

CATEGORY 1

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9905200189 DOC. DATE: 99/05/13 NOTARIZED: YES DOCKET #
FACIL: 50-269 Oconee Nuclear Station, Unit 1, Duke Power Co. 05000269
50-270 Oconee Nuclear Station, Unit 2, Duke Power Co. 05000270
50-287 Oconee Nuclear Station, Unit 3, Duke Power Co. 05000287

AUTH. NAME AUTHOR AFFILIATION
TUCKMAN, M.S. Duke Power Co.
RECIP. NAME RECIPIENT AFFILIATION
Records Management Branch (Document Control Desk)

SUBJECT: Provides response to follow-up to NRC staff RAI dtd 981229
re environ portion of review of license application for
Oconee Nuclear Station, Units 1, 2 & 3.

DISTRIBUTION CODE: A037D COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 15
TITLE: Oconee Station Units 1, 2, 3 License Renewal Application Activities

NOTES:

	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL
	PDLR HOFFMAN, S	1 1	LABARGE, D	1 1
INTERNAL:	ACRS	1 1	FILE CENTER 01	1 1
	NRR/DE/EEIB	1 1	NRR/DE/EMCB	1 1
	NRR/DE/EMEB	1 1	NRR/DIPM/IQMB	1 1
	NRR/DIR	1 1	NRR/DRIP/RGEB	1 1
	NRR/DSSA/SPLB	1 1	NRR/DSSA/SRXB	1 1
	OGC/HDS2	1 1	PD2-2 LA	1 1
EXTERNAL:	NRC PDR	1 1		

NOTE TO ALL "RIDS" RECIPIENTS:

PLEASE HELP US TO REDUCE WASTE. TO HAVE YOUR NAME OR ORGANIZATION REMOVED FROM DISTRIBUTION LISTS
OR REDUCE THE NUMBER OF COPIES RECEIVED BY YOU OR YOUR ORGANIZATION, CONTACT THE DOCUMENT CONTROL
DESK (DCD) ON EXTENSION 415-2083

TOTAL NUMBER OF COPIES REQUIRED: LTTR 15 ENCL 15



Duke Power Company
A Duke Energy Company

EC07H
526 South Church Street
P.O. Box 1006
Charlotte, NC 28201-1006

M. S. Tuckman
*Executive Vice President
Nuclear Generation*

(704) 382-2200 OFFICE
(704) 382-4360 FAX

May 13, 1999

Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: License Renewal
Response to Follow-up to Staff's Request for Additional Information Dated
December 29, 1998, Related to the Environmental Portion of the Review of
the License Renewal Application for Oconee 1, 2, and 3
Docket Nos. 50-269, -270, -287
(TAC Nos. M99162, M99163, and M99164)

By letter dated July 6, 1998, Duke Energy Corporation (Duke) submitted an Application for Renewed Operating Licenses for Oconee Nuclear Station, Units 1, 2, and 3 (Application). Volume IV (Exhibit D) of the Application contains the environmental information required by 10 CFR Part 51. By two letters dated December 29, 1998, the NRC staff identified areas where additional information is needed to complete its review of the Environmental Report contained in Volume IV of the Application. By letter dated March 4, 1999, Duke submitted its responses to these two letters.

By letter dated April 29, 1999, the staff requested Duke formally submit additional information that had been identified during the staff review. Accordingly, Duke is providing the requested information in Attachment 1.

If there are any questions, please contact Bill Miller at 704-373-7900 or Bob Gill at 704-382-3339.

Very truly yours,

M. S. Tuckman

9905200189 990513
PDR ADOCK 05000269
P PDR

1/1
A037

M. S. Tuckman, being duly sworn, states that he is Executive Vice President, Nuclear Generation Department, Duke Energy Corporation, that he is authorized on the part of said Company to sign and file with the U. S. Nuclear Regulatory Commission these responses to NRC requests for additional information concerning the Application to Renew the Facility Operating Licenses of Oconee Nuclear Station submitted by letter dated July 6, 1998; and that all statements and matters set forth herein are true and correct to the best of his knowledge and belief. To the extent that these statements are not based on his personal knowledge, they are based on information provided by Duke employees and/or consultants. Such information has been reviewed in accordance with Duke Energy Corporation practice and is believed to be reliable.

M. S. Tuckman

M. S. Tuckman, Executive Vice president
Duke Energy Corporation

Subscribed and sworn to before me this 13TH day of MAY 1999.

