

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8106090500 DOC. DATE: 81/06/03 NOTARIZED: NO
 FACIL: 50-387 Susquehanna Steam Electric Station, Unit 1, Pennsylvania
 50-388 Susquehanna Steam Electric Station, Unit 2, Pennsylvania
 AUTH. NAME: CURTIS, N.W. AUTHOR AFFILIATION: Pennsylvania Power & Light Co.
 RECIP. NAME: SCHWENCER, A. RECIPIENT AFFILIATION: Licensing Branch 2

DOCKET #
 05000387
05000388

SUBJECT: Forwards info requested by Matls Engineering Branch on fracture toughness requirements for steam & feedwater matls. Encl completes action on SER Outstanding Issue 55.

DISTRIBUTION CODE: 8001S COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 17
 TITLE: PSAR/FSAR AMDTS and Related Correspondence

NOTES: Send I&E 3 copies FSAR & all amends. 1 cy: BWR-LRG PM(L.RIB) 05000387
 Send I&E 3 copies FSAR & all amends. 1 cy: BWR-LRG PM(L.RIB) 05000388

ACTION:	RECIPIENT	COPIES		RECIPIENT	COPIES	
	ID CODE/NAME	LTTR	ENCL	ID CODE/NAME	LTTR	ENCL
	A/D LICENSNG	1	0	LIC BR #2 BC	1	0
	LIC BR #2 LA	1	0	STARK, R. 04	1	1
INTERNAL:	ACCID EVAL BR26	1	1	AUX SYS BR 27	1	1
	CHEM ENG BR 11	1	1	CONT SYS BR 09	1	1
	CORE PERF BR 10	1	1	EFF TR SYS BR12	1	1
	EMERG PREP 22	1	0	EMRG PRP DEV 35	1	1
	EMRG PRP LIC 36	3	3	EQUIP QUAL BR13	3	3
	FEMA-REP DIV 39	1	1	GEOSCIENCES 28	2	2
	HUM FACT ENG 40	1	1	HYD/GEO BR 30	2	2
	I&C SYS BR 15	1	1	I&E 06	3	3
	LIC GUID BR 33	1	1	LIC QUAL BR 32	1	1
	MATL ENG BR 17	1	1	MECH ENG BR 1A	1	1
	MPA	1	0	NRC PDR 02	1	1
	OELD	1	0	OP LIC BR 34	1	1
	POWER SYS BR 19	1	1	PROC/TST REV 20	1	1
	QA BR 21	1	1	RAD ASSESS BR22	1	1
	REAC SYS BR 23	1	1	REG FILE 01	1	1
	SIT ANAL BR 24	1	1	STRUCT ENG BR25	1	1
EXTERNAL:	ACRS 41	16	16	LPDR 03	1	1
	NSIC 05	1	1			

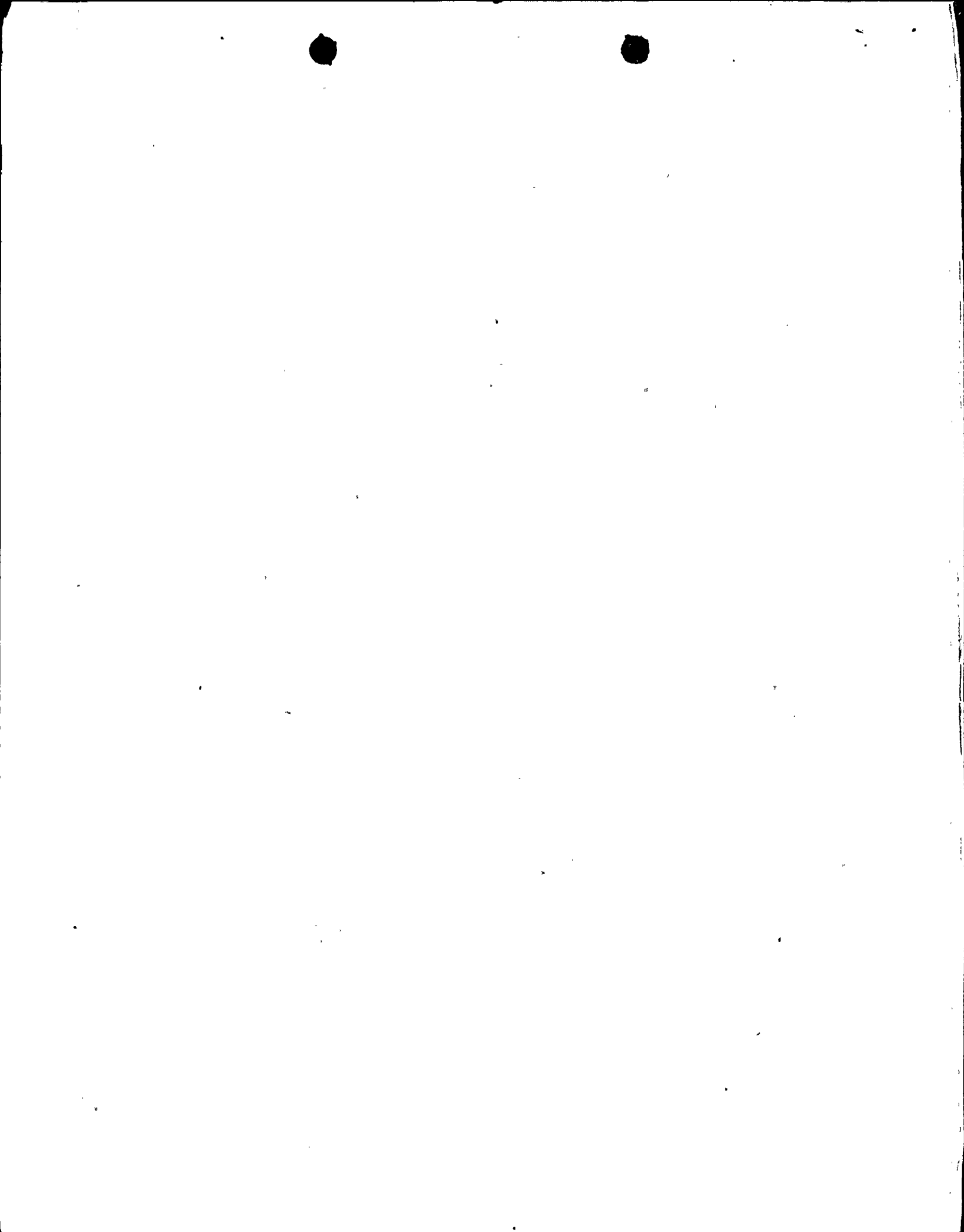
JUN 11 1981

MA4

TOTAL NUMBER OF COPIES REQUIRED: LTTR

~~63~~ 62 ENCL

~~57~~ 56

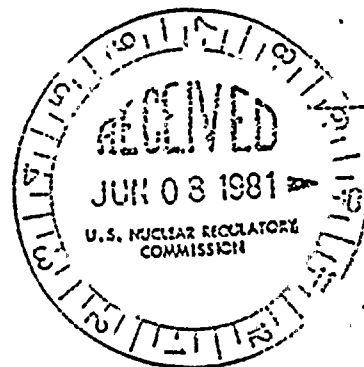


PP&L

TWO NORTH NINTH STREET, ALLENTOWN, PA. 18101

PHONE: (215) 770-5151

NORMAN W. CURTIS
Vice President-Engineering & Construction-Nuclear
770-5381



June 3, 1981

Mr. A. Schwencer, Chief
Licensing Branch No. 2
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Docket Nos. 50-387
50-388

