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Writer's Direct Dial Number

July 9, 1980 TLL 326

Office of Inspection and Enforcement Attn: B. H. Grier, Director U. S. Nuclear Regulatory Commission Region I 631 Park Avenue King of Prussia, Pa. 19406

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Dear Sir:

Three Mile Island Nuclear Station, Unit I (TMI-1) Operating License No. DPR-50 Docket No. 50-289 It service Inspection Program

It is requested that a formal resolution be provided to settle a disagreement between Met-Ed and Region I of the Office of Inspection and Enforcement concerning the use of ultrasonic calibration blocks. The issue is discussed in the Office of Inspection and Enforcement Report No. 50-289/80-09, Item 2 (80-06-05). While we respectfully acknowledge the NRC Inspectors concerns, Met-Ed is not in agreement with his interpretation of the ASME Boiler and Pressure Vessel Code governing the subject Inservice Inspection (ISI) Program. Amendment No. 54 to the subject ISI Program provided for an upgrade to the 1974 Edition through Summer 1975 Addenda. Section XI of the Code. The ISI Program upgrade did not, at least for the current and past ISI outages, include replacing existing ultrasonic calibration blocks. Region I Report No. 50-289/80-09 documents objective evidence demonstrating that the subject calibration blocks usage is not adversely affected by the as-built condition. This same report notes the issue as an unresolved item because the Inspector does not agree with Met-Ed's reference to sub-paragraph IWA 2240, Section XI of the Code. Met-Ed referenced IWA 2240 to demonstrate that the use of the calibration blocks yielded equivalent or superior results to that required by the Inspector. We believe we are in compliance with the Code and our ISI Program requirements, our interpretation being based upon this demonstrated evidence. We believe our response to the Inspector's concerns is an acceptable approach. Met-Ed already has a commitment with regard to a rewrite of nondestructive examination procedures that will result in replacing the austenitic piping calibration blocks discussed.

Having demonstrated these actions and presented the enclosed justification, Met-Ed requests NRC Inspection and Enforcement action with NRR participation as appropriate to resolve the unresolved item. To this end, we would like to

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Metropolitan Edison Company is a Member of the General Public Utilities System

B. H. Grier

request a meeting on site with your representatives to finally resolve this issue.

Sincerely,

Signed J. G. Herbein J. G. Herbein Vice President TMI-I

JGH:DGM:CDC:hah

Enclosure

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cc: R. W. Reid J. T. Collins D. Dilanni H. Silver

Enclosure 1 TLL 326

DISCUSSION

This facility is required by 10CFR 50.55(a)Section G, Paragraphs 1 and 4 to meet the inservice inspection (ISI) requirements of Section XI of the ASME Boiler and Pressure Vessel Code and its Addenda. Amendment No. 54 to Facility Operating License No. DPR-50 for the Three Mile Island Nuclear Station, Unit No. 1 (TMI-1) upgraded the ISI Program to the 1974 Edition through 1975 Summer Addenda of the Code.

Sub-paragraph IWA-2232 of the governing Code Edition/Addenda states in part...Where Appendix I (I-1200) is not applicable, the provisions of Article 5 of Section V shall apply. However, some product forms such as nozzles and piping welds that require ultrasonic (UT) examination by Section XI do not have examination requirements including calibration block design/material requirements in either Section XI or Article 5 of Section V. Article 5, Section V, Paragraph T-523 refers UT examination of tubular products and piping to Article 23. Article 23 does not contain calibration block design requirements. Figure T-533, Article 5 applies to vessels and is not applicable to cylindrical or curved product forms such as piping.

User requirements for UT calibration blocks for product forms such as piping not specifically included in the Code must be based upon sound engineering judgement. The Code is not intended to replace sound engineering judgement. Engineering judgement cannot be identified as a Code violation as stated in the referenced Inspection and Enforcement Report No. 50-289/80-09, Item 2 (80-06-05). A Code omission (i.e.-Piping calibration block design requirements) cannot be identified as a requirement.

