

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) McGuire Nuclear Station, Unit 2	DOCKET NUMBER (2) 0 5 0 0 0 3 7 1 0	PAGE (3) 1 OF 0 6
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TITLE (4) An ESP actuation occurred because personnel failed to take an appropriate action prior to draining Steam Generators.

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES	DOCKET NUMBER(S)
07	18	88	88	006	00	08	17	88	N/A	0 5 0 0 0
THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)										

OPERATING MODE (9) 5	POWER LEVEL (10) 01010	20.402(b)	20.405(a)(1)(i)	20.405(a)(1)(ii)	20.405(a)(1)(iii)	20.405(a)(1)(iv)	20.405(a)(1)(v)	20.406(e)	50.36(e)(1)	50.36(e)(2)	50.73(a)(2)(i)	50.73(a)(2)(ii)	50.73(a)(2)(iii)	50.73(a)(2)(iv) <input checked="" type="checkbox"/>	50.73(a)(2)(v)	50.73(a)(2)(vi)	50.73(a)(2)(vii)(A)	50.73(a)(2)(vii)(B)	50.73(a)(2)(x)	73.71(b)	73.71(c)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
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LICENSEE CONTACT FOR THIS LER (12)

NAME Steve E. LeRoy, Licensing	TELEPHONE NUMBER
	AREA CODE: 7104    37131-162133

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)

<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On 07/18/88 at 0919, Valves 2BB-1, 2, 3, and 4, Steam Generator (S/G) 2A, 2B, 2C, and 2D Blowdown Containment Isolation Outside, and valves 2BB-5, 6, 7, and 8, S/G 2A, 2B, 2C, and 2D Blowdown Containment Isolation Inside, automatically closed, and valves 2SA-48 and 49, Steam Supply 1 and 2 to Auxiliary Feedwater (CA) Pump Turbine, automatically opened in response to an ESF signal. The ESF signal was generated when S/G 2C was drained below the Low Low Level setpoint by Operations personnel, who erroneously believed this function was defeated. The S/Gs were being drained to allow for the addition of better quality water in preparation for Unit 2 startup. During the afternoon of 07/18/88, Instrumentation and Electrical (IAE) defeated the S/G Low Low Level setpoint ESF actuation, and Operations opened valves 2BB-1, 2, 3, 4, 5, 6, 7, and 8 and closed valves 2SA-48 and 49 and continued to drain the S/Gs without further incident. This event is assigned a cause of Personnel Error because IAE Technician A misinterpreted plant data. This event is also assigned a contributory cause of Defective Procedure because the operating procedure for draining the S/Gs did not include steps defining an appropriate method to defeat the S/G Low Low Level setpoint ESF actuation. This event was reviewed with IAE involved. The Operations procedures involved will be changed to clarify defeat of feedwater isolation signals.

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TEXT (If more space is required, use additional NRC Form 365A's) (17)

INTRODUCTION:

On July 18, 1988 at 0919, valves 2BB-1, 2, 3, and 4, Steam Generator 2A, 2B, 2C, and 2D Blowdown [EIIS:WE] Containment Isolation Outside, and valves 2BB-5, 6, 7, and 8, Steam Generator 2A, 2B, 2C, and 2D Blowdown Containment Isolation Inside, automatically closed, and valves 2SA-48 and 49, Steam Supply 1 and 2 to Auxiliary Feedwater [EIIS:BA] Pump Turbine, automatically opened in response to an Engineered Safety Features (ESF) signal. The ESF signal was generated when Steam Generator [EIIS:SG] 2C was drained below the Low Low Level setpoint by Operations personnel, who erroneously believed this function was defeated. The Steam Generators were being drained to allow for the addition of better quality water in preparation for Unit 2 startup. Operations personnel notified the NRC of the ESF actuation at 1130 on July 18, 1988. During the afternoon of July 18, 1988, Instrumentation and Electrical (IAE) personnel defeated the Steam Generator Low Low Level setpoint ESF actuation, and Operations personnel opened valves 2BB-1, 2, 3, 4, 5, 6, 7, and 8 and closed valves 2SA-48 and 49 and continued to drain the Steam Generators without further incident.

Unit 2 was in Mode 5, Cold Shutdown, at the time of this event.

This event is assigned a cause of Personnel Error because IAE Technician A misinterpreted plant data. Operations personnel consulted with IAE personnel prior to draining the Steam Generators to determine if the Steam Generator Low Low Level setpoint ESF actuation was defeated. IAE Technician A could not remember if the ESF actuations defeated during plant shutdown, which were still defeated, included the Steam Generator Low Low Level setpoint ESF actuation. After looking in the Solid State Protection System cabinet, IAE Technician A told Operations personnel that the Steam Generator Low Low Level Setpoint was defeated. However, the Steam Generator Low Low Level setpoint ESF actuation had not been defeated during plant shutdown.

This event is also assigned a contributory cause of Defective Procedure because the operating procedure for draining the Steam Generators did not include steps defining an appropriate method to defeat the Steam Generator Low Low Level setpoint ESF actuation.

