The year 2000--computer compliance : second report. Volume II, Minutes of evidence and appendices / Science and Technology Committee.

HOUSE OF COMMONS SESSION 1997–98

SCIENCE AND TECHNOLOGY COMMITTEE

Second Report

THE YEAR 2000 – COMPUTER COMPLIANCE

Volume II

Minutes of Evidence and Appendices

Ordered by The House of Commons *to be printed*
1st April 1998

LONDON: THE STATIONERY OFFICE
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The Science and Technology Committee is appointed under Standing Order No 152 to examine the expenditure, administration and policy of the Office of Science and Technology and associated public bodies.

The Committee consists of 11 Members. It has a quorum of three. Unless the House otherwise orders, all Members nominated to the Committee continue to be Members of it for the remainder of the Parliament.

The Committee has power:

(a) to send for persons, papers and records, to sit notwithstanding any adjournment of the House, to adjourn from place to place, and to report from time to time;

(b) to appoint specialist advisers either to supply information which is not readily available or to elucidate matters of complexity within the Committee's order of reference;

(c) to communicate to any other such committee and to the Committee of Public Accounts, to the Deregulation Committee and to the Environmental Audit Committee its evidence and any other documents relating to matters of common interest; and

(d) to meet concurrently with any other such committee for the purposes of deliberating, taking evidence, or considering draft reports.

The following were nominated Members of the Committee on 14 July 1997:

Mr David Atkinson
Mr Nigel Beard
Dr Michael Clark
Mrs Claire Curtis-Thomas
Dr Ian Gibson
Dr Lynne Jones
Mr Nigel Jones
Dr Ashok Kumar
Mrs Caroline Spelman
Dr Desmond Turner
Dr Alan W Williams

Dr Michael Clark was elected Chairman on 30 July 1997.

The cost of printing and publishing this Volume is estimated by The Stationery Office at £11,355

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Additional memoranda have been received by the following and have been reported to the House, but to save printing costs they have not been printed and copies have been placed in the House of Commons Library where they may be inspected by Members. Other copies are in the Record Office, House of Lords, and are available to the public for inspection. Requests for inspection should be addressed to the Record Office, House of Lords, London, SW1. (Tel 0171-219 3074). Hours of inspection are from 9.30 am to 5.30 pm on Mondays to Fridays.

1. Cap Gemini UK plc, Dr C N M Pounder
2. The Sage Group plc
3. Bridgeway-Sicor Ltd
4. Barclays plc
5. International Computers Limited
6. Confederation of British Industry
7. Morgan Stanley Group Inc
8. British Bankers' Association
9. British Embassy Washington
10. Health & Safety Executive
11. Office of Public Service, Central IT Unit
12. The Institute of Chartered Accountants in England and Wales
13. Association of British Insurers
14. Consumers' Association
15. Visionaries IT
16. National Health Service Executive

MINUTES OF EVIDENCE

WEDNESDAY 19 NOVEMBER 1997

Members Present:

Dr Michael Clark, in the Chair

Mr David Atkinson	Mr Nigel Jones
Mr Nigel Beard	Mrs Caroline Spelman
Dr Ian Gibson	Dr Desmond Turner
Dr Lynne Jones	Dr Alan W Williams

Memorandum submitted by Taskforce 2000

INTRODUCTION

Taskforce 2000 is a not-for-profit company, limited by guarantee, formed in August 1996 on the initiative of the Minister for Science and Technology at the DTI. Its main objective has been to raise private sector awareness of the computer date-change issue. Most of its funding has come from Government.

SUMMARY OF EVIDENCE

- The problem is far more serious than most people realise.
- The consequences of failure could be dire.
- Thousands of organisations risk not being ready on time.
- Although awareness seems high, understanding is poor.
- The main obstacle is that senior people are not giving it adequate priority.
- Government should do more to communicate the need for urgent action.

1. THE SERIOUSNESS OF THE PROBLEM

1.1 The problem is considerably more serious and urgent than most people realise. If we get it wrong, businesses could fail and basic services (financial, utilities, telecomms, health care, etc.) might not be delivered—the economic and social consequences would be appalling. At present, the UK is getting it wrong.

1.2 Eight characteristics of the problem put this into focus:

1. most computer systems (large and small, old and new) and almost countless "embedded" microprocessor chips are potentially affected;
2. systems that are not fixed in time will fail;
3. failure is likely to have severe business, economic, social and political consequences;
4. there is insufficient specialist resource for a comprehensive solution;
5. there is insufficient time for a comprehensive solution;
6. the deadline cannot be extended;
7. the computer industry has a dreadful record of missing deadlines—about 80 per cent are late; and
8. senior people in Government and business and leaders of the computer industry are not giving the matter adequate priority.

2. ARE UK ORGANISATIONS SUFFICIENTLY PREPARED?

2.1 The simple answer is No. Although levels of awareness, in the superficial sense of knowing that there is a problem, are high, there is abundant evidence that this is not being turned into understanding and, therefore, action.

2.2 The best practice is to have the bulk of the job done by the end of 1998. There are good technical and business reasons for this. It is probable that any medium or large business that has not made an adequate start by 31 March 1998 will not make it—an "adequate start" means Board sponsorship, completion of a full systems audit, identification of all "mission critical" items (including third party interdependencies), a full budget and project team in place and conversion in hand. About 40,000 such businesses, employing around 6,000,000 people, risk not making such a start in time. (Smaller businesses *may* have rather longer.) Evidence for this comes, inter alia, from the following recent surveys.

2.3 A DTI/Sage/Taskforce 2000 survey indicates that less than 10 per cent of SMEs (small and medium sized enterprises) have completed a full audit and 57 per cent plan no budget until 1999—yet half of those getting on with it say they expect the job to take 12–18 months. 80 per cent plan to resolve the matter "in house"—although 50 per cent have no people to allocate to it.

2.4 A Cap Gemini (Europe's largest computer services company) survey indicates that: *"One in ten organisations will fail to meet the deadline ...* [and therefore] *... 29 per cent of GDP will be at risk."* If the timetable slips by three months, this becomes 37 per cent. On resources, they say demand will exceed supply by April 1998. The average time to resolve the problem is two years for medium-sized and two and a half for large businesses.

2.5 Therefore, failing significant change in understanding within the next few weeks, we could be facing unprecedented difficulties.

3. Taskforce 2000's Role

3.1 Its first objective was "to operate at a high level to support an initial goal of achieving 100 per cent awareness and commitment by March 1997." Basic awareness was achieved on time. However, understanding and, therefore, commitment have proved more difficult.

3.2 Funds are limited: only £300,000 of public money since July 1996, together with a DTI official on secondment since January (focusing on SMEs). Therefore, activities have been strictly focused: speaking at relevant conferences (three or four presentations per week—often more), getting close to the media (success with TV, radio, the technical and specialist press and the broadsheets) and meeting senior business managers, boards of directors and relevant professionals. More extensive PR activity has not been possible.

4. Possible Failures of Safety Critical Systems

4.1 The extent depends entirely on how soon people get on with fixing the problem.

4.2 Some organisations are making contingency plans. Indeed, that—and damage limitation—are recognised by active organisations (including the oil and gas and nuclear industries) as an essential part of their date-change programme.

5. Impact of Action 2000 Launch on Taskforce 2000 Work

5.1 This is difficult to judge at the time of writing. On the face of it, Action 2000 should be able to provide a valuable service—there is a need for central advice and assistance of the kind being planned.

5.2 However, the campaign is at a critical stage: if medium and larger businesses do not get started within the next few weeks, we face severe problems. Therefore, there must be no mixed messages and no confusion. And it is essential that the momentum created and maintained by Taskforce 2000 is not prejudiced. There are some indications that this might be happening.

5.3 Taskforce 2000 understands the issues, has a successful track record, influences the agenda and knows the key journalists. Also its name is established as a clear and positive brand in the UK and internationally. It would be unwise to jeopardise these advantages

6. Why is More not Being Done?

6.1 There is a vicious circle: senior people do not have it on their agenda because other senior people do not have it on theirs. In particular, the matter would get far more attention if it were seen as a key Government priority at Cabinet level.

6.2 The reasons that senior people do not take it seriously are understandable—but wrong. They include:

- it is still described as "hype";
- it is seen as a technical matter;
- in-house computer staff are misleading them;
- other current global scare stories seem to be exaggerated; and
- could the computer industry be so stupid?

7. GOVERNMENT ACTION—COULD IT DO MORE?

7.1 Internationally, Taskforce 2000 was a unique initiative—until very recently, no similar body existed elsewhere.

7.2 As a result, awareness levels are probably higher in the UK than in any other country—and there may be more action here also.

7.3 The main weakness is that the vehicle for getting things done, Taskforce 2000, has been poorly supported by past and present Governments. Compared with the problem, its funding has been pitiful. A result, for example, is that proposals for a short-term highly-focused advertising campaign (on the lines of the AIDS and self-assessment campaigns) have been impossible to implement.

8. OTHER CONSIDERATIONS:

- The matter raises important legal, audit and insurance issues.
- Not least of these is senior people's liability for failure.
- There is inadequate action on the skills shortage.
- Some systems being sold today are not compliant.
- The embedded chip problem is underestimated—it is huge.
- Interconnections (with third parties) are a critical factor.
- Testing is a complex and massive part of the job.
- The date-change problem will have a major impact on euro introduction.
- The international dimension is critical and requires greater attention.
- Contingency planning is essential—at national as well as corporate level.

The key to the solution is radical prioritisation.

12 November 1997

Examination of Witnesses

MR ROBIN GUENIER, Executive Director, MR ROB WIRSZYCZ, Chairman, and MR IAN HUGO, Executive Member, Taskforce 2000, were examined.

Chairman

1. Mr Guenier, good afternoon. Thank you for coming before the Select Committee this afternoon. I wonder if you would care to introduce the colleagues you have brought with you?

(*Mr Guenier*) Yes, Chairman. On my left is Mr Rob Wirszycz, who is the Chairman of Taskforce 2000. He is also the Director General of the CSSA, that is, the Computing Services and Software Association. On my right is Mr Ian Hugo. Ian is a member of the Taskforce Executive. He is the editor and largely the author of "Millennium Watch", which is our regular newspaper, and he is also the part author of the BSI's compliance definition and also the author of their code of practice and so I think well suited to this.

2. Thank you very much indeed. Rather than invite you to give us an opening statement, perhaps I can ask you a question that enables you to use the answer as an opening statement. You said to us in your submission that "the problem is considerably more serious and urgent than most people realise". How serious do you think this problem of computer compliance in the year 2000 really is?

(*Mr Guenier*) I think it is very serious, as you have seen from my submission. My view is that if we fail to resolve this matter, the consequences will be more than the obvious business and economic consequences. I see the potential for social and political consequences and I fear that as this is only now two years away it is indeed a very urgent matter. Would you like me to develop that?

3. Yes. That does not really quantify the seriousness of the problem. It just says the seriousness of the timescale.

(*Mr Guenier*) I will give you some figures in a moment. Computers nowadays really control our lives. We have computers and computing systems, and by "computing systems" I include the microprocessing chips which exist in devices throughout our lives today, and these devices nowadays, together with computers, are really ordering the lives of most of us every day and this has become increasingly the case in the latter part of this century. Most of these systems have the potential for upset. Therefore, every business, every institution, every government department, has to tackle the problem and tackle it quickly because this is a big job. Our evidence in the private sector, putting it very broadly, is that about 40,000 medium or large businesses are at present not doing enough about it. Those companies employ approximately 6 million people and our view is if those businesses, those 40,000—and there are many more, by the way, which have the problem—do not begin to address that problem in a serious way by the end of the current financial year, then I think those companies are in danger of not surviving this date change. We are only now, therefore, approximately four months away from that. Therefore, I think it is extremely important that action be taken to turn those companies around and get them to face up to what needs to be done and make sure they do it.

4. Some of those companies might say the whole seriousness of this issue has been "hyped" up. How do you respond to those who say that it has been "hyped" up and it is nowhere near as serious as you and your Taskforce make out?

(*Mr Guenier*) Very few people within those companies who understand the issue in fact do say that. The allegation that this has been "hyped" up certainly exists in the newspapers. I would say this, that the purpose of "hype", I suggest, would be in some way to create business for the computing industry. I can think of no other reason why anybody would "hype" it up unless they were just mischievous. The computing industry is in no way "hyping" this. It would be very hard for anyone to find the major companies in the computing industry pushing this matter forward as a major item. The reason for that essentially is this, that they are themselves very frightened of this issue. It is a very short-term issue. Anybody who gets involved in this has no-where to go when it is complete. There will be no future in it for them. The fact is that because of the shortage of resources in the IT industry it will take away effort from jobs they would much rather be doing, jobs with a bigger margin and jobs with a good deal more future. So they have no interest at all in "hyping" it, for that reason. The second reason is that they are very concerned indeed about the legal implications. There is hardly a firm of solicitors in the City of London who has not got a partner dealing with this almost exclusively, and I think the legal consequences for the IT industry are very serious indeed. So it would be a very strange thing for the computer industry to be "hyping" something which (a) is going to damage their business, (b) gives them this considerable threat from the law, and (c), if things go wrong the computing industry is going to look extremely foolish. This is a very odd and rather bizarre problem which we have. It seems extraordinary that this industry, which carried all before it at the end of the twentieth century, should have at its heart what is really an absurd and bizarre problem. I think if things go wrong people at large and in business will look at the computer industry with a new eye and will be very much more cynical and very much more careful about their dealings with them. So for these three reasons there is no reason whatever for the computer industry to "hype" it and I submit, Chairman, there is no "hype" involved in this at all and that, indeed, it has been understated in many cases, particularly by those likely to be the most damaged by it.

5. Accepting the present rate of progress to tackle this problem, how likely is it that there will be a real danger to insurance and banking in the year 2000? Things are happening and things are moving forward and there will be a lot more progress even on the present graph. How realistic is the danger for the year

[**Chairman** *Cont*]
2000 for banking and insurance but, more importantly, for hospitals, air traffic control, emergency services, pensions and so on?

(*Mr Guenier*) I think the two are interesting to compare. The City of London, the financial community, by and large have seen this problem coming for some time. They have set themselves up to deal with it. They have very substantial budgets. For example, the four main clearing banks, broadly speaking, have a combined budget of about £400 million and one's knowledge of computing is that that will probably go up. So we may be looking at half a billion just for the four clearing banks. Generally speaking, therefore, we are looking at very large budgets and a lot of activity in the City of London and in the financial community generally. That does not mean that they are exempt from problems or that there is no risk. I think there is some risk in the banking community and I am somewhat fearful of that, but it is a very much lesser risk than the risk we see elsewhere in the economy. You mentioned in particular the national health service and air traffic control systems. Air Traffic Control again have recognised this for some time and they are reasonably confident, not certain but reasonably confident, that their systems will be ready, at least in this country and in Western Europe and in North America. That does not mean they will be elsewhere in the world, of course. One thing I am very concerned about—and I will come back to my point about resources—is that there is inadequate resource to deal with this. Therefore, if these people, such as the City of London, such as Air Traffic Control, in fact absorb all the available resource, or a very high percentage of it, particularly from specialist consultants who are needed to help, I fear very much who is going to help the national health service. The point we have made in our submission is the need for prioritisation. It does seem to me there is a great danger that those who can afford it and those who saw it coming a long time ago are quite sensibly getting on with it and trying to do everything, and the very fact that they are doing that could damage parts of the economy, particularly in the public sector.

Chairman: Thank you very much indeed. I think we shall come back to skill shortage in a few moments. May I now ask Mr Atkinson if he will lead us on to awareness and readiness for this date.

Mr Atkinson

6. Thank you, Mr Chairman. I have three separate questions. First of all, because most of us are laymen around this table, can you tell us very briefly, in understandable terms, precisely what would happen to British business if very little action were to be taken, and what is the action needed to be taken to avoid some of the problems which are being predicted if action is not taken?

(*Mr Guenier*) Could I invite my colleague Ian Hugo to deal with that.

(*Mr Hugo*) What will happen if no action is taken is that 80 per cent of computer systems of all kinds will fail. That is the general percentage of programmes that are affected that the large organisations who are into this problem have found, and something between 10 and 30 per cent of embedded systems will fail in one way or another. So that is what will happen if no action is taken. You asked earlier about deadlines.

7. The action needed to be taken?

(*Mr Hugo*) The action that needs to be taken, there is a process that is quite well-known, which is to establish an inventory of systems that may be affected, to carry out an impact analysis of those systems to see if and where they are affected, and then to decide on some process for either fixing the system as it stands or replacing it or, indeed, scrapping it if it is not essential to the business. When all these fixes have been made, as I say to 80 per cent of the systems typically within the company, all the modified programmes then have to be tested where they react together as an assembly. They then have to be put back into production in the company and tested again in the production environment. So there is a fairly long process and the key, I think, is that never before have any companies attempted to disassemble all their systems, correct them, and re-assemble them in such a short space of time.

8. When Taskforce 2000 was appointed last year, Mr Guenier, I think you said you would not be content unless there were 100 per cent awareness achieved within a year or so of the establishment, and as a year has now gone by, can you give us a measure as to whether you have achieved both 100 per cent awareness by British business of the problem and also a measure of the action that has been taken, the progress that has been made?

(*Mr Guenier*) I will give you a brief answer and then ask Rob Wirszycz to comment as well. Our original target was to achieve 100 per cent awareness at board level by March of this year. The problem, of course, is, what does awareness mean, and I think that problem has got in the way of some understanding of this issue anyway. But superficially I think we have, broadly speaking, achieved that. I think levels of awareness in the United Kingdom, according to most of the surveys we look at, are very high and were high by March, and in fact are very much higher probably than in any other country in the world, and we can be quite proud of that. On the other hand, in terms of understanding what the issue really is about, I think we have not succeeded at all. I suppose that is an exaggeration. We have succeeded to a degree but I think there is a very large measure of misunderstanding. I make presentations, four or five a week—I made two in Edgbaston this morning—and everybody who comes to these presentations knows there is a problem and so they are aware of it but hardly any understand the issues and they go away rather shaken when they find out what this is about. So yes, we have been successful superficially. I am pleased about that but we have not really been very successful when it comes down to really understanding it.

(*Mr Wirszycz*) I think there is one area of misunderstanding which actually comes from the name which is often given to this issue, which is "the year 2000 problem". In reality it is a 1999 problem because you cannot wait until the last minute, which is what most people do for the majority of their business projects, because the use of year 2000-related dates and processing will occur well before the year 2000. It is already occurring and we are

[**Mr Atkinson** *Cont*]
starting to see examples of failures occurring in various systems and I hear many anecdotes which in some ways I feel it would probably be unwise to present here because they have been passed secondhand. At the same time I think this action is just not early enough and that people, especially in smallish businesses, are waiting for their software suppliers and others to fix the problem for them and it does not just happen automatically. There is a degree of pro-action and planning that has to take place and that takes time. Upgrading anything is a more than trivial exercise in the IT world. So I believe it is a question of getting masses of people to act, and, if we have done any form of mass awareness behavioural change programmes in the past, the lessons are that it takes a lot of time, a lot of effort and a lot of resources to get everyone to do it.

9. Do you have a crude assessment of what percentage of British industry is actually embarking on the action necessary to survive in the next millennium?

(*Mr Guenier*) Yes, we have some quite good figures. There have been two surveys published quite recently, which is good, because until quite recently we had been relying to a large extent on anecdotal evidence, which is hugely unsatisfactory. There were two surveys, one that we carried out with the DTI, which was funded by a company called Sage Accounting Software, and this showed that something like—it was a really surprisingly high number—approximately 75 per cent of small- and medium-sized enterprises claimed that they were not only aware of the problem but understood it. That was good. However, only 10 per cent. of those companies have actually carried out a complete audit of their systems. I will give you some numbers at random. Fifty-seven percent. of those companies planned not to have any budget until 1999, which shows a total misunderstanding of the problem; 80 per cent said they were going to do the job in-house; 57 per cent had no people to do it with. So we have a very serious gap between people thinking they understand it and actually understanding it. As an example, we went to 50,000 SMEs and we had responses from 1,000, and I am told by statisticians that that means that those who replied were probably the better end and, therefore, the reality is worse than that. If you look at larger companies, our view is that probably only about 15 per cent, somewhere between 15 and 20 per cent of larger companies actually have a full strategic plan in place. By "full strategic plan" we mean the following: we mean that, first of all, the chief executive and the board of directors are involved very much in running this project, they understand it and they have bought into it; secondly, that a full audit has been carried out, as Ian Hugo just said; thirdly, that that audit has been prioritised. In other words, you look at your systems and then you determine what your mission critical systems are, and incidentally, Chairman, some of those mission critical systems may be at another person's organisation. You may well depend upon your suppliers or your customers or what have you for their systems to be compliant. So you list the things that are mission critical, then, having done all of that, you put a budget on to fixing it and that can be a very large sum of money and it must be an adequate budget. Having done that, you need to appoint a project manager who is going to run the project and a project team to see it through. I am talking about big companies. Our view is that only about 15 per cent of large companies in the United Kingdom have done all that and started the process of implementation. That is desperately worrying because when you have done all of that—and it is a big job, as you can tell—you have a mountain to climb, you have all the work to do, all of the conversion, all of the implementation, and as Ian Hugo said, all the testing still has to be done. We are in no doubt that now it is getting extremely late for those 85 per cent of larger companies. The best practice in the private sector established by companies—I think I can name a few, people like ICI, Shell, Smith Kline Beecham, Nationwide Building Society, British Telecom, who are companies that are really getting on with this—they have as their best practice to have the job completed by the end of 1998. There are good technical business reasons for that. Because they know that computing jobs nearly always run late, they are aiming to do it by about September. From today to September is about ten months and if you have not yet done that first step that I have just described now it is going to be very difficult indeed to complete the job in time. Therefore, we are going into an emergency.

10. So bigger companies are preparing but small- and medium-sized companies perhaps less so?

(*Mr Guenier*) As I said, bigger companies are preparing but not nearly enough, and smaller companies are even worse.

11. Finally, as it appears from these answers that there is still widespread complacency and ignorance on the part of business and time is running out, is it not now too late to require voluntary action, which is the purpose of Taskforce 2000? Is there not scope here for a unique piece of legislation to respond to a unique issue, as I proposed in my Private Member's Bill, which will require company directors to undertake an assessment and to report back the outcome of that assessment to the owners of the companies, the shareholders, in the annual report for just one year only?

(*Mr Guenier*) I am inclined to think that that is not the appropriate way forward. I think the problems with legislation are, first of all, the time involved in setting the legislation up, which I think is probably rather late now, and secondly, I fear that drafting that piece of legislation in a satisfactory way would be extremely difficult. One of the problems, Chairman, as I said a moment ago, is that it is all about prioritisation. People have to determine what needs to be done. There are some jobs you can abandon, some jobs you can cancel, some jobs you can defer, and it seems to me that a sensible board of directors will have to take account of its own business priorities and those it knows about, and it seems very difficult for me to see how a piece of legislation can be drafted to make that happen. I do not know whether you agree with that.

(*Mr Wirszycz*) I think that maybe the auditing boards, the auditing faculty of the Institute of Accountants of England and Wales have actually issued some guidance to auditors especially for the year-end accounts coming up, which indicates how

[**Mr Atkinson** *Cont*]
they should treat this in each company to look at them as a going concern, and we believe that that kind of action will certainly affect every private company in the land.

Dr Gibson

12. Let us turn now to government departments themselves. In your experience, is enough being done; what is still to be done; what should be done; and are they going to miss their deadlines for the year 2000?

(*Mr Guenier*) Taskforce 2000's brief is to address the private sector, so we are not directly involved with the public sector at all. I think I have to say that. I do sit on the Government's Year 2000 Action Group, which is the public sector group, and I feel that in some ways my view about it is something which is somewhat confidential. I do not know how I should deal with it at this meeting but my general view is as follows, that it seems to me that government departments are lagging behind best practice in the private sector, and I stress best practice, the companies of the sort I mentioned a moment ago. On the other hand, all the government departments do require a programme. They have a team in place. They do attend regular meetings. They have milestones set for them and they do have access to the CCSA's very expert help. So on the one hand they are lagging behind the best practice but, on the other hand, there is a much more universal approach in the public sector than in the private, because the worst practice in the private sector is disastrous and that certainly is not true in the public sector. So that is a very general answer.

Chairman

13. That is the private sector, is it?

(*Mr Guenier*) I am sorry, my comment was that in the private sector the worst practice in the private sector is considerably worse than the worst practice in the public sector. The point I wanted to make is that there is a uniformity of approach in the public sector which does not exist in the private sector. However, the best practice in the private sector is light years ahead, in my judgment, than in the public sector. If you look at large departments of state, who have an enormous job to do, they are far behind some of the big corporations who are getting on with this, and what disturbs me, Mr Chairman, is that when I talk, as I do commonly, to the boards of directors of large companies who are getting on with it—I want to stress that—they commonly say to me that they are very concerned they may not be able to complete the job on time, for various reasons. They will probably complete the main part of the job on time but they are very concerned about their supply chains, they are concerned about third parties and so on, and if a company which has been dealing with it for two years is concerned and they are two years ahead, as I suggest, of some government departments, it does worry me that those government departments have severe problems, because plainly they have the same problems as large companies.

14. Is the secrecy you feel uncomfortable divulging about which departments are really behind?

(*Mr Guenier*) I could not answer that. I do not have that information.

Chairman

15. Mr Wirszycz, I think you wanted to make a supplementary answer, did you?

(*Mr Wirszycz*) Yes, briefly. My day job is that I represent a great many companies who provide services to Government and I believe that the message that is coming through to me is that very few government departments are actually issuing contracts for help, and the message may come back that they are clearly doing it themselves. I see in my contact that there is not a great deal of urgency in the matter. That is something that does concern me both as a citizen and as someone who consumes Government services. I believe this is so important, especially in parts of Government where there is not centralised control and where effectively a great many decisions are taken by a great many people, in the health service, police service, local authorities. That dispersal of authority, I think, means that you are going to find a great deal of variety in how things are done and I think that that urgency could, indeed, provide leadership for the rest of the economy if it existed.

Mr Jones

16. If I could just tag on to the end of the public sector problem, we heard the estimate that the cost to the clearing banks was half a billion pounds to put this problem right. Do you have any feel for what the cost is going to be to Government?

(*Mr Guenier*) Yes. I have been quoted as saying it will cost the British economy £31 billion to resolve this matter. That is not actually what I said. I will come to your question in a moment. What I said was that if you take the best practice in the private sector and extrapolate that across the whole of the economy, you come to a figure of £31 billion, broadly speaking. The fact is that is completely impossible. The IT industry does not have the resources to meet that and we do not have the time to spend it even if they did. But if that were true, the figure in the public sector would be of the order of about 6, in my judgment. Now the same applies to that 6. There is not the resource and there is not the time to spend it. That, of course, is a matter of very serious concern because it means that items are not going to be properly done and that, therefore, underlines the point I made a moment ago about the need for radical prioritisation. It is essential we do not try and do everything and we do do the things that really matter. That requires very senior level leadership, in my judgment. My guess—and it is a pure guess—is that the proper bill for the public sector would be in the region of £3½ or £4 billion, which, incidentally, is not unadjacent to the figure which the Labour Party were suggesting in opposition. Therefore, I think the present estimates that we are now seeing are likely to be far too low and if you relate those estimates to, for example, the clearing banks, then it does not really

[**Mr Jones** *Cont*]
make sense. Why should there be any difference between the best practice in the private sector and the best judgment at present in the public sector?

17. Can I move on to suppliers. I used to work for a supplier. This is a problem created by the IT industry. We heard from the British Computer Society. They told us that "the current IT business is simply chaotic in structure" and "there are no effective professional or regulatory bodies". We also heard today in your own submission that 80 per cent of deadlines are missed. Is there a problem in the industry?

(*Mr Guenier*) Could I invite Mr Wirszycz to answer that question.

(*Mr Wirszycz*) I am not sure I understand the problem.

18. Does the industry have a bigger problem than just this millennium bug? Is it just anarchy out there in computer systems?

(*Mr Wirszycz*) It is a very entrepreneurial business environment and has thrived extremely well. I think I would take issue with one of the things you said, that the IT industry has actually caused this entire problem. It has certainly been involved but I certainly would not believe that the supply industry has been responsible for this. More than three-quarters of all the code that is affected here has actually been written by organisations in-house and, therefore, I would suggest that there is a great degree of culpability which exists throughout the economy and not merely within the IT technical arena. I believe that there is a problem of plant. The IT plant—let us talk about it in terms of people in the United Kingdom—is about 600,000 people in terms of IT professionals, and that plant is probably set up to replace or, indeed, fix about a quarter of the systems that exist in the country if we say that people replace their IT systems every four years. It is not set up to handle the replacement and the fixing of all systems within one year and, therefore, as Robin suggests, I believe we are going to call upon those who actually are responsible for these systems to radically prioritise what can be done and what ought to be done in the time and with the resources that actually exist. But I believe the IT industry has tried to put together services. Several of my larger members have indeed put together extensive service arms, centres of excellence, if you like, and they have been shocked by how little take-up there has been of that. Indeed, in two of the companies that probably were best set to help, less than 10 per cent of their business is accounted for by discrete year 2000 work currently, which probably indicates in a sense that this is not being treated early enough by enough organisations and in many cases there is not spare resource left any more.

19. Can I ask you about the equipment that is on sale now. How millennium compliant is it? If you go into Dixon's and buy a PC, is it going to go bang?

(*Mr Wirszycz*) It may.

Chairman

20. It may? Even now? Something on sale now?

(*Mr Guenier*) Mr Hugo is something of an expert on that and I will ask him to answer.

(*Mr Hugo*) It depends what you mean by "fail" in terms of getting the date wrong. Yes, nearly all equipment, nearly all PCs at the moment will fail. One of the suppliers, Compaq, is prepared, and has said it is prepared, to give a written guarantee either that its equipment will not fail or that it will fix it free of charge. That seems to me a responsible approach but the fact is that, although components are now being made that will not fail, by the time these components are assembled into machines that go through the warehouses and into the shops, that will take some time. The machines currently being sold are generally not compliant.

21. Have we not known of this problem for 18 months, two years, if not longer?

(*Mr Hugo*) Yes.

22. The IT industry, we have just learned from Mr Wirszycz, is almost whiter than white, but surely they are not if they are taking this long to do anything about it? This really must be the IT industry's responsibility?

(*Mr Guenier*) Could I try and help, Chairman. I think we have to look at the computing profession as a whole. This problem evolves, as you know, from the use of two digits to represent the year, which made very good sense when it happened in the Fifties and Sixties—I should say the 1960s; maybe I should use four digits as well!—but it became a practice and it was a practice within the supply industry but also a practice, as Mr Wirszycz says, in the user industry. So all the computer so-called professionals have a part in it. Therefore, I think it is very difficult to allocate blame to vendors or users. That is the point I would make in commenting on Mr Wirszycz' proposal. It is to my mind, though—and I am not a computer person at all—quite extraordinary that the use of two digits continued through into the 1980s and into the 1990s. It seems amazing that that happened and the thing is frankly bizarre.

23. But you are moving away from my point. My point is that since we have known about this for over two years, why were not urgent steps taken by the computer manufacturers to make sure that at least all equipment purchased after 1995 was millennium compliant, and if equipment is being replaced every four or five years, a large proportion of equipment would have been replaced by the year 2000?

(*Mr Guenier*) It is extremely difficult to answer that question.

24. Do profits have anything to do with it?

(*Mr Guenier*) I do not have a clear answer.

25. I think Mr Hugo thinks profits have something to do with it. Sell obsolete equipment and sell more later.

(*Mr Hugo*) The computer industry is demand-led, like many other industries, and there are many things that users require at one time. If there was not the demand for compliance, as there was not two years ago, why should the computer industry provide it?

Mr Jones

26. Do you think we need the Government to take some action? I have asked John Battle, the Minister, if he is going to ban the sale of non-compliant stuff.

(*Mr Wirszycz*) I would like to add a point here. I think there are so many definitions of what "compliance" actually means that I think we have a slight problem. I think also, to get the PC issue into some sort of perspective, we are not talking about computers melting or malfunctioning. We are talking about by and large the majority of the problem with PCs is that you will need to reset the date of the clock on your PC, so let us put this in perspective. We certainly, as representing the software and services industry—and we do not represent the entire industry—believe that we cannot condone the sale of anything which would not work beyond the year 2000, certainly even in the last year. Indeed, we have issued guidelines to the industry and codes of practice for that particular matter. Of course, we are an unregulated industry and it is very difficult to regulate anyway. There are 2,300 companies that build PCs in this country and I would say the very best, and those that actually supply the most, are indeed as clean as one could possibly be but you will find a great deal of variety across the industry. It is unregulated and that is how, in a sense, it is. It is very difficult to compel people because you cannot find a definition of what they ought to comply with. It is very difficult indeed.

27. Do you think that current legislation is adequate for what is going to happen? Given that some systems are going to fail, who is going to be responsible? Is the Sale of Goods Act in a sufficiently advanced state that it is able to cope with questions of liability from the year 2000?

(*Mr Guenier*) The question is, should Government be doing more to—

28. Do we need to change the Sale of Goods Act?

(*Mr Guenier*) I think in many ways the current law deals quite well with this problem. I think changing the law, rather as I said to Mr Atkinson, is probably too late now. There are great problems of definition again, as Mr Wirszycz said. There is a danger of over-concentration on the personal computer, if I may say so. I am not one to denigrate it. It is a very important problem and we do not have time to go into the detail but there are levels of compliance in the clock, in the computer, in what is called the BIOS, in the applications, in the operating systems, in the networks. It is a very complex subject and I think it is very difficult to say precisely what compliance means. For that very reason it would be very hard to bring in legislation to deal with it. The Sale of Goods Act deals with this in principle quite well, and my judgment would be, in view of the shortage of time, live with that. What I think Government could do—if I may make this point, Chairman—is rather than legislate, I would like to see Government emphasising the seriousness of the matter. The problem we have is that senior people in the private sector, and I dare say also in the public sector, simply do not regard this as a serious enough matter. It is not on the agenda of top people and when top people have it on their agenda, they drive it through. I have no doubt when I talk to large companies, the ones who are getting on with it, the chief executive regards it as his responsibility and he drives it through. He puts good people on to it, he puts budget on to it and sets priorities and so on. They do not see that happening in Government. This is our real concern. They do not see Government taking it seriously enough at a senior level, and we think that this problem is best resolved by tackling it that way, and we think that my point about prioritisation within corporations also applies to prioritisation within the economy. We would like to see a much stronger lead in Government to tackle these fundamental issues, which I think would do a thousand times more than amendment to the Sale of Goods Act.

Mr Beard

29. I do not quite understand the answer which you gave earlier. Earlier on you said that there were something like 57 per cent of small businesses that had not the means of carrying out the audit and remedying the position. You also said that we in this country were probably in the lead in making people aware. So you could make people aware but if there is no remedy for them there, what do they do about it? What do these 57 per cent of small businesses do if they are aware?

(*Mr Guenier*) I think you may have misunderstood my comment. I did not say they did not have the means to do it. What I said was that 57 per cent of small businesses did not propose to set up those means until 1999. I believe those companies in most cases would be able to tackle it if they understood the priority that existed.

30. Many small businesses would not have the capability internally to do it, so what could be done for them?

(*Mr Guenier*) I think there is a very real problem there. There are various ways that this can be tackled. My own personal view is that the best way this is tackled is by companies who have the problem coming together and sharing their experience. I have seen a number of cases of these self-help interest groups working together, finding common solutions, finding common approaches to consultants, and I would very much like to see that whole process of common approach being expanded throughout the economy. But this is not going to happen until senior people put it on their agendas. This is not going to happen from the IT manager taking the initiative himself. There is another point I really ought to make, Chairman. When we talk about PCs I say we are slightly misunderstanding the computer problem. When we talk about the computer problem we are tending to overlook the extraordinarily large problem with embedded microprocessors, which are not regarded as computers at all. Mr Wirszycz said, for example, there are 600,000 IT professionals in the British economy, a very large number—more than I thought actually—but I am told there are only 20,000 process control engineers in the United Kingdom. You need specialists to look at the microprocessor problem. There are literally billions of these devices throughout the economy. Shell tell me that a typical North Sea rig has 10,000 microprocessors in it, each one of which has to be looked at. Some of them are under the seabed. It exists throughout the health

[**Mr Beard** *Cont*]
service, it exists throughout all process industries, it is in air traffic control systems and, of course, at home it is in your fax machine, your video recorder and so on. These devices are everywhere and that is a very large problem which is hardly being addressed properly at all.

31. But does that not mean it is not just a matter of awareness, which is what you have been stressing and suggesting even more emphasis should be given to that? It is the matter of the capacity for action which is also at issue?

(*Mr Guenier*) That is partly true. I think I would say this. We said at the beginning there is a difficulty of definition of "awareness". My background is that I am a general manager, I am a businessman. My view is that when senior people understand that something has to be done, then they get it done. If they understand that their businesses may not survive, they will make sure it does survive.

32. Not if the resources are not there, if the skills are not there or the capital is not there. What was said was it may need fixing or it may need replacing. If it needs replacing it requires capital?

(*Mr Guenier*) Of course it does. I quite agree with that. What I said also was that it is a matter of prioritisation, and if people recognise this is a No. 1 priority, because otherwise they do not survive, those people will then stop doing other things they are at present spending money on because they have to be seen as secondary. This is the best approach. This is how you liberate people to get on and find the resource. Of course, we and Government and others can do something to help, but the fact is that if individuals know it is important to tackle it, they will find a way. That is my own personal view.

Mr Jones

33. Could I ask very quickly a technical question. I understand there are lots of embedded chips in the nuclear power industry. Is there enough time to close down nuclear stations in order to fix everything? Would not the national grid have some demand on the amount of electricity that is generated by the nuclear industry?

(*Mr Guenier*) I cannot provide a definitive answer to that question. The answers I get from the nuclear power industry are that they are confident that they can fix it. You may say, "They would say that, wouldn't they?" I suspect that they are very aware of this because they have the process of safety critical matters foremost in their minds always, irrespective of this problem. I know the nuclear power industry has been working on this now for some time and the statements I hear are reasonably optimistic; therefore I can only conclude they believe they can do it, but I suppose in the back of my mind I share your doubts and I really do not know more than that because I do not have time to go into the detail of how the nuclear industry are tackling this. We are a very small organisation.

Dr Jones

34. In claiming to ensure that millennium compliance has been given the priority it should have deserved, have not you in Taskforce 2000 failed to achieve your objectives; could you have done more and what has prevented you doing more?

(*Mr Guenier*) As I said to Mr Atkinson, I believe in terms of a very harsh interpretation of the word "awareness" we have. There is no question about that. The job, of course, is enormous and we have been setting out with tiny resources. I calculated that we have cost the public purse, if you were calculating on eight-hour days and five-day weeks, £100 an hour since we started, which I suggest is a rather small sum for doing a massive job right across the economy. So we can take some pride, I think, from the general levels of awareness, but I agree that the understanding of the issue is certainly not deep enough, and my present concern is that that understanding that very much needs to be put into the minds of senior people today is in danger of being put off a little by current changes in the Government's approach to this. So I think that yes, you are right, more needs to be done, more should have been done. As I said in my evidence, I believe that the last Government and the present Government really should have put more resource behind this, and I told both Governments that that was the case. We have had tremendously good support from the DTI and I am very grateful for that, but the fact is that the funding has been tiny and we have been doing it with a handful of people. I did not even have a secretary until August of this year. This is a tiny little cottage industry. So I think it is rather hard to expect a cottage industry to do this massive awareness campaign that is needed and I have very clear views and have made very clear proposals about how it should be done and they have not been able to be implemented.

35. Could you tell us, if you had the resources, what you would have done and how we actually catch up on that?

(*Mr Guenier*) I believe the following, something which we have said before. I believe that the No. 1 help would have been very senior support from Government. I think if Government itself were seen to be giving this priority at the most senior level, that would make an enormous difference to people's perception of the issue. That is the first thing that I really think needs to be done. Secondly, the view that we have had now for some time is that we think funding should be available for a very highly focused advertising campaign, similar to the AIDS campaign or the self-assessment campaign, which would be done by professionals and would focus this issue clearly on to the people it needs to target. I think those two taken together would make an enormous difference to our understanding of the position and I still believe now that is the way to tackle it.

Mrs Spelman

36. I want to ask you about what seems to the layman to be an apparent duplication between Taskforce 2000 and Action 2000. Why do you think the DTI thought it necessary to create a separate

[**Mrs Spelman** *Cont*]
organisation and how do you envisage Action 2000 and Taskforce 2000 working together in the future? You give some indication in your evidence to the Select Committee that there is a detrimental impact upon Action 2000 of what Taskforce 2000 has already done.

(*Mr Guenier*) The answer to your first question is that I think you should ask the DTI. I cannot tell you why precisely Action 2000 was set up. Let me say this. The function of Action 2000 is very welcome, the process that it appears to be addressing of things we have been asking to do since the beginning of Taskforce 2000. When Mr Wirszycz and I set up Taskforce 2000 we had an agenda of things we thought we would like to do and that agenda pretty well embraced the present objectives of Action 2000. That was 18 months ago, so we cannot possibly criticise them, we have been asking for them for some time. So that is welcome. The problem we have is that the amount of funding available to do that is probably inadequate to do just that. We believe the first priority has to be to get the message across to senior people in the private sector, because unless those senior people are doing something, unless they know they need help, they are not going to ask for it. Our fear—and it is only a fear at the moment because we are discussing these matters—is that the process that we are now carrying out—and I think it has been quite successful given our limited funds—the momentum we have created is likely to be diminished by a lack of funding, and the indications that I have had from the DTI are that our funding will be finished when our present amount runs out, that our present programme will stop. I think to stop that present programme would be unwise. Therefore, I suggest that the bringing in of Action 2000, although the detail is welcome, is not very welcome to what I believe is the first priority.

Mr Atkinson

37. In view of what you have just said, you may not wish to comment on this but I understand that the Chairman of Action 2000 is only going to spend one day a week in that role right up to 31 March 2000. Surely one day a week is totally inadequate in response to the problem?

(*Mr Guenier*) I do not necessarily agree with that because, supposing he were my Chairman, as Mr Wirszycz is my Chairman, I would not expect my Chairman to spend even one day a week. Mr Cruickshank is going to appoint a director. The director will be doing the equivalent job to the one that I am doing and the director has to be the boss; the director has to run the show. So I think it is perfectly proper for a Chairman to have a part-time role. So I think the press has misunderstood that. I do not really have a problem with that at all. The difficulty, of course, is that there is a hiatus now while the director is being appointed and this may take some time, and just at the moment this is such a critical issue, where we are looking literally at weeks within which these 40,000 companies have to be turned around, that we cannot afford a hiatus of even two days let alone two months. That is my concern.

Dr Turner

38. You have asked the Government to put a higher priority on your activities, so what more do you think the Government can do to help the industry and the public prepare for 2000? What way do you think the Government can give a higher priority?

(*Mr Guenier*) I think, as I have said already, the most important thing, the one thing I would welcome enormously, would be for the Prime Minister to make a statement about the importance of this issue. I think if it were seen to be a matter at Cabinet level, it would be extremely important.

39. So it would be a purely political process?

(*Mr Guenier*) I think the reason for that is that if that were to happen, it would be seen to be important by those who make the decisions. That would be my answer to that one.

40. So you do not think, then, that further Government spending is an answer to the problem?

(*Mr Guenier*) Of course, Government spending is an additional thing. As I said a moment ago, I think the actions that are being set forward for Action 2000 are very welcome and that will take money. I think there is a need for an advertising campaign. That will take money. I think there is a very good need for some sort of regular research to be done, funded by the Government, so that we can see where we are and are not relying upon anecdote. All these things take money, so of course I think that further funding is required.

Chairman

41. We have already discussed the skill shortage and you have brought it to our attention, so I will just ask one question. We know that there is a lot of effort going on in business and commerce at the moment thinking about the possibility of a single currency, and there must be a lot of IT effort in that. Do you think, Mr Guenier, that the effort going into preparing for a single currency as far as the IT is concerned is reducing the amount of skill there is available for this particular problem which we are discussing today?

(*Mr Guenier*) My personal view is that I have not the slightest doubt that it is. I think that the introduction of the euro is having a major impact on resolving the year 2000 problem. My personal view is that the single most potent reason for deferring the euro is the fact that the year 2000 is happening at the same time. The key dates for both are actually 1 January 1999. We are doing the largest IT job we have ever done and the second largest IT job we have ever done at the same time, and the computing industry, I regret to say, has a very bad record of delivering on large projects; it is nearly always late. To do two at the same time seems to me to be remarkably foolish. That is my view.

Mr Beard

42. Who internationally would you say is best prepared for the millennium and what have they done that we have not?

(*Mr Guenier*) I doubt, frankly, that anyone is better prepared than we are, which is an extraordinary thing for me to say in view of the points I have made. One journalist said to me that he believed that Britain was leading the pack. I said, "Could you please direct me to another pack?" If we are leading, then I fear—and I seriously mean that. I think probably more is being done, arguably more may be being done, in the United States, but a recent study of Fortune 500 companies in North America showed that only 16 per cent of Fortune 500 companies had an adequate strategic plan in place. Those data were taken in August. So I do not believe there is much chance that the United States is ahead of us and I am almost completely sure nobody else is. So the answer to your question is the world has a very serious problem.

(*Mr Wirszycz*) If I might add a supplementary in relation to the euro question you asked, I believe the situation in Europe is actually quite lamentable and certainly my contacts throughout similar organisations and others across the industry in Europe suggest to me that they have been looking at preparing for the euro ahead of year 2000 and the year 2000 capability within major economies in Europe is extraordinarily poor.

Dr Jones

43. Following on from that, what problems are we likely to suffer as a result of the failure of other countries to prepare for this?

(*Mr Guenier*) I think the problems could be very severe. We live in the cliche of a global economy today and if we were to fix our systems but our trading partners did not, we could be very seriously damaged. For that reason, another initiative I would like to see the Government taking, particularly as they are taking on the Presidency of the European Union this year, is to give the matter far more prominence on the international stage.

(*Mr Hugo*) The Chief Economist of Deutsche Morgan Grenfell has been quoted as saying that he believes there to be a 40 per cent probability that globally we will face a recessive financial situation similar to that in 1973-74 after the oil crisis.

Chairman

44. Thank you very much indeed, gentlemen, for your contribution this afternoon. I have before me, Mr Guenier, your press release of what you were going to say to this Committee. I am pleased to say that now that you have mentioned that the Prime Minister should take a lead, you have kept well to your script, and the hard-hitting assessment that you were going to give us has been delivered in every detail. I would just ask in future, if you were to give a press release on your activities before Select Committees of this House, that you would make the embargo time the end of the Committee and not the beginning of the Committee.

(*Mr Guenier*) I note that, Chairman.

Chairman: With that reservation, may I thank you very much indeed, all three of you, for your very kind and helpful assistance to the Committee.

Memorandum submitted by Action 2000

SUMMARY

1. Action 2000 has just been set up by the Government to help private businesses tackle this serious problem. Most businesses are aware of the problem, but too few are taking action. The problem is urgent. Action 2000 will be stimulating a range of collective activities in partnership with other organisations, particularly directed at medium and small businesses which need external help, and at tackling the shortage of IT skills.

2. Responsibility for avoiding the century date problem rests with the business, Government Department or other organisation which relies on a computer or electronic system. The remit of Action 2000 concerns systems in private sector businesses and this Memorandum does not address the public sector or consumers' systems.

3. This Memorandum responds to the letter received on 3 November 1997 and deals with the issues in turn.

(i) *The nature, magnitude and implications of an inability to manage the date change in personal and mainframe computers, embedded systems and software, especially where such computers are performing safety critical operations*

4. It is clear that if no action were taken to deal with the problem, many systems would malfunction with very serious consequences for the economy and society. Businesses large and small depend increasingly on computers for their operations, and few have adequate resources to handle those operations manually. In addition, there is a very wide range of electronically-controlled equipment, some of which will be affected. Widespread system malfunctions would be very disruptive.

5. Some malfunctions could be very serious, but others much less so. Given the pressures on resources and the shortage of time and of skilled people, it is essential to concentrate on systems which are critical for business performance, health and safety or the environment. Many systems will take a long time to tackle, but a few could if necessary be left until malfunction occurs. Senior managers need to set priorities.

(ii) *The effectiveness of action which has already been taken to avert problems in Government, large corporations and small businesses*

6. The business needs:

(a) to check its critical systems;

(b) where the problem is found, to fix the system, replace it, convert to manual operation or abandon the function; and

(c) test the solution.

All three steps must be completed before the system malfunctions. Systems which manipulate dates in the future—eg budget planning or forward ordering—will malfunction before 2000.

7. I am not aware of any systematic evidence about the effectiveness of action taken by businesses. The process of checking, fixing and testing takes time and only a minority of businesses have yet completed the process. I am more worried about businesses which have yet to start.

(iii) *The role of Government in raising awareness of the potential problems and in seeking solutions and the respective roles (of) Taskforce 2000 and the recently launched Action 2000*

8. The Government believes it has a responsibility to bring the century date problems to the attention of businesses, to encourage them to take action, and to ensure that help is available, principally from commercial sources, but co-ordinated, signposted and supplemented by collective activities.

9. The role of Action 2000 is:

(a) to advise the President of the Board of Trade and the Chancellor of the Duchy of Lancaster on the state of preparedness of the private sector—particularly in key sectors identified by them—and to make such contribution to their work on contingency planning as they may require;

(b) to advise the President whether the DTI should offer funding to other organisations; and

(c) to draw up, agree with the President and implement through a separate company a costed programme of collective activities—Action 2000—to support businesses in the private sector in their efforts to tackle the century date problem.

10. Advice to the Government will be provided by an Advisory Board, which I will chair, drawn from organisations which have a major part to play in helping industry tackle this problem, and from other individuals. I was appointed by the President of the Board of Trade. I will appoint the other members of the Advisory Board, after consulting her.

11. A separate company will be set up to help devise and implement the programme of activities. Many of the activities will be carried out in partnership with organisations such as trade associations, professional engineering institutions and Business Links. Government Departments, Regulators and individual companies also have a part to play in helping the private sector tackle the problem.

12. In all this the purpose of Action 2000 is to pull together the efforts and resources of other organisations into a coherent whole. We will be encouraging businesses and other organisations to participate and I shall be persuading senior people to support the initiative.

13. Action 2000 intends to undertake or promote others to undertake a wide range of activities, which are expected to fall under the following broad headings:

— Promotion—activities to promote the importance of the issue and signpost help.

— Advice and Guidance—identifying and providing available best practice, advice and guidance.

— Assessment Schemes—providing self-assessment conformance tools for users, consultants and suppliers.

— People and Skills—develop and implement ways to address the current shortage of skilled IT staff.

— Tools and Techniques—make available details of tools, techniques, products and services.

— Practical help and advice for small and medium sized businesses.

In addition, I would expect to advise Government on how existing programmes might be targeted on the century date problem, and on the adequancy of preparation and contingency plans of key sectors of the economy such as telecommunications and electricity generation.

14. Taskforce 2000 has been asked to give evidence on its activities. It is one of a group of organisations which have submitted proposals to Action 2000 which we are currently studying. Action 2000 will seek to build on its achievements.

(iv) *The extent to which new systems and software are "millennium compliant"*

15. The Computer Services and Software Association maintains a database about software products. Action 2000 will be considering how information can best be made available about computer hardware and about other electronic equipment. Action 2000 is also considering proposals for self-assessment schemes.

16. Compliance is a complex matter. It depends on the hardware, operating system, application software, data—including data imported from other organisations—and user behaviour all being compliant. It is also possible for a system to be non-complaint in trivial ways: we need to focus on non-compliance which will have serious consequences.

(v) *The development of contingency plans in the event of system and program failures*

17. Every business dependent on systems is responsible for developing its own contingency plans against the possibility of failure of critical systems. Government may need to consider whether contingency planning is necessary on a national basis, and Action 2000 stands ready to contribute to this by gathering information on the state of preparedness, particularly in key sectors.

(vi) *The legal implications of disputes over liability for compliance costs and system and program failures*

18. It has been suggested that businesses might delay taking action while arguing with suppliers about who is to pay. It is part of our message that businesses cannot afford to delay. Whether or not a supplier has liability, ultimately it is the business which is responsible for ensuring the effectiveness of its operations.

Q1. *What is your estimation of the seriousness of the millennium bug problem?*

19. As indicated above, the problem would be very serious if no action were taken. Many larger businesses have been engaged on the task for some time, and given adequate budgets there is sufficient time for them to fix it. At the other end of the scale, the smallest businesses are less dependent on computer systems. The main area of concern is medium sized businesses which may not appreciate the extent of the threat, have failed to start early enough or commit adequate resources, and could have a significant impact on other businesses in the supply chain if they are unable to cope.

Q2. *To what extent do you think that businesses and other organisations in the UK are sufficiently prepared to handle the date change? What is your evidence for this?*

20. Awareness of the problem is now much more widespread amongst businesses. In a recent survey undertaken for Sage and DTI, 97 per cent of respondents said they had an understanding of the business implications.

21. This indicates a significant improvement since surveys conducted over the last year, reflecting the more extensive media coverage and activity by Taskforce 2000 and many others.

22. The Sage survey paints a less encouraging picture of what businesses are doing about it. 55 per cent of those who responded had completed an audit of at least some of their systems, and are thus in a position to take timely action. We would hope that they will do so. Those who have started on their audit or are about to do so should be able to catch up. But there are many others who have no plans for an early audit—and the proportion may be much higher than indicated by those who bothered to respond to surveys.

23. Action 2000 will be commissioning systematic and regular surveys to improve our knowledge.

Q3. *How does Action 2000 intend to carry forward the work of Taskforce 2000? To what extent will the two organisations be working together?*

24. Covered under point (iii) of this Memorandum.

Q4. *What do you see as the main reasons why more has not been done to avert computer failures at the millennium?*

25. The following factors seem to be inhibiting progress:

(a) a mistaken belief that the problem only exists in old mainframes;

(b) a failure to appreciate the urgency of the task;

(c) a mistaken belief that someone else—a system supplier, a lawyer, an insurance company or the Government will sort it out;

(d) a mistaken belief that a "silver bullet" will be invented which will fix the whole problem automatically (the reality is that tools to address different aspects of the problem are improving but will not avoid significant effort in applying them);

(e) reluctance on the part of some technologists to expose the extent of the problem to senior managers ignorant about technology;

(f) inability to tackle the problem without external help, coupled with distrust of consultants, inadequately signposted sources of help and reluctance by some suppliers to take on more work in this area;

(g) shortage of IT skills.

26. Action 2000 will need to address all these factors but will be placing particular emphasis on the last two.

Q5. *Do you consider that there is enough time available for the majority of organisations to take steps to avoid problems at the millennium? To what extent do you think that it will be necessary for contingency plans to be drawn up? What will be Action 2000's role in that process?*

27. There is time for every business to assess its systems, prioritise and act on the most critical systems. There is also time to draw up contingency plans. Action 2000 will encourage businesses to this, and stands ready to assist the Government if it undertakes contingency planning at the national level.

28. I have consulted the Department of Trade and Industry and the Cabinet Office in preparing this Memorandum.

14 November 1997

Examination of Witness

MR DON CRUICKSHANK, Chairman, Action 2000, was examined.

Chairman

45. Mr Cruickshank, thank you for being with us this afternoon and helping us with our inquiry. Can I start straight away by asking you if you think the headlines we have seen, such as "The millennium time bomb" and "IT doomsday" and other such fearsome headlines are overstating this problem, or do you think we really do have a problem with millennium compliance of computers?

(*Mr Cruickshank*) Thank you very much. The problem will increase in severity as time passes. As we stand, November 1997, my initial judgment is that if there is urgency, if chief executives who are aware act, if they are properly supported (and that is a particular reference to those who are running smaller businesses who do not have the necessary IT support), then the doom and gloom you refer to will not happen. The challenge for me is to ensure that chief executives of businesses are enabled to reduce the risk to an acceptable minimum and that in key sectors of the economy, like telecoms or electricity generation, where the Government has a part to play or the citizens would expect the Government to have a part to play, the necessary contingency planning is in place. Certainly my previous experience, ie since the spring, of developments in the telecoms industry suggests that will be the case. I have yet to enquire in depth in areas such as energy.

46. We have received some evidence from Cap Gemini who say that one in ten organisations will fail to meet the deadline; in other words one in ten organisations will have the problem everyone fears will arise, and Cap Gemini tell us that could put 29 per cent of our GDP at risk. Do you believe there is any likelihood of that happening or is that another scare story?

(*Mr Cruickshank*) My response to that would be the same as my response to your first question. That is a specific example of the gloom and doom scare stories you were referring to in your first question, so my response would be the same.

47. You are newly appointed to Action 2000, you have probably not had enough time to do all that you want to in the way of digging into the problem yet, but is the initial reaction you have formed one of optimism that the bulk of the work that has to be done in the next 26 months can be achieved?

(*Mr Cruickshank*) I have been digging into the issue in telecoms, so I did not come to this post totally unversed.

48. That means you can give me an even better answer then, does it not?

(*Mr Cruickshank*) The telecoms experience is interesting, in that it is deeper in a sense in that the problem extends down the supply lines, and in the telecoms case across international boundaries. It is likely to take longer to resolve and is likely to take more resources than the telecoms industry considered even six months ago. My suspicion from my discussions with the community of those interested in this issue, is that the same is very likely to be true of other sectors of the economy.

Dr Williams

49. Just to get some kind of handle on the problem, in my reading for this session the figures quoted in newspaper articles were of the order of £1 billion, £3 billion, as the cost to the economy. Mr Ian Hugo in the last session said that if we were insufficiently prepared then we could be facing a crisis as big as the 1973-74 oil crisis and recession. On your appointment of one day a week, if I may ask you

[**Dr Williams** *Cont*]
specifically on that, it does strike me if the crisis is that large or that substantial, why is it your own appointment is not full-time with an army of at least 100 people to fend off this oncoming crisis?

(*Mr Cruickshank*) I have a number of responses to that. The first is that my judgment is that if there is that—and I will not repeat the answer to the first question—urgency and that awareness and that action, then the crisis will not be as you describe. The second is that the issues are likely to move towards being very difficult if the delay in the availability of skilled staff begins to become the critical resource. If I can turn to my appointment, the plan is to have a project team led by a director with probably five or six team leaders, some of whom are already active in solving the problem. My role is to act as leader of that team, as as it were chairman, to be the interface with Government and to advise Government, helped by an advisory board. My role is not to be active in the solution of the problem. I would also say that it is very important that all of us interested in this problem say to business, "This is a business problem", the role of Government in this sort of area is limited and I cannot but imagine what the response of the chief executive of a small company, the owner of a small company, would be to the thought that the Government was actually going to turn up on his doorstep and do something for him. That is just not how this problem will be solved. This is about developing awareness in the minds of chief executives and owners of small companies in particular, enabling them to find easily best practice for resolving this, and doing as much as we can in the time available about the availability of skills; when they reach out and say, "I want X, Y and Z", where are these people. That is what the Action 2000 project team is about. My role is guidance and interface with Government.

Mr Atkinson

50. You have just used the term "best practice" and I have been pursuing this issue in the House of Commons now for two years, as a result of which I have had a lot of approaches from the industry and others who feel they have got the solution to the problem. I would not know one from another because I am ignorant of the computer industry but surely there is, or should be, an agreed approach between the bodies concerned with this issue and the IT industry as to what steps should be taken? Is there such an approach—

(*Mr Cruickshank*) Yes.

51.—and are you embarking upon it?

(*Mr Cruickshank*) Prior to my appointment that work had started and groups had been established to identify, classify, all the readily available advice and best practice and guidance so it is available to chief executives in terms of, "What questions do I ask the IT people", so it is available to the IT people as to how to go about this. We are planning to publish that, both on paper and in Website form. The interesting issue is the extent to which that advice can be marked as being good or indifferent. Does Government have a role here? Does Action 2000 have a role in classifying whether something is good advice, good practice or useful—

52. Or cowboy?

(*Mr Cruickshank*) This problem, with the amount of money floating around, is bound to attract cowboys. Let chief executives be in no doubt about that. I have not taken a view as to the extent to which Action 2000 can, as it were, brand what we think is good or indifferent. There are issues about our capacity to do that, about the liability which would flow from such judgments being wrong, et cetera, et cetera, but it is an issue I am focusing on. My present thinking is to provide, particularly small companies, with complete and comprehensive lists of what and who is available and to offer them, as it were, a health warning in terms of "Here are the key questions to be asked" rather than a branding of the tools or the consultants as being good, bad or indifferent. However, I have yet to come to a conclusion on that.

53. I think we have the impression from what we have learned so far that the majority of businesses throughout the world, not just in this country, have not yet started the process to meet the deadline, which of course is central because you cannot move the deadline. What is your advice to them? Is it too late to start now?

(*Mr Cruickshank*) No. In fact this is a type of business problem that they rarely face, and for some of them it is their biggest business issue, so it is never too late. Remember, the challenge to every business is to reduce the risk to a manageable degree. I think it is highly unlikely that the target of eliminating all non-compliant equipment is likely to be achieved, so it is managing the risk downwards. The key issue, as I begun to talk to people in the last two weeks, is getting it in the right position in the in-tray of the chief executive.

54. Is it too late to avoid problems? Will we experience problems come what may? Are we are now talking about a damage limitation exercise?

(*Mr Cruickshank*) No, I would not put it quite like that. I think substantially all the problems can be overcome. There will be non-compliant systems starting in 1999 probably, and therefore the activities the Government has already set in place, to have contingency plans not just for the delivery of public services like health but also in key sectors of the economy—telecoms, energy, transport and so on—are very important parts of the planning which has to go on in the next year or so.

Mrs Spelman

55. You have mentioned the problems extend down supply lines and across national boundaries; what will Action 2000 do to tackle supply chain issues which do involve more than one company or more than one country?

(*Mr Cruickshank*) Let me deal with the internal ones first of all, ie internal to the UK. Talking to key players, key companies, in the main sectors—and I can talk about telecoms as an example, that is BT and a number of the other major telecoms service providers, talking back down the supply chain to companies like Nortel, GPT and others, and then back beyond them to deep into the IT industry—what has happened there, because that is a network industry, and this issue is absolutely integral to the

[**Mrs Spelman** *Cont*]
networks working, is a challenge from the customer end of the supply chain back down through the supply chain. I think we are going to see more of something that Reuters, which is an interesting company, did a few weeks ago, which is the large companies begin to feel they have the problem solved or almost solved and they will begin to say two things. They will begin to say to their customers, "I have a competitive advantage over the people who are competing with me who are not compliant, trust me", and they will also be saying down the supply chain, "Look, we are compliant and we are damned if we are not going to be compliant because of your delivery to us, so please will you talk us through your compliance programme and please will you demonstrate your compliance to us." My judgment is, from my discussions with big companies, is that that is beginning to happen. If I may offer an opinion from my business background, a lot of the relative silence in this area is about large companies not wishing to upset auditors, stock markets, investment analysts, customers, supply chains, before they are confident that they have the problem substantially cracked themselves. Hence there is a willingness to talk to me and others privately about the problems and programmes, but an unwillingness to talk publicly. I would be interested to hear the response of some large companies to being asked to appear in front of your Committee, for instance. So I think in the next six months we will see a lot of pressure from large companies down the supply chain, becoming more and more public as they become more and more confident they have solved the problem. Internationally, my only relevant experience is telecoms, where it is proving difficult and we need to be raising this issue both through the contractual arrangements between major UK carriers and foreign carriers, but also within the European Union initially, and I know Mrs Roche is planning to raise this issue at the next Telecoms Council on December 1st with specifically that problem in mind. We do not know enough about what other countries are doing in an area like telecoms where it is really global.

56. What will Action 2000 do to help the private sector in safety critical systems, such as North Sea oil platforms, to operate reliably after the year 2000?
(*Mr Cruickshank*) Or before.

57. Or before.
(*Mr Cruickshank*) I may say one of my first impressions is that I should be called Action 1998 not Action 2000, because it is next year that these companies and Government itself needs to have done the substantial bulk of the work. There are two dimensions to my answer to that question. One is the contingency planning, the number of parts of the economy—I mentioned telecoms, power generation and so on—where the Government will want to be assured that there are contingency plans in place. I mentioned that before and I will be recommending to Government which these sectors are. I had not thought of oil coming ashore and I shall note that in my advice to Government. But other than that, they are typically being run by large companies which it is my present judgment are aware of and are at some point in the process of resolving this problem. I do not know company by company where they have got to but one of the research projects we have in hand is to bench-mark, as it were, the current state of preparedness, and we will be doing that with particular focus on these key sectors of the economy. I guess health and safety issues perhaps lay behind your question as much as supply, and I know the Health & Safety Executive are working on the issues in that area. We will be building on a useful report—more than useful, I found it a very illuminating report—which the IEE produced and a note here from my colleagues says that there is an expectation that the report will be published on 8 December and will address some of the health and safety issues arising from the buried systems problem as distinct from the computer failure problem.

Mr Jones

58. Will Action 2000 be paying particular attention to problems associated with embedded chips? One of our previous witnesses told us that there are 10,000 chips on a North Sea oil rig, some of them under the sea. The impression from what you have said is that the companies who own those oil rigs will be responsible for that and, presumably, Railtrack will be responsible for checking out all their signalling systems?
(*Mr Cruickshank*) Yes.

59. Could you say a bit more about embedded chips, particularly in the Health Service where there are life support machines which have these devices in them?
(*Mr Cruickshank*) I was beginning to translate my answer to Mrs Spelman into an observation on embedded systems. That is a focus of the Health & Safety Executive report which, it is indicated, will be published the week beginning 8 December. I have not yet seen that. It has also been the focus of a very helpful report from the IEE, the Institute of Electrical Engineering. But you are absolutely right, when I asked for a briefing from the DTI and others involved here, to give me everything to read about this, there was a very small pile on embedded systems and a very large pile which was everything else. It strikes me that because of the relative lack of awareness of the functionality of these embedded systems, the age of some of them, it probably is at least as important an issue as the more obvious software problems in office or other systems. That is merely me appreciating that it is at least as large a problem and observing that there is as yet relatively little known about it.

60. You have mentioned electricity generation; can I ask you about the nuclear industry? It takes a long time to close a nuclear power station.
(*Mr Cruickshank*) That is an obvious area where I would expect the Government to want to audit, I think, the compliance of, in this case, one company and to run the rule over what contingency plans they have in the event of failures. I expect that to be certainly one area where contingency planning will be demanded of Government, even though the problem is in the private sector.

Dr Gibson

61. I think I understood the complementary role of Action 2000 and Task Force 2000, but the previous group of witnesses suggested the whole thing needed a fillip, some oomph in it, and suggested the Prime Minister might appear on prime time television to give it that, which implies that unless something as dramatic as that happens we are not going to be up to speed. What is your view about that as a tactic?

(*Mr Cruickshank*) I do not believe that chief executives should need to be seeing the Prime Minister on television to get a full appreciation of this issue. However, that sort of thing would help and I have had one brief discussion with the Policy Unit at Number 10. What they will advise to be the Prime Minister's, or indeed any other senior ministers', role on this I do not yet know, but I took it upon myself to enquire of Number 10.

Dr Gibson: I am very grateful.

Mr Beard

62. Action 2000 and Task Force 2000: what do you see as the difference in roles between these two organisations which are now operating?

(*Mr Cruickshank*) Task Force 2000 has been in existence for some time. Its initial role was to stimulate awareness. The surveys available to us suggest that that has by and large been done. The surveys, however, also indicate that somehow that awareness has not necessarily been translated into practice particularly in small and medium sized companies. So it is likely that Action 2000 will find itself, as we move into 1998, devoting more and more of its energy to the contingency planning I have talked about, as we have been doing in the telecoms industry, and supporting small companies. That means moving on from awareness-raising to gathering-together, making available in a user friendly way, best practice and so on; dealing as best we can in the time available with some of the likely skill shortages, a role for Government there yet to be defined precisely but we already have a number of projects in hand there. It means generally, getting closer to the implementation without slipping over the edge of saying to business, "We know how you should do it", because we do not and we are not resourced to do that.

63. In that process of implementation, it seems likely a lot of small companies will not have the resources in-house to comply.

(*Mr Cruickshank*) Yes.

64. Is there likely to be a problem of resources available to those sort of organisations?

(*Mr Cruickshank*) I think there is likely to be an exacerbated skills shortage and, because this is a problem which has to be fixed by a fixed date, the longer the companies delay then the less available people there are to solve the problem from the available workforce. That is part of the message which needs to go out to chief executives, "Do not delay, because even though it may turn out there is not much for you to do, you may find there is no one to do it for you if you delay too long." So it is part of the message and it is part of the work of Action 2000 with, I would hope, the Government supporting us separate from the money to fund Action 2000. It is something we will have to get to grips with. As you will be aware, skills shortages are not something which can be dealt with in short order. Some argue they take generations. My relative experience is in the Health Service where it is very difficult to shift the skill base very quickly, so I am not too sure how much we can do. The crucial thing is to get through to chief executives that the longer they wait, the more likely they are to have to spend more or find the skills are not available, or to refer to these cowboys who they might find are all they have to rely on.

65. If the skills are not there, does that mean they will have to be replaced and capital expenditure will be needed to conform?

(*Mr Cruickshank*) That assumes the assessment, et cetera, et cetera, has been completed and that is time-consuming as well.

66. What about even the small scale where individuals have mobile telephones or alarm systems in their homes, what is the remedy there? Is that a liability on the original manufacturer? What is the remedy for individuals, domestically, having these things?

(*Mr Cruickshank*) Like in other walks of life, it will depend on the nature of the contract you entered into with your supplier. We touch on a subject which is outside my immediate brief from Government. My brief is ensure the business systems work and that the necessary contingency planning is in place. There are individual consumers—and the obvious example is those who use PCs at home—who are to some degree vulnerable in a form we know not. The issue as to how it is, if it is, appropriate for Government to raise awareness amongst all personal consumers and what if anything can be done to help them through this problem, even if it is going to be more demanding of their supplier, is a question I have not addressed, and have not been asked to address, yet. It may be an issue you, as a Committee, might wish to take forward.

67. By what date will the director be appointed to Action 2000 and the Advisory Board?

(*Mr Cruickshank*) I have in hand the search for the director, because that will take some time. There are thoughts about an acting director moving to appoint some team leaders, even absent-director, so that the substance of Action 2000 can be in work as soon as possible. As always there is a tension between seeking the best person and the time it takes, and I have been through that before. My lesson from previous experiences like this is that the first thing you do when you wake up in the morning is to think about the people, not the problem but the people, "What do I do today to progress getting that team in place", and that is what I have been doing over the last two weeks.

Chairman

68. Can you tell us what criteria you will use to judge the success of Action 2000? You will be looking at what other people are going to do and monitoring what other people are doing—Government, private sector, small businesses, large businesses—but with your experience as a regulator and in industry you

[**Chairman** *Cont*]
will presumably want to put some benchmarks on your own activities. What criteria will you use to judge the success of your organisation?

(*Mr Cruickshank*) I do not know yet. There is a very obvious one, which is that the lights do not go out. We are talking to research support companies who will help us in research to do that benchmarking. That will give me a much better understanding than is available to me now, notwithstanding this pile of briefing I have, as to the state of preparedness, particularly of big companies who are unwilling to talk publicly about it. This will give me more understanding of what are the factors which are stopping the chief executives of the small companies actually doing something about it. Do they not believe me? Do they think it will go away? Do they think suppliers will solve the problem for them? So from that research early in 1998 I will come up with some benchmarks against which we can progress Action 2000 on a regular basis. I would be happy to report back to you as to what my proper answer to that question is.

69. You have given a proper answer; the proper answer is that you do not know and there is no point in saying you do when you do not. I think you have also conceded that some form of stage posts or benchmarks are going to be necessary. There is no point in finding out on 1st January 2001 you did not get anywhere; you want to know how you are getting on before then and you have agreed that.

(*Mr Cruickshank*) That is in hand.

Dr Jones

70. How do you respond to the suggestion that the launch of Action 2000 has prejudiced the momentum for action arising from Task Force 2000? We have heard about the delays in getting your team together and so on.

(*Mr Cruickshank*) I was very aware—in fact before I was appointed, as I discussed with Mrs Roche—that one of the key things I would have to achieve would be to maintain the momentum of not just Task Force 2000 but activities of industry associations or bodies which the DTI had initiated itself. So throughout the last 2½ weeks or so my challenge to me has been to maintain the momentum I have found there. Actually I have a brief here of how we are doing that under about seven or eight headings—I will not go through it but I will flash it up just to say that maintaining momentum has been my second priority, my first one being the people. It is the sort of question which is almost impossible to answer, whether Action 2000 has or has not been a bar to progress. I doubt it. Certainly one of the first documents I received literally the day after I was appointed was from Task Force 2000 and a number of those who had been associated with the DTI and with trade associations in this area, spelling out in four or five crisp pages what they thought the priorities were and things which needed to be done. I took the view it was not for me to spend two months reviewing whether they were right or wrong but to take a very quick judgment as to whether we should, and how we should, pursue what was set out in these four or five pages. That is what we have been doing, working through—because I am not absolutely resourceless—colleagues at the DTI who are acting as a stand-in project team for me. Since I am called Action 2000 I have come prepared with a list of things I have done in the last two weeks which I am happy to share with you.

71. Perhaps you would like to do that.

(*Mr Cruickshank*) Now?

72. Why not?

(*Mr Cruickshank*) We have talked about research and the point of research is for the purposes you have described but also, frankly, to inform the team. Some of the surveys which have been conducted have been in the form of the type where you send out X,000 forms to fill in and you get 900 back and you do an analysis. Well, sorry, but that is not good enough. So we have to do something much better than that. So that is under way.

73. What are you going to do which is much better than that?

(*Mr Cruickshank*) There are better ways of doing research than sending out pieces of paper.

74. What specifically are you going to do?

(*Mr Cruickshank*) Three things. Firstly, a benchmarking study on the current state of preparedness particularly in large companies, just to get to grips with whether I am right that they are rather better prepared in some cases than they are announcing publicly. Secondly, the supply chain issue; how are these large companies using their supply chains; what are they demanding of the supply chains? Thirdly, research of a different type to understand what are the inhibitors to, particularly small companies, taking action, because unless we understand what the inhibitors are, we cannot direct our promotional activities and our information at them very effectively. We are going to appoint—my brief here says—"a top of the range media relations consultancy", I am not sure about that but anyway a media relations consultancy to take forward the sort of work that Task Force 2000 has been doing, which is about information dissemination and the preparation of a helpline, putting in helpline numbers and possibly a free phone, developing our own Website so it is easier for people, having been prompted by the awareness campaign, to do something about it. We have established groups to identify and classify all the readily-available advice and best practice and guidance, the sort of issues Mr Atkinson was talking about; and we have a plan to publish that on paper and in electronic form as soon as possible, and get views back from the industry as to what gaps need to be plugged. That is one of the key things there. We talked about assessment earlier, again in response to Mr Atkinson, and we are working on what type of scheme we could put in place to help smaller businesses in particular conform and to a recognised level. One may say, "I am conformed", but what does that actually mean to those who wish to rely on it. People with skills, taking forward the initiative announced by Barbara Roche, and we have initiated eleven of the projects recommended by her team already. Moving to take a slice across all this, in the expectation that the main residual problem is going to be small and medium sized businesses, to set up a team to think about how to communicate more effectively with them, perhaps

[**Dr Jones** *Cont*]
through Business Links and Government agencies and so on, and that is in hand. We have touched on embedded software but that is further back because of the lack of information available there. I talked about recruiting a director and we are beginning to have thoughts about the contingency planning in the private sector which might be required.

75. Can I go back to the issue of skills? You have already identified that may be an issue. Let us assume you are successful in getting all these chief executives to face up to their responsibilities and give appropriate priority to this issue, how are we going to address the skills shortage? Exactly what is the nature of them and what are you going to do to address the shortage? It is not just in this country that we have got the millennium problem, it is an international issue, so it is an international shortage. What effect, for example, is the launch of the euro round about the same time going to have on the skill shortage because there is going to be a requirement for IT skills in relation to that too.

(*Mr Cruickshank*) There is indeed, of a scale I understand which may be greater than this problem from my initial findings. As I said before, I think this is a very difficult area. It is not in the Government's gift to change the skill base of the country very easily and very quickly, and that is where I will be spending most of my time. That will be my expectation.

76. ICL apparently are enlisting retired computer programmers and looking at women who are taking maternity leave. This is obviously a serious problem and we are not going to be successful by the year 2000 if we have not found these skills.

(*Mr Cruickshank*) Yes, some of this is about the operation of the labour market. As the price goes up, I am sure there will be individuals who decide it is worthwhile going back to work for a few years for very large sums of money on offer. So part of it is going to happen because the price of these skills is going to rise, particularly if companies delay. That does not need me or the Government to do anything, that will happen automatically. The more difficult issue is whether the Government can take any action to increase the skill base beyond a simple operation of the labour market, and I honestly do not know yet just what that might add up to.

77. What impact do you think all this is going to have on the future competitiveness of the UK?

(*Mr Cruickshank*) It is going to mean a substantial diversion of scarce skills, IT skills, to solving a mundane but very important problem, and taking IT specialists away from new product development, service development, building systems to improve productivity for their own organisations and so on. The problem is shared around the world—to what degree we do not understand properly—so it is unlikely to have a major relative effect but there is bound to be a dampening effect on the innovation and initiative that UK industry is able to deliver in the next few years.

78. Finally, could I ask if you think there are any risks associated with people with insufficient skills working on critical systems?

(*Mr Cruickshank*) Yes. When we come to what sort of questions should the chief executive be asking the IT manager, that is one of the things we want to point out.

Dr Turner

79. You have already touched on it and obviously our economy does not operate in isolation from the rest of the world. How ready are we for the millennium compared with others, do you think?

(*Mr Cruickshank*) I do not know. To the extent that one can rely on Government statements and Government initiatives, I would suggest we are at least as well prepared as others. As to the depth and the pace of the effort which is going on in the different economies, I have seen nothing in the briefing I have which would enable me to answer that question with any authority at all.

80. Do you think there is a risk that we could import other people's Year 2000 problems even if we were prepared?

(*Mr Cruickshank*) Yes, and telecoms is an example of an industry where that could happen. But telecoms is also an example of an industry where the problem is potentially so severe that if it is identified early the resources are there because it is large companies—BT for instance is the largest employer of the relevant skills in the country. So there is a sort of inverse problem. The bigger the problem, the more aware the company, the earlier it is started, the more likely it is to be compliant. It is the smaller companies who do not realise the scale of the problem for their bit of the supply chain who are going to have the relatively large problems.

81. Do you think there is an export opportunity for us here, at least in some areas, if our own companies are abreast of the problem? Is there an opportunity to export the expertise to other countries?

(*Mr Cruickshank*) The communications industry, the IT industry, is an industry sector where the UK can claim to be or close to worldclass. We do not have many of them but it is one of them. So therefore there probably is, but again that is a general observation and it is not based on any precise knowledge.

82. Is that something you are seeking to promote?

(*Mr Cruickshank*) I think there is a limit in the timescale available to what I and a small project team can do. Again, I think that is up to the chief executives, in this case the chief executives of the companies who have the skills and expertise and the tools. I think I will leave it to them.

Mr Atkinson

83. Clearly the importance to Europe and the world, especially to Britain, of uninterrupted trade arises here. Are you concerned that the European Commission has not issued any guidelines on this issue or appeared to show any interest in this issue, and nor has it been raised at the World Trade Organisation?

(*Mr Cruickshank*) Yes, and therefore I have been very supportive of, first of all, Mrs Roche's intention to raise it at the Telecoms Council the week after

[**Mr Atkinson** *Cont*]
next, and we will encourage the Government to particularly use its presidency of the Union next year to give the issue not just more visibility but perhaps some action behind it. How the World Trade Organisation operates is a bit of a mystery to me, I am sorry.

Mr Atkinson: Thank you.

Chairman: Mr Cruickshank, thank you very much indeed, you have given us 45 minutes of helpful dialogue. We wish you every success in the gigantic task you are undertaking. We shall follow your work with great interest. If from time to time you might think it appropriate to drop us a note on anything interesting you are doing or have found out, we would certainly appreciate that. Again on behalf of all the Committee may I thank you for your assistance in the inquiry we are now undertaking.

Supplementary Memorandum submitted by Action 2000

INTRODUCTION

1. Action 2000 was launched by the Government on 28 October to help private sector businesses tackle the impact of the Year 2000 on their computer and other business systems.

SUMMARY

2. Since its launch Action 2000 has worked simultaneously both to set itself up in an appropriate form, and to develop urgently a campaign to help businesses take action. Action 2000 launched its Millennium Bug campaign on 22 January.

3. This memorandum supplements that supplied to the Committee on 14 November and deals with the issues set out in the letter of 27 January.

DETAIL

(i) *What is the current state of maturity of Action 2000?*

4. Action 2000 is now fully operational. It has a full-time staff of six, managed by its Acting Director Dr Ian Eddison. Its staff includes two secondees provided by IBM and ICL. The team is also supported by four DTI staff and external contractors. I am in the closing stages of a competitive recruitment process for the permanent Director's post, three full time leaders and an office manager. Action 2000's strength is supplemented by close relationships with Year 2000 experts throughout the IT community who are contributing in detail to its work.

5. I am considering the composition of my Advisory Board. I have sought advice from the key industry organisations and from major companies with direct experience of tackling the Year 2000 problem.

6. Beside the Millennium Bug Campaign, launched on 22 January, Action 2000's work plan already includes some six projects designed to provide information or detailed guidance on different aspects of the Year 2000 problem. Many of these are covered in the answers to questions below.

(ii) *Do you now have your own estimate of the scale of the Year 2000 problem and the state of the UK's readiness to handle it? How does this compare to other countries?*

7. Action 2000 has collated a number of different surveys of national and international preparedness. Detailed results and sample sizes differ, but the key messages are reasonably consistent.

8. The UK's Year 2000 awareness activities now compare well with those in other countries. So far as I am aware the US, Australia, Canada, the Netherlands, Belgium, Denmark and Sweden are also undertaking broadly comparable programmes aimed at their own business communities. The UK, as the current President of the European Council, together with the European Commission, is urging other Member States to take suitable action to ensure their own preparedness at a national level. The issue is on the agenda for the 26 February Telecommunications Council.

(iii) *In your evidence you expressed the view that large companies were better prepared than they admitted. Do you think this is still the case?*

9. Yes, Since my appointment I have discussed this issue with senior figures in large companies in the UK, with trade associations, regulators, auditors and institutions such as the CBI. Action 2000 is now working to encourage as many of these companies as possible to share their experience to assist those companies whose preparations are less advanced. I was pleased that companies including Coca Cola, Unilever, BP, British Steel and Safeway supported the Millennium Bug campaign launch. Many of these companies are now turning their attention to helping smaller companies in their own supply chains to reduce the impact of the Year 2000 problem. Action 2000 will be building on this.

(iv) *How severe is the problem for the smaller companies. How might they best be helped?*

10. The latest evidence collected by Action 2000 suggests that awareness of the problem among smaller companies is high, at over 80 per cent. However surveys have generally found that smaller companies are much less advanced in their preparations. Likely reasons for this include:

- a lack of understanding of the issues and their business implications;
- a feeling that small companies will not be seriously affected because of the small scale of their business;
- uncertainty about how to start (eg how to conduct an audit of the problem) or whose advice to trust;
- a feeling that there is still enough time to take remedial action on a small system;
- waiting for large companies and suppliers to resolve the issue;
- the cost of compliance may be relatively large in relation to the size of the business; and
- lack of information on the Year 2000 in relation to embedded systems.

11. Action 2000's Millennium Bug campaign aims to address these by providing a package of information and signposting to support smaller companies through a seven step action plan (Understand—Prioritise—Assess—Plan—Implement—Test—Install). All enterprises are strongly recommended to keep an audit trail of their activity. This will be supplemented by further material covering, in particular, information on tackling embedded systems and on meeting the skills requirements of the task (see question (v) below).

(iv) *What is your view on the severity of the skills shortage and how best might it be overcome?*

12. The demand for specialist Year 2000 programmers and project managers able to service larger projects is high and increasing further, fuelling corresponding salary increases. Companies who need these specialist skills who have not yet recruited are likely to encounter problems unless they can match the increasing rate for the job.

13. However in many cases smaller firms may be able to meet their own needs by undertaking modest retraining of their own staff, or making use of personnel returning to the IT sector who have updated their skills. Action 2000 is working closely with DTI and the Department for Education and Employment to ensure the skills training is provided by local Training and Enterprise Councils to meet local needs. We are also developing a complementary programme, in conjunction with Business Link network, through which local companies will be able to assess exactly what their skills and training needs are. We are already aware of a number of successful local programmes, for instance to recruit people capable of carrying an initial systems audit, or to update the skills of those returning to the IT sector after a career break. These initiatives should yield concrete results in the very short term.

(vi) *What concerns do you have about the readiness of critical national infrastructure services?*

14. This is probably Government's biggest challenge—a public confidence in public services. Action 2000 has developed a project plan for contingency planning spanning the private and public sectors. We will be consulting over 100 organisations, including utility regulators, at a workshop on 24th March. The aim is to develop the project plan, agree the way forward, and allocate responsibilities. I would expect this initiative to tie into the wider Government-plan as developed by the Ministerial Group announced on 27 November last year to oversee work being done in both the public and private sector.

(vii) *What programme of activities has been agreed by Action 2000 and what timetable has been set?*

15. The core of our programme will be the regular improvement and broadening of the advice and support given to SMEs. This will take the form of monthly updates to "The Millennium Bug Campaign" fact sheets and Website. A further key plank to this small company support will be the help being planned by local support organisations such as the Business Links and their equivalents in Scotland, Wales and Northern Ireland. These activities are being complemented by the setting up of BugNET, a national network of self help groups and the offering of a software diagnostic tool Comply2K through the National Computer Centre.

16. Other key projects for SMEs under development or in the early implementation phase are:

- A skills initiative to signpost opportunities and encourage training of new and returning staff. This is being run with the help and co-operation of DfEE.
- A national PC campaign.
- A large company/supply chain initiative catalysing the support that larger companies can provide for the SMEs in their sectors or client networks.
- A marketing campaign aimed at improving the understanding of the problem and encouraging the SME base into action.
- A continuous research and assessment programme aimed at monitoring UK industry's state of preparedness and the inhibitors and drivers for action.

17. Contingency planning as set out above.

18. Investigation of the problems likely to be faced by consumers and householders, with a view to further public information programmes.

19. Prompting Government to use its existing programmes (votes) and powers in a more targeted way. Examples are in relation to Business Links (see above), TEC training programmes and encouraging companies to disclose their preparedness. I view this as an important aspect of my role as Chairman of Action 2000.

20. Supporting the Government in its effort to raise the international profile of this issue.

21. I have consulted the Department of Trade and Industry and the Cabinet Office in preparing this Memorandum.

27 February 1998

WEDNESDAY 10 DECEMBER 1997

Members present:

Dr Michael Clark, in the Chair

Mr David Atkinson
Mr Nigel Beard
Dr Ian Gibson
Mr Nigel Jones
Mrs Caroline Spelman
Dr Desmond Turner

Memorandum submitted by the Confederation of British Industry

INTRODUCTION

1. The CBI welcomes the Committee's inquiry as a further opportunity to stimulate action on the millennium date change issue. Due to the scarcity of time in advance of the millennium we encourage the Committee to reach and promote its conclusions with urgency; to this end we will endeavour to help as much as we can.

2. The CBI is very concerned by the pervasive nature of this issue and its potentially damaging effect on the viability of every business. However, the impact is wider than the single business: it could affect the integrity of entire business chains. We are keen to promote action both by individual companies and by companies working together to minimise the effect the date change will have on our members and across the UK as a whole.

3. We believe that though awareness of the issue is high, not enough organisations have taken sufficient action. Valuable work is progressing, including that through Action2000. We encourage the development of such work in order to support more companies progressing towards compliance. Growth in the number of companies undertaking compliance projects should be monitored and focus provided where necessary.

4. This memorandum was produced in consultation with a cross-section of CBI member companies.

ESTIMATE OF THE SERIOUSNESS OF THE MILLENNIUM BUG

5. The millennium date change could adversely affect any system, product or process which features a date reference. Such a reference could be found in equipment as various as main frame computers, process control systems, PCs, video recorders, medical monitoring systems or any embedded chip. Software programmes, networks and in-company and national infrastructures may be affected.

6. The date change could result in failure to meet the requirements of particular applications but the overall effect on all systems is difficult to predict. The effect and the cost of failure will vary on a case by case basis. It it therefore impossible for us to predict the precise impact of the issue until all organisations have conducted an audit of their systems and ability to handle the date change. It is difficult to concur with or refute the various published cost estimates of £400 billion world-wide or £30 billion for the UK. Irrespective of cost, the date change could have a real impact on all businesses and across borders. Business critical systems that would be adversely affected must be amended soon.

EXTENT THAT ENOUGH HAS BEEN DONE TO AVERT POTENTIAL PROBLEMS

7. A survey conducted by the CBI in October 1997 revealed that 85 per cent of responding CBI member companies had evaluated the impact of the date change on their systems and processes and that 80 per cent of those surveyed had agreed an action plan to deal with the problems. These results support evidence from other sources[1] that awareness of the date change, though not complete, has increased dramatically over the past year. The work of Taskforce 2000 and its associated bodies, including the CBI, has done much to facilitate this increase in awareness.

8. However, as was illustrated in the DTI/Sage Survey,[2] the lack of real understanding of the seriousness of the issues has been manifest by the failure of too many organisations to turn plans into action and start the process of correcting their systems. It is for this reason that the CBI supports Action2000 as the

[1]Defusing the Millennium Bomb, February 1997—a survey conducted by PA Consulting and Taskforce 2000
[2]DTI/Sage study for Taskforce 2000 on small businesses and the Year2000 issue

appropriate body to bridge the gap between awareness and action. Action2000 can consolidate and build on the abundance of help and advice which has been developed within the IT and business communities and ensure that it is distributed to all enterprises in the UK.

9. Given the difficulty that many organisations encounter in finding and assessing the value of the help that is available, Action2000 should provide a mechanism to enable quick and simplified access to information, including a method for assessing applicability. We have encouraged Action2000 to deploy the resources needed to capitalise on and publicise the help available in the shortest time possible.

10. There are companies in CBI membership which have progressed millennium compliance projects to the stage of testing; there are others yet to start conversion. Over the past 17 months the CBI has promoted awareness and understanding of the millennium date change issue at the most senior levels as well as at functional levels:

- Sir Colin Marshall, President of the CBI, raised the date change issue in his opening address to the CBI National Conference in 1997.
- Adair Turner, CBI Director General, has given keynote addresses to business leaders, calling on organisations to take action.
- Significant changes in national strategy have been communicated in the weekly fax from Adair Turner to the CEO of all CBI member companies.
- The CBI's most influential members have been directly addressed via the CBI Council, SME Council, Trade Association Council and all Regional Councils.
- We produced and distributed 40,000 copies of a related briefing paper[3].
- The date change issue has been and continues to be regularly featured in *CBI News*, which has a monthly readership of 75,000.
- Early in 1997 the CBI ran a series of regional workshops, through which the issues of designing a compliance programme, assessing the help available and making low risk decisions were presented to audiences of management and IT professionals.
- The CBI has written many articles and features for publications both internal and external and has regularly responded to press interest.
- In September 1997 the CBI stimulated and hosted a meeting of active bodies, the outcome from which was formative in the structure of Action2000.
- The CBI hosted an Action2000/UK Year2000 Interest Group stand in the exhibition area of the CBI National Conference 1997.
- A new briefing paper, containing industrial and commercial case-studies, is currently being drafted.

11. The CBI has made every effort to stimulate member companies to take action and will continue to support and work with Action2000, with the goal of encouraging the achievement of compliance for all business critical systems.

Has the Government Done Enough?

12. Establishing Taskforce 2000 and encouraging the participation of its constituent bodies was a positive and effective action by the Government to raise awareness of issues associated with the date change. We were keen for encouragement of action to follow this and therefore welcomed the establishment of Action2000.

13. A number of organisations have emerged as exemplars of best practice in tackling the date change issue. Some have made public statements of the financial and personnel costs of achieving compliance but many, constrained perhaps by fear of the effect on the individuals involved as well as on the value of their company's shares, have been reluctant to do so.

14. A similar problem is faced by the developers of hardware and software, from whom it would be useful for the business community to elicit statements of compliance of current versions and of the dates and compliance of future versions.

15. The Government is in a unique and powerful position. There are departments within Government which are progressing millennium projects. The intelligence amassed could be of value to non-government organisations, especially those within related business chains and would provide a huge contribution towards the strengthening tide of action.

16. The Government and its departments have powerful communication mechanisms, which if applied to this issue, could complement the PR strategy of Action2000. Related Government schemes, such as the ISI, could also have a valuable role in stimulating action.

[3]CBI Information Technology Brief, May 1997 *Date change 2000: update*

17. Millennium date change projects are expensive and many organisations have been forced to divert resources in order to tackle the issue. The Government has made a statement on how its departments and agencies plan to tackle the date change. We trust there will be careful consideration of budget allocation on the basis of this statement.

18. Tackling the millennium date change does consume significant resource, which is particularly worrying for smaller companies and in sectors where resources are scarce. Action2000 has the power to provide tools that will help to make effective action by companies of all kinds simpler and more efficient. There is a valuable communication role for bodies and organisations such as trade associations, professional organisations and companies with strong positions in their supply chain, who have influence in their communities. In addition, hardware and software manufacturers can be encouraged to communicate advice and guidance to SMEs through their distribution channels more effectively than they have done so far.

19. Already Action2000 has provided the stimulus for bodies that are active in the field to develop a common approach to collecting and distributing information. Given the lead by Action2000, business chains and the different sectors of industry and commerce can communicate awareness and the need for action to all their suppliers and customers. This can be reinforced by action aimed at smaller firms on a local basis through TECs, Chambers of Commerce, Business Links and their equivalents in Scotland and Wales.

20. We would like to see a systematic approach to the assessment of the degre of system compliance across the UK. This could start with the key players across industry and be expanded progressively to build up a sector by sector picture of the state of UK readiness for the millennium. The assessment process could provide further stimulation for action as well as tracking progress and identifying areas where intervention is needed.

21. The financial burden for compliance achievement has already proved arduous for some organisations. The CBI believes that companies are more likely to be supported by the financial community if they have date change achievement plans in place.

Major Constraints Militating Against Progress

22. The CBI believes there are a number of reasons why sufficient progress has not been made, which all stem from a lack of understanding of the nature of the potential problem:

- some companies have failed to understand the potential impact of the problem on the future viability of their businesses;
- many medium and large companies with relatively complex systems do not appreciate that time is short and that action is needed now;
- some senior managers have not yet assigned the responsibility and authority to undertake a proper impact study or have failed to commit sufficient resources;
- some companies have failed to identify the source of funds to tackle the issue;
- some companies have problems in selecting the appropriate solutions for their businesses, due to the complexity of the issue and the plethora of advice available;
- there is a dearth of role models and case studies; some companies have not been open in communicating their situation;
- some companies lack the trained staff who understand and can manage the resolution of the issue; and
- both within companies and across industry there is a lack of skilled specialists able to tackle the embedded chip issue; this problem has received relatively little attention and special focus could be required.

Concluding Remarks

23. The millennium date change has already had a significant inmpact on resources. In the worse case scenario, it could have a drastic effect across the whole of the UK. The CBI commends Action2000, a neutral body consolidating community action, as a valuable vehicle for promoting action. Given the progress in addressing this issue thus far and provided momentum is maintained over the coming months, the UK could be in a competitively advantageous position. We expect that later surveys will show that large portions of industry are contributing to this goal by achieving compliance of their systems but until such a time as all critical systems are compliant, we will continue to encourage action.

3 December 1997

Examination of Witnesses

MR ANTHONY PARISH, Director General, Federation of the Electronics Industry, MR KEITH JACKSON, 2000 Programme Director, Yorkshire Electricity and MS SARAH BALES, Senior Policy Adviser, Technology Group, Confederation of British Industry, were examined.

Chairman

84. Order, order. Mr Parish, on behalf of the Committee I would like to welcome you here this afternoon. Thank you, and your colleagues, for finding the time to be with us and the help that I know you are going to give us on our inquiry into the millennium compliance problem. Before I ask you the first question, would you care to introduce yourself and perhaps the two colleagues you have brought with you?

(*Mr Parish*) Thank you very much, Dr Clark. I am Anthony Parish. I am Director General of the Federation of the Electronics Industry. I am a member of the CBI Council and I am also part of the Taskforce 2000 Steering Committee. As Director General of the FEI, it is a trade association which represents the IT, telecommunications, electronic components and defence electronics industry, so that is my background. On my left is Sarah Bales who is a Senior Policy Adviser at the CBI and is also a member of the Taskforce 2000 Steering Group. On my right is Mr Keith Jackson who is the Year 2000 Programme Director from Yorkshire Electricity.

85. Thank you very much indeed. We shall as a general rule, Mr Parish, direct our questions to you, but if you think it is more appropriate for them to be passed to one of your two colleagues, we will leave that for you to do?

(*Mr Parish*) Thank you.

86. I would like to first of all ask you whether you think the devotion and attention that has been paid to this millennium problem by a large number of companies who will be members of your CBI organisation is diverting investment from other IT projects; or would it be fair to say, as an alternative, that the effort that has been put into the millennium compliance problem is part of a general update of IT technology and programmes?

(*Mr Parish*) I think if I could give a general answer to the question and then perhaps ask Mr Jackson to give some specific examples from his own industry? There are clearly certain industries to whom information technology is absolutely vital. If you are running an insurance company the product is the computer programme and if you do not have the computer programme you do not have the product and therefore your capacity to generate new computer software actually determines the rate at which you can introduce new products into the market place. Therefore in a lot of industries which are very highly dependent on IT in that way and need to introduce lots of new products with high IT, the fact that we have this and things like EMU coming along is likely to deter them from introducing new offerings and maintaining their competitiveness. So as a general statement I would say that was obviously the case.

87. Of my two options, it is probably the former?

(*Mr Parish*) It would tend to be the former as I see it.

88. As diverting from new investment rather than incorporating this problem into investment that has been planned, it is the former is it not?

(*Mr Parish*) That is my impression, yes.

89. Mr Jackson?

(*Mr Jackson*) Obviously my experience will be focussed on a particular organisation, but I believe it to be generally correct for the utilities sector and I guess the answer is a bit of both. On the IT side certainly there is a timing issue that certain investment decisions that I think would have been made anyway are being brought forward to make the systems which would otherwise have been replaced perhaps early in the next century, be replaced to make them conformant. Clearly though there are certain activities, such as the inventory process, certain repairs to systems which would otherwise be shelved but which cannot be replaced within the time frame, and indeed the whole imbedded issue, where work is going on which would not otherwise be going on, clearly does represent a diversion of resource.

90. Thank you very much. Mr Parish, in your submission to us you refer to the pervasive nature of this whole problem and it is a fact that affects the integrity of entire business chains. What do you judge to be some of the most critical business chains that are affected?

(*Mr Parish*) Clearly, I think we have to start with the ones on which the infrastructure systems of our society depend, such as the supply of electricity, water, gas, the life giving substances, food. Those are the most critical ones obviously and failures in a major system which is then dependent on the supply of a critical component from somewhere else down the track which may not be available, clearly could represent a hazard if the chain is not managed.

91. At the present time there is a lot of talk, particularly at the time of Kyoto, of climate change and so on and yet some people will say that there is no evidence of global warming at all; there is no evidence of the greenhouse effect. It is just a big nightmare that we are being obsessed with. Do you think that there is any possibility that this millennium compliance problem is just a big nightmare we are becoming obsessed with and that in actual fact nothing may happen at all?

(*Mr Parish*) I think perhaps I could answer that in two ways. One is to say that companies are spending a great deal of money on actually changing and testing code. People are writing new computer software to change things that did not work. So there is action and therefore there is a problem. Now whether we are going, in practice, to get there and fix it all and nothing goes wrong on the day is a different question.

92. Because there is action it does not mean to say that there is a problem, does it?

[**Chairman** *Cont*]

(*Mr Parish*) I think there is no doubt at all that systems have been identified which if they were not changed would fail. So yes, there is a problem to resolve.

Chairman: Thank you very much indeed. Mr Jones?

Mr Jones

93. I have just been reading a publication called Construction Computing. There are a lot of small- to medium-sized companies in the construction company and there is an item there, Year 2000: Time is Running Out where the author, Clive Seddon, says: "I do not have the same level of confidence in relation to small and medium sized enterprises in the construction sector dealing with this problem." There is also an item by John Harris which says: "Be afraid, be very afraid. Your very existence is being threatened by a terrible menace lurking below the surface like the iceberg that sank the Titanic". Is the Year 2000 problem as significant for SMEs, many of which do not have business critical systems, as it is for large corporations?

(*Mr Parish*) Perhaps Ms Bales could answer this?

(*Ms Bales*) I think it does depend on the business criticality of any system within any organisation, so for SMEs, like larger organisations, it does depend how computer systems and electronic devices are used in their business. So it can be, but in other situations it may not be critical to that organisation.

94. Taskforce 2000 did stress the need to set priorities for the allocation of resources and efforts to solve the problem; do you think that Action 2000 should make SMEs a priority?

(*Mr Parish*) It tends to do that. I think that there has been a general recognition for some months now that we are moving from the awareness phase into the action phase and that in order to prompt action you actually have to deliver things that people can use. It has been quite frustrating I think for small businesses hearing about this problem over the last year or so and nobody being able to answer two questions: "How does it affect me, my little business, and what specifically do I do?" and we have not yet delivered that package to the small businesses very effectively and I think that is what Action 2000 is seeking to do; turn the general into the specific.

Mr Beard

95. When Mr Cruickshank from Action 2000 was here he said he thought that many companies were not saying what they were actually doing about adjusting to the millennium 2000 problem; they were not making it public. Why do you suppose that is the case, if it is the case, and would it not strengthen their company's hand in relation to its customers if they did declare what they were doing and gained confidence for it? And if they are not doing it, what should be done to encourage them to do so?

(*Mr Parish*) I speculate along with the other people about why this may be and I seem to arrive at the same conclusions as other people I have spoken to about why companies do not speak out. I think in our evidence we indicated that there seem to be two concerns. One is a personal concern that directors of companies have legal duties which they have to be seen to fulfil, or do their very best to mitigate potential damage to businesses which they run and there is a feeling that if they raise a problem which they are then claiming to solve and then do not solve that, they put themselves in jeopardy. The second problem is that, alas, there is great fear, I think, that they will be marked down by financial commentators and advisers in the City and that their shares on the Stock Exchange could lose value if they say: "We have got this horrendous thing; we are going to have to spend £300 million to fix it" or whatever it is. That is our impression; Ms Bales may have a different view.

(*Ms Bales*) No, I agree with that. I think in addition I agree with you that it could be a good thing if organisations did make others aware of what they were doing, given the considerations that they need to make in terms of directors' responsibilities and the value of their organisations.

(*Mr Parish*) If I could perhaps add one further point to that. In recognising this difficulty, because we have spent a lot of time going to see the people we knew to be taking significant action and asking them to please speak out, and they would not. So what we are trying to do now to compensate that is to get large companies, particularly in the same industry, working together in groups in which they are prepared to share information and that does seem to work. I think Mr Jackson would have something to add, if that is all right with you?

