Greenwood, Carol

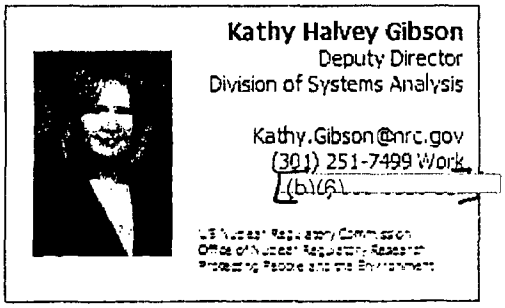
From: Gibson, Kathy - RES
Sent: Wednesday, June 09, 2010 11:27 AM
To: Bush-Goddard, Stephanie; Sherbini, Sami; Krotiuk, William; Boyd, Christopher
Cc: Case, Michael; Richards, Stuart; Elkins, Scott; Frankl, Istvan; Hoxie, Chris; Jolicoeur, John; Lee, Richard; Yerokun, Jimi; Bajorek, Stephen; Mitchell, Jocelyn; Rubin, Stuart; Tinkler, Charles; Voglewede, John; Zigh, Ghani
Subject: FW: Request: Notation Vote SECY paper dose estimates for GSI-191 (sump clogging)
Attachments: SECY Annotated Outline 6_1_10.docx; SRM 05-17 M100415.doc; Kathy Halvey Gibson.vcf; image001.jpg

Folks,
NRR is requesting our help in responding to an SRM on GSI-191. I know some of our staff has been contacted by NRR staff regarding assistance. The SRM and NRR's draft outline for a SECY are attached.

NRR has set up a conference call with us from 10-11 am tomorrow in 3 C19, for NRR to give us an overview of the SRM and SECY, and to gain alignment with us on the support they need and what we can provide and schedule.

Those on the To: Line, please plan to attend. Those cc'd, please attend if you think you or your staff might have a role or if you are otherwise interested. Also feel free to invite appropriate staff.

Thanks,
Kathy



From: Mitchell, Jocelyn
Sent: Monday, June 07, 2010 3:19 PM
To: Gibson, Kathy
Subject: FW: Request: Notation Vote SECY paper dose estimates for GSI-191 (sump clogging)

Jennifer has this exchange of emails. I'm not sure of the amount of work involved. (Neither is Charlie) I still don't understand this issues, so even to get a reasonable estimate of the work, I would have to read the transcript. I think this should be handled at a higher level, especially with the extremely short due date and SOARCA work at the same time.

j.

Jocelyn Mitchell
Senior Level Technical Advisor
Office of Nuclear Regulatory Research
US Nuclear Regulatory Commission
Washington, DC 20555

EX-6

P/6

301-251-7697
jocelyn.mitchell@nrc.gov

From: Hott, Christopher
Sent: Monday, June 07, 2010 8:21 AM
To: Mitchell, Jocelyn
Cc: Tinkler, Charles; Uhle, Jennifer; Bush-Goddard, Stephanie
Subject: RE: Request: Notation Vote SECY paper dose estimates for GSI-191 (sump clogging)

Thanks. Attached is the SRM and the latest outline for the SECY paper. Big picture here is that licensees may need to do some modifications to demonstrate compliance that would result in worker dose. Some work on potential off-site evaluations may have been done back in the 2004 timeframe. We are trying to dig these up (so may not need to do anything new there). If we don't have time for some of these, then we may not get it into the paper. I am told that the due date will not shift. If that's the case then we'll do the best we can without it. Thanks,

Chris Hott
NRR/DSS/SSIB
301-415-1167

From: Mitchell, Jocelyn
Sent: Monday, June 07, 2010 8:16 AM
To: Hott, Christopher
Cc: Tinkler, Charles; Uhle, Jennifer; Bush-Goddard, Stephanie
Subject: RE: Request: Notation Vote SECY paper dose estimates for GSI-191 (sump clogging)

I was away from the office and only got your email this morning.

