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

SEE REPS

SUBJECT: Forwards info re GDC-51 of 10CFR50,per Halapatz request for info to aid in evaluation of containment fracture toughness, SER Open Item 66.

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NIAGARA MOHAWK

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

September 27, 1984
(NMP2L 0173)

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 is information relating to General Design Criterion 51 of 10 CFR Part 50. This information was requested by Mr. Halapatz, of your staff, for his use in evaluating the containment fracture toughness for Nine Mile Point Unit 2, which is Safety Evaluation Report Open Item 66.

Very truly yours,

C. V. Mangan
Vice President
Nuclear Engineering & Licensing

DS:ja
Enclosure

cc: Project File (2)

B001
1/1

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 27th day of September 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

0 5 4 1 9 0 0 7 4

ENERGY PRODUCTS GROUP
GULF + WESTERN MANUFACTURING COMPANY
Plant 35
P. O. Box 536, West Chester, Pennsylvania 19380

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manufacturers of LENAPE FORGE products

MATERIAL TEST REPORT S. O. NO. 6194-8 WEST CHESTER, PA. 4/3/79 19

PURCHASER Fluid Systems Division DISTRIBUTOR Fluid Systems Division

PURCHASER'S ORDER NO. DISTRIBUTOR'S ORDER NO. 1590

ITEM NO.	QTY.	PRODUCT	SPEC.	HEAT OR CODE NO.	REMARKS
2	4	24" X 900# Class 1 Bonnet Forging to finish to Dwg. # D-246-000-GR2400, rev. B NATIONAL MOHAWK NINE MILE #2 NMPZ - F303D MSIV VALVES TAG: 2MSSXHV7A FLUID SYSTEMS - EPG REPORT WAS MANUFACTURED UNDER ASME QUALITY SYSTEMS CERTIFICATE (MATERIALS) NO. N-1950. EXPIRES DECEMBER 9, 1980.	SA 350 LF2 per Mat'l Spec. MS-1164 ASME Sec. III, Cl. 1 & Add. #1 dated 7/19/78 ASME B & PV 1974 Ed. thru W 76	B57QT	M/O 987F-1 thru 4 ENERGY PRODUCTS GROUP Gulf & Western Mfg. Co. 235 Kilvert Street Warwick, R.I. Quality Assurance Dept. Signed 4-6-79 Date REVISED TEST REPORT; PLEASE DESTROY PREVIOUS COPY DATED 4-3-79

CHEMICAL ANALYSIS AND MECHANICAL PROPERTIES

HEAT NO.	C	MN	P	S	SI	CR	NI	MO			REMARKS
B57QT	.21	1.15	.014	.025	.21						HEAT TREATMENT: HT-2 rev. 2 Austenitize @ 1650°F for 7-3/4 hrs. & W.Q. to room temp. Temper @ 1275°F for 7-3/4hrs. and Air cool to room temp. (See attached Heat Treat Rep

S. W. E. C. PQC INSPECTED 49

HEAT NO.	TENSILE	YIELD	ELONG % IN 2"	R.A. %	Cv Temp.	IMPACT Ft. Lbs.	REMARKS Lat. Exp.	% Shear
B57QT	79,23	55,959	22.0	45.9				
987F-1					+40°F	81-71-47	.074-.069-.048	60-60-60
-2					+40°F	149-120-193	.102-.097-.-99	100-100-10
-3					+40°F	87-103-127	.077-.087-.081	90-100-100
-4					+40°F	165-211-169	.101-.099-.096	100-100-10

Attachments: H.T. Report
U.T. Report-M.P. Report

We hereby certify the above results to be correct as contained in the records of the Company.

Tanya Fariner

Printed in U.S.A.

INFORMATION ONLY

8410010338

TRANSMITTAL NO. 00957

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.

The limiting materials were found to have a permissible lowest service metal temperature (PLSMT) at or below the design lowest service metal temperature of +70°F.

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.

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.

0 0 4 1 9 0 0 5

WALL THICKNESS MEASURING PROCEDURE

PART DWG Nº E 1234 248 Rev 0 HEAT Nº 571811
PART NAME 24" 900 BODY ASSY W/Brace INSPECTED BY W. GOLINI
MATERIAL SA 350 LF-2 DATE 6/3/81
PART SERIAL Nº 0001 CUSTOMER Q/A
DATE

NIAGARA MOHAWK
NINE MILE #2
NMPZ - P303D
MSIV VALVES
TAG: 2MSS-HYV7A
FLUID SYSTEMS - EPG

ENERGY PRODUCTS GROUP
Gulf & Western Mfg. Co.
235 Kilvert Street
Warwick, R.I.
Quality Assurance Dept.
Signed Date 6/6/81

ZONE AREA	MIN DIM.	METHOD *	ACTUAL DIM. & LOCATION 1	2	3	4	5	6	7	8
A	3.875	U	4.025	4.000	4.000	4.050	4.125	4.100		
B	3.875	U	5.175	4.175	4.200	5.175	4.375	4.475		
C	3.875	U	4.050	4.075	3.975	4.175	4.250	4.300		
E	3.89	U	5.250	4.950	4.800	4.825	4.750	4.050	4.550	4.775
F	5.465	U	5.475	5.500	5.475	5.475				
G	3.89	U	5.125	4.975	5.050	4.950	4.625	4.475	4.375	4.575

TYPE INSTRUMENT 130SL-38 NO. S/N 911190
CALIBRATION STANDARD 0TQ#14 - EPG#1092
TYPE TRANSDUCER FLAWSCAN K/B S/N JD0590
TRANSDUCER SIZE 1/2"
TRANSDUCER FREQUENCY 2.25 MHz
COUPLANT EXOSEN 20
OPERATOR William Golini LEVEL II

S. W. E. C. PQC INSPECTED 66

* C = DIAL CALIPER
U = ULTRASONIC

INFORMATION ONLY

SUPPLEMENT 5
SPECIFICATION FS-1056
SHEET 5 OF 5

TRANSMITTAL NO. 00957

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.

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 summar 1977 addendum, are applied.

4. Pipe

a. MSS pipe (mmark 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 ins., 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.

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.

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. Disk. SA105 normalized with a manufactured minimum thickness of 2.28 in. was applied for the feedwater swing check valve disk. 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. Disk. SA105 normalized with a design thickness of 2.25 in. was applied for the reactor water cleanup isolation valve disk. 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.

TA

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 1/3 in. (n)	+70 - Based on chemistry, heat treatment and data from Armco Steel.	+70	Note 3
Penetration Z-1A	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	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	+7	Note 4
Flued Head Penetration Z-1A	SA508 Class 1 Quenched and tempered	6 in. (n)	+62 - Based on actual DWT indicating TNDT 0	+70	

Item	Material	Thickness (Note 1)	Permissible Lowest Service Metal Temperature (PLSMT) (°F) and Basis	Lowest Service Metal Temp. (LSMT) (°F) (Note 2)	Remarks
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	
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 5
MSS Sockolet	SA105	0.156 in. (d)	+69 - Based on NUREG 0577 for C-Mn steel not heat treated	+69	
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	
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
WCS Sockolet	SA105	0.092 in. (d)	+69 - Based on NUREG 0577 for C-Mn steel not heat treateed	+69	
WCS Elbows	SA234 WPB (SA106) Normalized	0.906 in. (n)	+70 - Based on NUREG 0577 for "mild" steel not heat treated (better than)	+70	
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	

Item	Material	Thickness (Note 1)	Permissible Lowest Service Metal Temperature (PLSMT) (°F) and Basis	Lowest Service Metal Temp. (LSMT) (°F) (Note 2)	Remarks
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	
FWS Thermal Tee Thermal Sleeve	SA350, Grade LF2 Normalized	0.793 inn. (m)	+25 - Based on NUREG 0577 for C-Mn steel normalized	+70	
FWS Thermal Tee Reducer	SA350, Grade LF2 Normalized	1.804 in. (m)	+25 - Based on NUREG 0577 for C-Mn steel normalized	+70	
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	+5-	Note 6
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	
MSIV Ball	SA351, Grade CF8M		Excluded - Based on austenitic stainless steel		Note 7

Item	Material	Thickness (Note 1)	Permissible Lowest Service Metal Temperature (PLSMT) (°F) and Basis	Lowest Service Metal Temp. (LSMT) (°F) (Note 2)	Remarks
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	
FWS Valve Bonnet	SA105 Normalized	2.47 in. (m)	+25 - Based on NUREG 0577 for C-Mn steel normalized	+70	
FWS Valve Wedge	SA105 Normalized	1.7128 in. (d)	+25 - Based on NUREG 0577 for C-Mn steel normalized	+70	
FWS Valve Bolting	--	--	--	--	Note 7
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 8
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	
FWS Swing Check Valve Bonnet	SA105 Normalized	4.498 in. (a)	+50 - Based on NUREG 0577 for C-Mn steel normalized	+70	
FWS Swing Check Valve Disk	SA105 Normalized	2.28 in. (m)	+25 - Based on NUREG 0577 for C-Mn steel normalized	+70	
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	--	

Item	Material	Thickness (Note 1)	Permissible Lowest Service Metal Temperature (PLSMT) (°F) and Basis	Lowest Service Metal Temp. (LSMT) (°F) (Note 2)	Remarks
2WCS*MOV200					
WCS Valve Body	SA105 Normalized	0.880 (d)	+25 - Based on NUREG 0577 for C-Mn steel normalized	+70	
WCS Valve Bonnet	SA105 Normalized	0.875 (d)	+25 - Based on NUREG 0577 for C-Mn steel normalized	+70	
WCS Valve Disk	SA105 Normalized	2.25 (d)	+25 - Based on NUREG 0577 for C-Mn steel normalized	+70	
WCS Valve Bolting	--	--	--	--	Note 7
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 8

NOTES TO TABLE 1

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

a. Actual thickness

b. 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 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.

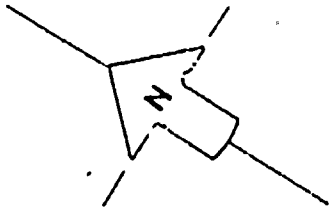
Note 5 Actual fabrication of main steam piping piece mark NM-01-85 did not include hot bending. The CMTRs included hot bending information as a qualification in case it was elected to hot bend in fabrication. The actual fabrication, however, used miters and the material is therefore in the normalized 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.

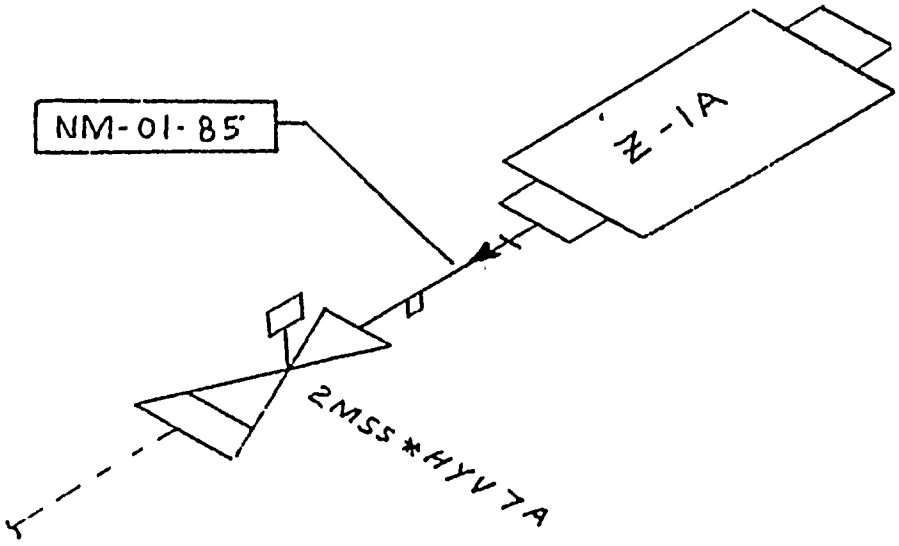
Note 6 The normalized SA516 Grade 70 was cold worked approximately 1.9% in forming the thermal sleeve run. Welding Research Council Bulletin No. 158 presents data on the effects of cold work and cold work plus stress relief on the toughness properties of material such as this. The data demonstrate that 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 7 MSS*HYV7A, FWS*MOV21A and WCS*MOV200 bolting are not pressure-retaining parts.

Note 8 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.

MAIN STEAM SYSTEM





PURCHASER:

6 IRWIN STEEL FABR.
CANTON, OHIO

LUKENS STEEL COMPANY

COATESVILLE, PA. 19320

TEST CERTIFICATE

DATE: 10-11-77 FILE NO. 3960 01

CONSIGNEE:

MILL ORDER NO.	CUSTOMER P.O.	
75567-8	K-5845	MP 101077 VS 5/1

THIS MATERIAL HAS BEEN MANUFACTURED AND TESTED IN ACCORDANCE WITH PURCHASE ORDER REQUIREMENTS AND SPECIFICATION(S):

SA-516 GR. 70 ASME CODE SECT. II & III SUB NE 1971 EDITION THRU SUMMER 1973 ADDENDA N-1160 8/4/78

BEND TEST O.K. HOMOGENEITY TEST

CHEMICAL ANALYSIS

MELT NO.	C	MN	P	S	CU	SI	NI	CR	MO	V	TI	AL	B		GRAIN SIZE
B1821	23	1.01	011	005		24									7-3

NIAGARA MOHAWK POWER CORP.
NINE MILE POINT NUCLEAR STA. UNIT. 2
P.O. NMP2-P283B R.O. 12177
EQUIPMENT HATCH
IRWIN STEEL FAB. — CANTON, OHIO
SHIPMENT #131
J.R.L. 10/25/78

S.W.E.C. QC INSPECTED

PHYSICAL PROPERTIES

MELT NO.	SLAB NO.	YIELD PSI X100	TENSILE PSI X100	% ELONG. IN 2"	% R.A.	BHN	IMPACTS LV -10°F.			FRACTURE APPEARANCE % SHEAR	DESCRIPTION
B1821	3	492	758	31							1 - 4-7/8" X 48 X 276
		500	760	30			86	88	100	90-90-90	
							LATERAL EXPANSION IN INCHES				
							.096	.084	.086		

LONG. DROP WEIGHT TESTS PER E208 (SIZE P-3) @ 0°F. EXHIBIT NO BREAK. N.D.T. IS -10°F. OR BELOW.

PLATE AND QUENCHED, TESTS HEATED 1625-1675°F., HELD 1/2 HR. PER INCH MIN. AND WATER THEN TEMPERED 1220°F., HELD 1/2 HR. PER INCH MIN. AND WATER QUENCHED.

TESTS STRESS RELIEVED BY HEATING WITHIN A RATE OF 100°F. PER HR. TO 1100-1200°F., HELD 8 HRS. AND FURNACE COOLED WITHIN A RATE OF 103°F. PER HR. TO 600°F.

DEC 19 1978

Q.A. APPROVED
IRWIN STEEL FABRICATORS INSPECTED

EQUIPMENT HATCH COVER-FLANGE
M.T.R. #4

TRANS. REF. 00887

We hereby certify the above information is correct.

SUPERVISOR-TESTING

59625

COULTER STEEL & FORGE COMPANY

Special Metals in Bars and Forgings

MAILING ADDRESS: P.O. BOX 8008
1494 - 67TH STREET, EMERYVILLE, CALIFORNIA 94662
415 - 653-2512 TELEX 33-6406 TWX 910-366-7293

1228 RIO VISTA AVENUE, LOS ANGELES, CALIF. 90023, TELEX 67-7340, PHONE 213-261-6115
334 WEST 8TH SOUTH, SALT LAKE CITY, UTAH 84101, TELEX 38-8330, PHONE 801-322-3533
2715-6TH AVENUE SOUTH, SEATTLE, WASH 98134, TELEX 32-9463, PHONE 206-622-6066

HAHN & CLAY
5100 Clinton Drive
Houston, Texas 77020

CUSTOMER ACCT. NO. 676163
INV. REQ'D. 3
SPEC. CLAUSE
TAXABLE
NON-TAXABLE X

CUSTOMER'S ORDER NO. C.O. #1 15463-2
ORDER DATE 26 JAN'79
CALL
OUR TRUCK

SAME
NIAGARA MOHAWK POWER CORP.
NINE MILE POINT NUCLEAR STATION-UNIT 2
NMP2-FPO-9161
DRYWELL HEAD
Tr. 75
HAHN & CLAY MACHINE & BOILER WORK
5100 CLINTON DRIVE HOUSTON, TEX. 77020

PREPAY
COLLECT X
VIA T
DATE SHIPPED
PARTIAL
COMPLETE

ITEM NO.	QUANTITY ORD.	QUANTITY SHIP	DESCRIPTION
			Hot Finished and Ground Stainless Steel, Type 630 Solution Heat Treated and Age hardened H-1075°F; In accordance with ASME-SA-564. ASME Boiler & Pressure Vessel Code Sections II & II, Subsection NB, Class MC Div. 1. Code 1388-2 applies.
			BARS R.M.: 3-1/4"Dia x R/L
			PROX. 34 FT. REQUIRED (TO GET 50 PCS. 8" LONG)
			SHIPPED 35 FEET 1 1/4 INCHES

TRANSMITTAL NO. 0 0 9 5 9

MARKING AND PACKAGING REQUIREMENTS
CSF STD; TAG #75
JOB N-11779

METALLURGICAL REPORT REQUIREMENTS
NOTARIZE | W/SHIPMENT 3 | W/B LADING 1
MAIL ___ COPIES TO:

TOTAL

METALLURGICAL REPORT

Item No.	Heat No. or Ident.	C.	Mn.	P.	S.	Si.	Cr.	Ni.	Mo.	Cu	G/S
	Ladle A17249	.049	.39	.028	.012	.49	15.62	4.42	.22	3.15	
									Cb .27	Ta .001	

Heat Treatment: Solution 1900°F.±25°F. for 1 hr. at heat, air cool to below 90°F.
Age 1075°F.±15°F. for 4 hrs. at heat, air cool

Item No.	Hardness of Material Supplied	Tensile	Yield —% Offset	El.	R.A.	BHN.	Size of Raw Stock	Mill
		162,000	.2% 156,000	17-1/2	54.5	363	3-3/8"Ø	Crucible AMS 2303 F .00/ S .00 Ferrite: OK

Charpy V-notch at +70°F.:

Ft-lbs.	Lat. Exp.	% Shear
66	.045	77
55	.043	75
58	.044	75

S. W. E. C. P.C. INSPECTED 70

ASME QUALITY SYSTEM CERTIFICATE (MATERIALS)
NUMBER N-1189
EXPIRATION DATE OF CERTIFICATE 8-4-81

We certify that the contents of this report are correct and accurate, and that all operations performed by us and our subcontractors are in compliance with the requirements of all specifications listed in the material description.

RECEIVED HAHN & CLAY

We certify that the material described herein has been inspected and/or tested for conformance to the applicable specifications. Our warranty of quality provides for replacement only of any part of this material which subsequent inspection, test or use shows non-conformance with the specification. Inspection records, certifications, chemical and/or physical test reports are on file for your examination at EMERYVILLE, CALIFORNIA.

COULTER STEEL & FORGE COMPANY

By Frank Kern (14)

Title QUALITY CONTROL MANAGER

DRYWELL HEAD FINGER PINS

Z1A SLEEVE ✓

(15)

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

EXPIRATION DATE: JANUARY 6, 1978

MATERIAL: 41 1/2" OD X 1.500W ASME SA-155 CMSH80.

HEAT NO: or Lot: J2092 & 59629

MANUFACTURER: TUBE TURNS DIVISION

NOV 1 1977 S.W.E.C. PQC INSPECTED 83

NIAGARA MOHAWK
NINE MILE POINT, UNIT 2
J. O. 12177, NMP2-P283B
SHIPMENT No. 2
DOCUMENTATION

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-155 Class 1 Grade CMSH-80 Materials.

2) ASME Code Section III 1971 Edition including addenda through Summer 1973 NE-2000, Class NC which was examined and stampled in accordance with Class 2 requirements in NC-2000.

GRAVER TANK & MFG. CO.
EAST CHICAGO, IN
ORDER No. 60840N-X50
ITEM No. X230

REFERENCE:
GRAVER TANK PO# 60840N-X50
CAPITOL SO DN-5537-B
ITEM# 54
TAG: X-230

Sworn to and subscribed before me this 21 day of June, 1977

Murray Herbert Feldman

Brian Kilpatrick
QUALITY ASSURANCE

MURRAY H. FELDMAN
Notary Public, State of Illinois
My Commission Expires October 10, 1977

SOLD TO: Capitol Pipe & Steel Products
2720 [illegible] Plaines Ave., Suit 33
De[illegible]es, Ill. 60018

SHIP TO: Graver Tank & Mfg. Co.
4809 Tod Ave.
East Chicago, Indiana 46312

DETAILED ANALYSIS REPORT

TUB[illegible]NS
DIVISION OF C[illegible]RPORATION

Replaces Pg. 2 DAR dated 6/3/77

HO-5 9/70

HOUSTON, TEXAS 7/[illegible] bh

TUBE TURNS ORDER NO. HPM 4 27534

CUSTOMERS' ORDER NO. D-73305-20N

DESCRIPTION	PHYSICALS OF MATERIALS FROM WHICH MADE: ** HEAT TREATMENT	YIELD POINT PER SQUARE INCH	TENSILE STRENGTH PER SQUARE INCH	PERCENT ELONGATION IN 8"	PERCENT REDUCTION IN AREA	CHEMICAL ANALYSIS: C	MN	P	S	SI	CR	NI	MO	XXX CU	HEAT OR LOT NO.	SPECIFICATION OF MATERIAL FROM WHICH MADE
Item 003 2 Pieces	4	62,900	83,800	25.0		.17	Ladle Analysis 1.20	.012	.014	.30	.21	.20	.06	.19	J2092	ASME SA537 Cl. 2
39.5" O.D. x 1.50" W. EFW		Transverse weld tensile	82,000			.20	Check Analysis 1.15	.014	.016	.50					59629	
Pipe per ASME SA155 CMSH 80		SERIAL NO'S:	J2092-1-HC			2-HD										
Cl. 1 and ASME Sect. III Cl. 2		Charpy "V" Notch Impacts				@ -10°F.	(10mm x 10mm)									
(1971 Ed./Sum.'73 Ad.)		Base	66-52-56	Mils	L.E.	/94-86-82	Ft. Lbs.	/80-80-80%	Shear							
Furnished in 9' 0" length		Weld	55-43-56	Mils	L.E.	/79-57-79	Ft. Lbs.	/60-60-60%	Shear							
with sqaure ends TAG X232																
Item 004 2 Pieces	4	62,800	83,800	25.0		.17	Ladle Analysis 1.20	.012	.014	.30	.21	.20	.06	.16	J2092	ASME SA537 Cl. 2
41.5" O.D. x 1.50" W. EFW		Transverse weld tensile	82,000			.20	Check Analysis 1.15	.014	.016	.50					59629	
Pipe per ASME SA155 CMSH 80		SERIAL NO'S:	J2092-1-HF, 2-HH													
Cl. 1 and ASME Sect III Cl. 2		Charpy "V" Notch Impacts				@ -10°F.	(10mm x 10mm)									
(1971 Ed./Sum.'73 Ad.)		Base	66-52-56	Mils	L.E.	/94-86-82	Ft. Lbs.	/80-80-80%	Shear							
Furnished in 10' 9" lengths		Weld	55-43-56	Mils	L.E.	/79-57-79	Ft. Lbs.	/60-60-60%	Shear							
with square ends. TAG X230																

GRAVER TANK & MFG. CO.
EAST CHICAGO, IN
ORDER No. 60840N X50
ITEM No. X230
CERT. No. 102746

NIAGARA MOHAWK
NINE MILE POINT, UNIT 2
J. O. 12177, NMP2-P283B
SHIPMENT No. 2
DOCUMENTATION

21A SLEEVE

* STANDARD ROUND TEST SPECIMEN ** 1=NORMALIZED 2=ANNEALED 3=HEAT TREATED PER ORDER SPECIFICATION. 4=Quench & Tempered

SUBSCRIBED AND SWORN TO BEFORE ME THIS 18th DAY OF July 19 77

Glenda F. Herrington
NOTARY PUBLIC

GLENDA F. HERRINGTON
Notary Public in and for Harris County, Texas
My Commission Expires January 6, 1979

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

R. Avera, Quality Control Engr.

S. W. PC INSPECTED 83

NOV 16 1977

DETAILED ANALYSIS REPORT

TUBE TURNS DIVISION OF CHL

Page 4 of 5

HOUSTON, TEXAS 6/3

TUBE TURNS ORDER NO. HPM 4 27534

CUSTOMERS' ORDER NO. D-73305-20N

SOLD TO: Capital Pipe & Steel Products
2720 Plaines Ave., Suit 33
Des Plaines, Ill. 60018

SHIP TO: Graver Tank & Mfg. Co.
4809 Tod Ave.
East Chicago, Indiana 46312

GRAVER TANK & MFG. CO. EAST CHICAGO, IN
ORDER NO. 608040X50
ITEM NO. X231
CERT. NO. 8/2/2/2

DESCRIPTION	PHYSICALS OF MATERIALS FROM WHICH MADE: ** HEAT TREATMENT	YIELD POINT PER SQUARE INCH	TENSILE STRENGTH PER SQUARE INCH	PERCENT ELONGATION IN 2"	PERCENT REDUCTION IN AREA	CHEMICAL ANALYSIS: C	MN	P	S	SI	CR	NI	MO	CU	V	HEAT OR LOT NO.	SPECIFICATION OF MATERIAL FROM WHICH MADE
NOTES:	1) Sub Arc welded per TT 014-1805 Rev. 2 using 1/8" Armco W18																
	(Ht. 46746) and Linde 769-5 Flux (Lot 0543)																
	All Weld Metal Tensile		81,000			.079	.85	Weld Metal .012	.009	.37	Chemistry .08	1.33	.13	.21	.01		
	2) Weld Repair per TT 11-0105 Rev. 11 Using 1/8" E7018																
	(Ht. 20400) Lot H611N1ADB)																
	All Weld Metal Tensile		77,000			.13	1.16	Weld Metal .008	.025	.43	Chemistry .04	.05	.02	.06	.01		
	3) Bend test performed per SA155 - Satisfactory																
	4) Welds Radiographed per TT 03-022 Rev. 2 Ad 2- Satisfactory																
	5) Pipe hydro tested at It001 1500PSI, It002 1400PSI per TT HO 08-013 Rev. 2 - Satisfactory																
	NOTE: It. 003-005 Not Hydroed and marked appropriately with "NH"																
NOT APPLICABLE																	

S.W.E.C. PQC INSPECTED .83 NOV 1 1977

AGARA MOHAWK
E MILE POINT, UNIT 2
O. 12177, NMP2-P2533
PMENT No. 2
OCUMENTATION

APPLICABLE TO 2-1A & 2-1B

* STANDARD ROUND TEST SPECIMEN ** 1=NORMALIZED 2=ANNEALED 3=HEAT TREATED PER ORDER SPECIFICATION.

SUBSCRIBED AND SWORN TO BEFORE ME THIS 3rd DAY OF June 19 77

Vicki Divin
NOTARY PUBLIC

VICKI DIVIN
Notary Public in and for Harris County, Texas
My Commission Expires November 8, 1978

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

R. Avera, Quality Control Engr.

17

SOLD TO: Capitol Pipe & Steel Products
272[illegible] Plaines Ave., Suit 33
De[illegible]s, Ill. 60018

SHIP TO: Graver Tank & Mfg. Co.
4809 Tod Ave.
East Chicago, Indiana 46312

DETAILED ANALYSIS REPORT

TUBE TURNS DIVISION OF CH.

HOUSTON, TEXAS 6/3/7[illegible]

TUBE TURNS ORDER NO. HPM 4 27534

CUSTOMERS' ORDER NO. D-73305-20N

DESCRIPTION	PHYSICALS OF MATERIALS FROM WHICH MADE: ** HEAT TREATMENT	YIELD POINT PER SQUARE INCH	TENSILE STRENGTH PER SQUARE INCH	PERCENT ELONGATION IN 2"	PERCENT REDUCTION IN AREA	CHEMICAL ANALYSIS: C	MN	P	S	SI	CR	NI	MO	CB	HEAT OR LOT NO.	SPECIFICATION OF MATERIAL FROM WHICH MADE
NOTES CONTINUED	7) Pipe heated to 1650° for 1/2 hr. Min. Tempered at 1280°F. for 1/2 hr. Min.															
	and cooled in still air.															
	8) Weld(s) Repair Cavities Magnetic Particle tested															
	per TT 06-010 Rev 0 - Result Satisfactory															
	9) The longitudinal axes of Charpy specimens are oriented															
	in a direction perpendicular to the principal rolling															
	direction in accordance with Ne2300															
	10) The pipe described herein are identified as follows															
	with low stress interrupted dot stamping:															
NPT Cl. 2	TT R Tube Turns R 31" O.D. x .500" W. ASME SA155 CMSH 80 Cl. 1															
	TAG: P.O. 60840N-X50-X228 YR. BLT. 1977 "SERIAL No." 1500 PSI															
	11) This certifie that the above material meets the purchasing															
	requirements, material(s) specifications and all special															
	requirements of ASME Sect. III, to be fulfilled by the manufacturers of parts, articles N 2000 and N 4000 applidable (1971 Ed./Sum.'73 Add.)															

S. W. E. C. P.Q.C. INSPECTED .83 NOV 1 1977

AGARA MOHAWK
E MILE POINT, UNIT 2
. 12177, NMP2-P283B
MENT No. 2
DOCUMENTATION

ASME III-E P 2-1/A SLEEVE

* STANDARD ROUND TEST SPECIMEN ** 1=NORMALIZED 2=ANNEALED 3=HEAT TREATED PER ORDER SPECIFICATION

SUBSCRIBED AND SWORN TO BEFORE ME THIS 3rd DAY OF June 19 77

Vicki Divin
NOTARY PUBLIC

VICKI DIVIN
Notary Public in and for Harris County, Texas
My Commission Expires November 8, 1978

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

R. Avera, Quality Control Engr.

(18)

211 SLEEVE

(12)

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

EXPIRATION DATE: JANUARY 6, 1978

MATERIAL: 36" OD X 1.000 W ASME SA-333 GR-6.

NIAGARA MOHAWK
NINE MILE POINT, UNIT 2
J. O. 12177, NMP2-P283B
SHIPMENT No. 2
DOCUMENTATION

HEAT NO: L3921

MANUFACTURER: CAMERON IRON WORKS INC.

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 GR-6 Materials.

2) ASME Code Section III 1971 Edition including addenda through Summer 1973, NE-2000 for Class MC material which was examined in accordance with NB-2000 for Class 1 Materials.

GRAVER TANK & MFG. CO.
EAST CHICAGO, IN
ORDER No. 60840NX50
ITEM No. X130
CERT. No.

S. W. E. C. 10-18-74
PQC
INSPECTED-163

REFERENCE:
GRAVER PO 60840NX50
CAPITOL SO DN-1208-B7
ITEM# X-130

Brian Kilpatrick
QUALITY ASSURANCE

Cameron

IRON WORKS INC.
P. O. BOX 1212
HOUSTON, TEXAS 77001

(13)

SOLD TO
CAPITOL PIPE & STEEL PRODUCTS, INC.
2055 S. GESSNER SUITE 130
HOUSTON, TX 77063

SLEEVE 2-11

Date 26 September 1977

Customer Order No.	C.I.W. Sales Order No.	Specification
D83323-35N	F-9129	ASME SA333 GR. 6 ASME SEC. III, DIV. 1, CL. MC, 1971 EDITION THRU SUMMER 1973 ADDENDA WITH IMPACT PER NE2300 AT -10°F.

Description of Material O.D. 36.000" x I.D. x WALL 1.000" A.W.

C.I.W. Part No. 86-9129-360-340

ASME QUALITY SYSTEM CERTIFICATE (MATERIALS) NO. N-1261 EXPIRES 10-27-78.

CHEMICAL ANALYSIS

Heat No.	Location or Serial No.	C	MN	P	S	SI	CR	NI	MO
3921		.18	1.28	.014	.020	.35			

Graver Tank & Mfg Co
PO 60840NX50
SO DN-1208-B7

Item# X-130

TRANSMITTAL NO 0

* Pipe Ultrasonic inspected 100% and found acceptable.

MECHANICAL PROPERTIES

Qu...	Heat No.	Test Loc.	Tensile PSI	.2 % Offset Yield PSI	% Elong. 2 In.	% Red. Area	Macro Etch	Bend Test	Flattening Test	Specimen Size	Test Lot#
1	L 3921	Trans.	78,400	48,400	30.9	62.3			OK	.505	263

Charpy V-Notch Impact Test Results:

Forg. Ser.#	Test Lot#	Test Lot#	Test Temp.	Ft.Lbs.	Lat. Exp.	% D/F
#29244	263	263	-50°F.	86.0	68 MILS	49%
			-50	41.0	32	33
			-50	52.0	43	36
			-10	99.0	78	63
			-10	129.0	87	100
			-10	92.0	70	57

S.W.E.C. PQC INSPECTED-163 10-18-78

All specimens removed in axial direction with radial notches.

GRAVER TANK & MFG. CO. EAST CHICAGO, IN
ORDER No. 60840NX50
ITEM No. X130
CERT. No. 025631

Hydrostatic Test Each length of pipe hydrostatically tested at 1200 psi for 5 sec. and found acceptabl

Heat Treatment:
1550°F. held 1 hr. at temp. Air cooled.

Sworn to before me this 26 Day of September 1977

Notary Public
Notary Public in and for Harris County, Texas
My Commission Expires June 1, 1979

NIAGARA MOHAWK
NINE MILE POINT, UNIT 2
J. O. 12177, NMP2-P283B
SHIPMENT No. 2
DOCUMENTATION

I certify these tests to be correct as contained in the records of the company.

Metallurgical Representative H. O. WRIGHT. /at

CAMERON 1068 3/70

Z 1A FORGING

FORM NO. 1057B

REVISED DOCUMENT PACKAGE
MAR 25 1977

NATIONAL FORGE COMPANY

MATERIAL CERTIFICATION DOCUMENTATION PACKAGE

Customer: Graver Tank & Manufacturing Co.

Forge Div. Irvine [X] Erie [ ]

Purchase Order No.: 60840NX38 Penet. No. X-56
S & W Penet. No. Z-1A

Foundry Div. [ ]

Drawing No.: 332201, Rev. -4

NFC Order No.: 60-A-3322 01-001

Nomenclature: Flued Head Penetration

NFC Serial No.:

Specification: SA-508, Class 1, Code Case 1332-6 and 1971 Ed. Through S-73 add. ASME Sec. 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,
Heat Treat Procedure: HT-60-A-3322-0A, Add. 2, Dtd. 8/26/76 Dtd 11/30/76
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 and Agenda S.O. 60-A-3322, Rev. D, Dtd 11/23/76

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 1978
S.W.E.C. PQC INSPECTED 83

NIAGARA, MOHAWK
NINE MILE POINT, UNIT 2
J. O. 12177, NMP2-P283B
SHIPMENT No. 2
DOCUMENTATION

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.

R. S. Nowak
Authorized Company Representative

RECEIVED
Nine Mile Pt. 2 Project
Date: 2/18/77

SEP 14 1983

Syracuse — Headquarters

GRAVER TANK & MFG. CO.
EAST CHICAGO, IN
ORDER No. 60840NX38
ITEM No. X56
CERT. No. 00944

NATIONAL FORGE COMPANY
QUALITY CONTROL DEPARTMENT

MATERIAL CE[illegible]CATION REPORT NO. 0- 08203

NFC SHOP NO. 60-A-3322 SERIAL NO. 01-001
CUSTOMER G[illegible]r Tank & Manufacturing Co.
CUSTOMER ORDER N[illegible] 60840NX38

FORM NO. 1056 D

GRAVER TANK & MFG. CO.
EAST CHICAGO, IN
ORDER No. 60840NX38
ITEM No. 1
CERT. No. 00928

CHEMICAL ANALYSIS

HEAT NO.	C	Mn	P	S	Si	Ni	Cr	Mo	V	Al	Cu	Co	Ti
21-4142	.26	1.14	.011	.011	.26	.25	.22	.06	.03		.08	.011	
check	.24	1.11	.011	.011	.24				.02				

MECHANICAL PROPERTIES

LEGEND	SPECIMEN IDENT. NO.	TENSILE psi	YIELD psi @ .2	% ELONG	% R/A	GRAIN SIZE	HARDNESS
L = LONG	YC Head	80,700	55,600	29.0	65.5	8-10	
R = RAD	LB Pipe	80,000	57,500	31.5	73.0		
X = TRAN							
Y = TANG							

JUN 4 1977 INSPECTED

INSPECTOR NO. 0003

MANUFACTURING NOTES AND HEAT TREATMENT DATA

'C Bore Dia.
PIPE END 23.638"-23.641"
HEAD END 23.6445"-23.648"

Drop Weight Tests
YC 2 No Break @ 10°F

LB 2 No Break @ -20° F
1 Break @ -30 °F

OPERATION	TO °F	HRS. HOLD
Normalized	1700	7
Austenitized	1550	7
Quenched in Water		
Austenitized	1460	7
Quenched in Water		
Tempered	1180	7

IMPACT DATA

SPCMN. IDNT. NO.	°F	FT. LBS.	% SHEAR	LATERAL EXPANSION
YC Head	40	90.0	71	.063
		87.0	66	.062
		95.0	71	.066
LB Pipe	0	154.0	73	.087
		148.5	75	.084
		147.0	66	.086

NIAGARA MOHAWK
NINE MILE POINT, UNIT 2
J. O. 12177, NMP2-P283B
SHIPMENT No. 2
DOCUMENTATION

ULTRASONIC INSPECTED PER Approved Procedure and found to be satisfactory with no reportable indications.

MAGNETIC PARTICLE INSPECTED PER Approved procedure and found to be satisfactory with no reportable indications.

HYDROSTATIC TESTED PER APPROVED PROCEDURE AND FOUND TO BE SATISFACTORY

TENSILE SPECIMEN SIZE = .505"
ROUND FLUTED [illegible]OT MOLD
FREE OF MERCU[illegible] CONTAMINATION

COPIES OF ACTUAL TEST DATA AVAILABLE FOR REVIEW.

Z-4A

FORM NO. 1057B

NATIONAL FORGE COMPANY

MATERIAL CERTIFICATION DOCUMENTATION PACKAGE

Customer: GRAVER TANK & MFG. CO.

Forge Div. Irvine [X] Erie [ ]

Purchase Order No.: 60840NX38 GRAVER PENET. X-59
S & W PENET. Z-4A

Foundry Div. [ ]

Drawing No.: 332204, REV. 2

NFC Order No.: 60-A-3322

Nomenclature: FLUED HEAD PENETRATION

NFC Serial No.: 04-001

Specification: SA-508, CLASS II AND 1971 ED. THROUGH S-73 ADD. ASME SECT. 3, CLASS 2

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-3322-10B, ADD. 2, DTD 8/26/76
Impact Test Procedure: LT-60-3322-0A, REV. A, DTD 7/8/76
Forging Test Drawing:
Other: HYDROSTATIC TEST PROCEDURE: 61-GP99-006, REV. B, DTD 1/28/75 AND AGENDA S.C. 60-A-3322, REV. D, DTD 11/23/76

DOCUMENTATION PACKAGE TABLE OF CONTENTS

3 Chemistry/Mechanical/NDT Data
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Heat Treatment Charts/Table IV Form
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Heat Stability Data

Photomicrographs
Test Material (Sep. Cover)
U-1A Form
U-2 Form
Other

S. W. E. C. PQC INSPECTED 83

GRAVER TANK & MFG. CO.
EAST CHICAGO, IN
ORDER No. 60840NX38
ITEM No. X59
CERT. No. 023681

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.

