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SOUTHERN COMPANY
Energy to Serve Your World℠

March 31, 2006

Docket Nos.: 50-321 50-348 50-424
50-366 50-364 50-425

NL-06-0540

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

Edwin I. Hatch Nuclear Plant
Joseph M. Farley Nuclear Plant
Vogtle Electric Generating Plant
Southern Nuclear Operating Company 60-Day Response to Generic Letter 2006-02
Grid Reliability and Impact on Plant Risk and the Operability of Offsite Power

Ladies and Gentlemen:

On February 1, 2006, the Nuclear Regulatory Commission (NRC) issued Generic Letter 2006-02. The NRC required that written responses be submitted within 60 days of this date and that responses be submitted in accordance with 10CFR50.54(f).

Attached are three enclosures, one for each of the three Southern Nuclear Operating Company (SNC) sites. These enclosures provide the SNC 60-day response to GL 2006-02 for Hatch Nuclear Plant (HNP) (Enclosure 1), Farley Nuclear Plant (FNP) (Enclosure 2), and Vogtle Electric Generating Plant (VEGP) (Enclosure 3).

SNC does not have first hand knowledge of the operation of the Southern Company transmission grid beyond the protocols, procedures and agreements described in the enclosures and has relied on Southern Company Transmission for the information contained in the attached enclosures regarding analyses, procedures, and activities concerning grid operations.

(Affirmation and signature are on the following page.)

Mr. H. L. Sumner, Jr. 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.

This letter contains no NRC commitments. If you have any questions, please advise.

Respectfully submitted,

SOUTHERN NUCLEAR OPERATING COMPANY

Lewis Sumner

H. L. Sumner, Jr.

Sworn to and subscribed before me this 31st *day of* March, *2006.*

Glenda C. Smith

Notary Public

My commission expires: 11/10/06

GLENDA C. SMITH NOTARY PUBLIC ALABAMA STATE AT LARGE

HLS/PAH/daj

Enclosures: Appendix A – Abbreviations
Appendix B – Description of Southern Company and the Electrical Grid
1. Edwin I. Hatch Nuclear Plant 60-day Response
2. Joseph M. Farley Nuclear Plant 60-day Response
3. Vogtle Electric Generating Plant 60-day Response

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Appendix A

Edwin I. Hatch Nuclear Plant
Joseph M. Farley Nuclear Plant
Vogtle Electric Generating Plant

Southern Nuclear Operating Company 60-Day Response to Generic Letter 2006-02
Grid Reliability and Impact on Plant Risk and the Operability of Offsite Power

Abbreviations

Appendix A
Abbreviations

ACC	Alabama Power Company Transmission Control Center (Birmingham)
AOP	Abnormal Operating Procedure
APC	Alabama Power Company
ARP	Annunciator Response Procedure
ATWS	Anticipated Transient Without Scram
BPO	Bulk Power Operations
CRD	Control Rod Drive
EDG	Emergency Diesel Generator
EOOS	Equipment Out-of-Service Risk Tool
EOP	Emergency Operating Procedure
FNP	Joseph M. Farley Nuclear Plant
FSAR	Updated Final Safety Analysis Report
GPC	Georgia Power Company
HNP	Edwin I. Hatch Nuclear Plant
LOCA	Loss of Coolant Accident
LOOP	Loss of Offsite Power (also LOSP)
NERC	North American Electric Reliability Council
NTCC	Northern Transmission Control Center (GPC, Atlanta)
PCC	Power Control Center (SCT, Birmingham)
PQG	Power Quality Guide
RPS	Reactor Protection System
RTCA	Real Time Contingency Analysis
SCA	Southern Control Area
SCADA	Supervisory Control and Data Acquisition
SCT	Southern Company Transmission
SERC	Southeastern Electric Reliability Council
SNC	Southern Nuclear Operating Company
SOP	System Operating Procedure
STCC	Southern Transmission Control Center (GPC, Valdosta)
TS	Technical Specifications
UOP	Unit Operating Procedure
VEGP	Vogtle Electric Generating Plant

TSO is used as an abbreviation that represents several entities which are part of Southern Company Transmission. These are known individually as Bulk Power Operations (BPO), which includes the PCC (Power Control Center, located in Birmingham, Al.); ACC (Alabama Power Company Transmission Control Center located in Birmingham, Al.); NTCC (Georgia Power Company Northern Transmission Control Center, located in Atlanta, Ga.); and STCC, (Georgia Power Company Southern Transmission Control Center, located in Valdosta, Ga.). A brief description of the Southern Company Grid is located in Appendix B.

Appendix B

Edwin I. Hatch Nuclear Plant
Joseph M. Farley Nuclear Plant
Vogtle Electric Generating Plant

Southern Nuclear Operating Company 60-Day Response to Generic Letter 2006-02
Grid Reliability and Impact on Plant Risk and the Operability of Offsite Power

Description of Southern Company and the Electrical Grid

Appendix B
Description of Southern Company and the Electrical Grid

The Southern Company transmission grid can be briefly described as follows:

Southern Company is a vertically integrated electric utility consisting of five operating companies: Alabama Power Co. (APC), Georgia Power Co. (GPC), Gulf Power Company, Mississippi Power Company, Savannah Electric and Power Co, and Southern Power (an electric wholesale subsidiary). Other entities within Southern Company include Southern Nuclear Operating Company (SNC), which operates and provides technical support to the nuclear plants within Southern Company; Southern Company Generation, which operates and provides technical support to the fossil and hydro plants within Southern Company; and Southern Company Services, Inc. which provides engineering and other common services for all Southern companies, including Transmission Planning and Bulk Power Operations (BPO).

The individual operating companies own the generation and transmission assets within the Southern Company, including the nuclear facilities. Farley Nuclear Plant (FNP) is owned by APC while Hatch Nuclear Plant (HNP) and Vogtle Electric Generating Plant (VEGP) are owned by GPC (along with co-owners), but all are operated by SNC. Similarly, the electrical transmission assets owned by the operating companies within the Southern Control Area (SCA), as well as assets within the Integrated Transmission System in the state of Georgia that are co-owned by GPC and other non-Southern entities, are operated by Southern Company Transmission (SCT), a division of the Southern Company. The SCA is located within (and via the operating companies is a member of) the Southeastern Electric Reliability Council (SERC), one of the regional coordinating councils within the North American Electric Reliability Council (NERC).

The SNC-operated nuclear plants are connected to the SCA. The SCA is operated by the BPO organization within SCT. The BPO control center is called the Power Coordination Center (PCC) and is located in Birmingham, Alabama. SCT is thus the Transmission Service Operator (TSO) for Southern Company and the SCA and will be designated as the TSO for the remainder of this response.

GPC and APC have agreements with the TSO for the operation of transmission facilities interconnected with FNP, HNP & VEGP. The agreement between the operating companies and the TSO is implemented by TSO operating procedures. These procedures and agreements include explicit and detailed responsibilities for offsite power supply to the nuclear plants. The TSO is required to maintain an assured source of offsite power, to monitor nuclear plant voltages, and to notify nuclear plant personnel prior to any significant grid changes. SNC has provided the TSO with power quality guides for each of the nuclear plants that specify the detailed voltage and other requirements specific to each plant. Each plant also has detailed coordination agreements and procedures in place with the local transmission maintenance organizations within the TSO to ensure proper coordination of transmission maintenance activities at all levels.

Enclosure 1

Edwin I. Hatch Nuclear Plant

Southern Nuclear Operating Company 60-Day Response to Generic Letter 2006-02
Grid Reliability and Impact on Plant Risk and the Operability of Offsite Power

HNP Response to GL 2006-02 Requested Information

Use of protocols between the NPP licensee and the TSO, ISO, or RC/RA and the use of analysis tools by TSOs to assist NPP licensee in monitoring grid conditions to determine the operability of offsite power systems under plant Technical Specifications.

GDC 17, 10 CFR Part 50, Appendix A, requires that licensees minimize the probability of the loss of power from the transmission network given a loss of the power generated by the nuclear power unit(s).

1. Use of protocols between the NPP licensee and the TSO, ISO, or RC/RA to assist the NPP licensee in monitoring grid conditions to determine the operability of offsite power systems under plant Technical Specifications.

(a) Do you have a formal agreement or protocol with your TSO?	Yes. HNP does have a formal agreement with the TSO. This agreement is implemented by applicable procedures and guidelines.

(b) Describe any grid conditions that would trigger a notification from the TSO to the NPP licensee and if there is a time period required for the notification	Normal day to day operational communications between the TSO and HNP are the same as those for other generating plants and are associated with topics such as: work coordination, switching, generation dispatch, and planning. TSO procedures require timely notification to HNP if any of the conditions noted below exist: 1. System real time contingency analysis (RTCA) tools will be unavailable for > 8 hours under normal conditions or >1 hour during severe weather or abnormal system conditions. 2. The RTCA tools predict a next contingency low voltage or system stability alarm condition. 3. Actual low voltage observed in the HNP switchyard. 4. Identification of common and plant specific abnormal weather conditions that could lead to violation of plant specific requirements as listed in plant power quality guides. 5. Other notifications to nuclear plants would be issued as they would be for all other generating plants as required for reliable, safe system operations. In addition, the TSO has guidance for different levels of system alerts and will notify all generating plants for any conditions that could adversely affect system reliability. If one of the 230KV or 500KV lines feeding HNP trips, the TSO would contact the Control Room. HNP has annunciation in the Control Room for all breakers in the HNP switchyard.

(c) Describe any grid conditions that would cause the NPP licensee to contact the TSO. Describe the procedures associated with such a communication. If you do not have procedures, describe how you assess grid conditions that may cause the NPP licensee to contact the TSO.	The TSO is notified by HNP for any of the following conditions: 1. Main generator VR in manual, and voltage cannot be maintained within limits 2. Unit offline 3. Panel breaker and bus alarms for 230/500KV switchyard 4. Panel alarms for emergency bus low voltage 5. Adverse weather conditions 6. Degraded 4KV bus voltage conditions 7. Security threat/attack 8. Airborne security threat/attack 9. Loss of metering Anytime a low bus voltage annunciator is received on a 4KV bus, a check is made of the 230KV and 500KV bus voltages. A notification is made to the TSO of the present condition with a request to raise system voltage.

(d) Describe how NPP operators are trained and tested on the use of the procedures or assessing grid conditions in question 1(c).	HNP operators are trained and subject to testing on the following: 1. Main generator VR in manual, and voltage cannot be maintained within limits 2. Unit offline 3. Panel breaker and bus alarms for 230/500KV switchyard 4. Panel alarms for emergency bus low voltage 5. Adverse weather conditions 6. Degraded 4KV bus voltage conditions 7. Security threat/attack 8. Airborne security threat/attack 9. Loss of metering

(e) If you do not have a formal agreement or protocol with your TSO, describe why you believe you continue to comply with the provisions of GDC 17 as stated above, or describe what actions you intend to take to assure compliance with GDC 17.	HNP does have a formal agreement with the TSO; thus, this question is not applicable. GDC compliance was established in the NRC SER dated February 23, 1995 (TAC No. M80948).

(f) If you have an existing formal interconnection agreement or protocol that ensures adequate communication and coordination between the NPP licensee and the TSO, describe whether this agreement or protocol requires that you be promptly notified when the conditions of the surrounding grid could result in degraded voltage (i.e., below TS nominal trip setpoint value requirements; including NPP licensees using allowable value in its TSs) or LOOP after a trip of the reactor unit(s).	As previously stated, HNP does have a formal agreement with the TSO. The TSO is responsible for monitoring the transmission system around each plant to ensure that under any single contingency, sufficient power is available at all times to enact a safe and controlled shutdown of the plant. Timely notification regarding pre-trip analysis of predicted post-trip voltage that results in below acceptance limits is included. HNP has guidelines to implement these communications.

(g) Describe the low switchyard voltage conditions that would initiate operation of plant degraded voltage protection.	The TSO is capable of monitoring a number of different points in the low voltage switchyard (230KV) and maintains the voltage levels between 101.3% and 104.9% of 230KV. The TSO has an energy management system that will display alarms to the TSO operators if voltages on the 230KV busses are above or below the required voltages. The low voltage requirement of 101.3% (233KV) provides a 4KV bus voltage well above even the 4KV low voltage anticipatory alarm setpoints. Plant operators monitor both 230KV and 4160V voltages. If the 4160V voltage dips below 2800V (called loss of voltage setpoint) for greater than 6.5 seconds, operation of the plant loss of voltage protection devices would be initiated. Also, if plant voltage dipped below 3280V (called degraded voltage setpoint) for greater than 21.5 seconds, operation of the plant degraded voltage protection devices would be initiated. If the plant voltage dips below 3825V (called emergency bus undervoltage) for greater than 65 seconds, an anticipatory alarm is received. The alarms actuate when the 4160V bus voltages approach the minimum required voltage for normal; i.e., non-LOCA conditions. This ensures that manual actions will be initiated to restore the bus voltages or to initiate a plant shutdown.

2. Use of criteria and methodologies to assess whether the offsite power system will become inoperable as a result of a trip of your NPP.	
(a) Does your NPP's TSO use <u>any analysis tools</u>, an online analytical transmission system studies program, or other equivalent predictive methods to determine the grid conditions that would make the NPP offsite power system inoperable during various contingencies? <u>If available</u> to you, please provide a brief description of the analysis tool that is used by the TSO.	According to RIS 2005-20, the term 'Operable/Operability' is defined in the Technical Specifications and applied ONLY to TS Structures, Systems, or Components (SSCs). Thus, the transmission grid cannot be referred to as 'operable' or 'inoperable', because the grid is not a TS SSC. Everything that is non-TS is referred to as Functional or non-Functional. The TSO makes use of analysis tools to predict grid conditions that would impact the HNP offsite power supply. The tools presently used by the TSO to manage the grid programs, control the transmission related activities, and monitor grid actions are outside the control of the HNP and include the following: 1 - a grid SCADA system and state estimator 2 - a fully commissioned real-time contingency analysis (RTCA) program in conjunction with periodic studies of all single outages and a reasonable set of multiple contingencies specifically tailored for HNP worst case conditions 3 - a voltage stability analysis program 4 - a near real time dynamic stability analysis program 5 - bounding analyses produced by transmission planning studies The real time contingency analysis package utilized by TSO includes monitoring / predictive analysis computer programs that can predict HNP switchyard voltages expected to occur upon realization of any single contingencies and a number of possible multiple contingencies on the grid, such as: (1) - a trip of the HNP generator(s), (2)- a trip of another large generator(s), or (3) - the loss of an important transmission line. Monitoring / predictive analysis computer program tools operate based on raw data from transducers across the system that is processed through a state estimator to generate a current state snapshot of the system. This output is then processed through a contingency analysis program that generates a set of new results with all single elements of the system out of service and a predefined set of multiple contingencies. These results are then screened against a predetermined set of acceptance limits. Postulated scenarios which then do not meet the acceptance limits are alarmed for review by TSO operators.

(b) Does your NPP's TSO use an analysis tool as the basis for notifying the NPP licensee when such a condition is identified? If not, how does the TSO determine if conditions on the grid warrant NPP licensee notification?	Yes. The TSO uses the above analysis tools, in conjunction with procedures, as the basis for determining when conditions warrant HNP notification. Notifications are made based on grid conditions being outside of predefined procedure requirements under real time or first contingency conditions or based on unavailability of computer program tools and contingency analyses. Conditions impacting HNP offsite power supplies that are identified by the contingency analysis, EMS monitoring, or other means are promptly communicated to HNP.

(c) If your TSO uses an analysis tool, would the analysis tool identify a condition in which a trip of the NPP would result in switchyard voltages (immediate and/or long-term) falling below TS nominal trip setpoint value requirements (including NPP licensees using allowable value in its TSs) and consequent actuation of plant degraded voltage protection? If not, discuss how such a condition would be identified on the grid.	Yes. Procedures and monitoring / predictive analysis tools are in place for both planning and real time environments. The TSO analysis tools, in conjunction with HNP plant analysis, identify conditions which would result in 230KV voltages below 233KV or above 240.3 KV. TSO System operators are trained on the required bus voltage requirements at HNP and will respond appropriately if either actual system voltages or post-contingency voltages violate HNP requirements.

(d) If your TSO uses an analysis tool, how frequently does the analysis tool program update?	The state estimator and contingency analysis application tools run continuously with each new case taking approximately five minutes to solve.

