

**GROUP B**

**FOIA/PA NO: \_\_\_\_\_2012-0235\_\_\_\_\_**

**RECORDS BEING RELEASED IN THEIR ENTIRETY**

**Thomas Hipschman**

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**From:** Hipschman, Thomas *OCM/GBT*  
**Sent:** Sunday, June 26, 2011 3:25 AM  
**To:** Brenner, Eliot  
**Subject:** Fw: Fort Calhoun Aquaberm Punctured.

**Importance:** High

FYI

----- Original Message -----

**From:** Hipschman, Thomas *OCM/GBT*  
**To:** Batkin, Joshua; Jaczko, Gregory  
**Sent:** Sun Jun 26 03:24:09 2011  
**Subject:** Fort Calhoun Aquaberm Punctured.

A front end loader punctured a section of the aquaberm and water is now funneling onto the site. The maintenance building and auxiliary building will be impacted, but it should not affect safety-related equipment. The agency is in monitoring mode.

## Thomas Hipschman

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**From:** Robles, Jesse *NRR*  
**Sent:** Wednesday, February 15, 2012 9:08 AM  
**Subject:** New OpE COMM: Fort Calhoun - NOUE Declared Due To High River Levels And Alert Declared Due To Fire In Switchgear Room Issues - Site Placed Under IMC 0350 Oversight

This email is being sent to notify recipients of a new posting on the [@Operating Experience Community Forum](#).

Recipients are expected to review the posting for applicability to their areas of regulatory responsibility and consider appropriate actions. However, information contained in the posting is not tasking; therefore, no specific action or written response is required.

### Summary

On June 6, 2011, while shutdown for a refueling outage, elevated river levels prompted [Fort Calhoun](#) to declare a Notification of Unusual Event (NOUE). On June 7 while still in the NOUE, an Alert was declared due to evidence of a possible fire in a switchgear room. Due to the previous significant performance issues in addition to these events, Fort Calhoun Station was placed under IMC 0350 - "Oversight of Reactor Facilities in a Shutdown Condition Due to Significant Performance and/or Operational Concerns."

**Information Security Reminder: OpE COMMs contain preliminary information in the interest of timely internal communication of operating experience. OpE COMMs may be pre-decisional and may contain sensitive/proprietary information. They are not intended for distribution outside the agency**

The posting may be reviewed at: [Fort Calhoun - NOUE Declared Due To High River Levels And Alert Declared Due To Fire In Switchgear Room Issues - Site Placed Under IMC 0350 Oversight](#)

<http://nrr10.nrc.gov/forum/forumtopic.cfm?selectedForum=03&forumId=AllComm&topicId=3741>

This COMM is being posted to the following groups: ***All COMMs, ECCS, Electrical Power Systems, Emergency Diesel Generators, Emergency Preparedness, Fire Protection, Flood Protection & Missiles, Human Performance, Inspection Programs, Natural Phenomena, New Reactors, Physical Security, Safety Culture, Shutdown Risk, SIT/AIT, Station Service Water Systems & Ultimate Heat Sink***

To unsubscribe from this distribution list or to subscribe to a different list on the OpE Community, please visit: <http://nrr10.nrc.gov/rps/dyn/subscription1.cfm>

For more information on the Reactor OpE Program, please visit our [Reactor OpE Gateway](#).

Thank you for reviewing and using Operating Experience.

**Jesse E. Robles**  
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## Thomas Hipschman

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**From:** Thomas Hipschman OCM/635  
**Sent:** Saturday, June 25, 2011 11:42 AM  
**To:** Linda Howell; Kriss Kennedy  
**Cc:** Elmo Collins  
**Subject:** RE: Monitoring Missouri River Flooding

OK - thanks

Thomas Hipschman  
Policy Advisor for Reactors  
Office of Chairman Gregory B. Jaczko  
301-415-1832

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**From:** Howell, Linda RGN-TV  
**Sent:** Saturday, June 25, 2011 11:42 AM  
**To:** Hipschman, Thomas; Kennedy, Kriss  
**Cc:** Collins, Elmo  
**Subject:** FW: Monitoring Missouri River Flooding  
**Importance:** High

Tom, after reviewing my e-mail traffic, here's the starting point for our outreach to USACE. We had been monitoring the Missouri River levels while we were still providing additional oversight and reporting on the Mississippi River flooding throughout the month of May. We had several calls with the National Weather Service to verify predicted crests. On May 28, USACE issued its first press release noting their intention to increase release rates on 5 of the 6 dams in the Missouri River Mainstem Reservoir System. Shortly after that we initiated outreach to USACE through NWS.

USACE did not reach out to us in advance of modifying the reservoir management plan, we initiated the contact.

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**From:** Howell, Linda RGN-TV  
**Sent:** Tuesday, May 31, 2011 12:53 PM  
**To:** Virgilio, Martin; Wiggins, Jim; Moore, Scott; Marshall, Jane; Gott, William  
**Cc:** Collins, Elmo; Howell, Art; Kennedy, Kriss; Pruet, Troy; Vegel, Anton; Caniano, Roy; R4RCB  
**Subject:** Monitoring Missouri River Flooding

To all -

We wanted to let you know that we continue to monitor flooding impacts on NRC facilities along the Mississippi and Missouri rivers. For Grand Gulf, River Bend Station and Waterford, river levels are either decreasing or continuing to hold steady. The two plants currently of interest are Ft. Calhoun Station (FCS) and Cooper Nuclear Station (CNS).

The river level at CNS is forecast to crest on Wednesday, June 1, at approximately 896 feet. The licensee has entered its flooding procedure and is conducting enhanced monitoring of the river levels and traveling screens. The projected crest is three feet below the level (899 feet) where a NOUE would be declared.

FCS is experiencing minor flooding in parking lots and some low lying areas on site. FCS has entered its flooding procedure and they have been placing sandbags in areas specified in the procedure. Although the National Weather Service (NWS) projected that the river would crest at FCS on Thursday, this projection is not certain and may be impacted by actions taken by the US Army Core of Engineers (USACE) to control flooding and dams upstream of FCS.

Region IV is working with the NWS to establish a conference call between Region IV staff, NWS and USACE to discuss projected river levels and other river management activities currently under consideration. We will be coordinating with FEMA and the state(s) for information sharing. We expect to resume our river flooding and impact report this week with a specific focus on the plants located near the Missouri River.

Should you need information concerning FCS or CNS, or if the HOOs receive a "data call" from external organizations, please contact us so that we can assist in providing accurate information under changing conditions.

V/R,  
Linda Howell

Commissioner TA Brief Notes  
December 21, 2011  
Jeff Clark

Opening and Introductions:

- Ensure communications working (VTC and phone bridge)
- Introduce Region IV personnel

Overview:

- The purpose of this brief is to communicate information to the Commission regarding:
  - the pertinent background of Fort Calhoun Station (FCS), including a general description of the findings and issues that were included in our continuous assessment
  - the basis for the decision to transition oversight of the facility to Inspection Manual Chapter (IMC) 0350 guidance,
  - a discussion of the path forward and logistics for the MC 0350 Panel, including the major activities
  - and to allow for specific questions regarding the presented material

FCS Background:

- In the September 6, 2011 Mid-Cycle Assessment Letter to FCS, Region IV articulated the transition of the facility to Column IV of the NRC Action Matrix. This was based on a Yellow finding issued October 6, 2010, which was identified by the NRC for inadequate strategies to protect the plant from flooding events, and a White finding issued on July 18, 2011, which was identified by the NRC for the failure of electrical components used to automatically shutdown the reactor. The Yellow finding caused FCS to transition to the Degraded Cornerstone Column (or Column III) of the Action Matrix, effective in the second quarter of 2010. As the Yellow finding exceeded four calendar quarters, and the White finding was also in Mitigating Systems, the MC 0305 conditions were met to move FCS to the Multiple/Repetitive Degraded Cornerstone Column (or Column IV) of the NRC Action Matrix. Again, this action was taken through the September 6, Mid-Cycle Assessment Letter.
- On April 9, 2011, FCS initially shutdown for a scheduled refueling outage. This outage was extended due to the Missouri River flooding affecting the site from June through September of this year. During this extended shutdown, several other performance issues were identified, which are currently being inspected or processed, that will require additional NRC oversight. These issues include:

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- FCS had an electrical bus and breaker fire on June 7, 2011, that required an Alert declaration. Following the fire, the licensee and an NRC special inspection identified several problems with the breaker design, bus connections, and electrical separation of busses. While the SIT is still finishing their review, the initial risk characterization is a greater than Green issue, potentially in the range of a significant operational event. It appears final risk analyses will likely show the issue is greater than White. That finding would be associated with the Initiating Events Cornerstone.
- Following the June 7 Alert, state and local officials were not notified within 15 minutes. Additionally, during an emergency drill this summer, FCS withdrew a Protective Action Recommendation after it had been communicated to emergency responders. Withdrawing recommendations after they have been communicated could impede the effectiveness of the offsite organizations. Both of these issues are being evaluated as potentially greater than Green Emergency Preparedness findings.
- The licensee has one issued final White finding in Security, due to the improper control of Safeguards materials. Inspectors subsequently found other examples of improper Safeguards controls, and inadequate corrective actions for the initial issue. These additional issues are being evaluated as potentially greater than Green Security findings.
- Additionally, the licensee has identified a number of deficient or nonconforming conditions during the course of the extended shutdown, concurrent with the NRC identifying concerns with their actions for such conditions. These include the lack of supporting analyses for High Energy Line Break and Environmental Qualifications, improper piping supports, and implementation of vendor recommendations for equipment. Region IV has determined these issues warrant additional inspection.
- On September 2, 2011, Region IV issued a Confirmatory Action Letter (CAL) to FCS that addressed the issues related to plant recovery from the flooding, and a number of the other technical issues I just discussed.

Basis for Transition to MC0350:

Now, I would like to go into the basis for the decision that Region IV made, in consultation with NRR, to transition FCS to MC0350 oversight.

I believe you were provided a 2-page handout that NRR put together on the MC0350 process. I am going to address our basis and decision in reference to that handout.

You'll see that MC0350 establishes the criteria for the oversight of licensee performance for those licensees that are in a shutdown condition as a result of significant performance problems or operational event.

There are four entry conditions for MC0350. The first is that plant performance is in Column 4 or 5 of the NRC Action Matrix. This was met for FCS as they were in Column 4 of the Action Matrix. The second condition is the plant is shutdown or the licensee has committed to shut down the plant to address performance issues. This condition was met for FCS based upon the previously discussed performance issues. While the facility was initially shutdown for a refueling outage, and extended for the flooding conditions, it soon became apparent to Region IV that a number of other performance deficiencies were actually their main restraints from startup. The third condition is that a regulatory hold is in effect, such as a confirmatory action letter (CAL) or emergency order. FCS also met this condition as a CAL was issued on September 2, 2011 and remains in effect. The final entry condition is that an agency management decision is made to place the plant in the IMC 0350 process. Region IV management consulted with NRR, NSIR, and other offices regarding this decision. On December 5, Region IV briefed the acting Deputy-EDO (Jim Wiggins) and other senior management on the proposed decision to transition FCS to MC0350 oversight. Region IV finalized its decision and informed members of the executive team, and the Chairman on December 9, 2011. On December 13, 2011, a memo from our Regional Administrator was sent to the EDO, and a letter was sent to the VP and CNO of FCS, outlining this decision and transition.

#### Path Forward/Logistics of MC0350

The next aspect to brief you on is the path forward and logistics associated with MC0350 oversight for FCS. Troy Pruett has been designated as the Region IV executive responsible for MC0350 oversight of FCS. He will act as the Chairman for the Oversight Panel. The Panel will include representatives from Headquarters and Region IV. A Charter will be developed that outlines the Panel's specific duties and actions, including the development and implementation of a Panel Process Plan, Restart Checklist, Inspection Plan, and logistics for appropriate communications with stakeholders.