R S Nywach
Authorized Company Representative

Sally L. Revere

Date: 3/22/77 APR 4 1977

NIAGARA MOHAWK
NINE MILE POINT, UNIT 2
J. O. 12177, NMP2-F233B

INVENTORY CONTROL

DOCUMENTATION

NATIONAL FORGE COMPANY
QUALITY CONTROL DEPARTMENT

FORM NO. 105G B

MATERIAL CERTIFICATION REPORT NO. 0- 08522

NFC SHOP NO. 60-A-3 SERIAL NO. 04-001
CUSTOMER GRAVER TANK & MFG. CO.
CUSTOMER ORDER NO. 60840NX38

Page 2 of 2

GRAVER TANK & MFG. CO.
EAST CHICAGO, IN
ORDER No. 60840NX38
ITEM No. X59
CERT. No. 02368

INVENTORY CONTROL
APR 4 1977

CHEMICAL ANALYSIS

HEAT NO.	C	Mn	P	S	Si	Ni	Cr	Mo	V	Al	Cu	Co	Ti
22-4145	.23	.76	.007	.010	.24	.73	.36	.61	.035		.09	.010	
CHECK	.20	.75	.007	.010	.22	.72	.37	.60	.02				

MECHANICAL PROPERTIES

LEGEND	SPECIMEN IDENT. NO.	TENSILE psi	YIELD psi @ .2	% ELONG	% R/A	GRAIN SIZE	HARDNESS
- LONG	LB PIPE	87,600	67,400	29.0	75.1	7-9	
- RAD	YC HEAD	85,000	64,400	29.0	69.2		
- TRAN							
- TANG							

MANUFACTURING NOTES AND HEAT TREATMENT DATA

'C BORE DIA.
HEAD END PIPE END
19.8575 19.858

DROP WEIGHT TESTS
YC 2 NO BREAK @ 10 F
LB 2 NO BREAK @ -30 F
LB 1 BREAK @ -40 F

OPERATION	TO °F	HRS. HOLD
NORMALIZED	1700	9
AUSTENITIZED	1550	9
QUENCHED IN WATER		
AUSTENITIZED	1460	9
QUENCHED IN WATER		
TEMPERED	1280	9

IMPACT DATA

SPCMN. IDNT. NO.	°F	FT. LBS.	% SHEAR	LATERAL EXPANSION
LB PIPE	40	183.0	100	.095
		239.0	100	.080
		194.0	100	.097
YC HEAD	40	145.0	100	.095
		138.0	100	.085
		114.0	73	.076

INSPECTED S.W.E.C. JUN 14 1977 83

GRAVER TANK & MFG. CO.
EAST CHICAGO, IN
ORDER No. 60840NX38
ITEM No. X59
CERT. No. 02368

ULTRASONIC INSPECTED PER APPROVED PROCEDURE AND FOUND TO BE SATISFACTORY WITH NO REPORTABLE INDICATIONS.
MAGNETIC PARTICLE INSPECTED PER APPROVED PROCEDURE AND FOUND TO BE SATISFACTORY WITH NO REPORTABLE INDICATIONS.
HYDROSTATIC TESTED PER APPROVED PROCEDURE AND FOUND TO BE SATISFACTORY.

NIAGARA MOHAWK
NINE MILE POINT, UNIT 2
J. O. 12177, NMP2-P283B
SHIPMENT No. 2

2-44A

TENSILE SPECIMEN SIZE = .505"
ROUND FLUTED INGOT MOLD
FREE OF MERCURY CONTAMINATION

COPIES OF ACTUAL TEST DATA AVAILABLE FOR REVIEW

ATTACHMENT-13

Z 4A

STONEWBST CHI
3:02

NATLFORGE PA
TWX 8-02-79 15

Rec'd 12177/10126 8-2-79

ATTN: MR. C. F. CROCKER

THIS IS TO VERIFY THAT THE FLUED HEAD FORGINGS WHICH WE SUPPLIED FOR S & W PENETRATIONS NO'S. Z-4A & Z-4B ON THE NINE MILE POINT 7 PROJECT, MEET ASME SECTION 3, CLASS 1 (SUBSECTION NB) REQUIREMENTS EXCEPT FOR ONLY THE LACK TO CONSIDER POST WELD HEAT TREATMENT FOR EXECUTION OF REQ'D. MECH. TEST.

REGARDS,

JIM OLSON
NATIONAL FORGE COMPANY
IRVINE, PA

STONEWBST CHI

NATLFORGE PA

Copies to: WFVichko (5 Green)
JTPlant -3 (2 Red)
CECrocker (6 Blue)
Document Control Systems/site

3:30

NOTED AUG 2 1979

Z 4A

bcc: OB 85940
T. Albright - NY Sls
R. E. Akin - NC Engr. w/att.
D. M. Butler - OB Engr., Special Struct. w/att.
C. A. Plate - G'Ville Welding & QA
DTC/NVW/KMW/85940-Q1 w/att.
CWS CIRC CHRON

CAD/EPT/REOT/ 85940

December 26, 1979

IN QUINTUPLICATE

Stone and Webster Engineering Corporation
Cherry Hill Operations Center
3 Executive Campus, P.O. Box 5200
Cherry Hill, New Jersey 08034

DEC 28 1979

GREENVILLE

Letter No. ENC-359

Attention: Mr. C. E. Crocker
Lead Mechanics Engineer

Re: CBI Project 85940 Contracts 85941/9
Purchase Order NMP2-736
Reactor Primary Containment Steel Plate Liner
Nine Mile Point Nuclear Station, Unit II
Niagara Mohawk Power Corporation
Stone and Webster Engineering Corporation, Agent
J.O. 12187/12177
Scriba, New York

COPY

Gentlemen:

Attached is one copy of the CBI Certified Test Report dated 12-18-79 certifying that the results listed thereon meet the requirements of procedure MTRIN, revision 1. In accordance with the procedure, the test coupons were obtained from material cut from the flued head forging of penetration Z4A. The original Certified Test Report will be filed with the QA Documentation generated by our Greenville Shop.

P317A-1

The attached copy is for your information.

Very truly yours,

CHICAGO BRIDGE AND IRON COMPANY

S. W. E. C. QC INSPECTED 77

C. W. Stoyer
Project Manager
New Castle Operations

CWS/kaa
Attachment

cc: Mr. J. F. Barrett - S&W w/att.
Chief, Procurement QC Division (3), - S&W
Expediting Supervisor (3), - S&W
Mr. I. S. Stupal, Niagara Mohawk

45

Chicago Bridge & Iron Company

8900 Fairbanks north Houston road
p o box 40066
Houston, Texas 77040

telephone 713. 466 7581

S. W. E. C. PQC INSPECTED 77

CERTIFIED TEST REPORT
CHICAGO BRIDGE & IRON CO.
CBI PROJECT 85940
STONE & WEBSTER ENGINEERING CORP.
PURCHASE ORDER NO. NMP2-P283B
REACTOR PRIMARY CONTAINMENT STEEL PLATE LINER
NINE MILE POINT NUCLEAR STATION - UNIT 2
(J. O. No. 12177/12178)
NIAGARA MOHAWK POWER CORPORATION

Below are results of testing perfomed in accordance with MTR 1N Revision 1: (CBI w/o #H119P)

PWHT: 11 Hrs. 45 Min. at 1150°F.

SPECIMEN ORIENTATION/LOCATION: Longitudinal axis of all specimen are parallel to the forging end centerline at a depth of 1/2 the thickness of the forging & located at mid length of the forging end. The second tension specimen is located 180° from the first. The notch of the charpy V-Notch specimen are normal to the surface of the material.

TENSION TESTS: (Std. 0.500" Round)

	SPECIMEN 1	SPECIMEN 2
Tensile Strength (PSI) -	83,794	85,164
Yield Strength (PSI) -	63,412	65,434
Elongation in 2" (%) -	32	30
Reduction in Area (%) -	73.4	71.8

CHARPY V-NOTCH TESTS: (Full Size)

SPECIMEN NO.	TEST TEMP.(°F)	FT. LBS.	L. E. (MILS)	% SHEAR
1	+25	191	65	100
2	+25	200	72	100
3	+25	183	100	100

DROP WEIGHT TESTS:(TYPE P2)

SPECIMEN NO.	TEST TEMP. (°F)	RESULT
1	+10	No Break
2	+10	No Break

I certify that these results meet the requirements of MTR 1N Revision 1.

Alan E. Hudson

Alan Hudson 12-18-79
CBI Houston Corporate Welding

AH/jlp

Z-11 PENET

FORM NO. 1057B

9

MAR 25 1977

NATIONAL FORGE COMPANY

MATERIAL CERTIFICATION DOCUMENTATION PACKAGE

Customer: GRAVER TANK & MFG. CO.

Forge Div. Irvine [X] Erie [ ]

Foundry Div. [ ]

Purchase Order No.: 60840NX38 PENET. NO. X-63
S & W PENET. Z-11

Drawing No.: 332208, REV. 3

NFC Order No.: 60-A-3322

Nomenclature: FLUED HEAD PENETRATION

NFC Serial No.: 08-001

Specification: SA-508, CLASS 1, CODE CASE 1332-6 AND 1971 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 PORCEDURE: 61-GP99-006, REV. B, DTD. 1/28/75 AND AGENDA S.O. 60-A-3322, REV. D, DTD 11/23/76

DOCUMENTATION PACKAGE TABLE OF CONTENTS

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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

NIAGARA MOHAWK
NINE MILE POINT, UNIT 2
J. O. 12177, NMP2-P283B
SHIPMENT No. 2
DOCUMENTATION

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.

DOCUMENT NO. 00000

R.S. Newark
Authorized Company Representative

Sally L Vavers
Notary Public
Lake, Warren County, Pennsylvania
My Commission Expires January 2, 1978

Date: 1/20/77

GRAVER TANK & MFG. CO.
EAST CHICAGO, IN
ORDER No. 60840NX38
ITEM No. X63
CERT. No. 009523

NATIONAL FORGE COMPANY
QUALITY CONTROL DEPARTMENT

MATERIAL CERTIFICATION REPORT NO. 0- 07967

NFC SHOP NO. 60-A-3322 SERIAL NO. 08-001
CUSTOMER GRAVER TANK & MFG. CO.
CUSTOMER ORDER NO. 60840NX38

Page 02 of 02

GRAVER TANK & MFG. CO.
EAST CHICAGO, IN
ORDER No. 60840NX38
ITEM No. 1
CERT No. 007967

CHEMICAL ANALYSIS

HEAT NO.	C	Mn	P	S	Si	Ni	Cr	Mo	V	Al	Cu	Co	Ti
4-6031	.22	1.22	.008	.006	.34	.15	.18	.05	.02		.08	.010	
CHECK	.21	1.23	.008	.006	.34			.02					

MECHANICAL PROPERTIES

LEGEND	SPECIMEN IDENT. NO.	TENSILE psi	YIELD psi @ .2	% ELONG	% R/A	GRAIN SIZE	HARDNESS
• LONG	LA PIPE	80,500	62,000	31.0	75.5	8-10	
• RAD	YC HEAD	78,000	56,000	33.0	69.9		
• TRAN	LB PIPE	79,000	60,000	32.0	74.5		
• TANG							

JUN 24 1977
INSPECTED

MANUFACTURING NOTES AND HEAT TREATMENT DATA

	OPERATION	TO °F	HRS. HOLD
DROP WEIGHT TESTS	NORMALIZED	1700	7
PIPE 2 NO BREAK @ -50 F	AUSTENITIZED	1550	7
1 BREAK @ -60 F	QUENCHED IN WATER		
	AUSTENITIZED	1460	7
HEAD 2 NO BREAK @ 10 F	QUENCHED IN WATER		
	TEMPERED	1200	7
PIPE 2 NO BREAK @ -50 F			
1 BREAK @ -60 F			
C' BORE DIA.			
18.1535"- PIPE END.			
18.1515"- HEAD END			

IMPACT DATA

SPCMN. IDNT. NO.	°F	FT. LBS.	% SHEAR	LATERAL EXPANSION
LA	-40	195.0	100	.088
		151.0	74	.083
		131.0	73	.082
LC	-40	122.0	74	.078
		136.0	65	.093
		113.0	51	.079
LB	-40	190.0	100	.080
		200.0	100	.092
		120.0	56	.080

NIAGARA MOHAWK
NINE MILE POINT, UNIT 2
J. O. 12177, NMP2-P2633
SHIPMENT No. 2
DOCUMENTATION

ULTRASONIC INSPECTED PER APPROVED PROCEDURE AND FOUND TO BE SATIFACTORY WITH NO REPORTABLE INDICATIONS.
MAGNETIC PARTICLE INSPECTED PER APPROVED PROCDURE AND FOUND TO BE SATISFACTORY WITH NO REPORTABLE INDICATIONS.
HYDROSTATIC TESTED PER APPROVED PROCEDURE AND FOUND TO BE SATISFACTORY

TENSILE SPECIMEN SIZE = .505"
ROUND FLUTED INGOT MOLD
FREE OF MERCURY CONTAMINATION

COPIES OF ACTUAL TEST DATA AVAILABLE FOR REVIEW.

NON-DESTRUCTIVE TEST REPORT

Z-11

(11)

Shop Order No. 60-3322-08 Serial No. 001 Customer Order No. 608401X38

D[redacted] 12-28-76 Customer GRAVER TANK & MFG. CO.

Product Description FLUID HEAD

Type Test ☐ Final ☐ Preliminary

☐ Scleroscope ☐ Brinell ☐ Bore Search ☐ Dye Penetrant ☐ Magnetic Partic

☐ Zyglo ☑ Other HYDRO - TEST

Remarks

Hydrostatic test to 1563 psi with 10 minute hold. O.K.

Hydrostatic Test Procedure: 61-GP99-006, Rev. B, dated January 28, 19

Test Agenda: S.O.60-3322, Rev. D, dated 11/23/76

[redacted]IAGARA MOHAWK
NINE MILE POINT, UNIT 2
J. O. 12177, NMP2-P283B
SHIPMENT No. 2
DOCUMENTATION

NOV 22 1977
S. W. E. C.
PQC
INSPECTED 83

GRAVER TANK & MFG. CO.
EAST CHICAGO, IN
ORDER No. 608401X38
ITEM No. X63
CERT. No. 00822

Disposition

☐ Hold ☑ Release ☐ Ship

☐ Other

Applicable Specification

Distribution

R. NEWACK
L. GUSTAFSON
J. OLSON

Ch[redacted]ed by

Customer Representative

CERTIFIED MILL TEST REPORT

Bonney Forge (2-1-82 COT)

Gulf + Western Manufacturing Company

CARLINVILLE, ILLINOIS 62626

LOG NO. 300-16 PAGE 1 of 2

00173

CUSTOMER: ITT GRINNELL CORP

Date 10/22/81

CUSTOMER'S Order No. KER 15696 F

Bonney Order No. 97020

SHIPPED TO: ITT GRINNELL CORP
PO BOX 566

HIGHWAY 421
KERNERSVILLE NC 27284

Dev. #7999

Mark KP-8055/1

S. W. E. C. PQA INSP 221

ITEMS	QUANTITY	COL NO.		GRADE OR SPECIFICATION NO. / CHEMICAL ANALYSIS / PHYSICAL PROPERTIES / REMARKS
				ASME SA105
1	1	S102		26 x 3/4" 6000# SOCKOLET C.260 Mn.920 P.025 S.033 Si.210 T/S 85858 Y/S 52399 EL 28 RA 58.5
	~~3~~	~~CC13~~		C.31 Mn.91 P.011 S.015 Si.25 T/S 77400 Y/S 50700 El 64 Ra 49.7
42357	NM-3099			

ITTG - IPI
QUALITY CONTROL
APPROVED
T. C. WILSON
DATE JAN 25 1982
SHEET 1 OF 4

This is to certify that:

1. The fittings supplied are in complete accordance with the ASME Boiler and Pressure Vessel Code, Section III, Class 1, 1977 Edition thru Summer 1978 Addenda, and SA652 Cl.1.

2. The fittings supplied are in complete accordance with the purchase order specifications.

3. The fittings supplied were 100% visually and dimensionally inspected and satisfactory results obtained.

4. The materials furnished against your purchase order conform to the specification listed above.

5. 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)

6. The fittings supplied were Liquid Penetrant Tested and satisfactory results obtained in accordance with BF-DF-3, Rev 7, dated 5/12/77, by Mick Staten SNT-TC-1A level II..

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

P.O. Box 468
Carlinville, Illinois 62626
(217) 854-9611

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

by Phil Simpson

Phil Simpson
QUALITY CONTROL MANAGER

Bonney Forge Division
Energy Products Group
CARLINVILLE, ILLINOIS

Log No. _____ Page 2 of 2

PHONE 217/854-9611

00173

CUSTOMER: ITT Grinnell

Date Dec. 18, 1981

CUSTOMER'S Order No.: KER 15696

Bonney Order No. 8055

SHIPPED TO:

Mark

nm
SWF-350

Dev. #7999

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

ITTG - IPI
QUALITY CONTROL
APPROVED
T. C. WILSON
DATE JAN 25 1982
SHEET 2 OF 4

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

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 Q.A.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-P301B
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. Kalfahr
QUALITY ASSURANCE MANAGER

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

Log No. _____ Page 1 of 1

00173

CUSTOMER: ITT Grinnell

Date Jan. 4, 1982

CUSTOMER'S Order No.: KER 15696

Bonney Order No. 8055

SHIPPED TO:

Mark

nm
SWF-850

Item No.	Quantity No.	Bonney Lot No.	Grade or Specification No. Chemical Analysis, Physical Properties, Remarks:
1	4	S102 CC15	

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

ITTG - IPI
QUALITY CONTROL
APPROVED
T. C. WILSON
DATE JAN 25 1982
SHEET 3 OF 4

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 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 check

N. M. P. C.
NINE MI F... STAT...
UNIT ... P. O. ...P2-P301B
J. O. 12177 SHOP FAB. PIPE
PIECE MARK:---------
ITT GRINNELL
KERNERSVILLE, N.C. 27284

Bonney Forge
Cedar and Meadow Streets, P.O. Box 359
Allentown, Pennsylvania 18105
(215) 435-9611, Telex. 3...

by William R. Piccolo
QUALITY ASSURANCE MANAGER

FORM 2135A

Job No. 8055
Item #
Cust. P.O.

GW Berney Forge Division

NM
SWF-250

Date 11-[redacted]-81

LIQUID PENETRANT INSPECTION REPORT

Customer Name	Material Specification	Material Description
ITT GRINNELL	ASME SA105	2½ x 3/4 - 6000 SOCKOLET

Penetrant System	Brand Name	Penetrant Type	Remover Type	Emulsifier Type	Developer Type
Visible	Spotcheck	SKL - HF/S 81 Ho 22	SKC - S 81 Fo 76	N/A	SKD - S 81 Ho 85

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

Remover Drying Time	Development Time	Code or Spec.	Lot #	Technician
5 Min.	10 Min.	BF-DP-3 Rev. 7 DTD 3-12-77	See below	C. Staten Level II

Filling Description	Accept	Reject	Crack	Linear	Porosity	Surface	Undercut	Describe Indication
2½ x 3/4 6000 SOCKOLET S/N - PT-11-3-81-1 thru 3 (CC15) 11-3-81-4 (5102)	✓							NO DEFECTS FOUND

ITTG - IPI
QUALITY CONTROL
APPROVED
T. C. WILSON
DATE FEB. 15 1982
SHEET 4 OF 4

S.W.E.C. QA INSPECTED 221

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

CERTIFICATE OF TEST ON PIPE MATERIAL

Cameron 00178

IRON WORKS INC.

P. O. BOX 1212
HOUSTON, TEXAS 77001

GRINNELL INDUSTRIAL PIPING, INC
P. O. BOX 566
KERNERSVILLE, N.C. 27784

*Supplementary Report
ASME QUALITY SYSTEM CERTIFICATE
(MANUFACTURER) NO. N-2209 EXPIRES 10-27-81

ALL OPERATIONS WERE PERFORMED BY CIW & MEET THE REQUIREMENTS OF THE MATERIAL SPECIFICATION AND SEC.III,DIV.1. DATE 3 JAN. 1979.

CUSTOMER ORDER NO.	C.I.W. SALES ORDER NO.	SPECIFICATION
KER-11622	F-9784	ASME SA106 GR.C ASME SEC. III, CL.1, 1974 EDITION AND NM-001, REV. 2; MN-005, REV. 3 W/MAX. CARBON CONTENT OF .30% AND IMPACTS AT +40F.

CIW PART NO. 86-9784-261-135
DESCRIPTION OF MATERIAL SEAMLESS PIPE
O.D. x I.D. 23.481" x WALL 1.177" M.W.

HEAT NO.	LOCATION OR SERIAL NO.	CHEMICAL ANALYSIS C	MN	P	S	SI	CR	NI	MO	CU	CO	TI
L 5327		.26	.95	.010	.009	.32						
L 5328		.24	1.01	.008	.010	.25						

NM-63
Lot # 504452

Pipe has been Ultrasonically tested per ASME Sec. III, Para. NB 2550 and NRC Guide 1.66 and found acceptable. Report attached.

Impact specimens were tested in accordance with approved CIW Procedure PI-32 and found acceptable.

HEAT NO.	QUANTITY OR SERIAL NO.	TEST LOC.	MECHANICAL PROPERTIES TENSILE PSI	YIELD PSI .2%	% ELONG 2"	% RED AREA	FLAT. TENING TEST	BAR SIZE	LOT NO.
L 5327	4	Trans.	80,900	51,800	29.5	59.4	OK	.505	1564
L 5328	4	Trans.	79,400	49,700	29.3	57.8	OK	.505	1560

V-Notch Impact Test Results @ +40F.:

Test Lot#	Heat#	Ft.Lbs.	Lat.Exp.	D/F%
1564	L 5327	72.0	59 MILS	45%
		85.0	68	45
		87.0	66	55
1560	L 5328	79.0	63	80%
		79.0	62	75
		67.0	57	40

*Impact specimens removed at 1/4 T and oriented in the axial direction with radial notches.

S.W.E.C. PQA INSPECTED 224

SEE ATTACHMENT FOR FORGING SERIAL NUMBERS.

Pipe has been hydrostatically tested in accordance with approved CIW Procedure PI-15 at 2500 PSI for 5 sec. and found acceptable.

Pipe has been heat treated in accordance with approved heat treat procedure PH-8, Rev. C. Heat Treat Charts attached.

HEAT TREATMENT: 1600F., HELD 1 HR. AT TEMP. AIR COOLED.

N. M. P. C.
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P1018
J. O. 12177 SHOP FAB. PIPE
PIECE MARK:
ITT GRINNELL
KERNERSVILLE, N.C. 27284

SWORN AND SWORN TO BEFORE ME THIS 3RD DAY OF JAN. 1980.

NOTARY PUBLIC

E. A. TOMINSON
Notary Public in and for Harris County, Texas
My Commission Expires 1981

CIW-10 KA

ITTG - IPI
QUALITY CONTROL
APPROVED
T. C. WILSON
DATE JAN. 1 0 1980
SHEET 1 OF 6

I CERTIFY THESE TESTS TO BE CORRECT AS CONTAINED IN THE RECORDS OF THE COMPANY.

METALLURGICAL REPRESENTATIVE

D9784/gt

GRINNELL

P.O. KER-11622 S/O F-9784 29 NOV. 1979

FORG.SER.#	HEAT#	TEST LOT#
34430	L 5327	1564
34431	"	"
34432	"	"
34433	"	"
34434	L 5328	1560
34435	"	"
34436	"	"
34437	"	"

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

NM P-329

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 JAN. 10 1980
SHEET 2 OF 6

NM P-329

Cameron IRON WORKS INC.

P. O. BOX 1212 HOUSTON, TEXAS 77001

ULTRASONIC EXAMINATION REPORT

* Denotes submit
** Denotes Rev. Change 12/27/79

DATE: 11/12/79

CUSTOMER: ITT GRINNELL U.T. PROCEDURE: ** PU-43 REV. D RV PART NO.: 86-9784-261-235

SPECIFICATION: ASME SA106 GR. C ASME SEC. III MATERIAL: SA106

CLASS I

INSTRUMENT: Ultrasonoscope Series 10

METHOD: Contact TECHNIQUE: Pulse Echo COUPLANT: Water

OVERLAP: 10% SCANNING SPEED (MAX.) 60"/MIN.

INDEXING: Automatic Helical Scan

SCANNING: Pipe rotated on rolls with serach unit in fixed position

CIW SER.	HEAT #	LENGTH	INSP
34430	L-5327	38'-5 3/8"	UT-33&42
34431	"	34'-6 1/2"	UT-33&42
34432	"	43'-4"	UT-33
34433	"	43'-8 3/4"	UT-33
34434	L-5328	41'-0 1/2"	UT-42&33
34435	"	41'-1"	UT-42
34436-Y	"	37'-0 1/4"	UT-42
34437	"	39'-10 1/4"	UT-42

MIN. WALL 1.127"
REF. WALL 1.420"
NOTCH (I.D.) .071"
NOTCH (O.D.) .072"

LONGITUDINAL MODE

SURFACE SCANNED	SEARCH UNIT	REFERENCE STANDARD	STANDARDIZATION
O.D. Longitudinal	Branson 5.0 M.H.Z. 1"@ 90°	5/64" F.B.H.	100% SCREEN HEIGHT

SHEAR MODE

SURFACE SCANNED	SEARCH UNIT	REFERENCE STANDARD	STANDARDIZATION
O.D. Shear Wave (2) Circ. direction	Branson 2.25 M.H.Z. 1" x 1" at 45° (2)	5% I.D. & O.D. NOTCH	100% I.D. & O.D. NOTCH
O.D. Shear Wave (2) Axial direction	Branson 2.25 M.H.Z. 1" x 1" at 45° (2)	5% I.D. & O.D. NOTCH	100% I.D. & O.D. NOTCH

REPORTABLE INDICATIONS

IND. #	DISTANCE FROM END "A"	CIRCUM. LENGTH	AXIAL LENGTH	DEPTH FROM OD	CLOCK POSITION	INDICATION AMPLITUDE	LOSS OF B. R.	REMARKS
								N. M. P. C. NINE MILE NUC. STATION UNIT-2 P. O. NMP2-P3018 J. O. 12177 SHOP FAB. PIPE PIECE MARK:--------- ITT GRINNELL KENNETTVILLE, N.C.

ITTG - IPI QUALITY CONTROL APPROVED T. C. WILSON DATE JAN 1 0 1980 SHEET 3 OF 3

U.S. N.R.C. INSPECTED 224

RESULTS: [ ] REPORTABLE INDICATIONS RESOLVED ARE INCLUDED IN THIS REPORT. [ ] ACCEPT [ ] REJECT

[X] NO REPORTABLE INDICATIONS AND NO REPORTABLE LOSS OF BACK REFLECTION WERE NOTED.

[X] THE PARTS WERE TESTED IN ACCORDANCE WITH THE ABOVE PROCEDURE AND FOUND TO BE ACCEPTABLE.

INSPECTOR	SNT-TC-IA LEVEL	UT NUMBER	EXPIRATION DATE
R. E. Smith	II	33	1-17-82
R. Nordeen	II	42	8-28-82

SIGNED: R. Nordeen SNT-TC-IA LEVEL II EXP. DATE 8-28-82

CIW-678

Grinnell

Industrial Piping Inc.

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

Materials Engineering Test Report ML-80-53

Project: Niagara Mohawk

Contract No.: 7100

Subject: Impact Test for Bending Cycle

Material used for fabrication of Niagara pieces will require Impact Testing in the "AS BENT" condition to qualify for use in the bending cycle.

Samples of this material were heat treated to simulate our bending cycle as follows: Heat to 1500°F with continued heating at 175°F/HR to 1950°F. This temperature shall be held for 15 minutes. Cooling shall be performed at 1100°F/HR to below 1350°F followed by cooling at 300°F/HR to below 600°F.

After Heat Treatment, three (3) full size (10mm X 10mm) Charpy V-Notch Impact Specimens were prepared from each sample, and tested.

Description of material tested:

12"	S/80	SA-106 Gr. B Pipe	HT #L81052	LOT #502995
12"	S/80	SA-106 Gr. B Pipe	N93231	502995
12"	S/80	SA-106 Gr. B Pipe	50200	505077
18"	S/80	SA-106 Gr. B Pipe	L81314	503551
24"	S/80	SA-106 Gr. B Pipe	75886	503682
23.481"	I.D. X 1.77"MW	SA-106 Gr. C	L5328	504471
23.481"	I.D. X 1.77"MW	SA-106 Gr. C	L5327	504452

Results: The results of the impact testing show that all except the 24 inch pipe specimens meet the minimum required Cv values per Section III (NB2300) 1974 edition. The attached reports from Law Engineering Testing Company give Impact results.

This report was revised to show the correct heat number L81052 and Client P.O. No. KER-43418-L

Leonard M. Smith

Leonard M. Smith
Materials Engineering

N. M. P. C.
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P201B
J. O. 12177 SHOP FAB. PIPE
PIECE MARK:---------
ITT GRINNELL
KERNERSVILLE, N.C. 27284

ITTG - IPI
QUALITY CONTROL
APPROVED
U.C. Nelson
DATE 2-23-81
SHEET 4 OF 6

Date: 2/18/81

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

CHAPY IMPACT TEST

(Attachment to Charpy Impact Test Reports
Dated January 28, 1981 &
Re-Issued February 13, 1981)

LETCo. Piece No.	Orientation
1-19-81-1C1	Axial direction notch normal to outside surface.*
1-19-81-1C2	Axial direction notch normal to outside surface.*
1-19-81-1C3	Axial direction notch normal to outside surface.*
1-19-81-2C4	Axial direction notch normal to outside surface.*
1-19-81-2C5	Axial direction notch normal to outside surface.*
1-19-81-2C6	Axial direction notch normal to outside surface.*
1-19-81-3C7	Axial direction notch normal to outside surface.*
1-19-81-3C8	Axial direction notch normal to outside surface.*
1-19-81-3C9	Axial direction notch normal to outside surface.*
1-19-81-4C10	Axial direction notch normal to outside surface.*
1-19-81-4C11	Axial direction notch normal to outside surface.*
1-19-81-4C12	Axial direction notch normal to outside surface.*
1-19-81-4C22R	Axial direction notch normal to outside surface.*
1-19-81-4C23R	Axial direction notch normal to outside surface.*
1-19-81-5C13	Axial direction notch normal to outside surface.*
1-19-81-5C14	Axial direction notch normal to outside surface.*
1-19-81-5C15	Axial direction notch normal to outside surface.*
1-19-81-6C16	Axial direction notch normal to outside surface.*
1-19-81-6C17	Axial direction notch normal to outside surface.*
1-19-81-6C18	Axial direction notch normal to outside surface.*
1-19-81-7C19	Axial direction notch normal to outside surface.*
1-19-81-7C20	Axial direction notch normal to outside surface.*
1-19-81-7C21	Axial direction notch normal to outside surface.*

*Note: In accordance with ASME Section III, Subsection NB, Paragraphs NB-2322.1, NB-2322.2(2), and NB-2431.1(d).

ITTG - IPI
QUALITY CONTROL
APPROVED
J. C. Hilsa
DATE 3-11-81
SHEET 5 OF 6

N. M. P. C.
NINE MILE NUC. STATION
UNIT - 2 P. O. NMP2-P2018
J. O. 12177 SHOP FAB. PIPE
PIECE MARK: --------
ITT GRINNELL
KERNERSVILLE, N.C. 27284

ITT GRINNELL INDUSTRIAL PIPING, INC.
Kernersville, North Carolina
LETCo. Job No. CHS 81-122

00173

LAW ENGINEERING TESTING COMPANY

geotechnical, environmental & construction materials consultants
501 MINUET LANE
P.O. BOX 11297 • CHARLOTTE, NORTH CAROLINA 28220
(704) 523-2022

P389

REPORT OF CHARPY IMPACT TEST (BASE METAL)

Client: ITT GRINNELL INDUSTRIAL PIPING, INC.
Project: Kernersville, North Carolina
General

Office: Charlotte Metals
Date: January 28, 1981 Re-Issued 2-13-81
Lab. No. CHS 81-122

Client P. O. No.: KER-43418-L

Material: Reported as 23.481" ID x 1.177 MW ASME SA-106 Grade C (ML-80-53 PL NM-63)

Heat No.: L5327, Lot 504452

Date Tested: 1/28/81

Specimen Size: 10 mm (0.394") x 10 mm (0.394")

Test Temperature: +40° F

Procedure: In accordance with ASME SA-370

ITTG - IPI
QUALITY CONTROL
APPROVED
J.C. Nilson
DATE 2-23-81
SHEET 6 OF 6

TEST RESULTS

LETCo. Piece No.	Impact Strength (Ft. Lbs.)	Lateral Expansion (In.)	Percent Shear	Comments
1-19-81-7C19	52.5	0.049	35	—
1-19-81-7C20	52.0	0.049	31	—
1-19-81-7C21	55.0	0.047	33	—

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

Note: The above specimens were removed from segments that were subjected to the heat-treatment cycle outlined on client's purchase order.

Inspector(s): Larry E. Coble
Richard H. Norris

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

Reviewed by:
Edward M. Beck, P.E.
Corporate Consultant/Metals

Respectfully submitted,
LAW ENGINEERING TESTING COMPANY

Larry E. Coble, Metals Laboratory Supervisor

00173

LAW ENGINEERING TESTING COMPANY

geotechnical, environmental & construction materials consultants
501 MINUET LANE
P.O. BOX 11297 • CHARLOTTE, NORTH CAROLINA 28220
(704) 523-2022

P389

REPORT OF CHARPY IMPACT TEST (BASE METAL)

Client: ITT GRINNELL INDUSTRIAL PIPING, INC.
Project: Kernersville, North Carolina
General

Office: Charlotte Metals
Date: January 28, 1981 Re-Issued 2-13-81
Lab. No. CHS 81-122

Client P. O. No.: KER-43418-L

Material: Reported as 23.481" ID x 1.177 MW ASME SA-106 Grade C (ML-80-53 PL NM-63)

Heat No.: L5327, Lot 504452

Date Tested: 1/28/81

Specimen Size: 10 mm (0.394") x 10 mm (0.394")

Test Temperature: +40° F

Procedure: In accordance with ASME SA-370

ITTG - IPI
QUALITY CONTROL
APPROVED
J.C. Nilson
DATE 2-23-81
SHEET 6 OF 6

TEST RESULTS

LETCo. Piece No.	Impact Strength (Ft. Lbs.)	Lateral Expansion (In.)	Percent Shear	Comments
1-19-81-7C19	52.5	0.049	35	—
1-19-81-7C20	52.0	0.049	31	—
1-19-81-7C21	55.0	0.047	33	—

S. W. E. C. PQA INSPECTED 224

Note: The above specimens were removed from segments that were subjected to the heat-treatment cycle outlined on client's purchase order.

Inspector(s): Larry E. Coble
Richard H. Norris

Reviewed by: Edward M. Beck, P.E.
Corporate Consultant/Metals

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

Respectfully submitted,
LAW ENGINEERING TESTING COMPANY

CERTIFICATE OF TEST ON PIPE MATERIAL

Cameron 00178

IRON WORKS, INC.

P. O. BOX 1212
HOUSTON, TEXAS 77001

GRINNELL INDUSTRIAL PIPING, INC.
P. O. BOX 566
KERNERSVILLE, N.C. 27784

*Supplementary Report
ASME QUALITY SYSTEM CERTIFICATE
(MANUFACTURER) NO. N-2209 EXPIRES 10-27-81

ALL OPERATIONS WERE PERFORMED BY CIW & MEET THE REQUIREMENTS OF THE MATERIAL SPECIFICATION AND SEC.III,DIV.1. DATE 3 JAN. 1979.

CUSTOMER ORDER NO.	C.I.W. SALES ORDER NO.	SPECIFICATION
KER-11622	F-9784	ASME SA106 GR.C ASME SEC. III, CL.1, 1974 EDITION AND NM-001, REV. 2; MN-005, REV. 3 W/MAX. CARBON CONTENT OF .30% AND IMPACTS AT +40F.

CIW PART NO. 86-9784-261-135
DESCRIPTION OF MATERIAL SEAMLESS PIPE
O.D. x I.D. 23.481" x WALL 1.177" M.W.

HEAT NO.	LOCATION OR SERIAL NO.	CHEMICAL ANALYSIS C	MN	P	S	SI	CR	NI	MO	CU
L 5327		.26	.95	.010	.009	.32				
L 5328		.24	1.01	.008	.010	.25				

NM-63
Lot # 504452

INSPECTED S.W.E.C. 103 TI

Pipe has been Ultrasonically tested per ASME Sec. III, Para. NB 2550 and NRC Guide 1.66 and found acceptable. Report attached.

Impact specimens were tested in accordance with approved CIW Procedure PI-32 and found acceptable.

HEAT NO.	QUANTITY OR SERIAL NO.	TEST LOC.	MECHANICAL PROPERTIES TENSILE PSI	YIELD PSI .2%	% ELONG 2"	% RED AREA	FLAT. TENING TEST	BAR SIZE	LOT NO.
L 5327	4	Trans.	80,900	51,800	29.5	59.4	OK	.505	1564
L 5328	4	Trans.	79,400	49,700	29.3	57.8	OK	.505	1560

V-Notch Impact Test Results @ +40F.:

Test Lot#	Heat#	Ft.Lbs.	Lat.Exp.	D/F%
1564	L 5327	72.0	59 MILS	45%
		85.0	68	45
		87.0	66	55
1560	L 5328	79.0	63	80%
		79.0	62	75
		67.0	57	40

*Impact specimens removed at 1/4 T and oriented in the axial direction with radial notches.

SEE ATTACHMENT FOR FORGING SERIAL NUMBERS.

Pipe has been hydrostatically tested in accordance with approved CIW Procedure PI-15 at 2500 PSI for 5 sec. and found acceptable.

Pipe has been heat treated in accordance with approved heat treat procedure PH-8, Rev. C. Heat Treat Charts attached.

HEAT TREATMENT: 1600F., HELD 1 HR. AT TEMP. AIR COOLED.

N. M. P. C.
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P1018
J. O. 12177 SHOP FAB. PIPE
PIECE MARK:
ITT GRINNELL
KERNERSVILLE, N.C. 27284

SUBSCRIBED AND SWORN TO BEFORE ME THIS 2D DAY OF JAN. 1980.

NOTARY PUBLIC

E. A. [illegible]
Notary Public [illegible] Harris County, Texas
[illegible] 1981

ITTG - IPI
QUALITY CONTROL
APPROVED
T. C. WILSON
DATE JAN. 1 0 1980
SHEET 1 OF 5

I CERTIFY THESE TESTS TO BE CORRECT AS CONTAINED IN THE RECORDS OF THE COMPANY.

METALLURGICAL REPRESENTATIVE

D9784/gt

ELL

P.O. KER-11622 S/O F-9784 29 NOV. 1979

FORG.SER.#	HEAT#	TEST LOT#
34430	L 5327	1564
34431	"	"
34432	"	"
34433	"	"
34434	L 5328	1560
34435	"	"
34436	"	"
34437	"	"

NUM
P-329

INSPECTED: 103 S.W.E.C. 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

ITTG - IPI
QUALITY CONTROL
APPROVED
T. C. WILSON
DATE JAN. 1 0 1980
SHEET 2 OF 5

NM P-329

Cameron IRON WORKS, INC.

P. O. BOX 1212 HOUSTON, TEXAS 77001

ULTRASONIC EXAMINATION REPORT * Denotes submit
** Denotes Rev. Change 12/27/79

DATE: 11/12/79

CUSTOMER: ITT GRINNELL U.T. PROCEDURE: ** PU-43 REV. D RV PART NO.: 86-9784-261-235

SPECIFICATION: ASME SA106 GR. C ASME SEC. III MATERIAL: SA106
CLASS I

INSTRUMENT: Ultrasonoscope Series 10

METHOD: Contact TECHNIQUE: Pulse Echo COUPLANT: Water

OVERLAP: 10% SCANNING SPEED (MAX.) 60"/MIN.