(*Mr Jackson*) Very definitely. As far as the utilities sector is concerned there has been a lot of close working by the Utilities Group within the United Kingdom Interest Group, certainly on this very point, to develop mutual confidence because of the supply chain issues which are pronounced within the utilities sector and general electricity industries specifically. But to look at specific areas, because some of the problems that we are addressing are fairly new, it is not simply replacing computer systems which perhaps has been done in the past. Looking at the embedded risk, this is a new type of problem and in that sense learning from each other, shortening the learning curve in terms of how do you actually physically go about testing embedded systems for example, is something we can all share together because everybody effectively is at the leading edge together. Clearly some organisations may see competitive advantage in terms of not sharing; within the utilities sector, which is my experience, quite the reverse is true. There is a strong mutual interest in sharing information.

96. What more could be done to encourage people to be more open about their state of preparedness? Have you a view on it?

(*Mr Parish*) People have talked about the possibility of an amnesty of some sort as regards the City or something, but the City does not work in that way. We have tried to believe that you can muzzle the City or control what people think or how they act and I do not think that is a practical thing to do. So we are going to push very strongly down this line of getting companies to speak to each other in their own sectors, starting at the very highest levels and on

[Mr Beard *Cont*]
downwards and not necessarily asking them to come out on public platforms because we think we have failed on that one.

97. As the CBI, you did a survey last October of the state of people's preparations. Did the survey indicate that there was any particular type of company or sector that was more prepared or less prepared than any other? Were there any particular characteristics that shone out from this survey?
(*Ms Bales*) The survey was conducted prior to the CBI National Conference this year and it was a very general survey. There were two questions within it which related to the millennium date change. The response that the survey commanded was cross sector and there was no further evidence other than a response of either yes or no to the two questions that were on there. So we cannot offer any further information.

98. You cannot see any characteristics of those who are not complying?
(*Ms Bales*) Not on the basis of the survey.

99. Not between bigger organisations or small and medium?
(*Ms Bales*) There was no breakdown in that survey at all.

100. How confident are you that this 80 percent that came out of the survey is a reasonable figure?
(*Ms Bales*) The response rate to the survey was 30 percent, which is a good response rate I think for any survey, but I think that figure probably does give an overly optimistic view as to the state of preparedness of many organisations. Aside from that, the survey only asked two questions. It could have perhaps asked a third question which would have been along the lines of: "How far along the implementation path of your plan are you? How has your plan changed since you first looked at it, compared with now when you have actually been in and had a look at your system?", but that further question or questions were not asked.

101. So what would be your judgment on the true state of things if this is a bit exaggerated?
(*Ms Bales*) That they are worse than that survey result would indicate.

102. To what extent?
(*Ms Bales*) It is very difficult to say without looking at every single organisation both within CBI membership and across the country. Until every organisation has assessed its system and, within that, identified its business critical systems, it is very difficult to tell.
The Committee suspended from 4.35 p.m. to 4.48 p.m. for a division in the House.
Chairman: Once again, Mr Parish, and your colleagues, I apologise for the delay. It is after all the House of Commons and I am sure you understand the funny ways we operate! May I now ask Mrs Spelman to put her question?

Mrs Spelman

103. I would like to ask you which companies you consider examples of best practice in solving the millennium bug problem and how do you define best practice in this area?

(*Mr Parish*) There are I suppose a number of names of companies which circulate in the community of people who deal with this issue who have a reputation for having it under control. I think the companies in the oil sector, particularly Shell, British Petroleum, are perceived as doing a particularly good job given the challenge they have, for instance, in the North Sea where there are potentially very hazardous problems they have to address. The oil sector has addressed it very professionally. The insurance sector, Guardian Royal Exchange and others, again are looking very good and we are I think, speaking for the Taskforce, very impressed with the activities of most of the companies in the utilities sector, namely water, electricity on the whole are very good and I would like to say, I think, a word for Railtrack and the work that is being done by the rail industry in general which looks impressive. It is perhaps for this reason that we have tended to focus by sector in trying to get them together so we can make an assessment and say: "This sector looks good because they are working together and seem to be doing sensible things, and in this sector they are doing less well". And that is how we are trying to do it, because we cannot chase a million different companies easily.

104. And your definition of best practice?
(*Mr Parish*) I think perhaps I would defer to Mr Jackson on that matter?
(*Mr Jackson*) I do not know if we could purport to be best practice, but hopefully it is certainly good practice. We took as a lead the guidance provided in the CCTA documentation which forms an approach to dealing with the issue which we certainly found very useful. Certain, and as I say, if I am talking here in a sense generically, colleagues elsewhere in the utilities sector that I have dealt with, things that seem to be making the programmes go well, I think first and fundamentally from a corporate point of view is board support because patently without clear executive support within an organisation frankly nothing will be delivered. It will not have the commitment, it will not have the resources devoted to it. Beyond that certain organisations, and again, this is a scale issue because in the utilities sector they tend to be large organisations, where we have largely dedicated resources. Our example within an organisation which has a group structure where there is a central team dealing with the issue with some IT expertise, some engineering expertise, access to legal expertise, to provide standards to support and control the process across the group as a whole. Indeed we do work, and again best practice seems to dictate that the process should be highly disciplined given not least I guess the litigation risk but probably primarily the time scale risks is the need to work in a thoroughly disciplined fashion. We have quite a comprehensive set of procedures to work to and a fairly tight set of plans and controls that we report upon to gauge progress against those standards and time scales. Other areas that again we look at particularly are communications, often one of the softer issues, but certainly in terms of communicating with our customers, with other suppliers and being up-front about what our organisation is doing about it, also communicating within the organisation because it is one of these issues that at some levels

[**Mrs Spelman** *Cont*]
appears to have very little in the way of business benefit. Clearly there is a need to focus people's minds on what could go wrong and avoiding the negative and our job is to keep that in the forefront of people's minds across the whole corporation. One other area, and it has been touched upon, is the whole supply chain issue, because—using electricity as an example—as a distributor and supplier of electricity at the end of the supply chain if the transmission system or the generation system is not working the end delivery system, in a sense, has nothing to deliver. So it is a classic supply chain issue there.

Mr Atkinson

105. Obviously I was a little miffed that the CBI should have opposed my Bill which I felt was a practical response to resolving this problem and indeed sought some credit in CBI defuses Millennium Bomb Bill in so doing and yet we heard from the head of Taskforce 2000, Robin Guenier, a couple of weeks back—as you know he probably has his grasp on this issue more than any other person in this country—he said the problem is more serious than the CBI realise, so it rather smacks of complacency. So the question I would like to put is why did the CBI oppose my Bill? secondly, did it consult amongst its members as to what their response might be to my Bill because when I consulted the top 100 companies I got majority support for my Bill?

(*Mr Parish*) Luckily, I think I can ask an official from the CBI whether she could respond to the first point at least.

(*Ms Bales*) The reason why the CBI opposed the Bill was because at the time we felt that the structure that was being proposed would not have been appropriate in terms of stimulating action, but also in terms of its interpretation by the organisations that it would affect, which would be every organisation in the country. The CBI has been in dialogue with many of its members over this issue over the last 18 or 19 months. In terms of an absolute consultation on whether we would or would not support the Bill, we did not enter into that and we do recognise that for some organisations it would be a mechanism by which they would be assured that some of the organisations with which they did business would be considering the millennium issue. However, for many organisations it would be something that would provide an onerous task upon themselves and would not take them any further along the path of achieving compliance or even assessing their systems.

106. Okay. So you are supporting the Government that it is the voluntary approach which is the only approach on this issue and yet you say in CBI at Work and I quote: "Despite efforts to cajole, encourage, inform or frighten organisations and business chains into taking action, too many are still unprepared for this challenge". You have been holding road shows amongst your members to draw attention. What kind of support have you been getting at those road shows?

(*Ms Bales*) We held a series of road shows at the beginning of 1997. They were all deemed to be successful. They were all aimed at encouraging a size of audience depending upon the location that they were held in. I think the audience ranged from 40 to 50 and upwards towards the 100 mark which was what was being aimed at. I think the real message that came from those road shows was that, at that stage, awareness was building. In promoting the roadshows we mailed thousands of organisations both in CBI membership and outside and that the attendance at those roadshows was the level that it was was a by-product of this awareness raising activity. The road shows themselves proved useful to the organisations that attended and also useful in terms of looking at how we might focus any future work that the CBI has undertaken over the last year.

107. But you did not raise this issue prominently at your last Conference?

(*Ms Bales*) Sir Colin Marshall gave an opening address to CBI Conference in which he did talk about the millennium date change issue as one which every single organisation needs to address and to which every organisation needs to commit board level support.

108. Thank you very much. My final question, Mr Chairman, is about the imbedded chip problem and may I quote from Government Computing in October: "The more one reads about imbedded processes, the more one realises that it is there that the real millennium bomb exists. Nobody seems to have a clue as to how to investigate it, let alone how to fix it." So can you give us the CBI's view on this particular aspect, the imbedded chip issue, and can you confirm that there appears to be very little action on the problem compared to that of computer hardware and software and what the Government should be doing to redress that problem?

(*Mr Parish*) That statement might have been true about May of this year, I would say. Since then there has been a dramatic move forward. We do recognise that we were relatively slow in addressing the embedded chip issue, partly I think we had tended to run somewhat behind the United States on this whole issue. In the United States IT is in the boardroom and in the United States they picked up on the whole Year 2000 IT problem very, very quickly because chief executives, CEOs in the United States have IT very much more to heart than is the case here. But they have done remarkably little on the embedded chip problem and so taking their lead as we did we tended to ignore it as well. In the last six months there has been a dramatic change, an enormous amount of effort from the IEE, which has become the focus of gathering together expertise. They have printed a huge book, they have a very big web site. We probably have 40 or 50 consultancy companies now working actively in this field when six months ago there were probably only three or four. If we look at the Year 2000 Interest Group which is a body of some 250 larger businesses who work together, and Yorkshire Electricity is part of that, their Embedded Systems Groups are incredibly dynamic and really very effective so that area is moving very fast. There are one or two problems. One is that it turns out that testing embedded systems is very, very difficult indeed. You cannot turn off an awful lot of things to test them. You cannot turn off a nuclear power station very easily; you turn it off, it is off for a month and a half. You cannot stop a blast furnace, and there

[**Mr Atkinson** *Cont*]
is not yet agreement as to how to test these things. So there are still significant technical issues in the way. But we are catching up very quickly and we are working not so much through the high profile of the press with this one because that I think we could not really follow the other major alarm, but we are doing it through the engineering industry very largely and it is beginning to work. I am very encouraged by the progress that has been made myself and my Association is very much involved with this with British Aerospace, GEC, British Telecom and so on.

Dr Turner

109. I have a slight personal interest in this because I am not even sure whether my own office systems are compliant. Would you welcome legislation to compel suppliers to say whether the products they are selling are compliant?

(*Mr Parish*) Not particularly, because I do not think that it is very easy to determine what compliance is. Funnily enough, we are just coming out with another definition of what is compliance and we have been working on these definitions for clients for 15 months because it turns out not only to be 31 December but there are tricks like 29 February in the year 2000 and have people worked out whether that is indeed a leap year or not? There are other dates that things can go wrong apart from 31 December. I think there are about 15 different dates over and around the turn of the century when the thing might go wrong. So what is compliance? It is not entirely clear. It may be that there are a lot of things that are not compliant, but they have no negative effect and therefore do you mind about that very much. I have a PC which is not compliant. I turn it off at midnight, I turn it on at one o'clock in the morning in the next century, re-set the time of day and the date and it will go and I have had no problems. It is not a compliant machine, but I have worked it by manual means over the end of the century. There are so many ways around the problem.

110. There is in fact a British Standards Institute definition of compliance?

(*Mr Parish*) Yes, we do not like it. We are changing it.

111. Do you think suppliers should declare that?

(*Mr Parish*) No, not that one. No. In fact suppliers are working on a different version of that and might be prepared to accept one that is different from the current British Standards one. The British Standards one certainly does not cope with embedded systems because they have different characteristics, so we are going to have to change it anyway. I think we may then be able to bring many suppliers to say they comply. The difficulty with that is that the big suppliers who will step up to this are probably the people who are going to comply anyway and the small suppliers who are causing the problems, people who are back street, put-togetherers of PCs, they are going to say they comply whether they do or not and the law is not going to make any difference to them.

112. Trading standards would have something to say about that?

(*Mr Parish*) Yes, they would, but we have never felt with this issue that the law or appealing to the law or using the law is somehow something that is going to help the case forward.

113. To what extent are your members actually putting pressure on the suppliers to make sure that the equipment they are getting from them will cope with the date change?

(*Mr Parish*) A great deal. One of the things that does happen is that we get a group of suppliers in front of 20 or 30 users at a time. You get IBM or Microsoft or whoever it is up and we get serious users actually really digging into them and pushing them pretty hard and these major corporations have simply had to say: "Yes, well we are not actually quite compliant" and we are getting a lot more information by running these sort of vendor events and we are pushing the big suppliers very, very hard and actually sharpening up their performance quite a lot. That has been quite an encouraging way of working.

114. You think it is galvanising them into action, do you?

(*Mr Parish*) Oh yes, I think so. There is more to do in the embedded systems area however. We are well behind in that regard in that field and we have to work very quickly on that.

Dr Gibson

115. What would you like to see Action 2000 doing in the next two years in terms of the priorities, for example, remembering that Mr Cruickshank said to us that it was not his role to be active in solving the problem? What do you think they ought to be doing?

(*Mr Parish*) Getting useful advice out to the community, which means making the best practice information which is around—and there is a lot of it because there are a great many organisations doing good things—getting it together and delivering it. Delivering it to and through the kind of groups that Yorkshire Electricity belong to so that it will help them to manage their problems through the supply chain. Getting it out through business links, getting it out through the dealers. One of the things we want to push is the agents of the computer companies to get them to put out good material, so it is really a question of gathering all the stuff together in one piece and then finding good vehicles for disseminating them.

116. It is a pure education thing as you see it?

(*Mr Parish*) Yes. Taskforce 2000 did a very good job saying: "Pay attention, this is a huge problem and unless you do something very, very immediately there is going to be a major disaster" and Robin Guernier to a certain extent is still saying that same thing. We think the time now is to say: "This is a really important issue. You have to get on with it and here are the tools to do the job" and that is the important change from Taskforce 2000 to Action 2000. It is equipping companies.

Chairman

117. Although, Mr Parish, as Dr Gibson said, Mr Cruickshank has said that it is not his role to be active in solving the problem. If it were as neat as you have described that Taskforce 2000 was an organisation that made people aware of the problem, then Action 2000 is an organisation that came in to help to solve it, that would be very neat and very laudable. But it seems that Action 2000 does not see itself as the organisation to help solve the problem either? It is another awareness organisation?

(*Mr Parish*) I am quite surprised at that reaction because over the last three months we have been holding regular meetings of the 15 or 20 or so people most involved in providing central help: The British Computer Society, the major companies like British Telecom, my trade association, the CSSA and others, people who are trying to generate material and Don Cruickshank has been involved in the last three of these meetings and there we are, we have groups working on writing presentations to go to small businesses. We have people putting material on web sites to be available as toolsets. We have best practice groups writing best practice guidance material and gathering them together, all of those things are happening. My understanding is that Don Cruickshank intends to encourage all of those things.

118. Let us put it down to semantics then and let us say that when Mr Cruickshank says he is not active in solving the problem, he may be active in propagating the way to solve the problem, but he himself may not be active in solving it and let us hope that is what is meant; but I am sure that we will all check when we leave this meeting to see if that is the case, certainly we shall?

(*Mr Parish*) Yes.

119. Time is running out. May I put the last question to you, Mr Parish? You will be aware of the fact that considerable IT resources are being devoted to making preparations for the single currency if and when it should happen. To what extent do you think those resources are hampering progress towards the millennium bug and which do you think is the most important at the present time, preparing for the single currency or preparing for the millennium bug?

(*Mr Parish*) I think if I could answer the last question first. Clearly the single currency is potentially a moveable feast which the Year 2000 is not. You cannot buck the date! There are certain businesses, particularly within the financial sector, where it is extremely complex to try and modify systems for the date and for the currency at the same time. It makes the testing of such systems once altered immensely complicated. Maybe if you have a factor of one for testing one of them, testing for when you have made both sets of changes it costs a factor of four more, so that seems to be a great complexity. Perhaps Mr Jackson would something about this from his perspective although he is not in the City.

120. If you could be brief, Mr Jackson, because we are holding the Minister up at the moment, but we would like to hear your answer?

(*Mr Jackson*) We are perhaps in the fortunate position of being largely domestic in terms of our customer base. As far as our major systems are concerned we are in the process of evaluating what needs to be done. We think there are manageable work-rounds, certainly for the 1999 scenario, and therefore that would not have an immediate impact on the 2000 solution. Other organisations who have a less domestic market may have greater problems.

121. So the short answer is that the preparation for the single currency is having only a minimal effect on 2000?

(*Mr Jackson*) Within our organisation, but I would stress that is based on not being an international organisation. Our customer base is largely Yorkshire and Humberside.

122. So you are putting in a cautionary word there. It may be worse than that elsewhere?

(*Mr Jackson*) Very definitely and the point in terms of complexity, if you are making major changes to systems of two different areas at the same time there is an exponential growth in terms of complexity for acceptance testing.

Chairman: Thank you. Mr Parish, we have come to the end of our time. We would like to have gone on, but in fact in the time that we have had you and your colleagues have been most helpful to us. Bearing in mind we had to take 10 minutes off to do other business elsewhere, we have got through an enormous amount of questions and answers. A lot of information has come our way which has been recorded in a variety of ways. We thank you, we thank Ms Bales, we thank Mr Jackson and in due course, if we may, we will send you a copy of our report and thank you for the help you have given in compiling it.

Memorandum submitted by Department of Trade and Industry

SUMMARY

1. My responsibility on the century date is to co-ordinate the Government's interest in private sector systems, and this Memorandum is primarily devoted to that.

2. This is a very serious problem which every organisation must address without delay. Those who have the problem in critical systems must plan now how to tackle it. The Government cannot fix the problem for businesses, but we will continue to urge them on. We are determined that the advice they need should be made available.

3. The Department and its Agencies are tackling their own systems and a copy of our Plan has been placed in the House of Commons Library. The Department is also responsible for ensuring that those public sector organisations which we sponsor, such as the Post Office, are tackling the problem.

4. Like other Government Departments, the DTI has an interest in aspects of the problem which cross the public sector/private sector boundary. These common issues are amongst the problems which I expect to be considered by the new Ministerial Group which is to be chaired by the President of the Board of Trade.

5. The Memorandum addresses the issues in your Terms of Reference in turn. The Department was consulted by Don Cruickshank in the preparation of his Memorandum and in general we endorse his comments on these issues. To avoid repetition, this Memorandum provides additional material.

DETAIL

(i) *The nature, magnitude and implications of an inability to manage the date change in personal and mainframe computers, embedded systems and software, especially where such computers are performing safety critical operations.*

6. If this problem were ignored, the consequences would be very serious. Financial systems, utilities, manufacturing processes, transport, distribution, communications and services of all kinds depend increasingly on computers and other electronically controlled equipment. Fortunately, many organisations are already tackling the problem. The Government's objective is to ensure that as many as possible of the critical systems on which we all depend are fixed in time.

7. The IT industry has advised me that there is already a shortage of skilled people. As more businesses start to check their systems, and as others move from checking to fixing, these skill shortages will intensify. It is therefore necessary to do what we can in the time available to increase the skills pool. Action2000 is following up the discussions which started at the Millennium IT Skills Summit which I hosted in July.

8. It will also be necessary for organisations to switch resources in the short term from other projects to work on the century date problem. Organisations will also need to prioritise, identifying the systems which are critical for business operations, for health and safety, or for the environment.

9. This means that the problem is one for senior management to address. They must set priorities and allocate budgets. They must ensure that the IT and other technical experts are able to tackle the job with the urgency required.

10. It is dangerous, however, to prescribe general solutions across the full range of UK businesses. Some—like the banks—are highly dependent on IT, and in general we believe that they are already well advanced in tackling the problem. Others make little or no use of IT. In between is a range of businesses which are moderately dependent, have perhaps made a start at thinking about the issues, but have not all advanced very far. Our concern is that every business should make an assessment without delay of the scale of the problem in its critical systems and decide what, if anything, needs to be done. The bigger the task, the sooner the business should act. All businesses are likely to find that, as the year 2000 approaches, it will become more difficult to obtain external help.

11. For many systems, which manipulate dates in the future—such as financial planning systems—malfunctions will occur before 2000. Nevertheless, I believe that for the vast majority of businesses there is still time to act if they start checking now.

(ii) *The effectiveness of action which has already been taken to avert problems in Government, large corporations and small businesses.*

12. Government systems lie outside the scope of my responsibilities.

13. Most businesses are reluctant to discuss the extent of their problems or the action they are taking, although more information is becoming available from larger companies. More generally, survey evidence suggests that progress through the checking phase to the action phase is underway, though not as rapidly as we would like.

14. One of the tasks of Action2000 will be to obtain much better and more systematic information about the current state of preparation and the plans which businesses have to complete the work in time. Action 2000 is expected to get a picture of progress in all business sectors, and to look particularly closely at key sectors on which the economy at large depends, such as telecommunications, energy, financial services and others.

(iii) *The role of Government in raising awareness of the potential problems and in seeking solutions and the respective roles of Taskforce 2000 and the recently launched Action2000.*

15. Businesses cannot evade the responsibility for tackling their own systems.

16. The Government's first role is to alert them to the issue and the need to tackle it urgently. The Department started work in this area under the previous Administration, and the present Government has continued to support these efforts to raise awareness. We have continued to provide funding to Taskforce 2000, to work with the Taskforce on its programme of events and to consult it about the issues. This funding will cease on 31 March 1998 or when the £350,000 to which we are committed has been spent, whichever is the sooner.

17. We believe that awareness amongst the business community is now high. Businesses know there is a problem. The emphasis needs to shift from telling people that a problem exists to ensuring that they take appropriate action. This is the conclusion I came to on the basis of consultation by the Department during the summer with a range of organisations actively involved in the problem.

18. We therefore decided to establish a new initiative, Action2000, to look at all aspects of the problem, to advise the Department on what needs to be done to stimulate action, and to orchestrate all the many organisations which can help businesses tackle it. In doing this, Action2000 will need to determine what is inhibiting some businesses, to take stock of the range of help already available, and to address any gaps.

19. Details of Action2000's task are set out in Don Cruickshank's Memorandum dated 14 November 1997.

20. Don Cruickshank has been told that the budget for Action2000 would be up to £1 million per financial year (in each of the year 1997–98 to 1999–2000 inclusive).

21. This budget is not of course a budget to fix industry's problem. Industry must finance that. As with other business problems, the best prospect of solving it lies in the market place, where users recognise the need to commit their resources to it and thus provide commercial organisations with an incentive to help. Action 2000's role is to orchestrate a framework of support activities which will make the task easier. The budget has to be sufficient for that task.

22. The Department has also sought to raise awareness internationally. A number of countries have followed the UK's lead in taking the initiative with business, and I have raised the issue with my European colleagues on the Telecommunications Council of Ministers.

(iv) *The extent to which new systems and software are "millennium compliant".*

23. The Department is not aware of any comprehensive information on this point. The Computing Services and Software Association has a database on some IT software. Action2000 will be considering what additional information can be provided, and will also be exploring what data is available about electronically-controlled equipment.

24. Purchasers need to check whether their intended purchases are millennium compliant, and if not whether the non-compliance is insignificant or likely to be remedied by a subsequent upgrade. They should ask about the timing of the upgrade and whether any additional charge will be made.

25. Millennium compliance is only one feature of a purchase, and provided purchasers are aware of the issue they should be able to take it into account in making their choice. The normal provisions of the law governing such purchases will provide further protection.

26. Compliance of the system will depend upon the hardware, operating system, software and data all being compliant, and on the user using the system in the right way.

(v) *The development of contingency plans in the event of system and program failures.*

27. Just as responsibility for avoiding significant malfunction rests with the business concerned, so does responsibility for considering contingency planning in case significant malfunction does nevertheless occur. A business will need to consider malfunction in its own critical systems, but also any electronic links it may have with other organisations. Even where there is no electronic linkage, the business may be economically dependent on other major suppliers or customers and may need to plan for the possibility that they are seriously affected by malfunction.

28. The extent of contingency planning undertaken should clearly depend on the size of the risks to which the business is exposed, the probability that they will materialise and the extent to which damage can be minimised more easily and cheaply by advance planning. These are issues which senior management needs to address as the size of the problem and the extent of preparedness becomes clearer in the coming months. We hope that better information will be forthcoming from Action2000 and other sources.

29. In some sectors of the economy, particularly where there is a high degree of interdependence between businesses, it may be desirable for industry to undertake contingency planning on a collective basis.

30. The role for Government is to encourage and facilitate this planning by the private sector. It will also be necessary for Government Departments and other public sector organisations to undertake such planning in relation to their own systems. The new Ministerial Gorup will have oversight of this process.

(vi) *The legal implications of disputes over liability for compliance costs and system and program failures.*

31. Every user facing the need to fix or replace a system will need to consider whether the supplier or another contractor has any legal liability. The legal position will vary from case to case, and we see no need to amend the law. It is important, however, that the user should recognise that he has the ultimate responsibility for ensuring that critical systems on which the business depends are tackled in good time. He should not put the business at risk while arguing over who is to pay for this.

32. This is a message which Action2000 may need to promulgate.

33. We have consulted the Cabinet Office and Action2000 in preparing this Memorandum.

8 December 1997

Examination of Witnesses

MRS BARBARA ROCHE, a Member of the House, Parliamentary Under Secretary of State for Small Firms, Trade and Industry, and MR STEPHEN PRIDE, Director, Supply Industries Sponsorship, Communications and Information Industries, Department of Trade and Industry, were examined.

Chairman

123. Welcome, Minister. Thank you very much for finding time in your very busy schedule to be with us this afternoon to help us in our inquiry into the computer compliance or the 2000 bug as it is called. We know you very well, but before we ask you our first question, would you be so kind as to introduce your companion this afternoon?

(*Mrs Roche*) Yes, certainly, Dr Clark. My colleague is Mr Stephen Pride who is the senior civil service official in my Department assisting me with this matter.

124. Thank you very much. Welcome, Mr Pride. Minister, could I first ask you about suggestions that have been made that as much as 29 percent of the United Kingdom's GDP could be at risk if the worst fears of the millennium bug come to pass and how great do you judge this risk to be yourself on your Department?

(*Mrs Roche*) Thank you very much, Dr Clark, and may I just say right from the beginning how pleased I am that this very important Select Committee is discussing this issue because as far as I am concerned it is one of the very key issues facing our industry today. As far as the question of effect is concerned, I think it is probably very, very difficult to give a precise effect on its effect on GDP, because I think there will be very many issues that one would need to take into consideration. For example, what the scale will be of fixing the problem, the extent, also what other things would not get done because this has to be done and that may all be very difficult to calculate, but may I certainly say that as far as the Department is concerned and as far as Government is concerned and as far as our anxiety is concerned about business, we think that it is a very serious problem, a very complex problem and one that we are taking very seriously indeed. And certainly one that we believe that if business does not grasp the nettle and act very soon and very seriously it will have very adverse consequences indeed for this country.

125. Do you think on the smaller scale, on the micro-scale perhaps, that some businesses could actually fail and become insolvent if they were very heavily dependent on computers and scheduling and they failed to take note of this problem?

(*Mrs Roche*) We certainly would not discount that possibility at all, which is why we are taking the action we are taking now. What is very key for us is that business recognises its responsibility. This is very much a problem that has been created by industry and it is one that industry itself needs to tackle, but having said that we believe that there is some additionality which the Government can provide and that is assisting business to look at the tools that they will need to do something about it. I think we are in the situation at the moment where there is a high level of awareness, but what worries me, Dr Clark, very much indeed is that that awareness has not been translated into action and that is where I think that the Government can provide the necessary additionality. What I really want to see is a concentration by larger businesses on their supply chain relationships because of course what is very important for large businesses and medium sized businesses is not for them to say: "We are millennium compliant. We are all right", but for them to think: "Well, hold on a moment. What about my customers? Are my customers compliant? Are my suppliers compliant". If we are in the situation where that is not the case then there are very serious problems indeed. So what I think we are doing as far as the Government is concerned, why we formed Action 2000, is to encourage them to think of the picture in the round and of course apart from appealing to their own interests, their own enlightened interests, to look at the country as a whole. That is certainly what we will be concentrating our energies on.

[**Chairman** *Cont*]

126. Just a small point before I pass over to Mr Beard, but having worked for some time in the motor industry I know, as you will know, that when you have a production line—and you have mentioned the supply chain—you only have to have a supplier of a very small component, that seems to be minuscule in the scale of things, who fails to deliver and the whole line comes to a halt and that is how the whole thing can escalate. So the point you are making to us is that the large companies who might in themselves have got things right have got to go down the line to make sure all their suppliers are right, otherwise they could come to a halt; the kingdom could come to a halt for the want of a horse shoe nail?

(*Mrs Roche*) I could not agree with you more, Dr Clark. One of the interesting things I do as part of my portfolio anyway is visiting numbers of businesses and certainly when one visits—I mean, you talk about the car industry; the car industry is a very good example. That industry is reliant on its supply chain, very reliant on large numbers of small suppliers. Quite small businesses, but actually quite significant businesses and of course the interesting thing now in the way in which manufacturing has developed of course is an increased reliance on computers. Computer aided design is something that you now see in the smallest of businesses on that manufacturing side and of course it is very good to see its development because I think that is one of the key areas in which certainly as a Government we want to see progress because we can see that helping our competitiveness. But having said that, that is why there does need to be that concentration.

Mr Beard

127. Could you draw the distinction between your role in relation to the millennium bug problem and that of the Chancellor of the Duchy of Lancaster?

(*Mrs Roche*) Yes, my role, Mr Beard, is to be responsible for the action and developments that we are taking with the private sector. As far as the Chancellor of the Duchy of Lancaster is concerned, he is responsible for the public sector. But clearly there is obviously room in that for discussion which is why, of course, the Prime Minister announced the launch of the Ministerial Group to be chaired by Margaret Beckett, the President of the Board of Trade.

128. Thank you very much. How does the Government intend to monitor the level of preparedness of the private sector?

(*Mrs Roche*) We believe as far as that is concerned that Action 2000 is going to have an enormous role to play in that and I know that already, Mr Beard, that this Committee has taken evidence from Mr Cruickshank and clearly they are going to have a key role in making sure that they get out to business all the information that they need of the tools that are available for them to solve this situation. It is a complex area because of course, depending on the sort of business, different applications will be needed and it is also quite clear that depending on different sorts of businesses there will be different sorts of difficulty as far as sophistication of systems are concerned. So monitoring of that area is going to be important and I know that Mr Cruickshank has spoken about that. One of the other things that we will also be doing is looking at the business link network. I have responsibility within the DTI, as the Minister responsible for small and medium sized firms, for the business link network. Now we announced a re-launch of that network in October and one of the key things I highlighted at that was that we would also be looking at the century date change problem. Now of course the advantage of that is that those business links do have the knowledge of their local companies, what they are doing, and I think that is something that is going to be very helpful to Action 2000 indeed. So in that sense there is an advantage in my being responsible for the two areas.

129. What plans are there for immediate action if it becomes apparent that insufficient progress is being made in addressing this problem in the private sector?

(*Mrs Roche*) I think the problem is so serious, Mr Beard, that I think we do have to make sure that action is taken. What I can assure you is that the Government will do all it can do to make sure that we act as facilitators and enablers. What is useful and very much an important component of Action 2000 is, if I can put it this way, all the major players are there. The industry is there, the CBI is there, the banking community is represented and of course the banking community has played a very important part in this already. It has already been distributing a great deal of information to its business customers about this. So if you like all the key players are in there. There is, I think, a growing realisation, there is an awareness that there is this problem and that is very, very good. What we now have to do is translate it into reality and I think we have to have a number of different ways of tackling it. First of all we have to have an approach by sector so that we can use the supply chain. That is very important to us, so a very targeted approach. Second, we are very keen as well to go to chief executives as well. It relates to the supply side approach because we actually believe that going to the chief executives can have a very important role on that and that is certainly a major role that we see for Mr Cruickshank and Action 2000. So to come back to your important question, Mr Beard, this is so important we cannot let it fail and the very important message that we want to get across, which is why I very much appreciate the opportunity to come to talk to you today and why I am personally taking on so many speaking engagements in this area, is to get this message across and to get it across as forcibly as we can do. What we do not want is to be in a situation where we scare industry so much it does not do anything. That would be the very reverse of what we want to do. We want to get a sensible message over to them that if they want their businesses to grow and prosper and they want to be in a position where they can be truly competitive, they have to seize this issue at the moment.

130. We did hear earlier from the CBI that there seems to be a reluctance of some companies to say what the state of preparedness is for fear of damaging their stock price or their share price or trading conditions. Are there any ways round that, do you think?

[**Mr Beard** *Cont*]

(*Mrs Roche*) I can understand that being a worry because of course in a sense of market advantage and having knowledge of this is an important issue. That is where I think that Action 2000 can play its role and I also think that because we have as the Chairman of that organisation, Don Cruickshank, who is a man who is well respected by both Government and by industry, he can play a role in helping to dispel any fears there. And of course the fact that we have the CBI as part of that and using its influence is very, very important indeed. But we need to get a message over. If I can just say to you, one of the things that a few months ago really alarmed me when I was sitting next to somebody, a businessman, a managing director of a good medium-sized company who I greatly respect as an extremely competent businessman and he said to me that until comparatively recently he thought the whole issue was hype got up by the industry and that really alarmed me. He now realised it was not and he had to do something about it, but that worried me. That is why, if you like, we need to have a focus on industry as a whole and that is why for us Action 2000, a broad based organisation, is just very important indeed.

Mrs Spelman

131. You mentioned the Ministerial Group on the century date change. What precisely will be its role? Have any objectives been set for it and by what criteria will you judge its success?

(*Mrs Roche*) Yes, it will. As I said, it will be chaired by Margaret Beckett and the whole point of it is to drive action across the private and public sector to make sure that our national infrastructure is not damaged by the problem. Now what I think would be very useful is that Margaret Beckett and myself are co-ordinating action with regard to the private sector. David Clark, as the Chancellor of the Duchy of Lancaster, is driving on the public sector. But clearly there can be lessons that can be drawn about good practice between the two and that is where the Ministerial Group will be very important. The other thing, I think, that is very important about it as well is that it illustrates just how seriously the United Kingdom is taking the issue. I had the opportunity recently to speak about the issue to the Telecoms Council and again they are very interested about what we are doing in the United Kingdom and I think it gives a very graphic example of what Government can do. It will enable us to spread best practice, but I think it also sends a very powerful message itself about the Prime Minister's concern in this matter and the fact that we have a ministerial task group force.

132. What funding, or rather support, will the Government provide to assist companies, particularly the small- and medium-sized enterprises, to meet the costs of ensuring their systems are millennium compliant if they are not able to do this for themselves?

(*Mrs Roche*) As far as funding is concerned, the Government is giving up to £1 million in this financial year for Action 2000 and it will provide the same sums in the following years to resolve the problem. Clearly at the end of the day it is for companies themselves to sort out the problem and as far as that is concerned that clearly is a matter not for intervention, but is a matter for the private sector. However, may I say in that that what we will be doing with Action 2000 is provide help lines and there are possible plans for a web site to provide information. There is the Government's very own Enterprise Zone which we launched on 4 November which can signpost, there will be information, we will be using the business link network. We will also, via Action 2000 and the people involved in the Advisory Group, have access to the banks and other organisations. So there will be an enormous amount, if you like, of advice and guidance for those companies and we believe that we are in the forefront—certainly as far as the rest of Europe is concerned—on what we are doing here.

Dr Gibson

133. Minister, do you think perhaps this is all too much for one man to handle all this interaction between the different bodies? Mr Cruickshank has had his job expanded from a week ago, I think?

(*Mrs Roche*) Yes, it is not just for one man. I have a great deal of admiration for Mr Cruickshank's skills, but it is not just him. Mr Cruickshank we have taken on as our very high profile Chairman and he will be doing that job, but he will also be supported by a full time director and indeed Mr Cruickshank has just appointed an acting director. There will also be other full time staff. Clearly many of them will be project directors, team leaders as well; people who are well aware of the industry, but also well aware of business becasuse I come back to this. It is very important when you are trying to talk about what needs to be done that we just do not tackle it from the point of view of IT people talking to other IT people. The people we need to get involved are some of the people in business who are not necessarily IT people, but people who hold the purse strings for those businesses, the finance directors, because at the end of the day we know that these are the people who make the decisions and we do have to get it over to them. So it is very much a broad-based organisation, Dr Gibson.

134. I know you have said you intend not to fail, but at some point you may find that some people are not listening. Have you got some back-up tactics other than persuasion?

(*Mrs Roche*) I think we will find, certainly I would suggest that from January onwards, the pace is going to hot up. That is certainly my intention, it is certainly my prediction and I expect that as that becomes more and more of a realisation about what is going to happen, what people are going to want to know is—help. Now what I do not want them to do is to panic; that is the worst thing they could do. Having had the level of awareness that we have got—the survey showed that the level of awareness is high—the worst thing they can do is bury their heads in the sand and say: "Well, what do I do now?", so what I will be focusing on is saying—you know, it is a bit like Dad's Army; "Don't panic, don't panic, help is at hand"—and that is what we can provide. I think that when in the next couple of months or so when we see the fruition of Action 2000's plans which Mr Cruickshank outlined to you—and we would

[**Dr Gibson** *Cont*]
also be very happy if that is helpful, Dr Clark, to give you an update on that as that progresses—we will see more and more businesses trying to do that. But also, I think we will be seeing much more activity because I think you will have, for example, the banks themselves saying to their business customers: "What are you doing about millennium compliance?". We will be seeing the PBAs, the Personal Business Advisers in the Business Links advising their business customers about that. I do not want to make it sound too optimistic because I think there is a mountain to climb here. We will be seeing much more of a flurry of concern and what we have to do is to make sure that all the initiatives that we are doing with industry are up and running so that they can meet those challenges.

Mr Atkinson

135. Minister, you rightly stress the very real seriousness of the problem and the risk that businesses will fail and the Chairman has pointed out that it has been suggested that 29 percent of GDP would be at risk, perhaps rising to 37 percent if businesses do not respond in time. So it was obviously disappointing to me when I met you ten days ago to ask for Government support for my Bill that you declined it, suggesting that it would represent a greater burden on business, which I found rather strange because, as I said to you, what greater burden on a business than to go bankrupt because it has not addressed the problem which my Bill would require company directors of businesses to do. I felt that the Government had nothing to lose but everything to gain for this country by supporting my Bill. Could you enlarge upon your opposition to what my Bill proposed?

(*Mrs Roche*) I will certainly do that, Mr Atkinson, but can I say first of all thank you, it was a very helpful meeting that we had, and let me say at the beginning if I may without causing you to blush that I certainly acknowledge very much that you were I think the first Member of Parliament to raise this very important issue on the floor of the House and outside and I think if I may say so your Parliamentary colleagues owe you a debt of gratitude for the work that you have done in this area and I very much acknowledge and appreciate that.

136. Thank you?

(*Mrs Roche*) As far the Bill itself is concerned, the reason why I did not feel able to give Government support to it is that I do not believe we need additional legislation in this area. If we are going to get companies to do it they will do it because it is in their self-interest to do it and I actually thought just putting an additional legislative burden on there that it would take up time and it would not really deliver the result. I think, you see, that we are getting the impetus there anyway. We are getting the impetus there from auditors who are already saying to companies before they sign them up: "Are you millennium compliant?" and as I have already said, we are getting it from the banks, so it is coming anyway from a number of sources already. I think what you have said publicly in the past, Mr Atkinson, quite really when you framed the Bill and when you actually framed it originally in the last Parliament, that one of the reasons it was there was to raise discussion and awareness of the issue and I think that is quite right. The fact that you framed it and campaigned for it, that is what it did. I think actually that the picture has moved on a bit now because what the survey evidence shows is that there is a level of awareness, but what people have not done is translate it that awareness into actions. So although, Mr Atkinson, we might not agree on the legislation I think we agree generally on some of the things that need to be done. May I say that some of the areas which I think we could very usefully take up that you have also suggested is the work for example that I know you have done in your own constituency of contacting your own businesses and finding out what they have done, signposting them to offers of help and certainly I very strongly believe that this is a contribution that Members of Parliament could make across the board because there is no doubt that Members of Parliament on all sides of the House in their individual capacities as constituency Members of Parliament do have very good contact with local companies, very many of them with big companies as well. So again that is a route into the supply chain. I think as well you have a situation where constituency Members of Parliament are taking the sort of interest that you have, Mr Atkinson, in that way that we can look at similar schemes such as the one that you have done in your own constituency and that is certainly one that I have passed on to Mr Cruickshank and to Action 2000.

Chairman: Mr Atkinson, do you want to stop while you are winning or would you like to ask another question?

Mr Atkinson

137. I am going to ask another question! Of course I greatly appreciate the Minister's kind comments and let me tell her that whilst I appreciate the reasons why she feels unable at this stage to support my Bill, given the widespread complacency and ignorance on this issue which is coming to the attention of this Committee, can I tell her that the Bill remains on the floor of the House of Commons. I shall be there almost every Private Member's Bill Friday to move a second reading, so if you feel that the need is there then it is still ready and waiting for you. Now for another question and that is that given the seriousness of the problem, is there no justification for a Prime Ministerial statement which would in itself give greater publicity to the problem and the need to take action; take action, not to be aware of, but to take action in response to it? Another question is ought we not to co-ordinate and arrange a national test day given one of your prime messages is we have to allow sufficient time for testing on the action that you have taken to ensure that that action is adequate before the time runs out in two years' time. We ought to have a national test day, maybe on 1 May 1999? That is a suggestion I put to you.

(*Mrs Roche*) On the second question I will say something and perhaps bring in my colleague on that. On the first point, the Prime Minister—I think the point is an important one and the Prime Minister has very much shown his concern in this area. It was an issue that he raised in Cabinet and an issue that he

[**Mr Atkinson** *Cont*]
spoke about to all his Cabinet colleagues and of course that was made public and mentioned and you then had the statement from the Chancellor of the Duchy of Lancaster as had been planned on this issue because the Chancellor had been collecting reports from all Government departments. Then of course you had the announcement of the setting up of the Ministerial Group so clearly that has come from the Prime Minister and you have seen very much the Prime Minister's commitment and involvement, very importantly because the Prime Minister recognises the very important effect this could have on industry. As far as the second point is concerned, Mr Atkinson, about the test day I think this is something that Action 2000 are considering, but perhaps I could bring Mr Pride in here if I may, Dr Clark?

(*Mr Pride*) Thank you. We have passed on the suggestion to Action 2000 as one way of raising awareness and also co-ordinating testing and they will be looking at that. It is very important more generally that testing is encouraged, that companies realise the amount of time that testing is going to take even when the work has been done. That is an important issue and message that we are trying to get across and there may well be scope for Action 2000 co-ordinating information about when particular tests are being done by particular companies or collaborative tests on a sector by sector basis. So I think there is an important issue here and they will certainly be looking at it.

Mr Jones

138. Minister, may I turn to the problem of the IT skills shortage. In their submission to us ICL mentioned that a recent Millennium Skills Shortage Conference, organised by the DTI, concluded that the growing shortage of staff with IT skills would increasingly affect the Year 2000 activities. It is already causing organisations to pay inflated rates to retain and acquire staff with appropriate skills. I myself was offered £150,000 to go and use some of my cobol and assembler expertise. My wife was reaching for the Chiltern Hundreds! Seriously, the CBI are also saying that both within companies and across industry there is a lack of skilled specialists able to tackle particularly the embedded chip issue. What does the Government intend to do to try and alleviate this shortage?

(*Mrs Roche*) Well, Mr Jones, this is a very serious problem, it really is and the Summit that you referred to is one that I chaired in the summer and we do regard it as a great problem. Clearly it is an area that the industry itself is going to pay a lot of attention to because it knows it needs the necessary skills base to do it. It is certainly an important part of the Action 2000 agenda. I met with Mr Cruickshank earlier this week as part of a wide-ranging discussion and this particular subject, I think it would be fair to say, occupied a fair amount of time as we regarded it as so important. There are a number of different initiatives that are being looked at by companies in this area. Women returners, family friendly practices to encourage part-time work, enormous numbers of things that can be done with young people and certainly when we had the Skills Summit that you referred to in the summer, those very same issues were mentioned by industry itself as being very important. We do need the people there. There have been various estimates, quite alarming estimates, that have been given about the numbers. It is precisely difficult to know quite what the vacancy is, but I have certainly had it suggested that it is at about 50,000 more in terms of the gap that there is. It is difficult to be able to verify the figure, but it certainly is a figure that has been suggested by some in industry. So it is something that we are concerned about. We are certainly talking to our colleagues in Education and Employment about it, but it is going to be a large part of what Action 2000 has to do. Again, it is looking at the Projects Skills Office, which is part of it, trying to have a channel of ideas. At the end of the day clearly it is one of those areas that is a matter for industry, but I also think it is one of the areas where the Government can make a significant contribution.

139. The introduction of the single currency will clearly exacerbate the situation of skills shortages and ICL again point out that an important aspect of dealing with the shortages is matching any available people with the relevant skills to the organisations in need of them and they are suggesting that the Government could consider providing a central directory service to support this. Do you think that is a possibility? You mentioned education; do you think there is a possibility that colleges and universities could release some of their students, and indeed staff, to help overcome this skills shortage?

(*Mrs Roche*) I think again I will bring Mr Pride in if I may? But I think there are a number of things that can happen in this area. I think what is very important is that clearly the skills needed to sort out issues like the Century Date Change problem are very specialist skills. They are quite difficult to train people in in a very quick period of time, but if we add to the overall number of people in the industry that clearly, if you like, has a pyramid effect and it then frees people to do other things, so certainly we do see one of the roles for Government, working with Action 2000, part of the Action 2000 role, as acting if you like as a clearing house for some of these ideas and we actually think we can work with industry very profitably in this area, but it may well be that Mr Pride may have some other things to say on that.

(*Mr Pride*) Yes. Following the Conference that Mrs Roche chaired in July, the Department gave some funding to set up a Skills Project office to look at the whole range of ideas which would tackle the skills shortage problem. That office has now been brought under the aegis of Action 2000 and they produced an initial report. I think that when one puts training and bringing people back into the industry—people who have retired, people who have taken early retirement, women who have left to have families—if one puts all those ideas together, which is what the Skills Project office has tried to do, then the task is to identify those that are going to have a short-term impact early enough to help us deal with the Century Date problem and that means that some ideas are more promising on that narrow point than others. That work is proceeding; I cannot really say today which of those ideas are going to be taken up, but it is very much on the agenda of Action 2000. It is something that I know Mr Cruickshank personally

[**Mr Jones** *Cont*]
is very concerned about and he will be submitting advice on this, as on many other questions, to Government as to what can be done. If I could just add one brief point which is that if it is not possible to generate as many additional people on the sort of time scale that is necessary then I think that reinforces the message that we have been trying to put across to industry that they have to prioritise, that companies really have to concentrate on the business critical, the environmental critical, the health and safety critical systems where a problem may exist. That is why senior management has to be involved in the Century Date problem. That is why it cannot just be left to the IT department or the technical people. It is senior management who have to say: "Right, these are the areas where we really must concentrate the limited resources that we have".

Chairman: Thank you very much indeed. Mr Turner?

Dr Turner

140. Minister, in enacting legislation Governments can also place strains on the IT industry and amending the Data Protection Law for instance would have considerable implications; so to what extent is the Government prepared to examine and, if necessary, amend its own legislative problem so that it does not place excessive burdens on the IT industry to enable it to cope with the 2000 problem?

(*Mrs Roche*) Mr Turner, I think that is something we are going to have to increasingly look at. I think that is one of the great advantages of the Ministerial Group that because we have that you will have Ministers in all departments becoming increasingly aware, not only of what their own departments have to do, which is one element of course of that, but also the problems as far as industry is concerned because that is going to be the very positive advantage of that which will make us think about what we do as Government and what we do in adding in terms of things that the industry has to do. So I think that will be one of the great strengths of the Ministerial Group.

141. Do you think the introduction of the single currency in the year 2000 is going to have any great impact on our ability to be ready for the Century Date Change, because after all, even if we are not part of Euro when it happens in 2000, none the less we are going to have to do business with trading partners that are, which is going to have considerable IT implications? Do you think that there is a case for arguing a delay in the introduction of the Euro so that we can get past the Year 2000 problem before we go into the European currency?

(*Mrs Roche*) I think they are two different issues and it is difficult to say precisely the effect on both, but I think you are right to say that businesses will be preparing for both. Certainly the DTI played a role as far as looking at the Chancellor's Advisory Group for preparation as far as EMU was concerned about systems, but I think it is difficult to say precisely what would be the effect on businesses. Mr Pride may have some points as far as that is concerned.

(*Mr Pride*) Yes, I represented the Department on one of the sub-groups that was reporting to the Chancellor of the Exchequer's Business Advisory Group on EMU. I was sitting on the Working Group looking at IT implications in particular. We have just submitted our report and perhaps I should not say too much about it, but I can tell the Committee that the interaction between Century Date and EMU was very much in the minds of the people who sat around the table and that point is taken on board in the report that we put up to the main Advisory Group. I think that one of the question marks in this area is the extent to which businesses will have to begin to adapt their system even though at a particular point in time the United Kingdom is not actually a member. I think the general expectation across industry is probably that: "Well, I do not need to do anything just yet. I do not need to do anything until the United Kingdom actually joins, if indeed it does" and I think what we recognised in our group is that many businesses will have to begin to adapt their systems to cope with the Euro on the time scale that is determined by the countries that join on day one. Many businesses have trading relationships with companies elsewhere in the European Community. Many businesses are supplying to the United Kingdom subsidiaries of major European groups and those major European groups may insist upon trading in the Euro from day one, so many, many businesses in the United Kingdom will have to start thinking about what they need to do on the start date in 1999, whether the United Kingdom is a member at that date or not. On the other hand, many businesses may not need to take any steps unless or until the United Kingdom actually joins, so it is a question that each business has to answer for itself, but our concern I think is that many smaller businesses are just assuming that this is a problem far in the distant future that they do not have to worry about just yet and that is not true.

Chairman: Minister, if I may just conclude on a final question because we are now touching on European currency and European matters? Have you any idea at all what our colleagues in the European Union are doing and I do believe that you requested that the European Commission should propagate information about what they are doing so that all Member States may have an awareness of what other Member States are doing. I wonder if you would just care to make a few comments on that particular point?

Mr Atkinson: Or issue a Directive on the matter!

Chairman

142. Our legislator would like you to do more than talk about it?

(*Mrs Roche*) Thank you, Dr Clark, I would be delighted to because I really regard this as a very important area because very importantly following on from what Mr Pride has said, what is very important in this is that we cannot bury our heads in the sand as a country. We cannot say we are okay and therefore it does not matter what everybody else is doing in other countries, because of course it is our trade that is very dependent on that, so again it is enlightened self-interest as far as we are concerned. You are absolutely right, Dr Clark. I requested that this matter be put on the agenda for the Telecoms Council on 1 December and I sit on that Council

[**Chairman** *Cont*]
representing the United Kingdom and I will have the privilege of chairing that Council from 1 January when the United Kingdom takes on the Presidency. I have already done two things really. First of all I make it an absolute point that whenever I meet my opposite numbers who are also Telecoms Ministers to always raise the issue so it is there in all those bilateral meetings. We had a very good discussion about it in the Council on 1 December. First of all I was really delighted about the fact that we raised it, got a warm reception because I think it may well be that in the past this has been something that the United Kingdom has been concerned about, but perhaps somehow other countries have not seen it as quite the issue as we have. Again I am very pleased that it did receive a very warm reception from other Member States. It also received a warm reception from the Commission from Commissioner Bangemann. The Commission have issued a paper and I think there is going to be a meeting—I think it is on 19 December—which is actually taking place on that issue when we will be able to look at it. Again what was interesting—and I am sure Dr Clark if it would be helpful we would be able to give you some information—was that other countries came equipped with bits of paper saying: "Well this is what we are doing" and we certainly had that happening around the table. So what I will certainly do and certainly after that meeting is to make available a summary of what other countries are doing and to sort of put that into your consideration and what I can also assure the Committee what I will also do is to make sure that this continues to be raised during our Presidency as well because for me it is coming at a very important time as far as this vital issue is concerned. So we will continue to press it and we will keep you updated on this because I have to say I do regard it as absolutely essential as far as international trade and competitiveness is concerned.

143. That is a most significant note on which to finish, Mrs Roche. The Committee is very grateful to you, and indeed to Mr Pride too, for coming along this afternoon. You have promised us two things if I may remind you; you promised us first of all that you would send us an update of Mr Cruickshank's remit and initial findings and you have just a moment ago offered very kindly to send us the notes that you get from the Commission in due course and we will be very, very pleased to receive those. May we thank you for coming along to see us this afternoon. May we congratulate you on not only your knowledge of this particular subject which is only perhaps a small part of your overall portfolio and also say how well you have answered our questions. You have been very kind to one of our Committee members; I see no reason why we should spare your blushes as well! Thank you very much indeed for all the help you have given us and we wish you well in the difficult task you have ahead of you in this particular field.

(*Mrs Roche*) Thank you, Dr Clark, you are very kind. Thank you very much for the opportunity.

Chairman: The meeting is closed at 5.45 p.m.

WEDNESDAY 28 JANUARY 1998

Members present:

Dr Michael Clark, in the Chair

Mr Nigel Beard
Mrs Claire Curtis-Thomas
Dr Ian Gibson
Mr Nigel Jones
Dr Ashok Kumar
Mrs Caroline Spelman
Dr Desmond Turner
Dr Alan W Williams

Memorandum submitted by Shell UK Limited

Shell UK Limited, a company of the Royal Dutch/Shell Group, is engaged in the United Kingdom in the exploration for and production of oil and natural gas, in oil and chemicals manufacturing, and in the marketing of the resultant products. The company is organised into three business sectors—Shell UK Exploration and Production (Shell Expro, or Upstream); Shell UK Downstream Oil (Downstream) and Shell Chemicals UK Limited.

Because these business sectors cover such widely differing activities, involving complex infrastructure which is quite distinct and unique, some of the paragraphs in the following memorandum have been split to give the Committee the widest coverage of Shell UK's experience to date of the Year 2000 problem. It focuses on the two main businesses of Shell UK which are most relevant to the Committee's inquiry.

Shell Expro, operating on behalf of Shell UK Limited and co-venturers, is one of the largest offshore producers of oil and natural gas in the UK with an interest in more than 30 producing fields and their supporting offshore infrastructure, together with three onshore plants at St Fergus, Mossmorran and Bacton.

Shell UK Downstream Oil manufactures a full range of the highest quality fuels, lubricants, petrochemicals and bitumen operating out of two refineries, 16 large distribution terminals and around 1,700 retail sites.

1. Introduction

Shell UK has been actively involved in addressing the "Year 2000 Problem" since early 1996, as part of a worldwide Shell Group initiative. Shell UK's experience, especially in the area of embedded systems, has been instrumental in developing the "Year 2000 Survival Action Guide", a document which provides practical direction for Shell Group companies.

2. Summary

The Year 2000 problem is multi-faceted, and penetrates far beyond office computer systems and data. In the Upstream Oil and Gas sector its main impact is with embedded systems controlling production plant, whereas in Downstream, business systems are also significantly impacted. We believe successful Year 2000 projects require a high profile and genuine support from the Board. If tackled early, methodically, and with enough commitment, the critical exposure areas can be successfully addressed. As well as looking inward, companies should be aware of the potential problems that can stem from the supply chain, and obtain assurance from their key suppliers and customers of a well-found compliance plan. Other external risks relate to the ability of some vendors to resource the demand that will accrue for remedial work, and of others to make their products compliant.

3. Problem Impact

The problem breaks down into three distinct areas of impact. Asset Integrity embraces the physical infrastructure, particularly control and monitoring systems in offshore platforms, onshore gas fractionation plants, refineries, retail sites and offices. Business Computing covers the effects on electronic business information systems and the data that drives them. Commercial Integrity refers to our implicit dependence on third parties and the potential effects on our operation, of failure on their part to overcome the Year 2000 problem.

4. TARGET

The project is targeted for completion by end-1998, leaving a year for operational testing, contingency planning and as a buffer against slippage. Eradication of all Year 2000 problems would be an unrealistic target. Our aim is to develop and implement action plans for all perceived threats, to achieve assurance levels which reflect, in each case, the business criticality of the threat. This will reduce the effects of the Year 2000 problem to manageable levels in all areas, a target we are confident can be achieved.

5. COST

The direct cost of addressing Shell UK's Year 2000 exposure is estimated in the range £30 to £40 million, most of which will be spent on Asset Integrity. The estimated spend should not be confused with the magnitude of the problem which, if ignored, could cost many times the remedial outlay. If a single offshore platform were to fail, deferred production could run to £1 million per day. If the St Fergus gas fractionation plant were to fail, a large part of the North Sea would be instantly inoperative.

6A. SHELL EXPRO ORGANISATION AND RESPONSIBILITIES

In its first year the programme has been run as a number of independent projects dealing with all areas of exposure. It has been co-ordinated by a full-time resource and directed by a multi-functional Steering Group. In moving to the implementation phase, the project has been reorganised on a pan-Expro basis, the manager having single-point responsibility and reporting to a senior Director. This will ensure that the work is prioritised consistently, that it has the necessary profile to produce the required action, and that schedules and complex logistics are fully co-ordinated. The role of the team is to organise, plan, schedule and facilitate the work. Responsibility for achieving compliance lies firmly with the owners of the Assets, Systems and Business Processes affected.

6B. SHELL UK DOWNSTREAM ORGANISATION AND RESPONSIBILITIES

Work commenced in 1996 and concentrated on Business Information Systems. As understanding of the Year 2000 grew, two further projects were instigated to address the Asset and Commercial Integrity issues. These projects have discrete project managers whose roles are to co-ordinate and facilitate corrective actions within the appropriate areas of the business within which lies ultimate responsibility for compliance. All three Year 2000 projects report to a Steering Committee which is chaired by the Finance/IT director who is a member of the Shell UK Downstream management team.

7. METHOD

We have developed a number of interlinking, innovative methods, based on well-proven hazard analysis techniques, which allow all facets of the problem to be tackled methodically and consistently. The philosophy behind all our methods is to inventorise, assess, test, remedy, plan for contingencies. To date we have completed the analysis phase for many of our installations, enabling us to create a comprehensive and accurate view on the threats and necessary remedies.

8A. SHELL EXPRO ASSET INTEGRITY

This aspect represents by far our greatest exposure. A typical offshore platform or onshore gas plant uses 50–100 definable "embedded systems", meaning sets of electronic code used to control equipment and which cannot be altered by the users. As many as 10,000 individual microchips can be involved. Impact analysis has shown that about half the identified systems are critical to the business, ie loss of their function would result in significant production loss or environmental effects. None has yet been found to have direct safety implications, as our safety-related systems all have low-technology fallback systems. Remedial action has to be agreed, planned and scheduled with each of 60-plus vendors, a very significant logistical exercise. IT/Telecommunications infrastructure is a specialised sub-project of Asset Integrity, using the same method. In comparison to the main project we expect the incidence of non-compliance to be similar, but anticipate the problems being easier to remedy, as there is less customisation of the equipment, and non-compliance should be fixable via standard upgrades.

8B. SHELL UK DOWNSTREAM ASSET INTEGRITY

As with the upstream, asset integrity is likely to be the most difficult and costly area to resolve. The impact can range from refinery process control and safeguarding systems, via pipeline control and terminal operations, through to commercial and retail activities. Retail is complicated by the sheer number of sites involved—c. 1,700. Each individual business sector is investigating its own area of responsibility with the project manager providing guidance and co-ordination. Prime concern is safety and environment, particularly with the refineries. Thereafter, remedial action is based on business criticality.

9A. SHELL EXPRO BUSINESS COMPUTING

The most widely understood aspect of Year 2000 problems, this is unfortunately believed by many to constitute the whole problem. In the Oil and Gas industry, embedded systems are the highest profile issue. Remedying Shell Expro's Business Computing problem, although much smaller at £2.5 million, is still important. This is less than the original estimate for various reasons including: the replacement of many vulnerable systems by an integrated business operations package which is expected to be fully Year 2000 compliant; use of systems supplied by Shell Central Offices, for which we only bear a fraction of the remedial cost; the relatively high integrity of code in our Business Information systems; and the low incidence of dates in data processing compared to a typical retail or financial organisation.

9B. SHELL UK DOWNSTREAM BUSINESS COMPUTING

This aspect of the Year 2000 project encompasses all Mainframe, Midrange and PC based applications. These traditional application areas can largely be categorised into the areas of Finance, Marketing, Retail, Commercial, Human Resourcing and Manufacturing. The cost of remedy within Shell UK Downstream is currently estimated at £3 million. This amount is subject to change as it is recognised that the nature of the Year 2000 problem is one of ongoing problem discovery as increasing numbers of applications are progressed through the compliance process. The basic corrective methodology of inventorise, assess, fix and test has been applied to our applications and systems on a priority basis. The elements considered in the setting of priority are business criticality, estimated corrective effort and event horizon (the date that a system may fail because of a Year 2000 problem). The bulk of systems will be corrected by means of an upgrade process, however several have been identified as targets for replacement. Given the short timescales involved it is essential that, for those systems being replaced, a contingency plan be developed as a precaution against non-delivery of the new system(s). In some cases this has resulted in some critical systems being subject to both a parallel upgrade and replacement strategy. The resourcing strategy centres around the use of existing staff supplemented by contract resources supplied via agencies. Two things are evident: the costs of these resources are rising; and for some of the lesser known development tools and languages, there is an increasing scarcity of appropriate skills. This not only presents problems in procuring additional staff but also presents difficulties in retaining existing staff. Some smaller organisations may face severe problems in achieving compliance if they are unable to meet manpower costs. Considerable effort is required to ensure that the underlying "system architecture" supporting the application layer becomes compliant. Significant dialogue with software and hardware suppliers to establish the compliance status of their products is taking place, with a mixed degree of success. It is clear that some companies are more advanced in their ability to (a) commit to a compliance strategy and schedule, and (b) deliver the corresponding upgrades. It is vital that the status of the underlying architecture is clearly understood as this must be taken into consideration when considering which corrective strategy to adopt. The failure of computer software and hardware manufacturers to deliver a clear statement of intent will compromise the ability of organisations to deliver fully compliant systems.

10A. SHELL EXPRO COMMERCIAL INTEGRITY

In Upstream Oil and Gas we are particularly vulnerable to third parties' Year 2000 problems, because so many of our operations are contracted out. Our objective is to gain assurance that each key third party has a viable Year 2000 compliance plan. This applies to customers as well as suppliers, as failure on their part to address the problem could mean that they are unable to take our products. Collaboration helps share the load. As well as pursuing third parties directly from Shell Expro, two powerful fora have been set up, within the Shell Group and the UK Offshore Operators Association (UKOOA). The main purposes of these networks are to use the combined weight of their members to initiate action among key third parties, to share technical information, and to ensure that the companies involved are all pursuing the problem in a consistent manner.

10B. SHELL UK DOWNSTREAM COMMERCIAL INTEGRITY

The survival of key suppliers and customers through and beyond the Year 2000 is of extreme importance to Downstream. Initiatives are taking place to encourage these organisations to adopt appropriate strategies to tackle this problem in a timely manner. We recognise that this must be done in a sensitive and efficient manner so as to minimise the non-productive workload burden that is being placed on many organisations in responding to such inquiries. As such we have avoided the use of lengthy and complex questionnaires. Instead a simple letter in conjunction with the effective use of existing personal one-to-one contacts have been employed.

11. LEGAL ASPECTS

Although inclusion of watertight warranty clauses in all new contracts is a must, the only sensible approach is to pre-empt litigation by ensuring as far as possible that the products and services we use are unaffected by the problem. Litigation against suppliers of deficient products or services will not begin to compensate for our losses and may well put them out of business, helping neither party.

12. ISSUES

The main issues that we currently face are:

- lack of awareness industry-wide of the seriousness of the problem;
- non-compliance in control equipment and infrastructure systems, coupled with lack of vendors' support resources;
- matching availability of resources to platform and refinery shutdown schedules, to avoid production deferrals solely for Year 2000 work;
- the need to match assurance levels to perceived criticality;
- guaging the effects of potential failure in the complex network of interdependent IT and Telecommunications systems;
- providing effective and comprehensive test mechanisms for systems which are sometimes very complex in their architecture;
- containing the problem so that new equipment is proved compliant before being installed;
- contingency planning; and
- obtaining and retaining appropriately skilled resources to effect a Year 2000 programme of work.

28 November 1997

Examination of Witnesses

MR MALCOLM BRINDED, Oil and Technical Services Director, MR DAVID THOMSON, Year 2000 Co-ordinator, Shell UK Exploration and Production, and MR RICK JACOBS, Year 2000 Business Information Systems Manager, Shell UK Downstream Oil, Shell UK Ltd, were examined.

Chairman

144. Mr Brinded, good afternoon. Welcome to you and your colleagues from Shell. Perhaps before we start the questioning, you might like to introduce your two colleagues to us and tell us what your responsibilities are in Shell so that we can know a little bit more about you before we start our session.

(*Mr Brinded*) Good afternoon, Dr Clark, ladies and gentlemen. I am the Oil and Technical Services Director for Shell UK Exploration and Production. We call ourselves Shell Expro and I will probably use that phrase. That is the upstream company in the United Kingdom which looks after oil and gas production platforms and gas plants in the United Kingdom. My two colleagues are David Thomson who is the Year 2000 Co-ordinator for Shell Expro, the upstream company, and Rick Jacobs who is the Year 2000 Co-ordinator for the downstream part, which means the refineries, petrol stations, the marketing and commercial activities.

145. Thank you very much indeed. Welcome to all of you. We will direct questions to you, Mr Brinded, and should you wish to invite one of your colleagues to take the question on or give a supplementary answer, that is entirely for you to decide. I wonder if you could try and give us some idea of the size of this problem, the "millennium bug" as it has been called by some. If Shell had decided to do nothing and just continued on its normal course of business, what do you think the effect would have been when we came to the year 2000? How would Shell and indeed Shell's customers have been affected had Shell done nothing about the millennium bug?

(*Mr Brinded*) I think had we done nothing then there would have been serious consequences in terms of failure to continue to supply oil and gas. I think what I want to stress at this point is that we have done something and we have done quite a lot.

146. We know you have done a lot and you are amongst the leaders or we would not have dared ask you the question! So from a position of strength can

[**Chairman** *Cont*]
you give us a bit of a Doomsday scenario so that when we write our report we can have some idea that this was not an expensive game you all played and had you done nothing there would have been a serious situation for your company and our country. Because we know you have done a lot and you will not be embarrassed by going into this scenario, we can ask you that. There are some companies that we would rather not have asked that question.

(*Mr Brinded*) Let me stress that it would have been unlikely to cause any safety consequences in our installations because there are three facets, as we put in the submission, to the problem and we have found it easier to divide it into those three and manage through those three: the business computing issue; the asset integrity issue; and the commercial integrity issue or supply chain issue. Taking them one by one, the business computing issue, which is financial systems, planning systems and so forth, had we failed to do anything there it is very likely we would have had all sorts of problems with automatic payments, invoicing, our accountancy structure and our procurement structure, so we would not have been able to place orders, make payments and so it would impact our business significantly that way. That is the most widely recognised and understood area; it is business software. It is being tackled, I think, very widely. As we got more into the issue over the past 18 months we realised that the second area, what I call asset integrity, was probably more significant. It may be helpful if I tell you a little bit more about that as I see it. That is really the issue of embedded chips or embedded intelligence in all sorts of equipment ranging from items of equipment you would have in your own home like the video recorder or the engine management system you would have in your car, through to the control systems we have on our offshore platforms which control compressors, generators, they meter our production and so forth. In fact, I thought it might be helpful to highlight the fact that we have thousands of these chips on every offshore platform. On offshore installations we have 18 major installations each with 50 to 100 systems and each system has probably 100 of those embedded chips so in all we have got a couple of thousand systems and 10,000 of these chips per location. Most of them are fine. Some of them have a date-related problem embedded in them and that I think is a harder issue to recognise and to realise the implications. To come back to what if we had not recognised the implications, which was your question, it would not have been a safety issue—it is important to stress that in a safety conscious industry like ours—in that the embedded systems tend to be part of the primary control systems of oil and gas facilities and refineries and so forth. You also have secondary shutdown systems which in our installations are all hard-wired, simple, low intelligence and they do not have these type of embedded chips. They would essentially shut down the installations. You also have a back-up, again for example the pressure relief systems on pressure vessels. What would have happened had we done nothing would tend to be in the area of control systems and metering systems not working so plants would shut down unexpectedly. We would not know why they had shut down and so continuity of oil and gas supply would be suspended.

147. Thank you very much indeed. Just a very quick subsidiary question. I imagine—tell me if I am wrong—the problems that your company has had to address would be very similar to the problems your competing companies, other big majors or indeed smaller companies in the oil sector would all have had?

(*Mr Brinded*) That is correct and indeed we regard it as an area more of collaboration than competition and as an industry we are trying to tackle it through the UK Offshore Operators Association, for example. There we have a network of all of the operators who are trying to share learning and best practice in this area.

148. We note from your memorandum that you are going to be spending something like £30 or £40 million on this problem. Will that all be money that is "lost" in solving this problem or is some of it money you would have spent anyway on IT? Thirdly, could you say that as a result of solving this problem your IT equipment will be in better shape and therefore you will have got some return from the £40 million of expenditure?

(*Mr Brinded*) That is a good question. If I may put in context the relationship to our total spend to bracket it. As a company we are responsible for a spend of £3 billion a year essentially, mostly spent with United Kingdom suppliers, so it is a sizable operation when you combine upstream and downstream and the £30 to £40 million needs to be seen in that context. Most of it is likely to be spent this year because one of the points I should stress is we are trying to get remedial actions completed as far as possible by the end of this year. I would say the majority of the expenditure (£35 to £40 million is our latest total estimate) or nearly £30 million is on the asset integrity side and that is investment that we would not otherwise have made. It is only in the business systems, which together between the upstream and downstream come to £5 million or £6 million, could you say that some of that is accelerating new systems that we might have brought in anyway.

149. 90 per cent is money you would not otherwise have spent?

(*Mr Brinded*) That is correct.

Dr Turner

150. Your memorandum tells us that you do not think eradicating all the problems by the year 2000 is realistic so you aim to reduce the problems to manageable levels. What do you mean by "manageable levels"?

(*Mr Brinded*) Let me try and explain. If we take the asset integrity problem again, which I have talked about, in the case of the upstream company Shell Expro, we have 2,000 systems which contain these chips so we have categorised them according to criticality. That is one of the things we have been doing in the past year—making an inventory and deciding which ones are highly critical in terms of potential production, control and environmental impact if we do not fix them, which ones are medium and which ones are of low criticality. We will by the end of this year, 1998, have completed the testing,

[**Dr Turner** *Cont*]
remedial action and re-testing of all the high and medium critical ones. Essentially the systems that may get left in terms of this will already have been classified as low criticality which means that we do not expect them to fail, we do not expect them to have much impact and if they do we can deal with it after the event and they will tend to be in areas of non-critical data recording or something of that sort.

(*Mr Thomson*) I just wanted to make one point in addition to what Malcolm was saying which is that throughout the project it is a given that we will match the level of assurance that we derive about any given piece of equipment or software, whatever, to the level of criticality that it poses to the business in the event it would fail. Therefore, we are trying to focus the resources and efforts where it really matters. Every single item that has been identified will be addressed in some way. In some situations it might be the strategy to take the vendor's word for compliance in cases where criticality is very low. Clearly, where it is much higher we want to take much more substantial actions.

151. You are confident then that none of the things that are left in your category of low criticality are going to have safety or environmental implications? You will have tested that?

(*Mr Brinded*) We will have tested as far as we can and we will be sure that the systems that we have classified as low critical are by definition not systems that have an environmental or critical production impact.

152. Is the Health and Safety Executive involved in oversight of this testing? Is there any independent monitoring?

(*Mr Brinded*) They are not directly involved in monitoring in that sense but actually we are involved with the Health and Safety Executive in discussing with them and working together to develop the most appropriate means of disseminating best practice across the industry.

153. Finally as far as I am concerned, one of the predicted problems of the year 2000 is that people will stockpile and because they anticipate supply breakdowns one of the things they might stockpile is obviously fuel. If all our motorists rushed into the garage on the last day and topped up their tanks would you be able to cope?

(*Mr Brinded*) That is an interesting thought. We would sell more petrol! I think actually that what underlies your question is the balance between creating enough sense of urgency to get on with it but not creating a sense of impending doom such that the public is terribly worried about an issue that maybe they do not understand and feel the ramifications are going to be much more high impact and catastrophic than they will in fact be. If business moves early enough and properly then we should not have a major problem. In answer to your question directly I think we hope to have reassured customers well in advance of that date that there will be no problem for us maintaining security of supply and therefore convince people that there is no need to rush into purchasing extra stocks.

154. You will not do a little stockpiling yourselves so you can replace supplies quickly if they did do this?

(*Mr Brinded*) That might come into our contingency planning but it is not something that is high on our priority list.

Mr Beard

155. Could you say what sort of steps you have had to take to put right the very large number of chips embedded in systems?

(*Mr Brinded*) In essence quite often it is an element of going back to the vendor, and I use as an example the turbine manufacturer and the control system provider, to that turbine manufacturer and seeking from them a solution that they are going to have to apply to all of their products. That is why the problem is not one where we say, "Let's send the Shell specialist out to fix that item" because it is the original supplier of that equipment who has to actually tackle it and he has to tackle it across all the products he supplies. Sometimes we find vendors who are fully up to the mark, who recognise the problem and who have a very aggressive plan to address it worldwide. Other times you find people who are only gradually cranking into gear at the moment. Can you add to that answer?

(*Mr Thomson*) In all of the embedded systems we do not have programmatic control so we are forced to go to the vendors and we have, of course, close working relationships with lots of vendors so they do listen. If they are not already on the case they do listen when we ask them to set about getting their product year 2000 compliant. We are not just corresponding. We think the best way to get action from vendors is to go and visit them and jointly develop a remedial plan relating to our systems. That is the first thing to get the technical planning in place. The second stage is once they have got a solution, or they have demonstrated to us they have a solution or they have planned to get a year 2000 version of their software, the next thing is to plan the implementation of the system and upgrading and testing which involves scheduling key people from those companies on to platforms or whatever at a suitable time, preferably when the platform is in shutdown.

(*Mr Brinded*) That is quite critical. Some of the testing has to be scheduled when you have a planned shutdown because otherwise it will itself create a shutdown and you do not want to have lots of unnecessary interruptions. Again, the earlier you start the more you can mitigate the impact by making sure that the testing activities coincide with planned shutdowns and again with no loss of production.

156. You say the vendors you have had to deal with have had the means of remedying the problem. Have there been instances where various suppliers have not done much to prepare themselves for it?

(*Mr Brinded*) We are still in that stage of discovering which systems do not comply and what the remedial action programme is they have to put in place. That is why our target is to complete the remedial action this year.

157. Are you finding so far that they are in a state of reasonable preparedness?

(*Mr Brinded*) The full spectrum.

158. Surprise?

[**Mr Beard** *Cont*]

(*Mr Brinded*) The full spectrum I would say, from people right on the case seeing it as a source of competitive advantage as suppliers of control equipment to show how good they are, and at the other end people indeed who are only just waking up and perhaps not taking as much responsibility for products they sold five years ago as you would like them to. To amplify we have to deal collectively with 15,000 suppliers and so the challenge of the supply chain management is tremendous. Of those we would say around 3,000 are key suppliers from whom we would definitely want to seek assurance in some form that their products are compliant. Of those, some 500 would be critical suppliers where we would engage in face-to-face dialogue with them to really probe the extent and confidence they have in the compliance of their products. That may take from a few man-hours of joint effort to a few man-weeks of joint effort to achieve that assurance.

159. What happens if they are not in a position to give you that assurance? What will be your response to it? Some people are going to be black sheep no doubt.

(*Mr Brinded*) Those are the ones we keep going back to and keep going back to.

160. Do you have any legal power to ensure that it is put right?

(*Mr Brinded*) I think at this stage we certainly do not see it as something that is going to be resolved by legal redress and again the consequences of non-compliance are usually much greater than the cost of remedy so it is important for us to work with the suppliers to get them to the point where they will remedy it.

161. When one is talking about compliance does it mean reprogramming it in some way, physically taking a chip out and putting another one in?

(*Mr Brinded*) Usually reprogramming. That is the vast majority of what we have done.

(*Mr Thomson*) The control system software tends to be one of the things that needs to be reprogrammed by the vendor but, of course, there are layers of this and sometimes the vendors' products are based on products from other sub-vendors, if you want to call them that.

Chairman

162. What if the chip we are talking about, Mr Thomson, is at the bottom of the sea at the end of a directional drill? Can you still reprogramme that remotely?

(*Mr Thomson*) It is possible to replace it with a reprogrammed one.

163. It is replacement rather than reprogramming?

(*Mr Thomson*) Where the software is embedded in the chip then it is a question of replacing it with a compliant one. We have some chips in some weird and wonderful places but I am pleased to report at least in our case that it seems the more remote the chips are geographically and locationally, the less likely they are to be non-compliant. Most non-compliance occurs higher up the control pyramid in the management information systems and the monitoring and control systems. The test houses that we have used to test equipment for us have discovered from their experience that the low level parts of the control pyramid are not very susceptible to this.

Chairman: Have you not broken one of the laws of nature? One of the laws of nature says the more remote something is the more likely it is to go wrong. I know there is a shorthand for it but in this Committee I had better not use it! Dr Williams?

Dr Williams

164. Briefly, the vendors in this case solve their problems for you. You said earlier that some of them are quite up to the mark; others are unaware that there is a problem. Have some vendors actually come to you and said, "With Esso we found this problem and we thought we should alert you"? Are some of them proactive and should they not become increasingly proactive during the course of this year?

(*Mr Brinded*) I think some are and we are trying to stimulate that. Just as the Government has been trying to raise awareness, we have been trying to raise awareness across all vendors. We have had, for example, days for small and medium sized enterprises. We had 500 SMEs in the Aberdeen area where this is one of the areas we have talked about to stimulate awareness. An increasing number are coming to us proactively to say, "We can confirm our products are compliant," or, "We know they are not and here are some of the remedial actions we are taking."

165. Is it not good business practice for them to become proactive because the company that comes to you during the course of this year pointing out necessary work that needs to be done is likely to be in the longer term the kind of company you would go back to to conduct increased business with?

(*Mr Brinded*) That is correct. It is a way of demonstrating professionalism and obtaining the right reputation.

166. How do you demonstrate eventually that something is 2000 compliant? Is it possible to run a simulation or how can you be sure that it will work when the critical date comes?

(*Mr Jacobs*) I can take that one and cover it on business information systems. All the business information systems that we run are capable of being wound forward in terms of time. We can take the hardware platform, wind the date forward and then proceed with our testing strategies and our testing plans. It is of course not just a matter of winding the date forward to one single date. There is a range of eleven or so dates we have to test for. Which dates are tested depends on the process that is being tested. Some of these dates run into the year 2001 so some testing is slipped over into 1999 rather than 1998 because of the long-term future of that planning.

(*Mr Brinded*) Can I just clarify that point because it may not be realised that apart from 1/1/2000 there are other dates that need to be checked. A couple of examples, 29 February 2000 being a leap year is often not recognised because generally at the turn of the century it is not a leap year, only at the turn of a millennium it is, and 9/9/99. Those are three of the eleven dates we test for.

Mr Beard

167. Going back to the relationship with your vendors, who is bearing the cost of these remedies? Is it entirely borne by the vendor or do you share it between you?

(*Mr Brinded*) It is a mixture I would say. In some cases we are certainly bearing the cost.

168. You are?

(*Mr Brinded*) Yes.

169. What is happening where the vendor has gone out of business and no longer exists? What happens in this instance?

(*Mr Brinded*) That is certainly one of the problem areas we are now starting to tackle. I do not know if you have got any anecdotes or insights specifically?

(*Mr Thomson*) Yes, we do. We have one case in particular that is in the telecoms area where the vendor of a particular system no longer exists and the company that took them over has ceased to take responsibility for products that were made by the original vendor and we actually do not have any spare instances of this kit so we cannot test it as such because we do not have any advice from the vendor as to how to do it and we do not have any spares to test. It can happen with such equipment that if you roll the date forward to the year 2000 you might not be able to get it back again. So we are unwilling to do this without the support of the vendor. So in this instance we are seriously considering replacing the kit with something completely different.

Chairman

170. Just before we go to Dr Gibson, could I ask a supplementary question to something Mr Beard said about five minutes ago. He talked about, I think, compensation from your suppliers if you had any difficulty that you could not overcome by the year 2000. Move that on a little bit. Do you have any insurance policies that would be applicable to third parties if something you did or did not do caused difficulty to your customers and they came back to you as a third party claiming damages or compensation? Do you have insurance cover for any of this?

(*Mr Brinded*) No, not in that specific way. I think generally we would aim to meet any such claims ourselves, but I think the key is that we aim to avoid obviously getting into that situation. We certainly hope that by being able to demonstrate to our insurers that we have a good plan and we are addressing that, that will, for example, avoid our having to pay particularly steep premiums on the insurance for, for example, our installations, by being able to demonstrate that this is a credible plan, that we have tackled all aspects, that there is no risk to the installation and, thereby avoid having escalating premiums.

Dr Gibson

171. Why was Shell UK ahead on embedded systems of its sister companies for the year 2000 problem? What was the secret of moving ahead fast, because you are obviously in the lead, because we are interested in moving forward other companies who are not moving quite fast enough, so we are looking for tips from the top?

(*Mr Brinded*) I would be hesitant to position us as absolutely out in front. I think it is something where, as an industry, we are all moving now quite fast. I think we started relatively early. We have put quite a lot of effort into a compilation of best practice for Shell companies around the world and in that sense we have issued three documents. This is the latest of them. In fact, we could make this available to the Committee if you would be interested. This is an 80-page compilation of best practice for any of our companies around the world, which starts with what chief executives and project management must do down to the details of how to test the individual systems. This is the third such update. Each of them has been accompanied by an exhortation from the Chairman of the company that this is something of prime importance.

172. It was his idea, was it?

(*Mr Brinded*) He certainly signed it. For example, I think that this year, at the end of 1997, we asked every chief executive of every operating company in the Shell group to put in his so-called letter of representation, the annual letter to the Chairman of the Board, how we have addressed the year 2000 problem and that we have a plan in place to address it. So there is that pressure from the top combined with networking across Shell that I think has raised the energy right across the company. Can I say also that these volumes are the basis of discussion with some of the SMEs (small- and medium-sized enterprises) that come to us as suppliers and essentially say, "We had not realised it was such a big problem. How should we address it?" That is where we give these reports out, discuss with the SMEs what they might do and essentially try and pass on some of the learning that we have had.

Chairman

173. What would you do if a small company came to you, with which you had no connection at all, and said, "We hear that you are pretty good at this and we are pretty bad. Could we have one of your brochures"?

(*Mr Brinded*) I think that is something we have not yet tackled but we could probably make them available to them at cost and I think we could provide some degree of advice, but it is an area where we are not consultants in this business and our own expertise in it is focused on addressing our own problems and the supply chain. As I have said, in a sense our supply chain is substantial, and so we will be getting in one way and another to those 15,000 companies and to 3,000 of them quite a bit more extensively.

Dr Gibson

174. So you are not too worried about a company from abroad coming to you and asking for their problems to be sorted out—for advice—at this stage? It is not a priority for you at the moment? It may not happen but if it did—

(*Mr Brinded*) You mean outside the Shell group?

[**Dr Gibson** *Cont*]

175. Yes?

(*Mr Brinded*) No, I think it would not be a priority for us. Some of our staff are available and operate occasionally as consultants because it gives them a chance to see the problems in other situations, but it is certainly peripheral. Our prime interest is resolving the issue in our own business in the UK and in addition some of the expertise we have is being used around the world for other companies in the Shell group. Our asset integrity manager, for example, the one looking after the embedded software aspects, has been out to Malaysia for some time to help the Shell company in Malaysia.

176. Did this come from one person's head, the whole thing? How was it precipitated, this problem within your company? Was it two people in a bar meeting one night? How does it work?

(*Mr Brinded*) I think it has gradually raised its profile since early 1996. I would say the third or fourth quarter of 1996 was the first time I started to become really aware of it, when Mr Thomson and a colleague came to us as the technical management of the company and said, "This issue is coming. We think we should start putting more effort into it." So it tended to come from the experts within the company who recognised it was an issue and said, "We would like to put more time and resources into studying it," and then the senior management started to realise that it was going to be our responsibility and something that we needed to get involved in.

Mr Jones

177. Could I press you a bit more on the question of somebody who comes and knocks on the door from somewhere abroad. The Chairman and I were in Saudi Arabia just before Christmas and the Saudis collared me as a former computer man and asked what they should do about the year 2000 problem. I rather got the impression they had not started and were clearly a long way behind you. If they came to you and said, "Can you give us some help, could you give us some guidelines?", as their competitors would you show them the door or would you help?

(*Mr Brinded*) First of all, I do not see Middle Eastern producers particularly as competitors in that sense. A Shell company is active in many of them and I think where we can see it would be a good idea from a business point of view to demonstrate our capability and might help in terms of our reputation, then we would start putting some time and effort into it. That, I have to say, would be more something that Shell International would be going for. Really I am here representing Shell UK, so all of the operations in the United Kingdom.

Mrs Curtis-Thomas

178. What are the risks presented by the "millennium bug" to your internal supply chain from production to retail, and I am thinking specifically of not just within the United Kingdom but also where you have a European connection and association?

(*Mr Brinded*) You are particularly talking about the delivery of products to the retail end, to the petrol stations?

179. Yes?

(*Mr Brinded*) I think it is very important indeed to think in terms of the supply chain, and when I talked earlier about the three aspects—business software, asset integrity and commercial integrity—the last one is, indeed, this issue of the supply chain, and we are taking that very seriously through all facets of our business, so on the gas side from the wellhead through the gas platform, the pipeline, the on-shore terminal and then to the transmission company that takes the product, and as well as checking our own operation we seek reassurance from those who are in that connected supply chain. That includes particularly in the United Kingdom, for example, the gas distribution companies and those who are critical to our operation, such as the electricity supply companies. We particularly go into them and seek reassurance that they have a credible year 2000 plan, because it is no good us being in good shape but not being able to sell the gas because the gas pipeline system is shut down. In the European context, where our business is dependent on a supply chain from Europe or worldwide, we would seek to follow that through the supply chain in the same way.

180. Could I ask a supplementary question which relates to the first question that we asked you, which was that the investment is put at £30 to £40 million. That is on an investment IT programme, the existing programme, of how much? The other piece of information I would very much like is that you say that the consequences of not taking the remedial action is three- to fourfold that sum. How did you arrive at that figure and does threefold mean £120 million?

(*Mr Brinded*) Let me try and take them one by one, if I may. I may have forgotten them. If I have, please correct me.

181. Existing asset value?

(*Mr Brinded*) The existing investment in computing systems: in the upstream business we spend about £50 to £60 million a year in our IT systems and a comparable amount in the downstream, so one would say around £100 million of information technology spend, being a combination of new investment and developing new applications, buying new hardware and developing new systems.

182. I would like to press you a little. What is the total asset value of the new investment?

(*Mr Brinded*) Of our total IT portfolio?

183. Yes.

(*Mr Brinded*) I cannot answer that question. I could come back in writing on it.

184. I wondered in fact how you had arrived at this three or four-fold consequence arising as a failure to implement the remedial programme of £30-40 million.

(*Mr Brinded*) I would say that the reference that we made was where we did give an example that the estimated spend should not be confused with the magnitude of the problem which would be many times the remedial outlay, many times.

185. Many times, not a specific one.

[**Mrs Curtis-Thomas** *Cont*]

(*Mr Brinded*) No, I do not believe we gave a specific number because it is back to your opening question, that if we get it wrong and a platform shuts down for a month while we fix it, that could be up to £1 million a day loss of revenues, so if we had done nothing, then as we started with the problem, the consequences would have been many times the cost.

186. I would like a written answer please.

(*Mr Brinded*) Yes, that is fine.

Chairman

187. You can give us a note on that?

(*Mr Brinded*) Yes.

Mrs Spelman

188. I have got some questions relating to the UK Offshore Operators' Association of which you are a member. How has this Association sought to ensure that, as you have referred to in your evidence, the "key third parties" address Millennium compliance issues?

(*Mr Brinded*) The first point is that UKOOA, by co-operating as a group of operators, has sought to raise awareness with all of the key vendors and suppliers, so that there have been conferences organised to promote knowledge and to explain best practice in conjunction with, for example, Task Force 2000. The second aspect would be that we are now putting together as the operators a website which is available to all of the operators again with examples of best practice and looking for some areas where we avoid going to the same vendor 35 times, so there is some discussion between us as to some of the critical vendors, that we should approach them collectively. I think the third area raises a point of interest which is of some potential significance countrywide which is that with some of the key utilities and infrastructure providers, like the electricity companies, telecommunications companies and so forth, there is obviously a danger that everybody will be addressing them to say, "Please can you assure us of your year 2000 compliance and what your remedial action plan is", and that is one of the areas where there may be scope for finding more efficient ways of tackling that to avoid duplication of effort essentially. We have been trying to do it on a limited scale between the operators within UKOOA.

Chairman

189. Can I just interrupt for a second, Mr Brinded? What did you mean by a "key third party" when you put that in your evidence?

(*Mr Brinded*) We meant particularly the downstream gas companies and the electricity utilities.

190. Yes, because without a downstream third party being compliant, there is no point in your being compliant because you are just blocked out.

(*Mr Brinded*) Correct, and there is no point in our gas plants being compliant if the power source fails, and those tend to be shared.

Mrs Spelman

191. It would seem fairly obvious why it is important that members of the Association approach this in a consistent manner, but are they doing so?

(*Mr Brinded*) Yes, increasingly we are doing so. As I said right at the start, I think we recognise that this is not an issue to compete on, but this is an issue where collaboration can mean that we all learn something from each other and where we can avoid duplication of effort by working together. I think perhaps Mr Thomson has something to add on this.

(*Mr Thomson*) I am the Vice Chairman in fact of the UKOOA Year 2000 Committee and have attended all the meetings. We are now represented by, I would say, almost all, very nearly all 34 operators who regularly attend the meetings and we have just put into being a plan for deliverables and actions for 1998. High on that plan is to get all the key utilities and suppliers that are of common interest to us to come and testify to us in much the same way as we are testifying to you here, and we ask questions of them and perhaps give them some guidance as to what more they can be doing. We believe that this will be beneficial to them as well as to us because of what Mr Brinded said earlier as we would only have to do it once and we could take it from there.

192. Have the members of the Association been able to share all the relevant technical information or has such sharing been limited by commercial sensitivity or market sensitivity? We are very interested in solutions to this, so how have you been able overcome that?

(*Mr Brinded*) I think we are still in the stages of actually sharing and within a company the size of Shell sharing some of our information internally is already a challenge in itself. I think that is why we have agreed as an industry to put a website together which will facilitate effective sharing where we do not push information in every direction, but where you can go and search for it, so one of our key projects for the first half of this year as UKOOA is to construct an efficient and comprehensive website.

Dr Williams

193. I would like to ask about staffing and skills shortages perhaps that are in the pipeline next year. How have you organised the staffing in the way you are tackling the problem?

(*Mr Brinded*) Perhaps I can start and then my colleagues can come in. I think by starting early it has given us a certain advantage because I think rates are going up and skills are in increasingly short supply. We have aimed to get our project team together by a mixture of a few of our own experts together with a number of consultants. We estimated that we have at the moment collectively between the upstream and the downstream perhaps 60 full-time people and another 20 or so full-time equivalents if you add up all the part-time involvement. We try and leverage specialist skills. What I mean by that is that where a vendor, for example, has to resolve a problem on all 18 of our major installations, it may be more effective for him to conduct a workshop with our own instrument technicians from all of those installations

[**Dr Williams** *Cont*]
and our own technicians who live and work on those platforms then go out and do the remedial work. It is fairly straightforward, so in that way, rather than trying to use that vendor's individual specialist who may be a scarce and costly resource and have him visit all 18 offshore installations which would mean, with travel, that he was out for probably a couple of months, we can use him for a couple of days, maybe do one installation with him and then our own people can go and use that extra expertise. So that it is quite important, to see ways of actually using the limited skills available and getting the most benefit out of them.

(*Mr Jacobs*) I would like to comment on the business information systems part of the problem. Within downstream, we recognised early on that this was not a problem that you could just throw COBOL programmers at or a low-level coding-type skill. Part of the problem is to fully understand your own applications and that means you have to make use of existing staff, experienced existing staff, to guide the programme of activities towards year 2000 compliance, so it was important that we did not just bring in a team of people working solely on the year 2000, but that they were integrated into our existing support structure, so it is the harmony, if you like, of existing skills and knowledge with bringing in outside resources to help with some of the coding and some of the checking tasks. There is a large range of skills, and I have mentioned that coding skills are required, but by no means is that the total picture. There are analytical skills required for developing solutions and there are customer interfacing skills to be able to go and talk to the business, develop test plans in conjunction with the business and to actuate those test plans and the resource which is quite often forgotten is that the business itself has to contribute to solving the year 2000 problem. It is not purely an IT resource issue. We have to look at the business resource, what manpower they can make available when, so that they can test plans in their own areas. So the resourcing issue is not just, as some people believe, "Let's bring some COBOL programmers in and the problem is resolved." It is much greater than that.

194. Mr Thomson, did you want to add anything?
(*Mr Thomson*) If I may. In the embedded systems we have found a spin-off benefit from our proactive approach to trying to broach the problem jointly with the vendor, and that is that sometimes they can come up with innovative solutions relating to their own products, through interaction with ourselves, that we would never have thought of on our own. Some of those innovative solutions are much less labour-intensive to implement than perhaps the most obvious way of doing things. There is one case in point that we are dealing with at the moment. It has still to be ratified that this will work as a solution but it looks very hopeful, and if it does, it will cost something like a tenth of what we would anticipate spending, and, of course, low costs also means less use of resources, so they are able to get to more of their customers.

195. Within the staff allocation, the people you have, are they mainly existing employees or have you recruited extra staff specifically for this programme?
(*Mr Brinded*) Quite a few in the latter category. Some needed to have a knowledge of our business and our installations but quite a few of the specialist project team have been brought in as contractors/consultants for the duration of the project. Do you know the ratio?
(*Mr Thomson*) I would guess it to be at the moment in Expro, 60 per cent staff, 40 per cent contractors numerically. Most of the key positions are held by Shell staff.

196. We were told earlier it is becoming more difficult to get those contract staff. How much more difficult? Is there a cost factor?
(*Mr Brinded*) The rates in the market are up 15 to 20 per cent over a year ago.

197. What do you expect over the next year?
(*Mr Brinded*) I think there will be a market response, so more and more people will be brought in who have some relevant skills in order to assist in the problem. So it is hard to forecast; I would be hesitant to do so, to be honest.

Chairman

198. Do you think, Mr Brinded, that the rate might begin to go down perhaps in January or February next year when the prudent, efficient companies like yourselves have done all the work you wish to do a year ahead of time and there is less demand for staff and there might be more coming back on the market at the beginning of next year?
(*Mr Brinded*) I think there will be quite a few companies who are still getting round to tackling the problem this time next year, unfortunately.

199. Will there not also be some companies that might be shedding them?
(*Mr Brinded*) Certainly we will be at the peak of our use of resources in the first half of this year and it will gradually reduce because we want to have pretty well completed the programme by this time next year, so that if there are any odds and ends left we have time to fix them and put in place contingency plans.

Dr Williams

200. Is there a possibility, then, as your own work is gradually behind you, let us say at the end of this year, that you will start losing some of your existing staff, who will be fairly valuable in the marketplace?
(*Mr Brinded*) Yes, I think there is that possibility. Most of the staff that we put on to the project we brought together because of their knowledge of our business, so the Shell staff we have essentially taken from elsewhere in the company in order to bring that set of skills together, and I imagine that they will generally go back to the areas of the business from which they have been drawn. Some of them may indeed feel that there is a premium to be made for another year by being a year 2000 specialist and may jump ship to go and earn an extra dollar elsewhere.

201. Finally, do you think nationally that there is a major skill shortage problem here for next year?

[**Dr Williams** *Cont*]

(*Mr Jacobs*) On the business information systems there are certainly shortages appearing now for some of the lesser used languages. In some of the languages that were in use in the Seventies and died out through the Eighties there is an acute shortage of skills in those areas. I liken this side of the project to a bit of a voyage of discovery. We are lifting the lid off all these applications but there are some there that may not have been touched for ten years that have been running consistently and efficiently and now we have to start lifting the lid off and looking inside, "What is this comprised of? What language does it use?" and it is during that phase that we were picking up that we need some additional skills in this area. There are some language skills that are very difficult to get hold of. At the moment COBOL resource is not a problem but there are other languages that are more difficult.

(*Mr Brinded*) And I think it is right to say it may also change one's choice. In certain cases you have a choice as to what you do. You can upgrade an existing application or you can phase it out and bring in a completely new replacement software package which would avoid the problem altogether. In a way the reason why our business computing problem is a relatively small part of the total cost is because we have been generally upgrading our business applications. For our major finance contracting and procurement system we are just in the middle of uprating to the so-called SAP system, which is a German business system widely used around the world. That, because it is year 2000 compliant and replaces a huge number of applications that we previously had, means that we do not have to work on making those year 2000 compliant. So it was always in our plans to bring in a new business system, such a comprehensive one. It has the spin-off benefit that that reduces the amount of upgrade of existing applications. The reason for raising this is that I think many companies will be faced with that choice, and as the rates for remedial action go through the roof, it will become more cost-effective to buy a replacement application.

Dr Kumar

202. You have touched on this, Mr Brinded, but you may want to expand on it. What level of support have you had from your IT equipment suppliers in fixing problems in their systems?

(*Mr Brinded*) I think that is one I will hand straight over. You are particularly referring, therefore, to software?

203. Yes?

(*Mr Thomson*) It is not one I can answer directly because, in terms of our IT equipment suppliers, that is an aspect of the Shell worldwide problem that is being handled by one of the Shell companies called Shell Services International. It is a Shell company but it provides computing infrastructural services to Shell operating companies around the world.

(*Mr Brinded*) So you are talking about the basic provision of the hardware and the infrastructure?

204. Yes?

(*Mr Thomson*) They are handling, on behalf of the Shell Group,[1] liaison with the main suppliers or the main names who make computers, operating systems, languages, compilers, packages and so on, and they are actually finding out, on behalf of the Group, the compliance status of those products and then they are passing that information on so that we can be assured through their efforts that our applications are sitting on a compliant base. We are not directly involved in this.

(*Mr Brinded*) So we are more looking at the applications than the substructure, but again my understanding is that that programme is following the same basic lines of verification. Indeed, for the biggest hardware suppliers and operating systems suppliers, this is so much meat and drink to them—it is their core business—that it tends to be less of an issue in getting a positive and proactive response from them. It is an area of competitive edge for them. Our problems are often more associated—and again I come back to the embedded software and embedded intelligence—more related to people who supply you with a compressor where the control system is a small add-on to the compressor yet their core business is supplying compressors and control systems are secondary, peripheral, and not really an area of great competitive edge. If you are dealing with a main-frame supplier whose business is main business software and applications, they are much more responsive generally than the people for whom this is something secondary.

Mrs Curtis-Thomas

205. You have mentioned the shortages associated with some specific language programmes. However, do you believe that the Government has a role to play in addressing and alleviating the skills and resources shortages associated with your problems and those of the industry worldwide?

(*Mr Brinded*) I think there are a number of areas where it is potentially important to look at how to make best use of available resources. I think that given the time-frame, the issue of suddenly generating thousands more experienced COBOL programmers is perhaps one which may not respond in time sufficiently. I do think that there are some opportunities to try to make more efficient the processes of reassurance and in a way we have touched on this earlier and perhaps I could expand on it. For example, I referred earlier to the fact that we have 15,000 suppliers. Three thousand of them are rather key to us and 500 are critical and with those 500, we want to engage in face-to-face discussions. Let me illustrate the 3,000 in the middle where we are sending them questionnaires and asking them to send written reassurance and details of their plans. It is quite possible that those 3,000 are getting different types of questionnaires and different types of questions from all of their customers. It may not yet have started to hit them, but it is beginning to. We are starting to get them from the people whom we supply. Now, that process of responding on Monday to the questionnaire from Shell and on Tuesday to the questionnaire from British Gas or whatever will

[1] "Group" means The Royal Dutch/Shell Group of Companies.

[**Mrs Curtis-Thomas** *Cont*]
start to consume potentially quite a lot of resources I think there are opportunities to consider looking at industry best practice for what is a standard questionnaire and I think there is an opportunity for, for example, Action 2000 to look at whether we can standardise on such a questionnaire, the receipt of which should be considered sufficient not for every supplier to us, but for that middle category of 3,000. I think we would still want some face-to-face discussions with the 500 critical ones, but it would avoid the diversion of resources into giving reassurance everywhere which is quite an inefficient use of resources and duplication of effort. So we do think that there are potentially some opportunities which are more geared to improving the efficiency in ways in which resources are used than generating lots of additional people with new skills.

206. Let me get this quite straight then. You are suggesting that we somehow, or Action 2000, establish a pro forma which would suit the vast number of interests of all industry and that we foist that on to industry and say, "This is the document that you ought to use and it will satisfy 90 per cent of all your enquiries"?

(*Mr Brinded*) I do not think it would need to be quite as prescriptive as that, but by having one document which was relatively standard, then it should be the exception that people ask for more. They maybe feel entitled to ask for more, but most businesses are engaged at both ends of the supply chain where you are both a supplier and a customer and I think that there is an opportunity to try to look to standardise on what is best practice in terms of giving a response that demonstrates compliance and potentially making that available, for example, through a structured website where you could in fact search for any company and find its compliance statement rather than thousands and millions of exchanges of correspondence between people asking for your compliance plan, but against a set of questions that I have set and then another set of questions which someone else has set. I think there are some areas for a bit of uniformity and proactivity that would save quite a lot of resources.

207. I would like to come back yet again because I quite like the solution, but I do not think it is at all practical, quite frankly. Who would you suggest for a start would be fit to put up this standard pro forma? Who would be the agents involved in doing that? Then you talked about 3,000 suppliers in your particular industry. Now, I do not know how many businesses there are in UK plc that would be affected by this, but how would we disseminate that effectively? I do not think you can do it. I recognise the implications for industry over this, but I do not think there is an easy solution to it which would sweep all of that away.

(*Mr Brinded*) I certainly do not think it would sweep it all away and I was not trying to suggest in one bound that there is an easy solution because I think we all recognise that this is a tricky one. But I would like to believe that in this area of everyone seeking reassurance from everyone else, there is some room for appropriate bodies to look for some area of standardisation to avoid the resource use that would otherwise prevail. It is certainly something that we are investigating to see if it can be done and, as I say, it would not preclude the fact that in a number of cases you really will need detailed face-to-face reassurance with critical suppliers, and we will still do that, but again people can look to co-operate within industry to do that as, as we have already alluded to, we are doing with the electricity companies and the critical utilities, so I think there is an opportunity there.

