



10 CFR § 50.73
L-2006-120
May 5, 2006

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

Re: Turkey Point Unit 3
Docket No. 50-250
Reportable Event: 2006-005-00
Date of Event: March 8, 2006
Ground Test Devices Installed in Startup Transformer Output Breakers Causes Both Unit
3 Emergency Diesel Generators to be Inoperable

The attached Licensee Event Report 50-250/2006-005-00 is being submitted pursuant to the requirements of 10 CFR 50.73(a)(2)(i)(B) and 10 CFR 50.73(a)(2)(vii) to provide notification of the subject event.

If there are any questions, please call Mr. Walter Parker at (305) 246-6632.

Very truly yours,

A handwritten signature in black ink, appearing to read 'Terry O. Jones', is written over the typed name.

Terry O. Jones
Vice President
Turkey Point Nuclear Plant

Attachment

cc: Regional Administrator, USNRC, Region II
Senior Resident Inspector, USNRC, Turkey Point Nuclear Plant

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

Estimated burden per response to comply with this mandatory collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@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.

1. FACILITY NAME Turkey Point Unit 3	2. DOCKET NUMBER 05000250	3. PAGE 1 OF 9
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4. TITLE
Ground Test Devices Installed in Startup Transformer Output Breakers Cause Unit 3 EDGs to be Inoperable

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
3	8	2006	2006	- 005 -	00	5	5	2006	FACILITY NAME	DOCKET NUMBER
										05000
										05000

9. OPERATING MODE 5	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: (Check all that apply)									
10. POWER LEVEL 0	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input checked="" type="checkbox"/> 50.73(a)(2)(vii)						
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)						
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)						
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)						
	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)						
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)						
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)						
	<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> OTHER						
	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A						

12. LICENSEE CONTACT FOR THIS LER

NAME Paul F. Czaya – Licensing Engineer	TELEPHONE NUMBER (Include Area Code) 305-246-7150
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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

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 7	DAY 30	YEAR 2006
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ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On March 8, 2006 at approximately 1553, a loss of power to the Unit 3 3A 4 kV electrical distribution bus occurred. The 3A emergency diesel generator (EDG) automatically started and restored power to the 3A bus. At approximately 0400 on March 9, 2006, while reenergizing the 3A 4 kV bus from the Unit 3 auxiliary transformer, Operations personnel suspected the 3A EDG to be in droop mode, since EDG speed decreased as loads were applied to the bus, which required frequency adjustments. Maintenance personnel confirmed both Unit 3 EDGs were configured to operate in droop mode, since required jumpers were not installed when ground test devices (GTD) were installed in the startup transformer output breakers. The 3A and 3B EDGs were declared inoperable at approximately 0550 and declared operable at approximately 0615 after installation of the jumpers. The cause was determined to be the use of an incorrect plant procedure for grounding the startup transformers. Subsequent to the event, a modification was completed that eliminates the need to install jumpers in the Unit 3 startup transformer breaker cubicles when GTDs are installed. As a result of degraded EDG output in droop mode, supported equipment performance capability was also degraded; however, valid assumptions for event and accident analyses were maintained. Assessment results show that no acceptance criteria or limits would be exceeded if any design basis events occur while the Unit 3 EDGs are in the droop mode of operation.

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DESCRIPTION OF THE EVENT

At the time of the event, Unit 3 was in Mode 5 with reactor [EIIS: AC] coolant system temperature at approximately 108 degrees F with the 3A residual heat removal (RHR) pump [EIIS: BP, P] supplying core cooling. The power supply to Unit 3 was from a back feed alignment via the Unit 3 main transformer [EIIS: EL, XFMR]. Unit 4 was in Mode 1 at 100% power.

