December 22, 1992

Revised see 1/4/93

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THRU: Herbert N. Berkow, Director
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FROM: L. Raghavan, Project Manager
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SUBJECT: GREEN TICKET EDO CONTROL NO. 0008388
QUESTIONS ON TURKEY POINT FROM THE STAFF OF THE SUBCOMMITTEE ON NUCLEAR REACTOR REGULATION

Enclosed is our proposed response to Nuclear Reactor Regulation Subcommittee staff questions on Turkey Point nuclear units. As requested in the green ticket, our response is provided in Q and A format.

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QUESTION 1. It is alleged that the failure to perform the license-required surveillances to verify the operability of the pressure-relief system used to prevent possible vessel cracking constitutes a serious violation of the plant's technical specifications. It cannot be considered to be but a mere deviation as the NRC has chosen to characterize it.

ANSWER.

To reduce the potential for overpressurization of the reactor coolant system (RCS) when it is in a cold and water-solid condition, referred to as the low temperature overpressurization (LTOP) condition, the plant technical specifications (TS) include several administrative controls and limitations for overpressure mitigation. The TS provide requirements to minimize the time the RCS is maintained in a water-solid condition, to isolate the high pressure safety injection (HPSI) to prevent HPSI injection into a water-solid RCS, and to prevent the start of an idle reactor coolant pump when the difference between the RCS and steam generator temperatures is more than 50 degrees F. In addition, many pressurized water reactor (PWR) plants rely on venting through power-operated relief valves (PORVs) to provide LTOP protection. For these cases, plant TS specify setpoints for the PORVs as well as minimum RCS vent size. These requirements are designed to ensure that mass and heat input transients more severe than those assumed in the LTOP protection analyses will not occur.

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Specifically, Turkey Point TS 3.4.9.3, Overpressure Mitigating Systems (OMS), Limiting Condition of Operation, specifies that, when the RCS average temperature falls below 275 degrees F, the HPSI flow paths are to be isolated and require two operable PORVs or provision for adequate venting of the RCS. To verify operability of the PORVs, a surveillance procedure, 3/4-OSP-041.4, OMS Nitrogen Backup Leak and Functional Test, should be performed. A nitrogen bottle is a backup to the instrument air system which normally operates the PORV. The instrument air remained operational throughout the entire event. The surveillance checks the nitrogen bottle pressure and verifies opening of the PORV on a test signal. During August 24 - 25, 1992, after the units were brought to a hot shutdown, the licensee, under the provisions of 10 CFR 50.54(x), decided not to enter the containment and hook up the equipment required to perform the necessary surveillance test procedure. The licensee took this action because the normal lighting in the containment was not available due to loss of offsite power and portable lighting would have been required to perform this surveillance. Entry into containment without normal lighting carried too high a risk of potential human error and injuries or of resulting in an undesirable plant transient. At the time, the safety importance of the OMS was substantially reduced from its design basis because the unit was not in a water solid condition during or following the hurricane. Also, the HPSI flow path to the RCS was isolated. The licensee successfully accomplished the control room portion of testing the OMS (i.e. cycling of the PORVs) within 24 hours of the shutdown of the units. The backup nitrogen portion of the OMS was tested and declared operational by September 7, 1992, when stable offsite power was restored and normal lighting was available inside containment.

The licensee's action to depart from the TS-required surveillance tests was not a failure but rather a conscious emergency decision and action consistent with the provisions of 10 CFR 50.54(x). The conduct of surveillances during normal and off-normal conditions is required and expected. However, 10 CFR 50.54(X) allows a licensee to "....take reasonable action that departs from a license condition or a technical specification (contained in a license issued under this part) in an emergency when this action is immediately needed to protect the public health and safety and no action consistent with the license conditions and technical specifications that can provide adequate or equivalent protection is immediately apparent." The licensee is expected to exercise good judgment and minimize possible upset situations where feasible. Further, 10 CFR 50.54(y) requires that the "licensee's action permitted by paragraph (x) of this [10 CFR 50.54] section shall be approved, as a minimum, by a licensed senior operator prior to taking the action."

The NRC staff reviewed the licensee's actions taken during the emergency condition to depart from the TS surveillance noted above and determined that they were immediately needed to protect the public health and safety, no other adequate or equivalent action consistent with license conditions or TS was immediately apparent, and no opportunity existed to process a license amendment. The NRC staff also found the licensee's actions appropriate on the basis that the departure from TS was approved by a licensed senior reactor operator prior to implementation and the licensee took necessary actions to recover from the departure from TS as soon as practicable following the hurricane (i.e., departed from TS only to the extent necessary).

The NRC staff evaluation of this event is documented in Inspection Report 50-250,251/92-20, which was provided to you earlier.

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QUESTION 2. Florida Power and Light management failed to perform critical start-up surveillance tests on the reactor coolant system and in the feedwater equipment, leading to cool down the primary system after the inevitable manual or automatic reactor trip that followed the loss of feedwater from main or nuclear-safety-related auxiliary feedwater and residual heat removal sources.

