Marine science : Government response to the Committee's ninth report of session 2012-13 : second special report of session 2013-14 / Science and Technology Committee.

House of Commons

Science and Technology Committee

Marine science: Government Response to the Committee's Ninth Report of Session 2012–13

Second Special Report of Session 2013–14

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Science and Technology Committee

The Science and Technology Committee is appointed by the House of Commons to examine the expenditure, administration and policy of the Government Office for Science and associated public bodies.

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The Reports and evidence of the Committee are published by The Stationery Office by Order of the House. All publications of the Committee (including press notices) are on the Internet at http://www.parliament.uk/science. A list of reports from the Committee in this Parliament is included at the back of this volume.

The Reports of the Committee, the formal minutes relating to that report, oral evidence taken and some or all written evidence are available in printed volume(s). Additional written evidence may be published on the internet only.

Committee staff

The current staff of the Committee are: Dr Stephen McGinness (Clerk); Jessica Montgomery (Second Clerk); Xameerah Malik (Senior Committee Specialist); Victoria Charlton (Committee Specialist); Darren Hackett (Senior Committee Assistant); Julie Storey (Committee Assistant); Henry Ayi-Hyde (Committee Office Assistant); and Nick Davies (Media Officer).

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Second Special Report

On 11 April 2013 the Science and Technology Committee published its Ninth Report of Session 2012–13, *Marine science* [HC 727]. On 7 June 2013 the Committee received a memorandum from the Government which contained a response to the Report. The memorandum is published as Appendix 1 to the Report.

Appendix 1: Government response

Introduction

The Government welcomes the Committee's further report into marine science. A number of significant changes have taken place since the Committee's previous report, *'Investigating the Oceans'*, in 2007. These include the publication of the Marine and Coastal Access Act 2009, the Marine (Scotland) Act 2010 and the Northern Ireland Marine Bill 2012, which contain provisions for the establishment of marine conservation zones, the introduction of the Marine Strategy Framework Directive and the creation of the Marine Science Co-ordination Committee. These changes provide important opportunities for strengthening the marine science undertaken across the UK and, at the same time, increase the need for greater and more effective co-ordination of marine science and sharing of data between UK funders—both public and private.

The Government recognises the key role of marine science in informing policies and actions and agrees with the Committee's observation that we need to be '*more clever about how we advance our understanding of the marine environment and improve our capability in marine science*'. The Government accepts many of the Committee's recommendations, including those relating to the operation and work of the Marine Science Co-ordination Committee, which should help to reinforce existing procedures and provide greater clarity and focus on progress to a wider audience. The Government also welcomes the Committee's interest in the establishment of Marine Conservation Zones.

This Response replies to each of the Committee's 11 conclusions and recommendations in turn. The Committee's report has covered some policy areas that are devolved to the administrations in Scotland, Northern Ireland and Wales and the replies to those recommendations have been prepared with their co-operation.

The UK Marine Science Strategy

Recommendation 1. We welcome the establishment of the UK Marine Science Strategy. However, if the Strategy is to help the Government achieve its vision of "clean, healthy, safe, productive and biologically diverse oceans and seas", further work is needed to translate its high level goals into substantive outcomes. We recommend that the Government set out an implementation plan for the UK Marine Science Strategy, with a timetable that articulates expected outcomes at intervals over the next ten years, and how success will be measured. This should be updated on an annual basis. (Paragraph 7)

The Government welcomes the support expressed by the Committee for the UK Marine Science Strategy. The Strategy is a joint initiative by the Government and the Devolved Administrations. It is being delivered through the Marine Science Co-ordination Committee (MSCC) on which the Devolved Administrations and Government are represented and which is co-chaired by the Scottish Government and Defra. The responses to this and the other MSCC-related recommendations within the report have therefore required the agreement of a range of parties—the Government cannot unilaterally agree to courses of action for the MSCC.

The Government shares the Committee's ambition to maximise the substantive outcomes from the implementation of the UK Marine Science Strategy. The Marine Science Co-ordination Committee has, from the start, recognised the need to be outcome focussed and established a number of Working Groups tasked to deliver specific aspects of the Strategy. Progress with delivering these activities has been monitored through regular update reports to the six-monthly MSCC meetings and reported to the Ministerial Marine Science Group (Annex B of the Government's written evidence to this inquiry).

