SEP 27 1989

DOCKET NO.: 70-3057

APPLICANT: Texas Utilities Electric Company
Texas Municipal Power Agency

FACILITY: Comanche Peak Steam Electric Station (CPSES), Unit 2

SUBJECT: SAFETY EVALUATION REPORT, RE APPLICATION FOR A MATERIALS LICENSE

I. INTRODUCTION

On January 29, 1988, Texas Utilities Electric Company (TUEC), acting on its own behalf and as agent for Tex-La Electric Cooperative of Texas, Inc., Texas Municipal Power Agency, and Brazos Electric Power Cooperative, Inc., applied for a license to receive, possess, and use unirradiated nuclear fuel assemblies and associated radioactive materials at the CPSES - Unit 2. On March 25 and July 22, 1988, and May 4, 1989, TUEC supplemented the application to revise the ownership interests in the CPSES - Unit 2. The March 25, 1988, supplement reflected a transfer by the Texas Municipal Power Agency (TMPA) of its interest to TUEC; the July 22, 1988, supplement reflected a transfer by the Brazos Electric Power Cooperative, Inc., of its interest to TUEC; and the May 4, 1989, supplement reflected a transfer by the Tex-La Electric Cooperative of Texas, Inc., of its interest to TUEC. Because of the nature of the agreement between TMPA and TUEC, the transfer will take place over a period of time, and therefore, TMPA will continue as a shareholder until that transfer is complete. On September 13, 1989, TUEC submitted an additional supplement to the application revising the organization. To accommodate this request and to clearly define the licensee, the following license condition is recommended:

Licensee

Texas Utilities Electric Company
Texas Municipal Power Agency*

In December 1974, the NRC issued CPPR-127 for the CPSES, Unit 2, which is located in Somervell County, Texas, 65 miles southwest of Dallas. The CPSES, Unit 2, is a pressurized water reactor and will use fuel supplied by Westinghouse Electric Corporation for the initial core loading.

The fuel rods consist of low enriched uranium dioxide pellets encapsulated (clad) in zircalloy tubing which is seal-welded at both ends. Each assembly contains 264 fuel rods, 24 zircalloy-4 control rod guide thimbles, and 1 zircalloy-4 instrumentation thimble arranged in a 17 x 17 matrix. A fuel assembly weighs about 1,300 pounds. The applicants request authorization to possess 193 assemblies and 3 excore neutron detector assemblies for the initial core load.

*Transfer of ownership interest from Texas Municipal Power Agency to Texas Utilities Electric Company takes place in 10 installments as set forth in the agreement attached to the application supplement dated March 25, 1988. At the completion thereof, Texas Municipal Power Agency is no longer a licensee.

II. SCOPE OF REVIEW

The staff reviewed and discussed the TUEC application with the NRR Project Manager, the Resident Inspector, and the applicants' staff.

III. POSSESSION LIMITS

The applicant has requested authorization to receive 2,200 kg U-235 as low enriched uranium oxide in unirradiated fuel assemblies. The applicant has also requested authorization to receive 24 grams U-235 as high enriched uranium in excore neutron detector assemblies. To accommodate these requests, the staff recommends the following license conditions:

	Material		Form		Quantity
A.	Uranium enriched up to 3.15 w/o in the U-235 isotope	A.	UO_2 in reactor fuel assemblies	A.	2,200 kg U-235 (193 assemblies)
B.	Uranium enriched in the U-235 isotope	B.	Uranium oxide in excore detectors	B.	24 g U-235 (3 detectors)

IV. AUTHORIZED ACTIVITIES

The applicant has requested authorization to receive, possess, inspect, and store fuel assemblies at CPSES Unit 2. The applicant has also requested authorization to receive, possess, inspect, store, and use excore neutron detector assemblies. This license will not authorize fuel assembly installation into the reactor. To authorize these activities, the staff recommends the following license conditions:

> The licensee is authorized to receive, possess, and use uranium enriched in the U-235 isotope in accordance with the statements, representations, and conditions specified in the license application dated January 29, 1988, and supplements dated March 25 and July 22, 1988; and May 4, and September 13, 1989.
>
> The authorized place of use is the Comanche Peak Steam Electric Station, Unit 2, located in Somervell County, 65 miles southwest of Dallas, Texas.