MC0350 oversight is terminated when several conditions are met. First, the licensee must satisfactorily complete all of the Restart Checklist. The Panel would then provide a written recommendation for restart of the facility to our Regional Administrator. The RA, in coordination with the Deputy-EDO and the Director of NRR, would make a determination for restart of the facility. Once the plant is operating again, the Panel will assess plant-specific criteria for exiting MC0350, and for reintegrating the facility back into an appropriate column of the NRC Action Matrix, and oversight via the ROP. It is recognized that a plant could remain in Column 3 or 4 of the Action Matrix for up to 2 years after exiting MC0350 oversight.



Questions/Answers:

In summary, Region IV has been monitoring FCS performance continuously. In the last few months, it has become apparent that FCS has some additional significant issues to deal with. I have covered these issues, or decision, and our future actions in a very short time compared to the actual considerations that got us here. So, if I can answer and questions, or elaborate on any details, I'll open up the briefing for those now.

# Fort Calhoun Station Oversight Summary

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Fort Calhoun Station initially shutdown in April 2011 for a scheduled outage. The shutdown was extended because of the summer 2011 flood and to address longstanding technical issues.

The licensee is currently in the Repetitive Degraded (Column IV) Column for the mitigating systems cornerstone (MS) for two significant findings.

- A Yellow (substantial safety significance) finding identified by the NRC in 2009 for inadequate strategies to protect the plant from flooding events
- A White (low to moderate safety significance) finding identified in 2010 for the failure of electrical components used to automatically shutdown the reactor

Several safety significant (greater than green) inputs into the ROP are pending. Specifically, a finding with at least Yellow safety significance is likely to be issued for the June 7, 2011 breaker fire. Additionally, it is highly likely that at least one more White input will be issued for inadequate control of safeguards. This will culminate in 3 degraded cornerstones (IE, MS, Security) with a potential for a 4<sup>th</sup> in EP.

The NRC issued a Confirmatory Action Letter (CAL 4-11-003 ML112490164) on September 2, 2011 to track the actions and confirmatory inspections required for restart.

The licensee is currently in the beginning stages of determining the breadth of activities needed to assess the extent of condition/cause for performance concerns. Fort Calhoun has primarily focused efforts on restoring plant systems affected by the flood and recovering electrical systems.

The NRC will need to modify the inspection programs at Fort Calhoun to address inability to complete baseline inspection requirements and invalid PI data due to the prolonged outage. IMC 0350 allows the NRC to implement inspections to address deficiencies to ensure adequate safety for plant operation. The best estimate (from NRC perspective) for restart is June 2012, assuming no additional major modifications or program changes.

Milestones for path forward:

- Modify CAL to address performance deficiencies
- Develop charter for 0350 Oversight Panel
- Determine inspection plan to address performance deficiencies
- Determine enforcement/assessment for current and additional deficiencies identified
- Transition from 0350 back into the Action Matrix(IMC 0305)

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# Communication Plan – Fort Calhoun Station Oversight

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## Goal

This document outlines the strategy the NRC staff will use to communicate oversight activities at Fort Calhoun Station to internal and external stakeholders. The key messages are for public distribution to reporters, external stakeholders, etc. The background section is mainly comprised of public information, but some of the info (which is portion marked) is not for public release (e.g. the security deficiencies).

## Key Messages (For more background, see background section)

- **Fort Calhoun Station (FCS) has additional NRC regulatory oversight as of December 13, 2011. This enhanced regulatory framework is the IMC 0350 process. The NRC has identified performance and technical issues that need to be resolved before they are allowed to restart.**
- Increased NRC oversight stems from meeting 4 prerequisites for IMC 0350:
  1. Two significant findings of NRC Regulations – resulting in a move to Column IV of the ROP Action Matrix on September 1, 2011; and a significant operational event.
    - A Yellow (substantial safety significance) finding identified by the NRC in 2009 for inadequate strategies to protect the plant from flooding events
    - A White (low to moderate safety significance) finding identified in 2010 for the failure of electrical components used to automatically shutdown the reactor
    - A significant operational event due to a fire in electrical breakers on June 7, 2011
  2. Missouri River floodwaters affected the site from May to September 2011, causing the refueling outage to be extended.
  3. A regulatory hold (Confirmatory Action Letter – CAL) was put in effect on September 2, 2011.
  4. NRC senior management (Region IV Regional Administrator and Director of the Office of Nuclear Reactor Regulation), made the decision to transition FCS to IMC 0350.
- Fort Calhoun Station initially shutdown for a scheduled outage in April 2011. The shutdown was extended because of the summer 2011 flood and to address longstanding technical issues. As a result, the NRC increased its regulatory oversight of FCS under

the Inspection Manual Chapter 0350 Process (Oversight of Reactor Facilities in a Shutdown Condition due to Significant Performance and/or Operational Concerns).

- A significant operational event involving a fire occurred on June 7, 2011, in an electrical switchgear that powered several key components. This performance issue is currently under a special NRC inspection.
- Fort Calhoun Station will be required to obtain NRC approval before the reactor is allowed to be restarted. Before providing this approval, the NRC will confirm that the actions described in Fort Calhoun's post-flood recovery plan and NRC inspections needed to address the technical and performance issues at the site have been completed. The NRC issued a Confirmatory Action Letter (CAL 4-11-003 ML112490164) on September 2, 2011. An IMC 0350 restart checklist will be developed to track the actions and confirmatory inspections required for restart.

## Background

### Yellow Flooding Finding (Publically Available Information)

In September 2009, an NRC Component Design Basis Inspection (CDBI) team identified that Fort Calhoun Station failed to ensure that its procedures and equipment were adequate to protect the plant from external events—specifically flooding. The licensee's Updated Safety Analysis Report (USAR), technical specifications, and station procedures stated that sandbag berms and flood gates would protect the raw water pumps from flooding at the maximum flood height. A follow-up inspection was performed from January 2010 to June 2010. Inspectors determined that the procedural guidance in the licensee's "Flood Control Preparedness for Sandbagging" procedure was inadequate because stacking and draping sandbags at a height of four feet over the top of floodgates would be insufficient to protect the auxiliary building and intake structure from floods. FCS corrected the inadequate flooding protection by installing more robust flood mitigation equipment. For more information on the Yellow finding, see Inspection Reports [IR 05000285/2010007 \(ML102800342\)](#) and [05000285/2010008 \(ML102800284\)](#).

### White Reactor Protection System Finding (Publically Available Information)

On June 14, 2010, Fort Calhoun Station performed a test on the Reactor Protection System (RPS). The RPS is one system used to shutdown—"trip" or "scram"—the reactor. Fort Calhoun Station does not use reactor trip circuit breakers in RPS, rather, it uses four electrical contactors, designated M1, M2, M3, and M4. During this test, one of these electrical contactors in RPS, M2, did not open as required. With the M2 contactor failed closed, the M1 contactor MUST open to successfully trip/scram the reactor. The failure of the M2 contactor significantly reduced the reliability and redundancy of the RPS:

The M2 contactor failed because a small piece of metal, known as a shading coil, became loose and lodged into the sides of the contactor, preventing it from opening. A shading coil is installed on each of the four RPS contactors to prevent excess vibration and extend the service life; it serves no direct safety function. Over time, these coils had become loose from their recess (resting place). Operators in the control room, noticing the increased noise from vibration of the

shading coil being loose, either ignored the condition or had personnel press the coil back into place. No more permanent corrective actions were taken until after the M2 contactor failure. Since this failure, FCS has replaced all four RPS contactors. For more information on this White finding, see Inspection Report [IR 05000285/2011007](#) (ML11260254).

**Potentially Significant Performance Issues (bold indicates preliminary, NON PUBLIC INFORMATION. DO NOT DISCLOSE).**

(Publically Available) Breaker Fire: On June 7, 2011, a fire started in a safety-related 480V electrical breaker with the designation 1B4A, in an electrical switchgear room at the plant. The faulted breaker was a replacement for an original (1970's vintage) General Electric breaker that was obsolete. The replacement Square D breakers were not an exact fit into the General Electric AK-5 switchgear, so a transition piece called a breaker cradle assembly was used. The breaker cradle assembly inserts into the switchgear cubicle first, followed by breaker insertion into the cradle assembly. The cradle assembly has finger clusters that engage the bus bar stabs at the back of the switchgear, and has stabs on the breaker side of the cradle assembly that accept the breaker finger clusters. The licensee replaced all six load center supply breakers with Square D breakers with cradle assemblies in 2009.

**(Non Public – OIU Information) Examinations of the affected breaker showed that the cradle-to-bus-stab connections for breaker 1B4A were vaporized or melted, indicating that the connections had excessive electrical resistance. Additionally, FCS found a breaker with abnormally high resistance on all three phases on the separate load center 1B3B. The cradle-finger engagement inappropriately extended beyond the silver plated contact surface of the bus stabs to copper surfaces. These copper surfaces had evidence of hardened grease and oxidation, which would increase contact resistance. After cleaning the bus stabs, the resistance readings were significantly reduced. The licensee has found high resistance readings on 8 of the 10 breakers that were not damaged in the event, although the remaining 2 breakers exceeded the manufacturer's recommended resistance.**

The following observations were identified by the NRC special inspection team during the initial phase of inspection:

- The event resulted in the loss of the spent fuel pool cooling function, and could have resulted in the loss of a safety function or multiple failures in systems used to mitigate an actual event had the event occurred at power.
- The event resulted in significant unexpected system interactions. Specifically, the faulted bus arced across open tie breaker BT-1B4A, causing a phase-to-phase fault on the island bus 1B3A-4A, nullifying train separation and eventual loss of power to the 1B3A bus. Also, the event affected both trains of direct current control power, used for breaker operation and protection, although the extent of the impact is not yet known.

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- The event involved questions or concerns pertaining to licensee operational performance, since an acrid odor was reported in the area of the fire 3 days prior to the fire, but the licensee did not identify the source or prevent the fire.

Although the NRC is still inspecting and gathering data about the June 7<sup>th</sup> breaker fire, this issue is considered a significant operational event and is potentially greater than green risk significance.

Security (bold indicates preliminary, NON PUBLIC INFORMATION. DO NOT DISCLOSE):

**(OUO)** On January 14, 2011, an NRC inspector discovered SGI material in an unsecured location during a security baseline inspection (IR 05000285/2011404 ML110810967). On May 24, 2011, additional SGI issues were discovered during follow-up inspection activities for the security issue that occurred in March. Three more concerns were identified as a result of a special inspection conducted September 26 through 30, 2011. While preliminary, these concerns may culminate in 1 or 2 potentially greater than green findings in the security cornerstone. One additional White input will result in a degraded security cornerstone.

(Public) HELB/EQ: In preparations for a now-delayed Extended Power Uprate (EPU – a method some plants use to produce more power from the same reactor), Fort Calhoun Station reviewed high energy line break (HELB) calculations. Industry experience with EPUs highlighted potential problems associated with HELB effects, and some utilities were required to make modifications as a result or to perform analyses to address these concerns. FCS found that it was lacking documentation and calculations for HELB effects. Currently, these HELB issues are being tracked with the CAL.

Emergency Preparedness (bold indicates preliminary, NON PUBLIC INFORMATION. DO NOT DISCLOSE):

**(OUO)** There are two potential greater-than-green violations for emergency preparedness:

1. On June 7, 2011, a fire occurred in electrical equipment at the plant. As a result, the licensee declared an emergency (ALERT). Following the declaration of the ALERT on June 7, 2011, state and local officials were not contacted within the required 15 minutes.
2. During an emergency drill FCS withdrew a Protective Action Recommendation after it had been communicated to emergency responders. Withdrawing recommendations after they have been communicated could impede the effectiveness of the offsite organizations.

### Regulatory Oversight Plan

Entry to Inspection Manual Chapter (IMC) 0350 (Public)

The Reactor Oversight Process (ROP) envisioned circumstances in which a facility might be in an extended shutdown with or without significant performance issues. To ensure an appropriate

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level of oversight for facilities in an extended shutdown, the ROP has an established process to transition plants to Inspection Manual Chapter (IMC) 0350, "Oversight of Reactor Facilities in a Shutdown Condition due to Significant Performance and/or Operational Concerns," provided certain criteria are met. The criteria for entry are discussed below.

