UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

ENVIRONMENTAL ASSESSMENT

BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATING TO THE INCREASE IN THE SPENT FUEL STORAGE CAPACITY

TEXAS UTILITIES ELECTRIC COMPANY

FACILITY OPERATING LICENSE NOS. NPF-87 AND NPF-89

COMANCHE PEAK STEAM ELECTRIC STATION, UNITS 1 AND 2

DOCKET NOS. 50-445 AND 50-446

1.0 INTRODUCTION

1.1 Description of Proposed Amendment

The current licensing basis for Comanche Peak Steam Electric Station (CPSES) allows up to 1116 fuel assemblies in two storage pools. The currently authorized as-installed configuration has 20 low density racks installed in Spent Fuel Pool No. 1 (SFP1) (556 fuel assembly locations). By letter dated December 30, 1994, as supplemented by letters dated July 28, September 14, and November 29, 1995, and January 2, 1996, Texas Utilities Electric Company (TU Electric/the licensee) requested an amendment to change the Technical Specifications (TS) for Comanche Peak Steam Electric Station (CPSES), Units 1 and 2. The proposed amendment would authorize the use of high density spent fuel storage racks in Spent Fuel Pool No. 2 (SPF2) with a capacity for storing 735 fuel assemblies, for a total of 1291 fuel assemblies.

1.2 Need for Increased Storage Capacity

At the completion of the Unit 1 fourth refueling outage (spring 1995) 389 spent fuel assemblies were stored in SFP1. No racks were initially installed in SFP2. To ensure that sufficient spent fuel storage capacity continues to exist for a full core offload in the spring of 1996 and for some time thereafter, TU Electric is requesting approval to use nine free standing, high density, non-poison spent fuel racks in SFP2.

2.0 ALTERNATIVES

Reprocessing of spent fuel has not developed as originally anticipated. In 1975, the NRC performed a Generic Environmental Impact Statement (GEIS) to evaluate alternatives for the handling and storage of spent fuel.

A "Final Generic Environmental Impact Statement (FGEIS) on Handling and Storage of Spent Light Water Power Reactor Fuel," NUREG-0575, Volumes 1-3, was issued by the Commission in August 1979. The finding of the FGEIS is that the environmental costs of interim storage are essentially negligible, regardless of where such spent fuel is stored. The storage of spent fuel, as evaluated

in NUREG-0575, is considered to be an interim action, not a final solution to permanent disposal.

One spent fuel storage alternative considered in detail in the FGEIS is the expansion of the onsite fuel storage capacity by modification of the existing SFPs. Over 100 applications for SFP expansion have either been approved or are under consideration by the Commission. The finding in each has been that the environmental impact of such increased storage capacity is negligible. However, since there are variations in storage design and limitations caused by spent fuel already stored in the pools, the FGEIS recommended that licensing reviews be done on a case-by-case basis, to resolve plant-specific concerns.

The licensee has considered several alternatives to the proposed action of the SFP expansion. The staff has evaluated these and certain other alternatives. The following alternatives were considered by the staff:

2.1 Shipment of Fuel to a Permanent Federal Fuel Storage/Disposal Facility

Shipment of spent fuel to a high-level radioactive storage facility is an alternative to increasing the onsite spent fuel storage capacity. However, the U.S. Department of Energy's (DOE's) high-level radioactive waste repository is not expected to begin receiving spent fuel until approximately 2010, at the earliest. The existing SFPs at CPSES lost full core offload capability in 1995. Therefore, shipping spent fuel to the DOE repository is not considered an alternative to increased onsite spent fuel storage capacity.

2.2 Shipment of Fuel to a Reprocessing Facility

Reprocessing of spent fuel from the CPSES facility is not a viable alternative since there are no operating commercial reprocessing facilities in the United States. Therefore, spent fuel would have to be shipped to an overseas facility for reprocessing. However, this approach has never been used, and it would require approval by the Department of State.

