



FirstEnergy Nuclear Operating Company

Perry Nuclear Power Station  
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June 2, 2009  
L-09-159

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

**SUBJECT:**

Perry Nuclear Power Plant  
Docket No. 50-440, License No. NPF-58  
Response to ANNUAL ASSESSMENT LETTER – PERRY NUCLEAR POWER PLANT  
(05000440/2009001)

The referenced letter provided the Nuclear Regulatory Commission (NRC) staff's annual assessment of the safety performance for the FirstEnergy Nuclear Operating Company Perry Nuclear Power Plant (FENOC/PNPP) over the previous 12 months. The NRC determined that FENOC/PNPP performance (2008) continued to exhibit weakness in the area of human performance and expressed concern regarding corrective action effectiveness and sustainability.

In addition to requesting that FENOC/PNPP address actions regarding human performance during the end-of-cycle public meeting, the NRC requested a written response describing FENOC/PNPP actions to address human performance in general, and specifically for the cross-cutting aspects of work control, procedures/documentation, and human error prevention techniques. The attachment to this letter provides the FENOC/PNPP written response. The written response also includes examples of progress made to date, and expected improvements in human performance from actions taken.

While progress has been made, FENOC/PNPP recognizes that the plant must continue to strengthen its efforts to improve human performance fundamentals. FENOC/PNPP is committed to realizing the cultural changes that are necessary and recognizes the need to continue our efforts to improve human performance.

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There are no regulatory commitments contained in this letter. If there are any questions, or if additional information is required, please contact Mr. Robert B. Coad, Manager - Regulatory Compliance, at (440) 280-5328.

Sincerely,



Handwritten signature of Mark Bezilla in black ink.

for  
Mark Bezilla

Attachment - Response to ANNUAL ASSESSMENT LETTER – PERRY NUCLEAR  
POWER PLANT (05000440/2009001)

cc: NRC Region III Administrator  
NRR Project Manager  
NRC Resident Inspector

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## **Background**

In the NRC's Annual Assessment Letter, dated March 4, 2009, the NRC determined that 2008 performance at the FirstEnergy Nuclear Operating Company Perry Nuclear Power Plant (FENOC/PNPP) (during the specific assessment period) continued to exhibit weaknesses in the area of human performance. The NRC noted that while the number of findings identified with a cross-cutting aspect of work control (H.3(a)) declined, with only two identified in the last half of 2008, a second cross-cutting theme in the area of procedures/documentation (H.2(c)) was identified with five findings. In addition, the NRC observed indications of a new cross-cutting theme in the aspect of human error prevention techniques (H.4(a)), with three findings identified during the assessment period and a potential fourth finding identified shortly after the end of the assessment period. The NRC concluded that because of the continuing weakness in the human performance area, the substantive cross-cutting issue in human performance, with themes of work control and procedures/documentation, would remain open. This issue is a continuation of the substantive cross-cutting issue first opened in the March 3, 2008, End-of-Cycle Assessment letter [ADAMS Ref. ML080600303].

The NRC acknowledged FENOC/PNPP demonstration of shared concern in the human performance area; however, the effectiveness and sustainability of corrective actions continued to be a concern. The NRC continued to see vestiges of the original cross-cutting theme (H.3(a)) while additional cross-cutting themes continued to come to the forefront. Therefore, the NRC requested that FENOC/PNPP address actions regarding human performance during the End-of-Cycle public meeting, yet to be scheduled. In addition, the NRC requested that FENOC/PNPP provide a written response, by June 2, 2009, describing actions to address human performance, progress that has been made to date, and improvements in human performance expected from these actions.

## **Actions to Address Human Performance**

### General Actions to Address Human Performance

A business practice (NOBP-LP-4015, Cross-Cutting Aspects of Inspection Findings) was developed to establish a methodology for tracking, assessing, and addressing cross-cutting aspects of NRC inspection report findings for performance deficiencies. This methodology provides leading indicators of regulatory performance and for the potential for a Substantive Cross-Cutting Issue. The business practice also provides a methodology for proactively identifying and communicating actions that have been taken to address cross-cutting aspects. The Regulatory Compliance Unit also bins

precursor condition reports (CR) at a lower threshold to identify emerging performance trends.

