



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

February 7, 2000

MEMORANDUM TO: Chairman Meserve
Commissioner Dicus
Commissioner Diaz
Commissioner McGaffigan
Commissioner Merrifield

FROM: William D. Travers 
Executive Director for Operations

SUBJECT: COMPLETION OF PROCESS FOR REVIEW OF STEAM GENERATOR
DPO

There has recently been considerable interest in the Differing Professional Opinion (DPO) submitted by Dr. Joram Hopenfled concerning steam generator degradation issues. This recent interest has included several articles in "Inside NRC." On December 29, 1998, I sent a memorandum to Dr. Hopenfled proposing an approach for resolving his DPO issues. This approach deviated slightly from the normal procedures for handling DPO's by (1) soliciting public comments on the DPO and related documents, and (2) allowing the staff and Dr. Hopenfled one more opportunity to resolve these issues following the public comment period. An ad hoc panel would be formed to address any issues remaining after the completion of these steps (see attachment 1 for details). On January 5, 1999, Dr. Hopenfled agreed to this process (attachment 2). The staff's revised DPO Consideration Document was transmitted to Dr. Hopenfled on November 1, 1999 (attachment 3). In response to specific requests from Dr. Hopenfled, I have had his September 28, 1999, and December 16, 1999, memoranda to me placed in the Public Document Room.

With Dr. Hopenfled's December 16, 1999, response to the staff's "DPO Consideration Document," all steps prior to establishing an ad hoc review panel have been completed. To date, the original DPO issues have not been addressed to the satisfaction of Dr. Hopenfled. I am presently forming an ad hoc panel consistent with the provisions of Management Directive 10.159 "Differing Professional Views or Opinions" to review the documentation of the DPO issues and the staff's response and make recommendations to me for final disposition of the DPO. This will include selection of a panel member from a list to be submitted by Dr. Hopenfled. Because of the technical breadth and complexity of the issues, I expect the panel to take several months to review the documentation and consult appropriate experts both from the NRC staff and from outside the NRC. As soon as the panel has been formed and had an opportunity to assess the task, it will provide a schedule for the completion of its activities. I will forward a copy of this schedule to the Commission. After the panel has submitted its recommendations, I will provide Dr. Hopenfled with my decision and the rationale for that decision. At this time the formal DPO process will be complete although any follow-up actions will just be starting.

The Commission

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I will forward my decision on this DPO to the Commission. Additionally, the Commission may want to consider a briefing on the ad hoc panel's recommendations and my decision with regard to their implementation. At this time the staff will be able to discuss any proposed actions and potential impacts on the staff and the industry.

Attachments: As stated

cc: SECY
OGC
OPA
OCA
CFO
CIO



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

December 29, 1998

MEMORANDUM TO: Joram Hopenfeld
Generic Safety Issues Branch
Division of Engineering Technology
Office of Nuclear Regulatory Research

FROM: William D. Travers 
Executive Director for Operations

SUBJECT: PANEL REVIEW OF DPO ON STEAM GENERATOR INTEGRITY

Jocelyn Mitchell of my staff indicated to me that, with the recent changes in the direction of staff actions and the long time since your concerns were first expressed, you have questions about what, exactly, an ad hoc Differing Professional Opinion (DPO) panel would review on the subject of steam generator integrity. I agree that your question has merit and that this particular situation seems to require a somewhat different approach than the standard approach for addressing DPOs in Management Directive 10.159. Therefore, I propose the following course of action:

(1) The staff of NRR will receive public comments on the draft regulatory guide, the draft DPO resolution document, and your memorandum dated September 25, 1998 addressed to the Commission. This is in accordance with the final Staff Requirements Memorandum (SRM) on SECY-98-248, dated December 21, 1998. The SRM is attached for your information.

(2) The staff will address all the comments and prepare a final staff position, including endorsing a revision of NEI-97-06, should that prove to be technically acceptable, or deciding to issue a Generic Letter.

(3) The final staff position will be forwarded to you for your review as to which, if any, of your DPO issues have been adequately addressed in that position. Any remaining issues would then be submitted to an ad hoc panel, which would be established at that time. A mutually agreeable length of time would be provided for your review, depending upon the volume of documentation to be reviewed.

The schedule for the start of your review would not be before the early summer of 1999, and might be as late as the fall.

If this revised course of action addresses your question and seems reasonable to you, please indicate your approval in a memorandum to me.

