



Adam C. Heflin  
President, Chief Executive Officer and Chief Nuclear Officer

July 29, 2014

WM 14-0017

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D. C. 20555-0001

Reference: Letter dated July 1, 2014, from M. L. Dapas, USNRC, to A. C. Heflin, WCNOC

Subject: Docket No. 50-482: Reply to a Notice of Violation; EA-14-024

Gentlemen:

In accordance with 10 CFR 2.201, Attachment I provides Wolf Creek Nuclear Operating Corporation's (WCNOC) reply to Notice of Violation (NOV) EA-14-024 as contained in the Reference (Inspection Report 05000482/2014503).

Attachment II identifies actions committed to by WCNOC in response to NOV EA-14-024.

If you have any questions concerning this matter, please contact me at (620) 364-4000, or Mr. Steven R. Koenig at (620) 364-4041.

Sincerely,

A handwritten signature in black ink, appearing to read "Ad C. Heflin".

Adam C. Heflin

ACH/rlt

Attachment I – Reply to Notice of Violation EA-14-024  
Attachment II – List of Commitments

cc: M. L. Dapas (NRC), w/a  
Senior Resident Inspector (NRC), w/a

IEO1  
NRR

## **Reply to Notice of Violation (NOV) EA-14-024**

### **Description of Violation Identified in NOV EA-14-024**

10 CFR 50.54(q)(2) requires, in part, that the holder of a nuclear power reactor operating license shall follow and maintain the effectiveness of an emergency plan which meets the standards of 50.47(b).

10 CFR 50.47(b)(9) requires, in part, that licensees have adequate methods for assessing and monitoring the actual or potential offsite consequences of a radiological emergency condition.

Contrary to the above, between February 2003 and November 8, 2013, Wolf Creek Generating Station failed to ensure the effectiveness of its emergency plan in that adequate methods for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition were not maintained. Specifically, two errors in the Electronic Dose Calculation Program would have resulted in calculating inaccurate offsite doses for the main vent stack effluent radiation monitor pathway when the effluent radiation monitor was in the accident modes, and for application of containment sprays following a loss of coolant accident.

### **Reason for the Violation**

Prior to February 2003, Electronic Dose Calculation Program (EDCP) had a functional filtration factor. Version 3.2 of EDCP released in February 2003 did not include a functional filtration factor. The loss of the functional filtration factor was not apparent during the verification and validation of the software change. Subsequent revisions to the EDCP did not include functionality testing of this feature. The only time this software function is used is during a monitored release through the Unit Vent with the radiological monitor in "accident mode." The first opportunity during an Emergency Plan (EP) drill / exercise to discover this nonfunctionality was November 13, 2012.

Immediately following the November 13, 2012, EP drill, the Dose Assessment Controller compared the dose assessment developed during the drill with the published dose assessment from the drill scenario package. It was determined the iodine to noble gas ratio used did not match that of the drill package and was a factor of ten higher. The Dose Assessment Controller suspected either the EDCP filtration factor was not working properly or that the dose assessment personnel had made an error. The Dose Assessment Controller was unable to reproduce the drill package dose assessment results even after applying the same iodine to noble gas ratio used in the scenario. Because the Dose Assessment Controller was uncertain where the problem existed, Condition Report (CR) 59832 was written suggesting the CR be assigned to Chemistry (the end user) with possible actions for Emergency Planning or Information Services (IS). (Emergency Planning owns the procedure and IS provides the software support. EDCP is co-owned by Chemistry and Emergency Planning).

The Corrective Action Program Screening Review Team (SRT) screened the CR as a Find Fix Action Needed (FFAN) and assigned it to IS. On January 10, 2013, IS closed the CR to Service Request (SR) 126710. Closing an FFAN CR to an SR is allowed by procedure AP 28A-100, "Condition Reports." The SR remained open and at 90 days an IS Analyst assigned to EDCP provided justification not to complete the SR within 90 days. This SR was placed on hold with permission of the IS supervisor as the analyst was working on what was considered by IS to be a higher priority task. After the initial 90 day tracking reminder, SRs are not automatically tracked.