As a result of the NRC's continuous assessment of Fort Calhoun Station's performance, the NRC made a change in the regulatory oversight of FCS. Effective December 13, 2011, oversight of FCS transitioned from Inspection Manual Chapter (IMC) 0305, "Operating Reactor Assessment Program," to IMC 0350, "Oversight of Reactor Facilities in a Shutdown Condition due to Significant Performance and/or Operational Concerns."

The IMC 0350 process for FCS is being implemented to: establish a regulatory oversight framework as a result of significant performance problems and a significant operational event, ensure the NRC communicates a unified and consistent position in a clear and predictable manner, establish a record of actions taken and technical issues resolved, verify corrective actions are sufficient for restart, and to provide assurance that following restart the plant will be operated in a manner that provides adequate protection of public health and safety.

Troy Pruett, the Region IV Deputy Director of the Division of Reactor Projects (DRP) has been assigned as the Chairman of the IMC 0350 Oversight Panel. This Oversight Panel, consisting of regional and headquarters personnel, is responsible for development and implementation of an oversight plan (panel process plan), restart checklist, inspection plan, and any necessary updates to Confirmatory Action Letter (CAL) 4-11-03 (ADAMS Accession No. ML 112490164). The Oversight Panel will develop and be responsible for the inspection program. The inspection program will use existing inspection guidance from the Reactor Oversight Process regulatory framework. A panel charter that provides the purpose, objectives, panel composition, and outcomes will be developed by January 2012.

Fort Calhoun initially shutdown for a scheduled refueling outage in April, 2011. The outage was extended due to the flooding along the Missouri River affecting the site from June through September 2011, and to address longstanding technical issues. During the shutdown, several performance issues were identified that will require additional NRC oversight. These issues involve the electrical fire and train separation, HELB/EQ analyses, security, and emergency preparedness issues (discussed above).

The criteria for IMC 0350 are:

1. Plant performance is in Column 4 or 5 of the Action Matrix, or a significant operational event has occurred as defined by MD 8.3, "NRC Incident Investigation Program"
  - **The facility transitioned to Column IV because the Mitigating Systems cornerstone was degraded for more than four consecutive quarters (Yellow flooding finding), with an additional input to the action matrix (White RPS finding).**
  - **Additionally, a significant operational event occurred on June 7, 2011, involving an electrical fire in safety related switchgear.**

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2. The plant is shutdown or the licensee has committed to shutdown the plant to address these performance issues (whether voluntary or via an NRC order to shutdown),
  - **After the plant shutdown for a scheduled refueling outage, several additional performance issues were identified (the risk significance of these issues have yet to be determined) that will require additional NRC oversight.**
    - **On June 7, 2011, the licensee declared an emergency (ALERT) for an electrical breaker fire that was caused by inadequate replacement breaker design or installation. The replacement breakers did not have adequate electrical bus engagement, leading to a high resistance condition that started the fire.**
    - **The licensee identified that analyses for high energy line breaks and environmental qualifications were incomplete.**
    - **The licensee declared an emergency (ALERT) for the electrical fire on June 7, 2011. However, the licensee failed to contact state and local officials within the required 15 minutes. Additionally, during an emergency drill the licensee withdrew a Protective Action Recommendation after it had been communicated to emergency responders. Withdrawing recommendations after they have been communicated could impede the effectiveness of the offsite organizations.**
3. A regulatory hold is in effect, such as a CAL or an NRC order
  - **The NRC issued Confirmatory Action Letter (CAL) 4-11-003 (ADAMS Accession No. ML 112490164) on September 2, 2011, to confirm the actions FCS plans to take in its submitted Post-Flooding Recovery Action Plan (ADAMS Accession No. ML 112430102) and identify those actions the NRC has determined are necessary for review or inspection prior to restart of the plant. Specifically, the CAL focused on six areas: site restoration, plant systems and equipment, equipment reliability, design and licensing basis, emergency planning, and security.**
4. An NRC management decision is made to place the plant in the IMC 0350 process
  - **There is no definitive date for restart of the plant.**
  - **Fort Calhoun Station communicated it is not ready for NRC inspection of either the Yellow or White findings described above, as of December 14, 2011.**
  - **Fort Calhoun Station is in the early stages of figuring out how widespread the issues are, and what caused them (extent of condition and extent of cause reviews). However, the licensee is in the early stages to form an independent team to assess the breadth of performance concerns at the facility.**

Restart Decision

The IMC 0350 oversight panel, in conjunction with the Regional Administrator and NRC Headquarters office(s) will determine when it is appropriate for Fort Calhoun to exit IMC 0350 and resume ROP baseline inspection. At minimum, FCS will satisfy all the NRC CAL items, complete the necessary portions of inspection procedure 95003, and the restart checklist.

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## Intended Audience and Stakeholders

External

Public

Omaha Public Power District

Government Agencies

Local Officials

Public interest groups (Sierra Club, Union of Concerned Scientists, etc.)

Nuclear industry

Media

Congress

Internal

Commission

Office of the Executive Director of Operations (OEDO)

Office of Nuclear Reactor Regulation (NRR)

Office of Nuclear Security and Incident Response (NSIR)

Office of Public Affairs (OPA)

Office of Congressional Affairs (OCA)

Advisory Committee on Reactor Safeguards (ACRS)

Region IV

Office of Enforcement (OE)

Office of the General Counsel (OGC)

Regions

Table 1 - Communication Team

Name	Telephone	Title
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Timothy Kobetz	301-415-1932	Chief, DIRS/Reactor Inspection Branch
Troy Pruett	817-200-1291	Dep. Director, RIV/ Division of Reactor Projects
Victor Dricks	817-200-1128	RIV Public Affairs Officer (PAO)
Michael Markley	301-415-5723	NRR External Communications Team

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## Questions/Answers

Q1: We keep seeing different dates reported in the media about when the plant will restart? When can we expect them to restart?

- The schedule for restart is, by nature, dynamic. The breadth of the performance problems are still being reviewed. During this discovery period, the plant will be subject to additional NRC oversight, with any new issues subject to inspection. The plant will not be allowed to restart until it has successfully completed the restart checklist, in addition to the items in the CAL. Overall, the facility will not be restarted until the NRC feels the plant can provide reasonable assurance of public health and safety.

Q2: Does the NRC's new regulatory oversight - recently described as IMC 0350 process - mean the plant is in column 5? What exactly does it mean?

- As a result of the extended outage and performance issues discussed above, the NRC is taking Fort Calhoun out of the regular inspection process and putting them into a new regulatory process we call Inspection Manual Chapter 0350. In this enhanced oversight process, the NRC will require Fort Calhoun to complete the CAL and do additional inspections required to provide reasonable assurance of safety. The NRC won't allow Fort Calhoun to restart until it has addressed all the technical and performance concerns. This process will be spelled out in the IMC 0350 Oversight Panel Charter and restart checklist. At a minimum, the restart checklist will include what is currently in the CAL plus additional inspections of technical issues that cover the breadth of performance issues at Fort Calhoun.
- Column 5 is for plants with unacceptable performance, and those plants are not normally permitted to operate because there is an unacceptable safety margin. The NRC will issue a regulatory order to modify, suspend, or revoke licensed activities for plants in Column 5. The plant performance of Fort Calhoun is continually reviewed by the NRC.
- The NRC inspection program is proactive: it is meant to make sure licensees identify and correct problems before they become a significant safety concern. The inspection program ramps up NRC inspections with declining plant performance.

Q3: Why isn't Fort Calhoun in Column 5 with all these performance problems?

- The NRC inspection program is proactive: it is meant to identify and correct problems before they become a significant safety concern. The IMC 0350 process will provide reasonable assurance of public health/safety prior to plant restart. Column 5 is meant for plants that are considered unsafe, and their license to operate the plant is modified, suspended, or even revoked. While it's true that Fort Calhoun has performance issues, the plant is still safe. The NRC is engaging FCS early to address the performance concerns.

Q4: How common is it for the NRC to use this process? What plants have been subjected to the NRC's IMC 0350 process?

- While it's fairly uncommon to use the IMC 0350 process, it has been invoked before.

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Plant	Shutdown	0350 Start	Restart	0350 End
Davis-Besse	Feb 2002	May 2002	Mar 2004	May 2005
DC Cook 1	Sep 1997	Apr 1998	Dec 2000	June 2001
DC Cook 2			July 2000	
Clinton	Sep 1996	Mar 1997	May 1999	Sep 1999
LaSalle 1	Sep 1996	Mar 1997	Aug 1998	May 1999
LaSalle 2			Apr 1999	
Zion 1	Feb 1997	Sep 1997	N/A	June 1998
Zion 2	Feb 1996			
Salem 1	May 1995	June 1995	Apr 1998	June 1997
Salem 2	June 1995		Sep 1997	
Millstone 1	Oct 1995	Aug 1996	N/A	N/A
Millstone 2	Feb 1996		May 1999	Sep 1999
Millstone 3	Mar 1996		June 1998	July 1998
Maine Yankee	Dec 1996	Mar 1997	N/A	Aug 1997
Indian Point 3	Mar 1993	July 1993	June 1995	Apr 1996
Crystal River	Sep 1996	Nov 1996	Feb 1998	Mar 1998
Cooper	May 1994	May 1994	Feb 1995	May 1995
South Texas 1	N/A	Apr 1993	N/A	Jan 1995
South Texas 2	Feb 1993	June 1993	May 1994	

Q5: Is it possible that this plant will be permanently shutdown – not allowed to restart- due to the variety of problems we've read about in NRC inspection reports and in press articles (breaker fire, flooding, and reactor protection system)?

- The plant will not be restarted until the NRC has reasonable assurance that the plant will be operated in a manner that will provide adequate protection of public health and safety.

Q6: Is the NRC concerned that the plant may have underlying structural or other problems associated with the standing water on site all those months during the flooding of the Missouri?

- Yes. Sections of the restart checklist specifically address structural, and various other effects, that may be present as a result of the extended floodwaters onsite. The NRC will not allow the plant to be restarted until any and problems associated with the floodwaters are resolved. In addition, the any technical and performance problems in either the CAL or restart checklist will be addressed and corrected prior to the restart.

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**Timeline (ALL DATES TENTATIVE – FINAL LOGISTICS TBD BY RIV)**

<b>Date</b>	<b>Communication Tasks</b>	<b>Responsible Organization</b>
December 5, 2011	Brief EDO/DEDO	RIV/Collins
December 9, 2011	Chairman VTC	RIV/Collins
December 12, 2011	Telephonic brief with DEDO/Chairman	RIV/Collins
December 13, 2011	Issue memo to EDO informing of transition to IMC 0350	RIV/Collins
<b>December 13, 2011</b>	<b>Inform FCS management *Critical Date CEO Gates notified via phone : Howell VP Bannister notified via phone: Pruett</b>	<b>RIV/Howell/Pruett</b>
December 13, 2011	Issue letter to FCS informing transition to IMC 0350	RIV/Clark
December 13, 2011	Contact Federal congressional members	OCA/Weil
December 13, 2011	Contact local officials	RIV Maier
December 13, 2011	Issue press release and blog after elected officials have been notified	RIV PAO
December 21, 2011	Brief Commission TAs	RIV/Clark
December ?, 2011	Brief Chairman of the Board of Directors OPPD	RIV/Collins
December ?, 2011	Panel notifies ACRS of IMC 0350 transition	Markley
January 19, 2012	OPPD/NRC Public Meeting	RIV/Pruett/Clark/Dricks
January 31, 21012	IMC 0350 Panel completes charter, action plan	Panel/Pruett

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February 22, 2012	Column IV Commission Meeting	RIV/NRR
February ?, 2012	Partial 95002 Inspection of Yellow Flooding Finding	RIV/DRP/DRS
March 5, 2012	Triennial Fire Protection Inspection	RIV/DRS
July 16, 2012 – September 4, 2012	NRC Component Design Basis Inspection	RIV/DRS

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OFFICE OF COMMISSIONER APOSTOLAKIS

