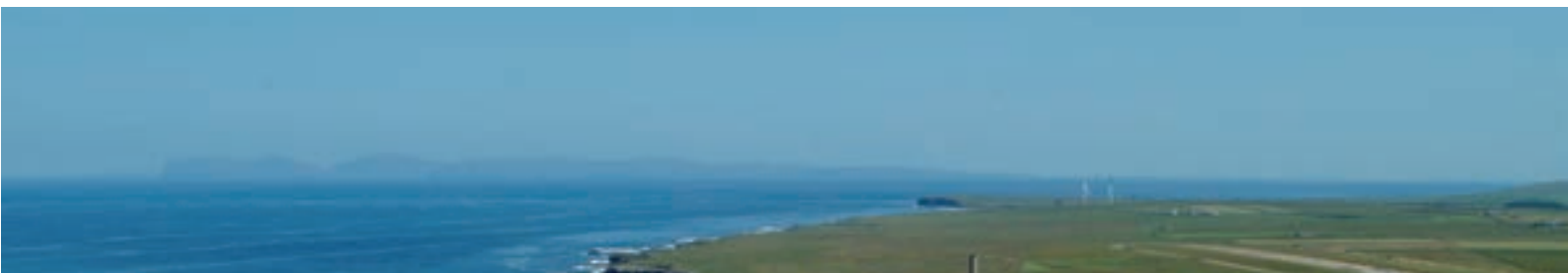


DOUNREAY RADIOACTIVE WASTE SUBSTITUTION CONSULTATION: RESPONSE PAPER



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Scottish Government/Department of Energy and Climate Change 2012

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EXECUTIVE SUMMARY

The consultation was published jointly by the Scottish Government and the Department of Energy and Climate Change (DECC) in December 2010 and proposed a means to deal with overseas reprocessing contracts through waste substitution.

More specifically, it is proposed that approval be given for the substitution of:

- Prototype Fast Reactor (PFR) and cemented Materials Test Reactor (MTR) raffinate wastes from Dounreay with vitrified radioactive wastes from Sellafield; and
- PFR raffinate waste at Dounreay with cemented MTR raffinate waste at Dounreay.

We said that these proposals would, if adopted, allow the existing overseas contracts to be honoured at the earliest opportunity and that it would also give greater certainty to the overall decommissioning schedule at Dounreay.

The majority of those who responded agreed overall with the proposed policy although others raised concerns over some aspects of the policy.

Having considered all the responses and taken all the comments into consideration Government has concluded that a waste substitution policy for radioactive waste arising from overseas research reactor fuel reprocessing contracts is an acceptable practice that the Nuclear Decommissioning Authority (NDA) can adopt to deal with historic Dounreay contracts.

More specifically:

Substitution of Prototype Fast Reactor (PFR) and cemented Materials Test Reactor (MTR) raffinate wastes from Dounreay with a radiologically equivalent amount of vitrified radioactive waste from Sellafield is permitted subject to contractual agreement with overseas customers and approval from the environmental regulators (the Environment Agency and the Scottish Environment Protection Agency).

Substitution of PFR raffinate waste with a radiologically equivalent amount of cemented MTR raffinate is also permitted subject to contractual agreement with overseas customers and approval from the environmental regulator.

In both cases Government expects broad environmental neutrality to be maintained, primarily on the basis of radiological equivalence. Government will not specify the methodology used to determine radiological equivalence but expects the environmental regulators to be satisfied that the waste substitution arrangements between the NDA and its overseas customers result in environmental neutrality.

