

DUKE POWER COMPANY
OCONEE NUCLEAR STATION
ATTACHMENT 1
TECHNICAL SPECIFICATIONS

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- (c) If all 230 kV transmission lines are lost, restore at least one of the inoperable 230kV offsite sources to operable status within 24 hours or be in at least hot standby within the next 6 hours. With only one offsite source restored, restore at least two 230kV offsite circuits to operable status within 72 hours from time of initial loss or be in at least hot standby within the next 6 hours and in cold shutdown within the following 30 hours.
- (d) After loss of all 230 kV transmission lines, this information shall be reported within 24 hours to the U.S. NRC Regional Office, Region II. If the outage is expected to exceed 24 hours, a written report shall be submitted detailing the circumstances of the outage and the estimated time to return the 230 kV transmission lines to operating condition.

3.7.6 In the event that all conditions of Specification 3.7.1 are met, and planned tests or maintenance are required which will make both Keowee units unavailable, the 4160 volt standby buses shall first be energized by a Lee gas turbine through the 100 kV transmission circuit and shall be separate from the system grid and offsite non-safety-related loads. The reactor shall then be permitted to remain critical for periods not to exceed 72 hours with both Keowee units unavailable.

Prior to hot restart of a reactor from a tripped condition, the causes and the effects of the shutdown shall be established and analyzed. A restart will be permitted if the cause of such trips is the result of error or of minor equipment malfunctions. A restart will not be permitted if the trip is a result of system transients or valid protection system action.

3.7.7 In the event that all conditions of Specification 3.7.1 are met except that both Keowee hydro units become unavailable for unplanned reasons, the reactor shall be permitted to remain critical for periods not to exceed 24 hours provided the 4160 volt standby buses are energized within 1 hour by the Lee gas turbine through the 100 kV transmission circuit and it shall be separate from the system grid and all offsite non-safety-related loads.

Prior to hot restart of a reactor from a tripped condition, the causes and the effects of the shutdown shall be established and analyzed. A restart will be permitted if the cause of such trips is the result of error or of minor equipment malfunctions. A restart will not be permitted if the trip is a result of system transients or valid protection system action.

3.7.8 In the event that all conditions in Specification 3.7.1 are met except that any one of the following is expected to be unavailable for longer than the test or maintenance period of 72 hours⁽¹⁾, as allowed by 3.7.2(a):

- 1) Keowee Main Step-up transformer (including both Keowee Auxiliary Transformers);
- 2) Both Keowee Auxiliary Transformers (1X and 2X);
- 3) Keowee Backup Auxiliary Transformer (CX);

⁽¹⁾ Provided the restrictions of Specification 3.7.8 are observed, a one-time allowable outage time of seven days is granted for the yellow bus to allow modification of the degraded grid protection system and the external grid trouble protection system.

DUKE POWER COMPANY

OCONEE NUCLEAR STATION

ATTACHMENT 2

TECHNICAL SPECIFICATIONS
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- (c) If all 230 kV transmission lines are lost, restore at least one of the inoperable 230kV offsite sources to operable status within 24 hours or be in at least hot standby within the next 6 hours. With only one offsite source restored, restore at least two 230kV offsite circuits to operable status within 72 hours from time of initial loss or be in at least hot standby within the next 6 hours and in cold shutdown within the following 30 hours.
- (d) After loss of all 230 kV transmission lines, this information shall be reported within 24 hours to the U.S. NRC Regional Office, Region II. If the outage is expected to exceed 24 hours, a written report shall be submitted detailing the circumstances of the outage and the estimated time to return the 230 kV transmission lines to operating condition.

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Prior to hot restart of a reactor from a tripped condition, the causes and the effects of the shutdown shall be established and analyzed. A restart will be permitted if the cause of such trips is the result of error or of minor equipment malfunctions. A restart will not be permitted if the trip is a result of system transients or valid protection system action.

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- 1) Keowee Main Step-up transformer (including both Keowee Auxiliary Transformers);
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- 3) Keowee Backup Auxiliary Transformer (CX);

⁽¹⁾ Provided the restrictions of Specification 3.7.8 are observed, a one-time allowable outage time of seven days is granted for the yellow bus to allow modification of the degraded grid protection system and the external grid trouble protection system.

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OCONEE NUCLEAR STATION
ATTACHMENT 3
TECHNICAL JUSTIFICATION

TECHNICAL JUSTIFICATION

Technical Specification Change:

The proposed revision to the Technical Specifications provided in Attachment 1 adds a footnote to Specification 3.7.8 to allow the overhead emergency power path to be inoperable for seven days in order to modify the degraded grid protection system and external grid trouble protection system.

