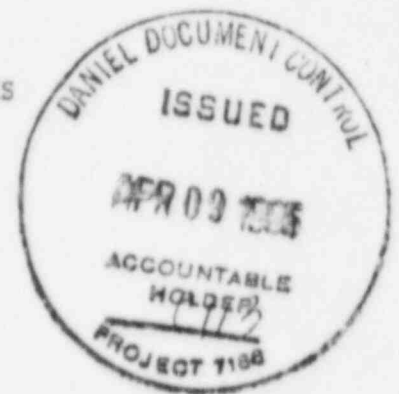




Gaithersburg
Power Division

Specification No. 10466-QA-1
Job No. 10466

SPECIFICATION
OF
GENERAL REQUIREMENTS FOR
SUPPLIER QUALITY ASSURANCE PROGRAMS
FOR THE
STANDARDIZED NUCLEAR UNIT
POWER PLANT SYSTEM
(SNUPPS PROJECT)



RECEIVED

OCT 30 1975

DANIEL DOCUMENT CONTROL
PROJECT 7186

BECHTEL POWER CORPORATION
GAITHERSBURG, MARYLAND

Design Specification

No.	Date	Revisions	PQE	SUPV UE	POA MGR	SENIOR PE
0	12/28/73	Issued for Client Review and Comment	REM	WMM	LFS	BKK
1	1/28/74	Issued for Project Use	REM	WMM	LFS	BKK
2	11/18/74	Issued for Client Review and Comments	R.E. Measurement	WMM	LFS	BKK
3	1/14/75	Issued for Project Use	R.E. Measurement	WMM	LFS	BKK
4	10-15-75	Issued for Project Use	R.E. Measurement	WMM	LFS	BKK
		8602250122 860221 PDR ADOCK 05000483 P PDR				

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GENERAL REQUIREMENTS FOR SUPPLIER QUALITY ASSURANCE PROGRAMS

1.0 SCOPE

- 1.1 This specification provides quality assurance requirements for the Supplier of materials, equipment or services as specified in the bid, purchase or contract documents.
- 1.2 This specification as attached to the technical or design specification applies to those items and related services which are designated "Q" (safety related) by the Buyer.
- 1.3 This specification does not delete or revise any requirements of the bid, purchase or contract documents. If any inconsistency is considered to exist between the requirements of this Specification and the bid or purchase documents, the Bidder or Supplier shall promptly bring it to the attention of the buyer, in writing, for resolution.
- 1.4 The term, Supplier, as used herein, includes Seller, Vendor, Contractor, and Subcontractor.

2.0 REFERENCES

- 2.1 Atomic Energy Commission Regulation, "Quality Assurance Criteria for Nuclear Power Plants", 10CFR50, Appendix B, "Licensing of Production and Utilization Facilities," effective October 11, 1971.
- 2.2 American National Standards Institute, N45.2-1971 "Quality Assurance Program Requirements for Nuclear Power Plants". 4
- 2.3 American National Standards Institute, N45.2.9-1974 "Requirements for Collection, Storage, and Maintenance of Quality Assurance Records for Nuclear Power Plants".
- 2.4 American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section III, "Nuclear Power Plant Components".

3.0 PROPOSAL

- 3.1 Each Bidder shall submit with his proposal an uncontrolled copy of his Quality Assurance Manual, or other written description of the Quality Assurance Program to be implemented in the performance of the work required by the purchase or contract documents.
- 3.2 The Bidder shall prepare and submit with his proposal a listing of the paragraph and/or section numbers of his Quality Assurance Manual, or description, cross-referenced to the corresponding Quality Assurance Program elements of Paragraphs 5.1 through 5.18 of this specification.

This listing will be used by the Buyer as an aid in reviewing the Bidder's Quality Assurance Manual or description, for compliance to the requirements of this specification.

- 3.3 If the Bidder's organization includes more than one plant or facility, the Bidder shall include in his proposal a listing of plants or facilities at which work will be performed in accordance with the purchase or contract documents. A Quality Assurance Manual, or description, shall be submitted that applies to each facility. If one Quality Assurance Manual is used at all facilities, a statement to this effect is to be made in the proposal.
- 3.4 If, in the Bidder's opinion, his Quality Assurance Manual or description does not need to contain all of the quality program elements called for in the bid documents, he shall provide with his proposal a brief statement of justification for each element he considers not applicable. Any changes agreed to by the Buyer shall be included in the documents released for purchase or contract.
- 3.5 The Buyer may require inspection of the Bidder's plants or facilities and his proposed lower-tier supplier's facilities to determine the degree of implementation of their Quality Assurance Programs prior to award of contract. The adequacy of the Quality Assurance Manuals, or descriptions, and their degree of implementation will be a factor in the bid evaluation.