The UK Marine Science Strategy is implemented through a rolling programme of priority activities and operations; this approach helps to ensure that important emerging issues can be addressed swiftly. The Government agrees that the development of a longer-term—10 year—implementation plan, which identifies expected future priorities and, at the same time, reflects availability of funding and retains responsive flexibility, would strengthen existing approaches. It is therefore the intention that the MSCC will provide a rolling implementation plan composed of a detailed programme for the first 18 months, which identifies specific actions, outcomes and appropriate success measures and which is updated on a rolling basis. From 18–24 months the plan will identify a direction of travel through the inclusion of outline objectives and outcomes, with high level milestones identified for up to 2023. The plan will be reviewed every six months and updated annually. It will be published on the MSCC website. This approach should reinforce the MSCC's existing mechanisms in a way that helps to provide greater accessibility for outside interests.

Marine Science Co-ordination Committee

Recommendation 2. We recommend that Defra includes the evidence submitted to this inquiry regarding the work of the MSCC when considering areas for improvement, such as its membership, resources, and focus on outcomes. The Government should set

out a clear timetable for the current review and publish its results on the MSCC website alongside an action plan to address its findings. We note that the Minister has identified the absence of permanent industry representation as a weakness in the MSCC's operations and we recommend that a seat for an industry representative on the MSCC be identified within three months. (Paragraph 12)

The Government recognises the value of the evidence submitted to this inquiry and will consider it as part of the ongoing MSCC review. The review is due to be completed before the summer recess and details of its findings, along with an action plan for its implementation, will be published on the MSCC's website.

An industry representative has already been appointed to the MSCC and attended his first MSCC meeting in March 2013. As mentioned in the Government's written evidence, the process to elect an industry representative to the MSCC, who would also be the industry co-chair of the MSCC's Marine Industries Liaison Group, was already in train prior to the announcement of this inquiry.

NERC support for marine science

Recommendation 3. We understand the difficulties that NERC faces in prioritising its resources at a time of limited funding. However, we are concerned about the potential for current reprioritisation measures to undermine the UK's long-term capability in marine and polar science. Marine and polar science should not suffer from structural changes to funding mechanisms. These sciences are particularly dependent on the maintenance of extensive or large scale facilities, sometimes operating over long periods of time. NERC should therefore ensure there is adequate provision for research centres that depend on its national capability resources within its funding portfolio. (Paragraph 16)

Like the other research councils, NERC balances many demands for funding from a tight budget. NERC has had to appropriately balance this reduced resource across all the fields of environmental sciences for which it is responsible including marine and polar sciences.

NERC has ensured that its centres of marine and polar national capability have been properly sustained throughout the present CSR period. NERC funding to the National Oceanography Centre (NOC) has maintained a proportion of 14% of the NERC resource budget, while the British Antarctic Survey (BAS) has slightly increased to 15% over the spending review period.

In addition, NERC is committed to the marine and polar infrastructures of ships, planes and bases, thus sustaining the UK national capability to mount experimental campaigns of world-class importance and ambition.

From 2010, NERC has made a gradual transfer of resources between allocated (National Capability[1]) funding to its Centres and openly competed, but directed "Research Programmes", whilst at the same time maintaining the opportunity for Centres to compete for undirected, "Responsive Mode" funding. Research Programmes ensure that research of wide, societal importance is performed by the most excellent science drawn from across the UK research base. Research programmes also recognise the need for partnerships in delivering research of societal importance: £236 M of NERC funding commitments have been matched by £153 M of other Research Council or Government Department funding, opening a broader range of funding opportunities to all the NERC scientific community.

The increased emphasis on Research Programmes has not affected NERC funding of major programs in polar and marine sciences of long-term, global importance. The £45 M 'RAPID' programme that measures the over-turning circulation of the Atlantic Ocean is now in its second decade and depended on a sustained collaboration with US national marine laboratories. The NERC 'Arctic' £15 M programme, which recognises the national importance of understanding the implications of Arctic climate change was initiated in 2011. The £7.5 M NERC 'ISTAR' programme, that seeks to understand the widespread mass losses from the West Antarctic Ice Sheet also commenced in 2012. All these programs depend upon and are supported by the marine and polar infrastructure maintained by NERC, NOC and BAS.