I have not seen the SRM you are talking about, but if you are right about the question to be answered, 3 weeks is probably not possible. There would have to be 2 dose calculations, one the worker dose, which would come out of Stephanie's group, and an off-site dose assuming the sump clogged and ruined the pumps. For the latter, which Charlie and I might be involved in, would require getting a frequency for all accidents where recirculation could fail, and doing off-site evaluations for cases where other (e.g., 10CFR 50.whatever(hh)) systems were also not successful. An extension of time might be in order if this is what you actually need. Please send all of us the SRM so we can review it and let's talk. Also the draft of the responding SECY if there is one.

j.

Jocelyn Mitchell
Senior Level Technical Advisor
Office of Nuclear Regulatory Research
US Nuclear Regulatory Commission
Washington, DC 20555

301-251-7697
jocelyn.mitchell@nrc.gov

From: Hott, Christopher
Sent: Thursday, June 03, 2010 7:27 PM
To: Mitchell, Jocelyn; Tinkler, Charles
Cc: Harrison, Donnie; Dinsmore, Stephen; Garry, Steven; Holahan, Vincent; Scott, Michael
Subject: Request: Notation Vote SECY paper dose estimates for GSI-191 (sump clogging)

Hi Jocelyn and Charlie,

We are under extraordinary time limits for getting a Notation Vote SECY paper to the Commission. The SRM was issued less than 2 weeks ago and the SECY paper must be to the EDO for signature by 8/20/10. With concurrences through all offices, we only have about 3 weeks to do the technical work for this paper. The paper is about GSI-191 (sump clogging) and there is significant industry interest in the outcome of the future Commission vote.

Vincent Holahan said that either of you might be able to help us respond to the SRM which requires we assess dose impacts of various options in our SECY paper. One way I interpret this is seeking an answer to the question "Is the potential worker dose from plant modifications worth the safety benefit/reduction in dose risk to the general public. I am not working in the office tomorrow, but please call me on my cell phone ((b)(6) (b)(6) if you can.

Any help you can provide is greatly appreciated. Also, RES is already on concurrence for the SECY paper, but for other reasons.

Thanks,

Chris Hott
Reactor Systems Engineer
U.S. NRC - NRR/DSS/SSIB
christopher.hott@nrc.gov
301-415-1167

SRM M100415: SECY Annotated Outline – <u>All inputs due 6/22</u>

PURPOSE: - Hott
To provide recommendations and request Commission approval for path forward on GSI-191 closure. To discuss relevant issues, options, and the budgetary implications of those options on the fiscal year (FY) 2011 and FY 2012 budgets.

SUMMARY: (½ page) - Hott
Describe what is contained in the SECY paper and enclosures. Make high-level recommendation on path forward here with basis.

BACKGROUND: (2 pages) Hott
Provide a brief description of how we got here and current status (55% of PWR plants effectively complete). Point to detailed background discussion enclosure. Includes reasoning for staff's prior decision to move forward to closure with 10 CFR 50.54(f) letters (plant-specific approach).

<u>Remaining Issues</u> – Point to detailed background discussion of licensee assumptions that the staff has not accepted (ZOI, settling credit)
Describe In-Vessel issue

DISCUSSION: (4 pages) Hott
The following discussion is not intended to address all options available to licensees. For example, licensees that have not resolved GSI-191 may elect to voluntarily replace problematic insulation, request plant-specific exemptions, etc.

A. <u>Options to Address Remaining GSI-191 Issues</u>

A.1: Maintain the status quo - Continue evaluating new proposed approaches to justify some licensees' GSI-191 analysis assumptions that the NRC staff has not previously accepted (e.g. reduced ZOIs, settling credit, in-vessel effects.)

a: No time limit
b: Require that GSI-191 be closed by date certain. Send 10 CFR 50.54(f) letters to some plants. Timeline may be linked to final issuance of 50.46a.

A.2: NRC performs independent research to develop better GSI-191 models for determining realistic ZOI, realistic settling credit, and realistic in-vessel effects.