V. ORGANIZATION AND ADMINISTRATIVE CONTROLS

A. Organization

The Vice President, Nuclear Operations (VPNO) has utimate responsibility for the safe operation of the plant and its equipment. This responsibility is accomplished by delegating and assigning responsibility to qualified individuals.

The Manager, Technical Support, who reports to the VPNO, is responsible for the administrative controls which govern the safe handling and storage of fuel. The procedures which control the safe handling of fuel will be approved by the Station Operations Review Committee.

The Radiation Protection Manager (RPM), who reports directly to the Manager, Technical Support, directs and supervises the radiation protection personnel and is responsible for implementing and enforcing the radiation protection program.

Additional support is provided to the RPM from the corporate office by the TUEC Health Physics Supervisor. The TUEC Health Physics Supervisor is available for guidance and consultation and periodically visits CPSES to review and inspect the radiation protection program.

B. Technical Qualifications

The minimum qualifications for the Manager, Technical Support, are a bachelor of science degree in engineering or science and 8 years of power plant experience. One of the 8 years will be experience in a nuclear power plant.

The minimum qualifications for the Radiation Protection Manager are a bachelor of science degree in engineering or science and 5 years of power plant experience. Two of the 5 years will be nuclear power plant experience.

C. Training

The Radiation Protection Manager is responsible for the radiation protection training program at CPSES. All permanent station personnel who are required to work in restricted areas will complete the basic training courses, lectures, and exercises and demonstrate their proficiency and competence prior to receipt of fuel onsite.

D. Procedures

Procedures which control the safe handling of fuel will be approved by the Station Operations Review Committee (SORC). The SORC is composed of a group of plant personnel who possess the type and degree of expertise required to review procedures that affect nuclear safety.

VI. NUCLEAR CRITICALITY SAFETY

A. General

Fuel assemblies may be temporarily stored in shipping containers on the transportation vehicle or in the new fuel receipt area. Other fuel assembly storage areas include the new fuel storage racks and the spent fuel storage racks. The excore neutron detectors will either be in storage or installed in the Unit 2 spare instrument wells.

Each fuel rod consists of slightly enriched uranium dioxide pellets 0.3088 inches in diameter, encased in zircalloy tubing 0.360 inches in diameter with a cladding thickness of 0.0225 inches. Each assembly contains 264 fuel rods, 24 zircalloy-4 control rod guide thimbles, and 1 zircalloy-4 instrumentation thimble arranged in a 17 x 17 matrix with a fuel rod pitch of 0.496 inches. Calculations performed by NRC staff assumed fuel assemblies containing uranium enriched to 3.15 w/o U-235. For conservatism, each assembly was assumed to have 289 fuel rods in a 17 x 17 array.

B. Shipping Container Storage

Fuel assemblies will be received in Westinghouse Model RCC shipping containers (package) licensed under NRC Certificate of Compliance No. 5450. Certificate of Compliance No. 5450 authorizes Fissile Class I shipments of packages, each containing 2 assemblies. The applicants have stated that loaded shipping containers may be temporarily stored on the transportation vehicle or in the new fuel receipt area. This presents no criticality safety concern since an undamaged Fissile Class I package can be transported in unlimited numbers and in any arrangement.

C. New Fuel Storage Pit

The new fuel may be stored in racks in a reinforced concrete pit. The racks are laid out in 4 groups of 18 storage cells, each in a 2 x 9 cell arrangement, and 3 groups of 20 storage cells in a 2 x 10 cell arrangement for a total of 132 storage cells. The individual cells are on 21-inch centers. Each cell consists of 0.075-inch stainless steel square cylinders with 9.00-inch inside dimensions. The center-to-center spacing between the closest of adjacent group cells is 36 inches. The applicants reported that this storage array would not exceed 0.98 with fuel of a maximum pin enrichment of 3.5 w/o U-235 under optimum water moderation conditions. The calculations were performed using PDQ, a diffusion theory code. The cross sections were generated using LEOPARD. The staff calculated the array assuming a maximum enrichment of 3.15 w/o U-235 and used the 27-group cross section set which is found in the SCALE program, along with KENO-Va, a Monte Carlo code. The staff determined the k-effective for a water flooded array in a concrete pool to be about 0.85. A metal cover is positioned over each new fuel rack section (2 x 2 grouping of assemblies) after each section is loaded so that no more than four assemblies will be exposed at any one time to a water mist in the event water was used to fight a fire in the area. Therefore, the analysis of the water flooded array is the most conservative case.

