November 7, 2003

Mr. J. T. Gasser,
Vice President
Southern Nuclear Operating
Company, Inc.
Post Office Box 1295
Birmingham, Alabama 35201-1295

SUBJECT: NOTICE OF ENFORCEMENT DISCRETION (NOED) FOR SOUTHERN NUCLEAR OPERATING COMPANY REGARDING VOGTLE ELECTRIC GENERATING PLANT, UNIT 2 (TAC NO. MC1180, NOED NO. 03-6-004)

Dear Mr. Gasser:

By letter dated November 5, 2003, you formally documented a verbal request made on November 3, 2003, for discretionary enforcement concerning Vogtle Electric Generating Plant (VEGP), Unit 2, 31-day staggered test basis Actuation Logic Tests required by Surveillance Requirements (SR) 3.3.1.5 and 3.3.2.2 for the Solid State Protection System (SSPS). These tests include:

- P-14 initiated P-4/Feedwater Isolation [FWI] seal-in (Normal Memory Test)
- SI (Steam Injection) initiated P-4/Feedwater Isolation seal-in (Normal Memory Test)
- P-14 initiated Feedwater Isolation (FWI Actuation Logic Test)
- SI initiated Feedwater Isolation (FWI Actuation Logic Test)
- P-10 block of Source Range Neutron Flux Reactor Trip (P10/P6 Interlock Test)

Southern Nuclear Operating Company (SNC, the licensee) could not perform this testing because of a broken test switch. Most of these tests involve Feedwater Isolation, while the remaining test is for blocking of the Source Range Neutron Flux Reactor Trip.

Your letter addressed the information previously discussed with the NRC during two telephone conferences on November 3, 2003, at 3:00 p.m., and November 4, 2003, at 1:30 p.m. The principal NRC staff members who participated in the telephone conferences included: Edwin M. Hackett, Director, Project Directorate II (PD2), Division of Licensing Project Management (DLPM), Office of Nuclear Reactor Regulation (NRR); Victor M. McCree, Director, Division of Reactor Projects (DRP), Region II (RII); Walter G. Rogers, Division of Reactor Safety (DRS), RII; Brian R. Bonser, Chief, Branch 2, DRP, RII; Norman Merriweather, DRS, RII; John Zeiler, Sr. Resident-VEGP, DRP, RII; John A. Nakoski, Section Chief, PD2-1, DLPM, NRR; Frank Rinaldi and Sean Peters, Project Managers, PD2-1, DLPM, NRR; Carl Schulten, Reactor Operations Branch, Division of Regulations Improvement Programs, NRR; Nicholas Saltos, Probabilistic Safety Assessment Branch, Division of Systems Safety and Analysis, and Hukam Garg, Electrical and Instrumentation and Controls Branch, Division of Engineering, NRR.

Since restoration activities would exceed the Technical Specifications (TS) allowable outage time (AOT) for the SSPS, you requested that a NOED be issued pursuant to the NRC's policy

regarding exercise of discretion for an operating facility, set out in Section VII.C, of the "General Statement of Policy and Procedures for NRC Enforcement Actions" (Enforcement Policy), NUREG-1600. The requested NOED would be effective for an additional 28 days from the date and time that the required tests were to be completed (November 5, 2003, 4:36 AM EST).

This letter documents our verbal issuance of the NOED during the telephone conference on November 4, 2003, at 2:15 PM EST. As of the date of this letter, we understand that the condition causing the need for this NOED has not yet been corrected.

On October 26, 2003, the licensee performed Surveillance Test Procedure 14421-2, “Solid State Protection System (SSPS) and Reactor Trip Breaker Train B Operability Test” on VEGP, Unit 2, utilizing the Memories Test Switch. The switch is made up of a bank of switches and contacts held together by screws and nuts. The functions tested by the use of this switch are:

- Power Range Low Setpoint Trip Block (Switch position 1)
- Intermediate Range Block (Switch position 2)
- Source Range Neutron Flux Trip Block (Switch positions 3 and 4)
- Safety Injection Block, Pressurizer (Switch positions 5 and 6)
- SI Block, High Steam Pressure Rate (Switch positions 7 and 8)
- Auto SI Block (Switch position 9)
- Feedwater Isolation on P-14 or SI (Switch positions 10 and 11).

Memory testing with the switch in positions 1 to 9 was completed satisfactorily, but the expected response was not obtained for switch positions 10 and 11. Also, for switch positions 6, 7, and 9, the operator had to apply some force to the switch for it to operate successfully. The need to provide some force to the switch to obtain the proper response had been experienced during previous tests. The following observations document the history of the problems with the VEGP, Unit 2, Train B, Memories Test Switch:

- Switch positions 2 and 8 initially indicate BAD [unable to test position] on April 23, 2001. However, the switch was moved to the previous positions and retested successfully. A maintenance work order was written and scheduled for refueling outage 2R10.

