ENCLOSURE

Q040.126 (8.3) Your responses to Q040.54 and Q040.83 reflect a continuing misunderstanding of the question. The purpose of the Q040.83 was to require that one alarm be provided to explicitly indicate conditions are such that a diesel generator is incapable of responding to an automatic emergency start signal. As outlined in Q040.54, you should separate the alarms so that there is a dedicated alarm for the conditions that render a diesel incapable of responding to an automatic start signal. Some of the examples are as follows:

a) Diesel generator breaker feeding to the ESF bus is racked out.

b) Diesel generator is started locally for test or maintenance and the operator forgets to return the control to the control room after the activity is completed.

c) Failure of DC control power supply to the diesel generator breaker.

d) Failure of the control power supply to the start air train circuits.

e) After testing the diesel generator, the operator forgets to reset the exciter pushbutton.

You may have more than the conditions as mentioned above which would render a diesel generator incapable of responding to an automatic emergency start signal.

We require that you provide a list of all these conditions and that your design comply with Regulatory Guide 1.47 "Bypassed and Inoperable Status Indication for Nuclear Power Plant Safety Systems," as stated in FSAR Section 8.1.4.3 with respect to this subject.

Q040.127 (8.3) In section 1.9.26 titled "Emergency Power Supply for Pressurizer Heaters (II.E.3.1)", you state that FSAR Section 8.3 and Figure 8.1-7 will be revised to provide the capability to supply from either the offsite power source or the emergency power source (when offsite power is not available). Submit these drawings and the associated schematics when they are available.

Q040.128 (8.3) Your response No. 2 to Q040.119 is unacceptable. Our position on 18 months periodic testing was outlined in Q040.51 and Q040.110. We require that you comply with Regulatory Guide 1.108 Position C.2a.3 which states: demonstrate full-load carrying capability for an interval of not less than 24 hours, of which 22 hours should be at a load equivalent to the continuous rating of the diesel generator and two hours at a load equivalent to two hour rating of the diesel generator.

Q040.129 (8.1) The response to 040.01 (regarding containment electrical penetration) is not complete. We require that the I^2t ratings, maximum fault currents, protective equipment setpoints and expected clearing times be provided in order to complete our review.

Q040.130 (8.3) FSAR Subsection 8.3.1.2.13 paragraph d) states: "Position C4. Cables used in both safety related and associated circuits are fully qualified for the worst environment and are derated, etc."

Provide a complete statement on qualifying safety related and associated circuits without using "etc.".

Q040.131 (8.3) Your response to Q040.06 is not sufficient to allow a fully independent review of this aspect of your design. We require that the adequacy of the design with regard to the adequacy of the safety-related bus voltage levels be verified by actual measurement and by correlation of measured values with analysis results. The verification and test should be performed prior to initial full power reactor operation on all sources of offsite power by:

a) Loading the station distribution buses, including all Class 1E buses down to the 120/208 volt level, to at least 30%;

b) recording the existing grid and Class 1E bus voltages and loading down to the 120/208 volts level at steady state conditions and during starting of both a large class 1E and a non-Class 1E motor (not concurrently);

Note: To minimize the number of instrumented locations, the bus voltages and loading need only be recorded on that string of buses which previously showed the lowest analyzed voltages from Q040.06.

c) using the analytical techniques and assumptions of the previous voltage analyses cited in Q040.06, and the measured existing grid voltage and loading conditions recorded during conduct of the test, calculate a new set of voltage for the Class 1E buses down to the 120/208 volt level;

d) compare the analytical values against the test results.

With good correlation between the analytical result and the test result, the test verification requirement will be met. In general the test results should not be more than 2% lower than the analytical results. However, the difference between the two when subtracted from the voltage levels determined in the original analyses should never be less than the Class 1E equipment rated voltages.

Q040.132 (8.3) Your response to Q040.03 regarding second level of voltage protection is unacceptable. You state on page 8.3-69 that "it is undesirable to generate a LOVS anytime the auxiliary system voltage drops to 88-87 percent because an unnecessary reactor trip will occur when the auxiliary equipment is still capable of providing an acceptable output. It is difficult to precisely select a percentage of bus voltage and time between 88% and 78% at which a LOVS should be generated due to the response of the plant auxiliaries under various conditions of the voltage falls within these limits appropriate action will be taken manually by the control room operator."

