AUG 5 1988

Docket No. 72-4, (50-269,270,287)

MEMORANDUM FOR: Leland C. Rouse, Chief
Fuel Cycle Safety Branch
Division of Industrial and
Medical Nuclear Safety

THRU: John P. Roberts, Section Leader
Irradiated Fuel Section
Fuel Cycle Safety Branch
Division of Industrial and
Medical Nuclear Safety

FROM: Fritz Sturz
Irradiated Fuel Section
Fuel Cycle Safety Branch
Division of Industrial and
Medical Nuclear Safety

SUBJECT: MEETING WITH DUKE POWER COMPANY

56 6 RPB IN 50-269

DATE AND TIME: July 14, 1988, 8 a.m.

LOCATION: Oconee Nuclear Station, Seneca, SC

PURPOSE: Site visit and discussion of environmental matters pertaining to licensee's independent spent fuel storage installation (ISFSI) application.

ATTENDEES: See enclosure

DISCUSSION:

Duke Power Company provided preliminary responses to environmental questions contained in our June 24, 1988, letter (see enclosure). We cursorily reviewed these responses and provided Duke Power Company some feedback about the appropriateness of the scope of their responses. After the initial discussions we toured the Oconee Nuclear Station Units 1 and 2 spent fuel storage pool and walked the two transfer cask routes to the proposed ISFSI site. Following the tours, additional discussions were held to clarify our informational needs for those questions which Duke Power Company had not provided preliminary responses. Duke Power Company indicated that they expected to have the official responses to our June 14, 1988, letter to us by the beginning of August 1988.

Duke Power Company has gone out with requests for bids for the earth-moving work at the ISFSI site and hopes to be able to let a contract this fall. Their construction plans do not, as yet, seem finalized. They are undecided

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about which direction to construct, north-to-south or south-to-north. Apparently, the earth-moving contract hinges on how much storage capacity they will need. If they construct south-to-north, not as much earthwork will have to be done immediately and they could hold off and avoid additional earthwork depending on their ultimate storage needs.

Original Signed By:

Fritz Sturz
Irradiated Fuel Section
Fuel Cycle Safety Branch
Division of Industrial and
Medical Nuclear Safety

Enclosures:
1. Attendee List
2. Meeting Agenda
3. Preliminary Responses to NRC Questions

cc: Attached list

DISTRIBUTION: w/ enclosures
Docket File 72-4, (50-269,270,287) PDR & LPDR NRC File Center IMSB R/F
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OFFICIAL RECORD COPY

ER SITE VISIT

ATTEMDEES

JULY 14, 1988

Name	Representing	Role
Jack C. Jenkins	Duke Power - Design Engr.	Project Engineer
Robert M. Dullin	Duke Power - Design Engr.	Senior Engineer
Harry E. Vanpelt	Duke Power - Design Engr.	Radiation Shielding
James R. Thornton	Duke Power - Design Engr.	Radiation Effluents
Dick Sweigart	DPC/NPD/ONS	Supt. OPS
Bob Rasmussen	Duke Power - Design Engr.	Spent Fuel Mgt.
Van McCormic	Duke/ONS/OPS - Fuel Handling	Site Spent Fuel Supv.
Ali Haghi	Duke/GO/Licensing	Licensing Engineer
Martin Hemphill	Duke/CMDS	Construction
Deborah Ryan	SAIC	Principle Investigator
Ray Roland	SAIC	Engineer
James Hammelman	SAIC	Engineer
Fritz C. Sturz	NRC	Engineer
K. C. Leu	NRC	Engineer
Joe Price	ONS/OPS	AOE
Milo Killough	ONS/Project	Project Services
J. N. Pope	ONS/OPO	Sapt.
P. H. Skinner	NRC	SRI
Coleman Jennings	ONS	Station Emergency Planner

OCONEE NUCLEAR STATION
INDEPENDENT SPENT FUEL STORAGE INSTALLATION
ENVIRONMENTAL ASSESSMENT SITE VISIT
JULY 14, 1988

AGENDA

Time	Item	By
8:00 a.m.	Welcome to Oconee	ONS Representative
	Introduction of Personnel	Jack Jenkins
	Review of Site Visit	Jack Jenkins
8:45 a.m.	Begin Site Access Process	
9:30 a.m.	Enter SFP	Van McCormic and/or Dave Deatherage
10:30 a.m.	Exit SFP	
10:30-11:30 a.m.	Walk Transfer Route Inside Controlled Access Area	All
11:30-12:15 a.m.	Lunch at Canteen	
12:15-1:15 p.m.	Walk to ISFSI Site	All
1:15-2:00 p.m.	Closure	All

