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UNITED STATES
NUCLEAR REGULATORY COMMISSION
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June 28, 2018

MEMORANDUM TO: Kriss M. Kennedy, Regional Administrator
Region IV

FROM: Jimi T. Yerokun, DPO Panel Chair /RA/
Charles E. Moulton, DPO Panel Member /RA/
John W. Thompson, DPO Panel Member /RA/

SUBJECT: DIFFERING PROFESSIONAL OPINION PANEL REPORT ON CLOSURE OF WHITE FINDING AT COLUMBIA GENERATING STATION (DPO-2018-001)

In a memorandum dated March 7, 2018, we were appointed as members of a Differing Professional Opinion (DPO) Ad Hoc Review Panel (henceforth referred to as the Panel) to review a DPO regarding the closure of a WHITE Finding at the Columbia Generating Station (CGS). The DPO Submitter claimed that the decision to close the WHITE Finding was not supported by the inspection report details. The Panel reviewed the DPO in accordance with the guidance in Management Directive 10.159, "The NRC Differing Professional Opinion Program." The Panel Report is enclosed for your consideration.

The Panel reviewed the concerns raised in the DPO, reviewed associated inspection reports and documents, and interviewed NRC management and staff that were involved with the implementation of Inspection Procedure (IP) 95001, "Supplemental Inspection – Response to Action Matrix Column 2 Inputs," at CGS, or the review and approval of the resulting inspection report issued in January 2018. While the Panel does not believe that the expectation for completing the 95001 inspection is that line-by-line guidance in the IP are to be completed, the Panel believes that the key objectives of the IP should be satisfied to support closure.

Based on this, the Panel concluded that NRC Inspection Report 05000397/2017-011, dated January 30, 2018 (ML18032A754), does not depict all the bases to support the conclusion that the objectives of the IP were met and thus does not support closure of the WHITE finding. The Panel did not find sufficient information in the report to support the conclusion in the report that the licensee's root, contributing and apparent cause identified reasonable and appropriate corrective actions. Instrumental in this conclusion is that the Panel did not find the licensee's problem statement and root cause as discussed in the report to be representative of the issue. While this disconnect was alluded to in the report, it was nevertheless the conclusion in the report that the licensee's corrective actions were appropriate. Our recommendations are included in this report. A member of the Panel also identified some Reactor Oversight Process (ROP) improvement recommendations (Enclosure 2) that were provided to DIRS/NRR through the ROP feedback process.

Enclosures:
1. DPO Panel Report
2. ROP Process Improvement Recommendation

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Differing Professional Opinion (DPO) On Closure of White Finding at Columbia Generating Station (DPO-2018-001)

DPO Panel Report

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Date: June 28, 2018

Enclosure 1

Introduction

On March 7, 2018, the Office of Enforcement (OE) issued a memorandum establishing an Ad Hoc Differential Professional Opinion (DPO) Panel (henceforth referred to as the Panel) to review a DPO involving the closure of a WHITE finding at the Columbia Generating Station (DPO 2018-001). The DPO Submitter claimed that the results and conclusions of the Inspection Procedure (IP) 95001, "Supplemental Inspection – Response to Action Matrix Column 2 Inputs," inspection at Columbia Generating Station (CGS) were not supported by the information documented in the NRC Inspection Report 05000397/2017-011, Columbia Generating Station – NRC Supplemental Inspection Report and Assessment Follow-Up Letter, dated January 30, 2018 (ML18032A754). The DPO Submitter claimed that the NRC inappropriately closed the WHITE finding in the Public Radiation Safety cornerstone and as a result, the NRC oversight program may not have been met for CGS.

On April 25, 2018, the Panel held a discussion, by telephone, with the DPO Submitter to discuss his concerns and ensure that the Panel had a clear understand of the concerns as reflected in the Panel's Statement of Issues. The DPO Submitter agreed with the statement.

The Panel reviewed the associated 95001 inspection report, 2017-011, dated January 30, 2018, and the Columbia Generating Station – Revised NRC Special Inspection Report 05000397/2016009: Preliminary WHITE Finding dated October 19, 2016 (ML17292B776). The Panel also reviewed relevant NRC Inspection Guidance documents including IP 95001, IMC 0611, Appendix C – Guidance for Supplemental Inspection Reports, 01/01/2018. The Panel also reviewed Energy Northwest Root Cause Evaluation AR 360236, Revision 01, dated 03/01/17, that was accessible via the INPO Consolidated Events System (ICES) Accessible Database. The Panel interviewed NRC staff and management that were associated with the conduct of the 95001 inspection as well as the subsequent review and issuance of the inspection report. Finally, Panel members engaged NRC staff knowledgeable in this area for additional insights.

