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SUBJECT: RO:on 890128,TS 3.8.1.1.b entered while EDG in process of
 being returned to normal lineup.

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March 1, 1989

U.S. Nuclear Regulatory Commission
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SUSQUEHANNA STEAM ELECTRIC STATION
D/G SPECIAL LETTER
FILE R41-2
PLAS - 353

Docket No. 50-387
License No. NPF-14

This letter is to revise a previous notification which was made to the Commission under 10CFR50.72(b) (2) (iii) on January 29, 1989.

On January 28, 1989 at 0610 hours, with both Unit 1 and Unit 2 operating at 100% power, Technical Specification Action 3.8.1.1.b was entered while Emergency Diesel Generator (EDG; EIIS Code: EK) 'D' was in the process of being returned to its normal line-up, following a maintenance outage. Prior to this evolution, the 'E' EDG had been substituting for the 'D' EDG while it was out-of-service for the maintenance work. The return-to-service of the 'D' EDG requires the removal of the 'E' EDG from service. Thus, until the 'D' EDG is successfully tested, only 3 EDG's are OPERABLE and LCO 3.8.1.1.b must be entered. Tech Spec Action 3.8.1.1.b requires that with one EDG inoperable, OPERABILITY of the A.C. offsite sources be demonstrated within 1 hour and at least once per 8 hours thereafter, and that the remaining EDG's be demonstrated OPERABLE per Tech Spec 4.8.1.1.2.a.4 within 24 hours.

At 0327 hours on January 29, 1989, the 'D' EDG failed its post-maintenance (non-valid test) start attempt. In order to comply with Tech Spec Action 3.8.1.1.b, the remaining three EDG's needed to be tested per Tech Spec Surveillance Requirement 4.8.1.1.2.a.4 by 0610 hours January 29, 1989 (end of the 24 hour time limit of Tech Spec 3.8.1.1.b). The 'A' EDG was successfully started at 0401 hours on 1/29/89. At 0435 hours on 1/29/89, the 'B' EDG failed its start attempt (greater than the allowable 10 second start time). A second start attempt of the 'B' EDG at 0510 hours on 1/29/89 was successful and the 'C' EDG was successfully started at 0522 hours on 1/29/89. It was initially determined that, due to the unsuccessful first start of the 'B' EDG, only two (2) EDG's were OPERABLE from 0435 to 0510 hours on 1/29/89. Since the safety analysis for Susquehanna requires three (3) OPERABLE EDG's to safely shut down the plant, the decision was made to make a verbal notification to the Commission. This notification was made at 1905 hours on January 29, 1989, pursuant to 10CFR50.72(b) (2) (iii).

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It was subsequently determined, based on investigations by Maintenance, I&C and Plant System Engineering personnel, that the unsuccessful first start attempt of the 'B' EDG could be attributed to malfunction of a component that is not operative in the emergency operating mode. As such, per the guidance provided by Regulatory Guide 1.108, Rev. 1, August 1977, the unsuccessful start attempt of the 'B' EDG at 0435 hours on 1/29/89 would not be considered to be a valid test or a failure.

There is strong evidence to support this determination. During a start attempt of the 'B' EDG on December 12, 1988, the diesel failed to start. A sticking pneumatic control valve, either USCV-9 or USY-9, was judged as contributing to the failure. Since failure of either of these valves would not have prevented the EDG from starting in the emergency mode, this start attempt was classified as a non-valid test. During a maintenance troubleshooting (non-valid test) start attempt on January 3, 1989, a start time of 10.18 seconds was observed (a maximum of 10 seconds is allowed). Observations indicated that there was a potential problem with the EDG left side air starting system. A Work Authorization was generated to investigate this potential problem at the next opportunity (an 18-month maintenance surveillance outage on the 'B' EDG was already scheduled to start on February 6, 1989).

Following an investigation/evaluation it was the System Engineer's judgement that the slower than normal start times could be due to a pneumatic control component problem and not directly related to the left bank air start system problem. It was determined by the System Engineer that pneumatic actuating valve (USCV-9) in the fuel control portion of the EDG may have been mis-operating (i.e., sticking; slow-acting). Upon the investigation and disassembly of this pneumatic component (USCV-9) by I&C, a sticky, oil-like, foreign substance was found and the valve's action was erratic (i.e., valve actuated on the first attempt; failed to actuate on subsequent attempts). The source of the substance could not be determined. Slower than normal action of this pneumatic valve will cause the main fuel control cylinder to move more slowly and result in a slower engine acceleration on fuel oil, leading to the slower start time to required speed and voltage. This pneumatic component is used during test starts of the EDG. In an emergency start situation, two redundant, independent 125 VDC solenoid valves provide this same function. Thus, USCV-9 is not required for the EDG to perform its emergency design function. It is believed that USCV-9 has not been functioning properly and most likely led to the slow start times. Because this component is not required for EDG emergency starts, the 'B' EDG is considered to have remained OPERABLE during the subject time period of 0435-0510 on January 29, 1989 and verbal notification of the NRC was not required. USCV-9 was cleaned, retested satisfactorily and returned to service by I&C personnel.

On January 30, 1989 the Work Authorization, which had previously identified the potential left bank air start system problem, was worked. Investigation determined that a slightly mis-positioned bracket on the EDG turning gear interlock switch prevented the switch from actuating, thus preventing the left side main air start valve from operating. The bracket was adjusted and the 'B' EDG was again successfully tested on January 30, 1989, with no starting air problems observed. It could not be determined why the switch bracket had become mis-positioned. The EDG is designed to start with only one side's (left or right) main air start valve operating. This is accomplished by a hard-piped cross-connection header between the left and right side air starting headers, downstream of the main air start valves. This further supports the plant

staff's determination that the slow start of the 'B' EDG on January 29, 1989 0435 hours was most likely as a result of the malfunctioning pneumatic component (USCV-9) and not as a result of the mis-positioned turning gear interlock.

Based on this evaluation:

- 1) The 'B' EDG start of 0435 hours on January 29, 1989 was a non-valid test and not considered to be a failure.
- 2) The 'B' EDG remained OPERABLE throughout the time period January 29, 1989 0435 - 0510 hours.
- 3) Three (3) EDG's ('A', 'B' and 'C') remained OPERABLE as per the Tech Spec Surveillance Requirement 4.8.1.1.2.a during this evolution on 1/29/89.
- 4) Verbal notification to the Commission on January 29, 1989, pursuant to 10CFR50.72(b) (2) (iii) was not required.
- 5) This event is not reportable per 10CFR50.73 or per Tech Spec 4.8.1.1.4 (Diesel Special Reports) and no Licensee Event Report or Special Report will be filed.


R.G. Byram

Superintendent of Plant - Susquehanna

RRW/mjm

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