

INSERVICE INSPECTION
EXAMINATION REPORT

VERMONT YANKEE NUCLEAR POWER
CORPORATION

JULY 12, 1978 THROUGH OCTOBER 7, 1978

790110 0281

PREFACE

This report covers the inservice inspection of Vermont Yankee Nuclear Power Station during the period July 12, 1978 through October 7, 1978. This period includes the 1978 refueling outage and the unscheduled shutdown of July 1, 1978.

Included in this report is the Form NIS-1 as required by the provisions of ASME Section XI and a Summary Report of the examinations performed, conditions observed, and corrective measures taken.

TABLE OF CONTENTS

	<u>PAGE</u>
NIS-1 OWNER'S DATA REPORT	1
SUMMARY REPORT	27
1.0 INTRODUCTION	27
1.1 Examination Methods	27
1.2 Evaluation of Data	28
1.3 Examination of Results	28
2.0 SUMMARY OF EXAMINATIONS	29
2.1 Reactor Vessel Data	29
2.2 Piping Data	32
2.3 Pumps	34
2.4 Valves	35
3.0 SYSTEM PRESSURE TEST	37
4.0 CONCLUSIONS	38

FORM NIS-1 OWNERS' DATA REPORT FOR INSERVICE INSPECTIONS

As required by the Provisions of the ASME Code Rules

1. Owner Vermont Yankee Nuclear Power Corp., 77 Grove St., Rutland, Vt. 05701
(Name and Address of Owner)
2. Plant Vermont Yankee Nuclear Power Station, P.O. Box 157, Vernon, Vt. 05354
(Name and Address of Plant)
3. Plant Unit 1 4. Owner Certificate of Authorization (if required) DPR-28
5. Commercial Service Date 11/30/72 6. National Board Number for Unit None
7. Components Inspected

Item	Component or Appurtenance	Manufacturer or Installer	Manufacturer or Installer Serial No.	State or Province No.	National Board No.
1	11 Vessel Seam Welds	Chicago Bridge & Iron	B-4698	NA	NA
2	8 Nozzle to Vessel Welds	Chicago Bridge & Iron	B-4698	NA	NA
3	9 CRD Penetrations	Chicago Bridge & Iron	B-4698	NA	NA
4	3 Nozzle to Safe-end Welds	Chicago Bridge & Iron	B-4698	NA	NA
5	16 Vessel Studs & Nuts	Chicago Bridge & Iron	B-4698	NA	NA
6	2 Vessel Head Patches	Chicago Bridge & Iron	B-4698	NA	NA
7	3 Piping Safe-end Welds	per attached Isometrics Ebasco	NA	NA	NA
8	87 Pipe Welds	per attached Isometrics Ebasco	NA	NA	NA
9	162 <2" Bolts	per attached Isometrics Ebasco	NA	NA	NA
10	22 Supports/Hangers	per attached Isometrics Ebasco	NA	NA	NA
11	8 >2" Bolts	Byron Jackson	671-S-1108	NA	NA
12	2 Valve Bodies	per attached Isometrics Ebasco	NA	NA	NA
13	32 Instrument Lines	Ebasco	NA	NA	NA

Note: Supplemental sheets in form of lists, sketches, or drawings may be used provided (1) size is 8½ in. x 11 in., (2) information in items 1 through 6 on this data report is included on each sheet, and (3) each sheet is numbered and the number of sheets is recorded at the top of this form.

FORM NIS-1 (back)

8. Examination Dates 7/12/78 to 10/7/78 9. Inspection Interval from 11/30/72 to 11/30/82

10. Abstract of Examinations. Include a list of examinations and a statement concerning status of work required for current interval.

See attached Page 3.

11. Abstract of Conditions Noted

See attached Page 5.

12. Abstract of Corrective Measures Recommended and Taken

See attached Page 5.

We certify that the statements made in this report are correct and the examinations and corrective measures taken conform to the rules of the ASME Code, Section XI, Summer 1975 Addenda and Summer 1976 Appendix III for Piping Examinations.

Date January 2 19 79 Signed Verminot Jenkins Newbold Owner William F. Conway Plant Superintendent

Certificate of Authorization No. (if applicable) DPR-28 Expiration Date December 11, 2007

CERTIFICATE OF INSERVICE INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State or Province of Conn. and employed by H.S.B. I+I of HTFd. Conn. have inspected the components described in this Owners' Data Report during the period 7/12/78 to 10/7/78, and state that to the best of my knowledge and belief, the Owner has performed examinations and taken corrective measures described in this Owners' Data Report in accordance with the requirements of the ASME Code, Section XI, Sum. 1975 Ad. & Sum. 1976 App. III for Piping Ex.

By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the examinations and corrective measures described in this Owners' Data Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date JAN. 02 19 79

Robert L. Smith Commissioners
Inspector's Signature

A.N.I. A.N.I.I.
Nat'l. Bd. 7933

National Board, State, Province and No.

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10. Abstract of Examinations

	<u>Category</u>	<u>No. of Components Examined</u>	<u>Examination</u>
Reactor	B	6 Closure Head Meridional Welds	UT
		1 Closure Head Circumferential Weld	UT
		2 Vessel Longitudinal Welds	UT
	C	1 Head to Flange Weld	UT
		1 Vessel to Flange Weld	UT
	D	8 Nozzle to Vessel Welds	UT
		9 CRD Penetrations & CRD Pressure Boundary Welds	VT
	F	3 Nozzle to Safe-end Welds	UT, PT, VT
	G-1	16 Reactor Vessel Studs and Nuts	UT, VT
		Corresponding Ligament Areas	UT
		16 Corresponding Bushings	VT
		32 Washers for Studs	VT
Piping	G-2	8 Flange Bolts and Corresponding Nuts	VT
	I	2 Vessel Head Cladding Patches	PT, VT
	F	3 Safe-end Welds	UT, PT, VT
		8 Flange Studs and Corresponding Nuts	VT
	J	54 Piping Welds	UT, VT
		2 Piping Welds	UT, PT, VT
		2 Piping Welds	VT, PT
		29 Piping Welds	PT
		32 Instrument Lines	VT
	K-1	2 Integrally Welded Supports	VT, PT
	K-2	14 Hangers and Supports	VT
Pumps	G-1	8>2" Bolts	VT
	K-1	2 Integrally Welded Supports	UT, PT, VT
		4 Integrally Welded Supports	PT, VT

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10. Abstract of Examinations (Cont'd)

	<u>Category</u>	<u>No. of Components Examined</u>	<u>Examination</u>
Valves	G-2	146 Bolts and Corresponding Nuts (in place)	VT
	M-2	2 Valve Bodies	VT

- NOTES:
1. In piping, Category J, weld F3B on Line CS-4A and weld F3B on Line CS-4B were inaccessible on one side for ultrasonic examinations so liquid penetrant examinations were performed.
 2. In piping, Category J, weld F4 on Line CS-4A and weld F4 on Line CS-4B were inaccessible for ultrasonic examinations so liquid penetrant examinations were performed.
 3. All examination procedures are Yankee Atomic Procedures except OP 4101 which is a Vermont Yankee Procedure.

Ultrasonic Examination Procedures

- YA-UT-1 Ultrasonic Examination - General Requirements
- YA-UT-2 Ultrasonic Examination of Vessels-Circumferential, Longitudinal, Meridional and Flange Welds
- YA-UT-4 Ultrasonic Examination of Vessels - Nozzle to Vessel Welds
- YA-UT-6 Ultrasonic Examination of Flange Ligaments
- YA-UT-7 Ultrasonic Examination of Volting
- YA-UT-8 Ultrasonic Examination of Reactor Closure Nuts
- YA-UT-9 Ultrasonic Examination of Piping - Ferritic Welds
- YA-UT-10 Ultrasonic Examination of Piping - Austenetic Welds
- YA-UT-11 Ultrasonic Examination of Piping - Dissimilar Metal Welds
- YA-UT-14 Ultrasonic Examination of Piping - Base Material and Weld Heat Affected Zones
- YA-UT-15 Ultrasonic Examination of Piping - Straight beam Method When Used for Weld and Heat Affected Zone Examination

Liquid Penetrant Examination Procedures

- YA-PE-2 Liquid Penetrant Examination

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-

10. Abstract of Examinations (Cont'd)

Visual Examination Procedures

YA-VT-1 Visual Examination Procedure

OP 4101, Rev. 7, RPV Operational Hydro Test

11. Abstract of Conditions Noted

During ultrasonic examination of nozzle to vessel weld N5A an indication was noted and recorded. In addition, several indications were found on nozzle to vessel weld N2C and were recorded. During ultrasonic examination of Reactor Vessel Head Longitudinal welds, indications were noted and recorded for welds B1, B5 and B6.

During visual examinations of valves, several recordable conditions were noted. During inspection of valve bolting (in place) on Valve V2-65B, slight corrosion was noted and recorded. An inspection of valve bodies, internal, revealed slight corrosion on Valve V10-46A and slight corrosion and wear on Valve V2-96A.

Liquid Penetrant Examination of weld F1 on the 2 inch CUW-19 line revealed a linear indication on the body of the tee. Visual and liquid penetrant examinations of integrally welded supports RR-80, RR-81 and RR-82 on recirculation pump P-18-1B revealed several indications on each of these supports.

During visual examination of hanger CU-8 on the CUW-18 line it was noted that the hanger was loose at the clevis.

Upon visual examination of support RHR-3, on the RHR A line, it was noted that a nut was missing from the pipe clamp bolting.

12. Abstract of Corrective Measures Recommended and Taken

The indication found on nozzle to vessel weld N5A is a plate lamination and falls within the acceptance criteria as defined in IWB-3511.2, therefore there was no need for further evaluation or additional examinations. The reflectors on nozzle to vessel weld N2C were small in size with no length and displayed no amplitudes that were recordable. All of the indications are acceptable.

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-

12. Abstract of Corrective Measures Recommended and Taken (Cont'd)

The indications noted on Reactor Vessel Head Welds B1, B5 and B6 all fell within acceptance criteria. No further examinations or evaluations are necessary.

The slight corrosion noted on Valves V2-65B and V10-46A and the slight corrosion and wear on Valve V2-96A were determined not to cause any deterioration of the components or degradation of the systems. No further evaluations or examinations are deemed necessary.

Indications found on weld F1 (CUW-19 line) and integrally welded supports RR-80, RR-81 and RR-82 were repair ground in accordance with Vermont Yankee Operating Procedures 6023 Rev. 4. Repairs were initiated and performed in accordance with MR 78-976 for weld F1 and MR 78-977 for integrally welded supports.

The bolting for the clevis on hanger CU-8 was tightened and the nut was replaced on support RHR-3.

NOTE: The referenced repair procedures and maintenance requests are filed at the plant site with the 1978 ISI paperwork.

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ISOMETRICS

Note: Visual examination performed on bolting of circled valves with the exception of valve V2-96A on the Feedwater "B" Line and valve V10-46A on the RHR "C" Line. A visual examination of the valve body was performed on these two valves.

