

ORIGINAL

<b>REPORTABILITY DETERMINATION</b>	<b>CONDITION REPORT NO.</b> 319646	Page <u>1</u> of <u>1</u>
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**PART 1**

**DETAILS OF IMMEDIATE REPORTABILITY DETERMINATION**

Immediate NRC Reporting Required:  NO  YES PER see below

NRC Notification Made:  NO  YES Type:  1 HR  4 HR  8 HR  24 HR

**BASIS FOR DETERMINATION:**

Unit 2 was in Mode 5 on the fifth day of its 10th Refuel and Inspection Outage. At 1508 hours, the unit experienced an unexpected loss of Division 1 RPS Power supply. The loss of power was a result of the Electrical Protection Assembly (EPA) A & C breakers and motor generator output breaker tripping. The cause is under investigation. The loss of power caused the RHR Shutdown Cooling suction valve HV251F009 to close. This is a common suction valve to both divisions of RHR and resulted in the complete loss of RHR Shutdown Cooling. In accordance with 10CFR50.72(b)(3)(v) this represents a loss of the a safety system which removes residual heat and requires an 8 hour ENS call.

In addition to the isolation of RHR SDC, RWCU isolated due to containment valve HV244F001 closing, and Unit 2 HVAC Zone 3 (refuel floor) isolated. These isolations constitute an actuation of a Containment Isolation signal that affected multiple systems, and is reportable per 10CFR50.72(b)(3)(iv)(A).

Tom Middleton / 03/14/01 / [Signature] / 13/14/01  
 Completed By Date Shift Supervisor Date

**PART 2**

**DETAILS OF FOLLOW-UP REPORTABILITY DETERMINATION**

Reportable:  Y  N  P Per \_\_\_\_\_

Special Report:  Y  N  P Per Section \_\_\_\_\_

Reportable Per 10CFR50.9/10CFR21:  Y  N  P

Referred to Nuclear Licensing:  Y  N Date: \_\_\_\_\_

Report Due Date: \_\_\_\_\_

**Basis for Determination:**

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_  
 Completed By Date Supv. Operating Exp. Svcs. Date  
 or Nuc. Licensing Supervision

D-5

REACTOR PLANT  
EVENT NOTIFICATION WORKSHEET

EN # 37839

REGISTRATION TELEPHONE NUMBER: PRIMARY - 301-316-5100 or 800-532-3489, BACKUPS - (18T) 301-481-0860 or 800-448-3094, (M) 301-418-0550 and (F) 301-418-0633. \*Licensees who maintain their own ETS are provided these telephone numbers.

NOTIFICATION TIME 1802 est	FACILITY OR ORGANIZATION SUSQUEHANNA LLC	UNIT 2	NAME OF CALLER Robert R. Boesch	CALL BACK #. (570) 542-3907
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EVENT TIME & ZONE 508 EST	EVENT DATE 03/14/2001	POWERMODE BEFORE 0% / 5	POWERMODE AFTER 0% / 5
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EVENT CLASSIFICATIONS		1-Hr. Non-Emergency 10 CFR 50.72(b)(1)		60-Day Optional 10 CFR 50.73(e)(1)	
GENERAL EMERGENCY	GEN/AAEC	TS Deviation	ADEV X	(v)(A) Safe S/D Capability	AJNA
SITE AREA EMERGENCY	SIT/AAEC	4-Hr. Non-Emergency 10 CFR 50.72(b)(2)		(v)(B) RHR Capability	AJNB
ALERT	ALE/AAEC	(i) TS Required S/D	ASHU	(v)(C) Control of Rad Release	AJNC
UNUSUAL EVENT	UNU/AAEC	(iv)(A) ECCS Discharge to RCS	ACCS	(v)(D) Accident Mitigation	AJND
50.72 NON-EMERGENCY (see next column)		(iv)(B) RPS Actuation (scram)	ARPS	(vii) Offsite Medical	AMED
PHYSICAL SECURITY (73.71)	DDDO	(d) Offsite Notification	APRE	Loss Comm/Asmt/Resp	ACOM
MATERIAL/EXPOSURE	B777	8-Hr. Non-Emergency 10 CFR 50.72(b)(3)		Invalid Specified System Actuation	AJNV
FITNESS FOR DUTY	HFIT	(v)(A) Degraded Condition	ADEG	Other Unspecified Requirement (Identify)	
OTHER UNSPECIFIED REQMT (see last column)		(v)(B) Unanalyzed Condition	AUNA		NONR
INFORMATION ONLY	NNF X	(v)(A) Specified System Actuation	AESF		NONR

DESCRIPTION

Include: Systems affected, actuations & their tripping signals, causes, effect of event on plant, actions taken or planned, etc. (Continue on back)

Unit 2 was in Mode 5 on the fifth day of its 10th Refuel and Inspection Outage. At 1508 hours, the unit experienced an unexpected loss of Division 1 RPS Power supply. The loss of power was a result of the Electrical Protection Assembly (EPA) A & C breakers and motor generator output breaker tripping. The cause is under investigation.