1 THE CONSULTATION

Background

- 1.1 This report is an analysis of the responses to the Dounreay Radioactive Waste Substitution Consultation 2010. The consultation was published on 3 December 2010 and is available to view on the Scottish Government website¹. Consultees were asked to respond to the consultation by 11 March 2011.
- 1.2 In this report the use of "Government" refers collectively to the Scottish and UK Governments where policy and responsibilities are aligned. Where policies and responsibilities differ, separate references are made to either the Scottish or the UK Government.
- 1.3 The Nuclear Decommissioning Authority (NDA) sought clarification from Government about using radioactive waste substitution arrangements for the return of radioactive wastes resulting from reprocessing of overseas research reactor fuel at Dounreay. That is, instead of sending customers the radioactive waste allocated to them under their reprocessing contracts, a radiologically equivalent amount of radioactive waste from another source within the NDA estate would be sent.
- 1.4 The countries with radioactive waste at Dounreay which is due to be returned to them are Australia, Belgium, Germany and Italy.
- 1.5 More specifically, approval has been requested for the substitution of:
 - Prototype Fast Reactor (PFR) and cemented Materials Test Reactor (MTR) raffinate wastes from Dounreay with vitrified radioactive wastes from Sellafield; and
 - PFR raffinate waste at Dounreay with cemented MTR raffinate waste at Dounreay.
- 1.6 The NDA owns the UK's legacy civil nuclear facilities and is responsible for their decommissioning and clean up. In the case of Dounreay it has also inherited the long standing contracts for reprocessing of overseas research reactor fuel and the subsequent return of radioactive wastes. Requests from these overseas customers for radioactive wastes to be returned in forms that they are able to manage, along with the need to clarify the Dounreay site radioactive waste management strategy, have led the NDA to approach Government with a request to fulfil contractual obligations with radioactive wastes that are already available within its overall estate. In other words, NDA has asked Government if it can implement radioactive waste substitution to return these wastes.
- 1.7 Clarity about Government's policy on radioactive waste substitution is therefore necessary to allow the NDA to complete the discussions with its overseas customers.

¹ www.scotland.gov.uk/Publications/2010/12/03093403/0

The Consultation Questions

1.8 The consultation document asked five questions:

- Do you agree that a waste substitution policy should be adopted for radioactive waste arising from overseas research reactor fuel reprocessing contracts at Dounreay?
- Do you agree that substituting cemented Materials Test Reactor radioactive waste for Prototype Fast Reactor radioactive waste should be an available option to finalise the overseas contracts?
- Do you agree that substituting vitrified radioactive waste from Sellafield for cemented Materials Test Reactor radioactive waste and/or Prototype Fast Reactor radioactive waste should be an available option to finalise the overseas contracts?
- Do you agree with the proposals to ensure broad environmental neutrality for the United Kingdom?
- Do you agree that all of the relevant implications of the proposed policy have been identified?

1.9 Written responses were requested on a template questionnaire which could be submitted by post or email. All of the questions asked the respondent to select either Yes, No, In Part or Not Sure as their answer, and to provide additional comments where necessary to support this.

Submissions and Respondents

1.10 Twelve responses were received. While most respondents used the form provided, three did not answer the specific questions posed, but provided general comments supporting their position.

1.11 The responses are available from the Scottish Government Library. Two respondents requested that particular details (such as name and address) be withheld, so these details have been omitted accordingly.

Analysis and Presentation of the Data

1.12 All 12 responses were included in the analysis. Overall, the analysis of the data involved the following processes:

- Input of all responses into an Excel spreadsheet
- Initial identification of key themes
- Analysis of the commonalities and differences in the issues raised
- Preparation of the report

1.13 The focus of the report is on qualitative analysis and presentation, reflecting the nature of the material received.

1.14 Detailed quantitative analysis has not been undertaken for a number of reasons:

- There was a very small number of respondents
- Respondents covered similar issues but at different points on the response form
- Not all of the respondents answered the questions specifically
- The purpose of the consultation was to determine whether there were any reasons that the proposals should not be allowed or if there was anything that Government had not taken into account rather than determining the 'weight' of opinion

1.15 None of the respondents requested that their actual responses remain confidential.

1.16 Some of the questions received very few comments, whilst some received comments very similar to those made regarding other questions by different respondents. However, the comments have been separated by question rather than theme to aid the clarity of the analysis. The conclusion notes where this has occurred and draws together the comments thematically.

1.17 The report is not intended to be an exhaustive list of all the points made, but rather a detailed overview of the main themes and issues emerging from the consultation.

Question 1: Do you agree that a waste substitution policy should be adopted for radioactive waste arising from overseas research reactor fuel reprocessing contracts at Dounreay?