At present, ships are essential platforms for marine science measurements. Nonetheless their energy costs have continued to rise over the past decade. New technology is now giving us more energy efficient methods with which to survey the oceans. Autonomous systems, such as sea-gliders, autonomous underwater and surface vehicles equipped with suitable sensors, offer a route for transforming approaches to marine observation. NERC funded £2.8 M capital in 2012/13, and is currently investing (2013/14 and 2014/15) £10 M capital, in marine autonomous systems (funded from the "Eight Great Technologies" capital initiative), with a view to maintaining a world class position in this field.

Use of scientific evidence

Recommendation 4. The Government appears to have moved the goalposts during the Marine Conservation Zone designation process, to require robust evidence showing the presence or extent of marine features rather than the best available evidence reflecting our current understanding of the marine environment. We support the principle that Marine Conservation Zones should be based on sound scientific evidence. We consider that the Government should adhere to its standard of best available evidence, as set out in its initial Marine Conservation Zone guidance, that "network design should be based on the best information currently available" and "lack of full scientific certainty should not be a reason for postponing proportionate decisions on site selection". (Paragraph 23)

1NERC funding for "National Capability" (NC) supports large research infrastructure (such as ships, aircraft and polar bases), scientific facilities, and data assets. It also funds science and technology developments that require a long-term focus such as those involving sustained programmes of environmental observing to measure decadal-scale change and variability and development of environmental measurement technologies (e.g. autonomous vehicles), and developing and supporting community modelling systems (e.g. ocean and shelf sea components of climate and earth-system models). NERC also funds, through processes of open competition, both issue-led "Research Programmes" (RP) and investigator-led ("Responsive Mode", RM) science on shorter time-scales (typically 3–5 years).

The Government welcomes the Committee's support for the principle that Marine Conservation Zones (MCZs) should be based on sound scientific evidence. The Government has stated from the outset that it wants well managed marine conservation zones to contribute to the network of marine protected areas and not just a series of lines on maps. It has also been clear that it wants to move to managing sites soon after designation. To do this effectively adequate evidence is vital. Without it, there will be no prospect of securing agreement from other Member States to regulate the activities of their fishermen where this is required in waters beyond our six mile limits.

The analysis carried out by the Marine Protected Area Science Advisory Panel as part of providing its final advice to Government on the Regional MCZ Project recommendations indicated that there were issues with the evidence base supporting the recommendations and recommended that an in depth review was carried out. It also noted that even after this, some sites would have very little evidence[2]. In November 2011, Defra Ministers announced that because of evidence issues, designation of MCZs would be made in tranches and additional seabed and habitat surveys would be carried out along with an in depth review. Reports of completed surveys including analysis of data collected, updated habitat maps[3] and the in depth review[4] are available on Defra's pages on the Government website.

The Government agrees that best available evidence should be used but considers that there are instances when this is not sufficient to proceed with designation. The Committee notes the poor state of marine seabed mapping which led to the Regional MCZ Projects relying on modelled information about presence and/or extent of habitats and species leading to significant uncertainties around this information. Results from some of the seabed surveys have confirmed these uncertainties.

The Government is also concerned that the best available data might be anecdotal reports of presence of a habitat or a sighting of a particular species. Given these uncertainties the Government considers that an adequate evidence base is necessary to support decisions that may have socio-economic impacts and effects on people's livelihoods and result in enforcement and monitoring costs that fall on the tax payer. For the designation of MCZs adequate evidence is high or moderate confidence in presence and extent of features based on the advice provided by Natural England and the Joint Nature Conservation Committee (JNCC) except in specific circumstances for features at higher risk, where a lower certainty of data is accepted in accordance with the Precautionary Principle.

