

DECC GDF¹ Siting Consultation Response Phil Davies member of NWAA.

Dec.2013

As a member of NWAA² I support the NGO/DECC submission submitted by Professor Blowers and Dr Ruth Balogh.

I also support the response of NWAA to DECC's Call to Evidence

I sent in my own "Brief Submission" to DECC's Call for Evidence.

I have considerable historical knowledge of the UK Nuclear Industry from an NGO Perspective, having attended the Sizewell Inquiry (last day only), Hinkley Inquiry, and Nirex Inquiry as part of the Friends of the Earth Energy Campaign. More recently I have attended many meetings of CoRWM-1, and several of CoRWM-2, and asked many public questions.

I am studying part-time for a PhD at the University of Sussex on Ethical Aspects of Nuclear Waste Management, Disposal, and Regulation.

I regularly attend both the ONR/NGO Forum (in the course of which I have engaged several times in correspondence with Regulators), and the DECC/NGO Forum.

Purpose of this Submission

There does not seem to be much point in going over the same ground covered by other respondents, unless I can add something of my own. It has been remarked on by several respondents that the DECC Civil Servants running this Consultation are simply too young and lack the experience to challenge the half-truths and evasions which have been perpetrated for so long. Nor are they likely to learn on the job, since such a thorough attempt has been made to airbrush the whole issue of the Nirex Inquiry out of history. Not everything that Nirex did was wrong – there was a rational scientific basis to the BGS 1986 survey which became the 537 site list but that was lost when they tried to fit Sellafield in and it wouldn't go. But the 2006 supposed update was never "completed" (see below), so the 1986 version is still the only one we have, and that is squarely and rightly based on hydrogeological environments rather than only host rock types.

I fundamentally agree with Professor Smythe's assessment that there has been thorough-going pre-determination to return, by hook or by crook, to Sellafield, and bury the waste there.

I will give just two examples:

Before CoRWM and MRWS, there was RWMAC (Radioactive Waste Advisory Committee). DECC Civil Servants have barely heard of it – they spelled it RoMAC at the meeting for NGOs on Nov. 27th. In 1996, its former Chairman, Sir John Knill, commenting on the statement by a nuclear industry spokesperson that "*Disposal in the underground repository at Sellafield is the solution for intermediate level waste. It will happen as it has happened elsewhere*", stated:

¹ Geological Disposal Facility

² Nuclear Waste Advisory Associates

“These words are unambiguous and members of the public could be forgiven if they came to the conclusion that somehow and somewhere a decision had already been made to construct a deep repository for radioactive waste at Sellafield³”

And in 2005 Nirex produced its Viability Report for its Phased Geological Repository Concept (PGRC)⁴. In paragraph 8.4, page 91, under the heading “Suitability of Sellafield as a potential Repository Site”,

Nirex state:

“we believe that Sellafield is a potentially suitable site for a repository. This view is shared by the British Geological Survey (BGS) and many other specialist consultants.

Based on data obtained from Sellafield investigations there would be scope to examine alternative repository locations within the rocks underlying the Sellafield Area”.

The “rather more than 30% of the UK” Claim by BGS/Nirex in 2006 and the Significance of the fact that it was not “completed”

I recently Fol’d the NDA on this document (attached as an Annex below), and received the following. I attach the full correspondence:

a)

On Friday, 6 December 2013, 16:22, Enquiries <Enquiries@nda.gov.uk> wrote:
Case Ref: **20130138**
Dear Mr Davies

I refer to your request for information received on 8 November 2013 regarding CoRWM Doc 1797 BGS-Nirex Note.

I am writing to advise you that following a search of our paper and electronic records, I have established that the information you requested is not held by the NDA. We have made further enquiries and understand that the document was not completed. The reason is that, whilst it was still in preparation, CoRWM made their recommendation to Government that geological disposal should be implemented via a process of voluntarism and partnership.

If you are unhappy with the decisions made in relation to your request you may ask for an internal review. Please contact me in the first instance.

If you are not content with the outcome of the internal review, you have the right to apply directly to the Information Commissioner for a decision. The Information Commissioner can be contacted at:

Wycliffe House, Water Lane, Wilmslow, Cheshire, SK9 5AF

If you have any queries about this letter, please contact me. Please remember to quote the reference number above in any future communications.

³ Smythe and Haszeldine ed. Radioactive Waste Disposal at Sellafield UK, University of Glasgow 1996

⁴ The viability of a phased geological repository concept for the long-term management of the UK’s radioactive waste, Nirex Report no.N/122, November 2005

Yours sincerely

Lynda Buckland
Enquiries
Nuclear Decommissioning Authority

b)

From: ATHERTON, Elizabeth
Sent: 08 November 2013 17:05
To: Enquiries; Hollands, Judith
Cc: Parkes, Andrew
Subject: Fw: Corwm Doc 1797 BGS-Nirex Note

Dear Judith

CoRWM have forwarded the information request below. Phil was at the CoRWM meeting I attended today and he asked that we treat it as a FOI request and provide him with a formal response from the NDA.