Responses

- 2.1 Most of the respondents answered 'yes' to this question.
- 2.2 Some respondents commented that the policy would allow early conclusion of the contracts held with Dounreay, thereby improving the ability to plan for the management of radioactive waste.
- 2.3 Two of the respondents also commented that the adoption of the policy would likely reduce the international transport of radioactive waste from the UK, with one commenting that the proposals should reduce hazards and the chances of an accident with population or environmental consequences.
- 2.4 One respondent commented that the adoption of the policy was likely to represent the best use of the UK's infrastructure for the management of radioactive waste and better value for money for the taxpayer.
- 2.5 Of the respondents who did not agree with the adoption of the policy, one agreed 'in part'. Two respondents provided a '*Statement of Principles*' in relation to radioactive waste management at Dounreay that has guided their decision-making in relation to the decommissioning of the site. These principles precluded their agreement with the policy.

Government Response

- 2.6 There were no issues identified to suggest that the principle of waste substitution for Dounreay contracts was fundamentally flawed and should not proceed. Government has therefore concluded that the NDA can adopt a waste substitution policy for radioactive waste arising from overseas research reactor fuel reprocessing contracts at Dounreay. Having the option of waste substitution will help bring closure to the contracts held with Dounreay, which in turn will help with the decommissioning, clean-up and effective management of radioactive waste at the site.
- 2.7 Without this policy option the NDA will not be able to clarify its strategy for overseas liquid wastes at Dounreay, resulting in:
 - continued storage of overseas liquid wastes with little certainty about when they might be solidified, possibly leading to long delays or a potential inability to return wastes overseas. and
 - potentially increasing the risk of delay to the decommissioning and clean-up of the Dounreay site.

- 2.8 This policy extends the scope of the UK Government policy set out in Cm2919², and subsequently amended in 2004, that allowed BNFL (as was) to substitute Intermediate-level waste (ILW) and return a radiologically equivalent amount of High level waste (HLW) to its overseas customers. Thus, there is policy precedent and it has been in place and used for many years.

² “Review of Radioactive Waste Management Policy: Final Conclusions”, Cm 2919, published in July 1995

Question 2: Do you agree that substituting cemented Materials Test Reactor radioactive waste for Prototype Fast Reactor radioactive waste should be an available option to finalise the overseas contracts?

Responses

- 3.1 Most of the respondents answered 'yes' to this question.
- 3.2 One respondent commented that the proposal was 'sensible and pragmatic', whilst another commented that using substitution rather than building another plant represented better value for the taxpayer.
- 3.3 Where respondents did not agree with the proposal, this tended to be because they disagreed with the adoption of the policy (see Q1).

Government Response

- 3.4 Government believes that substituting cemented Materials Test Reactor radioactive waste for Prototype Fast Reactor radioactive waste at Dounreay will allow Dounreay and its overseas customers to reach a suitable agreement that would allow the contracts to be fulfilled, thereby helping decommissioning, clean-up and effective management of radioactive waste at the site. Government has therefore concluded that this form of radioactive waste substitution should be an available option.

Question 3: Do you agree that substituting vitrified radioactive waste from Sellafield for cemented Materials Test Reactor radioactive waste and/or Prototype Fast Reactor radioactive waste should be an available option to finalise the overseas contracts?

Responses

- 4.1 Most respondents answered 'yes' to this question.
- 4.2 One of the respondents commented that the substitution of vitrified waste would allow the recipient countries to use the expertise already obtained in this area through work with the UK to allow the returns of vitrified products from Sellafield.
- 4.3 Some respondents commented that the proposal would reduce the transport of radioactive waste and that using substitution rather than building another plant represented better value for the taxpayer.
- 4.4 Where respondents did not think Government was right to pursue this proposal, this tended to be because they disagreed with the adoption of the policy (see Q1).
- 4.5 One respondent agreed to the proposal 'in part', referring to answers given to questions 4 and 5.

Government Response

- 4.6 Government believes that substituting vitrified radioactive waste from Sellafield for cemented Materials Test Reactor radioactive waste and/or Prototype Fast Reactor radioactive waste at Dounreay will allow Dounreay and its overseas customers to reach a suitable agreement that would allow the contracts to be fulfilled, thereby helping decommissioning, clean-up and effective management of radioactive waste at the site. The Government has therefore concluded that this form of radioactive waste substitution should be an available option.
- 4.7 Adopting such a policy option also provides an opportunity to co-ordinate waste returns under Dounreay contracts with transports of radioactive wastes already planned from Sellafield. This could help reduce the overall number of radioactive waste transport movements.

