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AUTH.NAME AUTHOR AFFILIATION
MANGAN,C.V. Niagara Mohawk Power Corp.
RECIP.NAME RECIPIENT AFFILIATION
SCHWENCER,A. Licensing Branch 2

SUBJECT: Forwards info re SPDS,per NRC 841108 request.Encl to be incorporated in FSAR Amend 17. see epl

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	NRR LB2 LA	1	0	HAUGHEY,M 01	1	1
INTERNAL:	ACRS 41	6	6	ADM/LFMB	1	0
	ELD/HDS3	1	0	IE FILE	1	1
	IE/DEPER/EPB 36	1	1	IE/DEPER/IRB 35	1	1
	IE/DQASIP/QAB21	1	1	NRR ROE,M.L	1	1
	NRR/DE/AEAB	1	0	NRR/DE/CEB 11	1	1
	NRR/DE/EHEB	1	1	NRR/DE/EQB 13	2	2
	NRR/DE/GB 28	2	2	NRR/DE/MEB 18	1	1
	NRR/DE/MTEB 17	1	1	NRR/DE/SAB 24	1	1
	NRR/DE/SGEB 25	1	1	NRR/DHFS/HFEB40	1	1
	NRR/DHFS/LQB 32	1	1	NRR/DHFS/PSRB	1	1
	NRR/DL/SSPB	1	0	NRR/DSI/AEB 26	1	1
	NRR/DSI/ASB	1	1	NRR/DSI/CPB 10	1	1
	NRR/DSI/CSB 09	1	1	NRR/DSI/ICSB 16	1	1
	NRR/DSI/METB 12	1	1	NRR/DSI/PSB 19	1	1
	NRR/DSI/RAB 22	1	1	NRR/DSI/RSB 23	1	1
	REG FILE 04	1	1	RGN1	3	3
	RM/DDAMI/MIB	1	0			
EXTERNAL:	BNL(AMDTS ONLY)	1	1	DMB/DSS (AMDTS)	1	1
	FEMA-REP DIV 39	1	1	LPDR 03	1	1
	NRC PDR 02	1	1	NSIC 05	1	1
	NTIS	1	1	PNL GRUEL,R	1	1

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NIAGARA MOHAWK

NIAGARA MOHAWK POWER CORPORATION/300 ERIE BOULEVARD WEST, SYRACUSE, N.Y. 13202/TELEPHONE (315) 474-1511

December 12, 1984
(NMP2L 0291)

Mr. A. Schwencer, Chief
Licensing Branch No. 2
Division of Licensing
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Schwencer:

Re: Nine Mile Point Unit 2
Docket No. 50-410

Enclosed for your use is information regarding the Nine Mile Point Unit 2 Safety Parameter Display System. This information responds to the Nuclear Regulatory Staff questions enclosed in your letter of November 8, 1984.

The enclosed information will be included in Final Safety Analysis Report Amendment 17.

Very truly yours,

C. V. Mangan
Vice President
Nuclear Engineering & Licensing

NLR:ja
Enclosure
xc: R. A. Gramm, NRC Resident Inspector
Project File (2)

B001
1/1

8412180240 841212
PDR ADOCK 05000410
F PDR

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	
Niagara Mohawk Power Corporation	)	Docket No. 50-410
	)	
(Nine Mile Point Unit 2)	)	

AFFIDAVIT

C. V. Mangan, being duly sworn, states that he is Vice President of Niagara Mohawk Power Corporation; that he is authorized on the part of said Corporation to sign and file with the Nuclear Regulatory Commission the documents attached hereto; and that all such documents are true and correct to the best of his knowledge, information and belief.

C V Mangan

Subscribed and sworn to before me, a Notary Public in and for the State of New York and County of Onondaga, this 12th day of December, 1984.

Christine Austin
Notary Public in and for
Onondaga County, New York

My Commission expires:
CHRISTINE AUSTIN
Notary Public in the State of New York
Qualified in Onondaga Co. No. 4787687
My Commission Expires March 30, 1985

8412180240

CHRISTINE AUSTIN
Notary Public in the State of New York
Qualified in Onondaga Co. No. 4702697
My Commission Expires March 30, 19[illegible]

420.01 Isolation Devices

Provide the following:

a. For each type of device used to accomplish electrical isolation, describe the specific testing performed to demonstrate that the device is acceptable for its application(s). This description should include elementary diagrams when necessary to indicate the test configuration and how the maximum credible faults were applied to the devices.

b. Data to verify that the maximum credible faults applied during the test were the maximum voltage/current to which the device could be exposed, and define how the maximum voltage/current was determined.

c. Data to verify that the maximum credible fault was applied to the output of the device in the transverse mode (between signal and return) and other faults were considered (i.e., open and short circuits).

d. Define the pass/fail acceptance criteria for each type of device.

e. A commitment that the isolation devices comply with the environmental qualifications (10 CFR 50.49) and with the seismic qualifications which were the basis for plant licensing.

f. A description of the measures taken to protect the safety systems from electrical interference (i.e., Electrostatic Coupling, EMI, Common Mode and Crosstalk) that may be generated.

Response

See response to Question 421.13.

620.01 HUMAN FACTORS PROGRAM

a. The staff has not reviewed the document referred to in the submittal as SAI 01381-364L0, "BWR Graphics Display System Dynamic Screening Program". The applicant should submit this document to the docket.

b. The applicant should provide a description of the display system including the radiation monitoring portion. This description should include hardware interface devices (CRT characteristics, control devices, etc.) and software interfaces (page format, human factors characteristics incorporated into the design of the displays, etc.) Photographs or reproductions of display pages and interface devices may be helpful in supporting the descriptions.

Response

a) NMPC will submit this document under separate cover.

b) The NMP2 SPDS is based on the BWR owners group's recommended SPDS displays. The BWR owners group's SPDS displays are an implementation of the criteria defined in NUREG-0696.

There are five important plant functions which the NRC has determined should be monitored by an SPDS:

I - Reactivity Control

II - Reactor Core Cooling and Heat Removal from Primary Source

III - Reactor Coolant System Integrity

IV - Radioactivity Control

V - Containment Integrity

The BWR owners group's SPDS displays consist of three levels of displays. Level I is an overview display of five plant parameters. Level II is a set of five displays, each display a detailed presentation of information on one of the five plant functions. Level III consists of ten displays showing various plant parameters plotted in relationship to each other. The NMP2 SPDS consists of the BWR owners group's Level I display and Level II displays for four of the five plant functions: I, II, III and V. These displays are available on CRTs which are part of the ERF/LWS computer system; two CRTs are in the control room, one in the TSC, one in the EOF and one on the Engineer/Programmer's console in the radwaste control room.

Plant function IV information is available in the main plant control room. Radioactivity internal to the plant is monitored by the digital radiation monitoring system (DRMS). These data are available on a CRT located on the same console as the two SPDS CRTs. The gaseous effluent monitoring system (GEMS) is used to monitor gaseous radioactivity released to the environment. These data are available from chart recorders located on a panel near the SPDS and DRMS CRT display console.

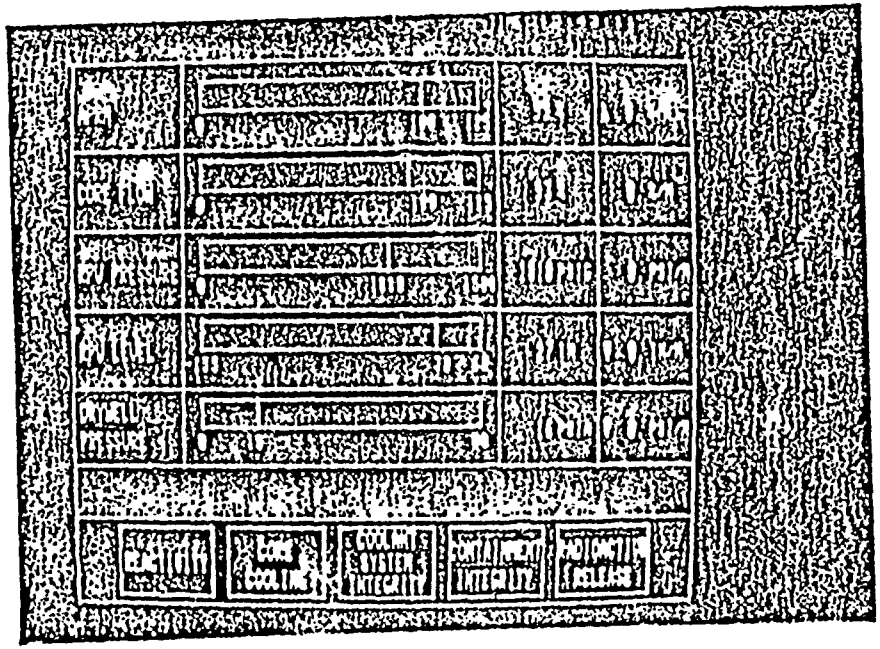
Attached are displays for your use and include:

Exhibits 620.01-1 to 620.01-4 - BWR Owners Group Recommended SPDS Displays

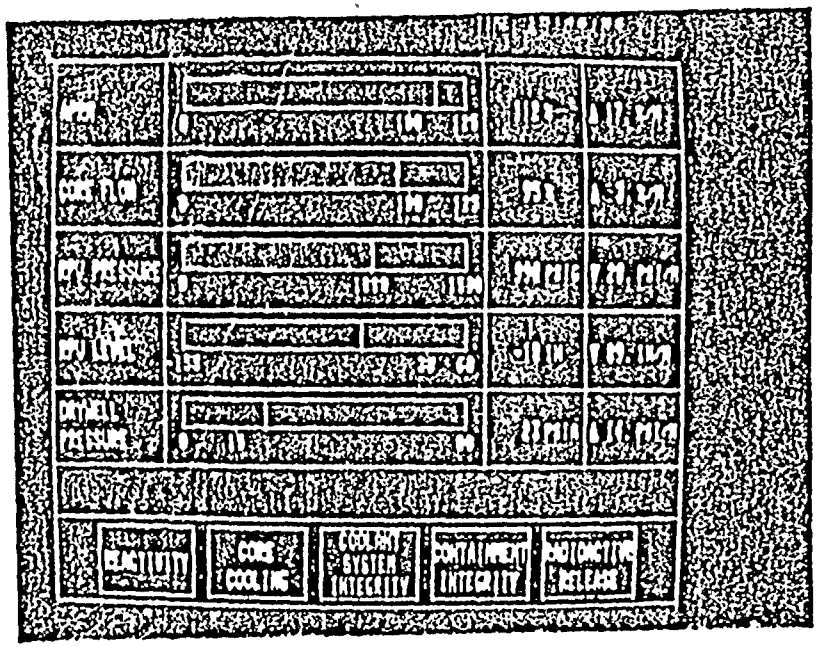
Exhibits 620.01-5 to 620.01-9 - NMP2 Implementation of BWR O.G. SPDS Dispalys

Exhibits 620.01-10 to 620.01-25 - DRMS Displays

Exhibits 620.01-26 to 620.01-42 - GEMS Displays



Normal Condition



Abnormal Condition

Figure 8.12. Recommended Level 1 Display.

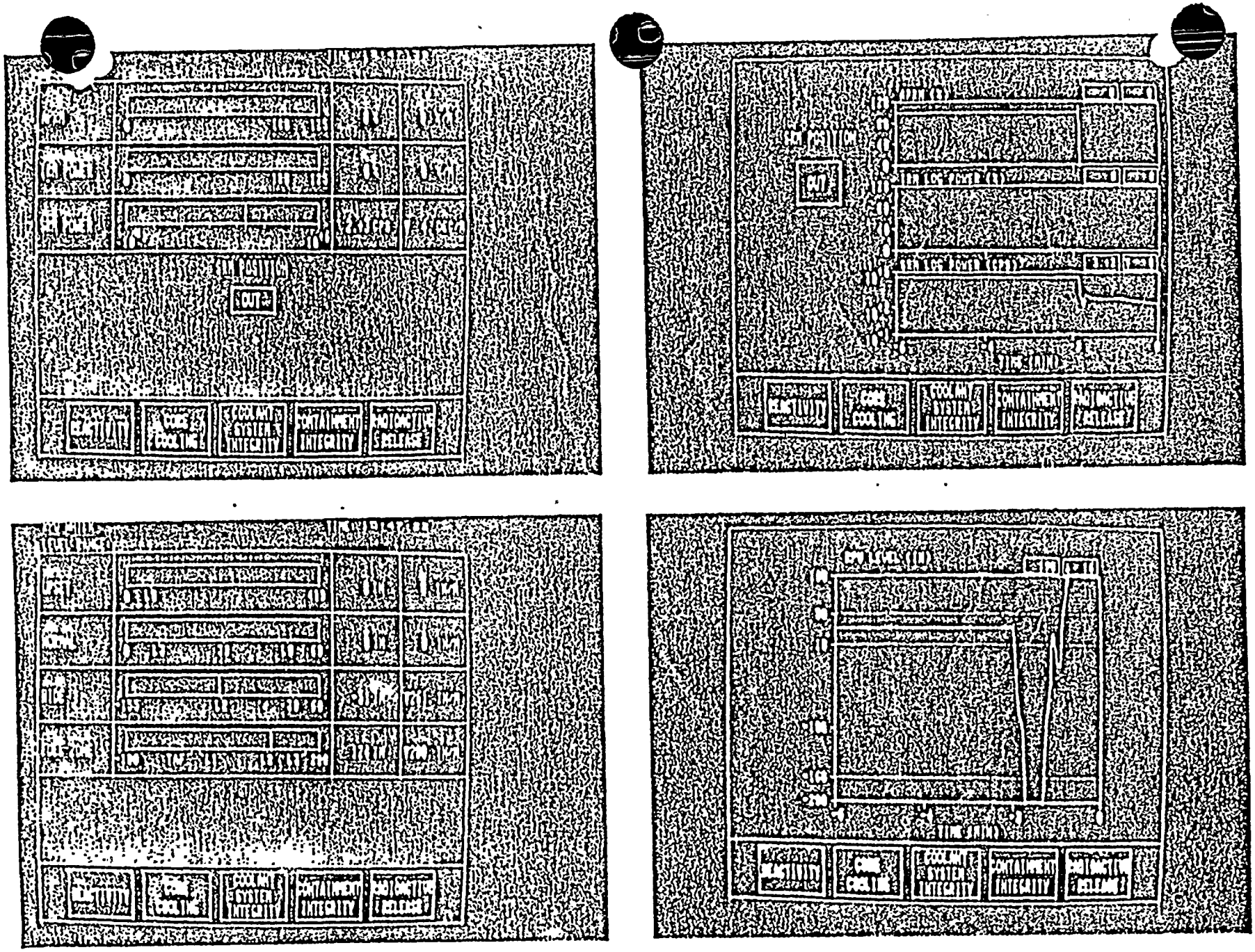


Figure 8.13. Recommended Level 2 Displays.

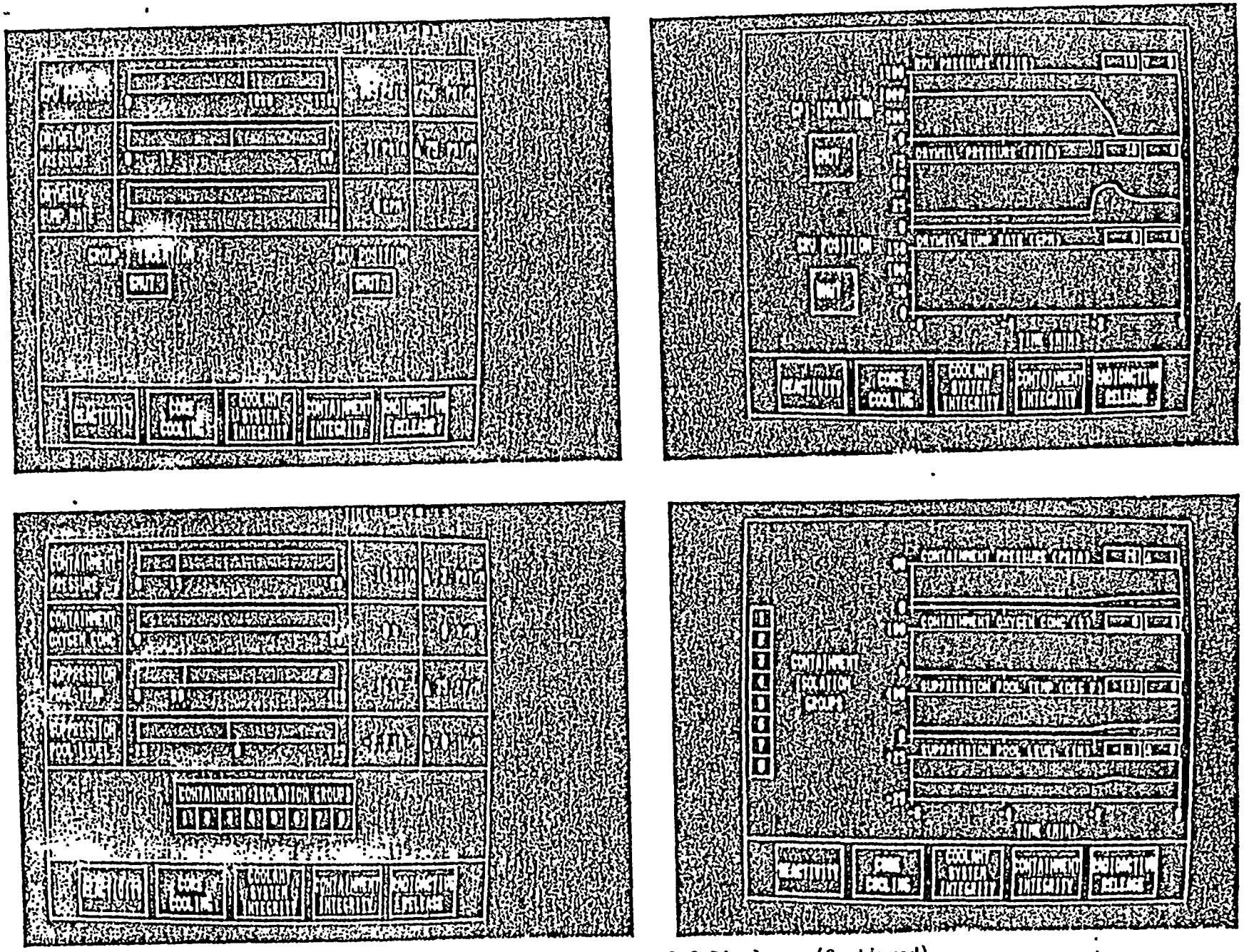
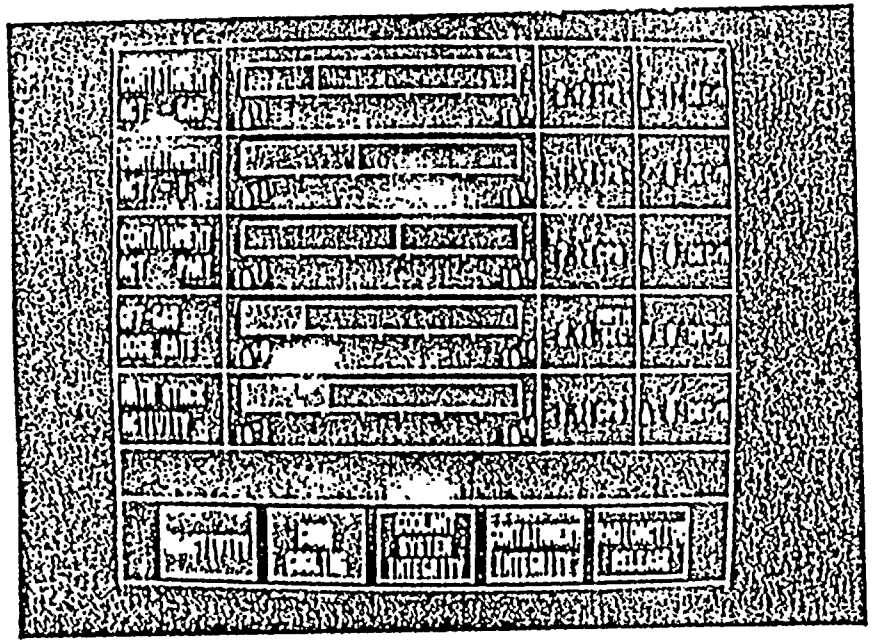


Figure 8.13. Recommended Level 2 Displays. (Continued)



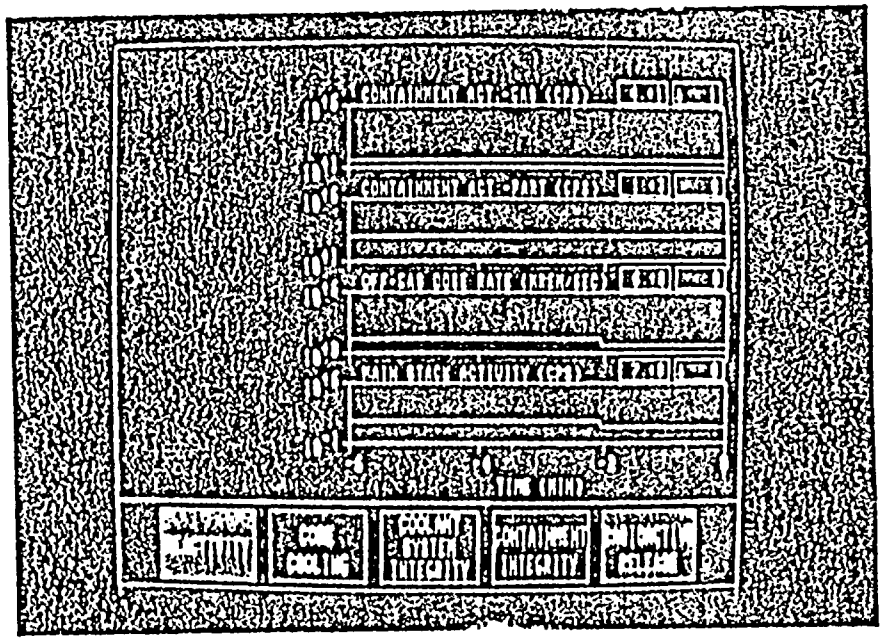


Figure 8.13. Recommended Level 2 Displays. (Continued)

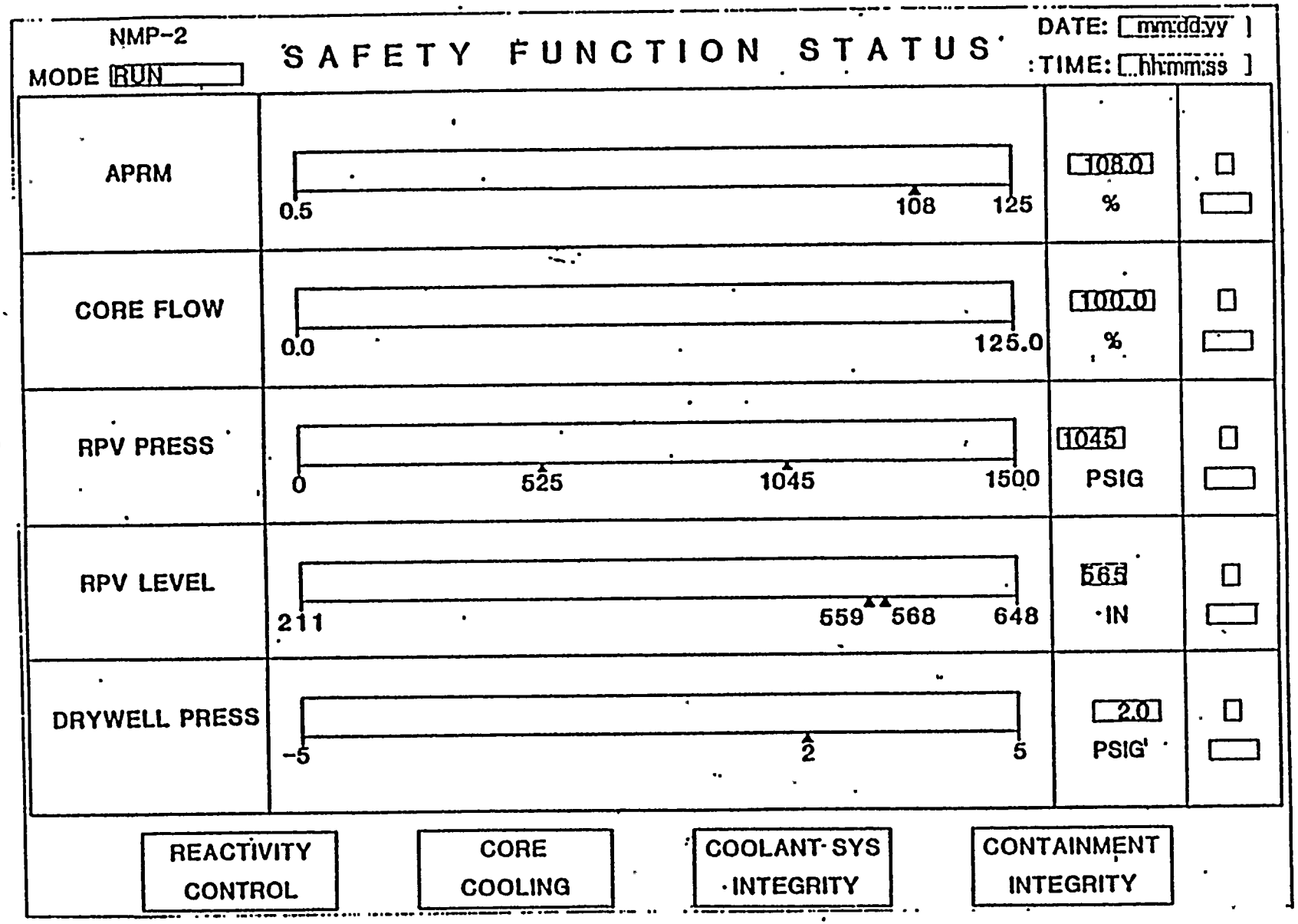


FIGURE A-1
SAFETY FUNCTI STATUS DISPLAY

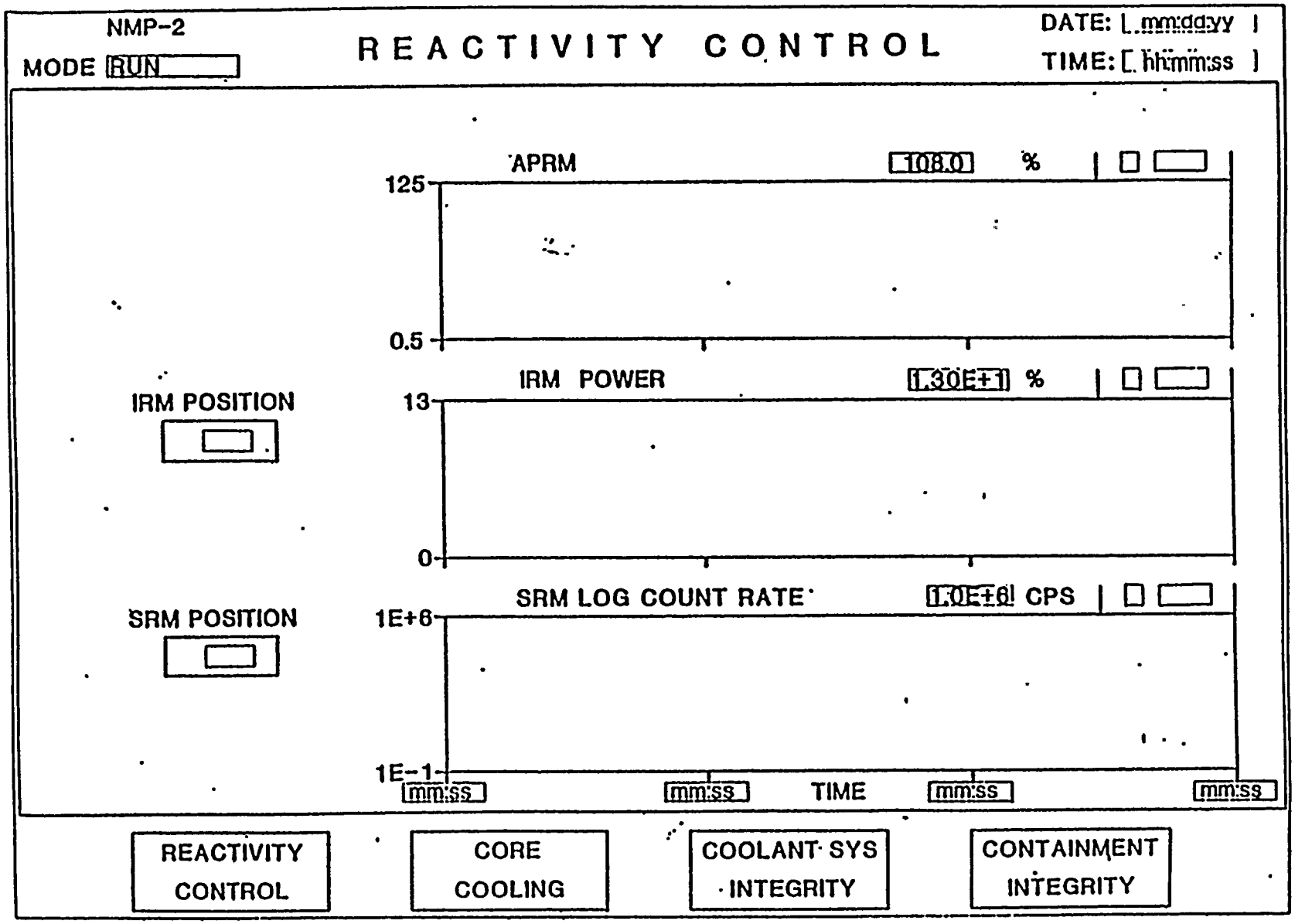


FIGURE A-2 .
REACTIVITY CONTROL DISPLAY

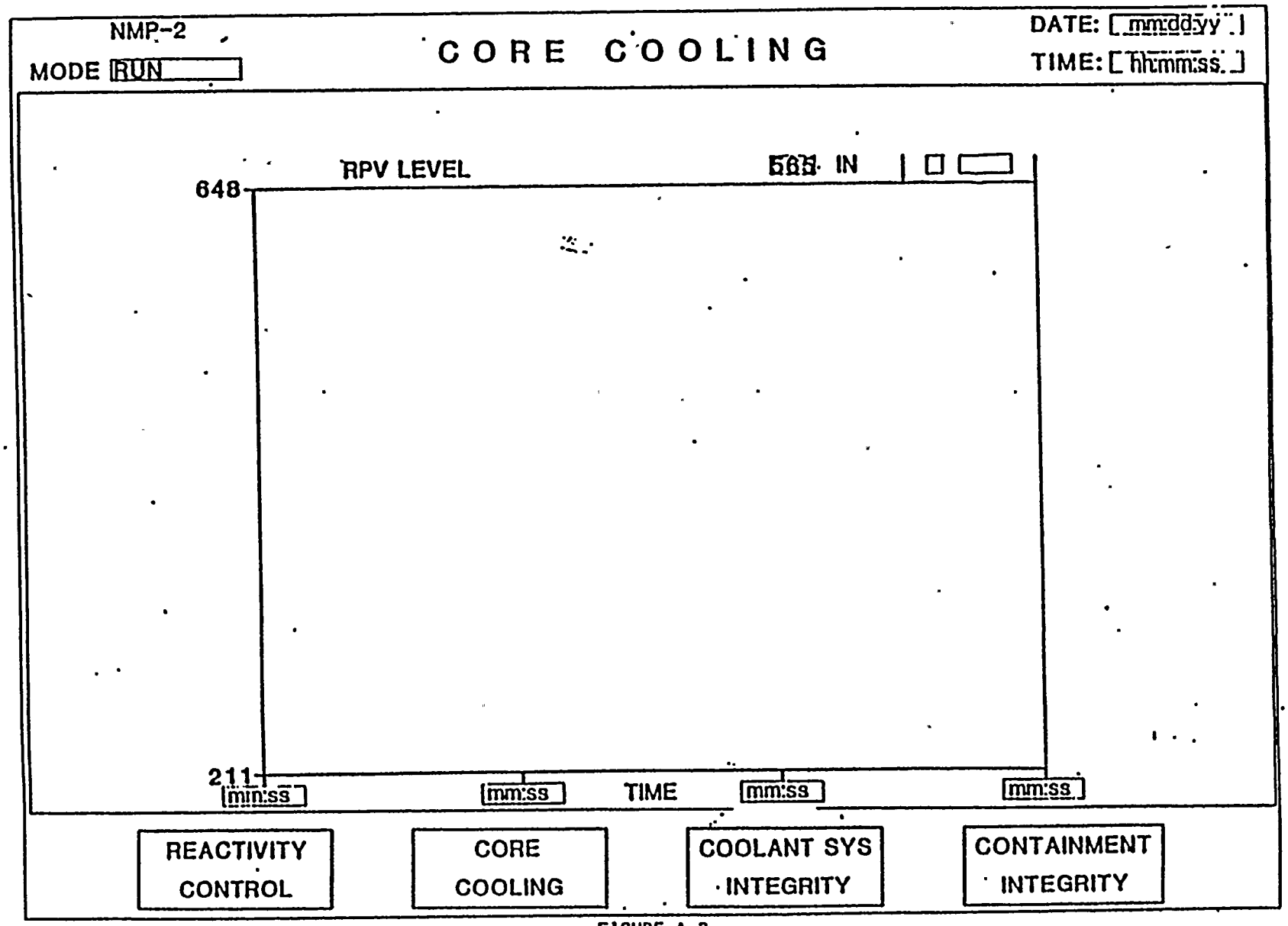


FIGURE A-3
CORE COO G DISPLAY

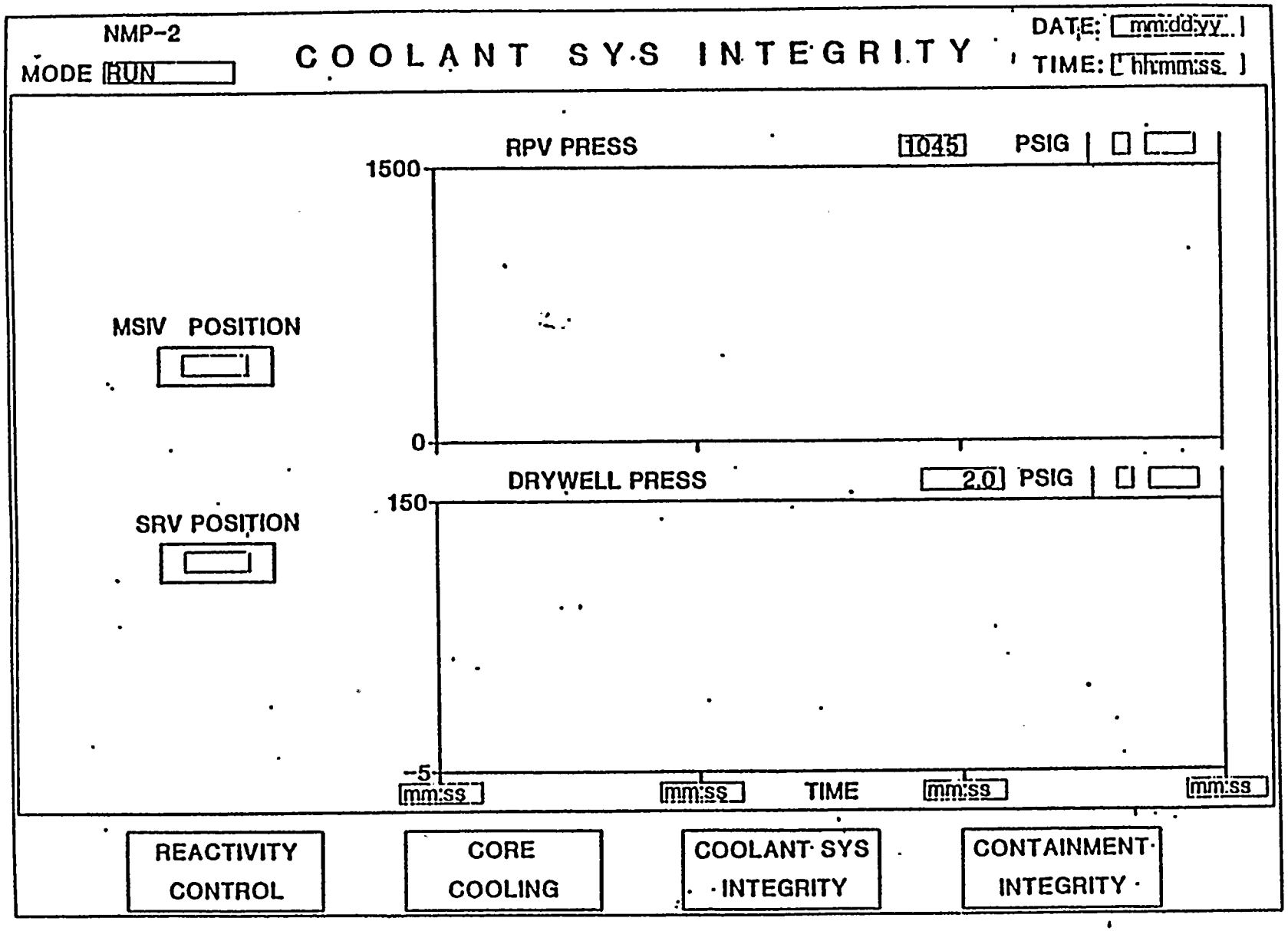


FIGURE A-4
COOLANT SYSTEM INTEGRITY DISPLAY

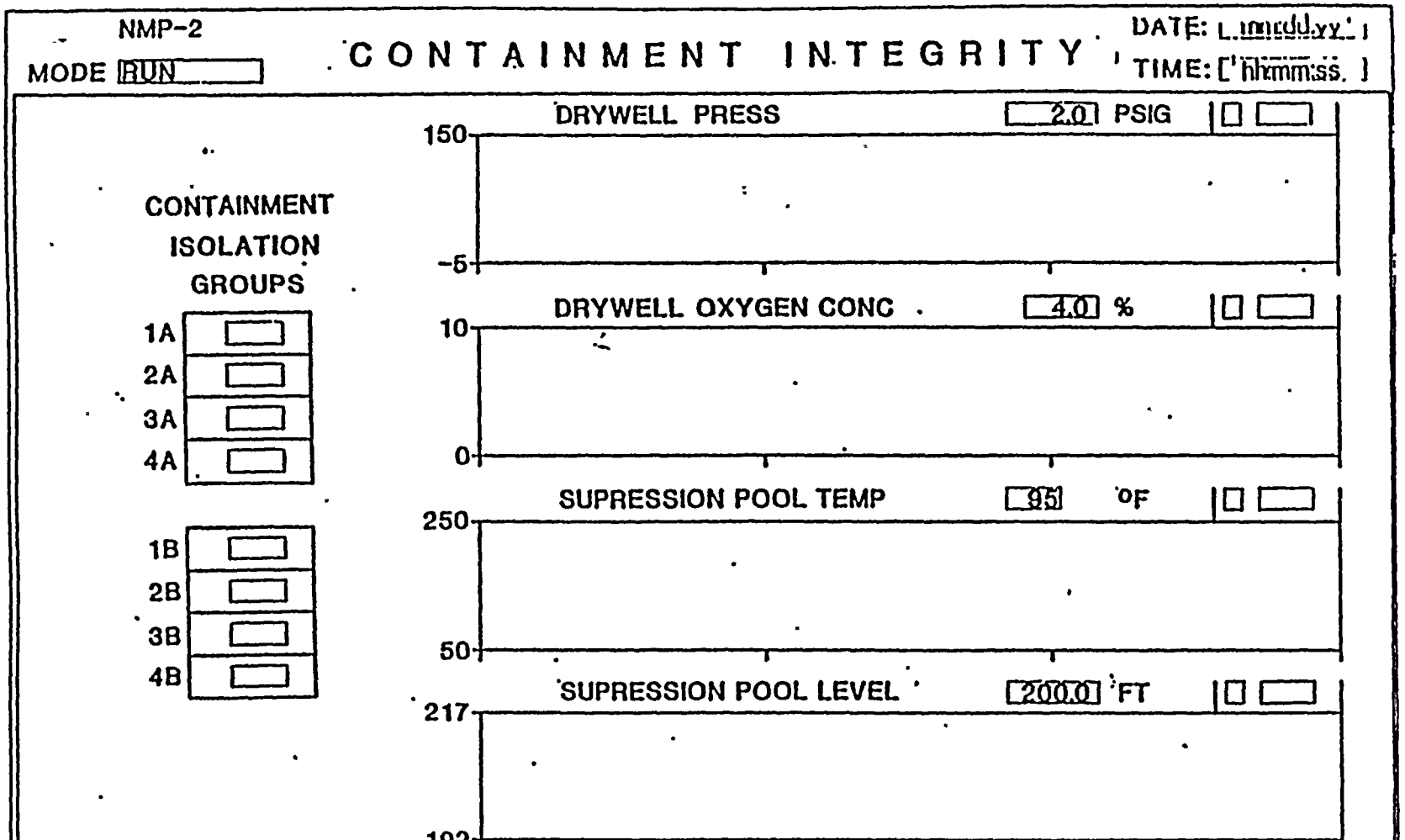


FIGURE A-5
CONTAINMENT INTEGRITY DISPLAY

18-OCT-83 09:52:33 STATUS GRID DISPLAY

NON-IE MONITORS

RMS25	1	1	RMS24	1	1	RMS19	1	1	RMS18	1	1	RMS17	1	1	RMS22	1	1	HVC91	1	1
HVC91	2	1	RMS21	1	1	RMS23	1	1	DAS50	1	1	ARC21	1	1	RMS38	1	1	RMS37	1	1
CND07	1	1	LWC65	1	1	RMS40	1	1	RMS51	1	1	RMS53	1	1	RMS50	1	1	RMS52	1	1
RMS45	1	1	RMS46	1	1	RMS47	1	1	HVQ49	1	1	HVQ49	2	1	RMS33	1	1	RMS26	1	1
RMS27	1	1	RMS34	1	1	MSS79	1	1	RMS01	1	1	RMS02	1	1	RMS03	1	1	RMS31	1	1
RMS32	1	1	RMS35	1	1	MSS75	1	1	MSS76	1	1	MSS77	1	1	MSS78	1	1	RMS48	1	1
RMS49	1	1	HVR11	1	1	HVR11	2	1	HVR12	1	1	HVR12	2	1	HVR13	1	1	HVR13	2	1
HVR15	1	1	HVR15	2	1	HVR16	1	1	HVR16	2	1	HVR17	1	1	HVR17	2	1	HVR18	1	1
HVR18	2	1	RMS07	1	1	SSR08	1	1	CCP31	1	1	GWS48	1	1	HVR14	1	1	HVR14	2	1
RMS15	1	1	RMS16	1	1	RMS20	1	1	RMS55	1	1	RMS44	1	1	RMS56	1	1	RMS43	1	1
RMS54	1	1	RMS39	1	1	RMS12	1	1	RMS13	1	1	RMS14	1	1	RMS11	1	1	CNA47	1	1
LWS70	1	1	CHS69	1	1	CHS69	2	1	RMS10	1	1	RMS09	1	1	RMS08	1	1	RMS36	1	1
RMS29	1	1	RMS06	1	1	RMS30	1	1	RMS28	1	1									

IE MONITORS SAFETY RELATED

HVZ09A	1	1	RMS04	1	1	HVC16A	1	1	RMS41	1	1	SWP60A	1	1	HVR10B	1	1	HVR10A	1	1
HVR10A	2	1	HVR10A	3	1	HVR10A	4	1	HVR10A	5	1	HVZ09B	1	1	RMS05	1	1	HVC16B	1	1
RMS42	1	1	SWP60B	1	1	HVR19B	1	1	HVR19A	1	1	HVR19A	2	1	HVR19A	3	1	HVR19A	4	1
HVR19A	5	1	CMS22	1	1	CMS22	2	1												

MONITOR STATUS LEGEND

1 = NORMAL
2 = CHECK SOURCE ACTIVE, PURGE, OR AUTO-TEST
3 = EQUIPMENT FAILURE
4 = OTHER CHANNEL ALARM(S)
5 = ALERT-RAD
6 = HIGH-RAD, HIGH-RATE, OR SATURATION
7 = OFF-LINE, UNREACHABLE, OR IN LOCAL MODE

BLINKING FIELDS INDICATE UNACKNOWLEDGED ALARMS

SYSTEM STATUS

ALTERNATE CPU = OK
SYNC SERIAL INTERFACE = UP
POLLING = YES

UNIBUS SWITCH CONTROL = YES
AUTOMATIC REPORTS = NO

18-OCT-83 09:52 [illegible] MONITORS NOT BEING FOLLED
09:52

///RMS24 1

EXHIBIT 620.01-10

18-OCT-83 09:59:06 PAGE 1.

MONITOR IDENTIFICATION				CHANNEL		CURRENT				
NUMBER	NAME	LOCATION		NUMBER	TYPE	VALUE				
1	RMS25	WSTE DISP	NON-1E	1	AREA					
2	RMS24	WSTE DISP	NON-1E	1	AREA	0.00E-01	0%	A	00:00:00	
3	RMS19	WSTE DISP	NON-1E	1	AREA					
4	RMS18	WSTE DISP	NON-1E	1	AREA	9.00E-06	0%	A	00:00:00	
7	HVC91	CNTRL BLDG	NON-1E	1	GAS	2.00E-06	0%	A	07:12:00	
				2	PART	4.00E+00	0%	A	00:00:00	
8	RMS21	SRVCE BLDG	NON-1E	1	AREA	1.00E+04	100%	H	00:00:00	
9	RMS23	SRVCE BLDG	NON-1E	1	AREA	1.00E+05	999%	H	00:00:00	
10	DAS50	TURBN BLDG	NON-1E	1	LIQU	3.10E-07	62%	H	00:00:00	
11	ARC21	TURBN BLDG	NON-1E	1	GAS	2.00E-08	0%	A	00:00:00	
12	RMS38	COND POLSH	NON-1E	1	AREA	3.00E-07	86%	A	00:00:00	
13	RMS37	COND POLSH	NON-1E	1	AREA	1.00E-03	25%	A	00:00:00	
14	CND07	COND POLSH	NON-1E	1	LIQU	3.00E-04	30%	A	00:00:00	
15	LWC65	COND POLSH	NON-1E	1	LIQU	3.00E-03	33%	A	00:00:00	
16	RMS40	HR BLDG	NON-1E	1	AREA					
17	RMS51	HR BLDG	NON-1E	1	AREA	1.00E-07	10%	A	00:00:00	
18	RMS53	HR BLDG	NON-1E	1	AREA	1.00E-07	10%	A	00:00:00	
19	RMS50	HR BLDG	NON-1E	1	AREA	1.00E-07	10%	A	00:00:00	
20	RMS52	HR BLDG	NON-1E	1	AREA	1.00E-07	10%	A	00:00:00	
24	HVB49	ESF BLDG	NON-1E	1	GAS	3.00E+03	75%	A	00:00:00	
				2	PART	1.00E-07	10%	A	00:00:00	
25	RMS33	ESF BLDG	NON-1E	1	AREA					
26	RMS26	ESF BLDG	NON-1E	1	AREA	1.00E-07	10%	A	00:00:00	
42	HVR11	AUX BLDG	NON-1E	1	GAS	1.00E-05	1%	A	00:00:00	
				2	PART	4.00E+02	10%	A	00:00:00	
67	CNA47	AUX BLDG	NON-1E	1	LIQU	1.50E-07	50%	A	00:00:00	

** USE PAGE-FORWARD [illegible] AND PAGE-BACKWARD [illegible] FUNCTION KEYS TO ACCESS DIFFERENT PAGES.

18-OCT-83 09:59

///RMS24 1

A-25

EXHIBIT 620.01-1T

26-OCT-82 17:12:23 DATABASE:01:SRLAT

MON ID	MONITOR NAME	MONITOR LOC	MODE	CODE	MONITOR CLASS	REPORTING PERIOD	CHNL TYPE
16	RMS40	HR ELEG	2	1	NON-IE	1 OF 1	AREA

CRT-LINE
REACHABLE
NO-ALARMS

LEVELS

CURR (RU) = 0.00E-01 | 1-MIN AVG = 0.00E-01 | 1-HR AVG = 0.00E-01
RAD (CPM) = 0.00E-01 | 10-MIN AVG = 5.32E-01 | 1-DAY AVG = 0.00E-01

10-MIN AVG SAMPLE FLOW = 3.00E+02 | 10-MIN AVG PROC FLOW = 5.00E+02 | TOTAL SAMP FLOW = 0.00E-01

CURR TEMP = 1.19E+02 | CURR PRES = 3.20E+01

TRIP-PNTS

HIGH LEVEL = 0.00E-01 | HIGH PRES = 0.00E-01 | HIGH TEMP = 0.00E-01
ALERT LEVEL = 0.00E-01 | LOW PRES = 0.00E-01 | LOW TEMP = 0.00E-01
RATE INCR = 0.00E-01 | LOW FLOW = 0.00E-01

CONV&FOTR

RAD LEVEL = 0.00E-01 | SAMP FLOW = 0.00E-01 | PROC FLOW = 0.00E-01

PURGE DURATION = (SEC) | **AUTO-TEST** PERIOD = HRS

CHECK-SRC EXPECTED = 0.00E-01 | RESPONSE = 0.00E-01 | PERIOD = MIN

FILTER CALIB LAST CHANGE = 01-JAN-80 | 00:00:00 | PERIOD = MIN
LAST CALIB = 01-JAN-80 | SENSITIVITY= 0.00E-01

BKGD-CHK ALARM LAST CHECK = 01-JAN-80 | LEVEL = 0.00E-01
LAST ALARM = | LEVEL = 0.00E-01 | TYPE =

LEVEL-ALARMS
HIGH LVL = NO
ALERT LVL = NO
RATE INCR = NO
HIGH PRES = NO
LOW PRES = NO
HIGH TEMP = NO
LOW TEMP = NO
LOW FLOW = NO
DET SAT = NO

EQUIP/FAIL-ALARMS
AUX EQUIP = NO
CHK SOURCE = NO
FIL STEP = NO
OUT PAPER = NO
HIGH VLTG = NO
LOW VLTG = NO
DETECTOR = NO

CONDITION-ALARMS
IN LOCAL MODE = NO
ALARMS OFF = NO

ACTIVITIES
PURGE/BACKFLUSH = NO
FILTER STEP = NO
CHECK SOURCE ON = NO
PUMPS ON = NO
AUTO-TEST ON = NO
ACTIVE MODE = NO

PARAMETER UNITS: RAD UNITS=MR/HR RATE INCR=RU/SEC CPM=RU/CPM

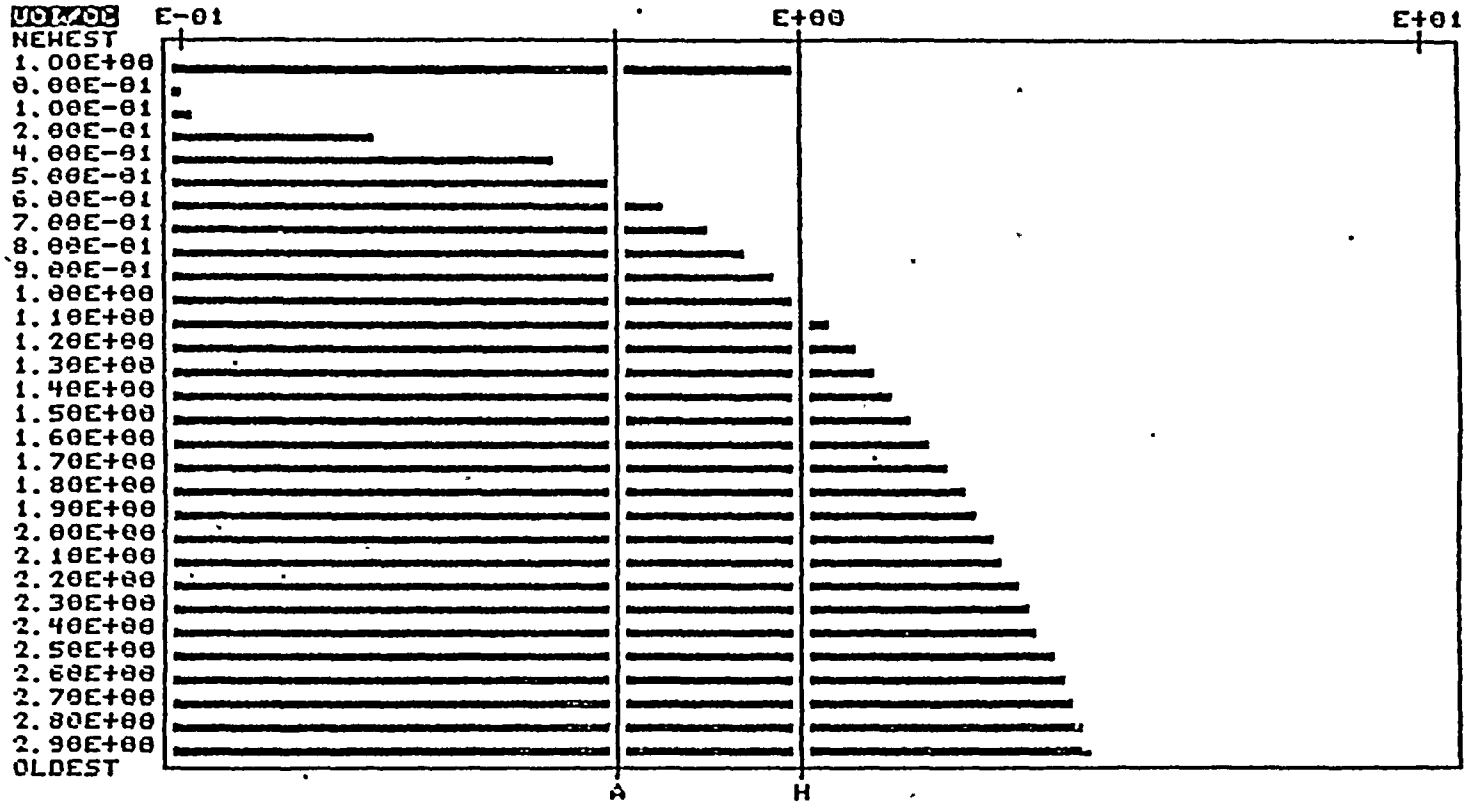
17:12
26-OCT-82 [illegible] OPEN/MINUTE/AVERAGES/REPORT/EXECUTING
COMMAND: RMS40 1///

A-24

EXHIBIT 620.01-12

18-OCT-83 10:16:55 RADIATION LEVEL TREND DISPLAY

ALERT 5.00E-01
HIGH 1.00E+00



MONITOR IDENTIFICATION			CHANNEL	TIME	CURRENT READING
NUMBER	NAME	LOCATION	SIGNAL	INTERVAL	
7	HVC91	CNTRL BLDG NON-1E	1 GAS	10-MIN	2.00E+00

10:17

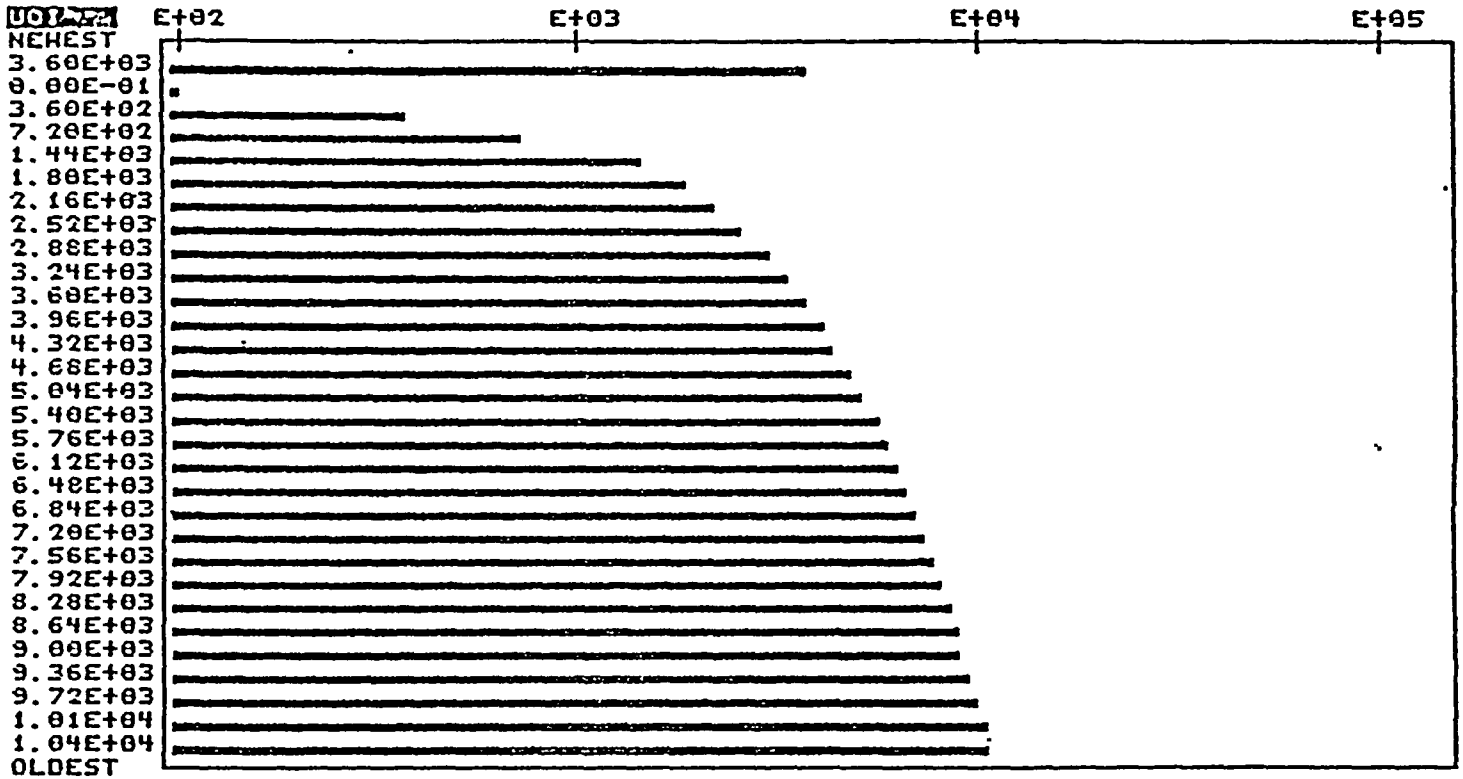
COMMAND

///RMS24 1///

EXHIBIT 620.01-13

A-27

18-OCT-83 10:18:15 INTEGRATED RELEASE TREND DISPLAY



MONITOR IDENTIFICATION NUMBER NAME LOCATION DESC	CHANNEL TYPE	TIME INTERVAL	TOTAL RELEASE IN UDI
7 HVC91 CNTRL BLDG NON-1E	1 GAS	1-HOUR	1.59E+05

10:18

COMMAND

///HVC91 1

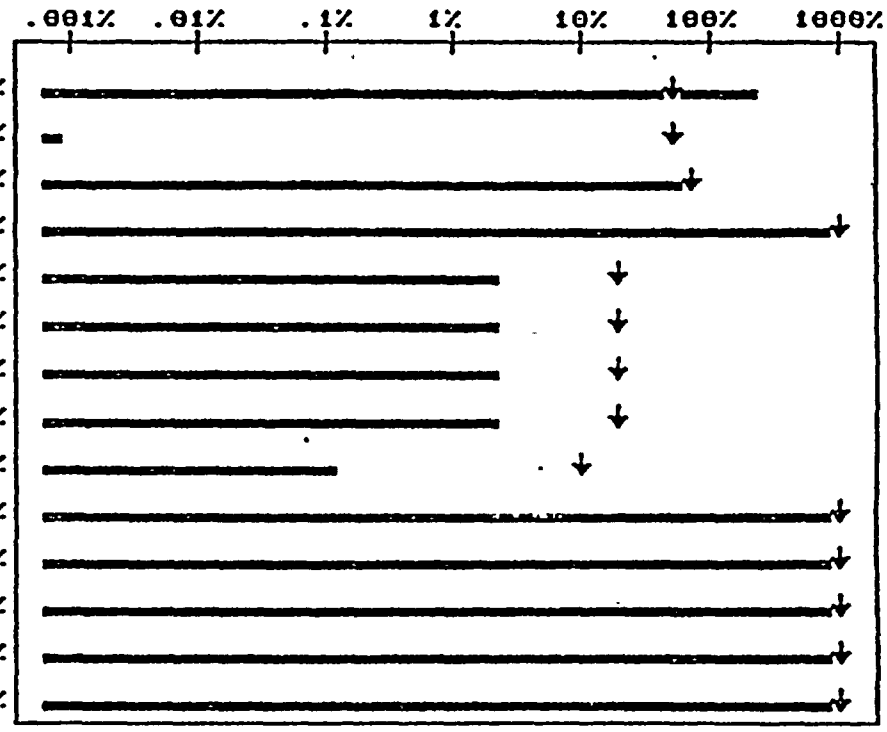
EXHIBIT 6.20-01-14

A-28

18-OCT-83 10:20:38 [illegible] GAS PAGE 1.

MONI NUM	MONITOR NAME	CHNL NUM	CURRENT LEVEL	PCNT HIGH
7	HVC91	1	2.00E+00	200%
11	ARC21	1	2.00E-08	0%
24	HVQ49	1	3.00E+03	60%
29	MSS79	1	0.00E-01	1000%
36	MSS75	1	1.00E-07	2%
37	MSS76	1	1.00E-07	2%
38	MSS77	1	1.00E-07	2%
39	MSS78	1	1.00E-07	2%
42	HVR11	1	1.00E-05	100%
43	HVR12	1	0.00E-01	1000%
44	HVR13	1	0.00E-01	1000%
45	HVR15	1	0.00E-01	1000%
46	HVR16	1	0.00E-01	1000%
47	HVR17	1	0.00E-01	1000%

CURRENT LEVEL PERCENT [illegible] HIGH TRIP POINT



↓ : ALERT RADIATION LEVEL TRIP POINT

10:20

HVC91 1///

A-29

EXHIBIT 620,01-15

18-OCT-83 10:05:48 [illegible] LOOP1 PAGE 1.

MONITOR IDENTIFICATION				CHANNEL		CURRENT	[illegible]		[illegible]	
1	RMS25	WSTE DISP	NON-1E	1	AREA	[illegible]	5.50E+00	0%	5.50E+00	0%
2	RMS24	WSTE DISP	NON-1E	1	AREA	0.00E-01	5.50E+00	0%	5.50E+00	0%
3	RMS19	WSTE DISP	NON-1E	1	AREA	[illegible]	5.50E+00	0%	5.50E+00	0%
4	RMS18	WSTE DISP	NON-1E	1	AREA	9.00E-06	9.00E-01	.001%	1.00E-01	.009%
5	RMS17	WSTE DISP	NON-1E	1	AREA	0.00E-01	0.00E-01	0%	0.00E-01	0%
6	RMS22	CNTRL BLDG	NON-1E	1	AREA	0.00E-01	0.00E-01	0%	0.00E-01	0%
7	HVC91	CNTRL BLDG	NON-1E	1	GAS	2.00E-06	1.00E-03	.200%	5.00E-03	.040%
				2	PART	4.00E+00	4.00E+03	.100%	4.00E+04	.010%
8	RMS21	SRVCE BLDG	NON-1E	1	AREA	1.00E+04	1.00E+03	1000%	1.00E+04	100%
9	RMS23	SRVCE BLDG	NON-1E	1	AREA	1.00E+05	1.00E+03	1000%	1.00E+04	1000%
10	DAS50	TURBN BLDG	NON-1E	1	LIQU	3.10E-07	3.00E-07	103%	5.00E-07	62%
11	ARC21	TURBN BLDG	NON-1E	1	GAS	2.00E-08	2.50E-03	.001%	5.00E-03	0%
12	RMS38	COND POLSH	NON-1E	1	AREA	3.00E-07	3.50E-07	86%	5.00E-07	60%
13	RMS37	COND POLSH	NON-1E	1	AREA	1.00E-03	4.00E-03	25%	6.00E-03	17%
14	CND07	COND POLSH	NON-1E	1	LIQU	3.00E-04	1.00E-03	30%	2.00E-02	2%
15	LWC65	COND POLSH	NON-1E	1	LIQU	3.00E-03	9.00E-03	33%	2.00E-02	15%

18-OCT-83 10:05:22 WARNING MONITORS NOT BEING POLLED

10:05

COMMAND

RMS24 1///

A-30

EXHIBIT 620.01-16

18-OCT-83 10:07:22 [illegible] PAGE 1.

LOG TYPE: [illegible]

DATE	TIME	MONITOR	[illegible]	[illegible]
18-OCT-83	10:07:18	CNSL	1	TEN
18-OCT-83	10:06:44	CNSL	1	DAI
18-OCT-83	10:05:26	CNSL	1	FUN LOOP1
18-OCT-83	10:02:21	CNSL	1	FIL
18-OCT-83	10:02:10	CNSL	1	FUN
18-OCT-83	10:01:58	CNSL	1	FLO
18-OCT-83	10:01:37	CNSL	1	FLO
18-OCT-83	10:00:43	CNSL	1	RAD RMS21 1 T
18-OCT-83	10:00:01			HOURLY ALARM REPORT EXECUTING
18-OCT-83	09:59:00	CNSL	1	OUT
18-OCT-83	09:31:03	CNSL	1	STA
18-OCT-83	09:00:07			SWITCH ASSUMED
18-OCT-83	09:00:03	CNSL	1	STA
18-OCT-83	08:59:40			SWITCH ASSUMED
18-OCT-83	08:59:18			SWITCH ASSUMED
18-OCT-83	08:59:07			HNDSHK IN PROG
18-OCT-83	08:59:07			POLL FAIL ALT
18-OCT-83	08:58:35			HNDSHK IN PROG
18-OCT-83	08:58:35			POLL FAIL ALT
18-OCT-83	08:58:03			HNDSHK IN PROG
18-OCT-83	08:58:03			POLL FAIL ALT
18-OCT-83	08:57:31			HNDSHK IN PROG
18-OCT-83	08:57:31			POLL FAIL ALT

[illegible] END OF LOG EVENTS [illegible]

[illegible] 10:07

[illegible] ///RMS24 1///

A-31

EXHIBIT 620.01-17

18-OCT-83 10:08:21 LOAR STATUS DISPLAY

DATA LOOP 1 OF 8

# MONITORS:	16
LOOP CLASS:	NON-16

LOOPS NORMAL:	3 8
LOOPS ABNORMAL:	[illegible]

DROP NUMBER	MON NUMBER	MONITOR NAME	MONITOR LOCATION	# MONITORS	ON/OFF LINE	[illegible]	[illegible]	[illegible]	DROP NUMBER
1	1	RMS25	WSTE DISP	1	OFF	NO	YES	YES	1
2	2	RMS24	WSTE DISP	1	ON	YES	NO	YES	2
3	3	RMS19	WSTE DISP	1	OFF	YES	NO	NO	3
4	-								4
5	-								5
6	4	RMS18	WSTE DISP	1	ON	YES	YES	NO	6
7	5	RMS17	WSTE DISP	1	ON	NO	YES	YES	7
8	6	RMS22	CNTRL BLDG	1	ON	NO	YES	YES	8
9	-								9
10	7	HVC91	CNTRL BLDG	2	ON	YES	YES	YES	10
11	-								11
12	8	RMS21	SRVCE BLDG	1	ON	YES	YES	YES	12
13	9	RMS23	SRVCE BLDG	1	ON	YES	YES	YES	13
14	-								14
15	10	DAS50	TURBN BLDG	1	ON	YES	YES	YES	15
16	11	ARC21	TURBN BLDG	1	ON	YES	YES	YES	16
17	12	RMS38	COND POLSH	1	ON	YES	YES	YES	17
18	13	RMS37	COND POLSH	1	ON	YES	YES	YES	18
19	14	CND07	COND POLSH	1	ON	YES	YES	YES	19
20	15	LWC65	COND POLSH	1	ON	YES	YES	YES	20

** DROP NUMBERS ARE ASSIGNED STARTING AT COMMUNICATION PORT A

18-OCT-83 [illegible] MONITORS NOT BEING FOLLED [illegible]
10:08

COMMAND RMS24 1///

EXHIBIT 620.01-18

A-32

18-OCT-83 10:03:14 [illegible]

FUNCTION GROUP NAMES	FLOOR PLAN SCHEMA [illegible]
LOOP1	CONTBLD1
LOOP2	ESFBLD1
LOOP3	AUXBLD2A
LOOP4	AUXBLD2B
LOOP5	CNDSPOL2
LOOP6	CONTBLD2
LOOP7	ESFBLD2
AREA	FUELBLD2
GAS	HSTDISP2
LIQUID	AUXBLD3
PART	CONTBLD3
PI	ESFBLD3
FG1	FUELBLD3
ALARMS	HYDGREC3
HVR	MSVBLD3
FG2	HSTDISP3
	AUXBLD4
	CONTBLD4
	ESFBLD4
	FUELBLD4
	MSVBLD4
	AUXBLD5
	MSVBLD5
	TRBNBLDG
	FS1
********	********
BLD NEW	BLD NEW
DELETE	DELETE
DISP GROUP HISTO	UPDATE
DISP FUNC GROUP	DISP FLOOR PLAN

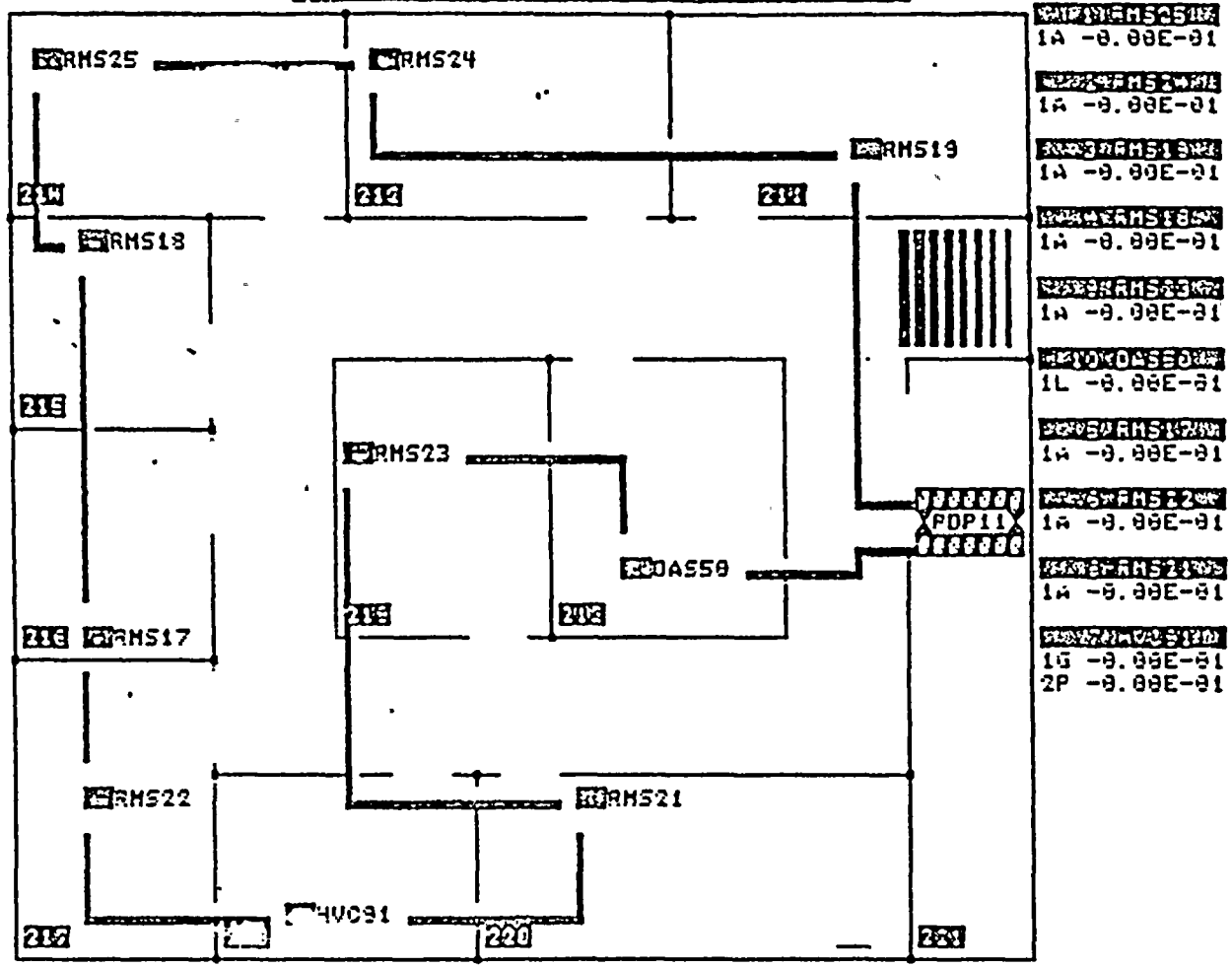
1. SELECT ACTION VERB
2. SELECT FILE NAME

[illegible]
10:03

///RMS24 1 //

EXHIBIT 620.01-19

26-OCT-82 17:13:55

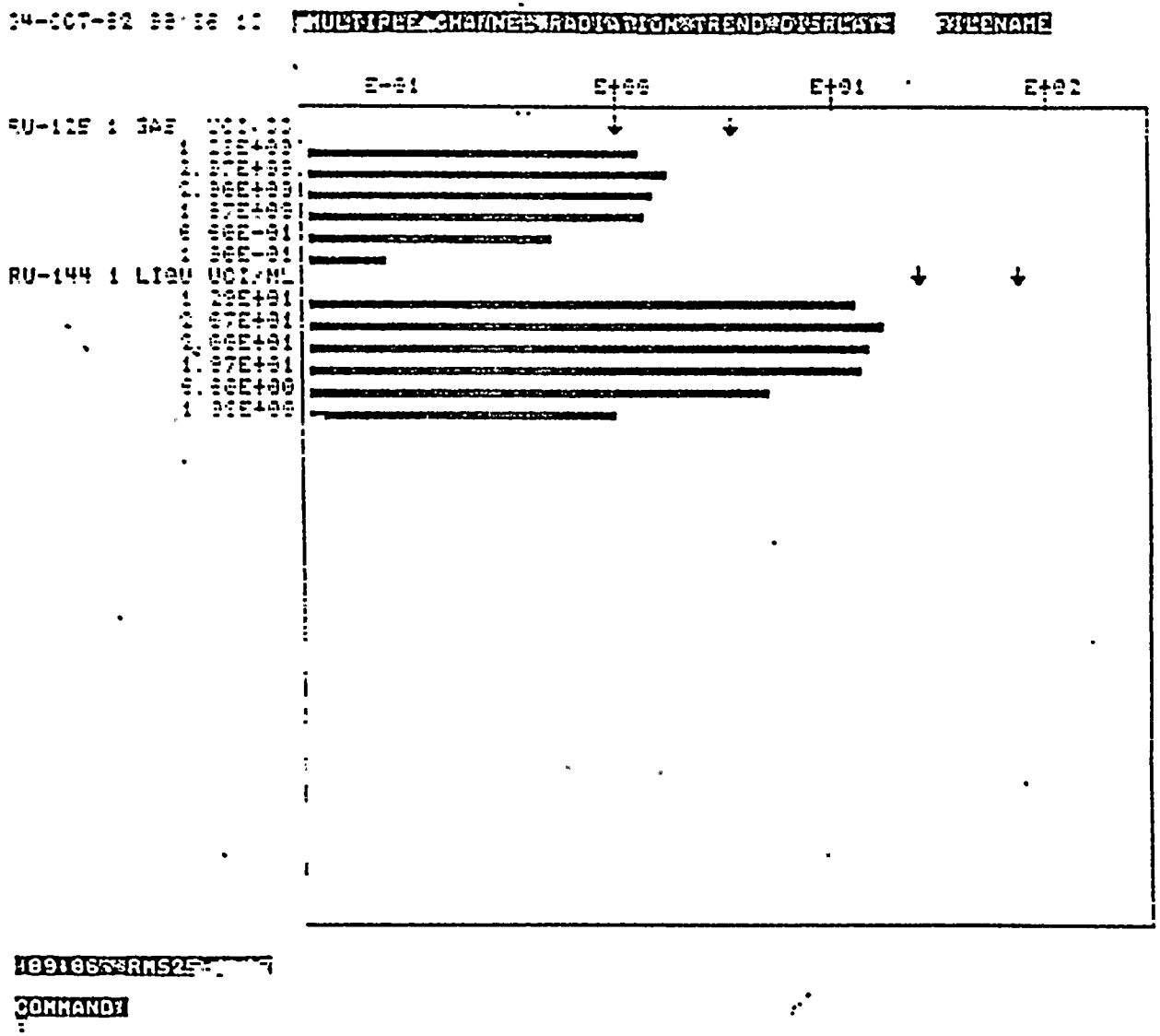


17:13

RMS40 1///

A-34

EXHIBIT 620.01-20



A-35

EXHIBIT 620.01-21

18-SEP-83 15:09:32 CPU-A [illegible] [illegible] PAGE 1.

1.44E-04 NORMAL

[illegible]	[illegible]	[illegible]	[illegible]
18-OCT-83	15:01:03	CNSL 1	HON HVR11 1
18-OCT-83	15:00:08	CNSL 1	BAK HVR11 1 1.77E-08
18-OCT-83	14:59:22	CNSL 1	DAT HVR11 1
18-OCT-83	14:47:06	HVR11 1	***HIGH-COND. ALARM ON (.....).
18-OCT-83	14:46:12	HVR11 1	***FILTER MECHANISM PAPER USED UP.
18-OCT-83	14:46:12	HVR11 1	BEGAN AUTOMATIC TEST CYCLE.
18-OCT-83	14:46:12	HVR11 1	TURNED ON PUMPS.
18-OCT-83	14:46:12	HVR11 1	TURNED ON CHANNEL CHECK SOURCE (1.00E-07).
18-OCT-83	14:46:12	HVR11 1	STARTED ADVANCING FILTER PAPER.
18-OCT-83	14:46:12	HVR11 1	BEGAN PURGE OR BACKFLUSH (1.00E-07).
18-OCT-83	14:46:12	HVR11 1	DISABLED LOCAL ALARMS.
18-OCT-83	14:46:12	HVR11 1	BEGAN ACTIVE MODE.
18-OCT-83	14:46:12	HVR11 1	ENDED AUTOMATIC TEST CYCLE.
18-OCT-83	14:46:12	HVR11 1	TURNED OFF PUMPS.
18-OCT-83	14:46:12	HVR11 1	TURNED OFF CHANNEL CHECK SOURCE (1.00E+03).
18-OCT-83	14:46:12	HVR11 1	STOPPED ADVANCING FILTER PAPER.
18-OCT-83	14:46:12	HVR11 1	ENDED PURGE OR BACKFLUSH (1.00E+03).
18-OCT-83	14:46:12	HVR11 1	ENABLED LOCAL ALARMS.
18-OCT-83	14:46:12	HVR11 1	ENDED ACTIVE MODE.
18-OCT-83	14:46:12	HVR11 1	***DETECTOR BACK IN OPERATION.
18-OCT-83	14:46:12	HVR11 1	***HIGH-VOLTAGE POWER SUPPLY BACK IN OPERATION.
18-OCT-83	14:46:12	HVR11 1	***FILTER MECHANISM PAPER INSTALLED.
18-OCT-83	14:46:12	HVR11 1	***FILTER MECHANISM STEP BACK IN OPERATION.
18-OCT-83	14:46:12	HVR11 1	***CHANNEL CHECK SOURCE BACK IN OPERATION.
18-OCT-83	14:46:12	HVR11 1	***AUXILIARY EQUIPMENT BACK IN OPERATION.
18-OCT-83	14:46:12	HVR11 1	***DETECTOR SATURATION ALARM OFF.
18-OCT-83	14:46:12	HVR11 1	***LOCAL MODE ALARM OFF.
18-OCT-83	14:46:12	HVR11 1	DOWNLOAD REQUEST OFF.
18-OCT-83	14:46:12	HVR11 1	UPLOAD REQUEST OFF.
18-OCT-83	14:46:12	HVR11 1	***HIGH-COND. ALARM OFF (.....).

** USE PAGE-FORWARD [illegible] AND PAGE-BACKWARD [illegible] FUNCTION KEYS TO ACCESS DIFFERENT PAGES.

15:09

EXHIBIT 620.01-22

A-36

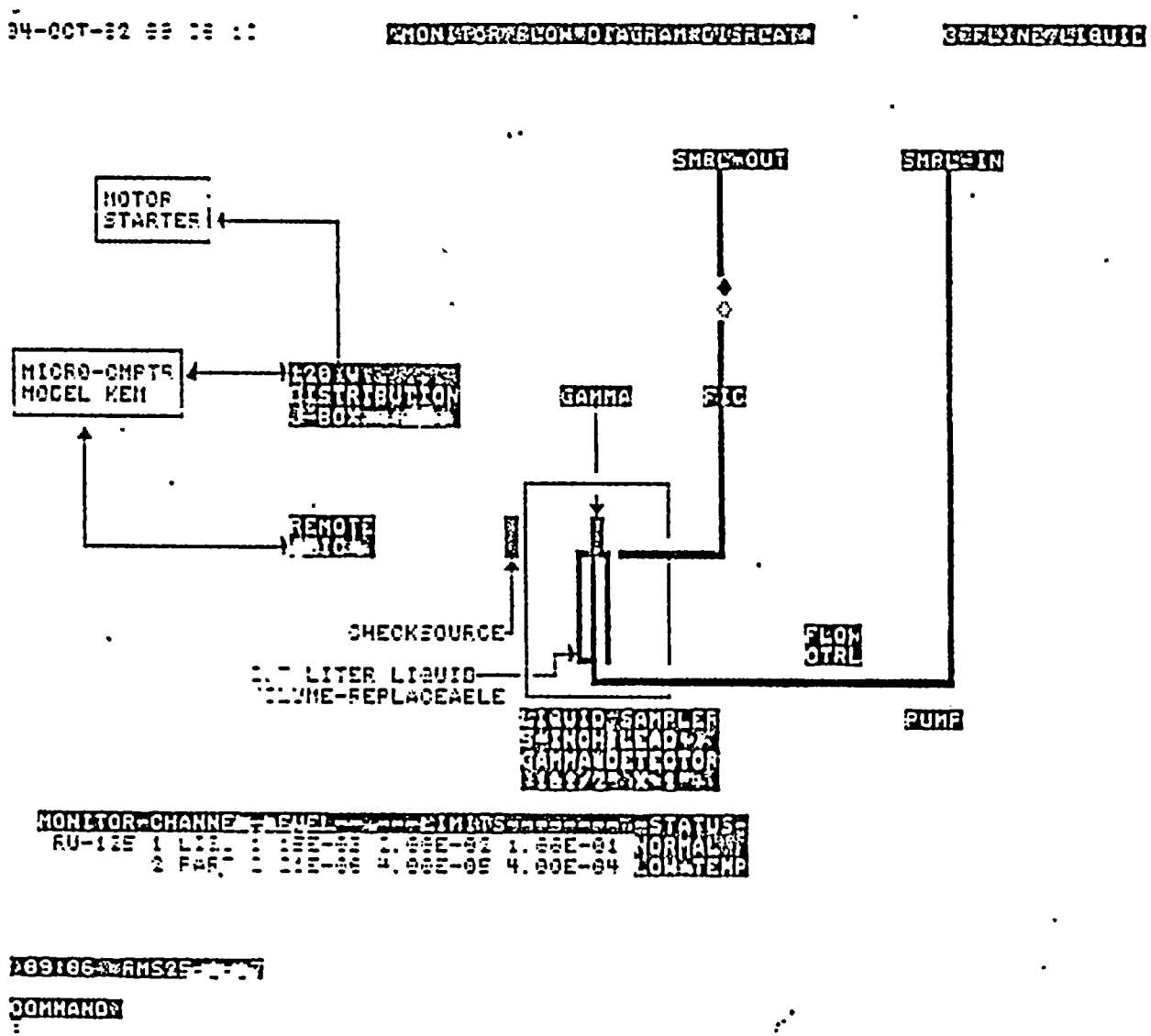


EXHIBIT 620.01-23

18-SEP-83 15:10:01 CPU-A [illegible] [illegible] PAGE 1.