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TEXT (if more space is required, use additional NRC Form 366A's) (17)

EVALUATION:

Background

The Engineered Safety Features Actuation System (ESFAS) is designed to actuate ESF equipment in the event predetermined safety limits are exceeded. The analog portion of the ESFAS consists of three to four redundant channels of process instrumentation for each parameter or variable that is monitored. The digital portion of the ESFAS consists of two redundant logic trains which receive inputs from the analog channels and is a part of the Solid State Protection System [EIIS:JC] (SSPS). The SSPS performs the logic necessary to determine when and which ESF equipment needs to be actuated, and through systems of relays, actuates the ESF equipment. Technical Specifications do not require the ESFAS to be operable in Mode 5.

Each Steam Generator has four narrow range level instruments to monitor the water level. If Steam Generator water level falls below a predetermined setpoint, a Low Low Level signal will be generated by the SSPS. When two Low Low Level signals from each of two Steam Generators occur, the ESFAS will actuate appropriate relays to cause valves SA-48 and 49 to open, which will start the Auxiliary Feedwater (CA) Turbine Driven pump, and valves BB-1, 2, 3, 4, 5, 6, 7, and 8 to close, which isolates Steam Generator blowdown. These functions provide necessary additional feedwater to the Steam Generators to preserve the heat sink for the Reactor [EIIS:RCT] and to isolate Steam Generator blowdown to prevent any unnecessary loss of water. ESF actuation signals can be defeated by removing the coil wires to the appropriate relays in the SSPS to prevent equipment actuation when the process instrumentation reaches the actuation setpoint. During plant shutdown and prior to filling the Steam Generators, procedure OP/1,2/A/6250/03A, Steam Generator Cold Wet Layup Recirculation, directs IAE personnel to defeat "all Feedwater Isolation signals" in the SSPS by removing the coil wires to several relays listed. These coil wires are then reconnected during plant startup.

Description of Event

During the morning of July 18, 1988, Operations personnel were preparing to drain the Unit 2 Steam Generators so that they could be refilled with better quality water in preparation for Unit 2 startup. At 0800, Operations personnel consulted with IAE Technician A, who was working on another part of the SSPS, to determine if the Steam Generator Low Low Level setpoint ESF actuation was defeated. IAE Technician A told Operations personnel, after looking inside the SSPS electrical cabinets, that the modification performed during the Unit 2 shutdown was still intact. IAE Technician A thought the modification included defeating the Steam Generator Low Low Level setpoint ESF actuation and then told Operations personnel that the necessary ESF actuations were defeated. Operations personnel then continued preparations for draining the Steam Generators.

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TEXT (If more space is required, use additional NRC Form 365A x) (17)

At 0830 on July 18, 1988, Operations personnel completed preparations for draining Steam Generators 2A, 2B, and 2C, and commenced draining Steam Generator 2D. Steam Generator 2D had already been drained to the Low Low Level setpoint. When Steam Generator 2C reached the Low Low Level setpoint, the ESFAS generated a two out of four Steam Generators Low Low Level ESF actuation signal. Valves 2BB-1, 2, 3, 4, 5, 6, 7, and 8 closed, and valves 2SA-48 and 49 opened. Operations personnel secured from draining the Steam Generators any further.

At 1130 on July 18, 1988, Operations personnel implemented procedure RP/O/A/5700/10, NRC Immediate Notification Requirements, to notify the NRC of the ESF actuation.

During the afternoon of July 18, 1988, Operations personnel implemented a change to the procedure used for draining the Steam Generators, Steam Generator Cold Wet Layup Recirculation. This change provides instructions to defeat the Steam Generator Low Low Level ESF actuation prior to draining the Steam Generators. IAE personnel, after being instructed by Operations personnel, then defeated the Steam Generator Low Low Level ESF actuation, and Operations personnel resumed draining the Steam Generators.

Conclusion

This event is assigned a cause of Personnel Error because the action chosen by IAE Technician A was incorrect because plant data was misinterpreted. The procedure for Steam Generator Cold Wet Layup Recirculation has a step for IAE personnel to defeat some ESF actuations during plant shutdown, but does not clearly state which are defeated. Step 2.10 of Enclosure 4.1 states in part to "have IAE defeat all Feedwater Isolation signals" and then lists several relays from which the coil wires must be removed to accomplish this. On the morning of July 18, 1988, Operations personnel and IAE Technician A consulted this procedure step and looked in the SSPS cabinets to determine that the specified relay coil wires were still removed. IAE Technician A could not remember if these relays included the relays for the Steam Generator Low Low Level setpoint ESF actuation. IAE Technician A thought since one of the Steam Generators was already drained below the Low Low setpoint and no ESF actuation had occurred, that the defeated ESF actuations must have included the Steam Generator Low Low Level setpoint ESF actuation. He did not remember that two Steam Generator levels must be below the Low Low Level setpoint to complete the ESF actuation logic; therefore, IAE Technician A then told Operations personnel that the Steam Generator Low Low Level setpoint ESF actuation was defeated. IAE Technician A was involved with unrelated Emergency Priority work at the time of this consultation, and this may have contributed to his confusion about the status of the defeated ESF actuations in the SSPS cabinet. IAE Technician A is Employee Training Qualification System qualified to work on the SSPS.