Question 4: Do you agree with the proposals to ensure broad environmental neutrality for the United Kingdom?

Responses

- 5.1 Most of the respondents answered yes to this question.
- 5.2 One respondent commented that the proposals were 'pragmatic', with some commenting that the proposals would result in a likely reduction in transport and would be beneficial to the environment.
- 5.3 One respondent commented that UK environmental neutrality may benefit from both the technology on the management of vitrified radioactive waste in Sellafield and the experience achieved by NDA on the return to customers of the vitrified residues.
- 5.4 One respondent answered 'in part' to this question, adding that whilst the specific measures proposals were finite and in accordance with the principle of minimum transport of waste, the principle of broad environmental neutrality was one which they could not accept. The respondent added that unless consideration was given to the environmental neutrality of constituent countries, the principle of broad environmental neutrality for the UK could permit Dounreay to be used as the national waste store.

Government Response

- 5.5 Government has concluded that the primary consideration for determining broad environmental neutrality is that substituted radioactive wastes should be radiologically equivalent. It will be a matter for the NDA, to determine the precise methodology used to calculate this radiological equivalence.
- 5.6 However, in the case of substitution of vitrified radioactive waste from Sellafield for Dounreay PFR and MTR radioactive wastes, the environmental neutrality will also be agreed, jointly, by the Scottish Environment Protection Agency (SEPA) and the Environment Agency. For the substitution of cemented MTR radioactive waste for PFR radioactive waste, the environmental neutrality will be agreed by SEPA.
- 5.7 With respect to the response described in paragraph 5.4, Government recognises that this policy might result in a very small increase in the amount of waste remaining at Dounreay. However, the scope of the policy is very limited, applying to overseas MTR and PFR wastes only, hence it is not correct to infer that this policy means that the site will become a national waste store.

Question 5: Do you agree that all of the relevant implications of the proposed policy have been identified?

Responses

- 6.1 Most of the respondents answered yes to this question.
- 6.2 One respondent commented that costs were not dealt with in detail in the consultation and presumed there had been a comparative study to compare the risks associated with the policy, in comparison with non-adoption.
- 6.3 Some respondents asked for consideration to be given to leaving the waste where it is at Dounreay and have the cost of treatment and storage borne by the originating country.

Government Response

- 6.4 Government expects there to be economic benefit for the UK taxpayer in Dounreay fulfilling its contracts with overseas customers. While the detail of the contracts is commercially sensitive, Government is clear that having the option of waste substitution affords the opportunity to fulfil contracts in the most effective manner.
- 6.5 Government policy is that overseas owned radioactive waste should be repatriated as soon as possible and it has concluded that the NDA may employ waste substitution as an option to achieve this. Government will need to be satisfied that Dounreay's overseas customers have suitable facilities to receive and manage the returned radioactive waste in question.

Additional comments and requests for further information

- 7.1 Two respondents commented that they were opposed to the unnecessary transport of radioactive and other hazardous wastes, and their preferred solution is to retain and manage the wastes at Dounreay.
- 7.2 One respondent requested further information on how risks of release of material are managed during the transportation of radioactive materials.
- 7.3 One respondent made the following comments:
- It would be helpful for the Scottish Government to issue a Direction or similar mandate to help SEPA ensure radiological equivalence in NDA's contracts with overseas customers.
 - It is assumed there is no presumption for the policy to extend to cover substituting wastes other than vitrified waste from the Sellafield site.
 - Further information is requested as to why the policy was considered to be out with the scope of Strategic Environmental Assessment Regulations.
 - Further information is requested as to what role UK Government would expect when concluding these arrangements for returning wastes overseas.
 - It is suggested the policy should make it clear how Government would resolve the issue where customers ask for vitrified waste to be sent from Sellafield, but this option may not be practical or there are other reasons why this cannot happen.