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1	RMS25	WSTE DISP	NON-1E	1 AREA				[illegible]
2	RMS24	WSTE DISP	NON-1E	1 AREA	0.00E-01	0%	2.11E-04	[illegible]
3	RMS19	WSTE DISP	NON-1E	1 AREA			2.11E-04	[illegible]
4	RMS18	WSTE DISP	NON-1E	1 AREA	9.00E-06	0%	2.11E-04	[illegible]
7	HVC91	CNTRL BLDG	NON-1E	1 GAS	2.00E-06	0%	2.11E-04	[illegible]
				2 PART	4.00E+00	0%	2.11E-04	[illegible]
8	RMS21	SRVCE BLDG	NON-1E	1 AREA	1.00E+04	100%	2.11E-04	[illegible]
9	RMS23	SRVCE BLDG	NON-1E	1 AREA	1.00E+05	999%	2.11E-04	[illegible]
10	DAS50	TURBN BLDG	NON-1E	1 LIQU	3.10E-07	62%	2.11E-04	[illegible]
11	ARC21	TURBN BLDG	NON-1E	1 GAS	2.00E-08	0%	2.11E-04	[illegible]
12	RMS38	COND POLSH	NON-1E	1 AREA	3.00E-07	86%	2.11E-04	[illegible]
13	RMS37	COND POLSH	NON-1E	1 AREA	1.00E-03	25%	2.11E-04	[illegible]
14	CND07	COND POLSH	NON-1E	1 LIQU	3.00E-04	30%	2.11E-04	[illegible]
15	LWC65	COND POLSH	NON-1E	1 LIQU	3.00E-03	33%	2.11E-04	[illegible]
16	RMS40	HR BLDG	NON-1E	1 AREA			2.11E-04	[illegible]
17	RMS51	HR BLDG	NON-1E	1 AREA	1.00E-07	10%	2.11E-04	[illegible]
18	RMS53	HR BLDG	NON-1E	1 AREA	1.00E-07	10%	2.11E-04	[illegible]
19	RMS50	HR BLDG	NON-1E	1 AREA	1.00E-07	10%	2.11E-04	[illegible]
20	RMS52	HR BLDG	NON-1E	1 AREA	1.00E-07	10%	2.11E-04	[illegible]
24	HVQ49	ESF BLDG	NON-1E	1 GAS	3.00E+03	75%	2.11E-04	[illegible]
				2 PART	1.00E-07	10%	2.11E-04	[illegible]
25	RMS33	ESF BLDG	NON-1E	1 AREA			2.11E-04	[illegible]
26	RMS26	ESF BLDG	NON-1E	1 AREA	1.00E-07	10%	2.11E-04	[illegible]
42	HVR11	AUX BLDG	NON-1E	1 GAS	1.00E-05	1%	2.11E-04	[illegible]
				2 PART	4.00E+02	10%	2.11E-04	[illegible]
67	CNA47	AUX BLDG	NON-1E	1 LIQU	1.50E-07	50%	2.11E-04	[illegible]

** USE PAGE-FORWARD [illegible] AND PAGE-BACKWARD [illegible] FUNCTION KEYS TO ACCESS DIFFERENT PAGES.

15:17

EXHIBIT 620.01-24

```
84-OCT-82 [illegible]          SWITCHABLE ALARM RELAY DISPLAY          FILENAME

MONITOR CHANNEL ALARM
NAME   NO TYPE CRITERIA
FU-131 1 LIQU EQUIP RAIL
FU-132 1 GAS  HIGH LEVEL
FU-133 2 AREA ALERT LEVEL
FU-118 1 PART LOW FLOW
FU-112 3 GAS  OFF LINE

FU-144 1 GAS  EQUIP RAIL

89186 RMS25-[illegible]
COMMAND
```

EXHIBIT 620.01-25

Display Number 1 (Rev. 1) - Default Display

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT UNIT 2

GEMS

CURRENT DATE
27-FEB-84

CURRENT TIME
07:57:23

RELEASE RATES (MICRO-CURIES/SEC)				
SYSTEM	PARTICULATE	IODINE	NOBLE GAS	TOTAL
STACK	(0.00E-01)	0.00E-01	0.00E-01	(0.00E-0)
VENT	0.00E-01	0.00E-01	0.00E-01	0.00E-01

VALUES IN PARENTHESIS DENOTE EDITED VALUES

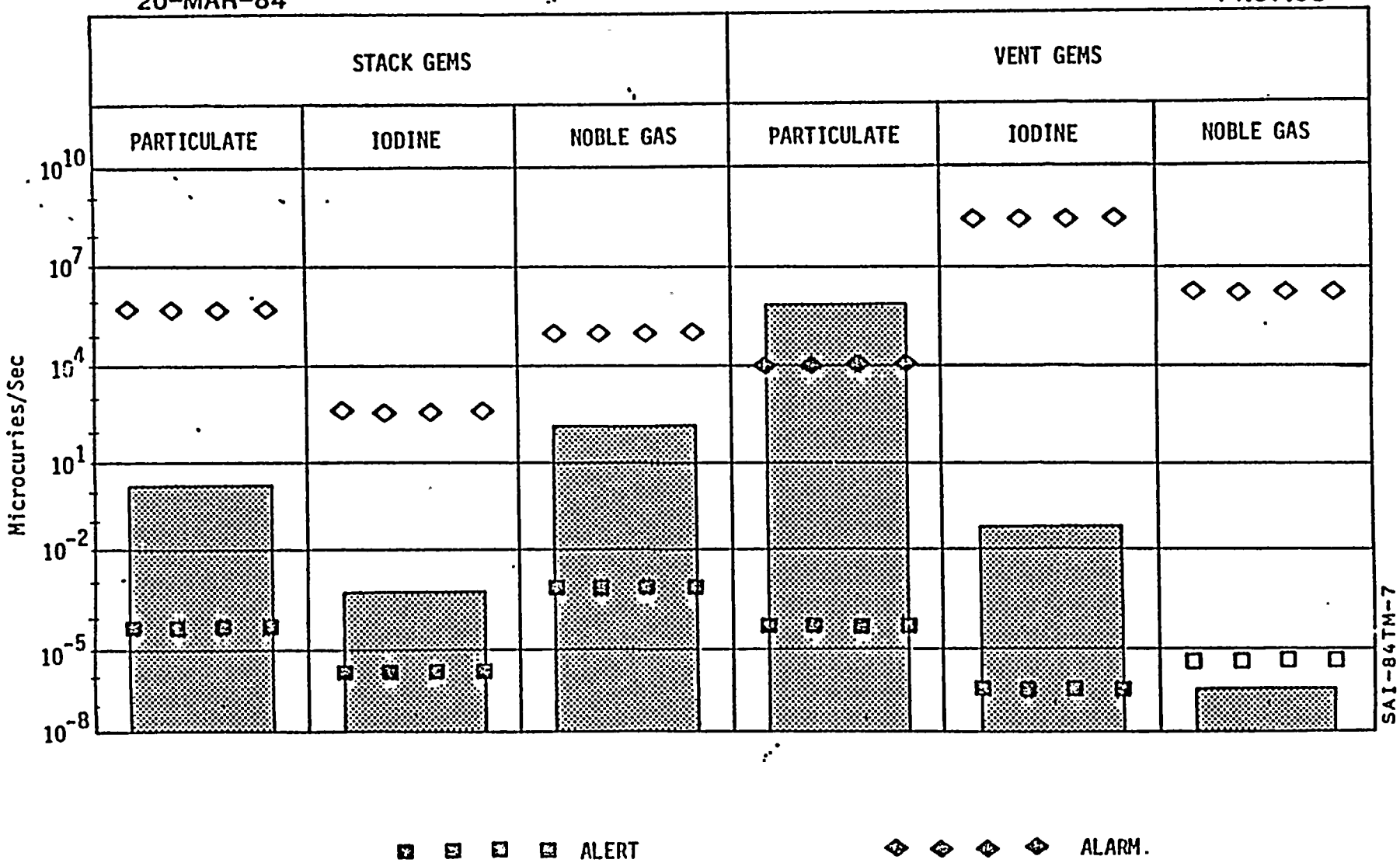
SAI-84TM-11

Display Number 2 (Rev. 1)

CURRENT RELEASE LEVEL DISPLAY

CURRENT DATE
20-MAR-84

CURRENT TIME
14:07:08



SAI-84TM-7

EXHIBIT 620.01-27

ISOTOPIC RELEASE REPORT

STACK GEMS PARTICULATE STATION

SAMPLING PERIOD (DATE & TIME) TO (DATE & TIME)

ISOTOPE	RELEASE RATE MICROCURIES/SEC	ALARM SET		ALARM STATUS	
		ALERT	ALARM	ALERT	ALARM
TOTAL	(5.55E-05)	1.00E-05	1.50E+02		
BA-140	1.50E-80				
CE-141	(2.30E-06)				
CO-58	1.52E-09				
CO-60	2.01E-12				
CR-51	3.55E-07				
CS-134	9.22E-08				
CS-137	(2.31E-05)				
MN-54	8.11E-07				
NB-95	3.99E-08				
SB-125	(6.23E-11)				
ZN-65	5.12E-10				
ZR-95	5.55E-05				

Values in parenthesis denote Edited Values.

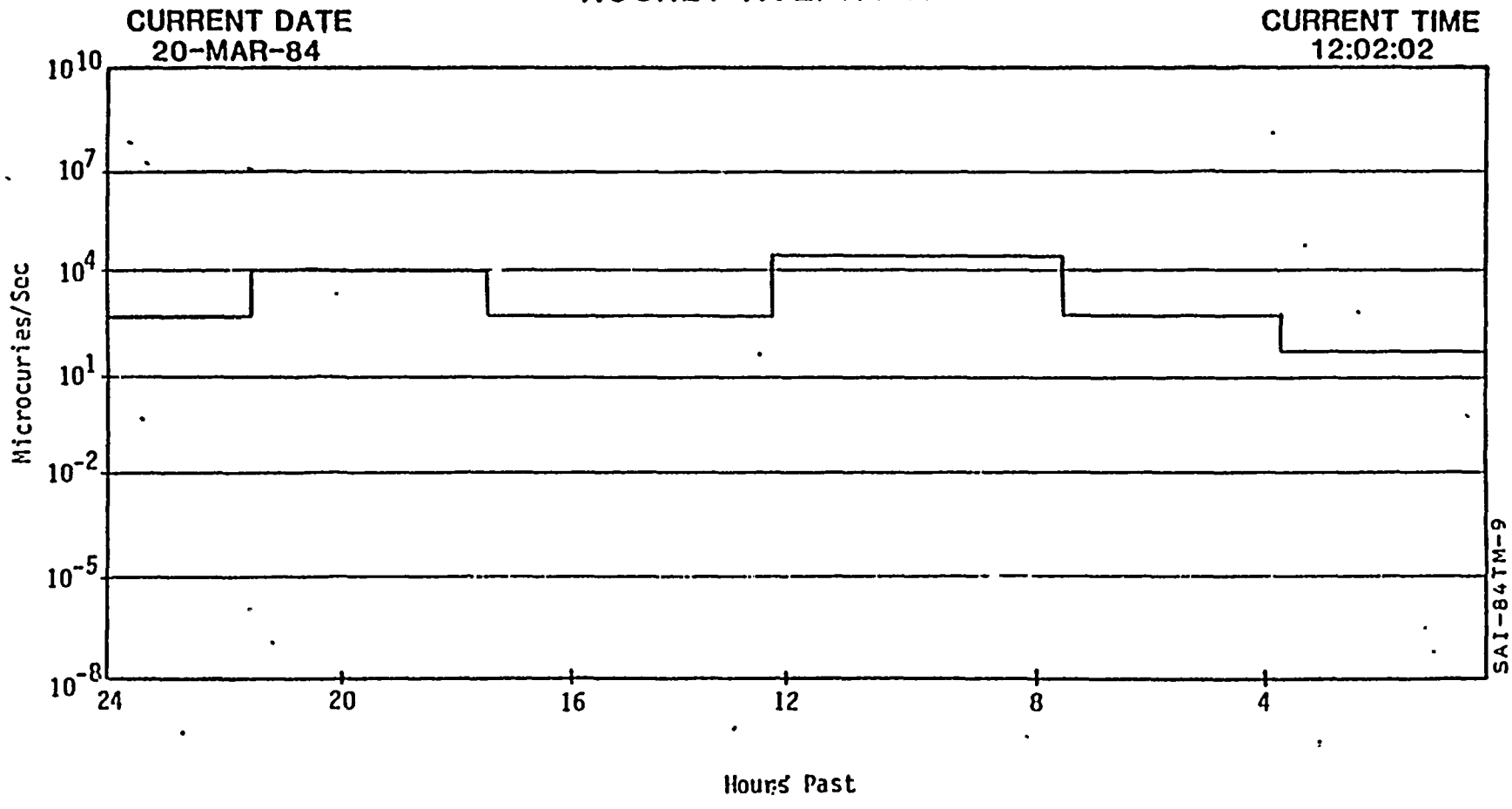
5AI-94TM-12

play Number 4 (Rev. 2)

TREND DISPLAY

STACK GEMS PARTICULATE STATION

HOURLY AVERAGES



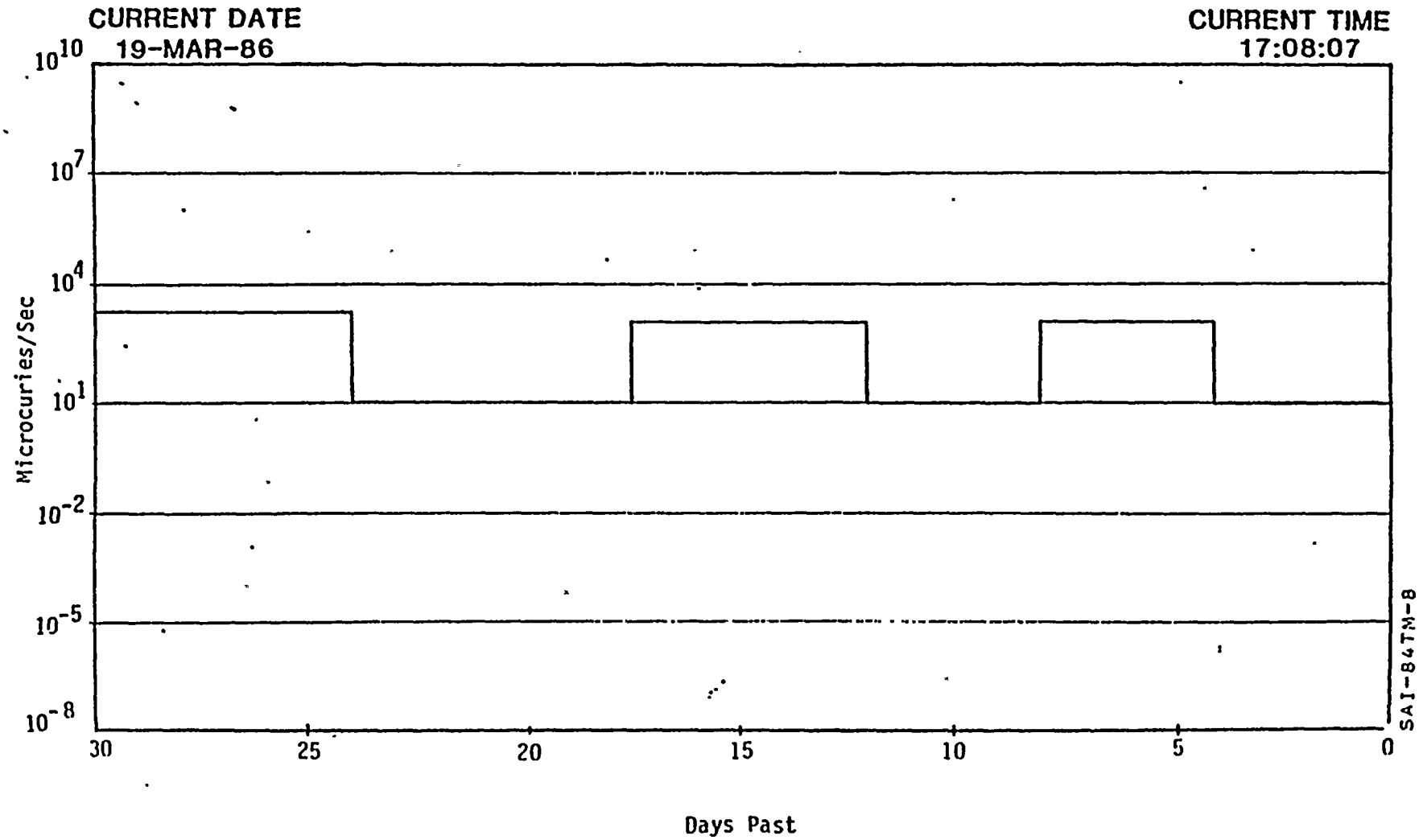
SAI-84TM-9

EXHIBIT 620.01-29

TREND DISPLAY

STACK GEMS PARTICULATE STATION

DAILY AVERAGES



SAI-84TM-8

play Number 6 (Rev. 1)

STACK GEMS TREND DISPLAY

CURRENT DATE
20-MAR-84

DAILY AVERAGES

CURRENT TIME
12:11:32

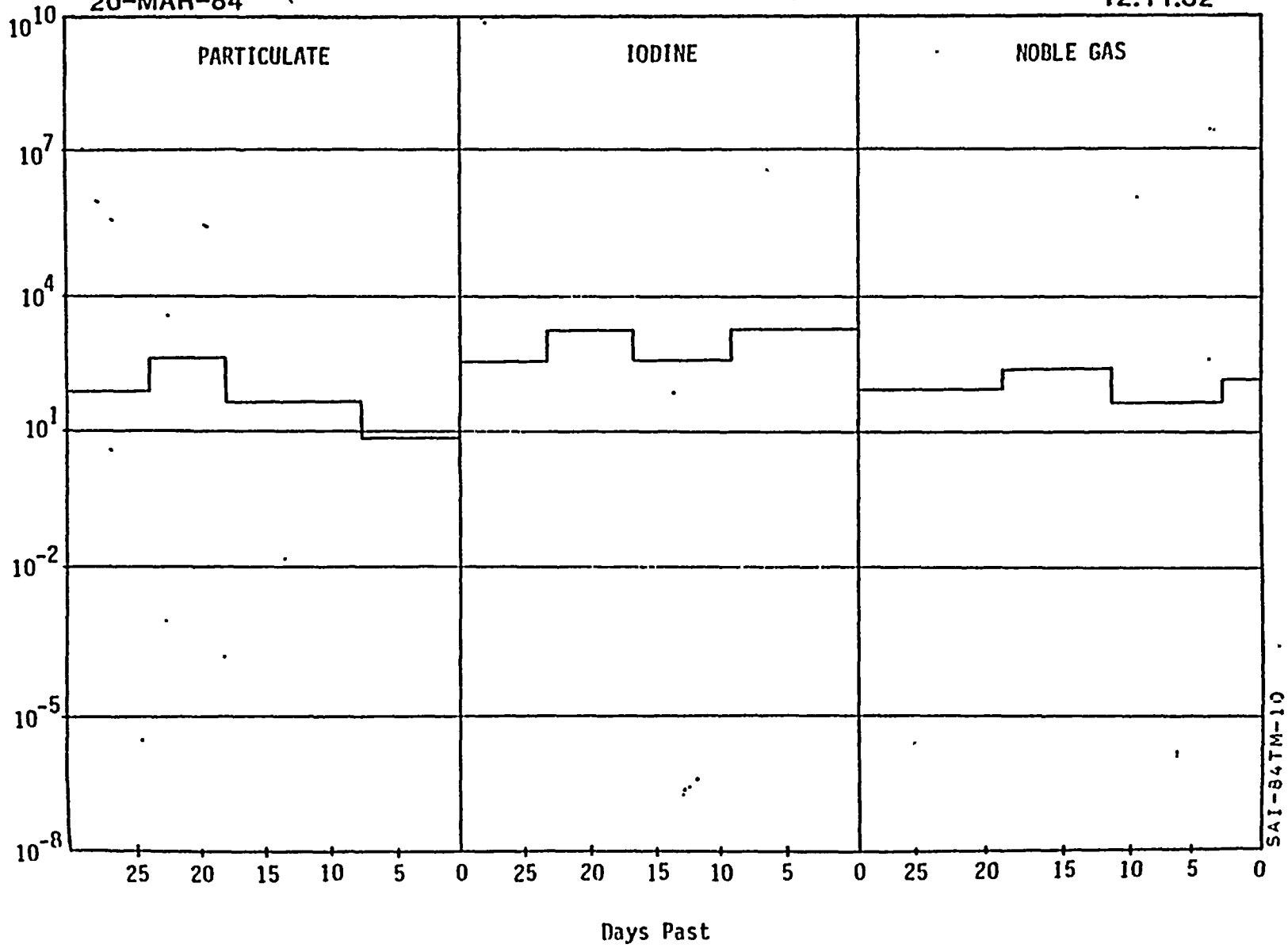
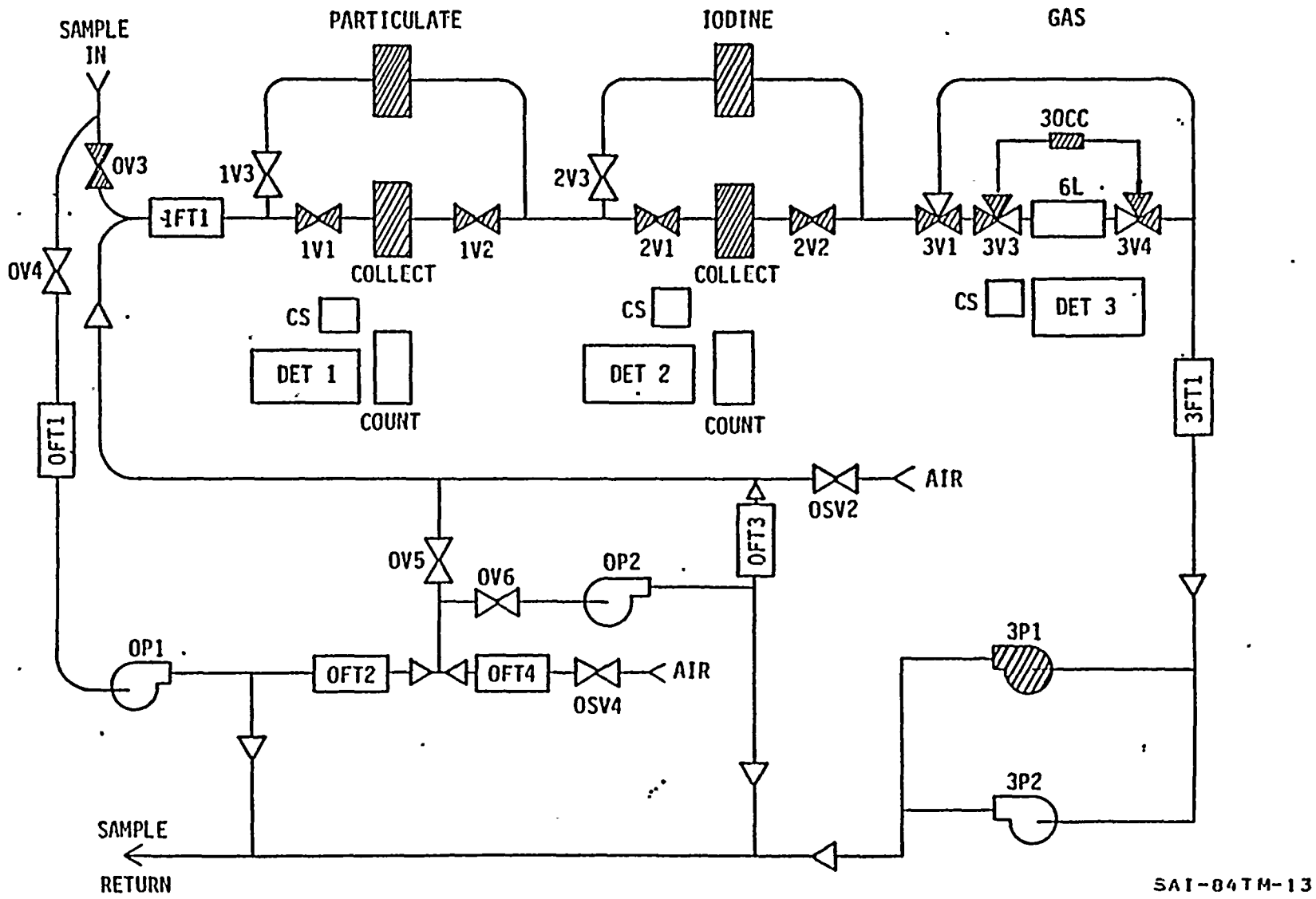


EXHIBIT 620.01-31

STACK GEMS

SYSTEM STATUS DISPLAY



STACK GEMS SYSTEM PARAMETERS

PARTICULATE STATION

DATA	VALUE	ENTERED BY	DATE	TIME
INIT. COLLECT TIME (SEC)	1000.	SAI	3-19-84	13:35:20
INIT. COUNT TIME (SEC)	1000.	SAI	3-19-84	13:35:36
DELAY TIME (SEC)	200.	SAI	3-19-84	13:35:46
MAX. COLLECT TIME (SEC)	691200.	SAI	3-19-20	13:36:00
MIN. COLLECT TIME (SEC)	600.	SAI	3-19-84	13:36:20
MAX. COUNT TIME (SEC)	28800.	SAI	3-19-84	13:36:33
MIN. COUNT TIME (SEC)	900.	SAI	3-19-84	13:36:45
BACKGROUND ALARM (CPS)	2.5	SAI	3-19-84	13:36:50

SAI-84TM-26

STACK GEMS SYSTEM PARAMETERS

IODINE STATION

DATA	VALUE	ENTERED BY	DATE	TIME
INIT. COLLECT TIME (SEC)	1000.	SAI	3-19-84	13:35:20
INIT. COUNT TIME (SEC)	1000.	SAI	3-19-84	13:35:36
DELAY TIME (SEC)	0.	SAI	3-19-84	13:35:46
MAX. COLLECT TIME (SEC)	691200.	SAI	3-19-20	13:36:00
MIN. COLLECT TIME (SEC)	600.	SAI	3-19-84	13:36:20
MAX. COUNT TIME (SEC)	28800.	SAI	3-19-84	13:36:33
MIN. COUNT TIME (SEC.)	900.	SAI	3-19-84	13:36:45
BACKGROUND ALARM (CPS)	2.5	SAI	3-19-84	13:36:50

SAI-84TM-25

STACK GEMS SYSTEM PARAMETERS

NOBLE GAS STATION

DATA	VALUE	ENTERED BY	DATE	TIME
MAX. COUNT TIME (SEC)	43200.	SAI	3-19-84	14:03:55
MIN. COUNT TIME (SEC)	900.	SAI	3-19-84	14:04:05
BACKGROUND ALARM (CPS)	50.	SAI	3-19-84	14:04:10
DELTA COUNT RATIO	10.	SAI	3-19-84	14:05:10

SAI-84TM-27

STACK GEMS ALARM PRESETS (MICROCURIES/SEC)

STATION	ALERT	ALARM	ENTERED BY	DATE	TIME
PARTICULATE	1.00E-01	1.00E+01	SAI	3-19-84	14:12:37
IODINE	1.00E-01	1.00E+01	SAI	3-19-84	14:12:44
NOBLE GAS	1.00E-01	1.00E+01	SAI	3-19-84	14:12:52

SAI-84T[illegible]-24

STACK GEMS
FLOW AND COUNT RATE

PARAMETER	VALUE
STACK/VENT FLOW (KCFM)	1.030
1st STAGE DILUTION BLEED (CFM), OFT2	0.000
2nd STAGE DILUTION BLEED (CFM), OFT3	0.000
DILUTION AIR FLOW (CFM), OFT4	6.920
OUTLET FLOW (CFM), 3FT1	1.025
INLET FLOW (CFM), 1FT1	0.000
SYSTEM PRESSURE (3PT1)	0.000
GAS DETECTOR COUNT RATE (CPS)	712.890

SAI 841M 41

Display Number 13

STACK GEMS STATUS

STATION	ACTION INDEX	STATE	SECONDS UNTIL NEXT ACTION
1	6	2	2000
2	7	2	197
3	1	1	15

SAI-84TM-30

Display Number 14

PERFORM ACTION CODE

ENTER ACTION CODE

(ACTION CODE LIST ATTACHED)

SAI-84TM-29

ACTION CODE OPTIONS

1. Turn on main system inlet valve.
2. Turn off main system inlet valve.
3. Bypass a station.
4. Unbypass a station.
5. Purge a station.
6. Stop purge on a station.
7. Move cartridge to collect point.
8. Drop cartridge to count point.
9. Discard cartridge from count point.
10. End discard action.
11. Start check source at a station.
12. End check source at a station.
13. Route sample through 6-liter chamber.
14. Route sample through 30cc chamber.
15. Turn on first stage dilution.
16. Turn off first stage dilution.
17. Turn on second stage dilution.
18. Turn off second stage dilution.
19. Turn on system pump.
20. Turn off system pump.
21. Exit.

NOTE: Action Code options are designed for use by SAI personnel in system checkout and maintenance. Running of these functions by untrained personnel can seriously damage the mechanical system.

Display Number 15

PERFORM STATION CONTROL

[I (Init), F (Fail), H (Halt), R (Restart), E (Exit)]

ENTER OPTION

SAI-84TM-28

STACK GEMS
CALIBRATION SOURCES

STATION	ISOTOPE	HALF LIFE (MINUTES)	CPS	DATE	TIME
PARTICULATE	EU-152	6.94E+06	1020.0	4-24-84	00:00:00
IODINE	EU-152	6.94E+06	970.0	4-24-84	00:00:00
NOBLE GAS	EU-152	6.94E+06	1323.0	4-24-84	00:00:00

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620.02 DATA VALIDATION

a. The applicant should describe the specific method to be used to ensure that displayed data is valid (e.g. physical redundancy, analytical redundancy, etc.)

b. The applicant should explain why the use of the letter "Q" for questionable data and the use of "N" for questionable calculated values is not an inconsistency that should be corrected. A more detailed description of the display method used to indicate data quality may help the staff to understand more clearly.

Response

a) Data is checked for validity as it is scanned by the data aquisition software and by the SPDS algorithms which drive the SPDS displays. When the data fails to pass either valid data checking, it is flagged to alert the operator. Exhibit 620.02-1, an excerpt from the vendor's software documentation, which details the approach to data validation and flagging of invalid data.

b) Examination of Exhibit 620.02-1 indicates that this question is based on inaccurate information. The symbols "Q" and "N" are not used to flag the same type of invalid data. "Q" is used to flag questionable data. "N" is used to flag no data.

6.1 Analog Data Validity Checking

In order to display valid information, readings of failed sensors and sensors in drift must be eliminated from any calculation. All analog input data are checked by SEER against predetermined limits in a high/low limits table as follows:

- $X < X_L$, X is invalid,
- $X_L \leq X \leq X_H$, X is valid,
- $X > X_H$, X is invalid.

If any data point is designated invalid, the validity bit in the status word for that signal is set. The contents of the high/low limits table are given in Table 6-1.

6.2 Digital Filtering of Analog Data

Digital filtering is designed to eliminate noise from a digitized analog signal.

The PIU smoothing algorithm takes the form

$$X'(n) = AX(n) + (1-A)X(n-1),$$

where A is a user input constant between zero and one. Possible values for A are listed on page 41 of the PIU general description (PTH-021).

6.3 SPDS Analog Data Algorithms

The algorithms for the calculation of the primary SPDS analog variables are presented in appendix A.

6.3.1 Variables 'In Alert'

When the alert bid for an SPDS primary variable is set, the value of the parameter may be in doubt. The alert bit for the APRM reading is set by the SCP if any of the six APRM signals used in the averaging is invalid as determined by SEER or if any of the six APRM signals are not within a predetermined range of the average. The alert bit for the IRM or SRM reading is set if any of the IRM or SRM signals are invalid. The alert bit for RPV level, RPV pressure, or drywell oxygen concentration is set if either of the two sensors for that parameter is invalid or if the signal difference exceeds a predetermined constant. The alert bid for drywell pressure or suppression pool level is set if either of the narrow range sensors is invalid. The alert bit for suppression pool temperature is set if any of the sensors is invalid.

If the alert bit for a variable is set, the variable is said to be 'in alert.' The value of the variable is displayed in white followed by a yellow 'Q' following the numeric field. The 'Q' indicates to the operator that the variable is questionable and should be validated.

6.3.2 Variables "Failed"

When the validity bid for an SPDS primary variable is set, the value of the parameter is unknown.

The validity bit for the APRM reading is set by the SCP if all of the six APRM signals used in the averaging are invalid as determined by SEER. The validity bit for the IRM or SRM reading is set if all of the IRM or SRM signals are invalid.

The validity bit for RPV level, RPV pressure, or drywell oxygen concentration is set if both of the sensors for that parameter are invalid. The validity bit for drywell pressure or suppression pool level is set if both of the narrow range sensors are invalid and both of the wide range sensors are invalid. The validity bit for suppression pool temperature is set if all of the sensors are invalid. The validity bit for core flow is set if either of the signals for jet pump flow are invalid.

If the validity bit for a variable is set, the variable is said to be 'failed'. The value of the variable is displayed as a blank field followed by an 'N'.

620.03 VERIFICATION AND VALIDATION PROGRAM

The applicant states (Ref. 1) that its V and V program "... is structured after the NSAC report 'Verification and Validation for SPDS,' NSAC-39, December 1981..." The staff is unsure of the meaning of this statement. The applicant should provide a specific commitment regarding its plans for a V and V program. If the intent is to commit to a program identical to that described in NSAC-39, the applicant should so state. If not, the program should be described as to where and how it departs from the NSAC-39 methodology.

Response

NSAC 39 concerns itself with the V and V of the SPDS in a nuclear plant. The definition of V and V can be found on page 1 of NSAC 39. Software verification for the Unit 2 SPDS consisted of NMPC and vendor testing during different phases of the project. NMPC reviews of the development of BWROG displays and review of functional specs and detailed design specs provided the verification of the design phase. Verification of the code and implementation of the software system occurred during the factory acceptance test utilizing test document S57 and supplemented with a data base software generation simulator package installed on the SPDS computer. A site acceptance test consisting of subsystem reviews and test procedures shall verify the SPDS installation in the field.

Validation and verification are performed by NMPC and its architect/engineer with some assistance from the vendor (Honeywell) rather than acceptance of vendor tests alone. The vendor V and V process on the operating system and video subsystems software are acceptable based on long term historical review processes in place and accepted by industry prior to NSAC 39. This had previously been reviewed by the NRC in a memorandum from L. Beltracchi to Voss A. Moore dated March 12, 1983.

Verification of the SPDS also entailed a simulator demonstration and review cycle of the BWROG graphic displays as issued in document #ALC-1019 dated May 1983 titled "Simulator Evaluation of the BWROG Graphic Display System."

Finally, even after the initial installation of the SPDS, subsequent changes to the software subsystem based on operator requirements shall be reviewed prior to implementation using an existing software change procedure #7DP-30 which covers all computer software changes within the nuclear plant. This covers the identification of a software concern, the review of the proposed change, the approval of the proposed change, verification of the software installation and verification of the results. After the change on the total computer system performed. Documentation of the software change cycle is a part of this technical department procedure process.

The vendor response to V and V is provided in Exhibit 620.03 and has been examined by NMPC for compliance with NSAC 39.

NIAGARA MOHAWK
NINE MILE POINT #2

VERIFICATION AND VALIDATION

The Honeywell proposal is based on the enclosed project implementation techniques. These techniques have been used with the implementation of numerous Nuclear Power Plant systems including Public Service New Jersey, Hope Creek Unit #1 and #2, Control Room Integrated Display System, SNUPPS Balance of Plant monitor systems and Combustion Engineering System 80 and Nuplex 80 monitoring systems. Additionally, SNUPPS Emergency Response Information Systems, the Wisconsin Power and Light, Kewaunee, Balance of Plant and Emergency Response Facility system and the Commonwealth Edison, Dresden, Emergency Response Facilities, are being implemented under these procedures. As decribed in the summary, Item #1, Honeywell began documenting this approach to insure a quality system is delivered to the specified requirements in early 1979. The basis of this approach for providing the customer a cost effective, functioning system is Honeywell's ability to provide a field proven system of integrated hardware and software. With a solid base, the verification of modifications to the system base is all that is necessary. Based on Honeywell's approximately 20 years of implementing real time proess monitoring systems, additional design standards have been developed to control these changes.

The Project Implementation Methodology, Item #2, shows the overall flow of a project and the implementation steps necessary to deliver a system. Since Honeywell is implementing from a proven base system, the steps to modify the base as identified in paragrahs 4.6 through 4.11 are of major importance. In order to insure a quality performing system is delivered, further definition of the design and implementation steps were identified in the Software Design Standard, Item #3. Page four of this standard shows the flow of documentation resulting from the customer specification. Page five shows the flow of reviews in design implementation. Additional coding standards, unit test standards, and system test standards are established and are available for your review.

The above described project implementation techniques provide the basis for meeting our customer's requirements. This interactive process of checks against the original requirement defined in the specification is the verification process. This verification is based on a communication of activities and results of project activities. The most frequent means of communication is through documentation. This documentation creates a traceable and systematic approach to the development of a product. The documentation provided to the customer for their verification files includes:

- SYSTEM SPECIFICATION SECTION 3 (SS3) - Functional Definition

  This section describes the functions the system is to perform. It is written in sufficient detail to allow all parties to achieve the functional understanding which is mutually required prior to detailed implementation of the system. It is subject to client approval as a contractual document providing mutual agreement of the intent of the contract. This document therefore describes the 'what' to be done rather than 'how' of the more detailed sections. With the supporting sections as listed below, hardware and software design is finalized.

- SYSTEM SPECIFICATION SECTION 4 (SS4) - Analysis Detail

  This section is used by the system analyst to document the performance equations, control strategy, algorithms, symbols, descriptions, units, etc., for functions such as LMCS controls and SPDS algorithms.

- SYSTEM SPECIFICATION SECTION 5 (SS5) - Schedule (List of Equipment)

  This section specifies, at the module level of detail, the hardware requirements for the computer system. This section is used to design the exact hardware configuration and results in releasing system hardware drawings for procurement, assembly, and test of the computers, peripherals, CRT displays, interfaces, remote multiplexing units, modems and all other equipment to be supplied.

- SYSTEM SPECIFICATION SECTION 6 (SS6) - Input/Output (I/O) Summary

  This section describes the remote multiplexing units process I/O at the level of detail required to develop the system configuration and relate the hardware address and termination points to the system software point identification (Point ID).

  The Purchaser/Engineer will be requested to provide data for the SS6.

- SYSTEM SPECIFICATION SECTION 7 (SS7) - Test Specification

  This section specifies the tests to be run to ensure the computer system meets the required functional specifications. These tests are those indicating the readiness for shipment from the factory. An abbreviated repeat of these tests at the plant site will show the system is ready for turnover to the customer. The tests are sequenced such that each subsequent test uses routines which were previously tested, insuring maximum testing efficiency, a logical testing pattern, and confidence in the interactive capability of the entire system.

- SYSTEM SPECIFICATION SECTION 8 (SS8) - Standard Software Summary

  This section specifies in detail the standard software, including options, for the specific computer system configuration. It is prepared specifically for program production in a format specified in Honeywell's Systems and Programming Instructions.

- SYSTEM SPECIFICATION SECTION 9 (SS9) - System Program and Analysis Documentation

  This section documents the base system programs to be supplied. It provides write-ups, and/or diagrams, and/or charts, of the routines comprising the base system programs. The intent of the document is to provide the client with; the software organization of the system, the definition of the internal data base, the command flow, the data flow, the function of each piece of data, and the interface between programs.

- On a monthly basis a project report will be submitted to the Purchaser/ Engineer to review the overall status of the project. Items to be covered by these reports will include:

  a) Major accomplishments during the past month

  b) Plans for the next month

  c) Key items which are ahead or behind schedule

  d) Plans to make up any schedule deficiencies

  e) Information received from the Purchaser/Engineer during the past month

  f) Information due from the Purchaser/Engineer during the next month

- Honeywell, Purchaser, and Engineer meeting minutes defining topics covered, agreements, and action items will be submitted.

In addition to the above formal documentation provided during the course of the contract, the additional design documents identifying Honeywell's Software Design Standards will be retained in the project files and is available for the customer's review and audit. Upon completion of the project, these files are retained in Honeywell's archive and available to customer access for a minimum of seven years.

Validation, as defined by the Data and Analysis Center for Software Glossary, is the process of determining whether executing the system (i.e., software, hardware, user procedures, personnel) in a user environment causes any operational difficulties. The process includes ensuring that specific functions meet their requirements and specifications. Validation is more difficult than the verification process since it involves questions of the completeness of the specification and environment information.

Since the validation process involves more than the evaluation of the system performance, Honeywell has proposed a limited role in this phase of the project. The first step in this process is the in-plant system customer demonstration. As described, Honeywell supports this effort by providing the test specification which establishes the criteria for completion of the demonstration. Additionally supervision in the field for the proper installation of the system cabinets and interconnecting cables as well as a functional verification to insure the system is ready for turnover to the customer for final validation of meeting the functional requirements is included.

Honeywell believes the above proposed verification and validation process is the most cost effective method of meeting Niagara Mohawk's requirements. This is based on many factors. First and foremost, this approach has been developed and proven over years of experience in successfully providing process computers to the nuclear industry and is implemented on a field proven system. The operator interface, the process interface and the system alarming and display system is known to work. Second, this approach has been reviewed

with several major utilities and is consistent with the approaches being used in the industry. Finally, in reviews with the NRC, this approach was discussed. The NRC response was "... as a purchaser of SPDS equipment and services, utilities stand to benefit if they performed the verification and validation as they are the end users." Honeywell's systematic approach to insuring a quality functioning system provides a cost effective basis for our customer meeting the NRC requirements for verification and validation.

SUMMARY

HONEYWELL RESPONSE TO SYSTEM VERIFICATION AND VALIDATION

In the Functional Criteria for Emergency Response Facilities, Final Report, NUREG-0696, the need for a documented program for the design, development and verification of the data acquisition system developed to meet the requirements for the Emergency Response Facility was expressed. In response to this requirement, the Electric Power Research Institute, through the Nuclear Safety Analysis Center (NSAC), developed NSAC-39, "Verification and Validation for Safety Parameter Display Systems" which defines an approach to meeting the 0696 design, development and verification requirements. As a leader in the process computer industry, Honeywell, through its Process Management Systems Division, has been actively addressing this issue since early 1979, prior to the identification of the need by the Nuclear Regulatory Commission.

In 1979, Honeywell developed and documented a method of system verification and validation in order to assure Honeywell meeting its continued commitment to provide a quality system to the Electric Utility Industry. This method has been further revised and expanded based on Honeywell's extensive experience operating under these methods. A comparison of the existing Honeywell methods to NSAC-39 reveals that the majority of the issues expressed by NSAC-39 are covered in detail by Honeywell's operating methods. The key differences in the two documents are NSAC's discussion of the utilities responsibilities in the project implementation process and the addition of extensive dynamic testing to insure an operating system prior to shipment.

A closer look at these differences reveals that Honeywell has taken the position that it is critical to have the ultimate end user involved in the development of the system. Our experience proves the more active involvement by the customer in a process computer project, the better the installation and subsequent acceptance by the operating personnel. As such, Honeywell supports utility involvement and understanding of the process monitoring system. The requirement for extensive dynamic testing is necessary for initial merging of new products into a system. Honeywell's extensive system development experience confirms this. However, once a system has been proven by extensive field experience, complete dynamic testing can be eliminated with minimum risk by building on this proven system base. This is the approach Honeywell has successfully taken. The documented methods Honeywell uses provides the Electric Utility Industry with a quality, cost effective system.

The subsequent information provides a picture of the level of effort and concern Honeywell places on providing a quality product to the Electric Utility Industry.

- Honeywell Position Statement on Nuclear System Verification and Validation.

- Honeywell Project Implementation Methodology: The first Project Implementation Methodology was a result of an intensive study in 1979 by Honeywell management to understand and improve methods of implementing quality systems. After a year of operating under these guidelines, Honeywell performed an intensive review of these operating methods and revised them based on the lessons learned during this year. The Project Implementation Methodology in Tab 3 is the result of this extra effort by Honeywell to continue to provide a quality system.

Additional levels of procedure and checks including software methodologies are already in place to insure that the SEER software base continues to be a quality product. This level of detail is too voluminous to distribute; however, it is available for review upon request.

HONEYWELL POSITION STATEMENT

NUCLEAR SYSTEM VERIFICATION AND VALIDATION

As a leader in the Electric Utility Process Computer Industry, Honeywell implemented a program, in early 1979 using experience gained producing over ninety systems for the nuclear industry, specifically addressing the issue of software verification and validation. The result of this effort, Honeywell's Project Implementation Procedures and Software Methodologies, was first published in late 1979. Honeywell has continually updated these procedures based on the experience gained by implementing over fifty additional systems during the 1979-82 time frame. In addition, during development of the application software for the Safety Parameter Displays and Technical Data Displays, the verification and validation of this software has been specifically addressed with outside sources.

Honeywell has reviewed NSAC-39, "Verification and Validation for Safety Parameter Display Systems" published in late 1981 and compared that document to the procedures discussed in the above paragraph. Additionally, Honeywell is currently implementing several Emergency Response Facility projects with software verification and validation requirements. Honeywell has incorporated changes to the existing procedures to address the Emergency Response Facility software verification and validation requirements based on a review of NSAC-39 and independent audits performed by our Emergency Response Facility customers. As recognized in NSAC-39, different levels of software verification and validation are needed based on the application. Based on internal reviews as well as independent audits, Honeywell believes that the procedures already developed meet the purpose and intent of this report at a minimum cost to the customer.

V&V is not a new concept to Honeywell. The ultimate validation test is a quality system, which performs its specified functions. This has been Honeywell's basic commitment to the Electric Utility Industry. Honeywell is committed to continue to monitor this program based on it's experiences in working with you the customer, and is prepared to discuss in-depth the current status of this program.

620.04 UNREVIEWED SAFETY QUESTIONS

Provide conclusions regarding unreviewed safety questions or changes to Technical Specifications.

Response

No unreviewed safety questions have been identified concerning the SPDS system. There are no Technical Specification requirements for this system.

620.05 - IMPLEMENTATION PLAN

Provide a schedule for full implementation of the SPDS including hardware, software, operator training, procedures and user manuals.

Response

The ERF/LWC computer system including all hardware and software is on site. The site acceptance testing is in progress and expected to be completed by April 1985. At this time, the system will be turned over to NMPC for further testing and operation. Scheduling of operator training and development of operating procedures are described in Section 13.2 and 13.5, respectively.

640.01 PARAMETER SELECTION

The applicant should provide a list of the parameters that it has selected for use on the SPDS. The analytical basis on which the selected parameters were deemed sufficient should be described or specifically referred to.

Response

The SPDS parameter set consists of those parameters identified by the BWR Owners Group and consist of the following parameters:

Level I Parameters - Overview display consisting of the major parameters defining the functions of SPDS (see Exhibit 620.01-5)

Level II Parameters - Sublevel parameter sets that support the overview display with more detail (see Exhibits 620.01-6 through 620.01-9). However, the overview display provides the monitoring requirement of SPDS.

The BWR Owners Group display parameter selection is based on consensus of utilities as referenced in Owners Group publications.

BWR Graphics Display System Dynamic Screening Program (SAI 01381-364L6) and Simulator Evaluation of the BWR Owners Group Graphic Display System dated May 1983 (ALB-1019).

Also included in Exhibits 640.01-1 through 640.01-6 is an excerpt of the vendor's software documentation which details the SPDS data base inputs, outputs and constants used in the algorithms which drive the SPDS displays.

TABLE 5-1. Input Process Computer Point IDs Necessary for SPDS Displays

Parameter Name	Range	Units	Calculation* Rate (seconds)	Process Computer Point ID Description
APRM	0 - 125	% Power	1	NMP2U100 APRM CHANNEL A NMP2U101 APRM CHANNEL B NMP2U102 APRM CHANNEL C NMP2U103 APRM CHANNEL D NMP2U104 APRM CHANNEL E NMP2U105 APRM CHANNEL F
IRM Power	4×10^{-4} To 12.65×10^{0}	% Power	1	NMS2A104 INTERMEDIATE RNG FLUX LEVEL, CHAN-A NMS2A105 INTERMEDIATE RNG FLUX LEVEL, CHAN-B NMS2A107 INTERMEDIATE RNG FLUX LEVEL, CHAN-C NMS2A108 INTERMEDIATE RNG FLUX LEVEL, CHAN-D NMS2A109 INTERMEDIATE RNG FLUX LEVEL, CHAN-E NMS2A110 INTERMEDIATE RNG FLUX LEVEL, CHAN-F NMS2A111 INTERMEDIATE RNG FLUX LEVEL, CHAN-G NMS2A112 INTERMEDIATE RNG FLUX LEVEL, CHAN-H
IRM Switch Positions	2v/Pos.	Volts	1	NMS2A113 IRM SWITCH POSITION CHAN-A NMS2A114 IRM SWITCH POSITION CHAN-B NMS2A115 IRM SWITCH POSITION CHAN-C NMS2A116 IRM SWITCH POSITION CHAN-D NMS2A117 IRM SWITCH POSITION CHAN-E NMS2A118 IRM SWITCH POSITION CHAN-F NMS2A119 IRM SWITCH POSITION CHAN-G NMS2A120 IRM SWITCH POSITION CHAN-H
IRM Positions	0 = out 1 = in	-	1	NMSZC104 IRM DET POSN CHAN-A NMSZC105 IRM DET POSN CHAN-B NMSZC106 IRM DET POSN CHAN-C NMSZC107 IRM DET POSN CHAN-D NMSZC108 IRM DET POSN CHAN-E NMSZC109 IRM DET POSN CHAN-F NMSZC110 IRM DET POSN CHAN-G NMSZC111 IRM DET POSN CHAN-H

EXHIBIT 640.01-1

TABLE 5-1. Continued

Parameter Name	Range	Units	Calculation* Rate (seconds)	Process Computer Point ID Description
SRM Count Rate	$10^{-4} \sim 10^{3}$	KCPS	1	NMS2A100 SOURCE RNG FLUX LEVEL, CHAN-A NMS2A101 SOURCE RNG FLUX LEVEL, CHAN-B NMS2A102 SOURCE RNG FLUX LEVEL, CHAN-C NMS2A103 SOURCE RNG FLUX LEVEL, CHAN-D
SRM Positions	0 = out 1 = in	-	1	NMSZC100 SRM DET POSN CHAN-A NMSZC101 SRM DET POSN CHAN-B NMSZC102 SRM DET POSN CHAN-C NMSZC103 SRM DET POSN CHAN-D
RPV Level	211.31 ~ 648.0	in.	1	ISCLA100 RCTR.COOL.LEVEL A ISCLA101 RCTR.COOL.LEVEL B
RPV Pressure	0 ~ 1500	PSIG	1	ISCPA100 REACTOR PRESSURE-A ISCPA101 REACTOR PRESSURE-B
Drywell Pressure	0 ~ 150 (wide) -5 ~ 5 (narrow)	PSIG PSIG	1 1	CMSPA100 CONTMT DRYWELL PRESSURE-A CMSPA101 CONTMT DRYWELL PRESSURE-B CMSPA102 CONTMT DRYWELL PRESSURE-A CMSPA103 CONTMT DRYWELL PRESSURE-B
SRV Position	0 = shut 1 = open	-	5	MSSZC111 to MSSZC128 PRI SAF RFL VLV
MSIV Position	0 = shut 1 = open	-	5	MSSZC100 to MSSZC107 CONTMT ISOL V (INBD/OUTBD MSIVs)
Drywell Oxy Concentration	0 ~ 10	%	5	CMSOA100 DRYWELL OXY.CONC.A CMSOA101 DRYWELL OXY.CONC.B
Suppression Pool Temp.	50 ~ 250	°F	5	CMSTA100 to CMSTA107 SUPPRESSION POOL WATER TEMP CHANS A-H
Suppression Pool Level	192 ~ 217 (wide) 197 ~ 202 (narrow)	Ft Ft	5 5	CMSLA100 SUPPR POOL WATER LEVEL A CMSLA101 SUPPR POOL WATER LEVEL B CMSLA102 SUPPR POOL WATER LEVEL A CMSLA103 SUPPR POOL WATER LEVEL B
Core Flow	$0 \sim 0.8 \times 10^{4}$	klb/hr	1	RCSFA100 JET PUMP FLOW LOOP-A RCSFA101 JET PUMP FLOW LOOP-B
Control Rod Status	0 = Withdrawn 1 = Scram	-	1	RMSZC100 RX CONTROL ROD STATUS

EXHIBIT 640.01-2

TABLE 5-1. Continued

Parameter Name	Range	Units	Calculation* Rate (seconds)	Process Computer Point ID Description
Containment Isolation Group Positions	0 = shut 1 = open	-	5	AASZC100 to AASZC103 CONTAINMENT ISOLATION VALVE
			5	CCPZC100 to CCPZC111 CONTAINMENT ISOLATION VALVE
			5	CMSZC100 to CMSZC123 CONTAINMENT ISOLATION VALVE
			5	CPSZC100 to CPSZC111 CONTAINMENT ISOLATION VALVE
			5	CSHZC100 to CSHZC104 CONTAINMENT ISOLATION VALVE
			5	CSLZC100 to CSLZC102 CONTAINMENT ISOLATION VALVE
			5	DERZC100 to DERZC103 CONTAINMENT ISOLATION VALVE
			5	DFRZC100 to DFRZC103 CONTAINMENT ISOLATION VALVE
			5	FPWZC100 to FPWZC103 CONTAINMENT ISOLATION VALVE
			5	FWSZC100 to FWSZC103 CONTAINMENT ISOLATION VALVE
			5	HCSZC100 to HCSZC111 CONTAINMENT ISOLATION VALVE
			5	IASZC100 to IASZC104 CONTAINMENT ISOLATION VALVE
			5	IASZC107 to IASZC109 Containment Isolation Valve
			5	ICSZC100 to ICSZC110 CONTAINMENT ISOLATION VALVE
			5	LMSZC100 to LMSZC103 CONTAINMENT ISOLATION VALVE
			5	MSSZC108 to MSSZC110 CONTAINMENT ISOLATION VALVE
			5	NMSZC112 to NMSZC116 TIP VALVE
			5	RCSZC100 to RCSZC117 CONTAINMENT ISOLATION VALVE
			5	RHSZC100 to RHSZC129 CONTAINMENT ISOLATION VALVE
			5	SASZC100 to SASZC103 CONTAINMENT ISOLATION VALVE
			5	SLSZC100 to SLSZC101 CONTAINMENT ISOLATION VALVE
			5	WCSZC100 to WCSZC102 CONTAINMENT ISOLATION VALVE

*Calculation rate of 5 means an SPDS calculation is performed every five seconds for the parameter listed.

EXHIBIT 640.01-3

TABLE 5-2. Constants Required for SPDS Calculation

NAME	DESCRIPTION	DESCRIBED IN MORE DETAIL IN
CON(1)	APRM average difference constant.	Appendix A, algorithm 1
CON(2)	APRM ROC difference constant	Section 6.6
CON(3)	IRM low alert limit	Appendix A, algorithm 2
CON(4)	IRM high alert limit	Appendix A, algorithm 2
CON(5)	IRM ROC difference constant	Section 6.6
CON(6)	SRM ROC difference constant	Section 6.6
CON(7)	Difference constant RPV level	Appendix A, algorithm 4
CON(8)	RPV level ROC difference constant	Section 6.6
CON(9)	Difference constant RPV pressure	Appendix A, algorithm 4
CON(10)	RPV pressure ROC difference constant	Section 6.6
CON(11)	Difference constant drywell pressure	Appendix A, algorithm 5
CON(12)	Difference constant drywell pressure (wide range)	Appendix A, algorithm 5
CON(13)	Drywell pressure ROC difference constant	Section 6.6
CON(14)	Difference constant oxygen conc.	Appendix A, algorithm 4
CON(15)	Drywell O_2 concentration ROC difference constant	Section 6.6
CON(16)	Suppression pool temperature average difference constant	Appenddix A, algorithm
CON(17)	Suppression pool temperature ROC difference constant	Section 6.6
CON(18)	Difference constant suppression pool level (narrow range)	Appendix A, algorithm 5
CON(19)	Difference constant suppression pool Level (wide range)	Appendix A, algorithm 5
CON(20)	Suppression pool level ROC difference constant	Section 6.6
CON(21)	Core flow ROC difference constant	Section 6.6
CON(22)-CON(30)	Spares	

ROC = rate of change

TABLE 5-3. Output Process Computer Calculated Analog Point IDs and Their Status Words

Legend

ROC = rate of change
j=1 = value
j=2 = status

AOUPUT(j,i), j=1,2

i=1	Point ID	Description	Units
1	SPDSA101	APRM READING	% power
2	SPDSA102	APRM ROC	% power/min.
3	SPDSA103	IRM READING	% power
4	SPDSA104	IRM ROC	% power/min.
5	SPDSA105	SRM READING	CPS
6	SPDSA106	SRM ROC	CPS/min.
7	SPDSA107	RPV LEVEL	in.
8	SPDSA108	RPV LEVEL ROC	in./min.
9	SPDSA109	RPV PRESSURE	psig
10	SPDSA110	RPV PRESSURE ROC	psig/min.
11	SPDSA111	DRYWELL PRESSURE	psig
12	SPDSA112	DRYWELL PRESSURE ROC	psig/min.
13	SPDSA113	DRYWELL O_2 CONC.	%
14	SPDSA114	DRYWELL O_2 ROC	%/min.
15	SPDSA115	SUPP. POOL TEMP.	°F
16	SPDSA116	SUPP. POOL TEMP. ROC	°F/min.
17	SPDSA117	SUPP. POOL LEVEL	ft.
18	SPDSA118	SUPP. POOL LEVEL ROC	ft./min.
19	SPDSA119	CORE FLOW	%
20	SPDSA120	CORE FLOW ROC	%/min.
21	SPDSA121	LOG SRM READING	log CPS
22	SPDSA122	IRM CHANNEL A READING	% power
23	SPDSA123	IRM CHANNEL B READING	% power
24	SPDSA124	IRM CHANNEL C READING	% power
25	SPDSA125	IRM CHANNEL D READING	% power
26	SPDSA126	IRM CHANNEL E READING	% power
27	SPDSA127	IRM CHANNEL F READING	% power
28	SPDSA128	IRM CHANNEL G READING	% power
29	SPDSA129	IRM CHANNEL H READING	% power
30	SPDSA130	SPARE	

EXHIBIT 640.01-5

TABLE 5-4. Output Process Computer Calculated Digital Values

DOUPUT Bit Position	Description
0	IRM POSITION (1=IN)
1	SRM POSITION (1=IN)
2	MSIV POSITION (1=OPEN)
3	SRV POSITION (1=OPEN)
4	CONTAINMENT ISOLATION GP 1A (1=OPEN)
5	CONTAINMENT ISOLATION GP 2A (1=OPEN)
6	CONTAINMENT ISOLATION GP 3A (1=OPEN)
7	CONTAINMENT ISOLATION GP 4A (1=OPEN)
8	CONTAINMENT ISOLATION GP 1B (1=OPEN)
9	CONTAINMENT ISOLATION GP 2B (1=OPEN)
10	CONTAINMENT ISOLATION GP 3B (1=OPEN)
11	CONTAINMENT ISOLATION GP 4B (1=OPEN)
12	MODE ALERT SWITCH (1=MODE ERROR)

DOUSTS validity bit positions are the same as above (if validity bit is set=1, point is invalid).

DOUPUT = digital value
DOUSTS = digital status

EXHIBIT 640.01-6

Enclosure

Compliance of the primary containment pressure boundary materials with General Design Criteria (GDC) 51 was evaluated by identifying the materials which were limiting under operation, maintenance, test and postulated accident conditions based on material type, thickness and metallurgical characterization. The fracture toughness of these materials was evaluated on the basis of ASME III NC-2300, 1977 Edition including the summer 1977 addendum and NUREG 0577, Potential for Low Fracture Toughness and Lamellar Tearing on PWR Steam Generator and Reactor Coolant Pump Supports, October 1979.

Except for the high pressure core spray system test throttling valve and connecting upstream piping, the limiting materials were found to have a permissible lowest service metal temperature (PLSMT) at or below the design lowest service metal temperature (LSMT) of +70°F. A PLSMT at or below the design LSMT could not be established for the high pressure core spray system test throttling valve (2CSH*HCV 133) and connecting upstream piping (Mark No. NM-25-115X) with the existing data. For these items, either additional tests will be performed to establish compliance with GDC 51, or else the items will be replaced.

In the case of the feedwater system (FWS) and reactor water cleanup system (WCS), there are situations where the actual metal temperature may be less than +70°F. However, these situations are during startup from the cold shutdown condition, where the loads are very low and the probability of rapidly propagating fracture, as referenced in GDC 51, is minimal. The FWS and WCS are above +70°F for all conditions where the pressure exceeds 660 psi.

In the following discussion, the fracture toughness of each of the specific limiting materials is evaluated in detail. This information also is presented in summary form in Table 1.

1. Equipment Hatch

SA516 Grade 70 quenched and tempered material with a nominal thickness of 4.875 in. was applied for the equipment hatch cover flange. Actual drop weight tests performed on this material indicate a nil ductility transition temperature (TNDT) of -10°F or less. Thus, the permitted lowest service metal temperature (PLSMT) is +45°F when the rules of ASME III NC-2300, 1977 Edition, including the summer 1977 addendum, are applied.

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2. Drywell Head Pins

SA564 Grade 630, H1075 material with a nominal diameter of 3.25 in. was applied for the drywell head pins. The heat of material used had a relatively high nickel content (4.42 percent) and was age hardened at a relatively high temperature (1,075°F minimum). An estimated PLSMT of +70°F for this material is derived from Armco data on H1100 material. Armco report A.I. 71.6-16, Report No. 1, June 11, 1969, shows Charpy transition curves for relatively high nickel heats where the curve midheight temperatures are at or below +5°F. This is consistent with a PLSMT of +70°F.

3. Penetrations

a. Z-1A sleeve. SA155 Grade CMSH80 applying SA537 Class 2, quenched and tempered and the finished pipe normalized and tempered, with a nominal wall thickness of 1.5 in. was applied for the penetration Z-1A sleeve. Due to its similarity to SA516 Grade 65 (SA155 Grade KCF65) with respect to melting practice, chemistry and heat treatment, ASME III NC-2300, 1977 Edition, including the summer 1977 addendum, would assign a TNDT of 0°F and a PLSMT of +30°F.

b. Z-11 sleeve. SA333 Grade 6 normalized with a nominal wall thickness of 1 in. was applied for the penetration Z-11 sleeve. NUREG 0577, in a "worst case" characterization of this material as a "mild" steel, indicates a TNDT at or below the NDT of +40°F. Based on a TNDT of +40°F, ASME III NC-2300, 1977 edition, including the summary 1977 addendum, assigns a PLSMT of +70°F.

c. Z-1A flued head. SA508 Class 1 quenched and tempered with a nominal web thickness of 6 in. was applied for the penetration Z-1A flued head. Actual drop weight tests performed on this material indicate a TNDT of 0°F or lower. Thus, the PLSMT is +62°F when the rules of ASME III NC-2300, 1977 edition, including the summer 1977 addendum, are applied.

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d. Z-4A flued head. SA508 Class 2 quenched and tempered with a design web thickness of 6.16 in. was applied for the penetration Z-4A flued head. Actual drop weight tests performed on this material indicate a TNDT of 0°F or lower. Thus, the PLSMT is +62°F when the rules of ASME III NC-2300, 1977 edition, including the summer 1977 addendum, are applied.

e. Z-14 sleeve. SA333 Grade 6 normalized with a nominal wall thickness of 3/4 in. was applied for the HPCS injection penetration sleeve. NUREG 0577, in a "worst case" classification of this material as a "mild" steel, indicates a TNDT at or below the NDT of +40°F. Based on a TNDT of +40°F, ASME III NC-2300, 1977 edition, including the summer 1977 addendum, assigns a PLSMT of +70°F.

f. Z-14 flued head. SA508 Class 1, quenched and tempered with a nominal web thicknesses of 4-1/4 inches was applied for the HPCS injection penetration flued head. Actual drop weight tests performed on this material indicate a TNDT of 0°F or lower. Thus, the PLSMT is +51°F when the rules of ASME III, NC-2300, 1977 edition, including the summer 1977 addendum, are applied.

g. Z-12 and Z-13 penetrations. SA312 type 304 was applied for the HPCS suppression pool suction and return penetrations. This is an austenitic stainless steel which is exempt.

4. Pipe

a. MSS pipe (mark no. NM-1-85). SA106 Grade C normalized with a manufactured minimum wall thickness of 1.177 in. (by Cameron Iron Works) was applied for the main steam piping. NUREG 0577 indicates a TNDT for this material at or below the mean nil ductility transition temperature (NDT) of +40°F for mild carbon steel. Based on a TNDT of +40°F, ASME III NC-2300, 1977 edition, including the summer 1977 addendum, assigns a PLSMT of +70°F.

b. MSS sockolet (26" x 3/4" x 6000#). SA105 as forged with a design thickness of 0.156 in. was applied for the main steam sockolet. Although this material has a design thickness of less than 0.625 in., the philosophy of NC-2300 can still be applied.

NUREG 0577 categorizes this material as an as-hot rolled carbon manganese steel and assigns it a TNDT of +39°F. Thus, the PLSMT is +69°F when the "worst case" rules for 5/8 inch thick material of ASME III NC-2300, 1977 edition, including the summer 1977 addendum, are applied.

c. FWS pipe and WCS pipe (mark nos. NM-47-112, NM-47-113, NM-09-142 and NM-09-144). SA106 Grade B normalized with a nominal wall thickness of 0.906 in. and SA106 Grade C normalized with a nominal wall thickness of 2.062 in. were applied for the feedwater piping. NUREG 0577 indicates a TNDT for this material at or below the NDT of +40°F for mild carbon steel. Based on a TNDT of +40°F, ASME III NC-2300, 1977 edition, including the summer 1977 addendum, assigns a PLSMT of +70°F.

d. WCS pipe (mark nos. NM-09-98, NM-09-143, NM-09-145 and NM-09-146). SA333 Grade 6 normalized with a nominal wall thickness of 0.906 in. was applied for the reactor water cleanup piping. NUREG 0577, in a "worst case" characterization of this material as a "mild" steel indicates a TNDT at or below the NDT of +40°F. Based on a TNDT of +40°F, ASME III NC-2300, 1977 edition, including the summer 1977 addendum, assigns a PLSMT of +70°F.

e. WCS sockolet (mark no. NM-09-143). SA105 with a design thickness of 0.092 in. was applied for the reactor water cleanup sockolet. Although this material has a design thickness of less than 0.625 in., the philosophy of NC-2300 can still be applied. NUREG 0577 categorizes this material as an as-hot rolled carbon-manganese steel and assigns it a TNDT of +39°F. Thus, the PLSMT is +69°F when the "worst case" rules for 5/8 inch thick material of ASME III NC-2300, 1977 edition, including the summer 1977 addendum, are applied.

f. WCS elbows (mark nos. NM-09-98, NM-09-142, NM-09-143, NM-09-144, NM-09-145 and NM-09-146). SA234 Grade WPB fabricated from SA106 and the final fitting normalized, with a nominal thickness of 0.906 in., was applied for the reactor water cleanup elbows. NUREG 0577 indicates a TNDT for normalized SA106 at or below the NDT of +40°F for mild carbon steel. Based on a TNDT of +40°F, ASME III NC-2300, 1977 edition, including the summer 1977 addendum, assigns a PLSMT of +70°F.

g. CSH pipe, ASME III Class 1 (Mark No. NM-25-59X). SA106 Grade B with a nominal wall thickness of 0.844 in. was applied for the HPCS injection line piping. This material was CVN impact tested at +40°F. Thus, ASME III NC-2300, 1977 edition, including the summer 1977 addendum, assigns a PLSMT of +40°F.

h. CSH pipe, ASME III Class 2, except between the HPCS test isolation valve and the HPCS test throttling valve. (Mark Nos. NM-25-25X, NM-25-116X, NM-25-117X, NM-25-118X, NM-25-119X, NM-25-120X, NM-25-121X and NM-25-138X). SA106 Grade B with a nominal wall thickness ranging from 0.237 in. to 0.562 in. was applied for the HPCS suppression pool suction and the HPCS suppression pool return piping, except for the pipe between the HPCS test isolation and throttling valves. This material is exempt from testing, due to its nominal thickness, in accordance with ASME III NC-2300, 1977 edition, including the summer 1977 addendum.

i. CSH pipe, ASME III Class 2, betwen the HPCS test isolation valve and the HPCS test throttling valve (Mark No. NM-25-115X). SA106 Grade B with a nominal wall thickness of 0.844 in. was applied for the approximately 8 feet of pipe between the HPCS test throttling and isolation valves. NUREG-0577 categorizes this material as a "mild" steel and assigns it a TNDT of +77°F. Thus, the PLSMT is +107°F when the rules of ASME III NC-2300, 1977 edition, including the summer 1977 addendum, are applied.

j. CSH elbows (Mark Nos. NM-25-116X, NM-25-117X, NM-25-118X, NM-25-119X, NM-25-120X and NM-25-121X). SA234 Grade WPB with a nominal wall thickness of 0.280 in. to 0.406 in. wall applied for the CSH elbows. This material is exempt from testing, due to its nominal thickness, in accordance with ASME III NC-2300, 1977 edition, including the summer 1977 addendum.

k. CSH sockolets/weldolets (Mark Nos. NM-25-59X, NM-25-120X and NM-25-121X). SA105 with a nominal thickness of 0.237 in. and less was applied for the CSH sockolets an weldolets. This material is exempt from testing, due to its nominal thickness, in accordance with ASME III NC-2300, 1977 edition, including the summer 1977 addendum.

l. CSH reducer, outlet side of 2CSH*HCV133 (Mark No. NM-25-120X). SA234 Grade WPB, fabricated from SA106 and the final fitting normalized, with a nominal wall thickness of 0.375 in. was applied for the reducer on the outlet side of the high pressure core spray system test throttling valve. This material is exempt from testing due to its nominal thickness, in accordance with ASME III NC-2300, 1977 edition, including the summer 1977 addendum.

m. CSH reducer, inlet side of 2CSH*HCV133 (Mark No. NM-25-115X). SA234 Grade WPB, fabricated from SA106 and the final fitting 0.844 in. was applied for the reducer on the inlet side of the high pressure core spray system test throttling valve. NUREG-0577 indicates a TNDT for normalized SA106 at or below the NDT of +40°F for mild carbon steel. Based on a TNDT of +40°F, ASME III NC-2300, 1977 edition, including the summer 1977 addendum, assigns a PLSMT of +70°.

5. Feedwater Thermal Tees (2FWS*FTG1A)

a. Flued head. SA350 Grade LF2 normalized with a manufactured minimum web thickness of 1.804 in. was applied for the feedwater thermal tee flued head. NUREG 0577 categorizes this material as a normalized carbon manganese steel and assigns it a TNDT of -5°F. Thus, the PLSMT is +25°F when the rules of ASME III NC-2300, 1977 edition, including the summer 1977 addendum, are applied.

b. Extruded outlet fitting. SA420 Grade WPL6, fabricated from SA350 Grade LF2, normalized with a manufactured minimum web thickness of 2.625 in. was applied for the feedwater thermal tee extruded outlet fitting. NUREG 0577 categorizes this material as a normalized carbon manganese steel and assigns it a TNDT of -5°F. Thus, the PLSMT is +28°F when the rules of ASME III NC-2300, 1977 edition, including the summer 1977 addendum, are applied.

c. Thermal sleeve. SA350 grade LF2 normalized with a manufactured minimum wall thickness of 0.793 in. was applied for the feedwater thermal tee thermal sleeve. NUREG 0577 categorizes this material as a normalized carbon manganese steel and assigns it a TNDT of -5°F. Thus, the PLSMT is +25°F when the rules of ASME III NC-2300, 1977 edition, including the summer 1977 addendum, are applied.

d. Reducer. SA350 Grade LF2 normalized with a manufactured minimum wall thickness of 1.804 in. was applied for the feedwater thermal tee reducer. NUREG 0577 categorizes this material as a normalized carbon manganese steel and assigns it a TNDT of -5°F. Thus, the PLSMT is +25°F when the rules of ASME III NC-2300, 1977 edition, including the summer 1977 addendum, are applied.

e. Thermal sleeve run. SA516 Grade 70 normalized, cold formed into pipe and stress relieved, with a nominal thickness of 0.375 in. was applied for the feedwater thermal tee thermal sleeve run. Although this material is less than 5/8 inch thick, the philosophy of NC-2300 can still be applied. ASME III NC-2300, 1977 edition, including the summer 1977 addendum assigns a TNDT of 0°F to normalized SA516 Grade 70. According to the discussion on "Effects of Cold Work" in Welding Research Council Bulletin Number 158, January 1971, when this type of material is cold worked 1% and then stress relieved, it completely regains its fracture toughness; when it is cold worked 5% and then stress relieved, its transition curve midheight temperature increases 20°F. As the material for the thermal sleeve run was strained just under 2%, a conservative assumption of a 20° increase in TNDT can be made. Based on a TNDT of 0° + 20°, or 20°F, the PSLMT is +50°F when the "worst case" rules for 5/8 inch thick material of ASME III NC-2300, 1977 edition, including the summer 1977 addendum, are applied.

6. Main Steam Isolation Valve (2MSS*HYV7A)

a. Body. SA350 Grade LF2 quenched and tempered with a minimum design wall thickness of 2.55 in. was applied for the main steam isolation valve body. NUREG 0577 indicates a TNDT for quenched and tempered SA350 Grade LF2 at or below the NDT of -28°F for normalized carbon manganese steel. Based on a TNDT of -28°F, ASME III NC-2300, 1977 edition, including the summer 1977 addendum, assigns a PLSMT of +2°F.

b. Bonnet. SA350 Grade LF2 quenched and tempered with a minimum design thickness of 4.94 in. was applied for the main steam isolation valve bonnet. NUREG 0577 indicates a TNDT for quenched and tempered SA350 Grade LF2 at or below the NDT of -28°F for normalized carbon manganese steel. Based on a TNDT of -28°F, ASME III NC-2300, 1977 edition, including the summer 1977 addendum, assigns a PLSMT of +27°F.

c. Ball. SA351 Grade CF8M was applied for the main steam isolation valve ball. This is an austenitic stainless steel material which is exempt.

d. Bolting. The main steam isolation valve bolting is not pressure retaining.

7. Feedwater Isolation Valve (2FWS*MOV21A)

a. Body. SA105 quenched and tempered with a manufactured minimum wall thickness of 2.28 in. was applied for the feedwater isolation valve body. NUREG 0577 indicates a TNDT for quenched and tempered SA105 at or below the NDT of -28°F for normalized carbon manganese steel. Based on a TNDT of -28°F, ASME III NC-2300, 1977 edition, including the summer 1977 addendum, assigns a PLSMT of +2°F.

b. Bonnet. SA105 normalized with a manufactured minimum thickness of 2.47 in. was applied for the feedwater isolation valve bonnet. NUREG 0577 categorizes this material as a normalized carbon manganese steel and assigns it a TNDT of -5°F. Thus, the PLSMT is +25°F when the rules of ASME III NC-2300, 1977 edition, including the summer 1977 addendum, are applied.

c. Wedge. SA105 normalized with a design thickness of 1.7128 in. was applied for the feedwater isolation valve wedge. NUREG 0577 categorizes this material as a normalized carbon manganese steel and assigns it a TNDT of -5°F. Thus, the PLSMT is +25°F when the rules of ASME III NC-2300, 1977 edition, including the summer 1977 addendum, are applied.

d. Bolting. The feedwater isolation valve bolting is not pressure retaining.

e. Thrust ring. SA182 Grade F6 with a design thickness of 1.000 in. was applied for the feedwater isolation valve thrust ring. This material was tempered at a relatively high temperature of 1400°F, which serves to enhance its fracture toughness. An estimated PLSMT of +70°F for this material is derived from Republic Steel data, Universal-Cyclops Steel data and other data in the literature that exhibit very good toughness properties after tempering at 1400°F. In addition, the thrust ring is loaded in compression and shear only, which minimizes the possibility of crack propagation.

8. Feedwater Swing Check Valve (2FWS*AOV23A)

a. Body. SA216 Grade WCB normalized with a manufactured minimum wall thickness of 2.28 in. was applied for the feedwater swing check valve body. NUREG 0577 indicates a TNDT for normalized SA216 Grade WCB at or below the NDT of +35°F for heat-treated cast steels. Based on a TNDT of +35°F, ASME III NC-2300, 1977 edition, including the summer 1977 addendum, assigns a PLSMT of +65°F.

b. Bonnet. SA105 normalized with an actual thickness of 4.498 in. was applied for the feedwater swing check valve bonnet. NUREG 0577 categorizes this material as a normalized carbon manganese steel and assigns it a TNDT of -5°F. Thus, the PLSMT is +50°F when the rules of ASME III NC-2300, 1977 edition, including the summer 1977 addendum, are applied.

c. Disc. SA105 normalized with a manufactured minimum thickness of 2.28 in. was applied for the feedwater swing check valve disc. NUREG 0577 categorizes this material as a normalized carbon manganese steel and assigns it a TNDT of -5°F. Thus, the PLSMT is +25°F when the rules of ASME III NC-2300, 1977 edition, including the summer 1977 addendum, are applied.

d. Bolting. SA193 Grade B7 and SA194 Grade 2H, both quenched and tempered, with a nominal diameter of 0.625 in. were applied for the feedwater swing check valve bolting. This material is categorized by NUREG 0577 as having least susceptibility to brittle failure.

9. Reactor Water Cleanup Isolation Valve (2WCS*MOV200)

a. Body. SA105 normalized with a design thickness of 0.880 in. was applied for the reactor water cleanup isolation valve body. NUREG 0577 categorizes this material as a normalized carbon manganese steel and assigns it a TNDT of -5°F. Thus, the PLSMT is +25°F when the rules of ASME III NC-2300, 1977 edition, including the summer 1977 addendum, are applied.

b. Bonnet. SA105 normalized with a design thickness of 0.875 in. was applied for the reactor water cleanup isolation valve bonnet. NUREG 0577 categorizes this material as a normalized carbon manganese steel and assigns it a TNDT of -5°F. Thus, the PLSMT is +25°F when the rules of ASME III NC-2300, 1977 edition, including the summer 1977 addendum, are applied.

c. Disc. SA105 normalized with a design thickness of 2.25 in. was applied for the reactor water cleanup isolation valve disc. NUREG 0577 categorizes this material as a normalized carbon manganese steel and assigns it a TNDT of -5°F. Thus, the PLSMT is +25°F when the rules of ASME III NC-2300, 1977 edition, including the summer 1977 addendum, are applied.

d. Bolting. The reactor water cleanup isolation valve bolting is not pressure retaining.

e. Thrust ring. SA182 Grade 6 with a design thickness of 1.253 in. was applied for the reactor water cleanup isolation valve thrust ring. This material was tempered at a relatively high temperature of 1400°F, which serves to enhance its fracture toughness. An estimated PLSMT of +70°F for this material is derived from Republic Steel data, Universal-Cyclops Steel data and other data in the literature that exhibit very good toughness properties after tempering at 1400°F. In addition, the thrust ring is loaded in compression and shear only, which minimizes the possibility of crack propagation.

10. High Pressure Core Spray Recirculation Isolation Valve (2CSH*MOV105)

The HPCS recirculation isolation valve is located in and connected to 4 inch diameter, 0.337 inch nominal wall pipe. Therefore, the materials of this valve are exempt from testing, due to the nominal pipe size and nominal wall thickness of the connecting pipe, in accordance with ASME III NC-2300, 1977 edition, including the summer 1977 addendum.

11. High Pressure Core Spray Test Isolation Valve (2CSH*MOV111)

a. Body. SA216 Grade WCB normalized and tempered with a design thickness of 3.0 in. was applied for the HPCS test isolation valve body. This material was CVN impact tested at +40°F. Thus, ASME III NC-2300, 1977 edition, including the summer 1977 addendum, assigns a PLSMT of +40°F.

b. Bonnet. SA216 Grade WCB normalized and tempered with a design thickness of 3.0 in. was applied for the HPCS test isolation valve bonnet. This material was CVN impact tested at +40°F. Thus, ASME III NC-2300, 1977 edition, including the summer 1977 addendum, assigns a PLSMT of +40°F.

c. Disc. SA216 Grade WCB normalized and tempered with a design thickness of 3.0 in. was applied for the HPCS test isolation valve disc. This material was CVN impact tested at +40°F. Thus, ASME III NC-2300, 1977 edition, including the summer 1977 addendum assigns a PLSMT of +40°F.

d. Bolting. SA193 Grade B7 and SA194 Grade 7, both quenched and tempered, with a nominal diameter of 1-3/8 inches was applied for the HPCS test isolation valve bolting. This material is categorized by NUREG-0577 as having least susceptibility to brittle failure.

e. Drain connection. SA105 was applied for the 3/4 inch nominal pipe size half coupling drain connection on the HPCS test isolation valve. This material is exempt from testing, due to its nominal pipe size and thickness, in accordance with ASME III NC-2300, 1977 edition, including the summer 1977 addendum.

12. High Pressre Core Spray Injection Valve (2CSH*MOV107)

a. Body. SA216 Grade WCB normalized and tempered with an actual thickness of 2.440 in. as applied for the HPCS injection valve body. This material was CVN impact tested at +40°F. Thus, ASME III NC-2300, 1977 edition, including the summer 1977 addendum, assigns a PLSMT of +40°F.

b. Bonnet. SA216 Grade WCB normalized and tempered wth an actual thickness of 2.40 in. was applied for the HPCS injection valve bonnet. This material was CVN impact tested at +40°F. Thus, ASME III NC-2300, 1977 edition, including the summer 1977 addendum, assigns a PLSMT of +40°F.

c. Disc. SA217 Grade WCB normalized and tempered with a design thickness of 1-3/8 in. was applied for the HPCS injection valve disc. This material was CVN impact tested at +40°F. Thus, ASME III NC-2300, 1977 edition, including the summer 1977 addendum, assigns a PLSMT of +40°F.

d. Bolting. SA193 Grade B7 and SA194 Grade - both quenched and tempered, with a nominal diameter of 1-1/4 in. were applied for the HPCS injection valve bolting. This material was CVN impact tested at +40°F. Thus, ASME III NC-2300, 1977 edition, including the summer 1977 addendum, assigns a PLSMT of +40°F. These materials are also categorized by NUREG-0577 as having least susceptibility to brittle failure.