Background:

The overhead emergency power path is one of the independent onsite emergency power paths used to supply emergency power to Oconee. This power path is aligned automatically to the appropriate Keowee Hydro Unit following completion of the Switchyard isolation. Some of the components of the overhead emergency power path include the Keowee Main Stepup transformer, overhead transmission cable, power control breaker (PCB) 9, Switchyard yellow bus, and Oconee Startup transformers. Current Technical Specification section 3.7 allows the overhead emergency power path to be inoperable for a period not to exceed 72 hours for test or maintenance.

The Degraded Grid Protection System (DGPS), upon indication of inadequate voltage, will provide an alarm to the Unit 1 & 2 Control room and the Transmission Control Center. If any single engineered safeguards (ES) Channel 1 or 2 signal from any Unit is sensed by the DGPS, while the voltage is below acceptable levels, the DGPS will initiate an isolation of the 230 kV Switchyard yellow bus to ensure the onsite overhead emergency power path is available. Each DGPS actuation logic channel is capable of isolating the overhead emergency power path by a set of actuating (94V) relays and the associated Switchyard PCB trip coil. The sets of 94V relays are common to the DGPS and the undervoltage part of another system called the External Grid Trouble Protection System (EGTPS). The DGPS relaying ensures that the startup transformers are not connected to a degraded source of power during an ES event. In this event, ES loads are provided adequate voltage from the standby buses.

The EGTPS serves to protect from grid collapse and does not require an ES signal before isolating the Switchyard. The EGTPS consists of two redundant channels of undervoltage and underfrequency protection circuitry. The undervoltage and underfrequency protection circuits monitor each phase of the red and yellow bus in the 230 kV Switchyard.

Proposed Modification:

This modification will provide a separate set (one per phase) of QA Condition 1 Capacitor Coupled Voltage Transformers (CCVT) for the degraded grid circuit which provides indication to the plant operators of a low voltage situation (219 kV or less) in the 230 kV switchyard. The CCVTs that are being added transform the switchyard voltage with a ratio of 230kV/120V for input to the degraded grid undervoltage relays (ABB 27N). If 2 out of 3 phases have this undervoltage condition, then two undervoltage relays will each open a contact and drop out one of the 3 new Cutler-Hammer relays which are added by the modification. These relays in turn will start two 9 second timers. If the voltage recovers above 219 kV before the timers time out, then nothing else will happen. However, if the undervoltage is still present, an alarm will be sent to the control room. The degraded grid circuitry will wait for either the voltage to recover above a preset limit or for an Engineered Safeguards (ES) signal which will start the grid separation sequence. Also, since the 27N's are the instantaneous type, the solid state timers set at 9 seconds have been used to preclude any nuisance alarms and to ride out any voltage transients in the switchyard.

Currently, the degraded grid voltage is sensed from the CCVTs connected to the CT1, CT2, and CT3 230 kV transformer busses on the Z phase only. These CCVTs need to stay where they are because of synchronization needs, but in order to preclude the potential imbalance problems that we may have from sensing the voltage from only the Z phase, the three new CCVTs will be added with each one on a different phase. Also, the new CCVTs will have an accuracy of 0.3% compared to the 1.0% accuracy of the existing CCVTs. This increase in accuracy will allow a decrease in the degraded grid setpoint of approximately 2 kV. This setpoint revision will decrease the requirements on the Transmission Control Center as well as reduce the impact of the contingencies that System Planning has to consider to ensure adequate voltage in the 230 kV Switchyard.

The EGTPS shall recognize the impending collapse or degraded voltage conditions of the 230 kV external grid when voltage and/or frequency deteriorates to certain levels and shall separate the 230 kV yellow bus from the external grid and automatically align the Keowee unit, not selected to the underground path, to each unit's startup transformer. This system also provides an emergency start signal to each Keowee unit following actuation.

The installation of this modification will require an outage of the yellow bus in excess of 72 hours. The outage of the yellow bus will remove the overhead emergency power path from service. Current estimates indicate that 5 days will be required to complete the installation of the modification.

Justification:

There are several benefits in modifying the Degraded Grid Protection logic.

