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SOUTHERN COMPANY
Energy to Serve Your World℠

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U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555-0001

Vogtle Electric Generating Plant - Units 1 & 2
Response to NRC RAI on SNC Request for Extension for Completing Corrective Actions for Generic Letter 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors"

Ladies and Gentlemen:

By letter dated August 31, 2005, Southern Nuclear Operating Company (SNC) submitted a combined SNC response for Joseph M. Farley Nuclear Plant (FNP) and Vogtle Electric Generating Plant (VEGP) as required by NRC Generic Letter 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized Water Reactors." In this letter, SNC committed to the installation of the VEGP Unit 1 and Unit 2 new post-LOCA containment sump recirculation screens, completion of required modifications, and implementation of required procedural changes by December 31, 2007. By letter dated June 22, 2006, SNC requested the completion of the modifications to mitigate downstream effects for VEGP Unit 1 be extended until the completion of the Unit 1 2008 spring outage. This letter also provided SNC's basis for concluding that it is acceptable to extend the completion time for the modifications. In a teleconference on June 30, 2006 with the NRC staff reviewer of the June 22, 2006 extension request, SNC was requested to provide an update of on-going activities and a clarification as to what activities are driving the extension request.

SNC is fully committed to resolving GSI-191. Debris generation and transport calculations are complete. Contracts are in place for the design, testing, delivery and installation of the new containment emergency sump screens. However, the VEGP passive screen design still has a couple of open industry and plant specific design issues to be resolved. Downstream effects evaluations of component operation require plant modifications that include some combination of ECCS flow orifice installations. Fabrication and shop testing of the new ECCS flow orifices is required to ensure the proper system response can be achieved. The fabrication and testing schedule is contained in Enclosure 1. Chemical effects testing by the vendor is being negotiated for completion in the fall of 2006. This chemical effects testing timeframe allows for an assessment of the NRC's Request for Addition Information (RAI) on the chemical effects WCAP-16530-NP, "Evaluation of Post-Accident Chemical Effects in Containment Sump Fluids to Support GSI-191," prior to completion of testing for VEGP. The RAI is expected from the NRC to the PWR Owners Group (PWROG) in July 2006.

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To improve existing margins until all modifications can be implemented, VEGP will install new sump screens that will increase the available screen area from approximately 54 sq ft to 765 sq ft for each of the RHR screens, an approximate 1400% increase, and from approximately 54 sq ft to 590 sq ft for each of the Containment Spray screens, an approximate 1075% increase, during the Unit 1 fall 2006 refueling outage. Required modifications, including modifications to mitigate downstream effects, to Unit 2 are scheduled to be completed during the spring 2007 outage. Preliminary screen head loss test results indicate that the removal of Min-k insulation will substantially reduce the head loss across a debris loaded screen. VEGP is actively pursuing the removal of Min-k from the Unit 1 containment during the fall 2006 refueling outage. It is anticipated that approximately 13.5 feet of head loss margin will be available to account for chemical effects.

Considering the above, a short extension to the completion schedule is respectfully requested to extend the completion of the corrective actions required by Generic Letter 2004-02 for VEGP Unit 1 from December 31, 2007 to the spring 2008 outage, which is currently scheduled to begin in March 2008. Enclosure 1 to this letter provides the basis for SNC's conclusion that it is acceptable to extend the completion of the corrective actions required by Generic Letter 2004-02 and an update of on-going activities and a clarification as to what activities are driving the extension request.

SNC requests approval of the proposed request by August 25, 2006.

Mr. D. E. Grissette states he is a Vice President of Southern Nuclear Operating Company, is authorized to execute this oath on behalf of Southern Nuclear Operating Company and to the best of his knowledge and belief, the facts set forth in this letter are true.

The NRC commitment contained in this letter is provided as a table in Enclosure 2.
If you have any questions, please advise.