LEGEND

○ SPRING HANGAR OR SUPPORT

⊕ INTEGRALLY WELDED SPRING HANGAR OR SUPPORT

⊥ RIGID HANGAR, SUPPORT OR RESTRAINT

⊕ INTEGRALLY WELDED RIGID HANGAR, SUPPORT OR RESTRAINT

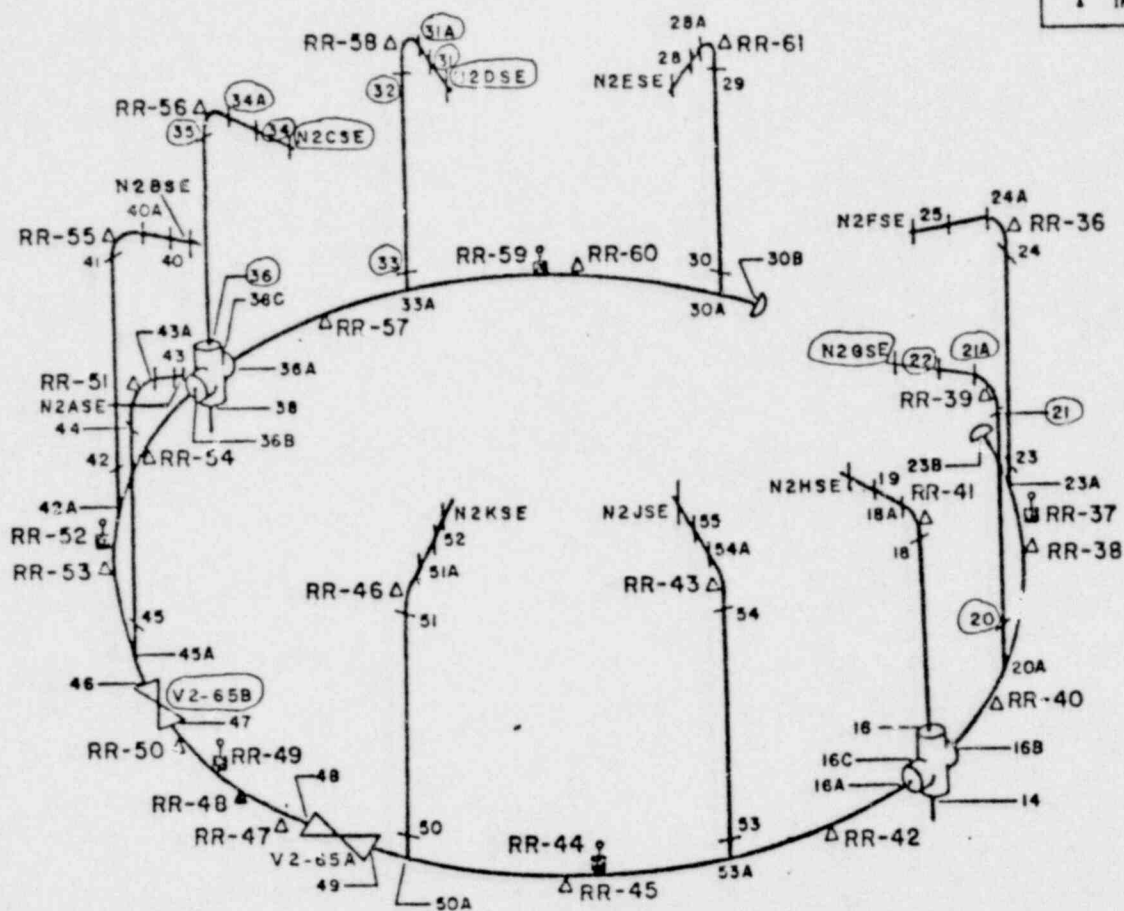
— SWAY BRACE

— INTEGRALLY WELDED SWAY BRACE

— SHOCK SUPPRESSOR

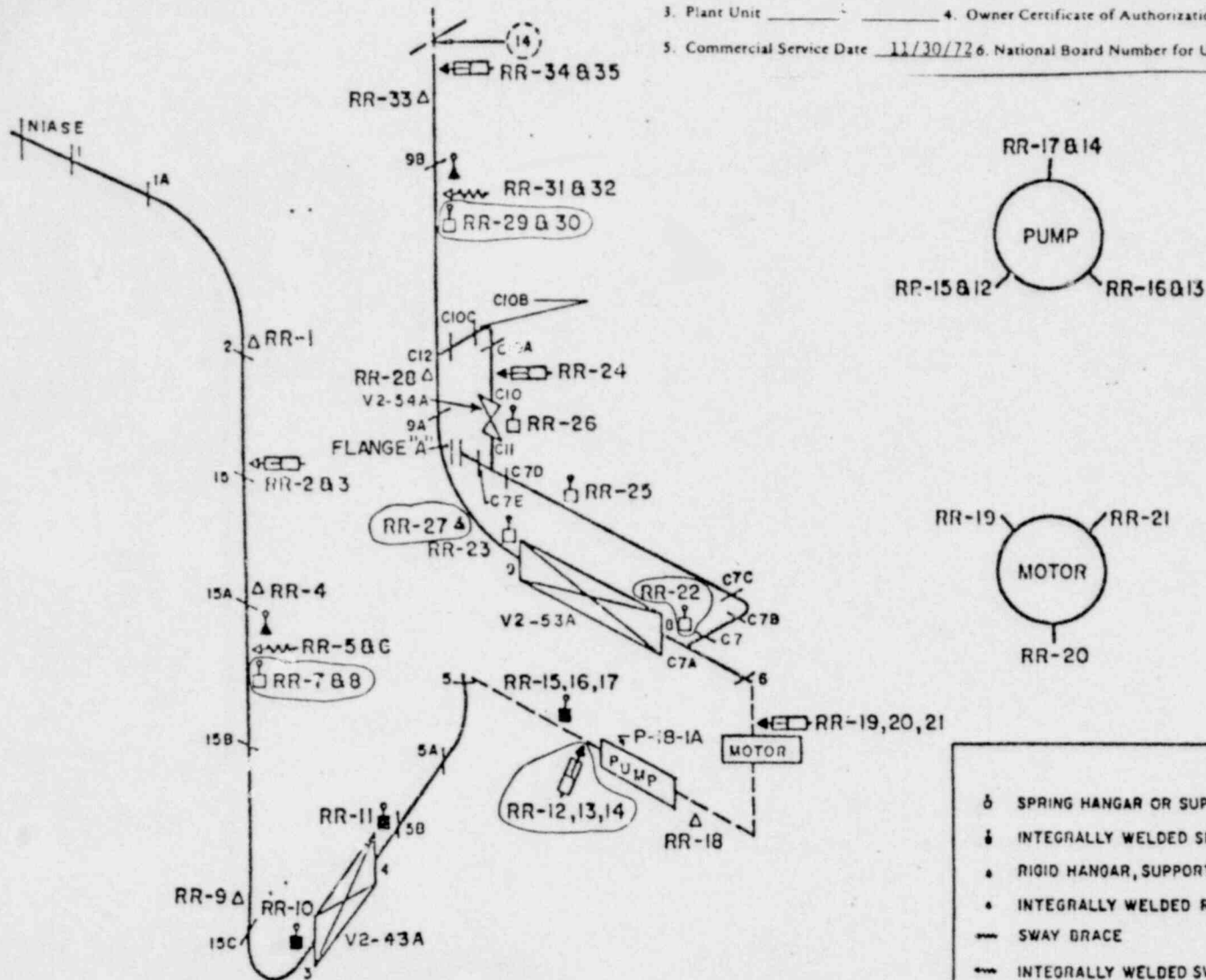
— INTEGRALLY WELDED SHOCK SUPPRESSOR

⊕ INTEGRALLY WELDED SHEAR BLOCKS



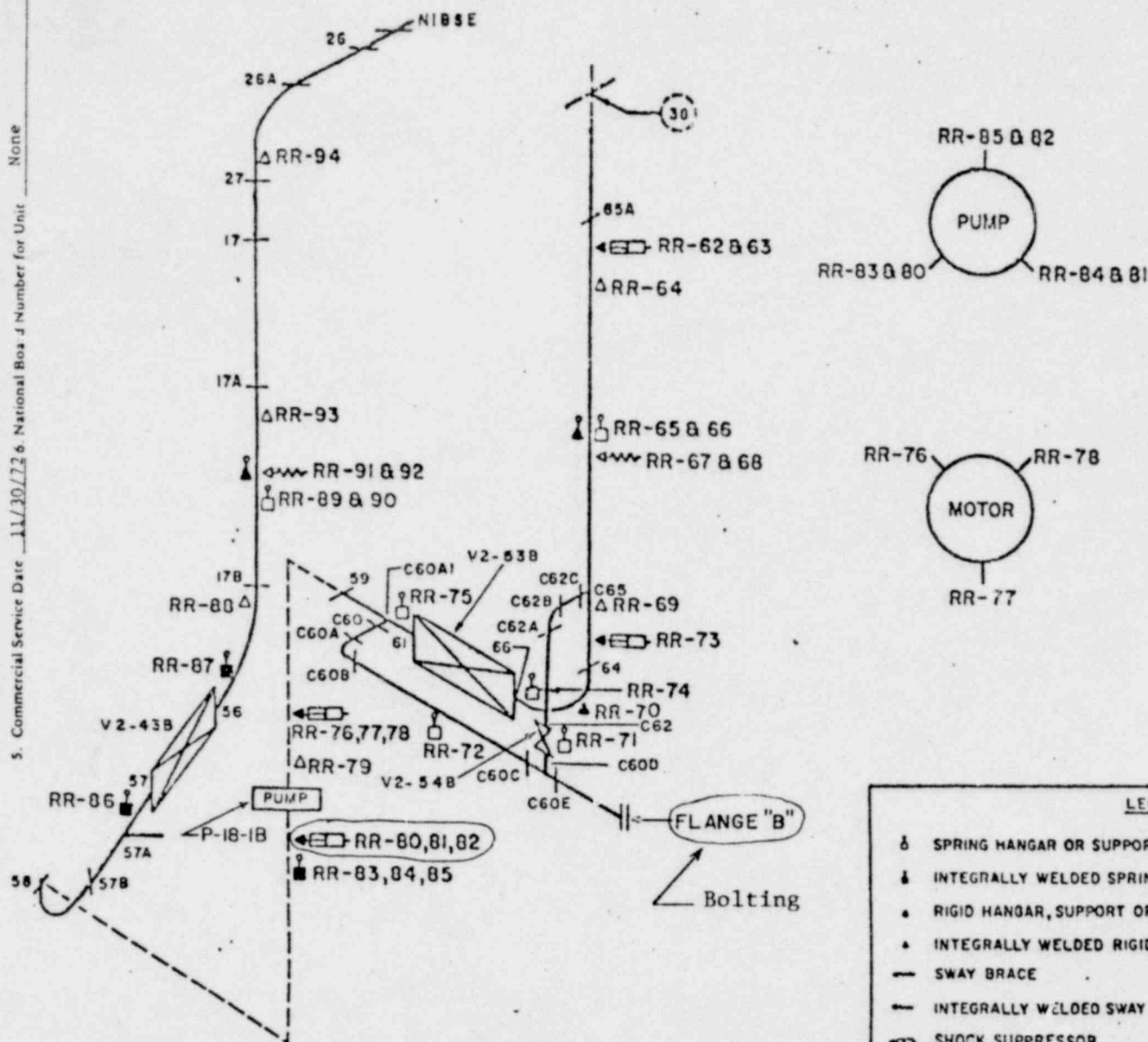
RECIRC RING HEADER & INLETS
REF EDASCO DWG. 5920-FS-133

1. Owner Vermont Yankee Nuclear Power Corp., 77 Grove St., Rutland, Vt. 05701
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RECIRC LOOP "A"

2. Plant Vermont Yankee Nuclear Power Station, P.O. Box 157, Vernon, Vt. 05354
(Name and Address of Plant)

3. Plant Unit 1 4. Owner Certificate of Authorization (if required) DPR-285. Commercial Service Date 11/30/72 6. National Board Number for Unit None

