

GENERAL ELECTRIC

NUCLEAR POWER SYSTEMS DIVISION
GENERAL ELECTRIC COMPANY • 175 CURTNER AVENUE • SAN JOSE, CALIFORNIA 95125

May 30, 1984

MFN# 073-84

U. S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Washington D.C. 20555

Attention: Mr. D. G. Eisenhut, Director
Division of Licensing

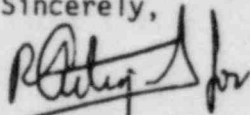
SUBJECT: IN THE MATTER OF 238 NUCLEAR ISLAND GENERAL ELECTRIC
STANDARD SAFETY ANALYSIS REPORT (GESSAR II) DOCKET
NO. STN 50-447

Verification Testing of Optical Isolators

Attached please find response to GE commitment in Section 7.2.2.2 of
Safety Evaluation Report NUREG-0979 regarding design verification testing
of optical isolators.

The information is provided at the request of M. J. Virgilio, ICSB.

Sincerely,



Glenn G. Sherwood, Manager
Nuclear Safety and Licensing Operation

GGs:cal:rm/K053012*

Attachments

cc: M. J. Virgilio, NRC
D. C. Scaletti, NRC
L. S. Gifford, GE-Bethesda (w/o att.)
F. J. Miraglia (w/o att.)
C. O. Thomas (w/o att.)
R. M. Ketchel (w/o att.)
R. W. Strong
D. L. Foreman

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The optical isolators used in the GESSAR II design fully comply with the requirements of Regulatory Guide 1.75. Each divisional chamber contains only wiring and equipment associated with that specific division. Each chamber is enclosed by metal barriers also in accordance with the guide. Therefore, any individual failure of card or component can at most affect only equipment within the same chamber, which is the same division. The single-failure criterion is thus preserved regardless of the optical isolators capability to withstand line-to-line or line-to-ground faults. Such capability is of interest for reliability and system availability evaluations, but is not pertinent for safety evaluations because of the isolation and redundancy provided in the design.

GE has designed the cards for high reliability, which includes tolerance of abnormally high voltages on the input gates. This is accomplished by high impedance resistors which limit input currents to non-destructive levels. The 12-volt logic input pins of sample cards were subjected to the following overrange voltages for the time durations shown:

<u>DC Volts</u>	<u>Temperature</u>	<u>Time</u>
150	Ambient	2 minutes
400	Ambient	1 millisecond (pulse)

After applying a 150-volt DC signal to the inputs for two minutes, the card was determined to be functioning properly. The 400-volt, 1 millisecond pulse was then applied at the inputs and verified on the oscilloscope. Following the application of the pulse, the card was still functioning normally.