Summary of Issues

The DPO Submitter claims that the Columbia Supplemental Inspection Report (2017-011) does not contain sufficient information for a reader to conclude that the objectives stated in IP 95001 (revision 08/24/16) were met. The DPO Submitter expressed the following specific concerns:

1) The report does not appropriately address how long the condition existed and why prior opportunities to identify and correct were missed (IP 95001, Section 03.02a).
2) The report fails to specify what other regulations were not met by the licensee, although it appears to contain multiple examples of compliance issues (IP 95001 Section 02.01c).
3) The report does not describe each causal evaluation effort reviewed in detail (IP 95001, Section 02.02a).
4) The report did not properly address all root causes and contributing causes (IP 95001, Section 02.02b), but instead discusses one root cause that appears incorrect.
5) The report concludes that the Operating Experience review was sufficient but it contains information to the contrary (IP 95001, Section 02.02c).
6) The report does not adequately address the conclusion that the extent of condition and extent of cause reviews by the licensee were adequate (IP 95001, Section 02.02d).
7) The report does not address the ineffectiveness of numerous corrective actions, including corrective actions for unmentioned causal factors, corrective actions to preclude recurrence, and temporary or permanent corrective actions (IP 95001, 02.03).

Additionally, the DPO Submitter suggested that a potential violation of 10 CFR Part 50.5 requirements might have occurred where licensee personnel may have engaged in deliberate misconduct.

DPO Panel Review

In the 95001 Inspection Report, 05000397/2017-011, the staff states, "The NRC determined that the root, contributing, and apparent cause evaluations were conducted to a level of detail commensurate with the significance of the problems and, taken as a whole, reached reasonable conclusions as to the root, contributing, and apparent causes of the event. The NRC also concluded that you [the licensee] identified reasonable and appropriate corrective actions for each root, contributing, and apparent cause and that the corrective actions appeared to be prioritized commensurate with the safety-significance of the issues." The Panel understood this to mean that the inspectors essentially agreed with the licensee's efforts to identify the root cause and corrective actions.

In the NRC Special Inspection Report, 05000397/2016-009, the staff identified that CGS failed to ensure that the radioactive contents in a radioactive waste liner did not exceed the radiation level requirements for shipping. Also in the report, the staff states that there were a number of previous instances noted in the licensee's corrective action program associated with radioactive waste and radioactive material processing, disposal, and transportation problems in 2015 and 2016. The Panel understood this to mean that there were a number of inspection findings and violations that had causal factors and interdependencies that contributed to the occurrence of the WHITE finding.

NRC Inspection Procedure (IP) 95001, "Supplemental Inspection Response to Action Matrix Column 2 Inputs," provides the supplemental inspection response for one or two WHITE findings (an Action Matrix Column 2 response) as described in Inspection Manual Chapter 0305, "Operating Reactor Assessment Program." The objectives of the inspection procedure include:

- to assure that the root causes and contributing causes of individual and collective (multiple WHITE inputs) significant performance issues are understood (01);
- to independently assess and assure that the extent of condition and extent of cause of significant performance issues are identified (02);
- to assure that corrective actions taken to address and preclude repetition of significant performance issues are prompt and effective (03); and
- to assure that corrective plans direct prompt actions to effectively address and preclude repetition of significant performance issues (04).

Part of the Panel's review of the concerns raised in the DPO was to conduct interviews with key NRC individuals who had direct knowledge of the conduct of the 95001 inspection, as well as with individuals who had knowledge of the activities with the special inspection and the WHITE finding. Information gleaned from these interviews revealed several important insights that were not apparent from reading the 95001 report. These insights included:

- a belief by the 95001 inspection team and other NRC staff with oversight of this inspection that the licensee's written root cause evaluation (RCE), even in its seventh revision, was poorly written and lacked documentation of all the actions taken in response to this event;

- a realization that there is a significant gap between what was the actual extent of the licensee's RCE efforts and what was actually documented in the RCE; and
- an understanding that the 95001 inspectors were able to obtain a level of understanding and comfort with the licensee's efforts only after conducting extensive site interviews where additional verbal information was exchanged with the inspectors, allowing them to gain a better understanding of the extent of condition/cause and corrective actions taken by the licensee.

Evaluation

The focus of this DPO assessment is to ascertain if the objectives of the IP 95001 procedure were met by the documentation contained within the 95001 inspection report. The following IP 95001 Inspection Objectives (95001-01) and Requirements (95001-02) are particularly relevant to the DPO:

- understand the root cause(s) and contributing causes (95001-01, 01.01);
- independently assess extent of condition and extent of cause (95001-01, 01.02);
- inspectors sufficiently challenge aspects of the licensee's evaluation, corrective plans, and actions to ensure that the cause(s) of the performance issue have been correctly identified and appropriate corrective plans and actions are in place (95001-02); and
- failure to satisfy these objectives (95001-01) or requirements (95001-02) must result in an expansion of this IP through continued follow-up IP 95001 inspection.

The Panel recognizes that IP 95001 requires that the inspection be limited to just the WHITE finding. However, IP 95001, Section 03.03c states that the licensee's RCE should broadly question the applicability of other similar events or issues with related root or contributing causes and determine if the root cause evaluation for the current problem specifically addresses those aspects of the prior root cause evaluation or corrective actions that were not successfully addressed. The inspectors should also discuss the problem and associated root causes with other resident, regional, or headquarters personnel to assess whether previous similar problems or root causes should have been considered.