Andy I assume that you are best placed to provide an answer.

Thanks

Elizabeth

Dr Elizabeth Atherton

Radioactive Waste Management Directorate

c)

From: Butchins Laura (Office for Nuclear Development) [
Sent: Friday, November 08, 2013 03:14 PM
To: ATHERTON, Elizabeth
Subject: FW: Corwm Doc 1797 BGS-Nirex Note

Elizabeth

See below. Please take this as an official request for information as discussed in CoRWM's meeting today,

thank you.

Laura

Laura Butchins PhD. Head, Secretariat to Committee on Radioactive Waste Management (CoRWM)

d)

From: phil davies
Sent: 07 November 2013 17:37
To: Butchins Laura (Office for Nuclear Development)
Subject: Corwm Doc 1797 BGS-Nirex Note

Dear Laura,

Thanks for Document 2550.

I know it's a late request, but I have a question about Doc 1797 that I would like a formal answer to, if possible. This is a note by BGS and Nirex re Suitability of UK Geology for a GDF.

At the start of the third paragraph, it states:

"It is planned that this analysis will be published as a report to Nirex later in 2006 following an appropriate level of peer review".

My question therefore breaks down into three:

- was the analysis done? (the note says yes)
- was it peer reviewed at the "appropriate level"?
- was it published as a report to Nirex (or to anyone else, eg NDA)??

And finally of course, if so, can we see it please?

Would you be able to supply members with a copy please - it's only a page.

Thanks,

Look forward to seeing you at the meeting,

Phil Davies

In determining the significance of this admission from NDA the following references should be checked:

Nirex Viability Report⁵:

Page 51, para 1; _first reference to 30% figure

Page 52, para 4: 30% figure referenced to BGS 1986 survey (Chapman, McEwen and Beale 1986)

Reference to BGS having recently commissioned to use its updated national geoscientific database and geoscientific knowledge to review values of the hydrogeological parameters Q, T and F for their groundwater reference case model

⁵ See Reference 4

Page 102, para 9.3 “Implementation” first bullet point: further information about the proposed updating, which will lead to updating the “estimate of the proportion of the UK potentially suitable for a repository”

CORWM Document 1529 and Nirex Answer (2006)

First para is CoRWM Question, the rest is Nirex answer

Excerpt from Nirex Reply to “CoRWM Questions arising from the Nirex Viability Report , CoRWM Doc. 1529, January 2006” (pp 10 – 11)

8. Acceptable UK Geological Systems

We asked about the extent that uncertainties in the methodology and data could impact on the proportion of the UK that would have a suitable geology.

The third paragraph from bottom on Page 78 in Section 6.4, addresses how some uncertainties can be reduced by the appropriate choice of geology, but the report does not address the extent to which existing uncertainties impact on the proportion of the UK that is suitable.

The British Geological Survey has been commissioned to update an earlier analysis of the extent of hydrogeological environments with the potential to afford a suitable location for a) the Nirex PGRC for L/ILW; b) the reference HLW/SF repository concept; and c) co-location of the L/ILW and HLW/SF repository concepts. This analysis is to be conducted on the basis of BGS knowledge and experience of the geological/hydrogeological characteristics that are suitable for a deep repository and using the up-to-date BGS geoscientific databases. It does not involve the use of the modelling parameters Q, T and F.

As part of the work commissioned, the BGS has been asked to comment, in the light of its analysis of suitable hydrogeological environments, whether the basis for Nirex’s selection of Q, T and F values for the modelling of the PGRC is appropriate.

When selecting values of Q, T and F, believed to be consistent with UK hydrogeological systems, for modelling the groundwater pathway, Nirex took account of uncertainties in models and data, in particular:

- In the probabilistic calculations of risk for the Generic Performance

Assessment (GPA), uncertainty ranges of an order of magnitude either side of the central values were applied for the groundwater flux through the repository (Q) and the groundwater travel time (T).

- For soluble and mobile radionuclides such as iodine-129, these uncertainties

(particularly that on T) would be expected to be the main contributors to the uncertainty in calculated dose. This is addressed by the use of probabilistic safety assessment to calculate a peak expectation value of dose/ radiological risk.

- For daughter products of uranium-238 that dominate the calculated peak risk,

the key uncertainties in the solubility and sorption of uranium-238 in the repository near field and in the sorption of uranium-238 and its daughter products in the geosphere are also taken into account by probabilistic analysis when determining suitable site characteristics.