QUESTIONS AND RESPONSES
FOR THE OCONEE NUCLEAR STATION
INDEPENDENT SPENT FUEL STORAGE INSTALLATION
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Question 1: Table 2.1-1 in the ER is based on 1970 census data. Table II-I in the Oconee FEIS is also based on the 1970 census. However, comparison of these two tables, showing population distribution in the 16 sectors around the Oconee site reveals marked discrepancies in the number of persons shown residing in each sector. Please clarify.

Response: The FEIS (Table II-I) and the ER (Table 2.1-1) both utilized the 1970 census for developing the population distributions around Oconee Nuclear Station for the various sectors. The discrepancies between the two documents are attributable to the approximation methods used to allocate populations to the various sectors and mile radial increments. The population distribution estimates for the ER Table 2.1-1 are consistently higher than those presented in FEIS Table II-I except for the radial increment 1-2 miles. In this case the difference is 61 persons. The ER Table 2.1-1 would, therefore, represent a worst case situation in overestimating the populated at risk.

An updated population projection for the 10 mile radius at Oconee Nuclear Station, based on the 1980 census, is provided in "Evacuation Time Estimates" prepared by PRC Voorhees in 1981. A copy of the report is provided.

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Question 2: Table 2.1-1 in the ER lists the projected number of residents within a 50-mile radius of the Oconee site for the year 2020. This table is based on the 1980 census and indicates there are no residences within one mile of the plate site in any sector. Inspection of the USGS 7-1/2 mile minute map of the area which surrounds the Oconee plant site reveals the presence of some 17 structures within one mile of the plant site, at least some of which could be residences. Please resolve these apparent discrepancies and provide up-to-date information for Tables 2.1-1 and 2.1-2 of the ER. An aerial photograph of the site would be most beneficial.

Response: There are no residents within a one-mile radius of the plant, based on ground surveys and aerial photographs. The most recent topographic maps are photo revised and may not have been fully confirmed by ground surveys. Some of the structures and roads in the vicinity of the plant indicated on the topographic maps may represent those present on the original 1961 map. An aerial photograph taken in 1988 has been provided.

QUESTIONS AND RESPONSES
FOR THE OCONEE NUCLEAR STATION
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Question 3: Population statistics provided in the ER should include the transient population associated with nearby universities. Please confirm that these are represented or correct the data to include this part of the transient population for both current and future projections.

Response: The only university within a ten-mile radius of the plant is Clemson University. It is located approximately 9 miles SSE of the plant. The student population is not included in the census. However, the study "Evacuation Time Estimate" conducted by PRC Voorhees, 1981, discusses the student population in the ten-mile Evacuation Zone for Oconee Nuclear Station. A copy of the report is provided.

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Question 4: With the benefit of more recent population data, identify the location of the nearest residence. Where could the nearest residence be in the future? What is the distance to the nearest residence from the HSM center?

Response: The nearest residence is approximately 1 1/4 miles in direction from the plant. The nearest residence in the future would be at least one mile from the plant. The distance to the nearest residence from the HSM center is approximately miles in a direction.

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Question 5: The absence of any scale, particularly for ER Figure 2.1-3, detracts from its use. If the ISFSI is located, as stated, 100 feet west of the intake structure, then the dimensions of the ISFSI are roughly 130 by 230-feet and it therefore occupies a little over one-half acre. Why them, will 3-4 acres be requried for construction of the ISFSI? Are the short and long routes (SAR Fig. 4.1-1) from the cask handling area to the ISFSI about 1,200 and 2,200 feet in length, respectively? Why then, does it take an hour (SAR Table 7.4-1) to traverse even the longer route, which is less than one-half mile?

