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**Jerry C. Roberts**  
Director  
Nuclear Safety Assurance

June 18, 2001

U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Attention: Document Control Desk

Subject: Grand Gulf Nuclear Station  
Docket No. 50-416  
License No. NPF-29  
Response to Request for Additional Information RE: Revision  
of Technical Specifications for Emergency Diesel Generator  
Lube Oil Inventory (TAC NO. MB0423) LDC 1999/083

References:

1. GNRO-2000/00060, dated October 24, 2000, Diesel Engine Lubricating System Technical Specification Change Request
2. GNRI-2001/00054, dated April 12, 2001, Request for Additional Information RE: Revision of Technical Specifications for Emergency Diesel Generator Lube Oil Inventory (TAC NO. MB0423)

GNRO-2001/00048

Ladies and Gentlemen:

In Reference 1 Grand Gulf Nuclear Station (GGNS) requested a change to the GGNS Technical Specifications. The change sought allowance for additional lube oil inventory to compensate for any future changes in lube oil consumption rate which might occur in the future.

In Reference 2 you requested that additional information be provided within 60 days of receipt of your request. GGNS is providing the requested information in Attachment 1 to this letter.

The attached response does not contain any new commitments. The additional information provided does not alter the No Significant Hazards Considerations of the original submittal. Should you have any questions please contact Lonnie Daughtery at (601) 437-2334.

A001

June 18, 2001  
GNRO-2001/00048  
Page 2 of 2

I declare under penalty of perjury that the foregoing is true and correct. Executed on June 14, 2001.

Yours truly,



JCR/LFD

attachment:  
cc:

Response to Request for Additional Information

Hoeg	T. L.	(GGNS Senior Resident)	(w/a)
Levanway	D. E.	(Wise Carter)	(w/a)
Reynolds	N. S.		(w/a)
Smith	L. J.	(Wise Carter)	(w/a)
Thomas	H. L.		(w/o)

Mr. E. W. Merschoff (w/2)  
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Mr. S. P. Sekerak, NRR/DLPM/PD IV-1 (w/2)  
**ATTN: ADDRESSEE ONLY**  
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**Plant Systems RAI Questions:**

- 1.0 Discuss the provisions established, or to be established, in the plant operating procedures to ensure that Division III emergency diesel generator (EDG) engines will have sufficient lube oil for seven days of operation following a design basis accident. Information should include:
- a. A detailed description to show how the lube oil inventory in the EDGs will be monitored.
  - b. A detailed description to show how the lube oil will be transferred from the skid mounted barrels to the EDGs.

**RESPONSE:**

**Question:**

- a. Provide a detailed description to show how the lube oil inventory in the EDGs will be monitored.

**Response:**

The Engineering Request Response, which provided for the skid installation, included the following requirements in the Engineering Instructions Section regarding how lube oil inventory was to be monitored:

"The Technical Specification seven / six day limits for Division III are being changed to 202 / 173 gallons respectively (of useable oil). These new storage requirements are based upon an engine lube oil consumption rate equal to twice the nominal consumption rate specified by the manufacturer. Verification of meeting the seven day storage requirement can be accomplished by verifying that the engine lube oil sumps are at their full mark when the engines are not running and that three full barrels (i.e. containing 55 gallons each) are stored in the designated area in the northwest corner of the Division 3 DG room. For the purposes of meeting the Division III Tech Spec lube oil storage requirements (for seven days) barrels may be considered full if they are within 1.75 inches of the top of the barrel. The six day storage requirement is met with the sumps at the full mark when the engines are not running and two full barrels (filled to within 5 inches of the top of the barrel).

Additionally a check of Operations procedures both System Operation Instructions and Surveillance Procedures was conducted to determine periodic monitoring requirements. This check revealed that all procedures covering diesel run times longer than one hour required hourly checks via the engine dipsticks for lube oil level. This check also revealed that all procedures covering diesel generator runs require checking the oil level after shutdown. The procedures also contain criteria for alerting Operations personnel when lube oil should be added to the individual engine.

**Question:**

- b. Provide a detailed description to show how the lube oil will be transferred from the skid mounted barrels to the EDGs.