The issue of gas generation from wastes may present a new requirement for the suitability of a hydrogeological environment. Work undertaken subsequent to the GPA has identified the consequences of carbon-14 bearing gases as a key issue in the PGRC (see Section 5 of the Viability Report). Nirex has an ongoing programme of research on carbon-14, which is improving our understanding of the related issues.

Dependent on the outcome of this further work, it could be necessary to establish additional siting criteria to ensure that significant gaseous release to the biosphere would be unlikely. If it is necessary to impose such constraints, then the effect could

be to reduce the proportion of the UK that is suitable for long term radioactive waste management. This is currently being addressed as part of the BGS review of the suitability of geological settings in the UK.

HOWEVER:

Environment Agency (NWAT)⁶ Review of the Nirex Viability Report (2005)

Stated (Page 8)

“Nirex makes the assertion that 30% of the UK deep geosphere is potentially suitable for a deep geological disposal facility. We have not reviewed the justification for this assertion. However, no clear outline is provided in terms of what the siting requirements are for the PGRC, or how this 30% assumption is founded or underpinned. Nirex has indicated that this assumption is being reappraised. The report acknowledges that any future site will need to be technically suitable and publically acceptable. However the required geological characteristics have not been communicated other than in very broad terms (eg low groundwater flow rates, travel times, 300 to 1000 m depths).....

SO:

I conclude:

- 1) Nirex reference the 30% back to the 1986 BGS study, which luckily we can read for ourselves, courtesy of Professor Smythe’s website, but there is no published 30% figure there, or else the EA review would have picked it up.
- 2) But Nirex say that BGS are currently “upgrading the estimate” which implies they had one, but didn’t publish it, for whatever reason.
- 3) The upgrade seems to have been started but wasn’t “completed”, due according to NDA, to CoRWM’s recommendation for a process of voluntarism and partnership
- 4) The CoRWM Doc 1797 “Joint BGS/Nirex Note” discusses three types of host rock (hard rock, sedimentary, evaporates) but does not mention hydrogeology. Yet the whole basis of the 1986 study was regional hydrogeology.
- 5) For the Government to surrender potentially good science for the vagaries of voluntarism seems like a very bad bargain indeed.

The national survey should now be completed, but must include information on regional hydrogeology as well as host-rocks, as was done the first time round.

⁶ Review of Nirex Report: “The viability of a phased geological repository concept for the long-term management of the UK’s radioactive waste” Version 3.1, NWAT/Nirex/05/003 November 2005, Environment Agency.

Annex: BGS/Nirex 2006 Note: (complete text) (CoRWM 1797)

A Note by the British Geological Survey and Nirex on the Suitability of UK Geology for Siting a Repository for Radioactive Waste

In 1986 the BGS undertook a study that identified approximately 30 % of Great Britain as potentially suitable to host a repository for intermediate-level radioactive waste. In response to queries from CoRWM, Nirex has commissioned the BGS to review this work and to provide an updated assessment, based on current understanding, for all the higher activity wastes being considered by CoRWM. Based on its geoscientific database and the expertise of its specialist staff, the BGS is confident that it should be possible to identify areas of the UK in which geologically suitable sites for the disposal of radioactive waste could be found following a detailed evaluation programme, and subsequently confirmed by in-depth site characterisation activities.

The BGS has reviewed the characteristics of existing ILW/LLW disposal concepts and the geological factors relating to packaged HLW/spent fuel (KBS-3 concept) and believes that the geological conditions that would be suitable for the former will also be appropriate for the isolation of the latter. The biggest difference between the wastes is that the latter are heat generating but we do not believe that the amount of heat generated, especially after an extended period of active management (of order 50 years, for example), is a major issue and that a repository can be designed to minimise the impact of the thermal input.

It is planned that this analysis will be published as a report to Nirex later in 2006 following an appropriate level of peer review. Nevertheless, it can be concluded that rather more than the previously determined 30% proportion of the UK land mass would provide a potentially suitable geological setting for a repository.

A variety of different rock types in a number of geological situations offer potentially suitable repository host rocks. These vary from low permeability 'hard' rocks through potentially plastic clays to halite/anhydrite beds. The 'constructability' of the different rock types varies greatly: their responses to the excavation of a repository will be different and there will be different issues relating to the rock type and the depth of excavation. While these may place constraints on the design of a repository, the BGS believes that engineered solutions will be available to overcome these issues in all of the geological environments considered. Therefore the proportion of the UK land mass that would be geologically suitable in terms of the long-term isolation and containment of radionuclides would not be significantly reduced for a phased repository option that incorporated a period of reversibility of up to hundreds of years.

Clearly, the geological options for the safe long-term management of higher activity radioactive wastes in the UK are varied and in total represent a sufficiently high proportion of the UK land mass so as not to be prohibitively restrictive. This conclusion is not affected by consideration of a phased geological repository that provides for an extended period of reversibility.

British Geological Survey/ United Kingdom Nirex Limited

March 2006