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Ministry of Defence Submarine Dismantling Project
Consultation response from Nuclear Information Service

Nuclear Information Service is a not-for-profit, independent information service which works to promote public awareness and debate on nuclear weapons and related safety and environmental issues (see http://nuclearinfo.org for more information). Our research work is supported by funding from the Joseph Rowntree Charitable Trust.

Nuclear Information Service welcomes public consultation on the Ministry of Defence submarine dismantling project and is grateful for the opportunity to respond to this consultation. The dismantling of redundant submarines is a controversial and sensitive matter and we support initiatives which will stimulate a mature and informed debate over what to do with the unwanted radioactive legacy of submarines which have left service. The country has been left with this legacy as the result of unwise decisions made in the past, but it is our responsibility to deal with the problem.

Q1. ***What are your views on the overall objectives for the dismantling submarines that have left service? [chapter 4]***

The objectives of the project are reasonable and we accept that a boundary for the project must be drawn somewhere. However, the scope of the project does not include defuelling of the six out of service submarines stored at Devonport which still contain reactor fuel, or defuelling of submarines which will subsequently leave service. As this is the most controversial and risky stage of the overall dismantling process, some may criticise the decision to exclude submarine defuelling from the scope of the project as an attempt to avoid discussion of the issue. We recommend that the Ministry of Defence demonstrates greater transparency about arrangements for submarine defuelling and the associated risks (see answer to question 15 below).

Q2. ***What are your views on the options for how the radioactive materials could be removed from the submarine? Do you think any significant options have been left out? [chapter 6]***

It is not yet clear whether storage of intact reactor pressure vessels without size reduction will be possible within the planned national radioactive waste repository. If it transpires that the repository is able to accept intact reactor pressure vessels then this option should be given further consideration and further public consultation should take place.

Although it is unlikely that interim dry storage of an intact submarine would be an effective option for managing waste from redundant submarines, this route could have been

considered as a possible option and reasons should have been given for discounting it.

Q3. ***What are your views on the candidate sites for where the radioactive waste is removed from the submarines? Do you think any significant options have been left out? [chapter 6]***

We accept that there are a limited number of sites which will realistically be suitable for submarine dismantling operations. We support the principle that if possible an existing nuclear licensed site should be used for these operations, rather than a 'new build' location, in order to reduce the size of the Ministry of Defence's nuclear footprint and for reasons of cost and efficiency.

As the locations where out of service submarines are currently stored, Devonport and Rosyth are obvious candidate sites for submarine dismantling. Dismantling submarines at these locations would eliminate risks arising from their transport to another site but in our view it would probably be feasible to move the defuelled submarines by sea from Devonport and Rosyth to another location at an acceptable risk provided there were clear advantages in doing so.

One site which we consider requires deeper consideration as a location for a submarine dismantling facility is Barrow-in-Furness. In equity terms, Barrow would be an appropriate location as the waste would be returned to the location where the submarines were built. Submarine dismantling would help to generate employment in Barrow in the event of an eventual halt to submarine construction in the town. The close proximity of the town to the Sellafield nuclear complex is an attractive factor in relation to interim storage of radioactive waste and could increase the feasibility of the 'reactor compartment separation and storage' option. We accept that the tidal regime in the Walney Channel would complicate access for redundant submarines but we do not consider that this poses an insuperable obstacle.

It is not clear why Barrow was rejected at an early stage as a candidate site for submarine dismantling. The Ministry of Defence should publish further information on the suitability of Barrow as a location for a submarine dismantling facility, and should publish in full the reasons for rejecting Barrow for submarine dismantling.

Q4. ***What are your views on the options for which type of site is used to store the intermediate level waste from submarine dismantling? Do you think any significant options have been left out? [chapter 6]***

At this stage in the submarine dismantling project it is too early to identify specific waste storage sites. We agree that the focus should be on types of site and support the view that the choice of site should be made through a future Nuclear Decommissioning Authority consultation on a national programme for interim storage of intermediate level radioactive waste.

Q5. ***What are your views about the methods used to compare dismantling and storage options, in particular the factors considered to assess their suitability/effectiveness / performance? [chapter 6]***

We do not consider that the Multi Criteria Decision Analysis (MCDA) conducted by the Ministry of Defence represents a robust approach to comparing dismantling and storage options. Although MCDA is an accepted methodology for options appraisal, the analysis conducted for the submarine dismantling project does not appear to have been conducted in accordance with good practice for use of the technique in the nuclear sector. Specifically:

- The analysis was conducted with a limited group of government specialists and experts rather than a broad range of stakeholders including representatives from local communities.
- A 'swing weighting' approach was not adopted to help determine the relative importance of different factors.
- It is not always possible to see and understand the basis for the MCDA scores and the findings from sensitivity tests are not always shown, giving the impression that information has been presented selectively.

