Emergency Diesel Generator Owners Groups Final Comments to the issued RG 1.9, R4

ESI-EMD Owners Group

Fairbanks Morse Owners Group

August 1st, 2007

P E A

Overview of Current Situation

- Draft RG Issued Late November 2006
- Comments Requested by December 21st, 2006
  - To coordinate with industry NEI comments required initial reviews and comments by Dec 6th
  - With little time, ESI-EMD and FMOG coordinated comments to meet deadline, requiring significant industry commitment from an already overworked resource.
- Comments Significant (44 comments / 25 pages)
  - NRC took several exceptions and new positions to recent revision of IEEE-387-1995 with no regulatory or technical basis.
    - Process that engages equipment manufacturers in IEEE 387
  - Some positions in our opinion could cause a decrease in reliability of EDGs, contrary to the strong industry and NRC work from the 80s and 90s

Overview of Current Situation

- Comment Meeting / Conference Call, January 30th
  - Discussed several key comments
  - Came to resolution on many
  - Surprised document was issued with requirements contrary to what was discussed in certain cases
- RG 1.9, R4 – Key Final Comments
  - Full Load Reject Test at Power Factor
  - Table 1 inconsistent with written RG 1.9 R4 provisions and IEEE 387
  - EDG Design provisions for Testing to Room temperature and humidity conditions
  - Unreviewed example of EDG 30 day operation

Full Load Reject Test at Design Power Factor

- Reg. Position 2.2.8 states "This test involves demonstrating the *EDG's* capability to reject a load equal to 90–100 percent of the continuous rating while operating at a design load power factor and verify that the voltage requirements are met and the unit will not trip on "overspeed."
  - This test is designed to assure the governor will prevent the engine from tripping on overspeed in the event of a full load reject.
  - Voltage requirements were not in IEEE 387
- Industry comments noted that this is a potentially destructive test.
  - When paralleled to the grid, the voltage is artificially offset high to allow rated power factor loading.
  - Upon load rejection, the accompanying voltage spike will typically exceed max vendor recommended voltage.
  - Several sites do not perform this test as they have provided justification in the ITS process.
  - Discussed in detail at comment meeting and thought we had agreement here.
- Recommend eliminating provisions for performing this test at design power factor and voltage requirements

P E A

Table 1 Inconsistencies

- **Initial draft had several inconsistencies**
- **Though tests required for site acceptance only per IEEE 387 and RG, 1.9, some of these tests are also checked for monthly availability tests**
  - 7.2.1.1 (starting), 7.2.1.2 (load acceptance), and 7.2.1.3 (rated load) should only be checked for site acceptance tests and not monthly availability tests.
  - The monthly availability tests are covered with 7.5.1 (start) and 7.5.2 (load run) per IEEE 387-1995, and Regulatory Position 2.3.2.1.
  - As written, the Table creates confusion, and should be revised as stated above.
    - Using the table as is can result in some plants performing routine tests at greater than 100% load which is contrary to past regulatory guidance and detrimental to long term equipment performance

P E A

EDG Testing design provisions for humidity and temperature

- Reg. Position 1.5 requires that "the design should allow testing of the diesel generators to simulate .... environments (e.g. temperature, humidity)."
  - Impractical to control or simulate these conditions
  - Though exists in language in RG 1.9, R3, no plants currently have this capability
  - Creates confusion for new plant design
  - NRC comments stated "the staff does not intend that efforts should be made to control the environments"
  - NRC comments state that licensees should consider environments because conditions can influence electrical output and should derate if environmental temperature exceed range used for rating.
    - Comments correct but have nothing to do with design of the EDG room for EDG testing purposes which is the purpose of the provision
- References to environments should be stricken from the document. Environmental impacts should continue to be addressed by engineering analysis/qualification.

PEA

Unreviewed Example of EDG 30 day Operation

- B. Discussion, regarding capability of the EDG, last clause states "…3) supply power continuously to the equipment needed to maintain the plant in a safe condition if an extended (e.g., 30-day period should be considered with refueling every 7 days) LOOP occurs.
- The example provided in () was inserted in final version without opportunity for industry comment
  - EDG operation duration is set by each plants accident analysis and design including PRA
  - Providing this example creates confusion amongst plants and their regulators that can lead to unnecessary regulatory questions and investigations.
- Recommend example be stricken from document

P E A