On March 8, 2006 at approximately 1553, a loss of the Unit 3 3A 4 kV electrical distribution bus [EIIS: EB, BU] occurred during restoration of the 3C load center (LC) following outage maintenance. The 3A load sequencer performed bus load stripping and a loss of offsite power (LOOP) occurred due to a degraded voltage condition that was sensed on the 3C LC. This was caused by a misaligned auxiliary contact [EIIS: CNTR] on the 3C 480V LC breaker [EIIS: EB, BKR], which triggered the 3A load sequencer to strip the 3A 4 kV bus. The 3A emergency diesel generator (EDG) [EIIS: EK, DG] automatically started and restored power to the 3A 4 kV bus. LOOP loads on the 3A 4 kV bus were sequenced and core cooling was reestablished utilizing the 3B RHR pump on the 3B 4 kV bus which was unaffected by the loss of the 3A 4 kV bus. 3B 4 kV bus equipment was in service. (The automatic actuation of the 3A EDG is reported separately in Licensee Event Report (LER) 50-250/2006-004-00.)

At approximately 0400 on March 9, 2006, while reenergizing the 3A 4 kV bus from the Unit 3 auxiliary transformer [EIIS: EA, XFMR], Operations personnel suspected the 3A EDG to be in droop mode versus the required isochronous mode since EDG speed decreased as loads were applied to the bus, which required frequency adjustments. Subsequent investigation by Maintenance personnel confirmed that both the 3A and 3B EDGs were configured to operate in droop mode. The startup transformer [EIIS: EB, XFMR] was out of service with the associated bus supply breakers racked out, and the proper jumpers were not installed to achieve isochronous mode of operation. The 3A and 3B EDGs were declared inoperable at approximately 0550. At approximately 0615, after installation of the jumpers, both Unit 3 EDGs were declared operable. Condition Report (CR) 2006-7091 was initiated to evaluate the event.

An operating unit at Turkey Point requires one of the two opposite unit's EDGs to be operable to support required loads in addition to both of the operating unit's EDGs. With a startup transformer (Unit 3) out of service and both Unit 3 EDGs inoperable, Technical Specification (TS) 3.8.1.1, Action c requires the NRC to be notified within 4 hours of declaring one startup transformer and one of the unit's required EDGs inoperable. This notification (42400) was made to the NRC Operations Center for Unit 4 at approximately 0920 on March 9, 2006.

During startup transformer maintenance, ground test devices (GTD) [EIIS: 57] are installed in the startup transformer breaker cubicles. The installation of the GTDs without required jumpers would cause the Unit 3 EDGs to respond to a LOOP event in the droop mode, instead of the desired isochronous mode. The EDGs should only operate in droop mode when they are paralleled with an external power source on their respective buses. In droop mode on an isolated bus, EDG steady state output frequency would be less than that required by TS Surveillance Requirement (SR) 4.8.1.1.2; and therefore, both Unit 3 EDGs would be inoperable during startup transformer maintenance, when the GTDs are installed. The condition would exist anytime the Unit 3 startup transformer is out of service with the GTD devices racked into the startup

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transformer breaker cubicles and required jumpers are not installed. This condition is not applicable to Unit 4 EDGs, as they have a different control circuit design.

This condition was determined to be reportable in accordance with 10 CFR 50.73(a)(2)(i)(B) and 10 CFR 50.73(a)(2)(vii).

BACKGROUND

There are two startup transformers, one for each Turkey Point Unit 3 and Unit 4. The startup transformers are connected to the 240 kV buses [EIS: FK, SSB] on their primary sides and have two secondary windings at 4.16 kV. The startup and C bus transformers serve the unit during startup, shutdown, and after a unit trip. The C bus transformers are isolated from their respective startup transformer. The startup transformer also constitutes a standby source of auxiliary power in the event of the loss of the unit auxiliary transformer during normal operation. In the event the main turbine [EIS: TA, TRB] trips, an automatic transfer connects A and B 4.16 kV buses to the unit startup transformer.

GTDs are used to ground selected portions of switchgear cubicles to ensure worker safety during maintenance.

