

Vermont Yankee
Piping F.A.C. Inspection Program
Small Bore Piping
Component Selection Review

Prepared By Vermont Yankee Design Engineering, Mechanical/Structural Group

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U.S. NUCLEAR REGULATORY COMMISSION
In the Matter of Energy Nuclear Vermont Yankee LLC
Docket No. 50-271 Official Exhibit No. E4-42-V4
OFFERED by Applicant/Licensee Intervenor _____
NRC Staff _____ Other _____
IDENTIFIED on 7/23/08 Witness/Panel NEC4
Action Taken: ADMITTED REJECTED WITHDRAWN
Reporter/Clerk MAC

V.Y. Piping F.A.C. Inspection Program - Small Bore Component Selection Review

Introduction / Purpose

The purpose of this paper is to document and to formalize the process used in the selection of small bore piping components to be considered as susceptible to wall thinning due to flow accelerated corrosion (FAC).

Small bore piping locations identified as susceptible to FAC are comprised of either single piping components or groups of components (straight pipes, elbows, reducers, & tees, etc.). The susceptible locations are identified using the Vermont Yankee Piping & Instrumentation Diagrams (P&IDs) and screening criteria listed in this paper.

The locations identified on the P&IDs will be included in a data base of susceptible piping components. These will be considered for inspection under the Vermont Yankee Piping Flow Accelerated Corrosion (FAC) Inspection Program.

Most small bore piping is original plant equipment and has been in service since 1972. The majority of this piping is carbon steel. Given approx. 27 years of service, high wear locations should have made themselves evident. However, some sections of small bore piping have been replaced during equipment replacement and/or repairs.

Inspection data for small bore components prior to 1992 may be available, but there has been no dedicated data base which documents and trends small bore replacements. A detailed search of Maintenance work orders records will be required to obtain this information. Inspections of small bore components performed under the Piping FAC Program began in 1992. Since then approximately 83% of the small bore lines identified as susceptible to FAC have been inspected. Some have multiple inspections. Small bore inspections of the data base locations will continue until all locations are either inspected or judged as not susceptible to FAC damage.

For the Piping FAC Inspection Program, long term tracking of wear in small bore piping will not generally be performed. CHECWORKS modeling and evaluations will not typically be performed for small bore piping. Given the cost of performing inspections, components and attached piping which exhibit FAC damage will preferably be replaced with FAC resistant materials.

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Small Bore Piping: Susceptible System Selection:

Small bore lines, 2-1/2 inch nominal diameter and smaller are included in the program based on industry and plant experience, possible effects on personnel safety, consequences to plant availability, and possible negative effects to the plant licensing basis.

(Example: a small steam leak in the Reactor Building may adversely effect the fire protection systems and/or electrical equipment in the EQ program).

Criteria for inclusion:

1. Piping diameter 2-1/2" nominal or less. (Note: some 3" segments are included).
2. Design Pressure > 275Psi. and/or Design Temperature > 200°F
3. Piping Material Chrome Content < 5%.
4. Steam Quality < 99%
5. System in use > 2% of Plant Operating Hours (Note: systems in use < 2% of plant operating hours are not automatically excluded).
6. Consequences of leak or failure on personnel safety and plant operation.

Results:

A review of the VY P&ID's using the criteria above, shows portions of the following systems may be susceptible to FAC:

<u>System</u>	<u>Symbol</u>	<u>P&ID's</u>
Auxiliary Steam	AS	G191156, 33600-A217(AOG by Suntac)
Main Steam Drains	MSD	G191156, G191157, G191169, G191174
Extraction Steam	ES	G191156
Condensate	C	G191157
Heater Vents	HV	G191158
Control Rod Drive	CRD	G191170
Reactor Water Cleanup	CUW	G191178
Heating Steam	HS	G191254
Turbine Steam Seal & Leakoff Lines	(various)	5920-224(by GE)

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Small Bore Piping: Identification of Susceptible Piping Components

The following criteria are used to identify Small bore piping components or groups of components susceptible to FAC.