SUSQUEHANNA STEAM ELECTRIC STATION
SER OUTSTANDING ISSUE #55
ER 100450 FILE 841-2
PLA-828

Dear Mr. Schwencer:

Attached is the information requested by the Materials Engineering Branch on the fracture toughness requirements for steam and feedwater materials.

This letter completes our action on SER Out Issue #55.

Very truly yours,

A handwritten signature in cursive script that reads "N. W. Curtis".

N. W. Curtis
Vice President-Engineering and Construction-Nuclear

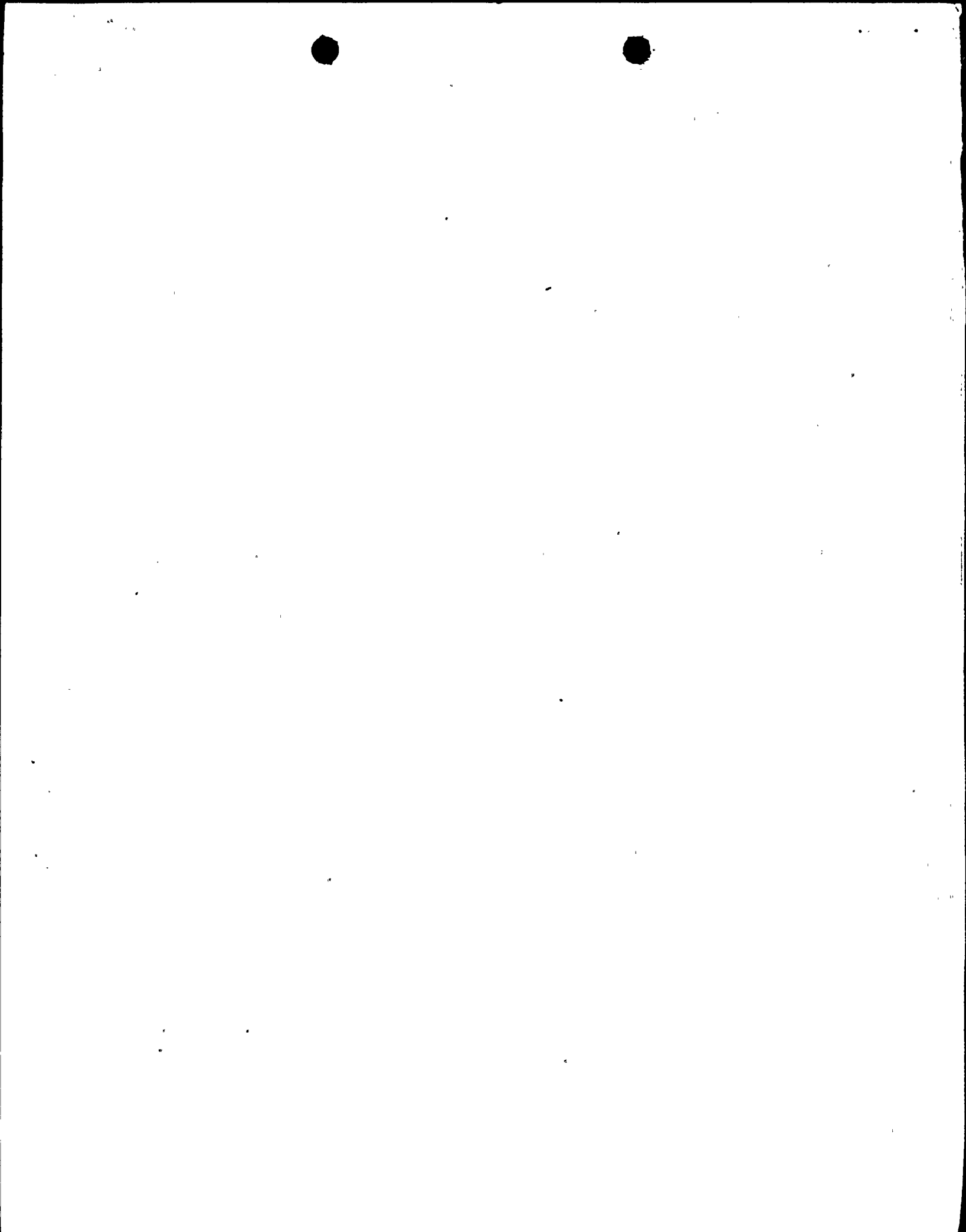
CTC/mks

Attachment

cc: R. M. Stark - NRC

Boo! 5/1

8106090500
E





MAIN STEAM DBB-101-1-8, ITEMS 3, 5 - NO H.T.
KUP

CUSTOMER: ITT GRINNELL CORP.

Date JULY 25, 1974

Bonney Order No. 20957

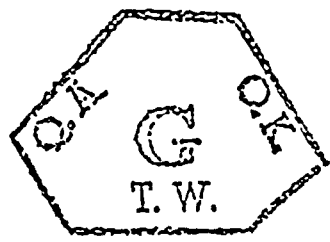
CUSTOMER'S Order No.: KER 9853-F
SHIPPED TO: ITT GRINNELL CORP.
P. O. BOX 566
HIGHWAY 421
KERNERSVILLE, N. C. 27284

Mark KER 9853-F

Item No.	Quantity No.	Bonney Lot No.	Grade or Specification No.	Chemical Analysis, Physical Properties, Remarks:
2	1	DU9	A105-71	3/4 6000# Half Coupling S/W
PRT NO SA 3002-1				
4	23	DU9	"	1 6000# Half Coupling S/W C.30 Mn.71 P.018 S.024 Si.19 T/S 77,220 Y/S 47,550 El 29.0 Ra 50.6
PRT NO SA 3025-1				
4	2	AS27	"	1 6000# Half Coupling S/W C.265 Mn.76 P.005 S.025 Si.22 T/S 73,200 Y/S 41,000 El 33.0 Ra 51.0
PRT NO SA 3025-1				
4	300	BD34	"	1 6000# Half Coupling S/W C.31 Mn.88 P.018 S.031 Si.23 T/S 81,400 Y/S 50,400 El 27.5 Ra 51.83
PRT NO SA 3025-1				

DOCUMENTATION REVIEWED
Date 7-30-74
BECHTEL CORPORATION
By [Signature]

SA SWF IS



This is to certify that the fittings supplied are in complete accordance with purchase order #KER 9853-F.

