NORTHEAST UTILITIES

THE CONNECTICUT LIGHT AND POWER COMPANY
WESTERN MASSACHUSETTS ELECTRIC COMPANY
HOLYOKE WATER POWER COMPANY
NORTHEAST UTILITIES SERVICE COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

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August 30, 1985

Docket No. 50-336
B11691

Director of Nuclear Reactor Regulation
Attn: Mr. Edward J. Butcher, Chief
Operating Reactors Branch #3
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Gentlemen:

Millstone Nuclear Power Station, Unit No. 2
Inservice Inspection and Testing Program
Supplemental Relief Request Information

On June 27, 1985,(1) Northeast Nuclear Energy Company submitted a description of the inservice inspection and testing program, and "requests for relief" from code requirements as necessary, for the second ten-year inspection interval for Millstone Unit No. 2.

Enclosed is supplemental information concerning relief requests contained in the June 27, 1985 submittal. Pursuant to the requirements of 10CFR170.12(c), we have enclosed, with this relief request, the $150.00 fee. We trust you will find this information satisfactory.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

J. F. Opeka
Senior Vice President

By: C. F. Sears
Vice President

A047 w/check $150.00
1/40
#157524

(1) J. F. Opeka letter to E. J. Butcher, dated June 27, 1985.

ACCESSIBILITY RELIEF REQUEST

Code Requirement:

The 1980 ASME Code, 1981 Winter Addenda, Subarticle IWA-1500 Accessibility states:

> "IWA-1500 Accessibility"
>
> Provisions for accessibility shall include the following considerations:[7]
>
> (a) access for the Inspector, examination personnel, and equipment necessary to conduct the examinations;
> (b) sufficient space for removal and storage of structural members, shielding, and insulation;
> (c) installation and support of handling machinery (e.g., hoists) where required to facilitate removal, disassembly, storage of equipment, components, and other materials;
> (d) performance of examinations alternative to those specified in the event structural defects or indications are revealed that may require such alternative examinations;
> (e) performance of necessary operations associated with repairs or installation of replacements.

[7] Design considerations other than access provisions may be needed for specific system components to render inservice inspections practical (such as, surface finish of components subject to crud or corrosion product buildup, material selection to to minimize activation inservice, and shielding from irradiation effects).

Code Relief Requested:

Class 1, 2, and 3 piping systems and components were designated and fabricated before the examination requirements of Section XI of the code were formalized. The arrangements and details of the piping systems and components are such that some examinations are limited due to geometric configuration or accessibility. Typically, these limitations exist at fitting-to-fitting welds, such as elbow-to-tee, elbow-to-valve, valve-to-reducer, etc., where geometry or surface conditions preclude ultrasonic coupling or access for the full required scan length. These limitations exist to a lesser degree at pipe-to-fitting welds where examination can sometimes only be fully performed from the pipe side.

Proposed Alternative Examination:

Components or welds having these restrictions will be examined utilizing code specified examination techniques or a combination thereof, to the extent practical. Where a meaningful examination cannot be performed on a particular component or weld, specific relief will be requested as those items are identified.

CONTROL ROD DRIVE (CRD) HOUSING

PRESSURE RETAINING WELD RELIEF REQUEST

Code Requirement:

Table IWB-2500-1, Category B-0, Item B14.10 in the applicable edition of the 1980 ASME Code, 1981 Winter Addenda requires that 10 percent of the peripheral housings be examined each interval. Note: there are 28 peripheral housings.

Code Relief Requested:

Relief is requested from performing the code required volumetric and surface examinations on several of these CRD housing welds for the following reasons:

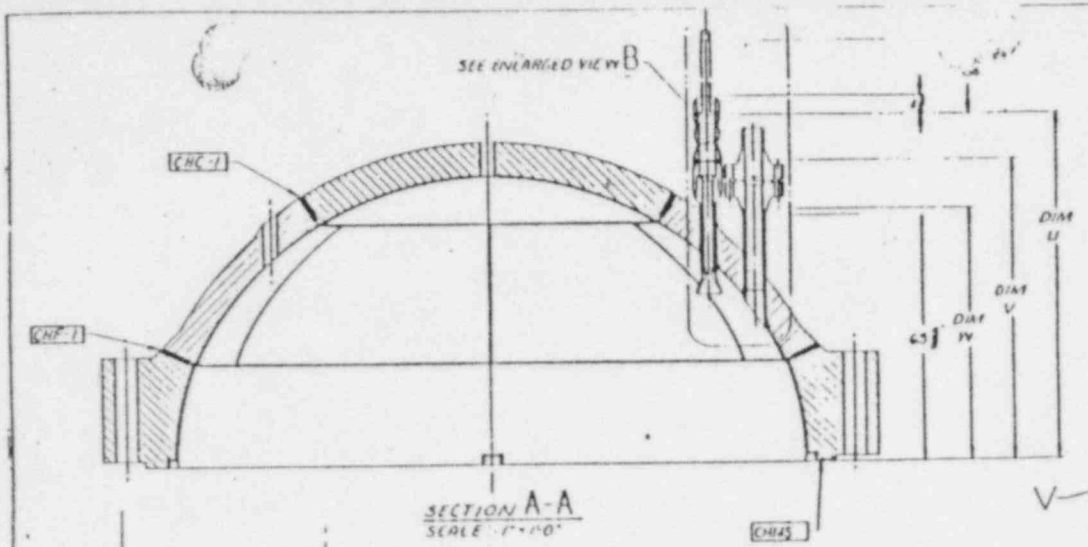
1. The lower CRD housing weld (W) is partially recessed into the reactor vessel head and less than 40 percent of the weld can be examined. See attached Drawing 25203-29527, Sheet 2 for details.

2. Surface examination techniques would be extremely difficult to perform on this weld as the adjacent CRD housings are too close to one another to permit accessibility.

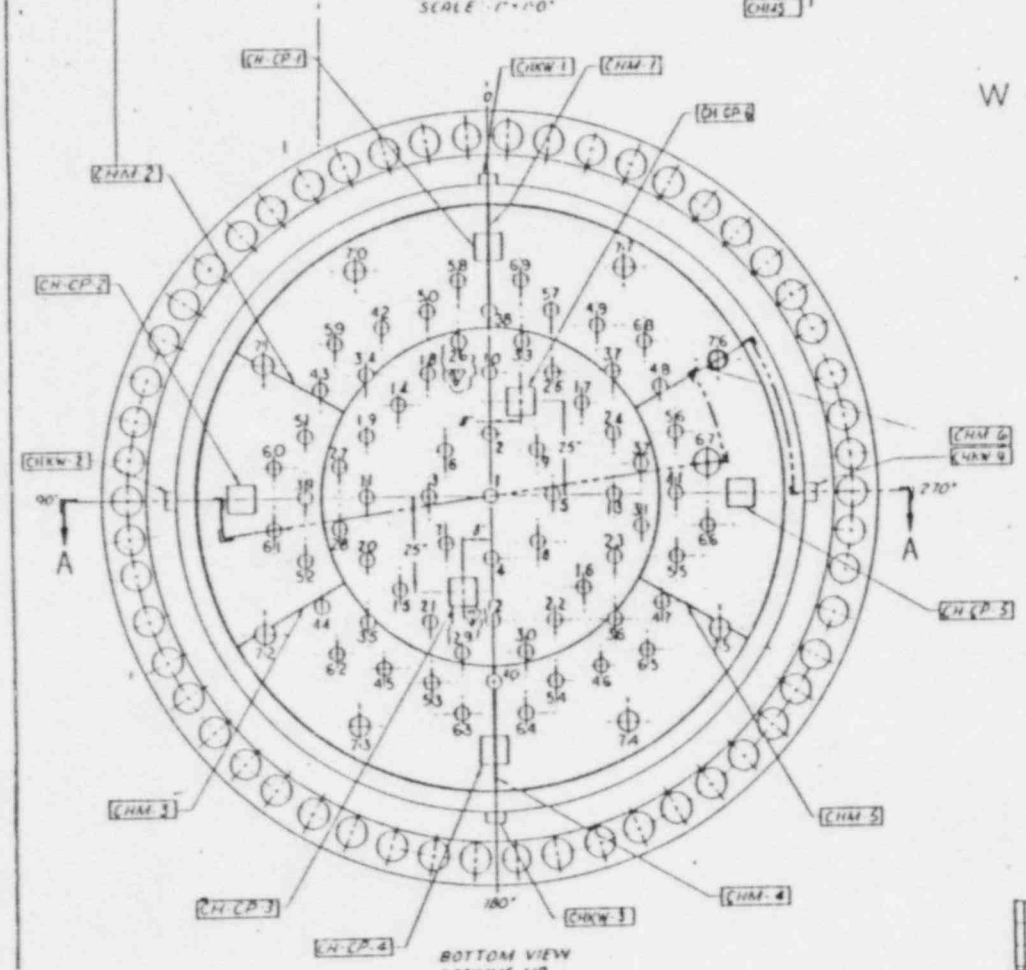
3. Subsequent cleaning of any surface examination technique would be questionable due to the crevice in the recessed area.