A.3: Policy decision to allow LBB credit for remaining issues
a: Full credit
b: Partial credit

A.4: NRC determines whether remaining plants have reached adequate protection despite not having demonstrated compliance. This option would require plant-specific determinations using currently undefined criteria that do not include compliance.

a: If staff determines that adequate protection can be demonstrated, staff would do a regulatory analysis to determine whether further licensee action to demonstrate compliance is justified using a cost-benefit analysis. This would include discussions with CRGR as appropriate. If further action is not justified, then the analysis would be used as part of the basis for issuing exemptions to 50.46(b)(5). New rulemaking would also be considered to eliminate the need for exemptions in the future.

b: If staff determines that adequate protection cannot be demonstrated, or if the regulatory analysis in A.4.a shows that action to demonstrate compliance is justified, then the staff would pursue sending 10 CFR 50.54(f) letters to licensees to demonstrate compliance with regulations.

Dose Considerations

Dose discussion for section A options as applicable including asbestos considerations.

B. Additional options, any combination of which, may facilitate GSI-191 closure when combined with options A.1 or A.2 above

B.1: Alternative regulatory treatment of in-vessel effects

Input new issue into generic issues program for in-vessel effects. Feasibility discussion here with potential implications for re-opening new issue later. Discussion of pros and cons. One con is future modifications may still be required.

B.2: Work with industry to create new guidance or enhance existing guidance for applying 50.46a technical basis to GSI-191 predicated on Commission approval of risk-informed 50.46a rulemaking. The 2004 staff safety evaluation for GSI-191 has a risk-informed alternate evaluation method that was based on the 50.46a rulemaking effort. This guidance could be enhanced assuming the final rule is approved.

a: Licensees adopt 50.46a. Short term exemptions may or may not be required.
b: Licensees do not intend to adopt 50.46a. Credit may still be applied, but exemptions from 50.46(b)(5) would be required. This sub-option is related to option A.4.

B.3: Risk-informed versus deterministic treatment of remaining items – **Dinsmore (1 page)**

Discuss challenges of risk-informing remaining items. Is GSI-191 still a safety issue? Additional options include PIRT, staff update to risk study done 4 years ago, ask industry to risk inform, perform study using risk as the basis for applying engineering judgment (large uncertainties and will take a couple years.) LBB was early attempt at risk-

informing. 50.46a is risk-informing of ECCS rule. Will include discussion that a rule-making option to risk-inform 50.46(b)(5) could be combined with option A.2 above but would be a long-term effort that would be resource intensive and may still lead to insulation replacements for some licensees.

C. Options Considered but Determined not Viable

POLICY DISCUSSION: (1 page)

Policy implications discussion of section A options as applicable.

RESOURCES: (1 page)

Resource discussion for each option above as applicable

RECOMMENDATION: (1 page)

Recommended option is to continue evaluating licensee approaches, but give a time limit using 10 CFR 50.54(f) letters (Option A.1.b). We also recommend working with industry to create additional guidance for implementing 50.46a technical basis for GSI-191. The staff's approach for setting a time limit using 10 CFR 50.54(f) letters would be to give sufficient time to develop 50.46a guidance for those licensees that intend to adopt the final 50.46a rule.

For in-vessel effects, a recommendation has not yet been developed. The options currently are evaluate industry testing assuming industry agrees to perform cross-tests, issue a safety evaluation for in-vessel based on current test data that exists, or recommend new NRC research for in-vessel effects. The recommended option will be resolved prior to sending the SECY paper to the Commission.

