DUKE POWER COMPANY
POWER BUILDING
422 SOUTH CHURCH STREET, CHARLOTTE, N. C. 28242

WILLIAM O. PARKER, JR.
VICE PRESIDENT
STEAM PRODUCTION

TELEPHONE: AREA 704
373-4083

February 1, 1979

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Mr. Robert L. Baer
Light Water Reactors
Project Branch No. 2

Subject: McGuire Nuclear Station
Docket Nos. 50-369 and 50-370
Preservice Inspection Plan

Dear Mr. Denton:

Your letter of April 26, 1978 transmitted questions 121.15 and 121.16 requesting additional information with regard to the McGuire Unit No. 1 preservice inspection plan. Our response to this request was transmitted by a May 31, 1978 letter to Mr. Edson G. Case. After further discussions with members of the NRC staff Duke provided more detailed request for relief from ASME Section XI requirements. These requests for relief are summarized in Attachment 1.

Attachment 2 consists of requests for relief MC-1-025 through MC-1-031. MC-1-025 and MC-1-026 complete the known requests for relief from ASME Class II requirements. Requests for relief MC-1-027 through MC-1-031 are further requests for relief from ASME Class I and Class II requirements which supplement our May 31, 1978 letter.

It is requested that requests for relief MC-1-014 and MC-1-015, transmitted by our July 24, 1978 letter, be withdrawn. It has been determined that there are no welded supports on Class I systems thus making MC-1-014 and MC-015 unnecessary.

Very truly yours,

William O. Parker, Jr.

GJP:scs
Enclosure

BOOK
S/E
1/1

7902060236

Q

ATTACHMENT 1

Relief Request Summary

Date Of Submittal	Relief Serial No.	Code Class	Description of Component/Relief
July 24, 1978	MC-1-001	N/A	Request for relief from requirement of ASME Boiler & Pressure Code Section V, 1971 Edition thru Winter 1972 Addenda. Article 6, Paragraph T-630.
"	MC-1-002	I	Reactor vessel primary nozzle to safe-end welds.
"	MC-1-003	I	Pressurizer Longitudinal and Circumferential weld seams-National Board Number 68-123.
"	MC-1-004	I	Pressurizer integrally welded supports-National Board Number 68-123.
"	MC-1-005	I	Steam Generator Circumferential weld seams-National Board Nos. 1A: 68-107, 1B: 68-108, IC: 68-109, ID: 68-110
"	MC-1-006	I	Steam Generator Nozzle to safe-end welds-National Board Nos. same as MC-1-005.
"	MC-1-007	I	Pressurizer safe-end to surge line-National Board No. 68-213.
"	MC-1-008	I	Piping-Longitudinal and Circumferential weld seams.
"	MC-1-009	I	Branch piping welds exceeding 4 inches (NPS) - Visual Inspection impractical.
"	MC-1-010	I	Branch piping welds exceeding 4 inches (NPS) - 4 inch NPS changed to 6 inch NPS.
"	MC-1-011	I	Branch Piping Welds 4 inch (NPS) & smaller - Visual Inspection impractical.
"	MC-1-012	I	Branch Piping Welds 4 inch (NPS) & smaller - 4 inche NPS to 6 inch NPS
"	MC-1-013	I	Piping Socket Welds
"	MC-1-014	I	Piping Integrally Welded Supports
"	MC-1-015	I	Valve Integrally welded Supports
"	MC-2-001	N/A	Same as MC-1-001
September 5, 1978	MC-1-016	I, II	All components requiring preservice hydrostatic test.
"	MC-1-017	I	ASME Class I valves $\geq$ 3 inches (NPS)
September 25, 1978	MC-1-018	I	Reactor Coolant Pumps 1A, 1B, 1C, 1D
"	MC-1-019	I	Reactor Coolant Pumps 1A, 1B, 1C, 1D Lower Seal Housing Belts (12 per pump)

ATTACHMENT 1
Page Two

Relief Request Summary

Date Of Submittal	Serial No.	Code Class	Description of Component/Relief
September 25, 1975	MC-1-020	I	Reactor Coolant Pumps 1A, 1B, 1C, 1D Lower Seal Housing Ligament Area
"	MC-1-021	I	Reactor Vessel Head, Control Rod Drive Penetrations - National Board No. 20766
"	MC-1-022	I	Reactor Vessel Incore Instrument Penetrations - National Board No. 20766
"	MC-1-023	I	Control Rod Drive Mechanisms Housing Welds
"	MC-1-024	I	Reactor Vessel Closure Head-National Board No. 20766

DUKE POWER COMPANY

Requests For Relief From
Inservice Inspection Requirement

McGuire Nuclear Station

ATTACHMENT 2

DUKE POWER COMPANY

Request For Relief From
Inservice Inspection Requirement

Station: McGuire

Unit: 1

Reference Code: ASME Boiler and Pressure Vessel Code, Section XI, 1971 Edition through Winter 1972 Addenda

I. Component for which exemption is requested:

a. Name and Identification Number:

Residual Heat Removal (ND) Heat Exchangers (2)
National Board Numbers 635, 636

b. Function:

Primary Coolant Heat Removal

c. ASME Section III Code Class:

Class II

d. Valve Category: NA

II. Reference Code Requirement that has been determined to be impractical:

Category C-B Item C1.2 Volumetric examination of nozzle to vessel welds (2 per heat exchanger). Due to welded collar, the nozzle to vessel welds are inaccessible. See attachment 1.

III. Basis for Requesting Relief

Material - Shell SA-240 Type 304 SS, Nozzles SA312 Type 304SS
Estimate of preservice examination performed - 0%
Original fabrication examination - Radiography and dye penetrant examination
Measures which would be required to make the area accessible - Removal of the welded collars
Reference Drawing - Sketch Attached

DUKE POWER COMPANY

Request For Relief From
Inservice Inspection Requirement

III. Basis for Requesting Relief (cont.)

To grind off the welded collars would not justify the high cost and loss of time to inspect the nozzle to vessel welds. The shop examinations provide adequate assurance of component reliability.

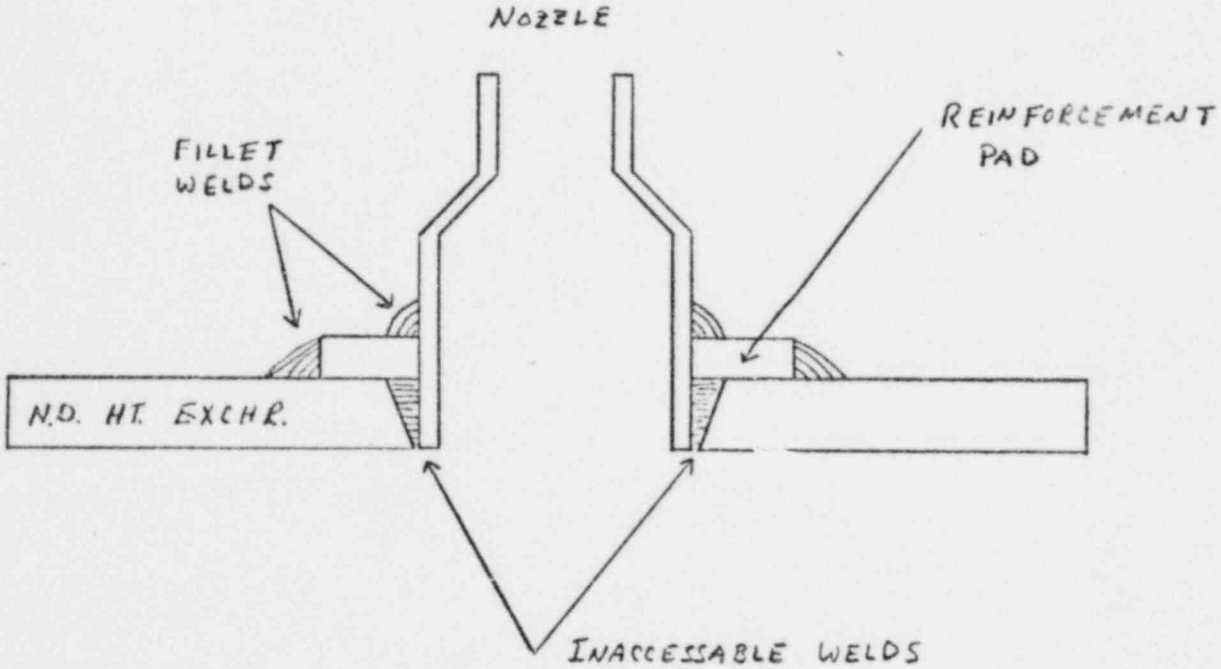
IV. Alternate Examination:

The fillet welds attaching the collar to the nozzle and shell will be examined with dye penetrant. The vessel has been hydrostatically tested with no evidence of leakage.

V. Implementation Schedule:

Inservice inspections will include a surface examination of the collar welds and hydrostatic tests.

Attachment 1 to
MC-1-025



ND Heat Exchanger
Inaccessable Nozzle Welds

DUKE POWER COMPANY

Request For Relief From
Inservice Inspection Requirement

Station: McGuire

Unit: 1

Reference Code: ASME Boiler & Pressure Vessel Code, Se .on XI, 1971 Edition through Winter 1972 Addenda

I. Component for which exemption is requested:

a. Name and Identification Number:

Steam Generators 1A, 1B, 1C, 1D
National Board Numbers 68-107, 68-108, 68-109, 68-110 respectively

b. Function:

Primary to Secondary coolant heat exchanger

c. ASME Section III Code Class:

Class 1

d. Valve Category: NA

II. Reference Code Requirement that has been determined to be impractical:

Category C-A Item C1.1 of Table ISC-261 volumetric examination of steam generator transition cone to lower shell barrel circumferential weld. Due to location of seismic res.raint, approximately 60% of the weld is obscured.

III. Basis for Requesting Relief

Material - ASME-SA-533, Grade A Class 2
Estimate of preservice examination performed - 40%
Original fabrication examination - Radiography
Measures which would be required to make the area accessible - Removal of seismic restraint.
Reference Drawing - Sketch Attached

DUKE POWER COMPANY

Request For Relief From
Inservice Inspection Requirement

III. Basis for Requesting Relief (cont.)

The welds in question have been ultrasonically tested from one side using 0°, 45°, and 60° transducers. Due to the location of the restraint, it is impossible to perform the 0° scan on the weld centerline or the 45° and 60° scans from the lower side of the weld. All other steam generator welds are accessible. It is believed that the limited scan plus the periodic hydrostatic tests provide adequate assurance of weld integrity. The high cost in time and money does not justify relocating the seismic restraint.

