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WRITER'S DIRECT DIAL NUMBER

September 2, 1983

822-1090

Mr. Samuel J. Chilk  
 Secretary  
 U.S. Nuclear Regulatory Commission  
 Washington, D.C. 20555

In the Matter of  
 Metropolitan Edison Company  
 (Three Mile Island Nuclear Station, Unit No. 1)  
 Docket No. 50-289 (Restart)

Dear Mr. Chilk:

Please find enclosed copies of the following documents, which include information potentially relevant and material to matters under adjudication in the plant design and procedures phase of this proceeding, which is now before the Commission:

1. Letter 5211-83-230, August 25, 1983, H. D. Hukill, GPU Nuclear, to J. F. Stolz, NRC, Inadequate Core Cooling (NUREG 0737, II.F.2).

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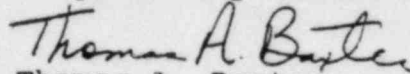
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A PARTNERSHIP OF PROFESSIONAL CORPORATIONS

Mr. Samuel J. Chilk  
September 2, 1983  
Page Two

2. Letter 5211-83-231, August 25, 1983, H. D. Hukill, GPU Nuclear, to J. F. Stolz, NRC, EFW Flow Devices-D/P Transmitters.

Respectfully submitted,

  
Thomas A. Baxter  
Counsel for Licensee

TAB:sg

Enclosures

cc: Service List

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

In the Matter of )  
)  
METROPOLITAN EDISON COMPANY ) Docket No. 50-289  
) (Restart)  
(Three Mile Island Nuclear )  
Station, Unit No. 1) )

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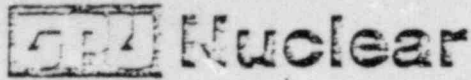
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August 25, 1983  
5211-83-230

Office of Nuclear Reactor Regulation  
Attn: J. F. Stolz, Chief  
Operating Reactor 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  
Inadequate Core Cooling (NUREG 0737, II.F.2)

Your letter of June 14, 1983 requested clarification on two items of minor concern dealing with the Subcooling Margin Monitor. The first item related to our letter of March 10, 1983 (83-071) and the surveillance requirements for the SSM. Amendment 78 dated October 20, 1982, p. 4.7a (attached) provides those requirements. Surveillance Procedure 1302.-6.6, available on site, discusses specific details of that surveillance. Additionally, pages 6 and 7 of attachment 1 to our letter of March, 1983 have been revised for the sake of readability and are enclosed.

The second item concerned our letter of February 18, 1983 (83-039) and the seismic qualification of the SSM indicator. GPUN has recently contacted Westinghouse and Combustion Engineering concerning a qualified digital indicator. We are advised that these two vendors do not provide an indicator qualified separately from the entire instrumentation package. These indicators are also not compatible with existing instrumentation at TMI-1. GPUN's SSM was designed and partially installed prior to the time that these vendors were developing a SSM instrumentation package. However, GPUN has contacted another vendor who is currently qualifying a digital indicator. Upon receipt of successful results, GPUN will place an order for this indicator which is compatible with our SSM system.



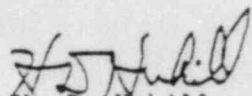
Mr. J. F. Stolz

-2-

5211-83-230

Additional information requested in Attachment 1 of your June 14 letter will be provided as further detailed design information becomes available.