D. Spent Fuel Pool Storage

The new fuel will be stored in modules in a stainless-steel lined reinforced concrete pit. The spent fuel storage racks consist of 20 freestanding modules. The modules consist of cells arranged in 6 x 5 or 5 x 5 arrays. The cell walls and structural components are fabricated from stainless steel. The individual cells are on 16-inch centers. The applicants have committed to utilize an "expanded checkerboard" array such that an open storage cell exists in the eight adjacent cells surrounding each assembly. This arrangement will result in a 32-inch center-to-center spacing between fuel assemblies. A study by J. M. Cano, et al. ("Supercriticality Through Optimum Moderation in Nuclear Fuel Storage," Nuclear Technology, May 1980) indicates that an array of 4% U-235 enriched assemblies on 32-inch centers cannot be made critical at any degree of water moderation. The applicant has committed to the following administrative controls to assure that this spacing requirement is maintained.

(1) The individual conducting new fuel loading into the spent fuel pool will verify correct assembly location after insertion of each new fuel assembly.

(2) An independent loading verification will be conducted by a second individual after each assembly insertion.

(3) A loading check will be conducted by CPSES Results Engineering after each shipment of fuel is offloaded into assigned storage locations.

E. Handling of Fuel Assemblies

To ensure that fuel assemblies outside of storage remain safely subcritical, the applicants have committed to having no more than one fuel assembly out of a shipping container or an approved storage location at a time.

The plastic dust wrapper on each fuel assembly in the pit or the pool must be removed from the fuel assembly or must be open at the bottom so that water will not collect in the wrapper. If the storage array were to become flooded, the dust wrappers filled with water, and then the pool or pit drained, the fuel assemblies could be well-moderated and effectively coupled to other well-moderated fuel assemblies because the isolating water between the fuel assemblies had drained away. The applicant is aware of this situation and has committed to having the wrapper removed.

F. Exemption

The applicant requests an exemption from the monitoring requirements of 10 CFR 70.24(a) as provided in 70.24(d). The applicant's reason for requesting the exemption is that the procedures and storage facilities provide assurance that inadvertent criticality cannot occur during receipt, handling, and storage of nuclear fuel assemblies.

The applicant's reason for exemption is valid and good cause exists for the exemption. The storage racks provide physical protection to ensure subcriticality. The procedural controls provide reasonable assurance that nuclear criticality will not occur during fuel handling, and monitoring is not needed. Even if procedural controls were violated, optimum conditions of neutron moderation, physical spacing, and neutron reflection would be required for assemblies to be in a critical situation.

The procedural controls, considering the limited activities and material handling methods, are deemed adequate to grant the exemption. This exemption is authorized by law, will not endanger life or property or the common defense and security, and is otherwise in the public interest. Therefore, the following license condition is recommended:

> The licensee is hereby exempt from the requirements of 10 CFR 70.24, insofar as this requirement applies to materials possessed under this license.

VII. RADIATION SAFETY

The applicant radiation safety program includes assignment of responsibility for radiation safety, training, written procedures, surveys, and instrument calibration and testing. The primary hazard from encapsulated low-enriched uranium is low-level radiation. The applicant's program, combined with 10 CFR Part 20 requirements, is adequate to protect the health and safety of the public.

VIII. ENVIRONMENTAL PROTECTION

Pursuant to 10 CFR 51, the NRC staff prepared an Environmental Assessment for the proposed activities at Comanche Peak Steam Electric Station, Unit 2. Based on the Assessment, a Finding of No Significant Impact was made and published in the Federal Register on June 28, 1989.

IX. FIRE SAFETY

The fire protection measures for the Fuel Handling Building consist of separation of the areas from the rest of the facility by fire boundaries. Portable fire extinguishers, hose stations, and a remote manual deluge system constitute the fire protection equipment. Fire detection is provided by ionization and flame detectors equipped with both local and remote alarms.

