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 FACIL: 50-250 Turkey Point Plant, Unit 3, Florida Power and Light C 05000250
 AUTH. NAME AUTHOR AFFILIATION
 MOWREY, C.L. Florida Power & Light Co.
 PLUNKETT, T.F. Florida Power & Light Co.
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 92-001-00: on 920210 concluded that operability of
 switchgear w/racked-down breakers could not be assured.
 Caused by incomplete info re seismic qualification of
 switchgear. Procedures revised. W/920311 ltr.

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

NOTES: NRR RAGHAVAN, L

05000250

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FPL

P.O. Box 629100, Miami, FL 33162-9100

MARCH 11 1992
L-92-070
10 CFR 50.73

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

Gentlemen:

Re: Turkey Point Unit 3
Docket No. 50-250
Reportable Event: 92-001-00
Operation With 4160 Volt Switchgear In A Configuration
For Which Seismic Qualification Was Not Evaluated

The attached Licensee Event Report 250-92-001-00 is being provided in accordance with 10 CFR 50.73 (a)(2)(ii) to provide notification of the subject condition.

Very truly yours,

T. F. Plunkett
Vice President
Turkey Point Nuclear

TFP/CLM/cm

attachment

cc: Stewart D. Ebnetter, Regional Administrator, Region II,
USNRC
Ross C. Butcher, Senior Resident Inspector, USNRC, Turkey
Point Plant

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11

9203180183 920310
PDR ADDCK 05000250
S PDR

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)

TURKEY POINT UNITS 3 and 4

DOCKET NUMBER (2)

05000250

PAGE (3)

1 OF 4

TITLE (4)

Operation With 4160 Volt Circuit Breakers in a Configuration for Which
Seismic Qualification was not Evaluated

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 # (5)
06	22	84	92	001	00	03	10	92	TURKEY POINT UNIT 4	05000251

OPERATING MODE (9)

1/1

POWER LEVEL (10)

100/100

10 CFR 50.73(a)(2)(ii)

LICENSEE CONTACT FOR THIS LER (12)

Craig L. Mowrey, Licensing Engineer

TELEPHONE NUMBER

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?

SUPPLEMENTAL REPORT EXPECTED (14) NO ☒ YES ☐

(if yes, complete EXPECTED SUBMISSION DATE)

EXPECTED
SUBMISSION
DATE (15)

MONTH

DAY

YEAR

ABSTRACT (16)

Since 1984, Turkey Point has routinely placed certain 4160 volt safety-related breakers in a racked-down configuration. The seismic qualification for the switchgear had been based on all breakers being racked up. In October, 1991, Turkey Point placed wooden chocks against the wheels of all normally racked-down safety-related breakers, to ensure that the seismic qualification of the switchgear was not adversely affected, and began investigating the need for the chocks and the operability of the switchgear.

On February 10, 1992, FPL concluded that operability of the switchgear with racked-down breakers (prior to installation of the chocks) could not be assured, and declared the as-found condition to be inoperable and therefore reportable. Seismic qualification of the switchgear with racked-down breakers does not appear to have been considered in earlier design evaluations.

The low seismicity of South Florida, the low probability of any seismic event, and the low probability that such an event could render both vital buses inoperable, combine to minimize the potential safety significance of the as-found condition. Procedures were revised to require chocks and chocks were installed, in October, 1991. A Design Basis Document change will be initiated to clarify the seismic qualification limitations for the switchgear.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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I. EVENT DESCRIPTION

In June, 1991, Florida Power and Light Company (FPL) discovered via the Institute of Nuclear Power Operations that Arkansas Nuclear One had determined that their General Electric 4160 Volt Engineered Safety Features Switchgear [EIIS:EB] was being operated in a configuration which had not been seismically qualified. Four circuit breakers [EIIS:EB; COMPONENT:52] were routinely positioned in a racked-down configuration, while the seismic qualification calculations were based on all breakers being racked up.

In October, 1991, FPL determined that similar unanalyzed switchgear configurations existed at Turkey Point, i.e., racked-out breakers were physically racked down. FPL committed to keep certain bus tie breakers racked down in a 1984 letter to the USNRC. Although the switchgear could not be qualified with any certainty in this configuration, FPL determined that wooden chocks placed against the wheels of the racked-down breakers would provide positive assurance that (1) there would be no adverse interaction between the racked-down breakers and any safety related equipment, (2) there would be no adverse effects on the safety-related function of the switchgear and (3) the seismic qualification of the switchgear would not be adversely affected. FPL also determined that the relays mounted on the front door of the cabinet are installed on the upper end of the door and cannot be directly impacted by the breaker if it were to hit the door.

Wooden chocks were installed against the wheels of all racked-down breakers on October 18, 1991.