Management measures

Recommendation 5. We are not convinced that the issues of what to conserve and how to conserve it can be separated as easily as the Minister suggests, particularly in a stakeholder-driven process with negotiations happening at a local level to decide which

2https://www.gov.uk/government/publications/science-advisory-panel-assessment-of-the-marine-conservation-zone-regional-project-final-recommendations

3http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&ProjectID=18221&FromSearch=Y&Status=3&Publisher=1&SearchText=cefas&GridPage=30&SortString=ProjectCode&SortOrder=Asc&Paging=10#Description

4http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&ProjectID=18125&FromSearch=Y&Publisher=1&SearchText=MB0116&SortString=ProjectCode&SortOrder=Asc&Paging=10#Description

sites should be chosen to be protected on the basis of their biological importance and socio-economic impact. People need to understand what Marine Conservation Zones mean for their lifestyles and livelihoods. The absence of a substantive discussion on likely management measures perpetuates uncertainty, undermines local support for Marine Conservation Zones and creates room for scare-mongering. We recommend that the Government produce a clear statement on how management measures will be decided and tailored to specific Marine Conservation Zones, alongside a clear timetable showing when these will be discussed. (Paragraph 28)

The Government accepts this recommendation. An indication of the timetable for introducing management measures will be published with the Government response to the consultation on MCZs. The lead regulatory authorities, the Marine Management Organisation (MMO) and the Inshore Fisheries and Conservation Authorities are developing plans and processes for putting in place management measures. This work includes the prioritising of MCZs on the basis of potential management need and a simple timetable for next steps for each site at the time of designation. At the heart of any action they take will be engagement with interested parties.

Defra's current consultation

Recommendation 6. There is a lack of clarity regarding why the proposed 31 Marine Conservation Zones were selected for designation first, despite the JNCC and Natural England's advice that 59 sites, 51 of which are not included in the first tranche, are currently at high risk of further damage. The Government should set out the reasons for not putting these sites forward for consultation and outline action being taken to prevent further damage to these areas as the Marine Conservation Zone process continues. We agree with the principle that socio-economic concerns should be taken into account when designating Marine Conservation Zones. We recognise that it is difficult to balance socio-economic and scientific concerns. However, at present it is not clear why certain sites are being progressed and others not. Given that the weight given to socio-economic concerns compared to scientific evidence is a political judgement, we recommend that the Government should publish the criteria being used by Defra to select sites for conservation. (Paragraph 32)

The Government welcomes the Committee's support for including consideration of socio-economic concerns when designating MCZs and recognising the challenges of balancing these with environmental concerns. The consultation was the opportunity for stakeholders to comment on the proposals being made including whether they thought the right balance had been reached between socio-economic and environmental concerns and on the treatment of high risk sites. Responses are currently being analysed and a summary of comments made on this aspect of the proposals will be included in the Government response to the MCZs consultation.

The Written Ministerial Statement in November 2011 explained the issues with the evidence base for the MCZs recommendations made by the four Regional MCZ Projects and announced that designations would be made in tranches with the best-evidenced sites designated first and further evidence gathering would be undertaken for other sites.

The MCZs consultation document (section 4.1) explained how sites had been selected and explained the more precautionary approach taken for features and sites which JNCC and Natural England had identified as being at high risk. Annex A1–6 to the consultation document provided a detailed narrative for each site summarising the decision-making process explaining why it had been selected or not. A description of the decision making process was published on Defra's website in March 2012[5].

Next steps

Recommendation 7. We are concerned that a clear vision for Marine Conservation Zones has not been articulated by the Government. We recommend that it does so in the response to this report. (Paragraph 33)

The Marine and Coastal Access Act and the MCZs consultation document clearly set out the purpose of MCZs which is to complement other types of marine protected areas to contribute to an ecologically coherent network of MPAs which will in turn contribute to achieving our vision of clean, healthy, safe, productive and biodiverse seas and oceans. The MPA network will also contribute to meeting our obligations under the Marine Strategy Framework Directive and international commitments under the Oslo and Paris Convention (Ospar) and the Convention on Biological Diversity.

The Government will look for opportunities to articulate further its vision for the marine environment.