Respectfully submitted,

SOUTHERN NUCLEAR OPERATING COMPANY

Don E. Grissette

Sworn to and subscribed before me this 28th *day of* July, *2006.*

Notary Public

My commission expires: 11/10/06

DEG/DWM/daj

Enclosure: 1. Response to NRC RAI on SNC Request for Extension for Completing Corrective Actions for Generic Letter 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors"

2. List of Regulatory Commitments

cc: Southern Nuclear Operating Company
Mr. J. T. Gasser, Executive Vice President
Mr. T. E. Tynan, General Manager – Plant Vogtle
RType: CVC7000

U. S. Nuclear Regulatory Commission
Dr. W. D. Travers, Regional Administrator
Mr. C. Gratton, NRR Project Manager – Vogtle
Mr. G. J. McCoy, Senior Resident Inspector – Vogtle

State of Georgia
Mr. L. C. Barrett, Commissioner – Department of Natural Resources

Enclosure 1

Vogtle Electric Generating Plant
Response to NRC RAI on SNC Request for Extension for Completing Corrective Actions for Generic Letter 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors"

Enclosure 1

Vogtle Electric Generating Plant
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SNC is fully committed to resolving GSI-191. Debris generation and transport calculations are complete. Contracts are in place for the design, testing, delivery and installation of the new containment emergency sump screens. However, the VEGP passive screen design still has a couple of open industry and plant specific design issues to be resolved. Downstream effects evaluations of component operation require plant modifications that include some combination of ECCS flow orifice installations. Fabrication and shop testing of the new ECCS flow orifices is required to ensure the proper system response can be achieved. The fabrication and testing schedule is contained in this Enclosure. Chemical effects testing by the vendor is being negotiated for completion in the fall of 2006. This chemical effects testing timeframe allows for an assessment of the NRC's Request for Addition Information (RAI) on the chemical effects WCAP-16530-NP, "Evaluation of Post-Accident Chemical Effects in Containment Sump Fluids to Support GSI-191," prior to completion of testing for VEGP. The RAI is expected from the NRC to the PWR Owners' Group (PWROG) in July 2006.

Downstream Effects

VEGP has performed analysis of downstream effects in accordance with WCAP 16406-P, "Evaluation of Downstream Sump Debris Effects in Support of GSI-191." The following components were evaluated for wear and plugging:

- Residual Heat Removal (RHR) Pumps and Heat Exchangers
- ECCS Pumps
- CS System Pumps
- Flow Orifices
- Throttle Valves
- Instrumentation
- Check Valves
- Relief Valves
- Reactor fuel and vessel internals

The ECCS throttle valves were the only components identified as being susceptible to debris plugging. Note that only eight of the twelve ECCS throttle valves per Unit have been identified as being susceptible to debris plugging. As noted earlier in this document, Vogtle Unit 1, which has a refueling outage planned for the fall of 2006, is facing challenges to the installation schedule for the downstream effects related modifications. Specifically, parts and testing of 3 flow reducing breakdown orifices (one for the CCPs and two for the SI System) may not be complete in time for the fall 2006 Refueling Outage. A preliminary schedule has been developed which includes finalization of the design and procurement and installation of the modification in accordance with the spring 2008 refueling outage schedule. Required modifications, including modifications to mitigate downstream effects, to Unit 2 are scheduled to be completed during the spring 2007 outage.

The schedule for resolution of modifications (detailed below) to open the ECCS throttle valves requires time to fully shop test the new ECCS breakdown orifices prior to installation. The importance of comprehensively testing the orifices is demonstrated through numerous operational experience events involving the degradation of ECCS system due to cavitation. In addition, NRC Information Notice IN 97-76, "Degraded Throttle Valves in Emergency Core Cooling System Resulting From Cavitation-Induced Erosion During a Loss-Of-Coolant Accident," was issued to describe potential problems caused by degradation of ECCS throttle valves in the intermediate-head safety injection pump hot-leg and cold-leg flow paths and in the charging pump (high-head safety injection) cold-leg flow paths during certain loss-of-coolant accident (LOCA) scenarios.

As identified in NRC SECY 06-0078, "Status of Resolution of GSI-191, 'Assessment of [Effect of] Debris Accumulation On PWR Sump Performance,'" certain criteria must be addressed to support station requests for extension beyond the December 31, 2007 GL commitment date. One of the criterion states: "...the licensee has a plant-specific technical/experimental plan with milestones and schedule to address outstanding technical issues with enough margin to account for uncertainties."