INDEXING: Automatic Helical Scan

SCANNING: Pipe rotated on rolls with serach unit in fixed position

CIW SER.	HEAT #	LENGTH	INSP
34430	L-5327	38'-5 3/8"	UT-33&42
34431	"	34'-6 1/2"	UT-33&42
34432	"	43'-4"	UT-33
34433	"	43'-8 3/4"	UT-33
34434	L-5328	41'-0 1/2"	UT-42&33
*34435	"	41'-1"	UT-42
34436-Y	"	37'-0 1/4"	UT-42
34437	"	39'-10 1/4"	UT-42

MIN. WALL 1.127"
REF. WALL 1.420"
NOTCH (I.D.) .071"
NOTCH (O.D.) .072"

LONGITUDINAL MODE

SURFACE SCANNED	SEARCH UNIT	REFERENCE STANDARD	STANDARDIZATION
O.D. Longitudinal	Branson 5.0 M.H.Z. 1"@ 90°	5/64" F.B.H.	100% SCREEN HEIGHT

S. W. E. C. INSPECTED PQC 103

SHEAR MODE

SURFACE SCANNED	SEARCH UNIT	REFERENCE STANDARD	STANDARDIZATION
O.D. Shear Wave (2) Circ. direction	Branson 2.25 M.H.Z. 1" x 1" at 45° (2)	5% I.D. & O.D. NOTCH	100% I.D. & O.D. NOTCH
O.D. Shear Wave (2) Axial direction	Branson 2.25 M.H.Z. 1" x 1" at 45° (2)	5% I.D. & O.D. NOTCH	100% I.D. & O.D. NOTCH

REPORTABLE INDICATIONS

IND. #	DISTANCE FROM END "A"	CIRCUM. LENGTH	AXIAL LENGTH	DEPTH FROM OD	CLOCK POSITION	INDICATION AMPLITUDE	LOSS OF B. R.	REMARKS

N. M. P. C.
NINE MILE NUC. STATION
UNIT - 2, P. O. NMP2-P301R
J. O. 12177 SHOP FAB. PIPE
PIECE MARK: ---------
ITT GRINNELL
KENNERSVILLE, N.C. 27860

ITTG - IPI
QUALITY CONTROL
APPROVED
T. C. WILSON
DATE JAN 1 0 1980
SHEET 3 OF 5

RESULTS: ☐ REPORTABLE INDICATIONS RESOLVED ARE INCLUDED IN THIS REPORT. ☐ ACCEPT ☐ REJECT

☒ NO REPORTABLE INDICATIONS AND NO REPORTABLE LOSS OF BACK REFLECTION WERE NOTED.

☒ THE PARTS WERE TESTED IN ACCORDANCE WITH THE ABOVE PROCEDURE AND FOUND TO BE ACCEPTABLE.

INSPECTOR	SNT-TC-IA LEVEL	UT NUMBER	EXPIRATION DATE
R. E. Smith	II	33	1-17-82
R. Nordeen	II	42	8-28-82

SIGNED R. Nordeen SNT-TC-IA LEVEL II EXP. DATE 8-28-82

IM-678

ITT Grinnell
Industrial Piping Inc.

0017

Materials Engineering Test Report ML-80-53

Project: Niagara Mohawk

Contract No.: 7100

Subject: Impact Test for Bending Cycle

Material used for fabrication of Niagara pieces will require Impact Testing in the "AS BENT" condition to qualify for use in the bending cycle.

Samples of this material were heat treated to simulate our bending cycle as follows: Heat to 1500°F with continued heating at 175°F/HR to 1950°F. This temperature shall be held for 15 minutes. Cooling shall be performed at 1100°F/HR to below 1350°F followed by cooling at 300°F/HR to below 600°F.

After Heat Treatment, three (3) full size (10mm X 10mm) Charpy V-Notch Impact Specimens were prepared from each sample, and tested.

Description of material tested:

12"	S/80	SA-106 Gr. B Pipe	HT #L81052	LOT #502995
12"	S/80	SA-106 Gr. B Pipe	N93231	502995
12"	S/80	SA-106 Gr. B Pipe	50200	505077
18"	S/80	SA-106 Gr. B Pipe	L81314	503551
24"	S/80	SA-106 Gr. B Pipe	75886	503682
23.481"	I.D. X 1.77"MW	SA-106 Gr. C	L5328	504471
23.481"	I.D. X 1.77"MW	SA-106 Gr. C	L5327	504452

Results: The results of the impact testing show that all except the 24 inch pipe specimens meet the minimum required Cv values per Section III (NB2300) 1974 edition. The attached reports from Law Engineering Testing Company give Impact results.

This report was revised to show the correct heat number L81052 and Client P.O. No. KER-43418-L

Leonard M. Smith
Leonard M. Smith
Materials Engineering

ITTG - IPI
QUALITY CONTROL
APPROVED
T. C. WILSON
DATE JUL 22 1981
SHEET 4 OF 5

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

R. H. E. E.
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P30?
12177 SHOP FAB. PIPE
OSWEGO, N.Y. 13126
GREENSVILLE, N.C. 27284

Date: 2/18/81

geotechnical environmental & construction materials consultants
507 MINUET LANE
P.O. BOX 11297 • CHARLOTTE, NORTH CAROLINA 28220
(704) 523-2022

REPORT OF CHARPY IMPACT TEST (BASE METAL)

00173

P329

Client: ITT GRINNELL INDUSTRIAL PIPING, INC.
Project: Kernersville, North Carolina
General

Office: Charlotte Metals
Date: January 28, 1981 Re-Issued 2-13-81
Lab. No. CHS 81-122

Client P. O. No.: KER-43418-L

Material: Reported as 23.481" ID x 1.177 MW ASME SA-106 Grade C (ML-80-53 PL NM-63)

Heat No.: L5327, Lot 504452

Date Tested: 1/28/81

Specimen Size: 10 mm (0.394") x 10 mm (0.394")

Test Temperature: +40° F

Procedure: In accordance with ASME SA-370

ITTG - IPI
QUALITY CONTROL
APPROVED
T. C. WILSON
DATE JUL 22 1981
SHEET 5 OF 5

TEST RESULTS

LETCo. Piece No.	Impact Strength (Ft. Lbs.)	Lateral Expansion (In.)	Percent Shear	Comments
1-19-81-7C19	52.5	0.049	35	—
1-19-81-7C20	52.0	0.049	31	—
1-19-81-7C21	55.0	0.047	33	—

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

Note: The above specimens were removed from segments that were subjected to the heat-treatment cycle outlined on client's purchase order.

Inspector(s): Larry E. Coble
Richard H. Norris

N. M. P. C.
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2LP3013
J.O. 12177 SHOP FAB. PIPE
PIECE MARK:
ITT GRINNELL
KERNERSVILLE, N.C. 27284

Reviewed by:
Edward M. Beck, P.E.
Corporate Consultant/Metals

Respectfully submitted,
LAW ENGINEERING TESTING COMPANY

Larry E. Coble, Metals Laboratory Supervisor

TRANS. #04 00236

ITT GRINNELL INDUSTRIAL PIPING, INC.
P. O. Box 566, Kernersville, N. C. 27284

Form N9.1B

EXAMINATION AND DOCUMENTATION CHECK LIST

Plant: Nine Mile Point Nuclear Sta. Unit 2 Job: Niagara Mohawk Corp. Cont. No.: NMP2-P301B Shop Fabricated Piping

System: M. S. S. Ref. Dwg.: 01-13 Class: Nucl.

Piece Mark: 01-13-2-MSS-152-1-85 Register No.: NM-1-85X

Req'd	In File	
✓ (X)	SO	Data Reports
(X)	NA	Materials Manufacturer Code Data Reports
✓ (X)	SO	Shop Traveler (N4.1B)
(N/A)	N/A	Operations Record - Production Planner (N4.1A)
✓ (X)	SO	MT Reports
(X)	NA	PT Reports
(X)	NA	UT Reports
✓ (X)	SO	RT Reports - Including final acceptance
(X)	NA	Furnace Load Sheet (N8.1A)
(N/A)	N/A	Isometric Sketch
✓ (X)	SO	Engineering Shop Sketches (N2.1C)
✓ (X)	SO	Materials Records (N2.1F)
(N/A)	N/A	Index of Certificates
(X)	Previously Submitted	Certified Material Test Report
(X)	Previously Submitted	Weld Procedure Qualification
(N/A)	N/A	Welder Qualification
(N/A)	N/A	NDE Personnel Qualification
(X)	NA	Nonconformance Reports
(N/A)	N/A	Materials Receipt Reports (N3.3A)
(N/A)	N/A	Weld Chemical Analysis

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. PQA INSPECTED-224

Sargent & Webster Engineering Corporation
☒ APPROVED AS NOTED IN THE SPECIFICATION
☐ DISAPPROVED
☐ APPROVED AS REVISED AS NOTED IN THE SPEC.
☐ REVISED
J.O. No. 12177.50
SPEC. No. NMP2-P301B
DATE 5-7-79
BY R. Hudson

Other Documents Required by Owner or his Agent

(X)	Previously Submitted	Approved Procedures
(X)	Previously Submitted	Certified Product Report

Signed William Hudson
Quality Control Manager (NWD)

Where item not required, mark NA.

Special Contract System Applicable Documents:

(X)	NA	PWHT Total Time at Temperature
(X)	NA	Painting Documentation
(X)	NA	Supplemental Tests - Special Requirements Class 4

P.O. & Spec. No. NMP2-P301B

187

FORM NPP-1 DATA REPORT FOR FABRICATED NUCLEAR PIPING SUBASSEMBLIES TRANS. 00236

(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 Main Steam (Brief description of intended use, main coolant etc.)

(a) Drawing No. NM-1-85 X 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 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 Number D1-13-2-MSS-152-1-85 (include—mark no.—material spec.—nom. pipe size—schedule or thickness—length — fittings — flanges, etc.)

See Attached Sheets

S.W.E.C. P.Q.1 INSPECTED 224

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 3-26-82 Signed * (Repairer) 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 VA. and employed by ** of Hartford, Ct. have inspected the piping described in this Data Report on 3-26 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 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 3-26, 19 82 [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".

9. Description of Field Fabrication

10. Field Hydrostatic Test _____ psi.

We certify that the field fabrication of the described piping conforms with the requirements of SECTION III of the ASME BOILER AND PRESSURE VESSEL CODE, Class _____, Edition _____, Addenda Date _____ Case No. _____

Date _____, 19____ Signed _____ (Fabricator) By _____ (Representative)

Our Certification of Authorization to use the _____ Symbol Expires _____ 19____

Certificate of Authorization No. _____

CERTIFICATE OF FIELD FABRICATION 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 _____

and employed by _____ of _____

have compared the statements in this Manufacturer's Data Report with the described piping and state that the parts referred to as data items _____, not included in the certificate of shop inspection have been inspected by me and that to the best of my knowledge and belief the manufacturer has constructed this piping in accordance with the applicable section of the ASME CODE SECTION III.

By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the piping described in this Manufacturer's 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 _____ 19____

_____ Inspector

Commissions _____ National Board, State, Province and No.

TRANS. #09: 00236

FORM-EN-101 REV. 8/
Q.A. FORM N2AC

ITT Grinnell Industrial Piping Inc.

KERNERSVILLE, N. C.

CO. NO. 7100
NAME NIAGARA MOHAWK
LOCATION SCRIBA NY

DRW'N 3/1/79 CHK'D 6-22-79
REV. 1 FEG 12-1-81 CHK'D DB 12-2-81
REV. CHK'D
REV. CHK'D

NINE MILE POINT NUCLEAR STATION UNIT 2
NIAGARA MOHAWK POWER CORPORATION
JO NO 12177 PO NO NMP2-68

IN SERVICE INSPECTION

GRND WELDS PER MAT D25

MITER CUT L = 0'-3 1/4"
DIAL SETTING = 3/16"
CUT FROM BAR 2
LOT 509471
SER 34436Y

4'-11 3/8"
3'-11 3/8"
11-0" 2'-11 3/8" 1'-0"

CUT 1'-0 1/8"
FROM BAR 1 LOT 505594
SER 34433

SPECIAL MATERIAL
CHECK ALLOCATION SHEETS
BEFORE CUTTING

ASME CODE APPROVED

3/4" SOL

IMPACT TESTED MAT'L

PIPE TOP C X 1.177 M.W. (SMLS) SA-106C
CONN. 6000# SA-105

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

ENDS MACH. PER SK# NM-020

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

REVISION

S. W. E. C.
INSPECTED

QUALITY CONTROL

CLEANLINESS CLASS C

CLASS Nuc.1 LINE SPEC. 901 APP. CODE ASME III NO. REQ'D 1

Radiography (RT)	✓	Special Marking		Preheat	✓	Cert. of Compliance	
Magnetic Particle (MT)	✓	Special Cleaning	✓	Heat Treat		Mill Test Reports	✓
Liquid Penetrant (PT)		Painting		Code Stamp	✓	Data Reports	✓

SYSTEM MAIN STM. FAB. SPECS. JS-137
REF. DRW'G NO. 01-13-3 (EP-2A 3) PRESS. 1250 PSI. TEMP. 575 °F. WT 1560 LBS.
PIECE MARK 01-13-2-MSS-152-1-85 REGISTER NM 1 11 1 1 85X

ITT GRINNELL INDUSTRIAL PIPING, INC

REVISION

SHOP COPY LAY

FORM EN-102 REV. 8/78
DIA. FORM N2.1F

Sheet ___ of ___

CONT. NO. 7100
NAME NIAGARA MOHAWK
LOCATION SCRIBA NY

MATERIALS RECORD
PRODUCTION PLANNER

REGISTER N M 1 8 5 X

REV. NO. BY DATE

PIECE MARK 0 1 - 1 3 - 2 - M S S - 1 5 2 1 - 1 8 5

ITEM	DESCRIPTION: PART NUMBER/STOCK NUMBER	R M	FT/EA/PD	IN	FRACTIONS	WHSE. LOCATION	QUALITY CONTROL: HEAT NUMBER	DOCUMENT	IN PROCESS	INSPECTION
	26" (D) x 1.177" M.W. SMLS PIPE					ASME SA-106-C	BAR 1 LOT 505594 SER 34433			
1	NM 63 -	F	1	10	1/8" (1)		L5327 SN 34433	P.339 RAM	5/10	0129 2-6-82
	26" x 3/4" 6000# SOCKOLET					ASME SA-105	S102 S/N-PT-11-3-9-4	SWF-350 RAM	5/10	2/17/82
2	NM-3099 -	E	1			G2-46-4				
	3/4" C/S E. P.									
	-	E	1			FEB 11 1982				
	26" C/S MACH'D. E. P.					DELIVERED				
	-	E	2							
	26 x 1.177 M.W. PIPE					SA-106-C	BAR 2 LOT 504471 SER 34436Y			
3	NM 63 -	F	3	11	1/2"		L5328 SN 34436Y	P.339 RAM	5/10	0129 2-6-82
(1)										

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 MSS

GATHERED
JAN 28 1982

ITT GRINNELL IND. PIPING
KERNERSVILLE, N. C.

07

INSPECTED
SEP 2 4

TRANS. NO. 00236

CODE ASME III
CUST LINE SPEC 9 0 1
MFG CODE L X
JOB SPEC JS-13713
BATCH
SIZE 2 6

UNIT PRICE P.O. | DIS VENDOR | NET
TOTAL
ACCOUNTING

ITT Grinnell Industrial Piping, Inc. TRAVELER SHEET 1 OF 1

PROJECT NIAGARA CONTRACT 7190 PC. NK. 01-13-2-MSS-152-1-85 REG. N.M 8,5,X

SPECIFICATION JS-137-13

WELD	FIT-UP/PREHEAT WELDER I.D.	WELD MAT'L	Q.C. INSP.	MAT'L	ROOT WELDER I.D.	WELD MAT'L	INTERMEDIATE WELDER I.D.	WELD MAT'L	FINAL WELDER I.D.	WELD MAT'L	Q.C. INSP.	RT DATE Q.C.		CUST.	PAG ROOT	LP FINAL
	PROC.	5-4			PROC.	5-4	PROC.	1-3	PROC.	1-3						
A	C211	NAGAC	(P910)		C99	NAGAC	C99	NAEAJ	C99	NAEAJ	(P910)					N116
DATE	2/17/82		MMR		2/20/82		2/20	82 2/24	2/22	82	MMR				3-5-82	
Code	PROC.	5-4			PROC.		PROC.		PROC.							
Peak	C211	NAGAC	(P910)													N116
DATE	2/17/82		MMR												3-5-82	
	PROC.	5-4			PROC.	5-4	PROC.	1-3	PROC.	3-4						
B	C211	NAGAC ~~NAGAC~~	(P910)		C99	NAGAC	C99	NAEAJ	C276	MAYAB NGDAB	(Q164)	3/15/82	3/19/82	3/22/82		N116
DATE	2/17/82		MMR		2/20	82	2/20	2/22-82	3/4/82		3/5/82				3-5-82	
	PROC.				PROC.		PROC.		PROC.							
DATE																
	PROC.				PROC.		PROC.		PROC.							
DATE																

N. M. P. C.
NINE MILE NUC. STATION
UNIT - 2 P. O. NMP2-P30173
J. O. 12177 SHOP FAB. PIPE
PIECE MARK: -------
ITT GRINNELL
KERNERSVILLE N.C. 27284

INSPECTED 224 S.W.C.A.

STRESS DATE NA	FINAL INSP. Q129 3-25-82	SPECIAL OPERATIONS: C DIM. NA	Q.C. DOC. APPROVAL JS 3-25-82
SQUARE UP 3-5-82 S121 (Q167) 3-5-82	NA	WALL THK.	A/I STAMP/DATA REPORT 3-26-82
CLEAN UP TR 3-25-82	CUST INSP MM 3/25/82	OTHER	CUST DOC. APPROVAL

Form N4.10

TRANS. NO. 0023

Req. No. _____ In-Process ☐ **RADIOGRAPHIC INSPECTION REPORT** Standard Hours _____

ITT GRINNELL INDUSTRIAL PIPING, INC. 50 Repair ☐ Date 3-10-82

Form N8.3A

Register No.	Piece No.	Weld No.	Pipe Size and Schedule	Welder No.
NM--L-----85X	D1-13-2-MIS-152-185	-B-	26" X 1.177" m.w.	C.9921 C.2760

		Film Interval	LP	LF	S	P	BT	UC	C	CR	T	HL	Comments	Interpretation ACC.	R
Views	1														
Source	Ir192														
Source Curies or KVP & MA	70	A-D											splatter e c	X	
Source Size or Focal Spot	.10X.10	D-G												X	
TECHNIQUE: Source Film Distance	13"	G-J												X	
TECHNIQUE: Time	:50	J-M												X	
TECHNIQUE: Actual Weld Thickness	1.177"	M-P												X	
TECHNIQUE: Penetrameter	25	P-S												X	
TECHNIQUE: Sensitivity	2T	S-A											process c/r	X	
Shim Thickness	—														
Film Size	7X17														
Film Type	70														

INTERPRETATION

R. H. E. C.
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P3018
J. O. 12177 SHOP FAB. PIPE
PIECE MARK:--------
ITT GRINNELL
KERNERSVILLE, N.C. 27284

Viewing Technique: Single ☒ Double ☐

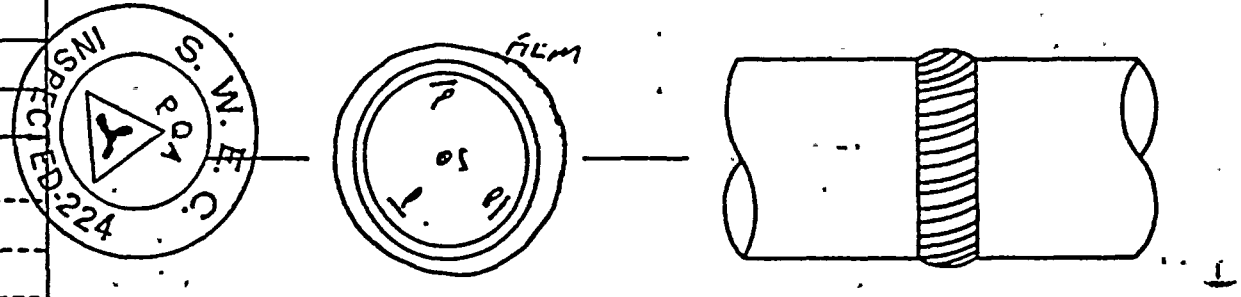
Screen		
	Front	.010
	Back	.010

Development		
	68° Kodak 6 min.	
	Automatic	X

LP — Lack of Penetration
LF — Lack of Fusion
S — Slag
P — Porosity
BT — Burn Thru
UC — Under Cut
C — Crater
CR — Crack
T — Tungsten
HL — High Low

Severity
A — Acceptable
R — Rejectable
B — Borderline

Welding Procedure
Root 5-4
Intermediate 1-3
Balance 3-4



Radiographer — Date 3/12/82 By Ron Dovesak
Interpretation — Date 3-15-82 By [illegible]
Approval — Date 3-15-82 By [illegible]

Customer ~~7100~~ Niagara Mohawk
Contract _____
Inspection Standard RTP-3-1
Authorized Insp. — Date 3/17/82 By [illegible]
Customers Approval — Date 3-22-82 By Mark Mills Level II

Location Nine Mile Point Unit 2
Job No. _____
Acceptance Standard ~~RTA-1-1~~

TRANS. NO. 00236

TRANS. #09- 00236

ITT GRINNELL INDUSTRIAL PIPING, INC.

MAGNETIC PARTICLE EXAMINATION REPORT

Customer N. M. Register Number UM-1-85X

Contract/PO No. 7100 Piece Mark 01-13-2-HSS-152-1-85

System H.S.I.

Equipment Type: DC Prods _____ AC Yoke ✓ Serial No. G-2

Examination Method Dry Powder Continuous

Procedure MTP-1-1 Acceptance MTA-1-0

Item Identification Weld/Serial/Ht. No.	Size and Thickness	Area Examined. Indicate, Root, Intermediate, Final Weld, or Material as Applicable	Interpretation Accept	Interpretation Reject
A	3/4" 6000#	Final	✓	
B	26" x 1.177" wall	Final	✓	
Cadaplate		Fillet	✓	

S.W.E.C. PQ1 INSPECTED 224

Comments

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. 27284

Examination Performed by T. Smith Date 3-5-82
NDT Level II

Interpretation Performed by T. Smith Date 3-5-82
NDT Level II

MAGNETIC PARTICLE EXAMINATION REPORT

GULF COAST MACHINE & SUPPLY CO.

MILL TEST REPORT

TRANS. NO. 01068

S.W.E.C. P.O.C. INSPECTED 173

REFERENCE NUMBER	DATE	CUSTOMER P/O NUMBER	SOLD TO
10280	08/06/82	44801	TUBE TURNS

TEM	QUAN. ORD. / QUAN. SHIP.	DESCRIPTION	HEAT NUMBER / BHN	HEAT TREAT CYCLE
1	2 / 2 / 8055L	ASME SA-350 LF-2 SEC.3 CLASS I (PER TT-73506-CS-F-201 REV 0) NORMALIZE ROUGH FORGING TO FINISH 10-3/4 OD X 6.813 ID X 12.375 LG LATERAL EXPANSION: 91 89 91 % SHEAR: 90 100 100	55285 / BHN ___ TO ___	NORMALIZED AT 1650 DEG F. FOR 5 HOURS AND AIR COOLED. L6993
2	1 / 1 / 8054L	ASME SA-350 LF-2 SEC.3 CLASS I (PER TT-73506-CS-F-201- REV 0) NORM CHARPY V AND TENSION TEST AT PLUS 50DEG.F 25MILS EXP. AFTER PWHT AT 1150 DEG.F FOR 12HRS AND COOLED PER NB 4623 (RESULTS ONLY) FINISH MACH. 3 TH X 3 WIDE X 12 LG	55285 / BHN ___ TO ___	SAME AS ABOVE
3	2 / 2 / 8055L	ASME SA-350 LF-2 SEC.3 CLASS I (PER TT-73506Y-CSF 200 REV.0) NORMALIZE ROUGH FORGING TO FINISH 30.400 OD X 19.875 ID X 24 LG LATERAL EXPANSION: 71 85 81 % SHEAR: 100 100 100	6051538 / BHN 156 ___ TO ___	NORMALIZED AT 1650 DEG F. FOR 5 HOURS AND AIR COOLED. L6990 L6991
4	2 / 2 / 8056L	ASME SA-350 LF-2 SEC.3 CLASS I (PER TT-73506Y-CSF 200 REV.0) NORMALIZE ROUGH FORGING TO FINISH 30.400 OD X 19.750 ID X 13 LG LATERAL EXPANSION: 71 69 73 % SHEAR: 100 100 100	6051538 / BHN 156 ___ TO ___	NORMALIZED AT 1650 DEG F. FOR 5 HOURS AND AIR COOLED. L6994 L6995
5	1 / 1 / 8057L	ASME SA-350 LF-2 SEC.3 CLASS I (PER TT-73506YCSF200 REV.0) NORM CHARPY V NOTCH AND TENSION TEST AT PLUS 50DEG.F 40MILS EXP. AFTER PWHT AT 1150 DEG.F FOR 12HRS AND COOLED PER NB 4623 (RESULTS ONLY) FINISH MACHINE 6-1/2 SQ. X 12 LG	6051538 / BHN ___ TO ___	NORMALIZED AT 1650 DEG F. FOR 5 HOUR AND AIR COOLED.
8	1 / 1 / 8060L	ASME SA-350 LF-2 SEC.3 CLASS I (PER TT-73506YCSF200 REV.0) NORM CHARPY V NOTCH AND TENSION TEST AT PLUS 50DEG.F 40MILS EXP. AFTER PWHT AT 1150 DEG.F FOR 12HRS AND COOLED PER NB 4623 (RESULTS ONLY) FINISH MACHINE 6-1/2 SQ. X 12 LG	6051538 / BHN ___ TO ___	NORMALIZED AT 1650 DEG F. FOR 5 HOURS AND AIR COOLED. NOTE: FOR PWHT SEE PAGE 2.

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT NUCLEAR STATION - UNIT 2
P.O. NO. NMP2-R3076 ITEM NO. 2TWS *F.V.O.
THERMAL TEE, MARK NO. 1B
TUBE TURNS, LOUISVILLE, KY

CHEMICAL ANALYSIS

ITEM	HEAT NUMBER	STEEL MILL	C	MN	PHOS	SUL	SI	CR	NI	CU	V	TYPE ANALYSIS	STEEL MILL CHECK—C	AN
1	55285	ARMCO	.17	1.35	.010	.006	.21						.024	S
2	55285	ARMCO	.17	1.35	.010	.006	.21							S
3	6051538	REPUBLIC	.17	1.17	.008	.004	.21							S
4	6051538	REPUBLIC	.17	1.17	.008	.004	.21							S
5	6051538	REPUBLIC	.17	1.17	.008	.004	.21							S
8	6051538	REPUBLIC	.17	1.17	.008	.004	.21							S

MECHANICAL PROPERTIES

TYPE: BILLET HEAT ACCEPT—B, PRODUCT PROLONGATION—P, REPRESENTATIVE TEST BLOC

ITEM	TENSILE LB. PER SQ. IN.	YIELD LB. PER SQ. IN.	ELONGATION IN 2 INS.	REDUCTION IN AREA %	TYPE TEST	CHARPY IMPACT TEST: TYPE SAMPLE	°F	IMPACT TEST VALUES FT/LBS.			AVG.
1	70,000	54,000	35.00	76.00	R	V-NOTCH	+50	174	167	170	170
2	70,000	54,000	35.00	76.00	R	V-NOTCH	+50	174	167	170	170
3	70,000	45,200	41.00	77.00	R	V-NOTCH	+50	234	236	234	235
4	70,000	45,500	39.00	76.00	R	V-NOTCH	+50	216	239	240	232
5	70,000	45,200	41.00	77.00	R	V-NOTCH	+50	234	236	234	235
8	70,000	45,500	39.00	76.00	R	V-NOTCH	+50	218	239	240	232

THIS IS TO CERTIFY THAT THE REPORT RECEIVED ON MATERIAL FURNISHED ON THIS ORDER, ARE TO EFFECT, THAT IN ALL RESPECTS, SUCH MATERIAL MEETS REQUIREMENTS FOR SPECIFICATIONS AS INDICATED IN DESCRIPTION.

STEEL MADE IN U.S.A.

GULF COAST MACHINE & SUPPLY CO.

GULF COAST MACHINE & SUPPLY CO.

MILL TEST REPORT

TTNS. 01068

REFERENCE NUMBER	DATE	CUSTOMER P/O NUMBER		SOLD TO
10280	08/05/82	44801		TUBE TURNS

ITEM	DESCRIPTION	HEAT NUMBER / BHN	HEAT TREAT CYCLE
QUAN. ORD. / QUAN. SHIP.	NOTE: POST WELD HEAT TREATED AT 1150 DEG F. FOR 12 HOURS PER NB 4623	HEAT NUMBER / BHN / TO	
QUAN. ORD. / QUAN. SHIP.	NOTE: THIS MATERIAL HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE QUALITY SYSTEM PROGRAM AUDITED AND APPROVED BY TUBE TURNS ON 3/24/82 AS CONFORMING WITH THE REQUIREMENTS OF ASME SECTION III METALLIC MANUFACTURER-QUALITY SYSTEM PROGRAM (NCA 3800).	HEAT NUMBER / BHN / TO	S.W.E.C. PQC INSPECTED 173
QUAN. ORD. / QUAN. SHIP.		HEAT NUMBER / BHN / TO	
QUAN. ORD. / QUAN. SHIP.	NIAGARA MOHAWK POWER CORPORATION NINE MILE POINT NUCLEAR STATION - UNIT - 2 P.O. NO. [illegible] THERMAL TEE, MARK NO 2FWS *F.T.G.-1A-1B TUBE TURNS, LOUISVILLE, KY	HEAT NUMBER / BHN / TO	
QUAN. ORD. / QUAN. SHIP.		HEAT NUMBER / BHN / TO	
QUAN. ORD. / QUAN. SHIP.		HEAT NUMBER / BHN / TO	

CHEMICAL ANALYSIS

ITEM	HEAT NUMBER	STEEL MILL	C	MN	PHOS	SUL	SI	NI	CR	MOLY	CU	V	TYPE ANALYSIS / STEEL MIL CHECK—C	

MECHANICAL PROPERTIES

TYPE: BILLET HEAT ACCEPT—B, PRODUCT PROLONGATION—P, REPRESENTATIVE TEST BLOC

ITEM	TENSILE LB. PER SQ. IN.	YIELD LB. PER SQ. IN.	ELONGATION IN 2 INS.	REDUCTION IN AREA %	TYPE TEST	CHARPY IMPACT TEST: TYPE SAMPLE	°F	IMPACT TEST VALVES FT/LBS.			AVG.

THIS IS TO CERTIFY THAT THE REPORT RECEIVED ON MATERIAL FURNISHED ON THIS ORDER, ARE TO EFFECT, THAT IN ALL RESPECTS, SUCH MATERIAL MEETS REQUIREMENTS FOR SPECIFICATIONS AS INDICATED IN DESCRIPTION.

GULF COAST MACHINE & SUPPLY CO.

8-6-82

SOLD TO
SHIP TO

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT NUCLEAR STATION - UNIT 2
P.O. NO. NMP2-P307L
THERMAL TEE, MARK NO 2FWS *F.T.G.- IA-IB
TUBE TURNS, LOUISVILLE, KY

DETAILED ANALYSIS REPORT
Tube Turns Division

SA REV. (4-76)

LOUISVILLE, KY. 2/10/8

TUBE TURNS ORDER NO. 73506

CUSTOMERS' ORDER NO.

DESCRIPTION	HEAT OR LOT NO	
LINE C THERMAL SLEEVE INSERT	L7004	MATERIAL FORGED, HEAT TREATED, AND MECHANICALLY TESTED BY GULF COAST MACHINE AND SUPPLY CO. (CMTR ATTACHED). LOT # L7004 IS GULF COAST HEAT # 55285 MATERIAL ULTRASONICALLY EXAMINED, MACHINED TO SHAPE, AND MAGNETIC PARTICLE EXAMINED BY TUBE TURNS; NDE REPORTS ARE INCLUDED IN SECTION 5 OF DATA PACKAGE.

This report supplements the attached Material Manufacturer's Certified Material Test Report for the Heat(s)/Lot(s) of material described on this report for the above customer's order number:

The specific marking that will identify the material to the Certified Material Test Report is the Tube Turns symbol, size, specification, pressure rating, and heat or lot number.

Material complies with ASME Section III, Class 1, 1977 Edition, with Addenda through SUMMER 1979.

Material processed in accordance with the Quality System requirements of Subarticle NCA 3800; Quality System Certificate QSC-358 with expiration date of Jan. 8, 1985.

S. W. E. C. PQC INSPECTED-173

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

Quality Control

8901068

GULF COAST MACHINE & SUPPLY CO. INV. 01068

MILL TEST REPORT

REFERENCE NUMBER	DATE	CUSTOMER P/O NUMBER		SOLD TO
11876	12/01/82	46203		TUBE TURNS

ITEM	QUAN. ORD. / QUAN. SHIP.	DESCRIPTION	HEAT NUMBER / BHN	HEAT TREAT CYCLE
1	1 / 1 / C745E	ASME SA-350 LF2 SECT 3 CLASS 1 NORMALIZE ROUGH FORGING TO FINISH (PER TT-73506-CS-F-201 REV C) 10-3/4 OD X 6.813 ID X 12.375 LG TEST SPECIMEN FOR IMPACT TEST WERE TAKEN TRANSVERSE AT 1/4 T X T	HEAT NUMBER 55285 BHN ___ TO ___	NORMALIZED AT 1650 DEG F. FOR 5 HOURS AND AIR COOLED. L7004
	QUAN. ORD. / QUAN. SHIP.	MATERIAL HEAS BEEN MANUFACTURED IN ACCORDANCE WITH THE QUALITY SYSTEM PROGRAM AUDITED APPROVED BY TUBE TURNS ON 3/24/82 AS CONFORMING WITH THE REQUIREMENTS OF ASME SECTION III METALLIC MANUFACTURER QUALITY SYSTEM PROGRAM(NCA3800)	HEAT NUMBER BHN ___ TO ___	
	QUAN. ORD. / QUAN. SHIP.	LATERAL EXPANSION: 74 68 87 % SHEAR: 100 100 100	HEAT NUMBER BHN ___ TO ___	TEST SPECIMEN WAS POST-WELD HEAT TREATED AT 1150 DEG F. FOR 12 HOURS PER NB 4623.
	QUAN. ORD. / QUAN. SHIP.	THIS MILL TEST IS BEING SENT TO CORRECT THE ONE SENT TO YOU DATED 11/04/82.	HEAT NUMBER BHN ___ TO ___	
	QUAN. ORD. / QUAN. SHIP.	NIAGARA MOHAWK POWER CORPORATION NINE MILE POINT NUCLEAR STATION-UNIT 2 P.O. NO. NMP2-P0071 THERMAL TEE, MARK NO 2FWS *F.T.G.-IA-IB TUBE TURNS, LOUISVILLE, KY	HEAT NUMBER BHN ___ TO ___	S.W.E.C. PQC INSPECTED 173
	QUAN. ORD. / QUAN. SHIP.		HEAT NUMBER BHN ___ TO ___	

CHEMICAL ANALYSIS

TYPE ANALYSIS } STEEL MILL—CHECK—CK

ITEM	HEAT NUMBER	STEEL MILL	C	MN	PHOS	SUL	SI	NI	CR	MOLY	CU	V		TYP ANAL
1	55285	ARMCO	.17	1.35	.010	.006	.21							SM

MECHANICAL PROPERTIES

TYPE: BILLET HEAT ACCEPT—B, PRODUCT PROLONGATION—P, REPRESENTATIVE TEST BLOCK—

ITEM	TENSILE LB. PER SQ. IN.	YIELD LB. PER SQ. IN.	ELONGATION IN 2 INS.	REDUCTION IN AREA %	TYPE TEST	CHARPY IMPACT TEST: TYPE SAMPLE	°F	IMPACT TEST VALVES FT/LBS.			AVG.
1	78,000	54,000	35.00	76.00	P	V-NOTCH	+50	84	73	116	90
								LATERAL EXPANSION:	74	68	87
								% SHEAR:	100	100	100

THIS IS TO CERTIFY THAT THE REPORT RECEIVED ON MATERIAL FURNISHED ON THIS ORDER, ARE TO EFFECT, THAT IN ALL RESPECTS, SUCH MATERIAL MEETS REQUIREMENTS FOR SPECIFICATIONS AS INDICATED IN DESCRIPTION.

STEEL FAB. IN U.S.A.

GULF COAST MACHINE & SUPPLY CO.

11/30/82

SOLD TO
SHIP TO

NIAGARA [redacted]WK POWER CORPORATION
NINE MIL[redacted]NT NUCLEAR STATION-UNIT 2
P.O. NO. NMP2-P3071
THERMAL TEE, MARK NO 2FWS *F.T.G.-1A-1B
TUBE TURNS, LOUISVILLE, KY

DETAILED ANA[redacted]S REPORT
Tube Turns Division

[redacted]SA REV. (4-76)

LOUISVILLE, KY. 2/10/83

TUBE TURNS ORDER NO. 73506

CUSTOMERS' ORDER NO.

DESCRIPTION	HEAT TREATMENT	YIELD STRENGTH PSI	TENSILE STRENGTH PSI	PERCENT ELONGATION IN 2"	PERCENT REDUCTION IN AREA	C	MN	P	S	SI	NI	CR.	MO	CU	HEAT OR LOT NO.	MADE FROM MATERIAL OF CHEMISTRY AND TENSILE PROPERTIES OF SPECIFICATION
30" x 10" 2.625" MIN. WALL EXTRUDED OUTLET FITTING	2*	44300	70000	36	73	SEE ATTACHED REPORT FROM GULF COAST MACHINE AND SUPPLY CO.									L 6997FA	SA 350 LF2
SA 420 GRADE WPL6 ASME SECTION III, CLASS I 1977 EDITION WITH ADDENDA THROUGH SUMMER, 1979															HEAT 64459	

CHARPY V-NOTCH @ +50°F: 139-239-237 FT. LBS.
(10mm x 10mm) 65-100-100 % SHEAR FRACTURE
73- 74- 80 MILS LATERAL EXPANSION
SPECIMENS LOCATED 1/4 THICKNESS AND ORIENTED LONGITUDINALLY.

* TEST MATERIAL STRESS RELIEVED AT 1150°F FOR 12 HOURS AFTER PRODUCTION HEAT TREATMENT; PRODUCTION HEAT TREATMENT WAS NORMALIZE AT 1650°F FOR 3 HOURS AND AIR COOL.

FITTINGS HAVE A MAXIMUM HARDNESS OF 197 BHN.

MATERIAL PROCESSED IN ACCORDANCE WITH THE QUALITY SYSTEMS REQUIREMENTS OF SUBARTICLE NCA-3800; QUALITY SYSTEM CERTIFICATE QSC-357 WITH EXPIRATION DATE OF JANUARY 8, 1985.

THE SPECIFIC MARKING THAT WILL IDENTIFY THIS MATERIAL TO THE CERTIFICATION IS THE MATERIAL SPECIFICATION, TUBE TURNS SYMBOL, SIZE, AND LOT NUMBER.

S. W. E. C. PQC INSPECTED-173

* STANDARD ROUND TEST SPECIMEN
1 ANNEALED
2 NORMALIZED
3 NORMALIZED AND STRESS RELIEVED
4 STRESS RELIEVED
5 QUENCHED AND TEMPERED
6 HOT FORMED
7 HEAT TREAT PER ORDER SPECIFICATION

SUBSCRIBED AND SWORN TO BEFORE ME THIS

_____ DAY OF _____ 19____

NOTARY PUBLIC

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

S.D.VITATOE, QUALITY ASSURANCE

GULF COAST MACHINE & SUPPLY CO.