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.

Subscribed and sworn before me
this 25th day of JULY 19 74
[Signature]
NOTARY PUBLIC

Bonney Forge Division
GULF + WESTERN INDUSTRIAL PRODUCTS COMPANY
by [Signature]
MGR. INSPECTION AND TESTING

My Commission Expires March 20, 1978

sil:5



Bonney Forge

Gulf + Western Manufacturing Company

Cedar and Meadow Streets, P.O. Box 359
Allentown, Pennsylvania 18105
(215) 435-9811, Telex: 847453

April 28, 1981

Mr. Jan Sachs
Pennsylvania Power & Light Company
Two North Ninth Street
Allentown, Pennsylvania.

Dear Mr. Sachs:

You requested information concerning fittings with Lot Numbers BD34 and 259J.

Fittings marked BD34 were machined from hot rolled bar produced by Republic Steel. Enclosed is a copy of Republic's CMTR; their Heat No. 4490108 subsequently became our Lot No. BD34. To the best of my knowledge, the material was used in the "as-received" condition and not normalized or otherwise heat treated.

Fittings marked 259J were machined from tubing supplied by Tubular Steel; their mill heat number is 81526. Again, I do not believe that any heat treatment was performed and that the material was used in the "as-supplied" condition. Enclosed is a copy of Tubular's CMTR.

I hope that the enclosed information will be of some help to you.

Very truly yours,

R.W. Schneider
Engineering Manager

RWS/cmd
Enclosures

cc: W. R. Nicolls

10. Bill Meales - Allentown

Republic Steel

Republic Steel Corporation
Cleveland OH 44101

CUSTOMER ORDER NUMBER AND DATE: 6136 11/8/73
 SHIPPED FROM: CLEVELAND
 INVOICE DATE: 30-1-2-10
 INVOICE NUMBER: A403-1603

LAKE SHORE
 SALES CO. DIV. TYPE: 0101152
 CONTROL CARD: 8343
 STATE: 03
 COUNTY: 0023
 TAX: 30000101A
 ACCOUNT NUMBER: 03479003300

ANVIL PRODUCTS INC
 ALLISON PARK PA 15101

RECEIVED
 APR 12 1987
 SALES PRODUCT CLASS: 106010012

Certificate of Tests

("SHIP TO" SAME AS "SOLD TO" UNLESS OTHERWISE INDICATED)

BONNEY FORGE DIV.
 ALLENTOWN, PA.

"P" PARTIAL SHIPMENT "C" COMPLETE SHIPMENT

REPUBLIC PRODUCT DESCRIPTION	ITEM NO	UNITS SHIPPED
ASTM A-105-71 FOR CHEM & MECH PROP- ERTIES ONLY CARB 22/35 MANG 60/1.05 SPEC QUAL HR STEEL BARS EACH STR CLEANED AND OILED	2C	6730#
2-1/4 RD X 8/10 FT 1 LIFT 5 T MX		

1 1/4 x 3/4 3000 # L.W. Rd.
 HM0016 P. Dist B811/12
 \$ D - 7 8/12/74

SHIP COVERED BY INV 403-1608-1609
 B/L WT 53280#

I HEREBY CERTIFY THAT THE MATERIAL LISTED HEREIN HAS BEEN INSPECTED AND TESTED IN ACCORDANCE WITH THE METHODS PRESCRIBED IN THE GOVERNING SPECIFICATIONS AND BASED UPON THE RESULTS OF SUCH INSPECTION AND TESTING HAS BEEN APPROVED FOR CONFORMANCE TO THE SPECIFICATIONS.

B D 3 4

C. E. ROWDEN
 CHIEF METALLURGIST

W. F. Keslar

BY: W. F. KESLAR

FRT. PPD

ITEM NO	HEAT NO	C M N	CARBON	MANG	PHOS.	SUL	SIL	COPPER	NICKEL	CHROME	MOLT.	VAN
	4490108		.31	.88	.018	.031	.23					

HEAT NO	SIZE	LBS. PER SQ IN		ELONG ^{2"}	RED AREA	BRINELL ROCKWELL	BEND TEST	REMARKS
		YIELD POINT	TENSILE STRENGTH					
4490108	2 1/4 Rd.	50,400	91,400	27.5	51.25			

T. G.

Republicsteel

Republic Steel Corporation
Cleveland District
3100 East 45th Street
Cleveland OH 44127

May 22, 1981

Mr. Daniel Sachs, N4
Pennsylvania Power & Light
2 N. 9th Street
Allentown, Pennsylvania 18101

Dear Mr. Sachs:

In response to your request for information regarding the rolling of 2-1/4" diameter rounds in our plant, we can offer the following general comments.

2-1/4" diameter bars are finish rolled from a nominal 6-1/8" square billet. Using our standard foot weights, the reduction ratio from billet to bar would be 9.8 to 1.

$$\frac{132.4 \text{ (6-1/8" billet)}}{13.53 \text{ (2-1/4" } \phi)}$$

This diameter product is rolled on our 12" bar mill. Typically, the billets exit the mill's reheat furnace at 1950° to 2000°F. Temperatures out of the finishing stand of this mill are normally in the 1600°F to 1700°F range. The bar(s) cool to temperatures below 1000°F while they reside on the run-out tables (hot beds) prior to shearing and bundling.

I hope that the above answers your questions. If you need any additional information, please feel free to call or write.