Government Response

- 7.4 With respect to the response described in paragraph 7.1, Government policy remains that the radioactive wastes resulting from overseas spent fuel at Dounreay under those reprocessing contracts signed since 1976 should be returned to the country of origin, subject only to the possibility of substitution allowed by this policy.
- 7.5 With respect to the response described in paragraph 7.2, up to half a million packages containing radioactive materials are transported within the UK every year. The safety of the transport of radioactive material is ensured by the design of the transport packages used. These packages are designed to protect the environment from the radioactive materials that they contain and are tested to ensure that the protection they provide is maintained even under extreme circumstances.
- 7.6 The transportation of radioactive material must be carried out in compliance with all the required regulatory obligations that are put in place specifically to ensure that movements of nuclear materials are both safe and secure. On this basis, Government expects risks associated with any transportation of radioactive waste to be managed effectively.

- 7.7 With respect to the response described in paragraph 7.3, the Scottish Government will consider the merits of the request for Scottish Ministers to issue a Direction to SEPA.
- 7.8 Government believes that the scope of this policy is sufficiently clear: substitution of -
- Prototype Fast Reactor (PFR) and cemented Materials Test Reactor (MTR) raffinate wastes from Dounreay with vitrified radioactive wastes from Sellafield; and
 - PFR raffinate waste at Dounreay with cemented MTR raffinate waste at Dounreay.
- 7.9 The proposed policy is out with the scope of the Environmental Assessment of Plans and Programmes Regulations (2004) in respect of 2(c) and 5(2)(b) and therefore a Strategic Environmental Assessment was not considered to be necessary on this occasion.
- 7.10 Substitution of waste will entail commercial negotiations between the NDA and overseas customers which will include discussion around the practicalities of returning the various waste forms. If necessary Government would consider bilateral discussions with overseas Governments in order to facilitate repatriation of overseas waste
- 7.11 This policy enables the substitution of overseas wastes at Dounreay but does not require that it be done. Where the option of substituting vitrified wastes from Sellafield is not practical then Government would still expect arrangements to be made to return wastes to the country of origin.

CONCLUSION

- 8.1 The majority of respondents agreed overall with the proposed policy, but others raised concerns over some aspects of the policy.
- 8.2 Having considered all the responses, Government has concluded that a waste substitution policy for radioactive waste arising from overseas research reactor fuel reprocessing contracts is an acceptable practice that the NDA can adopt to deal with Dounreay contracts:

The aim of this policy statement is to set down the Government's position on the substitution of radioactive wastes at Dounreay arising from the reprocessing of overseas nuclear fuels, known as 'raffinate'.

Government policy remains that the radioactive wastes resulting from the reprocessing of overseas spent fuel at Dounreay under those reprocessing contracts signed since 1976 should be returned to the country of origin. This should be carried out as soon as practicable after the radioactive waste has been produced.

Government accepts that the circumstances at Dounreay have changed markedly since the United Kingdom Atomic Energy Authority entered into contracts with overseas customers to reprocess nuclear fuels. As a result, alternative means of satisfying contractual obligations should now be considered in order to allow these obligations to be discharged as soon as reasonably practicable.

Substitution of Prototype Fast Reactor (PFR) and cemented Materials Test Reactor (MTR) raffinate wastes from Dounreay with a radiologically equivalent amount of vitrified radioactive waste from Sellafield is permitted subject to contractual agreement with overseas customers and approval from the environmental regulators (the Environment Agency and the Scottish Environment Protection Agency).

Substitution of PFR raffinate waste with a radiologically equivalent amount of cemented MTR raffinate is also permitted subject to contractual agreement with overseas customers and approval from the environmental regulator.

In both cases Government expects broad environmental neutrality to be maintained, primarily on the basis of radiological equivalence. Government will not specify the methodology used to determine radiological equivalence but expects the environmental regulators to be satisfied that the waste substitution arrangements between the NDA and its overseas customers result in environmental neutrality.

Next Steps

- 8.3 Government expects that the environmental regulators will work with the NDA to determine a satisfactory methodology to determine radiological equivalence in line with the policy statement above.
- 8.4 Government will consider provisions as to how the environmental regulators ensure that the waste substitution arrangements result in environmental neutrality.

- 8.5 The NDA, and Government if necessary, will discuss waste substitution options with its overseas customers.



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