DWG. NO. 01068

MILL TEST REPORT

EFERENCE NUMBER	DATE	CUSTOMER P/O NUMBER		SOLD TO
V 10316	08/17/82	44801		TUBE TURNS

TEM	QUAN. ORD. / QUAN. SHIP.	DESCRIPTION	HEAT NUMBER / BHN	HEAT TREAT CYCLE
6	2 / 2 / 8058L	ASME SA-350 LF-2 SEC 3 CLASSI (PER TT-73506Y-CSF 200 REV.0) NORMALIZE ROUGH MACHINE TO FINISH 30.438 OD X 23.938 ID X 36 LG	64459 / 156 TO	NORMALIZED AT 1650 DEG F. FOR 5 HOURS AND AIR COOLEI
7	1 / 1 / 8059L	ASME SA-350 LF-2 SEC 3 CLASSI (PER TT-73506Y-CSF 200 REV.0) NORM. CHARPY V-NOTCH AND TENSION TEST AT +50 DEG F. 40 MILS EXP AFTER PWHT AT 1150 DEG F. FOR 12 HRS AND COOLED PER NB 4623 (RESULTS ONLY) FINISH MACHINE ~~4-1/2 SQ. 12 LG~~	64459 / 156 TO	SAME AS ABOVE PWHT AT 1150 DEG F. FOR 12 HOURS PER NB 4623.
		LATERAL EXPANSION: 75 79 83 PERCENT OF SHEAR : 90 80 70	TO	
		THIS MATERIAL HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE QUALITY SYSTEM PROGRAM AUDITED AND APPROVED BY TUBE TURNS ON 3/24/82 AS CONFORMING WITH THE REQUIREMENTS OF ASME SECTION III METALLIC MAUFACTURER QUALITY SYSTEM PROGRAM NCA 3800	TO	
		THIS IS A CORRECTED MILL TEST.	TO	
		TEST SPECIMENS FOR IMPACT TESTS WERE TAKEN TRANSVERSE AT 1/4 T X T. STEEL MADE IN U.S.A.	TO	

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT NUCLEAR STATION-UNIT 2
P.O. NO. NMP2-P30/L
THERMAL TEE, MARK NO 2FWS *F.T.G.-IA-IB
TUBE TURNS, LOUISVILLE, KY

CHEMICAL ANALYSIS

TYPE ANALYSIS } STEEL MILL—CHECK—CK

ITEM	HEAT NUMBER	STEEL MILL	C	MN	PHOS	SUL	SI	NI	CR	MOLY	CU	V		TYPE ANALY
5&7	64459	ARMCO	.15	1.20	.010	.005	.27	.11	.13	.04	.14	.033		SI

MECHANICAL PROPERTIES

TYPE: BILLET HEAT ACCEPT—B, PRODUCT PROLONGATION—P, REPRESENTATIVE TEST BLOCK—

ITEM	TENSILE LB. PER SQ. IN.	YIELD LB. PER SQ. IN.	ELONGATION IN 2 INS.	REDUCTION IN AREA %	TYPE TEST	CHARPY IMPACT TEST: TYPE SAMPLE	°F	IMPACT TEST VALVES FT/LBS.			AVG.	T
5&7	71,000	45,700	38.00	76.00	R	V-NOTCH	+50	123	118	105	115	1

S.W.E.C. PQC INSPECTED-178

THIS IS TO CERTIFY THAT THE REPORT RECEIVED ON MATERIAL FURNISHED ON THIS ORDER, ARE TO EFFECT, THAT IN ALL RESPECTS, SUCH MATERIAL MEETS REQUIREMENTS FOR SPECIFICATIONS AS INDICATED IN DESCRIPTION.

GULF COAST MACHINE & SUPPLY CO.

2-17-82

TRANS. #: 01068

50-048

MILLS ALLOY STEEL COMPANY

Twinsburg, Ohio 44087

CERTIFICATE OF CONFORMANCE

CUSTOMER

Tube Turns
29th & Garland
Louisville, Kentucky 40232

DATE 7-22-8[illegible]

OUR ORDER NO. 324[illegible]-H

YOUR ORDER NO. 44[illegible]

ITEM	ITEM DESCRIPTION	HEAT NUMBER (and letter code when applicable)
	ASME S/ 516 Grade 70 carbon steel plate	
1.	[illegible] x 31-1/2" x 64-1/2"	[illegible]

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT NUCLEAR STATION-UNIT 2
P.O. NO. [illegible]
THERMAL TEE, MARK NO 2FWS *F.T.G.-1A-1B
TUBE TURNS, LOUISVILLE, KY

S. W. E. C. PQC INSPECTED-173

This is to certify that the material furnished for your order and described above, complies to the requirements of the applicable material specifications, as reported on the attached copies of the manufacturer's certified material test reports, and meets all requirements of your purchase order.

(THE FOLLOWING APPLY AS INDICATED)

☐ This is to certify that the material supplied for your order conforms to the requirements of specification; _____.

☐ This is to certify that the material furnished for your order was supplied in accordance with our identification and verification program per the quality requirements of ASME Section III, Division 1, Subarticle NCA 3800/NA3700 and complies to the applicable requirements, as specified, of ASME Section III, Subsection_____, Class_____, _____ Edition _____ Addenda.

☐ This is to certify that repair by welding was not performed on the material described above.

☐ This is to certify that to the best of our knowledge this material, during the manufacturing processes, tests and inspections, has not come into direct contact with mercury or any of its compounds nor with any mercury containing devices employing a single boundary of containment.

☐ This is to certify that your order was furnished in accordance with the following specifications and/or procedures;

ISSUED IN PURCHASING

DATE 8-4

MILLS ALLOY STEEL COMPANY

BY _____

ASME QUALITY SYSTEM CERTIFICATE
(Materials) #QSC-324
Expires March 24, 1984

FORM OS 27 REV.A

1-2144

PURCHASER
3 . M[redacted] ALLOY STEEL COMPANY
P.[redacted] BOX 187
TWINSBURG, OHIO
44087

LUKENS STEEL COMPANY

COAT[redacted]E, PA. 19320

TEST[redacted]TIFICATE

DATE: 8/19/81

FILE NO. 5246-01-01

CONSIGNEE:

MILL ORDER NO.	CUSTOMER P.O.	
57974 2	1771-KSN	81381 WL L 81781

THIS MATERIAL HAS BEEN MANUFACTURED AND TESTED IN ACCORDANCE WITH PURCHASE ORDER REQUIREMENTS AND SPECIFICATION(S).

SA-516 GR. 70 S5 S14 ASME Code Sect II & III sub NCA 1980 ED thru Sum.1980 Add N1160 8/4/81 extended by letter to 9/15/81

BEND TEST O.K. HOMOGENEITY TEST

CHEMICAL ANALYSIS

MELT NO.	C	MN	P	S	CU	SI	NI	CR	MO	V	TI	AL	B		GRAIN SIZE
D1917	.19	1.00	.016	.021		.22									7-8

P0876

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT NUCLEAR STATION - UNIT 2
P.O. NO. NEP2-P307
THERMAL TUBE, MARK NO 2T WS *F.T.G.-IA-IB
TUBE TURNS, LOUISVILLE, KY

PHYSICAL PROPERTIES

MELT NO.	SLAB NO.	YIELD PSI X100	TENSILE PSI X100	% ELONG IN 8.	% R.A.	BHN	IMPACTS LV- 50 F (3/4 Size)			FRACTURE APPEARANCE % SHEAR	DESCRIPTION
D1917	6D	542	766	23			40	36	42	30-30-30	1- 3/8 X 96 X 240
					LATERAL EXPANSION IN INCHES		.034	.039	.036		
D1917	6E	534	728	25			90	92	90	80-80-80	1- "
					LATERAL EXPANSION IN INCHES		.086	.083	.084		
D1917	6GA	585	777	20			60	58	58	50-50-50	2- "
					LATERAL EXPANSION IN INCHES		.057	.055	.054		

Plates and tests norm. 1635-1675°F., held 1/2 hr. per inch min. and air cooled.

S. W. E. C. PQC INSPECTED 173

QA REVIEWED M. A. J. CO.

8/24/81

We hereby certify the above information is correct.

SUPERVISOR TESTING H. H. Kline

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

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

DATA REC. 01068

1. Fabricated by Tube Turns, Louisville, Ky. (Name and Address of Fabricator) Order No. 73506

2. Fabricated for Stone & Webster, Cherry Hill, NJ (Name and Address) Order No. NMP2-P307L-3

3. Owner Niagara Mohawk Power Corp. 4. Location of Plant Scriba, N.Y.

5. Piping System Identification Feedwater (Brief description of intended use, main coolant etc.)

(a) Drawing No. 73506Y-D2.1 Prepared by Tube Turns

(b) National Board No. 132

6. The material, design, construction, and workmanship complies with ASME Code Section III, Class 1

Edition 1977, Addenda Date Summer 1979, Case No. NA

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)

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT NUCLEAR STATION - UNIT 2
P.O. NO. NMP2-P307L
THERMAL TEE, MARK NO 2FWS *F.T.G.-IA-IB
TUBE TURNS, LOUISVILLE, KY

7. Shop Hydrostatic Test NA psi.

8. Description of piping inspected Serial No. 14826 (include — mark no. — material spec. — nom. pipe size — schedule or thickness — length — fittings — flanges, etc.)

A - E. O. F - 30" x 10" 2.625" M.W - SA420-WPL6

B - Reducer - 30" x 24" 1.804" MW - SA350-LF2

C - Thermal Sleeve - 10" x 8" .793" MW - SA350 - LF2

D - Flued Head - 30" x 24" 1.804" MW - SA350-LF2

E - Thermal Sleeve Run - 24" .375" Nom. Wall - SA516 Gr. 70

S. W. E. C. PQC INSPECTED-173

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 12/14/82 Signed Tube Turns (Fabricator) By [signature]

Certificate of Authorization Expires June 16, 1984 Certificate of Authorization No. N-1111

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 KY and employed by HSBI&I Co. of Hartford, CT have inspected the piping described in this Data Report on 12-14 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.

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 12-14, 1982 Commissions NB8130 KY593

[signature] Inspector 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".

Reproduced in U.S.A. (2/73)

0 5 4 / 4

FORM NPV-1 N CERTIFICATE HOLDERS' DATA REPORT FOR NUCLEAR PUMPS OR VALVES*

As Required by the Provisions of the ASME Code, Section III, Div. 1

1. Manufactured by VELAN VALVE CORPORATION, AVENUE 'C', WILLISTON, VERMONT
(Name and Address of N Certificate Holder)
2. Manufactured for NIAGARA MOHAWK POWER CORP, OSWEGO NEW YORK
(Name and Address of Purchaser or Owner)
3. Location of Installation NINE MILE POINT NUCLEAR STATION RTE 104 OSWEGO NEW YORK
(Name and Address)
4. Pump or Valve GATE VALVE. Nominal Inlet Size 24" (inch) Outlet Size 24" (inch)

	(a) Model No., Series No. or Type	(b) N Certificate Holder's Serial No.	(c) Canadian Registration No.	(d) Drawing No.	(e) Class	(f) Nat'l. Bd. No.	(g) Year Built
(1)	B24-7054P-02TS	383	N/A	P3-7026-N13 REV E	1	N/A	1981
(2)							
(3)							
(4)							
(5)							
(6)							
(7)							
(8)							
(9)							
(10)							

INFORMATION ONLY

G. W. E. PO 1 C INSPECTED 230

5. N/A
(Brief description of service for which equipment was designed)

6. Design Conditions 2200 (Pressure) psi 450 (Temperature) °F or Valve Pressure Class N/A (1)
7. Cold Working Pressure 2250 psi at 100°F.
8. Pressure Retaining Pieces

Mark No.	Material Spec. No.	Manufacturer	Remarks
(a) Castings			H/C
		TRANSMITTAL NO. 01083	
(b) Forgings			H/C
BODY	ASME-SA-105	CAMERON IRON WORKS	L-5968
BONNET	ASME-SA-105	GALT-BRITISH FORGE	H-7721
WEDGE	ASME-SA-105	GALT-BRITISH FORGE	H-7721
THRUST RING	ASME-SA-182-F6	GALT-BRITISH FORGE	J-3609 (R156) VELAN CODE

(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.

(10/77) This form (E00037) may be obtained from the Order Dept., ASME, 345 E. 47th St., New York, N.Y. 10017

Mark No.	Material Spec. No.	Manufacturer	Remarks
(c) Bolting			
(d) Other Parts			
BODY DRAIN	ASME SA106 GR B	GUYON ALLOYS INC.	P86

S. W. E. C. QA INSPECTED 230

INFORMATION ONLY

9. Hydrostatic test 3375 psi. Disk Differential test pressure N/A 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. 1, Edition 1974, Addenda WINTER 1975 (Date), Code Case No. N/A. Date July 30, 1981

Signed VELAN VALVE CORPORATION (N Certificate Holder) by [signature]

Our ASME Certificate of Authorization No. 2117 to use the N (N) symbol expires JUNE 9'84 (Date).

CERTIFICATION OF DESIGN

Design information on file at VELAN VALVE CORPORATION

Stress analysis report (Class 1 only) on file at VELAN VALVE CORPORATION

Design specifications certified by (1) PETER D. VISALLI

PE State NEW YORK Reg. No. 050821

Stress analysis certified by (1) A.S.ISBITSKY

PE State PROVINCE QUEBEC Reg. No. 22115

(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 CT and employed by LUMBERMANS MUTUAL & CASUALTY CO. of LONG GROVE, ILLINOIS have inspected the pump, or valve, described in this Data Report on 7-30 19 81, and state that to the best of my knowledge and belief, the N Certificate Holder 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 7-30 19 81.

Frank Araujo (Inspector) Commissions CT528 (Nat'l Bd., State, Prov. and No.)

TRANS.# 01083 CMS 12/82

0 5 4 / 4

CERTIFICATE OF TESTS

W810383

Cameron B295

IRON WORKS, INC.

P. O. BOX 1212
HOUSTON, TEXAS 77001

VELAN ENGINEERING LTD.
LARGE STEEL VALVE DIVISION
2125 WARD AVENUE
MINTREAL, QUEBEC,
CANADA

ASME QUALITY SYSTEM CERTIFICATE
(MANUFACTURER) NO. N-1261 EXPIRES 10-27-81

ALL OPERATIONS WERE PERFORMED BY CIW & MEET THE RQUIREMENTS
OF THE MATERIAL SPECIFICATION AND SEC.III,DIV.1.

DATE

CUSTOMER ORDER NO.	C.I.W. SALES ORDER NO.	SPECIFICATION
W00053	F-17795-01	Carbon Steel in accordance W/ASTM A105/ASME-SA105 Asme Sec. II Part A 1974 and current Addenda W/Charpy V-Notch Impact tests per Velan Spec. 8909-21 Rev. B and VEL-PS009 Rev. 6

CIW PART NO. DESCRIPTION OF MATERIAL: 66301-03
24" L.P. Valve Body Forging
Dwg.#8909-21 Rev. B

HEAT NO.	LOCATION OR SERIAL NO.	CHEMICAL ANALYSIS C	MN	P	S	SI
L 5968		.25	.94	.010	.019	.23

I certify that the contents of this report are in compliance with the requirements of specification ASME SA 105 edition 1974 and addenda through WINTER 1975 except as noted

VELAN VALVE CORP

Per Mgr. of Q. C. Documentation

INFORMATION ONLY

HEAT NO.	QUANTITY OR SERIAL NO.	TEST LOC.	MECHANICAL PROPERTIES TENSILE PSI	YIELD PSI .2%	% ELONG 2"	% RED AREA	LOT NO.
L 5968	2	TB	79,000	50,300	27.1	52.6	0016

V-Notch Impact Test Results at 40°F.

Ft.Lbs.	Lat.Exp.	%D/F
54.0	43 MILS	50%
37.0	29	45
61.0	48	65

0016

ANI/AI REVIEW
INITIAL
DATE 7/30/81

Forg. Ser.#	Test Lot#	Forging Hardness
0016	0016	163 BHN
0017	0016	156

Taken from forged-down bar, tangentially oriented, radial notches, 3/4" - 1-1/2".

During the manufacture, test and inspection of this product, it did not come in contact with Mercury or any of it's compounds, nor with any Mercury containing device employing a single boundry ofcontainment.

HEAT TREATMENT: 1565°F. HELD 1.75 HR. AT TEMP. WATER QUENCHED.
1200°F. HELD 7.00 HRS. AT TEMP. AIR COOLED.

Heat treat furnace report attached.

ANI/AI REVIEW
INITIAL
DATE 7/30/81

S.W.E.C. PQA INSPECTED

SUBSCRIBED AND SWORN TO BEFORE ME THIS
2nd DAY OF Oct. 1980.

NO PARK THURSTON
G. A. THURSTON
Notary Public in and for Harris County, Texas
My Commission Expires June 1, 1981

CIW-429-A

VEL. INSP. 72

OCT 27 1980

VERIFY THESE TESTS TO BE CORRECT AS CONTAINED IN THE RECORDS OF THE COMPANY.

C. M. Hundl
METALLURGICAL REPRESENTATIVE

A6301/gt

TRANSMITTAL NO. 0 1 0 8 3

W810383

GALT-BRITISH FORGE COMPANY

204 BEVERLY STREET — CAMBRIDGE (GALT), ONTARIO N1R 3Z8

REVISED

C493

Velan Valve

2 pcs. 12" O.D. x 10½" thick

This material was used to manufacture BODDET VELAN VALVE CORP. Per Mgr. of Quality Assurance

Specification ASME SA105

P.O. No. WO7025

Dwg. No.

Mill: Atlas Steels

Part No. 7989-021-002

Certificate of Test

NORMALIZED

W. E. C. INSPECTED 230

CHEMICAL ANALYSIS

HEAT NO.	C	MN	P	S	SI	CR	MO	NI	CU			
H7721	.24	.89	.008	.002	.18							

PHYSICAL PROPERTIES

Heat No.	Yield Strength P.S.I. 0.2% Offset	Tensile Strength P.S.I.	Elong. %	Red. of Area %	Brinnell Hardness
T3321 H7721	53,100	76,260	33.6	62.8	137

HEAT TREAT DATA

1. Furnace No. 1.
2. Charge 600° F.
3. 190 °F/hr.
4. Hold 1650 °F/ 12 hrs.
5. Air cool.
6. Furnace No.
7. Charge
8. °F/hr.
9. Hold °F/
10.

ANI REVIEW IN: 74 DA: 7/30/81

Charpy V-Notch Impact Test at + 40 °F

	Impact Ft. Lbs.	Lateral Expansion Mils	Shear Fracture %
1.	71.5	57	45
2.	74.5	62	45
3.	96.0	72	60

ASME B. & P.V. Code Section 2 Part A & Sect. 3 1974 Edition & Addenda through Winter 1975

Test specimens from 11" x 11" Block

Orientation & location per NB 2223.3

ANI/AI REVIEW INIT: 74 DA: 7/30/81

1. Material Identification Marking: P.O. No. WO7025 Part No. 7989-021-002 Grade SA105 Heat No. H7721 G.B.F.
2. Material produced according to our Q.A. Manual approved by Velan Engr. Revision level 5 - November 28, 1980.
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. 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.

INFORMATION ONLY

REVISED DATE February 20, 1981

Date Jan. 29, 1981

FEB 23 1981

Galt-British Forge Company
Quality Assurance

TRANSMITTAL NO. 01083

U 5 4 / 4

W810383 REVISED

GALT-BRITISH FORGE COMPANY

204 BEVERLY STREET — CAMBRIDGE (GALT), ONTARIO N1R 3Z8

C494

Velan Valve 2 pcs 3/8" thick

This Material was used to manufacture WEDGE VELAN VALVE CORP.

Certificate of Test Per Mgr. of QC Documentation

Specification ASME SA105 P.O. No. WO7025

Dwg. No. Mill: Atlas Steels

Part No. CGHF-DIA-002

NORMALIZED

S. W. E. C. INSPECTED 230

CHEMICAL ANALYSIS

HEAT NO.	C	MN.	P	S	SI	CR	MO	NI	CU			
H7721	.24	.89	.008	.002	.18							

PHYSICAL PROPERTIES

Heat No.	Yield Strength P.S.I. (.2% Offset)	Tensile Strength P.S.I.	Elong. %	Red. of Area %	Brinnell Hardness
T3308 H7721	51,700	74,600	35.2	66.5	156/163

HEAT TREAT DATA

1. Furnace No. 5.
2. Charge 400° F.
3. 155 °F/hr.
4. Hold 1650 °F/ 10 hrs.
5. Air cool.
6. Furnace No.
7. Charge
8. °F/hr.
9. Hold °F/
10.

ANALYSIS REVIEW INITIAL DATE 7/30/8

Charpy V-Notch Impact Test at + 40 °F

	Impact Ft. Lbs.	Lateral Expansion Mils	Shear Fracture %
1.	89.0	69	55
2.	96.5	71	60
3.	114.0	76	70

ASME B. & P.V. Code Section 2 Part A & Sect. 3 1974 Edition & Addenda through Winter 1975

Test specimens from 7 7/8" x 7 7/8" Block

Orientation & location per NB 2223.3

1. Material Identification Marking: P.O. No. WO7025 Part No. CGHF-DIA-002

Grade SA105 Heat No. H7721 G.B.F.

2. Material produced according to our Q.A. Manual approved by Velan Engr. Revision level 5 - November 28, 1980.
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. 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.

INFORMATION ONLY

REVISED DATE February 20, 1981

VEL. INSP. 73 FEB 25 1981

Galt-British Forge Company
Quality Assurance

Date Jan. 29, 1981

TRANSMITTAL NO. 01083

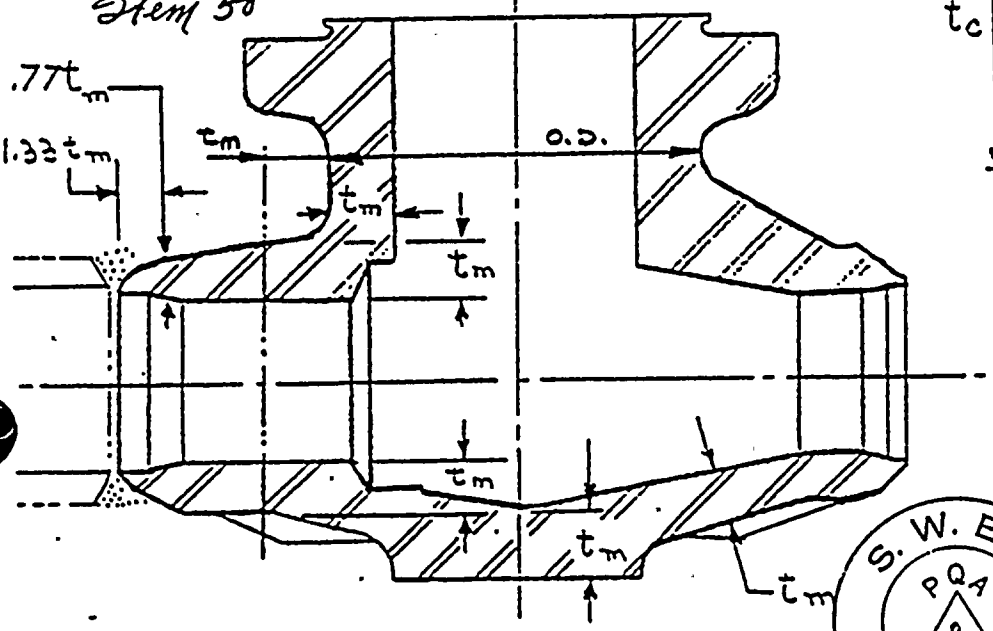
VELAN ENGINEERING COMPANIES	Q.C. PROCEDURE
WALL THICKNESS INSPECTION W810383	VEL-QC-665A REV.:

VALVE TYPE	PS Gate Valve	(BODY) MIN. WALL THICKNESS REQ'D (t_m)	2.280
VALVE SIZE	24"	PRESS. SEAL BONNET MIN. WALL THICKNESS (t_1)	
PRESSURE RATING	900#	PRESS. SEAL BONNET MIN. WALL THICKNESS (t_m)	
NUCLEAR CLASS	1	PRESS. SEAL COVER MIN. WALL THICKNESS (t_c)	
MATERIAL	C/S		
(BODY) SERIAL NO.	17		
BONNET SERIAL NO			

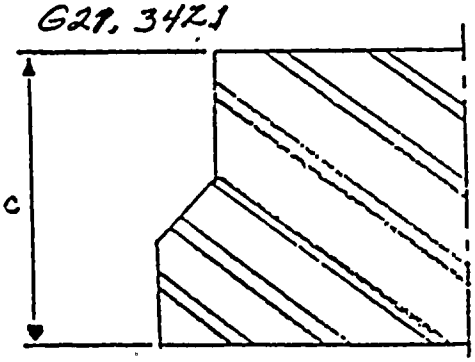
G11. 3585
G21. 3421

Nia Mohawk
P3. 7026-N
Item 50

PRESSURE SEAL CONFIGURATION SHOWN



GATE VALVE BODY



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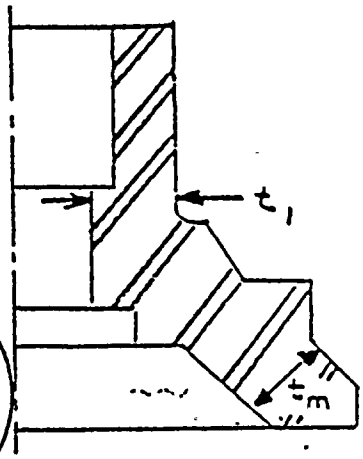


GATE VALVE BONNET

S. W. E. C. PQA INSPECTED 230

TRANSMITTAL NO. 01083

ACTUAL MEASUREMENTS (FINISHED/MACHINED CONDITION) 1.756 @ 3.032

	t INLET (t_m)	t OUTLET (t_m)	t NECK (t_m)	t BOWL (t_m)	t COVER (t_c)	t BONNET (t_m)	t BONNET (t_1)	t SOCKET (.77 t_m) INLET	t SOCKET (.77 t_m) OUTLET
A	3.375	3.375	3.812	3.380				2.687	2.750
B	3.437	3.500	3.750	3.380				2.687	2.750
C	3.500	3.562	3.812	3.380				2.687	2.750
D	3.562.	3.375	3.750	3.380				2.687	2.750

WTR 2/13/81 Dmp

INSPECTOR	INSP. 78	DATE	JUL 17 '81
ACCEPTABLE	/	REJ.	0

Values above are lowest measured in each four quadrants. For end connections, quadrants start at top and progress clockwise, facing the end. For neck and bonnet, quadrants start at side over manufacturer's symbol and progress clockwise facing downstream.

NOTE: 0.77 t_m minimum measured at a distance of 1.33 t_m from weld end.

FORM # VL-96-04-80

INFORMATION ONLY

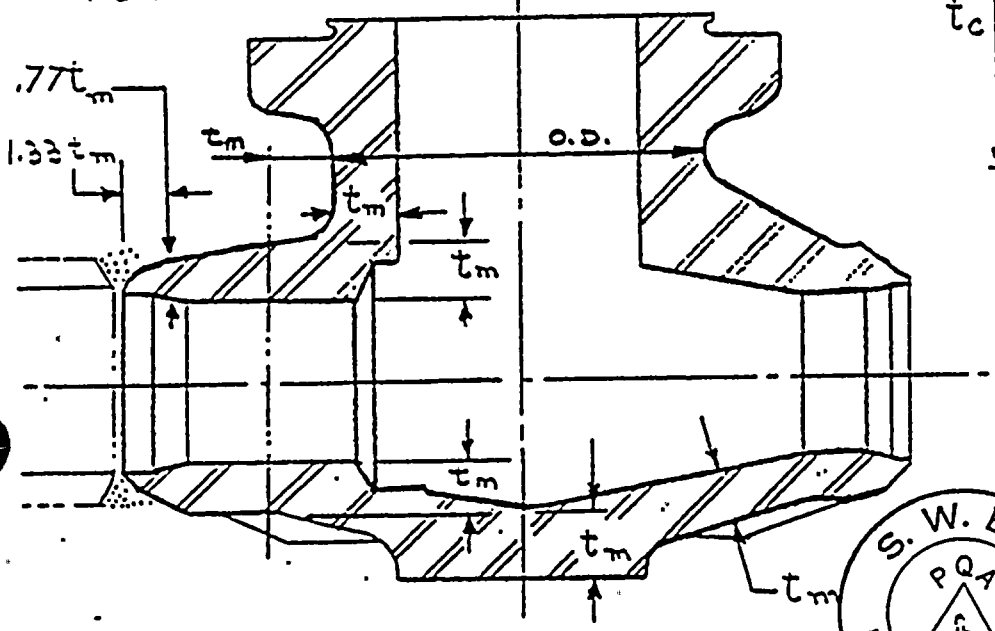
VELAN ENGINEERING COMPANIES	Q.C. PROCEDURE
WALL THICKNESS INSPECTION W810383	VEL-QC-665A REV.:

VALVE TYPE	PS Hat, rabe	BODY MIN. WALL THICKNESS REQ'D (t_m)	
VALVE SIZE	24"	PRESS. SEAL BONNET MIN. WALL THICKNESS (t_1)	3.810 Min
PRESSURE RATING	900#	PRESS. SEAL BONNET MIN. WALL THICKNESS (t_m)	2.470 MIN.
NUCLEAR CLASS	1	PRESS. SEAL COVER MIN. WALL THICKNESS (t_c)	
MATERIAL	C/S		
BODY SERIAL NO.			
BONNET SERIAL NO	W2589		

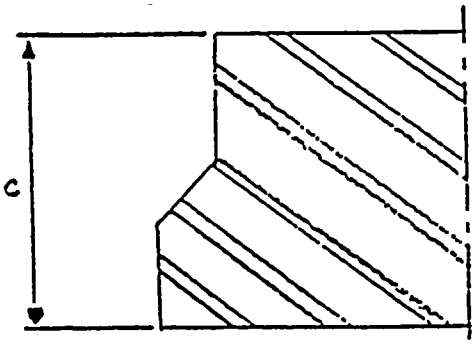
Nea Mohawk. P37026N.

G11.3863

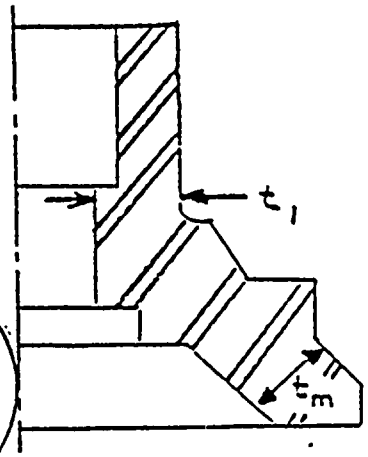
PRESSURE SEAL CONFIGURATION SHOWN



GATE VALVE BODY



CHECK COVER



GATE VALVE BONNET

S.W.E.C. PQA INSPECTED 230

TRANSMITTAL NO. 01083

ACTUAL MEASUREMENTS (FINISHED/MACHINED CONDITION)

	t INLET (t_m)	t OUTLET (t_m)	t NECK (t_m)	t BOWL (t_m)	t COVER (t_c)	t BONNET (t_m)	t BONNET (t_1)	t SOCKET (.77 t_m) INLET	t SOCKET (.77 t_m) OUTLET
A						2.500	3.865		
B						2.500	3.865		
C						2.500	3.865		
D						2.500	3.865		

INSPECTOR	VEL INSP. 24	DATE	APR 24 '81
ACCEPTABLE	1	REJ.	0

Values above are lowest measured in each four quadrants. For end connections, quadrants start at top and progress clockwise, facing the end. For neck and bonnet, quadrants start at side over manufacturer's symbol and progress clockwise facing down.

NOTE: 0.77 t_m minimum measured at a distance of 1.33 t_m from weld end.

FORM # VL-96-04-80

INFORMATION ONLY

TRANS. NO. 00245

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 Feedwater (Brief description of intended use, main coolant etc.)

(a) Drawing No. NM-47-112X 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 4713-2. FWS -50-1-112 (include — mark no. — material spec. — nom. pipe size — schedule or thickness — length — fittings — flanges, etc.)

See Attached Sheets

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 4-9-82 Signed * By [signature]
(Fabricator)

* 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 4-9 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 4-9, 1982 Commissions V.A. 321
(Inspector) 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".

9. Description of Field Fabrication

10. Field Hydrostatic Test _____ psi.

We certify that the field fabrication of the described piping conforms with the requirements of SECTION III of the ASME BOILER AND PRESSURE VESSEL CODE, Class _____, Edition _____, Addenda Date _____ Case No. _____

Date _____, 19____ Signed _____ (Fabricator) By _____ (Representative)

Our Certification of Authorization to use the _____ Symbol Expires _____ 19____

Certificate of Authorization No. _____

CERTIFICATE OF FIELD FABRICATION 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 _____ and employed by _____ of _____ have compared the statements in this Manufacturer's Data Report with the described piping and state that the parts referred to as data items _____, not included in the certificate of shop inspection have been inspected by me and that to the best of my knowledge and belief the manufacturer has constructed this piping in accordance with the applicable section of the ASME CODE SECTION III.

By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the piping described in this Manufacturer's 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 _____ 19____

_____ Inspector

Commissions _____ National Board, State, Province and No.

TRANS. #09- 0 0 0 4 0

2 of 3

FORM-EN-101 REV. 8/7
Q. A. FORM N2.1C

ITT Grinnell Industrial Piping Inc.

KERNERSVILLE, N. C.

SH 1 of 2 4-9-82

CONT. NO. 7100

LOCATION NIAGARA MOHAWK SCRIBA NY

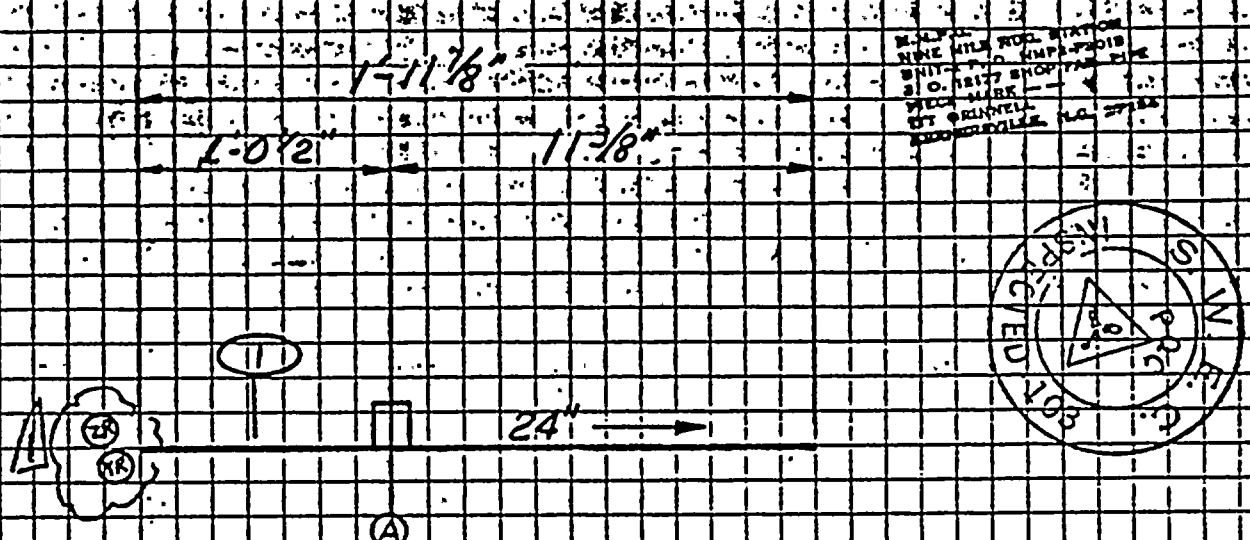
DRW'N UH 2-14-79 CHK'D ALB 2-14-79

1 REV. CAR-2-3-82 CHK'D DB 2-3-82

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 MATERIAL

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

ENDS MACH. PER SK# NM-D2

ASME CODE APPROVED

REVISION

CLEANLINESS CLASS C

QUALITY CONTROL

CLASS NUC. 1 LINE SPEC. 1511 APP. CODE ASME III NO. REQ'D 1

Radiography (RT)		Special Marking		Preheat	✓	Cert. of Compliance	
Magnetic Particle (MT)	✓	Special Cleaning		Heat Treat	✓	Mill Test Reports	✓
Liq. Penetrant (PT)		Painting		Code Stamp	✓	Data Reports	✓

SYSTEM FEEDWTR. FAB. SPECS. US-137

REF. DRW'G NO. 47-13 (EP-17D7, 17E7) PRESS. 2200 PSI. TEMP. 450 °F. WT. 963 LBS.

PIECE MARK 47-13-2-FWS-50-1-112 REGISTER NM 1417 1 1 1 1 2 X

3

ITT GRINNELL INDUSTRIAL PIPING, INC.

FORM EN-102 REV. 6/78
Q. A. FORM NO. 1

Sheet 4 of 5

CONT. NO. 7100
NAME NIAGARA MOHAWK
LOCATION SCRIBA NY

MATERIALS RECORD
PRODUCTION PLANNER

REGISTER N.M 4.7 1.1.2.X
REV. NO. BY DATE

PIECE MARK 4.7.-1.3.-2.-F.W.S.-5.0.-1.1.-1.1.2.

ITEM	DESCRIPTION / PART NUMBER/STOCK NUMBER		FT/EA/PD	IN	FRACTIONS	WHSE. LOCATION	QUALITY CONTROL: MEAS NUMBER	DOCUMENT	IN PROCESS	INSPECTION
	24" SCH 140 SMLS PIPE					ASME SA-106-C 70C543	SN 4917-B13			
1	NM-51-	F	1	11	7/8	70C543 ~~SN 4917-B13~~	70C543	P.381 8AM		0129 1-26-82
	24" x 3/4" 6000# SOCLET					ASME-SA-105				
2	NM-31.80	F	1			GL-44-10	P-703	9WE.183 8AM		
	1/2" TUBEMOWELL TAG									
	- - -	E	1							
	1/2" L/A E. P.									
	- - -	E	1							
	24" C/S MACH'D. E. P.									
	- - -	E	2							
	- - -									
	STOR & CONT OF ELECTRODES									
	- - -									
	TRAVELER									
	- - -									
	M. T. R.									
	- - -									
	DOCUMENTATION									
	- - -									
	TRANSFER TRACE									
	- - -									

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

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 PAR 1168
PIECE MARK —
ITT GRINNELL
KERNERSVILLE, N.C. 27284

INSPECTED 103 P.O.C. N.M.P.C.