In November, 1991, in separate correspondence, FPL completed an investigation of the affected switchgear. This included a review of Turkey Point documents as well as a survey of other utilities that had been questioned by the USNRC on this issue during Select System inspections. The purpose of these reviews was to determine if the original unblocked configuration of the breakers would be acceptable, and the wooden chocks could be eliminated. FPL determined that it could not be concluded that the unrestrained breakers on rollers would not adversely affect the switchgear cabinet relays, and therefore chocking of the racked-down breakers should continue.

On February 10, 1992, FPL concluded that operability of the switchgear with racked-down breakers (prior to installation of the chocks) could not be assured. On that basis the as-found condition was considered to be reportable in accordance with 10 CFR 50.73(a)(2)(ii)(B). The NRC Operations Center was notified of the reportable condition at 0911, February 10, 1992.



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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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The commitment to maintain the bus tie breakers racked down was made in FPL letter to NRC L-84-157, which transmitted Turkey Point's Auxiliary Power Upgrade Summary and Design Evaluation. This configuration commitment was made to supplement the protection against interaction between the non-safety related C Bus [EIIS:EA], and the nuclear safety related buses. The as-found condition is considered to have existed since the issuance of L-84-157 on June 22, 1984, and is indeterminate prior to that date.

During the engineering evaluation, Asea Brown Boveri (ABB) switchgear breakers were also discovered in the unrestrained racked-out (maintenance) position. The ABB circuit breakers [EIIS:EB; COMPONENT:52] were procedurally allowed to be positioned in a maintenance configuration, while the seismic qualification calculations were based on all breakers being racked-in (restrained). The ABB switchgear breakers are racked-out horizontally involving no change in height of the center of gravity and will not adversely affect the qualification of the switchgear. The evaluation required a procedure change to ensure the breakers were restrained.

II. EVENT CAUSE

Seismic qualification of the circuit breakers in the racked-down position was not discussed in the design evaluation transmitted in L-84-157. Limitation of seismic qualification to the racked-up configuration was also not addressed in the licensing basis documents.

The root cause of this event is incomplete information concerning seismic qualification of the 4160 volt switchgear, with racked-down breakers, in the licensing basis documents.

III. EVENT SAFETY ANALYSIS

Four factors mitigate the potential consequences of the breakers in the racked-down position: (1) moving the breakers to the racked-down position reduces the amount of mass being carried by the vertical support members of the cabinet, and lowers the center of gravity of the switchgear; (2) the design seismic loadings used during equipment qualification are well in excess of the response accelerations associated with electrical equipment at Turkey Point; (3) lowering the breaker increases the natural frequency of the critical component in the switchgear (the jackscrew); and (4) the freedom of movement of the breakers is limited to approximately one inch front-to-back, while guide angles on the floor restrain any side to side movement.

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The primary safety considerations for seismic events are the capability to conduct a safe plant shutdown and maintain the plant in a safe shutdown condition. The potential for indirect damage to the relays in the vital buses indicates that impairment of this capability could be postulated if a seismic event of sufficient magnitude were to have occurred with the circuit breakers in an unqualified configuration. The specific damage that may have resulted from a seismic event cannot be determined. The low seismicity of South Florida, the low probability of any seismic event, and the extremely low probability that both 4160 volt vital buses would be rendered inoperable as a result of seismic interaction, combine to minimize the potential safety significance of this condition. Both buses would have to be inoperable to impair the ability to shut down safely because of redundant equipment powered from either bus. Therefore, the health and safety of the public was not significantly impacted by the as-found condition.

IV. CORRECTIVE ACTIONS

1. Procedures 3-OP-005 and 4-OP-005 were revised with On The Spot Changes (OTSC) on October 18, 1991, to include a precaution to chock the front wheels of GE 4160 volt breakers when racked down or in the test position. The OTSCs were reviewed and approved by the Plant Nuclear Safety Committee on October 22, 1991.
2. Chocks were installed against the front wheels of the GE 4160 volt, racked-down tie breakers on October 18, 1991. ABB breakers were required to be maintained in the racked-out (restrained) position as opposed to maintenance (unrestrained) position when not racked-in.
3. A change to the Design Basis Document will be initiated to discuss the seismic qualification of the 4160 volt nuclear safety related breakers in the racked-down position. This change will be completed during the next scheduled update to the Design Basis Document in 1993.

V. ADDITIONAL INFORMATION

The circuit breakers are MAGNA-BLAST type AM-4.16-350-1H or AM-4.16-350-2H, manufactured by General Electric or ABB Type 5 HK-250-1200A manufactured by Asea Brown Boveri.

Since other plants may have different configurations (more freedom of movement, relays mounted lower, more severe design basis seismic events), this Licensee Event Report provides an alternative solution to that given in LER 368-91-014.

Energy Industry Identification System (EIIS) codes are identified in the text as [EIIS:XX]. When a component code is included, the form is [EIIS:XX; COMPONENT:xx].

No similar events involving seismic qualification have been reported for Turkey Point.