13. High Pressure Core Spray Recirculation Check Valve (2CSH*V7)

The HPCS recirculation check valve is located in and connected to 4 inch diameter, 0.237 inch nominal wall pipe. Therefore, the materials of this valve are exempt from testing, due to the nominal pipe size and nominal wall thickness of the connecting pipe, in accordance with ASME III NC-2300, 1977 edition, including the summer 1977 addendum.

14. High Pressure Core Spray Suppression Pool Suction Isolation Valve (2CSH*MOV118)

The HPCS suppression pool suction isolation valve is located in and connected to 18 inch diameter, 0.375 inch nominal wall pipe. Therefore, the materials of this valve are exempt from testing, due to the nominal wall thickness of the connecting pipe, in accordance with ASME III NC-2300, 1977 edition, including the summer 1977 addendum.

15. High Pressure Core Spray Recirculation Throttling Valve (2CSH*HCV116)

The HPCs recirculation throttling valve is located in and connected to 4 inch diameter 0.337 inch nominal wall pipe. Therefore, the materials of this valve are exempt from testing, due to the nominal pipe size and nominal wall thickness of the connecting pipe, in accordance with ASME III NC-2300, 1977 edition, including the summer 1977 addendum.

16. High Pressure Core Spray Test Throttling Valve (2CSH*HCV133)

a. Body. SA217 Grade WC9 normalized and tempered with a design thickness of 1.07 in. was applied for the HPCS test throttling valve body. No data exist in ASME III NC-2300, 1977 edition, including the summer 1977 addendum, or in NUREG-0577 from which a PLSMT can be established for this material.

b. Bonnet. SA217 Grade WC9 normalized and tempered with a design thickness of 3.672 in. was applied for the HPCS test throttling valve bonnet. No data exist in ASME III NC-2300, 1977 edition, including the summer 1977 addendum, or in NUREG-0577 from which a PLSMT can be established for this material.

c. Inlet nipple. SA106 Grade B with a nominal wall thickness of 0.719 in. was applied for the HPCS test throttling valve inlet nipple. NUREG-0577 categorizes this material as a "mild" steel and assigns it a TNDT of +77°F. Thus, the PLSMT is +107°F when the rules of ASME III NC-2300, 1977 edition, including the summer 1977 addendum, are applied.

d. Outlet nipple. SA106 Grade B with a nominal wall thickness of 0.365 in. was applied to the HPCS test throttling valve outlet nipple. The connecting pipe to the outlet side of the valve is 12 inch diameter, 0.375 inch nominal wall pipe. Thereore, the outlet nipple of this valve is exempt from testing, due to the nominal wall thickness of the connecting pipe, in accordance with ASME III NC-2300, 1977 edition, including the summer 1977 addendum.

e. Plug. SA479 type 304L was applied for the HPCS test throttling valve plug. This is an austenitic stainless steel which is exempt.

f. Bolting. SA193 Grade B7 and SA194 Grade 2H - both quenched and tempered, with a nominal diameter of 1-3/4 in. were applied for the HPCS test throttling valve bolting. This material is categorized by NUREG-0577 as having least susceptibility to brittle failure.

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GDC 51 COMPLIANCE REVIEW

Nine Mile Point Nuclear Station - Unit 2

Item	Material	Thickness (Note 1)	Permissible Lowest Service Metal Temperature (PLSMT) (°F) and Basis	Lowest Service Metal Temp. (LSMT) (°F) (Note 2)	Remarks
Equipment Hatch Cover Flange	SA516-70 Quenched and tempered	4 7/8 in. (n)	+45 - Based on drop weight test (DWT) indicating a nil ductility transition temperature (TNDT) of -10	+70	
Drywell Head Pins	SA564, Grade 630 H1075	3 1/4 in. (n)	+70 - Based on chemistry, heat treatment and data from Armco Steel.	+70	Note 3
Penetration Z-1A Sleeve	SA155 CMSH80 Normalized and tempered	1.5 in. (n)	+30 - Based on summer '77 Class 2 TNDT data for SA516-65	+70	
Penetration Z-11 Sleeve	SA333, Grade 6 Normalized	1 in. (n)	+70 - Based on NUREG 0577 for "worst case" analysis as "mild" steel. Also based on Charpy V-notch tests at -50 which is consistent and adequate for a design lowest service metal temperature of +70	+70	Note 4
Penetration Z-14 Sleeve	SA333 Grade 6 Normalized	3/4 in (n)	+70 - Based on NUREG-0577 for "worst case" analysis as "mild" steel. Also based on Charpy V-notch tests at -50°F which is consistent and adequate for a design lowest service metal temperature of +70°F.	+70	Note 4

Item	Material	Thickness (Note 1)	Permissible Lowest Service Metal Temperature (PLSMT) (°F) and Basis	Lowest Service Metal Temp. (LSMT) (°F) (Note 2)	Remarks
Penetrations Z-12 Z-13	SA312 Type 304	---	Excluded - Based on austenitic stainless steel		
Flued Head Penetration Z-1A	SA508 Class 1 Quenched and tempered	6 in. (n)	+62 - Based on actual DWT indicating TNDT 0	+70	
Flued Head Penetration Z-4A	SA508 Class 2 Quenched and tempered	8 in. (n), 6.16 in. (d)	+62 - Based on actual DWT indicating TNDT 0 and design thickness	+70	Note 5
Flued head Penetration Z-14	SA508 Class 1 Quenched and tempered	4-1/4 in. (n)	51 - Based on actual DWT indicating TNDT 0	+70	
MSS Pipe NM-01-85	SA106-C Normalized	1.177 in. (m)	+70 - Based on NUREG 0577 for "mild" steel not heat treated (better than)	+70	Note 6
MSS Sockolet	SA105	0.156 in. (d)	+69 - Based on NUREG 0577 for C-Mn steel not heat treated	+70	
FWS Pipe and Reactor Water Cleanup (WCS) Pipe - 24 in. and 8 in.	SA106B and C Normalized	2.062 in. (n) 0.906 in. (n)	+70 - Based on NUREG 0577 for "mild" steel not heat treated (better than)	+70	Note 5
WCS Pipe 8 in.	SA333, Grade 6 Normalized	0.906 in. (n)	+70 - Based on NUREG 0577 for "worst case" analysis as "mild" steel. Also based on Charpy V-notch tests at -50 which is consistent and adequate for a design lowest service metal temperature of +70	+70	Note 4,5

Item	Material	Thickness (Note 1)	Permissible Lowest Service Metal Temperature (PLSMT) (°F) and Basis	Lowest Service Metal Temp. (LSMT) (°F) (Note 2)	Remarks
WCS Sockolet	SA105	0.092 in. (d)	+69 - Based on NUREG 0577 for C-Mn steel not heat treated	+70	Note 5
WCS Elbows	SA234 WPB (SA106) Normalized	0.906 in. (n)	+70 - Based on NUREG 0577 for "mild" steel not heat treated (better than)	+70	Note 5
CSH Pipe ASME III Cl. 1	SA106 Grade B	0.844 in. (n)	+40 - Based on CVNs at +40°F meeting summer 1977 Class 2 and SRP 6.2.7 requirements	+70	
CSH Pipe ASME III Cl. 2	SA106 Grade B	0.237 in. (n) to 0.375 in. (n)	Exempt based on thickness criteria of summer 1977 Class 2 and SRP 6.2.7		
CSH Pipe ASME III Cl. 2	SA106 Grade B	0.844 in. (n)	+107 - Based on NUREG-0577 for "mild" steel not heat treated		
CSH Elbows	SA234 Grade WPB	0.280 in. (n) to 0.375 in. (n)	Exempt - Based on thickness criteria of summer 1977 Class 2 and SRP 6.2.7		
CSH Sockolets/ Weldolet	SA105	0.237 in. (n) and less	Exempt - Based on thickness criteria of summer 1977 Class 2 and SRP 6.2.7		
CSH Reducer, Outlet	SA234-WPB (SA106) Normalized	0.365 in. (n)	Exempt - Based on thickness criteria of summer 1977 Class 2 and SRP 6.2.7	---	
CSH Reducer, Inlet	SA234-WPB (SA106) Normalized	0.844 in. (n)	+70°F - Based on NUREG-0577 for "mild" steel not heat treated (better than)	+70	

Item	Material	Thickness (Note 1)	Permissible Lowest Service Metal Temperature (PLSMT) (°F) and Basis	Lowest Service Metal Temp. (LSMT) (°F) (Note 2)	Remarks
2FWS*FTG1A					
FWS Thermal Tee Flued Head	SA350, Grade LF2 Normalized	1.804 in. (m)	+25 - Based on NUREG 0577 for C-Mn steel normalized	+70	Note 5
FWS Thermal Tee Extruded Outlet Fit	SA240, Grade WPL6 (SA350 LF2) Normalized	2.625 in. (m)	+28 - Based on NUREG 0577 for C-Mn steel normalized	+70	Note 5
FWS Thermal Tee Thermal Sleeve	SA350, Grade LF2 Normalized	0.793 in. (m)	+25 - Based on NUREG 0577 for C-Mn steel normalized	+70	Note 5
FWS Thermal Tee Reducer	SA350, Grade LF2	1.804 in. (m)	+25 - Based on NUREG 0577 for C-Mn steel normalized	+70	Note 5
FWS Thermal Tee Thermal Sleeve Run	SA516, Grade 70 Normalized, cold formed and stress relieved	3/8 in. (n)	+50 - Based on summer '77 Class 2 TNDT data and NRC Bulletin No. 158	+70	Note 5,7
2MSS*HYV7A					
MSIV Body	SA350, Grade LF2 Quenched and tempered	2.55 in. (d)	+2 - Based on NUREG 0577 for C-Mn steel normalized (better than)	+70	
MSIV Bonnet	SA350, Grade LF2 Quenched and tempered	4.94 in. (d)	+27 - Based on NUREG 0577 for C-Mn steel normalized (better than)	+70	

Item	Material	Thickness (Note 1)	Permissible Lowest Service Metal Temperature (PLSMT) (°F) and Basis	Lowest Service Metal Temp. (LSMT) (°F) (Note 2)	Remarks
MSIV Ball	SA351, Grade CF8M		Excluded - Based on austenitic stainless steel		
MSIV Bolting					Note 8
2FWS*MOV21A					
FWS Valve Body	SA105 Quenched and tempered	2.28 in. (m)	+2 - Based on NUREG 0577 for C-Mn steel normalized (better than)	+70	Note 5
FWS Valve Bonnet	SA105 Normalized	2.47 in. (m)	+25 - Based on NUREG 0577 for C-Mn steel normalized	+70	Note 5
FWS Valve Wedge	SA105 Normalized	1.7128 in. (d)	+25 - Based on NUREG 0577 for C-Mn steel normalized	+70	Note 5
FWS Valve Bolting	--	--	--	--	Note 8
FWS Valve Thrust Ring	SA182, Grade F6 Normalized and tempered	1.253 in. (d)	+70 - Based on heat treatment and data from Republic Steel and Universal-Cyclops Steel	+70	Note 5,9
2FWS*AOV23A					
FWS Swing Check Valve Body	SA216, Grade WCB Normalized	2.28 in. (m)	+65 - Based on NUREG 0577 for cast steel heat treated (better than)	+70	Note 5

Item	Material	Thickness (Note 1)	Permissible Lowest Service Metal Temperature (PLSMT) (°F) and Basis	Lowest Service Metal Temp. (LSMT) (°F) (Note 2)	Remarks
FWS Swing Check Valve Bonnet	SA105 Normalized	4.498 in. (a)	+50 - Based on NUREG 0577 for C-Mn steel normalized	+70	Note 5
FWS Swing Check Valve Disc	SA105 Normalized	2.28 in. (m)	+25 - Based on NUREG 0577 for C-Mn steel normalized	+70	Note 5
FWS Swing Check Valve Bolting	SA193-B7 SA194-2H Quenched and tempered	5/8 in. (n)	Excluded from GDC 51 review based on NUREG 0577 categorization as least susceptible to brittle failure	--	Note 5
2WCS*MOV200					
WCS Valve Body	SA105 Normalized	0.880 (d)	+25 - Based on NUREG 0577 for C-Mn steel normalized	+70	Note 5
WCS Valve Bonnet	SA105 Normalized	0.875 (d)	+25 - Based on NUREG 0577 for C-Mn steel normalized	+70	Note 5
WCS Valve Disc	SA105 Normalized	2.25 (d)	+25 - Based on NUREG 0577 for C-Mn steel normalized	+70	Note 5
WCS Valve Bolting	--	--	--	--	Note 8
WCS Valve Thrust Ring	SA182 Grade F6 Normalized and tempered	1.0 (m)	+70 - Based on heat treatment and data from Republic Steel and Universal-Cyclops Steel	+70	Note 5,9

Item	Material	Thickness (Note 1)	Permissible Lowest Service Metal Temperature (PLSMT) (°F) and Basis	Lowest Service Metal Temp. (LSMT) (°F) (Note 2)	Remarks
2CSH*MOV105					
Body	SA216 Grade WCB Normalized	1-3/4 in. (d)	Exempt - Based on thickness of connecting pipe criteria of summer 1977 Class 2 and SRP 6.2.7		Note 10
Bonnet	SA216 Grade WCB Normalized	1-3/4 n. (d)			Note 10
Disc	SA216 Grade WCB Normalized	1/2 in. (d)			Note 10
Bolting	SA193-B7 SA194-2H Quenched and tempered	1 in. (n)	Exempt - Based on thickness of connecting pipe criteria of summer 1977 Class 2 and SRP 6.2.7		Note 10
2CSH*MOV111					
Body	SA216-WCB Normalized and tempered	3.0 in. (d)	+40 - Based on CVNs at +40°F meeting summer 1977 Class 2 and SRP 6.2.7 requirements	+70	
Bonnet	SA216-WCB Normalized and tempered	3.0 in. (d)	+40 - Based on CVNs at +40°F meeting summer 1977 Class 2 and SRP 6.2.7 requirements	+70	
Disc	SA216-WCB Normalized and tempered	3.0 in. (d)	+40 - Based on CVNs at +40°F meeting summer 1977 Class 2 and SRP 6.2.7 requirements	+70	

Item	Material	Thickness (Note 1)	Permissible Lowest Service Metal Temperature (PLSMT) (°F) and Basis	Lowest Service Metal Temp. (LSMT) (°F) (Note 2)	Remarks
Bolting	SA193-B7 SA194-7 Quenched and tempered	1-3/8 in. (n)	Excluded from GDC 51 review based on NUREG-0577 categorization as least susceptible to brittle failure.	-	
Drain Connection	SA105	3/4" NPS (n)	Exempt - Based on thickness criteria of summer 1977 Class 2 and SRP 6.2.7.	-	
2CSH*MOV107					
Body	SA216-WCB Normalized and tempered	2.440 in. (a)	+40 - Based on CVNs at +40°F meeting summer 1977 Class 2 and SRP 6.2.7 requirements.	+70	
Bonnet	SA216-WCB Normalized and tempered	2.40 in. (a)	+40 - Based on CVNs at +40°F meeting summer 1977 Class 2 and SRP 6.2.7 requirements	+70	
Disc	SA216-WCB Normalized and tempered	1-3/8 in. (d)	+40 - Based on CVNs at +40°F meeting summer 1977 Class 2 and SRP 6.2.7 requirements	+70	
Bolting	SA193-B7 SA194-7 Quenched and tempered	1-1/4 in. (n)	+40 - Based on CVNs at +40°F meeting summer 1977 Class 2 and SRP 6.2.7 requirements	+70	
2CSH*V7					
Body	SA105 Normalized	0.250 in. (d)	Exempt - Based on the connecting pipe nominal pipe size criteria of summer 1977 Class 2 and SRP 6.2.7	-	Note 11
Cover	SA105 Normalized	1.038 in. (d)		-	Note 11

Item	Material	Thickness (Note 1)	Permissible Lowest Service Metal Temperature (PLSMT) (°F) and Basis	Lowest Service Metal Temp. (LSMT) (°F) (Note 2)	Remarks
Disc	SA216-WCB Normalized and tempered	7/8 in. (n)	Exempt - Based on thickness of connecting pipe criteria of summer 1977 Class 2 and SRP 6.2.7	-	Note 11
Bolting	SA193-B7 SA194-2H Quenched and tempered	5/8 in. (n)		-	Note 11
2CSH*MOV118					
Body	SA216-WCB Normalized and tempered	2-1/2 in. (a)		-	Note 10
Bonnett	SA216-WCB Normalized and tempered	2-1/2 in. (a)	Exempt - Based on thickness of connecting pipe criteria of summer 1977 class 2 and SRP 6.2.7	-	Note 10
Disc	SA216-WCB Normalized and tempered	1-1/2 in. (a)		-	Note 10
Bolting	SA193-B7 SA194-2H Quenched and tempered	1-1/4 in. (n)		-	Note 10

Item	Material	Thickness (Note 1)	Permissible Lowest Service Metal Temperature (PLSMT) (°F) and Basis	Lowest Service Metal Temp. (LSMT) (°F) (Note 2)	Remarks
2CSH*HCV116					
Body	SA217-C5 Normalized and tempered	0.500 in. (a)	Exempt - Based on the connecting pipe nominal pipe size criteria of summer 1977 Class 2 and SRP 6.2.7	-	Note 11
Bonnet	SA217-C5 Normalized and tempered	1.6385 in. (a)		-	Note 11
Plug	SA564 Grade 630 Aged at 1100°F	( )		-	Note 11
Nipples	SA106 Grade B	0.337 in. (n)		-	Note 11
Bolting	SA193-B7 SA194-2H Quenched and tempered	1 in. (n)		-	Note 11
2CSH*HCV133					
Body	SA217-WC9 Normalized and tempered	1.07 in. (d)	No data on cast 2-1/4 Cr - 1 Mo	-	
Bonnet	SA217-WC9 Normalized and tempered	3.672 in. (d)	No data on cast 2-1/4 Cr - 1 Mo	-	
Nipple (inlet)	SA106 Grade B	0.719 in. (n)	+107 - Based on NUREG-0577 for "mild" steel not heat treated		

Item	Material	Thickness (Note 1)	Permissible Lowest Service Metal Temperature (PLSMT) (°F) and Basis	Lowest Service Metal Temp. (LSMT) (°F) (Note 2)	Remarks
Nipple (outlet)	SA106 Grade B	0.365 in. (n)	Exempt - Based on thickness of connecting pipe criteria of summer 1977 Class 2 and SRP 6.2.7		Note 10
Plug	SA479 Type 304L	---	Exempt - Based on austenitic stainless steel		
Bolting	SA193-B7 SA194-2H Quenched and tempered	1-3/4 in. (n)	Excluded from GDC 51 review based on NUREG-0577 categorization as least susceptible to brittle failure		

NOTES TO TABLE 1

Note 1 The values presented as "thickness" are as noted:

a. Actual thickness

d. Minimum design thickness

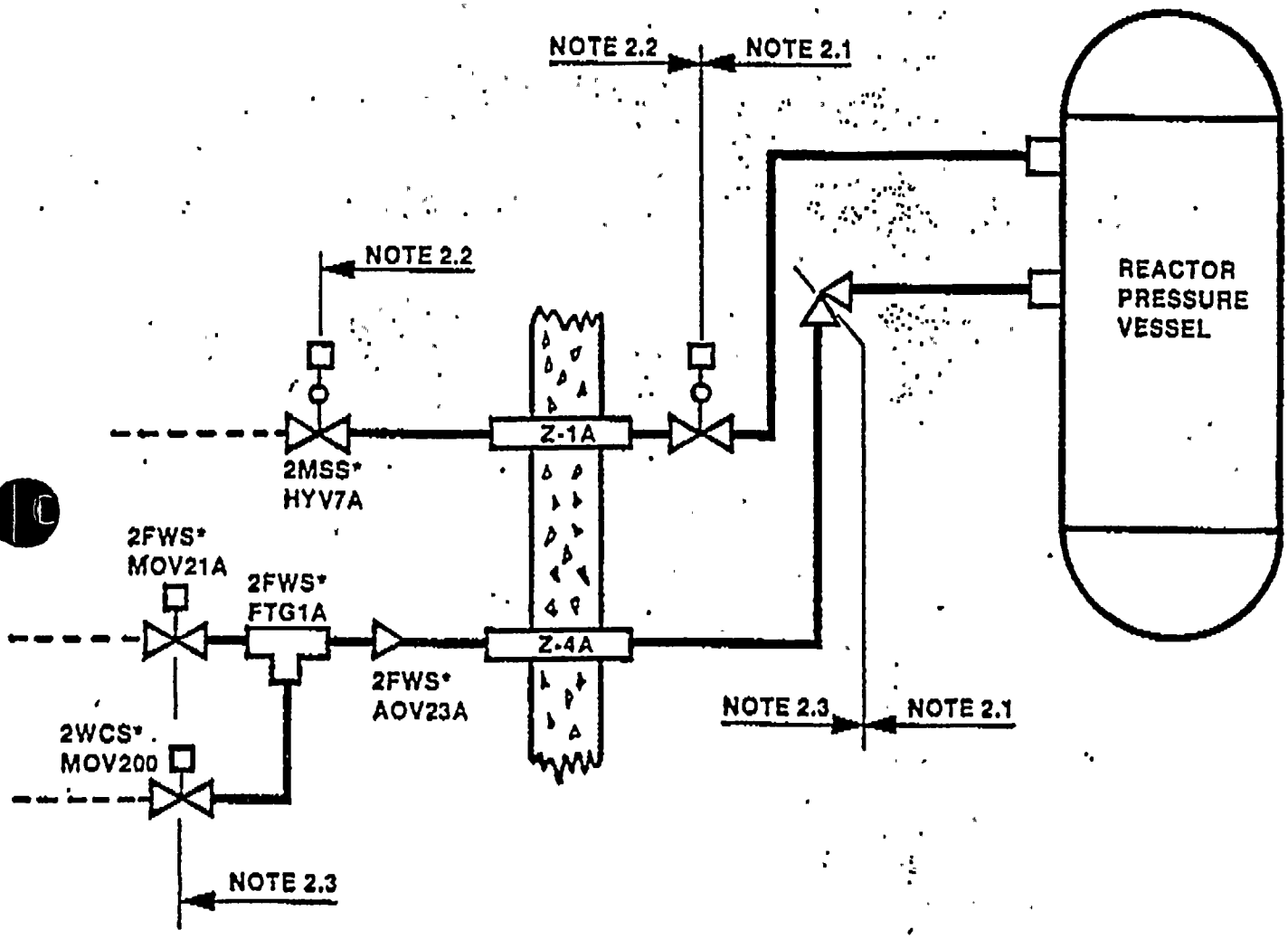
(The minimum design thickness for the flued head penetration Z-4A is based on all design loads minus temperature loads. Therefore, this value is conservative since it includes conditions that are not present at the LSMT, such as safety relief valve discharge loads. Other design thicknesses noted in this table are based on all worst-case design loads including temperature, and are therefore also conservative since they include conditions not present at the LSMT.)

m. Manufacturer's minimum thickness

n. Nominal thickness

Note 2 The lowest service metal temperature (LSMT) is limited either by the minimum local ambient temperature or by the minimum hydrotest temperature. When limited by the local ambient temperature, the LSMT is based on the minimum capacity of HVAC plus heat effects due to plant conditions necessary prior to the time the components are stressed. These heat contributions include, for example, heat from plant lighting and operating mechanical equipment. The following figure serves to clarify the LSMT when the hydrotest is the limiting condition.

NOTE 2 (CONTD)
LIMITING CONDITION — HYDROTEST



NOTES:

2.1 THIS PORTION TO BE HYDROTESTED WITH REACTOR PRESSURE VESSEL, 140°F MINIMUM TEMP. (PRESSURE TEST INSTRUCTION MP.001.002)

2.2 THIS PORTION TO BE HYDROTESTED AT 70°F MINIMUM TEMP. (PRESSURE TEST INSTRUCTION MP.001.001)

2.3 THIS PORTION TO BE HYDROTESTED AT 70°F MINIMUM TEMP. (PRESSURE TEST INSTRUCTION MP.006.002)

Note 3 SA564, Grade 630 is a precipitation hardening steel which cannot be drop-weight tested. The deposition of the weld bead as required by ASTM E208 would alter the material properties and therefore render the test not meaningful. From a metallurgical consideration, the heat used had a relatively high nickel content (4.42 percent) and was age hardened at a relatively high temperature (1,075°F, minimum), both of which serve to enhance the fracture toughness of this material.

Note 4 The PLSMT for penetration Z-11 and for the 8-in. feedwater pipe, both fabricated of SA333, Grade 6, were evaluated as follows:

Generally, SA333 can be expected to perform significantly better than the "mild steel" group of NUREG 0577. SA333 is Specification for Seamless and Welded Steel Pipe for Low Temperature Service. When intended for low temperature service, materials are manufactured with built-in inherent toughness, accomplished mainly by tight controls on cleanliness, chemistry and heat treatment. This inherent toughness is evidenced by the high CVN absorbed energy values obtained at very low temperatures.

For the two items in question, CVNs were performed on each heat of material at -50°F in accordance with SA333, Grade 6 and demonstrated absorbed energy values of 60/41 ft/lb and 131/100 ft/lb (average of 3/lowest single value). In accordance with NUREG 0577, paragraph 4.4.1, the temperature at which CVNs demonstrate 20 to 25-ft/lb absorbed energy is considered to approximate the TNDT. Therefore, for the heats above, it can be conservatively assumed that the TNDT is at or below -50°F, and that the SA333, Grade 6 is adequate for these items.

Note 5 There are situations where the FWS and WSS actual metal temperature may be less than +70°F; however, these situations could occur only during startup from the cold shutdown condition where the loads are very low. At very low stresses, the probability of rapidly propagating fracture is also very low. As the pressure increases, the temperature also increases such that the temperature is greater

than +70°F for all conditions where the pressure exceeds 660 psi. A pressure of 660 psi correlates to 20% of the preoperational system hydrostatic test pressure, which is defined by ASME III NC-2300, 1977 edition, including the summer 1977 addendum as the reference point to be used in establishing the lowest service temperature.

Note 6 Actual fabrication of main steam piping which serves as primary containment pressure boundary did not include hot bending. The CMTRs included hot bending information as a qualification in case it was elected to hot bend in fabrication. The actual fabrication, however, used miters and the material is therefore in the normalized condition. NUREG 0577, Table 4.4, on the basis of Figure 8 data for normalized SA106, would assign a TNDT at or below +40°F. The ASME III summer 1977 addenda, Class 2 rules then would assign a PLSMT of +70°F.

Note 7 The normalized SA516 Grade 70 was cold worked approximately 1.9% in forming the thermal sleeve run. Welding Research Council Bulletin No. 158 presents data on the effects of cold work and cold work plus stress relief on the toughness properties of material such as this. The data demonstrate that the transition temperature increases with increasing cold work. After a stress relief of 1150°F, this ranges from an increse of 0°F for 1% cold work to an increase of 20°F for 5% cold work. Conservatively, a 20°F increase in the TNDT of the thermal sleeve run can be assumed, raising the ASME III summer 1977 Class 2 TNDT to +20°F and resulting in a PSLMT of +50°F.

Note 8 MSS*HYV7A, FWS*MOV21A and WCS*MOV200 bolting are not pressure-retaining parts.

Note 9 SA182 Grade F6 is a martensitic chromium stainless steel which cannot be drop weight tested. The deposition of the weld bead as required by ASTM E208 would alter the material properties and therefore render the test not meaningful. From a metallurgical consideration, the high tempering temperature of 1400°F produces a material with a significantly high toughness. This is reflected in data from Republic Steel and other sources in the literature.

Note 10 ASME III summer 1977 addendum NC-2331 defines the nominal wall thickness for valves as the nominal pipe wall thickness of the connecting pipe. As the nominal pipe wall thickness of the pipe connecting to this valve is 5/8 inch or less, no testing is required. Also, NC-2311 (a)(5) of the same code exempts testing of material for valves with pipe connections of 5/8 inch wall and less. Therefore, this valve meets the summer 1977 addendum class 2 rules and SRP 6.2.7 acceptance criteria.

Note 11 ASME III summer 1977 addendum NC-2311 (a)(4) exempts testing for all thickness of material for valves with a nominal pipe size 6 inch and smaller. Therefore, this valve meets the summer 1977 addendum class 2 rules and SRP 6.2.7 acceptance criteria.

{ FEEDWATER SWING CHECK VALVE DISC }

VIKING METALLURGICAL CORPORATION

TURB-O-TEMP PRODUCTS

CORRECTED TO SHOW ACTUAL COOLING MEDIA AFTER NORMALIZE 11/8/84

1 ERIK CIRCLE • (P.O. BOX 330) • VERDI, NEVADA 89439
TELEPHONE (702) 345-0348

[redacted]

TO: Anchor/Darling Valve Co.,
Hayward Plant
24747 Clawiter Rd
Hayward, California 94545

CUSTOMER'S ORDER NO.	CUST. ORDER DATE	PART NO. (SIZE IF NO PART NO.)*	QUANTITY	VIKING ORDER NO.	SHIPPING DATE
A-1617	11-2-79	Per Dwg.#F04-24F-58A	4	19751 - 6683	

ELECOPIED
TO Hu Lowell
FROM R Chapuette
NO. DATE 11/20/84

[redacted]

SPECIFICATION(S)	MATERIAL	HEAT, LOT, OR CODE NO.	MILL SOURCE	SIZE
ASME-SA-105	8620	219870	Sharon	12"RCS

[redacted]

CHEMICAL ANALYSIS: [X] MILL (LADLE) [ ] CHECK ANALYSIS *LESS THAN

Ni	Co	Fe	B	C	S	P	Si	Mn	Mo	Cu	W	V	Zr	Cr
				.22	.014	.014	.23	.74						

Al	Ti	Cb	Ta	Sn	Pb	Bi	Mg	Zn	O	N	H	Y

MECHANICAL TESTS: [X] REPRESENTATIVE TEST MATERIAL [ ] INTEGRAL TEST SECTION [ ] FIRST PRODUCT PIECE

TEST SPECIFIED	TEMP °F	TS (KPSI)	YS.2% (KPSI)	STRESS(KPSI)	LIFE (HRS)	EL %	RA %	FT/LBS.	HARDNESS
Tensile	Room	82.1	54.1			24.0	44.3		BHN 163
Charpy V-Notch	+40°F	FT/Lbs	SHEAR %		LATERAL EXPANSION				
Impact Test 1		48	30%		.042				
2		72	60		.056				
3		54	40		.043				

Test Material Heat Treated as Follows: 1650°, to heat, AC; 1100°, 16 hours AC.

METALLURGICAL TESTS:

	GRAIN SIZE	HARDENABILITY	CLEANLINESS		INCLUSION CONTENT (ASTM E 45)									
			AMS		A		B		C		D		E	
		Rc	F	S	T	H	T	H	T	H	T	H	T	H
	AVERAGE _____ OR FINER													
	WITH OCCASIONAL GRAINS	J -												
	AS LARGE AS _____	J -												

[redacted]

MANUFACTURED IN ACCORDANCE WITH ASME SECTION III CLASS 3, NCA3800 1977 ADDENDA OR NA3700 1974 ADDENDA

HEAT TREATMENT SPECIFICATION(S) ASME-SA-105

PROCESS	Normalized	Temper			SOURCE(S)
TEMP. °F	1650	1100			Viking Metallurgical
TIME @ TEMP.	to heat	16 hours			Verdi, Nevada
QUENCH MEDIA	Air	Air			
ATMOSPHERE	Air	Air			
HARDNESS					

NONDESTRUCTIVE EVALUATION

PROCESS	SPECIFICATION(S)	SOURCE(S)	RESULTS
Mag Particle	ADV 1824-1 Rev. B NB 2549	Peabody Testing	Certification
Ultrasonic	Peabody 1P-UT-415 NB 2542	San Leandro, Ca 4577	Attached

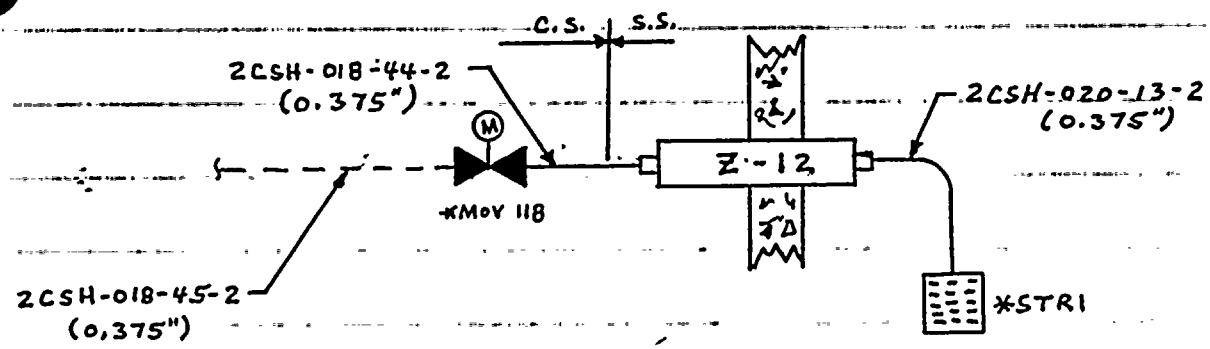
1. The Viking Metallurgical Corporation, A Subsidiary of Michigan Seamless Tube Company, certifies that the material contained in this shipment meets the requirements of the purchase order and the inspection and test requirements per applicable specifications. Results of tests as required are as shown herein.
2. Results of all chemical and physical tests not shown herein, as well as all other evidence which shows acceptability of the material, are on file and available for inspection at any reasonable time.

AUTHORIZED SIGNATURE

4-18-86
DATE

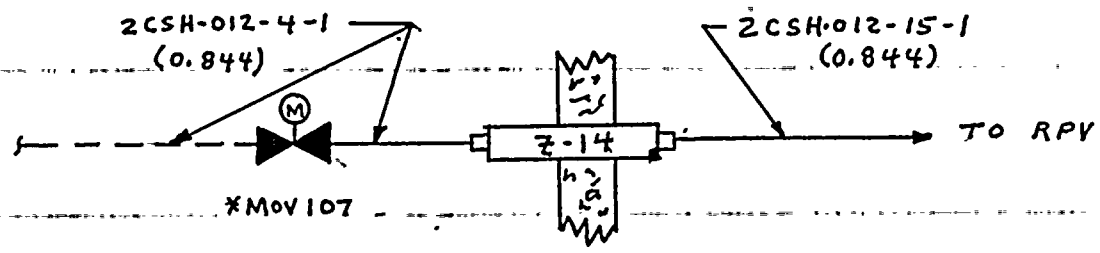
A SUBSIDIARY OF MICHIGAN SEAMLESS TUBE COMPANY

HIGH PRESSURE CORE SPRAY (CSH) 1 of 2



100 psig / 212 degF

NM-25-25X (P191)



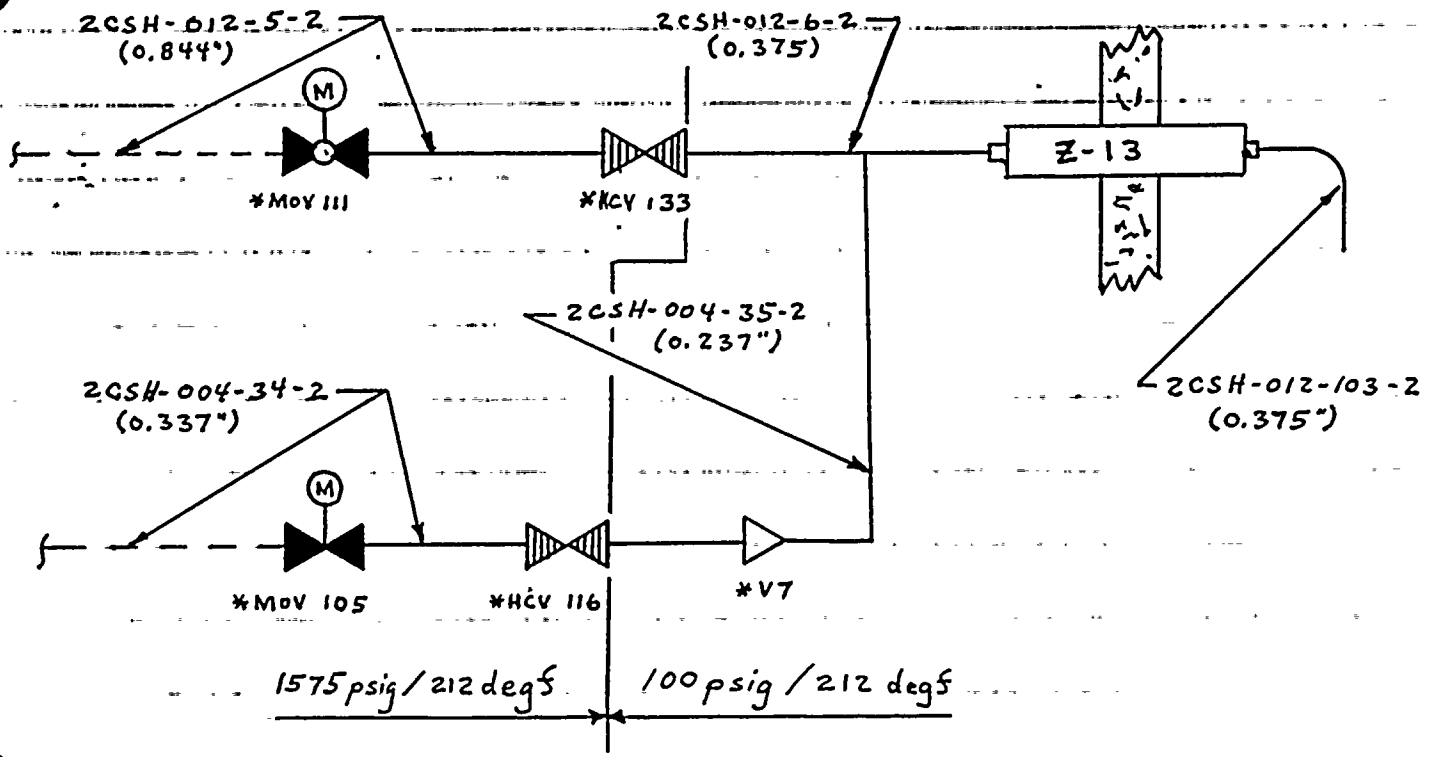
1575 psig / 575 degF

NM-25-59X (P-160, SWF-274)

RECEIVED
Nine Mile Pt. 2 Project
DEC 3 1984
Syracuse — Headquarters

RECEIVED
Air Force Op. 2 Prog.
DEC 2 1966
Syracuse Headquarters

HIGH PRESSURE CORE SPRAY (CSH) 2 of 2



NM-25-115X (P-525)

NM-25-116X (P-473, BWF-892)

NM-25-117X (P-473, BWF-892)

NM-25-118X (P-459, BWF-892)

NM-25-119X (P-473, BWF-784)

NM-25-120X (P-473, P-422, BWF-892, SWF-185, SWF-240)

NM-25-121X (P-422, BWF-667, SWF-180)

NM-25-138X (P-455)

2 CSH PIPING CMTR's

CSH PIPE ASME III Cl.1

PHOENIX STEEL CORPORATION

TUBE DIVISION
PHOENIXVILLE, PENNA.

TRANS. # 00173

CERTIFICATE OF INSPECTION AND TESTS

DATE: 4-17-78	DATE SHIPPED: 4-17-78	MILL ORDER NO. T-4605-A2-30	SHIPPING LIS 79B
SOLD TO: LaBarge, Inc.		CUSTOMER ORDER NO. 9193	
		CAR NO. PC 528629	
		MATERIAL: SEAMLESS ☒ PIPE ☐ TUBE, HOT FINISHED	
SHIP TO:		SPECIFICATION: ASTM A-106-B-76a, ASME SA-106-B (O.H.	

NM P-160

NO. PCS.	OD	WALL	LENGTH	TOTAL FT.	TOTAL WT.	HEAT NO.
	12.750" x	.844" S/100				NM-37 68609

S.W.E.C. PQC INSPECTED-103

HEAT NO.	C	Mn.	P.	S.	Si.	Cu.	Ni.	Cr.	Mo.
68609	.25	.91	.013	.032	.22				

N.M.P.C.
NINE MILE RUC. STATION
UNIT-2 P. O. NMP2-P3018
J. O. 12177 SHOP FAB. PIPE
PIECE MARK
ITT GRINNELL
KERNERSVILLE N.C. 27284

HEAT NO.	TENSILE (KSI)	YIELD (KSI)( )	% ELONG. IN 2"	% RA	HARDNESS ROCKWELL	HARDNESS BRINELL	GRAIN SIZE
68609	78.5	45.0	30.00				

ITTG - IPI
QUALITY CONTROL
APPROVED
L.R.
DATE 11-1-78
SHEET 1 OF 1

THESE MILL TEST REPORTS APPLY TO:

YOUR P.O. # KER 10422

LaBARGE INVOICE # SN 34565

JOMINY DISTANCE - 16TH Rockwell C

FLATTENING OK

HYDROSTATIC PSI 2800

2 4 6 8 10 12 14 16 20 24 28 32

THE PHOENIX STEEL CORPORATION HEREBY CERTIFIES THAT THE ABOVE MATERIALS HAVE BEEN INSPECTED AND TESTED IN ACCORDANCE WITH THE METHODS PRESCRIBED IN THE APPLICABLE SPECIFICATIONS AND THE RESULTS OF SUCH INSPECTION AND TESTS AS CONTAINED IN THE COMPANY RECORDS ARE AS SHOWN ABOVE. FOR PROPERTIES OR CHARACTERISTICS FOR WHICH NO METHODS OF INSPECTION OR TESTING ARE PRESCRIBED SAID SPECIFICATIONS, THE STANDARD MILL INSPECTION AND TESTING PRACTICES OF THE PHOENIX STEEL CORPORATION HAVE BEEN APPLIED. BASED ON SUCH INSPECTION AND TESTS, THE ABOVE MATERIALS HAVE BEEN APPROVED AS FULFILLING THE REQUIREMENTS OF SAID SPECIFICATION.

R. W. Pechan

INDUSTRIAL TESTING LABORATORIES inc.

Chemists
Engineers
Metallurgists

2350 Seventh Blvd. • St. Louis, Missouri 63104 | 314/PRospect 1-7111

A SUBSIDIARY OF CHROMALLOY AMERICAN CORPORATION

Report No. 78-9-367B

nm
P-160

October 20, 1978

Impact testing and Ultrasonic examination of A-106 Grade B seamless pipe per the requirements of ASME Boiler and Pressure Vessel Code Section III.

LaBarge, Inc.
Tubular Division
20 S. 4th Street
St. Louis, MO. 63102

P.O.: 77051
Attn: Mr. Jerry Coibion

TEST REPORT

The following pieces of 12-3/4" O.D. X .844" wall thickness A-106 Grade B seamless pipe were subjected to ultrasonic examination in accordance with the requirements of ASME Boiler and Pressure Vessel Code Section III, NB-2550 and ITL-UT-3-75, Revision I, October 16, 1978.

Sample	Heat No.	Length
1	68609	18' 1"
2	68609	18' 1"
3	68609	17' 2"

S. W. E. C. PQC INSPECTED-103

A representative sample of the heat lot was subjected to Impact Testing.

N.M.P.C.
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P3018
J. O. 12177 SHOP FAB. PRG
PIECE MARK
ITT CANNELL
KERNERSVILLE N.C. 27284

ITTG - IPI
QUALITY CONTROL
APPROVED
DATE 11-1-78
SHEET 1 OF 2

TRANS. # 00173

INDUSTRIAL TESTING LABORATORIES inc.

Chemists
Engineers
Metallurgists

2350 Seventh Blvd. • St. Louis, Missouri 63104 | 314/PRospect 1-7111

A SUBSIDIARY OF CHROMALLOY AMERICAN CORPORATION

nm
P-160

A. Impact Testing Results:

12-3/4" O.D. X .844" W 11; Heat No. 68609; Full Size, +40°.

	Energy Transition ft/lbs.	Shear Transition %	Lateral Expansion Mils
1	31.5	30.0	36.5
2	29.5	30.0	35.0
3	29.0	30.0	35.0
Average	30.0	30.0	35.5

B. Ultrasonic Examination:

Angle beam scanning in two (2) circumferential directions of the pipe sections utilizing a 45° shear wave 2.25 MHZ transducer, revealed no significant defect indications in excess of the calibration notch indications, following the removal of surface defects (scratches and shallow laminations) by grinding. The grinding operation required to remove the surface defects was such that minimum wall thicknesses were maintained.

S. W. E. C. PQC INSPECTED 103

Respectfully submitted,

INDUSTRIAL TESTING LABORATORIES, INC.

ITTG - IPI
QUALITY CONTROL
APPROVED
DATE 11-1-78
SHEET 2 OF 2

J. F. Sharp
ASNT Level II

Allan M. Siegel, P.E.
ASNT Level III

JFS/hj

N.M.P.C.
NINE MILE RUC. STATION
UNIT-2 P. O. NMP2-P5013
J. O. 12177 SHOP FAB. PIPE
PIECE MARK
ITT GRINNELL
KERNERSVILLE N.C. 27284

INDUSTRIAL TESTING LABORATORIES inc.

Chemists
Engineers
Metallurgists

2350 Seventh Blvd. • St. Louis, Missouri 63104 | 314/PRospect 1-7111

ation: Mr. Bruce Phillips

NM P-160

December 12, 1978

Rec 10422

LaBarge, Inc.
Tubular Division
20 South 4th Street
St. Louis, MO. 63102

P.O.: 77051
Attn: Mr. Jerry Coibion

REF: P.O.: 77051
ITL Report Nos. 78-9-367
78-9-367A
78-9-367B

Dear Mr. Coibion:

The Charpy impact data shown in the above referenced reports was obtained from specimens removed from the pipe with the following orientations and relative locations:

1. Orientation - Specimen axes were aligned along the axial direction of the pipe.

2. Location - The longitudinal axes were at least 1/4t below the outside surface.

S.W.E.C. PQC INSPECTED 103

N.M.P.C.
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P3018
J. O. 12177 SHOP FAB. PIPE
PIECE MARK
ITT GRINNELL
KERNERSVILLE N.C. 27204

Respectfully submitted,

INDUSTRIAL TESTING LABORATORIES, INC.

Allan M. Siegel

Allan M. Siegel, P.E.
Director

ITTG - IFI
QUALITY CONTROL
APPROVED
L.P.
DATE 12-14-78
SHEET 1 OF 1

JPS/hj

DEC 1978

TRANS. # 00173

United States Steel Corporation

0738 (REV. 3-78)

TUBULAR PRODUCTS
METALLURGICAL TEST REPORT

JOB, CONTRACT	P. O. DATE	PURCHASE ORDER NO.	
		KER 9727	
	SHIPPERS NO.	MILL ORDER NO.	INVOICE NO.
		AC18280	
	VEHICLE IDENTITY	08/11/78	

WE HEREBY CERTIFY THAT THE FIGURES SET FORTH BELOW ARE CORRECT, AS CONTAINED IN THE RECORDS OF THE COMPANY.

TRANS. # 00173

JH

E.L.BARTOLOTTA,CH.NET.

LORAIN-CUYAHOGA

ITT GRINNELL INDUSTRIAL PIPING
P O BOX 566
KERNERSVILLE N C 27284

ITT GRINNELL INDUSTRIAL PIPING
P O BOX 566
KERNERSVILLE N C 27284

MAIL TO 3

DATE 08/14/78

THIS MATERIAL HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE QUALITY SYSTEM PROGRAM AUDITED & APPROVED BY ITT GRINNELL INDUSTRIAL PIPING ON 02/04/77 AS CONFORMING WITH THE REQUIREMENTS OF ASME SECTION III SUB ARTICLE NCA 3800 THE APPLICABLE PROVISIONS OF 10CFR PART 21 APPLY

NM P191

ITEM NO.	MATERIAL DESCRIPTION SIZE	WALL	SPECIFICATION & GRADE	MATL.	HEAT/LOT NO.	MIN. HYDRO PSI	YIELD STR. PSI	TENSILE STR. PSI	ELONG. % IN 2"	GAGE WIDTH IN.	FLAT	BEND
2	18 OD	.375	ASTM A106,ASME SA106 GR B	SMLS	L62736	1090	50000	73600	37.5	1 1/2	OK	
2	18 OD	.375	ASTM A106,ASME SA106 GR B	SMLS	N75092	1090	44900	71100	40.5	1 1/2	OK	

N.M.P.C.
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P301B
J. O. 12177 SHOP FAB. PIPE
PIECE MARK
ITT GRINNELL
KERNERSVILLE N.C. 27284

Stock

ITTG - IPI
QUALITY CONTROL
APPROVED
T. C. WILSON
DATE NOV 15 1978
SHEET 1 OF 1

ITEM NO.	HEAT NO.	TYPE	C	MN	P	S	SI	CU	NI	CR	MO	SN	AL	N	V	B	TI	CB	CO
2	L62736	LADL	24	89	005	030	160												
2	N75092	LADL	23	61	005	027	160												

S.W.E.C. PQC INSPECTED 103

J&L 482

QUALITY CONTROL TEST REPORT

Req., Job, Contract No.: SN 303 Lot# 505729

Purchase Order No.: CHA-54706-AD

We hereby certify that this report accurately reflects the results of tests performed with respect to the material described hereon as shown by Company records.

JONES & LAUGHLIN STEEL CORPORATION

By V.G. Maurer Jr. Authorized Signer

VENDOR: JONES & LAUGHLIN STEEL CORPORATION
Campbell WORKS

Invoice Date: Dec. 15, 1980

Invoice No. (s): C-510070

Vehicle Identity: B&O 371468

Shipper's No.:

SOLD TO: ITT Grinnell Corp.
1431 W. Morehead St.
Charlotte, N.C. 28208

nm
P-422

SHIP TO: Same
Highway 421
Kernersville, N.C. 27284

STATE OF COUNTY OF
Subscribed and sworn before me
this day of A.D. 19

SPEC. INSP.

ITEM NO.	MILL ORDER NO.	MATERIAL DESCRIPTION	QUANTITY	HEAT/LOT NO.	TEST OR PIECE ID	YIELD PSI	TENSILE PSI	% ELONG. 2"	% ELONG. 8"	HYDRO PR. PSI	BEND	FLATING	GR. SIZE	HARDNESS
B	CO-85508-B	Seamless Pipe ASTM-A-106-78 Grade B Blk PE This material also conforms to spec. ASME-SA-106 Grade B 4-1/2"OD 10.79# .237 W	245	259356		49800	78430	36		2200		OK		
				361801		50160	76190	38		2200		OK		
				259344		49200	78060	36		2200		OK		
				259343		53330	78730	38		2200		OK		

N. M. P. C.
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P301D
J. O. 12177 SHOP FAB. PIPE
PIECE MARK:
ITT GRINNELL
KERNERSVILLE, N.C. 27284

Tag: KER 14013

S.W.E.C. INSPECTED 103 PQC

ITTG - IPI
QUALITY CONTROL
APPROVED
T. C. WILSON
DATE FEB. 1 0 1981
SHEET 1 OF 3

HEAT ANALYSIS

HEAT NO.	SAMPLE LCN.	C	Mn	P	S	Si
259356		.23	.88	.005	.020	.22
361801		.25	.82	.007	.012	.21
259344		.24	.86	.007	.020	.21
259343		.24	.82	.006	.016	.20

ITTG-IPI
QUALITY CONTROL
APPROVED
T.C. Wilson
DATE 5-4-81
SHEET 1 OF 3

WE CERTIFY THAT THIS MATERIAL TEST REPORT MEETS THE REQUIREMENTS OF ASME SECTION III 1974 ADDENDA AND Niagara Mohawk JOB SPEC. CONTRACT

SPECIAL TEST RESULTS

"This material was manufactured in accordance with Quality System Revision dated 6/1/80 & approved by ITT Grinnell Corp. 2356F dated 8/7/80 as conforming to requirements of ASME Section 3 Class 2 NCA-3800, and meets requirements of NC 2550 & 2551."

Letter of Extension Attached Dated 11-1-79 & 3-25-80

MS CERT. # 1540-9
EXPIRATION JAN. 10, 1980

QUALITY CONTROL
ITT RW
DATE

00173

The American Society of Mechanical Engineers

United Engineering Center • 345 E. 47th St., New York, N.Y. 10017 • 212-644-7812 • TWX-710-581-5267

ITTG-IPI QUALITY CONTROL ✱APPROVED✱ T.C. Wilson DATE 5-4-81 SHEET 2 OF 3	WE CERTIFY THAT THIS MATERIAL TEST RFPORT MEETS THE REQUIREMENTS OF ASME SECTION III 1974 ADDENDA AND Niagara Mohawk JOB SPEC. CONTRACT

March 28, 1980

ITT Grinnell Corporation
Arthur S. Laurenson; Mgr. QA
260 West Exchange Street
Providence, RI 02901

N. M. P. C.
NINE MILE NUC. STATION
UNIT 2 P. O. NMP2-P301B
J. O. 12177 SHOP FAB. PIPE
PIECE MARK:
ITT GRINNELL
KERNERSVILLE, N.C. 27264

nm p.422

Subject: Extension of Expiration Date for the Following Quality System Certificates as a Material Supplier at:

S.W.E.C. PQC INSPECTED 103

Providence, RI (Corporate)	N-1540
Milwaukee, WI	N-1540-3
Philadelphia, PA	N-1540-4
Phoenix, AZ	N-1540-5
Kansas City, MO	N-1540-6
Seattle, WA	N-1540-7
Los Angeles, CA	N-1540-8
Charlotte, NC	N-1540-9

This letter is to serve as an extension of expiration date for the subject for Certificates N-1540, N-1540-3, N-1540-4 & N-1540-5 for which the current expiration date is October 15, 1979 and which had been previously extended to January 15, 1980 and March 31, 1980; for Certificates N-1540-6, N-1540-7 & N-1540-8 for which the current expiration date is January 7, 1980 and which was previously extended to March 31, 1980, and for Certificate N-1540-9 for which the current expiration date is January 10, 1980 and which was previously extended to March 31, 1980.

As a result of the appearance of your company representatives before the ASME Subcommittee on Nuclear Certification (SCNC) at their meeting on March 3, 1980, during which you presented your views on the pending resolution of a problem identified during your survey conducted on August 27-29, 1979, for your Corporate Certificate (N-1540) renewal, SCNC has extended the expiration date of all the subject Certificates until December 31, 1980 or until clarification is obtained from Subcommittee III - whichever comes first.

Arlene A. Spadafino
Director, Certification

/bb

cc: File/CMPT

ITTG - IPI QUALITY CONTROL ✱APPROVED✱ T. C. WILSON DATE FEB. 10 1981 SHEET 2 OF 3

RESEARCH DEVELOPMENT and ENGINEERING DIVISION APR 01 1980 RECEIVED

The American Society of Mechanical Engineers

United Engineering Center • 345 E. 47th St., New York, N.Y. 10017 • 212-644-7812 • TWX-710-581-5267

ITTG-IPI QUALITY CONTROL ✱APPROVED✱ T.C. Wilson DATE 5-4-81 SHEET 3 OF 3	WE CERTIFY THAT THIS MATERIAL TEST REPORT MEETS THE REQUIREMENTS OF ASME SECTION III 1974 ADDENDA AND Niagara Mohawk JOB SPEC. CONTRACT

S.W.E.C. 103 PQC INSPECTED

November 1, 1979

ITT Grinnell Corporation
Helmut Thielsch; Vice Pres., Dir.
Research, Development and Engineering Div.
260 West Exchange Street
Providence, RI 02901

N. M. P. C.
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P301B
J. O. 12177 SHOP FAB. PIPE
PIECE MARK:
ITT GRINNELL
KERNERSVILLE, N.C. 27284

Subject: Renewal Surveys of Quality System Certificate (N-1540) as a Material Supplier (Corporate) with Seven (7) Warehouse Extensions

nm p.432

In reply to your letter of October 9, 1979, Mr. Green had requested that the subcommittee(s) review its contents and that I advise you on the results of their review.

This letter is to confirm the meeting with Messrs. M. R. Green, E. J. Hemzy and A. S. Laurenson and Miss Arlene A. Spadafino during which the results of the consideration of your letter of October 9, 1979 to M. R. Green by the Subcommittee on Nuclear Certification (SCNC) were made to A. S. Laurenson and discussed.

At the SCNC meeting on October 29, 1979, after consideration of your October 9, 1979 letter, its attachments, and various reports on the present actions under consideration by other subcommittee(s), SCNC voted to extend the expiration dates of your present Quality System Certificates until the end of March, 1980. The Subcommittee considers this will allow sufficient time for the renewal process of your Certificates to be reinstated and the required surveys to be conducted. This action was taken with the awareness that ITT has submitted requests for clarification of Code rules related to Quality System Certificate and also due to the unique situation of the relationship of these Quality System Certificates and the other N-type Certificates that ITT Corporation possesses. The SCNC Chairman and Secretary were directed by the Subcommittee on Nuclear Certification to convey that the intent of the extension of expiration dates is so that ITT Grinnell Corporation will have sufficient opportunity to proceed with a request for survey dates. We remind you that this has been a special action related to the renewal of your corporate Quality System Certificate (Materials) Certificate and its extensions.

Arlene A. Spadafino
Arlene A. Spadafino
Director, Certification

/bb

ITTG - IPI QUALITY CONTROL ✱APPROVED✱ T. C. WILSON DATE FEB. 10 1981 SHEET 3 OF 3

cc: R. B. Finch; ASME Exec. Dir.
P. Chiarulli; ASME Deputy Dir.
M. R. Green; ASME Mrg. Dir., Codes & Standards

nm
P-455

ITT

ITT Grinnell Corporation

Supply Sales Division

Branch 1127
Location Charlotte

Statement of Compliance

Customer Purchase Order:
KER 15030

Dear Sir,

The items/materials supplied by ITT Grinnell, Supply Sales Division have been supplied in accordance with the Quality System Program accepted by ASME.

Quality System
Certificate (Materials)
MS CERT. QCS-415-1
EXP. DATE MARCH 27, 1984

Expiration Date

Q. C. Manager

7-27-81
Date

N. M. P. C.
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P301B
J. O. 12177 SHOP FAB. PIPE
PIECE MARK:--------
ITT GRINNELL
KERNERSVILLE, N.C. 27284

4" XS SA-106B INV # C531927 CHR # DM50045 ITT # 364363
SN 315
LOT # 506609

ITTG-IPI
QUALITY CONTROL
APPROVED
T. C. Wilson
DATE 9-21-81
SHEET 1 OF 2

WE CERTIFY THAT THIS MATERIAL TEST REPORT MEETS THE REQUIREMENTS OF ASME SECTION III Ce.2 1974 ADDENDA AND Niagara Mohawk JOB SPEC. CONTRACT

ITTG - IPI
QUALITY CONTROL
APPROVED
T. C. WILSON
DATE AUG 4 1981
SHEET 1 OF 2

ITT 535

41L 535

* SN 315 Lot # 506609

Campbell WORKS

ITT Grinnell Corp.
1431 W. Morehead St.
Charlotte, N.C. 28208

Invoice Date: July 15, 1981

Purchase Order No.: 54748 AD & CHA 54747 AD

Invoice No. (s): C-531926 & 531927

Vehicle Identity: N M 50045

Shipper's No.:

SHIP TO: ITT Grinnell Ind. Piping Inc.
Highway 421
Kernersville, N.C. 27284

We hereby certify that this report accurately reflects the results of tests performed with respect to the material described hereon as shown by Company records.

JONES & LAUGHLIN STEEL CORPORATION

By P. A. Antonini Authorized Signer

STATE OF COUNTY OF

Subscribed and sworn before me

this day of A.D. 19

TEST RESULTS

	Item Order No.	Material Description	Quantity	Heat/Lot No.	Test or Piece ID	Yield PSI	Tensile PSI	% Elong. 2"	% Elong. 8"	Hydro Pr. PSI	Bend	Flating	Gr. Size	Hardness
	C1-82879-A	Seamless Pipe ASTM-A-106-78 Grade B Blk PE This material also conforms to spec. ASME-SA-106 Grade B		364353		56640	81660	36		2200		OK		
A	Tag: KER 15014	4-1/2"OD 10.79# .237 W	139	365041		50470	79230	42		2200		OK		
B		4-1/2"OD 14.98# .337 W	43	364363		48100	79850	38		2800		OK		
*A	C1-82880-A Tag: KER 15030	4-1/2"OD 14.98# .337 W	28	364363		48100	79850	38		2800		OK		

Item Order	Sample Loc.	C	Mn	P	S	Si
364353		.25	.84	.012	.018	.20
365041		.24	.79	.008	.014	.21
364363		.26	.81	.009	.017	.18
364363		.26	.81	.009	.017	.18

ITTG - IPI
QUALITY CONTROL
APPROVED
T. C. WILSON
DATE AUG 4 1981
SHEET 2 OF 2

SPECIAL TEST RESULTS

"This material was manufactured in accordance with Quality System Revision dated 6/1/80 and approved by ITT Grinnell 2356F dated 8/7/80 as conforming to requirements of ASME Section 3 Class 2 NCA-3800 and meets requirements of NC 2550 and 2551."

MS CERT. QCS-415-1
EXP. DATE MARCH 27, 1984

ITTG-IPI
QUALITY CONTROL
APPROVED
T. C. Wilson
DATE 9-21-81
SHEET 2 OF 2

WE CERTIFY THAT THIS MATERIAL TEST REPORT MEETS THE REQUIREMENTS OF ASME SECTION III Cl. 2 1974 ADDENDA AND Niagara Mohawk JOB SPEC. CONTRACT

N. M. P. C.
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P501B
J.O. 12177 SHOP FAB. PIPE
PIECE MARK:
ITT GRINNELL

QUALITY CONTROL
15 RW Rev
DATE 9-23-81

P-455

00073

nm
P. 459

ITT Grinnell Corporation

1431 West Morehead Street
Charlotte, North Carolina 28208
(704) 376-4431

TO WHOM IT MAY CONCERN:

REFERENCE: KER 14320
CHA 54735
SN 307 Lot # 505957

We, ITT Grinnell Supply Sales, certify that the material provided on the above referenced order was supplied under the Q.A. Program of ITT Grinnell Corporation, 1431 West Morehead Street, Charlotte, N.C. 28208 conforming with the requirements of ASME Section III, Sub-article NCA-3800
Manual Revision #1 Dated 7-22-80

MATERIAL:

12" Std SA106B INV. C 530371 CAR# B&O 363411 HT.# 915929, 915941 915927,

Material supplied in accordance with Quality Program as audited and approved by ITT Grinnell Corporation, Providence, R.I. as conforming to NCA-3800

N. M. P. C.
NINE MILE NUC. STATION
UNIT 2 P. O. NMP2-P301B
J. O. 12177 SHOP FAB. PIPE
PIECE MARK:---------
ITT GRINNELL
KERNERSVILLE, N.C. 27284

Yours very truly

Russell R. Willey
Quality Control Mgr

S. W. E. C.
PQA
INSPECTED-224

ITTG-IPI QUALITY CONTROL APPROVED J.C. Nelson DATE 10-29-81 SHEET 1 OF 2	WE CERTIFY THAT THIS MATERIAL TEST REPORT MEETS THE REQUIREMENTS OF ASME SECTION III Cl. 2 1974 ADDENDA AND Niagara Mohawk JOB SPEC. CONTRACT

ITTG - IPI
QUALITY CONTROL
APPROVED
T. C. WILSON
DATE AUG 1 8 1981
SHEET 1 OF 2

J&L 489

STEEL

QUALITY CONTROL TEST REPORT

Req., Job, Contract No.	Purchase Order No.
SN-307 Lot# 505957	CHA 54735

We hereby certify that this report accurately reflects the results of tests performed with respect to the material described hereon as shown by Company records.

JONES & LAUGHLIN STEEL CORPORATION

By C. A. Astorino Authorized Signer

STATE OF COUNTY OF

Subscribed and sworn before me

this day of A.D. 19

VENDOR: JONES & LAUGHLIN STEEL CORPORATION Campbell WORKS

Invoice Date: Feb. 7, 1981

Invoice No. (s): C-530371

Vehicle Identity: B&O 363411

Shipper's No.:

SOLD TO: ITT Grinnell Corp.
1431 W. Morehead St.
Charlotte, N.C. 28208

SHIP TO: ITT Grinnell Ind. Piping Inc.
Highway 421
Kernersville, N.C. 27284

SPEC. INSP.:

TEST RESULTS

ITEM NO.	MILL ORDER NO.	MATERIAL DESCRIPTION	QUANTITY	HEAT/LOT NO.	TEST OR PIECE ID	YIELD PSI	TENSILE PSI	% ELONG. 2"	% ELONG. 8"	HYDRO PR. PSI	BEND	FLATING	GR. SIZE	HARDNESS
A	CO-86245-A	Seamless Pipe ASTM-A-106-78 Grade B Blk PE This material also conforms to spec. ASME-SA-106 Grade B 12-3/4"OD 49.56# .375 W N. M. P. C. NINE MILE NUC. STATION UNIT-2 P. O. NMP2-P301B J. O. 12177 SHOP FAB. PIPE PIECE MARK:-------- ITT GRINNELL KERNERSVILLE, N.C. 27284	53	915929 915941 915927		52910 53700 51070	78130 80500 76690	40 37 40		1200 1200 1200		OK OK OK		
	Mark:	KER-14320												

nm p.459

ITTG - IPI
QUALITY CONTROL
APPROVED
T. C. WILSON
DATE FEB. 27 1981
SHEET 2 OF 2

HEAT ANALYSIS

HEAT NO.	SAMPLE LCN.	C	Mn	P	S	Si
915929		.26	.91	.008	.011	.19
915941		.23	.84	.007	.016	.22
915927		.24	.85	.007	.019	.21

SPECIAL TEST RESULTS

"Pipe was manufactured in accordance with Quality System Revision dated 6/1/80 and approved by ITT Grinnell Corp. 2356F dated 8/7/80 as conforming to requirements of ASME Section 3 Class 2 NCA 3800 and meets requirements of NC 2550 & 2551."

ITTG-IPI
QUALITY CONTROL
APPROVED
T. C. Wilson
DATE 10-29-81
SHEET 2 OF 2

WE CERTIFY THAT THIS MATERIAL TEST REPORT MEETS THE REQUIREMENTS OF ASME SECTION III Cl. 2 1974 ADDENDA AND Niagara Mohawk JOB SPEC CONTRACT

S. W. E. C. PQA INSPECTED-224

QUALITY CONTROL
[signature]
DATE 02-13-81

Form W-1030 (79)

00073

ITT Grinnell Corporation

1431 West Morehead Street
Charlotte, North Carolina 28208
(704) 376-4431

nm
P-473

TO WHOM IT MAY CONCERN:

REFERENCE: KER 14320

N. M. P. C.
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P301B
J. O. 12177 SHOP FAB. PIPE
PIECE MARK:---------
ITT GRINNELL
KERNERSVILLE, N.C. 27284

SN307
Lot# 505982

We, ITT Grinnell Supply Sales, certify that the material provided on the above referenced order was supplied under the Q.A. Program of ITT Grinnell Corporation, 1431 West Morehead Street, Charlotte, N.C. 28208 conforming with the requirements of ASME Section III, Sub-article NCA-3800
Manual Revision #1 Dated 7-22-80

MATERIAL:

2" Std. SA106B inv C530371. CAR # B&O 363411 Ht. 915925, 915941, 915927

Material supplied in accordance with Quality Program as audited and approved by ITT Grinnell Corporation, Providence, R.I. as conforming to NCA-3800

S.W.E.C. PQA INSPECTED 217

Yours very truly

Russell R. Wilkey
Quality Control Mgr

ITTG-IPI QUALITY CONTROL APPROVED T. C. Wilson DATE 1-21-82 SHEET 1 OF 2	WE CERTIFY THAT THIS MATERIAL TEST REPORT MEETS THE REQUIREMENTS OF ASME SECTION III Cl. 2 1974 ADDENDA AND Niagara Mohawk JOB SPEC. CONTRACT

ITTG - IPI
QUALITY CONTROL
APPROVED
T. C. WILSON
DATE AUG 1 8 1981
SHEET 1 OF 2

STEEL

QUALITY CONTROL TEST REPORT

1-21-82 E204

Req., Job, Contract No.: SN 307 Lot # 505982

Purchase Order No.: CHA 54735

We hereby certify that this report accurately reflects the results of tests performed with respect to the material described hereon as shown by Company records.

JONES & LAUGHLIN STEEL CORPORATION

By C. A. Astorino — Authorized Signer

VENDOR: JONES & LAUGHLIN STEEL CORPORATION — Campbell WORKS

Invoice Date: Feb. 7, 1981

Invoice No. (s): G-530371

OM P-473

Vehicle Identity: B&O 363411

Shipper's No.:

SOLD TO: ITT Grinnell Corp.
1431 W. Morehead St.
Charlotte, N.C. 28208

SHIP TO: ITT Grinnell Ind. Piping Inc.
Highway 421
Kernersville, N.C. 27284

STATE OF COUNTY OF
Subscribed and sworn before me
this day of A.D. 19

SPEC. INSP.:

TEST RESULTS

ITEM NO.	MILL ORDER NO.	MATERIAL DESCRIPTION	QUANTITY	HEAT/LOT NO.	TEST OR PIECE ID	YIELD PSI	TENSILE PSI	% ELONG. 2"	% ELONG. 8"	HYDRO PR. PSI	BEND	FLATING	GR. SIZE	HARDNESS
A	CO-86245-A	Seamless Pipe ASTM-A-106-78 Grade B Blk PE This material also conforms to spec. ASME-SA-106 Grade B 12-3/4"OD 49.56# .375 W	53	915929		52910	78130	40		1200		OK		
				915941		53700	80500	37		1200		OK		
				915927		51070	76690	40		1200		OK		
	Mark:	KER 14320												

N. M. P. C.
NINE MILE NUC. STATION
UNIT 2 P. O. NMP2-P301B
J. O. 12177 SHOP FAB. PIPE
PIECE MARK
ITT GRINNELL
KERNERSVILLE, N.C. 27284

ITTG-IPI QUALITY CONTROL APPROVED T. C. WILSON DATE MAR. 9 1981 SHEET 2 OF 2

SPECIAL TEST RESULTS

"Pipe was manufactured in accordance with Quality System Revision dated 6/1/80 and approved by ITT Grinnell Corp. 2356F dated 8/7/80 as conforming to requirements of ASME Section 3 Class 2 NCA 3800 and meets requirements of NC 2550 & 2551."

HEAT ANALYSIS

HEAT NO.	SAMPLE LCN.	C	Mn	P	S	Si
915929		.26	.91	.008	.011	.19
915941		.23	.84	.007	.016	.22
915927		.24	.85	.007	.019	.21

ITTG-IPI QUALITY CONTROL APPROVED T. C. Wilson DATE 1-21-82 SHEET 2 OF 2

WE CERTIFY THAT THIS MATERIAL TEST REPORT MEETS THE REQUIREMENTS OF ASME SECTION III 2 1974 ADDENDA AND Niagara Mohawk JOB SPEC. CONTRACT

S.W.E.C. PQA INSPECTED 217

QUALITY CONTROL ITT RW RW DATE 2-7-81

Form W-1030 (R

3869286

CONTROL ALLOYS, INC.

TUBULAR PRODUCTS FOR THE ENERGY INDUSTRIES
350 South Fourth Street, Harrison, N.J. 07029
(201) 485-5050

NM P.525

MATERIAL CERTIFICATION

To: Chuck Howell

Subject: ITT Grinnell
PO# KER-15875-P

Description: SEAMLESS ASME SA106 GRADE B

Item #42354. 12" S/100 (Phoenix Heat #E9195)

Certification: This certifies to the best of our knowledge and belief, that the piping material described herein is in accordance with the specification and Section III, Class 2 of the ASME Boiler and Pressure Vessel Code, 1974 Edition, through No Addenda, and that all requirements of the purchase order have been fulfilled. Material has been processed in accordance with our Identification and Verification program.

ATTACHMENTS:

CMTR (1)

ITTG - IPI
QUALITY CONTROL
★APPROVED★
DATE JUN. 16 1982
SHEET 1 OF 2

Gerald Caffrey

GERALD CAFFREY
QUALITY ASSURANCE

Date: 6-9-82

Quality Systems Certificate (Materials) #QSC-205

Expiration Date: 1-6-84

cc: Job File
Q.A. File-Houston

NM P-525

TWIN MT ISION
PHOENIXVILLE, PENNA.

CERTIFICATE OF INSPECTION AND TESTS * Supplemental Copy 6-8-8

DATE:	DATE SHIPPED:	MILL ORDER NO.	SHIPPING LIST NO.
[illegible]-6-82	5-6-82	T-6394-A	21

Guyon Alloys, Inc.
950 South 4th Street
Harrison, New Jersey 07029

CUSTOMER ORDER NO. A 53649 N

CAR NO.

MATERIAL: SEAMLESS ☒ PIPE ☐ THRF. HOT FINISHED

SPECIFICATION: ASTM A-106-B-80, ASME SA-106-B
ASME SEC. III, CL. 2-1974 EDITION

10CFR21 APPLIES

NO. PCS.	OD	WALL	LENGTH	TOTAL FT.	TOTAL WT.	HEAT NO.
	12.750" x .844"					E9195

Material was produced in accordance with the quality program revision dated 2/1/80, which was audited and approved by Guyon Alloys on June 24, 1981 as conforming to ASME Section III, Subarticle NCA-3800.

HEAT NO.	C	Mn.	P.	S.	Si.	Cu.	Ni.	Cr.	Mo.	V
E919[illegible]	.25	.83	.011	.015	.28	Ladle Analysis				
E9195	.24	.66	.012	.025	.28	Product Analysis				
E9195	.24	.66	.012	.025	.28	Product Analysis				

HEAT NO.	TENSILE (KSI)	YIELD (KSI)	% ELONG. IN 2"	% RA	HARDNESS ROCKWELL	HARDNESS BRINELL	GRAIN SIZE
E9195	79.0	46.3	30.00				

ITTG - IPI
QUALITY CONTROL
★APPROVED★
DATE JUN. 16 1982
SHEET 2 OF 2

Q.A. APPROVED
BY [illegible] DATE: 6/8/82
GUYON ALLOYS, INC.

ROCKWELL C

ALUMINY DISTANCE - IS IN												
1	2	4	6	8	10	12	14	16	20	24	28	32

FLATTENING OK HYDROSTATIC PSI 2800

THE PHOENIX STEEL CORPORATION HEREBY CERTIFIES THAT THE ABOVE MATERIALS HAVE BEEN INSPECTED AND TESTED IN ACCORDANCE WITH THE METHODS PRESCRIBED IN THE APPLICABLE SPECIFICATIONS AND THE RESULTS OF SUCH INSPECTION AND TESTS AS CONTAINED IN THE COMPANY'S RECORD [illegible] AS SHOWN ABOVE. FOR PROPERTIES OR CHARACTERISTICS FOR WHICH NO METHODS OF INSPECTION OR TESTING ARE PRESCRIBED BY SAID SPECIFICATIONS, THE STANDARD MILL INSPECTION AND TESTING PRACTICES OF THE PHOENIX STEEL CORPORATION HAVE BEEN APPLIED. BASED UPON SUCH INSPECTION AND TESTS, THE ABOVE MATERIALS HAVE BEEN APPROVED AS FULFILLING THE REQUIREMENTS OF SAID SPECIFICATION.

[signature]
ENGINEER OF TESTS

FORM I&T-0153-R4 (12/76)

00173

Taylor-Bonney Division
Energy Products Group
GULF + WESTERN MANUFACTURING COMPANY

Log No. 268-7 Page 1 of 1

USTOMER: ITT GRINNELL CORP
USTOMER'S Order No.: KER 13385-F
HIPPED TO: ITT GRINNELL CORP
PO BOX 566
HIGHWAY 421
KERNERSVILLE NC 27284

NM
SWF-180

Date APRIL 7, 1980
Bonney Order No. 83531
Mark

Stock

Item No.	Quantity No.	Bonney Lot No.	Grade or Specification No. Chemical Analysis, Physical Properties, Remarks:
			SA105
7	600	P960	5 - 3 X 3/4 3000# Sockolet
TAG 27980			C.28 Mn.32 P.008 S.022 Si.22
SX1860063012			T/S 80,303 Y/S 47,980 El 32 Ra 61

ITTG-IPI
QUALITY CONTROL
APPROVED
M. Brewer
DATE 9-16-80
SHEET 1 OF

WE CERTIFY THAT THIS MATERIAL TEST REPORT MEETS THE REQUIREMENTS OF ASME SECTION III 1974 ADDENDA AND NIAGARA-MOHAWK JOB SPEC. CONTRACT

S. W. E. C. PQC INSPECTED-103

ITTG - IPI
QUALITY CONTROL
APPROVED
T. C. WILSON
DATE APR. 23 1980
SHEET 1 OF 1

This is to certify that:

1. The fittings supplied are in complete accordance with the ASME Boiler and Pressure Vessel Code, Section III, Class 2, 1977 Edition thru Summer 1979 Addenda, SA105, and the purchase order.

2. The material included on this test report was manufactured under ASME Quality Systems Certificate (Materials) No. N-2286-1, expires March 30, 1982.

N. M. P. C.
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P301B
J. O. 12177 SHOP FAB. PIPE
PIECE MARK:
ITT GRINNELL
KERNERSVILLE, N.C. 27284

P160

We certify the data on this sheet is a true copy taken from our records of material furnished us of the production mill, or as obtained by additional analysis checks

Bonney Forge
Cedar and Meadow Streets, P. O. Box 339
Allentown, Pennsylvania 18105
(215) 435-9611, Telex 847453

BY

00173

Taylor-Bonney Division
Energy Products Group
GULF – WESTERN MANUFACTURING COMPANY

Log No. 267-8 Page 1 of 1

CUSTOMER: ITT GRINNELL CORP
CUSTOMER'S Order No.: KER 13385-F
SHIPPED TO: ITT GRINNELL CORP
PO BOX 566
HIGHWAY 421
KERNERSVILLE NC 27284

NM
SWF 185

N.M.P.C.
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P301B
J. O. 12177 SHOP FAB. PIPE
PIECE MARK ——
ITT GRINNELL
KERNERSVILLE, N.C. 27284

Date APRIL 3, 1980
Bonney Order No. 83531
Mark

Stock

Item No.	Quantity No.	Bonney Lot No.	Grade or Specification No. Chemical Analysis, Physical Properties, Remarks:
			SA105
8 ✓ TAG 27979 SK1860063212	3	P811	12 – 6 X 3/4 3000# Sockolet C.29 Mn.92 P.018 S.025 Si.22 T/S 78,426 Y/S 50,761 El 31 Ra 63
8 ✓ TAG 27979 SK1860063212	1	P702	12 – 6 X 3/4 3000# Sockolet C.32 Mn.92 P.018 S.033 Si.21 T/S 89,646 Y/S 54,040 El 29 Ra 52.5
[illegible] TAG 27979 SK1860063212	796	P970	12 – 6 X 3/4 3000# Sockolet C.28 Mn.82 P.008 S.022 Si.22 T/S 80,555 Y/S 49,242 El 32 Ra 59.5
10 TAG 28104 SK1860081007	50	S118	36 – 2 X 1 1/4 3000# Elbolet S/W C.31 Mn.85 P.009 S.014 Si.21 T/S 82,702 Y/S 46,717 El 30 Ra 61.5

S. W. E. C. INSPECTED 103 PQC

This is to certify that:

1. The fittings supplied are in complete accordance with the ASME Boiler and Pressure Vessel Code, Section III, Class 2, 1977 Edition thru Summer 1979 Addenda, SA105, and the purchase order.

2. The material included on this test report was manufactured under ASME Quality Systems Certificate (Materials) No. N-2286-1, expires March 30, 1982.

ITTG-IPI QUALITY CONTROL APPROVED
M. Brewer
DATE 11-4-80
SHEET 1 OF 1

WE CERTIFY THAT THIS MATERIAL TEST REPORT MEETS THE REQUIREMENTS OF ASME SECTION III 1974 ADDENDA AND NIAGARA MOHAWK JOB SPEC. CONTRACT

QUALITY CONTROL APPROVED
T. C. WILSON
DATE APR. 23 1980
SHEET 1 OF 1

Bonney Forge
Cedarland Meadow Streets, P.O. Box 359
Allentown, Pennsylvania 18105
(215) 435-9611, Telex: 847453

BY L. M. [illegible]

CERTIFIED MILL TEST REPORT

Bonney Forge
Gulf + Western Manufacturing Company
~~ALLENTOWN, PENNSYLVANIA 18105~~

LOG NO. 680-09 PAGE 1
00173

CUSTOMER: ITT GRINNELL CORP
Date 10/28/81

CUSTOMER'S Order No.: KER15484-F
Bonney Order No. 96497

NM SWJ-240

SHIPPED TO: ITT GRINNELL CORP
PO BOX 566
HIGHWAY 421
KERNERSVILLE NC 27284

Mark

ITEM	QUANTITY	LOT NO.	GRADE OR SPECIFICATION NO. CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS
			SA105
2	1	T378	14 - 12 X 4 Std Weldolet C.200 Mn 1.240 P.016 S.036 Si.230 T/S 86364 Y/S 52778 EL 30 RA 62.5
TAG: 41705	NM-3044		

This is to certify that:

1. The material included on this test report was manufactured under ASME Quality Systems Certificate (Materials) No. N-2286-1 which expires March 30, 1982.

2. The fittings supplied are in complete accordance with the ASME Boiler and Pressure Vessel Code, Section III, Class 2, 1977 Edition thru Summer 1978 Addenda, SA105, and the purchase order.

N. M. P. C.
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P301H
J.O. 12177 SHOP FAB. PIPE
PIECE MARK:----------
ITT GRINNELL
KERNERSVILLE, N.C. 27284

S. W. E. C. PQA INSPECTED-224

ITTG - IPI
QUALITY CONTROL
APPROVED
T. C. WILSON
DATE NOV. 11 1981
SHEET 1 OF 1

~~END OF CERTIFICATION~~

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by L. M. Laudenslager

Cedar and Meadow Streets, P.O. Box 359
Allentown, Pennsylvania 18105
(215) 435-9611, Telex: 847453

L. M. Laudenslager
QUALITY CONTROL MANAGER

00173

Bonney Forge Division
Energy Products Group
CARLINVILLE, ILLINOIS

Log No. _____ Page 1 of 1

PHONE 217/854-9611

RS 3/16/82

NM SWF-374

CUSTOMER: ITT Grinnell
CUSTOMER'S Order No.: KER 16267
SHIPPED TO:

Date Feb. 26, 1982
Bonney Order No. 8474
Mark

[redacted]

Nuts '74 no add

Item No.	Quantity No.	Bonney Lot No.	Grade or Specification No. Chemical Analysis, Physical Properties, Remarks:
			ASME SA105
1	2	332B	12 (.843) x 3/4 (.218) 6000# Sockolet (NM-3046) C.29 Mn.80 P.013 S.025 Si.21 T/S 77,570 Y/S 48,900 El 27.1 Ra 57.3 Serial Nos: PT-2-18-82-3 and 4

S.W.E.C. PQA INSPECTED-221

S.W.E. PQA INSPECTED-221

ITTG = IPI
QUALITY CONTROL
~~APPROVED~~ MB
DATE MAR. 15 1982
SHEET 1 OF 3

The above fittings are in accordance with ASME Section III, Class 1, 1977 edition thru summer 1978 addenda; and NCA-3800.