The issue of Code omissions/legalities notwithstanding, the Licensee responded to the NRC Inspectors concerns by demonstrating satisfactorily that actual reflector locations (shown in Enclosure 2) with respect to the calibration block end surface(s) does not adversely affect calibration. All piping material discussed is considered thin wall at less than 1.25 inch wall thickness, consequently the demonstration revealed the actual one inch location from the end surface as indeed conservative. A calibration reflector location 1 inch from the end surface in material less than 1.250 inch wall thickness would not be expected to be a problem as witnessed by the demonstration. The Licensee's procedure (Enclosure 3) used in the demonstration referred to Paragraph IWA 2240 Section XI to clarify intent of the demonstration. The IWB2240 referral was a means to justify the action, the Licensee does not consider this a Code issue. Paragraph IWA 2240 states "Alternative examination methods, combination of methods, or newly developed techniques may be substituted for the methods specified in this division provided the results yield demonstrated equivalence or superiority to the satisfaction of the inspection specialist." The Licensee interpretation and application of this paragraph of the Code to this problem is not in agreement with the NRC Inspector.

The issue regarding TWA 2240 may be dropped provided resolution to problems or inquiries permit application of sound engineering judgement with demonstrated acceptance as performed. The Licensee respectfully submits that the Code intent regarding interpretation and application of IWA 2240 as applies to UT calibration blocks for piping was published in the Winter 1975 Addenda, and endorsed by NRC in the 1977 Edition, through 1978 Summer Addenda in Appendix III, Paragraph III-1100(d) stating, "Alternative examination techniques, calibration block designs, etc. may be used a provided by IWA-2240." Paragraph III-1100(d) permits necessary alternatives where published Code requirements are not adequate. The Code, particularly the 1974 Edition, t rough 1975 Summer Addenda exhibits too many ambiguities and omissions to prohibit use of IWA 2240 in resolving UT calibration block issues. Enclosure 3 is typical of the techniques the Licensee intends to apply in investigating existing equipment including calibration blocks for use in implementing the upgraded ISI Program. Licensee believes that the type of action described in Enclosure 3 is completely within the Owner's responsibility described in the Code.

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CALIBRATION BLOCK DIMENSIONS AT ISSUE

The following UT piping calibration blocks were investigated to satisfy NRC concerns that the side drilled hole(s) (SDH) for calibration for axial scan (chord drilled) was located less than the distance (1.5") required by Code. The Licensee takes exception to this as a Code issue because all blocks are piping blocks and design requirements are not included in the governing Code Edition/ Addenda, 1974 thru Summer 1975. All problem areas or concerns were resolved with exception of the actual location of the chord drilled holes at 1 inch from the end surface. Demonstrations via Enclosure 3 proved to the satisfaction of the NRC Inspector that the hole location did not adversly affect calibration using the blocks listed:

Block #	Product ID	Item Investigated	Action
015	RC Pipe 3 x 4 x 12 (clad)	No 1/2 t hole	Used as is for piping only. Complies with Code for piping.
017	14" Sch 140	Hole Location at 1" Drill bit broken off	Scrapped
021	10" Sch 140	Hole Location at 1" from end surface	Accepted by demonstration
022	4" Sch 160	Hole Location at 1" from end surface	Accepted by Demonstration
024	2 Sch 160	Hole Location at 1" from end surface	Accepted by Demonstration
034	2.5 Sch 160	Hole Location at 1" from end surface	Accepted by Demonstration

Enclosure 3 TLL 326

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GPUSC MATERIALS TECHNOLOGY INSTRUCTION ULTRASONIC (UT) INSTRUCTION #NDE-UT-STD-1

Approved:

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Title: UT CALIBRATION REFLECTOR LOCATION ACCEPTABILITY VS END SURFACE/ ADJACENT REFLECTOR RESPONSE

I. FURPOSE

This is an ultrasonic investigation to demonstrate and document that the response from a calibration block reference reflector is not adversely affected by its physical location with-respect to the block's end surface or adjacent reflector.

II. SCOPE

This instruction applies to any reference reflector machined into a UI calibration block or standard that is located less than the required dimension from an adjacent reflector, or the block and surface, as specified in the drawings or governing code section. This instruction shall be applied by nonconformance report (NCR) action only.

