



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D. C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 162 TO FACILITY OPERATING LICENSE NO. DPR-40

OMAHA PUBLIC POWER DISTRICT

FORT CALHOUN STATION, UNIT NO. 1

DOCKET NO. 50-285

1.0 INTRODUCTION

By letter dated September 17, 1993, Omaha Public Power District (OPPD) submitted a request for changes to the Fort Calhoun Station, Unit No. 1 Technical Specifications (TS). The requested changes would enable the current fuel oil system configuration at Fort Calhoun Station (FCS) to meet the fuel oil storage capacity requirements of IEEE-308 as being capable of providing fuel oil for 7 days of continuous emergency diesel generator (EDG) operation following the most limiting accident.

During the licensing application for the FCS, Unit 1, a minimum of 16,000 gallons of fuel oil stored in the on-site underground dedicated emergency fuel oil storage tank (FO-1) was determined to be sufficient for 7 days of continuous EDG operation following a loss-of-coolant accident (LOCA). In September 1988, OPPD, as a result of its design basis reconstitution efforts, identified that due to the original methodology used in the fuel oil calculation and the additional loadings to EDGs (e.g. additional loadings resulting from TMI requirements, etc.) since the plant start-up, the above stated fuel oil inventory stored in fuel oil storage tank FO-1 was no longer sufficient for 7 days of continuous EDG operation following a LOCA. A minimum inventory of 24,520 gallons of fuel oil would be required in order to ensure 7 days of continuous EDG operation at the loads necessary to support and maintain safe reactor shutdown during the most limiting accident.

Consequently, the licensee proposed to use the fuel oil which is stored in the on-site auxiliary boiler fuel oil storage tank (FO-10) and reserved for the auxiliary boiler and the diesel driver of the auxiliary feedwater pump (FW-54), to makeup for the required minimum inventory of fuel oil for the EDG operation following a LOCA. The auxiliary boiler was designed only to heat plant work areas and support water treatment plant operation when the plant is shutdown. The FW-54 is a non-safety grade auxiliary feedwater pump designed to provide back-up auxiliary feedwater with a diverse power source (diesel engine), diverse water supply (the condensate storage tank instead of the emergency feedwater storage tank), and diverse location (basement level of the turbine building).

## 2.0 EVALUATION

### 2.1 Existing TS

TS Section 2.7, in part, requires that:

Both diesel generators, with a full engine base day tank and a minimum of 16,000 gallons of fuel in the underground storage tank.

### 2.2 Proposed TS

The licensee proposed to replace the above existing requirement with the following:

One diesel fuel storage system containing a minimum volume of 16,000 gallons of diesel fuel in FO-1, and an additional 8,000 gallons of diesel fuel in FO-10.

If inventory of diesel fuel in FO-1 is less than 16,000 gallons and/or FO-10 is less than 8,000 gallons, but the combined inventory in FO-1 and FO-10 is greater than a 6 day supply (21,350 gallons), then restore the required inventory within 48 hours.

### 2.3 Basis for the Proposed TS

The licensee provided the following rationale for the above TS requirements:

Each diesel generator has sufficient capacity to start and run at design load required by engineered safety features equipment. The safety features operated from one diesel generator can adequately cool the core for any loss of coolant accident and also maintain the containment pressure within the design value. The engine base tank capacity of 550 gallons on each diesel provides 3 hours running time (worst case loading) before transfer of fuel oil from the 18,000 gallon capacity emergency diesel generator fuel oil storage tank FO-1 is mandatory. Two fuel oil transfer pumps per diesel, with each being powered from the associated diesel, are available for transferring fuel oil from FO-1 to the day tanks. The minimum diesel fuel oil inventory available to the diesel generators from the emergency diesel generator fuel oil storage tank FO-1 is maintained to assure the operation of either: 1) one diesel generator at full rated design capacity for at least 3.6 days, or 2) one diesel generator at post accident load conditions for a minimum of 4.5 days.

A minimum of 8,000 gallons of diesel fuel oil is reserved in the auxiliary boiler fuel oil storage tank FO-10 for transfer to the emergency diesel generator fuel oil storage tank in the event of an emergency to extend the fuel supply for diesel generator operation to 7 days. Methods of transfer of the fuel oil from this tank to FO-1 have been established and procedures have been developed so that the transfer

can be made in a timely manner without adversely impacting diesel generator operation. Therefore, a minimum diesel fuel oil inventory available to the diesel generators from the total on-site diesel fuel oil storage capacity is maintained to assure the operation of one diesel generator at the required post accident loads for 7 days. The fuel inventory is allowed below the 7 day supply, but above a 6 day supply, for a period of 48 hours. This restriction allows sufficient time for obtaining the requisite replacement volume and performing the analyses required prior to addition of fuel oil to the tank. A period of 48 hours is considered sufficient to complete restoration of the required level prior to initiating a plant shutdown as required by Specification 2.7(2). This period is acceptable based on the remaining capacity (more than 6 days), the fact that procedures are in place to obtain replenishment, and the low probability of an event during this brief period.