Annually, Chemistry training provides training on EDCP and reviews errors and issues from the last year. Preparation for this training included a review of the past drill reports and associated CRs. In April 2013, the Lead Chemistry Instructor trained the Dose Assessment Technicians and Dose Assessment Coordinators that the EDCP filtration factor toggle switches were nonfunctional and would overestimate radioiodine levels. (SR 126710 remained open).

The IS Analyst assigned to EDCP completed work on another task and was planning to start work on SR 126710, but in late August 2013 separated from the company before starting the SR work. All of the analyst's open work associated with EDCP, including SR 126710, was reassigned to another IS Analyst.

On September 23, 2013, the new IS Analyst reviewed all the SRs and noted SR 126710 was assigned to his application. He wrote an e-mail to his supervisor asking for information on this SR and how he should proceed. The IS Analyst was asked to set up a turnover meeting on the SR. On September 26, 2013, the turnover meeting was held. The IS Analyst left the meeting with better understanding of the SR but there no change in work priority, and no additional action was taken.

At the EP Exercise critique in the Emergency Offsite Facility held November 5, 2013, the Dose Assessment Coordinator indicated he had experienced a problem with the EDCP filtration factor toggle buttons not working properly. He did not have to use the filtration factor generated EDCP calculation, because a bounding Protective Action Recommendation (PAR) had been made based on plant conditions at the time of the General Emergency declaration some 75 minutes earlier. CR 76084 was initiated by the Dose Assessment Coordinator. This CR was assigned by the Screening Review Team (SRT) to IS as an FFAN. IS closed CR 76084 to the same service request, SR 126710, on December 3, 2013.

In researching the filtration factor issue, the Superintendent Emergency Planning called upon the Dose Assessment Controller and an IS supervisor who determined the EDCP filtration factor to be nonfunctional on November 7, 2013. On February 25, 2014, EDCP version 4.9 was released. This version corrected the filtration factor issue.

The root cause was determined to be IS procedures and guidance do not require comprehensive verification and validation for risk significant software. EDCP, versions 3.2 through 4.8, did not have a comprehensive test plan that would have identified a nonfunctional filtration factor. IS procedures did not require full functional testing after revisions to the EDCP software.

### **Corrective Steps That Have Been Taken and Results Achieved**

1. Procedure AP 15D-007, "Computer Software Quality Program Requirements", was revised to add the definition for risk significant software and to require comprehensive verification and validation for all risk significant software that is purchased, developed or modified. Risk significant software is defined as, "Software or key software functions that meet all of the following: 1) Impacts the ability to comply with regulatory requirements/commitments, nuclear plant safety, and/or the health and safety of the public, 2) Has limited barriers which offset a failure to operate as expected, 3) Requires more comprehensive verification and validation exceeding the rigor applied to the assigned QA Graded Level." Revision 10 of the procedure was released June 30, 2014. (Corrective Action to Prevent Recurrence)

Results Achieved - Two CRs have been written for EDCP issues since the corrective actions to prevent recurrence were completed. The issue identified in CR 85948 was due to a fault in the software looping structure. The issue identified in CR 85949 was a procedure change that resulted in setting an isotope decay parameter outside the design parameter of the software. Both CRs are explained in more detail below.

CR 85948 was written due to isotope Pr-143 returning to its original value when reset to zero after the source term was re-zeroed. The cause was determined to be a fault in the software looping structure for variables on the zeroing function. Upon start EDCP loads isotope values from a file into a list of variables. That list of variables is then loaded to a list of display items on the EDCP source term screen. The application does this by starting at 1 and looping through to the end of the isotopes in the file. When the EDCP source term zero activity functionality was invoked it would change the isotope values to zero on the EDCP source term screen and in the variable list for isotope values by looping through the on screen items and the variable list items. The looping for the zero activity function started at 0 instead of 1 like the looping for the loading of the isotopes from external file. After the source term zero activity functionality was invoked and the source term screen closed and re-opened the last item on the screen was set to the last item in the variable list which did not get set to zero because the looping of the zeroing function did not reach the last variable list item because it started, and finished, at one count less than the count of the variable list items. The software will be modified and version 4.10 of EDCP will undergo a comprehensive verification and validation test. (CR action 80308-02-09, due date September 15, 2014)

