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5211-83-231

Office of Nuclear Reactor Regulation
Attn: J. F. Stolz, Chief
Operating Reactors Branch No. 4
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

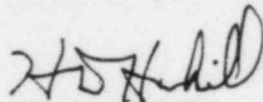
Dear Sir:

Three Mile Island Nuclear Station, Unit 1 (TMI-1)
Operating License No. DPR-50
Docket No. 50-289
EFW Flow Devices - D/P Transmitters

In our letter of May 24, 1983 (5211-83-156), GPUN indicated that two of the installed EFW sonic flow devices (controlotron) would be replaced with differential pressure (D/P) transmitters. Since that time, testing of the remaining sonic devices has shown them to be unsatisfactory. Based on this, by restart, all of the sonic flow devices will be replaced with D/P transmitters.

Information, as required by NUREG 0737 Item II.E.1.2, pt. 2, to document the change to the design description provided in the Restart Report, Section 2.1.1.7.3 is attached. A list of logic diagrams, electrical schematics and piping and instrument diagrams is also attached. These diagrams and schematics were provided to the NRC separately.

Sincerely,


H. D. Hukill
Director, TMI-1

HDH:LWH:vjf
Enclosure
cc: R. Conte
J. Van Vliet

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Emergency Feedwater System Flow Indication
D/P Transmitters

I. Introduction

The purpose of this modification is to replace 2 existing ultrasonic (Controlotron) flow devices with a new system utilizing 2 differential pressure transmitters and 2 annubars. The equipment arrangement allows the modification to be made by replacement of the ultrasonic flow devices with annubars and D/P transmitters utilizing existing wiring and instrumentation.

II. Equipment Description

A. Flow Element

The Annubar Model ANR-76 is a passive stainless steel device which translates fluid pressures to a D/P transmitter (in this case). The D/P varies in a squared relationship with flow across the annubar. The D/P detects the pressure difference between the dynamic and static pressures in the pipe. In this respect, as well as their function of generating a D/P proportional to flow, the annubars are analogous to flow orifices.

B. Transmitter

The Foxboro type NE 13 DM transmitters utilized are force-balance type, fully qualified for the application. These transmitters are utilized elsewhere at TMI-1.

C. Signal Conditioning

The Foxboro SPEC 200 signal conditioning equipment is the same equipment used for all recent IE instrumentation.

D. Indications

Existing Westinghouse 252 style qualified indicators in the control room are utilized for the new flow measurement. The input signal remains 4-20 ma.

III. Design Criteria

- A. The tubing from the annubar is routed to separate transmitters.
- B. The equipment was installed and inspected per established quality standards for Nuclear Safety Related/Important to Safety components.
- C. The pressure transmitters are environmentally qualified (Intermediate Building) and seismically qualified and mounted.

- D. The annubars are seismically qualified and meet appropriate piping code criteria
- E. The pressure transmitters are located above the flood level for the Intermediate Building.
- F. The flow instrumentation are reliable and accurate and are designed to monitor the full range of system flow requirements.
- G. No single failure within the flow instrumentation will fail to provide flow indication for each train (principally prevented by redundancy).
- H. Channels are separate and independent
- I. The differential pressure transmitter are to be tested (monthly) and calibration is to be provided at regular intervals (refueling).
- J. The EFW flow is indicated in the Control Room for each steam generator redundant to the ultrasonic flow devices.
- K. The EFW flow instrument channels are powered from independent emergency buses.

IV. Installation

A. Conclusion

As a result of the replacement of the Controlotron with D/P system there is no change to the Technical Specification (see Amendment 78). Also, there are no changes to operating or emergency procedures or operator training required. No alarms require change or reprioritization.

Main console mounted indicators have scales of 0-800 GPM. Half inch stainless steel tubing connects the annubar device valves to each of the two permanent feedwater flow transmitters per steam generator. Each transmitter will be equipped with two shutoff valves, two blowdown valves, and one equalizer valve.

V. Conclusion

As a result of the replacement of the Controlotrons with the D/P system there is no change to the Technical Specification (see Amendment 78). Also, there are no changes to operating or emergency procedures or operator training required. No alarms require change or reprioritization.