Response: The eastern edge of the ISFSI site is located approximately 210 feet west of the intake structure. The east-to-west dimension of the ISFSI site is approximately 253 feet and it measures 510 feet north-to-south (reference Figure 2.5-1). The approximately 3-acre ISFSI site includes a 20 feet wide controlled access area for security purposes around its entire perimeter as required by Subpart H of 10CFR72. Concrete modules are spaced approximately 8'8" on centers and have a front-to-back depth of 20 feet. The 88 module Oconee ISFSI will be constructed in two rows with 44 concrete modules in each row. Therefore, the front-to-back depth of the 88 modules will be 40 feet, and its total

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length about 400 feet. The ISFSI yard is sized to accommodate the docking maneuvers of the tractor pulling the transfer cask mounted on its trailer. The short and long transfer routes from the cask handling area to the ISFSI are about 2,500 feet and 4,800 feet in length, respectively (reference SAR Figure 4.1-1). The primary purpose of SAR Table 7.4-1 is to permit the calculation of total dose received by a canister transfer. The actual transport time will vary to meet conditions prevalent at the time of transfer.

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Question 7: Are there any species located on the site which are listed by either State or Federal government as being threatened or endangered?

Response: There are no known species of plant or animal located on the site that are listed by the South Carolina Heritage Trust Program or by the U. S. Fish and Wildlife Service. Bald eagles are occasionally sighted on Lake Keowee and Lake Jocassee but no nesting populations have been reported to date. The S. C. Wildlife and Marine Resources Department is conducting a program to reintroduce peregrine falcons on Lake Jocassee approximately 12 miles north of Oconee Nuclear Station.

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Question 8: Part of the proposed storage area is currently used for parking. Where will the new parking area be and assess any impacts associated with its construction?

Response: A portion of the ISFSI site is currently used by Duke's Construction and Maintenance Division-South (CMD-S) personnel during outages. That portion of the existing parking area not converted into ISFSI use will continue to be used for outage parking.

In addition, a new regional facility for CMD-S is located about one-half mile southeast of the ISFSI and provides additional parking at the site.

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Question 9: The ER states that there will be some on-site disposal of spoil material from the excavation? Where will this material be placed or where are the candidate areas for placement? Address any potential impacts and any mitigation measures to be taken to minimize any adverse impacts from disposal of the spoil material?

Response: The prime candidates for spoil material are an area approximately 800 feet west of the ISFSI and an area immediately south of South Carolina State Highway #183. Both areas are owned by Duke Power Company. An economic analysis of potential earthwork operations will be performed to determine which of the candidate spoil areas will be utilized.

Duke Power's environmental personnel are involved with the spoil area selection process. Burning permits will be obtained as required. Necessary measures will be taken to ensure that; 1) existing paved roads remain free of objectionable amounts of earth and rocks, and, 2) dust created during earthwork operations is kept at an acceptable level. Various requirements, such as silt fences, for erosion and sedimentation control will be implemented.

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All work performed will comply with the latest revision of Safety and Health Regulations for Construction (29CFR 1926). All rules and regulations of the State Board of Health and all local health officials will be observed. All operations in connection with the transportation, storage, and use of explosives ~~shall~~ will comply with all Federal, State, and Local laws governing the same.

Field inspection of work in progress by Duke Power's construction, design, and environmental personnel will monitor earthwork operations to ensure any potential problems are detected and eliminated.

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Question 11: Will all haul roads be paved?

Response: No. Approximately 80% of the roads anticipated to be used as haul roads are paved and about 20% are unpaved.

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Question 14: Is the SAR incorporated by reference? This is necessary to provide the ER with specific requirements of 10 CRF Part 72 Subpart E.

Response: Section 1.3 of the ISFSI Environmental Report lists the ONS ISFSI SAR as a reference.

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Question 15: Does the puff advection model referred to in Section 6.2 of the ER comply with guidance of Regulatory Guide 1.145?

Response: The puff advection model in Section 6.2 complies with broad aspects of the guidance in Regulatory Guide 1.145*. As a real time radiological evaluation tool, the statistical treatment of diffusion conditions in Regulatory Guide 1.145 ~~are~~ is not relevant to the puff advection model. The following exceptions are noted:

1) No meander is incorporated for low wind speed neutral/stable conditions.

2) Account is taken of reflection from elevated temperature inversions.

* "Oconee Nuclear Station Offsite Dose Assessment Computer Model," Volume 1. (A copy of this document was transmitted to the NRC, Region II on June 6, 1986).

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Question 17: For the nuclides H-3, Kr-85, I-129, Cs-134, Cs-137, Sr-90, and Ru-106 provide the DSC inventory for the 40,000 MWD/MTU 4.0% 10-year cooled fuel.