Proposed Alternative Examination:

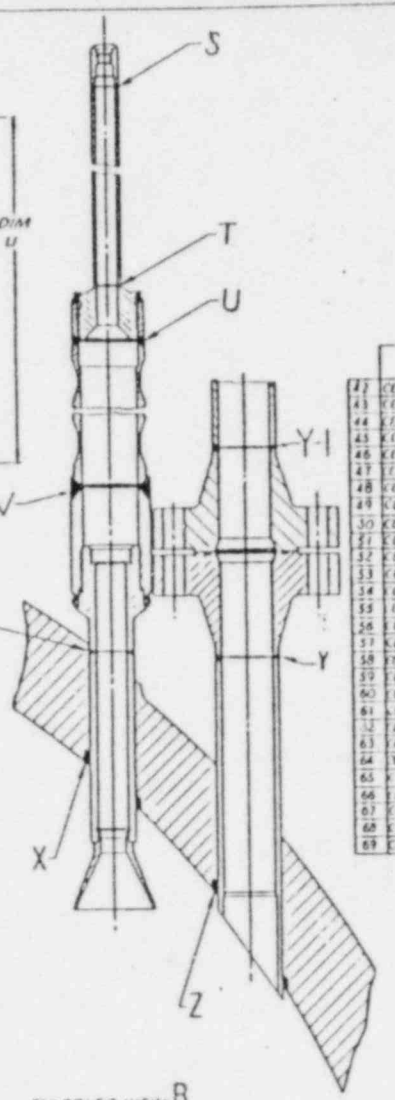
The accessible welds in the above CRD housings will be examined. The integrity of the inaccessible welds will be verified by visual examination during the system hydrostatic test.



SECTION A-A
SCALE 1"=1'-0"



BOTTOM VIEW
LOOKING UP



ENLARGED VIEW B
SCALE 3"=1'-0"

	U	V	W
58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69	V12 11/16	81 1/2	67°
50, 51, 52, 53, 54, 55, 56, 57	V24 1/2	83 1/2	69 1/2
42, 43, 44, 45, 46, 47, 48, 49	V24 1/2	83 1/2	69 1/2