ANSWER.

On September 29, 1992, with Unit 4 in Mode 2 (startup), the licensee discovered that two surveillance tests had not been completed as required. These tests were the venting of the Emergency Core Cooling System (ECCS) and the running of the standby feedwater pumps in the recirculation mode. These tests are required to be performed monthly by TS 4.5.2.b(1) and 4.7.1.6.2, respectively.

TS 4.5.2.b(1) requires that each ECCS component and flow path be demonstrated operable at least once per 31 days while the unit is in Modes 1, 2, or 3 by verifying that ECCS piping is full of water by venting the ECCS pump casings and accessible discharge piping. TS 4.7.1.6.2 requires that the standby feedwater pumps are verified to be operable at least monthly while the unit is in Modes 1, 2, or 3 by testing in recirculation on a staggered test basis. The licensee typically performs procedures 4-OSP-202.2, ECCS Pump and Piping

Venting, and 0-OSP-074.3, Standby Steam Generator Feedwater Pumps Availability Test, to satisfy these TS requirements.

Contrary to these requirements, ECCS pump and piping venting, and the standby steam generator feedwater pumps availability test were not performed prior to Unit 4 entry into Mode 3 and within the required timeframe. ECCS venting was last performed on August 7, 1992, and the feedwater pump availability test was last performed on August 5, 1992.

In response to the discovery of these missed surveillances, the licensee satisfactorily completed the two missed surveillances promptly and demonstrated that both the ECCS and the standby feedwater pumps were operable. Further, the licensee returned Unit 4 to Mode 3 (hot standby) and satisfactorily verified that all required surveillances had been performed. During this time the normal feedwater and safety-related auxiliary feedwater remained available. In addition, ECCS pump and piping venting (high head safety injection pump readiness test) showed no evidence of air when venting the piping or pump casing. The licensee also walked down the RHR and safety injection (SI) systems to verify valve alignment. Prior to entry into Mode 4 (RCS temperature above 200 degrees F but below 350 degrees F), cooling of the RCS was provided by a residual heat removal (RHR) pump which ran normally. NRC Inspector review of the licensee's event safety analysis indicated that the missed surveillances did not result in any health and safety concern.

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A thorough review of all required surveillance tests by the licensee and independently by the NRC resident inspectors did not identify any additional missed surveillance tests. It should be noted that the standby feedwater system is not a safety-related system. The licensee attributed the cause for the condition to personnel error, in that the due dates were improperly changed in the computer, and implemented corrective actions to require supervisory review and approval of all changes to surveillance dates in the computer.

The NRC staff reviewed the licensee's actions and determined that the above testing activities were performed in a satisfactory manner and the licensee's corrective actions are adequate. The NRC staff evaluation is documented in Inspection Report 50-250,251/92-20, which was provided to you earlier.

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QUESTION 3. On October 5, 1992, with the unit in cold shutdown, the Overpressure Mitigatic[illegible] System was erroneously actuated, with the spurious op[illegible]ing of power operated relief valves, the decreased primary [illegible]e increasing the risk of a spurious safety injecti[illegible].

ANSWER.

On October 5, 1992, with Unit 4 in cold shutdown, the licensee was performing Overpressure Mitigation System (OMS) nitrogen backup leak and functional test. The test requires preparation of the primary coolant loop such as to allow opening of the power-operated relief valves (PORV) without depressurization of the reactor coolant system (RCS) and to provide a closure signal to the residual heat removal (RHR) suction valves. The test is accomplished by introducing a simulated high pressure signal to the primary coolant loop instrumentation being tested and verifying that the loop instrumentation operates as designed. In performing the test, licensee personnel erroneously proceeded to apply the simulated high pressure signal to a backup instrumentation loop instead of the primary loop. The backup is a parallel loop which is identical in operation and configuration to the primary loop. Since the backup loop was not prepared for the test, application of the test pressure resulted in slight depressurization of the RCS, approximately 12 psig, which is insignificant compared with the pressure decrease required to trigger a safety injection, before the error was discovered and the PORV in

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the backup loop was closed. The reduction in pressure also caused a valve in the RHR system, which was kept open for the test, to close. This resulted in a brief loss of RHR cooling and a 1 degree F increase in the RCS temperature. After the event, the PORV was closed and the RHR system was returned to normal operation in a timely manner. No high system pressure actually occurred as a result of the inadvertent actuation of the PORV and the OMS and RHR system functioned as expected. Because of the short duration of the event and consequent small change in the RCS temperature and pressure, the event did not pose a health and safety concern. Further, although spurious safety injections should be avoided, the systems are designed for such events and, should a safety injection have occurred, this also would not have posed a health and safety concern. The licensee is implementing appropriate preventive corrective action. added

The NRC staff evaluation of this event is documented in Inspection Report 50-250,251/92-24, which was provided to you earlier.

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