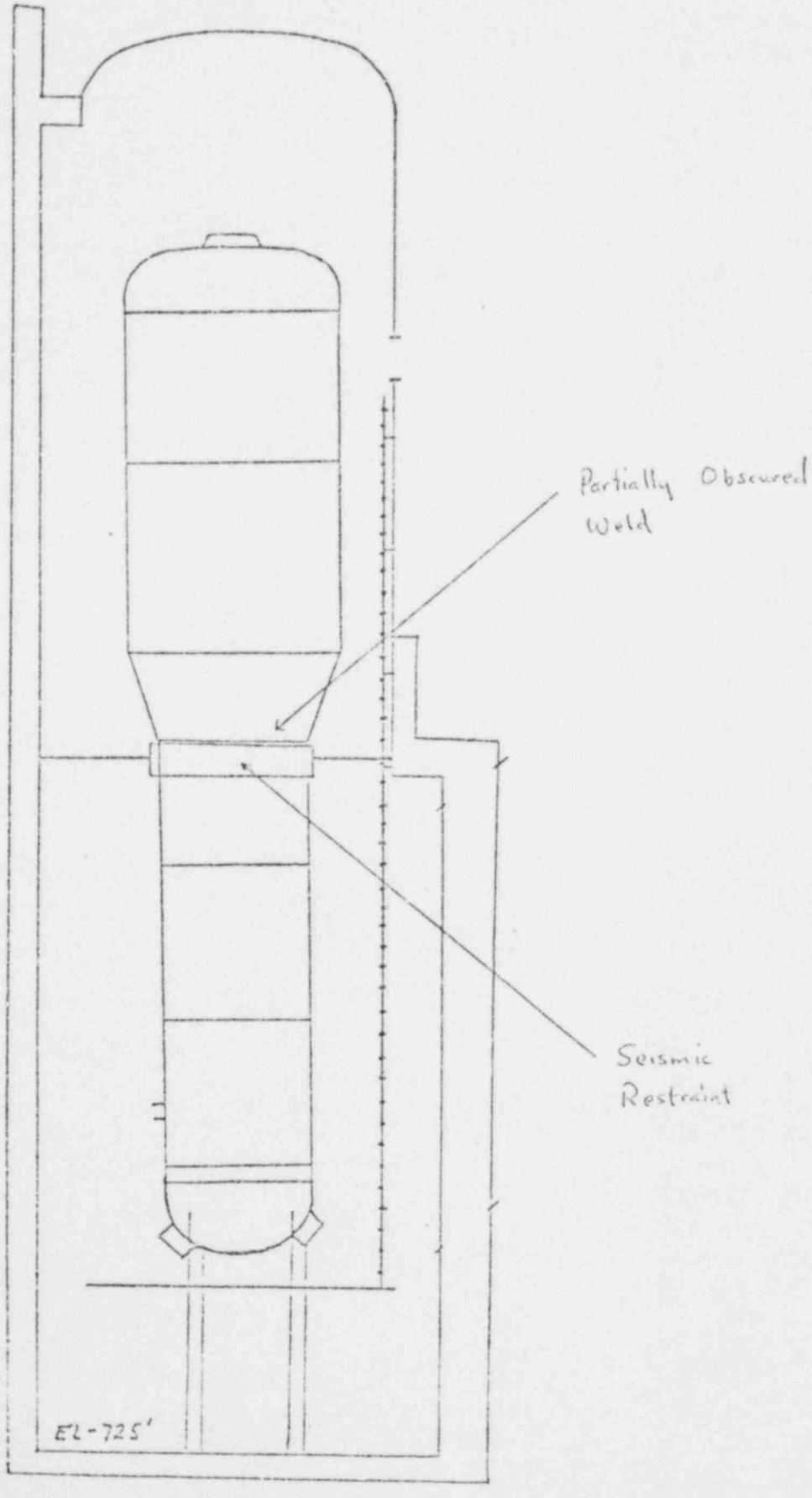
IV. Alternate Examination:

None

V. Implementation Schedule:

Inservice inspections will be performed by using the limited scan described above.

Attachment 1 to
MC-1-026



Steam Generator
(Typical of 4)

DUKE POWER COMPANY

Request For Relief From
Inservice Inspection Requirement

Station: McGuire

Unit: 1

Reference Code: ASMS Boiler and Pressure Vessel Code, Section XI, 1971 Edition through 1972 Winter Addenda

I. Component for which exemption is requested:

a. Name and Identification Number:

Steam Generators 1A, 1B, 1C, 1D
National Board Numbers, 68-107, 68-108, 68-109, 68-110 respectively

b. Function:

Primary to Secondary coolant heat exchanger

c. ASME Section III Code Class:

Class 1

d. Valve Category:

NA

II. Reference Code Requirement that has been determined to be impractical:

Category F Item 3.3 of Table IS-261 Volumetric examination of primary nozzle to safe-end welds. Due to presence of ground out areas and the contour of the nozzle, the safe-end weld cannot be fully inspected.

III. Basis for Requesting Relief

Material - ASME SA-216 Grade WCC casting, buttered with Type 309 austenitic stainless steel, welded to centrifugally cast ASME SA-351 CF8A stainless steel piping.
Estimate of Preservice Examinaton Performed - 90% volumetric, 100% surface
Original Fabrication Examination - Radiography and liquid penetrant
Measures which would be required to make the area accessible - Cosmetic welding then post weld heat treatment
Reference Drawing - Sketch attached

DUKE POWER COMPANY

Request For Relief From
Inservice Inspection Requirement

III. Basis for Requesting Relief (cont.)

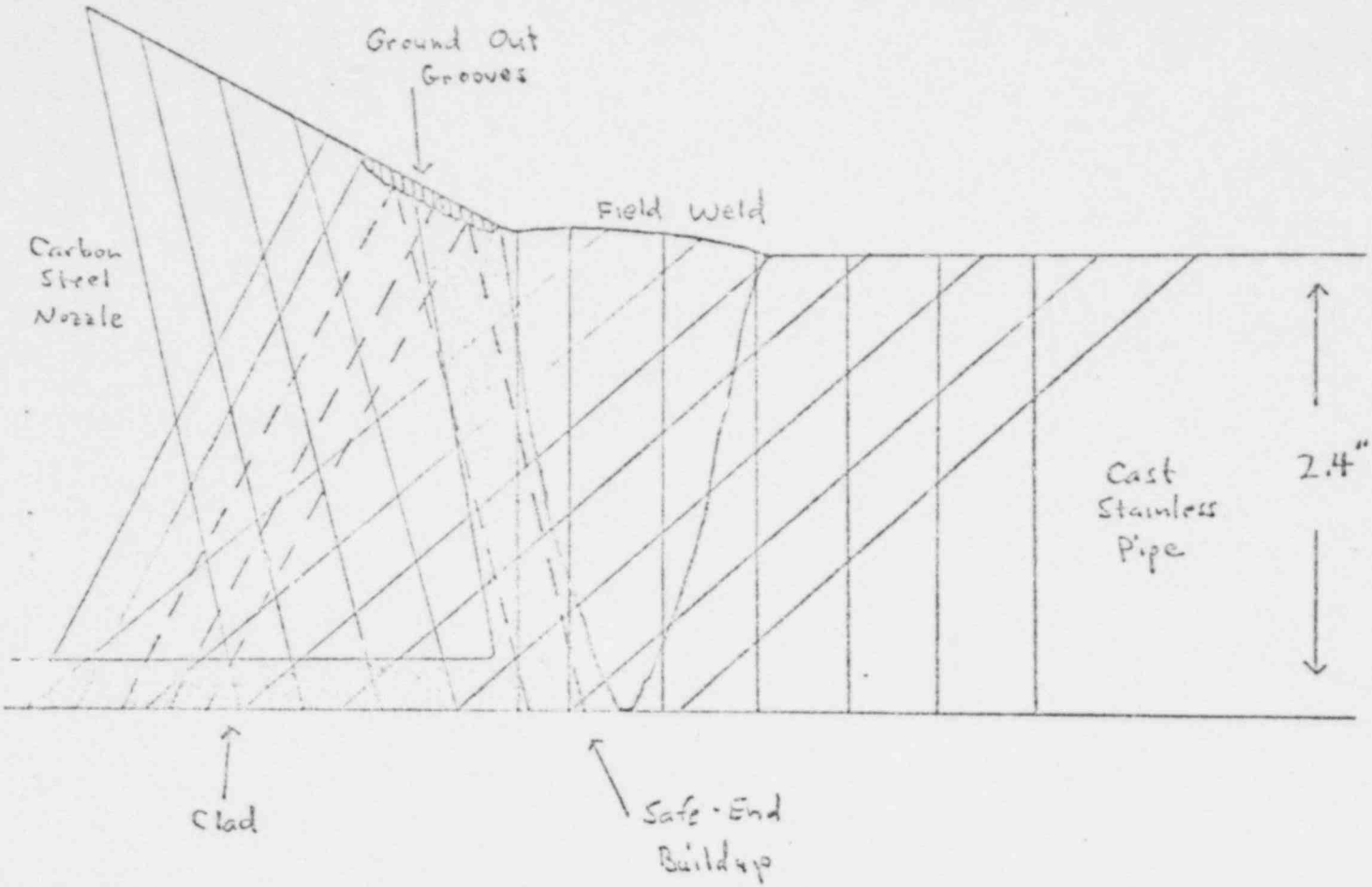
The ground out areas are present on all eight nozzle to safe-end welds and vary in depth from 1/32 inch to 1/8 inch. As can be seen from the attached sketch, the ground-out areas only slightly limit the ultrasonic scan. Both the manufacturer and an outside consultant have recommended that cosmetic welding not be performed. Because of our concern that cosmetic welding might be deleterious to the weld joints, this request for relief is submitted.

IV. Alternate Examination:

The welds have been examined ultrasonically, visually, and with dye penetrant in accordance with the Section XI Code.

V. Implementation Schedule:

Inservice inspection will be performed in accordance with the Section XI Code Edition specified by 10CFR55.55 a, paragraph (g). In addition, the welds will be examined using liquid penetrant every third refueling outage.



——— Acceptable UT Scan

— — — Limited UT Scan

Steam Generator
Nozzle-to-Pipe
Safe-End Weld

DUKE POWER COMPANY

Request For Relief From
Inservice Inspection Requirement

Station: McGuire

Unit: 1

Reference Code: ASME Boiler and Pressure Vessel Code, Section XI, 1971 Edition through Winter 1972 Addenda

I. Component for which exemption is requested:

a. Name and Identification Number:

Containment Penetration Assemblies:

Type I - Main Steam (4)
Type II - Feedwater (4)
Type III-2 - RHR discharge to cold legs (2)
Type III-3 - RHR supply (1)
Type III-3 -RHR discharge to hot legs (1)
Type III-5 - Upper Head Injection(2)

b. Function:

Provide air tight seal for piping through the containment boundary

c. ASME Section III Code Class:

Class II

d. Valve Category:

NA

II. Reference Code Requirement that has been determined to be impractical:

Categories C-F, C-G - Item C2.1 of Table ISC-261 volumetric examination of piping circumferential butt welds. Due to the design of the penetration assemblies, the penetration flued head to process pipe welds are inaccessible. In addition, the Type I and Type II penetration flued head to guard pipe welds are inaccessible.

III. Basis for Requesting Relief

Reference Drawings - See figures 1, 2, 3, 4 attached
Material - See figures 1, 2, 3, 4
Estimate of Preservice Examination Performed - 0% of the inaccessible welds
Original Fabricaton Examination - Radiography. Type I (Main Steam) flued head to guard pipe welds received penetrant and ultrasonic examination Type II (feedwater) flued head to guard pipe welds were examined by radiography.
Measures which would be required to make the areas accessible - complete redesign, manufacture, and installation.

