UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
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May 14, 2013

Mark E. Reddemann
Chief Executive Officer
Energy Northwest
P.O. Box 968 (Mail Drop 1023)
Richland, WA 99352-0968

SUBJECT: COLUMBIA GENERATING STATION - NRC INSPECTION PROCEDURE 95002 SUPPLEMENTAL INSPECTION REPORT 05000397/2013009 AND ASSESSMENT FOLLOW-UP LETTER

Dear Mr. Reddemann:

On March 22, 2013, the NRC completed a supplemental inspection pursuant to Inspection Procedure 95002, "Inspection for One Degraded Cornerstone or Any Three White Inputs in a Strategic Performance Area," at your Columbia Generating Station. The enclosed inspection report documents the inspection results, which were discussed during the exit meeting on April 24, 2013 with Mr. G. Hettel and other members of your staff.

As required by the NRC Reactor Oversight Process Action Matrix, this supplemental inspection was performed because two findings, both of White safety significance, were identified which placed Columbia Generating Station in the Degraded Cornerstone Column in the second quarter of 2012. The following issues degraded the Emergency Preparedness Cornerstone: two examples of inappropriately calculated Site Area Emergency (SAE) and General Emergency (GE) radiation monitor threshold values on Emergency Action Level (EAL) Table 3; and two deficiencies that degraded the licensee's ability to accurately assess the offsite dose consequences of a radiological release. Additionally, the NRC identified a Severity Level III violation for the failure to notify the NRC of a major loss of assessment capability.

These violations were previously documented in NRC Inspection Report 05000397/2012502 dated July 26, 2012. The NRC staff was informed on January 24, 2013, of your readiness, as of March 18, 2013, for us to conduct this supplemental inspection.

The objectives of this supplemental inspection were to provide assurance that: the root causes and the contributing causes for the risk significant issues were understood; the extent of condition and extent of cause of the issues were identified; and corrective actions were or will be sufficient to address and preclude repetition of the root and contributing causes.

The inspection also included an independent NRC review of the extent of condition and extent of cause for these issues and an assessment of whether any safety culture component caused or significantly contributed to the issues. The inspection consisted of examination of activities conducted under your license as they related to safety, compliance with the Commission's rules and regulations, and the conditions of your operating license. Additionally, the inspectors reviewed the apparent cause evaluation for the Severity Level III violation to provide assurance

that the cause was properly understood, extent of cause and extent of condition were identified and corrective actions were sufficient to minimize recurrence.

The inspection team determined that your corrective actions, as itemized in the root cause evaluation, were appropriate to resolve the deficiencies related to the Degraded Emergency Preparedness Cornerstone. The inspection team also concluded that your root cause, extent of condition, and extent of cause evaluations appropriately considered the safety culture components as described in Inspection Manual Chapter 0305, Operating Reactor Assessment Program. Additionally, the inspectors determined that your corrective actions are appropriate to resolve the deficiencies related to the Severity Level III violation. The inspectors made several observations associated with the cause evaluations, as discussed in the report details. However, the inspectors concluded that the weaknesses were not reflective of significant performance issues. The corrective actions completed, and those scheduled for completion, appear to be sufficient to prevent recurrence of these issues.

Based on the results of this inspection, the two White findings and one Severity Level III violation are closed. However, the two White findings can still be considered for agency actions in accordance with the Action Matrix until July 1, 2013. As a result, the NRC determined the performance at Columbia Generating Station to be in the Licensee Response Column of the Reactor Oversight Process Action Matrix as of May 14, 2013.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response will be made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).
Should you have any questions concerning this inspection, we will be pleased to discuss them with you.

Sincerely,

/RA/

Wayne Walker, Chief
Projects Branch A
Division of Reactor Projects

Docket: 50-397
License: NPF-21

Enclosure: Inspection Report 05000397/2013009
w/ Attachment: Supplemental Information

cc w/Enclosure:
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Publicly Avail	☑Yes ☐ No	Sensitive	☐Yes ☑ No	Sens. Type Initials	TB

RIV:RI:DRP/E	DRS:RI/PSB2	DRS:OE/OB	NSIR:DPR	RIV:RI:DRP/A
MABrown	PElkmann	COsterholtz	ESchrader	GSkaggs-Ryan
T-Walker	***E-Walker***	***E-Walker***	***E-Brown***	***E-Walker***
5/9/13	5/2/13	5/2/13	5/9/13	5/2/13
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U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket:	50-397
License:	NPF-21
Report:	05000397/2013009
Licensee:	Energy Northwest
Facility:	Columbia Generating Station
Location:	Richland, Washington
Dates:	March 18-22, 2013
Inspectors:	T. Brown, Senior Resident Inspector, Palo Verde P. Elkmann, Senior Emergency Preparedness Inspector, Region IV C. Osterholtz, Senior Operations Engineer, Region IV E. Schrader, Emergency Preparedness Specialist G. Skaggs-Ryan, Resident Inspector, Columbia Generating Station
Approved By:	W. Walker, Chief, Project Branch A Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000397/2013009; 03/18/2013-03/22/2013; Energy Northwest; Columbia Generating Station; Supplemental Inspection - Inspection Procedure 95002

This supplemental inspection was conducted by two senior reactor inspectors; one senior resident inspector; one emergency preparedness specialist; and one resident inspector. No findings were identified. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process."