Additional supplies of diesel fuel oil are available in the Omaha area and from nearby terminals. Ample facilities exist to assure deliveries to the site within 24 hours.

There are two EDGs of identical design and characteristic. Dedicated fuel oil for EDG operation is supplied from the 18,000 gallon underground storage tank FO-1 with a separated supply line for each EDG. Each EDG has two fuel oil transfer pumps mounted on the engine. The pumps transfer fuel oil from FO-1 storage tank to a 300 gallon wall mounted auxiliary day tank in the EDG room. Fuel oil is then gravity fed from the auxiliary day tank to a 550 gallon engine base tank. The level in the auxiliary day tank is maintained by automatic operation of the fuel oil transfer pump in response to low and high level signals. Low or high level in the auxiliary day tank is alarmed in the control room. Low level in the engine base tank is also alarmed in the control room. The plant emergency procedures provide guidance to transfer fuel oil in storage tank FO-10 to storage tank FO-1 prior to the depletion of fuel oil in storage tank FO-1 following a LOCA.

The configuration of the fuel oil transfer system for the diesel driver of FW-54 has been modified to allow the use of the fuel oil transfer pump (FO-37) for the system to transfer fuel oil from storage tank FO-10 to storage tank FO-1. A dedicated portable hose with sufficient length is provided to connect storage tank FO-10 to storage tank FO-1. This dedicated hose will be tagged and stored in an appropriate area. Fuel oil transfer pump FO-37 is a non-safety related component; however, power can be supplied to FO-37 from either of the two EDGs or from the generator connected to the diesel driver for FW-54. The licensee indicated that as a backup to fuel oil transfer pump FO-37, a dedicated and tagged portable pump will be provided and stored in an appropriate area. Periodically, the portable pump and hose will be checked via a preventative maintenance task to ensure they are available for use.

The licensee also stated that the two fuel oil storage tanks, FO-1 and FO-10, are nearly identical with the only identified differences being the nameplate and current critical quality element classification. The capacity, foundation, construction materials, construction code, and initial pressurized

leak testing are identical for both tanks. The vendor and model number of the level indicators are the same for both fuel oil storage tanks, FO-1 and FO-10, and they have similar maintenance requirements. Therefore, based on the acceptance of storage tank FO-1 in the original licensing basis for FCS Unit 1, storage tank FO-10 can be relied on as a source of fuel oil for replenishing storage tank FO-1 in the event of an accident.

In addition to the above cited submittal, the staff reviewed the following documents during a site visit at the FCS:

- a. EC-FC-92-047, Diesel Generator Fuel Oil Requirement, Rev.0. This report documented the licensee's calculation of the fuel oil inventory (24,520 gallons) required for 7 days of continuous EDG operation following a LOCA. The staff found the calculation which was based on time-dependent loads acceptable.
- b. SO-T-16, Emergency Diesel Generator Fuel Monitoring Program, Rev. 12. This EDG fuel monitoring program required the fuel oil stored in the FO-10 storage tank to be upgraded to the same quality assurance requirements and inspections currently in effect for the fuel oil in storage tank FO-1. The staff found that these fuel oil quality monitoring requirements were consistent with the guidance described in Regulatory Guide 1.137 and would ensure reliable fuel oil quality in both FO-1 and FO-10 storage tanks at the FCS.
- c. EPIP-OSC-2, Command and Control Position Actions/Notifications, Rev.26. This was the emergency plan implementing procedure which provided guidance to arrange for fuel oil deliveries within the first twelve hours of continuous EDG operation. The staff concludes that in the event of a LOCA, arrangements are in place to replenish the storage tank FO-1 prior to its depletion.
- d. EPIP-RR-17A, TSC Administrative Logistics Coordinator Actions, Rev. 8. This was the emergency plan implementing procedure which provided guidance for aligning the temporary fuel oil transfer system to transfer fuel oil from storage tank FO-10 to storage tank FO-1. This action would only be taken in the event that new diesel fuel oil could not be delivered to the site within 20 hours of the start of the EDG(s). The staff found that this procedure and the actions to be taken for transferring fuel oil from storage tank FO-10 to storage tank FO-1 were appropriate.

The proposed TS fuel oil inventory is allowed below the 7 days supply, but above a 6 day supply, for a period of 48 hours. The staff agrees with the licensee that this restriction allows sufficient time for obtaining the requisite replacement volume and performing the analyses required prior to addition of fuel oil to the tank. Therefore, the staff finds it acceptable.

Based on its review of the licensee's rationale for the proposed TS changes, the above cited documents, and provided that an administrative control

procedure will be established to maintain the availability and readiness of the portable fuel oil transfer pump and hose and the maintenance program for storage tank FO-10 will be upgraded to the same maintenance program currently in effect for storage tank FO-1, the staff concludes that the licensee will have adequate and reliable fuel oil inventory for 7 days of continuous EDG operation following a LOCA at the FCS. Therefore, the staff finds the above proposed TS change acceptable.

### 3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Nebraska State official was notified of the proposed issuance of the amendment. The State official had no comments.

### 4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (58 FR 52991). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

### 5.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

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Date: March 29, 1994