ROUTING SLIP

ROUTINE

<b>SUBJECT:</b> Accident Sequence Precursor (ASP) Analysis Schedule for Fort Calhoun Station Event		
1	Belkys Sosa, EA	DATE: 4/3/12
2	Roger Davis, LA	DATE: 4/6
3	Steve Baggett, MA	DATE: 4/9
4	Nan Gilles	DATE: 4/3/12
5	Christiana Lui	DATE: 4/10/12
	Cmr Apostolakis	DATE:
	Kathleen Blake, AA	DATE:
6	Carmel Savoy, AA	DATE:
	NOTES: <del>Has, pls highlight for EA</del> Done	
	FILE:	

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

March 28, 2012

NOTE TO COMMISSIONERS' ASSISTANTS

OCM/GBJ

- cc Angela Coggins
- cc Anna Bradford
- \_\_\_ Laura Pearson
- \_\_\_ Lisa Clark
- x Tom Hipschman
- x Nathan Sanfilippo
- \_\_\_ Neha Dhir
- \_\_\_ Melody Fopma
- \_\_\_ Susan Loyd
- \_\_\_ Richard Barkley
- \_\_\_ Andy Imboden
- \_\_\_ Patti Pace
- \_\_\_ Herald Speiser
- \_\_\_ Catina Gibbs

OCM/KLS

- \_\_\_ Jeffry Sharkey
- \_\_\_ Darani Reddick
- x Patrick Castleman
- \_\_\_ Alan Frazier
- \_\_\_ Janet Lepre
- \_\_\_ Nicole Riddick

OCM/GEA

- \_\_\_ Belkys Sosa
- \_\_\_ Roger Davis
- x Nanette Gilles
- \_\_\_ Steve Baggett
- \_\_\_ Kathleen Blake
- \_\_\_ Carmel Savoy

OCM/WDM

- \_\_\_ Patrice Bubar
- x Bill Orders
- \_\_\_ Rebecca Tadesse
- \_\_\_ Margaret Bupp
- \_\_\_ Carrie Crawford
- \_\_\_

OCM/WCO

- \_\_\_ John Tappert
- \_\_\_ Ho Nieh
- x Michael Franovich
- \_\_\_ Andrea Kock
- \_\_\_ Kimberly Sexton
- \_\_\_ Linda Herr
- X Sunny Bozin

FROM: Nader L. Mamish   
Assistant for Operations, OEDO

SUBJECT: ACCIDENT SEQUENCE PRECURSOR (ASP) ANALYSIS SCHEDULE FOR FORT CALHOUN STATION EVENT

In Staff Requirements Memorandum M120222B, the Commission directed the staff to "inform the Commission whether the June 7, 2011, fire in a safety-related bus at Fort Calhoun Station is being reviewed under the Accident Sequence Precursor (ASP) Program, and if so, provide the schedule for completing the review." ASP Program staff in RES are conducting a preliminary review of the event. In keeping with program guidance described in Regulatory Issue Summary (RIS) 2006-24, "Revised Review and Transmittal Process for Accident Sequence Precursor Analyses," dated December 6, 2006 (<http://www.nrc.gov/reading-rm/doc-collections/gen-comm/reg-issues/2006/ri200624.pdf>), RES is coordinating with Region IV on their Significance Determination Process (SDP) analysis and awaiting their final results. Additionally, the RIS describes opportunities for efficiencies that could lead to the SDP results being accepted as the official ASP result, which would lead to an early completion of the ASP process.

An estimated schedule for the SDP analysis and the subsequent associated ASP analysis, if needed, is provided in Table 1. The draft ASP schedule conservatively assumes that none of the opportunities for efficiencies described in RIS 2006-24 can be applied and that the results will identify this as a precursor event of high safety significance (i.e., conditional core damage probability great than  $1 \times 10^{-4}$ ), which extends the time necessary for analysis, comment, review, and approval. It also assumes that the NRC has complete plant information and risk models.



Additionally, it assumes that the SDP is completed by June 10, 2012, which is 90 days from the Special Inspection Report 05000285/2011014 (ADAMS ML12072A128), dated March 12, 2012, announcing the finding. This would lead to public release of the ASP analysis results in November 2012 according to estimated schedule in Table 1.

**Table 1: Fort Calhoun ASP Schedule (Draft)**

Task/Subtask		Completion Time	Start Date	Completion Date	
0.	SDP Phase 3 Assessment	90 days	12-March <sup>2</sup>	Mid June	
1.	Detailed Preliminary Analysis	20 days	Mid June	Early July	
2.	Internal Reviews	a. Technical Review by Senior Analyst	10 days	Early July	Mid July
		b. Branch Chief Audit Review	5 days	Mid July	Late July
		c. NRR/Region Review	10 days	Late July	Early August
		d. Division Director Review	5 days	Early August	Mid August
3.	Licensee 60-day Review	a. DRA <sup>4</sup> Transmits Analysis to DORL <sup>5</sup>	1 day	Mid August	Mid August
		b. DORL Sends Analysis to Licensee	3 days	Mid August	Mid August
		c. Licensee Review	60 days <sup>3</sup>	Mid August	Mid October
4.	Comment Resolution and Issue Final Analysis	a. Document Licensee Responses	1 day	Mid October	Mid October
		b. Internal Review of Comments	5 days	Mid October	Late October
		c. Resolve Comments and Finalize Analysis	10 days	Late October	Mid November
		d. DORL Transmits Final Analysis to Licensee	2 days	Mid November	Mid November

**Notes:**

1. The completion times listed below are estimates based on experience. The times are in terms of business days unless otherwise noted.
2. This date is the special inspection report date that starts the 90 calendar day SDP clock.
3. The time allotted for licensee review period is 60 calendar days.
4. DRA – Division of Risk Assessment, Office of Nuclear Regulatory Research.
5. DORL – Division of Operating Reactor Licensing, Office of Nuclear Reactor Regulation.

cc: R. W. Borchardt, EDO  
M. Weber, DEDMRT  
M. Virgilio, DEDR  
D. Ash, DEDCM  
N. Mamish, AO  
K. Brock, OEDO  
Y. Chen, OEDO  
B. Sheron, RES  
R. Correia, RES  
D. Marcano, RES

SECY  
OGC  
OCA  
OPA  
OIP  
OIS  
CFO  
EDO R/F (WITS 201200055)

COMMISSIONER REC'D  
2012 MAR 29 AM 8:00

## Frazier, Alan

---

**From:** Reilly, Breeda *OE DO*  
**Sent:** Monday, February 13, 2012 7:50 AM  
**To:** Vietti-Cook, Annette; Bates, Andrew; Hart, Ken; Wright, Darlene  
**Cc:** Borchartt, Bill; Virgilio, Martin; Weber, Michael; Ash, Darren; Mamish, Nader; Brock, Kathryn; Landau, Mindy; EDO\_ETAs  
**Subject:** February 13, 2012: Items of Interest for the Chairman

Good morning. Items of interest for the Chairman this morning include:

- On Sunday morning, an electrical fault occurred at the Sequoyah NPP 161 KV switchyard that resulted in an electrical explosion. An Unusual Event was declared due to the explosion. Both Units remained at 100% power and no safety related equipment was affected. All Emergency Diesel Generators remained operable and in standby conditions. Site exited NOUE based on the licensee's confirmation that the fault did not affect other switchyard equipment. The apparent cause of explosion is an internal fault on a power circuit breaker in the switchyard. Both residents were onsite Sunday for follow up.
- During a review of the Ft Calhoun station's procedures for responding to external flooding conditions, it was determined that the guidance is not adequate to mitigate a design basis flood event (1014 feet mean sea level [msl]). Compensatory actions have been identified and are being implemented. Additional corrective actions are being evaluated. The plant is currently in Mode 5, Cold Shutdown, with a river level of 986 feet 2 inches msl with no predictions for river level to pose a threat to safety related components. NRC inspectors identified procedural inadequacies relating to the mitigation of flooding. The licensee is addressing the procedural inadequacies.
- Region 3 and NRR are looking at the generic implications of the January 30<sup>th</sup> Byron trip on under voltage. This event revealed a design deficiency in the under voltage relaying logic at the plant. Specifically, both the degraded voltage logic and the under voltage logic did not adequately protect the plant in this event. While this protective logic was originally designed for a complete loss of voltage (the under voltage relaying) event or a degraded voltage event across all three offsite power phases, it did not adequately protect against such perturbations on a single phase of offsite power.
- On Friday members of the Fukushima Lessons Learned Steering Committee met with the ACRS and briefed them on the draft Commission Paper and enclosures with the orders and 50.54f letter that will address the Tier 1 recommendations. The draft ACRS letter from this meeting point to a more current reference for seismic analyses. Staff remains on schedule to provide the final 50.54f letters and proposed orders to the Commission on February 17<sup>th</sup>.
- As the Commission is aware, NRC will hold a public meeting with Bracco Diagnostics, Inc., the manufacturer of the CardioGen-82 generators on February 16<sup>th</sup>. The purpose of the meeting is to allow Bracco to describe its plan for bringing the generators back on the market. The U.S. Food and Drug Administration (FDA) is the lead federal agency and continues to work with Bracco, and has concluded that the breakthrough of <sup>82</sup>Sr and <sup>85</sup>Sr in 2011 was caused by overuse of the generators, compounded by poor quality assurance practices. Three medical events in Nevada have been confirmed by whole body scans. The company's proposed corrective actions include limiting the expiration date based on elution volume and increased customer training and monitoring. After FDA

allows the generators back on the market, the regulatory responsibility shifts back to the NRC and Agreement States to ensure licensees safely use the generators and radioactive material.

- The staff has been informed by Southern Company that the Secretary of Energy may visit the Vogtle site on Wednesday, 15 February.
- Shaw Areva MOX Services issued a stop work order for certain construction activities at the MOX Fuel Fabrication Facility on the Savannah River Site on 9 February. The action was taken in response to QA concerns identified by the licensee.
- The staff is planning a Federal interagency workshop on March 19–20, 2012 which will focus on cost-benefit analysis, specifically emphasizing the issues involved with determining a value of statistical life (VSL). This workshop is part of an ongoing effort to assess and update NRC's dollar per person-rem conversion factor policy, which currently stands at \$2,000 and is largely based on a VSL. This two-day meeting is a forum in which federal agencies can present and discuss VSL application topics and challenges (including public outreach) and exchange lessons learned. Tentative attendees include the Environmental Protection Agency (EPA), the Department of Homeland Security (DHS), the Food and Drug Administration (FDA), the Department of Transportation (DOT), the National Aeronautics and Space Administration (NASA), and U.S. Department of Agriculture (USDA).

Have a nice day.

Breeda

## Thomas Hipschman

---

**From:** Chang, Lydia *OEDO*  
**Sent:** Wednesday, February 15, 2012 2:47 PM  
**To:** Sanfilippo, Nathan  
**Cc:** Hipschman, Thomas  
**Subject:** FW: IMC 0350 Overview  
**Attachments:** IMC 0350 Overview (3).doc

Nathan:

Sorry, I forgot to include you on my e-mail...

---

**From:** Chang, Lydia *OEDO*  
**Sent:** Wednesday, February 15, 2012 2:46 PM  
**To:** Hipschman, Thomas; Castleman, Patrick; Gilles, Nanette; Orders, William; Franovich, Mike  
**Cc:** Bowman, Gregory  
**Subject:** IMC 0350 Overview

We would like to share with you a general overview of the IMC0350 process with some specifics related to Fort Calhoun Station that we thought might be beneficial/useful for you in preparation for the Commission Briefing scheduled for next Wednesday. Thanks...