When the Unit 3 startup transformer is taken out of service for maintenance, a GTD is installed/racked up in startup transformer switchgear cubicles 3AA05 and 3AB05. The Unit 3 EDG circuit senses startup transformer breaker and auxiliary transformer breaker positions, to determine the desired mode of operation. With the GTDs installed in the startup transformer breaker cubicles, the breaker contacts respond as follows:

Stationary contacts (152) will remain in their breaker "Open" position, since the breaker was opened prior to racking it out and the GTD does not have a plunger to actuate the 152/STA switch [EIS: EK, 33].

Auxiliary contacts (152) all appear as open circuits, since the contacts are connected via stabs that are disconnected when the breaker is removed.

152/HH contacts reflect the elevator position and will respond the same, regardless of whether the breaker is installed or the GTD is installed. The 152 HH contact of significance is contact 5-5T, which is used in the portion of the EDG circuit that controls EDG mode of operation. This 5-5T contact is open, since the GTD is in the racked up position.

The Unit 3 EDG control circuit recognizes the above contact logic as the startup transformer breaker being racked in and closed. If a LOOP was to occur during this time, the EDGs would start and energize their respective 4 kV buses, but the EDG governor [EIS: EK, 65] would be in droop mode, instead of the desired isochronous mode.

The operation of the EDG voltage regulator [EIS: EK, RG] is not dependent on startup transformer breaker

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and auxiliary transformer breaker position. The voltage regulator on the Unit 3 EDGs always operates in droop mode. Therefore, for a LOOP condition, the voltage regulator would respond as required, regardless of the GTD being installed in the startup transformer breaker cubicles.

As a result of identifying the potential for this condition to occur previously (Turkey Point LER 50-250/2004-001-01), other control circuits that have inputs from the startup transformer breaker cubicle contacts and that could be affected by having the GTD racked in the cubicles were reviewed at that time. No additional incorrect equipment logic/operation was identified. For a LOOP scenario, each EDG would start and accelerate to the required speed and voltage. The load sequencer would not be affected and would respond as required. The EDG breakers would close on the isolated buses and the loads sequentially loaded. The only adversely affected response is that the EDG governor would be in droop mode, instead of isochronous mode.

Droop is a characteristic of a diesel generator governor that results in lower speed as load increases. The EDG governor controls diesel engine [EIS: EK, ENG] speed to counter the droop effect and maintain desired EDG operation when the generator is operating in parallel with an external power source.

Isochronous mode is used when the EDG is operating as an isolated generator. The EDG governor compares the EDG output frequency signal to the established reference frequency and increases or decreases fuel (throttle) to the engine, as required to maintain the established 60 Hz reference frequency.

Droop mode is used when an EDG is paralleled with other larger generators, since the frequency is dictated by the larger generator system. The governor has an established droop value (%) setting, which is typically based on the kW rating of the EDG for the governor. Since the grid system is controlling frequency, the governor droop setting allows the diesel to be throttled by raising its reference point (speed adjuster) above the normal 900 RPM reference, and thereby pickup some of the grid system kW load. In droop mode, the EDG governor again uses the EDG output frequency signal, but, in this case, it also adds in the associated droop signal based on the load; it then compares this total frequency value to the established reference frequency. The governor increases or decreases fuel to the diesel, as required to obtain the established 60 Hz reference frequency. The droop circuit, in effect, sends a false signal (high) to the governor circuit, since the output frequency has not been actually restored to the reference frequency.

An isolated EDG operating with the governor in droop mode and no load will operate at an engine RPM speed equal to a 60 Hz frequency. Engine RPM/generator frequency will decrease as the EDG is loaded. For example, at rated full load of 2500 kW and a 6% droop governor setting, the EDG frequency will be lowered by a percentage equal to the droop setting, i.e., 56.4 Hz. The effect of the droop in speed/frequency is equivalent to the ratio of the actual EDG load to the EDG full load rating. In other words, at 500 kW the engine speed and generator frequency would be approximately 1.2% lower with a 6% droop setting. Generator output voltage is also related to generator speed. As such, generator output voltage will drop as engine speed drops. The EDG voltage regulator would normally restore the generator output voltage to the original reference point. However, the EDG magamp voltage regulator circuit is designed to operate in reference to a 60 Hz signal. The lower frequency sensed by the voltage regulator circuit results in a proportional change in voltage regulator reference voltage that it is responding to. As a result, the EDG

