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JUL 08 2013

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

**SUSQUEHANNA STEAM ELECTRIC STATION (SSES)
LICENSEE EVENT REPORT 50-387/2013-001-00
LICENSE NOS NPF-14 and NPF-22
PLA-7041**

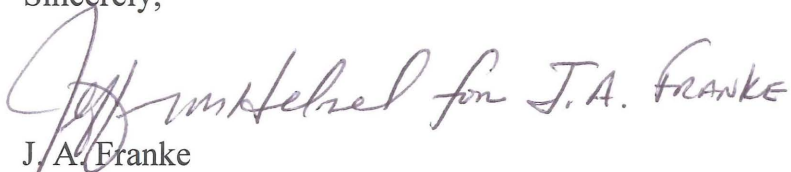
**Docket Nos. 50-387
and 50-388**

Attached is Licensee Event Report (LER) 50-387/2013-001-00. This LER is submitted to report a condition in which the SSES Diesel Generator (D/G) 'B' to 4.16 kV bus '2B' synchronizing selector switch failed. This resulted in a condition that is reportable in accordance with 10 CFR 50.73(a)(2)(i)(B) as any operation or condition which was prohibited by the SSES Technical Specifications (TS).

There were no actual consequences to the health and safety of the public as a result of this event.

There are no regulatory commitments associated with this LER.

Sincerely,


J. A. Franke

Attachment: LER 50-387/2013-001-00

Copy: NRC Region I
Mr. P. W. Finney, NRC Sr. Resident Inspector
Mr. J. A. Whited, NRC Project Manager
Mr. L. J. Winker, PA DEP/BRP