Dr Kumar

208. You mentioned in answer to earlier questions the skills shortages that the UK were facing. Are you facing the same problems with the Shell Group worldwide, as such, and, if you are, how are you dealing with them?

(*Mr Brinded*) I think again our focus is on trying to leverage the learning that we have as effectively as possible, so through the promulgation of the sort of books that I have referred to, the best practice workshops, to make sure that the approaches are relatively standardised and we get the best use of our people. There is one aspect which we have also tried across the Shell worldwide network again to avoid every Shell company approaching the same vendors, so that somebody who makes control equipment and sells it to 25 Shell companies worldwide will only get approached once. There are around 800 critical vendors that we have identified which we have decided to co-ordinate again so that their demonstration of year 2000 compliance is done once for Shell and then we consider ourselves satisfied.

Chairman

209. You have given us a cost, Mr Brinded, in the UK of £30-40 million. What do you think the cost might be worldwide for Shell?

(*Mr Brinded*) It would be speculation in the sense that we run it through every local operating company.

210. Ballpark?

(*Mr Brinded*) Ballpark, £200/300 million, of that order, I would estimate.

Dr Kumar

211. Are you encountering similar sorts of skills shortages? That is the question I want to ask. Are you facing the same sort of problems or is it different elsewhere in the world?

(*Mr Brinded*) It is not a question, Dr Kumar, I can readily answer, to be quite honest with you. My focus is on the operation in the UK. I can certainly investigate that and give you a written response.

Chairman: Thank you very much. That would be helpful.

Mr Jones

212. A number of witnesses have come before us and told us that there are other issues which IT departments, particularly, are having to deal with at the moment besides the year 2000 problem. Do those other demands, such as preparation for the single

[**Mr Jones** *Cont*]
currency, telephone code changes, things like that, have an impact on the progress which can be made on the year 2000 and how are you dealing with that?

(*Mr Brinded*) They have some impact, but not dramatic, particularly because of, as I have already touched on, the fact that we were perhaps fortunately replacing our main financial packages in, for example, the upstream and the chemicals companies with SAP and that, therefore, gives us both a year 2000-compliant solution and a solution that is well geared in terms of the euro. Also the aspect which is causing us most financial impact and most concern, and I come back here to the embedded intelligence issue, is not one that is related to those changes, so our biggest challenge and, as I suggested at the start, perhaps the one which still has not got the profile that it needs to have is the one of embedded software and the aspects to which you allude do not really impact on that.

213. How far on do you estimate Shell is in comparison with other countries, particularly the United States, and what about some of the other oil-producing countries, such as Iraq? I worked there ten years ago and I can remember meeting an oil engineer who told me that he was horrified by some of the installations where valves were fully open, rusted in place, and I just wonder what kind of infrastructure they particularly have in now and whether countries in less well advanced parts of the world perhaps are not quite as well suited to sorting out the year 2000 as you are.

(*Mr Brinded*) We believe that we are sufficiently well placed but that is not to say that we are not going to have a single problem. I think it would be simply wrong to suggest that. I am sure there will be issues we do not address, but I think we are well placed in relation to the United States, for example. I do not know that we have done an exact benchmark but we believe that if we are going with our current plans, we are planning for 100 per cent completion of our programme by the end of this year. We will probably achieve 95 per cent plus but we will still have plenty of time to sort it out. Turning to other countries, from the Shell group point of view—and we operate in 110 countries around the world—where our companies are operating we are in perhaps not the shape we are in in Shell UK but only a few months behind. So we are relatively confident that the situation has the focus worldwide. You alluded to other countries. Where I suppose there is, of course, one alleviating fact is that the more high-tech your installations, in a way the more this can be an issue, particularly the embedded intelligence. So if I think of our operation—and I spent, before coming here, five years in the Middle East in Oman—the beam-pump operation in parts of it would not be subject to the same challenge. However, there are also some high-tech installations in the oil and gas plants there which are extremely advanced, and I have no doubt they are tackling it in the same way as we are tackling it.

Chairman: Thank you very much indeed, Mr Brinded. We have just about come to the end and I would like to thank you for your very frank answers, and your colleagues Mr Jacobs and Mr Thomson, too. It has been an extraordinarily good session for us. It is the last of our witness sessions on this particular inquiry. Now we get down to writing the report. If you would just indulge me for a moment before you go, you gave me a nice symmetrical number, 9/9/99. Can I give you a symmetrical number that you might like to write down: 00111100. That is 11 minutes past midnight on 1 January in the year 2000. If you could project yourself to 11 minutes past midnight in the year 2000, do you think all the street lights will be flickering on and off or will have gone out? Do you think aircraft will be circling round Heathrow not able to land? Do you think pensions and salaries will not be paid or will be paid twice or be paid to 3-year-old children? Do you think clocking-in machines in factories and industry will fail to work and you will not be able to get into work or out of it? Do you think burglar alarms will be ringing all over the country? Do you think traffic lights will be working like they did in *The Italian Job* or do you think life will be normal?

Dr Gibson

214. Where will you be?

(*Mr Brinded*) I probably will not be in an aircraft, No. 1, because I suspect they will not have many passengers, so they may choose for commercial reasons not to be flying then. I think there is now a mood and a pace and a momentum to address the issue. I think there is an enormously long way to go and we do not have a lot of time, but I believe the will is there and that the plans can be laid and the actions can be taken in time. So my prediction is, my projection would be, that we will pretty well have got it okay. We will have spent a lot of money and there will be people watching with bated breath, and some people exhausted from the remedial actions they have been taking right up to the last minute, but I do not really see a Doomsday scenario myself. I think we can tackle it.

Chairman: On that note, we will finish this inquiry and we thank all three of you very much indeed for your assistance.

Supplementary Memorandum submitted by Shell UK Limited

I refer to our oral evidence session during the above inquiry and am writing to provide the Committee with the answer to the two outstanding questions to which we promised to reply. I have also provided some supplementary evidence to questions by Mr Turner.

Question 182

Ms Claire Curtis-Thomas MP: "What is the total asset value of the new investment—of your IT portfolio?"

It is difficult to assess with complete accuracy the total investment of Shell's IT asset portfolio in the UK because we make capital acquisitions which get written off or become obsolete over an average period of around four years. We also make use of IT infrastructure which is actually owned by Shell Services International, the organisation which provides Information Technology and Business Services for all the Royal Dutch/Shell Group companies around the world. However, we estimate a total of around GBP 115 million for Shell UK's IT asset base.

Question 211

Dr Ashok Kumar MP: "Are you encountering similar sorts of skills shortages? That is the question I want to ask. Are you facing the same sort of problems or is it different elsewhere in the world?"

As you might expect there are different facets to this question. Computing has increased in such importance to the way a business is currently run that the staffing problems which companies are facing have been brought about by market demand—in part it is about suitably trained staff but also about matching their salary expectations.

Shell Services International is currently running a recruitment campaign for high quality specialists in a large number of disciplines. They are seeking consultants, senior systems development staff (eg for data warehousing, analysts, programmers), client/server systems engineers, telecommunications engineers, database administrators and desktop support staff, all of whom are currently difficult to find. As well as experienced staff, for some of the jobs they are welcoming applications from recent graduates or final year undergraduates from any discipline, as well as experienced IT staff who wish to re-train in a different IT discipline.

Most of these are required for our operations in the UK and The Netherlands, although Shell companies in the Far East are also having to recruit in Europe to meet their own IT staffing demands.

In the UK, with respect to embedded systems, there has been a marked increase in the rates for contract staff—approximately 30 per cent over the last six to eight months, with the added problem of the duration of their contracts, which are sometimes now very short, one to three months long.

As Mr Jacobs mentioned in his oral evidence there is also the question of finding people with particular skills, for example computer languages which are no longer in use, as well as finding IT people who have a knowledge of the particular business sector. Skills shortages also leads to a high level of movement in employment by skilled staff, often leaving holes in key teams.

Supplementary information to Questions 153 and 154

Mr Desmond Turner MP asked about the ability to supply fuel in case there was panic buying.

Shell, along with all other oil refining companies within the UK, is required under EC legislation to hold at all times 75 days of stocks equivalent to the volume of sales in the previous year. This is termed a Compulsory Stocking Obligation and is intended to provide security of supply in the event of any situation that would prevent the normal supply of oil feedstocks (crude) and products to the UK.

In respect of petrol supplies our normal planning process anticipates forthcoming customer requirements for both retail and commercial customers. If we were to see demand rising during the months preceding end 1999 then we would endeavour to manufacture more fuel or possibly import more supplies if this were feasible.

However we should stress that we see Shell's primary effort going into ensuring that our Year 2000 programme is carred out in a diligent and systematic manner to reduce potential problems to a manageable level and, in the process, reassuring our customers that we are doing everything we can to ensure the continuity of supply. We see it as essential to maintain our customers' confidence and allay their fears over this important issue.

I trust this will provide you with sufficient further background for the Committee's report but please let us know if you need any additional information.

13 February 1998

WEDNESDAY 4 FEBRUARY 1998

Members present:

Dr Michael Clark, in the Chair

Mr David Atkinson
Mr Nigel Beard
Dr Ian Gibson
Lynne Jones
Dr Ashok Kumar
Dr Desmond Turner
Dr Alan W Williams

Memorandum submitted by IBM (UK) Ltd

1. INTRODUCTION

IBM is the world's leading IT (Information Technology) services company and has millions of customers in over 160 countries. We have been working with industry associations around the world and with customers to raise public, governmental and business awareness of this problem and to find ways to address the issue.

2. EVIDENCE

The six issues to which the Committee has invited IBM to respond are set out below.

(i) *the nature, magnitude and implications of an inability to manage the date change in personal and mainframe computers, embedded systems and software, especially where such computers are performing safety critical operations*

It could be a significant challenge for any individual or organisation using computers. Not only must they ensure that all their own hardware and software products, and all their own bespoke applications can cope with the date change, they must also ensure that their systems are not contaminated by two-digit dates from computers linked to their own by public or private network. Logic chips embedded in process control systems such as manufacturing plants and power stations and in devices such as switching systems in the telecommunications industry could also be affected.

If the date change is not handled correctly by the computer system, any computer calculation that involves a date eg a credit card transaction or a mortgage calculation could lead to incorrect results.

Any industrial economy is highly complex in its interdependencies and therefore it is possible that one failure in one system could have consequences in many other systems eg up and down the supply chain in the distribution industry.

(ii) *the effectiveness of action which has already been taken to avert problems in Government, large corporations and small businesses*

The actions taken by large companies have been well documented by research companies such as GartnerGroup and IDC. From our own customers we would observe that most large companies have begun to take action, but that many of these are in either assessment or planning stages. The two subsequent stages, making the changes and testing are expected to take significantly more resource, both technical and management. In particular the testing stage is expected to take about 50 per cent of the overall effort and we recommend to customers that they plan to have all the changes complete by the end of 1998 so that they can have the whole of 1999 for testing. Some large firms are choosing to replace older systems with Year 2000 ready systems, where possible.

From our experience of working with our smaller customers, we find that they are less aware and less likely to have initiated action. In round figures, we believe from the response to our proactive telephone campaign that 50 per cent of small firms are unprepared. Many smaller firms buy IBM products through agents so one important action on behalf of these customers, is that IBM ensure that all companies who sell software and hardware along with IBM products affirm that these complementary products are Year 2000 ready. We have already brought the Year 2000 issue to our partners attention and are now planning to advise these companies that in the absence of such an affirmation, joint marketing activities will be stopped.

We believe that Government has a particularly significant problem because they rely on a much larger proportion of bespoke applications than do commercial organisations. The option to replace may not be viable in the case of bespoke applications, now that we have only two years to go to the deadline. Government therefore has no choice but to find the resources to fix its applications. We are concerned that Departments may in their initial assessments, totalling £370 million, have underestimated the cost of fixing the problem.

(iii) *the role of Government in raising awareness of the potential problems and in seeking solutions, and the respective roles Taskforce 2000 and the recently launched Action 2000*

Government has a role, alongside industry and professional associations and the media in raising awareness of the problem, particularly among small firms. IBM worked with Taskforce 2000 in its awareness-raising activities and we believe that a shift in emphasis to advice and support is timely and important. We hope therefore to work with the Action 2000 team as we do with parallel government initiatives in other countries.

(iv) *the extent to which new systems and software are "millennium compliant"*

The current models, versions and releases of IBM hardware and system software are Year 2000 ready today. In addition, more than 1,900 applications packages are Year 2000 ready. For current information on the Year 2000 readiness of all IBM products, customers are encouraged to consult the IBM Internet website: http://www.ibm.com/year2000, their IBM sales representative or the freephone IBM Year 2000 Technical Support Centre.

It is possible that some Year 2000 ready IBM hardware may be running non-IBM software that is not Year 2000 ready and we encourage customers to contact the suppliers of non-IBM products to find information about their readiness.

(v) *the development of contingency plans in the event of system and program failures*

As the deadline looms closer, IBM is placing additional emphasis on the importance of contingency planning by their customers. IBM offers a business recovery service to customers which is designed to provide protection against many forms of system failure. Although, it should be noted that business recovery services do not amount to a total solution to the problem, however, we are currently investigating whether this service can provide value to customers in the context of failures arising from an inability to deal with the Year 2000 date change.

(vi) *the legal implications of disputes over liability for compliance costs and system and program failures*

IBM's position is that liability is defined under contract law.

3. Answers to Supplementary Questions

In addition to the issues raised by the Committee above, the invitation also sought IBM's response to four specific questions as set out below.

1. *What estimate has your organisation made of the seriousness of the millennium bug problem?*

We see no reason to dispute the GarterGroup estimates of $400 to 600 billion world-wide for a cost figure. The Year 2000 challenge is a broad challenge affecting not only the IT industry but virtually all users of information technology and electronics. Serious efforts must be undertaken immediately to ensure a smooth transition into the next millennium to prevent potential economic and social disruption.

2. *To what extent are the products now supplied by your company "millennium compliant"? To what extent do you consider you are responsible for ensuring products supplied in the past are made millennium compliant?*

See (iv) and (vi) above.

3. *What steps have been taken, or will have been taken, within your organistaion to ensure that your own internal systems will not fail at the millennium? How confident are you that you will not encounter problems at the millennium?*

IBM shares many of the characteristics of our large global customers. To address our own internal Year 2000 project, we have established a Year 2000 Project Office jointly managed by our Chief Information Officer (CIO) and a Global Services project manager. We are using IBM's Year 2000 services methodology and are currently in the implementation phase of executing that methodology. We are planning to complete our project by the end of 1998, leaving a full year for testing.

4. *Do you think that the Government has done enough to raise awareness of the millennium bug and to help and identify and apply solutions? What more should be done?*

UK Government has been quicker to take action than some of its counterparts in other European countries and we expect the Action 2000 programme to move forward rapidly on raising awareness amongst the most vulnerable companies, the small firms, and translating awareness into action through the provision of advice and guidance.

Shareholders and consumers should also be asking companies what they are doing to address the issue.

24 November 1997

Examination of Witnesses

MR CHRIS MOORE, Manager, Year 2000 Initiative, and MISS CLAIRE BIRKS, Manager, Corporate Affairs, IBM (UK) Ltd, were examined.

Chairman

215. Good afternoon Mr Moore, good afternoon Miss Birks. Thank you for coming along and helping the Select Committee in its inquiry into the millennium bug. Mr Moore, would you introduce yourself by telling us what you do within your company and introduce Miss Birks as well. What we will do, unless you tell us otherwise, is direct questions to you. If you wish to field some to Miss Birks, that is fine and when we get dialogue going we will ask her directly.

(*Mr Moore*) Thank you, Mr Chairman. I am Chris Moore and I am a Regional Manager for the IBM global initiative for the year 2000 in Europe. I have responsibility for our activities in the United Kingdom, Netherlands and Ireland as they relate to our customer facing activities rather than our internal programme in preparation for the year 2000. My colleague Claire is Manager for Corporate Affairs for IBM (UK).

216. Thank you very much indeed. You submitted evidence to us in November and you told us in that evidence that your large customers were still assessing or planning what they should do about the year 2000 problem. Can you tell us now to what extent your larger customers have made progress and are they on target for achieving compliance by the end of this year, which I understand most companies want to do so they can test it out during the course of next year?

(*Mr Moore*) Certainly we have seen amongst our larger customers a much stronger move towards completing the assessment and planning and beginning the implementation activity than amongst than smaller customers. Most of our larger customers are implementing the changes to their systems and processes within their company. Many have reached the stage of testing elements of that and all have stated that they have projects to be prepared and that they hope to have completed the implementation of the changes by the end of this year to allow next year for testing prior to the year 2000.

217. So it has changed a lot since November when it was a rather pessimistic view?

(*Mr Moore*) We have certainly seen a change and part of the underlying reason for that change is that many organisations actually created their budgets for the year 2000 implementation work in 1998 whereas in 1997 they had not actually allocated the budgets to begin that work so we have seen an increase in the amount of work that has been done.

218. Shell have told us that quite a few of the millennium date problems will manifest themselves before the millennium date change over itself. Do you agree that is the situation? What sort of things could manifest themselves before New Year's Eve of 1999?

(*Mr Moore*) They certainly can manifest themselves before because we have already seen that. There have been some instances of credit cards not being processed correctly because they have an expiry date beyond the year 2000. Really the issue of the year 2000 is not the issue of the calendar event; it is the question of whether or not the computer system can process a date which is beyond December 31, 1999 and most organisations are involved in work which means they will be handling something that is date related beyond December 31, 1999 even now. It might be processing a payment stream that goes out beyond the year 2000 so it is processing any data with dates greater than December 31, 1999.

Chairman: My son-in-law was delighted when my daughter's credit card would not work any more! But I think she has got it put right. Mr Atkinson?

Mr Atkinson

219. You and your colleagues very kindly invited members of this Committee to a briefing dinner just before Christmas in which you told us about your telephone survey that you have referred to in your submission to us. My notes from the dinner meeting indicated this survey suggested that there is the same awareness today as a year ago, that there is no new action, that it is now too late to avoid problems and one can only now prioritise. My question is: is that situation still true today or have you detected any improvement in the extent to which small firms are now preparing for the year 2000 since you undertook your telephone campaign?

(*Mr Moore*) With respect, I do not think I said it is too late to take action.

220. My note, your very words, under the heading "Chris"

(*Mr Moore*) Thank you! Let me explain, we have in the United Kingdom as an example small businesses ranging from organisations of ten employees to 1,500 employees which are customers of ours. There are about 6,000 of those. We have either face to face or through a mechanism called tele-coverage contacted them and spoken to them to understand what level of preparedness they have, what level of awareness they have and whether they are implementing change. The latest review of those figures—and we have shared all this data by the way with Action 2000 and given them a complete breakdown of what our findings are—shows that about 30 or so per cent of those companies are telling us they have either prepared themselves or have plans in place to be ready. About 24 per cent are saying that they do not yet want to talk to us about the year 2000 and the remainder are at some stage in between those two positions, ie, the remainder have identified some things they are working on but perhaps they need to replace hardware or a piece of software but they do not necessarily have a full-blown project in place or a clear view of when that project will end.

221. If you suspect that about half of small firms are unprepared can you go a little further in describing to us what you mean by unprepared?

(*Mr Moore*) Yes. If you consider the ways in which the year 2000 issue can impact, it can impact on a computer system, and it can impact on the computer system of a supplier company, it can impact on the infrastructure that supports a business including uninterrupted power supplies, lifts, elevators, air-conditioning, all that kind of thing. So if you are preparing for the year 2000 you really need to have a project that ensures the computer systems have been checked, that your supply chain is not going to be affected, and that the basic infrastructure of your business is not going to be affected. We are seeing a number of companies that have projects that focus primarily on just the IT systems rather than all of the aspects of the year 2000 and we are seeing companies that perhaps have focused on one element of their IT system. Maybe they have a major system but perhaps have not yet focused on PCs or subsidiary systems scattered around various parts of the company. When we are saying that companies may not be preparing we are saying it is across the broad spectrum of everything they have to prepare for. Part of the activities we are involved in is advising our customers on what they need to do with regard to IBM products and IBM systems they may be working with but also broader aspects of the year 2000 problem.

222. Obviously small- and medium-sized firms are unlikely to have the technical skills in-house to take the actions necessary. They may find it costly—we all know it is growing—to buy in the expertise. Is it possible to develop a best practice which can rely on non-technical skills to respond to this problem to beat the bug without the assistance of experts?

(*Mr Moore*) I think there is a lot of scope to develop best practice advice and guidance.

223. There would be panic if they left it to the last minute?

(*Mr Moore*) The suppliers would have trouble reacting to that simultaneously. If the software is being written in-house the expertise and knowledge about that software resides with the people who wrote it. Whether or not an external supplier can come in and assist depends very much on exactly how that has been written and structured and what information can be made available. Certainly organisations like IBM and many others will go in and help a company with software that they have written themselves.

Dr Jones

224. The implication of what you have just said is suppliers are waiting for people to approach them before they respond to their queries. I would be worried if that is the case. What action is Action 2000 taking on this?

(*Mr Moore*) It is certainly not the case that suppliers are waiting. As I mentioned earlier, we have just finished contacting 6,000 small- and medium-sized businesses and that is a proactive activity to alert them to the fact that year 2000 is coming and what it means. It gives information about products they may have bought from us in the past and the services we offer now. We are not alone in doing this. We wrote to 750,000 customers world wide twice last year to advise them about this and we ran free seminars in every country, eight in the United Kingdom, to alert people to the fact that is happening and again to alert them to information about our product and the services we can provide. So we are absolutely not waiting for customers to come to us. We are doing everything we can to raise this issue. I am sorry, but you had a second part to that question.

225. What do you know that Action 2000 are doing on this idea of best practice?

(*Mr Moore*) Probably a little more than the public would know from the press, but from some discussions with members of Action 2000, I am aware that they have looked at how they can best promulgate best practice, how they can provide advice and guidance to small businesses and that they have a number of initiatives in hand to try and do that.

Dr Gibson

226. I wanted to turn to supply chains. I believe that some of your products are "bundled", a current phrase, with other products. What level of success have you had in ensuring that those products are millennium-compliant and compliant with yours when they are bundled together through an agent and they are distributed?

(*Mr Moore*) There are two parts to that. Every computer system is a collection of components that have usually multiple suppliers to build up the system. At one end of the scale, they are the very sophisticated, large systems that are built as part of a service contract from a supplier like IBM, and at the other end of the scale, they are the domestic PCs that home-users use that are also bundled. Do you want me to address the whole spectrum?

227. Is there a difference in the success rate with both and does the story come out the same? When your products are bundled with others, at either end of the scale, what happens?

(*Mr Moore*) I am not sure of the success rate. I am not really sure I understand the question. Our responsibility, where we are providing a system, is to understand the specification that the customer requires for that system, to identify the right components to build the system from and to work with the suppliers of those components to integrate them together.

228. So there will be non-IBM products there as well?

(*Mr Moore*) Yes.

229. Suppose they are not up to the standard you would expect in terms of the millennium problem? What do you do then? Do you break off relations with them or what?

(*Mr Moore*) We would identify to the customer, who often will have specified a particular component they would want us to use, an IBM software package or something like that, and we would notify to the customer and to the supplying organisation our concerns about that and work it out with them as to what the best thing to do is.

230. But would you go to the point of breaking off the relationship with them? Has that happened?

(*Mr Moore*) I think that is addressing another aspect of how we deal with our business partners where we are marketing systems with business partners.

Chairman

231. Can I just put a supplementary to Dr Gibson's question? If you have got product A which is yours and is millennium-compliant, and product B is bundled with it from somebody else which is not millennium-compliant, is the chain only as strong as its weakest link and if its weakest link is not compliant on product B, the whole thing is non-compliant, is it?

(*Mr Moore*) That can be the case, yes.

232. Therefore, there is not much point in buying something, half of which is IBM and is millennium-compliant if the thing bundled to it is non-compliant?

(*Mr Moore*) I could not agree more, but that is precisely what we do not do. From our business partners, we have worked with our business partners who typically are distributors and resellers of our equipment and they would bundle, for example, their applications software and PC hardware and sell it as what we would term a "solution" into the marketplace. We have worked with them to identify through them which of their software packages or solutions are year 2000-compliant and where they have identified that they are year 2000-compliant, we have helped with them build a database of all those solutions, so that everybody in the market knows what is compliant and we maintain our marketing relationship with them. Where they are unable to tell us that their software solutions are year 2000-ready and will, therefore, work with our year 2000-ready hardware and systems software, then we have ceased that marketing relationship.

233. Miss Birks, I think you were going to add something.

(*Miss Birks*) That was exactly it.

Dr Gibson

234. You describe it as a heavy-handed approach, would you?

(*Mr Moore*) We have actually not found it heavy-handed. We have found they are actually very eager to collaborate. It is in their interests, it is in everybody's interests to sell year 2000-ready systems, everybody's interest, so there is no reluctance to identify what is year 2000-ready and what is not and they understand why we want to have as our business partners people who are providing year 2000-ready solutions.

235. Let me quote you this: "...there is sufficient evidence from the research...that no one can be confident in any PC system being compliant which is currently on the market". How do you react to that? Is that nonsense or is it true?

(*Mr Moore*) No.

236. It is nonsense?

(*Mr Moore*) We have repeatedly stated which of our PCs are year 2000-ready and which are not and I think as a result of that particular statement, Dixons, who are one of our major resellers, took an advertisement with all of their suppliers to reconfirm that they were satisfied that we had provided them with year 2000-ready products to resell.

Mr Beard

237. When you are asked to amend equipment retrospectively for someone who has bought it previously, do you actually charge for it or is it part of your service?

(*Mr Moore*) To amend equipment?

238. Yes.

(*Mr Moore*) There are several aspects to that. It is common practice in the computer industry and the computer marketplace at large that suppliers create products and then they produce upgrades for those products or new versions or new releases, so every supplier is constantly asking its marketplace to

[**Mr Beard** *Cont*]
upgrade to the next release of software or the next version of software or a new model of the machine. That is normal marketing practice and accepted in the customer base and we charge for upgrades. We have been producing year 2000-ready versions of our product line for some time now as upgrades in that sequence of upgrading activity and yes, we charge for those.

239. And that is universal with every piece of equipment, every product you have sold and you would treat the millennium-compliant version of it as a new product and you will charge for it?
(*Mr Moore*) Well, we would actually turn it around the other way. We have had an ongoing programme of refreshing our product line and as part of that refreshment, we have created upgrades that are year 2000-ready.

Chairman

240. What is the earliest date that your equipment was sold that did not need refreshing as far as millennium compliance was concerned?
(*Mr Moore*) I actually could not answer that question.

241. Well, if I had bought something from you in 1996, would I expect to have to spend more money to have it upgraded for computer compliance?
(*Mr Moore*) If you take the examples of PCs, we have said that everything sold from the beginning of 1996 was year 2000-ready and amongst other products we have had year 2000-ready versions of those products available since the beginning of the 1990s/end of the 1980s in some instances and they have been on the market not sold as year 2000-ready, but they simply have the year 2000 capacity built into them.

242. If, by chance, I had bought something from you in 1997 and found that it was not millennium-compliant, would you put that right for me without charging?
(*Mr Moore*) If there is a chargeable upgrade that we would ask you to move into, we would charge you for the upgrade.

243. But if it is chargeable, by definition, you would charge me. That is not what I am asking. If I bought something in 1997 and I found that it was not millennium-compliant, would you admit that it should be and, therefore, put it right for me free of charge?
(*Mr Moore*) There are very few instances of that, but where it has occurred and there is a millennium-ready version available from IBM, we would ask the customer to upgrade to that version. We would almost certainly charge for that unless there were special circumstances and then we would discuss it with the customer.

Dr Gibson

244. How would your customer know though? If I have gone into a shop on a Saturday and bought something for my kids, how would I know?
(*Mr Moore*) Because we have gone through an exercise of contacting every customer that we can contact. We have literally searched our entire billing systems and identified every customer we have sold something to and gone through an exercise of informing those customers where we believe those products are not ready. There is also for any customer who may not have been contacted by us for whatever reason a facility on the Internet that they can now access and, with whatever product name or number they enter, it will tell the customer whether or not that product is year 2000-ready and, if not, what the replacement product is.

245. How many have replied to you roughly?
(*Mr Moore*) How many have searched the Internet?

246. Well, how many have come back to you and said, "You have done me"?
(*Mr Moore*) To the best of my knowledge at this time, none.

247. Really? Do you not find that amazing?
(*Mr Moore*) Well, as I said, it is common practice and accepted practice in the industry that customers move through a series of upgrades and migrations and we have been encouraging customers to do this for some years and we have been introducing year 2000-ready versions of products for some time, so actually many of our customers are already on year 2000-ready versions of products. Where they are not, we are now identifying to them that in some instances they may be on products that are two or three generations old.

Mr Beard

248. When you have contacted them, you have actually actively said, "You will need to amend the version you have got by buying this version"?
(*Mr Moore*) Correct.

249. And how many people have taken that option up? How many have ignored the advice, as far as you are concerned?
(*Mr Moore*) I cannot tell you that yet. We are still going back over all of the people who have—

Chairman

250. Come on, give us ball-park figures otherwise we are wasting our time.
(*Mr Moore*) I am sorry, Chairman, I cannot even give a ball-park figure. We finished contacting all of our large account customers at the end of last year. We finished the tele-coverage survey I mentioned of 6,000 small businesses in the United Kingdom at the end of last year. We are now in the process of re-visiting those to say this is the migration plan we recommend, these are the replacements we recommend. In many cases there are other alternatives to IBM products they could select so customers, quite naturally, are actually making a

[**Chairman** *Cont*]
judgement now as to whether or not they want to upgrade to an IBM product or buy another product. I am afraid I simply do not have the figures.

Dr Jones

251. Do you supply components to other companies who assemble them into different products that have different brand names at all?
(*Mr Moore*) We do supply some components, yes.

252. How do these customers fit into all this? They will see they have got a machine that has got IBM parts in it.
(*Mr Moore*) The division of IBM responsible for the manufacture and sale of those component parts works with the companies who supply those component parts to identify whether or not there are any issues of those component parts and then it is the supplier of the finished system that knows their customer base.

253. Are they doing the same as you, do you know?
(*Mr Moore*) I could not actually tell you. We would advise them to do the same and we give them advice on what the components are.

Dr Gibson

254. There is a whole mysterious area of thousands, or millions perhaps, who are going to be shocked, stunned on the dreadful night. Is that a possibility? Is that what you are saying to us?
(*Mr Moore*) That is not what I am saying to you because even with our machines like PCs we buy components from other suppliers, we do not manufacturer every component that goes into an IBM PC. We will work with them to understand whether or not the components are ready. Ultimately, we are the manufacturer of that system so we through our distribution outlets, our own sales force and so on will disseminate information about our products that we have built out of other people's components. Put us in the other position where we are a component supplier, we advise that manufacturer of any concerns that we may have. They ultimately have to do a similar thing to what we are doing and contact their customer base and provide information about the finished system.

Mr Beard

255. You have spoken as though all the corrections that are required can be done through updating the software versions, if I have understood you correctly.
(*Mr Moore*) Then I have misled you. The conversation has focused very much on supplied products up until now and a very very significant proportion of the challenge or problem is the amount of what we would call bespoke code application software, programming language software that has been written by the end user of the product we provide to them and that presents a very very significant challenge to process that code find instances of data occurrence that might cause a problem, make the change and then test that.

256. Taking that aspect of it, how are you dealing with customers from the past?
(*Mr Moore*) We have not written that code. The customers have written that code and most of our large customers have very significant information technology divisions with hundreds, possibly thousands, of employers including programmers who would have written all those software applications they use in house. What we offer to those customers who might have bought systems or hardware is services to assist them with processing their application code to identify the problems and change it. We have 22 conversion centres worldwide where we can do conversion on Cobol, PL1.

257. Those are programmes they have written?
(*Mr Moore*) Right.

258. Are there no instances of systems with programmes which you have been responsible for which need attention?
(*Mr Moore*) Yes.

259. What do you do with those cases?
(*Mr Moore*) Where that is the case we have to go back to the customer and with them review the original specification which may have been modified since we did that. That is often the case and we may or may not have done the modifications. We work with the customer to identify what needs to be done to make that year 2000 ready and agree with the customer the commercial basis for whatever work we do.

260. So there are three categories you are referring to now. One is where the customers can do it by way of a normal commercial transaction by upgrading the system or software. Another is where the code has been written by them and you will help them. And the third is where the code has been written by you and you discuss it with them. Who pays in the latter case?
(*Mr Moore*) That depends entirely on the form of contract between us and what modifications may have been made subsequently. Each one is almost a unique situation.

261. Do you have any instances of embedded systems in industrial control equipment that you have to deal with?
(*Mr Moore*) No. Typically the components which people are concerned about with embedded systems would be process control and plant control equipment. Those are not pieces of equipment that IBM manufactures.

262. That does not apply to you?
(*Mr Moore*) We do try and help customers understand how to run a project to assess and evaluate the risk from embedded technology. Again we provide services in that form. We do not have the manufacturing or technical expertise with the actual embedded technology as such.

263. The two aspects where you are helping people change their own code or going back to provide the information to amend it takes certain skills. Are you experiencing any skill shortages in those activities?
(*Mr Moore*) There has been a lot of discussion in the press about skills shortages particularly in the area of programming languages. Certainly we are seeing a growing shortage for some languages. We can still find people but they are harder to find and are more expensive. Perhaps something that is not commented on very much is the need for very

[**Mr Beard** *Cont*]
experienced project managers and program managers as we would call them for what are fairly complex projects. Also system architects. If you are making changes to hardware, to systems software, to applications software, to your network, ultimately this is a change to the architecture of the total computer system and that requires high level expertise to advise on where to make changes and how to make them. There is probably a greater shortage of experienced project managers and systems architects than programmers right now, and clearly there is going to be a growing shortage.

264. And how soon is that going to be felt?
(*Mr Moore*) I honestly do not know how to predict that. There are a number of other elements that come into play here. IBM is a member of EURIM (?) and perhaps, Claire, you would like to comment on that.
(*Miss Birks*) IBM is a member of EURIM and we have worked with them to produce a recommendation to governments that they review forward programmes of legislation so that they can avoid introducing legislation which will demand extensive IT changes at the same time as organisations, including government organisations, are having to modify their systems to cope with year 2000 and the euro because we are concerned that with the layering of extra demands for IT change on to the basic year 2000 and euro changes is a high risk thing to do.

265. What is IBM doing about that?
(*Miss Birks*) We are lobbying through industry associations like EURIM.

Mr Atkinson

266. May I ask on this point whether you regard the Data Protection Bill that has just come before the other place as being one such piece of legislation which one could have avoided to reduce the problems?
(*Miss Birks*) The Data Protection Bill will provide some very valuable protection to the individual but, yes, I think at some stage—

267. It has IT consequences you could do without at this time?
(*Miss Birks*) Yes.

Mr Beard

268. Could I go back to the question of skills shortages. You said it has not happened yet but in certain categories like project leaders it may well do. I did not quite catch your answer when I asked how soon is that shortage likely to arise.
(*Mr Moore*) The reason why I hesitate to answer is because we still do not have a clear view of what is happening in the market place. Perhaps I can explain. The larger customers who have a very significant proportion of application software they have written in house they have two options. One is to use internal resources to make changes to that software and prepare it for the year 2000 or they can bring in extra resources to do that and use their own internal resources on other projects. The extent to which they come to the market or use their own internal resources to do it will affect greatly the level of skills in the market place. It depends whether or not customers displace their current planned IT activity resources towards the year 2000 or not. What we are beginning to see is a great displacement of internal projects that are being put to one side in order to focus on year 2000 which means they are using internal resource to do that and not coming to the market for that resource. However, if that changes then it will accelerate the rate at which the shortage will build. We cannot predict that at this time.

269. What about the sort of activity you are responsible for where you are amending your own equipment or helping people—are you experiencing a shortage of people to do that?
(*Mr Moore*) No. To date, we have been able to find the resources we need to provide the services to our customers.

270. Do you anticipate the resources to become short in the near future?
(*Mr Moore*) Yes.

271. When?
(*Mr Moore*) We do not know. We build a forecast that looks two or three months out which we have some confidence in and then we can look twelve months out, so we try and do a resource requirement plan three, twelve and 18 months out. We look at that plan and revise it every three months and, honestly, all I can tell you right now is that in the short term we can see the resources we need, but every time you refresh it, you get greater confidence about what the outer months are going to look like. We do not know yet when the shortage will come.

272. Lastly, in a company like yours where you do not manufacture everything and you outsource a lot of things, are you having difficulty getting compliance from your outsourcing organisations?
(*Mr Moore*) No, the answer to that is no, we have no difficulty. Well, we have reviewed with all of our suppliers the services and goods they provide to us and review with them whether or not there is a year 2000 problem. We have had no reluctance from any supplier in telling us what the status of their products and services is and we have not identified at this stage any major risk areas.

273. What about those you received in the past, things that have been outsourced ten or 15 year ago which are now part of your liability?
(*Mr Moore*) What are you referring to there—where we might have bought it—

274. Where you bought something in from, say, Taiwan and it has an IBM label on it, but the liability to make it compliant is with the original supplier.
(*Mr Moore*) That would be part of our assessment of whether a product that IBM has sold is year 2000-ready or not, so we would have reviewed all of that.

275. So you deem it as your own?
(*Mr Moore*) Yes.

Dr Jones

276. Just on this question of skills: in your assessment do you take into account some of the companies that may have actually been millennium-ready, and we were talking to Shell last week, and

[**Dr Jones** *Cont*]
that there may be resources released from those sources because they will be ready in advance of the year 2000?

(*Mr Moore*) Certainly there is the opportunity, if a company has completed their project, for those resources to become available in the market. I think there is a bigger opportunity which is where a company or an organisation has been through the entire process, including testing, and there is a lot of information there that can be shared to help improve best practice with lessons learned and that is the biggest opportunity. Certainly skill resources can be recycled. There are, to my knowledge, not that many organisations that have completed it and completed testing and are now releasing resources back into the marketplace.

277. Will they need some incentive to do that? Do you think that companies will see that they have something to offer and will voluntarily do this, or will there need to be some incentive for them to do so?

(*Mr Moore*) Where they are highly skilled and knowledgeable members of the internal organisation, the internal resources of a company, then I would imagine that they would be quite reluctant to release those into the marketplace. Where they are contract staff who have been brought in, they would be probably delighted to release them because they are very expensive and will not want to keep them on for longer.

278. Does IBM have limitations on the age of systems for which you are willing to offer year 2000 assistance? I am thinking particularly of software in some systems where the hardware is not in existence any more and they are running off software emulators, and that probably means more to you than to me? Is there any issue there?

(*Mr Moore*) We will help any customer where we can understand how to help them either by replacing hardware or systems software or helping them to rewrite applications software. If we cannot see how it can work, we will advise them so and in those cases it may mean the wholesale replacement of the entire system.

279. The Civil Aviation Authority and the National Air Traffic Control Service have told us that they are content that their year 2000 project is making satisfactory progress. What was the basis then of IBM's recently-reported claims that the National Air Traffic Control Service would not be ready for the year 2000?

(*Mr Moore*) There was no basis in the sense that we never made that claim. What we have done and we have done this with all of our customers, as I explained earlier, is to contact our customers to tell them what products they have from IBM that we would regard as not ready for the year 2000. The case of the Civil Aviation Authority is a very unique situation. They use an old IBM product called a 43-81 which is a mainframe. The model of 43-81 they have we have declared as not ready for the year 2000 because it cannot run the year 2000-ready versions of our systems software. Now, the vast majority of all the users of 43-81 use IBM systems software, so we have said that they need to replace the hardware in order to move to year 2000-ready versions of our systems software. In the case of the Civil Aviation Authority, they did not use our systems software; they used their own bespoke systems software and what we have done is provided them with technical information so that they can evaluate whether or not their systems software running on our 43-81 actually is year 2000-ready and that is what they have commented on in their response which says that with their project which has been running since 1996, they are confident they can provide year 2000-ready systems.

280. You have no reason to believe that their system is not adequate?

(*Mr Moore*) We are not directly involved in that sense. We provided them with the technical information so that they could make that evaluation.

Chairman

281. Did you see the press reports that quoted your company as saying that the National Air Traffic Control Service would not be ready for the year 2000?

(*Mr Moore*) I did see those, but we did not say that. We said—

282. You saw the reports. Therefore, did you take steps to correct those reports in the press which were a slur on the National Air Traffic Control Service and which were the basis of agitation to the population at large?

(*Mr Moore*) We discussed it with the National Air Traffic Control Service and following that discussion, there was the letter published by the Director of IT Services in *The Daily Telegraph* and that was the agreed reaction.

Dr Kumar

283. My question is regarding domestic users. To what extent will domestic PC users be exposed to the year 2000 problems and what sort of support are IBM providing to PC users when they turn to you for help?

(*Miss Birks*) As Chris said earlier, even the humble home PC is a system with five or six components which may well come from more than one supplier and relatively few home PCs in the UK incorporate IBM hardware or software products. We trade through channels and through business partners and we have been working with those business partners to make sure that the proper support is provided. Domestic users are entitled to call a Freefone number for help or to access the information that is available on the Internet to find out what products are ready or not ready.

Dr Williams

284. Can I ask you, are you involved with the Government's Action 2000?

(*Mr Moore*) Yes.

(*Miss Birks*) Yes. We were involved with Task Force 2000 and we are supporting Action 2000. Indeed we have seconded one of our year 2000 experts to Action 2000 for four days a week to provide them with additional industry expertise on the topic.

[**Dr Williams** *Cont*]

285. What is your assessment of the Government's strategy in relation to this? Is it enough and is it well directed?

(*Miss Birks*) I think that Action 2000 has yet to draw up full plans of all the actions it wants to take, but indeed in having a blend of awareness and advice and guidance activity, I am sure that that is the right way to encourage businesses and other organisations to address the problem.

286. I think it has been quite heavily criticised for not doing enough and understating the problem. Is that your assessment, that it should be doing much more?

(*Miss Birks*) I think this is one of those areas where many organisations are responsible for taking action. IBM and the other suppliers in the IT industry have all been taking action with their customers so any additional action that Action 2000 can take is a welcome reinforcement of that activity that is already going on.

287. Mr Moore, do you have European responsibility?

(*Mr Moore*) I have for a region of Europe.

288. How do we compare with Germany, France and other members of the European Community?

(*Mr Moore*) In many senses very well. As an example I was contacted this week by an organisation in Germany which were interested to know how Action 2000 and Task Force 2000 had come into being because they would like to encourage the German government to do the same thing. In many instances you will find that the UK is ahead of other countries in Europe in developing support programmes for small businesses and developing awareness. It differs in scale and I am not sure that there is a right or wrong there. In the United Kingdom there is such a lot of supplier activity, very strong trade associations (the CSSA and the FEI) which are all very active. In many countries the suppliers are not so active and the trade associations are not so active so there is more emphasis on government sponsored organisation. Certainly compared to other European countries the UK has taken action.

Dr Turner

289. IBM have told us that the Government has under-estimated the cost of the programme to government departments. What is your basis for saying the Government has under-estimated the cost and have you put a figure on the cost to government departments? Have you got an estimate?

(*Miss Birks*) Relatively few government organisations are IBM customers in the UK, so we have no information beyond that which has been published about the way that the current estimates have been developed, but in making that comment that we are concerned that they may be too low we are extrapolating from our experience with our private sector customers which shows that the estimates they make early in their year 2000 programmes about the likely cost of fixing the problem are often significant underestimates it turns out later on in the programme. That is the basis for our comment.

290. Do you think that we need more collaboration, more dialogue between public authorities both here and in the European Union about the cumulative and timing impacts on IT systems of proposed legislative and regulatory actions?

(*Miss Birks*) I am sure that would be helpful and the European Commission has already been taking some action to gather government and industry organisations together to work out what plan it can best have to help.

Chairman

291. Thank you very much indeed. We have finished very close to time. We have another session to follow. May I thank you, Mr Moore, for taking the burden of the day and also you, Miss Birks, for coming along and supporting so well and thank you for your help to this Committee in the inquiry it is undertaking with a degree of urgency bearing in mind that we have 22 months left or thereabouts.

(*Mr Moore*) Thank you for the opportunity.

Memorandum submitted by the Federation of Small Businesses

INTRODUCTION

1.1 The Federation of Small Businesses was founded in 1974 and is the major organisation in the UK and Europe representing the interests of the self-employed and those who direct small businesses in the UK. It is non-profit making and non party-political. A membership in excess of 100,000 benefits from the nation-wide lobbying force committed to furthering the interests of the self-employed and owners and directors of small businesses.

SUMMARY

2.1 The FSB believes that there is a problem which needs addressing but co-ordination between Government, Public Authorities and large and small businesses should lead to a satisfactory resolution.

ISSUES IDENTIFIED AS TERMS OF REFERENCE

3.1 *Issues*

"The nature, magnitude and implications of an inability to manage the date change in personal and mainframe computers, embedded systems and software, especially where such computers are performing safety critical operations".

3.2 *FSB Comment*

Risk managers need to approach the Year 2000 issue like any other program, but with a new degree of vigilance. Most importantly, they must recognise that it is not just a technical data conversion problem that the Chief Information Officer and IT department have undertaken. It is here now. Year 2000 compliance is a company wide issue that impacts every level of a company's management, internal and external operations, contractual relationships, insurance programs, risk financing plans, employee benefits, safety and loss control programs, vendor agreements, suppliers, software and computer systems.

Evidence is slowly emerging that certain embedded chips will cause shut down of plants such as The BP refinery, Grangemouth. These chips will need replacing, but not all will be easy to replace due to their location and disruption to processes whilst the work is being carried out.

3.3 *Issue*

"The effectiveness of action which has already been taken to avert problems in Government, large corporations and small businesses".

3.4 *FSB Comment*

There have been many initiatives, for example:

- Taskforce 2000 Seminars.
- British Computer Society Year 2000 documents Volume 1 and 2.
- Computer Software Services Association Millennium Directories and advice.
- CCTA Internet Year 2000 advice sites and "Tackling the Year 2000" Guides.

The above have made an excellent contribution but very few people know of the work carried out because the profile has been too low. There is a great need to make the above work known to all employees within all organisations and to encourage regular staff meetings within those organisations to keep staff updated and involved in the solutions.

3.5 *Issue*

"The role of Government in raising awareness of the potential problems and in seeking solutions and the respective roles of Taskforce 2000 and the recently launched Action 2000".

3.6 *FSB Comment*

The role of Government is vital. Just as when any nation is faced with a major threat, every citizen looks up to the government for direction and support. As the government is caught up in carrying out its own procedure for compliance, it would be useful to make those efforts to obtain information available to avoid massive duplication of such activities going on just now around the UK. There will be suppliers with which all organisations have much in common, and if replies to the government on the subject of compliance were made available on a database, this would save a great deal of time. Downloadable letters to MDs of software companies assuring of compliance, for example, could be downloaded and placed on file in relation to a company carrying out its inventory and needing such evidence from a particular supplier.

3.7 *Issue*

"The extent to which new systems and software are "millennium compliant".

3.8 *FSB Comment*

There is sufficient evidence from the research of such investigators such as Karl Fielder and Chris Anderson that no one can be confident in any PC system being compliant which is currently available for purchase. Not only are there likely to be hardware problems despite manufacturers compliance statements, but operating systems and complexities within integrated software packages need attention.

3.9 *Issue*

"The development of contingency plans in the event of system and program failures".

3.10 *FSB Comment*

This is a vital role of risk management and a must for all businesses.

3.11 *Issue*

"The legal implications of disputes over liability for compliance costs and system and program failures".

3.12 *FSB Comment*

As insurance companies will not provide professional indemnity for those offering Y2K solutions, the risk is further placed on the shoulders of management. Codes of Practice must be set up to protect the customer from malpractice as far as is possible. The legal implications have been explored in the "Tackling the Year 2000" guides.

The following list of potential defendants is possible:

- Officers and directors of companies who allegedly fail to respond in a timely fashion to Y2K;
- Manufacturers and sellers of computer software and hardware;
- Managers and manufacturers of traffic control or schedule control systems;
- Owners or managers of property which utilise date-dependent electronic devices;
- Business entities dealing with electronic data exchange or commerce;
- Financial institutions that fail due to the Year 2K problem.

Many types of litigation could result from Year 2000 issues:

- Litigation file by clients whose finances have been damaged.
- Litigation filed by shareholders of companies whose software does not safely make the year 2000 transition.
- Litigation associated with any deaths or injuries derived from the year 2000 problem.
- Class-action litigation filed by various affected customers of computers or software packages.
- Litigation filed by companies who utilised outsource vendors, contractors, consultants, or commercial Year 2000 tools but where Year 2000 problems slipped through and caused damage.
- Litigation against hardware manufacturers such as computer companies and defence contractors if the Year 2000 problem resides in hardware or embedded microcode as well as software.

Many of these areas will involve defending the suits by insurers, costing billions of dollars in defence and damages.

ANSWERS TO SPECIFIC QUESTIONS

4.1 *Question*

What is your estimate of the seriousness of the millennium bug problem?

4.2 *FSB Answer*

It is very difficult to assess the seriousness of the Millennium bug problem due to the fact that, although it is appreciated that it will affect everybody from all walks of life, it is not appreciated to what extent. The large corporations and Government have undertaken projects to identify the inventory and assess the risk or have applied remediation costs to this. The one "grey" area, however, is the embedded systems of which there are millions used in everyday life, both at the office and at home. A statement has been made that 4 billion chips were produced in 1996 of which only 5 per cent are Year 2000 compliant. This must be of large concern to anybody involved in the Millennium bug.

Another statement comes from KLM who have suggested that they will not be flying on 1 January 2000. The costs implied by so doing perhaps suggests the seriousness that should be put on this.

4.3 *Question*

To what extent do you think that UK businesses and other organisations have done, or will have done, enough to avert any potential problems?

4.4 *FSB Answer*

UK Businesses have addressed the problem from a very constructive viewpoint and they have, in general, done more than their European counterparts. Most of the businesses have followed a proven methodology and quite a few have subscribed to newsgroups on the Internet to assist them. As indicated, above the majority of large organisations and Government have or are about to, complete the inventory and risk assessment phases and will be embarking on the remediation work over the next couple of years. A number of large organisations have stated that they will be Year 2000 compliant by the end of 1998 which, although it may be a tall order, will assist in testing year end procedures before it is too late. One of the major concerns is the complacency of the SMEs and the distinct lack of any corrective action. This is due mainly to the lack of awareness amongst them AND the so-called "silver bullet" which is supposedly coming in 1999. The majority of SMEs do not appreciate how it is going to affect their business and a lot more work requires to be done in this area. The Federation of Small Businesses (FSB) is addressing this very issue and is proposing a plan of action to disseminate the awareness and to provide tools and advice to their members.

Other similar projects are being undertaken by different organisations, some involving the banks and large organisations who are prepared to work in partnership with the "feed system" (the SMEs) to ensure that the impact is minimised. The "heavy hand" approach by large organisations to say that they will not purchase from SMEs who are not able to provide assurance of Year 2000 compliance will happen very shortly and this should be avoided.

4.5 *Question*

Do you think that the Government has done enough to raise awareness of the problems associated with the date change or to encourage action to avert problems? If not, what more should be done?

4.6 FSB Answer

The Government has been active in raising awareness by initiatives such as Action 2000 and Taskforce 2000. However, a lot more needs to be done through working closely with organisations such as the Federation of Small Businesses. The whole of the UK plc could be affected if the risk is not minimised to controlled levels and this can only be done, in the time left, through representative bodies. This is one project whose date is finite and a degree of urgency is now required even if it be only that there is a plan in place for remediation work and budget for equipment to be replaced or upgraded in 1999.

Further action which could be taken

— A clear statement from the Government delaying the introduction of the single currency allowing organisations to concentrate all their efforts on the millennium bug.

— Legislation to ensure that all goods sold with embedded chips or time/date stamps are Year 2000 compliant. Additionally, all software packages, be they upgrades or new should carry the Year 2000 compliant stamp.

— Close liaison with action groups and representative bodies to monitor progress and to report on issues raised.

— Tax concessions for Year 2000 remediation work.

— Governmental departments' assurance of the Year 2000 compliance and statement from the Chancellor informing the public of the actions taken by Government to minimise the risk.

4.7 Question:

What, if any, are the major constraints militating against progress being made towards identifying and applying solutions to prevent computer system and software failures at the millennium?

4.8 FSB Answer

One of the major constraints is the shortage of human resources available for remediation work. This is perceived to be worse than it is, and could be resolved by better organisation of the human resources available. There have been comments regarding the Welfare to Work programme, suggesting that many of these people could be trained as programmers overnight! This is somewhat naive. However, there are many resources throughout Britain, which could be used effectively from home by use of the Internet and the communication links which are already in existence.

5 December 1997

Examination of Witnesses

MR BARRY HICKLEY, Managing Director, Electronic Printing, and member of FSB Business Development Committee, and MR STEWART HALLIDAY, Managing Director, Xexco Group, and member of FSB Business Development Committee, the Federation of Small Businesses, were examined.

Chairman

292. Good afternoon, Mr Halliday and Mr Hickley. Thank you to both of you for coming along this afternoon and helping the Science and Technology Select Committee on this very important and time-limited problem. We have got to try and make a recommendation to Parliament on this matter as soon as possible bearing in mind the whole thing will be over one way or another by 1st January 2000. Mr Halliday, are you going to take the questions primarily and then ask Mr Hickley to help you? To whom do we direct them?

(*Mr Hickley*) To myself.

293. Mr Hickley, would you therefore care to introduce yourself and then we will ask Mr Halliday to introduce himself too.

(*Mr Hickley*) Certainly. My name is Barry Hickley and I have spent 30 years in the computer industry. I originate from IBM where I spent 24 years. I have been running my own consultancy business for seven years involved in the IT business. We also do publishing for various organisations around the world. My colleague, Mr Halliday, has with myself been working on the Federation of Small Business Committee looking into the year 2000 problem and how it affects the members.

294. Thank you very much indeed. People think of some very big problems that might arise on New Year's Eve/New Year's Day 1999/2000. One that is always talked about is air traffic control, probably one of the biggest ones and one of the most frightening. If someone was to say to you that the small businesses you represent will only have small problems, all the big problems are going to be for big business, how would you react?

(*Mr Hickley*) I believe the small business community will affect many of those large corporations. We are suppliers to those businesses. We provide services and also products to those large companies, so if we are unable to comply and meet the requirements of year 2000 I believe we could seriously impact those large businesses. We in our own right will or could have problems. It could cause us to stop trading as small organisations depending on the nature of our businesses.

295. You would not necessarily disagree with my statement but what you would say is we are all part of the big business problem because we are all one continuum and you are part of that continuum?

(*Mr Hickley*) Yes, that is correct.

296. To what extent are the small- and medium-sized enterprises that you represent critically dependent on IT systems and to what extent are they just a luxury that they like to have?

(*Mr Hickley*) Increasingly, we are seeing members of our association, and we have more than 100,000 in the United Kingdom now, moving towards using computers. I believe that not quite 50 per cent of us are already using computers in one form or another so it has become a very integral part of our day to day

[**Chairman** *Cont*]
business and essential for many of us because in order to keep our companies small we have to use a lot of technology particularly PCs and software.

297. Here we are now in February of 1998 and if you asked the chief executives of many of the small companies that you represent to put things in priority order where would they put millennium compliance of their IT systems compared with late payments, the French lorry drivers' strike, getting VAT returns back or making sure their tax returns are in before 1st April?

(*Mr Hickley*) Naturally enough many small businesses have one or two or very small numbers of employees and the person running the day-to-day business is also responsible for setting up and looking into these future problems, year 2000 being one of those. So the day-to-day business will obviously take the majority of their time, running the business and keeping it going, but most certainly there will be a lot of interest in the year 2000. I believe they are beginning to become quite nervous as to what the impact will be to them. They are giving up more time to find out. This is usually done through associations like our own and other bodies rather than going out and doing the work themselves.

298. Do you think there is a role for large companies? I have met one or two privately in the last week or so and they have talked about computer compliance, and some of them have said that they would be prepared to assist small- and medium-sized companies particularly if they were their customers or their suppliers. They are not suggesting doing it for profit, they are suggesting doing it because they are large and other people are small but also because they are part of the supply chain. Do you think there is a role for large companies to act as grandfathers to smaller ones?

(*Mr Hickley*) Yes, most certainly and it is one of the things that we, as a group, are forging, this alliance with the large corporations. We have already done a lot of work in this area and we propose to do even more. We have been working with the DTI and with the SME sessions that they have been organising. We have had forums and round tables looking at this and trying to find ways in which we can work closer together and most certainly, yes, we would like to think that we can turn to them.

Mr Atkinson

299. Clearly commercial organisations that exist to support smaller businesses as clients, like banks, the accountancy profession and so forth, they themselves have a vested interest in ensuring that their clients are millennium-compliant. What advice have they been giving to their clients to ensure that both remain in business and what evidence are your members experiencing that banks are now taking, or are shortly to take, a strong line against their clients who are showing that they do not know and do not care about the need to be millennium-compliant?

(*Mr Hickley*) Well, I feel that the banks, the financial institutions and the venture capital companies have a vested interest naturally in these small companies doing well. They have invested money and are probably loaning money to those companies still today. I believe that most of the small organisations feel responsible to the banks, although they may feel slightly bent out of shape if the bank threatens them and wants to take back the money and I think that would be the wrong approach. I do believe, though, that our Federation members, for example, are being encouraged to develop plans that they can show to their banks and the like showing that they are actively involved in doing something which will enable them to become year 2000-compliant. It is no good for them to sit back and just wait until the last moment and say, "We did not think we should do anything. It should happen automatically for us", so we feel strongly that we must work together with companies, financial institutions and banks. We have also seen packages from some of the banks where they have actually given information, a help desk and various other advice to help our members.

300. Surely it is reasonable for a bank, which has as a client with a large overdraft and no intention of responding to the growing warnings that they need to be aware of, to take action to warn the client that his overdraft is at risk?

(*Mr Hickley*) Most certainly, yes, I agree with that, but I do not think that the responsible small business person should just sit back, but should actively get involved and that is our recommendation as an association, that we should be, if you like, giving our banks a warm feeling that we are doing all we can to get on board with this problem.

301. As you know, Action 2000 is emphasising that help and information is available through the local Business Link network.

(*Mr Hickley*) Yes.

302. Do you think that this is an appropriate channel to provide support for businesses and in the early days of Action 2000 what has been the experience of your members who have approached local Business Links to obtain the information and have they been provided with it?

(*Mr Hickley*) I believe that quite a few of our members have actually been involved. Based on some of the comments that have come back, it is a little too late in getting on board for them and maybe the information is inadequate for them actually to make good use of it at this point in time, but I believe that anybody that is promoting the problem, any campaign that is identifying the depth of the problem and what people can do to correct some of these issues to help them become compliant I think has got to be good, and it is a situation that when we talk to our members, some have been involved and think quite highly and others have just not bothered at this stage to get involved with these Business Links and others.

303. You just used the term "it may be too late". Could that be true for a lot of your members?

(*Mr Hickley*) I do not think so, not for the small organisations, no. We have tended to play a bit of a waiting game to see what the large corporations are doing. We are very much a feeder to those organisations. Therefore, we have sat in the back seat to hear what they are doing to see how we can approach this and find out exactly what it is we need in order to complement their activities in this area.

Dr Gibson

304. Following on with the actions of Action 2000 to stimulate your members, there must always be some lost souls around everywhere—there always are in any organisation.

(*Mr Hickley*) Yes.

305. Do you think that those occur in certain sectors and, therefore, tailoring Action 2000 to those sectors is required?

(*Mr Hickley*) I would like to ask Mr Halliday to answer this because he has been involved in this.

(*Mr Halliday*) What we are looking at doing is actually sectorising out the members, the over 100,000 members of the Federation, to try and isolate where the problems are and where more work needs to be done to ensure that our members are year 2000-compliant.

306. What have you found so far in that case?

(*Mr Halliday*) We are still at the early stages.

307. Everybody tells us that they are at the early stages and then other people tell us that it is getting too late and I am getting lost somewhere in the midstream here. Tell me what you really feel please. Is it too late for some of them?

(*Mr Halliday*) Certainly as small businesses we have had to take the lead from the large organisations and perhaps the large organisations have started too late and we have had to follow on from that and that is where I say that it is really too late.

308. But in your dream world with all the resources in the world at your finger tips, what would you like to see happen now? Let us just say that it maybe is too late for some of them, the lost souls, gone. What would you want to do? What kind of help do you think your organisation can give which will stimulate them so that they will not turn around in the year 2000 and say, "You never told us"? What do you see as the responsibilities you have in your organisation? What frustrates you most about it?

(*Mr Halliday*) Certainly the frustration level comes from the lack of awareness that is out there within the small business community.

309. Well, awaken their awareness, and how do you do that then?

(*Mr Halliday*) Through the media, through publications, through magazines, through TV campaigns as an example, to ensure that it is getting to those rightful people.

310. So you think they are educable about it then, do you, that they will listen if they see it in the media?

(*Mr Halliday*) I think so, yes, because if they are concerned about their business, then they will certainly listen, yes.

311. So they do not think it is like beef on the bone and scaring everybody to death? You must get that amongst some of them.

(*Mr Halliday*) There has indeed been a lot of scaremongering, yes. One needs to try and take out that scaremongering and get down to the real issue and I think Action 2000 is a very good name and I think we need to act now. I think the talking is over and we have got to get on and do it.

312. What you are saying is that you really think that Action 2000 has got it right, that they are doing a good job and that is the way forward?

(*Mr Halliday*) It is getting there, yes, and there is certainly a lot more that can be done, particularly in the small business area.

313. I am sure we all talk to small businesses in relation to some other matters, so we will stimulate them of course too. I must say, I have gone to chambers of commerce in Norwich and they are not interested because they do not believe it is going to happen and there are lots of small businesses in Norfolk. I do not know if they are members of your organisation or they are outwith it, but what will you do about organisations like that and small businesses? Do you just leave them alone or do you recruit them on the basis of this knowledge that you have?

(*Mr Halliday*) There certainly comes a point in time where you are knocking your head against a brick wall and eventually you stop, but as long as those businesses are aware that they could go under if they do not act, then that is all we can really do.

Mr Atkinson

314. Action 2000 has just launched its millennium bug logo. Is not the use of the word "bug" rather misleading. It implies it is some sort of virus. Surely the words "millennium time bomb" would have been much more appropriate to use as a logo for the Action 2000 campaign?

(*Mr Halliday*) I would agree, yes.

Dr Turner: You have got the delivery system there as well!

Dr Williams

315. Of the IT products on the market in Britain today, how many of those, if any, are still not millennium compliant?

(*Mr Hickley*) We are told by many of the large computer producers and producers of other equipment using in-built computer technology that some of the products they are shipping today are compliant and we have done some estimates and we believe some of the products (although it is difficult to put an actual number on it) are in fact still non-compliant from organisations we would have assumed would be able to guarantee that all their products would be compliant at this stage in the game. What we found is that some of the large companies, like IBM for example, have very good quality checks on their technology and before they use the product it goes through this quality check and anything that is typically not compliant in the way of the PC board and so on would be pushed to one side and sold off to other manufacturers for them to use. Those products are coming back into the market place under other brand names as non-compliant. The mainstream products we are given to understand by IBM are compliant today and have been for some time now.

316. Is it not irresponsible on the part of those traders that are marketing anything in 1998 which has a built-in two-year lifespan?

[**Dr Williams** *Cont*]

(*Mr Hickley*) Very much so. One of the things the Federation has been doing is to lobby to get some law or certainly some direction from government to help us stop this because there are many people out there still buying computers today which they are going to have major problems with.

317. Should there not be some kind of regulation to actually make it illegal?

(*Mr Hickley*) It would be nice if there were some kind of legislation.

Dr Jones

318. Does the legislation not exist? It could be considered that it is not suitable for the purpose intended?

(*Mr Hickley*) There is always a problem with this. It is very difficult to date and make and monitor. A lot of product comes from overseas. Other nations, it would seem, do not have the same worries we have. A lot of offshore products are coming in non-compliant. It is a major concern. Now how do you monitor this? How do you check this? Just by putting a label on is probably inadequate. You need some kind of standard set out and some way of getting back to those manufacturers that contravene those standards. It really is something that has to be monitored by the industry, I believe, more than anything.

319. You said that IBM have good quality control checks, whatever. What about the other major companies? Is that the case for larger companies?

(*Mr Hickley*) We know that Compaq and people like Apple and most of the other manufacturers also have checks. Many of those companies do not make the mother board and components for their PCs, they buy them from companies like IBM and other board manufacturers. Unless they have a quality check that says this is compliant or non-compliant then this gives them a problem.

320. Is there something to be said for some of these companies carrying a label 2000 compliant-assured and for that compliance to carry a warranty so if there is a problem post 2000 you could go back?

(*Mr Hickley*) That is right, this is the sort of thing we would like, but how do you ensure that those products do meet that standard. Someone at some point in time is going to have to sample check those PCs. You can do that today with software. You can actually verify those machines are compliant but who would be responsible for doing that is a very difficult one to administer.

Mr Atkinson: May I come in here—

Chairman: Mr Atkinson is going to tell us about his Bill!

Mr Atkinson

321. No. You are suggesting the need for some kind of independent certification of what has already been done to ensure they are millennium compliant?

(*Mr Hickley*) Yes indeed. For example, we have seen the Xerox Corporation take a very responsible view. What they are doing is publishing to all of their re-sellers and internally in their company and to customers a list of all the products and against that there will be "These products are compliant" "These products are non-compliant but they can be upgraded." "This is what is involved in the upgrade" and also a list of products that can never be upgraded which you will need to replace. That is the kind of approach we would like to see from manufacturers in the computer industry.

Dr Jones

322. There are two approaches. One is buyer beware and you should just search out those products where a reputable company has said that they are compliant and you have some come back, or there is the idea that somebody should be responsible for testing and ensuring that the assurance is genuine. Which approach do you favour?

(*Mr Hickley*) I think you have got both because I think you can believe the large organisations if they say they are compliant and if a machine gets through that is not I believe they will replace the product or fix the problem, but there are companies out there which we know are likely to try and bypass that circuit and not necessarily give you good quality. The people buying all those millions of chips produced last year where the majority have been non-compliant, where are they in the pipeline? They are going to come through into the product today and this year and next year and it is conceivable that those companies will go out of business by the year 2000 and start up somewhere else as a different company. It is a very easy thing for them to do and there is no come back.

323. Would it be fair to say that so far your organisation's approach to this whole issue has been exhortation to your members and that therefore your assurance earlier that you thought the majority would be millennium-prepared is really not based on any real evidence as certain later replies indicate?

(*Mr Hickley*) That is correct. It is very much left up to the individual business person themselves to say whether they are compliant or not or if they are interested in doing anything but you have also got to divide the businesses or the industries into sectors. Some are very dependent on computing, others have very little computing. Those companies that just do their accounts occasionally or use them to write letters are not going to be seriously impacted by the problem as it stands today. If they change their direction or change their business in some way then it is conceivable they will find themselves exposed and have a serious problem around that timeframe.

324. So we have got your organisation and other small business organisations exhorting their members to be aware of the issue?

(*Mr Hickley*) Yes.

325. We have got bigger companies developing relationships with their supply chains and we have got Action 2000?

(*Mr Hickley*) Yes.

326. We have got all these things going on at once. Everybody is doing their own thing. Could there not be more efficiency if somehow or other this is drawn together? Perhaps you would say Action 2000 should be doing that. Are you confident that they are?

[**Dr Jones** *Cont*]

(*Mr Hickley*) I think you are correct in what you say but you have to approach a small business differently to some of the medium-sized businesses and you have to approach them differently again to the large corporations. The large corporations using mainframes and mid-range systems have to make all their changes in software whereas the PC user makes changes in hardware and software because they need the applications to support that. So they do approach it in a different way. Their businesses are run differently. The large organisations do have people they can actually assign to that. The small business users, as I mentioned earlier, have got to get involved in running the day-to-day business. Some of them are just one person or a very small number of people. It is very difficult for them to take time out from their day-to-day business and do the risk analysis that is required to see how serious the problem is. That is where the FSB and some of the other associations are coming on board to try and draft risk analysis procedures to help these people, these organisations and along with the major suppliers, the vendors, they have given us their assurance that they will assist us and provide helplines. We ourselves are planning a helpline for our members where they can dial in on an 0800 number and get pointed in the right direction. We are making other proposals and suggestions similar to the holding of forums, education sessions, etcetera to try and educate these people, but it is very difficult to force them to do this.

327. Are you satisfied, therefore, that mechanisms to actually bring together best practice and disseminate them are evolving satisfactorily or do you think there needs to be some impetus to develop this?

(*Mr Hickley*) Yes, I believe it is evolving very slowly and we need to somehow drive this forward as a business community. Certainly it is happening at the high end user community but it is very slow to take off in the small business environment and even in the medium-sized businesses.

328. Who has the responsibility for driving that process forward, would you say?

(*Mr Hickley*) I think we all have responsibility, the associations that support these members, possibly the government.

329. But it seems that everybody has been waiting for things to happen.

(*Mr Hickley*) I think we have had to. We have had to take guidance because we would all be going off in different directions trying to resolve problems that we did not fully understand at this stage and it is not until these large organisations have got together and spent millions of pounds or dollars in investigating this and understanding the depth of the problem that we are beginning to get a spin-off effect from this to understand that whilst we are much smaller and it is only a small part of what they found as a problem which will affect us, it is still serious enough for us to take it step by step and try and fix it as we go.

Dr Kumar

330. In your submission you have suggested that the single currency should be delayed in order for you or your organisation to concentrate on the millennium bug to which a lot of effort is being given.

(*Mr Hickley*) Yes.

331. To what extent is the euro really detracting from dealing with the problems of the millennium bug?

(*Mr Hickley*) This has actually been covered by a different committee within the Federation. We have not as a year 2000 group taken that and linked the two together. What we have found is that it is producing an effect to our members that they are having to do both things in parallel and they really do not have the manpower to do this.

332. Would you be able to assist us—in writing, if you like—by making some sort of assessment of the difficulties you are facing regarding that?

(*Mr Hickley*) Yes, certainly. We would be able to feed that back to you.[1]

Chairman: We look forward to receiving it in a timely way, preferably before January 2000!

Mr Beard

333. In your submission you have called for tax concessions to help companies meet the costs of remedial work. What kind of scheme do you have in mind?

(*Mr Hickley*) I believe that certain sectors of the small business community are very dependent on their computing systems. Now, some of those companies have tended to use relatively old machines and they have been upgrading wherever they can, but they are still talking quite low-level and early technology, even though they use these machines on a daily basis. Some of those organisations will find it very difficult to finance replacement machinery which in many cases they certainly will need to. For these members, we need a scheme, perhaps a tax benefit scheme, whereby they could upgrade their businesses to later generation products. Also the software needs to be in line because if you start changing the hardware, you then have to bring up the software to match, and that is quite a high expense for a small organisation. Possibly loan schemes, low-interest loan schemes from the DTI or other organisations would be useful for certain industry sectors, having assumed that they would be able to justify a true need to upgrade their equipment for the year 2000.

334. How would you differentiate between those who needed help and those who did not?

(*Mr Hickley*) In many organisations you use a computer just to type letters and it is that kind of organisation, I feel, that would probably get by, certainly for a period of time. Other organisations that depend on financial systems, on database systems, applications like that, they will find it very difficult and in fact it could actually cause them serious problems when the year 2000 comes along if

[1] *See* supplementary memorandum from the Federation of Small Businesses.

[**Mr Beard** *Cont*]
they are not fully compliant, so those are the kind of organisations, I think, that depend on the computer for their business.

Dr Williams

335. Obviously asking for any kind of tax relief is a very difficult process. Coming from your sector of industry, information technology is probably the most profitable sector in the last five or ten years and a lot of people out there will be making small fortunes during the next year to 18 months tackling the millennium bug. Surely if there is money to come from anywhere, it is probably from the IT industry itself that that money should come, not depriving the Health Service and other priorities that the Government would have.
(*Mr Hickley*) It would be nice if they shared their profits. It is very difficult, is it not?

336. For a company like IBM, a long-established company which has been very profitable for decades, or MicroSoft and all those sort of whiz-kid companies, surely if there is a major bill to be paid, it should be paid by those people and not by Mr Taxpayer?
(*Mr Hickley*) It would be good if we could convince them that they should do this, yes. I find that very difficult, though, to get a company like an IBM or a MicroSoft, remembering that they would have to do the same in every country and not just in one country—

Dr Jones

337. You could have a windfall levy on their profits.
(*Mr Hickley*) Well, yes, you could.
Chairman: Just going back to Dr Williams' point about Mr Taxpayer—
Lynne Jones: And Mrs!

Chairman

338. Yes, and Mrs Taxpayer, there is no suggestion, is there, that the taxpayer will be paying to help small companies become millennium-compliant, apart from Action 2000 with rather a limited budget of £2 million or £3 million which of course is taxpayers' money, but there is no suggestion of any other help from the taxpayer, is there?
(*Mr Hickley*) I believe it has been under discussion within the Federation, yes.

339. Within the Federation, but not within the Government?
(*Mr Hickley*) No, not to my knowledge.

Mr Atkinson

340. Has or will the Federation be submitting to the Chancellor to take into account, in compiling his March Budget, a specific tax allowance to write off the expense of compliance to concentrate the minds of companies and to encourage them to take this action and will not the Chancellor say, as has been suggested, that this would be a subsidy when in fact it should be in the business of self-interest and other people should not be paying for that?
(*Mr Hickley*) Yes, this has actually been done.

341. Including your submission?
(*Mr Hickley*) Yes.

Dr Turner

342. Since you cannot obviously assume that any suggestions that you make for government action will be implemented, what advice do you have now for government and for your own members?
(*Mr Hickley*) Well, for our own members we must naturally take this very seriously. We must also try to work with the large corporations that we indeed in turn supply service and product to and a number of those companies have come forward and said, "We will also, wherever possible, try to assist you financially. For example, we will delay taking payment on product to become compliant if it is genuinely for the year 2000", so a number of companies have actually offered this to us and we want to try and promote more of this kind of interaction between the large organisations and ourselves. From a government standpoint, I guess we are looking for as much support as we can get, making sure that our members do not get ripped off by manufacturers that are selling products that are so-called compliant and are not compliant. It is very difficult for us to police that situation and it is true also for software companies that really have us over a barrel, that we really must make sure that they do not just make the new product compliant, but it must be downward compatible, so that we can take our databases from last year and bring them up to the standard and four-digit-year configuration that we are seeing in the current packages and that is something that a number of companies are beginning to address, but it is not in place. We are told that Sage, for example, has year 2000 compliance on its software, but we are not sure if it gives us the wherewithal to take existing databases of information and convert them into the new format, so we could be left with two databases, so we would need to bridge databases. It would be good if we could apply some pressure on these organisations to make them give us a good deal.

Chairman

343. Well, thank you very much indeed, both Mr Hickley and Mr Halliday. Just before you both go, can I just put one question to each one of you. Mr Hickley, may I ask you how millennium-compliant is Electronic Printing and, if it is not, what are you doing about it, and to Mr Halliday, how millennium-compliant is the Xexco Group and, if it is not, what are you doing about it?
(*Mr Hickley*) The electronic printing industry, I mentioned Xerox, for example, which is really one of the leaders along with IBM and Hewlett Packard, they are all working on year 2000 compliancy programmes. They have all offered us a helpline where we can go back and discuss problems with

[**Chairman** *Cont*]
them for our members and they will also provide us with information for our home page which we are developing as well for the year 2000.

344. So the organisation you are closely attached to you are content is moving forward well and should be ready six months ahead of the due date?
(*Mr Hickley*) I believe from the electronic printing standpoint that most of the organisations we have currently spoken to will be compliant, although not all of their products will be compliant; we may have to replace some of those as I have mentioned.

345. Mr Halliday, is Xexco Group?
(*Mr Halliday*) We have obviously addressed the issue in a big way because we are consultants in the year 2000 field anyway so if we have not got our own house in order—

346. We all know that cobblers are always the poorest shod!
(*Mr Halliday*) Yes, indeed. We have looked at our systems and some of our hardware is non-compliant. We have actually put into place a budget to replace that equipment in 1999. The majority of the software, our accounting software is non-year 2000 compliant. We are going to have to change that and that will be at the end of the tax year that we change that over. As Mr Hickley was saying, we have got a problem with the data as it stands at the moment and we have to change that as well.

Mr Atkinson

347. It is a close-run thing?
(*Mr Halliday*) Yes, we have still got some work to do but we have got a plan in place and we have got a budget in place.

Chairman

348. Your own personal problems, your company's problems actually focus your mind on the SBs problem because you are living in the real world yourself and it helps you with your members?
(*Mr Hickley*) Indeed.
Chairman: On that note may I thank you both very much indeed for coming along. We wish you well in all that you have to do. Thank you for helping us because we are part of the team that you are part of and that is the general team of propagating the problem and hopefully indicating and pointing towards solutions. We are all in the same boat and I hope we all row it ashore. Thank you.

Supplementary Memorandum Submitted by the Federation of Small Businesses

PREAMBLE

In its written evidence to the Science and Technology Committee, the FSB suggested that the single currency should be delayed in order for small businesses to concentrate on the Year 2000 issue.

The Committee was interested as to how the Year 2000 issue, combined with the preparations small businesses are having to make for the introduction of the single currency, is impacting upon such firms.

FSB RESPONSE

There is now evidence to suggest that despite general opposition amongst small business, in principle, to the single currency, many small firms are realistic enough to accept that they must make practical decisions regarding the introduction of the single currency.

Below are the practical implications small businesses will have to consider, in many cases regardless of whether the UK is in the first wave of entrants or not. Big business can adapt relatively easily to these implications; for small firms the impact on management time and costs on business are far greater.

1. Basic changes to cashtills will have to be paid for so that they can cope with two different currencies.
2. Slot machines—many of which were designed years ago—will have to be updated. Vending machines account for 10 per cent of all coin transactions in the UK and the majority exist on small retailers' premises.
3. Workers will have to be trained in handling the new currency.
4. Goods will have to be priced in two different currencies with four different prices (the regular price, the sale price, and a calculation in sterling and euro).
5. Many small business owners are already facing pressure from their large business customers to invoice in euro rather than sterling.

Small businesses that face adapting to cope with these practicalities will find it an added burden with the costs of Millennium compliance.

Those businesses that face pressure from big business customers to invoice in euro rather than sterling will have to modify computer software (and maybe hardware) to prepare euro invoices and for separate euro and sterling accounts. It remains unclear whether such software will be both 'euro compliant' and Year 2000 compliant. If not, then small businesses will face two increases in costs. If they are, then obviously these businesses will be able to kill two birds with one stone.

Conclusion

Because of the administrative, financial and management costs of complying with the Year 2000 issue and simultaneously preparing for the introduction of the single currency, the FSB proposes that the introduction of the euro in the UK be put on hold. Many businesses (ie those based in tourist areas and transport hubs) will have to adapt for the introduction of the euro, whether the UK joins in the first wave or not.

Some businesses may benefit from being forced by large customers to invoice in euro because they will have to modify their software anyway to cope with the Year 2000 problem, *but only* if the software/hardware is compliant for both. Assurances and guarantees should be made by manufacturers and suppliers that goods sold are able to invoice in euro and Year 2000 compliant if they are marketed as such.

March 1998

WEDNESDAY 11 FEBRUARY 1998

Members present:

Dr Michael Clark, in the Chair

Mr David Atkinson
Mr Nigel Beard
Mrs Claire Curtis-Thomas
Dr Ian Gibson
Dr Lynne Jones
Mr Nigel Jones
Mrs Caroline Spelman
Dr Alan W Williams

Memorandum submitted by the NHS Confederation

1. Introduction

The NHS Confederation is the representative organisation for over 500 trusts and 100 health authorities and boards nationwide. We welcome the opportunity to give evidence to the inquiry.

2. Main Points

- Accountability for achieving Year 2000 implementation lies with trust and health authority Chief Executives and with primary care contractors. The centre has confined its role to advice and guidance.
- Year 2000 is mainly a problem of management. The technical changes tend to be fairly simple but organising, implementing and paying for them is difficult. Equally important is the task of ensuring business continuity throughout the service, which has one of the most extensive and complex supply chains in the country. Furthermore, in extreme, the NHS may need to function under increasing pressure in an environment of failing infrastructure.
- Budgetary estimates for Year 2000 implementation are difficult to obtain. There are some figures for computer systems, none for medical devices and little for estates or contingency planning.
- The policy on funding is that Year 2000 costs must be met from existing resources. This is impacting in two ways: the pace of compliance activity and the level of compliance likely to be achieved when solutions are costed.
- The NHS target dates of detailed plans and budgetary estimates by March 1998 and compliance by December 1998 will be very difficult to meet for many parts of the NHS. The question of extra funding needs to be reconsidered.
- There is clear evidence that Year 2000 work is the subject of much local reinvention. There needs to be stronger central support in key areas, particularly pressure on suppliers, overall contingency plans and testing on common systems by witness testing. Regional Offices need to provide consistent support.
- The Year 2000 problem needs to be seen in the context of the enormous change agenda arising from the white papers on health and major service reviews, such as mergers. There will clearly be strains on the service in meeting these challenges.
- The overall assessment is that there is a major problem but it is feasible to address the vast majority of issues.

3. What Action is Being Taken Across NHS Trusts and Health Authorities to Avoid Problems Caused by Lack of Computer Compliance in 2000?

3.1 There is a NHS Year 2000 Steering Group. The IMG (Information Management Group) is taking the lead within the NHS on Year 2000 issues. There are also many bodies within the Service working on particular issues. These are co-ordinated by the NHS Executive's Year 2000 Steering Group. Chaired by Ron Kerr, Director of North Thames Region, it consists of representatives from MDA, NHS Estates, NHS Supplies, FHS, NBA, PHLS, DPB, PPA, IMG, the eight English Regions, and the Primary Care Division of the Department of Health. The main function of the Group is to ensure that all aspects of Year 2000 in the NHS are covered, and to avoid unnecessary duplication of effort.

3.2 The NHS Executive has issued guidance for health authorities and GPs advising them that the Year 2000 problem should be the first priority after the provision of clinical services.

3.3 In early October the NHS EL(97)59, the Year 2000 Problem, was sent out to all Chief Executives. Its key points are:

- Chief Executives are accountable for all problems in their organisations resulting from Year 2000.
- Chief Executives of health authorities are also responsible for co-ordinating Year 2000 work in primary care.
- Regional Offices will monitor the progress of Year 2000 projects.
- Each organisation must send outline project plans to its Regional Head of Information by 30 November 1997.
- Detailed plans must be submitted by 31 March 1998.
- No new money will be made available.

3.4 The Government will require that any trust or health authority which has not got its systems ready and fully tested should notify the department by 31 December 1998.

3.5 Health Service Guidelines, HSG(97)40, were sent out with the EL. These give further guidance on the steps NHS organisations should take concerning Year 2000. They emphasise the need for contingency planning, and the need for Year 2000 managers to have easy access to the World Wide Web.

3.6 Most of the Regional Offices now have a team dedicated to Year 2000. These are intended to provide support at local level and to co-ordinate discussions with suppliers. The NHS Executive set up a Year 2000 "Helpline" in July 1996. The helpline has received over 400 calls. The current rate of calls is in excess of 90 per month.

3.7 The Year 2000 team has been recently expanded and is to report on the progress of two Year 2000 projects in the NHS. Two natural communities, based around East Riding and the Isle of Wight Health Authorities, will be monitored closely over the coming months. Northern General Hospital NHS Trust in Sheffield will also be providing information on its project. The NHS Executive's Year 2000 team will publish advice, findings and conclusions from these sites and other selected sites on a regular basis.

3.8 NHS organisations are having trouble getting information from suppliers. Local organisations are having to commit local resources to try to establish compliance. This is creating a huge duplication of effort which is made more wasteful as individual organisations have little leverage on manufacturers to insist on compliance statements being issued within reasonable timescales. NHS organisations are keen that the government applies further pressure to ensure that system suppliers are Year 2000 compliant. Introducing an accreditation system for multi-national suppliers to ensure compliance should also be considered.

3.9 The NHS Executive's Year 2000 team has recognised that organisations would be helped by receiving detailed information about the top 30 or so NHS IT suppliers. They have approached these suppliers and intend to publish detailed information soon. This information will be added to the Executive's Year 2000 supplier database which is currently being completed. They are also asking for information from Year 2000 workers in the NHS to put on the website. A similar exercise is being done with the top GP systems suppliers.

3.10 There is a central database of healthcare IT products that tells whether they are Year 2000 conformant on the Web Searchable Site. It is sponsored by a number of organisations, including the Computing Services and Software Association (CSSA) and Task Force 2000. It is still fairly thinly populated but does have a number of entries for healthcare products. It also has entries from general suppliers such as Digital, ICL and Microsoft.

3.11 There is concern over Supplier Statements on Year 2000. The Year 2000 team has suggested the best definition to be that produced by BSI. The British Standards Institute (BSI) has issued document PD20001, "A Definition of Year 2000 Conformity Requirements". This was with input from the NHS.

3.12 There are a number of Year 2000 mailing lists and discussion groups on the Web, but none are dedicated to NHS issues. The government hopes to change this as soon as possible by adding such a discussion group to the Year 2000 Web site.

4. What Estimate, if any, has Been Made of the Nature and Scale of the Problem that is Facing the NHS?

41. The Year 2000 team has produced a briefing on Risk Management. This states "Year 2000 represents an unprecedented threat to all parts of the NHS. The sheer scale and complexity of the Year 2000 problem means that it must be addressed as a project with the highest priority within an organisation. Bear in mind, however, that Year 2000 projects have a number of unique attributes:

- For most organisations Year 2000 will be one of the most demanding and major projects they have ever undertaken.

— The deadline is immovable.

— The deadline bears no relation to the task.

— Everybody has the same deadline.

— There is no experience of previous or similar projects to rely on.

Taken together these factors amount to an unprecedented level of risk, for the project and the whole of the organisation undertaking it. It is essential, therefore, to attempt to manage this risk."

The Year 2000 Website notes that the budget is almost impossible to know before the programme is well underway and new information becomes available almost continuously, requiring changes in the plan.

4.2 Problems have already been reported with major Patient Administration Systems. Any piece of equipment that uses a computer chip may be affected. As well as clinical, administrative and financial systems, this may include patient monitoring equipment, security systems, building control systems and most PCs. All NHS organisations may be affected, from large acute Trusts to GP surgeries; from ambulance services to Health Authorities. Software is the area of greatest concern, particularly in applications which have forward looking functionality such as appointment management. The greatest area of medical risk is embedded chips in medical devices. Acute trusts pose the greatest risk with the greatest number of devices and critical procedures such as theatre scheduling, hospital admissions and dosages. Practices could suffer from the following problems: call/recall systems may not function properly; systems may calculate ages from dates of birth incorrectly; pharmacy and stock control systems may reject drugs as beyond their "use by" dates and telephone switchboards and pager systems may not work correctly.

4.3 Each organisational environment is different. Common systems can be used in different ways depending upon the organisational practices. This is compounded by the amount of disparate systems and critical links.

4.4 Sample costs for computer systems are:

Health Authority (exc primary care)	£100–200k
Primary Care	£450k–£1.3m per health authority (£2–22k per GP practice)
Trusts	£30k–£1m
Community trusts:	£30–150k
Acute trusts:	£0.2–£1m
Teaching hospitals:	£0.5–£1m

4.5 Members are concerned about resourcing compliance from discretionary capital budgets. Clarity is needed on the scope for a major Year 2000 compliance programme to be financed through PFI.

4.6 NHS organisations have been concerned at the attitude and slow speed of information from the Medical Devices Agency (MDA) on medical equipment. The MDA issued basic guidance in November 97 on the appropriate action by device users and manufacturers. The guidance asks medical equipment manufacturers to identify any of their products which are affected by Year 2000 problems and make this information available to users and other interested parties, with an indication of the appropriate remedial action.

4.7 Testing is one of the biggest problems facing most NHS organisations. Few have the expertise or the resources to test any but the simplest systems. It seems unlikely that external organisations will be able to test NHS systems at a reasonable price. The Year 2000 team have recognised that witness testing may be the only way that the NHS can find enough resource for Year 2000. Many of the Regional Offices are investigating how it might be organised on a regional basis. The government is also encouraging two or more representatives from organisations in the Region to witness the testing of each major system, to write a report detailing the tests and results, and make it available to the rest of the NHS.

4.8 Legal risks may arise from damages claims or unlawful processing of data under the Data Protection Act—this could apply to trusts, health authorities and GPs. Members are concerned at press reports of some large insurance companies considering adding Year 2000 indemnity clauses to their policies. The impact is that the exact cause of information systems failure at the turn of the century may be very hard to prove, for example, that it has not been as a result of "negligence" in sorting the Year 2000 problem out.

5. What is the Likelihood of Some Problems in 2000 and What Contingency Plans Have Been Made?

5.1 The overall assessment is that there is a genuine risk and problem but that it is feasible to address the vast majority of issues.

5.2 To date most members have concentrated on assessing the scope of the IT problem and are now moving to draw up contingency plans.

5.3 Many manufacturers have not yet issued statements of compliance, or non-compliance of their products. The longer NHS organisations have to wait for these statements the less time there is for response to non-compliance problems. There are still many major healthcare software systems which will not release a compliant version until well into 1998. It has been the norm for suppliers to claim that particular versions are compliant but the caveat to this is which hardware, operating system and interface are in use. The only way of knowing is by testing since the extent of compliance very much depends upon the environment in which the system exists.

5.4 NHS organisations recognise that because of the extent of the problem, it is unlikely that all systems will be known and audited. For some the key to managing the problem has been the identification of critical systems (those systems that can cause harm to patients and a full range of payments).

5.5 NHS Organisations have been instructed to ensure that all new systems are compliant. Organisations are routinely incorporating a Year 2000 compliance clause in all contracts or purchase of new equipment.

5.6 Contingency plans require development to address a possible scenario of major cities being without, heat, light and clean water, transport as well as shortages resulting from failed distribution systems.

5.7 Risk assessment and contingency planning also involves preparation for emergency health care in January 2000; assessing the interface to existing plans for winter pressures and flu and funding of contingency arrangements.

6. Whether Steps Have Been Taken to Avert the Problem Nationally, or Locally?

6.1 Accountability for achieving Year 2000 implementation lies with Trust and Health Authority Chief Executives and with primary care contractors. The centre has confined its role to advice and guidance. Therefore the steps to avert the problem have been taken locally.

6.2 Most organisations are at the inventory stage and information from suppliers is still incomplete. The key areas remaining to be tackled in whole or in part are prioritisation, testing, interfacing, risk management and contingency planning.

6.3 The primary focus has been on computer systems while the other large areas of work relating to medical devices and estates are just beginning to be tackled. Interface issues, for example between internal trust systems and interface to external suppliers or telecommunications have not really been tackled.

6.4 NHS organisations made early appeals to both central and regional NHS sources for assistance and guidance. For many members the result was insufficiently speedy to have a major effect on their programmes. The value of the Taskforce 2000 group (now Action 2000) and the NHS Executive Year 2000 team is recognised.

6.5 Regional Offices need to take a stronger role in coordinating and support. Joint health authority funding is enabling work to develop on addressing information sharing and expertise, project management and contingency planning. Trusts and Health Authorities are now developing detailed project plans. It would be helpful if templates were provided.

6.6 NHS organisations are looking at the problem within their broader work on Information Management and Technology Strategy. For example, linking in work on national initiatives like connecting GPs to NHSnet.

Sources

Submissions from Health Authorities and Trusts.

NHS Year 2000 Information Pack.

NHS Year 2000 Silver Bullet Update, November.

Year 2000 Brifing: Risk Management.

Year 2000 Website.

NHS Executive EL (97) 59 and HSG (97) 40.

30 January 1998

Examination of Witnesses

MR GRAHAM ELDERFIELD, Chief Executive, Isle of Wight Healthcare NHS Trust, MR TONY STOCK, Head of Information Management and Technology, University College London Hospitals NHS Trust, MR MICHAEL KERIN, Chief Executive, Bexley and Greenwich Health Authority, the NHS Confederation, were examined.

Chairman

349. Mr Elderfield, gentlemen, may I start by apologising to you for keeping you waiting outside for a quarter of an hour. We do generally try to start on time; today, I am afraid, we had need for an extended private meeting before this evidence session and the consequence was that we have started late. I hope you will accept the Committee's apologies on that particular point, and I hope you will also accept the Committee's thanks for coming along this afternoon and helping us with this inquiry. I understand, Mr Elderfield, that we direct our questions to you and you will do your best to answer them, and if you wish you can field them, of course, to your two colleagues; is that correct?

(*Mr Elderfield*) That is correct, Chairman, thank you.

350. I wonder, Mr Elderfield, if you would like to start by introducing yourself and your two colleagues, and then also just telling us, in a nutshell, what the NHS Confederation is?

(*Mr Elderfield*) My name is Graham Elderfield and I am Chief Executive of the Isle of Wight Healthcare NHS Trust. Perhaps if I can ask my two colleagues to introduce themselves.

(*Mr Kerin*) I am Mr Michael Kerin, the Chief Executive of Bexley and Greenwich Health Authority.

(*Mr Stock*) I am Tony Stock. I am Head of Information Management and Technology at University College London Hospitals NHS Trust.

(*Mr Elderfield*) The NHS Confederation represents both health authorities and trusts within the NHS, it is a body which has membership from the whole cross-section of the NHS and is very good at bringing together issues such as this one today, Sir.

351. Thank you very much. Do you have a Chairman of the Confederation, and Secretary, as other organisations do?

(*Mr Elderfield*) Yes.

352. Are you the Chairman or a member of the Executive of it?

(*Mr Elderfield*) I am not a member of the Executive, I am here in place of Stephen Thornton, who is the Chief Executive of the NHS Confederation.

353. Thank you very much. That just helps us set the scene. Now, Mr Elderfield, in your submission, or the submission of the Confederation to us, you give a long list of difficulties facing the National Health Service with regard to the so-called millennium bug, you refer to the difficulties there will be with suppliers, with equipment, with finances, but you conclude: "it is feasible to address the vast majority of issues." I wonder if you could let us know why your Confederation and your member trusts feel so confident about this problem, as we get closer and closer to the year 2000?

(*Mr Elderfield*) Chairman, the Confederation and its members believe that we will be ready by that time, because a lot of work has already started across the country in looking at the implications of the year 2000 problem. Certainly, my own organisation is one of a number of sites that have been chosen by the NHS Executive to pilot and look at this in more detail; certainly, in my own trust we have had a project manager working for the past year, looking at the implications working through in a project management way to all of the issues contained within this problem. And, therefore, the evidence that the Confederation have had to date is that whilst we do not underestimate the considerable amount of work that will be needed between now and the year 2000 we believe that the NHS will rise to the challenge.

354. When you look at the various problems, and I do not wish in any way to trivialise anything that happens in the National Health Service, but it possibly could be argued that if some supplies came in two or three days early, or some supplies even came in one day late, that might not matter too much. You could possibly even argue that if there was something wrong with a computer system, and some of the letters going out to patients asking them to come in for elective surgery were a little delayed, unfortunate, of course, and it may not be too efficient, but it is not life threatening. The thing that is life threatening is if equipment and machinery suddenly fail and then there is an alert, and that is life threatening. So I am not trivialising anything, but I am saying some things are life threatening and other things are not. Have you prioritised your work, to make sure that the life threatening ones receive maximum attention at the earliest possible time?

(*Mr Elderfield*) Certainly, speaking for my own trust, we have been working through, looking at not only just systems and computers but also the important area which you have just touched on, that of medical equipment, also questions within estate management, and we have been starting to, really, in a priority way, look at each of these issues and tackle it; we have been starting to make sure that all of our inventories of assets are up-to-date so that we can actually work through each of these areas. I think the main thing that trusts like mine will have to do is undertake very effective risk management, because this is what this is about, it is a risk management problem for the NHS, and we need to have in place contingency plans to ensure that none of the things that you have touched on, Chairman, will happen.

Chairman: Thank you very much indeed.

Dr Jones

355. I would like to ask about costs. In your submission to the Committee you gave some sample costs; now I appreciate that all this is very difficult, but we asked the Clerk to multiply those up, and that

[**Dr Jones** *Cont*]
gave costs anything between £67 million and £670-odd million, with a mid point of £371 million. What sort of money are we talking about, do you think, because we have had various estimates put forward, I understand the NHS Executive is talking about £200 million, but there have been other, recent publications, suggesting it is going to be more like £500 million or £600 million? What is your view of the position, and what effect is it going to have on your budgets, as I understand no additional finance has been allocated?

(*Mr Elderfield*) The short answer really is that at this stage the Confederation does not know precisely what the costs will be; however, we know that trusts and health authorities are required by 31 March of this year to have produced their plans, undertaken their inventories and to have put cost estimates to the centre on what it will be. I can speak only of my own region, the South and West Region, where we have been looking at this, and we have had already 50 per cent of health authorities and trusts submitting evidence back to us, and the costs for just our region alone, and that is only sort of half of the organisations, is in the region of £30 million. So I think certainly we will be in a position, as a Confederation, to have a more accurate figure at the end of March, which is when the NHS Executive have asked all health authorities and trusts to be in a position to report back to them on the financial implications of this. To come to your second question, about the effect on budgets, it is of concern, I think, to the Confederation and to health authorities and trusts that at the moment this problem is to be done with no extra funding, and that is an issue that certainly is of concern to myself and to my colleagues. And I think one of the things we will need to do is think very carefully about the priorities for the Health Service in the run-up to the year 2000.

356. Where you have got that figure of £30 million, what is the budget of the organisations that collectively have costed up the problem at £30 million: any idea?

(*Mr Elderfield*) Unfortunately, I have not got that in the breakdown that I have got in front of me, but I could certainly provide that to the Committee as a written answer.

357. Would you care to hazard some kind of guess for the overall costs, or will we really have to wait till 31 March?

(*Mr Elderfield*) I think it would be wrong for us to really give you a figure today, which could be misleading at this stage because of the fact that we have only got really half of the plans, certainly in my region, that have been submitted.

358. Are people going to be able to cope with the £30 million in your region?

(*Mr Elderfield*) I think it is important to understand that what we will need to do is really look again at our capital programmes, look again at what schemes will have to slip or change in order that this becomes a priority. Money will need to be diverted into sorting this problem, but it will be at the expense of other projects that we would want to have spent the money on.

359. You have suggested that private finance might be an option; is that realistic?

(*Mr Kerin*) I have been asked to answer that one. I think, at this stage, it is not an option. In our area we have a fair amount of experience of private finance initiatives, and I suppose the key thing that I would say about them is that they work for very large schemes, not for smaller schemes, and you have to allow time for the analysis and negotiations to be done, and on the year 2000 problem we are up against a very finite deadline. So I think, in terms of contingency and risk analysis, we are looking for mainstream funding.

360. You talked about the finite deadline; is it not worrying that here we are in February 1998 and the NHS cannot even give us any costs of actually dealing with the millennium compliance? Does that not shake, or it certainly shakes my confidence in your assumption that we will win through in the end?

(*Mr Elderfield*) I think, Chairman, that, as I said really in my opening remarks, the NHS will be ready, but there is a significant amount of work, which we do not underestimate, that will need to be done in this time.

361. How can you say you will be ready when you do not even know the amount of work or the costs involved?

(*Mr Elderfield*) Because I have some confidence in the fact that we do have in place plans being developed, deadlines which will be met, and certainly the evidence that I can draw from being a member of a regional group looking at this problem is that the response has been very positive from health authorities and trusts.

Mr Beard

362. Just following the question Dr Jones asked, are you planning that the remedy of this will be from within National Health Service staff?

(*Mr Elderfield*) I think that, at the moment, as I understand it, there will be no new monies for this, therefore we will need to look at the budgets that we currently spend on information management and technology, on the capital allocations that health authorities and trusts get, and we will need to reorganise our priorities, in order to make the necessary funds available for this, but some schemes will not go forward as a result of that. And I think what certainly the Confederation will be looking for is perhaps a greater clarity about what the priorities are for next year; for example, we have an initiative to move towards single-sex wards in hospitals across the country, now that is going to cost money, we cannot do that at the same time as doing this sort of work in replacing major systems, replacing computers and other medical equipment, so some choices will have to be made about this.

363. What other activities are likely to be deferred or postponed?

(*Mr Kerin*) If I could make two points. The first is that, clearly, the NHS is not a closed system and we are dependent on action being taken by others as well as action being taken within the NHS as well. Turning to your other question, my particular interest, I suppose, in being here is from a health

[**Mr Beard** *Cont*]
authority in relation to primary health care, and, in effect, the costs of addressing this issue in primary health care, certainly for general practice, would come from the earmarked funds for general medical services, which means it would take higher priority than the recruitment of extra practice nursing staff, premises developments, training, computers.

Chairman

364. I would have thought, Mr Kerin, that if your Confederation did not exist the 2000 problem would have been a very good reason for making it exist, to co-operate together, share your information and pool resources; there is no point in inventing the millennium bug 50 times in the course of this small island. To what extent really are you getting co-operation, and ideas from Glasgow are coming down into Kent, and ideas from Newcastle are going into Exeter, to what extent is this happening?

(*Mr Kerin*) Certainly, in our area, and I am from the South Thames Region, there is a lot of collaboration going on between people in various parts of the region, and linking in to other systems both through, as it were, human networks and web networks, and what have you. The issue is that one can learn from the experience of others but one has actually got to do the analysis in one's own area to find out precisely what systems are in place, particularly in primary care, where in our area there are 13 different systems being used by GPs, and working across that.

365. But "not invented here" is not alive and well, I hope?

(*Mr Kerin*) So do I, because it obviously adds to the cost, the time and the complexity.

Mr Jones

366. I have just been extrapolating the £30 million for half of the South and West Region; nationwide, you are talking hundreds of millions of pounds to put this right. Can you give us a bit more feel of what that is going to mean for primary care patients, are you going to be firing doctors and nurses in order to pay programmers and engineers?

(*Mr Kerin*) If I can answer that, the answer is no, because the way that primary care is funded the money for GPs comes from a different pot. The pot of money is a fund, as I said before, specifically for practice premises, computers and training. So that is the area that the relative priorities are between, in primary care.

Mr Beard

367. Could you give us an indication of where you think patients will see the effects of this diversion of funds in this away from the normal run of things in the National Health Service towards the millennium question?

(*Mr Elderfield*) I think, Chairman, it really goes back to the example I have quoted, that we certainly will be looking to spend money from our capital budgets to put right some of the problems we have identified, and that will mean that some of our upgrading of wards, some of the schemes that we have set aside to buy equipment, will stop, in order that money is then diverted into solving this problem, and it is in those sorts of areas that I think the public will notice a difference.

368. Are you confident that, given the scale, as has been said, that appears likely to come out of your gathering together of the estimates in March, this can be tackled from within your own resources, or are you going to have to depend on recruiting people from outside?

(*Mr Elderfield*) Perhaps I could ask Mr Stock to talk about the recruiting people aspect. I think that once we have a clear idea of what the implications financially are for the Health Service, and, as I say, this will be at the end of March, we have to have a discussion with the NHS Executive and with the Government about whether or not there are sufficient resources in the NHS in order to put right the problem. And it may well be that additional resources will have to come in to the Health Service in order to help us with this problem, otherwise we do need to have a clear steer, I think, from Government on the issues really that we should be dealing with. As I say, we cannot implement one policy of moving to single-sex wards and the costs that go with that at the same time as trying to fix this problem. I think we will need some leadership here.

Dr Williams

369. Can I just probe a little the way that that £30 million figure was arrived at; these were estimates by individual trusts about how each should tackle its own problems, is it, and then just the sum total of each of those estimates?