CEDM WELD DIMENSIONS

	S	T	U	V	W
43	CEDC 425	CEDC 427	CEDC 429U	CEDC 429V	CEDC 429W
44	CEDC 435	CEDC 437	CEDC 439U	CEDC 439V	CEDC 439W
45	CEDC 445	CEDC 447	CEDC 449U	CEDC 449V	CEDC 449W
46	CEDC 455	CEDC 457	CEDC 459U	CEDC 459V	CEDC 459W
47	CEDC 465	CEDC 467	CEDC 469U	CEDC 469V	CEDC 469W
48	CEDC 475	CEDC 477	CEDC 479U	CEDC 479V	CEDC 479W
49	CEDC 485	CEDC 487	CEDC 489U	CEDC 489V	CEDC 489W
50	CEDC 495	CEDC 497	CEDC 499U	CEDC 499V	CEDC 499W
51	CEDC 505	CEDC 507	CEDC 509U	CEDC 509V	CEDC 509W
52	CEDC 515	CEDC 517	CEDC 519U	CEDC 519V	CEDC 519W
53	CEDC 525	CEDC 527	CEDC 529U	CEDC 529V	CEDC 529W
54	CEDC 535	CEDC 537	CEDC 539U	CEDC 539V	CEDC 539W
55	CEDC 545	CEDC 547	CEDC 549U	CEDC 549V	CEDC 549W
56	CEDC 555	CEDC 557	CEDC 559U	CEDC 559V	CEDC 559W
57	CEDC 565	CEDC 567	CEDC 569U	CEDC 569V	CEDC 569W
58	CEDC 575	CEDC 577	CEDC 579U	CEDC 579V	CEDC 579W
59	CEDC 585	CEDC 587	CEDC 589U	CEDC 589V	CEDC 589W
60	CEDC 595	CEDC 597	CEDC 599U	CEDC 599V	CEDC 599W
61	CEDC 603	CEDC 605	CEDC 607U	CEDC 607V	CEDC 607W
62	CEDC 613	CEDC 615	CEDC 617U	CEDC 617V	CEDC 617W
63	CEDC 623	CEDC 625	CEDC 627U	CEDC 627V	CEDC 627W
64	CEDC 633	CEDC 635	CEDC 637U	CEDC 637V	CEDC 637W
65	CEDC 643	CEDC 645	CEDC 647U	CEDC 647V	CEDC 647W
66	CEDC 653	CEDC 655	CEDC 657U	CEDC 657V	CEDC 657W
67	CEDC 665	CEDC 667	CEDC 669U	CEDC 669V	CEDC 669W
68	CEDC 673	CEDC 675	CEDC 677U	CEDC 677V	CEDC 677W
69	CEDC 683	CEDC 685	CEDC 687U	CEDC 687V	CEDC 687W
70	CEDC 693	CEDC 695	CEDC 697U	CEDC 697V	CEDC 697W

CEDM WELD DESIGNATIONS

	X
1	CEDC 18
2	CEDC 28
3	CEDC 38
4	CEDC 48
5	CEDC 58
6	CEDC 68
7	CEDC 78
8	CEDC 88
9	CEDC 98
10	CEDC 108
11	CEDC 118
12	CEDC 128
13	CEDC 138
14	CEDC 148
15	CEDC 158
16	CEDC 168
17	CEDC 178
18	CEDC 188
19	CEDC 198
20	CEDC 208
21	CEDC 218
22	CEDC 228
23	CEDC 238
24	CEDC 248
25	CEDC 258
26	CEDC 268
27	CEDC 278
28	CEDC 288
29	CEDC 298
30	CEDC 308
31	CEDC 318
32	CEDC 328
33	CEDC 338
34	CEDC 348
35	CEDC 358

	X
36	CEDC 368
37	CEDC 378
38	CEDC 388
39	CEDC 398
40	CEDC 408
41	CEDC 418
42	CEDC 428
43	CEDC 438
44	CEDC 448
45	CEDC 458
46	CEDC 468
47	CEDC 478
48	CEDC 488
49	CEDC 498
50	CEDC 508
51	CEDC 518
52	CEDC 528
53	CEDC 538
54	CEDC 548
55	CEDC 558
56	CEDC 568
57	CEDC 578
58	CEDC 588
59	CEDC 598
60	CEDC 608
61	CEDC 618
62	CEDC 628
63	CEDC 638
64	CEDC 648
65	CEDC 658
66	CEDC 668
67	CEDC 678
68	CEDC 688
69	CEDC 698

CEDM WELD DESIGNATIONS

	Y-1	Y	Z
70	ICI 70 Y-1	IT C 70 Y	IT C 70 Z
71	ICI 71 Y-1	IT C 71 Y	IT C 71 Z
72	ICI 72 Y-1	IT C 72 Y	IT C 72 Z
73	ICI 73 Y-1	IT C 73 Y	IT C 73 Z
74	ICI 74 Y-1	IT C 74 Y	IT C 532
75	ICI 75 Y-1	IT C 75 Y	IT C 75 Z
76	ICI 76 Y-1	IT C 76 Y	IT C 76 Z
77	ICI 77 Y-1	IT C 77 Y	IT C 77 Z

INSTRUMENT WELD DESIGNATIONS

QA

ZONE 1-2

25203-29527 SH 2

EE

REACTOR COOLANT PUMP RELIEF REQUEST

Code Requirement:

Table IWB-2600, Items B5.6 and B5.7 in the ASME Code 1980 Edition, 1981 Winter Addenda requires that the pump casing weld and pump casing of one RCP be examined volumetrically and visually by the end of the inspection interval.