The above statement is not responsive to our position and is unacceptable. Degraded grid undervoltage conditions should be recognized and corrected such that the safety related loads do not experience degraded voltages outside of their ratings for any sustained period of time. This is best accomplished by an instantaneous relay with a time delay. The predetermined time delay should be consistent with the accident analyses.

You have proposed IAV55C relay for both a loss of voltage and the degraded grid voltage condition. The figure 040.48-1 showing the time voltage characteristics does not seem to be correct. Refer to GE Catalogue No. GEH-1768A. At No. 3 dial setting when the percent of closing volts is 85%, the time in seconds is 6.5 seconds. We fail to understand how you arrived at eight seconds when the percent closing volts is 78%. Moreover, it is difficult to predict the behavior of the relay if the percent of closing volts is above 85%. Provide a separate second level of undervoltage protection as described in Q040.03.

Q040.133 (9.5.4) Your response to Q040.26 is incomplete. FSAR section 9.5.4.3 states that "each fuel oil storage tank is provided with a distribution pipe inside the tank as shown in Figure 9.5-3 to minimize creation of turbulence of the sediment in the bottom of the fuel oil storage tank." This statement and figure 9.5.3 provide insufficient information to evaluate this aspect of the fuel oil system design. Provide sufficient information to enable evaluation that the distribution pipe inside the fuel oil storage tank has been designed to minimize the creation of turbulence of the sediment during emergency refilling of the system.

Q040.134 (3.2) (9.5.4) (9.5.5) (9.5.6) (9.5.7) (9.5.8)

The FSAR test and Table 3.2-1 states that the components and piping systems for the diesel generator auxiliaries (fuel oil system, cooling water, lubrication, air starting, and intake and combustion system) are designed seismic Category I and are ASME Section III Class 3 quality. The engine mounted components and piping are normally designed and manufactured to DEMA standards, and are seismic Category I. This is not in accordance with Regulatory Guide 1.26 which requires the entire diesel generator auxiliary systems be designed to ASME Section III Class 3 or Quality Group C. Provide the industry standards that were used in the design, manufacture, and inspection of the engine mounted piping and components. Also shown on the appropriate P&ID's where the Quality Group Classification changes from Quality Group C.

Q040.135 (9.5.4) (RSP)

Your response to Q040.23, Q040.56, Q040.57 and Q040.58 is unacceptable. We require the following:

a. The fill and vent lines for the diesel oil storage tank and fuel oil drain lines 7EG1-43 and 7EG1-44 be designed to Seismic Category I and ASME Section III Class 3 (Quality Group C).

b. The fill and vent lines shall be protected from tornado missiles and terminate above the site maximum flood level. The fill line shall be provided with suitable fill cap to prevent ingress of water into the diesel oil storage tank during postulated flooding and adverse environmental conditions.

Q040.136 (9.5.4) Discuss the means for detecting or preventing growth of algae in the diesel fuel storage tank. If it were detected, describe the methods to be provided for cleaning the affected storage tank. (SRP 9.5.4, Part III, Item 4).

Q040.137 (9.5.4) FSAR Table 9.5-1 states that the fuel oil storage tank capacity is 41,400 gallons while Figure 9.5-3 shows the tank capacity as 42,500. Resolve this discrepancy and revise the FSAR to show the correct tank capacity in the table and on the figure.

Q040.138 (9.5.4) In section 9.5.4.2 you state that "The exterior surface of the tanks is commercially sand blasted, then prime coated and finish painted to prevent corrosion. No painting is required on the interior surface. All piping is also cleaned and painted to prevent corrosion." Corrosion protection for the internal surfaces of the storage tanks is required. Provide this corrosion protection and revise the FSAR accordingly. For all the corrosion protective coatings used include the industry standards which will be used in their application. Also discuss what provisions will be made in the design of the fuel oil storage and transfer system in the use of a impressed current type cathodic protection system, in addition to water proof protective coatings, to minimize corrosion of buried piping or equipment. If cathodic protection is not being considered, provide your justification. (SRP 9.5.4, Part II, and Part III, Item 5).