In our view the weightings attached to certain factors in the MCDA and assessment process may skew the outcome of the analysis:

- The zero weighting for worker doses during dismantling, transport, and storage effectively means that this factor counts for nothing in the MCDA process.
- The weightings attached to reduction in impact to government and Ministry of Defence and reduction of impact to operations are relatively high. The conclusion which will be drawn by many stakeholders from outside government is that the choice of options has been made to minimise the expense and inconvenience to government at the expense of other stakeholders and factors.
- In general environmental and socio-economic factors have been given a lower weighting than we would expect to see.

As a result, we are concerned that the approach taken to the MCDA appears to distort the results of the analysis. The MCDA should be conducted again by independent experts from outside the Ministry of Defence selected by the submarine dismantling project independent advisory group using a best practice approach with a full range of stakeholders. The approach taken to option selection is likely to play a key role in public acceptance of decisions made by the submarine dismantling project and it is important that a robust, fair, and transparent approach has been seen to be taken if there is to be confidence that the selected option is the best choice.

Q6. ***Do you think we have captured all the potential advantages and disadvantages and if not which others would you propose? [chapter 7]***

It is difficult to answer this question in the light of our comments in response to the previous question on shortcomings with the options assessment methodology. There may be local, site specific issues which the Ministry of Defence is unaware of, and we trust that feedback from local stakeholders in Devonport and Rosyth will help in identifying advantages and disadvantages associated with these issues.

Q7. ***Are there any other significant issues or factors you think we have overlooked? [chapter 7]***

We are not aware of any such issues at this stage. As stated above, we consider that the assessment methodology has yet to adequately take into account all the issues that have been identified.

Q8. ***What are your views on our proposals, and associated rationale, for:***

a) how we remove the radioactive waste [chapter 8]

We consider that the Ministry of Defence has not yet published enough information for consultees to be able to answer this question on an informed basis. This appears to partly because of the project's nature, in undertaking work which has not previously been done in the UK, and partly because of secrecy constraints imposed by the Ministry of Defence. The Ministry's refusal to release certain information about reactor types and operation appears to be driven by concerns that the United States authorities would not wish to see such information made public. In our view enabling the correct choice of methods for dismantling out of service submarines which have the least impact on public safety and the environment should be given a higher priority by the Ministry of Defence than military arrangements between the USA and the UK.

To this end, the Ministry of Defence should publish the following information in order to inform and explain decision-making on submarine dismantling and radioactive waste removal:

- The predicted post-defuelling radioactive inventory in the reactor pressure vessel and primary and secondary cooling circuits for each of the submarines which is to be dismantled.
- The detailed risk analysis for each of the proposed dismantling and storage options, including the radiation doses to which it is anticipated that workers and members of the public would be exposed as a result of each option.
- The risk of an accident during submarine dismantling will be a concern to some members of the public. The Ministry of Defence should publish its assessment of possible accident scenarios and their associated risks during the dismantling process (including scenarios resulting from malicious acts) and preliminary views on how such risks would be mitigated and accidents handled.
- In order to inform discussion on whether it is feasible to move submarines which are currently in storage afloat between sites, information on hull integrity and the general condition of each submarine and the Ministry of Defence's assessment of the risks identified in moving the vessels should be published.
- The expected costs and benefits accruing to communities hosting submarine dismantling facilities, including outline information on the kind of compensation package that the Ministry of Defence would anticipate making to host communities.

One factor which will influence the decision on how to remove radioactive waste from the submarines is the risk that radioactive fission products may have migrated from reactor fuel modules into the reactor and its steam generating and cooling circuitry. The degree to which this may have happened will influence the radioactive dose to which workers dismantling the submarines will be exposed. The Ministry of Defence should therefore

seek further advice on this point from independent experts and should also be willing to adapt its approach to the dismantling process in the light of experience with the first, demonstrator, submarine which is to be dismantled.

The Ministry of Defence assumes that all reactor pressure vessel waste must be size reduced and packaged before it can be stored in a national radioactive waste repository, However, it is not yet clear whether it will be necessary to cut up and repackage the reactor pressure vessel for it to meet waste acceptance criteria for the repository. Size reduction is a potentially hazardous and costly activity and it should not be undertaken if there is no genuine need to do so.