Joram Hopenfeld

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Again I want to thank you for your willingness to participate in the DPO process. This willingness to bring your concerns to management's attention contributes directly to achieving the Agency's safety mission.

Attachment:

Staff Requirements Memorandum dated December 21, 1998



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

January 5, 1999

MEMORANDUM TO: William D. Travers
Executive Director for Operations

FROM: Joram Hopenfeld *[Signature]*
Generic Safety Issues Branch
Division of Engineering Technology
Office of Nuclear Regulatory Research

SUBJECT: PANEL REVIEW OF DPO ON STEAM GENERATOR INTEGRITY

This is in reply to your request of December 29, 1998 for my approval of a different approach regarding the resolution of the subject DPO. I agree with your proposed course of action.

It is my understanding that the staff position will not be finalized until the ad hoc panel issues a final report.

cc: J. Mitchell
A. Thadani



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
WASHINGTON, D.C. 20555-0001

November 1, 1999

MEMORANDUM TO: Joram Hopenfeld
Generic Safety Issues Branch
Division of Engineering Technology
Office of Nuclear Regulatory Research

FROM:

William D. Travers 
Executive Director for Operations

SUBJECT: DIFFERING PROFESSIONAL OPINION ON STEAM GENERATOR
TUBE INTEGRITY ISSUES

In a memorandum to you dated December 29, 1998, I outlined the NRC's approach for resolving your differing professional opinion (DPO) on steam generator tube integrity. In the memorandum, I proposed the following course of action: (1) the staff of NRR would receive public comments on the draft regulatory guide, the draft DPO consideration document, and your memorandum dated September 25, 1998; (2) the staff would address all the comments and prepare a final staff position, including endorsing a revision of NEI 97-06, should that prove to be technically acceptable, or deciding to issue a generic letter; and (3) the final staff position would be forwarded to you for your review as to which, if any, of your DPO issues have been adequately addressed in that position. I further proposed that any remaining issues would then be submitted to an ad hoc panel, which would be established at that time. The purpose of this memorandum is to forward to you the staff's final Consideration Document regarding your DPO, outline the next steps in the process, and address certain issues in your September 28, 1999, memorandum.

In January 1999, the staff issued the draft regulatory guide, draft DPO Consideration Document, and your memorandum dated September 25, 1998, for public comment. The comment period expired on June 30, 1999. No public comments were received on the DPO Consideration Document or your memorandum. Numerous comments were received on the draft regulatory guide. Staff technical resources in this area have been placed on resolving remaining issues with NEI 97-06, "Steam Generator Program Guidelines." Implementation of the new regulatory framework based on NEI 97-06, does not depend upon issuance of this regulatory guide and, therefore, no effort beyond the initial cursory review is being made to review the comments on the draft regulatory guide. However, a copy of these comments is attached for your information.

After the close of the public comment period, the staff updated the DPO Consideration Document to (1) clarify a number of areas/sections of the document to make them more readable, (2) reflect the current status of the staff's efforts to revise the regulatory framework with respect to steam generator tube integrity, (3) replace detailed 90-day report writeups which were contained in the response to issue 1 with a summary, (4) incorporate information related to the staff's review of a license amendment on Farley (discussed below), and

(5) identify the need for obtaining additional information on the behavior of short cracks/crack segments under severe accident conditions. As part of the effort to revise and update the DPO Consideration Document, the staff reviewed the information in your September 25, 1998, memorandum. The staff did not need to make any specific changes to the DPO Consideration Document in response to your memorandum. The staff concluded that the material in the DPO Consideration Document already addressed the information and analyses presented in your memorandum and that the Farley review had also considered this information. On September 22, 1999, NRR submitted the revised DPO consideration document to me. On October 18, 1999, upon request of my staff and in order to clarify the record on changes in the DPO Consideration Document, NRR also provided a redline/strikeout version showing the changes from the original document.

With regard to the NEI 97-06 industry initiative, the staff is working with the Nuclear Energy Institute (NEI) and the industry in meetings open to all stakeholders to resolve staff concerns with NEI 97-06. The staff is also working with NEI and the industry in an open forum to revise the existing regulatory framework (including technical specification requirements) to facilitate implementation of the revised NEI approach. These revisions will provide added assurance that licensees will maintain steam generator tube integrity, while providing added flexibility to licensees to achieve this objective in a cost effective manner. However, as discussed in the DPO Consideration Document, existing steam generator programs related to steam generator tube integrity are adequate to ensure public health and safety and, for this reason, resolution of the DPO concerns is not dependent on reaching agreement with industry on NEI 97-06 issues and an accompanying revised regulatory framework. Even within the revised regulatory framework, the staff will have to approve new repair criteria and methods prior to licensees implementing them. NRC staff consideration of alternate repair criteria and methods includes assessment of the severe accident risk contribution quantified to the extent possible for degradation in steam generators, including possible crack opening and leakage effects. Based on this, resolution of the DPO can proceed without further consideration of NEI 97-06 issues.