1. In the Electrical Distribution System Functional Inspection (EDSFI), two concerns with the DGPS were raised by the audit team. The first concern was due to the lack of separation of the two channels of the Degraded Grid protection logic scheme. The other concern was a potential phase imbalance problem caused by the monitoring of a single phase (Z-phase) of voltage. This modification will separate the protection channels as well as add a CCVT to each phase of voltage.
2. While correcting the phase imbalance problem mentioned above, higher accuracy CCVTs will be added to this system. This will allow the degraded grid relay voltage setpoint to be decreased. A reduction in the setpoint will decrease the amount of nuisance alarms in the Control Room. In addition, it will reduce the contingencies which are considered by the Transmission Control Center and System Planning to ensure adequate voltage in the 230 kV switchyard.
3. The replacement of the red and yellow Bus CCVTs will decrease the inaccuracy of the voltage measurements from the red and yellow buses. These inaccuracies contribute to the difference between the station computer and the Transmission Control Center computer.

The risk associated with the inoperability of the overhead emergency power path for longer than 72 hours has been previously reviewed and found acceptable by the NRC. Duke submitted a Technical Specification change on June 9, 1989 to allow a one time overhead path LCO of 10 days. This change was approved in a Safety Evaluation Report dated September 12, 1989.

DUKE POWER COMPANY

OCONEE NUCLEAR STATION

ATTACHMENT 4

NO SIGNIFICANT HAZARDS CONSIDERATION EVALUATION

NO SIGNIFICANT HAZARDS CONSIDERATION EVALUATION

Duke Power Company (Duke) has made the determination that this amendment request involves a No Significant Hazards Consideration by applying the standards established by NRC regulations in 10CFR50.92. This ensures that operation of the facility in accordance with the proposed amendment would not:

- (1) Involve a significant increase in the probability or consequences of an accident previously evaluated:

Each accident analysis addressed within the Oconee Final Safety Analysis Report (FSAR) has been examined with respect to the change proposed within this amendment request. The design basis of the auxiliary electrical systems is to supply the required engineered safeguards (ES) loads of one unit and the safe shutdown loads of the other two units. The systems are arranged so that no single failure will jeopardize plant safety.

The probability of any Design Basis Accident (DBA) is not significantly increased by this change. In addition, the consequences of the accidents are within the bounds of the FSAR analyses. The reliability of the emergency power system is not significantly affected by a one time extension of allowable outage time for the overhead power path. The underground power path is adequate to assure operability of the Oconee ES loads. Finally, the enhancement of the Degraded Gird Protection System will eliminate a concern which was expressed by the EDSFI audit team.

- (2) Create the possibility of a new or different kind of accident from any kind of accident previously evaluated:

Inoperability of the yellow bus is functionally equivalent to inoperability of the Keowee Main Step-up Transformer in that it renders the overhead emergency power path inoperable. The Keowee Main Step-up Transformer is allowed to be inoperable for a period not to exceed 28 days. This Technical Specification requirement for the Keowee Main Step-up Transformer has been reviewed and approved by the NRC. Therefore, operation of ONS in accordance with this Technical Specification amendment will not create any failure modes not bounded by previously evaluated accidents. Consequently, this change will not create the possibility of a new or different kind of accident from any kind of accident previously evaluated.

- (3) Involve a significant reduction in a margin of safety:

The design basis of auxiliary electrical systems is to supply the required ES loads of one Unit and safe shutdown loads of the other two units. The underground power path is

adequate to ensure operability of the ES loads during the outage of the yellow bus. The reliability of the emergency power system is not significantly affected by a one time extension of allowable outage time for the overhead power path. Therefore, there will be no significant reduction in any margin of safety.

Duke has concluded based on the above that there are no significant hazards considerations involved in this amendment request.

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ATTACHMENT 5
ENVIRONMENTAL IMPACT ANALYSIS

ENVIRONMENTAL IMPACT ANALYSIS

Pursuant to 10CFR51.22 (b), an evaluation of the proposed amendments has been performed to determine whether or not it meets the criteria for categorical exclusion set forth in 10CFR51.22 (c) 9 of the regulations. The proposed amendment does not involve:

- 1) A significant hazards consideration.

This conclusion is supported by the No Significant Hazards Consideration Evaluation which is contained in Attachment 4.

- 2) A significant change in the types or significant increase in the amounts of any effluents that may be released offsite.

This amendment will not change the types or amounts of any effluents that may be released offsite.

- 3) A significant increase in the individual or cumulative occupational radiation exposure.

This amendment will not increase the individual or cumulative occupational radiation exposure.

In summary, this amendment request meets the criteria set forth in 10CFR51.22 (c) 9 of the regulations for categorical exclusion from an environmental impact statement.