<u>COMPANY</u>	<u>DOCUMENT NO.</u>	<u>SHEET</u>	<u>REV.</u>	<u>TITLE</u>	<u>OCL</u>
GAI	302-082		Rev. IA-0	Flow Diagram	NSR/ITS
GAI	308-609		Rev. IA-0	Piping Diagram	NSR/ITS
GAI	302-081		Rev. IE-0	Flow Diagram	NSR/ITS
GAI	S-204-275		Rev. IB-0	Conduit Support	NSR/ITS
GAI	S-204-276		Rev. IB-0	Conduit Support	NSR/ITS
GAI	S-204-300		Rev. IB-0	Conduit Support	NSR/ITS
GAI	204-575		Rev. IB-0	Conduit Support	NSR/ITS
GAI	S-204-673		Rev. IB-0	Conduit Support	NSR/ITS
GAI	205-356		Rev. IA-0	Conduit Support	NSR/ITS
GAI	205-357		Rev. IA-0	Conduit Support	NSR/ITS
GAI	205-358		Rev. IA-0	Conduit Support	NSR/ITS
GAI	205-359		Rev. IA-0	Conduit Support	NSR/ITS
GAI	205-360		Rev. IA-0	Conduit Support	NSR/ITS
GAI	205-361		Rev. IA-0	Conduit Support	NSR/ITS
GAI	421-250		Rev. IA-0	Location of Core Drill	NSR/ITS
GAI	C-204-272		Rev. IF-0	Conduit Support	NSR/ITS
GAI	C-204-511		Rev. IE-0	Conduit Support	NSR/ITS
GAI	C-204-146		Rev. ID-0	Conduit Support	NSR/ITS
GAI	C-204-271		Rev. IG-0	Conduit Support	NSR/ITS
GAI	C-204-270		Rev. IG-0	Conduit Support	NSR/ITS
GAI	C-204-510		Rev. IO-0	Conduit Support	NSR/ITS
GAI	C-204-513		Rev. IF-0	Conduit Support	NSR/ITS
GAI	C-204-651		Rev. IL-0	Conduit Support	NSR/ITS
GAI	212-008	EA6795	Rev. IB-0	Circuit Schedule	NSR/ITS
GAI	212-008	EA6796	Rev. IB-0	Circuit Schedule	NSR/ITS
GAI	212-008	EA6805	Rev. IB-0	Circuit Schedule	NSR/ITS
GAI	212-008	EA6806	Rev. IB-0	Circuit Schedule	NSR/ITS
GAI	212-008	EA6846	Rev. IB-0	Circuit Schedule	NSR/ITS
GAI	212-008	EA6847	Rev. IB-0	Circuit Schedule	NSR/ITS
GAI	212-009	RK835	Rev. IB-0	Circuit Schedule	NSR/ITS
GAI	212-009	RK836	Rev. IB-0	Circuit Schedule	NSR/ITS
GAI	212-009	RK847	Rev. IB-0	Circuit Schedule	NSR/ITS
GAI	212-009	RK848	Rev. IB-0	Circuit Schedule	NSR/ITS
GAI	212-009	RK849	Rev. IB-0	Circuit Schedule	NSR/ITS
GAI	212-009	RK850	Rev. IB-0	Circuit Schedule	NSR/ITS
GAI	212-009	RK851	Rev. IB-0	Circuit Schedule	NSR/ITS
GAI	212-009	RK852	Rev. IB-0	Circuit Schedule	NSR/ITS
GAI	212-009	RK882	Rev. IA-0	Circuit Schedule	NSR/ITS
GAI	212-009	RK883	Rev. IA-0	Circuit Schedule	NSR/ITS
GAI	212-009	RK884	Rev. IA-0	Circuit Schedule	NSR/ITS
GAI	212-009	PK885	Rev. IA-0	Circuit Schedule	NSR/ITS
GAI	212-009	RK886	Rev. IA-0	Circuit Schedule	NSR/ITS
GAI	212-009	RK887	Rev. IA-0	Circuit Schedule	NSR/ITS
GAI	212-009	RK888	Rev. IA-0	Circuit Schedule	NSR/ITS

<u>COMPANY</u>	<u>DOCUMENT NO.</u>	<u>SHEET</u>	<u>REV.</u>	<u>TITLE</u>	<u>OCL</u>
GAI	212-009	RK889	Rev. IA-0	Circuit Schedule	NSR/ITS
GAI	212-009	RK890	Rev. IA-0	Circuit Schedule	NSR/ITS
GAI	212-009	RK891	Rev. IA-0	Circuit Schedule	NSR/ITS
GAI	212-009	RK892	Rev. IA-0	Circuit Schedule	NSR/ITS
GAI	212-009	RK893	Rev. IA-0	Circuit Schedule	NSR/ITS
GAI	S-211-001	T1014	Rev. IB-0	Terminal Box	NSR/ITS
GAI	S-211-001	T1015	Rev. IB-0	Terminal Box	NSR/ITS
GAI	211-001	T1078	Rev. IA-0	Terminal Box	NSR/ITS
GAI	211-001	T1079	Rev. IA-0	Terminal Box	NSR/ITS
GAI	211-001	T1080	Rev. IA-0	Terminal Box	NSR/ITS
GAI	211-001	T1081	Rev. IA-0	Terminal Box	NSR/ITS
GAI	SS-202-019	RK-1	Rev. IB-0	Block Diagram	NSR/ITS
GAI	202-077	RK-2	Rev. IA-0	Block Diagram	NSR/ITS
GAI	202-077	RK-3	Rev. IA-0	Block Diagram	NSR/ITS
GAI	210-616		Rev. IA-0	Wiring Diagram	NSR/ITS
GAI	210-617		Rev. IA-0	Wiring Diagram	NSR/ITS
GAI	B-210-968		Rev. IB-0	Detail Schematic	NSR/ITS
GAI	C-604-002		Rev. IB-0	Rack Loading	NSR/ITS
GAI	B-600-517		Rev. IB-0	Wiring Diagram	NSR/ITS
GAI	B-600-518		Rev. IB-0	Wiring Diagram	NSR/ITS
GAI	C-224-501	4	Rev. IX-0	Box Location Schedules	NSR/ITS
GAI	C-224-503	2	Rev. IJ-0	Box Location Schedules	NSR/ITS
GAI	C-600-520		Rev. IF-0	Wiring Diagram	NSR/ITS
GAI	D-215-044		Rev. IDDD-0	Conduit Layout	NSR/ITS
GAI	D-215-045		Rev. ICC-0	Conduit Layout	NSR/ITS
GAI	D-215-086		Rev. IJ-0	Conduit Layout	NSR/ITS
GAI	E-210-006		Rev. IK-0	Wiring Diagram	NSR/ITS
GAI	E-210-009		Rev. IE-0	Wiring Diagram	NSR/ITS
GAI	E-215-053		Rev. IG-0	Conduit Layout	NSR/ITS
GAI	E-215-196		Rev. IEE-0	Conduit Layout	NSR/ITS