CATEGORY 1

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

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FACIL:50-250 Turkey Point Plant, Unit 3, Florida Power and Light C 05000250
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SUBJECT: LER 97-003-00:on 970410,mode changed w/o meeting requirements of TS 3.0.4 due to inadequate procedural guidance.Night order was issued to inform personnel that S/G blowdown keylock switches were left in drain.W/970509 ltr.

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TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

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MAY 9 1997

L-97-123
10 CFR §50.73

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

Re: Turkey Point Unit 3
Docket No. 50-250
Reportable Event: 97-003-00
Mode Change Without Meeting Requirements of Technical Specification 3.0.4 Due to Inadequate Procedural Guidance

The attached Licensee Event Report, 250/97-003-00, is being provided in accordance with 10 CFR 50.73(a)(2)(i)(B).

If there are any questions, please contact us.

Very truly yours,

R. J. Hovey
Vice President
Turkey Point Plant

JEK

attachment

cc: Luis A. Reyes, Regional Administrator, Region II, USNRC
Thomas P. Johnson, Senior Resident Inspector, USNRC, Turkey Point Plant

1/1.
IE22

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
TURKEY POINT UNIT 3	05000250	1 OF 9

TITLE (4) MODE CHANGE WITHOUT MEETING REQUIREMENTS OF TECHNICAL SPECIFICATION 3.0.4 DUE TO INADEQUATE PROCEDURAL GUIDANCE

EVENT DATE (5)			LER NUMBER(6)			RPT DATE (7)			OTHER FACILITIES INV. (8)	
MON	DAY	YR	YR	SEQ #	R#	MON	DAY	YR	FACILITY NAMES	DOCKET # (S)
4	10	97	97	3	00	5	09	97		

OPERATING MODE (9)	1
POWER LEVEL (10)	100

10 CFR 50.73(a)(2)(i)(B)

LICENSEE CONTACT FOR THIS LER (12)

	Telephone Number
C.L. MOWREY, COMPLIANCE SPECIALIST	(305) 246-6204

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	NPRDS?	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	NPRDS?
									N

SUPPLEMENTAL REPORT EXPECTED (14) NO ☒ YES ☐	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
(If yes, complete EXPECTED SUBMISSION DATE)				

ABSTRACT (16)

On April 10, 1997, operators realized that the Steam Generator Blowdown system interlock bypass (keylock) switches had been left in the DRAIN/FILL position. This position blocks automatic closure signals to blowdown isolation valves CV-3-6275 A, B, and C and blowdown sampling valves MOV-3-1425, 1426, and 1427, such that these valves are open and will not close automatically. Operators immediately placed all 3 keylock switches to OFF, thereby enabling the valves to respond to automatic closure signals.

This error was caused by inadequate procedures and a knowledge level deficiency concerning the keylock switch position required for Mode 4.

The inadequate procedures are being revised. A new procedure for switch and light verifications prior to mode changes is being generated. A Night Order was issued to inform Operations personnel that the S/G Blowdown keylock switches were left in DRAIN/FILL, which bypassed the automatic closure signals, during the MODE 5 to 4 change. All licensed operators will be trained on the correct position of these keylock switches for different operating modes.

I. DESCRIPTION OF THE EVENT

On April 6, 1997, Unit 3 had been cooled down to MODE 5, to repair a leak. The leak was identified during the Reactor Coolant System (RCS) [AB] overpressure test during a refueling outage. During the cooldown process the Steam Generators (S/G) [AB:sg] were drained in accordance with 3-OP-071, "Steam Generator Blowdown Recovery System," and refilled. Section 5.1 of this procedure directs the operator (utility-licensed operator) to place the S/G Blowdown System interlock bypass (keylock) switches [WI:hs] in the DRAIN/FILL position. This switch position blocks three automatic closure signals to the blowdown isolation valves and to the blowdown sampling valves. The blocked signals are Phase A Containment Isolation, Main Steam Isolation, and Auxiliary Feedwater (AFW) Actuation. The valves are blowdown isolation valves CV-3-6275A, B, and C, and blowdown sampling valves MOV-3-1425, 1426, and 1427. With the switches in DRAIN/FILL, these valves can be opened and will not close automatically.

The leak was repaired and the unit entered MODE 4 at 1549 on April 9, 1997. At 0900 on April 10, 1997, operators realized that subject valves were open, and the keylock switches [WI:hs] had been left in the DRAIN/FILL position. This is a violation of Technical Specification 3.6.4, which requires that all automatic containment isolation valves be operable in MODE 4.

Operators immediately placed all 3 keylock switches to OFF and removed the keys. With the keylock switches in OFF, the automatic closure signals listed above are enabled.

The S/G blowdown system is described in the Updated Final Safety Analysis Report (UFSAR) in Section 10.2.4.3:

> "A steam generator blowdown recovery system is installed to assist in maintaining required steam generator water chemistry by providing a means for removal of foreign matter which concentrates in the evaporator section of the steam generator.
>
> The system is fed by three independent blowdown lines (one

per steam generator) which tie into a common blowdown flash tank. The steam generator blowdown is continuously monitored for radioactivity during plant operation. A radiation monitor is provided for the steam generator blowdown sample lines in each unit. The blowdown sample lines can be isolated using the manual isolation valves downstream of the motor operated isolation valves."