LEGEND

- 8 SPRING HANGAR OR SUPPORT
- 8 INTEGRALLY WELDED SPRING HANGAR OR SUPPORT
- 8 RIGID HANGAR, SUPPORT OR RESTRAINT
- 8 INTEGRALLY WELDED RIGID HANGAR, SUPPORT OR RESTRAINT
- SWAY BRACE
- INTEGRALLY WELDED SWAY BRACE
- 8 SHOCK SUPPRESSOR
- 8 INTEGRALLY WELDED SHOCK SUPPRESSOR
- 1 INTEGRALLY WELDED SHEAR BLOCKS

RECIRC LOOP "B"

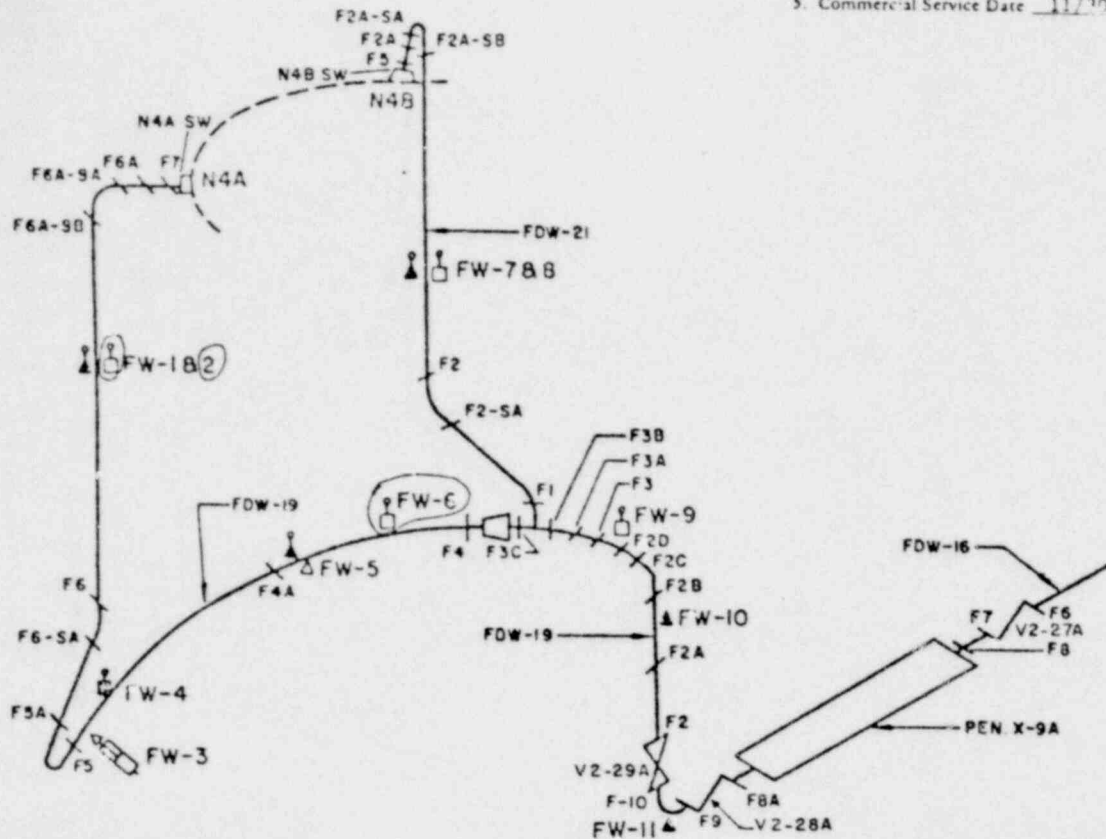
REF. EBASCO DWG. 5920-FS-I33

1. Owner Vermont Yankee Nuclear Power Corp., 77 Grove St., Rutland, Vt. 05701
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5. Commercial Service Date 11/20/72 6. National Board Number for Unit None

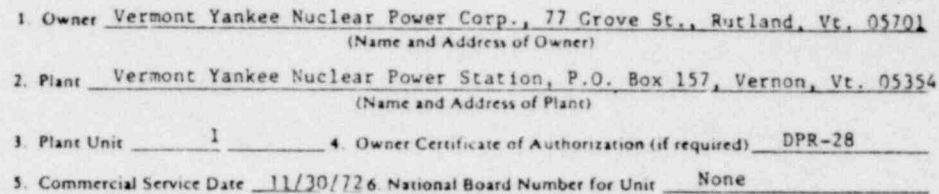


LEGEND

- 6 SPRING HANGAR OR SUPPORT
- 4 INTEGRALLY WELDED SPRING HANGAR OR SUPPORT
- 2 RIGID HANGAR, SUPPORT OR RESTRAINT
- 4 INTEGRALLY WELDED RIGID HANGAR, SUPPORT OR RESTRAINT
- SWAY BRACE
- INTEGRALLY WELDED SWAY BRACE
- SHOCK SUPPRESSOR
- INTEGRALLY WELDED SHOCK SUPPRESSOR
- 1 INTEGRALLY WELDED SHEAR BLOCKS

FEEDWATER PIPING LINE "A"

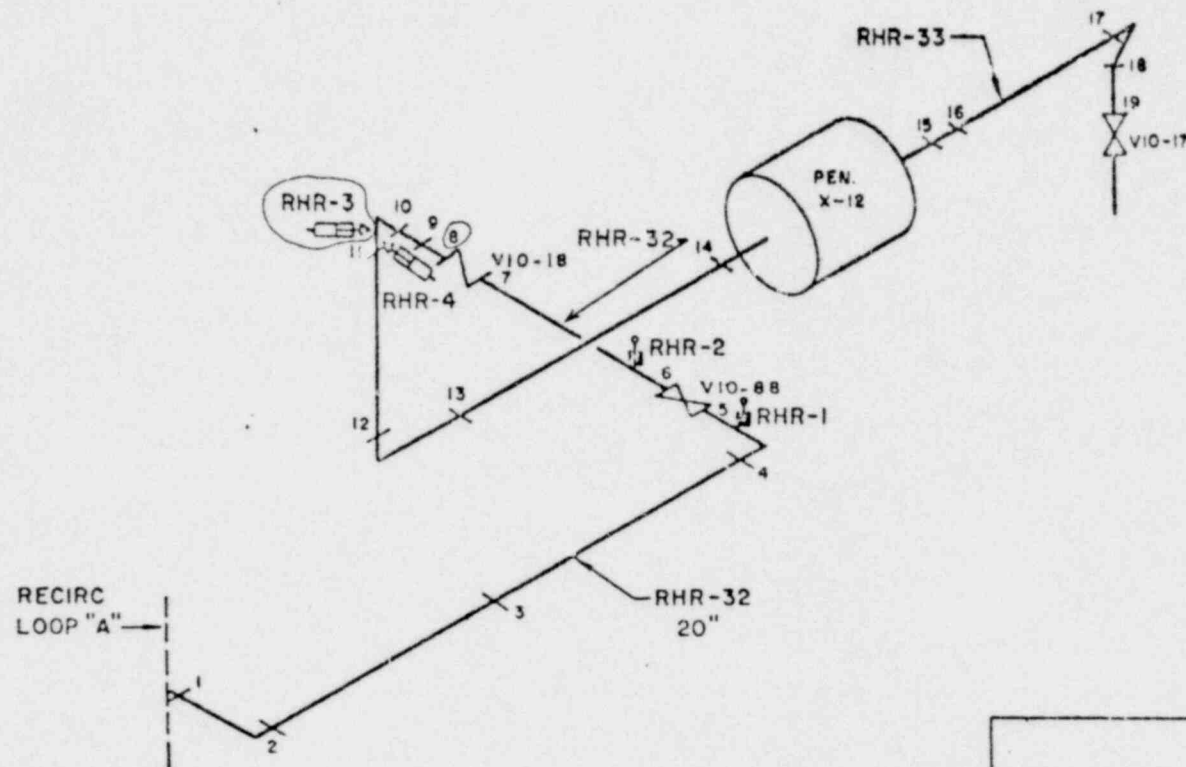
REF. EBASCO DWG 5920-FS-126



FEEDWATER PIPING LINE "B"

REF. EBASCO DWG. 5920-FS-126

1. Owner Vermont Yankee Nuclear Power Corp., 77 Grove St., Rutland, Vt. 05701
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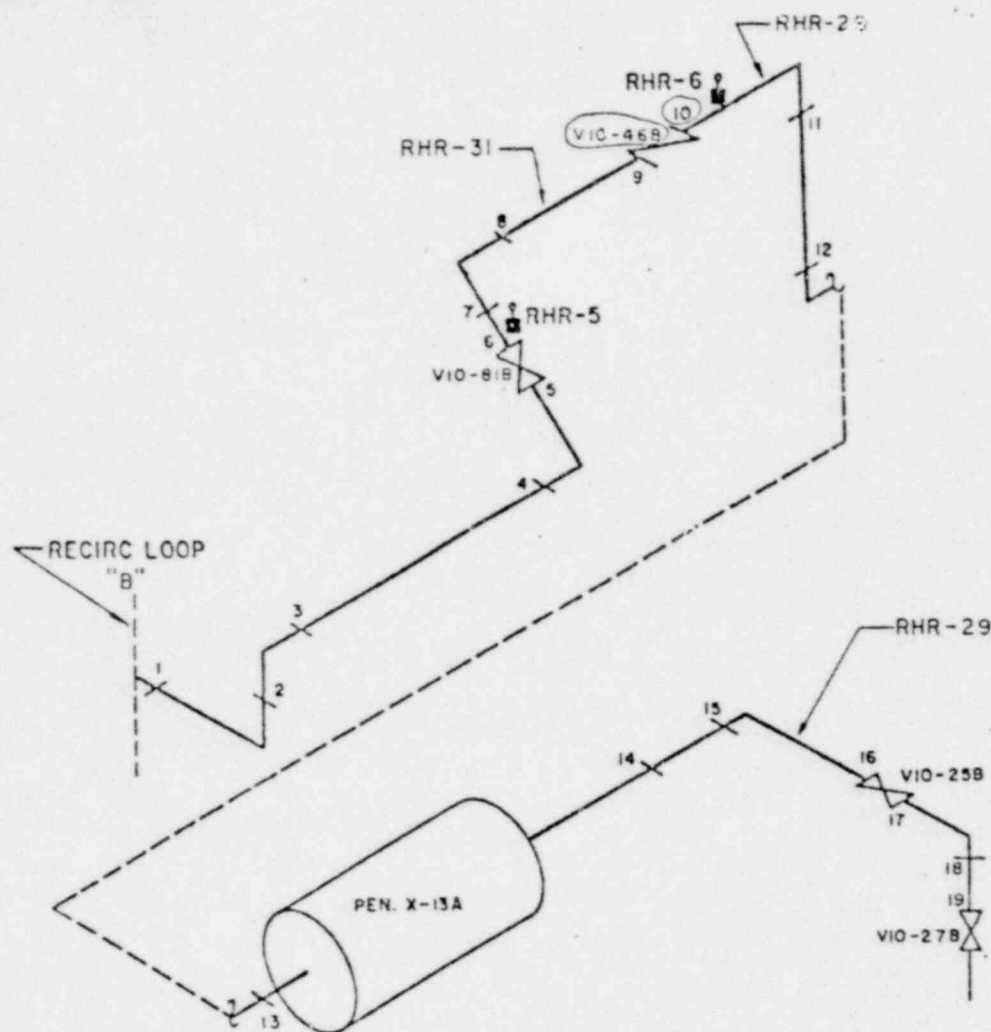


