

UTILITY RADIOLOGICAL SAFETY BOARD
MEETING MINUTES
January 13, 2014

Mr. Michael Snee, Ohio Department of Health, called to order the January 13, 2014 meeting of the Utility Radiological Safety Board at 1:30 p.m. at the Ohio Emergency Management Agency.

The first order of business from the agenda was the roll call taken by Melissa Wulliger.

I. ROLL CALL (Board Members)

EMERGENCY MANAGEMENT AGENCY
DEPARTMENT OF HEALTH
ENVIRONMENTAL PROTECTION AGENCY
DEPARTMENT OF AGRICULTURE
PUBLIC UTILITIES COMMISSION
DEPARTMENT OF COMMERCE

MS. SIMA MERICK
MR. MICHAEL SNEE
MR. KEVIN CLOUSE
MR. CHUCK KIRCHNER
MR. DAN FISHER
MR. DEAN JAGGER

A quorum was declared.

Other Notable Attendees:

Ms. Hiliary Damaser, Governor's Office
Mr. Dwaine Warren, FEMA
Mr. Allan Barker, NRC
Mr. Rick Collings, First Energy
Director Darin Benyak, First Energy
Mr. Pete Hill, Ohio Emergency Management Agency

II. READING OF THE OCTOBER 7, 2013 MINUTES (ADOPTED)

The board dispensed with the reading of the October 7, 2013 meeting minutes. Mr. Snee, Ohio Department of Health, asked for additions, corrections or deletions to the minutes. There were none. Mr. Jaggar, Department of Commerce, made the motion to approve the minutes, and Mr. Fisher, Public Utilities Commission, seconded the motion. None opposed and the motion carried.

III. OLD BUSINESS

A. URSB Working Group Report

1. Mr. Pete Hill, Ohio Emergency Management Agency, reviewed the URSB Snapshot spreadsheet, which is a roll-up of the snapshots that are sent out to the URSB Statutory members monthly after the URSB Working group meetings.

2. Mr. Hill also updated the board regarding the RadResponder Pro. This is available at no cost to the State. It provides rapid and accurate data collection during radiological incidents via a centralized location. Each agency has examined the program. Permission to move forward with RadResponder Pro and incorporate use was requested. Mr. Snee solicited questions regarding the RadResponder Pro, and there were none. Permission

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was granted to move forward. Mr. Hill will track progress and provide updates. There will be a RadResponder Pro presentation at the next board meeting.

IV. NEW BUSINESS

A. URSB WG Quarterly Reports

The Ohio Emergency Management Agency, the Ohio Environmental Protection Agency, the Ohio Department of Health and the Ohio Department of Agriculture all provided quarterly reports. The following are the updates:

• **ODA**

1. Agriculture Brochure has been reviewed and updated by the IZRRAG agencies and was mailed to farmers, food processor and food distributors within a ten mile radius of the nuclear power plants on October 30, 2013. Copies were also sent to OSU Extension offices near each power plant. An electronic version of the Agriculture Brochure is available on the ODA and OEMA websites.
2. ODA is part of a working group updating the State Radiological Incident Plan.
3. ODA attended WEB/EOC training. There were over 71 attendees. Ms. Merick was impressed by the number of attendees.

Mr. Kirchner solicited questions, and there were none.

- **DEPARTMENT OF COMMERCE** – There were no updates to report at this time.

• **OEMA**

1. Opened with updates regarding the opportunities to participate in the Hostile Action Based exercise activities will arise as preparation for the fall of 2014 Perry Nuclear Power Plant exercise as it gets underway. Draft Extent of Play documents for the state and Columbiana County have been submitted to FEMA Region V for review. A meeting to finalize these documents will be held February 5, 2014 at the Columbiana County Emergency Management Agency.
2. November 5, 2013 Beaver Valley Power Station declared an Unusual Event. This was based on indications of fire and explosion being reported by the station fire brigade while investigating a fire alarm in the Unit 1 turbine building. The Radiological Analyst Supervisor and Executive Director reported to the State EOC to monitor the event. Due to confusion over new internal Department of Public Safety (DPS) notification protocols the notifications to ODH and OEPA were delayed. Ohio EMA staff members identified the source of the confusion and are currently in the process of resolving the issue.