(e) Provide details of analysis tool-identified contingency conditions that would trigger an NPP licensee notification from the TSO.	The notification from the TSO is based upon either actual switchyard voltages or RTCA grid conditions. RTCA grid conditions are based upon the predicted post-trip contingency switchyard voltages given any single element of the system out of service or a predefined set of multiple contingency conditions. The following contingencies were identified from a recent system-wide steady-state and dynamic stability analyses as being the most limiting cases for both the nuclear plants and for the overall grid system:

	• Hatch 1 — Hatch –Duval 500KV • Hatch 2 — Thalmann-Duval 500KV • Vogtle 1 — N. Tifton-Farley 500KV • Vogtle 2 — S. Bainbridge-Farley 230KV • Farley 1 — Pinckard 230/115KV Banks #1 and #2 • Farley 2 • Farley 1 and Farley 500/230KV Bank — Webb 230/115KV If the HNP voltage requirement cannot be met under any of the contingencies considered, HNP will be notified. The same minimum required switchyard voltage limit bases that are used in the grid operating procedures are also used in the predictive analysis computer programs. In addition, the TSO also runs a full N-1 contingency analysis which would identify the loss of any single line or bus anywhere in the system which would result in the voltage at the HNP bus dropping below the minimum requirements or rising above the maximum requirements.

(f) If an interface agreement exists between the TSO and the NPP licensee, does it require that the NPP licensee be notified of periods when the TSO is <u>unable to determine</u> if offsite power voltage and capacity could be inadequate? If so, <u>how</u> does the NPP licensee determine that the offsite power would <u>remain operable</u> when such a notification is received?	Yes. As described above, TSO procedures and the HNP power quality guide require notification to HNP if the RTCA program will be out of service for more than 8 hours during normal system conditions or for more than 1 hour if bad weather conditions exist. Upon notification that the tools are unavailable to the TSO, actions to minimize load swings at HNP are started. Existing requirements for operability of the offsite power supplies as stated in GDC 17 and NUREG 0800 require that "results of the grid stability analysis indicate (d) that the loss of the largest generating capacity being supplied from the grid, loss of the most critical transmission line, or loss of the unit itself will not cause grid instability." This does not require that a continuous analysis be performed to demonstrate grid stability exists. TSO current practice is to perform a yearly grid stability analysis to ensure that this requirement is met, given changes and improvements to the Southern Company transmission grid. The actions described in response to notification that on-line tools are unavailable are intended to assist the grid operator in maintaining stable circumstances and to inform the HNP operating staff, but are not a factor in determining functionality of offsite power sources.

(g) After an unscheduled inadvertent trip of the NPP, are the resultant switchyard voltages verified by procedure to be bounded by the voltages predicted by the analysis tool?	No. For post event analysis, the TSO does not verify by procedure the switchyard voltages are bounded by the analysis tools. Nonetheless, such analyses have been performed on a case by case basis to validate predicted results. Also, the system operator monitors both actual conditions and contingency (predictions) values and identifies problems found. At HNP, the switchyard voltages are currently not specifically required to be examined or recorded by the post-trip procedures. Hourly electrical rounds will record the switchyard voltage, but the voltage numbers are not sent to the TSO for evaluation of the actual vs. predicted voltages. Fault data recorders in the HNP switchyard are triggered by a unit trip, and would record the data, but there is currently no procedural action to retrieve this data.

(h) If an analysis tool is not available to the NPP licensee's TSO, do you know if there are any plans for the TSO to obtain one? If so, when?	Not applicable to HNP, since TSO analysis tools are presently in use.

(i) If an analysis tool is not available, does your TSO perform periodic studies to verify that adequate offsite power capability, including adequate NPP post-trip switchyard voltages (immediate and/or long-term), will be available to the NPP licensee over the projected timeframe of the study? (a) Are the key assumptions and parameters of these periodic studies translated into TSO guidance to ensure that the transmission system is operated within the bounds of the analyses? (b) If the bounds of the analyses are exceeded, does this condition trigger the notification provisions discussed in question 1 above?	Not applicable to HNP, since TSO analysis tools are presently in use.

(j) If your TSO does not use, or you do not have access to the results of an analysis tool, or your TSO does not perform and make available to you periodic studies that determine the adequacy of offsite power capability, please describe why you believe you comply with the provisions of GDC 17 as stated above, or describe what compensatory actions you intend to take to ensure that the offsite power system will be sufficiently reliable and remain operable with high probability following a trip of your NPP.	According to RIS 2005-20, the term 'Operable/Operability' is defined in the Technical Specifications and applied ONLY to TS SSCs. Thus, the HNP transmission grid cannot be referred to as 'operable' or 'inoperable', because the grid is not a TS SSC. Everything that is non-TS is referred to as Functional or non-Functional. Not applicable to HNP, since the TSO utilizes analysis tools and communicates the applicable results / conclusions to the HNP. See the response to Question 1(e) regarding compliance with GDC-17.

3. Use of criteria and methodologies to assess whether the NPP's offsite power system and safety-related components will remain operable when switchyard voltages are inadequate.	
(a) If the TSO notifies the NPP operator that a trip of the NPP, or the loss of the most critical transmission line or the largest supply to the grid would result in switchyard voltages (immediate and/or long-term) below TS nominal trip setpoint value requirements (including NPP licensees using allowable value in its TSs) and would actuate plant degraded voltage protection, is the NPP offsite power system declared inoperable under the plant TSs? If not, why not?	According to RIS 2005-20, the term 'Operable/Operability' is defined in the Technical Specifications and applied ONLY to TS SSCs. Thus, the HNP transmission grid cannot be referred to as 'operable' or 'inoperable', because the grid is not a TS SSC. Everything that is non-TS is referred to as Functional or non-Functional. The requirements for switchyard voltages are not directly contained in the HNP TSs, but are in Section 8.2.1 of the Hatch Unit 2 FSAR. The normal offsite operating voltage range is 101.3% to 104.9% of 230KV. The switchyard minimum voltage requirements are well above emergency bus degraded voltage relays. In addition, HNP has installed a set of low voltage alarm relays that actuate above the analyzed minimum 4KV bus voltages. HNP TS require that 4KV busses be declared inoperable if actual low voltage anticipatory alarms are received and do not clear within a specified time frame, and this is discussed in the HNP SER dated 02/23/1995. As described in the HNP SER response, the TSO begins to take actions upon receiving low switchyard voltage alarms. In addition, there are prescribed actions for the HNP operators to take if the required switchyard voltage cannot be maintained. Actions include more frequent monitoring of the actual in-plant emergency bus voltages. There is no existing licensing requirement or commitment to enter an LCO or declare any portion of the offsite power system inoperable solely because of projected or actual low switchyard voltages.

(b) If onsite safety-related equipment (e.g., emergency diesel generators or safety-related motors) is lost when subjected to a double sequencing (LOCA with delayed LOOP event) as a result of the anticipated system performance and is incapable of performing its safety functions as a result of responding to an emergency actuation signal during this condition, is the equipment considered inoperable? If not, why not?	No. Double sequencing such as might occur as the result of a LOCA followed by a delayed LOOP is not in the HNP licensing basis and HNP is not designed or analyzed for a double sequencing scenario. The HNP licensing basis, as described in the bases of the TS, is a LOCA coincident with a LOOP. If onsite safety related equipment is lost, as governed by the plant TS, then the equipment is declared inoperable.

(c) Describe your evaluation of onsite safety-related equipment to determine whether it will operate as designed during the condition described in question 3(b).	Not applicable, beyond design basis and current licensing basis.

(d) If the NPP licensee is notified by the TSO of other grid conditions that may impair the capability or availability of offsite power, are any plant TS action statements entered? If so, please identify them.	HNP notifies the TSO in case of a credible threat to the facility that would potentially put the tie to the offsite grid in jeopardy. TS are not entered, as described in 3(a) above, for grid conditions that might occur.

(e) If you believe your plant TSs do not require you to declare your offsite power system or safety-related equipment inoperable in any of these circumstances, explain why you believe you comply with the provisions of GDC 17 and your plant TSs, or describe what compensatory actions you intend to take to ensure that the offsite power system and safety-related components will remain operable when switchyard voltages are inadequate.	The Hatch SER dated 02/23/1995 (TAC No. M80948) contains an analysis of the actions that would be taken as described in 3(a) and concluded that an acceptable method of complying with GDC 17 degraded voltage requirements existed. This method as described in the SER does not require that the offsite power source be declared inoperable.

(f) Describe if and how NPP operators are trained and tested on the compensatory actions mentioned in your answers to questions 3(a) through (e).	HNP operators are trained and subject to being tested on compensatory actions for degraded grid conditions. Classroom and simulator training is provided. Procedure actions include minimizing activities that may have an impact of large load changes at the plant, returning inoperable emergency diesel generators to operable status, avoiding maintenance on critical on-site equipment, increased frequency of monitoring emergency bus voltages, initiating required actions if minimum voltages cannot be maintained, and initiating shutdown if minimum voltages not met within one hour.

4. Use of criteria and methodologies to assess whether the offsite power system will remain operable following a trip of your NPP.	
(a) Do the NPP operators have any guidance or procedures in plant TS bases sections, the final safety analysis report, or plant procedures regarding situations in which the condition of plant-controlled or -monitored equipment (e.g., voltage regulators, auto tap changing transformers, capacitors, static VAR compensators, main generator voltage regulators) can adversely affect the operability of the NPP offsite power system? If so, describe how the operators are trained and tested on the guidance and procedures.	The HNP switchyard contains two capacitor banks for the 230KV system and two shunt reactor banks for the 500KV system. None of these devices can be controlled from the HNP control room; they are under the remote control of the PCC. The system operating procedures for the generator regulator voltage controls have limitations intended to limit the impact on grid reliability and on station service bus voltages. Operators are trained and subject to testing on operation with the main generator voltage regulator in manual, which includes notifying the TSO. The TSO procedure for voltage schedules in the Southern Control Area (Southern Company Bulk Power Operations Procedure BPO-1) specifies the requirements for the HNP operators in conjunction with TSO operators to maintain the voltage schedule to assist in maintaining the availability and reliability of the grid, and to ensure voltages are maintained within the band specified in the HNP Power Quality Guide.

(b) If your TS bases sections, the final safety analysis report, and plant procedures do not provide guidance regarding situations in which the condition of plant-controlled or -monitored equipment can adversely affect the operability of the NPP offsite power system, explain why you believe you comply with the provisions of GDC 17 and the plant TSs, or describe what actions you intend to take to provide such guidance or procedures.	The Hatch SER dated 02/23/1995 (TAC No. M80948) contains an analysis of the actions that would be taken as described in 3(a) and concluded that an acceptable method of complying with GDC 17 degraded voltage requirements existed. This method as described in the SER does not require that the offsite power source be declared inoperable. Also 4(a) discusses the guidance contained in plant procedures.

Use of NPP licensee/TSO protocols and analysis tool by TSOs to assist NPP licensees in monitoring grid conditions for consideration in maintenance risk assessments The Maintenance Rule (10 CFR 50.65(a)(4)) requires that licensees assess and manage the increase in risk that may result from proposed maintenance activities before performing them.	
5. Performance of grid reliability evaluations as part of the maintenance risk assessments required by 10 CFR 50.65(a)(4).	
(a) Is a quantitative or qualitative grid reliability evaluation performed at your NPP as part of the maintenance risk assessment required by 10 CFR 50.65(a)(4) before performing grid-risk-sensitive maintenance activities? This includes surveillances, post-maintenance testing, and preventive and corrective maintenance that could increase the probability of a plant trip or LOOP or impact LOOP or SBO coping capability, for example, before taking a risk-significant piece of equipment (such as an EDG, a battery, a steam-driven pump, an alternate AC power source) out-of-service?	Yes. 10CFR 50.65(a)(4) requires performance of a risk assessment prior to maintenance activities. Maintenance is defined broadly and would include surveillances, post maintenance testing, and preventive and corrective maintenance. Relative to increasing the initiating event frequency, such as the frequency of a plant trip, the industry guidance, NUMARC 93-01, in Section 11.3.2.2., states that the following should be considered: • The likelihood of an initiating event or accident that would require the performance of the affected safety function. • The likelihood that the maintenance activity will significantly increase the frequency of a risk-significant initiating event (e.g., by an order of magnitude or more as determined by each licensee, consistent with its obligation to manage maintenance-related risk). The first bullet above is generally met by using the PRA and associated configuration risk management tools, which explicitly consider initiating event frequencies for transients and accidents. LOOP sequences are important elements of PRAs, and are thoroughly modeled and assessed during plant peer reviews. Risk management personnel are sensitized to the importance of these sequences. The second bullet clarifies that if a maintenance activity is expected to increase initiating-event likelihood by an order of magnitude, then it should be considered in the assessment. Otherwise, the baseline initiating event frequencies may be used. These frequencies are based on generic data updated with plant specific data, and would take into account the plant specific LOOP and trip frequencies.

	Protocols require that any maintenance on the HNP 230KV and 500KV substations or maintenance on any substation that is one substation away be approved by the HNP Operations Shift Manager. Requests are processed through the designated individuals in the Daily Scheduling Department. These individuals must grant approval prior to allowing work to proceed. This process results in substation maintenance being identified on the daily work schedule and risk reviewed by a combination of quantitative and qualitative measures. This assures that the requested substation maintenance does not conflict with the planned plant maintenance or create an unknown or unanticipated increase in risk. Procedures contain guidance on performing qualitative assessments for determining the risk impact.

(b) Is grid status monitored by some means for the duration of the grid-risk-sensitive maintenance to confirm the continued validity of the risk assessment and is risk reassessed when warranted? If not, how is the risk assessed during grid-risk-sensitive maintenance?	Yes. NUMARC 93-01 does not define "grid-risk-sensitive maintenance", so there is no unique guidance for such activities. Designated individuals in Daily Scheduling and a TSO representative review planned switchyard activities on a weekly basis and each group provides daily updates for significant changes to the schedule and risk assessment as appropriate. In practice, scheduled switchyard activities are monitored by the designated individuals in Daily Scheduling on a daily basis to assure that work activities are progressing as scheduled and risk assessed as needed for both substation maintenance and plant maintenance activities.

(c) Is there a significant variation in the stress on the grid in the vicinity of your NPP site caused by <u>seasonal loads</u> or maintenance activities associated with <u>critical transmission elements</u>? Is there a <u>seasonal</u> variation (or the potential for	Yes. Stress on the transmission grid as measured by loading in the Southern Control Area (SCA) is seasonal with the peak loads typically occurring during the summer months (typically June through August). The all time instantaneous peak load for the Southern Control Area of 44,167 MW occurred on July 26, 2005. By contrast, the all time instantaneous peak load for winter of 39,192 MW that occurred on 1/24/2003 was roughly 89% of the summer peak. Shoulder periods in the fall and spring typically have daily peak loads as low as 25,000 MW (roughly 57% of the all time peak) or less. Maintenance on generating plants and transmission equipment is also seasonal. It typically occurs during the shoulder months in spring and fall when control area loads are low and equipment can be removed from service without adversely impacting grid

a seasonal variation) in the LOOP frequency in the local transmission region? If the answer to either question is yes, discuss the time of year when the variations occur and their magnitude.	operations. All scheduled outages are registered with the TSO and examined under contingency conditions to ensure they will not impact grid reliability prior to their occurrence. The transmission network is operated to maintain first contingency conditions throughout all of these conditions and the TSO does not anticipate any significant variation to the nuclear plant offsite power supply based on seasonal variation. Although these peak load and maintenance periods do stress the transmission grid, there is no time when the system is not operated in a reliable manner under first contingency criteria. HNP voltages and other critical parameters are monitored continuously during these periods to assure that no violation of Power Quality Guide requirements occur. All requirements of the protocols and other agreements between TSO and the HNP are met during peak load and maintenance periods in the same manner as they are at all other times.

(d) Are known time-related variations in the probability of a LOOP at your plant site considered in the grid-risk-sensitive maintenance evaluation? If not, what is your basis for not considering them?	The risk assessment for the purposes of 10CFR50.65(a)(4) does not vary the LOOP frequency strictly as a function of "time-related" issues. Substation and switchyard activities are scheduled through Daily Scheduling as far in advance as possible and included as part of the long term schedule (cycle schedule), as well as the daily schedule. Along with substation activities, plant activities that have increased the potential for a unit or generator trip are also identified and risk assessed prior to the start of work. If concurrent work activities result in an increased level of risk (greater than green), then higher levels of plant management approval are required, up to the Plant Hatch General Manager. To the extent possible, substation and switchyard activities are not scheduled during the same time frame with maintenance activities associated with the Emergency Diesel Generator, HPCI, RCIC, or safety-related electrical bus activities. Major system outages are assigned designated time frames and noted on the plant's cycle schedule. If conflicts arise between planned substation and switchyard activities and planned major system outages, one of the activities is rescheduled. Additionally, major substation and switchyard work activities are normally scheduled outside of summer peaks (May 1st through September 30th.