- Switch positions 2, 5, and 9 initially indicate BAD on November 23, 2002. Retest was successful.

- Switch positions 4, 8, and 9 initially test BAD on March 16, 2003. Retest was successful.

- Switch positions 2, 5, 7, 8, and 11 initially test BAD on September 7, 2003. Retest was successful but multiple attempts were required for positions 8 and 11 to pass.

- Condition documented in this proposed request for enforcement discretion (10/26/03).

Based on this history and the ability to successfully complete the test in the past, the licensee expected that SNC would be able to complete the required surveillances until the switch would be replaced in refueling outage 2R10 (Spring 2004).

As a result of the malfunction of the Memories Test Switch, SNC has been unable to complete the actuation logic surveillances referenced above. These surveillances were to become late on November 5, 2003, at 4:36 AM EST, at which time the applicable portions of VEGP, Unit 2, Train B SSPS would have to be declared inoperable in accordance with VEGP's TS. The licensee has stated that replacement of the Memories Test Switch during power operation is not feasible due to the fact that Train B SSPS would be out of service for as much as 36 hours, and the attendant risk increase due to such an activity. Therefore, SNC requested enforcement discretion for the interval of the above referenced surveillances for a period not to exceed 28 days from 4:36 AM EST on November 5, 2003. The safety bases for the NOED request included a discussion of four proposed alternatives, compensatory measures, and an evaluation of the potential impact on the public health and safety and the environment.

The proposed alternatives considered by SNC are:

- Replace the faulty Memories Test Switch during power operation. This would involve taking Train B SSPS out of service for at least 36 hours, thus, incurring an increase in risk while one train of SSPS is out of service plus the attendant trip risk while working on the SSPS while at power. This alternative was ruled out because of the additional time required beyond the current 24-hour AOT and the trip risk.

- Shut the unit down to Mode 5 to replace the faulty switch. This shutdown option would involve an increase in risk due to shutting the unit down, plus an additional thermal cycle on the reactor coolant pressure boundary.

- Complete the surveillance using jumpers to mimic the function of the memories test switch. While this alternative is feasible, it is not the preferred option because it involves entering the logic cabinet and installing jumpers which poses a potential trip risk and the potential for error.

- Remain at power until the refueling outage scheduled for April 2004. This alternative was selected based on consideration of the associated risk.

SNC's evaluation concluded that since the subject circuits could not be tested properly, the failure probability of the Train B feedwater isolation signal and that of the seal-in circuit will be increased until the function is tested successfully. However, the Train A feed water isolation (both actuation and seal-in circuits) has been verified operable via surveillance testing. Therefore, feedwater isolation will be assured by the Train A SSPS and all valves will remain closed by the seal-in signal. Even if the feedwater isolation signal from Train A fails, feedwater isolation can still be accomplished by Train B even though the failure probability of Train B is higher. In the case of a secondary side break (SSB), feed water isolation, as well as closure of the main steam isolation valves and termination of auxiliary feedwater flow, is required for the isolation of the faulted steam generator (SG) from the intact SGs for reducing the cooldown rate associated with the secondary break. However, core damage would not occur as long as the reactor coolant system remains intact and high pressure safety injection is successful. Out of the total 11 SSB core damage sequences, 3 sequences have been identified as core damage sequences involving failure of SG isolation.

Feedwater isolation may also be needed for the isolation of the ruptured SG in steam generator tube (SGTR) sequences. However, in the VEGP Probabilistic Risk Assessment (PRA) model manual isolation of the faulted SG was credited not isolation by a automatic feedwater isolation signal. Thus, the estimated SGTR risk with failure of the Train B feedwater isolation signal remained the same as those for the base cases.

The rest of the initiating events do not involve any secondary side breaches, and feedwater isolation is not required. Thus, the 3 SSB sequences are the only contributors to the core damage frequency (CDF) and large early release frequency (LERF) risk associated with the degradation of the Train B feedwater isolation signal. Since the total contribution of all of the SSB sequences to the total CDF and LERF is very small, less than 0.5 percent of the total risk for both CDF and LERF risks, and the automatic signal from the Train A SSPS or the capability to manually isolate feedwater is not affected by the condition addressed by this enforcement discretion, the risk increase associated with degradation of the of the Train B feedwater isolation signal was estimated to be negligible by the criteria of Regulatory Guide 1.177.

