



Connex Pipe Systems, Inc.
1115 Gilman Street
Marietta
Ohio 45750
Telephone 614 373 7541
Fax 614 373 8480
Twx 810 486 2808

APPROVED VENDORS LIST

MATERIAL MANUFACTURERS AND SUPPLIERS

OF ASME SECTION III MATERIAL AND

SUBCONTRACTED SERVICES

Issue Date: June 8, 1992

Revision: 92-6

Approved By: *J. H. Wick* Date 6-8-92

KAW/cak

A member of the Whessoe Group

9207150213 920708
PDR ADDCK 05000458
S PDR

<u>VENDOR</u>	<u>LOCATION</u>	<u>EXPIRATION DATE</u>
Allegheny International Alloy Rods, Inc.	Hanover, PA	S 09-08-93
Allegheny International Alloy Rods, Inc.	Hanover, PA	S 09-08-93
Arcos	Mt. Carmel, P	S 10-23-93 CA 09-11-94
Avesta Sandvik Tube, Inc.	Wildwood, FL	S 11-27-92
Avesta Sandvik Tube, Inc.	Wildwood, FL	S 11-27-92
Bicon	Cambridge, OH	R-A 07-12-92
Cameron Forge Company	Cypress, TX	R-A 06-11-92
Canuso, Louis P., Inc.	Deptford, NJ	S 01-30-95
Cardinal Industrial Products	Las Vegas, NV	S 01-09-93
Cardinal Industrial Products	Las Vegas, NV	S 01-09-93
Chicago Tube & Iron Company	Chicago, IL	S 06-07-94
Colonial Machine, Inc.	Pleasantville, PA	R-A 07-01-92
Custom Alloy Corporation	High Bridge, NJ	R-A 10-30-92
Donovan Heat Treating	Philadelphia, PA	A 06-14-92
Dresser Industries, Inc.	Alexandria, LA	S 03-30-93
Dresser Industries, Inc.	Alexandria, LA	S 03-30-93
Dresser Industries, Inc.	Alexandria, LA	S 03-30-93
DuBose National Energy Services, Inc.	Roseboro, NC	S 03-31-93
Dynamics Products, Inc.	Houston, TX	R-A 10-11-92
EIL Instruments, Inc.	Dayton, OH	A 11-19-92

A = AUDIT

R = RESTRICTED

S = SURVEY-MUST BE AUDITED BEFORE ISSUING P.O. FOR DOMESTIC CONTRACTS

CA = CERTIFICATE HOLDERS WHO HAVE BEEN AUDITED BY CONNEX

<u>VENDOR</u>	<u>LOCATION</u>	<u>EXPIRATION DATE</u>
Fin-Tech, Inc.	Houston, TX	A 09-19-92
Flowline Corporation	New Castle, PA	R-A 07-03-92
Hub, Incorporated	Tucker, GA	S 04-28-93 CA 12-19-94
Hub, Incorporated	Tucker, GA	S 04-28-93 CA 12-19-94
ITT Engineered Valves	Lancaster, PA	S 07-06-93
ITT Engineered Valves	Lancaster, PA	S 07-06-93
Inco Alloys International, Inc. Huntington Alloys	Huntington, WV	S 03-31-93
Inco Alloys International, Inc. Huntington Alloys	Huntington, WV	S 03-31-93
Inco Alloys International, Inc. Huntington Alloys	Huntington, WV	S 03-31-93
Inco Alloys International, Inc. Huntington Alloys	Huntington, WV	S 03-31-93
Jessop Steel Company	Washington, PA	S 07-23-94
Jessop Steel Company	Washington, PA	S 07-23-94
Lincoln Electric Co.	Cleveland, OH	S 03-30-93
Lincoln Electric Co.	Cleveland, OH	S 03-30-93
L-Tec Welding & Cutting Systems	Ashtabula, OH	S 03-17-93
L-Tec Submerge Arc Flux Plant	Niagara Falls, NY	A 07-19-92
McJunkin Corporation	Charleston, WV	S 03-03-93 CA 12-30-94
McJunkin Corporation	Charleston, WV	S 03-03-93 CA 12-30-94

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<u>VENDOR</u>	<u>LOCATION</u>	<u>EXPIRATION DATE</u>
Nova Machine Products Corp.	Middleburg Hts., OH	S 05-22-93 CA 03-27-95
Nova Machine Products Corp.	Middleburg Hts., OH	S 05-22-93 CA 03-27-95
NPS Industries, Inc.	Austin, TX	S 07-12-94
Professional Service Industries Pittsburgh Testing L. . . Div.	Pittsburgh, PA	A 11-19-92
Radnor Alloys, Inc.	Harrison, NJ	S 11-27-93 CA 12-18-94
Sandvik	Scranton, PA	S 06-11-94
Sandvik	Scranton, PA	S 06-11-94
Schulz, Wilh., GmbH	Krefeld, W. Germany	S 02-05-93
Specialty Machine	Belpre, OH	R 03-16-93
Swepeco Tube Corporation	Clifton, NJ	S 12-29-92
Taylor Forge Engineered Systems, Inc.	Paola, KS	S 11-25-92
Taylor Forge Engineered Systems, Inc.	Paola, KS	S 11-25-92
Taylor Forge Stainless, Inc.	North Branch, NJ	S 01-21-95 CA 09-12-94
Taylor Forge Stainless, Inc.	North Branch, NJ	S 01-21-95 CA 09-12-94
Teledyne McKay	York, PA	S 07-16-94
Trent Tube Div. of Crucible Materials	Carrollton, GA	S 09-15-92
Trent Tube Div. of Crucible Materials	Carrollton, Ga	S 09-15-92

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<u>VENDOR</u>	<u>LOCATION</u>	<u>EXPIRATION DATE</u>
Trent Tube	Troy, WI	S 12-16-94
Vitco Nuclear Products, Inc.	Mentor, OH	S 05-13-94 CA 09-11-94
Vitco Nuclear Products, Inc.	Mentor, OH	S 05-13-94 CA 09-11-94
Weldstar Company	Aurora, IL	S 01-05-94 CA 04-21-95
WFI Nuclear Products, Inc.	Houston, TX	S 01-16-93 CA 09-17-94
WFI Nuclear Products, Inc.	Houston, TX	S 01-16-93 CA 09-17-94
Youngstown Welding & Eng.	Youngstown, OH	S 11-27-92

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AVL APPENDIX

VENDOR

RAM FORGE & STEEL, INC.
INDUSTRIAL PARK ROAD
P.O. BOX 592
NAVASOTA, TX 77868

DELETED

TYPE OF SUPPLIER

MATERIAL MANUFACTURER AND SUPPLIER

ASME CERTIFICATION OF AUTHORIZATION

SURVEY DATE

EXPIRES

AUDIT DATE

EXPIRES

OCTOBER 9, 1991

OCTOBER 9, 1992

PRODUCT/SERVICE SUPPLIED

RESTRICTIONS/COMMENTS

QUALITY ASSURANCE PROGRAM MANUAL QCM REVISION 5
DATED MARCH 18, 1988

ALL MATERIAL USED IN THE MANUFACTURING OF ITEMS TO BE SUPPLIED
TO CONNEX MUST BE PURCHASED FROM AN ASME CERTIFICATE HOLDER
OR, AS AN ALTERNATIVE, CONNEX MUST AUDIT RAM FORGE'S SUB-TIER
SUPPLIERS, INCLUSIVE OF THE MANUFACTURER OF THE INGOT.

KAW/cak



CC:

Kevin A. Welch
Manager of Quality Assurance
Connex Pipe Systems, Inc.
1115 Gilman Street, Marietta, OH 45750
Phone: 614-373-7541 TWX: 810-486-2906 Fax: 614-373-8480
A member of the Whessex Group

ATTENTION: BJ GRUNER

COMPANY & LOC.: RAM FORGE

TELECOPY NO.: 409-825-7524

FROM: KEVIN A. WELCH, MANAGER OF QUALITY ASSURANCE

DATE: 6-10-92

PAGES IN MESSAGE
INCLUDING THIS
PAGE: _____

MESSAGE:

ATTACHED IS A COPY OF CONNEX'S
CORRECTIVE ACTION REPORT AND NCR
ON PO# E8634 - 2 ITEM 1.

I hope this will help with
CORRECTIVE ACTION INVESTIGATION.

THANKS
KEVIN



PIPE SYSTEMS

June 9, 1992

Ram Forge & Steel, Inc.
P.O. Box 592
Navasota, Texas 77868

Attention: Mr. B. J. Gruner, Vice President

Reference: Connex Approved Vendor's List

Gentlemen:

Confirming our phone conversation this date with Mr. Kevin Welch (Connex Manager of Quality Assurance) and the writer, Connex is removing Ram Forge from our Nuclear Approved Vendor's List.

This removal is the result of Ram Forge failing to comply with the requirements of several Connex purchase orders, the latest of which is the minimum wall condition on the 12" carbon steel long radius 90° elbow supplied on the Gulf States Utilities order.