The loss of power caused the RHR Shutdown Cooling suction valve HV251F009 to close. This is a common suction valve to both divisions of RHR and resulted in the complete loss of RHR Shutdown Cooling. The reactor currently has its head removed with the reactor cavity flooded up with the gates to the spent fuel pool removed. A Supplemental Decay Heat Removal system was in service at the time, but was not considered fully capable of decay heat removal. Reactor coolant temperature increased less than 2 degrees during the 37 minutes SDC was out of service. The RPS power supply was switched to its alternate supply and SDC was restored at 1545 hours. In accordance with 10CFR50.72(b)(3)(v) this represents a loss of ~~the~~ a safety system which removes residual heat and requires an 8 hour ENS call. In addition to the isolation of RHR SDC, RWCU isolated due to containment valve HV244F001 closing, and Unit 2 HVAC Zone 3 (refuel floor) isolated. These isolations constitute an actuation of a Containment Isolation signal that affected multiple systems, and is reportable per 10CFR50.72(b)(3)(iv)(A).

Contact - STEVE SANDIN

NOTIFICATIONS	YES	NO	WILL BE	ANYTHING UNUSUAL OR NOT UNDERSTOOD?	<input type="checkbox"/> YES (Explain above)	<input checked="" type="checkbox"/> NO
NRC RESIDENT	X					
STATE(s)		X		DO ALL SYSTEMS FUNCTION AS REQUIRED?	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO (Explain above)
LOCAL		X				
OTHER GOV AGENCIES		X		MODE OF OPERATION:		ADDITIONAL INFO ON BACK?
MEDIA/PRESS RELEASE		X		UNTIL CORRECTED 5	ESTIMATED RESTART DATE: 04/14/01	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO



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**REVISED REPORTABILITY DETERMINATION FOR CR 319646**

ENS Notification # 37839 documented that the loss of the Unit 2 Division 1 RPS power supply on 3/14/01 required an 8-hour ENS notification for actuation of a containment isolation signal that affected multiple systems and a loss of a safety function required to remove residual heat (10CFR50.72(b)(3)(iv)(A) and 10CFR50.72(b)(3)(v)(B) respectively).

**After subsequent evaluation of the event, the reportability determination is being changed to retract the 8-hour notification and require a 60-day ENS notification for an invalid actuation that affected multiple systems. See discussion below.**

**System Actuations**

The original notification stated that an actuation of a containment isolation signal that affected multiple systems was reportable as an 8-hour ENS notification per 10CFR50.72(b)(3)(iv)(A). For this event, the actuation resulted in a half-scam while the unit was shutdown and was invalid since it was due to loss of RPS power not a valid signal. Page 49 of NUREG-1022 Rev. 2 states, "except for critical scrams, invalid actuations are not reportable by telephone under 10CFR50.72". Therefore, an 8-hour notification was not required. Per NDAP-QA-0720 Rev. 7 attachment K, appendix A, the event is reportable as either a 60 day written report per 10 CFR50.73(a)(2)(iv)(A) or a 60 day ENS notification per 10CFR50.73(a). The 60-day ENS notification option will be used.

**Loss of Safety Function**

The initial condition was reported per 10CFR50.72(b)(3)(v)(B), loss of safety function that is needed to remove residual heat. A subsequent review of the event and reporting requirements by Licensing and Operations has concluded that the event is not reportable per this section of the rule.

*NUREG-1022 Rev. 2 states "a single failure that defeats the safety function of a redundant system is reportable even if the design of the system, which allows such a single failure to defeat the function of the system, has been found acceptable. For example, if a single RHR suction line valve should fail in such a way that RHR cooling cannot be initiated, the event would be reportable".*

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This section of the NUREG was originally believed to describe the event in CR 319646 since both trains of RHR shutdown cooling have a common suction line that isolated when the HV251F009 valve closed. A more detailed analysis of the above NUREG section shows that the event in CR 319646 does not meet this guidance.

The key phrase in the example is "... For example, if a single RHR suction line valve should fail in such a way that RHR cooling cannot be initiated, the event would be reportable". The suction line valve closed but it did not fail in a way that would have prevented RHR shutdown cooling from being initiated. NUREG - 1022 Rev. 2 page 53 states "...several different expressions such as 'would have,' 'could have,' 'alone could have,' and 'reasonable doubt' are used to characterize this standard. In the staff's view, all of these should be judged on the basis of a reasonable expectation of preventing fulfillment of the safety function". It has been determined, for the reasons described below that it is not a reasonable expectation that the event prevented fulfillment of the RHR shutdown cooling function.