If the assumption is correct the key issue in the choice of option for removal of waste is when the waste should be size reduced. If waste is size reduced at an early stage in the process – immediately after submarine dismantling – the dose to workers cutting up the contaminated components will be higher than if size reduction is delayed until shortly before the waste is consigned to the repository. This is a point in favour of size reduction at a later stage in the process.

On the other hand, delaying size reduction would transfer the radiation risks, expense, and responsibility for cutting up the pressure vessel to a future generation. As a guiding principle, Nuclear Information Service considers that the costs of dealing with nuclear legacies should be carried by the generation which made the decision to generate the waste and has received the benefits associated with generating the waste – in this case, ourselves, the current generation. For this reason we favour the 'RPV removal and size reduction for storage as packaged waste' option from the three options proposed by the Ministry of Defence.

A commitment from the Ministry of Defence to undertake size reduction at the earliest possible stage, rather than at an unspecified time in the future, would reduce the potential risk of the submarine dismantling project failing to meet its objectives if a future government is reluctant to meet the costs of size reduction or procrastinates for other reasons.

In order to engender public confidence in the dismantling process the Ministry of Defence should make visible and tangible arrangements for protecting the public and the environment from the impacts of dismantling. The submarine dismantling process should be openly regulated by the Office for Nuclear Regulation and the Environment Agency at all stages. Submarine defuelling should also be brought within the *vires* of the two regulators. We do not consider that the Defence Nuclear Safety Regulator is an appropriate body to regulate defuelling and dismantling as it lacks the necessary accountability and independence to command the confidence of the public.

In a number of places the consultation documentation states that proposed options will meet legal requirements and regulatory standards. Legal requirements and regulatory standards do not always represent best practice and may change, and we believe it is important for the Ministry of Defence to adopt an approach which ensures that doses and discharges are always kept as low as reasonably achievable.

b) where we remove the radioactive waste; and [chapter 8]

Assuming that there are no other suitable options for submarine dismantling (see our

comments about Barrow in Furness in response to question 3), we share the view of the Ministry of Defence that the dual site location (dismantling at both Devonport and Rosyth) would be the best way forward.

An advantage of undertaking dismantling operations at two locations using two facilities is that dismantling would take place at a faster rate, resulting in completion of the dismantling of redundant submarines which are currently in storage by an earlier target date.

The Ministry of Defence should be willing to compensate communities living near the dismantling sites for the potential extra risks they may face from hosting the dismantling facility. As well as providing financial and infrastructure benefits, as far as possible efforts should be made to provide 'radiological compensation' by reducing risks and doses from other nuclear operations in the vicinity. In the case of Devonport, this could be achieved by ceasing to undertake routine submarine maintenance operations at the dockyard when the submarine fleet eventually moves to Faslane.

As Rosyth does not have a submarine defuelling capability and the Scottish Government is unlikely to consent to redevelopment of defuelling capability at Rosyth, submarines which have yet to leave service will have to be defuelled at Devonport after their retirement. This means that either i) a dismantling facility at Rosyth would deal only with submarines currently in storage at Rosyth before closing, or ii) defuelled out of service submarines would have to be transported by sea from Devonport to Rosyth for dismantling if it was decided that the facility should remain open. Our preference would be for dismantling of submarines which have yet to leave service to take place at Devonport.

c) which type of site will be used to store Intermediate Level radioactive Waste? [chapter 8]

We agree with the proposal that intermediate level radioactive waste from dismantled submarines should be placed into interim storage at sites managed by the Nuclear Decommissioning Authority. We do not consider it to be either cost-effective or desirable for the Ministry of Defence to establish its own separate arrangements for the interim storage of radioactive waste. Radioactive waste of all types is a national liability and should be treated as such and placed under the long term management of a single government body. The Nuclear Decommissioning Authority is the appropriate body to take this role, and in any event Ministry of Defence radioactive wastes will ultimately be handed over to the Nuclear Decommissioning Authority for custody in the national radioactive waste repository when it is eventually built. For this reason, we do not consider that a Ministry of Defence-owned site would be an appropriate location for interim storage of radioactive waste from submarine dismantling. We are aware that the Ministry of Defence is in dialogue with the Nuclear Decommissioning Authority over its nuclear liabilities and would like to see closer co-operation and dovetailing of projects between the two organisations.

Nuclear Decommissioning Authority sites chosen as locations for interim storage facilities should be remote from centres of population.