Cornerstone: Emergency Preparedness

The inspection team performed this supplemental inspection in accordance with Inspection Procedure (IP) 95002, "Inspection for One Degraded Cornerstone or Any Three White Inputs in a Strategic Performance Area," to assess the licensee's evaluations associated with (1) failure to maintain a standard emergency action level scheme and (2) failure to maintain adequate methods for assessing the consequences of a radiological emergency condition. The findings associated with these issues were first documented in IR 05000397/2012502 (ML 12208A379) on July 26, 2012. The NRC provided the final significance determination of these issues to the licensee on October 24, 2012 (ML12298A489). The followup assessment letter, also dated October 24, 2012, transitioned Columbia Generating Station to the Degraded Cornerstone Column beginning June 27, 2012 and identified the intention to perform Inspection Procedure 95002 (ML12299A326).

The inspection team determined that the licensee performed an adequate evaluation of the issues. The inspection team also determined that the root cause evaluation for these issues appropriately evaluated the root and contributing causes, adequately addressed the extent of condition and cause, assessed safety culture, and established corrective actions for the risk significant performance issues. In addition to assessing the licensee's evaluations, the inspection team independently performed an extent of condition and extent of cause review of the two findings and a review of the site safety culture as it related to the root cause evaluations. The team concluded that the licensee's root cause evaluations and corrective actions, both completed and planned, were sufficient to address the causes and prevent recurrence. The team also concluded that the licensee's assessment of Columbia Generating Station safety culture accurately reflected the conditions at the site. As a result, the team concluded that the licensee appropriately addressed the two White findings, and in accordance with the guidance in IMC 0305, "Operating Reactor Assessment Program," each of the two White findings will be considered in assessing plant performance for a total of 5 quarters. The licensee's implementation of corrective actions will be reviewed during future inspections.

A. NRC-Identified and Self-Revealing Findings

None

B. Licensee-Identified Violations

None

REPORT DETAILS

4. OTHER ACTIVITIES

4OA4 Supplemental Inspection (95002)

.01 Inspection Scope

The inspection team performed this inspection in accordance with IP 95002, "Inspection for One Degraded Cornerstone or Any Three White Inputs in a Strategic Performance Area," because the licensee entered the Degraded Cornerstone column of the NRC Action Matrix in the second quarter of 2012 as a result of two NRC-white inspection findings in the Emergency Preparedness Cornerstone. These findings are summarized below:

- Failure to maintain a standard emergency action level scheme in September 2000 and November 2010 in accordance with the requirements of 10 CFR 50.47(b)(4). The licensee inappropriately calculated and changed Site Area Emergency and General Emergency radiation monitor threshold values on EAL (Emergency Action Levels) Table 3, "Effluent Monitor Classification Thresholds." These changes adversely affected the ability of the licensee to properly classify events involving a radiological release.

- Failure to maintain adequate methods for assessing the actual or potential consequences of a radiological emergency between April 2000 and December 2011 in accordance with the requirements of 10 CFR 50.47(b)(9). The licensee incorporated inaccurate gas calibration and Xenon equivalency factors into dose projection software, resulting in inaccurate offsite dose calculations involving radiological releases measured by the reactor building effluent radiation monitor.

The objectives of this supplemental inspection included the following:

- provide assurance that the root and contributing causes of risk-significant issues were understood

- provide assurance that the extent of condition and extent of cause of risk significant issues were identified and to independently assess the extent of condition of risk significant issues, both individually and collectively

- independently determine if safety culture components caused or significantly contributed to the risk significant issues

- provide assurance that the licensee's corrective actions for risk significant issues were, or will be, sufficient to address the root and contributing causes as well as preclude recurrence

The licensee staff informed the NRC staff on January 24, 2013, of their readiness, as of March 18, 2013, for this supplemental inspection. In preparation for the inspection, the

licensee performed a root cause evaluation (RCE) to identify weaknesses that existed in various processes and organizations that resulted in the White findings that led to a degraded Reactor Oversight Process cornerstone. As part of the RCEs the licensee also completed a safety culture self assessment report. The licensee provided the NRC inspection team with copies of their RCE and Nuclear Safety Culture Self Assessment on March 4, 2013, along with other supporting evaluations and documentation.

The inspection team reviewed the licensee's RCEs and other evaluations the licensee conducted in support of, or as a result of, the RCEs. The inspection team reviewed corrective actions that the licensee had taken, or planned to take, to address the identified causes. The inspection team also held discussions and conducted interviews with licensee personnel to determine if the root and contributing causes, and the contribution of safety culture components, were understood, as well as whether completed or planned corrective actions were adequate to address the causes and preclude recurrence. The inspection team independently assessed the extent of condition and extent of cause of the findings. In addition, the inspection team assessed whether any safety culture components caused or significantly contributed to the findings.