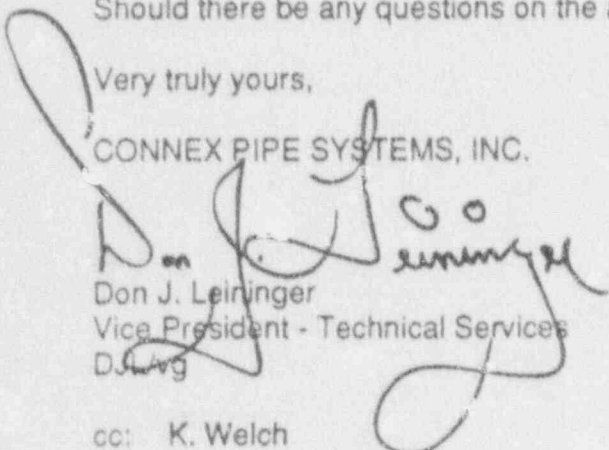
Connex has generated a Corrective Action Request (CAR) in relation to the nonconformances written as a result of Ram Forge's failure to comply with the Connex purchase orders.

Reinstatement on the Connex Approved Vendor's List is a function of Ram Forge's response to the Corrective Action Request and a verification by Connex's Mr. Kevin Welch that Ram Forge's quality system is working.

Should there be any questions on the above, please contact the writer.

Very truly yours,

CONNEX PIPE SYSTEMS, INC.


Don J. Leiringer
Vice President - Technical Services
D.J.L/g

cc: K. Welch
N. Brown
H. McConkey
G. Gardner

Connex Pipe Systems, Inc.
1135 Sunnyside Street
Marietta
Ohio 45750
Telephone: (614) 373-3440
Fax: (614) 373-3440
Tlx: 810 488 2828

DISCREPANCY REPORT

RAM FORGE & STEEL, INC.
P.O. Box 592
Navasota, Texas 77868

REPORT NO. CS-3544-1-R

REPORT DATE 6/10/92

SHOP ORDER CS-3544

CUSTOMER Connex Pipe

COMPLETE: O.C. SIGNATURE BY: [Signature] DATE: 6/12

DISCREPANCY 1 12" S/80 LR 90 deg. Ell SA234 WPC had area in heel that was below specified wall reported to be 0.378" in one area. (req. .688" or .602 minimum)

RESPONSIBLE PERSON: [Signature] REPORTED BY: Kevin Welch / 6/9/92
~~XXXXXX~~ Connex DATE

DISPOSITION Connex to weld build up low area in accordance with ASME III SUB. NB4130 and approved welding procedure.
BY: [Signature] / 6/12/92
SIGNED DATE

CORRECTIVE ACTION REQUIRED
 NOT REQUIRED

CAUSE: Grinding department at Ram removed too much material when polishing. We have not experienced thin wall due to heavier starting material and had no reason to suspect a problem. Required UT and MP was performed, but, as no thickness checks were required, none were taken.

RESPONSIBLE PERSON: [Signature] / 6/12/92
SIGNED DATE

CORRECTIVE ACTION Ells supplied to section III orders will be checked 100% for required thickness on a grid over entire Ells.

[Signature] / 6/25/92 A procedure will be initiated upon receipt of next section III order.

COMPLETED BY: [Signature] / 6/12/92
SIGNED DATE

COST TO CORRECT: Connex to advise
BACK CHARGE:
MAN HOURS:

CONNEX PIPE SYSTEMS, INC.
QUALITY ASSURANCE DEPARTMENT

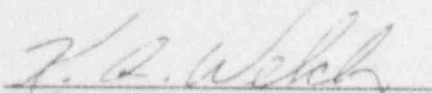
TO: G. Gardner
FROM: K. Welch
SUBJECT: Gulf States Utilities E8634 Filing a 10 CFR 21 on a Ram Forge Elbow.

cc: D. Leininger
H. McConkey
file

GSU has inform me that they are filing a 10 CFR 21 with the NRC on the elbow Ram Forge manufactured and direct shipped to GSU. GSU made the determination that the elbow could have caused a substantial safety hazard had it been installed.

I believe a meeting is in order to discuss the steps we should take to provide corrective action to prevent recurrence. I have tentatively scheduled this meeting for Monday, June 15, 1992 at 9:00 AM in the main conference room.

Please advise if you are unable to attend at this time.



K. A. Welch
Manager of Quality Assurance


TELECOPY TRANSMITTAL

RAM FORGE & STEEL, INC.
P.O. BOX 592
NAVASOTA, TEXAS 77868
409-825-6501 (FAX) 409-825-7524

TO: MR. KEVIN WELCH
FIRM: CONNEX PIPE SYSTEMS
REF: E-8634-2 RAM CS-3544-1
DATE: June 12, 1992
FROM: B.J. GRUNER
PAGES TO FOLLOW: 0

IF NOT RECEIVED IN GOOD ORDER - PLEASE CALL 409-825-6501

MESSAGE: KEVIN - YOU INFORMED ME TODAY THAT THE UNDER MINIMUM WALL DIMENSION FOUND ON THE 12" S/80 ELL WOULD CAUSE IT TO ALSO FALL UNDER THE 10 CFR PART 21 "REPORTING OF DEFECTS AND NONCOMPLIANCE". IT IS MY UNDERSTANDING THAT GULF STATES UTILITIES HAS FILED THE NECESSARY REPORTING REQUIREMENTS, AND THAT CONNEX, AS OUR CUSTOMER, ALSO KNOWS, AS YOU HAVE INFORMED ME. RAM FEELS THAT ALL REPORTING REQUIREMENTS HAVE BEEN COMPLETED TO COMPLY WITH PART 21 AND THAT NO OTHER ACTION IS REQUIRED FROM RAM FORGE & STEEL. PLEASE INFORM ME IF RAM NEEDS TO FILE ANY OTHER REPORTS.

THANKS,

B.J. GRUNER



PIPE SYSTEMS

June 26, 1992

Ram Forge and Steel, Inc.
P.O. Box 592
Industrial Park Road
Navasota, TX 77868

ATTENTION: Mr. B J. Gruner

RE: Gulf States Utilities Co.
Forged Elbow Defect

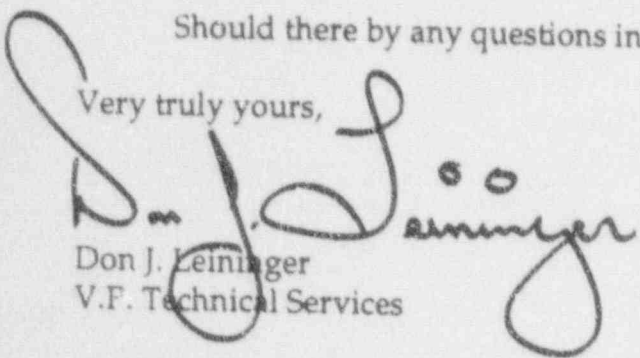
Dear B.J.:

Attached for your information and files are one (1) copy of the report that Gulf States Utilities has sent to the NRC reporting the 10CFR Part 21 Report of Defect in the 12" forged elbow and one (1) copy of the report sent by Connex to the NRC supplementing the Gulf States Report on the same subject.

It is very important that you keep us informed of any action on your part (Ram Forge) in relation to this matter.

Should there be any questions in the above, please contact us.

Very truly yours,



Don J. Leininger
V.F. Technical Services

attachments

DJL:cak

cc: N. Brown
K. Welch
G. Gardner

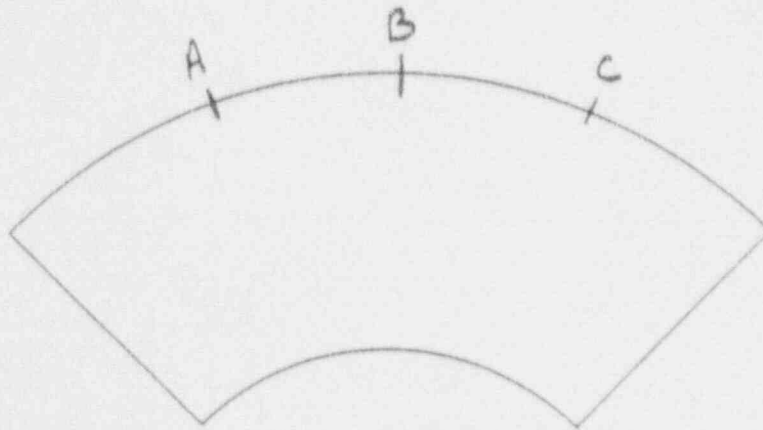
Connex Pipe Systems, Inc.
1115 Gilman Street
Merrittsville
Ohio 45750
Telephone 614 373 7541
Fax 614 373 8480
Twx 810 486 2808