Although it is the government's intention to open a national radioactive waste repository in due course significant questions remain unanswered about when the repository will be open to accept waste. To minimise the risks resulting from a significant delay in opening the repository, interim waste stores should be constructed to a standard capable of holding

waste safely and securely for an extended period. Although the submarine dismantling consultation documents state that the national repository is expected to open in 2040, it will not be accepting radioactive waste from the submarine dismantling project until at least twenty years later. In our view, the design life of the interim storage facility should be substantially longer than the proposed 100 year life span.

We note that, as well as well as the interim storage location(s) for intermediate level radioactive waste from submarines, short-term storage facilities will need to be constructed to hold waste generated at the dismantling facility before it is transported to the interim store.

Q9. ***Do you have any comments on the next stages of decision making process that will follow this consultation? [chapter 9]***

The Ministry of Defence should publish the results of this consultation as soon as is practicable and should also set out its 'roadmap' for future stages in the submarine dismantling project in a timely manner.

We consider that further work is needed to ensure that options assessment has been suitably robust (see answer to question 5) and no final decision to commit to any option should be made until this work has been completed and independently validated.

The independent advisory group for the submarine dismantling project should continue to meet to guide the project, and should oversee the drafting of the response to this consultation and the drafting of recommendations to Ministers on final selection of the options to be pursued.

Q10. ***Do you have any comments about how this consultation has been conducted? Did the consultation provide enough information for you to reach views on the key decisions? Did it meet the seven consultation criteria of the government Code of Practice (outlined at Annex D)?***

We welcome consultation by the Ministry of Defence on its submarine dismantling proposals and we hope that in future the department will conduct further consultations on matters of public interest and issues which have the potential to impact significantly on local communities.

However, we feel that a more open and deliberative approach should have been undertaken in decision-making on submarine dismantling. It is not clear what guiding principles and process were used by the submarine dismantling project team in identifying the preferred options presented during the consultation.

We would recommend that the submarine dismantling project team study the recommendations of the first Committee on Radioactive Waste Management (CoRWM) and follow the approach to decision-making taken by the Committee in its subsequent work. CoRWM's work is generally considered to have been successful in identifying a way forward for the management of radioactive waste, and the Committee established new standards for public and stakeholder engagement within the nuclear sector which were important in restoring trust in government institutions responsible for managing radioactive waste. In its principal report to the government CoRWM outlined the approach it had taken

to its work, based around seven elements which heavily emphasised ethics, public participation, and an open, deliberative approach to the problems it was tackling. The Committee considered that this approach would allow its recommendations to be successfully implemented

Central to the approach were five principles – statements of fundamental core values - which guided every aspect of the Committee's work and its approach to engagement with the public and stakeholders. These principles are outlined in CoRWM's report to the government[1] and are as follows:

- To be open and transparent.
- To uphold the public interest by taking full account of public and stakeholder views in our decision making.
- To achieve fairness with respect to procedures, communities and future generations.
- To aim for a safe and sustainable environment both now and in the future.
- To ensure an efficient, cost-effective and conclusive process.

Further environmental and radiological protection principles, such as the precautionary principle and management of doses to be as low as reasonably achievable, would also apply in the case of the submarine dismantling project.

We recommend that the submarine dismantling project takes the same kind of open and deliberative approach used by CoRWM, which was chosen so as to inspire public confidence in decisions made by CoRWM on the highly complex and emotive issue of radioactive waste management. The risk of not following such a route is that, if it is not clear that project decisions have been made in an open, reasoned, and principled way, the decisions will lack legitimacy and may not be accepted by members of the public in communities which are expected to host controversial dismantling and waste storage facilities. In particular, there may be concerns that decisions have been driven by costs and the vested interests of the industry partners who will undertake dismantling, rather than the best interests of the communities themselves.

It is somewhat regrettable that the Ministry of Defence presented its own preferred options as part of the consultation process. If these options are the ones eventually adopted by the submarine dismantling project team, it will be harder for the team to claim that the key decisions had not already been taken before the consultation exercise took place and that consultation was genuine and open-minded with no hidden agenda. On the other hand, it is encouraging that a strong group with independent advisors have been scrutinising and informing the work of the project team.

We appreciate that the Ministry of Defence has worked hard to undertake this consultation in an equitable way and follow the seven consultation criteria in the Government Code of Practice on Consultation. However, the technical approach underpinning the process (in particularly the assessment methodology) is not particularly accessible to lay members of the public who may be affected by the project and information which is in our view essential to informed decision making is unavailable (criterion 4). The burden of consultation is also high (criterion 5). At this stage it is not possible to comment on whether criterion 6 (responsiveness to consultation) has been met as feedback is not yet available and final decisions have yet to be made.