X. CONCLUSION

A. After reviewing the application, the staff finds that:

1. TUEC meets the requirements of the Atomic Energy Act, as amended, and the Commission's regulations;

2. Issuance of the license would not be inimical to the common defense and security; and

3. Issuance of the license would not constitute an unreasonable risk to the health and safety of the public.

B. With the recommended license conditions, the NRC staff finds that:

1. TUEC is qualified by reason of training and experience to use the material for the purpose requested in accordance with regulations in 10 CFR Part 70.

2. TUEC's proposed equipment, facilities, and procedures are adequate to protect health and minimize danger to life or property.

XI. RECOMMENDATION

The staff recommends issuance of the special nuclear material license provided the conditions identified above are incorporated into the license.

Original Signed By:
David McCaughey
Uranium Fuel Section
Fuel Cycle Safety Branch
Division of Industrial and
Medical Nuclear Safety, NMSS

Approved by: Original Signed By: ed flack for
George H. Bidinger, Section Leader
Uranium Fuel Section

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DATE: 9/ 7/89	9/ 7/89	9/ /89

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

Docket No. 70-3057

Amendment to Indemnity Agreement No. B-96
Amendment No. 6

Effective SEP 27 1989, Indemnity Agreement No. B-96 between Texas Utilities Electric Company, Texas Municipal Power Agency and the Nuclear Regulatory Commission dated February 14, 1983, as amended, is hereby further amended as follows:

Item 3 of the Attachment to the indemnity agreement is deleted in its entirety and the following substituted therefor:

Item 3 - License number or numbers

SNM-1912 (From 12:01 a.m., February 14, 1983)
SNM-1986 (From 12:01 a.m., SEP 27 1989)

Item 4 of the Attachment to the indemnity agreement is deleted in its entirety and effective March 1, 1987, the following substituted therefor:

Item 4 - Location

All of the premises including the land and all buildings and structures of Texas Utilities Generating Company's Comanche Peak Steam Electric Station shown as being within the boundaries outlined in yellow on Texas Utilities Services, Inc.,'s Site Map and Insurance Site Description designated as Drawing Number FSC-00470 dated March, 1987, a copy of which is attached hereto and made a part hereof. The Comanche Peak Steam Electric Station is located on the South Bank of the Squaw Creek Reservoir near the town of Glenrose in Somervell County, Texas, approximately thirty-five (35) miles Southwest of Fort Worth and sixty-seven (67) miles Southwest of Dallas, Texas.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Cecil O. Thomas

Cecil O. Thomas, Chief
Policy Development and Technical Support Branch
Program Management, Policy Development
and Analysis Staff
Office of Nuclear Reactor Regulation

Accepted _____, 1989

By _____
Texas Utilities Electric Company

Accepted _____, 1989

By _____
Texas Municipal Power Agency

7590-01

U. S. NUCLEAR REGULATORY COMMISSION
FINDING OF NO SIGNIFICANT IMPACT AND
NOTICE OF OPPORTUNITY FOR A HEARING
ISSUANCE OF SPECIAL NUCLEAR MATERIAL
LICENSE NO. SNM-1986
TEXAS UTILITIES ELECTRIC COMPANY, ET. AL.
SOMERVELL COUNTY, TEXAS
DOCKET NO. 70-3057

The U.S. Nuclear Regulatory Commission (the Commission) is considering the issuance of Special Nuclear Material License No. SNM-1986 to Texas Utilities Electric Company, Texas Municipal Power Agency, and Tex-La Electric Cooperative of Texas, Inc., (the applicants) for the Comanche Peak Steam Electric Station, Unit 2, located in Somervell County, Texas.

SUMMARY OF THE ENVIRONMENTAL ASSESSMENT

Identification of Proposed Action: The proposed action would authorize the applicants to receive, possess, inspect, and store special nuclear material in the form of unirradiated fuel assemblies. In addition, the license would authorize the applicants to receive, possess, inspect, store, and use neutron detector assemblies containing enriched U-235. Because the detector assemblies are sealed, storage and use of these materials will pose no threat to the environment. Therefore, the discussion below will be limited to assessing the potential for environmental impacts resulting from the handling and the storage of new fuel assemblies at Comanche Peak, Unit 2.