In your memorandum of September 28, 1999, you discuss the resolution of GSI-163 and the DPO. I agree that resolution of GSI-163 and your DPO are linked. Closure of GSI-163 will be based, in part, on the outcome of the final resolution of your DPO.

Regarding your comments on the staff's review of a Farley license amendment request, the staff does not see any new technical issues beyond those contained in your DPO. As in previous NRR evaluations, the Farley analysis assumed that some cracks that are too short to rupture would, in effect, result in failure of the primary-to-secondary pressure boundary during severe accidents due to leakage and the steam-cutting mechanism you have discussed in your DPO. It is the staff's professional judgement that this failure mechanism is not realistic for extremely short cracks, and that the DPO does not demonstrate otherwise. The staff has used engineering judgment to select the crack length limit for consideration of cutting-induced pressure boundary failure. The staff recognizes a need for better data to support the selection of a crack length limit. NRR is seeking assistance in better quantifying the crack-length dependence of the steam-cutting phenomenon and is preparing a user need memorandum to RES for this area. RES is currently developing a program to address this objective including the necessary resources and potential contractors.

There are five principles involved in the process of risk-informed reviews, each of which was addressed in the Farley safety evaluation as part of the decision to grant the licensee's request. I believe that it is a positive step to complete this first-of-a-kind analysis and to highlight the analytical areas needing refinement. In this case, should the quantitative analysis eventually be found to have a substantial flaw, the risk is still limited by the low frequency of the severe accident sequences that would challenge the tubes and the limited duration of the requested change. The staff concluded in the Final Safety Evaluation Report on the Farley license amendment that there is reasonable assurance of adequate protection of public health and safety with the license amendment that NRR granted.

Your memorandum of September 28, 1999, recommends certain accident considerations be included in analyses of license renewals. The issue you mention is not unique to license renewal. The technical criteria for ensuring the continued functioning of components and structures throughout the period of an extended license are consistent with criteria applied during the current license term. Therefore, the staff does not agree there is a need for the additional analyses you recommend.

A memorandum from the ACRS Chairman to the EDO dated October 10, 1997, states that in your presentation to the ACRS on October 2, 1997, you agreed that two issues, iodine spiking and thermally induced tube failure, have been resolved adequately by the staff. The staff continues to treat these two issues as unresolved items until formal resolution or a confirmation from you that these two issues have been adequately addressed. The DPO Consideration Document still addresses these issues.

Attached to this memorandum are the staff's final DPO Consideration Document and the transmittal package including the redline/strikeout version for your review. Please provide your comments to me within thirty working days of the date of this memorandum and specifically include your conclusion as to whether each issue has been resolved to your satisfaction and the basis for any continuing disagreement. If you still feel that any of the issues have not been adequately addressed at that time, an ad hoc panel will be formed for final resolution of this DPO. Selection of an appropriate panel will depend on the range of issues still open, so I encourage your careful consideration of the status of resolution of each of the DPO issues. For reasons discussed above, the ad hoc panel will only be charged with reviewing the issues in the final DPO Consideration Document and your comments on the final DPO Consideration Document.

In another memorandum to me on October 15, 1999, you also requested that you be permitted to place your memorandum of September 28, 1999, in the Public Document Room (PDR). NRC Management Directive 10.159, "Differing Professional Views or Opinions," outlines procedures for the review and dissemination of DPO materials to the PDR. Upon resolution of this DPO, the completed case file will be sent to Human Resources which will coordinate a review to determine what materials can be released. These materials will then be placed in the PDR. Your request is outside of this process. However, in the interest of full disclosure and keeping the public informed, the staff will have your September 28, 1999, memorandum placed in the PDR together with a staff memorandum on the status of resolving the DPO.

Thank you for your willingness to bring these concerns to my attention. If you have any questions, please contact William Ott (301-415-8705) on my staff.

**Attachment: Staff's Consideration Document
Public Comments on Draft Regulatory Guide
Transmittal package of redline/strikeout version**