(e) Do you have contacts with the TSO to determine current and anticipated grid conditions as part of the grid reliability evaluation performed before conducting grid-risk-sensitive maintenance activities?	Yes. TSO relies on contingency analysis tools for evaluating requested transmission and generator scheduled outages. Typically, the TSO has the ability to take snapshots of the state estimator program and use today's peak load snapshot to study tomorrow's requested outages. Obviously, the TSO can provide commentaries on grid conditions at anytime maintenance tasks are underway. The same dynamic nature of loads and active generation make prediction of grid conditions days or weeks ahead of time uncertain; however, such studies form the base cases from which additional analyses are performed as updated information is received. Routine work related to activities performed in the substation and in the switchyard are scheduled through Daily Scheduling.

(f) Describe any formal agreement or protocol that you have with your TSO to assure that you are promptly alerted to a worsening grid condition that may emerge during a maintenance activity.	Notification occurs whether or not maintenance is on-going. The Power Quality Guide lists criteria for notification in the event of degraded grid conditions.

(g) Do you contact your TSO periodically for the duration of the grid-risk-sensitive maintenance activities?	Designated individuals in Daily Scheduling and a TSO representative review planned switchyard activities on a weekly basis and each group provides daily updates for significant changes to the schedule as appropriate. In practice, scheduled switchyard activities are monitored by the designated individuals in Daily Scheduling on a daily basis to assure that work activities are progressing as scheduled and risk assessed as needed for both substation maintenance and plant maintenance activities.

(h) If you have a formal agreement or protocol with your TSO, describe how NPP operators and maintenance personnel are trained and tested on this formal agreement or protocol.	HNP operators are trained and subject to being tested on pertinent aspects of the agreements such as TSO notification of worsening grid conditions, switching orders, and scheduling of maintenance. Training addresses procedures associated with scheduling maintenance, operation with degraded system voltage, and substation switching. Work Week Coordinators are responsible for coordinating the scheduling of maintenance activities with the TSO. Coordinators are trained using a discussion guide in which topics are discussed with qualified Work Week Coordinators and the Scheduling Supervisor. Knowledge checks are conducted by the qualified Work Week Coordinator or Scheduling Supervisor during the discussions.

(i) If your grid reliability evaluation, performed as part of the maintenance risk assessment required by 10 CFR 50.65(a)(4), does not consider or rely on some arrangement for communication with the TSO, explain why you believe you comply with 10 CFR 50.65(a)(4).	Not applicable. Per the discussion in 5(b), routine discussions occur.

(j) If risk is not assessed (when warranted) based on continuing communication with the TSO throughout the duration of grid-risk-sensitive maintenance activities, explain why you believe you have effectively implemented the relevant provisions of the endorsed industry guidance associated with the maintenance rule.	Not applicable. Per the discussion in 5(b), routine discussions occur.

(k) With respect to questions 5(i) and 5(j), you may, as an alternative, describe what actions you intend to take to ensure that the increase in risk that may result from proposed grid-risk-sensitive activities is assessed before and during grid-risk-sensitive maintenance activities, respectively.	No alternative actions.

6. Use of risk assessment results, including the results of grid reliability evaluations, in managing maintenance risk, as required by 10 CFR 50.65(a)(4).	
(a) Does the TSO coordinate transmission system maintenance activities that can have an impact on the NPP operation with the NPP operator?	Yes. As described in the response to 5(a), HNP receives work requests from the TSO for transmission line work and for substation work. Personnel within these organizations submit transmission system switching requests for the required line or equipment clearances. The TSO provides HNP with copies of all transmission system switching requests within one substation away from HNP. HNP must approve both the work and the requested date. These requests are normally submitted at least four (4) weeks in advance so that they can be screened for risk significance. Those work requests that are risk significant or that will result in alarms or indications in the HNP Control Room, are placed into the plant Plan of the Day (POD). This allows HNP to assess the transmission switching requests in combination with in-plant work as required by 10 CFR 65(a)(4).

(b) Do you coordinate NPP maintenance activities that can have an impact on the transmission system with the TSO?	Yes. One (1) HNP in-plant activity has been identified as potentially impacting transmission system operation. This activity is the operation of the generator voltage regulator. HNP procedures require notification of and coordination with the TSO whenever the voltage regulator is not in automatic. This includes routine surveillance where the regulator is taken out of automatic and the raise/lower functions manually exercised.

(c) Do you consider and implement, if warranted, the rescheduling of grid-risk-sensitive maintenance activities (activities that could (i) increase the likelihood of a plant trip, (ii) increase LOOP probability, or (iii) reduce LOOP or SBO coping capability) under existing, imminent, or worsening degraded grid reliability conditions?	Yes. As discussed above, planned transmission outages are assessed and scheduled as to not violate HNP requirements. When notified of emergent outages due to equipment failures, the risk assessment process requires that the current configuration be re-examined to determine additional actions needed.

(d) If there is an overriding need to perform grid-risk-sensitive maintenance activities under existing or imminent conditions of degraded grid reliability, or continue grid-risk-sensitive maintenance when grid conditions worsen, do you implement appropriate risk management actions? If so, describe the actions that you would take. (These actions could include alternate equipment protection and compensatory measures to limit or minimize risk.)	As discussed in 5(a) above, the consideration of risk is reviewed daily by Daily Scheduling and/or Operations. Depending on the risk level, higher levels of management approval is required for planned activities. In addition, if risk levels warrant, the following actions are options that could be taken: • Rescheduling the grid risk activities if work has not started. • Stopping an on-going work activity and restoring the equipment to service as soon as possible. • Stopping work or traffic in areas of the plant that are near sensitive plant components or equipment.

(e) Describe the actions associated with questions 6(a) through 6(d) above that would be taken, state whether each action is governed by documented procedures and identify the procedures, and explain why these actions are effective and will be consistently accomplished.	The Hatch PQG (A-45587) that is provided to the TSO contains a listing of the transmission and switchyard elements that HNP considers potentially risk significant. The HNP Switchyard Agreements (site procedure 90AC-OAM-002-0, attachment 8) also contain that listing.

	The TSO transmits all work requests within one substation of HNP to the HNP work week scheduling group, normally 3-4 weeks prior to the requested start date. HNP must reply with an approval for the work to take place. This process has evolved since the maintenance rule requirements became effective but is not currently contained in a formal procedure or agreement. By having approval authority over planned TSO work in the vicinity of the plant, HNP can screen the requests, identify those that are potentially risk significant, and include the risk significant activities in the work scheduling and risk assessment processes described in plant procedures NMP-GM-006 and 90AC-OAM-002-0. Because they then become part of the normal work management process, emergent conditions that may require TSO activities to be rescheduled or the risk level to be reassessed are conducted the same as for in-plant work. Attachment 2 of plant procedure 90AC-OAM-002-0 contains specific requirements for assessing the risk of switchyard components. This process provides an effective and consistent approach to managing and coordinating transmission grid work that could affect HNP.

(f) Describe how NPP operators and maintenance personnel are trained and tested to assure they can accomplish the actions described in your answers to question 6(e).	HNP operators are trained and subject to being tested on procedural requirements for scheduling maintenance, which includes requirements for managing risk. Work Week Coordinators are responsible for coordinating the scheduling of maintenance activities with the TSO. Work Week Coordinators are trained on these responsibilities using a discussion guide in which topics are discussed with qualified Work Week Coordinators and the Scheduling Supervisor. Knowledge checks are conducted by the qualified Work Week Coordinators or the Scheduling Supervisor during these discussions.

(g) If there is no effective coordination between the NPP operator and the TSO regarding transmission system maintenance or NPP maintenance activities, please explain why you believe you comply with the provisions of 10 CFR 50.65(a)(4).	Not applicable. There is effective coordination between the HNP operator and the TSO regarding transmission system maintenance or HNP maintenance activities. Such coordination is in accordance with the agreements.

(h) If you do not consider and effectively implement appropriate risk management actions during the conditions described above, explain why you believe you effectively addressed the relevant provisions of the associated NRC-endorsed industry guidance.	As discussed in questions 6(a)—6(d), HNP effectively implements appropriate risk management actions.

(i) You may, as an alternative to questions 6(g) and 6(h) describe what actions you intend to take to ensure that the increase in risk that may result from grid-risk-sensitive maintenance activities is managed in accordance with 10 CFR 50.65(a)(4).	No alternative actions.

Offsite power restoration procedures in accordance with 10 CFR 50.63 as developed in Section 2 of RG 1.155

Pursuant to 10 CFR 50.63, the NRC requires that each NPP licensed to operate be able to withstand an SBO for a specified duration and recover from the SBO. NRC RG 1.155 gives licensees guidance on developing their approaches for complying with 10 CFR 50.63.

7. Procedures for identifying local power sources[1] that could be made available to resupply your plant following a LOOP event.

Note: Section 2, "Offsite Power," of RG 1.155 (ADAMS Accession No. ML003740034) states:

Procedures should include the actions necessary to restore offsite power and use nearby power sources when offsite power is unavailable. As a minimum, the following potential causes for loss of offsite power should be considered:

- Grid under-voltage and collapse
- Weather-induced power loss
- Preferred power distribution system faults that could result in the loss of normal power to essential switchgear buses

[1] This includes items such as nearby or onsite gas turbine generators, portable generators, hydro generators, and black-start fossil power plants.

(a) Briefly describe any agreement made with the TSO to identify local power sources that could be made available to re-supply power to your plant following a LOOP event.	Not applicable. Because of the configuration of the transmission system around HNP, there are no local power sources available to re-energize the HNP switchyards in case of an LOOP. The TSO maintains a LOOP recovery procedure for HNP that lists three methods of providing power to HNP after a LOOP event. This procedure contains detailed switching guidance to align the grid from other plant sites that have generation units capable of a black start (sites with multiple combustion turbine units). These sites are located approximately 100 miles from HNP. HNP also has procedures for the restoration of power to the plant from the 230KV switchyard to complement the TSO procedures. An agreement is in place to restore power to the HNP on a priority basis as soon as possible. In addition, a grid operations procedure provides detailed instructions for prompt HNP offsite power restoration. The procedure specifies various means of accomplishing the required power restoration. Grid operators train on this procedure twice annually per NERC training requirements.

(b) Are your NPP operators trained and tested on identifying and using local power sources to resupply your plant following a LOOP event? If so, describe how.	No. Actions to restore power to the switchyards are not performed by HNP operators. HNP operators are trained and subject to being tested on how to re-energize the startup transformers and in-plant busses once offsite power is available to the switchyard.

(c) If you have not established an agreement with your plant's TSO to identify local power sources that could be made available to resupply power to your plant following a LOOP event, explain why you believe you comply with the provisions of 10 CFR 50.63, or describe what actions you intend to take to establish compliance.	Not applicable; an agreement exists.

Losses of offsite power caused by grid failures at a frequency of equal to or greater than once in 20 site-years in accordance with Table 4 of Regulatory Guide 1.155 for complying with 10 CFR 50.63

Pursuant to 10 CFR 50.63, the NRC requires that each NPP licensed to operate be able to withstand an SBO for a specified duration and recover from the SBO. NRC RG 1.155 gives licensees guidance on developing their approaches for complying with 10 CFR 50.63.

8. Maintaining SBO coping capabilities in accordance with 10 CFR 50.63.	
(a) Has your NPP experienced a total LOOP caused by grid failure since the plant's coping duration was initially determined under 10 CFR 50.63?	No. HNP has not experienced a partial or total LOOP from any cause since the submittal of the 10 CFR50.63 response.

(b) If so, have you reevaluated the NPP using the guidance in Table 4 of RG 1.155 to determine if your NPP should be assigned to the P3 offsite power design characteristic group?	Not applicable.

(c) If so, what were the results of this reevaluation, and did the initially determined coping duration for the NPP need to be adjusted?	Not applicable.

(d) If your NPP has experienced a total LOOP caused by grid failure since the plant's coping duration was initially determined under 10 CFR 50.63 and has not been reevaluated using the guidance in Table 4 of RG 1.155, explain why you believe you comply with the provisions of 10 CFR 50.63 as stated above, or describe what actions you intend to take to ensure that the NPP maintains its SBO coping capabilities in accordance with 10 CFR 50.63.	Not applicable.

Actions to ensure compliance	
9. If you determine that any action is warranted to bring your NPP into compliance with NRC regulatory requirements, including TSs, GDC 17, 10 CFR 50.65(a)(4), 10 CFR 50.63, 10 CFR 55.59 or 10 CFR 50.120, describe the schedule for implementing it.	Not applicable.

Enclosure 2

Joseph M. Farley Nuclear Plant

Southern Nuclear Operating Company 60-Day Response to Generic Letter 2006-02
Grid Reliability and Impact on Plant Risk and the Operability of Offsite Power

FNP Response to GL 2006-02 Requested Information

1. Use of protocols between the NPP licensee and the TSO, ISO, or RC/RA to assist the NPP licensee in monitoring grid conditions to determine the operability of offsite power systems under plant Technical Specifications.	
(a) Do you have a formal agreement or protocol with your TSO?	Yes. FNP does have a formal agreement with the TSO. This agreement is implemented by applicable procedures and guidelines.
(b) Describe any grid conditions that would trigger a notification from the TSO to the NPP licensee and if there is a time period required for the notification	Normal day to day operational communications between the TSO and FNP are the same as those for other generating plants and are associated with topics such as: • work coordination, • switching, • generation dispatch, and • planning. The TSO is required to notify FNP whenever an impaired or potentially degraded grid condition is recognized by the TSO. Specific examples of known potentially degrading conditions identified in the agreement are: • loss of system security monitoring tools, • severe weather, • line or equipment outages impacting FNP, • very low system load, • very high system load, • identification of system security contingency alarms, • FNP voltage support problems, or • significant grid frequency problems. The occurrence of a grid contingency that impacts FNP requires timely FNP notification. If the TSO's real-time contingency analysis shows that the off-site power to FNP will be impaired or degraded upon the occurrence of a credible contingency, the TSO practice is to notify FNP immediately of the analysis results.

	[NOTE: The TSO may need to perform a few verifications before confirming a credible contingency. Once the contingency is determined to be credible, the TSO will initiate remedial actions and should notify FNP immediately of the condition and estimated time to restore the grid to an acceptable range. If the condition can be immediately resolved (within several minutes), no notification to FNP is required.]
(c) Describe any grid conditions that would cause the NPP licensee to contact the TSO. Describe the procedures associated with such a communication. If you do not have procedures, describe how you assess grid conditions that may cause the NPP licensee to contact the TSO.	Grid conditions and status are the primary responsibility of the TSO and Reliability Coordinator (RC). The grid parameters observable to a FNP operator include only voltage and frequency, generator real and reactive output, breaker status, line status and certain switchyard alarm points. Relative to this question, "grid conditions" is assumed to be FNP changes that impact the TSO analysis of the grid interface. FNP notifies the TSO for changes in the following grid conditions: • FNP power uprate and derate changes. (Both real and reactive power) • Changes to Switchyard Voltage, Switchyard Breaker alignment, Generator VAR loading • Modifications resulting in changes to generator electrical characteristics • Changes in FNP post trip offsite power minimum required switchyard voltage or loading • Change in status of FNP offsite power voltage regulating devices • High voltage equipment problems that could impact FNP output, stability, or availability (i.e.: large power transformer problems, main generator problems, isophase bus problems, etc.) • Other notifications associated with internal plant electrical or equipment alignments are also made when applicable; however, these are not related to "grid conditions".
(d) Describe how NPP operators are trained and tested on the use of the procedures or assessing grid conditions	Typically, FNP operators are trained and are subject to testing on procedures associated with assessing grid conditions. This training may be evaluated either by written examinations or

in question 1(c).	during performance in the simulator.
(e) If you do not have a formal agreement or protocol with your TSO, describe why you believe you continue to comply with the provisions of GDC 17 as stated above, or describe what actions you intend to take to assure compliance with GDC 17.	FNP does have a formal agreement with the TSO; thus, this question is not applicable. Compliance with GDC-17 is not predicated on this agreement; the SER for FNP dated May 2, 1975 concluded that the offsite power system satisfied the requirements of GDC 17 and was acceptable.
(f) If you have an existing formal interconnection agreement or protocol that ensures adequate communication and coordination between the NPP licensee and the TSO, describe whether this agreement or protocol requires that you be promptly notified when the conditions of the surrounding grid could result in degraded voltage (i.e., below TS nominal trip setpoint value requirements; including NPP licensees using allowable value in its TSs) or LOOP after a trip of the reactor unit(s).	As previously stated, FNP does have a formal agreement with the TSO. Timely notification regarding pre-trip analysis of predicted post-trip voltage that results in below acceptance limits is included. FNP has guidelines to implement these communications.
(g) Describe the low switchyard voltage conditions that would initiate operation of plant degraded voltage protection.	Actions for degraded grid voltage protection would be initiated by alarms received in the control room. Nominal setpoint for the degraded grid voltage alarm on the 4160 V emergency bus is 3850 V. Procedural guidance is provided for monitoring the abnormal condition, and for taking proper actions based on actual bus voltage. Procedures require that the reactor be taken to Mode 3 within 6 hours if emergency bus voltage is below 3850 V for more than 1 hour.

