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SUBJECT: Forwards supplemental response to violations noted in insp C
 repsts 50-387/97-06 & 50-388/97-06 re partially-opened CR A
 emergency outside air supply sys door. Corrective actions: T
 changes made to operator rounds to clarify expectations. E

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**SUSQUEHANNA STEAM ELECTRIC STATION
SUPPLEMENTAL INFORMATION
CREOASS FAN PLENUM ACCESS DOOR
REPLY TO INSPECTION REPORT 97-06
PLA-4839**

**Docket Nos. 50-387
and 50-388**

FILE R41-2

- References:*
- 1) *NRC Integrated Inspection Report 50-387/97-06 and 50-388/97-06, dated October 27, 1997.*
 - 2) *PLA-4812, "Reply to a Notice of Violation (50-387/97-06-08, 50-388/97-06-08; 50-387/97-06-10, 50-388/97-06-10; 50-387/97-06-11; 50-388/97-06-11; 50-387/97-06-12, 50/388/97-06-12; And 50-387/97-06-13, 50-388/97-06-13)," dated November 26, 1997.*

This letter responds to the request contained in Reference No. 1 for additional information regarding the partially-opened Control Room Emergency Outside Air Supply System (CREOASS) door. This information is provided in the attachment to this letter.

In response to finding the partially-opened door, immediate action was taken to close and latch the door, and a Condition Report was initiated. A Status Control Investigation was launched, and included interviews with Operators and other personnel. Additionally, the Shift Supervisor contacted Security to assist in the investigation.

Although a definitive cause was not identified as part of the causal evaluation of the event, the Condition Report evaluation and associated status control investigation were effective in uncovering the most probable cause and contributing factors. As indicated in the Attachment, this allowed us to take concrete actions in response to each in order to prevent recurrence of the condition. For example, to reduce the likelihood of the human error, clear expectations were added to operator rounds and "hot-box" training was provided to Operations personnel on the event and the expectations. Additionally, labeling was added to doors to remind operators of the proper latching of the doors. Such actions are directly responsive to the Condition Report causal evaluation, and should prevent occurrence of similar events. This is the intent of our approach to compliance with 10 CFR 50, Appendix B, Criterion XVI.

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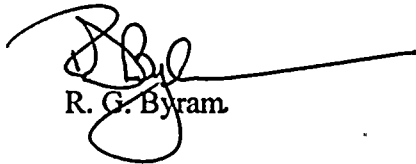


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With regard to the operability evaluation for this Condition Report, the attachment provides additional detail regarding the evaluation of the partially-opened door. The evaluation examined the condition as found in the plant, and provided sufficient basis for the conclusion that the door would close. This conclusion was based upon a combination of empirical plant data as well as engineering calculation.

We trust that the Commission will find the attached response acceptable. If you have additional questions, please contact Mr. J. M. Kenny at (610) 774-7535.

Sincerely,



R. G. Byram

Attachment

copy: NRC Region I
Mr. K. Jenison, NRC Sr. Resident Inspector
Mr. V. Nerses, NRC Sr. Project Manager

**ATTACHMENT 1
SUPPLEMENTAL RESPONSE TO NRC INSPECTION
REPORT 50-387/97-06, 50-388/97-06**

The NRC cover letter for "NRC Inspection Report 50-387/97-06 and 50-388-97-06 and Notice of Violation," dated October 27, 1997 discusses the alignment of the Control Room Emergency Outside Air Supply System (CREOASS) fan plenum access door. These issues are expanded upon in the executive summary of the report, which states the following:

"Although the CREOASS systems was promptly realigned, the licensee's operability assessment of the misaligned condition was weak because: (1) the licensee was not able to discover the cause of the plenum door being open; (2) the consequences of a partially opened door were not analyzed in the operability determination; and (3) the licensee does not block system initiation or enter a Limiting Condition for Operation (LCO) Action Statement when the ventilation system is breached during normal operator rounds..."

Each of these items are discussed below.

(1) Cause of the CREOASS Door Being Partially Open

On 7/24/97 at 0945 the 0V101A CREOASS door was found approximately 2" open. Attempts by the NSE System Engineer and Predictive Maintenance personnel to latch the door in the closed position were unsuccessful (the door was able to be closed throughout the event). The control room was notified of the condition. An AUS was dispatched to assist. The fan plenum door was successfully closed and latched. A Condition Report was initiated to document the event and a Status Control investigation commenced.

The Condition Report and Status Control investigations could not identify a definitive root cause regarding how the CREOASS fan plenum door was partially-opened. When a definitive root cause cannot be determined, it is PP&L's practice to identify and address the most probable cause(s). The investigation identified the following most probable cause along with two causal factors. The actions taken to correct the condition and the actions to prevent recurrence are also provided.

Most Probable Cause:

The event was caused by human error. An operator accessing the fan plenum during the normal course of duty or to perform a pre-start check closed the door. Proper latching of the door was not verified.

Action to
Correct Condition
Actions to
Prevent Recurrence

The door was closed and properly latched.

“Hot Box” training was provided to inform Operations personnel of the event and the associated corrective action.

Changes were made to operator rounds to clarify expectations regarding entry into fan plenums. The expectations are that operators should not enter fan plenums during rounds or system startup checks.