- The Radiological Branch Chief attended the U.S. Nuclear Regulatory Commission's biennial conference for the State Liaison Officers from November 5-7, 2013. This conference is hosted to allow NRC personnel and the State Liaison Officers to meet and

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discuss radiological issues of interest to both parties. Mr. Snee solicited questions for Mr. Hill, and there were none.

- **EPA**

1. Attended RAT training at Groveport – report on VR 13-2, and the implications on our standard operation procedures that ICS and NIMS has. This latter will apply to power plant response in the future. A presentation on OEMA SharePoint and a presentation on a process improvement idea for sample selection and transmission to the FTC/FRMAC.

2. EPA has received a copy of RASCAL 4.3. Installation is pending migration to Win7. Mr. Snee solicited questions, and there were none.

- **ODH** Mr. Snee reported on the following issues:

1. No JIOPs for January 2014. One JIOP scheduled for Davis-Besse in February covering Radiological Hazard Assessment & Exposure Controls (71124.01)
2. Emergency Worker KI – No new information at this time. Still on target for delivery towards end of April 2014. Unable to order bags due to the fact that we have not been given Lot # and expiration for the new supply of pills
3. Turbo FRMAC training –ODH is looking to send two people
4. ODH Procedure Review – ODH is in the process of reviewing procedures and forms for the annual review
5. Dose Assessment – Installed MIDAS
6. ODH attended the NEPAC meeting in Akron on Jan. 23, 2014
7. ODH participated in the Tritium meeting at Lake County on Jan. 23, 2014
8. ODH participated in the Semi-annual FRMAC Conference call on Jan. 29, 2014 – Next call scheduled for July 30, 2014

No questions were asked after his report.

- **PUCO** has been participating in the URSBWG meetings. Nothing to report at this time.

B. Role of URSB and Relationship to the Working Group

In prior meetings, it was noted the Board wanted to be more engaged and less reactive with the work group. It was suggested that the Board needed to discuss its' roles and ways it could be more engaged with the working group.

Mr. Hill made a few comments:

1. ODH has taken the lead with the Joint Inspection Observation Program and all is going well with NRC. It is noted, that the state cannot report on any fact or finding that may be found during the inspection. It would be a positive if that relationship would become working instead of just a friendship.

Mr. Barker, NRC, added that JIOP is under regulatory guidelines according to the protocol agreement. There is value in the responsibility of timely and expert

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reporting. Following the protocol agreement should be collaborate if observer is not receiving any shared benefit. The downside is having disagreeing reporting opinions that would make the benefit ineffective. Mr. Snee adds that Ohio is grateful to have the opportunity to attend inspections. Mr. Barker stated that Ohio actually takes advantage of the inspection process unlike others. This fits why the URSB work group meets and the work group has mentioned before that they would like to share their reports. It was mentioned that it would be beneficial for the board to see a few of the reports.

2. Hostile Action Planning – Beaver Valley partial, Davis-Besse full

C. Nuclear Regulatory Commission

The Nuclear Regulatory Commission representative, Mr. Allan Barker, read from a document that he prepared.

1. **Davis-Besse Nuclear Power Station**

On November 1, 2013, the third quarter integrated inspection report for Davis-Besse was issued. Based on the results of this inspection, two NRC-identified findings and two self-revealed finds of very low safety significance were identified. He touched base on some of the findings, which are specifically identified in his document attached at the bottom of the January 13, 2014 Board-approved minutes.

On November 7, 2013, the NRC completed the supplemental inspection pursuant to Inspection Procedure (IP) 95001, "Supplemental Inspection for One or Two White Inputs in a Strategic Performance Area." The NRC has determined that completed or planned corrective actions were sufficient to address the performance that led to the finding, which are specifically identified in his document attached to the bottom of the January 13, 2014 Board-approved minutes.

After reviewing David-Besse's performance in addressing the greater than-green finding, the NRC concluded the Station's actions met the objective of IP 95001. As a result, the NRC determined the performance at David Besse will be in the Licensee Response Column of the Reactor Oversight Process Action Matrix as of the date of the supplemental inspection report and assessment follow-up letter.