Further, IP 95001 Section 03.03e states that the RCE should include a proper consideration of whether a weakness in any safety culture component was a root cause or significant contributing cause of the performance issue, and if so, that weakness should be addressed through adequate corrective actions. Therefore, for each performance issue that prompted this inspection, consider whether the performance issue, the licensee's evaluation methodology, results obtained using that methodology, or any related circumstance indicates that a weakness in any safety culture component could reasonably have been a root cause or significant contributing cause of the performance issue. If so, then for each such weakness, determine if the licensee considered in their evaluation if the weakness was a root cause or significant contributing cause of the deficiency and documented that consideration in their evaluation.

Thus, given the procedural guidance above, the Panel evaluated whether the DPO concerns that relate to this guidance should be substantiated or not. The DPO is specific as to which sections were in question. The DPO Submitter introduces and provides background for his concerns in Bases 1 and 2. He then discusses the concerns relative to the specific sections of the inspection report and the 95001 procedure in Bases 3 through 9. Thus, the Panel addressed this DPO by assessing each concern as stated under Bases 3 through 9.

DPO Bases 3 states that Report Section 02.01b (Problem Identification – Duration) is inadequate

(3A) The DPO Submitter noted that the report does not address the multiple conditions that existed and how long they existed prior to the improper shipment. IP 95001, Section 03.02.a specifies that the licensee's evaluation should state how long the conditions existed and the prior opportunities to identify.

The 95001 report states that the licensee defined the problem statement for the RCE as the licensee's "transport of a radioactive waste container that exceeded the external radiation dose rate limit as required by DOT." Based on this statement, the "issue" existed only during the time that the shipment was in transit on public roads. The 95001 report appears to agree with this statement concerning the duration of the issue, which is a concern since this statement only reflects the period of the duration of the shipment and fails to consider the duration of the numerous deficient conditions that led to the illegal shipment. While the Panel acknowledges that the time the licensee was in actual "violation space" may be limited to the actual transient time, the "issue(s)" that led to the WHITE finding/violation likely existed prior to the shipment. This presumption was also substantiated through interviews conducted by the Panel as well as from documentation contained within the 95001 and SIT reports. While this point of note may seem immaterial, IP 95001-02 states that "inspectors shall sufficiently challenge aspects of the license's evaluation, corrective plans, and actions to ensure that the cause(s) of the performance issue have been correctly identified and that appropriate corrective plans and actions are in place to promptly and effectively address and preclude repetition of significant performance issues."

Additionally, IP 95001-02 states, "significant weaknesses in the licensee's actions to address individual or multiple performance issues do not provide the assurance level required to meet the inspection objectives defined in Section 95001-01 and requirements defined in Section 95001-02." These weaknesses might include but need not be limited to substantial inadequacy in the (a) evaluation of the root cause(s), (b) determination of the extent of the performance issue(s), or (c) action taken or planned to correct the issue. In this case, IP 95001, Section 03.02 states that the "licensee's failure to identify a problem before it became more significant may indicate a more substantial problem." If so, IP95001, Section 03.02 also states that the evaluation should address why the licensee's processes, such as peer review, supervisory oversight, inspection, testing, self-assessments, or quality activities, did not identify the problem.

Given the procedural guidance stated above, and the complexities and interdependencies of the issues surrounding the WHITE finding, the Panel determined that the 95001 report did not include adequate documentation of the licensee's actions to determine what conditions pre-existed, what issues contributed to the WHITE finding, and how long they existed. As a result of this lack of documentation concerning the breadth and depth of problem statement, the reader may not be able to conclude that other aspects of the RCE was conducted to the degree necessary to identify the extent of condition and causes and the appropriate corrective actions to prevent recurrence of the problem.

As a result, the Panel finds that DPO Bases 3A is substantiated.

(3B) The DPO Submitter stated that none of the missed opportunities described in the report include the reasons for why the opportunities were missed and that the examples described in the report lack sufficient detail for the reader to understand what action the licensee implemented, whether or not the licensee's action was appropriate.

IMC 0611 Appendix C – Guidance for Supplemental Inspection Reports, dated 01/01/2018, states that, "One of the objectives of Inspection Procedure (IP) 95001/95002 is to provide an assessment of the licensee's analysis and corrective actions associated with the issue(s) that prompted the supplemental inspection." IP 95001, Section 03.02(a) states that "if the licensee did not identify the problem at a precursor level, evaluate the cause" and that "the evaluation should state how long the condition(s) existed." Additionally, IP 95001-02 states that significant weaknesses in the licensee's actions to address individual or multiple performance issues do not provide the assurance level required to meet the inspection objectives defined in Section 95001-01 and requirements defined in Section 95001-02.