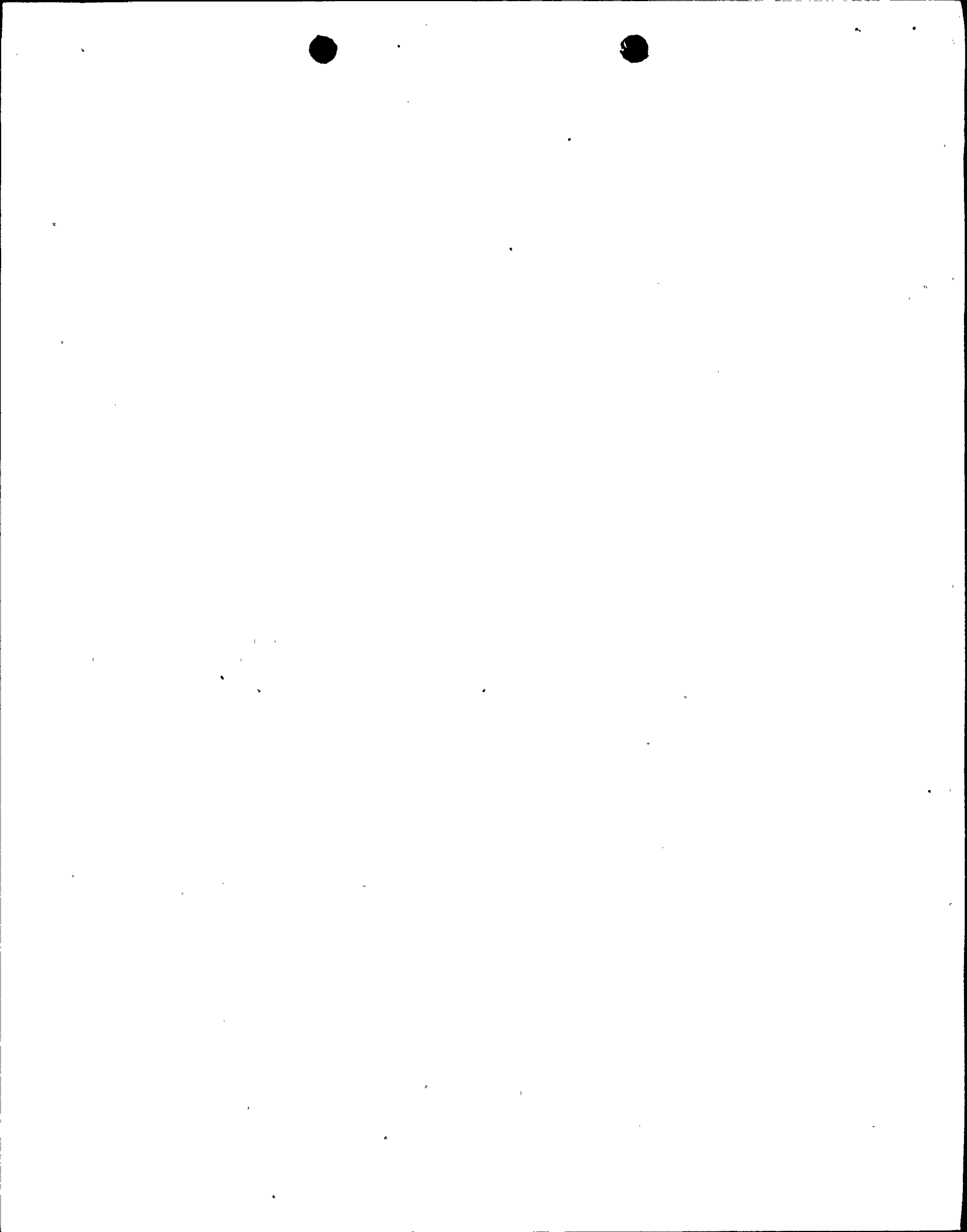
Sincerely yours,

C. A. Martini, Jr.

C. A. Martini, Jr.
Metallurgist - Primary & Bar Mills
Cleveland District

CAM:dt

cc: R. Gaydos
Quality Assurance



The Colonial Machine Company, Inc.

P. O. Box 290 — Pleasantville, Pa. 16341

FEBRUARY 14, 1975

ITT GRINWELL INDUSTRIAL PIPING, INC.
 P. O. BOX 566
 KENNESVILLE, NC 27284

MATERIAL CERTIFICATIONS

NORMALIZED

ITEM #4 - MAIN STEAM DBB-101-1-8

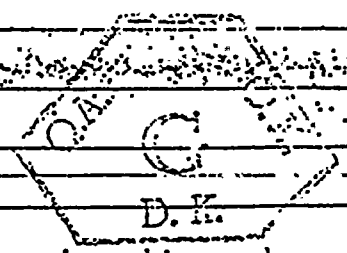
SA SWF 75

OUR ORDER NO. **KER 13603-C** OUR INVOICE NO. DATE SHIPPED *RAB.*

ITEM	TYPE	MATERIAL-SPEC.	SHIPPED	HEAT NUMBER
1		ASTM A195-71 <u>NORMALIZED</u> 1" 6000# S/W W/PLGS. TO BE USED ON MISC. SYSTEMS, PART NO. SA 3064-1	350	607257 (10A)

ITEM	C	MN	P	S	SI	CR	NI	MO	CU	CS	TI	CO	OTHER ELEMENTS
1	.25	.73	.011	.027	.24								

ITEM	TENSILE	2% YIELD	% ELONG.	% R.A.	HARDNESS	HARDEN-ABILITY	REMARKS: 1. 2. 3. 4. 5. & ETC.
1	75000	47000	IN 2" 30.0	61.3			



This is to certify that to the best of our knowledge and belief the above material has been manufactured in accordance with the specifications noted. We also certify this is a true copy of the original test report now on file and that the material shipped meets the requirements of the order.