	At a nominal setpoint of 3675 V degraded grid protection is actuated to prevent safety-related components from operating at less than designed voltages for extended periods of time. When this occurs, the buses are isolated from the off-site power system causing a loss of off-site power (LOOP) and allowing the buses to be powered from the on-site emergency diesel generators. At a nominal setpoint of 3255 V selected load breakers trip (load shed) and a start signal is sent to the diesel generator associated with each emergency bus. The diesel generators restore power to the emergency buses, and the load breakers re-close by either the loss of off-site power sequencer or the emergency safeguards system sequencer.

2. Use of criteria and methodologies to assess whether the offsite power system will become inoperable as a result of a trip of your NPP.	
(a) Does your NPP's TSO use <u>any analysis tools</u>, an online analytical transmission system studies program, or other equivalent predictive methods to determine the grid conditions that would make the NPP offsite power system inoperable during various contingencies? <u>If available</u> to you, please provide a brief description of the analysis tool that is used by the TSO.	According to RIS 2005-20, the term 'Operable/Operability' is defined in the Technical Specifications and applied ONLY to TS systems, structures & components (SSCs). Thus, the FNP offsite power system cannot be referred to as 'operable' or 'inoperable', because the grid is not a TS SSC. Everything that is non-TS is referred to as Functional or non-Functional. Yes. The TSO makes use of analysis tools to predict grid conditions that would impact the FNP offsite power supply. The tools presently used by the TSO to manage the grid programs, control the transmission related activities, and monitor grid actions are outside the control of FNP and include the following: • a grid SCADA system and state estimator • a fully commissioned real-time contingency analysis (RTCA) program conjunction with periodic studies of all single outages and a reasonable set of multiple contingencies specifically tailored for FNP worst case conditions • a voltage stability analysis program • a near realtime dynamic stability analysis program • bounding analyses produced by Transmission Planning studies. The real-time contingency analysis package utilized by the TSO includes monitoring / predictive analysis computer programs that can predict FNP switchyard voltages expected to occur upon realization of any single contingencies and a number of possible multiple contingencies on the grid, such as • a trip of the FNP generators, • a trip of other large generators, or • the loss of important transmission lines. Monitoring / predictive analysis computer program tools operate based on raw data from transducers across the system that is processed through a state estimator to generate a verified current state snapshot of the system. This output is then processed through a contingency

	analysis program that generates a set of new results with all single elements of the system out of service and a predefined set of multiple contingencies. These results are then screened against a predetermined set of acceptance limits. Postulated scenarios which then do not meet the acceptance limits are alarmed for review by the TSO operators.
(b) Does your NPP's TSO use an analysis tool as the basis for notifying the NPP licensee when such a condition is identified? If not, how does the TSO determine if conditions on the grid warrant NPP licensee notification?	Yes. The TSO uses the above analysis tools, in conjunction with procedures, as the basis for determining when conditions warrant FNP notification. Refer to the response to question 1(b). Notifications are made based on grid conditions being outside of predefined procedure requirements or based on unsatisfactory monitoring / predictive analysis computer program tool results (contingency analyses).
(c) If your TSO uses an analysis tool, would the analysis tool <u>identify a condition</u> in which a trip of the NPP would result in switchyard voltages (<u>immediate and/or long-term</u>) falling below TS nominal trip setpoint value requirements (including NPP licensees using allowable value in its TSs) and consequent actuation of plant degraded voltage protection? If not, discuss how such a condition would be identified on the grid.	Yes. Procedures and monitoring / predictive analysis tools are in place for this purpose in both planning and realtime environments. The TSO analysis tools, in conjunction with FNP plant analysis, identify conditions which could actuate the FNP degraded voltage alarms or protection logic and initiate separation from an offsite power source upon a trip of one or both FNP units.
(d) If your TSO uses an analysis tool, how frequently does the analysis tool program update?	The state estimator and contingency analysis application tools run continuously with each new case taking approximately five minutes to solve.
(e) Provide <u>details</u> of analysis tool-identified contingency <u>conditions</u> that would trigger an NPP licensee	The notification from the TSO is based upon either actual switchyard voltages or RTCA grid conditions. RTCA grid conditions are based on the predicted post-contingency switchyard

notification from the TSO.	voltage given any single element of the system out of service or a predefined set of multiple contingency conditions. The analyzed contingencies that are evaluated against the FNP voltage requirements include: loss of another generator, loss of a significant transmission line, loss of a capacitor bank, or loss of one or both FNP units. If the FNP voltage requirement cannot be met under any of the contingencies considered, FNP will be notified. The same minimum required switchyard voltage limit bases that are used in the grid operating procedures are also used in the predictive analysis computer programs.
(f) If an interface agreement exists between the TSO and the NPP licensee, does it require that the NPP licensee be notified of periods when the TSO is <u>unable to determine</u> if offsite power voltage and capacity could be inadequate? If so, <u>how</u> does the NPP licensee determine that the offsite power would <u>remain operable</u> when such a notification is received?	According to RIS 2005-20, the term 'Operable/Operability' is defined in the Technical Specifications and applied ONLY to TS SSCs. Thus, the FNP offsite power system cannot be referred to as 'operable' or 'inoperable', because the grid is not a TS SSC. Everything that is non-TS is referred to as Functional or non-Functional. Yes. The agreement does specifically require FNP notification for periods of time when analysis tools are unavailable and grid conditions are indeterminable. FNP follows abnormal operating procedure (AOP) requirements when notified by the TSO that analysis tools are unavailable and grid conditions are indeterminable. FNP operates within the bounds of its long term steady state and transient stability analyses and that ensures that FNP meets design and Technical Specification requirements. Any abnormal grid conditions that may impair the capability or availability of offsite power that are reported by the PCC or the ACC would require actions in accordance with FNP's abnormal operating procedures. Typically the time requirements for these actions are more restrictive than Technical Specification action statements.

	Existing requirements for functionality of the offsite power supplies as stated in GDC 17 and NUREG 0800 require that "results of the grid stability analysis indicate(d) that the loss of the largest generating capacity being supplied from the grid, loss of the most critical transmission line, or loss of the unit itself will not cause grid instability." This does not require that a continuous analysis be performed to demonstrate grid stability exists. The TSO current practice is to perform a yearly grid stability analysis to ensure that this requirement is met, given changes and improvements to the Southern Company transmission grid. The actions described in response to notification that on-line tools are unavailable are intended to assist the grid operator in maintaining stable circumstances and to inform the FNP operating staff, but are not a factor in determining functionality of offsite power sources.
(g) After an unscheduled inadvertent trip of the NPP, are the resultant switchyard voltages verified by procedure to be bounded by the voltages predicted by the analysis tool?	No. For post event analysis, the TSO does not verify by procedure that the switchyard voltages are bounded by the analysis tools. Nonetheless, such analyses have been performed on a case by case basis to validate predicted results. Also, the system operator monitors both actual conditions and contingency (predictions) values and identifies problems found.
(h) If an analysis tool is not available to the NPP licensee's TSO, do you know if there are any plans for the TSO to obtain one? If so, when?	Not applicable to FNP, since TSO analysis tools are presently in use.
(i) If an analysis tool is not available, does your TSO perform periodic studies to verify that adequate offsite power capability, including adequate NPP post-trip switchyard voltages (immediate and/or long-term), will be available to the NPP licensee over the projected	Not applicable to FNP, since TSO analysis tools are presently in use.

timeframe of the study? (a) Are the key assumptions and parameters of these periodic studies translated into TSO guidance to ensure that the transmission system is operated within the bounds of the analyses? (b) If the bounds of the analyses are exceeded, does this condition trigger the notification provisions discussed in question 1 above?	
(j) If your TSO does not use, or you do not have access to the results of an analysis tool, or your TSO does not perform and make available to you periodic studies that determine the adequacy of offsite power capability, please describe why you believe you comply with the provisions of GDC 17 as stated above, or describe what compensatory actions you intend to take to ensure that the offsite power system will be sufficiently reliable and remain operable with high probability following a trip of your NPP.	According to RIS 2005-20, the term 'Operable/Operability' is defined in the Technical Specifications and applied ONLY to TS SSCs. Thus, the FNP offsite power system cannot be referred to as 'operable' or 'inoperable', because the grid is not a TS SSC. Everything that is non-TS is referred to as Functional or non-Functional. Not applicable to FNP, since the TSO utilizes analysis tools and communicates the applicable results / conclusions to the FNP. See the response to Question 1(e) regarding compliance with GDC-17.

3. Use of criteria and methodologies to assess whether the NPP's offsite power system and safety-related components will remain operable when switchyard voltages are inadequate.	
(a) If the TSO notifies the NPP operator that • a trip of the NPP, or • the loss of the most critical transmission line or • the largest supply to the grid would result in switchyard voltages (immediate and/or long-term) below TS nominal trip setpoint value requirements (including NPP licensees using allowable value in its TSs) and would actuate plant degraded voltage protection, is the NPP offsite power system declared inoperable under the plant TSs? If not, why not?	According to RIS 2005-20, the term 'Operable/Operability' is defined in the Technical Specifications and applied ONLY to TS SSCs. Thus, the FNP offsite power system cannot be referred to as 'operable' or 'inoperable', because the grid is not a TS SSC. Everything that is non-TS is referred to as Functional or non-Functional. No, the offsite power system is not declared inoperable per Technical Specifications at FNP. Specific values for switchyard voltages are not addressed in FNP's Technical Specifications. As specified in the Power Quality Guide the switchyard minimum voltage requirements are established with margin above the settings for the degraded grid relays in the emergency buses. If FNP is notified by the TSO that a contingency prediction has resulted in a possible switchyard voltage below the minimum voltage requirement, then the degraded grid procedure actions include more frequent monitoring of actual in-plant emergency bus voltages. These procedures provide guidance for monitoring the abnormal condition and for taking proper actions (including plant shutdown if required based on actual bus voltage) which could address an operability concern with the emergency buses.

(b) If onsite safety-related equipment (e.g., emergency diesel generators or safety-related motors) is lost when subjected to a double sequencing (LOCA with delayed LOOP event) as a result of the anticipated system performance and is incapable of performing its safety functions as a result of responding to an emergency actuation signal during this condition, is the equipment considered inoperable? If not, why not?	According to RIS 2005-20, the term 'Operable/Operability' is defined in the Technical Specifications and applied ONLY to TS SSCs. Thus, the FNP offsite power system cannot be referred to as 'operable' or 'inoperable', because the grid is not a TS SSC. Everything that is non-TS is referred to as Functional or non-Functional. No. Double sequencing is not in FNP's licensing basis and FNP is not designed or analyzed for double sequencing scenarios. If onsite safety related equipment is lost (as governed by plant Technical Specifications), then the equipment is declared inoperable. The onsite safety related equipment has sufficient independence, redundancy and testability to ensure performance of safety functions assuming a single failure in compliance with GDC-17, as documented in the FNP licensing basis and the plant Technical Specifications.
(c) Describe your evaluation of onsite safety-related equipment to determine whether it will operate as designed during the condition described in question 3(b).	Not applicable.
(d) If the NPP licensee is notified by the TSO of other grid conditions that may impair the capability or availability of offsite power, are any plant TS action statements entered? If so, please identify them.	According to RIS 2005-20, the term 'Operable/Operability' is defined in the Technical Specifications and applied ONLY to TS SSCs. Thus, the FNP offsite power system cannot be referred to as 'operable' or 'inoperable', because the grid is not a TS SSC. Everything that is non-TS is referred to as Functional or non-Functional. No. Technical Specifications are not entered for grid conditions that might occur. Technical Specification action statements would only be entered if the limiting condition for operation is not met. Concerning grid conditions, FNP would enter the action statements if five of six off-site power sources were lost from the grid, or one or both off-site power sources were lost from the high voltage switchyard.
(e) If you believe your plant TSs do not require you to declare your offsite power system or safety-related equipment	Not applicable. As stated in RIS 2005-20, "Operability Determination Process," Appendix C.1, "Relationship Between the General Design Criteria and the Technical Specifications," "The general design

inoperable in any of these circumstances, explain why you believe you comply with the provisions of GDC 17 and your plant TSs, or describe what compensatory actions you intend to take to ensure that the offsite power system and safety-related components will remain operable when switchyard voltages are inadequate.	criteria (GDC) and the TSs differ in that the GDC specify requirements for the design of nuclear power reactors, whereas the TSs specify requirements for the operation of nuclear reactors." FNP was designed and licensed to the requirements of GDC 17, as documented in the NRC SER dated May 2, 1975. Taking the plant offline decreases the reliability of the grid.
(f) Describe if and how NPP operators are trained and tested on the compensatory actions mentioned in your answers to questions 3(a) through (e).	Similar to 1.d above, licensed personnel at FNP participate in an accredited training program to maintain their senior reactor operator license or reactor operator license current. Grid events discussed in questions 3(a) through (e) are presented in initial training, continuing training, and examination scenarios on the plant simulator. These include degraded grid conditions, severe weather conditions, loss of off-site power, and loss of all power. Testing is performed using simulator evaluations and written examinations. Every simulator session is critiqued to ensure the minimum expectations are met, and any enhancements to crew performance or procedural guidance are addressed through the corrective action process.

4. Use of criteria and methodologies to assess whether the offsite power system will remain operable following a trip of your NPP.	
(a) Do the NPP operators have any guidance or procedures in plant TS bases sections, the final safety analysis report, or plant procedures regarding situations in which the condition of plant-controlled or -monitored equipment (e.g., voltage regulators, auto tap changing transformers, capacitors, static VAR compensators, main generator voltage regulators) can adversely affect the operability of the NPP offsite power system? If so, describe how the operators are trained and tested on the guidance and procedures.	Yes. Procedural guidance is available to FNP operators. The TSO procedure for voltage schedules (Southern Company Bulk Power Operations Procedure BPO-1) in the applicable Southern Control Area specifies the requirements for the FNP operators to maintain the voltage schedule to assist in the availability and reliability of the grid, and to ensure voltages are maintained within the band specified in the Power Quality Guide for FNP. The capacitor bank in the high voltage switchyard is operated in the automatic or manual mode, and its operation is exclusively controlled by the TSO. The shunt reactor bank in the high voltage switchyard is operated manually. Its operation is directed by the TSO, and it is placed in service and removed from service through coordinated actions by the TSO and FNP Operations personnel. A high voltage switchyard activities procedure provides guidance for this activity. System Operating Procedures for the turbine generators provide limitations on the generator voltage regulators, which are intended to limit the impact on grid reliability, and on station service bus voltages. Any abnormal conditions that impact the successful accomplishment of the above items are documented in the plant's corrective action program. These condition reports are closed by corrective actions addressed to personnel, or procedures. Licensed personnel at FNP participate in an accredited training program to maintain their senior reactor operator license or reactor operator license current. Conditions discussed in question 4(a) are presented in initial training, continuing training, and examination scenarios through the use of the plant simulator, and on-the-job training. These include normal, abnormal, and emergency plant operations. All training sessions are critiqued to ensure the minimum expectations are met, and any enhancements to crew performance or procedural guidance are addressed through the corrective action process.

