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October 2, 2006

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

Subject: Duke Power Company LLC d/b/a Duke Energy Carolinas, LLC
Oconee Nuclear Site, Units 1, 2, and 3
Docket Numbers 50-269, 50-270, and 50-287
License Amendment Request Applicable to Technical Specification 3.8.1, AC Sources – Operating
Request For Additional Information
License Amendment Request (LAR) 2006-16

In accordance with the provisions of 10 CFR 50.90, Duke Power Company LLC d/b/a Duke Energy Carolinas (Duke) submitted a License Amendment Request (LAR) for the Facility Operating Licenses and Technical Specifications (TS) for Oconee Nuclear Station on September 27, 2006. The proposed amendment requests that the Completion Time (CT) of Technical Specification (TS) 3.8.1, AC Sources – Operating, Required Action (RA) C.2.2.5 be extended to allow for a total completion time of 75 days. This is a one time change that will expire at 1029 hours on November 3, 2006.

On October 2, 2006, Duke received a Request for Additional Information (RAI) from the Nuclear Regulatory Commission (NRC). This document is in response to the NRC's request.

Attachment 3 of the September 27, 2006, submittal provided additional risk reduction actions to be implemented during the TS extension period. These measures are considered to be NRC commitments. Duke is revising Attachment 3 to clarify actions associated with the Lee Combustion Turbines and to add a commitment to prohibit commercial generation as required by TS. The revised commitments are provided in Attachment 1 of this RAI and will remain in effect for the duration of the extended Completion Time.

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This response is bounded by the no significant hazards consideration provided in the original submittal.

Implementation of this proposed TS change will not require revision to the Oconee Updated Final Safety Analysis Reports (UFSAR). Duke is requesting NRC review and approval of this LAR by close of business October 3, 2006 with implementation to occur immediately.

Inquiries on this proposed amendment request should be directed to Reene' Gambrell of the Oconee Regulatory Compliance Group at (864) 885-3364.

Sincerely,

Bruce Hamilton

B. H. Hamilton, Vice President
Oconee Nuclear Site

Enclosures:
1. Notarized Affidavit
2. Request for Additional Information

Attachment:
1. Commitments

bc w/enclosures and attachments:

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ENCLOSURE 1

NOTARIZED AFFIDAVIT

AFFIDAVIT

B. H. Hamilton, being duly sworn, states that he is Vice President, Oconee Nuclear Site, Duke Power Company LLC d/b/a Duke Energy Carolinas, LLC that he is authorized on the part of said Company to sign and file with the U. S. Nuclear Regulatory Commission this revision to the Renewed Facility Operating License Nos. DPR-38, DPR-47, and DPR-55; and that all statements and matters set forth herein are true and correct to the best of his knowledge.

Bruce Hamilton

B. H. Hamilton, Vice President
Oconee Nuclear Site

Subscribed and sworn to before me this 2 day of October, 2006

Reni Lambrell

Notary Public

My Commission Expires:

My Commission Expires Aug. 29, 2010

Date

SEAL

ENCLOSURE 2

REQUEST FOR ADDITIONAL INFORMATION

Subject: License Amendment Request Applicable to Technical Specification 3.8.1, AC Sources - Operating
Request for Additional Information
License Amendment Request No. 2006-16

QUESTION 1

Differential relay protection is installed around important electrical equipment such as power transformers, generators and large motors to detect internal problems while they are relatively minor before they escalate into major problems. Twice in 2005, the KHU2 generator had a lockout. In both cases the lockout was attributed to failure of the differential relay. What diagnostics were performed on the KHU2 generator following the 2005 events before declaring the KHU2 operable?

RESPONSE TO QUESTION 1

Protective relaying is installed to detect failures / electrical faults that are occurring and actuate lockout relays or breakers to clear and isolate the conditions to preclude causing further catastrophic damage. Therefore, when a valid protective relay actuates, some damage has already occurred. Additional investigations and testing is needed to determine extent of condition and needed repairs.