2. **Perry Nuclear Power Plant:**

On November 14, 2013, the third quarter integrated inspection report for Perry was issued. There were two NRC-identified and two self-revealed findings of very low safety significance (Green) that were identified more specifically in his document which attached at the bottom of the January 13, 2014 Board-approved minutes.

On November 22, 2013, the NRC completed a Problem Identification and Resolution

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(PI&R) biennial inspection at Perry. The September 3, 2013, NRC Mid-Cycle Assessment Letter for Perry discussed that continued management attention and focus was needed to address lower level, less risk significant issues involving procedure use and adherence and procedure quality. To further evaluate these issues, this PI&R inspection specifically reviewed the licensee's corrective action for the extent of cause evaluations completed in response to the 2011, and 2012 White findings in the radiation protection area. Based on the inspection sample, the inspection team determined that Perry's implementation of the corrective action program supported nuclear safety. In reviewing the corrective action program, the team assessed how well Perry identified problems at a low threshold, the staff's implementation of the station's process for prioritizing and evaluating these problems, and the effectiveness of corrective action taken by the station to resolve these problems. In each of these areas, the team determined that Perry's performance was adequate to support nuclear safety. There were two NRC findings of very low safety significance identified during the inspection. The findings are more specifically identified in his document which is attached at the bottom of the January 13, 2014 Board-approved minutes.

3. Beaver Valley Power Station

On November 4, 2013, the third quarter integrated inspection report for Beaver Valley Units 1 and 2 was issued. Based on the results of this inspection, no NRC-identified finding or self-revealing finding was identified. Licensee Event Notification 49697: AUTOMATIC REACTOR TRIP DUE TO MAIN TRANSFORMER FAULT.

At 1659 EST hours on January 6, 2014, Beaver Valley Power Station Unit 1 automatically tripped from 100% power. The cause of the reactor trip was a main transformer differential trip. All rods fully inserted into the core and the plant is stable in Mode 3. All three auxiliary feed water pumps automatically started as expected. Normal and Emergency Busses are being powered by Offsite Power. The cause of the main transformer differential trip is being investigated. All other equipment functioned as expected. At 1757 EST hours the Emergency Operating Procedures were exited.

Decay heat is being removed via the turbine bypass valves to the condenser. No primary or secondary safety valves lifted. Unit 2 was unaffected. Licensee notified the State of Pennsylvania, Ohio and West Virginia and the counties of Beaver, Pennsylvania, Hancock, Ohio and Columbiana, Ohio.

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D. Federal Emergency Management Agency

Mr. Warren updated the board by announcing there were ten exercises scheduled. A lot of work has gone into preparing, planning, scheduling and tabletops. He is working with Mike and Pete closely on the programs. Davis- Besse is getting ahead on their HAB plan review. Perry has started theirs as well.

E. Utility Reports

Mr. Rick Collings of the First Energy Nuclear Operating Company introduced the new Director of First Energy Nuclear Operating Company, Mr. Darin Benyak, and then proceeded with the utility report on the following topics:

Beaver Valley Power Station:

1. Unit 1 reactor tripped automatically due to an unexpected problem with the Main Unit Transformer. The Main Transformer converts power made by the main Unit Generator to a higher voltage for the electric distribution system. Operations took the necessary steps to place the plant in a safe condition. Unit 1 is currently stable in mode 3 at Normal operating pressure and temperature. A mobile monitoring unit from FirstEnergy's Energy Delivery conducted preliminary analysis of the transformer and additional samples were tested at Beta lab. These tests indicated a fault occurred in the Main Unit Transformer. The Outage Control Center has been staffed and an Event Response Team is currently evaluating the path to restoring Unit 1 to operation. Analysis indicates the need to replace the Main Unit transformer. Preparations are being made to move Beaver Valley's site spare transformer into position to replace the existing Unit 1 Main Transformer.
2. Unit 2 is operating at 100% capacity. The Unit 2 refueling outage is scheduled to commence on Monday, April 14, 2014. The business plan duration is set for 31 days.
3. Radiological Dose is among the industry leaders in regards to maintaining workers exposure to radiation as low as reasonably achievable. Beaver Valley Unit 1 is in the top quartile in regards to Collective Radiation Exposure (CRE). CRE is a radiation exposure comparison to other nuclear plants compiled by the Institute for Nuclear Power Operations (INPO), and stations are measured on the length of the fuel cycle. Beaver Valley Unit 2, while currently in the third quartile, has twice set industry records for low annual exposure. With a focus towards continuing improvement, the site is currently implementing a number of initiatives to improve radiological safety. These initiatives include the installation of state of the art radiation monitoring, Independent Fuel Storage, and in 2017 the replacement of Beaver Valley Unit 2's reactor head and steam generators.