Cross-Cutting aspects of performance deficiencies, including precursors, are discussed at monthly management performance review meetings. Performance gap closure plans are developed for identified areas of performance shortfalls. The business practice also provides guidance for performing self-assessments of NRC inspection report findings having cross-cutting aspects during the past twelve-month period. Written assessment reports contain:

- a comparison of the inspection report-described cross-cutting aspect with any associated CR
- a determination of any gaps between the CR evaluation/cause and the cross-cutting aspect
- a determination of whether the corrective actions address the cross-cutting aspects and the progress of their completion
- a collective analysis and determination of any causal factors with a common theme, and
- a comparison with the prior cross-cutting aspects assessment report and the identification of trends.

#### Specific Actions to Address Human Performance

##### Human Performance Work Control Aspect H.3(a), Work Planning

On March 3, 2008, the NRC issued an Annual Assessment Letter identifying that Perry has a substantive cross-cutting issue in the area of human performance with a cross-cutting theme in the aspect of work control and planning. A root cause evaluation (CR 08-32972) was completed in April 2008. Identified root causes included (1) less than adequate implementation of human performance tools, and (2) organizational weakness in identifying and/or minimizing error traps. A contributing cause was perceived time pressure to complete tasks due to a significant number of emergent activities. The cause analysis determined that the human performance issues were broader than the area of 'work control' and, therefore, the corrective actions taken were broader as well.

In July 2008, a comprehensive Human Performance Strategic Action Plan was developed to provide the framework and organizational alignment necessary to reduce the frequency and severity of events. Part of the alignment included broadening the understanding of human reliability theory and the need for a strategic approach to reduce the frequency of events through rigorous use of error-prevention tools and aggressive control of defense-in-depth to reduce the severity of events.

This alignment included creating an understanding within key work groups that "how the job gets done" is as important as "getting the job done." The strategic plan provides a

strategy and focus to fundamentally influence the Perry culture such that it sustains human performance improvements through a focus on prevention of events, detection of event precursors, and correction of event causes.

The initial focus of the Human Performance Strategic Action Plan was to improve worker fundamentals and to increase in field observation time and feedback to reinforce standards and expectations. With this phase completed, the plan is currently being revised to continue our progress going forward with an emphasis on quality of the Field and Training observations conducted by front-line supervisors and above. The emphasis on improving worker fundamentals continues to reinforce positive behaviors and make on the spot corrections of the undesirable behavior. The Human Performance Team continues to work to reduce the number of procedure adherence errors by having each Section Human Performance Advocate discuss a general skill reference procedure during the monthly section meetings. The Site Human Performance Advocate continues to work with the FENOC Fleet and will continue to benchmark the industry best performers in the area of procedure adherence.

A Safety and Human Performance Center was constructed to increase personnel awareness of error traps and the need to provide feedback. This facility provides a plant-like setting for radiological and human performance training. The Safety and Human Performance Center was designed for conducting dynamic learning activities in the areas of human performance, foreign material exclusion, lifting and rigging and other relevant fundamental behaviors necessary for workers to perform work error-free. The facility contains a classroom as well as suitable areas used to conduct dynamic learning activities in support of the station's Human Performance Strategic Action Plan.

In preparation for our 2009 refueling outage, Safety and Human Performance training was developed and provided to nearly 1500 workers. This training averaged over three hours and emphasized standards and expectations for pre-job briefs, personnel protective equipment, safety, including electrical safety, chemical control, human performance tools, foreign material exclusion, and scaffolding. Prerequisite classroom training for the Safety and Human Performance Center included Plant Access Training, Non-Station Personnel Human Performance Training, and station Foreign Material Exclusion procedure training. The facility was also used to help prepare over 700 Radiation Workers, new to FENOC, by providing the setting for their Radiation Worker Exercise hands-on training.

An effectiveness review was conducted to evaluate visible organizational behaviors and to provide feedback relative to the organization's ownership in improving human performance. A qualitative assessment of results was conducted regarding the overall improvement in reducing the frequency and severity of events. This assessment included evaluation of trends in station and section clock resets as well as trends in overall station error rate. The effectiveness review concluded that improved leadership and organizational behaviors, relative to human performance, were visible on a daily basis, prior to and during the latest refueling outage (that ended May 2009). These

behaviors were recognized as a fundamental cultural change for the station. Although the emphasis on human performance has improved and high level consequential events have been suppressed, continued management emphasis will be provided to ensure the improvement is sustained.