	Testing is performed using simulator evaluations and written examinations.
(b) If your TS bases sections, the final safety analysis report, and plant procedures do not provide guidance regarding situations in which the condition of plant-controlled or -monitored equipment can adversely affect the operability of the NPP offsite power system, explain why you believe you comply with the provisions of GDC 17 and the plant TSs, or describe what actions you intend to take to provide such guidance or procedures.	According to RIS 2005-20, the term 'Operable/Operability' is defined in the Technical Specifications and applied ONLY to TS SSCs. Thus, the FNP offsite power system cannot be referred to as 'operable' or 'inoperable', because the grid is not a TS SSC. Everything that is non-TS is referred to as Functional or non-Functional. Not applicable. See the response to question 4(a).

Use of NPP licensee/TSO protocols and analysis tool by TSOs to assist NPP licensees in monitoring grid conditions for consideration in maintenance risk assessments The Maintenance Rule (10 CFR 50.65(a)(4)) requires that licensees assess and manage the increase in risk that may result from proposed maintenance activities before performing them.	
5. Performance of grid reliability evaluations as part of the maintenance risk assessments required by 10 CFR 50.65(a)(4).	
(a) Is a quantitative or qualitative grid reliability evaluation performed at your NPP as part of the maintenance risk assessment required by 10 CFR 50.65(a)(4) before performing grid-risk-sensitive maintenance activities? This includes surveillances, post-maintenance testing, and preventive and corrective maintenance that could increase the probability of a plant trip or LOOP or impact LOOP or SBO coping capability, for example, before taking a risk-significant piece of equipment (such as an EDG, a battery, a steam-driven pump, an alternate AC power source) out-of-service?	Yes. 10CFR 50.65(a)(4) requires performance of a risk assessment prior to maintenance activities. Maintenance is defined broadly and would include surveillances, post maintenance testing, and preventive and corrective maintenance. Relative to increasing the initiating event frequency, such as the frequency of a plant trip, the industry guidance, NUMARC 93-01 (endorsed without exception by NRC Regulatory Guide 1.182, states Section 11.3.2.2 that the following should be considered: • The likelihood of an initiating event or accident that would require the performance of the affected safety function. • The likelihood that the maintenance activity will significantly increase the frequency of a risk-significant initiating event (e.g., by an order of magnitude or more as determined by each licensee, consistent with its obligation to manage maintenance-related risk). The first bullet above is generally met by using the PRA and associated configuration risk management tools, which explicitly consider initiating event frequencies for transients and accidents. LOOP sequences are important elements of PRAs, and are thoroughly modeled and assessed during plant peer reviews. Risk management personnel are sensitized to the importance of these sequences. The second bullet clarifies that if a maintenance activity is expected to increase initiating-event likelihood by an order of magnitude, then it should be considered in the assessment. Otherwise, the baseline initiating event frequencies may be used. These frequencies are based on generic data updated with plant specific data, and would take into account the plant

	specific LOOP and trip frequencies.
(b) Is grid status monitored by some means for the duration of the grid-risk-sensitive maintenance to confirm the continued validity of the risk assessment and is risk reassessed when warranted? If not, how is the risk assessed during grid-risk-sensitive maintenance?	Yes. NUMARC 93-01 does not define "grid-risk-sensitive maintenance", so there is no unique guidance for such activities. The following guidance is included in Section 11.3.2.8 (emphasis added): Emergent conditions may result in the need for action prior to conduct of the assessment, or could change the conditions of a previously performed assessment. Examples include plant configuration or mode changes, additional SSCs out of service due to failures, or significant changes in external conditions (weather, offsite power availability). The following guidance applies to this situation: • The safety assessment should be performed (or re-evaluated) to address the changed plant conditions on a reasonable schedule commensurate with the safety significance of the condition. Based on the results of the assessment, ongoing or planned maintenance activities may need to be suspended or rescheduled, and SSCs may need to be returned to service. • Performance (or re-evaluation) of the assessment should not interfere with, or delay, the operator and/or maintenance crew from taking timely actions to restore the equipment to service or take compensatory actions. • If the plant configuration is restored prior to conducting or re-evaluating the assessment, the assessment need not be conducted, or re-evaluated if already performed. Note that emergent conditions are defined as "significant" changes to conditions assumed in the original risk assessment. How the plant determines whether grid conditions are changed, or whether these changes are significant enough to warrant re-assessment, are not prescribed in the NRC endorsed guidance. Plant procedures would address these issues.
(c) Is there a significant variation in the stress on the grid in the vicinity of your NPP site	Yes. Stress on the transmission grid as measured by loading in the Southern Control Area is

caused by seasonal loads or maintenance activities associated with critical transmission elements? Is there a seasonal variation (or the potential for a seasonal variation) in the LOOP frequency in the local transmission region? If the answer to either question is yes, discuss the time of year when the variations occur and their magnitude.	seasonal with the peak loads typically occurring during the summer months (typically June through August). The all time instantaneous peak load for the Southern Control Area of 44,167 MW occurred on July 26, 2005. By contrast, the all time instantaneous peak load for winter of 39,192 MW that occurred on January 24, 2003 was roughly 89% of the summer peak. Shoulder periods in the fall and spring typically have daily peak loads as low as 25,000 MW (roughly 57% of the all time peak) or less. Maintenance on generating plants and transmission equipment is also seasonal. It typically occurs during the shoulder months in spring and fall when control area loads are low and equipment can be removed from service without adversely impacting grid operations. All scheduled outages are registered with Southern Transmission and examined under contingency conditions to ensure they will not impact grid reliability prior to their occurrence. Although these peak load and maintenance periods do stress the transmission grid, there is no time when the system is not operated in a reliable manner under first contingency criteria. FNP voltages and other critical parameters are monitored continuously during these periods to assure that no violation of Power Quality Guide requirements occur. All requirements of BPO-2 and other agreements between Southern Transmission and FNP are met during peak load and maintenance periods in the same manner as they are at all other times.
(d) Are known time-related variations in the probability of a LOOP at your plant site considered in the grid-risk-sensitive maintenance evaluation? If not, what is your basis for not considering them?	There are no significant time-of-day or day-of-week variation in the frequency of LOOP at FNP. Thus, the risk assessment for the purposes of 10CFR50.65(a)(4) does not vary the LOOP frequency strictly as a function of "time-related" issues. However, as part of the FNP's configuration risk management program, the Equipment Out of Service (EOOS) program, time related variations (e.g., grid instability, severe weather) are always considered a configuration change. They are always explicitly evaluated. Severe weather, switchyard maintenance and test activities, and other events (not only grid specific) outside the plant are routinely considered within the EOOS model. FNP's EOOS program requires increased controls on maintenance during the described conditions. Risk is usually not calculated solely due to changes in grid reliability (i.e.,

	assessed in conjunction with plant equipment being out of service). When an unacceptable risk condition is calculated (e.g. Orange risk condition), then activities are re-scheduled, or managed to avoid any pre-planned, unacceptable risk conditions. If unacceptable risk conditions occur due to emergent issues (e.g. tornado warning, transmission line failures, etc.), then the plant equipment outages are prioritized, and returned to service in a priority manner.
(e) Do you have contacts with the TSO to determine current and anticipated grid conditions as part of the grid reliability evaluation performed before conducting grid-risk-sensitive maintenance activities?	Yes. TSO relies on Contingency Analysis tools for evaluating requested transmission and generator scheduled outages. Typically, the TSO has the ability to take snapshots of the State Estimator program output and modify today's peak load snapshot to study tomorrow's requested outages. The TSO can provide commentaries on grid conditions at anytime maintenance tasks are underway. The same dynamic nature of loads and active generation make prediction of grid conditions days or weeks ahead of time uncertain, however, such studies form the base cases from which additional analyses are performed as updated information is received.
(f) Describe any formal agreement or protocol that you have with your TSO to assure that you are promptly alerted to a worsening grid condition that may emerge during a maintenance activity.	Notification occurs whether or not maintenance is on-going. The Power Quality Guide lists criteria for notification in the event of degraded grid conditions.
(g) Do you contact your TSO periodically for the duration of the grid-risk-sensitive maintenance activities?	The Southern Company Electric System Transmission Power Quality Guide for FNP states that FNP operators have the responsibility to notify TSO when they become aware of conditions that could jeopardize plant safety and/or the electrical grid reliability. The specific actions are governed by system and plant procedures. For example, the plant procedure for an extended Emergency Diesel Generator Allowed Out of Service Time specifies the notification of the Transmission System Operator prior to removing the Emergency Diesel Generator from service that any maintenance must be carefully evaluated and approved by FNP Management prior to release for work to ensure offsite power is not jeopardized. During

	the extended Emergency Diesel Generator Allowed Out of Service Time, FNP operators are to periodically verify with the TSO that no maintenance is in progress in the FNP high or low voltage switchyards that would challenge off site power to the FNP units and that no impending extremely severe weather or system instabilities as defined in the procedure exist.
(h) If you have a formal agreement or protocol with your TSO, describe how NPP operators and maintenance personnel are trained and tested on this formal agreement or protocol.	The FNP Power Quality Guide outlines typical responsibilities of the various organizations involved in maintaining the FNP/grid interface. Operator training at FNP is based upon plant procedures. Operator training programs have degraded and loss of grid events embedded in the program. Operations personnel are trained and have procedural guidance covering notifying the TSO for certain grid-related configurations. A discussion of the Power Quality Guide for FNP has been included in the continuing training program and plant procedure changes are evaluated for training impact and added to training committee agendas for evaluation. Operator training is evaluated either by written examinations or during performance in the simulator. Work Control personnel are familiar with the Power Quality Guide, but are currently not formally trained on the Power Quality Guide.
(i) If your grid reliability evaluation, performed as part of the maintenance risk assessment required by 10 CFR 50.65(a)(4), does not consider or rely on some arrangement for communication with the TSO, explain why you believe you comply with 10 CFR 50.65(a)(4).	Not Applicable
(j) If risk is not assessed (when warranted) based on continuing communication with the TSO throughout the duration of grid-risk-sensitive maintenance activities, explain why you believe you have effectively implemented	Not Applicable

the relevant provisions of the endorsed industry guidance associated with the maintenance rule.	
(k) With respect to questions 5(i) and 5(j), you may, as an alternative, describe what actions you intend to take to ensure that the increase in risk that may result from proposed grid-risk-sensitive activities is assessed before and during grid-risk-sensitive maintenance activities, respectively.	No alternative actions.

6. Use of risk assessment results, including the results of grid reliability evaluations, in managing maintenance risk, as required by 10 CFR 50.65(a)(4).	
(a) Does the TSO coordinate transmission system maintenance activities that can have an impact on the NPP operation with the NPP operator?	Yes. FNP offsite power requirements are considered in all planned transmission outage assessments. Requests identified as potentially impacting FNP requirements are coordinated directly with FNP.
(b) Do you coordinate NPP maintenance activities that can have an impact on the transmission system with the TSO?	Yes. The responsible FNP Shift Manager notifies the TSO of planned Emergency Diesel Generator outages, maintenance activities that could impact generator real or reactive power output and other significant system maintenance that could result in an unacceptable risk situation.
(c) Do you consider and implement, if warranted, the rescheduling of grid-risk-sensitive maintenance activities (activities that could (i) increase the likelihood of a plant trip, (ii) increase LOOP probability, or (iii) reduce LOOP or SBO coping capability) under existing, imminent, or worsening degraded grid reliability conditions?	Yes. Maintenance that has an associated trip risk is performed when the on-shift FNP personnel conclude that the risk of the work is small compared to the safety benefit. When the maintenance work is done in response to a Technical Specification, the risk assessment is informative for sequencing tasks, but not controlling. Maintenance that has an associated trip risk would be activities such as the following: • RPS calibrations, • ATWS, • CRD testing, • main turbine control testing or • switchyard breaker cycling. Emergent issues are managed to maintain a high level of plant safety. At times appropriate management means rescheduling activities, at other times the shift-supervisor will order the on-shift FNP staff to back-out of the task and restore the safety-related function of the equipment. It is important that stations know the detail and content of maintenance activities so that an informed assessment can be completed.

(d) If there is an overriding need to perform grid-risk-sensitive maintenance activities under existing or imminent conditions of degraded grid reliability, or continue grid-risk-sensitive maintenance when grid conditions worsen, do you implement appropriate risk management actions? If so, describe the actions that you would take. (These actions could include alternate equipment protection and compensatory measures to limit or minimize risk.)	Yes. Same response as 6(c). TSO would take appropriate actions to ensure the required voltage would be maintained per the Power Quality Guide.
(e) Describe the actions associated with questions 6(a) through 6(d) above that would be taken, state whether each action is governed by documented procedures and identify the procedures, and explain why these actions are effective and will be consistently accomplished.	Scheduled maintenance activities on the transmission grid are entered into the Equipment Outage Scheduler (EOS) and assessed across the 0 to 13 month Operational Planning horizon for their impact on transmission system reliability. All scheduled outages are included in the base case developed each day by the TSO and assessments are performed to identify adverse impacts on FNP. As documented in the Power Quality Guide for FNP, the TSO is responsible for maintenance activities in the FNP substation. These activities are performed by Alabama Power Company (APCo). APCo is responsible for: ▪ Maintaining accesses control to the FNP switchyards, ▪ Performance of corrective maintenance, preventive maintenance surveillance inspections and testing of all substation equipment including the switchyard house and yard lights. ▪ In conjunction with FNP, establishing guidelines for the use of vehicles and heavy equipment within the switchyard area to ensure operation, movement, or use of such equipment will be performed in a manner to reduce the possibility of loss of power to plant systems or switchyards. ▪ Providing status of corrective maintenance items to FNP. These responsibilities are documented in the Power Quality Guide for FNP. Maintenance at the FNP switchyard is performed per the requirements of APCo procedures. Regarding the coordination and communication of grid-related activities with the TSO, FNP Operations personnel are trained and have procedural guidance covering when and how to

	notify the TSO for configurations identified as being grid related in Unit Operating Procedures (UOPs), System Operating Procedures (SOPs), Abnormal Operating Procedures (AOPs), Emergency Operating Procedures (EOPs), and Annunciator Response Procedures (ARPs). Regarding the scheduling of grid-sensitive maintenance activities, the major switching or pre-planned maintenance that occurs in the electrical switchyard is approved through the TSO and is communicated to designated FNP staff members. The maintenance is then included in the plant work control risk assessment process. A qualitative safety assessment using the following guidelines is performed. These guidelines establish an envelope which bounds out of service equipment within the assumptions of the Maintenance Rule performance criteria, Technical Specifications, and accident analyses. • Avoid maintenance on the protected train. • Avoid removing from service multiple safety-significant components in the same train at the same time. • Place standby components in service, where available, to perform the function of equipment removed from service. • Maintain out of service hours within the Maintenance Rule performance criteria and evaluate the impact of these out of service hours on NRC performance indicators.) • Avoid maintenance on sensitive or critical equipment during periods of severe weather forecasts, grid degradation, or system alert conditions. The qualitative safety assessment should also consider the effects of work, plant conditions, and weather conditions that are judged to have a significant impact on the probability of a reactor trip, turbine trip, or loss of off-site power (e.g., tornado watch, hurricane forecast, high risk switchyard work, MSIV/MFIV/EHC work, etc.).

(f) Describe how NPP operators and maintenance personnel are trained and tested to assure they can accomplish the actions described in your answers to question 6(e).	FNP operators are trained and subject to testing on procedural requirements for scheduling maintenance, which includes requirements for managing risk. Work Week Coordinators are responsible for coordinating the scheduling of maintenance activities with the TSO. Work Week Coordinators are trained on these responsibilities using a discussion guide in which topics are discussed with qualified Work Week Coordinators or the Scheduling Supervisor.
(g) If there is no effective coordination between the NPP operator and the TSO regarding transmission system maintenance or NPP maintenance activities, please explain why you believe you comply with the provisions of 10 CFR 50.65(a)(4).	Not applicable. There is effective coordination between the FNP operator and the TSO regarding transmission system maintenance and FNP maintenance activities. Such coordination is in accordance with the agreements.
(h) If you do not consider and effectively implement appropriate risk management actions during the conditions described above, explain why you believe you effectively addressed the relevant provisions of the associated NRC-endorsed industry guidance.	Not applicable. As discussed in questions 6(a)—6(d), FNP effectively implements appropriate risk management actions.
(i) You may, as an alternative to questions 6(g) and 6(h) describe what actions you intend to take to ensure that the increase in risk that may result from grid-risk-sensitive maintenance activities is managed in accordance with 10 CFR 50.65(a)(4).	Not applicable. No alternative actions.

