Monticello License Amendment Request:
Ten-Year Inspection of Emergency Diesel Generators
Common Fuel Oil Storage Tank
October 5, 2021

Agenda

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- MNGP Electrical / EDG Systems
- LAR Approach
- Alternative Fuel Oil Supply System
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Purpose

Discuss proposed license amendment request (LAR) for the Monticello Nuclear Generating Plant (MNGP) to support performance of the ten-year inspection of the Emergency Diesel Generators (EDGs) common Fuel Oil Storage Tank.

Background

- Every 10-years inspection of the Fuel Oil Storage Tank (FOST) is required by License Renewal commitments.
- Both EDGs draw from the single common FOST.
- During shutdown and refueling one EDG is required OPERABLE in accordance with the Technical Specifications (TSs).

General Approach

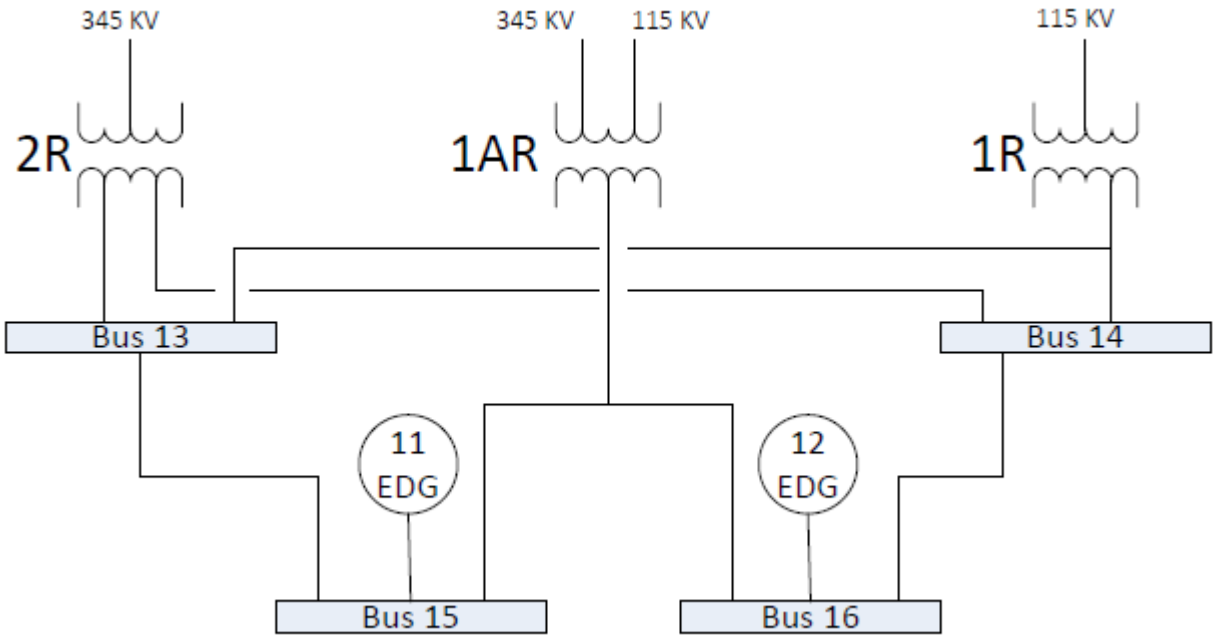
The LAR proposes several TS changes to maintain the 11 EDG OPERABLE while allowing for the drain down and 10-year inspection of the FOST.

- Establish an alternative fuel oil supply system for the OPERABLE EDG (11 EDG).
- Protect key parts of the electrical system and supply sources.
- Establish compensatory measures to minimize potential for a Loss of Offsite Power (LOOP) and address the effects if one were to occur.

MNGP Electrical / EDG Systems

- Three primary sources provide offsite power
- Each source can supply power to both Emergency Core Cooling System (ECCS) busses.
  - 2R – Primary station auxiliary transformer
  - 1R – Reserve transformer
  - 1AR – Reserve auxiliary transformer
- Two safety-related ECCS division busses
  - Bus 15
  - Bus 16
- An EDG backs-up each safety-related ECCS division
  - ECCS – 1 Core Spray and 2 Low Pressure Coolant Injection (LPCI) Systems