Code Relief Request:

Relief is requested from performing the volumetric examination of the pump casing weld and visual examination of the internal pressure boundary surfaces in the pump casing.

Reason for Request:

Volumetric examination of the RCP casing welds or visual examination of the internal casing surfaces requires complete disassembly and draining of the reactor coolant pump. Ultrasonic examination of the welds would not produce meaningful results due to the cast stainless steel construction of the pump casings. Radiography is not feasible even with a disassembled pump since Millstone Unit No. 2 employs Byron-Jackson/ Borg-Warner Type DFSS pumps which have dual casings as shown in the three attached photographs. The pump casing design precludes placement of a source or film on the inside of the welds to be examined. This configura-

tion also precludes an adequate visual examination of the internal surface of the pressure boundary welds.

The pumps are subjected to a visual examination during hydrostatic testing of the reactor coolant system. Potential pump casing degradation should also be evidenced by abnormalities in pump vibration, bearing temperature, seal flow, flow temperatures, and reactor coolant system leakage, which are monitored parameters. A review of results of pump casing examinations performed to date at other stations has shown that no degrading flaws or indications have been found during visual or volumetric examination. The personnel exposure and cost that would result from the limited exam which could be performed do not warrant pump disassembly solely for examination purposes.

Proposed Alternative Examination:

It is proposed that a surface examination of the accessible RCP casing welds on one pump be done at the end of the second inspection interval. Additionally, a visual examination of the accessible internal pressure boundary will be done when the pump is disassembled for maintenance.

Note: This relief request is a duplicate of the one submitted for the first 10-year inservice inspection interval. Reactor coolant pump, RP-40D was examined per the relief request during the 1985 Millstone Unit 2 refueling outage. The liquid penetrant examination was performed satisfactorily on upper scroll weld RP-PCD-1 and lower scroll weld RP-DCD-1A.

VIBRATION MONITORING RELIEF REQUEST

Code Requirement:

Subarticle IWP-4500 of the 1980 ASME Code, 1981 Winter Addenda.

Measure during each inservice test, vibration amplitude (mils).

Code Relief Requested:

Experience has shown that measurement of overall vibration amplitude in mils does not provide the desired early warning of pump degradation. Vibration amplitude is adequate for measuring unbalance, misalignment, and other low frequency failure modes. It does not give early warning of bearing degradation since the magnitude of higher frequency vibrations created by such degradation is 10 to 1,000 times lower than the normal pump movements. Experience at Northeast Utilities has shown that monitoring pump vibration velocity (in/sec) provides earlier warning of pump degradation. Collection and review of vibration "signatures" (plots of vibration velocity vs. frequency) over a range from slightly below running frequency to several times running frequency provides optimal early warning of pump degradation.

Proposed Alternate Examination:

In lieu of measuring overall vibration amplitude (mils), the following vibration monitoring program will be implemented:

Vibration will be monitored at least quarterly using equipment which collects vibration velocity signatures. Overall, vibration velocity (in/sec RMS) will be compared to the following acceptance criteria:

Acceptable Range - 0 to 2.5 times Reference Velocity

Alert Range - >2.5 to 5 times Reference Velocity

Required Action Range - >5 times Reference Velocity

Reference Velocity shall be the average overall velocity determined during an inservice test at reference conditions when the pump is known to be operating acceptably.

In addition to the above quantitative analysis of overall vibration levels, vibration signatures will be reviewed at least quarterly by a knowledgeable person to identify potential bearing degradation or other developing faults. When potential faults are identified, action as required for a pump in the Alert Range of vibration will be initiated.

HYDRAULIC AND MECHANICAL

SNUBBER INSPECTION RELIEF REQUEST

Code Requirement:

The 1980 ASME Code, Winter 1981 Addenda, Article IWF5000, Inservice Test Requirements.

Code Relief Requested:

Total relief is requested from performing the code required examination test as defined in this article.