1. The implications of a failure of the line or component on personnel safety, plant availability, and possible negative effects to the plant licensing basis. Priority should be given to sections of piping that cannot be readily isolated.
2. Observed fluid leakage through normally closed valves or blow by in steam traps during operation as indicated in plant work orders and/or the turbine performance monitoring system.
3. Data from previous inspections and continued monitoring of components which have been replaced with either carbon or low alloy steels.
4. Generic Industry Experience (IE) Components which are locations in plant piping systems that have experienced failures and/or have been found to exhibit wall thinning due to FAC. Industry Experience Components include but are not limited to:
 - Downstream of flow control valves.
 - Downstream of orifices and/or flow meters.
 - Upstream and downstream of steam traps.
 - Drain and vent connections to large bore piping or components with two-phase flow.
 - Last two changes in direction prior to entering the condenser. (i.e. 90 & 45 degree elbows, reducers, orifices, or globe valves).
 - Events at other plants such as piping failures.
 - Inspection experience from other plant inspection programs, available through the CHECWORKS Users Group (CHUG).

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Identification of Small bore components

Not all small bore piping will be inspected under the program, only the specific small bore locations identified in the Small Bore Data Base. Each location identified has been given a unique point number. The data base is a master list of all small bore locations to be included in the Piping FAC Inspection Program. Locations include the components (valves, steam traps, orifices, etc.) and the adjacent piping and fittings upstream and/or downstream of the components. Additional locations will be included into the database as warranted.

Over time multiple inspections may be performed at the same location (data point). The convention established in 1992 will be used to identify previous inspection data and will be included in the data base.

During each refueling outage the small bore locations inspected will be identified as follows: Each location will be given a unique identifier in the form of:

"YR-SBxx"

- where:
- YR** - is the year the location is inspected.
 - SB** - denotes small bore piping (less than 2-1/2" diameter).
 - xx** - a number assigned to the location by the FAC Program Coordinator

Example: **93-SB04**

Small Bore Inspection Location Sketches identifying the location in the plant and the components inspected at each location will be included in the UT inspection report. Details of any grids used, and other data required to identify and/or interpret the inspection data will also be included in each inspection report.

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References

- (a) V.Y. Piping Flow Accelerated Corrosion Inspection Program, Revision 2, dated 3/7/95.
- (b) EPRI Report NSAC-202L-R2, "Recommendations for an Effective Flow-Accelerated Corrosion Program."

Documentation

Original marked up P&IDs, Isometrics and piping dwgs, used in the review are in the possession of the FAC Program Coordinator.

Small Bore Component Location Sketches: are located with the UT inspection reports permanently stored with the ISI records.

VY Piping FAC Inspection Program: Small Bore Data Base - (attached pages 7 to 15)

Drawing List:

1. G191167, Flow Diagram – Nuclear Boiler, Revision 62
2. G191156, Flow Diagram – Main, Extraction and Auxiliary Steam Systems, Revision 29
3. G191169 Sheets 1 & 2, High Pressure Coolant Injection System, Revisions 40 & 36
4. G191174 Sheets 1 & 2, Reactor Core Isolation Cooling System, Revision 36 & 23
5. G191158, Flow Diagram – Heater Drain and Vent system, Revision 23
6. 33600-A217, Flow Diagram – Turbine Building Area, AOG, Revision 17
7. 5920-224, Diagram of Steam Seal Piping, Revision 9