MNGP Electrical / EDG Systems



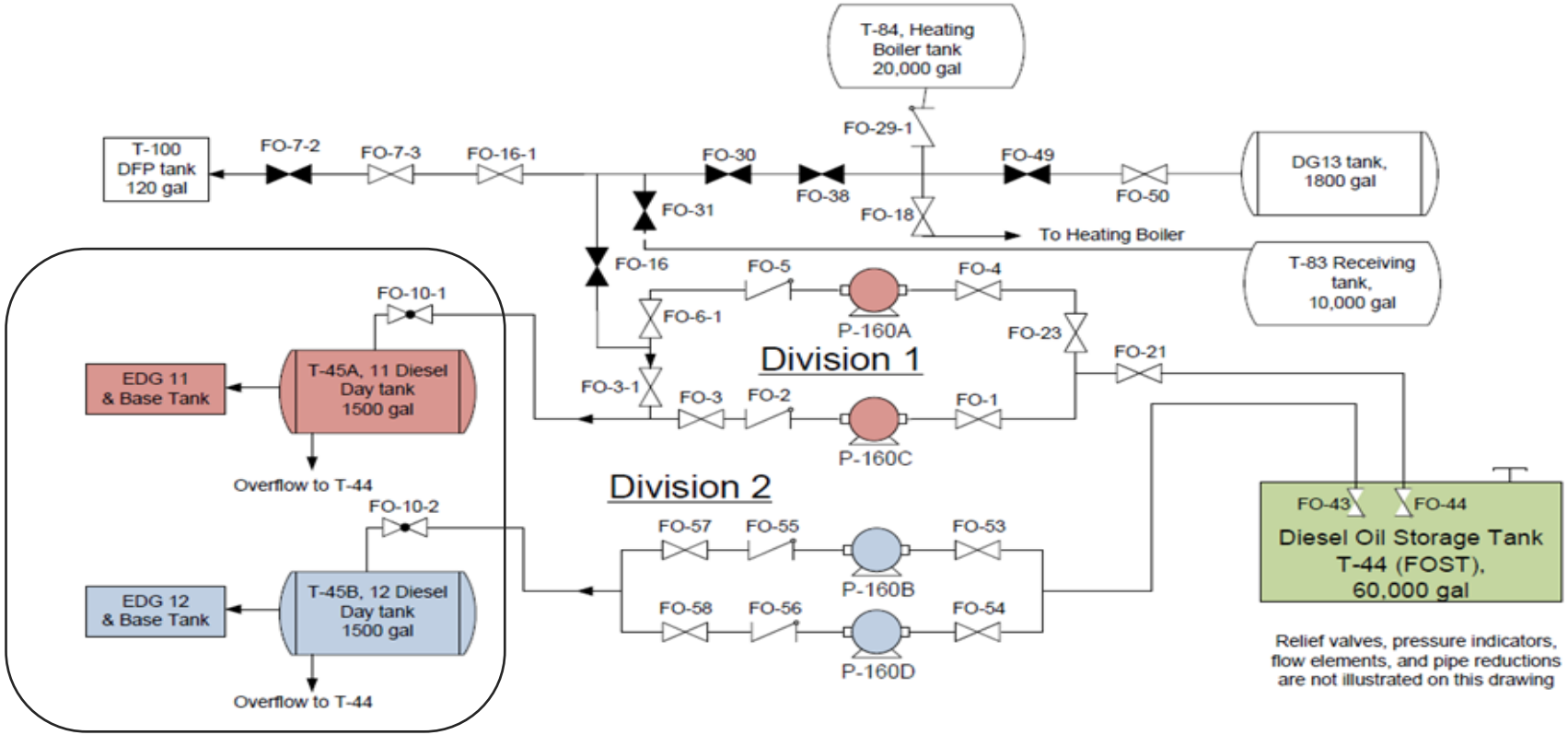
MNGP Electrical / EDG Systems

- MNGP has an additional off-site source (1AR Transformer) which provides an additional qualified supply to each of the two safety-related EDG backed ECCS busses.
- Meets full-load requirements for a single ECCS division.
- Has capability to be supplied from one of two different off-site sources to maintain separation from either of the other MNGP power transformers (1R and 2R Transformers).

MNGP Electrical / EDG Systems

- MNGP has a two train, divisionally separated, EDG fuel oil (FO) transfer system.
- The EDG Day Tanks are normally filled by continuous flow from the FOST via the FO transfer system with overflow from the day tanks returning to the FOST.
- The FO in the EDG Day/Base Tanks in combination provides for 8-hours of continuous operation of the EDG.
- Each FO subsystem draws from the single common FOST.

MNGP Electrical / EDG Systems



LAR Approach

- Establish initial conditions and compensatory measures before the FOST drain down evolution begins.
- Actions to respond to a LOOP are in place.
- Establishment of an alternative fuel oil supply system – some of the current TS requirements are temporarily replaced with requirements pertaining to the alternative configuration.
- TS controls specified through temporary modifications to Specification 3.8.3.