Mary P. Mahus

Notary Public

My Commission Expires:

JAN 22, 2001

xc: (w/ Attachment)
L. A. Reyes
Regional Administrator, Region II
U. S. Nuclear Regulatory Commission
Atlanta Federal Center
61 Forsyth Street, SW, Suite 23T85
Atlanta, GA 30303

C. I. Grimes
Director, License Renewal Project Directorate
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

M. A. Scott
Senior NRC Resident Inspector
Oconee Nuclear Station

D. E. La Barge
Senior Project Manager
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

J. H. Wilson
Senior Project Manager
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Rebekah Harty
Pacific Northwest National Laboratories
MSINK3-56
3230 Q Street
Richland, WA 99352

V. R. Autry
Director, Division of Radioactive Waste Management
Bureau of Land & Waste Management
S.C. Department of Health and Environmental Control
2600 Bull St.
Columbia, SC 29201

xc: (w/ Attachment)

GLRP Team

Bill Mackay - Entergy Operations, Inc.

Dave Masiero - GPU Nuclear Corporation

Dave Firth - Framatome Technologies, Inc., Lynchburg, VA (OF57)

Mark Rinckel - Framatome Technologies, Inc., Lynchburg, VA (OF51)

Rick Edwards - Framatome Technologies, Inc., Rockville, MD

Industry Contacts

John Carey - EPRI

Barth Doroshuk - BGE

Steve Hale - FP&L

Mike Henig - VEPCO

Tricia Heroux

Charles Meyer - Westinghouse Owners Group

Terry Pickens - NSP

Chuck Pierce - Southern Nuclear

Fred Polaski - PECO

Doug Walters - NEI

Attachment 1

**Oconee Nuclear Station
Application for Renewed Operating Licenses
Reponses to NRC Follow-up Items Related to the
Environmental Review
(provided by letter dated April 29, 1999)**

May 13, 1999

Attachment 1

Oconee Nuclear Station
Application for Renewed Operating Licenses
Responses to NRC Follow-up Items Related to the
Environmental Review
(provided by letter dated April 29, 1999)

May 13, 1999

GENERAL QUESTIONS

1. Why is the impingement of shellfish not an issue for ONS? Please provide a reference, if available, to substantiate the response to this question.

Response

Since Oconee is not located in a marine environment mollusks like oysters, clams, and mussels are not present. If the word shellfish is used to also refer to freshwater mollusks, there are no appreciable populations of native bivalves in Lake Keowee. The only bivalve present in Lake Keowee in any numbers is the exotic Asiatic clam (*Corbicula fluminea*) which is a nuisance organism introduced into the US from Asia in 1938.

2. Does Duke Energy or Duke Power pay the property taxes for Oconee?

Response

Duke Energy pays the property taxes on Duke Power property in Oconee County.

3. Why are the transmission lines sometimes referred to as 500 kV lines (FES; VICAR service map) and other times as 525 kV lines (ER; RAI response). Were changes made to these lines that would account for the difference in voltage or is this more an issue of line capability versus average voltage?

Response

500 kV is the base voltage used in the computer models of the Duke transmission network and therefore people who have been involved in modeling refer to it as the "500 kV" system. The Duke transmission maps (other than the VACAR map¹, developed by the Duke Energy Transmission Planning Department) refer to it as the 525 kV system. The system operates at or above 525 kV most of the time. The voltage range is roughly 530-550 kV and varies based on the location within the system and the loading conditions for that day. There have been no changes in these lines, therefore, references to these lines as 500 kV or 525 kV lines is not based on any changes made to the lines.

¹ This map was provided as Environmental RAI Response Attachment 11.5.

Attachment 1

Oconee Nuclear Station
Application for Renewed Operating Licenses
Responses to NRC Follow-up Items Related to the
Environmental Review
(provided by letter dated April 29, 1999)

May 13, 1999

4. Is there a separate radiological environmental monitoring program for the ISFSI?

Response

The radiological environmental monitoring program for the station serves as the operational program for the ISFSI. The excerpt below is from the UFSAR for the ISFSI, Section 7.6.

7.6 Environmental Monitoring Program

The current radiological environmental monitoring program for Oconee Nuclear Station will also serve as the operational program for the ISFSI.

No liquid or airborne effluents are anticipated from the HSM. Therefore, the dose to any offsite point will only be from direct and scattered gamma radiation. Several environmental sampling locations for direct radiation are presently located at the Oconee site boundary surrounding the ISFSI. The closest of these is less than 0.3 miles from the ISFSI, well within the 1-mile exclusion area boundary. In addition, the dose rates at the ISFSI will be monitored periodically with fence-mounted dosimetry as part of the Oconee routine radiological monitoring program. This will be used in part to control occupational exposures and will also augment the environmental program.