During the performance of the surveillance, the testing of the P-10 block of the source range trip was not tested. During power operation, the source range neutron flux trip function is blocked. When operating above the P-10 setpoint, P-10 ensures that the source range neutron flux remains blocked. The consequences of a failure of the source range trip block could be a reactor trip. For this to occur a failure of P-10 is required and an operator error would have to occur to reinstate the source range trip. This is not a likely scenario since it requires two separate and unrelated failures.

Operating history at VEGP has demonstrated that the SSPS is highly reliable. For Unit 1, there have been approximately 180 performances of actuation logic testing, and for Unit 2, approximately 150 performances. The actuation logic test procedure currently performs approximately 170 individual logic tests. A review of the test results has not revealed any logic failures. In addition, all inputs to the SSPS have been demonstrated to be operable via other required surveillance testing. The very small increase in risk discussed above is outweighed by compensatory measures that are discussed below. Hence, there is no net increase in risk. Therefore, the safety consequences of operation under the proposed NOED, as demonstrated by SNC's risk evaluation, present the safest course of action as compared to repairing the switch at power or shutting the unit down to repair the switch.

Public health and safety will not be adversely impacted by continuance of power operation of VEGP Unit 2. By maintaining VEGP, Unit 2 at power, the risk of a transient during power reduction requiring the actuation of the SSPS is offset. SNC has evaluated the request for enforcement discretion against the criteria set forth in Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.92 and concludes that the request involves no significant hazards consideration. Also, the requested enforcement discretion does not affect normal operation of the unit and does not alter any accident analysis results. Therefore, granting this NOED will not involve any significant change in the types or amounts of effluents that may be released offsite and no increase in the individual or cumulative occupational radiation exposure. This request for enforcement discretion does not involve any adverse environmental consequences. Further, the duration of the noncompliance (28 days) will allow SNC sufficient time to submit, and the NRC to review, an exigent change to VEGP, Unit 2 TS in accordance with 10 CFR 50.91(a)(6).

The control room operators will be briefed on the circuits in B Train SSPS that have not been tested due to the failure of the Memories Test Switch. This briefing will include a discussion of how a failure of these circuits would affect VEGP, Unit 2 operations. In view of the inability to test the above described functions, the operators will be directed to take the following compensatory measures:

- Operators are to be aware of the inability to test B-FWI and maintain an increased sensitivity to verifying FWI following Reactor Trip.

- In the event that FWI is necessary and does not occur, Operators will take the additional precautionary actions: place the main feedwater regulation valve and bypass feedwater control valve controllers in manual and closed; main feedwater isolation valve's in fast close/pull on lock; and bypass feedwater isolation valve's in the close/auto position.

- Twice per shift, while in Modes 1-4, Operators will verify correct indications for following and log completion for the following activities in the unit control log:
  * SG Levels
  * Pressurizer Pressure
  * SG Pressure
  * Containment Pressure
  * P-6, P-10 bypass and permissive light panels (BPLPs) and associated trip status lights
  * SR Trip Blocked BPLP's

- Increased operator rounds to twice per shift for the inspection of the main steam valve rooms and turbine building for steam leaks. This will increase the likelihood of precursors to secondary side breaks being identified so that prompt action can be taken.

- If for any reason VEGP, Unit 2 has to be taken to Mode 3 during the duration of the enforcement discretion, the faulty switch will be replaced.

This NOED is intended to avoid unnecessary transients as a result of compliance with the license condition and, thus, to minimize potential safety consequences and operational risks. The qualitative evaluation and compensatory measures in place that operation under this NOED provides the lowest risk course of action when compared to the other alternatives.

The NRC staff has reviewed your request and agree that the proposed alternative is acceptable and would avoid the potential for a plant transient that could occur during a plant shutdown. Also, we agree that your interim compensatory measures, risk analysis, and safety basis considerations have demonstrated that continued operation of VEGP, Unit 2, would not involve a net increase in radiological risk and would not adversely affect public health and safety. Further, our decision is based primarily on the request being risk neutral and providing assurance of public health and safety.

On the basis of the NRC staff's evaluation of your request and the information provided in your letter dated November 5, 2003, the NRC staff concludes that issuance of this NOED is consistent with the Enforcement Policy and staff guidance, and has no adverse impact on

public health and safety. Therefore, it is our intention to exercise discretion not to enforce compliance with VEGP, Unit 2, 31-day staggered test basis Actuation Logic Tests required by SR 3.3.1.5 and 3.3.2.2 for 28 days, starting from November 5, 2003, at 4:36 AM and ending in 28 days. However, as stated in the Enforcement Policy, action will be taken to the extent that violations are involved, for the root cause or causes that led to the request for this NOED.

Sincerely,

/RA/

Edwin M. Hackett, Director
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-425

License No. NPF-81

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