FC

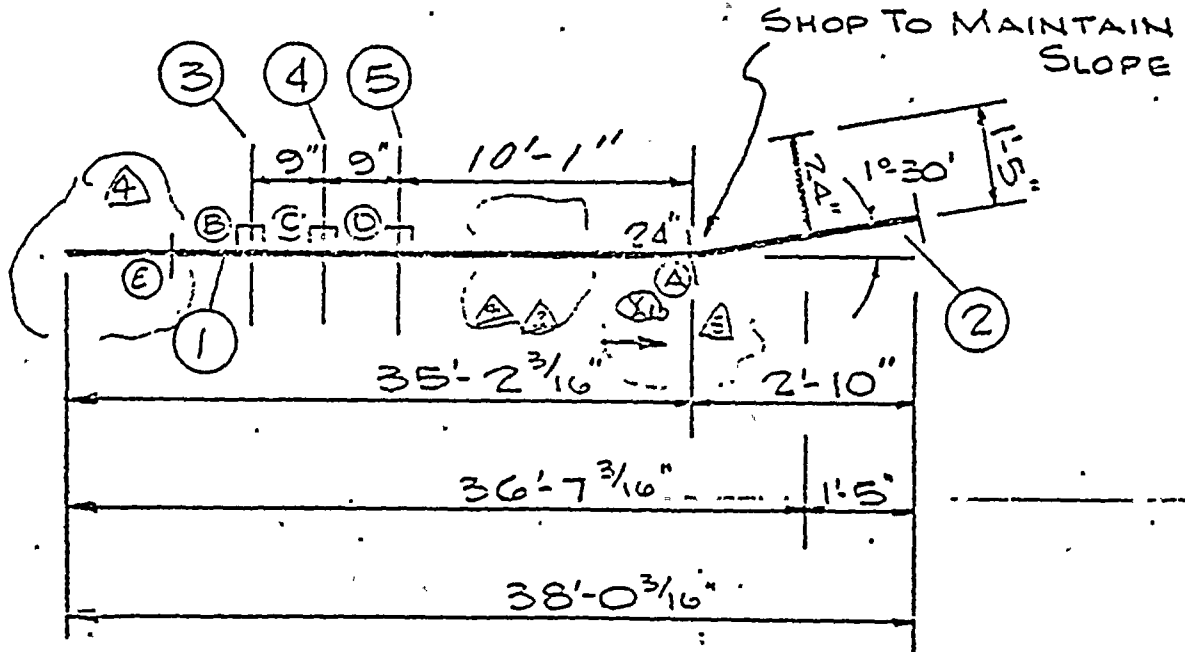
By *Ramsey R. Weycho*

6060

ERNERSVILLE I.P.D.

ORDER OR CONT. NO. _____
 NAME MAIN POWER & LIGHT
 LOCATION SUSQUEHANNA STA.
UNIT # 1

DEPT. _____
 DRW'N ZM CHK'D _____
 ① REV. 5-14-74 CHK'D _____
 ② REV. 10-24-74 CHK'D _____
 ⓐ IHL 8-25-75 _____
 ⓐ JDC 12-19-75 _____
 ⓐ BLM 3-21-76 JDC 3-21-76



ENDS MACH. PER SK#
 SABCD-13

DOCUMENT NO. _____
 DATE 10-20-76

ASME CODE APPROVED

USE END OF T
 SPEC. PAINT

CLASS NUC. CL. 1 LINE SPEC. DBR APP. CODE ASME SEC III NO. REQ'D 1

RADIOGRAPHY (RT)	<input checked="" type="checkbox"/>	SPECIAL MARKING	<input type="checkbox"/>	PREHEAT	<input checked="" type="checkbox"/>	CERT. OF COMPLIANCE	<input type="checkbox"/>
MAG. PARTICLE (MT)	<input checked="" type="checkbox"/>	SPECIAL CLEANING	<input checked="" type="checkbox"/>	HEAT TREAT	<input checked="" type="checkbox"/>	MILL TEST REPORTS	<input checked="" type="checkbox"/>
LIQ. PENETRANT (PT)	<input type="checkbox"/>	PAINTING	<input checked="" type="checkbox"/>	CODE STAMP	<input checked="" type="checkbox"/>	DATA REPORTS	<input checked="" type="checkbox"/>

SYSTEM MAIN STEAM FAB. SPECS. ES-10IN; ES-KV-1, KV-2
 REF. DRWG. NO. DBR-101-1 PRESS. 1250 PSI. TEMP. 555 F. WT. 472.4 LBS.
 REGISTER SP-1-X PC. MK. DBR-101-1 SK. NO. 1552

TRAVELER

N4.1B
3/21/73

JOB Pennsylvania Power & Light CONT. NO. 6060-7082 REG. NO. 52-1-8
 SYSTEM Mass Steam CLASS N-3 SK. NO. 1552
 PC. NO. 088-101-1-8 SPEC. FS-101N SUPPLEMENT SS-KV-1-2, 11

WELDING DATA

WELD IDENT.	ENG.	A	B	C	D	E	Filler (B.1)	A
PROCEDURE* NO.	QC	1-41-4-5 1-02A-1-6	1-41-2-5	1-41-2-5	1-41-2-5	1-41-4-5 1-02A-1-6	1-04-2-5	1-1-1-7
SPEC. SUPPLEMENT*	QC	KV-1 KV-2-3 KV-11-2	KV-1 KV-2-3 KV-11-2	KV-1 KV-2-3 KV-11-2	KV-1 KV-2-3 KV-11-2	KV-1 KV-2-3 KV-11-2	KV-1 KV-2-3 KV-11-2	
INSPECT	QC	9-12-75 TS	9-12-75 TS	9-12-75 TS	9-12-75 TS	9-12-75 TS	9-12-75 TS	
FOR: PREHEAT	QC	TS	TS	TS	TS	TS	TS	
WELDER IDENT.	TACK	S	C385	C385	C385	C385	C385	
	ROOT	S	C73	C73	C73	C73	C73	
	INT	S	"	"	"	"	"	
	BAL	S	C124	"	"	"	C124 C101	
WELD PROCESS	TACK	S	teg	teg	teg	teg	teg	
	ROOT	S	"	"	"	"	"	
	INT	S	ma	ma	ma	ma	ma	
	BAL	S	sa	"	"	"	sa	
WELD MATERIAL IDENT.	TACK	S		WW22	WW22	WW22		
	ROOT	S		"	"	"		WW80
	INT	S	WW38	WW38	WW38	WW38	WW38	WW84
	FINAL	S	WW30	WW26	WW26	WW26	WW40	"
	Q.C. VERIFICATION	QC	TS	TS	TS	TS	DG	TS
RADIO-GRAPHY	GRINNELL APP.	QC	9-23-75				9-23-75	
	AUTH. INSP.	QC	9-26-75				9-26-75	
	CUSTOMER APP.		9-24-75				9-24-75	
LP. OR I.A.P. TEST	ROOT	QC						
	FINAL	QC		10-11-76	10-11-76	10-11-76	11-12-75	10-11-76

MATERIAL DATA

SK IDENTITY	REQ. INSR	HEAT NO.	NTR	HTR	WELD MAT'L	DIA.	HEAT/LOT NO.
① 24" x .941" MW SAICOR	300	L85741	176	27	E705-2	1/8	065033
② 24" x .941" M.W. TEE	786	AMPZ		26	E7018	1/8	N24474/K407LAD
③ 1" G. CO. # 4/2 PLG	90	BD34		38	E7018	3/32	04604/0513MIR
④ DO	432	ARA		40	F7X-EM12	1/8	402004/0452
⑤ DO	90	BD34					
⑥ K-2-2-2	2-2-2			60	E-705-2		6059491
⑦							

PROCESS DATA

STRESS CHART NO. <u>10/15/75</u>	CLEAR <u>200</u>	PAINTING <u>148</u>	READY FOR IN-SPECTION <u>15/76</u>	REMARKS U.T. <u>MAG REVEALS - 9-11-75</u>
SQUARE UP <u>163006</u>		MACHINE "C" DIA. AND WALL THICKNESS OF OPEN ENDS <u>L.H.</u>		

FINAL APPROVAL R.R. DATE 10-8-76

CUSTOMER APPROVAL _____ DATE _____

* APPLICABLE REVISION NUMBER SHALL BE SHOWN.