Lydia Chang  
Executive Technical Assistant  
EDO/NRC  
301-415-8141

*J. B.*

# Briefing On **Fort Calhoun**

**Bill Borchardt**  
**Executive Director for Operations**  
**February 22, 2012**

*1<sup>st</sup> since 10 years D.B.*

## **Objectives**

- **Overview of facility performance issues**
- **Staff's review and assessment**
- **Agency actions**

*CB*

# **Agenda**

- **NRC's performance assessment**
  - **Elmo Collins**
- **Inspection Manual Chapter (IMC) 0350 oversight**
  - **John Lubinski**
  - **Troy Pruett**

3

## **Performance Assessment**

**Elmo Collins**  
**Regional Administrator**  
**Region IV**

4

# Performance Assessment

- **Confirmatory Action Letter**
- **Transition to Column IV**
  - **Yellow (Flood Mitigation Plan)**
  - **White (Reactor Protection System)**
- **Current performance concerns**

*Yellow - 2010 - flood  
2011 → 95002 pipe - 2 self assess - not ready  
↳ formal i. ins 95002 deferred  
6/6 URE - 6/17 fire 4800 enter → alert  
→ CAL - 2011  
White - RPS - Col IV  
Sept - fire inspection - H of ref def,  
→ 10-4 SORR  
→ 0350  
maintenance & design  
org weakness*

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## IMC 0350 Oversight

*- during S/D*

**John Lubinski, Deputy Director  
Division of Inspection and Regional  
Support  
Office of Nuclear Reactor  
Regulation**

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# IMC 0350 Overview

- **Purpose**
- **Enhanced oversight**
- **Entry conditions**
- **Process**
- **Termination of IMC 0350**  
*↳ continues after S/A & deactivation*

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# IMC 0350 Oversight

**Troy Pruett, Deputy Director**  
**Division of Reactor Projects**  
**Region IV**

*current CAI → contract schedule  
2 more CAI's prior to next  
CAI for sustained performance*

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# IMC 0350 Activities

- Panel Charter
- Panel Process and Plan
- Restart Checklist
- Inspection Plan
- Return to Reactor Oversight Process

→ NEPA 805

→ RI modules

CBDI - no - ? if design problems  
soil compaction under pressure

Borchardt -

still in discovery phase

Q's KLS - Col 5 vs 0350

GEA - when Col 5 added - was part of original

- depicted wrong stone

what about leading indicators

Borchardt - removal event - 0350

they - safety culture - still do

WDM - # times 0350 < 10-12 times - usually acute within

↳ why 0350 - long term & acute

WDM really is safety culture study team

don't focus on acute events, but overall

RI presence - leading indicators?

WCO

BK testing

no visual no thermography - not what science

org effectiveness

GBS - removed from ROP

0350 vs Col 5

for ASP Res does ASP review

Roni did not know answer (Tobey)

# **Fort Calhoun Station Integrated Performance Improvement Plan**

**February 22, 2012**

## **Discussion Topics**

- **Our Accountability**
- **Objectives**
- **Integrated Performance Improvement Plan**

*Time - long told to take time  
long term work force  
need outside help*

# **Our Accountability**

**Fort Calhoun Station performance is unacceptable to us and we will do what is necessary to identify, analyze and resolve our issues.**

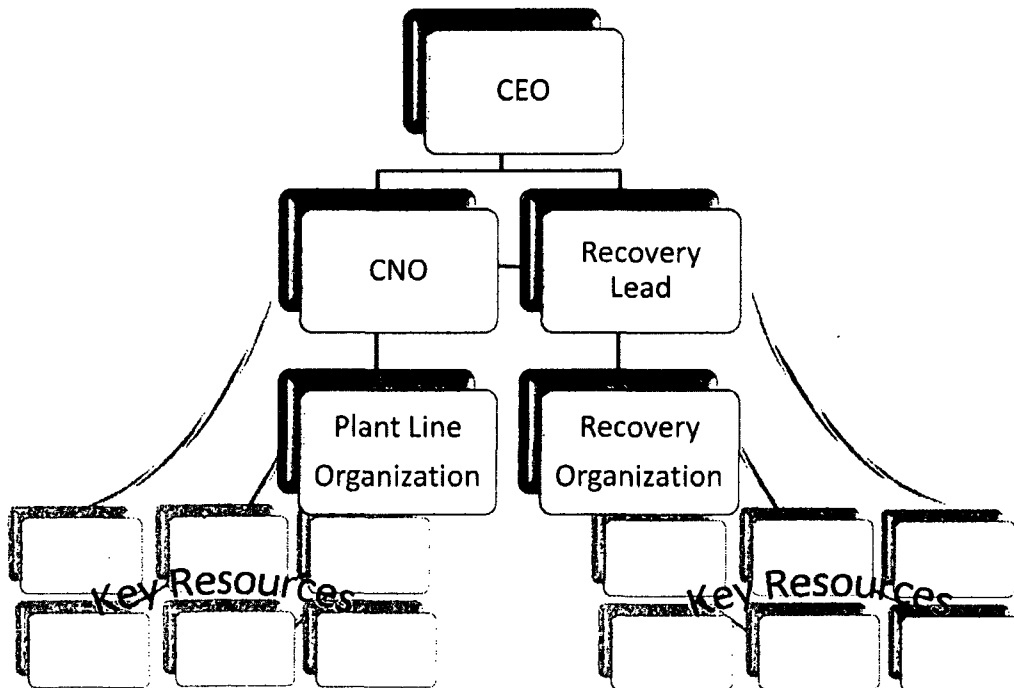
*- industry has rallied to help*

## **Objectives**

- **Improved and sustained station performance, equipment reliability, and risk reduction**
- **Identify and correct human performance issues**
- **Ensure ownership in the improvement initiatives**
- **Reestablish regulatory confidence**
- **Reinforce public confidence**

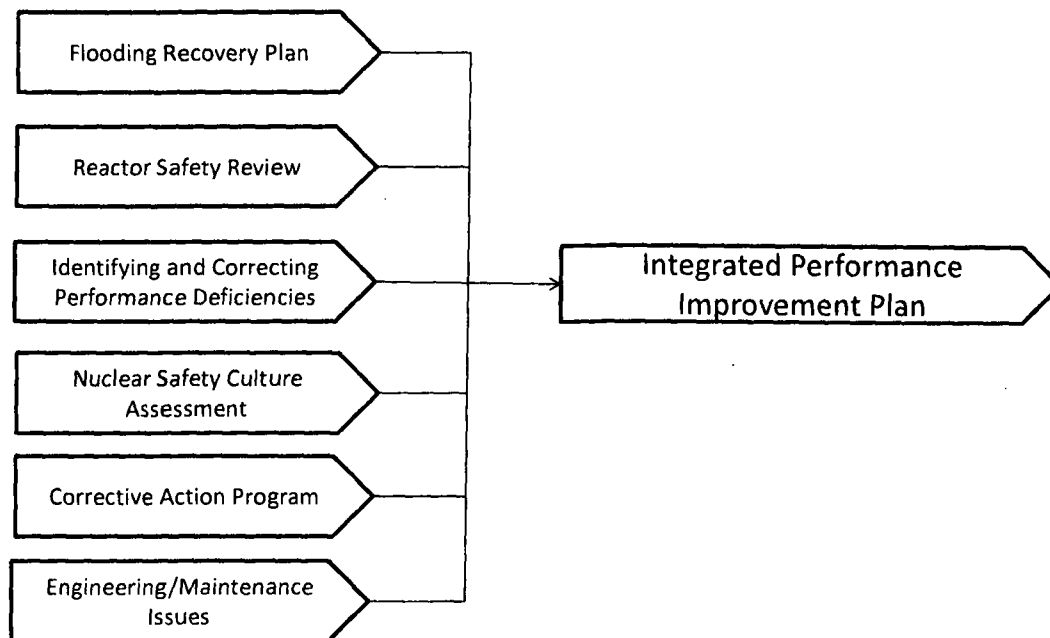
# Plan Attributes

- **Site engagement**
- **External support**
  - **Exelon** (INPO)
- **Oversight**
- **Communication**
- **Project scope**



Integrated Performance Improvement Plan Organization Chart

## Fort Calhoun Integrated Performance Improvement Plan



### Flooding Recovery Plan

- **Site restoration**
- **Plant systems and equipment**
- **Equipment reliability**
- **Design and licensing basis**
- **Emergency plan**
- **Security**

# **Reactor Safety Review**

- **Key attributes**
  - **Design, equipment performance and configuration control**
  - **Human performance**
  - **Procedure quality**
  - **Emergency preparedness**
- **Identified deficiencies will be corrected**

## **Identifying and Correcting Performance Deficiencies**

- **Purpose**
- **Major attributes**
  - **Corrective action program**
  - **Performance metrics**
  - **Employee concerns**
  - **Historical data review**
- **Identified discrepancies will be corrected**

# **Nuclear Safety Culture Assessment**

- **Third Party Independent Assessment - Conger & Elsea**
- **Three key elements**
  - **Behaviors and practices**
  - **Safety culture survey**
  - **Employee concerns program**
- **Final report with identified areas of improvement**

## **Corrective Action Program Culture Improvements**

- **Cause analysis**
- **Interim actions**
- **Training**
- **Program changes**



## **Engineering/Maintenance Issues**

- **Program and process deficiencies have been identified**
- **Evaluation and analysis of deficiencies in progress**
- **Corrective actions will be taken**

## **Sustainability**

- **Collective evaluation**
- **Cause analysis**
- **Action development and closure rigor**
- **Management changes** 
- **External support**
- **Long term oversight**

## Closing Comments

KLS → Board supporters  
Industrial resource impacts (resource)  
EP rule  
NFPA 805  
Q350  
Regul - → lead in SBO  
Exdm - not involved;  
all going to stay outside support  
EPU on hold

~~from~~ (EPA) → on targeted plan  
top 3 CAP culture  
not holding people accountable  
(part of member service alleg)  
need to track more of it  
WDM where did the issues come off tracks  
data looks OK POP bad?  
faint signs of human performance  
- extend resources  
certain area of expertise missing

WCU - wide spectrum of performance  
- sig self interest → ? work force receptive / unions

GBJ

## Thomas Hipschman

---

**From:** Garland, Stephanie *OEDO*  
**Sent:** Wednesday, March 28, 2012 3:20 PM  
**To:** Coggins, Angela; Bradford, Anna; Hipschman, Thomas; Sanfilippo, Nathan; Castleman, Patrick; Orders, William; Gilles, Nanette; Franovich, Mike; Bozin, Sunny; Chen, Yen-Ju; Sheron, Brian; Correia, Richard; Marcano, Jonathan  
**Cc:** Weber, Michael; Virgilio, Martin; Ash, Darren; Mamish, Nader; Brock, Kathryn; RidsSecyMailCenter Resource; RidsOgcMailCenter Resource; RidsOcaMailCenter Resource; RidsOpaMail Resource; RidsOipMailCenter Resource; RidsOIS Resource; RidsOcoMailCenter Resource; RidsEdoMailCenter Resource; Speiser, Herald; Pace, Patti; Gibbs, Catina; Chairman Temp; Svinicki, Kristine; Sharkey, Jeffrey; Lepre, Janet; Riddick, Nicole; Blake, Kathleen; Savoy, Carmel; Temp, GEA; Sosa, Belkys; Crawford, Carrie; Jimenez, Patricia; Temp, WDM; Orders, William; Bupp, Margaret; Herr, Linda; Shea, Pamela; Garland, Stephanie; Taylor, Renee; Coggins, Angela; Tappert, John; Bavol, Rochelle  
**Subject:** 03/28/12 - CA Note - Accident Sequence Precursor (ASP) Analysis Schedule for Fort Calhoun Station Event (To: Commissioner Assistants From: NL Mamish)

Date: March 28, 2012

From: Nader L. Mamish

Accession Number: ML12088A244

[View ADAMS P8 Properties ML12088A244](#)

[Open ADAMS P8 Document \(CA Note: 03/28/12 - Accident Sequence Precursor \(ASP\) Analysis Schedule for Fort Calhoun Station Event\)](#)

Hard copies are being mailed to each Commission Office

*cc's electronic distribution only*

OEDO -- Note placed in EDO Daily Information Folder for 3/28/2012

*Stephanie*

*Stephanie Garland*

Administrative Assistant for Darren Ash, DEDCM/CIO

Office of the Executive Director for Operations, U.S. Nuclear Regulatory Commission

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May 2, 2012

NOTE TO COMMISSIONERS' ASSISTANTS

OCM/GBJ

- cc Angela Coggins
- cc Anna Bradford
- X Laura Pearson
- Lisa Clark
- X Tom Hipschman
- X Nathan Sanfilippo
- Neha Dhir
- Melody Fopma
- Susan Loyd
- Richard Barkley
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OCM/WCO

- X John Tappert
- X Michael Franovich
- Andrea Kock
- Kimberly Sexton
- Linda Herr
- X Sunny Bozin

FROM: Nader L. Mamish /RA/  
Assistant for Operations

SUBJECT: UPDATE REGARDING FORT CALHOUN STATION OVERSIGHT PROCESS  
SINCE FEBRUARY 2012 COMMISSION MEETING

Summary of NRC Activities

Following the February 2012 Commission meeting, Region IV issued the Red finding associated with the switchgear fire event and two White findings associated with the control of safeguards information. Prior to June 1, 2012, Region IV expects to issue the Restart Checklist and associated revised Confirmatory Action Letter, a memorandum to office directors requesting inspection support, and an inspection plan for assessing the licensee's corrective actions. The preliminary results of the licensee's independent safety culture assessment will be available for NRC review on May 3, 2012. The NRC Oversight Panel will conduct the third public meeting (Category 3) in the local area on May 31, 2012. In response to the revised Confirmatory Action Letter, the licensee will be required to submit a performance improvement plan to the NRC in June 2012. Identification and staffing of the NRC's inspection team will occur in May/June 2012 with the major inspection efforts beginning in July 2012. Region IV expects that an informed perspective on the effectiveness of facility performance improvement efforts will be accomplished no earlier than September 2012.