Offsite power restoration procedures in accordance with 10 CFR 50.63 as developed in Section 2 of RG 1.155 Pursuant to 10 CFR 50.63, the NRC requires that each NPP licensed to operate be able to withstand an SBO for a specified duration and recover from the SBO. NRC RG 1.155 gives licensees guidance on developing their approaches for complying with 10 CFR 50.63.	
7. Procedures for identifying local power sources[2] that could be made available to resupply your plant following a LOOP event. Note: Section 2, "Offsite Power," of RG 1.155 (ADAMS Accession No. ML003740034) states: Procedures should include the actions necessary to restore offsite power and use nearby power sources when offsite power is unavailable. As a minimum, the following potential causes for loss of offsite power should be considered: - Grid under-voltage and collapse - Weather-induced power loss - Preferred power distribution system faults that could result in the loss of normal power to essential switchgear buses	
(a) Briefly describe any agreement made with the TSO to identify local power sources that could be made available to re-supply power to your plant following a LOOP event.	Existing plant procedures and commitments are adequate. The TSO will utilize the best sources available for specific events to restore offsite power and to determine the specific power sources and paths, since there is no way to predict the extent and characteristics of a specific blackout. The TSO has many options available to restore offsite power and would not be limited to identified local power sources. An agreement is in place to restore power to FNP on a priority basis. In addition, a grid operations procedure provides detailed instructions for prompt FNP offsite power restoration. The procedure specifies various means of accomplishing the required power restoration. Grid operators train on this procedure per NERC requirements.
(b) Are your NPP operators trained and tested on identifying and using local power sources to	No. Actions to restore power to the switchyard are not performed by FNP operators. FNP

[2] This includes items such as nearby or onsite gas turbine generators, portable generators, hydro generators, and black-start fossil power plants.

resupply your plant following a LOOP event? If so, describe how.	operators are trained and subject to being tested on how to reenergize the startup transformers and in-plant busses once offsite power is available to the switchyard.
(c) If you have not established an agreement with your plant's TSO to identify local power sources that could be made available to resupply power to your plant following a LOOP event, explain why you believe you comply with the provisions of 10 CFR 50.63, or describe what actions you intend to take to establish compliance.	Not applicable; an agreement exists. The TSO has the responsibility to restore offsite power to FNP as a priority. The TSO will utilize the best sources available for specific events to restore offsite power and to determine the specific power sources and paths, since there is no way to predict the extent and characteristics of a specific blackout. The TSO has many options available to restore offsite power and would not be limited to identified local power sources

Losses of offsite power caused by grid failures at a frequency of equal to or greater than once in 20 site-years in accordance with Table 4 of Regulatory Guide 1.155 for complying with 10 CFR 50.63 Pursuant to 10 CFR 50.63, the NRC requires that each NPP licensed to operate be able to withstand an SBO for a specified duration and recover from the SBO. NRC RG 1.155 gives licensees guidance on developing their approaches for complying with 10 CFR 50.63.	
8. Maintaining SBO coping capabilities in accordance with 10 CFR 50.63.	
(a) Has your NPP experienced a total LOOP caused by grid failure since the plant's coping duration was initially determined under 10 CFR 50.63?	No.
(b) If so, have you reevaluated the NPP using the guidance in Table 4 of RG 1.155 to determine if your NPP should be assigned to the P3 offsite power design characteristic group?	Not applicable.
(c) If so, what were the results of this reevaluation, and did the initially determined coping duration for the NPP need to be adjusted?	Not applicable.
(d) If your NPP has experienced a total LOOP caused by grid failure since the plant's coping duration was initially determined under 10 CFR 50.63 and has not been reevaluated using the guidance in Table 4 of RG 1.155, explain why you believe you comply with the provisions of 10 CFR 50.63 as stated above, or describe what actions you intend to take to ensure that the NPP maintains its SBO coping capabilities in accordance with 10 CFR 50.63.	Not applicable.

Actions to ensure compliance	
9. If you determine that any action is warranted to bring your NPP into compliance with NRC regulatory requirements, including TSs, GDC 17, 10 CFR 50.65(a)(4), 10 CFR 50.63, 10 CFR 55.59 or 10 CFR 50.120, describe the schedule for implementing it.	Not applicable.

Enclosure 3

Vogtle Electric Generating Plant

Southern Nuclear Operating Company 60-Day Response to Generic Letter 2006-02
Grid Reliability and Impact on Plant Risk and the Operability of Offsite Power

1. Use of protocols between the NPP licensee and the TSO, ISO, or RC/RA to assist the NPP licensee in monitoring grid conditions to determine the operability of offsite power systems under plant Technical Specifications.	
(a) Do you have a formal agreement or protocol with your TSO?	Yes. VEGP does have a formal agreement with the TSO. This agreement is implemented by applicable procedures and guidelines.
(b) Describe any grid conditions that would trigger a notification from the TSO to the NPP licensee and if there is a time period required for the notification	Normal day to day operational communications between the TSO and VEGP are the same as those for other generating plants and are associated with topics such as: • work coordination, • switching, • generation dispatch, and • planning. The TSO is required to notify VEGP whenever an impaired or potentially degraded grid condition of the following type is recognized by the TSO. Specific examples of known potentially degrading conditions identified in the agreement fall into two basic categories: • loss of system security monitoring tools, • severe weather, • line or equipment outages impacting VEGP, • very low system load, • very high system load, • identification of system security contingency alarms, • VEGP voltage support problems, or • significant grid frequency problems. The occurrence of a grid contingency that impacts VEGP requires timely VEGP notification. If the TSO's real-time contingency analysis shows that the off-site power to the VEGP will be impaired or degraded upon the occurrence of a credible contingency, the TSO practice is to notify VEGP immediately of the analysis results.

	[NOTE: The TSO may need to perform certain verifications before confirming a credible contingency. Once the contingency is determined to be credible, the TSO will initiate remedial actions and should notify VEGP immediately of the condition and estimated time to restore the grid to an acceptable range. If the condition can be immediately resolved (within several minutes), no notification to VEGP is required.]
(c) Describe any grid conditions that would cause the NPP licensee to contact the TSO. Describe the procedures associated with such a communication. If you do not have procedures, describe how you assess grid conditions that may cause the NPP licensee to contact the TSO.	Grid conditions and status are the primary responsibility of the TSO and Reliability Coordinator (RC). The grid parameters observable to a VEGP operator include only voltage and frequency, generator real and reactive output, breaker status, line status, and certain switchyard alarm points local to VEGP. Relative to this question, "grid conditions" is assumed to be VEGP changes that impact the TSO analysis of the grid interface. VEGP notifies the TSO for changes in the following grid conditions: • VEGP power uprate and derate changes. (Both real and reactive power) • Switchyard Breaker alignment • Modifications resulting in changes to generator electrical characteristics • Changes in VEGP post trip offsite power minimum required switchyard voltage or loading • Change in status of VEGP offsite power voltage regulating devices • High voltage equipment problems that could impact VEGP output, stability, or availability (i.e.: large power transformer problems, main generator problems, isophase bus problems, etc.) • Other notifications associated with internal plant electrical or equipment alignments are also made when applicable; however, these are not related to "grid conditions". VEGP has procedures which implement these communications.
(d) Describe how NPP operators are trained and tested on the use of the procedures or assessing grid conditions in	VEGP Training VEGP operators are trained and subject to testing on procedures associated with

question 1(c).	assessing grid conditions. This training may be evaluated either by written examinations or during performance in the simulator.
(e) If you do not have a formal agreement or protocol with your TSO, describe why you believe you continue to comply with the provisions of GDC 17 as stated above, or describe what actions you intend to take to assure compliance with GDC 17.	VEGP does have a formal agreement with the TSO; thus, this question is not applicable.
(f) If you have an existing formal interconnection agreement or protocol that ensures adequate communication and coordination between the NPP licensee and the TSO, describe whether this agreement or protocol requires that you be promptly notified when the conditions of the surrounding grid could result in degraded voltage (i.e., below TS nominal trip setpoint value requirements; including NPP licensees using allowable value in its TSs) or LOOP after a trip of the reactor unit(s).	As previously stated, VEGP does have a formal agreement with the TSO. Timely notification regarding pre-trip analysis of predicted post-trip voltage that results in below acceptance limits is included. VEGP has guidelines to implement these communications.
(g) Describe the low switchyard voltage conditions that would initiate operation of plant degraded voltage protection.	Plant Support (pg. 8.3.1-18 of FSAR) Two voltage sensing schemes for each Class 1E 4.16-kV bus are employed to initiate the logic signal. One scheme will recognize a loss of voltage, and the other will recognize degraded voltage conditions. Each scheme is provided voltage signals through four

	potential transformers located on each safety related bus. To sense a loss of voltage, four solid state type undervoltage devices are provided. Logic is provided to allow load shedding and tripping of the incoming breaker on two-out-of-four undervoltage logic signals. These devices are set to operate with a time delay of 0.8 s at a minimum of 70 percent of nominal voltage which is below the minimum expected voltage during diesel generator sequencing. The undervoltage relay design meets the applicable requirements of IEEE 279. Four additional undervoltage logic circuits are provided for each safety related bus to recognize degraded voltage conditions. These circuits are set to operate at a minimum of 88.5 percent of nominal voltage with a maximum time delay of 20 s. This setpoint is above the minimum motor starting voltage during normal operation; however, the time delay has been selected to prevent unwanted tripping and undervoltage-induced damage to the safety-related loads. Load shedding and tripping of the incoming breaker is provided by two out-of-four undervoltage logic. A two-out-of-four undervoltage logic set at 93.1 percent of nominal voltage with a time delay of 10 s is also provided to initiate an alarm in the control room to warn the operators of a degraded voltage condition. A Safety Injection Signal (SIS) subsequent to the initiation of this alarm does not separate the auxiliary power system from the offsite power system. Studies have been performed which indicate that at the degraded voltage trip setpoint indicated above, based on the worst case motor thermal damage curve, the permanently connected Class 1E loads will not be damaged. These studies also indicate that adequate voltage is provided to allow starting of the loads. On a loss of offsite power, after a diesel generator has been started and reaches rated voltage and frequency, the generator circuit breaker connecting it to the corresponding 4.16-kV bus closes, energizing that bus and the associated load center transformers. Each diesel generator is designed to accept loads within 9.5 s after receipt of a start signal, and all automatically sequenced loads are connected to the Class 1E bus within 30.5 s thereafter.

2. Use of criteria and methodologies to assess whether the offsite power system will become inoperable as a result of a trip of your NPP.	
(a) Does your NPP's TSO use <u>any analysis tools</u>, an online analytical transmission system studies program, or other equivalent predictive methods to determine the grid conditions that would make the NPP offsite power system inoperable during various contingencies? <u>If available</u> to you, please provide a brief description of the analysis tool that is used by the TSO.	According to RIS 2005-20, the term 'Operable/Operability' is defined in the Technical Specifications and applied ONLY to TS SSCs. Thus, the VEGP offsite power system cannot be referred to as 'operable' or 'inoperable', because the grid is not a TS SSC. Everything that is non-TS is referred to as Functional or non-Functional. Yes. The TSO makes use of analysis tools to predict grid conditions that impact the VEGP offsite power supply. The tools presently used by the TSO are outside the control of the VEGP and include the following: • a grid SCADA system and state estimator • a fully commissioned real-time contingency analysis (RTCA) program • a voltage stability analysis program • a near real time dynamic stability analysis program • bounding analyses produced by Transmission Planning studies. The real time contingency analysis package utilized by TSO includes monitoring / predictive analysis computer programs that can predict VEGP switchyard voltages expected to occur under any single contingency and a number of possible multiple contingencies on the grid, such as: • a trip of the VEGP generators, • a trip of other large generators, or • the loss of important transmission lines. Monitoring / predictive analysis computer program tools operate based on raw data from transducers across the system that is processed through a state estimator to generate a verified current state snapshot of the system. This output is then processed through a contingency analysis program that generates a set of new results with all single elements of the system out of service and a predefined set of multiple contingencies. These results are then screened against a predetermined set of acceptance limits. Postulated scenarios

	which do not meet acceptance limits are alarmed for review by the TSO operator.
(b) Does your NPP's TSO use an analysis tool as the basis for notifying the NPP licensee when such a condition is identified? If not, how does the TSO determine if conditions on the grid warrant NPP licensee notification?	Yes. The TSO uses the above analysis tools, in conjunction with procedures, as the basis for determining when conditions warrant VEGP notification. Refer to the response to question 1(b). Notifications are made based on grid conditions being outside of predefined procedure requirements or based on unsatisfactory monitoring / predictive analysis computer program tool results (contingency analysis).
(c) If your TSO uses an analysis tool, would the analysis tool identify a condition in which a trip of the NPP would result in switchyard voltages (immediate and/or long-term) falling below TS nominal trip setpoint value requirements (including NPP licensees using allowable value in its TSs) and consequent actuation of plant degraded voltage protection? If not, discuss how such a condition would be identified on the grid.	Yes. Procedures and monitoring / predictive analysis tools are in place for this purpose in both planning and real time environments. The TSO analysis tools, in conjunction with VEGP plant analysis, identify conditions which would actuate the VEGP degraded voltage protection logic and initiate separation from an offsite power source upon a trip of one or both VEGP units.
(d) If your TSO uses an analysis tool, how frequently does the analysis tool program update?	The state estimator and contingency analysis application tools run continuously with each new case taking approximately five minutes to solve.
(e) Provide details of analysis tool-identified contingency conditions that would trigger an NPP licensee notification from the TSO.	The notification from the TSO is based upon either actual switchyard voltages or RTCA grid conditions RTCA grid conditions are based on predicted post-trip contingency switchyard voltages given any single elements of the system out of service or a predefined set of multiple contingency conditions.

	The analyzed contingencies that are evaluated against the VEGP voltage requirements include: loss of any other single generator or selected multiple generators, loss of a any transmission line or selected multiple significant transmission lines, loss of a capacitor bank, or loss of the VEGP (one or both units). If the VEGP voltage requirement cannot be met under any of the contingencies considered, the VEGP licensee will be notified. The same minimum required switchyard voltage limit bases that are used in the grid operating procedures are also used in the predictive analysis computer programs. Refer to the response to question 1(e).
(f) If an interface agreement exists between the TSO and the NPP licensee, does it require that the NPP licensee be notified of periods when the TSO is <u>unable to determine</u> if offsite power voltage and capacity could be inadequate? If so, <u>how</u> does the NPP licensee determine that the offsite power would <u>remain operable</u> when such a notification is received?	According to RIS 2005-20, the term 'Operable/Operability' is defined in the Technical Specifications and applied ONLY to TS SSCs. Thus, the VEGP offsite power system cannot be referred to as 'operable' or 'inoperable', because the grid is not a TS SSC. Everything that is non-TS is referred to as Functional or non-Functional. Yes. The agreement does specifically require VEGP notification for periods of time when analysis tools are unavailable and grid conditions are indeterminable. The VEGP Final Safety Analysis Report (FSAR), sections 8.2.2.2, "VEGP Voltage Operating Range" and 8.2.2.3, "VEGP Transient Stability" define the established licensing basis for the voltage operating range for VEGP. An abnormal operating procedure is in place that includes operator actions for degraded grid conditions. Based on the licensing basis and the abnormal operating procedure, the TSO notifies VEGP any time that the grid is one contingency away from degraded grid conditions as defined in FSAR 8.2.2.3, although this condition does not require notification because the grid is still stable and if necessary, the plant can still be safely shutdown. The degraded voltage setpoints specified in the VEGP Technical Specifications were established so that

	electrical loads essential for the safe shutdown of the plant under normal and emergency conditions remain capable of performing their functions. Therefore, this condition does not meet the reporting criteria of 10 CFR 50.72. However, if VEGP reaches a degraded grid voltage setpoint, then the NRC would be notified of this condition in accordance with 10 CFR 50.72. VEGP follows Technical Specifications requirements when notified by the TSO that analysis tools are unavailable and grid conditions are indeterminable. The VEGP operates within the bounds of its long term stability analyses and that ensures that the VEGP meets design and Technical Specification requirements.
(g) After an unscheduled inadvertent trip of the NPP, are the resultant switchyard voltages verified by procedure to be bounded by the voltages predicted by the analysis tool?	No. For post event analysis, the TSO does not verify by procedure the switchyard voltages are bounded by the analysis tools. Nonetheless, such analyses have been performed on a case by case basis to validate predicted results. Also, the system operator monitors both actual conditions and contingency (predictions) values and identifies problems found.
(h) If an analysis tool is not available to the NPP licensee's TSO, do you know if there are any plans for the TSO to obtain one? If so, when?	Not applicable to VEGP, since TSO analysis tools are presently in use.
(i) If an analysis tool is not available, does your TSO perform periodic studies to verify that adequate offsite power capability, including adequate NPP post-trip switchyard voltages (immediate and/or long-term), will be available to the NPP licensee over the projected timeframe of the study? (a) Are the key assumptions and	Not applicable to VEGP, since TSO analysis tools are presently in use.

parameters of these periodic studies translated into TSO guidance to ensure that the transmission system is operated within the bounds of the analyses? (b) If the bounds of the analyses are exceeded, does this condition trigger the notification provisions discussed in question 1 above?	
(j) If your TSO does not use, or you do not have access to the results of an analysis tool, or your TSO does not perform and make available to you periodic studies that determine the adequacy of offsite power capability, please describe why you believe you comply with the provisions of GDC 17 as stated above, or describe what compensatory actions you intend to take to ensure that the offsite power system will be sufficiently reliable and remain operable with high probability following a trip of your NPP.	Not applicable to VEGP, since the TSO utilizes analysis tools and communicates the applicable results / conclusions to the VEGP.