REVISIONS
PAGE 1 of 3

ITT Inconnell Industrial Pipe & Fittings Inc.

KERNERSVILLE, N. C.

FORM 101 REV. 1
O.A. FORM 101 C

CONT. NO. 7082
 NAME PENN. POWER & LIGHT CO.
 LOCATION SUSQUEHANNA
 UNIT #1

③ REV. 5/15/51 CHKD [Signature]
 Δ REV. 1/2/52 CHKD [Signature]
 ⑤ REV. 11/2/53 CHKD [Signature]
 REV. _____ CHKD _____

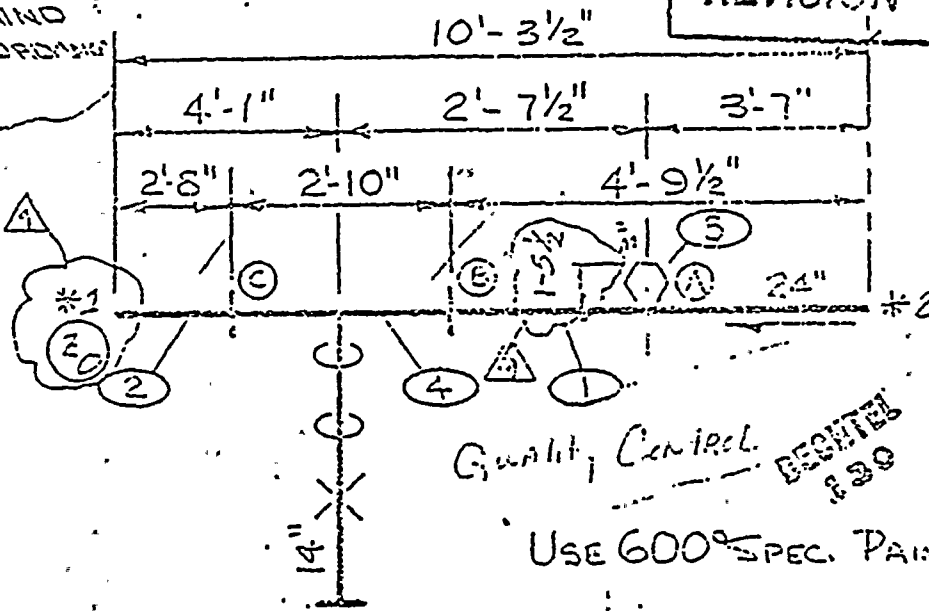
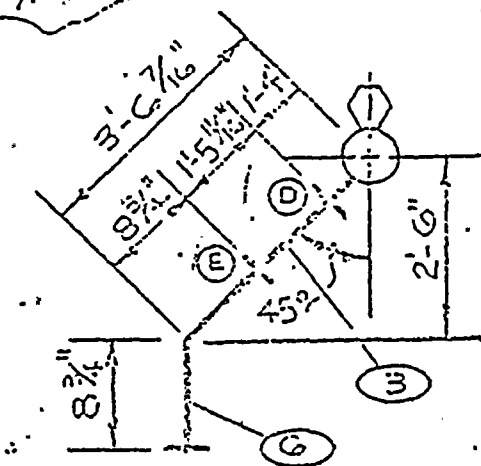
PIPE: SCH. 160 SA-106B
 FITT: SCH. 160 SA-234 W/PB
 CONN: SCH. 160 SA-105
 RING: CONS. INSERTS

*2 BEVEL PER SHEET SABC6-11
 WITH MACHINE I.D.
 19.857" $\pm .010$ FOR A DEPTH
 6" WITH 4:1 BLEND TO
 ORIGINAL BORE OF PIPE.

NOTE:
 *1 (A) WELD BUILD-UP O.D. TO PERMIT
 MACHINING TO 24.280" $\pm .000$ FOR
 5" LENGTH FROM END.
 (B) REBEVEL TO MATCH 24" SCH. 160 END
 PER SHEET 307 (1A-199). FINISH
 MACHINE O.D. TO 24.280" $\pm .000$ FOR
 5" LENGTH WITH 4:1 BLEND TO O.D.
 COUNTER BORE DIA. 21.280" TO BE
 FOR 4" DEPTH WITH 4:1 BLEND TO
 ORIGINAL BORE OF PIPE.

FOR IN SERVICE INSP GRIND
 O.D. OF BUTTWELD IN ACCORDANCE
 WITH SHOP STD ES-1062

REVISION



Quality Control
 BEHTER 829
 USE 600⁰ SPEC. PAINT



ASME CODE APPROVED

MACHINE ENDS PER
 DETAIL 0800 [unclear]
 (EXCEPT WHERE NOTE)

SEISMIC CL.I

CLASS NUC. CL. 2 LINE SPEC. DBB APP. CODE ASME SECT. III NO. REQ'D 1

Radiography (RT)	<input checked="" type="checkbox"/>	Special Marking	<input type="checkbox"/>	Preheat	<input checked="" type="checkbox"/>	Cert. of Compliance	<input type="checkbox"/>
Mag. Particle (MT)	<input checked="" type="checkbox"/>	Special Cleaning	<input checked="" type="checkbox"/>	Heat Treat	<input checked="" type="checkbox"/>	Mill Test Reports	<input checked="" type="checkbox"/>
Int. Pressure Test	<input type="checkbox"/>	Paints	<input checked="" type="checkbox"/>	Close Shutoff	<input checked="" type="checkbox"/>	Hydro. Test	<input type="checkbox"/>

SYSTEM GENERATOR FAB. SPECS. ES-MIN 52-KV-1, 2 & 11
 REF. DRAWG NO. DBB-119-1-1 PRESS. 1775 PSI TEMP. 556° F WT. 2266 LBS.
 RECL. MARK DBB-119-1-1 REGISTER SA-47 1000
 2021

2-27-71

WAS
5A-4-192

MATERIALS RECORD
PRODUCTION PLANNER

Sheet 3 of 3

Revision No. 7 Revision Date 9-1-71

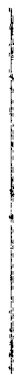
Acco. Mark DRP-119-1-7 Job Name SUSQUEHANNA Contract No. 7087 Location

