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Duke Power Company Charlotte, North Carolina A. C. Thies	3-7-74	3-28-74	X			

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A. Schwencer	1 signed	1		

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DESCRIPTION:

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PLANT NAME: OCONEE UNITS 1, 2, & 3

ENCLOSURES:

Info re special nuclear materials and byproduct material at Oconee Station

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FOR ACTION/INFORMATION

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DUKE POWER COMPANY

POWER BUILDING

422 SOUTH CHURCH STREET, CHARLOTTE, N. C. 28201

A. C. THIES
SENIOR VICE PRESIDENT
PRODUCTION AND TRANSMISSION

P. O. BOX 2178

March 7, 1974

Mr. A. Schwencer, Chief
Light Water Reactors
Branch 2 - 3
Directorate of Licensing
Office of Regulation
U. S. Atomic Energy Commission
Washington, D. C. 20545

Re: Oconee Nuclear Station
Docket Nos. 50-269, -270, -287

Dear Mr. Schwencer:

Please find attached information concerning special nuclear materials and byproduct material at Oconee Nuclear Station. This information responds to your letter of February 8, 1974.

Very truly yours,

A. C. Thies

ACT:vr
Attachment

1998

D U K E P O W E R C O M P A N Y

OCONEE NUCLEAR STATION

DOCKET NOS. 50-269, -270, -287

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION,

ENCLOSURE 2 TO MR. A. SCHWENCER'S LETTER OF FEBRUARY 8, 1974

1. MATERIALS SAFETY PROGRAM

1.1 STORAGE

1.1.1 SPECIAL NUCLEAR MATERIAL

Special nuclear material contained in fuel assemblies are stored at the Oconee Nuclear Station in the Unit 1 and 2 spent fuel building, or in the Unit 3 spent fuel building. The spent fuel building is defined as the spent fuel pool, fuel shipping and receiving and cask decontamination area, and the room which includes these three facilities. The purpose of including the entire room rather than the spent fuel pool only is to allow storage of assemblies in their shipping containers. Figure 1-5 of the Oconee Nuclear Station Final Safety Analysis Report (FSAR) shows the fuel shipping and receiving areas, cask decontamination areas, and spent fuel pool.

The spent fuel pool is a reinforced concrete pool lined with stainless steel clad plate, and is described in Section 9.7 of the FSAR. The fuel assemblies will be stored in racks in parallel rows having a center-to-center spacing of 21 inches in both directions. The spent fuel pool will be empty or filled or partially filled with borated water. The dissolved boron concentration will be maintained above 1800 ppm by weight. The motivation for partial filling is to provide enough water to operate and checkout the fuel transfer carriages and fuel assembly upender basket without filling the spent fuel pool, thereby, reducing the amount of water which must subsequently be removed to make adjustments on the transfer mechanisms.

On certain occasions, the fuel assemblies may be stored in AEC-licensed, Babcock & Wilcox Company shipping containers in the spent fuel building.

In the fuel storage racks, fuel is stored vertically in an array with a minimum center-to-center distance of 21 inches between assemblies to assure K_{eff} less than 0.91 even if submerged in unborated water. The racks are designed to preclude insertion of fuel assemblies in other than permitted locations, thereby, assuring the necessary spacing between assemblies. Violation of procedures by placing one fuel assembly in juxtaposition with any group of assemblies in racks does not result in criticality. To further assure subcritical arrays in the fuel handling facilities, only one assembly can be manipulated at a time.

Since the spent fuel racks are constructed of steel and there will be a minimum of combustible material in the spent fuel buildings, fire is considered extremely unlikely in those buildings. However, portable carbon-dioxide fire extinguishers are provided in the spent fuel building.

Access doors to the spent fuel building are locked when the building is not occupied by personnel under the supervision of the Oconee Nuclear Station superintendent. Access to the area is under the direction of the Oconee Nuclear Station superintendent.

One five curies plutonium-beryllium neutron source is used at Oconee for calibration of health physics neutron survey instruments and for making

periodic response checks of the out-of-core nuclear detectors. This source contains approximately 100 grams of plutonium 239 and was manufactured by the Monsanto Research Corporation. The model number is MRC-N-SS-W-PuBe. The source is stored in its DOT specification shipping container, Monsanto Research Corporation Model NS-6, which consists essentially of a shielded 15 gallon steel drum modified to hold the source in the center and to facilitate insertion and removal of the core. This container will normally be stored in the radiation survey instrument calibration room.

1.1.2 BYPRODUCT MATERIALS

Byproduct materials in the form of sealed sources are stored in cabinets or hoods in the Health Physics/Chemistry facilities and laboratories. Access to these sources is controlled by the health physics supervisor or the assistant health physics supervisor.

Neutron startup sources are stored in DOT specification or approved shipping containers or in a shroud tube located on the wall of the spent fuel pool. When a source is stored in this shroud tube, it will be located approximately 20 feet below the water level of the pool.

1.2 <u>HANDLING AND USE</u>

1.2.1 SPECIAL NUCLEAR MATERIAL

The fuel handling system at Oconee Nuclear Station is described in Section 9.7 of the Oconee FSAR.

1.2.2 BYPRODUCT MATERIALS

Byproduct material in the form of sealed sources is used for calibration of counting, survey, and monitoring instrumentation at Oconee. Use of these sealed sources will be under the supervision of the health physics supervisor or assistant health physics supervisor.

Sealed neutron sources are handled at all times by a source handling tool which is approximately 22 feet long. These sources are under water at all times when being handled.