The Need for the Proposed Action: The proposed license will allow the applicants to receive and store fresh fuel prior to issuance of the Part 50

operating license in order to inspect the fuel assemblies and to finalize fuel preparation needed to load the fuel into the reactor vessel. Actual core loading, however, will not be authorized by the proposed license.

Environmental Impacts of the Proposed Action: Once at Comanche Peak, Unit 2, the new fuel assemblies may be temporarily stored in their shipping containers prior to placement in their designated storage locations: the new fuel storage racks and the spent fuel pool racks located in the Fuel Handling Building. Temporary storage will be on the transportation vehicle or in the new fuel receipt area of the Fuel Building. This temporary storage of assemblies in their shipping containers will present no significant environmental impact or significant radiation exposure to plant workers.

Upon removal of the fuel assemblies from the shipping containers, they are inspected and surveyed for external contamination. The fuel assemblies are then transferred to their designated locations. Criticality safety in the storage locations is maintained by limiting interaction between adjacent fuel assemblies. In addition, the design of these storage locations, combined with plant procedures, will ensure acceptable protection of the general public and plant personnel either under normal or abnormal conditions.

Since the fresh fuel assemblies are sealed sources, the principal exposure pathway to an individual is via external radiation. For a low-enriched uranium fuel assembly (<4 percent U-235 enrichment), the exposure at 1 foot from the surface is normally less than 1 mR/hr; therefore, it is estimated that the exposure level to an individual from unirradiated fuel would be less than 25 percent of the maximum permissible exposure specified in 10 CFR Part 20. Because of the low radiation exposure levels associated with the requested materials and activities and the applicants' radiation protection procedures, the staff concludes that fuel handling and storage activities can be carried out without any significant occupational dose to workers or radiological impact to the environment.

Only a small amount, if any, of radioactive waste (e.g., smear papers and/or contaminated packing material) is expected to be generated during fuel handling and storage operations. Any waste that is produced will be properly stored onsite until it can be shipped to a licensed disposal facility.

In the event that assemblies must be returned to the fuel fabricator, all packaging and transport of fuel will be in accordance with 10 CFR Part 71. The package will meet NRC approval requirements for normal conditions of transport and hypothetical accident conditions. No significant external radiation hazards are associated with the unirradiated assemblies because the radiation level from the clad fuel pellets is low and because the shipping packages meet the external radiation standards in 10 CFR Part 71. Therefore, any shipment of unirradiated fuel is expected to have an insignificant impact.

In the unlikely event that an assembly (either within or outside its shipping container) is dropped during transfer, fuel cladding is not expected to rupture. Even if the cladding were breached and the pellets were released, an insignificant environmental impact would result. The fuel pellets are composed of a ceramic UO_2 that has been pelletized and sintered to a very high density. In this form, release to UO_2 aerosol is highly unlikely except under conditions of deliberate grinding. Additionally, UO_2 is soluble only in acid solution so dissolution and release to the environment are extremely unlikely.

Conclusion: The environmental impacts associated with the handling and storage of new fuel at Comanche Peak, Unit 2, are expected to be insignificant. Essentially no effluents, liquid or airborne, will be released, and acceptable controls will be implemented to prevent a radiological accident. Therefore, the staff concludes that there will be no significant impacts associated with the proposed action.

Alternatives to the Proposed Action: The principal alternative would be to deny the requested license. Assuming the operating license will eventually be issued, denial of the storage only license would merely postpone new fuel

receipt at Comanche Peak, Unit 2. Although denial of the special nuclear material license for Comanche Peak, Unit 2, is an alternative available to the Commission, it would be considered only if significant issues of public health and safety could not be resolved.

Alternative Use of Resources: This action does not involve the use of resources not previously considered in connection with the Commission's Final Environmental Statement (NUREG-0775) dated September 1981 related to this facility.

Agencies and Persons Consulted: The Commission's staff reviewed the applicants' request of January 29, 1988, and supplements dated March 25 and July 22, 1988, and May 4, 1989, and did not consult other agencies or persons.