.02 Evaluation of Inspection Requirements

02.01 Problem Identification

a. Determine that the evaluation documented who identified the issue (i.e., licensee-identified, self-revealing, or NRC-identified) and under what conditions the issue was identified.

On July 15, 2011, as part of an Emergency Preparedness self-assessment, the licensee discovered an inappropriate change to an Emergency Action Level classification value in both the Emergency Operating Procedures and Emergency Plan Implementing Procedures. While evaluating this issue, the licensee determined that the configuration of the dose projection software was not properly maintained with the result that the software would not provide accurate dose projections when using Reactor Building Exhaust Vent Effluent Monitor readings as input data. The inspectors determined that the licensee's evaluation adequately documented who identified the issue and under what conditions the issue was identified.

b. Determine that the evaluation documented how long the issue existed and prior opportunities for identification.

The licensee's root cause evaluation documented that the issue began with the stack monitor upgrades in 1993. The evaluation provided a detailed timeline of the changes made to the detector calibration factors, EAL values, and dose projection input file modifications. The timeline identified missed opportunities for earlier identification of the issues. The inspectors determined that the licensee's evaluation was adequate with respect to identifying how long the issue existed and prior opportunities for identification.

c. Determine that the evaluation documented the plant-specific risk consequences, as applicable, and compliance concerns associated with the issues both individually and collectively.

The licensee's root cause evaluation concluded that the errors caused the radiological emergency response plan to be degraded relative to not fully meeting two risk-significant planning standards required by 10CFR50.47(b). The errors impacted the licensee's ability to properly classify events and recommend appropriate off-site protective measures solely based on Reactor Building Exhaust Vent effluent monitor data. The licensee's evaluation provided detailed data comparing actual EAL and dose projection results with what the correct values should have been. The inspectors concluded that the licensee appropriately documented the risk consequences and compliance concerns associated with the issue.

d. Findings and Observations

No findings were identified.

02.02 Root Cause, Extent of Condition, and Extent of Cause Evaluation

a. Determine that the problem was evaluated using a systematic methodology to identify the root and contributing causes.

The licensee prepared a root cause analysis to evaluate causes for inappropriate changes to emergency action levels and inappropriate changes to dose assessment software that resulted in inaccurate dose projections. The licensee's analysis included: event descriptions, a timeline of related events and decisions, a summary of root and contributing causes, a discussion of internal and external operating experience, a discussion of quality assurance oversight activities related to the issues, an extent of condition analysis and resulting actions, an extent of cause analysis and resulting actions, and a safety culture assessment. The licensee identified a direct cause (DC), two root causes (RC) and three contributing causes (CC),

- (DC) An incorrectly calculated Quick Emergency Dose Projection System (QEDPS) Gain Factor for [process radiation monitor] PRM-RE-1C, derived from an incorrect Xe133 Equivalency Response value, resulted in an erroneous modification to the General Emergency classification value in Procedure PPM 5.4.1, "Radioactivity Release Control" Table 26, and PPM 13.1.1, "Classifying the Emergency." Table 3.

- (RC1) The overall process for controlling the configuration of equipment, calculations, and other inputs and outputs critical to emergency action level parameters and dose projection model software is inadequate;

- (RC2) A lack of sufficient management oversight/support of the emergency preparedness program fostered an environment where organizational and individual did not consistently demonstrate an understanding of the significance and potential for nuclear safety consequences;

- (CC1) Station personnel failed to follow established processes and procedures with respect to the identification of problems and the implementation of changes related to stack monitor and EAL modifications;

- (CC2) The Operating Experience program was less than adequate in evaluating industry and regulatory concerns related to equipment configuration changes that impacted the emergency plan; and,

- (CC3) The station does not always recognize the importance of Emergency Plan changes as part of configuration control for processes, procedures, and equipment changes.

The inspection team concluded the licensee performed a wide-ranging and thorough analysis of the issues, using standard data analysis methods to identify root and contributing causes of the events. The licensee performed a causal factor analysis, a barrier analysis, and prepared a comprehensive comparative event time line, as documented in the Root Cause Evaluation, Attachments 2 through 4.

The inspection team noted the licensee's analysis did not justify inclusion of Root Cause 2. Specifically, the licensee's analysis did not identify any causal factors, missed or broken barriers, or timeline events in which different management oversight or support actions or activities could have prevented the inappropriate action or altered the length or significance of the condition(s). The inspectors determined that Root Cause 2 was added after formal cause analyses were complete based on management's determination that numerous performance deficiencies documented on the comparative event timeline may not have occurred had personnel behaviors been properly monitored and reinforced. The inspectors concluded that although the licensee's analysis did not justify adding Root Cause 2 to the analysis, this did not negatively affect the licensee's corrective actions to prevent recurrence of the performance deficiencies.