In 2005, the two emergency lockouts occurred as a result of the bus differential relay actuation. This bus differential relay detects problems on the generator bus separate from the generator's protective relaying. The generator is not protected by this bus relay. In 2005, no electrical faults occurred; the cause of these events was a malfunction of the relay. However, the generator was also tested during this investigation to ensure no problems existed. The following generator testing was performed prior to returning KHU #2 to service:

- Generator Stator high voltage and resistance test.
- Generator Rotor high voltage and resistance test.
- Generator protective relaying input to the emergency lockout was checked for proper calibration.
- Functional check of emergency lockout inputs, including generator protective relaying.
- Sixty-three maintenance runs of KHU #2 were performed while monitoring generator volts & current for any anomalies.
- Final operability run of the unit to return to service

Since 2005, KHU #2 has been operated for normal generation and has successfully completed its emergency start technical specification (TS) surveillance requirements (SRs).

QUESTION 2

Page 2 of the LAR states that the 45 day Completion Time (CT) of Required Action (RA) C.2.2.5 is cumulative. While this is a matter of debate within NRC, NRC management has decided that the current wording of the RA is not definitive on whether the 45 days is the maximum time allowed for a one time use every three years of whether the 45 days is in fact

cumulative over any three year period. However, during the preliminary phone call concerning this request held between the NRC staff and the licensee on September 25, 2006, the staff emphasized that the technical basis for any extension beyond the existing 45 days must be clearly stated in the licensee's submittal. The proposed cumulative extension to 75 days (the original 45 plus the requested 30 additional days) in one shot appears premature when the root cause and failure mechanism is unknown. Provide your time table to:

1 - Determine the root cause of the KHU2 failure, including failure mechanism;

2 - Confirm that the differential protection scheme for both KHUs are working as required;

3 - Confirm a similar problem is not imminent on KHU1

RESPONSE TO QUESTION 2

1. Oconee has initiated the root cause process to investigate and determine the cause of this failure. The root cause evaluation is operating in parallel with the recovery and repair efforts at Keowee. Duke's root cause process establishes a typical 60 day completion time from initiation. Additional time is allowed for complex evaluations requiring external manufacturer support. The root cause evaluation will be continuously staffed and worked until completed with the goal to complete analysis as expeditiously as possible. Duke will provide the Oconee NRR Project Manager with weekly electronic mail updates during the root cause evaluation.

2. Differential relays are installed on each Keowee electrical generator. These relays monitor each phase of a generator and will actuate on detection of an electrical fault in the generator. Preventive maintenance (PM) is performed on these relays every two years with the PMs completed in December, 2005 for KHU #1 and August, 2005 for KHU #2 with acceptable results.

3. On KHU #1, test and inspections were performed for any indications of imminent problems. The testing included:

    - Rotor field winding resistance
    - Polarizations index (PI) test of the rotor field winding
    - Inspections of field poles, specifically looking for pole jumper degradation, looseness of pole collar or winding, coil turn insulation condition and overall cleanliness.

The winding resistance and PI test were both normal and within acceptable limits. The detailed inspections did not reveal any signs of degradation.

Upon removal of the rotor from the generator pit, KHU #2 rotor poles were inspected. Based on those results, an additional inspection of KHU #1 pole jumper connections was performed to look for any degradation in the joint connections. No degradation was observed.

QUESTION 3

Initial results of the risk analysis indicated an Incremental Conditional Core Damage Probability of only 9E-08 with no common cause and 2.7E-7 with common cause (a factor of only 3). This would be equivalent to another three unit PWR losing all six diesel generators. Is this the cumulative risk to all three Oconee units from a common cause failure or the individual risk to each Oconee unit?

RESPONSE TO QUESTION 3

These numbers represent the individual risk to each Oconee unit.

QUESTION 4

LCO 3.8.1 requires two independent offsite power supplies. During the 2004 extended KHU outage, the licensee committed to have a minimum of four independent offsite power supplies. Confirm that with only two offsite power supplies, loss of any one transmission line will not result in a three unit transient and a resulting inadequate offsite power voltage to the safety loads or identify the minimum number of transmission lines required to withstand a loss of a single line without initiating a three unit transient and commit to have that minimum number of lines available during this extended loss of KHU #2. The licensee should also make this minimum number of offsite power supplies a commitment for the life of this extension.

RESPONSE TO QUESTION 4

In order to assure adequate voltage to safety loads, TS 3.8.1 requires two sources on separate towers connected to the 230 kV switchyard to a unit startup transformer to be OPERABLE. Two of the following offsite sources are required:

1) Jocassee (from Jocassee) Black or White,
2) Dacus (from North Greenville) Black or White,
3) Oconee (from Central) Black or White,

4) Calhoun (from Central) Black or White,
5) Autobank transformer fed from either the Asbury (from Newport), Norcross (from Georgia Power), or Katoma (from Jocassee) 525 kV line.