LEGEND

- △ SPRING HANGAR OR SUPPORT
- ▲ INTEGRALLY WELDED SPRING HANGAR OR SUPPORT
- RIGID HANGAR, SUPPORT OR RESTRAINT
- INTEGRALLY WELDED RIGID HANGAR, SUPPORT OR RESTRAINT
- SWAY BRACE
- INTEGRALLY WELDED SWAY BRACE
- SHOCK SUPPRESSOR
- INTEGRALLY WELDED SHOCK SUPPRESSOR
- INTEGRALLY WELDED SHEAR BLOCKS

RHR PIPING LINE "A"
REF. EBASCO DWG. 5920-FS-I43B

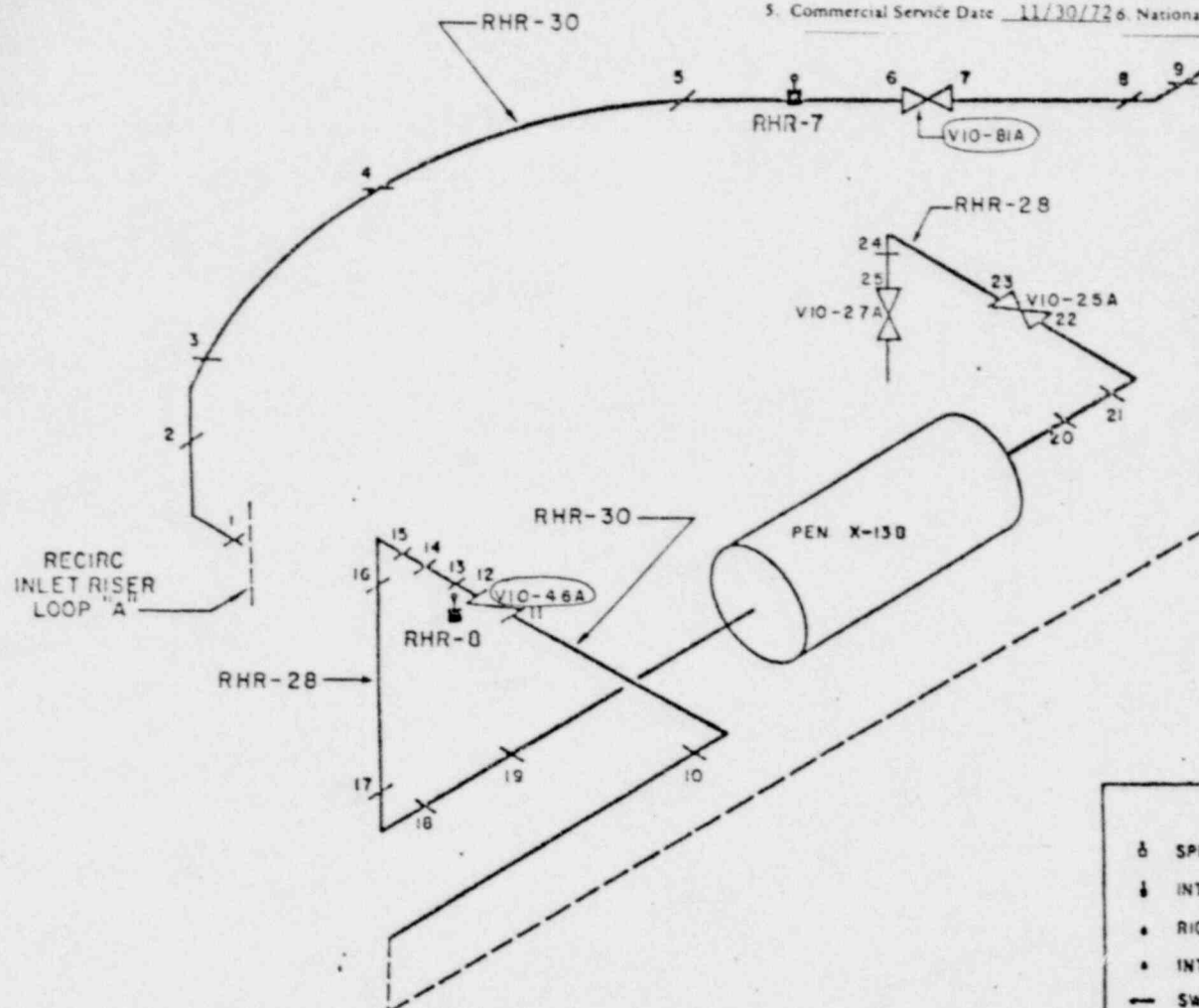
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LEGEND	
	SPRING HANGER OR SUPPORT
	INTEGRALLY WELDED SPRING HANGER OR SUPPORT
	RIGID HANGER, SUPPORT OR RESTRAINT
	INTEGRALLY WELDED RIGID HANGER, SUPPORT OR RESTRAINT
	SWAY BRACE
	INTEGRALLY WELDED SWAY BRACE
	SHOCK SUPPRESSOR
	INTEGRALLY WELDED SHOCK SUPPRESSOR
	INTEGRALLY WELDED SHEAR BLOCKS

RHR PIPING LINE "B"
 SEE BRASSO DWG 5000-ES-T43B

1. Owner Vermont Yankee Nuclear Power Corp., 77 Grove St., Rutland, Vt. 05701
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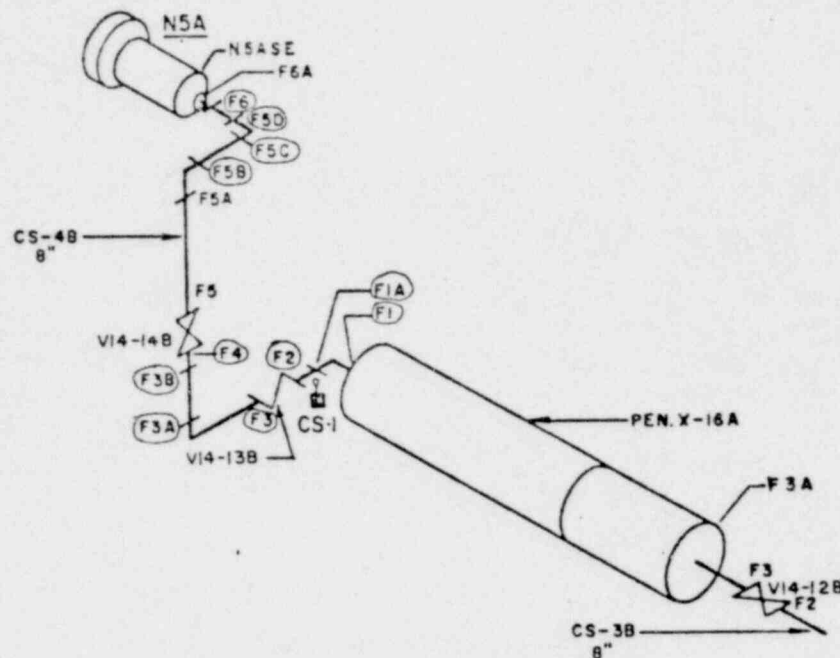


LEGEND

- ⊕ SPRING HANGAR OR SUPPORT
- ⊥ INTEGRALLY WELDED SPRING HANGAR OR SUPPORT
- RIGID HANGAR, SUPPORT OR RESTRAINT
- ⊥ INTEGRALLY WELDED RIGID HANGAR, SUPPORT OR RESTRAINT
- SWAY BRACE
- ⊥ INTEGRALLY WELDED SWAY BRACE
- ⊥ SHOCK SUPPRESSOR
- ⊥ INTEGRALLY WELDED SHOCK SUPPRESSOR
- ⊥ INTEGRALLY WELDED SHEAR BLOCKS

RHR PIPING LINE "C"
REF. E&ASCO DWG. 5920-FS-1430

1. Owner Vermont Yankee Nuclear Power Corp., 77 Grove St., Rutland, Vt. 05701
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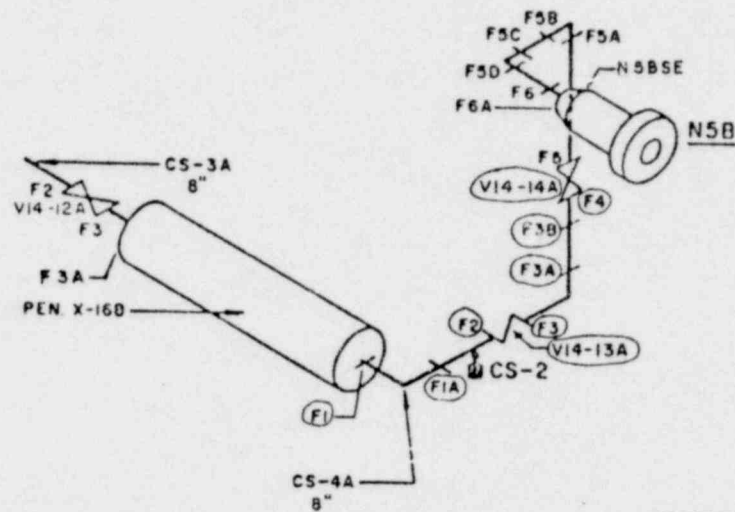


LEGEND

- ⊆ SPRING HANGAR OR SUPPORT
- ⊆ INTEGRALLY WELDED SPRING HANGAR OR SUPPORT
- ▲ RIGID HANGAR, SUPPORT OR RESTRAINT
- ▲ INTEGRALLY WELDED RIGID HANGAR, SUPPORT OR RESTRAINT
- SWAY BRACE
- INTEGRALLY WELDED SWAY BRACE
- ⊆ SHOCK SUPPRESSOR
- ⊆ INTEGRALLY WELDED SHOCK SUPPRESSOR
- ⊆ INTEGRALLY WELDED SHEAR BLOCKS

CORE SPRAY "A" SIDE
REF. EBASCO DWG 5920-FS-I49

1. Owner Vermont Yankee Nuclear Power Corp., 77 Grove St., Rutland, Vt. 05701
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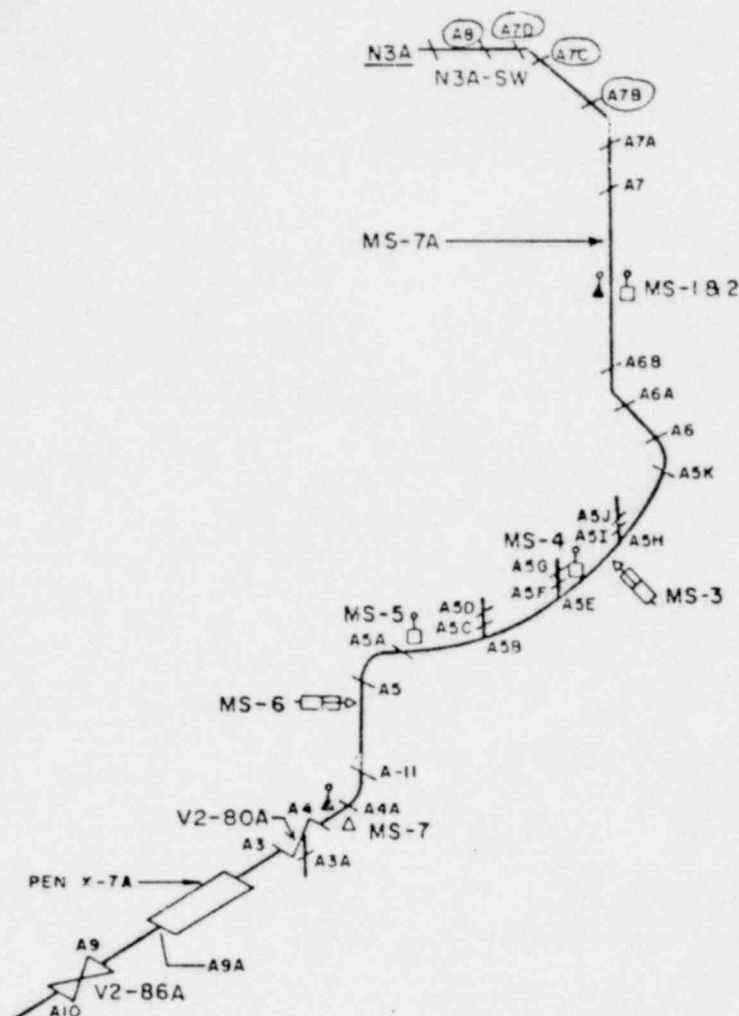
LEGEND