The station clock reset error rate from January 2008 - March 2009 has continually trended downward representing an improving trend. The trend represents an almost 70% reduction in the frequency of human errors. The current 18-month rolling average for station clock resets is consistent with industry performance.

#### Human Performance Resources Aspect H.2(c), Documentation

Review of NRC Inspection results for 2008 indicated that Perry has challenges in Human Performance Resources H.2(c), documentation and component labeling. In June 2008, a full apparent cause investigation (CR 08-41574) was performed which resulted in multiple corrective actions to address the H.2(c) aspect. The apparent cause was identified as lack of interface formality and teamwork between the maintenance and engineering departments. Most corrective actions to address the cause were completed by the end of October 2008.

Maintenance and engineering management (supervisors and above), with an appropriate selection of key individual contributors, participated in a team building meeting to discuss the identified communication issues and the Safety Culture insights. An effectiveness review was performed in April 2009, and concluded, through a review of condition reports, NRC Correspondence, and Fleet Oversight audits, that evidence of improvement had been demonstrated. FENOC/PNPP recognizes the importance of documentation quality to support error-free work in the field and close monitoring of on-going performance and effectiveness of corrective actions continues.

#### Human Performance Work Practices Aspect H.4(a), Human Error Prevention Techniques

Review of NRC inspection results for 2008 indicated that Perry has an emerging trend in the Human Performance Work Practices H.4(a), error prevention techniques. Beginning in July 2008, a full apparent cause investigation (CR 08-43197) was performed that resulted in multiple corrective actions to address the H.4(a) aspect. The apparent cause identified individuals (worker/supervisor) not being accountable, or held accountable, to meet procedure/instruction requirements, specifically, for using human performance tools and ensuring adequate pre-job briefs. Most corrective actions to address the cause were a subset of the corrective actions from the root cause that addressed H.3(a) (discussed above), and have been completed.

As mentioned previously, a human performance dynamic learning facility was created to help reinforce desired human performance behaviors. The scenarios help increase personnel awareness of error traps and reinforce the need to provide feedback. For example, the trainee handout was in the form of a work order, which the students used

as an interactive tool as they proceeded through the individual work stations. This enabled the students to better understand what their roles and responsibilities are as nuclear workers, as well as understanding standards and expectations for verification of qualifications, job briefs, protective equipment usage, job hazards and precautions, procedure use and place keeping, clearances, plant cleanliness (housekeeping), and foreign material control.

Based on the number of NRC Non-Cited Violations (NCV)/Findings over the past 12 months, as well as the timing of NCV/Findings, Precursors, and corrective actions, close monitoring of ongoing performance and effectiveness of corrective actions continues.

### **Improvements in Human Performance Expected from these Actions**

From rigorous implementation of the Human Performance Strategic Action Plan and continued monitoring and response to cross-cutting precursors and inspection findings, FENOC/PNPP management expects to see a continued reduction in frequency and severity of plant events culminating in improved regulatory performance.

### **Conclusion**

FENOC/PNPP is committed to addressing and resolving the aforementioned cross-cutting issues, as well as all human performance cross-cutting issues. During the latest FENOC/PNPP refueling outage, the plant was disappointed in experiencing a human performance error resulting in a loss of shutdown cooling. The issue was entered into the corrective action program and a root cause team was promptly formed, interim corrective actions were established to improve the organizations recognition of risk, and increased oversight of elevated risk activities was provided, all with the goal of preventing events. FENOC/PNPP uses the corrective action program to help site personnel understand the reasons why defenses fail when an event occurs. Additionally, we are improving individual accountability for human performance problems.

While there was immediate management intervention and actions were taken to address operational risk, the event further emphasizes our need for renewed vigilance in internalizing human performance error prevention techniques and strengthening defensive barrier implementation at the organizational and individual levels.

Overall, although the frequency and severity of events have decreased, management recognizes that we will never be satisfied or completed with our efforts to improve human performance. Actions to address human performance deficiencies are captured in the corrective action program and will continue to be monitored by the management team. FENOC/PNPP expects to demonstrate continued performance improvement in these areas.