Currently, all eleven offsite power sources are available. In order to support three units operating at 100% power, one 525 kV line, the autobank transformer, and one 230 kV line are required to carry the load to the grid. During this one time extension, Duke will maintain at least two 525 kV lines and four 230 kV lines available. Maintaining this configuration eliminates the need for the autobank transformer.

QUESTION 5

The LAR indicated that only a visual inspection of the KHU2 field coils and additional testing will be performed. Describe what other testing will be performed.

RESPONSE TO QUESTION 5

On the KHU #2 field coil, testing has been performed to determine extent of repairs needed. This testing included:

- Pole Drop Test
- Polarization Index (PI)
- Winding resistance (Megger) test

Similar testing of the generator stator has been completed. No additional damage was observed.

During the repair and post-repair the following testing is planned to be performed:

- Pole Drop Test
- Polarization Index (PI)
- Winding resistance (Megger) test
- Low resistance winding ohm reading on the rotor field winding
- Operational testing at no load and at full generator load

As part of root cause efforts, industry operating experience is being assessed to determine if additional diagnostic testing would be beneficial during repair or post-repair.

QUESTION 6

In an effort to demonstrate no common mode failure exists with KHU #1, the LAR states that KHU #1 voltages, currents and field impedance were normal and no change was noted. What was the base case for these comparisons? How do those similar readings on the KHU #2 machine compare to its base case? How do the readings compare between the two KHUs? What action will be taken if it is suspected that a common cause failure might exist?

RESPONSE TO QUESTION 6

For KHU #1, the base case for these comparisons were derived from selected normal field voltages and currents measured during start/run cycles collected over the last few years. Field current tracked the field voltage as expected. The field impedance comparison was made to measurements obtained during PMs, with the most recent PM being performed August 2004.

For KHU #2, the winding resistance test led to discovery of the open field winding (i.e. infinite resistance) following the lockout. During the investigation, abnormalities between field voltage and current data indicated that the problem was in the field windings. Field current did not track the field voltage as expected.

Prior to the failed KHU #2 run during the surveillance, the field voltages and currents, and the last PM resistance test compared favorably to previous results with the last being performed in January 2005.

The field voltage, current and resistance readings are comparable between the units.

Until root cause is understood no additional actions beyond the detailed inspections and tests on KHU #1 are planned. As an initial preliminary conservative measure, commercial generation on KHU #1 has been restricted until KHU #2 is declared operable. During the CT extension, commercial generation is prohibited except during testing as allowed by TS.

QUESTION 7

The LAR states that on emergency operation, the KHU connected to the 230 kV switching station is available to power the 230 kV Yellow bus after the Yellow bus is disconnected from the system (following a system disturbance) and after a preset time delay. It is the staff's understanding that the KHU #1 will be aligned to the 13.8 kV underground feed to transformer CT4. The discussion for the 230 kV feed does not seem relevant unless the underground path is not available. In that case describe the preset time delay mentioned and confirm this time delay has been accounted for in the KHU loading analysis and the accident analysis.

RESPONSE TO QUESTION 7

The staff's conclusion that the discussion of the 230 kV feed in section 3.0 (of the submittal dated September 27, 2006) is not relevant for this situation is correct. Section 3.0 is provided as background information to assist the staff in their review and reflects the normal configuration of the emergency power system with both KHUs operable. Since the overhead KHU (KHU#2) is inoperable, KHU#1 is aligned to the underground path.

QUESTION 8

The following actions described in the LAR should also be COMMITMENTS:

The third remaining LCT is also available and can be started and used to supply both standby buses should the running LCT fail.

KHU #1 will not be allowed to generate power to the grid (commercial generation prohibited).

RESPONSE TO QUESTION 8

Additional risk reduction actions listed in Section 4.0 of Enclosure 2 of the September 27, 2006, LAR provide the following discussion: Start a second LCT and maintain in standby conditions. During the 30 day extension period, a LCT will be energizing the standby bus via an isolated power path. A second LCT will be operating in standby. The third remaining LCT is also available and can be started and used to supply both standby buses should the running LCTs fail. To enhance unit availability, no major preventative maintenance work will be performed on the third LCT. Additionally, the onsite power path including CT5 will be treated as a protected train.