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Davis-Besse Nuclear Power Station:

1. 18 RFO status – Steam Generator Replacement project
 - Replacement of Reactor Coolant Pump 1-1 and 1-2 motors
 - Replacement of two Integrated head Assembly cooling fans
 - Replacement of the Electro Hydraulic Controls for the main turbine including modifying the simulator to reflect the new system
 - Main generator rewinding of stator and rotor and upgrading the rectifier and voltage regulation systems
 - Replacement of 1000 feet of service water piping
 - Replacement of 40 feet of feed water piping
 - Replacement of number 2 and 3 Turbine Plant Cooling Water heat exchangers
2. Renewal of DB Operations programs accreditation. The National Academy of Nuclear Training (NANT) Accreditation Board renewed the accreditation of Davis-Bessie's Operations training programs for an additional four years.
3. Site radiation exposure improvements – David-Besse moved from the fourth quartile in Collective Radiation Exposure (CRE) to the first quartile in December 2013. CRE is a radiation exposure comparison to other nuclear plants compiled by the Institute for Nuclear Power Operations (INPO), and stations are measured on a two year rolling average. All industry data is not in at this time however, analysis projects that Davie-Besse is likely to finish this year in the top decile for CRE.

Perry Nuclear Power Plant:

1. The Perry Plant successfully met the objectives of the 95002 Inspection, returning Perry to Column 1 of the NRC Reactor oversight process. This inspection validated an extensive improvement plan for the plant.
2. Station employees worked more than 2.8 million hours without a lost-time accident and had no FENOC OSHA recordable injuries. Safety (nuclear, radiological and industrial) is the single highest priority at First Energy. The stations have a continuously updated top 10 issues list that is aggressively pursued.
3. The Emergency Response organization's joint Information Center was moved from Lakeland Community College to more modern and spacious facilities at the Auburn Career Center. The facility was used for drills in late 2013 with positive feedback from both the Players and Controllers EMA has endorsed the move and will look at the facility in early 2014.

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4. The Institute of Nuclear Power Operations (INPO) recognized Perry for improved performance following Evaluation and Assessment (E&A) visit that resulted in an improvement in the plant's rating.
5. The Equipment Reliability Index has reached 92 – top quartile industry performance. This index is an industry standard to measure how reliable the station's equipment is and to allow industry best practices to be determined and shared. This has resulted in the plant's net generation to be just over 8.4 million megawatts in 2013 (an outage year). The outage focus was on equipment improvements that further improve reliability.

FENOC Fleet

1. The date MIDAS will be released to the state will be determined once all of the testing has been completed.
2. Central JIC – The final design was completed in 2013. Work to replace the roof is ongoing and expected to be completed in the first quarter of 2014. Budget reviews began in 2013 for all nuclear capital projects. These reviews may result in extending the completion of the Central JIC.
3. Davis-Besse and Perry ring down phone system replacement. The design has been completed including identification of equipment. The project is fully funded for 2014 with the expectation that it will be on line in the second half of the year. The existing system will be maintained. Both systems will run in parallel for a period of time to ensure the reliability at which time the older system will be retired.

Additional information from Mr. Rick Collings, First Energy Nuclear Operating Company, can be found in the attached document which is attached at the bottom of the January 13, 2014 Board-approved minutes.

V. MISCELLANEOUS

A. Questions

- No additional questions were presented to the board from the public
- The next meeting will be 4/16/14

VI. ADJOURNMENT

- A. Mr. Michael Snee, Ohio Department of Health, asked if there was a motion to adjourn the meeting. Mr. Clouse, Environmental Protection Agency, made a motion to adjourn and the motion was seconded by Mr. Kirchner, Department of Agriculture. The meeting was adjourned at 3:22 p.m.