VY PIPING FAC INSPECTION PROGRAM - SMALL BORE INSPECTION LOCATIONS
Revision 1, 12/6/1999

PT.	PREV. INSPECT. No.	SYSTEM	DESCRIPTION	LOCATION	DRAWINGS	COMMENTS	SIZE	SCH.	Tnom inch	T min inch
1.	93-SB01	MSD	1" Pipe & Fittings D.S. of valve M-33	Rx. Bldg. Torus Area	G191167	MS-33(N.C.)labeled as orifaced valve.	1"	160	.250	.053
2	93-SB02 95-SB01	MSD	1" Pipe & Fittings D.S. of steam trap ST60-3.	Rx. Bldg. Torus Area	G191167	Normal flow to condenser is thru ST60-3. (dp=965psi)	1"	160	.250	.053
3	93-SB03	MSD	1" piping D.S. of LCV-2-143	Rx. Bldg. Torus Area	G191167	Mn Steam strainer ST60-3 blow down. (dp=965psi)	1"	160	.250	.053
4	93-SB04	MSD	3" & 2½" MSD D.S. of valve MS-79 (3"-MSD-4)	Rx. Bldg. Torus Area	G191167	N.C. valve (dp=965psi)	3" 2½"	160 160	.438 .375	0.141 0.116
5	93-SB05	MSD	3" MSD-4 U.S. of Condenser A. Nozzle 67	T. B. - Heater Bay	G191156	IE	3"	160 STD	.438 .216	0.141 0.141
6	93-SB06	MSD	1" & 2½" MSD-7A D.S. of steam trap, ST-60-2A	T. B. - Heater Bay	G191156	IE	1" 2-1/2"	160 160	.250 .375	.053 .116
7	93-SB07	MSD	1" & 2½" MSD-8A @ LCV-38A.	T. B. - Heater Bay	G191156	IE	1" 2½"	160 160	.250 .375	.053 .116
8	95-SB03	MSD	1" & 2½" MSD-7B D.S. of steam trap, ST-60-2B.	T. B. - Heater Bay	G191156	IE	1" 2-1/2"	160 160	.250 .375	.053 .116
9	95-SB04	MSD	1" & 2½". MSD-8B @ LCV-38B.	T. B. - Heater Bay	G191156	IE	1" 2½"	160 160	.250 .375	.053 .116
10	93-SB09	MSD	1"&2½" MSD-7C D.S. of steam trap ST60-2C.	T. B. - Heater Bay	G191156	IE	1" 2-1/2"	160 160	.250 .375	.053 .116
11	93-SB10 95-SB02	MSD	1" & 2½" MSD-8C @ LCV-38C.	T. B. - Heater Bay	G191156	IE	1" 2½"	160 160	.250 .375	.053 .116
12	95-SB05	MSD	1" & 2½" MSD-7D D.S. of steam trap, ST-60-2D.	T. B. - Heater Bay	G191156	IE	1" 2-1/2"	160 160	.250 .375	.053 .116
13	95-SB-06	MSD	1" & 2½" MSD-8D @ LCV-38D.	T. B. - Heater Bay	G191156	IE	1" 2½"	160 160	.250 .375	.053 .116
	93-SB08	MSD	8" MSD-9 Hdr. @ 2½" conn. (See L.B. Sketch 097)	T. B. - Heater Bay	G191156	(IE) Portions of LB component inspected with SB pipe.	8"	80	.500	.347

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14	93-SB12	MSD	1"&2½" Piping @ valve MS-2A.	T. B. - Heater Bay	G191156	IE	1"	160	.250	.053
15	95-SB-07	MSD	1"&2½" Piping @ valve MS-2B.	T. B. - Heater Bay	G191156	IE	1"	160	.250	.053
16	93-SB13	MSD	1"&2½" Piping @ valve MS-2C.	T. B. - Heater Bay	G191156	IE	1" 2½"	160 160	.250 .375	.053 .116
17	95-SB08	MSD	1"&2½" Piping @ valve MS-2D.	T. B. - Heater Bay	G191156	IE	1" 2½"	160 160	.250 .375	.053 .116
18	93-SB14	MSD	D.S.of valve MS-4 on 2½" MSD-6.	T. B. - Heater Bay	G191156	IE	2½"	160	.375	.116
19	93-SB15	MSD	2½" MSD-6 @ Fittings U. S. of Condenser A.	T. B. - Heater Bay	G191156	IE	2½"	160	.375	.116
20	95-SB09 96-SB01	MSD	2½" MSD-6. (2 ft. length at Connect. to Condens. A -Noz.33	T. B. - Heater Bay	G191156	IE	2½"	160	.375	.116
21	93-SB16	MSD	1" MSD U.S. & D.S.of valve MS-5A.	T. B. - Heater Bay	G191156	IE	1"	160	.250	.053
22	93-SB55	MSD	1" MSD U.S. & D.S.of valve MS-5B.	T. B. - Heater Bay	G191156	IE	1"	160	.250	.053
23	93-SB17	MSD	1" MSD U.S. & D.S.of valve MS-5C.	T. B. - Heater Bay	G191156	IE	1"	160	.250	.053
24	93-SB56	MSD	1" MSD U.S. & D.S.of valve MS-5D.	T. B. - Heater Bay	G191156	IE	1"	160	.250	.053
25	93-SB18	MSD	2" MSD hdr. Under 5A & 5C valves.	T. B. - Heater Bay	G191156	IE	2"	160	.344	.096
26	93-SB19	MSD	2" pipe & fittings D.S. of valves MS-5A to 5D..	T. B. - Heater Bay	G191156	IE	2"	160	.344	.096
27	95-SB10	MSD	2" pipe & fittings D.S. of valves MS-5A to 5D. at Connect to Condenser. A Noz.34	T. B. - Heater Bay	G191156	IE	2"	160	.344	.096
28	92-SB10 92-SB11 95-SB38	MSD	2" pipe & fittings D.S. of valve MS-12 up to tee conn.	T. B. - Heater Bay	G191156	Leak @ MS-12 valve in 1992 Replaced in 1992	2"	80	.218	.096