In a plain reading, these statements require identification and documentation (in the 95001 report) of the issues that led to the WHITE finding and may have existed prior to the actual occurrence of the violation. This would include how long the violation and precursors were in existence, an evaluation of the prior opportunities that were missed, and why they occurred (or assess their cause). The fact that four precursors were noted in the 95001 report is a strong indication that the issue(s) existed prior to the actual shipment. These precursors were not discussed in the report other than they existed and this does not allow the reader to understand these issues and the reasons why they did not prompt the licensee to identify the problem earlier. More importantly, the reader cannot conclude from the report to what extent the licensee failed to identify a problem before it "became more significant," as it appears to have been the case in this situation. For example, there is no information in the report that states how long deficient procedures existed or the length of time inadequate surveys were conducted, even though the 95001 report acknowledges that the licensee identified these issues as contributors to the underlying cause for the WHITE finding. IP 95001, Section 03.02 states that the "licensee's failure to identify a problem before it became more significant may indicate a more substantial problem." "The evaluation should address why the licensee's processes, such as peer review, supervisory oversight, inspection, testing, self-assessments, or quality activities, did not identify the problem."

Thus, in the Panel's judgement, the lack of documentation in the 95001 report for evaluating the missed opportunities or describing the issue(s) that led to the WHITE finding and their causes at a precursor level does not allow the reader to understand the exact nature or the causes of these issues, and more importantly, if the inspection objectives outlined in IP 95001-01 were met.

As a result, the Panel finds that DPO Bases 3B is substantiated.

(3C) The DPO Submitter noted that a reader could infer from a statement in the report that a deliberate licensee misconduct may have occurred but this was not addressed in the report. The specific statement was "On November 8, 2016, Radiation Protection was uneasy with the shipment, but the decision to proceed was based on the high confidence that the shipping specialist had in the shipment meeting all the requirements."

The Panel conducted an interview with the DPO Submitter to determine if he actually had information that addressed this issue, or if the concern was with the appropriateness of the words chosen in the report. The Panel conducted other interviews and did not find any information to suggest that the licensee had engage in actual misconduct. Although the Panel did not come across any information to suggest a 50.5, Deliberate Misconduct, violation exists; the Panel was of the opinion that the choice of words could lead a reader to such an interpretive conclusion.

As a result, the Panel finds that DPO Bases 3C is unsubstantiated.

DPO Bases 4 states that Report Section 02.01c (Problem Identification – Risk Consequences and Compliance Concerns) is inadequate

(4A) The DPO Submitter states that the 95001 report contains several statements alluding to compliance issues but does not contain any specific compliance issues.

The Panel noted that IP 95001, Section 03.02(b) states that the evaluation should include an assessment of compliance. The Panel noted that some non-compliances were mentioned in the report (i.e., the Washington Administrative Code violations), but others were omitted (e.g., Part 20.1904, correct markings on radioactive material containers) and Part 20.1501, (failure to conduct adequate surveys, among others). This is significant because these non-compliances appear to contribute to why the WHITE finding occurred and warrant discussion in the report. The Panel determined that the 95001 report does omit documentation to show that several relevant potential compliance issues were addressed.

As a result, the Panel finds that the DPO Bases 4A is partially substantiated.

(4B) The DPO Submitter states that the report fails to describe a qualitative consequence associated with the unnecessary exposure to occupational radiation workers. IP 95001, Section 03.02(b) states that for "conditions that are not easily assessed quantitatively, such as the unavailability of security equipment, a qualitative assessment should be completed."

The Panel determined that the 95001 report does mention that additional consequences described [by the licensee's causal evaluation] were increased radiation exposure risk to the public and decreased NRC and public confidence in the licensee's ability to safely control its radioactive material. The Panel could find no evidence that the 95001 report documented any discussion of a "qualitative assessment" performed by the licensee, or even if the licensee undertook such an assessment. However, in the Panel's judgement, IP 95001, Section 03.02b does not explicitly require the licensee to conduct such an assessment, only that the licensee "should" conduct such an assessment for conditions that are not easily assessed quantitatively. It is important to note that IP 95001-03 states that the intent [of the inspection guidance] is that the inspector uses the guidance to look for weaknesses in the licensee's evaluation that might indicate an issue associated with one of the inspection requirements. In this situation, if the licensee did not perform such an assessment, this could be interpreted as a weakness. Lacking documentation in the 95001 report as to whether the licensee undertook such an assessment (qualitatively or quantitatively), the reader is left to wonder how the plant-specific consequences were assessed.

As a result, the Panel finds that the DPO Bases 4B is partially substantiated.

DPO Bases 5 states that the report section 02.02a (Root Cause, Extent of Condition, and Extent of Cause – Methodology) is marginal

The DPO Submitter states that the report contains insufficient detail concerning the inspectors' evaluation of the licensee's multiple causal evaluation efforts.

IP 95001 states that a licensee should use a systematic approach for causal evaluations, and that such an approach should include a clear identification of the problem and assumptions; a

clear description of the progression of the problem and identification of inconsistencies or missing information; and a determination of cause and effect relationships. Based on its interviews, the Panel developed information that the licensee developed a great deal of information not documented in the licensee's final report. However, the Panel finds that the 95001 report only includes a listing of the various techniques employed by the licensee, with no discussion of how these tools were used or how they demonstrate of the adequacy of the licensee's efforts.

As a result, the Panel finds that DPO Bases 5 is substantiated.