ULTRASONIC THICKNESS READINGS

INSTRUMENT: KRAUT KRAMER BRANSON DME THICKNESS GAUGE
 TRANSDUCER: KBA 560 5MHZ .60" DIA.
 PROCEDURE: ES-UT-6 REV. 3

M.A. Fuchs 7-2-92
 TEST OPERATOR

J.R. Welch 7-6-92
 REVIEWED BY



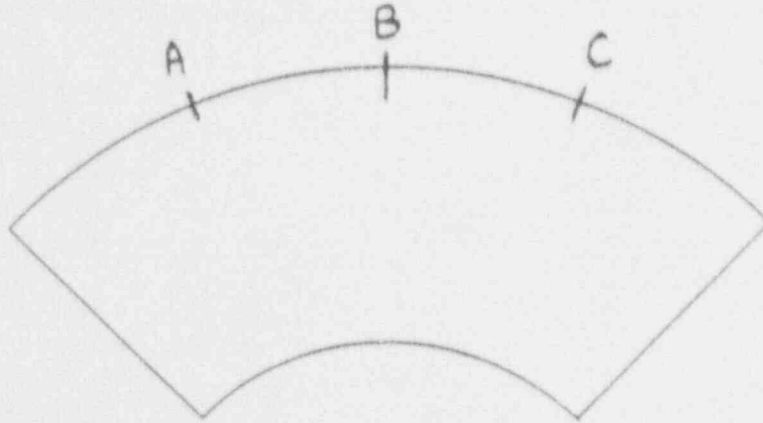
Size	P.O. NO.	Heat No.	Manufacturer	A	B	C	Min. Wall
10" SCH 120	E4241-18	517T	ENGLAND	0.808	0.817	0.808	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.836	0.847	0.829	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.865	0.861	0.881	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.823	0.834	0.836	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.838	0.821	0.804	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.789	0.786	0.811	0.739
12" SCH 140	E4241 C/M	JGNT	CUSTOM ALLOY	1.374	1.372	1.349	0.875
12" SCH 140	E4241 C/M	JGNT	CUSTOM ALLOY	1.397	1.39	1.339	0.875
10" SCH 140	E4241 C/M	JGNU	CUSTOM ALLOY	1.348	1.377	1.345	0.875
10" SCH 140	E4241 C/M	JGNU	CUSTOM ALLOY	1.396	1.356	1.408	0.875
16" SCH 100	E4229-2	JIVO	CUSTOM ALLOY	1.609	1.522	1.593	0.902
16" SCH 100	E4229-2	JIVO	CUSTOM ALLOY	1.521	1.464	1.499	0.902
20" 2.00 M.W.	E4229-2	JJPH	CUSTOM ALLOY	2.544	2.526	2.619	1.750
22" SCH 120	E4229-2	JJYM	CUSTOM ALLOY	2.103	1.868	2.071	1.422
22" SCH 120	E4229-2	JJYM	CUSTOM ALLOY	2.161	2.112	2.107	1.422
22" SCH 120	E4229-2	JJYM	CUSTOM ALLOY	2.021	1.883	2.009	1.422
24" STD WT	E4239-18	880T	ENGLAND	0.576	0.561	0.569	0.328
24" STD WT	E4239-18	880T	ENGLAND	0.538	0.582	0.541	0.328
16" SCH 100	E4229-2	JIVO	CUSTOM ALLOY	1.481	1.438	1.513	0.902
16" SCH 100	E4229-2	JIVO	CUSTOM ALLOY	1.596	1.461	1.548	0.902
8" 1.375 M.W.	E4229-2	JJOP	CUSTOM ALLOY	1.864	1.891	1.908	1.203
8" 1.375 M.W.	E4229-2	JJOP	CUSTOM ALLOY	1.881	1.895	1.916	1.203
8" 1.375 M.W.	E4229-2	JJBT	CUSTOM ALLOY	1.786	1.768	1.861	1.203
12" SCH 100	E4229-2	JION	CUSTOM ALLOY	0.948	0.941	0.957	0.739
12" SCH 100	E4229-2	JION	CUSTOM ALLOY	0.907	0.913	0.932	0.739

ULTRASONIC THICKNESS READINGS

INSTRUMENT: KRAUT KRAMER BRANSON DME THICKNESS GAUGE
 TRANSDUCER: KBA 560 5MHZ .60" DIA.
 PROCEDURE: ES-UT-6 REV. 3

M.A. Wick 7-2-92
 TEST OPERATOR

J.R. Wick 7-5-92
 REVIEWED BY

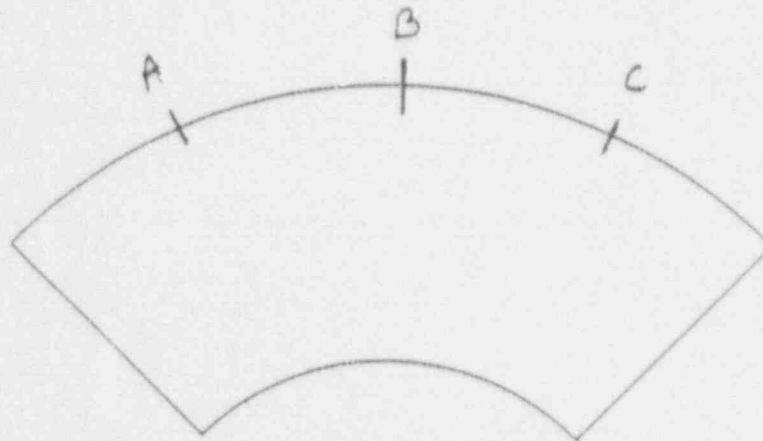


Size	P.O. NO.	Heat No.	Manufacturer	A	B	C	Min. Wall
12" SCH 100	E4229-2	JION	CUSTOM ALLOY	0.921	0.903	0.948	0.739
12" SCH 100	E4229-2	JIOO	CUSTOM ALLOY	0.921	0.848	0.884	0.739
12" SCH 100	E4229-2	JIOO	CUSTOM ALLOY	0.945	0.909	0.877	0.739
12" SCH 100	E4229-2	JIOO	CUSTOM ALLOY	0.937	0.923	0.963	0.739
8" SCH 40	E4229-2	JJHA	CUSTOM ALLOY	0.494	0.489	0.502	0.282
8" SCH 40	E4229-2	JJHA	CUSTOM ALLOY	0.486	0.483	0.502	0.282
8" SCH 40	E4229-2	JJHA	CUSTOM ALLOY	0.505	0.489	0.488	0.282
8" SCH 40	E4229-2	JJHA	CUSTOM ALLOY	0.507	0.501	0.506	0.282
5" SCH 160	E4229-2	JJBE	CUSTOM ALLOY	0.788	0.738	0.755	0.547
5" SCH 160	E4229-2	JJBE	CUSTOM ALLOY	0.717	0.713	0.754	0.547
5" SCH 160	E4229-2	JJBE	CUSTOM ALLOY	0.732	0.715	0.721	0.547
5" SCH 160	E4229-2	JJBE	CUSTOM ALLOY	0.732	0.725	0.769	0.547
5" SCH 160	E4229-2	JJBE	CUSTOM ALLOY	0.727	0.704	0.729	0.547
14" STD WT	E4229-2	JJBI	CUSTOM ALLOY	0.879	0.853	0.856	0.328
14" STD WT	E4229-2	JJBI	CUSTOM ALLOY	0.848	0.811	0.805	0.328
14" STD WT	E4229-2	JJBI	CUSTOM ALLOY	0.872	0.831	0.861	0.328
14" STD WT	E4229-2	JJGP	CUSTOM ALLOY	0.644	0.642	0.674	0.328
14" STD WT	E4229-2	JJGP	CUSTOM ALLOY	0.685	0.662	0.688	0.328
14" STD WT	E4229-2	JJGP	CUSTOM ALLOY	0.655	0.634	0.674	0.328
14" STD WT	E4229-2	JJGP	CUSTOM ALLOY	0.667	0.654	0.681	0.328
8" SCH 40	E4229-2	JJGZ	CUSTOM ALLOY	0.458	0.443	0.497	0.282
6" XXH	E4229-2	JIPP	CUSTOM ALLOY	0.972	0.951	0.972	0.756
6" XXH	E4229-2	JIPP	CUSTOM ALLOY	0.988	0.953	0.981	0.756
6" XXH	E4229-2	JIPP	CUSTOM ALLOY	0.962	0.958	0.987	0.756
6" XXH	E4229-2	JIPP	CUSTOM ALLOY	0.982	0.951	0.956	0.756

ULTRASONIC THICKNESS READINGS

INSTRUMENT: KRAUT KRAMER BRANSON DME THICKNESS GAUGE
 TRANSDUCER: KBA 560 5MHZ .60" DIA.
 PROCEDURE: ES-UT-6 REV. 3

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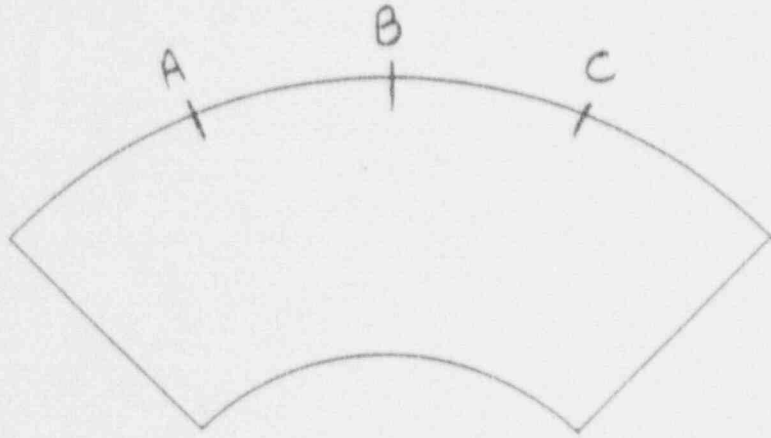