2. FACILITIES AND EQUIPMENT

Figure 2-1 shows the health physics/chemistry facilities at the Oconee Nuclear Station, consisting of counting room, instrument calibration room, hot laboratory, cold laboratory, health physics office, environmental laboratory, and supervisor's office. Section 11.2.3.4 of the Oconee FSAR describes the health physics and chemistry facilities. Section 11.2.3.5 describes the health physics instrumentation.

3. PERSONNEL AND PROCEDURES

3.1 PERSONNEL

3.1.1 SYSTEM HEALTH PHYSICIST

Mr. Lionel Lewis, System Health Physicist, joined Duke in 1967, following six years at the Carolinas-Virginia Tube Reactor, (CVTR), as Health Physicist and Safety Coordinator. As CVTR Health Physicist, he established and directed the health physics and safety program. During licensing of the CVTR, he prepared testimony and testified at facility license and intervention hearings and assisted in the preparation of Facility License Applications and in preparation of byproduct, special nuclear material and reactor operator license applications. He also participated in preparation of final hazards summary report, technical specifications, and amendments to the technical specifications. Mr. Lewis served as member and secretary of the Reactor Safety Committee, and he also prepared a comprehensive health physics manual for the CVTR. He also served for one year as CVTR station superintendent directing activities of the station operations, maintenance, health physics, and chemistry sections during the initial period of power operation. Prior to joining CVNPA in 1961, he held various responsible supervisory positions in the health physics field with Combustion Engineering (SIC Naval Reactor Prototype), the Martin Company, and Brookhaven National Laboratory. Mr. Lewis received a BA in pre-medical sciences from the University of Vermont in 1949. He completed an AEC Fellowship in radiological physics at the University of Rochester and Brookhaven National Laboratory and obtained a MS in radiological biophysics from the University of Rochester in 1955. He was certified in health physics by the American Board of Health Physics in 1961. In 1972, he was appointed for a four-year term on the Panel of Examiners of the American Board of Health Physics. In 1973, he became a member of Scientific Committee 46 of the National Council on Radiation Protection (NCRP). Mr. Lewis' present position as System Health Physicist includes the establishment and direction of the health physics and environmental surveillance programs for all Duke Power Company nuclear power stations and the participation in other company nuclear programs as radiation safety officer, advisor and coordinator. He is also chairman of the Nuclear Safety Review Committee for the Oconee Nuclear Station.

3.1.2 HEALTH PHYSICS SUPERVISOR

Mr. Charles L. Thames, Health Physics Supervisor, has 18 years of practical experience in health physics work both at the Savannah River Plant and at the CVTR. His experience at the Savannah River Plant included the calibration of radiation survey and counting instruments, lab and field work in environmental monitoring, and radiation monitoring and personnel exposure control at a reactor facility and a reprocessing plant. Mr. Thames' experience at the CVTR from 1962 to 1967 encompassed both health physics and operations. As Health Physics Technician, he was involved in radiation and radioactivity measurements, control of personnel exposure, and all related activities in the health physics program at the CVTR. His positions as reactor operator and shift supervisor involve considerable on-the-job training prior to receiving the operator and senior operator licenses. Since joining Duke in December, 1967, Mr. Thames' experience includes work at a steam station

chemistry laboratory and assisting in establishing an environmental monitoring laboratory. He completed the ten-week health physics course at Oak Ridge in 1968.

3.1.3 ASSISTANT HEALTH PHYSICS SUPERVISOR

Mr. C. T. Yongue, Assistant Health Physics Supervisor, has 12 years of health physics and nuclear power plant experience, four of these years at CVTR and eight years at Oconee Nuclear Station. While at CVTR, he received formal and on-the-job training in nuclear technology and health physics. After completing the training program, he received an AEC operators license at the CVTR. Upon joining Duke Power Company in 1967, Mr. Yongue transferred from the operations group to the health physics group and was a health physics technician until his promotion to Assistant Health Physics Supervisor in July, 1973.

3.2 PROCEDURES

The use of special nuclear materials and byproduct materials at Oconee Nuclear Station will be conducted under the Health Physics Program, described in Section 11.2.3 of the Oconee FSAR. Use of these materials will be by or under the direct supervision of health physics personnel. Materials in the form of sealed sources are tested for leakage and/or contamination upon arrival and at six-month intervals. Any licensed, sealed source containing byproduct material is exempted from periodic leak tests provided the quantity of byproduct material contained in the source does not exceed ten times the quantity specified for the byproduct material in Column II, Schedule A, 10CFR 31.100. These tests must be capable of detecting the presence of 0.005 micro-curies of radioactive material on the test sample. The test sample is taken from the sealed source or from the surfaces of the device in which the sealed source is permanently mounted or stored, and on which one might expect contamination to accumulate. Records of leak test results are kept in units of micro-curies, and maintained for inspection. If the test results reveal the presence of 0.005 micro-curies or more of removable contamination, the sealed source is immediately withdrawn from use, decontaminated, and returend to the manufacturer for repair or disposed of in accordance with AEC regulations. Appropriate reports will be filed with the Director of Materials Licensing, with a copy to the Director of Regulatory Operations, Region II.

4. REQUIRED MATERIALS

The following is a list of required byproduct and special nuclear materials which exceed the specified possession limits:

1.	Cobalt-60	4 Curies	Sealed source used for calibration of health physics radiation survey instruments
2.	Cobalt-60	500 millicuries	Sealed source used for calibration of nuclear instruments in the Reactor Building and for calibration of radiation survey instruments
3.	Cesium-137	175 millicuries	Sealed source used in field calibration kit (Victoreen Instrument Company Model 848-8)
4.	Plutonium	100 grams	Sealed Pu-Be neutron source used for calibration of neutron survey instruments