In addition, the inspection team noted that the licensee failed to identify two causes that contributed to the inappropriate changes to emergency action levels and dose assessment software. The team identified that weaknesses in procedures for calibrating process radiation monitors and weaknesses in recognizing actions that decreased the effectiveness of emergency plans and procedures both contributed to Root Cause 1. The comparative event timeline identified events associated with the calibration of the stack effluent radiation monitor, such as an incorrect check source configuration during the April 2000 calibration of the high range stack monitor. The inspectors determined that weaknesses in calibrating process radiation monitors were an initiator in the chain of events and therefore contributed to the inadequate processes for controlling the configuration of equipment, calculations, and other emergency preparedness parameters (RC1). The inspectors concluded the failure to identify these issues as contributing to Root Cause 1 did not negatively affect corrective actions to prevent recurrence of the performance deficiencies because acceptable corrective actions were identified during the licensee's extent of condition review.

Corrective actions to prevent recurrence (CAPR) 1.2, 1.7, and 1.8 addressed weaknesses in identifying activities that decreased the effectiveness of the emergency

plan. The inspectors determined that these corrective actions were not directly associated with Root Cause 1 because they were not related to the process for controlling equipment and calculation configurations. However, the comparative event timeline identified instances of required assessments that were not performed (e.g. April 2002 and September 2010) or assessments that were deficient. The inspectors concluded that weaknesses in identifying activities that decreased the effectiveness of the emergency plan contributed to Root Cause 1 because they missed opportunities to identify configuration control problems before they were implemented. The inspectors also concluded the failure to identify these issues as contributing to Root Cause 1 did not negatively affect corrective actions to prevent recurrence because acceptable corrective actions were identified.

b. Determine that the root cause evaluation was conducted to a level of detail commensurate with the significance of the problem.

The licensee's evaluation included: event descriptions, a timeline of related events and decisions, a summary of root and contributing causes, a discussion of internal and external Operating Experience, a discussion of Quality Assurance oversight activities related to the issues, an extent of condition analysis and resulting actions, an extent of cause analysis and resulting actions, and a safety culture assessment. The licensee identified a direct cause, two root causes, three contributing causes, two interim corrective actions, three prerequisite corrective actions, thirteen corrective actions to prevent recurrence, three contributing cause corrective actions, eight extent of condition actions, and twenty extent of cause actions.

The inspectors concluded the licensee's root cause evaluation was adequately performed, and included a level of detail commensurate with the identified performance deficiencies. The inspectors concluded the identified causes, corrective actions, and actions taken to identify the extent of problems provided evidence of a process that was methodical, in-depth, and thorough. The level of detail was reflected in the extensive event timeline and the evaluation attachments.

c. Determine that the root cause evaluation included a consideration of prior occurrences of the problem and knowledge of prior operating experience.

The licensee's evaluation included a discussion of nine operating experience reports and two Quality Assurance audits that were relevant to the identified issues.

The inspectors concluded that the root cause evaluation included a thorough review of prior and precursor problems, and properly evaluated internal and industry operating experience.

d. Determine that the root cause evaluation addresses the extent of condition and the extent of cause of the problem.

The licensee's evaluation included an evaluation of the extent of condition, which consisted of determining whether the conditions could exist in other plant equipment, processes or human performance. In this case, the extent of condition review examined whether other inaccurate EAL values existed in other documents, whether the QEDPS/EDPS software was incorrectly configured for other inputs used for dose assessment purposes, and whether other software applications were not subject to appropriate software quality assurance controls. The licensee's evaluation also included an evaluation of the extent of cause for each root cause to determine other departments or activities with processes that could be vulnerable to the root causes identified in the evaluation. For Root Cause 1, the licensee identified Radiation Protection, Environmental Services, Engineering, Quality Services, Fire Protection, and Security as potentially vulnerable to the same cause. For Root Cause 2, the licensee identified Security, Fire Protection, and Environmental Services as potentially vulnerable departments.

Based on a review of the evaluation and discussions with licensee management and staff personnel, the inspectors concluded that the licensee's evaluation addressed the extent of condition and the extent of cause of the problem through a disciplined process. Additional discussion is provided in Section 02.04.

e. Findings

No findings were identified.

02.03 Corrective Actions

a. Determine that appropriate corrective actions are specified for each root and contributing cause or that the licensee has an adequate evaluation for why no corrective actions are necessary.

The licensee's evaluation identified a direct cause, two root causes, three contributing causes, two interim corrective actions, three prerequisite corrective actions, thirteen corrective actions to prevent recurrence, three contributing cause corrective actions, eight extent of condition actions, and twenty extent of cause actions.

The inspectors concluded that appropriate corrective actions were developed for the identified and root causes of the identified performance deficiencies.

The licensee credited actions taken for other corrective action program issues as resolving problems in using the site corrective action program identified in the root cause evaluation, and in ensuring that all operating experience was thoroughly evaluated (Contributing Cause 2). However, the analysis did not list specific corrective actions for which credit was being taken or the causal factors with which these corrective actions were associated. Additional information was required to establish the effectiveness of these actions in correcting the issues identified in the root cause

evaluation. The inspectors concluded the failure to specifically identify these corrective actions associated with Root Cause 1 did not negatively affect corrective actions to prevent recurrence because acceptable corrective actions were being implemented.

