NRC FORM 690
(11-2002)
NRCMD 10.159

U.S. NUCLEAR REGULATORY COMMISSION

DIFFERING PROFESSIONAL OPINION -- APPEAL

FOR PROCESSING USE ONLY

1. DPO CASE NUMBER: DPO-2008-001

INSTRUCTIONS: *Prepare this form legibly and submit three copies to the address provided in Block 12 below.*

2. DATE APPEAL RECEIVED: 06/18/2009

3. NAME OF SUBMITTER	4. POSITION TITLE	5. GRADE
Ralph Architzel	Senior Reactor Engineer	15

6. OFFICE/DIVISION/BRANCH/SECTION	7. BUILDING	8. MAIL STOP	9. SUPERVISOR
NRR/DSS/SSIB	OWFN	O 10 A 1	Michael Scott

10. DESCRIBE THE DIFFERING PROFESSIONAL OPINION. DESCRIBE THE PRESENT SITUATION, CONDITION, METHOD, ETC., WHICH YOU BELIEVE SHOULD BE CHANGED OR IMPROVED. *(Continue on Page 2 or 3 as necessary.)*

This differing professional opinion concerns the NRC staff closure process for Generic Safety Issue (GSI)-191 [1], including associated activities such as review of Generic Letter (GL) 2004-02 [2]. The closure process for GL 2004-02 was established in an internal memorandum "NRC Staff Process For Review Of Licensee Supplemental Responses To Generic Letter 2004-02 (TAC MC9003), dated March 25, 2008 [3]. Documentation of the closure process is accomplished via a set of forms that are an integral part of the process. The closure process has two parts; a "Quick Look" for part one, with which I do not differ; and a subsequent detailed review, which is the subject of this differing professional opinion.

The GL 2004 02 Supplemental Response Detailed Area Review Form [4] (and follow-on versions) is used by a set of technical reviewers that are tasked with evaluating a number of detailed areas as described in the procedure. The procedure directs designated subject-matter experts to use available guidance and references for judging the supplemental responses' comprehensiveness and completeness (e.g., Content Guide, NEI 04-07 [6], and the NRC safety evaluation of NEI 04-07 [7]) (Note 1: Technical reviewers for the key areas of head loss, chemical effects, and coatings, are in actuality using staff review guidance published March 28, 2008 [9]; which was well after licensees were expected to have completed all actions to close GSI-191 and provided final responses (February 28, 2008 for

11. DESCRIBE YOUR REASONS FOR SUBMITTING AN APPEAL (IN ACCORDANCE WITH THE GUIDANCE PRESENTED IN NRC MANAGEMENT DIRECTIVE 10.159). *(Continue on Page 2 or 3 as necessary.)*

I have read the Director's decision regarding my differing professional opinion (DPO) and have elected to appeal that decision. For the most part I consider that the Decision did not agree with my opinion. However, certain of the directed actions do partially address some of my concerns, and other actions address recommendations made by the independent panel which examined my DPO. In particular, depending on implementation, Recommendation 1 has the potential to result in a more residual risk-focused, versus compliance with all applicable regulations-based, closure.

I am proud of my participation in the early phase of GSI-191 closure, and not so concerning the current NRC closure process. That early phase included industry recognition of need to address the safety issue (including repeated stated desires to only address the issue once). This situation rapidly drove the implementation of modifications that were assessed to represent the significant risk of this issue based on 25 or so "cases" of plants. Coupled with this effort, and in an effort to only address the issue once, industry examined the late-breaking issues of chemical and downstream effects (which had not been assessed as part of GSI-191 but were considered related issues by the NRC) to the extant knowledge available at the time the modifications and analyses were developed and implemented.

SIGNATURE OF SUBMITTER	DATE	SIGNATURE OF CO-SUBMITTER *(if any)*	DATE
	06/18/2009		

12. SUBMIT THIS FORM TO:

Differing Professional Opinions Program Manager

Office of: Nuclear Reactor Regulation

Mail Stop: 4A15A

13. ACKNOWLEDGMENT

13. SIGNATURE OF DIFFERING PROFESSIONAL OPINIONS PROGRAM MANAGER (DPOPM)	DATE OF ACKNOWLEDGMENT
	6/23/2009

14. DECISION

		DATE
☐ Appeal sustained ☐ Appeal denied (see attached)	Differing Professional Opinion Closed	

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final responses). Except for the head loss area, the industry had the major changes available in a September 2007 draft.) Following completion of the individual detailed area reviews, the input forms are consolidated into a single file that in turn is the subject of review by an integration team (aka integration review team (IRT)).