DUKE POWER COMPANY

Request For Relief From
Inservice Inspection Requirement

III. Basis for Requesting Relief (cont.)

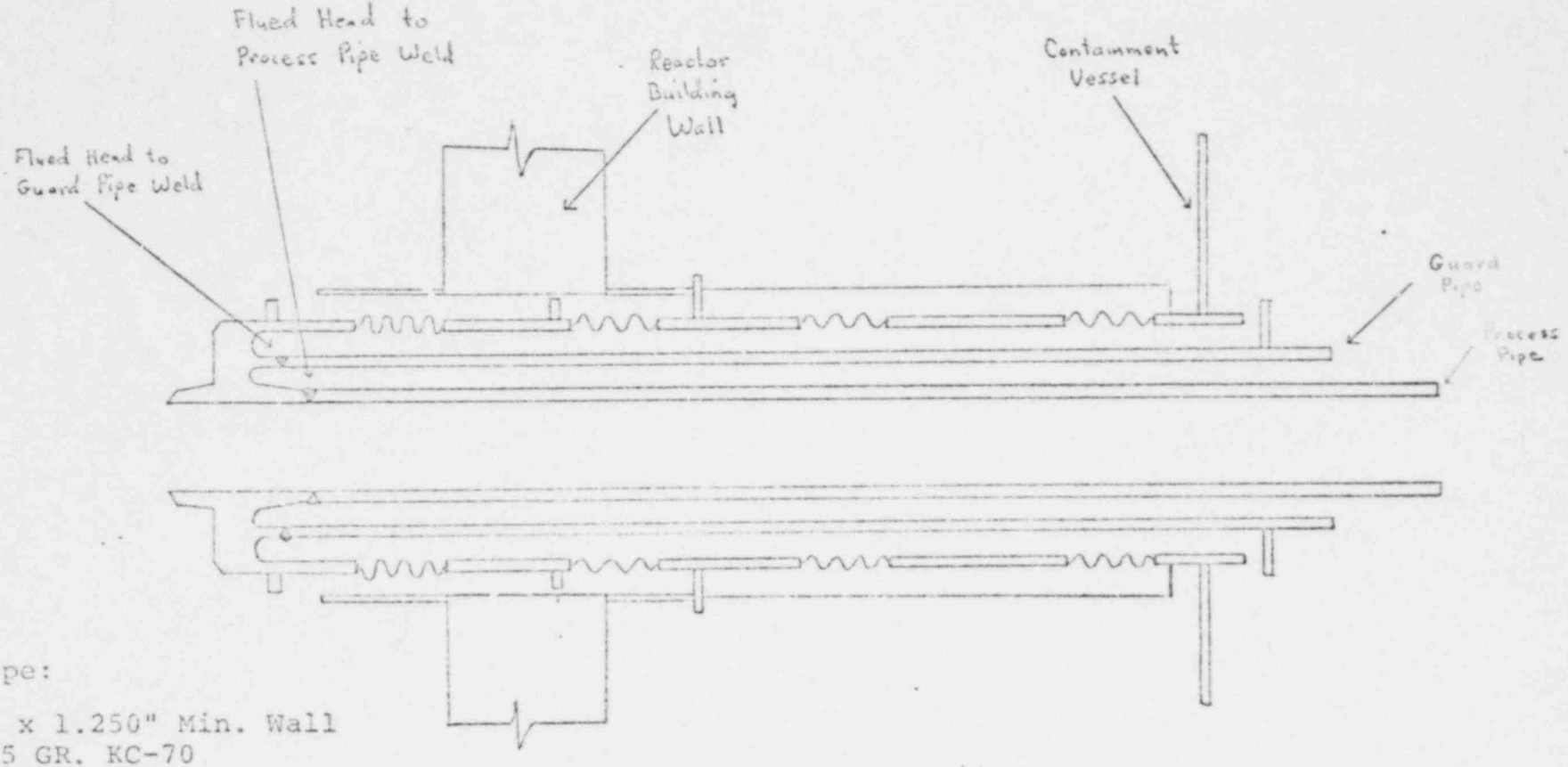
At the time of purchase, the penetration assemblies were state of the art in design and manufacturing technique. Redesign and replacement would result in extended delay and enormous cost. Component integrity can be assured with examination of similar welds in the process pipe coupled with hydrostatic tests and penetration leak tests.

IV. Alternate Examination:

Piping systems have been hydrostatically tested and penetrations will be leak tested.

V. Implementation Schedule:

Inservice inspection will consist of testing described in IV above.



Process Pipe:

31.5" I.D. x 1.250" Min. Wall
ASME SA-155 GR. KC-70

TYPE I (Main Steam)

4/Unit

Guard Pipe:

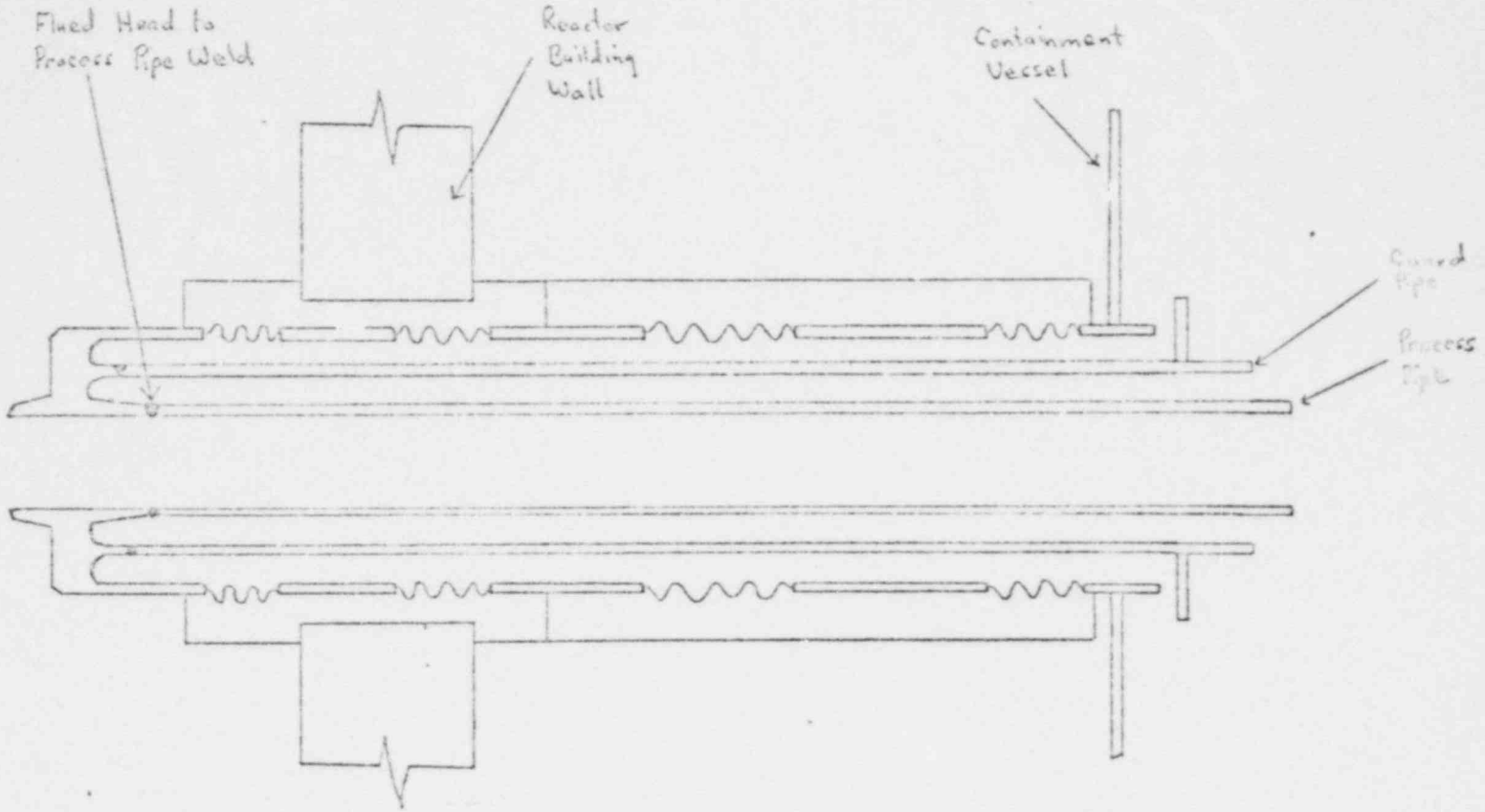
40" OD x 1.0" Min. Wall
ASME SA-155 GR KC-70

Flued Head:

ASME SA-105 GR 11

FIGURE 1

REF: MC-1676-3.1



Process Pipe:

18" NPS S-80
ASME SA-106 GR.B

TYPE II (Feedwater)

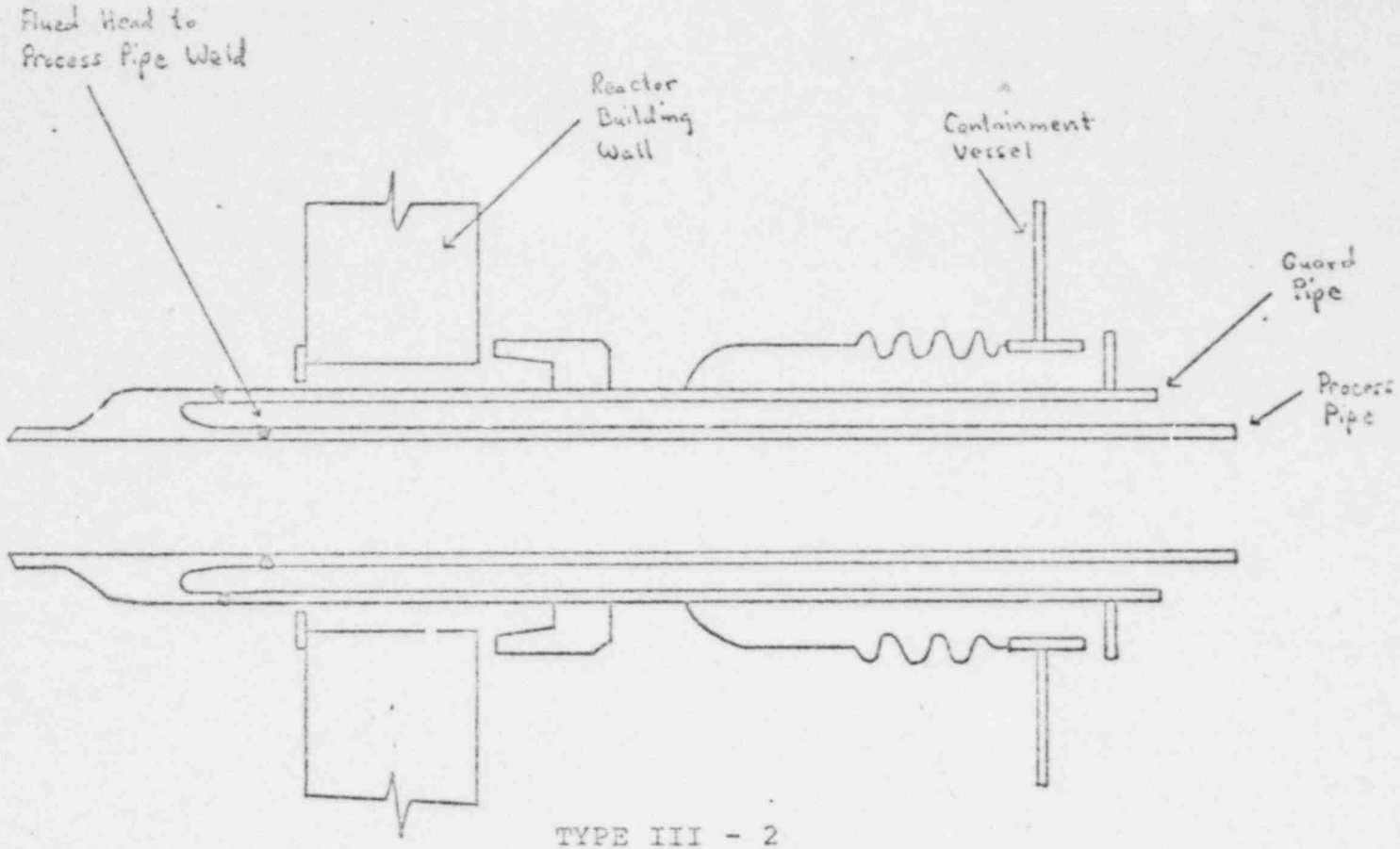
4/Unit

Flued Head:

ASME SA-105 GR 11

FIGURE 2

REF: MC-1676-3.2



REF: MC-1676-3.4

TYPE III - 2

Process Pipe:

8" NPS S-160
ASME SA376 TP304 SS

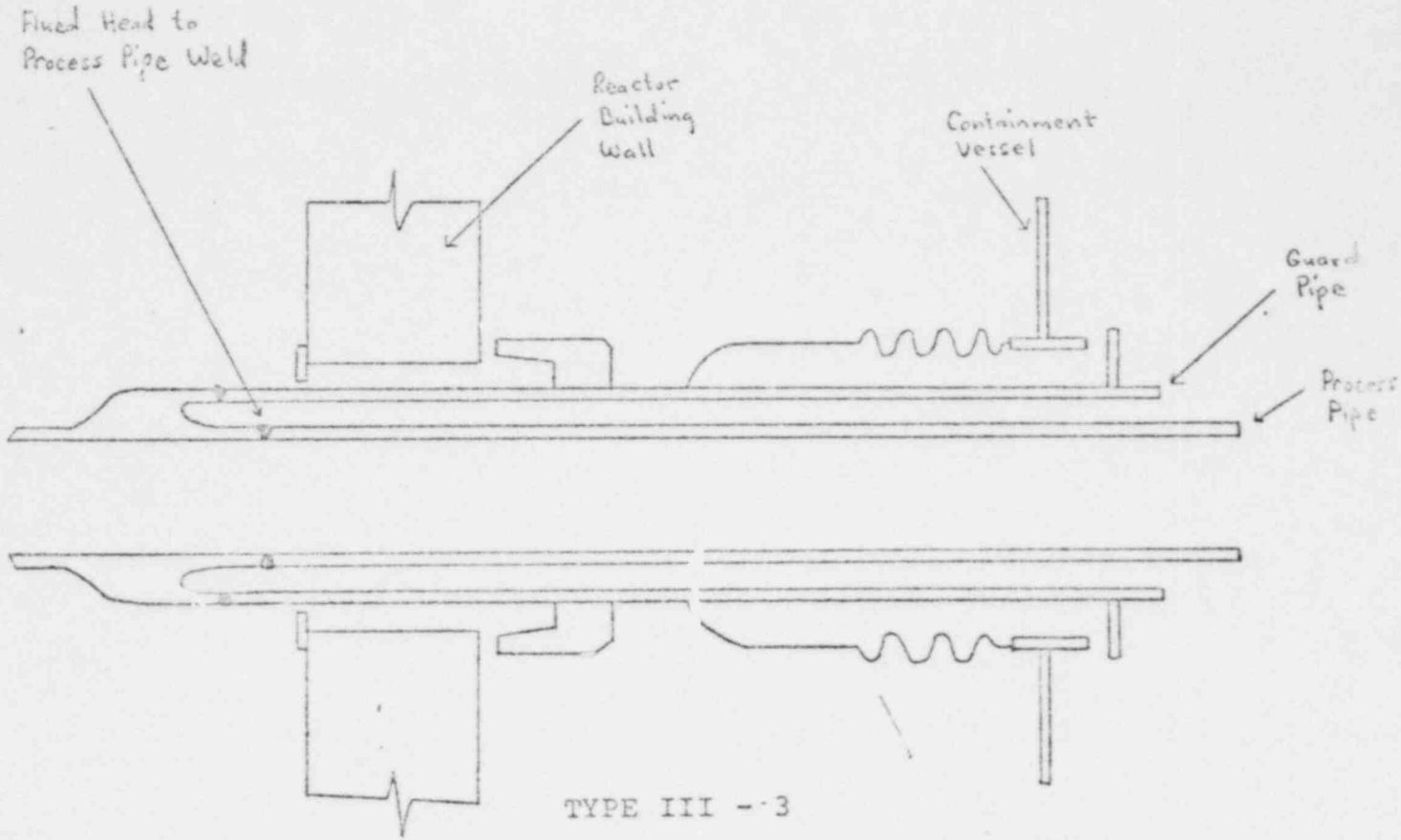
(RHR Heat Exchanger
Supply to Loop Cold Legs)

2/Unit

Flued Head:

ASME SA-182 GR F-304 SS

FIGURE 3



REF: MC-1676-3.4

TYPE III - 3

(RHR Supply) 1/Unit
(RHR Return to Hot Legs) 1/Unit

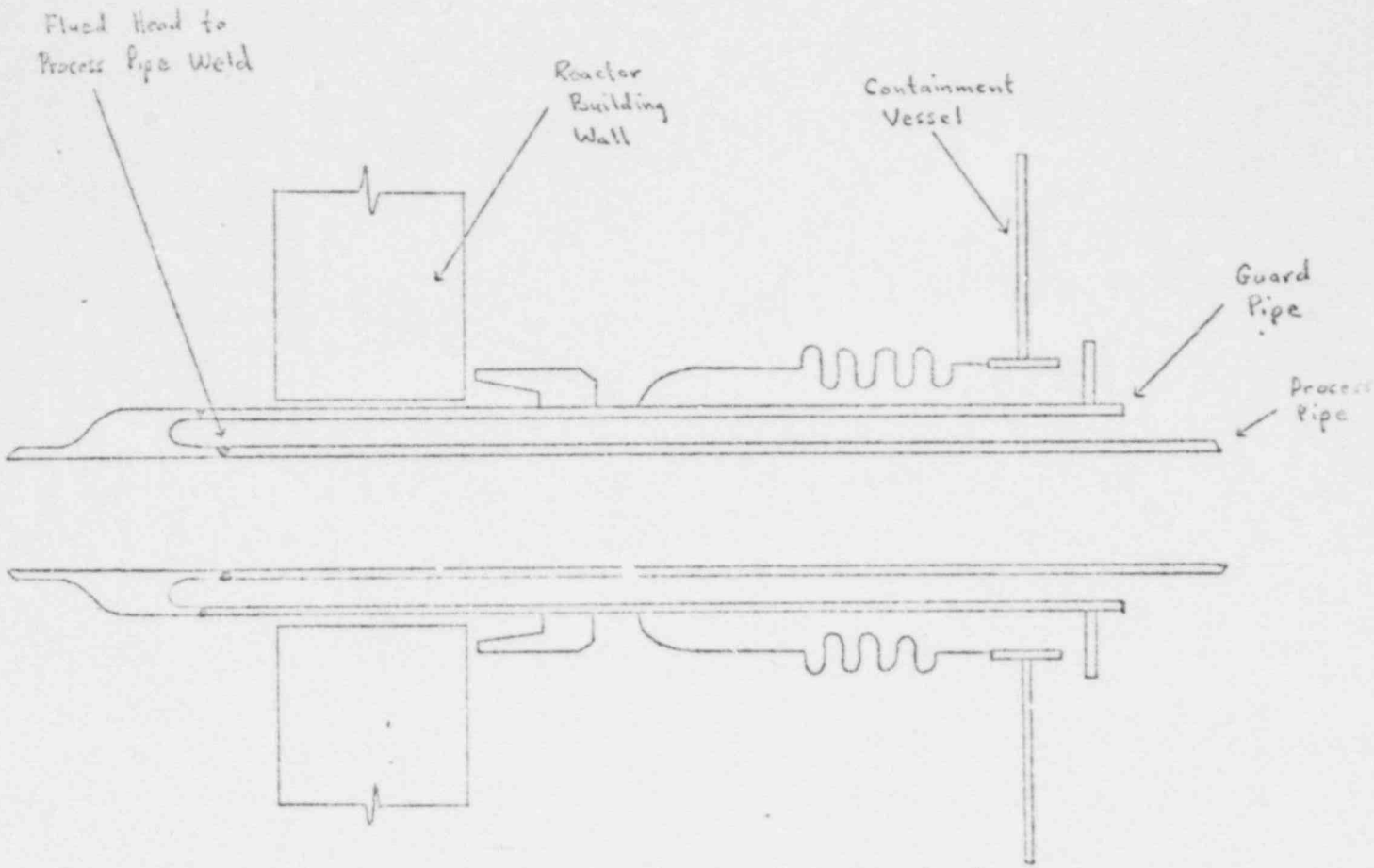
Process Pipe:

14" NPS S-140
ASME SA-376 TP316

Flued Head:

ASME SA-182 GR. F-316

FIGURE 4



REF: M.-1676-3.8

Type III - 5 (Upper Head Injection)

2/Unit

Process Pipe: 12" NPS S-140
ASME SA-376 TP 316

Flued Head: ASME SA-182 GR F316

FIGURE 5

DUKE POWER COMPANY

Request For Relief From
Inservice Inspection Requirement

Station: McGuire

Unit: 1

Reference Code: ASME Boiler and Pressure Vessel Code, Section XI, 1971 Edition through Winter 1972 Addenda

I. Component for which exemption is requested:

a. Name and Identification Number:

Main Steam and feedwater systems
See attached Figures 1, 2, 3, 4, 5, 6, 7, 8

b. Function:

Circulate secondary coolant

c. ASME Section III Code Class:

Class II

d. Valve Category: NA

II. Reference Code Requirement that has been determined to be impractical:

Category CG, Item C2.1 of Table IWC-261, Volumetric Examination of piping circumferential butt welds. Due to presence of guard pipe, approximately 16% of the feedwater and 75% of the Main Steam welds are inaccessible.