Basis for Relief:

The requirements of the existing Unit Technical Specification provide for hydraulic and mechanical support inspections and functional tests which equal or exceed those of the ASME Boiler and Pressure Vessel Code. For example, while the ASME Boiler and Pressure Vessel Code requires that the snubber population be examined (VT-4) each inspection interval, the Unit Technical Specification requires that 100 percent of the snubbers be examined every refueling shutdown or more frequently. Further, the Unit Technical Specification provides for increased inspection frequency of all snubbers if any are found to be inoperable by visual examination. The ASME Boiler and pressure Vessel Code requires only that the adjacent

and similar supports be examined. No increased frequency of inspection is specified.

Proposed Alternative Examination:

Continue to examine and test the hydraulic and mechanical snubbers in accordance with the Unit Technical Specification.

COMPONENT SUPPORT RESTRICTION, RELIEF REQUEST

Code Requirement:

The 1980 ASME Code, 1981 Winter Addendum, IWB-1200 and IWC-1200 subarticle examination requirements apply to Class 1 and Class 2 Pressure Retaining Components, their integral attachments and component supports.

Code Relief Requested:

In instances where the location of pipe supports or hangers restrict the access available for the examination of pipe welds and removal of these pipe supports would overstress the piping system, the exams shall be conducted to the extent practical with the support in place.

Proposed Alternative Examination:

None.

The examination will be performed to the extent practical with the support in place. Where no meaningful examination can be performed, specific relief will be requested as these areas are identified.

CALIBRATION BLOCK RELIEF REQUEST

Code Requirement:

Appendix III, Winter 1975 Addenda to the ASME Code, Section XI of the 1974 edition requires that, "Basic calibration blocks shall be made from material (pipe) of the same nominal diameter and nominal wall thickness or pipe schedule as those to be examined."

Code Relief Requested:

Relief is requested to use calibration block UT-15 (36" dia. pipe-safe end weld) when ultrasonically examining reactor coolant piping carbon steel to carbon steel welds. The use of this block will be enhanced by adding a side drilled calibration hole to the carbon steel side of this calibration block. Drawing 25203-29449SH30 shows location of the side drilled hole that will be added.

Justification for Using UT-15

A. Side drilled holes are the proper diameter for the piping thickness.

B. A new calibration block (mat'l SA516, gr. 70) complete with roll bond cladding would be difficult to obtain especially in pipe diameters (30" and 42") to match our reactor coolant system piping. This type of material is manufactured only in large quantities.