(*Mr Elderfield*) That is correct, Chairman, yes.

370. There is no economy of scale built in, or co-operation, collaboration, and because you are tackling the same problems, effectively, in 10 or 20 different units, therefore if you all work together we work out a way of doing this more cheaply?

(*Mr Elderfield*) There is some working together. I think the problem we have got in the Health Service is that health authorities' and trusts' development of information management and technology has progressed at different rates, some hospitals have got very sophisticated systems, others have not, and that is why we see a difference in the returns that we have had so far, because some have got systems in place, others have not, and, therefore, the costs of replacing or repairing those systems will differ across different trusts. But I would like to reassure the Committee that certainly there are, at the regional levels across the NHS, groups coming together to share best practice, to learn from each other, so that we can really understand the nature of how to tackle the problems.

371. A couple of weeks ago we had Shell giving evidence to us, and their programme was worked out in detail with collaboration right across the UK and internationally, and this is a private organisation that knew the goal that it was going for and it has built in efficiencies then. But the NHS has become too disparate really for that kind of central formula for the regional centres to take control of this problem?

[**Dr Williams** *Cont*]

(*Mr Kerin*) I think that the first thing to say is that since 1948 the NHS, while it has been one entity, has never been one organisation, because one of the keystones of the NHS is general practice, each of whom is a separate, independent business, contracting to the Health Service and ultimately responsible for their own systems. And it reinforces the point that Mr Elderfield has already said, one cannot give a unit cost even for a GP practice because it will depend on their size, it will depend on the systems that are in place. And so I do not think it is practical to take that kind of centralised approach, let us say, Shell could take by being one company, through the system, because we are actually relating to independent contractors as well as people who are managed within NHS bodies.

372. Can I ask about the regional centre, have they convened something like day conferences, or schools, pulling in representatives from each of the trusts, to pool that sort of information that each of you has acquired?

(*Mr Elderfield*) Yes, indeed; certainly, speaking for the South and West Region, where I am a member of the regional group that is co-ordinating this, we have already had regional events during November and December, with specific meetings planned for health authorities and trusts. We have also had meetings with emergency planners, to look at the whole emergency planning process that needs to be in place, because this affects ambulance services as well as hospitals and GPs. We have also undertaken training in project management, which this is important for, in risk management and in contingency planning, because we want everybody to be ready for this. We have also, through the regional office, undertaken performance management arrangements whereby the regional office is now monitoring how quickly each of the health authorities and the trusts are getting their plans together so that there is an effective co-ordination at the regional office level to take this forward.

Mrs Spelman

373. What exactly is the remit of the NHS Executive Year 2000 Steering Group, and does it have the power to coerce trusts and authorities to take action?

(*Mr Stock*) The way that the year 2000 problem has been devolved in the NHS as a whole has been to specifically put the responsibility with the chief executives of the health authorities and the trusts, and that was promulgated specifically in an Executive letter last October. The Steering Group, which is a fairly recent foundation, has effectively been taking the role of advice and dissemination of information. I cannot specifically say whether it has the Executive power of compulsion without referring to NHSE; we could give you an answer on that specifically. If I might just say that, the way that the central organisation has been perceived from the trusts, over the past 12 to 15 months there has been particular encouragement from those trusts which had made some headway and had recognised the problem early, to try to seek the economy of scale that one might get by sharing the task, either nationally or regionally, and that is now manifesting itself really through the regional groups, as Mr Elderfield has described for his region, we have found a similar approach now emerging in North Thames, but only after some considerable pressure from the detail of the individual trusts.

374. Does it have a role of monitoring what progress is being made, and is it likely to publish those findings?

(*Mr Stock*) It does have a monitoring role, it is publishing the findings, it has an active presence on the worldwide web, it has a website, which is being updated fairly regularly, and to which the regional offices are reporting the specific progress.

Chairman

375. Thank you very much. Just before we go to Mrs Curtis-Thomas, can I just go back, please, to Mr Kerin on one point. I think it was his answer to Mr Jones, when a question was asked, does it mean as a result of finding money for this 2000 millennium bug that there may be fewer doctors and nurses, you said, no, because it comes from a different pot. But, since we learned from the early questions from Dr Jones that there was not a pot for this 2000 millennium problem anyway, the money has to come out of some other pot, somewhere, so, if it is not the doctors and nurses pot, it may be the pharmaceutical pot, or the bed-linen pot, or the building maintenance pot, it has to come from some pot; which pot does it come from?

(*Mr Kerin*) That is correct, it has to come from a particular pot, and that pot covers the expenditure in general practice for practice support by way of computers, training and premises development.

Dr Jones

376. But that was just for the general practice?

(*Mr Kerin*) That is for general practice problems, yes.

377. What about the rest of the NHS, what about doctors and nurses in the rest of the NHS?

(*Mr Kerin*) Sorry, I was being asked about general practice and making it clear.

378. Yes, I know you were. I am now widening the question?

(*Mr Kerin*) I will then pass that back to Mr Elderfield, because I think he has already answered that, in relation to the relative priorities around the use of capital funds, and the way in which it would have to be spent on this activity rather than updating hospitals.

Chairman

379. We do not wish to pin you down to the last penny; what we are interested in, of course, is that patients are not going to suffer directly. It may be the rooms are decorated less frequently, or sheets are used for one month longer, or something, but there will be some consequence. The point is, without going too deep into this, patients will not suffer directly but there has to be a knock-on effect somewhere, because you are finding money for this problem that was not budgeted for; is that correct, basically?

[**Chairman** *Cont*]

(*Mr Elderfield*) That is correct, Chairman.

(*Mr Kerin*) Yes; and the way that the analysis has been done is identifying those things that are crucial to patient care as opposed to those things that are desirable.

Mrs Curtis-Thomas

380. I am interested, first of all, to go back on a number of observations that you have made so far. You asserted, Mr Elderfield, that you had a project manager who had been responsible, presumably, for a risk analysis within your own hospital, and subsequently Mr Stock went on to say that the requirement to carry out the analysis was given to the hospitals last October; is that correct?

(*Mr Elderfield*) That is correct, Chairman.

381. So last October was four months ago, and since that requirement you have undertaken a risk analysis within your hospital and so has the authority in your area?

(*Mr Elderfield*) That is correct, for my own trust, yes. I think Mr Stock needs to answer for his own trust.

(*Mr Stock*) Indeed, we had already carried out the preliminary analysis and assessment of the problem at our trust by about the middle of last year.

382. Okay; but, nevertheless, in your area, it was last October. So the exercise has been concluded, or is ongoing, in four months?

(*Mr Elderfield*) It is ongoing still, yes.

383. And the consequence of that is a potential budget of £30 million?

(*Mr Elderfield*) Chairman, if I could say, the £30 million that I have quoted is the returns we have had from across the region, including my own; for my own organisation, we are currently looking at around £600,000, as a trust, that is the implication for us locally that our risk analysis has identified.

384. Let me take you then a little further. Having identified that you have an individual involved in this particular exercise, indeed there are significant implications for the equipment that you utilise, in terms of delivering patient care, what resources do you have available to you now to effect the modifications of that equipment to ensure compliance with the year 2000?

(*Mr Elderfield*) What we are doing is systematically working through each of the areas, Chairman, and if it involves suppliers the project manager is engaging those suppliers in discussions about how a piece of equipment or a particular supplier can be made compliant in the timescale that we are working to. So this process is very much an ongoing one in my own local trust, as I would imagine it is for trusts and health authorities across the country. I can only speak, as I say, for my own organisation.

385. Could I ask you then, you have referenced third party suppliers and you have also indicated a timescale for compliance, what is the timescale for compliance that you are looking at?

(*Mr Elderfield*) Perhaps Mr Stock can answer that.

(*Mr Stock*) The required timescale for compliance which was set out in the Executive letter was the end of this year, 1998, 31 December. So the ideal target which all trusts and health authorities have to report against is that their systems should be fully compliant by that date, or that there should be clear indications of when, indeed, they will be compliant.

386. Just to recap then, so that I am not confused, we only have budget estimates for the potential cost of the compliance exercise, we are not terribly sure where that money is coming from at this time, and we then have approximately six months in which to enact the compliance project plans; is that right?

(*Mr Elderfield*) That is correct, Chairman.

387. Let me now just take you finally to my last question, which is, we have already referenced the primary care suppliers, or the primary care aspect of the National Health, but, of course, there are other agencies and other third parties with whom you work, notably social services, and you have already referenced the ambulance services. Given that you have a dialogue going on with some of your suppliers, how have you ensured that the continuity of care for those individuals that are external to a hospital environment, that are very much an integral part of primary care and social services, is not jeopardised by your planning process?

(*Mr Kerin*) Certainly, in our area, we have a Joint Information Strategy Group, that includes the health authority, local trusts, local authorities and representatives from the GPs, to look at the world in the round, and this is clearly one of the important issues that we are addressing with them.

388. Just for clarification, does that include members of the social services department?

(*Mr Kerin*) Yes.

Chairman: I wonder if I could just interrupt there, because we are running late, and I have already apologised for that. The Minister, the Chancellor of the Duchy of Lancaster, follows us. I have tried to point out to him that we are running 15 minutes late and would that be alright; he does not mind us starting late but he has to still finish at the same time. So we are going to have to finish in about 6 or 7 minutes time. My comments are addressed more to the Committee than they are to the witnesses. I hope the Committee will note that. Dr Jones, you have a quick question, then Mr Atkinson.

Dr Jones

389. Just very quickly, in dealing with all this, what are the staffing resource implications? I presume that their pay is limited by the general pay increases in the public sector. Is there a problem with staffing resources, are you worried about people being poached; if, at the end of the day, market forces reign, are we not going to see that the City gets its millennium compliance but the NHS does not?

(*Mr Stock*) Yes, that is obviously something of a consideration, although perhaps our own experiences indicate that it may not be quite so harsh as it might appear. Perhaps surprisingly, a large number of certainly internal IT staff in the NHS are very loyal to the Service and do not find an attraction in working outside the Service. More specifically,

[**Dr Jones** *Cont*]
although there are technical considerations, in terms of fixing problems in software, as I think Mr Elderfield said right at the beginning, much of the issue is a risk management issue, and the sort of staff who are required to actually take this work forward are effectively good project managers, and there does seem to be a reasonable pool of available people to take on secondment, in our experience, but I can only speak specifically for our own region, but that is within London.

Mr Atkinson

390. A Professor Mike Smith, from St Bartholomew's Hospital, recently produced a report which says: "Millennium failures in the Health Service are likely to result in between 600 and 1,500 deaths, and there are 50,000 drip-feeds, all of which need recalibration, in the NHS, I understand." My question is, how great is the risk that failures in equipment as a result of this problem will put patients' lives in jeopardy?

(*Mr Stock*) The best evidence that I have had, from my Medical Physics Department, who have looked in considerable detail at medical equipment, is that the risk is not as exaggerated as has been reported in such quarters as you have indicated. Nevertheless, we do recognise that this is a serious issue. Perhaps to give you an idea of the scale of this, in our own trust we have identified and inventoried some 7,000 pieces of medical equipment, of which we believe about 200 alone, 200 only, have a true date function in. Many pieces of medical equipment have some sort of elapsed time capability in them for indicating that a recalibration is due, but it is not a true date function; and, out of the 200, or so, pieces that have date functionality, indications are that the majority of them are already compliant. There is similar evidence from the United States on that basis as well.

391. But there are bound to be problems, and your memorandum refers to contingency planning. So what is the contingency plan for a hospital trust that cannot become compliant in time; will it have to revert to manual systems, will their people be trained for this, and will it restrict the number of operations it performs, or perhaps even result in the closure of beds?

(*Mr Stock*) Possibly any or all of those measures may be necessary. I think it is fair to say that at the moment the majority of trusts will be moving into the detail of the contingency planning phase; certainly, my own trust is about to do that, we are about to work across the region, which picks up one of the points that Dr Williams raised before about co-operative working, and we would set out to identify appropriate plans in detail.

Mr Jones: You say in your memorandum that many suppliers have not yet issued statements regarding the compliance of their products. Would you like to give us examples of responsible suppliers and manufacturers who have assisted the NHS, and would you like to name a few names of those who have not?

Chairman

392. This is a delegated question, Mr Stock. Mr Elderfield is very happy for you to answer this one?

(*Mr Stock*) I think, Mr Jones, that might be seen as rather a leading question, but, certainly, the primary suppliers of major administrative and health care software in the acute sector have been working, in my view, quite well with their customers; like most large organisations, they have the interest of remaining in business and having happy customers. We, at UCLH, are seen, as one of our suppliers described us, as an "aggressive" trust, in terms of putting the pressure onto our suppliers; we think we have been getting good responses from the major suppliers and we have not identified any who have in any way been at all recidivist about it.

Chairman: Thank you very much. The final question, in 30 seconds, from Mr Beard.

Mr Beard

393. We have heard from the private sector that contractors who are not able to assist them in guaranteeing compliance of their equipment they will not do business with in future; why does not the Health Service do the same thing?

(*Mr Stock*) I think that is certainly something that will be looked at as a serious consideration. As I say, our experience at the moment, and we have been working with some 20 or 30 key suppliers, is that we have not encountered that sort of situation.

(*Mr Kerin*) I think, in primary care, we are finding that that is actually happening, that some of the suppliers will be going out of the market for that very reason.

Chairman

394. Thank you very much indeed; what marvellous co-operation. It is five to five, exactly the time I wanted to finish. Gentlemen, Mr Elderfield, may I thank you very much indeed for coming along this afternoon; sorry we had to speed up, our fault that we are late, not yours, but it has been very, very helpful. There is one answer, I think, you are going to write and let us have, is there not?

(*Mr Elderfield*) Yes, that is true, Chairman.

Chairman: And would you please give our compliments to Ms Diane Milan, who was not able to be with you this afternoon, maybe we will meet her some other time. Thank you, gentlemen, very much indeed.

Supplementary Memorandum submitted by the NHS Confederation

The Committee clearly realised the scale of the challenge facing the NHS. We would have liked the opportunity to discuss the support the NHS is getting from government and what NHS organisations need. Our members feel the rate of support from the Government was too slow and we still need more recognition of the problem and support from the Department of Health.

In particular, progress would be aided by stronger government pressure on suppliers, pressure on the Medical Devices Agency to provide detailed guidance, development of generalised contingency plans, both within the NHS and with partners, and better co-ordination by the NHS Executive Regional Offices.

The NHS will need additional resourcing because of the strain on budgets due to coping with Year 2000. The opportunity costs implications are clearly that every pound spent on Year 2000 is not available for patient care. At the very least the NHS needs 3 per cent real growth each year. Once trusts and health authorities have submitted detailed project plans we will collate the overall cost of coping with Year 2000 and highlight the opportunity costs for the NHS.

24 February 1998

Memorandum submitted by The Chancellor of the Duchy of Lancaster

1. The Central IT Unit (CITU) supports me in carrying out my overall strategic and co-ordinating role in relation to the approach to resolving the Year 2000 problem taken by central government departments and agencies. My role includes giving impetus to the action by departments and agencies, providing guidance where necessary and reporting to Parliament on the overall state of preparations. I also have Ministerial responsibility for action by the Office of Public Service and its agencies. The principal responsibility for ensuring that their computer systems are Year 2000 compliant rests with individual departments and agencies. They are also responsible for ensuring that organisations in the wider public service sectors which they sponsor (such as local authorities, health authorities and non-departmental public bodies) understand their responsibilities.

2. This memorandum is concerned with my, and CITU's, responsibilities, and does not address the private or wider public sectors.

(i) The Nature, Magnitude and Implications of an Inability to Manage the Date Change

3. The threat to central government and agencies is very serious but varies according to the nature of each organisation. Critical government functions depend on mainframe computers (eg benefits payments, taxation); government systems and buildings may contain many embedded processors; and government as a whole is increasingly dependent on personal computers.

(ii) The Effectiveness of Action Which has Already Been Taken to Avert Problems in Government

4. In my statement to the House of Commons on 27 November (copy attached), I said that I had received plans from all departments and agencies showing how they were tackling the problem. On the basis of those plans, all have work in hand and scheduled for completion in time—many by December 1998, a majority by March 1999 and a small number later in 1999. Some Departments will in general give priority to correcting business critical systems and may leave systems of minor importance until later. The Government's policy is that the cost will be met from within planned allocations, and the evidence from the plans is that almost 97 per cent is so covered. Overall, my assessment was, and remains, that government has established the measure of the problem and set in hand plans which are realistic and achievable, but the bulk of the actual remedial or replacement work is yet to be done, the timetable is tight and there is little margin for error.

(iii) The Role of Government in Raising Awareness

5. Immediately after taking office, I wrote to all Ministerial colleagues in charge of departments to ensure that the new Government took concerted action. I asked to receive, as soon as possible after 1 October, detailed and costed plans, showing how their departments and agencies were tackling the problem. The plans were placed in the Library of the House and published on the Internet. I also wrote to Ministerial colleagues on 27 November to ask for additional information on embedded systems, contingency plans and staffing and skill issues.

6. Departments are supported on Year 2000 by CITU and the Central Computer and Telecommunications Agency (CCTA) who advise, disseminate best practice and keep in touch with industry and other practitioners. CITU and CCTA have set up an inter-departmental group on Year 2000 issues, and have been in regular contact with DTI, NAO, Taskforce 2000 and now Action 2000, the Computing Services and Software Assocation (CSSA) and the private sector so as to keep themselves fully up to date.

7. As I announced on 27 November, I am chairing an inter-departmental Ministerial group to co-ordinate and drive forward the action for which central government departments and agencies are responsible.

(iv) The Extent to Which New Systems and Software are "Millennium Compliant"

8. Between April 1996 and September 1996, the CCTA held a series of workshops with Departmental Officials to ensure that the contractual implications of Year 2000 compliance were fully understood by procurement officers. Following this work, in September 1996, a standard set of contractual conditions was published by CCTA for use by Departments in any IT procurement. Departments and agencies have been asked to undertake spot checks of new systems and software to ensure that they are genuinely compliant.

(v) The Development of Contingency Plans

9. I have asked Ministerial colleagues to ensure that the contingency plans in place to cope with major systems failures are adequate to deal with any unforeseen Year 2000 processing problems.

(vi) The Legal Implication of Disputes Over Liability

10. CITU has no remit in this area. Legal advice is available to departments and agencies through CCTA, and through departmental legal advisers.

15 December 1997

Examination of Witnesses

Rt Hon Dr David Clark, a Member of the House, Chancellor of the Duchy of Lancaster, Mr Mark Gladwyn, Deputy Director of the Central Information Technology Unit, Office of Public Service, were examined.

Chairman

395. Chancellor, we apologise for running ten minutes late, we have managed to pull back five minutes, but we had a rather extended private meeting at the beginning, and we did try to get a message to you, I hope you received it?

(*Dr Clark*) You did; thank you very much.

396. And I do understand that you still have to leave at the set time, so we will be as quick as we can. May I just say, on a personal note, it has taken 15 years for Dr Clark to come face to face with Dr Clark, and I do not know if I should start with the word "snap", but I do start by welcoming you most warmly to this Committee, and look forward to the help you can give us. Dr Clark, I believe that you do wish to just make a short opening statement?

(*Dr Clark*) Yes. It is a pleasure to be here, Dr Clark. Can I just introduce Mark Gladwyn, who is my principal adviser on these technical issues, he is Deputy Head of the Central Information Technology Unit of my Department, and Mark will certainly help me, and I suspect help us all, with some of the more technical questions. Can I say that I really thought it was not appropriate to make a statement, I think these Committees are much better if we treat them as dialogues and then you can actually ask me the questions, and hopefully I will give you the answers that you want to hear. But perhaps I can just make one general point. My responsibility overall is to see that central government departments, and their agencies, are aware of the millennium compliance problem and that they have realistic plans and costed plans to try to deal with that problem; and the operational responsibility for meeting those plans rests with the departments and the Secretaries of State concerned, as indeed they are responsible directly for the public departments which they sponsor. And I thought it might just be helpful to put that down as a marker right at the beginning.

397. It certainly is, Chancellor; thank you for that. But, having accepted that and fully accepted that, I wonder if I could just tempt you with one question, because we are finding out the ways in which the 2000 problems are facing government departments and we are also finding out ways in which they are affecting the private sector. I wonder, from your standpoint, while you are not responsible for the private sector, whether you have been able to observe any principal or major differences between the government sector problems and the private sector problems?

(*Dr Clark*) I am very happy to comment on all these, because clearly the Government has a responsibility and I do indeed sit on the MISC 4 committee, which is the Cabinet Committee the Prime Minister has established; in fact, the terms of reference are to drive action across the public and private sectors, to ensure that the national infrastructure is not damaged by the failure of electronic systems relating to the year 2000. So,

[**Chairman** *Cont*]
clearly, there is some responsibility. And I meet regularly with IT specialists, and indeed discuss these issues with Don Cruickshank, I have actually discussed it with Robin Guenier and a great many other people. And, as I see the situation, we have things to learn from the private sector, and I suspect the private sector has lessons to learn from us, and certainly, as we draw on and try to make our plans, we are conscious that in some cases the private sector is ahead of us and we are also conscious that in other cases they are behind us; so there is an interrelation. And I make the other point, that a great deal of the central government compliance work is actually contracted out, in fact the majority would be, to private companies, so we cannot, in fact, cut ourselves off from the private sector entirely, indeed I do not know what the percentage is but I think a very large percentage would be private contractors.

398. And just a final question from me, before we go to Mr Jones. Do you find, Chancellor, that there is goodwill in attempting to solve this problem, there is not jealousy, or "I have solved the problem, you haven't" and "Aren't I good and you're not?"; is there really goodwill to try to solve this problem, which has only another, what, 22 months to go before it hits us?

(*Dr Clark*) I think there is. I have taken the view, in a sense, that it is no use looking for winners or losers, or goodies or baddies, and actually it is no use on the one hand being over complacent or being alarmist, the problem is that in 100 weeks time, or whatever it is, less than that, the problem has got to be dealt with and the problem has got to be tackled. And, equally, it is no use Government solving the problem if private industry has not solved it, because there has got to be an interface of the computers, and if one is compliant and the other is not we are in equal problems. So I have tried to approach it with good nature and good grace, and, I must admit, the response I have had from the private industry has been understanding and a willingness to work together. I think one of the problems is this problem of awareness. I hope that we are beginning to address it, and I was interested to see the statement in The Times, I think it was, on Monday, from Robin Guenier, from Taskforce 2000, who actually said that it was his belief that the awareness in Britain, private and public, was greater than in any other country in the world, and certainly that view has been expressed to me on a number of occasions.

Mr Jones

399. Chancellor, can I say that I am delighted that someone in the Cabinet has responsibility for this. You made a statement to the House in November, and you submitted a memorandum to us; could you give us an update as to what has happened since those two events?

(*Dr Clark*) Yes, fine. Perhaps I could just remind you what I was basically trying to do on 27 November. When I assumed office this was something that did concern me and I talked to my officials and we worked out a strategy. One of the problems is that the way Government has been structured is, as I indicated, whilst I have overall responsibility for seeing that the plans are in place, I actually have not overall responsibility for their implementation. Having said that, if the thing does not work on 31 December 1999, people are not going to split hairs, and the Government is going to get the blame, and *mea culpa*, in that sense; so I accepted the responsibility in that way. Then, we wrote round to every government department, asking them to submit plans to us, detailed plans, of how they were going to cope with the problem, to do an audit and then also to put costs. When I got those results I reported to Parliament and, as you know, put the pages on the Internet and made them available on CD-ROM and also in paper. So all the plans have been there for people to see. I felt it was important that we were all aware of what happened to those plans, so I said I was going to revisit, every quarter, each department to ask for an update of their plans; we have done that, and I think the closing date for the responses is 18 February, or thereabouts anyhow, and once we have had time to analyse those I will report back to Parliament. I think it is very important that we are open about this and people can see what Government is doing; and what I find interesting is that, as I say, I have spoken to a lot of IT operators, and I have said to them all, "Look, we've been open, these are our plans, they're very detailed," with the exception of the MoD, for obvious reasons, "if you can find anything wrong that we are doing, please tell us." Now I checked this morning; as of this morning, not a single person has contacted my office, the CITU, or our agency, to advise us of any point that they thought was wrong. So that has taken place. We have also established, as you know, the Cabinet Committee, I referred to MISC 4, and we have also got a sub-committee, which I chair, which actually looks at central government departments and agencies; we have had one meeting of that, we have one more scheduled in the near future, and what the purpose of that was, I felt, was to raise awareness with Ministers of their responsibilities within their departments. And I have also written round to all Secretaries of State, drawing to their attention that they have a responsibility for millennium compliance for the sponsored public bodies under their remit, so to speak, and asking them if they will do a similar exercise with the bodies for which they are responsible as I have done with central government. I would like to see as much of this in the open arena as possible, so we can check progress as we go on.

Chairman: Thank you very much indeed.

Mr Jones

400. Just one small question. You mentioned the Ministry of Defence, and I have noticed that their submissions are brief and basically just say that they are going to be ready on time. As someone who wrote a couple of the systems that are still in operation at the Ministry of Defence, if you run into a spot of bother, let me know. Are your officials able to get in to the Ministry of Defence, just to reassure yourself that they are going to be ready; clearly, you can get into all the other departments, but is the Ministry of Defence slightly different?

(*Dr Clark*) It is slightly different, and I am sure they will take up your job offer very quickly; the comment was made that we are not worried so much about the

[**Mr Jones** *Cont*]
chips in the computers of our missiles, it is other people's missiles targeted at us that worry us perhaps. I talked to the MoD, because I actually thought, quite frankly, that just to shelter under the blanket of security, we all understand the security of live systems, and this sort of thing, but when you get the dental section, that they cannot give us information, for example, I thought that was stretching it. So they have agreed that they are going to look at the way in which they present the evidence in future, and I hope that will allow us greater transparency and ability perhaps to measure and test some of their systems, which are not so sensitive as others. So they have agreed at the meeting, and one of the advantages of the committee was that they agreed that they would address that problem.

Mr Beard

401. I believe, Dr Clark, you said you were monitoring this situation every quarter, that was your statement; how confident are you that all the departments are going to be ready in time, as a result of this?

(*Dr Clark*) We actually have a schedule, which I hope you have got, we can certainly let you have, of all the departments, it is publicly available, and we will certainly let you have that. We estimate, on the figures, that 36 per cent of the central organisations have given completion dates by 31 December of this year, and a further 46 per cent, in other words, I think that is 82 per cent overall, by March 1999. That leave us with 14 per cent completion dates up to about mid summer 1999. So there are one or two very small departments have not given us target dates; some of these are not particularly sensitive, for example, Wilton Park, which is, as you know, the residential centre for the Foreign Office, they have no real problems, as they see it, they have just got normal PCs they use for operational purposes. So we have got the details, we will monitor them very closely that they are sticking to those sorts of timetables, and, of course, we are hoping also that it is not only a question of compliance but these systems are tested as well, tried and tested. So that is what we are hoping to do.

402. Because we have just had evidence from a team representing the National Health Service that have not yet assessed the full cost of this for the Health Service nor the full range of skills or resources that might be needed to put it right. How many departments are in the same position as they appear to be?

(*Dr Clark*) The central departments, I think, we have an idea, because we have got costed figures from them and a breakdown of it. They estimate that the total cost at this moment of time, for all the central government departments and their agencies, remember, we are not talking about other public bodies, is £370 million. I will not hold people to those figures, because the key thing is to make sure the problem is solved, and I believe those figures may well vary as time goes on; one has only got to, Mr Chairman, come back to your point about have we learned anything from private industry, one thing we have learned is that, as private industry has gone into the process, as they have gone into the testing, their estimates of the cost, sometimes, have actually been under what they are going to be. So I would expect this figure of £370 million to vary as time goes on. But if you look at it and compare alongside the figures for the insurance industry and other industries, it is not really very much out of kilter, bearing in mind we employ about 470,000, we are not as computer-dependent as the insurance industry, I think they are talking about £500 million. So this figure does not seem very far out. But I do anticipate it will vary somewhat as time goes on.

403. The evidence, again, for the Health Service, was that the money that was required would be found essentially from the capital programme, which would mean deferring quite a few capital projects; is this not going to have a juggle effect if the Government is dealing with the costs in that way throughout the Service?

(*Dr Clark*) I think there may be a greater problem with the non-central government departments. We have had a purchasing policy since 1996 that all new equipment is millennium compliant, and, indeed, following one of my reviews in October, I have now asked every department to do actually random testing of the smaller equipment; the mainframe equipment and all that sort of thing we can test very easily and we can test really in every case, but with PCs and things like that we are now doing random testing to make sure that the contractual agreements which we have had in place since, I think, September 1996 are upheld. And, as you know, and Mr Gladwyn will come in here, if we need him, we also tried, in trying to meet the compliant problem, to make sure that we build in the regular replacement of PCs and other computer equipment as we go on; that has been part of solving the problem, so to speak.

404. If, in the process of monitoring, you do come to the conclusion that a particular department is falling behind its timetable, what are the options available to you to cause them to speed up?

(*Dr Clark*) I have no authority, in a sense, to force them to do it, except the authority (a) of publicity, which I think is quite important, and the policy of persuasion, in the sense I have been charged by the Prime Minister to address this problem. And I am pretty sure, I am confident indeed, that if we do find there are any departments falling behind, certainly my experts will be very happy to work with them to address the problem, to make sure that we do not fall behind. Because the key thing is not to apportion blame of any description but to meet the problem as of 31 December 1999.

Dr Jones

405. How do you really know that they are falling behind, are you reliant upon them to tell you that they have a problem, or do you take any steps yourself to monitor what is happening?

(*Dr Clark*) In a sense, bearing in mind one is dealing with huge departments, if you take those like the DSS or the Inland Revenue, or something like this, you really are dependent upon the information which they provide. And I think that we have obviously got our own experts at the centre, and each of the departments has their own experts, and there is

[**Dr Jones** *Cont*]
a fair cross-fertilisation of ideas and information and best practices, and I think that it would be very foolish, and I do not think it would happen, that any department would set out to deceive the centre, it would be very foolish, and I am sure they would not, because they would be found out very quickly. And that is why it was so important to get this massive audit of the 1,600 pages now of every department that we can measure against.

Mrs Spelman

406. Chancellor, in your memorandum you say that some departments are going to leave correcting systems of minor importance until after the millennium. Could you give us some examples of what you consider to be a minor system?

(*Dr Clark*) Yes. The most obvious one are things like pocket calculators, it simply, probably, is not worth the while, well I would say it is not worth the while, actually to check if the pocket calculator is going to be compliant or not; in those sorts of cases, the easiest thing is to see if it works on 1 January 2000, and if it does not buy a new one. That is almost certainly a cheaper way of tackling the problem. So that is a very clear and simple one. And I think there may be other things, where we just have normal PCs which are used purely for maybe correspondence; in cases like that, it really does not matter too much, as we are advised, if there is anything wrong with that, because the odds are, in any case, that it will be working on a two-digit time clock and it will just recognise 00. And if I am replying to you and it is 2 January 00, you and I will read that as year 2000; if the computer thinks it is 1900 well there is no problem with that. So it is that sort of thing that we see as minor sorts of problems.

407. Are there any departments or agencies which you have particular concerns about, and, if so, which are those; we have heard about your monitoring process, but what have you done to encourage those departments to make efficient preparations?

(*Dr Clark*) We are at the stage where we have not had the first quarter yet even, so it is very early days. But one of the things that came out of the committee, with our sub-committee, and I am being very frank and honest with you on this, was that I was encouraged by the enthusiasm of my ministerial colleagues, and we are looking at ways if we can actually do some testing and checking of departments, indeed, I have volunteered my own department that we might just check that we have got it right. And that really was the spirit of the Ministers concerned, we are not trying to hide anything, we are not trying to prove anything, we are just trying to make sure the system works. So we are hoping, by doing some testing of departments, that we can make sure that the system is working, we are not trying to catch anyone out, we are just trying to make sure it works.

Dr Jones

408. Sorry, who is going to do the testing?

(*Dr Clark*) It will be the people at the centre here, basically; my people.

409. So you are going out to sort of do random checks?

(*Dr Clark*) And Ministers have volunteered this, yes.

Dr Williams

410. Does the Cabinet Committee and MISC 4, and I think you mentioned a sub-committee too, are there 2 different committees there?

(*Dr Clark*) Yes, there are. Perhaps, Dr Williams, I have given you the terms of reference of the main committee, which the President of the Board of Trade chairs, the ministerial sub-group is to drive action across central government departments and agencies to ensure that Government business is not damaged by the failure of electronics systems relating to the year 2000. So ours is more specific on central government and the departments related to it, the agencies related to the central government departments.

411. And the MISC 4 entails private industry as well?

(*Dr Clark*) It does, indeed.

412. There was a meeting in January, that was the first meeting; how often do you intend meeting during the course of the year?

(*Dr Clark*) The general way the committee has been working is that we had the first meeting and we tasked various departments and various ministries to do particular sections of works, I am talking about MISC 4 here. And it has been reported in the paper accurately that most of the attention of MISC 4 has been addressing contingency planning, because, quite clearly, we have got to make sure nothing does go wrong, and if things go wrong before the critical date we try to address those, but we are aware that even things may go wrong on 1 January of the year 2000; so we are looking at very basic things that the whole of life depends on, things like communications, like power supplies, and so on and so forth. So we will almost certainly do that at the strategic level. But also, at the more, if I could say, mundane level, we will certainly be looking at bodies such as the Consumers' Association, we will perhaps do an audit of perhaps a certain number of houses, just to see how serious the problem is in the domestic scene as well, because nobody is really sure how it is going to affect the domestic scene, so to speak. So we will try to look at it at both levels.

413. I am aware that you are, as an individual, especially computer literate and into word processors and lap-tops, and what have you.

(*Dr Clark*) Red boxes.

414. Yes, red boxes even. So, in a sense, you feel very committed to this programme, and I am sure that as well as your abilities come into this then it will get very high priority; but are there some other colleagues in the Cabinet that are not so computer literate, that will not give it the same priority and

[Dr Williams *Cont*]
drive that you do, and will their civil servants or permanent secretaries be able to sort of perhaps overcome their lack of computer knowledge?

(*Dr Clark*) I have been very encouraged by the ministerial committees, because I did take the view, and I think it is right, that you had to attract the interest of Ministers; if you can get Ministers attracted by this, they will keep driving it on. And I think we have got the message through to them, because the basic point is, almost all the Ministers, if they do not use computers themselves, use them in their offices, and will be able to address the problem very personally, and they have been asking me questions, "Well, what happens to my PC in the office?" and it is that way of trying to engage their publicity. And, I must admit, the idea of doing some random testing, which Dr Jones referred to before, actually the idea came from one of the other Ministers, "Why don't we try to do this sort of thing?" and I am quite happy for my department to be guinea-pigs in this one. So I think there is very much a great deal of willingness; because we realise this has got to work, it is not a party political issue, it has just to work for our country.

Mr Atkinson

415. Chancellor, you have just told us that the £370 million figure which you announced on 27 November to be spent over two and a half years might vary, and that is understandable; but that figure has been greeted by experts as being totally inadequate. They have pointed out, for example, that the experience in many other organisations has been that their compliance costs have risen as the projects have progressed, and the IT industry has this reputation of escalating costs never being within budget. So have you allowed for this experience, and how confident are you that your departments will be within that overall budget of £370 million, that you say is subject to only slight variation?

(*Dr Clark*) Mr Atkinson, I know your work in this field, and I think I did make the point before that we had tried to learn from the private sector, and my experience of the private sector is exactly the same as yours, that it has shown, as the private sector has moved in to try to deal with the problem, that the cost has increased; and that may be the case with this £370 million. The £370 million is the figures given to me, the detailed figures, by all the central government departments and their agencies, and we have simply, when I say simply, added them up in that respect. Of course, we have done much more work with the plans than that, we have tried to look at them and gone back to them and written to them and checked figures with them, but that is their estimate as of October of last year. It will be very interesting to see what their figure is as of the end of January this year, to see if it is the same; whether there has been any change, I do not know. I suspect as we move into the system we will begin to see the change, if there is going to be a change, and I suspect we will begin to see a change at the end of the next quarter, ironically, because they have just got going on this occasion. But I think the message I am trying to get across to departments is, "Look, we don't mind if you've got the figures wrong, as long as you're tackling the problem", because it does not matter what the cost, this has got to be fixed, otherwise it is a catastrophic effect. So that is the message I am trying to get across. There are no goodies or baddies, as I said before.

416. We have heard that the demand for the skills to fix this problem will exceed supply, certainly by the middle of this year, and, in response to that market situation, of course, costs are rising now, almost escalating. Have you taken that into account, that, in fact, the availability of the skills just will not be there, because of the increasing demand, as people begin to panic, in response to the problem, knowing that time is running out?

(*Dr Clark*) Yes, indeed. When we were preparing the statement I made to the House on 27 November, there were three points which we felt needed further work straight away. First, the point about the embedded chip; the problem of skills shortages; and contingency planning. We felt the initial plans from departments and agencies had not dealt with those thoroughly enough, so immediately after that statement I wrote round to all the secretaries of state and other responsible ministers, asking them their response to my concern on those three issues. On the skills shortages, the general view has been, and we have published all the replies, they are on the Internet, that we have received since 27 November, the general response has been that, as they are contracted with private industry for all this work to be done, and they claim they have checked with their contractors and they have got legal contracts for the work to be done, they are more relaxed than perhaps private industry might expect. But the other point that has been put to me, and I think it is a point of interest, because of the vagaries and government policies in the seventies, eighties, that most of the mainframe computers of central government are basically ICL, as opposed to IBM, and therefore we think even a figure, even a mainframe, probably in the region of about 66 per cent. And, as it is pointed out to me, because of the vagaries of the market, that is not unique to government but is very heavily focused on government, and we actually do not see as big a shortage or as big a pressure with ICL producers as we deal with IBM computers. So there may be something in the responses we have had from the departments; it does make a bit of sense in that respect.

Dr Jones

417. At the beginning of the session, Chancellor, you said that you thought that in some areas the public sector were ahead of the private sector; which are they?

(*Dr Clark*) What I really meant was that the public sector generally, I think, may well be ahead of some private sectors. I think my major concern is, and I say this just as a general statement, I think there is general concern about smaller companies in Britain, and indeed throughout the world, that have got problems in trying to be aware of the problem, to start with. I think the major companies are becoming aware of the problem, and I quoted what Robin Guenier said previously. I think the real problem has been with the smaller companies here in Britain.

[**Dr Jones** *Cont*]

418. So you would not say the public sector has got anything to teach the big companies?

(*Dr Clark*) I think we have something to teach each other, by the way, because, in a sense, we are a big company on our own, and there are some individual private companies who are ahead of us, there are some who are not as good as us, and I think we can exchange ideas and information; because, at the end of the day, it is no use the Government being compliant if private industry is not, and vice versa.

419. I am a bit confused with all this talk about random testing, exactly what stage we are at in terms of the audit and the assessment of what is required, and your responsibility, the £370 million you are talking about, that would not include the whole of the NHS; what would it include in relation to that?

(*Dr Clark*) Dr Jones, perhaps I may tackle your problem, with your permission, in two ways; perhaps I can answer your second question first and then ask Mr Gladwyn if he can come in and deal with the technical question about what we mean by random testing, if that is helpful. The first point. The figure of £370 million I refer to would not include the National Health Service at all; all it would include is the running and the operation of the Department of Health, and its regional offices, of course, but not the National Health Service. And, as I say, that would refer equally to the Department of the Environment, Transport and the Regions, it would include all the central work and regional work of that department, but would not include local government.

420. So who in central government has overall responsibility, or do you have any responsibility, or are you just saying that the Department of Health should have the responsibility to ensure that all the Health Service is compliant and that the DETR has responsibility for local government; do you have any responsibility?

(*Dr Clark*) Constitutionally and legally, I have no responsibility; that is a responsibility of the Secretary of State for Health, to make sure of the National Health Service. And if you begin to think about it, it really would be quite a difficult operation, if someone from the centre—it is not impossible, of course—started opening means of communication with individual health trusts, you can imagine how messy and difficult it would be. And that is why we have tried to follow the route of raising the awareness of the Ministers in those departments, and through the ministerial sub-group to try to ensure that Ministers try to approach the National Health Service, in this case, with the same thoroughness that we have approached the Department of Health, so to speak, and the same openness as well.

421. Moving on to the other point though, about random testing, that worries me, because I thought your audit was supposed to have been completed and you would know whether yøu were equipped?

(*Dr Clark*) Can I ask Mr Gladwyn to answer your question.

Chairman

422. Just before Mr Gladwyn does, if I may, Chancellor, I do not wish in any way to reduce the responsibility you do have, because from what you tell us this afternoon it is quite clear you take your responsibility very seriously, but you are, in a way, a facilitator, are you not, you are making it easier for everyone else that has got direct line responsibility to do the job they have to do, you are more than a facilitator because you are also checking on them and then facilitating again if your check comes up with results that you do not particularly like? But that is the role you are playing, is it not, within the Government?

(*Dr Clark*) That is exactly right, because at the end of the day I know where the buck stops on 31 December, it stops with the Government, and I am the Minister responsible at the centre of Government.

Mr Jones

423. There is something very important that you have just said, that, frankly, I think I should have realised before, and that is that the £370 million does not include NHS money and does not include local government money?

(*Dr Clark*) Or schools, or anything like that.

424. I am wondering where that money, for local government, in particular, is going to come from, because I know they are squealing at the moment in local government, my own local authority in Cheltenham has done all the estimates and it is half a million pounds, and they have not got it. Where is the Government going to find that money, and do we write to you and say, "Can you get your friend, Mr Prescott, to find the money?"?

(*Dr Clark*) To take your first point, your understanding is absolutely accurate, and now I think you may also understand why I have been fairly sure that my figures of £370 million may not be way out, so to speak, because they do fit in with the general pattern, I am not saying they are absolutely precise, but I think they are not way out, because it just does include central government. Clearly, just as we said to private industry, private industry will have to meet this problem without any help from central government, financial help; equally, we are expecting public bodies, they know the problems there, they should be budgeting for that, and we will be expecting them to meet the costs of putting the issue right out of their own budgets.

Dr Jones

425. So, back to the point about where we are at in actually assessing what those costs are?

(*Dr Clark*) Yes.

Dr Jones: And the audit.

Chairman: You are still on this point, Mr Beard, are you?

Mr Beard: Yes, I am.

Chairman: We will come to you shortly, Mr Gladwyn, we have not forgotten you. Cherry on the side of the plate.

Mr Beard

426. All the different agencies, like the Benefits Agency, they are excluded from this figure, too?

(*Dr Clark*) No, they are in it, the Benefits Agency are in it, because they are a Next Steps Agency of Government.

427. And they are in, the Next Steps Agencies are in?

(*Dr Clark*) Yes. I will supply you with a list, and perhaps, Dr Clark, you can circulate it.

Chairman

428. Thank you. Mr Gladwyn.

(*Mr Gladwyn*) On the question of testing, thank you, Dr Clark, what Ministers have sought is a level of confidence, in terms of these plans which have been published, and a method which has been proposed is that a number of departments, and particularly smaller departments and agencies, are expecting to complete their year 2000 conversion within the next few months. So the proposal has been, with the agreement of the Ministers responsible for those agencies, to pick at random a number of systems and to subject those which are certified by their operators as being year 2000 compliant to rigorous testing, in order to see whether or not that is true. So, in the first instance, with the first few, that will give us a not particularly statistical set of straws in the wind, but at least will give us indicators of how good or bad the conversion and testing process has been. As we move into the autumn, towards the back end of the year, and we start to get some really major systems being certified as year 2000 compliant, at that point we will be able to get some very meaningful early data, at a point where there is still an opportunity to pass on lessons and to share information on common problems, if such emerge.

Dr Jones

429. Can I just clear in my mind what this is. You are saying that the departments, the officials, are doing the audit, they are testing their systems and saying, "Yes, we have a system that is compliant" and then you are, at random, going and checking up on that; is that the right impression?

(*Mr Gladwyn*) That is the proposal.

430. Just to go back to the financial situation, I think you were accepting that it may be that, the £370 million, it could turn out to be more than that. What will happen, will there be additional support for departments, if the amounts increase, and what about the same for all the other organisations that we were referring to, if they turn out to be more expensive, and there are people who are saying that these costs are an underestimate, will additional resources be forthcoming?

(*Dr Clark*) Perhaps to come to me again, if I may. I think the position is, quite simply, this, that we are expecting the departments to meet their obligations, and they have been charged to meet this problem, they have been aware of the problem, and, quite clearly, I cannot anticipate what the next financial settlement will be, but certainly in this year's provision there is no extra money available for them.

431. Are you not worried that the fact that there are not additional allocations may actually limit progress in ensuring millennium compliance, if people put it off because of budgetary constraints?

(*Dr Clark*) I do not think they will. Certainly, as regards central government, I do not think that is the case. I think what I found encouraging was the way in which they have tried to build in the obsolescence factor and replacement factor of IT in the run-up, and, as I say, I think that is quite an encouraging thing. And I did get the figure, which has slipped my mind, but Mr Gladwyn will actually remind me what it is, the percentage of reinvestment is very high indeed, is it not, of IT equipment each year?

(*Mr Gladwyn*) Yes, Chairman, what is commonly taken as a proportion of the IT budget, which is spent on what is termed maintenance, varies between 50 and 80 per cent, that is generally the expenditure which organisations require to keep their systems up-to-date, to fix known new requirements, and to reinvest in them. So there is a continuing state of changing, updating and modifying any major IT system going on which can be turned to advantage in a situation like this.

Chairman

432. Thank you very much. Chancellor, I am aware of your timetable, we are doing our best to—

(*Dr Clark*) No, I am very happy to try to help.

433. Are you alright for another five minutes?

(*Dr Clark*) Yes; no problem. That is fine.

434. But we did start late, and that is our fault, and I know that you have commitments at a quarter to five, and we will do our best to keep to that. Can I just change the subject to not government and private sector, as we have been talking about, but this country and other countries, because Mr Nigel Jones and I happened to be in Saudi Arabia at the end of November, and we talked about this problem in Saudi Arabia, where they have got quite a lot of computers, and they did not even seem to be aware that the problem existed; now it may be they are on a different calendar from us, but they did not seem to be aware of the problem. I wonder if you have any information, either you or Mr Gladwyn, on what is happening with our near neighbours, our English-speaking neighbours, perhaps, across the Atlantic, America, or, more importantly, the French, the Germans, the Italians, the Spanish; are they taking it as seriously as we are taking it, or are we going to find that we get it basically right and, come 1 January the year 2000, they have not got it right and we do not have telephone links, or financial links, or anything else, defence links?

(*Dr Clark*) You clearly raise a very serious issue. On your defence links, let me make it clear that, certainly, I happen to know, and I am choosing my words very carefully, that NATO is now addressing the problem; so they are aware of it. I think one is really on subjective judgement, in this respect, that is why I made the point and emphasised it about Robin Guenier with Taskforce 2000 making the statement that probably people in Britain were more aware of this problem than any other country in the world, or most countries in the world anyhow. Because I think if people are aware they are likely to begin to tackle

[**Chairman** *Cont*]
the problem, I use the word begin to tackle the problem. It has been put to me by IT people that Britain, and this is purely subjective, it is purely opinions that have been expressed to me, that we are probably ahead of most European countries, and indeed may well be ahead of the United States of America. But that is just opinion, but I have heard that point repeatedly made to me, in spite of what is said in the press.

435. Thank you very much indeed. I think we have come to the end now. I would like to thank both you, Chancellor, and Mr Gladwyn, for his support as well. But I do have just one final question for you, Chancellor. We have all heard about your famous red box, that is electronic and computerised, and so on; my question is, is it 2000 compliant, or is there a possibility that at one minute past midnight, on 1 January the year 2000, despite your fingerprint and your card, it will not open and will stay closed for the rest of your term as a Minister?

(*Dr Clark*) That would be very happy for me, would it not, if it did not work out; at least I would have a quiet Christmas recess. It obviously is millennium compliant, and I would just like to say to this Committee, knowing your interest, the real advantage of the red box is going to be when we get the Government secure Intranet up and running, because it will mean that if I am up in my constituency and I have got a dedicated line I will simply be able to plug in the red box and up in the lap-top I will have access to all Government information and messages, and this sort of thing. And I think that is going to make Government very much better, and that is going to be the great plus of the electronic red box. I think a number of us may find it a bit frustrating not having the paper things; but it is going to come, I am quite certain about that.

436. Thank you very much indeed, Chancellor. Thank you for the good-natured way you have answered all our questions, the tremendous amount of help you have given us, and we wish you well in all that you do. We hope that you might find our report of some interest, when we produce it within a few weeks, and, once again, thank you, thank you, Mr Gladwyn, for being with us.

(*Dr Clark*) And if I could just say that if you feel we can give you any extra help, any written documents, we will be delighted to try to do that.

Chairman: Thank you very much indeed. Thank you.

WEDNESDAY 4 MARCH 1998

Members present:

Dr Michael Clark, in the Chair

Mr David Atkinson
Mr Nigel Beard
Mrs Claire Curtis-Thomas
Dr Ian Gibson
Dr Lynne Jones
Mr Nigel Jones
Dr Ashok Kumar
Mrs Caroline Spelman
Dr Alan W. Williams

Memorandum submitted by the Health and Safety Executive

INTRODUCTION

1. The Health and Safety Commission (HSC) has overall responsibility for policy and the administration of the Health and Safety at Work etc. Act 1974 (HSWA). The HSC, together with its operational arm the Health and Safety Executive (HSE), are responsible for health and safety standards and regulation in higher-risk premises including factories, power stations, chemical installations and oil refineries. Local authorities are responsible for enforcing the Health and Safety at Work etc. Act 1974 (HSWA) in premises allocated to them under the Health and Safety (Enforcing) Authority Regulations 1989, which generally come within the lower end of the risk spectrum.

SCOPE OF THIS NOTE

2. The Science and Technology Committee has raised the specific problem of the ability of computers and other software-driven systems to cope with the transition from 1999 to the year 2000. There is also a more general problem of "date discontinuity", which is described briefly in Annex A, and which the Committee may wish to note. This brief deals only with the more specific problems associated with the run-up to the millennium.

THE "YEAR 2000" PROBLEM AND WHAT CAUSES IT

3. In most engineering, production and manufacturing environments, a variety of computerised systems are used to plan, measure, store information control processes and keep them safe. Systems may also be linked together by communications networks, and information shared and used for different purposes. When such information is both time or date-dependent and important for the safe operation of a process or machine, safety may become an issue at the year 2000. Moreover, because of linkages between systems, a system which is itself resilient to the "Year 2000 problem" may still be affected by the failure of a subsidiary system to which it is linked.

4. The problem is created through using a two-digit descriptor for the year in those systems which rely on a calendar. Thus "99" is the two-digit descriptor for 1999, and when the calendar advances to the year 2000, the 99 will roll over to "00". At this stage the software may be able to cope with the change, interpreting the "00" correctly as the year 2000. Alternatively it may consider that the calendar has regressed to 1 January 1900, in which case the software may think it is running 100 years late.

5. The changeover from 1999 to 2000 is the most readily-recognised aspect of the "Year 2000 problem". However, it is not limited to 31 December 1999. (There is also the more general problem associated with date discontinuities described in Annex A). 9 September 1999 is a potentially critical date because of its representation as "9999", which some computer systems may recognise as an "end code" (at which point the system may shut down). There are also potential problems associated with the fact that 2000 is a leap year. Centennial years are leap years only if they are divisible by 400. Thus 1900 was not a leap year but 1600 was, and 2000 will be. Some systems may be incorrectly programmed and risk failure at 29 February 2000 or 31 December 2000 (the 366th day).

HEALTH AND SAFETY LAW AND RESPONSIBILITIES

6. Employers have general duties under sections 2 and 3 of HSWA to ensure, so far as is reasonably practicable, the health, safety and welfare at work of their employees, and the health and safety of those who could be affected by their work activities. They also have more specific duties, under regulations, to provide and maintain plant and systems of work that are, so far as is reasonably practicable, safe and without risks

to health. Employers also have legal duties under the Management of Health and Safety at Work Regulations 1992 (as amended), to carry out a risk assessment on their work activities, including plant, machinery and work equipment. On the basis of this assessment duty holders must take adequate steps to control the risks.

7. Where work equipment is concerned employers have more specific duties under the Provision and Use of Work Equipment Regulations 1992 to ensure that work equipment is so constructed or adapted to be suitable for the purpose for which it is used or provided (Regulation 5) and that all control systems of work equipment are safe (Regulation 18).

8. It follows that the Government as an employer will also have duties to ensure that its own safety-critical systems are managed to ensure health and safety.

9. If suppliers provide products covered by regulations implementing Article 100A Directives of the Treaty of Rome (for instance, the Machinery Directive), these products must be safe. Under the Supply of Machinery (Safety) Regulations 1992, as amended, the responsible person has duties to make sure a fault in the control circuit logic does not lead to dangerous situations. Thus, for machinery supplied after 1 January 1993, suppliers should have addressed the year 2000 problem in the software.

Health and Safety Enforcement Responsibilities

10. HSE inspectors enforce health and safety in factories, building sites, mines, farms, fairgrounds, quarries, railways, chemical plant, offshore and nuclear installations. Under the Health and Safety (Enforcing Authority) Regulations 1989 Local Authority enforcement officers cover retailing, some warehouses, most offices, hotels and catering establishments, sports, leisure, consumer services, places of worship, etc.

11. Employers for work activities which are the subject of the Offshore Installations (Safety Case) Regulations 1992, or the Railways (Safety Case) Regulations 1994, are required to produce a safety case. These safety cases are handled by the Offshore Safety and the Railway Inspectorate respectively. Dutyholders under the Control of Industrial Major Accident Hazards Regulations 1984 produce safety reports as part of the information they are required to produce under these regulations. Employers in the nuclear industry are subject to a licensing scheme under the Nuclear Installations Act 1965 (as amended); licence applications have to be approved by the Nuclear Installations Inspectorate.

Enforcement Approach

12. HSE is fully seized of the safety-critical implications of computer software failure and in the past has produced some general guidance on the matter; this is listed at Annex B.

14. Inspectors preferred initial enforcement approach is through advice and guidance. This advice will be in the context of the requirement of the Management of Health and Safety at Work Regulations for dutyholders to review any existing risk assessment in light of the "Year 2000 problem". This will include government departments. If dutyholders fail to repond to this advice and guidance, and there is currently no evidence of this, inspectors will not hesitate to take appropriate enforcement action, including the use of improvement and prohibition notices and if, necessary, prosecution.

HSE Research

14. HSE has commissioned two new pieces of research to deal with the particular problems that the century date change might cause for safety critical systems. One is from Real Time Engineering Ltd, Glasgow and the other from the HSE's Health and Safety Laboratory. The research from Real Time will be published shortly and will provide information about the scope and nature of the problems and potential failure modes. It will also provide a suggested methodology for identifying the extent of the problem and a strategy for its solution. The research from the Health and Safety Laboratory ("Investigation of the Year 2000 problem with respect to safety-related control systems") centres on the potential effects of the date change using a computer system whose clock has been artificially advanced to simulate the change.

15. Both pieces of research demonstrate that there is no universal answer to the problem and that the same software running on different computer system could produce different results. The implications are that duty holders will need to ensure, in the case of safety-critical systems, that each software application is identified and the effect of the date change assessed. Once that assessment has been done any necessary changes will need to be made.

16. Based on this research, HSE is producing further guidance for dutyholders on what they should and should not do, and where to go for sources of advice. Dutyholders may need to go to their suppliers for help in tackling the problem.

High-Hazard Workplaces

17. HSE is paying particular attention to high-hazard installations as follows:

- Site inspectors within the Nuclear Installations Inspectorate have written to their respective nuclear sites asking them to demonstrate an adequate approach to the potential risk. The Inspectorate will be assessing the licensees' proposals to ensure that safety levels are maintained.
- The Chemical and Hazardous Installations Division has approached the chemicals manufacturing industry through the tripartite Chemicals Industries Forum. Members were also given an information note to distribute within their organisations with the aim of further increasing awareness and getting companies to take the first steps to establish whether or not they have a problem and need to take remedial action.
- HM Railway Inspectorate (HMRI) are in consultation with the principal players in the rail industry (Railtrack, London Underground Ltd, Eurotunnel etc) on what they are doing about the problem. The main industry members are undertaking surveys to determine the scale and possible effects of the problem so far as embedded systems are concerned. HMRI are monitoring industry activity.
- The Offshore Safety Division is giving a presentation to the HSC's Oil Industry Advisory Committee and will monitor how the offshore industry is coping with the problem.
- HM Inspectorate of Mines is contacting employers' and an HSE working group addressing this topic will shortly produce a checklist for circulation to dutyholders.

HSE's current assessment is that employers with high-hazard installations are taking their responsibilities seriously.

Other Premises

18. In the remainder of workplaces, HSE's Field Operations Directorate and local authority inspectors can use the publication of HSE's research and guidance (para 16) to help raise dutyholders' awareness. Where inspectors visit premises as a matter of routine they will ask dutyholders if they have safety-critical systems, and refer them to the guidance. Where there are safety-critical systems, inspectors will ask if risk assessments have been revised to take the year 2000 problem into account and, where appropriate, check that action is being taken to deal with any potential problems. Where inspectors find safety-critical problems which present a significant risk they will require employers to get advice and gain expertise from suppliers (or consultants, if necessary) to ensure the the time-critical aspects are dealt with.

Co-ordinating Government Enforcement Work

19. HSE is trying to promote a co-ordinated approach to employers to ensure that they have consistent advice and guidance and meet their legal duties. Angela Eagle, Parliamentary Under-Secretary of State for the Department of the Environment, Transport and the Regions, has specific responsibility for health and safety issues. She wrote to colleagues on 21 November about the establishment of an official enforcers' committee which HSE will co-ordinate. Ms Eagle's letter also alerted Government Ministers to the safety critical implications of the year 2000 problem.

HSE Next Steps

20. HSE's next steps will be to:

- Publish the RTEL and HSL research reports (see paragraphs 14-15 above).
- Produce and publish guidance (see paragraph 16 above).
- Continue to monitor and evaluate employers' responses (including Government as an employer).
- Take proportionate enforcement action, where appropriate, to ensure compliance with the law.
- Keep the situation under close review to ensure that experience is shared where appropriate, and additional research commissioned if necessary.

Annex A

DATE DISCONTINUITY

1. Date discontinuity occurs when the time (as expressed by a system or its software), does not successfully move forward in line with true time. For instance, some software systems are equipped with "clocks" which calculate time from a fixed point (eg by counting the number of clock ticks since 1980, or some other arbitrary date of significance to the manufacturer). When the register which accumulates these clock ticks is full, it will overflow (like a car odometer) and show zero. This will be interpreted by the software as the fixed date of origin ie 1980.

2. The failure mode may cause the software to "crash". More generally, an incorrect year change or recognition will produce unpredictable results. Date-dependent systems may then produce incorrect results or fail completely if these incorrect year numbers are used in arithmetical calculations. Alternatively the system may continue without any immediate apparent effect but time-critical aspects of the software may be affected eg valves which are timed to operate at particular intervals may not open or shut.

Annex B

GUIDANCE DEALING WITH THE FAILURE OF CONTROL SYSTEMS

1.1 HSE issued guidance of the design of safety-related computer control systems in 1987 titled "Programmable Electronic Systems" (PES) in safety-related applications.

This guidance was in two parts and was re-issued with new ISBN as follows:

Part 1: An introductory guide, ISBN 0 7176 12783, February 1997, price £5.50

Part 2: General technical guidelines, ISBN 0 7176 05450, November 1995, price £12.50

1.2 HSE continues to contribute to the development of European and International standards on the design of control systems as follow.

BS EN 954: Safety of machinery—safety-related parts of control systems:

Part 1: General principles for design, issued in 1997

Part 2: Validation (in preparation)

IEC 61508: Functional Safety of electrical/electronic/programmable electronic systems

Part 1: General requirements

Part 1: Requirements for electrical/electronic/programmable electronic systems.

Part 3: Software

Part 4: Definitions and abbreviations

Part 5: Examples of methods for the determination of safety integrity levels

Part 6: Guidelines on the application of parts 2 and 3

Part 7: Overview of techniques and measures.

Note 1 Parts 1, 3, 4 and 5 will be issued as Final Draft International Standards which national committees will be asked to accept by formal vote. Acceptance will lead to publication in late 1998.

Note 2 Parts 2, 6, and 7 will be issued as Committee Drafts for vote and comment. Acceptance will lead to these parts moving to Final Draft International standard stage with possible publication in 1999.

1.3 Although standards take a long time to emerge, the basic principles used to draft their requirements come from within industry and are therefore well known. Industry is kept well informed of progress in the standards working groups through formal consultation and informal contact between interested parties at National and International levels.

Examination of Witnesses

MR DAVID EVES, CB, Deputy Director-General, MR CLIVE NORRIS, Director, Safety Policy Directorate and MR RON BELL, Head of the Electrical and Control Systems Unit, Directorate of Science and Technology, Health and Safety Executive, were examined.

Chairman

437. Order, order. Mr Eves, welcome to the Science and Technology Select Committee. Thank you for coming along and bringing two of your colleagues with you. Before we start our questioning, would you care just to say a few words about yourself and to introduce your two colleagues?

(*Mr Eves*) Thank you, Chairman. Good afternoon. On my right is Mr Clive Norris who is Director of Safety Policy for the Health and Safety Executive and Mr Ron Bell is Head of our Electrical and Control Systems Unit in our Directorate of Science and Technology. I am David Eves; I am the Deputy Director-General of the Health and Safety Executive. My responsibilities embrace all of the operational side of our business which includes all the work of the inspectorates, science and technology capability and some other activities, so I think that is enough about me. Would you like me just to say a little bit about where we are coming from, Mr Chairman?

438. Provided it is very brief, Mr Eves, because we do prefer to get information from our own questions, but a brief opening statement would be welcome?

(*Mr Eves*) I do understand, Chairman, and thank you very much for the opportunity and I know you are extremely well informed already, but I thought if I just said what our strategy was as the health and safety regulator for tackling the Year 2000 problem it might be a helpful starting point. Essentially it has four elements. Carrying out or commissioning research which we have done and are continuing to do, so that we get better understanding of the nature and scale of this problem so far as it affects health and safety. You are probably aware of the report that we have recently commissioned by Real Time Engineering Limited and we can say more about that, but we also have some in-house research in progress and we are also carrying out a survey of Year 2000 Compliance on major hazard sites in the chemical sector which are not currently covered by a safety case regulatory regime unlike the nuclear and the off-shore and the railway sectors. The second element of our strategy is raising awareness. This is by means of published reports. You have probably seen *Safety and the Year 2000*. We published that in January. We are publishing guidance; in April we will be publishing some free guidance for SMEs. We are also raising awareness through contacts with employers and trade associations, professional bodies; for example, Mr Bell is a Member of the Institution of Electrical Engineers. We have a lot of contacts with all the professional bodies, with the standards making bodies and are speaking and participating in technical seminars. The third element of our strategy is to co-operate with other departments and agencies so in particular this means DTI and Action 2000, with whom we have established very good links and, I think, rapport. Finally as we are the enforcing authority for health and safety, we have formal enforcement as the fourth element of our strategy. I think I would like to make it clear at this stage that we are not regarding that as the answer to the problem. All four elements of the strategy we think are vital.

439. Most helpful, Mr Eves. I think it took two and a half minutes. If everyone was as succinct as that we would welcome opening statements more than we do. The trouble is, some people take 20 minutes and that is too long. You have told us where you are coming from. May I just tell you in reply where we are going to. We really have two things we are finding; one is that we are anxious about the safety to the general public that might be brought about by computer systems or IT systems not being 2000 compliant and second, we are trying to find out what is being done, what is the solution to the problem. We hear a lot from our witnesses telling us about the problem; we hear not so much about solutions. Today, with you as our witnesses, we would like to talk about solutions and first of all we would like to talk about dangers and then we would like to talk about solutions. So may I ask the first question? We hear a lot in the press about possible dangers to the general public. Could you give us a brief outline about how severe and how real these dangers may be; not will be, but may be, because there are some people in the press saying that it goes between total catastrophe and over-exaggeration and nothing is going to happen at all, it is over-exaggerated? Where is the truth, Mr Eves?

(*Mr Eves*) A simple question, but a difficult question, is it not? We are responsible for high hazard industries such as the nuclear and major chemical installations, off-shore installations. Some of these, of course, pose off-site risks. Now the work we have done with these industries through individual companies and through their associations convinces us that there is not actually a major problem there. An enormous amount of work is going on. Nuclear reactors, their protective control systems are generally hard-wired. We are not looking at safety critical software problems in most of those major hazard areas. Nevertheless we are pressing these companies to demonstrate to us, either through their safety cases or through special inquiries, that they have actually got abreast of the Year 2000 problem. But I make that point simply because Health and Safety Law requires employers, operators of plant like that, to take account of risks off-site. The safety of the public is actually embraced by Health and Safety Law; it is not just about employees. We are also responsible, of course, for the enforcement of safety on the railways where probably public safety is the biggest issue and we are engaged in discussions with Railtrack as the main infrastructure controller. They have to present a safety case to us as the regulator, but they are also in a system which also requires them to accept or reject safety cases from train operators wanting to come on to their system. We are also convinced that the problem is being properly addressed in that sector. Where we are less

[Chairman *Cont*]
clear—and I have to be frank about it—is about the extent of the problem, and you have asked about risk to the safety of the public, arising in the SME sector which is vast; we estimate something like 3.7 million businesses in the United Kingdom. The majority of those will be small firms employing fewer than 50 people and inevitably these days many of those will have programmable electronic systems, computerised systems, software of various kinds, some of which could have safety implications and that is where we are doing research and hoping to raise awareness. So I cannot give you a simple answer to your question; we are not in the scaremongering end of the spectrum but neither are we at the "there is no problem" end of the spectrum. We think there is a serious safety problem to be addressed and we are hoping to engage everybody's attention to that problem.

440. I do not think there is anything really in your answer, Mr Eves, if I may say so that would be very attractive to a press journalist one way or the other. Are trains going to crash because points are not going to switch? Are there going to be accidents because nuclear processors will suddenly die at midnight on 31 December next year? Is that the sort of thing that is scaremongering and is that the sort of thing we can rule out?

(*Mr Eves*) I think we can rule that out. We are making great efforts ourselves as the regulators to make sure that in those high hazard sectors that sort of thing just cannot happen.

441. Would it be fair to say that what we are going to see on 31 December 1999 is more likely to be a series of inconveniences than a series of major hazards?

(*Mr Eves*) I think that is probably so. Some of those inconveniences could however have safety implications.

442. I am not belittling it by making that comment, but I am trying to take some of the sting out of the scaremongering?

(*Mr Eves*) Yes.

443. Could I just finally ask before my colleagues ask questions I am sure, in your memorandum to us you talk about dates we already know about, 9 September 1999—9999—which we are told has been a dumping date for various programmers in the past and there might be some complications there which will be three months before the key date. 31 December 1999 we know about. 29 February because that is a leap year when it should not be in a millennium year; it could be a complication and even 31 December, 2000 you mentioned could be. Are there any other dates that might come along as being, quote "interesting" ones?

(*Mr Eves*) There are one or two other interesting dates and I think if I may I will ask Mr Bell to answer your question?

444. Mr Bell?

(*Mr Bell*) Thank you, Chairman. I think that as we progress with our research and as our programme develops, we are actually getting further information on the likely dates. At the present time this is the list we are sticking by.

445. Mr Bell, could you just tell me why 31 December 2000 could be an interesting date?

(*Mr Eves*) It is the 366th day—

(*Mr Bell*) Oh yes, it is the 366th day year.

446. Yes, in the leap year date, that is right? But there are other ones coming up, you think, from your research?

(*Mr Bell*) We have no evidence of that. What I am saying is that these dates that have arisen, we started off with just the one date and during the past several months other dates have come up and people, particularly people who are doing millennium work—consultants doing millennium work that we have contact with and the people who in fact did this work for us—as they do the work they then find dates that have been used in this particular way and flag them up to us.

Chairman: Thank you very much indeed. Mr Jones?

Mr Jones

447. Chairman, I wonder if I might just ask a question? You mentioned the nuclear industry. We had some evidence that seemed to indicate that each nuclear power station would have to be taken out in order to upgrade various parts of the system in order to do that and it takes rather a long time to do that, maybe a month to take it out and a month to wind it back up again after everything being tested. I also understand that the demands of the national grid are that you can only take one nuclear power station out at any one time. Do we have enough two-month slots to take the nuclear power stations out?

(*Mr Eves*) If I could start one step back, if I may, nuclear power stations as I said earlier, the reactor circuits themselves are not in any way time or date dependent in terms of their protective controls. We are, however, pressing for justification of all of the systems at nuclear power stations. Some of these will not apparently be linked to any other safety critical activities, but just as we, as with any other industrial sector, want to alert people to the fact that there may be embedded systems which could cause problems, probably bits of the plant shutting down which in itself will not be unsafe but possibly leading to other consequences, we are confident in our discussions with the nuclear industry that there is not a problem affecting nuclear safety at these plants. Now you ask about shutdowns. There is a system of shutdowns at nuclear power plants. The reactors themselves have to be shut down from time to time; outages, and huge amounts of work are done during that period and I think as the normal programme of outages continues companies will be taking advantage of those shutdowns to do other things, such as checking their other systems for Year 2000 compliance. So I do not think there is going to be a threat to the national grid.

448. In your memorandum you mentioned an official enforcers' committee. Has this committee been set up and has it met yet and what is its precise role and which agencies are represented on it?

(*Mr Eves*) When we put that submission to you that was certainly the state of play and indeed we set the ball rolling and wrote to departments and were really moving towards a meeting where we would all

[**Mr Jones** *Cont*]
get together. This however has been overtaken, I think, by the establishment of MISC 4 Committee. That of course is supported by DTI and we are involved in giving some support to that Committee and I am sure that amongst other things it is going to do the co-ordination of enforcement authorities' approach to this problem that we had originally volunteered to do.

449. How will this new committee actually help the enforcement agencies to make sure that their constituents are taking appropriate action?

(*Mr Eves*) I imagine, because I have not yet been involved in its working, that they will want to see that enforcement authorities, such as ours, such as perhaps the Environment Agency, Civil Aviation Authority and so on, are sharing information about this problem and, where necessary, are adopting a common or consistent approach when in some cases companies at the receiving end of regulation are subject to the attention of more than one regulator and we want to be consistent in this approach. I think by having put our own document on the table with a methodology we would hope that this would be a kind of benchmark for consistency and for co-ordination of this kind of approach, but we are always open to suggestion and we wait to see how that unfolds.

Mr Atkinson

450. We received some representations from Savills, the international property consultants, that many commercial buildings share the same threat from the time bomb as computers do which they feel has not been adequately addressed, such as the numerous service installations that regulate the operations of buildings which rely on the controls which have embedded chips and micro-processors and they paint a worst case scenario that we could see a loss in function of security installations, fire alarms, air conditioning, heating systems, escalators and back-up systems such as generators. Is it the responsibility of your Executive to address these particular problems and, if so, how are you doing it?

(*Mr Eves*) It is not actually our responsibility except that there will be some of those systems perhaps controlling maintenance intervals for lifts where the interruption, apart from being inconvenient, could actually be frightening to people and could possibly be unsafe in certain circumstances. So we do have an interest in that, but we do not have a majority interest. Business interruption, if I put it that way, is not our responsibility for dealing with although we do recognise that it could be a difficulty in the kind of premises you are talking about. In fact, we see the threat of business interruption, the commercial pressure on people arising from that, as being quite a favourable element in driving for safety improvements or at least getting attention paid to safety implications. So we hope for some spin off from that, but it is not our responsibility is the short answer.

Mr Atkinson: Thank you.

Dr Jones

451. I appreciate that for high hazard sites you have a direct relationship with those that are running them, but in relation to SMEs you said you were producing some information. Are you producing your own information that you are disseminating yourself, or are you putting proposals to Action 2000 so that it can all be co-ordinated?

(*Mr Eves*) We are doing both. We are producing our own free leaflet which will, I hope, put into small business friendly language some advice about how to tackle the problem and at least start off by identifying the hazard. I mean, do they actually have a problem is the starting point and then giving them some guidance on how to go forward with that. We feel we need to do that. The Health and Safety Commission, for whom the Health and Safety Executive works, is very keen to assist small firms in improving their health and safety standards and that is essentially an initiative flowing from the Commission's policy towards helping small firms. But we will, of course, also be assisting with Action 2000's campaign because I think there are a variety of means of getting the message through and one of our techniques is really to work through intermediaries—that is why we talk to trade associations—and Action 2000 is a major intermediary as far as the HSE is concerned in getting our message through. So there could be some duplication but I do not think there is any harm going to be done by that.

452. Has Action 2000 produced a check list and have you input into it?

(*Mr Eves*) I think not as yet.

(*Mr Bell*) Action 2000 have produced a package with a number of sheets which is growing and as the programme develops they are producing more. What we have now done is actually tied in with their programme so that when our document comes out it will actually be part of a two-part presentation pack. There will be the DTI material together with the HSE material and we have tailored our material to fit in with the DTI material. So basically it gives us a much higher gearing in terms of getting the information out to SMEs.

Dr Gibson

453. I would like to follow up on your awareness raising plans. How do you monitor that they are taking your advice? Do you actually go in on site and if you have not done that yet, are you worried in any industry and might there be a cut-off point where you do have to have a site visit? You must have talked about that, I am sure. At what point would you go into a company or a particular industry and do something and have you done it yet?

(*Mr Eves*) Between now and the year 2000 we will carry out roughly 200,000 site inspections for health and safety purposes generally. We are obviously raising awareness of our own inspectorates to the problem. We have talked about high hazard industries, I have mentioned the size of the problem for smaller firms and clearly if there are 3.7 million small firms with 200,000 inspections, even though that sounds impressive it is hardly going to scratch the surface of the problem. Which is why we are

[**Dr Gibson** *Cont*]
trying to use other means now in terms of raising awareness. For example, we held a press conference when we launched our guidance; that was well reported in the national press and will run for some months I suspect in the technical journals which smaller firms tend to read for their own business purposes, so we will be doing that. When inspectors come across a problem, it could be specific, you know, they just happen to find it by conversation with an employer in a small firm, they will obviously deal with that problem and give advice and point people in the right direction and at the end of the day could take enforcement action, but the point I am trying to make is that we do not see that as the answer; it is part of the answer, but it is not the whole answer.

454. But you are not ruling it out as a strong possibility in the next year perhaps?
(*Mr Eves*) We have got two years, have we not? I think this coming year we are very much in the awareness raising phase, getting the information out to people. We will learn more about the size of the problem and we will learn more about the specifics of the problem. There may be some sectors—we are looking closely at the chemical sector, for example, where there are a lot of small firms—where we need to do more.

455. So you do not lie awake thinking you might be too late in one company?
(*Mr Eves*) No, I do not lie awake thinking we might be too late in one company. I am sure that there will be many companies that we will not have visited by the year 2000 who could have a Year 2000 problem. I hope that our contribution in getting them tuned into the problem and getting them in line with good practice and perhaps taking advice from a bigger firm or from a respectable consultant will actually help them solve their problem. They are the duty holder, we are not. We are the regulator. We can do so much, but at the end of the day they have to try and get it right for their own businesses.

Dr Williams

456. You say that there are 200,000 site inspections a year, is that right?
(*Mr Eves*) No, in the next two years.

457. In the next two years. This Year 2000 Compliance is just part of that site visit at this stage. What percentage of the time of inspectors on sites would be dedicated to this problem?
(*Mr Eves*) I think that will depend, will it not, on the kind of establishment that the inspector is visiting? It is on the agenda now. It is one of a number of issues that inspectors will raise with firms and if in the dialogue, by probing, we establish that this particular firm has a problem the inspector may decide to spend all his time on that occasion in dealing with it. There are legal requirements, quite elaborate legal requirements, for risk assessment already in place and the inspector can say: "I would like to see your risk assessments and your safety management plans" and if it is clear that the Year 2000 Compliance has not been raised within the firm, he can raise it with them.

458. You do expect them to make some dedicated site visits on Year 2000 Compliance?
(*Mr Eves*) I am sure that some of the visits that some of our inspectors pay will turn into dedicated Year 2000 Compliance visits because we also learn from those and we will bring back from that inspector's experience information which we can disseminate to the rest of our field force.

459. If there is a genuine problem here of some of these medium sized companies not being compliant, do you have the resources to really carry out a detailed inspection in six months' time, in 12 months' time or over the next 18 months? Do you have the resources?
(*Mr Eves*) We do not have any additional resources specifically for this problem. We have about, at the moment, 1,440 inspectors roughly. We shall be recruiting more inspectors over the next couple of years because the Government has increased our budget this year for that purpose, but we do not have a dedicated force of inspectors for this problem. What we have are some specialists, like Mr Bell, who interact with a number of other organisations and other technical specialists outside and if necessary we could bring to bear our S & T capability on a single firm's problems, but I am not sure that we would see that as an efficient use of our resources.

460. You said that there were no additional resources to tackle this problem next year, yet when we ask numbers from Government or from the banks and so on, we are talking about hundreds of millions; something like £370 million I think the Government quoted for its own departments. The banks, later this afternoon, have a global figure of about a billion pounds they are spending. Yet in your own case no additional resources and in terms of personnel just time taken from the 1,440 inspectors. Could I just set that against as well Shell when they were here quoted a number of 60 full-time equivalent members of staff already involved in testing their equipment to make sure that it was compliant. Are you not being incredibly relaxed about it?
(*Mr Eves*) I hope we are not being relaxed about it in the Health and Safety Executive. I was answering your question in relation to our field force and the kind of work that they do with companies. So far as my own organisation is concerned, which has a lot of IT in it—everybody has a PC for example—we are actually carrying out our own Year 2000 Compliance programme and putting a lot of effort into that. I believe we are spending about £970,000 over the next two years to make sure that all of our systems, most of which are not safety critical of course, are actually Year 2000 compliant. Now I cannot compare our £970,000 with the figures of a multi-national company that you have just mentioned, but we believe it is that level of resource that we have to put in to get our systems right. We are trying to persuade and, if you like, be a catalyst amongst employers that they too should be spending some of their resources on averting problems which might have safety repercussions.

Dr Jones

461. What is your total budget?

(*Mr Eves*) Our total budget right now is a little less than £200 million.

462. And you are having to spend nearly £1 million on your own compliance?

(*Mr Eves*) This is from our own computerised systems budget which we are prioritising to sort out our problems right now. It is not the whole of our computer budget.

463. Do you think you do have enough resources to tackle this problem and enough trained personnel?

(*Mr Eves*) Yes, I think we have the expertise in our various inspectorates to be able to ask the challenging questions. That is our job. It is not our job to go in and provide expert consultancy advice to companies. I believe we could do that, but that is not our job. So I think with our current level of resources—and it would be impractical of us to imagine we could double the size in the next two years—I think we can do a good job in stimulating industry.

464. I take it that although you are not able to visit every firm you will be visiting every high risk site and are you setting some kind of timetable with them for compliance? I would gather that you have not issued any prohibition notices or any other kind of enforcement action, but what might have to happen to trigger such action?

(*Mr Eves*) High risk sites are visited in our programme of work annually. That is our target; we achieve that target. So every high hazard, high risk site or establishment will be inspected, probably twice before the year 2000 and in some cases probably a number of times more than that because other issues will arise. I think the answers we are getting back from major companies in those high hazard sectors indicate to us that they will have completed their programme by the end of this year, 1998, which is when incidentally we intend in HSE to complete our own programme. It seems to me that this is a sensible target. The majority of people I think can achieve that, particularly if they started a little while ago as a number of the bigger organisations did. So I think in a year's time we will be appraising the situation and deciding whether we move into the more formal enforcement stage that I mentioned earlier. That is when you might see some improvement notices or prohibition notices.

465. But at this stage that is still a possibility, that although people are hoping that they are going to have completed all their testing by the end of the year that if they have not, you might envisage issuing some compliance notices?

(*Mr Eves*) It is certainly one of the shots in our locker and we do, as I am sure you know, issue them and prohibition notices.

Chairman

466. You have the authority to do that?

(*Mr Eves*) We have the authority to do that.

467. You would not need any new authority?

(*Mr Eves*) No. It would be based on the opinion of an inspector. That is what the law requires.

Chairman: That is very helpful. Thank you very much. Mr Beard?

Mr Beard

468. What proportion of the safety critical systems in, for instance, a nuclear installation are dependent on some date, time chip function or are themselves linked to something that is dependent on a date, time function?

(*Mr Eves*) None of the safety critical systems related to the nuclear reactor itself are time, date dependent. We are satisfied on that point. Neither is there any linkage with other systems where there is such a dependency. We want to be sure, however, whether it is a nuclear plant or a chemical plant or anything else, something else might not happen which although not directly connected with the control of the reactor could actually affect people on site and cause an accident—if you like, a conventional safety accident—which in turn might impair the command structure's ability to cope with the running of the plant as a whole. Now that is a pretty remote risk, but it is the kind of inquiry we are currently making which we are expecting the industry to demonstrate to us that they have addressed.

Chairman

469. May I just interrupt there? Mr Eves, we hear cases where when there is a subtraction of one date from another—for example, to try to find places in primary schools for five year olds and you get 98 year olds being told that there will be a place for them in the year 2003 because it is one date subtracted from another, or when it comes to paying pensions which is one date subtracted from another—we can understand how the computer compliance can throw up anomalies which in the cases of which I have just told you causes us all to smile, but if it was something far more serious it would cause us distress. But generally in process plant running it is not a matter of subtracting one thing from another, it is a matter of just going over midnight into a new day and will not the plant generally not care whether it is 1 January 2000 or 1 January 1900? Are there not many cases with process plant running, including the nuclear industry, when it is just a new day and if the plant thinks it is 100 years old when it is only five years old, it probably does not really matter too much?

(*Mr Eves*) It matters if the software is double digit date dependent because that could lead to an unpredictable result. I am going to ask Mr Bell to say a bit more about this because he is heavily involved in the technical investigations we are carrying out, but there is a difference I think between the kind of software that can run through the year 2000 which is generally four digit, you know 1999, 2000 four digit and software which on the whole is older and has been based on two digit.

470. What I meant in my question was everything to be two digit. When I said 2000, I meant zero, zero?

(*Mr Eves*) Right, okay.

[**Chairman** *Cont*]

471. And the plant does not know if the zero, zero has a 20 before it or if the zero, zero has a 19 before it. Mr Bell?

(*Mr Bell*) I think the answer is that there is a high degree of uncertainty. We do not know. I will give you an example; we had a case recently of what are called smart sensors (analysers) which are basically micro-processor based instrumentation systems, just an instrument. And most instruments these days on process chemical plants are in fact micro-processor based. In fact, many duty holders may not appreciate that they have a small computer in the sensor. Now if you had looked at that sensor there was no reason why it should have any date dependencies whatsoever and yet when it was tested, it did fail on the year 2000, the reason being there was in fact a facility in the sensor to actually have a read out, a print out, if required. So in many of these things there are options in the systems which people can make use of and the issue is that over the years computer programmers have made use of these options. And this is the problem, that many of these things that have taken place have been possibly at the whim of an individual who wanted to make use of that facility.

472. I actually interrupted Mr Beard. Please continue Mr Beard, but it does actually tie up with what you said, Mr Eves, that it is when one thing is dependent on another, you are not sure of that dependency?

(*Mr Eves*) Yes.

Mr Beard

473. To continue what we are talking about, where there are dependencies on the date, time function are there low-tech back-up systems that will enable something else to take over if they fail at the critical time?

(*Mr Eves*) You can always have a hard wired system to back up a—you know, micro-processor or whatever—an electronic system. Generally speaking I do not think that has been done. Again, I ask Mr Bell to give us the benefit of his experience.

(*Mr Bell*) In many situations, particularly in the chemical area and off-shore, there is a layered structure in terms of the protection arrangements. For example, you would make sure in the design of the chemical plant or the off-shore installation that you had as much inherent safety built into the system as possible. You would then have probably some mechanical arrangement—possibly explosion relief or some release system which is mechanically based—and then in addition to that you would have an emergency shut-down system which could well be computer based. Now there are one or two situations, certainly at on-shore chemical plants, where you can only have one system; for example the production of ethylene could produce a detonation which means you cannot have a layered system. You have one protection system and that often has been done up to now in terms of either electro-mechanical or solid state electronic. Now, it could well be that there are some of those kinds of chemical plants which will depend totally to a high degree on a computer system.

Chairman

474. With no back up at all?

(*Mr Bell*) There would not be a back up, no. They will be in the minority but certainly that could be the case.

475. Would they fail safe if they did fail?

(*Mr Bell*) Those kind of situations tend to be designed by companies specialising in safety systems and it would be highly unlikely that they have not considered that, but again they would be the kind of things that we would be asking the duty holder to make sure, particularly in those sort of plants.

(*Mr Eves*) If I could add, we are actually carrying out a survey through some consultants of plants of that very kind to establish the size of the problem.

Mr Beard

476. Have you, as the nuclear installation inspectorate, had plans to review from each of the nuclear installations or high risk installations so far—plans to prepare themselves for the millennium date change?

(*Mr Eves*) Yes, our inspectorate wrote to all the operators last year, in fact, asking them specifically to demonstrate that they had an adequate approach to the year 2000 problem. Those replies have come in and we are assessing those replies at this moment. They give us no cause for concern, but the short answer to your question is yes, we did do that.

477. To what extent so far are they adequate? How much are you having to go back to them and say: "This will not do"?

(*Mr Eves*) They are adequate so far as nuclear safety is concerned. Like some other operators they have some work to do and they have a planned programme of work which they intend to complete in 1998 to deal with those systems which are not related to nuclear safety.

478. What are the criteria you will be judging them against in deciding whether they are adequate or not?

(*Mr Eves*) We will judge them, I think, against the criteria that we have published. The methodology is explained in our guidance booklet, *Safety and the Year 2000*. In practical specific situations it is about seeing that if there is a failure mode it is a failure to safety without any further knock-on consequences. These things are comparatively easy to demonstrate, provided you have done the initial thinking and testing. So the hard work comes first.

479. Would you be prepared, in a nuclear installation, if you were not satisfied that the plans were adequate or would be carried out in time, to withdraw the licence for that installation?

(*Mr Eves*) We have various levers short of withdrawing a licence, but we can of course withdraw a licence. The levers I mention are modification to licence conditions. They are under constant review between the inspectorate and the operators in any case. We regard a nuclear site licence as a living document. Things move on and the licence needs to move on with it, so if necessary an inspector can enter a discussion with the operator and say that I am not convinced that what you are doing is going to be satisfactory and there is the ultimate threat of course

[**Mr Beard** *Cont*]
of the licence being withdrawn. I am confident that we will not need to reach that point because of the positive discussions we have been having with the operators.

480. What would be the circumstances in which you would contemplate withdrawing the licence?
(*Mr Eves*) It would have to be a situation in which we believed that nuclear safety was threatened with a risk to workers at the site or an off-site risk to the public.

Dr Kumar

481. May I just turn now to the chemical industry, Mr Eves? In your submission to this Committee you said you were providing guidance notes for the Chemical Industries Forum. Can you tell us if you have made any more progress since then? Is there any action you have taken since those guidance notes? Can you elaborate on the progress made so far?
(*Mr Eves*) Chairman, with your agreement I would like to invite Mr Norris to comment as Mr Norris chairs one of our advisory committees.

Chairman

482. Mr Norris?
(*Mr Norris*) Thank you, Mr Chairman. The Chemical Industries Forum is one of our operational committees where we bring together major companies from the sector and we issued guidance to them a few weeks ago and major companies are now assessing that guidance and we have a continuing bi-lateral dialogue with them to check that action is being taken. To get a firmer fix on the scope of any particular problems, we are surveying some 300 of the major sites at the moment and that work we think will be finished in June or July. So the next phase of the programme is that we will take stock in July with the Forum based first of all on the action they have been taking under their own survey results and check that things are under control.

Dr Kumar

483. Can you just elaborate on what actions you would be intending to take or what you intend to do?
(*Mr Norris*) We have a team of specialist inspectors who are organised into what we call our Chemical and Hazardous Installations Division and they would be, I guess, in weekly contact with all the major players helping sort through the problems based on the methodology we have developed and published in our *Safety and the Year 2000* report and they will deal with problems as and when they arise, often over the phone or over a video link or by means of a site visit. The check point will probably be in July when we will come together with the Forum again and take stock of what has been happening across the piece.

Mrs Spelman

484. It is quite a good summary question, I think. How content are you that all high hazard installations will be millennium compliant and that the health and safety of workers and others will not be put in jeopardy by business failure?
(*Mr Eves*) I think here in March 1998 it would be wrong for me to say that we are fully content. I hope that we will be able to say that to you nearer the year 2000. We do have a lot of work to do and so does industry have a lot of work to do. We believe that in the high hazard sectors, without exception, they are working along the right lines and they are dominated of course by companies with a lot of resource and access to a lot of expertise. My concern at this stage is with SMEs who could actually pose risks both to workers and to the public if something goes seriously wrong with one of their process control systems.

485. What evidence do you have of that?
(*Mr Eves*) We do not have very much evidence. I have to say that we have scoured the world for evidence of things going wrong and we have not come up with that much. Our research continues. We do know of an example in New Zealand where an aluminium smelter closed down inadvertently, fortunately without any major accident consequences, but with enormous economic consequences for the plant and that perhaps is an extreme case. We do know, in any case, without the Year 2000, that computerised systems can go wrong for the sort of reasons that Mr Bell was explaining earlier on. So maintenance of this software where it is controlling plant with possible safety implications is always a major thing for us to talk about when we are inspecting plants. I think the Year 2000 problem has brought it into much sharper focus.

Mr Atkinson

486. Come midnight on Friday 31 December 1999 while a lot of people will be celebrating informally, officially, the local government will be organising their own thing; there is, I understand, money available from the millennium fund for such events. Yet we understand that more and more insurance companies are refusing to cover the holding of those events because of what might happen at midnight. What thought has been given to this? Who will be liable?
(*Mr Eves*) Well it is news to me that insurance companies are refusing to cover events of that kind. I was not sure in any case that it was easy to get cover for what sounds like a party, but I can see the seriousness of your question. I do not think the Health and Safety Executive is the sole player in this business. We will do our part and we are not actually planning a party of our own yet, but we would I hope be part of the general activity from Government which alerts people to the problem. Discussions with the insurance industry I think are probably something that we would want to get into ourselves for our own purposes, and although I cannot answer your question directly today, Mr Atkinson, I will take it away and pursue it elsewhere.
Chairman: One final question from Mr Jones.

Mr Jones

487. May I just ask about gas storage? It is an issue which came to my attention last evening when I had a very fine dinner with Transco. Around the country we have gas storage devices, some of them the old fashioned gasometers, some of them—I think there are 12 installations across the country—big gas bullets, which are socking great hundred metre long things that are 20 feet high which store gas under pressure. Now I have one of these in my constituency—which is why it was brought to my attention—and nobody actually works on site. These are monitored from elsewhere and of course it has a consultation area around it so that if any planning applications come in the local authority has to ask you to comment on those issues. Are you planning anything for installations like that, to inform residents living nearby, because of course you have a turnover of residents moving in and out of houses?

(*Mr Eves*) We are involved with Transco and we know that they set up a project team about a year ago to deal with their Year 2000 problem. We are also involved in the local planning process in that planning authorities can consult HSE and we can give them technical advice. The sort of installation you describe is unmanned, but is in fact likely to be a major hazard installation with which we will have some familiarity and the safety case regime for gas supply does require us to verify the proposals for safety that the network controller, which is effectively BG Transco, has over the whole system. Mr Norris is responsible for policy in this area and might be able to add a bit to what I am saying, but the short answer to your question, Mr Jones, is that we are involved in that kind of situation and if you have concerns or constituents have concerns, we are happy to deal with them.

Chairman: Thank you, Mr Eves, Mr Norris and Mr Bell. We have come to the end of our time. You have been very helpful in giving us answers to our questions. I think you have given us a degree of reassurance, but as you yourselves have said, you still have another 20 months to go and there is a lot more work to do in that time. You have told us that many of the problems you are aware of, you are working towards solving the problems and you also assured Mr Beard that in the event of people not working in the direction you want them to, there are sanctions you can take against them and would not hesitate to do so. We wish you well in what you do, because we all depend upon the success of your work. We shall take note where the members of your staff take their Christmas holidays in 1999. If too many of them are going abroad, Mr Eves, we may go abroad, too! Thank you very much for your help.

Memorandum submitted by the British Bankers' Association

THE BRITISH BANKERS' ASSOCIATION

1. The British Bankers' Association (BBA) is the trade association for more than 300 banks from over 60 countries which operate in the UK and is the principal trade association for the banking industry in this country. We welcome the opportunity to submit evidence since the issue has major implications for banks, their customers and for the country's financial infrastructure.

SUMMARY

2. The Year 2000 issue is of critical importance to banks and to the national economy. Banks and the UK payment systems on which they and their customers depend are making considerable efforts to ensure their own compliance. However, demands on scarce resources are considerable. There is also serious concern about lack of action in the small and medium sized business sector and overseas, North America apart. Banks are doing what they can in these areas and we welcome our involvement with Action 2000.

3. The Year 2000 problem is not just an IT matter but is a major business issue, which can only be solved by businesses themselves. However, the Government should continue to take a strong lead in raising awareness of the issue; in urging other governments to give it higher priority, to ensure that its own house is in order; and to ensure that the utilities and infrastructure on which the country relies will be compliant.

THE SCALE OF THE PROBLEM

4. It is difficult to exaggerate the scale of the impact on banks and through them the UK economy if they and their customers and counterparties both in the UK and abroad are not Year 2000 compliant. The problem, although essentially simple, is all-pervasive and is exacerbated by the complexities of interdependence of banks amongst themselves and with their counterparties. It is estimated that tackling the problem will cost banks in the UK approximately £1 billion.

5. Banks are on target to overcome these problems. To indicate the scale, however, if the problem is not solved in the core national payment systems, it would mean that the vast majority of salaries, pensions and all direct debits/standing orders would not be paid. The inter-bank CHAPS system moves the equivalent of a year's GDP about every six days. Payment systems failure would also trigger a systemic risk. Non-compliance of a bank's counterparty or customer may lead to that customer's failure and to a consequent

lending risk and/or a risk to investors such as pension funds. The impact of data corruption on, for example, interest calculations or payments would cause untold aggravation to customers whether business or private and would also involve substantial time and disruption in resolving problems which arise. Other risks include failure to meet market contract deadlines, inability to access market data and the need to amend and test the often complex spreadsheets which banks use to price their wholesale markets business.

6. There are also significant implications for banks if business customers are seriously disrupted or even go out of business because of Year 2000 problems. Within supply chains, the failure of one business could have a domino effect on its customers and suppliers. These could be compounded where supply chains work on "just in time" deliveries, so that the failure of a supplier could quickly halt production at its customer and the effects would then spread to other suppliers. Banks are co-operating to ensure business customers are taking the necessary action because they recognise that the failure of one bank's customer could disrupt or bring down the customers of other banks, leading to losses for all.

Action Taken to Avert the Problem

7. The major banks have been working on the problem for at least 2–3 years. In March 1997, following consultation with banks and the Bank of England, the BBA published a recommended timetable and guidance for compliance (Annex 1). The process involves audit, recording, impact analysis, resolution and testing. A survey of member banks in May 1997 indicated that awareness was very high, Year 2000 coordinators and related teams had been established and all expected to be compliant well before 2000. The key date in the timetable is 31/12/1998 by when it is recommended that banks will have completed testing of major systems, including external testing with outside organisations. In practice many will be undertaking external testing, particularly with the major UK payment systems in the second quarter of 1998.

8. However, as with other industries, banks are heavily dependent on third party suppliers in the IT industry to provide solutions. Resolution does not lie entirely within banks' hands.

9. Substantial effort is going into raising customer awareness and examples of the material banks have sent to customers are attached. Managers are also undergoing special awareness training and questions about compliance form part of regular reviews with business customers. Banks are working to identify higher risk sectors and may make more detailed enquiries of customers in those sectors.

10. We are also looking to develop, through Action 2000, the possibility of a "National Checklist". This is a self assessment checklist to help guide businesses through the work needed to get them ready for Year 2000. It would also form the basis for discussions about progress to compliance between a business and those likely to want to assess its progress, eg auditors, insurers, major customers, bankers, shareholders and regulators. We are trying to get as many of these groups as possible to agree a core set of questions in a checklist. This should help businesses and avoid them being faced with a number of similar but annoyingly different questionnaires from such groups.

11. The BBA has been instrumental in the setting up by the Bank of England of a City 2000 forum comprising representatives of the financial services industry to exchange information, report on progress, highlight and resolve problems and consider such issues as industry-wide testing.

12. Internationally, the BBA, through the European Banking Federation, has been seeking to increase awareness and assess compliance within other countries' banking industries. However, we do not have the resources to gather detailed information on the state of readiness in each country, which is what is needed.

The Role of Government

13. We welcomed the role of Taskforce 2000 in raising awareness and the creation of Action 2000 (of which we are a member) to move the agenda on. This will be helped when it appoints a full time Director. We support the direction Action 2000 is taking in the urgent establishment of one-stop sources of information for businesses and moves to increase the supply of skilled resource in the short term.

14. We believe, though, that in addition, Government has an important role to play in:

(a) influencing other governments and urging them to give the problem the priority it requires. It would also be a great help if the Foreign Office could use its network of embassies and consulates to provide regular information on the state of preparedness overseas, which Action 2000 could publish;

(b) ensuring compliance of the major utilities which comprise the nation's infrastructure and that information on their compliance is published through Action 2000 to avoid innumerable wasteful enquiries;

(c) minimise as far as possible legislative and other regulatory changes which will increase the enormous burden which Year 2000 is putting on the private sector. In addition to Year 2000, banks are having to devote considerable resource to preparing for EMU, adjusting to the requirements of the new regulatory regime and preparing for the new ISAs. Many are having to divert resource to Year 2000 by suspending their own competitive product development.

(d) leading by example by ensuring early compliance of its own systems and providing more openness on progress.

Extent to Which New Systems and Software are Millennium Compliant

15. New systems continue to be supplied by manufacturers and retailers which are non-compliant. These include some which may purport to be compliant. At a time when there is pressure on businesses to act, it is vital that those who choose to replace their hardware and software are given unambiguous compliance information about what they are buying as replacements. The imminence of Year 2000 means that non-compliant systems supplied now ought to be declared unfit for their purpose under the law. The IT industry ought not to force customers to purchase upgrades of package software by refusing to make existing systems compliant free of charge.

16. One particular concern is that some smaller software houses which have supplied non-compliant systems do not have the resources to cope with the remedial work. There is a real fear that a number will opt to liquidate their business rather than incur liability.

Contingency Plans

17. Banks which are advanced in their plans for resolving the problem are now preparing contingency plans. The BBA, in conjunction with APACS, will be consulting banks shortly to establish best practice to cover the contingency of a counterparty bank being temporarily unable to operate after 1 January 2000.

18. Contingency planning has highlighted two key differences between Year 2000 planning and standard disaster recovery. First, standby IT sites may not be usable if the prime site fails due to a Year 2000 problem, because the probability is that the problem is not localised and the standby site will have the same problem. Second, if the failure is caused by problems on customised software, alternative software will not be readily available. Resorting to "pen and paper" could be a huge operation.

19. Given the structure of IT systems, it is unlikely, in the event of a disaster, that alternative software will be available.

Legal Issues

20. There is widespread agreement that litigation is not a solution. Businesses cannot afford to wait until 1 January 2000 and then rely on litigation to deal with any problems.

21. The prominence given to legal issues and threats of litigation has inhibited the degree of openness and co-operation which is needed to resolve the problem. This is particularly true in the field of certification where directors, fearful of their liabilities, have sought rigorous compliance certification processes from customers or suppliers but, when faced with similar requests themselves, have couched their answers in the blandest terms. It is now increasingly recognised that there is no prospect of an independent, robust compliance certification process. There is evidence that, instead, firms are opting for a more constructive approach, involving a dialogue with key customers and suppliers to help them understand their position and plans. This allows more informed management decisions than relying on contract clauses and/or future litigation. The "National Checklist" mentioned in paragraph 10 above could help this dialogue.

Major Constraints

22. The major constraints are shortage of skilled labour and time, not only within banks but in the software industry. This is a particular problem amongst medium sized businesses. Many small firms rely on stand-alone PCs and package software, and so Year 2000 problems are largely containable and should not result in failure of the business. Medium sized companies tend to have networks, customised systems and external electronic linkages but tend not to have significant in-house IT resources they can assign to the problems.

23. The shortage of skilled staff able to tackle the problem is increasingly driving up the cost. We welcome Action 2000's efforts to facilitate the creation of a skills pool to alleviate this problem and to establish fast-track technical training.

24. The innumerable sources of information on the Year 2000 problem create something of an information overload which is difficult for SME's to navigate. We therefore welcome Action 2000's plans to create one-stop information databases for SME's.

25. The absence of independent, robust means of assessing compliance is compounded by the impracticality of establishing full "end to end" testing of international systems. A large electronic payment by a Singapore importer to a British exporter might be in US dollars and the transactions to deliver sterling to the British firm might, literally, circle the globe and be dependent on a host of local systems and gateways. Ideally, all those local systems and gateways would be linked and tested together but there is insufficient international agreement to achieve that.

Concluding Remarks

26. Whilst banks are devoting huge resources to ensure that they will be fully compliant and are doing their best to raise awareness in the business community they serve, there are four areas which threaten the success of this effort:

- the inadequate level of action in the UK, particularly amongst SMEs;
- lack of action internationally, especially in Europe where EMU has been given highest priority;
- the lack of resource within the IT industry to deliver solutions to an acceptable timescale; and
- the need to ensure that major utilities are compliant at an early stage.

We urge Government to do all it can to alleviate these key concerns.

J R W Thirlwell and M C Young

2 December 1997

Annex

Planning for Year 2000

The ability of computer systems and other electronically-controlled mechanisms to handle dates in the next century correctly is a major issue for all businesses. It is particularly important for financial institutions that the industry's reputation for safety and reliability is not prejudiced by the failure of any part of the electronic infrastructure, nor by speculation about such an eventuality. Banks will already have established a Year 2000 project but, by setting out emerging best practice covering the whole process, industry coordination will be facilitated and any systemic risk reduced.

The BBA, in consultation with APACS, the Bank of England and a range of Member Banks, has drawn up the following guidance which it recommends as a high-level framework for Members. With the support of all Members in ensuring that systems are checked, amended if necessary and tested both individually and in conjunction with others, the BBA will be able to take positive action to rebut "millennium meltdown" speculation relating to the financial sector. In particular, an outline timetable is recommended so that cross-bank and other third-party testing can be undertaken in a timely manner.

Banks have an interest in ensuring that their customers have taken timely action to address their own possible system problems and we suggest that this should form part of regular credit reviews, if not already incorporated in them.

The extent of legal liability of suppliers for millennium-related failures is uncertain and banks should review contract terms to establish their position both as purchasers and vendors of services.

Background

Virtually every organisation will have its computing operations affected in some way by the rollover of the two digit year value to 00. The majority of computer operating systems and programs currently in use have been developed using six digit date fields (YYMMDD). For example, 31 December 1999 would be represented by "991231" in computer code. The two digit field for the year (in this example "99") is the basis for all calculation formulae within many computer systems, particularly those processed through mainframes although PCs are also affected.