Size	P.O. NO.	Heat No.	Manufacturer	A	B	C	Min. Wall
6" XXH	E4229-2	JIPP	CUSTOM ALLOY	0.982	0.956	0.999	0.756
6" XXH	E4229-2	JIPP	CUSTOM ALLOY	0.943	0.928	0.932	0.756
6" XXH	E4229-2	JIPP	CUSTOM ALLOY	0.958	0.941	0.953	0.756
6" XXH	E4229-2	JIPP	CUSTOM ALLOY	0.938	0.931	0.939	0.756
6" XXH	E4229-2	JIPP	CUSTOM ALLOY	0.974	0.965	0.981	0.756
6" XXH	E4229-2	JIPP	CUSTOM ALLOY	0.947	0.934	0.961	0.756
6" XXH	E4229-2	JIPP	CUSTOM ALLOY	0.973	0.948	0.945	0.756
6" XXH	E4229-2	JIPP	CUSTOM ALLOY	0.948	0.942	0.981	0.756
6" XXH	E4229-2	JJOA	CUSTOM ALLOY	0.939	0.895	0.914	0.756
6" XXH	E4229-2	JJOA	CUSTOM ALLOY	0.927	0.887	0.914	0.756
6" XXH	E4229-2	JJOA	CUSTOM ALLOY	0.948	0.912	0.942	0.756
6" XXH	E4229-2	JJOA	CUSTOM ALLOY	0.922	0.924	0.924	0.756
6" XXH	E4229-2	JJOA	CUSTOM ALLOY	0.918	0.897	0.924	0.756
6" XXH	E4229-2	JJOA	CUSTOM ALLOY	0.933	0.899	0.903	0.756
6" XXH	E4229-2	JJOA	CUSTOM ALLOY	0.951	0.913	0.912	0.756
6" XXH	E4229-2	JJOA	CUSTOM ALLOY	0.932	0.908	0.921	0.756
6" XXH	E4229-2	JJOA	CUSTOM ALLOY	0.935	0.891	0.911	0.756
8" 1.00 M.W.	E4229-2	JJIM	CUSTOM ALLOY	1.181	1.133	1.113	0.875
8" 1.00 M.W.	E4229-2	JJIM	CUSTOM ALLOY	1.134	1.148	1.162	0.875
8" 1.00 M.W.	E4229-2	JJIM	CUSTOM ALLOY	1.189	1.129	1.136	0.875
8" 1.00 M.W.	E4229-2	JJIM	CUSTOM ALLOY	1.376	1.395	1.405	0.875
10" SCH 120	E4241-18	517T	ENGLAND	0.837	0.851	0.835	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.788	0.801	0.821	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.881	0.888	0.916	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.806	0.821	0.811	0.739

ULTRASONIC THICKNESS READINGS

INSTRUMENT: KRAUT KRAMER BRANSON DME THICKNESS GAUGE
 TRANSDUCER: KBA 560 5MHZ .60" DIA.
 PROCEDURE: ES-UT-6 REV. 3

M.A. H. 7-2-92
 TEST OPERATOR
R. L. Welch 7-6-92
 REVIEWED BY

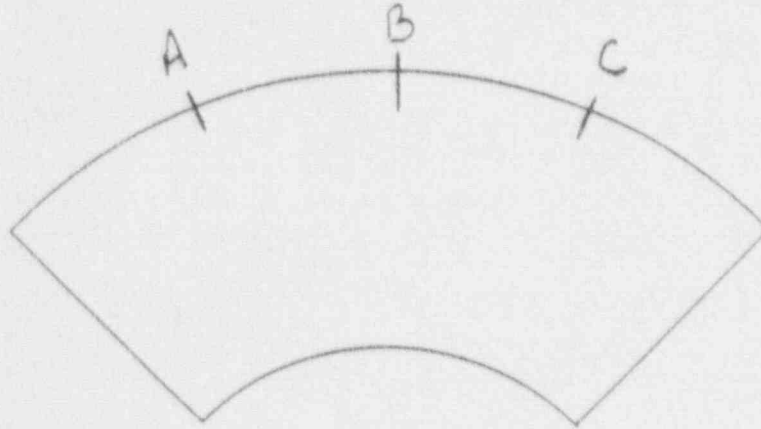


Size	P.O. NO.	Heat No.	Manufacturer	A	B	C	Min. Wall
10" SCH 120	E4241-18	589T	ENGLAND	0.792	0.777	0.771	0.739
10" SCH 120	E4241-18	589T	ENGLAND	0.778	0.783	0.794	0.739
10" SCH 120	E4241-18	589T	ENGLAND	0.762	0.773	0.789	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.819	0.812	0.828	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.918	0.928	0.961	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.803	0.802	0.814	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.871	0.868	0.895	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.805	0.816	0.793	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.856	0.839	0.853	0.739
10" SCH 140	E4241 C/M	JGNU	CUSTOM ALLOY	1.357	1.332	1.353	0.875
10" SCH 140	E4241 C/M	JGNU	CUSTOM ALLOY	1.358	1.302	1.371	0.875
10" SCH 140	E4241 C/M	JGNU	CUSTOM ALLOY	1.342	1.363	1.349	0.875
4" SCH 10	E4241-22	LFJR	TAYLOR FORGE	0.143	0.121	0.133	0.105
4" SCH 10	E4241-22	LFUM	TAYLOR FORGE	0.119	0.117	0.121	0.105
4" SCH 10	E4241-22	LFJR	TAYLOR FORGE	0.139	0.125	0.134	0.105
12" SCH 10	E4241-21	D8282	APP	0.246	0.223	0.244	0.158
12" SCH 10	E4241-21	D8283	APP	0.249	0.228	0.241	0.158
12" SCH 10	E4241-21	D8282	APP	0.237	0.231	0.266	0.158
12" SCH 10	E4241-21	D8929	APP	0.224	0.217	0.233	0.158
12" SCH 10	E4241-21	D8929	APP	0.228	0.238	0.235	0.158
10" SCH 10	E4241-21	D9565	APP	0.218	0.217	0.231	0.144
10" SCH 10	E4241-21	D9265	APP	0.226	0.215	0.231	0.144
10" SCH 10	E4241-21	D9265	APP	0.251	0.231	0.251	0.144
10" SCH 10	E4241-21	D9265	APP	0.253	0.231	0.263	0.144
12" SCH 10	E4241-21	D9775	APP	0.254	0.244	0.259	0.158

ULTRASONIC THICKNESS READINGS

INSTRUMENT: KRAUT KRAMER BRANSON DME THICKNESS GAUGE
 TRANSDUCER: KBA 560 5MHZ .60" DIA.
 PROCEDURE: ES-UT-6 REV. 3

M. A. H. 7-2-92
 TEST OPERATOR
J. J. Whit 7-6-92
 REVIEWED BY



Size	P.O. NO.	Heat No.	Manufaciurer	A	B	C	Min. Wall
12" SCH 10	E4241-21	D9775	APP	0.261	0.241	0.249	0.158
6" SCH 10	E4249-9	LFSC	TAYLOR FORGE	0.264	0.236	0.245	0.117
6" SCH 10	E4241-37	O57472	SCHULZ	0.142	0.129	0.135	0.117
6" SCH 10	E4249-9	LFSC	TAYLOR FORGE	0.262	0.234	0.237	0.117
10" SCH 120	E4241-18	517T	ENGLAND	0.841	0.813	0.836	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.845	0.851	0.828	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.843	0.815	0.851	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.822	0.801	0.823	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.824	0.843	0.849	0.739
12" SCH 140	E4241 C/M	JGNT	CUSTOM A1' OY	1.311	1.211	1.258	0.984
12" SCH 140	E4241 C/M	JGNT	CUSTOM ALLOY	1.291	1.203	1.289	0.984
14" SCH 10	E4241-21	P8185	APP	0.173	0.173	0.175	0.165
16" SCH 10	E4241-21	P8223	APP	0.184	0.185	0.186	0.165
6" SCH 10	E4241-21	P8276	APP	0.132	0.129	0.129	0.117
6" SCH 10	E4241-21	P8276	APP	0.128	0.123	0.145	0.117
4" SCH 10	E4241-50	LBIP	TAYLOR FORGE	0.119	0.116	0.121	0.105
4" SCH 10	E4241-22	LFJR	TAYLOR FORGE	0.132	0.122	0.128	0.105
4" SCH 10	E4241-22	LEGS	TAYLOR FORGE	0.155	0.127	0.138	0.105
4" SCH 10	E4241-22	LFUM	TAYLOR FORGE	0.138	0.137	0.144	0.105
4" SCH 10	E4241-22	LFUM	TAYLOR FORGE	0.124	0.111	0.125	0.105
4" SCH 10	E4241-22	LFUM	TAYLOR FORGE	0.133	0.119	0.137	0.105
4" SCH 10	E4241-22	LFUM	TAYLOR FORGE	0.108	0.118	0.117	0.105
4" SCH 10	E4241-22	LFUM	TAYLOR FORGE	0.117	0.112	0.119	0.105
12" SCH 120	E4241-18	D8886	APP	1.191	1.164	1.176	0.875
14" SCH 120	E4241-18	C7348	APP	1.405	1.391	1.425	0.957

ULTRASONIC THICKNESS READINGS

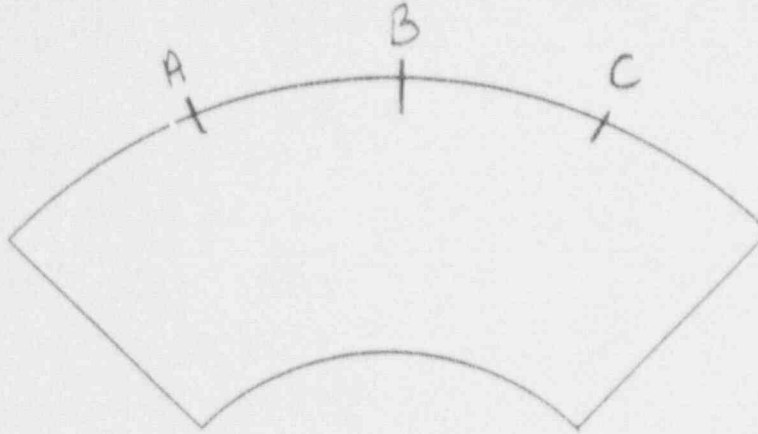
INSTRUMENT: KRAUT KRAMER BRANSON DME THICKNESS GAUGE
 TRANSDUCER: KBA 560 5MHZ .60" DIA.
 PROCEDURE: ES-UT-6 REV. 3