The commitments described in attachment 3 of the submittal dated September 27, 2006, have been revised to include the detailed information above.

Grid generation was suspended as a matter of complying with TS 3.8.1, Required Action C.2.2.2 which suspends KHU generation to the grid except for testing; therefore, it was not committed to in the original submittal. However, Duke will revise the commitments described in attachment 3 of the submittal dated September 27, 2006 to include the following:

During the extended CT, KHU #1 will not be allowed to generate power to the grid except during testing as allowed by TS. Generation to the grid provides the necessary loads for testing.

QUESTION 9

Identify the maximum duration of the current KHU #2 outage, assuming a 30-day extension of the existing LCO.

RESPONSE TO QUESTION 9

The maximum duration of the planned KHU #2 outage is from September 23, 2006 at 1050 hours until November 3, 2006 at 1029 hours. Therefore, the total maximum duration will be 40 days, 23 hours, and 39 minutes. The PRA evaluation only determined the increased risk associated with the 30 day CT extension and does not include the 45 day CT of RA C.2.2.5. The existing 45 day TS CT expires on October 4, 2006 at 1029 hours.

QUESTION 10

Confirm that the dual unit outages for dewatering the common intake has a conditional CDF of 4.6E-4/year, and identify the total duration this condition will exist during the proposed maintenance evolution for the KHU #2 outage.

RESPONSE TO QUESTION 10

From calc OSC-8980, the conditional CDF during the dewatering condition is 2.34E-08/reactor hour or 2.1E-04/reactor yr. Dewatering phase one is complete and lasted 29 hours (scheduled 44 hours). Dewatering phase two is scheduled for 38 hours. Both of the dewaterings are being done within the restrictions of our current TSs; therefore, an extension to TS associated with two KHUs inoperable is not required.

QUESTION 11

Identify the baseline CDF for Oconee, and identify the scope of risk (internal, external, fires, etc.).

RESPONSE TO QUESTION 11

The ONS non-seismic baseline CDF is 4.3E-05/yr. or 4.8E-05/reactor yr.
The ONS non-seismic zero maintenance baseline CDF is 3.5E-05/yr. or 3.9E-05/reactor yr.

The Oconee PRA is a full scope PRA including both internal and external events (i.e., fires, floods, tornados, etc.) The model includes the necessary initiating events (e.g., LOCAs, transients) to evaluate the frequency of accidents.

The Oconee PRA includes models for those systems needed to estimate core damage frequency. These include all of the major support systems (e.g., ac power, service water, component cooling, and instrument air) as well as the mitigating systems (e.g., emergency core cooling). These systems are generally modeled down to the component level, pumps, valves, and heat exchangers. This level of detail is sufficient for this application.

ATTACHMENT 1

COMMITMENTS

The following commitment table identifies those actions committed to by Duke Power Company LLC d/b/a Duke Energy Carolinas, LLC (Duke) in this submittal. These commitments will remain in effect for the duration of the extended Required Action Statement.

Commitment	Implementation Date
No discretionary T1 work will be undertaken	October 4, 2006 at 1029 hours
A second Lee Combustion Turbine operating and in standby. The third remaining LCT is also available and can be started and used to supply both standby buses should the running LCT fail. To enhance unit availability, no major preventative maintenance work will be performed on the third LCT. Additionally, the onsite power path including CT5 will be treated as a protected train.	October 4, 2006 at 1029 hours
No discretionary work on KHU #1	October 4, 2006 at 1029 hours
No discretionary work on Standby Shutdown Facility (including support systems) or Emergency Feedwater allowed	October 4, 2006 at 1029 hours
Appropriate actions will be taken to limit physical access to the backup emergency power transformer CT-5	October 4, 2006 at 1029 hours
KHU1 will not be allowed to generate power to the grid except during testing as allowed by TS. Generation to the grid provides the necessary loads for testing.	October 4, 2006 at 1029 hours
During this one time extension, Duke will maintain at least two 525 kV lines and four 230 kV lines available.	October 4, 2006 at 1029 hours

Other actions discussed in the submittal represent intended or planned actions by Duke. They are described to the Nuclear Regulatory Commission (NRC) for the NRC's information and are not regulatory commitments.