Until now, this two digit field has sufficed, using a subtraction of current date from some future date (up to 31/12/99). As the industry enters the year 2000, the two digit field "00" will not permit consistent calculations based on current formulae. 1 January 2000 would be held as 000101 and many computer systems will recognise this date as the year 1900. The potential impact is that date-sensitive calculations would be based on erroneous data or could cause a system failure. This affects all forms of financial accounting (including interest calculation, due dates, pensions, personnel benefits, investments and legal commitments).

It can also affect record keeping, such as stock, maintenance and file retention. Many devices are controlled by micro-processors (for example, lifts, security systems, cash dispensers and telephone exchanges) and these, too, could be affected, even if date processing appears peripheral to their operation.

The recommendations below provide a framework for ensuring that banks, and the banking system, continue to function smoothly into the year 2000 and beyond.

RECOMMENDATIONS

1. Banks should establish a Year 2000 Team headed by a very senior manager with authority to obtain the necessary resources, both IT and business, to identify, address and resolve all Year 2000 issues. It should be noted that this is not purely an IT project:

— amending code may not be the most cost-effective way to address each problem. In some instances with short date cycles, a short-term manual work-round may be effective; in others a decision to stop using the system or device may be less costly than making the changes.

— scarcity of IT resource may mean a prioritisation by business impact has to be made. Such decisions cannot be made by IT alone.

— Each business needs to assure itself that problems identified have been satisfactorily fixed by participating in the testing; if the test results are negative, businesses will need to undertake impact analysis and contingency planning.

2. An inventory of all computer operating systems, applications and files, and electronically-controlled equipment should be created. All those with year 2000 issues need to be identified.

3. A comprehensive Year 2000 plan for addressing the issues identified should be mapped out.

— The initial step in developing the plan should be to consider whether current systems and files should be modified, replaced, outsourced, or discontinued. Modification may consist of expanding date fields or of inserting inferential logic code to decide to which century a two-digit date belongs. It should be noted that even if new systems are purchased, old files may still have to be modified. (All computer systems, including mainframes, personal computers, local area networks, etc, should be considered.)

— The plan should also identify and prioritise applications and processes that are the most date sensitive and those which are most vulnerable. Interdependent applications should be grouped together.

— Where computer systems or other products are provided by service bureaux, hardware or software vendors, or other third parties, banks should request those external vendors and service providers to provide Year 2000 conformity (see below) within the testing deadlines below; and make contingency arrangements to ensure that critical operations will continue if the external supplier is unable to achieve millennium conformity.

4. The timetable is such that the inventory of systems and equipment should already (March 1997) have been completed, issues should have been identified and a plan addressing the issues agreed, incorporating the following target deadlines:

31 December 1997	Relational systems (transaction-processing and other systems with external interfaces) upgraded (modified, revised or replaced as appropriate) and available to test in order to meet the next deadline. Compliant platforms available to test.
30 June 1998	Relational systems tested and available for cross-organisational testing, including those from third parties. Stand-alone systems available to test.
31 December 1998	Relational systems cross-organisational testing completed and upgraded systems implemented. Stand-alone systems tested and upgraded versions implemented.
30 June 1999	All other equipment upgraded and tested

This timetable leaves the year 1999 for final trials and contingency planning.

5. The plan should be implemented within the bank's framework for systems development. Slippage in the plan should be closely monitored and addressed, either by allocating extra resources where feasible or by seeking alternative solutions. Late delivery is not an option on this occasion.

6. The definition of Year 2000 conformity prepared by British Standards Institute technical committee BDD/1/-/3 (document reference DISC PD2000-1) should be used:

"Year 2000 conformity shall mean that neither performance nor functionality is affected by dates prior to, during and after the year 2000.

In particular:

Rule 1 No value for current date will cause any interruption in operation.

Rule 2 Date-based functionality must behave consistently for dates prior to, during and after year 2000.

Rule 3 In all interfaces and data storage, the century in any date must be specified either explicitly or by unambiguous algorithms or inferencing rules.

Rule 4 Year 2000 must be recognised as a leap year."

Examination of Witnesses

MR TIM SWEENEY, Director-General, MR MICHAEL LEWIS, Deputy Chief Executive, Association for Payment and Clearing Services, and MR MIKE YOUNG, Assistant Director, British Bankers' Association, were examined.

Chairman

488. Order. Mr Sweeney, Mr Lewis, Mr Young, welcome to the Science and Technology Select Committee. You know the inquiry we are undertaking; the one into the computer compliance for the year 2000 and we look forward to the help and assistance you are going to give us this afternoon. Mr Sweeney, would you care to start by perhaps introducing yourself and your two colleagues to the Committee?

(*Mr Sweeney*) I am Tim Sweeney, the Director General of the British Bankers' Association which provides representative services for all 330 member banks operating in the United Kingdom. On my right is Michael Lewis, who is the Deputy Chief Executive of our sister association, the Association for Payment and Clearing Services which looks after the shared infrastructure of the payment system in principle, and on my left is Michael Young who works with me at the BBA, particularly on risk management and small firms.

489. Thank you, Mr Sweeney. We have heard various stories with regard to banking including the possibility that people will not be able to draw money out of the bank on New Year's Day 2000. I wonder if you could tell us what in your opinion are the greatest challenges facing the banking industry in relation to this particular problem?

(*Mr Sweeney*) Yes, certainly. I do not think there are any challenges which are unique to banking which are not shared by other sectors of the economy. The primary concerns are the main systems and making sure that the coding errors within those systems are corrected and that any problems with embedded chips are corrected. That will be familiar to the Committee. There is nothing else which is intrinsically different about banking. What is intrinsically different about banking is the nature of its business and the consequences of anything going wrong, but I think the important thing that I want to get across to the Committee is that the banks have identified the nature of this problem, identified it sufficiently far in advance and have done a great deal of work in planning the way in which we will tackle the problem and we have as much confidence as one can have—there is no guarantee in this area—that the problems will be solved and that the systems will be operating on 1 January.

490. What is the worst type of failure there can be in a banking system? If I cannot get money on 1 January in the year 2000, but I am promised I can get it the next day, I probably will not be too distressed, but if I am told there is not going to be any for three weeks because the accounts are all just up in the air, it is going to be quite a serious problem. What is the worst case scenario in regard to the banks?

(*Mr Sweeney*) I do not know that I can answer that, Chairman. The worst case scenario depends on who you are and what the nature of your business is. If you have a business transaction to settle on 1 January 2000, not having access to your bank account is a disaster. We have approached it a different way. We have approached it from the perspective that it is important that as far as possible all the central and critical elements of the banking system are working on 1 January in the year 2000. We have not asked ourselves what sort of disasters might befall us if we get that wrong. That does not betoken complacency, but it does betoken the degree of importance that banks attach to this problem and the extent of resources they are putting in as individuals and in our representative associations.

491. Are your member banks sharing information in a wise and mature fashion?

(*Mr Sweeney*) The answer to that is yes. They are certainly dealing with this in a co-operative fashion. Within the central payments systems—and Michael Lewis might say a word about that in a second—I think there is absolutely no doubt that there is a high level of sharing within the mainstream business of banks. Of course there is a competitive element and there is a limit to how far banks will share information, but where they have identified that the issue or the solution of a particular issue is core to the industry as a whole, then yes, they are sharing information responsibly.

492. You want to bring Mr Lewis in, but before you do, I have a last question before we go to other Members of the Committee and perhaps you could answer both of them. You did say in your

[**Chairman** *Cont*]
memorandum last December that you were on target to overcome the problems that you had found. Is that still the case? Are you still on target? May I ask you, Mr Lewis or Mr Sweeney first and then Mr Lewis?

(*Mr Sweeney*) If I may answer for the broad industry, as you know we set out a schedule by which people should have done various tasks. We are currently surveying the market to see whether people still anticipate being able to meet the 31 December 1998 target, which is the next critical one. Answers are still coming in, but we have sufficient information to be confident that what I call the heartland, the big High Street banks, the names that you will know, will be on track and are likely to meet that deadline. There will be a few outlyers and we will chase those vigorously, but we would think that something like well over 90 percent of the banking business, the institutions representing between 90 and 95 percent of the banking business of the United Kingdom, will meet that target.

493. Thank you very much. Mr Lewis?

(*Mr Lewis*) Thank you, Chairman. May I just echo what Mr Sweeney said. I think in connection with the competitiveness, banks initially wondered whether this was not a competitive issue but they very quickly discarded that and I think there has been an extremely high level of co-operation. They have come to understand the mutuality of interest in getting this right in the interests of themselves and of course their customers because of course their business is their customers' business and a failure of any one would be a failure, I think, perceived by the customers to be one of everyone. I think as regards the targets, we have set ourselves very demanding targets in order to allow slippage, to be frank, and the aim of the payment systems is to be compliant in all respects and tested by the end of 1998 at latest. That reflects a very sober, hard-edged assessment of what we have to do in order to allow inevitably for the slippages that will occur in one or other programme. For the moment we are on time. The actual internal testing of the central interfaces should be completed by the first quarter of this year, which then leaves the next three quarters of this year for the integration testing of the systems as a whole. I think it would be quite irresponsible to suggest that nothing is ever going to go wrong in this, but we have left ourselves I think sufficient time to recover and we are on timetable to do that.

Chairman: Very impressive, Mr Lewis. Mrs Spelman?

Mrs Spelman

494. In your evidence to us you have given an estimate of the total cost of compliance programmes being of the order of £1 billion. To what extent will these costs be passed on to the customer?

(*Mr Lewis*) Could I pass this question to Mr Sweeney who is more concerned with the customer.

(*Mr Sweeney*) The answer is we have talked about £1 billion. You have to put that into perspective of a very large sector and the operating costs of the sector as a whole are about £20 billion a year; there are other statistics, but I will not bore you with them. It is not a critical amount. The second point to bear in mind is that there are—a question we might come on to later—a limited number of resources available to do this sort of work and in large measure the way our industry is coping with it is diverting from other projects. So it is not an additional cost; it is a shift. The third factor to bear in mind in relation to those two is that in a hotly competitive banking market like we have in the United Kingdom, the supplier simply cannot manipulate the price. It will be set by the market, not by the underlying costs themselves. So the answer to your question I think pretty certainly is no, not in any realistic way.

495. What does this figure include? Does it for example include some of the valuable work that you have been doing with your customers to help them to prepare for the date change?

(*Mr Sweeney*) No, I think—and I am sorry to clash with my colleague—the £1 billion is the pure internal cost of manipulating the systems.

496. Often it is the experience of other organisations and other companies facing the same problem that they find the costs of this compliance work tend to escalate above the original estimate. How reliable do you think your figure of £1 billion is?

(*Mr Sweeney*) I think it is reasonably reliable because time is marching on. We are in 1998 now, so people's minds are focused very, very closely on this issue and they are having to ask themselves what projects they are going to have to forego and they are having to make important decisions about the allocation of resources. So people have thought about this; it is not finger in the air. This is people thinking about it. Some banks you will no doubt have seen have announced in their published results what amount they are provisioning for the Year 2000 work. Those can be slightly misleading because sometimes they are grouped rather than specifically for the United Kingdom. But no, people have thought seriously about this. There is a problem—and it relates back to what Mr Lewis was saying—that of course as you get up to the end of a programme things happen that you did not necessarily expect. There is a certain element of conservatism that one would want to build in, but I think that is broadly an accurate figure.

Dr Kumar

497. To earlier questions, Mr Sweeney, you said that you felt 90 percent of the banks would meet the target. Now obviously you are quite confident you are going to meet that target and so forth. Tell us what leads you to believe that you are actually going to meet that target and obviously to what extent your members are responding to the timetable that obviously you feel they are going to deliver in the end and how are you monitoring this?

(*Mr Sweeney*) I think that the confidence really stems from one very simple fact. They are very conscious that if they do not meet it their business is in serious trouble. This is unlike some other issues that face banks; this is potentially a life or death issue so they are working at it, let no-one be in any doubt of that at all. If there were no internal dynamics of that nature then of course there is the issue of the supervisors and regulators of the banking and financial services industry who will inevitably, as the

[Dr Kumar *Cont*]
time moves on, take an interest in banks' progress because there are real risks for customers if banks do not get it right, so there is an external dynamic. As far as our own role is concerned, we are a trade association so we are not a police body. I cannot tell my members what to do. We have published the timetable which was endorsed by our Council. We check on a regular basis whether they continue to believe they are meeting that target and we exhort them, we explain to them, we have a vigorous working group, we also have a contact group. There are a lot of means of communicating with the industry and periodically I write, as I just have done, to the chief executives of major institutions drawing their attention to the importance of the issue.

498. How regularly do you monitor this? Every two months, every three months?
(*Mr Sweeney*) No, it is every six months.

499. Every six months, and that you think is sufficient to monitor the progress?
(*Mr Sweeney*) I think with the regular reminders through our newsletter and through other industry circulars that come particularly from the work that Mr Young does, yes. This is not an issue which is on anybody's back burner. I think I would merely irritate my members if I rang them up every week or every month or so and said: "How is it going?". The answer is it is going, because they are worried about it.
(*Mr Lewis*) We have a rather simpler environment in the clearing companies because of course there are only some 20 banks involved directly as members, but just to pick up the points that Mr Sweeney was making, each of the clearing companies has an audit procedure and is requiring regular certificates from each of the members that they are complying with the requirements of the companies at approximately three-monthly intervals. What we have also done is set up an overview body, which I chair, called The Forum which is responsible for the overlaps and underlaps and to ensure in particular that testing has actually been conducted according to schedule. So there is an interactive means of supervision there. Each of the companies has also had an external validation of their test programme to make sure that it is realistic and that it will deliver on time and within the budgets that they have set. Again, this is an appropriate mechanical process; one cannot guarantee that all the results will be perfect, but we are trying to make very sure that no balls escape us, in the knowledge, as I think Mr Sweeney has said, that this is a central concern. If we do not get this right, the banks are dead in the water. It is not an option.

Dr Jones

500. Could you take any action if one particular organisation was not meeting their responsibilities? What would you do?
(*Mr Lewis*) Is that a question for me or Mr Sweeney to answer?
(*Mr Sweeney*) Well, it depends. If you are asking about individual banks, we as the Association, no. If you are asking about the clearing companies that may be different.
(*Mr Lewis*) Yes. We can and will take direct action.

501. And what sort of direct action?
(*Mr Lewis*) The first actions will be by the Audit Committee of the Board. There is a very effective form of peer review in this which is not at all a gentleman's agreement. It is a very severe scrutiny of companies' actions as indeed it is of their individual operations during the operations of the clearing company. There are very clear service level codes which they must adhere to. I suppose ultimately it would be possible for a bank to be expelled from a clearing company, but I think we would regard that as the weapon of last resort.

502. You have been involved with the setting up of City 2000. To what extent are you duplicating—are you doing the same sort of job as they might be doing, as Action 2000 might be doing? Is this a useful mechanism? There do seem to be lots of organisations being set up and there is a worry that there is duplication which will actually obfuscate and make people wonder. On a specific example, I was interested in your checklist that you developed. You said in your evidence to us that you were working with Action 2000 to develop that checklist. Has your checklist been approved by them? How is it being disseminated? For example, I checked the website which was being promoted by the CBI—you know, the bug campaign—and there was no checklist on that site about a week or so ago when I checked. So how much progress has been made? I would have thought that was very important, coordination of checklists for a particular—perhaps general ones for everybody and perhaps with additional questions specific to different types of industry?
(*Mr Sweeney*) I think if I could deal with the overlap problem first, the difficulty with this is it is no single one body or person's problem, so there is no single one body or person to take control and say: "We will coordinate all this". What we have found is that, by and large, each separate strand of development and coordination and co-operation has been useful on its own and there is an increasing tendency for them to overlap and to become constructive. We have worked with a number of other bodies ranging from Action 2000, but also critically within the City with the Bank of England who are now chairing a group which is City wide, and I think my own view—and I would ask my colleague because he is closely involved—is that the level of co-operation is actually constructive and helpful and there is an element of duplication, but it is inevitable within the system and it does not get in the way. On the checklist, our view is that a national checklist would be helpful. The problem is that there are a lot of differentiations in different sectors and someone would have to sit down and work very, very hard to define clearly what a national checklist would actually look like. We may be getting to the point actually when it is a bit too late anyway. We are now in 1998 and a lot of work has already been done and needs to be done. Our checklist we have made freely available; it is used by a number of different people and I think it has generally been regarded as helpful. We devised it for a particular purpose in relation to small businesses. If I may, Chairman, I would ask my colleague to comment?

Chairman

503. Yes. Mr Young?

(*Mr Young*) Thank you, Chairman. As Mr Sweeney has said, we still believe that the idea of a national checklist would be helpful to businesses who are going to face a lot of questions over the next 18 months from lots of different people. We still believe that the checklist that we have developed can be helpful to a lot of bodies who are maybe thinking of developing those checklists, but as Mr Sweeney has said, we lack a single body that we can go to and say: "Now here is our checklist. If this could be endorsed as the national checklist then everybody does this." There are a variety of people who would need to take it on board for it to have a true value with businesses. We are pursuing those discussions, but we have not held back on our checklist. We have made it freely available to people. If as a result it does not turn into a national checklist but becomes a common checklist or if other people crib 90 per cent of it and use it as their checklist that, I think, will be helpful and we are not asking for any acknowledgment or copyright.

Dr Jones

504. It did strike me as a very useful list and I think it is very worrying that it is now March and you raised this in your submission in December as an issue and there does not seem to have been any progress on it?

(*Mr Young*) There has certainly been less progress than we would have liked. Our target was to have something ideally by March because as Mr Sweeney has said—

505. It comes too late?

(*Mr Young*) Yes, the clock is running on this.

506. Could I just get a quick one in on relation to the costs? Am I reading you right when you are saying that with the £1 billion pound cost, there is not going to be any extra cost in that that money is going to be found by not spending in other areas, so there will not be any actual additional costs by your members as a result of this?

(*Mr Young*) In principle, yes. Individual houses will behave in different ways of course, but in principle we expect that it will be found by substitution from other work. That is simply because of the scarcity of resources to deal with the problem.

Mr Jones

507. You point out in your memorandum to the Committee that you have other things on your plate besides the millennium. What priority is the banking sector placing on millennium compliance projects compared to other essential IT developments like preparation for EMU or EMU issues or compliance with the new regulatory regime?

(*Mr Sweeney*) I think that is unambiguous. This is the highest priority because it is the only one which is a genuine matter of survival. People will hope to be able to continue to progress their business needs, but there are real constraints. One of the points that we have made in several different environments, something which is very much in the hands of the public sector, is that it is terribly important that over this next vital two years that the public sector keeps the demand for systems changes down to a minimum. For us that means in particular the regulators, the Inland Revenue, people of that nature, because if we have to divert significant resources as a matter of law or regulatory requirement away from this vital project, then we are in trouble. This is the highest priority.

508. That came through loud and clear in your memorandum as well as the words you have given us today. Would delaying the introduction of some or all of these other issues help the compliance issue?

(*Mr Sweeney*) The one which is key and which presumably is in your mind is the single currency and I think the answer to that is no, depending a little bit on the Government's intention which is not yet made clear in terms of timing. The first and most important priority for the industry has been to prepare the wholesale market level and that we have done. There is work continuing, but the bulk of the spend has been done and that is a much more simple project.

Chairman

509. Please explain what wholesale means in this sense?

(*Mr Sweeney*) That really means the provision of the inter-bank payments mechanisms, much of which run through APACS, but also the provision for ability to offer services to large corporate customers. The really big systems cost is in the retail market and what we have said to the Chancellor in his working parties is that we do not believe we could start any of that work until after the year 2000, until this project is out of the way.

Mr Atkinson

510. Is there not some legislation or regulation or EU Directives which you have specifically said can be postponed or suspended because they would impede the essential paramount progress form in any compliancing?

(*Mr Sweeney*) I do not believe we have made any such specific statement in terms of individual directives, no.

511. It might have been helpful if you had, because it might add some weight and influence?

(*Mr Sweeney*) There are not many—and I am thinking very rapidly—directives which I am conscious of at the moment which are having major systems implications. Probably the largest one will be the ECB reporting requirements under the single currency, but we do not yet know what the entire shape of those will be.

(*Mr Lewis*) A small clarification as an example. The cross-border payments directive is currently being implemented. The effects of that are relatively small and I think it would be raising that to be too important an issue, but I think it is an example of the legislation that is currently going through which has been programmed in and which can be run in parallel, but clearly any additional legislation, I think, would be a major problem because both Mr Sweeney and I are members of the Chancellor's Business Advisory Group and made this point I

[**Mr Atkinson** *Cont*]
think at the very first meeting that the simple technical clash between these two issues is a major problem and it has to be addressed full on. There are no political overtones to that statement whatever.

512. There has been a recent report about a report to the White House from the Chairman of a computer software company, Capers Jones, which has advised that the combination of EMU and the millennium time bomb could be a financial catastrophe. Do you have any response to that?
(*Mr Sweeney*) I think in terms of the United Kingdom our position is clear and we have explained it; we could not do the two together.

513. Could not do the two together?
(*Mr Sweeney*) We could not do the two together. Now the question of the rest of Europe is very difficult for us because we do not have information on precisely how Europe is tackling this problem. We are told by our sister associations and by banks that we have contacted in Europe that they are confident they can do the two things together. One reason they advance is that they had more planning time and a greater degree of political certainty, whatever the business uncertainty was, about EMU and that enabled them to be further ahead than we are. That may be so; I do not know the answer.

Mr Beard

514. Mr Sweeney has answered the question I was going to ask, but I would like to know to what extent are British banks' IT systems interlinked with banks abroad and dependent on IT systems abroad?
(*Mr Sweeney*) I think in terms of their core systems they are not. Their systems tend to be discrete. The nature of overlap is really in the international payment systems through the Swift mechanism and so forth and Mr Lewis, you may care to respond to that.

Chairman

515. Mr Lewis?
(*Mr Lewis*) I think, Chairman, it is really a matter more of the business flows rather than the interlinking of systems as such. Clearly, for example, foreign exchange settlement would be a major problem if there were to be a significant systems failure on the part of one of our major FX counterparts or indeed if the Swift system, which carries most of the messaging, were to suffer significant degradation. It is for that reason that we have been paying particularly close attention to the preparations that Swift have been making, but again for them this is not a life enhancing exercise; they have got to get it right and we have been in a fairly vigorous debate with them about the terms in which they are operating. But I think in terms of direct connection, as Mr Sweeney said, I think there are very few direct traffic connections in that way at all. It is a question of the business flows.
(*Mr Sweeney*) Mr Chairman, perhaps I could just add something because the international dimension is one that worries us a lot, because we do not have a clear feel for it. We cannot have. There is a competitive element, as I have already described, to some extent within the United Kingdom. We have overcome that; we have not overcome the competitive element in other international centres. We have done a number of things. One is that we are members of the European Banking Federation and we have persuaded them to run a survey amongst other member countries to see what other information we can gather. We are also setting up a working party of banks based in the United Kingdom, which includes our foreign bank members, trying to identify what we think as an industry, the collective international rate of progress is. Third, we are members of a group with the American Securities Association and 12 global banks which is having its first meeting next week where again we will be sitting down to see what information we can share and what pressure we can put on other centres. Finally, we have suggested through Action 2000 that embassies should be encouraged to ask questions within their centres and feed information back. It may be that there are no problems, but there is a dearth of information about what is actually happening overseas.
(*Mr Young*) Mr Chairman, may I just add a gloss to that?

Chairman

516. Mr Young, yes.
(*Mr Young*) Thank you. We have a concept of information black holes and these are the things that worry us and what is happening overseas and in certain parts of the world is an information black hole. Our concern is that unless these black holes are filled with information, business decisions are now being made and will increasingly be made by banks and by businesses in the United Kingdom in ignorance and the danger is that these decisions will be poor decisions and that is why as a group of banks we are coming together to try and identify the international hot spots so that if we can pool that information amongst banks—are we all worried about this country or that country—that at least gives us a better target to aim at. It it allows the banks themselves in their own systems in dealing with correspondent banks to identify which countries and banks they need to act on first of all.

Mr Beard

517. To what extent are we in danger of importing century date change problems into our own banking system through these connections?
(*Mr Sweeney*) Very limited. As Mr Lewis said, it is a question of business flows. There is little or no interlinking of systems. They tend to be discrete. That is one of the reasons why, as I said earlier, there will be outlyers in our own survey. In the main they will be foreign banks and the reason simply is that their head offices are concentrating on the domestic head office system and the United Kingdom branch is at the bottom of the pile for timing. There is no interlink.

Chairman

518. Mr Lewis, would you just like to convert your nod into an affirmation so that it goes on the record?

(*Mr Lewis*) Yes, indeed. I was just going to say, Chairman, if I might just pick that point up, I think one of the problems has been that often people fear that others are not making preparations, but when they ask the questions they discover in fact that there is quite a lot of work being done, but people do not often articulate that as well as one might wish. I think Dr Jones referred earlier on to access to a website. The BIS has now created a website for payment systems for precisely this reason. There is now a very good site that actually demonstrates the extent of compliance of other major international systems which I think has provided us with a great deal of reassurance.

Chairman: Thank you very much.

Dr Jones

519. What is it called?

(*Mr Lewis*) It is the Bank for International Settlements at Basle. Perhaps, Chairman, I could let the Committee have a note of it.

Chairman

520. Could you let us have a note?

(*Mr Lewis*) It is clear, tabular and in non-jargonistic form. It gives you a very good—

521. Just like your comment!

(*Mr Lewis*) Could I just make one other point about the corruption of data? I know that a number of the Members of the Committee are much more expert in this field. I think they have direct IT experience which I do not, but I think the problem sometimes is that a filter can prevent corrupt data coming into a system, but what it does not do is allow business to flow and again we focus back again on the fact that it is customers' business which is therefore being impeded. I think there is much less risk of corruption of data as such rather than that people's business will not get done.

Chairman: Right. We still have quite a long way to go, so Mr Williams?

Dr Williams

522. Your comments internationally over the last few minutes indicate that in the future you will be looking at this or there will be meetings about this and that. In your experience so far are there some countries that have got their acts together quite well and where we can perhaps learn from their good practice?

(*Mr Sweeney*) There is plenty of anecdotal evidence, the trouble is that much of it is conflicting and we do not have the means ourselves to test or check. Anecdotally the Americans are well seized of it, we are in the middle and the Europeans are not. It is very difficult for us to go beyond that.

523. Is there any kind of international forum where perhaps the European Union in its summits, since we are President this six months, for G7 or IMF—are you participating in any kind of discussions in those kind of forums to try and co-ordinate internationally to the business community?

(*Mr Sweeney*) There is a conference at the BIS later this month which we would be attending in common with a number of others. Otherwise we are co-operating whenever and wherever we can with whoever we can. The difficulty as I said before, in the domestic context, but it is in spades within the international context, is that there is nobody who can say: "This is our prime responsibility and we will pull it all together". This is why it is quite difficult to answer the question about what countries are doing well.

524. So as far as you are concerned, Britain seems to be all right but we do not know very much about other countries?

(*Mr Sweeney*) I would have to say that that is the state of our information, which is why we are concentrating on things like our information exchange through the European Community. One thing, which may or may not be an indicator, I was recently making one of my regular trips to Europe, speaking to a number of European Parliamentarians and I was questioned, I would think, by three who said, as if they had just discovered it, "Is the Year 2000 a real problem?" and my instinct is that Europe has not yet taken this as seriously as it should, but I cannot put my hand on my heart and give you evidence; that is my instinct.

Chairman: A quick question from Dr Jones and then Dr Gibson.

Dr Jones

525. Could I just take you back to what I thought was a very important point you made that the United Kingdom banks could not possibly deal with the EMU and the millennium compliance at the same time and you speculated on the reason why European banks may be able to cope? You said they are further ahead on EMU. How could we find out and if they are not, what are the implications for us?

(*Mr Sweeney*) How we can find out? I honestly do not know the answer to that. The difficulty is that there is a competitive element in this. If you go and look someone in the eye and say: "Is your business going to be still functioning on 1 January in the year 2000" they will say: "Yes". What else could they say? They will not give you guarantees and statements of compliance, but they will say yes and all European bankers that I speak to say: "Yes, do not worry. We have it under control. We know what we are doing". There is no international mechanism for testing that.

526. Should the Government in its role as President of the Union be doing something to find this out?

(*Mr Sweeney*) I think that the more information exchange there is the better. It is quite difficult to know how one goes beyond information exchange. The more raising of the profile of the problem the better. One of the reasons why I mentioned my contact with European Parliamentarians; the more that there are people in Europe who are putting pressure on to say, well, it is a problem and we need information, we need some evidence that you are addressing the problem, the better.

[**Dr Jones** *Cont*]

527. You mentioned that you are doing a survey to look at millennium compliance. Could you not do a survey to look at EMU at the same time?

(*Mr Sweeney*) That is only within our own domestic market. This is a European Banking Federation Survey—

528. Yes, that is what I meant?

(*Mr Sweeney*)—that is on the Year 2000.

529. But could they not do a survey on the EMU preparedness?

(*Mr Sweeney*) On EMU preparations?

530. Yes.

(*Mr Sweeney*) I think if you asked the Federation, the Federation focus has been on nothing but EMU for practically the last two or three years. They are quite confident that they will be ready.

Dr Jones: So they should—

Chairman: I think we should leave EMU, if you do not mind.

Dr Jones

531. But they should have the information?

(*Mr Sweeney*) They will have the same expressions of comfort that we have.

Chairman: We will leave EMU compliance I think for the moment and we will stay on 2000 compliance. Mr Beard?

Mr Beard

532. Forgive me Mr Sweeney, but is it not likely that if they are transferring their systems for EMU, they are putting the date change problem right at the same time and there is no real conflict?

(*Mr Sweeney*) That is what they say.

Dr Gibson

533. Are you also saying you cannot test the cross border transfer of international payments before the millennium there is so much lack of information? You are saying that, are you not? You cannot do a little test and find out?

(*Mr Lewis*) Chairman, would you like me perhaps to pick that up?

Chairman

534. Yes, please.

(*Mr Lewis*) One of the points that we addressed quite early on I think and one of our principal concerns was the possibility of doing end to end testing. The answer is that banks are indeed using their own mechanisms and Swift and selected partners, particularly their key commercial partners, to try and run those sort of tests. What we found very quickly though is to generate truly representative overall end to end tests is really very complex and the problem is also that they would have to run on live systems that itself brings in both project risk and technical risk. The answer is we are still looking I think for ways in which we can reassure ourselves that at least key partners' systems will work and will interact. One of the problems for example is that they run over Telecom networks and one can only be absolutely sure those Telecom networks are compliant on 1 January 2000.

Dr Gibson

535. Tell me, do you have contingency plans and tell me about the disaster that might ensue?

(*Mr Sweeney*) The answer on contingency plans is that it is genuinely too early. The focus at the moment is on getting things right. We have begun the process of thinking about contingencies and a working party has been set up and its first meeting will be next week.

536. Have you a date in mind when they ought to report back to you so you can make such a decision? Is there a date?

(*Mr Young*) Chairman, if I may pick this one up.

Chairman

537. Yes, of course.

(*Mr Young*) The plan is to do some initial work and then for all the banks to hold a brainstorm in May where we can hopefully look at all the risks and assess and prioritise the risks to banks in London from all their operations, domestic and international. Then it will be a question of identifying the extent to which you can develop contingency plans for the sort of things that are likely to go wrong, or the extent to which for certain things there is not a chance of having any sort of contingency plan. What you have to do is test the thing to death and make sure that it absolutely works without any chance of failure.

Dr Gibson

538. So the possibility still remains then that there could be a disaster in terms of the international monetary payments system in the Year 2000 that night or for some period? That is still a strong possibility?

(*Mr Sweeney*) I would remove the word strong. There remains a possibility. It is not going to be possible for anybody to put their hand on their heart until the system actually works in a live way. But—and I cannot emphasise this enough—the amount of effort that the industry is putting into this because it is so aware of what the consequences are that I genuinely believe that the probability of disaster, certainly within our domestic system, and within our major partner systems is negligible, but I cannot say that it is out of the question.

Mrs Curtis-Thomas

539. You made reference earlier on to some SMEs. How critical is the Year 2000 to small and medium sized businesses?

(*Mr Sweeney*) We believe you can segment the world broadly into three. The big corporates who are the same sort of size as the banking industry have addressed this, have the resources and can largely be stacked in the same way as the banks can. The very small people can also be stacked, largely because they run on small PCs and if the worst comes to the worst,

[**Mrs Curtis-Thomas** *Cont*]
you can chuck it out and go to Dixons and buy another one. The big problem is with the small and medium sized enterprises, people who have small systems—half a dozen terminals, 50 to 100 plus people—often will have custom built services made by small local software houses that have gone out of business. They do not have the resources; all their energy is diverted to day to day business so they do not have the resources to divert this problem. That not have the money to buy in the expertise even if they could find it. That is where the problem is and I think everybody is agreed on that. We in the banking sector have made one of our priorities getting information into the hands of these people, so all the banks almost without exception have produced very sizeable little tomes, some of which I think we sent the Committee, which are there as guidance. We have produced ourselves a more modest leaflet for banks who do not want to produce their own which goes out to customers to help them identify the problems and to set out planning how to address them. You are absolutely right. That is the core problem and we believe that much of that sector is well behind the pace at the moment to resolving the problem in time.

540. Do you think Government has a role to play here with respect to that particular sector of the market?

(*Mr Sweeney*) I think Government certainly has a role in providing information in the same way that we do. What role it has beyond that is quite difficult to see. At the end of the day these are small companies that have to find the resources to do the work. No-one can do it for them.

541. Could I suggest then would you support tax exemptions for firms below a certain size or in fact that fall within this critical group where they really are too busy engaged at the coal face to consider these systems? So, would you support tax exemptions for those firms in respect of their expenditure for compliance procedures?

(*Mr Sweeney*) We have not given any thought as an Association to tax matters or incentives of that nature. I think I would say that anything the Government could do to help that sector the better and if the Government wanted to offer tax incentives I would be fully supportive, but it is not really an area to which I have given a great deal of thought, I would have to say.

(*Mr Young*) Chairman, may I add a gloss on that?

Chairman

542. Yes, Mr Young?

(*Mr Young*) I think for the Government to really help medium sized businesses which face this great challenge it needs to make that help in a form that will really be beneficial to businesses. As Mr Sweeney said, tax exemptions and things like that are not things that we would particularly have an opinion on. I am not quite sure in my own mind, if I may express a personal opinion, that that would be the best way of giving the help. I think that it may focus people's attention; there may be other ways of doing it. I think what businesses need, the surveys that the banks have done, show that there is quite a high degree of awareness of the problem, but insufficient action and I think it is: "Where do I go to get help?" that businesses particularly need. That is where we are hopeful, and we have the problem with bank managers around the country being asked by businesses: "So okay, I have read your booklet. Now what do I do?". Now the average bank manager in Aylesbury is not an expert on solving these kind of systems, but he needs to know a man who does. He needs to be able to signpost and that is where we are hopeful that the sort of material that Action 2000 and Business Links are putting out will help us to signpost businesses to good quality—and that is a big question—help and advice.

Mrs Curtis-Thomas

543. So the Business Links and TECs have a role to play, you believe.

(*Mr Young*) Yes, a very important role.

Dr Jones

544. What progress has been made in setting up the skills pool that you say Action 2000 were looking at? Again there is no mention on their millennium bug website.

(*Mr Young*) Chairman, I am afraid that is not an area that we have been involved in with Action 2000.

545. You just said you welcomed it?

(*Mr Young*) We are aware that some work has been done by them, but I have to confess that we are not up to speed on that. Our work is concentrated on the advice and best practice element.

546. If some of your members had got rather large loans to some of these companies, to what extent would they try to find out whether they were millennium compliant and use their influence because presumably they could, at the end of the day, call in loans if they felt business was going to fail? Is any work of that nature being undertaken? Another point is that you have called for non-compliant systems now to be declared unfit for their purpose under the law. Does any action need to be taken by the Government to move along in that direction?

(*Mr Young*) I know that banks lending to medium sized businesses are all training and guiding their managers to help them assess the Year 2000 vulnerability of the businesses that they are dealing with. A lot of banks have tackled this by doing samples of their loan portfolio trying to identify the characteristics of businesses that are vulnerable and then trying to generalise that and apply that to the whole loan book so that managers have a target to aim at, because there are 3.8 million enterprises in this country. If you went to talk to all of them you would never get it done by the year 2000. So they are trying to prioritise and identify the ones that are most vulnerable and those are the ones that they want to go to and particularly help them to get the help. It is not something that we can provide, but we have a real interest in making sure that they are aware of where the help is and that they are taking it. I think we are a long way away from the loans being called in yet, but that ultimately will be something that would have to happen. In terms of unfit systems, there may be scope for Government action there. I am aware that

[**Dr Jones** *Cont*]
some of the major retailers are putting stickers on their machines "Millennium Ready". I think that is an advance. I think that the smaller and medium sized businesses who face the greatest challenge are the ones who need the help in making sure that if they do go to Dixons and buy a new machine they are not buying another lot of trouble.

Chairman: Mr Young, thank you very much. We are now coming to our final question because time is up and I would like to invite Mr Atkinson to put it to you.

Mr Atkinson

547. In fact you have already answered the question I proposed to put about contingency planning, so may I just pick up the theme of your last answer, Mr Young? In hindsight, and perhaps even still now, would it not have been helpful if there had been legislation which required companies to use the annual report to report back to their shareholders the millennium compliancy of their computer systems or, if not, the action they were proposing to take? That would have a ready checklist which would be available not only to the shareholders, the owners of the companies, but to yourselves, the bankers of those companies to know precisely where you are at regarding those companies?

(*Mr Young*) I think that may have been helpful, but I think the more important thing is to engage in the dialogue with businesses. The amount of information that you could include in an annual report would be limited and there is the danger that it may raise more questions than it answers. But we have here this afternoon constantly plugged the need for information flows and information exchange and I am not going to argue against anything that generates more information.

Chairman

548. Mr Young, I am going to stop you there because you do not know it but you have given the wisdom of Solomon in that answer. Mr Atkinson has been advocating for the last 18 months for legislation and you gave an answer that Solomon would have been proud of and I think while you are winning we will stop!

(*Mr Young*) Thank you, Chairman.

549. May I thank all three of you, Mr Sweeney, you and your two colleagues for coming along this afternoon and helping us with our inquiry. There may be just one or two points we have not had the time to cover. If that is the case, would you be prepared to answer one or two written questions for us?

(*Mr Sweeney*) Of course.

Chairman: Thank you very much indeed for coming, for your frank, helpful and skilful answers. Thank you very much.

APPENDICES TO THE MINUTES OF EVIDENCE

APPENDIX 1

Letter to the Clerk of the Committee from Dr C N M Pounder, Editor, Data Protection News

We are specialist consultants working in the field of data protection, and editors of Data Protection News, which is published by Cap Gemini UK plc. You will recall, during our telephone discussion earlier this week, that we agreed to send the Committee our analysis concerning Year 2000, the Data Protection Act1984, and the forthcoming legislation to implement the Data Protection Directive (95/46/EC) as announced in the Queen's Speech.

In summary, we believe that the impact of the Year 2000 from the data protection perspective has been very much underplayed, yet all systems which process personal data (eg most major systems of central and local government) are and will continue to be subject to data protection legislation. Consequently, we do not believe that any further legislation is needed to protect Data Subjects; Data Users, if they are to process personal data lawfully, must establish mechanisms with respect to data protection compliance and this should include Y2000 compliance. However, we do recognise that further legislation might be needed with respect to those systems which do not process personal data.

Can we take the opportunity to raise two points with the Committee:

(a) firstly, since many organisations must register under the Data Protection Act 1984, then the Office of the Data Protection Registrar could be well placed to co-ordinate any urgent advice or research.

(b) secondly, the new Data Protection Bill could offer a suitable legislative hook to which to attach any urgent recommendation from the Committee; such a route could also be appropriate, where a mechanism for official enforcement action is seen, by the Committee, as being necessary. For instance, much of the intention of the Companies (Millennium Computer Compliance) Bill, as published in the previous session of Parliament, could be achieved by ensuring that the notification requirement with respect to the security of processing (Article 19(f) of Directive 95/46/EC) was modified:

— to include a particular reference to measures taken by an organisation with respect to Year 2000 compliance; and

— to place any such reference in the public domain.

4 September 1997

APPENDIX 2

Letter to the Clerk of the Committee from Mrs Judith Scott, Chief Executive, The British Computer Society

I am writing to you about the planned investigation to be undertaken by the Select Committee, which I understand is concerned with problems in IT arising from the Millennium Bug.

As the Chartered Professional Institution in the field of Information Systems and a member of the Engineering Council, the Society is delighted that the Committee is undertaking a review in the field of information technology and information systems. We are very strongly of the view that this is an important field of public policy which has not attracted the level of considered debate which is desirable.

The Millennium bug has served to highlight some underlying and important public policy issues, but the Society is concerned that in pursuing the focused debate on resolving the impact of the Millennium bug, the government will loose sight of these fundamental issues in the belief that the Millennium bug solutions are in themselves the answer to everything. Of course it is important that the Millennium bug is addressed, and the Society is contributing to this through the publication of good practice guidance.

The fundamental public policy issues that are being highlighted are:

— the massive reliance of many sectors of the economy on IT systems, and the risk that poorly engineered systems could bring sophisticated western democracies to the brink of collapse;

— the opportunity to use IT as an agent for business development and the management of the related risks are still relatively invisible in the boardrooms of the nation, often leaving IT and Information Systems shrouded in mystique; and

— the lack of a widely accepted professional framework of competence in the design and commissioning of IT systems, allowing work to be undertaken by all and sundry including the incompetent and dishonest.

We would urge the Select Committee to consider these issues as part of its review of the Millennium Bug, because it is only by addressing them that we will avoid another "millennium bug" in the future. We have attached as background material a paper which is part of the Society's review on requirements for regulating the professional practice in Information Systems.

9 October 1997

Annex

PROFESSIONALISM IN IT

REVISED DRAFT, 9 SEPTEMBER 1997

INTRODUCTION

The central issue seems to be that IT has developed over the last 50 years as an unregulated industry and not as a profession, with all the possible consequential problems.

Characteristics of a profession are:

> members are individuals with individual responsibility for their work, there is an independent regulatory body to maintain practitioner standards, services normally charged by fixed fees or T&M and not by result, use of best endeavours at all times to represent the client interest.
>
> (Ref Lord Benson on the definition of a profession)

Analogies with building and civil engineering suggest that other fields have differentiated into the professionals representing the non-expert client, eg the architect or consulting engineer, and a large and diverse industry of contractors providing a range of contributing services and activities to undertakings and projects normally led by professionals. Professionals take personal responsibility and so often trade as individuals or partnerships.

There are differencies in the approach to regulation in professions. Doctors have both a "union" to represent their interests in matters such as pay negotiations and a regulatory body responsible for maintenance of standards. Solicitors, on the other hand, have currently only one body to carry out both activities, and there is debate as to the efficacy of the single body approach. In the professional Engineering Institutions, I understand that only the Civils and the Structurals meet the Benson criteria in full, in that members can be disbarred from practice for incompetence.

THE CURRENT SITUATION

The current IT business is simply chaotic in structure. There are no effective professional or regulatory bodies. The general view is that IT people are unregulated pirates exploiting gullible clients and the courts often seem to take decisions in line with this perception. Conversely, well intentioned IT people struggle with clients who can't or won't describe what they want and then sue when they don't get it. Professional qualifications exist, eg the FBCS and CEng, but the vast majority, ie some 90 per cent, of people in IT have no specific qualifications and the CEng carries little or no real weight. There are no generally accepted definitions of competencies in IT. There are no sanctions which can be exercised to restrict the incompetent from practicing.

WAYS FORWARD

Can anything be done? Some possibilities and issues are as follows.

REGISTERS OF "LICENSED PRACTITIONERS"

The suggestion has been made (Jon Vogler, BCS AGM 30 Oct 1996) that the BCS should establish a "Register of Consultants" and a BCS working party is looking at the idea. A study is in process in the safety criteria area to define, inter alia, the requirements for competence to practice in the area. In the IT security and expert witness fields, registers are already functioning. And the issue is receiving attention in the accountancy field in which, as in IT, anybody can claim to be an "accountant".

There are three levels at which such a device could be pitched:

(a) as a marketing device to publicise a list of practitioners;

(b) as a statement of adherence to a code of practice; and

(c) as a further qualification level: in effect a licence to practise in the speciality.

In my view, (a) would be in conflict with the role of a professional society, as it seems to advertise the services of some members but not others. Furthermore, it does not address the issue of professionalising the industry as, at the level of a list of names, it has no real associated sanctions. As to (b), the BCS and other

professional societies already have codes of practice which would be helpful were there any means of enforcing them—currently they are honoured in the breach and not much in the observance.

The introduction of a further level of licencing, as in (c), raises all the questions as to the means of gaining membership of the list—by exams, or by CV and interview and if so, who does the interviewing, what is the appeals mechanism, etc. However, this may be a constructive way forward as an intermediate step to possible later legislation.

PI Insurance

In many other professions where individuals take responsibility for their professional decisions it is usual for them to carry individual Professional Indemnity insurance or for their employers to carry corporate insurance which covers professional risks. It is expensive, likely to get more so and generally difficult to obtain unless you are licenced to practice. PI in the IT area is a developing market and it may be that we can influence the attitudes of underwriters to a relationship between certification and rates. There is evidence that some insurers require evidence of operation of a Professional Development Scheme within a Company before quoting for cover.

Government Purchasing

Should Government purchasing contracts require professional standards? (ISO 9000 etc. look useful but really only address project admin techniques, ie they address the process but not product quality). So the real issue here would be to convince Government that serious contracts should contain requirements on levels of qualification of staff carrying out the work: e.g.

— any project above £1 million headed and signed off by a CEng; and

— any project above £5 million must have at least five per cent staff with CEng, etc.

Note that an early example of this approach in the USA was the DoD Orange Book requirements for security projects back in the early 1980s—in those days it called for academic degrees whereas now we have engineering qualifications which are perhaps more relevant.

There is a difficulty here in that Government is not what it was 20 years ago—now we have a plethora of distributed privatised utilities, quangos, local authorities and ministries. The only central body with some overarching authority for larger sums is the Treasury. It may be that a useful body to approach for advice and for discussion as to the way ahead is the Audit Commission.

Evidence

Our claim is that in essence, properly trained and qualified engineers will produce better quality IT systems—it would be good to be able to support this claim with evidence. Is there any actuarial data, for example in the insurance world? Legal cases tend not to provide useful data for this purpose as they often turn on contractual details and points of evidence which are emphasised by counsel in their endeavours to win for their clients, and not on overall system quality issues.

Legislation

The purpose of legislation in the commercial world is generally to set ground rules for the operation of the free market, but there are areas of public concern where there is direct legislation. The system of licencing aero contractors and individuals is well established and effective and driven by the clear and direct risk to the public. In the case of IT systems, the risk is often great but to the client's pocket rather than to his life, except in some safety critical areas.

Should work in the safety critical applications area require use of qualified people, e.g. CEng? An SCS competency scheme is under consideration—ref discussion at the BCS SCS task force, 1 May 1996. The CEng would seem to be the only realistic basic qualification, together with licenced practitioner lists in specialist areas as discussed above; anything more specialised would have even less public visibility and acceptance.

Security issues are closer in general to Government interests than other areas, and the licencing arrangements in this area for individuals and for Evaluation Facilities for secure software may suggest ways ahead in other areas.

The Year 2000 Problem

Increasingly this is becoming a public issue where IT people are seen to have failed to foresee the obvious and to take steps to safeguard systems against the millennium. This is causing vast expense and difficulty, both public and private. Can we use this issue to advance the cause of responsible certification?

CONCLUSION

To reiterate—we need to use some or all of these routes to move forward to a responsible licencing and certification scheme for the profession, with the overall aim of increasing economic benefit for the country. We have only one accepted public qualification available to us: CEng. But this at present has no real weight and is largely ignored within the profession.

I think that moving forward hinges on the power and credibility to enforce sanctions such as de-licencing a manifestly incompetent practitioner. This will not happen voluntarily and will need coercion, by some use of power such as Government purchasing weight or in the long run by legislation. If informed users such as Government set the pattern of requirements then others will follow.

9 September 1997

APPENDIX 3

Letter to the Clerk of the Committee from Mr Mike Scanes, Managing Director, Bridgeway—Sicor Ltd

It occurs to me your committee may be interested in our experiences in dealing with the Millennium over the last two years.

I believe the fundamental problem is the manner in which the message has been carried. Invariably it has too much IT content, or journalese, and in both cases readers are unable to identify with the issues simply because they cannot relate it to their business. While there is an increasing amount of information available this in turn is too generic and not easily identifiable by business type.

The solution we have adopted is to identify businesses by type or industry. From this it is possible to estimate the level of risk. Precision engineering has a greater risk than the paint industry for example.

My particular concern is that there is so much Millennium mis-information it is difficult to determine that which is good and that which isn't. Late last year there was a flurry of software arriving for checking PCs for compliance. Recently the computer press reported that most of it was ineffective.

Similarly at a recent Millennium conference a Microsoft spokesperson told the audience all Microsoft products were Millennium compliant as they use four digit notation. Half an hour later a director of a software house completely demolished Microsoft's claim with a demonstration of Windows95 using a lap top and overhead projection. It was both awesome and a frightening demonstration. We never heard from Microsoft again.

In co-ordinating that which is available how do we truly know what is good and what is not? Or that which we provide today will not turn out to be useless tomorrow?

With SMEs the big problem is that all businesses are different and require different perceptions and approaches. Because of the manner in which the message has been worded, most businesses think it is everybody else's problem but theirs. Within half an hour of discussion the penny usually drops.

It is the interpretation of the information and the quality of the advice which is given to SMEs, which is important. My experience so far is that once given the direction and a little sensible verbal advice most businesses are perfectly capable of handling the problem, although some may need a little early and ongoing support.

When Millennium programmes are put into place it is usually the financial institutions which start first and are then followed by business and industrials. This has happened in the USA and is now following a similar pattern here.

The recent report from the Gartner Group that European Banks are not addressing the millennium problem is deeply disturbing. While it is serious enough the banks are not sufficiently aware the knock-on effect will be positively catastrophic. This is because until the banks take the lead industry does not follow. This in turn means any British company importing finished goods or raw materials from Europe runs a severe risk of disruption of supply in the early months of 2000. This applies equally to exporters to Europe who may find customers cannot accept scheduled deliveries.

Such judgements cannot be embodied within a standardised format, and each case will be horses for courses with recommendations made based on the latest information available.

While I accept the majority of businesses will survive because they cannot afford not to, the potential for a period of disruption is very real, and we work to minimise this and ensure businesses survive intact even if it has to temporarily stop trading in January 2000 because of external influences.

The requirement for a method of identifying the high risk companies is I believe fundamental because it is vital to direct support and resources to those most at risk. The blanket approach could mean support is offered to companies who need it the least, while those who need it the most get little or nothing.

Our approach is to carry out a corporate Millenium Impact Analysis with recommendations for action. A follow-up visit is arranged to access the results of the companies efforts. Some have achieved 70 per cent compliance within a few weeks of a single telephone call. Surprisingly this has been achieved at nominal cost and experience to date indicates the actual cost is nothing like that which is claimed in the press.

For large main frame computers which may not be compliant in time, we have identified a patented methodology in the USA which can bring a system to full compliance within months. It is possible to state as late as June 1999 and still complete in time. On the skills issue there are others who can provide a significant input who are not necessarily IT professionals.

My personal view is that addressed correctly the Millennium problem need not be the disaster it could be, and given the right approach can be easily resolved.

20 November 1997

APPENDIX 4

Memorandum submitted by Xi Software Ltd

Introduction and Summary

The Company has worked for nearly 12 years in programming computers. The software produced by the company includes heavy dependency on dates and the sorting and selection of data by dates. We believe that we have extensive experience in this area.

It is the belief of the company that the much-publicised "Millennium Bug" is grossly exaggerated both in its extent and purported consequences. We are gravely concerned that the allocation of extensive funds to the investigation of this problem would be a waste of public resources and would divert much-needed funds from more serious problems both inside and outside the computer industry.

The Way Dates are Held on Computer

All modern computers, including PCs produced in the last few years and associated software, now hold dates and times as the number of seconds since midnight on 1 January 1970. This is held as a 32–bit binary signed integer, which can hold from 0 to 2,147,483,647 seconds. To compare two dates, the larger number represents the later date and time.

At midnight on 1 January 2000, the date and time held in this way will change from 946,684,799 to 946,684,800. This is not regarded as particularly significant.

Accordingly, we cannot accept that anything spectacular will happen at midnight on 1 January 2000.

Why is There any Problem at All?

The only source of any problems is where the dates held in this format are converted to or from human-readable format.

In order to display dates, the date and time held as described above has to be broken down into a standard format. To find the day since 1 January 1970 divide the current time by the number of seconds in a day (86,400) and discard the remainder. To extract the day, month and year from this is a little more complicated but not that much more.

However, all modern computers have a routine to do this "built-in", to produce a sequence of numbers as a "broken-down" date representing the year, month, day, hour, minute and second from the given input. Again there is little problem; here both 99 and 100 will fit into six bits, and most computers allow 32 bits for each field—as much as for the date and time being broken down.

All that remains is to generate a string of characters from the "broken down" date for printing. It is possible that a carelessly written programme, expecting the year field to be at most 99, might display the date as "01/01/100" or something like "01/01/–0" but that is all. There should be no catastrophe.

In order for a programme to read dates, the opposite operation has to be performed. Again it is possible that a carelessly written programme might misread a date after 2000 in some way. Clearly a year less than 70 should just have 100 added to it to convert to the broken-down time. For most programmers that is almost a "knee-jerk response" by now.

Why No Panic?

As we have tried to explain, the only problems might relate to the input of and the display of dates after 2000, not to how the computer handles them.

Most software which involves dates can be tested by just seeing if it will accept, and then correctly display, dates after 01/01/2000, which can be done at leisure before or after that date.

The actual processing and sorting of dates will be done using the internal "seconds after midnight on 01/01/70" format for which the year 2000 is insignificant.

Conclusion

We believe that the stories of "aircraft falling from the sky" and "life-support machines failing" do not have even a grain of truth in them. We believe that the only problems relate to the display and entry of dates which are irrelevant to these processes. We believe that most, if not all, software which fails to handle these dates correctly will make its faults apparent well before then, and we further believe that all modern software does correctly handle such dates.

We would strongly recommend that no extensive public money be devoted to this problem beyond recommending that people be advised to ensure that any software they purchase correctly accepts all reasonable input dates and is able to display them correctly.

20 November 1997

APPENDIX 5

Memorandum submitted by Mr Tim Johnson, Look Multimedia Ltd

Introduction

1. Look Multimedia is a specialist producer and distributor of video and multimedia programming for the computer industry. As its owner and managing director, I have been working on the Year 2000 computer compliance issue since 1995 and the company is now successfully selling two videos about the awareness of the Year 2000 problem and the legal issues it raises. I am also a member of the BCS Year 2000 Working Group and will be contributing separately to their submission.

Summary

2. My comments focus on point (iii) of the Committee's Terms of Reference and the related questions about awareness of the problem and the constraints on dealing with it. My view is that simple awareness is now quite high in the UK[1] and the key task now is turning awareness into action. For government, this means taking a more imaginative approach to help and encourage organisations to solve the problems. In particular I suggest the government should urgently consider setting up a Certification Scheme for Year 2000 software and systems compliance.

3. One reason why people find it so difficult to tackle the Year 2000 problem on a psychological level is that—at least until systems start to break down—there is no positive incentive to deal with the problem now. It's rather like trying to persuade a teenager to clear up their room. Vague threats of dire consequences are less effective than the promise of a positive reward. That does not mean that the dire consequences of the Year 2000 failures should be ignored, but I suggest that government needs to find short-term incentives for solving Year 2000 problems as well as using long-term threats.

Legal Sanctions

4. Earlier this year I floated the idea of legislation to limit companies' liability to legal action over Year 2000 failures if they could demonstrate that they had followed best practice on the issue. This would have provided an incentive to action, but after discussing the idea with various experts in the area, including several MPs, lawyers and the BCS Working Group, I came to the conclusion that legislation was unlikely to be a realistic option.

5. In fact, there is already a formidable range of legal sanctions—from company law to health and safety to investor protection and beyond—which may eventually be invoked against companies which fail to sort out their Year 2000 problems. The weakness is that these sanctions will only apply after the failure has taken place. Government could do a lot more to raise awareness of the legal sanctions and the prospect that they will be enforced. I believe this would have some effect, but it comes in the category "warning of dire consequences" rather than "positive encouragement".

Certification Scheme

6. Positive encouragement is likely to be more successful than vague threats and one way of providing it would be to set up a government-backed Year 2000 compliance certification scheme. Organisations would be able to submit computer software and systems for inspection under this scheme and, if they passed the tests, receive a certificate of Year 2000 compliance for them.

7. One attraction of this approach is that it would offer organisations which get the certificate an immediate identifiable benefit. They would have the best possible answer to business partners enquiring if they were Year

[1] Awareness does not mean understanding. A friend who works as a volunteer for the Citizen's Advice Bureau suggested to one client that she should acquire computer skills as a way of getting a job. The woman replied she wasn't going to have anything to do with computers because people said they were all going to stop working in the Year 2000.

2000 compliant. If the certified software was for sale, it would sell better. If the systems concerned were internal the company would be able to show it was a better business partner with more secure future prospects. Certification should increase the value of a company and its share price.

8. On the other hand, setting up a certification scheme will undoubtedly be difficult. Although there is certainly a demand for it, no private organisation has been willing to tackle the problems. Only government has the power and the motivation to carry out such a project. It seems to me something which the British government should consider seriously, as a matter of urgency.

Declaration of Interest

9. As mentioned above, Look Multimedia is selling videos on the Year 2000 issue. I am also working with Ovum, the IT research and consulting company, to propose possible projects to Action 2000, including a feasibility study for a Year 2000 Certification Scheme.

24 November 1997

APPENDIX 6

Letter to the Clerk of the Committee from Mr James Marland, Mr Michael Pillow, and Mr Peter Matthews, Directors, Savills plc

Millennium Timebomb and the Property Sector

We write further to the Science & Technology Committee Press Notice No 4 of Session 1997–98, 30 October 1997—The Year 2000 and Computer Compliance.

We would like to draw your attention to the fact that many buildings face the same threat from the Millennium Time Bomb as computers and that, in our opinion, this threat has not been adequately addressed.

The Problem

The problem emanates from the numerous service installations that regulate the operation of buildings and the environment. These rely on controls which have embedded chips or microprocessors (similar to those found in computers) located throughout the building. When the millennium changes, the chip may not recognise the new date and so cease to operate as designed and in some instances not function at all.

The worst case scenario could see loss in function of access equipment, security installations, fire alarms, air-conditioning and heating systems, lifts, escalators and back-up systems such as generators.

The Scale

Buildings most at risk are believed to be those constructed or refurbished in the 20 years up to the early 1990s. These include shopping centres, offices, factories and public buildings such as libraries and hospitals, as well as conference centres, theatres, art galleries and museums.

As an indication, Savills Research estimates that in the City of London, some 29 million square feet of offices was developed or refurbished in the 1980s alone.

The Cost

Although the manufacturing cost of a chip is relatively small, estimated between £0.18 and £1.25 per chip, the replacement costs to British business lies between £2 and £3 per square foot—as it is not the chip replacement but the locating, testing and removal of the defunct chip which increases costs.

However, although the actual cost for any particular building is not clear, what is, is that the costs of any business disruption will be greater.

Associated Problems

Insurance—the Association of British Insurers has already stated that businesses will not be covered if systems, such as fire-alarms, fail in the Year 2000; because "there is reasonable time" to ensure that the systems will function correctly by the millennium.

Mark Boleat, Director General of the ABI, has warned: "Insurers cannot meet the consequences of companies not modifying their systems to take account of the known consequences of a known event. However, they may be prepared to offer some cover against Millennium-related risks, but this will depend on policyholders having taken action to make sure their business systems, as well as those of their suppliers and customers are "Millennium-compliant'."

CONCLUSION

In the circumstances, if a great deal of inconvenience and significant financial loss is to be avoided, we believe the public should be made aware of the importance of this issue in sufficient time to allow preventative action to be undertaken.

Savills has already initiated a planned series of investigations, checks and tests, first to identify where problems may arise and then to eliminate them. Buildings within the firms's management control are already being checked to ensure they have Millennium Compliance.

A team of property and IT experts is being brought together by Savills to provide the best advice available for clients.

We will be pleased to assist the Committee in any way we can.

17 November 1997

APPENDIX 7

Memorandum submitted by the Institute of Directors

INTRODUCTION

1. The Institute of Directors represents the interests of some 41,000 members in the UK to key policy makers, in order to achieve an environment in which business can thrive and enterprise will be rewarded.

2. The implications of failure to cope with the Year 2000 problems are widespread and potentially very serious indeed. Hence our concern that maximum publicity be given to the problem and that the efforts of those bodies who are best able to advise be supported and centrally co-ordinated.

RESPONSES TO PARTICULAR QUESTIONS POSED

What is your estimate of the seriousness of the millennium bug problem?

3. The problem is vast, extending well beyond IT departments. Any area where automated technology is used will be at risk. In addition companies will be exposed to any consequential disruption or non performance of their supply chain. Virtually no company will be immune as every PC currently in use will need checking and possibly rectifying and all software utilised needs to be assessed and critical problems dealt with.

4. Aside from their own businesses our members will need to be assured that public safety is preserved and the basic communications infrastructure is maintained. This of course is a global issue and not restricted to the UK.

To what extent do you think that UK businesses and other organisations have done, or will have done, enough to avert any potential problems?

5. We have not seen any accurate recent data to be able to give an answer. We think a suitable form of measurement should be carried out as a matter of priority. It is not an area in which this Institute has any particular expertise and would, we suggest, be best co-ordinated by the DTI.

6. However, circumstantially we believe that the vast majority of businessmen are aware of the issue but that only those with dedicated IT departments have actually done much about it.

Do you think the Government has done enough to raise awareness of the problems associated with the date change or to encourage action to avert problems? What more should be done?

7. No, it is felt that clear ministerial control should have been applied from the outset rather than relying on a minimally funded Taskforce 2000. The present creation of a new body Action 2000 is welcomed, although having two bodies operating may not lead to the co-ordination required. A top priority must be to set in place a mechanism for tracking progress as the millennium approaches so that appropriate changes in messages and resources can be implemented if required. An additional priority will be to provide directly, or co-ordinate elsewhere, help-points for sharing knowledge and sources of help. These help-points will need to distinguish clearly between the needs of IT professionals and those of non specialists.

What, if any, are the major constraints militating against progress being made towards identifying and applying solutions to prevent computer system and software failures at the millennium?

8. The constraints companies face are principally:

— Budgetary constraints.

— Lack of suitable staff or contractors.
— Inability to trace software suppliers.
— Inability to identify location or nature of embedded chips.
— Other, seemingly, more pressing business issues.

28 November 1997

APPENDIX 8

Memorandum submitted by Electronic Data Systems Limited

INTRODUCTION

EDS is in a comparatively unusual position in that the very nature of our business is such that we are both a consumer of Information Technology (IT) products as well as being the provider of IT based Services. As such we have a broad view of the situation across commerce, industry, and the public sector. EDS is also the largest supplier of IT services to the UK market (Ref: "The Holway Report 1996").

For these reasons, in 1997, we seconded a senior member of staff to work with Taskforce 2000. This has given us an objective view of perceptions and progress as well as providing much-needed support to raise awareness of Year 2000 issues in the UK.

We are pleased to present this memorandum as our response to the five Questions listed in your letter of 3 November 1997.

1. ESTIMATE OF THE SERIOUSNESS OF THE PROBLEM

While the causes of Year 2000 problems are technical, the consequences of failure extend throughout the business, economic and social spheres. Furthermore, the Year 2000 issue is global in extent. EDS in the UK could be seriously affected by the failure of other countries to fix their problems. Individuals and organisations alike are at risk from the failure of infrastructure services (power, water, telecommunications, electronic funds transfer, etc) many of which are now subject to influence from beyond the UK.

Some of the possible consequences of failure are:

— Communications failure—businesses are now heavily dependent on international communications networks.
— Unpredictable performance of equipment—major changes are detectable but minor changes may be almost imperceptible but will eventually become dangerous if cumulative.

2. ACTIONS TAKEN

EDS started to address the millennium issues several years ago. EDS has a large number of projects under way and some customers are already compliant. EDS has been strongly pro-active in persuading many customers to take the problem seriously and initiate work. We believe that we have identified everything that needs to be done, and are working on it.

We are encouraging our customers to undertake stringent prioritisation of their business processes, and to address the most critical and complex aspects first.

We are carrying out a rigorous internal risk management programme which includes:

— Quarterly progress surveys.
— Regular reports to board level in all units.
— Schemes for staff retention.
— Priority setting: 1—Customer work; 2—Internal compliance; 3—New Business.

We do not underestimate the complexity of this issue. Despite our skills and planning, given the risks which we face from third parties it is still possible that we may encounter problems. Our approach is to fix everything known, manage the risk and plan for the unexpected.

We are also engaged in what is currently one of the largest and most successful public sector Year 2000 projects, for the Inland Revenue. We have restricted our observations in this reponse to those directly obtained from our own experience, which includes a broad spectrum of contacts beyond our own customer base and enables us to comment authoritatively both on policy and practice.

3. Major Constraints

3.1 *Year 2000 and EMU*

The need for parallel streams of work to prepare for the Year 2000 and the Single Currency adds to the complexity of the issues and the potential risk of failure. Even if the UK does not enter in the first wave, any UK company trading or reporting within the European Community must still be able to handle the Euro. The fact that other EC countries give the highest priority to work on EMU compounds the problem.

Given the coincidence of the Year 2000 and the Single Currency, we believe that the government should recognise the very large amount of work that will be needed to tackle both requirements, and should weigh up the priorities carefully.

3.2 *IT Product Suppliers*

Many hardware and software suppliers are still perceived to be behaving unhelpfully. There is a lack of easily available, easily intelligible information (whether in advertisements, manuals, product documentation, or information from retailers). Large corporations have some advantage here, as they are significant customers and have in-house IT staff able to persist with asking the right questions.

Legal constraints and fear of litigation are presently restricting information provision.

Testing schedule (which are on the critical path for all Year 2000 project plans) depend on the availability of Y2K-compliant hardware and third-party software. Any supplier delay or defect will affect project progress.

3.3 *Legal Implications*

The threat of major contractual liabilities and no insurance cover may encourage or force some suppliers into liquidation. This could have a disastrous effect on organisations that were relying on their products or services.

The issue of "who pays for Year 2000" can delay the start of remedial work. EDS has successfully negotiated cost-sharing agreements with several customers to avoid this problem.

Successful resolution of the Year 2000 problem is absolutely critical to EDS' business, performance and reputation. We are therefore taking every possible action to protect our reputation and preserve our customer relationships.

4. Contingency Plans

Like other reputable IT service providers, we are approached by many organisations (some of which would be highly-desirable additions to our customer base) to contract for their Year 2000 programmes. However, taking on such work could detract from our commitments to existing customers. It is therefore extremely unlikely that we will take on new business of this nature until we are satisfied that our existing obligations can be met.

We are taking strongly proactive steps to ensure that our customers understand the problem and authorise work, minimise lengthy tender procedures, maintain a closely-focused project plan and sufficiently supply their own user and technical staff to work with our project teams, especially for testing.

It is extremely difficult to devise effective contingency plans when both the company itself and every aspect of its business are IT-based. We are prioritising work on our own systems and liaising closely with suppliers to minimise and manage all identified risks. We are also closely involved with our customers' contingency planning.

On our long-term outsourcing contracts we have recognised the need to prepare both for EMU and the Year 2000, and are working on both requirements.

We recognise that retention of key staff will be crucial to the success of our Year 2000 efforts. We have a range of initiatives to retain and re-skill existing staff, and to recruit and train new staff, including participation in Modern Apprenticeships in IT and other IT NTO schemes. We are giving the utmost support to the new IT NTO, including providing the non-executive Chairman, as we regard this as a vital contribution to alleviating the skills shortage in general, and the Year 2000 issue in particular.

5. Government Actions to Raise Awareness

Much action has already been taken, but we would recommend that an even higher profile is necessary to ensure that overall progress is maintained and accelerated.

The CCTA books have proved helpful; they should be regularly updated and a related public information forum maintained.

Given all the concerns highlighted above, we recommend that the Government appoints a Minister for the Millennium, with the following remit:

- Maintain continuing high visibility and high priority for Year 2000 issues;
- Drive progress towards compliance certification for technology products;
- Drive the development and implementation of a national Year 2000 contingency plan;
- Enforce maximum co-operation on Year 2000 issues between government departments;
- Drive and report on progress on public sector Year 2000 projects;
- Continue to support the IT NTO through the DfEE and DTI.

28 November 1997

APPENDIX 9

Memorandum submitted by Barclays Plc

1. Introduction

1.1 Information Technology (IT) is all-pervasive in the Barclays Group world-wide. Barclays has recently been recognised as one of the world's Top Ten users of IT, is the UK's largest spender on IT and has won several awards related to its use of IT.

1.2 Barclays regards the "Millennium Bug" as a matter of business survival. The Barclays Year 2000 Programme is the Bank's top priority, and plans are in place to achieve compliance in our business-critical systems by the end of 1998. However, like other organisations, Barclays is heavily dependent on its suppliers, service providers, trading partners and customers also achieving compliance. Barclays working assumption is that one or more date-related failures will be experienced and that establishing appropriate contingency plans is vital. Barclays believes that although much useful awareness raising has been achieved by Taskforce 2000, Government has a significant role to play in raising awareness and promoting action, particularly internationally.

2. Responses to the Committee's Specific Questions

2.1.1 What estimation has your organisation made of the seriousness of the "millennium bug" problem to your organisation?

2.1.2 The Barclays Group regards the "Millennium Bug" as a matter of business survival, and is therefore approaching it with utmost seriousness. Information Technology (IT) is all-pervasive in the Barclays Group; no part of the organisation considers itself immune from the problem.

2.2.1 What steps have been taken, and when, to avert problems in computer systems and software at the millennium? How much work remains to be done to ensure a smooth transition from 1999 to 2000? How confident is your organisation that it will encounter no problems at the millennium resulting from the inability of computer systems to handle the date change?

2.2.2 Barclays Year 2000 Programme was established in early 1996. Year 2000 Compliance Projects are in place across the Group world-wide. A Programme Board of Senior Executives provides direction for the programme. The Programme Board reports to the Group Executive, which is chaired by the Chief Executive, Martin Taylor.

2.2.3 It is Barclays policy to achieve compliance in its mission-critical systems by the end of 1998. Broadly speaking, the majority of Barclays businesses have completed their Year 2000 Assessment and Planning and are actively engaged in making the necessary software changes. Enterprise Testing will begin early in 1998.

2.2.4 Micro-chips with date-processing logic are also incorporated ("embedded") in many other types of equipment, such as building management systems, air-conditioning plants, power distribution and management, lifts and office equipment. Date-related failure in many of these could also threaten the continuity of business operations.

2.2.5 It would be the height of folly for any large financial organisation to state today that it is confident that it will encounter no problems at the millennium. In a programme of this size and complexity, the prudent working assumption must be that somewhere, at some time, one or more date-related failures will be experienced.

2.2.6 The Barclays approach aims to reduce the incidence and severity of any such failures, and to have in place appropriate contingency arrangements.

2.3.1 What, if any, are the major constraints on your organisation which may hinder work on averting computer system and software failures at the millennium?

2.3.2 The major contraints which may hinder our own work are:

- the availability of suitably skilled IT personnel and other resources;

— the resources required to address EMU in the same time-frame; and

— legal and regulatory changes imposed by Government.

2.3.3 However, there are many factors outside our control which will have a significant impact on our ability to prevent date-related failures at the millennium. Like all other financial institutions, Barclays is at risk from Year 2000-related failures in business partners' systems and Banking industry networks both in the UK (eg CHAPS) and internationally (eg VISA, SWIFT).

2.3.4 Other areas of potential impact include:

— the compliance of Governments and the services they provide;

— Central Banks;

— utilities (power, water, gas, telecommunications, postal services);

— suppliers;

— trading partners; and

— customers.

2.4.1 Has your organisation developed contingency plans should computer systems fail at the millennium? What would be the consequences of such a computer failure for your organisation? Whom would you hold to be responsible?

2.4.2 Barclays approach to the Year 2000 problem is based upon the identification and mitigation of risk. As part of that approach we are identifying and developing contingency plans.

2.4.3 The consequences of any single Year 2000 computer failure for Barclays could vary widely. Depending on the circumstances, these could range from, at worst, total collapse of one or more Barclays businesses, through insidious data errors, to, at best, minor inconvenience.

2.4.4 Responsibility for any given date-related failure will depend upon the contractual terms in place between the parties at the time. However, Barclays takes the position that, whilst sensible legal safeguards must be put in place, relying on legal remedies to address the problem is illusory. There is no substitute for addressing the problem actively and directly with suppliers, customers and trading partners.

2.5.1 Do you think that the Government has done enough to raise awareness of the potential problems that may be caused by the millennium bug? Has it done enough to help find solutions to the problem? What more could be done?

2.5.2 The potential consequences of the "Millennium Bug" pose a very real threat to the ability of any organisation, industry sector, or even nation state, to continue to function.

2.5.3 Taskforce 2000, and Robin Guernier in particular, has done a great deal to raise awareness of the Year 2000 problem in industry despite a severe lack of funding. However, it is our perception that many in the Small and Medium Enterprise sector, and the general public, are either still largely unaware of, or do not comprehend the impact that the Millennium bug could have if not addressed in time. Barclays has actively provided awareness raising material to all of its business customers.

Like others involved in this issue, we are concerned that the Government gives a lead to the effort to publicise and advise public, corporate and other bodies of the dangers and how to respond. The recent announcement to set up Action 2000 is a welcome step but it is important that this body is adequately resourced so that it can make a difference.

2.5.4 Government has an important role in raising awareness domestically, both with industry and the general public. However, we recognise that there is a difficult balance to strike between raising awareness and inciting panic. The public in particular need to be given the confidence that the problem is being taken seriously and actively addressed. In this respect, Government has particular responsibility to ensure the continued operation of vital services, such as the National Health Service, Social Services, Pensions, Fire, Police and Ambulance Services, Local Government and Defence.

2.5.5 Government also has a vital role to play in raising awareness and fostering prompt action in the international sphere. In particular:

— with other Governments and regulators, especially in developing countries where awareness is still poor;

— with Central Banks;

— with the European Community (where the focus appears, still, to be mainly on EMU);

— The Commonwealth; and

— International Telecommunications

APPENDIX 10

Memorandum submitted by Cap Gemini UK Plc

Introduction

Cap Gemini is the largest European Management Consultancy and IT Services organisation employing over 29,000 staff around the world. Our mission is to help organisations use IT to run their businesses better. This prominent position in the IT services market has meant we have been working with hundreds of clients across the world to address the Year 2000 problem, and have a comprehensive range of Year 2000 services and solutions—TransMillennium Services™. As a result of our experience and range of services we are recognised by many including independent industry watcher Gartner group as one of the leading Year 2000 solutions providers, and one of the very few able to offer comprehensive Year 2000 services.

Summary

Cap Gemini has created a Millennium Index which we believe provides the most comprehensive information available about the state of readiness and likely impact on the UK economy of the Year 2000 problem. The Index shows:

- The UK problem to be £23 billion.
- Demand for skills exceeds maximum supply in April 1998.
- One in 10 organisations representing 29 per cent of GDP will fail to complete their programmes by December 1999.
- If the timetable slips by 1 quarter, non-completion rises to 27 per cent of organisations representing 37 per cent of GDP.
- Eight out of 10 (80 per cent) of organisations will not complete their Year 2000 projects by December 1998.

It is clear from the findings that British organisations (public and private) are unprepared and under-resourced for the challenge posed by Year 2000. They have failed to recognise that due to project length, and or skills supply constraints, projects will not be complete by the drop-dead date December 1999 and 80 per cent of organisations will not complete their projects by December 1998.

This is exacerbated by the complex inter-relationships within the economy; if even a tiny number of key organisations such as utilities, banks or central Government departments such as the DSS miss the deadline, the knock on effects would cause severe economic disruption. Only the government can take responsibility for ensuring that this does not happen.

Main Points

For several years Cap Gemini has been concerned globally about the state of readiness of organisations about the Year 2000; the more companies we work for in Year 2000, the more alarmed we become about the impact of Year 2000 on economics around the world. This type of anecdotal evidence has, however, served only to generate a lot of heat and emotion.

Cap Gemini therefore decided to create its Millennium Index to put some substance into the debate to provide precise figures about the levels of supply and demand for Year 2000 resources and the consequent impact on the UK economy. Cap Gemini's Millennium Index sets out to answer three fundamental questions:

- how big is the problem;
- what resources will be required; and
- how many organisations will not complete their Year 2000 programmes in time.

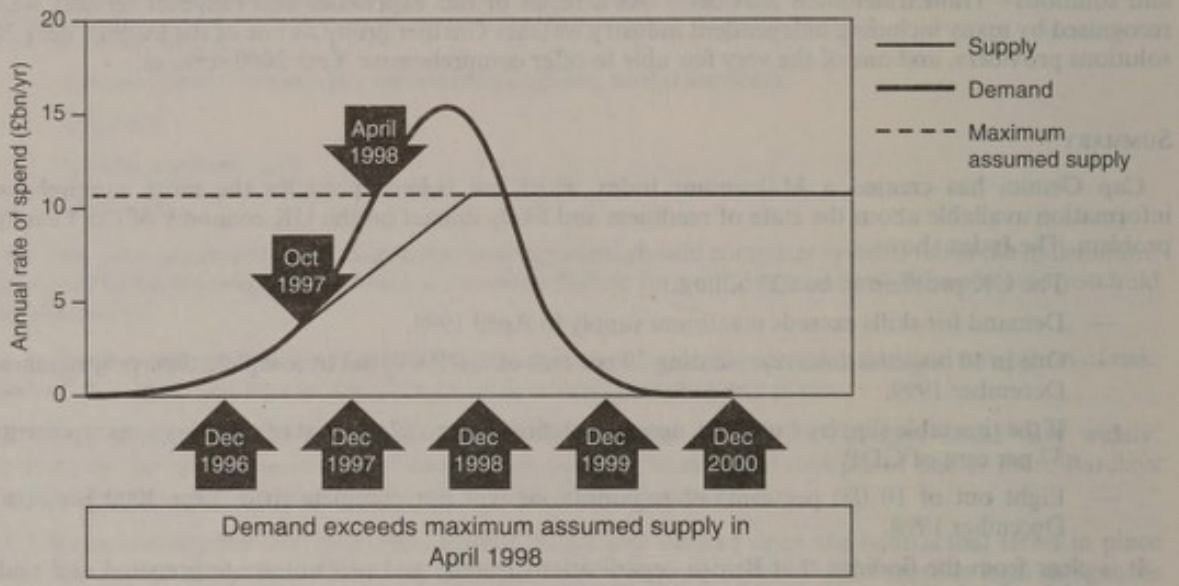
We believe this is currently the most comprehensive information available about the state of readiness and likely impact on the UK economy of the Year 2000 problem. Although it leaves a number of questions unanswered, it does provide some alarming findings—the headlines are as follows:

- One in 10 organisations (11 per cent) will fail to meet the Year 2000 deadline and, because many of these are larger organisations, this figure represents 29 per cent of Gross Domestic Product (GDP).
- If the timetable to fix the millennium bug slips by a single quarter, 27 per cent of organisations would fail to meet the Year 2000 deadline, representing 37 per cent of GDP.
- If one takes the deadline for fixing as December 1998 (because during 1999 systems will call up dates into the next century and if they are not fixed and tested they will start to work incorrectly or fail) which is when most organisations plan to complete their core business systems, eight out of 10 organisations (80 per cent) will not complete their programmes by this date.
- Demand for IT skills to fix the Year 2000 problem will exceed maximum available supply by April 1998. This figure assumes that 50 per cent of the entire UK IT skills pool will be diverted to work on Year 2000 projects—by, for example, scaling down other IT projects.

— Fixing the millennium bug will cost UK organisations £23 billion in total, with an average cost of £200k for small organisations, £400k for medium-sized organisations and £2 million for large organisations. These figures conceal wide variations, with some organisations spending over £100 million on tackling the problem.

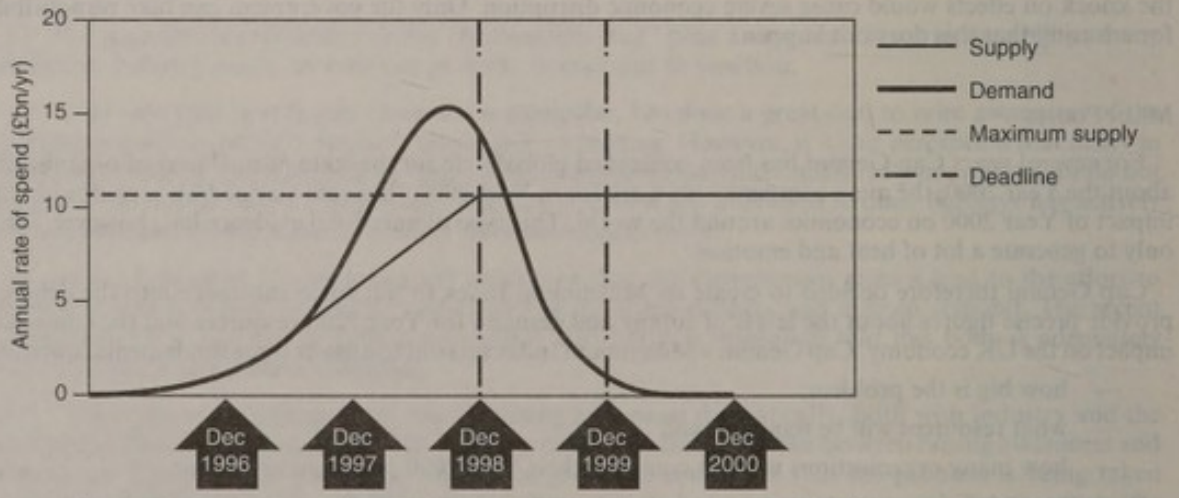
These points are illustrated in the graphs below.

Is there enough resource?



Source: Cap Gemini

How many will not complete on time?



Scenario	December 1998	December 1999
Index base case	80%	11%

Source: Cap Gemini

OTHER KEY FINDINGS INCLUDE

— Most organisations in the UK have only commenced their Year 2000 programmes in the past year—40 per cent of respondents started work between January and June 1997, with a further 11 per cent starting between June and October.

— Organisations remain complacent about the difficulty of resourcing the Year 2000. Only 24 per cent of respondents believe the skills shortage is a risk to their Year 2000 programme. More importantly, only 36 per cent of respondents have secured adequate resources from external solutions providers and contract IT staff to fix the Year 2000 problem.

— The percentage of work completed for critical applications varies from sector to sector with Retail and Wholesale (35 per cent) and Finance (33 per cent) having made the most progress; Manufacturing (28 per cent), Transport, Utilities and other services (27 per cent) and the Public Sector (25 per cent) are lagging behind.

— The percentage of Year 2000 budget spent to date varies between the sectors: Retail and Wholesale (26 per cent), Finance (29 per cent), Manufacturing (24 per cent), Transport, Utilities and other services (27 per cent) and the Public Sector (15 per cent).

— 44 per cent of survey respondents believe the most important single step the Government can take is to get its own house in order. However, the Government is making the slowest progress to date with only 25 per cent of work on critical applications in the public sector completed.

Millennium Index Methodology

It is planned to update the Millennium Index quarterly to monitor progress. The Index was constructed using an advanced Operational Research Model, which has been populated with data from three main sources as follows:

— An IDC survey conducted on behalf of Cap Gemini, of 300 organisations (private and public) to provide information about the status, spend and staff requirements of their Year 2000 projects

— Cap Gemini's experience of Year 2000 project phasing

— Figures from Richard Holway's (Independent IT market analyst) 1997 report detailing available IT resources in the UK (in-house and external)

What Does this Mean for the UK?

It is clear from the first findings of the Millennium Index, that British organisations are, as yet, unprepared and under-resourced for the challenge posed by Year 2000. Although they may individually feel confident about their own plans, almost without exception, organisations don't understand the size and duration of Year 2000 projects and have taken no account of the skills supply constraint that is going to become acute early next year.

If one considers the issue of interdependencies between organisations that underlies the way organisations work today, the Millennium Index shows an alarming proportion of organisations (all of whom trade with or supply other organisations) will not complete their projects in time the knock on effect within the economy will be significant. However, if those that don't complete are involved in the infrastructure of the economy hospitals, banks, paying benefits, power—the result will be disastrous.

Answers to Specific Questions

1. *What is your estimate of the seriousness of the millennium problem?*

The year 2000 problem is like looking for land mines in computer systems. The implications of not finding and fixing the respective systems varies from company to company and system to system. In essence it is all about managing risk and ensuring that not only your own systems will function correctly, but also those of your customers, suppliers and partners will do so too. The country wide implications for the UK are addressed for the first time by Cap Gemini's 1997 Millennium Index, and it shows the UK problem to be £23 billion.

2. *To what extent do you think that UK business and other organisations (eg Government) have done, or will have done to avert any potential problems;*

The Cap Gemini Millennium Index shows that organisations have started their projects too late given the average length of the projects and the resource constraint they will face; we would conclude that the action taken so far is too little too late and 27 per cent of GDP will impacted.

3. *Do you think that the Government has done enough to raise the awareness of the problems associated with the date change or to encourage action to avert problems? What more should be done?*

Taskforce 2000 has increased awareness in the UK (as compared to the level of awareness in continental Europe and USA) however, this has not on the whole translated into understanding by business directors and managers of the risks of the Year 2000 project not completing according to plan. Action 2000, although welcomed in broad terms does not appear to have the focus or dedicated effort that is going to be needed if the UK is to avoid some potential disasters. For example the whole "infrastructure" issue needs to be owned and managed. If hospitals, certain central government departments, power suppliers etc are amongst those who do not complete in time, the effort of this would be severe economic disruption if not civil unrest.

4. *What, if any, are the major constraints militating against progress being made towards identifying and applying solutions to prevent computer system and software failures at the millennium?*

The major constraints are lack of time and resource. For the former the only solution, depending on when you started and how long your project is anticipated to be, is to ruthlessly priortise and fix/replace the critical systems first, particularly those upon which other organisations depend on having strategic importance to the economy.

As far as resource constraint is concerned, productivity improvement is the only answer. Trying to "import" skills for "off-shore" may solve a few individual problems, but will not be the solution for the UK as a whole.

1 December 1997

APPENDIX 11

Memorandum submitted by Railtrack plc

INTRODUCTION

Railtrack owns and operates the UK mainland's railway infrastructure and is indispensable to the safe, reliable and continuing provision of rail passenger and freight transport. Railtrack has publicly stated (25 March 1997) its absolute commitment to ensuring that its operation will not be jeopardised by the Year 2000 date change. The company has committed significant funds and a dedicated management team to meeting this commitment. Through that team it has taken, and continues to take, a leadership role in ensuring that the whole rail industry meets the Year 2000 challenge. In this activity it has the whole hearted and valued support of the Office of the Rail Regulator.

SUMMARY OF EVIDENCE

The Year 2000 problem is significant and all pervasive across the rail industry.

Railtrack has an active and well-resourced programme to ensure its own compliance.

The UK rail industry is collaborating to manage the problem holistically.

There is a need for urgent and high profile Government action to increase awareness and to remove the Year 2000 risks from the public sector.

RESPONSE TO INQUIRY TERMS OF REFERENCE

(i) *Inability to manage the date change*

Any inability of organisations, public and private, to manage the date change effectively and in good time (ie generally before 31 December 1998 *not* 1999) will have immense repercussions on all other organisations and individuals that they trade with or serve. Where systems are safety critical the norm is to fail safe but extended failure may in itself induce new economic or social problems.

(ii) *Effectiveness of action taken*

In general action known to have been taken by Government and industry does not give us confidence that the problem will be averted. Observations suggest that small businesses and the public sector are the least prepared.

(iii) *Role of Government*

Whilst the UK Government has done more than most to raise awareness through Taskforce 2000 and now Action 2000 there remains a serious lack of genuine public and managerial understanding and thus action. An effort on at least the scale of AIDS awareness or the "Sid" campaign to sell British Gas is needed now.

(iv) *Compliance of new systems and software*

Vendors and retailers are still supplying non compliant hardware and software which adds to the problem daily. Urgent action to make this an offence using, if nothing else, the provisions of the Sale of Goods Act, would be of immense value but will encounter strong resistance. As far as the domestic consumer is concerned action to ensure that Year 2000 compliance rectification has to be included in the cover provided by normal and extended warranties would hasten action.

(v) *Contingency Planning*

Unless significant progress is made over the next six months this will be the only option open to many. There will undoubtedly be many cases where contingency plans or workarounds can be implemented by having extra staff on duty over the date change. Such staff will have to be identified early in 1999 and then be motivated to be at work rather than celebrating the millennium.

(vi) *Legal Aspects*

Whilst no doubt many lawsuits will be launched post hoc they will be too late to be of benefit. Some provisions in existing law need to be made more widely known now to prevent the acquisition of problem goods or services or to enforce rectification before 31 December 1999.

SPECIFIC QUESTIONS

1. *The seriousness of the "millennium bug" problem.*

1.1 Railtrack has no doubts about the seriousness, size, complexity, pervasiveness and cost of eliminating the millennium bug. Unless addressed systematically, comprehensively and in time the problem would cause serious and prolonged damage to the operation and hence the viability of the whole rail industry with serious knock-on effects across the economy.

1.2 The problem goes far beyond the popular conception that it is somehow only related to older computer systems. Were this so it would still be difficult and expensive to fix but the problem would at least be tractable. Because the problem can exist in so many types of electronic equipment involved in the operation of our and our customers' and suppliers' businesses the work involved in identifying and eliminating exposure is significant. To give an idea of the size, we expect to have to effect elimination procedures on several hundred thousand items of equipment.

1.3 The problem is also much more urgent than is generally appreciated. Far from the deadline for compliance being 31 December 1999 Railtrack, along with most other organisations who fully understand the problem, have concluded that the deadline for compliance in conventional computer systems is no later than 31 December 1998 with many having to be compliant sooner. We would like to set the same target for our embedded systems but logistics dictate a target of 30 June 1999. To illustrate how little time this leaves for the task, on the date of submission of this memorandum (1 December 1997) there remain only 274 working days for the computer systems task.

2. *Preparedness—steps taken and planned*

2.1 Railtrack began to evaluate the problem early in 1996 primarily as it affected computing systems. A formal study was conducted between September and December 1996 which identified the much wider scale of the problem and its ramifications across the whole rail industry. This estimated the cost of rectification for computers only at £60 million for the industry.

2.2 Following consultations in the industry and with the Rail Regulator, Railtrack organised an industry wide Management Conference on 25 March 1997 at which the problem was widely exposed. (A 15 minute video of the key points made is available if required).

2.3 As a result of the conference an independent Rail Co-ordination Office was set up to assess the industry wide readiness and report back in November 1997. Within Railtrack the team that had been evaluating the problem was absorbed into a much larger Year 2000 Management Unit with a full time Programme Director from 26 May 1997. This unit is now over 45 strong and is actively managing a companywide programme to identify and effect the changes needed.

2.4 The Railtrack Year 2000 Management Unit has broken the problem into four areas each being addressed by a specialist team. These are:

2.4.1 Information Systems—our computers and networks.

2.4.2 Rail Infrastructure Systems—the physcial railway—track and signalling.

2.4.3 Property and Premises Systems—stations, depots, offices and other premises.

2.4.4 Supplier Compliance—ensuring our suppliers operate through the date change.

The work of those teams is brought together by a Planning and Integration team and the move to compliance is monitored by another Change Control team.

2.5 A very full programme through to 2001 is now in place. The tasks post June 1999 are to ensure that what has been made compliant remains so and to monitor the changes through a complete 12 month cycle.

2.6 Railtrack hosted a Directors Forum on Year 2000 in the Rail Industry on 18 November. Part of the time was devoted to ensuring that all companies understand the obligations and risk that Year 2000 pose for Directors and Officers. The remainder was to seek support to establish an industry wide Rail Millennium

Programme Office to effect active collaboration by all companies. This initiative was supported by the Rail Regulator in person and is now under way. We anticipate the cost of resourcing this collaborative effort to be between £1 and £1.5 million per annum. This funding will be provided by the industry and does not include the actual cost of rectification or replacement.

2.7 No organisation can be certain that it will be totally free of problems on the day. Our approach of informed due diligence is intended to maximise our chance of achieving this. That said, we remain vulnerable should other organisations on whom we depend fail. The most significant of these, should they fail, would be major utility suppliers, the emergency services and local and central Government services.

3. *Constraints*

At present we have no internal constraints. We can see a growing problem ahead in finding people with the skills needed to support compliance work—primarily telecommunications and electronic engineers and project managers. The external constraints are compliance failures among suppliers and customers which is why we are investing so much time and effort into industry wide collabortion.

4. *Contingency Planning*

Formal processes to create and rehearse contingency plans are part of the rail industry's normal management disciplines. We have therefore already taken steps to apply these processes to the Year 2000.

5. *Government*

As stated earlier, the UK seems better informed than most countries. However on a 1–10 scale, where 10 is the awareness needed to stimulate action such as Railtrack is taking, the country as a whole is a very long way off the mark. As well as increasing focus in this area the Government should help by sponsoring the creation of reliable databases of products and companies that have been certified as compliant.

2 December 1997

APPENDIX 12

Memorandum submitted by The British Computer Society

1. INTRODUCTION

1.1 This submission has been prepared by the Year 2000 Working Party of the British Computer Society. The BCS is the Chartered Institution for Information Systems Practitioners, and a nominated body of the Engineering Council. It has 35,000 members, and represents a broad cross section of the working professionals in the IT field. It has prepared Guidance information for IT Directors and their senior management on the practical steps needed to deal with the Year 2000 problem, as part of a set of good practice publications in the IT field, (previously submitted to the Select Committee)[2].

1.2 This memorandum submits that for satisfactory resolution of the Year 2000 problem and to protect basic services there is a need to mobilise companies and industries to remedial action in a way which is beyond the scope of conventional industry structures and which may therefore require political enabling both nationally and internationally.

2. THE PROBLEM AND ITS POSSIBLE CONSEQUENCES

2.1 *Nature and scale of the Year 2000 problem for organisations*

2.1.1 The most frequently reported aspect of the problem is the cost of compliance. What is hardly ever reported is the consequence for an organisation if the work was not done. We live in an automated world and microchips have permeated nearly all areas of our personal and business lives. Yet the possibility that the basics of subsistence could be at stake, the availability of normal government and public services, the lifeblood of commerce under threat and even the possibility created of concurrent industrial catastrophes and defence impotence are dismissed as hype or exaggeration. But no-one would deny that all these things individually can happen if design principles are neglected, procedures ignored or if essential maintenance is withheld. Failure to find the Year 2000 weaknesses lurking in the fabric of today's complex and interdependent technological world is no different. It is to be hoped that the real downside is less than this and that specialists will detect and correct in advance most of the life-threatening or business critical errors. But it is also crystal clear that the public at large has no inkling of the potential power of the flaw that lies dormant beneath the surface of modern life. Neither do people grasp the difference between a plant or system being down for a few hours (annoying) and being out for weeks (devastating). Major companies recognise that in the event of loss of availability of computer systems, three or four days is the longest they can survive before getting into serious trouble.

[2]Not printed.

2.1.2 The level and understanding, of organisations around the world, of the various aspects of the Year 2000 problem varies considerably. Many people naturally find it difficult to understand why this is a major problem, let alone the largest technical problem in history. But the following are relevant:

2.1.2.1 Practically, the logistics per company are huge: tens of thousands of intelligent devices in plants, and libraries of software comprising anything from 5,000 to 100,000 programs.

2.1.2.2 Philosophically, the notion of sequence lies at the heart of automation and IT. This concept of sequence so often hinges on the date. In other words the Year 2000 problem is a central design flaw in a constellation of industries, not a peripheral inconvenience.

2.1.2.3 Visibility; the temptation is to react only in proportion to the visible magnitude; to do so is to be sucked into a reactive spiral from which there is no escape.

2.1.2.4 Psychologically, a "progress mindset" assumes things will go on working as before. Instinct and common sense are baffled by the problem because it is hidden, latent and dormant.

2.1.2.5 Managerially, competitive pressures and the agenda of corporate renewal compete for attention and compromise the priority that as a survival issue the problem requires.

2.1.2.6 Technically, "time machine" test environments are still only in their infancy and, for industrial automation, not yet fully defined. In other words very little has been tested yet.

2.1.2.7 Scope progressively has grown, first it was just IT. Now all electronic intelligence is suspect, bringing the need also to address all industrial and domestic automation.

2.2 *The consequences considered*

2.2.1 Taking the 6–9 month period straddling the turn of the century as that in which failures would be most concentrated, there are a range of global scenarios which are foreseen given the current understanding of the actions that are currently being taken to address the various aspects of the problem. These scenarios are provided in the Appendix and summarised below:

2.2.2 The following are our current best estimates of the possible range of global consequences for the four main areas of "IT Applications", "IT and Communications Infrastructure", "Industrial Automation", and "Commercial Issues". The likely outcome for each aspect, given the current rate of progress, will obviously lie between the ranges of the Best and Worst Scenarios.

2.2.2.1 IT Applications. The best outcome that can be foreseen are some widespread minor disruptions whilst a worst case scenario would be widespread disruptions leading to business failures and acute overload on IT resources needed to re-instate systems.

2.2.2.2 The IT and Communications Infrastructure. The best scenario would be some isolated difficulties. However the worst scenario, particularly for global communications, would be widespread difficulties. Given that the actual likely situation would lie between these boundaries, it could be foreseen that there will be pockets of communication failures affecting some countries around the world.

2.2.2.3 Industrial Automation. This area is of concern and even the best scenario foreseen would be for failures ranging from minor through to prolonged shutdowns. The worst scenario however would be widespread failures some affecting basic utilities and public services with possibly some HSE (health and safety) incidents. Organisations need to address this area as a matter of urgency.

2.2.2.4 Commercial Issues affecting the business chain. The best outcome foreseen is that the resilience of most business sectors proves adequate to contain failures. The worst scenario would be a widespread pattern of difficulties in the business chain, with an overload in the legal system as organisations seek to make redress.

2.3 *Overall Outcome*

2.3.1 The eventual outcome however will be an amalgamation of the four ranges above. The precise nature of this is not easy to estimate. However it is likely at the least that some impact on the economies of nations is foreseeable. It cannot be ruled out that the compound effect could undermine availability of essential services causing social as well as economic disruption. How long does a national power cut have to last to become a political issue?

2.3.2 What is clear is that there still remains an opportunity to mitigate the worst consequences of the scenarios, provided that the current level of remedial activity is increased. The current mould of gradually escalating reaction (inappropriate against a fixed deadline) needs to be broken and replaced by the active mobilisation appropriate to a foreseeable crisis.

2.3.3 Having outlined our understanding of the potential consequences arising from the problem we give below some brief comments regarding some of the other issues mentioned in the Select Committee terms of reference.

3. Status of Remedial Action and Major Inhibitors

3.1 *Status in the UK*

3.1.1 In the IT arena we believe remedial action in the UK has been characterised by too slow an awakening, given that the problem is known and publicised. Of particular concern is the effect on IT intensive sector such as banking, finance and the media. Also of concern are the needs of small and medium enterprises (SMEs) which frequently lack in-house IT skills.

3.1.2 The status for industrial automation and embedded controls is of great concern in view of:

- industrial automation not being generally recognised as subject to the problem until 1997 which has delayed developing any body of expertise to tackle it; and
- possible impact of problem directly on process industries providing basic services such as electricity, water and gas; also the health and defence sectors.

3.2 *Major inhibitors to progress in the UK*

3.2.1 Two major barriers to progress in resolving the problem are:

3.2.1.1 Conflicting messages from:

- the IT industry, which has not responded clearly, with few senior industry leaders prepared to speak out and IT companies limiting their statements to their immediate products, leaving the user community to interpret the real significance;
- the engineering industries, in which most companies assumed this was an IT-only issue and, having started much later, are about three years behind the IT community;
- government, which on the one hand has appointed Taskforce 2000, and then Action 2000, and on the other hand has government departments which are denied extra funding to address resolution; and
- academia, which has a focus on methodology rather than the installed base in the field.

3.1.1.2 Business Priorities which are inappropriate to an issue affecting survival of an organisation:

- very few corporate leaders have made a public issue of their Year 2000 programmes, and, more surprisingly, few shareholder meetings have insisted on being informed about Year 2000 readiness; and
- within companies, Year 2000 programmes are frequently seen just as another IT project and left to fight for resources and attention, increasing the risk of delay.

4. Government Action to Date

4.1 We regard Taskforce 2000 as having provided a much better start than in most other countries and Action 2000 likewise is to be welcomed. However, there is concern evident among some of the front-runner industries that are active in addressing the problem that they will barely have enough time. It is observed that different industry groupings go through a learning curve and then this pattern repeats with their feeder technology suppliers as well as their supplier/customer business chains. The problem is that we are running out of century for these consecutive learning curves to have time to operate. Therefore we believe that consideration should be given to political measures to facilitate faster mobilisation to action by the various industry and public sectors. These are outlined in the next three paragraphs. In particular we are concerned that Action 2000 has only got one current chance to be successful.

5. The Adverse Psychological Balance

5.1 Problem solving situations either follow a crisis response (mobilisation) pattern for visible needs or else an innovation learning curve. But the Year 2000 problem is hidden and, apart from a slowly growing case history of failing systems, remains below the surface. Therefore knowledge of the problem has failed to provoke the international activity appropriate to the situation. Furthermore, the nature of modern regulatory and legal structures which evolve with, rather than ahead of, problems has little to offer in this case, except to discourage the world-wide collaboration which could solve it. Therefore the challenge is to identify ways of changing for the positive this negative balance:

5.1.1 *Leadership*

Few business leaders who are facing up to the problem have been prepared to issue attributed testimonials. Too much is at stake on the downside in terms of reputation and effect on share price. Some knowledge of the real case studies does exist but it is mainly shared only at the practitioner level. People will believe their own peer group—they will not believe the IT industry.

Government action is needed now both in the UK and in international spheres to promote public recognition that the problem is real and could have serious social and economic consquences would be timely.

5.1.2 *Regulatory bodies and industry sectors*

Many existing regulatory structures such as HSE may need no further modification to render their normal statutory requirements applicable also to the Year 2000 problem. In some cases specific interpretation and modification will be needed. However, the pressure on companies again is negative.

Government action could task key industry sectors as a whole to demonstrate readiness for Year 2000 and seek to use regulatory mechanisms to facilitate Cupertino within such sectors and enable sectors collectively to retain public confidence through joint action. This could help individual companies to address the problem while avoiding the limelight and also help the government to avoid the appearance of taking ownership of solving the problem.

5.1.3 *Legal issues*

On the one hand, advisors such as accountants and auditors are cautious to give advice because of the potential risk of subsequent legal action. On the other hand, there are many laws and regulations which could be invoked against organisations which fail in their duties because of Year 2000 problems, in order to stimulate them to action.

Government action to raise awareness of these and how they could apply would add urgency to remedial work. It would also highlight any situations inhibiting remedial action where a dispensation mechanism should be sought.

