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A Duke Energy Company

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April 28, 2004

U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Document Control Desk

Subject: Oconee Nuclear Station
Docket Numbers 50-269, 270, and 287
Supplement 5 to the License Amendment Request for Temporary Extensions to the Completion Times for One or Two Keowee Hydro Units Inoperable
Technical Specification Change (TSC) Number 2002-05

In a submittal dated August 22, 2002, and supplemented by letters dated September 12, 2003, February 4, 2004, February 16, 2004, and March 23, 2004, Duke proposed to amend Appendix A, Technical Specifications, for Facility Operating Licenses DPR-38, DPR-47 and DPR-55 for Oconee Nuclear Station, Units 1, 2, and 3 to temporarily extend Technical Specification (TS) 3.8.1 Required Action Completion Times when in the Conditions for one or two Keowee Hydro Units (KHU) inoperable. This temporary change is needed to allow significant maintenance and upgrades to be performed.

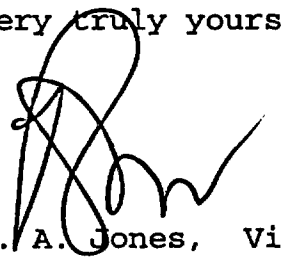
On April 7, 2004, Duke received additional questions from the NRC related to this License Amendment Request (LAR). Attachment 1 documents Duke's response to these questions.

Pursuant to 10 CFR 50.91, a copy of this proposed license amendment is being sent to the State of South Carolina.

A001

If there are any questions regarding this submittal, please contact Boyd Shingleton at (864) 885-4716.

Very truly yours,



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R. A. Jones, being duly sworn, states that he is Vice President, Oconee Nuclear Site, Duke Energy Corporation, 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, DPR-55; and that all the statements and matters set forth herein are true and correct to the best of his knowledge.

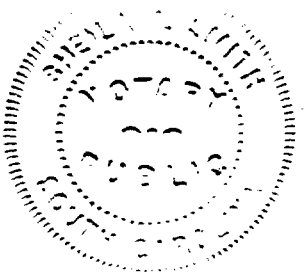
R. A. Jones, Vice President
Oconee Nuclear Site

Subscribed and sworn to before me this 28th day of April, 2004

Notary Public

My Commission Expires:

6/12/2013



Attachment 1

Response to March 7, 2004, Request for Additional Information

RAI-1: Explain the difference between the nominal PRA Rev. 2 value of the LOOP Initiating Event Frequency (T5WEATH) and the value used in the analysis.

RAI-1 Response:

The nominal value of the initiating event frequency for T5WEATH, Loss of Off-Site Power Due To Severe Weather Initiating Event, used in the Revision 2 PRA is 5.0E-03/year. This represents an average annual value based on 10 year old industry event data from NSAC-203, "Losses of Off-Site Power at U.S. Nuclear Power Plants All Years Through 1993."[1]

Since the maintenance work is to be done in the off-peak months of severe weather, a factor of 2 reduction for seasonal adjustment was assumed for initiating event T5WEATH. Therefore, the value used in the analysis is 2.5E-03/year.

A review of the Oconee Revision 3 PRA LOOP Initiating Event Frequency calculation for severe weather indicated that the corresponding Revision 3 initiating event frequency is based on the most recent industry event data from EPRI Technical Report 1002987, "Losses of Off-Site Power at U.S. Nuclear Power Plants Through 2001."[2] The value that is used in the Revision 3 PRA is 2.4E-03/year, which represents an average frequency for the entire year and is not adjusted for off-peak months of severe weather.

Therefore, with respect to Revision 3 of the PRA, the use of the value 2.5E-03/year as the initiating event frequency in the Revision 2 PRA in support of the Keowee Hydro Units' maintenance work is judged to be conservative in this application as it contains no credit for off-peak months of severe weather when the most recently available data are considered.

1. Wyckoff, H., *Losses of Off-Site Power at U.S. Nuclear Power Plants All Years Through 1993*, NSAC-203, Nuclear Safety Analysis Center, Palo Alto, California, Final Report, April 1994.

2. *Losses of Off-Site Power at U.S. Nuclear Power Plants Through 2001*, Electric Power Research Institute, Palo Alto, California, Final Report, April 2002.