M.A. Webb 7-2-92

TEST OPERATOR

J.J. Webb 7-15-92

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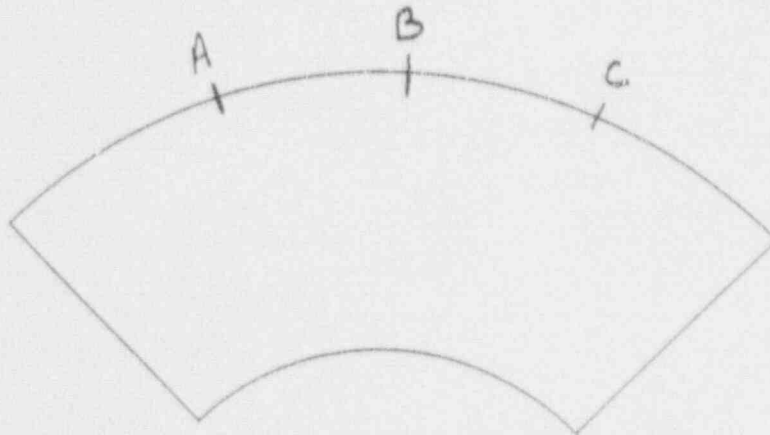


Size	P.O. NO.	Heat No.	Manufacturer	A	B	C	Min. Wall
14" SCH 120	E4241-18	C7548	APP	1.337	1.335	1.343	0.957
12" STD WT	E4229-2	128809	BENKAN	0.393	0.392	0.401	0.328
12" 1.375 M.W.	E4229-2	JJD	CUSTOM ALLOY	1.746	1.754	1.842	1.203
12" 1.375 M.W.	E4229-2	JJD	CUSTOM ALLOY	1.804	1.757	1.799	1.203
12" STD WT	E4229-31	128889	BENKAN	0.395	0.397	0.393	0.328
10" SCH 80	E4239-11	JJRS	CUSTOM ALLOY	0.659	0.661	0.663	0.520
10" SCH 80	E4239-11	JJRS	CUSTOM ALLOY	0.701	0.696	0.719	0.520
10" SCH 80	E4239-11	JJRS	CUSTOM ALLOY	0.759	0.755	0.807	0.520
10" SCH 80	E4239-11	JJSC	CUSTOM ALLOY	0.831	0.764	0.791	0.520
10" SCH 80	E4239-11	JJSC	CUSTOM ALLOY	0.809	0.795	0.799	0.520
12" STD WT	E4244-1	D697	TAYLOR FORGE	0.414	0.413	0.408	0.328
12" STD WT	E4244-1	D697	TAYLOR FORGE	0.416	0.414	0.397	0.328
10" SCH 120	E4241-18	517T	ENGLAND	0.765	0.823	0.808	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.858	0.852	0.851	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.819	0.787	0.785	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.865	0.898	0.889	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.769	0.814	0.817	0.739
6" SCH 120	E4241-18	383	CHINA	0.527	0.528	0.537	0.492
6" SCH 120	E4241-18	383	CHINA	0.524	0.545	0.512	0.492
6" SCH 120	E4241-18	383	CHINA	0.516	0.528	0.515	0.492
6" SCH 120	E4241-18	383	CHINA	0.542	0.522	0.541	0.492
12" SCH 120	E4241-18	590T	ENGLAND	1.086	1.064	1.065	0.875
12" SCH 120	E4241-18	590T	ENGLAND	1.077	1.076	1.091	0.875

ULTRASONIC THICKNESS READINGS

INSTRUMENT: KRAUT KRAMER BRANSON DME THICKNESS GAUGE
 TRANSDUCER: KRA 560 5MHZ .60" DIA.
 PROCEDURE: ES-UT-6 REV. 3

MAZuch 7-2-92
 TEST OPERATOR
~~*J. J. [unclear]*~~ 7-6-92
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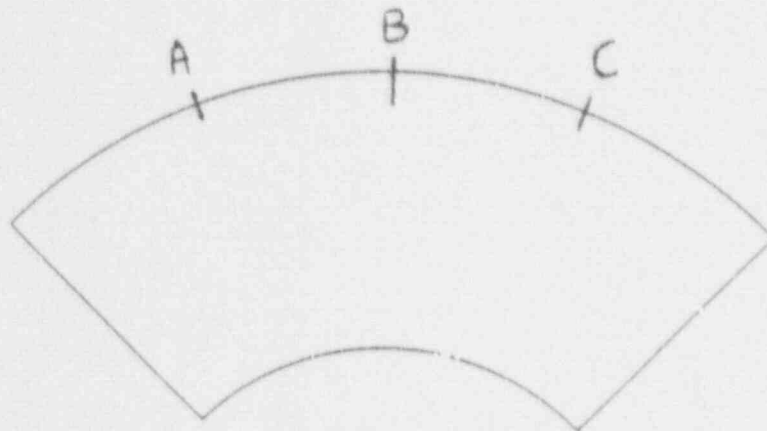
Size	P.O. NO.	Heat No.	Manufacturer	A	B	C	Min. Wall
10" SCH 120	E4241-18	517T	ENGLAND	0.808	0.817	0.808	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.836	0.847	0.829	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.865	0.861	0.881	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.823	0.834	0.836	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.838	0.821	0.804	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.789	0.786	0.811	0.739
12" SCH 140	E4241 C/M	JGNT	CUSTOM ALLOY	1.374	1.372	1.349	0.875
12" SCH 140	E4241 C/M	JGNT	CUSTOM ALLOY	1.397	1.390	1.339	0.875
10" SCH 140	E4241 C/M	JGNU	CUSTOM ALLOY	1.348	1.377	1.345	0.875
10" SCH 140	E4241 C/M	JGNU	CUSTOM ALLOY	1.396	1.356	1.408	0.875
16" SCH 100	E4229-2	JIVO	CUSTOM ALLOY	1.609	1.522	1.593	0.902
16" SCH 100	E4229-2	JIVO	CUSTOM ALLOY	1.521	1.464	1.499	0.902
20" 2.00 M.W.	E4229-2	JJPH	CUSTOM ALLOY	2.544	2.526	2.619	2.000
22" SCH 120	E4229-2	JIYM	CUSTOM ALLOY	2.103	1.868	2.071	1.422
22" SCH 120	E4229-2	JIYM	CUSTOM ALLOY	2.161	2.112	2.107	1.422
22" SCH 120	E4229-2	JIYM	CUSTOM ALLOY	2.021	1.883	2.009	1.422
24" STD WT	E4239-18	88OT	ENGLAND	0.576	0.561	0.569	0.328
24" STD WT	E4239-18	88OT	ENGLAND	0.538	0.582	0.541	0.328
16" SCH 100	E4229-2	JIVO	CUSTOM ALLOY	1.481	1.438	1.513	0.902
16" SCH 100	E4229-2	JIVO	CUSTOM ALLOY	1.596	1.461	1.548	0.902
8" 1.375 M.W.	E4229-2	JIOP	CUSTOM ALLOY	1.864	1.891	1.908	1.375
8" 1.375 M.W.	E4229-2	JIOP	CUSTOM ALLOY	1.881	1.895	1.916	1.375
8" 1.375 M.W.	E4229-2	JJBT	CUSTOM ALLOY	1.786	1.768	1.861	1.375
12" SCH 100	E4229-2	JION	CUSTOM ALLOY	0.948	0.941	0.957	0.739
12" SCH 100	E4229-2	JION	CUSTOM ALLOY	0.907	0.913	0.932	0.739

