

From: Richard Barrett *JNR*
To: Hannon, John
Date: Tuesday, April 18, 2000 07:55 AM
Subject: Re: Revised ACRS Letter to the Chairman on TWG Report

George:

The proposed response is in the right direction. However, we need to consider the implications of their various comments before responding.

First, regarding source term, plume and dose issues, I do not think this is a big problem. Despite their concern over Ruthenium, a LERF is a LERF. The cases with Ruthenium are worse than those without, but neither are very large compared with a reactor LERF. I do not think the record supports a distinction of LERF with and without Ruthenium. Moreover, if the release of Ruthenium in a decommissioned SFP fire is bad, then the release in an operating pool fire is worse, given the additional presence of Iodines. We should commit to include sensitivity cases in the consequence appendix and discuss the issues in the body of the final report. But we should tell the ACRS that we consider the LERF acceptance criterion to be applicable, and we believe the issues will not affect our final conclusions.

Similarly, I do not think the questions about frequency raise a problem. The uncertainties in HRA are large, but our guidance is to use best estimate. We can address the uncertainties qualitatively in the final report. Moreover, ACRS is correct in their assessment that the seismic numbers are probably conservative, but there is nothing we can do about that. The collective wisdom of the world's experts in that field has failed to produce a lower hazard curve. We should acknowledge this uncertainty and leave it at that. Tell the ACRS that we do not believe these issues would affect our final conclusions.

The issues related to ignition temperature and nitrides are more troublesome. They raise questions about the timing of a zirc fire. If we do not have 10 hours to heat up the fuel following a seismic event, then what happens to the argument that ad-hoc protective actions are good enough? We either need to find a defensible way to counter the ACRS claims, or we are left with arguing low frequency alone.

Similarly, the arguments about partial draindown raise questions about the 5 year cutoff. If we do not have good analyses of partial draindown (the argument goes), then we really do not know when the cutoff date is. We need T-H calculations bounding this effect, or else we need probabilistic arguments showing that partial draindowns are incredible.

These are my initial thoughts. Any other views?

--Rich

>>> John Hannon 04/18 7:01 AM >>>
good start, George.

>>> George Hubbard 04/17 2:15 PM >>>
DUE DATE TO DIANE IS APRIL 25

I have put the major comments into the following categories:

1. Consequences and plume related matters including land contamination
2. Thermal Hydraulic concerns relative to zirc fires
3. Proposed acceptance criteria (LERF for operating reactors)
4. Seismic too conservative

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5. Uncertainties in dominating sequences involving human errors and seismic events

In response to the Green Ticket (G20000194 - TAC MA8648A) we have received on this and based on discussion with John Hannon, I propose the following approach for a letter back to the ACRS in which we broadly address their concerns. **PLEASE CHARGE ANY TIME TO THE ABOVE TAC NUMBER**

1. Thank them for the input.
2. Acknowledge concerns on consequences and plume. - Jason/Tinkler/Cheok/Kelly
Tell them we have done work on ruthenium and will include in report
Acknowledge other work going on by RES and international community
3. Acknowledge concerns on thermal hydraulic concerns - Joe Staudenmeier
Tell them what additional work we have done - partial drain down work - and that we will be including it in the final version
4. Address broadly their concerns on uncertainties - Gareth/Cheok/Kelly
Tell them we will add additional information in final report - only if we think it is necessary.

Acknowledge the fact that further work in the areas of consequences and T/H could be useful in the future; however, with the low frequency of fuel uncoverly we calculated and the fact that no credit is taken for mitigative actions once fuel uncoverly occurs we believe the need for the recommended work is not justified for continuation of rulemaking activities for decommissioning plants since the frequency of reaching the end states where this data would be needed would be lower frequency than the values calculated in this report. Bring in the fact that seismic events are dominating and since, as acknowledge by the ACRS, we were conservative in our seismic efforts the frequency of fuel uncoverly would be further reduced if realistic analysis were used. Somehow we need to bring in the fact that the proposed acceptance criteria is good enough - suggestions on how to do this are welcomed.

This is my first cut approach to doing this, let me know your thoughts. I'm asking Diane to draft up a first cut- please provide your input to Diane.

OUR RESPONSE IS DUE TO TIM/GARY ON MAY 1. IN ORDER TO GET REVIEW BY THE BRANCH CHIEFS HAVE YOUR INPUT TO DIANE BY APRIL 25.

THANKS,

George Hubbard
2870

CC: Bagchi, Goutam, Cheok, Michael, Hubbard, George,...

From: Michael Cheok
To: "srmari@nuc.berkeley.edu"@GATED.nrcsmtp S. Rohrer, Nuc Berkeley
Date: Wed, Apr 19, 2000 2:41 PM
Subject: Re: Draft Final Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants

Shannon:

The transcription errors in the draft report are as follows:

pg A2a-58, Section 4.5.5.4, 2nd line in table should be: HEP-MKUP-START-E

pg A2a-59, 1st line in test should be: HEP-MKUP-START-E

pg A2a-65, Table 5.1: Fuel Uncovery Frequency for Internal Fires should be: 2.3E-08 per year.

The fuel uncovery frequencies for the individual event tree sequences in Figures 4.1 through 4.5 of Appendix 2 of the draft report are not affected by the above revisions. In your latest e-mail, you listed some frequencies you have calculated that are different from those in Figures 4.1 through 4.5. I believe that, in your calculations, you may have multiplied the initiating event frequencies by the functional failure probabilities at each event tree branch to obtain a sequence frequency. In doing so, you will be non-conservative since you are creating sequences with non-minimal cutsets (which do not account for the dependencies between the event tree functions). To account for functional dependencies, you will have to Boolean AND the initiating event with all the functional cutsets in the sequence to obtain the sequence frequency.

Please contact me if I can be of further assistance.

Mike Cheok
NRC/NRR/DSSA/SPSB
e mail: mcc2@nrc.gov
phone: 301-415-8380

CC: Hubbard, George, Kelly, Glenn, Rubin, Mark

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