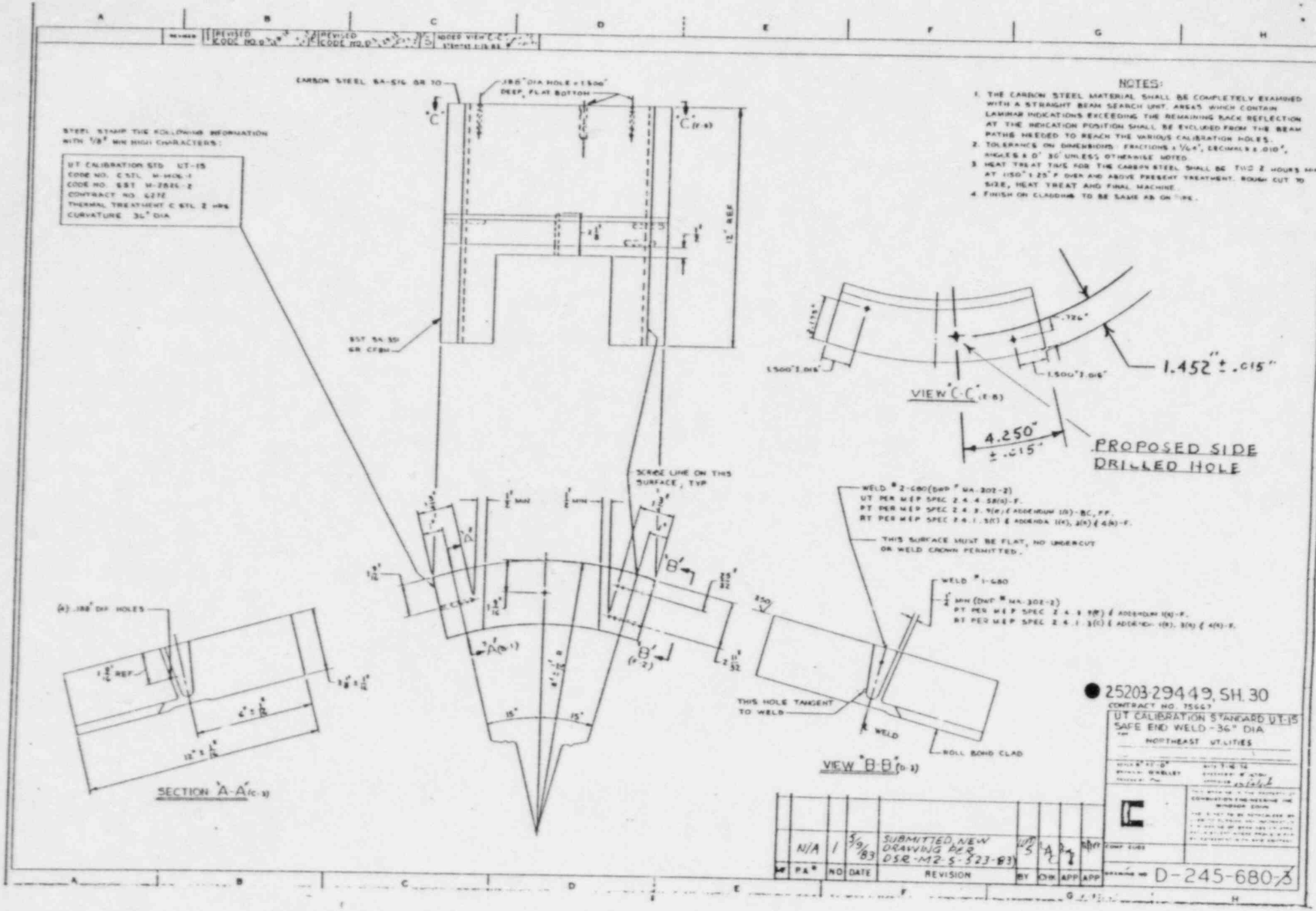
C. There is no assurance a new calibration block would possess the desired acoustic properties and minimize attenuation differences between block and component. Testing has shown UT-15 is almost a perfect match (±2 db).

D. UT-15 is of a smaller diameter (36") than hot leg piping and would provide a greater sensitivity when inspecting hot leg (42") piping. Per Section XI, Paragraph IWA-2240, this substitution is permissable with the concurrence of the inspection specialist.

E. Examinations would be performed at side drilled hole sensitivity using axial side drilled holes, which are more sensitive than the notches required by ASME Section XI Code, Appendix III. They are also more sensitive than circumferential side drilled holes.

Proposed Alternative Examination

All future ultrasonic examinations of the reactor coolant system welds, in the 30" and 42" piping, will be examined utilizing procedures specific to Millstone Unit 2. These ultrasonic examination procedures will specify the use of UT-15 calibration block and have concurrence of the ANII Agency.



NOTES:

1. THE CARBON STEEL MATERIAL SHALL BE COMPLETELY EXAMINED WITH A STRAIGHT BEAM SEARCH UNIT. AREAS WHICH CONTAIN LAMINAR INDICATIONS EXCEEDING THE REMAINING BACK REFLECTION AT THE INDICATION POSITION SHALL BE EXCLUDED FROM THE BEAM PATHS NEEDED TO REACH THE VARIOUS CALIBRATION HOLES.
2. TOLERANCE ON DIMENSIONS: FRACTIONS ± 1/64", DECIMALS ± .010", ANGLES ± 0° 30' UNLESS OTHERWISE NOTED.
3. HEAT TREAT TIME FOR THE CARBON STEEL SHALL BE TWO 2 HOURS MIN AT 1150° ± 25° F OVER AND ABOVE PRESENT TREATMENT. ROUGH CUT TO SIZE, HEAT TREAT AND FINAL MACHINE.
4. FINISH ON CLADDING TO BE SAME AS ON PIPE.

NO	DATE	REVISION	BY	CHK	APP	APP
N/A	1	3/9/83	SUBMITTED NEW DRAWING PER DSR-M2-5-523-83			

● 25203-29449, SH. 30
CONTRACT NO. 75667

UT CALIBRATION STANDARD UT-15
SAFE END WELD - 36" DIA
NORTHEAST UTILITIES

DRAWING NO D-245-680-3