Finding of No Significant Impact: The Commission has prepared an Environmental Assessment related to the issuance of Special Nuclear Material License No. SNM-1986. On the basis of this assessment, the Commission has concluded that environmental impacts that would be created by the proposed licensing action would not be significant and do not warrant the preparation of an Environmental Impact Statement. Accordingly, it has been determined that a Finding of No Significant Impact is appropriate.

The Environmental Assessment and the above documents related to this proposed action are available for public inspection and copying at the Commission's Public Document Room at the Gelman Building, 2120 L Street NW., Washington, DC. Copies of the Environmental Assessment may be obtained by calling (301) 492-3358 or by writing to the Fuel Cycle Safety Branch, Division of Industrial and Medical Nuclear Safety, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

OPPORTUNITY FOR A HEARING

Any person whose interest may be affected by the issuance of this license may file a request for a hearing. Any request for hearing must be filed with the

Executive Director for Operations, U.. uclear Regulatory Commission, Washington, DC 20555 within 30 days of the publication of this notice in the Federal Register, and must comply with the procedures set forth in the Commission's regulation, 10 CFR Part 2, Subpart L, "Informal Hearing Procedures for Adjudications in Materials Licensing Proceedings." Subpart L of 10 CFR Part 2, which became effective March 30, 1989, was published in the Federal Register on February 28, 1989.

Dated at Rockville, Maryland, this 20th day of June, 1989.

FOR THE NUCLEAR REGULATORY COMMISSION

Original Signed By:

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

OFC: IMUF:	IMUF:	IMUF:	IMUF:	IMSB:
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DATE: 6/19/89	6/19/89	6/19/89	6/19/89	6/20/89

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JUN 20 1989

DOCKET NO: 70-3057

APPLICANTS: Texas Utilities Electric Company
Texas Municipal Power Agency
Tex-La Electric Cooperative of Texas, Inc.

FACILITY: Comanche Peak Steam Electric Station, Unit 2 (CPSES)
Somervell County, Texas

SUBJECT: ENVIRONMENTAL ASSESSMENT - NEW LICENSE APPLICATION

Background

By letter dated January 29, 1988 and supplements dated March 25 and July 22, 1988, and May 4, 1989, Texas Utilities Electric Company (TU Electric), acting on its own behalf and as agent for the above, applied for an NRC license to permit the receipt, possession, storage, inspection, and preparation for transport of special nuclear material in the form of unirradiated nuclear fuel assemblies. In addition, TU Electric, as part of the license application, seeks authorization to receive, possess, inspect, store, use, and package for delivery neutron detector assemblies containing enriched U-235. All materials are for eventual use in CPSES, Unit 2. In accordance with 10 CFR Part 51.21, the NRC has prepared this assessment of the environmental impacts that may be caused by issuance of the requested license. Because of the form of nuclear materials contained in the neutron detectors, storage and use of these materials will pose no threat to the environment. Therefore, the discussion below will be limited to assessing the potential for environmental impacts resulting from the storage of new fuel assemblies at CPSES, Unit 2.

The Proposed Action

The proposed action is issuance of a special nuclear material license pursuant to 10 CFR Part 70 that would authorize TU Electric to receive, possess, inspect, and store 193 new fuel assemblies at CPSES, Unit 2. The license would be effective until it can be superseded by TU Electric's operating license under 10 CFR Part 50. The fuel assemblies contain uranium dioxide (UO_2) pellets that have a maximum uranium-235 enrichment of 3.1 percent by weight and are encapsulated in zircaloy tubing. Issuance of the license would result in the receipt, possession, inspection, and storage of the unirradiated fuel assemblies at CPSES, Unit 2. The transport of new fuel to CPSES will be the responsibility of the fuel fabricator.

Need for the Proposed Action

TU Electric proposes to receive and store fresh fuel prior to issuance of the Part 50 operating license in order to inspect the assemblies and to finalize fuel preparation (e.g., add necessary hardware) needed to load the fuel into

the reactor core vessel. Actual core loading, however, will not be authorized by the proposed license. Early completion of this fuel handling will help avoid delays in the CPSES, Unit 2, startup once its operating license is issued.