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29	92-SB13 to 92-SB15 95-SB11	MSD	1" pipe & fittings U.S. & D.S. of R.O. 60-1 up to tee conn.	T. B. - Heater Bay	G191156	Replaced in 1992.	1"	80	.179	.053
30A	92-SB12 95-SB12	MSD	2" piping D.S of tee conn. D.S. of R.O.60-1.	T. B. - Heater Bay	G191156	Leak @MS-12 valve in 1992 Replaced in 96 W/ A335 P11	2"	80	.218	.096
30B	95-SB12	MSD	2" piping D.S of tee conn. D.S. of R.O. 60-1. at condenser	T. B. - Heater Bay	G191156	Replaced in 96 W/ A335 P11				
31	96-SB03	MSD (HPCI)	1" pipe & fittings D.S. of valve HPCI FCV - 43	RX. - HPCI Room.	G191169 VYI-HPCI/RCIC-DRAIN	Replaced in 1990, w/ A335-P11	1"	80	.179	.053
32	96-SB04	MSD (RCIC)	1" pipe & fittings D.S. of valve RCIC FCV-35	RX. - RCIC Room	G191174 VYI-HPCI/RCIC-DRAIN	Replaced in 1990, w/ A335-P11	2"	80	.218	.096
33		MSD (HPCI/RCIC)	2" pipe & fittings U.S. of connect. to Condenser B.	T.B. - Heater Bay	G191156 VYI-HPCI/RCIC-DRAIN	Replaced in 1990, w/ A335-P11	2"	80	.218	.096
34	93-SB20	HV	1"-HV-1A, pipe & fittings U.S. of connect. to Cond. B.	T. B. - Heater Bay	G191158	Industry Experience Point	1"	80	.179	.011
35	93-SB21	HV	1"HV -1A, pipe & fittings D.S. of R.O.-1A	T. B. - Heater Bay	G191158	Industry Experience Point	1"	80	.179	.011
36	93-SB22	HV	1"HV-1A, pipe & fittings @ valve HV-1A	T. B. - Heater Bay	G191158	Industry Experience Point	1"	80	.179	.011
37	95-SB17	HV	1"-HV-1B. pipe & fittings U.S. of connect. to Cond. B	T. B. - Heater Bay	G191158	Industry Experience Point	1"	80	.179	.011
38	95-SB16	HV	1"- HV-1B, pipe & fittings D.S. of R.O.-1B	T. B. - Heater Bay	G191158	Industry Experience Point	1"	80	.179	.011
39	95-SB18	HV	1"-HV-1B, pipe & fittings @ valve HV-1B	T. B. - Heater Bay	G191158	Industry Experience Point	1"	80	.179	.011
40	95-SB19 98-SB01	HV	1"-HV-2A, pipe & fittings @ valve HV-4A	T. B. - Heater Bay	G191158	Industry Experience Point	1"	80	.179	.007