DELIVERED MAR 1 1982

GATHERED DEC 1 1981 05

CODE ASME III
CUST LINE SPEC 1.5.1.1
MFG CODE H P
JOB SPEC JS-137-13
BATCH
SIZE 2 4

UNIT PRICE P.O. | DIS VENDOR | NET
TOTAL
ACCOUNTING

SHOP COPY LAYOUT

ITT Grinnell Industrial Piping, Inc. — TRAVELER

[redacted] NUC. STATION
[redacted] O. NMPS-P3018
[redacted] 77 SHOP FAB. PIPE
PIECE MARK — —
ITT GRINNELL
KERNERSVILLE, N.C. 27284

SHEET 1 OF 2

S.C. 3/10/82

PROJECT NIAGARA CONTRACT 7100 PC. MK. # 47-13-2-FWS-JS-1-112 REG. # NM 47 1 1 1 2 X

SPECIFICATION JS-137-13

WELD	FIT-UP/PREHEAT WELDER I.D.	FIT-UP/PREHEAT WELD MAT'L	FIT-UP/PREHEAT Q.C. INSP.	MAT'L	ROOT WELDER I.D.	ROOT WELD MAT'L	INTERMEDIATE WELDER I.D.	INTERMEDIATE WELD MAT'L	FINAL WELDER I.D.	FINAL WELD MAT'L	FINAL Q.C. INSP.	RT DATE Q.C.	RT DATE CUST.	MAG ROOT	LP FINAL
A	PROC.	6-4			PROC.	6-4	PROC.	2-3	PROC.	2-3					
	S113	NAGAC	Q164		C382	NAGAC	C382	NAEAJ	C382	NAEAN	Q164				NITE
DATE	3-12-82		3-12-82		3-17-82		3-17-82		3-17-82		3-17-82			4/5/82	
CODE PLATE	PROC.	6-4			PROC.		PROC.		PROC.						
	S113	NAGAC	Q164												NITE
DATE	3-12-82		3-12-82											4/5/82	
YR	PROC.				PROC.		PROC.		PROC.	2-3		3/27/82	—	4/3/82	
									C535	NAEAL	Q168				NITE
DATE									2-9-82		2/9/82			4/5/82	
ZR	PROC.				PROC.		PROC.		PROC.	2-3		3/27/82	—	4/3/82	
									C535	NAEAL	Q168				NITE
DATE									2-9-82	3-10-82 GJ	2/9/82			4/5/82	
Add metal to ~~XR~~ YR	PROC.				PROC.		PROC.		PROC.	~~3-2~~ 2-3		3/27/82	—	4/3/82	
	YR								C535	~~NAEAN~~ NAEAN	Q167				NITE
DATE									3-10-82		3-10-82			4/5/82	

GJ 3-10-82

STRESS DATE 4-2-82 HAT 4-9-82	FINAL INSP 4/6/82 Q158	SPECIAL OPERATIONS: C DIM. N/A	Q.C. DOC. APPROVAL 4-9-82
SQUARE UP Q167 S112 4-5-82 4-5-82	N/A	WALL THK.	N/I STAMP/DATA REPORT 4-9-82
CLEAN UP 4-6-82 JS-137-13	CUST INSP MM 4/7/82	OTHER	CUST DOC. APPROVAL

TRANS. #004 0 0 8 4 0

Form HA 111

ITT [illegible]nell Industrial Piping, Inc. TRAV[illegible] SHEET 2 O[illegible] 2

PROJECT Niagara CONTRACT 7100 PC. MK. #47-13-2-FWS-50-1-112 REG. # NM | 47 | [illegible] | 1123

WELD	FIT-UP/PREHEAT			BACKING MAT'L	ROOT		INTERMEDIATE		FINAL			RT DATE			MAG LP	
	WELDER I.D.	WELD MAT'L	Q.C. INSP.		WELDER I.D.	WELD MAT'L	WELDER I.D.	WELD MAT'L	WELDER I.D.	~~WELD~~ MAT'L	Q.C. INSP.	Q.C.		CUST.	ROOT	FINAL
~~Add~~ metal ~~to~~ ZR	PROC.				PROC.		PROC.		PROC.	~~2-2-3~~						
									~~C535~~	~~NAGAN~~						
DATE									~~3-10-82~~							
ADD metal to ZR	PROC.				PROC.		PROC.		PROC.	2-3		3/27/82	-	4/3/82		N116
									C-535	NAGAN	Q167					
DATE									3-10-82		3-10-82				4/5/82	
	PROC.				PROC.		PROC.		PROC.							
DATE																
	PROC.				PROC.		PROC.		PROC.							
DATE																
	PROC.				PROC.		PROC.		PROC.							
DATE																
	PRC				PROC.		PROC.		PROC.							
DATE																
	PROC.				PROC.		PROC.		PROC.							
DATE																

N.M.P.C.
NINE MILE NUC. STATION
UNIT-2 P.O. NMP2-P001H
J.O. 12177 SHOP FAB. PIPE
PIECE MARK ——
ITT GRINNELL
KERNERSVILLE, N.C. 27284

INSPECTED 103

TRANS. #04 00240

6

Req. No. _____ In-Process ☐ **RADIOGRAPHIC INSPECTION REPORT** Standard Hours _____

ITT GRINNELL INDUSTRIAL PIPING, INC. Repair ☐ Date 3 22 82

Form N6.2A

Register No.	Piece No.	Weld No.	Pipe Size and Schedule	Welder No.
AM 47 - - - - 112X	47-13-2-1-WS-50-1-112X	ZL	24" S140	BC535

		Film Interval	LP	LF	S	P	BT	UC	C	CR	T	HL	Comments	Interpretation ACC.	Interpretation R
Views	2														
Source	IR192														
Source Curies or KVP & MA	90	A-D												↑	
Source Size or Focal Spot	1X1	D-G												↑	
TECHNIQUE: Source Film Distance	12"														
TECHNIQUE: Time	3:30														
TECHNIQUE: Actual Weld Thickness	2.062														
TECHNIQUE: Penetrameter	30														
TECHNIQUE: Sensitivity	2T														
Shim Thickness	—														
Film Size	7X17												Note		
Film Type	.55												Build up A-G only		

INTERPRETATION

Viewing Technique: Single ☒ Double ☐

Screen		
	Front	020
	Back	020
Development	68° Kodak 6 min.	
	Automatic	X

Welding Procedure

Root

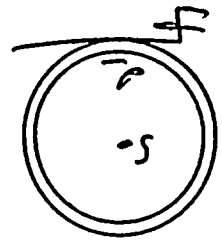
Intermediate

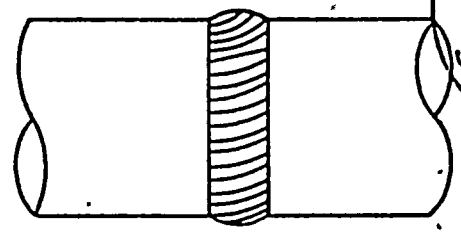
Balance 2-3

LP — Lack of Penetration
LF — Lack of Fusion
S — Slag
P — Porosity
BT — Burn Thru
UC — Under Cut
C — Crater
CR — Crack
T — Tungsten
HL — High Low

Severity
A — Acceptable
R — Rejectable
B — Borderline

N.M.P.S.
NINE MILE RUG. STATION
UNIT-2 P. O. NMP2-P301R
P. O. 12177 SHOP FAB. PIPE
PIECE MARK — —
ITT GRINNELL
KERNERSVILLE, N.C. 27284





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

Radiographer — Date 3-26-82 By [signature]

Interpretation — Date 3-27-82 By [signature]

Approval — Date 3-27-82 By [signature]

Customer Niagara Mohawk

Contract 7100

Inspection Standard RTP-3-1

Authorized Insp. — Date ✓ By ✓

Customers Approval — Date 4-3-82 By D. William Lowell III

Location

Job No.

Acceptance Standard

TRANS. #09 0 0 2 4 3

7

ITT GRINNELL INDUSTRIAL PIPING, INC.

MAGNETIC PARTICLE EXAMINATION REPORT

Customer N.M. Register Number NM-47-112L

Contract/PO No. 7100 Piece Mark 47-13-2-FWS-50-1-112

System F.W.

Equipment Type: DC Prods _____ AC Yoke ✓ Serial No. G-2

Examination Method Dry Powder Continuous

Procedure MTP-1-1 Acceptance MTA-1-0

Item Identification Weld/Serial/Ht. No.	Size and Thickness	Area Examined. Indicate, Root, Intermediate, Final Weld, or Material as Applicable	Interpretation Accept	Interpretation Reject
1R, 2R	24" S-40	Build-up	✓	
A	3/4" 6000#		✓	
CODE PLATE		FILLET	✓	

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

N.M.P.C. INSPECTED 103

Comments

Examination Performed by T. Smith Date 4/5/82
NDT Level II

Interpretation Performed by T. Smith Date 4/5/82
NDT Level II

MAGNETIC PARTICLE EXAMINATION REPORT

8

ITT Grinnell Industrial Piping, Inc.

1898

* Temperature variation within any 15 foot interval of weld length shall not exceed 250 degrees F

FORM N8.1A

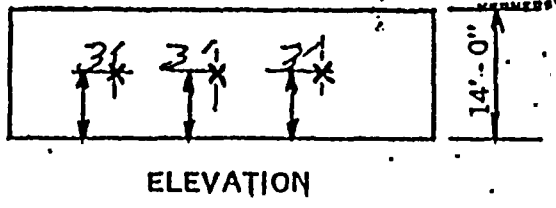
FURNACE LOAD SHEET

Date 11-2-82

REGISTER NO.	TYPE MATERIAL	WEIGHT	TEMP. REQD.*	RATE OF HT PER HR	HOLD TIME	RATE OF COOLING PER HOUR	CODE	PIPE SIZE
NM-47-112X	#106C	963	1150°±50	170°	2½ hrs	170° Scott		24"-S140
NM-47-167	11-B	580	"	fast 800°		fast	B31.1	8"-S160
NZ-7-56	KC65	13240	"	up to 1150°		800° and	"	30"-1" NW
OS-19-73	#106	480	"	300°		600°	"	16"-S120
CH-85-148	11-B	1156	"	fast			B31.3	6"-XXS
CH-81-81	"	7910	"	600°		600°	"	16"-S140
CH-81-177	#53B	1775	"	800°			"	16"-S160
CH-81-725	#106B	1189	"				"	10"-"
CH-81-914	"	1314	"				"	10"-"
CH-81-1006	"	1153	"				"	8"-1" NW
CH-81-1708	"	1248	"				"	8"-S160
CH-81-1969	"	685	"				"	8"-1" NW
CH-94-513	#105	344	"				"	16"-STD
CH-81-419	#106B	2240	"				"	12"-S160
CH-85-931	"	859	"				"	8"-1" NW

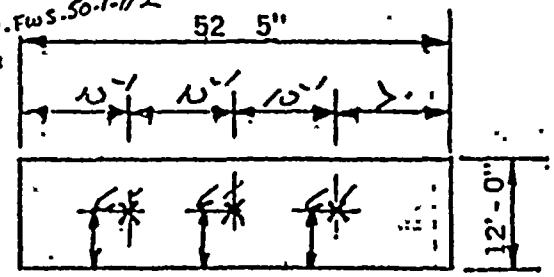
INSPECTED 103 P.O.C. S.W.E.

N.M.P.C.
NINE MILE NUCL. STATION
UNIT-2 P. O. NMP2-P3018
J. O. 12177 SHOP FAB. PIPE
PIECE MARK — 97-13-2-FWS-50-1-112
ITT GRINNELL
HENDERSVILLE, N.C. 27258



ELEVATION

THERMOCOUPLE LOCATIONS



PLAN

Q. C. APPROVAL

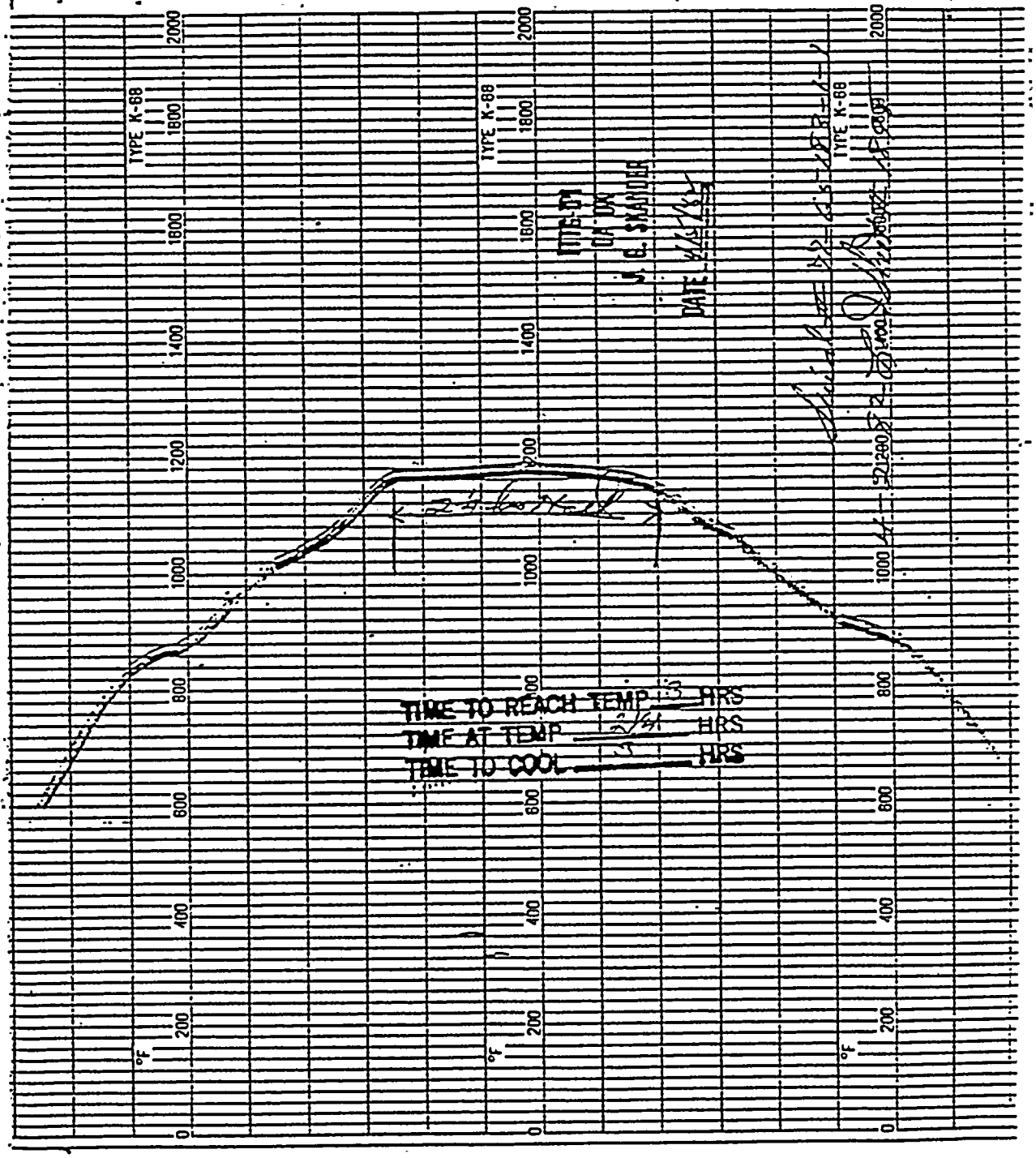
ITTG-IPI
QA OK
J. G. SKANDER
DATE 4/5/82

SUPERINTENDENT APPROVAL: L Deary

Load Inspection to insure against local flame inpingement
Q. C. Stamp 0150 4-1-82 4/2/82
DATE

TRANS. #08-0031

TRANS. #09 00245



NO. 54018 LEEDS & NORTHRUP CO.

NO. 54018 LEEDS & NORTHRUP CO., NORTH VALES, PA. MADE IN U.S.A.

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

N.M.P.C.
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P3018
J. O. 12177 SHOP FAB. PIPE
PIECE MARK — 4713-J-FL05-501-112
ITT GRINNELL
KERNERSVILLE, N.C. 27284

10

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. 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 Reactor Water Clean Up
(Brief description of intended use, main coolant etc.)

(a) Drawing No. NM-9-142X 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 MA
(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. 09-14-2-WCS-89-1-142
(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. 121.7 SHOP FAB. PIPE
PIECE MARK:--------
27284

S. W. E. C. P.O. 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 8-4-81 Signed ITT GRINNELL INDUSTRIAL PIPING, INC. By C. Clark Barrett

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 VA. and employed by ** of Hartford, Ct. have inspected the piping described in this Data Report on 8-6 19 81, 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 8-6, 1981

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

817801

* 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

FORM-EN-101 REV. 2
Q. A. FORM N2.1C

SHT. 1 OF 2

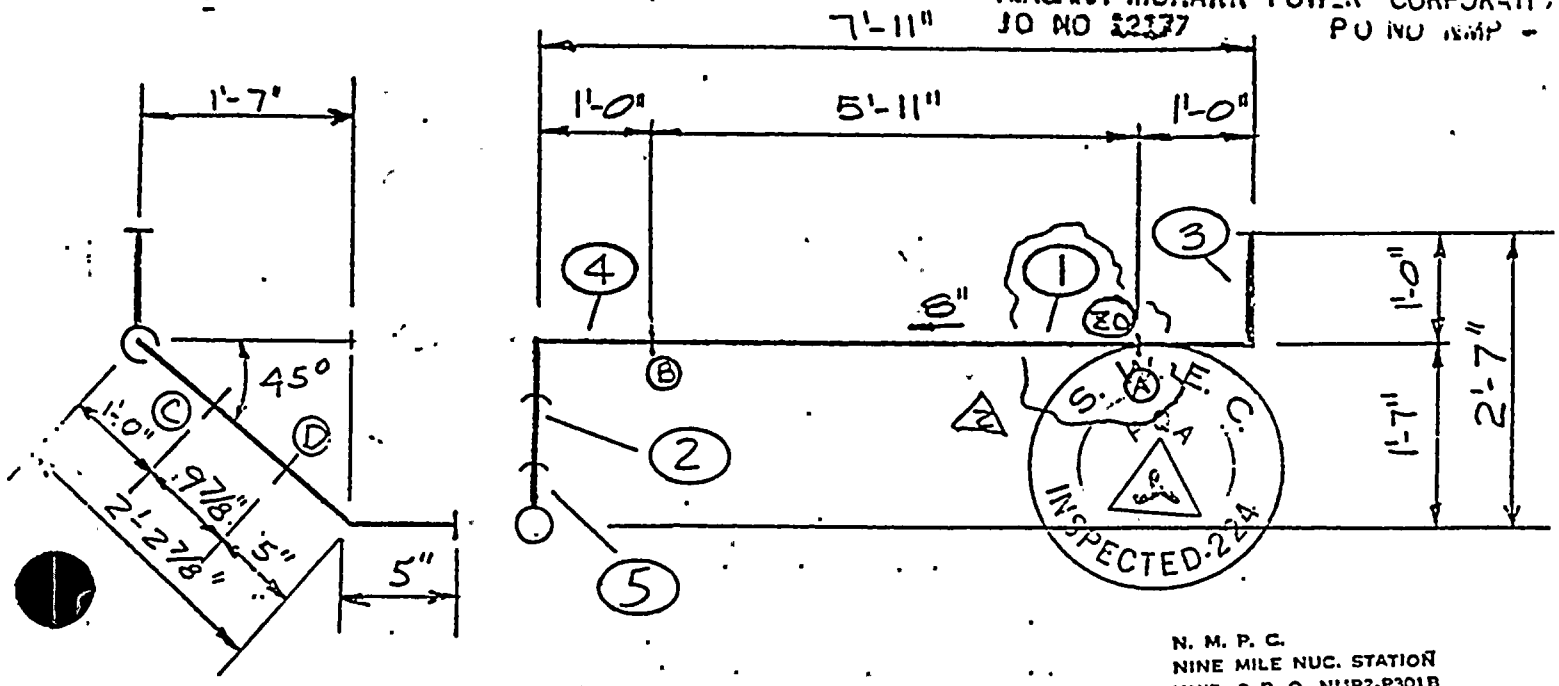
ITT GRINNELL INDUSTRIAL PIPING, INC.

KERNERSVILLE, N. C.

JOB NO. 7100
NAME NIAGARA MOHAWK
LOCATION SCRIBA NY

DRW'N WRAY 12-4-79 CHK'D DJ 1-24-81
REV. JDC 4-7-81 CHK'D FEG 4-7-81
REV. BM 4-16-81 CHK'D DB 4-17-81
REV. _____ CHK'D _____

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



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

PIPE - SCH 160 SA106B

FITT - SCH 160 SA234WPB

ENDS MACH PER SK# NM-D2

CLEANLINESS CLASS C

ASME CODE APPROVED

INSERVICE INSPECTION REQ'D. GRIND WELDS PER NM-D25

QUALITY CONTROL

REVISION

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

CLASS NUC. 1 LINE SPEC. 1511 APP. CODE ASME III NO. REQ'D 1

Radiography (RT)	✓	Special Marking		Preheat		Cert. of Compliance	
Mag. Particle (MT)	✓	Special Cleaning	✓	Heat Treat		Mill Test Reports	✓
Liq. Penetrant (PT)		Painting		Code Stamp	✓	Data Reports	✓

SYSTEM WCS FAB. SPECS. JS-137
REF. DRW'G NO. EP-74A, 09-14
PRESS. 2200 PSI. TEMP. 575 °F. WT. 810 LBS.
PIECE MARK 09-14-2-WCS-89-1-142
REGISTER NM 19 1 1 1412X

817601

REVISION

QUALITY CONTROL 3

J.J. GRINNELL INDUSTRIAL PIPING, INC.

Sheet 2 of

CONT. NO. 7100
NAME NIAGARA MOHAWK
LOCATION SCRIBA NY

MATERIALS RECORD
PRODUCTION PLANNER

REGISTER NM 19 142X

PIECE MARK 09-14-2-WCS-89-1-142

REV. NO. BY DATE

ITEM	DESCRIPTION: PART NUMBER/STOCK NUMBER	UOM	FT/EA/PD	IN	FRACTIONS	HEAT NUMBER	QUALITY CONTROL: DOCUMENT	IN PROCESS	INSPECTION	WHSE LOCATION
1	8" SCH 160 SMLS C.S. PIPE					SA106B	4-30-81		4-7-81	
	NM-71- -	F	5	11		58400-SN-1	357		Q159	
2	8" SCH 160 SMLS C.S. PIPE					SA106B		Q12	4-7-81	
	NM-71- -	F		9	7/8	58400 SN-1	357	4-28-81	Q159	
3	8" SCH 160 SMLS 90° LRWE					SA234WPB				
	NM-1003- 5-	E		1						
4	8" SCH 160 SMLS 90° LRWE					SA234WPB				
	NM-1003- 5-	E		1						
5	8" SCH 160 SMLS 45° LRWE					SA234WPB				
	NM-1003- 6-	E		1						
	- - -					See attached sheet				
	8" C.S.E.P.					Fabricated for: Stone and Webster Engineering Corp. Cherry Hill, N. J. P. O. NMP2-P301B Piping System WCS				
	- - -	E		2						
	- - -									
	N. M. P. C. NINE MILE NUC. STATION UNIT-2 P. O. NMP2P301B PIECE MARK: ITT GRINNELL KERNERSVILLE, N.C. 27284						ITT GRINNELL IND. PIPING KERNERSVILLE, N. C.			

SHOP COPY LAYOUT

REVISION

INSPECTED 6-24-81 P.C.A. S.V.E.C.

CODE: ASME III, NUC. I CUST LINE SPEC. 1511 MFG CODE X

JOB SPEC: US-137-12 BATCH SIZE

UNIT PRICE P.O. | IND VENDOR | NET

TOTAL ACCOUNTING

ITT GRINNELL INDUSTRIAL PIPING INC

FORM EN 102 [illegible] 72
Q. A. FORM N[illegible]

Sheet 2 of 2

CONT. NO. 7100
NAME NIAGARA MOHAWK
LOCATION SCRIBA NY

MATERIALS RECORD
PRODUCTION PLANNER

REGISTER NM 09 142x

PIECE MARK 09-14-2-WCS-89-1-142

REV. NO. BY DATE

ITEM	DESCRIPTION / PART NUMBER/STOCK NUMBER	FT/EA/PD	IN	FRACTIONS	HEAT NUMBER	QUALITY CONTROL DOCUMENT	IN PROCESS	INSPECTION	WHSE LOCATION
1	8" SCH 160 SMLS C.S. PIPE				SA 106				
	NM-71- -	F	5	11	58400 SN-1	P.		0149 AS 4-22-81	
2	8" SCH 160 SMLS C.S. PIPE				SA 106				
	NM-71- -	F	9	7/8	58400 SN-1			0149 AS 4-22-81	
3	8" SCH 160 SMLS 90° LRWE				SA 234 WPB		(4-30-81)		
	NM-1003- 5-	E	1		AD8NN SER # 897	BWF-643 8JM	0103		C1-10-1
4	8" SCH 160 SMLS 90° LRWE				SA 234 WPB				" "
	NM-1003- 5-	E	1		AD8NN SER # 898	BWF-643 8JM	0132 4-22-81		
5	8" SCH 160 SMLS 45° LRWE				SA 234 WPB				" "
	NM-1003- 6-	E	1		AD8NN SER # 896	BWF-686 8JM	0132 4-22-81		
	8" C.S.E.P.								
	- - -	E	2		SUPPLEMENTAL MAT'L RECORD				
	N. M. P. C. NINE MILE NUC. STATION UNIT-2 P. O.-NMP2:P3018 7.9 1817 stub-end pipe PIECE MARK:---------- ITT GRINNELL KERNERSVILLE N.C. 27284								
							CANCELED		
							MAY 19 198		
							07:		

SUPPLEMENTAL MATERIALS RECORD

INSPECTED S.W.P.O. 224

DELIVERED APR 16 1981

CODE ASME III, NUC. 1. CUST LINE SPEC 1511 MFG CODE L X

JOB SPEC US-137-12 BATCH SIZE 8

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)

ITT Grinnell Industrial Piping, Inc. Sheet 1 of 5

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 Feedwater (Brief description of intended use, main coolant etc.)

(a) Drawing No. NM-47-113X 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 Item #5: 24"S/140 X 8"S/160 Thermal TEE; Tube (Name of Part — Item number, Manufacturer's name, and Identifying stamp)
Turns: SA-420, WPL6; S/W # 148216, Dwg. # 735D6Y-D2.1

Supplemental Sheets 2 ---Drawings
3+4 ---Bill (s) of Material
5 ---Original Data Report

7. Shop Hydrostatic Test Field psi.

8. Description of piping inspected: Piece Mark Number 47-13-2-FWS-SD-1-113 (include—mark no.—material spec.—nom. pipe size—schedule or thickness—length—fittings—flanges, etc.)

See Attached Sheets Copy of original Data Report attached - original Data Report lost.

Note: In Service Inspection grinding of 3 Girth Welds on Thermal TEE supplied by S+W (ITT Grinnell Item #5) was performed by ITT Grinnell I.P.I. Surface NDE and Minimum Wall verification was performed and recorded after grinding.

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

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 3-24-83 Signed * By William Haynon

* ITT Grinnell Industrial Piping, Inc. (Fabricator)

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 3-24 19 83, 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 3-24, 19 83 Commissions V.A. 321 TRANS. #05 00324

(Inspector) 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. 8/77 Q. A. FORM N2.1C

2 of 5 SHT. 1 OF 5

CONT. NO. 7100

NAME NIAGARA MOHAWK

LOCATION SCRIBA NY

DRW'N UH 2-14-79 CHK'D ALB 2-14-79

1 REV. DB 6-29-81 CHK'D FEG 6-9-81

2 REV. DM 3-7-82 CHK'D FEG 6-8-82

3 REV. FEG 3-7-83 CHK'D DB 3-7-83

QUALITY CONTROL REVISION

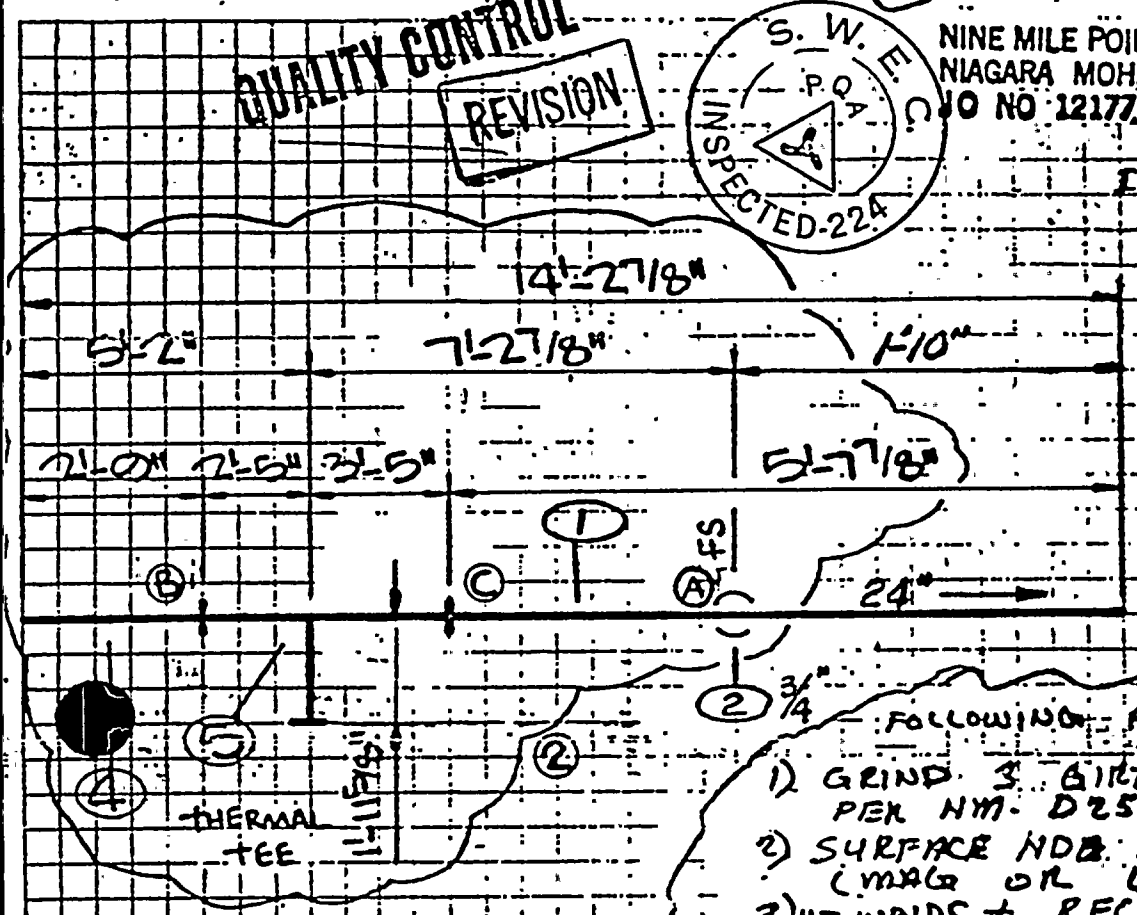
S. W. E. C. P. Q. A. INSPECTED-224

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

IMPACT TESTED
MATL

N. M. P. C.
NINE MILE NUC. STATION
UNIT 2 P. O. NMP2-P0018
J. O. 12177 SHOP FAB. PIPE
PIECE MARK
ITT GRINNELL
KERNERSVILLE, N.C. 27284

2



INSERVICE INSPECTION GRIND PER NM-D25

FOLLOWING APPLIES TO ITEM 5 ONLY:

1) GRIND 3 GIRTH WELDS OF ITEM 5 PER NM-D25.
2) SURFACE NDE REQ'D AFTER GRINDING (MAG OR LPI)
3) UT WELDS + RECORD MIN WALL OF RUN = 2.625" MIN WALL OF WELD ON OUTLET = .984"
4) SWEC INSPECTOR TO WITNESS NDE

PIPE - SCH 140 SMLS SA 106-C
CONN. 3/4" 6000# SA-105

ENDS MACH. PER SK# NM-02

3

ASME CODE APPROVED

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

S

CLEANLINESS CLASS C

CLASS NUC. 1 LINE SPEC. 1511 APP. CODE ASME III NO. REQ'D 1

Radiography (RT)	✓	Special Marking		Preheat	✓	Cert. of Compliance	
Magnetic Particle (MT)	✓	Special Cleaning	✓	Heat Treat	✓	Mill Test Reports	✓
Liquid Penetrant (PT)		Painting		Code Stamp	✓	Data Reports	✓

SYSTEM FEED WTR. FAB. SPECS. JS-137

REF. DRW'G NO. 47-13A (EP47D, 17E) (P12117) 3 PRESS. 2200 PSI. TEMP. 450 °F. WT 8605 LBS. 2

PIECE MARK 47-13-2-FWS-50-1-113

REGISTER NM 417 1 1 1/13 X

TRANS. NO. 0 0 3 2 4 13

ITT GRINNELL INDUSTRIAL PIPING, INC.

FORM EN-102 REVISED 3-16-83
O. A. FORM N2.1F

Sheet 3 of 4

CONT. NO. 7100
NAME NIAGARA MOHAWK
LOCATION SCRIBA NY

MATERIALS RECORD
PRODUCTION PLANNER

PIECE MARK 47-13-2-FWS-50-11-13

REGISTER NM 47 113
REV. NO. BY DATE

ITEM	DESCRIPTION / PART NUMBER/STOCK NUMBER	UM	FT/EA/PD	IN	FRACTIONS	WHSE. LOCATION	QUALITY CONTROL: HEAT NUMBER	DOCUMENT	IN PROCESS	INSPECTION
	24" SCH 140 SMLS PIPE					ASME SA-106-C				
1	NM-51 - -	F	5	7	7/8					
	24" X 3/4" 6000# SOCKOLET					ASME SA-105				
2	NM-3180 -	E	1							
	3/4" C/S E. P.									
	- - -	E	1							
	24" C/S MACH'D. E. P.									
	- - -	E	2							
	STOR & CONT OF ELECTRODES									
	TRAVELER									
	M. T. R.									
	DOCUMENTATION									
	TRANSFER TRACE									

② RETURN TO STORES 2'-0" CHARGE TO CUSTOMER

See attached sheet

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

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.

SHOP COPY LAYOUT

INSPECTED 2-24 SWEPCO

CODE ASME III
JOB SPEC JS-137-14
CUST LINE SPEC 1511
BATCH
MFG CODE H P
SIZE 2 4

UNIT PRICE P.O. | DIS VENDOR | NET
TOTAL
ACCOUNTING

TRANS. #01 00324

Grinnell Industrial Piping Inc.

FORM EN-102 REV. 6/81
Q. A. FORM N2.15

Sheet 4 of 4.5

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

MATERIALS RECORD
PRODUCTION PLANNER

REGISTER NM 47 113X

PIECE MARK 47-13-2-FWS-50-11-113

ITEM	DESCRIPTION: PART NUMBER/STOCK NUMBER									HEAT NUMBER	QUALITY CONTROL: DOCUMENT	IN PROCESS	INSPECTION	WHSE LOCATION
3	RETURNED SPOOL NM-47-113X													
	NM	1 1GH	1 1 1	1 1 1 113X	E									
4	24" SCH 140 SMLS PIPE SA106 GRC													
	NM	1 151	1 1 1	1 1 1 1	F	2	0			70C543-SN.4917-1373	P. 281 GM	Q172 1-24-83	Q129 1-13-83	
5	24" SCH 140 x 8" SCH 160 THERMAL ~~TEE SA106 GR B~~ WPL6 OR WPL6W													
	NM	5101.15	1 1 1	1 1 1 1	E					serial # 14826	BWF 2044 GM			Reel floor
										CMTR-BWF 2044 or				
										transmittal # 04-01068				
										Fabricated for: Stone and Webster Engineering Corp.				
										Cherry Hill, N. J.				
										P. O. NMP2-P301B				
										Piping System FWS				
										ITT GRINNELL IND. PIPING				
										KERNERSVILLE, N. C.				

SHOP COPY LAYOUT

INSPECTED 224 N.E.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.

DELIVERED JAN 24 1983

GATHERED JAN 11 1983 E.D.S.

CODE
CUST LINE SPEC 1511
MFG CODE H D
SIZE 2 4
JOB SPEC TS-137-11
BATCH

UNIT PRICE P. O. | DIS. VENDOR | NET
TOTAL
ACCOUNTING

TRANS. FOR 003224

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

Sheet ~~1 of 3~~ 5 of 5

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 Feedwater
(Brief description of intended use, main coolant etc.)

(a) Drawing No. NM-47-113X 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
(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. 47-13-2-FWS-50-1-113
(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 8-27-81 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 8/28 19 81, 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 8/28 19 81

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

00324

* 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".

THE GRINNELL INDUSTRIAL PIPING, INC.

7337
9-26-81
I.M. 225 —

Kep 7/29/81

FORM EN 102 REV. 5 78
Q A FO

Sheet 3 Of 3

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

MATERIALS RECORD
PRODUCTION PLANT

SHOP COPY LAYOUT

REGISTER NM 47 113X
REV. NO. BY DATE

PIECE MARK 47-13-2-FWS-50-11-113

ITEM	DESCRIPTION: PART NUMBER/STOCK NUMBER	H/M	FT/EA/PD	IN	FRACTIONS	WHSE. LOCATION	QUALITY CONTROL: HEAT NUMBER	DOCUMENT	IN PROCESS	INSPECTION
	24" SCH 140 SMLS PIPE					ASME SA-106-C				
1	NM-51	F	7	7	7/8		70E186	SN 5280-B23	0172 0281 5510	7-1-81 0129 12-3-80
	24" X 3/4" 6000# SOCKOLET					ASME SA-105				
2	NM-3180	E	1			G2.43-3	P703	SWF 183	0181 5510	7-1-81
	3/4" C/S E. P.									
		E	1							
	24" C/S MACH'D. E. P.									
		E	2							
	STOR & CONT OF ELECTRODES									
	TRAVELER									
	M. T. R.									
	DOCUMENTATION									
	TRANSFER TRACE									

SUPPLEMENTAL MATERIALS RECORD

NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P301B
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 Feedwater

ITT GRINNELL IND. PIPING
KERNERSVILLE, N. C.

INSPECTED S.W.E.C. 103

GATHERED
NOV 24 1980
07

DELIVERED
JUN 22 1981

CODE ASME III
JS-137
CUST LINE SPEC 1511
MFC CODE L P
SIZE 2 4

UNIT PRICE P. O. | DIS VENDOR | NET
TOTAL

TRANS. #08 003 24

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 Reactor Water Clean Up (Brief description of intended use, main coolant etc.)

(a) Drawing No. NM-9-143X 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 9-14-2-WCS-89-1-143 (include—mark no.—material spec.—nom. pipe size—schedule or thickness—length — fittings — flanges, etc.)

See Attached Sheets

S. W. E. C. QA INSPECTED 224

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 1-10-83 Signed * By [signature]

* ITT Grinnell Industrial Piping, Inc. (Fabricator)

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 U.A. and employed by ** of Hartford, Ct. have inspected the piping described in this Data Report on 1-18 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 1-18, 1983 (Inspector) Commissions U.A. 321 National Board, State, Province and No.

TRACK #05 00310

* 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

FORM-EN-101 REV. 2/80
Q. A. FORM N2.1C

ITT GRINNELL INDUSTRIAL PIPING, INC.

KERNERSVILLE, N. C.

SH 1 OF 2
SD 12-9-82

CONTRACT NO. 7100
NAME NIAGARA MOHAWK
LOCATION SCRIBA NY

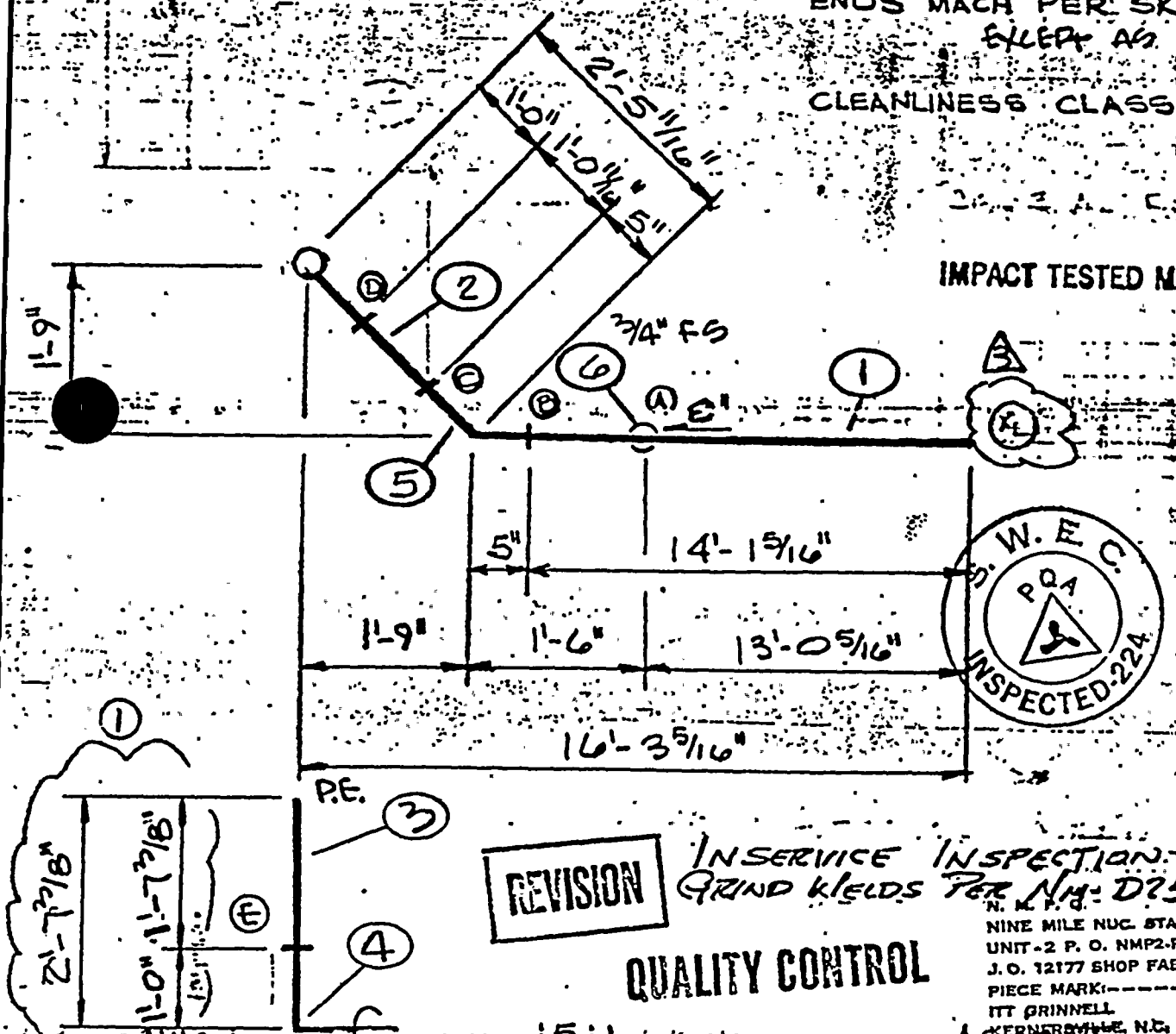
DRW'N WRAY 12-5-79 CHK'D PHIL 11-17-81
① REV. DB 5-20-82 CHK'D FEB 5-27-82
② REV. DWS 6-17-82 CHK'D FEB 6-17-82
③ REV. DB 11-12-82 CHK'D FEB 11-12-82

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

ENDS MACH PER SK NM-D2
EXCEPT AS NOTED

CLEANLINESS CLASS C

IMPACT TESTED MATERIAL



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

REVISION

INSERVICE INSPECTION - GRIND WELDS PER NM-D25

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

CLASS NUC. 1 LINE SPEC. 151 APP. CODE ASME III NO. REQ'D 1

Radiography (RT)	✓	Special Marking		Preheat		Cert. of Compliance	
Magnetic Particle (MT)	✓	Special Cleaning	✓	Heat Treat		Mill Test Reports	✓
Liq. Penetrant (PT)		Painting		Code Stamp	✓	Data Reports	✓

SYSTEM WCS FAB. SPECS. JS-137

REF. DRW'G NO. EP-74A ②, 09-14 ③ PRESS. 2200 PSI. TEMP. 575 °F. WT. 1510 LBS.