Q040.139 (9.5.4) (9.5.5) (9.5.6) (9.5.7) (9.5.8)

The FSAR sections 9.5.4 through 9.5.8 does not identify any specific high-or moderate-energy lines that pass through the diesel-generator room.

Identify all high and moderate energy lines and systems that will be installed in the diesel generator room. Discuss the measures that will be taken in the design of the diesel generator facility to protect the safety related systems, piping and components from the effects of high and moderate energy line failure to assure availability of the diesel generators when needed. Provide the specific FSAR subsection numbers which contain the analysis of moderate and high energy pipe breaks. (SRP 9.5.4, Part III, Item 8; SRP 9.5.5, Part III, Item 4; SRP 9.5.6, Part III, Item 5; SRP 9.5.7, Part III, Item 3; SRP 9.5.8, Part III, Item 6c).

Q040.140 (9.5.6)

The second paragraph of FSAR Subsection 9.5.6.3 states that all starting operations (of the diesel generator) are automatic and self-initiated. Provide additional information, including a logic diagram that shows the complete starting cycle, the duration of each starting sequence, and the time delay between attempts to start. Describe how the control room is advised of a diesel generator failure to start condition.

Q040.141 (9.5.8) (RSP) Figure 9.5-7 shows the diesel engine exhaust stacks terminating above what appears to be a parapet of the diesel generator building roof. FSAR section 9.5.8.3 states that the diesel engine combustion air intake is protected from tornado missiles, but no mention is made of tornado missile protection for the exhaust stacks extending above the diesel generator roof. We also require that this portion of the diesel engine exhaust stacks be protected from tornado missiles.

Q040.142 (10.2) Your responses to Q040.38 and 040.41 are inadequate. The following additional information is required:

(a) Revise Figs. 10.2-5, 10.2-6, and 10.2-9 to snown normal speed/load control for speeds <103% of rated.

(b) Show that control signals from the DEH and electrical overspeed protection systems are isolated from and independent of one another (SRP 10.2, Part II, item 2d).

(c) Provide a legend for Fig. 10.2-6 that identifies each instrument and its function.

(d) State whether turbine trip results in activation of the power-assisted extraction line non-return valves (SRP 10.2, Part II, item 3).

(e) Describe how valves 20-1/AST and 20-2/AST are energized by the OPC at 111.5% speed.

(f) Describe, with a sketch if necessary, how valve 20-1/AST is redundant to valve 20-2/AST. Redundancy is not obvious from Fig. 10.2-6.

(g) Provide a drawing (possibly No. Lou-1564-G-151, sheet 2) that shows turbine extraction lines and valves (reference: Fig. 10.2-4).

(h) According to FSAR p. 10.2-4a, the control room OPC monitor light indicates speed channel failure. Fig. 10.2-5 does not include that indication. Resolve this apparent inconsistency.

Q040.143 (10.2) Describe your inservice inspection program for essential components of the turbine control and protection systems (SRP 10.2, Part II, item 5).

Q040.144 (10.2) Describe how each turbine trip listed in FSAR subsection 7.7.1.4.3 (except for those already shown in Fig. 10.2-6) is implemented.

Q040.145 (10.3) Table 10.3-5, prepared in response to Q040.70, shows a total normal steam flow to the reheaters of 290,349 lb/hr. The system heat balance (Fig. 10.2-2) gives that flow as 1,165,394 lb/hr, four times as much. Clarify this discrepancy. Also, describe, with the aid of a logic and/or block diagram if necessary, the sequence of events beginning with the generation of a turbine trip signal and terminating with closure of the four valves in the lines to the MS-Rs. State which turbine trip signals cause valve closure and whether those valves can be closed from the control room.

Q040.146 (10.4.1) Discuss the measures to be taken for detecting, controlling and correcting condenser cooling water leakage into the condensate stream. Provide the permissible cooling water inleakage and time of operation with inleakage to assure the condensate/feedwater quality can be maintained within safe limits (SRP 10.4.1, Part III, item 2).

Q040.147 (10.4.4) Figure 10.2-4 does not show the steam bypass system (SBS) as stated in FSAR subsection 10.4.4.2. Provide a drawing that shows the SBS and its interface with the main steam supply system and the main condenser.