POC: Troy Pruett, Deputy Director  
Division of Reactor Projects, Region IV  
817-880-4840

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Summary of Licensee Activities

As of June 1, 2012, Region IV expects that Fort Calhoun Station will be in the process of completing root cause efforts for a variety of performance concerns (e.g., organizational effectiveness, corrective action program, subsurface soil anomalies, and other technical issues); performing extent of condition/cause reviews for significant performance weaknesses (e.g., vendor implemented modifications, maintenance practices, and use of non-qualified components); and developing and/or implementing corrective actions for numerous performance deficiencies and findings (e.g., safety culture enhancements, electrical fire repairs, and control of safeguards information). While progress is expected to be made by the licensee in understanding the full scope of performance issues, a full characterization of items necessary for facility restart and for sustaining performance improvement after restart will likely not be available until August 2012. As such, much of the licensee's progress in addressing its performance issues and the associated NRC inspection activities are planned for the next four to six months.

cc:	R. W. Borchardt, EDO	SECY
	M. Weber, DEDMRT	OGC
	M. Johnson, DEDR	OCA
	D. Ash, DEDCM	OPA
	N. Mamish, AO	OIP
	K. Brock, OEDO	OIS
	M. McCoppin, OEDO	CFO
	G. Bowman, OEDO	EDO R/F
	E. Collins, RIV	
	T. Pruett, RIV	
	J. Lubinski, NRR	
	R. Franovich, NRR	



**Omaha Public Power District (OPPD)  
Fort Calhoun Station (FCS)  
Meeting with NRC Commissioners  
May 30, 2012**

Agenda for Omaha Public Power District  
Fort Calhoun Station  
Meeting with NRC Commissioners  
May 30, 2012

- 11 - 11:30     Executive Director of Operations  
                    Bill Borchardt
- 1:30 -2:00     Commissioner George Apostolakis
- 2:30 -3:00     Commissioner Kristine L. Svinicki
- 3:30 -4:00     Commissioner William C. Ostendorff
- 4:30 -5:30     Chairman Gregory B. Jaczko

# Omaha Public Power District Executive Bio

## N. P. Dodge Jr. OPPD Chairman of the Board

N. P. Dodge Jr. is the president and chairman of the board of the N. P. Dodge Company. He serves on the board of directors of the American States Water Company

Mr. Dodge served as the Omaha Chamber of Commerce chairman in 1997 and is past chairman of the Chamber's Advisory Council Committee.

He is a current member of the Physicians Clinic Board of Trustees, Omaha Community Playhouse Foundation Board of Trustees, Omaha Police Foundation Board, and Advisory Council of Just Kids.

He is a past member of the Nebraska Power Review Board and Mayor's Crime Commission; past director of the Girls Club and of Firststar Bank in Council Bluffs; past president of the Omaha chapter of the Institute of Real Estate Managers; and past member of board of directors of the Bridges Investment Council.

Mr. Dodge holds a bachelor's degree from Harvard University.



# Omaha Public Power District Executive Bio

## W. Gary Gates OPPD President and CEO

W. Gary Gates began his career at OPPD in September 1972. He joined the staff at Fort Calhoun Station two years later and held several positions in the nuclear organization, including reactor engineer, supervisor – Operations at Fort Calhoun Station and manager – Fort Calhoun Station.

In May 1989, Mr. Gates was named executive assistant to the president, and he was appointed division manager – Nuclear Operations in February 1990. He was promoted to vice president with responsibility for OPPD's nuclear organization in November 1992. He became president and CEO in January 2004.

Local and industry board affiliations include the World Association of Nuclear Operators (WANO), Nuclear Energy Institute (NEI), Nuclear Electric Insurance Limited (NEIL), the Institute of Nuclear Power Operations (INPO), Ak-Sar-Ben Foundation – Governor's Council, Greater Omaha Chamber of Commerce, Boy Scouts Mid America Council, Mutual of Omaha, Joslyn Art Museum, Durham Museum, Boys Town National Board of Trustees, Creighton University, Heritage Services, Strategic Air Command Consultation Committee, Nebraska Military Support Coalition, Wings Over the Heartland, College World Series and Strategic Air & Space Museum.

Mr. Gates holds a bachelor's degree in nuclear engineering from Iowa State University, a master's degree in industrial engineering from the University of Nebraska at Lincoln, and a master's degree in business administration from Creighton University.

# Omaha Public Power District Executive Bio

## David Bannister OPPD Vice President and CNO

David Bannister began his career at OPPD in 1983 as an operations training specialist. His previous positions include shift technical advisor, reactor engineer, manager of quality and manager of operations.

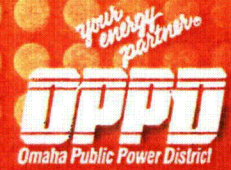
He also served as plant manager/division manager of Nuclear Operations during all of the major component replacements that were part of Fort Calhoun Station's 2005 and 2006 refueling and maintenance outages. He has served as division manager of Quality and Performance Improvement, and he served as site director of Fort Calhoun Station until February 2008, when he was promoted to Vice President and Chief Nuclear Officer.

Mr. Bannister held a senior reactor operator's license from 1990 to 2002, and holds a bachelor of science degree in physics from Nebraska Wesleyan University.

He has completed managerial training programs accredited by the Institute of Nuclear Power Operations.

Mr. Bannister is actively involved in the Utilities Services Alliance and is the executive sponsor for the FCS Chapter of the North American Young People in Nuclear.

# OPPD Quick Facts



- Founded in 1946
- Publicly owned, business-managed electric utility governed by an elected board of directors
- Headquarters in Omaha, Neb.; many other locations in 13-county, 5,000-square-mile service area
- Low rates and nationally recognized customer service
- Serves a population of 784,500 people, more than any other electric utility in the state
- Ranks as the 12th-largest public power utility in the U.S. in number of customers served
- Serves 47 towns at retail and five at wholesale
- The majority of OPPD's power comes from three baseload power plants: North Omaha Station and Nebraska City Station, both coal-fired plants, and Fort Calhoun Station, a nuclear power plant
- Additional energy comes from three peaking plants and renewable energy resources, including a landfill-gas plant and wind turbines

## 2011 Statistics

Generating capability .....	3,222.7 MW
System peak load .....	2,468.3 MW
Megawatt-hour sales .....	15,328,409 MWh
Operating revenue .....	\$1,041,762,000
Payments in lieu of taxes .....	\$28,217,000
Average cost per kilowatt-hour – residential .....	9.37 cents
Average annual use kilowatt-hour – residential .....	11,639
Total utility plant .....	\$5,027,093,000
Miles of electric line.....	15,421
Capital expenditures.....	\$195,774,000
Number of employees.....	2,301
Average number of electric customers.....	352,223

## Providing Low Rates to Customers

OPPD strives to maximize the public power advantage of low-cost energy for customers. According to preliminary December 2011 figures from the Energy Information Administration, OPPD rates rank:

- 20.6% below the national average in cost per kilowatt-hour for residential customers
- 25.7% below for retail customers
- 23.5% below for commercial customers
- 26.7% below for industrial customers

The charts below compare OPPD and national average residential and retail cents per kWh.

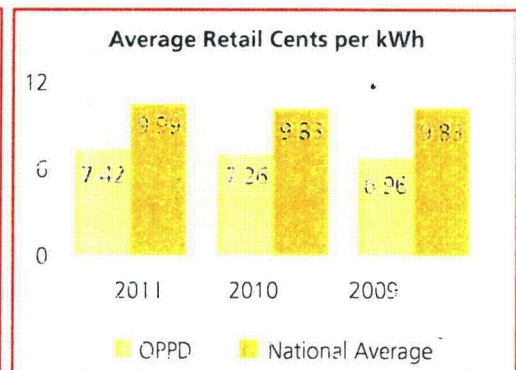
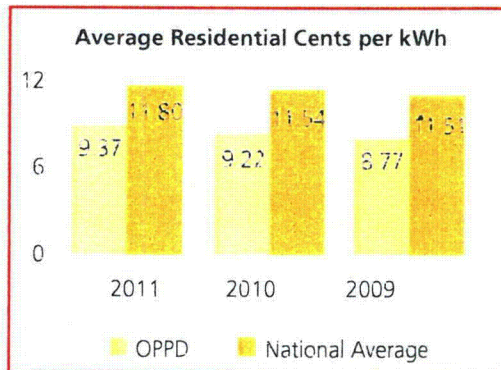
## Accomplishments

**Residential Customer Satisfaction**  
OPPD honored for residential customer satisfaction by J.D. Power and Associates for the 11th consecutive year, based on results of its 2011 Electric Utility Residential Customer Satisfaction Study™.

**Business Customer Satisfaction**  
OPPD took first place in the Midwest region among midsize utilities in the J.D. Power and Associates 2012 Electric Utility Business Customer Satisfaction Study™.

**ENERGY STAR Leader, 2011**  
Recognized in 2011 by the Environmental Protection Agency as an ENERGY STAR Leader for improving energy efficiency by 10 percent in the qualifying group.

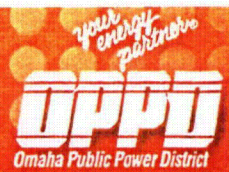
**APPA Energy Innovator Award**  
In 2011, American Public Power Association recognized the OPPD Digi-Optimizer pilot project.