PIECE MARK 9-14-2-WCS-89-1-143 REGISTER NM 19 1 1 143X

3

ITT GRINNELL INDUSTRIAL PIPING, INC.

FORM EN-102 REV. 8-79
Q.A. FORM N2.1F

Sheet 2 of 2

CONT. NO. 7100
NAME NIAGARA MOHAWK
LOCATION SCRIBA NY

MATERIALS RECORD
PRODUCTION PLANNER

PIECE MARK 19-14-2-WCS-89-11-143

REGISTER NM 9 143X
REV. NO. BY DATE

ITEM	DESCRIPTION / PART NUMBER/STOCK NUMBER	UOM	FT/EA/PD	IN	FRACTIONS	HEAT NUMBER	QUALITY CONTROL DOCUMENT	IN PROCESS	INSPECTION	WHSE LOCATION
1	8" SCH 160 SMLS C.S. PIPE					SA-333 GR 6				
	NM-91- -	F	14	1	5/16	60775 SN 12 UT 2-1	P527	Q172	Q129 7-8-82	
2	8" SCH 160 SMLS C.S. PIPE					SA 333 GR 6				
	NM-91- -	F	1	0	11/16	60775 SN 12 UT 2-1	P527	Q10	Q129 7-8-82	
3	8" SCH 160 SMLS C.S. PIPE					SA-333 GR 6				
	NM-91- -	F	1	7	3/8	60775 SN 12 UT 2-1	P527	Q10	Q129 7-8-82	
4	8" SCH 160 SMLS C.S. 90° LRWE					SA234WPB				
	NM-1003- 5-	E	1			PKR	BWF889	P10		D148
5	8" SCH 160 SMLS C.S. 45° LRWE					SA234WPB				
	NM-1003- 6-	E	1			RBE	BWF908	P10		
6	8" x 3/4" 6000# C.S. SOL					SA105	SWF-184	Q172		
	NM-3166- -	E	1			P595				6246-9
	8" C.S.E.P.									
	- - -	E	2							
	3/4" C.S.E.P.									
	- - -	E	1							

SHOP COPY LAYOUT

REVISION

INSPECTED 22 PDA

DELIVERED JUL 30 1982

Fabricated for: Stone and Webster Engineering Corp.
Cherry Hill, N. J.
P. O. NMP2-P301B
Piping System 6165

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

ITT GRINNELL IND. PIPING
KERNERSVILLE, N. C.

GATHERED JUN 23 1982

CODE ASME III, CL. 1
CUST LINE SPEC 1511
MFG CODE L X
SIZE 8
JOB SPEC JS-137-14
BATCH

UNIT PRICE P.O. | DIS VENDOR | NET
TOTAL
ACCOUNTING 07

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 REACTOR WATER CLEANUP (Brief description of intended use, main coolant etc.)

(a) Drawing No. NM-9-144X 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 09-14-2-WCS-250-1-144 (include — mark no. — material spec. — nom. pipe size — schedule or thickness — length — fittings — flanges, etc.)

See Attached Sheets

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

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 7-12-82 Signed * (Designee) By [signature]

* ITT Grinnell Industrial Piping, Inc.

Certificate of Authorization Expires 7-16-85 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 U.A. and employed by ** of Hartford, Ct. have inspected the piping described in this Data Report on 7-14 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.

TRANS. #03 0 0 2 7 0

Date 7-14, 1982

(Inspector) Commissions U.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 of 3

FORM-EN-101 REV. 2/79
Q. A. FORM N2.1C

ITT GRINNELL INDUSTRIAL PIPING, INC.

KERNERSVILLE, N. C.

SHT. 1 of 2

CONT. NO. 71.0

LOCATION NIAGARA MOHAWK SCRIBA NY

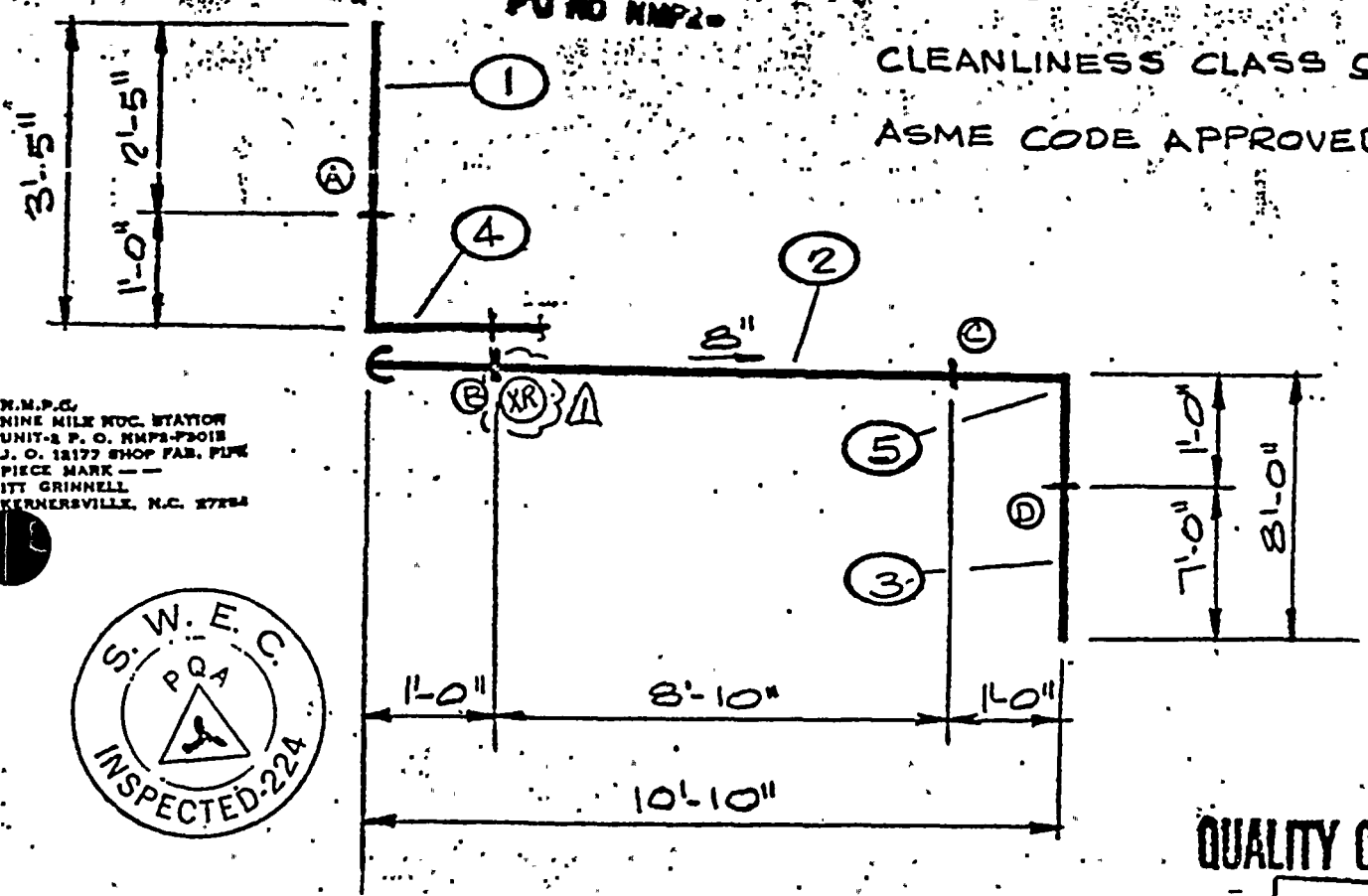
DRW'N WRAY 12-5-79 CHK'D 1-24-81
REV. CAR-3-2-82 CHK'D 3-2-82
REV. CHK'D
REV. CHK'D

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

INSERVICE INSPECT. REQ'D
GRIND ENDS PER NM-D25

CLEANLINESS CLASS C

ASME CODE APPROVED



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. PQA INSPECTED 224

QUALITY CONTROL

REVISION

PIPE - SCH 160 SA106B
FITT - SCH 160 SA234WPB

IMPACT TESTED MATERIAL

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

ENDS MACH PER NM-D2

TRANS. #09- 00278

CLASS NUC. 1 LINE SPEC. 1511 APP. CODE ASME III NO. REQ'D 1

Radiography (RT)	✓	Special Marking		Preheat		Cert. of Compliance	
Mag. Particle (MT)	✓	Special Cleaning	✓	Heat Treat		Mill Test Reports	✓
Liq. Penetrant (PT)		Painting		Code Stamp	✓	Data Reports	✓

SYSTEM WCS FAB. SPECS. JS-137

REF. DRW'G NO. EP-74A (5); 09-14 (2) PRESS. 2200 PSI. TEMP. 575 °F. WT. 1609 LBS.

PIECE MARK 09-14-2-WCS-250-1-144 REGISTER NM 19 11 144X

3

ITT GRINNELL INDUSTRIAL PIPING, INC.

ITT GRINNELL IND. PIPING

FORM EN-102 REV. 5-79 Q.A. MANUAL N2.1F

SHOP COPY LAYOUT

Sheet 23 of 23

CONT. NO. 7100 KERNERSVILLE, N. C.

NAME NIAGARA MOHAWK

LOCATION S. P. D., N.Y.

MATERIALS RECORD
PRODUCTION PLANNER

REGISTER N.M. 9 144x

REV. NO. BY DATE

PIECE MARK P9-14-2-WCS-2501-1-144

ITEM	DESCRIPTION: PART NUMBER/STOCK NUMBER	U/M	FT/EA/PD	IN	FRACTIONS	HEAT NUMBER	QUALITY CONTROL: DOCUMENT	IN PROCESS	INSPECTION	WHSE LOCATION
1	8" SCH 160 SMLS C.S. PIPE SA-106B									
	NM-71- -	F	2	5		58400 pc#1	P-359 8am	1910	Q129 2-18-82	
2	8" SCH 160 SMLS C.S. PIPE SA106B									
	NM-71- -	F	8	10		58400 pc#1	P-359 8am	1910	Q129 2-18-82	
3	8" SCH 160 SMLS C.S. PIPE SA106B									
	NM-71- -	F	7	0		58400 pc#2	P-359 8am	1910	Q129 2-18-82	
4	8" SCH 160 SMLS C.S. 90 LRWE SA234WPB									D1-5-6
	NM-1003- 5-	E	1			HT. PKR →	BuF 889 8am	1910		
5	8" SCH 160 SMLS C.S. 90 LRWE SA234WPB									
	NM-1003- 5-	E	1			HT. PKR →	BuF 889 8am	1910		
	8" C.S. E.P.					Fabricated for: Stone and Webster Engineering Corp. Cherry Hill, N.J.				
	- - -	E	2			P. O. NMP2-P301B				
						Piping System WCS				
	INSERVICE INSPECTION REQ'D (ENDS PER NM-D25)									
									GATHERED	
									DEC 23 1981	

DELIVERED MAR 24 1982

INSPECTED 22 SWEPCO

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

CODE ASME III, CL.1 CUST. LINE SPEC 151 MFG CODE L X

SIZE 8

BATCH

TOP SPEC. 15-137-14

UNIT PRICE P.O. | DIS VENDOR | NET

TOTAL

ACCOUNTING

TRANS. #104 0022 C

ITT GRINNELL INDUSTRIAL PIPING, INC.

KERNERSVILLE, N. C.

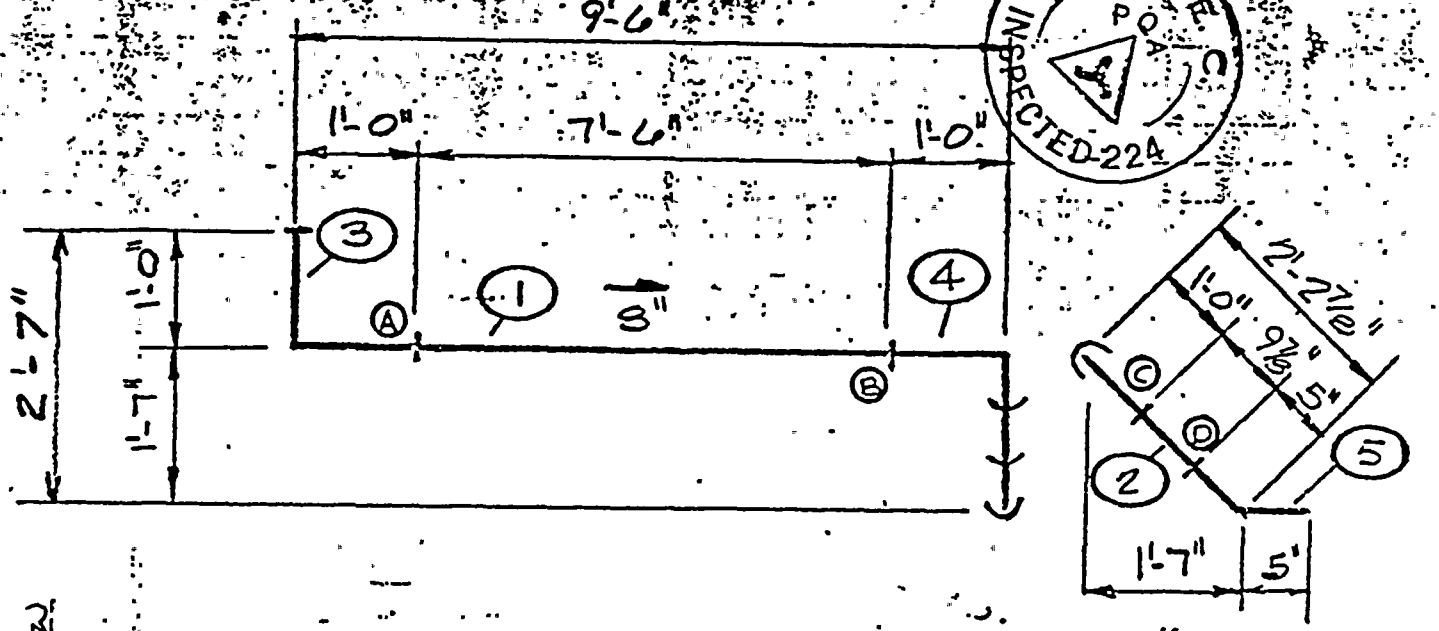
FORM-BN-101 REV. 7/79
Q. A. FORM N2
SHT. 1 OF 5

CONT. NO. 7100
[redacted]
LOCATION NIAGARA MOHAWK
SCRIBA NY

REVISION

DRW'N WRAY 12-5-79 CHK'D 1-24-81
REV. YCY 9-29-81 CHK'D DB 10-1-81
REV. CHK'D
REV. CHK'D

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



ENDS MACH PER SK #NM-D2

CLEANLINESS CLASS C

ASME CODE APPROVED

IMPACT TESTED MATERIAL

PIPE - SCH 160 SA-333 GR. 6 (1)
FITT - SCH 160 SA234 WPB

INSERVICE INSPECTION
GRIND WELDS PER
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

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

QUALITY CONTROL

CLASS Nuc-1 LINE SPEC. 1511 APP. CODE ASME III NO. REQ'D 1

Radiography (RT)	✓	Special Marking		Preheat		Cert. of Compliance	
Particle (MT)	✓	Special Cleaning	✓	Heat Treat		Mill Test Reports	✓
Liq. Penetrant (PT)		Painting		Code Stamp	✓	Data Reports	✓

SYSTEM WCS FAB. SPECS. JS-137

REF. DRW'G NO. EP-74A 09-14 PRESS. 2200 PSI. TEMP. 575 °F. WT. 930 LBS.

PIECE MARK 09-14-2-WCS-250-1-145 REGISTER NM 19 1 1 145X

TRANS. #09 00310

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 Reactor Water Clean Up (Brief description of intended use, main coolant etc.)

(a) Drawing No. NM-9-145 X 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 D9-14-2-NCS-250-1-145 (include — mark no. — material spec. — nom. pipe size — schedule or thickness — length — fittings — flanges, etc.)

See Attached Sheets

S. W. E. C. QA INSPECTED-22A

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 1-7-83 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 VA. and employed by ** of Hartford, Ct. have inspected the piping described in this Data Report on 1-18 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 1-18, 1983 Commissions VA. 321 TRANS #05 00310

(Inspector) 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

GRINNELL INDUSTRIAL PIPING, INC.

FORM EN-102 REV. 8-79

Sheet 2 of 2

REVISION

CONT. NO. 730
NAME NIAGARA MOHAWK
LOCATION SCRIBA NY

MATERIALS RECORD
PRODUCTION PLANNER

PIECE MARK 09-14-2-WCS-250-1-145

REGISTER N.M 09 145X
REV. NO. BY DATE

ITEM	DESCRIPTION / PART NUMBER/STOCK NUMBER	UOM	FT/EA/PD	IN	FRACTIONS	HEAT NUMBER	QUALITY CONTROL DOCUMENT	IN PROCESS	INSPECTION	WHSE LOCATION
1	8" SCH 160 SMLS C.S. PIPE SA333 GR.6					51125 P 527GM		Q172	Q171	
	N.M.-(91)-1 -	F	7	6		S.N.-11 HT UT.-2-2		11-02-82	7-27-82	
2	8" SCH 160 SMLS C.S. PIPE SA333 GR.6					51125 P 527GM			Q171	9-13-82
	N.M.-(91)-1 -	F		9	7/8	S.N.-11 HT-51125 UT-2-2			7-27-82	
3	8" SCH 160 SMLS C.S. 90 LRWE SA234WPB					PKR		Q172		D1-12-2
	NM-1003- 5-	E		4			BWF-899	6-20-82		
4	8" SCH 160 SMLS C.S. 90 LRWE SA234WPB					PKR	BWF-899			1C-17
	NM-1003- 5-	E		4						
5	8" SCH 160 SMLS C.S 45° LRWE SA234WPB					ADSNN SER.895	BWF-686			1C-17
	NM-1003- 6-	E		4						
	INSERVICE INSPECTION REQ'D. (GRIND WELDS NM-D25)									

SHOP COPY LAYOUT

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

8" O.S.E.P. ASME SECTION III CLASS 2 ED 22

ITT GRINNELL IND. PIPING
KERNERSVILLE, N. C.

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

DELIVERED AUG 02 1982

GATHERED OCT 20 1981 05

CODE ASME III, CL.1 CUST LINE SPEC 1511 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 3

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 Reactor Water Clean Up
(Brief description of intended use, main coolant etc.)

(a) Drawing No. NM-9-146X 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 9-14-2-WCS-250-1-146
(Include — mark no. — material spec. — nom. pipe size — schedule or thickness — length — fittings — flanges, etc.)

See Attached Sheets

S. W. E. C. PQA INSPECTED 224

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 1-26-83 Signed * By Joseph Monde
(Repr. of Fabricator)

* 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 VA and employed by ** of Hartford, Ct. have inspected the piping described in this Data Report on 2-2 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.

TRANS. NO. 00331

Date 2-2, 1983

(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

GRINNELL INDUSTRIAL PIPING, INC.

KERNERSVILLE, N. C.

FORM-EN-101 REV. 2/
Q. A. FORM N2.1C

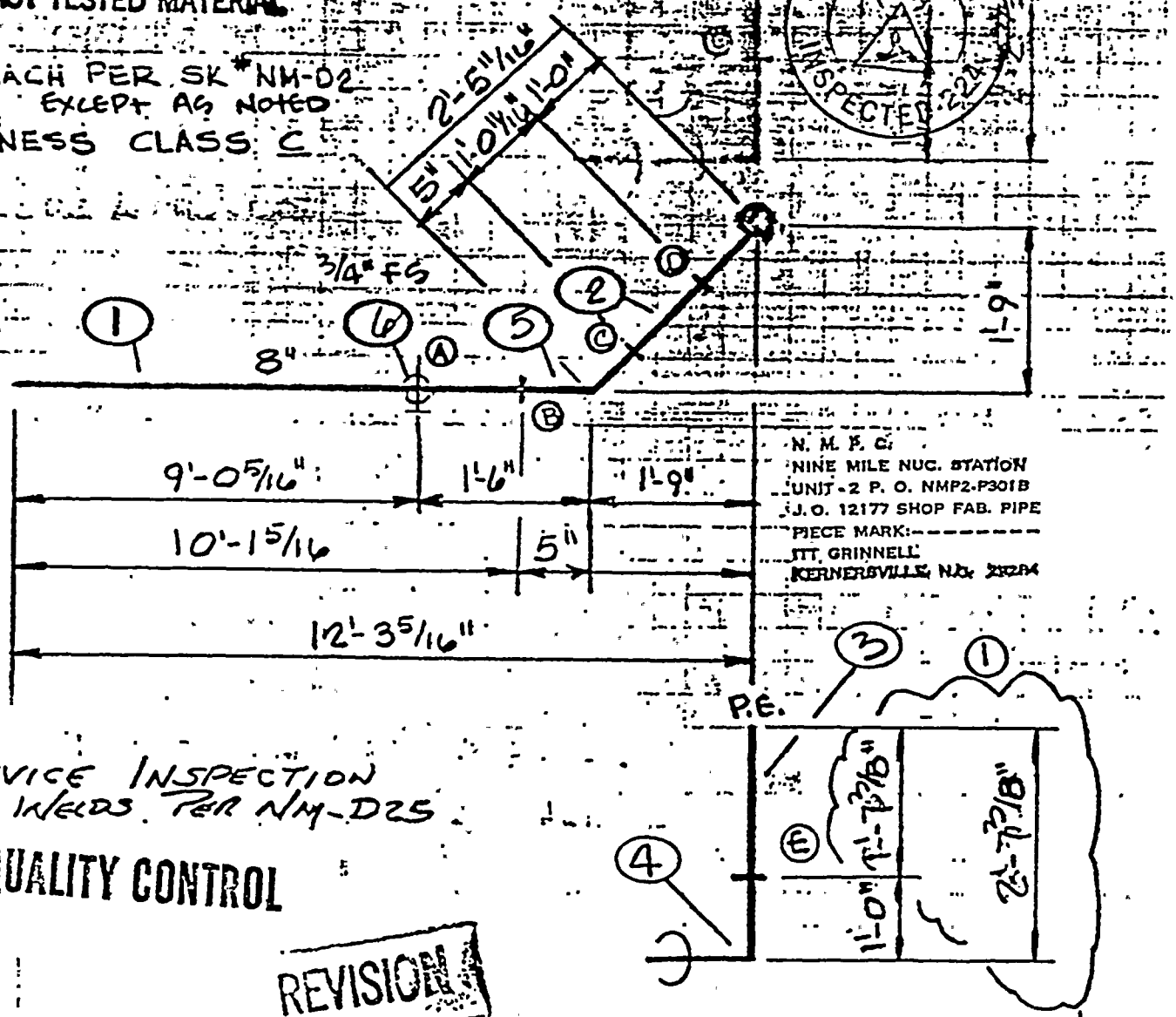
CONTRACT NO. 7100
NAME NIAGARA MOHAWK
LOCATION SCRIBA NY

DRW'N WRAY 12-5-79 CHK'D 11-17-81
(1) REV DB 5-20-82 CHK'D FEB 5-27-82
(2) REV DB 7-9-82 CHK'D FEB 7-9-82
REV. CHK'D

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

IMPACT TESTED MATERIAL

ENDS: MACH PER SK #NM-D2
EXCEPT AS NOTED
CLEANLINESS CLASS C



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

INSERVICE INSPECTION
GRIND WELDS PER NM-D25

QUALITY CONTROL

REVISION

CLASS NUC. 1 LINE SPEC. 1511 APP. CODE ASME III NO. REQ'D 1

Radiography (RT)	(1)	Special Marking		Preheat		Cert. of Compliance	
Particle (MT)	✓	Special Cleaning	✓	Heat Treat		Mill Test Reports	✓
Liq. Penetrant (PT)		Painting		Code Stamp	✓	Data Reports	✓

SYSTEM WCS FAB. SPECS. JS-137

REF. DRW'G NO. EP-74A △; 09-14 △ PRESS. 2200 PSI. TEMP. 575 °F. WT. 1215 LBS.

PIECE MARK 9-14-2-WCS-250-1-146 REGISTER NM 9 1 1 146X

TRANS. #08 00331

ITT GRINNELL INDUSTRIAL PIPING, INC.

FORM EN-102 REV. 8-79
QC FORM N2.1F

Sheet 2 of 2

CONT. NO. 7100
NAME NIAGARA MOHAWK
LOCATION SCRIBA NY

MATERIALS RECORD
PRODUCTION PLANNER

PIECE MARK 29-14-2-WCS-250-1-146

REGISTER NM 9 146X

REV. NO.	BY	DATE

ITEM	DESCRIPTION / PART NUMBER/STOCK NUMBER	UOM	FT/EA/PD	IN	FRACTIONS	HEAT NUMBER	QUALITY CONTROL DOCUMENT	IN PROCESS	INSPECTION	WHSE LOCATION
1	8" SCH 160 SMLS C.S. PIPE SA1333 GR.6									
	NM-91- -	F	10	9	5/16	2	See attached sheet			
2	8" SCH 160 SMLS C.S. PIPE SA1333 GR.6									
	NM-91- -	F	1	0	11/16					
3	8" SCH 160 SMLS C.S. PIPE SA1333 GR.6									
	NM-91- -	F	1	7	3/8	1				
4	8" SCH 160 SMLS C.S. 90° LRWE SA234WPB									
	NM-1003- 5-	E	1							
5	8" SCH 160 SMLS C.S. 45° LRWE SA234WPB									
	NM-1003- 6-	E	1							
6	8"x 3/4" 6000# SOL SA105									
	NM-3166- -	E	1							
	Fabricated for Stone and Webster Engineering Corp.									
	Cherry Hill, N. J.									
	P. O. NMP2-P301B									
	8" C.S.E.P. Piping System WCS									
	- - -	E	2	2						
	3/4" C.S.E.P. ITT GRINNELL IND. PIPING									
	- - -	E	1							
	KERNERSVILLE, N. C.									

INSPECTED 224 S.W.E.C.

REVISION

SHOP COPY LAYOUT

N. M. P. C.
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P301B
J.O. 1277 SHOP FAB. PIPE
PIECE MARK:
ITT GRINNELL
KERNERSVILLE, N.C. 27284

CODE ASME III, CL.1 CUST LINE SPEC. 151 MFG CODE L X

UNIT PRICE P.O.	DIS VENDOR	NET
TOTAL		

TRANS. FOR 00331

ITT GRINNELL INDUSTRIAL PIPING, INC.

FO[illegible]N-102 REV. [illegible]
O[illegible]M N2.1F

[illegible]VE LONG SO[illegible]
FAB. ENGINEER 7/8/82

SHOP COPY

REVISED

Sheet 2 of 2

CONT. NO. 7100
NAME NIAGARA MOHAWK
LOCATION SCRIBA NY

MATERIALS RECORD
PRODUCTION PLANNER

PIECE MARK 29-14-2-WCS-250-1-146

REGISTER N.M. 9 1 46X

REV. NO.	BY	DATE

ITEM	DESCRIPTION / PART NUMBER/STOCK NUMBER		FT/EA/PD	IN	FRACTIONS	HEAT NUMBER	QUALITY CONTROL DOCUMENT	IN PROCESS	INSPECTION	WHSE LOCATION
1	8" SCH 160 SMLS C.S. PIPE 5/16"					SA-333 GR.6				
	NM-91- -	F	9	0	5/16	60775 SN12 UT-2-1	P527 Hyp	0172 8/2/82	0129 7-13-82	
2	8" SCH 160 SMLS C.S. PIPE					SA-333 GR.6				
	NM-91- -	F	1	0	11/16	60775 SN12 UT-2-1	P527 Hyp	0152	0129 7-13-82	
3	8" SCH 160 SMLS C.S. PIPE					SA-333 GR.6	P527	8/6/82		
	NM-91- -	F	1	7	3/8	(1) 60775 SN12 UT-2-1	P527	7110	0129 7-13-82	
4	8" SCH 160 SMLS C.S. 90° LRWE					SA234WPB		8/2/82		
	NM-1003- 5-	E	1	1		QSL	Swf902 Hyp	0164		D1-4-9
5	8" SCH 160 SMLS C.S. 45° LRWE					SA234WPB		8/2/82		
	NM-1003- 6-	E	1	1		RBE	Swf908 Hyp	0164		
6	8" x 3/4" 6000# SOL					SA105				
	NM-3166- -	E	1	1		P595	Swf184 Hyp	0172 10-21-82		G2-46-9
	8" C.S.E.P.									
	- - -	E	2							
	3/4" C.S.E.P.									
	- - -	E	1							

INSPECTED 224

SUPPLEMENTAL MATERIALS RECORD

N. M. P. C.
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P[illegible]18
J.O. 12177 SHOP FAB. PIPE
PIECE MARK:--------
ITT GRINNELL
KERNERSVILLE, N.C. 27284

GATHERED

DELIVERED JUL 30 1982

CODE ASME III, CL.1 CUST LINE SPEC 1ST MFG CODE L X

UNIT PRICE P.O. | DIS VENDOR | TOTAL

JUN 25 1982

TRANS. FOR 0.0 8 [illegible]

00173

nm
R527

GUYON ALLOYS, INC.

TUBULAR PRODUCTS FOR THE ENERGY INDUSTRIES
P. O. Box 42345, Houston, Texas 77042
(713) 974-7200

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

MATERIAL CERTIFICATION

Subject: ITT Grinnell
Order Number: KER-15861-P

Description: SMLS ASME SA333 GR 6

Item 2 8" S/160 Heat #60775;51125 (PHOENIX)
" " S/N UT-2-1 & 2-2

Additional Testing: The above subject material was 100% Ultrasonically Tested to a 5% Notch in 2 circumferential and 2 axial directions, in accordance with ASME Section III, 1974 Edition thru NO Addenda.

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 1 of the ASME Boiler and Pressure Vessel Code, 1974 Edition thru NO Addenda and Grinnell specs. NM-001 Rev. 3 and NM-005 Rev. 3. Material has been processed in accordance with our Identification and Verification program.

Attachment: CMTR (2)
LAB REPORT (1)

Pete Rodriguez
Assistant Manager
Quality Assurance

Date: 6/3/82

Quality System Certificates
Mat'l:# QSC-205-2

Expiration Date: 1/6/84

ITTG - IPI
QUALITY CONTROL
★APPROVED★
DATE JUN. 15 1982
SHEET 1 OF 4

PR/ps

cc: Q. A. File

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

nm
P-527

ALPHA TESTING LABORATORIES
REPORT OF ULTRASONIC INSPECTION

TO: Guyon Alloys
P.O.: A 53150-HN
Scope Examination: 100%UT(2 axial/2 circ dirs)
Specification: ASME Sect. III, 1974 Edition thru No Addenda.
Procedure: ATL-7100 Rev. 2 Dtd. 1/29/82
Supplement: 4745 Dtd. 2/15/80

Date of Test: May 28, 1982
Witnessed by:
Technician: Tom Schuddekopf

Instrument	Sonatest UFD-2A
Calibration Dt.	Jan. 12, 1982
Calibration Std.	435-5-H 5% Notch
Calibration Amp.	75% Screen Height
Distance Amp. Correction	N/A
Method	Pulse Echo (Contact)
Scanning Speed	< 6" Per Second
Manual	X
Auto	
Indexing Width	10%
Couplant	Cellulose Gum

TRANSDUCERS

Circ. Scanning:

Type	Aerotech
Freq.	2.25 MHZ
Size	.5" X 1.0" Diameter
Shoe: Contour	8.625" O.D.
Angle	45°

Axial Scanning:

Type	Magnaflux
Freq.	2.25 MHZ
Size	3/4" Diameter
Shoe: Contour	Flat
Angle	45°

ITEM	MATERIAL DESCRIPTION
# 2	Seamless ASME SA 333 Grade 6. 2 pcs. (51'0") 1). 36-4 S/N UT-2-1 Heat No. 60775 2). 14-8 S/N UT-2-2 Heat No. 51125 8" S/160 (.906) X RLS ITT Grinnell P.O. #KER- 15861-P

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

Results of Inspection: The listed pipe was ultrasonically inspected in accordance with the referenced specification, procedure and supplement and revealed no apparent relevant indications.

Examination was performed in accordance with a Q.A. Pro. Dtd. 4-20-78 Rev. 2 Dtd. 1-25-80 as audited and approved by Guyon Alloys, Inc. on 9-28-81 as conforming to the requirements of ASME Sect. III, NCA-3800.

Inspection Engineer Tom Schuddekopf
S.N.T. Level II
Date 5/28/82

ITTG - IPI
QUALITY CONTROL
★APPROVED★
DATE JUN. 15 1982
SHEET 2 OF 4

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. 27284

Q. A. APPROVED
BY: DATE: 1-2-82
GUYON ALLOYS, INC.

hm
P527

PHOENIX STEEL CORPORATION

TUBE DIVISION ITT Grinnell Industrial Piping
PHOENIXVILLE, PENN KER15861-P

It. 2

CERTIFICATE OF INSPECTION AND TESTS

00173

DATE:	DATE SHIPPED:	MILL ORDER NO.	SHIPPING LIST NO
1-15-82	1-14-82	T-4063-C	55A

SOLD TO
Guyon Alloys, Inc.
Valley Forge South
440 E. Swedesford Road
Wayne, Pennsylvania 19087

CUSTOMER ORDER NO. A48119N

CAR NO. PC 557089

MATERIAL: SEAMLESS ☐ PIPE ☒ TUBE, HOT FINISHED

SHIP TO

8" S/160

ITTG - IPI
QUALITY CONTROL
★APPROVED★
RW
DATE JUN 15 1982

SPECIFICATION:
ASTM/ASME A/SA 333-79 Gr. 1 & 6

NO. PCS.	OD	WALL	LENGTH	TOTAL FT.	TOTAL WT.	HEAT NO.
	8.625" x	.906"				

SHEET 3 OF 4

INSPECTED 103 P.O.C. E.C.

Longitudinal Vee Notch Charpy at Minus 50°F. (10mm x 10mm)
Longitudinal Midwall Charpy Test

Ft. Lbs.	Lateral Expansion	Per Cent Shear	
100-122-108	.099-.099-.101	80-80-90	(61984)
170-140-114	.098-.095-.090	70-100-60	(51125)

HEAT NO.	C	MN.	P.	S.	SI.	CU.	NI.	CR.	MO.	V.	
61984	.13	1.14	.012	.024	.21						Ladle Analysis
61984	.13	1.16	.012	.024	.23						Product Analysis
61984	.12	1.13	.012	.025	.23						Product Analysis
51125	.15	1.12	.012	.020	.24						Ladle Analysis
51125	.15	1.11	.011	.020	.23						Product Analysis
51125	.15	1.11	.011	.020	.23						Product Analysis

Q.A. APPROVED
BY: [illegible] DATE: 2/10/82
GUYON ALLOYS, INC.

HEAT NO.	TENSILE (KSI)	YIELD (KSI)( )	% ELONG. IN 2"	% RA	HARDNESS ROCKWELL	HARDNESS BRINELL	GRAIN SIZE
61984	66.5	46.5	38.00				
51125	67.0	44.0	37.00				

Normalized at 1650°F. Held for 2 hours and air cooled.

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.

M. P. S.
NINE MILE NUC. STATION
UNIT - 2 P. O. NMP2-P0018
P. O. 12177 SHOP FAB. PIPES
PIECE MARK:
ITT GRINNELL
PHENEBOVILLE, N.C. 2726

JOMINY DISTANCE - 16TH	ROCKWELL C	FLATTENING	HYDROSTATIC PSI
		OK	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 [illegible] PRESCRIBED IN THE APPLICABLE SPECIFICATIONS AND THE RESULTS OF SUCH INSPECTION AND TESTS AS CONTAINED IN THE COMPANY'S [illegible] 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.

R. E. Schnell
ENGINEER OF TESTS

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

PHOENIX STEEL CORPORATION

TUBE DIVISION
PHOENIXVILLE, PENNA.

7-15-82

nm
P-527

CERTIFICATE OF INSPECTION AND TESTS

S.W.E.C. INSPECTED 103

DATE: 5-17-82	DATE SHIPPED: 3-31-82	MILL ORDER NO. T-4063-C	SHIPPING LIST 363A
SOLD TO: Guyon Alloys, Inc. P. O. Box 42345 Houston, Texas 77042 Attn: Ms. Carolyn Owen		CUSTOMER ORDER NO. A48119N	
		CAR NO. CR 529005	
		MATERIAL: SEAMLESS ☐ PIPE ☒ TUBE, HOT FINISHED	
SHIP TO: 8" S/160	ITTG - IPI QUALITY CONTROL ★APPROVED★ RJ DATE JUN. 15 1982 SHEET 4 OF 4	SPECIFICATION: ASTM A-333-79, ASME SA-333 Gr. 1 &	

NO. PCS.	OD	WALL	LENGTH	TOTAL FT.	TOTAL WT.	HEAT NO.
	8.625" x .906"					

N. M. P. C.
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P3818
J. O. 12177 SHOP FAB. PIPE
PIECE MARK:-------
ITT GRINNELL
KERNERSVILLE, N.C. 27284

Longitudinal Vee Notch Charpy at Minus 50°F. (10mm x 10mm)
Longitudinal Midwall Charpy Test

Ft. Lbs.	Lateral Expansion	Per Cent Shear	
100-122-108	.099-.099-.101	80-80-90	(61984)
72-52-71	.063-.045-.063	50-40-50	(60775)

HEAT NO.	C	Mn.	P.	S.	Si.	Cu.	Ni.	Cr.	Mo.	V
61984	.13	1.14	.012	.024	.21 Ladle Analysis					
61984	.13	1.16	.012	.024	.23 Product Analysis					
60775	.12	1.17	.012	.026	.22 Ladle Analysis					
60775	.13	1.08	.012	.027	.24 Product Analysis					

ITT Grinnell Industrial Piping
KER15861-P It. 2

Q. A. APPROVED
BY: DATE: 5/20/82
GUYON ALLOYS, INC.

HEAT NO.	TENSILE (KSI)	YIELD (KSI)( )	% ELONG. IN 2"	% RA	HARDNESS ROCKWELL	HARDNESS BRINELL	GRAIN SIZE
61984	66.5	46.5	38.00	Normalized at 1650°F. Held for 2 hours and air			
60775	65.0	45.0	43.00	cooled.			

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.

JOMINY DISTANCE - 16TH	ROCKWELL C	FLATTENING	OK	HYDROSTATIC PSI	2800

1	2	4	6	8	10	12	14	16	20	24	28	32

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.

ENGINEER OF TESTS

LOUIS P. CANUSO, INC.
Wholesale Distributor

PIPE, VALVES, FITTINGS AND INDUSTRIAL PRODUCTS

DATE: March 13, 1980

STATEMENT OF CONFORMANCE

CUSTOMER: I.T.T. Grinnell Industrial Piping

PURCHASE ORDER NO: KER-13324 It. 23590

DESCRIPTION: 8" Sch 160 SA016 Grade B Pipe

Nm-71 Lot # 504901

MANUFACTURER: Phoenix Steel Corp.