The ECCS throttle valves require careful setup and testing prior to installation in the system. The installed valves must be able to pass a particle size (plus margin) that could be passed by the new sump screens (i.e., the screen hole size is being reduced from 1/8" to 3/32"). Additionally, the valves must be able to throttle and balance injection flows in service to maintain safety system operability. The clearance associated with the current Vogtle CCP and SI Cold Leg Throttle Valves position has been found to be susceptible to debris plugging. Several alternatives were evaluated to resolve this issue including:

- Change the orifice size downstream of throttle valves so that valves can be opened farther - this is not desired because analysis predicted cavitation.

- Replace valves with new valves having a larger C_v range - this is not desired because of very long lead times or inability to acquire entire valve.

- Replace installed valve trim and eliminate/modify orifices - this is not desired because of very long lead times or inability to acquire valve trim.

- Add a new ECCS breakdown orifice to the CCP and SI system – this is the desired solution: however, shop testing of the new ECCS flow orifices is required

to ensure the proper system response can be achieved. The following items were considered in selecting this option:

1. The breakdown orifices are a passive device. This eliminates administrative controls or concerns regarding mispositioning of the devices.

2. The breakdown orifices can be designed to preclude cavitation.

3. Use of the breakdown orifices will simplify the flow balance test since the breakdown orifices will control the overall system resistance and the branch line throttle valves will only be used to balance flow.

SNC has evaluated the alternatives to procure and test parts for the planned modifications and the lowest risk option to the ECCS system is estimated to take 20 weeks from July 24, 2006.

Schedule Date		
Procure Orifices for testing	8 weeks	9/18/06
OrificeTesting	2 weeks	10/2/06
Procure Parts for installation	10 weeks	12/11/06
Total	20 weeks	Mid-December 2006

Design and subsequent shop testing is needed to confirm acceptable orifice design and impact on ECCS performance. The above schedule allows sufficient time to incorporate any lessons learned from the shop testing into the final design of the orifices and thus represents the lowest risk for an adverse impact on the ECCS design. This schedule does not support the fall 2006 refueling outages scheduled for Vogtle Unit 1; however, there is ample time to support installation in the spring 2008 Refueling Outage. The extension requested would support the parts procurement and testing prior to installation with sufficient margin to account for uncertainties. Required modifications, including modifications to mitigate downstream effects, to Unit 2 are scheduled to be completed during the spring 2007 outage.

Chemical Effects Margin

To improve existing margins until all modifications can be implemented, VEGP will install new sump screens that will increase the available screen area from approximately 54 sq ft to 765 sq ft for each of the RHR screens, an approximate 1400% increase, and from approximately 54 sq ft to 590 sq ft for each of the Containment Spray screens, an approximate 1075% increase, during the Unit 1 fall 2006 refueling outage. Required modifications, including modifications to mitigate downstream effects, to Unit 2 are scheduled to be completed during the spring 2007 outage. Screen head loss test results indicate that the removal of Min-k insulation will substantially reduce the head loss across a debris loaded screen. VEGP is actively pursuing the removal of Min-k from the Unit 1 containment during the fall 2006 refueling outage and from Unit 2 during the spring 2007 refueling outage. It is anticipated that approximately 13.5 feet of head loss margin will be available to account for chemical effects.

Mitigative Measures

Vogtle is continuing efforts to complete the corrective actions committed to in the August 31, 2005 GL 2004-02 response. Vogtle is currently on schedule to install new sump screens for both units by December 31, 2007. The schedule is as follows:

- Vogtle Unit 1 (fall 2006)
- Vogtle Unit 2 (spring 2007)

As previously stated, NRC SECY 06-0078 provides "Criteria for Evaluating Delay of Hardware Changes" which must be addressed to support a request for extension. The second criterion states:
"..the licensee identifies mitigative measures to be put in place prior to December 31, 2007, and adequately describes how these mitigative measures will minimize the risk of degraded ECCS *and* CSS *functions during the extension period."*

In support of this extension, SNC notes that the following favorable conditions exist at VEGP:

- Procedural guidance exists regarding containment foreign material exclusion (FME) controls and, improvements to loose debris surveillances.

- Bulletin 2003-01 training and procedural guidance to expedite plant cooldown in response to a small break LOCA.