The integration team conducts its review and documents the results using a form titled "GL Supplemental Response Integration Team Review Results" [5]. The form directs that the overall team result fit into one of the following categories:

Recommend NRR issue a finding that all applicable regulations are met. (with bases):

Recommend that requests for additional information (RAIs) be Sent to Licensee (with bases, attach proposed RAIs):

Defer Recommendation (provide rationale):

The process and the form provide for documentation of minority opinions. Of particular note in the procedure are several references to reaching determinations of whether each plant is in compliance with all applicable regulations (e.g., [3, page 3 end of third paragraph], and the above noted call to find that all applicable regulations are met, to preclude pursuit of additional information).

Considering the review criteria, most integration team reviews conducted to date resulted in the recommendation to pursue RAIs.

My differing professional opinion essentially is that the staff procedure and process outlined above has resulted in a review that is unnecessarily focused on compliance versus a determination that the underlying safety issue has been satisfactorily addressed. The process uses very late-breaking staff review guidance as a yardstick to establish whether licensees have demonstrated compliance in key areas. Additionally, I consider that this approach does not comport with Commission guidance provided in two staff requirements memoranda:

The Commission requested the ACRS work with the staff to resolve outstanding issues with respect to PWR [pressurized water reactor] Sump Performance, and make a recommendation for a practical solution within a reasonable period of time. Both the ACRS and the staff should focus their attention, resources, and additional research, if needed, on evaluating realistic scenarios rather than all possible scenarios [11].

The staff and industry should make a concerted effort to look at resolution of this issue holistically. Such an approach should include understanding the interdependence of changes in water chemistry on debris accumulation and sump performance [12].

I initially identified my potential differing professional view to management on July 16, 2008 [16] as a result of staff and management actions taken after completion of the Diablo Canyon IRT. Subsequently, on September 4, 2008, following many additional IRT deliberations and discussions with management, I identified five additional plants (packages) that were included within my differing professional view on the resolution of GSI-191 [17]. During the preparation of my original differing professional view form and during informal discussions prior to formally filing, I came to realize that my difference was principally with the NRC procedure/process, and not the specific decisions for a particular plant. The particular plants involved represented what in my view were some of the best cases for having adequately resolved GSI-191; wherein I was comfortable making a 'holistic' call that the plants had demonstrated with reasonable assurance that all regulations were met. For the balance of the packages to be reviewed, the great majority resulted in an inability to reach a holistic decision of compliance with all the rules and regulations due to either moderate or greater amounts of fiber (thus questioning adequacy of thin bed testing) or licensees that had deferred submittal of the final supplemental responses (therefore, not providing a foundation to even attempt a holistic call at that time). The existing IRT process, as well as the input by staff detailed area reviewers; already provided for documenting differing views. Therefore, I consider the particulars of the specific packages outside the scope of this differing professional view. However, there were many packages for which I recommended no RAIs as a minority view. My position on these packages was to not ask RAIs; thus that the NRC holistically accept the licensees' arguments demonstrating that all the rules and regulations were met.

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My proposed alternate approach would assess whether the plants have adequately resolved the risks associated with GSI-191, without making clear-cut compliance determinations based on new staff guidance. All licensees have been asked to make compliance determinations in their supplemental responses and in general have been stating their compliance basis using analyses and testing methods that were considered acceptable at the time their modifications and analyses were developed. The current staff approach is a compound bounding approach. The approach is resulting in decisions based on a multitude of worst-case design basis scenarios; a situation that is extremely unlikely to ever happen in a "real" design basis event, which will be stochastic in nature and could not be reasonably expected to occur. In my opinion, the staff process should ask whether the issues involved have been adequately addressed, using a holistic viewpoint considering residual risk, with practical solutions, specifically not evaluating all possible scenarios, making a determination that the safety issue can be closed for the particular plant, while not challenging licensees arguments for compliance.