HEAT NUMBER: 58400

This is to certify to the best of our knowledge and belief that the Seamless Pipe described herein is in accordance with the specification Section III, Class 1 of the ASME Boiler and Vessel Code 1974 Edition thru summer of 1974 addenda

Material stored at Louis P. Canuso, Inc., Deptford, New Jersey, retains traceability by the Identification and Verification Program of NCA 3800. ASME Section III Quality System Certificate No. QSC-396 expires January 31, 1983.

SIGNED: Dale Richards

TITLE: Quality Assurance Manager

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.
PQA
INSPECTED-211

ITTG - IPI
QUALITY CONTROL
APPROVED
T. C. WILSON
DATE JUL 2 1980
SHEET 1 OF 7

CEDAR AND SPRUCE STREETS • P.O. BOX 371 • DEPTFORD, NEW JERSEY 08096
(609) 227-5200 • (215) 334-4700 • TELEX: 83-1556

PHOENIX STEEL CORPORATION

TUBE DIVISION
PHOENIXVILLE, PENNA.

CERTIFICATE OF INSPECTION AND TESTS

DATE:	DATE SHIPPED:	MILL ORDER NO.	SHIPPING LIST NO.
2-13-79	2-12-79	T-5054-A-10	65A

SOLD TO: Louis P. Canuso, Inc.
Cedar & Spruce Sts.
Deptford, N. J. 08096

CUSTOMER ORDER NO. 14015

CAR NO.

MATERIAL: SEAMLESS ☒ PIPE ☐ TUBE, HOT FINISHED

SHIP TO: I.T.T. Grinnell
P.O.#KER-13324
It. 23590

SPECIFICATION: ASTM A-106-B-77, ASME SA-106-B (O.H.)

NO. PCS.	OD	WALL	LENGTH	TOTAL FT.	TOTAL WT.	HEAT NO.
	8.625"	x .906"				58400 68783

The material was manufactured in accordance with the Quality System Program audited and approved by L.P. Canuso, Inc. on 5-25-78 as conforming with the requirments of ASME Section III Subarticle NCA-3800.

HEAT NO.	C	MN.	P.	S.	SI.	CU.	NI.	CR.	MO.
58400	.25	.81	.012	.027	.24	Ladle Analysis			
58400	.26	.80	.013	.027	.24	Product Analysis			
58400	.26	.80	.012	.027	.24	Product Analysis			
68783	.27	.85	.014	.028	.25	Ladle Analysis			
68783	.25	.82	.014	.028	.24	Product Analysis			
68783	.25	.80	.013	.029	.25	Product Analysis			

ITTG - IPI
QUALITY CONTROL
APPROVED
T. C. WILSON
DATE JUL 2 1980
SHEET 2 OF 4

HEAT NO.	TENSILE (KSI)	YIELD (KSI)( )	% ELONG. IN 2"	% RA	HARDNESS ROCKWELL	HARDNESS BRINELL	GRAIN SIZE
58400	75.0	48.8	34.00	Normalized at 1650°F.			
68783	79.8	48.3	32.00	"	"	"	

S. W. E. C. PQA INSPECTED 211

N. M. P. C.
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P3013
J. O. 12177 SHOP FAB. PIPE
PIECE MARK:---------
ITT GRINNELL
KERNERSVILLE, N.C. 27284

JOMINY DISTANCE - 16TH ROCKWELL C FLATTENING OK HYDROSTATIC PSI 2800

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

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 IN 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.

R. W. Perkins
ENGINEER

UNIVERSAL TECHNICAL TESTING LABS., INC.
Woodlawn Avenue and North Street Post Office Box 372, Collingdale, Pa. 19023
Phone: 215/586-3070

REPORT 3497

To: LOUIS P. CANUSO, INC.
P. O. Box 178
Deptford, N. J. 08096

Job No. 13787
Date March 3, 1980
Cust. P. O. 23273

page 1 of 1 pages

INSPECTION METHOD:	APPLICABLE SPECIFICATIONS:	JOB LOCATION
ULTRASONIC	ASTM E 213	Lab ☒ Field

QUANTITY	DESCRIPTION	RECOMMEND ACCEPT	RECOMMEND REJECT	REMARKS
	NM-71 Ht. 58400			
2	8" Sch. 160 SA 106-B			
	1 @ 17-3	x		No rejectable indications noted
	1 @ 16-8	x		External gouges noted on pipe
	TAG P.O. KER 13324 It. 23590 LPC 23273			
	NM D-359			Calibration against 2 direction 5% w/t notches
	U.T. Procedure - UT-CAN-1 Rev. A dated 10/10/78			

S. W. I. C. P.G.A. INSPECTED 211

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 JUN 2 1980
SHEET 3 OF 4

LOUIS P. CANUSO, INC.
APPROVED
Q. A. DEPT.
INTL. DATE 3/3/80

EQUIPMENT and/or PROCEDURE

ULTRASONIC
Model: USIP-11
Search Unit: Harisonic 1 MHZ
Couplant: Water
Shear ☒ Longit. ☐

MAGNETIC PARTICLE
Current:
A. C. ☐ D. C. ☐
Wet ☐ Dry ☐
Residual ☐ Continuous ☐

LIQUID PENETRANT
Penetrant:
Penetrant time:
Cleaner:
Developer:
Developer time:

The test results reported herein are our conclusions based on our professional experience and our interpretation of the applicable specifications. Our recommendations should be carefully reviewed and are subject to acceptance by customer and/or his agents. We make no warranty relative to the structual integrity of the part inspected.

Govt./Industrial Rep.

Inspector/Technician [signature]
Michael C. Hodes, Level II. [illegible]

Form A5-2

BENJAMIN F. SHAW COMPANY

LABORATORY REPORT

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. 27284

March 12, 1980

B. F. SHAW COMPANY LABORATORY ORDER NO. 9204

REFERENCE: L. P. Canuso, Inc., Purchase Order No. 23272
Taged P.O. KER-13324

Procedure Q.C. 5 Rev. 0
dated 5/23/79

Gentlemen:

We hereby certify that six (6) samples of pipe were impact tested at the temperatures listed below. The longitudinal specimens were removed from mid wall of the specimens with the notch perpendicular to the surface. Test results are as follows:

Size	Grade	Ht. No.	Test Temp.	Lat. Exp.	Ft. Lbs.	Percent Shear	Spec. Size (mm)
16" S/80	SA106B	58185	+32°F	29.5	26.5	30	10 x 10
				36.5	31.5	30	
				35.0	29.0	30	
16" S/80	SA106B	N92657	+32°F	39.5	32.0	20	10 x 10
				44.0	40.0	20	
				40.0	37.0	20	
16" S/80	SA106B	N97873	+32°F	66.0	71.0	20	10 x 10
				50.0	47.0	20	
				60.0	70.0	20	
8" S/160	SA106B	58400	+40°F	47.5	42.0	30	10 x 10
				57.0	54.0	40	
				46.5	41.5	40	
20" S/80	SA106B	N97287	+40°F	40.0	33.0	20	10 x 10
				43.5	35.0	20	
				26.5	17.0	20	
6" S/80	SA106B	26257	+40°F	57.0	35.5	60	10 x 7.5
				55.0	35.0	60	
				56.0	32.5	60	

NM P-359

S. W. E. C. PQA INSPECTED-211

BENJAMIN F. SHAW COMPANY LABORATORY

Leonard P. Smeal | G.H.S.

Leonard P. Smeal
Laboratory Supervisor

LPS/ktg

ITTG - IPI
QUALITY CONTROL
APPROVED
T. C. WILSON
DATE JUN 2 1980
SHEET 4 OF 4

LOUIS P. CANUSO, INC.
APPROVED
Q. A. DEPT.
INTL. DATE 3/13/80

5.

00173

GOYON ALLOYS, INC.

NCR 4092

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

MATERIAL CERTIFICATION

Subject: ITT Grinnell Industrial Piping
Purchase Order KER 10942

Description: SEAMLESS ASME SA106 GRADE C

Item 1. 24" S/140
(U.S.S. Heat#'s 70C543 & 70E186)

Part # NM-51

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 1 of the ASME Boiler and Pressure Vessel Code, 1974 Edition, No Addenda, and that all requirements of the purchase order have been fulfilled.

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

Judith Garry
Judith Garry
Quality Assurance

Date: 6-29-79

Quality Systems Certificate
(Materials) # N-934

Expiration Date: 1/6/81

cc: Job File
Q.A. File - Houston
JG: gjm

S. W. E. C. PQC INSPECTED 103

NM-51

ITTG - IPI
QUALITY CONTROL
APPROVED
T. C. WILSON
DATE SEP. 12 1979
SHEET 1 OF 21

DUPLICATE

Ker 10942 dr-4092

CP-QC Rev. 6-1-72

UNITED STATES STEEL CORP.
CHRISTY PARK WORKS
McKEESPORT, PA.

QUALITY CONTROL SYSTEM

RECORD OF TESTS

NM P-281

DATE 6-14-79

AGENCY NUMBER EB 27860 CUSTOMER Guyon Alloys Inc. CONTRACT NUMBER A-25471-NW

GRADE ASME SA106 "C" O.D. 24" WALL 2.062" HEAT TREATMENT NORMALIZE

HEAT NUMBER 70C543 HEAT CODE B13 TEST IDENTITY Pipe 4917 FURNACE CHARGE NUMBER C-3685

TEST NO.	DIMENSIONS	AREA	YIELD STRENGTH BEAM POUNDS	YIELD STRENGTH POUNDS PER SQ. IN.	TENSILE STRENGTH BEAM POUNDS	TENSILE STRENGTH POUNDS PER SQ. IN.	ELONGATION IN 2 INS.	ELONGATION %	REDUC. DIMENSIONS	REDUC. AREA	REDUC IN AREA, %
4917	505	2003	9500	47429	15400	76885	65	32.5	300	0707	64.7
				HYDROTESTED TO 2000 PSI							
SPEC				40000		70000		20.0			

	TEST TEMP °F	RESULTS
CHARPY IMPACT TEST	+40° F	1- 65.0, 2- 60.0, 3- 58.0 } FR Less
DROP WEIGHT TEST	—	—
FLATTENING TEST	14.2"	OK To 12.0"

CHEMICAL ANALYSIS

	C.	Mn.	P.	S.	Si	V
LADLE	.25	.87	.006	.025	.25	.09
Check	.26	.88	.007	.024	.25	.095
Check	.26	.86	.008	.021	.25	.094

ITTG - IPI
QUALITY CONTROL
APPROVED
T. C. WILSON
DATE SEP 12 1978
SHEET 2 OF 2

APPROVED PIPE NUMBERS

4909 4910 4913 4916
4917

Test results which were not witnessed have been reviewed and meet order requirements.

Third Party Inspector

N. M. P. S.
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 hereby certify that the above figures are correct, as contained in records maintained at the above address.

Chief Metallurgist P. G. Fairchok

P. G. Fairchok

0017.3

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

Log No. 199-3 / 416-3 Page 1 of 1

CORRECTED CERTIFICATION - 10/9/80

CUSTOMER: ITT GRINNELL CORP

CUSTOMER'S Order No.: KER 12893-F

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

Date FEBRUARY 11, 1980

Bonney Order No. 80234

Mark

00173

Item No.	Quantity No.	Bonney Lot No.	Grade or Specification No. Chemical Analysis, Physical Properties, Remarks:
			SA105
6 23873	6 NM-3180	P703	24 (2.062) X 3/4 (.218) 6000# Sockolet C.29 Mn.94 P.012 S.021 Si.19 T/S 82,702 Y/S 50,505 El 30 Ra 60.5

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

ITTG - IPI
QUALITY CONTROL
APPROVED
T. C. WILSON
DATE OCT. 16 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 1, 1974 Edition with No Addenda, SA105, Grinnell Purch Spec NM-001, Rev. 3, NM-005, Rev. 3, and the purchase order.

2. The fittings supplied were Magnetic Particle Tested and satisfactory results obtained in accordance with ASME Section III, NB2545, BF-MP-4, Rev. 0, Add. 1, by John L. Shuster, SNT-TC-1A, Level II.

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

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 check

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

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

L. M. Lauderslager
QUALITY ASSURANCE MANAGER

FORM 2135A

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

Log No. 199-11 / 416-3 Page 1 of 1

CORRECTED CERTIFICATION - 10/9/80

CUSTOMER: ITT GRINNELL CORP

CUSTOMER'S Order No.: KER 12893-F

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

Date FEBRUARY 12, 1980

Bonney Order No. 80234

Mark 00173

Item No.	Quantity No.	Bonney Lot No.	Grade or Specification No. Chemical Analysis, Physical Properties, Remarks:
			SA105
7 23636	2 NM-3166	P595	.8 (.906) X 3/4 (.218) 6000# Sockolet C.30 Mn.90 P.007 S.025 Si.21 T/S 85,025 Y/S 53,299 El 30 Ra 62.5

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

ITTG - IPI
QUALITY CONTROL
APPROVED
T. C. WILSON
DATE OCT. 16 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 1, 1974 Edition with no Addenda, SA105, Grinnell Purch Specs NM-001, Rev. 3, NM-005, Rev. 3, and the purchase order.

2. The fittings supplied were Magnetic Particle Tested and satisfactory results obtained in accordance with ASME Section III, NB2545, BF-MP-4, Rev. 0, Add. 1, by John L. Shuster, SNT-TC-1A, Level II.

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

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 check

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

by L. M. Sandenberger
QUALITY ASSURANCE MANAGER

FORM 2135A

NM Bwp-6-13

L A H CO.
Material Analysis Report
METALLURGICAL DEPARTMENT

TRANS. 00173

PURCHASER ITT Grinnell-Industrial Piping Div.

PURCHASER'S ORDER NO. KER 12886-F

ADDRESS P.O. Box 566 Kernersville, N. C. 27284

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. 27284

CUDAHY, WIS., February 11, 19 80

LSO NO. F61016A

INVOICE NO. P54728

NO. PCS.	DESCRIPTION AND SPECIFICATION	HEAT NO. AND CODE	CHEMICAL COMPOSITION C	MN	P	S	SI	NI	CR	MO	PHYSICAL PROPERTIES YIELD STRENGTH KSI	ULTIMATE STRENGTH KSI	ELONG. %	RED OF ARE.
2	ITEM # 9 8" S/160 90° LR Ell Bev. Per Grinnell NM-D2 Rev. 5 dated 12-20-78	L65662 AD8NK	.24	.92	.009	.008	.19				50.4	71.4	35	69

VEE Notch Charpy Impacts 10 X 10 X 8
+40° F.

Ft. Lbs. 112 - 119 - 99
% Shear 74 - 72 - 77
Lat. Exp. .085 - .081 - .077

Impacts were taken with their longitudinal axis parallel to the longitudinal axis of the fitting. Centered on wall. The axis of the notch is perpendicular to the surface.

ASME SA234 WPB Per ASME Section III Nuclear Class I
1974 Edition No Addenda & NM-005 Rev. 3 dated 4-7-77 & NM-001 Rev. 3 dated 3-15-79

Serial No. 897, 898

Item No. NM-1003-5

S.W.E.C. PQA INSPECTED-211

ITTG - IPI
QUALITY CONTROL
APPROVED
T. C. WILSON
DATE FEB. 19 1980
SHEET 1 OF 3

SUBSCRIBED AND SWORN TO BEFORE ME THIS

_____ DAY OF _____ 19 ____

NOTARY PUBLIC

MY COMMISSION EXPIRES _____

I HEREBY CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF THE ABOVE REPORT IS TRUE AND CORRECT.

W. Gauger Jr.

NM
BW-643

L[illegible]H CO.
Material Analysis Report
METALLURGICAL DEPARTMENT

TRANS. 00173

PURCHASER ITT Grinnell - Ind. Piping Div.

PURCHASER'S ORDER NO. KER 12886-F

ADDRESS

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

CUDAHY, WIS., February 11, 19 80

LSO NO. F61016A

INVOICE NO. P54728

Starting material conforms to chemical and tensile properties of ASME SA106 Grade B Seamless Pipe.

Fittings have a maximum hardness of 197 BHN.

Tensile specimen size - Standard Round.

Fittings were ultrasonically inspected and accepted per Procedure 9-Q-2 Rev. 4 Nuclear Class 1 -
Reports attached.

This material was produced under a quality system program approved by ITT Grinnell Industrial Piping Incorporated on October 1, 1979 as conforming to the requirements of ASME Section III, Sub-Article NCA 3800.

Fittings were heat treated per (L) Procedure 13-F-451 -

Normalized at 1650° F.

S. W. E. C.
PQA
INSPECTED-211

ITTG - IPI
QUALITY CONTROL
APPROVED
T. C. WILSON
DATE FEB. 19 1980
SHEET 2 OF 3

SUBSCRIBED AND SWORN TO BEFORE ME THIS

_____ DAY OF _____ 19 ____

NOTARY PUBLIC

I HEREBY CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF THE ABOVE REPORT IS TRUE AND CORRECT.

W. Gauge

N.M.P.C.
NINE MILE NUC. STATION
UNIT-2 P.O. NMP2-P3048
J.O. 12177 SHOP FAB. PIPE
PIECE MARK:
GRINNELL
WARNERSVILLE N.C.

LADISH CO.
METALLURGICAL DEPT.
ULTRASONIC FITTINGS REPORT

TRANS. 00173

CUSTOMER	LJO	LSO	DATE
Grinnell	28-46347	F61016	1/18/80

PART NAME: 8 S/160 90 LR El

ULTRASONIC SPEC.	ITEM NO.	MATERIAL SPEC.
9 Q 2 Rev. 4	9	SA234 WPB Ncc Cl. 2

METHOD OF FORMING: ☐ FORGED ☐ EXTRUDED ☒ FORMED ☐ ROLL & WELD

EQUIPMENT: ☐ USIP II NO. ____ ☒ OTHER Mark I NO. (L) 1981 NO. ____

METHOD: ☒ CONTACT ☐ WITH SHOE ☐ IMMERSION

WAVE FORM: ☐ LONGITUDINAL ☒ SHEAR ANGLE 45°

COUPLANT: SC-1

WATER PATH DISTANCE:

FREQUENCY (MHZ): ☐ 1.0 ☒ 2.25 ☐

TRANSDUCER SIZE & NUMBER: 1/2" x 1" sq. C-75.

SENSITIVITY:

LONGITUDINAL

Circ.: Set 50% vs. OD axial notch, estab. "DAC" vs. ID axial notch placed 1.5" from end.

SHEAR

Axial: Set 50% vs. OD circ. notch, estab. "DAC" vs. second full node on OD notch placed 6" from end.

NOTCH DEPTH: 5% N/W "V" .045"x1"

TEST PROCEDURE:

LONGITUDINAL

Scan 2 opp. circ. and 2 opp. axial directions.

MATERIAL INSPECTED

SERIAL	CODE	DISPOSITION	SURFACE CONDITION	INSPECTOR NAME	CERTIFICATION LEVEL
897	AD8N K	Sonic accept.	Grit blast & ground	Toth	II
898	"	" "			

COMMENTS:

ITTG - IPI
QUALITY CONTROL
APPROVED
T. C. WILSON
DATE FEB. 19 1980
SHEET 3 OF 3

S.W.E.C.
QA
INSPECTED 211

APPROVED BY R.P. Mierzwa
R. P. MIERZWA/dh

LCO 5213

LADISH CO.
Material Analysis Report
METALLURGICAL DEPARTMENT

PURCHASER ITT Grinnell-Industrial Piping Div.

PURCHASER'S ORDER NO. KER 12886-F

ADDRESS

NM Brif-680

CUDAHY, WIS., March 26, 1980

LSO NO. F61016A

INVOICE NO.

NO. PCS.	DESCRIPTION AND SPECIFICATION	HEAT NO. AND CODE	CHEMICAL COMPOSITION C	Mn	P	S	Si	Ni	Cr	Mo	PHYSICAL PROPERTIES YIELD STRENGTH KSI	ULTIMATE STRENGTH KSI	ELONG. %	RED. OF AREA
2	ITEM # 10 8" S/160 45° Ell Bev per Grinnell NM-D2 Rev. 5 dated 12-20-78 ASME SA234 WPB Per ASME Section III Nuclear Class 1 1974 Edition No Addenda & NM-005 Rev. 3 dated 4-7-77 & NM-001 Rev. 3 dated 3-15-79 Serial # 895, 896 Item #NM-1003-6	L65662 AD8NN	.24	.92	.009	.008	.19				50.4	71.4	35	69

VEE NOTCH Charpy Impacts 10 X 10 X 8 @ +40° F.

Ft. Lbs.	112	119	99
% Shear	74	72	77
Lat. Exp.	.085	.081	.077

ITTG - PI
QUALITY CONTROL
APPROVED
T. C. WILSON
DATE APR. 21 1980
SHEET 1 OF 3

Impacts were taken with their longitudinal axis parallel to the longitudinal axis of the fitting. Centered on wall. The axis of the notch is perpendicular to the surface.

This material was produced under a quality system program approved by ITT Grinnell Industrial Piping Incorporated on October 1, 1979 as conforming to the requirements of ASME Section III, Sub-Article NCA-3800.

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

SUBSCRIBED AND SWORN TO BEFORE ME THIS

_____ DAY OF _____ 19____

NOTARY PUBLIC

MY COMMISSION EXPIRES

LCO 1016 R2

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

I HEREBY CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF THE ABOVE REPORT IS TRUE AND CORRECT.

W. Gauge Jr.

LADISH CO.
Material Analysis Report
METALLURGICAL DEPARTMENT

PURCHASER ITT Grinnell-Industrial Piping Div.

PURCHASER'S ORDER NO. KER 12886-F

ADDRESS

NM
BWJ-686

CUDAHY, WIS., March 26, 19 80

LSO NO. F61016A

INVOICE NO.

Item # 10

Starting material conforms to chemical and tensile properties of ASME SA106 Grade B Seamless Pipe.

Fittings have a maximum hardness of 197 BHN.

Tensile specimen size - Standard Round.

Fittings were heat treated per Ladish Procedure 13-F-451 - Normalized at 1650° F.

Fittings were ultrasonically inspected and accepted per Ladish Procedure 9-Q-2 Rev. 4 - Report attached.

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

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

ITTG - IPI
QUALITY CONTROL
APPROVED
T. C. WILSON
DATE APR. 21 1980
SHEET 2 OF 3

SUBSCRIBED AND SWORN TO BEFORE ME THIS

DAY OF 19

NOTARY PUBLIC

MY COMMISSION EXPIRES

LCO 1016A

I HEREBY CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF THE ABOVE REPORT IS TRUE AND CORRECT.

W. Gauge

NM

LADISH CO.
METALLURGICAL DEPT.
ULTRASONIC FITTINGS REPORT

CUSTOMER	LJO	LSO	DATE
Grinnell	28-46348	F61016	2/26/80

PART NAME: 8 S/160 45° EL BEV Per Grinnell

ULTRASONIC SPEC.	ITEM NO.	MATERIAL SPEC.
9 Q 2 Rev. 4	10	SA 234

METHOD OF FORMING: ☐ FORGED ☐ EXTRUDED ☒ FORMED ☐ ROLL & WELD

EQUIPMENT: ☒ USIP II NO. (L) 1782 NO. ____ ☐ OTHER NO. ____ NO. ____

METHOD: ☒ CONTACT ☒ WITH SHOE ☐ IMMERSION

WAVE FORM: ☐ LONGITUDINAL ☒ SHEAR ANGLE 45°

COUPLANT: SC-2

WATER PATH DISTANCE:

FREQUENCY (MHZ): ☐ 1.0 ☒ 2.25 ☐ 5.

TRANSDUCER SIZE & NUMBER: 1/2" Ø (LF) 2

SENSITIVITY:

LONGITUDINAL

SHEAR Circ.: Set 50% vs. OD axial notch, estab. DAC vs. ID axial notch.
Axial: Set 50% vs. OD circ. notch, estab. DAC

NOTCH DEPTH Circ. Axial .027 >

TEST PROCEDURE:

LONGITUDINAL

SHEAR Test OD in 2 opposite circum. directions and 2 opposite axial directions.

MATERIAL INSPECTED

SERIAL	CODE	DISPOSITION	SURFACE CONDITION	INSPECTOR NAME	CERTIFICATION LEVEL
895	AD8N N	Sonic OK	Shot Blasted	Colby	I
896	"	" "			

COMMENTS:
Level I operator supervised by Level II personnel.

ITTG - IPI QUALITY CONTROL APPROVED T. C. WILSON DATE APR 21 1980 SHEET 3 OF 3

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

R. P. Mierzwa Level III
R. P. MIERZWA - LEVEL III
RPM:kjm

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

APPROVED BY R. P. Mierzwa
R. P. MIERZWA/dh

LCO 5213

MATERIAL MANUFACTURERS TEST REPORT 00173

NM Bldg 889

Page 1 of 2

Heat Code: PK-R

CUSTOM ALLOY CORPORATION

ROUTE 513, CALIFON, N. J. 07830

PRODUCT DESCRIPTION	CUSTOMER DATA
Item L/R 90° Elbow	Name ITT Grinnell Industrial
Size 8" NPS	P.O. No. KER-14731 P.N. NM-1003-5
Wall Sch 160 (.906)	Tag No. KER-14731 Niagara Mohawk
Grade WP-B Smls.	Job No. N-16225-1

Specifications: ASME SA234 WP-B Seamless, Section III Class 1, 1974 Edition No Addenda Spec Sheets NM-001 Rev. 3 & NM-005 Rev. 3; Also ANSI B16.9 applies. Ends per NM-D2

CHEMICAL ANALYSIS

	C	Mn	P	S	Si	Cr	Ni	Mo	Cb			
Ladle	.26	.95	.01	.02	.26							
Check												

MECHANICAL PROPERTIES

Yield Strength .2% Offset	Tensile Strength PSI	Elong. in 2" % transv.	Red of Area %		Starting Material Control No.	Starting Material conforms to the chemical and tensile requirements of
51,382	82,412	28.0			CAC 12617	ASME SA-106

MILL HEAT NO: 60786 Phoenix Steel Corp.

REMARKS:
(A) Heat Treatment: Normalized at 1650°F ± 25°F, held at temperature for 1 hour per inch, then cooled in still air. (75-HT-4 Rev.2)
(B) Hardness: BHN 128
(C) U.T. Prodedure: 78-UTFF-6, Rev. 2 - Satisfactory
(D) We certify this material is in compliance with NB-2550.
(E) We certify this Order is in compliance with 10 CFR-21.
(F) Charpy Impact test in accordance with NB-2300 & SA-234, testing temperature at +40°F, and 77-CI-1, Rev. 1

Sample No.	Ft. Lbs.	Ave.	Lateral Exp.	Shear Fracture
1	24		32	30
2	26	29.6	30	30
3	26		27	30

S. W. E. C. PQ-1 INSPECTED 22

S.M.P.C. NINE MILE NUC. STATION UNIT-2 P. O. NMP2-P8010 J. O. 18177 SHOP FAB. PIPE PIECE MARK — — ITT GRINNELL KERNERSVILLE, N.C. 27284

ITTG - IPI QUALITY CONTROL ★APPROVED★ T. C. WILSON DATE AUG 17 1981 SHEET 1 OF 3 5F050181-1

State of New Jersey
County of Hunterdon

Sworn and subscribed before me this

_____ day of _____ 19 _____

NOTARY PUBLIC OF NEW JERSEY
My Commission Expires

Acceptance and Approval by Customer Representative/Inspector

I certify the above product has been manufactured in accordance with all applicable parts of the above order and specifications.

Judith Gick

CUSTOM ALLOY CORPORATION
Authorized Signature

5/27/81

HEAT CODE: PK-R

00173

Custom Alloy Corporation Route 513 Califon, N.J. 07830 • Telephone 201-832-7111 • TWX: 510-235-3362 • TELEX: 13-6456

NM Buf-889

MATERIAL MANUFACTURERS TEST REPORT
Continuation Sheet

CUSTOMER	P.O. NO.	JOB NO.
ITT Grinnell Industrial	KER-14731	N-16225-1

REMARKS: (F) Cont. Orientation & Location: The specimens were removed with the longitudinal axis parallel to the longitudinal axis of the sample with the axis of the Vee perpendicular to the surface.

(G) We certify these items were manufactured under a Quality System meeting the requirements of ASME Sec. III NCA-3800 as audited and approved by ITT Grinnell on 11/6/80, Our Quality Manual of 4/1/80 with Revision 2, 2/16/81.

(H) Note: We certify we did not authorize Phoenix Steel to do any weld repair on the material supplied.

S. W. E. C. PQA INSPECTED 224

N.M.P.C.
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P3010
J. O. 18177 SHOP FAB. PIPE
PIECE MARK ——
ITT GRINNELL
KERNERSVILLE, N.C. 27284

ITTG - IPI
QUALITY CONTROL
APPROVED
T. C. WILSON
DATE AUG 17 1981
SHEET 2 OF 3

Q.A. AUDITED
By: [illegible]
Date: 5-27-81

State of New Jersey
County of Hunterdon

Sworn and subscribed before me this

____ day of _____ 19____

NOTARY PUBLUC OF NEW JERSEY
My Commission Expires _____

5F050181-1
5/27/81

Acceptance and Approval by Customer Representative/Inspector

I certify the above product has been manufactured in accordance with all applicable parts of the above order and specifications.

CUSTOM ALLOY CORPORATION
Authorized Signature

21589 9/80

00173

Custom Alloy Corporation Route 513 Califon, N.J. 07830 • Telephone 201-832-7111 • TWX: 510-235-3352 • TELEX: 13-6456

NM
Bug-889

CAC NO: 12617

HEAT NO: PK-R

ULTRASONIC TEST REPORT

ITT Grinnell			
CUSTOMER		INSPECTOR/LEVEL II	DATE
N-16225-1	WP-B	[signature]	5/8/81
JOB NO.	ALLOY	EXAMINER/LEVEL III	DATE
L/R 90° Elbow	8" S/160		
ITEM	SIZE	CUSTOMER APPROVAL	DATE

PROCEDURE:

78-UTFF-6 Rev. 2

Krautkramer USIP 11		Exosen 14
EQUIPMENT		COUPLANT
1/2" x 1"	Gamma	2¼ MHz
TRANSDUCER	TYPE	FREQUENCY
5% Notch		
CALIBRATION STANDARD		
80%		45°
REFERENCE LEVEL (%)		SOUND ANGLE — DEGREES

The following material has been inspected and accepted in accordance with the above procedure:

6 fittings accepted

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

N.M.P.C.
NINE MILE NUC. STATION
UNIT-2 P. O. NMP2-P2018
J.O. 12177 SHOP FAB. PIPE
PIECE MARK ——
ITT GRINNELL
KERNERSVILLE, N.C. 27284

ITTG - IPI
QUALITY CONTROL
★APPROVED★
T. C. WILSON
DATE AUG 17 1981
SHEET 3 OF 3

21589 9/80

MATERIAL MANUFACTURERS TEST REPORT

00173

NMP 8/19/82

Page 1 of 2

Heat Code: QS-L

CUSTOM ALLOY CORPORATION

ROUTE 513, CALIFON, N. J. 07830

N. E. C. S. PAC INSPECTED: 103

PRODUCT DESCRIPTION		CUSTOMER DATA	
Item	L/R 90° Elbow	Name	ITT Grinnell Industrial Piping
Size	8" NPS	P.O. No.	KER-14770 P.N. NM-1003-5
Wall	S/160 (.906)	Tag No.	KER-14770 Niagara Mohawk-Marble Hill II
Grade	WP-B Smls.	Job No.	N-16310-1

Specifications: ASME SA234 WP-B Seamless Section III Class 1, 1974 Edition No Addenda and NM-001 Rev. 3 & NM-005 Rev. 3 Ends per NM-D-2

ITTG - IPI QUALITY CONTROL APPROVED T. C. WILSON DATE AUG 24 1981 SHEET 1 OF 3

CHEMICAL ANALYSIS

	C	Mn	P	S	Si	Cr	Ni	Mo	Cb
Ladle	.26	.95	.01	.02	.26				
Check									

MECHANICAL PROPERTIES

Yield Strength .2% Offset	Tensile Strength PSI	Elong. in 2" %	Red of Area %		Starting Material Control No.	Starting Material conforms to the chemical and tensile requirements of
53,266	84,422	30.0			CAC 12617	ASME SA-106

MILL HEAT NO: 60786 Phoenix Steel Corp.

REMARKS:
(A) Heat Treatment: Normalize at 1650°F ± 25°F, held at temperature for 1 hr/inch, then cooled in still air. (75-HT-4 Rev.2)
(B) Hardness: BHN 170
(C) U.T. Procedure: 78-UTFF-6, Rev. 2 - Satisfactory
(D) Charpy Impact test in accordance with 77-CI-1 Rev. 1, testing temperature at +40°F

Sample No.	Ft. Lbs.	Ave.	Shear Fracture	Lateral Expansion
1	57		40	47
2	60	52.7	50	58
3	60		50	53

Orientation & Location: The specimens were removed with the longitudinal axis parallel to the longitudinal axis of the sample with the axis of the Vee perpendicular to the surface.

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

State of New Jersey
County of Hunterdon

Sworn and subscribed before me this ____ day of _____ 19 ____

NOTARY PUBLIC OF NEW JERSEY
My Commission Expires

5F070881-1
8/18/81

Acceptance and Approval by Customer Representative/Inspector

I certify the above product has been manufactured in accordance with all applicable parts of the above order and specifications.

CUSTOM ALLOY CORPORATION
Authorized Signature

HEAT CODE: QS-L

00173

Custom Alloy Corporation Route 513 Califon, N.J. 07830 • Telephone 201-832-7111 • TWX: 510-235-3362 • TELEX: 13-6456

MATERIAL MANUFACTURERS TEST REPORT
Continuation Sheet

CUSTOMER	P.O. NO.	JOB NO.
ITT Grinnell Industrial	KER-14770	N-16310-1

REMARKS:
(E) We certify that this order is in compliance with 10 CFR-21.
(F) We certify these items were manufactured under a Quality System meeting the requirements of ASME Sec. III NCA-3800 as audited and approved by Grinnell on 11/6/80 Our Quality Manual of 4/1/80 with Rev. 2 of 2/16/81.

NM
Bw7.902

S. W. E. C. PQC INSPECTED 103

ITTG - IPI
QUALITY CONTROL
APPROVED
T. C. WILSON
DATE AUG 24 1981
SHEET 2 OF 3

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

Q.A. AUDITED
By: JS
Date: 8-18-81

State of New Jersey
County of Hunterdon

Sworn and subscribed before me this

_____ day of _____ 19____

NOTARY PUBLUC OF NEW JERSEY
My Commission Expires _____

Acceptance and Approval by Customer Representative/Inspector

I certify the above product has been manufactured in accordance with all applicable parts of the above order and specifications.

CUSTOM ALLOY CORPORATION
Authorized Signature

5F070881-1

8/18/81

21589 9/80

Custom Alloy Corporation Route 513 Califon, N.J. 07830 • Telephone 201-832-7111 • TWX: 510-235-3362 • TELEX: 13-6456

CAC NO: 12617

HEAT NO: QS-L

ULTRASONIC TEST REPORT

ITT Grinnell		Mark Kenney	7/15/81
CUSTOMER		INSPECTOR/LEVEL II	DATE
N-16310-1R1	WP-B		
JOB NO.	ALLOY	EXAMINER/LEVEL III	DATE
L/R 90° Elbow : 8" S/160			
ITEM	SIZE	CUSTOMER APPROVAL	DATE

PROCEDURE: NM PWR-902 78-UTT-6, Rev. 2

Krautkramer USIP 11	Exosen 14
T EQUIPMENT	COUPLANT

1" x ½"	Gamma	2¼ MHz
TRANSDUCER	TYPE	FREQUENCY

5% Notch

CALIBRATION STANDARD

80%	45°
REFERENCE I FVEL (%)	SOUND ANGLE – DEGREES

The following material has been inspected and accepted in accordance with the above procedure:

1 Fitting Accepted

ITTG - IPI
QUALITY CONTROL
APPROVED
T. C. WILSON
DATE AUG 24 1981
SHEET 3 OF 3

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

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

21589 9/80

MATERIAL MANUFACTURERS TEST REPORT TRANS. #05 00173

NM 908

Heat Code: RB-E

CUSTOM ALLOY CORPORATION

ROUTE 513, CALIFON, N. J. 07830

PRODUCT DESCRIPTION	CUSTOMER DATA
Item L/R 45° Elbow	Name ITT Grinnell Industrial
Size 8" NPS	P.O. No. KER-14731
Wall S/160 (.906)	Tag No. KER-14731 Niagara Mohawk
Grade WP-B Smls.	Job No. N-16225-3 TAG: NM-1003-6

Specifications: ASME SA234 WP-B Seamless, Section III Class 1, 1974 Edition No Addenda Ends per NM-D2 NM-001 Rev. 3 & NM-005 Rev. 3 ANSI B16.9 applies.

INSPECTED 103 U.S. N.E.C. ROC

CHEMICAL ANALYSIS

	C	Mn	P	S	Si	Cr	Ni	Mo	Cb	
Ladle	.26	.95	.01	.02	.26					
Check										

MECHANICAL PROPERTIES

Yield Strength .2% Offset	Tensile Strength PSI	Elong. in 2" Trans.	Red of Area %		Starting Material Control No.	Starting Material conforms to the chemical and tensile requirements of
54,020	85,628	28.0			CAC 12617	ASME SA-106

MILL HEAT NO: 60786 Phoenix Steel Corp.

REMARKS:
(A) Heat Treatment: Normalized at 1650°F ± 25°F, held at temperature for 1 hr/inch, then cooled in still air. (75-HT-4 Rev.2)
(B) Hardness: BHN 127
(C) U.T. Procedure: 78-UTFF-6 Rev. 2 - Satisfactory
(D) We certify this material is in compliance with NB-2550.
(E) We certify that this order is in compliance with 10 CFR-21.
(F) Charpy Impact test in accordance with NB-2300 and 77-CI-1 Rev.1 testing temperature at +40°F

Sample No.	Ft. Lbs.	Ave.	Lateral Exp.	Shear Fracture
1	37	42	.35	40
2	41		39	40
3	49		42	50

State of New Jersey
County of Hunterdon

Sworn and subscribed before me this

day of 19

NOTARY PUBLIC OF NEW JERSEY
My Commission Expires

ITTG - IPI
QUALITY CONTROL
APPROVED
T. C. WILSON
DATE SEP. 21 1981
SHEET 1 OF 3

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

5F082581-1

8/27/81

Acceptance and Approval by Customer Representative/Inspector

I certify the above product has been manufactured in accordance with all applicable parts of the above order and specifications.

CUSTOM ALLOY CORPORATION
Authorized Signature

HEAT CODE: RB-E

00173

Custom Alloy Corporation Route 513 Califon, N.J. 07830 • Telephone 201-832-7111 • TWX: 510-235-3362 • TELEX: 13-6456

MATERIAL MANUFACTURERS TEST REPORT
Continuation Sheet

NM Buf-908

CUSTOMER	P.O. NO.	JOB NO.
ITT Grinnell Industrial	KER-14731	N-16225-3

REMARKS: (F) Continued: Orientation & Location: The specimens were removed with the longitudinal axis parallel to the longitudinal axis of the sample with the axis of the Vee perpendicular to the surface.

(G) We certify these items were manufactured under a Quality System meeting the requirements of ASME Sec. III NCA-3800 as audited and approved by ITT Grinnell on 5/12/81, Our Q.A. Manual dated 4/1/81.

INSPECTED · 103 S. W. E. C. 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

ITTG - IPI
QUALITY CONTROL
APPROVED
T. C. WILSON
DATE SEP. 21 1981
SHEET 2 OF 3

Q.A. AUDITED
By: JS
Date: 8-27-81

State of New Jersey
County of Hunterdon

Sworn and subscribed before me this

_____ day of _____ 19____

NOTARY PUBLUC OF NEW JERSEY
My Commission Expires _____

5F082581-1
8/27/81

Acceptance and Approval by Customer Representative/Inspector

I certify the above product has been manufactured in accordance with all applicable parts of the above order and specifications.