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voltage drop due to the lower speed of the generator remains and the voltage regulator only responds to changes that vary from that new voltage reference. Therefore, an isolated EDG operating with the governor in droop mode results in lower frequency and voltage that is directly related to the EDG kW load.

CAUSE OF THE EVENT

An incorrect plant procedure was used for grounding the startup transformers. Two plant procedures, 0-GME-005.1, 4.16 kV Equipment Grounding and Testing, and 3-PME-004.2, Unit 3 Startup Transformer Grounding, can effectively be used to ground the startup transformer output side by the installation of GTDs. Procedure 3-PME-004.2 has specific requirements to install jumpers to ensure the Unit 3 EDGs will start in the isochronous mode, if needed in response to a loss of power to their respective buses. The work planner incorrectly chose procedure 0-GME-005.1, which was implemented by the maintenance department.

ANALYSIS OF THE EVENT

The analysis of the impact of the Unit 3 EDGs operating in droop is bounded by the results presented in Turkey Point LER 50-250/2004-001-01 dated October 18, 2004. The discussion below summarizes that analysis.

EDG Engine Impact

This condition would not challenge the EDG engine. The EDG engines used at Turkey Point are designed to operate at full load in genset applications. A 5% frequency reduction would result in a reduction in horsepower required by driven equipment; and, as such, the horsepower demand on the engine would be less. Engine response to load blocks would be essentially the same, since engine response is dependent upon governor response and reserve power is available to accelerate the engine back to the new load level. Reserve power and governor response do not change between the droop and isochronous modes. Therefore, there is no adverse effect on engine operation on an isolated bus in droop mode.

Unit 3 EDG Droop Impact of Sequencer Loading

Engineered Safeguards Integrated Testing (ESIT) includes an EDG load rejection test with EDG load >2500 kW. Review of previous ESIT Unit 3 EDG load rejection data for EDG 3A shows approximately a 6.3% droop effect in frequency, and for EDG 3B, approximately a 6.0% droop effect in frequency. There are related drops in voltage for the accident loading sequence.

The reduction in frequency and voltage for the respective LOOP/LOCA load blocks, due to the EDG being in droop mode, would remain within the transient acceptance criteria of the ESIT, with one exception. The only exception is the frequency and voltage drop for load block 5, which are very close to the acceptance criteria values. Load block frequency dips recover quickly (i.e. < 2 seconds) with typically 4 to 5 seconds of steady state frequency until the next load block. In emergency mode, the only EDG trips in effect are overspeed and generator differential. Neither of these trips can be actuated under this EDG operating

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condition and diesel engine speed and voltage would recover, with only a fraction of a second increase in recovery time. In addition, the numbers used to determine the frequency and voltage drop in this evaluation are conservative, and it is expected that the voltage and frequency would remain within the acceptance criteria. Any slight increase in frequency and voltage load block recovery time will not adversely affect the starting of associated motors/pumps.

For LOOP there are only 3 automatic load blocks with a lower automatic load. All load blocks for a LOOP only condition would remain within the acceptance criteria.

Upon completion of load sequencing, the EDGs would operate at reduced voltage and frequency but sufficient to ensure the operation of required equipment.

EDG Operability Assessment

Unit 3 Operating

Although this event did not occur while Unit 3 was operating, if GTDs were racked into the Unit 3 startup transformer output breakers without the required jumpers, the result would be as discussed below.

Racking in GTDs in the startup transformer cubicles during Unit 3 startup transformer outages operates contacts in the respective EDG control circuits, creating logic indicating that the transformer output breakers are closed. This then places EDG voltage/frequency control in droop mode. In this condition, any EDG startup and loading would result in EDG output voltage and frequency lower than nominal.