There is no automatic initiation of RHR shutdown cooling; the system is manually aligned and operated in accordance with approved procedures. In the event on 3/14/01, the RHR shutdown cooling suction valve (HV251F009) isolated to the closed position when the Unit 2 division 1 normal RPS power was lost, but loss of the normal power supply did not create a situation in which the valve could not be opened in a time frame commensurate with normal expectations for aligning the system. The following supports this conclusion:

- Operations personnel used approved procedures to swap Unit 2 RPS division 1 to its alternate power supply. This action restored power to HV251F009 and the normal suction path for RHR shutdown cooling was restored within 37 minutes of the isolation. This was within the 1-hour completion time required by condition C of TS 3.9.7.
- The reactor was in Mode 5 with the reactor cavity flooded and cross-tied to the spent fuel pool. The reactor coolant temperature increased less than 2 degrees F.
- TS basis 3.9.7 states that "...operation (either continuous or intermittent) of one subsystem can maintain and reduce the reactor coolant temperature as required".
- Technical Specification 3.9.7 contains a note that allows both RHR shutdown-cooling subsystems to be removed from operation for up to 2 hours per 8-hour period. This is consistent with the TS Basis for 3.9.7 which states that the RHR system is not required to mitigate any events or accidents evaluated in the safety analysis. The RHR system is required for removing decay heat

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to maintain the temperature of the reactor coolant and was retained in the Technical Specifications as an important contributor to risk reduction.

The event did not create a condition that was adverse to RHR shutdown cooling with respect to the most limiting single failure that it is designed to accommodate, i.e., a Loss of Offsite Power with an additional failure of one of the RHR shutdown cooling suction valves.

- FSAR section 5.4.7.1.1(2) states "the design basis for the most limiting single failure for the shutdown cooling mode of RHR is that the shutdown line isolation valves can be opened by hand (Section 5.4.7.1.5) and that the plant can then be shut down using a single RHR heat exchanger and its RHR Service Water loop. Shutdown to 212 degrees F can be achieved within about 20 hours, which is acceptable. If the shutdown line cannot be opened manually, the alternate shutdown cooling systems described in Section 15.2.9 are capable of acceptable shutdown heat removal."
- FSAR section 5.4.7.1.5 states "... Shutdown suction and discharge valves are required to be powered from both offsite and standby emergency power for purposes of isolation and shutdown following a loss of offsite power. In the event either of the two shutdown supply valves fail to operate, and the shutdown supply valves cannot be opened by hand, alternate shutdown cooling is established in accordance with plant procedures".

In this case the loss of the Unit 2 division 1 normal RPS power supply did not and would not have prevented either of the RHR shutdown cooling suction valves from being opened electrically or by hand.

### Conclusion

The reportability determination for CR 319646 is being changed to retract the 8-hour notification and require a 60-day ENS notification for an invalid actuation that affected multiple systems.

**RETRACTION OF ENS NOTIFICATION # 37839 / REPLACE WITH 60 - DAY NOTIFICATION OF INVALID SYSTEM ACTUATIONS.**

ENS Notification # 37839 documented that the loss of the Unit 2 Division 1 RPS power supply on 3/14/01 required an 8-hour ENS notification for actuation of a containment isolation signal that affected multiple systems and a loss of a safety function required to remove residual heat (10CFR50.72(b)(3)(iv)(A) and 10CFR50.72(b)(3)(v)(B) respectively). After subsequent evaluation of the event, the reportability determination is being changed to retract the 8-hour notification and provide the required a 60-day ENS notification for an invalid actuation that affected multiple systems. See the discussion below.

The initial condition was reported per 10CFR50.72(b)(3)(v)(B), loss of safety function that is needed to remove residual heat. A subsequent review of the event and reporting requirements by PPL has concluded that the event is not reportable per this section of the rule. In this case the 37-minute interruption did not and would not have prevented the fulfillment of the RHR shutdown cooling function.

The original notification stated that an actuation of a containment isolation signal that affected multiple systems was reportable as an 8-hour ENS notification per 10CFR50.72(b)(3)(iv)(A). For this event, a half-scam while the unit was shutdown, was the result of an invalid signal since it was due to loss of RPS power. Except for critical scrams, invalid actuations are not reportable by telephone under 10CFR50.72. Therefore this 60-day optional report, as allowed by 10CFR50.73(a)(1), is being made under the reporting requirement in 10 CFR50.73(a)(2)(iv)(A) to describe an invalid actuation of general containment isolation signals affecting isolation valves in more than one system.

At 15:08 on March 14, 2001 with Unit 2 in Mode 5 at 0% power, the primary power supply to the "A" Reactor Protection System (RPS) power distribution panel was lost when the Motor-Generator (MG) Set generator in that division failed. This resulted in Primary Containment Isolation System actuations including isolation of an Residual Heat Removal shutdown cooling suction valve and other automatic system initiations. RPS as well as other plant systems functioned as designed in response to the event. The "A" RPS distribution panel was swapped to alternate power and all isolations were reset by 16:10. The loss of power was due to a failure of the "A" RPS M-G set generator. The generator failed due to a manufacturing defect of an internal conductor connection. The failed generator was replaced and other like-in-kind generators will be inspected. There were no safety consequences or compromises to the health or safety of the public. This event has been entered into the site-specific corrective action program for resolution. Internal and industry events were reviewed to assess if a generic problem exists with this type of generator. No evidence of similar failures was found, which indicates that a generic problem does not exist.

The NRC site Resident Inspector has been notified