- VEGP does not utilize calcium silicate insulation and will remove Min-K insulation from the ZOI in containment. Preliminary screen head loss test results indicate that the removal of Min-k insulation will substantially reduce the head loss across a debris loaded screen. It is anticipated that approximately 13.5 feet will be available to account for chemical effects.

- Application of the leak-before-break analysis principle has been approved by the NRC Staff for VEGP in relation to breaks in the reactor coolant loop primary piping, accumulator line piping, and reactor coolant loop bypass piping.

- The NPSH analysis for the CS System pumps and the RHR pumps do not credit containment overpressure.

In addition to the existing favorable conditions, Vogtle Unit 1 plan for additional mitigative measures to be taken during the fall 2006 refueling outage, including:

- Installation of new replacement sump strainers for each pump suction. The new sump screens are relatively large, approximately 765 sq ft for each of the RHR screens, an approximate 1400% increase, and 590 sq ft for each of the Containment Spray screens, an approximate 1075% increase.

- VEGP is actively pursuing the removal of Min-k from the Unit 1 containment during the fall 2006 refueling outage.

- New screen mesh size will be smaller than current (3/32" versus 1/8" currently).

- The size of the replacement strainers is based on conservative debris quantities. For example, the quantity of qualified coating debris is based on the 10 Diameter ZOI while preliminary industry test data indicates that the ZOI could be substantially reduced.

Risk Impact Evaluation

ECCS post-LOCA Line-up description:

In response to a LOCA, the RHR, centrifugal charging (CCP), and safety injection (SI) pumps automatically start upon receipt of a safety injection signal. These pumps inject to the reactor coolant system (RCS) cold legs, taking suction from the refueling water storage tank (RWST). This system line-up is referred to as ECCS Injection phase. The Containment Spray (CS) pumps start automatically when the containment pressure reaches the setpoint for CS actuation; the CS pumps also take suction from the RWST. The switchover to the ECCS recirculation sumps as suction source to the RHR pumps is initiated when the RWST water level decreases to approximately 39%. After the ECCS recirculation line-up is established, the RHR pumps combine to inject to the RCS cold legs and to supply water to the suction of the CCP and SI pumps. The CCP and SI pumps continue to inject to the RCS cold legs. This line-up is referred to as ECCS cold leg recirculation. At 7.5 hours into the event, the ECCS line-up is modified for hot leg recirculation. The RHR pumps supply the suction to the CCP and SI pumps and inject to the RCS hot legs. The SI pumps also inject to the RCS hot legs while the CCP pumps continue to inject to the RCS cold legs. The CS pumps continue to take suction from the RWST until the suction source is manually switched over to the ECCS recirculation sumps when the RWST water level decreases to approximately 10%.

Throttle valves are located on the discharge line from the SI pumps to the RCS cold legs, the discharge line from the SI pumps to the RCS hot legs, and the discharge line from the CCP pumps to the RCS cold legs. For post-LOCA operation, throttle valves are not used on the discharge lines from the RHR pumps to the RCS cold legs and hot legs.

ECCS Throttle Valve Risk Implications

The additional four months of operation (based on the current VEGP outage schedule) with the existing ECCS throttle valves in place represents a very small increase in incremental risk. All of the sump strainer replacement modifications will be completed by December 31, 2007. Therefore, the ECCS and CS System recirculation capability will be enhanced. The new sump strainers will have a smaller mesh size (3/32" versus 1/8" currently). The risk associated with delaying the throttle valve modifications is due to the potential for debris to be transported into the CCP and SI systems during the recirculation mode of ECCS operation.

Quantification of the risk associated with such throttle valve plugging is very difficult because of the difficulties in estimating the likelihood of the debris (i.e. down stream debris will likely consist of coating particles and latent debris) being transported to and significantly plugging the high pressure injection throttle valves; however, it was qualitatively determined that the risk associated with plugging of the high pressure injection throttle valves would be very low due to the following reasons:

- The LOCAs most likely to transport the debris to the ECCS sumps are:
  (a) Large LOCAs due to the large ZOI they present, and
  (b) LOCAs in which the CS (Containment Spray) system actuated and provided an additional generation and transport mechanism.