## Ensuring Employee and Customer Safety

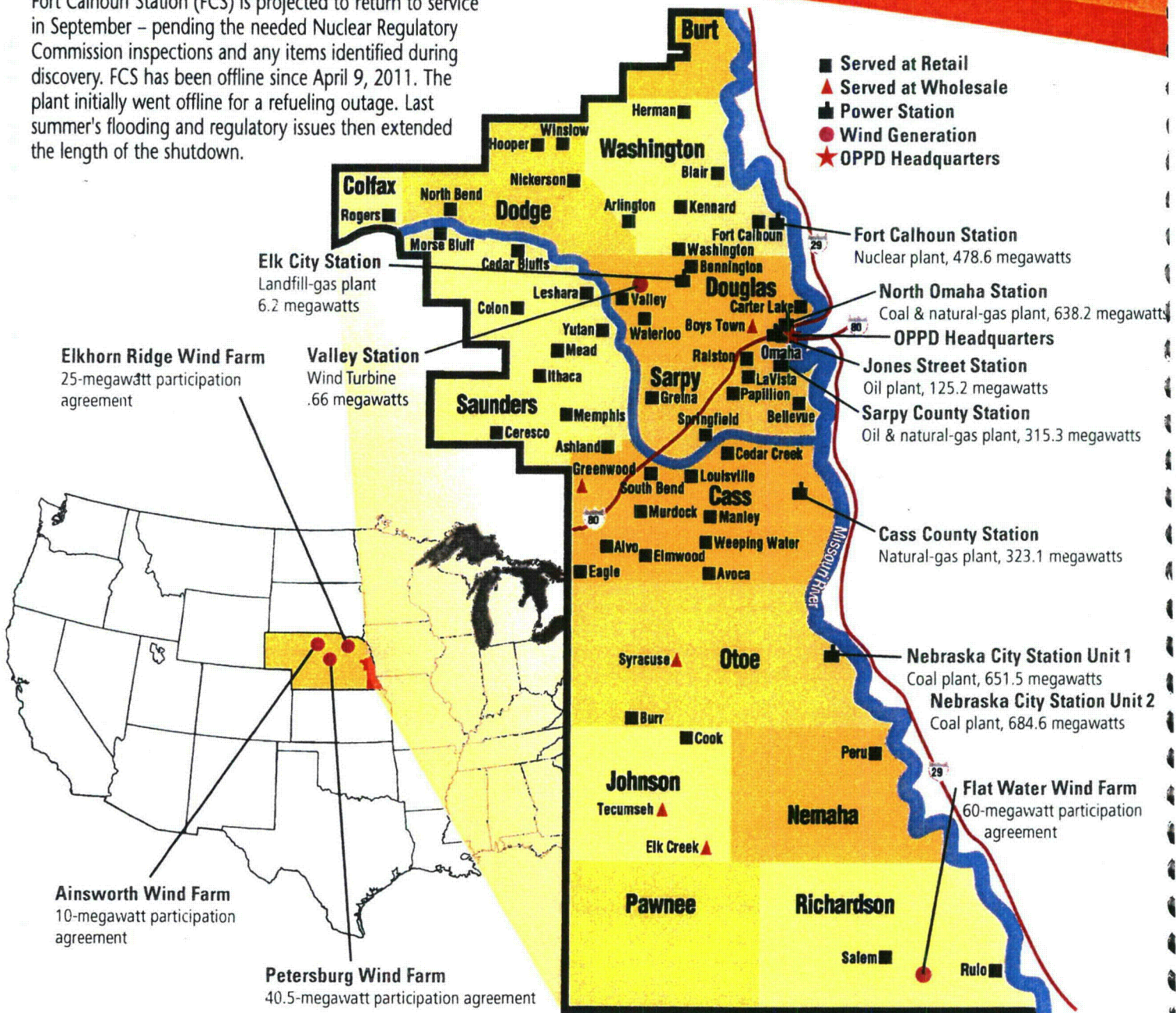
- OPPD promotes a hazard-free environment through engineering controls, administrative controls and personal protective equipment for its employees, and OPPD routinely distributes electrical safety messages to customers through its website and other customer communications.
- OPPD's Fort Calhoun Nuclear Station is designed to withstand severe natural disasters. The plant's "defense in depth" systems include multiple sources of offsite and onsite power. Plant personnel train on and follow written procedures for both normal and emergency operations. As part of OPPD's Emergency Response Organization, employees participate in regular training drills to help prepare for a serious event at the plant. OPPD has good working relationships with emergency management personnel at the federal, state, regional and county level. Those residing within 10 miles of the plant receive annual emergency preparedness booklets from OPPD. Following the historic flood of 2011 and subsequent regulatory concerns, OPPD developed an Integrated Performance Improvement Plan to address critical concerns. Progress of the plan is available at [www.oppd.com](http://www.oppd.com) under the "About Us" tab.

# Service Area Map



## As of May 2012:

Fort Calhoun Station (FCS) is projected to return to service in September – pending the needed Nuclear Regulatory Commission inspections and any items identified during discovery. FCS has been offline since April 9, 2011. The plant initially went offline for a refueling outage. Last summer's flooding and regulatory issues then extended the length of the shutdown.



## Delivering Reliable Energy

- For the past 11 years, OPPD's reliability has been greater than 99.98%, as measured by the Average Service Availability Index.
- Electrical grid reliability is maintained through compliance with industry standards established by the North American Electric Reliability Corporation (NERC). OPPD complies with all NERC standards and strives for 100% compliance.
- Through its membership in the Southwest Power Pool (SPP) Reserve Sharing Group, OPPD has access to energy reserves in emergency situations. The SPP Reserve Sharing Group consists of members spread over parts of eight Midwestern states.

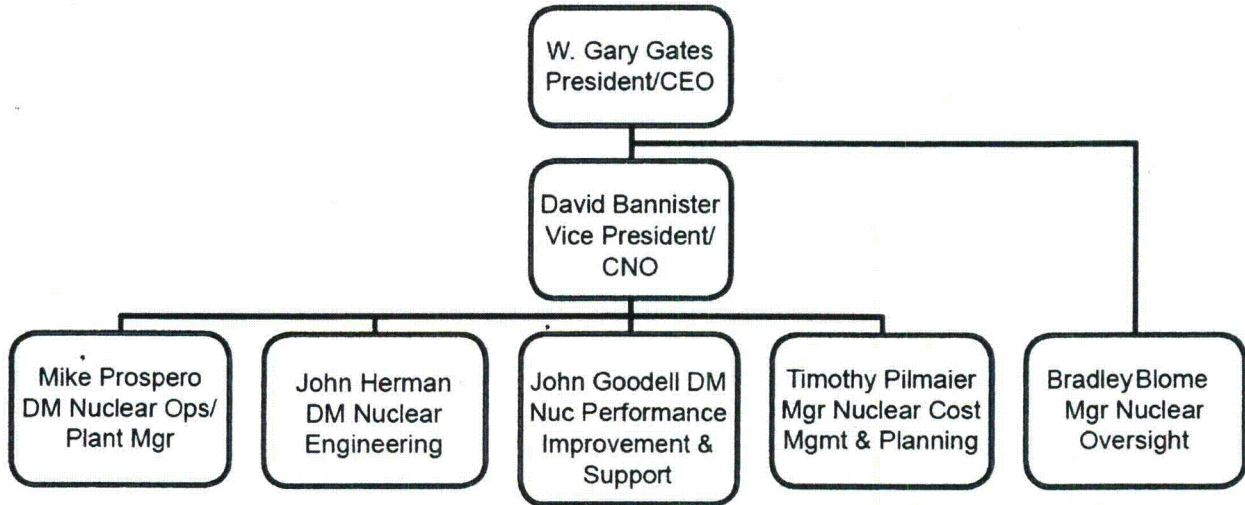


For more information, visit [oppd.com](http://oppd.com) and click on the Investors & Finance tab to view the 2011 Annual Report.

# Fort Calhoun Station Fact Sheet

- Parent Company                      Omaha Public Power District
- August 1973                              Full-Power Operation License Issued
- September 1973                          Commercial Operation
- December 1993                          Operating License Extended to August 2013
- November 2003                          Operating License Extended to August 2033
- December 2006                          Life-Extension Projects Complete
- Current Operating Cycle              Fuel Cycle 27
- Current Electric Rating (Gross)      502 Megawatts

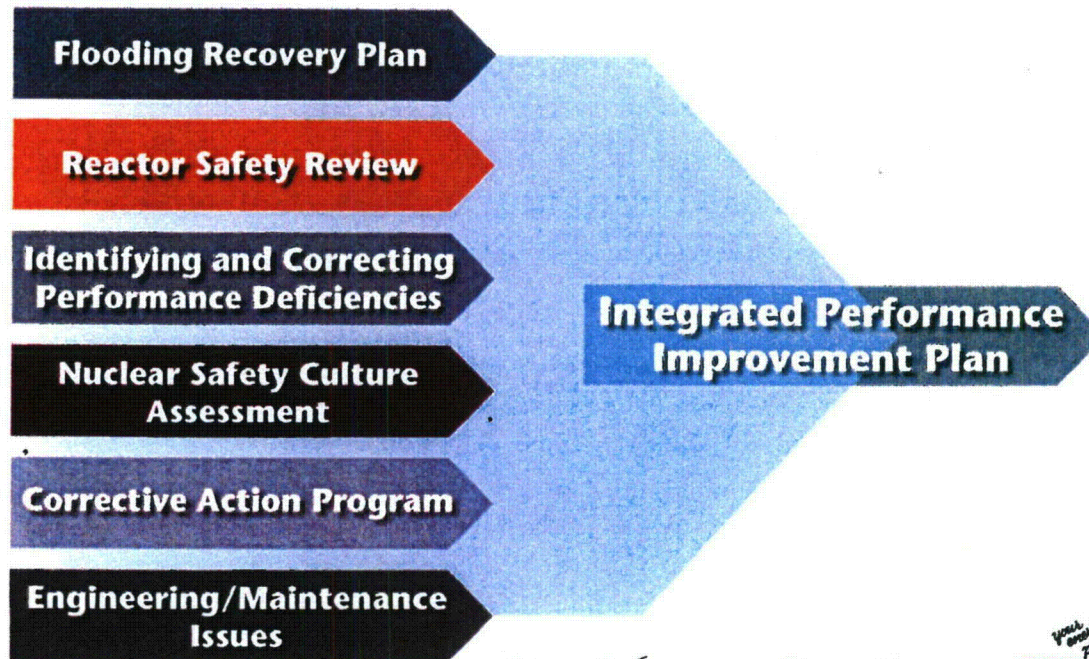
# Fort Calhoun Station Organizational Chart



## Fort Calhoun Station Key Points

- Improving our nuclear safety culture and organizational effectiveness are our two most critical focus areas.
- FCS is conducting a root cause analysis on organizational effectiveness and has brought in outside OR experts to help.
- FCS is conducting a root cause analysis on the ineffectiveness of its previous root cause analyses process, again with the help of recognized experts.
- Our focus is on recovery – improving our performance, getting the station inspection-ready for restart and positioned for long-term operational excellence.
- FCS welcomes the expertise and guidance we are receiving from Exelon.
- The OPPD Board of Directors is fully committed to the continued success of Fort Calhoun Station.
- The Fort Calhoun Station Integrated Recovery Team is making good progress on the discovery phase.
- The station leadership and workers are committed to improving our performance to enable us to restart FCS and safely operate at the highest level.

# Fort Calhoun Station Integrated Performance Improvement Plan



*Our History, Our Future*



Due to the large number of required activities that must be addressed simultaneously, FCS has developed an Integrated Performance Improvement Plan. The IPIP addresses performance-improvement, restart inspection-readiness and margin-recovery.

## Key IPIP Features

- Includes a comprehensive action plan that embodies the full scope of recovering the station and placing it back on the road to excellence.
- Coordinates resources and efforts through resource-loaded scheduling.
- Drives accountability by assigning actions to specific owners.
- Creates vertical and horizontal alignment across FCS through comprehensive communications on the plan sitewide.



# Integrated Performance Improvement Plan

## Six Key Elements

- **Flooding Recovery Plan:** Recovering from the unprecedented flooding of summer 2011 means inspecting miles of cable, checking for unseen damage underground, replacing damaged equipment and making certain the plant is safe to operate.
- **Reactor Safety Review:** This process involves a detailed review of critical plant systems, using six major review areas to confirm the health of each system.
- **Identifying, Assessing and Correcting Performance Deficiencies:** IACPD involves formally assessing all important programs, processes and procedures to identify other potential performance deficiencies. Corrective actions are then assigned to address these deficiencies.
- **Independent Nuclear Safety Culture Assessment:** A nuclear power station's culture must be such that nuclear safety is the overriding priority of every worker on site. The independent assessment recently completed details where we need to make changes to "imprint" nuclear safety into the collective DNA at FCS.
- **Corrective Action Program:** A foundation for returning FCS operations to a top-performing level, our Corrective Action Program (CAP) must ensure issues that could impact nuclear safety are quickly identified, evaluated and corrected.
- **Engineering and Maintenance Issues:** A number of engineering and maintenance issues must be resolved. This program lays out the changes needed to deal with these issues.