**Response:**

The Engineering Request Response which provided for the skid installation included the following requirements in the Engineering Instructions Section regarding lube oil transfer from the barrels to the engines. The transfer method consists of attaching a manual barrel pump to the barrels and then running its discharge via rubber hose to the engine sumps (this is similar to normal maintenance practice for refilling the sumps after oil changeout). Note that the rubber hose was included in the evaluation of combustibles:

- (75') ¾" Red Rubber Hose,
- Manual barrel pump and tools as required for transfer of oil from the barrels to the engine sumps.

The oil transfer related equipment described in sections 3.3 and 3.4 is to be located in the modified Division III DG room safe storage area where it will be available for immediate use. This equipment is to be tagged as being required for Technical Specification 3.8.3. Such storage must be in accordance with the requirements of Engineering Standard CS-17, which addresses seismic concerns.

It should be noted that the manual barrel pump will not be able to completely empty the barrels. However, the calculation for the Division 3 storage requirement assumes that 3 inches in the bottom of the barrels can not be transferred by the barrel pump.

**Fire Protection RAI Questions:**

- 2.0 The licensee stated in the license amendment request that their fire hazard analysis (FHA) was updated to ensure that the existing design requirements were still valid, and that the ability to achieve and maintain safe shutdown was not adversely affected. Lube oil fires are typically rapidly developing fires, with high rates of heat release, that produce large amounts of dense smoke. Early detection and prompt automatic suppression are key to controlling this type of fire. Therefore, since the FHA update was not included in the license amendment request, please respond to the following staff concerns:
- a. Provide the staff with a copy of the updated portions of the FHA which assessed that the existing design requirements are still valid, and that the ability to achieve and maintain safe shutdown was not adversely affected for Division I, II, and III EDGs, and for the lube oil storage skid.
  - b. Provide either a detailed diagram or detailed written description to describe the relationship of the lube oil storage skid and the Division I, II, and III EDGs to the following:
    - combustibles
    - potential ignition/heat sources
    - safe shutdown equipment or cables
    - rated fire barriers/doors

- automatic suppression and detection systems
  - manual fire protection features
  - ventilation systems
- c. Discuss what measures are in place to prevent or detect oil leakage from the skid mounted barrels. Furthermore, in the event that the skid-mounted barrels leak oil, describe all actions or built-in features that would minimize the potential for a fire and limit the ability of the oil to spread beyond the lube oil storage skid.

**RESPONSE:**

**Question:**

- a. Provide the staff with a copy of the updated portions of the FHA which assessed that the existing design requirements are still valid, and that the ability to achieve and maintain safe shutdown was not adversely affected for Division I, II, and III EDGs, and for the lube oil storage skid.

**Response:**

Fire Hazards Analysis Report Revision Request (FHARRR) No. 1999-0004 was prepared in accordance with Nuclear Plant Engineering Administrative Procedure No. 317 to reflect changes made by ER 1999-0311-00. The change was prepared and approved by qualified fire protection engineers; however, the change can not be incorporated into the FHA until the amendment request is approved and the plant change has been implemented. There are only two changes to the FHA resulting from this ER: 1) Fire loading in the Div. III Diesel Generator Room (0C306) increased from <45 minutes to < 60 minutes, and 2) Different type of combustible material being added in this room (i.e. rubber hose). Both of these changes are reflected in FHARRR No. 1999-0004. A copy of FHARRR 99-0004 is attached.

**Question:**

- b. Provide either a detailed diagram or detailed written description to describe the relationship of the lube oil storage skid and the Division I, II, and III EDGs to the following:
- combustibles
  - potential ignition/heat sources
  - safe shutdown equipment or cables
  - rated fire barriers/doors
  - automatic suppression and detection systems
  - manual fire protection features
  - ventilation systems

**Response:**

The lube oil storage skid will be located on the north end along the west wall of the Div. III EDG Room (Fire Zone 1A306/Fire Area 63) as indicated in Sketch #1. Sketch #1 is a partial view taken from Drawing A-0634 "Unit 1 Aux. & Diesel Gen. Bldg. and SSW Pump House – Fire Protection Floor Plans at El. 133'-0" & 139'-0". Fire Area 63 is separated from all other areas by