- The only LOCAs requiring CCPs (centrifugal charging pumps) and SIPs (safety injection pumps) to operate and provide core cooling while in recirculation from the ECCS sump are LOCAs from smaller sizes. These smaller LOCAs deplete the inventory in the RWST and do not cause depressurization of the RCS to a pressure below the shutoff head of RHR pumps.

- The current VEGP PRA model defined three LOCA initiating event categories depending on their sizes;

  - Large LOCA (equivalent break diameter > 6 inch),
  - Medium LOCA (2 inch ≤ equivalent diameter ≤ 6 inch), and
  - Small LOCA (3/8 inch ≤ equivalent diameter < 2 inch).

  The success criteria for the ECCS injection and recirculation for each LOCA category were based on VEGP specific MAAP (Modular Accident Analysis Program) analyses.

- According to the VEGP PRA success criteria, high pressure injection and recirculation are not required for Large LOCA (break size > 6 inch in diameter) because accumulator injection, low pressure injection and recirculation by 1 RHR pump can prevent core damage. Thus, for a Large LOCA, plugging of high pressure injection throttle valves during ECCS recirculation would not increase the risk of core damage due to a Large LOCA.

- For a Small LOCA (3/8 inch ≤ equivalent diameter < 2 inch), high pressure injection by 1 of 4 CCPs/SIPs is required during ECCS injection phase. However, high pressure recirculation would not be required unless RCS cooldown and depressurization to bring the RCS to shutdown cooling entry condition using the secondary side (per VEGP Emergency Operating Procedure (EOP) ES-1.2, 19012-C) failed. If RCS cooldown and depressurization are successful, core cooling can be provided by either shutdown cooling operation or low pressure recirculation (if shutdown cooling can not be established) using 1 RHR pump. Thus, there is a low probability that high pressure recirculation would be required in a Small LOCA.

- Furthermore, a Small LOCA is not likely to transport debris to the sump which could cause plugging of high pressure injection throttle valves unless containment spray actuated. According to the VEGP MAAP analysis of a 1.6 inch break small LOCA, containment spray would not actuate as long as at least 3 of 8 Containment Cooling Units are operable. VEGP utilizes a 2 safety-related containment cooling trains with 4 coolers/train design. Thus, it is very unlikely that CS spray would actuate during a Small LOCA. Furthermore, even when containment spray is actuated, as explained above, high pressure recirculation is not required unless cooldown and depressurization fail.

In summary, the risk associated with the plugging of high pressure injection throttle valve due to transported debris would be very low for small LOCAs.

- Medium LOCA break sizes range from 2 inch to 6 inch in diameter. The lower end of the Medium LOCA behaves similarly to a Small LOCA. On the other hand, the higher end of the range of Medium LOCAs behaves similarly to a Large LOCA. In order to support VEGP PRA, two Medium LOCA sizes, 3 inch and 5 inch in diameter, had been analyzed using the MAAP code.

- VEGP MAAP analysis results for a 5 inch break showed that core damage would not occur even if high pressure injection (and recirculation) by CCPs and SIPs failed as long as 2 accumulators and 1 RHR pump are available for ECCS injection and recirculation. Thus, for the higher end of Medium LOCAs (5 inch or larger), low pressure injection and recirculation by 1 RHR pump could provide adequate core cooling even when high pressure injection and recirculation are not available. Consequently, the risk associated with the plugging of the high pressure injection throttle valve due to transported debris would be very low for the higher end of Medium LOCAs.

- Another size of Medium LOCA, 3 inch in diameter, was also analyzed using MAAP for the VEGP PRA. For a 3 inch break, loss of high pressure injection during the ECCS injection phase could lead to core damage because RCS pressure would not decrease fast enough to allow low pressure injection by the RHR pump in time, if operators do not perform RCS cooldown and depressurization using secondary side as directed EOP ES-1.2 19012-C or EOP FR-C.2 19222-C. However, this does not mean that plugging of the throttle valve will cause core damage for 3 inch break since plugging of the throttle valve affects only high pressure recirculation. During the ECCS injection phase, high pressure injection would still be available. In order to evaluate the impact of throttle valve plugging during ECCS recirculation more realistically, a new MAAP analysis was performed for a 3 inch Medium LOCA assuming that high pressure injection was successful during injection phase, but failed during the recirculation phase when only 1 RHR pump was available for ECCS recirculation. The results showed that core damage would not occur even if only 1 RHR pump is available for recirculation as long as high pressure injection is successful during the ECCS injection phase.