ULTRASONIC THICKNESS READINGS

INSTRUMENT: KRAUT KRAMER BRANSON DME THICKNESS GAUGE
 TRANSDUCER: KBA 560 5MHZ .60" DIA.
 PROCEDURE: ES-UT-6 REV. 3

M.A. [Signature] 7-2-92
 TEST OPERATOR

[Signature] 7-6-92
 REVIEWED BY

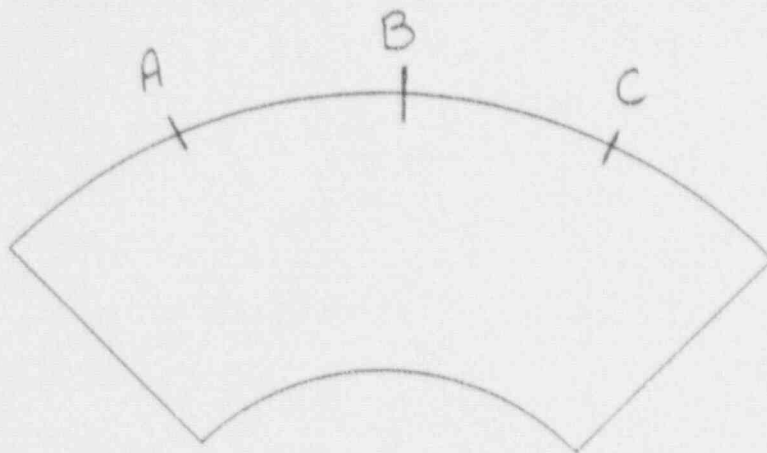


Size	P.O. NO.	Heat No.	Manufacturer	A	B	C	Min. Wall
12" SCH 100	E4229-2	JION	CUSTOM ALLOY	0.921	0.903	0.948	0.739
12" SCH 100	E4229-2	JIOO	CUSTOM ALLOY	0.921	0.848	0.884	0.739
12" SCH 100	E4229-2	JIOO	CUSTOM ALLOY	0.945	0.909	0.877	0.739
12" SCH 100	E4229-2	JIOO	CUSTOM ALLOY	0.937	0.923	0.963	0.739
8" SCH 40	E4229-2	JJHA	CUSTOM ALLOY	0.494	0.489	0.502	0.282
8" SCH 40	E4229-2	JJHA	CUSTOM ALLOY	0.486	0.483	0.502	0.282
8" SCH 40	E4229-2	JJHA	CUSTOM ALLOY	0.505	0.489	0.488	0.282
8" SCH 40	E4229-2	JJHA	CUSTOM ALLOY	0.507	0.501	0.506	0.282
5" SCH 160	E4229-2	JJBE	CUSTOM ALLOY	0.788	0.738	0.755	0.547
5" SCH 160	E4229-2	JJBE	CUSTOM ALLOY	0.717	0.713	0.754	0.547
5" SCH 160	E4229-2	JJBE	CUSTOM ALLOY	0.732	0.715	0.721	0.547
5" SCH 160	E4229-2	JJBE	CUSTOM ALLOY	0.732	0.725	0.769	0.547
5" SCH 160	E4229-2	JJBE	CUSTOM ALLOY	0.727	0.704	0.729	0.547
14" STD WT	E4229-2	JJBI	CUSTOM ALLOY	0.879	0.853	0.856	0.328
14" STD WT	E4229-2	JJBI	CUSTOM ALLOY	0.848	0.811	0.805	0.328
14" STD WT	E4229-2	JJBI	CUSTOM ALLOY	0.872	0.831	0.861	0.328
14" STD WT	E4229-2	JJGP	CUSTOM ALLOY	0.644	0.642	0.674	0.328
14" STD WT	E4229-2	JJGP	CUSTOM ALLOY	0.685	0.662	0.688	0.328
14" STD WT	E4229-2	JJGP	CUSTOM ALLOY	0.655	0.634	0.674	0.328
14" STD WT	E4229-2	JJGP	CUSTOM ALLOY	0.667	0.654	0.681	0.328
8" SCH 40	E4229-2	JJGZ	CUSTOM ALLOY	0.458	0.443	0.497	0.282
6" XXH	E4229-2	JIPP	CUSTOM ALLOY	0.972	0.951	0.972	0.756
6" XXH	E4229-2	JIPP	CUSTOM ALLOY	0.988	0.953	0.981	0.756
6" XXH	E4229-2	JIPP	CUSTOM ALLOY	0.962	0.958	0.987	0.756
6" XXH	E4229-2	JIPP	CUSTOM ALLOY	0.982	0.951	0.956	0.756

ULTRASONIC THICKNESS READINGS

INSTRUMENT: KRAUT KRAMER BRANSON DME THICKNESS GAUGE
 TRANSDUCER: KBA 560 5MHZ .60" DIA.
 PROCEDURE: ES-UT-6 REV. 3

M.A. Hub 7-2-92
 TEST OPERATOR
A. J. Jenkins 7-6-92
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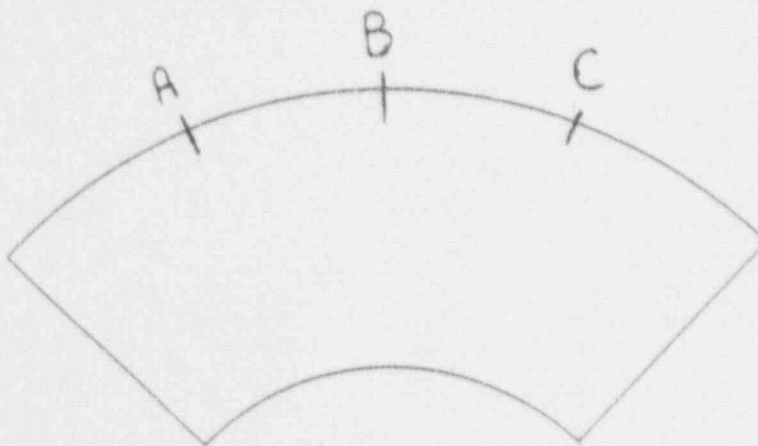


Size	P.O. NO.	Heat No.	Manufacturer	A	B	C	Min. Wall
6" XXH	E4229-2	JIPP	CUSTOM ALLOY	0.982	0.956	0.999	0.756
6" XXH	E4229-2	JIPP	CUSTOM ALLOY	0.943	0.928	0.932	0.756
6" XXH	E4229-2	JIPP	CUSTOM ALLOY	0.958	0.941	0.953	0.756
6" XXH	E4229-2	JIPP	CUSTOM ALLOY	0.938	0.931	0.939	0.756
6" XXH	E4229-2	JIPP	CUSTOM ALLOY	0.974	0.965	0.981	0.756
6" XXH	E4229-2	JIPP	CUSTOM ALLOY	0.947	0.934	0.961	0.756
6" XXH	E4229-2	JIPP	CUSTOM ALLOY	0.973	0.948	0.945	0.756
6" XXH	E4229-2	JIPP	CUSTOM ALLOY	0.948	0.942	0.981	0.756
6" XXH	E4229-2	JJOA	CUSTOM ALLOY	0.939	0.895	0.914	0.756
6" XXH	E4229-2	JJOA	CUSTOM ALLOY	0.927	0.887	0.914	0.756
6" XXH	E4229-2	JJOA	CUSTOM ALLOY	0.948	0.912	0.942	0.756
6" XXH	E4229-2	JJOA	CUSTOM ALLOY	0.922	0.924	0.924	0.756
6" XXH	E4229-2	JJOA	CUSTOM ALLOY	0.918	0.897	0.924	0.756
6" XXH	E4229-2	JJOA	CUSTOM ALLOY	0.933	0.899	0.903	0.756
6" XXH	E4229-2	JJOA	CUSTOM ALLOY	0.951	0.913	0.912	0.756
6" XXH	E4229-2	JJOA	CUSTOM ALLOY	0.932	0.908	0.921	0.756
6" XXH	E4229-2	JJOA	CUSTOM ALLOY	0.935	0.891	0.911	0.756
8" 1.00 M.W.	E4229-2	JJIM	CUSTOM ALLOY	1.181	1.133	1.113	1.000
8" 1.00 M.W.	E4229-2	JJIM	CUSTOM ALLOY	1.134	1.148	1.162	1.000
8" 1.00 M.W.	E4229-2	JJIM	CUSTOM ALLOY	1.189	1.129	1.136	1.000
8" 1.00 M.W.	E4229-2	JJIM	CUSTOM ALLOY	1.376	1.395	1.405	1.000
10" SCH 120	E4241-18	517T	ENGLAND	0.837	0.851	0.835	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.788	0.801	0.821	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.881	0.888	0.916	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.805	0.821	0.811	0.739

ULTRASONIC THICKNESS READINGS

INSTRUMENT: KRAUT KRAMER BRANSON DME THICKNESS GAUGE
 TRANSDUCER: KBA 560 5MHZ .60" DIA.
 PROCEDURE: ES-UT-6 REV. 3

M.A. Hub 7-2-92
 TEST OPERATOR
A. J. Jimmy 7-6-92
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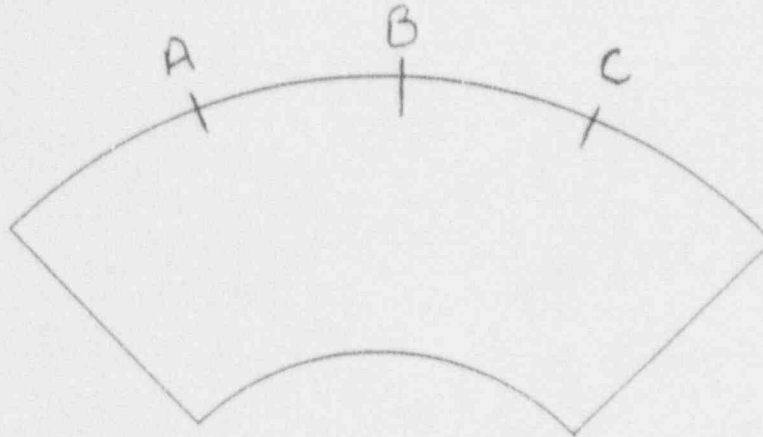