“Hot Box” training was provided to raise the level of awareness regarding the operability impact of opening the CREOASS plenum doors, including reiteration of the requirement that an LCO be entered prior to opening the plenum doors.

Causal Factor No. 1:

Action to
Correct Condition

Actions to
Prevent Recurrence

The latch mechanism for these doors is unique. It requires specific handle alignments for the “door closed” and for the “door closed and latched” positions. It is possible to close the door and rotate the handle without properly engaging the latch.

Labels were manufactured and applied to the CREOASS fan plenum doors to indicate the proper latch positions.

An engineering review of the latch design resulted in the recommendation to retain the door latch design. Engineering concluded that improved labeling -- to explicitly describe the latch positions for closing and fully securing the door -- was sufficient to preclude recurrence.

Walkdowns of the Standby Gas Treatment System (SGTS) and the “E” Emergency Diesel Generator Supply Fan were performed to determine if they were susceptible to the same problem. Some additional labeling was installed.



Causal Factor No. 2:

The "door closed" and "door closed and latched" alignment positions were not indicated on the door.

Action to
Correct Condition

Labels were manufactured and applied to the CREOASS fan plenum doors to indicate the proper latch positions.

Although the investigation did not uncover the "definitive" cause for the CREOASS door being partially opened, it is appropriate to identify and address the "most probable" cause. The actions taken provide reasonable assurance that the identified problem has been corrected and will not recur.

2) Consequences of a Partially-Opened Door

An operability assessment of the condition was performed as part of the Condition Report process. Based on the fact that the door was only open approximately two inches, and the CREOASS fan suction develops a negative pressure of 5" wg, it was calculated that there would be a closing force of 300 lbs. on the door. This force is more than sufficient to close the door and maintain an adequate seal. The operability determination assessed the condition as found in the plant.

In order to understand the nature of the inspection report comment, Section 02.3.b "Observations and Findings" must be reviewed. Clarification can be found in the second paragraph which states:

"...and (2) the operability determination for CR 97-2408 assumed that the door in question would have closed if the CREOASS train had initiated. However, the consequences of the door remaining partially opened were not analyzed in the operability determination. This omission was significant because the redundant train of CREOASS was out of service for maintenance and potential for obstruction of the open door could not be conclusively ruled out. These issues were considered weaknesses in the operability review process."

PP&L conducted a follow-up investigation whereby the CREOASS plenum door was repositioned as it was during the initial event. This investigation concluded that the latches were in a position where their center of mass was directly below their center of rotation. Therefore, any fan vibration during a system start could not have caused the latches to move into a position where they would have held the door in the open position. In addition, with the door in the position as found during the original event, the latches were inside the door jamb. Thus, any rotation out of the vertical alignment position would have been prevented by the door jamb. PP&L concluded that the CREOASS door would have closed during a fan start and that the original Operability Assessment remains valid.

PP&L's procedure for operability assessments identifies the key concepts that must be considered when performing an operability determination. Specifically, realistic analysis may be used when performing the assessment. In the case of the CREOASS door, the operability assessment did not "assume" the door would close if the fan had initiated. The conclusion was based on a combination of empirical plant data as well as engineering calculation.

Additionally, the lack of a definitive cause is not related to the quality of the operability determination. Cause determination and/or root cause analyses are part of the corrective action program and are not related to performance or quality of an operability determination.

Another key concept that must be considered when performing operability determinations is that additional independent failures do not have to be assumed (not to be confused with consequential failures). The operability determination was performed based on the as-found condition in the plant. The CREOASS door was not blocked open nor was its closure path obstructed. The inspection report states that the operability determination was weak because it failed to assess the consequences of the door remaining partially opened. Some other postulated failure or condition would have to be assumed for this situation to occur. Postulating such additional failures is not appropriate for an operability determination. Generic Letter 91-18 "*Information to Licensees Regarding Two Inspection manual Sections on Resolution of Degraded and Nonconforming Conditions and on Operability*" was reviewed and there is no requirement to postulate such failures in an operability determination. Generic Letter 91-18 indicates that an operability determination must assess the degraded or nonconforming condition as it existed. Considering this information, we have concluded that the operability assessment performed was acceptable.

3) Controls When Ventilation System is Breached

The safety-related ventilation systems covered by SSES Technical Specifications are not intended to be breached during normal operator rounds. It is, however, our operating practice to check that all equipment is ready for a start prior to performing a manual startup. This practice also applied to the CREOASS. As part of the investigation into this event, 16 operators were surveyed to determine how they conducted this check for the CREOASS fan. The results indicated that five routinely opened the plenum door, eight responded they did not open the plenum door, and three responded they sometimes opened the plenum door. This information indicated that there were inconsistencies regarding the expectation of performing CREOASS startup readiness checks.

Given the fact that an open CREOASS plenum door could affect system operability and the inconsistencies in operator actions, the expectations for performing rounds and system startup checks of the CREOASS were added to the operator round sheets. Operators have been trained on this expectation. The expectation is:

“CREOASS fan suction access doors (fan housing) and other similar doors shall NOT be opened without Shift Supervision authorization and are NOT to be opened in preparation for fan starts.”

This corrective action will preclude the CREOASS plenum door from being opened during performance of normal operator duties. If there is an occasion to have the plenum door opened for some other activity, the appropriate LCO Action Statement for the CREOASS will be entered.