5.1.4 *EMU*

It is unlikely that there are sufficient IT resources to complete both the preparations for EMU and Year 2000 at the same time.

Government action could recognise the interaction of these two issues.

5.1.5 *SMEs*

The SME community is especially vulnerable to the Year 2000 problem due to lack of awareness and because they frequently do not have in-house IT resources.

Government action to facilitate meeting the needs of SMEs, by means including provision of advisory material and publicity, is therefore supported.

6. Compliance of Current Software

6.1 It is of concern that, contrary to some press reports, the infiltration of the problem is by no means restricted to old software but occurs in all areas of computing and automation whether recent or not. The principal hindrances to "stopping the rot" are slow realisation by those creating these products and the lack of availability until very recently of test methods and facilities for forward dating.

Government action could be considered with the aim to give public recognition of the issues inhibiting information sharing about compliance of products through fear of litigation and to explore any measures such as a certification scheme to create incentives for companies to be open about their products.

7. Contingency Planning

7.1 It is essential to emphasise that normal business and operational contingency planning by companies or public agencies will need further development to cover the increased difficulties should simultaneous failures occur and in order to keep vital services, such as gas, electricity and water flowing. Government action could consider facilitating appropriate contingency planning, such as the Civil Defence approach for communities, or "end-to-end" contingency planning (in which all players institute shared emergency response mechanisms) for such key services as the utilities.

8. Conclusion

8.1 What needs to be avoided is the sentiment enunciated by Winston Churchill on 2 May 1935. "When the situation was manageable it was neglected, and now that is thoroughly out of hand, we apply too late the remedies which then might have affected a cure" and continues: "There is nothing new in the story.....It falls into that long, dismal catalogue of the fruitlessness of experience and the confirmed unteachability of mankind. Want of foresight, unwillingness to act when action would be simple and effective, lack of clear thinking, confusion of counsel until the emergency comes, until self-preservation strikes its jarring gong—these are the features which constitute the endless repetition of history."

8.2 The more we can discover better ways to work together globally the more chance we have to contain the problem.

1 December 1997

Annex

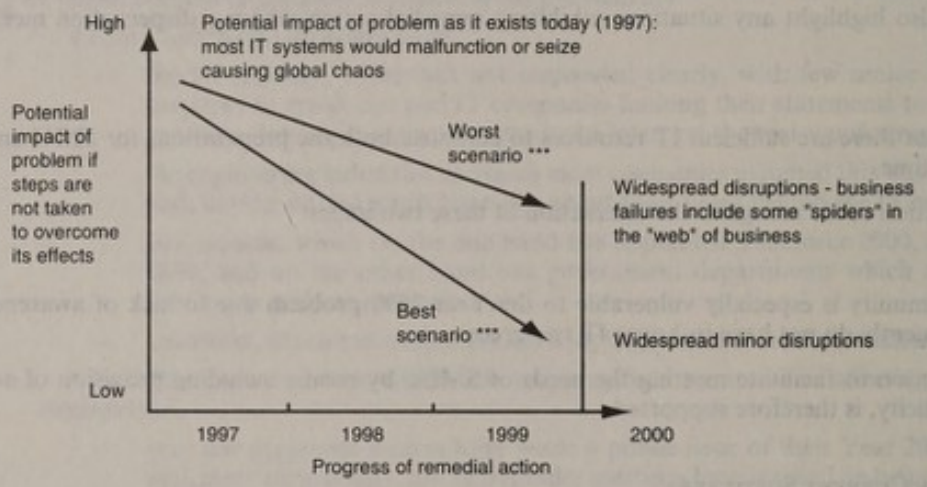
DETAILS OF SCENARIOS INDICATING RANGE OF CONSEQUENCES

If unaddressed from now on, the consequences of the Year 2000 problem would be much more serious than the likely actuality following world-wide remedial work over the remaining time. However there is much uncertainty in current understanding of how effective the remedial programmes will prove to be, thus there are a range of outcome scenarios which can be foreseen. The following are our current best estimates of the possible range of global consequences for the four main areas of "IT Applications", "IT and Communications Infrastructure", "Industrial Automation", and "Commercial Issues". The likely outcome for each aspect, given the current rate of progress, will obviously lie between the ranges of the Best and Worst Scenarios.

IT Applications

IT Applications - Year 2000 - what will happen? ***
*** Maturity of world body of understanding = good

This topic has become increasingly active from the early 1990's

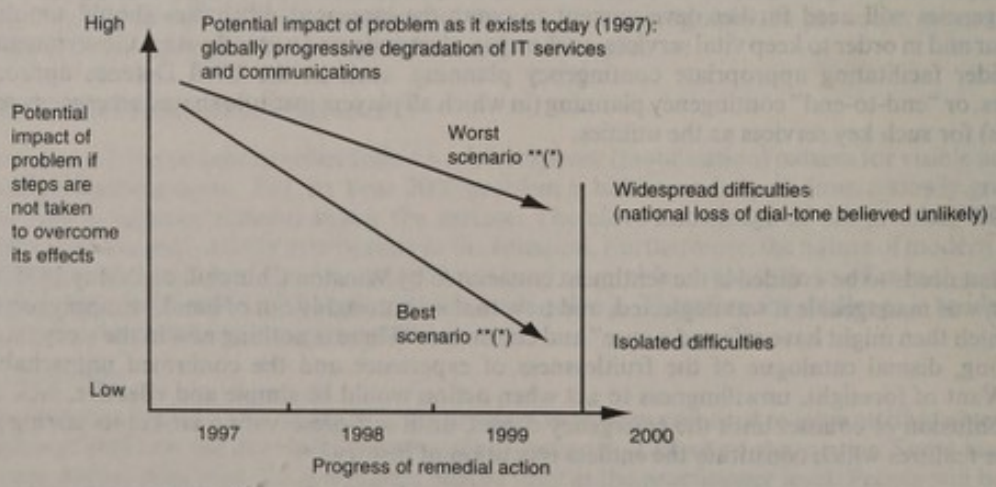


The understanding of the IT application aspects of Year 2000 is good and organisations have been working on the problem since the early 1990's. That said there are still a significant proportion of organisations that are still not actively pursuing programs that will achieve the deadline. This in itself will have a domino effect on the business chains of those organisations that are pursuing compliance. Given this background the best outcome that can be foreseen are some widespread minor disruptions whilst a worse case scenario would be widespresd disruptions leading to business failures.

IT & Communications Infrastructure

IT & Communications Infrastructure - Year 2000 - what will happen? **(*)
**(*) Maturity of understanding: IT platforms = good; Communications = fair

Topics active from c. 1994



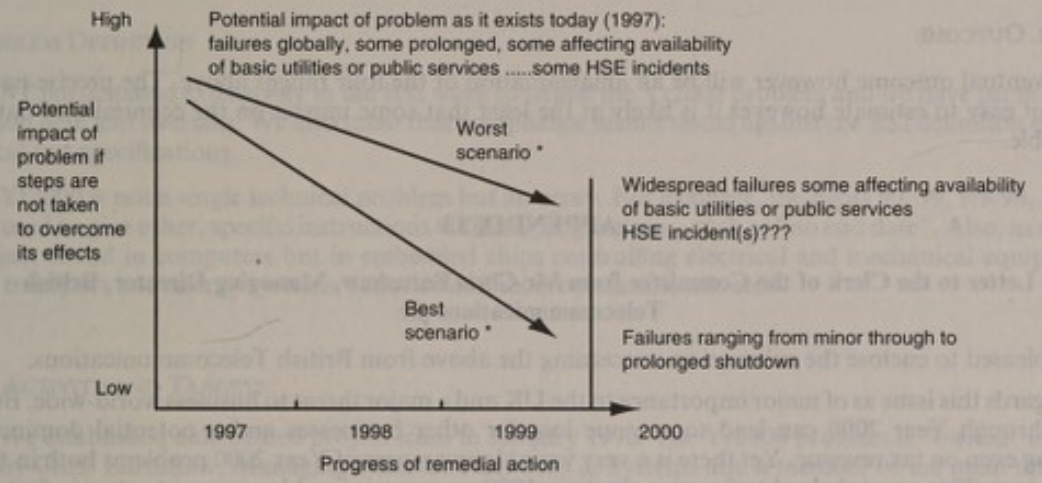
The state of progress for IT applications and its inter-relationship with the IT infrastructure has lead to a degree of maturity in this area. The telecommunications field however, due to the specialist knowledge required, is less well understood. It is also more difficult to test. The situation world wide is therefore less

mature and carries greater attendant risks of failures. The best scenario would therefore be some isolated difficulties however the worst scenario, particularly for global communications, would be widespread difficulties. Given that the actual likely situation would lie between these boundaries it could be foreseen that there will be pockets of communication failures affecting some countries around the world.

Industrial Automation

Industrial Automation - Year 2000 - what will happen? *
* Maturity of world body of understanding = low

This topic only became active to any degree at start of 1997



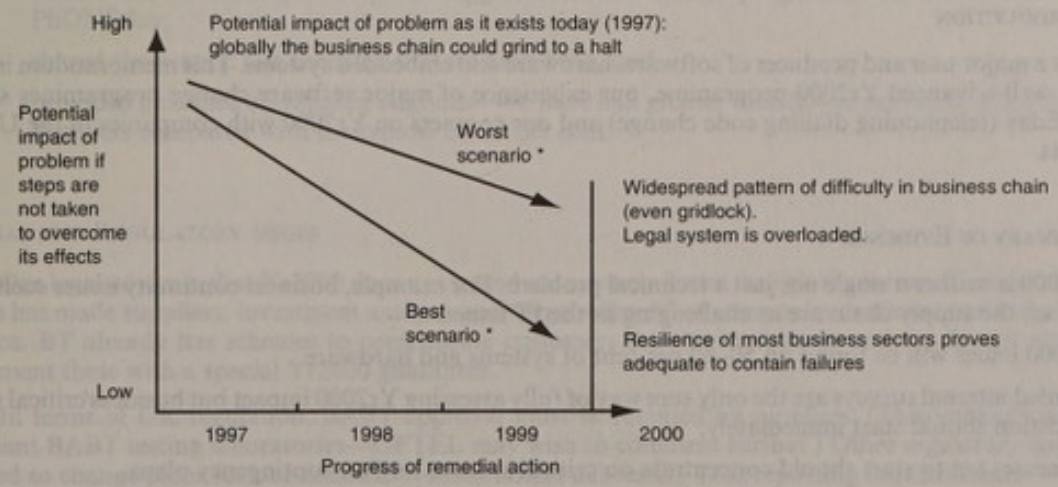
With regard to the four areas under consideration this area is probably the least understood and has to date received the least attention. It is technically more complex than the other areas and requires the highest degree of specialist knowledge. In book II an approach was outlined for assessing the risks for organisations with widespread process automation. Even the largest organisations in general are still in this stage of inventorisation, risk assessment and dialogue with vendors, with very few having progressed into testing for critical areas of business and service continuity. The specialist skills required to carry out this testing in terms of process control and instrument engineers are relatively scarce by comparison to IT staff and this combined with the careful planning of testing that is required in companies with highly integrated automation plants will lead to delays in addressing the problem. It is estimated that the number of specialist engineering staff in this area in the UK represents by comparison only some three per cent of the numbers of IT staff available to address the IT issues.

This area is therefore of concern and even the best scenario foreseen would be for failures ranging from minor through to prolonged shutdowns. The worst scenario however would be widespead failures some affecting basic utilities and public services with possibly some HSE (health and safety) incidents. Organisations need to address this area as a matter of urgency.

Commercial Issues

Commercial Issues - Year 2000 - what will happen? *
* Maturity of world body of understanding = low

This topic became increasingly active in 1996



It is difficult to separate some of the issues under this heading from those above as the issues are inter-related. However despite the maturity of understanding of the IT issues the consequences within the business chain of the dependencies on customers and suppliers also addressing the challenge in all its various aspects is less well understood. The commercial issues also encompass inter alia legal, insurance and business continuity planning aspects. The topic became increasingly active during 1996 and 1997 and the maturity of understanding may rise to fair during 1998. That said even large organisations rely on SMEs (small to medium sized enterprises) for their operational survival and it is in the SME area that the understanding is lowest. The best outcome foreseen therefore is that the resilience of most business sectors proves adequate to contain failures. The worst scenario would be a widespread pattern of difficulties in the business chain with an overload in the legal system as organisations seek to make redress.

OVERALL OUTCOME

The eventual outcome however will be an amalgamation of the four ranges above. The precise nature of this is not easy to estimate however it is likely at the least that some impact on the econimies of nations is foreseeable.

APPENDIX 13

Letter to the Clerk of the Committee from Mr Chris Earnshaw, Managing Director, British Telecommunications plc

I am pleased to enclose the submission concerning the above from British Telecommunications.

BT regards this issue as of major importance to the UK and a major threat to business world-wide. Business failure through Year 2000 can lead to revenue loss for other businesses and a potential domino effect impacting even on tax revenue. Yet there is a very variable awareness of Year 2000 problems both in the UK and overseas. This can only lead to frantic activity in 1999 as countries and businesses try to win first call on increasingly scarce skilled software engineering resources. This will be exacerbated by the introduction of the Euro, despite the recent UK Government decisions.

No one company can control all of the issues. For example, across any one geographical area a whole range of companies, public sector organisations, and utilities must remain in operation if the basic infrastructure is to be in place to support health, transport, power, communications and everything else on which companies and their employees depend. This makes the prospect of Year 2000 guarantees impractical. What is important is that every business should analyse its operations immediately and even before the analysis is complete, take action to protect critical systems and processes.

There is a clear role for Government in promoting common objectives in the UK and overseas but this needs to be an active role and not just information dispensing. If BT can help further, then we will be only too pleased to do so.

The information contained within the memorandum may be freely distributed—we do not believe that it is sensible to regard Year 2000 as an opportunity to gain competitive advantage and have been free with our experiences and time, including agreeing to chair an International Telecommunications Union taskgroup. We have supported Taskforce 2000 and will willingly work with Action 2000, if this will focus more attention on resolving the critical issues.

2 December 1997

Memorandum submitted by British Telecommunications plc

1. INTRODUCTION

BT is a major user and producer of software, hardware and embedded systems. This memorandum is based on our well-advanced Yr2000 programme, our experience of major software change programmes such as PhONEday (telephoning dialling code change) and our contacts on Yr2000 with companies in the UK and overseas.

2. SUMMARY OF EVIDENCE

Yr 2000 is neither a single nor just a technical problem. For example, business continuity issues such as the impact on the supply chain are as challenging as the IT issues.

Yr2000 issues will be found on 50–80 per cent of systems and hardware.

Detailed internal surveys are the only sure way of fully assessing Yr2000 impact but business critical system modification should start immediately.

Businesses yet to start should concentrate on critical systems and on contingency plans.

Active companies like BT have put pressure on large business suppliers to initiate Yr2000 programmes, with a positive knock-on effect to smaller companies.

The major issues for the UK are:

— resources to resolve Yr2000, the Euro and Code Change;

— lack of co-ordination of Yr2000 effort on the UK infrastructure. No one company can control all of the Yr2000 issues; and

— the potential impact on global communications and finance due to lack of awareness and action on Yr2000 outside N America and the UK.

3. Problem Definition

3.1 BT participated extensively in the BSI work to define the Yr2000 problem and we have promoted this definition here and overseas. We also insist that compliance means tested against the BSI definition using our technical test specifications.

3.2 Yr2000 is not a single technical problem but an array. For example, the digits 00, 99, 9/9/99, 31/12/99 can be used to give other, specific instructions within a programme—such as "no end date". Also, as software is not just found in computers but in embedded chips controlling electrical and mechanical equipment, it affects transport and energy systems, lifts, fire and security alarms, tills etc.

4. BT Activity and Targets

4.1 We established a dedicated project team in January 1996. The Yr2000 problem is "owned" on behalf of BT by Chris Earnshaw, Managing Director Networks & Systems and a member of the main operations board. It is closely monitored at Board level and through internal audit.

4.2 Our target is to be "Yr2000 ready" by 31 December 1998. This is not to provide a 12 month safety net but to:

— recognise that many systems will meet their first transaction with a Yr2000 date during 1999;

— allow thorough field trials by both BT and our customers in 1999. The field trial will test for user interaction problems and customer site issues; and

— test production using new software of the last full year accounts pre 2000.

We do not employ a single method of correction as, despite claims to the contrary, a single solution does not exist. Date expansion (to 4 digits) can significantly reduce systems efficiency so we match solution to situation.

4.3 We will complete standalone tests and end to end "integration" testing before December 1998. Testing is one of the most complicated and expensive parts of the programme.

4.4 Our programme reflects both the effort involved for a high technology, global company and also the responsibility we feel to be proactive. We have:

— taken the lead in establishing dialogues with UK and overseas telecommunication companies, with OFTEL, and also with standards bodies such as the International Telecommunications Union and European Telecommunications Networks Operators forum;

— sought regular discussions across a range of industries to share experiences and best practice and participated in the BSI Yr2000 and Taskforce2000 initiatives;

— shared lessons from probably the biggest software change programme in the UK to date—PhONEday;

— shared the generic test checklist that we have built; and

— provided guidance on supplier relations—we have had greater than 60 per cent response rates from suppliers compared with the typical 20–30 per cent.

5. Legal and Regulatory Issues

5.1 Our legal advice is that Yr2000 does not introduce any new issues though the threat of action in media articles has made suppliers, investment analysts and "legal officers" of companies cautious, particularly in N America. BT already has schemes to compensate customers for service failures and we do not intend to supplement these with a special Yr2000 guarantee.

5.2 In terms of UK regulation, BABT approval must be retained by suppliers. (This implicity assumes compliant BABT testing laboratories—OFTEL may wish to comment further.) Other regulatory issues are confined to change plans for our financial systems which deliver OFTEL reporting requirements.

6. Potential Risks

6.1 *Supply Chain failure*

If suppliers of our key network and IT components failed to deliver upgrades on time, then our core operations would be significantly affected. We judge these risks as low. However, even where supplier products may not have a date dependency, they might fail to deliver because their own systems fail. We judge these risks as higher, particularly for smaller companies. We are now making specific enquiries of this sector. Finally, there are risks to our revenues from business customers failing.

6.2 *Resource*

We expect to spend up to £300m, but money is only part of the problem. Companies will increasingly compete globally for resource as the deadline approaches and as other software projects like the Euro and, for UK telecommunications, Code Change, impact.

6.3 *Infrastructure*

A failure of power, water, banking etc could severely curtail telecommunications services—and vice versa. Transport failure would also threaten our services. The lack of co-ordination of Yr2000 infrastructure plans either on a national or regional basis causes concern.

6.4 *International connectivity*

We have addressed this with the ITU and the ETNO forum, but also directly with all countries with whom we exchange telecommunications traffic. Evidence suggests some countries have not yet started a Yr2000 programme including some developing countries who will lack both skills and money. Failure would impact not only on calls, but on business operations including transfer of information, international money transfer, share dealing; and even the Internet.

7. Contingency Plans

We have built contingency plans for Yr2000 by extending our existing disaster recovery plans. These cover situations such as an inability to take customer orders, to bill customers or pay suppliers. It also covers our capability to connect calls, carry TV, radio, utility command information, banking instructions or even food stock information between hypermarkets and their central depots. A further issue being addressed is the need for extra staff, recorded announcements, helplines etc for the period 31 December 1999 to 10 January 2000.

8. Government Support

Whilst the actions of Taskforce 2000 have increased Yr2000 awareness, there is a need for acceleration and increased focus to deliver the following by March 1998:

- agreed common timescales, compliance definitions and test criteria across the UK would reduce suppliers' testing effort and permit end to end integration testing in the UK during 1998–99;
- infrastructure co-ordination—given the privatisation of much of this, it may be best addressed on a regional basis but readiness, risks and contingency plans need to be assessed and shared;
- raising Yr2000 and international connectivity as a major issue—on both international and European agendas (providing we avoid a time consuming standards-setting exercise or unilateral action from other countries). Countries which lack the skills and money to address Yr2000 need particular help; and
- all companies to have assessed the implications of Yr2000 for them. All major companies to have fully resourced plans, dedicated teams in place, and to have commenced work on the critical systems.

Our view at present is that we will be offering telecommunications service in January 2000 to the normal standards, provided the other elements of the national infrastructure also deliver. There are much higher risks against the full international telecommunications service. Given that telecommunications are a major dependency for the global economy, the issues must stay at the top of the Government agenda, as well as that of BT. No one company can control all of the issues.

December 1997

APPENDIX 14

Memorandum submitted by GPT Limited

INTRODUCTION

GPT is involved in the development and supply of telecommunications systems to all the major telecommunications operators in the UK. We have a major concern to ensure that those operators' networks continue to operate satisfactorily over the date change. We are also concerned that we can continue to do business with our suppliers, partners and customers after the date change.

GPT believes that it has in place mechanisms to ensure that its products will work and its business will not fail due to problems caused by the Century Date Change. GPT also believes that some statements made on compliance overestimate the effect faults are likely to have on organisations.

EVIDENCE

(The following is set as answers to items in the terms of reference and your supplementary questions)

We can only answer the issues you raise in relation to our company and to some extent our customers, partners and suppliers with whom we have discussions. In terms of the general level of awareness throughout industry it is not practical to offer any opinion.

(i) The majority of the general purpose software packages that we have tested to date have not had faults shown up by Millennium specific testing. On the real-time software used in our products the results have shown a very low rate of faults. Many of the faults found during millennium testing have not been millennium specific faults, but more general faults not previously identified. Most of the millennium faults found would not have had a major effect on the organisation if they had remained undiscovered, many might not have been noticed at all.

Whilst telecommunications systems are not technically "safety critical" in the strict sense of the words, we are aware that many users are highly dependent on an available service particularly for the completion of emergency and related calls. We therefore treat any failures that could result in the loss of normal telephone service over an area in a similar way to safety critical failures. None of the faults we have identified in our products has any effect on the ability of our customers' networks to handle normal telephony or emergency calls. The faults all relate to advanced features and network management tools. We have not yet identified any safety critical software within our organisation.

As most software contains faults, we suspect that any exhaustive testing programme of all software, for a particular feature would yield a similar result. The major issue with millennium specific software faults is the danger that they will all occur at once, rather than the magnitude of any problem.

(ii) GPT has had a comprehensive compliance programme in place since October 1996. This programme sets out to ensure that all our products, internal system and interfaces to other organisations are compliant. In December 1996 the Public Network Group of GPT issued a policy statement, this forms that basis on which we are working. This programme is overseen by a steering committee with representation from all divisions of the company chaired by a senior manager who has overall project responsibility. The evidence of action within government is not generally available to us.

We believe that most other large organisations that we deal with are in a similar state to ourselves. Smaller organisations in general have smaller problems and are correspondingly later in tackling some of the issues. It is difficult to get a contractual commitment from any organisation to cover compliance due to the nature of software problems rather than the special nature of the Year 2000 issues.

(iii) The government has been far more effective than many other governments in raising awareness. The work of Taskforce 2000 and Action 2000 have been very widely reported and is doubtful if government can do much more to raise awareness. Further publicity could become counter productive.

(iv) We are ensuring that all products will be available in a compliant version by the end of 1998. This will give customers the opportunity to install such products during 1999, so that they can ensure that their networks are fully compliant. Most of our suppliers and customers appear to be working to broadly similar timescales.

(v) We are proposing to have a special arrangement to staff our customer help lines over the period during which our customers' system will move from the year 1999 to 2000. We are particularly concerned about the situation when two systems intercommunicate when they are in time zones in different centuries.

(vi) We are striving with our suppliers and customers to ensure that all disputes are settled without recourse to legal action. To this end we have a considerable legal effort employed to ensure that we fully understand the legal implications of our actions. Whilst there is good advice available about the situation under English law, there appears to be very little information on the situation in other jurisdictions.

1. We believe that the millennium bug problem will mainly be solved by the actions that are in place. Any residual faults are unlikely to have any significant effect on the operation of the machines on which they occur. In the case of any particular system failing at the date change, the normal contingency actions, that are in

place for dealing with system failure, will be instigated. During 1999 we will audit our contingency plans to ensure that they are adequate.

2. All products currently being supplied by our company are compliant or will be made compliant before 1 January 1999. We have the impression that most other companies are working to similar timescales.

3. We have a comprehensive audit programme in hand to test all our internal systems. This includes all software and intelligent devices used in the organisation. We will test all systems that have been internally generated or modified. We are seeking commitments from all our suppliers that their systems are compliant. Systems that are critical to our operation will be tested in addition to getting supplier commitments on compliance. We aim to have solutions to make all our internal systems compliant by the end of 1998, where there are major activities required to roll-out compliant solutions across the organisation these may extend into 1999.

4. The UK government has done more than most to raise awareness. The government should be working with others to ensure that the issue is dealt with as seriously elsewhere. In particular to ensure that financial institutions and telecommunications operators across the world will be compliant. We are particularly concerned about the position in countries that may not have the resources to solve the problems internally, possibly those in Africa and the former Soviet Union. The government's principle role in the UK should be to ensure that all UK public bodies are fully compliant. The availability of databanks should be encouraged, but government's role should be merely to act as an information clearing point.

2 December 1997

APPENDIX 15

Memorandum submitted by International Computers Limited (ICL)

1. INTRODUCTION

1.1 ICL is one of Europe's leading IT systems integration and services company with a successful history of large-scale IT projects. As such we have both the project management and technical skills to advise on all aspects of the Year 2000 problem.

1.2 Since 1995 ICL has been actively involved in all aspects of the Year 2000 problem. Our underlying policy has been one of openness about our products and early dialogue with our customers and suppliers.

1.3 We are taking the Year 2000 problem seriously within our own company. We have a company-wide programme dealing with the compliance of products we sell, the readiness of our internal business systems, the readiness of all building services under our control ie we are taking our own medicine.

1.4 In addition to the ongoing discussions with our customers and partners, we have worked actively with the DTI, CSSA, BSI and other relevant organisations to raise awareness and provide best practice advice and guidance. We are major sponsors of Taskforce 2000 and its successor Action 2000, providing both financial and consultative support.

2. SUMMARY

2.1 The Year 2000 problem is a threat to the future economic performance and international competitiveness of the UK. In our evidence to the Committee we will concentrate on analysis and proposals for a few key issues, which we consider, need urgent attention to address this threat:

- the need for active and public monitoring mechanisms to ensure the readiness of all key Government and infrastructure services;
- the potential role of Government as an exemplar of best practice;
- non-competitive self-help groups;
- the need for extensive help for SMEs who look like being the weak links in the economic supply chains;
- Government role in achieving global compliance; and
- a growing shortage of staff with appropriate IT skills.

3. PUBLIC MONITORING

3.1 The timescales for solving the Year 2000 problem are embedded in existing business systems and cannot be slipped. It is imperative for maintaining public confidence that any risk of key Government and infrastructure services not being ready in time should be identified and acted on as soon as possible. Public scrutiny is a powerful mechanism to achieve this.

3.2 The United States House of Representatives' Subcommittee on Technology of the Committee on Science and the Subcommittee on Government Management, Information and Technology of the Committee of Government Reform and Oversight have established such a public scrutiny mechanism administered by the Office of Management and Budget.

3.3 All US Government agencies are required to submit a quarterly report of quantified progress against a Government template of key readiness milestones and timescales (see Appendix A for details).[3] These reports are published on a US Government public website along with analysis and recommended actions. The actions are designed to recover slippages but there are also sanctions for poor performance eg withholding of budgets for other IT projects.

3.4 We recommend that Her Majesty's Government introduce such a scheme covering all Government departments and agencies. Furthermore, the Official Regulators should be instructed to apply a similar scheme to privatised utility and transport industries. This monitoring should be extended to cover the existence of practical contingency plans with appropriate triggers.

3.5 Government regulatory bodies responsible for licensing or certifying activities or processes should be instructed that future renewals should take account of Year 2000. Applications should be subject to documented proof of a Year 2000 plan identifying and addressing prioritised risks.

3.6 ICL would be willing to help in defining appropriate milestones, timescales and measures.

3.7 The spotlight of public scrutiny must be applied to both the private sector and the public sector. The possibility of legislation/regulation to force companies to disclose their Year 2000 readiness plans should be considered. The US Securities and Exchange Commission has pioneered this approach by issuing guidelines covering the conditions where information concerning Year 2000 issues must be disclosed in documents filed with that Commission.

4. Government as an Exemplar of Best Practice

4.1 There is a wealth of knowledge and experience amongst the various Government departments'/agencies' Year 2000 Programmes. We suggest that a Government agency which is well advanced with its Year 2000 activities should be asked to act as a focal point to work with other agencies to identify and share best practice, information, and advice and guidance, in effect to become the benchmark for dealing with this issue.

4.2 This information should be made freely available at least via a Government public website for the benefit of all Government agencies and the whole community. Particularly useful would be information about:

- testing;
- rules for representation of dates in the electronic interfaces used by the various Government agencies to interwork with their many customers;
- embedded systems in buildings; and
- compliance status of Commercial Off the Shelf software particularly for desktop computing.

4.3 The Buying Agency should develop and publish the Government policy on procurement and awarding of tenders to ensure the Year 2000 compliance of all future product or service acquisitions. This procurement policy should be backed up by legislation/regulation along the lines of this year's US Treasury, Postal Appropriations bill which prohibits Federal Government from purchasing any Information Technology which is not Year 2000 compliant.

4.4 The Health and Safety Executive should ensure that each of its Divisions and Directorates researches and publishes advice and guidance on identifying and dealing with potential health and safety issues arising from the Year 2000 problem.

4.5 Every Government organisation should be required to review whether the Year 2000 problem could affect anything, which falls within its terms of reference. The results of these reviews should be turned into action plans for lobbying and mobilising all stakeholders in the relevant field to address the issues.

5. Non-competitive Self-help Groups

5.1 The Government should use its various contacts and regulatory influence to encourage all sectors, both industrial and non-industrial, to view the Year 2000 problem as a non-competitive survival issue and to form sector specific self-help groups to gather and exchange knowledge. This is happening very effectively in the United States, especially in the energy industries where there is an underlying safety imperative.

5.2 Such self-help groups would be particularly beneficial for those industries, which are dependent on embedded systems for plant and process control. They have particular difficulties because they are faced with a huge problem and very little expertise or knowledge to analyse and solve it.

[3] Not printed.

6. SME Readiness is Crucial

6.1 There is growing recognition amongst large enterprises—that may have the skills and resources to tackle their own problems—that their business may still be at risk if their supply chain partners fail.

6.2 This is particularly true for enterprises which do not hold much stock but depend on "just in time" deliveries of goods or components. Many of these suppliers are SMEs who are struggling to come to terms with the Year 2000 problem.

6.3 One of the key themes of the new Action 2000 initiative covers SMEs and the provision of information and resources to help them. Examples are:

- technical help desk;
- information services covering:
  - suppliers and product status;
  - tools and methods; and
  - service providers.
- best practice guides;
- action checklists;
- information on tools and methods; and
- regionally based seminars and training courses.

This is a crucial set of activities which must be allocated realistic resources, both staff and funding, in order to succeed.

6.4 There is an abundance of information about the Year 2000 problem on the World Wide Web. However most SMEs either do not have World Wide Web access or, when they do, they do not have the staff with the skills or availability to find it and turn it into something useful for them. Support for SMEs should include a knowledge brokering service. This would track publicly available information on all aspects of the Year 2000 problems and solutions and synthesise it into a form suitable for SMEs. This should include making it available in formats (eg paper, CD-ROMs) suitable for SMEs with no access to the World Wide Web.

6.5 The DTI in particular has been very active in recent years in trying to encourage and promote the growth and effectiveness of SMEs. All the contact information and communications channels generated by these activities should be used to actively disseminate free help to them.

6.6 Information is the key to minimising the risks of problems due to the Year 2000 problem. The Government could address the needs of both SMEs and the general public by providing a Year 2000 National Helpline to provide advice and guidance.

7. Government Role in Achieving Global Compliance

7.1 As demonstrated by recent stock market events in the Far East there is a strong linkage between the economies of all the countries in the world. In the same way that large enterprises are taking action to ensure the compliance of their suppliers, the Government should be acting to ensure that our trading partners are doing everything possible to achieve compliance.

7.2 The United Nations Working Group on Informatics, chaired by Ambassador Ahmad Kamal, the Representative for Pakistan, is mounting an active campaign to help those countries that do not have adequate technical expertise or resources to remedy problems themselves. The Government should provide all possible support for this activity.

7.3 All regulatory bodies should be contacted and urged to establish contact with their overseas counterparts to exchange knowledge and experience of achieving effective compliance and contingency planning within their sector.

7.4 The European Commission's Directorate General III (Industry) is leading activities to determine what actions the Commission should be taking. We recommend strong UK Government support for these activities.

8. IT Skills Shortage

8.1 A recent millennium skills shortage conference organised by the DTI concluded that the growing shortage of staff with IT skills would increasingly affect Year 2000 activities. It is already causing organisations to pay inflated rates to retain and acquire staff with appropriate skills for their Year 2000 programmes. The bulk of spending on Year 2000 activities will occur in 1998 and 1999 and this is when the skill shortage will have the most negative impact. The introduction of the Euro in 1999 will exacerbate the situation.

8.2 Skill shortage is one of the main themes of Action 2000 and we recommend that it should be adequately funded to implement the actions proposed by the DTI conference.

8.3 An important aspect of dealing with the skill shortage is matching any available people with relevant skills to the organisations in need of them. The Government could consider providing a central directory service to support this.

9. Answers to the Four Specific Questions in the Submission Invitation

9.1 ICL regards the Year 2000 problem as a serious business risk to the extent that it has appointed a Director to lead a company-wide Programme to address it.

9.2 All new and enhanced product releases produced by ICL are now "millennium compliant". The only, few, exceptions are where we have consulted with our customers and agreed with them that availability of other new product features should have higher immediate priority. We have a company-wide supplier engagement programme to determine the Year 2000 readiness status of all products which we use in delivered solutions and services.

9.3 All constituent businesses have been mandated to produce a plan with uniform milestones and timescales to ensure the Year 2000 readiness of their IT systems. We have worked closely with our External Auditors to ensure that these plans are independently audited for completeness.

9.4 We think that the Government, through Taskforce 2000 and the efforts of the CCTA, has been at the forefront of efforts to raise awareness. However, as has been recognised with Action 2000, there is much more to be done in encouraging/helping/ensuring that enterprises take all actions necessary to remove the risks to their business. This memorandum has identified some of the further actions we think are necessary.

November 1997

APPENDIX 16

Memorandum submitted by the British Broadcasting Corporation ("The Corporation")

Introduction

1. The Corporation has been asked by the Science and Technology Committee to respond to its inquiry concerning "the extent and nature of the problems likely to arise from the inability . . . to manage correctly the date change from 1999 to 2000 . . .".

2. The relevance of the Corporation to this inquiry is that it:

- provides television and radio services relied upon by the UK public; it will be providing coverage of the millennium commemorations and events to the UK, and through the World Service, to an audience of nearly 150m;
- is a major public service institution bridging both public and private sectors;
- has universal public visibility, operating on a truly international scale in a highly competitive environment;
- has already transmitted programmes about the Year 2000 problem; and
- is actively operating a Corporation-wide Year 2000 project utilising a multi-sourced workforce with experts from the Corporation itself, major consultancies and contracting agencies and other suppliers. The project is directed by a senior Corporation operations manager and represented on the Executive Committee by the Director of Finance and Information Technology.

Summary

3. The main points made in this paper are:

- the Corporation's absolute priority has been the formulation of plans to ensure that BBC programmes, domestically and through the World Service remain on screen and on air over the millennium date change and to achieve these plans in the most cost effective manner;
- the Corporation's senior management is aware of both the serious potential impact of the millennium date change and the Corporation's dependence on computer and chip based systems. These systems and processes extend across information technology, broadcasting technology, property systems, office and business systems and relationships with suppliers/customers. The Corporation recognises its public duty to continue to provide its trusted television and radio services at their current high level of quality before, during and after the millennium and to ensure the health and safety of staff and contributors alike;
- while confident that the work necessary to broadcast and produce programmes will be done in time, several constraints exist. These include a shortage of information technology skills, suppliers' reluctance to provide guarantees of compliance and a difficulty in distinguishing valid concerns or risks amongst a mass of conflicting information;

— the Government, through Task Force 2000, and subsequently Action 2000, has been raising awareness of millennium issues. The BBC is concerned that sufficient assistance reaches all areas of the broadcast sector.

EVIDENCE

4. Answers to the specific questions asked are provided below:

Q1. *What estimation has your organisation made of the seriousness of the "millennium bug" problem to your organisation?*

The Corporation is now heavily dependent on computer and chip based systems. The Year 2000 problem is, potentially, an extremely serious issue. The primary focus is the maintenance of television and radio broadcasting services to the public.

In the Summer of 1996 the Corporation began investigating the extent of the "millennium bug" issue. In October 1996, it established a millennium project working with its external auditors KPMG to scope both the risks and strategy options to remedy the millennium problem. In June 1997 the Executive Committee approved a full "millennium proofing", project led by a Project Director, with three major project strands covering broadcasting systems, financial and business information systems and property systems. The Corporation has also fulfilled its public service role by aiming to provide support in the education of the public concerning the millennium problem through several television and radio broadcasts covering the topic.

Q2. *What steps have been taken, and when, to avert problems in computer systems and software at the millennium? How much work remains to be done to ensure a smooth transition from 1999 to 2000? How confident is your organisation that it will encounter no problems at the millennium resulting from the inability of computer systems to handle the date change?*

Through the use of "millennium assessors" across the Corporation, the project has undertaken a business priority assessment to identify the systems that are "mission critical" and decide which need to be fixed first. Initial focus will be on broadcast related systems.

Current work is concerned with assessing problems with key systems and generating solutions, developing contacts with suppliers of goods and services to the Corporation and undertaking a major management and staff communications exercise.

Future work will include monitoring the progress of specific implementation projects, testing fixes and systems interfaces, preparing and implementing a roll-out plan and establishing a contingency plan to back-up critical systems.

Plans will be continually revised in the light of experience as remedial action progresses. The Corporation is confident that the work necessary to ensure the ability to continue broadcasting and produce programmes will be done in time for the millennium. It is inevitable that there will remain a small number of systems where rectification or replacement work is necessary after the millennium date or where the initial work undertaken subsequently proves to be ineffective.

It is Corporation policy that contracts for new systems/software specifically require millennium compliance. Appropriate guarantees for existing contracts are also sought, but this is proving difficult to achieve in some areas, eg power utilities.

Q3. *What, if any, are the major constraints on your organisation which may hinder work on averting computer system and software failures at the millennium?*

Three constraints may hinder work on compliance:

— the increasing competition for skilled information technology resources;

— direct contact with the Corporation's suppliers has frequently resulted only in confirmation that "best endeavours" are being made to overcome the problem, but without providing any commitment or guarantee of a successful outcome;

— the legal implications of potential disputes are emerging as a major potential issue, as the likely costs of compliance emerge, and the reluctance to provide guarantees by suppliers becomes evident. It is also clear that risk insurance against millennium compliance claims will not be available.

Q4. *Has your organisation developed contingency plans should computer systems fail at the millennium? What would be the consequences of such a computer failure for your organisation? Whom would you hold to be responsible?*

The existence of the Year 2000 project, together with the Corporation's current arrangements for ensuring that broadcasting continues during emergencies, mean that a strategy exists for the development of contingency plans. These plans will be refined during 1998–99, once it is clear which systems have not been made compliant but nevertheless remain critical to the Corporation's broadcasting, efficient management and staff health and safety.

As Project Sponsor, The Director of Finance and Information Technology is ultimately responsible for the project.

Q5. *Do you think that the Government has done enough to raise awareness of the potential problems that may be caused by the millennium bug? Has it done enough to help find solutions to the problem? What more should be done?*

Reports of Government action have been made available to the Corporation through press statements and presentations from Task Force 2000 representatives.

Members of the Corporation's project team have attended conferences where Government representatives have given, and received, presentations.

The Corporation has yet to receive any Government literature from Action 2000.

Organisations such as the British Standards Institute (BSI) and the Central Computer and Telecommunications Agency (CCTA) have produced relevant material to assist action planning.

Government activity has helped encourage widespread public understanding that an issue exists. Government assistance in finding more general solutions to the millennium problem, and in co-ordinating information about best practice, implementation processes, activities and achievements is essential.

RECOMMENDATIONS

5. The Corporation would recommend to the Government that it:
   - assist in co-ordinating and sharing information and, specifically, in finding solutions to the problem, which may already have been developed within major public or private sector organisations;
   - consider what legislative steps could be taken to require that all suppliers provide millennium compliant goods and services without this needing to be explicitly written into every contract;
   - publicise the initiatives underway within Government departments; and
   - consider the consequences of the current EMU timescales on millennium work.

2 December 1997

APPENDIX 17

Memorandum submitted by Ian Simister, Co-ordinator, Lloyd's Year 2000 Programme

1. INTRODUCTION

1.1 Lloyd's is a market in which more than £7 billion of insurance business is transacted each year by multiple firms of underwriters and brokers. Business is conducted using both paper and electronic processes which, typically, give rise to 2.5 million policy transactions and 22 million output transactions in any one year. The Corporation of Lloyd's which processes these transactions centrally on behalf of the market holds approximately 750 gigabytes of data in its operational databases, all of which are to some degree date related. The interdependence of the market firms trading at Lloyd's potentially increases their exposure to the effects of the year 2000 problem.

1.2 *Summary*

Lloyd's Market Board has established a Year 2000 Programme for the Lloyd's Community. Consensus has been reached that compliance should be demonstrated by the end of 1998. Most firms are on schedule.

A small number of firms within our own community indicate little, current intention of devoting management attention to the problem.

Businesses, generally, suffering financial or other losses will seek to blame others or seek to claim from insurers. It is easy to envisage unprecedented levels of claims emerging.

Lloyd's central systems are relatively new and will require less significant modification than might commonly be anticipated for large mainframe systems.

Introduction of the Euro could not have happened at a worse time. Lloyd's will allow for the settlement of transactions in Euro. Any further commitment could not, realistically, be undertaken prior to 2000.

The increasing use of our regulatory framework is anticipated during 1998.

The role played by Taskforce 2000 has been highly commendable. The meagre funding of the organisation allowed it to do little more than repeat the call-to-arms.

Government's response in no way matches the commitment now being made by the business community.

There is a clear cost argument for a central register holding the status of compliance of such businesses as the major utilities and transport providers.

The establishment of a year 2000 "reporting environment" built around agreed criteria would provide significant benefits.

2. Nature of the Problem

2.1 That some computer systems will not perform in a predictable way after 31 December 1999 and the consequent requirement to effect corrective action appear now to be accepted, universally as fact. That the implications go far beyond this straightforward technological dimension and that severe business dislocation could result seem far from widely accepted, even within the business community. A small number of firms within our own community display such lack of understanding and indicate little, current intention of devoting management attention to the problem beyond accepting any cost implications of changes made by their third party software suppliers.

2.2 These isolated situations will be resolved within the framework Lloyd's has established to achieve market wide compliance but are indicative of a far wider problem with significant potential to generate claims on insurers and to damage the trading position of underwriters. Businesses, generally, suffering financial or other losses will seek to blame others or seek to claim from insurers. It is easy to envisage unprecedented levels of claims emerging in areas such as the liability of directors and officers, professional negligence, product guarantee, legal expenses and that almost all insurance policies will be affected to some degree.

2.3 The litigation associated with severe business loss, disruption or demise will be substantial as those involved seek to apportion blame, to recover their losses, to protect professional and product credibility and to challenge the validity of claims made. Jeff Jinnett of US lawyers LeBoeuf, Lamb, Greene & MacRae postulates a potential $3 trillion of litigation, world-wide, consequential to year 2000 problems.

2. Action Taken by Lloyds

3.1 In April of this year, following 12 months of technical investigation, Lloyd's Market Board launched a Year 2000 Programme for the Lloyd's Community and established a Programme Office to:

Co-ordinate activity across the Community

Provide guidance on best practice

Provide information and support

Provide a central research facility

Establish and monitor Lloyd's collective position on compliance

Provide regular progress reports to the Board

3.2 All Lloyd's Managing Agents (underwriting firms) have completed self-assessments based on a standard methodology which establishes and measures progress against seven major milestones towards compliance. The programme has recently been extended to include Lloyd's brokers.

3.3 Consensus has been reached that compliance should be demonstrated across the Community by the end of 1998 in order to provide a year end opportunity to test systems prior to 1999 and to minimise the possibility of incorrect processing and postings to 2000 accounts during 1999. It is also considered prudent to allow a full year for the determination of remaining risk exposure and the development of appropriate contingency arrangements. A high level timetable has been adopted which reflects these intentions.

3.4 Full testing of business procedures involving all market firms and central service providers is a key element of the plan. Six months has been allowed for this activity which will be centrally co-ordinated within an agreed strategy. Compliant test environments are in place for the testing of central systems and of electronic messaging between trading partners. Test environments for more local applications will be made available in early 1998. A technical assessment of personal computers in use has indicated the need to upgrade or replace some 75 per cent of the current hardware stock, to change the operating system in approximately 50 per cent of cases and to move all users to a new version of desktop software in readiness for the year 2000. The change in desktop software will add an organisation-wide training element to the year 2000 overhead.

3.5 As the result of a major commitment to IT development in the 1993 business plan, the majority of Lloyd's central computer systems have been rewritten within the last five years and incorporate four digit fields to designate the year. Our current assumption is, therefore, that these applications will require less

significant modification than might commonly be anticipated for large mainframe systems. A schedule of tests to validate this assumption is in place and the early results have been extremely positive.

3.6 The Programme Office liaises regularly with the EMU team, which has a separate reporting line, to ensure that the inevitable conflict for IT resources is identified at, and managed from, an early stage. From this perspective the introduction of the Euro could not have happened at a worse time and whilst Lloyd's will manage resources to amend systems which will allow for the settlement of transactions in Euro, we are convinced that any further commitment requiring more extensive systems changes could not, realistically, be undertaken prior to 2000.

3.7 Lloyd's Regulatory Division have been concerned for some time that the year 2000 problems could constitute a threat to firms' long-term viability and, therefore, look for the demonstration of a professional approach to year 2000 issues as an integral part of their review programme. The activities required to achieve compliance will become more precisely identifiable as the target date for its demonstration approaches. The Lloyd's timetable requires that detailed plans for such activities should be in place by the end of 1997 if our end of 1998 target is to be achieved. The increasing use of the regulatory framework, and in particular the review process, is anticipated during 1998 with the requirements being formalised and extended to include the presentation of high level plans and an ongoing demonstration of progress against them.

4. Role of Government

4.1 The role played by Taskforce 2000 has been highly commendable. Lloyd's called upon the services of its Executive Director to present the context of the year 2000 problem and the implications of inactivity on two occasions; on launching its own programme and at a professional indemnity conference for US insurance agents. The meagre funding of the organisation allowed it to do little more than repeat the call-to-arms. Organisations responding or already committed to action were thus left to spearhead their approach individually or possibly in conjunction with trade associations. Little impact has so far been seen from the creation of Action 2000 and although the intended direction appears to be appropriate and the indicated budget represents a move in the right direction, the level of the Government's response in no way matches the commitment now being made by the business community.

4.2 The Committee will, I am sure, examine elements of existing, and in particular advanced, programmes which could provide models for future Government action. Aspects which, almost certainly, will emerge for further consideration are:

Leadership

Collective action to reduce cost

The requirement for information and legislation

4.3 Leadership is vital both for the tardy and for the advanced. Models of best practice, from start-up to demonstration of compliance, should therefore be adopted and widely publicised. Given the commercial and competitive pressures affecting the response of businesses to this issue, it is also important that Government understands the constraints to the free flow of information which exist and seeks to establish appropriate channels for more open and concerted action.

4.4 The high cost of year 2000 activity, much of which will be found at the expense of strategic development, is of concern to all. A considerable proportion of this expenditure stems from the investigation of issues common to many. Within most local programmes some form of central investigative role is created to minimise the duplication of effort and thus the cost. Direct parallels exist on a national scale with every person and organisation in the country having an interest in, if not a need to investigate, the status of compliance of such businesses as the major utilities and providers of public transport. There is a clear cost argument for a central body or register to be created to make available such information and a secondary argument for preventing such organisations being inundated with information demands.

4.5 The establishment of any co-ordinating or reporting body for year 2000 raises issues of certification and, therefore, the potential for litigation in the event of loss or disruption. This is a considerable disincentive to trade associations and professional bodies who might be contemplating moves in this direction. It seems already to have created near paranoia in the minds of some auditors and major systems suppliers. As 2000 approaches the situation will worsen and, in some situations, will positively prevent the flow of necessary information. The exploration and establishment of a year 2000 "reporting environment", possibly built around criteria agreed with the appropriate professional bodies, could only be contemplated by Government and should be, given the significance of the benefits which would accrue.

4.6 The formalisation of such a framework could also assist the Government in considering the appropriateness of legislation in respect of year 2000. Without such a framework in place it is difficult to envisage quite what could be mandated which would assist in achieving compliance and in avoiding economic damage. The alternatives may well make it easier to apportion blame sometime in the new millennium but will do little to help us get there.

2 December 1997

APPENDIX 18

Memorandum submitted by the Equipment Management Special Interest Group, the Institute of Physics and Engineering in Medicine (IPEM)

The Institute of Physics and Engineering in Medicine (IPEM) has received a copy of the press notice regarding the forthcoming inquiry into the Year 2000 and Computer Compliance. IPEM would like to submit the following response to the committee.

The effects of the Year 2000 on computer systems and medical equipment are of concern to many in the field of Medical Physics and Clinical Engineering in the NHS. IPEM represents many professionals in this field, and continues to monitor developments on the Year 2000 issue through its Scientific Committee and Special Interest Groups.

IPEM continues also to inform its members about this issue through Newsletters and the IPEM Web site (www.ipem.org.uk).

In many Trusts, IPEM members are on local committees dealing with the Year 2000 issue, and they will need to know the effects on software and equipment. Hence there is a need for centrally provided information in order to avoid unnecessary duplication of effort. Use of the IPEM Web site and those provided by the NHS Executive Information Management Group and Scottish Healthcare Supplies assists this process.

To date, there has been little published information on Year 2000 compliance of specific equipment and hence many IPEM members are contacting Manufacturers and Suppliers to establish the status of items for which they have responsibility.

A great deal of duplication of effort will result from this, which our members have stressed is a waste of limited NHS resources. It was expected that a central source, possibly the World Wide Web space (WWW) held by the Medical Devices Agency (MDA), could be used to indicate where confirmation of compliance had been obtained by the MDA or by user organisations. The matter of contingency planning has not been covered in the MDA's device bulletin DB9704 published on the WWW. We hope guidance on this matter will be provided in the not too distant future.

This information will enable informed decisions on required actions and contingency plans to be made.

1 December 1997

APPENDIX 19

Memorandum submitted by Thames Water plc

1. Introduction

Thames Water supplies water and waste water services within the Thames Valley area. We are a major utility company supplying essential services to London. Any failure of our services for a significant period of time would have a potentially serious impact on the public health of millions of people.

The company recognised the Year 2000 problem more than two years ago and established a projects programme at the beginning of 1996 to address the matter.

2. Assessment and Estimation

The company has investigated the issue, segmenting its effort into the following complementary areas:

- Corporate IT systems
- Laboratory systems and instruments
- Operational monitoring and control systems
- Building services
- Telecommunications

2.1 The problems that existed in corporate IT systems were considered to be serious and likely to impact the commercial operations of the company.

2.2 Certain operational monitoring and control systems are critical to major water and waste water processes. A failure of embedded systems within operational control could have serious impacts on water and waste water services.

2.3 A full assessment of laboratory systems has been completed. Reviews for telecommunications and building services are ongoing.

3. ACTIONS

3.1 The company has established a programme of remedial work and replacements for its corporate IT systems. We are confident that all necessary changes will have been completed in time to avert detrimental consequences. The work programme is a well established on-going set of projects.

3.2 Survey and replacement work for operational embedded systems is being undertaken. Priority is being given to critical and important processes. We face the same problems as all other industries in assessing the likelihood of failure of individual computer chips.

3.3 Our laboratory systems will be fully compliant by the end of 1998. Current survey work of our building services is confirming our expectation of few if any significant problems to be addressed. We are working together with our telecommunications equipment suppliers to determine the risk to our internal network.

4. CONSTRAINTS AND CONTINGENCY PLANS

4.1 There are no perceived constraints to achieving compliance for our corporate IT systems.

4.2 The constraint to achieving compliance with embedded systems is the vast number of process controllers we have installed across the region and the difficulty of assessing the risk of failure in individual cases. The low availability of suitably qualified ICA technicians is a constraint.

4.3 The slowness of telecommunications equipment suppliers to come to terms with potential problems is considered by us to be a constraint.

4.4 We have contingency plans to cover many areas of risk and are in the process of developing them for major operational processes, where we consider that the resolution of the embedded problem may be in doubt and the water/waste water process is critical.

5. OTHER

5.1 A major failure in our corporate IT systems could have a commercial impact and would be potentially embarrassing, for example if bills showed incorrect dates or were incorrectly calculated. We would expect to intercept any such problems within the organisation. In these circumstances, the impact of such a failure would be limited to an adverse effect on cash flow.

5.2 Major failures of operational processes would affect water supplies or waste water treatment. We are confirming that manual overrides would provide adequate mechanisms for direct control in the event of continued outage of supervisory control systems. This forms part of our review of contingency arrangements.

5.3 We do not expect, at this point in time, to take any legal action for past supply of non-compliant IT products.

6. SUMMARY

The problems that the company faces in respect to Year 2000 compliance problems are significant, but also quite within our capabilities to solve.

We have an established programme of projects to achieve compliance.

It will not be possible to eliminate all risks. The most likely ones remaining at the end of the millennium will be with respect to operational embedded systems for process control. Apart from direct remedial actions, we are also making contingency arrangements to maintain process control where the impact of failure warrants that provision.

APPENDIX 20

Memorandum submitted by J Sainsbury plc

1. INTRODUCTION

1.1 J Sainsbury plc is one of the top 10 users of computer systems in the UK.

1.2 The principal operating companies are Sainsburys Supermarkets Ltd, Savacentre Ltd, and Homebase Ltd. Our main business is food retail and DIY.

1.3 Computers are pervasive throughout the business. Key applications include the checkout, the supply chain, food safety, electronic banking, electronic data interchange of orders and invoices with suppliers, payroll, accounting and management information.

2. How Serious is the Millennium Bug?

2.1 If not contained, the Millennium Bug would certainly have a major impact on our business. Clearly, we are not going to allow this to happen.

2.2 The problem is not simply the transition from 1999 to 2000. For example, thanks to preventative action, our stores are already handling goods with Best Before dates in the next century, and payment cards which expire after the Millennium. We anticipate a steady build up of further "date events" in our systems, peaking sharply at the Millennium itself, but then dropping off gradually for up to three years thereafter. One of these events is the processing of information relating to the year 1999, which is not handled correctly by a few of our systems.

2.3 The consequences of serious computer failure would be unthinkable. We have no intention of allowing this to happen. For example,

2.3.1 Extended failure of our checkouts would force us to close our food stores to the public for an indeterminate period. We have literally no alternative means of trading, because goods are no longer price-marked.

2.3.2 The supply of food would be disrupted. Both our internal distribution network, and our suppliers, depend on highly automated systems. We no longer employ sufficient staff to work around a system failure for more than a day or two.

2.3.3 Failure of automated refrigeration monitors would prevent the sale of chilled and frozen food.

2.3.4 We are dependent on the continued provision of essential services, such as power, public transport and telecommunications.

2.4 In principle, we have contingency plans to work around any failure of our banking, payments, payroll and accounting systems. However, no responsible business could seriously entertain the possibility of allowing this to occur on a widespread basis.

3. What Steps have been taken?

3.1 A programme has been established in every Operating Company, under the overall governance of a Board director, at an estimated cost of £40 million.

3.2 Suppliers of computer hardware and software have provided us with a plan of action. We are testing their solutions as they are delivered.

3.3 We have already converted 30 per cent of our own computer programs, using a large team of IT staff in the UK and India. Equipment incorporating embedded chips will also be tested. This programme will be completed in 1998.

3.4 We have written to every supplier of goods, services and equipment, to understand their plans. At this stage, we are concerned that the majority of companies have failed to reassure us.

3.5 We are confident that this action will reduce the problem to manageable proportions, at least as far as our internal systems are concerned. We cannot be absolutely certain that there will be no problems—it is mathematically impossible to test all the scenarios that could arise in theory—but major disruption is very unlikely.

4. Constraints

There are no major constraints on our ability to contain the problem internally. Retention of IT staff in a very competitive labour market, and ensuring delivery of all the component solutions from our IT suppliers, will be a management challenge, but we remain confident.

5. Contingency Plans

Contingency plans are in place for all mission critical operations. However, these are under review, as the Year 2000 scenario is subtly different from those previously considered. As explained in 2.3, our contingency plans do not allow us to operate for an extended period without systems, so the main emphasis is on prevention.

26 November 1997

APPENDIX 21

Memorandum submitted by the Institution of Electrical Engineers (IEE)

Introduction

1. The Institution of Electrical Engineers is the largest professional engineering society in Europe, with nearly 140,000 members. The activities of the Institution cover electrical and electronic technology, communications, manufacturing, computers, systems and software engineering. Many of our members are involved in the use and application of computers in industry, and they are therefore very much concerned with dealing with the Year 2000 problem.

Summary

2. The problem caused by the inability of some computers to recognise the change of date from 1999 to 2000 (the Year 2000 problem) could, if not solved, cause severe difficulties to many branches of industry, commerce and society at large. The IEE has taken steps, not only to ensure that its own internal systems will be unaffected at the turn of the century, but to provide help and guidance to the outside world, taking advantage of the wealth of experience and expertise represented by its members. The Institution has co-operated with many other bodies including Government, and we have developed an understanding of the problems and their potential solution. We attempt in the following paragraphs to reflect our views in relation to the questions posed by this inquiry.

The Scale of the Problem

3. There is no doubt that the scale of the problem could be substantial, if no action were taken. There could be major implications for commerce, industry, telecommunications, transport, energy and in fact almost every aspect of civilised society. Computers are now ubiquitous, and therefore in principle any operation which relies on a computer or any embedded microprocessor, which has a date-based function, could be vulnerable.

4. There has been much "hype" and scare-mongering in the popular press, and the consequences of failure to deal with the problems have been exaggerated. This is not to say that we should be complacent. Many of the larger organisations in industry and commerce have recognised the problems and have taken steps to overcome them. Many smaller companies and organisations lack either the understanding or the resources to deal with the problem, and failure to take action could have serious implications. What is important is to ensure maximum awareness, so that sensible decisions and actions can be taken, based on rational, commercial and technical judgement.

The Effectiveness of Action Taken so far

5. Action already taken by many large corporations to avert problems in their own activities is probably adequate. In the case of Government, we have insufficient evidence to determine whether or not they have taken adequate steps. Major organisations have both the expertise and the funding necessary to assess the problem, identify a solution and implement it. It may for example be sensible to replace suspect hardware with equipment guaranteed to be reliable. This however does not necessarily obviate the need to check, modify and test software. This will involve an immediate capital expense, but computers in any case have a relatively short write-off period, and on commercial as well as technical grounds, early replacement might be seen as the best option.

6. Smaller companies are in a more difficult position. They may fail to appreciate their vulnerability, their financial position may be weak, and they are more likely to lack the expertise necessary to identify and solve any problems. Furthermore, in the case of embedded software, they may not even be aware that such software exists within their operations. It is especially to this sector of industry and commerce that particular and urgent attention needs to be paid.

The Role of Government

7. Government clearly has an important part to play in alerting the country to the potential problems, and to seeking solutions. As ever in any awareness activity, the difficulty is to strike a balance between sensationalism and complacency. An awareness programme needs to be based on rational and persuasiveness argument, backed up by sound technical information. The Government has direct access to all the necessary information, and understandably advice has been sought from a number of expert and informed bodies including the IEE.

8. It might be argued that the remit of the original Task Force 2000 was never adequately clarified, and as a result, some of the statements issued by the Task Force appeared to reflect this uncertainty. Furthermore, the level of funding made available probably did not fully reflect the magnitude of the task, particularly in

the early stages. The sudden replacement of Task Force 2000 by Action 2000 did little to clarify the position, and continuing uncertainty over the latter's role and level of resource, and its apparent lack of activity weaken what should be an important and high-profile function.

The Extent to Which New Systems are "Millennium Compliant"

9. Very few systems are completely new, and designers must ensure that no part of the system will continue to cause problems. We understand for example, that only very few suppliers of personal computers are currently willing to guarantee absolute compliance of their equipment. It is likely that this situation will improve with time. To an extent, pressure will come from the customer in refusing to sign a contract without a compliance clause, and in having legal redress in the event of failure.

The Development of Contingency Plans in the Event of Failure

10. Organisations which have identified a problem and sought and implemented solutions, are not anticipating failure, although contingency planning in the event of failure should nevertheless be undertaken. Clearly those organisations which do not appreciate the potential difficulties for whatever reason will take no action, and be vulnerable as a result.

11. It would seem sensible for Government, both nationally and locally, to make contingency plans in case there is a disruption of vital services. Such planning should incorporate an audit of actions already taken by the military, police and fire services, the health service, telecommunications, energy and water providers, the banks and major food suppliers, so as to identify any obvious weaknesses and implement solutions well in advance.

The Legal Implications of Disputes over Liability for Compliance Costs, and System and Program Failures

12. There is a growing consensus that the supply of non-compliant products is tantamount to providing goods which are not "fit for purpose". It is clearly for the courts to rule on any particular circumstance. However, Government should emphasise that failure to disclose non-compliance could lead to claims for damages, on the basis that such non-disclosure constituted negligence on the part of the supplier.

13. Companies will naturally be reluctant to guarantee compliance for equipment which has already been supplied, and it might be unreasonable to expect them to do so. However, they should at least co-operate with their customers in trying to identify problem areas and proposing appropriate solutions. In the case of new hardware and software, there is no reason why compliance should present any great difficulty. There will however be a potential problem if new, compliant equipment is installed in an existing system, part of which may be non-compliant. The supplier of the compliant equipment will wish to be indemnified for any problem arising through no fault of his own. Herein lies a legal minefield.

Actions Taken by the IEE in Relation to its Own Systems

14. The IEE is a large professional institution employing 450 people. In addition to our institutional activities, we have an important commercial arm, publishing books and journals, organising conferences and providing an international scientific and technical data service. We appreciate the importance to our activities of overcoming the "millennium bug" problem, and have taken the problem very seriously.

15. Work to identify necessary software changes to in-house programs has been undertaken. Amendments to programs will start in March 1998 to allow sufficient time for testing. In addition, letters are being sent to both software and hardware suppliers seeking confirmation of their readiness for the year 2000. Service providers are being asked to confirm in writing that their service will run uninterrupted, and where the service is critical to the business of the Institution, we are demanding that by the end of 1998, the service must be demonstrably Year 2000 compliant. We are confident that our own in-house programs will run without difficulty, although it is impossible to be completely confident about services, software and hardware supplied by others.

16. We are not aware of any constraints which may hinder work on averting computer system and software failures at the millennium.

17. We have developed contingency plans, should there be a computer failure. A short-term stoppage (say three to four days) would have little effect. Beyond this, we could suffer serious consequences. The responsibility for our computer systems and Year 2000 compliance rests with our Managing Director, Publishing and Information Services, and with our Director of Administration.

What More can be Done?

18. Much has already been achieved in raising awareness of the issues concerned with the Year 2000. Government has undertaken its own awareness activity, and encouraged others to do likewise. The press generally has promoted the issue, perhaps not surprisingly introducing a certain amount of hysteria. Many conferences and seminars have been organised, and articles have appeared regularly in the professional journals. Large organisations, including banks, energy companies, major airlines and manufacturers, have explored the issues and taken steps to avoid any serious consequences to their businesses. The emergency services, the armed services and food chains are all aware of the problems and are seeking solutions.

19. It is not for Government to find answers to all the problems likely to be experienced by the multitude of organisations up and down the country. The problem is however international, and the Government is in a position to collaborate with our European and overseas partners, exchanging views and experiences, seeking solutions, and making them known to British business and commerce.

The Role of the IEE in Disseminating Information

20. As a professional organisation, the IEE has a responsibility to use its expertise, and that of its members and Industrial Affiliates, to help society at large in understanding and overcoming problems which are relevant to its activities. The Year 2000 problem falls very much within this category. Accordingly, we have been active in promoting an understanding of the issues, collaborating closely with others including the British Computer Society, the Health and Safety Executive, the Engineering Council, DTI, and a number of industrial companies.

21. We have in particular concentrated on problems associated with embedded systems. A working party was set up, with expert representatives from industry and academia, and we have established a Web Site which is up-dated regularly and is being used extensively. A 160 page guidance document has been produced and circulated widely. In addition, members of the Institution have spoken at numerous seminars and meetings. We are planning to produce a short version of the guidance document aimed specifically at small companies.

22. The IEE has access to a wide spectrum of advice and information through its membership, and contacts with other bodies. We would be happy to explore the possibility of taking on a "gate keeping" role, collaborating with others as appropriate, to provide a managed information service on behalf of Government for the benefit of society at large.

2 December 1997

APPENDIX 22

Memorandum submitted by Greenwich Mean Time Ltd

1. Introduction

1.1 Greenwich Mean Time was formed by Karl W Feilder, an acknowledged year 2000 authority, as a private company to address the issues arising from Personal Computer year 2000 problems.

1.2 The company has conducted extensive research into the problem as it affects PC software programs and PC hardware with the following findings:

2. Findings (Refer Annex A)

2.1 47 per cent of PCs currently on sale may be described as non-compliant at the hardware level.

2.2 64 per cent of PC software bought over the last five years (much of it currently in operational usage) contains identified year 2000 problems and issues. The remaining 36 per cent of PC software (much of it currently on sale) may, at best, be described as having insignificant year 2000 problems.

3. Conclusions

3.1 The majority of PCs in current usage, (estimated at 20 million in the UK) will experience some form of hardware and software disruption ranging from minor irritation to total loss of usefulness. Of these, 17 million PCs are estimated to be in business use by both large and small organisations, and this will consequently have a major negative impact on the UK economy as we approach the end of the century.

3.2 The year 2000 problem will start to affect PC users well before the end of 1999. Already this has become evident in programs such as inventory systems, accounts packages and programs that calculate forward projects such as mortgages and insurance policies.

3.3 At best, only 6 per cent of these PCs have yet been correctly inspected for problems at the hardware level (refer Annex B).

3.4 The majority of organisations and government departments that have published statements on their year 2000 plans have failed to address the PC issue. Any year 2000 surveys or statistics that fail to include PC plans are likely to be very misleading.

3.5 PCs pervade the business world to the extent that few organisations have precise information regarding the number, location or usage of their PCs, yet they are, in most cases, critical to the continued functioning of organisations.

3.6 Many business computer users are aware of the year 2000 problem but do not understand how it affects them. They assume it is an IT problem and as such will be fixed by the industry. This is a wholly wrong assumption, and we respectfully suggest that a government funded media campaign be mounted to raise the understanding that this is a problem for every single computer user.

3.7 It is true that a significant number of organisations rely on their PCs to the extent that they cannot function without them.

4. Other Related Issues

4.1 PC software liability would seem to rest with the user of the software program, not with the manufacturer. This has yet to be tested in court. (The recent St. Albans vs ICL case was not relating to PC programs and may be held to be a very different matter.)

4.2 PC hardware liability would seem to rest with the assembler and should be covered by the "fitness for purpose" condition under the Sale of Goods Act. This has yet to be tested in court.

4.3 Britain is currently ahead of its largest European trading partners, Germany and France, and there seems no current mood by these partners to accept the seriousness of the situation. Britain has a unique opportunity here to demonstrate its European leadership. More importantly, the domino effect of the year 2000 problem requires Britain not only to get its own house in order, but to prepare to withstand the impact of the inevitable economic failure of its traditional partners.

4.4 It is impossible to modify PC hardware or software to achieve year 2000 survival concurrent with the adoption of the Euro. There is simply insufficient time and resource.

5. Opinions

Greenwich Mean Time is extremely concerned as to the ability of the UK to address the year 2000 problem. Specifically:

5.1. The PC year 2000 problem is calculated to cost UK businesses £4.8 billion (refer Annex C i).

5.2. A typical small company may be faced with a bill of over £21,000 (refer Annex C ii).

5.3. No UK business has yet to complete its year 2000 task and the majority have yet to start.

5.4. This problem is immense and threatens the stability of our country both economically and politically.

5.5. It is nearly impossible to overstate the scale or impact of the year 2000 computer problem.

6. Constraints

There are a number of factors preventing UK businesses from getting on with the job of checking every single PC for risks associated with the year 2000 problem.

6.1. Incredulity at the severity of the problem.

6.2. Understanding of the problem and its manifestations.

6.3. Belief that "someone else will fix it".

6.4. Refusal to accept that the computer industry cannot and will not fix the problem.

Greenwich Mean Time would welcome the opportunity to put these and other points in person, to the Committee, at the earliest possible convenience.

1 December 1997

Annex A

Greenwich Mean Time has investigated the year 2000 status of 4,000 best-selling PC software programs. Its findings show that of the 4,000 software programs checked, 2,568 (64.2 per cent) have some sort of year 2000 date dependent behaviour which can create problems even as 2000 approaches. Of these, 724 (28.2 per cent) are claimed to be year 2000 compliant by their manufacturers.

Greenwich Mean Time has defined the year 2000 issues among the 2,568 programs as follows:

- 629 (24.5 per cent) manipulate dates to perform date calculations. This can create problems where the dates being used are in a different century from the one which the program infers.
- 539 (21 per cent) are programming development tools which are capable of creating programs that use dates incorrectly, so perpetuating non-compliance problems.
- 506 (19.7 per cent) use a process known as "date windowing". While at first glance such programs seem to be year 2000 compliant, there exists potential for indirect problems leading up to 2000, as the program must decide which dates belong in which century and it is often not apparent which century was chosen. Furthermore, these date "windows" differ from one program to another and the user has no way of changing them.
- 295 (11.5 per cent) store dates differently from the way the user inputs them. These programs can work in 2000 but the user has no control over any function to do with date computations.
- 254 (9.9 per cent) have licensing issues which means that there is a time bomb embedded within them to counteract illicit use of the software. If the software manufacturer did not cater for either the year 2000 or the year 1900, this time bomb may go off unexpectedly.
- 142 (5.5 per cent) import dates from either the operating system or the BIOS, either of which may not register 2000 correctly.
- 113 (4.4 per cent) do not recognise 2000 as a leap year (which it is), creating day-of-week errors from 29 February 2000 onwards.
- 90 (3.5 per cent) of shrink wrapped software programs that are commonly used today will only function in the 20th century. Users need to know which these are so they can abandon them in favour of programs that do work in 2000.

As for PC hardware, Greenwich Mean Time found that 93 per cent of 1996 and pre-1996 BIOSs do not rollover successfully to 2000. For BIOSs created in 1997, the figure drops to 47 per cent which do not rollover successfully to 2000, a number which remains dangerously high at this late stage.

(The BIOS initialises the PC, including setting up the system date and time by reading values from the real time clock chip which keeps a constant time reference for the PC. If the BIOS does not successfully rollover to 2000, all date and time references will be incorrect.)

Annex B

PC Hardware Inspection Figures

The only way to correctly and accurately test a PC for hardware year 2000 problems is to use a tool, normally referred to as a "BIOS Checker". These tools have been written by a number of commercial companies which, to date, have sold an estimated 3 million copies worldwide.

Of these, it is further estimated that, at best, 1 million have been sold to UK customers.

Thus, only 1 million of the estimated 17 million PCs in business use in the UK can have been properly and accurately checked for hardware year 2000 problems.

Thus, at best, 6 per cent of business PCs in the UK have been correctly investigated.

Worse still, of an estimated 350 million PCs in global business usage, less than 1 per cent have so far been correctly checked.

Annex C1

Cost to the UK Economy—Assumptions

20 million PCs in current use—17 million in non-domestic situations.

Cost to test a PC—£100.

Cost to fix PC hardware—£10.

Average cost to upgrade software—£300.

Average cost to expand YY data to YYYY data (20 significant spreadsheets and one significant database per PC)—30 hours per PC at £50 per hour—£150 per PC.

Assume 50 per cent of PCs are critical, the remainder to be destroyed.

Total—£560 per PC.

UK total—£4,760 million (rounded to £4.8 billion).

Annex C2

A Typical Small Company

Similar assumptions to previous, except:

Assume 200 employees and 50 PCs

Assume that 75 per cent of PCs are critical.

Total company cost—£21,375

APPENDIX 23

Memorandum submitted by The Central Computer and Telecommunications Agency (CCTA)

1. CCTA advises public sector organisations on the effective deployment of information technology in support of their businesses. In relation to the Year 2000 computer compliance issue we are running a programme of advice and guidance to help the public sector minimise the impact of century date change errors on their ability to provide public services. CCTA is working with the Central IT Unit (CITU) of the Office of Public Service who are funding much of this work programme and who are also charged with monitoring the progress of departments in addressing the problem.

2. This submission outlines the main activities of the CCTA/CITU programme and includes a summary at Appendix A of CCTA's own programme for addressing century date change problems with its own IT infrastructure. CCTA's programme comprises four main streams of activity: production of guidance; dissemination of advice and information; co-ordination of public sector activity; progress monitoring.

3. *Advice and Guidance*. Since the start of the CCTA programme in 1996 we have produced the following publications:

- *The Millennium Bomb—Can You Cope With IT?* (an awareness briefing that introduces the subject)
- *The Year 2000 A Management Briefing covering Information Systems* (aimed at business managers)
- *Defusing the Millennium Bomb* (a report produced in 1996 with DTI, CSSA and PA Consulting assessing the state of readiness of organisations of the public and private sectors)
- *Planning a Year 2000 Programme* (a briefing produced to support a seminar on planning)
- *The Millennium Bomb Its Impact on Telecommunications* (briefing produced for government telephone network users)
- *Technology update Year 2000: Scoping the Problem* (a briefing produced in co-operation with the Gartner Group)
- *Tackling the Year 2000* (a six volume set of guides that describes how to create and manage a programme of action from start to finish)

The programme will continue to produce briefings. These will be based on topics that we and our customers in the public sector see as important and will initially be published in CCTA's BEST Directory. Already planned are briefings on Embedded Systems and Contingency Planning/Disaster Recovery.

CCTA Model Agreements (published by The Stationery Office) may be purchased by both public and private sector organisations. These Agreements all include a Year 2000 warranty and were first made available in September 1996. Discussions continue with industry bodies to ensure that the clauses remain best practice.

4. *Advice and Information*. CCTA has created a Year 2000 web site which is intended to be an information point. It includes details of our programme, including seminars, and links to other sites containing helpful information. We also run an open discussion group over the web. This activity stream includes a programme of conferences and seminars that has been under way since mid 1996. The programme started out with conferences aimed at raising awareness of the Year 2000 problem, including one for top of the office, and has developed into more focused seminars, each looking at a specific aspect. To date we have held seminars on planning and embedded systems and intend to hold further seminars on testing and contingency planning/ disaster recovery. Each seminar is supported by a briefing paper.

5. *Co-ordination of Public Sector Activity*. CCTA chairs a regular meeting of the Year 2000 Public Sector Group. This was established at the behest of CITU and meets every 2–3 months to discuss progress and problems in public sector organisations. The group is open to all public sector bodies and is usually attended by Year 2000 project managers from about 25 organisations including most central departments. We also attend meetings of Year 2000 co-ordinating groups within some departments. Further afield, CCTA is represented on a number of other co-ordinating groups and attends meetings of Action 2000 and international public sector bodies such as ICA and IDA. We have established links with groups with a Year 2000 interest eg CSSA and the KPMG IMPACT programme.

6. *Progress Monitoring*. Apart from the general survey with DTI, CSSA and PA mentioned above, we have run two surveys of public sector bodies (Winter 1996 and Summer 1997). These asked samples of departments

specific questions about progress, costs, estimates and predicted end dates for their programmes. In general terms the two surveys indicated a high degree of certainty of completing programmes in time but progress is slow in getting systems converted. CCTA, working on behalf of CITU, assessed departmental plans submitted in October 1997 at the request of the Chancellor of the Duchy of Lancaster.

28 November 1997

APPENDIX 24

Memorandum submitted by Morgan Stanley Group Inc

INTRODUCTION

Relevance of our organisation to the Committee's enquiry

Morgan Stanley, Dean Witter, Discover & Co. ("Morgan Stanley" or "The Firm") is one of the world's largest securities firms with offices in 22 countries world-wide. Morgan Stanley Group Inc. recognised the seriousness of the Year 2000 problem in 1995, launched a project in 1996, and is currently completing the second year of a four-year project to ensure no disruption of service over the millennium year change. The Year 2000 Project is the largest IT project ever undertaken by the company and will cost the Firm of the order of $100 million. Additionally, Morgan Stanley is taking a leading role within the US-based Securities Industry Association (SIA) and other industry trade associations around the world to ensure that Year 2000 best practice is shared among members.

Summary of main points of evidence

- Morgan Stanley considers the "millennium bug" problem to be one of the most serious challenges facing the financial services industry today. Achieving timely compliance, adequate contingency planning, and building confidence through industry testing are requirements for success.
- Government assistance in public and private sector contingency planning as well as support for regulatory oversight of Year 2000 efforts may reduce systemic risk.
- Minimising potential new regulation that has a high degree of IT impact is essential over the next 24 months.
- Due to the imminent nature of the EMU deadline, companies may put off their Year 2000 compliance efforts which could create an unmanageable resource shortage in 1999.
- Companies are most at risk from potential failure of their external business relationships (over which they have less control).

In response to the Committee's request, Morgan Stanley is pleased to reply as follows:

(i) Comment on *"the nature, magnitude and implications of an inability to manage the date change in personal and mainframe computers, embedded systems and software, especially where such computers are performing safety critical operations"*

1. The scope of the Year 2000 problem within Morgan Stanley is extremely large and poses significant challenges to our organisation. Our technology infrastructure includes 88,000 mainframe programs, 400 business critical client/server systems, over 16,000 desktop computers, and almost two million desktop spreadsheet and database files. In addition, we have identified approximately 6,000 external products and services used by the Firm worldwide, not including electronic interchanges with clients.

2. To date, we have encountered Year 2000 date problems in nearly all of our internally developed systems. If we had not worked aggressively to complete the project in time, there would have been considerable disruption to the operations of the Firm. Left uncorrected, Year 2000 "bugs" would corrupt databases beyond repair, disrupt computing infrastructure, and halt operations. We have also found that networks, telecommunications infrastructure, and building systems are affected. In fact, the central building management system in our Canary Wharf office which controls and monitors fire-alarm, water detection and other safety systems has defective embedded chips and we have elected to completely replace the system.

3. External products and service providers represent one of the greatest areas of risk due to our inability to control the quality of their compliance efforts. Presently, approximately one third of these providers claim to be Year 2000 compliant. An additional one-third is working towards compliance and has provided us with written project documentation and forecast product upgrade dates. The remaining one-third has provided us with incomplete or ambiguous information that has left us with a great deal of uncertainty regarding compliance plans, or in fact concern as to whether some of them will achieve compliance at all. We plan to test our most critical providers independently of their own efforts.

(ii) Comment on *"the effectiveness of action which has already been taken to avert problems in Government, large corporations and small businesses"*

4. Government has been effective in raising Year 2000 awareness. In fact, we believe that Government has encouraged businesses to consider important issues such as the compliance of their own suppliers. However, we do not yet have much information regarding Government's actual progress in correcting its own systems.

5. Through our involvement with industry level initiatives, we believe that most large corporations have achieved Year 2000 awareness, assembled project teams, and are progressing in their efforts to achieve compliance. However, most corporations and governments are still struggling with the size and scope of the problem and frequently discover that the cost of compliance is double or triple initial estimates. This has also been true for Morgan Stanley as our current forecast project budget is approximately $100 million over four years, up from our estimates only a year ago of $50–60 million.

6. We are concerned that smaller companies are less convinced of the enormity of the problem and may gain a false sense of confidence from their reliance on vendor provided software. In our experience, vendor software still requires testing and often requires time-consuming upgrades. In addition, due to the broad scope of the problem, small companies are likely to be affected by some form of hardware problems, embedded chip malfunctions, or more simply spreadsheet data errors.

(iii) Comment on *"the role of Government in raising awareness of the potential problems and in seeking solutions and the respective roles Taskforce 2000 and the recently launched Action 2000"*

7. The Government has made a significant impact in raising Year 2000 awareness. Frequent press coverage of statements by Government officials and Taskforce 2000 commentary has precipitated widespread discussion in the financial services industry. The results of the Government funded PA Consulting surveys have also been widely distributed; though the results indicate more work remains to be done. These kinds of efforts should continue. We do not yet have experience working with Action 2000, but look forward to their leadership in this area.

8. Government and regulatory bodies could provide support by requiring Year 2000 disclosure on financial filings, and by fostering discussion and co-ordination amongst market participants regarding contingency planning and industry testing. Publishing the results of these efforts may help sustain investor confidence.

(iv) Comment on *"the extent to which new systems and software are 'millennium compliant'"*

9. Morgan Stanley has found that not all new systems and software are millennium compliant and not all products that vendors have claimed to be compliant actually pass our testing. These failures may be partly because underlying components supplied to the vendor are in turn not compliant. We do not have enough experience with this issue yet to draw conclusions regarding percentage failures or causes, but this is an area of concern. Morgan Stanley will continuously test new systems and software installed between now and the year 2000.

(v) Comment on *"the development of contingency plans in the event of system and program failures"*

10. We believe that only companies with the most advanced Year 2000 projects are now beginning to approach contingency planning. Planning for the possible failure of each critical system, as well as building facilities, vendors, counter-parties, industry infrastructure, and regional liquidity is vast and only beginning to be addressed. We strongly believe that industry dialogue needs to extend beyond basic project methodology to encompass contingency planning approaches with some urgency. Discussion and co-operation among firms will be required to define the proper scope of "contingency planning" and to discuss the larger systemic issues.

(vi) Comment on *"the legal implications of disputes over liability for compliance costs and system and program failures"*

11. The legal implications of disputes over Year 2000 failures are significant. The ultimate liability for losses sustained as a result of system and program failures will depend in part upon individual contracts between organisations and will not be clear until precedent has been established. Morgan Stanley has been including Year 2000 compliance requirements in purchasing contract language for over a year and we intend to document due diligence with regard to the compliance of our suppliers over the next two years.

Below we answer the specific questions raised by the Committee.

Response to: *What is your estimate of the seriousness of the millennium bug problem?*

12. Morgan Stanley considers the "millennium bug" problem to be one of the most serious challenges facing the financial services industry today. At its worst, the millennium bug could create financial infrastructure risk such as: execution and settlement disruptions, funds transfer failures, and liquidity

problems. Achieving timely compliance, adequate contingency planning, and building confidence through industry testing can help ensure success.

13. The Firm's specific response has been to initiate the largest IT project ever undertaken by the company to ensure its internal compliance and to minimise the risk from its 6,000 external business relationships.

Response to: *To what extent do you think that UK businesses and other organisations have done, or will have done, enough to avert any potential problems?*

14. General awareness of the problem in the UK seems to have increased greatly over the last 12 months, but the seriousness of the problem needs continued emphasis.

15. Due to the imminent nature of the EMU deadline, companies may put off their Year 2000 compliance efforts, which will create an unmanageable resource shortage in 1999. A pragmatic discussion on creative resource management over the next two years may help companies bridge the shortfall.

16. Smaller companies may be at particular risk from inadequate capital to fix their problems or over reliance on third parties to supply compliant software.

17. Co-ordinated testing among core suppliers and trading partners can help work out any remaining issues as well as increase confidence in the supplier chain. More discussion in the UK on how to achieve this is required.

Response to: *Do you think that the Government has done enough to raise awareness of the problems associated with the date change or to encourage action to avert problems? What more should be done?*

18. The Government has done a good job in raising awareness of the Year 2000 problem although smaller companies may yet not have received the message. Schemes to provide incentives for smaller businesses to divert resources to Year 2000 compliance might be considered.

19. The Year 2000 issue is advancing to a stage where companies need to disclose exposure and progress in their individual projects, start contingency planning, and work together with counter-parties on industry testing issues. Government sponsorship for contingency planning and industry testing, particularly for the financial services industry, would be key to ensuring continued confidence in the market place.

Response to: *What, if any, are the major constraints militating against progress being made towards identifying and applying solutions to prevent computer systems and software failures at the millennium?*

20. Failure to disclose the extent of the problem or to acknowledge its seriousness can cause organisations to deny the potential threat it poses to their organisation.

21. Resource availability is a major issue. Many UK organisations face the constraint of staffing both their Year 2000 and EMU projects. During 1998 and 1999 the cost of IT staff is likely to rise as organisations make last ditch attempts to achieve compliance on time. During that time, companies will have to prioritise systems and projects, deciding which to abandon to ensure that the more important systems are made compliant.

22. To maintain confidence in the global financial markets, it is imperative that time is reserved in 1999 for co-ordinated industry testing.

23. Minimising potential new regulation that has a high degree of IT impact is essential over the next 24 months. Securities houses and banks are already faced with potential IT work in connection with the following European and UK initiatives: EMU, CAD II (Capital Adequacy Directive), Implementation of Data Protection Directive, and new regulatory reporting requirements for the FSA. Government should try to avoid adding to this list.

3 December 1997

APPENDIX 25

Memorandum submitted by the London Stock Exchange

1. INTRODUCTION

1.1 The London Stock Exchange has a statutory duty under the Financial Services Act 1986 to ensure that its markets operate in a fair and orderly fashion. For this reason, and for the well-being more generally of the UK financial industry, the Stock Exchange is taking all the necessary steps to ensure that it is well prepared for the Year 2000 date change.

2. Summary of Key Points

2.1 There are few areas of commercial or public sector life untouched by the implications of the Year 2000 date change. Failure to prepare adequately will have serious repercussions.

2.2 The level of awareness has increased markedly during 1997. However, there is much still to do. The next twelve months will be critical in determining whether the overall level of preparation in the UK is adequate.

2.3 The Government has an important role to play in helping to raise awareness. However, there are a number of existing initiatives already underway and it is important to ensure that these are well co-ordinated and appropriately structured and resourced. Too many separate initiatives could divert attention away from practical preparations.

2.4 Smaller organisations have generally been slower to respond to the issue. Many are now finding that the cost of preparation is rising at a prohibitive rate.

2.5 The introduction of Economic and Monetary Union (EMU) will place a major additional burden on organisations preparing for the Year 2000 date change. These two projects together are likely to curtail the ability of many organisations to introduce new products and services in the next two–three years.

2.6 The London Stock Exchange has a well structured and systematic programme of testing and systems enhancements to ensure that the risk of disruption to its operations is kept to an absolute minimum.

3. General Issues Raised by the Inquiry

Implications of date change

3.1 Given that computer hardware and software and embedded microprocessors are now fundamental to almost all areas of commercial and public sector activity in the UK, any systemic failure could have very serious repercussions. Because of the unique nature of the issue and the fact that it is driven by an immovable end-date, it has to be faced now. Addressing the issues raised by the date change during 1999 is almost certainly going to be too late for all but the smallest organisation.

3.2 The inherent problems created by the date change are compounded by the fact that it is very difficult to predict which devices do not utilise date dependent processing. In principle, therefore, all systems should be tested, creating an immense problem both in terms of cost and the numbers of people required to carry out the testing and verification process.

3.3 For this reason, and because not all systems and processes are equally important, it is vital that organisations prioritise their effort according to well founded criteria such as business dependence, safety and financial risk.

Effectiveness of action to date

3.4 Prior to this year, the action taken by the majority of organisations appears to have been limited. That has changed dramatically during 1997. The feedback we receive from our network of advisory and consultative committees suggests that as far as our own constituent organisations are concerned, the vast majority are now well aware of the issue and are taking the necessary steps.

3.5 However, as we near the end of 1997, it is clear that only a limited number of products are Year 2000 compliant and even among these a number are still failing basic tests.

3.6 The problem is most acute, we believe, in the smaller company sector. These companies have, on the whole, been slower to respond to the issue and are consequently vulnerable on two grounds. First, the necessary resources are becoming scarce. Second, the cost of these resources is rising steeply. It is possible that some firms will face serious difficulties, either because they run out of time or because they cannot afford to develop compliant versions of their products or correct problems in their own internal systems. We would expect the effects of this to be apparent well before the Year 2000 as companies start to change their suppliers in order to minimise their own risks.

Extent of compliance

3.7 Only a relatively small proportion of new hardware and software is certified Year 2000 compliant today. Compliant versions are typically being promised during 1998. This adds to pressure on timescales. In the case of the Stock Exchange, for example, we need to have a Year 2000 compliant version of our test system before we can test with the market. If our suppliers slip, this could have a domino effect across the market.

3.8 Statements of compliance for devices with embedded processors—such as electrical appliances—would appear to be very rare at the present time.

Contingency plans

3.9 The Year 2000 problem is not one that lends itself easily to the provision of contingency plans. In most cases, it is difficult to envisage a contingency plan that is practical (back-up systems are likely to have the same problems as primary systems). Manual contingency plans may be practical for limited periods in specialised circumstances, eg to keep an emergency service going.

3.10 In the course of preparing for the Year 2000 date change, it may be possible for organisations to identify ways in which potential risks can be managed or reduced. However, we believe that the only truly practical solution to this problem is comprehensive testing and correction of any errors discovered.

Legal implications

3.11 Liability for losses flowing from non-compliant systems will, we believe, be determined by reference to the particular contractual relationship. We therefore believe that legal action should be a last resort.

3.12 A practice is starting to emerge whereby some organisations are demanding legally binding statements of compliance in circumstances where service suppliers are unable to give it. We are concerned that this apparent positioning for potential litigation, in substitution for addressing the problem, is a very unhelpful practice.

3.13 We are aware that the insurance industry is now actively examining this issue with the intention, we believe, of severely limiting its exposure to Year 2000 related claims.

4. Specific Questions Raised by the Committee

4.1 What steps has your organisation taken to avoid potential computer systems problems caused by the date change at the millennium?

4.2 The London Stock Exchange has already devoted considerable effort and resource, as well as management time, to addressing the issues raised by the date change. We are confident that we are already doing everything possible to minimise potential problems and to ensure that users of our trading and other systems are able to access those systems from 1 January 2000.

4.3 The most significant steps we have taken—and are taking—include:

- impact analysis and risk assessment for all our systems, both external and internal;
- identification through Year 2000 compliance testing of the condition of all our systems in risk sequence (high—medium—low) to be completed in February 1998;
- development of plans for upgrading, replacement or retirement of all non-compliant systems;
- installation of all upgrade and replacement systems by end of 1998;
- comprehensive retesting of all systems to verify compliance by end of 1998;
- establishment of an "umbrella" project to manage all aspects of Year 2000 compliance, including embedded systems, insurance issues, legal issues, as well as computer systems as described above;
- consultation with our market users covering selected member firms, service providers and software houses to determine their state of readiness and their expectations for testing arrangements with the London Stock Exchange;
- development of a proposal to provide a market testing service to enable member firms, service providers and software houses to demonstrate compliance consistent with our obligation to run an orderly market; and
- we are also working closely alongside other regulators in our capacity as members of the Financial Services Authority's Year 2000 Group.

4.4 Do you think the Government has done enough to raise awareness of the problems associated with the date change or to encourage action to avert problems? What more should be done?

4.5 Because of the all embracing nature of the Year 2000 problem, we do see a natural role for government in helping to address the issues raised by the date change. In particular, we believe the Government should have a role in the following areas:

- raising public consciousness about the seriousness of the issue;
- assessing the overarching legal and insurance issues;
- heightening awareness and providing practical assistance to the more vulnerable organisations, particularly smaller companies; and
- ensuring that all government systems—and those used on behalf of central government—can manage effectively the Year 2000 date change.

4.6 As far as action already taken by government is concerned, the Taskforce 2000 initiative was, in our view, very effective in increasing general levels of awareness. However, it appeared to have little in the way of resources to provide more tangible assistance.

4.7 Action 2000 has only just been formed, but in order to make a serious and constructive contribution to the problem, it will need to demonstrate that it:

— has sufficient resources;

— is run by people with an in-depth knowledge of the issues;

— can very soon establish credibility within the IT industry; and

— is clear about the practical help/work it will undertake.

4.8 Those working in organisations on the date change issue are already in danger of suffering from an excess of information as they seek to absorb advice on highly complex and technical issues from a number of quarters. If Action 2000 is to make a valuable contribution, and not add to existing burdens, then it must have—and convey—a clear focus on what it is seeking to achieve.

4.9 What, if any, are the major constraints militating against progress being made towards identifying and applying solutions to prevent computer system and software failures at the millennium?

4.10 We would identify the following five general areas of potential constraint:

— a continuing lack of awareness, particularly among smaller companies;

— the high and escalating cost of addressing the problem, together with a lack of resources and necessary expertise amongst many organisations;

— a lack of knowledge/documentation in relation to older systems;

— an unwillingness in some organisations to divert funds and people from business-driven projects; and

— complicated dependencies on the compliance of products from third-party vendors/suppliers, some of whom are smaller companies. Any failure of these suppliers will quickly compound the practical problems.

4.11 To what extent does the planned introduction of the euro at the same time complicate the process of avoiding computer systems failures?

4.12 There is no doubt that the advent of the euro is highly relevant in the context of the preparations being made for the Year 2000. The systems that have to be modified to support EMU will also have to be tested, and may need to be modified, for Year 2000 compliance as well. The same resources will often be needed within an organisation for both projects, significantly increasing pressure on already overstretched staff.

4.13 Because of the similarity in timeframes, some may regard the implementation and testing of changes for both projects at the same time to be an enticing option. However, we believe this would be difficult to achieve in practice and could increase costs and exacerbate resourcing difficulties. Most organisations having to prioritise between work on Year 2000 and EMU, are likely to opt to work on Year 2000 because of the certainty of it occurring.

4.14 Year 2000 and EMU are likely to be the two most important externally-driven IT-related projects that many organisations have to grapple with. Indeed, preparations for these projects may already be curtailing the capacity of some businesses to introduce new products or services before late 2000. Given existing workloads, we believe that any move to bring forward the possible date of UK entry into EMU would place severe additional burdens on many of these organisations.

5. Other Issues

5.1 The Committee invited the Stock Exchange to submit additional information which may be relevant in the context of the inquiry. We would draw the Committee's attention to the following issues.

Compliance

5.2 To date, most organisations focusing on the issue have concentrated on the compliance of their own systems. Yet, many organisations have complex interfaces with others who in turn are likely to have their own Year 2000 programmes. At the Stock Exchange, we will be conducting a programme of collective testing sessions with our users. In order to help avoid significant gaps in overall Year 2000 compliance, we believe that other organisations with similar groupings of users would do well to adopt the same approach.

The potential for instability after 2000

5.3 Though the main focus of activity to date has been on preparing for the Year 2000 itself, we do believe that there are issues which go beyond 2000 and which need to be considered.

5.4 We would highlight three issues in particular:

— The volume of change being introduced into computer systems to meet Year 2000 compliance could inject instability into otherwise stable systems. This instability may occur in areas other than date processing and could go on manifesting for a considerable period after 2000.

— The practice of using newly trained inexperienced programming staff to meet the resource shortfall for testing and modification could compound the instability problems.

— The volume of change could also present opportunities for the committing of malicious damage or fraud. It would be possible, for example, for a suitably qualified programmer to hide fraudulent payments under the guise of year 2000 errors.

5.5 In order to avoid these potential pitfalls, we believe organisations must maintain the same rigorous levels of control over changes and over staff that are required for all major systems projects.

3 December 1997

APPENDIX 26

Memorandum submitted by British Nuclear Fuels plc

1. INTRODUCTION

1.1 BNFL is a large manufacturing organisation that is extensively reliant on information-systems to support its normal business operations; and on computer chips that are embedded in, and control, many of its process-control, safety and site-infrastructure systems.

1.2 To this end, it has a requirement to ensure full compliance of these systems in correctly managing the date change from 1999 to 2000, and its approach to this issue will be of direct relevance to the Science and Technology Committee's inquiry.

2. COMMENTS ON KEY POINTS OF TERMS-OF-REFERENCE

2.1 In regard to the points of particular reference in the terms-of-reference, our general comments are as follows:

(i) Large organisations of all types are facing compliance issues in all of the categories listed. In relation to personal and mainframe computers, the magnitude is moderate, with the implications being mainly on cost and commercial risk. In the case of embedded systems and software, some of which are safety related, there is the further risk of precipitating injury, incident and lost production. The cost of achieving compliance in this area is likely to exceed the cost of achieving compliance in the personal and mainframe computer area for our type of organisation.

(ii) It is our impression that larger organisations are progressing well in addressing the issue and that smaller businesses are behind. However, in general, projects are not sufficiently advanced to be confident of successful completion in time, and consequently, resources may become a problem as 2000 approaches.

(iii) Taskforce 2000 was generally visible and contributed to raising awareness. However, the issue is now generally acknowledged in industry, and media coverage has taken over in maintaining awareness. Turning awareness into action, particularly in SME's, remains a key issue.

(iv) Our experience is that new systems can definitely not be assumed to be compliant. The development of today's "new system" may have started several years ago when the Y2K problem was less high profile. This particularly applies to large bespoke developments. However, Y2000 compliance has been a condition of purchase for some time within BNFL.

(v) Whilst there is a general understanding of the need for contingency planning, we expect this to be delayed in most organisations, primarily because it is too soon at this stage to predict progress against rectification plans, and therefore, how confident organisations will become as 2000 approaches.

(vi) Our experience so far has resulted in BNFL having to stand the compliance costs, which typically involves upgrading to versions of software products/packages which the suppliers have certified as compliant. These upgrades are generally "free" as part of maintenance contracts. The cost involved is mainly that of manpower in carrying out the upgrade and the consequential enforced software modification/testing. Whilst the contractual background giving rise to this situation is varied, the main reason is that software suppliers have the right to "retire" software versions as they age and as new versions are released, and have no obligation to support and maintain old versions.

Suppliers are at times taking advantage of the situation to force users to upgrade, by only certifying the current version as compliant. Often, suppliers will not provide a firm statement as to the compliance state of previous versions.

3. COMMENTS ON THE SPECIFIC QUESTIONS ASKED OF BNFL

3.1 In regard to the specific questions posed, our comments are as follows

(i) Problems associated with mainframe and personal computers do not pose a major threat to BNFL. However, embedded systems and software will continue to be treated as priority until any necessary work is completed on assessment.

(ii) The company initiated a Compliance Project in mid-1996. The team is made up of representatives responsible for all areas of the business and a rigorous methodology is in place. Assessment of what is required continues and rectification work has started in some areas. BNFL does not anticipate any major constraints and is confident that major problems will be averted.

BNFL are pro-actively adopting an approach which takes special cognisance of safety related systems, in the expectation that our regulators will require such diligence.

(iii) The BNFL compliance team has identified the potential plant problems of non-compliance, is confident of achieving compliance but, prudently, is developing contingency plans. Responsibility is shared between the Company's IS Director and local management who are accountable for ensuring that their systems are compliant.

(iv) Awareness is currently adequate. BNFL has not used Taskforce 2000 services or publications, but has taken guidance from other sources. These include a consortium of nuclear related organisations led by KPMG (IMPACT); collaboration with MAGNOX Electric; taking some initial education from AEA Technology; and using literature from suppliers and the British Computer Society.

The Government should take particular interest in guaranteeing that utility providers and other major infrastructural services (electricity, water, gas supplies, transport, banks, BT, etc) avoid problems, since these have the potential to cause severe disruption to commerce and society generally.

2 December 1997

APPENDIX 27

Memorandum submitted by GEC Alsthom Limited

1. GEC Alsthom Limited is the UK holding company of the GEC Alsthom Group, one of the world's leading developers and manufacturers of equipment and services for electrical power generation, transmission, and distribution, for all forms of rail transport, and for various types of supporting industrial equipment. Its modern manufacturing facilities are heavily dependent on computer-based systems for a wide range of control actions, as is much of the equipment used to operate and maintain its sites. Similarly, the products and equipment manufactured by GEC Alsthom have benefited from major technical advances over recent years which, for example, have also dramatically increased efficiency and reliability. This is due to the application of computer-based analysis systems for their design, and to the incorporation of computer systems into the products themselves for sophisticated real-time control. It has only been possible to create products, such as the Eurostar train, because of the latter.

2. At present we have no reliable estimate of the potential financial or other costs for GEC Alsthom of ensuring avoidance of computer problems arising from Year 2000 non-compliance. This matter is under review by the GEC Alsthom Group on a world-wide basis and is clearly not viewed on simply a UK related issue. We are, therefore, very much aware of the potential problem through our own computer experts, through the publicity actions of Government Departments such as the DTI Taskforce 2000, and through the initiatives of professional organisations such as the Institution of Electrical Engineers. Nevertheless the magnitude of the audit task, and the difficulties of obtaining definitive assessments on each potential item, are such that it is not yet completed.

3. All products currently supplied by the GEC Alsthom Group are millennium compliant, and ensuring that this is so was a priority to us. With regard to those already "in the field" it is important to appreciate that many of them are major capital items of individual design or adaptation for a particular service. Such equipment often has a design life of 40 years or more, but usually with planned refits or upgrades at intermediate times. The position may, therefore, be categorised on a case-by-case basis in terms of products which are:

(i) year 2000 compliant;

(ii) not year 2000 compliant, but a year 2000 compliant upgrade release will be available;

(iii) not year 2000 compliant, but it is commercially and technically feasible to perform the adaptations if so requested by a customer;

(iv) not year 2000 compliant and it is not technically or commercially feasible to perform the adaptations. A migration towards a year 2000 compliant product might be offered to the customer.

4. We are attempting to avoid problems arising internally by means of an exhaustive audit of all our systems and equipment which employ any type of digital processing equipment, ranging from personnel record software to controllers of all kinds of office and factory equipment. From this we are assessing those items that are at risk and are implementing Action Plans to remove, avoid, or disprove each such risk.

5. We expect the preparation and initiation of such Plans to have been completed by the end of this calendar year, which is why no reliable estimation of the potential costs or risks is currently available. In spite of this we feel that some problems are likely to arise at the millennium change, but not on such a scale as to have severely damaging consequences to our operations.

6. Within our Company and the GEC Alsthom Group on a whole, we believe the need to assess the scale of the potential problem is now widely understood. We also well appreciate that as the assessment proceeds and understanding of all the implications increases, the extent of systems potentially at risk expands. It is therefore critical that all UK organisations should be aware of the need to initiate a serious assessment of potential problems. We cannot judge if the Government has done enough to ensure this amongst smaller companies, who may not have our benefits of our computer-aware staff and customers. That it should do so is in our view of the first importance.

2 December 1997

APPENDIX 28

Memorandum submitted by PA Consulting Group

1. Introduction

1.1 *PA Consulting Group's experience with the Millennium Bug Problem*

PA Consulting Group is, and has consistently been, at the leading edge of providing innovative solutions to the Millennium Bug challenge. Our project management and technical skills are currently being used by a wide range of clients globally, to deliver successful Millennium programmes.

1.2 *Millennium Bomb global survey*

PA has consolidated an in-depth understanding of the Millennium Bomb Problem from working with a wide variety of organisations and also through conducting a series of surveys. Most recently we surveyed approximately 1000 public and private sector organisations world wide to gain a comprehensive picture of awareness levels and progress towards compliance (a copy of our report, "Defusing the Millennium Bomb", is attached). It is essential to assess how other countries are handling the Millennium problem compared with the UK as this could have profound effects on our economy as a whole.