Size	P.O. NO.	Heat No.	Manufacturer	A	B	C	Min. Wall
10" SCH 120	E4241-18	589T	ENGLAND	0.792	0.777	0.771	0.739
10" SCH 120	E4241-18	589T	ENGLAND	0.778	0.783	0.794	0.739
10" SCH 120	E4241-18	589T	ENGLAND	0.762	0.773	0.789	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.819	0.812	0.828	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.918	0.928	0.961	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.803	0.802	0.814	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.871	0.868	0.895	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.805	0.816	0.793	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.856	0.839	0.853	0.739
10" SCH 140	E4241 C/M	JGNU	CUSTOM ALLOY	1.357	1.332	1.353	0.875
10" SCH 140	E4241 C/M	JGNU	CUSTOM ALLOY	1.358	1.302	1.371	0.875
10" SCH 140	E4241 C/M	JGNU	CUSTOM ALLOY	1.342	1.363	1.349	0.875
4" SCH 10	E4241-22	LFJR	TAYLOR FORGE	0.143	0.121	0.133	0.105
4" SCH 10	E4241-22	LFUM	TAYLOR FORGE	0.119	0.117	0.121	0.105
4" SCH 10	E4241-22	LFJR	TAYLOR FORGE	0.139	0.125	0.134	0.105
12" SCH 10	E4241-21	D8282	APP	0.246	0.223	0.244	0.158
12" SCH 10	E4241-21	D8283	APP	0.249	0.228	0.241	0.158
12" SCH 10	E4241-21	D8282	APP	0.237	0.231	0.266	0.158
12" SCH 10	E4241-21	D8929	APP	0.224	0.217	0.233	0.158
12" SCH 10	E4241-21	D8929	APP	0.228	0.238	0.235	0.158
10" SCH 10	E4241-21	D9565	APP	0.218	0.217	0.231	0.144
10" SCH 10	E4241-21	D9265	APP	0.226	0.215	0.231	0.144
10" SCH 10	E4241-21	D9265	APP	0.251	0.231	0.251	0.144
10" SCH 10	E4241-21	D9265	APP	0.253	0.231	0.263	0.144
12" SCH 10	E4241-21	D9775	APP	0.254	0.244	0.259	0.158

ULTRASONIC THICKNESS READINGS

INSTRUMENT: KRAUT KRAMER BRANSON DME THICKNESS GAUGE
 TRANSDUCER: KBA 560 5MHZ .60" DIA.
 PROCEDURE: ES-UT-6 REV. 3

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Size	P.O. NO.	Heat No.	Manufacturer	A	B	C	Min. Wall
12" SCH 10	E4241-21	D9775	APP	0.261	0.241	0.249	0.158
6" SCH 10	E4249-9	LFSC	TAYLOR FORGE	0.264	0.236	0.245	0.117
5" SCH 10	E4241-37	O57472	SCHULZ	0.142	0.129	0.135	0.117
6" SCH 10	E4249-9	LFSC	TAYLOR FORGE	0.262	0.234	0.237	0.117
10" SCH 120	E4241-18	517T	ENGLAND	0.841	0.813	0.836	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.845	0.851	0.828	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.843	0.815	0.851	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.822	0.801	0.823	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.824	0.843	0.849	0.739
12" SCH 140	E4241 C/M	JGNT	CUSTOM ALLOY	1.311	1.211	1.258	0.984
12" SCH 140	E4241 C/M	JGNT	CUSTOM ALLOY	1.291	1.203	1.289	0.984
14" SCH 10	E4241-21	P8185	APP	0.173	0.173	0.175	0.165
16" SCH 10	E4241-21	P8223	APP	0.184	0.185	0.186	0.165
6" SCH 10	E4241-21	P8276	APP	0.132	0.129	0.129	0.117
6" SCH 10	E4241-21	P8276	APP	0.128	0.123	0.145	0.117
4" SCH 10	E4241-50	LBIP	TAYLOR FORGE	0.119	0.116	0.121	0.105
4" SCH 10	E4241-22	LFJR	TAYLOR FORGE	0.132	0.122	0.128	0.105
4" SCH 10	E4241-22	LEQS	TAYLOR FORGE	0.155	0.127	0.138	0.105
4" SCH 10	E4241-22	LFUM	TAYLOR FORGE	0.138	0.137	0.144	0.105
4" SCH 10	E4241-22	LFUM	TAYLOR FORGE	0.124	0.111	0.125	0.105
4" SCH 10	E4241-22	LFUM	TAYLOR FORGE	0.133	0.119	0.137	0.105
4" SCH 10	E4241-22	LFUM	TAYLOR FORGE	0.108	0.118	0.117	0.105
4" SCH 10	E4241-22	LFUM	TAYLOR FORGE	0.117	0.112	0.119	0.105
12" SCH 120	E4241-18	D8886	APP	1.191	1.164	1.176	0.875
14" SCH 120	E4241-18	C7548	APP	1.405	1.391	1.425	0.957

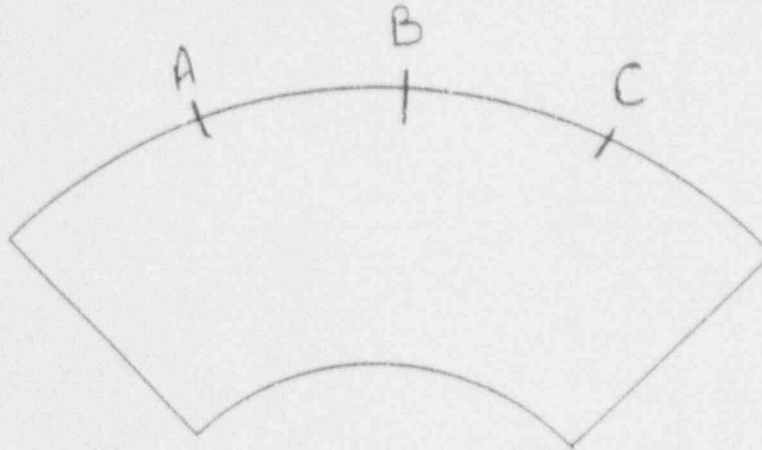
ULTRASONIC THICKNESS READINGS

INSTRUMENT: KRAUT KRAMER BRANSON DME THICKNESS GAUGE
 TRANSDUCER: KBA 560 5MHZ .60" DIA.
 PROCEDURE: ES-UT-6 REV. 3

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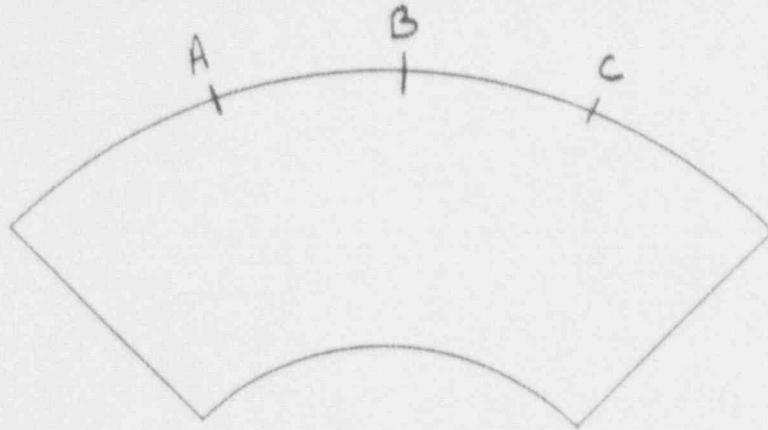


Size	P.O. NO.	Heat No.	Manufacturer	A	B	C	Min. Wall
14" SCH 120	E4241-18	C7548	APP	1.337	1.335	1.343	0.957
12" STD WT	E4229-2	128809	BENKAN	0.393	0.392	0.401	0.328
12" 1.375 M.W.	E4229-2	JJD	CUSTOM ALLOY	1.746	1.754	1.842	1.375
12" 1.375 M.W.	E4229-2	JJD	CUSTOM ALLOY	1.804	1.757	1.799	1.375
12" STD WT	E4229-31	128889	BENKAN	0.395	0.397	0.393	0.328
10" SCH 80	E4239-11	JJRS	CUSTOM ALLOY	0.659	0.661	0.663	0.520
10" SCH 80	E4239-11	JJRS	CUSTOM ALLOY	0.701	0.696	0.719	0.520
10" SCH 80	E4239-11	JJRS	CUSTOM ALLOY	0.759	0.755	0.807	0.520
10" SCH 80	E4239-11	JJSC	CUSTOM ALLOY	0.831	0.764	0.791	0.520
10" SCH 80	E4239-11	JJSC	CUSTOM ALLOY	0.809	0.795	0.799	0.520
12" STD WT	E4244-1	D697	TAYLOR FORGE	0.414	0.413	0.408	0.328
12" STD WT	E4244-1	D697	TAYLOR FORGE	0.416	0.414	0.397	0.328
10" SCH 120	E4241-18	517T	ENGLAND	0.765	0.823	0.808	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.858	0.852	0.851	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.819	0.787	0.785	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.865	0.898	0.889	0.739
10" SCH 120	E4241-18	517T	ENGLAND	0.769	0.814	0.817	0.739
6" SCH 120	E4241-18	383	CHINA	0.527	0.528	0.537	0.492
6" SCH 120	E4241-18	383	CHINA	0.524	0.545	0.512	0.492
6" SCH 120	E4241-18	383	CHINA	0.516	0.528	0.515	0.492
6" SCH 120	E4241-18	383	CHINA	0.542	0.522	0.541	0.492
12" SCH 120	E4241-18	590T	ENGLAND	1.086	1.064	1.065	0.375
12" SCH 120	E4241-18	590T	ENGLAND	1.077	1.076	1.091	0.875