LAR Approach

Initial conditions prior to 10-year FOST inspection:

- Establish the alternative fuel oil supply system.
- Meet new TS SR requirements in Specification 3.8.3 ACTIONs.
- Reactor in Mode 5 (Refueling) – reactor cavity flooded / fuel pool gates out.
- The 11 EDG ECCS division is “protected.”
- Incoming power sources (1R, 2R, and 1AR Transformers) are “protected” during the evolution. (2 of 3 sources protected at all times)
- Evaluate weather forecast for the FOST 10-year inspection duration
- Verify compensatory measures are in place

LAR Approach

- Proposed compensatory measures:
  - Maintain sufficient inventory on-site in the alternative fuel oil supply system to meet 7-day operation of one EDG.
  - Store FO inventory in a safe manner at a location(s) providing adequate distance to protect from impact of FO fires.
  - Store the FO inventory to prevent contamination of the FO.
  - Elective switchyard activities and on-site electrical maintenance that could cause unstable offsite or on-site power conditions will not be scheduled.

LAR Approach

- Proposed compensatory measures:
  - Elective maintenance that affects the 11 EDG OPERABILITY will not be permitted.
  - Removal of the FOST for the 10-year inspection will not be permitted when severe weather is forecast for the area or if there is a foreseen need for EDG operation.

LAR Approach

- If a LOOP were to occur:
  - Reactor cavity is flooded-up – provides a long duration to respond.
  - ECCS systems supplied by the 11 EDG are available
  - Injection by alternative means is also available
  - Alternative fuel oil supply system will be used to periodically refill the 11 EDG Day Tank.
  - FOST would be restored as expeditiously as possible.
- NSPM maintains procedures to respond to a Station Blackout / FLEX event.

Alternative Fuel Oil Supply System

- Temporary FOST(s) and/or tanker truck(s) to be utilized.
- Tanker truck used to transfer FO to 11 EDG Day Tanks.
- Alternative source(s) are not safety related, seismic, nor tornado protected but will have ability to rapidly resupply.
- Supply to the 11 EDG Day/Base Tanks from the alternative fuel oil supply system verified by testing prior to FOST drain down.
- 11 EDG Day Tank is at normal operating level prior to beginning drain down of the FOST.

Alternative Fuel Oil Supply System

- Temporary FOST(s) and/or tanker truck(s) will be located on-site.
- Multiple “kits” of material (hoses, connectors, etc.) to transfer the FO will be maintained on-site.
- On-site FO storage location(s) selected to ensure storage of inventory in a safe manner that provides adequate distance to protect from the impact of FO fires.
- Provide for FO storage inside double walled tanks or a berm / catch basin.

TS Changes

- The affected MNGP Technical Specifications are:
  - Specification 3.8.3 – Diesel Fuel Oil, Lube Oil, and Starting Air
  - Specification 3.8.2 – AC Sources Shutdown
- Specification 3.8.3 – the controlling specification during 10-year FOST drain down / inspection evolution.
- These TS changes are only for the duration of the 10-year FOST inspection during the 2023 Refueling Outage.

TS Changes

Add a Note to the Specification 3.8.3 ACTIONs table to provide specific Actions to address the out-of-service nature of the FOST for this evolution:

- On a one-time basis, the fuel oil storage tank may be made inoperable and drained to support inspection and associated repair activities for 14 days without entering Conditions A or G.
- If not restored within this period, Condition G must be entered.

TS Changes

In the Note added to the Specification 3.8.3 ACTIONs table provide temporary requirements applicable for the evolution:

a) Verify fuel oil volume in the alternative fuel oil system provides 7-days of operation for the 11 EDG prior to removing the FOST from service.

b) Verify fuel oil volume in the 11 EDG Day/Base Tanks provides 8-hours of operation. Verify prior to removing the FOST from service and once per 24 hours thereafter.

c) Specify the following TS SRs are not applicable during this evolution; SR 3.8.1.5, SR 3.8.3.1, and SR 3.8.3.5.

TS Changes

Add Note to SR 3.8.2.1 clarifying the status of SR 3.8.1.5 during the FOST 10-year inspection evolution.

- SR 3.8.2.1 lists SR 3.8.1.5 as an SR required for an OPERABLE AC source (the EDGs) in Modes 4 and 5.
- SR 3.8.1.5 cannot be performed with the FOST out-of-service for inspection since the SR verifies the fuel oil transfer system can transfer oil from the FOST to the EDG day tanks/base tanks.
- Note will indicate SR 3.8.1.5 is not applicable during this evolution and redirects to the ACTIONs in Specification 3.8.3 for the appropriate controls.

Summary

- Similar TS changes to perform 10-year inspections of EDG Fuel Oil Storage Tanks have been approved by the NRC for many licensees.
- Projected date for LAR submittal – November 2021
- Requested for the spring 2023 Refueling Outage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