- ⊕ SPRING HANGAR OR SUPPORT
- ⊞ INTEGRALLY WELDED SPRING HANGAR OR SUPPORT
- ⬤ RIGID HANGAR, SUPPORT OR RESTRAINT
- ⬤ INTEGRALLY WELDED RIGID HANGAR, SUPPORT OR RESTRAINT
- SWAY BRACE
- INTEGRALLY WELDED SWAY BRACE
- ⊞ SHOCK SUPPRESSOR
- ⊞ INTEGRALLY WELDED SHOCK SUPPRESSOR
- ⊞ INTEGRALLY WELDED SHEAR BLOCKS

CORE SPRAY "B" SIDE

REF EDASCO DWG. 5920-FS-I49

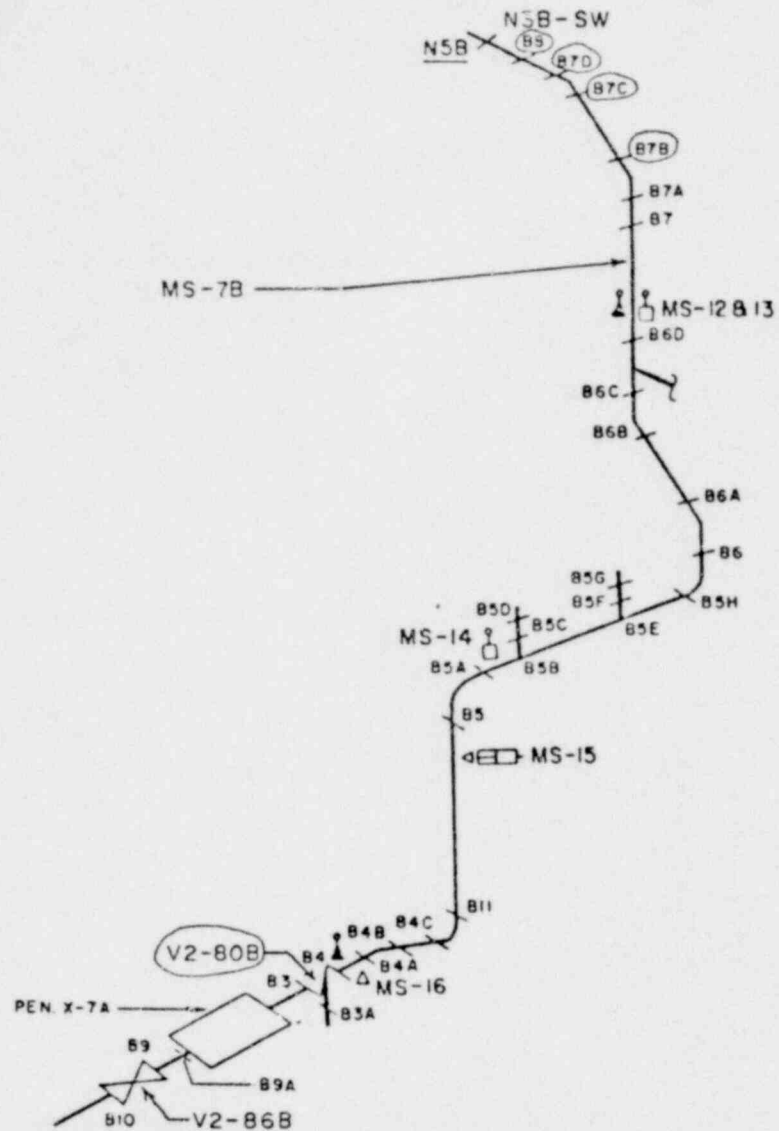
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LEGEND	
	SPRING HANGER OR SUPPORT
	INTEGRALLY WELDED SPRING HANGER OR SUPPORT
	RIGID HANGER, SUPPORT OR RESTRAINT
	INTEGRALLY WELDED RIGID HANGER, SUPPORT OR RESTRAINT
	SWAY BRACE
	INTEGRALLY WELDED SWAY BRACE
	SHOCK SUPPRESSOR
	INTEGRALLY WELDED SHOCK SUPPRESSOR
	INTEGRALLY WELDED SHEAR BLOCKS

MAIN STEAM LINE "A"
 REF. EBASCO DWG. 5920-FS-13

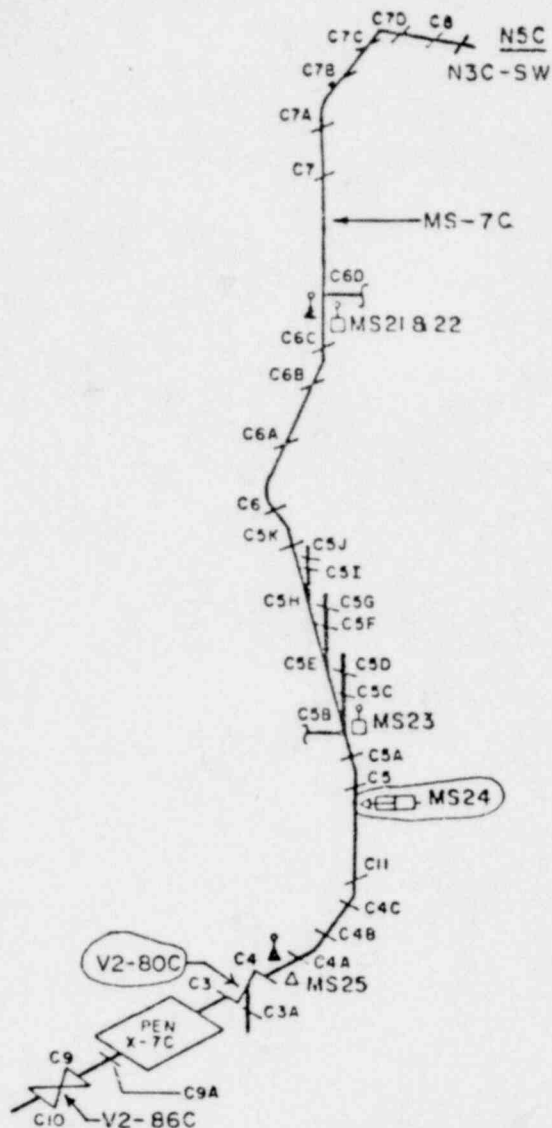
1. Owner Vermont Yankee Nuclear Power Corp., 77 Grove St., Rutland, Vt. 05701
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 5. Commercial Service Date 11/30/73 6. National Board Number for Unit None



LEGEND	
	SPRING HANGER OR SUPPORT
	INTEGRALLY WELDED SPRING HANGER OR SUPPORT
	RIGID HANGER, SUPPORT OR RESTRAINT
	INTEGRALLY WELDED RIGID HANGER, SUPPORT OR RESTRAINT
	SWAY BRACE
	INTEGRALLY WELDED SWAY BRACE
	SHOCK SUPPRESSOR
	INTEGRALLY WELDED SHOCK SUPPRESSOR
	INTEGRALLY WELDED SHEAR BLOCKS

MAIN STEAM LINE "B"
 REF EBASCO DWG. 5920-FS-13

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LEGEND

- ◻ SPRING HANGAR OR SUPPORT
- ◻ INTEGRALLY WELDED SPRING HANGAR OR SUPPORT
- ◻ RIGID HANGAR, SUPPORT OR RESTRAINT
- ◻ INTEGRALLY WELDED RIGID HANGAR, SUPPORT OR RESTRAINT
- SWAY BRACE
- INTEGRALLY WELDED SWAY BRACE
- ◻ SHOCK SUPPRESSOR
- ◻ INTEGRALLY WELDED SHOCK SUPPRESSOR
- ◻ INTEGRALLY WELDED SHEAR BLOCKS

MAIN STEAM LINE "C"

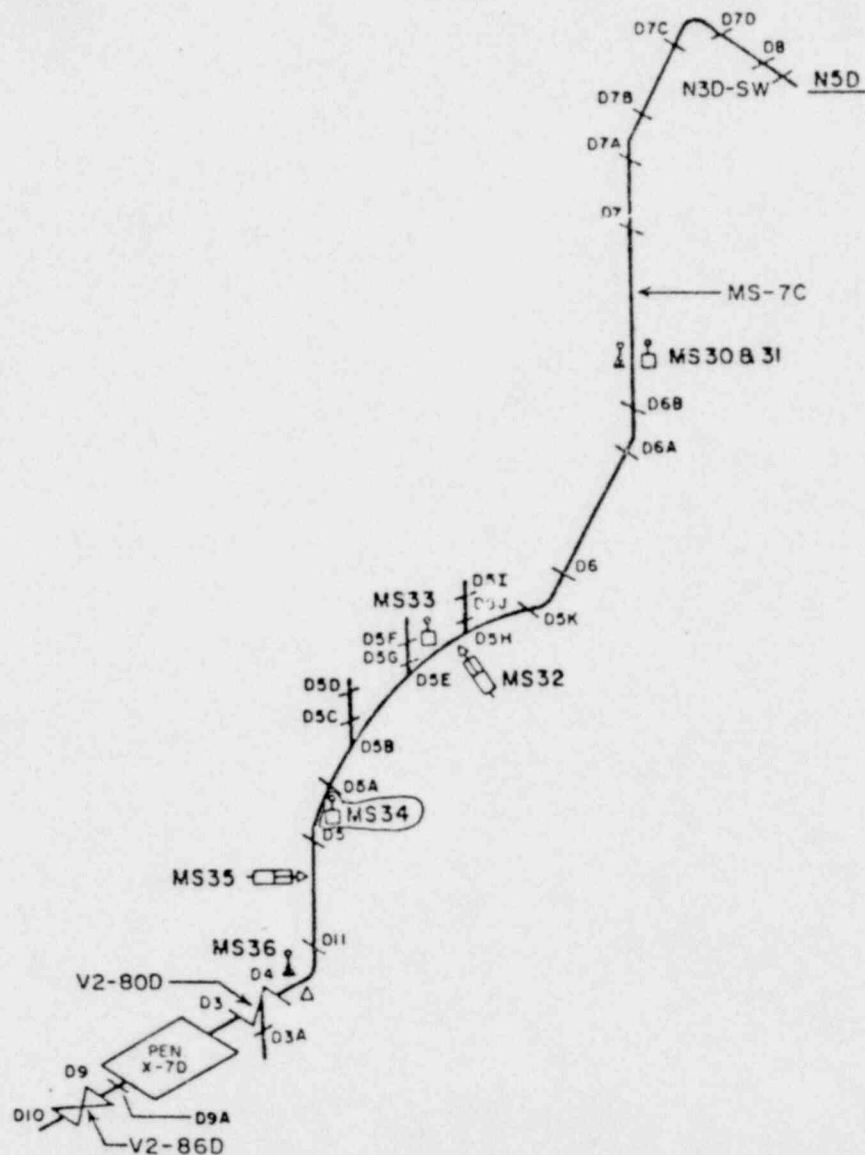
REF EBASCO DWG. 5920-FS-13

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2. Plant Vermont Yankee Nuclear Power Station, P.O. Box 157, Vernon, VT, 05354
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5. Commercial Service Date 11/30/76, National Board Number for Unit None