4.0 GENERAL PROGRAM REQUIREMENTS

- 4.1 The SNUPPS Project Quality Assurance Program is governed by AEC Regulation 10CFR, Part 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants". To satisfy this requirement, the Supplier shall maintain a Quality Assurance Program that conforms to the provisions of ANSI N45.2-1971, "Quality Assurance Program Requirements for Nuclear Power Plants", or ASME B & PV Code, Section III, as applicable (refer to 6.1.5).
- 4.2 The Supplier shall establish and implement a Quality Assurance Program that conforms to the requirements specified in the Quality Assurance article of the technical specification and to the other applicable codes and standards as cited in the technical specification. This includes design, purchasing, manufacture, processing, fabrication, assembly, installation, testing, examination, inspection, and services related to these activities.

5.0 SUPPLIER'S QUALITY ASSURANCE PROGRAM

The Supplier's Quality Assurance Program as described in his Quality Assurance Manual or Program Document(s) shall include the following 18 elements as specified in the Quality Assurance article of the technical specification. These elements correspond to the eighteen criteria of 10CFR, Part 50, Appendix B, and Sections 2 through 19 of ANSI N45.2. The Quality Assurance Program shall include the following applicable elements described in Sections 2 through 19 of ANSI N45.2.

- 5.1 Organization (Refer to N45.2, Section 3)
- 5.2 Quality Assurance Program (Refer to N45.2, Section 2)
- 5.3 Design Control (Refer to N45.2, Section 4)
- 5.4 Procurement Document Control (Refer to N45.2, Section 5)
- 5.5 Instructions, Procedures, and Drawings (Refer to N45.2, Section 6)
- 5.6 Document Control (Refer to N45.2, Section 7)
- 5.7 Control of Purchased Material, Equipment, and Services (Refer to N45.2, Section 8)
- 5.8 Identification and Control of Materials, Parts and Components (Refer to N45.2, Section 9)
- 5.9 Control of Special Processes (Refer to N45.2, Section 10)
- 5.10 Inspection (Refer to N45.2, Section 11)
- 5.11 Test Control (Refer to N45.2, Section 12)
- 5.12 Control of Measuring and Test Equipment (Refer to N45.2, Section 13)
- 5.13 Handling, Storage, and Shipping (Refer to N45.2, Section 14)
- 5.14 Inspection, Test, and Operating Status (Refer to N45.2, Section 15)
- 5.15 Nonconforming Items (Refer to N45.2, Section 16)
- 5.16 Corrective Action (Refer to N45.2, Section 17)
- 5.17 Quality Assurance Records (Refer to N45.2, Section 18)
- 5.18 Audits (Refer to N45.2, Section 19)

6.0 ADDITIONAL REQUIREMENTS

- 6.1 Within thirty (30) days after award and prior to starting any activities related to this commitment, the Supplier shall submit for the Buyer's approval a controlled copy of his Quality Assurance Program document(s) which defines the program that he has agreed to follow to meet this specification.
- 6.1.1 The Supplier shall provide an index, listing the Quality Assurance Program elements of Section 5 and the corresponding section/paragraph numbers of his Quality Assurance program document(s) for the Buyer's review and approval.
- 6.1.2 The Buyer may approve, or approve with comments, the Supplier's Quality Assurance Program document(s). Upon the Buyer's acceptance, the Supplier's activities may proceed provided he incorporates the Buyer's comments in the quality program documents (i.e., by revisions, addenda, amendments, or supplements) and resubmits the affected documents for final acceptance to the Buyer within thirty (30) days of their receipt. Changes to the Buyer accepted program shall be submitted by the Supplier for acceptance in the same manner as original submittals.
- 6.1.3 Acceptance does not relieve the Supplier of the obligation to comply with the requirements of the purchase or contract documents, including this specification. If the program is subsequently found to be ineffective or inadequate in providing for acceptable control, the Buyer will require necessary revisions. All proposed program modifications shall be submitted to the Buyer for review and acceptance in accordance with the requirements for initial program submittals.
- 6.1.4 If the Seller is a Distributor who will in no way physically affect, examine, or test the supplied item, and whose function is limited to placing the Buyer's order with the actual Manufacturer, the Distributor shall provide a controlled copy of the Manufacturer's Quality Assurance Program Document(s) to the Buyer for approval. Buyer approval of the Quality Assurance Program Document(s) is required before the Distributor may place orders with the Manufacturer. In addition, if the Distributor will store, repackage, or in any way handle the items before shipment to the Buyer, he shall submit his Program Document(s) for Buyer approval.