RAI-2: Explain how the ΔCDF was calculated for the dual unit KHU outage.

RAI-2 Response:

The ΔCDF values in the calculations are all determined in the similar manner using the following equation,

ΔCDF = (conditional core damage frequency/year - baseline core damage frequency/year)

÷ (8760 hours/year x 0.9)

ΔCDF = (CCDF/year - CDF_b/year) ÷ (8760 hours/year x 0.9)

ΔCDF = per reactor-hour

where

- 0.9 is the plant average capacity factor that adjusts for not running the plant at full power the entire year,
- CDF_b/year is a baseline constant equal to 5.05E-05/year and,
- CCDF/year is the result in the cut set file from the solution of the PRA for the case of interest, either one or two KHUs out of service.

From the original analysis (Cumulative CCDP = 3.45E-06), the two ΔCDF inputs are calculated as:

ΔCDF = (3.49E-05/year -5.05E-05/year) ÷ (8760 hours/year x 0.9)

= -1.97E-09/reactor-hour (one KHU out of service)

ΔCDF = (3.17E-04/year -5.05E-05/year) ÷ (8760 hours/year x 0.9)

= 3.38E-08/reactor-hour (two KHU out of service)

RAI-3: The Keowee extended AOT amendment request does not preclude taking both Keowee units out of service during periods of peak grid stress, such as summertime. Duke Power's response to RAI-B2 in letter dated September 12, 2003, states: "Electrical Grid Related Loss of Offsite Power (LOOP) events are not risk significant in the Oconee PRA." The weakness in PRA results in an area such as grid reliability is that they typically rely a great deal on data that is looking backward (e.g., over the past 20 years) and may not account for current vulnerabilities. The August 14, 2003, U.S. - Canadian blackout that resulted in a loss of offsite power to 8 U.S. nuclear power plants, and other grid challenges such as increased congestion and higher grid power flows across operating regions, suggest that backward looking data may not be an accurate representation of current operating conditions. Provide an electrical assessment of the grid surrounding the Oconee site, particularly during the upcoming periods of peak summertime grid stress, and correlate this to the grid reliability assumptions used in the Oconee PRA.

RAI-3 Response:

Grid related LOOP events do not contribute significantly to the likelihood of a core damage event at Oconee and would not even if the likelihood of Grid events increased significantly. The overhead lines from Lee are to be separated from the grid prior to both Keowee units being out of service so that a grid related event has no impact on the ability to supply Oconee from Lee. There are three combustion turbine generators at Lee any one of which can supply all the emergency loads for Oconee. Additionally, the Jocassee hydro station will be maintained available as a dedicated backup power supply and can power ONS loads independent of the grid. Any one of Jocassee's four hydro units can supply all the emergency loads for Oconee. Random failure of all these sources would be required to result in a loss of power to Oconee. While an increase in the estimated grid related LOOP frequency might be possible during times of peak summertime grid stress, Oconee's core damage frequency would be insensitive to large changes in the grid related LOOP initiating event frequency.

Duke Power performed an assessment of the regional transmission system performance for projected 2004 summer peak load conditions in conjunction with other companies in the region, such as Progress Energy, TVA and Southern Company. The assessment investigated the interconnected system performance during projected peak load conditions, the capability of the systems to interchange power above base amounts expected for 2004 summer and the effects of various contingencies on the performance of the systems. The assessment was based on a computer simulation of the power system that took into account expected customer demand, generation dispatch, scheduled maintenance, configuration of the interconnected systems, contingencies including loss of transmission line or transformers and loss of generation, and projected electric power transfers among the systems. Based on the results of this study, Duke does not anticipate

any problems or negative impact on the grid surrounding Oconee, or on other portions of the Duke system during the 2004 summer operating period.

RAI-4: 10 CFR 50.65(a)(4) requires that licensees assess and manage the increase in risk that may result from maintenance activities before performing the proposed maintenance activities. NUMARC 93-01, Rev 2, is endorsed by NRC RG 1.182 as providing methods that are acceptable for meeting 10 CFR 50.65(a)(4). Section 11.3.4 in NUMARC 93-01 identifies severe weather and offsite power instability as unusual external conditions present or imminent that are appropriate to be included in the assessment. Section 11.3.2.8 in NUMARC 93-01 states that: "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." Weather and offsite power availability are two examples given of emergent conditions that could change the conditions of a previously performed assessment or result in the need for action prior to conduct of the assessment.