LEGEND

- Δ SPRING HANGAR OR SUPPORT
- ⬇️ INTEGRALLY WELDED SPRING HANGAR OR SUPPORT
- * RIGID HANGAR, SUPPORT OR RESTRAINT
- ⬆️ INTEGRALLY WELDED RIGID HANGAR, SUPPORT OR RESTRAINT
- SWAY BRACE
- INTEGRALLY WELDED SWAY BRACE
- ⬇️ SHOCK SUPPRESSOR
- ⬇️ INTEGRALLY WELDED SHOCK SUPPRESSOR
- ⬇️ INTEGRALLY WELDED SHEAR BLOCKS

MAIN STEAM LINE "D"
REF EBASCO DWG. 5920-FS-13

1. Owner Vermont Yankee Nuclear Power Corp., 77 Grove St., Rutland, Vt. 05701
(Name and Address of Owner)

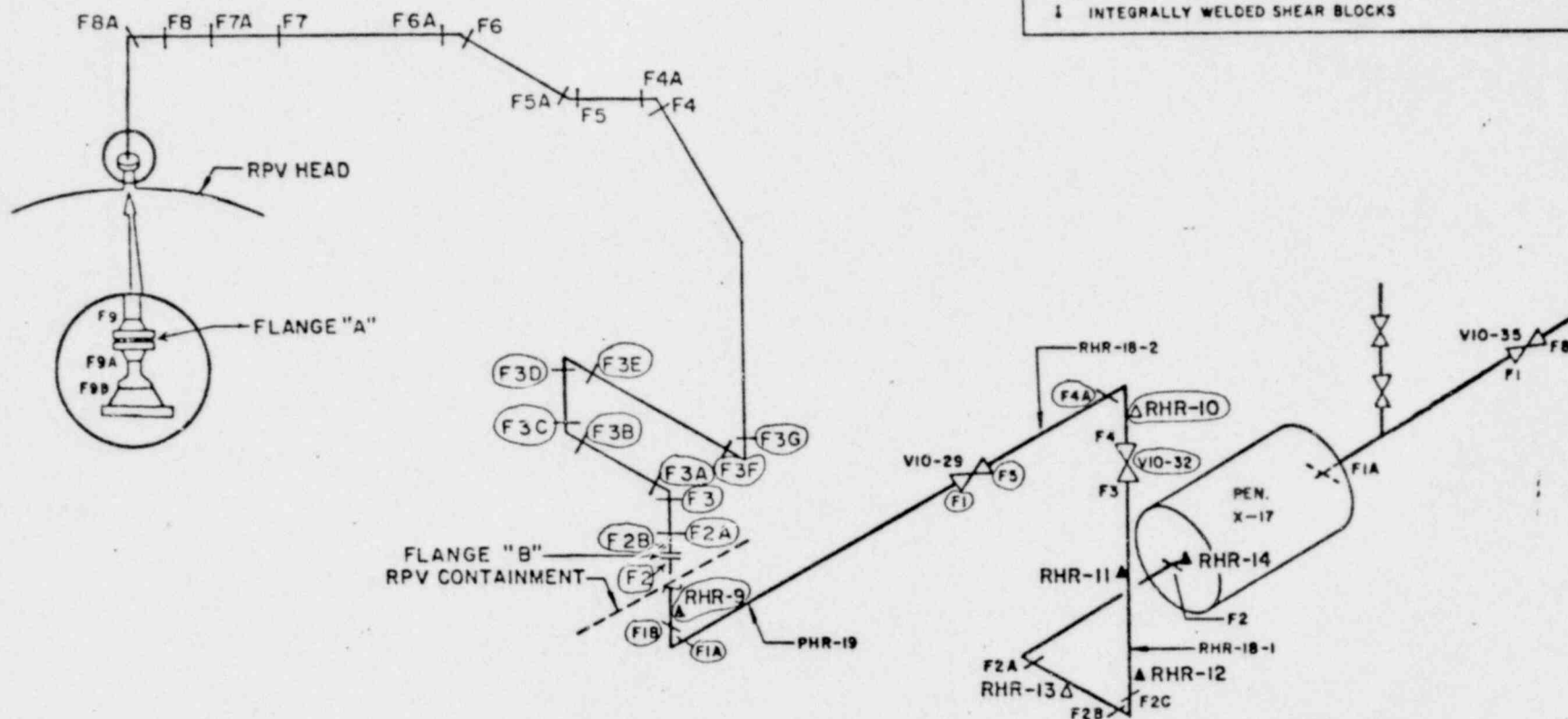
2. Plant Vermont Yankee Nuclear Power Station, P.O. Box 157, Vernon, Vt. 05354
(Name and Address of Plant)

3. Plant Unit 1 4. Owner Certificate of Authorization (if required) DPR-28

5. Commercial Service Date 11/30/72 6. National Board Number for Unit None

LEGEND

- △ SPRING HANGAR OR SUPPORT
- ⊥ INTEGRALLY WELDED SPRING HANGAR OR SUPPORT
- * RIGID HANGAR, SUPPORT OR RESTRAINT
- ▲ INTEGRALLY WELDED RIGID HANGAR, SUPPORT OR RESTRAINT
- SWAY BRACE
- INTEGRALLY WELDED SWAY BRACE
- SHOCK SUPPRESSOR
- INTEGRALLY WELDED SHOCK SUPPRESSOR
- ⊥ INTEGRALLY WELDED SHEAR BLOCKS



HEAD SPRAY PIPING

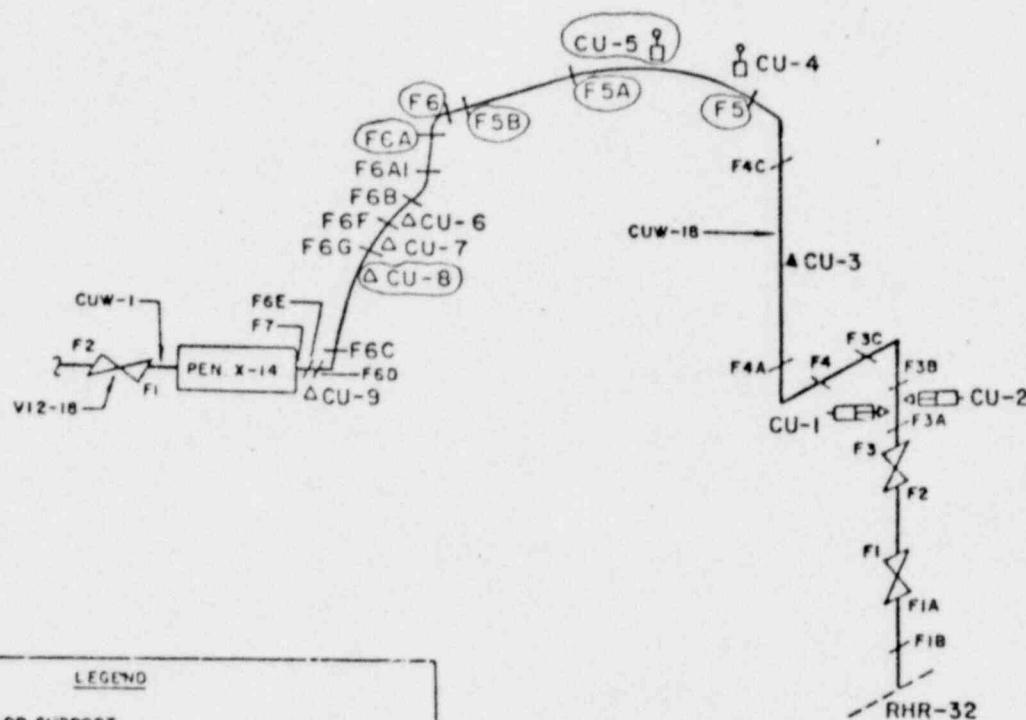
REF EBASCO DWG. 5920-FS-143B

1. Owner Vermont Yankee Nuclear Power Corp., 77 Grove St., Rutland, Vt. 05701
(Name and Address of Owner)

2. Plant Vermont Yankee Nuclear Power Station, P.O. Box 157, Vernon, Vt. 05354
(Name and Address of Plant)

3. Plant Unit 1 4. Owner Certificate of Authorization (if required) DPR-28

5. Commercial Service Date 11/30/73 6. National Board Number for Unit None

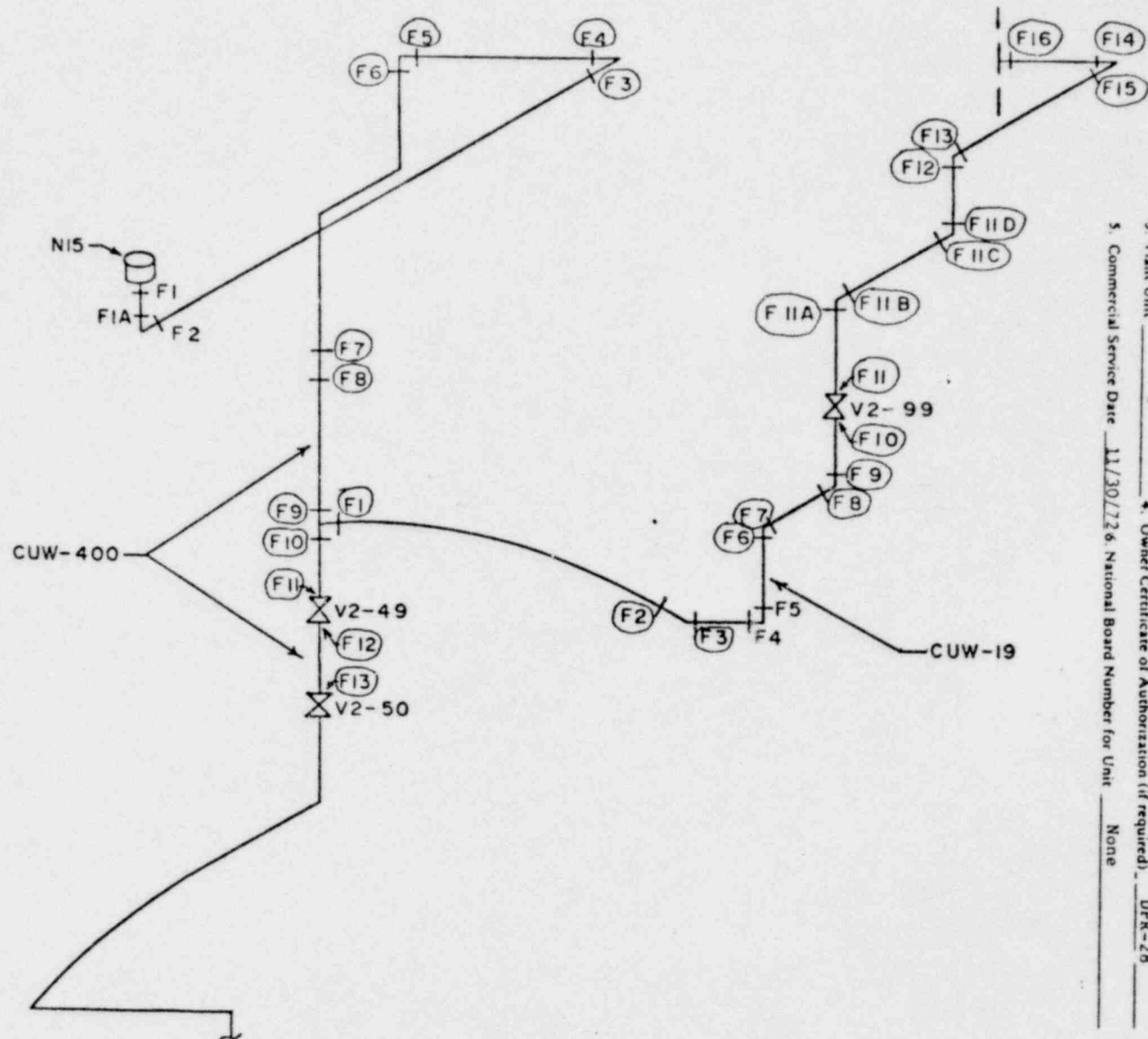


LEGEND

- Δ SPRING HANGAR OR SUPPORT
- ▲ INTEGRALLY WELDED SPRING HANGAR OR SUPPORT
- ▲ RIGID HANGAR, SUPPORT OR RESTRAINT
- ▲ INTEGRALLY WELDED RIGID HANGAR, SUPPORT OR RESTRAINT
- SWAY BRACE
- INTEGRALLY WELDED SWAY BRACE
- SHOCK SUPPRESSOR
- INTEGRALLY WELDED SHOCK SUPPRESSOR
- INTEGRALLY WELDED SHEAR BLOCKS