As a result, no changes to the environmental program are anticipated.

The reference document is titled:

Duke Power Company
Independent Spent Fuel Storage Facility
OCONEE NUCLEAR SITE
FINAL SAFETY ANALYSIS REPORT
Document Number 004S000
Revised to Include: 1997 Update
Effective Date of Contents: December 31, 1997

Attachment 1

**Oconee Nuclear Station
Application for Renewed Operating Licenses
Responses to NRC Follow-up Items Related to the
Environmental Review
(provided by letter dated April 29, 1999)**

May 13, 1999

ALTERNATIVES

As background to the first four questions, we need to consider alternatives of coal and combined cycle gas plants both with and without cooling towers. These alternatives need to be considered both at the existing site (if feasible) and at a new greenfield site.

1. Is it possible to build a coal plant or a combined cycle gas plant within, or adjacent to, the existing ONS site?

Response

Attached is Table 6.4-2 which lists the Environmental Impacts of the following four options for alternative power:

- Construction of a coal fired facility within or adjacent to the Oconee site, which utilizes a once through cooling system.
- Construction of a coal fired facility within or adjacent to the Oconee site, which utilizes cooling towers.
- Construction of a combined cycle gas plant within or adjacent to the Oconee site, which utilizes a once through cooling system.
- Construction of a combined cycle gas plant within or adjacent to the Oconee site, which utilizes cooling towers.

ER Table 6.4-1 identified the environmental impacts for the coal fired and combined cycle gas generation located at a greenfield site.

COAL FIRED FACILITY AT THE OCONEE SITE

Construction of a 2500 MW(e) coal fired, baseload generation facility on the Oconee site would require converting approximately 550 acres (222 ha) of the Oconee site to industrial use. This estimate for land use is based on Duke Power's Belews Creek Steam Station (a 2370 MW(e) base load coal-fired facility) and includes the area required for the plant, coal storage, ash basin, and flyash disposal area. The land surrounding the Oconee Site that is not currently owned by Duke Power is owned by one of Duke Energy's subsidiaries and could likely be made available. The construction of a facility of this size would require more land than is available at the existing site (located north of Highway SC 130 and east of SC 183). Therefore, additional land (located across one of the state roads (Highways SC 130 and SC 183) would need to be used.

Attachment 1

Oconee Nuclear Station Application for Renewed Operating Licenses Responses to NRC Follow-up Items Related to the Environmental Review (provided by letter dated April 29, 1999)

May 13, 1999

Utilizing Oconee's existing intake and discharge structures for a once through cooling system would minimize the environmental impacts, although the intake piping would have to be re-routed to the new plant site.

The environmental impacts would be different if the coal-fired facility located at the Oconee site were required to utilize cooling towers as opposed to a once-through cooling system. There would be less of a thermal load on the receiving water, however, water consumption would be greater than with a once through system (see ER Table 6.4-1). The existing intake and discharge structures could be utilized by a cooling tower system (reducing the environmental impact). The land use requirement for a plant utilizing cooling towers would be increased by approximately 25 acres (10 ha) (based on the size of the cooling tower yard at Catawba Nuclear Station).

The nearest rail line that could be used for supplying coal is also the line that was used to bring in the original steam generators for Oconee. This line, however, terminates at Newry, South Carolina. A new rail line, between 8 to 10 miles in length, would have to be constructed to the Oconee Site, requiring approximately 60 acres (25 ha) of land. This line would have to be constructed across the Little River at Newry. This construction would significantly increase the environmental impacts associated with this option. The impacts to the air quality in this area would be greater than those which exist now and would be the same as that estimated for a greenfield site (ER Table 6.4-1).

COMBINED CYCLE GAS FACILITY AT THE OCONEE SITE

Construction of a combined cycle natural gas facility within or adjacent to the Oconee site would require converting a minimum of 60 acres (25 ha) of the Oconee site to industrial use. The estimated land use requirements for a greenfield site are from 70 – 100 acres (30-40 ha) which would include switch yard, roads, supporting cooling structure, etc. The land surrounding the Oconee Site that is not currently owned by Duke Power is owned by one of Duke's subsidiaries and could likely be made available. The acreage requirements for the facility would require that it be located across one or the state roads (Highways SC 130 or SC 183) that border the Oconee Site.

Utilizing Oconee's existing intake and discharge structures for a once through cooling system would minimize the environmental impacts, although the intake piping would have to be re-routed to the new plant site.