CR 85949 was written as a result of a revision to form EPF 06-012-01, Revision 2, Spent Fuel Pool Source Term Calculations. The form reflects the continued decay of the isotopes in the spent fuel pool. I-131 decayed below the threshold parameters and was therefore set to a value of zero curies (hourly rate) on the form. Setting the value to zero caused a divide by zero error within EDCP. The cause was determined to be setting I-131 to zero is outside the design parameters of the software. Form EPF 06-012-01 has been revised to set I-131 to 4.50E-10 Ci. This value is sufficiently low as to not contribute to the calculated dose and is within the design parameters of the software. Form EPF 06-012-01, Revision 2A, was released July 22, 2014.

2. Procedure AI 15D-001, "Computer Software Management," was revised to increase the rigor required in service request resolution. Requirements for data owner communication, classifying, planning, developing, testing and documentation of each SR will ensure priority setting and owner involvement. Revision 19 of the procedure was released June 30, 2014. (Preventative Action)

Results Achieved - There is no data for results achieved due to the recent release of the procedure.

3. Procedure AP 17C-024, "Emergency Planning Responsibilities," was revised to increase the rigor of corrective action tracking by Emergency Planning. Condition reports initiated for a risk-significant planning standard deficiency, weakness, or area recommended for improvement will have the corrective actions reviewed and tracked to completion by Emergency Planning personnel. Revision 12 of the procedure was released June 19, 2014. (Preventative Action)

Results Achieved - There is no data for results achieved due to the recent release of the procedure.

4. Procedure AI 28A-010, "Screening Condition Reports," has been revised to include dose assessment errors and problems as Level 4 CRs that require a basic evaluation. Level 4 CRs are those with minor safety consequences and require an understanding of how the failure occurred. Revision 19 of the procedure was released June 2, 2014. (Preventative Action)

Results Achieved – There is no data for results achieved due to the recent release of the procedure.

5. Procedure AI 15D-002, "IS Support, Services, and Inventory Management," has been revised to ensure on-hold SRs reaching 90 days of age are evaluated for priority and that the requesting organization participates in determining the priority of their organization's SR. Service requests document and track software or hardware issues and provides notification for technical support. Revision 7 of the procedure was released June 30, 2014. (Preventative Action)

Results Achieved – There is no data for results achieved due to the recent release of the procedure.

6. An interim monitoring action is in place to review all risk significant software open computer software modifications and SRs to determine if the appropriate priority is assigned to significant issues.

Results Achieved – The action has a due date of August 15, 2014.

#### **Corrective Steps That Will Be Taken**

Version 4.10 of the EDCP will undergo a comprehensive verification and validation testing once the EDCP software has been modified. CR action 80308-02-09 has a due date September 15, 2014.

#### **Date When Full Compliance Will Be Achieved**

The two errors in the EDCP that resulted in calculating inaccurate offsite doses for the main vent stack effluent radiation monitor pathway when the effluent radiation monitor was in accident mode, and for the application of containment sprays following a loss of coolant accident were corrected February 25, 2014.

Full compliance will be achieved when version 4.10 of the EDCP has undergone a comprehensive verification and validation test and is released. This action has a due date of September 15, 2014.

#### LIST OF COMMITMENTS

The following table identifies a commitment made by Wolf Creek Nuclear Operating Corporation in this document. Any other statements in this letter are provided for information purposes and are not considered regulatory commitments. Please direct questions regarding this commitment to Mr. Michael Westman, Manager Regulatory Affairs at Wolf Creek Generating Station, (620) 364-4009.

<b>REGULATORY COMMITMENT</b>	<b>DUE DATE</b>
Perform a comprehensive verification and validation on version 4.10 of EDCP and then release version 4.10 of EDCP.	September 15, 2014