2.3 Shipment of Fuel to Another Utility or Site for Storage

The shipment of fuel from CPSES to the storage of another utility would provide short-term relief from the storage problem. The Nuclear Waste Policy Act (NWPA) and 10 CFR Part 53, however, clearly place the responsibility for the interim storage of spent nuclear fuel with each owner or operator of a nuclear plant. The shipment of fuel to another source is not an acceptable alternative because of increased fuel handling risks and additional occupational radiation exposure, as well as the fact that no additional storage capacity would be created.

2.4 Reduction of Spent Fuel Generation

Reducing the amount of spent fuel generated by improving usage of fuel and/or operation at a reduced power level would extend the life of the fuel in the reactor. In the case of extended burnup of fuel assemblies, the fuel cycle would be extended, and fewer offloads would be necessary. The licensee has

already increased its fuel enrichment to 5 percent and is currently using 18-month refueling cycles. However, full-core offload capability was lost with the spring 1995 refueling outage of Unit 1. Operating the plants at a reduced power level would not make effective use of available resources, and would cause unnecessary economic hardship on TU Electric and its customers. Therefore, reducing the amount of spent fuel generated is not considered a practical alternative.

2.5 Development of Onsite Independent Storage Facility

Spent fuel storage in metal casks is one of the most mature on-site dry storage methods available at the present time. It has been tested, demonstrated, licensed, and used in the United States since 1986 and it continues to gain industry acceptance. The dry storage technique involves loading intact or consolidated spent fuel into casks which are stored on a concrete platform in a secured area. This installation is classified as an independent spent fuel storage installation (ISFSI) and is licensed under 10 CFR Part 72.

A dry cask ISFSI is a passive storage system requiring no auxiliary equipment such as pumps, fans, motors, etc. Aside from the casks and a cask transporter, the ISFSI requires lighting, monitored security fencing, a backup diesel generator and an alarm panel for cask monitoring. However, onsite ISFSIs do not have to be staffed on a continuous basis.

Present generation casks have been designed for storage only. Dual purpose casks are currently being designed to serve both storage and transport functions. Metal cask designs, which have been used since 1986 can be modified to obtain approval under 10 CFR Part 71 for transporting spent fuel. Such a dual purpose cask would eliminate the need to prepare another shipping cask.

Although spent fuel cask storage provides many benefits, the development of an independent dry fuel storage facility was deemed undesirable compared to the cost of high density racks and pursuing alternative storage techniques. Additionally, the environmental impacts associated with the construction and operation of an ISFSI are similar to those associated with the expansion of the SFP capacity.

2.6 No Action Taken

If no action were taken, the storage capacity would become exhausted in the near future and CPSES would have to shut down. This alternative is considered a waste of available resources and is not considered viable.

3.0 ENVIRONMENTAL IMPACTS

3.1 Radiological Impact

The waste treatment systems for CPSES, Units 1 and 2, are designed to collect and process gaseous, liquid, and solid waste that may contain radioactive material. The proposed Technical Specification (TS) changes to support

implementation of the modification to install new high density spent fuel storage racks in SFP2 at CPSES will not impact the ability of the waste treatment systems to perform their intended design functions.

All work in the radiologically controlled area associated with the installation of the high density racks will be performed in accordance with CPSES procedures for radiation work control. Work will be controlled and guided by specific radiation work permit and by appropriate as low as reasonably achievable (ALARA) planning as determined by the requirements of CPSES procedures. The new racks will be installed in a pool that is dry and has never contained any spent fuel. Therefore, installation activities will result in insignificant personnel exposure.

3.2 Nonradiological Impact

The only nonradiological effluent affected by the expansion of SFP2 is the additional spent fuel waste heat rejected from the plant. The heat rejected to the environment from the operation of CPSES is approximately 2280 MWt or 7800 X 10^6 BTU/hr per unit. In contrast assuming storage of 3386 assemblies, the maximum coincident spent fuel heat load is only 17 X 10^6 BTU/hr, which is small in comparison to the amount of total heat currently being released from the operation of CPSES. No impact on aquatic life is expected. Thus, the increase in rejected heat will have a negligible effect on the environment.