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[1] 'Managing our Radioactive Waste Safely: CoRWM's recommendations to Government'. Committee on Radioactive Waste Management. CoRWM document 700, July 2006. http://bit.ly/tWijEr. Paragraph 10, pages 5-7 and Chapter 4, pages 29-32.

We would also remind the Ministry of Defence that a highly transparent and open approach to submarine dismantling issues will need to be taken beyond the current consultation and decision-making phase of the project, and indeed throughout the entire cycle of the project.

Environmental Questions

Q11. ***Do you think that the Environmental Report has captured the significant environmental effects of the SDP options? If not, what effects do you think we have missed, and why?***

Please see response to question 5.

Q12. ***Is there any other baseline environmental information, relevant to the SEA that we have not included? If so, please provide details.***

We would have liked to have seen a deeper consideration of socio-economic impacts, going beyond looking principally at short to medium term economic impacts of the submarine dismantling project and also looking at long-term potential implications of the project for community structure and resilience and at the impacts on different sections of the community based on age, gender, ethnicity, and similar factors. As the two proposed dismantling facilities are both close to urban areas with significant populations, this is a relatively important factor.

Q13. ***Do you agree with the proposed arrangements for monitoring significant effects of the SDP options, detailed in the environmental report? If not, what measures do you propose?***

Monitoring arrangements should go beyond the legal baseline specified by government regulators and the needs of site operators and should address the potential concerns of local residents. The Local Liaison Committees for the Devonport and Rosyth Dockyards should be reviewed and strengthened by including representation from local environmental and community groups. Monitoring protocols for each site should be agreed in consultation with the new Local Liaison Committee and other stakeholders with an interest in health and environmental concerns. The local knowledge of Liaison Committee members and local stakeholders should be used to help identify sensitive receptors where monitoring would be desirable. As well as monitoring environmental and health-related determinands, socio-economic changes should also be tracked.

Q14. ***Do you agree with the conclusions of the Report and the recommendations for avoiding, reducing or off-setting significant effects of the SDP options? If not, what do you think should be the key recommendations and why?***

The Environmental Report makes a number of assertions about radiological doses, the impact of radiological discharges, and risks of discharges resulting from an accident which downplay the importance of these issues. Little serious evidence is presented to support

these assertions. As discussed in our answer to question 8a, further evidence about potential risks, accident scenarios, and planned safeguards is required to allow informed discussion of the potential impacts of the submarine dismantling project.

Q15. ***Are there any other comments you would like to make?***

We would like to make the following comments on issues which we consider to be critical to the success of the submarine dismantling project.

Defuelling

Removal of spent fuel from submarine reactors is clearly the most risky part of the overall submarine dismantling process. We appreciate that the boundary for the Submarine Dismantling Project needs to be drawn somewhere, and that a decision has been taken to exclude reactor defuelling from the scope of the project. However, defuelling is a significant area of public concern as evidenced by discussion on the point at submarine dismantling project consultation workshops. This concern should be acknowledged and acted on by the Ministry of Defence.

Particular issues are as follows:

- Defuelling operations for six out of service submarines which still contain spent fuel (and presumably all submarines which subsequently leave service) are planned to take place at the Devonport Dockyard at Plymouth – a significant centre of population. Spent fuel removal poses significant tangible risks to the public and the environment. On 10 August 1985 control rods were incorrectly removed from a Soviet 'Victor' class submarine during defuelling at Chazma Bay naval yard outside Vladivostok, resulting in an explosion, the release of large amounts of radioactivity, and ten deaths[2]. As far as we are aware, Devonport is the only location in the world where nuclear reactor fuelling and defuelling is permitted to take place in close proximity to an urban area, posing unnecessary risks to the population. This is a legacy of a historic approach to nuclear safety by the Royal Navy and Ministry of Defence which, although adopted in the past, is unacceptable nowadays. Arrangements for managing safety and regulation of the defuelling process are opaque and unclear to the public.
- The UK currently has no capability to remove reactor fuel from fleet submarines, although there are plans to upgrade the Devonport Dockyard to be able to undertake defuelling operations by 2014. There has been minimal public consultation and debate on this decision locally. Although submarine defuelling operations have been undertaken at Devonport in the recent past, this does not absolve the Ministry of Defence of the duty to engage in discussion with local communities on proposals which could potentially have a significant impact on public safety.
- The location of the dockyard in an urban area raises issues relating to emergency planning. The Office for Nuclear Regulation has taken the following view on this point:

  > "The practicability of implementing off-site countermeasures is inextricably linked to the density and distribution of people around the nuclear site. A site that was acceptable for emergency planning purposes when it was first established may not continue to be acceptable unless planning controls limit population growth in the

[2] Kopte, Suzanne (August 1997): 'Nuclear Submarine Decommissioning and Related Problems'. Bonn International Centre for Conversion. Available at: http://www.bicc.de/uploads/pdf/publications/papers/paper12/paper12.pdf

site's locality, or action can be taken to ensure the off-site emergency countermeasures can cope with the changed demographic. In making decisions on planning consent for developments near to nuclear sites, it is therefore vital that ONR's expert advice on these matters continues to be given full consideration by the relevant planning authorities. In light of the events at Fukushima, we consider that it is timely for the relevant Government departments in the UK to examine the existing system of planning controls for development in the vicinity of nuclear sites and consider the need for improvements[3]."

Depending on the nature of the risks posed by defuelling and other operations at Devonport Dockyard, the Ministry of Defence and local authorities may need to consider implementing controls on development around the dockyard to minimise the risk to the public.

- Spent fuel will not only be removed from reactors at the Devonport Dockyard – it will also be stored there, at least for an interim period, before being transported to Sellafield for indefinite long term storage. This raises questions about the safety of the fuel cycle and the lack of a long term strategy for management of spent submarine reactor fuel. Despite being the component of out-of-service submarines which poses the greatest safety and security risks, there has as yet been no public consultation on spent fuel management through the mechanisms of the submarine dismantling project, the Ministry of Defence Nuclear Liabilities Strategy, or any other route.

Nuclear Information Service advocates that:

- The Ministry of Defence should provide greater transparency over submarine defuelling operations and potential risks, and place defuelling within the civil regulatory regime.
- Out of service submarines which still contain spent fuel should be defuelled as soon as possible after the necessary capacity has been installed at Devonport and spent fuel should immediately be removed from the Plymouth urban area.
- Spent fuel should be categorised as waste and a strategy for its management should be developed as soon as possible.

The Ministry of Defence should give consideration to the proposal made at the Birmingham national workshop for giving advance notice to the public before a submarine is defuelled at Devonport. This would allow those members of the public who are concerned about such issues to take their own measures to protect themselves and their families.

Construction of new submarines

A major factor behind the difficulties the Ministry of Defence is now facing in disposing of out of service submarines is the lack of consideration given to legacy and ethical issues at the time when the submarines were designed and built. It would be the worst kind of folly to make the same mistakes again. The Committee on Radioactive Waste Management has taken the view that "the political and ethical issues raised by the creation of more wastes are quite different from those relating to committed - and therefore, unavoidable – wastes"[4] and we consider it would be irresponsible and unethical for the government to

[3] 'Japanese earthquake and tsunami: implications for the UK nuclear industry. Final Report'. HM Inspector of Nuclear Installations. Office for Nuclear Regulation, September 2011. Paragraph 794, page 145.

[4] 'Managing our Radioactive Waste Safely: CoRWM's recommendations to Government'. Committee

build any new nuclear powered submarines before a proven solution has been found for how to manage the radioactive waste that they would generate. We do not consider that it is necessary for the Royal Navy to operate nuclear powered submarines in the current defence environment. Other navies are able to operate effectively with diesel electric submarines, including the Israeli navy, which is widely believed to use them as a platform for the launch of nuclear weapons[5].

Ministers and Parliament should be made fully aware of legacy and ethical issues when making decisions on whether or not there is a need to procure more nuclear powered submarines in the future, and, in the words of the Committee on Radioactive Waste Management, "will need to consider a range of issues including the social, political and ethical issues of a deliberate decision to create new nuclear wastes"[6].

In a similar vein, the submarine dismantling project must not be used as opportunity to conduct investigations which would be used to obtain information to assist in the future development and design of submarine reactors.

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on Radioactive Waste Management. CoRWM document 700, July 2006. Paragraph 26, page 13. http://bit.ly/tWijEr.

[5] 'SSL Dolphin Class, Israel'. NavalTechnology.com. http://www.naval-technology.com/projects/dolphin/

[6] 'Managing our Radioactive Waste Safely: CoRWM's recommendations to Government'. Committee on Radioactive Waste Management. CoRWM document 700, July 2006. Paragraph 22, page 12. http://bit.ly/tWijEr.