2. In PA's view, What is the Extent of the Millennium Bomb Problem?

2.1 *The Millennium bomb is not being taken seriously enough*

Within PA's Millennium client organisations, we have discovered that the majority of software and embedded systems are exposed to the Millennium Problem in some form or another. PA Consulting Group has repeatedly found that companies tend to underestimate both the amount of software they use and the extent of their exposure to the problem.

2.2 *The Millennium bomb has the potential to put an organisation out of business*

The Millennium Bomb is a deceptively simple problem but this does not lessen its potential for damaging effects on an organisation.

3. How Effective is Current Action that UK Businesses and Other Organisations are Taking to Avert any Potential Problems?

3.1 *Millennium programmes must gain momentum*

PA's international survey revealed that since our previous survey in February 1997, there has been a significant increase in the number of companies who have completed an audit, from 9 per cent to 39 per cent. This is a considerable increase over a six month period, but leaves 61 per cent of responding UK organisations who have not yet completed an audit. It is PA's view that many of these organisations are now seriously at risk of not achieving Millennium compliance.

3.2 *In most organisations progress has been made towards Millennium compliance, but there is still much to do*

Most larger organisations have made some progress towards achieving compliance, our survey shows. However, very few are as advanced as we would expect, given the complexities involved and the scale of investment required. If business continuity is to be maintained *it is essential that organisations urgently focus on action plans to address their business critical systems, time is running short.*

3.3 *Small businesses are lagging behind larger organisations*

One disturbing aspect which our survey highlighted, is the lack of activity in Small/Medium sized Enterprises (SMEs). Respondents from smaller organisations showed lower levels of awareness and commitment. This is further supported by survey findings that suggested only 37 per cent had a formal Millennium programme in place to address the problem compared with as many as 80 per cent of larger companies. Clearly, this is a serious issue in a business group that may have few permanent IT resources. Help may be necessary to enable SMEs to reach compliant status.

4. How Effective has the Government Been in Raising Awareness and Encouraging Action to Avert Problems Associated with the Date Change Issue? What More Could be Done?

4.1 *Taskforce 2000*

The increase in awareness levels reflected by the "Millennium Bomb" survey highlights the success of Taskforce 2000. Taskforce 2000 was very effective in bringing the Millennium Bomb problem to the attention of all those who were willing to listen. This initiative was strongly supported by private sector effort and resources. The Government has a responsibility to UK industry in continuing to achieve the objectives set by Taskforce 2000.

4.2 *Tighter controls over organisations by regulators*

The interdependencies between organisations throughout industry indicate that the Government should endorse all industry regulators to apply pressure on organisations, ensuring that British industry survives the Millennium. Even those organisations who address the Millennium problem are vulnerable due to lack of control over other organisation's Millennium compliance standards.

4.3 *The Hong Kong Monetary Authority as an example*

Probably the most dynamic example of market regulators becoming involved has been in Hong Kong. The Hong Kong Monetary Authority (HKMA) have insisted that every bank and financial institution under their care must have a Year 2000 programme in place by the end of June 1997. The banks in Hong Kong are working hard to ensure that the Year 2000 arrives with minimum impact to their businesses.

4.4 *Introduction of the Euro unnecessarily increases costs and risks*

Planning to delay EMU for the United Kingdom until 2002 eases the strain on business. However this promise, in the interest of British industry, is simply not enough. If the EC plans to introduce the Euro before or shortly into the new millennium, many companies in the UK will still have to address the EMU issue to avoid being left behind by their European competitors. This puts IT resource under tremendous pressure. It is therefore the responsibility of the UK Government to actively encourage the EC to ensure that these aspects are fully taken into account in deciding the timing for introduction of the Euro.

5. What are the Major Constraints Militating Against Progress being made Towards Identifying and Applying Solutions to Prevent Computer System and Software Failures at the Millennium?

5.1 *Misleading awareness levels?*

Our survey findings suggest that although respondents claim to be fully aware of the Millennium Bomb issue, this may only be founded on a superficial knowledge of the problem. While 87 per cent of respondents claimed to be fully aware of the Millennium Problem's impact, only 39 per cent of UK organisations had completed an Audit of systems, etc which are affected. Over half of all respondents had not, or had not planned to, include embedded systems in the scope of their audit.

5.2 *Lack of resources is causing rapid increases in costs and risks*

PA's global survey shows that 44 per cent of all resource used is expected to be supplied by external organisations. A rising demand for specific skills (eg COBOL Programmers, Project Management, IT Consultancy) is likely to substantially increase costs. Research by the CSSA shows that wage inflation in the sector is between two and four times the average. The association warns "this will inevitably lead to rises in the costs and risks of IT projects". Many respondent organisations could not accurately estimate the potential impact of the Millennium Bomb on their business, in particular the total cost of fixing the Millennium problem.

5.3 *Millennium programmes should be business driven*

In many organisations the Millennium problem has presented a large and complex challenge. This has generally been directed straight to the IT department who may have never dealt with such a unique problem before. PA's international survey results show that only 55 per cent of Senior Managers are fully aware of the Millennium issue. This is extremely discouraging as it suggests that senior management are ignoring risks which can potentially cause serious damage to the whole business.

The Millenium Bomb should not be perceived as being purely the IT department's responsibility. Senior management commitment is vital if risk to the business is to be minimised. IT staff must tackle the low senior management awareness to get their Millennium programmes into action with full business backing before it is too late. PA recommend that organisations include a progress statement in their annual reports in order to demonstrate to their shareholders that they are taking the Millennium Bomb problem seriously.

5.4 *The complex scale of the Millennium bomb problem*

Potential obstacles in tackling the Millennium Problem are a lack of understanding the total scope of the problem and the processes required to solve it. These include tracing each supply chain and identifying all external interfaces. This can still be a laborious process even if external organisations choose to co-operate. Many suppliers are concentrating on becoming Millennium compliant themselves and neglecting, or openly ignoring, their customers and suppliers.

5.5 *IT Project management problems*

IT departments are infamous for budget and schedule overruns. A recent survey conducted by PA's Pugh-Roberts Associates, Cambridge, Massachusetts, noted that half of development projects fail to meet their cost and schedule targets. This emphasises how important it is for organisations to have a formal programme plan in place, particularly considering the ultimately immovable deadline of any Millennium project. PA's Millennium Bomb survey suggested that, on average, as many as 40 per cent of organisations are not running a formal programme plan. There wil be an increasing need for many more skilled IT programme managers.

5.6 *The deadline cannot be delayed if companies are not ready*

There is now an extremely short period of time remaining before the Year 2000. According to our survey findings 61 per cent of respondents estimated that they would be impacted before 2000, or already have been impacted, however nearly all Millennium programmes are scheduled to be completed by the end of 1998. It is crucial for organisations to tackle the problem effectively BUT some compromises may be necessary to finish before the organisation is impacted.

3 December 1997

APPENDIX 29

Memorandum submitted by UK Year 2000 Interest Group

1. INTRODUCTION

1.1 The UK Year 2000 Interest Group was formed in April 1996 as a non profit making organisation and has subsequently established itself as a central player in the UK Year 2000 community. It is constituted as a self help group with the primary aim of exchanging information between members to assist them to tackle the Millennium problem. The membership is made up from a broad range of companies and organisations spread across the UK. The Group has held numerous events including two UK Year 2000 Vendor clinics. It has held workshops looking at testing, embedded systems (including separate sessions for manufacturing, office systems and utilities) and resourcing issues and has been solely responsible for bringing the utilities sector together to discuss common issues.

1.2 The Year 2000 problem affects individuals, companies and organisations in all countries throughout the world. The scale of the problem is unknown and currently is of uncertain outcome. Without determined action the risk ranges from extremely serious to catastrophic. Even with intensive action throughout the available time left for resolution, the risk ranges from inconvenient at best, to remaining extremely serious at worst.

1.3 The UK Year 2000 Interest Group is not authorised to disclose specific information relating to any one company or organisation. The evidence provided to the inquiry is therefore given in a general context from experience gained over the last two years by practitioners and leading experts in Year 2000 projects.

2. General Response

2.1 It is our opinion that at a component level, the year 2000 problem is relatively simple to understand. However, from the range of where it can be found and the magnitude of occurrence we believe it presents a unique and complex challenge not only to individual companies but the public sector, UK plc and indeed throughout the world. The consequences of our inability to successfully manage the problem could be catastrophic.

2.2 Our experience shows that the longer an organisation has been working on the Year 2000 issue, the more concerned it becomes about its ability to overcome the problem. It is important to recognise that this is not just because the initial assessment is nearly always understated and resolution becomes more complex with knowledge and experience but that the key to resolution lies in the "supplier chain", eg suppliers, customers and partners over whom you may have little or no control. In addition, each supplier, customer and partner has exactly the same problem throughout their own supply chain.

3. Response to Questions

3.1 *What is your estimate of the seriousness of the Millennium bug problem.*

3.1.1 It is clear that we do not know the extent of the problem currently facing the world. Within the UK the three major significant areas of most concern must be:

- Continuity of supply from utilities (both primary and Public Service)
- Continuity of food supply
- Continuity of financial services

3.1.2 As stated earlier, each organisation is part of a National and International supplier chain outside their own control. For example, can a water company provide water if electricity is cut or can a bank function if International telecommunications are broken?

3.1.3 Until the above three areas of significant impact are eliminated from being at risk, the seriousness has to be of the highest possible category. Assuming that these can be dealt with satisfactorily, one must then turn to lower levels of seriousness if failure occurs within Health, Transport, Defence etc.

3.2 *To what extent do you think that UK businesses and other organisations have done, or will have done, enough to avert any potential problems.*

3.2.1 For an organisation to be a member of the UK Year 2000 Interest Group it must, by definition, have already recognised that something needs to be done. Our members are therefore not typical across industry, they include the leaders and pace-setters within their own sectors. (They include High Street Banks, Retailers, Utilities etc). However, even within our own membership, we cannot cite any member who claims that they are already compliant.

3.1.3 We conclude from this lack of evidence of completion, that progress has been too slow. Although awareness of the Year 2000 problem has significantly increased over the last year, we see no indication that the pace of progress is yet fast enough.

3.3 *Do you think that the government has done enough to raise awareness of the problems associated with the date change or to encourage action to avert problems? What more should be done?*

3.3.1 Apart from Taskforce 2000, we have been unaware of any other Government sponsored initiative, until the recent announcement of Action 2000. Taskforce 2000 appears to have had modest funding but despite this has significantly raised awareness at boardroom level in the major companies. Throughout UK plc awareness has dramatically improved in the last year, but action and resolution still seems to be low.

3.3.2 One of the major inhibitors to progress is that organisations are reluctant to talk publicly of their own Year 2000 problems. This appears to be for two main reasons. Firstly they are concerned about their own share price and secondly for competitive advantage.

3.3.3 Opinion from our members is that the Year 2000 problem is still, incorrectly perceived to be an IT industry issue. The organisations most advanced within Year 2000 programmes now recognise that their business is at risk if suppliers, customers and partners fail to resolve their own Millennium issues.

3.3.4 Evidence is emerging that the identification and resolution of Year 2000 problems in the embedded chip area may be bigger than anticipated. Information about the problem, scope and resolution is urgently needed.

3.3.5 Strong leadership is required if we are to resolve the National and International issues. Action 2000 may become the conduit for Government action. However, it is crucial that whatever group takes on

responsibility for mobilising UK plc, it must provide strong leadership and does not just become a talking shop. Each week of delaying action is 1 per cent off the time remaining.

3.3.6 Contingency and business continuity plans need to be developed to cover failure of services.

3.4 *What if any are the major contraints militating against progress being made towards identifying and applying solutions to prevent computer systems and software failures at the millennium?*

3.4.1 Adequate awareness has not yet been achieved and the views that "Someone else will solve the problem for me" or "It's all hype" and "It's an IT problem" are still frequently quoted. Advice to all companies to ensure awareness and advice on how to tackle the problem needs to be issued.

3.4.2 Regulators need to be insisting on Year 2000 action plans.

3.4.3 Year 2000 needs to be clearly stated as the number one issue. Other "mandatory" work must take a lower priority and should only continue when the Year 2000 problem is known to be under control. Political issues must not be allowed to get in the way.

1 December 1997

APPENDIX 30

Memorandum submitted by The National Computing Centre (NCC)

Prepared by Dr John Perkins, Director for Membership

1. NCC is an independent IT Services Group which was founded in 1966. It provides products and services to clients internationally, aimed to reduce business risk in the use and supply of information systems and technology.

2. NCC has been offering guidance and services relating to the millennium date change problem since the beginning of 1995. It has built up a significant knowledge base which it uses to further develop practical steps to help its members and clients ensure their business continuity through the millennium transition.

3. The millennium problem is an issue of risk assessment and planning for business continuity. It is not a technical issue. It is unique for three core reasons: the date of the change is immutable, every person and enterprise is involved, we are all connected to computer systems which are all connected one to another.

4. The problem and its possible extent are well documented and that documentation is growing all the time. We are not short of words or descriptions. We are short of sensible, practical ways in which enterprises, particularly smaller enterprises, can assess risk and develop and resource action plans to deal with it.

5. NCC has developed a service called Escrow 2000, for example, which offers a very practical way in which enterprises can contain their risk in the event that software fails to handle the millennium date change. We are also developing, with DTI support, a business assurance scheme for SME's which will allow them to rapidly assess their exposure to the problem and suggest appropriate action. This will be delivered through Business Links and promoted through other intermediaries. These are the kinds of measures which are needed if we are to turn awareness into action.

6. Action 2000 is a welcome move on the part of the Government and has the wholehearted support of NCC. However there is more that could be done outside of Action 2000. For example the Government fund a variety of technical, business and educational support programmes which could all be encouraged to contain a Y2K component and Government contracts with TEC's and their sub-contracts with the Business Link Partnerships could be used to encourage positive action in relation to the problem on behalf of SME's. The new Ministerial Committee could examine these and other ideas across the Departmental boundaries.

7. Sharing of good practice within and across industry sectors and between the private and public sector is recognised as an important mechanism for enhanced effectiveness in dealing with the problem. Constraints, whether they be technical, procedural or legal, need to be analysed and removed wherever possible. This is a particular issue where enterprises need information from infrastructure providers to properly assess their own business risk.

8. The Government must recognise that international trading is a major component of the problem and therefore its European and global dimensions must not be overlooked.

9. The voluntary sector must not be allowed to fall between the stools of public and private sectors. For example, the Lifeboat service is essential to safety at sea but is a voluntary organisation with restricted if well focused resources.

10. AIDA is a well known acronym within the advertising business used to describe the purchasing process. The letters stand for awareness, interest, desire and action. In communicating effectively the two middle letters should not be overlooked. The wider business community is not yet passionately interested in this issue. Awareness is not at issue, passionate interest certainly is.

11. No effective channel into the business community should be ignored. For example there are at least 10,000 computer "manufacturers" in the UK, the majority of whom are direct marketers and local retailers of self assembled hardware and systems. Many SME's source their requirements from these suppliers who should be a natural target for communication but one which it is easy to overlook.

12. In planning beyond the millennium date change lessons must be learned. The complete transparency of most IT systems to the user is a benefit and a threat. It leads to greater business focus but also to a lack of understanding about risk and dependency and a gulf between the business professional and the professional who enables the systems upon which the enterprise ultimately depends. The millennium date change is as much a symptom as a problem for the private and the public enterprise.

13. NCC believes that the risks associated with the millennium date change can be reduced to an acceptable level. However to do so will require a combination of vision, commitment and practical support. It will require the shared efforts of the whole business and IT community. The government cannot solve the problem but it can do much through direct action and through facilitation to enable that process. NCC will provide every support it can to those efforts.

2 December 1997

APPENDIX 31

Memorandum submitted by The Sage Group plc

1. Introduction—The Sage Group plc

Sage is the world's leading supplier of PC accounting and payroll computer software for small and medium-sized enterprises (SMEs), with over one million customers worldwide. Sage has over 16 years experience of developing computer software for this market, and is intimate with the business and the technology issues that the Year 2000 issue raises for smaller companies. Sage has been working on the Year 2000 issue for over two years—most recently, Sage, the DTI and Tate Bramald Consultancy conducted the industry's first major research on attitudes to Year 2000 issues and current levels of Year 2000 compliance in the SME sector.

2. Summary of Evidence

Sage believes that the Year 2000 issue will have widespread and potentially damaging effects unless more is done to raise awareness and promote action in the SME community. Much of the industry, media and government focus on Year 2000 has been directed at the UK's largest organisations. SMEs do not have the resources to tackle the issue head-on; they lack understanding of the seriousness of the issue; and too many will wait until it is too late before moving to address the issue. Through Action 2000 the Government should establish a comprehensive advertising campaign, aimed at SMEs, through the small business and vertical market press. This will raise awareness by promoting the issue through SME channels and prompt small businesses to take action.

3. The Nature of the Year 2000 Issue

The Year 2000 issue exists because of computer programming methods in the 1960s and 1970s. During this time, computer memory and computer storage space were at a premium, so computer software companies looked for any way to reduce the requirement for memory and storage space in their applications.

4. One way was to reduce the number of digits used to store dates. Instead of storing a four-digit figure for the "year" part of the date (for example, "1997") the last two digits only were used ("97"). Unfortunately this means that the computer system has no way of knowing whether "97" refers to 1997, 1897, 2097 or any similar date. At that time it seemed unlikely that these computer applications would still be in use in the next Millennium—but many still are. Many still run on mainframe computers in some of the UK's largest private and public sector organisations, and the two-digit date tradition has in many cases perpetuated to the present day.

5. This means PCs can also be affected. Some applications that run on these systems will not be able to cope with the Year 2000 date change. In addition, the hardware BIOS (Built-In Operating System) that controls fundamental aspects of a PC's operation—including date and time in the system clock—may not recognise the Year 2000 date change.

6. Embedded systems can also be affected. Any tool, appliance or system that uses microprocessors to process date information may not be able to cope with dates in the next Millennium—from faxes and telephones to video recorders and lifts. PC peripherals may also be at risk. Some, such as printers and plotters, contain their own processing logic and computer memory and will need to be checked for Year 2000 compliance. Most will contain embedded systems.

7. The Magnitude of the Year 2000 Issue

Because ability to manage the Year 2000 date change differs from computer system to computer system, it is difficult to establish the exact magnitude of the issue. However, since most organisations rely on computers to control at least some of their day-to-day functions, and since many of these will be safety-critical or business-critical functions, the Year 2000 issue must be treated as an extremely serious problem indeed.

8. In business, computers are used to automate and simplify complex and routine processes for greater efficiency. But this efficiency depends upon the inherent reliability of computer systems. When this reliability is called into doubt—as it will be for computer systems that have not been checked for Year 2000 compliance—these benefits will be lost.

9. And, because the effects of non-compliance will also be varied, it is impossible to predict exactly what will happen when a non-compliant computer system is switched on in January 2000. Possible effects include: computer systems resetting to the date of manufacture; systems crashing with possible loss of data; systems assuming that the date is 1 January 1900, or any other incorrect date; or incorrect calculation of date-dependent transactions. In business computer software this could translate into incorrect calculation of payroll, tax details, purchase orders, invoices, stock recalls, or any other time-independent process.

10. The Implications of the Year 2000 Issue

The uncertainty over Year 2000 compliance in different computer systems means that all systems should be checked to be certain that business processes will continue to function in the next Millennium. For large organisations this is likely to be expensive and time-consuming, as there will be many mainframe, midrange and personal computers that will need checking. But large organisations have the financial resources, and often the in-house expertise, to address the issue effectively. There has also been a great deal of industry, government and media interest in the effects of the Year 2000 on large organisations. For many of these organisations Year 2000 is well understood and for them it is now a question of allocating budget and time to the issue.

11. For smaller companies the issue is more pressing. SMEs typically do not have the internal resources to tackle the issue themselves, and many are still unaware of the real seriousness of the Year 2000 issue. This was shown by the Sage/DTI study into the effects of the Year 2000 issue on smaller businesses, which looked at awareness of Year 2000 issues and preparedness among SMEs in all industries. Although 97 per cent of the small businesses surveyed said they understood the Year 2000 issue, more than half planned to wait until 1999 before allocating any budget to it.

12. This is far too late for two key reasons. Firstly, these companies will begin to notice the effects of the Year 2000 issue on their computer software towards the end of 1998, when their accounting, stocks and other systems begin to process transactions that involve dates in the next Millennium. Direct debits, standing orders, stock returns and many other processes will be affected. Secondly, by 1999 the IT industry will be low on the skilled resources necessary to conduct Year 2000 auditing and fixing for such a large percentage of UK industry. This effect is noticeable now. The bottom line is that SMEs that wait until 1999 risk starting the Year 2000 without their business-critical systems.

13. What is Sage's Estimate of the Seriousness of the Millennium Bug Problem?

It is important to separate the impact of the Year 2000 issue on UK industry as a whole from the impact it will have on individual businesses. For a typical SME, the process of auditing and fixing computer systems will be manageable and short-lived. But if today's state of unpreparedness continues into 1999, the cumulative effect on industry will be much more serious. Something like 90 per cent of UK companies fall into the SME bracket—a huge number of companies running PCs and peripherals, telephone systems, fax machines, photocopies and any number of appliances that depend on embedded systems. While the effects of the Year 2000 issue on a single business may only require a few weeks' work to remedy, collectively the failure of many systems in the new Millennium will place a huge strain on the resources of the IT industry and may adversely affect the economy.

14. The Effectiveness of Action Which has Already Been Taken to Avert Problems in Government, Large Corporations and Small Businesses

Although awareness of the Year 2000 issue has been raised by the IT industry, the media and the Government's Taskforce 2000 initiative, it is clear that these campaigns have overlooked a large proportion of the SME community. The Sage/DTI study showed that, although most SMEs said they understood the issue, many plan to leave it too late to do anyting about it. Overall, only 13 per cent of the organisations surveyed had Year 2000 compliant systems. And 45 per cent had yet to undertake a "systems audit" to establish exactly which computer systems need fixing.

15. Year 2000 compliance varies temendously by industry sector. Sage found that a high percentage of companies in the motor trades had already undertaken systems audits, and that this sector was best prepared

for the Year 2000 overall. In contrast, the government, education and health sectors were worst prepared for Year 2000, with nearly three-quarters of companies surveyed planning to wait until 1999 before allocating budget to the issue.

16. The Role of Government in Raising Awareness of the Potential Problems and in Seeking Solutions and the Respective Roles of Taskforce 2000 and the Recently Launched Action 2000

While Sage feels that Taskforce 2000 was extremely effective at raising the profile of the Year 2000 issue, the lack of information and action in the SME community is worrying. Typically, smaller companies are not sources of IT expertise. They are more concerned with day-to-day issues, such as paying next week's wage bill, than with keeping up-to-date on the latest IT news. This means that much of the current Government focus on Year 2000—which is aimed at larger companies, chiefly through the national and corporate IT press—will do little to improve the situation in the SME sector.

17. And, while Sage welcomes the introduction of Action 2000 it is disappointing to see that the Chairman is only able to devote one day per week to maintaining the momentum of the Government's Year 2000 initiative. More is needed to support the SME sector. Sage welcomes the introduction of Millennium Week to raise the profile of the issue, but strongly believes that a well-planned Action 2000 advertising campaign is needed to attract the attention of the UK's small companies. From extensive market research into the SME market Sage we know that SMEs tend to read vertical market publications that are relevant to their businesses. By targeting small business and vertical market publications, and by giving comprehensive information on the Year 2000 issue, the legal situation, how to approach suppliers, and industry-specific areas for concern, this campaign would raise awareness for the SME sector and prompt smaller companies to take action.

18. Developing Contingency Plans in the Event of System and Program Failures

At Sage we recognise that, in spite of our best efforts, some SMEs will not address the Year 2000 in time for the next Millennium. We are in the process of preparing contingency plans for this situation, but it is crucial to realise that the success of these plans will be affected by the preparation that other suppliers have made for the Year 2000. For example, although Sage software will be compliant, businesses will still face difficulties if other areas of their IT systems are not.

Without a total, universal commitment from industry and Government it will be impossible to ensure any level of security for business-critical systems in January 2000.

3 December 1997

APPENDIX 32

Memorandum submitted by SmithKline Beecham plc

SmithKline Beecham plc (SB) is one of the world's leading healthcare companies. We discover, develop, manufacture and market pharmaceuticals, vaccines, over-the-counter (OTC) medicines and health-related consumer products. We also provide healthcare services including clinical laboratory testing, disease management and pharmaceutical benefit management. SB is the UK's second largest pharmaceutical company by sales and is sixth in the FT's ranking of the country's largest companies by market capitalisation. We employ approximately 8,300 people in the UK out of a total of 53,000 worldwide. The company has operations in 160 countries.

SmithKline Beecham was one of the leaders in recognising the magnitude of the Year 2000 computer date change problem. Our experience of tackling this unprecedented problem in a global distributed computing environment perhaps means that we are better placed than many to judge the scale of the threat and the best way to avoid business disruption.

As the following evidence demonstrates, SB's experience shows that:

- The Year 2000 is a serious threat to business continuity. Assuring the viability of business critical systems must be a top priority for all organisations in the public as well as the private sector.
- The threat posed by non-compliant suppliers, customers and business partners is crucial. All organisations must work with key third parties to minimise the potential for disruption.
- The Year 2000 problem is complex. There is no quick fix.

Our responses to the specific questions posed are as follows:

1. *What estimation has your organisation made of the seriousness of the millennium bug problem to your organisation?*

Left unaddressed, the Year 2000 problem would arguably have been the biggest threat to business continuity that SmithKline Beecham has ever faced. As a global research-based company operating in complex and fast-moving healthcare markets, SB cannot compete effectively if it is unable to create, analyze, communicate and share accurate, timely and reliable information. Information is not only the nervous system of our business organisation, it is also in a very real sense a critical ingredient to our products. In some of our businesses, in fact, information is our product. Disruption resulting from Year 2000 related system failures would have significant negative impact on these abilities and could, if unchecked for a significant period of time, inflict serious damage to the business. However, because SB has been aggressively addressing Year 2000 issues for several years, we do not anticipate significant negative impact or serious damage to our business from international systems disruptions.

When we began to look at the problem in 1995 we quickly recognised not only the seriousness of the threat, but also the scale of the challenge that faced us as a global organisation. The Year 2000 problem potentially affects every form of digital technology in every part of the business, in every corner of the globe and is not isolated to any particular type of computer system or programming language.

The seriousness with which we take this issue is demonstrated by two facts:

- By direction of our Chief Executive, the Year 2000 corrective action programme is the top priority for SB Information Resources (SB's information technology function) after servicing the critical day-to-day operational information needs of the business.
- Fixing the Year 2000 problem will require an increase in Information Resources budgets of around 15 per cent over the three-year period from 1997 to 1999 incrementally in addition to the reprioritising of approximately 10 per cent of our baseline resources. Additional resources in the year 2000 will undoubtedly also be required to cope with shocks experienced by our upstream and downstream business partners.

2. *What steps have been taken, and when, to avert problems in computer systems and software at the millennium? How much work remains to be done to ensure a smooth transition from 1999 to 2000? How confident is your organisation that it will encounter no problems at the millennium resulting from the inability of computer systems to handle the date change?*

SB began to investigate the scope of the problem in 1995. We established and staffed a dedicated Year 2000 Project Office in early 1996 and appointed Year 2000 coordinators throughout many of our business units shortly thereafter. Our Year 2000 programme is composed of four phases derived from a methodology developed by IBM *(Diagram 1)* which we have significantly extended to deal with specific requirements in our highly regulated research and manufacturing processes.

The first 12 months of our Year 2000 Project focused on creating awareness throughout the company and completing Phase I, the "Assessment and Strategy" phase.

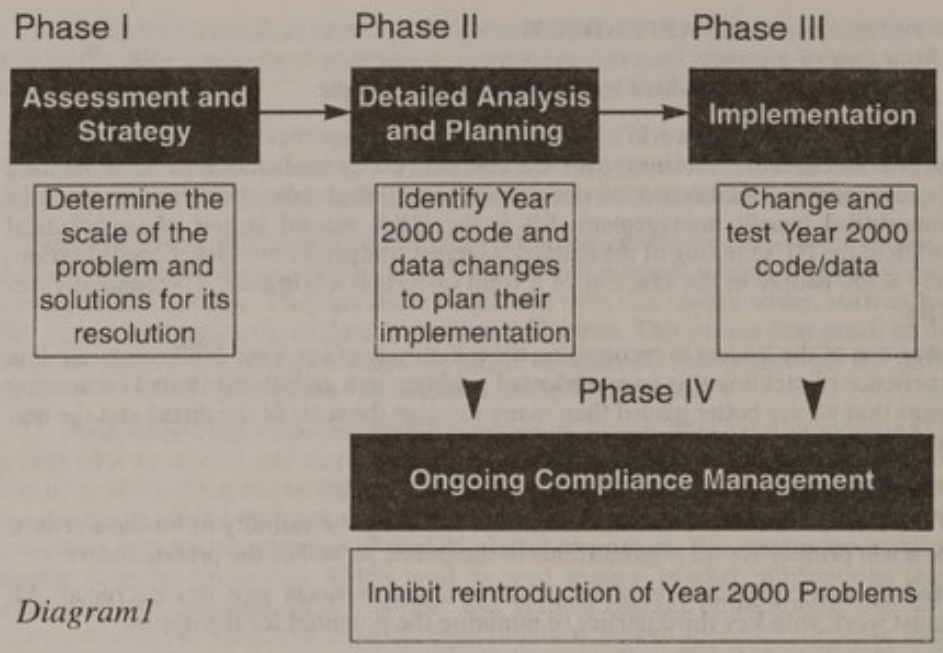


Diagram1

SmithKline Beecham's 130 Information Resource departments, located in 89 countries, completed Phase I for all of our operations in June 1997. Among the key tasks were:

- Completing a global inventory of SB information systems applications and technology environment.
- Creating vendor compliance standards to be used to track and evaluate the progress of our information system technology suppliers.
- Prioritising applications and creating "partitions" of groups of applications which must be managed as a unit because of high levels of information interdependency.
- Developing remediation methods and testing capabilities.
- Performing early pilots on our key technology platforms to identify the special problems each inevitably entails and evaluate the use of automated tools.
- Developing a methodology for the implementation phase for each SB computing environment.

Year 2000 teams across the company are now working on Phases II and III. These next steps require that changes to critical systems be identified before remedial and testing plans are implemented. Phase IV is underway in parallel with these steps and is designed to prevent the reintroduction of Year 2000 problems to systems or technology platforms once they are initially cleansed.

SB current plans call for the completion of Phase II and III for all critical systems by the end of 1998, reserving 1999 and 2000 for final clean up and contingency management. While we recognise that these plans are aggressive, the programme is proceeding rapidly although rates of progress do vary depending on country, business unit and the technology challenges being addressed. Our programme extends to cover all forms of digitally controlled equipment such as factory process control, laboratory instrumentation and facilities environment operation.

No one in SB underestimates the scale of the task. Over 300 person years of effort has been expended since 1997 but a huge amount of work remains which must be completed in the next two years. Notwithstanding the scale of the challenge, because of the commitment of our executives, managers and professional associates top to bottom within our company, we are confident that all internal business critical systems will be compliant before the end of 1999 and that disruption to our systems will not be significant.

3. *What, if any, are the major constraints on your organisation which may hinder work on averting computer system and software failures at the millennium?*

SmithKline Beecham is confident that its business-critical systems will continue to operate before, during and after the turn of the millennium. There are, however, some challenges that are inherent in the Year 2000 problem, especially for those organisations, like SB, which operate distributed computing environments and have sophisticated electronic links with customers, suppliers and other key third parties.

From the beginning, SB adopted a co-ordinated global approach which promotes the use of best practice and eliminates duplication wherever possible. Ultimately however, fixing and testing systems calls for hands-on skills and especially extremely effective project management. Such skills are in increasingly short supply in many parts of the world (especially in the UK and the US but now increasingly in other markets as well).

As a result, we pay particularly close attention to the needs of our technical staff, both in terms of competitive financial compensation as well as long-term career development.

Another technical consideration that makes the Year 2000 issue a labour-intensive task is the need to treat all systems as suspect unless and until proven otherwise. To date, our testing has revealed that many systems will have date problems unless remedial action removes and corrects the source causes. In fact, to our dismay, many third-party software packages have produced date errors when subject to validation challenge tests, despite vendors' claims of compliance. We regard these results as justification of our rigorous, although expensive, approach to evaluation and testing. When it comes to the Year 2000, it is clear that the best advice is to "trust no one and test everything".

Arguably the biggest threat to our company comes from non-compliant suppliers, customers and other business partners. In addition, the technical challenges and stress on the available supply of technically skilled personnel posed by the superposition of the Year 2000 with the early phases of introduction of the European Monetary Union should not be underestimated.

4. *Has your organisation developed contingency plans should computer systems fail at the millennium? What would be the consequences of such a computer failure for your organisation? Whom would you hold to be responsible?*

SB's aggressive global Year 2000 plans are designed to ensure that our business-critical computer systems avoid disruption before, at and after the millennium. We are tracking our progress monthly on an all points basis across the globe. If critical milestones are missed, resources will be marshalled and contingency plans will be implemented as second lines of defence. As stated above, probably the biggest threat comes from the ripple effect of non-compliant suppliers, customers and business partners all incurring business disruptions of various degrees of severity simultaneously. Significant system failures within these organisations could leave SB without critical raw materials, access to customers or other necessary services supplied to us by outside parties whether or not these organisations are linked to us electronically. Because of the phenomenal information intensivity of modern day pharmaceutical research and manufacture, such problems could also slow or halt the development of new products.

To address this threat we have initiated a global evaluation process designed to identify the Year 2000 status of our important partners. We are also developing contingency plans to ensure business continuity and are prepared to take measures such as stock piling of key raw materials or qualification of back up suppliers, where prudent.

Should disruptions occur we intend to use every remedy of law available to us, although we are much more interested in correcting and eliminating the risk beforehand, rather than attempting to ascertain blame and apportion damages after the fact.

5. *Do you think that the Government has done enough to raise awareness of the potential problems that may be caused by the millennium bug? Has it done enough to help field solutions to the problem? What more should be done?*

Ultimately, each organisation must be responsible for correcting its own systems.

This being said, the pivotal role of Government cannot be ignored. The previous UK Government gave little leadership on this issue. We hope the new Government will play an important part in galvanising private sector companies as well as public bodies into action. A more aggressive monitoring of Year 2000 action programmes of government departments and agencies, for example, may well encourage other organisations to treat the issue with the seriousness it warrants.

In terms of its own systems, portions of the UK Government (as is the case with the US Federal and State governments) have apparently failed to make adequate remedial plans. We are concerned that significant disruption will result because, even if the political will now exists, time is running out.

There is no time left for debate, only action.

1 December 1997

APPENDIX 33

Memorandum submitted by Coopers & Lybrand

1. INTRODUCTION

101. Coopers & Lybrand is a world wide based organisation which provides professional services including accounting and auditing, tax, management consulting and risk management. We were one of the first major professional firms to address the turn of the century date issue, setting up a specialised Year 2000 team to provide support to our customers in the management of the Year 2000 programme. In order to achieve that, Coopers & Lybrand has developed a structured but flexible approach specifically designed to address Year

2000 issues, based on our existing proven methodologies for managing large programmes. In addition we have initiated a major internal programme to ensure the Year 2000 compliance of our own systems.

102. In summary, Coopers & Lybrand is very concerned about the risks associated with the Year 2000 and the effectiveness of action which has already been taken, as well as the level of readiness and compliance of the systems. We are actively participating and working with different Y2K Interest Groups but with the time remaining there are still many organisations that have not yet started, especially small businesses. These are a significant concern. Of the organisations which have started, the majority should be able to inventory their systems and concentrate their efforts on fixing the critical ones. The Government's activities, although well intentioned, have not been enough in terms of raising awareness and providing adequate funds.

2. Response to the Issues

201. This section sets out our responses to the specific questions raised in your letter of 3 November. Coopers & Lybrand believe that there is a very real risk associated with the inability to manage the date change in personal and mainframe computers, embedded systems and software, especially where such computers are performing safety critical operations. The risks include:

- Process control failures, which could result in the stoppage of the process, safety implications or unexpected results.
- Utilities failures, generating health and security risks.
- Computer applications that use the date for computations, comparisons and sorting, producing incorrect results or failures due to invalid data.
- Events being triggered out of sequence (eg security, backup/recovery, . . .).
- Heating, ventilating, alarms and other embedded systems failures that could end in safety problems in either business or non-business buildings.
- Financial systems calculating taxes or payments on a long term basis producing wrong results and other inconveniences that could end in court.
- Financial institutions losing loans outstanding to organisations that may not survive.

202. The "millennium bug" problem is a challenge without precedent. It is based in technology but ultimately is a business management problem that must be addressed. There are many things which a large company needs to do in order to complete a successful Year 2000 programme, including:

- setting up a programme team with an appropriate structure for that specific organisation;
- developing a communication programme to engage the total organisation in understanding and dealing with the problem; and
- developing plans that not only deal with the technical challenges (hardware, software, embedded systems, etc) but cover funding and the organisation's cultural issues.

Internal politics cannot be allowed to get in the way of completion of the work, since the deadline is not negotiable.

203. Two misconceptions about the Year 2000 problem should also be considered. The first is that the problem will be encountered at midnight on 31 December 1999: although this is largely true for computer equipment and embedded systems a high proportion of the application software on which businesses depend is used in some way to forecast future activity. This means that systems will start to fail well before the end of 1999, and possibly before the end of 1998 (some have already done so!). Consequently the time available in which to address the problem is considerably less than may be believed.

204. The second misconception is that systems failures will be highly visible and easily identified. Again, this is true of many systems and likely failures, but there is an insidious danger that systems may appear to work correctly but will produce incorrect information on which key business decisions will be taken. This "invisible" failure may not be detected until well after the system has become unreliable.

205. In discussing the effectiveness of action which has already been taken to avert the problems we would stress that although most large companies have started to evaluate the problem, few have reached the correction and test stage. Their plans and schedules show that, with the time remaining before the millenium roll-over and bearing in mind that several of the systems already have been or will be affected before the Year 2000, most of these companies will not complete their programmes in time. Typically they will only manage to inventory and fix the most critical systems.

206. A recent Coopers & Lybrand study of over three hundred UK based organisations with a turnover in excess of £100 million, across a number of market sectors, has shown that the information systems in over half of the organisations are not yet fully compliant. However, for the high proportion still in the process of correcting systems, "they soon will be".

207. Additionally, we would add that experience has shown that an individual's viewpoint concerning the Year 2000 problems moves through several stages: *naiveté, denial, panic and realisation*. The last stage occurs when people recognise that changes are not impossible. For that reason, it is important that the whole

organisation is aware of the problem. Those organisations that have already been through this process show they are in a better position to achieve compliance.

208. One limitation on the action possible by most organisations is the dependency on third parties to provide compliant software. There are many examples of repeated delays in the provision of compliant software: customers may have little or no leverage with which to compel suppliers to deliver. Should software suppliers cease trading without providing compliant software, their customers will be in a difficult position with very little time left to effect a solution.

209. Taskforce 2000 has done an excellent job in raising awareness in large organisations, but could have been far more effective if proper funding had been available. Coopers & Lybrand have been very supportive of any initiative which would not only arise awareness but also persuade organisations to start the programme of work to resolve the problem, playing an active role in the DTI road shows.

210. Coopers & Lybrand also participate actively in the UK Y2K Interest Group, hosting and leading many Work Group meetings. Topics for such meetings have included IT Testing Strategy, Embedded Systems, Resourcing and Contingency Planning. Currently one of our consultants chairs the Utility Group, a sub-group of the Interest Group and, in this capacity, recently attended an Action 2000 meeting.

211. Action 2000 is a somewhat belated, but welcome initiative by the Government to try to ensure the correct steps are being taken in the private sector to ensure compliance. However, there is now very little time left to start new ventures of this kind, and Action 2000 will need to be seen to be taking action very quickly, rather than just talking about it, if it is to carry any credibility in the marketplace. We have already had feedback from some clients that too long a gap has developed between the announcement of the initiative and anything actually happening.

212. It is rumoured that Taskforce 2000 is to be wound down and that Robin Guernier will no longer be playing an active role. This would not, in our opinion, be a constructive move; Robin's name is well known in the marketplace and we are sure could be used to great effect if the Taskforce were to be given a remit (and funds) to broaden its strategies from awareness to include other issues.

213. One of the major problems with any initiative is the lack of co-ordination between all the different groups working to try to resolve the problem in the various market sectors. For some businesses whose operations span several sectors there is a real problem in trying to attend the various meetings and keep the programme running at the same time. We have often heard the view expressed that it would be very easy to become "professional conference-goers".

214. We are aware that Action 2000 is currently trying to look at the various initiatives that are taking place, and indeed starting some new ones of their own. We feel that a truly valuable action would be to identify all the different User/Interest Groups for each market sector and to initiate the co-ordination of such groups so each topic "belongs" to a single group. If this is not possible, then at the very least the activities of each group should be identified and published so that the differences and similarities between them are clearly understood.

215. We believe that the Government should be taking more co-ordinated and direct action to ensure that the Year 2000 does not impact the UK's infrastructure—its utilities, communications, transport and healthcare—or that contingency plans are established (and published) to address any possible impact. Individual organisations may be able to ensure the Year 2000 compliance of their own systems but will still be severely damaged if there is no electricity to run their computers and buildings, no communications or if staff are unable to attend due to transport failures.

216. There are a number of issues which are constraining the progress being made on the Year 2000 problem. These constraints, discussed below, include:

- lack of funds and/or suitable resources;
- insufficient priority given to the problem; and
- lack of testing capability.

217. For many organisations the cost of addressing the Year 2000 problem represents a major constraint. No budget requirement has previously been identified and the work provides no perceived benefit in terms of business gain.

218. Resources are also an issue. There is a widely-reported shortage of technical resources such as programmers: perhaps more damaging, if less widely understood, is the lack of project management skills required to manage the Year 2000 work programme.

219. Many organisations are guilty of giving insufficient priority to the Year 2000 problem. There are many business initiatives which offer greater perceived benefits, particularly where the Year 2000 is seen as a primarily technical problem. Other issues such as the proposed Economic and Monetary Union are also distracting attention from this problem.

220. It is generally agreed that the most difficult and time-consuming aspect of Year 2000 compliance is testing. Even systems which are thought to be already compliant will require testing to make certain, while systems which are extensively modified to achieve compliance will need to be exhaustively tested not only for

compliance but to ensure that the modifications have not introduced errors into any part of their functionality.

221. Most organisations are not particularly well equipped to undertake major testing programmes of this nature. There is a general lack of infrastructure to support testing, well-defined processes for planning and executing tests, and staff with specific skills and experience in testing.

3 December 1997

APPENDIX 34

Memorandum submitted by The Electricity Pool of England and Wales

INTRODUCTION

1. This memorandum is in response to the request of 11 November by the Clerk to the Science and Technology Committee to furnish details of The Electricity Pool's Year 2000 activities and progress together with comments on the contribution from Government initiatives.

2. By way of introduction to the Pool and other parties referred to in the response:

(i) The Electricity Pool was created in 1990 in readiness for electricity industry privatisation. It facilitates a competitive bidding process between generators that sets the wholesale price paid for electricity for each half hour period of every day. In addition the Electricity Pool provides the supporting financial settlement processes that calculate suppliers' bills and ensure payment to generators.

(ii) The Electricity Pool's settlement processes have been developing to support the competitive market for supply to consumers—the ability to purchase their energy from a supplier other than their host regional electricity company. This option became available for customers with peak demand exceeding 1MW in 1990 and for more customers with peak demand exceeding 100kW in 1994. Finally, the option is planned to become available for all customers in 1998.

(iii) The trading and governance arrangements under which the Pool operates are defined in a Pooling and Settlement Agreement to which all traders in the Pool are obliged to be signatories, as are other organisations providing some of the key services to the Electricity Pool. These include the Settlement System Administrator, a function presently outsourced to Energy Settlements and Information Services Ltd.

3. This response relates only to the business of the Pool in facilitating and supporting trading between electricity generators and suppliers and does not reflect the status of individual Pool Members' own wider Year 2000 issues.

RESPONSE TO YEAR 2000 ISSUES

3. Addressing Year 2000 issues as raised in the Science and Technology Committee's Terms of Reference:

(i) The Pool's systems are not safety critical, nor could their failure be regarded as instrumental in any cessation of power services. Failure of a Pool system would at worst delay correct calculation and execution of payments from electricity suppliers to generators.

(ii) Actions have been fully effective in identifying problem areas by determining the impact of the millennium change on software components within the direct control of the Pool, in the financing and definition of modifications required to ensure millennium-change compliance within such components and commencement of remedial measures.

(iii) Government initiatives have not been instrumental in either raising awareness or assisting with solution of problems. Contact with Taskforce 2000 to debate solution approaches clarified that its objectives were not to help with solution but only to raise awareness. It is too early to comment on the efficacy of Action 2000.

(iv) It has been a condition of acceptance of any new system in recent years that it be millennium compliant.

(v) Contingency plans for failure in normal functioning of settlement processes are covered by part of the Pooling and Settlement Agreement.

(vi) Compliance costs/liability were not allowed to delay progress with the above, but have already been resolved. As regards consequences of system failure, the Electricity Pool provides a service to the members who comprise it and fund all of its activities, so there are no legal implications in system failure within the Pool.

RESPONSE TO SPECIFIC QUESTIONS RAISED

4. The following responses to the specific questions in the order in which they were raised:

(i) Without appropriate corrective action, it became clear that the Settlement System would fail to function across the millennium-change and that fall-back processes as defined in the Pooling and Settlement Agreement would be required.

(ii) Specific steps have included:

— Formation of an Expert Group to focus on potential millennium change problems.

— High Level, followed by Detailed Impact Analyses on the Settlement System.

— Preparation of the Project Initiation Document by contractor, scheduling all corrective measures to be completed by September 1998.

— Monitoring of progress with this and broader interactions will assure that the Pool's systems will continue to function correctly across the change of millennium.

(iii) Resources scheduled and expected to be available could conceivably become limiting. The Pool is constrained to consideration of assurances from service providers beyond the direct control of the Pool but upon which its Settlement System depends.

(iv) Contingency plans form part of the Pooling & Settlement Agreement between Members which comprise the Pool. The Pool would have to operate these if the computerised support systems were to fail. Energy Settlements & Information Services Ltd has agreed to take responsibility for all necessary corrective measures.

(v) Taskforce 2000 adequately raised widespread awareness of the potential problems from Year 2000 anomalies. Government has not visibly contributed to the solution of the potential problems. Facilitation of Internet publication of experience of applying the range of corrective measures such as windowing, encapsulation etc (at open.gov.uk perhaps) would materially assist in solving the problem. A widespread understanding or at least appreciation of the technological approaches would encourage appropriate response to the real issues and reduce the risk of inappropriate response to any "hype".

CONCLUSION

5. The Electricity Pool is confident that its plans and actions for removing potential anomalies across the change of millennium will reduce any risk of disruption to its settlement processes to the absolute minimum.

4 December 1997

APPENDIX 35

Memorandum submitted by British Airways plc

INTRODUCTION

1. British Airways plc is a significant and long time user of computing equipment throughout its activities, and we have experience in managing the Year 2000 problem in the United Kingdom and abroad.

2. In summary, British Airways believes that the Year 2000 problem is very serious, and is putting a high priority on managing it. We would like to see Government take a more active role in raising public awareness at home and abroad, and promoting the exchange of compliance information between organisations.

What estimation has BA made of the seriousness of the "millennium bug" problem?

3. British Airways considers the Year 2000 problem to be very serious. Without action, it would threaten the smooth operation of the airline, would cause disruption to passengers and consignments of cargo and could result in significant financial losses. The effects of the problem will extend to the air transport industry worldwide.

4. In particular we recognise that this is not purely an issue for our internal computer systems but is a question of ensuring in good time the uninterrupted continuity of our business over the millennium period. We see that all of the organisations we are associated with on a world-wide basis—airports, air traffic control, utilities—must take the problem equally seriously to avoid disruption to the international aviation and its customers.

What steps have been taken . . .?

5. British Airways started a project in its Information Management department in 1995. It has worked successfully with industry and other bodies (The International Air Transport Assocaition (IATA) and the British Standards Institution (BSI)) to help define technical standards that will ease the problem. Since the beginning of 1997, we have specified all new systems to be Year 2000 compliant, and all contracts have included Year 2000 clauses. We have now set internal standards so that all BA systems adopt a common approach to Year 2000 compliance. All applications, software, networks and hardware will be reviewed for compliance to the Year 2000 standard, and we will also review the compliance status of all supplied services. We intend to make any necessary changes within our own control by the end of December 1998.

6. By November 1997, we had completed an inventory of all our information technology (IT) components. Over 85 per cent of these have been assessed in detail, and the correction project planned and scheduled. The remaining assessments will be completed by the end of 1997. Correction work is well under way in many cases.

7. We estimate that we have done about 20 per cent of the work to date, with the bulk of the remaining work occurring between now and December 1998.

8. Earlier this year BA also established a project board representing all departments to deal with the Year 2000 issues from a wider business perspective—embedded chips, suppliers, local systems and processes with particular emphasis on our major business partners with whom we will work closely. The methodology for this project is to compile an inventory of systems, equipment, and suppliers along with a risk assessment. Action plans with timescales will then be developed to ensure continuity of business-critical items, along with contingency plans.

9. Pilot studies are being undertaken to refine this process and there will be quarterly reporting to the audit committee of the Board along with more frequent monitoring by Executive Directors.

10. We are confident that we can reduce the problem level to something that can be handled: It is too early to say whether some level of problem will remain at the time of the millennium.

What are the major constraints . . .?

11. Within the purely IT part of the work, we believe that the major constraint will be our dependence on suppliers of software and services. Our experience so far is that few suppliers are prepared to warrant their products to be compliant, and we will need to take early decisions to substitute one supplier for another. A second constraint will be the complexity of the interrelationships between our many computer systems and also between them and those of our business partners. It will be impossible to carry out complete tests, and we must judge what parts need to be tested.

12. In the wider business context our high degree of dependence on, and interrelations with, major service providers and suppliers will be a major focus of our activities.

Have British Airways developed contingency plans . . .?

13. British Airways has in place business contingency plans which provide for failures of all kinds including failures of computer systems. We intend to develop more specific plans over the next year as we understand more where the greatest threats to our business operation are. The allocation of responsibility would depend on the nature of any failure.

Has the Government done enough to raise awareness/help to find solutions . . .?

14. We believe that the Year 2000 problem will affect almost all aspects of society, with its potential to disrupt utilities, the banking industry, transport and communications. We think that government should do more to raise awareness, especially with smaller companies. It should also emphasise our dependence as a society on machinery that contains computer chips, and work to move the awareness on from obvious computer problems.

15. There may be a role for a transport group under government leadership to co-ordinate efforts with regard to transport infrastructure issues in this country involving interested parties.

16. For an international company operating in all parts of the world we believe there is a particular role for Government to use its influence with other governments and international organisations to ensure that all countries take this problem seriously and take action to deal with critical infrastructure problems which may be identified.

December 1997

APPENDIX 36

Memorandum Submitted by Marks and Spencer

1. Introduction

Marks and Spencer is a leading retailer. It uses computers extensively and is a computer dependent company. The main issues facing Marks and Spencer are computer equipment and applications that are date sensitive, and appliances, not normally regarded as IT that may have embedded chips that may or may not be date sensitive. This extends throughout our supply chain and into the retail operation. The committee should be able to judge from this submission, how Marks and Spencer, as a large organisation, is able to deal with the issues generated by Year 2000, and the progress made to date. We also hope that the committee might be able to use some of the experiences in this submission to help shape government attitude towards the problem and generate appropriate action.

2. Central Computer Systems

Marks & Spencer is dependent upon its central or corporate computer systems, largely written in house. The business is predicated on accuracy in all these systems. The potential threat of disruption to its operation is serious. At worst key systems could stop, causing vital business processes to fail. This is most relevant to our Food business as the processing of Food sales and re-merchandising has very tight timescales. Less acute, date based calculations could become inaccurate giving incorrect stock positions, availability and response to sales. Least disruptive would be programs having cosmetic problems with dates on listings and reports. The potential threat of failure also exists on major pieces of hardware, system software and packages supplied to us by external IT companies. **We are confident that we will be successful in dealing with these issues.**

3. Replacement Systems

The IT Group is organised on business lines. Each area of IT has Project Managers responsible for making all necessary changes to computer systems. They report to a senior manager, who is responsible for progress overall on Year 2000 throughout Marks and Spencer. In some cases the business has capitalised on the need to change. One example is our New Point of Sale system, a major development that is fully Year 2000 compliant, for which completion is planned in October 1999. This enhances the pressure to deliver this system in a timely manner.

4. Progress

It is estimated that we will expend, in total, about 110 man years effort and about £6 million dealing with the problem. All areas have completed the analysis phase for Marks and Spencer programs and some coding is complete. In the next twelve months the remaining coding and all testing is planned. This is a challenging timetable. Until completion of testing in major business areas the company remains confident but cautious about computer problems that might be encountered at the millennium.

5. User Programs

The greatest challenge to continuing sound business is the existence of user written programs, the majority of which are spreadsheets. Many business people within Marks and Spencer believe that the "millennium bug" is an IT problem and that users do not have to concern themselves with it. We must make business people aware that they have a responsibility for their own programs and will offer advice and guidance accordingly.

6. Embedded Systems

There are other pieces of equipment that have chips, referred to as embedded systems. These include lifts, refrigeration units, time lock safes and production control systems. The chips may or may not have date sensitivity. An extensive list of non-computing equipment has been created. Options for dealing with the issues arising from this are currently being investigated. It is not certain that all can be tested. This will put pressure on resources necessary to fix problems when key dates around the new century arrive.

7. Skills Shortage

Skilled computer and software people are in short supply in the IT industry. This will test our ability to retain our staff in a challenging time of system development and re-engineering. The date changes to systems are not in themselves challenging but are an enormous number of them. Shortage of experienced people represents a potential threat to our progress. We cannot further rely on third party development partners as they are indicating their ability to take on more Year 2000 work.

8. Contingency Plans

There can be no specific contingency plans for system failure due to millennium problems. Problems will have to be fixed at the time when they arise. The business has no ability to return to a paper based environment. We must ensure that changes are done accurately and thoroughly tested. The millennium and Christmas 1999 coincide. This will be a peak trading period for us. Any failures will be more acutely felt. This holiday period will be different to a normal end of year and this will affect schedules more than usual. The business has normal contingency plans that are invoked in cases of failure and these would be exercised as appropriate.

9. Government Action

The subject of potential computer failure related to the change of year in 2000 is well publicised. The role of Taskforce 2000 has been effective in generating publicity on the likely results of such failure but has offered little advice on resolution of problems. It is too early to comment on the impact made by Action 2000. The combination of extra work generated by the new millennium, the short timescale for introduction of the Euro currency, irrespective of the UK position, and the general increase in the complexity of computer systems, has created a shortage of skilled labour in the IT industry. It might still be helpful for the government to consider incentives and training options to increase the pool of skilled labour. Although time is short, the government might consider taking swift action.

10. Testing Other Dates

The millennium bug is seen as a single date problem. We are aware of, and will test for, other dates that could cause problems. These are:

— 9 September 1999 (9999 is used extensively as a default in programming)

— 29 February 2000 (2000 is a leap year unlike 1900 and 2100)

Retail companies generate a lot of system changes. Year 2000 will necessitate a change freeze in the run up to the millennium in order to ensure stability of our computer systems during our peak trading period which, as explained in paragraph 8, inevitably is a time of heavy schedule change.

11. Suppliers

We deal with a large number of suppliers and contractors as well as a long international supply chain, on whom we are dependent for merchandise and services. These companies vary from small to large, some with little IT systems and equipment, some with a great deal. We have been in contact with all of those with whom we deal directly, stressing the importance of the issue and urging them to take appropriate action. However, it should be noted that smaller companies have less ability to make the necessary changes. We are conscious that we cannot instruct them and must not put ourselves in the position of shadow directors of their companies.

12. Responsibilities within Marks and Spencer

It is the responsibility of the management of the business to deal with Year 2000 issues. In addition to this, the company's Audit Committee, chaired by a non-executive Director, is kept informed of progress. The Information Technology Review Committee, which is a committee of the main Board, reviews this project on a regular basis.

13. Support

The turn of the millennium will be a cause for national celebration. For IT, related industries and all those involved in engineering it will be a time for heavy on-site presence. We must assume that some things will be missed and will need immediate correction. We know that some problems cannot be anticipated. It is essential that the trading and holiday pattern are set well ahead of time and that personal arrangements of those involved anticipate a need for on-site presence.

10 December 1997

APPENDIX 37

Memorandum submitted by BG plc

1. This submission is made by BG plc, one of the two successor companies of British Gas plc following its demerger in February 1997. BG comprises three main businesses: Transco, the developer and operator of Britain's gas transportation network which is regulated as a monopoly service provider to gas shippers and

suppliers; a substantial, mainly gas-related, Exploration and Production business which operates both in UK offshore waters and overseas; and a growing International Downstream gas business which is engaged in the development and supply of gas markets, principally in developing countries.

Introduction

2. BG plc welcomes the opportunity to provide a memorandum to the Science and Technology Committee on the Year 2000 and computer compliance. The Year 2000 computer date problem has been recognised by BG plc as a key business risk area and is regularly reviewed by the Executive Risk Management Committee.

3. BG plc intends to be ready for the Year 2000 and so plans are designed to ensure the discovery and completion of the majority of Year 2000 work by the end of 1998, leaving 1999 for final "mopping up" and testing. As with other companies facing this problem, this is an ongoing programme of work and these timescales reflect current plans.

4. Whilst the programme is being monitored and supported at the Group level, BG believes that the issue is fundamentally a matter for each of its Business Unit Management Teams. They are the only groups able to properly assess the business risk as the solutions will not always be IT ones. Many uses of date are effectively "passive" and will have little effect on system fundamentals. BG is concentrating its remedial action on the fundamental uses of date in either operating systems or application systems which would cause significant business impacts. In addition, BG needs to address the use of date in computer chips, both in normal computing equipment, such as PCs, and also in process control equipment.

5. BG has identified two major areas of activity as regards Year 2000 compliance: business computing and process control computing (affecting the operation of our pipelines, power stations and E&P operations). The safety and security of these latter operations are by far BG's greatest concern and this matter is taken very seriously, both within Transco and within all international operations. BG is also linking with key industry bodies, such as the UK Offshore Operators Association (UKOOA), terminal operators and shippers, Regulatory Authorities and other vital utilities.

6. The successful addressing of these issues involves not only BG itself, but also BG's business partners and supply chain partners. BG's approach to this is for suppliers and business partners to demonstrate their plans and for BG to undertake an assurance process. Whilst mindful of the legal implications, BG's approach is, above all, practical.

7. In terms of business computing, BG is perhaps more fortunate than many in that the restructuring of the gas business and the recent growth of competition in the gas market, have resulted in BG having fewer legacy systems of ancient design. This means that, although some of these systems need attention, they are fundamentally better documented and able to be adjusted.

8. Like many other companies, BG's approach to business computing has been a combination of existing systems with the bringing forward of system replacement or modification to address the Year 2000 problem.

9. Although there is increasing awareness of the problem, BG detects a lack of focus on the key issues. In particular, the support of small and medium-sized enterprises, through either relevant trade associations or other DTI industry links, may need to be strengthened and focused on the practical issues affecting them. The complexity of supply chain relationships means that no business is truly stand-alone and the effective support of the smaller and medium size business will be critical to all.

The Seriousness of the Problem

10. The problem affects application code (particularly of the older systems), operating systems, databases and embedded chips, not only in obviously computer equipment, but in a whole range of devices. Of particular concern to BG, is the use of such technology in process control equipment affecting our fundamental operations. BG's first responsibility is to ensure the safety and security of the national gas transmission and distribution system. Thereafter, the other business risks, in terms of loss of income or business process capability, are important but less so than our process operations. Each business unit of BG plc will have in place, by the end of the year, an action plan to address the issues. Transco, in particular, is at an advanced stage in this. Progress is regularly monitored, at Executive level, by our Executive Risk Management Committee.

Action Steps

11. BG's planning work commenced in early 1997 and all business units now have designated managers responsible for this process, who are supported by a cross-business network and Executive level monitoring. The aim is to achieve most of the work during 1998 to ensure that appropriate testing can be completed in 1999. Some work in the process control area may have to be undertaken during the summers of 1998 and 1999 so as to avoid any impact on the operation of the gas network. BG is confident of its ability to have everything in readiness to address the business risk, but this does not imply that all problems will have been

resolved. In fact, in some cases, it would not be cost-effective or appropriate to produce an IT solution when a manual "work around" could be produced.

12. BG is also working actively with suppliers and business partners to ensure that they also have all the steps in place to address the Year 2000 issue. It is encouraging that industry bodies are beginning to co-operate and provide networking opportunities. Companies are often willing to share experiences to mutual benefit.

13. Perhaps the most difficult problem is that of the embedded microchip in computing or other equipment. It is often only by inspection of the particular chip that the likelihood of problems arising can be ascertained. Unfortunately, stock control in many computer suppliers has not been sufficiently good for them to be able to determine which chips went into which products.

Major Constraints

14. Whilst the Year 2000 problem will divert resources from meeting normal business needs, BG is confident that it can address the issues. However, similar organisations may be less fortunate and may need assistance in order to focus on the key issues.

Contingencies

15. BG sees the Millennium problem as a particular example of normal business continuity plans to deal with emergencies. In this regard, BG's pipeline and other gas and oil operations are designed to "fail safe" and all reasonable steps are being taken to validate this approach. Systematic plans are in place to both address all of the key process issues and to deal with contingencies as they arise.

16. In business computing, the areas of greatest anxiety are the operating systems and embedded chips which might cause the application systems to fail, even if the application systems themselves are not directly affected by the problem.

26 November 1997

APPENDIX 38

Letter to the Clerk of the Committee from Mr R Hammond, Millennium Assurance Project Manager, HM Customs and Excise

Please find enclosed eighteen copies of a memorandum prepared by the Millennium Assurance Project Team on behalf of HM Customs and Excise for the Year 2000 inquiry by the Science and Technology Committee.

The view represented is that of the Millennium Assurance Project Team and has focused on how the Year 2000 Date Change Problem may affect the Department, and our experiences to date.

If there are any questions or areas of clarification required, please do not hesitate to contact me.

10 December 1997

Memorandum submitted by HM Customs and Excise

Introduction

1. HM Customs and Excise has had a project in place to deal with the Year 2000 potential computer problems since July 1996 although issues had started to be addressed before then. Potential problem areas have already been identified and work started to develop necessary fixes. The Millennium Assurance Project (MAP) deals with the correction and assurance of internal IS systems, the assurance of embedded processing and is helping to minimise any potential impacts on revenue collection by raising awareness within the business community.

2. Within this memorandum only those considerations which directly affect HM Customs and Excise and its business functions have been considered. References to any likely effects are constrained within a HM Customs and Excise framework.

Nature, Magnitude and Implications of Inability to Manage Date Change

3. As with all organisations, the impact of an incorrectly managed date change on HM Customs and Excise could be considerable. The likely problems fall into three broad areas; embedded systems, computer systems and businesses' systems. However, the Project has at all times stressed the importance of this being a business issue, not an IT one. Any ill-effects will impinge upon an organisations' ability to continue its business functions.

4. The likely effect on embedded systems could include disruption to, or failure of, building heating systems, building management systems, building security systems and devices which use date processing eg, video recorders, radios etc. As well as health and safety concerns, the ability of staff to physically gain access to their working environment could be affected.

5. National computer systems could fail resulting in loss of revenue accounting systems and tax assessment systems, loss of trade statistic systems and customs import/export processing. In addition, local systems which perform business support functions could be affected.

6. If businesses' accounting systems are non compliant, the revenue stream, whilst not being stopped as revenue would still be collected, would suffer a short term delay, and more Departmental resource would need to be expended to collect and assure this. In addition, businesses need to be compliant to continue into the next century and to avoid the embarrassment of failure.

7. Thus, the potential of a badly managed and non-compliant date change could be considerable to the Department and in turn could threaten Government revenue collection.

Effectiveness of Action Taken

8. HM Customs and Excise has had a project in place to deal with the Millennium date change problem since 1996. It is project managed from within the Information Systems Directorate reporting to a Project Board representing all Departmental regimes. Each specific regional area (Collection) and HQ discipline has its own sub-project in place reporting to the Project Manager. To date, approximately 40 per cent of the work required to achieve Year 2000 Compliance has been completed.

9. All areas which may be affected by the date change have been covered in the project. The Department submitted plans to the Central IT Unit of the Cabinet Office in October 1997 as requested.

10. The Department has inserted a "Year 2000 Clause" in all new contracts let, based on the DISC PD2000-1 A definition of Year 2000 Compliance (British Standards Institution) definition of compliance. To date, no instances of suppliers who are unwilling or unable to agree to this have been recorded. The task of seeking compliance statements for existing systems is more complex and lengthy. Suppliers either procrastinate or claim compliance can only be achieved by an upgrade to the most recent version/specification. HM Customs and Excise has rigidly set in place a policy of refusing to pay for (solely) year 2000 upgrades. This is rigorously enforced across all suppliers.

Role of Government in Raising Awareness

11. The view of the Project Board is that the "Millennium" should be tackled as a "UK PLC" issue, with a central drive from the DTI. Taskforce 2000 did some valuable work to raise awareness but the impression gained was that it centred on large corporations and tended to use scare tactics. As yet, the Department has not made any contact with Action 2000, although may do so to ensure that our own publicity campaign dovetails with the national initiative. In our view, the small and medium sized enterprises need to be made aware of their inherent obligations and need for compliance to ensure their own survival.

Development of Contingency Plans

12. The view of the Project is that Year 2000 contingency plans are included within any standard contingency planning/disaster recovery scheme. Failure at Year 2000 and the potential consequences are the same as serious fire at a computer centre for example, albeit at every location at once. Disaster recovery planning is already in place for central IT systems and a review of local plans has recently been commissioned. Local sub-project managers are being ensuring these are sufficient to meet the potential of the Year 2000 problem.

Legal Implications

13. To date we have experienced no legal problems.

Estimation of Seriousness of "Millennium Bug" in HM Customs and Excise

14. The Department is tackling the Year 2000 problem in a serious although risk based manner. To this end, financial modelling of the potential revenue risks is being considered.

15. In its entirety, the Year 2000 date change problem is manageable within HM Customs and Excise which is well practised in dealing with change. Its seriousness is indicated by the personal interest the Chairman and Board of Customs and Excise are taking in the issue.

WORK UNDERTAKEN TO DATE

16. Work has been progressing in the three areas identified in paragraph 3 and is broadly on target for completion of all compliance work by December 1998. National Computer systems and services which are maintained by a central IT Division are being corrected and tested in conjunction with the service owners. Despite one or two specific problems, work is progressing well. The IT infrastructure within the Department, currently the subject of a PFI exercise, is being made compliant. Local systems are being checked by the local IT teams. Business support equipment including telephones, faxes, etc and building services are being checked for compliance. These are being made compliant where necessary.

17. A separate working group dealing with business compliance issues has been formed and meets regularly to review progress. Its specific responsibilities are publicity to ensure businesses address Year 2000 in order to meet their legal obligations and ensuring a consistent line on compliance across all Departmental regimes.

IDENTIFIED RISKS

18. The project has, in its risk register, identified two potentially serious constraints; lack of resources and dependence upon external suppliers.

19. With no additional funding being made available for Year 2000 compliance work, resourcing remains tight for all the areas being considered. In some areas, sufficient resources are not available and contingency measures are having to be taken to ensure millennium compliance activity is completed. The potential of an increasing attrition rate due to high pay rates in the commercial sector is a serious concern and has been recognised with the majority of development work planned for completion in advance of the Treasury target date of December 1998.

20. The Department is highly dependent upon external suppliers; both those with whom a partnership exists and those with whom a contractual relationship exists. In both cases much informtion needs to be obtained from them, assessed and disseminated to ensure compliance. In general, the trade has been slow to provide information regarding their systems which will help identify potential non-compliance areas. This may be due to reluctance to be the first in a particular industry sector to make such statements and thereby go out on a limb. Notably the Department has achieved significant success with the strategic PC suppliers who have provided upgrades for all platforms some dating back over five years at no cost. Providing negotiations are handled with care suppliers are willing to assist in solving the "joint" problems.

10 December 1997

APPENDIX 39

Memorandum Submitted by The Computer Futures Group

INTRODUCTION

1. As the leading supplier of permanent IT staff in the UK, the Computer Futures Group is well placed to comment on the extent of the problems faced by UK Plc as a result of the affects of non–compliance of computers with the Year 2000 date change.

2. The Computer Futures Group is also one of the leading suppliers of IT contract staff and has the UK's largest database of IT consultants and engineers.

REPORT

In Reply to: The legal implications of disputes over liability for compliance costs and system and program failures

3. The legal implications of disputes over liability for compliance costs and system and program failures is one of the crucial issues for UK industry. Many companies are finding that non-compliance with the year 2000 date change is already affecting their business as they look to plan beyond the millennium. The effect of non-compliance will be felt down the chain of suppliers, and therefore the issue cannot be tackled in isolation. A company may have completed the necessary changes to the computer system, but will still be faced with the same crisis if suppliers do not follow suit, and many will not as the cost of compliance will be too great.

4. The same issue applies to system providers. System providers range from one person companies to giants like Microsoft, with many having only one product. The cost of making their products millennium compliant is often too great, although most IT companies are claiming their systems are Year 2000 compliant, they do so in the full knowledge that they are not. On the Millennium change those systems will fail and the providing company will be trading to avoid the cost of amending their systems and any legal obligations. These service providers will then start-up new ventures which will have the only expertise to fix the failed systems. Whilst the clients will be extremely unhappy about this, they will have no choice but to pay up the smaller amount of repairing the system rather than installing a whole new package.

5. The current rate of bankruptcies for software firms is very high. They require quite low start-up costs and new companies can quickly be formed again on the foundations of the former firm. If this issue is not tackled soon then the new millennium will see a hugh growth in "phoenix" computing companies, which will have a serious impact on the UK industry.

6. One of the key areas of enquiry for the new Government funded body, Action 2000, should be into the compliance of existing IT packages which are being sold to companies as millennium complaint. If system providers are not forced to ensure their products are fully complaint, UK companies will be faced with complete system failure and a large repair bill on the millennium date change, with little legal redress. We would also encourage the Committee to look into current insolvency legislation, and ensure that any loop holes currently being exploited by computer software operators are closed before the new millennium.

11 December 1997

APPENDIX 40

Memorandum submitted by the Inland Revenue

Background

The potential effects on computer systems of the so-called "Year 2000 problem" have been well understood by the Inland Revenue for some time. As a major government department whose core business depends critically on effective IT support, we are committed to taking effective action to ensure that we can continue to assess and collect tax revenues without problems after 1999.

Accordingly, we, together with EDS, our information technology partners, embarked on work in early 1996 to tackle the Year 2000 problem for the IT systems which support our business. That work began with a thorough investigation of the problem, leading to a comprehensive report from EDS in November 1996 on the work and the resources needed to make our systems fully "Year 2000 compliant" within a planned timeframe.

Project Approval and Resourcing

The subsequent project was authorised by a sub-committee of the Revenue's Departmental Management Board at an estimated overall cost of £26 million, the main element of which is the manpower cost of carrying out the necessary software conversion and testing work. Also included in that figure are the associated operational and hardware costs. To ensure that we can meet these costs from existing PES provision, we have reprioritised other project work and system maintenance budgets. In July this year, we concluded a fixed-price deal with EDS covering the technical manpower costs required for Year 2000 work, in place of the input basis of payment which normally applies under the contract with them. The aim was to bring greater control and certainty to this major area of project expenditure where the risk of escalating costs could otherwise be significant.

Planning and Reporting

The Inland Revenue's Year 2000 project covers nearly 250 of the IT systems which support different aspects of our business, plus our PC hardware and software estate. It has been given the highest priority by the Department: it is sponsored by the Deputy Director of the Business and Management Services Division who reports on progress each quarter to the Management Board sub-committee mentioned above.

The Year 2000 project team have drawn up detailed project implementation plans covering, inter alia, key activities and milestones, risk management, scope and change control, communications and financial management. They are also actively addressing a number of issues central to project success: these include maintaining a problem-free exchange of data with certain external organisations (chiefly financial institutions and employers) through our electronic "interfaces" with them, and validating the various commercial hardware and software products on which a number of our systems depend.

Copies of our main plans were submitted to CCTA in October 1997 (with updated versions in November) in accordance with the Chancellor of the Duchy of Lancaster's letter of 21 May to Ministerial colleagues.

Progress so far

A full programme of software conversion and testing for all our affected systems is now well under way to a planned timetable. These changes are being implemented in a cost-effective way with minimal direct impact upon users' day-to-day business or our service to the taxpayer population. Thirty-three of our systems have been made "Year 2000 compliant" already, and work on many more—including our major national tax assessment and collection systems—is well advanced. All essential conversion work is currently on target for completion by October 1998, and all testing work by Summer 1999.

EMBEDDED MICROCHIP INFRASTRUCTURE

The other main area of our Year 2000 work—the so-called "embedded chip technology" (ie, the microprocessors which control buildings security and access systems, office equipment etc)—is being addressed through a separate Departmental Year 2000 Interest Group who will be advising and coordinating the work of local managers in tackling the problem through their business continuity plans.

December 1997

APPENDIX 41

Memorandum submitted by the Royal Academy of Engineering

NOTE

The Royal Academy of Engineering comprises the United Kingdom's most eminent engineers of all disciplines. The Academy's objectives may be summarised as the pursuit, encouragement and maintenance of excellence in the whole field of engineering to promote the advancement of the science, art and practice of engineering for the benefit of the public. The Academy aims to take advantage of the wealth of engineering knowledge and experience that its Fellows possess. The interdisciplinary character of The Academy's membership provides a unique breadth of expertise with which to further all forms of engineering.

By promoting a multi-disciplinary approach, The Academy is able to overcome traditional barriers and to demonstrate the interdependence of different areas of expertise in the efficient use of modern technology and engineering. Emphasis is also placed on the importance of well informed communication between engineers, Government, research establishments, industry, public services and academia.

The evidence which follows represents a collation of personal views from Fellows of The Royal Academy of Engineering. It cannot reflect the views of all contributing Fellows nor those of The Academy as a whole. It may, however, be regarded as representative.

1. *What is your estimate of the seriousness of the millennium bug problem?*

Fellows of The Royal Academy of Engineering believe that the millennium bug problem is very serious and will affect mainframe computers, personal computers and potentially any equipment that contains an embedded microprocessor or special purpose chip. It is likely that particular difficulties will be experienced with systems over five years old. The problem is likely to have greatest impact on traditional data processing activities such as order processing, finance, payroll and pension administration. This appears to be widely recognised but is difficult to deal with because of the lack of detailed documentation on such systems coupled with a shortage of suitably qualified IT personnel to resolve the problems.

A more detailed description of the problem is given in Annex A but, in summary, the difficult and time-consuming tasks faced by most companies are as follows:

- Creating a full index of all system and application software used.
- Addressing the problem of embedded software eg intelligent instruments with built-in chips which might use the year for data compaction etc. (This could be the most serious and intractable problem.)
- Addressing the potential for corruption of all of these systems at or before the 1999–2000 date change.
- Correcting or replacing the affected packages in the appropriate timescale.

Estimates by others suggest that the cost of overcoming the problem will be greater than £400 billion world-wide and £30 billion in the UK, with possibly 10 per cent of companies failing as a result. Such estimates are difficult to prove but are believed to be indicative of the scale of the problem.

Today's business is part of a complex network of suppliers and customers with mutual dependencies. The continuous functioning of the business therefore not only depends on a particular company's actions, but also on the actions taken by its business partners (including public services). To a great extent the millennium bug issue is perceived at present as a technology issue to be solved by IT personnel. The potential risks of failure, however, are business risks for which management is responsible. The problem has the potential to put many organisations out of business as their mission-critical systems, or those of their partners or suppliers, fail. It is essential that all parties address this issue adequately and urgently.

Fellows believe that despite an insufficiency of time, money, knowledge and human resources to fix all the problems, it ought still to be possible to correct, or otherwise mitigate the most business-critical problems.

2. *To what extent do you think that UK businesses and other organisations have done, or will have done, enough to avert any potential problems?*

It appears that UK industries and other organisations—professional institutes, consultants and some Government bodies, have done a lot to raise awareness of the problem. It is, however, unlikely that this could ever be enough to "avert any potential problem". Some industries have an enormous amount of IT specific work to do, with a threatened shortage of skilled resources. Other industries are slow to assess the pervasiveness of the problem and its impact and are finding it difficult to get expert help.

It seems likely that most larger companies with separate IT departments and IT budgets will, in many cases, have already allocated budgets to the millennium bug problem. However, many SMEs will not possess a separate IT department nor an explicit IT budget. There is some concern that such companies are also likely to have many other financial commitments that may result in the millennium bug problem being considered a low priority issue.

The UK and USA appear to be ahead of the world in preparing for the Year 2000. It is therefore likely that international systems will be more vulnerable than domestic systems. In considering the millennium bug, serious consideration must be given to understanding how the impact on one business affects other businesses.

3. *Do you think that the Government has done enough to raise awareness of the problems associated with the date change or to encourage action to avert problems? What more should be done?*

There is a view that, although the Government has done a lot to address the problem, more could be done to increase awareness of the issue in general. Taskforce 2000 was set up to provide news-sheet information and shared learning, partly funded by the Government. This group seems to have the correct membership but its role should now be focused on the wider business issues—legal, contractual, procurement, trading, risk assessment and contingency. There is concern that, to date, the emphasis has been on private companies and that more attention and support should be given to the public sector. There has also been criticism, however, that the Government has done little to support this group directly. More recently an industry liaison group, Action 2000, was set up which appears to have more direct support from Government and could be effective if adequate funding is provided.

If Government departments and other larger organisations put more pressure on their own suppliers, this may help to ensure that the importance of the message is distributed to those organisations further down the supply chain who are potentially at risk. Significant resources need to be directed at testing and collating results. This is an area where a centralised body could aid efficiency in disseminating information for standard commercial products. High priority should also be given to ensuring that the utility companies have addressed this issue, possibly through the appropriate regulators.

To prevent paralysis or extensive legal proceedings which could arise, the Government should examine the question of defining responsibilities both on the part of the customer and supplier, for funding and resolving Year 2000 issues, where no specific terms relating to this issue are covered in the contract. This may require changes in legislation. It has been suggested that Government should oblige suppliers to state whether new equipment is or is not Year 2000 compliant. Greater publicity could be given to examples of known deficiencies relevant to small and medium sized businesses which would make it clear how the problems arise and what checks need to be made. Initiatives which would enable companies to learn from the experiences of others would be particularly welcome.

4. *What, if any, are the major constraints militating against progress being made towards identifying and applying solutions to prevent computer systems and software failures at the millennium?*

The major constraints appear to be:

- the still limited general awareness of the scale of the problem and general inertia;
- a lack of understanding of the problem and a tendency to dismiss the problem as "just IT" when it is a business problem and business priorities must be used to determine the order in which systems are corrected;
- a shortage of staff with appropriate IT skills and the immediacy of the problem;
- the lack of financial resources for investment in replacement computers and systems, particularly in small companies; and
- the pervasive hidden nature of the problem and the difficulty in identifying which equipment and systems are affected.

Cost does appear to be a major constraint. Companies may have to divert significant funds towards this problem instead of towards profitable new products. Funding in the order of 10 per cent of development costs for the next few years has been suggested by one company.

One major obstacle to identifying and applying solutions exists where there is no relationship, or where the relationship has been lost between, the supplier of the software and the user. This will apply equally to

software products intended for operation in a general purpose computer as well as for software products contained within embedded hardware.

It has also been suggested that one of the major constraints is a fear of being sued. Suppliers may be generally reluctant to release information on product status because they fear litigation if these interim statements turn out to be inaccurate. Waiting until a cast-iron guarantee can be given will obviously introduce significant delays.

Annex A

THE MILLENNIUM BUG PROBLEM

To estimate the extent of the problem, it is easier to divide the problem into two sub-problems:

1. the clock roll-over problem; and
2. the database problem.

We should also divide the computers that will be affected into two different types:

— General purpose systems (for instance PCs, mini computers etc); and

— Embedded systems.

1. THE CLOCK ROLL-OVER PROBLEM

The clock roll-over problems occur as a result of the clock going from:

23:59:59 31/12/99 to 00:00:00 1/1/00

The effect on general purpose systems is likely to be minimal:

(i) few general purpose computers will be operating at midnight on a public holiday;

(ii) the operating system normally deals with clock operations. As the operating system is software that tends to be in use in very large numbers, the developers have a strong commercial imperative to ensure that their current operating system deals with the clock roll-over correctly (in some cases, the developers may also support previous versions);

(iii) commercial users of general purpose computers will often use the most up-to-date operating system to ensure that they are supported by the operating system developer;

(iv) applications which require access to the clock will normally do so through operating system support (for absolute timing) or through standard programming libraries (for measuring time periods). Like operating systems, vendors of programming libraries will have financial reasons for ensuring that they deal with Y2K problems correctly. However, application programs that have been developed using previous version of programming libraries may suffer. It will be hard to determine which version of a programming library that a program was linked with (it may even be difficult to determine which library developer was used), unless the application developer maintains excellent records as part of his development process;

(v) the effects of an incorrectly operating clock are likely to be minor and fixable. For instance, if a database program starts putting negative time stamps on data records, it will in many cases be possible to detect this, and to re-compute the correct time on a post-hoc basis.

On embedded systems problems are more likely, and more serious:

(i) it is common for embedded systems to make use of unusual hardware or hardware configurations. This requires that developers produce their own operating systems/executives to deal with clock handling. Thus the risk that the system does not handle the Y2K exists for large numbers of systems independently;

(ii) application access to the clock will be through custom routines developed for a specific product, or through direct access to the clock hardware. This implies that every different embedded system should be checked for Y2K compliance;

(iii) embedded systems include many systems that are required to have 24 hour, 365 day operations, and therefore will be operating when the roll-over takes place;

(iv) the effects of an incorrectly operating clock would be serious. Self-test routines checking system integrity may decide that the clock roll-over corresponds to a fault, and shut the system down, or worse, the fault may not be detected, which results in the system supplying negative times to applications.

It is difficult to estimate the scale of the problem. Embedded systems are very pervasive, although of those which include real-time clocks, even those which monitor day and month, very few require that the year be entered.

By 2/1/00, virtually all of the effects of the clock roll-over problem should have been dealt with (although the magnitude of those effects may be large in some cases).

2. The Database Problem

This problem has the potential to be a longer-lasting problem, with effects continuing to occur long after the start of the millennium. As an extreme example, problems might not be seen until people born after 1/1/2000 apply for driving licences, or even when they start to retire.

Database problems (ie problems arising from representing the year with two digits in databases) are likely to affect many specific applications on general purpose machines (particularly legacy applications), but also will affect some embedded systems, particularly larger ones which include logging and reporting functions.

Other problems may occur through the synergy of "Y2K compliant" systems that have been fixed in different ways. For instance consider two interacting systems: one of which uses four digits, the other uses two digits together with some additional field to indicate whether the date is before or after Y2K. The systems work fine until data is exchanged between them (perhaps automatically).

December 1997

APPENDIX 42

Memorandum submitted by the Civil Aviation Authority

1. Introduction

1.1 The Civil Aviation Authority (CAA) plays a leading role in the development of the aviation industry, through the safety and economic regulation of the UK aviation industry and by providing air traffic control and other air navigation services through a subsidiary company—National Air Traffic Services Ltd (NATS).

1.2 The CAA and NATS regard the Year 2000 threat as a serious business issue because:

- it could disrupt the operational air traffic control service with potential implications for airline operators and a more general knock-on impact on the UK economy;
- it could represent a safety hazard to all forms of aviation activity including but not limited to services provided by CAA/NATS; and
- it could disrupt the normal internal business activities conducted by CAA/NATS including IT systems concerned with e.g. finance, payroll, forecasting, business administration etc.

1.3 The component parts of the CAA have all initiated Year 2000 projects with particular emphasis as follows:

National Air Traffic Services Ltd: NATS' objective is to provide a "service as usual" operation during the transition from 1999 to 2000. NATS has a total of some 700 equipment systems in operation and all are in the process of being assessed and corrected where necessary. No problems have been found which are technically insurmountable and NATS is confident that all necessary remedial action can be completed in good time. NATS has also actively promoted the Year 2000 issue with other ATC service providers in Europe and the North Atlantic and with airline operators. NATS has a substantial installed base of non-operational IT systems (some 3,000 users) and needs to ensure that the IT infrastructure and applications are Year 2000 compliant.

Safety Regulation Group (SRG): SRG sets and maintains UK civil aviation safety standards and its key concern is to highlight the Year 2000 issue to those organisations which it regulates. Manufacturers of airborne systems and equipment, with the potential to be affected by the Year 2000 problem, have been asked to provide assurance that there can be no condition that could result in a hazardous effect on aircraft. In parallel, the Society of British Aerospace Companies Ltd (SBAC) have agreed to advise their members to provide a similar assurance.

Economic Regulation Group (ERG): ERG regulates airlines, air travel organisers and airports. The main issue for ERG is the need to ensure that its internal IT systems are Year 2000 compliant.

CAA Corporate Headquarters has standard IT systems which are run on CAA's behalf by NATS using an external IT service provider. The Year 2000 compliance issue for the IT infrastructure is the same as for NATS.

1.4 From a governance viewpoint, both the CAA and NATS Boards have taken active steps to ensure that the Year 2000 issue is being fully covered by all parts of the organisation. The individual Year 2000 projects are co-ordinated through a CAA Year 2000 Liaison Working Group and progress is subject to regular review by the respective Boards.

2. Response to Issues Raised in the Terms of Reference

The nature of the Year 2000 problem, its magnitude and implications, especially where computers are performing safety critical operations.

2.1 The delivery of air traffic control (ATC) and other air navigation services is dependent on the collection and presentation of information to air traffic controllers, and the delivery of information and instructions to aircraft. The systems used by NATS range from radar sensors, real-time processing, voice and data communications, conventional information processing and display systems. Similarly, modern aircraft rely on computers for control and for flight management. The Year 2000 date change problem poses a potential threat to any situation where time/date information is a factor.

2.2 The significance of the Year 2000 threat can perhaps best be illustrated by considering what would be the impact on the air traffic service if nothing were done to address the problem. NATS own assessment of a do nothing scenario is that:

— voice communications and radar systems would continue to run but with inaccuracies evident in the date and time stamping of events and the display of some data to controllers. System safety would be maintained but the anomalous behaviour of systems might render normal operations unviable;

— flight data and support information systems would experience time/date problems including the possible failure of some components. As a consequence of these problems it is probable that the normal ATC service would need to be closed down soon after the midnight boundary; and

— data communications systems would also be substantially at risk, probably not immediately but under restart and recovery conditions.

2.3 It is clear that the Year 2000 problem is pervasive, affecting many systems and requiring extensive assessment, correction, test and validation work to eliminate the threat. The assessment phase has been completed and, of the 700 operational systems deployed by NATS, it is evident that 75 require remedial work involving a mixture of corrective and replacement action. The estimated cost of this remedial work is £7 million, divided between internal effort and external procurement. The total cost for CAA systems as a whole is £10 million. The work is scheduled for completion by July this year, to be followed by validation testing.

2.4 One further key aspect of the Year 2000 threat is the dependence of NATS on its own suppliers, particularly telecommunications service providers, and on neighbouring ATC organisations. NATS has actively pursued a dialogue with its suppliers and customers. NATS has also promoted the Year 2000 issue with its colleague ATC organisations via Eurocontrol and ICAO. However it should be noted that the risk of non-compliance elsewhere in Europe is outside the direct control of NATS and represents a threat to both NATS and UK airlines.

2.5 NATS does not consider that the Year 2000 problem represents a threat to the safety of the air traffic service. With loss of operational information, air traffic controllers would progressively impose traffic flow restrictions to ensure that safety margins were not eroded. The manufacturers of airborne systems and equipment, with the potential to be affected by the Year 2000 problem, have been required by SRG to provide assurance that there can be no condition that could result in a hazardous effect on aircraft.

Effectiveness of action taken to avert problems

2.6 The CAA and NATS are confident that action taken will be effective in understanding the risk and reducing it to a manageable level. Contingency plans will be developed later when there is more knowledge of residual risks. It is very clear now that action was justified and that efforts must be sustained to complete the remedial plan. Confidence that dependent organisations are adequately prepared can only be built by active co-operation, and this takes time to develop. We hope to encourage action by involvement in validation tests.

Role of Government in raising awareness, seeking solutions, etc

2.7 Government has been effective in raising awareness via the Taskforce 2000 effort. We are waiting to see how the Action 2000 initiative develops. We are also aware of material producted by CCTA, the DTI, and professional bodies such as Computer Software Services Association (CSSA) and the British Computer Society (BCS). The Government should continue to stress the importance of the issue, proving as much advice and encouragement as it can, but should make it clear that only organisations themselves can sort this problem. It is clear from discussions with colleague organisations in Europe that the UK is better prepared than most countries for the Year 2000 problem. Some important strategic advantages may be derived from being well prepared at a national level, however there is also a risk to the UK's interests of a knock-on impact of Year 2000 failure elsewhere in the world.

Extent to which new systems and software are "millennium compliant"

2.8 There are still problems with purchasing new IT equipment. We have recently purchased a batch of PCs where some comply, and some do not. This highlights a configuration management problem within the industry. Due to the lengthy period taken to field new operational systems, problems can arise because orders were placed before Year 2000 became a "well known" issue.

Development of contingency plans in the event of system failures

2.9 The CAA and NATS do not believe it is possible to guarantee the elimination of all risks associated with the Year 2000 problem and intend to develop contingency plans, so that operations can continue in the event of an unusual pattern of system failures. This will be consistent with normal operational practice for NATS: specific measures can be prepared based on the knowledge gained from the validation tests to be carried out during late 1998.

Legal implications of disputes over liability for compliance costs and system failures

2.10 In the main, Year 2000 is about co-operative partnership between organisations to resolve issues before problems occur. However, in case of negligence, suppliers will be held responsible and legal proceedings may be taken. The CAA and NATS are seeking to indemnify themselves against Year 2000 risks by actively managing their insurance programme.

3. Answers to the Questions Raised in the Committee Clerk's Letter of 25 November 1997

What estimation has CAA/NATS made to the seriousness of the "millennium bug" problem?

3.1 NATS initially recognised the problem in early 1996 and a study, lasting from April to September 1996, was undertaken to assess the impact of the problem. A report was published which concluded that problems did exist and that they had to be addressed. A key recommendation was that an organisation-wide project should be established to manage the issue. As a result, NATS established a Year 2000 project to ensure that the company was fully prepared for Year 2000.

3.2 A similar study, for assessing the implications for SRG's computer based business systems, was begun in May 1997 and subsequently completed in July. Since that time activities have been set up in the other parts of the CAA to address Year 2000 and there is regular liaison between these project groups - in the form of a CAA Year 2000 Liaison Working Group – to share experience and to avoid overlaps and gaps in coverage. Meetings with the Federal Aviation Administration are also taking place to share experiences. As a result of the assessment the CAA has identified which changes to systems/equipment are required, and this work is now underway. The current estimate is that the project will cost CAA overall of the order £10 million, with NATS taking the majority share.

What steps have been taken, and when, to avert problems in computer systems and software at the millennium?

3.3 The Year 2000 project was set up in late 1996 to cover all NATS systems and is responsible for managing and monitoring overall Year 2000 readiness. The project has defined common processes and the reporting mechanisms to be used by business divisions within NATS. Each business division is accountable for its own readiness and is committed to the overall NAT-wide project framework. The project has defined the following phases for operational systems:

(i) Inventory and assessment of operational systems was completed by July 1997.

(ii) Fixing identified problems and re-test by July 1998.

(iii) Multi-system Validation Tests from September to December 1998.

(iv) All operational systems being fully prepared by end of December 1998.

3.4 For non-operational systems, similar phases of activity are defined culminating in all systems with significant impact being ready by the end of December 1998.

3.5 Each business division has appointed a Year 2000 local project manager who is responsible for planning and progressing all Year 2000 activity associated with that part of the organisation, and of coordinating with the NATS project team. The NATS project manager holds regular progress meetings with the key focal points and their staff. Each item of operational equipment in service has a nominated member of staff who is responsible for ensuring maintainability. These nominated staff are required to identify all equipment, to assess the Year 2000 risk, to repair and validate these systems. This includes assessing and managing the risk associated with external suppliers (such as telecommunications service providers) and dependencies on external organisations (such as datalinks with other ATC authorities).

3.6 For new systems coming into service, the project managers are responsible for ensuring that requirements and acceptance testing cover Year 2000 compliance. NATS procedures ensure that new equipment will not be put into service without checking for Year 2000 compliance. NATS Contracts and Purchasing are applying Year 2000 compliance conditions to all purchases.

How much work remains to be done to ensure a smooth transition from 1999 to 2000?

3.7 For operational systems, the fixing of problems will be completed by the end of July 1998. We are working on the strategy for our validations tests, due to be carried out from September to December 1998. After this, we will prepare contingency plans. For non-operational systems, we still have some work to complete assessment, but the problems found to date are manageable. There are some system replacements planned which need to be dovetailed into the Year 2000 plan. The fixing and re-testing work needs to be done during 1998 so that systems with significant business impact are all ready by the end of 1998.

How confident is CAA/NATS that it will encounter no problems at the millennium resulting from the inability of computer systems to handle the date change?

3.8 The Year 2000 programme addresses two aspects. Firstly reducing risk in our own systems by assessment, validation testing and contingency plans and, secondly, by understanding how external dependencies can affect our operations. We are confident that the internal risks will be worked down to a manageable level such that they can be handled by our normal operating procedures (which include dealing with abnormalities) plus any additional Year 2000 contingency that is found to be necessary. Our declared goal is to be in a position to deliver services as on a usual day and we know of no reason, at this stage, why this should not be achievable.

3.9 We are getting a mixed response from suppliers and other air traffic service providers. Most organisations respond positively and quickly but some do not. Telecom services, both UK and international, are a key dependency and we are liaising with their Year 2000 teams to build confidence. Provision of the ATC services goes beyond national boundaries. To build confidence that the system overall is ready for Year 2000 requires that all air traffic service organisations world-wide are adequately prepared. Although NATS has no direct control of this, it is using its influence to raise awareness of the problem. In the Spring of 1997, NATS formally raised this issue with Eurocontrol and with ICAO. Eurocontrol is in the process of establishing the status of plans that exist within the European States. ICAO has distributed a letter to member States on the topic. NATS will continue to monitor the situation and feels that pressure from airlines, airline associations (and possibly inter-government) will help to prompt the necessary responses from these organisations.

What, if any, are the major constraints on CAA/NATS which may hinder work on averting computer system and software failures at the millennium?

3.10 Timescales are fixed and must be met. All areas of CAA/NATS are giving their Year 2000 efforts a high priority to achieve this. Allocation of effort and funds for this work is included in business plans. Most of the effort is in-house. The problems found to date are considered manageable within our available resources. As stated above, other ATC service providers are not under our control.

Has CAA/NATS developed contingency plans should computer systems fail at the millennium?

3.11 Despite having redundancy and fallback capability, computer systems occasionally fail during normal operation. Because of this, NATS has operating procedures to cope with equipment failure. No new equipment is introduced to service without a thorough examination of its failure modes. The main objective of the Year 2000 Validation Tests is to identify what type of risks remain once the identified fixes have been introduced. The results of these tests will be a primary input into any additional contingency plans to cover the high risk periods, such as the millennium roll-over and the leap year recognition. Such contingency plans will be developed early in 1999.

What would be the consequences of such a computer failure for CAA/NATS?

3.12 NATS operating procedures ensure that, when system problems occur, air traffic flow restrictions are progressively applied to match the condition, so that safety margins are not eroded. The impact on the service depends on which systems are affected; for example, a loss of flight data will cause a reversion to manual operation and procedural control with consequent reduction in traffic flows.

Whom would CAA/NATS hold to be responsible?

3.13 NATS is responsible for the provision of air traffic services and the management of its own systems. NATS is taking action to gain assurance of preventive action being taken by suppliers and co-providers. In cases of negligence, suppliers would be held responsible for failure to deliver service and legal proceedings could be taken. CAA/NATS is seeking to indemnify the company against Year 2000 risks by actively managing its insurance program.

What have CAA and NATS done to ensure that there will be no failures in safety critical systems within its control? How confident is CAA/NATS that there will be no such failures? To what extent have the Health and Safety Executive been involved in such preparations?

3.14 NATS does not consider that Year 2000 represents a threat to the safety of the air traffic service. With consequential loss of operational information, air traffic controllers would progressively impose traffic flow restrictions to ensure that safety margins were not eroded. The manufacturers of airborne systems and equipment, with the potential to be affected by the Year 2000 problem, have been required by SRG to provide assurance that there can be no condition that could result in a hazardous effect on aircraft. There has been no specific involvement by the Health and Safety Executive in the work to date.

4. Conclusion

4.1 The CAA and NATS would be pleased to provide whatever further advice and information the Committee may require.

7 January 1998

APPENDIX 43

Memorandum submitted by the Association of British Insurers

1. Introduction

1.1 The Committee have requested a memorandum to be submitted from the Association of British Insurers (ABI) on this topic. ABI represents over 440 insurance companies which, between them, account for over 95 per cent of United Kingdom insurance company business.

1.2 The Committee is particularly interested in the ABI's views on the extent to which insurers are likely to be able to provide cover against millennium related risks, both in computer systems and embedded chips in use either commercial or domestic environments.

2. Features of the Millennium from an Insurance Perspective

2.1 The Year 2000 problem is currently a major issue for insurance companies in two respects. Firstly, insurance companies own IT systems are affected by the millennium bug. Secondly, insurers have to decide how they will deal with Y2K exposures in the policies they issue and specifically as to whether cover should be provided or not. This paper will concentrate on the latter point.

2.2 The "millennium bug", by its very nature, is a global problem and it will therefore impact on the global business and insurance communities. The problem also has several unique features which, when taken together, suggest that insurance cannot be viewed as the means for companies to protect themselves against the risks of not being millennium compliant. These can be summarised as follows:

- The problem is very difficult to quantify, but under some scenarios the cost could be so vast it could threaten the capital base of the UK insurance industry if widespread cover was provided. It is likely to have various manifestations which could lead to property damage, legal liabilities, interruption of business and various other difficulties. The insurance industry is in the same position as everyone else in trying to assess the magnitude of the problem and in such a situation it is very difficult to provide cover without threatening the insurance industry's solvency.
- Insurers have no experience in dealing with this risk. Insurance products usually develop slowly in response to normal market forces, allowing insurers to adapt their pricing as understanding of the risk increases. But here we are dealing with a "one-off" situation which will result in insurance claims manifesting themselves over a short period of time. If insurers miscalculate the risk, they would find it difficult to recover any losses from future underwriting as the millennium risks occur by definition infrequently.
- Insurance is designed to protect against consequences of unpredictable and unforeseen events. The Year 2000 is predictable and foreseeable and has been since the present calendar came into effect. It is also predicatable and foreseeable in that many computer systems in the corporate sector will need modification if they are to cope with the millennium.

2.3 Prudent companies are aiming to do the necessary work well before December 1999. Such "preventative" work will not be covered under any insurance. Rather, this should be seen as necessary risk management by industry.

3. Insurance Industry Action on Year 2000

3.1 To date, insurance industry action has fallen into three categories:

- evaluating exposures;
- educating policyholders; and
- deciding what policy should be adopted for dealing with exposures.

Evaluating Exposures

3.2 In common with other business sectors, insurers only recently became aware of the nature of the Year 2000 problem and the potential exposures which may arise under existing policy wordings. With this in mind ABI commissioned a legal report in the first quarter of 1997 from the legal firm Cameron McKenna on the subject. The report:

- defined the millennium problem;
- considered its potential ramifications;
- reviewed the primary areas on which the potential ramifications may impact with reference to insurance clauses found in several classes of insurance; and
- considered various avenues open to insurers to protect themselves against the risk.

3.3 The report concluded that, as insurers had not contemplated this problem when drafting policy wordings, insurers could have potential exposures under a variety of different types of commercial policies including:

- material damage (to property) and business interruption;
- public and products liability;
- professional indemnity;
- machinery loss of profits; and
- directors' and officers' liability.

3.4 Whilst many existing clauses in these commercial insurances, such as those excluding the consequences of latent defects in the insured property, may remove or limit cover, the potential ramifications of the millennium problem were considered to be so many and unpredictable that the effectiveness of standard exclusion clauses was uncertain.

3.5 The report advised insurers to consider new business and the renewal of existing business with this in mind: if insurers chose to incorporate specific exclusion clauses to exclude millennium problems, these should be expressed in clear and unambiguous terms.

3.6 On receiving the report, ABI members requested that, in the interest of economies of scale and consistency, ABI should produce model exclusion clauses in those classes of commercial business identified. ABI did not issue any recommendation to members about how to deal with Y2K exposures because it was viewed as entirely a matter for individual insurers as to whether they used the exclusion clauses or not, or produce their own versions of the clauses.

3.7 In due course ABI circulated the model clauses to members advising that it was up to each individual member whether or not they applied the exclusions.

3.8 These wordings were largely aimed at commercial insurances, but could of course be applied to "personal lines" insurances like household, travel, motor etc if insurers felt they were exposed in these areas.

Educating policyholders

3.9 Through issuing this report, ABI raised awareness amongst its members of the Year 2000 problem. ABI has also produced an information leaflet aimed at Small and Medium sized Enterprises to raise awareness of the problem and advising them to discuss the issue with their insurance broker or company. ABI members have purchased 700,000 copies of the information sheet for distribution to SMEs (copy attached). Individual insurers are also producing leaflets and raising awareness amongst "personal lines" customers.

3.10 ABI is of the view that its membership is now relatively well informed about the issue, and through the information leaflet and contacts with other organisations, has helped to raise awareness generally.

Deciding what policy should be adopted for dealing with exposures

3.11 ABI has recently issued a questionnaire to its members to obtain clarity as to how they intend to treat millennium exposures. From responses received so far it would seem that most commercial insurances will exclude Y2K exposures. In particular, legal liabilities arising from the millennium bug are likely to be excluded wherever possible.

3.12 However, with regard to commercial property insurances, some insurers appear willing to offer an element of cover in respect of property damage caused by certain defined perils, even if the original cause of an incident was a Y2K failure. Such defined perils include Fire, Explosion, Aircraft, Escape of Water and Impact. To what extent such cover is available will only become clear as insurers evaluate their exposures under these policies.

3.13 It is not yet clear what the response of the personal lines insurers, ie household insurers and motor insurers, will be. This will depend on their perception of the risk.

3.14 ABI is aware that international insurance markets are considering the issue with some urgency and it is understood that several insurers in the US have signalled their intention to exclude Y2K losses from commercial insurances.

3.15 ABI will be happy to submit a summary of responses to its questionnaire on insurers' intentions on Y2K to the Committee as soon as they have been received from all major insurers.

16 January 1998

APPENDIX 44

Memorandum submitted by the British Chambers of Commerce

In accordance with your request dated 4 December, I am pleased to provide comments on the issues raised.

The British Chambers of Commerce is the largest business network in the United Kingdom, with 62 Approved Chambers throughout the country, representing over 110,000 business members.