ULTRASONIC THICKNESS READINGS

INSTRUMENT: KRAUT KRAMER BRANSON DME THICKNESS GAUGE
 TRANSDUCER: KBA 560 5MHZ .60" DIA.
 PROCEDURE: ES-UT-6 REV. 3

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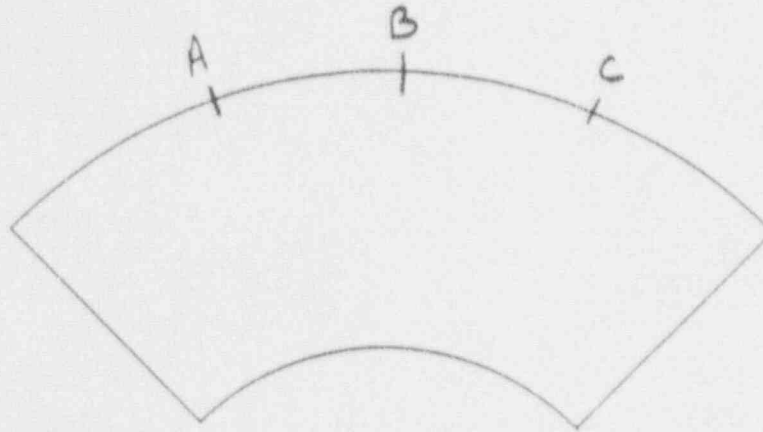


Size	Heat No.	S/N	Manufacturer	A	B	C	Min. Wall
6" SCH 40	LEPC	88	TAYLOR FORGE	0.328	0.311	0.316	0.245
6" SCH 40	LEPD	72	TAYLOR FORGE	0.329	0.317	0.331	0.245
6" SCH 40	LEPC	89	TAYLOR FORGE	0.329	0.316	0.334	0.245
6" SCH 40	LEPD	78	TAYLOR FORGE	0.327	0.321	0.328	0.245
6" SCH 40	LEPD	79	TAYLOR FORGE	0.339	0.321	0.345	0.245
10" SCH 40	LEDQ	254	TAYLOR FORGE	0.388	0.386	0.391	0.319
10" SCH 40	LELQ	253	TAYLOR FORGE	0.393	0.387	0.389	0.319
10" SCH 40	LEBC	250	TAYLOR FORGE	0.386	0.379	0.385	0.319
10" SCH 40	LEBC	454	TAYLOR FORGE	0.382	0.381	0.384	0.319
10" SCH 40	LEBC	236	TAYLOR FORGE	0.375	0.357	0.382	0.319
10" SCH 40	LEBC	148	TAYLOR FORGE	0.363	0.358	0.379	0.319
10" SCH 40	LEBC	149	TAYLOR FORGE	0.371	0.353	0.380	0.319
10" SCH 40	LEBC	232	TAYLOR FORGE	0.382	0.358	0.381	0.319
36" STD WT	Z2148P	49	SCHULZ	0.453	0.461	0.457	0.328
36" STD WT	Z2148P	89	SCHULZ	0.451	0.450	0.449	0.328
4" SCH 40	LDLP	6	TAYLOR FORGE	0.241	0.237	0.241	0.207
4" SCH 40	LDLP	5	TAYLOR FORGE	0.245	0.240	0.242	0.207
4" SCH 40	LDLP	4	TAYLOR FORGE	0.246	0.237	0.242	0.207
4" SCH 40	LDLP	3	TAYLOR FORGE	0.243	0.244	0.243	0.207
4" SCH 40	LDLP	7	TAYLOR FORGE	0.243	0.237	0.242	0.207
24" STD WT	Z2111P	44	SCHULZ	0.482	0.480	0.482	0.328
28" STD WT	KTNS	12	TAYLOR FORGE	0.730	0.731	0.726	0.328
12" SCH 40	LELT	16	TAYLOR FORGE	0.411	0.413	0.417	0.355
12" SCH 40	LELT	17	TAYLOR FORGE	0.414	0.413	0.419	0.355
12" SCH 40	LELT	8	TAYLOR FORGE	0.417	0.410	0.408	0.355

ULTRASONIC THICKNESS READINGS

INSTRUMENT: KRAUT KRAMER BRANSON DME THICKNESS GAUGE
 TRANSDUCER: KBA 560 5MHZ .60" DIA.
 PROCEDURE: ES-UT-6 REV. 3

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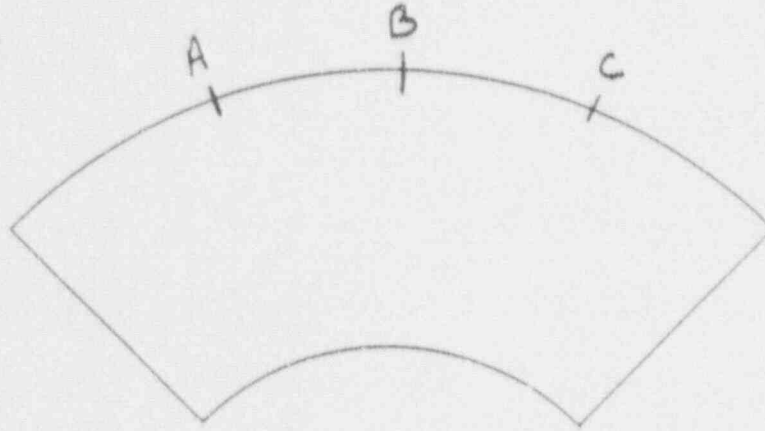


Size	Heat No.	S/N	Manufacturer	A	B	C	Min. Wall
12" SCH 40	LELT	19	TAYLOR FORGE	0.425	0.403	0.439	0.355
12" SCH 40	LELT	21	TAYLOR FORGE	0.430	0.406	0.423	0.355
4" SCH 40	LDLP	8	TAYLOR FORGE	0.242	0.239	0.242	0.207
10" SCH 40	LEBC	246	TAYLOR FORGE	0.388	0.386	0.390	0.319
6" SCH 40	LEPC	87	TAYLOR FORGE	0.342	0.322	0.329	0.245
20" STD WT	Z2111P	97	SCHULZ	0.451	0.453	0.448	0.328
26" STD WT	Z2148P	85	SCHULZ	0.409	0.409	0.404	0.328
24" XH	Z2150P	111	SCHULZ	0.580	0.582	0.581	0.438
28" .328 MW	KTNO	16	TAYLOR FORGE	0.707	0.711	0.708	0.328
28" .328 MW	KTNS	29	TAYLOR FORGE	0.698	0.712	0.699	0.328
24" STD WT	Z2117P	34	SCHULZ	0.420	0.420	0.421	0.328
26" STD WT	Z2151P	90	SCHULZ	0.452	0.450	0.448	0.328
20" STD WT	Z2111P	98	SCHULZ	0.445	0.450	0.452	0.328
36" STD WT	Z2151P	106	SCHULZ	0.413	0.411	0.413	0.328
26" STD WT	Z2111P	91	SCHULZ	0.463	0.458	0.464	0.328
10" SCH 40	LDSM	6	TAYLOR FORGE	0.383	0.376	0.386	0.319
10" SCH 40	LDSM	11	TAYLOR FORGE	0.381	0.373	0.382	0.319
8" SCH 40	LEBD	3	TAYLOR FORGE	0.353	0.339	0.348	0.282
8" SCH 40	LEBD	4	TAYLOR FORGE	0.349	0.342	0.352	0.282
6" SCH 40	LENY	30	TAYLOR FORGE	0.316	0.301	0.303	0.245
6" SCH 40	LENY	3	TAYLOR FORGE	0.317	0.312	0.319	0.245
8" SCH 40	LEBD	7	TAYLOR FORGE	0.350	0.341	0.349	0.282
6" SCH 40	LENY	36	TAYLOR FORGE	0.299	0.301	0.308	0.245
6" SCH 40	LENY	39	TAYLOR FORGE	0.309	0.301	0.304	0.245
6" SCH 40	LENY	17	TAYLOR FORGE	0.309	0.299	0.303	0.245

ULTRASONIC THICKNESS READINGS

INSTRUMENT: KRAUT KRAMER BRANSON DME THICKNESS GAUGE
 TRANSDUCER: KBA 560 5MHZ .60" DIA.
 PROCEDURE: ES-UT-6 REV. 3

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Size	Heat No.	S/N	Manufacturer	A	B	C	Min. Wall
6" SCH 40	LENY	61	TAYLOR FORGE	0.305	0.365	0.303	0.245
10" SCH 40	LDSM	33	TAYLOR FORGE	0.368	0.365	0.367	0.319
10" SCH 40	LDSM	34	TAYLOR FORGE	0.375	0.367	0.375	0.319
10" SCH 40	LDSM	10	TAYLOR FORGE	0.385	0.379	0.384	0.319
14" SCH 40	Z2113P	69	SCHULZ	0.429	0.440	0.437	0.383
14" SCH 40	Z2113P	73	SCHULZ	0.439	0.442	0.437	0.383
16" STD WT	Z21135	8	SCHULZ	0.428	0.429	0.429	0.328
6" SCH 40	LEZW	1	TAYLOR FORGE	0.371	0.363	0.365	0.245
6" SCH 40	LEZW	2	TAYLOR FORGE	0.368	0.364	0.365	0.245
6" SCH 40	LFMF	216	TAYLOR FORGE	0.366	0.365	0.369	0.245
6" SCH 40	LFMF	204	TAYLOR FORGE	0.367	0.366	0.370	0.245