NEW REACTORS: McKirgan (1/2 page)

COORDINATION:

OCFO and OGC concurrence statements

Enclosures:
1. GSI-191 Background Discussion (4 pages)
2. Detailed Discussion of Reduced ZOI and Settling Assumptions (3 pages)
3. Detailed Discussion of Section A Options 1-4 (10 pages)
4. Detailed Discussion of 10 CFR 50.46a Approach, Including Implementation and Timing Issues (2 pages)
5. Detailed Dose Evaluation (2 pages)

Total document including enclosures approximately 30 pages

ADAMS Accession No.: MLXXXXXXXXX

OFFICE	BC:NRR/DSS/SSIB	D:NRR/DSS	D:NRR/DCI	D:NRR/DRA	D:NRR/DIRS	D:FSME
NAME	MScott	WRuland	MEvans	MCunningham	FBrown	CMiller
DATE						
OFFICE	D:RES	D:NRO	Tech Editor	OCFO	OGC	NRR
NAME	BSheron	MJohnson		JDyer	SBurns	ELeeds
DATE						
OFFICE	EDO					
NAME	WBorchardt					
DATE						

ENCLOSURE: GSI-191 Background Discussion – Hott – 4 pages

ENCLOSURE: Detailed discussion of ZOI and Settling Assumptions – 3 pages

Hott ZOI – 2 pages
Describe ZOI
Testing Basis for 2004 SE ZOIs
Reduced ZOI tests
Test rig error
ANSI model issues – ACRS vs Westinghouse
ZOI Potential conservatisms vs potential non-conservatisms
Smith - Future industry testing efforts ½ page

Lehning Settling credit: – 1 page
Describe settling
Why staff has not allowed settling during tests
Prototypicality of settling
Future industry testing efforts

ENCLOSURE: Detailed Discussion of Section A Options – 10 pages

A.1: Maintain the status quo - Continue evaluating new proposed approaches to justify some licensees' GSI-191 analysis assumptions that the NRC staff has not previously accepted (e.g. reduced ZOIs, settling credit, in-vessel effects.) **Hott – 3 pages**

a: No time limit (Description, Pros, Cons, Resources)

Pros:

Cons:
Resources: Separate resources for continued IRT review process, evaluation of new industry ZOI testing (**Smith**), new industry settling testing (**Lehning**), new in-vessel testing (**Geiger**) if applicable

b: Require that GSI-191 be closed by date certain. Send 10 CFR 50.54(f) letters to some plants. Timeline may be linked to final issuance of 50.46a. (Description, Pros, Cons, Resources)

Pros:
Cons:
Implementation:
Resources:

A.2: NRC performs independent research to develop better GSI-191 models for determining realistic ZOI, realistic settling credit, and realistic in-vessel effects. **Hott, Smith, Lehning, Geiger – 2 pages**

Pros:
Cons:

Smith - ZOI Testing: (Description, Timeline, Resources)

Lehning - Settling Credit: (Description, Timeline, Resources)

Geiger - In-Vessel effects for different fuels: (Description, Timeline, Resources)

A.3: Policy decision to allow LBB credit for remaining issues – **Tsao – 3 pages**

Background, Response to NEI 2010 letters and UCS letters, Policy discussion

a: Full credit
Pros:
Cons:
Implementation:
Resources:

b: Partial credit
Pros:
Cons:
Implementation:
Resources:

A.4: NRC determines whether remaining plants have reached adequate protection despite not having demonstrated compliance. This option would require plant-specific determinations using currently undefined criteria that do not include compliance. **Hott, Karipineni – 2 pages**

If staff determines that adequate protection can be demonstrated, staff would do a regulatory analysis to determine whether further licensee action to demonstrate compliance is justified using a cost-benefit analysis. This would include discussions with CRGR as appropriate. If further action is not justified, then the analysis would be used as part of the basis for issuing exemptions to 50.46(b)(5). New rulemaking would also be considered to eliminate the need for exemptions in the future.
If staff determines that adequate protection cannot be demonstrated, or if the regulatory analysis in A.4.a shows that action to demonstrate compliance is justified, then the staff would pursue sending 10 CFR 50.54(f) letters to licensees to demonstrate compliance with regulations.