The inspectors determined that implementation of the Excellence Model and Excellence Plan was integral to resolving Root Cause 2; however, completion of the Excellence Plan was not being tracked as a corrective action to prevent recurrence. Additional information was required to establish the scope and effectiveness of these actions in correcting Root Cause 2. The inspectors concluded the failure to specify and track program implementation did not negatively affect corrective actions to prevent recurrence because implementation was being tracked by other condition reports, although they were not listed in the root cause evaluation.

The root cause evaluation discussed several immediate actions taken from July through September 2011 to inform the Operations and Regulatory Affairs departments about issues being discovered. The inspectors concluded these were interim corrective actions although they were not specifically labeled in the analysis.

The inspectors concluded that corrective actions to prevent recurrence for Contributing Cause 3 duplicated corrective actions to prevent recurrence for Root Cause 1, and could have been eliminated.

b. Determine that the corrective actions have been prioritized with consideration of risk significance and regulatory compliance.

The licensee documented nineteen corrective actions as completed as of March 18, 2013, along with all extent of cause and extent of condition actions. The remaining corrective actions were scheduled to be completed by April 30, 2013.

The inspectors concluded the licensee had appropriately prioritized and scheduled corrective actions for the identified root and contributing causes.

c. Determine that a schedule has been established for implementing and completing the corrective actions.

As discussed in Section 02.03.b, the licensee documented nineteen corrective actions as completed as of March 18, 2013, along with all extent of cause and extent of condition actions. The remaining corrective actions were scheduled to be completed by April 30, 2013.

The inspectors concluded that an appropriate schedule had been established for implementing and completing the corrective actions.

d. Determine that quantitative or qualitative measures of success have been developed for determining the effectiveness of the corrective actions to prevent recurrence.

The licensee has scheduled eight effectiveness reviews to ensure that problems identified in the root cause evaluation would be corrected. The licensee documented

that two effectiveness reviews were completed as of March 18, 2013. The remaining six reviews are scheduled to be completed by July 24, 2014.

The inspectors concluded the licensee had developed evaluation criteria for each corrective action to prevent recurrence, had appropriately scheduled post-implementation effectiveness reviews, and was tracking completion of the reviews. The inspectors concluded this was appropriate given the implementation schedule and the complexity of some corrective actions.

e. Determine that the corrective actions planned or taken adequately address a Notice of Violation (NOV) that was the basis for the supplemental inspection, if applicable.

The NRC issued two Notices of Violation to the licensee for inappropriate changes to Emergency Action Level Table 3 and for the failure to maintain adequate methods for assessing the actual or potential consequences of a radiological emergency because of erroneous parameters in the dose assessment model (ML12208A379). The first violation included two examples in which the licensee inappropriately calculated Site Area Emergency (SAE) and General Emergency (GE) radiation monitor threshold values on EAL Table 3, "Effluent Monitor Classification Thresholds." The second violation included two deficiencies that degraded the licensee's ability to accurately assess the offsite dose consequences of a radiological release. During this inspection, the inspectors confirmed that the licensee's root cause evaluation and corrective actions addressed the Notices of Violation. The licensee restored full compliance by correcting the dose projection model Gas Calibration and Xe-133 Equivalent Response Factors used in the Quick Emergency Dose Projection System on December 17, 2011 and by correcting the errors on EAL Table 3 in Procedure 13.1.1A, "Classifying the Emergency, Technical Bases," Revision 24, dated January 5, 2012.

f. Findings

No findings were identified.

02.04 Independent Assessment of Extent of Condition and Extent of Cause

a. Inspection Scope

The inspectors conducted an independent extent of condition and extent of cause review of the Root Cause Evaluation as well as contributing causes associated with the two White findings. The two White findings resulted from Columbia Generating Station's failure to maintain a standard emergency action level scheme in accordance with 10CFR 50.47(b)4 and failure to maintain adequate methods for assessing the consequences of a radiological emergency condition in accordance with 10 CFR50.47(b)9. The inspectors reviewed Root Cause 1 for extent of cause/extent of condition, specifically focusing on inaccurate EAL values existing in EPIPs, EOPs, and other documents. The methods for assessing the consequences of an accidental release of radiological material were being maintained through QEDPS/EDPS software configuration control and other processes where the lack of a formal basis document could contribute to a similar event.

In addition, the inspectors reviewed Root Cause 2 for extent of cause, as it relates to other station departments and programs.

In conducting this review, the inspectors interviewed station management and personnel, reviewed program and process documentation, reviewed station program monitoring and improvement efforts, and reviewed corrective action documents.

b. Assessment

The inspectors' independent assessment of the extent of condition / extent of cause did not identify any additional significant issues that the licensee had not already identified, addressed with planned or completed actions, or that would have negatively impacted the licensee's root cause evaluation conclusions and corrective action plan.