The expected frequency and voltage would be approximately 57.0 Hz and 3950 volts with each EDG loaded to 2500 kW and operating as isolated EDGs in droop mode.

In accordance with TS SR 4.8.1.1.2, the EDG surveillance requirement for frequency is 60 ± 1.2 Hz and for voltage, 4160 ± 420 volts at a steady state condition.

Based on the above, voltage would remain within the TS requirement but frequency would be lower than the required minimum of 58.8 Hz. Therefore, both Unit 3 EDGs would be inoperable in accordance with the TSs.

Unit 3 Shutdown

In response to the loss of power to the 3A 4kV bus, the 3A EDG automatically started and successfully provided power to bus loads for approximately 13 hours. For worst case LOOP/LOCA (other unit) loads, the 3A EDG response to a LOOP/LOCA (other unit) with Unit 3 in Mode 5 would result in an EDG frequency of 58.25 Hz operating in the droop mode. In accordance with TS SR 4.8.1.1.2, the EDG surveillance requirement for frequency is 60 ± 1.2 Hz (i.e., steady state condition). Based on the above, the frequency would be lower than the required minimum of 58.8 Hz. Therefore, both Unit 3 EDGs would be inoperable in accordance with the TSs.

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Reportability

A review of the reporting requirements of 10 CFR 50.72 and 10 CFR 50.73 and NRC guidance provided in "Event Reporting Guidelines," 10 CFR 50.72 and 10 CFR 50.73 (NUREG-1022, Rev. 2) was performed for the subject condition. As a result of this review, the condition is reportable as described below.

1. Part 50.73(a)(2)(i)(B) of Title 10 CFR states that the licensee shall report "Any operation or condition which was prohibited by the plant's Technical Specifications except when:
 - (1) The Technical Specification is administrative in nature;
 - (2) The event consisted solely of a case of a late surveillance test where the oversight was corrected, the test was performed, and the equipment was found to be capable of performing its specified safety functions; or
 - (3) The Technical Specification was revised prior to discovery of the event such that the operation or condition was no longer prohibited at the time of discovery of the event."

Racking in the GTDs in the startup transformer breaker cubicles during Unit 3 startup transformer outages operates contacts in the respective EDG control circuits, creating logic indicating that the transformer output breakers are closed. This then places EDG frequency control in droop mode. In this condition, EDG startup and loading could result in EDG output voltage and frequency lower than nominal. Subsequent loading could reduce frequency below that required by TS SR 4.8.1.1.2, thus making both Unit 3 EDGs inoperable.

With Unit 4 in operation at the time the GTDs were installed in the Unit 3 startup transformer one of the two Unit 3 EDGs was required to be operable by TS Limiting Condition for Operation (LCO) 3.8.1.1.b.1. The GTDs were installed in the breaker cubicles sometime between approximately 0930 on March 8, 2006 when the Unit 3 startup transformer was declared out of service and 1725 when the electrical maintenance log was updated to document the completion of the switching order that installed the GTDs. Since it was not recognized until approximately 0550 on March 9, 2006 that both Unit 3 EDGs were inoperable, TS 3.8.1.1, Actions b, c and d were not met for Unit 4 from the time the GTDs were installed. While TS SR 4.8.1.1.1.a was not performed within one hour of the installation of the GTDs rendering both Unit 3 EDGs inoperable as required by TS 3.8.1.1, Actions b and c, it was being performed every 8 hours, as required for Unit 4 in accordance with TS 3.8.1.1, Action a, since the Unit 3 startup transformer had been removed from service.