The issue upon which you are seeking comments will no doubt have an impact, to a greater or lesser extent, right across the business community. However, small firms are often more vulnerable than larger firms due to a lack of resources. This can result in a low level of awareness, an inclination to defer problems or not having the required in-house expertise to resolve technical challenges. From the Government's perspective there is the difficulty in targeting initiatives to small firms.

ASSESSMENT OF THE SCALE OF THE PROBLEM FOR SME'S

The Year 2000 issue is likely to be a major problem for many businesses. However, it is not possible to judge the scale of the problem for SME's at the moment as many of them have not started to address the issue. A particular difficulty is getting firms to recognise that the Year 2000 issue is well beyond computers.

The costs of updating equipment could be significant and may lead to more SMEs needing to borrow. Whilst borrowing itself should not cause business failure, the failure to address the problems could.

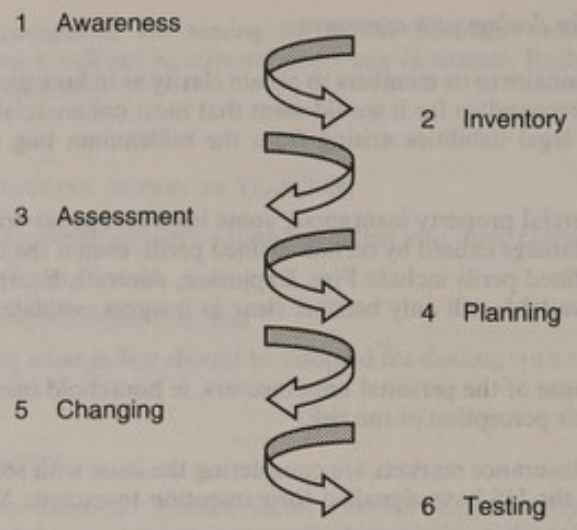
The Association of British Insurers has warned that it "cannot and will not meet the consequences of businesses failing to modify their systems in time for the millennium date change."

A factor which could work to the advantage of some SMEs is that many smaller firms buy "off the shelf" software. This, in comparison to bespoke packages, may well mean SMEs are less exposed to the problems that are associated with millennium compliance.

The impression is that many small businesses owners still do not yet realise the extent of the problem.

THE LEVEL OF ACTIVITY IN PREPARING SYSTEMS FOR THE YEAR 2000 AMONG SMES

The NatWest-sponsored publication "The Year 2000 Computer Problem" provides a clear illustration of the process of becoming millennium compliant. The steps suggested are as follows:



Source; The Year 2000 Computer Problem - NatWest - Jonathan Whelan

There appears to be little consistent action from business owners, with those that have awareness often hugely underestimating the cost, effort and time of compliance.

The initial work of preparing inventories and assessing the problem has been slow to gain widespread momentum although among larger SMEs it has started to increase over the last six months. Some firms still consider the Year 2000 to be too far away—the reality is, it is not.

In general terms, there appears to be a low level of response to Chamber awareness activity, which include mailshots, editorial articles and seminars. However, Chamber-organised seminars are seeing ever increasing attendance levels although there is a reluctance among firms to spend money on this issue.

The Level of Technical Assistance

A significant problem is in a skills shortage to reconfigure many older systems which are still in use, with there being a lack of programmers with knowledge of old computer languages to meet the demand. This is creating difficulties for SMEs which have modified old systems rather than replaced them. SMEs tend to have a longer timescale for depreciating capital equipment which makes them vulnerable to problems such as these.

As businesses defer sorting out the problem there will be an increasing shortage of qualified consultants to employ, which is likely to affect SMEs more than large firms as in many cases larger businesses have dedicated IT managers and can afford to buy-in consultancy. As highlighted in the BCC small firms survey on training there is a need for improvement among employees and management in computer and IT skills.

Consideration must also be given to non computer equipment such as lifts, photocopiers, air conditioning and manufacturing equipment; it is probable that people with these skills will not be among existing employees.

The Role of Government

The Government has a very important role to play in communicating the correct message to business. At present the message has not hit home to the SME sector. The communication of the potential problem needs to be accompanied by information on what SMEs need to do next.

The respective roles of Taskforce 2000 and Action 2000 are not familiar to all businesses and the objectives of these need to be clearly communicated and understood. Whilst the Government may have done enough to influence larger businesses there is the need for more communications to reach to all sizes of businesses to raise the importance of this issue.

BCC Support

In 1998, BCC will be undertaking a major piece of work in the field of information technology. We will also be conducting a small firms survey on IT, which will include an assessment on how the Year 2000 problem is being addressed by the SME sector.

21 January 1998

APPENDIX 45

Memorandum submitted by the Advertising Standards Authority

INTRODUCTION

1. Established in 1962, the Advertising Standards Authority promotes and enforces the highest standards in all non-broadcast advertisements by supervising the advertising industry's system of self-regulation. The ASA ensures that everyone who commissions, prepares and publishes advertisements in the non-broadcast media within the UK observes the British Codes of Advertising and Sales Promotion.

1.1 The Codes require advertisements to be "legal, decent, honest and truthful", socially responsible and prepared in line with the principles of fair competition. They reverse the burden of proof applied in law, so it is up to advertisers to prove any claims they make, not for the ASA to disprove them. If they cannot do so the advertisement must be withdrawn. This common sense approach takes into account the nature of the product being advertised, the media used, and the audience being targeted.

SUMMARY

2. According to the Authority's most recent research, advertising standards within the non-broadcast media in the UK are extremely high. To date the ASA has seen no evidence that computer advertisers are misleading consumers about the compliance of their products with the Year 2000. Last year the Authority investigated just three complaints relating to the Millennium problem generally, and the relevant adjudications appear in the appendix to this paper. As for those advertisers who do mislead or offend, the ASA has a range of effective sanctions at its disposal.

WHAT IS THE AUTHORITY DOING TO ENSURE THAT THE ADVERTISEMENTS STATING THAT PRODUCTS ARE YEAR 2000 COMPLIANT ARE ACCURATE?

3. Advertising self-regulation features a number of proactive and preventative functions, such as offering pre-publication guidance to advertisers, agencies and the media or monitoring problematical advertising sectors. It does not, however, pre-vet all non-broadcast advertisements as this would be logistically impossible; an estimated 30 million advertisements (and three billion items of direct mail) are published in the UK each year.

3.1 Code compliance levels are nevertheless extremely high. The Authority's most recent research indicated that 98 per cent of poster advertisements, 96 per cent of press advertisements and 85 per cent of direct marketing advertisements comply with the Codes. We believe this is down to the work of the ASA and its industry wing, the Committee of Advertising Practice. High advertising standards also make sound commercial sense; they generate consumer trust which, in turn, results in more effective advertising. In 1997, 8,291 advertisements attracted a total of 10,678 complaints and were subject to ASA scrutiny. Following investigation, just 512 advertisements were found to break the Codes rules.

3.2 It is the responsibility of individual media owners to check the acceptability of advertisements against the Codes before publishing them. However, while publishers may be able to spot prima facie breaches of the rules, they could not be expected to test the veracity of claims that a product was Year 2000 compliant. Moreover we have no reason, given the above, the believing that such misleading claims are being made.

4. WHAT STEPS CAN THE AUTHORITY TAKE AGAINST THOSE FALSELY ADVERTISING PRODUCTS AS YEAR 2000 COMPLIANT? HAS ANY SUCH ACTION BEEN TAKEN TO DATE?

4.1 An effective range of sanctions underpins the success of the ASA in maintaining high standards. If an advertisement breaks the rules, the Authority asks the advertiser to amend or withdraw it. In the overwhelming majority of cases advertisers comply immediately with such a request. If they do not, media owners will invoke their standard terms and conditions of business and refuse further advertising space. Although the ASA supervises a self-regulatory system, advertisers can not opt out. Both they and their agencies may also jeopardise their membership of trade organisations, as well as the incentives attached, if they persistently break the Codes' rules. The Authority's adjudications are published in the ASA Monthly Report which is circulated widely to the media. It generates a high volume of negative publicity for advertisers who mislead or offend and, in doing so, also encourages high compliance rates with the Codes.

4.2 A legal backstop exists to deal with the rare occasions when the ASA is unable to prevent a misleading advertisements from appearing. We can refer the case to the Office of Fair Trading (OFT) which can seek an injuction, under the Control of Misleading Advertisements Regulations 1988, to prevent misleading claims from being repeated.

4.3 Last year the ASA investigated three public complaints about advertisements relating to Millennium computer problem. Full details of the Authority's adjudications appear in the appendix.

5. DO YOU FEEL THAT THE PUBLIC IS ADEQUATELY PROTECTED AT PRESENT FROM FALSE ADVERTISEMENTS IN RELATION TO MILLENNIUM COMPLIANCE? IF NOT, WHAT GREATER PROTECTIONS DO YOU ADVOCATE?

5.1 To date we have seen no evidence to suggest that any significant problems exist with misleading advertising relating to millennium compliance. We are aware that the Millennium computer problem has already received widespread publicity in the media but would nevertheless encourage any further initiative to raise awareness of the issue among consumers.

12 February 1998

APPENDIX 46

Supplementary Memorandum submitted by the Chancellor of the Duchy of Lancaster

SUMMARY OF DEPARTMENTAL AND AGENCY PLANS

Department/Agency	*Target*	*Estimated Cost*	*Existing PES?*	*Progress*	*Document Type*
Cabinet Office inc OPS					
Centre	December 1998	£27,600	Yes	Remedial action underway	Full plans
Buying Agency	September 1998	£10,000	Yes	Assessment underway	Summary
Central Computer & Telecommunications Agency	End of 1998	£47,000	Yes	Audit underway	PID—includes plans
Central Office of Information			Yes	Virtually no impact	Status report
Civil Service College	December 1997	£0	Yes	Currently upgrading systems as part of IT strategy	Summary action plan
Government Car and Despatch Agency	April 1998	£23,000	Yes	Testing for compliance	Outline plan
Property Advisers to the Civil Estate		£15,000	Yes	Audit	Summary plan
Security Facilities Executive				Audit complete	Letter
Department for Culture, Media and Sport					
Centre	September 1998	£65,000	Yes	Remedial action underway	Comprises GANTT chart
Historic Royal Palaces	Late 1999	£100,000	Yes		Part of Dept Plan
Royal Parks	April 1999	£100,000	Yes		Part of Dept Plan
Department for Education and Employment					
Centre	December 1998	£4,800,000	Yes	Audits complete, about to start development	Impact analysis
Employment Service	March 1999	£23,150,000	Yes	Determination of action plan	Summary plan, includes GANTT chart
Department for International Development					
Centre	End of 1998	£200,000	Yes	Scoping study complete	Summary plan
Department of Environment, Transport and Regions					
Centre	December 1998	£2,200,000	Yes	Assessment done, remedial work started	Impact analysis and GANTT charts
Coastguard Agency	Mid 1999	£100,000		Assessment complete, options being considered	Situation report
Driver and Vehicle Licensing Agency	December 1998	£300,000		Systems assessment almost finished.	Submission to NAO, extensive supporting documents
Driving Standards Agency	December 1998	£48,000	Yes	Collecting data	Progress report
Highways Agency	December 1998	£4,300,000		Preparing PID	Progress report
Marine Safety Agency	December 1998	£38,305		Main systems being amended and tested	Activity charts with progress, costs and resources
Planning Inspectorate	March 1999	£197,500	Yes	Inventory complete, new systems being installed	Summary plan including timetable and cost estimate
QEII Conference Centre	April 1998	£0		Compliant except security system	Letter

Department/Agency	*Target*	*Estimated Cost*	*Existing PES?*	*Progress*	*Document Type*
Vehicle Certification Agency	December 1998	£0		Systems assessed, replacement part of IT strategy	Position statement
Vehicle Inspectorate Agency	March 1999	£0	Yes	System replacement in progress	Situation report of IS strategy plan
Department of Health					
Centre and all agencies (Medical Devices Agency, Medicines Control Agency, NHS Estates, NHS Pensions Agency)	End February 1999	£6,100,000	Yes	Remedial action underway	Extensive supporting documents (cost supplied sep; excl embedded systems)
Department of Social Security					
Centre and all Agencies (Benefits Agency, Child Support Agency, Contributions Agency, IT Services Agency, War Pensions Agency)	Major systems 31/8/98, others by 31/8/99	£45,692,000	Yes	Remedial action underway	Extensive support documentation compiled by ITSA
Department of Trade and Industry					
Centre	March 1999	£2,700,000	Yes	Assessing main systems	Summary plan and activity chart
Companies House	Easter 1999	£317,000	Yes	Inventory and audit complete, conversion started	High level plan
Employment Tribunals Service	End of 1998	£40,000		Auditing Systems	Summary Plan/Situation Report
Insolvency Service	End of 1998	£7,200		Testing existing systems	Report on progress and plans
National Weights and Measures Laboratory		£61,000		Inventory and compliance assessment complete	Situation report and outline action plan
Patent Office	March 1999	£850,000		Auditing systems and contacting suppliers	Activity chart and covering letter
Radiocommunications Agency	December 1998	£1,000,000	Yes	Inventory complete, some code checking under way	Progress report and Gantt chart
Export Credits Guarantee Department					
(Reports to Pres. of Board of Trade)	End of March 1998	£184,187	Yes	Inventory and Audit complete	Assessment and programme reports
Foreign and Commonwealth Office					
Centre	End of September 1999	£1,857,000	Yes	Some corrective work underway	Project description, risk management proposal
Wilton Park				No Action Required	Phone call with F&CO
Forestry Commission					
Centre and all agencies (Forest Enterprise, Forestry Commission Research Agency)	March 1999	£650,000	Yes	Starting a pilot study	Summary plan
Government Offices for the Regions					
(Reports to DTI, DfEE, DETR)				Survey stage	Project description & status report

Department/Agency	*Target*	*Estimated Cost*	*Existing PES?*	*Progress*	*Document Type*
HM Customs and Excise					
(Report to Chancellor of Exchequer)	December 1998	£5,500,000	Yes	Converting systems, broadly on target	Detailed Gantt charts
HM Land Registry					
(Reports to Lord Chancellor)	April 1998	£1,500,000	Yes	Remedial action underway	PID, activity charts and progress report
HM Treasury					
Centre	End of March 1999	£114,000	Yes	Audit of central systems complete	Statement of intent + costs
Home Office					
Centre and all agencies (Fire Service College, Forensic Science Service, UK Passport Agency, HM Prison Service)	February 1999	£17,500,000	Yes	Audit completed	PID and background material
Inland Revenue					
(Reports to Chancellor of Exchequer)	December 1998	£26,000,000	Yes	Remedial work underway, broadly on target	Costs, milestones, Gantt
Valuation Office	End of 1999	£569,700		Replacement of main systems well advanced	Costs, progress report and Gantt chart
Intervention Board for Agricultural Produce					
(Reports to MAFF, SO, WO, NIO)	August 1998	£724,000	Yes	Assessment complete, replacements underway	Systems overview, summary plans
Law Officers' Departments/Attorney General					
Government Property Lawyers	December 1998	£50,000			Position paper
Treasury Solicitor's Department	March 1998	£115,000		Inventory completed	Outline plans
Lord Advocate's Department					
Centre	Autumn 1998			Testing about to start	TOR and Objectives
Crown Office for Scotland	Autumn 1998			Testing about to start	TOR and Objectives
Lord Chancellor's Department					
Centre and all agencies (Court Service, Public Trust Office)	April 1999	£4,927,750	Yes	Remedial action underway	Full plans
Ministry of Agriculture, Fisheries and Food					
Centre and all agencies (CEFAS, Central Science Laboratory, Farming & Rural Conservation Agency, Meat Hygiene Service, Pesticides Safety Directorate, Veterinary Laboratories Agency, Veterinary Medicines Directorate)	April 1999	£11,100,000	Yes	Most audits complete, coversion started	Top level programme plans, project and cost summaries
Ministry of Defence					
Centre and all agencies (Armed Forces Personnel Administration Agency, Army Base Repair Organisation,	January 1999	£200,000,000	Yes	Remedial action underway	Progress summary report

Department/Agency	Target	Estimated Cost	Existing PES?	Progress	Document Type
Army Base Storage & Distribution Agency,					
Army Training & Recruitment Agency,					
Army Personnel Centre,					
Army Technical Support Agency,					
Defence Analytical Services Agency,					
Defence Animal Centre,					
Defence Bills Agency,					
Defence Clothing & Textiles Agency,					
Defence Codification Agency,					
Defence Dental Agency,					
Defence Estate Organisation,					
Defence Evaluation & Research Agency,					
Defence Intelligence & Security Centre,					
Defence Medical Training Organisation,					
Defence Postal & Courier Services Agency,					
Defence Secondary Care Agency,					
Defence Transport & Movements Executive,					
Defence Vetting Agency,					
Disposal Sales Agency,					
Duke of York's Royal Military School,					
Joint Air Reconnaissance Intelligence Centre,					
Logistic Information Systems Agency,					
Medical Supplies Agency,					
Meteorological Office,					
Military Survey,					
Ministry of Defence Police,					
Naval Aircraft Repair Organisation,					
Naval Bases & Supply Organisation,					
Naval Manning Agency,					
Naval Recruiting & Training Agency,					
Pay & Personnel Agency,					
Queen Victoria School,					
RAF Logistics Support Services,					
RAF Maintenance Group Defence Agency,					

Department/Agency	*Target*	*Estimated Cost*	*Existing PES?*	*Progress*	*Document Type*
RAF Personnel Management Agency, RAF Signals Engineering Establishment, RAF Training Group Defence Agency, Service Children's Education, Ships' Support Agency, Specialist Procurement Services, UK Hydrographical Office)					
National Savings					
(Reports to Chancellor of the Exchequer)	December 1998	£3,583,754		Starting conversion work.	High level activity chart with costings
Office for National Statistics					
(Reports to Chancellor of the Exchequer)	June 1999	£2,470,543		Initiation complete. Inventory started	Initiation document and plans
Ordnance Survey					
(Reports to Secretary of State ETR)	31 March 1998	£800,000	Yes	Audit completed, test planning underway	Covering Letter and detailed Gantt
Public Record Office					
(Reports to Lord Chancellor)	December 1998	£906,541	Yes	Inventory and System assessment complete	Full plan
Royal Mint					
(Reports to Chancellor of the Exchequer)	End of 1999	£12,000	Yes	Fully compliant	Letter only
Scottish Office					
Centre and all agencies (Fisheries Research Service, Historic Scotland, Registers of Scotland, Scottish Agricultural Science Agency, Scottish Court Service, Scottish Fisheries Protection Agency, Scottish Office Pensions Agency, Scottish Prison Service, Scottish Record Office, Student Awards Agency for Scotland)	December 1998	£2,000,000	Yes	Inventory complete, pilot started	Assessment report + activity plans
Welsh Office					
Centre and agency (Cadw: Welsh Historic Monuments)	December 1998		Yes	Audit complete, checking systems	Progress report

APPENDIX 47

Memorandum submitted by the Institute of Chartered Accountants in England and Wales

INTRODUCTION

1. The Institute of Chartered Accountants in England and Wales (ICAEW) has a membership of over 110,000 members. Approximately half the membership works in practice and the other half works in finance, commerce and industry. The Institute has a wide-ranging knowledge and experience over the whole of the business arena and amongst its members' specialisations is information systems.

SUMMARY

2. The ICAEW has through its Audit Faculty issued guidance to help its members consider the audit applications for the Year 2000 date change.

In addition through the ICAEW Information Technology Faculty there has been a steady stream of advice and technical support to assist both members of the Faculty and other members in the ICAEW.

For the reserved areas of Audit and Investment business inspection by the Joint Monitoring Unit seeks to ensure that auditors are addressing appropriate questions to their clients and that for Investment Business purposes, when relevant, appropriate procedures are in place.

The ICAEW thinks that the Millennium problem is understood generally but has some concern that unscrupulous persons might prey on people's fears about the problem and that the Government might actively consider this problem.

SUBMISSION

3. The Institute's members do not face any specific problems in connection with the Year 2000 problem not encountered by others. Our members who act as auditors face a problem because of unrealistic expectations about what their responsibilities and role is. There might be companies who fail because of third party problems, embedded chips, etc which the auditor is unlikely to know anything about. The auditor's role is to give an opinion on historic figures and consider going concern problems ie the company becoming insolvent. In relation to this particular problem the Institute's Audit Faculty has issued a technical release which fully covers the responsibilities of directors and which is attached to this memorandum as Appendix 1.

4. In order to ensure its members become millennium complaint, apart from the guidance offered in the audit technical release referred to above, the Institute through its Information Technology Faculty has distributed a briefing booklet in January 1997. The Information Technology Faculty's monthly newsletter throughout 1996 and 1997 has been carrying articles on the subject to assist members and continues with that in 1998. The Faculty is shortly to distribute to its members a further publication on the subject. All these publications were, and will be available to other members of the Institute on request. In addition, since 1996 the Faculty has held a number of seminars on this subject and promoted a conference. This programme of education will continue throughout 1998.

5. The Institute seeks to regulate the professional standards of its members. The Institute seeks to provide and promote services which will help its members to adopt good business practice in relation to their business systems but it does not have powers to compel them to do so. However, if a member ceases to be able to operate his/her business coherently (eg because of deficiencies in its systems), this could, under certain circumstances, lead indirectly to disciplinary action by the Institute. If a member goes bankrupt, for the same reason, that member would of course be excluded from membership.

The term "Year 2000 complaint" is formally defined by the British Standards Institute, but this formal definition, from a practical point of view, need not be achieved by all businesses. For practical purposes compliance for a particular organisation is relative, not absolute. It depends upon the specific circumstances of the organisation including:

- Its degree of reliance upon computer systems.
- The nature of that reliance.
- The degree to which any particular date-related function within the computer programme is deficient.
- The degree to which such deficiency is crucial to the organisation.
- The degree of inter-action of the organisation's systems with those of other organisations which themselves may be deficient.

It would therefore be almost impossible to define a regulation for "forcing" compliance which would be sufficiently explicit without being extremely prescriptive or unnecessarily rigorous.

In terms of our members in practice, the Joint Monitoring Unit on its visits will question firms. In the case of an audit visit a general question will be asked to discover what are the firm's procedures for doing what is

recommended in the Audit Technical Release attached to this memorandum at Appendix 1*. Provided the audit firm has procedures in place to appropriately question its clients then no further action will be taken. If it does not have procedures it will be pointed towards the guidance issued.

In the case of investment business our only concern is that the firm's own systems are integral to, and dependant on, its management and giving of investment advice. If it is, we will require the firm to confirm that it is or has or is making them 2000 compliant. If this confirmation is not forthcoming, the Authorisation Committee may restrict the firm's activities to avoid risk to investors until the firm solves its problems.

6. The terms under which the Institute recommends whether its members qualify the accounts of companies not making sufficient progress towards compliance is set out in the Audit Technical Release at Appendix 1*. The Technical Release suggests that auditors consider qualifying the accounts of companies if:

— The auditors consider they have not received sufficient information from management to accept management's assertion that there is no significant impact on the business and, from their knowledge of the business they believe that there could be a material impact.

— It appears the company would suffer a going concern problem because of lack of progress to making the company complaint and lack of viable alternative plans and the company had not made this sufficiently clear in its accounts.

7. In terms of litigious shareholders again our Audit Technical Release at Appendix 1* addresses that problem. There seems little our members could do to protect themselves from bankrupt suppliers over and above normal prudence considerations when dealing with a supplier. The responsibility for making a company Year 2000 complaint is that of the directors who have an important role to play here. Directors will need to be able to demonstrate that they have exercised due diligence in fulfilling their duties.

8. As to whether the general public is sufficiently aware of the problem, it is our view that in general people do seem to be aware. This does not always lead to action. In many cases, particularly in very small businesses, this is because the problem is assessed, quite realistically, as likely to be minor. In other cases, businesses perceive a risk analysis as being relatively pointless because they perceive themselves as being more or less wholly reliant on their hardware and software suppliers to ensure the technical functioning of their systems. On the whole it seems likely that the general public is aware of the problem. The "Millennium Bug Campaign" of the group "Action 2000" and press comments have extensively drawn attention to the matter. We understand there is also a private members bill about Millennium Compliance by companies which, although it is unlikely to make progress, has also drawn attention to the matter.

9. As to the issue of public ignorance being exploited, we have no hard information on which to make a judgement. Fears might be exploited by unscrupulous consultants and other suppliers, offering cut price, simplistic and possibly highly dubious advice or products, sometimes on the basis of cold calling. Confidence tricksters might persuade individuals to admit them to homes and possibly business premises by posing as engineers calling to test electrical devices, lifts, cookers, video players etc for Year 2000 compliance. Existing laws seem to cover such matters. There might be a role for advice from the Government and the regulated utilities, particularly in relation to domestic dangers. Perhaps the Government could introduce an approval system, such as was done with telecommunications equipment, to denote Year 2000 compliant goods.

16 February 1998

APPENDIX 48

Memorandum submitted by Allen & Overy, Solicitors

INTRODUCTION

Allen & Overy is one of the UK's leading international law firms. It has 177 partners and some 2,000 staff working in 19 major centres on three continents. Allen & Overy has just been awarded the prestigious Legal Business "Law Firm of the Year Award". Our Information Technology Group, based in London, straddles the Litigation and Corporate Departments. This Group comprises 23 solicitors and 6 partners and has extensive experience of advising on millennium issues is corporate transactions as well as electronic commerce and banking.

It is with this experience that we feel qualified to assist the Committee with its inquiry. We will concentrate on the legal aspects of this inquiry.

SUMMARY

— The problems surrounding the millennium compliance issue will have a significant impact on major industry sectors including finance and health;

— The UK will be affected in the same way as other Western countries which are dependent upon an advanced computer infrastructure;

*Not printed.

— Millennium compliance is a particular problem in relation to embedded software where the problem is difficult to detect and remedy before the year 2000;

— Our view is that existing UK contract law and consumer protection legislation, together with remedies under the tort of negligence, offer adequate legal protection to UK consumers in connection with Year 2000 problems, bearing in mind this must be balanced against the interests of commerce;

— Our experience indicates that many large businesses expect that their systems will be millennium compliant by the year 2000 but many smaller companies do not have the necessary resources to ensure millennium compliance which could have a significant impact on the economy as a whole.

OPINION

By way of assistance of the Committee we set out, prior to answering its questions, a brief statement as to the exact nature of the millennium problem.

Most computer systems are date-critical using two-digit data fields. It is the inability of computer software and systems to recognise "00" that is causing the so-called "millennium", "Year 2000" or "Y2K" problem. In the year 2000, it is thought that some software will read the year "00" as "1900" with the effect that wrong data will be stored, manipulated, or wrongly calculated, In the worst case, this may cause the computer system to crash.

1. *What type of legal action do you think will result from equipment failures at the millennium? Is the picture in the UK likely to be significantly different from other countries, and, if so, why?*

As computer chips can be found in so many everyday items from household goods to the most complex computer software in our leading financial institutions, the potential effect of the millennium problem is unprecedented in its scope.

Examples of the type of legal action which may be brought are as follows:

Computer Software/Systems Supply

— actions for loss to library and database management systems;

— actions by users of mainframe or PC systems which predate the recognition of the millennium problem. Even if applications used are able to cope with the problem this will be of no value if the mainframe cannot;

— actions by purchasers of computer software against the supplier/manufacturer for losses suffered by the business;

— actions by users against those who recommended the system or software;

— actions by the business for liability to third parties as a result of the failure to remedy the software in time; and

— actions by businesses for their management time and the loss to the business as a result of diverting IT resources from other projects[4].

Finance and Commerce

— actions by the shopkeeper who loses business as a result of the rejection of credit cards whose expiry date is beyond the year "00";

— actions against investment banks, accountants, solicitors and other professionals who have given incomplete due diligence advice on the purchase of, or investment into, companies which have or may be affected by serious millennium problems;

— actions by individuals whose personal pensions have been wrongly calculated;

— actions against the Inland Revenue for its failure accurately to calculate income tax;

— actions by the company whose payment tracking system has failed leaving it with a liability to Customs and Excise for VAT;

— actions by small, medium or large businesses whose payment and receipt software miscalculates sums due and consequentially interest due;

— actions by the financial sector for the failure of its forecasting software; and

— actions by traders in the Stock Exchange who suffer loss as a result of a computer crash on that date.

[4] Claims for management time in the UK have been unsuccessful in the past. Claims under this head of damages in connection with losses for computer non-compliance have been brought for the first time and are currently following due process in US Courts.

Health & Product Safety

- actions by the estate of the person who died, or a person who is seriously injured, as a result of hospital equipment failure on 01/01/00;
- action by producers of food whose sell-by labelling software fails;
- actions by individuals who are harmed by lift failure on that date; and
- actions by residents in the neighbourhood of a chemical production plant whose equipment fails allowing noxious gas to escape.

Consumer

- action by the individual whose microwave oven, and other appliances with embedded chips, ceased to work on that date;
- actions by individuals who are unable to travel as a result of the failure of aircraft or air traffic control systems on that date; and
- actions by individuals whose utilities on telephone systems fail to operate on or after that date.

These are 20 random examples of the type of claim which may be brought from the petty to the financially significant crash on the Stock Market. These examples indicate that a number of actions will be in the nature of "Group Actions", which, by definition involve greater numbers of parties with attendant complications and escalation of costs.

The millennium problem is a global one. There is no reason to believe that the problem will be significantly different in the UK from other countries. This problem will affect Western, developed countries where the use and incidence of computer chips and software is higher rather than countries where there is less computer infrastructure.

Particular industry sectors are easy to identify as being the worst affected because of their reliance on software. They include the financial services sector; health and safety sector and mission-critical sectors such as transport and utilities (eg aviation, rail, shipping and gas, electricity and telecoms). Our experience with clients indicates that particular industry sectors were early to recognise the nature of the problem and are now in an advanced state of compliance. The Financial Services sector is a good example followed by other major corporates. Our experience is that the Public Sector is trailing behind.

One point worth making is that, no matter how advanced compliance is in the UK at the millennium, the financial and commercial sectors in the UK are so dependent upon businesses and the public sector in other countries with whom we trade that the picture in the UK will be coloured by the compliance steps of our trading partners.

2. *Do you think such legal actions could have a significant impact on the overall economy? If so, to what extent?*

Statistics suggest that the value of claims arising out of the millennium problem is so great that there will be a significant impact on the economy.

At the very least will be the cost of carrying out an audit to check whether all currently used software is compliant. If defects are identified, the further costs associated with remedying those defects either to re-write the code, update software or replace the all or part of the system will affect the economy. Old mainframes using the COBOL computing language are likely to have to be replaced entirely. The cost to the economy of preventative medicine, that is to say ensuring millennium compliance in advance of the year 2000, is likely to be considerably less than trying to restore a failed system and recovering corrupted data in the millennium.

The most difficult area to estimate costs and consequently the impact on the economy is that of embedded software. Many electrical and automated products from household to factory equipment, contain embedded chips which may be affected by the millennium problem. The extent of loss caused by embedded software will only become apparent upon failure of those products or equipment and is very difficult to predict. Thereafter, the impact on the economy will be the ability of the supplier of those failed products to replace or correct them or not.

3. *Do you think that the public are sufficiently well protected by current consumer legislation? Is further legal protection needed to deal with year 2000 problems?*

Supply of Goods Containing Software

The Sale and Supply of Goods Act 1994 which came into force on 3 January, 1995 brought in the implied term that goods must be of "satisfactory quality". Goods, with embedded chips, or software will be covered by this legislation. In many cases, the supply of goods will also be governed by standard contractual principles. There may also be an express term in the contract to the effect that the goods will be fit for the purpose. The fact that it is the software element that will fail and cause the goods to fail is irrelevant to the

issue of liability. The consumer will be protected in the same way as he/she would be if the product failed for any other reason.

In addition to this contractual liability, a person who suffers loss may also have a claim in negligence against the supplier or manufacturer if he can establish a duty of care. Most goods containing embedded software of a safety critical nature will support a claim in negligence.

Both contractual claims and claims in negligence are based on establishing fault. The Consumer Protection Act 1987 allows a claimant a remedy for defective products which cause injury irrespective of fault but dependent upon the failure of the goods. Any person who suffers injury may claim under the Act. There is some doubt about whether this Act applies to computer software.

Supply of Software

As set out above there may be an express contractual term which sets out that the software is of "satisfactory quality". There is some doubt as to whether software is "goods" although the indication given in the case of *St Albans City and District Council -v- International Computers Limited* [1996] 4 All ER 481 is that software is "goods" with the protection that this offers the consumer.

In both the sale or supply of software and the sale of goods containing software, the consumer has to overcome the statutory limitation period hurdle. Claims must be brought within six years from the date of supply of the goods or software. This will affect all supplies of software six years before the year 2000.

Consumers (like others) are also under a duty to mitigate their loss. This means that they must take all the steps they can to limit the losses which arise out of millennium non-compliant software. Any attempt by software suppliers to limit or exclude liability will be subject to the Unfair Contract Terms Act 1977 which puts such clauses under a "reasonableness" spotlight.

4. What would be the legal position of a supplier of proven non-compliant goods if his insurance company had excluded non-compliance from product cover?

The supplier of proven non-compliant goods which is uninsured will have to bear its own losses. This problem will be particularly acute amongst many smaller companies who do not have the resources to deal with the millennium compliance issues in a comprehensive manner. There is a real risk of business failure in the small business sector which may have a considerable impact on the economy as a whole.

It should be emphasised that this note focuses on **legal** remedies available to customers. The fact that a legal remedy is available does not mean a consumer will always be able to enforce that remedy. In particular, where a supplier of defective goods is forced into insolvency procedures because of a multiplicity of claims, individual consumers are unlikely to recover from that supplier. For these reasons it is important to consider what measures can be taken to protect against the impact of millennium compliance on business failure in the small business sector.

As at today's date Wednesday, 25 February, 1998, there is only one year, 309 days until 1 January 2000.

25 February 1998

APPENDIX 49

Memorandum submitted by Masons, Solicitors

INTRODUCTION

Masons is an international law firm with a leading reputation in Information Technology and Construction law and practice, and consequently we have received a wide variety of instructions from clients concerned about the impact of the Year 2000 problem upon their businesses and customers.

SUMMARY

- We consider that a substantial number of legal actions will arise due to the Year 2000 problem.
- Such actions will be pursued by system users and users of equipment containing embedded systems[5] either to recover their costs in securing a replacement solution or where system failure causes severe business interruption, damage to property, personal injury or death. In the case of personal injury or death, the Health & Safety Executive is likely to pursue a criminal prosecution.

We would be surprised if such legal actions or disputes per se will impact upon the UK economy.

[5] See "Embedded Systems and the Year 2000 problem. Guidance notes" published by the Institution of Electrical Engineers, Savoy Place, UK WC2R 0BL which is regularly updated on their web site http:/www.iee.org.uk/2000risk.

RESPONSES TO QUESTIONS ASKED

1. *What type of legal action do you think will result from equipment failures at the millennium?*

We anticipate three types of legal action arising as follows:

(i) a civil action initiated by a system user to recover its costs in implementing a replacement system following its own technical audit or receipt of advice from its supplier revealing that its existing system is not Year 2000 compliant—we have been instructed by a City of London institution in one such case;

(ii) a civil action initiated by a system user where its own Year 2000 project has failed to reveal a Year 2000 problem; there is system failure; a serious incident or accident arises and consequently the system user suffers substantial business interruption and/or damage to property and/or employees or visitors to the site are injured or killed; and

(iii) a criminal prosecution pursued by the Health & Safety Executive under the Health and Safety at Work etc Act 1974, or other statutory regulations against employers, designers, manufacturers and suppliers[6] in the circumstances referred to in (ii) above where individuals are injured or killed.

There are certain factors which will make civil claims by system users more or less likely (in no particular order)

- The consequences or potential consequences of system failure caused by the Year 2000 problem.
- The nature of the application which the system performs.
- The date upon which the system was installed.
- The degree to which the system will fail, under perform or malfunction as a consequence of the Year 2000 problem.
- The availability of a remedy to enable an existing system to be repaired.
- The costs of a remedy or replacement solution.
- The availability of I.T. resources.
- The terms of the contract between system user and its supplier and other sub-suppliers in the supply chain.
- The liquidity and financial resources of the system user and its supplier and other sub-suppliers in the supply chain.
- The availability of insurance.
- The degree to which system users are able to complete their Year 2000 project "on time".

Where civil claims arise they are likely to be multi-party, with each party in the supply chain seeking a contribution or an indemnity from its sub-supplier or, where an insurance policy is in place, from its insurers (see answer to question 4 in this respect). Management consultancies and other IT consultancies are at risk for negligent advice given in relation to the Year 2000 problem.

Is the picture in the UK likely to be significantly different from other countries and, if so, why?

We see no reason in principle why the UK should differ from other leading Western economies, although it is probably fair to say that there is more of a "claims culture" in the UK and USA than other civil law jurisdictions.

2. *Do you think such legal actions could have a significant impact on the overall economy? If so, to what extent?*

It is widely reported that most companies which are now undertaking Year 2000 projects have had to increase their cost estimates or budgets for remedying the problem. Should a substantial number of system users seek to pass on these costs to their suppliers, there will be a significant number of legal actions.

Currently no-one (and certainly no law firm) can foresee the extent to which systems will fail; the precise consequences of failure and whether legal actions will result.

We would be surprised if legal actions and disputes per se would impact the overall economy.

3. *Do you think that the public are sufficiently well protected by current consumer legislation? Is further legal protection needed to deal with Year 2000 problems?*

No comment as this is outside our area of practice.

[6] See preface by HSE contained in "Safety and the Year 2000" (published by HSE Books, PO Box 1999, Sudbury, Suffolk CO10 6FS. Price £15.00.

4. *What would be the legal position of a supplier of proven non-complaint goods if his insurance company had excluded non-compliance from product cover?*

This would not affect the supplier's potential liability to the system user for breach of warranty, depending upon the precise terms of the contract between the parties and the extent to which warranties might be implied by law.

The non-availability of insurance cover (due to an exclusion) would however influence a Court in considering the extent to which a supplier's limitation of liability clause passes the test of reasonableness under the terms of the Unfair Contract Terms Act 1977 (where applicable). In the case of St Albans District Council -*v*- ICL[7] the Learned Judge took into account the availability of insurance cover for ICL and the absence of insurance protection for St. Albans in finding that ICL's limitation of liability clause did not pass the test of reasonableness under UCTA and was therefore unenforceable.

It is perhaps trite to state that the supplier would not be able to claim as an insured against its insurer under its insurance policy if it contains a Year 2000 exclusion clause. As the law stands, it is not open for the supplier to argue that such an exclusion clause is contrary to UCTA as insurance contracts are excluded from the scope of UCTA[8].

February 1998

APPENDIX 50

Memorandum submitted by the Consumers' Association

INTRODUCTION

1. Consumers' Association (CA), publisher of *Which?* and other consumer magazines and books is an independent consumer organisation with around 700,000 members. We receive no funding from government or industry and are financed solely by sales of our products. As an organisation relying heavily on information technology for research, data processing and subscription fulfilment, we have first hand knowledge of some of the difficulties that businesses may experience with millennium compliance. At the beginning of last year we initiated an audit process to ensure that our own computing and operating systems and embedded software in products and processes, and that of our suppliers, meets the British Standards Institute's Year 2000 Conformity Requirements. We also set up a project team to look at issues affecting consumers in general.

1.2 We are extremely concerned about the potential problems which may arise in the year 2000 as a result of software and systems which are not compliant. Much of the debate about potential problems has focussed on the potential impact on businesses, rather than the likely impact on consumers if companies have not taken the necessary steps to protect them. It has also been a matter of concern to us that much of the information currently available continues to be characterised by speculation and anecdote rather than well researched facts. We therefore welcome this Inquiry by the Science and Technology Committee and we appreciate the opportunity to submit evidence to the Committee.

1.3 While the problem was initially seen by some as chiefly affecting businesses and IT suppliers, it has become increasingly clear that there may also be a significant impact directly on consumers, whether as purchasers of goods and services, for example, personal financial products, or as users of systems such as health or transport services.

To deal with the questions raised in order:

2. *To what extent is the public at risk from non-millennium compliance exposure?*

2.1 The public is potentially at significant risk. It has been suggested that Year 2000 failure or malfunction in date-critical systems which support essential services could have life threatening consequences, for example in:

- air traffic control and road and rail signalling equipment;
- medical equipment or computerised patient records in hospitals and surgeries;
- control equipment in factories, chemical plants or power stations, particularly near residential areas; and
- processing, labelling and distribution of perishable foods.

2.2 There is also the possibility of consumers suffering financial loss, major inconvenience or breach of data protection safeguards arising from malfunctions in, for example:

- transaction, billing and credit-rating systems in banks, building societies, credit card companies, utilities and other businesses;

[7] [1995] FSR 686 at pages 708 and 709.
[8] UCTA 1977, Schedule 1, Section 1(a).

— insurance company records;

— social security benefit administration, (concern relates particularly to elderly people during winter months, for example);

— workplace salary systems or pension records;

— local authority administration systems (affecting, for example, electoral rolls); and

— PEPS (in relation to the millennium compliance status of the companies in which funds are invested).

2.3 In qualitative terms, therefore, some types of hazard could be extremely serious; what is not known is how major or how widespread any of these malfunctions will be in practice, and hence the degree of risk to the public in quantitative terms.

2.4 It will also be evident that while consumers can take precautionary measures against financial and administrative Year 2000 problems of the type listed in the second group above, there is very little they can do about the potentially very serious failures in the first group.

2.5 In addition, there is also the less serious but probably more widespread risk of malfunction in consumer equipment. As well as the many personal computers used in homes and small businesses, this could include such items as video recorders and telecom equipment with embedded date sensitive control systems. These raise issues of product liability which, while theoretically covered by existing legislation, may present difficulties for consumers in obtaining adequate redress.

2.6 Over the past two years, we have, as a matter of course, tested for millennium compliance every relevant domestic appliance which we have tested for our *Which?* reports. To date, we have not found any problems.

2.7 We also carried out a small survey in which we asked 500 *Which?* members to check their video cassette recorders (VCRs), watches and fax machines for any Year 2000 problems. To do this, they set the clocks forward on these products to see whether they rolled over to 1 January 2000. They then checked whether the products "recognised" the date 29 February 2000. Of the 187 replies we received, five watches, 10 VCRs and two fax machines experienced problems. For this reason, our concern about domestic appliances focuses chiefly on those products which consumers have already purchased.

2.8 An important element of the problem for consumers is that in England, Wales and Northern Ireland, consumers have only six years from the date of purchase to bring a legal action for breach of contract against a retailer[9] .It is therefore important for consumers who bought equipment four years ago to be aware of the opportunity to test that equipment and seek any necessary redress now, rather than waiting until the Millennium when the six year limit will have expired.

3. *Is enough being done to educate the public?*

3.1 No. A huge amount of information is available in print and on the Internet but almost all of it focuses on issues of technical and contractual compliance and litigation from the perspective of businesses and providers of IT solutions. There has been unhelpful alarmist reporting in the tabloid press. We think it important that consumers are not alarmed unnecessarily to allow companies to focus attention on assessing and dealing with Y2K problems, rather than dealing with thousands of letters and calls from customers. Nevertheless, there is an important balance to be achieved between not diverting resources from the problem and ensuring that consumers' needs for information are met. Companies, government departments and other bodies have a vital role to play in educating consumers about the action they have taken to protect them and giving information about available redress. As the dates when computer problems are expected draw nearer, it will become even more important for companies to communicate with customers on this issue, and consumers will expect to be given more detailed information and assurances.

3.2 Similarly, the Government's Action 2000 programme offers informations and training advice to businesses but does not have in its remit responsibility for consumer issues. We have written to the Minister responsible for Action 2000 on a number of occasions to express our dissatisfaction with this serious omission.

3.3 *What more would you like to see done and by whom?*

We would like to see the Government take active responsibility for protecting consumers from the Millennium problem and, at the very least, to give consumer problems the same attention that they have addressed to those of industry.

3.4 There is a need for a planned practical consumer information programme, to raise awareness, accompanied by a programme of consumer education on what consumers can do to minimise any impact if problems do arise. At a very basic level, this could be done by means of fact sheets, help lines and web-sites — the sort of initiatives that Action 2000 has introduced for business.

[9] Sale of Goods Act 1979, as amended by the Sale & Supply of Goods Act 1994.

There also needs to be a central source of information about consumer problems which can be used by journalists and others who have the potential to inform (or misinform) consumers on this issue.

3.5 A planned consumer education programme should look at consumers' information needs now and over the next two years. While such an information campaign should be co-ordinated by the Government, much of the information could be provided by manufacturers, retailers, banks, insurance companies and other suppliers of products and services.

The education needs to take several forms:

3.5.1 Consumers need information about their legal rights and any time limits for making claims for redress;

3.5.2 For products which consumers already have in their possession, consumers need information about what sorts of products might be affected and how they can check them in advance of the century Date Change to see if there are problems. This is particularly important for products which are around four years old, for which consumers will not be able to claim compensation in 2000 for breach of contract by the retailer, but could do so over the next two years;

3.5.3 For products which consumers are buying now, they need to understand any claims which are being made about the products in relation to the Millennium, for example, do the claims refer to the software or the hardware?;

3.5.4 Consumers need information about what action they can take to minimise the problems which they may run into if a company has not taken the appropriate action (as set out below in our answer to Q4);

3.5.5 Public bodies, government departments, regulators and industry should be encouraged to make publicly available, in a form which is understandable by consumers, information about their compliance activity and its progress, to help to ensure consumer confidence.

4. *What advice has CA offered its members?*

4.1 In January 1998, we published a *Which?* report, "Millennium Countdown"[10], which includes practical advice in a number of areas, for example:

- we have set out a number of actions which consumers can take to protect themselves, such as, keeping personal financial papers in order, including utility bills and checking insurance policies for year 2000 exclusions (a full list is set out in our answer to Q5 below);
- We have explained consumers' legal rights under the Sale of Goods Act 1979, as amended by the Sale & Supply of Goods Act 1994, and the Supply of Goods and Services Act 1982, the Consumer Protection Act 1987, unfair contracts legislation and the law of negligence.

In addition, we have published details of telephone lines for our members to call us with information on problems they have experienced as a result of the Millennium bug.

4.2 Our report pointed out that some services liable to be affected (such as NHS treatment or social security benefits) are supplied without contract making any claim for redress more difficult; and, as already indicated under Question 1 above, the most potentially serious Year 2000 problems are entirely outside the consumer's control.

4.3 In an earlier *Which?* report[11], we gave consumers information about some software packages designed to audit and/or fix home computer problems which had performed well in tests.

5. *Is there a need for consumers to be offered greater protection beyond that provided by current legislation?*

5.1 With regard to consumer goods and also services supplied under contract, existing legislation should in theory be sufficient to ensure that retailers meet their obligations to upgrade, replace or compensate, although for claims for breach of contract against the retailer this only covers equipment up to six years old (in England, Northern Ireland and Wales). The same problem should not exist for consumers in Scotland where consumers have a period of five years after damage to a product occurs in which to make a claim. This needs to be publicised and enforced, though, preferably by the DTI. We anticipate particular difficulties with personal computers in determining whether hardware or software is at fault.

5.2 We are concerned that a number of retailers and manufacturers are making claims about Millennium compliance for their products as we think that there is scope for considerable consumer confusion. We would like to see Trading Standards Officers investigating these claims now.

5.3 In addition, we raised concern with Action 2000 about their proposed introduction of a "Millennium Safe" logo, which companies could use if they felt they had taken appropriate action. We fear that without some basic consumer protection measures, such a logo could be used to mislead consumers by companies, particularly those who may not have appreciated the need to undertake a proper audit of their systems and

[10] Not printed.
[11] "The Millennium Bug", *Which?*, November 1997, pp30-31.

processes. In our view, such a logo should at the very least demonstrate that a company has undertaken an identified procedure, such as a systematic audit and correction of software and embedded systems. Additional safeguards that we consider should underpin the use of a logo would be that its use should be signed off by a senior member of staff, for example, the Company Secretary. Those companies who use the logo should be required to register its use with an authorising body (such as Action 2000) and be prepared to produce documentary evidence to back up their claim if requested. In addition, a clear definition of what is meant by "Millennium Safe" is needed to help consumers in obtaining redress at a later date if necessary.

5.4 As already noted under the answer to Question 3, above, there is greater cause for concern in the case of state or other services supplied on a non-contractual basis. Although a consumer might still have a valid claim for negligence if they suffered loss or injury due to Year 2000 problems, this could prove difficult, time consuming or expensive to substantiate.

5.5 In September 1997, CA contacted 15 regulatory bodies and agencies to ask what action they were taking to protect consumers from Year 2000 problems. Replies showed that some were still in the early stages of dealing with the potential problem. Even where they said they were putting pressure on their respective industries to meet targets for millennium compliance, they had not in most cases considered the issue of consumer redress if failures or other problems arise. Nor has there been any clear statement concerning the passing on of compliance costs to the consumer. It would be unacceptable if consumers are expected to bear the cost of the company inefficiencies in relation to this problem. Regulators must accept that they have a role to play beyond normal standards of service regulation, and CA plans to monitor this issue very carefully. We are concerned that some Regulators may hold that setting normal standards of service is sufficient to guarantee that companies take action to deal with the Year 2000. This would clearly not be the case if companies are not aware of the potential impact of Y2K on their service delivery or are not aware that Regulators will take an interest. Regulators are uniquely placed to take action and we would like to see them play a proactive role in ensuring consumers do not suffer as a result of inaction by companies.

6. *What should the Government be doing to encourage consumers to make appropriate preparations?*

6.1 As already indicated in the response to Question 2, in our view there is a need for a planned programme of consumer education which could include measures such as media advertising, fact sheets, helplines and web-sites. In other words the sort of initiatives that Action 2000 has introduced for businesses. There should be a planned strategy co-ordinated by the Government as part of its "Millennium Bug" campaign. This strategy should not, however, be restricted to specific precautionary advice but should also seek to maintain consumer confidence by including up to date progress reports on compliance measures by government and industry in the key areas identified in the answer to Question 1.

6.2 *What appropriate preparations should consumers be making?*

We will continue to keep under review the sort of preparations which consumers should be making, in the light of information which becomes available about the progress being made by government departments, industry and other organisations in tackling the problem. We may also advise action in the light of calls and letters from *Which?* members about any problems they are experiencing with products or services. At the moment we are advising consumers of the following;

Action which consumers should consider to protect themselves from possible problems:

- keep financial papers in order, for example, keep records of when insurance policies are due for renewal, keep details of direct debits and mortgage repayments;
- keep receipts of financial transactions made abroad, in case there are problems with the computer systems in that country;
- if you receive a credit card with an "00" expiry date, make sure you keep all your transaction slips and check them against your statement;
- keep your utility bills, so that you have proof of meter readings, for example, in case there are problems with billing systems;
- if you are buying or renewing an insurance policy, check with your broker or insurer to see whether it has any Year 2000 exclusions. As policies such as household or car insurance are annually renewable, exclusion clauses may only start appearing in early 1999;
- be careful if you are buying an extended warranty. Year 2000 exclusions may make the policy virtually worthless;
- there are some products you can test at home, such as VCRs and fax machines by setting the clock to roll over from 1999 to 2000, and then seeing if it recognises the leap year;
- if you discover that any products are not year 2000 compliant, refer back to the retailer. Remember that in England, Wales and Northern Ireland you can only claim compensation for breach of

contract during the six years from the date of purchase. So if you have a four-year old product that is not compliant, it is best to contact the retailer now;

— if you have concerns at your workplace, ask what action is being taken. For example, check that plans have been made to ensure that your pension scheme contributions will continue to be picked up;

— if you are making a purchase over £100, it may be worth using a credit card to gain the extra protection provided under Section 75 of the Consumer Credit Act 1974, which specifies that the credit card companies are jointly liable for the retailer's breach of contract or misrepresentation if you buy faulty goods or services; and

— check whether travel insurance policies exclude Year 2000 failures.

February 1998

APPENDIX 51

Memorandum submitted by the London Ambulance Service

INTRODUCTION

1. The London Ambulance Service (LAS) covers an operational area of 620 square miles, broadly aligned with the M25 boundary. Nearly seven million people live in the capital and their numbers are swelled by around one million commuters who travel into London by tube, train and car during the rush hour. LAS provides patient care annually for one and a half million patient journeys, of which approximately half a million are conveyed by the accident and emergency fleet.

SUMMARY

2. The LAS has set up a Year 2000 project using the PRINCE methodology, with commitment at the highest possible level. The project does not restrict itself to internal risks. It also identifies that external organisations that LAS relies upon to provide service may fail to fully address the Year 2000 problem. The project plans make the assumption that there will be such difficulties, and that the LAS should seek to minimise their impact. Many risks to the project have been identified; however the major contraint is expected to be retention of sufficiently qualified staff, especially when the rest of the IT industry wakes up to the scale of the problem.

BRIEF INFORMATION

3. The LAS treats this project as of the utmost importance, and commensurate with this, has set up a PRINCE project on which the Executive role is undertaken by the LAS Chief Executive; the Senior User is the Director of Finance and Business Planning; the Senior Technician is the Director of Technology, redoubtable in the Information Technology field, being a Fellow of the British Computer Society; and the overall Project Manager has 25 years IT experience covering the private as well as public sector.

4. As can be seen, LAS has established a project with a very high profile sponsor. It has also created a multidisciplined team to undertake a full inventory and scope of the problem; contact suppliers, analyse contracts, identify suppliers' solutions, assurances and their test results; if appropriate run our own tests and/or procure replacements.

5. Whilst the underlying problem is technology related, it needs to be appreciated that the potential consequences are upon service delivery and therefore upon patient care. To fully address not only the potential problem but also the potential impacts, the Project Manager has a team which includes 19 Senior Managers or Directors within the LAS, each chosen for their specialist knowledge and experience, and of which only five are from the Information Technology field.

6. LAS works to timescales laid down by the NHS Executive in EL97(59) dated 3 October 1997, which require that by 31 March 1998 the LAS reports to the Regional Head of Information with: "Detailed Year 2000 project plans, timescales for main phases, detailed budgets for remedial actions and how they will be funded".

7. In line with this timescale, LAS is currently undertaking an inventory of all of its systems, including writing to suppliers and establishing the costs and timescales of putting right those that are not compliant. It is necessary to undertake the inventory to identify all equipment that might possibly be subject to the Year 2000 problem (ie contains or it is suspected may contain a computer chip), identify whether it is, and if it is, assess the impact and fix the problem, either by correction or by replacement. An initial budget figure of £1 million has been identified and included in LAS financial plans. This figure may be subject to revision depending upon the results of the inventory and its state of Year 2000 compliance.

8. The process is: using standard proforma, write to the supplier to confirm if the product is Year 2000 compliant. If the supplier confirms that it is compliant, ask for test results, and if possible independently cross

check/validate the results. If the supplier confirms it is not Year 2000 compliant, ask what they are going to do to make it compliant . . . and if necessary plan to upgrade or replace . . . in either case, test and check results.

9. In some cases, there are tools available which can be used to help, for example to test compliance of BIOS in PC's. Where available and proven, these tools should be used to maximise the accuracy of the test results.

10. In some cases, other parts of the NHS or other public bodies may have already undertaken the same or similar checks. Great care needs to be taken to ensure that their environment is an exact match to LAS's, and in all cases, confirmatory test results are required. This option is being investigated further at a National Ambulance Forum to be held on 3 March 1998.

11. Since broadly the products being investigated are mutually independent, the project is being progressed using concurrent Stage managers, each to establish their own project and Project Assurance team. Great care needs to be exercised on areas of actual or potential overlap, including LAN/WAN infrastructure.

12. It is recognised as vital that LAS quickly identifies what systems needs to be replaced and reserves "slots" in its suppliers' order book.

13. The above details only internal risks. There is also the risk that external organisations may fail to fully address the Year 2000 problem. *The LAS Year 2000 Project makes the assumption that there will be such difficulties,* and that LAS should seek to minimise their impact. Hence during the subsequent stage (laid down in EL97(59) as by end 1998), detailed contingency plans are to be drawn up against each of the identified failure scenarios, both of internal and external providers. LAS project plans formally document as an assumption that there will be failures of external suppliers.

14. For example, LAS has identified that if the Millennium problem causes failure of the electricity supply, there would be difficulty in fuelling the ambulances. This problem is seen as common to fuelling all of the emergency service vehicles in London, and LAS has therefore escalated it to the London Emergency Services Liaison Panel for a unified approach for emergency services in London.

15. There is no doubt that the problem of the "Millennium bug" has not been adequately communicated to date. It needs to be appreciated however that this is a world-wide, not just UK problem. For example, the LAS has received written confirmation of Year 2000 product compliance from one multinational company, based on testing undertaken by their US parent. LAS was aware from our internal testing that this was not the case, and asked for copies of their test data sets and test results. LAS has helped that company by identifying the failure/inadequacy of their test data sets, and that company now appreciates that their product is not Year 2000 compliant.

16. To how many more companies and products does this apply, and will the users of these products be as technically aware and adept as are LAS technology staff?

17. It is recommended that Government write at the highest level to every known IT provider and to every known UK user of technology, perhaps drawing upon the knowledge and experience of the LAS. It is suggested that this be underpinned by personal invitations to captains of industry and decision makers to a seminar to be chaired by a Cabinet Minister, to outline the potential problems and issues, followed by a Brains Trust Question and Answer session.

18. Assuming that LAS is not alone in deciding to cover itself against possible failure of the supply chain, that is by building up stocks of all consumables in the latter half of 1999, there could be an impact on the economy, as organisations generally bring forward their spend. There are three perceived impacts upon the economy: the early spend may impact upon borrowing; the supply chain may expect to encounter a mini-boom, mini-bust scenario; the increased demand in the second half of 1999 may make it that much more difficult for the supply chain to address its own Year 2000 problems.

23 February 1998

APPENDIX 52

Memorandum submitted by Annodeus Limited

1. INTRODUCTION

1.1 Annodeus Limited is a wholly owned subsidiary of Acclaim Entertainment Limited, a global entertainment software corporation established in 1987. Annodeus draws upon Acclaim's significant software skills and development experience and, importantly for the millennium issue, a key skill-set in system clock management within a range of computing environments. This led to the development of its Year 2000 product concept, the launch of Annodeus and a strategic step into business solutions software for the corporation.

1.2 Annodeus has spent the last 18 months developing Solution 2000—a range of products and services to help businesses assess and address Year 2000 compliancy issues, scalable from the largest multinational corporations down to the single personal computer.

1.3 Solution 2000 is the first in a range of solutions aimed at the desk top environment that will address wider business needs. For example, Annodeus is already developing software that will help businesses manage the technical and business changes arising from European Monetary Union.

1.4 Adopting a broad, long-term strategic approach to solutions and intelligence-based technologies distinguishes Annodeus from many of its competitors, who are entering a short-term market created by the Year 2000 issue. The substantial investment (over £600,000 to date) made by our parent company, in parallel with a focus on quality standards and significant due diligence in choosing advisors, is key to the arguments we present overleaf. Annodeus remains to be convinced that other entrants to the Year 2000 solution market have demonstrated a similar level of commitment and responsibility.

1.5 As a result of this, Annodeus believes that Solution 2000 is the premier product in its category. This has been supported in a report by one of the leading independent authorities on the Year 2000 problem, Solace Consultancy Services. It rated Solution 2000 one of the top products in all areas of testing. In addition, Solace provides independent auditing for the company's compliancy database, which is the largest of its kind and the only one known to be independently verified by a reliable third party.

2. Executive Summary

2.1 As a supplier of relevant solutions, Annodeus wishes to contribute to the debate concerning the millennium compliancy issue. In Annodeus' view, the issue remains largely misrepresented as a technology problem, and instead must be approached primarily from a business/economic perspective. Annodeus aims to assist the Government in framing the issue clearly, and providing practical assistance to UK businesses.

2.2 In summary, Annodeus believes that since all individual technical date change problems are solvable, the critical need is to ensure that companies put "millennium management" processes in place. Before they can do this, they must understand the true potential implications of the date change technical problem, which extend to the business and commercial environment, and in addition, among others, incorporate legal and insurance issues.

2.3 The key to enabling these necessitates rapid action by the Government to re-frame its handling of some of the millennium issues. There must be more emphasis on practical assistance, the introduction of defined compliancy standards, a re-evaluation of the information sources and specifically, the advisors upon which the Government is currently relying.

2.4 Annodeus' key recommendations can be summed up as follows:

- Annodeus believes that action must be taken now to address this issue, as we are fast approaching the millennium and time is literally running out. The awareness generation process is excellent, but insufficient: *"Stop talking: start doing"*
- Many companies and individuals claim to offer solutions and best practice advice. But Annodeus urges the government to establish an accreditation system for solutions providers. It needs to establish and acknowledge practitioners of best practice, lest a false sense of security stacks up unresolved problems for the date change timeframe: *"Choose your partners carefully"*
- It is entirely likely that the range of problems already identified could recur at a later stage, so the government and the business community must be prepared. This includes acknowledgement of the shared responsibility to address such problems, as well as the practical steps towards managing such issues. Annodeus itself is already developing solutions to manage the technical and business changes arising from European Monetary Union: *"Establish pattern for the future"*

3. Responses to Specific Points

(i) *the nature, magnitude and implications of an inability to manage the date change in personal and mainframe computers, embedded systems and software, especially where such computers are performing safety critical operations;*

3.1 The phrasing of this question illustrates a fundamental problem that is shared by government and the business community alike.

3.2 Every single individual technical problem, whether in software, hardware or embedded systems can potentially be solved given sufficient time and resources.

3.3 The nature of the Year 2000 problem is actually an inability to manage the *process* of tackling these issues within the timeframe available. This arises both from the sheer scale of corporate and government systems, as well as the well-documented lack of awareness that the problem exists within sections of the business community, in particular SMEs and very small businesses.

3.4 A further causal factor is potentially the most serious. That is, lack of understanding that *no system exists in isolation.* Universal compliance, if it is achieved, is meaningless without understanding the interdependencies your system and or business shares with other (non-compliant) systems.

3.5 As a result, the magnitude of the "millennium issue" is impossible to quantify. Therefore, direct implications are impossible to outline to any significant degree. The "knock-on" effects of business and technical interdependencies may only be known after the date change.

3.6 Annodeus supports the Government in its awareness raising activities, however, we believe that it must take technology out of the equation to a large degree, and immediately commence providing practical guidance to ensure that the problem is tackled. The size of the problem is, to some extent, immaterial. *Immediate action* is critical but will only happen if practical recommendations are offered, based on clear and concise guidelines.

3.7 Annodeus has developed concrete proposals to work with sections of the public and private sectors to tackle the millennium compliancy issue.

(ii) *the effectiveness of action which has already been taken to avert problems in Government, large corporations and small businesses;*

3.8 All action taken or underway to address date change problems within individual systems is a step towards the readiness of these organisations. However, it cannot and will not avert the economic, organisational and commercial problems that will impact the UK on 1 January 2000. Annodeus does not therefore consider this action effective.

3.9 Again, Annodeus re-iterates that the problem should be approached from the wider business and economic perspective. Technical plans of action are important, but the focus should be on preparedness to face and manage the host of non-technical problems which are currently being ignored or side-lined in favour of IT planning. Effective action will only be that which addresses and prepares for the business and commercial implications of the date change, in addition to the technical.

Amongst others, the Government must include consideration of:

- Commercial implications—the potential for total collapse of our commercial system is a reality. As financial institutions prepare to protect themselves and assess the risk of their own lending, small and medium sized business credit is tightening, and will do so further leading to some business failures. Warehousing/distribution of all consumer and industrial goods is at risk, as each single problem will impact entire supply chains of businesses due to the interdependent nature of the economy. The knock-on effects of non-compliancy will be excessive.
- Legal implications—in addition to assisting thousands of IT supplier companies to frame their Year 2000 "get-out" clauses, the legal profession is gearing up for a "boom" in professional and commercial liability cases, as a result of supply-chain problems, public/consumer safety claims and a host of other issues. This is fuelled by the ambiguity regarding compliancy standards and practical guidance for businesses.
- Insurance implications—this industry is focusing on self-protection as it becomes aware of the infinitely large potential claims arising. Minor and major systems failures will affect public safety, lead to personal financial losses, business collapses, personal liability for company directors, and many other issues. Already, companies are signing annual insurance renewals which specifically exclude coverage for losses arising out of the Year 2000 date change, without real understanding of the implications.
- Social and consumer implications—arising from failure of systems in the home, household utilities, safety systems, transport, personal banking and others.

4.0 To be effective, the Government must address the problem of how to ensure commercial and economic stability for the country, and share responsibility for this within European and global markets. We believe it holds a duty of care to acknowledge this responsibility, cascade and manage shared responsibility throughout the UK business community, as a key element of its millennium action.

(iii) *the role of government in raising awareness of the potential problems and in seeking solutions and the respective roles of Taskforce 2000 and the recently launched Action 2000;*

4.1 Annodeus applauds the leading role the Government has played in raising awareness of the technical issue, and it is clear that at some levels (in some large corporate enterprises) this has stimulated action. Taskforce 2000 was successful in focusing attention on the broad problem, and was effective in encouraging some organisations and individuals to consider how they will address millennium preparedness. The better-funded Action 2000, with a more business-orientated remit, will undoubtedly play a key role in promoting awareness in the SME community.

4.2 However, Annodeus shares some of the concerns voiced in the media. Firstly, whether this initiative is sufficiently prioritised, as illustrated by the appointment of a part-time director, able to devote only one day per week to the organisation tasked with averting a potential national catastrophe. This undermines the Government's claim that it is committed to doing everything possible to tackle this issue.

4.3 Secondly, Annodeus questions whether the Government has undertaken sufficient due diligence to ensure that its advisors and information sources are the best available. Annodeus also queries the appointment of an official advisor with commercial links to a solution product—the effectiveness of which is questioned.

4.4 Annodeus recognises the requirement for absolute diligence in ensuring its own products and services are unassailable. Annodeus' actions have included engaging senior level legal advice through Clifford Chance and top technical law firm Bird and Bird, ensuring that products and compliancy knowledge-base are independently audited and verified. All Annodeus' operations are therefore to the level of or above the ISO 9000 standard, and we adhere to the most rigorous compliancy definitions yet developed.

4.5 Thirdly, despite offering "direct support for SMEs to help them translate their awareness of the problem into action" there is little action evident—once more, the focus appears to be on talking up the issue, although the government is offering to act as a "link" between business solution providers. However, even this linking carries a rider, in that the government is carefully avoiding providing concrete recommendations, or approvals or certification of suppliers.

4.6 Fourthly, Action 2000 has created an effectively meaningless "kitemark" system, to be applied by businesses to their products when they reach a level of confidence about product compliancy. This is purely self-determined, and there is currently no clear definition of millennium compliance. Annodeus feels that this may therefore be actively detrimental to the overall drive towards true problem resolution, create a false sense of security, and encourage "near enough" attitudes. Annodeus considers the compliancy definition issue itself in detail overleaf.

(iv) *the extent to which new systems and software are millennium compliant;*

4.7 Annodeus believes that it is impossible to assess the extent to which any new or existing systems or software are millennium compliant, without a definition of millennium compliancy. Neither the UK Government nor the European Union has ratified a definition of compliance, and in Annodeus' view this is a fundamental step towards effective action of any kind. Annodeus commend to the Government the British Standards Institute definition, and the outline of technical compliancy provided by Solace Consultancy Services.

4.8 A clear benchmark is required before we can be confident that any new systems and software are compliant, let alone those systems currently in use. All diagnostic activity, whether manual or automatic, requires a standard against which compliancy can be measured. This must be consistent across all diagnostic and problem fixing programmes in order to achieve a level of confidence in the results and any resulting certification. This would also clarify the position for legal and insurance purposes.

4.9 Self-determined compliancy statements issued by vendors of software or systems are meaningless without third party verification. They will give rise both to a false sense of confidence and potential legal liability/insurance issues arising. It is unlikely that business insurance will cover a company whose systems fail because they have taken a vendor's assurance to be correct, and it is certain that the insurance industry will include this qualification. Financial liability of company officers might potentially hinge upon a single IT purchaser taking a system vendor's assurance to be absolute.

5.0 Compliancy measurement must also take into account the effect of interdependency of different systems—for instance, a compliant PC running non-compliant application software will, overall, be non-compliant and subject to date change failure. Similarly, a network running on a compliant server or mainframe computer, with a compliant operating system, and compliant application software, will be non-compliant if a single PC on the system is non-compliant. These scenarios, as well as illustrating the complexity of the business problem, also act to make the effectiveness of vendor assurances null and void.

5.1 Recent press reports have suggested that a large proportion of new consumer systems are still non-compliant: for example, a recent report in *The Sunday Times* reported that 80 per cent of the personal computers sold in Dixons are non-compliant. Firstly, these have been measured against an unknown compliancy standard. Secondly, this illustrates a further issue with new equipment supply: although many manufacturing companies claim that "all new computers" will be millennium compliant, products in the supply pipeline (factory inventory, warehouse inventory, shop inventory) are older stock. Inevitably, the home and small business consumer is continuing to purchase non-compliant systems, and will continue to do so for some time to come.

5.2 The rate at which new products are coming to market presents a further problem for millennium managers. It calls into question the value of many databases, reference guides, and information sources about millennium compliance of commonly used products. Annodeus has committed to continual rewrite of its own products, and continual expansion of its auditing database, to ensure that it remains the most reliable source of data on product compliancy. With over 39,000 products currently listed, it is the largest known database of compliancy, based upon the BSI and Solace standards.

5.3 To ensure that our products remain at the cutting edge of quality, we have submitted our products to both the National Physical Laboratories and the US-based National Software Testing Laboratory (NSTL)

for comprehensive testing. Annodeus believes that it is this commitment to quality and development which has convinced blue chip companies such as NCR, ECS/Société Générale, among others to work with us in tackling the millennium compliancy issue.

(v) *the development of contingency plans in the event of system and programme failures; and*

5.4 In the light of our preceding arguments, we believe that effective contingency planning on a national basis is not only premature, but impossible. Both the government and all individual businesses should certainly be developing contingency plans at this late stage, but are simply not yet equipped to do so due to lack of appreciation of the above issues.

5.5 There is no clear definition of the problem. There is no established system for measuring the problem, or defining areas of our national technology which are or will become safe. There is also too wide an interdependency network to accurately predict the effects of the date change. There is therefore no idea what we will be recovering from.

5.6 Annodeus believes that the priority today is to establish a clear plan of action, and provide practical help to minimise the risk of major technical and business system failures.

(vi) *the legal implications of disputes over liability for compliance costs and system and programme failures"*

5.7 In the absence of any accepted uniform compliancy standard, it is impossible to assess the legal implications of disputes arising from system failures. For proof, one only has to look at the current level of concern amongst insurers, and the rapid re-writing of insurance policies for every Y2K contingency.

5.8 Considerable damage will arise from the prevalent lack of awareness that there are legal issues and liability risks arising. In the coming months, businesses will face a critical question: how do you insure against the unknown? The legal industry will prepare for potentially the biggest boom in their history, while the insurance industry continues to batten down the hatches to protect their existence. In this scenario, every British business will be a loser, whether they are individually compliant or not.

5.9 The Government is the only body in the UK which can break this deadlock, and we strongly recommend that this becomes a further priority area for action.

6.0 It is essential that a pattern for addressing issues such as this is established now. We are beginning to see recognition of the potential issues arising from the implementation of European Monetary Union, which will share many of the procedural problems associated with the millennium problem. This is not a one-off issue as further date change issues are brewing—when the real "millennium" starts, and further key dates in the future.

22 February 1998

APPENDIX 53

Memorandum submitted by the National Health Service Executive

BACKGROUND

1. The National Health Service is one of the largest users in the UK of computer-based devices and, of course, many of these are concerned with direct patient care.

2. The problems associated with the change of millennium (and related dates such as 9 September 1999 and 29 February 2000) affect the NHS in the same way as all other organisations. However, there are two areas of particular significance which are shared by some—but certainly not all—other organisations. These are the safety critical nature of many computer systems and the large number of devices with "embedded chips", such as infusion pumps.

3. This Memorandum to the Science and Technology Committee indicates the actions that have been taken to date in the NHS in England and planned future work.

EXECUTIVE LETTERS

4. The NHS Executive is fully aware of the seriousness of the problem and has issued two Executive Letters (EL(96)80 in August 1996 and EL(97)59 in October 1997), together with Health Service Guidelines (HSG(97)40, issued along with the latter EL). The second EL made it absolutely clear that this matter was of the highest priority and that Chief Executives should take personal responsibility for overseeing the arrangements within their organisation. I attach copies of these documents for ease of reference.

5. The EL required completion of initial project plans by 30 November 1997. By 31 March 1998, NHS Organisations are required to complete detailed project plans (including details about how and when

contingency plans will be developed), detailed inventories and budget estimates. By 31 December 1998, all critical systems are required to be ready and fully tested, or detailed plans made for coping without those systems or equipment that cannot be repaired or replaced in time.

Funding

6. There is, at present, no definitive figure for the costs of rectifying these date problems. Figures between £100 million and £500 million have been suggested, although for planning purposes, a figure of £350 million has been assumed. After NHS Organisations have submitted their costed plans by the end of March 1998, more accurate figures will be available.

7. It is the NHS Executive's policy, in line with the Government's overall policy, that all costs associated with the "Year 2000" problem must be met from existing resources.

Central Resources and Activities

8. A project was set up within the Information Management Group of the NHS Executive in mid-1996. This was significantly extended in mid-1997 with the incorporation of the Acute Provider Centre as a "Year 2000 Task Force" and additional financial resources.

9. The principal purpose of this central team is to provide advice, information and assistance to NHS Organisations. Large quantities of various information packs have been distributed to Health Authorities, NHS Trusts, GPs, etc.

10. Two "exemplar" sites have been chosen and the results of detailed studies of good practice at these sites are being widely disseminated. Further "exemplar" work will focus on specific issues such as contingency planning and embedded devices to provide further detailed information to the Service over the next few months.

11. A Helpline at the NHS Executive's Information Management Centre has been in existence for some time and is successfully responding to a considerable increase in queries.

12. A World-Wide Web site has also been in existence for some time but has now been extensively revised and is being used to disseminate information and guidance to the NHS, although the information is freely available to other organisations and, in particular, to suppliers to the NHS. A database will very shortly be available on the site to provide detailed status information on a larger number of systems, devices and services together with full contact information for users, manufacturers and suppliers.

13. A high-level Steering Group (now chaired by Neil McKay, Regional Director of Trent Region) has been set up to co-ordinate the activities of NHS agencies and other central organisations (eg Medical Devices Agency, NHS Supplies) and the NHS through the Executive's Regional Offices. The "Year 2000 Task Force" is collaborating closely with all these organisations.

14. The major suppliers of products and services are being contacted for information centrally using the appropriate knowledge and expertise of the central organisations. Meetings with several IT system suppliers have already taken place and information will be published in the next few weeks.

15. Training courses have been developed specifically for those involved in NHS Year 2000 projects covering topics such as project management, risk management and contingency planning. The main Year 2000 events for March include a forum for ambulance trusts and a workshop at HC'98, the largest healthcare IT Conference in the UK.

Local and Regional Activities

16. The activities of NHS organisations are being monitored through the Regional Offices as part of the normal performance management process. All NHS organisations have projects underway and, with initial plans in place, are now actively producing inventories and developing resource estimates.

17. A full awareness programme throughout the Regions has been completed and specialist training is now proceeding. Further seminars on specific topics are being planned.

National Audit Office interest

18. The National Audit Office have undertaken a survey of NHS organisations by questionnaire. They have also conducted a review in the Primary Care sector. The reports are in draft.

Major Constraints

19. The Committee requested information on the major constraints on the organisation which may hinder work in this area. The main potential constraints are:

— Priorities: The NHS has an extremely heavy work programme in meeting the increasing demand for its services and in implementing new policy initiatives (such as the recent White paper, the new NHS) which are also of high priority. The NHS Executive's letter stated that the solution of the millennium problem was the "highest non-clinical priority".

— Resources: The availability of financial and skilled human resources poses a constraint on the NHS, as it does for most organisations. As noted above, the NHS has been asked to identify the required financial resources from within existing and planned allocations, and fullest use is being made of existing "in-house" NHS specialist advice.

20. Magnitude of the task: Even if sufficient resources were made available, it is unlikely that every single piece of computer-based equipment could be thoroughly checked and where necessary, replaced or the fault corrected. Even if this were possible within NHS organisations, there are many suppliers on which they rely, to a greater or lesser extent. For this reasons, a vigorous approach to prioritising the necessary work is being taken to ensure due focus on safety-critical systems.

Contingency Plans

21. Whilst it is expected that the majority of systems will be checked and vigorous steps taken to secure the supply chain, a major component of the NHS strategy to deal with this problem is the provision of contingency plans. Such plans are required to be submitted to the NHS Executive by 31st December 1998.

22. The consequences of failure of date dependent systems and devices will vary very substantially, depending on the function of the system. Some failures may be life-threatening while others may not even be noticed. As already noted, NHS organisations are being required to prioritise their efforts depending on the degree of risk for each system.

Government Actions

23. The setting up of Taskforce 2000 raised general awareness, mainly in the Press, and was useful in reinforcing the messages put out to the NHS by the Year 2000 Team. There was a significant delay before Action 2000 was launched but its focus is on small to medium enterprises (SMEs). GP Practices are examples of SMEs but GPs are likely to consider Action 2000 to be less relevant to them than the work of the NHS Executive Year 2000 team and, of course, Action 2000 will provide less targeted advice.

10 March 1998

APPENDIX 54

Memorandum submitted by KPMG

COMMERCIAL PROPERTY—WHERE WILL THE MILLENNIUM BUG BITE?

The Property IT Team of KPMG, located in Canary Wharf, consists of accountants, chartered surveyors and IT specialists with a strong focus on the commercial property industry. We use this blend of expertise to consider the possible impact of the Y2K bug on commercial buildings. KPMG have tried and tested methodologies for dealing with the Y2K bug which are tailored to suit the needs of commercial property clients.

There are generally three main areas of concern for any business:

1. IT systems.
2. Third party software.
3. Embedded systems.

Although we provide advice on all these three areas, this note concentrates solely on embedded systems in buildings as we understand this to be of particular interest to the Millennium Select Committee.

In essence, embedded systems are systems which contain read only memory chips where the functionality is not accessed directly. These microchips have software embedded into them. The embedded systems are commonly used for monitoring, assisting or controlling equipment and can be generally categorised into two types—

Large Systems: Lifts, CCTV, Fire Alarm/Detection, Air Conditioning, Boilers, Security, Intruder Alarms, Building Management Systems (BMS), Car Parking, Access Control, Telephone Exchange, etc.

Small Stand Alone Systems: Photocopiers, VCR's, answering machines, fax machines, printers, etc.

Expert opinion is that about 5–20 per cent of embedded systems in a building are likely to experience a problem with Y2K bug. The issue is which of the systems are going to fail, in which area and with what consequences. To get suppliers of these systems to give Y2K compliant certification can be difficult (sometimes impossible) and time consuming. Also, if the system is business critical, it may be unwise to rely

solely on such a guarantee. Business managers would be well advised to instigate their own comprehensive investigations and develop contingency procedures.

Embedded systems pose a different (perhaps more complex) problem than IT systems do. Firstly, it may not be immediately apparent that a piece of equipment contains an embedded system. Once an embedded system has been identified in a building it is necessary to focus on who is legally responsible for ensuring the equipment operates correctly beyond Y2K. This, in itself, is not straightforward, as the equipment may rely on, or donate information to, other embedded systems which may fall under a different area of responsibility. In most cases the landlord has a responsibility, under the lease to keep the premises insured. Insurance policies may become invalid if safety or security related systems—such as fire or intruder detection systems—fail to operate correctly. Tenants also have a legal responsibility to ensure their employees are working in a safe environment.

Once the likely problem for which you have a direct responsibility has been identified, it needs to be assigned a level of criticality to the business eg 1: Business Critical 2: High Level of Impact 3: Medium Level 4: Low Level 5: Not Important. This will help rationalise the approach taken in later stages. It is imperative that businesses then quickly focus on the systems that are of the most importance, as the Y2K project can be time-consuming and large organisations may already be short of time. It may be necessary to study the work patterns and functions that are related to the system in question, so that knock-on effects of system failure can be fully judged. This may also uncover possible alternative solutions of by passing the system in the case of failure ("workarounds").

A dialogue needs to be established with the suppliers of the equipment which contains the embedded systems in question. Again, time is of the essence, so making contact with the right person in the suppliers' organisation, and striking up a good working relationship with him or her is important.

All of the above steps should lead towards testing of the systems to satisfy the business (landlord or tenant) that the systems will perform correctly on the day. Although each confidence building step is separate, some investigations can be undertaken in parallel.

The Y2K embedded systems problem in property is very real and needs to be addressed by all concerned. Without gauging the size of the problem for a particular business it will remain an unsettling unknown. The worst case scenario could be arriving at work to find the doors firmly locked, the alarms on, security lights flashing, the CCTV malfunctioning, the heating and air conditioning systems inoperative and the car park gates jammed. Business could be severely disrupted—this would not be the most auspicious start to the millennium. The landlord must view the tenant as a customer to whom he is providing a service. The tenant may rent elsewhere upon renewal, or lease break, if he feels the landlord is not adequately addressing his responsibilities. This in turn may detrimentally affect the lettability (or saleability) of the accommodation, as prospective occupiers may look upon "Y2K compliant" space more favourably.

Despite the potential for some severe disruption to business, KPMG's experience is that there are still a large number of businesses that have yet to adequately address the Y2K issue. A third of KPMG's respondents to the Information Security Survey 1998 (which had over 1,000 responses to its questionnaire from organisations in the UK and Ireland, each with an annual turnover of more than £10m) had not tested or received assurances from suppliers, a third had no project plan in place for IT application evaluation and testing, this rising to just under a half for embedded systems. The problem is likely to be magnified in the property industry due to embedded systems being commonplace in most buildings refurbished or built since the 1970s.

KPMG use tried and tested methodologies in the specific area of embedded systems in property, as an aid to the swift and successful implementation of a Y2K project. KPMG also specialise in providing Health Checks for organisations carrying out their own Y2K projects. These Health Checks give a snapshot of how the project is progressing and provide guidance on any areas of potential high risk to the organisation.

APPENDIX 55

Memorandum submitted by the Department for International Development (DFID)

DFID has considered what role it could play in addressing the problem of the computer compliance in the year 2000 and whether it should offer to make good the equipment which DFID has supplied[12].

The Problem in Poor Countries

2. DFID's responsibility focuses on poor countries in accordance with its purpose to promote sustainable development and to eliminate extreme poverty. At present, the scale of the Year 2000 compliance problem in developing and transitional countries is not well understood. The World Bank contacted 128 of their

[12] DFID understands the year 2000 compliance problem to mean the practice of computer programme designers to store date in programmes as two digits (97) rather than four (1997) and, as a result when dealing with dates in the 21st century ("00 rather than 2000"), hardware and software may fail or behave in unpredictable ways. Mainframes and PCs provided as late as early 1997 may be non-compliant, while equipment supplied up to the late 1980s may not have been sufficiently sophisticated to be affected. However, software packages may also be date dependent. The problem applies not only to computers but to "embedded systems" found in power stations, building management systems and process controls.

borrowing member countries. Of the 78 who have replied, only 12 countries claimed to be prepared and 15 others claimed to be aware of the problem.

3. There is a need to assess the scale of the problem. This will involve determining the area and nature of IT dependence and testing systems for the occurrence of dates and non-compliant date systems using already available software packages. As a rough indication of IT dependence a list of exports of computer equipment to developing countries for which data is available is given in the Annex.

4. In addition, developing countries may be affected by failures of compliance in global systems such as telecommunications, transport and automated business systems. Developing country systems may also contribute to these problems. There is a risk for developing countries that organisations in Year 2000 compliant countries may turn off links with non-compliant systems to prevent contamination.

5. The solutions to the Year 2000 compliance problem may not always be very difficult, but they can be complex, time consuming and expensive. Making information available about the risks will be a major task in developing countries, as will organising the availability of software and expertise, managing the implementation process, making appropriate choices and supplying new kit.

DFID Policy

6. DIFD's approach forms part of the Government's strategy to raise international awareness and promote international action. Opportunities to raise these issues arise from the UK Government's roles in the preparation for the Birmingham Summit and in the European Union.

7. DFID has concluded that the World Bank is best placed to take the lead in addressing the problem in poor countries and that it should support their efforts without regard to the national origin of equipment or software.

8. Developing countries are likely to have compliance problems with equipment and software which have been supplied from their own resources and by multilateral and bilateral donors including through aid-funding from the UK. These problems are likely to arise in applications, large and small, important and of lesser priority.

9. To address all these problems will be beyond the means of developing countries. They will be faced with choices about how best to use limited resources, both their own and those provided by aid agencies. The choice will be between addressing the Year 2000 compliance problem and financing other services of government. Obviously developing countries should give priority to addressing those applications where failing to remove the Year 2000 compliance problem will have the most serious consequences.

10. As a bilateral donor, DFID is faced with similar choices in terms of what is most important. Rectifying problems on all equipment which DFID has supplied would not always have priority as between IT applications or between this problem and other requirements for poverty elimination.

11. DFID is also at a disadvantage as compared with international financial institutions in terms of mobilising the resources to address the problem. One estimate of the global cost is 500 billion ECU. Even if the cost to developing countries is only a fraction of this, it is evident that only the international financial institutions and the private sector can provide the resources.

World Bank Programme

12. The World Bank is actively promoting the need for millennium compliance and organising guidance for its client countries. Bank Country Directors have been charged with approaching senior country officials to raise awareness of the issue. Countires are being urged to designate Executive Sponsors and to identify a specific agency and staff to be responsible for carrying forward their own work and for relating to international donors. The Bank has also instructed staff to investigate compliance on current projects and to ensure requirements on compliance are included in future contracts.

13. The Bank's aim is to put the tools into the hands of developing country governments to enable them to identify the problem, to prioritise systems, and to protect those systems which are key to the economy and public order and well-being. It has initiated a project to develop a toolkit for review and prioritisation systems. They also propose to catalogue all the types of assistance available from IT companies. They plan to roll out a series of seminars through developing countries to raise awareness of the issues and these facilities.

DFID Action

14. DFID has been considering how best to support the Bank's efforts. In the past DFID has found that it can have a catalytic effect by financing technical co-operation. By providing such funding through the World Bank it can energise both Bank operations and developing countries. The Government has therefore committed £10 million of grant aid to the World Bank Trust Fund for Information Development (INFODEV). These funds are earmarked for assisting poor countries to identify problems of Year 2000 computer compliance, to design strategies to overcome the problem in priority areas, and to provide technical

co-operation in support of solutions. The first product of our collaboration is DFID's financing of the toolkit project referred to above at a cost of £250,000.

15. DFID is also ready to consider requests for assistance direct from its developing country partners. These would be financed from country development programmes.

16. DFID is also planning ahead against the possibility that expertise and hardware will not be available to address developing country problems when they want it. This is likely to be between mid 1998 and, at least, the end of 2000. A crisis management capability will be required at the turn of the millennium. Prices for experts are being driven up in the UK and in India (a major supplier of programmers). While there is no absolute shortage as yet, the supply problems will get worse.

Compliance of aid-funded equipment

17. DFID is advised that equipment currently being supplied under UK aid through the Crown Agents is millennium compliant. However, some IT is procured locally in developing countries using aid resources or is supplied by consultants. DFID is reminding current suppliers it is dealing with that it must have systems in place which fully meet the terms of those agreement and contracts which continue into the Millennium. DFID is also considering the need for additional clauses in its technical co-operation and capital aid agreements with developing countries.

18. The vast majority of computers, embedded systems and software sent abroad under the aid programme now belong to developing country as ownership was either transferred at the outset under capital aid or was gifted at the completion of the project if financed under technical co-operation. Given this DFID can only encourage developing countries to address compliance issues on old equipment. Where DFID staff are aware of potential difficulties with DFID supplied kit, they will alert the users to the problem and possible solutions.

Annex

EXPORTS OF ADP EQUIPMENT FROM OECD AND NEWLY INDUSTRIALISED ASIA TO AFRICA, ASIA AND THE CARIBBEAN

	US$ 000s
AFRICA	
South African Customs Union	495,973
Egypt	114,689
Algeria	68,427
Morocco	64,634
Kenya	48,542
Tunisia	46,848
Nigeria	21,484
Cote d'Ivoire	18,117
Angola	16,472
Libya	13,665
Senegal	12,827
Mauritius	11,465
Gabon	11,326
Ghana	9,383
Zimbabwe	9,149
Zambia	9,065
Mali	7,168
Congo	7,071
Tanzania	6,411
Ethiopia	6,122
Guinea	6,033
Madagascar	6,032
Burkina Faso	5,254
Benin	4,266
Zaire	4,055
Uganda	3,950
Togo	3,699
Niger	3,104
Sudan	2,710
Mauritania	2,640
Rwanda	2,637
Sierra Leone	2,597

Mozambique	2,066
Malawi	1,935
Cape Verde	1,857
Central African Republic	1,681
Eritrea	1,308
Chad	1,292
Gambia	904
Djibouti	869
Guinea Bissau	684
Liberia	627
Equatorial Guinea	417
Saint Helena	195
Somalia	5
Regional Total	**1,059,653**
ASIA	
China	424,950
India	396,063
Viet Nam	79,037
Pakistan	30,508
Sri Lanka	14,358
Bangladesh	13,637
Nepal	10,943
Cambodia	4,877
Mongolia	3,643
Maldives	1,651
Laos	1,438
Seychelles	913
Afghanistan	400
Bhutan	79
Regional Total	**982,497**
CENTRAL AMERICA	
Costa Rica	28,668
Jamaica	18,650
Trinidad and Tobago	16,347
Netherlands Antilles	14,840
Dominican Republic	11,877
Cuba	10,205
Barbados	9,273
Bahamas	7,715
Cayman Islands	3,939
Antigua and Barbuda	2,648
Saint Lucia	2,421
Aruba	2,341
Haiti	2,272
Grenada	913
Saint Kitts and Nevis	659
Saint Vincent and the Grenada	583
Dominica	574
Anguilla	111
Montserrat	104
Regional Total	**134,140**
Grand Total	2,176,290

Source: UN Comtrade Database

APPENDIX 56

Supplementary Memorandum submitted by Taskforce 2000

UPDATE TO MEMORANDUM DATED 12 NOVEMBER 1997

MAIN POINTS

1. With only 21 months to the end of the century, a satisfactory outcome to the computer date change problem is impossible. Damage is therefore inevitable. The extent depends on how this emergency is handled from today onwards.

2. Taskforce 2000 believes that successful damage limitation depends, in particular, on two factors: openness and personal accountability.

3. The Government must provide high level leadership and should demonstrate the importance of the issue by its own actions with regard to Government compliance. The latter, in particular, is unsatisfactory at present.

UPDATE

1. Current surveys and Taskforce 2000 contact with business confirm:

   (a) fixing the date-change problem is proving to be an extraordinary challenge;

   (b) businesses that are getting on with it are, almost without exception, finding it to be more difficult than they expected;

   (c) budgets are escalating rapidly;

   (d) many large companies are a long way behind where they should be by now and are struggling, for example, with unexpected supply chain and embedded software problems and with the massive difficulties of testing their systems;

   (e) preparation for the introduction of the single currency is exacerbating difficulties;

   (f) there are real concerns about the preparedness of the utilities and telecommunications industries; and

   (g) the public sector is way behind the private sector leaders.

Big computer jobs are usually late. This one—the biggest ever—is made worse by two factors: rapidly reducing time and too few skilled people.

ACTION PLAN

Taskforce 2000 has clear proposals to deal with the emergency. Key features of those proposals are:

1. The Government should unambiguously confirm that we are now dealing with an emergency—advising people of the possible consequences and encouraging wide co-operation to avoid an unacceptable outcome. The creation of a situation of "informed anxiety" is essential.

2. Ministers should publish lists of the critical systems in their departments affected by the problem—stating levels of confidence of achieving compliance, budget details, the names of the people responsible for compliance and details of the contingency plans being put in place where there are any fears of failure. This should be independently evaluated and reported on by the National Audit Office.

3. The chief executives of all major utilities should be requested by Government to provide a public assurance that there will be no service interruption as a result of the date-change—the executives having responsibility for ensuring this should be named. If there is any uncertainty about the outcome it should be stated together with full details of any contingency plans. Where appropriate, regulators should be asked to conform publicly that they are satisfied with the responses provided.

4. The Stock Exchange should require all listed companies to provide full details of compliance budgets and plans—including those relating to dependencies. An outline of any contingency planning should be included together with the names of the executives responsible.

5. All the above information should be available by the end of June.

6. The Bank of England and the Financial Services Authority should extend their current activities in this area to ensure that any potential failures in the financial sector are contained. Taskforce 2000 believes that this can be best accomplished by their providing regular reports not only on actions being taken, as presently planned, but also by publicly evaluating those actions (including contingency planning). Both bodies should state now what action they would take if any financial institution seemed unlikely to complete remedial action in time.

7. Details of national contingency plans should be made publicly available by August this year. This is so that business people and others can relate them to their own planning.

8. The Prime Minister should call an urgent meeting of the CEOs of the largest IT businesses in the UK. The objective would be to determine what special measures can be taken to make more resource available to help minimise the problem.

9. The British Government should, with the US Government, call an urgent international conference to encourage action throughout the global economy and recommend the emergency measures that are necessary to minimise international disruption. A particular area of concern must be international telecommunications.

10. Taskforce 2000 has been saying for months that the single most effective contribution to a reduction in potential damage would be for the European Union to postpone the introduction of the single currency. That recommendation has been ignored and, in any case, Europe's rush towards EMU seems almost unstoppable. But, to get the debate into the open, the Government should call for the European Commission to publish a report now on how, given the extreme shortage of skills and resources to do either job, it believes both can be accomplished in time.

Taskforce 2000 is ready and waiting to co-operate with Government and others in considering these proposals in more detail and in putting them into effect. The nature of this emergency is such that all interested and knowledgeable parties must work together to tackle this unprecedented challenge.

26 March 1998

APPENDIX 57

Memorandum submitted by the Association of Chief Police Officers

I write as Second Vice-President of the Association of Chief Police Officers (ACPO) and carry the ACPO brief on issues relating to the Millennium. In fact I will be President over the Millennium.

The following is provided on behalf of ACPO and addresses the questions posed. No doubt you are aware that the Association of Chief Police Officers was established to promote the effectiveness, efficiency and professional interests of the Police Service in England, Wales and Northern Ireland; and advises Her Majesty's Government on policing issues. Membership includes all police officers holding rank or appointment above that of Chief Superintendent.

1. *Who, within the Police Authority, is responsible for ensuring that IT and imbedded systems are millennium compliant?*

As an operational matter, ensuring IT systems and equipment within each Force are Year 2000 compliant is the responsibility of each individual Chief Constable. The Police Authority is responsible for making funds available, against a costed policing plan, to allow him or her to discharge that responsibility.

2. *Has additional funding been made available for compliance projects? If not, how are the projects being financed?*

No new resources have been provided to cover auditing of current systems for compliance or, where required, to correct or replace those systems identified through audits as non-compliant. Following guidance provided by the Police Information Technology Organisation (PITO), Forces are handling auditing of systems as a priority, diverting existing resources to that purpose. Any subsequent replacement or refurbishment of systems shown not to be millennium compliant is being handled as part of the normal IT replacement programme. It would be expected that police authorities will assign a high priority to funding such essential millennium work which may be at the expense of other important projects elsewhere.

3. *To what extent have police authorities made progress towards compliance?*

To gain an overall impression on the state of readiness of the Police Service in respect of the Year 2000 problem, PITO wrote to all Chief Constables in England, Wales and Scotland in February 1998 for response by the end of March. The questions posed were:

- What is the current position in your Force in respect of auditing your existing systems for year 2000 compliance?
- What work is in hand and what needs to be done to rectify problems which have been identified through audits?

To date 29 of the 52 Forces have provided responses to those questions. Of those responding, the vast majority have completed or are close to completing audits of their computer hardware, software and equipment suspected of containing computer chips. A substantial portion of Forces are now resolving millennium problems identified by audits and have projects in place to manage that process.

4. *Are there any particular barriers preventing satisfactory progress towards achieving compliance and, if so, how could they be removed?*

The priority for Forces it to ensure the essential IT systems and equipment which are used to deliver core policing services to the public continue to work normally beyond the millennium change over. It is clear that, for some important operational systems, replacement or upgrade is required. The provision of new resources to carry out the necessary programme of work would reduce the risk that Forces will fail to achieve compliance because of lack of funds.

Whilst Forces have made considerable progress towards identifying the work needed to achieve compliance, most systems are provided by outside suppliers. Those suppliers have, in many cases, been either slow to provide necessary information or have been unwilling to support existing non-compliant systems, preferring to offer a completely new compliant solution at increased cost.

To address such supplier difficulties, ACPO and PITO have:

— Facilitated the formation of Force user groups to tackle individual suppliers in respect of identifying and rectifying problems;

— Organised regular conferences for all year 2000 managers in Forces so that experiences can be shared; and

— Established an electronic year 2000 bulletin board, accessible to all Forces, through which information on problems and solutions can be shared.

Even if Forces have fully operational IT systems and equipment, the police do not operate in isolation. For example, the police may have difficulty calling on ambulances, hospitals, fire and rescue, volunteers, social services, utilities, vets, interpreters etc to assist if those bodies and organisations are facing problems with their own IT systems. A significant factor in police preparedness for year 2000 is the ability of other organisations, on which the police depend, to continue to function normally after the millennium change over.

If the police are to maintain public order and safety then industry, local and central government need to ensure their own systems are year 2000 compliant. Failures of systems elsewhere might impose significant new demands on the police which could overwhelm our ability to respond. The police are again dependent on others ensuring their systems work and do not create a greatly increased demand for police assistance. On a local basis, Forces are approaching industry and Government bodies for information on their state of preparedness and the potential for increased demand on police resources.

Forces have long experience of dealing with major incidents and have detailed contingency plans in place to respond to such occurrences. Failure of IT systems elsewhere may generate a number of concurrent incidents which cannot be accommodated using plans designed for one-off occurrences. ACPO are already taking the lead in identifying and co-ordinating such operational issues to ensure the Police Service is properly prepared for emergencies arising from the millennium.

5. *To what extent do you expect police authorities to have achieved compliance by the turn of the century?*

Forces are heavily dependent on IT systems for providing assistance to the public. Failure of key operational IT systems, for example those used to respond to calls from the public, would disable that response, compromising public safety and order. With such systems, the alternative of a return to manual processes may not be viable given the complexity of the task and the volume of calls received even in normal circumstances. The only option is to ensure that such systems are year 2000 compliant. All Forces are committed to achieving compliance before 2000.

Forces also depend on IT systems for a range of administrative police tasks, for example the processing of persons from arrest to trial. The failure of such IT systems would have a significant effect on the speed and quality with which justice is administered as well as on the police resources needed to undertake such tasks. Again Forces are aiming to have these systems fully compliant. A small number of administrative systems remain which are not core to policing, for example those used to manage a Forces' estate or for planned maintenance of vehicles. Their failure is unlikely to have an immediate effect on a Force's ability to police its area effectively.

The effects on other equipment used by the police also needs to be considered. If police officers cannot access buildings or cell complexes because of failure of electronic locks, or lifts are inoperable, maintaining a normal level of service is, at best, hampered. All Forces have assessed the position in respect of such systems and are committed to achieve compliance before 2000.

Technology also finds a place in equipment used to enforce the law (eg speed cameras and breath test devices) or to manage traffic (eg traffic signals). All may be affected by the year 2000 issue. There is then the question of whether evidence which relies on such technology might be challenged in court. These evidential issues are being tackled by ACPO with a commitment to resolve them before the millennium changeover.

6. *What do you think central Government should be doing to assist police authorities in this matter?*

The Ministerial Group on the millennium date, with responsibility to co-ordinate action across the public and private sector, is a necessary step to ensure that organisations, both public and private, are made aware of the millennium problem and take appropriate action to ensure their systems are year 2000 compliant. The position of others has a major impact on the police both in our ability to respond effectively and in terms of the demand for assistance which may arise. Such steps to co-ordinate action on year 2000 across Government and industry are welcome.

Force expenditure is already severely constrained. The need to fund changes to IT and other systems to ensure millennium compliance further tightens the pressure on funding. Currently, the priority must be to complete essential millennium work but this is at the expense of other important albeit less critical areas of work. The provision of new money to cover the costs of millennium compliance would allow Forces to recover some of the ground lost by diverting resources to that task.

I hope this submission is helpful for your purpose. Please feel free to use me as a conduit on behalf of ACPO and, in that regard, I will ensure my colleagues are kept informed of progress and developments.

26 March 1998

APPENDIX 58

Memorandum submitted by the British Institute of Facilities Management

1. The British Institute of Facilities Management (BIFM) is the national body representing individual professionals working in facilities management in the public and private sectors. Facilities Management is the fastest growing sector in British industry employing over 25,000 people in a £160 billion industry.

2. The growth of Facilities Management in this country has been stimulated by the rapid and innovative advances in technology, the development of management practices and the changing environment at places of work. In addition, the growth of privatisation, contracting out and rationalisation has put even more emphasis on the need for efficient and effective practice whether in public or private sectors. The BIFM straddles both sectors.

3. Facilities Management is the integration of multi-disciplinary activities in the built environment and the management of their impact on people and the workplace. Within this fast growing professional discipline, facilities mangers have extensive responsibilities for providing, maintaining and developing services ranging from property strategy, space management and communications infrastructure to building maintenance, administration and contract management.

4. Facilities Managers are "the voice of the occupier" who's role is not only to champion the welfare and safety of the workforce but also to have responsibility for co-ordinating a wide range of activities that support the work environment and working practices. It is the facilities managers' responsibility to ensure that the workplace is a safe and healthy environment to work in and that the services provided for or by the organisation are effective and efficient.

5. In order to do this, facilities managers rely on IT systems to work, be they Building Maintenance Systems, electronic (such as doors, lifts, car park barriers), or utilities (electricity, gas, oil and water supply) which are the base source for many of the operations upon which buildings, be they hospitals, schools or offices depend.

6. The facilities manager will be expected to have co-ordinated the multiplicity and complexity of services in preparation for the millennium timebomb, and it is the facilities managers task to alert others to the need for a proper audit for Millennium compliance and ensure that appropriate action is taken. This, the BIFM is supporting through a number of seminars on Compliance across the UK and by regular reference in its publications.

7. It is not only large industrial organisations who need to be aware and able to manage the impact of the Year 2000 syndrome but also all those other organisations within the facilities managers' work—hospitals, schools, railway stations, hotels or office blocks where IT support systems rely on microchips (even the Houses of Parliament . . .).

8. Unless utilities suppliers; landlords and property managing agents in particular, address the issues of compliance we can envisage security alarms ringing ad nauseum or even worse, failing to ring at all; heating systems failing to recognise its Winter or to switch off, significantly affecting working conditions and Health and Safety regulations; automated water supplies causing flooding in offices, factories etc, and finally, the workforce failing to report to work because the infrastructure systems of road and rail which depend upon electronic means, fail or the automatic security system in office and factory doors lock everybody out.

9. The BIFM supports the recent initiatives taken so far by the Government, but is conscious that these initiatives may be too little and too late. It is vital, therefore, that senior decision makers within the public and private sectors recognise and understand the Year 2000 problem, and the potential impact it may have on the efficiency of their operations and the welfare of their employees. Monday, 3 January may be too late.

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