CUSTOM ALLOY CORPORATION
Authorized Signature

21589 9/80

NM
BWR-908

Custom Alloy Corporation Route 513 Califon, N.J. 07830 • Telephone 201-832-7111 • TWX: 510-235-3362 • TELEX: 13-6456

CAC NO: 12617

HEAT NO: RB-E

ULTRASONIC TEST REPORT

ITT Grinnell	Mark Lechner	8/26/81
CUSTOMER	INSPECTOR/LEVEL II	DATE
N-16225-3R1 WP-B		
JOB NO. ALLOY	EXAMINER/LEVEL III	DATE
L/R 45° Elbow 8" S/160		
ITEM SIZE	CUSTOMER APPROVAL	DATE

INSPECTED - 103 W.E.S. PRC

PROCEDURE:

78-UTFF-6, Rev. 2

Krautkramer USIP 11	Exosen 14
EQUIPMENT	COUPLANT

1" x ½"	Gamma	2¼ MHz
TRANSDUCER	TYPE	FREQUENCY

5% Notch

CALIBRATION STANDARD

80%	45°
REFERENCE LEVEL (%)	SOUND ANGLE – DEGREES

The following material has been inspected and accepted in accordance with the above procedure:

2 fittings accepted

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 SEP. 21 1981
SHEET 3 OF 3

21589 9/80

05472 0320

INFORMATION ONLY

ARMCO National Supply Division
Armco Steel Corporation
Torrance, California

LABORATORY REPORT

DATE 7-11-79 BY C. L. Morris

CUSTOMER PRL Industries
Cornwall, Pennsylvania

CUSTOMER'S PURCHASE ORDER NO. 6342

NSCO SALES REGISTER NO. IP-29872

SPECIFICATION NO. ASME SA-216-75, Grade WCB

PART NAME (1) 24" 900# SC Valve Body

PART NO. _____ CUSTOMER'S DRG. NO. F-4325, Rev. H NSCO DRG. NO. 151234

COUPON IDENTIFICATION	TENSILE TEST (LONGITUDINAL / TRANSVERSE)					HARDNESS	IMPACT TEST	BEND TEST
	PROOF STRESS P.S.I. / YIELD STRENGTH P.S.I. X / YIELD POINT P.S.I.	ULTIMATE STRENGTH P.S.I.	ELONG. %	REDUCT. %		BRINELL / ROCKWELL / SHORE	LONG. / TRANS. / IZOD FT. LBS. / CHARPY FT. LBS.	
723958	52,700	72,600	34.3	69.4				
REQUIRED	36,000	70,000	22.0	35.0				

7-23-79
Q A P. 2
MAL

L382

ANCHOR/DARLING VALVE CO.
24747 CLAWITER ROAD
HAYWARD, CA 94545
STONE & WEBSTER
NINE MILE POINT NUCLEAR STA.
PO #NMP2-P303W
J.O. #12177 Unit 2
Nomenclature 24" 900# S.C.
SJO #6308 01 Tag # 2EWS*AOV 23A

HEAT NO.		CHEMICAL ANALYSIS C.	MN.	SI.	P.	S.	CR.	VA.	NI.	MO.				A. S. T. M. GRAIN SIZE
723958		.17	1.00	.54	.013	.003								
REQUIRED	MAX.	.30	1.00	.60	.040	.045								
	MIN.													

S. W. E. C. PQC INSPECTED 98

TRANSMITTAL NO. 00827

05472 08.1

INFORMATION ONLY

NATIONAL SUPPLY COMPANY
ARMCO STEEL CORPORATION
TORRANCE, CALIFORNIA

Date 7-11-79

Customer PRL Industries Customer Order No. 6342

NSD Order No. IPN-29872 Heat No. 723958

"V" NOTCH CHARPY IMPACT TEST RESULTS @ +40°F.

	Absorbed Energy	% Shear	Lateral Expansion
	93.5 Ft.Lbs.	60	.064 in.
	80.5 Ft.Lbs.	50	.060 in.
	102.0 Ft.Lbs.	60	.074 in.
Required	INFORMATION	INFORMATION	.040 in.

Heat Treatment

1725°F (4 Hrs.) Normalize

1650°F (3 Hrs.) Normalize

1200°F (6 Hrs.) Temper

In addition, the test coupon received a simulated post weld heat treatment of 1150°F. (16 Hrs.)

Test Location

The above test results were obtained from an attached coupon.

S. W. E. C. PQC INSPECTED 98

ANCHOR/DARLING VALVE CO.
24747 CLAWITER ROAD
HAYWARD, CA 94545
STONE & WEBSTER
NINE MILE POINT NUCLEAR STA.
PO #NMP2-P303W
J.O. #12177 Unit 2

Nomenclature 24" 900# S.C.

SJO #6308- 01 Tag # 2FWSHA0V23A

The chemical, physical, or mechanical tests reported above are correct as contained in the records of the Corporation.

ARMCO STEEL CORPORATION

(signed)

Chester L. Morris

TRANSMITTAL NO. 00827

05472 0812

TEST REPORT

WESTERN FORGE & TOOL WORKS

Quality Forgings

Telephone 835-3220

209 JEFFERSON ST. • OAKLAND, CALIFORNIA

Mailing Address
P.O. Box 1649
OAKLAND, CALIFORNIA 94604

SOLD TO

Anchor/Darling Valve Company
24747 Clawiter Road
Hayward, CA 94545

SHIP TO

ANCHOR/DARLING VALVE CO.
24747 CLAWITER ROAD
HAYWARD, CA 94545
STONE & WEBSTER
NINE MILE POINT NUCLEAR STA.
PO #NMP2-P303W
J.O. #12177 Unit 2

Nomenclature 24" 900# S.C.

SJO #6308-01 Tag #2FWS#90V23A

CUSTOMER ORDER NO.	QUANTITY	ORDER DATE	INVOICE DATE	INVOICE NO.
A 1342	4	9/25/79		1396

DESCRIPTION & SPECIFICATION	SIZE
4 Bonnet Forging	MARK NO. 6308-01 6308-02 6308-03 S/N 1 and 2

CHEMICAL ANALYSIS

HEAT NO.	C	MN	PHOS	SUL	SIL	NI	CR	CU	MO	CO			G/S
322H889	.32%	.81	.011	.034	.23								

MECHANICAL TESTING

YIELD THOUSAND LBS/SQ IN.	TENSILE STRENGTH THOUSAND LBS/SQ IN	ELONG % IN 2 IN	RED OF AREA %	BHN
51,800	74,400	35%	65.6	149-156

Charpy Impact Test-Type V Notch Size: 10mm x 10mm x 55mm Temperatury: 40°F

SPECIMEN	ENERGY ABSORBED	LATERAL EXPANSION	SHEAR
1	40	45	47
2	120	88	76
3	52½	54	52

~~Laterial expansion -25 MILS Min~~

Oakland Metal Company, Heat Treatment Certificate No. 23373 A Attached
Peabody Testing Laboratories Report No.11-79-018 Attached
Material marked with Heat No., MARK No, S/N, low stress metal stamp

We hereby certify that the above to be in accordance with the records maintained in our files.

WESTERN FORGE & TOOL WORKS

We hereby certify that the above meets all requirements of the material specifications and all the applicable requirements of the ASME Section III Article NB 2000, that are required to be fulfilled by the materials manufacturer.

Debbie Weber

Debbie Weber

TRANSMITTAL NO. 00827

0 5 4 7 2 0 0 3 3

Certification of Heat Treatment

S. W. E. C. PQC INSPECTED 98

OAKLAND METAL TREATING CO.

QUALITY CUSTOM HEAT TREATING

450 DERBY AVENUE 261-9675 OAKLAND, CALIFORNIA 94601

Date October 21, 1979 Certification No. 23373 A

Customer WESTERN FORGE & TOOL WORKS

Customer's Order No. 0701 Contract No.

Our Shipper No. 23373 Military Specification No. Bonnets B.T.AD/V 1-21-80

No. Parts 4 Part Name and No. discs

Specification, Material Used 1034 forging SA 105 75a Heat No. 322H889

Specification, Heat Treating Heat treat to A105 spec

Annealed °F Cooled in furnace to °F

Normalized 1650 °F Time at heat 4½ hours, air quench

Carburize °F

Hardened °F Time Coolant

Drawn °F Time at heat

Hardness Test 143 BHN No. of pcs. Tested 1

Stress Relieve °F

Solution Quench °F Time

Age Harden °F Time

ANCHOR/DARLING VALVE CO.
24747 CLAWITER ROAD
HAYWARD, CA 94545
STONE & WEBSTER
NINE MILE POINT NUCLEAR STA
PO #NMP2-P303W
J.O. #12177 Unit 2

Nomenclature 24" 900 # S.C.
Tag # 2FWS*A01239
SJO-6308-03
SJO-

NOTES WF #1396
Mark: 6308-01 6308-03, S/N 1 and 2
6308-02

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, Quality Control

10/25/79 alices

INFORMATION ONLY

TRANSMITTAL NO. 00827

0 5 4 7 2 · 0 3 3 0

Anchor/Darling

Valve Company

24747 Clawiter Road
Hayward, CA 94545
(415) 785-2430
Telex: 335451 Ancorco

PART DESCRIPTION DISC 24" 900# SWING CHECK

SERIAL # 1

HEAT # 219870

NDE # 6308-01-004-L382

MAT'L SPEC. & GRADE SA 105

ARTICLE NB 2000 ADDENDA N/A

I HEREBY CERTIFY THAT THE ABOVE LOT OF MATERIAL MEETS THE SPECIFICATION REQUIREMENTS AND REQUIRED NDE WAS PERFORMED IN ACCORDANCE WITH APPROVED PROCEDURES AND APPLICABLE ASME REQUIREMENTS.

B.A. Tillman
QUALITY ASSURANCE DEPARTMENT

DATE 6-16-80

ANCHOR/DARLING VALVE CO.
24747 CLAWITER ROAD
HAYWARD, CA 94545
STONE & WEBSTER
NINE MILE POINT NUCLEAR STA.
PO #NMP2-P303W
J.O. #12177 Unit 2

S. W. E. C. PQC INSPECTED 98

Nomenclature 24" 900# S.C.

SJO #6308 01 Tag # 2FWS*AOV23A

INFORMATION ONLY

TRANSMITTAL NO. 00827

0 5 4 7 2 0 3 1 0

V281-2/79

TURB-O-TEMP PRODUCTS

VIKING METALLURGICAL CORPORATION

1 ERIK CIRCLE • (P.O. BOX 338) • VERDI, NEVADA 89430
TELEPHONE (702) 345-0345

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. #F04-24P-58A	4	19751 - 6683	4-21-80

ADV Assigned Serial Numbers 6308-01-4-1 6308-02-4-2 6308-03-4-3 6308-03-4-4 B.A.7 4-23-80

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

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

W. E. C. RECEIVED

METALLURGICAL TESTS:

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

PROCESSING

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	Water Quench	Air			
ATMOSPHERE	Air	Air			
HARDNESS					

NONDESTRUCTIVE EVALUATION

PROCESS	SPECIFICATION(S)	SOURCE(S)	RESULTS
Mag Particle	ADV 1824-1 Rev. B NB 2545	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 materials, are on file and available for inspection at any reasonable time.

AUTHORIZED SIGNATURE

4-18-80
DATE

A SUBSIDIARY OF MICHIGAN SEAMLESS TUBE COMPANY

INFORMATION ONLY

TRANSMITTAL NO. 00827

0 5 4 7 2 0 8 0 9

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 193 B7

CODE # - A-2

HEAT NUMBER - 71568

MILL - COULTER

CODE # A-2 IS TRACEABLE TO MILL HEAT # 71568.

IDENTIFICATION - STUDS ARE STAMPED ON ONE END WITH K AND TRACEABILITY CODE A-2.

Material was Produced/Manufactured in accordance with ASME Section III (NA-3700/NCA-3800).

ANCHOR/DARLING VALVE CO.
24747 CLAWITER ROAD
HAYWARD, CA 94545
STONE & WEBSTER
NINE MILE POINT NUCLEAR STA.
PO #NMP2-P303W
J.O. #12177 Unit 2

6308-001

STUDS (STUFF. BOX)

Nomenclature 24" 900# S.C.
SJO #6308 01 Tag # 2FWS4AV23A

S. W. E. C. PQC INSPECTED 98

SIGNED:

INFORMATION ONLY

TRANSMITTAL NO. 00827

COULTER STEEL & FORGE COMPANY

Special Metals in Bars and Forgings

74156

MAILING ADDRESS: P.O. BOX 8008
1494 - 67TH STREET, EMERYVILLE, CALIFORNIA 94662
415 - 653-2512 TELEX 33-0406 TWX 910-366-7293

1228 RIO VISTA AVENUE, LOS ANGELES, CALIF. 90023, TELEX 67-7340, PHONE 213-261-6115
334 WEST 8TH SOUTH, SALT LAKE CITY, UTAH 84101, TELEX 38 8330, PHONE 801-322-3533
2715 6TH AVENUE SOUTH, SEATTLE, WASH 98134, TELEX 32-9463, PHONE 206-622-6086

SOLD TO: RALPH KNUDTSEN CORPORATION
45805 Warm Springs Blvd.
Fremont, CA

CUSTOMER ACCT. NO.
INV. REQ'D. 2
SPEC. CLAUSES
TAXABLE
NON-TAXABLE X

CUSTOMER'S ORDER NO. 4197
ORDER DATE 13 MAR'80
CALL X
OUR TRUCK

SHIP TO: SAME
PREPAY
COLLECT
VIA WILL CALL
DATE SHIPPED

CODE A-2

PARTIAL
COMPLETE

ITEM NO.	QUANTITY ORD.	QUANTITY SHIP	DESCRIPTION
			Hot Finished Alloy Steel, Grade B-7, Heat Treated; In accord with ASME-SA-193, ASME Boiler & Pressure Vessel Code Sections II & III, Class I, 1977 Edition applies.
3	20		Bars 5/8" Dia x 12 ft. R/L

W. E. C. P.Q.C. INSPECTED '98

MARKING AND PACKAGING REQUIREMENTS: Csf Std

METALLURGICAL REPORT REQUIREMENTS: NOTARIZE; W/SHIPMENT 4; W/B LADING 1

MAIL ___ COPIES TO

ANCHOR/DARLING VALVE CO.
24747 CLAWITER ROAD
HAYWARD, CA 94545
STONE & WEBSTER
NINE MILE POINT NUCLEAR STA.
PO #NMP2-P303W
J.O. #12177 Unit 2

Nomenclature 24" 900# S.C.
SJO #6308 01 Tag # 2FW5X A0V23A

Form 21

Page 2 of 2

METALLURGICAL REPORT

Item No.	Heat No. or Ident.	C.	Mn.	P.	S.	Si.	Cr.	Ni.	Mo.	Cu	G/S
3	Ladle 71568	.39	.88	.018	.020	.31	.90	.13	.16	.11 Al .02	

Item No.	Hardness of Material Supplied	Tensile	Yield —% Offset	El.	R.A.	BHN.	Size of Raw Stock	Melt
3		140,000	.2% 121,000	20	63.7	287	5/8"Ø	Crucible

Heat Treatment: 1) Normalize at 1650±25°F for 1/4 hour at heat, air cool; 2) Austenitize at 1600±25°F. for 1/2 hour at heat, oil quench; 3) Temper at 1175±25°F. for 1 hour at heat, air cool

ASME QUALITY SYSTEM CERTIFICATE (MATERIALS)
NUMBER N-1189
EXPIRATION DATE OF CERTIFICATE 8-4-81

To certify that the contents of this report are correct and accurate, and that all operations performed by us and our subcontractors are in compliance with the requirements of all specifications listed in the material description.

We certify that the material described herein has been inspected and/or tested for conformance to the applicable specifications. Our warranty of quality provides for replacement only of any part of this material which subsequent inspection, test or use shows non-conformance with the specification. Inspection records, certifications, chemical and/or physical test reports are on file for your examination at EMERYVILLE, CALIFORNIA.

COULTER STEEL & FORGE COMPANY

By Frank Rossi
MANAGER, QUALITY CONTROL

Title

TRANSMITTAL NO. 00827

0 5 4 7 2 0 9 0 1 0

0 5 4 7 2 · 0 9 0 1

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
6-01-78	5229	5058

ITEM (1) 402 Pcs. 5/8" -11 NC-2 Hvy Hex Nuts W-1653 (Trace. # BB)

SPECIFICATION ASME SA 194, Grade 2H, ASME Section III, Class 1, 1977 Edition, Winter 1977 Addenda

CHEMICAL COMPOSITION

ITEM	HEAT NO.	C	Mn	P	S	Si	Cr	Mo	Ni	Cu	Fe	Al	Ti	
1	6064287	.40	.88	.010	.017	.29	1.01	.22						

PHYSICAL COMPOSITION

ITEM	TENSIL STRENGTH PSI	YIELD PSI. 2%	ELONG. % IN 2"	RED. AREA %	HARDNESS	HEAT TREAT DATA
1	Hardness Per ASME SA 194, Para.			7.1.5.1	24.5-26 RC	Temper 2½ Hrs. @ 1220°F
						Heat Treat 2 Hrs. @ 1550°
	Hardness Per ASME SA 194, Para.			7.1.5.2	26 RC	24 Hrs. @ 1000°F

ADDITIONAL SPECIFICATION REQUIREMENTS OR SPECIAL TESTS

(IDENTIFICATION MARKING STAMPED ON CROWN)

AXIAL PROOF LOAD (39,550 Lbs.) SATISFACTORY

S. W. E. C. PQC INSPECTED 98

ATTACHMENTS

REPUBLIC STEEL CORP. MILL TEST REPORT FOR HEAT # 6064287.

ANCHOR/DARLING VALVE CO.
24747 CLAWITER ROAD
HAYWARD, CA 94545
STONE & WEBSTER
NINE MILE POINT NUCLEAR STA.
PO #NMP2-P301W
J.O. #12177 Unit 2
Nomenclature 24" 900# S.C.
S.O. #6308-01 Item # 2FWS-1-A0V23A

6308-01 NUTS (STUFF. BOX)

I 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 # 5058.

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 _____ NOTARY PUBLIC _____ BY Steve McCook AUTHORIZED AGENT

INFORMATION ONLY TRANSMITTAL NO. 00827

ANCHOR/DARLING PROCEDURE NO. 1452-1 REV. I ADD. 7 EXHIBIT #6

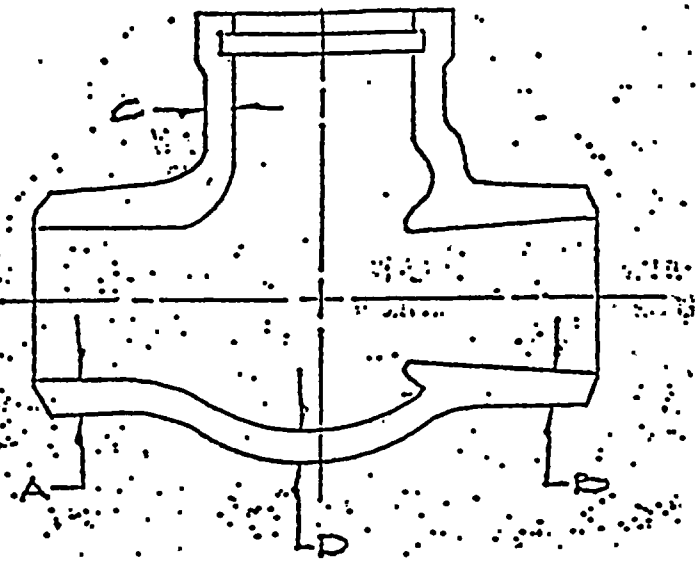
MATERIAL THICKNESS MEASUREMENT RECORD

PRESSURE SEAL SWING CHK

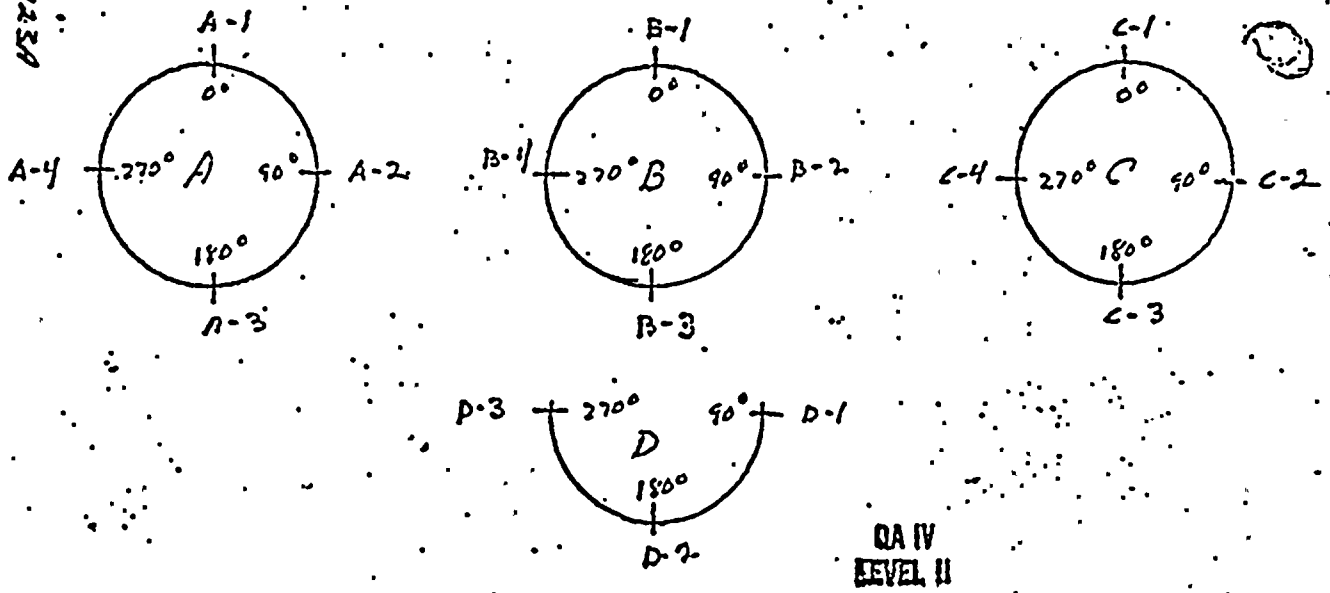
DWG. NO. 6342-7-5 REV. ___ VALVE SIZE & PRESSURE 24"-900# SWING CHK

HEAT NO. 723958 SN L382 MIN. WALL (t_m) 2.280

ANCHOR/DARLING VALVE CO.
24747 CLAWITER ROAD
HAYWARD, CA 94545
STONE & WEBSTER
NINE MILE POINT NUCLEAR STA.
PO #NMP2-P303W
J.O. #13177 Unit 2
Nomenclature 24" 900# S.C.
SJO #6308 01 Tag # 2FWS*A0113A



S.W.E.C. PQC INSPECTED 98



QA IV
LEVEL II

CUSTOMER INSPECTOR ___ DATE ___ INSPECTED BY CAL DATE 6-5-80

NOTES: (1) Survey each zone (inspect in a grind pattern of approx. 3 sq. inches) and record thickness and location of area found to be minimum on reverse.
(2) Additional measurement taken at repaired, ground or machined surfaces: select for dimensional inspection by visual inspection (applicable when indicated by asterisk).

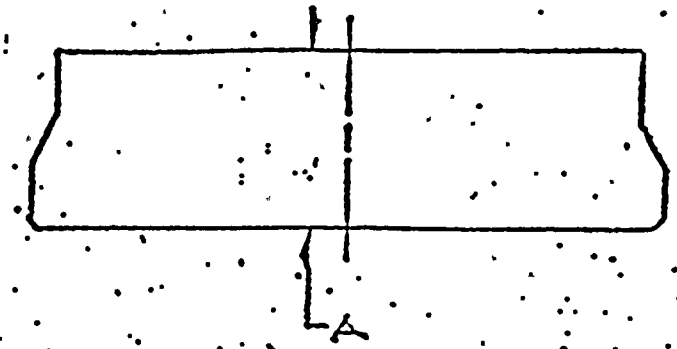
INFORMATION ONLY TRANSMITTAL NO. 00827

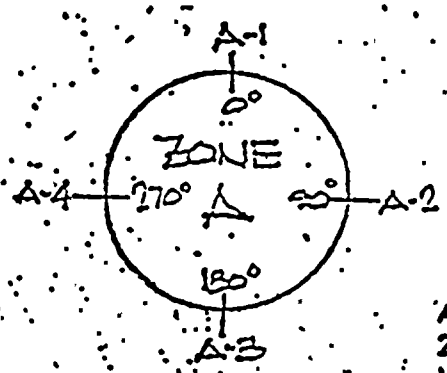
ANCHOR/DARLING PROCEDURE NO. 1452-1 REV. I ADD. 7 EXHIBIT #13

MATERIAL THICKNESS MEASUREMENT RECORD

DWG. NO. 6342-7-5 REV. ___ VALVE SIZE & PRESSURE JOB 6308-01

HEAT NO. 322H889 SN 1 MIN. WALL (t_m) N/A





S.W.E.C. PQC INSPECTED 98

ANCHOR/DARLING VALVE CO.
24747 CLAWITER ROAD
HAYWARD, CA 94545
STONE & WEBSTER
NINE MILE POINT NUCLEAR STA.
PO #NMP2-P303W
J.O. #12177 Unit 2

Nomenclature: 24" 900# S.C.

SJO #6308-01 Tag # 2FWS4A0V23A

QA IV
LEVEL II

S.W.E.C. PQC INSPECTED DATE 98

CUSTOMER INSPECTOR _____ INSPECTED BY CWL DATE 3-14-80

NOTES: (1) Survey each zone (inspect in a grind pattern of approx. 3 sq. inches) and record thickness and location of area found to be minimum on reverse.
(2) Additional measurement taken at repaired, ground or machined surfaces: selected for dimensional inspection by visual inspection (applicable when indicated by asterisk).

TRANSMITTAL NO. 00827

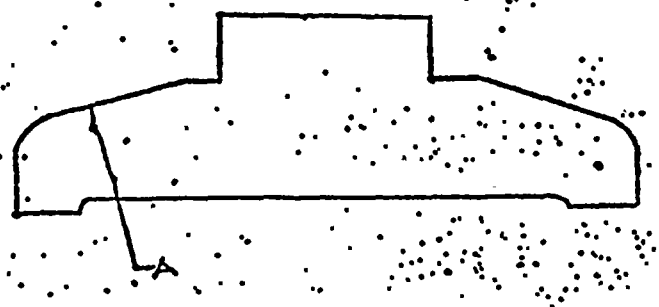
0 5 4 7 2 0 9 3 3

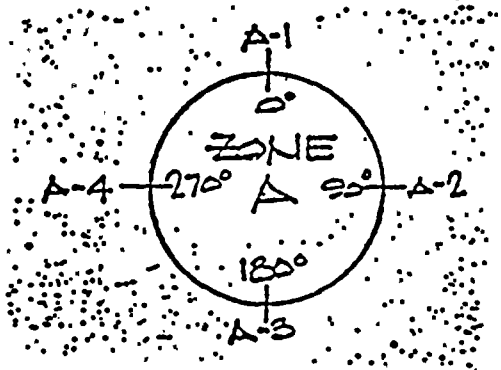
ANCHOR/DARLING PROCEDURE NO 1452-1 REV I ADD 7 EXHIBIT #18

MATERIAL THICKNESS MEASUREMENT RECORD

DRAWING NO 4020-3 REV D VALVE SIZE & PRESSURE 24" 900# SWING CHK.

HEAT # 219870 SERIAL # 1 MIN. WALL (t_m) 2.28





ANCHOR/DARLING VALVE CO.
24747 CLAWITER ROAD
HAYWARD, CA 94545
STONE & WEBSTER
NINE MILE POINT NUCLEAR STA.
PO #NMP2-P303W
J.O. #12177 Unit 2

Nomenclature 24" 900# S.C.

SJO #6308 01 Tag #: 2FWS*A0V 23A

S. W. E. C. PQC INSPECTED 98

QA IV
LEVEL II

CUSTOMER INSPECTOR _____ DATE _____ INSPECTED BY OKL DATE 5-6-80

NOTES: (1) Survey each zone (inspect in a grind pattern of approx 3 sq inches) and record thickness & location of area found to be minimum on reverse.
(2) Additional measurement taken at repaired, ground or machined surfaces: selected for dimensional inspection by visual inspection (applicable when indicated by asterisk).

INFORMATION ONLY

TRANSMITTAL NO. 00827

-0-5 4 1 9 0 0 3 3

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 Fluid Systems Division, Gulf + Western Mfg. Co., Warwick, RI 02886
(Name and Address of Manufacturer)
2. Manufactured for Stone & Webster Engineering Corporation, Cherry Hill, NJ
(Name and Address of Purchaser or Owner)
3. Location of Installation Nine Mile Point Nuclear Station - Unit 2 - Scriba, NY
(Name and Address)
4. Pump or Valve Valve. Nominal Inlet Size 24 (inch) Outlet Size 26

	(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)	Ball Valve	6453	N/A	E-24-900-15	1		1981
(3)				Rev. C			
(4)							
(5)							
(6)							
(7)							
(8)							
(9)							
(10)							

NIAGARA - MOHAWK
NINE MILE #2
NMPZ- P303D-
MSIV VALVES
TAG: 2MSS*HYV7A
FLUID SYSTEMS - EPG

5. Main Steam Isolation Valve
(Brief description of service for which equipment was designed)

6. Design Conditions 1375 (Pressure) psi 586 (Temperature) °F or Valve Pressure Class (1)
7. Cold Working Pressure 1930 psi at 100°F.
8. Pressure Retaining Pieces

Mark No.	Material Spec. No.	Manufacturer	Remarks
(a) Castings			
SN6-HT5207	SA351-CF8M	Dodge Foundry & PRL	Ball
(b) Forgings			
SN1 HT57181	SA350 Gr LF2	Cameron Iron	Body
SN987-FJ HT B570T	SA350 Gr LF2	Lenape Forge	Bonnet
SN1A-HT8460T	SA350 Gr LF2	Lenape Forge	Reducer
SN22-HT75411	SA182 Gr F6A	McWilliams Forge	Seal Retainer

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(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 reference is recorded at top of this form.

(1/76) This form (E00037) may be obtained from the Order Dept., ASME, 345 E. 47 St., New York, N.Y. 10017

INFORMATION ONLY

Serial No. 00957

Mark No.	Material Spec. No. 9	0 Manufacturer	Remarks
(c) Bolting			
N/A			
(d) Other Parts			
(2) 3/4"			
Trace 8H	SA479 Type 316	Vitco	Pipe plug
HT C17396			
(2) 1/2"			
Trace 64H	SA479 Type 316	Vitco	Pipe plug
HT 845893			

9. Hydrostatic test 2900 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 74, Addenda Winter 76 (Date), Code Case No. N/A. Date 6/24/81

Signed Fluid Systems Div., G+W Mfg. Co. (Manufacturer) by William C. Kaiser

Our ASME Certificate of Authorization No. 1269 to use the N (N) (NPV) symbol expires 9/8/81 (Date).

CERTIFICATION OF DESIGN

Design information on file at FSD - Gulf + Western Mfg. Co., Warwick, RI 02886

Stress analysis report (Class 1 only) on file at FSD-Gulf + Western Mfg. Co., Warwick, RI 02886

Design specifications certified by (1) Charles C. Zappile

PE State PA Reg. No. 025111-E

Stress analysis certified by (1) Harry E. Eminger

PE State PA Reg. No. 10729-E

(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 Massachusetts and employed by HSSICI Co. of Hartford, Connecticut have inspected the pump, or valve, described in this Data Report on June 24, 19 81, 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 June 24, 19 81

(Inspector)

Commissions NA 946 (Nat'l Bd., State, Prov. and No.)

Transmittal No. 00957 12/07/82

NINE MILE #2
0 4 1 NMPZ 1 P303D 0 0 4 5
MSIV VALVES
TAG: 2MSS V4XV74
FLUID SYSTEMS - EPG

CERTIFICATE OF TESTS

Cameron
IRON WORKS, INC.
P. O. BOX 1212
HOUSTON, TEXAS 77001

SOLD TO
ENERGY PRODUCTS GROUP
FLUID SYSTEMS DIVISION
235 Kilvert St.
Warwick, Rhode Island

ASME QUALITY SYSTEM CERTIFICATE (MANUFACTURER)
NO. N-1261 EXPIRES 10-27-81,

DATE 11 Dec. 1978

CUSTOMER ORDER NO.	C.I.W. SALES ORDER NO.	SPECIFICATION
9702	F-20021-03	ASME Sec. II, Part A, SA350 Gr. LF2 and ASME Sec. III, Cl. 1 74 Edition W/'76 Addenda, Proc per Energy Products Group Specification, MS 1152 Rev 5.

DESCRIPTION OF MATERIALS 24" 900 Lb. Valve Body Dwg. #D-112-000-0924 Rev. E

CIW PART NUMBER 66350-02

ENERGY PRODUCTS GROUP
Gulf & Western Mfg. Co.
235 Kilvert Street
Warwick, R.I.
Quality Assurance Dept.
Signed [illegible] Date 4-20-79

HEAT NO.	LOCATION OR SERIAL NO.	CHEMICAL ANALYSIS C	MN	P	S	SI	CR	NI	MO
57181		.22	1.17	.013	.010	.27			

ALL OPERATIONS WERE PERFORMED BY CIW & MEET THE REQUIREMENTS OF THE LISTED MATERIAL SPECIFICATION AND SEC. III DIV. I.

Forg.Ser.# 0001 Major Weld Repair was radiographically examined in accordance with approved Procedure FR-24 Rev. A with Addenda 2 Dated 7-13-78 and found acceptable. Report attached.

QUANTITY OR SERIAL NO.	HEAT NO.	Test Lot#	MECHANICAL PROPERTIES Tensile PSI	.2 % Offset Yield PSI	% Elong. In.	% Red. Area	Bar Size
1	57181	0001	74,900	58,900	32.5	71.8	.505

V-Notch Charpy Impact Test Results at 40°F.:

Forg. Ser.#	Test Lot#	Ft.Lbs.	Lat.Exp.	D/F%	Test Lot#
#0001	0001	115.0	76 MILS	65%	0001
		90.0	68	60	
		120.0	73	70	

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Part ultrasonically examined in accordance with approved procedure FU-212 Rev. B with Fig. 4, Dtd. 1-24-78, and Addenda 1 Dtd. 8-18-78 and found acceptable. Report attached.

Part Magnetic Particle examined in accordance with approved procedure FI-75, Dtd. 1-5-74 with Addenda 1 Dtd. 5-18-78 and found acceptable. Report attached.

Heat treatment was in accordance with approved Procedure FH-455 N/C. Furnace Report attached.

HEAT TREATMENT
1650°F., held 3 hrs. at temp. Air Cooled.
1600°F., held 3 hrs. at temp. Water Quenched.
1200°F., held 6 hrs. at temp. Air Cooled.
1125°F., held 2 hrs. at temp. Furnace Cooled.
1125°F., held 2 hrs. at temp. Furnace Cooled.

SWORN TO AND SUBSCRIBED TO BEFORE ME THIS 11th DAY OF Dec. 1978

I CERTIFY THESE TESTS TO BE CORRECT AS SHOWN IN THE RECORDS OF THE COMPANY.

METALLURGIST

INFORMATION ONLY

TRANSMITTAL NO. 00957

0 0 4 1 9 0 0 5

WALL THICKNESS MEASURING PROCEDURE

PART DWG Nº E 1234 248 Rev D HEAT Nº 571811 Gilbert Gilbert
PART NAME 24" 900 Body ASSY W/Bonnet INSPECTED BY W. Colini
MATERIAL SA 350 LF-2 DATE 6/3/81
PART SERIAL Nº 0001 CUSTOMER Q/A
DATE

NIAGARA MOHAWK
NINE MILE #2
NMPZ - P303D
MSIV VALVES
TAG: 2MSS-HYV7A
FLUID SYSTEMS - EPG

ENERGY PRODUCTS GROUP
Gulf & Western Mfg. Co.
235 Kilvert Street
Warwick, R.I.
Quality Assurance Dept.
Wm. C Kane 6/4/81
Signed Date

ZONE AREA	MIN DIM.	METHOD *	ACTUAL DIM. & LOCATION 1	2	3	4	5	6	7	8
A	3.875	U	4.025	4.000	4.000	4.050	4.125	4.100		
B	3.875	U	5.175	4.175	4.200	5.175	4.375	4.475		
C	3.875	U	4.050	4.075	3.975	4.175	4.250	4.300		
E	3.89	U	5.250	4.950	4.800	4.825	4.750	4.050	4.550	4.775
F	5.465	U	5.475	5.500	5.475	5.475				
G	3.89	U	5.125	4.975	5.050	4.950	4.625	4.475	4.375	4.575

TYPE INSTRUMENT 130SL-38 NO. S/N 911190
CALIBRATION STANDARD OTQ#14 - EPG#1092
TYPE TRANSDUCER FINGETIP K/B S/N JD0590
TRANSDUCER SIZE 1/2"
TRANSDUCER FREQUENCY 2.25MHz
COUPLANT EXOSEN 20
OPERATOR William Colini LEVEL III

S. W. E. C. PQC INSPECTED - 66

* C = DIAL CALIPER
U = ULTRASONIC

INFORMATION ONLY

SUPPLEMENT 5
SPECIFICATION PS-1056
SHEET 5 OF 5

TRANSMITTAL NO. 00957

0 3 4 1 9 0 0 7 4

ENERGY PRODUCTS GROUP
GULF + WESTERN MANUFACTURING COMPANY
Plant 35
P. O. Box 536, West Chester, Pennsylvania 19380

Phone: (215) 793 1500
TWX: 510 663 0377
Telex: 83-5453
Telecopier: (215) 793 1500 Ext. 264

manufacturers of LENAPE FORGE products

MATERIAL TEST REPORT S.O. NO. 6194-8 WEST CHESTER, PA. 4/2/79 19

PURCHASER Fluid Systems Division DISTRIBUTOR Fluid Systems Division

PURCHASER'S ORDER NO. DISTRIBUTOR'S ORDER NO. 1590

ITEM NO.	QTY.	PRODUCT	SPEC.	HEAT OR CODE NO.	REMARKS
2	4	24" X 900# Class 1 Bonnet Forging to finish As Per # D-248-000-GR2400, rev. B NATURA MOHAWK NINE MILE # 2 NMPZ - F303D MSIV VALVES TAG: 2MSSXHV7A FLUID SYSTEMS - EPG REPORT WAS MANUFACTURED UNDER ASME QUALITY SYSTEMS CERTIFICATE (MATERIALS) NO. N-1950. EXPIRES DECEMBER 9, 1980.	SA 350 LF2 per Mat'l Spec. NS-1164 ASME Sec. III, Cl. 1 & Add. #1 dated 7/19/78 ASME B & PV 1974 Ed. thru W 76	B57QT	M/O 987F-1 thru 4 ENERGY PRODUCTS GROUP Gulf & Western Mfg. Co. 225 Kilvert Street Warwick, R.I. Quality Assurance Dept. Signed 4-6-79 Date REVISED TEST REPORT; PLEASE DESTROY PREVIOUS COPY DATED 4-3-79

CHEMICAL ANALYSIS AND MECHANICAL PROPERTIES

HEAT NO.	C	MN	P	S	SI	CR	NI				REMARKS
B57QT	.21	1.15	.014	.025	.21						HEAT TREATMENT: HT-2 rev. 2 Austenitize @ 1650°F for 7-3/4 hrs. & W.Q. to room temp. Temper @ 1275°F for 7-3/4hrs. and Air cool to room temp. (See attached Heat Treat Rept

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HEAT NO.	TENSILE	YIELD	ELONG % IN 2"	R.A. %	Cv Temp.	IMPACT Ft. Lbs.	REMARKS Lat. Exp.	% Shear
B57QT	79,23	55,959	22.0	45.9				
987F-1					+40°F	61-71-47	.074-.069-.048	60-60-60
-2					+40°F	149-120-193	.102-.097-.-99	100-100-100
-3					+40°F	87-103-127	.077-.087-.081	90-100-100
-4					+40°F	165-211-169	.101-.099-.096	100-100-100

Attachments: H.T. Report
U.T. Report-M.P. Report

We hereby certify the above results to be correct as contained in the records of the Company.

Tanya Ferrine

Printed in U.S.A.

INFORMATION ONLY

TRANSMITTAL NO. 00957