REACTOR CLEANUP DEMINERALIZER PIPING

REF. ERASCO DWG. 5920-FS-145

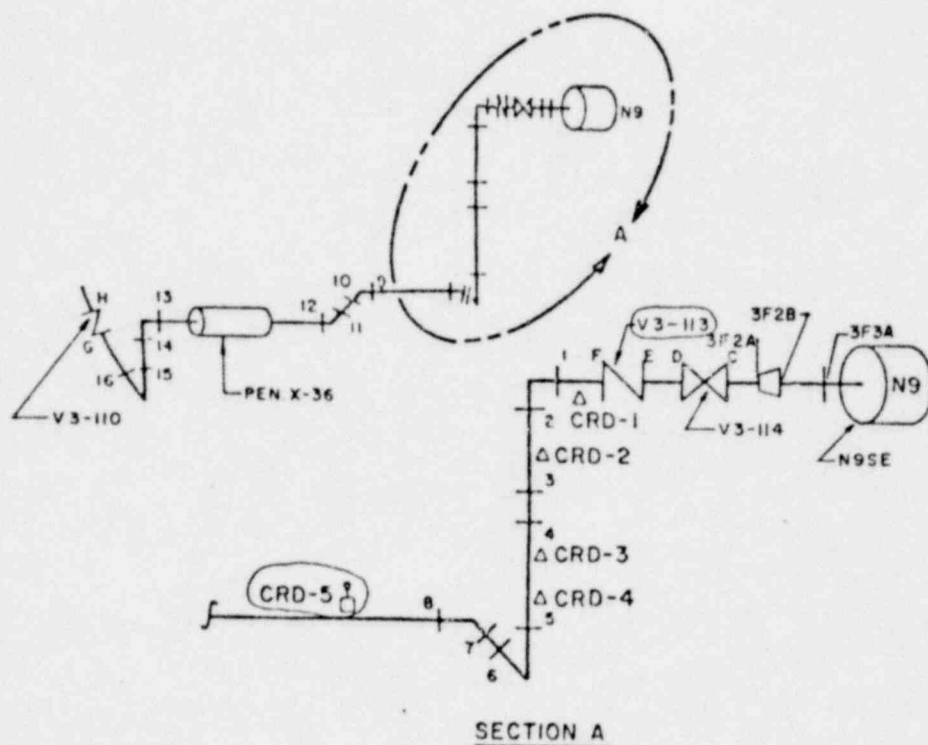


1. Owner Vermont Yankee Nuclear Power Corp., 77 Grove St., Rutland, Vt., 05701
(Name and Address of Owner)
2. Plant Vermont Yankee Nuclear Power Station, P.O. Box 157, Vernon, Vt., 05354
(Name and Address of Plant)
3. Plant Unit 1
4. Owner Certificate of Authorization (if required) DPR-28
5. Commercial Service Date 11/30/72, National Board Number for Unit None

REACTOR DRAIN LINE C UW-400 & C UW-19

REF. EBASCO DWG. 5920-FS-145

1. Owner Vermont Yankee Nuclear Power Corp., 77 Grove St., Rutland, Vt. 05701
 (Name and Address of Owner)
 2. Plant Vermont Yankee Nuclear Power Station, P.O. Box 157, Vernon, Vt. 05354
 (Name and Address of Plant)
 3. Plant Unit 1 4. Owner Certificate of Authorization (if required) DPR-28
 5. Commercial Service Date 11/30/76 National Board Number for Unit None



LEGEND

- Δ SPRING HANGAR OR SUPPORT
- ⊥ INTEGRALLY WELDED SPRING HANGAR OR SUPPORT
- ▲ RIGID HANGAR, SUPPORT OR RESTRAINT
- ⊥ INTEGRALLY WELDED RIGID HANGAR, SUPPORT OR RESTRAINT
- SWAY BRACE
- INTEGRALLY WELDED SWAY BRACE
- SHOCK SUPPRESSOR
- INTEGRALLY WELDED SHOCK SUPPRESSOR
- ⊥ INTEGRALLY WELDED SHEAR BLOCKS

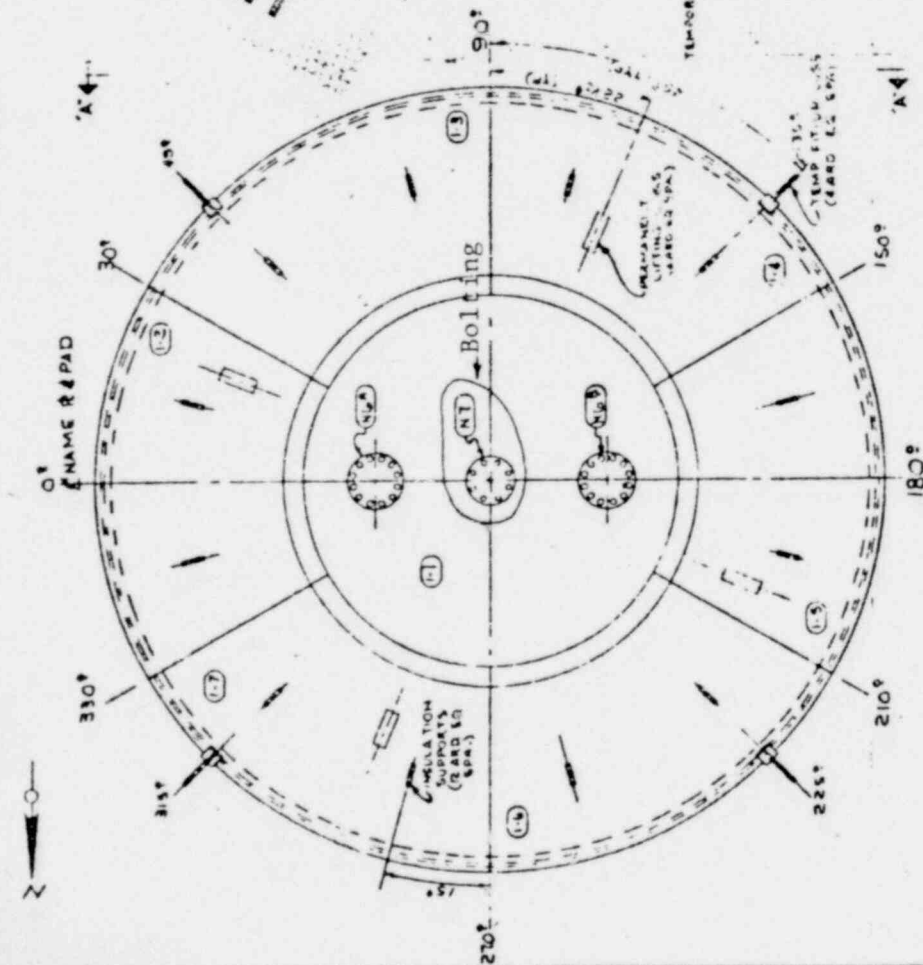
CRD RETURN PIPING

1. Owner Vermont Yankee Nuclear Power Corp., 77 Grove St., Rutland, Vt. 05701
(Name and Address of Owner)

2. Plant Vermont Yankee Nuclear Power Station, P.O. Box 157, Vernon, Vt. 05354
(Name and Address of Plant)

3. Plant Unit 1 4. Owner Certificate of Authorization (if required) DPR-28

5. Commercial Service Date 11/30/72 6. National Board Number for Unit None



PLAN VIEW

ITEM	DESCRIPTION	QTY	UNIT
1	OP HEAD SECTION	1	EA
2	VENT NOZZLE (SEE DWG 27)	1	EA
3	TEMP FIT UP LUGS (SEE DWG 45)	1	EA
4	INSULATION SUPPORTS (SEE DWG 45)	1	EA
5	NAME R4 PAD (SEE DWG 45)	1	EA
6	TEMP FIT UP LUGS (SEE DWG 45)	1	EA
7	INSULATION SUPPORTS (SEE DWG 45)	1	EA
8	NAME R4 PAD (SEE DWG 45)	1	EA
9	TEMP FIT UP LUGS (SEE DWG 45)	1	EA
10	INSULATION SUPPORTS (SEE DWG 45)	1	EA
11	NAME R4 PAD (SEE DWG 45)	1	EA
12	TEMP FIT UP LUGS (SEE DWG 45)	1	EA
13	INSULATION SUPPORTS (SEE DWG 45)	1	EA
14	NAME R4 PAD (SEE DWG 45)	1	EA
15	TEMP FIT UP LUGS (SEE DWG 45)	1	EA
16	INSULATION SUPPORTS (SEE DWG 45)	1	EA
17	NAME R4 PAD (SEE DWG 45)	1	EA
18	TEMP FIT UP LUGS (SEE DWG 45)	1	EA
19	INSULATION SUPPORTS (SEE DWG 45)	1	EA

SEE DWG 26 SEE DWG 27

TEMP NOT WELD TO HEAD

TEMP FIT UP LUGS (SEE DWG 45)

INSULATION SUPPORTS (SEE DWG 45)

NAME R4 PAD (SEE DWG 45)

TEMP FIT UP LUGS (SEE DWG 45)

INSULATION SUPPORTS (SEE DWG 45)

NAME R4 PAD (SEE DWG 45)

TEMP FIT UP LUGS (SEE DWG 45)

INSULATION SUPPORTS (SEE DWG 45)

NAME R4 PAD (SEE DWG 45)

TEMP FIT UP LUGS (SEE DWG 45)

INSULATION SUPPORTS (SEE DWG 45)

NAME R4 PAD (SEE DWG 45)

TEMP FIT UP LUGS (SEE DWG 45)

INSULATION SUPPORTS (SEE DWG 45)

NAME R4 PAD (SEE DWG 45)

TEMP FIT UP LUGS (SEE DWG 45)

INSULATION SUPPORTS (SEE DWG 45)

NAME R4 PAD (SEE DWG 45)

TEMP FIT UP LUGS (SEE DWG 45)

INSULATION SUPPORTS (SEE DWG 45)

NAME R4 PAD (SEE DWG 45)

TEMP FIT UP LUGS (SEE DWG 45)

INSULATION SUPPORTS (SEE DWG 45)

NAME R4 PAD (SEE DWG 45)

TEMP FIT UP LUGS (SEE DWG 45)

INSULATION SUPPORTS (SEE DWG 45)

NAME R4 PAD (SEE DWG 45)

CERTIFIED
by VENDOR
APPROVED
BY *[Signature]*
DATE 7-27-81
FOR

TELETRONIC CO
B - SAN JOSE
APR 28 42-514
EP# 2-1-1

ORIGINAL VESSEL RECORD
DATE 7-27-81
BY *[Signature]*
FOR

SUMMARY REPORT

1.0 INTRODUCTION

This report describes the inservice inspections performed during 1978 at the Vermont Yankee Nuclear Power Station, Vernon, Vermont. The examinations performed are those of the first outage of the second period of the first 10 year interval. The non-destructive examination procedures used for inservice inspection were in accordance with the ASME Boiler and Pressure Vessel Code, Section XI, "Rules for Inservice Inspection of Nuclear Reactor Coolant Systems," as referenced by the plant technical specifications. The areas subject to examination and the methods used were in accordance with the plant technical specifications. Pressure boundary welds, and integrally welded supports and adjacent base metal were examined as required by Section XI to the extent that the system design and non-destructive testing technology permitted. All limited scans are described in the data. This report summarizes the areas examined, the type of examinations, the results of the test data, evaluations and repairs. Manual ultrasonic testing techniques were employed in conjunction with visual and liquid penetrant examinations.