Davis-Besse Nuclear Power Plant

On November 1, 2013, the third quarter integrated inspection report for Davis-Besse was issued. Based on the results of this inspection, two NRC-identified findings and two self-revealed findings of very low safety significance (Green) were identified. The findings are as follows:

- A self-revealed finding was identified for the licensee's failure to procure and install appropriate replacement parts for repair of the Reactor Coolant Pump (RCP) 1 2 motor during the 2010 refueling outage. Specifically, a degraded terminal strip in the motor's current transformer circuit was replaced with a new terminal strip that had substandard fasteners. The licensee's procurement process did not have any provisions in place to ensure the fasteners (screws) were of the appropriate quality for the application, and some of the screws ultimately failed due to vibration induced fatigue causing a reactor trip when the RCP tripped due to an electrical fault.
- A self-revealed finding was identified for the licensee's failure to fully evaluate a previously identified degraded condition on the first stage seal cavity vent line for RCP 1 2. Specifically, a known high vibration condition associated with this line had caused a pinhole leak on a socket weld on the line that was repaired in June of 2012. However, the licensee's root cause evaluation and subsequent repair efforts for that leak failed to adequately address other welds on that vent line that were also subjected to the same high vibration levels, such that following an unplanned reactor trip another small pressure boundary leak was discovered on a different socket weld on the same line on July 1, 2013.
- The inspectors identified a finding for the licensee's failure to perform an accurate and detailed shift turnover to ensure oncoming plant operators were aware of plant status. Specifically, cracks identified in two control power fuses associated with High Pressure Injection (HPI) Pump No. 2 were not communicated in the unit log or during shift turnover to the oncoming operations crew. As a result, the oncoming operating crew was unaware of the status of the cracked close control power fuses until after being questioned by the inspectors on the status of the fuses several hours into their shift. The HPI pump was subsequently declared inoperable to facilitate replacement of the control power fuses.
- The inspectors identified a finding involving the licensee's failure to ensure design features to protect the low and high voltage switchgear rooms, including the battery rooms, from the temperature and humidity effects of a high energy line break (HELB) in the turbine building. Specifically, the licensee relied on non-safety-related equipment that was not verified to function under a HELB scenario.

On November 7, 2013, the NRC completed the supplemental inspection pursuant to Inspection Procedure (IP) 95001, "Supplemental Inspection for One or Two White Inputs in a Strategic Performance Area." The NRC has determined that completed or planned corrective actions were sufficient to address the performance that led to the finding.

After reviewing Davis-Besse's performance in addressing the greater than-green finding, the NRC concluded the Station's actions met the objectives of IP 95001. As a result, the NRC determined the performance at Davis-Besse will be in the Licensee Response Column of the Reactor Oversight Process Action Matrix as of the date of the supplemental inspection report and assessment follow-up letter.

Perry Nuclear Power Plant

On November 14, 2013, the third quarter integrated inspection report for Perry was issued. There were two NRC-identified and two self-revealed findings of very low safety significance (Green) that were identified. The findings are as follows:

- The inspectors identified a finding for failure to ensure that an individual met the fire drill participation requirements for fire brigade members and fire brigade leaders. Specifically, certified fire brigade members and fire brigade leaders are required to participate in at least two drills per year and in one case the licensee failed to conduct proper drills.
- A finding was self-revealed through an electronic dosimeter alarm when, on August 6, 2013, a licensee worker inappropriately entered a high radiation area in the overhead of Auxiliary Building 574'. The inspectors concluded that the worker failed to comply with the requirements of his radiation work permit that prohibited work 6 feet above floor level until a radiological survey is performed and radiation protection verifies that the area met the requirements of the radiation work permit.
- The inspectors reviewed a self-revealed finding involving an unauthorized activity inside a radiological contaminated locked high radiation area. Specifically, on April 30, 2013, licensee contract personnel inappropriately placed a plastic container of goldfish inside the Turbine Building 620' auxiliary steam tunnel.
- The inspectors identified a finding of the licensee's failure to follow the "Fish and Invertebrates" sampling requirements specified in the Offsite Dose Calculation Manual. Additionally, the inspectors determined that the primary cause of this finding was related to the cross cutting aspect in the area of human performance in work practices. Specifically, the licensee did not effectively communicate expectations regarding procedural compliance and personnel following procedures.

