



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, IL 60532-4352

December 2, 2011

Mr. Barry Allen
Site Vice President
FirstEnergy Nuclear Operating Company
Davis-Besse Nuclear Power Station
5501 North State Route 2
Oak Harbor, OH 43449-9760

SUBJECT: ERRATA FOR DAVIS-BESSE NUCLEAR POWER STATION INTEGRATED
INSPECTION REPORT 05000346/2010-003

Dear Mr. Allen:

On July 23, 2010, the U. S. Nuclear Regulatory Commission (NRC) issued Integrated Inspection Report 05000346/2010-003 (ML102080019). Section 2RS2 was inadvertently omitted. This section documents the results of a 5-day onsite inspection ending April 23, 2010, which reviewed the licensee's as-low-as-is-reasonably-achievable (ALARA) program during the 16th refueling outage and aspects of the occupational exposure. Section 4OA6 is modified to include the exit meeting for this inspection. A documents reviewed list is included. No findings were identified.

We apologize for any inconvenience to you and your staff.

Sincerely,

/RA/

Jamnes L. Cameron, Chief
Branch 6
Division of Reactor Projects

Docket No. 50-346
License No. NPF-3

Enclosures: As Stated

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Letter to B. Allen from J. Cameron dated December 2, 2011.

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INSPECTION REPORT 05000346/2010-003

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REPORT DETAILS

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2RS2 Occupational As-Low-As-Is-Reasonably-Achievable (ALARA) Planning and Controls (71124.02)

This inspection constitutes a partial sample as defined in IP 71124.02-5.

Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed pertinent information regarding plant collective exposure history, current exposure trends, and ongoing or planned activities in order to assess current performance and exposure challenges. The inspectors reviewed the Davis Besse Nuclear Power Station (DBNPS) 3-year rolling average collective exposure.

The inspectors reviewed the site-specific trends in collective exposures (using NUREG-0713, "Occupational Radiation Exposure at Commercial Nuclear Power Reactors and Other Facilities," and plant historical data) and source term (average contact dose rate with reactor coolant piping) measurements (using Electric Power Research Institute (EPRI) TR-108737, "BWR Iron Control Monitoring Interim Report," issued December 1998).

The inspectors reviewed site-specific procedures associated with maintaining occupational exposures ALARA, which included a review of processes used to estimate and track exposures from specific work activities.

b. Findings

No findings of significance were identified.

Radiological Work Planning (02.02)

a. Inspection Scope

The inspectors selected several ongoing refuel outage (RFO-16) work activities of the highest exposure significance, each with actual or projected dose greater than 5 person-rem. The inspectors determined whether the licensee reasonably grouped the radiological work into work activities, based on historical precedence, industry norms, and/or special circumstances. The inspectors reviewed the ALARA work activity evaluations, total effective dose equivalent ALARA evaluations (i.e., respiratory protection evaluations), exposure estimates, and exposure mitigation requirements.

The inspectors determined whether the licensee's planning identified appropriate dose mitigation features; considered alternate mitigation features; and defined reasonable dose goals. The inspectors also determined whether the licensee's ALARA assessment had taken into account decreased worker efficiency from use of respiratory protective

devices and/or heat stress mitigation equipment (e.g., ice vests). Additionally, the inspectors determined whether the licensee's work planning considered the use of remote technologies (such as teledosimetry, remote visual monitoring, and robotics) as a means to reduce dose and the use of dose reduction insights from industry operating experience and plant-specific lessons learned. The inspectors evaluated the integration of ALARA requirements into work procedures and RWP documents for adequacy.

The inspectors compared the dose results achieved during the RFO-16 with the intended dose established in the licensee's ALARA planning for various work activities the accrued the greatest cumulative dose. The dose comparisons were made through approximately the six weeks of the extended scheduled refueling outage, and focused on work activities that accrued doses greater than 5 person-rem. The inspectors reviewed the person hour estimates provided by maintenance planning and other work groups with the actual expenditures to assess the adequacy of the estimates. The inspectors explored the reasons for any inconsistencies between intended and actual work activity doses to determine whether the licensee adequately planned and executed the work.

b. Findings

No findings of significance were identified.

Verification of Dose Estimates and Exposure Tracking Systems (02.03)

a. Inspection Scope

The inspectors selected several outage related ALARA work packages and reviewed the assumptions and basis (including dose rate and man-hour estimates) for the collective exposure estimates to determine if they were accurate and established without unjustified conservatism. The inspectors reviewed applicable procedures and discussed processes with the licensee's ALARA staff to determine the methodology for estimating exposures from specific work activities.

The inspectors assessed whether the licensee had established measures to track, trend, and if necessary to reduce, occupational doses for ongoing work activities. The inspectors evaluated whether trigger points or other appropriate criteria were established to prompt additional reviews and/or additional ALARA planning and controls.