PART NUMBER	DESCRIPTION	QTY OR REQ	QUALITY CONTROL			ACCOUNTING/MATERIAL			
			HEAT NUMBER	DOCUMENT IN PROCESS	STATUS	U/M	UNIT PRICE P.O.	DIS. VENDOR	NET
SA-60-1 24"	SCH. 160 SIAL'S C.S. PIPE A-9 1/2" ASME SA-106B	15	38	1/19	F		P-45 TEL		
SA-61-1 24"	SCH. 160 - DO - 2'-8" Sub.	241822	3/4	3/4	F		P-44 TEL		
SA-62-1 14"	SCH. 160 - DO - 1'-5 1/16"	204568	10/16	10/16	F		P-551 TEL		
SA-63-1 2" 14"	SCH. 160 RED'G TEE ASME SA-234-WPB ENDS PER SABCD-11	1	BUF-10 S.M.	3/17	E				
SA-64-1 24" 3"	(SCH. 160) WELD OLET ASME SA-105-71 D.W. END PER SABCD-11	1	BUF-10 S.M.	3/17	E				
SA-65-1 1 1/2"	SCH. 160 45° LR WE ASME SA-234-WPB ENDS PER SABCD-11	1	YNR BUF-90 S.M.	3/17	E				
SA-66-1 14"	SCH. 160 CONS. INSERT RINGS "C" = 11.499"	2	JA JR-65 S.M.		E		K-R-R Gear Corp. San Francisco, Calif. P. O. 8856-P-1-AC		
SA-67-1 24"	SCH. 160 CONS. INSERT RINGS "C" = 19.857"	2	AO JR-95 S.M.		E		ITT GRINNELL IND PIPING. KERRERSVILLE, NC		

Code ASME SEC. III Class NUC. CL. 2

Job/Supplier Cont ES-101N, SS-KV-1, -2, -11 MFG. Code

E-4-5
815



ITEM # 1000000-119-1-2
RUB

ITT Grinnell

TEST CERTIFICATE

PO# 0539 R

(DIN 5049 Clause 3 B)

10-1203

POSTANSCHRIFT
MANNESMANNWERKE AG · 4 DÜSSELDORF 1 · POSTFACH 1104

Manufacturer: Betriebsabteilung Rath
Our Order No: 829/1078
Your Order No: B 722.504/VR 21
- USA -

Firma
Mannesmann Export AG

(4) Düsseldorf.

Breite Str. 29/31

Marking of the Product
Manufacturer's Brand:

Inspector's Brand: W.S.
Ultrasonic Test:

SA
P444

Product: SEAMLESS STEEL PIPES WITH PLAIN ENDS Grade of Steel: Grade B, but with
Specification: ASTM-A 106 phys. properties as Grade B

Item	Number	V.A. 0010	Dimensions and Quantity	Test Pressure X1000 psi	Heat No	Sample No.
3)	- 9-	= 127'7"	20" x 3.000" 69379 lbs	2800	585686	191
4)	-12-	= 169'9"	24" x 2.344" 91755 lbs	2800	241827 241822 442013	366 367 368

Reihe 5a

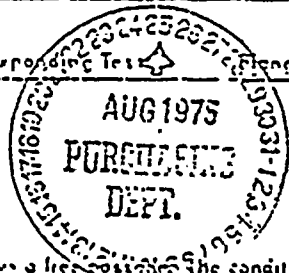
Result of the Ladle Analysis in %									
Heat No	C	Si	Mn	P	S	Cr	Mo	Ni	
685686	.27	.19	.96	.010	.040				
241827	.27	.26	.96	.015	.015				
241822	.26	.28	.97	.027	.022				
442013	.24	.25	.97	.027	.016				

Handwritten notes: R-9. ps, (R+T-slay), Batten Corp.

Result: Tensile Test						Result: Impact Test			
Sample No	Orien: tation	Dimensions of Test Piece Width Ø mm thickness	Yield Stress 25X10 ³ psi	Tensile Strength 50X10 ³ psi	Elong. Lo200 %	Orien: tation	Impact Value kgm/cm ² · ft · lb		
191	1	Requirements	42670	74100	3.3				
366	1		47220	78800	3.3				
367	1		44940	76240	3.3				
368	1		43810	74100	3.3				

Results of other Tests on Tubes
Flattening Test: OK Ring Expanding Test: Ring Tensile Test: Drift Expanding Test: Flanging Test:

Visual Inspection and Control of Dimensions: checked



The tubes have passed the above mentioned hydraulic pressure test without leakage and have a free surface. The condition of the tubes complies with the specification. This is to certify that the material and the tubes comply with the above specification.

Düsseldorf-Rath 10.5.1974 Pz

MANNESMANNWERKE
AKTIENGESELLSCHAFT
Betriebsabteilung Rath
Abdruck

Mannesmannröhren-Werke AG - Postfach 1104 - 4000 Düsseldorf 1

To
Mr. Daniel Sachs
PPAL · 2 North Ninth Street
18101 N 4
Allentown
Pennsylvania
U S A

Ihr Zeichen und
Ihre Nachricht vom

Unsere Abteilung
und Zeichen

HBA-QR/Ra
Str./Ha.

Telefon
(Durchwahl)

(02 11) 65 02-
280

Rather Kreuzweg 106
4000 DOSSELDORF 30 (Rath)

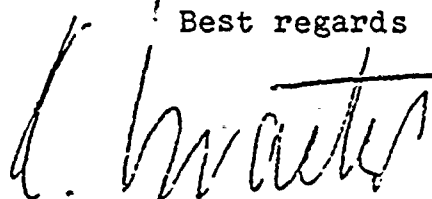
24th April 1981

Dear Mr. Sachs,

as I informed you at our telecon, tuesday 21st of April 1981, Mannesmannröhren delivered pipes 24" x 2.34" in ASTM-A-106 Grade C via MPS Houston to a firm Tubular Steel/USA in 1973. Due to the temporal distance we could'nt find out if the pipes were heat-treated or not. However because the pipes were ordered without any further requirements but ASTM I suppose the pipes were not heat-treated, that means they are in hot rolled condition. Hot rolled condition means, the ingot leaves the furnace with 1280°C and the temperature during forming of a dimension 24" OD with 2,3"W.Th. is approximately 1100/1150°C. This temperature is more than necessary for a complete recrystallization.

Starting from the ingot the final pipe got a 5,3-times stretching, enough to eliminate the casting structure and to meet the mechanical requirements.

Best regards





A GULF + WESTERN COMPANY

FEEDWATER, ITEM 5 DBB-119-1-2

CUSTOMER: ITT GRINNELL CORP.