3-hour rated fire barriers and it contains no Appendix R safe shutdown components. The nearest combustibles to the lube oil skid are the lube oil in the west engine of the Div. III EDG (approximately 6' to the east) and electrical cables in trays (approximately 20' to the south and approximately 15' above floor level). The nearest fixed ignition source other than the diesel engine is electrical control panels located approximately 18' to the south of the oil storage skid. Protection for Fire Area 63 consist of area wide automatic pre-action sprinkler system, actuated by heat detectors, ultraviolet flame detection for early warning, and accessibility to manual hose streams and portable fire extinguishers. All suppression and detection system alarms annunciate in the main control room. The area where the oil skid is located is an open area that is adequately covered by the existing detection and suppression systems. Ventilation for this area consists of room supply fans with exhaust through the Diesel Generator Building Corridor (Room 1D301) to the outside. The major contributor's to the combustible loading in this area is the lube oil in the engines and diesel fuel oil. Currently the in situ loading is <45 minutes, the addition of the 3-55 gallon drums of lube oil and fill hose to this area increases the loading to <60 minutes. Fire Area 63 contains no safe shutdown components, total combustible loading will be <60 minutes, and this area is separated from other areas containing safe shutdown components by 3-hour rated fire barriers. Therefore, a fire in fire area 63 will not damage or propagate to damage redundant safe shutdown components.

**Question:**

- c. Discuss what measures are in place to prevent or detect oil leakage from the skid mounted barrels. Furthermore, in the event that the skid-mounted barrels leak oil, describe all actions or built-in features that would minimize the potential for a fire and limit the ability of the oil to spread beyond the lube oil storage skid.

**Response:**

The barrels to be used for the skid are to be closed and sealed to prevent sloshing/leakage and stored inside a welded steel pan or tank capable of holding 110% of the contents of the barrels (185 gallons). Therefore, any leakage from the barrels will be contained within the steel pan. The barrels are to be tightly restrained/strapped together in accordance with the requirements of an established plant procedure and seismic storage requirements standard. The specified design requirements for the skid included specific pan/tank dimensional requirements to preclude overturning the skid during a seismic event and resultant spillage of the contents.

Conditions in the Division III EDG room are monitored by plant operations on a regular basis (as a minimum once per shift or every 12 hours). Generic checks already specified include inspections for oil and water leakage in the room. Even a small amount of leakage from the barrels would be contained within the pan and would be clearly visible to the operators during these checks.

**FIRE HAZARDS ANALYSIS REPORT  
REVISION REQUEST**

Engineering Fire Hazards Analysis Report Revision Request (FHAR) Number: 99-0004

Change Document: ER 99/0311-00-00

I. LIST AFFECTED PAGE(S): (Attach Mark-up of Affected Page(s))

Pages 305 and 306.  
and  
Page 124 of Table 1.

II. JUSTIFICATION OR REASON FOR CHANGE:

ER 99/0311-00-00 adds three 55 gallon barrels of lube oil and 75 ft. of rubber hose to the DIV III Diesel Generator Bay, Fire Zone 1D306. This additional lube oil (165 gallons) and rubber hose (75 ft) increases the total fire loading from 59,188 BTU/SF (a duration of < 45 minutes) to 65,958 BTU/SF (a duration of < 60 minutes).

This FHARR requires that the fire duration of < 45 minutes for Fire Zone 1D306 be changed to < 60 minutes in three places and that rubber hose be added to the list of combustibles as shown on the attached mark-ups.

RESPONSIBLE ENGINEER: Michael R. Combust 11/19/99  
Denise J. Hofer DATE: 11/19/99

MANAGER, PROGRAMS & COMPONENTS \_\_\_\_\_ DATE: \_\_\_\_\_

5.63 FIRE AREA 63

FIRE AREA DESCRIPTION

Fire Area 63 consists solely of Fire Zone 1D306 (Elev. 133' 0") in the Diesel Generator Building. The East and South walls and portions of the North wall adjacent to Fire Zone 1D301 are 3-hour rated fire barriers. The remaining portion of the North wall, West wall, and floor (slab) are nonrated exterior barriers (Ref. Architectural Drawings A-0634 and A-0635). In addition, the ceiling is a nonrated roof, which is supported by structural steel coated with a 3-hour rated fireproofing barrier (Ref. Architectural Drawing A-0629).