Interviews were conducted with station management and other licensee personnel to assess the: effectiveness of documented actions taken, understanding of their implementation, as well as the logic and justifications used for documented extent of cause/extent of condition actions. The interviews demonstrated an awareness of actions taken. However, a strong understanding of how the actions had been implemented appeared to be lacking in some cases. For example, several staff members working on Root Cause 1 indicated during interviews that they were unaware that the stack monitor in question was actually scheduled to be replaced in June 2014. Some station personnel questioned on how equipment important to emergency preparedness (EP) would be recognized and evaluated for functionality or reportability were not able to describe how the process was accomplished. Some personnel questioned on the training provided related to actions taken for recognizing and evaluating equipment important to EP for functionality or reportability were not able to recall how, or if, the training was completed for their specific group.

The inspectors identified two minor performance deficiencies associated with the corrective action program (CAP). The first deficiency occurred after the licensee identified an incorrect gas calibration factor in a calibration procedure and entered the discrepancy in the CAP. The CAP closed the action without correcting the number in the calibration procedure. The second deficiency occurred when the licensee failed to update the FSAR after an incorrect gas calibration value was identified in 2009. The licensee entered these issues into the CAP.

The inspectors made another observation related to an issue identified by the licensee during the extent of condition review. Specifically, the licensee identified that a 1994 calculation, developed to estimate containment radiation monitor indications during accident conditions, provided different values than a 1982 calculation that was used as input into the dose projection models and EALs. The licensee initially screened the issue as insignificant and initiated a long-term action to evaluate whether the newer calculation should be utilized. The inspectors initially had some concern with how the issue was evaluated and dispositioned in the CAP. After further review, the inspectors determined that no violation of regulatory requirements existed pertaining to the use of the 1994 calculation as input into the dose assessment model. Currently, there is no

requirement to use the new information, considering the original calculation was still technically adequate.

However, the inspectors did note a potential weakness in the initial disposition of this issue. One of the root causes for the white findings was related to an environment where significance and potential for nuclear safety consequences was not clearly understood. The initial determination that this issue was insignificant and little emphasis was placed on the need to expedite an assessment, it did not appear that a high priority was placed on determining if the newer calculation should be used, especially if it would provide more accurate containment radiation monitor indications and therefore more accurate dose assessment results. In this case, the licensee decided to incorporate the newer 1994 calculation, with a 6-8 week completion time. Therefore, the team concluded that any technical issues should be resolved in a timely manner, but recognized that this course of action occurred after the team questioned the initial disposition of the issue.

Inspectors also noted two potential vulnerabilities associated with the licensee's emergency preparedness program. First, an Area Radiation Monitor emergency action level (EAL) meter threshold, described as greater than 10,000 mr/hr, which was the upper limit of the meter's indication. Second, the inspectors reviewed an extent of cause action that reviewed modifications completed over the last five years that affected EP and found three that had the potential to impact EP. Of the three, two did not receive a 10 CFR 50.54(q) screening, although subsequent screenings determined neither of the two modifications had a negative impact on EP. The inspectors did not identify any performance deficiencies associated with these vulnerabilities.

Additionally, the inspectors noted that the extent of cause review did not consider other potentially vulnerable departments. For example, the extent of cause review for RC1 identified several plant organizations that may be susceptible, such as Radiation Protection, Environmental Services, Engineering, Quality Services, Fire Protection, and Security. Additionally, the extent of cause for RC2 identified Security, Fire Protection, and Environmental Services as potentially susceptible. The inspectors noted that other site organizations, especially Operations, should have been included in the extent of cause review.

The inspectors discussed their observations with licensee management and the licensee entered the observations into the CAP as AR00281107 and AR00281876. Overall, the inspectors concluded that the licensee conducted an adequate RCE with respect to extent of condition and extent of cause.

c. Findings.

No findings were identified.

02.05 Safety Culture Consideration

a. Inspection Scope

The inspection team conducted a focused inspection to independently determine that the licensee's RCE appropriately considered whether any safety culture component caused or significantly contributed to any risk significant performance issues. The inspectors reviewed action requests, training requests, performance indicators, and procedures as part of the assessment. The inspectors also reviewed the site wide safety culture survey performed by the licensee in April 2012, and interviewed licensee personnel associated with safety culture and evaluated initiatives identified by the safety culture survey for improvement. The inspectors performed these activities to determine if the licensee properly considered whether any safety culture component caused or contributed to the findings and to assess the validity of the safety culture components identified in the licensee's RCE.

b. Assessment

The April 2012 safety culture survey concluded overall that Columbia Generating Station has a safety culture that supports all the principles for a strong nuclear safety culture, has a healthy respect for nuclear safety, and assures that nuclear safety is not compromised by production priorities. The inspectors concurred with this conclusion based on the review of the safety culture survey results.

The safety culture survey also identified areas for improvement in staff feedback communication, placing a higher value on staff inputs, reducing turnover rates, and increasing employee awareness of performance indicators. These areas were addressed using the Excellence Model Program that had been established in June 2011. The inspectors considered that the implementation of the Excellence Model Program was providing a successful means of addressing and improving Columbia Generating Station's overall safety conscious work environment based on a noted reduction in divisional and site clock resets, as well as a reduction in industrial safety incidents and OSHA reportable events. During interviews, staff personnel indicated that the Excellence Model Program was specifically designed to reach all levels of plant staff in ensuring that a questioning attitude was maintained through the use of peer observations and the implementation of thorough pre-job briefs. The inspectors reviewed the checklist used for the performance of pre-job briefs, and concluded that it was an effective tool for ensuring the proper and safe performance of assigned plant tasks.