Sincerely,

  
H. D. Hukill  
Director, TMI-1

HDH:LWH:vjf

Attachments

cc: R. Conte  
J. Van Vliet

DESIGN AND QUALIFICATION OF THE  
SATURATION MARGIN MONITOR

1. Environmental/Seismic Qualification - The pressure measurement is obtained from 2 seismic and environmentally qualified sensors. The temperature measurement is control grade, and all signals are seismic Category I and separated for use as redundant signals. The qualification of the meter was recently discussed in our letter of February 14, 1983.
2. Single Failure - Redundant channels which are electrically independent are used.
3. Power Sources - The two saturation margin monitors use separate power supplies (115 Vac 60 Hz) powered from safety grade inverters.
4. Availability - The operability/surveillance requirements of the saturation margin monitor are provided in Amendment 78 dated October 20, 1982.
5. QA Requirements - The quality level of all equipment covered for the saturation margin monitor is designated as Nuclear Safety Related, Class 1E and meets the requirements of the OQA plan Rev. 9. The temperature sensors, plant computer and annunciation system are nonsafety related components.
6. Continuous Operation - The saturation margin monitor will continuously display the margin between actual primary coolant temperature and the saturation temperature.
7. Recording Instrumentation - Outputs of saturation margin are provided for trending and alarm annunciation by the plant computer.
8. Display Instrumentation - Digital display of the margin between actual RCS temperature and saturation temperature for the existing RCS pressure is provided in the control room on the back panel (PCL).
9. Isolation - The Tsat computation equipment provides isolation to the pressure and temperature signals through the use of isolation devices at the signal inputs. The Tsat outputs to the annunciation system and the computer utilize isolation devices to minimize potential hazardous effects from these system.
10. Testing - Test signals may be substituted for normal RC pressure and temperature signals to verify operation on the Tsat Margin Monitor equipment. Operating checks can be performed by reading RC pressure and temperature and with calculations obtain the Tsat margin.
11. Surveillance - See item 4.

12. Removal From Service - The Test Margin Monitor is designed such that all necessary functional tests can be performed on line without affecting other reactor systems. Any testing that is required to be performed offline shall not be required to be performed at less than 15 month intervals.
13. Access for Adjustment - The Test Margin Monitors are rack mounted in signal processing channel A and B equipment cabinets. Accessibility for these cabinets is the same as for normal maintenance.
14. Anomalous Reading - Anomalous readings are reduced to a minimum by items 2, 3 and 9.
15. Ease of Repair - See item 13.
16. Directly Measured Variable Sensors - RCS temperature and pressure sensors provide direct inputs to the saturation margin calculation.
17. Normal/Accident Ranges - The Test Margin Monitor has a range of  $-100^{\circ}$  to  $400^{\circ}$ F which is suitable for normal and accident conditions.
18. Periodic Testing - Testing is described in item 10 and surveillance will be provided as discussed in item 11.



TABLE 4.1-1 (continued)

<u>CHANNEL DESCRIPTION</u>	<u>CHECK</u>	<u>TEST</u>	<u>CALIBRATE</u>	<u>REMARKS</u>
49. Saturation Margin Monitor	S(1)	H(1)	R	(1) When $T_{ave}$ is greater than 525°F.
50. Emergency Feedwater Flow Instrumentation	NA	H(1)	R	(1) When $T_{ave}$ is greater than 250°F.
51. Emergency Feedwater Initiation				
a. Loss of RCP's	NA	Q(1)(2)	R	(1) When $T_{ave}$ is greater than 250°F.
b. Loss of both Feedwater Pumps	NA	Q(1)(2)	R	(2) Includes logic test only

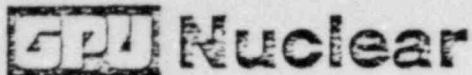
S - Each Shift  
D - Daily  
W - Weekly  
M - Monthly

T/W - Twice per week  
B/M - Every 2 months  
Q - Quarterly  
P - Prior to each startup  
If not done previous week

R - Each Refueling Period  
NA - Not applicable  
B/W - Every two weeks

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4-7a



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TELEX 84-2386  
Writer's Direct Dial Number:

August 25, 1983  
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

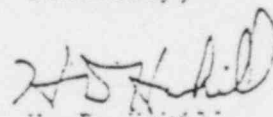
Dear Sir:

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. Kukill  
Director, TMI-1

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

~~8348344636~~

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 ANK-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-C	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. IE-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
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GAI	212-008	EA6846	Rev. IB-0	Circuit Schedule	NSR/ITS
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GAI	212-009	RK835	Rev. IB-0	Circuit Schedule	NSR/ITS
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GAI	212-009	RK885	Rev. IA-0	Circuit Schedule	NSR/ITS
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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
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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. ICCC-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. IEEF-0	Conduit Layout	NSR/ITS