Policy Discussion:
Pros:
Cons:
Implementation:
Resources:
CRGR response to memo

ENCLOSURE: Detailed Discussion of 10 CFR 50.46a Approach, Including Implementation and Timing Issues **Collins** (2-3 pages)

Work with industry to create new guidance or enhance existing guidance for applying 50.46a technical basis to GSI-191 predicated on Commission approval of risk-informed 50.46a rulemaking. The 2004 staff safety evaluation for GSI-191 has a risk-informed alternate evaluation method that was based on the 50.46a rulemaking effort. This guidance could be enhanced assuming the final rule is approved.

a: Licensees adopt 50.46a. Short term exemptions may or may not be required.
b: Licensees do not intend to adopt 50.46a. Credit may still be applied, but exemptions from 50.46(b)(5) would be required. This sub-option is related to option A.4.

Pros: Good technical basis, allows more engineering judgment for evaluating large breaks, rule is risk-informed versus deterministic, adopt only for GSI-191 results in no PRA model costs for licensees, GSI-191 has a risk-informed option under alternate evaluation of the safety evaluation that could be updated.
Cons: Voluntary Rule, limited modifications (e.g. insulation replacements, backflush capability) may still be required to show mitigation for large breaks for some plants, possible exemptions until rule finalized.

Implementation:
Resources:

ENCLOSURE: Detailed Dose Evaluation **Garry** (2 pages)

Description of ALARA policy

Summary of plant specific dose info

Hazardous material dose impact

Dose from other activities

ML101370261

IN RESPONSE, PLEASE
REFER TO: M100415

May 17, 2010

MEMORANDUM TO: R. W. Borchardt
Executive Director for Operations

FROM: Annette Vietti-Cook, Secretary */RA/*

SUBJECT: STAFF REQUIREMENTS – BRIEFING ON RESOLUTION OF GENERIC SAFETY ISSUE (GSI) – 191, ASSESSMENT OF DEBRIS ACCUMULATION ON PRESSURIZED WATER (PWR) SUMP PERFORMANCE, 9:30 A.M., THURSDAY, APRIL 15, 2010, COMMISSIONERS' CONFERENCE ROOM, ONE WHITE FLINT NORTH, ROCKVILLE, MARYLAND (OPEN TO PUBLIC ATTENDANCE)

The Commission was briefed by an industry panel and the NRC staff on the ongoing efforts to resolve GSI-191.

Because of the number of significant matters that remain unresolved, the staff should not transmit letters to licensees under 10 CFR 50.54(f) on the subject of GSI-191, pending further direction from the Commission. The staff should continue to engage external stakeholders and pursue realistic and holistic assessments, such as the Integrated Review Team approach.

The staff should submit to the Commission a Notation Vote policy paper on potential approaches to bring GSI-191 to closure. The discussion of the options should address such factors as the Commission's ALARA policy concerning radiation dose, worker hazardous material exposure, and risk-informed versus deterministic treatment of remaining elements. The items to be discussed in the paper should include, but need not be limited to:

1. Determining the realistic Zone of Influence and the need for additional testing.

2. Application of General Design Criterion (GDC) 4 (as referenced in letters from NEI (4/7/10 and 4/27/10) and UCS letter (4/14/10)).

3. Consideration of in vessel effects of different types of fuel.

4. Ongoing rulemaking to revise 10 CFR 50.46a, and the development of implementing guidance.

5. Feasibility of alternative regulatory treatment of in-vessel effects.

(Notation Paper signed by EDO.)

~~(EDO)~~ ~~(SECY Suspense: 8/27/10)~~

(NRR) (EDO Due Date: 08/20/10) 201000147/EDATS: SECY-2010-0273

As the staff proceeds towards the resolution of GSI-191, it should keep the Commission informed whether the issues being addressed for Pressurized Water Reactors raise any concerns for the operation of Boiling Water Reactors. The staff should consult with CRGR, as appropriate, to ensure compliance with backfit requirements. (CA Note signed by AO.)
(NRR) (EDO Due Date: 11/01/10) 201000148/EDATS: SECY-2010-0274

cc: Chairman Jaczko
Commissioner Svinicki
Commissioner Apostolakis
Commissioner Magwood
Commissioner Ostendorff
OGC
CFO
OCA
OIG
OPA
Office Directors, Regions, ACRS, ASLBP (via E-Mail)
PDR