3. Use of criteria and methodologies to assess whether the NPP's offsite power system and safety-related components will remain operable when switchyard voltages are inadequate.	
(a) If the TSO notifies the NPP operator that • a trip of the NPP, or • the loss of the most critical transmission line or • the largest supply to the grid would result in switchyard voltages (immediate and/or long-term) below TS nominal trip setpoint value requirements (including NPP licensees using allowable value in its TSs) and would actuate plant degraded voltage protection, is the NPP offsite power system declared inoperable under the plant TSs? If not, why not?	According to RIS 2005-20, the term 'Operable/Operability' is defined in the Technical Specifications (TS) and applies ONLY to TS SSCs. A TS SSC is Operable or has Operability when it is capable of performing its specified safety functions and when all necessary attendant instrumentation, controls, normal or emergency electrical power, cooling and seal water, lubrication, and other auxiliary equipment that are required for the system subsystem, train, component, or device to perform its specified safety function(s) are also capable of performing their related support functions. It is not clear from this question whether the "offsite power system" refers to the grid or the offsite circuits required Operable by the VEGP TS. The grid is not a TS SSC and, as such, the term Operable does not apply in accordance with RIS 2005-20. Therefore, our response refers to the offsite circuits required Operable by the VEGP TS. The VEGP Technical Specifications (LCO 3.8.1) require, in part, the Operability of "Two qualified circuits between the offsite transmission network and the onsite Class 1E AC Electrical Power Distribution System…." The Bases for LCO 3.8.1 define the two required offsite circuits as follows: Offsite circuit #1 and #2 each consist of a Reserve Auxiliary Transformer (RAT) fed from separate lines from the 230 kV switchyard. Each RAT can supply either 4160V ESF bus. In addition to these circuits, there is also a 13.8/4.16 kV Standby Auxiliary Transformer (SAT) which may be manually connected to supply power to any one of the 4.16 kV ESF buses for Units 1 and 2 in place of any RAT. The SAT receives power via the Georgia Power Company Plant Wilson switchyard. The Bases for LCO 3.8.1 state that each offsite circuit must be capable of maintaining rated frequency and voltage, and accepting required loads during an accident, while connected to the Engineered Safety Feature (ESF) buses. The VEGP Power Quality Guide summarizes the requirements of the offsite power

	system for VEGP. It also delineates guidelines for use in Southern Electric System transmission planning and operational activities to ensure the safe and reliable operation of VEGP. These guidelines are designed to achieve the following: a. Meet the power supply requirements of the safety-related (Class 1E) loads during both normal and accident conditions without reliance on the offsite power supply systems (i.e., diesel generators). b. Meet the requirements of all station service loads during normal conditions including when a unit is off-line. This will ensure reliable plant operation during normal, startup and shutdown conditions. The VEGP Power Quality Guide states given the expected configurations of the transmission system, a single contingency event should not result in inadequate voltage at the Class 1E loads. The contingencies evaluated include the sudden loss of a transmission element and the sudden loss of a large generating unit. Under these severe contingencies, the 230-kV bus voltage should not be less than 230-kV(100%) or greater than 242-kV(105%). SNC is a part of a vertically integrated system of Southern Company. We have a formal agreement with the TSO to operate the grid within a required voltage range. Therefore, there is a mutual interest to maintain adequate grid voltage. If it was predicted that a certain scenario could potentially impact the grid, then VEGP along with the TSO would take compensatory measures to maintain grid voltage. Therefore, the offsite circuits required by the TS would remain Operable because they would remain capable of accepting the required loads under accident conditions without challenging degraded voltage protection. Furthermore, if both offsite circuits were to be declared inoperable, the TS would require the unit to be shut down within 30 hours or less thereby potentially causing further grid degradation which could challenge degraded voltage protection.
(b) If onsite safety-related equipment (e.g., emergency diesel generators or safety-related motors) is lost when subjected to a <u>double sequencing</u> (LOCA with delayed LOOP event) as a result of the <u>anticipated</u>	No. Double sequencing such as might occur as the result of a LOCA followed by a delayed LOOP is not in the VEGP licensing basis and VEGP is not designed or analyzed for double sequencing scenarios. However, as discussed in FSAR section 8.3.1, the plant design is such that once load sequencing has been completed, or if the diesel generator

system performance and is incapable of performing its safety functions as a result of responding to an emergency actuation signal during this condition, is the equipment considered inoperable? If not, why not?	breaker opens before all the loads are sequenced onto the bus, the load shed and resequence capability is automatically reinstated for an undervoltage sensed at the 4.16-kV Class 1E bus. Logic has been provided that prevents more than three undervoltage resequence of the required loads. The third undervoltage signal will initiate a load shed only. Reinstatement of sequencing can be accomplished by manually resetting a timer located at the sequencer. This limitation is provided to prevent automatically exceeding the manufacturer's recommendations concerning motor start capability of two successive starts within a 2-h period. If onsite safety related equipment was lost as a result of multiple sequencing, then the equipment would be declared inoperable (as governed by plant Technical Specifications).
(c) Describe your evaluation of onsite safety-related equipment to determine whether it will operate as designed during the condition described in question 3(b).	Not applicable.
(d) If the NPP licensee is notified by the TSO of other grid conditions that may impair the capability or availability of offsite power, are any plant TS action statements entered? If so, please identify them.	No. Technical Specifications are not entered for grid conditions that might occur. Refer to the response to question 3(a).
(e) If you believe your plant TSs do not require you to declare your offsite power system or safety-related equipment inoperable in any of these circumstances, explain why you believe you comply with the provisions of GDC 17 and your plant TSs, or describe what compensatory actions you intend to take to ensure that the offsite power system and safety-	VEGP was designed and licensed to the requirements of GDC 17. As stated in RIS 2005-20, "Operability Determination Process," Appendix C.1, "Relationship Between the General Design Criteria and the Technical Specifications," "The general design criteria (GDC) and the TSs differ in that the GDC specify requirements for the design of nuclear power reactors, whereas the TSs specify requirements for the operation of nuclear reactors." A degraded condition that would result in the offsite circuits or other TS SSCs to be declared inoperable is not a failure to meet GDC17, because, as long as the affected TS SSC is restored to Operability, the design is not changed and compliance with GDC 17 is maintained. Furthermore, the stipulation that safety related components

related components will remain operable when switchyard voltages are inadequate.	must remain Operable when switchyard voltages are inadequate is inconsistent with the TS definition of Operability which states that the component is Operable provided the component has either normal or emergency power. Even an actual offsite circuit undervoltage condition would not result in TS SSCs being inoperable as long as the components were capable of being powered from the emergency power source.
(f) Describe if and how NPP operators are trained and tested on the compensatory actions mentioned in your answers to questions 3(a) through (e).	Training associated with Technical Specifications and electrical power distribution systems associated with on and offsite power sources, emergency diesel generators, Plant Wilson, and safety system sequencer is embedded in the initial and continuing training programs. This training includes compensatory actions including use of Plant Wilson and the Standby Auxiliary Transformer. Evaluation of plant conditions is discussed in relation to available off-site power sources and industry operating experience is included. Training associated with the plant procedures associated with degraded grid and loss of off-site power is performed in the classroom and simulator. Selected specific tasks relating to the restoration of power on site have been included as "job Performance Measures". Additionally, the Continuing training program discussed the Power Quality Guide for VEGP and system voltage control during segment 3 of 2005. Additionally the following Industry OE relating to power supply problems was covered in the continuing training program: SEN 256 Catastrophic Main Transformer Failure Resulting in Fire and Unplanned Outage (Turkey Point) H-05-15 Main Transformer Fire (Hatch) NRC 41800 Turkey Point Transformer Fire/NOUE OE 18583 Palo Verde Units Trip Offline Due to Grid Disturbance OE 17846 Shutdown of North Anna Unit 1 Due To Main Transformer Degradation Testing is performed using simulator evaluations and written examinations.

4. Use of criteria and methodologies to assess whether the offsite power system will remain operable following a trip of your NPP.	
(a) Do the NPP operators have any guidance or procedures in plant TS bases sections, the final safety analysis report, or plant procedures regarding situations in which the condition of plant-controlled or -monitored equipment (e.g., voltage regulators, auto tap changing transformers, capacitors, static VAR compensators, main generator voltage regulators) can adversely affect the operability of the NPP offsite power system? If so, describe how the operators are trained and tested on the guidance and procedures.	Yes. Operations personnel are trained and tested and have procedural guidance covering the protocol of when, and how to notify the Transmission System Operator (TSO), PCC/GCC/TMC for configurations identified as being GRID related in Unit Operating Procedures (UOPs), System Operating Procedures (SOPs), Abnormal Operating Procedures (AOPs), Emergency Operating Procedures (EOPs), and Annunciator Response Procedures (ARPs).
(b) If your TS bases sections, the final safety analysis report, and plant procedures do not provide guidance regarding situations in which the condition of plant-controlled or -monitored equipment can adversely affect the operability of the NPP offsite power system, explain why you believe you comply with the provisions of GDC 17 and the plant TSs, or describe what actions you intend to take to provide such guidance or procedures.	Not applicable.

Use of NPP licensee/TSO protocols and analysis tool by TSOs to assist NPP licensees in monitoring grid conditions for consideration in maintenance risk assessments The Maintenance Rule (10 CFR 50.65(a)(4)) requires that licensees assess and manage the increase in risk that may result from proposed maintenance activities before performing them.	
5. Performance of grid reliability evaluations as part of the maintenance risk assessments required by 10 CFR 50.65(a)(4).	
(a) Is a quantitative or qualitative grid reliability evaluation performed at your NPP as part of the maintenance risk assessment required by 10 CFR 50.65(a)(4) before performing grid-risk-sensitive maintenance activities? This includes surveillances, post-maintenance testing, and preventive and corrective maintenance that could increase the probability of a plant trip or LOOP or impact LOOP or SBO coping capability, for example, before taking a risk-significant piece of equipment (such as an EDG, a battery, a steam-driven pump, an alternate AC power source) out-of-service?	Yes. 10CFR 50.65(a)(4) requires performance of a risk assessment prior to maintenance activities. Maintenance is defined broadly and would include surveillances, post maintenance testing, and preventive and corrective maintenance. Relative to increasing the initiating event frequency, such as the frequency of a plant trip, the industry guidance, NUMARC 93-01 (endorsed without exception by NRC Regulatory Guide 1.182, states Section 11.3.2.2 that the following should be considered: • The likelihood of an initiating event or accident that would require the performance of the affected safety function. • The likelihood that the maintenance activity will significantly increase the frequency of a risk-significant initiating event (e.g., by an order of magnitude or more as determined by each licensee, consistent with its obligation to manage maintenance-related risk). The first bullet above is generally met by using the PRA and associated configuration risk management tools, which explicitly consider initiating event frequencies for transients and accidents. LOOP sequences are important elements of PRAs, and are thoroughly modeled and assessed during plant peer reviews. Risk management personnel are sensitized to the importance of these sequences. The second bullet clarifies that if a maintenance activity is expected to increase initiating-event likelihood by an order of magnitude, then it should be considered in the assessment. Otherwise, the baseline initiating event frequencies may be used. These

	frequencies are based on generic data updated with plant specific data, and would take into account the plant specific LOOP and trip frequencies.
(b) Is grid status monitored by some means for the duration of the grid-risk-sensitive maintenance to confirm the continued validity of the risk assessment and is risk reassessed when warranted? If not, how is the risk assessed during grid-risk-sensitive maintenance?	Yes. NUMARC 93-01 does not define "grid-risk-sensitive maintenance", so there is no unique guidance for such activities. The following guidance is included in NUMARC 93-01 Section 11.3.2.8: Emergent conditions may result in the need for action prior to conduct of the assessment, or could change the conditions of a previously performed assessment. Examples include plant configuration or mode changes, additional SSCs out of service due to failures, or significant changes in external conditions (weather, offsite power availability). The following guidance applies to this situation: • The safety assessment should be performed (or re-evaluated) to address the changed plant conditions on a reasonable schedule commensurate with the safety significance of the condition. Based on the results of the assessment, ongoing or planned maintenance activities may need to be suspended or rescheduled, and SSCs may need to be returned to service. • Performance (or re-evaluation) of the assessment should not interfere with, or delay, the operator and/or maintenance crew from taking timely actions to restore the equipment to service or take compensatory actions. • If the plant configuration is restored prior to conducting or re-evaluating the assessment, the assessment need not be conducted, or re-evaluated if already performed. Note that emergent conditions are defined as "significant" changes to conditions assumed in the original risk assessment. How the plant determines whether grid conditions are changed, or whether these changes are significant enough to warrant re-assessment, are not prescribed in the NRC endorsed guidance. Plant procedures would address these issues.

(c) Is there a significant variation in the stress on the grid in the vicinity of your NPP site caused by seasonal loads or maintenance activities associated with critical transmission elements? Is there a seasonal variation (or the potential for a seasonal variation) in the LOOP frequency in the local transmission region? If the answer to either question is yes, discuss the time of year when the variations occur and their magnitude.	Yes. Stress on the transmission grid as measured by loading in the Southern Control Area is seasonal with the peak loads typically occurring during the summer months (typically June through August). The all time instantaneous peak load for the Southern Control Area of 44,167 MW occurred on July 26, 2005. By contrast, the all time instantaneous peak load for winter of 39,192 MW that occurred on 1/24/2003 was roughly 89% of the summer peak. Shoulder periods in the fall and spring typically have daily peak loads as low as 25,000 MW (roughly 57% of the all time peak) or less. Maintenance on generating plants and transmission equipment is also seasonal. It typically occurs during the shoulder months in spring and fall when control area loads are low and equipment can be removed from service without adversely impacting grid operations. All scheduled outages are registered with Southern Transmission and examined under contingency conditions to ensure they will not impact grid reliability prior to their occurrence. Although these peak load and maintenance periods do stress the transmission grid, there is no time when the system is not operated in a reliable manner under first contingency criteria. VEGP voltages and other critical parameters are monitored continuously during these periods to assure that no violation of Power Quality Guide requirements occur. All requirements of BPO-2 and other agreements between Southern Transmission and the VEGP are met during peak load and maintenance periods in the same manner as they are at all other times.
(d) Are known time-related variations in the probability of a LOOP at your plant site considered in the grid-risk-sensitive maintenance evaluation? If not, what is your basis for not considering them?	VEGP's Configuration Risk Management (CRM) program procedures require increased controls on maintenance during the grid risk sensitive conditions. Risk is usually not calculated solely due to changes in grid reliability (i.e., assessed in conjunction with plant equipment being out of service). According to preliminary work by the WOG, there is no statistically significant time-of-day or day-of-week variation in the frequency of LOOP at nuclear power plants. This is largely a result of a small number of LOOP events. The analysis has yet to normalize factors such as:

	• most tasks are done on the day-shift, and • most tasks are performed from Monday to Friday. Thus, the risk assessment for the purposes of 10CFR50.65(a)(4) does not vary the LOOP frequency strictly as a function of "time-related" issues.
(e) Do you have contacts with the TSO to determine current and anticipated grid conditions as part of the grid reliability evaluation performed before conducting grid-risk-sensitive maintenance activities?	Yes. TSO relies on Contingency Analysis tools for evaluating requested transmission and generator scheduled outages. Typically, the TSO has the ability to take snapshots of the State Estimator program output and modify today's peak load snapshot to study tomorrow's requested outages. Obviously, the TSO can provide commentaries on grid conditions at anytime maintenance tasks are underway. The dynamic nature of loads and active generation make prediction of grid conditions days or weeks ahead of time uncertain, however, such studies form the base cases from which additional analyses are performed as updated information is received.
(f) Describe any formal agreement or protocol that you have with your TSO to assure that you are promptly alerted to a worsening grid condition that may emerge during a maintenance activity.	Notification occurs whether or not maintenance is on-going. The Power Quality Guide lists criteria for notification in the event of degraded grid conditions.
(g) Do you contact your TSO periodically for the duration of the grid-risk-sensitive maintenance activities?	The Southern Company Electric System Transmission Power Quality Guide for VEGP states that VEGP Operators have the responsibility to notify Transmission System Operators when they become aware of conditions that could jeopardize plant safety and/or the electrical grid reliability. The specific actions are governed by system and plant procedures. For example, the plant procedure for an extended Emergency Diesel Generator Allowed Out of Service Time specifies the notification of the Transmission System Operator prior to removing the Emergency Diesel Generator from service that any maintenance must be carefully evaluated and approved by VEGP Management prior to release for work to ensure offsite power is not jeopardized. During the extended Emergency Diesel Generator Allowed Out of Service Time, VEGP operators are to

	periodically verify with the Transmission System Operator that no maintenance is in progress in the VEGP high or low voltage switchyards that would challenge off site power to the VEGP units and that no impending extremely severe weather or system instabilities as defined in the procedure exist.
(h) If you have a formal agreement or protocol with your TSO, describe how NPP operators and maintenance personnel are trained and tested on this formal agreement or protocol.	The VEGP Power Quality Guide outlines typical responsibilities of the various organizations involved in maintaining the VEGP/grid interface. Operator training at VEGP is based upon plant procedures. Operator training programs have degraded and loss of grid events embedded in the program. Operations personnel are trained and have procedural guidance covering notifying the Transmission System Operator for certain grid-related configurations. A discussion of the Power Quality Guide for VEGP has been included in the continuing training program and plant procedure changes are evaluated for training impact and added to training committee agendas for evaluation. Operator training is evaluated either by written examinations or during performance in the simulator. Work Control personnel are familiar with the Power Quality Guide, but are currently not formally trained on the Power Quality Guide.
(i) If your grid reliability evaluation, performed as part of the maintenance risk assessment required by 10 CFR 50.65(a)(4), does not consider or rely on some arrangement for communication with the TSO, explain why you believe you comply with 10 CFR 50.65(a)(4).	Per the VEGP Maintenance Rule Scoping Manual concerning the Division of Responsibility of Switchyard Equipment Under the Maintenance Rule, work to be performed by the Transmission Maintenance Center (TMC) on switchyard equipment which might affect either of the units is conveyed to the VEGP Work Week Coordinators via E-mail or a telephone call prior to the work being performed in order to obtain an assessment on plant operation. The maintenance is then included in the plant work control risk assessment process. Per VEGP Procedure 00354-C, "Maintenance Scheduling" a qualitative safety assessment is performed.
(j) If risk is not assessed (when warranted) based on continuing communication with the TSO throughout the duration of grid-	Plant configuration maintenance and PRA personnel are well aware of the importance of LOOP sequences and how they are impacted by plant configuration. The

risk-sensitive maintenance activities, explain why you believe you have effectively implemented the relevant provisions of the endorsed industry guidance associated with the maintenance rule.	communication with the TSO, including the associated process, is a plant-specific and situation-specific attribute. 10CFR50.65(a)(4) is a risk informed performance based rule; it is not intended to be prescriptive with regard to "one size fits all" risk assessment and management actions. The point of risk assessment under 10CFR50.65(a)(4) is not intended to be a numerical exercise but rather to highlight the condition of the plant and ensure the plant staff is aware of the safety implications of maintenance work so that the proper risk management actions can be taken. Once the implications of the work are known, well rehearsed risk management practices can be implemented. Sometimes, the risk management action is to defer the work to another time.
(k) With respect to questions 5(i) and 5(j), you may, as an alternative, describe what actions you intend to take to ensure that the increase in risk that may result from proposed grid-risk-sensitive activities is assessed before and during grid-risk-sensitive maintenance activities, respectively.	No alternative actions.

6. Use of risk assessment results, including the results of grid reliability evaluations, in managing maintenance risk, as required by 10 CFR 50.65(a)(4).	
(a) Does the TSO coordinate transmission system maintenance activities that can have an impact on the NPP operation with the NPP operator?	Yes. VEGP offsite power requirements are considered in all planned transmission outage assessments. Requests identified as potentially impacting VEGP requirements are coordinated directly with VEGP.
(b) Do you coordinate NPP maintenance activities that can have an impact on the transmission system with the TSO?	Yes. For the last several years on an annual basis, meetings between VEGP and the Georgia Power Company Transmission Maintenance Center have been held to discuss

	how maintenance and testing of emergency power systems or other equipment important to plant safety and grid maintenance and testing are coordinated between the plant and grid operators to minimize nuclear safety risks. For example, in 2005, a meeting was held between VEGP, Plant Wilson, and Georgia Power Company Transmission Maintenance Center (TMC) representatives to discuss the VEGP 2005 work plan for switchyard and large power transformer maintenance, tests, inspections and repairs. The meeting emphasized a proposed work planning schedule in relation to minimizing nuclear plant risk particularly during refueling outage periods. Also discussed were offsite power source and 230KV bus testing and included industry operating experience concerning breaker and relay testing. More frequent meetings are being scheduled for 2006.
(c) Do you consider and implement, if warranted, the rescheduling of grid-risk-sensitive maintenance activities (activities that could (i) increase the likelihood of a plant trip, (ii) increase LOOP probability, or (iii) reduce LOOP or SBO coping capability) under existing, imminent, or worsening degraded grid reliability conditions?	Yes. Maintenance that has an associated trip risk is performed when the on-shift VEGP personnel conclude that the risk of the work is small compared to the safety benefit. When the maintenance work is done in response to a Technical Specification, the risk assessment is informative for sequencing tasks, but not controlling. Maintenance that has an associated trip risk would be activities such as the following: • RPS calibrations, • ATWS, • CRD testing, • main turbine control testing or • switchyard breaker cycling. Emergent issues are managed to maintain a high level of plant safety. At times appropriate management means rescheduling activities, at other times the shift-supervisor will order the on-shift VEGP staff to back-out of the task and restore the safety-related function of the equipment. It is important that stations know the detail and content of maintenance activities so that an informed assessment can be completed.
(d) If there is an overriding need to	

perform grid-risk-sensitive maintenance activities under existing or imminent conditions of degraded grid reliability, or continue grid-risk-sensitive maintenance when grid conditions worsen, do you implement appropriate risk management actions? If so, describe the actions that you would take. (These actions could include alternate equipment protection and compensatory measures to limit or minimize risk.)	Yes. Same response as 6(c). TSO would take appropriate actions to ensure the required voltage would be maintained per the Power Quality Guide.
(e) Describe the actions associated with questions 6(a) through 6(d) above that would be taken, state whether each action is governed by documented procedures and identify the procedures, and explain why these actions are effective and will be consistently accomplished.	Scheduled maintenance activities on the transmission grid are entered into the Equipment Outage Scheduler (EOS) and assessed across the 0 to 13 month Operational Planning horizon for their impact on transmission system reliability. All scheduled outages are included in the base case developed each day by the TSO and assessments are performed to identify adverse impacts on the VEGP. As documented in the Power Quality Guide for VEGP, section 6.4, the TSO is responsible for maintenance activities in the VEGP substation. These activities are performed by the Georgia Power Company (GPC) Middle Georgia Transmission Maintenance Center (TMC). The GPC TMC is responsible for : ▪ Maintaining access control to the VEGP switchyards, ▪ Performance of corrective maintenance, preventive maintenance surveillance inspections and testing of all substation equipment including the switchyard house and yard lights. ▪ In conjunction with VEGP, establishing guidelines for the use of vehicles and heavy equipment within the switchyard area to ensure operation, movement, or use of such equipment will be performed in a manner to reduce the possibility of loss of power to plant systems or switchyards. ▪ Providing status of corrective maintenance items to VEGP. ▪ Observing the guidelines stated in Appendix A (work responsibilities for VEGP and Plant Wilson switchyards)

	These responsibilities are documented in the Power Quality Guide for VEGP, section 6.4. As per the requirements of Appendix A of the VEGP Power Quality Guides the GPC TMC provides a yearly forecast of scheduled equipment maintenance and provides input for outage related activities to VEGP three months in advance of scheduled outages. Maintenance at the VEGP switchyard is performed as per the requirements of the Georgia Power Company Procedures for the Maintenance of Substation Equipment. Regarding the coordination and communication of grid-related activities with the TSO, VEGP Operations personnel are trained and have procedural guidance covering when, and how to notify the Transmission System Operator (TSO), PCC/GCC/TMC for configurations identified as being GRID related in Unit Operating Procedures (UOPs), System Operating Procedures (SOPs), Abnormal Operating Procedures (AOPs), Emergency Operating Procedures (EOPs), and Annunciator Response Procedures (ARPs). Regarding the scheduling of grid-sensitive maintenance activities, the major switching or pre-planned maintenance that occurs in the electrical switchyard is approved through the Power Coordination Center and is communicated to designated VEGP staff members. The maintenance is then included in the plant work control risk assessment process. Per VEGP Procedure 00354-C, "Maintenance Scheduling" a qualitative safety assessment using the following guidelines is performed and a summary of the results are included in the POD. These guidelines establish an envelope which bounds out of service equipment within the assumptions of the Maintenance Rule performance criteria, Technical Specifications, and accident analyses. • Avoid maintenance on the protected train. • Avoid removing from service multiple safety-significant components in the same train at the same time. • Place standby components in service, where available, to perform the function of equipment removed from service.

	• Maintain out of service hours within the Maintenance Rule performance criteria and evaluate the impact of these out of service hours on NRC performance indicators.) • Avoid maintenance on sensitive or critical equipment during periods of severe weather forecasts, grid degradation, or system alert conditions. The qualitative safety assessment should also consider the effects of work, plant conditions, and weather conditions that are judged to have a significant impact on the probability of a reactor trip, turbine trip, or loss of off-site power (e.g., tornado watch, hurricane forecast, high risk switchyard work, MSIV/MFIV/EHC work, etc.).
(f) Describe how NPP operators and maintenance personnel are trained and tested to assure they can accomplish the actions described in your answers to question 6(e).	There currently is no formal training that addresses the concerns of this question.
(g) If there is no effective coordination between the NPP operator and the TSO regarding transmission system maintenance or NPP maintenance activities, please explain why you believe you comply with the provisions of 10 CFR 50.65(a)(4).	Not applicable. There is effective coordination between the VEGP operator and the TSO regarding transmission system maintenance or VEGP maintenance activities. Such coordination is in accordance with the agreements.
(h) If you do not consider and effectively implement appropriate risk management actions during the conditions described above, explain why you believe you effectively addressed the relevant provisions of the associated NRC-endorsed industry guidance.	Not applicable. As discussed in questions 6(a)—6(d), VEGP effectively implements appropriate risk management actions.
(i) You may, as an alternative to questions	

6(g) and 6(h) describe what actions you intend to take to ensure that the increase in risk that may result from grid-risk-sensitive maintenance activities is managed in accordance with 10 CFR 50.65(a)(4).	Not applicable.

Offsite power restoration procedures in accordance with 10 CFR 50.63 as developed in Section 2 of RG 1.155 Pursuant to 10 CFR 50.63, the NRC requires that each NPP licensed to operate be able to withstand an SBO for a specified duration and recover from the SBO. NRC RG 1.155 gives licensees guidance on developing their approaches for complying with 10 CFR 50.63.	
7. Procedures for identifying local power sources[3] that could be made available to resupply your plant following a LOOP event. Note: Section 2, "Offsite Power," of RG 1.155 (ADAMS Accession No. ML003740034) states: Procedures should include the actions necessary to restore offsite power and use nearby power sources when offsite power is unavailable. As a minimum, the following potential causes for loss of offsite power should be considered: - Grid under-voltage and collapse - Weather-induced power loss - Preferred power distribution system faults that could result in the loss of normal power to essential switchgear buses	
(a) Briefly describe any agreement made with the TSO to identify local power sources that could be made available to re-supply power to your plant following a LOOP event.	The TSO will utilize the best sources available for specific events to restore offsite power and to determine the specific power sources and paths, since there is no way to predict the extent and characteristics of a specific blackout. The TSO has many options available to restore offsite power and would not be limited to identified local power sources. An agreement is in place to restore power to the VEGP on a priority basis. In addition, a grid operations procedure provides detailed instructions for prompt VEGP offsite power restoration. The procedure specifies various means of accomplishing the required power restoration. Grid operators train on this procedure per NERC training requirements.

[3] This includes items such as nearby or onsite gas turbine generators, portable generators, hydro generators, and black-start fossil power plants.

(b) Are your NPP operators trained and tested on identifying and using local power sources to resupply your plant following a LOOP event? If so, describe how.	Yes. VEGP has EOPs for LOOP and offsite power recovery; VEGP operators are trained and tested on these procedures. AX3BB02-00001 Power Quality Guide for VEGP summarizes the requirements of the offsite power system. It also delineates guidelines for use in Southern Electric System transmission planning and operational activities to ensure the safe and reliable operation of VEGP. This guideline includes the system power supplies that can be used to supply VEGP in the event of a LOSP. VEGP personnel are trained on the emergency diesel generators (Operations CL-11), and procedures (CL-37 & CL-60). Additionally simulator scenarios have been developed for practical exercises for the response to degraded grid conditions, the loss of offsite power, and restoration of power following a loss of offsite power. System Operators are trained to be able to align the Plant Wilson switchyard, operate the Diesel Generator and operate the Combustion Turbine in the event of a "System Blackout" at VEGP. This ensures Plant Wilson will be able to supply station service for Plant Wilson, supply power to the VEGP Standby Auxiliary Transformer (SAT) by means of the 13.8 kv underground feeder circuit. Testing is provided by written examinations, simulator evaluations and job performance measures.
(c) If you have not established an agreement with your plant's TSO to identify local power sources that could be made available to resupply power to your plant following a LOOP event, explain why you believe you comply with the provisions of 10 CFR 50.63, or describe what actions you intend to take to establish compliance.	Not applicable; an agreement exists. The TSO has the responsibility to restore offsite power to the VEGP as a priority. The TSO will utilize the best sources available for specific events to restore offsite power and to determine the specific power sources and paths, since there is no way to predict the extent and characteristics of a specific blackout. The TSO has many options available to restore offsite power and would not be limited to identified local power sources.

Losses of offsite power caused by grid failures at a frequency of equal to or greater than once in 20 site-years in accordance with Table 4 of Regulatory Guide 1.155 for complying with 10 CFR 50.63 Pursuant to 10 CFR 50.63, the NRC requires that each NPP licensed to operate be able to withstand an SBO for a specified duration and recover from the SBO. NRC RG 1.155 gives licensees guidance on developing their approaches for complying with 10 CFR 50.63.
8. Maintaining SBO coping capabilities in accordance with 10 CFR 50.63.

(a) Has your NPP experienced a total LOOP caused by grid failure since the plant's coping duration was initially determined under 10 CFR 50.63?	No.
(b) If so, have you reevaluated the NPP using the guidance in Table 4 of RG 1.155 to determine if your NPP should be assigned to the P3 offsite power design characteristic group?	Not applicable.
(c) If so, what were the results of this reevaluation, and did the initially determined coping duration for the NPP need to be adjusted?	Not applicable.
(d) If your NPP has experienced a total LOOP caused by grid failure since the plant's coping duration was initially determined under 10 CFR 50.63 and has not been reevaluated using the guidance in Table 4 of RG 1.155, explain why you believe you comply with the provisions of 10 CFR 50.63 as stated above, or describe	Not applicable.

what actions you intend to take to ensure that the NPP maintains its SBO coping capabilities in accordance with 10 CFR 50.63.	

Actions to ensure compliance	
9. If you determine that any action is warranted to bring your NPP into compliance with NRC regulatory requirements, including TSs, GDC 17, 10 CFR 50.65(a)(4), 10 CFR 50.63, 10 CFR 55.59 or 10 CFR 50.120, describe the schedule for implementing it.	Not applicable.