Response: The irradiated fuel inventory data requested is provided below:

Nuclide	DSC Inventory (Curies)
H-3	4.30E+03
Kr-85	6.60E+04
I-129	4.49E-01
Cs-134	8.30E+04
Cs-137	1.13E+06
Sr-90	7.85E+05
Ru-106	7.03E+03

The radionuclide inventory data provided above is based on SCALE-3, SAS2 analysis sequence results for a total of 24 B&W 15x15 fuel assembies irradiated to 40,000 MWD/MTU and cooled 10 years.

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Question 18: What is the anticipated rate (number per year for 88 modules) for placing DSCs in HSMs?

Response: It is presently planned to reduce prevailing spent fuel pool inventories to prudent operating levels in the first year of operation. Current projections indicate that ~~8~~ 10 DSCs will be required.

On an ongoing basis, the DSC loading rate will match (on average) the reactor discharge rate, including discharges during the first year of operation. Currently, the station discharge rate is approximately 104 spent fuel assemblies per year. At that discharge rate, either 4 or 5 DSCs would be required.

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Question 21: Provide an estimate of the maximum 2-hour dose to an individual located in the nearest area of public access, which would be either SC 130 or SC 183, due to the maximum plausible accident. Relate the X/Q value used in this assessment to that used in the Reactor SAR, i.e., 1.16E-4 sec/m^3.

Response: Duke Power Company and Oconee Nuclear Station emergency procedure protective actions include provisions to control access to SC 130 and SC 183 during radiological emergencies (see response to NRC Question 16). As stipulated by 10CFR72.68, the appropriate location to analyze design basis accident radiological consequences is the nearest boundary of the controlled area; the nearest controlled area boundary is approximately 3900 feet, SSW from the center of an 88 module ISFISI. Therefore, the atmospheric dispersion factor, X/Q, used in calculating radiological consequences resulting from a postulated maximum design basis accident (i.e., Dry Storage Canister Leakage) corresponds to any location on or outside of the owner controlled area boundary. The owner controlled area for Oconee extends 1 mile in all directions from the center of Oconee Unit 2 (see ER Figure 2.1-2).

The X/Q value referenced in the Oconee SAR, 1.16E-04 sec/m^3, applied to Unit 1 and included an empirical adjustment factor based on a field test series of SF6 releases. Calculations for the ISFSI, however, are based on data and assumptions as proposed in the Oconee SER, Section 3.2.4, Units 2 and 3.

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Question 27: What were the offsite estimated anual dose commitments to the population within 1-2 and 2-3 miles from the Oconee station from its liquid and gaseous discharges for the last three years? Provide data from the most recent annual environmental dose measurement program and a map which identifies the locations where measurements were made.

Response: The estimated annual population dose commitment information requested is provided below:

	1-2 Mile Population Dose (Person-Rem)		
Pathway	1985	1986	1988
Liquid [1]			
Gas [2]		(LATER)	
Direct			
Total			

	2-3 Mile Population Dose (Person-Rem)		
Pathway	1985	1986	1988
Liquid [1]			
Gas [2]		(LATER)	
Direct			
Total			

The most recent environmental dose measurement information requested is included as Attachment 27.1.

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Question 32: Will the entire concrete foundation for the maximum number of HSMs be built prior to any loading of HSMs? If this is not the case, i.e., if this aspect of the ISFSI construction will be phased, has the dose to construction workers been assessed? If so, please provide the assumptions and methods used and results of the analysis.

Response: The concrete foundation of a Horizontal Storage Module (HSM) array will be constructed as needed. This permits the construction of the number of modules necessary to meet Oconee's need for spent fuel storage as discussed in the ER Section 1.2.

— see next sheet for more —

QUESTIONS AND RESPONSES
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Response: As each segment of the storage array is added, an assessment of the radiological conditions at the construction area will be performed as detailed in Question 28. Dose to construction workers will be minimized using appropriate ALARA techniques.

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Question 33: What ALARA considerations will be given to construction workers to provide protection when building additional HSM units? Doses up to 100 mrem/hour are quite close to occupied areas during construction.

Response: High Radiation areas will be fenced off during construction phases of operation. Any areas with unacceptably high dose rates will be temporarily shielded during construction to preclude unnecessary dose to workers.

Work will be planned and scheduled to minimize hours spent in the radiation area.

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Question 34: The SAR Table 7.4-1 lists the steps required in moving the spent fuel from the fuel pool to completion of storage within an HSM and give the number of personnel involved in each step. Will these steps be performed by the same one, two, three, or four personnel? What is the total number of persons involved in this action?