PT per per BF-DP-3 Rev. 7, results acceptable.

Fittings supplied are in complete accordance with the purchase order specifications and were manufactured in accordance with the Quality Assurance Program audited to NCA-3800 and approved by W.R.Nicolls, Divisional Q.A. Mgr., June 1981.

Carlinville Plant QA Manual Rev. 3 dated 5/20/81.

This certifies that the provisions of 10 CFR Part 21 are applicable.

N.M.P.C.
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P801B
J. O. 12177 SHOP FAB. PIPE
PIECE MARK — —
ITT GRINNELL
KERNERSVILLE, N.C. 27284

Bonney Forge Division
Energy Products Group
Carlinville, Illinois

by D. L. Kale/ch
QUALITY ASSURANCE MANAGER
D.L.Kale

00173

Taylor-Bonney Division
Energy Products Group
GULF + WESTERN MANUFACTURING COMPANY

Log No. _____ Page 1 of 1

CUSTOMER: ITT Grinnell

Date Feb. 26, 1982

CUSTOMER'S Order No.: KER 16267

NM SwF-274

Bonney Order No. 8474

SHIPPED TO:

Mark

Item No.	Quantity No.	Bonney Lot No.	Grade or Specification No. Chemical Analysis, Physical Properties, Remarks: NM-3046

S.W.E.C. PQA INSPECTED-221

ITTG - IPI
QUALITY CONTROL
APPROVED
MB
DATE MAR. 15 1982
SHEET 2 OF 3

The material included on this test report was supplied under ASME Quality Systems Certificate (Supplier) No. N-2287-1 which expires March 30, 1982 (Manufacturer - Bonney Carlinville)

We [illegible] that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory check

N.M.P.C.
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P301B
J. O. 12177 SHOP FAB. PIPE
PIECE MARK ——.
ITT GRINNELL
STURNERSVILLE, N.C. [illegible]

Bonney Forge
Cedar and Meadow Streets, P.O Box 359
Allentown, Pennsylvania 18105
(215) 435-9611, Telex: 847453

by William R. Nicolls
QUALITY ASSURANCE MANAGER

00173

Job No.: [redacted]74
Item #
Cust. P.O. #

GW Bonne[redacted]rge Division
Energy Pro[redacted] Group
GULF + WESTERN MANUFACTURING CO.

Carlinville Plant
H.M.P.G.
NINE MILE NUC. STATION
UNIT-2 P. O. HMP2-P801B
J. O. 12177 SHOP FAB. PIPE
PIECE MARK — —
ITT GRINNELL
KERNERSVILLE, ILL. [illegible]

Date 2-18[redacted]2

LIQUID PENETRANT INSPECTION REPORT

NM
SWF-274

Customer Name	Material Specification	Material Description
GRINNELL	SA105	12 (843) x 3/4 (218) SOCKOLET

Penetrant System	Brand Name	Penetrant Type	Remover Type	Emulsifier Type	Developer Type
Visible	Spotcheck	SKL-HF/S 81J106	SKC-S 81D053	N/A	SKD-S 80J055

Temperature	Surface Preparation	Cleaner Drying Time	Dwell Time	Emulsification Time	Removal Method
70°	Pre-Clean	5 Min.	15 Min.	N/A	Wipe NM-3046

Remover Drying Time	Development Time	Code or Spec.	Lot #	Technician
5 Min.	10 Min.	BF-DP-3 Rev. 7	332B	C. Staten Level II

Fitting Description	Accept	Reject	Crack	Linear	Porosity	Surface	Undercut	Describe Indication
12 (843) x 3/4 (218) SOCKOLET	✓							NO DEFECTS FOUND
S/N-PT-2-18-82 3+4								

S.W.E.C. PQA INSPECTED 221

ITTG - IPI
QUALITY CONTROL
APPROVED
MB
DATE MAR 15 1982
SHEET 3 OF 3

LCNK

ITT GRINNELL CORPORATION
WELDING PRODUCTS DIVISION
PR[illegible], KY.

SOLD TO: [illegible] Grinnell Corporation
[illegible]rsville, N. C.

SHIP TO: Same

NM
BWF-667

DATE: June 15, 1979

Kernersville

OUR ORDER NO. KE-[illegible]
BRANCH ORDER NO. List [illegible]96
CUSTOMER'S ORDER NO. Stock

DESCRIPTION OF FITTING	PHYSICAL PROPERTIES FITTING MATERIAL: HEAT TREATMENT	YIELD POINT P.S.I.	TENSILE STRENGTH P.S.I.	ELONG. IN 2" %	CHEMICAL ANALYSIS: C	MN	P	S	SI	HEAT CODE OR HEAT NO.	SPECIFICATION—FITTING MATERIAL
ASME SA-234 WPB	✓	✓	✓		✓	✓	✓	✓	✓		A-106 B
6" STD IR 90 ELL	F	58800	91800	*29.5	.23	.69	.009	.017	.22	LCNK	
-DITTO-	F	51420	80570	42.5	.23	.93	.014	.017	.21	LCHV	
-DITTO-	F	53680	78000	40.0	.21	.82	.015	.020	.21	JCMM	
4" STD IR 90 ELL	F	49900	77000	30.0	.26	.82	.007	.014	.27	LCKP	
-DITTO-	F	46400	76400	33.0	.23	.75	.013	.013	.27	JCKD	
-DITTO-	F	46600	69500	*29.0	.23	.66	.011	.016	.21	JCKB	
-DITTO-	F	48100	75100	35.0	.26	.84	.010	.016	.27	LCTB	
-DITTO-	F	53877	74448	*28.1	.25	.73	.014	.025	.19	JCMS	

WE CERTIFY THAT THIS MATERIAL TEST REPORT MEETS THE REQUIREMENTS OF ASME SECTION III 1974 ADDENDA AND Niagara Mohawk JOB SPEC. CONTRACT

ITTG-IPI QUALITY CONTROL APPROVED M. Brewer DATE 3-20-80 SHEET 1 OF 1

ITTG - IPI
QUALITY CONTROL
APPROVED
T. C. WILSON
DATE JUN. 25 1979
SHEET 1 OF 1

N. M. P. C.
NINE MILE NUC. STATION
UNIT 2 P.O. NMP2-P-01B
J.O. 12177 SHOP FAB. PIPE
PIECE MARK:
ITT GRINNELL
KERNERSVILLE, N.C. 27284

S. W. E. C. PQC INSPECTED 103

"The fittings represented by this Metallurgical Report will meet the following requirements as to hardness. Brinell Hardness Number, Max. 197".

We certify that the fittings listed hereon comply with the requirements of ASME specification SA234. They were manufactured in accordance with the Materials Manufacturers Quality Systems Program, accepted by the American Society of Mechanical Engineers as evidenced by the issuance of Quality Systems Certificate (Materials) Number 1909. (Expires Oct. 31, 1980)

* Standard round test specimen used for tensile properties

The above fittings were manufactured and tested in strict compliance with ASME Section III, Class [illegible].

HEAT TREATMENT - LEGEND - A = NORMALIZED B = NORMALIZED AND TEMPERED C = NORMALIZED, QUENCHED, & TEMPERED D = STRESS RELIEVED
E = HEAT TREATED PER SPECIFICATION ON ORDER F = HOT FORMED BETWEEN 1150 AND 1800°F AND COOLED IN STILL AIR

SUBSCRIBED AND SWORN TO BEFORE ME

THIS _____ DAY OF _____ 19____

NOTARY PUBLIC

I HEREBY CERTIFY THIS TO BE A TRUE AND CORRECT REPORT ACCORDING TO RECORDS IN THE POSSESSION OF THIS CORPORATION.

R. Jones

MILL TEST CERTIFICATE

LCZF

ITT GRINNELL CORPORATION
WELDING PRODUCTS DIVISION
PRINCETON, KY. Kernersville

SOLD TO: Grinnell Corporation
Kernersville, N.C.

NM
Buf-784

SHIP TO: Same

DATE: November 16, 1979

OUR ORDER NO.: KE-139[illegible]

BRANCH ORDER NO.: KER [illegible]5

CUSTOMER'S ORDER NO.: Stock

DESCRIPTION OF FITTING	PHYSICAL PROPERTIES FITTING MATERIAL: HEAT TREATMENT	YIELD POINT P.S.I.	TENSILE STRENGTH P.S.I.	ELONG. IN 2" %	CHEMICAL ANALYSIS: C	MN	P	S	SI					HEAT CODE OR HEAT NO.	SPECIFICATION — FITTING MATERIAL
ASME SA-234 WPB															A-106B
12" Std. IR 90° Ell	F	53400	74000	35.0	.22	.71	.013	.019	.25					LCZF	
10" Std. IR 90° Ell	F	49400	79400	47.0	.25	.86	.010	.021	.25					LCRB	
-Ditto-	F	53300	75200	31.0	.27	.85	.010	.017	.25					LCVF	
-Ditto-	F	46700	70400	37.0	.23	.64	.008	.012	.26					LCJM	
12" Std. IR 90° Ell	F	45300	72900	41.0	.23	.75	.007	.020	.24					LCZG	
20" Std. IR 45° Ell	F	46100	70400	42.0	.23	.92	.008	.025	.14					KBBN	

N.M.P.C.
NINE MILE POINT STATION
UNIT-2 P. O. NMP2-P[illegible]
J. O. 12177 SHOP FAB. PIPE
PIECE MARK —
ITT GRINNELL
KERNERSVILLE, N.C. 27284

S.W.E.C. PQC INSPECTED-103

ITTG-IPI QUALITY CONTROL ✡APPROVED✡
M. Brewer
DATE 3-18-81
SHEET 1 OF 1

WE CERTIFY THAT THIS MATERIAL TEST REPORT MEETS THE REQUIREMENTS OF ASME SECTION III 1974 ADDENDA AND Niagara-Mohawk JOB SPEC. CONTRACT

We certify that the fittings listed hereon comply with the requirements of ASME specification SA234. They were manufactured in accordance with the Materials Manufacturers Quality Systems Program, accepted by the American Society of Mechanical Engineers as evidenced by the Issuance of Quality Systems Certificate (Materials) Number 1[illegible]9. (Expires Oct. 3[illegible], 1980)

ITTG - IPI QUALITY CONTROL ✡APPROVED✡
T. C. WILSON
DATE NOV. 29 1979
SHEET 1 OF 1

The above fittings were manufactured and tested in strict compliance with ASME Section III, Class 2.

*The fittings represented by this Metallurgical Report will meet the following requirements as to hardness. Brinell Hardness Number, Max. 197[illegible].

HEAT TREATMENT - LEGEND - A = NORMALIZED B = NORMALIZED AND TEMPERED C = NORMALIZED, QUENCHED, & TEMPERED D = STRESS RELIEVED E = HEAT TREATED PER SPECIFICATION ON ORDER F = HOT FORMED BETWEEN 1150 AND 1800°F AND COOLED IN STILL AIR

SUBSCRIBED AND SWORN TO BEFORE ME

THIS _____ DAY OF _____ 19____

NOTARY PUBLIC

I HEREBY CERTIFY THIS TO BE A TRUE AND CORRECT REPORT ACCORDING TO RECORDS IN THE POSSESSION OF THIS CORPORATION.

J. O. Brown, Q.A. Manager

MILL TEST CERTIFICATE RHCC

ITT GRINNELL CORPORATION
WELDING PRODUCTS DIVISION
PRINCETON, KY.

SOLD TO: Grinnell Corporation
Kernersville, N.C.

SHIP TO: Same

NM
BWF-893

DATE: March 11, 1980

Kernersville

OUR ORDER NO. KE-14136

BRANCH ORDER NO. KER 13

CUSTOMER'S ORDER NO. stock

DESCRIPTION OF FITTING	PHYSICAL PROPERTIES FITTING MATERIAL: HEAT TREATMENT	YIELD POINT P.S.I.	TENSILE STRENGTH P.S.I.	ELONG. IN 2" %	CHEMICAL ANALYSIS: C	MN	P	S	SI					HEAT CODE OR HEAT NO.	SPECIFICATION – FITTING MATERIAL
ASME SA-234 WPB															A-106B
12" Std. LR 90° E11	F	50980	80220	37.0	.26	.81	.013	.013	.23					RHCC	

ITTG-IPI
QUALITY CONTROL
APPROVED
J.C. Nelson
DATE AUG 19 1981
SHEET 1 OF 1

WE CERTIFY THAT THIS MATERIAL TEST REPORT MEETS THE REQUIREMENTS OF ASME SECTION III CL.2 1974 ADDENDA AND Niagara Mohawk JOB SPEC. CONTRACT

S.W.E.C. P.O.C. INSPECTED CD-103

We certify that the fittings listed hereon comply with the requirements of ASME specification SA234. They were manufactured in accordance with the Materials Manufacturers Quality Systems Program accepted by the American Society of Mechanical Engineers as evidenced by the issuance of Quality Systems Certificate (Materials) Number 1909. (Expires Oct. 31, 1980)

ITTG - IPI
QUALITY CONTROL
APPROVED
T. C. WILSON
DATE 12-9-1981
SHEET 1 OF 1

"The fittings represented by this Metallurgical Report will meet the following requirements as to hardness. Brinell Hardness Number, Max. 197".

The above fittings were manufactured and tested in strict compliance with ASME Section III, Class 2.

HEAT TREATMENT - LEGEND - A = NORMALIZED B = NORMALIZED AND TEMPERED C = NORMALIZED, QUENCHED, & TEMPERED D = STRESS RELIEVED
E = HEAT TREATED PER SPECIFICATION ON ORDER F = HOT FORMED BETWEEN 1150 AND 1600°F AND COOLED IN STILL AIR

SUBSCRIBED AND SWORN TO BEFORE ME
THIS _____ DAY OF _____ 19____

NOTARY PUBLIC

N. M. P. C.
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P301B
J. O. 12177 SHOP TAD. PIPE
PIECE MARK: --------
ITT GRINNELL
KERNERSVILLE, N.C. 27284

I HEREBY CERTIFY THIS TO BE A TRUE AND CORRECT REPORT ACCORDING TO RECORDS IN THE POSSESSION OF THIS CORPORATION.

J.O. Hoare, Q.A. Manager

0001173

FORM NPP-1 DATA REPORT FOR FABRICATED NUCLEAR PIPING SUBASSEMBLIES*
(As Required by the Provisions of the ASME Code Rules)

1. Fabricated by ITT GRINNELL INDUSTRIAL PIPING, INC. Kernersville, N.C. 7100 Order No.
(Name and Address of Fabricator)

2. Fabricated for Stone and Webster Engineering Corp. Cherry Hill, N.J. NMP2-P301B Order No.
(Name and Address)

3. Owner Niagara Mohawk Power Corp. 4. Location of Plant Scriba, New York

5. Piping System Identification High Pressure Core Spray
(Brief description of intended use, main coolant etc.)

(a) Drawing No. NM-25-121X Prepared by ITT GRINNELL INDUSTRIAL PIPING, INC.

(b) National Board No. N/A

6. The material, design, construction, and workmanship complies with ASME Code Section III, Class Nuc.-2

Edition 1974, Addenda Date None, Case No. N/A

Remarks: Manufacturers' Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of this report NA
(Name of Part — Item number, Manufacturer's name, and identifying stamp)

Supplemental sheets— #2 —Drawings
3 —Bill (s) of Material

7. Shop Hydrostatic Test Field psi.

8. Description of piping inspected Piece Mark No. 25-19-2-CSH-35-2-121
(include—mark no.—material spec.—nom. pipe size—schedule or thickness—length — fittings — flanges, etc.)

See Attached Sheets

N. M. P. C.
NINE MILE NUC. STATION
UNIT 2 P. O. NMP2-P301B
J.O. [illegible] SHOP FAB. PIPE
PIECE MARK: [illegible]
GRINNELL
KERNERSVILLE N.C. 27284

S. W. E. C. QC INSPECTED 103

We certify that the statements made in this report are correct and that the fabrication of the described piping conforms with the requirements of SECTION III of the ASME BOILER AND PRESSURE VESSEL CODE.

Date 2-16-82 Signed ITT GRINNELL INDUSTRIAL PIPING, INC. By

Certificate of Authorization Expires 7-16-82 Certificate of Authorization No. N-145b

CERTIFICATE OF SHOP 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 VA and employed by ** of Hartford, Ct. have inspected the piping described in this Data Report on 2-17 19 82 and state that to the best of my knowledge and belief, the Manufacturer has constructed this piping in accordance with the applicable Subsections of ASME Code, Section III.** The Hartford Steam Boiler Inspection & Insurance Company

By signing this certificate, neither the Inspector nor his employer make any warranty, expressed or implied, concerning the piping in this 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 2-17, 19 82

(Inspector) Commissions VA 321
National Board, State, Province and No.

*Supplemental sheets in form of lists, sketches or drawings may be used provided (1) size is 8½" x 11", (2) information in items 1, 2 and 5 on this data report is included on each sheet, and (3) each sheet is numbered and number of sheets is recorded in item 7, "Remarks".

2of3

ITT Grinnell Industrial Piping, Inc.

KERNERSVILLE, N. C.

FORM EN-101 REV. 9/80
Q. A. FORM N2.1C

SHT. 1 OF 1

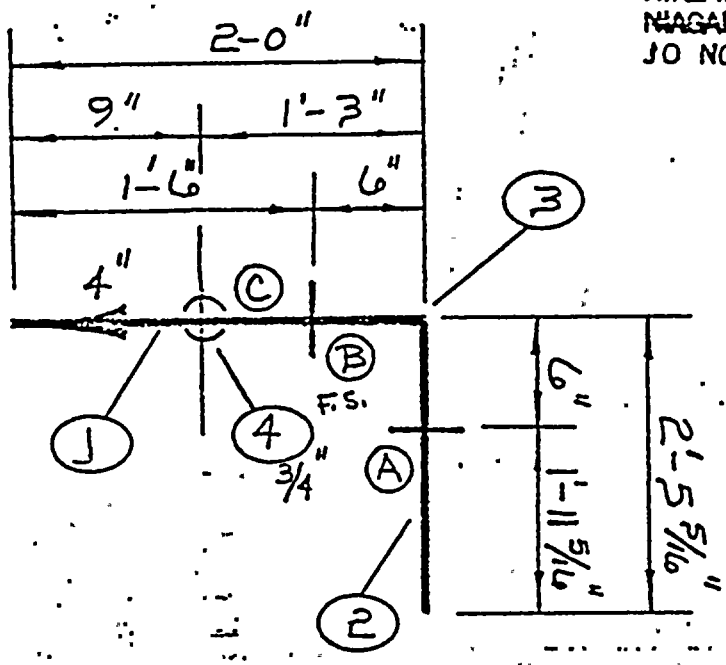
DRW'N R.P.B. 4-8-81 CHK'D 4-8-81
REV. _____ CHK'D _____
REV. _____ CHK'D _____
REV. _____ CHK'D _____

CUSTOMER NO
HA
LOCATION

7100
NIAGARA MOHAWK
SCRIBA NY

NINE MILE POINT NUCLEAR STATION UNIT 2
NIAGARA MOHAWK POWER CORPORATION
JO NO 12177 PO NO NMP2-

QUALITY CONTROL



N. M. P. C.
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P301B
J. O. 12177 SHOP FAB. PIPE
PIECE MARK:
ITT GRINNELL
KERNERSVILLE, N.C. 27284

CLEANLINESS CLASS C

S. W. E. C. PQC INSPECTED-103

37½° BEVEL ENDS

Fabricated for: Stone and Webster Engineering Corp.
Cherry Hill, N. J.
P. O. NMP2-P301B
Piping System See Below

NUC. 2 LINE SPEC. 151 APP. CODE ASME III NO. REQ'D 1
SYSTEM HIGH PRESSURE CORE SPRAY FAB. SPECS. JS-137
REF. DRW'G NO. 25-19A (EP-78E 4) PRESS. 100 PSI. TEMP. 212 °F. WT. 48 LBS.
PIECE MARK 25-19-2-CSH-35-2-121 REGISTER NIM 1215 1 1 1211 X

3

ITT Grinnell Industrial Piping, Inc.

FORM EN-102 REV. 9/80
Q. A. FORM N2.1F

Sheet 2 of 2

CONT. NO. 7100
NAME
LOCATION NIAGARA MOHAWK SCRIBA NY

MATERIALS RECORD
PRODUCTION PLANNER

REGISTER NM 25 121X

PIECE MARK 25-19-2-CSH-35-2-121

ITEM	DESCRIPTION: PART NUMBER/STOCK NUMBER	UOM	FT/EA/PD	IN	FRACTIONS	HEAT NUMBER	QUALITY CONTROL: DOCUMENT	IN PROCESS	INSPECTION	WHSE LOCATION
1	4" STD. WT. SMLS PIPE SN-303	F	1	6		SA-106-B 259344	P.422 8am	Q168 1-27-82	Q129 1-26-82	
2	4" DO SN-303	F	1	11	5/16	SA-106-B 259344	P.422 8am	Q168 1-27-82	Q129 1-26-82	
3	4" STD. WT. SMLS 90° LRWE SN-2002	E	1			SA-234-WPB LCTB P.O.12296	BwF.667 8am	Q168 1-27-82	8-19-81 Q112	C1-8-8
4	4"X3/4" 3000# S.O.L. SN-3025	E	1			SA-105 P960 P.O.13385	SwF.180 8am	Q168 1-27-82	8-19-81 Q112	G2-42-7
	3/4" C.S. E.P.	E	1							
	4" C.S. E.P.	E	2							

Fabricated for: Stone and Webster Engineering Corp.
Cherry Hill, N. J.
P. O. NMP2-P301B
Piping System CSH
ITT GRINNELL IND. PIPING
KERNERSVILLE, N. C.

S. W. E. C. INSPECTED-103 PQC

N. M. P. C.
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P301B
J. O. 12177 SHOP FAB. PIPE
PIECE MARK:
ITT GRINNELL
KERNERSVILLE, N.C. 27284

DELIVERED JAN 6 1982

DELIVERED JAN 26

SHOP COPY LAYOUT

GAITHER
AUG 19 1981
10

UNIT PRICE P.O.	DIS VENDOR	NET
TOTAL		
ACCOUNTING		

CODE ASME III CL. 2 CUST LINE SPEC 151 MFG CODE L X

JOB SPEC JS-137-13 BATCH SIZE 4

Revised Data Report

FORM NPP-1 DATA REPORT FOR FABRICATED NUCLEAR PIPING SUBASSEMBLIES*

(As Required by the Provisions of the ASME Code Rules)

Sheet 1 of 4

1. Fabricated by ITT Grinnell Industrial Piping, Inc. Old Highway 421, Kernersville, NC 27284 (Name and Address of Fabricator) Order No. 7100

2. Fabricated for Stone and Webster Engineering Corp. Cherry Hill NJ (Name and Address) Order No. NMP2-P301B

3. Owner Niagara Mohawk Power Corp. 4. Location of Plant Scriba, New York

5. Piping System Identification HIGH PRESSURE CORE SPRAY (Brief description of intended use, main coolant etc.)

(a) Drawing No. NM-25-120X Prepared by ITT Grinnell Industrial Piping, Inc.

(b) National Board No. N/A

6. The material, design, construction, and workmanship complies with ASME Code Section III, Class Nuc.-2

Edition 1974* , Addenda Date None , Case No. N/A

*Except Material for Item # 5 Meets 1977 Edition With S78 Addenda and Later On

Remarks: Manufacturers' Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of this report N/A (Name of Part — Item number, Manufacturer's name, and Identifying stamp)

Supplemental Sheets

2 ---Drawings

3 ---Bill (s) of Material

4 ---Original Data Report

7. Shop Hydrostatic Test Field psi.

8. Description of piping inspected Piece Mark Number 25-19-2-CSH-6-2-120 (include—mark no.—material spec.—nom. pipe size—schedule or thickness—length—fittings—flanges, etc.)

See Attached Sheets

S. W. E. C. PQA INSPECTED-24

N. M. P. C.
NINE MILE NUC. STATION
UNIT 2 P. O. NMP2-P301B
J.O. 12177 SHOP FAB. PIPE
PIECE MARK:--------
ITT GRINNELL
KERNERSVILLE, N.C. 27284

We certify that the statements made in this report are correct and that the fabrication of the described piping conforms with the requirements of SECTION III of the ASME BOILER AND PRESSURE VESSEL CODE.

Date 3-15-83 Signed * (Fabricator) By [signature]

*ITT Grinnell Industrial Piping, Inc.

Certificate of Authorization Expires 7-16-85 Certificate of Authorization No. N-2444-5

CERTIFICATE OF SHOP 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 V.A. and employed by ** of Hartford, Ct. have inspected the piping described in this Data Report on 3-12 1983, and state that to the best of my knowledge and belief, the Manufacturer has constructed this piping in accordance with the applicable Subsections of ASME Code, Section III. ** The Hartford Steam Boiler Inspection and Insurance Company

By signing this certificate, neither the Inspector nor his employer make any warranty, expressed or implied, concerning the piping in this 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 3-12, 19 83

[signature] (Inspector) Commissions V.A. 321 National Board, State, Province and No.

* Supplemental sheets in form of lists, sketches or drawings may be used provided (1) size is 8½" x 11", (2) information in items 1, 2 and 5 on this data report is included on each sheet, and (3) each sheet is numbered and number of sheets is recorded in item 7, "Remarks".

Printed in U.S.A. (2/73) This form (E62) is obtainable from the ASME, 345 E. 47th St., New York, N.Y. 10017

2

ITT Grinnell Industrial Piping, Inc.

KERNERSVILLE, N. C.

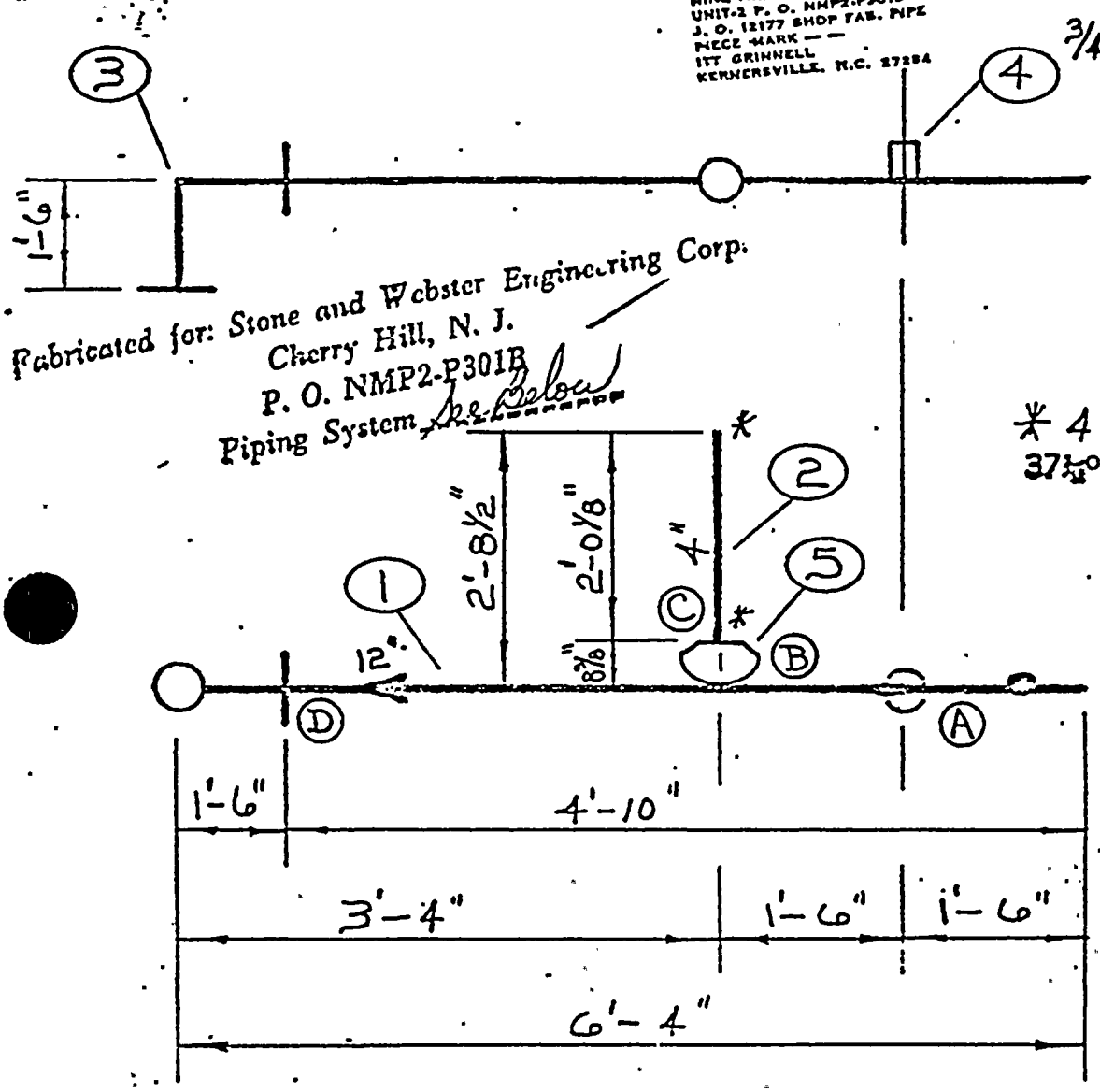
FORM EN-101 REV. 9/80
Q. A. FORM N2.1C

2 OF 4

CONT. NO 7100
NAME NIAGARA MOHAWK
LOCATION SCRIBA NY
NINE MILE POINT NUCLEAR STATION UNIT 2
NIAGARA MOHAWK POWER CORPORATION
JO NO 12177 P.O NO NMP2

DRWN 4-8-81 CHK'D 4-8-81
REV. CHK'D
REV. CHK'D
REV. CHK'D

R.M.P.C.
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P301B
J. O. 12177 SHOP FAB. PIPE
PIECE MARK — —
ITT GRINNELL
KERNERSVILLE, N.C. 27284



S. W. E. C. INSPECTED-224

Fabricated for: Stone and Webster Engineering Corp.
Cherry Hill, N. J.
P. O. NMP2-P301B
Piping System See Below

* 4" PIPE
37½° BEVEL ENDS

INSERVICE INSPECTION
GRIND WELDS TO
2 TN COUNTERBORE
NM-D25

QUALITY CONTROL
REVISION

WELDER SYS C

ENDS MACH. PER NM-D2
(EXCEPT AS NOTED)

CL NUC. 2 LINE SPEC. 151 APP. CODE ASME III NO. REQ'D 1
SYSTEM HIGH PRESSURE CORE SPRAY FAB. SPECS. JS-137
REF. DRW'G NO. 25-19-2 (EF-736 Δ) PRESS. 100 PSI. TEMP. 212 °F. WT. 295 LBS.
PIECE MARK 25-19-2-CSH-6-2-120 REGISTER NM 1215 1 1 1210X

Grinnell Industrial Piping, Inc.

SHOP COPY LAYOUT

FORM FN 102 REV 9-80
Q.A. FORM NO 11

Sheet 2 of 4

CONT. NO. 7100
NAME NIAGARA MOHAWK
LOCATION SCRIBA NY

MATERIALS RECORD
PRODUCTION PLANNER

REGISTER NM 25

PIECE MARK 25-19-2-CSH-6-2-120

ITEM	DESCRIPTION: PART NUMBER/STOCK NUMBER	U/M	FT/EA/PD	IN	FRACTIONS	HEAT NUMBER	QUALITY CONTROL: DOCUMENT	IN PROCESS	INSPECTION	WIRE LOCATION
1	12" STD. WT. SMLS PIPE					SA-106-B				
	SN-307 -	E	4	10		915929	P.473 8AM	Q103 2-3-82	Q129 1-30-82	
2	4" STD. WT. SMLS PIPE					SA-106-B				
	SN-303 -	E	2	0	1/8	259344	P.488 8AM	Q171 2-18-82	Q129 1-30-82	
3	12" STD. WT. 90° LR WE					SA-234-WPB				
	SN-2006	E	4			KHCC P.O.13109	SWF.893 8AM	Q103 2-3-82	11-9-81 Q112	D1-11-1
4	12"X3/4" 3000# S.O.L.					SA-105				
	SN-3026 -	E	1			P970 P.O.13385	SWF.185 8AM	Q103 2-3-82	11-9-81 Q112	G2-4-16
5	12"x4" STD. WT. WOL					SA-105				
	SN-3014 -	E	1			T378	SWF.340 8AM	Q103 2-3-82		
	3/4" C.S. E.P.									
	- - -	E	1							
	4" C.S. E.P.									
	- - -	E								
	12" C.S. E.P.									
	- - -	E								
	- - -									
	- - -									
	- - -									

Fabricated for: Stone and Webster Engineering Corp.
Cherry Hill, N. J.
P. O. NMP2-P301B
Piping System CSH

N.M.P.C.
NINE MILE PNC STATION
UNIT: P. O. NMP2-P301B
J. O. 2177 SHOP FAB. PIPE
PIECE MARK — —
GRINNELL
KERNERSVILLE, N.C. 27284

ITT GRINNELL IND. PIPING
KERNERSVILLE, N. C.

INSPECTED 22 S. W. ROLE

RECEIVED FEB 03 1982

GATHERED DEC 19 1981 05

CODE ASME III Cl. 2 CUST LINE SPEC 15 MFG CODE L X

UNIT PRICE P.O. | DIS VENDOR | NET

TOTAL

FORM NPP-1 DATA REPORT FOR FABRICATED NUCLEAR PIPING SUBASSEMBLIES

(As Required by the Provisions of the ASME Code Rules)

ITT Grinnell Industrial Piping, Inc.

Sheet 1 of 2

00236

4 of 4

1. Fabricated by Old Highway 421, Kernersville, NC 27284 Order No. 7100
(Name and Address of Fabricator)

2. Fabricated for Stone and Webster Engineering Corp. Cherry Hill, NJ Order No. NMP2-P301B
(Name and Address)

3. Owner Niagara Mohawk Power Corp. 4. Location of Plant Scriba, New York

5. Piping System Identification High Pressure Core Spray
(Brief description of intended use, main coolant etc.)

(a) Drawing No. NM-25-120X Prepared by ITT Grinnell Industrial Piping, Inc.

(b) National Board No. N/A

6. The material, design, construction, and workmanship complies with ASME Code Section III, Class NUC - 2

Edition 1974, Addenda Date None, Case No. N/A

Remarks: Manufacturers' Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of this report N/A
(Name of Part — Item number, Manufacturer's name, and Identifying stamp)

Supplemental Sheets 2 ---Drawings
3 ---Bill (s) of Material

7. Shop Hydrostatic Test Field psi.

8. Description of piping inspected Piece Mark Number 25-19-2-CSH-6-2-120
(include — mark no. — material spec. — nom. pipe size — schedule or thickness — length — fittings — flanges, etc.)

See Attached Sheets

S. W. E. C. P.O. INSPECTED 224

N. M. P. C.
NINE MILE NUC. STATION
UNIT - 2 P. O. NMP2-P301B
J. O. 12177 SHOP FAB. PIPE
PIECE MARK: -------
ITT GRINNELL
KERNERSVILLE, N.C. 27284

We certify that the statements made in this report are correct and that the fabrication of the described piping conforms with the requirements of SECTION III of the ASME BOILER AND PRESSURE VESSEL CODE.

Date 3-15-82 Signed * (Fabricator) By James H. Shanks

* ITT Grinnell Industrial Piping, Inc.

Certificate of Authorization Expires 7-16-82 Certificate of Authorization No. N-1456

CERTIFICATE OF SHOP 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 Maryland and employed by ** of Hartford, Ct. have inspected the piping described in this Data Report on 3/17 1982, and state that to the best of my knowledge and belief, the Manufacturer has constructed this piping in accordance with the applicable Subsections of ASME Code, Section III. ** The Hartford Steam Boiler Inspection and Insurance Company

By signing this certificate, neither the Inspector nor his employer make any warranty, expressed or implied, concerning the piping in this 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 3/17, 1982

Richard L. Shirkley (Inspector) Commissions Maryland - 94 National Board, State, Province and No.

* Supplemental sheets in form of lists, sketches or drawings may be used provided (1) size is 8½" x 11", (2) information in items 1, 2 and 5 on this data report is included on each sheet, and (3) each sheet is numbered and number of sheets is recorded in item 7, "Remarks".

Printed in U.S.A. (2/73) This form (E62) is obtainable from the ASME, 345 E. 47th St., New York, N.Y. 10017

FORM NPP-1 DATA REPORT FOR FABRICATED NUCLEAR PIPING SUBASSEMBLIES*

(As Required by the Provisions of the ASME Code Rules)

ITT Grinnell Industrial Piping, Inc. Sheet 1 of 3

1. Fabricated by Old Highway 421, Kernersville, NC 27284 (Name and Address of Fabricator) Order No. 7100

2. Fabricated for Stone and Webster Engineering Corp. Cherry Hill, NJ (Name and Address) Order No. NMP2-P301B

3. Owner Niagara Mohawk Power Corp. 4. Location of Plant Scriba, New York

5. Piping System Identification High Pressure Core Spray (Brief description of intended use, main coolant etc.)

(a) Drawing No. NM-25-119X Prepared by ITT Grinnell Industrial Piping, Inc.

(b) National Board No. N/A

6. The material, design, construction, and workmanship complies with ASME Code Section III, Class NUC - 2

Edition 1974, Addenda Date None, Case No. N/A

Remarks: Manufacturers' Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of this report N/A (Name of Part — Item number, Manufacturer's name, and Identifying stamp)

Supplemental Sheets 2 ---Drawings

3 ---Bill (s) of Material

7. Shop Hydrostatic Test Field psi.

8. Description of piping inspected Piece Mark Number 25-19-2-CSH-6-2-119 (Include — mark no. — material spec. — nom. pipe size — schedule or thickness — length

See Attached Sheets — fittings — flanges, etc.)

N. M. P. C.
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P301D
J. O. 12177 SHOP FAB. PIPE
PIECE MARK:---------
ITT GRINNELL
KERNERSVILLE, N.C. 27284

S. W. E. C. PQA INSPECTED 221

We certify that the statements made in this report are correct and that the fabrication of the described piping conforms with the requirements of SECTION III of the ASME BOILER AND PRESSURE VESSEL CODE.

Date 4-6-82 Signed * (Fabricator) By [signature]

* ITT Grinnell Industrial Piping, Inc.

Certificate of Authorization Expires 7-16-82 Certificate of Authorization No. N-1456

CERTIFICATE OF SHOP 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 V.A. and employed by ** of Hartford, Ct. have inspected the piping described in this Data Report on 4-6 1982, and state that to the best of my knowledge and belief, the Manufacturer has constructed this piping in accordance with the applicable Subsections of ASME Code, Section III. ** The Hartford Steam Boiler Inspection and Insurance Company

By signing this certificate, neither the Inspector nor his employer make any warranty, expressed or implied, concerning the piping in this 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 4-6, 1982 (Inspector) Commissions V.A. 321 National Board, State, Province and No.

* Supplemental sheets in form of lists, sketches or drawings may be used provided (1) size is 8½" x 11", (2) information in items 1, 2 and 5 on this data report is included on each sheet, and (3) each sheet is numbered and number of sheets is recorded in item 7, "Remarks".

Printed in U.S.A. (2/73) This form (E62) is obtainable from the ASME, 345 E. 47th St., New York, N.Y. 10017

2

2 of 3

ITT Grinnell Industrial Piping, Inc.

KERNERSVILLE, N. C.

FORM EN-101 REV. 9/80
Q. A. FORM N2.1C

REB 7-16-81 ~~SHT 1 OF 2~~ 4-5-82

C[illegible] NO. 7100
N[illegible] NIAGARA MOHAWK
LOCATION SCRIBA NY

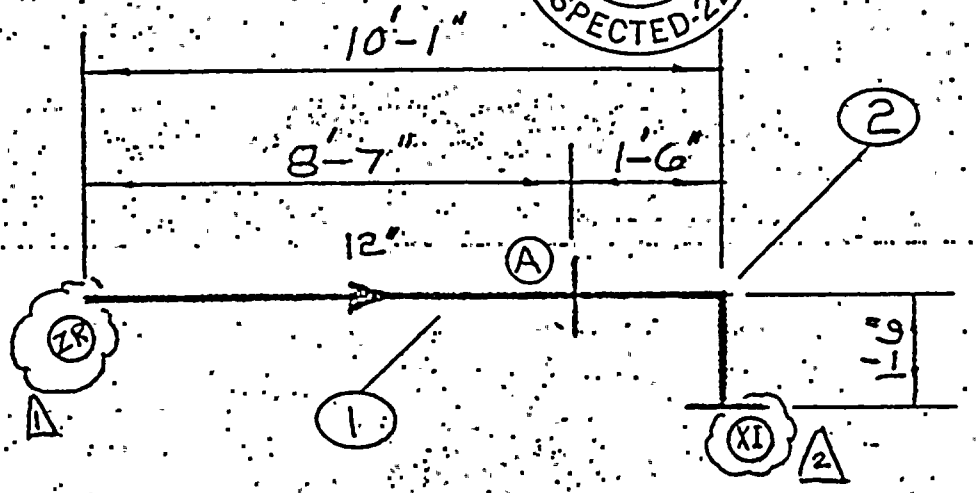
DRW'N REB 4-8-81 CHK'D JOJ 4-8-81
1 REV. CAR-1-29-82 CHK'D DB 1-29-82
2 REV. CAR-3-2-82 CHK'D DB 3-2-82
REV. _____ CHK'D _____

N.M.P.C.
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P301B
J. O. 12177 SHOP FAB. PIPE
PIECE MARK ——
ITT GRINNELL
KERNERSVILLE, N.C. 27284

NINE MILE POINT NUCLEAR STATION UNIT 2
NIAGARA MOHAWK POWER CORPORATION
JO NO. 12177 PO NO NMP2-

INSERVICE INSPECTION
GRIND WELDS TO
2 TN COUNTERBORE
NM-D25

S.W.E.C. PQA INSPECTED-221



ENDS MACH. PER NM-D2

CLEANLINESS CLASS C

REVISION

Fabricated for: Stone and Webster Engineering Corp.
Cherry Hill, N. J.
P. O. NMP2-P301B
Piping System See Below

QUALITY CONTROL

[illegible]S NUC. 2 LINE SPEC. 151 APP. CODE ASME III NO. REQ'D 1
SYSTEM HIGH PRESSURE CORE SPRAY FAB. SPECS. JS-137
REF. DRW'G NO. 25-19 (EP-78E) PRESS. 100 PSI. TEMP. 212 °F. WT. 545 LBS.
PIECE MARK 25-19-2-CSH-6-2-119 REGISTER NM 125 11 11191X

3

ITT Grinnell Industrial Piping, Inc.

FORM EN-102 REV. 9/80
Q. A. FORM [illegible]

Sheet 2 of 2

CONT. NO. 7100
NAME NIAGARA MOHAWK
LOCATION SCRIBA NY

MATERIALS RECORD
PRODUCTION PLANNER

REGISTER NM 25 119X

PIECE MARK 25-19-2-CSH-6-2-119

ITEM	DESCRIPTION: PART NUMBER/STOCK NUMBER	UOM	FT/EA/PD	IN	FRACTIONS	HEAT NUMBER	QUALITY CONTROL: DOCUMENT	IN PROCESS	INSPECTION	WHSE LOCATION
1	12" STD. WT. SMLS. PIPE					SA-106-B		Q160	Q129	
	SN-307	F	8	7		915929	P.473	2-11-82	1-21-82	
2	12" STD. WT. 90° LRWE					SA-234-WPB		Q160	Q112	D1-8
	SN-2006	E	1			LCZE P.O. 13075	BWF 784	2-11-82	10-21-81	
						Fabricated for: Stone and Webster Engineering Corp.				
						Cherry Hill, N. J.				
	12" C.S. E.P.					P. O. NMP2-P301B				
		E	2			Piping System CSH				
						ITT GRINNELL IND. PIPING				
						KERNERSVILLE, N. C.				
						N. M. P. C. NINE MILE NUC. STATION UNIT-2 P. O. NMP2-P301B J. O. 12177 SHOP FAB. PIPE PIECE MARK: ITT GRINNELL KERNERSVILLE, N.C.				

S.W.E.C. INSPECTED 221 PQA

DELIVERED FEB 11 1982

SHOP COPY LATCH

OCT 21 1981

UNIT PRICE P.O.	DIV. VENDOR	NET
TOTAL		
ACCOUNTING		

CODE ASME III CL. 2 CUST LINE SPEC 151 MFG CODE L X

JOB SPEC JS-137-13 BATCH SIZE 1 2

TRANS. NO. 00223

FORM NPP-1 DATA REPORT FOR FABRICATED NUCLEAR PIPING SUBASSEMBLIES*
(As Required by the Provisions of the ASME Code Rules)

Sheet 1 of 3

1. Fabricated by ITT GRINNELL INDUSTRIAL PIPING, INC. Kernersville, N.C. (Name and Address of Fabricator) Order No. 7100

2. Fabricated for Stone and Webster Engineering Corp. Cherry Hill, N.J. (Name and Address) Order No. NMP2-P301B

3. Owner Niagara Mohawk Power Corp. 4. Location of Plant Scriba, New York

5. Piping System Identification High Pressure Core Spray (Brief description of intended use, main coolant etc.)

(a) Drawing No. NM-25-118X Prepared by ITT GRINNELL INDUSTRIAL PIPING, INC.

(b) National Board No. N/A

6. The material, design, construction, and workmanship complies with ASME Code Section III, Class Nuc.-2

Edition 1974, Addenda Date None, Case No. N/A

Remarks: Manufacturers' Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of this report N/A (Name of Part — Item number, Manufacturer's name, and identifying stamp)

Supplemental sheets— #2 —Drawings

3 —Bill (s) of Material

7. Shop Hydrostatic Test Field psi.

8. Description of piping inspected Piece Mark No. 25-19-2-CSH-6-2-118 (include—mark no.—material spec.—nom. pipe size—schedule or thickness—length—fittings—flanges, etc.)

See Attached Sheets

N. M. P. C.
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P301B
J.O. 12177 SHOP FAB. PIPE
PIECE MARK--------
ITT GRINNELL
KERNERSVILLE, N.C. 27284

W. E. C. S. PQA INSPECTED

We certify that the statements made in this report are correct and that the fabrication of the described piping conforms with the requirements of SECTION III of the ASME BOILER AND PRESSURE VESSEL CODE.

Date 12/29/81 Signed ITT GRINNELL INDUSTRIAL PIPING, INC. By William Hagron

Certificate of Authorization Expires 7-16-82 Certificate of Authorization No. N-1456

CERTIFICATE OF SHOP 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 Maryland and employed by ** of Hartford, Ct. have inspected the piping described in this Data Report on 1/4 1982, and state that to the best of my knowledge and belief, the Manufacturer has constructed this piping in accordance with the applicable Subsections of ASME Code, Section III.** The Hartford Steam Boiler Inspection & Insurance Company

By signing this certificate, neither the Inspector nor his employer make any warranty, expressed or implied, concerning the piping in this 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 1/4 1982

Patrick L. Shirley (Inspector) Commissions Maryland — 94 (National Board, State, Province and No.)

* Supplemental sheets in form of lists, sketches or drawings may be used provided (1) size is 8½" x 11", (2) information in items 1, 2 and 5 on this data report is included on each sheet, and (3) each sheet is numbered and number of sheets is recorded in item 7, "Remarks".

Printed in U.S.A. (2/73) This form (E62) is obtainable from the ASME, 345 E. 47th St., New York, N.Y. 10017

2

TRANS. # 09- 00222 2 of 3

ITT Grinnell Industrial Piping, Inc.

KERNERSVILLE, N. C.

FORM EN-101 REV. 9/80
Q. A. FORM N2.1C

SHT 1 OF 2 12-29-81

CODE NO 7100
NAME NIAGARA MOHAWK
LOCATION SCRIBA NY

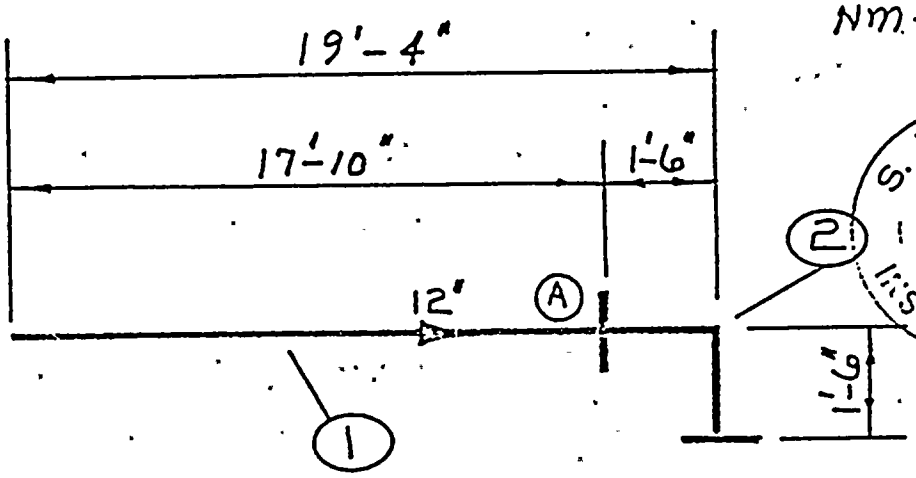
DRW'N 4-8-81 CHK'D 4-8-81
REV. CHK'D
REV. CHK'D
REV. CHK'D

NINE MILE POINT NUCLEAR STATION UNIT 2
NIAGARA MOHAWK POWER CORPORATION
PO NO

N. M. P. C.
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P301B
J. O. 12177 SHOP FAB. PIPE
PIECE MARK:
ITT GRINNELL
KERNERSVILLE, N.C. 27284

INSERVICE INSPECTION
GRIND WELDS TO
2 TN COUNTERBORE
NM-D25

QUALITY CONTROL



S. W. E. C. PQA INSPECTED 224

Fabricated for: Stone and Webster Engineering Corp.
Cherry Hill, N. J.
P. O. NMP2-P301B
Piping System See Below

CLEANLINESS CLASS C

ENDS MACH. PER NM-D2

S NUC. 2 LINE SPEC. 151 APP. CODE ASME III NO. REQ'D 1
SYSTEM HIGH PRESSURE CORE SPRAY FAB. SPECS. JS-137
REF. DRW'G NO. 25-19-2 (EP-78E4) PRESS. 100 PSI. TEMP. 212 °F. WT. 1004 LBS.
PIECE MARK 25-19-2-CSH-6-2-118 REGISTER NM 125 11 11118X

3

Grinnell Industrial Piping, Inc.

FORM CN-102 REV. 9/80
Q. A. FORM N2.1F

Sheet 2 of

CONT. NO. 7100
NAME
LOCATION NIAGARA MOHAWK SCRIBA NY

MATERIALS RECORD
PRODUCTION PLANNER

REGISTER N.M. 25 118X

PIECE MARK 25-19-2-CSH-6-2-118

ITEM	DESCRIPTION: PART NUMBER/STOCK NUMBER	UOM	FT/EA/PD	IN	FRACTIONS	HEAT NUMBER	QUALITY CONTROL: DOCUMENT	IN PROCESS	INSPECTION	WHSE LOCATION
1	12" STD. WT. SMLS. PIPE					SA-106-B				
	SN-307	F	17	10		913927	P.459		0120 11-23-81	
2	12" STD. WT. 90° LRWE					SA-234-WPB				
	SN-2006	E	4			RHCC P.O. 13109	Buf. 893		0112 8-19-81	C1-12-4
						Fabricated for: Stone and Webster Engineering Corp. Cherry Hill, N. J. P. O. NMP2-P301B Piping System CSH				
	12" C.S. E.P.									
		F	2							

ITT GRINNELL IND. PIPING
KERNERSVILLE, N. C.

N. M. P. C.
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P301B
J. O. 12177 SI QA FAB. PIPE
PIECE MARK: ----------
ITT GRINNELL
KERNERSVILLE N.C. 27284

SWEC QA INSPECTED

DELIVERED DEC 01 1981

AUG 19 1981

CODE ASME III CL. 2 CUST LINE SPEC 151

MFG CODE L X

JOB SPEC JS-13773 BATCH

SIZE 1 2

UNIT PRICE P.O. | DIS VENDOR | NET

TOTAL

ACCOUNTING

SHIP COPY LAYOUT

TRANS. PKG. 00223

TRANS. #09 00232

FORM NPP-1 DATA REPORT FOR FABRICATED NUCLEAR PIPING SUBASSEMBLIES*

(As Required by the Provisions of the ASME Code Rules)

Sheet 1 of 3

1. Fabricated by ITT GRINNELL INDUSTRIAL PIPING, INC. Kernersville, N.C. Order No. 7100
(Name and Address of Fabricator)

2. Fabricated for Stone and Webster Engineering Corp. Cherry Hill, N.J. Order No. NMP2-P301B
(Name and Address)

3. Owner Niagara Mohawk Power Corp. 4. Location of Plant Scriba, New York

5. Piping System Identification High Pressure Core Spray
(Brief description of intended use, main coolant etc.)

(a) Drawing No: NM-25-117X Prepared by ITT GRINNELL INDUSTRIAL PIPING, INC.

(b) National Board No. N/A

6. The material, design, construction, and workmanship complies with ASME Code Section III, Class Nuc.-2

Edition 1974, Addenda Date None, Case No. N/A

Remarks: Manufacturers' Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of this report N/A
(Name of Part — Item number, Manufacturer's name, and Identifying stamp)

Supplemental sheets--- #2 ---Drawings

3 ---Bill (s) of Material

7. Shop Hydrostatic Test Field psi.

8. Description of piping inspected Piece Mark No. 25-19-2-CSH-6-2-117
(include — mark no. — material spec. — nom. pipe size — schedule or thickness — length — fittings — flanges, etc.)

See Attached Sheets

N. M. P. C.
NINE MILE NUC. STATION
UNIT-2 P. C. NMP2-P301B
J. C. 12177 SHOP FAB. PIPE
PIECE MARK:
ITT GRINNELL
KERNERSVILLE, N.C. 27284

S. W. E. C. PQC INSPECTED-103

We certify that the statements made in this report are correct and that the fabrication of the described piping conforms with the requirements of SECTION III of the ASME BOILER AND PRESSURE VESSEL CODE.

Date 2/27/82 Signed ITT GRINNELL INDUSTRIAL PIPING, INC. By William Hognon

Certificate of Authorization Expires 7-16-82 Certificate of Authorization No. N-1456

CERTIFICATE OF SHOP 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 Maryland and employed by ** of Hartford, Ct. have inspected the piping described in this Data Report on 2/27 1982, and state that to the best of my knowledge and belief, the Manufacturer has constructed this piping in accordance with the applicable Subsections of ASME Code, Section III.** The Hartford Steam Boiler Inspection & Insurance Company

By signing this certificate, neither the Inspector nor his employer make any warranty, expressed or implied, concerning the piping in this 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 2/27 1982

Richard L. Shockley (Inspector) Commissions Maryland-94 National Board, State, Province and No.

2

* Supplemental sheets in form of lists, sketches or drawings may be used provided (1) size is 8½" x 11", (2) information in items 1, 2 and 5 on this data report is included on each sheet, and (3) each sheet is numbered and number of sheets is recorded in item 7, "Remarks"

TRANS. NO. 00232
283

ITT Grinnell Industrial Piping, Inc.

KERNERSVILLE, N. C.

FORM EN-101 REV. 9/80
Q. A. FORM N2-1C

R.E.B. 7-16-81 SHT. 1 OF 2 2-26-82

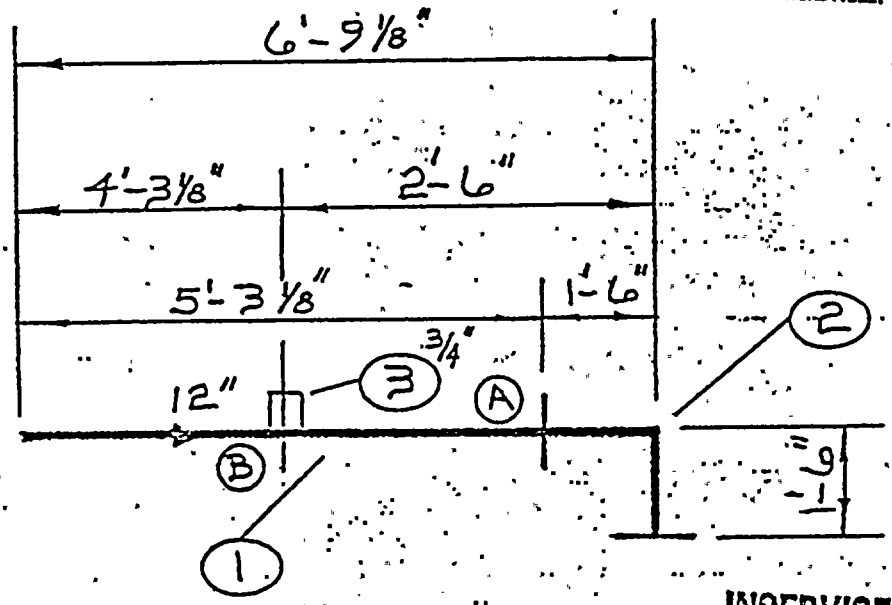
CO. NO 7100
NAME NIAGARA MOHAWK
LOCATION SCRIBA NY

DRW'N R.E.B. 4-8-81 CHK'D 4-8-81
REV. _____ CHK'D _____
REV. _____ CHK'D _____
REV. _____ CHK'D _____

NINE MILE POINT NUCLEAR STATION UNIT 2
NIAGARA MOHAWK POWER CORPORATION
JO NO [illegible] PO NO [illegible]

N.M.P.C.
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P301B
J. O. 12177 SHOP FAB. PIPE
PIECE MARK ——
ITT GRINNELL
KERNERSVILLE, N.C. 27284

QUALITY CONTROL



S. W. E. C. PQC INSPECTED 103

INSERVICE INSPECTION

GRIND WELDS TO
2 TN COUNTERBORE
NM-D25

Fabricated for: Stone and Webster Engineering Corp.
Cherry Hill, N. J.
P. O. NMP2-P301B
Piping System See Below

ENDS MACH. PER NM-D2

CLEANLINESS CLASS C

CLASS NUC. 2 LINE SPEC. 151 APP. CODE ASME III NO. REQ'D 1
SYSTEM HIGH PRESSURE CORE SPRAY FAB. SPECS. JS-137
REF. DRW'G NO. 25-19A(EP-78E4) PRESS. 100 PSI. TEMP. 212 °F. WT. 383 LBS. 3
PIECE MARK 25-19-2-CSH-6-2-117 REGISTER NIM 1215 1 1 11117X

ITT Grinnell Industrial Piping, Inc.

FORM EN-102 REV. 9/80
Q. A. FORM N2.1F

2-26-82

Sheet 2 of 3

CONT. NO. 7100
NAME NIAGARA MOHAWK
LOCATION SCRIBA NY

MATERIALS RECORD
PRODUCTION PLANNER

REGISTER NM 25 117X

PIECE MARK 25-19-2-CSH-6-2-117

ITEM	DESCRIPTION: PART NUMBER/STOCK NUMBER	UOM	FT/EA/PD	IN	FRACTIONS	HEAT NUMBER	QUALITY CONTROL: DOCUMENT	IN PROCESS	INSPECTION	WHSE LOCATION
1	12" STD. WT. SMLS PIPE SN-307	F	5	3	1/8	SA-106-B 915929	P.473 RAM	Q103 2-4-82	Q129 1-30-82	Delivered to 7 Mach
2	12" STD. WT. 90° LRWE SN-2006	E	1			SA-234-WPB RHCC P.O. 13109	BWF.892 RAM	Q103 2-4-82	1-29-82 Q160	D1-3-1
3	12" X 3/4" 3000# S.O.L. SN-3026	E	1			SA-105 P970 P.O. 13385	SWF.185 RAM	Q103 2-4-82	1-29-82 Q160	G2-46-6
	3/4" C.S. E.P.	E	1							
	12" C.S. E.P.	E	2							

N.M.P.C.
NINE MILE NUC. STATION
UNIT 2 P.O. NMP2-P301B
J. O. 12177 SHOP FAB. PIPE
PIECE MARK
ITT GRINNELL
KERNERSVILLE, N.C. 27284

Fabricated for: Stone and Webster Engineering Corp.
Cherry Hill, N. J.
P. O. NMP2-P301B
Piping System CSH

ITT GRINNELL IND. PIPING
KERNERSVILLE, N. C.

S.W.E.C. INSPECTED 103

DELIVERED FEB 04 1982

JAN 29 1982

CODE ASME III CL.2 CUST LINE SPEC 151 MFG CODE L X

JOB SPEC JS-137-13 BATCH SIZE 1 2

UNIT PRICE P.O. | DIS VENDOR | NET

TOTAL

ACCOUNTING

CLEARED
LAYOUT

FORM NPP-1 DATA REPORT FOR FABRICATED NUCLEAR PIPING SUBASSEMBLIES*
(As Required by the Provisions of the ASME Code Rules)

Sheet 1 of 3

1. Fabricated by ITT GRINNELL INDUSTRIAL PIPING, INC. Kernersville, N.C. Order No. 7100
(Name and Address of Fabricator)

2. Fabricated for Stone and Webster Engineering Corp. Cherry Hill, N.J. Order No. NMP2-P3013
(Name and Address)

3. Owner Niagara Mohawk Power Corp. 4. Location of Plant Scriba, New York

5. Piping System Identification High Pressure Core Spray
(Brief description of intended use, main coolant etc.)

(a) Drawing No. NM-25-1116X Prepared by ITT GRINNELL INDUSTRIAL PIPING, INC.
(b) National Board No. N/A

6. The material, design, construction, and workmanship complies with ASME Code Section III, Class Nuc.-2
Edition 1974, Addenda Date None, Case No. N/A

Remarks: Manufacturers' Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of this report
(Name of Part — Item number, Manufacturer's name, and Identifying stamp)

Supplemental sheets--- #2 ---Drawings
#3 ---Bill (s) of Material

7. Shop Hydrostatic Test Field psi.

8. Description of piping inspected Piece Mark No. 25-19-2-CSH-6-2-1116
(Include — mark no. — material spec. — nom. pipe size — schedule or thickness — length — fittings — flanges, etc.)

See Attached Sheets

NINE MILE NU
UNIT-2 P. O. NMP2-P3013
J.O. 12177 SHOP FAB. PIPE
PIECE MARK:
ITT GRINNELL
KERNERSVILLE, N.C.

S.W. E.C. QC INSPECTED 103

We certify that the statements made in this report are correct and that the fabrication of the described piping conforms with the requirements of SECTION III of the ASME BOILER AND PRESSURE VESSEL CODE.

Date 3-2-82 Signed ITT GRINNELL INDUSTRIAL PIPING, INC. By

Certificate of Authorization Expires 7-16-82 Certificate of Authorization No. N-1456

CERTIFICATE OF SHOP 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 Maryland and employed by ** of Hartford, Ct. have inspected the piping described in this Data Report on 3/3 1982, and state that to the best of my knowledge and belief, the Manufacturer has constructed this piping in accordance with the applicable Subsections of ASME Code, Section III.** The Hartford Steam Boiler Inspection & Insurance Company

By signing this certificate, neither the inspector nor his employer make any warranty, expressed or implied, concerning the piping in this 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 3/3 1982

Richard L. Stable
(Inspector)

Commissions Maryland — 94
National Board, State, Province and No.

* Supplemental sheets in form of lists, sketches or drawings may be used provided (1) size is 8½" x 11", (2) information in items 1, 2 and 5 on this data report is included on each sheet, and (3) each sheet is numbered and number of sheets is recorded in item 7, "Remarks".

ITT Grinnell Industrial Piping, Inc.

KERNERSVILLE, N. C.

FORM EN-101 REV. 9/80
Q. A. FORM N2.1C

2 of 3

SHT. ~~1 OF 2~~

NO 7100
NAME NIAGARA MOHAWK
LOCATION SCRIBA NY

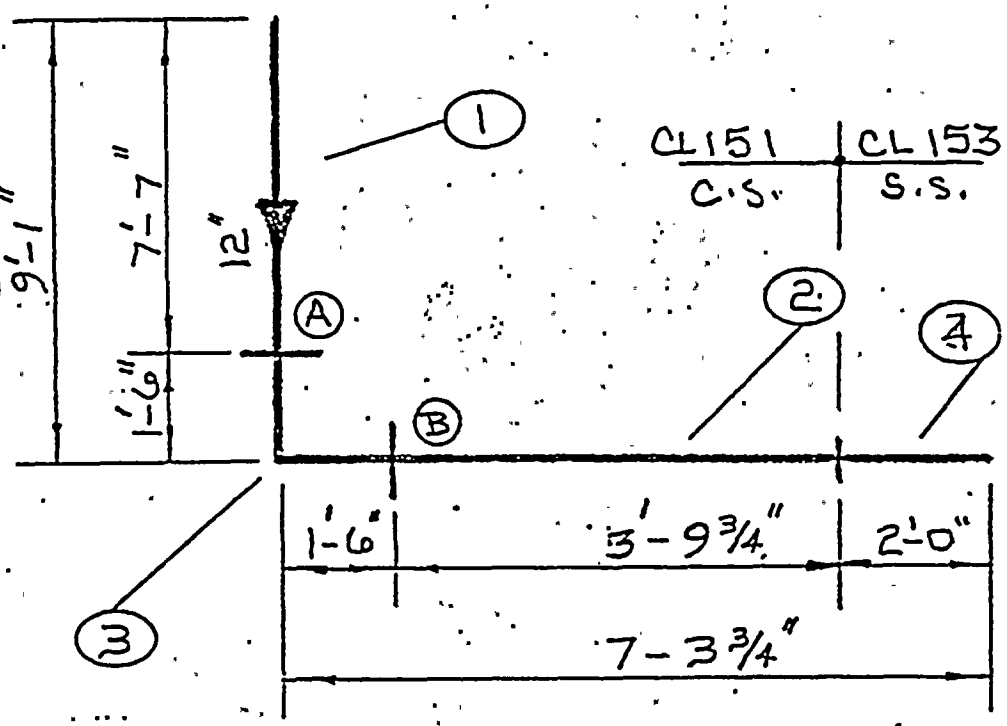
DRW'N REB 4-8-81 CHK'D 4-8-81
REV. CHK'D
REV. CHK'D
REV. CHK'D

NINE MILE POINT NUCLEAR STATION UNIT 2
NIAGARA MOHAWK POWER CORPORATION
JO NO 12177 PO NO NMP2-

QUALITY CONTROL

Fabricated for: Stone and Webster Engineering Corp.
Cherry Hill, N. J.
P. O. NMP2-P301B
Piping System See Below

S. W. E. C. PQC INSPECTED 103



INSERVICE INSPECTION

GRIND WELDS TO
2 TN COUNTERBORE
NM-D25

N. M. P. C.
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P301B
J.O. 12177 SHOP FAB. PIPE
PIECE MARK:
ITT GRINNELL
KERNERSVILLE, N.C. 27284

ENDS MACH. PER NM-D2

CLEANLINESS CLASS C

NUC. 2 LINE SPEC. 151 + 153 APP. CODE ASME III NO. REQ'D 1

SYSTEM HIGH PRESSURE CORE SPRAY FAB. SPECS. JS-137

REF. DRW'G NO. 25-19 (EP-78E) PRESS. 100 PSI. TEMP. 212 °F. WT. 800 LBS.

PIECE MARK 25-19-2-CSH-6-2-116 REGISTER VM 125 11 11161X

ITT Grinnell Industrial Piping, Inc.

FORM EN-102 R[illegible]0
Q. A. FORM N2.[illegible]

3 of 3 3-2-82

Sheet 2 of 2

CONT. NO. 7100
NAME
LOCATION NIAGARA MOHAWK SCRIBA NY

MATERIALS RECORD
PRODUCTION PLANNER

REGISTER NM 25 116X

PIECE MARK 25-19-2-CSH-6-2-116

ITEM	DESCRIPTION: PART NUMBER/STOCK NUMBER	UOM	FT/EA/PD	IN	FRACTIONS	HEAT NUMBER	QUALITY CONTROL: DOCUMENT	IN PROCESS	INSPECTION	WHSE LOCATION
1	12" STD. WT. SMLS PIPE SN-307	F	7	7		SA-106-B 915929	P.473 RAM	2/5/82 (Q10)	MP Q150 2-1-82	
2	12" Do SN-307	F	5	9	3/4	SA-106-B 915929	P.473 RAM	2/5/82 (Q10)	MD Q150 2-1-82	
3	12" STD. WT. 90° LRWE SN-2006	E	1			SA-234-WPB RHCC P.O. 13109	Buf. 892 RAM	2/5/82 (Q10)	Q169 1-29-82	01-3-1
4	12" STD. WT. S.S. PIPE NM-622	F	2	0		SA-312 TP304 8-548 1210-123-2	P.365 RAM	(Q10) 2/17/82	Q150 2/1/82	
	12" C.S. E.P.	E	1							
	12" S.S. E.P.	E	1							

Fabricated for Stone and Webster Engineering Corp.
Cherry Hill, N. J.
P. O. NMP2-P301B
Piping System CSH

ITT GRINNELL IND. PIPING
KERNERSVILLE, N. C.

S. W. E. C. INSPECTED 103 P.O.C.

N. M. P. C.
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P301B
J.O. 12177 SHOP FAB. PIPE
PIECE MARK:
ITT GRINNELL
KERNERSVILLE, N.C. 27284

DELIVERED FEB 02 1982

JAN 29 1982

CODE ASME III CL.2 CUST LINE SPEC 151 153 MFG CODE L X

JOB SPEC JS-137-13 BATCH SIZE 1 2

UNIT PRICE P.O.	DIS VENDOR	NET
TOTAL		
ACCOUNTING		

FORM NPP-1 DATA REPORT FOR FABRICATED NUCLEAR PIPING SUBASSEMBLIES*
(As required by the Provisions of the ASME Code Rules)

Sheet 1 of 3

1. Fabricated by ITT GRINNELL INDUSTRIAL PIPING, INC. Kernersville, N.C. Order No. 7100
(Name and Address of Fabricator)

2. Fabricated for Stone and Webster Engineering Corp. Cherry Hill, N.J. Order No. NMP2-P301B
(Name and Address)

3. Owner Niagara Mohawk Power Corp. 4. Location of Plant Scriba, New York

5. Piping System Identification High Pressure Core Spray
(Brief description of intended use, main coolant etc.)

(a) Drawing No. NM-25-25X Prepared by ITT GRINNELL INDUSTRIAL PIPING, INC.
(b) National Board No. N/A

6. The material, design, construction, and workmanship complies with ASME Code Section III, Class Nuc.- 2
Edition 1974, Addenda Date None, Case No. N/A

Remarks: Manufacturers' Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of this report Item 2; 20" X 18" CONC. RED. WP30 4W; SA-403;
(Name of Part — Item number, Manufacturer's name, and Identifying stamp)
TAYLOR FORGE; S/N 811344-2; HEAT # JQZM; RT. #1.
Supplemental sheets--- #2 ---Drawings
3 ---Bill (s) of Material

7. Shop Hydrostatic Test Field psi.

8. Description of piping inspected Piece Mark No. 25-5-2-CSH-33-2-25
(include — mark no. — material spec. — nom. pipe size — schedule or thickness — length — fittings — flanges, etc.)

See Attached Sheets

N. M. P. C.
NINE MILE NUC. STATION
UNIT 2 P. O. NMP2-P301B
J.O. 12177 SHOP FAB. PIPE
PIECE MARK: ---
ITT GRINNELL
KERNERSVILLE, N.C. 27284

S. W. E. C. PQC INSPECTED 103

We certify that the statements made in this report are correct and that the fabrication of the described piping conforms with the requirements of SECTION III of the ASME BOILER AND PRESSURE VESSEL CODE.

Date 3/1/82 Signed ITT GRINNELL INDUSTRIAL PIPING, INC. By William Gagnon

Certificate of Authorization Expires 7-16-82 Certificate of Authorization No. N-1456

CERTIFICATE OF SHOP 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 Maryland and employed by ** of Hartford, Ct. have inspected the piping described in this Data Report on 3/1 1982, and state that to the best of my knowledge and belief, the Manufacturer has constructed this piping in accordance with the applicable Subsections of ASME Code, Section III.** The Hartford Steam Boiler Inspection & Insurance Company
By signing this certificate, neither the Inspector nor his employer make any warranty, expressed or implied, concerning the piping in this 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 3/1, 1982
Richard E. Shorbley (Inspector) Commissions Maryland - 94 National Board, State, Province and No.

* Supplemental sheets in form of lists, sketches or drawings may be used provided (1) size is 8½" x 11", (2) information in items 1, 2 and 5 on this data report is included on each sheet, and (3) each sheet is numbered and number of sheets is recorded in item 7, "Remarks".

Printed in U.S.A. (2/73) This form (E62) is obtainable from the ASME, 345 E. 47th St., New York, N.Y. 10017

2 of 3 ~~SH7 1 OF 2~~ 3-1-82

FORM-EN-101 REV. 8/77
Q. A. FORM N2.1C

Phil 10-26-81

ITT Grinnell Industrial Piping Inc.

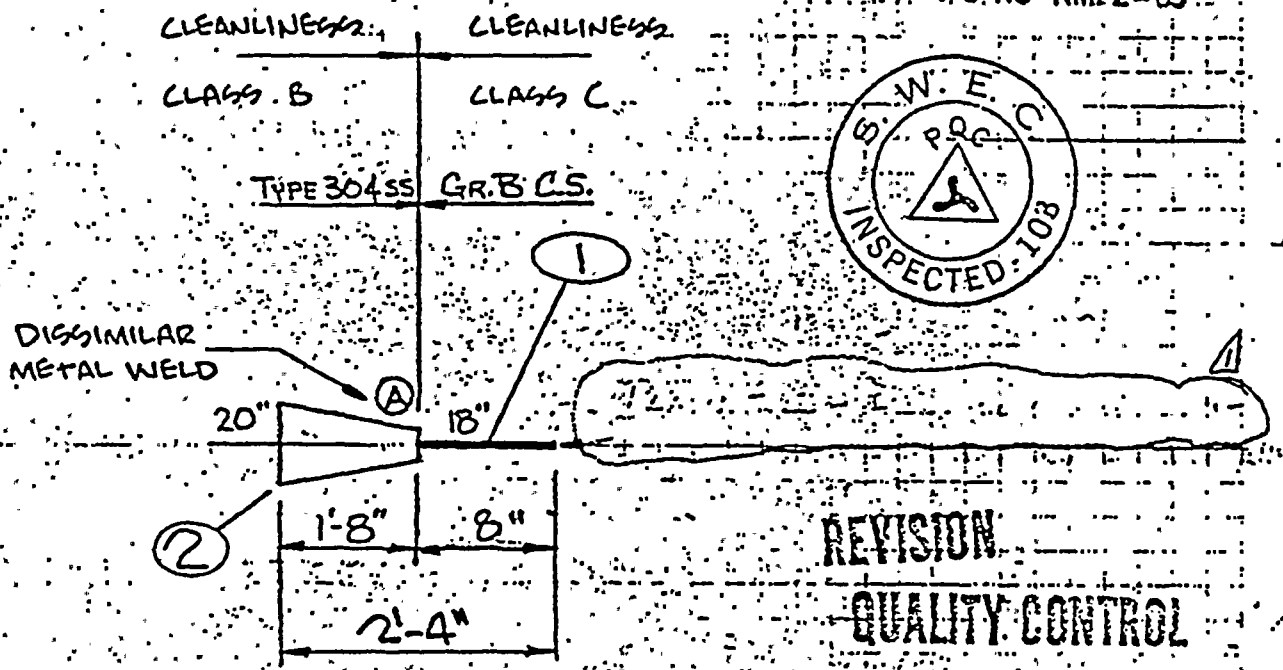
KERNERSVILLE, N. C.

ONT NO. 7100
AM
OCATION NIAGARA MOHAWK
SCRIBA NY

N.M.P.C.
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P301B
J. O. 12177 SHOP FAB. PIPE
PIECE MARK ——
ITT GRINNELL
KERNERSVILLE, N.C. 27284

DRW'N C.R.C. 7-5-78 CHK'D ALB 7-5-78
1 REV. CAR-2-11-82 CHK'D DB 2-11-82
2 REV. CAR-3-1-82 CHK'D EEG 3-1-82
REV. _____ CHK'D _____

NINE MILE POINT NUCLEAR STATION UNIT 2
NIAGARA MOHAWK POWER CORPORATION
JO NO 12177 P.O. NO NMP2-65



S.W.E.C. PQC INSPECTED 10B

REVISION
QUALITY CONTROL

ENDS MACH. PER SK#
NM-D2

*INSERVICE INSPECTION
GRIND WELDS PER NM-D25

Fabricated for: Stone and Webster Engineering Corp.
Cherry Hill, N. J.
P. O. NMP2-P301B
Piping System See Below

CLASS Nuc. 2 LINE SPEC 153/151 APP. CODE ASME III NO. REQ'D 1

Radiography (RT)	✓	Special Marking		Preheat		Cert. of Compliance	
M[illegible] Particle (MT)	✓	Special Cleaning		Heat Treat		Mill Test Reports	✓
[illegible]netrant (PT)		Painting		Code Stamp	✓	Data Reports	✓

SYSTEM CSH FAB. SPECS. JS-137

REF. DRW'G NO. EP-7B A/10 PRESS. 100 PSI. TEMP. 212 °F. WT. 99 LBS.

PIECE MARK 25-5-2-CSH-33-2-25 REGISTER NM 25 1 1 25X

ITT GRINNELL INDUSTRIAL PIPING, INC. REVISION SHOP COPY LAYOUT

Q. A. FORM N2.1F

dl 3-7-82 SS-2

CONT. NO. 7100
NAME NIAGARA MOHAWK
LOCATION SCRIBA · NY

MATERIALS RECORD
PRODUCTION PLANNER

Sheet 3 of 3 12
Revision No. ____ Revision Date ____

PIECE MARK 25-5-2-CSH-33-2-25

REGISTER N | M | 2 5 | 1 1 | 2 5 1 X

ITEM	PART NUMBER	DESCRIPTION	QUAN OR LENG	QUALITY CONTROL: HEAT NUMBER	DOCUMENT	IN PROCESS	ACCOUNTING/MATERIAL: STATUS	U/M	UNIT PRICE P.O.	DIS. VENDOR	NET
1	PBBA SCA 18"	STD WT SMLS	8"					F			
	SN-310	C/S PIPE, ASME SA-106									
		GR. B									
2	NM-1690 20" 18"	STD. WT. S.S. CONC. RED	1			See		E	Supplemental		
		TO ASME SA-403 TR304W									
		W/ ENDS PER NM-D2/2									
				Fabricated for: Stone and Webster Engineering Corp. Cherry Hill, N. J. P. O. NMP2-P301B Piping System C.S.H.							
				ITT GRINNELL IND. PIPING KERNERSVILLE, N. C.							
	20"	C.S. MACH'D E.P.	1					E			
	18"	C.S. PLAIN E.P.	1					E			
		ISI-GRIND WELDS PER NM-D25									

Code ASME III Class Nuc. 2 Batch ____

Job Specification JS-137 13 MFG. Code ____

ITT GRINNELL INDUSTRIAL PIPING, INC.

FORM EN-102 REV. 8/77
Q. A. FORM N2.1F

SS-2

CONT. NO. 7100
NAME NIAGARA MOHAWK
LOCATION SCRIBA NY

MATERIALS RECORD
PRODUCTION PLANNER

Sheet 2 Of 2
Revision No. _____ Revision Date _____

PIECE MARK 25-5-2-CSH-33-2-25 REGISTER N M 25 25 X

ITEM	PART NUMBER	DESCRIPTION	QUAN OR LENG	QUALITY CONTROL HEAT NUMBER	DOCUMENT	IN PROCESS	ACCOUNTING/MATERIAL STATUS	U/M	UNIT PRICE P.O.	DIS. VENDOR	NET
1	PBBA SCA 18" SN-310	STD WT SMLS C/S PIPE, ASME SA-106 GR.B	8"	N7509	P.191 8dm	Q16 2/4/82	Q129 2-2-82	F			
2	NM-1690 20" 18"	STD. WT. S.S. CONC. RED TO ASME SA-403 WP304 W/ENDS PER NM-D2	1	JQZM RT-1	BWF-929 8dm	Q16	2/4/82	E			K-2-2-1
	20"	C.S. MACH'D E.P.	1					E			
	18"	C.S. PLAIN E.P.	1					E			
		ISI-GRIND WELDS PER NM-D25									

SUPPLEMENTAL MATERIALS RECORD

DELIVERED FEB 03 1982

S.W.E.C. INSPECTED 103

GATHERED JAN 27 1982 05.

Code ASME III Class NUC. 2 Batch _____
Job Specification JS-137-13 MFG. Code _____

SHOP COPY LAYOUT

FORM NPP-1 DATA REPORT FOR FABRICATED NUCLEAR PIPING SUBASSEMBLIES*

(As Required by the Provisions of the ASME Code Rules)

ITT Grinnell Industrial Piping, Inc. Sheet 1 of 3

1. Fabricated by Old Highway 421, Kernersville, NC 27284 (Name and Address of Fabricator) Order No. 7100

2. Fabricated for Stone and Webster Engineering Corp. Cherry Hill, NJ (Name and Address) Order No. NMP2-P301B

3. Owner Niagara Mohawk Power Corp. 4. Location of Plant Scriba, New York

5. Piping System Identification High Pressure Core Spray (Brief description of intended use, main coolant, etc.)

(a) Drawing No. NM-25-59X Prepared by ITT Grinnell Industrial Piping, Inc.

(b) National Board No. N/A

6. The material, design, construction, and workmanship complies with ASME Code Section III, Class NUC - 1

Edition 1974, Addenda Date None, Case No. N/A

Remarks: Manufacturers' Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of this report N/A (Name of Part — Item number, Manufacturer's name, and Identifying stamp)

Supplemental Sheets 2 ---Drawings

3 ---Bill (s) of Material

7. Shop Hydrostatic Test Field psi.

8. Description of piping inspected: Piece Mark Number 25-9-2-C5H-4-1-59 (include—mark no.—material spec.—nom. pipe size—schedule or thickness—length — fittings — flanges, etc.)

See Attached Sheets

S. W. E. C. PQC INSPECTED-103

We certify that the statements made in this report are correct and that the fabrication of the described piping conforms with the requirements of SECTION III of the ASME BOILER AND PRESSURE VESSEL CODE.

Date 4-26-82 Signed * (Purchaser) By [signature]

* ITT Grinnell Industrial Piping, Inc.