- ***a. Describe the provisions you will have in place to determine that the weather and grid conditions that could impact Oconee or the Lee Steam Station are satisfactory before taking the Keowee units out of service for their extended maintenance.***
- ***b. Describe the provisions you will have in place to monitor the weather and grid conditions during the course of the Keowee outages.***
- ***c. Do you have an established communication protocol with your transmission system operator to be notified of grid conditions that could impact the Oconee offsite power system? Does the communication protocol include contingency conditions such as a trip of the Oconee generators and its impact on offsite power to the Oconee site, including the adequacy of post-trip switchyard voltages?***
- ***d. During the period leading up to the August 14, 2003, blackout, state estimator and contingency analysis computer programs that transmission system operators rely on were not performing properly. Will your transmission system operator notify you if these are unavailable or if the capability to otherwise monitor the status of the grid during the course of the Keowee outages is lost?***
- ***e. Describe the provisions you will have in place to return the Keowee units to service given an indication of deteriorating weather or grid conditions.***
- ***f. What is the criteria you use to determine weather or grid conditions that require returning the Keowee units to service?***

RAI-4(a) Response: The Keowee Refurbishment Outages are classified as critical evolutions and will be performed using the Critical/Complex Evolution Process procedure. This procedure provides guidance for activities that have a potential to affect operators response to plant transients by ensuring that Critical/Complex Evolutions are

planned and executed with appropriate consideration of plant safety, operational requirements, and sound judgment. Critical Evolutions, at a minimum, require a designated Critical Evolution Coordinator, a designated Management Sponsor, Site Management Awareness/PORC approval, approval by the affected Work Window Manager, clearly defined termination criteria, a written evolution plan, contingency planning with designated owners for implementation when needed, completion of a Complex/Critical Evolution work review checklist, a post evolution critique, a written Pre-Job Briefing, and an evaluation of the need for training, mock-up testing, and pre-evolution walk-through. The Critical Evolution plan has not been completed for the Keowee Maintenance work. The plan will include criteria related to weather and grid conditions that must be satisfied prior to the start of the overall Keowee Refurbishment Outage and each of the two dual KHU outages planned within the overall outage. These criteria have not been established yet but will include a check of the short range weather forecast and grid conditions. Duke has a Nuclear Site Directive (NSD) in place that requires Operations personnel to consider the effects of severe weather and grid instabilities on plant operations prior to the release of work for execution. This qualitative evaluation is inherent of the duties of the Work Control Center (WCC) Senior Reactor Operator (SRO). Response to actual plant risk due to severe weather or grid instabilities are programmatically incorporated into applicable plant emergency or response procedures.

RAI-4(b) Response: Duke currently monitors the status of weather and grid conditions for its service area. There is a severe weather radio located just outside the Operations Shift Manager's (OSM's) office and the Oconee Units 1 and 2 control room to warn of impending severe weather. There is also a severe weather radio located in the Keowee Conference Room. Grid conditions are evaluated each shift by the OSM. The Critical Evolution plan will also specifically address the need to monitor weather and grid conditions during the Keowee Refurbishment Outage and include appropriate actions based on those conditions and the status of the Keowee units in the outage.

RAI-4(c) Response: Duke has an NSD in place that requires grid conditions be assessed continuously. Site work activities identified as trip potential or generation losses are displayed in a color based on their assessed generation risk impact. The NSD requires that the site be notified when the Overall System Indicator (OSI) is or is projected to be other than green (or normal). If conditions change, generation trip potential work is stopped to minimize this risk. This process will be in place during the Keowee outages.

Post trip switchyard voltages are predicted by the Duke's Transmission Control Center (TCC) using a real time contingency analysis (RTCA) program. Should the RTCA predict inadequate post trip voltage, procedures are in place to address this condition (including declaring all offsite power sources inoperable and placing the Degraded Grid

Voltage Protection in trip within 2 hours). Action will be dependent upon grid conditions and the status of the Keowee units in the outage.