Response: Primary responsibility for loading of DSC will rest with an operations supervisor supported by a fuel handling crew expected to consist of 4 nuclear equipment operators (NEOs) and 4 maintenance personnel. This crew will be directly involved in preparation of the transfer cask/DSC, fuel loading, filling/draining, decontamination, vacuum drying, backfilling with helium, cask head bolting, and placement on the transfer trailer.

It is expected that this crew will be staffed on an ongoing basis and that NEOs will be assigned to the crew on a staggered rotational basis with an 8-week tour. It is expected the maintenance personnel will be assigned to the crew on a long-term basis.

Welding setup and seal welding will require maintenance personnel specifically trained. It is anticipated that an existing maintenance crew of 8 to 10 welders will be trained and available, as needed. The operations supervisor will maintain overall responsibility.

It is anticipated that transport of the loaded cask to the ISFSI and loading of the DSC into the HSM will be performed by another crew of 8 to 10 maintenance personnel under the direction of the operations supervisor.

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Response: The FEIS (Table II-I) and the ER (Table 2.1-1) both utilized the 1970 census for developing the population distributions around Oconee Nuclear Station for the various sectors. The discrepancies between the two documents are attributable to the approximation methods used to allocate populations to the various sectors and mile radial increments. The population distribution estimates for the ER Table 2.1-1 are consistently higher than those presented in FEIS Table II-I except for the radial increment 1-2 miles. In this case the difference is 61 persons. The ER Table 2.1-1 would, therefore, represent a worst case situation in overestimating the populated at risk.

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Response: The eastern edge of the ISFSI site is located approximately 210 feet west of the intake structure. The east-to-west dimension of the ISFSI site is approximately 253 feet and it measures 510 feet north-to-south (reference Figure 2.5-1). The approximately 3-acre ISFSI site includes a 20 feet wide controlled access area for security purposes around its entire perimeter as required by Subpart H of 10CFR72. Concrete modules are spaced approximately 8'8" on centers and have a front-to-back depth of 20 feet. The 88 module Oconee ISFSI will be constructed in two rows with 44 concrete modules in each row. Therefore, the front-to-back depth of the 88 modules will be 40 feet, and its total

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Question 9: The ER states that there will be some on-site disposal of spoil material from the excavation? Where will this material be placed or where are the candidate areas for placement? Address any potential impacts and any mitigation measures to be taken to minimize any adverse impacts from disposal of the spoil material?

Response: The prime candidates for spoil material are an area approximately 800 feet west of the ISFSI and an area immediately south of South Carolina State Highway #183. Both areas are owned by Duke Power Company. An economic analysis of potential earthwork operations will be performed to determine which of the candidate spoil areas will be utilized.

Duke Power's environmental personnel are involved with the spoil area selection process. Burning permits will be obtained as required. Necessary measures will be taken to ensure that; 1) existing paved roads remain free of objectionable amounts of earth and rocks, and, 2) dust created during earthwork operations is kept at an acceptable level. Various requirements, such as silt fences, for erosion and sedimentation control will be implemented.

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All work performed will comply with the latest revision of Safety and Health Regulations for Construction (29CFR 1926). All rules and regulations of the State Board of Health and all local health officials will be observed. All operations in connection with the transportation, storage, and use of explosives ~~shall~~ will comply with all Federal, State, and Local laws governing the same.

Field inspection of work in progress by Duke Power's construction, design, and environmental personnel will monitor earthwork operations to ensure any potential problems are detected and eliminated.

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Question 11: Will all haul roads be paved?

Response: No. Approximately 80% of the roads anticipated to be used as haul roads are paved and about 20% are unpaved.

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Question 14: Is the SAR incorporated by reference? This is necessary to provide the ER with specific requirements of 10 CRF Part 72 Subpart E.

Response: Section 1.3 of the ISFSI Environmental Report lists the ONS ISFSI SAR as a reference.

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Question 15: Does the puff advection model referred to in Section 6.2 of the ER comply with guidance of Regulatory Guide 1.145?

Response: The puff advection model in Section 6.2 complies with broad aspects of the guidance in Regulatory Guide 1.145*. As a real time radiological evaluation tool, the statistical treatment of diffusion conditions in Regulatory Guide 1.145 ~~are~~ is not relevant to the puff advection model. The following exceptions are noted:

1) No meander is incorporated for low wind speed neutral/stable conditions.

2) Account is taken of reflection from elevated temperature inversions.