I also recommended that the detailed area reviewers be assigned to play a role in the "holistic" decision-making process. As the current process stands; this decision making is essentially the sole province of a set of senior reviewers that in general are not as familiar with the detailed issues involved in the decision for a particular plant, when there is an IRT.

Issues associated with the staff agreeing with licensees' determinations of compliance should be deferred to a later time. I recommended that such determinations be combined with the planned revisit by boiling water reactor (BWR) licensees of head loss and testing issues. I may agree that the head-loss testing/correlation issues for the BWRs will not pan out to warrant additional measures to establish compliance (with the new staff positions) when they are examined in several years. However, it is difficult to accept the illogic of pursuing such compliance questions for PWRs, yet not BWRs. I consider the situation more challenging for BWRs - with their immediate flow demand, much higher flow rates through much smaller strainers, and with demonstrated (not conservative postulated) major quantities of iron oxide particulate as a minimum for chemical effects; rather than PWRs with delayed initiation of recirculation, plant-specific tests, larger strainers, etc.

Such an approach (close GSI-191 based on safety significance being addressed holistically) would perhaps never result in compliance being established to the same level as the current approach of "test to success." It may be difficult to pursue additional changes for PWRs beyond what has already been done from a backfit/cost benefit viewpoint. It is hard to envision how additional retesting (at several hundred thousand $ per plant), and additional modifications associated with the "test to success" approach (such as removal of major quantities of fibrous insulation which would cost several million $), could be justified based on considerations of the present risk after the modifications that the licensees have performed in their efforts to date to resolve GSI-191. Clearly there is only a de minimis benefit to fairly large additional costs, and in my opinion such a course of action should be pursued in concert with the BWR plants (Note 2: NRR has requested via user need memorandum [15] that RES examine the issues identified during resolution of GSI-191 for applicability to BWRs) and "fixed" in compliance space based on careful consideration of the situation, the costs of further analyses and testing, the incremental safety benefit that could be achieved as well as safety risks such as radiation exposure for issues such as insulation removal and other potential risks such as exposure to asbestos-laden debris.

References

1.GSI 191, "Assessment of Debris Accumulation on PWR Sump Performance," prioritized September 1996.
2.NRC Generic Letter 2004 02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors," dated September 13, 2004.
3.Memorandum from Michael Scott to William Ruland dated March 25, 2008, NRC Staff Process For Review Of Licensee Supplemental Responses To Generic Letter 2004-02 (TAC NO. MC9003), ML073380168.
4.GL 2004 02 Supplemental Response Detailed Area Review Form, Revision 5, ML082620300
5.GL Supplemental Response Integration Team Review Results, ML082701092
6.NEI PWR Sump Performance Task Force Report NEI 04 07, "Pressurized Water Pressurized Water Reactor Sump Performance Evaluation Methodology," Revision 0, December 2004, ML050550138.

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References (cont.)

7. Safety Evaluation by the Office of Nuclear Reactor Regulation Related to.NRC Generic Letter 2004 02, Nuclear Energy Institute Guidance Report, NEI 04 07, "Pressurized Water Reactor Sump Performance Evaluation Methodology," NRC/NRR Staff Report, Revision 0, 2004, ML043280007.
8. Revised Content Guide for Generic Letter 2004-02 Supplemental Responses, forwarded to NEI by W Ruland letter dated November 21, 2007, ML073110389.
9. Revised Guidance For Review Of Final Licensee Responses To Generic Letter 2004-02, "Potential Impact Of Debris Blockage On Emergency Recirculation During Design Basis Accidents At Pressurized-Water Reactors," March 28, 2008, ML080230234.
10. Chain E-mail, "Integration Team Form Revision 1 for Comment," February 27, 2008, ML082600360.
11. Staff Requirements Memorandum, Meeting with ACRS, June 30, 2004, ADAMS
12. Staff Requirements Memorandum, Briefing On Resolution Of GSI-191, Assessment Of Debris Accumulation On PWR Sump Performance, November 16, 2006, ADAMS ML063200471.
13 September 10, 2008 - Notice of Public Meeting with Boiling Water Reactor Owner's Group (BWROG) to Discuss the BWROG Program Plan for the Treatment of Emergency Core Cooling System (ECCS) Suction Strainer Technical Issues as Applied to Boiling Water Reactors, ML082240654.
14. Memorandum from A Thadani to S Collins dated September 28, 2001, RES Proposed Resolution of GSI-191, Assessment of Debris Accumulation on PWR Sump Performance, ML012750091.
15. User Need Request to Revise Regulatory Guide 1.82 and Address Identified Disparities in Treatment of Debris-Induced Clogging of Emergency Core Cooling Systems Strainers (NRR-2007-007), December 31, 2007, ML073120209.
16. Chain E-mail, "E-mail to Inform DH of Existing DPV copied to W Ruland," August 20, 2008, ML082540855.
17. E-mail with attachment, "Task Status Report RE Weekly IRT Tracking Table," September 4, 2008,ML082620173.
18. Staff Observations of Fort Calhoun Station Strainer Testing for GSI191 During February 18-19, 2008, Trip to Continuum Dynamics, Incorporated, dated May 28, 2008, ML081420357.