Certificate of Authorization Expires 2-16-82 Certificate of Authorization No. N-1456

CERTIFICATE OF SHOP 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 VA and employed by ** of Hartford, Ct. have inspected the piping described in this Data Report on 4-30 1982, and state that to the best of my knowledge and belief, the Manufacturer has constructed this piping in accordance with the applicable Subsections of ASME Code, Section III. ** The Hartford Steam Boiler Inspection and Insurance Company

By signing this certificate, neither the Inspector nor his employer make any warranty, expressed or implied, concerning the piping in this 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 4-30, 1982 [signature] (Inspector) Commissions VA 321 National Board, State, Province and No.

* Supplemental sheets in form of lists, sketches or drawings may be used provided (1) size is 8½" x 11", (2) information in items 1, 2 and 5 on this data report is included on each sheet, and (3) each sheet is numbered and number of sheets is recorded in item 7, "Remarks".

Printed in U.S.A. (2/73) This form (E62) is obtainable from the ASME, 345 E. 47th St., New York, N.Y. 10017

2

2 of 3

FORM-EN-101 REV. 8/77
Q.A. FORM N2.1C

ITT Grinnell Industrial Piping Inc.

KERNERSVILLE, N. C.

SHT 1 OF 2

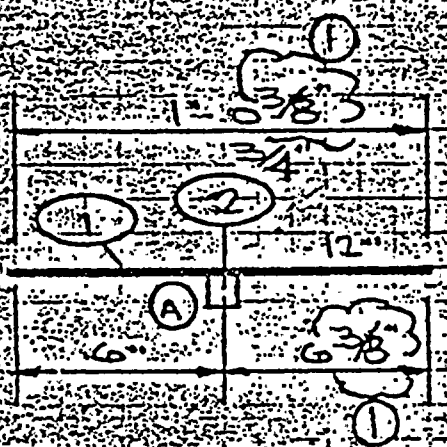
CONT. NO. 7100
NAME NIAGARA MOHAWK
LOCATION SCRIBA NY

DRW'N 12-4-81 CHK'D LB 12-4-81
REV. DB 3-22-82 CHK'D FEG 3-22-82
REV. CHK'D
REV. CHK'D

NINE MILE POINT NUCLEAR STATION UNIT 2
NIAGARA MOHAWK POWER CORPORATION
JO NO 12177 P.O. NO NMP2-65

IMPACT TESTED MATERAIL

INSERVICE INSPECTION
GRIND WELDS PER NM-D25



N. M. P. 41
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P301B
J. O. 12177 SHOP FAB. PIPE
PIECE MARK
ITT GRINNELL
KERNERSVILLE, N.C. 27292

REVISION

QUALITY CONTROL

Fabricated for: Stone and Webster Engineering Corp.
Cherry Hill, N. J.
P. O. NMP2-P301B
Piping System See Below

S.W.E.C. PQC INSPECTED 103

ASME CODE APPROVED

CLEANLINESS CLASS C

ENDS MACH. PER SK# NM-D2

CLASS Nuc. 1 LINE SPEC. 911 APP. CODE ASME III NO. REQ'D 1

Radiography (RT)		Special Marking		Preheat		Cert. of Compliance	
M[illegible]rticle (MT)	✓	Special Cleaning	✓	Heat Treat		Mill Test Reports	✓
Li[illegible]etrant (PT)		Painting		Code Stamp	✓	Data Reports	✓

SYSTEM CSH FAB. SPECS. JS-137

REF. DRW'G NO. ISO #25-9/1 (EP-788 (10)) PRESS. 1575 PSI. TEMP. 575 °F. WT. 108 LBS.

PIECE MARK 25-9-2-CSH-4-1-59 REGISTER NM 25 1 1 59 X

3

ITT GRINNELL INDUSTRIAL PIPING, INC. REVISION SHOP COPY LAYOUT

FORM EN-102 REV. 8/77
Q. A. FORM

CONT. NO. 7100
NAME NIAGARA MOHAWK
LOCATION SCRIBA NY

MATERIALS RECORD
PRODUCTION PLANNER

Sheet 2 3 of 2 3
SB 4-26-82
Revision No. Revision Date

PIECE MARK 25-9-2-CSH-4-1-59

REGISTER NM 25 59X

ITEM	PART NUMBER	DESCRIPTION	QUAN OR LENG	QUALITY CONTROL: HEAT NUMBER	DOCUMENT	IN PROCESS	ACCOUNTING/MATERIAL: STATUS	U/M	UNIT PRICE P.O.	DIS. VENDOR	NET
1	NM 37 12"	SCH 100 SMLS PIPE	1'-0 3/8"	1		4.6.82		F			
		ASME SA-106-B		68689	P.180 8dm	0162	0129 4.1.82				
						4.6.82					
2	NM-3046 12" 75"	6000# SOL	1	3328 SN PT 2-18-82 4	SWF 274 8dm	0162		E			
		ASME SA-105							N. M. P. C. NINE MILE NUC. STATION UNIT 2 P. O. NMP2-P301B J.O. 12177 SHOP FAB. PIPE PIECE MARK ITT GRINNELL KERNERSVILLE, N.C. 77234		
	75	G. S. E. P.	1					E			
	12"	---DO--- (MACH'D.)	2					E			
				Fabricated for Stone and Webster Engineering Corp.							
		STOR & CONT OF ELECTRODES				Cherry Hill, N. J.					
		TRAVELER				P. O. NMP2-P301B					
		M. T. R.				Piping System CSH					
		DOCUMENTATION				ITT GRINNELL IND. PIPING					
		TRANSFER TRACE				KERNERSVILLE, N. C.					
		INS. INSPECTION									
		NPT CODE STAMP									
		1/4" FILLET WLD. CODE PLATE									

GATHERED

Code ASME III Class NUC-1 Batch MAR 25 1982
Job Specification US-137-14 MFG. Code 07

DELIVERED APR 05 1982

FORM NPV-1 MANUFACTURERS' DATA REPORT FOR NUCLEAR PUMPS OR VALVES

(As Required by the Provisions of the ASME Code, Section III, Div. 1)

2CSH*HCV116

1. Manufactured by Copes-Vulcan, Lake City, PA 16423
(Name and Address of Manufacturer)
2. Manufactured for Stone & Webster
(Name and Address of Purchaser or Owner)
3. Location of Installation Niagara Mohawk Unit #2 (Nine Mile Point)
(Name and Address)
4. Pump or Valve Valve. Nominal Inlet Size 4 (inch) Outlet Size 4 (inch)

	(a) Model No., Series No. or Type	(b) Manufacturers' Serial No.	(c) Canadian Registration No.	(d) Drawing No.	(e) Class	(f) Nat'l. Bd. No.	(g) Year Built
(1)	Globe	7920-95415-1-1	---	E-192981 Rev. 2	2	2278	1982
(2)							
(3)							
(4)							
(5)							
(6)							
(7)							
(8)							
(9)							
(10)							

S. W. E. C. PQC INSPECTED 157

5. 4" Class 900# Discharge to suppression pool
(Brief description of service for which equipment was designed)
Cust. P.O. NMP2-C051M Cust. Tag. 2CSH*HCV116

6. Design Conditions 1590 (Pressure) psi 212 (Temperature) °F or Valve Pressure Class _____ (1)
7. Cold Working Pressure 2250 psi at 100°F.
8. Pressure Retaining Pieces

Mark No.	Material Spec. No.	Manufacturer	Remarks
(a) Castings			
Body S/N V217	ASME SA 217	Quaker	GR-C5
Bonnet S/N D5214-1	ASME SA 217	Quaker	GR-C5
(b) Forgings			

(1) For manually operated valves only.

* Supplemental sheets in form of lists, sketches or drawings may be used provided (1) size is 8-1/2" x 11", (2) information in items 1, 2 and 5 on this data report is included on each sheet, and (3) each sheet is numbered and number of sheets is recorded at top of this form.

(3/77) This form (E00037) may be obtained from the Order Dept., ASME, 345 E. 47 St., New York, N.Y. 10017

FORM NPV-1 (Back)

Mark No.	Material Spec. No.	Manufacturer	Remarks
(c) Bolting			
Studs Lot J94	ASME SA 193	Vitco	GR-B7
Nuts Lot EE	ASME SA 194	Vitco	GR-2H
(d) Other Parts			
Plug S/N 81-1	ASME SA 564	Cartech	GR-630

9. Hydrostatic test 3250 psi. CV S/N 7920-95415-1-1

S. W. E. C. PQC INSPECTED 157

CERTIFICATE OF COMPLIANCE

We certify that the statements made in this report are correct and that this pump, or valve, conforms to the rules of construction of the ASME Code for Nuclear Power Plant Components. Section III, Div. I., Edition 1974, Addenda Winter 1975 (Date), Code Case No. ----- Date 5 Feb 82

Signed Copes-Vulcan (Manufacturer) by

Our ASME Certificate of Authorization No. N-1842 to use the N (N) (NPV) symbol expires 8/19/83 (Date).

CERTIFICATION OF DESIGN

Design information on file at Stone & Webster

Stress analysis report (Class 1 only) on file at N/A

Design specifications certified by (1) Jerome L. Kligerman

PE State NY Reg. No. 052926

Stress analysis certified by (1) N/A

PE State _____ Reg. No. _____

(1) Signature not required. List name only.

CERTIFICATE OF SHOP INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and the State or Province of Penna and employed by Protection Mutual Ins.Co.* of Park Ridge, IL have inspected the pump, or valve, described in this Data Report on Feb 9 19 82, and state that to the best of my knowledge and belief, the Manufacturer has constructed this pump, or valve, in accordance with the ASME Code, Section III.

By signing this certificate, neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the equipment described in this 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 2-9 1982

(Inspector) Commissions NB 8563 (Nat'l Bd., State, Prov. and No.)

*Factory Mutual Systems

QUAKER ALLOY CASTING CO., MYERSTOWN, PA.

CUSTOMER Copes Vulcan PURCHASE ORDER 001,100 CONTRACT NO. N/A

Stone & Webster P.O. #NMP2-C051M

SHOP ORDER J0219-10 Q DESIGNATION 5M PATTERN NO. 81921

MATERIAL SPEC. & GRADE ASME SA217 Gr. C5 DESCRIPTION Bonnet SIZE 4"

HEAT NO. D5214- CASTING SERIAL NO. D5214-1 R.T. SERIAL NO. N/A

NUCLEAR CLASS N2 PCS. COVERED ON THIS REPORT 1 SOURCE INSPECTION N/A

QUALITY ASSURANCE DOCUMENTATION CHECK LIST

THE RECORDS ENCLOSED IN THIS FOLDER COMPRISE THE CERTIFIED MATERIAL TEST REPORT FOR THE SUBJECT MATERIAL

RECORD OF DOCUMENTATION	REQ'D	FORM NO.	CHECKED BY
1. Material Test Report	x		dss
a. Charpy Impact Test	n/a	126	
b. Ferrite Content	n/a	126	
c.	n/a	126	
d.	n/a		
2. Inspection Report			
a. Visual Inspection	x	113	dss
b. Statement of Dimensional Inspection	x	113	dss
c. Magnetic Particle Inspection 100%	x	113	dss
d. Liquid Penetrant Inspection	n/a	113	
e. Radiographic Inspection	n/a	113	
f. Radiographic Inspection Report	n/a	153	
g.	n/a		
3. Welding			
a. Casting Repair Welding Report	x	156	No Major
b. Weld Material Identification	x	240	dss
c. Filler Material Certifications	x	n/a	dss
d.	n/a		
4. Heat Treatment x Records x Charts			
a. Normalize	x	212	dss
b. Harden	n/a	212	
c. Temper	x	212	dss
d. Solution Anneal	n/a	212	
e. x Post Weld Heat Treat Final Solution Anneal	x	212	not req'd
f.	n/a		
5. Certificates			
a. Qualification of NDE Personnel	x	113	dss
b. Qualification of Welding Procedure & Welder Performance	x	240	dss
c. Certification of Liquid Penetrant Materials	n/a	113	
d.	n/a		
6. Test Bar (s) to Customer	n/a	n/a	

S.W.E.C. PQC INSPECTED-157

REVIEWED BY R. Gaspard DATE 1/9/81

DATE

DATE

Form 213 Rev.2
7-24-79

QUAKER ALLOY CASTING CO., MYERSTOWN, PA.

46

CUSTOMER Copes Vulcan PURCHASE ORDER 001,100 CONTRACT NO. N/A

Stone & Webster P.O. #NMP2-C051M

SHOP ORDER J0219-10 Q DESIGNATION 5M PATTERN NO. 81921

MATERIAL SPEC. & GRADE ASME SA217 Gr. C5 DESCRIPTION Bonnet SIZE 4"

HEAT NO. D5214- CASTING SERIAL NO. D5214-1 R.T. SERIAL NO. N/A

NUCLEAR CLASS N2 PCS. COVERED ON THIS REPORT 1 SOURCE INSPECTION N/A

HEAT TREATEMENT RECORD

PROCESS*	N	T		
PROCEDURE	QAP-HT.P5(115) Rev. B	same		
DATE	11-24-80	11-25-80		
FURNACE	Surf. Comb.	Eclipse 232		
CHARGE NO.	SI-11-24-80-2	E2-11-25-80-2		
CHARGE TEMP.	1530°F	845°F		
TIME TO EQUIL. TEMP.	40 Mins	2Hr. 40 Mins		
HOLDING TEMP. (RANGE)	1840-1875°F	1330-1340°F		
TIME AT TEMP.	2Hr. 35 Mins	2Hr. 55 Mins		
COOLING DATA	AIR	AIR		

REMARKS

ACTUAL HEAT TREAT CHARTS ARE RETAINED IN FILE FOR THE ABOVE.

S.W.E.C. PQC INSPECTED 157

*N = Normalize or homogenize
Q = Quench or harden
T = Temper
SA = Solution Anneal
PWHT = Post Weld Heat Treat (Stress Relieve)

PREPARED BY Deb Soliday
Quaker Alloy Casting Co.

TITLE Q.C. Clerk

DATE 1-9-81

Form 212 Rev. 1
12/20/76.

QUAKER ALLOY CASTING CO.
a division of HARSCO corp.
MYERSTOWN, PA. 17067

MATERIAL TEST REPORT

Copes Vulcan

CUSTOMER ORDER NO.	PATTERN NO.	DATE
001,100	81921	1/9/81

SPECIFICATION	QUAKER DESIG.
ASME SA217 Gr.C5	5M

CONTROL NO.	59401		
HEAT SERIAL	D5214-1		
RT. NO.			
CHEMICAL COMPOSITION			
C	.12		
Mn	.55		
Si	.43		
P	.011		
S	.014		
Cr	5.20		
Ni			
Mo	.54		
Cu			
MECHANICAL PROPERTIES			
TENSILE: TENSILE, Ksi	107.0		
TENSILE: YIELD, Ksi	85.5		
TENSILE: ELONG. %	19.0		
TENSILE: RED. of AREA %	56.6		
CHARPY: ENERGY, ft-lbf			
CHARPY: LAT. EXP. mils			
CHARPY: SHEAR, %			
CHARPY: TEST TEMP. °F			
OTHER			
PIECES SHIPPED	1		

ADDITIONAL INFORMATION:
Material supplied is in accordance with our Quality System Program dated 9/15/75 including Revision dated 9/11/80 which has been reviewed and accepted by Copes Vulcan

Stone & Webster P.O. #NMP2-C051M

L. Dickson MR 918940 5-12-81
CVI INSP. DATE

[signature] 12-8-81
CODE INSP. DATE

We certify the above castings have been produced from Mercury free Material and that no Mercury or Mercury bearing instruments have been used in their processing:

S.W.E.C. PQC INSPECTED 157

"I HEREBY CERTIFY THAT THE ABOVE INFORMATION IS CORRECT."

R. Anspach 1/9/81
AUTHORIZED SIGNATURE

STATE OF PENNSYLVANIA, COUNTY OF LEBANON, S.S.
SWORN TO AND SUBSCRIBED BEFORE ME

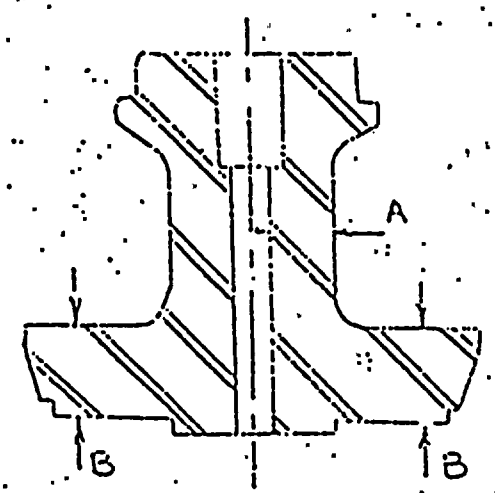
THIS DAY OF 19

CVI PART NO. 194031

PART S/N D5214-1

NOMINAL SIZE

PRESSURE STD.



S. W. E. C. PQC INSPECTED-157

INSTRUCTIONS

1. Visually inspect the bonnet neck area to determine the apparent minimum thickness due to local surface irregularities.

2. Using mechanical methods, measure the wall thickness (A) at four (4) locations starting at the apparent minimum condition, and then approximately 90° apart. Record the results below.

3. Measure the flange thickness (B) in four (4) places 90° apart for valves 4" & smaller and in eight (8) places 45° apart for valves 5" & larger.

4. Visually inspect the bonnet for damage. Ground areas, or thin areas which may be suspect, shall also be checked.

Bonnet neck - Measurement A

1. .875 inch 2. .860 inch 3. .865 inch 4. .840 inch

Flange thickness - Measurement B

1. 1.6385 inch 2. 1.6385 inch 3. 1.6385 inch 4. 1.6385 inch

5. NA inch 6. NA inch 7. NA inch 8. NA inch

CVI INSPECTOR J. Pacansky

DATE 6-1-81

CUSTOMER INSP. & DATE

Sketch 13 Rev. 0 9-14-78

CERTIFIED TEST REPORT

63

VITCO NUCLEAR PRODUCTS INC., 4445 HAMANN PARKWAY, WILLOUGHBY, OH 44094
PHONE: Area Code 216-946-9550

Copes-Vulcan, Inc.
P.O. Box 577
Lake City, PA 16423

DATE SHIPPED	VITCO ORDER NUMBER	CUSTOMER ORDER NUMBE
3/9/81	1350	001,109

ITEM (1) 8 Pcs. 1"-8 UNC-2A X 4-1/2" Double End Stud (Trace# J94)
Drawing# L-168285 Rev. 0 Marked 1/24/80

SPECIFICATION ASME-SA-193 Grade B7, ASME Boiler and Pressure Vessel Code, Section III, Division I, 1974 Edition through Winter of 1975 Addenda Class 2

CHEMICAL COMPOSITION

Item	Heat No.	C	Mn	P	S	Si	Cr	Mo	Ni	Cu	Fe	Al	Ti	
1	54838	.39	.90	.008	.017	.21	.90	.18						

PHYSICAL COMPOSITION

Item	Tensil Strength PSI	Yield PSI. 2%	Elong. % in 2"	Red. Area %	Hardness	Heat Treat Data
1	142,000	129,500	21.0	62.5	32 Rc	Heat Treat 1½ Hours @ 1550°F
						Temper 2 Hours @ 1100°F

ADDITIONAL SPECIFICATION REQUIREMENTS OR SPECIAL TESTS

S. W. E. C. PQC INSPECTED-157

ATTACHMENT

COPPERWELD STEEL COMPANY MILL TEST REPORT FOR HEAT# 54838

NETTLETON STEEL HEAT TREATING CHARTS.

Parts were heat treated in accordance with procedure NST-193-B7-1 Rev. 10-18-77 with addenda # 1 Rev. 0 dated 9/2/80

Material was manufactured in accordance with Vitco Nuclear Quality Assurance Manual Revision # 2 dated 2/1/80

L. Dickson MRA19833 3-16-81
DATE
3-31-81
DATE

WE CERTIFY THAT THE ABOVE MATERIAL IS COMMERCIALLY FREE FROM MERCURY CONTAMINATION AND MEETS THE REQUIREMENTS OF SPECIFICATION ASME-SA-193 Grade B7, and your order# 001,109

THE ABOVE TESTS CONFORM TO THE REQUIREMENTS OF THE SPECIFICATION LISTED

SWORN TO AND SUBSCRIBED BEFORE ME THIS 9th DAY OF Mar BY A DULY AUTHORIZED AGENT OF VITCO NUCLEAR PRODUCTS INC.

AUDREY L. HARIG, Notary Public
STATE OF OHIO (Lake County)
My Commission Expires May 23, 1985

Audrey L. Harig

WE HEREBY CERTIFY THAT THE ABOVE DATA IS A TRUE COPY OF THE DATA FURNISHED US BY THE PRODUCING MILL OR SUPPLIER OR OF THE DATA RESULTING FROM TESTS PERFORMED IN APPROVED LABORATORIES AND MEETS THE REQUIREMENT OF THE SPECIFICATION NOTED.

VITCO NUCLEAR PRODUCTS INC.

By Steve Mark

CUSTOMER'S PURCHASE ORDER NUMBER	DATE (MO. DAY YR.)	ITEM	DATE WANTED	SHIPPING PROMISE WEEK OF:	SALES ORDER NO.
6641 PO	090178	5 7	OCT	12/3/78	45438

COMPETITIVE FREIGHT FROM	PRICE: IN EFFECT AT TIME OF SHIPMENT	TERMS OF PAYMENT: % OF 1% OF MILL VALUE
NBP		10 DAYS, NET 30 DAYS

PRD	COL	SHIP VIA	CLASS
X		TRUCKER TO CALL 216-292-7600 TRAFFIC DEPT FOR APPOINTMENT TO UNLD MATL - LOW SIDE OR FLAT BED TRK	

STEEL BARS

SOLD TO:
A M CASTLE & CO
P.O BOX 5787
CLEVELAND, OHIO 44101

SHIP TO: (SAME AS "SOLD TO" UNLESS OTHERWISE NOTED)
SAME
26800 MILES ROAD
BEDFORD HEIGHTS, OHIO 44146

FEET	PIECES	LBS.	SIZE AND SHAPE	STD	SIZE TOLERANCE PLUS	MINUS	PURPOSE	CUSTOMER'S FIRST OPERATION
		20,000	1"Ø		000	004	WHSE STOCK	

LENGTH	SHORTS	MULTS	STD.	LENGTH TOLERANCE PLUS	MINUS
2/10'					

PRODUCT DESCRIPTION	MPG	PART
ANN CD	(208)	

GRAIN	HARDNESS	ADDIT. MACRO/MICRO REQ.	SPECIFICATION NO.
FINE			ASTM-A-331-74

TAG	STRAIGHTNESS

CONSOLE	PAINT & MARK	INSPECTION: OURS	CUST	GOVT	OTHER
S T MAX - OVRHD CRANE UNLD	BDL GREEN	X			

SPECIAL INSTRUCTIONS

COPPERWELD STEEL COMPANY
P.O. [illegible] / WARREN, OHIO 44482

TEST REPORT

kn

ORDER NUMBER: CUSTOMER	COPPERWELD
	45438

GRADE	DATE
4140	1/15/79

HEAT NO.	C	Mn	P	S	Si	Ni	Cr	Mo	Cu	Pb	Al		GRAIN SIZE
54838	.39	.90	.008	.017	.21		.90	.18					5-7

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	20	24	28	32	36
56	56	54	54	53	52	49	48		44		41		38		36	34	33	33	33	

YIELD PSI	TENSILE PSI	OFFSET %	ELONG. %	R.A. %	HARDNESS*	OTHER DATA
					223	

*Surface unless otherwise noted

S.W.E.C. PQC INSPECTED 157

a Copperweld product

IS CERTIFICATE NOTARIZED WHEN REQUIRED

..... a Notary Public do hereby certify that ... was subscribed and sworn to before me by a duly authorized representative of Copperweld Steel Company.

..... day of .....

COMMISSION EXPIRES ..... NOTARY PUBLIC

We hereby certify that the above data are correct as contained in the records of Copperweld Steel Company.

Supv. Mtl. Lab.

Acc 3/21/79 JRACE # J94

2-69 I

56

CARPENTER TECHNOLOGY CORPORATION

P.O. BOX 662 • READING, PA. 19603

CARTECH

CERTIFICATE OF TESTS

DATE: 6/2/80

COPES-VULCAN INC.
P O BOX 577
LAKE CITY, PA 16423

ATTN: QUALITY CONTROL DEPT.
ATTN: CERTIFICATION TECHNICIAN

RCH

CUSTOMER ORDER NO.	CARP. ORDER NO.	DATE SHIPPED	WEIGHT
909,297	M64766 NUCLR		1186#

PRODUCT DESCRIPTION	SPECIFICATION
CUSTOM 630 SOLUTION ANNEALED, CENTERLESS GROUND	* SEE PAGE 2

SIZE	HEAT NO.	C	MN	SI	P	S	CR	NI	MO	CU
4.000" RD	32722	.04	.34	.43	.017	.002	15.64	4.19		3.36

CB+TA .28

ITEM #1 2 BARS

INGOT #2

S. W. E. C. PQC INSPECTED 157

CAPABILITY (TENSILE/IMPACTS/HARDNESS)
1100°F/4 HRS. (AT HEAT)/AIR COOL

YIELD STRENGTH, KSI @ .2%		148.0
TENSILE STRENGTH, KSI		151.0
ELONGATION IN 2 ", %		17.0
REDUCTION OF AREA, %		67.0
HARDNESS	RC	37

77 edition winter 79 add

CVI INSP. DATE 01/27/81

CODE INSP. DATE

ANI 2-4-82 74 ed w 75 add.

IMPACT - CHARPY V-NOTCH (FT/LBS)

TEST TEMPERATURE		70°F	
INDIVIDUAL RESULTS	94	104	96
AVERAGE RESULT		98	

HEAT TREATMENT: SOLUTION ANNEAL
TEMPERATURE: 1040°C = 1904°F
TIME (AT HEAT): 1 HOUR
COOL: AIR

HARDNESS AS SHIPPED, BHN 341

ASTM-A 461-65
ASME SA-564 770-79

(CONTINUED)

11-21-80

I CERTIFY THIS INFORMATION TO BE TRUE AND CORRECT AS CONTAINED IN THE RECORDS OF

CARPENTER TECHNOLOGY CORPORATION

AUTHORIZED REPRESENTATIVE

NOTE: THE VALUES AND OTHER TECHNICAL DATA SHOWN REPRESENT THE RESULTS OF ANALYSES AND TESTS MADE ON SAMPLES COLLECTED

CARPENTER TECHNOLOGY CORPORATION

P.O. BOX 662 • READING, PA. 19603

CERTIFICATE OF TESTS

CARP. ORDER NO. M64766 NUCLR

HEAT NO. 32722

*SPECS: ASME SA564 GRADE 630
ASME BOILER AND PRESSURE VESSEL CODE SECTION II & III CLASS 1

ULTRASONIC INSPECTION SATISFACTORY PER CARTECH S-UT-C-329 6/22/78

IN PRODUCTION OR TESTING OF MATERIAL SHIPPED AGAINST THIS ORDER, NO DIRECT CONNECTED MERCURY MANOMETER, MERCURY PUMPS, MERCURY SEALS, OR MERCURY IN GL. THERMOMETER HAVE BEEN USED: NOR IN SUCH PRODUCTION OR TESTING, HAS MERCURY BEEN HANDLED IN THE IMMEDIATE VICINITY OF SUCH MATERIAL.

MATERIAL MARKED BY INK STENCIL WITH ASME SA 564, 630 HEAT #32722, ORDER #M64766 NUCLR.

HEAT TREATED PER S-HT-17, 2/11/73 AND COPES-VULCAN ADDENDUM #1, 1/23/75.

S. W. E. C. PQC INSPECTED-157

ATTACHMENTS
ULTRASONIC INSPECTION REPORT

BLD/IN 6
WS 6

CARPENTER TECHNOLOGY CORPORATION

P.O. BOX 662, • READING, PA. 19603

CRTECH

CERTIFICATE OF TESTS

DATE: 6/2/80

COPES-VULCAN INC.
P O BOX 577
LAKE CITY, PA 16423

ATTN: QUALITY CONTROL DEPT.
ATTN: CERTIFICATION TECHNICIAN

RCH

CUSTOMER ORDER NO.	CARP. ORDER NO.	DATE SHIPPED	WEIGHT
909,297	M64766 NUCLR		1186#

PRODUCT DESCRIPTION	SPECIFICATION
CUSTOM 630 SOLUTION ANNEALED, CENTERLESS GROUND	* SEE PAGE 2

SIZE	HEAT NO.	C	MN	SI	P	S	CR	NI	MO	CU
4.000" RD	32722	.04	.34	.43	.017	.002	15.64	4.19		3.36
ITEM #1	2 BARS									CB+TA .28
INGOT #2										

S.W.E.C. PQC INSPECTED 157

CAPABILITY (TENSILE/IMPACTS/HARDNESS)
1100°F/4 HRS. (AT HEAT)/AIR COOL

YIELD STRENGTH, KSI @ .2%		148.0
TENSILE STRENGTH, KSI		151.0
ELONGATION IN 2 ", %		17.0
REDUCTION OF AREA, %		67.0
HARDNESS	RC	37

77 edition winter 79 add

CV INSP. DATE
T.B. Charles Ant 01/27/81
CODE INSP. DATE
T.D. Bussard
ANT 2-4-82 74 ed w 75 add.

IMPACT - CHARPY V-NOTCH (FT/LBS)

TEST TEMPERATURE		70°F	
INDIVIDUAL RESULTS	94	104	96
AVERAGE RESULT		98	

HEAT TREATMENT: SOLUTION ANNEAL
TEMPERATURE: 1040°C = 1904°F
TIME (AT HEAT): 1 HOUR
COOL: AIR

HARDNESS AS SHIPPED, BHN 341

ASTM-A 401-65
ASME SA-27-4 77-79

(CONTINUED)

C.C. [illegible] 11-21-80

I CERTIFY THIS INFORMATION TO BE TRUE AND CORRECT AS CONTAINED IN THE RECORDS OF

CARPENTER TECHNOLOGY CORPORATION

Irvin D. Ulmer Jr.
AUTHORIZED REPRESENTATIVE

MED COPY

COPES-VULCAN, INC.
One of the White Consolidated Industries
LAKE CITY (ERIE CO.), PA. U.S.A.

ISSUED 3-13-69

COPES-VULCAN PROCEDURE NO. 1.3.119 REV. NO. 6 DATE 6-27-80

PROCEDURE TITLE HEAT TREATMENT OF 17-4 PH STAINLESS STEEL TO CONDITION H-1100

FOR REVISION SEE SHEET NO. 3

1. **SCOPE:**

This procedure is for hardening material up thru 5" diameter for use as valve trim cages, plugs or stems.

2. **GENERAL:**

The material to be heat treated may be in one of several conditions. It may be in the solution treated condition or it may be heat treated to a condition other than H-1100.

If the material has had a hardening heat treatment such as H-925, H-1025, H-1075, H-900 or H-1150 or the material has been forged, it must be solution treated prior to the hardening heat treatment. If doubt exists if solution treating is required, Solution Treat.

3. **CLEANING:**

17-4 PH should be throughly cleaned before heat treatment. Cutting oils or other material left on the surface may cause troublesom staining or carburization. Standard methods such as vapor, solvent or detergent cleaning are ususally satisfactory.

4. **TYPES OR FURNACES:**

Either electric or gas fired furnaces can be used but best results are obtained with convection or radiant tube electrics because temperature control is easier to maintain. If gas fired furnaces are used, they should be of the full-muffle type to prevent the possibility of carburizing 17-4 PH parts by exposure to a reducing atmosphere.

SOLUTION TREATING:

Heat material to 1900°F ± 25°F in an inert atmosphere. Hold for 1/2 hour. Air cool to below 900°F and then water quench.

Stone & Webster Engineering Corporation
- [x] APPROVED AS DEFINED IN THE SPECIFICATIONS
- [ ] ACCEPTABLE
- [ ] APPROVED AS REVISED AS DEFINED IN THE SPEC.
- [ ] REVIEWED

J.O. No. 12177
SPEC. No. C051M
DATE 10/14/80

PROCEDURE NO. 1.3.119
REVISION NO. 6

6. HARDENING HEAT TREATMENT:

6.1 A recording type thermocouple shall be attached to at least one piece of each heat treat lot.

6.2 Heat material to 1100°F + 15°F - 0°F in an air or inert atmosphere. Hold 4 hours. Air cool.

6.3 The required hardness is R_c 32-38.

7. RECORDS

7.1 Furnace temperature chart required.

7.2 Actual part temperature chart required.

REVISIONS

SHT.NO. 3

COPES-VULCAN
PROCEDURE NO. 1.3.119

REV.NO.	DESCRIPTION OF CHANGE	SIGNATURE & DATE: REVISED BY	CVI APPROVAL IF REQUIRED: Q.C.	ENGR.	
0	First Submittal 3-13-69	JNR 3/13 69			
1	Added Paragraph 1.	JNR 3/14 69			
2	Revised paragraph 1				
3	Revised paragraph 6.1, added paragraphs 7, 7.1 & 7.2	DAT 9.20.72			
4	Revised Paragraph 2	DAT 1-6-75			
5	Revised Para. 6.2, added Hold 4 hours. Air cool 4-6-77	DAT 4-6-77		DAT 4-6-77	
6	Revised Para. 5., 900°F was 90°F 6-27-80	WMS 6-27-80		WMS 6-27-80	N.

QUAKER ALLOY CASTING CO., MYERSTOWN, PA.

CUSTOMER Copes Vulcan PURCHASE ORDER 001,100 CONTRACT NO. N/A 34

SHOP ORDER J0219-10 Q DESIGNATION 5M PATTERN NO. 21479-1

MATERIAL SPEC. & GRADE ASME SA217 Gr. C5 DESCRIPTION Body SIZE 4"

HEAT NO. A3496 CASTING SERIAL NO. A3496-1 R.T. SERIAL NO. V217

NUCLEAR CLASS N2 PCS. COVERED ON THIS REPORT 1 SOURCE INSPECTION Copes

QUALITY ASSURANCE DOCUMENTATION CHECK LIST
THE RECORDS ENCLOSED IN THIS FOLDER COMPRISE THE
CERTIFIED MATERIAL TEST REPORT FOR THE SUBJECT MATERIAL

S.W.E.C. PQC INSPECTED 157

RECORD OF DOCUMENTATION	REQ'D	FORM NO.	CHECKED BY
1. Material Test Report	x		dss
a. Charpy Impact Test	n/a	126	
b. Ferrite Content	n/a	126	
c.	n/a	126	
d.	n/a		
2. Inspection Report			
a. Visual Inspection	x	113	dss ✓
b. Statement of Dimensional Inspection	x	113	dss ✓
c. Magnetic Particle Inspection 100%	x	113	dss ✓
d. Liquid Penetrant Inspection	n/a	113	
e. Radiographic Inspection	x	113	dss ✓
f. Radiographic Inspection Report	x	153	dss ✓
g.	n/a		
3. Welding			
a. Casting Repair Welding Report	x	156	dss ✓
b. Weld Material Identification	x	240	dss ✓
c. Filler Material Certifications	x	n/a	dss ✓
d.	n/a		
4. Heat Treatment x Records x Charts			
a. Normalize	x	212	dss ✓
b. Harden	n/a	212	
c. Temper	x	212	dss ✓
d. Solution Anneal	n/a	212	
e. xPost Weld Heat Treat Final Solution Anneal	x	212	dss ✓
f.	n/a		
5. Certificates			
a. Qualification of NDE Personnel	x	113	dss ✓
b. Qualification of Welding Procedure & Welder Performance	x	240	dss ✓
c. Certification of Liquid Penetrant Materials	n/a	113	
d.	n/a		
6. Test Bar (s) to Customer	n/a	n/a	

REVIEWED BY R. Ensprach DATE 4/16/81

DATE

DATE

Form 213 Rev.2
7-24-79

QUAKER ALLOY CASTING CO.
a division of HARSCO corp.
MYERSTOWN, PA. 17067

MATERIAL TEST REPORT

Copes Vulcan

2CSHX HCU116

CUSTOMER ORDER NO.	PATTERN NO.	DATE
001,100	21479-1	4/16/81

SPECIFICATION	QUAKER DESIG
ASME SA217 Gr.C5	5M

CONTROL NO.	59400		
HEAT SERIAL	A3496-1		
RT. NO.	V217		
CHEMICAL COMPOSITION			
C	.12		
Mn	.67		
Si	.32		
P	.014		
S	.005		
Cr	6.41		
Ni			
Mo	.52		
Cu			
MECHANICAL PROPERTIES			
TENSILE: TENSILE, Ksi	107.0		
TENSILE: YIELD, Ksi	88.5		
TENSILE: ELONG. %	20.0		
TENSILE: RED. of AREA %	61.2		
CHARPY: ENERGY, ft-lbf			
CHARPY: LAT. EXP. mils			
CHARPY: SHEAR, %			
CHARPY: TEST TEMP. °F			
OTHER			
PIECES SHIPPED	1		

ADDITIONAL INFORMATION:
We certify that the contents of this report are correct and accurate and that all operations performed and material produced by our Company and our subcontractors are in compliance with the requirements of the material specifications and the ASME B & PV Code Section III, Division 1, 1974 Edition thru 1975 Winter Addenda, and in accordance with Quaker Alloy Quality System Manual, Revision 10 dated 9/11/80 and approved by Copes Vulcan

R Dillon MR A20458 5-12-81
CVI INSP. DATE
[signature] 12-8-81
CODE INSP. DATE

S.W.E.C. INSPECTED 157

We certify the above castings have been produced from Mercury free Material and that no Mercury or Mercury bearing instruments have been used in their processing:

"I HEREBY CERTIFY THAT THE ABOVE INFORMATION IS CORRECT."

R. Anspach 4/16/81
AUTHORIZED SIGNATURE

STATE OF PENNSYLVANIA, COUNTY OF LEBANON, S.S.
SWORN TO AND SUBSCRIBED BEFORE ME

THIS DAY OF

71

QUAKER ALLOY CASTING CO., MYERSTOWN, PA.

CUSTOMER Copes Vulcan PURCHASE ORDER 001,100 CONTRACT NO. N/A

SHOP ORDER J0219-10 Q DESIGNATION 5M PATTERN NO. 21479-1

MATERIAL SPEC. & GRADE ASME SA217 Gr. C5 DESCRIPTION Body SIZE L

HEAT NO. A3496 CASTING SERIAL NO. A3496-1 R.T. SERIAL NO. V217

NUCLEAR CLASS N2 PCS. COVERED ON THIS REPORT 1 SOURCE INSPECTION Copes

HEAT TREATEMENT RECORD

PROCESS*	N	T	PWHT	
PROCEDURE	QAP-HT.P5(115) Rev. B	same	QAP-WS-05-08 Rev. 1 Add 8:	
DATE	1-20-81	1-22-81	1-30-81	
FURNACE	Eclipse 230	Eclipse 232	Eclipse 232	
CHARGE NO.	E0-1-20-81-4	E2-1-22-81-2	E2-1-30-81-2	
CHARGE TEMP.	1360°F	1085°F	1010°F	
TIME TO EQUIL. TEMP.	55 Mins	10 Mins	20 Mins	
HOLDING TEMP. (RANGE)	1840-1870°F	1340-1350°F	1330-1350°F	
TIME AT TEMP.	3Hr. 15 Mins	2Hr. 25 Mins	2Hr. 55 Mins	
COOLING DATA	AIR	AIR	AIR	

REMARKS

W. E. S. PQC INSPECTED

ACTUAL HEAT TREAT CHARTS ARE RETAINED IN FILE FOR THE ABOVE.

*N = Normalize or homogenize
Q = Quench or harden
T = Temper
SA = Solution Anneal
PWHT = Post Weld Heat Treat (Stress Relieve)

PREPARED BY Deb Holiday
Quaker Alloy Casting Co.

TITLE Q. C. Clerk

DATE 4-16-81

Form 212 Rev. 1
12/20/76

CASTING REPAIR WELDING REPORT

1-22-81 DATE | CONTR

CUSTOMER	CUSTOMER P/O NUMBER	SHOP ORDER NUMBER
Cope	001-100	J0219-10

PATTERN NO.	MATERIAL SPEC.	GRADE	HEAT NUMBER
21479-1	ASME SA217	C5	A3496

CASTING SERIAL NO.	R.T. SERIAL NO.	WELDING PROCEDURE OAP.	REV.	& ADD	REV.
A3496-1	V217	WS-05-08	1	810206	

FILLER METAL	FILLER METAL LOT NUMBER
E502-16	1K006F01

APPROVED TO WELD

1. T. Trimble (QUAKER ALLOY CASTING CO.) 1-22-81 DATE
2. DATE
3. DATE
4. DATE

WELDERS

1. E. LONG 1-22-81 DATE
2. DATE
3. DATE
4. DATE

DISCONTINUITIES DESCRIBED HEREIN HAVE BEEN REVEALED BY THE FOLLOWING METHODS:

☐ RADIOGRAPHY ☐ MAGNETIC PARTICLE ☐ LIQUID PENETRANT ☐ ULTRASONIC ☑ DIMENSIONAL ☑ VISUAL

EXAMINATION OF AREA PREPARED FOR WELDING OAP.	REV.	& ADD	REV.	EXAMINATION OF AREA APPROVED BY
visual				T. Trimble DATE: 1-2

INSPECTION REQUIREMENTS	PREHEAT TEMP.	INTERPASS TEMP.	POST WELD HEAT TREATMENT
☑ RT ☑ MT ☐ PT ☐ UT ☑ VISUAL	400°F MIN	600°F MAX	1250-1400°F PWHT

ROOT LAYER EXAMINATION	INTERMEDIATE EXAMINATION
DATE:	DATE:

VERIFICATION OF NONDESTRUCTIVE EXAMINATION OF COMPLETED WELD REPAIRS

	SIGNATURE	ASNT. LEVEL	ACCEPT	DA
1. VISUAL EXAMINATION	J. E. Bates DS	II	☑	4-2
2. MAGNETIC PARTICLE EXAMINATION	J. E. Bates DS	II	☑	4-2
3. LIQUID PENETRANT EXAMINATION	N/A		☐	
4. RADIOGRAPHIC EXAMINATION	N/A		☐	
5. ULTRASONIC EXAMINATION	N/A		☐	

REMARKS:

S.W.E.C. PQC INSPECTED 157

APPROVED BY:

1. Deb Solidey (QUAKER ALLOY CASTING CO.) DATE 4-16-81
2. DATE
3. DATE
4. DATE

FORM 156-1 REV. B

2CSH*HO116

CERTIFICATION FORM

75

MODERN INDUSTRIES, INC. — HEAT TREATING DIVISION

PHONE 814/455-8061 — 814/455-8065 after 5 P.M. and Weekends • 613 WEST 11th STREET, P.O. BOX 399, ERIE, PA 16512

Purchase Order No. 106,732; 106,903 (20 95418) Date: 7-16-81

Customer Copes Vulcan

Part Description 4" Body #194029 S/N V-217 MRA 21205 #194026 S/N 1202 MRA 21204

Type of Material

Hardness Required

Special Instructions Copes Form 60411

THE RECORDING OF FALSE FICTITIOUS, OR FRAUDULENT STATEMENTS OR ENTRIES ON THIS DOCUMENT [illegible] FELONY UNDER FEDERAL STATUTES INCLUDING FEDERAL LAW TITLE 18 CH 4 FEB 47

HEAT TREAT CYCLE PERFORMED

CYCLE	TIME	TEMP.	QUENCH	DRAW		HARDNESS SAMPLES
ANNEALING					There is no known Mercury Compounds in our plant that could be exposed to these parts.	
STRESS RELIEVING	4 hrs.	1375"	Cool 100° TO 800°	per mean Air Cool		
NORMALIZING						
NITRIDING						
AUSTINITIZING TEMPERATURE						
T[illegible]ING						

S.W.E.C. PQC INSPECTED 157

AQL:

LOT SIZE: 1 + 1

SAMPLE SIZE:

NO. REJECTS:

FORM NO. 119

We certify that the above cycle was performed. We further certify the samples from this lot checked as indicated in the "hardness" column.

I hereby certify that the above information furnished is correct.

J. Hunton

[illegible]

Operator # 308

½ hrs 01

2CSH&HC116

CERTIFICATION FORM

90

MODERN INDUSTRIES, INC. — HEAT TREATING DIVISION

PHONE 814/455-8061 — 814/455-8065 after 5 P.M. and Weekends • 613 WEST 11th STREET, P.O. BOX 399, ERIE, PA 16512

Purchase Order No. 109652 + 109651 Date: 11-17-81

Customer Copes Vulcan

Part Description Body 194028 S/N C.V. 1202; Body 194030 S/N V217

Type of Material

Hardness Required

Special Instructions C.V. Form 60411

"THE RECORDING OF FALSE FRAUDULENT STATEMENTS OR ENTRIES ON THIS DOCUMENT MAY BE PUNISHABLE AS A FELONY UNDER FEDERAL STATUTES INCLUDING FINE AND IMPRISONMENT."

HEAT TREAT CYCLE PERFORMED

CYCLE	TIME	TEMP.	QUENCH	DRAW		HARDNESS SAMPLES
ANNEALING					There is no known Mercury Compounds in our plant that could be exposed to these parts.	
STRESS RELIEVING	4 hrs	1300°	cool 100° per hour TO 800°	Air Cool		
NORMALIZING						
NITRIDING						
AUSTINITIZING TEMPERATURE						
TEMPERING						

S. W. E. C. PQC INSPECTED 157

AQL:

LOT SIZE: 2

SAMPLE SIZE:

NO. REJECTS:

FORM NO. 110

We certify that the above cycle was performed. We further certify the samples from this lot checked as indicated in the "hardness" column.

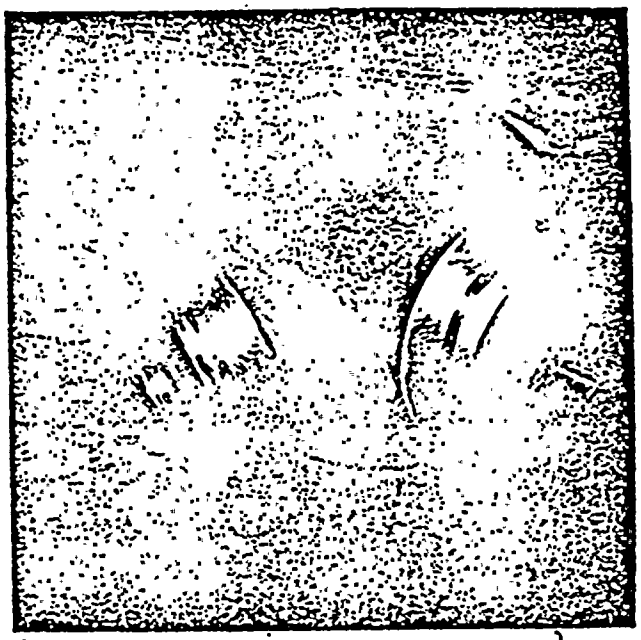
I hereby certify that the above information furnished is correct.

J. Thurston

2CSHXHC/16 ~~2CH~~ ~ ~ 73

REFERENCE
Q-NUMBER
42880

REPAIR SKETCH



194029

.50 Min Wall
(1) Area as Marked
is .430 at Lowest
Point

Weld and Blend

S.W.E.C. PQC INSPECTED 157

FORM 705232 REV 2

TEXAS ALLOYS, INC.

TUBULAR PRODUCTS FOR THE ENERGY INDUSTRIES
P.O. Box 42345, Houston, Tx. 77042
(713) 977-3330

Revised 3/4/81

MATERIAL CERTIFICATION

S.W.E.C. PQC INSPECTED-157

Subject: Copes Vulcan
Order Number: 006,447 A

Description: ASME SA106 Gr B SMLS

Item #1: 4" S/80 Heat Number 183972 (Armco)

Item #2: 4" S/40 Heat Number N92524 (USS)

Additional Processing: This certifies that, to the best of our knowledge and belief, no mercury, mercury compounds, nor mercury bearing instruments were used in any manner which might cause contamination in the manufacture of the materials described herein.

CERTIFICATION: This certifies that, to the best of our knowledge and belief, the piping material described herein meets the purchasing requirements; material specification, and all special requirements of ASME Section III, Class 2 of the ASME Boiler and Pressure Vessel Code, 1974 Edition thru Winter 1975 Addenda. Material has been processed in accordance with our Identification and Verification program.

Attachment: CMTR (2)

Pete Rodriguez
Asst. Manager - Quality Assurance

1 MRA19811
2 MRA19493
3 10.81

Date: 3-4-81

Quality System Certificate
Mat'l: N-934-2

Expiration Date: 3-6-81

PR/ak

cc: Q.A. File

13-8-81

FORM N-2 MANUFACTURERS DATA REPORT FOR NUCLEAR PART AND APPURTENANCES*

As required by the Provisions of the ASME Code Rules

1. (a) Manufactured by Copes-Vulcan, Lake City, PA 16423
(Name and address of Manufacturer of part)

(b) Manufactured for Niagara, Mohawk, Nine Mile Point, Unit #2
(Name and address of Manufacturer of completed nuclear component)

2. Identification-Manufacturer's Serial No. of Part Inlet 81-1 Outlet 81-1 Nat'l Bd. No. ------

(a) Constructed According to Drawing No. L-194030 Rev. 0 Drawing Prepared by Copes-Vulcan

(b) Description of Part Inspected 4" Nipple Inlet Sch 80 Outlet Sch 40

(c) Applicable ASME Code: Section III, Edition 1974 Winter, Addenda date 1975, Case No. _____ Class 2

3. Remarks: Cust. P.O. NMP2-C051M CV S/N 7920-95415-1-1
(Brief description of service for which component was designed)

Cust. Tag 2CSH*HCV116 CV Ref. 7720-95350

CV Valve assembly drawing E-192981 Rev. 2

We certify that the statements made in this report are correct and this vessel part or appurtenance as defined in the Code conforms to the rules of construction of the ASME Code Section III.
(The applicable Design Specification and Stress Report are not the responsibility of the part Manufacturer. An appurtenance Manufacturer is responsible for furnishing a separate Design Specification and Stress Report if the appurtenance is not included in the component Design Specification and Stress Report.)

Date 4 Feb 19 82 Signed Copes-Vulcan (Manufacturer) By [signature]

Certificate of Authorization Expires 8/19/83 Certificate of Authorization No. N-1843

CERTIFICATION OF DESIGN FOR APPURTENANCE (when applicable)

Design information on file at Stone & Webster

Stress analysis report on file at N/A

Design specifications certified by Jerome L. Kligerman Prof. Eng. State NY Reg. No. 05[illegible]26

Stress analysis report certified by N/A Prof. Eng. State _____ Reg. No. _____

S. W. E. C. PQC INSPECTOR-157

CERTIFICATE OF SHOP 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 Penna and employed by Protection Mutual Ins. Co.* of Park Ridge, IL have inspected the part of a pressure vessel described in this Manufacturer's Partial Data Report on Feb 9 1982 and state that to the best of my knowledge and belief, the Manufacturer has constructed this part in accordance with the ASME Code Section III.

By signing this certificate, neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the part described in this Manufacturer's Partial 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 2-9 19 82

[signature] Commissions NB8863
Inspector's Signature National Board, State, Province and No.

Supplemental sheets in form of lists, sketches or drawings may be used provided (1) size is 8½" x 11", (2) information in items 1-2 on this data report is included on each sheet, and (3) each sheet is numbered and number of sheets is recorded in item 3, "Remarks".

*Factory Mutual System

CERTIFIED TEST REPORT

VITCO NUCLEAR PRODUCTS INC., 4445 HAMANN PARKWAY, WILLOUGHBY, OH 44094
PHONE: Area Code 216-946-9550

Copes-Vulcan, Inc.
P.O. Box 577
Lake City, PA 16423

DATE SHIPPED	VITCO ORDER NUMBER	CUSTOMER ORDER NUMBER
3/16/81	1351	001,109

ITEM (2) 8 Pcs. 1"-8 UNC-2B Heavy Hex Nuts (Trace# EE)
Drawing# M-170423 Rev. 0 Marked 1/24/80

SPECIFICATION ASME-SA-194 Grade 2H, ASME Boiler and Pressure Vessel Code, Section III, Division I, 1974 Edition through Winter of 1975 Addenda Class 2

CHEMICAL COMPOSITION

Item	Heat No.	C	Mn	P	S	Si	Cr	Mo	Ni	Cu	Fe	Al	Ti
2	6075879	.41	.90	.015	.016	.28	1.09	.20					

PHYSICAL COMPOSITION

Item	Tensil Strength PSI	Yield PSI. 2%	Elong. % in 2"	Red. Area %	Hardness	Heat Treat Data
2	HARDNESS PER ASME SA 194 PARA.			8A	27-28 Rc	Heat Treat 2 Hours @ 1550°F
						Temper 2½ Hours @ 1220°F
	HARDNESS PER ASME SA 194 PARA.			8B	Rc 26	24 Hours @ 1000°F

ADDITIONAL SPECIFICATION REQUIREMENTS OR SPECIAL TESTS

Cone Stripping Proof Load (74,250 Lbs.) Satisfactory

ATTACHMENT

REPUBLIC STEEL MILL TEST REPORT FOR HEAT# 6075879
HEAT TREATMENT CHARTS
Parts were heat treated in accordance with procedure NST-194-2H-1 dated 10/18/77.
Material was manufactured in accordance with Vitco Nuclear Quality Assurance Manual Revision #2 dated 2/1/80

Robert A. Rafaelli 3-23-81
DATE
3-31-81
DATE

S.W.E.C. PQC INSPECTED 157

WE CERTIFY THAT THE ABOVE MATERIAL IS COMMERCIALLY FREE FROM MERCURY CONTAMINATION AND MEETS THE REQUIREMENTS OF SPECIFICATION ASME-SA-194 Grade 2H, and your order# 001,109

THE ABOVE TESTS CONFORM TO THE REQUIREMENTS OF THE SPECIFICATION LISTED

SWORN TO AND SUBSCRIBED BEFORE ME THIS _____ DAY OF ____ BY A DULY AUTHORIZED AGENT OF VITCO NUCLEAR PRODUCTS INC.

WE HEREBY CERTIFY THAT THE ABOVE DATA IS A TRUE COPY OF THE DATA FURNISHED US BY THE PRODUCING MILL OR SUPPLIER OR OF THE DATA RESULTING FROM TESTS PERFORMED IN APPROVED LABORATORIES AND MEETS THE REQUIREMENTS OF THE SPECIFICATION NOTED.

VITCO NUCLEAR PRODUCTS INC.
By: Steve Mark

Republic steel

Republic Steel Corporation
Cleveland OH 44101

CONTROL CARD	REQ JOB CONTRACT NO	PURCHASE ORDER DATE	PURCHASE ORDER NO	RELEASE
015225		02/04/77	P-2625	

CERTIFICATE OF TESTS

DMS RATING	RENEGO	CUSTOMER IDENTIFICATION	REPUBLIC ORDER NO DIST	NUMBER	MFD	ITEM NO
			02	43106	823	05

TEAM	MAN	OFFICE DIST	OFFICE SLM	INVOICE DATE	INVOICE NUMBER
3S	2	02	19		823-6210

LE	ACCOUNT NUMBER	TERMS
J	37599801	30-1/2-10

SOLD TO
INDUSTRIAL NUT CORP.
1425 TIFFIN AVENUE
SANDUSKY, OH 44870

SHIP TO

DATE SHIPPED	FROM	ROUTE/VEHICLE IDENTIFICATION
6/20/77	GARY	GREAT LAKES / BRANCH

I HEREBY CERTIFY THAT THE MATERIAL LISTED HEREIN HAS BEEN INSPECTED AND TESTED IN ACCORDANCE WITH THE METHODS PRESCRIBED IN THE GOVERNING SPECIFICATIONS AND BASED UPON THE RESULTS OF SUCH INSPECTION AND TESTING HAS BEEN APPROVED FOR CONFORMANCE TO THE SPECIFICATIONS:

ITEM NO	MATERIAL DESCRIPTION	%	QUANTITY SHIPPED
	COLD FINISHED STEEL BARS ALLOY EF-AISI-4142 VACUUM CARBON DEOXIDIZED MAGNAFLUX Q COLD DRAWN ANN BEFORE CD MAG TEST		
05	HEX 1-5/8 X 10/12 FT 3 BDLS OD 5/28	C	8170#
	PHYSICALS--TENSILE YD EL RA BRIN 110000 992500 15 43 228		
	823-6206/10 INCL Freq .00 Sev .00		

S.W.E.C. PQC INSPECTED 157

EE
QA 1 7/15/77

K. S. JAIN, PLANT METALLURGIST
BY K Clayton

ANALYSIS

ITEM NO	HEAT NO.	GRAIN	CARBON	MANG	PHOS	SUL	SIL	COPPER	NICKEL	CHROME	MOLY	VAN	CB
	6075879		.41	.90	.015	.016	.28			1.09	.20		

TEST RESULTS

ITEM NO	HEAT NUMBER	TEST OR PIECE IDENTITY NO	YIELD PSI	TENSILE STRENGTH PSI	ELONG 2"	ELONG 8"	% RED AREA	BEND TEST	HARDNESS

PACKAGE
MAR 25 1977

FORM NO. 1057B

FLUED HEAD PENETRATION Z-14

NATIONAL FORGE COMPANY

MATERIAL CERTIFICATION DOCUMENTATION PACKAGE

Customer: GRAVER TANK & MANUFACTURING CO.

Forge Div. Irvine [X] Erie [ ]

Purchase Order No.: 60840NX38 PENET. NO. X-61A
S & W PENET. NO. Z-14

Foundry Div. [ ]

Drawing No.: 332221, REV. 3

NFC Order No.: 60-A-3322

Nomenclature: FLUED HEAD PENETRATION

NFC Serial No.: 21-001

Specification: SA-508, CLASS 1, CODE CASE 1332-6 AND 9171 EDITION THRU S-73 ADDENDA ASME SECT. 3, CLASS 1

NATIONAL FORGE COMPANY DOCUMENTS APPROVED AND USED ON THIS CONTRACT

Ultrasonic Procedure: UT-60-A-3322, REV. 0, ADD. 1, DTD 7/2/76
Magnetic Particle Procedure: MT-60-A-3322, REV. A, DTD 11/1/76 & LETTER DLM-76-053, DTD 11/30/76
Heat Treat Procedure: HT-60-A-3322-0A, ADD. 2, DTD 8/26/76
Impact Test Procedure: LT-60-A-3322-0A, REV. A, DTD 7/8/76
Forging Test Drawing:
Other: HYDROSTATIC TEST PROCEDURE: 61-GP99-006, REV. B, DTD 1/28/75 & AGGENDA S.O. 60-A-3322, REV. C, DTD 10/26/76

DOCUMENTATION PACKAGE TABLE OF CONTENTS

3 Chemistry/Mechanical/NDT Data
Transition Curve
Heat Treatment Charts/Table IV Form
Dimensional Data
Forging Material Log
Heat Stability Data
Photomicrographs
Test Material (Sep. Cover)
U-1A Form
U-2 Form
Other

JUN 14 1977
S.W.E.C. PQC INSPECTED 83

GRAVER TANK & MFG. CO
EAST CHICAGO, IN
ORDER No. 60840NX38
ITEM No. X61A
CERT. No. 01024

This is to certify that the material identified above has been processed, tested and inspected in accordance with the requirements of the purchase order and applicable specifications, including any amendments and conforms to the requirements thereof.

INFORMATION ONLY

TRANSMITTAL NO. 00063

R. S. Newark
Authorized Company Representative

Date: 12/3/76

Sally L. Vevers
Embossed Hereon Is My
Irvine, Warren County, Pennsylvania, Notary Public Seal
My Commission Expires January 2, 1978
SALLY L. VEVERS

NIAGARA MOHAWK
NINE MILE POINT, UNIT 2
J. O. 12177, NMP2-P283B
SHIPMENT No. 2

PENETRATIONS Z-12
Z-13

Metallon

Metallurgical Testing Laboratories

2524 Sutherland, Houston, Texas 77023
(713) 923-7761

GRAVER TANK & MFG. CO.
LAST CHANCE, IN
ORDER No. 60840NX91
ITEM No. X160, X152, X229, X219
CERT. No. [redacted]

January 17, 1977
Report No. 82-77
P.O. L-80620-02

TO: CAPITOL PIPE & STEEL PRODUCTS, INC.
P.O. Box 6
Pearland, Texas

Intergranular Corrosion Tests per ASTM A 262

Material: 12" Std., ASME SA 312 TP304 Smls., Heat #2836-21-1
2836-20-1
2836-11-1-2

JUN 14 1977

S.W.E.C. PQC INSPECTED 83

TAG: Graver Tank & Mfg.
60840NX91
DN-1072A7 H83366-DN

Oxalic Acid Etch Test, Practice A

Coupon	Structure - Results
WI	Dual - Acceptable

X160

Material: 16" Std., ASME SA 312 TP 304 Smls., Heat #2719-1-2

TAG: Graver Tank & Mfg.
60840NX91
DN-1072A7 H83366-DN

NIAGARA MOHAWK
NINE MILE POINT, UNIT 2
J. O. 12177, NMP2-P283B
SHIPMENT No. 2
DOCUMENTATION

Oxalic Acid Etch Test, Practice A

Coupon	Structure - Results
WM	Dual - Acceptable

TRANSMITTAL NO. 00066

Graver Tank & Mfg Co.
PO# 60840NX91
SO# DN-1072-A7
Ch# H-83366
Item# X219

INFORMATION ONLY

METALLON, INCORPORATED

Donald R. McGehee

Donald R. McGehee, P.E.

Our reports apply only to the actual sample tested and are not necessarily indicative of the properties of other identical or similar materials.

Graver Tank & Mfg. Co.
PO: 60840NX91
SO: DN-1072-A7
H-83366
Item: X160

SOUTHWESTERN LABORATORIES

DALLAS HOUSTON MIDLAND BEAUMONT TEXARKANA

REPORT OF NON-DESTRUCTIVE TESTING

File No. 2-1281-00

Houston, Texas January 24, 1977

GRAVER TANK & MFG. CO.
EAST CHICAGO, IN
ORDER No. 60840NX91
ITEM No. X160, X152, X220, X219
CERT No.

To: Capitol Pipe & Steel Products, Inc.
Date of Test: 1-24-77
Job Reference: P/O L-80625-02, SWL-D/R 20879
Witnessed By:
Scope of Examination: 100% (one direction)
Acceptance Mark: UT
Specification No. Capitol UT-1 revised 8-12-75 (5% notch)

Ultrasonic	Magnetic Particle	Penetrant
Instrument: Krautkramer USM2M	Wet ☐ Dry ☐	Visible ☐
Couplant Cellulose gum w/water	A/C ☐ D/C ☐	Fluorescent ☐
Long. Freq. - mHz Shear Freq. 2.25 mHz	Ampere Turns	Penetrant Time
Size - Size ½" x 1" 45°	Circular Amps	Emulsifier Time
Type - Type BSC-SAB2	Demagnitized	Developer Time

ITEM	QUANTITY	DESCRIPTION	RESULTS OF INSPECTION
X160	2 pcs	12" Std SMLS Pipe Matl: ASME SA312 TP-304 Length: 26' 1" Ht #2836-21-1 26' 0" 2836-20-1 Total Footage 52' 1"	Ultrasonic examination of this pipe in accordance with the abc referenced procedures revealed no apparent unacceptable indications of discontinuities in Items X160, X220/X152 and X219.
X220/X152	1 pc.	12" Std. SMLS Pipe Matl: ASME SA312 TP-304 Length: 18' 7" Ht #2836-11-1-2	
X219	1 pc.	16" Std. SMLS Pipe Matl: ASME SA312 TP-304 Length: 7' 6" Ht #2719-1-2	

Tag: Graver Tank
60840NX91
DN-1072-A7 H83366-DN
SL-37-77

TRANSMITTAL NO. 00066

Sworn to and subscribed before me this 25th date of January, 1977

Maxine M. Negrin
MAXINE M. NEGRIN, Notary Public
Harris County, Texas
My commission expires: Oct. 2, 1978

JUN 14 1977
S.W.E.C. PQC INSPECTED 83

NIAGARA MOHAWK
NINE MILE POINT, UNIT 2
J. O. 12177, NMP2-P283B
SHIPMENT No. 2
DOCUMENTATION

Technician: Joe Cusworth, NDE-Level II

Copies: 4 - Capitol Pipe & Steel Products

INFORMATION ONLY

SOUTHWESTERN LABORATORIES
Per:

Lab. No. X-35879 mn

Our letters and reports are for the exclusive use of the client to whom they are addressed. The use of our name must receive our prior written approval. Our letters and reports apply only to the sample tested and/or inspected, and are not necessarily indicative of the qualities of apparently identical or similar products.

☒ ASTM A-312 ☒ ASME SA-3
☐ ASTM A-376 ☐ ASME SA-3
☒ CW 1401-F

Extrusion Facility

Curtiss-Wright Corporation

12" STD TP 304/304H

60 Grider Street • Buffalo, New York 14215

DATE May 28, 1976

CUSTOMER CAPITOL PIPE & STEEL PRODUCTS, INC. CUSTOMER P.O. 78047-00

PART NUMBER 12.750" O.D. X .375" A.W. (Std) SALES ORDER NO. 2837

PART NAME PRESSURE TUBING SPECIFICATIONS Type 304/304H

	REQUIRED	MILL HEAT NO. 3-648 C.W. Code 2837	MILL HEAT NO. C.W. Code
ELEMENT		HEAT LOT NO. 051176	HEAT LOT NO.
CARBON	0.04 - 0.08	Mill 0.065	Check 0.065
MANGANESE	2.00 MAX.	1.62	1.63
SILICON	0.75 MAX.	0.52	0.49
CHROMIUM	18.0-20.0	18.17	18.20
NICKEL	8.00-11.00	9.32	9.42
PHOSPHORUS	0.040 MAX.	0.022	0.021
SULPHUR	0.030 MAX.	0.011	0.010

This certificate covers the following pieces:
2836-20-2
2836-21-1
2836-21-2

GRAVER TANK & MFG. CO.
EAST CHICAGO, IN.
ORDER NO. 60840NX91
ITEM NO. X160 X162 X20 X21
CERT. NO.

Graver Tank & Mfg Co.
PO# 60840NX91
SO# DN-1072-A7
Ch# H-83366
Item# X160

TEST	TRANSVERSE	PHYSICAL PROPERTIES	
TENSILE, PSI	75,000 MIN.	85,000	
YIELD, PSI	30,000 MIN.	43,200	
ELONG, % IN 2 IN.	20 MIN.	52	
FLATTENING		OK	

JUN 14 1977
S.W.E.C. PQC INSPECTED 83

PARTS WERE HYDROSTATICALLY TESTED AT 882 P.S.I. FOR A MINIMUM OF 5 SECONDS. NO DEFECTS NOTED.

Parts were Ultrasonically tested to a 5% notch in accordance with the 1974 Edition, of ASME Code Section III, Para. NB 2552 and were accepted.

Material was heated above 1950°F for 1/2 hour and rapidly cooled, by forced air.

We hereby certify to the chemical analysis and physical tests reported herein.

Supervisor of Metallurgy G. G. Weart [signature]

Sworn to before me this 28th day of May 1976. Patricia Bronzino, Notary Public, State of New York, Qualified in Erie County, My Commission expires Ma[illegible]

TRANSMITTAL NO. 00066

INFORMATION ONLY

Patricia Bronzino

NIAGARA MOHAWK
NINE MILE POINT, UNIT 2
J. O. 12177, NMP2-P283B
SHIPMENT No. 2
DOCUMENTATION

CAPITOL PIPE WORLD-WIDE

Capitol
PIPE & STEEL PRODUCTS, CO.
Division of FAS International, Inc.
ALLOY PIPING MATERIALS FOR HIGH TEMPERATURE AND LOW TEMPERATURE APPLICATIONS

301 CITY LINE AVENUE • AREA CODE 215 • TE 9-4300
BALA-CYNWYD, PENNSYLVANIA 19004

CAPITOL PIPE CERTIFICATE OF COMPLIANCE

ASME QUALITY SYSTEM CERTIFICATE (MATERIALS) NUMBER N-936-2

EXPIRATION DATE: MAY 6, 1978

GRAVER TANK & MFG. CO.
EAST CHICAGO, IN
ORDER No. 60840NX91
ITEM No. X160, X152, X220, X219
CERT. No. 1

MATERIAL: 12" STD WT ASME SA-312 TP-304.

MILL HEAT NO: 3-648 C.W. CODE# 2836-21-1

MANUFACTURER: CURTISS-WRIGHT CORP.

This Certification affirms that the content of the attached report (s) is correct and accurate and that all test results and operations performed are in compliance with the below listed Specifications:

1) ASME Section II 1971 Edition including addenda through Summer 1973 for SA-312 TP-304.

2) ASME Section III 1971 Edition including addenda through Summer 1973 for Class 1 Materials. per NB-2000

X160

INFORMATION ONLY

JUN 14 1977
S.W.E.C. PQC INSPECTED 83

REFERENCE:
GRAVER TANK PO# 60840NX91
CAPITOL SO# DN-1072-A7
ITEM# X-160

TRANSMITTAL NO. 00066

Brian Kirkpatrick
QUALITY ASSURANCE

Murray Herbert Feldman

NIAGARA MOHAWK
NINE MILE POINT, UNIT 2
J. O. 12177, NMP2-P283B
SHIPMENT No. 2

☒ ASTM A-312 ☒ ASME SA-3
☐ ASTM A-376 ☐ ASME SA-3
☒ CW 1401-F

Extrusion Facility

Curtiss-Wright Corporation

12" STD TP 304/304

60 Grider Street • Buffalo, New York 14215 DATE Nov. 26, 1976

CUSTOMER CAPITOL PIPE & STEEL PRODUCTS, INC. CUSTOMER P.O. 78047-00

PART NUMBER 12.750" O.D. X .375" A.W. (Std) SALES ORDER NO. 2837

PART NAME PRESSURE TUBING SPECIFICATIONS Type 304/304

	REQUIRED	MILL HEAT NO. 3-648 C.W. Code 2837	MILL HEAT NO. C.W. Code
ELEMENT		HEAT LOT NO. 051176	HEAT LOT NO.
CARBON	0.04 - 0.08	Mill 0.065	Check 0.065
MANGANESE	2.00 MAX.	1.62	1.63
SILICON	0.75 MAX.	0.52	0.49
CHROMIUM	18.0-20.0	18.17	18.20
NICKEL	8.00-11.00	9.32	9.42
PHOSPHORUS	0.040 MAX.	0.022	0.021
SULPHUR	0.030 MAX.	0.011	0.010
TEST	TRANSVERSE	PHYSICAL PROPERTIES	
TENSILE, PSI	75,000 MIN.	85,000	
YIELD, PSI	30,000 MIN.	43,200	
ELONG. % IN 2 IN.	20 MIN.	52	
FLATTENING		OK	

This certificate covers the following pieces

2836-20-1

GRAVER TANK & MFG. CO. EAST CHICAGO, IND. ORDER No. 60840NX91 ITEM No. X160 CERT. No.

Gruver Tank & Mfg Co.
PO# 60840NX91
SO# DN-1072-A7
Ch# H-83366
Item# X160

X160

INFORMATION ONLY

PARTS WERE HYDROSTATICALLY TESTED AT 882 P.S.I. FOR A MINIMUM OF 5 SECONDS. NO DEFECTS NOTED.

Parts were Ultrasonically tested to a 5% Notch in accordance with the 1974 Edition, of ASME Code Section-III, Para. NB 2552 and were accepted.

Material was heated above 1950°F for 1/2 hour and rapidly cooled, by forced air.

We hereby certify to the chemical analysis and physical tests reported herein.

Supervisor of Metallurgy G.C. Wert G.C. Wert

Sworn to before me this 27th day of May 1976. Patricia Bronzino, Notary Public, State of New York, Qualified in Erie County, My Commission expires March 30, 1978.

Patricia Bronzino

JUN 14 1977 S.W.E.C. QC INSPECTED 83

TRANSMITTAL NO. 00066

NIAGARA MOHAWK
NINE MILE POINT, UNIT 2
J. O. 12177, NMP2-P283B
SHIPMENT No. 2

Capitol
PIPE & STEEL PRODUCTS, CO.
Division of FAS International, Inc
ALLOY PIPING MATERIALS FOR HIGH TEMPERATURE AND LOW TEMPERATURE APPLICATIONS
301 CITY LINE AVENUE • AREA CODE 215 • TE 9-4300
BALA-CYNWYD, PENNSYLVANIA 19004

CAPITOL PIPE CERTIFICATE OF COMPLIANCE

ASME QUALITY SYSTEM CERTIFICATE (MATERIALS) NUMBER N-936-2

EXPIRATION DATE: MAY 6, 1978

MATERIAL: 12" STD WT ASME SA-312 TP-304.

MILL HEAT NO: 3-648 C.W. CODE# 2836-20-1

MANUFACTURER: CURTISS-WRIGHT CORP.

JUN 14 1977
S. W. E. C. PQC INSPECTED 83

GRAVER TANK & MFG. CO. INC.
EAST CHICAGO, IN
ORDER No. 60840NX91
ITEM No. X160
CERT. No.

This Certification affirms that the content of the attached report (s) is correct and accurate and that all test results and operations performed are in compliance with the below listed Specifications:

1) ASME Section II 1971 Edition including addenda through Summer 1973 for SA-312 TP-304.

2) ASME Section III 1971 Edition including addenda through Summer 1973 for Class 1 Materials. per NB-2000.

INFORMATION ONLY

REFERENCE:
GRAVER TANK PO# 60840NX91
CAPITOL SO# DN-1072-A7
ITEM# X-160

NIAGARA MOHAWK
NINE MILE POINT, UNIT 2
J. O. 12177, NMP2-P283B
SHIPMENT No. 2
X160

Sworn to and subscribed before me this ..... day of ..... 19...

Murray Herbert Feldman

Brian Kirkpatrick
QUALITY ASSURANCE

TRANSMITTAL NO. 00068

CAPITOL PIPE WORLD-WIDE

Capitol

PIPE & STEEL PRODUCTS, CO.

Division of FAS International, Inc.

ALLOY PIPING MATERIALS FOR HIGH TEMPERATURE AND LOW TEMPERATURE APPLICATIONS

301 CITY LINE AVENUE • AREA CODE 215 • TE 9-[illegible]
BALA-CYNWYD, PENNSYLVANIA 190[illegible]

INFORMATION ONLY

GRAVER TANK & MFG. CO.
EAST CHICAGO, IN
ORDER No. 60840X50
ITEM No. X133
CERT. No. [illegible]

CAPITOL PIPE CERTIFICATE OF COMPLIANCE

ASME QUALITY SYSTEM CERTIFICATE (MATERIALS) NUMBER N-936

EXPIRATION DATE: JANUARY 6, 1978

MATERIAL: 28" OD X .750W ASME SA-333 GR-6.

HEAT NO: L3485

MANUFACTURER: CAMERON IRON WORKS INC.

JUN 14 1977
S. W. E. C. PQC INSPECTED 83

This Certification affirms that the content of the attached report (s) is correct and accurate and that all test results and operations performed are in compliance with the below listed Specifications:

1) ASME Code Section II 1971 Edition including addenda through Summer 1973, for ASME SA-333 Grade 6 Materials.

2) ASME Code Section III 1971 Edition including addenda through Summer 1973 NE-2000, Class MC which was examined in accordance with Class 1 Requirements in NB-2000.

NIAGARA MOHAWK
NINE MILE POINT, UNIT 2
J. O. 12177, NMP2-P283B
SHIPMENT No. 2

Sworn to and subscribed before this ..... day of ..... 19...

REFERENCE:
GRAVER TANK & MFG PO# 60840-X50
CAPITOL SO# DN-5566-B
ITEM# 1
TAG: X-133

TRANSMITTAL NO. 00066

Murray Herbert Feldman

QUALITY ASSURANCE

My Commission Expires [illegible]

POWER • REFINING • PETROCHEMICAL • SHIPBUILDING • CRYOGENIC

CERTIFICATE OF TEST ON PIPE MATERIAL * SUPPLEMENTARY REPORT

2/17/77

Penetration 2-14 SLEEVE

Cameron

IRON WORKS, INC.

P. O. BOX 1212
HOUSTON, TEXAS 770

SOLD TO

Graver Tank & Mfg
PO-60840N-X50
SO# DN-5566-B
Item# 1
Tag- X-133

...TS, INC.

INFORMATION ONLY

Date 25 Jan. 1977

Customer Order No.	C.I.W. Sales Order No.	Specification
D-83129-30N	F-5847	ASME SA333 GR. 6 WITH ASME SEC. III, CLASS MC 1971 EDITION THRU SUMMER 1973 ADDENDA.

Description of Material O.D. 28.000" x I.D. _____ x WALL .750" A.W.

C.I.W. Part No. 86-5847-280-265

ASME QUALITY SYSTEM CERTIFICATE (MATERIALS) NO. N-1261 EXPIRES 10-27-78.

NIAGARA MOHAWK
NINE MILE POINT, UNIT 2
J. O. 12177, NMP2-P283B
SHIPMENT No. 2
DOCUMENTATION

Heat No.	Location or Serial No.	CHEMICAL ANALYSIS C	MN	P	S	SI	CR	NI	MO
L 3485		.17	1.22	.012	.016	.30			

* Pipe has been 100% ultrasonically tested in accordance with sub-section NB 2550 of ASME Sec. III Class I 1974 Edition Thru Summer '76 Addenda and found acceptable.

Serial No.	Heat No.	Test Loc.	MECHANICAL PROPERTIES Tensile PSI	.2% Offset Yield PSI	% Elong. In.	% Red. Area	Macro Etch	Bend Test	Flattening Test	Bar Size	Test Lot#
7	L 3485	Trans.	76,600	50,100	31.0	64.6			OK	.252	#574

Forg.Ser.#	Test Lot#
#27584X	574
27584Y	"
27584Z	"
27585W	"
27585X	"
27585Y	"
27585Z	"

Charpy V-Notch Impacts per SA333 at -50°F.:

Ft. Lbs.
77.0
80.0
57.0

Charpy V-Notch Impacts per Section III at -10°F.

Ft.Lbs.	Lat.Exp.	D/F%
92.0	73 MILS	53%
155.0	86	100
117.0	80	57

JUN 14 1977
S.W.E.C. PQC INSPECTED 83

GRAVER TANK & MFG. CO.
EAST CHICAGO, IN.
ORDER No. 60840X50
ITEM No. X133

All specimens removed in axial direction with radial notched.

Hydrostatic Test Each length of pipe hydrostatically tested at 1500 psi for 5 sec. and found accepta

Heat Treatment:

1600°F., held 1 hr.at temp. Air Cooled.

TRANSMITTAL NO. 00066

Subscribed and Sworn to before me this 25th Day of Jan. 1977

Notary Public

Notary Public ... County, Texas

I certify these tests to be correct as contained in the recor of the company.

Metallurgical Representative H. O. WRIGHT

SWEPCO TUBE CORPORATION
ONE CLIFTON BOULEVARD
CLIFTON, NEW JERSEY

- - - - -

PHOTOMICROGRAPH REPORT

INFORMATION ONLY

Swepco No.	Item No.	Type	Q.C. Lab No.
M-1069-7	4 (X159)	T-304	2917

Size: 20" O.D. x 3/8" W x 79"

NIAGARA MOHAWK
~~NINE MILE POINT, UNIT 2~~
J. O. 12177, NMP2-P283B
~~SHIPMENT No.~~ 2
DOCUMENTATION

Heat No. F 60756

Sensitized	Temperature	Time at Temp.	Cooling
No			

Annealing Date	Annealing Temp.	Time at Temp.
19	1950°-2000°F	30 min.

COOLING --- Air Cooled ☐ Water Quenched ☒ Rapid Air Cool ☐

EXPOSURE TIME --- 1/15 sec.

INTENSITY --- ~~Normal~~ ☐ High ☒

TRANSMITTAL 60066

ETCHANT --- Oxalic Acid ☒

MAGNIFICATION --- 100X ☐ 200X ☒ 400X ☐

GRAVER TANK & MFG. CO.
EAST CHICAGO, IN
ORDER No. 608400 X110
ITEM No. X159

1 SAMPLES TESTED

THESE TEST REPORTS APPLY TO
Your Purchase Order 608400 X110
Our Shipping # 160360
CHICAGO TUBE & IRON CO.

☒ Step Structure - Acceptable - ASTM A262
☐ Dual Structure - Acceptable - ASTM A262
☐ Ditch Structure - Not Acceptable - ASTM A262

REMARKS:

Signed by: [illegible]

TEST REPORT

SWEPCO TUBE CORPORATION

Swepco

ONE CLIFTON BOULEVARD • CLIFTON, NEW JERSEY 07015

INFORMATION ONLY

DATE: Apr 22,1

SOLD TO: Chicago Tube & Iron Co.
2531 W 48th St.
Chicago, IL

SHIP TO: Graver Tank & Mfg
4809 Tod Ave.
E. Chicago, IN

(201) 778-3000
TWX NO. 710-989-7
TELEX NO. 133321

SWEPCO NUMBER	DISTRIBUTOR P.O. NUMBER	CUSTOMER P.O. NUMBER
m-1069-7	40485-DQA	

PRODUCT DESCRIPTION:
SWEPCO SP GRADE WELDED PIPE, T-304, TO ASME SA-312 & ASME SECT III, CLASS 1971 EDITION INCLUDING 1973 SUMMER ADDENDA, ENTIRE VOLUME UT INSPECTED PE NB2550, WELD XRAYED 100% PER NB2553, ACCEPTANCE PER NB5320, OXALIC ETCH TESTED PER ASTM A-262, PRACTICE A, SUPPLEMENTAL TEST PER S4 OF ASME SA-31 REQUIRED, ANNEALED, WATER QUENCHED, AND PICKLED

BASE METAL HEAT NO. F 60756

WELD WIRE HEAT NO.
A.
B.

HEAT TREATMENT
SOLUTION ANNEALED @ 1950°-2000 °F
FOR 30 MINUTES MINIMUM AND
RAPID AIR COOLED ☐
WATER QUENCHED ☒

SIZE: 20" O.D. X 3/8" W X 7'9"
SWEPCO PC. NOS. 1 & 2
ITEM - X159

AUG 23 1977
S.W.E.C. PQC INSPECTED 83

CHEMICAL ANALYSIS

	C	Mn.	P	S	Si	Ni	Cr	Mo	Co	Cu	Ti	Cl
CHEMICAL REQUIREMENTS - PLATE	.08	2.00	.040	.030	.75	8.00-11.0	18.0-20.0					
HEAT ANALYSIS	.043	1.33	.016	.007	.57	8.18	18.08	.19	.24	.32		
PRODUCT ANALYSIS - BASE METAL	NIAGARA MOHAWK											
PRODUCT ANALYSIS - WELD DEPOSIT	NINE MILE POINT, UNIT 2											
CHEMICAL REQUIREMENTS Spec. Weld Wire	J. O. 12177, NMP2-P288B											
A. HEAT ANALYSIS - WELD WIRE	SHIPMENT No. 2											
B. HEAT ANALYSIS - WELD WIRE	DOCUMENTATION											
PRODUCT ANALYSIS-UNDILUTED WIRE												

GRAVER TANK & MFG. CO.
EAST CHICAGO, IN
ORDER No. 60840N X110
ITEM No. X159

MECHANICAL TESTS

	HARDNESS	YIELD P.S.I.	TENSILE P.S.I.	% ELONG. IN 2"	FACE BEND	ROOT BEND	REV. BEND	FLAT
MECHANICAL TEST REQUIREMENTS		30000	75000	25.0				
BASE METAL	HB171	41500	94300	56.0				
PIPE WELD-TRANSVERSE		41800	79600	58.0				ok
PIPE WELD-TRANSVERSE								
PIPE WELD-TRANSVERSE								
PIPE WELD-TRANSVERSE								
PIPE WELD-TRANSVERSE								
PIPE WELD-TRANSVERSE								

THESE TEST REPORTS APPLY TO
Your Purchase Order 60840N X110
Our Shipping # 160360
CHICAGO TUBE & IRON CO.