1.1 Examination Methods

All non-destructive examinations were performed in accordance with the procedures contained in the Yankee Atomic Electric Company, Engineering Guidelines, Book III, "Inservice Inspection NDE Procedures." The examination procedures were reviewed and

approved by personnel qualified to SNT-TC-1A Level III.

These procedures conform to the requirements of ASME Section XI (S-75) and the referenced parts of ASME Section V (S'75) except where these editions are in conflict with the technical specification requirements, i.e., for Category B-F and B-J, Section XI S'76 Addenda Appendix III and appropriate Acceptance Criteria. The inservice examinations were performed and evaluated by personnel qualified to the 1975 Edition of SNT-TC-1A.

The procedures used for these examinations are listed in Section 10 of the NIS-1 form.

1.2 Evaluation of Data

The examination results were reviewed at the site by personnel qualified to SNT-TC-1A Level III. Indications were evaluated to the acceptance standards as defined in the Vermont Yankee Nuclear Power Station Technical Specifications.

1.3 Examination Results

Summaries of all the examinations that were performed are contained in Sections 2, 3, and 4 of this report. The detailed examination data along with the calibration record, procedures, equipment certifications and personnel qualifications are maintained at the plant site.

2.0 SUMMARY OF EXAMINATIONS

This section summarizes the inservice inspection data for the 1978 refueling outage at Vermont Yankee Nuclear Power Station. For clarity, the results are summarized in accordance with the examination categories of Section XI.

2.1 Reactor Vessel Data

Category B-B - Longitudinal and Circumferential Reactor Vessel Welds

Closure head circumferential weld AB was examined ultrasonically from 4" left of weld B1 to 9" past B1. No recordable indications were found.

Closure head meridional welds, B1, B-2, B-3, B-4, B-5, B-6 were examined ultrasonically. The examination volume was defined by a surface distance of 5 inches. Recordable indications were found with straight beam (0°) techniques in welds B1, B5 and B6. Angle beam scans of 45° and 60° shear wave produced no indications. The indications were evaluated as spot type in the base metal adjacent to the weld. There was no through wall depth or measurable size. The amplitudes did not exceed 100% DAC.

Longitudinal welds D1 and D2 on the reactor vessel upper shell course were ultrasonically examined. Examination of D1 started 3" below weld CD and proceeded 1.5' toward weld DE. Examination of D2 started at weld CD and proceeded 1.5' toward weld DE. No recordable indications were found.

Category B-C - Head to Flange and Vessel to Flange Welds

The closure head to flange weld, BC, was examined ultrasonically starting at weld B5 (270^o Az) and continuing 90^o to 0^o, a distance of 14 feet. No recordable indications were found.

The vessel to flange weld, CD, was examined ultrasonically starting at Azimuth 180^o, 14 feet to approximately 260^o Azimuth. The scan was complete on the lower side of the weld, but limited to 2" of base metal on the upper side by the refueling bellows.

No recordable indications were found.

Category B-D - Nozzle to Vessel Welds

Ultrasonic examinations were performed on Reactor Vessel Nozzles. The nozzles examined were:

Recirc Inlet - N-2C, N-2D, N-2G

Main Steam - N-3A, N-3B

Core Spray - N-5A, N-5B

CRD Return - N9

The nozzle to vessel weld was examined during this outage. Nozzle inner radii will be examined during the 1979 outage.

Visual examination was performed on:

- (1) the accessible portions of the thermal sleeve of nozzle N-9 with underwater video cameras; and
- (2) nine (9) CRD penetrations and CRD pressure boundary welds during leak test.

Nozzle N-2C had recordable indications found with the straight beam scan on the vessel base metal adjacent to the weld. No indication exceeded 100% DAC. No indications were found using 45° and 60° shear techniques. All N-2C indications were spot type with no through wall depth.

Nozzle N-5A had a plate lamination adjacent to the weld of approximately 4 square inches. This was determined to be acceptable per IWB-3511.2 and Table IWB-3511.3.

No recordable indications were found in N-2D, N-3A, N-3B, N-5B, N-9, and CRD penetrations.

Category B-F - Nozzle to Safe End Welds

Reactor recirc. nozzle to safe end welds N2C-SE, N2D-SE and N2G-SE were examined through ultrasonic, visual and liquid penetrant methods. No recordable indications were found.

Category B-G.1 - Closure Studs

Sixteen (16) Closure Studs were examined ultrasonically and visually. There were no recordable indications.

Category B-G.1 - Closure Nuts

Sixteen (16) Closure Nuts were examined visually and ultrasonically. No recordable indications were found.

Category B-G.1 - Closure Washers and Bushings

Sixteen (16) sets of closure washers and corresponding bushings were visually examined. No recordable indications were found.

Category B-G.1 - Ligaments between Threaded Stud Holes

The flange ligaments between stud holes 12-17, 20-22, 36-39, 50-53, 58-60 were ultrasonically examined. No recordable indications were found.

Category G-2 - Pressure Retaining Bolting Less Than 2" Diameter

Visual examination was performed on eight (8) bolts and corresponding nuts of the (RHR-19) head spray flange. No recordable indications were found.

Category B-I-1 - Closure Head Cladding

Two (2) Closure Head patches were examined with liquid penetrant and visual methods. No recordable indications were found.

2.2 Piping Data

Category F - Safe End Welds

Ultrasonic, visual and liquid penetrant examinations were performed on the three (3) safe-end welds listed below:

- a. RHR piping Line "A" - Weld 8
- b. RHR piping line "B" - Weld 10
- c. Head Spray Piping - Line RHR-18-2 Weld F4A

No recordable indications were found.

Category G-2 - Pressure Retaining Bolting Less Than 2" Diameter

Visual examination was performed on bolting of flange B on Recirculation Loop "B" Line. Eight (8) studs and corresponding nuts were examined. No recordable indications were found.

Category J - Circumferential Pipe Welds

Visual examination was performed during system leak test on thirty-two (32) instrument lines, in accordance with reference drawings G191267-R4 and G191167-R15. No recordable indications were found.

Category J - Socket Welds

Twenty-nine (29) socket welds were examined by liquid penetrant methods on the following systems:

- a. Reactor Cleanup Piping (CUW-19) - 18 Welds
- b. Reactor Cleanup Piping (CUW-400)- 11 Welds

Examination of weld F1 on the 2" CUW-19 line revealed a linear indication on the body of the tee. The indication was due to original manufacturing. It was repair ground in accordance with Vermont Yankee Operating Procedure 6023 Rev. 4 (MR78-976). No recordable indications were found.

Category J - Circumferential Pipe Welds - 8" Core Spray Line

Visual and liquid penetrant examination was performed on two (2) welds of the CS-4B and CS-4A core spray line. Weld F4 on Core Spray "A" and weld F4 on Core Spray "B" were examined with no recordable indications.

Category J - Circumferential and Longitudinal Welds

Fifty-four (54) piping welds were visually and ultrasonically examined on the following systems:

- a. RHR-18-2 - 1
- b. RHR-19 - 14
- c. Main Steam MS-7A and MS-7B - 8
- d. Recirc. Risers (N2C, D, G) - 12
- e. Core Spray "A" and "B" - 14
- f. Reactor Cleanup (CUW-18) - 5
- g. Core Spray A&B - Welds F3B - 2
Also liquid penetrant exam.

No Recordable indications were found.

Category K-1 - Integrally Welded Supports

Two (2) integrally welded supports RR-27 (Recirc. Loop "A") and RHR-9 (Head Spray Piping, RHR-19) were examined with visual and liquid penetrant methods. No recordable indications were found.

Category K-2 - Hangers and Supports

Fourteen (14) hangers and supports were visually examined in the following systems:

- a. Recirc. Loop "A" - 5
- b. Main Steam -
- c. Feedwater "A" - 2
- d. RHR Line "A" - 1
- e. Reactor Cleanup Line - 2
- f. CRD Return - 1
- g. Head Spray Line - 1

Examination revealed hanger CU-8 on the CUW-18 line was loose at the clevis. Also, it was noted that a nut was missing from the pipe clamp bolting on RHR-3 support (RHR A Line). The bolting for the clevis on hanger CU-8 was tightened and the nut was replaced on support RHR-3.

2.3 Pumps

Category G-1 - Pressure Retaining Bolting Less Than 2" Diameter

All bonnet bolting on Recirculating Pump P-18-18 was examined visually. No reportable indications were found.

Category K-1 - Integrally Welded Supports

Two (2) integrally welded supports, RR80 and RR 81, on pump P-18-1B were examined through ultrasonic, visual and liquid penetrant methods. Visual and liquid penetrant examination of support RR82 was also performed. The liquid penetrant and visual examinations revealed several indications on each of these supports; however, no indications were in the pump pressure boundary. Indications were evaluated as original manufacturing defects. They were repair ground in accordance with Vermont Yankee Operating Procedures 6023 Rev. 4 and MR 78-977.

Three (3) integrally welded support RR-12, RR-13 and RR-14 were examined through visual and liquid penetrant methods on recirculation pump (P-18-1A). No recordable indications were found.

2.4 Valves

Category G-2 - Pressure Retaining Bolting Less Than 2" Diameter

Visual examination was performed on 146 bolts and corresponding nuts on the following valves:

<u>System</u>	<u>Valve</u>	<u>Bolts, Studs, & Nuts</u>
a. Recirc. Header	V2-65B	24
b. CRD	V3-113	16
c. Head Spray	V10-32	2
d. Core Spray "B"	V14-13A	16
e. Core Spray "B"	V14-14A	4
f. RHR "B"	V10-46B	24
g. Main Steam "C"	V2-80C	18
h. Main Steam "B"	V2-80B	18
i. RHR "C"	V10-81A	24

Slight corrosion and light surface rust were noted and recorded on valve V2-65B.

There was no evidence of component degradation. The components were found acceptable with no further action required.

Category M-2 - Valve Bodies

Visual examination was performed on two (2) valve bodies in the following systems:

- a. Feedwater Piping Line "B" - V2-96A
- b. RHR Piping Line "C" - V10-46A

Light rust was noted and recorded on valve bodies V2-96A and V10-46A. It was determined that no degradation to the primary pressure boundary was evident. The components were found acceptable with no further action required.

3.0 SYSTEM PRESSURE TEST

The reactor coolant system was given a system pressure leak test per Vermont Yankee OP4101. No leakages (other than normal controlled leakage) were detected on the final system leak test.

4.0 CONCLUSIONS

The examinations performed during this outage begin the second period of the first interval. The 1979 outage will complete the second period.

There are no unacceptable conditions.