NRC FORM 366 (10-2010)		<u>U.S. NUCLEAR REGULATORY COMMISSION</u>			APPROVED BY OMB: NO. 3150-0104 Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA/Privacy Section (T-5 F53), U. S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects.resources@nrc.gov , and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.					
LICENSEE EVENT REPORT (LER) (See reverse for required number of digits/characters for each block)								EXPIRES: 10/31/2013		
1. FACILITY NAME Susquehanna Steam Electric Station (SSES) Unit 1					2. DOCKET NUMBER 05000387			3. PAGE 1 OF 5		
4. TITLE : Diesel Generator 'B' to Bus '2B' Synchronizing Selector Switch Failure										
5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
05	07	2013	2013	- 001	- 01	07	08	2013	Susquehanna Steam Electric Station Unit 2	05000388
9. OPERATING MODE Unit 1 – 1 Unit 2 – 5			11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply) <div style="display: flex; flex-wrap: wrap;"> <div style="width: 25%;"><input type="checkbox"/> 20.2201(b)</div> <div style="width: 25%;"><input type="checkbox"/> 20.2203(a)(3)(i)</div> <div style="width: 25%;"><input type="checkbox"/> 50.73(a)(2)(i)(C)</div> <div style="width: 25%;"><input type="checkbox"/> 50.73(a)(2)(vii)</div> <div style="width: 25%;"><input type="checkbox"/> 20.2201(d)</div> <div style="width: 25%;"><input type="checkbox"/> 20.2203(a)(3)(ii)</div> <div style="width: 25%;"><input type="checkbox"/> 50.73(a)(2)(ii)(A)</div> <div style="width: 25%;"><input type="checkbox"/> 50.73(a)(2)(viii)(A)</div> <div style="width: 25%;"><input type="checkbox"/> 20.2203(a)(1)</div> <div style="width: 25%;"><input type="checkbox"/> 20.2203(a)(4)</div> <div style="width: 25%;"><input type="checkbox"/> 50.73(a)(2)(ii)(B)</div> <div style="width: 25%;"><input type="checkbox"/> 50.73(a)(2)(viii)(B)</div> <div style="width: 25%;"><input type="checkbox"/> 20.2203(a)(2)(i)</div> <div style="width: 25%;"><input type="checkbox"/> 50.36(c)(1)(i)(A)</div> <div style="width: 25%;"><input type="checkbox"/> 50.73(a)(2)(iii)</div> <div style="width: 25%;"><input type="checkbox"/> 50.73(a)(2)(ix)(A)</div> <div style="width: 25%;"><input type="checkbox"/> 20.2203(a)(2)(ii)</div> <div style="width: 25%;"><input type="checkbox"/> 50.36(c)(1)(ii)(A)</div> <div style="width: 25%;"><input type="checkbox"/> 50.73(a)(2)(iv)(A)</div> <div style="width: 25%;"><input type="checkbox"/> 50.73(a)(2)(x)</div> <div style="width: 25%;"><input type="checkbox"/> 20.2203(a)(2)(iii)</div> <div style="width: 25%;"><input type="checkbox"/> 50.36(c)(2)</div> <div style="width: 25%;"><input type="checkbox"/> 50.73(a)(2)(v)(A)</div> <div style="width: 25%;"><input type="checkbox"/> 73.71(a)(4)</div> <div style="width: 25%;"><input type="checkbox"/> 20.2203(a)(2)(iv)</div> <div style="width: 25%;"><input type="checkbox"/> 50.46(a)(3)(ii)</div> <div style="width: 25%;"><input type="checkbox"/> 50.73(a)(2)(v)(B)</div> <div style="width: 25%;"><input type="checkbox"/> 73.71(a)(5)</div> <div style="width: 25%;"><input type="checkbox"/> 20.2203(a)(2)(v)</div> <div style="width: 25%;"><input type="checkbox"/> 50.73(a)(2)(i)(B)</div> <div style="width: 25%;"><input type="checkbox"/> 50.73(a)(2)(v)(C)</div> <div style="width: 25%;"><input type="checkbox"/> 50.73(a)(2)(v)(D)</div> <div style="width: 25%;"><input type="checkbox"/> OTHER</div> </div> Specify in Abstract below or in NRC Form 366A							
12. LICENSEE CONTACT FOR THIS LER										
FACILITY NAME D. L. Filchner, Senior Engineer - Nuclear Regulatory Affairs								TELEPHONE NUMBER (Include Area Code) (610) 774-7819		
13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT										
CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	
B	EK	SEL	E155	Yes						
14. SUPPLEMENTAL REPORT EXPECTED <input checked="" type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input type="checkbox"/> NO						15. EXPECTED SUBMISSION DATE				
						MONTH		DAY	YEAR	
						09		13	2013	
ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) <p>On 5/7/2013 at 0053 the control room noted HS-00040B (Emergency Diesel Generator (D/G) 'B' to bus '2B' synchronizing selector switch) failed in the 'on' position during performance of SO-024-001B "Monthly Diesel Generator B Operability Test." Based on the design of the SSES synchronizing selector switch circuitry, with HS-00040B failed in the 'on' position, all other synchronizing selector switches were rendered non-functional. The initial operability determination by the Senior Reactor Operators (SRO) for the failed synchronizing selector switch was that the switch did not have a safety function and that the D/Gs and offsite AC sources were operable. During the operability determination, the assessment of the LCO 3.8.1 Surveillance Requirements (SR) did not identify all of the SRs impacted by the failed selector switch. Therefore it was not recognized that the failed switch caused some of the SRs associated with Unit 1 LCO 3.8.1 and Unit 2 LCO 3.8.2 to not be met in accordance with SR 3.0.1. The extent of SRs not met on both Units 1 and 2 is currently under evaluation and will be provided at a later date as a supplement to this LER. It has been determined that SR 3.8.1.16 was not met.</p> <p>The Direct Cause of the event was a failure of synchronizing selector switch HS-00040B, which failed in the 'on' position during performance of SO-024-001B. The Apparent Cause determined thus far was that Surveillance Procedure SO-024-001B did not provide guidance that operability of the synchronizing selector switch is required to meet the SR 3.8.1.16 surveillance requirement.</p> <p>An immediate corrective action was to replace the failed synchronizing selector switch. Additional planned corrective actions include revising the affected surveillance procedures; evaluating the feasibility of synchronizing circuit design changes; and reviewing Operability Determination Training recently provided for effectiveness.</p> <p>There were no adverse consequences to the health and safety of the public as a result of this event. This event is being reported under 10 CFR 50.73(a)(2)(i)(B) as any operation or condition which was prohibited by the SSES TS.</p>										

(10-2010)

LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

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Susquehanna Steam Electric Station Unit 1	05000387	YEAR 2013	SEQUENTIAL NUMBER -001	REVISION NUMBER - 00	2 OF 5

NARRATIVECONDITION PRIOR TO THE EVENT

Unit 1 – Mode 1, 100 percent Rated Thermal Power

Unit 2 – Mode 5, 0 percent Rated Thermal Power

EVENT DESCRIPTION

On 5/7/2013 at 0053 the control room noted HS-00040B (Emergency Diesel Generator (D/G) 'B' to bus '2B' synchronizing selector switch) failed in the 'on' position during performance of SO-024-001B "Monthly Diesel Generator B Operability Test." Based on the design of the SSES synchronizing selector switch circuitry, with HS-00040B failed in the 'on' position, all other synchronizing selector switches were rendered non-functional. The synchronizing hand switches have a removable key and only one key is provided to operations so that only one of the thirty-seven (13.8 kV and 4.16 kV) synchronizing hand switches can be in the 'on' position at a time. This switch failure prevented the synchronizing scope to return to its de-energized position. A condition report (CR) documented this condition and identified that all manual synchronizing operations of the 13.8 kV and 4.16 kV busses could not be performed while the switch was in the 'on' position. The initial operability determination by the Senior Reactor Operators (SRO) for the failed synchronizing selector switch was completed on 5/7/2013 at 0328. It was determined that the switch did not have a safety function and that the D/Gs and offsite AC sources were operable. The synchronizing switches are a design function to allow manual synchronization of a running and loaded D/G to the offsite circuits.