PRODUCT DESCRIPTION:

SWEPCO SP GRADE WELDED PIPE, T-304, TO ASME SA-312 & ASME SECT III, CLASS 1 1971 EDITION INCLUDING 1973 SUMMER ADDENDA, ENTIRE VOLUME UT INSPECTED PER NB2550, WELD XRAYED 100% PER NB2553, ACCEPTANCE PER NB5320, OXALIC ETCH TESTED PER ASTM A-262, PRACTICE A, SUPPLEMENTAL TEST PER S4 OF ASME SA-312 REQUIRED, ANNEALED, WATER QUENCHED, AND PICKLED

BASE METAL HEAT NO.	HEAT TREATMENT	SIZE: 20" O.D. X 3/8" W X 7'9"
F 60756	SOLUTION ANNEALED @ 1950° - 2000 °F FOR 30 MINUTES MINIMUM AND	SWEPCO PC. NOS. 1 & 2
WELD WIRE HEAT NO. A. B.	RAPID AIR COOLED ☐ WATER QUENCHED ☒	ITEM - X159

AUG 23 1977 S.W.E.C. PQC INSPECTED 83

INFORMATION ONLY

CHEMICAL ANALYSIS

		Mn.	P	S	Si	Ni	Cr	Mo	Co	Cu	Ti	Cb &
CHEMICAL REQUIREMENTS - PLATE	.08	2.00	.040	.030	.75	8.00-11.0	18.0-20.0					
HEAT ANALYSIS	.043	1.33	.016	.007	.57	8.18	18.08	.19	.24	.32		
PRODUCT ANALYSIS - BASE METAL	NIAGARA MOHAWK											
PRODUCT ANALYSIS - WELD DEPOSIT	NINE MILE POINT, UNIT 2											
CHEMICAL REQUIREMENTS Spec. Weld Wire	J. O. 12177, NMP2-P288B											
A. HEAT ANALYSIS - WELD WIRE	SHIPMENT No. 2											
B. HEAT ANALYSIS - WELD WIRE	DOCUMENTATION											
PRODUCT ANALYSIS-UNDILUTED WIRE												

GRAVER TANK & MFG. CO. EAST CHICAGO, IN ORDER No. 60840N X110 ITEM No. X159 CERT. No.

MECHANICAL TESTS

	HARDNESS	YIELD P.S.I.	TENSILE P.S.I.	% ELONG. IN 2"	FACE BEND	ROOT BEND	REV. BEND	FLAT
MECHANICAL TEST REQUIREMENTS		30000	75000	25.0				
BASE METAL	HB171	41500	94300	56.0				
PIPE WELD-TRANSVERSE		41800	79600	58.0				ok
PIPE WELD-TRANSVERSE								
PIPE WELD-TRANSVERSE	THESE TEST REPORTS APPLY TO							
PIPE WELD-TRANSVERSE	Your Purchase Order 60840N X110							
PIPE WELD-TRANSVERSE	Our Shipping # 160360							
PIPE WELD-TRANSVERSE	CHICAGO TUBE & IRON CO.							
PIPE WELD-TRANSVERSE								

EXAMINATIONS

	RADIOGRAPHY	ULTRASONIC	LIQUID PEN.	CORROSION	IMPACT	HYDRO.	P.S.I.
APPLICABLE PROCEDURES	ASME-SEC III PAR. NB 5320	ASME-SEC. III PAR. NB 2550		ASTM-A-262 PRAC. A		ASTM A-312	56
RE...	ACCEPTED	ATTACHMENT		ATTACHMENT			OK

REMA...

Supplemental test S-4 - ok

NOTARY PUBLIC OF NEW JERSEY
My Commission Expires March 28, 1978

This certification affirms that above CMT is correct and accurate including all test results and operations in compliance with the material specification and customer requirements.

SWEPCO TUBE CORPORATION

...worn to and subscribed to before me

Certification No. N1419

SPECTRUM LABORATORIES INC.

524 PELHAM AVE. P. O. BOX 565
PISCATAWAY, NEW JERSEY 08854

(201) 752-1400

CORROSION TESTING
PHYSICAL TESTING
MECHANICAL TESTING
FIELD TESTING
X-RAY

MASS SPECTRO
CHEMICAL ANAL
ULTRASONI
INSPECTION

CUSTOMER

SWEPCO TUBE CORPORATION
One Clifton Boulevard
Clifton, New Jersey 07015

Attention Mr. V. Battistuz

REPORT of TEST

Laboratory No. 25415

PURCHASE ORDER NO.	DATE	MATERIAL	IDENTIFICATION
1069-7W	6-16-77	304 S.S.	14 pcs. as noted below

FILM OR PART IDENTIFICATION	RADIOGRAPH OR PART NUMBER	ACCEPT	REJECT	No Significant Defect	Gas Holes	Porosity	Shrinkage Cavity	Shrinkage Sponge	Foreign Material	Tungsten	Segregation	Cold Shots	Surface Irregularities	Misruns	Micro Shrinkage	Cracks	Lack of Penetration	Lack of Fusion	Burn Through	Slag Inclusion	Gas Porosity	Undercutting	Remarks
2 pcs.	18"	S/40	x	7'-9"																			
3 pcs.	24"	S/80	x	7'-9"																			
1 pc.	24"	S/80	x	7'-0"																			
2 pcs.	20"	S/40	x	7'-9"																			
1 pc.	14"	S/40	x	7'-9"																			
5 pcs.	12"	S/80	x	7'-6"																			

TRANSMITTAL No. 00066

NIAGARA MOHAWK
NINE MILE POINT, UNIT 2
J. O. 12177, NMP2-P288B
SHIPMENT No. 2
DOCUMENTATION

GRAVER TANK & MFG. CO.
EAST CHICAGO, IN
ORDER No. 608 40N X 110
ITEM No. 4159
CERT No. 40253

INFORMATION ONLY

AUG 23 1977
S.W.E.C. PQC INSPECTED 83

THESE TEST REPORTS APPLY TO
Your Purchase Order 60840N: X 110
Our Shipping # 160360
CHICAGO TUBE & IRON CO

Inspection System complies with MIL-I-45208A and ASTM E-548.

TYPE	QUANTITY IN ORDER	QUANTITY TESTED	QUANTITY SERVICEABLE	SPECIFICATION
X-RAY				
MAGNETIC PARTICLE				
DYE PENETRANT				
Ultrasonic	14	14	14	NB-2550 Spectrum QC-58 6E

DIRECTOR

Area Code 312 LAfayette 8-1441

CHICAGO TUBE AND IRON COMPANY

2531 WEST 48th STREET • CHICAGO ILLINOIS 60632

July 12, 1977

INFORMATION ONLY

Transmittal No. 00066

AUG 23 1977

S. W. E. C. PQC INSPECTED 83

Graver Tank and Manufacturing Co.
4809 Tod Avenue
East Chicago, Indiana 46312

Attention: Ms. Kathy Knoche

Re: Order #60840N X110

CERTIFICATE OF COMPLIANCE

1 pc Item X175 - 14" OD x .375 Wall x 7'9" long ASME Boiler & Pressure Vessel Code Section II SA-312 Type 304. Made in accordance with ASME Section III Boiler & Pressure Vessel Code Class 1 (MC) all necessary tests were performed.

2 pcs Item X157 - 18" OD x .375 Wall x 7'9" Long Ditto

2 pcs Item X159 - 20" OD x .375 Wall x 7'9" long Ditto

3 pcs Item X156 - 24" OD x.500 Wall x 7'9" long Ditto

5 pcs Item X227 - 12-3/4 OD x .500 Wall x 7'6" long Ditto

GRAVER TANK & MFG. CO.
EAST CHICAGO, IN
ORDER No. 60840N X110
ITEM No. X159
CERT. No. [redacted]

UT Test performed on entire volume per NB2550
Weld X-Rayed 100% per NB2553 acceptance NB5320
Oxolic Etch Test performed per ASTM A-262 Practice A
Supplemental Test S-4 of SA-312 performed.

Certified Material Test Reports have been mailed.

NIAGARA MOHAWK
NINE MILE POINT, UNIT 2
J. O. 12177, NMP2-P283B
SHIPMENT No. 2
DOCUMENTATION

Very truly yours,

CHICAGO TUBE & IRON COMPANY

William J. Martin

William J. Martin
Quality Assurance Manager

WJM/gs

SWEPCO TUBE CORPORATION
ONE CLIFTON BOULEVARD
CLIFTON, NEW JERSEY

- - - - -

PHOTOMICROGRAPH REPORT

INFORMATION ONLY

Swepco No.	Item No.	Type	Q.C. Lab No.
M-1069-7	4 (#159)	T-304	2917

Size: 20" O.D. x 3/8" W x 79"

NIAGARA MOHAWK
~~NINE MILE POINT, UNIT 2~~
J. O. 12177, NMP2-P283B
~~SHIPMENT No.~~ 2
DOCUMENTATION

Heat No.: F 60756

TRANSMITTAL NO. 00066

Sensitized	Temperature	Time at Temp.	Cooling
No			

Annealing Date	Annealing Temp.	Time at Temp.
19	1950°-2000°F	30 min.

COOLING --- Air Cooled ☐ Water Quenched ☒ Rapid Air Cool ☐

EXPOSURE TIME --- 1/15 sec.

INTENSITY --- Normal ☒ High ☒

ETCHANT --- Oxalic Acid ☒

MAGNIFICATION --- 100X ☐ 200X ☒ 400X ☐

W. F. C. PQC INSPECTED AUG 25 1977 83

CRAVER TANK & MFG. CO.
EAST CHICAGO, IN
ORDER No. 608 40 X110
ITEM No. 4/159

1 SAMPLES TESTED

THESE TEST REPORTS APPLY TO
Your Purchase Order 60840 X110
Our Shipping # 160360
CHICAGO TUBE & IRON CO.

☒ Step Structure - Acceptable - ASTM A262
☐ Dual Structure - Acceptable - ASTM A262
☐ Ditch Structure - Not Acceptable - ASTM A262

REMARKS:

DEC.04 '84 11:39 NMPC 9 MILE POINT #2 LYCOMING NY

CSH REDUCER INLET P.04

QUYON ALLOYS, INC.

TUBULAR PRODUCTS FOR THE ENERGY INDUSTRIES

950 South Fourth Street, Harrison, N.J. 07029

(201) 485-5050

X 3001834

MATERIAL CERTIFICATION

Subject: Niagara Mohawk Poer Corp.
Stone & Webster Engr. Corp., Agent
Nine Mile Point Nuclear Stat. - Unit 2
J.D. #12187
P.O. #NMP2-FPO- 17922

Description: SMLS ASME SA-234 WPB, Buttweld

Item 2 12" x 10" S/100 Conc. Reducer
(Customs Alloy Heat Code N98)

Certification: This certifies to the best of our knowledge and belief, that the piping material described herein is in accordance with the specification and Section III, Class 2 of the A.S.M.E. Boiler and Pressure Vessel Code, 1974 Edition, through NO Addenda, and that all requirements of the purchase order have been fulfilled. Material has been processed in accordance with our Identification and Verification program. And Stone & Webster specification NMP2-P307K and Stone & Webster C/A Category I.

Attachments:

Gerald F. Caffrey
Asst. Q.A. Manager

Date 5/22/83

Quality Systems Certifica
(Materials) # CSC-205

Expiration Date: 1-6-84

cc: Job File
Q.A. File

00515

X3001834 Item Code: N98 /

CUSTOM ALLOY CORPORATION

ROUTE 513, CALIFON, N. J. 07830

PRODUCT DESCRIPTION		CUSTOMER DATA	
Item	Concentric Reducer	Name	Guyon Alloys, Inc.
Size	12"x10" NPS	P.O. No.	A-58590-N
Wall	S/100 (.844 x .719)	Tag No.	PO NMP2-FPO-17922
Grade	WP-B Smls.	Job No.	N-23722-2

Specifications: ASME SA234 Section III Class 2, 1974 Ed. No Addenda

CHEMICAL ANALYSIS

	C	Mn	P	S	Si	Cr	Ni	Mo	Cb		
Ladle	.24	.93	.005	.025	.27						
Check											

MECHANICAL PROPERTIES

Yield Point PSI	Tensile Strength PSI	Elong. in 2" %	Red of Area %		Starting Material Control No.	Starting Material conforms to the chemical and tensile requirements of
49,500	76,000	44.0			CAC 18679	ASME SA-106

MILL HEAT NO: L81058 United States Steel Corp.

REMARKS:

(A) Heat Treatment: Normalized at 1650°F ± 25°F, held at temp. for 1 hr/inch, then cooled in still air.

(B) Hardness: BHN 146

(C) Cleaning Procedure: ANSI N45.2.1 Class D-77-CL-3 Rev.2

(D) Packaging Procedure: ANSI N45.2.2 Level D 77-PK-1 Rev.0

(E) We certify that this order is in compliance with 10 CFR-21.

(F) We certify that this order is in compliance with 10CFR-50 App

(G) Material was produced in accordance with our Quality Program dated 4/1/81 Rev.3 which was audited and approved by Guyon Alloys on 7/28/82 as conforming to ASME Sec. III NCA-3800.

NANCY H. SHERIDAN
NOTARY PUBLIC OF NEW JERSEY
My Commission Expires May 13, 1987
County of Hunterdon

Sworn and subscribed before me this 19 day of May 1983
NOTARY PUBLIC OF NEW JERSEY
My Commission Expires 5-13-87

Q.A. APPROVED
BY [illegible] DATE [illegible]
GUYON ALLOYS, INC.

SF051683-3

Acceptance and Approval by Customer Representative/Inspector

I certify the above product has been manufactured in accordance with all applicable parts of the subject order and specifications.

CUSTOM ALLOY CORPORATION
Authorized Signature

TUBULAR PRODUCTS FOR THE ENERGY INDUSTRIES
850 South Fourth Street, Harrison, N.J. 07029
(201) [illegible]

K300193-1

CSH REDUCER OUTLET

MATERIAL CERTIFICATION

Subject: Niagara Mohawk Power Corp.
Stone & Webster Engineering Corp., Agent
Nine Mile Point Nuclear Station. - Unit #2
J.O.# 12187
P.O.# NMP2-FPO-17922

Description: SMLS ASME SA-234 GR.WPB

Item 3 12" x 10" S/Std Conc. Reducers
(CAC Heat Code 062)

Certification: This certifies, to the best of our knowledge and belief, that the piping material described herein is in accordance with the specification and Section III, Class 2 of the ASME Boiler and Pressure Vessel Code, 1974 Edition, through No Addenda, and that all requirements of the purchase order have been fulfilled. Material has been processed in accordance with our Identification and Verification program, and Stone & Webster Specification NMP2-P307K and Stone & Webster Q/A Category I.

Attachments: CMTR(1)

Kathleen Kijesky
Quality Assurance

Date: 6-1-83

KK: cf

Quality Systems Certificate
(Materials) # QSC-205

Expiration Date: 1-6-84

cc: Job File
Q.A. File

09515

CUSTOM ALLOY CORPORATION

ROUTE 513, CALIFON, N. J. 07830

PRODUCT DESCRIPTION	CUSTOMER DATA
Item Concentric Reducer	Name Guyon Alloys, Inc.
Size 12" x 10" NPS	P.O. No. A-58590-N
Wall S/Std. (.375) x (.365)	Tag No. PO# NMP2-FPO-17922
Grade WP-B Seamless	Job No. N-23722-3

Specifications: ASME SA-234, Sect. III, Class 2, 1974 Ed. No Addenda

Stone & Webster Spec. NMP2-P307K

NIAGARA MOHAWK POWER CORP
STONE & WEBSTER ENGR CORP
NINE MILE POINT NUCLEAR STA
UNIT 2 - JO#12187

CHEMICAL ANALYSIS

	C	Mn	P	S	Si	Cr	Ni	Mo	Cb		
Ladle	.22	.67	.008	.012	.190						
Check											

MECHANICAL PROPERTIES

Yield Point PSI	Tensile Strength PSI	Elong. in 2" %	Red of Area %		Starting Material Control No.	Starting Material conforms to the chem tensile requirements
41,100	71,700	36.0			CAC 18680	ASME SA-1[illegible]

MILL HEAT NO: N53833

REMARKS: (A) Heat Treatment: Normalized at 1650oF ± 25oF, held at temp. for 1 hr/inch, then cooled in still air.

(B) Hardness: BHN 118

(C) Cleaning Procedure: ANSI N45.2.1 Class D 77-CL-3, Rev. 2

(D) Packaging Procedure: ANSI N45.2.2 Level D 77-PK-1, Rev. [illegible]

(E) We Certify that this order is in compliance with 10 CFR-[illegible]

(G) Material was produced in accordance with 10CFR-[illegible] dated 4/1/81, Rev. 3 whcih was audited and approved by G. Alloys on 7-28-82 as conforming to ASME Sec. III NCA-3[illegible]

JANET P. SHERWIN
State of New Jersey
NOTARY PUBLIC OF NEW JERSEY
My Commission Expires May 13, 1987

BY [illegible] 6-1-83

Sworn and subscribed before me this 25 day of May 1983

[illegible]
NOTARY PUBLIC OF NEW JERSEY
My Commission Expires 5-13-87

09515

5F051683-3 5/25/83

Acceptance and Approval by Customer Representative/Inspector

I certify the above product has been [illegible] accordance with all applicable [illegible] order and specifications.

[illegible]
CUSTOM ALLOY CORPORATION
Authorized Signature

0 5 4 7 1 0 0

2CSH*MOV105

NINE MILE II

205-AG-102

5219-03-1-7

GENERAL ELECTRIC

MPL E22 F012

ANCHOR/DARLING VALVE COMPANY
4" 900# GATE

P800A
MPL #E22-F012
S/N #

P800A/QASRB/E22F012

0 3 4 7 1

NINE MILE-2

8279041700 09

QUALITY ASSURANCE RECORDS BINDER

4" 900# GATE VALVE

MPL: E22F012 PO: AG102

S/N: 5219-03-1-7/ 2N737

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CERTIFICATE OF COMPLIANCE
MANUFACTURERS' CODE DATA REPORT
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DEVIATION DISPOSITION REQUESTS

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WELDING DEFECT RECORD (IF REQUIRED)
PLASMA HARDFACING RECORD
SEAT RING WELDING RECORD
PWHT CHART (IF REQUIRED)
MT REPORT
RT READER SHEETS
PT MACHINED SURFACES
MINIMUM WALL REPORT

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CERTIFIED MATERIAL TEST REPORT
DEFECT CHART & PT OF EXCAVATION (IF REQUIRED)
WELDING DEFECT RECORD (IF REQUIRED)
HARDFACING RECORD
PWHT CHART (IF REQUIRED)
PT MACHINED SURFACES
MINIMUM WALL REPORT

SECTION 4: VALVE DISC

CERTIFIED MATERIAL TEST REPORT
DEFECT CHART & PT EXCAVATIONS (IF REQUIRED)
WELDING DEFECT RECORD (IF REQUIRED)
HARDFACING RECORD
PWHT CHART (IF REQUIRED)
PT MACHINED SURFACES
MINIMUM WALL REPORT

J. O. NO. 12187

CONTROL LEVEL 2

120802

SECTION 5: STUDS AND NUTS

STUDS

CERTIFIED MATERIAL TEST REPORT
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CONE STRIPPING RESULTS
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SECTION 6: WELD FILLER METAL

CERTIFIED WELD FILLER METAL TEST REPORTS

0 5 1 3 6 0 0 1 7

PREPARED BY: Ray E. Miller
GE QA RECORDS SPECIALIST

DATE: February 8, 1977

K.D. Jakabovics 2/9/77
Reviewed By: Date:
K. D. Jakabovics Quality Control Engineer
General Electric Co. - BWR Projects Dept.

0 5 4 / 1 1 1 1

1 0 0 0 0 4

GENERAL ELECTRIC PQC NO. M 603

NUCLEAR ENERGY DIVISION

PRODUCT QUALITY CERTIFICATION

CUSTOMER/PROJECT		PRODUCT NAME	MPL NO.
NINE MILE II		4" 900# GATE VALVE H/O	B22P012
G. E. PURCHASE ORDER NO.	REV	PURCHASE ORDER ITEM(S) NO.	QUANTITY
205-AG-102	11	03	1

SUPPLIER'S CERTIFICATION

THIS IS TO CERTIFY THAT THE PRODUCTS IDENTIFIED HEREIN HAVE BEEN MANUFACTURED UNDER A CONTROLLED QUALITY ASSURANCE PROGRAM AND ARE IN CONFORMANCE WITH THE PROCUREMENT QUALITY REQUIREMENTS INCLUDING APPLICABLE CODES, STANDARDS AND SPECIFICATIONS AS IDENTIFIED IN THE ABOVE-REFERENCED DOCUMENTS; UNLESS NOTED BELOW. ANY SUPPORTING DOCUMENTATION WILL BE FORWARDED OR RETAINED IN ACCORDANCE WITH PURCHASE ORDER REQUIREMENTS.

SIGNED: [illegible] DATE: OCTOBER 15, 1976

TITLE: QUALITY ASSURANCE ENGINEER ORGANIZATION: ANCHOR/DARLING VALVE C

GE QUALITY ASSURANCE CERTIFICATION

THIS IS TO CERTIFY THAT EVIDENCE SUPPORTING THE ABOVE SUPPLIER'S CERTIFICATION STATEMENT HAS BEEN REVIEWED AND NO PRODUCT NONCOMFORMANCES FROM PROCUREMENT QUALITY REQUIREMENTS HAVE BEEN FOUND UNLESS NOTED BELOW.

SIGNED: [illegible] DATE: 10-15-76

TITLE: GE QA REPRESENTATIVE ORGANIZATION: BWRPD

NONCONFORMANCES FROM PROCUREMENT QUALITY REQUIREMENTS:

REMARKS/EQUIPMENT SERIAL NUMBERS:

BJO 5219-03

120006

CERTIFICATE OF COMPLIANCE

GE Purchase Order: 205-AG-102

Project: NINE MILE II

Equipment Description: 4" 900# GT.

Valve Serial Number: 5219-03-1-7 MPL No: E22-F012

Operator Serial Number: 226320

All welding procedures used by Anchor/Darling Valve Company and/or their material manufacturers or suppliers during the fabrication or repair of this equipment were duly qualified and current with the requirements of Section III and IX of the ASME B&PV Code.

All welders/welding operators used by the above referenced companies for either the fabrication or repair of this valve were duly qualified and current with the requirements of Section III and IX of the ASME B&PV Code.

All nondestructive examination was performed by personnel duly qualified and current in accordance with SNT-TC-1A requirements. Further, all inspection personnel had valid eye examinations on file at the time of their verification sign offs.

All Penetrant materials used meet the requirements of Section III of the ASME B&PV Code.

Signature: [illegible]

BWRPD-QC C.C.M. 10-15-76

Title: Quality Assurance Manager

Date: 10-11-76

120607

0 3 4 / 1 0 1 . 1

FORM NPV-1 MANUFACTURERS' DATA REPORT FOR NUCLEAR PUMPS OR VALVES*

As Required by the Provisions of the ASME Code Rules

1. Manufactured by ANCHOR/DARLING VALVE CO. - HAYWARD, CA. Order No. 5219-03
(Name & Address of Manufacturer)

2. Manufactured for GENERAL ELECTRIC CO. SAN JOSE, CA. Order No. 205-AG-102
(Name and Address)

3. Owner NIAGARA MOHAWK POWER CORP.

4. Location of Plant NINE MILE POINT NUCLEAR STATION UNIT 2 SCRIBA, NEW YORK

5. Pump or Valve Identification SERIAL # 3H737 4" 900# Gate

ASME SECTION III
(Brief description of service for which equipment was designed)

STEAM AND WATER SERVICE IN A COMMERCIAL NUCLEAR POWER PLANT

(a) Drawing No. 2998-3 Prepared by E.O. HOOK

(b) National Board No. NA

6. Design Conditions 2160 / 1410 (Pressure) psi 100 / 700 (Temperature) °F or Pressure Class 900# (1)

7. The material, design, construction, and workmanship complies with ASME Code Section III, Class 2

Edition 1971, Addenda Date WINTER '73, Case No. 1567, 1637

Mark No.	Material Spec. No.	Manufacturer	Remarks
(a) Castings			
BODY HT. 44 SH 7	SA216 WCB	ANCHOR/DARLING	FICK
BONN. HT. 853 SH 6	SA216 WCB	ANCHOR/DARLING	FICK
DISC HT. 853 SH 6	SA216 WCB	ANCHOR/DARLING	FICK
(b) Forgings			
SEAT RING HT. 3T316	SA105	ANCHOR/DARLING	AIRCO VIKING

(1) For manually operated valves only.

100308

*Supplemental sheets in form of lists, sketches or drawings may be used provided (1) size is 8½" x 11", (2) information in Items 1, 2, 5a and 5b on this data report is included on each sheet, and (3) each sheet is numbered and number of sheets is recorded at top of this form.

3/75

This form (E00037) may be obtained from the Order Dept., ASME, 345 E. 47 St., New York, N.Y. 10017.

FORM NPV-1 (back)

Mark No.	Material Spec. No.	Manufacturer	Remarks
(c) Bolting			
BONN. STUDS CODE 7D	SA193 B7	KNUDTSEN	COULTER
BONN. NUTS CODE C22	SA194 2H	ANCHOR/DARLING	VITCO
(d) Other Parts			

8. Hydrostatic test 3250 psi.

CERTIFICATION OF DESIGN

Design information on file at NINE MILE POINT NUCLEAR STATION SCRIBA, NEW YORK

Stress analysis report on file at NA

Design specifications certified by CLYDE E. NIEH (1) Prof. Eng. State CA Reg. No. 15587

Stress analysis report certified by NA (1) Prof. Eng. State Reg. No.

(1) Signature not required. List name only.

We certify that the statements made in this report are correct.

Date 10-13 19 76 Signed ANCHOR/DARLING CO. (Manufacturer) By B. J. Tillman

Certificate of Authorization No. N-731 expires MARCH 4, 1977

CERTIFICATE OF SHOP INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State of Province of CALIFORNIA and employed by LUMBERMENS MUTUAL of LONG GROVE, ILLINOIS have inspected the equipment described in this Data Report on 10-13 19 76, and state that to the best of my knowledge and belief, the Manufacturer has constructed this equipment in accordance with the applicable Subsections of ASME Code, Section III.

By signing this certificate, neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the equipment described in this 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 10-13 19 76

John Carroll (Inspector) Commissions CA.1309 (National Board, State, Province and No.)

Nine Mile II
MPL E22-F012.
205-AG102

LIQUID PENETRANT REPORT

P.O. 205-AG102 ITEM ANCHOR JOB

DESCRIPTION 4" - 900# GATE R.S. 03 5219-03

PART #7	ACC	REJ	IND	TYP	RPR	LOC	INS	DATE	PART	ACC	REJ	IND	TYP	RPR	LOC	INS
BODY SEAT(~~INTEGRAL~~)	2	0						10-4-72	BODY SEAT(INTEGRAL)							
BODY ~~P/S~~ Bonnet AREA	1	0						10-4-72	BODY P/S AREA							
BODY B.W. ENDS	2	0						10-4-72	BODY B.W. ENDS							
BONNET BACKSEAT #6	1	0						10-5-72	BONNET BACKSEAT							
DISC FACE(S) #6	2	0						10-4-72	DISC FACE(S)							
SEAT RING(S)	2	0						10-4-72	SEAT RING(S)							
STEM(S)	1	0						10-4-72	STEM(S)							
BYPASS PIPING									BYPASS PIPING							

PART	ACC	REJ	IND	TYP	RPR	LOC	INS	DATE	PART	ACC	REJ	IND	TYP	RPR	LOC	INS
									BODY SEAT(INTEGRAL)							
									BODY P/S AREA							
									BODY B.W. ENDS.							
									BONNET BACKSEAT							
									DISC FACE(S)							
									SEAT RING(S)							
									STEM(S)							
									BYPASS PIPING							

COMMENTS AND REPAIR SECTION ON REVERSE.
COMMENTS = C-1, ETC.
ABOVE LIQUID PENETRANT TESTS CONDUCTED IN ACCORDANCE WITH: 1034-1-Rev G b008 1413-1-Rev B

PAGE 1 OF 1 PAGES

QC FORM 1-21(68)

ANCHOR EQUIPMENT COMPANY
QUALITY CONTROL MANAGER

FIGURE 71

VALVE TEST REPORT

JOB NO: 5219-03

CUSTOMER: GENERAL ELECTRIC CONTRACT NO: 205-AG102 ITEM NO: 03

TYPE & SIZE: 4"-900# GATE, R.S., BOLT-BONN, MOTOR OPER DRAWING NO: 2998-3

SERIAL NO: 5219-03-1-7 MPL NO: E22-F012 PROC. # 1104-1-REV-E

2N-737 (REQUIRED) NINE MILE II (ACTUAL)

GAUGE # 32	PRESS	TIME	MAX TORQUE	ALLOW SEAT LEAK	PRESS	TIME	MAX TORQUE	SEAT LEAK	INSPECTED	DATE
HYDRO TEST BODY	3250	10 MIN	—	NONE	3250	10 MIN	—	0	[signature]	10-11-76
HYDRO TEST SEAT	1575	10 MIN	MOTOR	40 CC/HR	1575	10 MIN	MOTOR	A-0 B-0	[signature]	10-11-76
PACKING AREA TEST	3250	10 MIN	—	NONE	3250	10 MIN	—	0	[signature]	10-11-76
TEST BACK SEAT	3250	10 MIN	MOTOR	NONE	3250	10 MIN	MOTOR	0	[signature]	10-11-76

COMMENTS: TORQUE BONNET STUDS & NUTS 500 FT LBS

COMMENTS: STEM TRAVEL 4 5/16"

BWRD-OC R-6A 10-15-76

OPERATOR

(REQUIRED) S/N 226320 (ACTUAL) MOTOR S/N 715092-TA

TIME TO OPEN	4 TO 5 sec.	4 sec.
TIME TO CLOSE	4 TO 5 sec.	4 sec.
LIMIT SWITCHES SET		OPEN OK CLOSED OK
TORQUE SWITCHES SET	2 1/2 MAX	OPEN 1 1/2 CLOSED 1 1/2

WITNESSED BY: _____ DATE: _____ ACCEPTED BY: [signature] DATE: 10-12-76

Authorized Inspector ANCHOR/DARLING VALVE COMPANY

Form NQA 8-5 [signature] 10-12-76

0 3 4 / 1 1 1 1

2

190913

FICK FOUNDRY CO.

572-8294 1005 EAST C STREET TELEX 32-747
TACOMA, WASHINGTON
98421

CERTIFICATE OF COMPLIANCE

CUSTOMER Anchor/Darling Valve Company DATE February 18, 1976

PURCHASE ORDER NO. 4614 RGR FFC043

HEAT NO.	NAME OF CASTING	PATTERN NO.	SPECIFICATION	QTY.
44	4" Gate Valve	606-5-1	ASME SA 216, Gr. WCB	1
			ASTM A-216-70A, Gr. WCB	

CHEMICAL ANALYSIS

HEAT	C	Mn	Si	S	P	Ni	Mo	Cu	Cr	Mg	
44	.22	.60	.52	.020	.017	.12	.25	.13	.16		

PHYSICAL PROPERTIES

HEAT	DIMENSION	TENSILE	YIELD	% ELONG	% Reduction of Area	FRACTURE	CERT. NO.
44	.501	80,203 PSI	49,441 PSI	25.8	43.7	S ½ cup	1465
		PSI	PSI				
		PSI	PSI				
		PSI	PSI				

BRINELL TEST / CHARPY TEST

HEAT	RESULTS	HEAT	°F	FT./LBS.	% SHEAR	LATERAL EXPANSION
	NOT REQUIRED			NOT REQUIRED		

HEAT	QUAN.	SERIAL NUMBERS	DATE OF HEAT TREAT	CHART NUMBER	OVEN	HEATED TO	TIME HELD	COOLED IN
44	1	G	2-2-76	53	6-7	1650°	4 3/4 Hrs.	Air
SW# G T 5219-03-1-7				PROC 1283-1 REV 0				

STATEMENT OF CONFORMITY

We certify that this material meets all requirements of the material specification and the applicable requirements of Article NC 2000 of ASME Section III, Class II, Winter 1973 Addenda, that are required to be fulfilled by the materials manufacturer. Method of Identification: Serial numbers are steel stamped. Heat numbers are cast on and/or steel stamped.

By Andrew Drobnack

ML201 • 1 • 3.0

0 5 4 7 1 0 1

Certification of Heat Treatment

OAKLAND METAL TREATING CO.
QUALITY CUSTOM HEAT TREATING

490 DERBY AVENUE 261-9675 OAKLAND, CALIFORNIA 94601

Date August 5, 1976 Certification No. 13540 A

Customer ANCHOR DARLING VALVE CO

Customer's Order No. B1035 1006 Contract No.

Our Shipper No. 13540 XXXX Military Specification No.

No. Parts 1 Part Name and No. body #606-5-1

Specification, Material Used SA 216 WCB

Specification, Heat Treating Stress relieve @ 1125°F, 2 hours per 1372-1-D

Annealed °F Cooled in furnace to °F

Normalized °F Time at heat

Carburize °F

Hardened °F Time Coolant

Drawn °F Time at heat

Hardness Test No. of pcs. Tested

Stress Relieve 1150 °F 3¼ hours @ heat, furnace cooled to 600°F

Solution Quench °F Time

Age Harden °F Time

NOTES SN #7
HT #44
JOB #5219-03

19

BWRPD-QC G.C.M. 10-15-71

We certify that heat treatment described above is true and correct and that temperatures and test results were obtained with standard approved methods.

OAKLAND METAL TREATING By Richard N. Nelson
Richard N. Nelson,
Production Mgr.

8/9/6 pd

Peabody Testing
X-Ray Engineering Company

☐ FOSTER CITY – MAIN OFFICE 1118 Chess Drive, Foster City, CA 94404, (415) 573 6000
☐ SAN MATEO OFFICE 145 North Amphlett Blvd., San Mateo, CA 94401, (415) 342-4183
☐ SAN LEANDRO OFFICE 2506 Davis Street, San Leandro, CA. 94577, (415) 562-7500

CERTIFIED INSPECTION REPORT

CLIENT

ANCHOR/DARLING VALVE COMPANY
24747 Clawiter Rd.
Hayward, CA. 94545

REPORT TO:

TYPE OF INSPECTION (S) AND SPECIFICATION(S):

Magnetic Particle, ASME Section III
Winter '73 Addenda and A/DV
Procedure 1326-1, Rev. A and
IPMT-201, Rev. A Add. 1

DESCRIPTION:

Quantity 1
Part Body 4"900# Globe
Pattern # 606-5-1
SN 7

ANALYSIS:

Final Acceptance 8/7/76

GENERAL ELECTRIC
P.O. NO 205-AG-102
REPORT NO.
CONTROL NO.
SHIPPER NO.
JOB 5219-03
HEAT NO. 44
MATERIAL SA216 WCB

BWRPD.OG G.C.M. 10-15-76

– WORLD WIDE NONDESTRUCTIVE TESTING SERVICE –

INSPECTOR Bruce Baker LEVEL II SNT-TC-1A

By [signature] PEABODY TESTING

DATE

ENCLOSURE ADDED Yes ☐ No ☒

Witnessed by

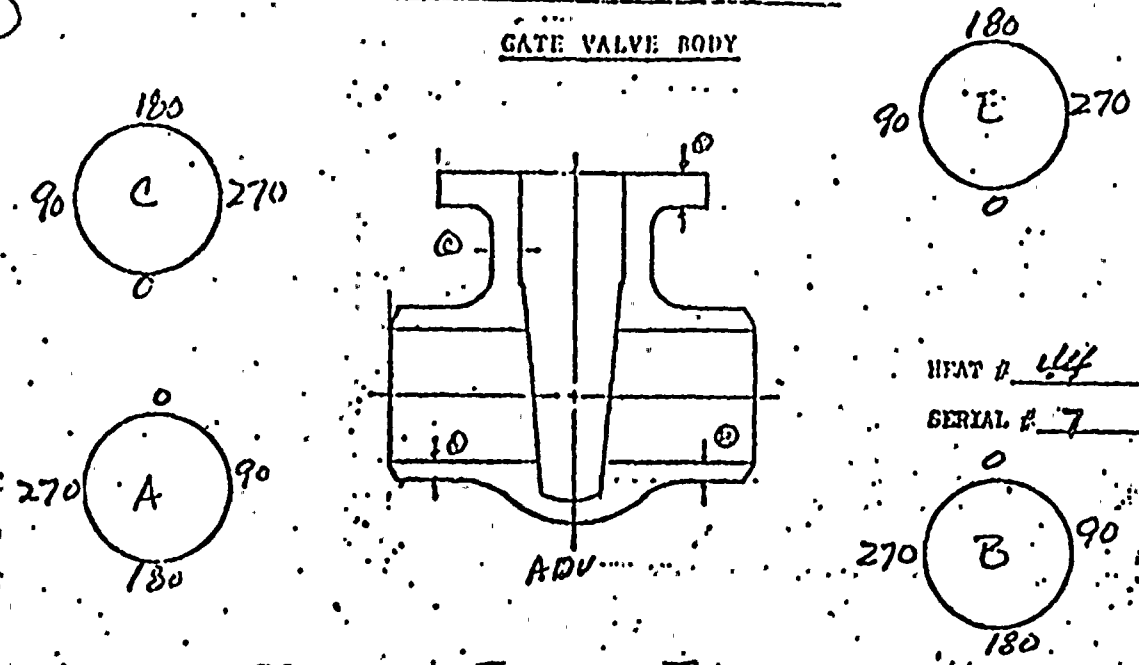
Page 1 of 1

PEABODY TESTING/X-RAY ENGINEERING CO. assumes no responsibility for losses of any kind due to interpretation
The X-ray film used remains the property of Peabody Testing/X-Ray Engineering Company

0 5 4 7 1 0 1

MINIMUM THICKNESS MEASUREMENT RECORD

GATE VALVE BODY



HEAT # 44

SERIAL # 7

DRAWING 2998-3 REV. E Job 5219-03

4"-900# GATE R.S.

PROCEDURE 1452-1-Rev. F.

ZONE	SPECIFICATION MINIMUM	ACTUAL MINIMUM MEASURED	ACTUAL MINIMUM LOCATION	INSP	DATE	CUSTOMER INSP	DATE
A	1/2"	.770	355°	[illegible]	10/2/76	[illegible]	10-4-76
B	1/2"	.780	350°	[illegible]	10/2/76	↑	↑
C	1/2"	.940	310°	[illegible]	10/2/76		
D						↓	↓
E	1 3/4-1/16	1.770	315°	[illegible]	10-2-76	[illegible]	10-4-76
		R.D.R. ADV. 3-1-77					

NOTES: (1) Survey each zone (inspect in a grind pattern of approx 1 inches) and record thickness & location of area found to be minimum.

(2) Additional measurement taken at repaired, ground or machined surfaces; selected for dimensional inspection by visual inspection (applicable when indicated by asterisk).

BWRPD-OC G.C.M. 10-15-76

100095

0 5 4 / 1) 1)

3

120696

0 5 4 7 1

FICK FOUNDRY CO.

572-8294 1005 EAST E STREET TELEX 32-7476
TACOMA, WASHINGTON
99421

CERTIFICATE OF COMPLIANCE

CUSTOMER Anchor/Darling Valve Co. DATE November 4, 1975

PURCHASE ORDER NO. 4614

HEAT NO.	NAME OF CASTING	PATTERN NO.	SPECIFICATION	QTY.
853	4" 900# Gate Valve Bonnet	5184-4-5-2	ASME SA-216, Gr. WC3	6
			ASTM A-216-70A	

CHEMICAL ANALYSIS

HEAT	C	Mn	Si	S	P	Ni	Mo	Cu	Cr	Mg	
853	.23	.57	.43	.031	.023	.22	.14	.12	.16		

PHYSICAL PROPERTIES

HEAT	DIMENSION	TENSILE	YIELD	% ELONG	% Reduct'n of Area	FRACTURE	CERT. NO.
853	.504	76,500 PSI	57,350 PSI	30.3	51.0	Sil 2/3 cup	898
		PSI	PSI				
		PSI	PSI				
		PSI	PSI				

BRINELL TEST

HEAT	RESULTS
	NOT REQUIRED

CHARPY TEST

HEAT	°F	FT./LBS.	% SHEAR	LATERAL EXPANSION
		NOT REQUIRED		

HEAT	QUAN.	SERIAL NUMBERS	DATE OF HEAT TREAT	CHART NUMBER	OVEN	HEATED TO	TIME HELD	COOLED IN
853	6	A thru F	9/2/75	55	6-7	1675°	5 Hrs.	Air.
			A As ~~5223~~ 3-03-2-1					
HD Assigned SN#			B AS 5220-10-2-2			Proc 1283-1		Rev 0
			C AS 5220-03-2-3					
			D AS 5220-10-2-4					
			E AS 5224-03-2-5					
			F AS 5219-03-2-6					

STATEMENT OF CONFORMITY

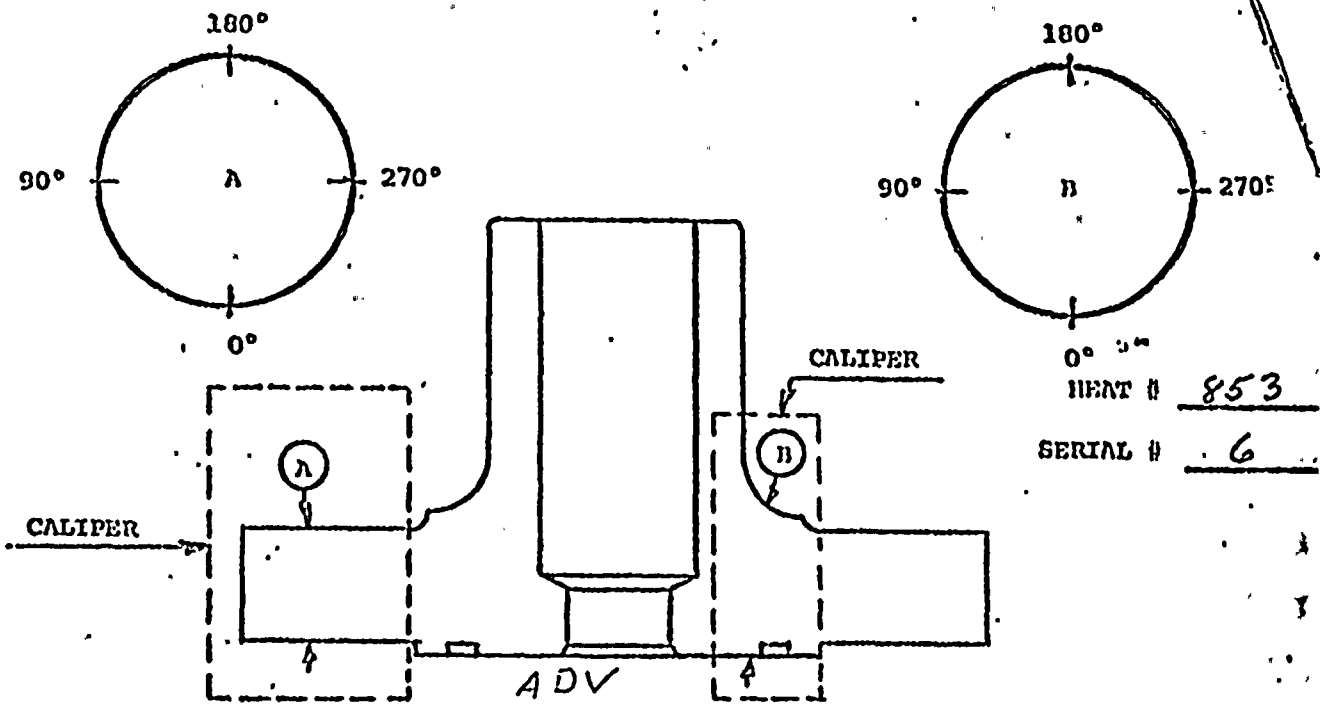
We certify that this material meets all requirements of the material specification and all the applicable requirements of Article NC 2000 of ASME Section III, Class II, Winter 1973 Addenda, that are required to be fullfilled by the materials manufacturer. Method of Identification: Serial numbers are steel stamped. Heat numbers are cast on and/or steel stamped.

120828

By. [signature]

3 5 4 7 1 0 1 1 1

MATERIAL THICKNESS MEASUREMENT RECORD
GLOBE VALVE BONNET



HEAT # 853

SERIAL # 6

SEE DRAWING 2998-3 REV E SJO # 5219-03

4" 900# GATE R.S. B.B.

PROCEDURE 1452-1-REV. F

BWRPD-QC G.C.M. 10-15-76

ZONE	SPECIFICATION MINIMUM	ACTUAL MINIMUM MEASURED	ACTUAL MINIMUM LOCATION	INSPECTOR DATE	CUSTOMER INSPECTOR	DATE
A	1 3/4 - 1/16	1.750	0°	[illegible] 10-2-76	Rechecked [illegible] 12-11-76 [illegible]	
B	1 1/4	1.330	90°	10-2-76		A

NOTES: (1) Survey zone (dimensionally inspect flange thickness 4 location 90° apart) and record thickness and location of area found to be minimum. Inspected in grid pattern of approx 3 inches.

(2) Additional measurements to be taken at repair, ground or machined surfaces; selected for dimensional inspection by visual inspection (applicable when indicated by an asterisk).

[illegible]

4

120002

FICK FOUNDRY CO.

572-8294 1005 EAST E STREET TELEX 032-7476
TACOMA, WASHINGTON
98421

CERTIFICATE OF COMPLIANCE

CUSTOMER Anchor/Darling Valve Co. DATE November 6, 1975

PURCHASE ORDER NO. 4614

HEAT NO.	NAME OF CASTING	PATTERN NO.	SPECIFICATION	QTY.
853	4" 900# Gate Valve Disc	1349-5-4	ASME SA-216, Gr. WCB	6
			ASTM A-216-70A	

CHEMICAL ANALYSIS

HEAT	C	Mn	Si	S	P	Ni	Mo	Cu	Cr	Mg	
853	.23	.57	.43	.031	.023	.22	.14	.12	.16		

PHYSICAL PROPERTIES

HEAT	DIMENSION	TENSILE	YIELD	% ELONG	% Reduct'n of Area	FRACTURE	CERT. NO.
853	.504	76,500 PSI	57,350 PSI	30.3	51.0	Sil 2/3 c	898
		PSI	PSI				
		PSI	PSI				
		PSI	PSI				

BRINELL TEST

HEAT	RESULTS
	NOT REQUIRED

CHARPY TEST

HEAT	°F	FT./LBS.	% SHEAR	LATERAL EXPANSION
		NOT REQUIRED		

HEAT	QUAN.	SERIAL NUMBERS	DATE OF HEAT TREAT	CHART NUMBER	OVEN	HEATED TO	TIME HELD	COOLED IN
853	6	A thru F	9/2/75	55	6-7	1675°	5 Hrs.	Air
A/D Assigned		SN# A	AS 5223-03-4-1			PROC 1283-1 Rev 0		
		B	AS 5223-10-4-2					
		C	AS 5220-03-4-3					
		D	AS 5220-10-4-4					
		E	AS 5224-03-4-5					
		F	AS 5219-03-4-6					

STATEMENT OF CONFORMITY

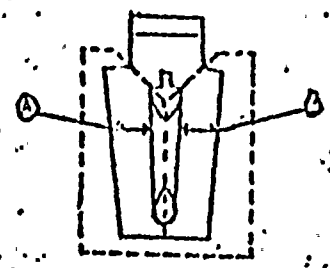
We certify that this material meets all requirements of the material specification and all the applicable requirements of Article NC 2000 of ASME Section III, Class II, Winter 1973 Addenda, that are required to be fullfilled by the materials manufacturer. Method of Identification: Serial numbers are steel stamped. Heat numbers are cast

SWRPD. OC 15-72 G.C.M. 10

5471 [illegible]

MINIMUM THICKNESS MEASUREMENT RECORD

GATE VALVE DISC



HEAT # 853

SERIAL # 6

DRAWING 3998-3 REV. E Job 5217-03

4"-900# Gate R.S.

Procedure 1452-1-Rev. F

BWRPD-OC C.C.M. 10-15-76

ZONE	SPECIFICATION MINIMUM	ACTUAL MINIMUM MEASURED	ACTUAL MINIMUM LOCATION	INSP	DATE	CUSTOMER INSP	DATE
A	1/2"	17/32	180°	[illegible]	10/4/76	[illegible]	10-4-76
B	1/2"	17/32	180°	[illegible]	10/4/76	[illegible]	10-4-76
C		RDR	ADV.				
D		3-1-77		VIII			
E							

NOTES: (1) Survey each zone (inspect in a grind pattern of approx 1 inches) and record thickness & location of area found to be minimum.

(2) Additional measurement taken at repaired, ground or machined surfaces; selected for dimensional inspection by visual inspection (applicable when indicated by asterisk).

120637

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120038

0 5 4 7 1 1 1 3

RALPH KNUDTSEN CORP.

45805 WARM SPRINGS BLVD. FREMONT, CA. 94538

(415) 651-1363

MASTER

ANCHOR/DARLING VALVE COMPANY
24747 Clawiter Road
Hayward, California 94545

Gentlemen: We hereby certify the bolting manufactured by us meets the following specifications:

ASTM - SA 193 GR B 7

CODE # - 7 D

HEAT NUMBER - 52890

MILL - CRUCIBLE

CODE # 7 D IS TRACEABLE TO MILL HEAT # 52890

IDENTIFICATION - STUDS ARE STAMPED ON ONE END WITH B 7 AND TRACEABILITY CODE 7 D.

BWRPD-QC G.C.M. 10-15-76

SIGNED:

120641

MASTER

Crucible SP 25 300 REV. 4/71

Colt Industries Crucible Inc

CAR/TRUCK # PC614088 ALLOY DIVISION, MIDLAND, PA. 15059 2 008

GRADE	FIELD	MFG	CUSTOMER CODE	SHIPPED FROM	DATE SHIPPED	INSTRUCTIONS
2414	0287	0411	75175-01	MIDLAND PA	08/20/5	

SOLD TO: COULTER STEEL & FORGE CO
1494 67TH STREET
OAKLAND CALIF 94608

SHIP TO: COULTER STEEL & FORGE CO
EMERYVILLE CALIF 94608

ITEM	CUSTOMER ORDER NO	OUR ORDER NO	DESCRIPTION	SIZE
5978-2.4 2 08-08		679110994	TGC HR HT SR MS BARSASTM A-193 GRADE B-7	1 RD 20/24 FT

HEAT NO	C	MN	P	S	SI	CR	MO
52890	.42	.92	.013	.031	.28	.95	.16

CODE TD

HEAT #	COIL #	QUANTITY	GRAIN	HARDNESS	YIELD	TENS.	BND	DG&FAC	ELONG %&GL	RA %	CHAR IZOD
52890		7330		BHN 277	124050	139850		OK	20.5	61.7	

BWRPD-QC

THIS MATERIAL HAS BEEN 100 PER CENT MAGNETIC ANALYSIS INSPECTED AND APPROVED

QUENCH OIL 1600 F 20 MRC TEMPER 1210 F 40 MRC S R 1000 F 5 HRS SURFACE BHN 286/286

SWORN TO AND SUBSCRIBED BEFORE ME

THIS 22 DAY OF _____ 19__

NOTARY PUBLIC

Colt Industries Crucible Inc

CERTIFICATE OF TEST

THE TEST RESULTS SHOWN IN THIS REPORT ARE CORRECT TO THE BEST OF OUR KNOWLEDGE AND BELIEF.

COLT INDUSTRIES CRUCIBLE Inc

CERTIFIED BY: A. J. Jabinowsky

REPRESENTATIVE

0547101

0 5 4 7 1 0 1 5 2

LABORATORY CERTIFICATE

SIGNET TESTING LABORATORIES, INC.

TESTING AND INSPECTION OF CONSTRUCTIONAL AND INDUSTRIAL MATERIALS

ENGINEERS
CHEMISTS
METALLURGISTS

REPLY TO
1428 WEST WINTON AVENUE
HAYWARD, CALIFORNIA 94545
782-7919 AREA CODE 415

November 13, 1975

LAB NO.: 22601 P.O. NO.: 2007

SAMPLE: One (1) 1" diameter steel bar; ASTM A193, Grade B-7

MARK: Code 7B, Ref.: Cl.2 ASME Sect. III Summer 73

DATE RECEIVED: November 4, 1975

REPORT TO: Ralph Knudtsen Corp.
45805 Warm Springs Blvd.
Fremont, Calif. 94538

MASTER

REPORT

CHARPY IMPACT TESTS

Specimen Size: 10x10x55mm
Notch: V-Notch
Test Temperature: +40°F

Test No.	Impact Value ft.-lbs.	Lateral Expansion inches	Percent Shear
1	71.1	0.053	100
2	81.7	0.066	100
3	76.6	0.054	100
Average	76.5	0.058	100

Respectfully submitted,
SIGNET TESTING LABORATORIES, INC.

By [signature]

2cc: Ralph Knudtsen Corp.
ms

BWRPD-QC G.C.M. 10-15-76

ANCHOR P.O. 7695

120543

0 5 4 7 1 0 1 3 3

ANCHOR/DARLING VALVE COMPANY 24747 CLAWITER ROAD • HAYWARD, CALIFORNIA 94545 • (415) 735-2430
CABLE: ANCORCO • TELEX: 335451

"CERTIFICATION"

Subject: PRESSURE BOUNDRY BOLTING MATERIAL
NUTS CODE C 22

We hereby certify that this material meets all the requirements of the material specification and applicable special requirements of NB-2000, ASME Section III, Nulcear Power Plant Components, Winter Addenda 73.

J.W. Smith, Jr.
Quality Assurance Engineer

BWRPD-O G.C.M. 10-15-76

120644

CERTIFIED TEST REPORT

VITCO NUCLEAR PRODUCTS INC. 1489 E. 363rd ST. EASTLAKE, OHIO 44094
PHONE AREA CODE 216 946-9550

TO
ANCHOR/DARLING VALVE COMPANY
24747 Clawiter Road
Hayward, CA 94545

DATE SHIPPED	VITCO ORDER NUMBER	CUSTOMER ORDER NUMBER
6-10-76	3501	1575

ITEM (20) 59 Pcs. 1" -8 Hvy Hex Nuts (Traceability # C22)
Tag: 5265-25(32) and Stock

SPECIFICATION ASME SA 194, Grade 2H, ASME Section III, Class 2, S-73

CHEMICAL COMPOSITION

ITEM	HEAT NO.	C	Mn	P	S	Si	Cr	Mo	Ni	Cu	Fe	Al	Ti
20	6024519	.48	.86	.015	.026	.23							

PHYSICAL COMPOSITION

ITEM	TENSIL STRENGTH PSI	YIELD PSI	ELONG. % IN 2"	RED. AREA %	HARDNESS	GRAIN SIZE	BEND TEST	MIN. TEMP.
20	Hardness Per ASTM A 194, Para. 7.1.5.1				28-30 RC			1000°F
	Hardness Per ASTM A 194, Para. 7.1.5.2				207 BHN @ 1000°F			

ADDITIONAL SPECIFICATION REQUIREMENTS OR SPECIAL TESTS

AXIAL PROOF LOAD (106,000 Lbs.) SATISFACTORY

ATTACHMENTS

REPUBLIC STEEL CORP. MILL TEST REPORT FOR HEAT # 6024519.

BWRPD-QC G.C.M. 6-15-76

WE CERTIFY THAT THE ABOVE MATERIAL IS COMMERCIALLY FREE FROM MERCURY CONTAMINATION AND MEETS THE REQUIREMENTS OF SPECIFICATION ASTM A 194, GRADE 2H, ASME SECTION III, CLASS 2, S-73, AND YOUR ORDER # 1575.

30041

THE ABOVE TESTS CONFORM TO THE REQUIREMENTS OF THE SPECIFICATION LISTED

SWORN TO AND SUBSCRIBED BEFORE ME THIS _____ DAY OF _____ BY A DULY AUTHORIZED AGENT OF VITCO NUCLEAR PRODUCTS INC.

WE HEREBY CERTIFY THAT THE ABOVE DATA IS A TRUE COPY OF THE DATA FURNISHED US BY THE PRODUCING MILL OR SUPPLIER OR OF THE DATA RESULTING FROM TESTS PERFORMED IN APPROVED LABORATORIES AND MEETS THE REQUIREMENTS OF THE SPECIFICATION NOTED.

VITCO NUCLEAR PRODUCTS INC.

BY _____

MY COMMISSION EXPIRES _____ NOTARY PUBLIC _____

Republic Steel Corporation
Cleveland OH 44101

Republic steel

CUSTOMER ORDER NUMBER AND DATE		SHIPPED FROM	INVOICE DATE	INVOICE NUMBER
50545 7/11/75		GARY IND		823-7041

SHIPPED 10475 KAFLAN TRUCKING

REPUBLIC ORDER NO	CUSTOMER ABBREVIATION	SALES CO	CONTROL CARD	STATE	COUNTY	TAX	OFFICE	ACCOUNT
2-11303-323	RYERSON&SON	05 01 154	76412	034	0153	33 00	02 13 R	552400 06 160

JOSEPH T RYERSON & SON INC
P O BOX 8000-A
CHICAGO, IL 60680

3M13 30-1/2-10

SALES PRODUCT
13607 7000 -206993-709115- 22601

JOSEPH T RYERSON & SON INC
EAST 53RD & LAKESIDE AVE
CLEVELAND, OH 44114

("SHIP TO" SAME AS "SOLD TO" UNLESS OTHERWISE INDICATED)

"P" PARTIAL SHIPMENT "C" COMPLETE SHIPMENT

REPUBLIC PRODUCT DESCRIPTION	ITEM NO	UNITS SHIPPED
SPEC 1031-C DTD 1/20/71 AISI-1045 FINE GRAIN COLD DRAWN STEEL BARS YELLOW CC 1039621		
1-5/8 IN HEX X 10/12 FT 1 BDL 48 PCS OD 9/14 SHPT COVD BY INVS 823-7040841 B/L WT 93720	3C	44320

STOCK

BWRPD-GC G.C.M. 10-15-76

FRT. PPD

ANALYSIS ITEM NO	HEAT NO	E H N	CARBON	MANG	PHOS	SUL	SIL	COPPER	NICKEL	CHROME	MOLY	VAN
3	6024519	5-8	.48	.86	.019	.026	.23					

Piece count may vary.
Check weight before claiming shortage.

Shipping Notice

120846

0 5 4 6 2 0 6 3 1

2CSH* MOV 111

2CSH* MOV 111

NINE MILE 2

205-AG-102

2N794

5219-07-1-6

GENERAL ELECTRIC

E22-F023

ANCHOR/DARLING VALVE CO.

12" 900# GLOBE

P800A
MPL # E22-F023

05462 0635

P800A/QASRB/E22-F023

SW2017

QUALITY ASSURANCE RECORDS BINDER

NINE MILE POINT II

MPL: E22-F023 PO: AG 102

S/N: 5219-07-1-6

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Defect Chart & PT of Excavations (if required)
Welding Defect Record (if required)
Plasma Hardfacing Record
Seat Ring Welding Record
PWHT Chart (if required)
MT Report
RT Reader Sheets
PT Machined Surfaces
Minimum Wall Report

SECTION 3: VALVE BONNET

Certified Material Test Report
Defect Chart & PT of Excavation (if required)
Welding Defect Record (if required)
Backseat Welding Record

RECEIVED
J. O. NO. 12187
DEC 16 1977
STONE & WEBSTER
ENG. CORP.
CONTROL LEVEL 2

014 0000

SECTION 3: VALVE BONNET (CONT'D)

PWHT Chart (if required)
MT Report
RT Reader Sheets
PT Machined Surfaces
Minimum Wall Report

SECTION 4: VALVE DISC

Certified Material Test Report
Defect Chart & PT Excavations (if required)
Welding Defect Record (if required)
Plasma Hardfacing Record
PWHT Chart (if required)
MT Report
RT Reader Sheets
PT Machined Surfaces
Minimum Wall Report

SECTION 5: STUDS and NUTS

Studs

Certified Material Test Report
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Nuts

Certified Material Test Report
Cone Stripping Results
Impact Test Report (if required)

SECTION 6: WELD FILLER METAL

Certified Weld Filler Metal Test Reports

SECTION 7: RETEST

Retest for possible damage in transit

Prepared By: R. D. Pope
G.E. Q.C. Records Specialist

Date: 12/2/77

014 0001

Reviewed By: R. D. Pope, Quality Control Records Specialist
General Electric Co. - BWR Projects Dept.
Date: 12/2/77

Reviewed By: J. M. Bricken, Quality Control Engineer
General Electric Co. - BWR Projects Dept.
Date: 12/2/77

Reviewed By: J. M. Bricken, Quality Control Engineer
General Electric Co. - BWR Projects Dept.
Date:

ENERAL ELECTRIC 0 6 PQC NO. B B 200

NUCLEAR ENERGY DIVISION

PRODUCT QUALITY CERTIFICATION

CUSTOMER/PROJECT		PRODUCT NAME	MPL NO.
NINE MILE POINT II		12"-900# GLOBE VALVE M/O	E22F023
G. E. PURCHASE ORDER NO.	REV	PURCHASE ORDER (ITEM(S) NO.	QUANTITY
205-AG-102	12	07	1

SUPPLIER'S CERTIFICATION

THIS IS TO CERTIFY THAT THE PRODUCTS IDENTIFIED HEREIN HAVE BEEN MANUFACTURED UNDER A CONTROLLED QUALITY ASSURANCE PROGRAM AND ARE IN CONFORMANCE WITH THE PROCUREMENT QUALITY REQUIREMENTS INCLUDING APPLICABLE CODES, STANDARDS AND SPECIFICATIONS AS IDENTIFIED IN THE ABOVE-REFERENCED DOCUMENTS; UNLESS NOTED BELOW. ANY SUPPORTING DOCUMENTATION WILL BE FORWARDED OR RETAINED IN ACCORDANCE WITH PURCHASE ORDER REQUIREMENTS.

SIGNED: [signature] DATE: FEBRUARY 28, 1978

TITLE: QUALITY ASSURANCE ENGINEER ORGANIZATION: ANCHOR/DARLING VALVE CO

GE QUALITY ASSURANCE CERTIFICATION

THIS IS TO CERTIFY THAT EVIDENCE SUPPORTING THE ABOVE SUPPLIER'S CERTIFICATION STATEMENT HAS BEEN REVIEWED AND NO PRODUCT NONCOMFORMANCES FROM PROCUREMENT QUALITY REQUIREMENTS HAVE BEEN FOUND UNLESS NOTED BELOW.

SIGNED: [signature] DATE: 2-28-78

TITLE: GE QA REPRESENTATIVE ORGANIZATION: NEED

NONCONFORMANCES FROM PROCUREMENT QUALITY REQUIREMENTS:

NA

REMARKS/EQUIPMENT SERIAL NUMBERS:

* 5219-07-1-6

VALVE REFURBISHED PER REQUIREMENTS OF FDDR NMP2-2, DATED 4028-77.

* THIS CORRECTS A CLERICAL ERROR ON PQC # U 431.
MATERIAL ORIGINALLY RELEASED ON 9-07-77 DATE.

014 0004

NEEI-885B (10/74) See Reverse for Instructions

1 QC 4-4-31

ANCHOR/DARLING VALVE COMPANY 24747 CLAWITER ROAD • HAYWARD, CALIFORNIA 94545 • (415) 785-8430
CABLE: ANCORCO • TELEX: 335481

PO # 205-AG-102

DWG # 3001-3

ANCHOR JOB # 5219-07

TAG # F22-F023

DESCRIPTION: 12" 900# GB.

ITEM # 7

SHIPMENT: 1

5219-07-1-6

CERTIFICATION

TO CONTRACT SPECIFICATIONS

We certify that the chemical analysis of the material is in accordance with the required chemistry of the applicable specification.

We further certify that the physical properties of the material furnished comply with the physical properties of the applicable specification.

Materials used are free of Mercury contamination.

Other tests called for in specifications have been completed and the material is in strict accordance with the contract specifications.

Very truly yours,

ANCHOR/DARLING VALVE COMPANY

D.P. Gilbert
Quality Assurance Manager

DPG:das 12/27-76

011 00058 12-30-76

0 5 4 6 2 0 5 1 0

CERTIFICATE OF COMPLIANCE

GE Purchase Order: 205-AG-102

Project: NINE MILE II

Equipment Description: 12" 900# GB.

Valve Serial Number: 5219-07 MPL No: E22-F023

Operator Serial Number: 22157/

All welding procedures used by Anchor/Darling Valve Company and/or their material manufacturers or suppliers during the fabrication or repair of this equipment were duly qualified and current with the requirements of Section III and IX of the ASME B&PV Code.

All welders/welding operators used by the above referenced companies for either the fabrication or repair of this valve were duly qualified and current with the requirements of Section III and IX of the ASME B&PV Code.

All nondestructive examination was performed by personnel duly qualified and current in accordance with SNT-TC-1A requirements. Further, all inspection personnel had valid eye examinations on file at the time of their verification sign offs.

All Penetrant materials used meet the requirements of Section III of the ASME B&PV Code.

Signature: [illegible]

Title: Quality Assurance Manager

Date: 12/27/76

QCM 12-30-76

014 0006

·0 5 4 6 2 0 6 1 1

FORM NPV-1 MANUFACTURERS' DATA REPORT FOR NUCLEAR PUMPS OR VALVES*

As Required by the Provisions of the ASME Code Rules

1. Manufactured by ANCHOR/DARLING VALVE CO. HAYWARD, CA. (Name & Address of Manufacturer) Order No. S219-07

2. Manufactured for GENERAL ELECTRIC CO. SAN JOSE, CA. (Name and Address) Order No. 205-AG-102

3. Owner NIAGRA MOHAWK POWER CORP.

4. Location of Plant NINE MILE POINT NUCLEAR STATION :2 SCRIBA, NEW YORK

5. Pump or Valve Identification SERIAL # 2N794 12"900# GLOBE

ASME SECTION III

(Brief description of service for which equipment was designed)

STEAM AND WATER SERVICE IN A COMMERCIAL NUCLEAR POWER PLANT

(a) Drawing No. 3001-3 Prepared by E.O. NOOK

(b) National Board No. NA

6. Design Conditions 2160 / 1410 (Pressure) psi 100 / 700 (Temperature) °F OR PRESSURE CLASS 900#

7. The material, design, construction, and workmanship complies with ASME Code Section III. Class 2

Edition 1971, Addenda Date WINTER '73, Case No. 1567, 1637

Mark No.	Material Spec. No.	Manufacturer	Remarks
(a) Castings			
BODY HT. 8056E SN 6	SA216 WCB	ANCHOR/DARLING	VULCAN
BONN. HT. 7581E SN 5	SA216 WCB	ANCHOR/DARLING	VULCAN
DISC HT. 8072E SN 8	SA216 WCB	ANCHOR/DARLING	VULCAN
(b) Forgings			
DRAIN CONN.(BODY) HT. 3W497	SA105	ANCHOR/DARLING	AIRCO VIKING
DRAIN CONN.(BONN) HT. 3W497	SA105	ANCHOR/DARLING	AIRCO VIKING

011 0097

*Supplemental sheets in form of lists, sketches or drawings may be used provided (1) size is 8½" x 11", (2) information in Items 1, 2 5a and 5b on this data report is included on each sheet, and (3) each sheet is numbered and number of sheets is recorded at top of this form.

Mark No.	Material Spec. No.	Manufacturer	Remarks
(c) Bolting			
BONN. STUDS CODE 7C	SA193 B7	KNUDTSEN	COULTER
BONN. NUTS CODE W13	SA194 Gr.7	ANCHOR/DARLING	VITCO
(d) Other Parts			
SEAT RING HT.52796-10-2	SA515 Gr.70	ANCHOR/DARLING	KAISER

8. Hydrostatic test 8250 psi.

CERTIFICATION OF DESIGN

Design information on file at NINE MILE POINT NUCLEAR STATION SCRIBA, NEW YORK

Stress analysis report on file at NA

Design specifications certified by CLYDE T. NIKN (1) Prof. Eng. State CA Reg. No. 18887

Stress analysis report certified by NA (1) Prof. Eng. State Reg. No.

(1) Signature not required. List name only.

We certify that the statements made in this report are correct.

Date 12-30 1976 Signed ANCHOR/DARLING CO. (Manufacturer) By B. J. Tillman

Certificate of Authorization No. N-781 expires MARCH 4, 1977

CERTIFICATE OF SHOP INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State of Province of CALIFORNIA and employed by LUMBERMENS MUTUAL of LONG GROVE, ILLINOIS have inspected the equipment described in this Data Report on 12-30 1976, and state that to the best of my knowledge and belief, the Manufacturer has constructed this equipment in accordance with the applicable Subsections of ASME Code, Section III.

By signing this certificate, neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the equipment described in this 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 12-30 1976

011 0008

John Cairell (Inspector) Commissions CA 1309 (National Board, State, Province and No.)

This form (E37) is obtainable from the ASME, 345 E. 47th St., New York, N.Y. 10017

LIQUID PENETRANT REPORT

P.O.

DESCRIPTION 12"-900# Globe

ITEM 07

ANCHOR JOB 5219-07

PART #6	ACC	REJ	IND	TYP	RPR	LOC	INS	DATE	PART	ACC	REJ	IND	TYP	RPR	LOC	INS	DATE
BODY SEAT(INTEGRAL)	1	0	—					12-18-96	BODY SEAT(INTEGRAL)								
BODY P/S AREA	1	0	—					12-18-96	BODY P/S AREA					009			
BODY B.W. ENDS	2	0	—					12-18-96	BODY B.W. ENDS								
BONNET BACKSEAT #5	1	0	—					12-20-96	BONNET BACKSEAT								
DISC FACE(S) #8	1	0	—					12-20-96	DISC FACE(S)					014			
SEAT RING(S)	1	0	—					12-18-96	SEAT RING(S)								
STEM(S)	1	0	—					12-20-96	STEM(S)								
BYPASS PIPING									BYPASS PIPING								
Bonn Studs	16	0	—					12-21-96									
Bonn Nuts	16	0	—					10-22-96									

PART	ACC	REJ	IND	TYP	RPR	LOC	INS	DATE	PART	ACC	REJ	IND	TYP	RPR	LOC	INS	DATE
Screw Cover (Body)	1	0	—					10-19-96	BODY SEAT(INTEGRAL)								
Screw Cover (Bonn)	1	0	—					10-19-96	BODY P/S AREA								
									BODY B.W. ENDS								
									BONNET BACKSEAT								
									DISC FACE(S)								
									SEAT RING(S)								
									STEM(S)								
									BYPASS PIPING								

COMMENTS AND REPAIR SECTION ON REVERSE.

COMMENTS = C-1, ETC.

ABOVE LIQUID PENETRANT TESTS CONDUCTED IN ACCORDANCE WITH: 1034-1-Rev G 1008 / 1413-1-Rev B

PAGE 1 OF 1 PAGES

QC FORM 7-21(R)

S.N.T. LEVEL II

ANCHOR EQUIPMENT COMPANY
QUALITY CONTROL MANAGER

ASSEMBLY INSPECTION REPORT

JOB NO: 5219-07

CUSTOMER: GENERAL ELECTRIC CONTRACT NO: 205-AG102

ITEM NO: 07 VALVE NO: 5219-07-1-6 MPL NO: E22-F023

VALVE TYPE: GLOBE(STOP)B.B. SIZE: 12" PRESSURE: 900# OPERATION: MOTOR

PART I — CERTIFICATIONS REQUIRED

PART	MATL	RT	MT	PT	UT	IT		OTHER (LIST)
BODY	SA216WCB	X	X	X		X		
BONNET/CAP	SA216WCB	X		X		X		
DISC	SA216WCB	X		X		X		
STEM	A479TY410			X				
SEAT RING	SA515GR70			X				
STUDS-BONNET	SA193B7			X		X		
NUTS-BONNET	SA194GR7			X		X		
[illegible] BODY	SA105			X				
DRAIN CONN(BONN)	SA105			X				

PART II — VALVE IDENTIFICATION RECORD

PART	SERIAL NO	HEAT NO	NDT IDENT NO.	CHECKED BY/DATE
BODY	5219-07-1-6	8056E		[illegible] 12/22/76
BONNET	5219-07-2-5	7581E		[illegible] 12/22/76
DISC	5219-07-4-8	8072E		[illegible] 12/22/76
STEM	5219-07-5-1	832285		[illegible] 12/22/76
SEAT RING	———	52796-10-2		[illegible] 12/22/76
STUDS-BONNET	———	Code-7C		[illegible] 12/22/76
NUTS-BONNET	———	Code-W13		[illegible] 12/22/76
BYPASS				
DRAIN CONN(BODY)	———	3W497		[illegible] 12/22/76
DRAIN CONN(BONN)	———	3W497		[illegible] 12/22/76

PART III — ACCEPTED BY / DATE

	ACCEPTED BY	DATE
PARTS DEBURRED	[illegible]	12/22/76
PARTS CLEANED	[illegible]	12/22/76
ASSEMBLY CHECKED	[illegible]	12/22/76
DISC CLEARS BORE(GATE)		
CAVITIES FREE OF FOREIGN MATL	[illegible]	12/22/76
STUDS & NUTS TIGHT	[illegible]	12-28-76
STEM BACKSEATS	[illegible]	12-28-76
GEAR BACKLASH CHECKED	[illegible]	
LANTERN RINGS INSTALLED	[illegible]	12-28-76
TACKWELDS & SET SCREW SECURE	[illegible]	
HANDWHEEL & GLAND NUTS TIGHT	[illegible]	12-28-76
GREASE FITTINGS INSTALLED	[illegible]	
GEARS LUBRICATED WITH ( )		
BEAR'GS LUBRICATED WITH ( )		

014 0010

Form NQA 8-4 (6/70) ACCEPTED BY [signature] DATE 12-28-76

ANCHOR/DARLING VALVE COMPANY

VALVE TEST REPORT

JOB NO: 5219-07

CUSTOMER: GENERAL ELECTRIC CONTRACT NO: 205-AG102 ITEM NO: 07

TYPE & SIZE: 12"-900# GLOBE (STOP), R.S., BOLT-BONN, MOTOR OPER DRAWING NO: 3001-3 B

SERIAL NO: 5219-07-1-6 MPL NO: E22-F023 PROC. # 1104-1-REV-E

2N-794 NINE MILE II

(REQUIRED) (ACTUAL)

GAUGE # 32	PRESS	TIME	MAX TORQUE	ALLOW SEAT LEAK	PRESS	TIME	MAX TORQUE	SEAT LEAK	INSPECTED	DATE
HYDRO TEST BODY	3250	10 MIN	—	NONE	3250	10 MIN.	—	0	[signature]	12-28-76
HYDRO TEST SEAT	1575	10 MIN	MOTOR	120 CC/HR	1575	10 MIN.	MOTOR	0	[signature]	12-28-76
PACKING AREA TEST	3250	10 MIN	—	NONE	3250	10 MIN	—		[signature]	
TEST BACK SEAT	3250	10 MIN	MOTOR	NONE	3250	10 MIN.	MOTOR	0	[signature]	12-28-76

COMMENTS: BONNET BOLT TORQUE 1200 FT LBS

COMMENTS: STEM TRAVEL 3 5/8"

OPERATOR

(REQUIRED) S/N 221571 (ACTUAL) MOTOR S/N 753-21765-01

TIME TO OPEN	45 TO 60 sec.	54 sec.
TIME TO CLOSE	45 TO 60 sec.	54 sec.
LIMIT SWITCHES SET	12-3[illegible]	OPEN OK CLOSED OK
TORQUE SWITCHES SET	4 1/2 MAX.	OPEN 2 CLOSED 2

WITNESSED BY: [signature] DATE: 12-28-76 ACCEPTED BY: [signature] DATE: 12-28-76

Authorized Inspector ANCHOR/DARLING VALVE COMPANY

Form NQA 8-5 [signature] 12-28-76

APPENDIX 1 TO ANCHOR FORM QR-815 (FOR G.E. ONLY)

CONTRACT 205-AG102 DWG NO: 3001-3 PLANT Nine Mile II

MPL E.22-F023

MOTOR OPERATOR TEST

VALVE SN: 5219-07-1-6 MOTOR OPERATOR SN: 221571

MOTOR SN: 753-21765-01

1. Set Switches: LIMIT: OPEN Full CLOSE Full

TORQUE: OPEN 2 CLOSE 2

2. Pressurize body to P1575 PSIG. at motor terminal 100% voltage applied close valve.

RECORD THE FOLLOWING:

VOLTAGE 560 AC CURRENT: 8 Amps TIME: 54 sec

3. Pressurize body to P1575 PSIG. at motor terminal 100% voltage applied open valve.

RECORD THE FOLLOWING:

VOLTAGE: 560 AC CURRENT: 7 Amps TIME: 54 sec.

4. Pressurize body to P N/A PSIG. at motor terminal N/A % voltage applied close valve.

RECORD THE FOLLOWING:

VOLTAGE: N/A CURRENT: N/A TIME: N/A

5. Pressurize body to P N/A PSIG. at motor terminal N/A % voltage applied open valve.

RECORD THE FOLLOWING:

VOLTAGE: N/A CURRENT: N/A TIME: N/A

6. COMMENTS:

WITNESSED BY: (CUSTOMER) ACCEPTED BY: (ANCHOR VALVE CO.)

014 0012

DATE: 12-28-76 DATE: 12-28-76

DEVIATION DISPOSITION REQUEST

U 5 4 6 2 0 6 1 7

GENERAL ELECTRIC CO.
175 CURTNER AVENUE
SAN JOSE CA 95125

1. SUPPLIER: Anchor/Darling Valve Co.
24747 Clawiter Rd.
Hayward, CA. 94545

2. ITEM DESCRIPTION	3. PO NO.	4. PART NAME	5. PART NO.
12"900# Globe Valve	832P023	Bonnet	3001-3-02

6. G.E. PROJECT/SYS	7. SUPPLIER JOB NO.	8. DATE INSPECTED
Nine Mile Point II BC102	5219-07	12/20/76

9. IDENTIFY THE ITEM(S) DEVIATING

12"900# Globe Valve Bonnet SN 5 Heat 7581-E Dwg. 3001-3B

10. DESCRIBE DEVIATION(S), PROPOSED DISPOSITION AND ENGINEERING BASIS

Bonnet flange thickness is undersize.
Thickness is 2.86. Should be 3" per dwg. 3001-3B

Accept As Is. Function is not affected and stress level is acceptable.
See attached calculation.

11. G.E. Q.C. REPRESENTATIVE VERIFICATION OR HOW NOTIFIED [signature] DATE 12-21-76

12. DEVIATION CAUSE, ACTION TAKEN TO PRECLUDE RECURRENCE (TIME AND POINT OF IMPLEMENTATION)

Backfacing of flange to clean up reduced thickness excessively.
Caution manufacturing to maintain flange thickness at all points during machining.

13. I CERTIFY THAT THE ABOVE DESCRIPTION IS CORRECT AND AUTHORIZE SUBMITTAL OF THIS DDR:

[signature] Project Engineer 12/21/76
SUPPLIER'S SIGNATURE, TITLE AND DATE

NO. OF SUPPLIER ATTACHMENTS 2

14. G.E. DISPOSITION AND JUSTIFICATION OF DECISION

Attached calculations show that increased stresses are below Code allowables.
Will not affect performance, life or safety

APPROVED AS PROPOSED ☒
DISAPPROVED ☐
OTHER ☐
☐ FDI NO. _____

0013

OTHER APPROVAL REQUIRED YES ☐ NO ☒
OTHER APPROVAL OBTAINED YES ☐ NO ☒

NO. OF G.E. ATTACHMENTS 2

15. G.E. APPROVALS

ENGINEER [signature] for E.D. Lyne 12/24/76 DATE
Q.C. ENGINEER [signature] 12/30/76 DATE
BUYER [signature] W.G. Dye 12/30/76 DATE

16. G.E. DISTRIBUTION

J.R. SUADEZ	750
R.D. Ruby	753
K. JAKABCIN	
C. LEWIS	354
E. LLOYD	
H. THIEL	

17. A.E. NUMBER REV
205A0102 11

G.E.R. NUMBER 11638

16. QA 8881 12/1/75

01 DISPOSITIONED ORIGINAL-G.E. Q.C. A

12-900 GLOBE VALVE
BONNET FLANGE THICKNESS

REF: ADVCO CALCULATION NO SC 1812-1
PARA 10.2 BONNET

IDEALIZE BONNET AS FLAT CIRCULAR PLATE WITH HOLE AND FIXED AT OUTER EDGE

(REF: ROARK 4TH ED P 221 CASE 17)

a = OUTER RADIUS = 8.5 IN.
b = INNER RADIUS = 1.75 IN.
t = THICKNESS = 2.86 IN.
P_s = INTERNAL PRESSURE = 1600 PSI

$a/b = 4.86$, $\beta = 0.727$ (P.241 ROARK)

$$S = \frac{\beta \cdot P_s a^2}{t^2} = 10{,}275 \text{ PSI} \quad (13{,}500 \text{ ALLOWABLE})$$

OHook
12/21/76

05462 0619

SECTION

2

014 0015

.05462 0630.

VULCAN STEEL FOUNDRY CO.

Carbon and Alloy Steel Castings

2909 CHAPMAN STREET • OAKLAND, CALIF. 94601
PHONE (415) 261-5305

MATERIAL TEST REPORT

ANCHOR VALVE CO.
24747 CLAWITER RD.
HAYWARD, CALIFORNIA 94545

DATE: 8-16-76

MATERIAL SPECIFICATION: ASME SA-216 WCB

ASME SECTION III
WINTER 1973 ADDENDA

HEAT NUMBER: 8056E

PO/JOB NUMBER 4075-5221-07 PATTERN NUMBER 2393-5-1 SERIAL NUMBER 6,7

MATERIAL MARKED BY: Heat and Serial Number (Metal Stamp)

NORMALIZED @ 1700 °F 2 HRS 15 MIN – AQ – DATE 8-20-76 OMT
STRESS RELIEVED @ °F HRS MIN – AQ – DATE
SOLUTION ANNEALED @ °F HRS MIN – WQ – DATE
OTHER Temper 1250 1U 30 DATE 8-20-76 OMT

Chemical Properties		Mechanical Properties		Charpy Impact Test (V-Notch) Temperature +40 °F
.21	Carbon	81,200	Tensile Strength, psi	1
.82	Manganese	56,200	Yield Point, psi	50.5 Ft Lbs
.42	Silicon	31.5	Elongation (%)	75 Shear
.018	Phosphorus	64.0	Reduction of Area (%)	.056 Expansion
.023	Sulfur			
	Nickel			
	Chromium			
	Molybdenum			
	Columbium			
	Copper			

5219-07-1-6

12-30-76

2
59.4 Ft Lbs
80 Shear
.062 Expansion

3
53.6 Ft Lbs
80 Shear
.060 Expansion

PROC 1322-1 REV E

We hereby certify that this material meets all requirements of the material specification and all applicable special requirements of (Article N/A of the ASME Pump and Valve Code (Draft)) or (Article NC2000 of the ASME Section III, Boiler and Pressure Vessel Code).