DPO Bases 6 states that the Report Section 02.02b (Root Cause, Extent of Condition, and Extent of Cause Evaluation – Level of Details) is inadequate

(6A): The DPO Submitter states that the report only addresses one root cause and one contributing cause although many others are implied in the report but not explicitly evaluated. (6B): The DPO Submitter states that the report identified a single, convoluted, root cause that includes elements organizational alignment, decision making, oversight, and program validation and that the report does not describe how the root cause led to the illegal shipment, or how correcting it would prevent reoccurrence. (6C): The DPO Submitter states that the licensee's contributing cause (*the chemistry manager failed to implement corrective actions to address organizational and programmatic issues*) is insufficient in that the corrective action program is not a single point failure program and that many organizations and licensee personnel would have contributed to the failure. (6D): The DPO Submitter states that while the report describes numerous failures, none is included as part of the causal analysis. For example, what was the cause for inadequate procedures, failure to follow procedures, failure to perform surveys, failure to characterize waste, or failure of filter management?

The Panel finds these observations to be correct. In information obtained through interviews, the Panel determined that the licensee was procedurally driven to identify a single root cause and that this may explain why the licensee's final RCE documented a single, convoluted, root cause that combined organizational alignment deficiencies with decision making, oversight, and program validation issues, among other issues. The 95001 report acknowledged this RCE statement, but given the underlying issues that contributed to why the WHITE finding occurred, which included procedural issues, inadequate surveys, and the causes of the multiple precursor events, not to mention that the licensee's "documented" RCE was grossly inadequate, which was confirmed through interviews by the Panel, it remains unclear as to how (or if) the licensee was able to address or consider these issues from a reading of the 95001 report. Further, IP 95001, Section 03.03.b.1 describes pursuing the root cause determination until the cause(s) are beyond the licensee's control. It is unclear to the Panel whether the evaluations were conducted to this level of detail.

Consequently, the Panel can only conclude that the 95001 report justifies closure of the WHITE finding based on significant verbal information that was not contained in the final RCE and not discussed in the 95001 report. Thus, the reader cannot get a sense of whether the licensee adequately identified all the root and contributing causes and extent of condition, what were the significant issues with the final documented RCE, and how it was that the staff was able to satisfy itself that the objectives of the IP 95001 procedure were met.

As a result, the Panel finds DPO Bases 6A, 6B, 6C, and 6D substantiated.

(6E) The DPO Submitter noted that the report states that extensive work was performed by the licensee, but no basis or description of the completed work product is provided in the report.

While the Panel finds that this is correct, the Panel does not believe that the absence of detailed description of the licensee's work necessarily means that a reasonable conclusion cannot be reached, but such a description would aid the reader in understanding the report and its conclusions.

As a result, the Panel finds that DPO Bases 6E is unsubstantiated.

DPO Bases 7 states that the report section 02.02c (Root Cause Evaluation – Prior Occurrence and Operating Experience) is inadequate

(7A): The DPO Submitter states that the report concludes that the operating experience review is sufficient. However, the report provides details that oppose the conclusion that the licensee's effort is adequate. (7B): The DPO Submitter also states that the report never describes why deficiencies with operating experience reviews occurred. Accordingly, the history of issues at CGS suggests organizational alignment is not the root cause. (7C): The DPO Submitter states that IP 95001 03.03.d specifies that prior events are to be assessed against the root and contributing causes but this aspect is not addressed in the inspection report. Moreover, the organizational alignment is not the cause of previous failed corrective actions.

The Panel noted that in the Special Inspection report, 2016-009, the staff noted that the licensee had identified a number of problems associated with radioactive waste and radioactive material processing, disposal, and transportation in 2015 and 2016. In the 95001 report, the staff noted that the licensee's review of internal operating experience identified a range of weaknesses related to radioactive waste shipping, handling and documentation that had been identified in self-assessments and audits over the prior 2-year period. In addition, that the licensee recognized that the corrective actions taken to address these issues had not been effective, as evidenced by the continued declining performance culminating in the shipping violation. In the report, the staff further states that the licensee determined that the external operating experience that applied represented missed opportunities due to the similarity of the CGS event. Based on this alone, the Panel could not find the licensee's Problem Statement pointing just to the shipping violation as the "issue" appropriate. The Panel could not conclude that organizational alignment is not the cause of previous failed corrective action program implementation. Thus, the root cause evaluation could not have been focused on the right issue and the resulting corrective actions may not be all inclusive.

However, despite the above information, in the 95001 report the staff determined that the licensee's RCE included consideration of prior occurrences of the problem and knowledge of operating experience. In report section 02.02.c, it is stated, "The inspectors concluded that the licensee had determined the root cause and then performed the operating experience evaluation, which was contrary to the expectation that the operating experience inform the root cause determination." Further, the inspectors noted that there was no discussion of internal operating experience in the final version of the licensee's root cause analysis, so that previous versions were reviewed. It light of this, it is not clear how the inspectors concluded that what the licensee did was acceptable. Therefore, the Panel does not agree with this statement.

As a result, the Panel finds that DPO Bases 7A, 7B, and 7C are substantiated.