During the operability determination, the assessment of the LCO 3.8.1 Surveillance Requirements did not identify all of the SRs impacted by the failed selector switch. Only SRs 3.8.1.3, 3.8.1.4, 3.8.1.5, 3.8.1.6, 3.8.1.7, 3.8.3.1, 3.8.3.2, and 3.8.3.4 were identified in SO-024-001B as surveillances associated with the test. It was not recognized that the failed switch caused some of the other SRs associated with SSES Unit 1 LCO 3.8.1 and Unit 2 LCO 3.8.2 to not be met. Accordingly, Unit 1 LCO 3.8.1 and Unit 2 LCO 3.8.2 should have been entered in accordance with SR 3.0.1. The full extent of SRs not met on both Units 1 and 2 is currently under evaluation and will be provided as a supplement to this LER. It has been determined that SR 3.8.1.16 was not met.

At the time of the switch failure Unit 1 was operating in Mode 1 and therefore, LCO 3.8.1 'AC Sources – Operating', was applicable. As a minimum, LCO 3.8.1 is considered not met due to SR 3.8.1.16 not being met. Since no LCO 3.8.1 Conditions were entered, no required Actions were taken. This condition on Unit 1 is being reported in accordance with 10 CFR 50.73 (a)(2)(i)(B) as any operation or condition which was prohibited by the plant's TS.

Unit 2 was in Mode 5 at the time of the switch failure and therefore, LCO 3.8.2 'AC Sources – Shutdown', was applicable. Since no LCO 3.8.2 Conditions were entered, no required Actions were taken. Accordingly, LCO 3.8.2 Condition A "One or more required AC Sources inoperable," and Required Action A.2.3 to immediately initiate actions to suspend operations with a potential for draining the reactor vessel (OPDRVs), should have been entered. Since the Required Action to suspend OPDRVs was not performed, the enforcement discretion per EGM 11-003 was not applicable to any OPDRV activities that were performed while LCO 3.8.2 required Action A.2.3 was not met. This condition on Unit 2 is also being reported in accordance with 10 CFR 50.73 (a)(2)(i)(B) as any operation or condition which was prohibited by the plant's Technical Specifications (TS). Additionally, this condition was previously identified as an exception to PPL's application of EGM 11-003 guidance during the in SSES Unit 2 16th Refueling and Inspection Outage (RIO), as discussed in LER 50-388/2013-001-00, submitted on June 14, 2013 via PLA-7018. A complete discussion of the LCO Conditions and Required Actions that were not completed will be provided as a supplement to this LER after the full extent of SRs not met is evaluated.

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NARRATIVESequence of Events

The following is a summary of the events related to this reportable condition:

- 5/7/2013 00:40 While performing SO-024-001B, the synch switch for Unit 2B ESS bus HS-00040B appears to have failed in the synch position. CR1700407 written to document this failure.
- 5/7/2013 00:53 Synchronizing Select Switch DG B to Bus 2B is determined to be broken in the closed position, the synchronizing scope will not work for any other busses. Use of any other synchronizing selector switch will cause the fuse to blow.
- 5/7/2013 00:56 CR 1706404 written to identify that the synchronizing circuit at Susquehanna needs to be reviewed in accordance with NDAP-QA-0524 for Failure Effect Codes and Single Point Vulnerability mitigation.
- 5/7/2013 15:48 CR 1700812 written to evaluate an engineering change to electrically jumper out the synch switch for breaker 2A20204 (HS-00040B) from the circuit to allow all other synch switches to function.
- 5/7/2013 PCWO 1700528 written to determinate / remove the defective synchronizing selector switch from control room panel 0C653. PCWO 1700647 written to replace synchronizing selector switch HS-00040B on panel 0C653.
- 5/8/2013 18:10 Power supply de-energized for synchronizing selector switch replacement
- 5/9/2013 13:17 Completed replacement of HS-00040B DG B to Bus 2B Synchronizing Selector Switch on Panel 0C653 under WO 1700647
- 5/14/2013 03:55 The SSES NRC Senior Resident requested clarification related to compliance with the TS SR 3.8.16 surveillance requirement for the HS-00040B DG B to Bus 2B Synchronizing Selector Switch failure (documented in CR1703293) The TS Bases for SR 3.8.1.16 states: "As required by Regulatory Guide 1.9 (Ref. 3), this Surveillance ensures that the manual synchronization and automatic load transfer from the DG to the offsite source can be made and that the DG can be returned to ready to load status when offsite power is restored. It also ensures that the auto start logic is reset to allow the DG to reload if a subsequent loss of offsite power occurs. The DG is considered to be in ready to load status when the DG is at rated speed and voltage, the DG controls are in isochronous and the output breaker is open.
- 5/28/2013 16:58 CR 1708912 was written to identify that the condition prohibited by Unit 2 TS 3.8.2 involved OPDRVs. Specifically, LCO 3.8.2 required action A.2.3 to immediately initiate actions to suspend OPDRVs was not followed on Unit 2. As a result, enforcement discretion criteria item 4 of EGM 11-003, Revision 1 was not met because TS Action requirement for Mode 5 OPDRV activities were not followed as required by criteria item 4 for approximately 75 hours. Because criteria item 4 was not met, enforcement discretion under EGM 11-003 was not applicable to any OPDRV activities that were performed while LCO 3.8.2 required action A.2.3 was not met.