Additionally, TS LCO 3.8.1.2.b.1, which requires one of a unit's two EDGs to be operable when in Modes 5 or 6, was not met for the shutdown Unit 3 from the time the GTDs were installed in the startup transformer. TS 3.8.1.2 Action was not entered at the time the EDGs were rendered inoperable by the installed GTDs. Consequently, an RCS drain down had commenced at approximately 0430 on March 9, 2006 (both Unit 3 EDGs were declared operable at 0615) that would have been precluded by the Action associated with TS 3.8.1.2. Therefore, the event is reportable under 10 CFR 50.73(a)(2)(i)(B).

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2. Based on the evaluation above, an additional reporting criterion was considered as discussed below:

10 CFR 50.73(a)(2)(vii) states that the licensee shall report, "Any event where a single cause or condition caused at least one independent train or channel to become inoperable in multiple systems or two independent trains or channels to become inoperable in a single system designed to:

- (A) Shut down the reactor and maintain it in a safe shutdown condition;
- (B) Remove residual heat;
- (C) Control the release of radioactive material; or
- (D) Mitigate the consequences of an accident."

The described condition is the design and use of GTDs without jumpers during startup transformer outages that would have made both Unit 3 EDGs inoperable. While these are two separate test devices, they are both required to be used to ground the output side of the transformers to ensure worker safety during subsequent transformer testing and are thus considered a single cause or condition.

As stated above, both Unit 3 EDGs were rendered inoperable during use of these GTDs when the Unit 3 startup transformer was removed from service on March 8, 2006. Therefore, the condition is considered reportable under 10 CFR 50.73(a)(2)(vii).

ANALYSIS OF SAFETY SIGNIFICANCE

Based on the analysis contained in Turkey Point LER 50-250/2004-001-01 dated October 18, 2004, it is concluded that the health and safety of the public were not affected by this event. The analysis reflects the worst case loading for the Unit 3 EDGs with a Unit 3 LOOP/LOCA at power. Unit 3 EDG loading is significantly lower with an assumed LOOP/LOCA on the other unit as was the case for this recent event. Therefore, the analysis bounds the recent event and is summarized below.

An isolated Unit 3 EDG operating in droop mode would have an initial frequency of 60 Hz, with no load and the frequency would decrease as load increased. The effects on the following AC powered components would not prevent them from performing their safety function:

- Motor Operation (Running and Starting)
- Inverter (Vital AC)/Battery Charger Operation
- Mechanical Equipment for LOOP and LOOP/LOCA at 5% Speed Reduction
- Motor Operated Valve Performance
- Pump Performance
- Emergency Containment Coolers

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The following accident aspects were evaluated and the impacts were found to be acceptable:

- Containment Response
- Operational Controls
- Reactor Coolant Pump Performance
- Hydrogen Generation
- Control Room HVAC and Emergency Containment Filter Performance
- Small-Break LOCA Impact
- Large-Break LOCA and Long Term Cooling
- Non-LOCA Transients

EDG operation in the droop mode results in a reduction of output frequency of approximately 5%, which translates to reductions in pump and fan motor speeds. For pumps, flow and head are reduced by approximately 5% and 10%, respectively; although affinity laws were used to more definitively estimate flow based on a 10% head reduction. Also, the effects of degraded pump performance become less critical with time into an event.

Although the defined equipment performance capability was degraded, valid assumptions for event and accident analyses were upheld. Assessment results show that no acceptance criteria or limits would be exceeded if any design basis events occur while the Unit 3 EDGs are in the droop mode of operation. Therefore, the increase in risk from Unit 3 EDGs operating in droop mode is considered very small.

CORRECTIVE ACTIONS

A modification has been completed that eliminates the need to install jumpers on the Unit 3 startup transformer breaker cubicles when a GTD is installed. Unit 4 EDGs have a different control circuit design that is not affected by the use of GTDs. Therefore, no action is required.

Any additional corrective actions will be determined upon completion of a root cause evaluation. A supplement to this report is targeted for submission on July 30, 2006.

ADDITIONAL INFORMATION

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

FAILED COMPONENTS IDENTIFIED: None

SIMILAR EVENTS: Turkey Point Licensee Event Report 50-250/2004-001-01 reported the identical condition.