INCLUDED FIRE ZONES

<u>Fire Zone</u>	<u>Description</u>
1D306	Diesel Generator Bay, Elev. 133' 0"

SAFE SHUTDOWN EQUIPMENT

None

FIRE AREA ANALYSIS

Fire Zone 1D306 does not contain any safe shutdown components, as shown in the microcomputer data base (Ref. FPP-1, Appendix C Data). This fire area is separated from all other fire areas by 3-hour rated fire barriers. Therefore, in the event of a fire in this fire area, safe shutdown capability would be maintained by either division of safe shutdown equipment. The postulated fire in Fire Zone 1D306 has a duration of less than 45 minutes. Therefore, a fire occurring in Fire Area 63 will not spread into any other fire area.

DELETE

FIRE ZONE ANALYSES

FIRE ZONE 1D306: DIESEL GENERATOR BAY, ELEV. 133' 0"

Safety-Related Equipment

Relay and Control Panels  
Fuel Oil Day Tank  
HPCS Diesel Generator  
Exhaust Silencers  
Air Intake Filters  
Air Intake Silencers  
Air Compressor Skid  
Diesel Generator Room Outside Air Fan  
Electrical Cable and Raceway

ADD → 60

Fire Zone Analysis

DELETE

60-minute ADD

Fire Zone 1D306 is located in the Diesel Generator Building on Elev. 133' 0". The East, South, and portions of the North wall adjacent to Fire Zone 1D301 are 3-hour rated fire barriers. The floor, ceiling, West wall, and a portion of the North wall are nonrated exterior barriers (Ref. Architectural Drawings A-0634 and A-0635).

The combustible loading in Fire Zone 1D306, including transient combustibles, amounts to less than a ~~45-minute~~ fire duration. The major contributors to this combustible loading are the miscellaneous insitu combustibles (e.g., lubricating oil, fuel oil, etc.) present in the room. The transient combustible loading in this fire zone is less than 5 percent of the total combustible loading (Ref. Calculation MC-QSP64-86058).

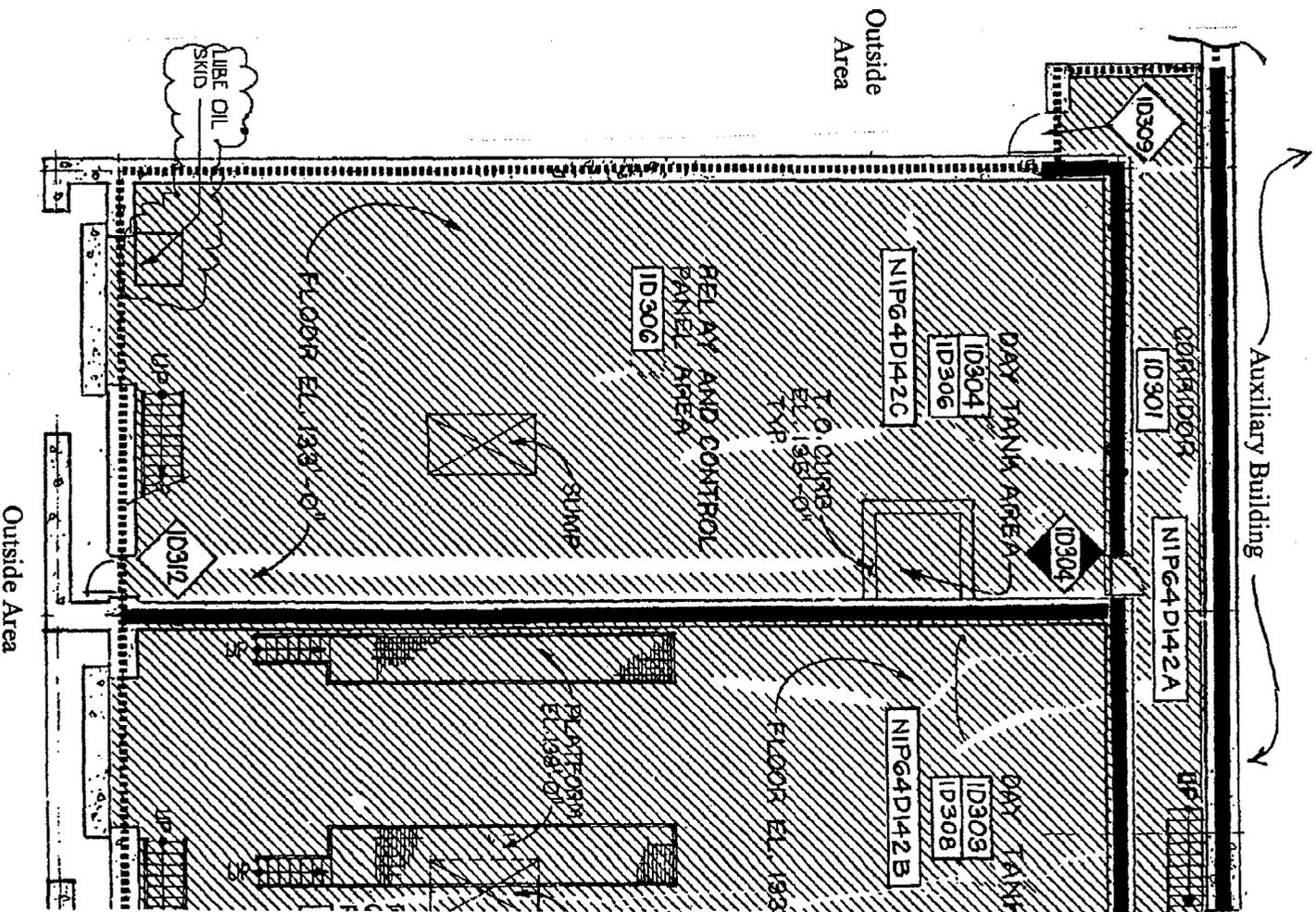
Fire Zone 1D306 contains safety-related equipment and the following fire protection measures are provided: an automatic preaction sprinkler system which is activated by heat detection, an ultraviolet flame detection system, and accessibility to manual hose streams and portable fire extinguishers.