DPO Bases 8 states that the report section 02.02d (Root Cause – Extent of Condition and Extent of Cause) is inadequate

(8A) The DPO Submitter states that report describes that the extent of condition review only applied to shipments but many deficiencies converged to cause the illegal shipment. No attempt was made by the licensee to explore the extent of condition of numerous failed barriers (failure to perform surveys, failure to follow procedures, inadequate procedures, ineffective OpE reviews, ineffective self-assessments, and more...).

In report section 02.02 d, the licensee appears to have limited their extent of condition review only to rad waste shipments. It appears logical that there were other deficiencies that contributed to why the illegal shipment occurred. In fact, this was the conclusion of the Special Inspection team leader, as he stated as much during the interview. Additionally, the 95001 report (page 6 of the report) does discuss some of these contributors. These include insufficient procedures to implement spent fuel pool cleanup (SFPCU) activities, flawed waste characterization based on inaccurate survey documentation, and a lack of formal SFP filter management. Given all these, the Panel could not understand the rationale for finding the licensee's extent of condition review appropriate.

As a result, the Panel finds that DPO Bases 8A is substantiated.

(8B) The DPO Submitter states that the report fails to describe the organizational alignment extent of cause review scope, and it was not clear if the licensee or NRC adequately completed the extent of cause review.

In the report, the staff noted that the licensee had determined the root cause of the issue to be "... station management did not have the organizational alignment in place that would ensure proper decision-making, effective oversight, and programmatic validation to assure execution of critical radioactive waste packaging and shipping activities in accordance with regulations." In section 02.02d of the report, the staff discussed the licensee's actions to evaluate the extent of cause associated with the organization alignment that included the licensee reviewing multiple other departments to identify circumstances for the vulnerability and ultimately identifying one other department that had a similar potential. The Panel finds this scope to be sufficient.

As a result, the Panel finds that DPO Bases 8B is unsubstantiated.

(8C) The DPO Submitter states that the report indicates a similar organizational alignment problem existed with one department; however, who identified the concern is missing.

In the section 02.02d of the report, the staff discusses the licensee's actions to evaluate the extent of cause associated with the organization alignment problem. The Panel believes from its review of the report section that the licensee identified the concern and entered it into the corrective action program. It states that the "extent of cause" contacted nearly every department to identify circumstances of the vulnerability and found only one department that had the same potential. Based on this, the Panel concludes the licensee identified the concern.

As a result, the Panel finds that DPO Bases 8C is unsubstantiated.

(8D) The DPO Submitter states that the extent of cause assessment does not include any review of corrective action program deficiencies described with the one contributing cause listed in the report.

The licensee did not explore the extent of condition of numerous failed barriers and the extent of cause assessment does not include any review of corrective action program deficiencies described in the one contributing cause listed in the report.

As a result, the Panel finds that DPO Bases 8D is substantiated.

(8E) The DPO Submitter states that the root cause itself is suspect; therefore, the extent of cause review and corrective actions are also suspect.

The Panel noted that the 95001 briefly discusses that the complexities involving the illegal shipment were beyond what could be addressed by a "single concise statement or single cause evaluation." This appeared to be a criticism levied by the 95001 team of the licensee's efforts in addressing a single root cause, but the 95001 report falls short of explaining why this inadequacy was ultimately found to not prevent closeout of the WHITE finding. What appears confusing is that interviewees told the Panel that the licensee's written RCE was grossly inadequate, yet the inspectors were able to accept it as adequate, without requiring the licensee to address the discrepancies through a revised RCE.

As a result, the Panel finds that DPO Bases 8E is substantiated.

DPO Bases 9 states that the report section 02.03 (Corrective Actions) is inadequate

The DPO Submitter states that corrective actions for the unmentioned causal factors are not provided in the report (9A). Additionally, actions to preclude recurrence are not specifically mentioned (9B) and there is no separation of the temporary verses permanent actions (9C). In addition, the root causes were not assessed for adequacy (9D) and how the corrective actions were to be tracked was not described (9E).

The Panel found that the report does discuss the licensee's corrective actions. However, the details do not go to the level of documentation one might expect given the complexities of this issue. While the level of detail may be a judgement call by the 95001 team, it would have been prudent to include specific details on how the actions were prioritized, that included the contributors to the root cause as well, with the consideration of those actions being prompt and effective. However, the problem here is that a single root cause was only identified by the licensee, of which the 95001 team found problematic.

It is hard to believe that the corrective actions mentioned, which supports only a single root cause, satisfy the inspection requirements and are comprehensive and complete. Again, if the team is relying on information not documented in the final root cause evaluation, then this information does not appear to be included in the 95001 report, and does little to aid the reader to support the conclusions reached in the report.

As a result, the Panel finds that DPO Bases 9A, 9B, 9C, 9D, and 9E are substantiated.

Summary

The Panel reviewed a very detailed and point-specific DPO concerning the level of documentation and actions necessary to satisfy the objectives of IP 95001. The issues that contributed to the WHITE finding at Columbia appeared complex, had signs and symptoms of a programmatic breakdown in radioactive waste packaging and shipping, and issues previously documented in the SIT appear to contribute to the cause(s) of the WHITE finding. Contributing to this complexity was the licensee's documented RCE, which based on information obtained by the Panel through interviews, appears to have been poorly performed and lacked sufficient documentation on its own merit such that inspectors had to rely on additional information as a basis for concluding the objectives of IP 95001 were met. More importantly, this additional information does not appear to be discussed in any appreciable detail in the 95001 report.