The inspectors concluded that the licensee's RCE, including the extent of condition and extent of cause evaluations, appropriately considered the safety culture components as described in MC 0305, Operating Reactor Assessment Program. The inspection team also concluded that, although performance deficiencies described in the RCE occurred prior to the implementation of the Excellence Model Program, the licensee has currently established appropriate corrective actions to address the identified safety culture issues.

c. Findings

No findings were identified.

02.06 Evaluation of IMC 0305 Criteria for Treatment of Old Design Issues

The licensee did not request credit for self identification of an old design issue. Therefore, the subject risk significant issues were not evaluated against the IMC 0305 criteria for treatment of an old design issue.

40A5 Other Activities

(Closed) Notice of Violation (NOV) 05000397/2012502-03, "Failure to Report a Loss of Emergency Capability"

a. Inspection Scope

As documented in Inspection Report 05000397/2012502, the NRC also identified a Severity Level III NOV for the failure of the licensee to notify the NRC of a major loss of emergency assessment capability identified on October 18, 2011, as required by 10 CFR 50.72(b)(3)(xiii). The licensee failed to identify that the deficiencies described above adversely affected the licensee's ability to project offsite dose during a radiological event and therefore constituted a major loss of assessment capability. In response to this violation, the licensee completed an apparent cause evaluation, documented in AR264998, to determine the cause and identify corrective actions to minimize recurrence.

Inspectors evaluated the analysis to provide assurance that the cause was properly understood, extent of cause and extent of condition were identified and corrective actions were sufficient to minimize recurrence. The inspectors discussed the corrective actions with operations, licensing, and emergency preparedness personnel. The topics discussed included adequacy of the corrective actions to restore compliance and the thoroughness of root cause evaluations including the subsequent reviews by the corrective action review board.

Overall, the inspectors determined that the analysis was of sufficient depth to identify the cause of the issue and the corrective action plan in place was sufficient to minimize recurrence. The inspectors did note that the scope of the corrective actions related to additional training were limited to licensing personnel and did not consider that operations and emergency preparedness personnel have a role in the reportability review and implementation process. However, the inspectors concluded that actions had been taken outside of the apparent cause evaluation to inform these personnel of the revised reporting guidance. The licensee entered this observation into the corrective action program to evaluate additional actions.

b. Findings

No findings were identified.

40A6 Management Meetings

Exit Meeting Summary

The inspectors presented the inspection results to Mr. G. Hettel, Vice President Operations, Columbia Generating Station, and other members of licensee management on April 24, 2013. The licensee acknowledged the information presented. The inspector verified that information received from the licensee was not proprietary or that all proprietary information had been returned. The licensee did not identify any proprietary information.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

B. Adami, Manager, Technical Services
V. Bhardwaj, Systems Engineer Manager, Engineering
A. Black, General Manager, Operations
D. Brown, Planning, Scheduling and Outage Manager
S. Brown, Manager, Operations
Z. Dunham, Supervisor, Licensing
E. Dumlao, System Engineer
R. Garcia, Licensing Engineer
D. Gregoire, Manager, Regulatory Affairs
M. Hedges, Principal Engineer, Licensing
W. Hettel, Vice President, Operations
A. Javorik, Vice President, Engineering
C. King, Assistant Plant General Manager
B. MacKissock, Plant General Manager
B. Sawatzke, Chief Nuclear Officer
R. Schuetz, Manager, Maintenance
C. Sonoda, Licensing Engineer, Regulatory Affairs

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Opened and Closed

None

Closed

05000397/2012502-01	NOV	Failure to Maintain Accurate EAL Thresholds
05000397/2012502-02	NOV	Failure to Maintain Accurate Methods for Dose Assessment
05000397/2012502-03	NOV	Failure to Report a Loss of Emergency Capability

LIST OF DOCUMENTS REVIEWED

CONDITION REPORTS

AR00002747 AR00244838 AR00194139 AR00227572 AR00202259 AR00246173
AR00230696 AR00021560 AR00278185 AR00202259 AR00246173 AR00248448
AR00183656 AR00228282 AR00231459 AR00278742 AR00278190 AR00277086
AR00278189 AR00278192 AR00278185 AR00244578 AR00278190 AR00277086
AR00278189 AR00278192 AR00278185 AR00264998 AR00280884 AR00280997
AR00280734 AR00280973 AR00280913 AR00280848 AR00281001 AR00280949
AR00280955 AR00280972 AR00281005 AR00281061 AR00281089 AR00281099
AR00281107 AR00281876 AR00282260

ROOT/APPARENT/COMMON CAUSE EVALUATIONS

AR00244578, Root Cause Evaluation, "Inappropriate Emergency Action Level (EAL) Modification," R4, February 11, 2013

WORK ORDERS

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Work Order 00004114 22: CSP-PRMRE-X302 Rx Bldg EFF Monitor High Range – RC Rev 002. Date 04/27/2000