Recommendation 8. We were pleased to hear that the Minister is keen to move the Marine Conservation Zone process forward, but we have not seen this intention translated into action. The Minister should not let his priorities be set by fear of judicial review. Further delay to the process perpetuates the uncertainty that has already been damaging to the Marine Conservation Zone project. We recommend that Government set out a clear timetable for designation of this tranche and future tranches of Marine Conservation Zones, with a clear commitment to an end date by which the ecologically coherent network of marine protected areas, as the Marine and Coastal Access Act 2009 requires, will be established. (Paragraph 34)

Work is proceeding as a priority on analysing the 40,000 responses to the recent consultation on new MCZs. This work has to be seen alongside the significant number of MPAs that already exist including 42 Special Areas of Conservation and 37 Special Protection Areas for birds with marine components. Natural England advise that there are also 377 coastal Sites of Special Scientific Interest (of which 113 have been assessed as having features which would contribute to an ecologically coherent network) in English waters. 23% of English inshore waters are already included in MPAs and the Government has committed to 25% of inshore waters being within a well-managed MPA network by 2016[6].

5https://www.gov.uk/government/publications/steps-for-assessing-marine-conservation-zone-proposals

6https://www.gov.uk/government/publications/biodiversity-2020-a-strategy-for-england-s-wildlife-and-ecosystem-services

The Government will say more about future designation of MCZs when announcing its response to the recent consultation.

Commercial operations

Recommendation 9. We support the Marine Management Organisation in their efforts to encourage data sharing from industry. We agree with Professor Boyd's assessment that "we have to be a lot cleverer" about using the data that is out there already to improve our understanding of our marine environment. Whilst we recognise there is work underway to address this issue, we consider that this could go further. We recommend that the Government works with the Marine Management Organisation to bring forward proposals that would make sharing of more data collected at sea, particularly seabed and habitat maps, as well as wind data, a licensing condition on commercial activity in UK waters. We recognise that this may have to contain caveats relating to genuinely commercially sensitive information. (Paragraph 40)

The Government welcomes the recognition by the Committee of the valuable work that has been undertaken by the Marine Management Organisation in making available industry data, in the form of published environmental statements. A number of other initiatives, including activities led by The Crown Estate,[7] Marine Scotland[8] and the other Devolved Administrations, are also making significant contributions, as part of a shared endeavour, to providing wider access to industry marine data. For example, the Department of Environment (Northern Ireland) Marine Division has taken the lead in working with other parts of the Government in Northern Ireland to provide a geo-referenced data platform so that all government data, industry-gathered, and data from other organisations can be made available to the public through a web-based application.

It is clear that opportunities exist for sharing more marine data. The Government is seeking to source as much relevant data as possible from industry while, at the same time, avoiding placing an undue burden on them. The inclusion of a requirement to provide data gathered as a licensing condition is already being used for some types of data, while other approaches for sharing data, such as by the agreement of the industry, have also been productive. The MMO, for instance, publishes a register of industry activities and is working to enhance access to data submitted via its marine licensing process. There is also related work being taken forward by the Marine Environmental Data and Information Network (MEDIN) to ensure that data collected from marine organisations are consistently managed through the use of common standards and can be discovered through a single point of access—the MEDIN web portal.[9]

The Government recognises the benefits to all of sharing marine data more widely. The Marine Management Organisation will therefore continue to work closely with the Devolved Administrations, The Crown Estate and other bodies to increase the amount of data collected at sea that is made available for wider use. Progress with this activity will be reported regularly to the Marine Science Co-ordination Committee.

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[7] http://www.marinedataexchange.co.uk

[8] www.scotland.gov.uk/Topics/marine/science/MSInteractive and http://www.scotland.gov.uk/Topics/marine/Licensing/marine

[9] http://portal.oceannet.org/search/full

Long term monitoring

Recommendation 10. We welcome Sir John Beddington's work on the issue of long-term monitoring programmes, which are of particular importance to understanding long-term environmental change in the marine environment. We encourage Sir Mark Walport to continue to be involved in these efforts. We consider that there are shortcomings in both the Government's and NERC's support for long-term monitoring and we are concerned that the UK's capability in this field appears to be being cut back. The Marine Science Coordination Committee should meet with Sir Mark Walport within his first six months in office as Government Chief Scientific Adviser to discuss longterm monitoring. We recommend that the Committee produce an action plan to address this issue and answer the strategic questions posed by Professor Boyd about how we measure the right parameters in a technologically developed manner. (Paragraph 43)

The Government recognises the importance of long-term marine observations for a range of purposes. Building on discussions between Sir John Beddington and public sector funders around the issues of funding for environmental observations, Sir Mark Walport will take forward a thematic review of scientific observations needed to meet the UK's requirements for environmental data to inform and support research, operational needs, and policy-making. The aim of this review would be to set out a vision for environmental observations for the coming decade; to identify current and future challenges; and the data and monitoring activities needed for decision-making with respect to these challenges. Recognising that observational datasets can have multiple uses, and that there are a number of sources of funding for many observation programmes, such a review would necessarily consider issues related to future funding. The review will be scoped more fully and taken forward in the coming months. The Marine Science Co-ordination Committee's input to this review will be very valuable.