RAI-4(d) Response: Procedures controlling the use of the RTCA program and required notifications between the Duke nuclear units control rooms and the TCC are currently in place. If the RTCA program becomes unavailable the TCC initiates actions to restore the program immediately. Recovery from grid low voltage is addressed by procedure. The Critical Evolution plan will include steps to verify the RTCA computer program is available prior to the start of a dual KHU outage.

RAI-4(e) Response: Duke will have provisions in place to return a KHU to service should termination criteria in the critical evolution plan be met. If these criteria were met at the worst case time during one of the two planned dual KHU outages, at least one of the KHUs could be returned to service within 12 hours. Duke also will have provisions in place to allow the return of one KHU to service should Keowee be without auxiliary power as a result of a loss of power.

RAI-4(f) Response: The critical evolution plan, currently being developed but not yet completed, will include criteria to determine weather or grid conditions that would require returning a Keowee unit to service.

RAI-5: The August 14 blackout task force interim report identifies transmission conductor contact with trees as a factor in the blackout. Conductor contact with trees was also a triggering factor in the July 2-3, 1996, west coast blackout and the August 10, 1996, west coast blackout. Describe the tree trimming practices along the transmission line rights-of-way in the grid surrounding the Oconee site that you believe will preclude this as an initiating factor in grid LOOPs during the Keowee maintenance outages. One of the primary compensatory measures relied upon during the Keowee extended maintenance period is the use of the Lee Steam Station combustion turbines to power Oconee emergency loads through 30 miles of overhead transmission line. Describe the tree trimming practices along that particular right-of-way. Describe the additional measures that will be taken during the Keowee extended maintenance outages to ensure that proper tree clearances are maintained to preclude tree contact from taking out that overhead line. Tree contact with transmission lines due to high temperature conductor sag and/or high winds should be addressed.

RAI-5 Response:

Duke Power has a structured vegetation management program to prevent transmission line contact with vegetation. This program includes the following elements:

- Inspection - All transmission line segments are flown and aerially inspected semi-annually to identify potential vegetation issues.
- Clearances are typically determined by Right of Way (R/W) easement widths. R/W easement widths are generally determined by the line segment voltage, i.e. 44 kV and 100 kV at 68 foot width, 230 kV at 150 foot width, 500 kV at 200 foot width.
- Obstruction removal procedure - Customer generated encroachments are captured and reported via the semi-annual aerial inspection process.
- Maintenance schedules – Duke has defined maintenance schedules for herbicide application along Electrical Transmission (ET) R/W floors and removal of danger trees outside the defined R/W easement.

Duke treated the 30 mile Lee ET R/W line segment with herbicides in 2003. This same line segment will receive danger tree maintenance work for trees located outside the defined R/W width prior to the planned August 2004 Keowee Refurbishment Outage. Tree contact with transmission lines due to high temperature conductor sag and/or high winds is precluded by maintaining the R/W easement widths by scheduled herbicide application and manual tree removal.

RAI-6: The response to RAI-D1 in Duke Power's September 12, 2003, letter indicates that the overhead transmission lines at Oconee are designed for 80 mph winds in accordance with the National Electric Safety Code (NESC). Figure 250-2(b) in the current version of the NESC appears to indicate that 90 mph should be used as the design basic wind speed for the overhead transmission lines. Please address.

RAI-6 Response:

The latest 2002 edition of the NESC code has an extreme wind map of 90 mph. Most of the overhead transmission lines at Oconee were designed and installed prior to the 2002 edition. The earlier version of the NESC code specifies a design basic wind speed of 80 mph. Portions of the transmission structures and lines from the Lee Steam Station to Oconee were replaced in 2003 and are designed to the 2002 edition of the NESC code.

RAI-7: How recently will the 100 kV circuit from the Lee CTs to Oconee have been checked out prior to its use as an isolated circuit, energized by the Lee CTs, to support the Keowee outages? Of interest is the most recent maintenance or checkout of the motor-operated disconnect switches, Lee CT circuit breakers and step-up transformers, OCB-101, CT5, and the 100 kV line and supporting structures. To what degree are Oconee station personnel involved in controlling the necessary maintenance of this equipment and the Lee combustion turbine generators?