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41	95-SB20 98-SB02	HV	1"-HV-2A, pipe & fittings @ R.O.-2A.	T. B. - Heater Bay	G191158	Industry Experience Point	1"	80	.179	.007
42	95-SB21 98-SB03	HV	1"-HV-2A, pipe & fittings @ Condenser A.	T. B. - Heater Bay	G191158	Industry Experience Point	1"	80	.179	.007
43	93-SB23	HV	1"-HV-2B, pipe & fittings @ valve HV-4B	T. B. - Heater Bay	G191158	Industry Experience Point	1"	80	.179	.007
44	93-SB24	HV	1"-HV-2B, pipe & fittings @ R.O.-2B.	T. B. - Heater Bay	G191158	Industry Experience Point	1"	80	.179	.007
45	93-SB25	HV	1"-HV-2B, pipe & fittings @ condenser A	T. B. - Heater Bay	G191158	Industry Experience Point	1"	80	.179	.007
46		HV	1½"-HV-3A, pipe & fittings @ valve HV-7A	T. B. - Heater Bay	G191158	Industry Experience Point	1½"	80	.200	.007
47	95-SB22	HV	1½"-HV-3A, pipe & fittings @ Condenser A. Nozzle 23	T. B. - Heater Bay	G191158	Industry Experience Point	1½"	80	.200	.007
48		HV	2"-HV-9A, pipe & fittings @ R.O.-3A.	T. B. - Heater Bay	G191158	Industry Experience Point	2"	80	.218	.008
49		HV	2"-HV-9A, pipe & fittings D.S. of valve HV-15A	T. B. - Heater Bay	G191158	IE	2"	80	.218	.008
50		HV	2"-HV-9A, pipe & fittings @ Condenser A.	T. B. - Heater Bay	G191158	IE	2"	80	.218	.008
51		HV	1½"-HV-3B, pipe & fittings @ valve HV-7B	T. B. - Heater Bay	G191158	IE	1½"	80	.200	.007
52	95-SB23	HV	1½"-HV-3B, pipe & fittings @ Condenser A.	T. B. - Heater Bay	G191158	IE	1½"	80	.200	.007
53		HV	2"-HV-9B, pipe & fittings @ R.O.-3B.	T. B. - Heater Bay	G191158	IE	2"	80	.218	.008
54		HV	2"-HV-9B, pipe & fittings D.S. of valve HV-15B	T. B. - Heater Bay	G191158	IE	2"	80	.218	.008

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55		HV	2"-HV-9B, pipe & fittings @ Condenser A.	T. B. - Heater Bay	G191158	IE	2"	80	.218	.008
56		HV	2½"-HV-4A, pipe & fittings U.S. of connect. to Cond. B.	T. B. - Heater Bay	G191158	Industry Experience Point	1"	80	.179	.011
57		HV	2½"-HV-4A, pipe & fittings D.S. of R.O.-4A	T. B. - Heater Bay	G191158	Industry Experience Point	1"	80	.179	.011
58		HV	2½"-HV-4A, pipe & fittings @ valve HV-9A	T. B. - Heater Bay	G191158	Industry Experience Point	1"	80	.179	.011
59		HV	2½"-HV-4B, pipe & fittings U.S. of connect. to Cond. B	T. B. - Heater Bay	G191158	Industry Experience Point	1"	80	.179	.011
60		HV	2½"-HV-4B, pipe & fittings D.S. of R.O.-4B	T. B. - Heater Bay	G191158	Industry Experience Point	1"	80	.179	.011
61		HV	2½"-HV-4B, pipe & fittings @ valve HV-9B	T. B. - Heater Bay	G191158	Industry Experience Point	1"	80	.179	.011
62	95-SB24 98-SB08	ES	2"-ES-12A piping US & DS of LCV-2A near Condenser A	T. B. - Heater Bay	G191156	Industry Experience Point	2"	80	.218	.012
63	95-SB25	ES	2"-ES-10A piping US & DS of LCV-3A near Condenser A	T. B. - Heater Bay	G191156	Industry Experience Point	2"	80	.218	.012
64	93-SB26	ES	2"-ES-12B piping US & DS of LCV-2B near Condenser B.	T. B. - Heater Bay	G191156	Industry Experience Point	2"	80	.218	.012
65	93-SB27 98-SB09	ES	2"-ES-10B piping US & DS of LCV-3B near Condenser B	T. B. - Heater Bay	G191156	Industry Experience Point	2"	80	.218	.012
66	93-SB28	AS	1" piping US & DS of valve LCV-101-39	T.B. - SJAE Room.	G191156	Industry Experience Point	1"	160	.250	.053
67	93-SB29 98-SB04	AS	1" & 2" piping US & DS of steam trap ST 62-1.	T.B. - SJAE Room.	G191156	Industry Experience Point	1" 2"	160 160	.250 .344	.053 .096