Except no R.T. or Weld Repair Performed

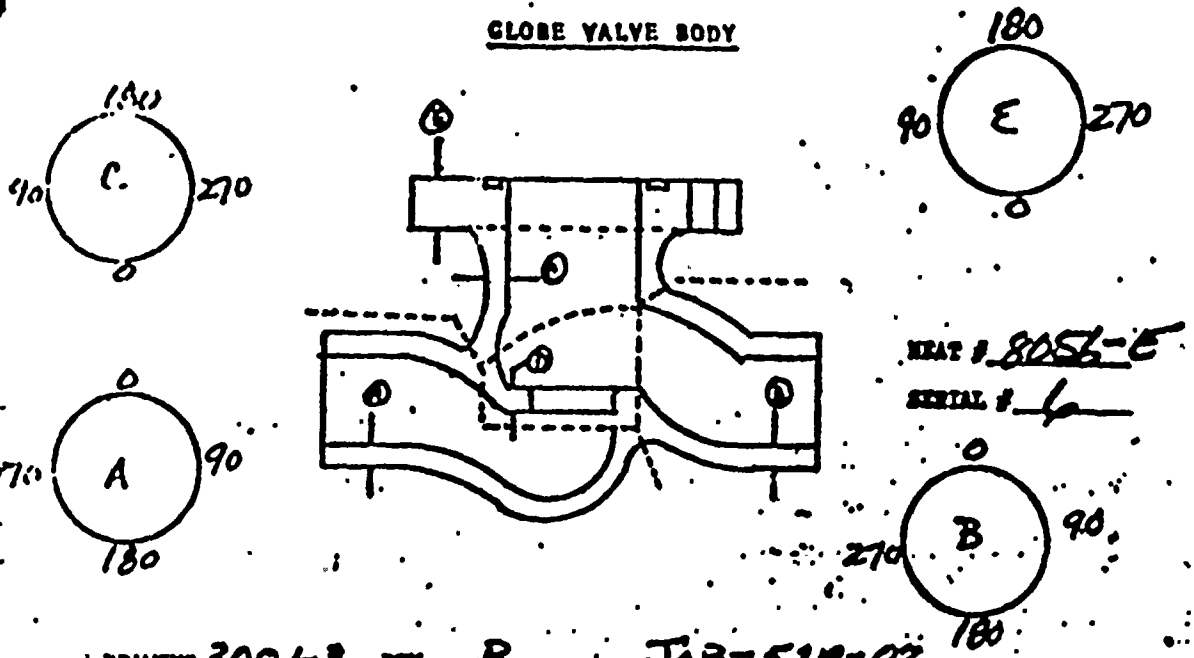
014 0017

9-17-76
(DATE)

QUALITY CONTROL MANAGER

MINIMUM THICKNESS MEASUREMENT RECORD

GLOBE VALVE BODY



HEAT # 8056-E

SERIAL # 6

DRAWING 3001-3 REV. B JOB-5219-07

12" 900# GLOBE (STOP)

PROCEDURE 1452-1-Rev F

ZONE	SPECIFICATION MINIMUM	ACTUAL MINIMUM MEASURED	ACTUAL MINIMUM LOCATION	INSP	DATE	CUSTOMER INSP	DATE
A	1¼	1.450	310°	[illegible]	12/18/76		
B	1¼	1.450	45°	[illegible]	2/11/76		
C	1¼	1.500	45°	[illegible]	2/11/76		
*E	3"-1/2	3.940	0°	[illegible]	2/11/76		

NOTES: (1) Survey each zone (inspect in a grind pattern of approx 3 inches) and record thickness & location of area found to be minimum.

(2) Additional measurement taken at repaired, ground or machined surfaces; selected for dimensional inspection by visual inspection (applicable when indicated by asterisk).

05462 0633

Section 3

05462 0666

VULCAN STEEL FOUNDRY CO.

MASTER

Carbon and Alloy Steel Castings

2909 CHAPMAN STREET • OAKLAND, CALIF. 94601
PHONE (415) 261-5305

MATERIAL TEST REPORT

ANCHOR VALVE CO.
24747 CLAWITER RD.
HAYWARD, CALIFORNIA 94545

DATE: 3-17-76

MATERIAL SPECIFICATION: ASME SA-216 WCB

ASME SECTION III
WINTER 1973 ADDENDA

HEAT NUMBER: 7581E

PO/JOB NUMBER 4075-5221-07 PATTERN NUMBER 5288-1-2 SERIAL NUMBER 5,6,7

MATERIAL MARKED BY: Heat and Serial Number (Metal Stamp)

NORMALIZED @ 1700 °F 2 HRS 30 MIN -- WQ -- DATE 6-11-76 OMT
STRESS RELIEVED @ °F HRS MIN -- AQ -- DATE
SOLUTION ANNEALED @ °F HRS MIN -- WQ -- DATE
OTHER Temper 1150 7 30 DATE 6-11-76 OMT

Chemical Properties		Mechanical Properties		Charpy Impact Test (V-Notch) Temperature +40°F
.20	Carbon	78,600	Tensile Strength, psi	1
.89	Manganese	60,400	Yield Point, psi	66.2 Ft Lbs
.43	Silicon	28.5	Elongation (%)	90 Shear
.014	Phosphorus	65.0	Reduction of Area (%)	.064 Expansion
.022	Sulfur			2
	Nickel			57.4 Ft Lbs
	Chromium			80 Shear
	Molybdenum			.056 Expansion
	Columbium			3
	Copper			63.6 Ft Lbs
				90 Shear
				.063 Expansion

5219-07-2-5

ALE

PROC. HT. 1322-1 REV E

We hereby certify that this material meets all requirements of the material specification and all applicable special requirements of (Article M/A of the ASME Pump and Valve Code [Draft]) or (Article NC2000 of the ASME Section III, Boiler and Pressure Vessel Code).

014 0033

Except no R.T. or Weld Repair Performed

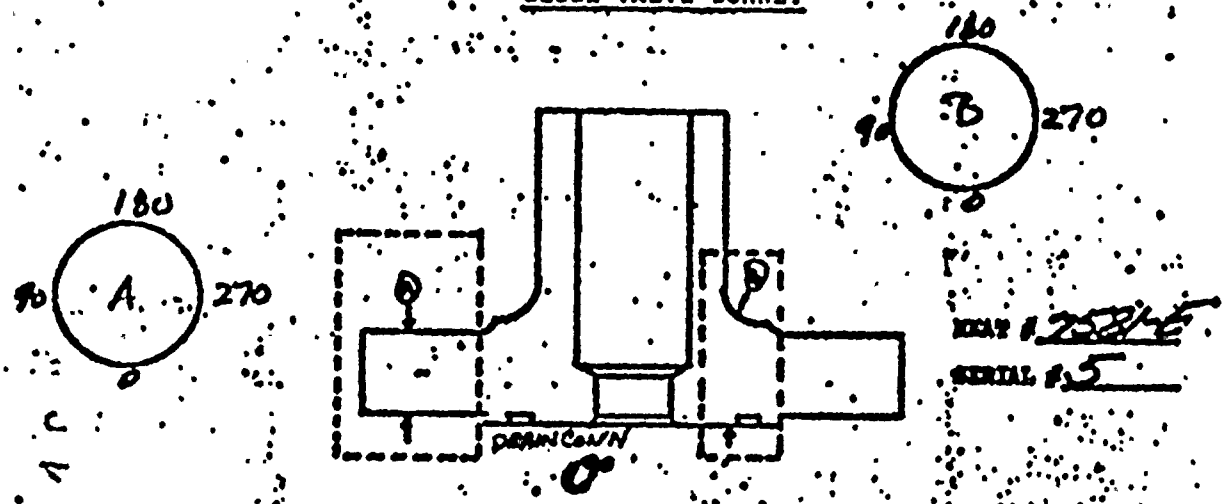
6-16-76
(DATE)

Thomas P. Bessie
QUALITY CONTROL MANAGER

05462 0670

MINIMUM THICKNESS MEASUREMENT RECORD

GLOBE VALVE BONNET



DRAWING 3001-3 REV. B JOB-5219-07

12" 900# GLOBE (STOP)

PROCEDURE #452-1-Rev F

DDR #1638

ZONE	SPECIFICATION MINIMUM	ACTUAL MINIMUM MEASURED	ACTUAL MINIMUM LOCATION	INSP	DATE	CUSTOMER INSP	DATE
A	3"-4/16	2.860	0°	[illegible]	12/20/72		
B	3"	3.300	0°	[illegible]	12/20/72		
C							
D							
E							

NOTES: (1) Survey each zone (inspect in a grind pattern of approx 3 inches) and record thickness & location of area found to be minimum.

(2) Additional measurement taken at repaired, ground or machined surfaces; selected for dimensional inspection by visual inspection (applicable when indicated by asterisk).

014 0037

05462 0671

SECTION

4

014 0038

0 5 4 6 2 0 6 7 2

VULCAN STEEL FOUNDRY CO.

Carbon and Alloy Steel Castings

2909 CHAPMAN STREET • OAKLAND, CALIF. 94601
PHONE (415) 261-5305

MATERIAL TEST REPORT

ANCHOR VALVE CO.
24747 CLAWITER RD.
HAYWARD, CALIFORNIA 94545

DATE: 8-18-76

MATERIAL SPECIFICATION: ASME SA-216 WCB

ASME SECTION III
WINTER 1973 ADDENDA

HEAT NUMBER: 8072E

PO/JOB NUMBER 4075-5221-07 PATTERN NUMBER 2393-5-3 SERIAL NUMBER 8,9,10

MATERIAL MARKED BY: Heat and Serial Number (Metal Stamp)

NORMALIZED @ 1700 °F 2 HRS MIN ~~AO~~ WQ – DATE 9-10-76 OMT
STRESS RELIEVED @ °F HRS MIN – AQ – DATE
SOLUTION ANNEALED @ °F HRS MIN – WQ – DATE
OTHER Temper 1250 7 DATE 9-10-76 OMT

Chemical Properties		Mechanical Properties		Charpy Impact Test (V-Notch) Temperature +40° F
.20	Carbon	97,700	Tensile Strength, psi	1
.85	Manganese	74,100	Yield Point, psi	39.9 Ft Lbs
.46	Silicon	22	Elongation (%)	60 Shear
.015	Phosphorus	49.4	Reduction of Area (%)	.06 Expansion
.020	Sulfur			
	Nickel			
	Chromium			
	Molybdenum			2
	Columbium	5219-07-4-8		38.8 Ft Lbs
	Copper			60 Shear
				.041 Expansion
				3
				41.5 Ft Lbs
				60 Shear
				.046 Expansion

PROC HT. 1322-1 REV E

We hereby certify that this material meets all requirements of the material specification and all applicable special requirements of (Article N/A of the ASME Pump and Valve Code (Draft)) or (Article NC2000 of the ASME Section III, Boiler and Pressure Vessel Code).

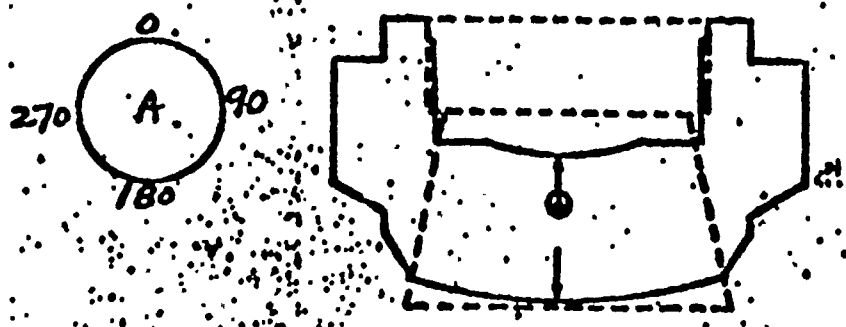
Except no R.T. or Weld Repair Performed 011 0040

9-30-76
(DATE)

Thomas P. Rossi
QUALITY CONTROL MANAGER

MINIMUM THICKNESS MEASUREMENT RECORD

GLOBE VALVE DISC



HEAT # 8072E

SERIAL # 6

STAMP X = 0°

DRAWING 3001-3 REV. B JOB - 5210-07

12" - 900# GLOBE B.B.

PROCEDURE 1452-1-REV. F

ZONE	SPECIFICATION MINIMUM	ACTUAL MINIMUM MEASURED	ACTUAL MINIMUM LOCATION	INSP	DATE	CUSTOMER INSP	DATE
A	3"	3 3/8	0°	[illegible]	12/20/76		
B							
C							
D							
E							

NOTES: (1) Survey each zone (inspect in a grind pattern of approx 3 inches) and record thickness & location of area found to be minimum.

(2) Additional measurement taken at repaired, ground or machined surfaces; selected for dimensional inspection by visual inspection (applicable when indicated by asterisk).

0 5 4 3 2 0 3 7 8

SECTION

5

014 0046

05462 0679

ANCHOR/DARLING VALVE COMPANY 24747 CLAWITER ROAD • HAYWARD, CALIFORNIA 94545 • (415) 785-2430
CABLE: ANCORCO • TELEX: 335451

"CERTIFICATION"

Subject: PRESSURE BOUNDRY BOLTING MATERIAL
STUDS CODE 7C

We hereby certify that this material meets all the requirements of the material specification and applicable special requirements of NB-2000, ASME Section III, Nulcear Power Plant Components, Winter Addenda 73.

J.W. Smith, Jr.
Quality Assurance Engineer
12/27/76

011 0018

0 5 4 6 2 0 5 9 9

RALPH KNUDTSEN CORP.

45805 WARM SPRINGS BLVD. FREMONT, CA. 94538

(415) 651-1363

ANCHOR/DARLING VALVE COMPANY
24747 Clawiter Road
Hayward, California 94545

Gentlemen: We hereby certify the bolting manufactured by us meets the following specifications:

ASTM - SA 193 GR B 7

CODE # - 7 C

HEAT NUMBER - 52326

MILL - CRUCIBLE

CODE # 7 C IS TRACEABLE TO MILL HEAT # 52326

IDENTIFICATION - STUDS ARE STAMPED ON ONE END WITH B 7 AND TRACEABILITY CODE 7 C.

014 0049

SIGNED: R. E. Knudtsen

Crucible Inc. 0 5 4 6 2 0 3 3 1 Division

TEST REPORT

TO:	SHIP TO:
COULTER STEEL & FORGE CO. PO BOX [illegible] EMERYVILLE, CALIF. 94662	COULTER STEEL & FORGE CO. 1494 [illegible] STREET EMERYVILLE, CALIF. 946[illegible]

CUSTOMER ORDER NO. & DATE	CUSTOMER REQ. NO.	OUR ORDER NO.	DATE SHIPPED	DISTRICT SHIPPED FROM
6338-1[illegible]		[illegible]	[illegible]	[illegible]

ITEM NO.	DESCRIPTION - SIZE	WEIGHT	HEAT NO.
	OH 4140 HR HT ASTM A-193 GRADE B7 M/L 1-3/8" RD CODE 7C	1980 LBS	52326

Cond Made

CHEMICAL ANALYSIS

ITEM NO.	HEAT NO.	C	MN	P	S	SI	NI	CR	V	W	MO	CU	AL
	52326	.42	.91	.014	.024	.27	.17	.94	.	.	.19	.06	.05

MECHANICAL PROPERTIES

ITEM NO.	HARDNESS NO.	HARDNESS METHOD	YIELD STRENGTH OFFSET %	YIELD STRENGTH PSI	TENSILE PSI	ELONG. GAGE	ELONG. %	% RED. AREA	BEND DEGREE	BEND FACTOR	IMPACT FT./LB.	IMPACT TYPE TEST
52326	BHN302/			130050	149,290	.	18.0	50.[illegible]			.	.02% YIELD 128,8[illegible] SURFACE HRDNESS BHN 293/302 TEMPER 1180°F

JOMINY HARDENABILITY IN /16"

ITEM NO.	GRAIN SIZE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	20	24	28	32	ATTAINABLE HARDNESS
52326	7/ /	37	5[illegible]	5[illegible]	5[illegible]	5[illegible]	5[illegible]	5[illegible]	5[illegible]	5[illegible]	5[illegible]	4[illegible]	47	48	4[illegible]	42	4[illegible]	1[illegible]	3[illegible]	3[illegible]	3	

THE TEST RESULTS SHOWN IN THIS REPORT ARE CORRECT TO THE BEST OF OUR KNOWLEDGE AND BELIEF.

014 0030

SWORN TO AND SUBSCRIBED BEFORE ME

THIS ____ DAY OF _____ 19__

NOTARY PUBLIC

LOUISE JASEK, Notary Public
My Commission Expires Mar. 25, 1979

CERTIFIED BY
COLT INDUSTRIES CRUCIBLE Inc
7-23-76

Linda Johnson
REPRESENTATIVE

Crucible [illegible]

0 5 4 6 2 0 6 3 2

LABORATORY CERTIFICATE

SIGNET TESTING LABORATORIES, INC.

TESTING AND INSPECTION OF CONSTRUCTIONAL AND INDUSTRIAL MATERIALS

ENGINEERS
CHEMISTS
METALLURGISTS

REPLY TO
1400 WEST WINTON AVENUE
HAYWARD, CALIFORNIA 94545
783-7910 AREA CODE 415

October 28, 1975

LAB NO.: 22503 P.O. 1971

SAMPLE: One (1) 1 3/8" diameter steel bar, ASTM A193 Grade B-7

HEAT NO.: Code 7C

DATE RECEIVED: October 21, 1975

REPORT TO: Ralph Knudtsen Corporation
45805 Warm Springs Blvd.
Fremont, Calif. 94538

REPORT

CHARPY IMPACT TESTS

Specimen Size: 10x10x55mm
Notch: V-Notch
Test Temperature: +40°F

Test No.	Impact Value ft.-lbs.	Lateral Expansion inches	Percent Shear
1	76.0	0.050	85
2	76.6	0.044	80
3	78.[illegible]	0.047	85
Average:	77.1	0.047	83

Respectfully submitted,
SIGNET TESTING LABORATORIES, INC.

BY [illegible]

014 0051

2cc: Ralph Knudtsen Corp.

05462 0633

Anchor DARLING

ANCHOR/DARLING VALVE COMPANY 24747 CLAWITER ROAD • HAYWARD, CALIFORNIA 94545 • (415) 785-2430
CABLE: ANCORCO • TELEX: 335451

"CERTIFICATION"

Subject: PRESSURE BOUNDRY BOLTING MATERIAL
NUTS CODE W13

We hereby certify that this material meets all the requirements of the material specification and applicable special requirements of NB-2000, ASME Section III, Nulcear Power Plant Components, Winter Addenda 73.

J.W. Smith, Jr.
Quality Assurance Engineer
12/27/76

BWRPD-QS G.C.M. 12-30-76

014 0052

CERTIFIED TEST REPORT

VITCO NUCLEAR PRODUCTS INC. 1489 E. 363rd ST. EASTLAKE, OHIO 44094
PHONE AREA CODE 216-946-9550

TO
ANCHOR/DARLING VALVE COMPANY
24747 Clawiter Road
Hayward, CA 94545

DATE SHIPPED	VITCO ORDER NUMBER	CUSTOMER ORDER NUMB
9-23-76	1489	2173

ITEM (20) 112 Pcs. 1-3/8" -8 Hvy Hex Nuts (Trace. # W13)
Tag: 5219-05(12) -06(12) -07(16), 5220-14(16), 5221-12(12) -13(12) -14(16)

SPECIFICATION ASME SA 194, Grade 7, class 2, ASME Section III, Winter 73

CHEMICAL COMPOSITION

ITEM	HEAT NO.	C	Mn	P	S	Si	Cr	Mo	Ni	Cu	Fe	Al	Ti
20	124K244	.40	.90	.011	.015	.24	.95	.21					

PHYSICAL COMPOSITION

ITEM	TENSIL STRENGTH PSI	YIELD PSI	ELONG. % IN 2"	RED. AREA %	HARDNESS	GRAIN SIZE	BEND TEST	MIN. TEMP.
0	Hardness Per ASME SA 194, Para. 8.A				269 BHN			1180°F
	Hardness Per ASME SA 194, Para. 8.B				241 BHN			

ADDITIONAL SPECIFICATION REQUIREMENTS OR SPECIAL TESTS

CONE STRIPPING PROOF LOAD (126,850 Lbs.) SATISFACTORY

IMPACT STRENGTH V-NOTCH CHARPY BARS @+40°F. (FT.LB.)	LATERAL EXPANSION (IN.)	DUCTILE FRACTURE AREA (%)
49.5	.032	100
49.0	.032	100
51.0	.034	100
Average 50.0		

BWRPD. G.C.M. 12-8-76

ATTACHMENTS

WYCKOFF STEEL CORP. MILL TEST REPORT FOR HEAT # 124K244.

WE CERTIFY THAT THE ABOVE MATERIAL IS COMMERCIALLY FREE FROM MERCURY CONTAMINATION AND MEETS THE REQUIREMENTS OF SPECIFICATION ASME SA 194, GRADE 7, CLASS 1, ASME SECTION III, WINTER 73, AND YOUR ORDER # 2173.

ORIGINAL

THE ABOVE TESTS CONFORM TO THE REQUIREMENTS OF THE SPECIFICATION LISTED

SWORN TO AND SUBSCRIBED BEFORE ME THIS _____ DAY OF _____ BY A DULY AUTHORIZED AGENT OF VITCO NUCLEAR PRODUCTS INC.

COPY

WE HEREBY CERTIFY THAT THE ABOVE DATA IS A TRUE COPY OF THE DATA FURNISHED US BY THE PRODUCING MILL OR SUPPLIER OF THE DATA RESULTING FROM TESTS PERFORMED IN APPROVED LABORATORIES AND MEETS THE REQUIREMENTS OF THE SPECIFICATION NOTED.

VITCO NUCLEAR PRODUCTS INC.

BY E. D. [illegible]

MY COMMISSION EXPIRES _____ NOTARY PUBLIC

.0 5 4 6 2 0 6 7 5.

☐ FOSTER CITY — MAIN OFFICE 1118 Chess Drive, Foster City, CA 94404, (415) 573-6000

☒ SAN MATEO OFFICE 145 North Amphlett Blvd., San Mateo, CA 94401, (415) 342-4183

☐ SAN LEANDRO OFFICE 2506 Davis Street, San Leandro, CA. 94577, (415) 562-7500

Peabody Testing
X-Ray Engineering Company

Anchor Darling Valve
24747 Clawiter Road
Hayward, Ca 94545

CERTIFIED INSPECTION REPORT

Control No. 5219-07-4-8

Date 10-26-76

Serial No.	View No.	Acpt.	Rej.	Gas	Tear	Shrink	Slag	Sand	Surface	Artifact Filter	OTHER
521907-4 SN-8											
	1-2-3	X							✓	✓	

P.O. No. 5324-5219- 07
Part Name Disc 12" 900# Globe
Part No. 2393-5-3
Heat No. 8072 E
Material SA 216 WCB

Radiographic Insp. Spec. ASME Sec III 71 NB2570 winter 73 addenda & IPRT--101 Rev.A Add-1.

Acceptance Std. ASTM E71-64, E186-67, E280-68

Class (2) defects D,E,F,G not acceptable

Other Insp. MT ☐ PT ☐ UT ☐

Insp. Spec.

Acceptance Std.

Our Shipper 0226

Cust. Shipper 0226

		FILM USED
Qty. Rec.	1	3½ x 8½
Qty. Insp.	1	5 x 7
Total Accept.	1	4½ x 8½
Total Rej.	0	3½ x 17
Qty. X-Rayed	1	4½ x 17
Qty. Accept.	1	8 x 10
Qty. Rej.	0	7 x 17
No. of Views	1	10 x 12
		14 x 17 3

Other Inspection
Qty. Accepted
Qty. Rejected

BWRPD-QC G.C.M. 12-30-76

Surface indications verified by visual examination Yes ☒ No ☐

Inspector:

SNT-TC-1A Level:

Contract No. 205 AG 102 Nine Mile Point Unit #2

Drawing No. 5288-1-5

RSSS No. 5221- 7-3 Rev.0

Reviewed by: [signature] 11/12/76 G.E. Insp

Interpreter: Ray Rash

SNT-TC-1A Level: II Ray Rash

011 0013

Q. C. A.
ANCHOR DARLING VALVE CO
SNT-TC-1A LEVEL II
[signature] 11-11-76

PEABODY TESTING/X-RAY ENGINEERING COMPANY ASSUMES NO RESPONSIBILITY FOR LOSSES OF ANY KIND DUE TO INTERPRETATION. THE X-RAY FILM USED REMAINS THE PROPERTY OF PEABODY TESTING/X-RAY ENGINEERING COMPANY.

FORM 108D

Republic Steel Corporation
Cleveland OH 44101

Republic steel

CUSTOMER ORDER NUMBER AND DATE	SHIPPED FROM	INVOICE DATE	INVOICE NUMBER
50545 7/11/75	GARY IND		823-7041

SHIPPED 0475 KAFLAN TRUCKING

REPUBLIC ORDER NO	CUSTOMER ABBREVIATION	SALES CO	SP	CONTROL CARD	STATE	COUNTY	TAX	OFFICE	ACCOUNT
2-11302-823	RYERSON&SON	05 01	154	76412	034	0193	3300	02 13 R	552400 06 160

JOSEPH T RYERSON & SON INC
P O BOX 8000-A
CHICAGO, IL 60680

TEAM 3M13 TERMS 3C-1/2-10

SALES PRODUCT 13607700G -206993-709115- 22601

JOSEPH T RYERSON & SON INC
EAST 53RD & LAKESIDE AVE
CLEVELAND, OH 44114

("SHIP TO" SAME AS "SOLD TO" UNLESS OTHERWISE INDICATED)

"P" PARTIAL SHIPMENT "C" COMPLETE SHIPMENT

REPUBLIC PRODUCT DESCRIPTION	ITEM NO	UNITS SHIPPED
SPEC 1031-C DTD 1/20/71 AISI-1045 FINE GRAIN COLD DRAWN STEEL BARS YELLOW CC 1039621		
1-5/8 IN HEX X 10/12 FT 1 BDL 48 PCS OD 9/14 SHPT COVD BY INVS 823-7040841 B/L WT 93720	3C	44320

STOCK

BWRPD-OC G.C.M. 10-15-76

FRT. PPD

ITEM NO	HEAT NO	E H N	CARBON	MANG	PHOS	SUL	SIL	COPPER	NICKEL	CHROME	MOLY	VAN
3	6024519	5-8	.48	.86	.019	.026	.23					

Piece count may vary.
Check weight before claiming shortage.

Shipping Notice

120646

2CSH*MOV107

05462-0534

FORM NPV-1 MANUFACTURERS' DATA REPORT FOR NUCLEAR PUMPS OR VALVES*

As Required by the Provisions of the ASME Code Rules

1. Manufactured by ANCHOR/DARLING VALVE CO. HAYWARD, CA. Order No. 5219-02
(Name & Address of Manufacturer)

2. Manufactured for GENERAL ELECTRIC CO. SAN JOSE, CA. Order No. 205-AG-102
(Name and Address)

3. Owner NIAGRA MOHAWK POWER CORP.

4. Location of Plant NINE MILE POINT NUCLEAR STATION UNIT 2 SCRIBA, NEW YORK

5. Pump or Valve Identification SERIAL # 1N233 12"655# GATE

ASME SECTION III
(Brief description of service for which equipment was designed)
STEAM AND WATER SERVICE IN A COMMERCIAL NUCLEAR POWER PLANT

(a) Drawing No. 2997-3 Prepared by E.O. HOOK

(b) National Board No. NA

6. Design Conditions 1512 / 1640 (Pressure) psi 700 / 100 (Temperature) °F OR PRESSURE CLASS 655#

7. The material, design, construction, and workmanship complies with ASME Code Section III, Class 1

Edition 1971, Addenda Date WINTER '73, Case No. 1567, 1637

Mark No.	Material Spec. No.	Manufacturer	Remarks
(a) Castings			
BODY HT. 7920E SN 26	SA216 WCB	ANCHOR/DARLING	VULCAN
BONN. HT. 8072E SN 7	SA216 WCB	ANCHOR/DARLING	VULCAN
DISC HT. 8082E SN 18	SA216 WCB	ANCHOR/DARLING	VULCAN
(b) Forgings			
BACKSEAT BUSH.HT. 213981	SA105	ANCHOR/DARLING	AIRCO VIKING
BODY DRAIN CONN. HT. 213981	SA105	ANCHOR/DARLING	AIRCO VIKING
BONN.DRAIN CONN. HT. 213981	SA105	ANCHOR/DARLING	AIRCO VIKING

013 0020

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

0 5 4 6 2 0 5 3 S

FORM NPV-1 (back)

Mark No.	Material Spec. No.	Manufacturer	Remarks
(c) Bolting			
BONN. STUDS CODE A20	SA193 B7	VITCO	REPUBLIC
BONN. NUTS CODE A9	SA194-7	ANCHOR/DARLING	VITCO
(d) Other Parts			
SEAT RING HT. 33899	SA106 Gr.B	ANCHOR/DARLING	UNITED STATES STEEL
BONN.LEAKOFF PIPE HT. 20260	SA106	ANCHOR/DARLING	GULF STATES TUBE

8. Hydrostatic test 2460 psi.

CERTIFICATION OF DESIGN

Design information on file at NINE MILE POINT NUCLEAR STATION SCRIBA, NEW YORK

Stress analysis report on file at NA

Design specifications certified by CLYDE T. NIEH (1) Prof. Eng. State CA Reg. No. 15587

Stress analysis report certified by NA (1) Prof. Eng. State _____ Reg. No. _____

(1) Signature not required. List name only.

We certify that the statements made in this report are correct.

Date 1-7 19 77 Signed ANCHOR/DARLING CO. (Manufacturer) By B. J. Tillman

Certificate of Authorization No. N-781 expires MARCH 4, 1977

CERTIFICATE OF SHOP INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State of Province of CALIFORNIA and employed by LUMBERMENS MUTUAL of LONG GROVE, ILLINOIS have inspected the equipment described in this Data Report on 1-7 19 77, and state that to the best of my knowledge and belief, the Manufacturer has constructed this equipment in accordance with the applicable Subsections of ASME Code, Section III.

By signing this certificate, neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the equipment described in this 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 1-7 19 77

John Carroll (Inspector) Commissions CA-1309 (National Board, State, Province and No.)

013 0021

05462. 0538

VULCAN STEEL FOUNDRY CO.

Carbon and Alloy Steel Castings

2909 CHAPMAN STREET • OAKLAND, CALIF. 94601
PHONE (415) 261-5305

MATERIAL TEST REPORT

ANCHOR VALVE CO.
24747 CLAWITER RD.
HAYWARD, CALIFORNIA 94545

DATE: 7-21-76

MATERIAL SPECIFICATION: ASME SA-216 WCB

ASME SECTION III
WINTER 1973 ADDENDA

HEAT NUMBER: 7920E

PO/JOB NUMBER 6113 PATTERN NUMBER 1182-5-1 SERIAL NUMBER 26

MATERIAL MARKED BY: Heat and Serial Number (Metal Stamp)

NORMALIZED @ 1700 °F 3 HRS 15 MIN — ~~AQ~~ WQ — DATE 8-2-76 OMT
STRESS RELIEVED @ °F HRS MIN — AQ — DATE
SOLUTION ANNEALED @ °F HRS MIN — WQ — DATE
OTHER Temper 1125 7 30 DATE 8-3-76 OMT

Chemical Properties	Mechanical Properties	Charpy Impact Test (V-Notch) Temperature +40 °F
.20 Carbon	95,000 Tensile Strength, psi	1
.88 Manganese	74,000 Yield Point, psi	61.4 Ft Lbs
.47 Silicon	25 Elongation (%)	70 Shear
.011 Phosphorus	61.8 Reduction of Area (%)	.058 Expansion
.017 Sulfur		
Nickel		2
Chromium		59.2 Ft Lbs
Molybdenum		70 Shear
Columbium		.055 Expansion
Copper		
		3
		60.1 Ft Lbs
		70 Shear
		.052 Expansion

BWRPD-OS G.C.M. 1-27-77

5219-02-1-26

013 0025

HT PROC. 1322-1 REV E

We hereby certify that this material meets all requirements of the material specification and all applicable special requirements of (Article N/A of the ASME Pump and Valve Code (Draft)) or (Article NB2000 of the ASME Section III, Boiler and Pressure Vessel Code).

Except no R.T. or Weld Repair Performed

9-29-76
(DATE)

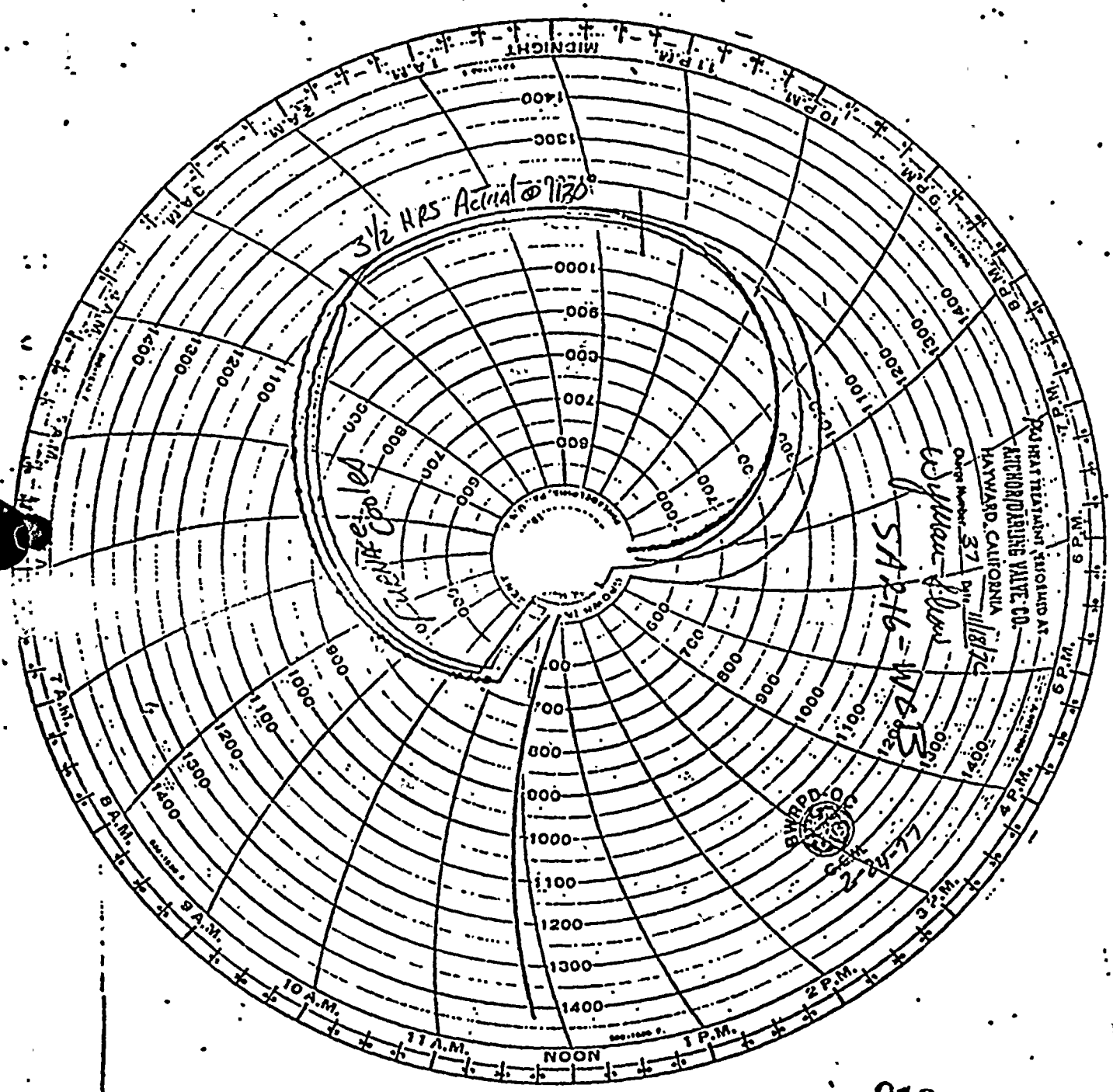
Thomas P. Rey
QUALITY CONTROL MANAGER

VS FORM NO. 2

0 5 4 6 2 0 3 1

ANCHOR/DARLING VALVE CO. PROCEDURE 1372-1, REV. B

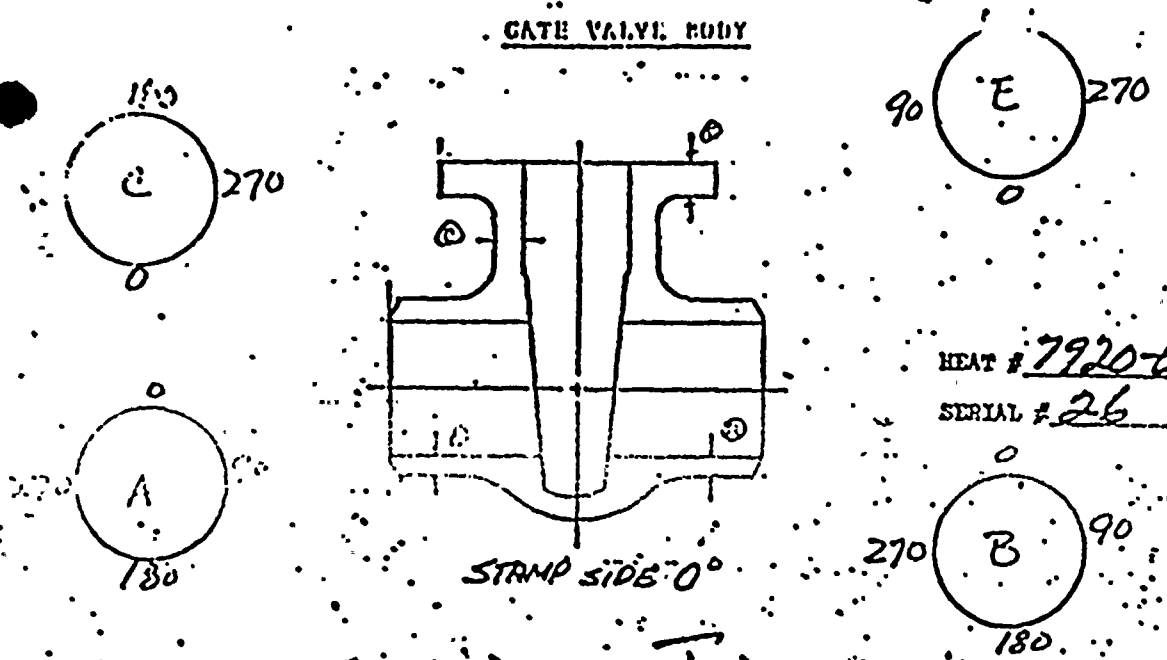
1	Body	SN 1	Heat 8007E	5219-01
1	Body	SN 26	Heat 7920E	5219-02
1	Body	SN 4	Heat 50	5384-01



013 0038

05462 0556

GATE VALVE BODY



HEAT # 7920-E

SERIAL # 26

DRAWING 2997-3 REV. D JOB-5219-02

12"-655 GATE R.S.

PROCEDURE 1452-1-RWF

POS.	SPECIFICATION MINIMUM	ACTUAL MINIMUM MEASURED	ACTUAL MINIMUM LOCATION	INSP	DATE	CUSTOMER INSP	DATE
A	.97	1.650	190°	[illegible]	12/18/76		
B	.97	1.610	170°	[illegible]	12/18/76		
C	.97	1.190	180°	[illegible]	12/18/76		
E	2 7/16 -1/16	2.440	190°	[illegible]	12/18/76		
*							

NOTES: (1) Survey each zone (inspect in a grind pattern of approx 3 inches) and record thickness & location of area found to be minimum.

(2) Additional measurement taken at repaired, ground or machined surfaces; selected for dimensional inspection by visual inspection (applicable when indicated by asterisk).

BWRPD-OP G.C.M. 2-27-77

013 0043

05462 0559

VULCAN STEEL FOUNDRY CO.

Carbon and Alloy Steel Castings

2909 CHAPMAN STREET • OAKLAND, CALIF. 94601
PHONE (415) 261-5305

MATERIAL TEST REPORT

DATE: 8-18-76

ANCHOR VALVE CO.
24747 CLAWITER RD.
HAYWARD, CALIFORNIA 94545

MATERIAL SPECIFICATION: ASME SA-216 WCB

ASME SECTION III
WINTER 1973 ADDENDA

HEAT NUMBER: 18072E

PO/JOB NUMBER 5695-5220-09 TRANSFERED TO 52A-02 PATTERN NUMBER 5174-1-5-2 SERIAL NUMBER 7,8,9

MATERIAL MARKED BY: Heat and Serial Number (Metal Stamp)

NORMALIZED @ 1700 °F 2 HRS MIN ~~AQ~~ WQ DATE 9-8-76 OMT
STRESS RELIEVED @ °F HRS MIN — AQ — DATE
SOLUTION ANNEALED @ °F HRS MIN — WQ — DATE
OTHER Temper 1250 6 DATE 9-8-76 OMT

Chemical Properties		Mechanical Properties		Charpy Impact Test (V-Notch) Temperature +40 °F
.20	Carbon	97,700	Tensile Strength, psi	1
.85	Manganese	74,100	Yield Point, psi	39.9 Ft Lbs
.46	Silicon	22.0	Elongation (%)	60 Shear
.015	Phosphorus	49.4	Reduction of Area (%)	.040 Expansion
.020	Sulfur			2
	Nickel			38.8 Ft Lbs
	Chromium			60 Shear
	Molybdenum			.041 Expansion
	Columbium			3
	Copper			41.5 Ft Lbs
				60 Shear
				.044 Expansion

BWRPD-QC GCM 1-27-77

5219-02-2-7

HT PROC 1322-1 REV E

We hereby certify that this material meets all requirements of the material specification and all applicable special requirements of (Article N/A of the ASME Pump and Valve Code (Draft)) or (Article NB2000 of the ASME Section III Boiler and Pressure Vessel Code).

C13 0047

Except no R.T. or Weld Repair Performed

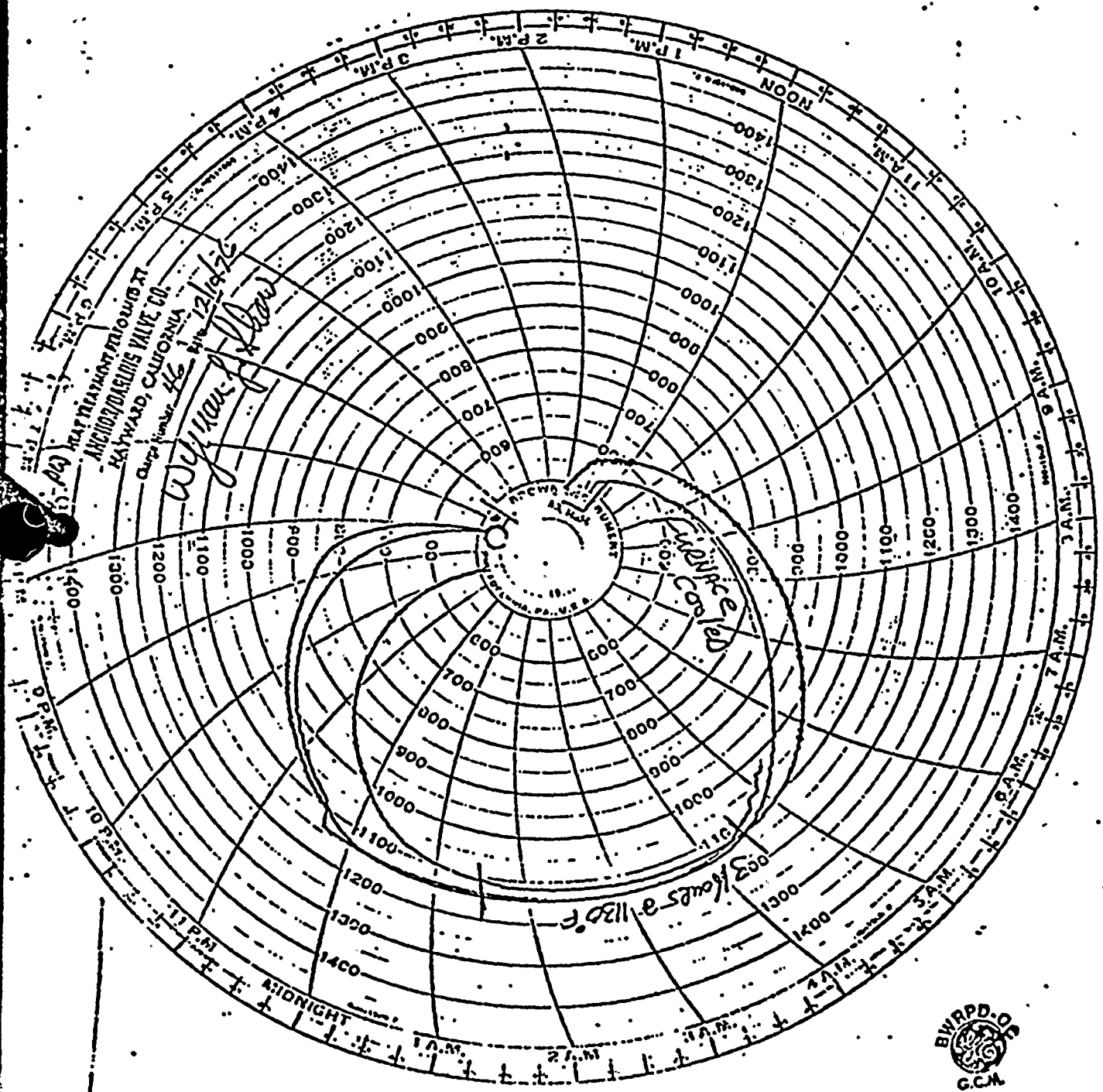
9-13-76
(DATE)

QUALITY CONTROL MANAGER

ANCHOR/DARLING VALVE CO. PROCEDURE 1372-1, REV. E

0 5 4 6 2 0 5 5

1	Bonnet	SN 7	Heat 8072E	5219-02
1	Body	SN 7	Heat 8056E	5220-14



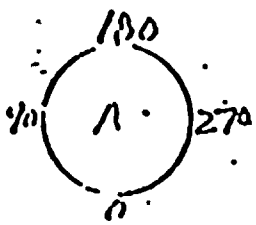
BWRPD.O
C.C.M.

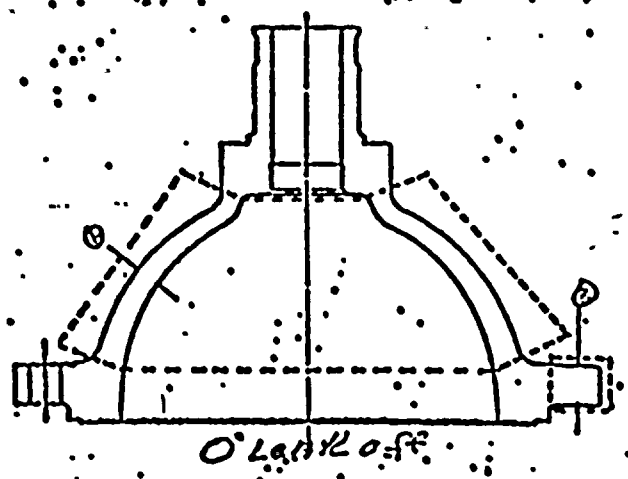
013 0070

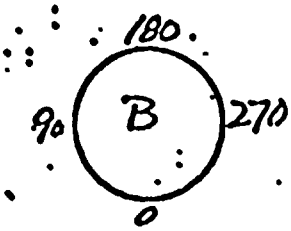
05462 0585

MINIMUM THICKNESS MEASUREMENT RECORD

GATE VALVE BONNET







HEAT # 8072-E

SERIAL # 7

DRAWING 2997-3 REV. D JOB-5219-02

12" 600# Gate Valve

Pressure [illegible]

ZONE	SPECIFICATION MINIMUM	ACTUAL MINIMUM MEASURED	ACTUAL MINIMUM LOCATION	INSP	DATE	CUSTOMER INSP	DATE
A	2 7/16 - 1/16	2.400	0°	MB	12/27/76		
B	2"	2.050	10°	MB	12/27/76		
C							
D							
E							

BWRPD-OC G.C.N. 1-27-77

NOTES: (1) Survey each zone (inspect in a grind pattern of approx 3 inches) and record thickness & location of area found to be minimum.

(2) Additional measurement taken at repaired, ground or machined surfaces; selected for dimensional inspection by visual inspection (applicable when indicated by asterisk).

013 0073

0 5 4 6 2 0 5 3 8

VULCAN STEEL FOUNDRY CO.

Carbon and Alloy Steel Castings

2909 CHAPMAN STREET • OAKLAND, CALIF. 94601
PHONE (415) 261-5305

MATERIAL TEST REPORT

ANCHOR VALVE CO.
24747 CLAWITER RD.
HAYWARD, CALIFORNIA 94545

DATE: 8-19-76

MATERIAL SPECIFICATION: ASME SA-216 WCB

ASME SECTION III
WINTER 1973 ADDENDA

HEAT NUMBER: 8082E

PO/JOB NUMBER 4076-5221-02 Transferred to 5219-02 PATTERN NUMBER 1182-5-4 SERIAL NUMBER 18, 19

MATERIAL MARKED BY: Heat and Serial Number (Metal Stamp)

NORMALIZED @ 1700 °F 2 HRS 30 MIN — ~~AQ~~ WQ — DATE 9-23-76 OMT
STRESS RELIEVED @ °F HRS MIN — AQ — DATE
SOLUTION ANNEALED @ °F HRS MIN — WQ — DATE
OTHER Temper 1250 11 DATE 9-23-76 OMT

Chemical Properties		Mechanical Properties		Charpy Impact Test (V-Notch) Temperature +40°F
.20	Carbon	95,200	Tensile Strength, psi	1
.88	Manganese	74,900	Yield Point, psi	51.9 Ft Lbs
.45	Silicon	25	Elongation (%)	90 Shear
.016	Phosphorus	54.9	Reduction of Area (%)	.054 Expansion
.023	Sulfur			2
.08	Nickel			54.2 Ft Lbs
.16	Chromium			90 Shear
.04	Molybdenum			.058 Expansion
	Columbium			
	Copper			3
				52.9 Ft Lbs
				90 Shear
				.057 Expansion

5219-02-4-18

BWRPD-QC G.C.M. 2-24-77

Procedure
Heat Treat 1322-1-E

We hereby certify that this material meets all requirements of the material specification and all applicable special requirements of (Article N/A of the ASME Pump and Valve Code [Draft]) or (Article NB2000 of the ASME Section III, Boiler and Pressure Vessel Code).

Except no R.T. or Weld Repair Performed

9-23-76
(DATE)

Thomas P. Bein
QUALITY CONTROL MANAGER

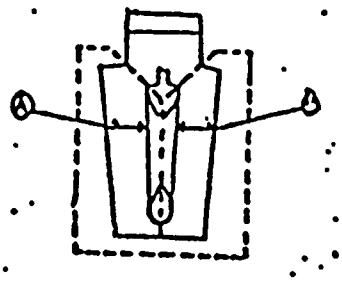
0130076 A

VS FORM NO. 2

05462 0511

MINIMUM THICKNESS MEASUREMENT RECORD

GATE VALVE DISC



HEAT # 8082-E

SERIAL # 18

DRAWING 2997-3 REV. D JOB# 5219-02

12"-655# GATE, R.S., BOLT-BONN.

PROC-1452-1-REV-F

ZONE	SPECIFICATION MINIMUM	ACTUAL MINIMUM MEASURED	ACTUAL MINIMUM LOCATION	INSP	DATE	CUSTOMER INSP	DATE
A	1 3/8"	1 9/16	180°	[illegible]	12/4/76		
B	1 3/8"	1 7/16	180°	[illegible]	12/4/76		
C							
D							
E							

BWRPD-QC G.CM 1-27-77

013 0079

NOTES: (1) Survey each zone (inspect in a grind pattern of approx 3 inches) and record thickness & location of area found to be minimum.

(2) Additional measurement taken at repaired, ground or machined surfaces; selected for dimensional inspection by visual inspection (applicable when indicated by asterisk).

CERTIFIED TEST REPORT

VITCO NUCLEAR PRODUCTS INC. 1489 E. 363rd ST. EASTLAKE, OHIO 44094
PHONE AREA CODE 216 946 9550

TO
ANCHOR/DARLING VALVE COMPANY
24747 Clawiter Road
Hayward, CA 94545

DATE SHIPPED	VITCO ORDER NUMBER	CUSTOMER ORDER NUMBE
6-23-76	1489	1810

ITEM (19) 21 Pcs, 1¼" -8 X 5½" lg. Studs Tap End (Traceability # A20)

SPECIFICATION ASME SA 193, Grade B7, ASME Section III, Class 1, W-73

CHEMICAL COMPOSITION

ITEM	HEAT NO.	C	Mn	P	S	Si	Cr	Mo	Ni	Cu	Fe	Al	Ti
19	8067457	.43	.98	.010	.023	.29	.94	.22	.17				

PHYSICAL COMPOSITION

ITEM	TENSIL STRENGTH PSI	YIELD PSI	ELONG. % IN 2"	RED. AREA %	HARDNESS	GRAIN SIZE	BEND TEST	MIN. TEMP.
19	145,000	132,000	20.0	59.4	302 BHN			1120°F

ADDITIONAL SPECIFICATION REQUIREMENTS OR SPECIAL TESTS

MAGNETIC PARTICLE INSPECTION Per ASME Section III 1971 Add. NB-2583.

ATTACHMENTS

REPUBLIC STEEL CORP. MILL TEST REPORT FOR HEAT # 8067457.
ULTRA LABS., INC, MAGNETIC PARTICLE INSPECITON.

IMPACT STRENGTH V=NOTCH CHARPY V-NOTCH @+40°F (FT.LBS.)	LATERAL EXPANSION (IN.)	DUCTILE FRACTURE AREA (%)
65.0	.036	100
62.5	.034	100
64.5	.036	100

Average 64.0

BWRPD-QC 7-27-77 G.C.M.

013 0083

WE CERTIFY THAT THE ABOVE MATERIAL IS COMMERCIALLY FREE FROM MERCURY CONTAMINATION AND MEETS THE REQUIREMENTS OF SPECIFICATION ASME SA 193, GRADE B7, ASME SECTION III, CLASS 1, W-73, AND YOUR ORDER # 1810.

THE ABOVE TESTS CONFORM TO THE REQUIREMENTS OF THE SPECIFICATION LISTED

SWORN TO AND SUBSCRIBED BEFORE ME THIS _____ DAY OF _____ BY A DULY AUTHORIZED AGENT OF VITCO NUCLEAR PRODUCTS INC.

WE HEREBY CERTIFY THAT THE ABOVE DATA IS A TRUE COPY OF THE DATA FURNISHED US BY THE PRODUCING MILL OR SUPPLIER OR OF THE DATA RESULTING FROM TESTS PERFORMED IN APPROVED LABORATORIES AND MEETS THE REQUIREMENTS OF THE SPECIFICATION NOTED.

VITCO NUCLEAR PRODUCTS INC.

MY COMMISSION EXPIRES

CERTIFIED TEST REPORT

VITCO NUCLEAR PRODUCTS INC. 1489 E. 363rd ST. EASTLAKE, OHIO 44094
PHONE AREA CODE 216 946 9550

TO: ANCHOR/DARLING VALVE COMPANY
24747 Clawiter Road
Hayward, CA 94545

DATE SHIPPED	VITCO ORDER NUMBER	CUSTOMER ORDER NUMBER
6-23-76	1489	1810

ITEM (20) 25 Pcs. 1-1/4" -8 Hvy Hex Nuts (Traceability # A9)
Tag: 5219-02 (20)

MASTER

SPECIFICATION ASME SA 194, Grade 7, ASME Section III, Class I, W-73

CHEMICAL COMPOSITION

M	HEAT NO.	C	Mn	P	S	Si	Cr	Mo	Ni	Cu	Fe	Al	Ti
	578S3256	.42	.87	.019	.019	.28	1.00	.18					

PHYSICAL COMPOSITION

	TENSIL STRENGTH PSI	YIELD PSI	ELONG. % IN 2"	RED. AREA %	HARDNESS	GRAIN SIZE	BEND TEST	MIN. TEMP.
	Hardness	Per ASME SA	194, Para.	8.A	30-32 RC			1175°F
	Hardness	Per ASME SA	194, Para.	8.A	248 BHN			

CONE STRIPPING PROOF LOAD (109,550 Lbs.) SATISFACTORY

IMPACT STRENGTH V-NOTCH CHARPY BARS @+40°F. (FT.LBS.)	LATERAL EXPANSION (IN.)	DUCTILE FRACTURE AREA (%)
72.0	.046	100
75.0	.048	100.
72.5	.044	100
Average 73.0		

BWRPD-OS G.C.M. 1-21-77

ATTACHMENTS

WESTERN COLD DRAWN STEEL CO. MILL TEST REPORT FOR HEAT # 578S3256.
ULTRA LABS., INC. MAGNETIC PARTICLE INSPECTION C13 0087

WE CERTIFY THAT THE ABOVE MATERIAL IS COMMERCIALLY FREE FROM MERCURY CONTAMINATION AND MEETS THE REQUIREMENTS OF SPECIFICATION ASME SA 194, GRADE 7, ASME SECTION III, CLASS I, W-73, AND YOUR ORDER # 1810.

THE ABOVE TESTS CONFORM TO THE REQUIREMENTS OF THE SPECIFICATION LISTED

SWORN TO AND SUBSCRIBED BEFORE ME THIS _____ DAY OF _____ BY A DULY AUTHORIZED AGENT OF VITCO NUCLEAR PRODUCTS INC

WE HEREBY CERTIFY THAT THE ABOVE DATA IS A TRUE COPY OF THE DATA FURNISHED US BY THE PRODUCING MILL OR SUPPLIER OR OF THE DATA RESULTING FROM TESTS PERFORMED IN APPROVED LABORATORIES AND MEETS THE REQUIREMENTS OF THE SPECIFICATION NOTED

VITCO NUCLEAR PRODUCTS INC.

BY _____

FORM NPV-1 MANUFACTURERS' DATA REPORT FOR NUCLEAR PUMPS OR VALVES*

(As Required by the Provisions of the ASME Code, Section III, Div. 1) W800168

1. Manufactured by Velan Valve Corporation Avenue "C" Williston, Vermont
(Name and Address of Manufacturer)
2. Manufactured for Niagara Mohawk Power Corporation Scriba New York
(Name and Address of Purchaser or Owner)
3. Location of Installation Nine Mile Point Nuclear Station Rte. 104 Oswego N.Y.
(Name and Address)
4. Pump or Valve Swing Check Valve. Nominal Inlet Size 4" (inch) Outlet Size 4" (inch)

	(a) Model No., Series No. or Type	(b) Manufacturers' Serial No.	(c) Canadian Registration No.	(d) Drawing No.	(e) Class	(f) Nat'l. Bd. No.	(g) Year Built
(1)	B12-0114B-02WN	168	-------	P3-3916-N11	2	---	1980
(2)				Rev. C			
(3)							
(4)							
(5)							
(6)							
(7)							
(8)							
(9)							
(10)							

2CSH*V7

5. (Brief description of service for which equipment was designed)

6. Design Conditions 275 (Pressure) psi 100 (Temperature) °F or Valve Pressure Class (1)
7. Cold Working Pressure 300 psi at 100°F.
8. Pressure Retaining Pieces

Mark No.	Material Spec. No.	Manufacturer	Remarks
(a) Castings			
Disc	ASME-SA-216-WCB	Vestshell Inc.	V1294
(b) Forgings			
Body	ASME-SA-105	Steel Improvement Co.	BB1
Cover	ASME-SA-105	Galt British Forge Co.	E2818
* Revised to change Body Manufacturer			

S.W.E.C. PQ4 INSPECTED 216

(1) For manually operated valves only.

* Supplemental sheets in form of lists, sketches or drawings may be used provided (1) size is 8-1/2" x 11", (2) information in items 1, 2 and 5 on this data report is included on each sheet, and (3) each sheet is numbered and number of sheets is recorded at top of this form.

FORM NPV-1 (Back)

Mark No.	Material Spec. No.	Manufacturer	Remarks
(c) Bolting			W800168
STUDS	ASME-SA-193-B7	Metallurgica Erbese	
NUTS	ASME-SA 194-2H	Metallurgica Erbese	
(d) Other Parts			

9. Hydrostatic test 425 psi.

CERTIFICATE OF COMPLIANCE

We certify that the statements made in this report are correct and that this pump, or valve, conforms to the rules of construction of the ASME Code for Nuclear Power Plant Components. Section III, Div. I., Edition 1971, Addenda Winter 1973 (Date), Code Case No. N/A. Date May 6, 1980

Signed Velan Valve Corporation (Manufacturer) by W Bleau

Our ASME Certificate of Authorization No. 2117 to use the N (N) (NPV) symbol expires June 1981 (Date)

CERTIFICATION OF DESIGN

Design information on file at

Stress analysis report (Class 1 only) on file at

Design specifications certified by (1) Peter D. Visalli

PE State New York Reg. No. 050821

Stress analysis certified by (1)

PE State Reg. No.

(1) Signature not required. List name only.

S. W. E. C. R.C.A. INSPECTED-216

CERTIFICATE OF SHOP INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and the State or Province of Vermont and employed by Lumbermans Mutual and Casualty Company of Long Grove Illinois have inspected the pump, or valve, described in this Data Report on May 7 19 80, and state that to the best of my knowledge and belief, the Manufacturer has constructed this pump, or valve, in accordance with the ASME Code, Section III.

By signing this certificate, neither the inspector nor his employer makes any warranty, expressed or implied, concerning the equipment described in this 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 May 7 19 80

Gregory P. Odom (Inspector) Commissions Vermont #388 (Nat'l Bd., State, Prov. and No.)

Form R-380-8

12787.50

11

TEST CERTIFICATE

THE STEEL IMPROVEMENT & FORGE CO.

6151

802-863
2561

W800168

Customer VELAN ENGINEERING, LTD. Part No. 89054 Pur. Ord. C 10164

Die 9952AD Sales Ord. 9511 Size 8½"SQ Grade C 1029 Specification ASTM-A105 & ASME SA-105, ASME Sect. 2 Code 77 W-78

HEAT NO.	CODE	C.	Mn.	P.	S.	Si.	Cr.	Ni.	Mo.	Grain Size
82043	BB1	.28	.89	.010	.022	.24				5/7

Macro Etch - Satisfactory

I certify that the contents of this report are in compliance with the requirements of specification ASME-SA-105 edition 1971 and addenda through WINTER 1973 except as noted

VELAN VALVE CORP

Per Mgr. of Q.C. Documentation

	YIELD STRESS	TENSILE STRESS	% ELONG. IN 4D.	% R.A.
		MATERIAL TESTED		
R.T. TENSILE	48,000	82,200	30.7	61.2
Macro Etch - Satisfactory				
		PRODUCT TESTED		
R.T. TENSILE	50,100	81,700	32.5	65.7
MacroEtch - Satisfactory				

"MATERIAL SUPPLIED HAS BEEN MANUFACTURE TO ASME SEC. III IN ACCORDANCE WITH QA-MANUAL APPROVED BY VELAN ENGR. INC., THE MATERIAL MANUAFACTURED FOR THE ABOV P.O. WAS PRODUCED AT STEEL IMPROVEMENT FACILITY AT 970 E. 64TH St., CLEVE, OHIO.

FORGINGS:
NORMALIZED 1700oF 3 Hrs. Air Cooled
BRINELL 143-149
MAGNAFLUX INSPECTED
100% METAL MONITOR INSPECTED & FOUND TO BE CORRECT GRADE
MATERIAL FREE FROM MERCURY CONTAMINATION
THIS IS TO CERTIFY THAT THE CONTENTS OF THIS REPORT ARE CORRECT AND ACCURATE AND THAT ALL OPERATIONS PERFORMED ARE IN COMPLIANCE WITH THE PURCHASE ORDER."
Serial Nos: 1839 THRU 2042

NCA-3800 & NCA-3867-4 Para. B applies

HEATTREATMENT DATA: SOURCE - STEEL IMPROVEMENT & FORGE
CHARGE TEMP. - NORMALIZED - 1700oF
RATE OF TEMP. RISE- NORMALIZED 3 Hrs.
HOLDING TEMP. - NORMALIZED - 1700oF
HOLDING TIME XXXXXXXX -
NORMALIZED - 3. Hrs. COOLING MODE- AIR COOLED

Mill Supplier
COPPERWELD STEEL CO.

We hereby certify that all parts and material have been manufactured and/or processed in conformance with all applicable instructions and specifications. The above tests represent 204 pieces covered by our shipping memorandum 78321

Duly sworn and subscribed before me this 17TH day of August, 1979

NOTARY PUBLIC

8/17/79

THE STEEL IMPROVEMENT & FORGE CO.

By Met.

Notary Public, State of Ohio - Cuyo, Ohio
My Commission Expires ...

Aug 31-79

REVISED 12

GALT-BRITISH FORGE COMPANY

204 BEVERLY STREET — CAMBRIDGE (GALT), ONTARIO N1R 3Z8

Engineering 30 - 8" 1500# PS Bonnets

Specification ASTM A105-73 P.O. No. C3716

Dwg. No. 89481 Mill: Atlas Steels

Part No. 8948-001-002

Certificate of Test

W800168

CHEMICAL ANALYSIS

HEAT NO.	C	MN	P	S	SI	CR	MO	NI	CU			
E2818	.34	.73	.020	.026	.20							

PHYSICAL PROPERTIES

Heat No.	Yield Strength P.S.I. (.2% Offset)	Tensile Strength P.S.I.	Elong. %	Red. of Area %	Brinell Hardness
T77 E2818	47,500	80,250	32.8	57.5	

HEAT TREAT DATA

1. Furnace No.
2. Charge
3. °F/hr.
4. Hold °F/
5.
6. Furnace No.
7. Charge
8. °F/hr.
9. Hold °F/
10.

Charpy V-Notch Impact Test at °F

	Impact Ft. Lbs.	Lateral Expansion Mils	Shear Fracture %
1.			
2.			
3.			

Normalized 1650 deg. F. ± 25 deg. F. Air cooled still air

I certify that the contents of this report are in compliance with the requirements of specification ASME SA-105 edition 1971 and addenda through Winter 1972 except as noted

VELAN VALVE CORP.

Per Mgr. of Q. C. Documentation

1. Material Identification Marking: P.O. No. C3716 Part No. 8948-001-002

   Grade A105-73 Heat No. E2818 G.B.F.

2. Material produced according to our Q.A. Manual approved by Velan Engr.
3. These forgings have not come into direct contact with mercury or any of its components, nor with any mercury containing devices during manufacture, testing, inspection or storage.
4. Weld Repair — None.
5. To certify that the contents of this report are correct and accurate and that all operations performed are in compliance with the requirements of the material specification and the purchase order.

VEL INSP. 67

MAR 26 1980

Galt-British Forge Company
Quality Assurance

Date Sept. 2, 1976

13

X72, X73

RELEASE NOTE

VESTSHELL INC.

MANUFACTURERS OF FERROUS INVESTMENT CASTINGS

10351 PELLETIER STREET
MONTREAL, QUE. H1H 3R2
TELEPHONE: 326-1280
AREA CODE 514

Alyne 3-27-80

800168

SOLD TO: Velan Engineering Ltd.,
2125 Ward Ave.,
Montreal.P.O.

DATE: March 23, 1979

ORDER NO: W-1315

SHIPPED TO: same
255 Migneron St..

RELEASE NOTE NO: 8439

Quantity	Part Description and No.	Material Specification	Remarks
X73 63	3" Disc #82044	WC-B to ASME-SA-216 Section II Part A 1977 & current addenda.	
X72 60	4" Disc. #82054		Parts stamped V-1294.

I certify that the contents of this report are in compliance with the requirements of specification ASME-SA-216-WCB edition 1971 and addena through WINTER 1973 except as noted

VELAN VALVE CORP.

Per Mgr. of Q. C. Documentation

CHEMICAL ANALYSIS: HEAT NO. Howmet RXI53-6749.

C	Mn	Si	P	S	Ni	Cr	W	Mo	Cu	Fe	Co	V		CbTa
.27	.54	.35	.004	.019	.03	.09		.02	.02	Bal.		.025'		

MECHANICAL TESTS: By Vestshell Inc.

	TENSILE STRENGTH	YIELD STRENGTH	ELONGATION % IN 1"	REDUCTION OF AREA %
Bar1	78400	48020	27%	41%
Bar2	81016	53352	30%	44%

HEAT TREATMENT: Normalized & tempered as per spec.
Normalized 1650°F of 75 minutes, Tempered 800°F of 2 hours, Vestibule.

FLUORESCENT PENETRANT INSP.	MAGNETIC PARTICLE INSP.	X-RAY INSPECTION

CERTIFICATION:

We hereby certify that the material covered by this Release Note conforms to the Specification listed under "Material Specification".

Signed D. Muller QC.Mgr/

W8 168

SHEET 1/3

OMET S.p.A. Brescia Italia

PROVE MECCANICHE
mechanical test

ANALISI MATERIALE
material analysis

COLLAUDO (Inspection): Internal.

DATA (date): 1.2.79

CERTIFICATO (certificate): No. 169/79

CLIENTE (purchaser): VELAN VALVE

ORDINE No (order): W 1269 pos. from 12 to 26.

VALORI RICHIESTI E OTTENUTI NELLE PROVE EFFETTUATE SECONDO NORME (required and obtained values in tests executed according with standards): ASME BPV. CODE SECTION II part A, AND SECTION III 1974 EDITION SUMMER 1975 ADD

LOTTO (lot No)	SAGGIO (test No)	MATERIALE (material)	DESCRIZIONE (description)	PROVETTA (test specimen) Ø (mm)	AREA (mm²)	LUNG. (length) (mm)	Valori richiesti (required values) Rp (0.2) (MPa)	R (MPa)	A (%)	C (%)	HB	Kv (J)	Valori ottenuti (obtained values) Rp (0.2) N	Rp (0.2) MPa	R N	R MPa	A (mm)	A (%)	C (%)	HB	Kv (J)
1		SA 193 B7	1/2"x3 1/2"	6.35	31.6	25.4	724	862	16	50				818.2		937.7		21.7	59.8		
2		" "	5/8"xseveral	9	63.6	36	"	"	"	"				805.6		929.3		20.5	60.2		
3		" "	3/4"xseveral	12.7	126.7	50.8	"	"	"	"				791.8		915.9		21.4	60.5		
4		" "	7/8"x5"	"	"	"	"	"	"	"				784.1		902.5		21.3	59.3		

This is to certify that the contents of this report are correct and accurate and that all operations performed are in compliance with the requirements of the material specification and the purchase order.

LOTTO (lot No)	COLATA (heat No)	C	Mn	Si	P	S	Cr	Ni	Mo	V
1	850570	.38	.89	.28	.016	.020	.95		.18	
2	13352	.43	.93	.31	.021	.016	.01		.17	
3	79606	.39	.81	.26	.023	.009	.98		.20	
4	919232	.39	.88	.26	.011	.016	.98		.17	

MATERIAL HAS BEEN QUENCHED AND TEMPERED.

NOTE (remarks): DIMENSIONAL AND VISUAL CONTROL ON 5% OF THE PIECES: SATISFACTORY
ALL STUDBOLTS HAVE BEEN STAMPED: B7 - O PLUS LOT NUMBER.

UFFICIO COLLAUDO (surveyor)

IL COLLAUDATORE (surveyor): S.D.M. METALLURGICA ELETTRICA S.p.A. (Como)

I certify that the contents of this report are in compliance with the requirements of specification ASME-SA-193 B7 edition 1971 and addena through WINTER 1973 except as noted

VELAN VALVE CORP.

Per Mgr. of Q.C. Documentation

W8001

PROVE MECCANICHE / mechanical test ANALISI MATERIALE / material analysis	COMANDO / Inspection: Internal	DATA / date: Nov 16/78	CERTIFICATO / certificate: 1343/A/78

Cliente / purchaser: Velan Engineering

Ordine No / order: C 9048

VALORI RICHIESTI E OTTENUTI NELLE PROVE INDICATE NEGLI ALLEGATI / required and obtained values in tests executed according with standards: ASME II Part A 1974 Current Addenda

Colata / Lot	Colata / Lot	MANNAIA / material	DESCRIZIONE / description	PROVETTA / test specimen: ø mm	AREA mm²	LUNG. / length mm	VALORI RICHIESTI / required values: Rp 0,2 MPa	R MPa	A %	C %	HB	Fo	VALORI OTTENUTI / obtained values: Rp 0,2 N	Rp 0,2 MPa	R N	R MPa	A mm	A %	C %	HB	Fo
2		SA 194-2H	5/8" Nuts	Hardness			HRC	= from	25	to 30	Hardness	after	24h	at T=540°C					HRB=	from	95 to 100
4		SA 194-2H	7/8" Nuts				HRC	= from	26	to 31	Hardness	after	24h	at T=540°					HRB=	from	95 to 100

This is to certify that the contents of this report are correct and accurate and that all operations performed are in compliance with the requirements of the material specification and the purchase order:

LOTTO / lot No	COLATA / heat No	C	Mn	Si	P	S	Cr	Ni	Mo	V			LOTTO / lot No	COLATA / heat No	C	Mn	Si	P	S	Cr	Ni	Mo	V		
2	L713203	.48			.025	.010								Remarks:											
4	CC 1155	.46			.017	.017									All pieces have been stamped: 2H-CHR										

ESITO / result: 1

Proof load test on lots 2-4 : Satisfactory
Dimensional control on 5% : Satisfactory
Done proof load on lots 2-4 : Satisfactory

Jan 22-79

INSP. CONTRAMARCHI / inspector: Vol. Pat. 46

IL CONTRAMARCHI / the inspector:

I certify that the contents of this report are in compliance with the requirements of specification ASME-SA-194-2H edition 1971 and addenda through WINTER 1973 except as noted

VELAN VALVE CORP.

Per Mgr. of Q. Documentation

3-27-80

15

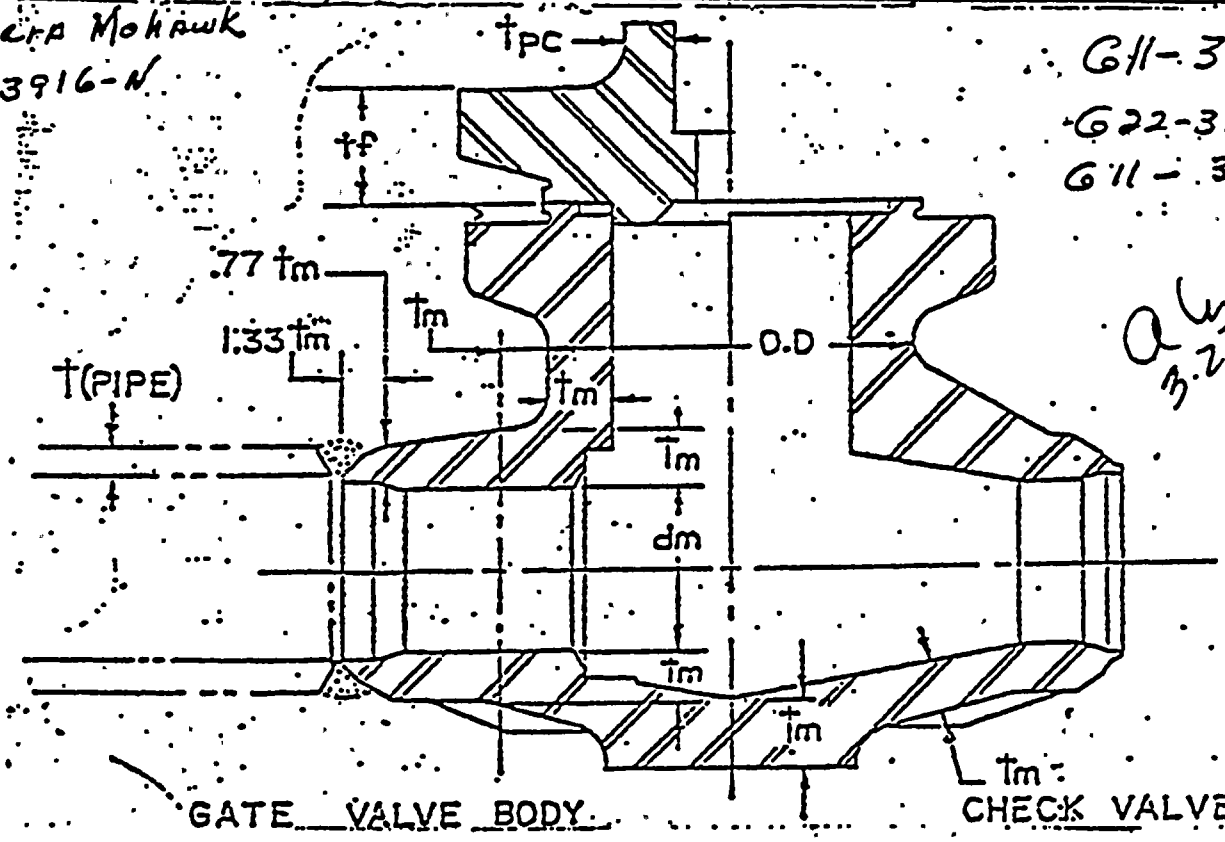
VELAN ENGINEERING COMPANIES	Q.C. INSTRUCTION
WALL THICKNESS INSPECTION	VEL-QC-665A SECTION I

17

VALVE TYPE	BBSC	BODY SERIAL NO. E800168	1876
VALVE SIZE	4"	BONNET SERIAL NO.	
PRESSURE RATING	150#	BODY MIN. WALL THICKNESS REQ'D (t_m)	.250
NUCLEAR CLASS	~~III~~ 2	BONNET MIN. WALL THICKNESS REQ'D (t_f)	
MATERIAL	C/S	PACKING CHAMBER MIN. WALL THICKNESS REQ'D (t_{pc})	

Niagara Mohawk
P3-3916-N

G11-3588
G22-3863
G11-3585



ACTUAL MEASUREMENTS (FINISHED/MACHINED CONDITION) .193 @ .333

	t INLET (t_m)	t OUTLET (t_m)	t NECK (t_m)	t BOWL (t_m)	t BONNET FLANGE (t_f)	t PACKING CHAMBER (t_{pc})	t SOCKET (.77 t_m) Inlet	t SOCKET (.77 t_m) Oulet
A	.940	1.090	1.340	1.230			.365	.355
B	.865	.935	1.175	1.230			.365	.370
C	.975	1.035	1.197	1.230			.360	.375
D	.850	1.040	1.230	1.230			.365	.370

...es above are lowest measured in each four quad-...ts. For end connections, quadrants start at top and progress clockwise, facing the end. For neck and bonnet, quadrants start at side over manufacturers symbol and progress clockwise facing down.

INSPECTOR B. G. Maynard	DATE 12/17/79
ACCEPTABLE ✓	REJECTED

NOTE: 0.77 t_m minimum measured at a distance of 1.33t_m from weld end.

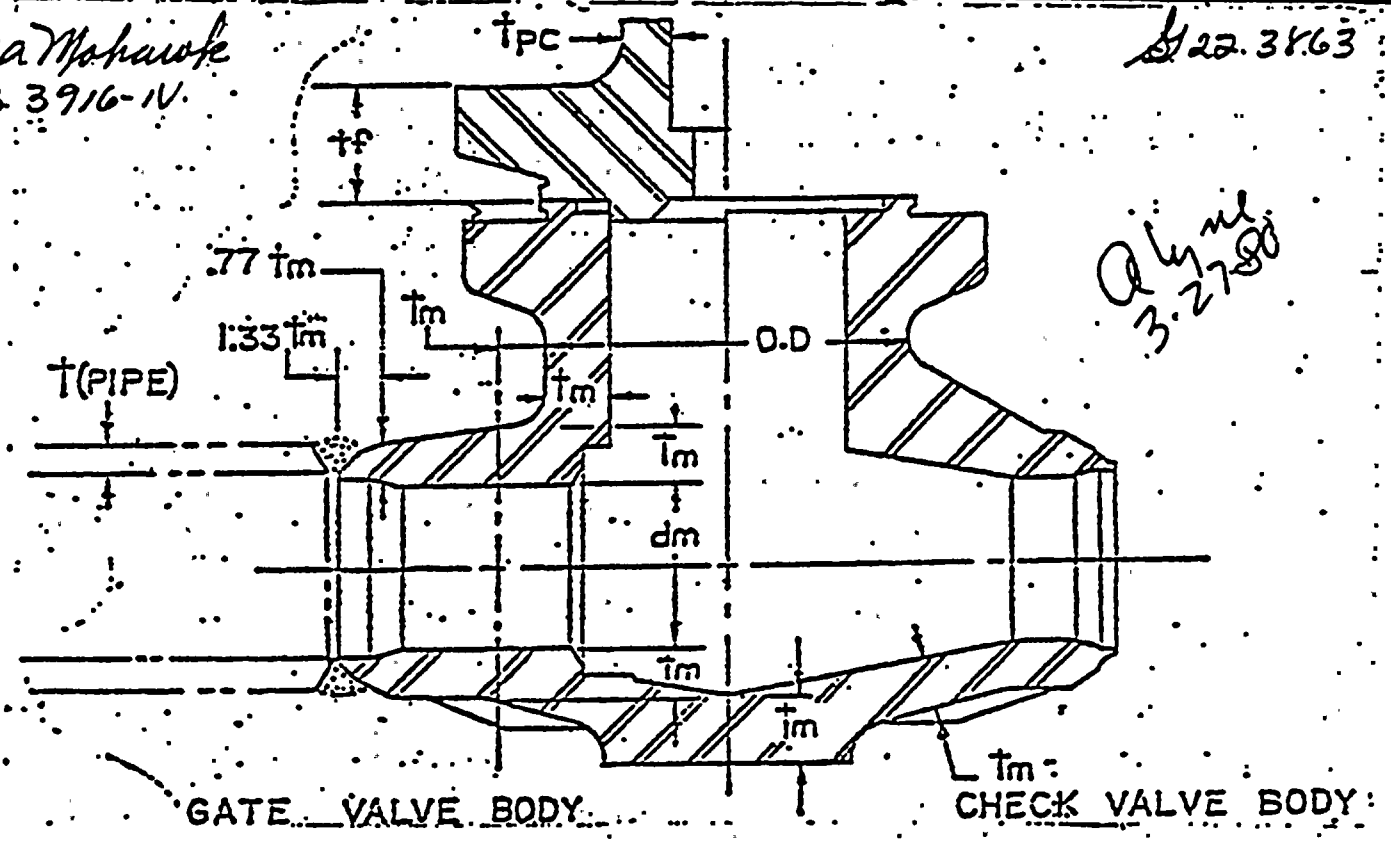
FORM NO. 67-9-76

VELAN ENGINEERING COMPANIES	Q.C. INSTRUCTION
WALL THICKNESS INSPECTION	VEL-QC-665A SECTION I

VALVE TYPE	Sw Check Valve	BODY SERIAL NO.	
VALVE SIZE	4"	Cover ~~BONNET~~ SERIAL NO. W800168	1372
PRESSURE RATING	300#	BODY MIN. WALL THICKNESS REQ'D (t_m)	
NUCLEAR CLASS	2	BONNET MIN. WALL THICKNESS REQ'D (t_f)	1.038
MATERIAL	C/S	PACKING CHAMBER MIN. WALL THICKNESS REQ'D (t_{pc})	

Nea Mohawk
P3 3916-IV

G22.3863



Alyne 3.27.80

ACTUAL MEASUREMENTS (FINISHED/MACHINED CONDITION)

	t INLET (t_m)	t OUTLET (t_m)	t NECK (t_m)	t BOWL (t_m)	t BONNET FLANGE (t_f)	t PACKING CHAMBER (t_{pc})	t SOCKET (.77 t_m) Inlet	t SOCKET (.77 t_m) Oulet
A					1.590			
B					1.590	n/A	n/A	
C					1.590			
D					1.590			

[illegible]s above are lowest measured in each four quad-[illegible]. For end connections, quadrants start at top and progress clockwise, facing the end. For neck and bonnet, quadrants start at side over manufacturers symbol and progress clockwise facing down.

