P821 86113
Publicly Available
Bill Jones

GENERAL ELECTRIC

NUCLEAR ENERGY BUSINESS OPERATIONS
GENERAL ELECTRIC COMPANY • 175 CURTNER AVENUE • SAN JOSE, CALIFORNIA 95125

MC 682, (408) 925-1913
GBS-031-086
MFN-026-086

April 3, 1986

U. S. Nuclear Regulatory Commission
Office Inspection and Enforcement
Washington, D. C. 20555

Attention: D. P. Allison

Gentlemen:

SUBJECT: TELECON-GERMANE TO SAFETY
DOCUMENTATION DISCREPANCIES FOR
FLOW ORIFICE STUDS AND BOLTS

Please fine the attached memo of telecon to you on April 3, 1986. The telecon provided information on the documentation discrepancies found for flow orifice studs and bolts.

Very truly yours,

George Stramback

G. B. Stramback, Manager
Safety Evaluation Programs

GBS/dc

Attachment

cc: L. S. Gifford
GE-Bethesda

JE19

MEMO OF TELECON

DATE: April 3, 1986

TIME: 1:30 p. m.

PERSON CALLING: G. B. Stramback

PERSON CALLED: D. P. Allison (NRC-I&E, 301-492-4193)

SUBJECT: DOCUMENTATION DISCREPANCIES FOR FLOW ORIFICE STUDS AND BOLTS

Dennis Allison was called in order to inform the NRC of a condition determined to be not reportable but considered to be Germane-to-Safety. This conclusion is based upon GE completing its evaluation as to reportability under 10CFR Part 21.

General Electric personnel at Grand Gulf identified discrepancies in the impact test reports of the ECCS flow orifice bolting hardware. This led to testing of a few studs which provided confirmation of the hardware deficiency and the anomalies in the vendor supplied reports. GE reviewed test reports from the vendor and from sub-tier suppliers and concluded that some of the test information on these reports was improperly changed. When or where the information was changed is not known. A review of all Purchase Orders placed with this orifice vendor indicated that only bolts for the Perry, Grand Gulf, and two overseas plants were affected. The vendor of the orifice assembly is no longer on the GE qualified vendor list.

The concern is the loss of piping integrity for the emergency core cooling systems (ECCS) due to deficiencies in the bolts of the flow orifice assemblies which are mounted downstream of each ECCS pump. There are seven orifice assemblies on each affected plant with a maximum of 88 bolts varying in size from 3/4 inch to 1-5/8 inch in diameter. There is one orifice assembly on the vessel head spray line (FE-N012), one on each of the three Residual Heat Removal (RHR) system pump discharge lines (FE-N014A, B, C) and one each on the pump discharge line of the Low Pressure Core Spray (LPCS) system (FE-N002), the High Pressure Core Spray (HPCS) system (FE-N007) and the Reactor Core Isolation Cooling (RCIC) system (FE-N001).

The orifice assemblies were supplied by Fluidic Techniques, Inc., of Mansfield, Texas. The test reports in question are from Atlas Testing Lab, Los Angeles, California, who did hardness testing on bolts supplied to Atlas by A&G Engineering. Copies of the test reports furnished with the orifice assemblies from Fluidic were compared to copies obtained from Atlas. It is clear that the test reports which GE originally received from Fluidic have been altered. Since the Atlas reports were the only ones provided by Fluidic, it appears that these reports on the A&G Engineering bolts were used to justify the quality of all the bolts supplied, whether or not they were supplied by A&G. It is not clear who in the supply chain altered the test reports.

The test report discrepancies include changes in the bolt diameter and changes in the testing temperature. All other components of the flow orifice assembly supplied by Fluidic have been verified to meet quality requirements.

Engineering fracture mechanics evaluation of the bolting has verified that no substantial safety hazard would occur with the delivered products. The evaluation showed that a major flaw would have to be present to cause failure at the maximum preload stress. The limiting case is based on the worst case combination of preload, design pressure, bolt diameter and the lowest value of Charpy energy of the sampled specimens. The results of the calculations indicated that a 360° crack of 0.1 inch depth at the root of the bolt threads would have to be present to cause a failure of the bolt under peak expected preload. This preload is higher than the expected operating loads.

From the preceding, it is concluded that:

1. If a bolt did not fail during the preload state, it is not expected to fail during the operating life. In other words, preloading the bolt serves as a final proof test.

2. Even though the flow meter bolting did not meet the Charpy energy specifications, the structural integrity of the flow meter flange joints was assured during operating conditions and thus, no substantial safety hazard existed.

Thus, the system integrity could be maintained with the delivered bolts. To avoid the necessity of any further action by the affected plants, they are being provided new, fully qualified, orifice assembly bolts.

Since falsification of quality assurance records is involved, this condition will be reported to the NRC as being germane to safety, so that the NRC can pursue the significance of the condition to other purchasers of basic components from the various suppliers involved. There are no other identified corrective actions within GE control.