Attachment 1

**Oconee Nuclear Station
Application for Renewed Operating Licenses
Responses to NRC Follow-up Items Related to the
Environmental Review
(provided by letter dated April 29, 1999)**

May 13, 1999

The use of a once through cooling system at this facility would lower the water consumption requirements, due to the lower water use requirement associated with combined cycle facilities.

The environmental impacts to the water quality would be different if a combined cycle facility were required to utilize cooling towers as opposed to a once-through cooling system. Oconee's existing intake and discharge structures could be utilized. There would be less of a thermal load on the receiving water, however the water consumption for a cooling tower system would be greater than with a once through system (see ER Table 6.4-1). The land use requirement would increase by approximately 25 acres (10 ha) over a plant with a once through cooling system due to the cooling tower yard.

Attachment 1

**Oconee Nuclear Station
Application for Renewed Operating Licenses
Reponses to NRC Follow-up Items Related to the
Environmental Review
(provided by letter dated April 29, 1999)**

May 13, 1999

Table 6.4-2 Comparison of Environmental Impacts

Expected Environmental Impacted	Conventional Coal Fired Fossil 2500 MW(e) at Oconee Site with once through cooling	Conventional Coal Fired Fossil 2500 MW(e) at Oconee Site with cooling towers	Combined Cycle Natural Gas 2500 MW(e) at Oconee Site with once through cooling	Combined Cycle Natural Gas 2500 MW(e) at Oconee Site with cooling towers
Land Use	~ 550 acres in addition to that which already exist for Oconee plus ~60 acres for rail line.	~ 575 acres in addition to that which already exist for Oconee plus ~ 60 acres for rail line.	~ 60 acres in addition to that which already exists for Oconee plus ~ 150 acres (minimum) for gas line.	~ 85 acres in addition to that which already exists for Oconee plus ~ 150 acres (minimum) for gas line.
Ecology	Minimal additional habitat loss.	Minimal additional habitat loss.	Significant additional habitat loss due to installation of gas line.	Significant additional habitat loss due to installation of gas line.
Aesthetics	Visual impacts from additional plant structures and emissions.	Visual impacts from additional plant structures and emissions.	Visual impacts from additional plant structures and emissions.	Visual impacts from additional plant structures and emissions.
Water Quality				
Impacts from Site Construction	Sediment from land clearing.	Sediment from land clearing.	Sediment from land clearing.	Sediment from land clearing.
Water Consumption	16,000 gpm (same as Oconee).	>16,000 gpm	<16,000 gpm,	>16,000 gpm
Pollutants	Same as Oconee, addition of ash basin discharge, and no radwaste.	Less thermal load than Oconee, addition of ash basin discharge, and no radwaste.	Less thermal load and no radwaste.	Less thermal load and no radwaste.
Air Quality	Same as ER Table 6.4-1 for greenfield site.	Same as ER Table 6.4-1 for greenfield site.	Same as ER Table 6.4-1 for greenfield site.	Same as ER Table 6.4-1 for greenfield site.
Waste	Same as ER Table 6.4-1 for greenfield site.	Same as ER Table 6.4-1 for greenfield site.	Same as ER Table 6.4-1 for greenfield site.	Same as ER Table 6.4-1 for greenfield site.
Human Health	Same as ER Table 6.4-1 for greenfield site.	Same as ER Table 6.4-1 for greenfield site.	Same as ER Table 6.4-1 for greenfield site.	Same as ER Table 6.4-1 for greenfield site.

Attachment 1

**Oconee Nuclear Station
Application for Renewed Operating Licenses
Responses to NRC Follow-up Items Related to the
Environmental Review
(provided by letter dated April 29, 1999)**

May 13, 1999

Expected Environmental Impacted	Conventional Coal Fired Fossil 2500 MW(e) at Oconee Site with once through cooling	Conventional Coal Fired Fossil 2500 MW(e) at Oconee Site with cooling towers	Combined Cycle Natural Gas 2500 MW(e) at Oconee Site with once through cooling	Combined Cycle Natural Gas 2500 MW(e) at Oconee Site with cooling towers
Socioeconomic	Post construction workforce reduction from Oconee's current level.	Post construction workforce reduction from Oconee's current level.	Post construction workforce reduction from Oconee's current level.	Post construction workforce reduction from Oconee's current level.
Cultural	Same as existing Oconee Site.	Same as existing Oconee Site.	Same as existing Oconee Site.	Same as existing Oconee Site.

2. Is it possible to build a combined cycle gas plant within or adjacent to the existing ONS site?

Response

See the response to Alternatives Question 1.

3. If yes (for either option in 1 or 2 above), could the plant be built so as to use the existing Once Through Cooling System intake and discharge or a would a cooling tower be required?