III. GENERAL REQUIREMENTS

- Calibration blocks investigated and accepted for use schording to this procedure are accepted in accordance with Section XI, IWA 2240 by demonstrating that the use of the calibration block investigated will yield equivalent or superior results.
- This instruction applies to calibration blocks 4 inches and less in thickness. Reference Section V, Article 5, Figure T-533 (a). Note 2 for Section V referenced examinations to

4. Adjacent Reflector (If app.) - Place the search unit for maximum response from one reference reflector. If another reflector appears on the screen, verify that 3 minor divisions (min) separation exists between the 2 reflectors. Record.

V. ACCEPTANCE CRITERIA

Accept for use any calibration block that exhibits acceptable resolution between any 2 reference reflectors or any reference reflector and an end surface corner. Acceptable resolution is at least 3 minor divisions separation on the instrument CRT baseline.

- VI. RECORDS
 - Complete the attached record listings each calibration block investigated noting accept/reject status where required.
 - Obtain the ANI signature witnessing compliance to this instruction.
 - Submit a copy of the data sheet for, NCR record, 2) calibration birck file, 3) Materials Technology and, 4) the ANI if he wants a copy.

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ATTACHMENT TO PROCEDURE NDE-UT-STD-1

FIGURE 1

TYPICAL REFERENCE REFLECTOR VS END SURFACE/CORNER REFLECTOR CONFIGURATIONS - INVESTIGATED









ATTACHMENT TO MATERIALS TECHNOLOGY DISTRUCTION #NDE-UT-STD-1 ULTRASONIC DATA SHEET

DATE 3/20/80	SITE TIMI UNIT_/	-
OPERATOR REPAimet	NDE LEVEL	
WITHESSED BY Robert S. Toma	- 45° 1/4 DIA. DISS28 2.25MHZ	

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(DATA ETTRY - SEE NOTES FELON)

ITEM	CALIBRATION STANDARD SERIAL #	LOCATION	ACTUAL "A" DIMENSION #1/16" SEE FIG. 1	JT RESUL	5/3-00	7/8-0,3		CALIDAA A SILUDAFD ACCEPT	ICH STATUS REJECT
	MET-ED OZI-B	1/2+	1"	A	Ą	A		Ą	
					P(OR (0R1(GINAL	2

- MOTES: 1. Exclector Location-Enter reflector location being investigated, y1,"t 1/dt, -to. 2. Artual "A" dimension - Measure "A" dimension to + 1/16" and rearring tere.
 - (See Figure 1) The-raths noted apply as follows: 2/8, 6/3, 10/8 calibration standards 1 inch or ders thick; 3/8, 5/8, 7/3 calibration staniard over 1 inch think, a re-other maximum metal path for UT techniques calibratel beyond (/) or 10 p. 3.
 - Chieri "A" for Accept or "R" for inject this tas Ves-path colum. All witness/ clynature for compliance to in throathene not stanted it is and a 4.
 - 5.

*. NOTE: By witnessing I'm in no way accepting NDE UTSTD-1 as being per code Polut 5. Toms

ATTACHMENT TO MATERIALS TECHNOLOGY INSTRUCTION #NDE-UT-STD-1 ULTRASONIC DATA SHEET

DATE 3/20/80 SITE	Tro	U	UNIT /			
OPERATOR REPAIRER NDE LEV	TEL_J	T				
WITNESSED BY Roberts. Toma	458.8	Allaha				
417 dan dans	45°	14" DIA .	015528	2.25		

OTHER ORGANIZATION

(DATA ENTRY - SEE NOTES BELAN)

ERIAL #	1/2+	#1/16" SEE FIG. 1	3/8-2/8 A	5/8-6/8 A	7/8(10/8) A	OTH-	ACCEPT REJECT		r

- etc. 1. Reflector Location-Enter reflector location being investigated, y1/4t 1/2t, etc.
- 2. Actual "A" dimension Measure "A" dimension to + 1/16" and record here. (See Figure 1)
- ach 3. Vee-paths noted apply as follows: 2/8, 6/8, 10/8 calibration standards 1 inch or less thick; 3/8, 5/8, 7/8 calibration standard over 1 inch thick, other enter maximum metal path for UT techniques calibrated beyond 7/8 or 10/8.
- 4. Record "A" for Accept or "R" for Reject under the Vee-path column.
- on. 5. ANI witness/signature for compliance to instructions not standard disposition.

By waressing In in no way accepting NOE UT STD-1 as here per code. Robert S. 10m2 NOTES