Work Order 01186150 01: CSP- PRMRE-X301 Rx Bldg EFF Monitor Intermediate Range – RC Rev 007. Date 02/21/2012

Work Order 02006659 02: Stack Monitor Low Range Detector – RC Rev 011. Date 01/13/2012

Work Order 02006660 01: PPM 16.3.1 WEA Low Range Noble Gas Monitor –CC/RC Rev 007. Date 01/12/2012

Work Order 02005225 01: ISP-WEA/PRM-X301 CC/RC WEA Intermed Range Noble Gas Monitor Rev 001. Date 10/12/2011

Work Order 02005216 01: CC/RC Standby Service Water System Effluence Monitor ChA – Rev 10. Date 12/19/2011

Work Order 02029309 01: CC/RC – Standby Service Water System Effluence Monitor ChB – Rev 12. Date 02/28/2013

Work Order 0108059404: Energy Northwest Human Performance Expo 2013 Kickoff

PROCEDURES

SWP-CSW-01, Software Quality Assurance Program Description, R6-3, March 9, 2011

SWP-CSW-02, Software Quality Assurance Program Implementation, R9, December 18, 2009

SWP-CSW-11, Software Quality Assurance and Configuration Control of Non-SSC Software, R4, March 17, 2011

SWP-CAP-03, Operation Experience Program, R3, February 13, 2004

SWP-CAP-03, Operation Experience Program, R4, July 27, 2006

SWP-CAP-03, Operation Experience Program, R8-1 February 17, 2011

SWP-LIC-02, Licensing Basis Impact Determinations, R11, December 19, 2011

EPI-16, Emergency Plan Change Processing, R11, October 12, 2011

EPI-33, EAL Source References, R0, December 16, 2011

DES-2-19, Instrument Master Sheets, R0, February 24, 2011

DES-4-1, Preparation, Verification and Approval of Calculations, R10, R14, October 9, 2012

EES-4, Setpoint Methodology, R6, June 19, 2007

MAN-QEDPS-01, User's Manual, Quick Emergency Dose Projection System, R1, March 7, 2012

PPM 13.1.1, Classifying the Emergency, R40, January 5, 2012

PPM 13.1.1A, Classifying the Emergency – Technical Bases, R24, January 5, 2012

EPI-34, Configuration Control of Dose Assessment Software, R0, December 15, 2011

EPI-33, EAL Source References, R0, December 16, 2011

EPI-16, Emergency Plan Change Processing, R11, October 12, 2011

ISP-TEA/PRM-X301, TEA Intermediate Range Noble Gas Monitor, R4, February 27, 2012

ISP-WEA/PRM-X301, WEA Intermediate Range Noble Gas Monitor, R2, June 19, 2012

CI-11.6, Reactor Building Exhaust System Outage, R0, May 13, 2012

CSP-INST-M201, Chemistry Monthly Source and Channel Checks, R17, January 5, 2012

CSP-STACK-M201, Stack Monitor Monthly Source and Channel Checks, R11, January 5, 2012

CSP-PRMRE-X301, Reactor Building Effluent Monitor Intermediate Range, R7, February 16, 2012

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GEK-45808B, Operation and Maintenance Instructions – Process Radiation Monitor 368X103AAG1 & G2, December 1979

CMS 2.1.8, Engineering Guidelines for Work Planning, Documentation, and Closure, R5

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EPIP 13.14.11, EP Equipment (equipment important to EP)

STANDARD-01, Worker Error Prevention Tools, R9

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GBP-HR-18, Performance Improvement, R0

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CDM-01, Cause Determination Manual, R9

CDM-02, Root Cause Report Manual, R1

MISCELLANEOUS

HP001855, Radioactive Source User Training

Qualification Directory, Section 3.3, I&C Maintenance, R30

IC000120, Lesson Plan, General Electric Radiation Monitoring, R4, September 5, 2009

IC000174, Lesson Plan, Victoreen Radiation Monitoring, May 31, 1993

IC000220, Lesson Plan, Stack Monitoring System, R2, January 12, 2000

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IC000608, Lesson Plan, General Electric Radiation Monitoring Continuing Training, R0, October 5, 2009

List, Radiation Monitors, Backlog Work Orders, February 25, 2013

Audit AU-OP/TS-11, Operations, Technical Specifications and License Program, August 18, 2011

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Lesson Plan LD000009, LBID Refresher Training, R2, September 9, 2001

Calculation ENSD-TAA-82-02, R0

Calculation NE-02-94-57, R2, 9-29-94, Containment Monitor EAL

Plant Tracking Log 130256, March 21, 1996

Plant Tracking Log 168824, May 22, 2000

Plant Tracking Log 187994, May 22, 2002

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Nuclear Safety Culture Monitoring Panel Minutes and Report, 1Q, 2012

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Columbia Generating Station Excellence Model Handbook implemented June 2011

Pre-job Brief Checklist 26320, R13

CCER No. C93-0864, PRM-RE-1B and PRM-RE-1C, R4