Response

See the response to Alternatives Question 1.

4. Where is the nearest gas line? Is it big enough for 100 billion cubic feet a year (to replace the energy from ONS)?

Response

The nearest gas line that would be large enough to support a new combined cycle facility of this size is located near Interstate 85 in Anderson County. The gas line is located approximately 25 miles southeast of the Oconee site. Transco Energy Corporation owns this line.

Construction costs for a gas pipeline average approximately \$1 million dollars per mile. Combined cycle facilities of this size are more economical when sited near an existing gas line. The installation of a gas line from the interstate Transco line to the Oconee site would not be economical and would have a significant environmental impacts (requiring approximately 150 acres (60 ha) of land) when compared to the continued operation of Oconee.

Operation of this facility as base load unit would likely require wintertime constraints on the gas supply and would likely require expansion of the interstate pipeline if the gas were to be made available all year. This would most likely be cost prohibited.

The next two questions correspond only to the Coal-fire alternative -

5. Coal Fire Alternative - Does Duke have enough Sulfur-dioxide allowances for their existing coal-fired units that could be used to operate an additional coal-fired plant or would they need to buy additional allowances?

Response

Duke is allocated approximately 185,000 SO₂ allowances until the year 2010 and 143,000 SO₂ allowances from the year 2010 on. Because of low fossil capacity factors from 1985 to 1987, this amounts to about a 0.8 pounds SO₂/MMBTUs for the Duke system average, which is well below the national average of 1.2 pounds/MMBTUs phase II SO₂ limit.

Attachment 1

Oconee Nuclear Station
Application for Renewed Operating Licenses
Responses to NRC Follow-up Items Related to the
Environmental Review
(provided by letter dated April 29, 1999)

May 13, 1999

Duke already burns a lower sulfur coal (in the 1.2 to 1.5 pounds SO₂/MMBTUs) and will emit over 270,000 tons per year after the year 2000. Duke's current strategy is to purchase SO₂ allowances for SO₂ emissions over 185,000 tons. Therefore additional coal generation units would add to the number of allowances that need to be purchased.

6. Coal Fire Alternative - Do you have an estimate for the total annual carbon monoxide emissions from a 2500 MW coal-fired plant? If so, please provide.

Response

Annual carbon monoxide (CO) emissions from a 2500 MW coal fired plant are calculated as follows:

Assumed a heat rate for new coal fired boiler is 9,400 BTU/kWh. The assumed capacity factor is 0.85.

$$(9,400 \text{ BTU/kWh}) (2,500,000 \text{ kW}) (\text{MMBTU}/10^6 \text{ BTU}) (0.02 \text{ pounds CO/MMBTU}) \\ = 470 \text{ pounds CO/hour}$$

Note: MMBTU = 1,000,000 BTU

Using a 85% Capacity Factor, this equates to:

$$(470 \text{ pounds CO/hour}) (8760 \text{ hour/year}) (.85) (1 \text{ ton}/2000 \text{ pounds}) = 1800 \text{ tons/year}$$

Reference - COMPIATION OF AIR POLLUTION FACTORS VOLUME I:
STATIONARY POINT AND AREA SOURCES, United States Environmental
Protection Agency, Office of Air Quality Planning and Standards, AP-42, Fifth Edition,
January 1995.

Attachment 1

**Oconee Nuclear Station
Application for Renewed Operating Licenses
Responses to NRC Follow-up Items Related to the
Environmental Review
(provided by letter dated April 29, 1999)**

May 13, 1999

SITE DESCRIPTION

1. We were under the impression that the river running from Lake Keowee to Lake Hartwell was called the "Keowee River" (RAI Attachment 11.3; FES Figure II-5; Keowee-Toxaway, Supplement to Keowee-Toxaway project page 14). However, Figure 2.5-3 of the ER labels this river as the "Seneca River". Which name should we use to refer to the river that flows between Lake Keowee and Lake Hartwell?

Response

The dams built for the Keowee-Toxaway Project (Lake Keowee) impounded the Keowee River and the Little River. The body of water immediately below the Keowee Dam is the Keowee River. The name remains the Keowee River until the juncture with the Little River (below Little River Dam on ER Figure 2.5-2). The Keowee River and the Little River form the Seneca River.

2. Can we get an electronic copy of Figure 2.5-2 and Figure 2.5-4 from the ER?

Response

Electronic copies of these two figures were provided.

3. The attachment on RAI 6 shows a volume of Lake Jocassee of 1,1600,000 ac-ft. Would this be 1,160,000?

Response

The correct volume for Lake Jocassee is 1,160,000 ac-ft.