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68	93-SB30 98-SB03	AS	2"-MSD-465 pipe & fittings @ connect. to Condenser B Nozzle 68	T.B. - Heater Bay	G191156	Industry Experience Point	2"	160	.344	.096
69	95-SB26	AS	2"-MSD-465 pipe & fittings DS of valve V-62-2	T.B. - SJAE Room.	G191156	Industry Experience Point	1"	160	.250	.053
70	95-SB27	AS	1" piping US &DS of valve LCV-101-40	T.B. - SJAE Room.	G191156	Industry Experience Point	1"	160	.250	.053
71	95-SB28 98-SB06	AS	1" & 1½" piping US &DS of steam trap ST 62-2.	T.B. - SJAE Room.	G191156	Industry Experience Point	1" 2"	160 160	.250 .344	.053 .096
72	95-SB29 98-SB07	AS	1½"-MSD-464 pipe & fittings @ connect. to Condenser B Nozzle 69	T.B. - Heater Bay	G191156	Industry Experience Point	2"	160	.344	.096
73	95-SB30	AS(AOG)	2" piping of DS of valve OG PRV -834A	T.B. - Heater Bay El.248.	33600-A217	Industry Experience Point	1"	160	.250	.053
74	95-SB31	AS(AOG)	¾" piping US &DS of steam trap MS-113-1A.	T.B. - Heater Bay El.248.	33600-A217	Industry Experience Point	1" 2"	160 160	.250 .344	.053 .096
75	95-SB32	AS(AOG)	¾" piping US &DS of steam trap MS115-1A	T.B. - Heater Bay El.248.	33600-A217	Industry Experience Point	2"	160	.344	.096
76	95-SB33	AS(AOG)	¾"MS-189-D3 AS drain from OG @ conn. to 3"-MSD-4.	T.B. - Heater Bay El 233'-4".	33600-A217	Industry Experience Point	2"	160	.344	.096
77	95-SB34	AS(AOG)	¾"HCN-188-H1 AS drain from OG @ conn. to 3"-MSD-4.	T.B. - Heater Bay El 233'-4"	33600-A217	I. E. Point, Replaced prior to 1990	2"	160	.344	.096
78	93-SB31	SSL	1½" & 3" Header for 1SLMSV off Turbine Stop Valves	T.B. - Heater Bay.	5920-224	Industry Experience Point	1½" 3"	80 40	.200 .216	.077 .141
79	93-SB32	SSL	1½"-1SLMSV - Stop Valve A	T.B. - Heater Bay	5920-224	Industry Experience Point	1½"	80	.200	.077
80	93-SB33	SSL	1½"-1SLMSV - Stop Valve B	T.B. - Heater Bay	5920-224	Industry Experience Point	1½"	80	.200	.077
81	93-SB34	SSL	1½"-1SLMSV - Stop Valve C	T.B. - Heater Bay	5920-224	Industry Experience Point	1½"	80	.200	.077