III. Basis for Requesting Relief

Reference Drawings - see figures 1 through 8
Material - Listed on reference figures
Estimate of Preservice Examination Performed - 0% on inaccessible portions
100% on accessible portions
Original fabrication examinaton - 100% Radiography
Measures which would be required to make the areas accessible - Removal of the guard pipe

DUKE POWER COMPANY

Request For Relief From
Inservice Inspection Requirement

III. Basis for Requesting Relief (cont.)

The guard pipe was designed and installed for pipe rupture and jet impingement protection required by NRC directives. Section XI requirements to inspect Class II piping systems had not been developed at the time of system design. Component integrity can be assured by examining the accessible welds (Section XI only requires examining 50% of the welds at structural discontinuities, and this number is further reduced by applying the multiple stream concept) and hydrostatic tests. The purpose of the guard pipe and support systems is to maintain plant safety in the unlikely event of system failure. We believe the extreme measures required to make the areas accessible without compensating increase in the level of quality assurance do not justify the high cost and loss of time.

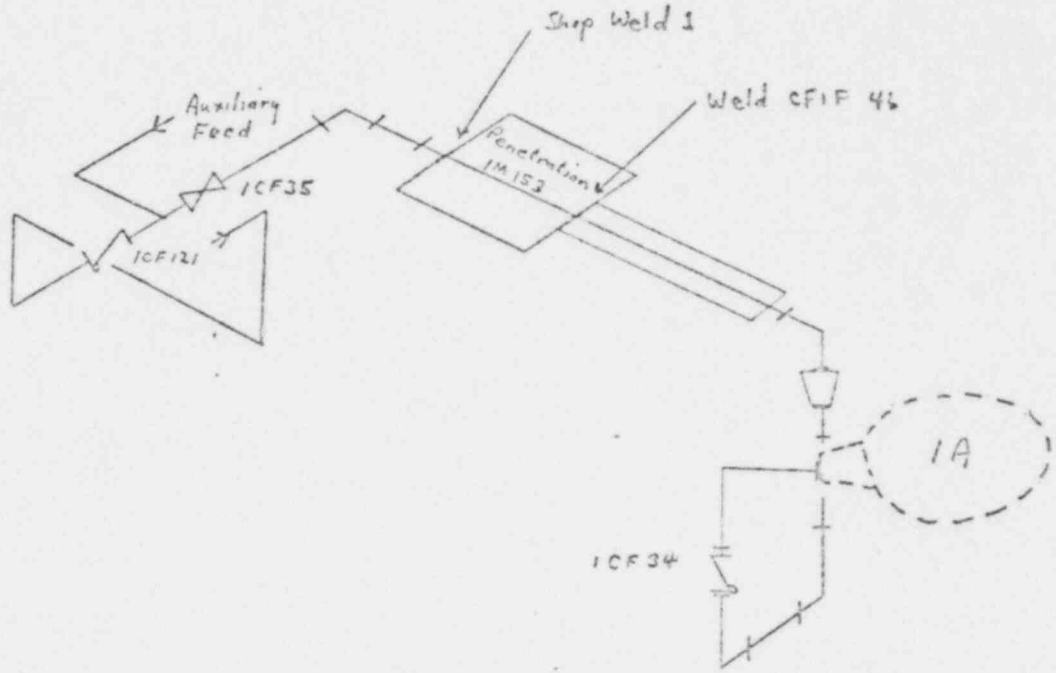
IV. Alternate Examination:

No alternate examination is possible.

V. Implementation Schedule:

Preservice examination has been completed on the accessible welds. Inservice examinations will be performed on the accessible welds as required by the Section XI specified by 10CFR50.55a paragraph (g).

REF: MC-1591-1.1



FEEDWATER

Process Pipe:

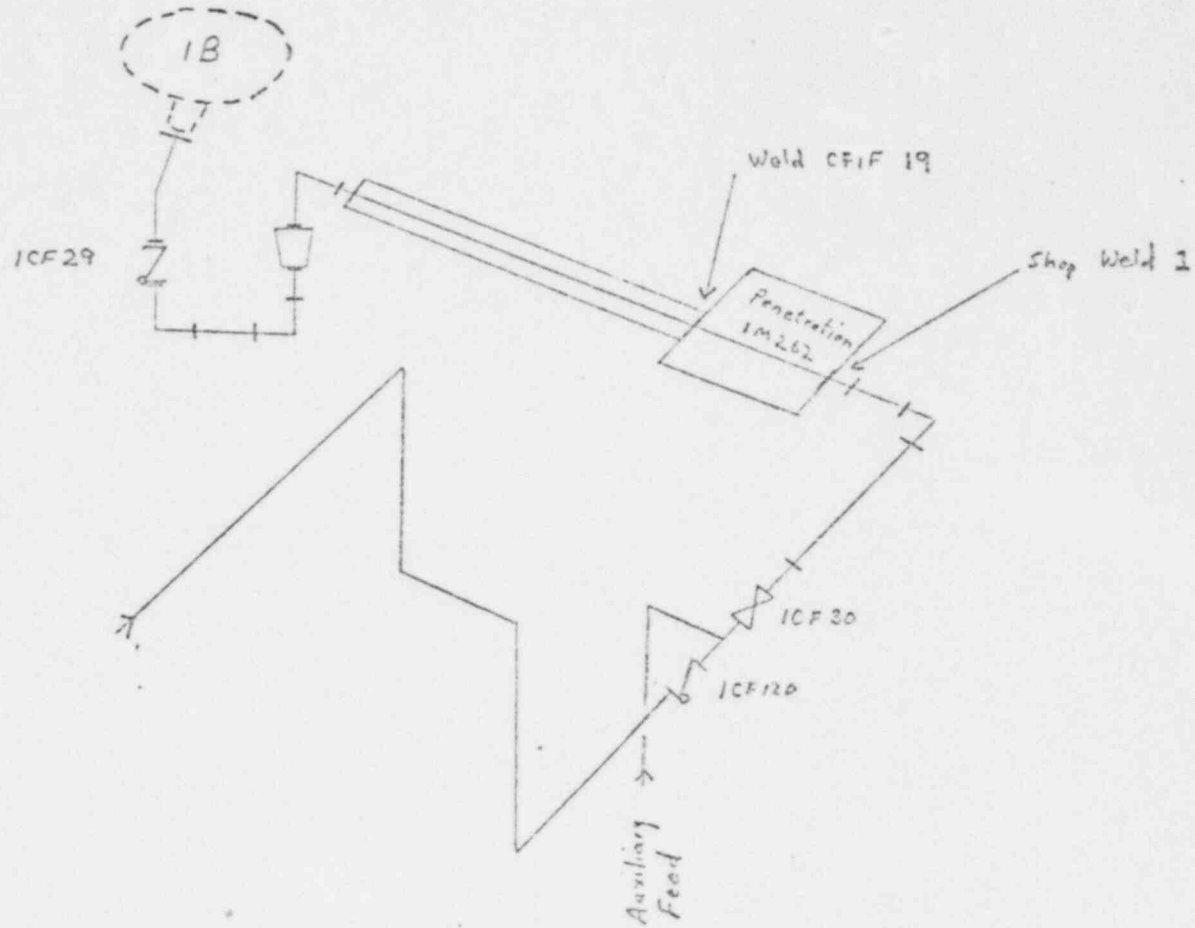
16"-18" NPS S-80
ASME SA-106 GR B
Seamless

Fittings:

ASME SA-234 GR WPB
Seamless or EFW

Figure 1

REF: MC-1591-1.1



Process Pipe:

16"-18" NPS S-80
ASME SA-106 GR B
Seamless

Fittings:

ASME SA-234 GR WPB
Seamless or EFW

FEEDWATER

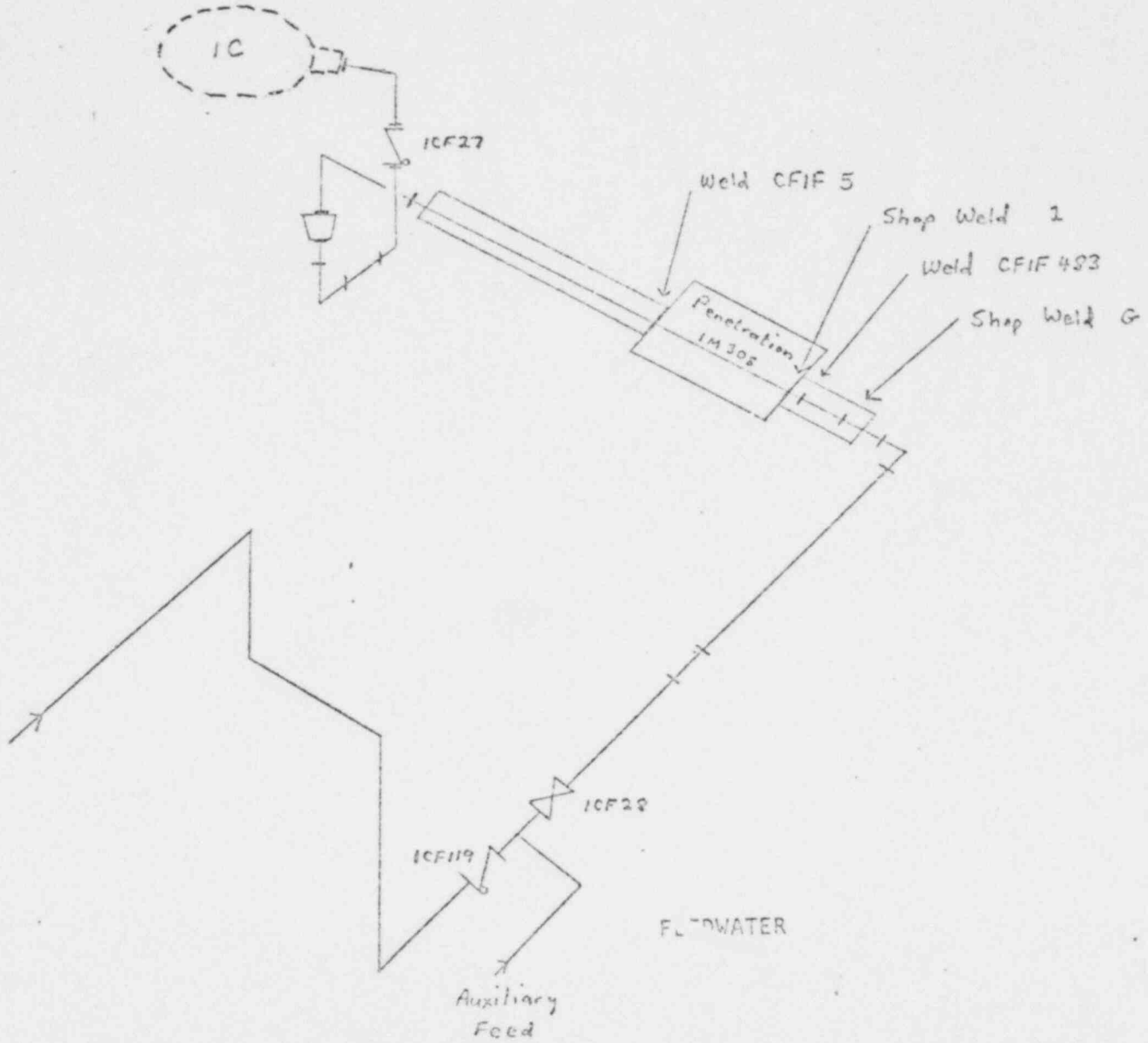
Figure 2

Process Pipe:

16"-18" NPS S-80
ASME SA-106 GR B
Seamless

Fittings:

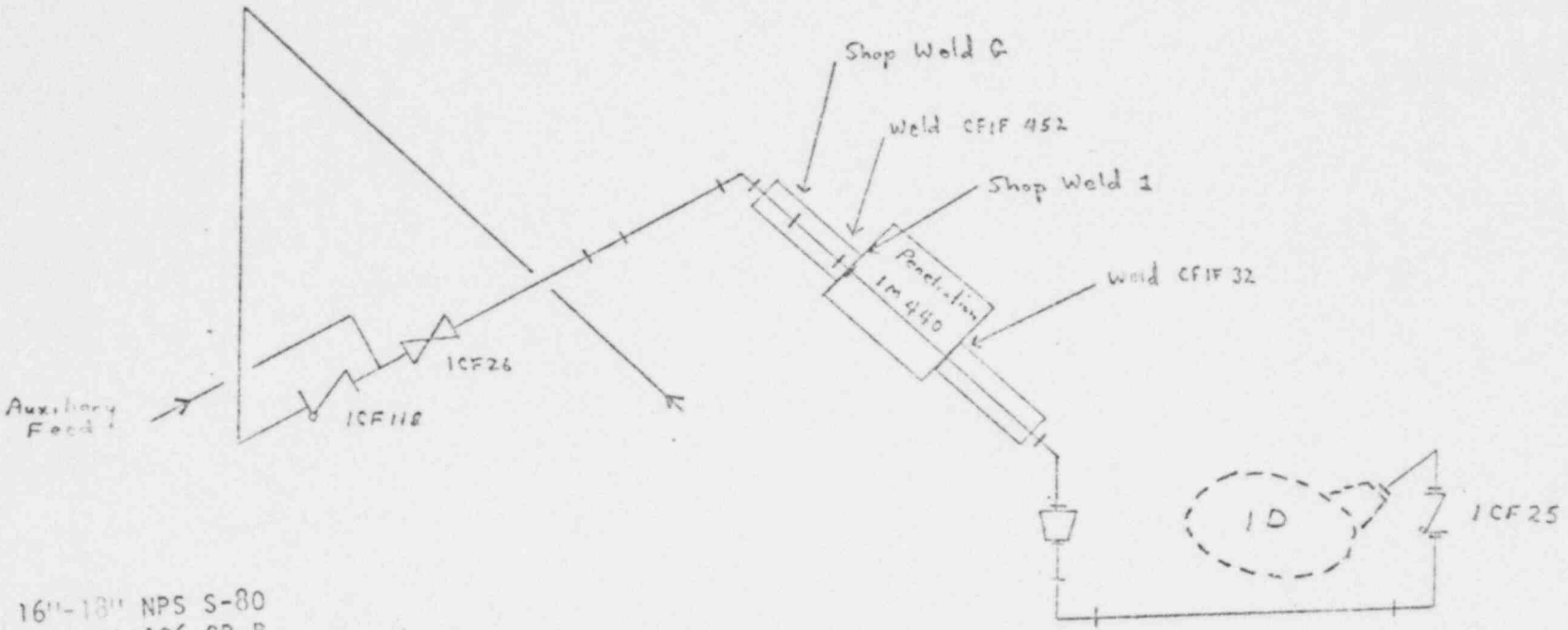
ASME SA-234 GR WPB
Seamless or EFW



REF: MC-1591-1.1

Figure 3

REF: MC-1591-1.1



16"-18" NPS S-80
ASME SA-106 GR B
Seamless

Fittings:

ASME SA-234 GR WPB
Seamless or EFW

FEEDWATER

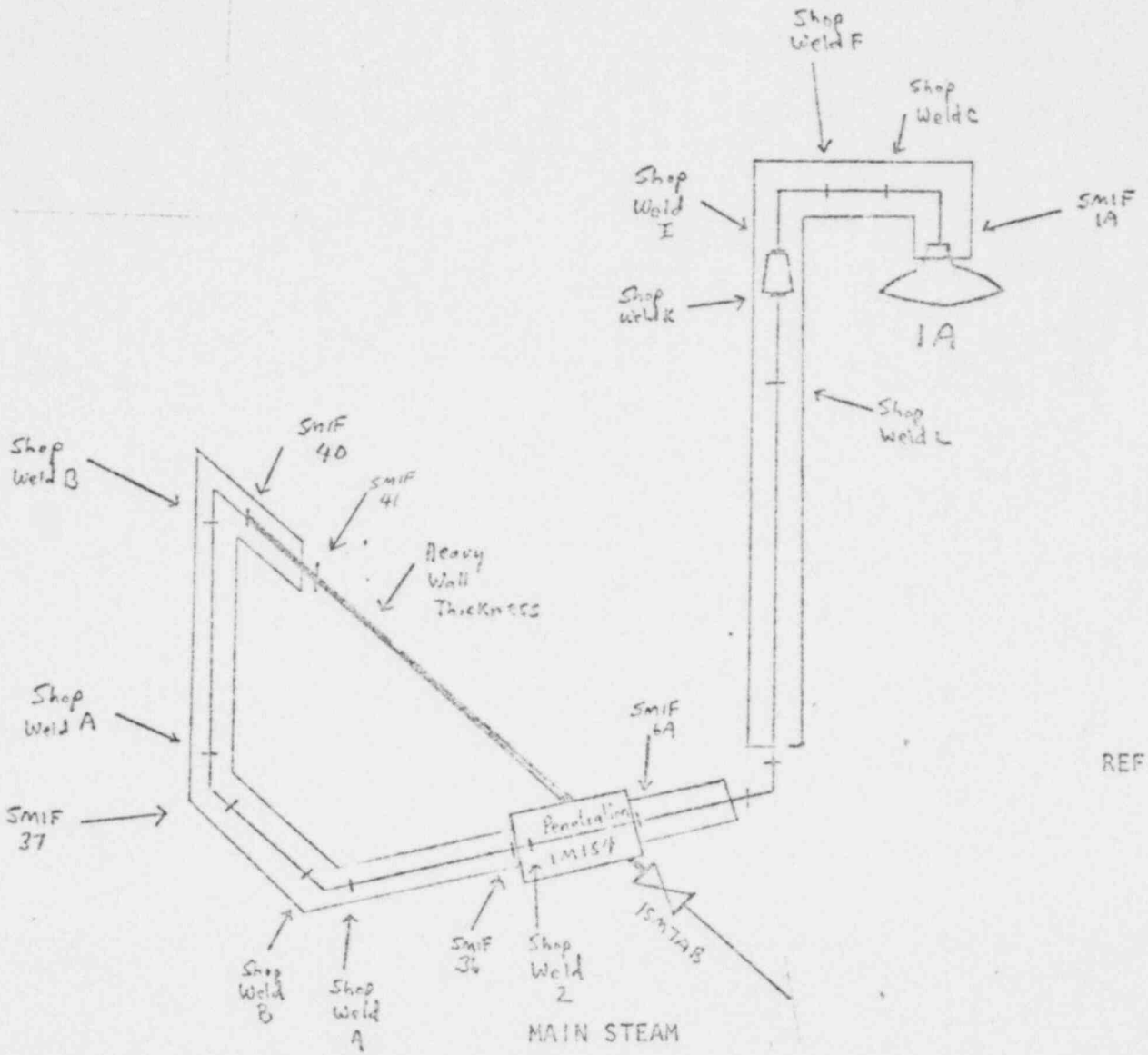
Figure 4

Process Pipe:

32" NPS, M.W. 1.375"
34" NPS, M.W. 1.250", 1.75", 2.08"
ASME SA-106 GRC
Seamless

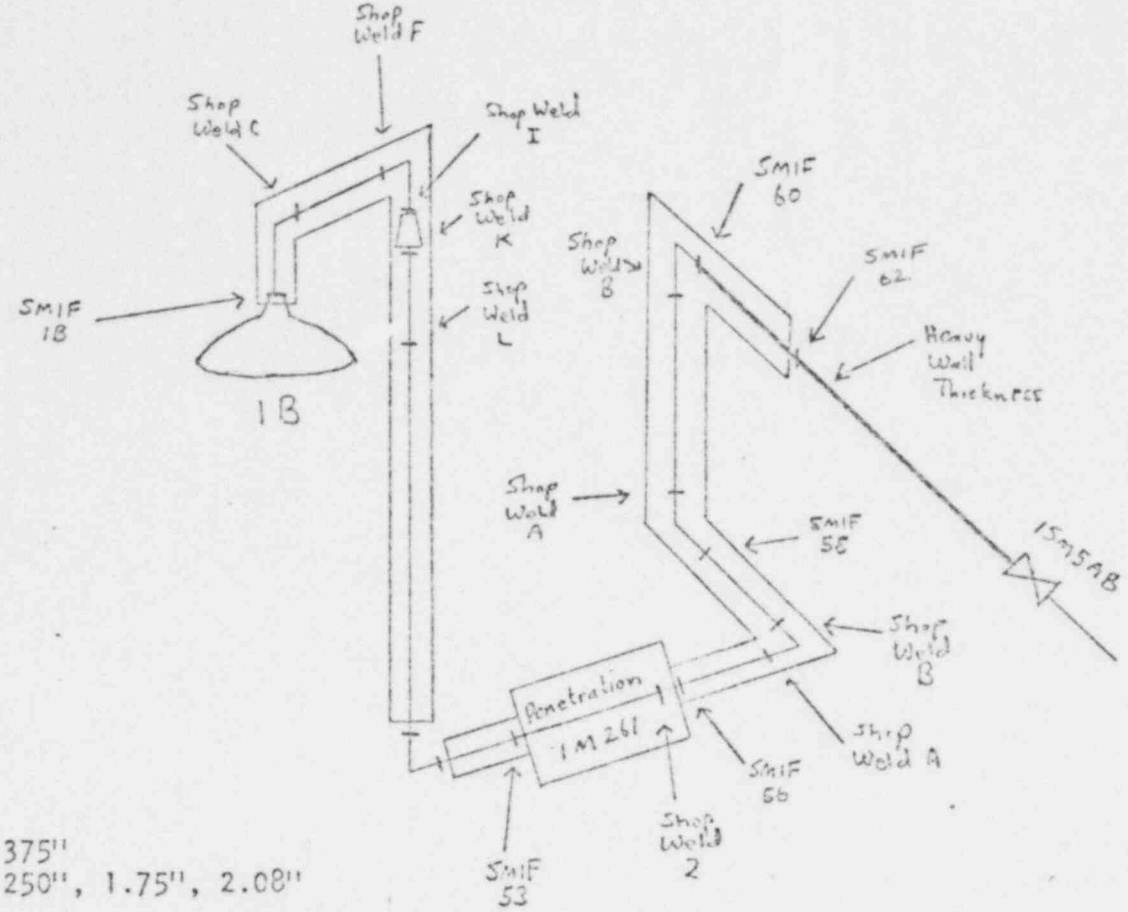
Fittings:

ASME SA-234 GR WPC
Seamless



REF: MC-1593-1.0

Figure 5



Process Pipe:

32" NPS, M.W. 1.375"
34" NPS, M.W. 1.250", 1.75", 2.08"
ASME SA-106 GRC
Seamless

Fittings:

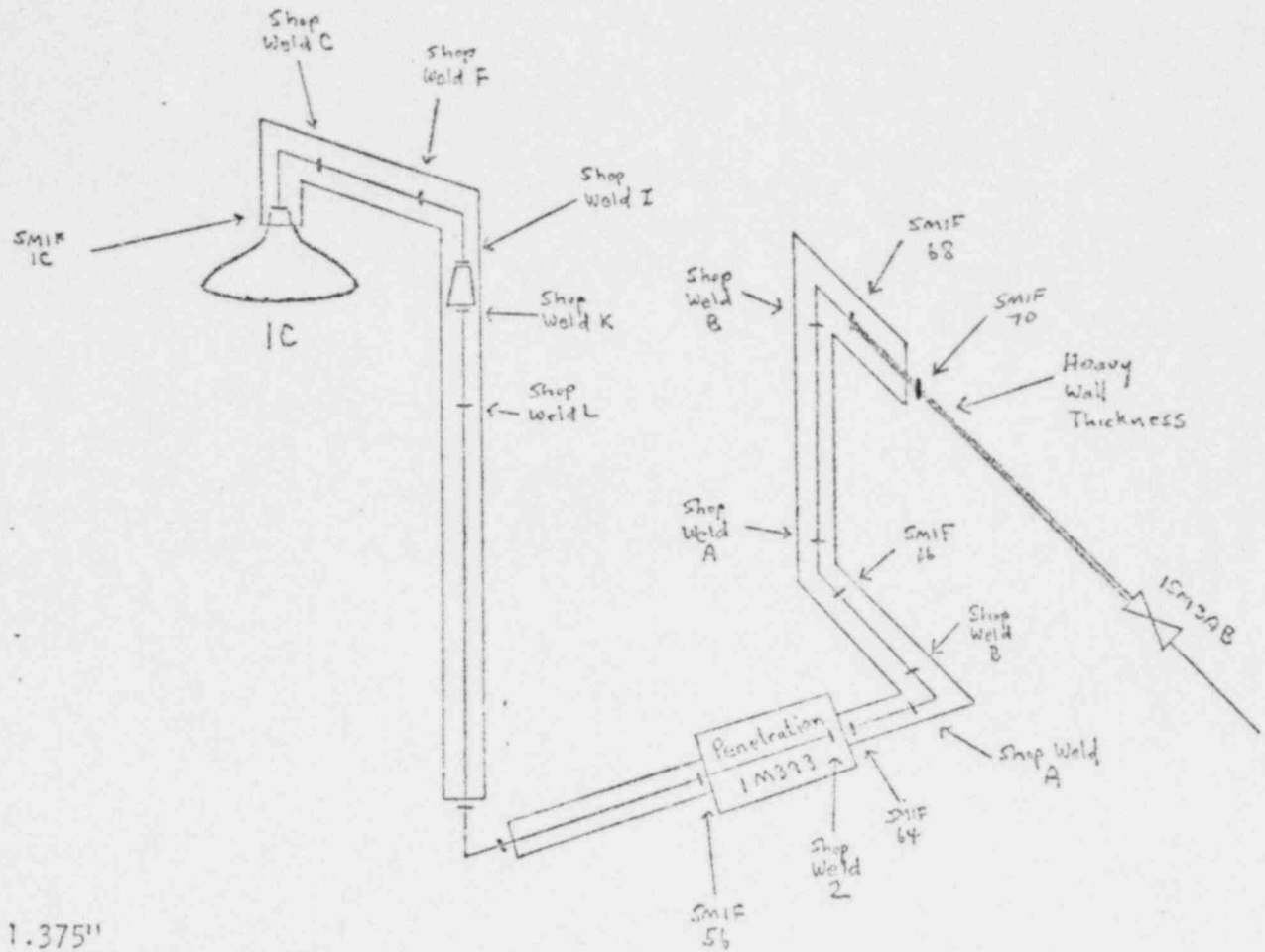
ASME SA-234 GR WPC
Seamless

REF: MC-1593-1.0

MAIN STEAM

Figure 6

REF: MC-1593-1.0



Process Pipe:

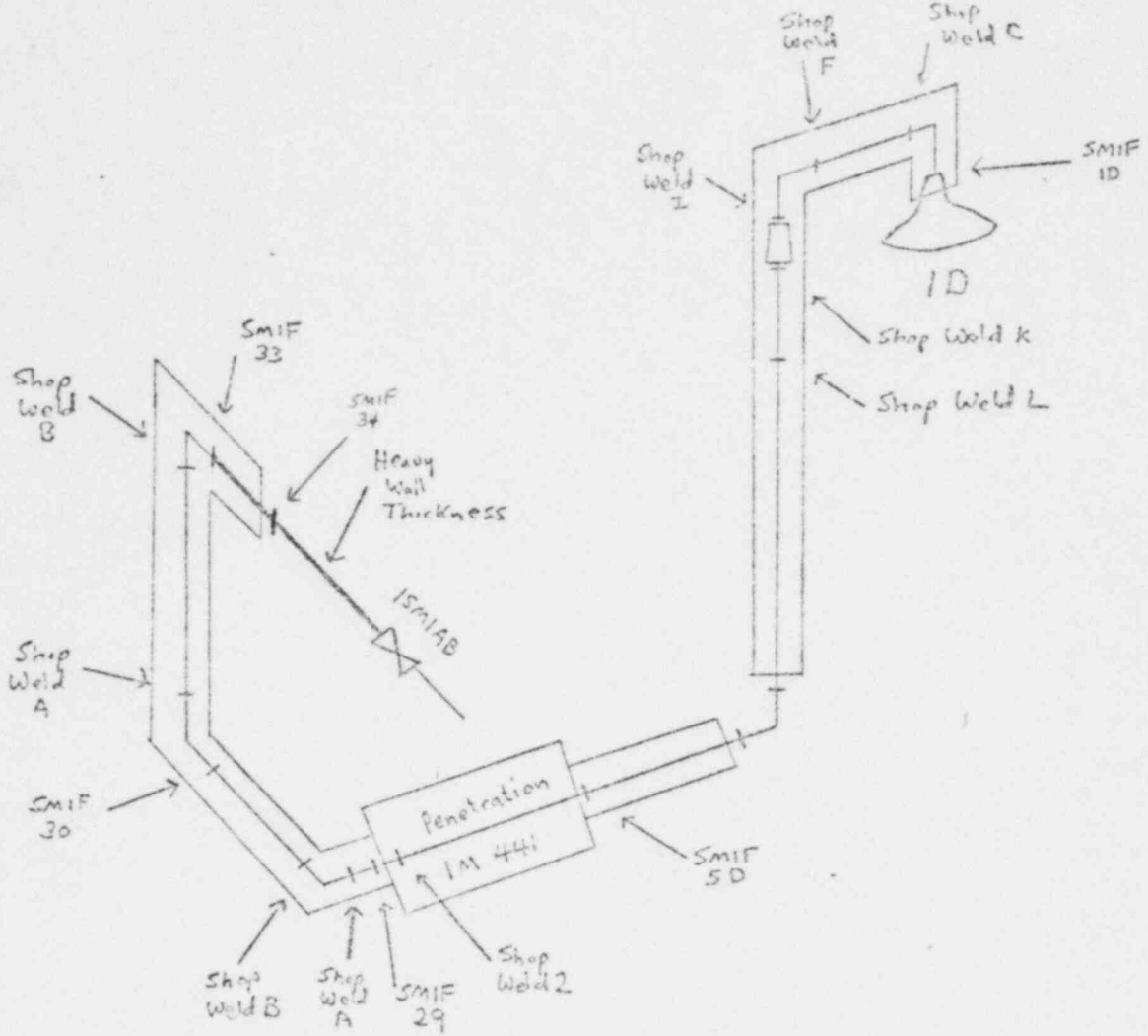
32" NPS, M.W. 1.375"
34" NPS, M.W. 1.250", 1.75", 2.08"
ASME SA-106 GRC
Seamless

Fittings:

ASME SA-234 GR WPC
Seamless

MAIN STEAM

Figure 7



REF: MC-1593-1.0

Process Pipe:

32" NPS, M.W. 1.375"
34" NPS, M.W. 1.250", 1.75", 2.08"
ASME SA-106 GRC
Seamless

MAIN STEAM

Fittings:

ASME SA-234 GR WPC
Seamless

Figure 8

DUKE POWER COMPANY

Request For Relief From
Inservice Inspection Requirement

Station: McGuire

Unit: 1

Reference Code: ASME Boiler & Pressure Vessel Code, Section XI, 1971 Edition through Winter 1972 Addenda

I. Component for which exemption is requested:

a. Name and Identification Number:

Main Steam System welded restraint attachments
R1A through R8A R1C through R8C
R1B through R8B R1D through R8D

b. Function:

Wear pads welded to main steam piping encased by guard pipe

c. ASME Section III Code Class:

Class II

d. Valve Category:

NA

II. Reference Code Requirement that has been determined to be impractical:

Category C-C, Item C2.4 of Table ISC-261 surface examination of integrally welded support-to-pipe welds. Due to the presence of guard pipe the welded wear pads of 1a above are inaccessible.

III. Basis for Requesting Relief

Material - SA-515 Grade 70 plate or SA-155 KC70 pipe wear pads fillet welded to SA-106 Gr C main steam piping
Estimate of Preservice Examinaton Performed - 0%
Original Fabrication Examination - Magnetic particle surface examination
Measures which would be required to make the areas accessible - removal of the guard pipe
Reference Drawing - Sketch attached.

DUKE POWER COMPANY

Request For Relief From
Inservice Inspection Requirement

III. Basis for Requesting Relief (cont.)

The main steam guard pipe was designed and purchased before there was a Section XI requirement to inspect Class II components. These wear pads are only subject to compressive stresses. The welds have been verified defect free by original fabrication examination. Component integrity can be assured by inspecting similar system welds and hydrostatic tests.

IV. Alternate Examination:

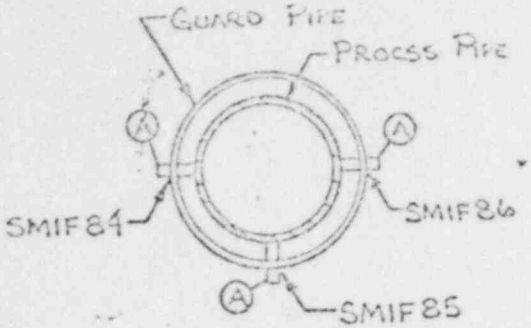
No alternate examination is possible.