* "Oconee Nuclear Station Offsite Dose Assessment Computer Model," Volume 1. (A copy of this document was transmitted to the NRC, Region II on June 6, 1986).

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Question 17: For the nuclides H-3, Kr-85, I-129, Cs-134, Cs-137, Sr-90, and Ru-106 provide the DSC inventory for the 40,000 MWD/MTU 4.0% 10-year cooled fuel.

Response: The irradiated fuel inventory data requested is provided below:

Nuclide	DSC Inventory (Curies)
H-3	4.30E+03
Kr-85	6.60E+04
I-129	4.49E-01
Cs-134	8.30E+04
Cs-137	1.13E+06
Sr-90	7.85E+05
Ru-106	7.03E+03

The radionuclide inventory data provided above is based on SCALE-3, SAS2 analysis sequence results for a total of 24 B&W 15x15 fuel assembies irradiated to 40,000 MWD/MTU and cooled 10 years.

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Question 18: What is the anticipated rate (number per year for 88 modules) for placing DSCs in HSMs?

Response: It is presently planned to reduce prevailing spent fuel pool inventories to prudent operating levels in the first year of operation. Current projections indicate that ~~8~~ 10 DSCs will be required.

On an ongoing basis, the DSC loading rate will match (on average) the reactor discharge rate, including discharges during the first year of operation. Currently, the station discharge rate is approximately 104 spent fuel assemblies per year. At that discharge rate, either 4 or 5 DSCs would be required.

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Question 21: Provide an estimate of the maximum 2-hour dose to an individual located in the nearest area of public access, which would be either SC 130 or SC 183, due to the maximum plausible accident. Relate the X/Q value used in this assessment to that used in the Reactor SAR, i.e., 1.16E-4 sec/m^3.

Response: Duke Power Company and Oconee Nuclear Station emergency procedure protective actions include provisions to control access to SC 130 and SC 183 during radiological emergencies (see response to NRC Question 16). As stipulated by 10CFR72.68, the appropriate location to analyze design basis accident radiological consequences is the nearest boundary of the controlled area; the nearest controlled area boundary is approximately 3900 feet, SSW from the center of an 88 module ISFISI. Therefore, the atmospheric dispersion factor, X/Q, used in calculating radiological consequences resulting from a postulated maximum design basis accident (i.e., Dry Storage Canister Leakage) corresponds to any location on or outside of the owner controlled area boundary. The owner controlled area for Oconee extends 1 mile in all directions from the center of Oconee Unit 2 (see ER Figure 2.1-2).

The X/Q value referenced in the Oconee SAR, 1.16E-04 sec/m^3, applied to Unit 1 and included an empirical adjustment factor based on a field test series of SF6 releases. Calculations for the ISFSI, however, are based on data and assumptions as proposed in the Oconee SER, Section 3.2.4, Units 2 and 3.

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Question 27: What were the offsite estimated anual dose commitments to the population within 1-2 and 2-3 miles from the Oconee station from its liquid and gaseous discharges for the last three years? Provide data from the most recent annual environmental dose measurement program and a map which identifies the locations where measurements were made.

Response: The estimated annual population dose commitment information requested is provided below:

	1-2 Mile Population Dose (Person-Rem)		
Pathway	1985	1986	1988
Liquid [1]			
Gas [2]		(LATER)	
Direct			
Total			

	2-3 Mile Population Dose (Person-Rem)		
Pathway	1985	1986	1988
Liquid [1]			
Gas [2]		(LATER)	
Direct			
Total			

The most recent environmental dose measurement information requested is included as Attachment 27.1.

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Question 32: Will the entire concrete foundation for the maximum number of HSMs be built prior to any loading of HSMs? If this is not the case, i.e., if this aspect of the ISFSI construction will be phased, has the dose to construction workers been assessed? If so, please provide the assumptions and methods used and results of the analysis.

Response: The concrete foundation of a Horizontal Storage Module (HSM) array will be constructed as needed. This permits the construction of the number of modules necessary to meet Oconee's need for spent fuel storage as discussed in the ER Section 1.2.

— see next sheet for more —

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Question 32: Will the entire concrete foundation for the maximum number of HSMs be built prior to any loading of HSMs? If this is not the case, i.e., if this aspect of the ISFSI construction will be phased, has the dose to construction workers been assessed? If so, please provide the assumptions and methods used and results of the analysis.