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82	93-SB35	SSL	1½"-1SLMSV - Stop Valve D	T.B. - Heater Bay	5920-224	Industry Experience Point	1½"	80	.200	.077
83	93-SB36	SSL	1½" Header for 1SCVL off Turbine Control Valves	T.B. - Heater Bay	5920-224		1½"	80	.200	.067
84	93-SB38	SSL	½"-1SCVL - Control Valve A.	T.B. - Heater Bay	5920-224		½"	80	.147	.033
85	93-SB39/40	SSL	½"-1SCVL - Control Valve B.	T.B. - Heater Bay	5920-224		½"	80	.147	.033
86	93-SB41/42	SSL	½"-1SCVL - Control Valve C.	T.B. - Heater Bay	5920-224		½"	80	.147	.033
87	93-SB37	SSL	½"-1SCVL - Control Valve D.	T.B. - Heater Bay	5920-224		½"	80	.147	.033
88	93-SB43	SSL	1" & 3" Header for 2SLMSV off Turbine Stop Valves A & B	T.B. - Heater Bay	5920-224		2-1/2" 1"	40 80	.203 .179	.116 .053
89	93-SB44	SSL	1" & 3" Header for 2SLMSV off Turbine Stop Valve C	T.B. - Heater Bay	5920-224		3" 1"	40 80	.216 .179	.141 .053
90	93-SB45	SSL	1" - 2SLMSV off Turbine Stop Valve D	T.B. - Heater Bay	5920-224		3" 1"	40 80	.216 .179	.141 .053
91	93-SB58	SSL	2½" - Header for 2SCVL off Turbine Control Valves	T.B. - Heater Bay	5920-224		1"	80	.179	.053
92	93-SB61	SSL	1" - 2SCVL off Control Valve A	T.B. - Heater Bay	5920-224		2½"	40	.203	.116
93	93-SB60	SSL	1" - 2SCVL off Control Valve B	T.B. - Heater Bay	5920-224		1"	80	.179	.053
94	93-SB59	SSL	1" - 2SCVL off Control Valve C	T.B. - Heater Bay	5920-224		1"	80	.179	.053
95	93-SB57	SSL	1" - 2SCVL off Control Valve D	T.B. - Heater Bay	5920-224		1"	80	.179	.053
96	92-(SB-info only)	SSL	Turbine Bypass Valve Chest 1st Seal Leakoff 1/2"-1SLBPV	T.B. - Heater Bay	5920-224		1/2"	80	.147	.034
97	92-SB01	SSL	TBV Chest 1st Seal Leakoff 2"-1SLBPV	T.B. - Heater Bay	5920-224		2"	80	.218	.099
98	92-SB02	SSL	TBV Chest 1st Seal Leakoff 2"-1SLBPV	T.B. - Heater Bay	5920-224		2"	80	.218	.099

VY PIPING FAC INSPECTION PROGRAM - SMALL BORE INSPECTION LOCATIONS

Revision 1, 12/6/1999

PT.	PREV. INSPECT. No.	SYSTEM	DESCRIPTION	LOCATION	DRAWINGS	COMMENTS	SIZE	SCH.	Tnom inch	T min inch
99	92-SB03	SSL	TBV Chest 1st Seal Leakoff 2"-1SLBPV	T.B. - Heater Bay	5920-224		2"	80	.218	.099
100	92-SB04	SSL	TBV Chest 1st Seal Leakoff 2"-1SLBPV	T.B. - Heater Bay	5920-224		2"	80	.218	.099
101	92-SB05	SSL	TBV Chest 1st Seal Leakoff 2"-1SLBPV	T.B. - Heater Bay	5920-224		2"	80	.218	.099
102		SSL	TBV Chest 1st Seal Leakoff 2"-1SLBPV	T.B. - Heater Bay	5920-224	Not Inspected in 1992	2"	80	.218	.099
103	92-SB07	SSL	TBV Chest 1st Seal Leakoff 2"-1SLBPV	T.B. - Heater Bay	5920-224		2"	80	.218	.099
104	92-SB08	SSL	TBV Chest 1st Seal Leakoff 2"-1SLBPV	T.B. - Heater Bay	5920-224		2"	80	.218	.099
105	92-SB09	SSL	TBV Chest 1st Seal Leakoff 2"-1SLBPV	T.B. - Heater Bay	5920-224	Vertical section replaced in 1992.	2"	80	.218	.099
106	92-SB10	SSL	TBV Chest 1st Seal Leakoff 2"-1SLBPV	T.B. - Heater Bay	5920-224	Loc. of 1992 leak, replaced in 1992.	2"	80	.218	.099
107	93-SB46	SSL	TBV Chest 2nd Seal Leakoff 2½" - 2SLBPV	T.B. - Heater Bay	5920-224	Continuation of 1992 inspections	2½"	40	.203	.116
108	93-SB47 95-SB35	SSL	TBV Chest 2nd Seal Leakoff 2½" - 2SLBPV	T.B. - Heater Bay	5920-224	" "	2½"	40	.203	.116
109	93-SB48A 93-SB48B 95-SB36A 95-SB36B	SSL	TBV Chest 2nd Seal Leakoff 2½" - 2SLBPV	T.B. - Heater Bay	5920-224	" "	2½"	40	.203	.116
110	93-SB49	SSL	2½" - 1SPL2 H.P. Turbine Pocket Drain	T.B. - Heater Bay	5920-224	Significant Wear @ Duane Arnold	2½"	40	.203	.023
111	93-SB50	SSL	2½" - 1SPL2 H.P. Turbine Pocket Drain	T.B. - Heater Bay	5920-224	" "	2½"	40	.203	.023
112	93-SB51	SSL	2½" - 1SPL2 H.P. Turbine Pocket Drain	T.B. - Heater Bay	5920-224	" "	2½"	40	.203	.023
113	93-SB52	SSL	2½" - 1SPL2 H.P. Turbine Pocket Drain	T.B. - Heater Bay	5920-224	" "	2½"	40	.203	.023
114	93-SB53	SSL	2½" - 1SPL2 H.P. Turbine Pocket 90 deg elbow	T.B. - Heater Bay	5920-224	" "	2½"	40	.203	.023
115	93-SB54	SSL	1SPL2 2½" x 2" reducer at 36" CAR pipe.	T.B. - Heater Bay	5920-224	" "	2½" 2"	40 40	.203 .154	.023 .019