Throughout most of the interviews with key NRC staff who were involved in either the Special Inspection or the 95001 supplemental inspection, the Panel gained the insight that most of the other green NCVs documented in the SIT had underlying causes and interdependencies that were also causal factors that led to the WHITE finding. This was also the opinion of the team leader for the Security inspection (IP 92702), which originally was intended to be part of the 95001 inspection. However, in the case of the Security inspection, the inspectors discussed their concerns with the licensee and were able to get the licensee to revise the 92702 RCE to better reflect the actions taken by the licensee. Yet, this does not appear to have been done with the RCE performed in support of the 95001 inspection. Given the complexity of the issues that led to the illegal shipment and the poor documentation by the licensee, there is little discussion about what it took to resolve these inadequacies in the 95001 report. This insight is significant, especially given the fact that additional (verbal) information not contained in the RCE was necessary to satisfy the 95001 inspection objectives. The Panel believed that this lack of documentation is a concern because there is no indication in the 95001 report that the licensee's written RCE was anything but acceptable. In addition, given that the 95001 inspection team believed it was not acceptable, this discrepancy (along with a very narrow definition of the problem statement) had the potential to limit the extent of cause/condition reviews and corrective actions identified by the licensee. It also had the potential to affect the ability of the staff to set a performance baseline upon which to evaluate the licensee's effort going forward. If the licensee's documented RCE is inaccurate and left unchanged, then a reader of the 95001 report might conclude that the licensee's documented RCE was acceptable as written, a fact that is not supported from the information obtained in the interviews.

Thus, what is reflected in the 95001 report is a confusing story about how the licensee's assessment evolved with their understanding of the issues and that when taken as a whole, [the Panel interprets this to mean when taken in consideration of the additional information gleaned from the verbal interactions with the licensee but which is not discussed in the report] the inspectors concluded the licensee met the inspection objectives of IP 95001. However, this appears to the Panel to be a leap of (documentation) faith that appears counter to the inspection requirements and guidance of IP 95001 as well as IMC 0611. IMC 0611 states that for all supplemental inspections conducted in accordance with IP 95001/95002, an assessment of the licensee's evaluation and corrective actions associated with the issue(s) should be documented. Negative conclusions regarding aspects of the licensee's evaluation and corrective actions should be supported by examples of performance deficiencies (i.e., observations or findings). Other conclusions should be supported by a brief statement describing their bases. It appears that the documentation contained within the 95001 report falls short of this expectation.

Two of the key objectives of IP 95001 are (i) assure that the root causes and contributing causes of "WHITE" and significant performance issues are understood, and (ii) independently assess and assure that the extent of condition and extent of cause of significant individual performance issues are identified, among others. Thus, it is not clear how a root cause of "station management did not have the organizational alignment in place to ensure proper decision-making, effective supervisor oversight and programmatic validation to assure execution of critical radioactive waste packaging and shipping activities in accordance with regulations" aligns with these objectives. Given that there were previous occurrences identified by the licensee, the implication of these long-standing issues implies there might have been organizational alignment issues for a significant period. A reader of the 95001 report is left confused as to why the licensee's root cause for the WHITE finding did not connect previous occurrences with the WHITE finding, and why this fact is left unchallenged, especially given the fact that the 95001 report discusses a range of weaknesses related to radiation waste shipping, handling and documentation over the past two years (including shipments rejected by US Ecology) and that corrective actions taken to address these issues were ineffective.

Finally, the Panel could not substantiate that a 10 CFR 50.5 violation may have existed but instead believes that the inference that one exists may have been drawn from the poor choice of words used in the report.

Conclusion

The Panel concludes that NRC Inspection Report 05000397/2017-011, dated January 30, 2018 (ML18032A754), does not depict all the bases to support the conclusion that the objectives of Inspection Procedure (IP) 95001, "Supplemental Inspection – Response to Action Matrix Column 2 Inputs," were met. A key to this conclusion is that the Panel could not establish the nexus between the licensee's problem statement and the root cause as defined in the inspection report, which questions the adequacy of the corrective actions.

In the report, the staff recognized the licensee's problem statement as the "transportation of a radioactive waste container that exceeded the external radiation dose rate limit required by the Department of Transportation." This definition of the issue is limited to the time it took the radwaste shipment to arrive at the disposal facility and return to the licensee, and is exclusive of the previous occurrences. Yet, the conclusion in the report was that the licensee accurately determined the duration of the issue.

The report only addresses one root cause that "... station management did not have the organizational alignment in place that would ensure proper decision-making, effective oversight, and programmatic validation to assure execution of critical radioactive waste packaging and shipping activities in accordance with regulations." Interviews with key Regional individuals indicated that the licensee's procedures drive them to identify a single root cause. However, IP 95001 03-03 (b) states that the RCE should be conducted to a level of detail that is adequate for the significance of the problem. It should consider complex problems, and conduct a questioning process that is followed until the causes were beyond the licensee's control. Complex problems may have more than one root cause as well as several contributing causes. The report acknowledges that a number of issues contributed to the occurrence of the WHITE finding, but the report does not appear to challenge the licensee in their description of a single convoluted root cause statement.