Response: As each segment of the storage array is added, an assessment of the radiological conditions at the construction area will be performed as detailed in Question 28. Dose to construction workers will be minimized using appropriate ALARA techniques.

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Question 33: What ALARA considerations will be given to construction workers to provide protection when building additional HSM units? Doses up to 100 mrem/hour are quite close to occupied areas during construction.

Response: High Radiation areas will be fenced off during construction phases of operation. Any areas with unacceptably high dose rates will be temporarily shielded during construction to preclude unnecessary dose to workers.

Work will be planned and scheduled to minimize hours spent in the radiation area.

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Question 34: The SAR Table 7.4-1 lists the steps required in moving the spent fuel from the fuel pool to completion of storage within an HSM and give the number of personnel involved in each step. Will these steps be performed by the same one, two, three, or four personnel? What is the total number of persons involved in this action?

Response: Primary responsibility for loading of DSC will rest with an operations supervisor supported by a fuel handling crew expected to consist of 4 nuclear equipment operators (NEOs) and 4 maintenance personnel. This crew will be directly involved in preparation of the transfer cask/DSC, fuel loading, filling/draining, decontamination, vacuum drying, backfilling with helium, cask head bolting, and placement on the transfer trailer.

It is expected that this crew will be staffed on an ongoing basis and that NEOs will be assigned to the crew on a staggered rotational basis with an 8-week tour. It is expected the maintenance personnel will be assigned to the crew on a long-term basis.

Welding setup and seal welding will require maintenance personnel specifically trained. It is anticipated that an existing maintenance crew of 8 to 10 welders will be trained and available, as needed. The operations supervisor will maintain overall responsibility.

It is anticipated that transport of the loaded cask to the ISFSI and loading of the DSC into the HSM will be performed by another crew of 8 to 10 maintenance personnel under the direction of the operations supervisor.

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Question 16: 10 CFR72.69 requires that an ISFSI Emergency Planning Zone shall be established. Please define the ISFSI-EPZ and provide details about the determination that protective action guides beyond its outer boundary would not be necessary. Also, Section 9.5 of the SAR states that the Emergency Program for the Oconee Nuclear Station has been determined to be adequate to manage the consequences of events which might occur involving the ISFSI. Please discuss the basis for this determination and how ISFSI emergencies will be integrated into the plan.

16. A separate emergency planning zone has not been developed just for the ISFSI. The Plume Exposure Pathway (10 mile EPZ) and the Ingestion Pathway (50 mile EPZ) are sufficient to provide protec- to the public. The Oconee Nuclear Station management has determined that the emergency plan that has been developed (using NUREG 0654 as guidance) will provide the planning expertise, experience and training necessary for plant personnel to handle any type of emergency that should occur. The ONS emergency program addresses radiological, chemical, fire, medical, natural disaster, and security-related events. Since a ten-mile exposure pathway has already been identified for radiological events, we will continue to use that area for any and all emergencies since we know the population status for two miles, five miles, ten miles, and fifty miles surrounding the plant.

The meteorological tower has been upgraded to have the most accurate equipment available. A new dose assessement model that can provide information for a Model A and Model B dose projection has recently been purchased. This model was developed by Impell and includes an internationally accepted meteorological model (MESORI) which was designed to contain all current regulatory requirements for dispersion of radioactive effluent.

The field monitoring teams are experienced technicians and are placed in the field to detect any radioactive activity released offsite. Dose assessment personnel assigned to the Technical Support Center assess dose and would make protective action recommendations to the Emergency Coordinator if required by their procedures. Protective action procedures are in place for protecting the public against radioactive releases that are in excess of EPA guidelines.

The Technical Support Center dose assessment would use the source term for the fuel that is dry-stored and would calculate dose projection based on the damage to the fuel (i.e. four assemblies damaged, bomb detonated and the entire storage area destroyed and all assemblies damaged). The classification of the event would be determined by the radiation levels being seen/projected offsite whichever is the most appropriate for the actual event in progress as determined by the Emergency Coordinator.

Accident scenarios that could occur and affect the ISFSI are covered by the present emergency plan and would be handled through the Technical Support Center and the Crisis Management Center should assistance be needed from the General Office. Attached is a copy of the Emergency Classification procedure RP/O/B/1000/01.

The emergency plan is tested each calendar year (minimum of 4 quarterly drills and one annual exercise). These drills/exercise use a myriad of scenarios and would involve the ISFSI after it is built.