VY PIPING FAC INSPECTION PROGRAM - SMALL BORE INSPECTION LOCATIONS
 Revision 1, 12/6/1999

PT.	PREV. INSPECT. No.	SYSTEM	DESCRIPTION	LOCATION	DRAWINGS	COMMENTS	SIZE	SCH.	Tnom inch	T min inch
116	95-SB37	C	1½" & 2½" piping US & DS of LCV 1A-3	T.B. - Heater Bay	G191157 Sht.1	IE	1½" 2½"	80 80	.200 .276	.038 .057
117		MSD	Steam Seal Regulator to Steam Seal Piping low point drain		G191156 5920-224	IE	1"			
118		HV	4"-HV-8A @ Condenser A No.4 continuous vent.	T.B. - Heater Bay	G191158	IE				
119		C	1" Piping D.S of R.O. 64-2	T.B. - Heater Bay	G191157 Sht.1	IE				
120		ES	3"-ES-8A D.S.of LCV-4A	T.B. - Heater Bay	G191156	IE				
121		ES	3"-ES-8B D.S.of LCV-4B	T.B. - Heater Bay	G191156	IE				
122	99-SB01	MSD	1" piping US & DS valve HPCI-LCV-53	Rx. Bldg. HPCI Rm.	G191169 Sht.1 VYI-HPCI-Pt.3A St.2/2	(I.E.) Dreseden 3 LER 3/96	1"	160	.250	.053
123	99-SB02	MSD	1" piping US & DS of Steam Trap ST-3	Rx. Bldg. HPCI Rm.	G191169 Sht.1 VYI-HPCI-Pt.3A St.2/2	(I.E.) Dreseden 3 LER 3/96	1"	160	.250	.053
124	99-SB03	MSD	1" piping US & DS valve HPCI-FCV-42	Rx. Bldg. HPCI Rm.	G191169 Sht.1 VYI-HPCI-Pt.3A St.2/2	(I.E.) Dreseden 3 LER 3/96	1"	160	.250	.053
125	99-SB04	MSD	1" piping US & DS valve RCIC LCV-32	Rx. Bldg. RCIC Rm.	G191174 Sht.1 VYI-RCIC-Pt.3A Shts.1/2 & 2/2	(I.E.) Dreseden 3 LER 3/96	1"	160	.250	.053
126	99-SB05	MSD	1" piping US & DS of Steam Trap ST-6	Rx. Bldg. RCIC Rm.	G191174 Sht.1 VYI-RCIC-Pt.3A Shts.1/2 & 2/2	(I.E.) Dreseden 3 LER 3/96	1"	160	.250	.053
127	99-SB06	MSD	1" piping US & DS valve RCIC FCV-34	Rx. Bldg. RCIC Rm.	G191174 Sht.1 VYI-RCIC-Pt.3A Shts.1/2 & 2/2	(I.E.) Dreseden 3 LER 3/96	1"	160	.250	.053