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TEXT (if more space is required, use additional NRC Form 365A's) (17)

Coil wires were removed during shutdown to defeat the Steam Generator High High Level ESF actuation and the Reactor Trip coincident with Low T-average ESF actuation, both of which are Feedwater Isolation signals as specified in the procedure step. These are not all the Feedwater Isolation signals as indicated in the procedure step. Operations Procedure Group personnel remembered requesting approximately 1 year ago that IAE personnel supply a list of relays that would need to have the coil wires removed to defeat all Feedwater Isolation signals. IAE personnel supplied the list that was put in the Steam Generator Cold Wet Layup Recirculation procedure. The Steam Generator Low Low Level ESF actuation was not included because it is not a Feedwater Isolation signal.

This event is also assigned a contributory cause of Defective Procedure because the operating procedure for draining the Steam Generators, Steam Generator Cold Wet Layup Recirculation, did not include steps to defeat the Steam Generator Low Low Level setpoint ESF actuation even though this action is necessary and performed every time prior to draining the Steam Generators.

The ESF actuation did not cause any operational problems or difficulties because Unit 2 was in Mode 5 at the time. The CA Turbine Driven Pump did not start because no steam was available, and the Steam Generator blowdown isolation did not affect any critical operational activities.

A review of McGuire Licensee Event Reports (LER) did not reveal any other of ESF actuations because plant data was misinterpreted. The review revealed LERs 370/85-20, 369/87-12, 370/87-12, and 369/87-19 that were incidents of ESF actuations because of incomplete procedures. Therefore, this event is considered recurring. The corrective actions for these past IIRs were procedure changes to the specific procedures involved and would not have prevented this event from occurring.

This event is not reportable to the Nuclear Plant Reliability Data System (NPRDS).

CORRECTIVE ACTIONS:

Immediate: None

- Subsequent:
- 1) Operations personnel notified the NRC of the Unit 2 ESF actuation.
  - 2) Operations personnel implemented a change to procedures OP/1,2/A/6250/03A, Steam Generator Cold Wet Layup Recirculation, which now include steps for IAE personnel to defeat the Steam Generator Low Low Level ESF actuation prior to draining a Steam Generator.

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TEXT (if more space is required, use additional NRC Form 388A's) (17)

- 3) Operations personnel implemented a change to procedures OP/1,2/A/6100/01, Controlling Procedure For Unit Startup, which now include steps to verify the Steam Generator Low Level ESF actuation is reinstated prior to entering Mode 4 (Hot Shutdown).
- 4) IAE personnel defeated the Steam Generator Low Level ESF actuation and Operations personnel opened valves 2BB-1, 2, 3, 4, 5, 6, 7, and 8 and closed valves 2SA-48 and 49.
- 5) This event was reviewed with the IAE personnel involved.

Planned: Operations personnel will change procedures OP/1,2/A/6250/03A, Steam Generator Cold Wet Layup Recirculation, by October 1, 1988 to clarify the step to defeat all Feedwater Isolation signals. The clarification will specify which Feedwater Isolation signals are to be defeated.

SAFETY ANALYSIS:

Unit 2 was in Mode 5 with the Residual Heat Removal system [EIIS:BP] in service at the time of the ESF actuation. The ESFAS is not required to be operable in this mode because the ESF equipment does not serve any purpose to mitigate the consequences of an accident with the unit in the Cold Shutdown condition. Some ESF equipment is intentionally taken out of service in Mode 5 (CA Motor Driven Pumps, Safety Injection [EIIS:BQ] Pumps, Centrifugal Charging Pumps, etc.) to preclude damage to the equipment or the plant because the ESF equipment is not designed to operate in Mode 5, Cold Shutdown. However, the available ESF equipment actuated as required. The inadvertent operation of valves 2BB-1, 2, 3, 4, 5, 6, 7, and 8 and valves 2SA-48 and 49 did not cause any operational problems, disturbances, or damage to Unit 2.

No personnel injuries, radiation overexposures, or releases of radioactive material occurred as a result of this event.

This event is considered to be of no significance with respect to the health and safety of the public.

DUKE POWER COMPANY

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HAL B. TUCKER  
VICE PRESIDENT  
NUCLEAR PRODUCTION

TELEPHONE  
(704) 373-4531

August 17, 1988

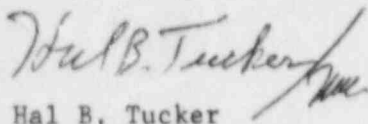
U.S. Nuclear Regulatory Commission  
Document Control Desk  
Washington, D.C. 20555

Subject: McGuire Nuclear Station, Unit 2  
Docket No. 50-370  
Licensee Event Report 370/88-06

Gentlemen:

Pursuant to 10CFR 50.73 Sections (a)(1) and (d), attached is Licensee Event Report 370/88-06 concerning an ESF actuation. This report is being submitted in accordance with 10CFR 50.73(a)(2)(iv). This event is considered to be of no significance with respect to the health and safety of the public.

Very truly yours,

  
Hal B. Tucker

SEL/314/bhp

Attachment

xc: Dr. J. Nelson Grace  
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