The inspectors evaluated whether the licensee's method of adjusting exposure estimates, or re-planning work, when unexpected changes in scope or emergent work were encountered. The inspectors assessed whether adjustments to exposure estimates (intended dose) were based on sound radiation protection and ALARA principles and were not adjusted to account for failures to control the work. The inspectors assessed whether the frequency of these adjustments called into question the adequacy of the original ALARA planning.

b. Findings

No findings of significance were identified.

Radiation Worker Performance (02.05)

a. Inspection Scope

The inspectors observed radiation worker and radiation protection technician performance during work activities being performed in radiation areas, airborne radioactivity areas, and HRAs. The inspectors evaluated whether workers demonstrated the ALARA philosophy in practice (e.g., workers are familiar with the work activity scope and tools to be used, workers used ALARA low-dose waiting areas) and whether there were any procedure compliance issues (e.g., workers not complying with work activity controls). The inspectors observed radiation worker performance to assess whether the training and skill level was sufficient with respect to the radiological hazards and the work involved.

b. Findings

No findings of significance were identified.

Problem Identification and Resolution (02.06)

a. Inspection Scope

The inspectors reviewed corrective actions documents, self-assessments, and audit reports generated during the extended refueling outage since it began in February 2010, to assess whether problems associated with ALARA planning and controls were being identified by the licensee at an appropriate threshold and were properly addressed for resolution in the corrective action program.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA6 Management Meetings

.2 Interim Exit Meetings

Interim exits were conducted by Mr. Tony Go, NRC Inspector, for:

- The results of occupational ALARA planning and control program inspection with Mr. Barry Allen, Site Vice President, and other licensee staff on April 23, 2010.

The inspectors confirmed that none of the potential report input discussed was considered proprietary.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

D. Noble, Radiation Protection Manager
S. Trickett, Radiation Protection Superintendent
J. Scott, Radiation Protection Oversight Superintendent
J. Sturdavant, Regulatory Compliance

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened, Closed, and Discussed

None

LIST OF DOCUMENTS REVIEWED

The following is a list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspectors reviewed the documents in their entirety, but rather, that selected sections or portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

2RS2 Occupational ALARA Planning and Controls

RWP 2010-5405 All Task; Letdown Cooler Project; ALARA Work In Progress Review; dated April 21, 2010

RWP 2010-5602; ALARA Plan; Weld Overlays of North/South Core Flood Nozzles and All Support Activities; dated February 17, 2010

RWP 2010-5601; ALARA Plan; Alloy-600; Cutting to Access North and South Core Flood Nozzles; Install and Remove shielded Work Platforms; dated April 30, 2010

RWP 2010-5018; ALARA Plan; Reactor Canal Decontamination to Include ALARA Plan and associated TEDE ALARA Evaluations for RWP 10010886; Drywell Insulation Activities; Revision 1

RWP 2010-5600; ALARA Plan; ALARA Work In Progress; Weld Overlays of RCP Cold Leg (4) Suction and (4) Discharge Lines and all Support Activities such as Scaffolding, Insulation, Shielding, UT/PT, and Interference Removal; dated April 12, 2010

NOP-OP-417-12; ALARA Work In Progress Review; Revision No. 0

Alloy-600-1R16; Preliminary Estimate Summary: RCP/Drain Line Overlays; Core Flood Nozzle Overlays; and Common Support Activities; dated April 15, 2010

ALARA Work In Progress Reviews for RWP 1010-5600; Weld Overlay on Reactor Coolant Pumps; dated March 16, 2010

CR 10-72971; Alloy 600 Dose Delta; dated March 11, 2010

CR 10-74240; A Review of Alloy-600 Weld Overlays; dated March 25, 2010

RWP 2010-5104; ALARA Plan; Reactor Head Disassembly/Reassembly Work Activities; dated January 17, 2010

CR 10-73156; Elevated Dose Rates on Core Flood Shielded Work Platforms with the Incores Pulled; dated March 10, 2010

RWP 2010-5603; ALARA Plan; Concrete Cutting through Bio-shield to Access North and South Core Nozzles; dated January 6, 2010

RWP- 2010-5604; ALARA Plan; ALARA Work-In-Progress Review; March 14, 2010

NOP-OP-4005; ALARA Program; Revision No. 01

NOP-WM-7002; Operational ALARA Program; Revision No. 01

DB-HP-01801; ALARA Design Review; Revision No. 03

DBBP-RP-0018; Guidance for Work In Progress (WIP) ALARA Reviews; Revision No. 00

DB-HP-01802; Control of Shielding; Revision No.08

DB-HP-04027; Installed Shielding Inspection and Engineering Evaluation; Revision No. 04

RWP 2010-5302; ALARA Plan; Work In Progress Review; OT Steam Generator Platform Work; dated March 13, 2010

RWP 2010-5016; ALARA Plan; Work In Progress Review; Insulation Work Activities in the Containment; dated April 17, 2010