On November 22, 2013, the NRC completed a Problem Identification and Resolution (PI&R) biennial inspection at Perry. The September 3, 2013, NRC Mid-Cycle Assessment Letter for Perry discussed that continued management attention and focus was needed to address lower level, less risk significant issues involving procedure use and adherence and procedure quality. To further evaluate these issues, this PI&R inspection specifically reviewed the licensee's corrective action for the extent of cause evaluations completed in response to the 2011, and 2012 White findings in the radiation protection area. Based on the inspection sample, the inspection team determined that Perry's implementation of the corrective action program supported nuclear safety. In reviewing the corrective action program, the team assessed how

well Perry identified problems at a low threshold, the staff's implementation of the station's process for prioritizing and evaluating these problems, and the effectiveness of corrective action taken by the station to resolve these problems. In each of these areas, the team determined that Perry's performance was adequate to support nuclear safety. There were two NRC-identified findings of very low safety significance (Green) identified during the inspection. The findings are as follows:

- The inspectors identified a finding for failure to comply with reactor pressure vessel pressure/temperature limits. Specifically, in 2011 the inspectors identified the pressure/temperature limits in Technical Specification 3.4.11 only contained values for reactor pressure vessel pressures greater than 0 pounds per square inch gauge. However, between June 2011 and July 2013, the licensee operated the plant with a vacuum in the reactor pressure vessel during 5 cold startups and 1 cool down. Specifically, complete, accurate, and up-to-date procedures were not available to operators to ensure operations within the requirements of Technical Specifications.
- The inspectors identified a finding for failure to promptly correct a non-conservative Technical Specification. Specifically, the inspectors identified on November 14, 2013, that the licensee failed to promptly correct the non-conservative Technical Specification 3.4.11 by not submitting a license amendment request in accordance with NRC Administrative Letter 98-10, which required submittal within 1 year or 1 operating cycle. The licensee had determined Technical Specification 3.4.11, "RCS Pressure and Temperature (P/T) Limits," to be non-conservative on October 16, 2009, and implemented administrative controls as allowed by the Administrative Letter. As of November 14, 2013, the licensee had not submitted the license amendment request, over 4 years and 2 operating cycles after determining the Technical Specification was non-conservative.

BEAVER VALLEY

On November 4, 2013, the third quarter integrated inspection report for Beaver Valley Units 1 and 2 was issued. Based on the results of this inspection, no NRC-identified finding or self-revealing finding was identified.

Licensee Event Notification 49697: AUTOMATIC REACTOR TRIP DUE TO MAIN TRANSFORMER FAULT

At 1659 EST hours on January 6, 2014, Beaver Valley Power Station Unit 1 automatically tripped from 100% power. The cause of the reactor trip was a main transformer differential trip. All rods fully inserted into the core and the plant is stable in Mode 3. All three auxiliary feed water pumps automatically started as expected. Normal and Emergency Busses are being powered by Offsite Power. The cause of the main transformer differential trip is being investigated. All other equipment functioned as expected. At 1757 EST hours the Emergency Operating Procedures were exited.

Decay heat is being removed via the turbine bypass valves to the condenser. No primary or secondary safety valves lifted. Unit 2 was unaffected.

Licensee notified the States of Pennsylvania, Ohio, and West Virginia and the Counties of Beaver, PA, Hancock, OH, and Columbiana, OH.

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1) Beaver Valley Power Station

a) Unit 1

At 4:59 p.m. on Monday, January 6th, the Unit 1 reactor tripped automatically due to an unexpected problem with the Main Unit Transformer. The Main Transformer converts power made by the Main Unit Generator to a higher voltage for the electric distribution system. Operations took the necessary steps to place the plant in a safe condition. Unit 1 is currently stable in Mode 3 at Normal operating pressure and temperature. A mobile monitoring unit from FirstEnergy's Energy Delivery conducted preliminary analysis of the transformer and additional samples were tested at Beta Lab. These tests indicated a fault occurred in the Main Unit Transformer. The Outage Control Center has been staffed and an Event Response Team is currently evaluating the path to restoring Unit 1 to operation. Analysis indicates the need to replace the Main Unit transformer. Preparations are being made to move Beaver Valley's site spare transformer into position to replace the existing Unit 1 Main Transformer.

