78-063-000 (R)

GENERAL ELECTRIC

NUCLEAR ENERGY

PROJECTS DIVISION

ENERAL ELECTRIC COMPANY, 175 CURTNER AVE., SAN JOSE, CALIFORNIA 95125

MC 682, (408) 925-5040

July 19, 1978

MFN 297-78
WHD 176-78

Mr. Robert H. Engelken, Director
Office of Inspection and Enforcement
Nuclear Regulatory Commission
Region 5
1990 North California
Walnut Creek, CA 94596

3871354

Dear Mr. Engelken:

SUBJECT: REPORTING OF DEFECTS DISCOVERED DURING QUALIFICATION AND MANUFACTURING OF CONTROL ROOM SYSTEMS

This is to advise the NRC staff of three defects reportable per 10CFR Part 21. As discussed with Mr. Lucien Vorderbrueggen by Walter H. D'Ardenne, Manager - BWR Product Standards at 4 p.m. on July 15, 1978 these defects are in previously shipped control room systems and affect three projects under construction. This constitutes the written report pursuant to 10CFR Part 21.21.

These defects were determined to be reportable at 4:21 p.m. PDT on July 14, 1978. Attached hereto are reports of the defects as they apply to the specific licensees.

General Electric's Control and Instrumentation Department, the designer and manufacturer of these systems, has implemented changes to its quality assurance program to prevent similar occurrences and have initiated corrective actions necessary to resolve the specific defects with the affected licensees. These and further actions to correct the issue are shown in the attachment.

Although the control systems were shipped, we believe there is a high probability that these conditions would have been detected prior to plant operation. The plant preoperation and startup tests and audits conducted by General Electric are designed to detect and correct conditions such as described by the attached prior to plant operation.

Glenn G. Sherwood, Manager
Safety and Licensing Operation

GGS:cc/29

Attachment

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ATTACHMENT

I. DEFECT IN CONTROL ROOM SYSTEM SUPPLIED FOR PENNSYLVANIA POWER & LIGHT'S SUSQUEHANNA 1 PROJECT

On July 14, 1978 it was determined that a defect existed in a control room benchboard manufactured by the General Electric Company Nuclear Energy Business Group and supplied to Pennsylvania Power & Light for application on the Susquehanna 1 project.

The Reactor Protection System mode switch is a Rundel Product manufactured by Gould, Inc.. The mode switch performs numerous safety related interlock and bypass functions and must be seismically qualified to assure that plant conditions during and after a Safe Shutdown Earthquake are not aggravated or that the probability of occurrence of an analyzed plant event has not increased.

The seismic examination conducted by an independent laboratory concluded that the prototype switch had passed the seismic examination but exhibited some contact chatter. Based on that information, a safety-related control room benchboard containing the mode switch was shipped to Susquehanna 1. During a subsequent investigation for contact chatter at the GE Seismic Test Facility the prototype switch failed. The failure mechanism was attributed to a tolerance buildup (due to electrical separation barriers) which caused the switches primary contact cam to separate from the contact cam in the adjacent contact block. All contact blocks downstream of this separation ceased to function.

The following corrective actions have been taken:

1. Pennsylvania Power & Light has been instructed to "red tag" the switch until the appropriate corrective action is complete.

2. All inhouse Rundel Product mode switches have been removed from the affected benchboards.

3. General Electric engineers are working with the vendor to effect a qualified switch or a suitable alternate.

The following corrective actions are to be taken:

1. Seismic examination of a fixed switch ..... Aug. 4, 1978 (tentative)

2. Qualify a controlled batch of switches and issue installation instructions ..... June 30, 1979 (tentative)

3. If 1 or 2 is unsuccessful then select and qualify new switch and issue installation instruction ..... Dec. 31, 1979

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II. DEFECT IN CONTROL ROOM SYSTEM SUPPLIED FOR WASHINGTON PUBLIC POWER SUPPLY SYSTEMS HANFORD NUCLEAR STATION

On July 14, 1978 it was determined that a defect existed in the power generation control complex (PGCC) manufactured by the General Electric Company Nuclear Energy Business Group and supplied to Washington Public Power Supply System for application as a control room system in the Hanford 2 Nuclear Station. The PGCC is the nuclear steam supply system (NSSS) control room panels which are prewired and functionally verified by General Electric.

During an electrical separation audit of engineering documentation utilized in the manufacture of the Hanford 2 PGCC several deviations were discovered that obviate compliance with the single failure criteria. One such deviation affects the ability of the Reactor Protection System to perform its function.

The following corrective actions have been taken:

1. Washington Public Power Supply System has been notified.

2. Effort initiated to check all panel wiring diagrams against actual manufacturing documentation.

The following corrective action is to be taken:

1. Issue "from-to" (wire by wire) instructions to correct any discrepancies ..... March 30, 1979

III. DEFECT IN CONTROL ROOM SYSTEM SUPPLIED FOR PENNSYLVANIA POWER & LIGHT'S SUSQUEHANNA 1 PROJECT AND MISSISSIPPI POWER & LIGHT'S GRAND GULF 1 PROJECT

On July 14, 1978 it was determined that a defect existed in the control room panels manufactured by the General Electric Company Nuclear Energy Business Group and supplied to Pennsylvania Power & Light (Susquehanna 1) and Mississippi Power & Light (Grand Gulf 1) for application as a control room system.

GE-CR2940 control switch assembly requires a locking ring which secures the switch in place on the benchboard face. An error in manufacturing documentation utilized to manufacture control room panels depicted the GE-CR2940 control switch without its position locking ring. Consequently the switches were installed without the locking ring. As a result, the entire switch body may rotate rather than the operator, thereby preventing the switch function.

GE-CR2940 control switches are utilized for safety related manual control functions. The above mentioned deviation could delay manual operation during an analyzed plant event such that technical specification limits could be exceeded. It is believed that manual operation could only be delayed since the plant operator would be informed by numerous diverse alarms and annuciators of the omitted manual action.

The following corrective actions have been taken:

1. Pennsylvania Power & Light and Mississippi Power & Light have been notified.

2. The manufacturing documentation has been revised to assure installation with the locking rings prior to further equipment shipment.

3. Locking rings and installation tools are ordered for on-site installation at the Susquehanna 1 and Grand Gulf 1 site.

4. Issue installation instructions for Grand Gulf 1.

The following corrective action is to be taken:

1. Issue installation instructions for Susquehanna 1 ...Nov. 24, 1978.

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