Date MAY 31, 1974

CUSTOMER'S Order No.: KER 9603
SHIPPED TO: ITT GRINNELL CORP.
P. O. BOX 566
HIGHWAY 421
KERNERSVILLE, N. C. 27284

Bonney Order No. 19639

Mark KER 9603

Item No.	Quantity No.	Bonney Lot No.	Grade or Specification No.	Chemical Analysis, Physical Properties, Remarks:
3	2	388J	SA182-F304	<p><u>SA182-F304</u></p> <p>3 1/2 - 3 x 1 3000# Sockolet C.07 Mn.79 P.023 S.024 Si.53 Ni 9.57 Cr 18.90 Mo.42 Cu.37 T/S 98,300 Y/S 66,300 El 45.0 Ra 74.6</p>
				<p><u>SA105-71</u></p> <p>36 - 24 x 3 Sch. 160 Weldolet C.27 Mn.79 P.013 S.025 Si.14 T/S 79,500 Y/S 44,700 El 29.0 Ra 37.2</p>
4	2	259J	SA105-71	

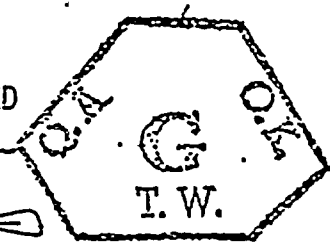
SA SWF10

DOCUMENTATION REVIEWED

Date 7-9-77

BECHTEL CORPORATION

By [Signature]



This is to certify that the fittings supplied are in complete accordance with purchase order #KER 9603.

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.

Subscribed and sworn before me
this 31st day of MAY 1974

[Signature]
NOTARY PUBLIC
Allentown, Lehigh County, Pennsylvania
My Commission Expires May 23, 1976

Bonney Forge Division
GULF + WESTERN INDUSTRIAL PRODUCTS COMPANY

by [Signature]

MGR. INSPECTION AND TESTING

sil:5

FORM 2155



Bonney Forge

Gulf + Western Manufacturing Company

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

April 28, 1981

Mr. Jan Sachs
Pennsylvania Power & Light Company
Two North Ninth Street
Allentown, Pennsylvania

Dear Mr. Sachs:

You requested information concerning fittings with Lot Numbers BD34 and 259J.

Fittings marked BD34 were machined from hot rolled bar produced by Republic Steel. Enclosed is a copy of Republic's CMTR; their Heat No. 4490108 subsequently became our Lot No. BD34. To the best of my knowledge, the material was used in the "as-received" condition and not normalized or otherwise heat treated.

Fittings marked 259J were machined from tubing supplied by Tubular Steel; their mill heat number is 81526. Again, I do not believe that any heat treatment was performed and that the material was used in the "as-supplied" condition. Enclosed is a copy of Tubular's CMTR.

I hope that the enclosed information will be of some help to you.

Very truly yours,

R.W. Schneider
Engineering Manager

RWS/cmd
Enclosures

cc: W. R. Nicolls

SOLD TO: ENTRINS PRODUCTS DEPT.
P.O. BOX 9
CARLEVILLE, ILLINOIS 62626

DATE 2/6/78
 ORDER NO. 1503

THIS IS TO CERTIFY THAT THE MATERIAL FURNISHED ON THE ABOVE ORDER CONFORMS TO THE FOLLOWING CHEMICAL AND PHYSICAL ANALYSES AS COPIED FROM REPORT FURNISHED BY OUR SUPPLIER(S).

SPECIFICATION AND GRADE	ASTM A-106 GRADE C	ASTM A-106 GRADE C	
SIZE	6" O.D.	12-3/4" O.D. (Reheated)	
WALL	2.000	1.625" Wall	
YIELD PT (PSI)	34,760		
TENSILE (PSI)	79,500		
ELONGATION % 2"	29.0		
CARBON	.17		
MANGANESE	.73		
PHOSPHOROUS	.013		
SULPHUR	.025		
SILICON	.14		
FLATTENING TEST			
HEAT NUMBER	81523		
MTL. MFG. BY			
TEST PRESSURE			

ANALYSIS NUMBER
 10562 2595

Reanne Smith

State of Missouri }
 County of St. Louis }

Certified and subscribed before me, a Notary Public, in and for the above state and city, this day and date.

My commission expires 10-7-78

Dated 2/6/78

SOLD TO ITT Grinnell Corporation
Kernersville, North Carolina
 SHIP TO Same for Penn Power

WELD TEST CERTIFICATE
 ITT GRINNELL CORPORATION
 WELDING PRODUCTS DIVISION
 PRINCETON, KY.

OUR ORDER NO. 1999
 BRANCH ORDER NO. List 2160-C
 CUSTOMER'S ORDER NO. _____
 DATE August 1, 1975

ITEM #6, FEEDWATER DBB-119-1-3

DESCRIPTION OF FITTING	PHYSICAL PROPERTIES FITTING MATERIAL				CHEMICAL ANALYSIS								HEAT CODE OR HEAT NO.	SPECIFICATION - FITTING MATERIAL
	HEAT TREATMENT	YIELD POINT P.S.I.	TENSILE STRENGTH P.S.I.	ELONG. IN 2" %	C	MN	P	S	SI					
ASME SA-234 WPB														A-106B
1 1/2" S/160 45° IR Ell	F	53760	78370	35.3	.27	.97	.024	.027	.31			SA-242-1	YNR	

SA SWF-907

DOCUMENTATION REVIEWED
 Date 9-18-75
 BECHTEL CORPORATION
 By [Signature]

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

We certify that the fittings herein comply with the requirements of ASME Specification SA234. They were produced in accordance with the ASME Quality Systems Program, accepted by the American Society of Mechanical Engineers as evidenced by the issuance of Quality Systems Certificate (Materials) Number H-8.

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

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

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

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

NOTARY PUBLIC

[Signature]
 R. D. BERLIEN

ITT Grinnell Corporation

P.O. Box 647 530
Princeton, Kentucky 42445
Telephone (502) 365-5551

April 13, 1981

Penn Power & Light
2 North Ninth Street
Allentown, PA 18101

ATTN: Mr. Dan Sachs - N4

Dear Sir:

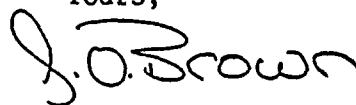
In accordance with our recent conversation about materials provided by ITT Grinnell Welding Products Division to the ASME Section II, SA-234 specification the following information is provided:

Material reduction of area (cross section thickness) in our process is nominally held to 10% or less of starting material wall thickness. In our process, we either bend or mandrel form elbows. The bending elbows see a 5% reduction of thickness in the back arc with a corresponding gain in the crouch area of the elbow.

Hot forming is carried out in accordance with SA-234 Paragraph 6 which allows hot forming between 1150°F and 1800°F without subsequent heat treatment provided they are cooled in still air. Our actual practice is that we use a nominal of 1550°F+50°F in order to assure material flow in the forming process. These forming temperatures are followed by a still air cool to room temperature (50 to 90°F).

If we can provide any further information as to our heating practices, please contact the undersigned.

Yours,



J. O. Brown
Division QA Manager

JB/bl