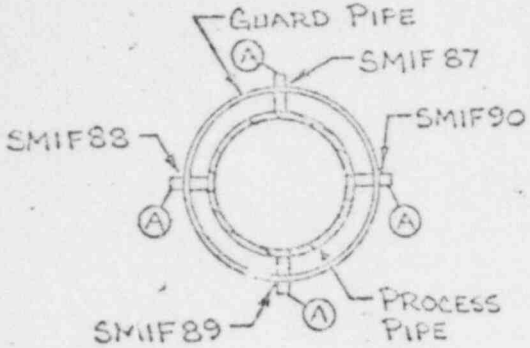
V. Implementation Schedule:

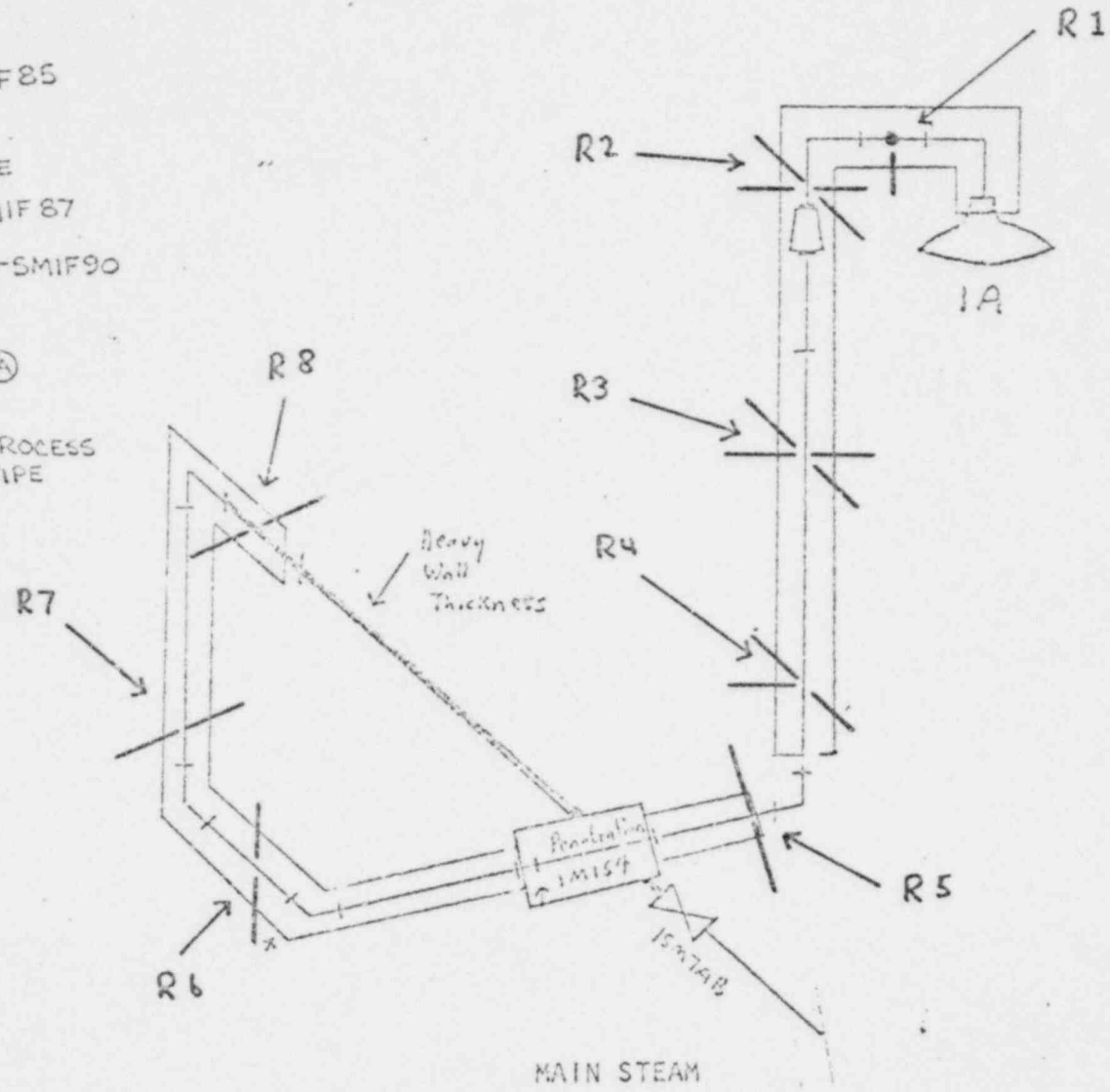
The system is installed and field hydrostatically tested. Inservice inspections will not be possible because of inaccessibility.

Typical Support Arrangements

Attachment to MC-1-030







REF: MC-1553-1.0

Welded Support Locations
(Identical on all 4 Steam Generators)

DUKE POWER COMPANY

Request For Relief From
Inservice Inspection Requirement

Station: McGuire

Unit: 1

Reference Code: ASME Boiler & Pressure Vessel Code, Section XI, 1971 Edition through Winter 1972 Addenda

I. Component for which exemption is requested:

a. Name and Identification Number:
Feedwater system welded attachments, CF-H1 and CF-H2.
See attached sketch.

b. Function:
Wear pads welded to feedwater piping encased by guard pipe

c. ASME Section III Code Class:
Class II

d. Valve Category:
NA

II. Reference Code Requirement that has been determined to be impractical:

Category C-C, Item C2.4 of Table ISC-261 surface examination of integrally welded support-to-pipe welds. Due to the presence of guard pipe the wear pads are partially inaccessible.

III. Basis for Requesting Relief

Material - CF-H1 and CF-H2 each consists of 4 segments of ASME SA-106 Gr. B pipe 3/8 in x 8 in. x 6 in fillet welded to ASME SA-106 Gr. B pipe.

Estimate of Preservice Examination Area Accessible - 35%
Original Fabrication Examination Performed - Magnetic particle surface examination
Measures which would be required to make the area accessible - Removal of the guard pipe
Reference Drawing - Sketch attached.

DUKE POWER COMPANY

Request For Relief From
Inservice Inspection Requirement

III. Basis for Requesting Relief (cont.)

The feedwater guard pipe was designed and purchased before there was a Section XI requirement to inspect Class II components. The welds have been verified defect free by original fabrication examination. Component integrity can be assured by inspecting the 35% of the accessible area, inspection of similar system welds, and hydrostatic tests.

IV. Alternate Examination:

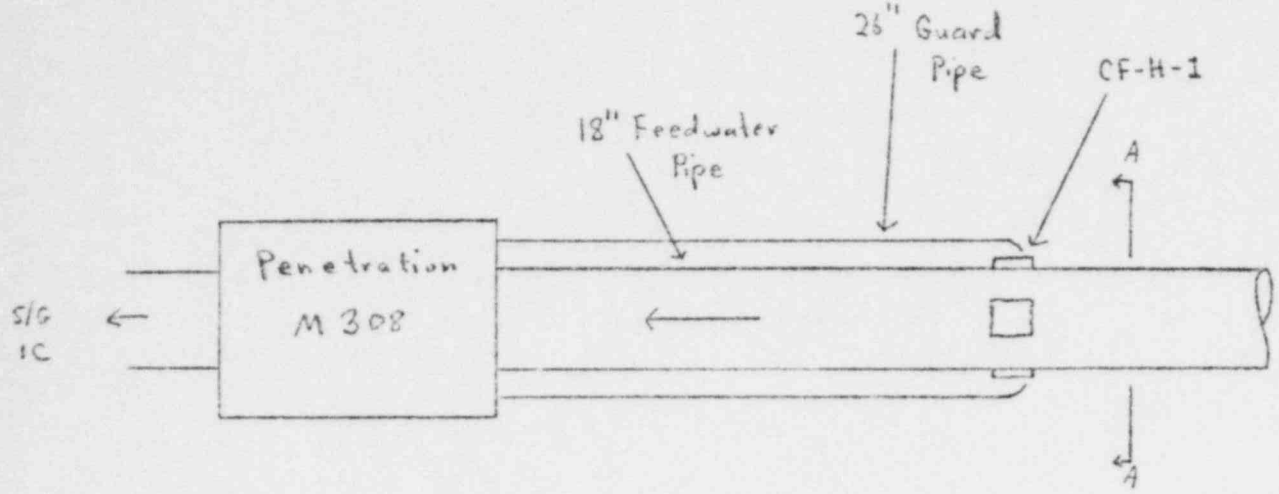
No alternative examination is possible.

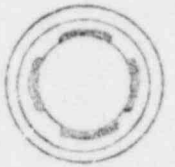
V. Implementation Schedule:

The system is installed and field hydrostatically tested. The accessible areas will be examined in January 1979. Inservice examination of the accessible areas will be in accordance with the Section XI code required by 10CFR50.55a, paragraph g.

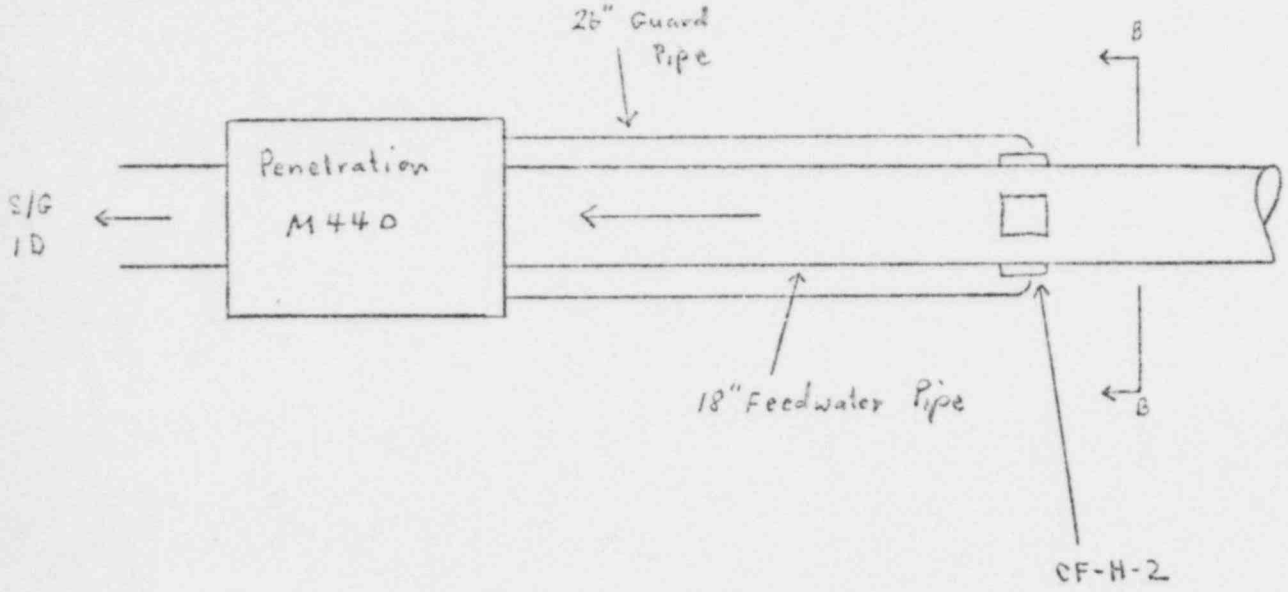
Attachment to
MC-1-031

Ref. Dwg. - MC 1591-1.1





Section A-A



Section B-B

Feedwater Welded Attachments