INSPECTOR	[signature]	DATE	Feb 12, 80
ACCEPTABLE	VEL INSP. 74	REJECTED	

NOTE: 0.77 t_m minimum measured at a distance of 1.33t_m from weld end.

FORM NO. 67-9-76

15471 0136

2CSH *MOV118

FORM NPV-1 MANUFACTURERS' DATA REPORT FOR NUCLEAR PUMPS OR VALVES*

As Required by the Provisions of the ASME Code Rules

1. Manufactured by ANCHOR/DARLING VALVE CO. HAYWARD, CA. Order No. 5219-04
(Name & Address of Manufacturer)

2. Manufactured for GENERAL ELECTRIC CO. SAN JOSE, CA. Order No. 205-AG-102
(Name and Address)

3. Owner NIAGRA MOHAWK POWER CORP.

4. Location of Plant NINE MILE POINT NUCLEAR STATION UNIT 2 SCRIBA, NEW YORK

5. Pump or Valve Identification SERIAL # 2N851 18"150# GATE

ASME SECTION III
(Brief description of service for which equipment was designed)

STEAM AND WATER SERVICE IN A COMMERCIAL NUCLEAR POWER PLANT

(a) Drawing No. 2992-3 Prepared by E.O. HOOK

(b) National Board No. NA

6. Design Conditions 275/110 (Pressure) psi 100/700 (Temperature) °F OR PRESSURE CLASS 150#

7. The material, design, construction, and workmanship complies with ASME Code Section III. Class 2

Edition 1971, Addenda Date WINTER '73, Case No. 1567, 1637

Mark No.	Material Spec. No.	Manufacturer	Remarks
(a) Castings			
BODY HT. 8001E SN 2	SA216 WCB	ANCHOR/DARLING	VULCAN
BONN. HT. 7982E SN 6	SA216 WCB	ANCHOR/DARLING	VULCAN
DISC HT. 7999E SN 2	SA216 WCB	ANCHOR/DARLING	VULCAN
(b) Forgings			
BODY DRAIN CONN. HT.3W497	SA105	ANCHOR/DARLING	AIRCO VIKING
BONN.DRAIN CONN. HT. 3W497	SA105	ANCHOR/DARLING	AIRCO VIKING

130016

*Supplemental sheets in form of lists, sketches or drawings may be used provided (1) size is 8½" x 11", (2) information in items 1, 2, 5a and 5b on this data report is included on each sheet, and (3) each sheet is numbered and number of sheets is recorded at top of this form.

FORM NPV-1 (back)

Mark No.	Material Spec. No.	Manufacturer	Remarks
(c) Bolting			
BONN. STUDS CODE 73	SA193 B7	KNUDTSEN	COULTER
BONN. NUTS CODE N15	SA194 2H	ANCHOR/DARLING	VITCO
(d) Other Parts			
SEAT RING HT. 358130-3-1	SA515 Gr.70	ANCHOR/DARLING	KAISER
DISC LUGS HT. 52796-10-2	SA515 Gr.70	ANCHOR/DARLING	KAISER

8. Hydrostatic test 425 psi.

CERTIFICATION OF DESIGN

Design information on file at NINE MILE POINT NUCLEAR STATION SCRIBA, NEW YORK

Stress analysis report on file at NA

Design specifications certified by C.T. NIEH (1) Prof. Eng. State CA Reg. No. 15587

Stress analysis report certified by NA (1) Prof. Eng. State _____ Reg. No. _____

(1) Signature not required. List name only.

We certify that the statements made in this report are correct.

Date 2-10 1977 Signed ANCHOR/DARLING CO. (Manufacturer) By B. F. Tillman

Certificate of Authorization No. N-781 expires MARCH 4, 1977

CERTIFICATE OF SHOP INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State of Province of CALIFORNIA and employed by LUMBERMENS MUTUAL of LONG GROVE, ILLINOIS have inspected the equipment described in this Data Report on 2-10 19 77, and state that to the best of my knowledge and belief, the Manufacturer has constructed this equipment in accordance with the applicable Subsections of ASME Code, Section III.

By signing this certificate, neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the equipment described in this 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 2-10 19 77

John Carroll (Inspector) Commission CA. 1309 (National Board, State, Province and No.)

136617

05471 0160

VULCAN STEEL FOUNDRY CO.

Carbon and Alloy Steel Castings

2909 CHAPMAN STREET • OAKLAND, CALIF. 94601

PHONE (415) 261-5305

MATERIAL TEST REPORT

ANCHOR VALVE CO.
24747 CLAWITER RD.
HAYWARD, CALIFORNIA 94545

DATE: 8-6-76

MATERIAL SPECIFICATION: ASME SA-216 WCB

ASME Section III
Winter 1973 Addenda

HEAT NUMBER: 8001-E

PO/JOB NUMBER 4878-5219-04 PATTERN NUMBER 1572-5-1 SERIAL NUMBER 2

MATERIAL MARKED BY: Heat and Serial Numbers (Metal Stamp)

NORMALIZED @ 1720 °F 1 HRS 45 MIN — AQ — DATE 8-9-76 CH8976A
STRESS RELIEVED @ °F HRS MIN — AQ — DATE
SOLUTION ANNEALED @ °F HRS MIN — W/Q — DATE
OTHER TEMPER 1200 3 15 DATE 8-9-76 CH8976B

Chemical Properties	Mechanical Properties	Charpy Impact Test (V-Notch)
.22 Carbon	77,800 Tensile Strength, psi	Temperature ___ °F
.85 Manganese	56,100 Yield Point, psi	1
.48 Silicon	30.5 Elongation (%)	___ Ft Lbs
.017 Phosphorus	65.6 Reduction of Area (%)	___ Shear
.027 Sulfur		___ Expansion
___ Nickel		2
___ Chromium		___ Ft Lbs
___ Molybdenum		___ Shear
___ Columbium		___ Expansion
___ Copper		3
		___ Ft Lbs
		___ Shear
		___ Expansion

BWRPD-QC G.C.M. 5-17-77

PROC. HT 1322-1 REV E

We hereby certify that this material meets all requirements of the material specification and all applicable special requirements of (Article N/A of the ASME Pump and Valve Code [Draft]) or (Article NC 2000 of the ASME Section III, Boiler and Pressure Vessel Code).

Except No R.T. or Weld Repair Performed.

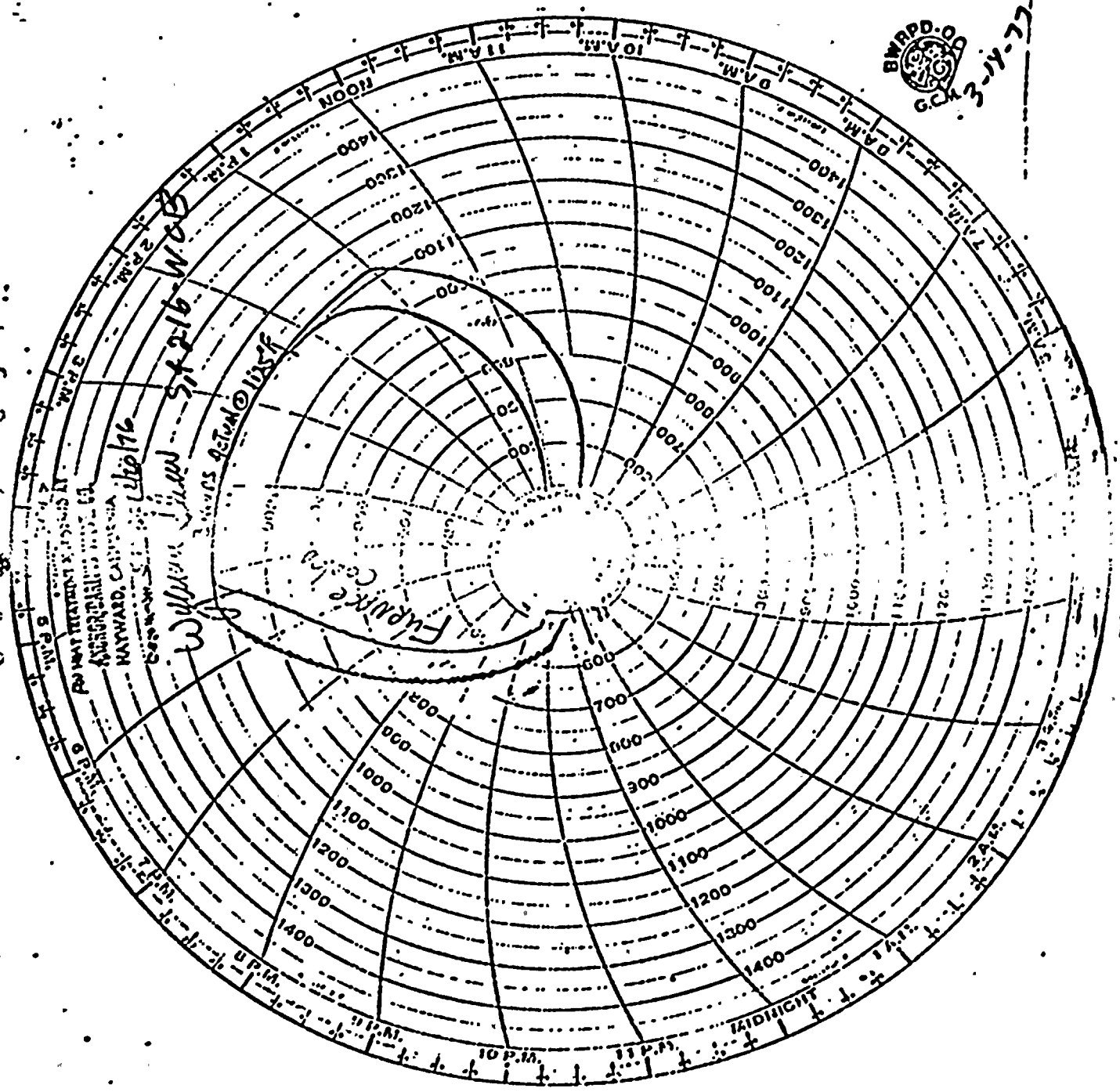
8-18-76
DATE

Thomas P. Bevis
QUALITY CONTROL MANAGER

130621

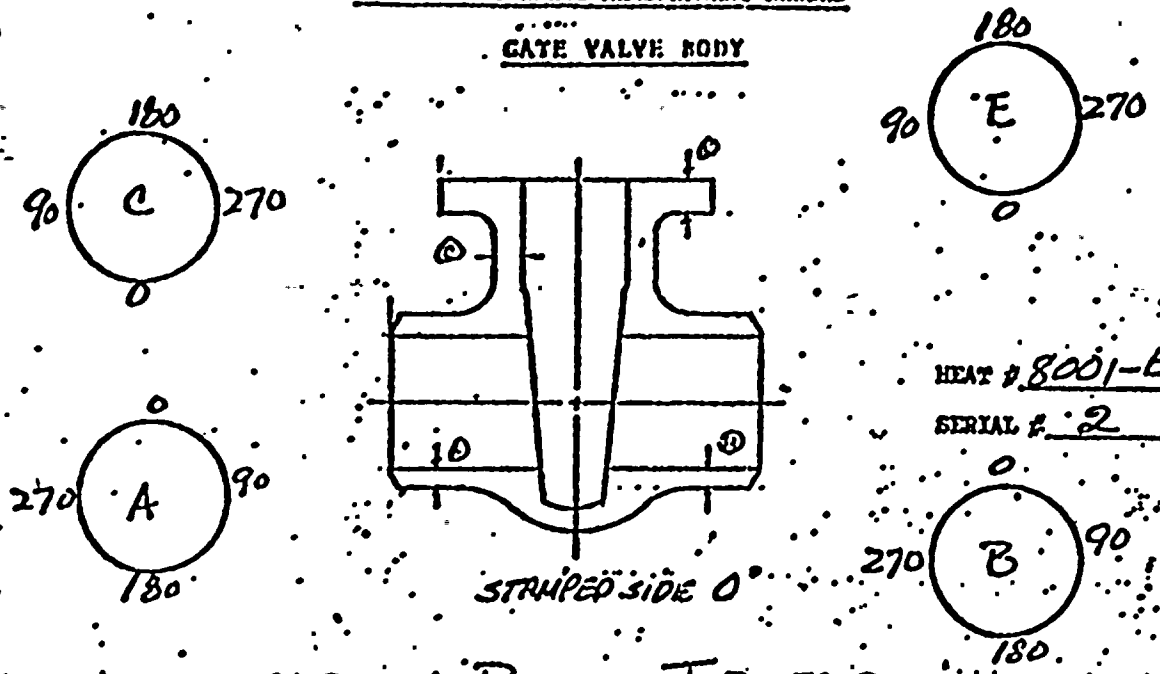
ANCHOR/DARLING VALVE/CO, PROCEDURE 1332-1, REV. E

1 Body SN 2 Heat 8001E 5219-04



MINIMUM THICKNESS MEASUREMENT RECORD

GATE VALVE BODY



HEAT # 8001-E

SERIAL # 2

DRAWING 2792-3 REV. B JOB 5219-04

18" 150# GATE & Bonnet

Procedure 1452-1-RWF

ZONE	SPECIFICATION MINIMUM	ACTUAL MINIMUM MEASURED	ACTUAL MINIMUM LOCATION	INSP	DATE	CUSTOMER INSP	DATE
A	15/32	1.300	180°	MB	1-14-77		
B	15/32	1.350	180°	MB	1-14-77		
C	15/32	.950	0°	MB	1-14-77		
E	2 1/2 - 1/16	2.500	0°	MB	1-14-77		

NOTES: (1) Survey each zone (inspect in a grind pattern of approx 3 inches) and record thickness & location of area found to be minimum.

(2) Additional measurement taken at repaired, ground or machined surfaces; selected for dimensional inspection by visual inspection (applicable when indicated by asterick).

BWRPD-QC C.C.M. 3-28-77

05471 0131

VULCAN STEEL FOUNDRY CO.

Carbon and Alloy Steel Castings

2000 CHAPMAN STREET • OAKLAND, CALIF. 94601
PHONE (415) 261-5305

MATERIAL TEST REPORT

ANCHOR VALVE CO.
24747 CLAWITER RD.
HAYWARD, CALIFORNIA 94545

DATE: 8-4-76

MATERIAL SPECIFICATION ASME SA-216 WCB

ASME SECTION III
WINTER 1973 ADDENDA

HEAT NUMBER: 7982E

PO/JOB NUMBER 4876-5221-08 TRANSFERED TO 5219-04 PATTERN NUMBER 1572-5-2 SERIAL NUMBER 6

MATERIAL MARKED BY: Heat and Serial Number (Metal Stamp)

NORMALIZED @ 1700 °F 2 HRS. MIN – AQ – DATE 8-5-76 CU8576
STRESS RELIEVED @ °F. HRS. MIN – AQ – DATE
SOLUTION ANNEALED @ °F. HRS. MIN – WQ – DATE
OTHER Temper 1240 2 55 DATE 8-5-76 CU8576B

Chemical Properties	Mechanical Properties	Charpy Impact Test (V-Notch)
.20 Carbon	86,000 Tensile Strength, psi	Temperature °F
.87 Manganese	67,800 Yield Point, psi	1
.45 Silicon	26.5 Elongation (%)	Ft Lbs
.018 Phosphorus	62.1 Reduction of Area (%)	Shear
.027 Sulfur		Expansion
Nickel		2
Chromium		Ft Lbs
Molybdenum		Shear
Columbium		Expansion
Copper		3
		Ft Lbs
		Shear
		Expansion

BWRPD-OG G.C.M. 3-14-77

PROC HT. 1322-1 REV E

We hereby certify that this material meets all requirements of the material specification and all applicable special requirements of (Article N/A of the ASME Pump and Valve Code [Draft]) or (Article NC2000 of the ASME Section III, Boiler and Pressure Vessel Code).

Except no R.T. or Weld Repair Performed

8-13-76 (DATE)

QUALITY CONTROL MANAGER

130643

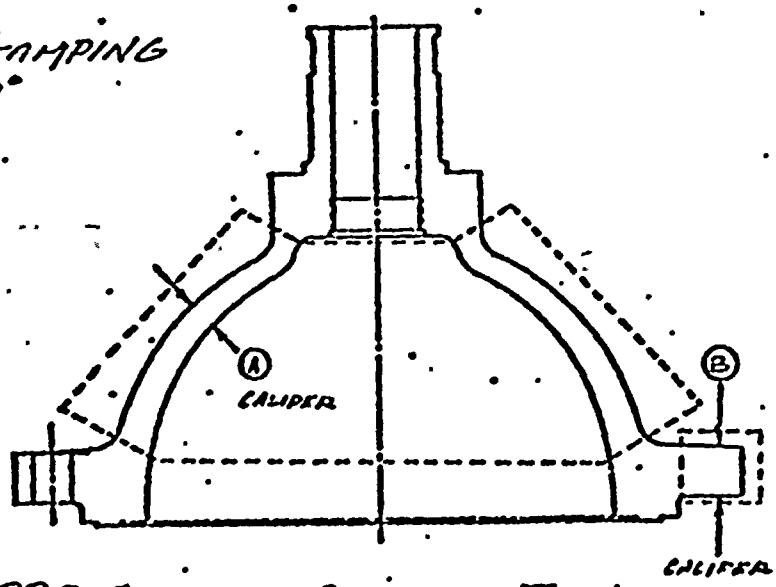
VS FORM NO. 2

D 05471 0136

MINIMUM THICKNESS MEASUREMENT RECORD

GATE VALVE BONNET

S/N STAMPING = 0°



HEAT # 7982E

SERIAL# 6

SEE DRAWING 2992-3, REV. B JOB#5219-04

18"-150# GATE-BOLT-BONN- PESC 1452-1-REV-E

ZONE	SPECIFICATION MINIMUM	ACTUAL MINIMUM MEASURED	ACTUAL MINIMUM LOCATION	INSPECTOR DATE	CUSTOMER INSPECTOR	DATE
A	13/16	.870	0°	11/18/76		
B	2 1/2	2.580	0°	11/18/76		

NOTES: (1) Survey Zone A, (Inspect in Grid Pattern of Approx. 3 inches and record thickness and location of area found to be minimum.

(2) Dimensionally inspect and record flange thickness 4 location 90° degrees apart.

(3) Additional measurements to be taken at repair, ground or machined surfaces, selected for dimensional inspection by visual inspection.

EXHIBIT NO. "K"

13664S

05471 0137

VULCAN STEEL FOUNDRY CO.

Carbon and Alloy Steel Castings

2000 CHAPMAN STREET • OAKLAND, CALIF. 94601
PHONE (415) 261-5303

XIV

MATERIAL TEST REPORT

ANCHOR VALVE CO.
24747 CLAWITER RD.
HAYWARD, CALIFORNIA 94545

DATE: 8-6-76

MATERIAL SPECIFICATION: ASME SA-216 WCB

ASME SECTION III
WINTER 1973 ADDENDA

HEAT NUMBER: 7999E

PO/JOB NUMBER 4878-5219-04 PATTERN NUMBER 1572-5-4 SERIAL NUMBER 2

MATERIAL MARKED BY: Heat and Serial Number (Metal Stamp)

NORMALIZED @ 1700 °F 1 HRS 50 MIN — AQ — DATE 8-6-76 CH8676
STRESS RELIEVED @ °F HRS MIN — AQ — DATE
SOLUTION ANNEALED @ °F HRS MIN — WQ — DATE
OTHER Temper 1200 3 25 DATE 8-6-76 CH8676A

Chemical Properties		Mechanical Properties		Charpy Impact Test (V-Notch)
.22	Carbon	85,00	Tensile Strength, psi	Temperature °F
.85	Manganese	55,500	Yield Point, psi	1
.47	Silicon	23.5	Elongation (%)	Ft Lbs
.017	Phosphorus	47.6	Reduction of Area (%)	Shear
.022	Sulfur			Expansion
	Nickel			2
	Chromium			Ft Lbs
	Molybdenum			Shear
	Columbium			Expansion
	Copper			3
				Ft Lbs
				Shear
				Expansion

5219-04-4-2

H.T. PROC. 1322-1 REV. E.

BWRPD-OC G.C.M. 3-28-77

We hereby certify that this material meets all requirements of the material specification and all applicable special requirements of (Article N/A of the ASME Pump and Valve Code [Draft]) or (Article NC2000 of the ASME Section III, Boiler and Pressure Vessel Code).

Except no R.T. or Weld Repair Performed

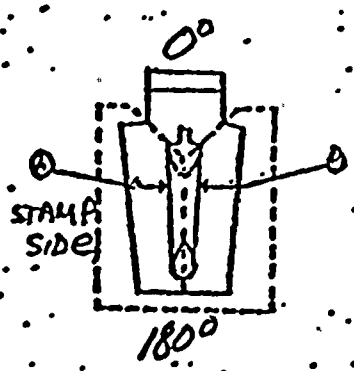
[signature] 8-26-76 (DATE) QUALITY CONTROL NUMBER

130050

05471 0120

MINIMUM THICKNESS MEASUREMENT RECORD

GATE VALVE DISC



HEAT # 7999-E

SERIAL # 2

DRAWING 2992-3 REV. B JOB-5219-04

18" 150# GATE B. BONN

PROCEDURE 1452-1-Rev F

ZONE	SPECIFICATION MINIMUM	ACTUAL MINIMUM MEASURED	ACTUAL MINIMUM LOCATION	INSP	DATE	CUSTOMER INSP.	DATE
A	1"	1 5/16	180°	[illegible]	1/14/77	[illegible]	
B	1"	1 1/2	180°	[illegible]	1/14/77	[illegible]	

NOTES: (1) Survey each zone (inspect in a grind pattern of approx 2 inches) and record thickness & location of area found to be minimum.

(2) Additional measurement taken at repaired, ground or machined surfaces; selected for dimensional inspection by visual inspection (applicable when indicated by asterisk).

SWRPD-QC G.C.M. 3-28-77

130053

05471 0193 MASTER

RALPH KNUDTSEN CORP.
45805 WARM SPRINGS BLVD. FREMONT, CA. 94538
(415) 651-1363

ANCHOR/DARLING VALVE COMPANY
24747 Clawiter Road
Hayward, California 94545

Gentlemen: We hereby certify the bolting manufactured by us meets the following specifications:

ASTM - SA A-193 B-7

CODE # - 7-J

HEAT NUMBER - 52722

MILL - Crucible

CODE # 7-J IS TRACEABLE TO MILL HEAT # 52722

IDENTIFICATION - STUDS ARE STAMPED ON ONE END WITH B-7 AND TRACEABILITY CODE 7-J.

BWRPD-QC
G.C.M. 3-28-77

160857

SIGNED: R. E. Knudtsen

Crucible SP 21 REV. 4-71

Colt Industries Crucible Inc

RECEIVED DEC 1 0 1975

CAR/TRUCK # UP 229703

ALLOY DIVISION, MIDLAND, PA. 15059

1 008

CUST	PCSS	MTS	CUSTOMER COST	SHIPPED FROM	DATE SHIPPED	INSTRUCTIONS
2416	02	07	041175175-01	MIDLAND PA	12/12/5	

SOLD TO: COULTER STEEL & FORGE CO
1494 67TH STREET
OAKLAND CALIF 94608

SHIP TO: COULTER STEEL & FORGE CO
EMERYVILLE CALIF 94608

	BT	S/N	CT	INV	M.A	MCD	NTZ
SOLD		1	3	3	Y	Y	N
SHIP					N		

LINE	CUSTOMER ORDER NO.	OUR ORDER NO.	DESCRIPTION	SIZE
		679108804	TOC HR HT SR MS BARSASTM A-193 GRADE B-7	
5952-100 -1 07-22				1-1/4 RD 20/24 FT

HEAT NO.	C	MN	P	S	SI	CR	MO
52722	.42	.90	.012	.018	.31	.87	.17

MASTER

CODE-7-J

HEAT #	COIL #	QUANTITY	GRAIN	HARDNESS	YIELD	TENS.	BND	OG&FAC	ELONG %	GL	RA %	CHAR	IZOD
52722		6400		BHN 286	125300	143200		OK	18.9		62.8		

QUENCHED IN OIL 1600°F FOR 25 MPC TEMPER 1170°F MPC STR REL 1000°F 5 HOURS SURFACE HDNS-BRN 277-286

BWRPD 0 0 GCLA 28-A

SWORN TO AND SUBSCRIBED BEFORE ME

THIS _____ DAY OF _____ 19__

_____ NOTARY PUBLIC

Colt Industries Crucible Inc

CERTIFICATE OF TEST

THE TEST RESULTS SHOWN IN THIS REPORT ARE CORRECT TO THE BEST OF OUR KNOWLEDGE AND BELIEF.

COLT INDUSTRIES CRUCIBLE Inc

CERTIFIED BY: R. J. Jankowski

0547101 74

8 0 1 0 5 3

0 5 4 7 1 0 1 0 8

LABORATORY CERTIFICATE

SIGNET TESTING LABORATORIES, INC.

TESTING AND INSPECTION OF CONSTRUCTIONAL AND INDUSTRIAL MATERIALS

ENGINEERS
CHEMISTS
METALLURGISTS

REPLY TO
1426 WEST WINTON AVENUE
HAYWARD, CALIFORNIA 94545
782-7719 AREA CODE 415

November 17,1976

LAB NO.: 24566 P.O. #2540

SAMPLE: 1-1/4" Round Bar, Mark: SA193 Grade B-7 Cl.2 Winter 73

HEAT NO.: Code-7J

DATE RECEIVED: November 10,1976

REPORT TO: Ralph Knudtsen Corp.
45805 Warm Springs Blvd.,
Fremont, California 94538

REPORT

CHARPY IMPACT TESTS

Specimen Size: 10x10x55mm
Notch: V-Notch
Test Temperature: -40°F

Test No.	Impact Value ft.-lbs.	Lateral Expansion inches	Percent Shear
1	50.9	0.031	100
2	50.0	0.033	100
3	53.3	0.035	100
Average:	51.4	0.033	100

EWPD.QC G.C.M. 3-28-77

Respectfully submitted,
SIGNET TESTING LABORATORIES, INC.

By

cc: Ralph Knudtsen Corp.

130059

CERTIFIED TEST REPORT

VITCO NUCLEAR PRODUCTS INC. 1490 E. 363rd ST. EASTLAKE, OHIO 44094
PHONE AREA CODE 216-946 9550

TO
ANCHOR/DARLING VALVE COMPANY
24747 Clawiter Road
Hayward, CA 94545.

DATE SHIPPED	VITCO ORDER NUMBER	CUSTOMER ORDER NUMBER
3-24-77	4146	3125

ITEM (20) 88 Pcs. 1-1/4"-8 Hvy Hex Nuts (Trace. # N15)
Tag: 5219-04(40), 5221-08(40)

MASTER

SPECIFICATION ASME SA 194, Grade 2H, ASME Section III, Class 2, W-73

CHEMICAL COMPOSITION

ITEM	HEAT NO.	C	Mn	P	S	Si	Cr	Mo	Ni	Cu	Fe	Al	Ti
20	576S3395	.43	.88	.012	.025	.25	.92	.17					

PHYSICAL COMPOSITION

ITEM	TENSIL STRENGTH PSI	YIELD PSI	ELONG. % IN 2"	RED. AREA %	HARDNESS	GRAIN SIZE	BEND TEST	MIN. TEMP.
20	Hardness Per ASME SA 194, Para. 8.A				28-29 RC			1160°F
	Hardness Per ASME SA 194, Para. 8.B				277 BHN			

ADDITIONAL SPECIFICATION REQUIREMENTS OR SPECIAL TESTS

CONE STRIPPING PROOF LOAD (109,350 Lbs.) SATISFACTORY

IMPACT STRENGTH V-NOTCH CHARPY BARS @ +40°F (FT.LBS)	LATERAL EXPANSION (IN.)	DUCTILE FRACTURE AREA (%)
84.5	.042	80
84.5	.043	80
80.0	.040	80
Average 83.0		

QA 3-24-77

ATTACHMENTS

BLISS & LAUGHLIN STEEL CORP. MILL TEST REPORT FOR HEAT # 576S3395.

WE CERTIFY THAT THE ABOVE MATERIAL IS COMMERCIALLY FREE FROM MERCURY CONTAMINATION AND MEETS THE REQUIREMENTS OF SPECIFICATION ASME SA 194, GRADE 2H, AND YOUR ORDER # 3125.

THE ABOVE TESTS CONFORM TO THE REQUIREMENTS OF THE SPECIFICATION LISTED

SWORN TO AND SUBSCRIBED BEFORE ME THIS _____ DAY OF _____ BY A DULY AUTHORIZED AGENT OF VITCO NUCLEAR PRODUCTS INC.

WE HEREBY CERTIFY THAT THE ABOVE DATA IS A TRUE COPY OF THE DATA FURNISHED US BY THE PRODUCING MILL OR SUPPLIER OR OF THE DATA RESULTING FROM TESTS PERFORMED IN APPROVED LABORATORIES AND MEETS THE REQUIREMENTS OF THE SPECIFICATION NOTED.

VITCO NUCLEAR PRODUCTS INC.

BY _____

AUTHORIZED AGENT

MY COMMISSION EXPIRES _____ NOTARY PUBLIC _____

2CHS*HCV133

FORM NPV-1 MANUFACTURERS' DATA REPORT FOR NUCLEAR PUMPS OR VALVES*
(As Required by the Provisions of the ASME Code, Section III, Div. 1)

1. Manufactured by Copes-Vulcan, Lake City, PA 16423
(Name and Address of Manufacturer)
2. Manufactured for Stone & Webster Eng. Corp.
(Name and Address of Purchaser or Owner)
3. Location of Installation Niagara Mohawk Power Corp., Nine Mile Point Nuclear Station Unit #2
(Name and Address)
4. Pump or Valve Valve. Nominal Inlet Size 10 (inch) Outlet Size 10 (inch)

	(a) Model No., Series No. or Type	(b) Manufacturers' Serial No.	(c) Canadian Registration No.	(d) Drawing No.	(e) Class	(f) Nat'l. Bd. No.	(g) Year Built
(1)	Globe	8220-95446-5-1	---	E-265073 Rev.1	2	2496	1984
(2)							
(3)							
(4)							
(5)							
(6)							
(7)							
(8)							
(9)							
(10)							

5. 10" Class 900# HPCS Pump Test Return Line to Supp. Pool Valve
(Brief description of service for which equipment was designed)
Cust. P.O. NMP2-C051M Cust. Tag. 2CHS*HCV133

6. Design Conditions 1575 (Pressure) psi 212 (Temperature) °F or Valve Pressure Class _____ (1)
7. Cold Working Pressure 2160 psi at 100°F.
8. Pressure Retaining Pieces

Mark No.	Material Spec. No.	Manufacturer	Remarks
(a) Castings			
Body S/N R34	ASME SA 217	PRL Ind.	GR-WC9
Bonnet S/N Y911	ASME SA 217	Quaker	GR-WC9
(b) Forgings			

S. W. E. C. P.O.C. INSPECTED 42

(1) For manually operated valves only.

* Supplemental sheets in form of lists, sketches or drawings may be used provided (1) size is 8-1/2" x 11", (2) information in items 1, 2 and 5 on this data report is included on each sheet, and (3) each sheet is numbered and number of sheets is recorded at top of this form.

(3/77) This form (E00037) may be obtained from the Order Dept., ASME, 345 E. 47 St., New York, N.Y. 10017

FORM NPV-1 (Back)

Mark No.	Material Spec. No.	Manufacturer	Remarks
(c) Bolting			
Studs NE70	ASME SA 193	Vitco	GR-B7
Nuts X59-4	ASME SA 194	Vitco	GR-2H
(d) Other Parts			
Plug S/N 83-1	ASME SA 479	Coulter	Tp. 304
Inner Plug S/N 83-1	ASME SA 182	Cartech	Tp. 304
Nipples	(See attached N-2 Form)		
Inlet 83-1	ASME SA 106	Guyon	GR. B
Outlet 83-1	ASME SA 106	Guyon	GR. B

9. Hydrostatic test 3250 psi. CV S/N 8220-95446-5-1

CERTIFICATE OF COMPLIANCE

We certify that the statements made in this report are correct and that this pump, or valve, conforms to the rules of construction of the ASME Code for Nuclear Power Plant Components. Section III, Div. I., Edition 1974, Addenda Winter 1975 (Date), Code Case No. ---. Date July 18, 1984

Signed Copes-Vulcan (Manufacturer) by [signature]

Our ASME Certificate of Authorization No. 1842 to use the N (N) (NPV) symbol expires 8/19/86 (Date).

CERTIFICATION OF DESIGN

Design information on file at Stone & Webster Eng. Corp., Cherry Point, NJ

Stress analysis report (Class 1 only) on file at N/A

Design specifications certified by (1) Subhash C. Brahma

PE State NY Reg. No. 059685

Stress analysis certified by (1) N/A

PE State _____ Reg. No. _____

(1) Signature not required. List name only.

CERTIFICATE OF SHOP INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and the State or Province of Penna and employed by Protection Mutual Ins. Co.* of Park Ridge, IL have inspected the pump, or valve, described in this Data Report on July 19 19 84, and state that to the best of my knowledge and belief, the Manufacturer has constructed this pump, or valve, in accordance with the ASME Code, Section III.

By signing this certificate, neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the equipment described in this 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.

*Factory Mutual Systems

Date 7-19 19 84

[signature] (Inspector)

Commissions NB8563 PA2274 NY0851 (Nat'l Bd., State, Prov. and No.)

PRL Industries, Inc.

CORNWALL, PENNSYLVANIA 17016 / TELEPHONE (717) 273-6787 / TELEX 84-2372

CERTIFIED MATERIAL TEST REPORT
ASME QUALITY SYSTEMS CERTIFICATE (MATERIALS)
MM NO. QSC 281 EXPIRATION DATE MAY 3, 1986

CUSTOMER Copes-Vulcan PO NO. 311,589 SHOP ORDER NO. 4008

PATTERN NO. 22079-1 DESCRIPTION 10" 900# SS BWE Body

THIS IS TO CERTIFY THAT THE BELOW LISTED CASTING HAS BEEN MANUFACTURED AND TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF ASME B&PV Code 1974 Ed. to Win. 75 ADD., SECTION III, CLASS II

PRL SER. NO.	HEAT NO.	CSTG. SER. NO.
R34—	7214	NA

OPERATIONS PERFORMED AND RECORDS ATTACHED

- [x] VT in accordance with MSS-SP-55 with acceptance standards to MSS-SP-55
- [x] MT/[redacted] in accordance with PRL MPE1 REV. 0 with acceptance standards to PRL AS2 REV. 0
- [x] RT in accordance with PRL RT2 REV. 2 with acceptance standards to PARA. 11 OF PROC. All NDE personnel are qualified in accordance with ASNT TC-1A. All NDE procedures are qualified in accordance with Sections III and V of the Code.
- [x] WELDED in accordance with PRL WC1 REV. 3 PRL WP5 REV. 1 ADD. 1 All welding and welders are qualified in accordance with Sections III and IX of the Code.
- [x] HEAT treated in accordance with PRL HT6 REV. 2 ADD. 3 PRL HT3 REV. 0
- [x] CHEMICAL and physical analyses conforming to ASME SA217-75 WC9
- [x] CONFORMS to drawing and minimum wall requirements as required by the Code or as increased by the customer's PO or drawing.

S.W.E.C. PQC INSPECTED 42

WE FURTHER CERTIFY THAT THE MATERIAL LISTED HEREIN IS FREE FROM MERCURY CONTAMINATION.

PRL INDUSTRIES, INC.

BY Jay K. Ball II QA

DATE: 3/14/84

MRA28191 3-20-84
QC REVIEW DATE

3-23-84
CODE INSP. DATE

BODY

PRL Industries, Inc.

CORNWALL, PENNSYLVANIA 17016
TELEPHONE (717) 273-6787
TELEX 84-2372

METALLURGICAL TEST REPORT

CUSTOMER: Copes-Vulcan
P.O.NO. 311,589
SPECIFICATION ASME SA217-75
GRADE WC9
SHOP ORDER NO. 4008
LAB NO. 1437

CHEMICAL ANALYSIS

Ht.No.	C	Mn	Si	P	S	Cr	Ni	Mo	Cu					

Ferrite — TENSILE PROPERTIES — Hardness

Ht. No.	Severn Gauge	Calculated	Yield PSI	Tensile PSI	% Elong	% R.A.	HB	HR	
7214			72527	93992	25	64			

S.W.E.C. PQC INSPECTED-42

CHARPY IMPACT TESTS

Ht. No.	Ft. Lbs.	Avg.	Mils Lateral Expansion	Avg.	% Shear	Avg.	Test Temp. Deg. F

BODY

BODY

THIS CERTIFICATION AFFIRMS THAT THE TEST RESULTS ARE IN COMPLIANCE WITH THE ABOVE LISTED MATERIAL SPECIFICATION.

HEAT TREATMENT: Test material heat treated with castings.

2-28-84 QA P 2 MAL

COMMENTS: PRL SER. NO. R34

BY Jeffrey A. Whitney Lab Mgr. DATE 2-28-84

12

CUSTOMER: PRL Industries, Inc. Cornwall, Pa. 17016	SHIP TO: Same
CUST CODE 490	MARK FOR P.O.

2-13-84 Q A P 2 R34 MAL

PREPAID	COLLECT XX	VIA Truck	TERMS NET 30 DAYS
CHEPSHIP: PRL Industries, Inc. (Copes Vulcan)		SHIP DATE 2-13-84	D.F. ORDER NO 1-12778
QUANTITY 1	CB 2	PATTERN NO 22079-1 (10" 900 Body)	CUSTOMER ORDER NO 9819
NTT PER 1	MOLDS 1	S/P NO E220753, Rev. 6	UNIT WGT 1459 / TOTAL WGT 1459 / OPER 25
ORD ENTERED 1/11/84	CUSTOMER SPECIFICATION ~~A217 WC9~~, No Weld A217-75 WC9 2-13-84 MAL	METAL 140 / H.T. CODE D6	ROUTING CODE 1238
SALESMAN D4			TEST BARS 2 KB
BUYER Zimmer	INSTRUCTIONS (2) 3 copies TR & Docu. (3) No weld - hi integrity design, Submit sample and obtain RT results before production. Preheat 500°F prior to riser and defect removal, H.T. chart req., PWHT at 1275°F for 8 hrs.		
CUST. REQ. DEL. ASAP			

CERTIFICATION OF CHEMICAL & PHYSICAL TESTS - HEAT TREATMENT - N.D.E. TESTS

HEAT NO	SERIAL NOS	QUANTITY IN HEAT	DATE POURED
T214	9629LU	1	1-24-84

CHEMICAL ANALYSIS - MAT. SPEC. ~~A217 WC9~~ A217-75 WC9 2-13-84 MAL

C	MN	SI	P	S	CR	NI	MO
.15	.63	.50	.026	.009	2.39		.04

WELD METAL CHEMICAL ANALYSIS — WELDING PROCEDURE NUMBER

Filler Metal Spec	Lot Number	C	MN	SI	CR	NI	MO	Welder's I.D.

TENSILE PROPERTIES OF CASTING

T.S. P.S.I.	Y.P. P.S.I.	Y.S. P.S.I.	EL. %	R.A. %	BHN RANGE
94,200	59,700		25%	65.8	187

TENSILE PROPERTIES OF WELDING ELECTRODE

T.S. P.S.I.	Y.P. P.S.I.	Y.S. P.S.I.	EL. %	R.A. %	BHN RANGE

HEAT TREATMENT

TYPE	TEMP °F	TOTAL HRS	RATING	CHART ATT
HOMOGENIZE				
NORMALIZE				
TEMPER				
WATER QUENCH				
OIL QUENCH				

1 KEEL BLOCK.

IMPACT TEST

TEMP. F°	1	2	3	AVG
(FT. LBS.)				
(M.L.E.)				
SHEAR %				

BEND TEST

Specification

TYPE	DEG	AGE	No

RESULTS

CORROSION TEST

SPEC.	TYPE
TEMP	RESULTS

Ferrite Content %

Measured by

N.D.E. SPECIFICATIONS	SER No	APP'D	DATE
VT PER MSS-SP55	9629 LU	OK	2/84
MT-LPT PER			
RT PER			

REPORTS ATTACHED

- HEAT TREATMENT CHART
- RT FILM & READER & SHOOTING SKETCH
- WELD REPAIR MAP
- SNT-TC-1A CERTIFICATE
- WELDING PROCEDURE & QUALIFICATION TEST
- WELDER'S QUALIFICATION TEST

REMARKS

Casting was manufactured in accordance with our Quality Assurance Program, Rev. 2 dated 5/20/80 and PRL-CP-1, Rev. 1

BODY

We hereby certify that the above material has been tested in accordance with the listed specifications and conforms to all applicable requirements thereof

Don [signature] 2/7/84

Quality Assurance — Date

DODGE FOUNDRY & MACHINE CO.
6501 STATE ROAD, PHILA., PA. 19135

PRL Industries, Inc.
CORNWALL, PENNSYLVANIA 17016 / TELEPHONE (717) 273-6787 / TELEX 84-2372

HEAT TREAT CERTIFICATION

HEAT TREAT FURNACE NO. 2

CUSTOMER COPES-VULCAN DATE 2/21/84

P. O. NO. 311,589 PRL FILE NO. 4008

DESCRIPTION 10" 900# SS BWE BODY PATTERN NO. 22079-1

MATERIAL ASME SA217-75 WC9

CASTING INFORMATION

PRL NO.	HEAT NO.	CUSTOMER SER. NO.
R34	7214.	

S. W. E. C. PQC INSPECTED 42

~~Heat Treat~~ Procedure PRI HT3, REV 0 H.T.Process NORM

Charge No. 2190 Charge Temp 200°F

Time ~~to Equilibrium~~ 2 hrs 20 mins Htg. Rate NA °/hr.

Holding Temperature Range 1750°F ± 25°

Time at Temp. 4 hr. Clg. Rate NA °/hr.

Cooling Data AIR COOL (STILL AIR)

Thermocouple Information NA

Original Heat Treat Charts are maintained at PRL Industries, Inc.

Heat Treated by PRL INDUSTRIES Form No. 148, Rev. 1

Approved by QA P 4 Date 2/23/84

BODY

PRL Industries, Inc.
CORNWALL, PENNSYLVANIA 17016 / TELEPHONE (717) 273-6787 / TELEX 84-2372

HEAT TREAT CERTIFICATION

HEAT TREAT FURNACE NO. 2

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DESCRIPTION 10" 900# SS BWE BODY PATTERN NO. 22079-1

MATERIAL ASME SA217-75 WC9

CASTING INFORMATION

PRL NO.	HEAT NO.	CUSTOMER SER. NO.
R34	7214	

S.W.E.C. PQC INSPECTED-42

Heat Treat Procedure PRL HT3, REV 0 H.T.Process TEMPER

Charge No. 2191 Charge Temp 800°F

Time to Equilibrium ___ hrs 55 mins Htg. Rate NA °/hr.

Holding Temperature Range 1300°F ± 25°

Time at Temp. 4 hr. 10 min Clg. Rate NA °/hr.

Cooling Data AIR COOL (STILL AIR)

Thermocouple Information NA

BODY

Original Heat Treat Charts are maintained at PRL Industries, Inc.

Heat Treated by PRL INDUSTRIES Form No. 148, Rev. 1

Approved by QA P 4 Date 2/23/84

PRL Industries, Inc.
CORNWALL, PENNSYLVANIA 17016 / TELEPHONE (717) 273-6787 / TELEX 84-2372

HEAT TREAT CERTIFICATION

HEAT TREAT FURNACE NO. 2

CUSTOMER COPES-VULCAN DATE 3/12/84

P. O. NO. 311,589 PRL FILE NO. 4008

DESCRIPTION 10" 900# SS BWE BODY PATTERN NO. 22079-1

MATERIAL ASME SA217-75 WC9

CASTING INFORMATION

PRL NO.	HEAT NO.	CUSTOMER SER. NO.
R34	7214.	

S.W.E.C. PQC INSPECTED 42

Heat Treat Procedure PRL HT6, REV2, ADD3 H.T.Process PWHT

Charge No. 2206 Charge Temp 250 °F

Time to Equilibrium 5 hrs 15 mins Htg. Rate 125 °/hr.

Holding Temperature Range 1300 °F ± 25°

Time at Temp. 3 hr. Clg. Rate 70 °/hr.

Cooling Data FURNACE COOL TO 800 °F & AIR COOL (STILL AIR)

Thermocouple Information TC'S 6 & 7 IN CONTACT WITH LOAD

Original Heat Treat Charts are maintained at PRL Industries, Inc.

Heat Treated by PRL INDUSTRIES Form No. 148, Rev. 1

Approved by QA P 4 Date 3/13/84

BODY

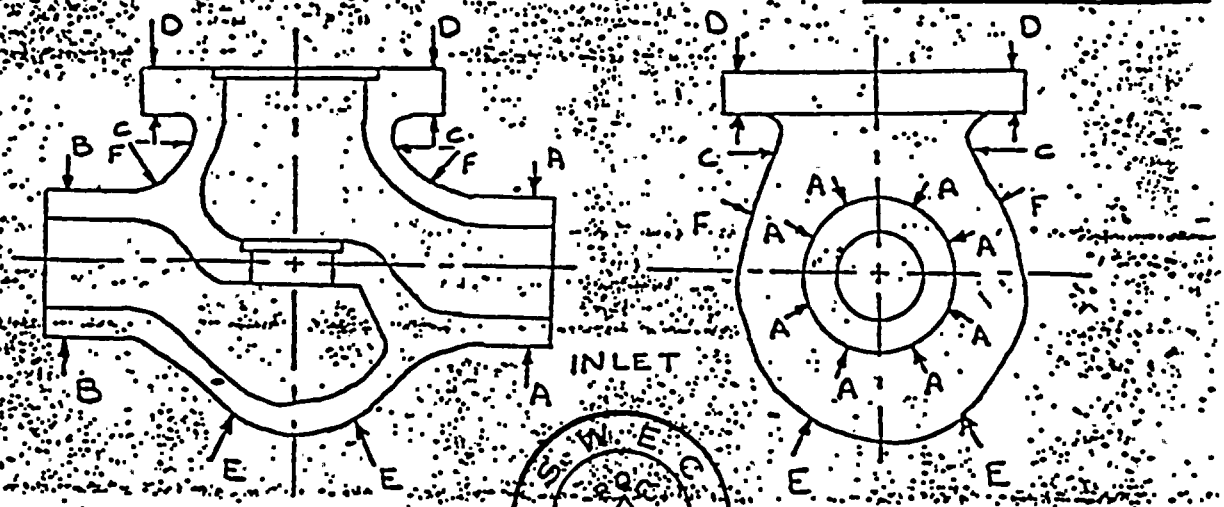
CVI PART NO.

1.07 MIN

PART S/N R-34

NOMINAL SIZE 10

PRESSURE STD. 900



MIN WALL 1.07

INSTRUCTIONS:

1. Visually inspect each area to be checked to determine the apparent minimum thickness due to local surface irregularities.

2. Using mechanical methods, measure the wall thickness starting at the apparent minimum, four (4) places 90° apart for valves 4" & smaller and in eight (8) places 45° apart for valves 5" & larger. (See sketch above.)

3. Visually inspect the body for damage. Ground areas, or thin areas which may be suspect, shall also be checked.

Inlet port - Measurement A

1. 1.700 inch	2. 1.470 inch	3. 1.550 inch	4. 1.535 inch
5. 1.520 inch	6. 1.500 inch	7. 1.790 inch	8. 1.560 inch

Outlet port - Measurement B

1. 1.540 inch	2. 1.510 inch	3. 1.335 inch	4. 1.410 inch
5. 1.650 inch	6. 1.485 inch	7. 1.550 inch	8. 1.360 inch

Body neck - Measurement C

1. 2.050 inch	2. 1.875 inch	3. 1.875 inch	4. 2.110 inch
5. 2.400 inch	6. 2.030 inch	7. 2.030 inch	8. 2.040 inch

Flange thickness - Measurement D

1. 3.945 inch	2. 3.918 inch	3. 3.905 inch	4. 3.905 inch
5. 3.855 inch	6. 3.800 inch	7. 3.815 inch	8. 3.910 inch

Body bowl - Measurement E

1. 1.250 inch	2. 1.550 inch	3. 1.365 inch	4. 1.430 inch
5. 1.500 inch	6. 1.250 inch	7. 1.430 inch	8. 1.310 inch

Midway between port and body neck - measurement F

1. 1.400 inch	2. 1.680 inch	3. 1.800 inch	4. 1.675 inch
5. 1.780 inch	6. 1.470 inch	7. 1.940 inch	8. 1.490 inch

BODY

CVI INSPECTOR [signature]

DATE 4-11-84

FOLIO 8220-95446

Sketch 3-20-95446 REV. 0 12-20-82

CUSTOMER INSP. AND DATE [signature] 4-11-84

Copes-Vulcan, Inc.

QUAKER ALLOY CASTING CO.
a division of HARSCO corporation
MYERSTOWN, PA. 17067

MATERIAL TEST REPORT

CUSTOMER ORDER NO.	PATTERN NO.	DATE
211,682 -3	84975	6-23-83

SPECIFICATION	QUAKER DESIG.
ASME SA217 Gr.WC9	2CM

CONTROL NO.	13982		
HEAT SERIAL	F5648-5		
RT. NO.	Y911		
CHEMICAL COMPOSITION			
C	.14 X		
Mn	.54 X		
Si	.41 X		
P	.011 X		
S	.001 X		
Cr	2.35 X		
Ni			
Mo	.99 X		
Cu			
MECHANICAL PROPERTIES			
TENSILE: TENSILE, Ksi	91.5 X		
TENSILE: YIELD, Ksi	64.0 X		
TENSILE: ELONG. %	27.5 X		
TENSILE: RED. of AREA %	70.9 X		
CHARPY: ENERGY, ft-lbf			
CHARPY: LAT. EXP. mils			
CHARPY: SHEAR, %			
CHARPY: TEST TEMP. °F			
OTHER			
PIECES SHIPPED	1		

BONNET

ADDITIONAL INFORMATION:

We certify that the contents of this report are correct and accurate and that all operations performed and material produced by our Company and our subcontractors are in compliance with the requirements of the material specification and the ASME B&PV Code Section III Division I, 1974 Edition thru Winter 1975 Addenda, and in accordance with Quaker Alloy Quality System Manual, Revision 10 dated 9/11/80 and approved by Copes-Vulcan, Inc.

We certify the above castings have been produced from Mercury free Material and that no Mercury or Mercury bearing instruments have been used in their processing.

"I HEREBY CERTIFY THAT THE ABOVE INFORMATION IS CORRECT."

M M Landis
AUTHORIZED SIGNATURE

L Didion MRA27083 8-26-83
CVI INSP. DATE

[signature] 8-29-83
CODE INSP. DATE

5

QUAKER ALLOY CASTING COMPANY, HYERSTOWN, PA

CUSTOMER Copes-Vulcan, Inc. PURCHASE ORDER 211,682 CONTRACT NO: N/A

SHOP ORDER M0228-23 Q DESIGNATION 2CM PATTERN NO. 84975

MATERIAL SPEC. & GRADE ASME SA217 Gr.WC9 DESCRIPTION Valve Bonnet SIZE 10"

HEAT NO. F5648 CASTING SERIAL NO. F5648-5 R.T. SERIAL NO. Y911

NUCLEAR CLASS N2 PCS. COVERED ON THIS REPORT 1 SOURCE INSPECTION N/A

HEAT TREAT RECORD

PROCESS*	N	T	PWHT	
PROCEDURE	QAP-H-15-02	SAME	QAP-WS-05-03 &	Ad. 830607
DATE	5-9-83	5-9-83	5-20-83	
FURNACE	Even Temper	Even Temper	Even Temper	
CHARGE NO.	ET-5-9-83-1	ET-5-9-83-2	ET-5-20-83-1	
CHARGE TEMP.	80°F	820°F	280°F	
TIME TO EQUIL. TEMP.	4 Hr. 55 Min.	10 Mins.	1 Hr.	
HOLDING TEMP.(RANGE)	1840°-1850°F	1350°-1360°F	1290°-1320°F	
TIME AT TEMP.	4 Hr. 10 Min.	4 Hr. 15 Mins.	5 Hr. 5 Mins.	
COOLING DATA	Air	Air	Air	

W.E.C. PQC INSPECTED 42

REMARKS

ACTUAL HEAT TREAT CHARTS ARE RETAINED IN FILE FOR THE ABOVE.

*N = Normalize or Homogenize
Q = Quench or Harden
T = Temper
SA = Solution Anneal
PWHT = Post Weld Heat Treat (Stress Relieve)

BONNET

PREPARED BY J. Sangler
Quaker Alloy Casting Company
TITLE Q. C. Clerk
DATE PREPARED 6-23-83

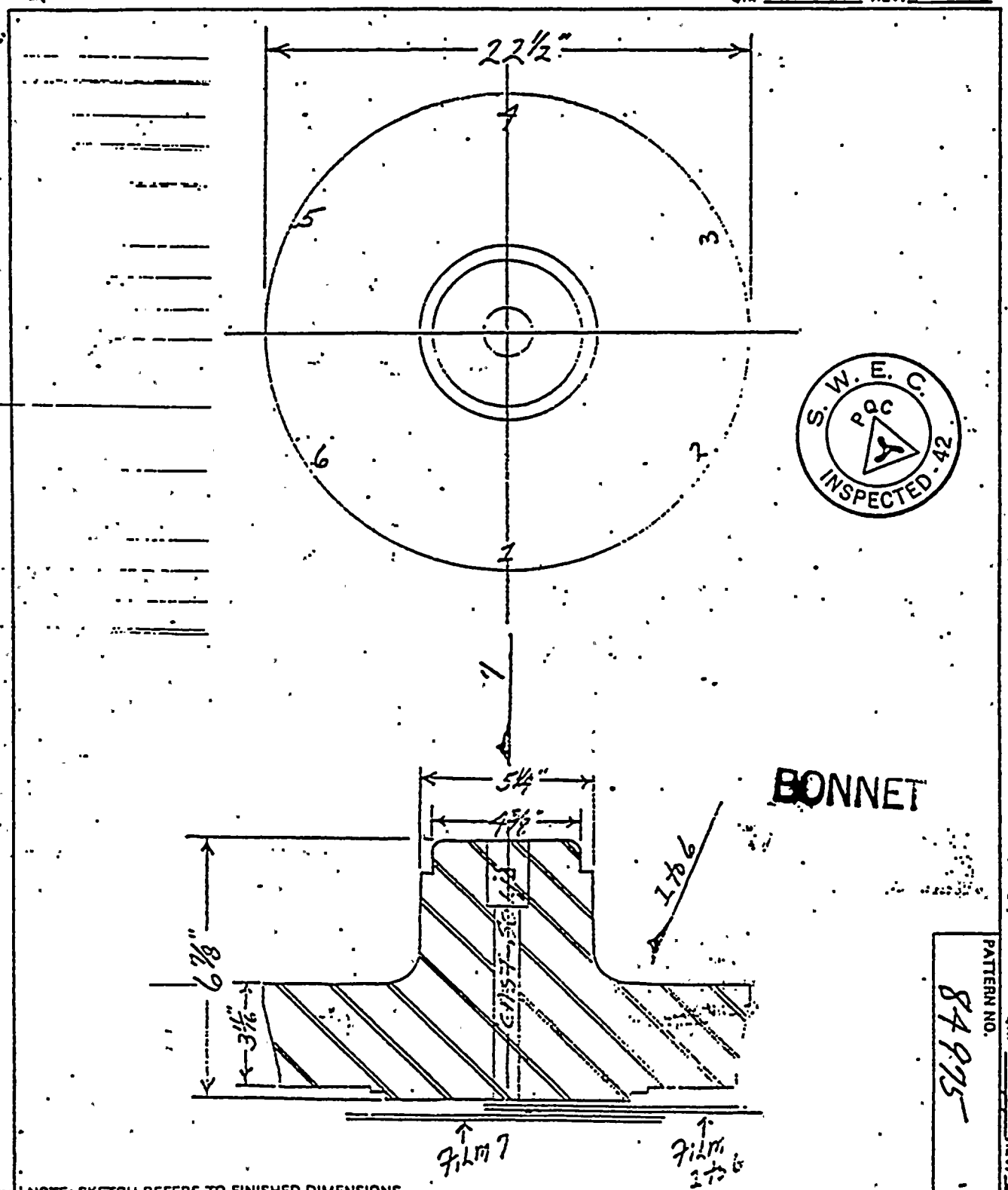
Form 212 Rev. 1
12/20/76

55

QUAKER ALLOY CASTING CO.
MYERSTOWN, PENNSYLVANIA 17067

Radiographic Shooting Sketch

ORP 6268 REV. B



PATTERN NO. 84925

ORP 6268 REV. B

NOTE: SKETCH REFERS TO FINISHED DIMENSIONS

SHOOTING SKETCH NUMBER	SHEET	REVISION	PAGE 2 OF 2

Form 155 Rev. A

CVI JOB NO. 20-95446

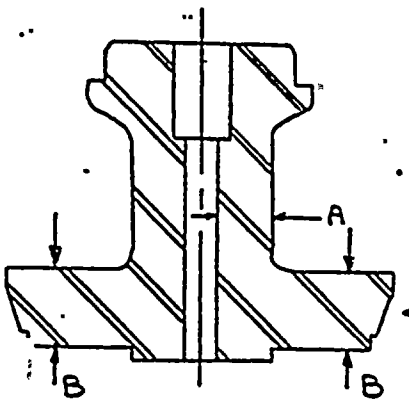
CVI PART NO. 265316

PART S/N. 1911

NOMINAL SIZE 10"

PRESSURE STD. #900 LB

YBT 3/3 Act



← MIN WALL 3.672

S.W.E.C. PQC INSPECTED-42

INSTRUCTIONS:

1. Visually inspect the bonnet neck area to determine the apparent minimum thickness due to local surface irregularities.

2. Using ultrasonic or mechanical methods, measure the wall thickness at the four (4) locations starting at the apparent minimum condition ~~and then~~ approximately 90° apart. Record the results below.

3. Measure the flange thickness in four (4) places 90° apart for valves 4" & smaller and in eight (8) places 45° apart for valves 5" & larger.

Bonnet neck - Measurement A

1. 1 7/8 inch 2. 1 7/8 inch 3. 1 7/8 inch 4. 1 7/8 inch

Flange thickness - Measurement B

1. 3.680 inch 2. 3.677 inch 3. 3.680 inch 4. 3.680 inch
5. 3.678 inch 6. 3.677 inch 7. 3.677 inch 8. 3.681 inch

CVI INSPECTOR [signature]

DATE 10-17-83

FOLIO 8220-95446

Sketch 4-20-95446 REV.0 4-20-82

CUSTOMER INSP. & DATE

BONNET

FORM N-2 MANUFACTURERS DATA REPORT FOR NUCLEAR PART AND APPURTENANCES*

As required by the Provisions of the ASME Code Rules

1. (a) Manufactured by Copes-Vulcan, Lake City, PA 16423
(Name and address of Manufacturer of part)

(b) Manufactured for Stone & Webster Engr. Corp.
(Name and address of Manufacturer of completed nuclear component)

2. Identification-Manufacturer's Serial No. of Part * (11b)(11c) Nat'l Bd. No. ——

(a) Constructed According to Drawing No. E-265319 Rev.1 Drawing Prepared by Copes-Vulcan

(b) Description of Part Inspected Inlet & Outlet Nipples on Valve Ass'y Dwg. E-265073 Rev. 1

(c) Applicable ASME Code: Section III, Edition 1974, Addenda date Winter 1975, Case No. —— Class 2

3. Remarks: Cust. P.O. NMP2-C051M CV Job 8220-95446
(Brief description of service for which component was designed)

Cust. Tag. 2CHS*HCV133 CV S/N 8220-95446-5-1

* S/N 83-1 10"SI00 Inlet

S/N 83-1 10" S40 Outlet

We certify that the statements made in this report are correct and this vessel part or appurtenance as defined in the Code conforms to the rules of construction of the ASME Code Section III.
(The applicable Design Specification and Stress Report are not the responsibility of the part Manufacturer/Appurtenance Manufacturer is responsible for furnishing a separate Design Specification and Stress Report if the appurtenance is not included in the component Design Specification and Stress Report.)

Date July 18 1984 Signed Copes-Vulcan (Manufacturer) By Dale May

Certificate of Authorization Expires 8/19/86 Certificate of Authorization No. N-1843

CERTIFICATION OF DESIGN FOR APPURTENANCE (when applicable)

Design information on file at Stone & Webster Eng. Corp., Cherry Point, NJ

Stress analysis report on file at N/A

Design specifications certified by Subhash C. Brahma Prof. Eng. State NY Reg. No. 059685

Stress analysis report certified by N/A Prof. Eng. State ____ Reg. No. ____

CERTIFICATE OF SHOP 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 Penna and employed by Protection Mutual Ins.Co.* of Park Ridge, IL have inspected the part of a pressure vessel described in this Manufacturer's Partial Data Report on July 19 1984, and state that to the best of my knowledge and belief, the Manufacturer has constructed this part in accordance with the ASME Code Section III.

By signing this certificate, neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the part described in this Manufacturer's Partial 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.

*Factory Mutual Systems

Date 7-19 1984

Inspector's Signature

Commissions NB8563 PA2274 NY 2851
National Board, State, Province and No.

*Supplemental sheets in form of lists, sketches or drawings may be used provided (1) size is 8½" x 11", (2) information in items 1-2 on this data report is included on each sheet, and (3) each sheet is numbered and number of sheets is recorded in item 3, "Remarks".

GRAYON ALLOYS, INC.

TUBULAR PRODUCTS FOR THE ENERGY INDUSTRIES
P. O. Box 42345, Houston, Texas 77042
(713) 974-7200
TWX (910) 881-7182

S. W. E. C. PQC INSPECTED

RECEIVED MAR 11 1983 COPES-VULCAN

MATERIAL CERTIFICATION

Subject: Copes Vulcan
Order Number: 212,267
CV Tag # 8220-95446
Description: SMLS ASME SA106 GR B

Item 1	8" S/80	Heat #917859	(J&L) ok
Item 2	8" S/100	Heat #93232	(PHOENIX) ok
Item 3	3/4" S/80	Heat #M22831	(SHARON) ok
Item 5	10" S/100 (.718"W)	Heat #93129	(PHOENIX) ok
Item 6	10" S/40	Heat ~~#92313~~ 93213 typo	(PHOENIX) ok
Item 7	3" S/40	Heat #165566	(J&L) ok
Item 8	1" S/160	Heat #JB6289	(QUANEX) ok

Description: SMLS ASME SA335 P-22

Item 4	3/4" S/80	Heat #113402	(GST) ok

CVI INSP. CODE INSP. DATE 3-17-83

CERTIFICATION: This certifies that, to the best of our knowledge and belief, the piping material described herein meets the purchasing requirements, material specifications, and all special requirements of ASME Section III, Class 2 of the ASME Boiler and Pressure Vessel Code, 1974 Edition thru Winter 1975 Addenda. Material has been processed in accordance with our Identification and Verification program.

Additional Certification: This certifies that, to the best of our knowledge and belief, no mercury, mercury compounds, not mercury bearing instruments and/or equipment were used in any manner which might cause contamination in the manufacture, assembly, or test during the manufacture of the piping material described herein.

Attachments: CMTR (8)

NIPPLE
Inlet

Pete Rodriguez
Assistant Manager - QA

PR/cp

Date: 2/28/83

cc: QA File

Quality System Certificates
Mat'l:# QSC-205-2

PHOENIX STEEL CORPORATION

TUBE DIVISION
PHOENIXVILLE, PENNA.

Q.C. REVIEW MRA26565
SIGNED [illegible] DATE 3/14/83

CERTIFICATE OF INSPECTION AND TESTS

DATE: 9-23-82	DATE SHIPPED: 9-18-82	MILL ORDER NO. T-7253-A	SHIPPING LIST NO. 35 H
SOLD TO: Guyon Alloys, Inc.		CUSTOMER ORDER NO. A55879N	
		CAR NO.	
SHIP TO: Copes-Vulcan item 5 212,267		MATERIAL: SEAMLESS ☒ PIPE ☐ TUBE, HOT FINISHED	
		SPECIFICATION: ASTM A106B-80, ASME SA106B ASME SECTION III CLASS 2 1971 EDITION THRU SUMMER 1973 ADDENDA.	
	10"S/100		

NO. PCS.	OD	WALL.	LENGTH	TOTAL FT.	TOTAL WT.	HEAT NO.
	10.750" x .719"					93129

Q. A. APPROVED
BY: [illegible] DATE: 9-29-82
GUYON ALLOYS INC.

HEAT NO.	C	Mn.	P.	S.	Si.	Cu.	Ni.	Cr.	Mo.	V.	
93129	.24	.71	.007	.007	.22						Ladle Analysis
93129	.26	.74	.010	.008	.23						Product Analysis
93129	.26	.73	.010	.007	.21						Product Analysis

S.W.E.C. PQC INSPECTED-42

HEAT NO.	TENSILE (KSI)	YIELD (KSI)( )	% ELONG. IN 2"	% RA	HARDNESS ROCKWELL	HARDNESS BRINELL	GRAIN SIZE
93129	80.4	51.2	34.00				

"MATERIAL WAS PRODUCED IN ACCORDANCE WITH THE QUALITY PROGRAM REVISION DATED 2/1/80, WHICH WAS AUDITED AND APPROVED BY GUYON ALLOYS ON JUNE 9, 1982 as conforming to ~~ASME SECTION III~~, SUBARTICLE NCA-3800."

INLET Nipple

JOMINY DISTANCE - 16TH	ROCKWELL C	FLATTENING	OK	HYDROSTATIC PSI	2800
1 2 4 6 8 10 12 14 16 20 24 28 32					

THE PHOENIX STEEL CORPORATION HEREBY CERTIFIES THAT THE ABOVE MATERIALS HAVE BEEN INSPECTED AND TESTED IN ACCORDANCE WITH THE METHODS PRESCRIBED IN THE APPLICABLE SPECIFICATIONS AND THE RESULTS OF SUCH INSPECTION AND TESTS AS CONTAINED IN THE COMPANY'S RECORDS ARE AS SHOWN ABOVE. FOR PROPERTIES OR CHARACTERISTICS FOR WHICH NO METHODS OF INSPECTION OR TESTING ARE PRESCRIBED BY SAID SPECIFICATIONS, THE STANDARD MILL INSPECTION AND TESTING PRACTICES OF THE PHOENIX STEEL CORPORATION HAVE BEEN APPLIED. BASED UPON SUCH INSPECTION AND TESTS, THE ABOVE MATERIALS HAVE BEEN APPROVED AS FULFILLING THE REQUIREMENTS OF SAID SPECIFICATION.

Wayne Brosder
ENGINEER OF TESTS

FORM I&T-0153-R4 (12/76)

COPES-VULCAN, INC.

One of the White Consolidated Industries

RADIOGRAPHIC INSPECTION REPORT

P.O. BOX 577 • LAKE CITY, PENNSYLVANIA 16423 • PHONE 814/774-3151 • TELEX: 91-4414

CUSTOMER S+W JOB # 20-95446 DATE 7/13/84 PAGE

JOB LOCATION | WELDING SPECIFICATION

MATERIAL THICKNESS	MATERIAL DIAMETER	ACCEPTANCE STANDARD	TECHNIQUE SPECIFICATIONS	
.8-1.125	12"	50-5.9.15	50-5.9.15	S/N. R34

ISOTOPE	DIA. X LENGTH	CURIES	DISTANCE	TIME	FILM TYPE(s)	FILM SIZE	FILM TECHNIQUE
IR192	.1X.1	20	10"	2.5 min	AA/AA	7X17	SINGLE WALL

X RAY	KV	MA	DISTANCE	TIME	FOCAL SPOT SIZE	FILM PROCESSING	RADIOGRAPHER
						AUTO	FRP

PENETRAMETER - "S" FOR SOURCE SIDE - "F" FOR FILM SIDE: 20S 25S

SHIM THICKNESS: .375

FITTING CASTING OR JOINT NUMBER	FILM INTERVAL NUMBER	PENETRAMETER SIZE AND CONDITION	ACCEPT	REJECT	SLAG	POROSITY	CRACK	LACK OF PEN.	LACK FUSION	UNDERCUT	SURFACE	TUNGSTEN INCL.	OXIDE INCL.	SHRINK	HOT TEAR	SAND	CHAPLETS
OVS	0-1		✓			✓											
	1-2		✓			✓											
	2-3		✓			✓											
	3-0		✓			✓											
UNS	0-1		✓			✓											
	1-2		✓			✓											
	2-3		✓								✓						
	3-0		✓			✓											

BRIEFLY DESCRIBE APPARENT DEFECTS

IF NO DEFECTS ARE INDICATED STATE "NO APPARENT DEFECTS"

S/N R34

OVS = OVER SEAT WELD END

UNS = UNDER SEAT WELD END

BODY NIPPLE ASS'Y

S.W.E.C. INSPECTED 42

BODY

COPES-VULCAN DIVISION REVIEWERS [signature] 7/13/84 CUSTOMERS REVIEWERS [signature] 7-18-84

NOTE: The recording of false, fictitious, or fraudulent statements or entries on this document may be punished as a felony under Federal statutes including Federal Law, Title 18, Chapter 47.

FORM 705242

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CERTIFICATE OF COMPLIANCE

Vitco Nuclear Products, Inc. 4445 Hamann Parkway, Willoughby, Ohio 44094

S.W.E.C. PQC INSPECTED 42

LD Edison WRA 26618 4-12-83
CVL INSP. DATE
[signature] 4-18-83
CODE INSP. DATE

DATE: March 8, 1983

PURCHASE ORDER NO.: 212,967

TO: Copes-Vulcan Inc.

ITEM: (6) 12 pcs 1-3/4"-8 UN-2A X 8-3/4" Double End Stud

PARTS MARKED: ** V,B7, NE70 HEAT # 96207

HEAT TREAT CONDITION: Quenched & Tempered

SPECIFICATIONS: ASME-SA-193 GR.B7 ASME Boiler & Pressure Vessel Code Section III, Division I, 1974 ED., W-75 ADD., CL.2

DWG#: S-148158 Rev.0 MKD (MH 12/10/82)

VITCO ORDER NO.: 1465

WE CERTIFY THAT THE ABOVE MATERIAL IS COMMERCIALLY FREE FROM MERCURY CONTAMINATION.

WE CERTIFY THAT THE CONTENTS OF THIS REPORT ARE CORRECT AND ACCURATE, AND THAT ALL TESTS AND OPERATIONS PERFORMED ARE IN COMPLIANCE WITH THE REQUIREMENTS OF THE MATERIAL SPECIFICATIONS AND CONTRACT DOCUMENTS. CERTIFICATIONS ATTESTING TO THE ACCURACY OF THIS REPORT ARE ON FILE AT VITCO.

STUD

**Alternative marking in lieu of: V
SA-193 GR.B7
Heat#: 96207

By [signature]
Authorized Q.A. Agent
Steve Marsh

ASME MS QSC #454, EXP 5/4/85 [NA 3700]
Visual examination per SA-614 Paragraph "RU" - Satisfactory
Heat treatment was performed in accordance with Coppeweld Steel Co.
Procedure #C-QCP-4140-4142 Rev.0 dated 10/1/80

ATTACHMENTS

COPPERWELD STEEL MILL TEST REPORT FOR HEAT# #96207
HEAT TREAT CHARTS

83

COPPERWELD STEEL COMPANY - WARREN, OHIO 44482

SALES ORDER

INTERVIEW NO.	DISTRICT	CUSTOMER'S PURCHASE ORDER NUMBER	DATE MO. DAY YR.	ITEM	DATE WANTED	SHIPPING PROMISE WEEK OF:	SALES ORDER NO.
081731	CLE PHIL	TXS 15307	07 16 81	8 8	12/4	12/6/81	80372

2 P.O.B. MILL WARREN, OHIO	COMPETITIVE FREIGHT FROM XXXXXXXX	PRICE: IN EFFECT AT TIME OF SHIPMENT	TERMS OF PAYMENT: % OF 1% OF MILL VALUE 10 DAYS, NET 30 DAYS

PLUS ATTACHMENT NO. 1

3 LADING STEEL BARS	PPD. X	COL.	SHIP VIA OPEN TOP TRK - TARPED	NUCLEAR CLASS EWT 8/18

SOLD TO:
PETER A FRASSE & CO INC
P O BOX 447
TEINSBURG, OHIO 44087

SHIP TO: (SAME AS "SOLD TO" UNLESS OTHERWISE NOTED)
PETER A FRASSE & CO INC.
2060 ENTERPRISE PARKWAY
TWINSBURG, OHIO 44087

QTY FEET	PIECES	LBS.	SIZE AND SHAPE	STD.	SIZE TOLERANCE PLUS MINUS	PURPOSE	CUSTOMER'S FIRST OPERATION
		6,000	1 3/4" RD	X		WHSE STOCK	

LENGTH	SHORTS	MULTS	STD.	LENGTH TOLERANCE PLUS MINUS
12/10'				

PRODUCT DESCRIPTION	MFG	PART
7 HT CD SR PPQ	(209)	CODE 190-081414

GRAIN	HARDNESS	ADDIT. MACRO/MICRO REQ.	SPECIFICATION NO.
8 FINE			ASME-SA-193-80 GR B7 PLUS CHARPY IMPACT TESTS AT AMBIENT TEMP FOR INFO. ASME NCA-3800-80 (W80A) PLUS OTHERS SHOWN BELOW

TAG	STRAIGHTNESS
9 ASME SA 193-80 GR B7 & SR CHG NO	

BUNDLE	PAINT & MARK	INSPECTION
10	STAMP HEAT CODE ON EACH BAR-PAINT OTHER END GREEN	X

S.W.E.C. PQC INSPECTED-42

COPPERWELD STEEL COMPANY
P.O. BOX 351 / WARREN, OHIO 44482

TEST REPORT
for a Copperweld product

ORDER NUMBER CUSTOMER	COPPERWELD
	80372

GRADE: E 4142 DH PPQ — REISSUED 3-15-82 TO INCLUDE STATEMENT * SHOWN BELOW — DATE: 2/19/82

ANALYSIS

HEAT NO.	C	Mn	P	S	Si	Ni	Cr	Mo	Cu	Pb	Al		GRAIN SIZE
96207	.43	.90	.015	.025	.26		1.03	.15					6-8

Material identified with Heat Code - KTE

JOMINY

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	20	24	28	32	36
56	56	56	56	56	55	54	52		51		48		46		43	42	39	37	37	

MECHANICAL PROP.

YIELD PSI	TENSILE PSI	OFFSET %	ELONG. %	R.A. %	HARDNESS* HB
125,000	139,000	.2	21.0	59.8	302

*Surface unless otherwise noted

OTHER DATA

ASME Quality Systems Certificate (Materials) No. QSC 348, expires 10-20-84.
Material produced to requirements of ASME Code NA 3700 for (1971 ED. S-77 ADD, thru W-79 ADD.) & (1980 ED., W-80 ADD. Material capable of meeting magnetic particle requirements of NB-2580(W-80A) at finished size per minimum stock removal listed in AISI steel products manual (8-77) table 5-2.
Quench - 1600F - 2 hrs. Media - Oil
Temper - 1100F - 2 hrs.
Stress - 1000F - 2 hrs.
SR. CHG. No. 8E-507
See attached Tensile Testing Co. TR for charpy impact results.

STUD

We hereby certify that the above data are correct as contained in the records of Copperweld Steel Company.

Veryl D Kefer March 15, 1982 — Veryl D. Kefer Feb. 19, 1982 SUPV. MET. LAB.

* MATERIAL THERMAL TREATED IN ACCORDANCE WITH COPPERWELD QC PROCEDURE NO. C-QCP-4140/42 (10-1-80).

Acc [signature] 7/29/82 TRACE # NE70

MATERIAL PRODUCED AND CERTIFIED TO SPECIFICATIONS SHOWN ABOVE. NO ADDITIONAL CERTIFICATION IS IMPLIED OR WARRANTED.

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CERTIFIED MATERIAL TEST REPORT

Vitco Nuclear Products Inc., 4445 Hamann Parkway, Willoughby, Ohio 44094

TO Copes-Vulcan Inc.
P.O. Box 577
Lake City, PA 16423

DATE	VITCO ORDER NUMBER	CUSTOMER ORDER NUMBER
3/8/83	1472	212,967

ITEM (12) 12 pcs 1-3/4"-8 UN-2B Heavy Hex Nut
DWG#: M-170423 Rev.0 MKD MH 12/10/82

PARTS MARKED: ** V, 2HB,X59-4

SPECIFICATION ASME-SA-194 GR. 2H ASME Boiler & Pressure Vessel Code Division III, Section I, 1974 ED., W-75 ADD., CL.2

CHEMICAL COMPOSITION

Item	Heat No.	C	Mn	P	S	Si	Cr	Mo	Ni	Cu	Fe	Al	Ti	V	CB & T.
(12)	93890	.49	.80	.009	.016	.28	.05	.01	.03	.04					

MECHANICAL PROPERTIES

Item	Tensil Strength PSI	Yield PSI. 2%	Elong. % in 4D	Red. Area %	Hardness	Heat Treat Data
(12)	Hardness per ASME-SA-194 para. 8 (a)				Rc 26-31	Heat treat 1680°F 1 hr 45 min
						Temper 950°F 3 hrs
	Hardness per ASME-SA-194 para. 8 (b)				Rc 22.5	24 hrs @ 1000°F

ADDITIONAL SPECIFICATION REQUIREMENTS OR SPECIAL TESTS

S.W.E.C. PQC INSPECTED 42

ASME MM QSC #453, Exp. 5/4/85 [NA 3700]
CONE STRIPPING PROOF LOAD (143,600 LBS.) SATISFACTORY
**Alternative marking in lieu of: V
SA-194 GR.2H
Heat# 93890

Heat treatment was performed in accordance with Vitco Procedure # QAP 1014 Rev.4 dated 7/9/81

ATTACHMENTS
INLAND STEEL MILL TEST REPORT FOR HEAT# 93890
HEAT TREAT CHARTS

WE CERTIFY THAT THE ABOVE MATERIAL IS COMMERCIALLY FREE FROM MERCURY CONTAMINATION.

DATE 3-23-83

DATE

NUT

SWORN TO AND SUBSCRIBED BEFORE ME THIS_____ DAY OF_____ BY A DULY AUTHORIZED AGENT OF VITCO NUCLEAR PRODUCTS, INC.

My Commission Expires _____ Notary Public _____

WE CERTIFY THAT THE CONTENTS OF THIS REPORT ARE CORRECT AND ACCURATE, AND THAT ALL TESTS AND OPERATIONS PERFORMED ARE IN COMPLIANCE WITH THE REQUIREMENTS OF THE MATERIAL SPECIFICATIONS AND CONTRACT DOCUMENTS

By _____
Authorized Q.A. Agent

PHOENIX STEEL CORPORATION

TUBE DIVISION
PHOENIXVILLE, PENNA.

** SUPPLEMENTAL (11-5-82)

CERTIFICATE OF INSPECTION AND TESTS

DATE:	DATE SHIPPED:	MILL ORDER NO.	SHIPPING LIST NO
10-20-82	10-18-82	T-7370-A	42B

SOLD TO: Guyon Alloys, Inc.

CUSTOMER ORDER NO. A57894 N

CAR NO. GONX 351192

MATERIAL: SEAMLESS ☒ PIPE ☐ TUBE, HOT FINISHED

SHIP TO: 10" Std **

SPECIFICATION: ASTM A-106-B-80, ASME SA-106-B. ASME Section III, Class 2, 1980 Edition thru Summer 1982 Addenda and ASME SA655 Class 2, Paragraph RM, RO & RP.

NO. PCS.	OD	WALL	LENGTH	TOTAL FT.	TOTAL WT.	HEAT NO.
	10.750" x .365"					93213

** Material produced in accordance with QA Program dated 2/1/80 as audited and approved by Guyon Alloys on 6/9/82. Material conforms to ASME Section III, sub article NCA 3800.

HEAT NO.	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V
93213	.25	.79	.006	.013	.24	Ladle Analysis				
93213	.29	.82	.012	.014	.24	Product Analysis				
93213	.29	.83	.012	.015	.25	Product Analysis				

Copes Vulcan item 6
212,267

S.W.E.C. PQC INSPECTED-42

HEAT NO.	TENSILE (KSI)	YIELD (KSI) ( )	% ELONG. IN 2"	% RA	HARDNESS ROCKWELL	HARDNESS BRINELL	GRAIN SIZE
93213	85.3	61.4	38.00				

Q. A. APPROVED
BY: D.S. DATE: 11/9/82
GUYON ALLOYS, INC.

Q.C. REVIEW MRA26066
SIGNED [illegible] DATE 3/4/83

OUTLET nipple

JOMINY DISTANCE - 16TH ROCKWELL C FLATTENING OK HYDROSTATIC PSI 1500

1	2	4	6	8	10	12	14	16	20	24	28	32

THE PHOENIX STEEL CORPORATION HEREBY CERTIFIES THAT THE ABOVE MATERIALS HAVE BEEN INSPECTED AND TESTED IN ACCORDANCE WITH THE METHODS PRESCRIBED IN THE APPLICABLE SPECIFICATIONS AND THE RESULTS OF SUCH INSPECTION AND TESTS AS CONTAINED IN THE COMPANY'S RECORDS ARE AS SHOWN ABOVE. FOR PROPERTIES OR CHARACTERISTICS FOR WHICH NO METHODS OF INSPECTION OR TESTING ARE PRESCRIBED BY SAID SPECIFICATIONS, THE STANDARD MILL INSPECTION AND TESTING PRACTICES OF THE PHOENIX STEEL CORPORATION HAVE BEEN APPLIED. BASED UPON SUCH INSPECTION AND TESTS, THE ABOVE MATERIALS HAVE BEEN APPROVED AS FULFILLING THE REQUIREMENTS OF SAID SPECIFICATIONS.

Wayne Brooks
ENGINEER OF TESTS

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