Neither the problem statement nor the root cause address the fact that there had been multiple occurrences of the issue. Thus, the Panel determined that if the licensee's written problem and

root cause statements are problematic, because either they are too narrowly defined, or a confusing mix of an assortment of apparent or contributing causes, then it is likely that other aspects of the RCE, including the extent of condition/cause statements are incomplete or inadequate. With these inadequacies, and the fact that critical verbal information was relied upon to meet the inspection objectives, the expectation for the level of documentation in the report should have been above normal and should have provided a clear path for the reader to understand how the 95001 objectives were met. The report falls short of these expectations. It is difficult to imagine that the licensee's definition of the problem statement, extent of condition and cause, and corrective actions are appropriate. These facts alone suggest that the objectives of the IP 95001 may not have been met.

Recommendation(s)

The Panel recommends:

1. Reopen the WHITE finding to assess the adequacy of the licensee's written RCE. The basis for this recommendation is that the licensee's written problem statement, stated in the report, appears to be unreasonably narrow-focused and limited to the time it took the radwaste shipment to arrive at the disposal facility (and return back to the licensee). The Panel determined it was obvious that the problem(s) that led to the WHITE finding pre-existed the facts in this statement. Additionally, the 95001 report acknowledges that a number of issues contributed to the occurrence of the WHITE finding, but the report does not appear to challenge the licensee in their description of a single convoluted root cause statement. This root cause statement appears to be a mix of several apparent and contributing root causes, none of which was fully explained or even understandable from the information contained in the 95001 report.

   OR

2. Revise the 95001 report to provide a characterization of the written RCE by the licensee. If the written RCE is deemed inadequate on its own merits (the panel had evidence of this based on the interviews that it conducted), the report should clearly state so and what additional information aside from the RCE was relied upon to meet the inspection objectives and why this is acceptable. The revised report should also reflect whether the licensee did an assessment of the overall impact of the noncompliance(s) that led to the WHITE finding. The Panel did not see any evidence that the licensee included and assessed in their RCE all the non-compliances that likely contributed to the WHITE finding, as they should. The 95001 report should state if the licensee did such an assessment, and if not, provide the basis for why a lack of an assessment is acceptable.

References

NRC Inspection Report 05000397/2017-011, Columbia Generating Station – NRC Supplemental Inspection Report and Assessment Follow-Up Letter, dated January 30, 2018 (ML18032A754).
NRC Special Inspection Report 05000397/2016009: Preliminary WHITE Finding dated October 19, 2016 (ML17292B776).
Inspection Procedure 95001, Supplemental Inspection – Response to Action Matrix Column 2 Inputs, 08/24/16
Inspection Manual Chapter 0611 Appendix C – Guidance for Supplemental Inspection Reports, 01/01/2018

Energy Northwest, Root Cause Evaluation – Incorrect Container for Radioactive Waste Shipment, Rev 01 3/01/17

Interviews

Heather Gepford, Branch Chief, RIV
Jeremy Groom, Branch Chief, RIV
David Garmon, NRC's RSO, Certified HP, NRR
Steven Garry, Certified HP, Senior Health Physicist, NRR
Louis Carson, Snr. HP, RIV
Pete Hernandez, RIV
John O'Donnell, RIV
Tony Vegel, Division Director, RIV
Bill Orders, NRR
Tom Hipschman, NRR
Chris Cauffman, NRR
Ross Telson, NRR

ROP Process Improvement Recommendation

1. IMC 0612 should be revised to encourage use of the "Enforcement Problem" concept, which is currently part of OE's Enforcement Policy, where multiple findings that have commonalities can be grouped together, with the risk significant being characterized by the most risk significant finding.

2. IP 95001 and IMC 0611 should be revised to make it clear that all issues, even if they happen to be documented as separate findings that relate or contribute to the causes that led to the white finding, need to be within scope of the supplemental inspection. Note, the 95001 is still performed for a single or double white, but if there are related underlying issues documented as green findings that caused or enabled the white finding to occur, this should not be ignored.

3. The ROP is overly restrictive where it is clear that a programmatic breakdown in any functional area occurred, yet inspectors are prevented from documenting such observations (unless the licensee is in column 4 and a 95003 is being performed). The Columbia experience clearly has shown it is possible to have such a breakdown with only a single white finding. The licensee stated as much in their apparent and root cause assessments. Inspectors should be free to document their observations when such cases manifest themselves.

4. There should be an internal NRC policy that at least one inspector who is actually performing the 95001 inspection needs to have prior supplemental inspection experience.

5. There is likely an Agency-wide training issue in that some inspectors may not understand what is required of them when performing supplemental inspections, especially when the licensee's "documented" efforts at a root cause evaluation falls short of expectations.

K. Kennedy

Memorandum to Kriss Kennedy, Regional Administrator, Region IV, from the Differing Professional Opinion Panel

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