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In my opinion, GSI-191 does not need to be closed based on a staff determination of compliance with all the applicable regulations, as examined to staff guidance issued over six years after the completion of the technical review phase of the GSI (2001 to 2008). The guidance invoked as a compliance yardstick has not been subjected to the NRC's process for issuance of guidance to be used for backfits (e.g. CRGR review, and regulatory analyses of the costs and benefits, and a public comment process including addressing the comments and estimates of costs and benefits). Other guidance, such as the long-standing (approved in Regulatory Guide 1.82) guidance to install redundant strainers, plays second fiddle in the face of staff approval of plants removing such redundancy to achieve larger strainer surfaces. The compliance focused reviews provide no credit for those plants which retained such redundancy, a situation which overall (in my opinion) may have played a part in sacrificing safety (in the form of protection against failure of strainer integrity) for compliance.

I do not imply by these comments that I believe that compliance is unimportant. As stated in my DPO, I recommend allowing licensee statements of compliance (which were required in the responses and have been submitted by all licensees) to stand unchallenged for the purpose of closure of GSI-191. My recommended path to closure of GSI-191 would be similar to the closure of the 1996 Bulletin addressing boiling water reactor strainers. This would be a simple examination of qualitative assessment of residual risk by staff knowledgeable of the issues, using "holistic" judgments. This examination would include the staff reviewers involved in the details of the review. (Note this last point/recommendation of my DPO was not addressed nor commented on in either the DPO panel's report nor the Director's Decision; a situation I believe to be a result of incomplete assessment of the DPO. However, this aspect was not the key aspect of the DPO, so such an omission is not critical).

The DPO is clear on what to do about the staff positions that are being used to determine compliance and being currently backfit on the licensee's through the "test to success" process. These procedures should be subjected to the agency's review and approval process for backfits. The entire set of plants for which there is a potential non-compliance (as assessed by current staff guidance) should then be assessed for backfit and that backfit process implemented in accordance with staff procedures which include a regulatory analyses of the costs and benefits; although it can be a simplified analyses since the compliance exception to the backfit rule would be invoked.

In my view an approach which followed my DPO recommendation would reassess (following simple closure of GSI-191) the entire set of vulnerable plants where additional actions are warranted (as opposed to the somewhat random nature of the results of the current "test to success" and the unquantified safety benefit of the resulting modifications relative to the value of the retest and analyses costs).

Lastly, I would like to correct the record regarding a statement in the DPO panel report regarding my concurrence on a "statement of concerns." I never concurred with, and specifically objected to, certain phrases contained in the DPO panel report's "statement of concerns." The report states in a summary of my concerns that I consider "...the risk of sump failure associated with GSI-191, and related issues such as downstream and chemical effects, is insignificant." I never made such a statement, specifically non-consented with that statement when it was presented to me, and don't believe it to be true in any event. I did agree to the following replacement wording for that phrase; "These improvements have mitigated the most risk-significant issues associated with GSI-191, and related issues such as downstream and chemical effects." I do not know what effect, if any, this mischaracterization had on the development of the DPO Panel's report. However it is possible that because the panel assessed the limited statement of concerns (which did not accurately reflect my views), versus examining the DPO itself (which contained many more points than can be reflected in a several sentence summary), that there is not a strong relationship between that independent report and my DPO.