Work is already underway by the MSCC to assess the potential for new technologies to be used for undertaking monitoring activities, with a UK Integrated Marine Observing Network (UK-IMON) workshop in September 2013 focussed on this issue. The conclusions from the workshop will be made available.

Autonomous underwater vehicles

Recommendation 11. We agree with Professor Boyd that priority should be given to harnessing the potential of autonomous underwater vehicle technologies. We were particularly interested in this issue in light of our recent work on the commercialisation of research. This area of innovation should be a focus of attention within the Technology Strategy Board. It could also be used to provide a forum for the Marine Science Coordination Committee to begin to improve its engagement with industry. We recommend that the Marine Science Coordination Committee engages with the Technology Strategy Board on the issue of developing autonomous underwater vehicles. (Paragraph 46)

Marine Autonomous Systems (MAS) present important potential for improved measurements in the marine environment. They offer opportunities for improved sampling (e.g. where large numbers of low cost platforms could be used); to access

environments not accessible by other means (e.g. under ice), and to reduce costs (e.g. by reducing dependency on ships for some types of measurements). Nevertheless, for the foreseeable future, ships will remain a crucial element of marine observing that cannot as yet be undertaken autonomously—such as where large teams are needed at sea or where large instrument pay-loads or power are needed for more than a few days at a time.

The challenge is to develop a roadmap for transforming marine measurements (for scientific, regulatory and industry applications) through use of autonomous systems. The recent announcement of £10 M capital allocation to the Natural Environment Research Council (NERC) from BIS in 2013/14 to 2014/15 for marine autonomous systems technologies as part of the "Eight Great Technologies" initiative is an important stimulus.

There are a number of initiatives already underway involving Government, Research Councils, the Technology Strategy Board and industry including:

- The UK Marine Industries Leadership Council (MILC) recently launched an initiative to investigate the potential for overcoming the most significant technical challenges to the expanded use of MAS through joint investment by industry, Government and academia. This initiative is set in the context of the UK's Marine Industries Growth Strategy, 2011. The NERC National Oceanography Centre is therefore working closely with the MILC and co-chaired an industry workshop at Ocean Business (Europe's largest marine technology showcase) in Southampton in April 2013 to develop this strategy.

- The NERC National Oceanography Centre, the Technology Strategy Board (TSB) and the Defence Science and Technology Laboratory (DSTL) are currently running a Small Business Research Initiative (SBRI) competition to stimulate innovations in Long Endurance Marine Unmanned Surface Vehicles technologies. NERC also participating in developing the TSB's Robotics and Autonomous Systems (RAS) road map.

- NERC and NOC are engaged with the TSB's Robotic and Autonomous Systems (RAS) Special Interest Group to roadmap these technologies in a wider context than just marine. In parallel, NOC are also working with Southampton Marine and Maritime Institute, which comprises a number of major industry partners to harness autonomous technologies that cross-cut a range of user sectors.

- In Scotland, SAMS (the Scottish Association for Marine Science) has established the North Atlantic Glider Base in close collaboration with NOC, which deploys gliders operationally and provides UK-wide testing facilities. This will also provide a contribution to the emergent EU Atlantic and Arctic Strategies.

- NERC and Defra have been working together through the National Oceanography Centre to scope the potential for application of autonomous vehicles in a variety of applications for monitoring and seafloor mapping. NOC are also working with Met Office to develop MAS as a replacement and/or augmentation for the ODAS buoy observing network.

NERC, with support from Defra, will continue to engage closely with MILC and the TSB on this; NERC will also provide a link through to wider MSCC interests and, to do so, will convene a group of interested MSCC members.

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