Containment isolation is described in Section 6.6 of the UFSAR. Table 6.6-1 of the UFSAR indicates that, for valves CV-3-6275A, B, and C (associated with Penetrations 28A, B, and C respectively), Note 18 applies; and that, for valves MOV-3-1425, 1426, 1427 (associated with Penetrations 64C, 64B, and 64A respectively), Note 18 applies. Note 18 of Table 6.6-1 states:

"This valve is a containment isolation valve (i.e., closes on a Phase A, Phase B, or Containment Ventilation Isolation signal, is a normally closed manual isolation valve; or is a non-essential system check valve)."

Containment isolation valves are described in Technical Specification 3/4.6.4, "Containment Isolation Valves," which states in part, that for Modes 1, 2, 3, and 4:

"Each containment isolation valve shall be OPERABLE with isolation times less than or equal to those required isolation times...

ACTION

With one or more isolation valves inoperable, maintain at least one isolation valve OPERABLE in each affected penetration that is open and either:

a. Restore the inoperable valve(s) to OPERABLE status within 4 hours, or
b. Isolate each affected penetration within 4 hours by use of at least one deactivated automatic containment isolation valve secured in the isolation position, or
c. Isolate each affected penetration within 4 hours by

use of at least one closed manual valve or blind flange, or

d. Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours."

Technical Specification 3/4.6.1 provides more generic requirements that containment integrity be maintained at all times in Modes 1 through 4. Containment integrity is demonstrated in part by surveillance of containment isolation and boundary valves.

The S/G Blowdown system is not explicitly addressed in the Technical Specifications. Because these valves are listed in UFSAR Table 6.6-1 as containment isolation valves, and because they receive an automatic closure signal (Phase A), these valves have been considered subject to Technical Specification 3/4.6.4.

Because the keylock switches were in DRAIN/FILL, the valves were not capable of closing automatically when Unit 3 changed from MODE 5 to MODE 4. This is a violation of Technical Specification 3.0.4, reportable under the requirements of 10 CFR 50.73(a)(2)(i)(B).

II. CAUSE OF THE EVENT

The primary cause of this error was an inadequate procedure. Section 5.1 of 3-OP-071 directs the operator to place the S/G Blowdown interlock bypass switches in the DRAIN/FILL position, but does not restore the switch lineup in this section, nor does it direct the operator to the procedure section which requires the switches to be returned the NORMAL position.

Contributors to the event were:

1. procedure 3-GOP-503, "Cold Shutdown to Hot Standby," has a step to verify that the S/G Blowdown System is aligned and ready for use using 3-OP-071, but does not refer to the specific section of 3-OP-071 that requires the keylock switches to be in the OFF position,

2. a knowledge level deficiency on the part of some licensed

operators concerning the keylock switch position required for MODE 4.

III. ANALYSIS OF THE EVENT

Safety Impact in MODE 4

At the time the event occurred, Unit 3 was heating up from a refueling outage, with RCS pressure and temperature of about 370 psig and 340°F, respectively. Accident analyses in the UFSAR for events in this mode (MODE 4, less than 350°F in the RCS, Safety Injection {SI} isolated and SI signals blocked) were reviewed. In MODE 4, the UFSAR does not consider Steam Generator Tube Ruptures (SI is isolated), Main Steam Line Breaks (no reactivity excursion possible with unit borated and rods inserted, SI isolated), Loss of Feedwater events (AFW not required), Load Excursion events (no load), Loss of Reactor Coolant Flow (no core power), Rod Ejection events (no credible force to create a missile), or other events involving control rods (all are in the core). Were any of these events to be hypothesized, operator action (including actions outside the control room) would be required for their mitigation. Fuel handling events, accidental waste gas releases, and accidental liquid waste releases are independent of this issue and are unaffected. Therefore, having the blowdown and blowdown sampling valves in "DRAIN/FILL" (keylock position so valves would not close automatically on a Phase A containment isolation signal) in MODE 4 does not affect the outcome of these events. This is because the blowdown and blowdown sample valves are the secondary closure mechanism of an already closed system inside containment.

The only accident or event which may be viewed as part of the licensing basis in MODE 4 is a possible MODE 4 loss-of-coolant accident (LOCA). During such an event, with loss of Reactor Coolant System (RCS) inventory, the operating crew would enter 3-ONOP-041.3, "Excessive Reactor Coolant System Leakage," to deal with high RCS leakage. If the loss of inventory in MODE 4 could not be accommodated by isolating letdown and increased charging, procedure 3-ONOP-041.7, "Shutdown LOCA," would be entered. In Step 6 of this procedure, containment phase A isolation is manually initiated. For the event being reported, manual Phase A isolation would not result in closure of the valves in question. However, they would almost immediately be manually closed to

comply with Response Not Obtained Step 6b, which would require manual closure of CV-3-6275A, B, and C and MOV-3-1425, 1426, and 1427. Note that these valves are all considered the second barrier for these penetrations. The closed system inside containment (the steam generator and associated piping to each penetration) is considered the primary barrier inside containment.