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NARRATIVECAUSE OF THE EVENT

The Direct Cause of the event was a failure of the D/G 'B' to bus '2B' synchronizing selector switch (HS-00040B) which failed in the 'on' position during performance of SO-024-001B "Monthly Diesel Generator B Operability Test.

The Apparent Cause determined thus far was that Surveillance Procedure SO-024-001B did not provide guidance that the synchronizing selector switch is required to meet the TS SR 3.8.1.16 surveillance requirements. A Causal Factor was determined to be that the SRO review was limited to the TS surveillance requirements of SO-024-001B. It was not recognized that operation of the synchronizing selector switch was necessary to meet the SR 3.8.1.16 requirement which is met by performing Engineering Surveillance SE-1(2)24-1(2)07 "LOCA LOOP TESTING" on a two year frequency. Consequently, this SR is not frequently reviewed and exercised. Recent Operability Determination Training did not emphasize that SRO's are expected to be aware of the content of TS and SRs. The full extent of SRs not met on both Units 1 and 2 is currently under evaluation and will be provided as a supplement to this LER.

ANALYSIS/SAFETY SIGNIFICANCEActual Consequences:

There were no actual consequences to the health and safety of the public as a result of this event. The broken synchronizing selector switch caused a TS SR to not be met, which resulted in Unit 1 LCO 3.8.1 and Unit 2 LCO 3.8.2 to not be met. At no time were the A, B, C, or D required D/Gs not capable of performing their safety function to automatically start and load to the Emergency Safety Switchgear (ESS) busses. Additionally, at no time were either of the offsite power sources unable to supply their connected loads or automatically transfer from the preferred to the alternate source or vice versa if necessary. The switch failure only affected restoration of power following a 'loss of offsite power' (LOOP), in which the offsite power source would not be able to re-synchronize to the ESS busses with the loads remaining connected to the D/Gs.

Since the inoperable AC power sources were determined to have maintained their ability to perform their necessary shutdown risk function, the impact to OPDRV activities was determined to be of low shutdown risk significance and an adequate level of safety was provided during the performance of the OPDRV activities described in Unit 2 LER 50-388/2013-001-00 (PLA-7018, dated June 14, 2013).

Potential Consequences:

In the event of a LOOP Offsite power could not have been re-synchronized to the running loads on the ESS busses without repair of the broken synchronizing selector switch or its isolation from the circuit.

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NARRATIVE**CORRECTIVE ACTIONS**

An immediate corrective action was to replace the failed synchronizing selector switch.

Longer term corrective actions planned thus far:

- Revise the affected surveillance procedures to provide guidance that the synchronizing selector switch is required to meet the surveillance requirements of SR 3.8.1.16.
- Reclassify all existing synchronizing switches to have the same failure effect and maintenance rule codes, which will establish an equal criticality for all switches.
- Create a maintenance plan to change out the switches to improve reliability.
- Evaluate the feasibility of synchronizing circuit design changes.
- Perform a sampling of surveillances that would lead to a 2 hour LCO if the surveillance failed, to ensure that there are sufficient directions in procedures to alert Operators when performing the TS review.
- Review Operability Determination Training recently provided for effectiveness.
- Submit an INPO Operating Experience Report for this event.

PREVIOUS SIMILAR EVENTS

No previous similar events in which a single point vulnerability equipment failure resulted in a condition prohibited by TS on both SSES Units were identified.