b) Unit 2

Unit 2 is operating at 100% capacity. The Unit 2 refueling outage is scheduled to commence on Monday, April 14, 2014. The business plan duration is set for 31 days. Major work activities include:

- Core refueling activities
- Reactor Vessel Head Inspection
- Steam Generator Eddy Current and secondary side Sludge Lancing
- Two reactor coolant pump motor replacements
- Fuel Transfer System Inspection and Upgrades
- Containment Palfinger crane installation
- Control Rod Drive Mechanism fan motor replacement
- Power range detector replacement
- Feed water pump motor refurbishment
- Main Unit Generator inspection

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c) Radiological Dose

Beaver Valley Power Station is among the industry leaders in regards to maintaining workers exposure to radiation as low as reasonably achievable. Beaver Valley Unit 1 is in the top quartile in regards to Collective Radiation Exposure (CRE). CRE is a radiation exposure comparison to other nuclear plants compiled by the Institute for Nuclear Power Operations (INPO), and stations are measured on the length of the fuel cycle. Beaver Valley Unit 2, while currently in the third quartile, has twice set industry records for low annual exposure. With a focus towards continuing improvement, the site is currently implementing a number of initiatives to improve radiological safety. These initiatives include the installation of state of the art radiation monitoring, Independent Fuel Storage, and in 2017 the replacement of Beaver Valley Unit 2's reactor head and steam generators.

2) Davis-Besse Nuclear Power Station

a) 18 RFO status

Steam Generator Replacement project

- The second hot leg piping was delivered from B&W Canada in mid December 2013 resulting in all major SGRP components being staged on site.
- Craft are practicing their outage work activities on mockups and will continue right up until 18RFO begins. The mock up are for activities that are in high radiation areas and involve large components. Activities that are not frequently performed pose challenge. Practicing on mockups allow individuals to work out the safest methods prior to performing the work in a radiation field. Mockups also help to validate the outage schedule and key to the success of the outage.
- The primary contractor organization is on track with manual and non-manual staffing, ensuring adequate manpower to meet FENOC needs.
- An Integrated Containment Management Team is in place to facilitate effective move-in and move-out activities, including managing use of the cranes in Containment.
- Pre-outage activities are on track and, in a few cases, ahead of schedule.
- Cutting a hole in the security fence and laying the runway for the outside lift system originally scheduled for January was completed in December.
- Improvements in flow of personnel into the Protected area have been put in place. This limits the time necessary for personnel to enter and exit the area while maintaining the necessary level of security.

Other RFO projects:

- Replacement of Reactor Coolant Pump 1-1 and 1-2 motors
- Replacement of two Integrated Head Assembly cooling fans
- Replacement of the Electro Hydraulic Controls for the main turbine including modifying the simulator to reflect the new system

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- Main generator rewinding of stator and rotor and upgrading the rectifier and voltage regulation systems
- Replacement of ~ 1000 feet of Service Water piping
- Replacement of ~ 40 feet of feed water piping
- Replacement of number 2 and 3 Turbine Plant Cooling Water heat exchangers.

b) Renewal of DB Operations programs accreditation

The National Academy for Nuclear Training (NANT) Accreditation Board renewed the accreditation of Davis-Bessie's Operations training programs for an additional four years. Accreditation renewal of these programs was a 2013 Site Priority. The announcement came following a meeting the morning of December 19, 2013 in Atlanta, Ga., between representatives of the INPO Accreditation Board and a team representing Davis-Bessel. The Davis-Bessel team presented information about the site's training programs and responded to follow-up questions from the board during the meeting. Accreditation renewal is a key demonstration of both Davis-Bessel and Fennec's commitment to training to improve performance.

During a September visit, the NANT Accreditation Team conducted an extensive evaluation of Davis-Bessie's Operations training programs to verify the programs met industry standards. The programs reviewed included training for non-licensed Operators, Reactor Operators, Senior Reactor Operators, Shift Managers, Shift Engineers and Operator Requalification. The programs were presented to the Accreditation Board by the Site Vice President, the Site Operations Director, the Operations Manager, the site Training Manager, the Operations Training Superintendent, a Nuclear Unit Supervisor and the Fleet Training Manager.

c) Site radiation exposure improvements

Davis-Besse moved from the fourth quartile in Collective Radiation Exposure (CRE) to the first quartile in December 2013. CRE is a radiation exposure comparison to other nuclear plants compiled by the Institute for Nuclear Power Operations (INPO), and stations are measured on a two year rolling average. All industry data is not in at this time however; analysis projects that Davis-Besse is likely to finish this year in the top decile for CRE.