The licensee has not proposed any change in the use or discharge of chemicals in conjunction with the expansion of the SFP. The proposed expansion will not require any change to the National Pollution Discharge Elimination System permit. Therefore, the staff concludes that the nonradiological environmental impacts of expanding the SFP will be insignificant.

3.3 Summary

The occupational radiation dose for the proposed operation of SFP2 is extremely small compared to the annual occupational exposure for a facility of this type. The small increase in radiation dose should not affect the licensee's ability to maintain individual occupational doses at CPSES within the limits of 10 CFR Part 20 and ALARA. Furthermore, the nonradiological impacts of high density rack installation in SFP2 will be insignificant and none of the alternatives are practical or reasonable.

4.0 ACCIDENT CONSIDERATIONS

The staff, in its related safety evaluation, to be issued with the TS amendment at a later date, will address both the safety and environmental aspects of a fuel handling accident. All fuel handling accidents are bound by the potential consequences of an accident attributable to the operation of a SFP with high density racks. A fuel handling accident may be viewed as a "reasonably foreseeable" design basis event which the pool and its associated structures systems and components (including the racks) are designed and constructed to prevent. The environmental impacts of the accident were found not to be significant.

The staff has considered accidents whose consequences might exceed a fuel handling accident, that is, beyond design basis events. An accident evaluated by the staff involves a structural failure of the SFP resulting in loss of all contained cooling water followed by fuel heatup and Zircaloy cladding fire.

The details of this severe accident are discussed in NUREG/CR-4982, entitled "Severe Accidents in Spent Fuel Pools in Support of Generic Issue 82." Subsequently, the staff issued NUREG/CR-5176, entitled "Seismic Failure and Cask Drop Analysis of the Spent Fuel Pools at Two Representative Nuclear Power Plants." This report considers the structural integrity of the SFP and the pool response to the circumstances considered. More recently, the staff issued NUREG/CR-5281, "Value/Impact Analysis of Accident Preventative and Mitigative Options for Spent Fuel Pools," and NUREG-1353, "Regulatory Analysis for the Resolution of Generic Issue 82: Beyond Design Basis Accidents in Spent Fuel Pools." In NUREG-1353, the staff concluded that Generic Issue 82 concerning the possibility of Zircaloy cladding fires in SFPs was resolved and required no further study.

The staff believes that the probability of severe structural damage occurring at CPSES is extremely low. This belief is based upon the Commission's requirements for the design and construction of SFPs and their contents and on the licensee's adherence to approved industry codes and standards. For example, in the CPSES case, the pool is an integral part of the fuel building. The spent fuel storage racks are Seismic Category 1, and thus, are required to remain functional during and after a safe shutdown earthquake. The cooling water system is extremely reliable. In the unlikely event of a total loss of the cooling system, makeup water sources are available. Therefore, the staff concludes that the potential for environmental impact from severe accidents is negligible.

5.0 ALTERNATIVE USE OF RESOURCES

This action does not involve the use of any resources not previously considered in the Final Environmental Statement for the CPSES, Units 1 and 2, dated October 1989.

6.0 AGENCIES AND PERSONS CONSULTED

In accordance with its stated policy, on February 5, 1996, the staff consulted with the Texas State official, Mr. Arthur Tate of the Texas Department of Health, Bureau of Radiation Control, regarding the environmental impact of the proposed action. The State official had no comments.

7.0 BASIS AND CONCLUSIONS FOR NOT PREPARING AN ENVIRONMENTAL IMPACT STATEMENT

The staff has reviewed the proposed SFP modification to CPSES, Units 1 and 2, relative to the requirements set forth in 10 CFR Part 51. Based upon the environmental assessment, the staff has concluded that there are no significant radiological or nonradiological impacts associated with the proposed action and that the proposed license amendment will not have a

significant effect on the quality of the human environment. Therefore, the Commission has determined, pursuant to 10 CFR 51.31, not to prepare an environmental impact statement for the proposed amendment.

Principal Contributor: T. Polich

Date: February 5, 1996