RAI-7 Response: Technical Specifications (TS 5.5.19) require verification that an LCT can energize the standby buses using the 100 kV lines electrically separated from the system grid and offsite loads every 12 months. They also require verification that an LCT can supply equivalent to one Unit's maximum safeguard loads plus two Unit's MODE 3 loads when connected to the system grid every 12 months. Every 18 months, Technical Specifications require Duke to verify an LCT can provide equivalent of Unit's maximum safeguard loads within one hour through the 100 kV line electrically separated from system grid and offsite loads. These TS surveillances are maintained current. The 12 month SRs were last performed on November 10, 2003, and January 23, 2004. The 18-month SR was last performed on May 18, 2003. In addition to the required LCT surveillances, an LCT and a dedicated path are used during periodic emergency power switching logic (EPSL) testing. In this test, an LCT is aligned dedicated to ONS and energizes the standby bus. During the EPSL testing the plant loads, including decay heat removal (DHR) loads of the shut down unit, are block loaded onto the LCT for a period of time. This testing was last performed in November, 2003, and demonstrated the LCT, the isolated path, and supporting equipments are all functioning properly as designed.

A team of Duke personnel, which included Oconee Engineering personnel, reviewed all aspects of offsite power circuits to identify maintenance that needed to be performed prior to the Keowee Refurbishment Outages to assure offsite power circuit reliability. This review was completed in the Summer of 2003. The LCTs and the 100 kV circuit to the Oconee standby buses were included in that review.

The most recent preventative maintenance on the LCTs and overhead lines is described below:

Motor operated disconnect switches	All three were replaced in Fall 2003.
LCT circuit breakers	PM completed 6C (10/02), 5C (3/04), 4C (10/00)
LCT main step-up transformers	PMs complete 4/02
Oil DGA/Fluid Quality Samples	5/03
OCB-101	PM complete 2/01
CT5	PM complete 1/01
Oil DGA/Fluid Quality Samples	12/03
Infrared scans	12/03

100kV line and supporting structures	The line from the LCTs to Central switchyard is a new line on new towers. This work was completed on 4/12/02. Structures 2-9 on the Central to Oconee line were replaced with steel poles This work was completed 3/28/03. The Oconee to Central 100kV line was last inspected 10/21/03. The Central to Lee Steam 100kV line was last inspected 10/23/03. Both of these lines are scheduled for spring inspection the week of, 4/28/04-4/29/04, depending on weather. As indicated in RAI-5 response above, the line is aerially inspected semi-annually.

One of the recommendations of the reliability review mentioned above was to perform a 30 day continuous run on a Lee unit to demonstrate the ability to run reliably for long periods of time. Lee Unit 6C successfully completed a 30 day continuous run on April 30, 2003. Lee energized the standby bus to support ONS testing five times since the 30 day run, the most recent being on March 14, 2004. Additionally, the LCTs are started and placed on the grid monthly. This verifies that the starting systems, fuel oil system, auxiliaries, generator breaker, step up transformers, and Lee current switches operate properly.

ONS Engineering personnel perform periodic walk downs at Lee every 1 or 2 months. ONS Engineering personnel are in contact with Lee personnel in Engineering and Operations regularly, usually every 1 or 2 weeks. Issues arising for LCT performance, enhancements to operation or reliability, or past events are typically discussed and recommendations from both sites are weighed to determine the actions to take that best enhance the use of the LCTs. Lee Operations procedure changes related to providing power to ONS are reviewed by ONS personnel in Engineering and Operations. Maintenance recommendations have been made in the past by ONS Engineering and will continue to be made as needed. Lee personnel have acted on all the recommendations made to date. There is an ONS Operations Management Procedure (OMP 5-5) summarizing ONS Operations expectations for LCTs and an ONS Maintenance Directive 3.2.36 summarizing ONS Management expectations for maintenance of the LCTs. Lee Engineering and Operations personnel have these documents.

Monitoring and trending of equipment operation is performed by personnel at Lee and ONS. ONS Engineering maintains health reports on the 100kV path and the individual CTs. These reports are shared with personnel at Lee and provide action plans for resolution of problems and completion of enhancements.