Different chemistry measures instituted, such as shutdown chemistry clean-up utilizing the Reactor Coolant Pumps during outages, and site source-term reduction efforts such as shielding to decrease exposure during work activities have caused the dose rates to come down. Davis-Besse's CRE performance fell into the fourth quartile during the four-month 16RFO in 2010, when extensive testing of the Reactor Head Control Rod Drive Mechanism (CRDM) nozzles led to modifications on 24 of the 69 nozzles due to Primary Water Stress Corrosion Cracking (PWSCC).

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After the modifications, extensive testing was performed to verify the Reactor Head's structural integrity and ability to operate safely and reliably until it was replaced during the 17th Mid-Cycle Outage in 2011.

3) Perry Nuclear Power Plant

- a) The Perry Plant successfully met the objectives of the 95002 Inspection, returning Perry to Column 1 of the NRC Reactor Oversight Process. This inspection validated an extensive improvement plan for the plant. The focus now is on Continuous Improvement via a Strategic Improvement Plan with cross-functional action plans and department improvement plans.
- b) Station employees worked more than 2.8 million hours without a lost-time accident and had no FENOC OSHA recordable injuries. Safety (nuclear, radiological and industrial) is the single highest priority at FirstEnergy. The stations have a continuously updated top 10 issues list that is aggressively pursued.
- c) The Emergency Response Organization's Joint Information Center was moved from Lakeland Community College to more modern and spacious facilities at the Auburn Career Center. The facility was used for drills in late 2013 with positive feedback from both the Players and Controllers. FEMA has endorsed the move and will look at the facility in early 2014.
- d) The Institute of Nuclear Power Operations (INPO) recognized Perry for improved performance following Evaluation and Assessment (E&A) visit that resulted in an improvement in the plant's rating.
- e) The Equipment Reliability Index has reached 92 - top quartile industry performance. This index is an industry standard to measure how reliable the station's equipment is and to allow industry best practices to be determined and shared. This has resulted in the plant's net generation to be just over 8.4 million megawatts in 2013 (an outage year). The outage focus was on equipment improvements that further improve reliability including:
 - Upgraded Main Turbine Low Pressure Rotors
 - Emergency Diesel Generator work, including the replacement of four pistons and cylinder liners on Div 1 and the replacement of all 20 heads on Div 3
 - Installed Low Power Hydrogen Water Chemistry
 - Replaced six source valves that were contributing to the higher radiation source term
 - Installed spare Startup Transformer

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4) FENOC Fleet

a) Date MIDAS will be released to the state

Testing of MIDAS has identified a number of issues with the Davis-Besse phase of the software. DB utilized a utility developed program (PCDose) that while functional did not have the same capabilities of MIDAS. Additionally, a number of other improvements were undertaken including updated source term values, core damage classification expansion, spent fuel pool dropped assembly, and a number of other minor improvements. These changes resulted in much more extensive testing for DB than was needed for Perry or Beaver Valley. Both of those stations dose assessment programs had similar capabilities to MIDAS. Currently,

b) Central JIC

The final design was completed in December 2013. Work to replace the roof is on going and expected to be completed in the 1st quarter of 2014. Budget reviews began in 2013 for all nuclear capital projects. These reviews may result in extending the completion of the Central JIC.

c) Davis-Besse and Perry ring down phone system replacement

The design has been completed including identification of equipment. The system will have two separate and redundant sets of equipment. The buildings housing the equipment will be ~ 20 miles apart and have their own backup power sources and UPS capabilities. The system will be a preprogrammed bridge system utilizing the public internet. In addition to the redundant equipment it will also utilize satellite phone technology as a method to join the bridge system. The project is fully funded for 2014 with the expectation that it will be on line in the second half of the year. The existing system will be maintained. Both systems will run in parallel for a period of time to ensure the reliability at which time the older system will be retired.