# Flooding Recovery Plan

## Overall Status and Key Activities

- 80% complete
- Manhole 31 conduit support repairs
- Restore bus 1B4A
- Restore station fire-protection system
- System health assessments
- Assess damage and restore wetted CW pump motor
- Engineering program reviews
- Plant geotechnical and structural assessment
- Design configuration control
- High-energy line break/EEQ resolution
- Design resolution items
- Assess offsite emergency response following natural disaster
- Onsite facility and equipment restoration

## **Reactor Safety Review**

### Overall Status and Key Activities

- 66% complete
- Design, configuration control and equipment performance Key Attribute Review (KAR)
- Emergency preparedness KAR
- Human performance KAR
- Procedure quality KAR

## **Identifying and Correcting Performance Deficiencies**

### Overall Status and Key Activities

- 65% complete
- Issue IACPD procedures
- Benchmarking assessment program assessment
- Operating experience assessment
- Identify significant performance deficiencies data analysis

## **Nuclear Safety Culture Assessment**

### Overall Status and Key Activities

- 100% complete
- Onsite employee/contractor survey (93% participation)
- One-on-one interviews and focus group interviews
- Final report issued

## **Corrective Action Program**

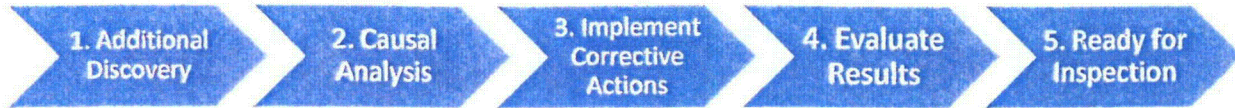
### **Overall Status and Key Activities**

- 96% complete
- Corrective Action Program (CAP) improvements identified
- CAP improvements interim actions completed
- CAP procedures revised and issued
- FCS staff trained on CAP changes
- CAP trend reports issued

## **Engineering/Maintenance Issues**

### **Overall Status and Key Activities**

- 60% complete
- 10CFR50.59 screening and evaluation
- DNC/operability evaluations
- Vendor manuals
- Equipment service life
- Critical Quality Element (CQE) equipment
- Vendor-prepared modification packages



## Fort Calhoun Station Next Steps

1. Completion of the discovery analysis will ensure the scope identified for recovery in a given area is broad and deep enough. This step allows for further identification and characterization of problems.
2. Issues that require causal analysis, where this has not yet been completed, will be determined as part of the IPIP process.
3. Once root causes are determined, corrective actions will be developed and implemented.
4. When corrective actions are in place, they will be monitored for their effectiveness.
5. When corrective actions are effective in a particular area, that area will be deemed to be ready for inspection.

## Ongoing Focus

- Nuclear safety
- Transparency
- Thoroughness
- Sense of urgency
- Positive actions

# Fort Calhoun Station Supplemental Detail

## Integrated Performance Improvement Plan (IPIP)

- Combines & prioritizes plans for:
  - Flooding Recovery Action Plan
  - Corrective Action Program improvement
  - Identifying Assessing & Correcting Performance Deficiencies
  - Independent Nuclear Safety Culture Assessment Action
  - Reactor Safety Strategic Performance Area Reviews
  - Engineering/Maintenance Issues
  - Start-up Mods
  - Existing station outage schedule
- Organizes actions for maximum efficiency
- Drives accountability
- Allows close-out of issues long left open:
  - Meteorological tower repairs
  - Initial testing of 1B4A bus
  - Flood damage repair is complete
  - Flooding lessons-learned are included in plant procedures
- Four-phase approach to IPIP:
  - Analyze
  - Evaluate significance and trends
  - Identify fundamental performance deficiencies
  - Implement corrective action
- Reactor Safety Review:
  - 4160/480-volt AC
  - 125-volt DC/emergency batteries
  - High-pressure safety injection
  - Projects selected based on nuclear safety significance
  - Six key attributes addressed:
    - Design
    - Equipment Performance
    - Configuration Control
    - Procedure Quality
    - Human Performance
    - Emergency Response Organization Readiness
- Identifying, Assessing and Correcting Performance Deficiencies:
  - Review of processes to find and fix problems
  - Ten assessment areas
  - Discovery well under way:
    - Some areas wrapping up

- Early results indicate problems (as expected)
    - Easier assessments just getting started
  - Historical data review results being compiled:
    - Early indications are that discovery results accurate
    - Effort may turn up problems not discovered elsewhere
- Independent Nuclear Safety Culture Assessment
  - Areas of focus:
    - Survey
    - 1-on-1 interviews and focus groups
    - Observations and document reviews
  - Conducted by Conger & Elsea
  - 93% of onsite personnel completed survey; one of highest participation rates in industry.
  - OPPD leadership anticipated results would be candid and supports aggressive efforts to return plant to high performance.
  - Three of the four areas outlined in findings and identified as needing improvement had already been included in IPIP.
  - Fourth area, Safety-Conscious Work Environment, will be included in IPIP. Plans for improving will be outlined and progress monitored.
  - Here are areas survey indicated need strong focus:
    - We need leadership behavior that can develop a strategic vision and a path forward for the station. Decisions, then, must be consistent with that vision to engage the workforce. Expectations and standards around that vision must be clearly communicated.
    - In the area of identifying and resolving problems, we need to work on performance improvement overall, and Corrective Action Program in particular.
    - A healthy, questioning attitude among employees needs to be built and the employees need to feel that management wants them to report concerns and management will act on them. There is a fear of retaliation that must be dispelled.
    - Accountability must be implemented consistently throughout the FCSW site. Desirable behavior should be reinforced, effective coaching should be utilized often, and punitive action for undesirable behavior should be minimized.
  - Next Steps:
    - Have sense of urgency.
    - Enact changes recommended (many of the changes needed already in IPIP).
- Corrective Action Program
  - Comprehensive and ongoing program improvement
  - Training being completed
  - Feedback being incorporated for more effectiveness
  - Independent Safety Culture Assessment will further refine actions
  - Management more involved

- Multi-disciplinary screening team
- New Corrective Action Program coordinator positions created/filled
  - Training under way
- Seeing improvements:
  - E.g., Condition Reports being written at lower levels
- Engineering/Maintenance Issues
  - We are resolving design and program issues:
    - Vendor manuals
    - Vendor design changes
    - Equipment service life
    - Degrades/non-conforming conditions

### **Plant Status**

- Met tower & IB4A restoration
- Procedural guidance upgraded:
  - FCSG-63, "Establishing Incident Command"
  - FCSG-64, "External Flooding of Site"
  - Lessons learned incorporated into OPPD Business Continuity Plan
  - AOP-01, "Acts of Nature" updated w/ enhanced flooding actions
  - EPIP-TSC-2, "Catastrophic Flooding Preparations" updates
    - Lessons learned updated
- New method to transfer diesel fuel during flooding
- Below-ground surveys conducted:
  - No significant impacts identified to date
- Flood Readiness
  - Intake Structure:
    - Evaluating equipment classification
    - Changed operating procedures
    - Interim compensatory measures to protect sluice gates
    - Permanent solutions under study
- Public Warning Sirens:
  - Several lost power during flood – sirens operable now
  - Recent siren outage
- NRC inspection-readiness:
  - To be ready when we tell you we're ready:
    - Detailed self-assessments
    - Senior management-led challenge boards
- Emergency Planning inspection conducted
  - Evaluated exercise with states and counties



## **Electrical Fire**

- Stepped through 480-volt load center diagram for NRC and public
- Lessons Learned:
  - Following the fire, Fort Calhoun Station:
    - Acted promptly to investigate fire
    - Began engineering work
    - Procured new electrical equipment
    - Did not complete EOC work in timely manner
    - Did not complete design package in timely manner
    - Did not allocate appropriate resources
  - 1B3A Breaker
    - The two breakers were removed from plant and tested together at testing facility
    - Design change procedures do not provide guidance to evaluate impact of unused design features
    - Training not provided on unique features of new equipment
    - Corrective actions:
      - Procedures changed to include specific guidance on identifying critical characteristics
      - Expanded requirements for researching operating experience during design process
      - More detailed instructions for cleaning breaker stabs
      - Review of in-progress modifications
      - Review of previously completed modifications (in progress)
      - New thermography procedure for investigating unusual "odors"
      - Quality audit of equipment supplier
      - Verified other jumpers installed correctly
      - Identified other equipment supplied by same vendor

## **Current Causal Analysis**

- Electrical Bus Fire:
  - Initial causal analysis questioned
  - External expertise being utilized
- Organizational Effectiveness:
  - Early kick-off of analysis
  - Will help station begin to move culture sooner rather than later
  - Expected completion in early to mid-June 2012
- Causal Analysis Quality:
  - Intended to repair process
  - Needed prior to completion of discovery cause evaluations

## **Next Discovery Phase**

- Collective Evaluation:
  - Purpose is analysis of problems learned during discovery
  - Will yield fundamental performance deficiencies at station

- Fundamental performance deficiencies will be further analyzed using root or apparent cause analysis, as appropriate

**NRC Inspection Procedure 95003, Identifying, Assessing and Correcting Performance Deficiencies (IACPD) Preparations**

- 65% complete
- Some areas are complete and remainder are well under way
- Experience shows data analysis takes approximately 30% of discovery time
- Early indications include weaknesses in IACPD
- Historical data review results are already supporting preliminary conclusions
- More definition will be added as analysis draws to a close

**NRC Inspection Procedure 95003, Reactor Safety Strategic Performance Area (RSSPA), Key Attribute Review (KAR) of Electrical Distribution System (EDS) and High-Pressure Safety Injection (HPSI)**

- RSSPA KAR overall percent complete: 75% for original EDS/HPSI scope:
  - KAR – Design is 80% complete
  - KAR – Configuration Control is 70% complete
  - KAR – Equipment Performance is 60% complete
  - KAR – Procedure Quality is 73% complete
  - KAR – Human Performance is 63% complete
  - KAR – Emergency Response Organization Readiness is 95% complete
- Preliminary Findings
  - KAR – Procedure Quality Findings:
    - Procedure references outdated, vendor manual not properly identified and procedures do not incorporate vendor recommendations.
    - Condition Reports not closed and corrective actions not completed in timely manner.
    - Procedure format is not in accordance with writer's guide.
  - KAR – Human Performance Findings Cross-Cutting Area-Resources:
    - Causal analysis accurately identifies cultural and organizational issues as causes. However, corrective actions often do not address those causes, but instead rely on additional or revised written guidance. Drivers of incorrect behavior are overlooked and are not provided appropriate significance or attention.
    - Station sensitivity to human performance cross-cutting issues is below industry standards and does not allow staff to understand any commonalities, if not investigated. Station does not have bias for action in this area.
  - KAR – Design/Configuration Control/Equipment Performance:
    - Some cases of markups of design-basis documents and operating procedures contained in engineering change (modification) packages could not be confirmed in current station documents.

- Programmatic weaknesses in station engineering change equivalency process that allows for material and component replacements.
- Corrective actions for long-standing degraded equipment performance and obsolete equipment have been ineffective.
- KAR – Emergency Response Organization (ERO):
  - ERO equipment being used is near obsolescence.
  - Documentation in general is weak.

### **Engineering Discovery (Maintenance and Engineering Issues)**

- Areas being assessed include:
  - Degraded Non-Conforming Conditions and Operability reviews
  - N-CQE use in Critical Quality Element (CQE) applications
  - Vendor Manuals
  - Equipment Service Life
  - Vendor Modifications
  - 10CFR50.59 products
- Three major phases
  - Discovery:
    - Screening documents to obtain review population (100% complete)
    - Performing detailed reviews (60% complete); ECD's range from 6/1/12 to 7/13/12
    - Writing Condition Reports (CRs) to document discrepant conditions – performed in process upon discovery
  - Collective Significance Evaluations:
    - PDS development
    - Causal evaluations
  - Recovery Actions:
    - Address all CR's consistent with station priorities – in process (1,160 CR's written to date)
    - Implement all corrective actions to prevent recurrence (pre-restart and post-restart)
- Summary of findings/discrepancies to date include:
  - Missing or incorrect documents
  - Procedural compliance
  - Inaccurate or incomplete information
  - Lack of rigor
  - Poor questioning attitude

### **Geotechnical**

- Assessment of site system, structures and components
  - OPPD and independent third party review of HDR report in progress
  - Working to establish contract for broken/cracked turbine building drain pipe relining
  - Working with HDR to see if additional tests can be performed in annulus between Auxiliary and Turbine buildings