Based on the closed system inside containment configuration for the blowdown and blowdown sample penetrations, there was no safety impact associated with having the subject valves open with their associated keylock switches in the "DRAIN/FILL" position.

Containment Isolation Features Design Bases

The containment isolation features associated with Turkey Point Units 3 and 4 were reconstituted by the development of Engineering Package (EP) 89-581, "Containment Isolation Features Design Basis Implementation." Review of the technical requirements associated with containment isolation shows that the analysis for blowdown isolation provisions is essentially the same as that for main feedwater and main steam isolation.

The containment isolation design for secondary systems is that the primary, passive containment isolation boundary is the secondary system inside containment (main steam and feedwater piping and steam generator). The main steam isolation valves, main feedwater isolation valves, blowdown valves, AFW valves etc. provide a secondary barrier that is available to isolate in the event of a S/G tube rupture. This design ensures containment isolation that meets the "single active failure" design requirement.

EP 89-581 provided notes in UFSAR Table 6.6-1, to classify the different penetrations described. The main feedwater and main steam isolation provisions are identified as secondary system boundary valves that close in response to system process signals but are not "containment isolation valves" as governed by Technical Specification 3/4.6.4. Nevertheless, for consistency, valves which received a Phase A or Phase B signal, or were normally closed, were identified as "containment isolation valves." From a functional standpoint, however, the need for blowdown isolation is primarily process oriented, rather

than for the purpose of containment isolation. The S/G blowdown and blowdown sampling valves were therefore listed with all other Phase A valves rather than explaining the design differences from other Phase A valves.

It is desirable in many instances to close the S/G blowdown isolation and blowdown sampling valves, but not directly for containment isolation. Use of a Phase A signal to these valves is considered a design convenience with respect to providing closure signals (Phase A is initiated on SI) for these valves, rather than that they must close to effect containment isolation. This is supported by generic Westinghouse system design information which states:

> "Piping associated with the steam generators such as main steam, main feedwater, AFW, blowdown and sampling systems' piping fall within the scope of GDC (10CFR50 Appendix A General Design Criterion) 57. These lines are typically provided with containment isolation valves capable of remote-manual operation for the purpose of containment isolation. These valves also receive automatic isolation signals for other safety requirements. (Although these signals may be generated at the same time as containment isolation, they are not considered as such)."
> (taken from Westinghouse Steam Systems Design Manual, Section 3-3, "Containment Isolation Pertaining to the Steam Generators and Associated Systems," dated March, 1978).

The primary reason these valves were not originally identified as secondary system boundary valves was the potential confusion that could exist since they do use Phase A contacts to provide closure. The primary closure function of these valves is to maintain steam generator inventory for AFW; AFW is not required to be operable in MODE 4. The primary actuation input of Containment Isolation Phase A is a Safety Injection signal. Safety Injection is also an input for AFW auto-start. The valves in question also close in response to an AFW auto-start, and in response to a Main Steam Isolation Signal. These closure signals are entirely consistent with the process closure requirements of the secondary systems described by the Westinghouse manual quoted above.

Since the valves which were left open do not actually serve an automatic containment isolation function, and since the primary containment boundary for these penetrations (Closed System Inside Containment) was intact, this event did not compromise the health or safety of plant personnel or the general public.

IV. CORRECTIVE ACTIONS

1. A Night Order was issued to inform Operations personnel that the S/G Blowdown keylock switches were left in DRAIN/FILL, which bypassed the automatic closure signals, during the MODE 5 to 4 change.

2. Operations will revise procedures 3/4-OP-071:

   - the S/G draindown evolution will be detailed, including recommended minimum levels, blowdown tank pressure relief, and switch/valve restoration on the completion of draining steam generators.

   - the system alignment attachments will include the keylock switches' OFF position.

   - signoff and independent verification will be added to the required procedure section.

3. Operations will develop a switch/indicating light verification procedure to be performed prior to mode changes. This procedure will be tracked and scheduled by 0-ADM-215, "Plant Surveillance Tracking Program."

4. Operations will revise procedures 3/4-GOP-503 to specify which sections and/or attachments of 3/4-OP-071 are to be used to verify the correct blowdown system alignment.

5. The UFSAR is being revised to more correctly define the role of the S/G blowdown isolation valves and blowdown sampling valves, with respect to containment isolation and system isolation.

6. All licensed operators will be trained on the correct position of

the interlock bypass switches for different operating modes.

V. ADDITIONAL INFORMATION

Similar events: The last mode change in violation of Technical Specifications was in 1992, reported in LER 251/92-006. That event was caused by an error in the surveillance tracking program, and is unrelated to this event.

EIIS Codes are shown in the format [EIIS SYSTEM: IEEE component function identifier, second component identifier (if appropriate)].