Alternatives to the Proposed Action

Alternatives to the proposed action include denial of TU Electric's application. Assuming the operating license for the facility will eventually be issued, denial of the storage only license now would merely postpone new fuel receipt at CPSES, Unit 2. Such action, as well as any other alternative that could be imagined, would not present an environmental advantage because as discussed below, no environmental impacts are expected from the proposed action.

Environmental Impacts of the Proposed Action

A Final Environmental Statement associated with the full-scale operation of CPSES, Units 1 and 2, (NUREG-0775) has already been issued by the NRC. Based on the evaluation in this statement, the environmental impacts of plant operation are expected to be small. New fuel receipt and storage is only a small part of CPSES, Unit 2's overall operation that will eventually include the handling and storage of irradiated fuel which is significantly more hazardous. Accordingly, the environmental impacts resulting from the handling and storage of new fuel are expected to be very minor.

Once at CPSES, Unit 2, the new fuel assemblies may be temporarily stored in their shipping containers prior to placement in their designated storage locations: the new fuel storage racks and the spent fuel pool racks located in the Fuel Handling Building. Temporary storage will be on the transportation vehicle or in the new fuel receipt area of the Fuel Building. This temporary storage of assemblies in their shipping containers will present no significant environmental impact or significant radiation exposure to plant workers.

Assemblies are then removed from their shipping containers, inspected, and surveyed for external contamination. The fuel assemblies are then transferred to their designated locations. Criticality safety in the storage locations is maintained by limiting interaction between adjacent fuel assemblies. In addition, the design of these storage locations, combined with plant procedures, will ensure acceptable protection of the general public and plant personnel either under normal or abnormal conditions.

Since the fresh fuel assemblies are sealed sources, the principal exposure pathway to an individual is via external radiation. For a low-enriched uranium fuel assembly (<4 percent U-235 enrichment), the exposure rate at 1 foot from the surface is normally less than 1 mR/hr; therefore, it is estimated that the exposure level to an individual from unirradiated fuel would be less than 25 percent of the maximum permissible exposure specified in 10 CFR Part 20. Because of the low radiation exposure levels associated with the requested materials and activities and TU Electric's radiation protection procedures, the staff concludes that fuel handling and storage activities can be carried out without any significant occupational dose to workers or impact to the environment.

Only a small amount, if any, of radioactive waste (e.g., smear papers and/or contaminated packing material) is expected to be generated during fuel handling and storage operations. Any waste that is produced will be properly stored onsite until it can be shipped to a licensed disposal facility.

In the event that assemblies must be returned to the fuel fabricator, all packaging and transport of fuel will be in accordance with 10 CFR Part 71. The package will meet NRC approval requirements for normal conditions of transport and hypothetical accident conditions. No significant external radiation hazards are associated with the unirradiated assemblies because the radiation level from the clad fuel pellets is low and because the shipping packages meet the external radiation standards in 10 CFR Part 71. Therefore, any shipment of unirradiated fuel is expected to have an insignificant impact.

TU Electric has installed redundant engineered-safety features on equipment intended for use in fuel handling and storage handling operations. These safety features combined with administrative controls minimize the likelihood of an accident situation occurring during fuel handling activities. In addition, TU Electric has analyzed the possible consequences that may result from various postulated accidents, the worst being an assembly (either within or outside its shipping container) dropped during transfer. The fuel cladding is not expected to rupture. Even if the cladding were breached and the pellets were released, an insignificant environmental impact would result. The fuel pellets are composed of a ceramic UO_2 that has been pelletized and sintered to a very high density. In this form, release of UO_2 aerosol is highly unlikely except under conditions of deliberate grinding. Additionally, UO_2 is soluble only in acid solution so dissolution and release to the environment are extremely unlikely.

Conclusion

Based upon the information presented above, the environmental impacts associated with new fuel storage at CPSES, Unit 2, are expected to be insignificant. Essentially no effluents, liquid or airborne, will be released, and acceptable controls will be implemented to prevent a radiological accident. Therefore, the staff concludes that there will be no significant impacts associated with the proposed action.

Original Signed By:

Merri Horn
Uranium Fuel Section
Fuel Cycle Safety Branch
Division of Industrial and
Medical Nuclear Safety, NMSS

Approved by: Original signed by George H. Bidinger
George H. Bidinger, Section Leader

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