Since Fire Zone 1D306 does not contain any safe shutdown components, a fire in Fire Zone 1D306 will not affect either train of safe shutdown components.

TABLE  
FIRE HAZARDS ANALYSIS SUMMARY

<u>Fire Area</u>	<u>Fire Zone</u>	<u>Fire Zone Elevation, Ft., Column Location</u>	<u>Safe Shutdown Equipment</u>	<u>Major Safety-Related Equipment (Quantity)</u>	<u>Fire Protection</u>	<u>Combustible Materials</u>	<u>Maximum Fire Duration (Minutes)</u>
63	1D306	Diesel Generator Bay, Elev. 133' 0", Area Bounded by Column Lines 11-13 and R-West Wall	None	Fuel Oil Day Tank HPCS Diesel Generator Exhaust Silencers (2) Air Intake Filters (2) Air Compressor Skids D.G. Room Outside Air Fan Air Intake Silencers (2) Electrical Cable and Raceway Relay and Control Panels	Auto Preaction Water Sprinkler Ultraviolet Flame Detection Hose Streams Portable Extinguishers 3-Hr Rated East, South, and Portion of North Walls	Fuel Oil Electrical Cable Concrete Joint Sealants Lube Oil Transient	

### Sketch #1



**LEGEND:**

SYMBOLS	DESCRIPTIONS
[NIP64D142A]	SYSTEM NUMBER (SEE MECH. DWGS. M-0025A TO M-0025H)
[ID306]	3-HOUR FIRE DELINEATION ALL EXPOSED STR. STL. WITHIN THE WALL SHALL BE FIREPROTECTED (INCLUDE ALL PENETRATIONS)
[---]	2-HOUR FIRE DELINEATION ALL EXPOSED STR. STL. WITHIN THE WALL SHALL BE FIREPROTECTED (INCLUDE ALL PENETRATIONS)
[---]	FIRE ZONE BOUNDARY
[Hatched Box]	FIRE ACTION SPRINKLER SYSTEM
[Diamond]	CLASS 1 1/2" DOOR (3 HOURS)
[Diamond]	CLASS 1 1/8" DOOR (1 1/2 HOURS)
[Diamond]	CLASS 1 1/4" EXT. DOOR (1 1/2 HOURS)
[Diamond]	FIRE RATED PENETR. CEILING (FL. SLAB ABOVE)
[Diamond]	FIRE RATED PENETR. FLOOR SLAB
[A308]	ROOM NUMBER
[A308]	AND/OR FIRE ZONE NUMBER
[A308]	FIRE ZONE NUMBER
[A1002]	FIRE ZONE NUMBER