- Also, another MAAP analysis for the VEGP PRA showed that if operators initiate cooldown and depressurization using the secondary side as directed EOP ES-1.2 19012-C after a 3 inch LOCA with a high pressure injection failure, RCS pressure would decrease rapidly. Then accumulator injection and low pressure injection and recirculation by 1 RHR pump could prevent core damage.

Thus, for a 3 inch LOCA, 1 RHR pump will be capable of providing adequate core cooling to prevent core damage during the ECCS recirculation phase even if high pressure recirculation failed due to plugging of the throttle valves.

The debris that present the potential plugging concern are distributed throughout the containment. LOCAs that are 3 inches or smaller in size would be extremely unlikely to dislodge and transport sufficient debris to the ECCS system, unless containment spray is actuated. This is due to the limited ZOI for the smaller LOCAs and the relatively low

transport velocities to the ECCS sump for these scenarios. VEGP utilizes 2 safety-related containment cooling trains with 4 coolers/train design. According to a MAAP analysis for the VEGP PRA in the case of a 3 inch Medium LOCA, containment spray will not actuate as long as at least 3 out of 8 containment cooling units are running. More than 6 out of 8 containment cooling units would have to fail for a 3 inch LOCA to pressurize the containment to the CS actuation set point. Thus, for 3 inch or less break LOCA, it is very unlikely that containment spray is a debris transport mechanisms to ECCS sumps. Thus, for these smaller break LOCAs, the only likely transport mechanisms to the ECCS sumps would be due to the relatively low ECCS flow from CCPs and SIPs.

In summary, the risk associated with the plugging of the high pressure injection throttle valve due to transported debris would also be very low for the lower end of the range of Medium LOCAs.

- Additionally, the success criteria for high pressure injection in the VEGP PRA, is to inject into 2 of 4 cold legs for Small (from 1 of CCPs/SIPs) and Medium (from 2 of 4 CCPs/SIPs) LOCAs. The "2 of 4 cold legs" criteria came from a Medium LOCA MAAP analysis in which two loops were grouped into a broken loop with a 5 inch diameter break and the remaining two loops were grouped into an unbroken loop. The MAAP analysis showed that the success criteria for the high pressure injection for this case would be injecting water using 2 of 4 CCPs/SIPs. Since the majority of water injected into the broken loop with 5 inch diameter hole would be spilled through the break and could not reach the core, it may be assumed that only the unbroken loop could deliver enough flow from the 2 CCP/SIPs to the core to prevent core damage. In other words, two intact cold legs should be available for the success of high pressure injection and recirculation. Since two intact cold legs could deliver enough flow to the core from 2 of 4 CCPs/SIPs, it is obvious that two intact cold legs could deliver enough flow to the core from 1 of 4 CCPs/SIPs in small LOCA case. Thus, even when the throttle valves are partially plugged due to debris in a Small LOCA (note: the probability of an event in which high pressure recirculation is required and plugging occurs in a Small LOCA is very low as explained above), enough high pressure recirculation flow can be delivered to the core to prevent core damage.

Summary

SNC's request for extension to the completion schedule for downstream effects related modifications is needed to support identified procurement and testing of ECCS orifices. Per the criteria listed in SECY 06-0078, SNC has established a plant-specific plan with milestones and schedules to address outstanding technical issues with enough margin to account for uncertainties. Additionally, SNC has identified mitigative measures to be put in place by December 31, 2007, and adequately described how these mitigative measures will minimize the risk of degraded ECCS functions during the extension period.

Enclosure 2

Vogtle Electric Generating Plant
List of Regulatory Commitments

List of Regulatory Commitments

The following table identifies those actions committed by Southern Nuclear Operating Company in this document Vogtle Electric Generating Plant. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments.

Commitment	Type		Scheduled Completion Date (If Required)
	One-Time Action	Continuing Compliance	
Installation of Unit 1 ECCS flow orifices	X		Spring 2008 Refueling Outage