- 6.1.5 For items, parts of items, or activities required to comply with the ASME B&PV Code, Section III, the Quality Assurance Program requirements of the Code shall apply in lieu of the requirements of Section 5.0 of this Specification, provided that:
- a. The Supplier's quality assurance program, in addition to providing for compliance with the Code, is supplemented to provide for compliance with the additional requirements of Section 6.0 of this Specification.
 - b. The Supplier's quality assurance program must also be extended or otherwise supplemented to provide for compliance with the appropriate quality assurance program requirements of Section 5.0 of this Specification for any non-code safety-related items, parts of items, or activities specified in the bid, purchase or contract documents.
 - c. In addition to the performance of each of those inspection functions which are required by the Supplier's quality assurance program to be performed by the Authorized Code Inspector, the Buyer or his authorized agents also have the option of performing those inspection functions except the signing of ASME Code data reports.
- 6.1.6 The Supplier shall assure that lower-tier suppliers comply with the applicable requirements of the purchase or contract documents. The effectiveness of the control of quality by lower-tier suppliers shall be assessed by the Supplier at intervals consistent with the importance and complexity of the product or service. When requested, the Supplier shall furnish the Buyer with lower-tier Supplier's Quality Control Procedures and Quality Assurance Program Documents showing the latest revision and approval status.
- 6.2 The Supplier shall identify and document all deviations from the requirements of the purchase or contract documents on either Form SDDR - Supplier Deviation Disposition Request (Appendix A) or the Supplier's own form if in the judgment of the Buyer's Project Engineer, it presents equivalent information. The recommended disposition, based on appropriate analysis, shall be described on the form. Deviation Disposition Request submittals from lower-tier suppliers shall be through the Supplier to the Buyer.

- 6.2.1 A deviation is any departure from any requirement contained in the procuring documents which the Supplier intends to incorporate in the completed item or service provided. Disposition of deviations is classified and defined as follows:
- a. Accept as is - A disposition which may be imposed for a nonconformance when it can be established that the discrepancy will result in no adverse conditions and that the item under consideration will continue to meet all engineering functional requirements, including performance, maintainability, fit, and safety.
 - b. Repair - The process of restoring a nonconforming characteristic to a condition such that the capability of an item to function reliably and safely is unimpaired, even though that item still may not conform to the original requirement.
 - c. Modify Buyer's Requirement - Change the subject requirement in Buyer's purchase or contract document so that the item or service to be furnished is no longer deviant but fully conforming.
- 6.2.2 The Supplier shall submit deviation requests to the Buyer's Project Engineer with a copy to the Buyer's Inspector within five (5) working days after detection. When this time limit cannot be met, notification by telephone, or TWX is acceptable. At that time, a revised submittal date shall be established. Any deviation is considered unacceptable until approved in writing by the Buyer's Project Engineer.
- 6.2.3 SDDR's must be supported by technically valid information that is sufficient for Buyer evaluation. When necessary, the Supplier shall attach supporting technical documents (of reproducible quality) to the SDDR. One copy of each attachment must also be supplied to the Buyer's Inspector.
- 6.2.4 A copy of the dispositioned SDDR and attachments shall be included by the Supplier in the quality verification data package for the item(s) to which it applies. The SDDR is considered complete when all entries are made, including the appropriate verification signatures by the Supplier and the Buyer's Inspector.

6.2.5 The acceptance or rejection of the Supplier Deviation Disposition Request is the Buyer's prerogative, to be exercised at the discretion of the Buyer's Project Engineer. Acceptance of the Supplier Deviation Disposition Request shall require the signed authorization of the Buyer's Project Engineer. Acceptance of the Supplier Deviation Disposition Request by the Buyer does not relieve the Supplier from responsibility for the accuracy, adequacy, or suitability of the item or service being provided as defined in the procuring documents.

6.3 The Supplier shall promptly notify the Buyer in writing of each deficiency found which, were it to have remained uncorrected, could have affected adversely the operation of the item at any time throughout the expected lifetime of the item, and which represents:*

- a. a significant breakdown in any portion of the quality assurance program established for design and fabrication of the item; or
- b. a significant deficiency in the final design as approved and released for fabrication such that the design does not conform to the criteria and bases stated in the purchase documents or its referenced specifications; or
- c. a significant deficiency in fabrication of, or significant damage to the item which will require extensive evaluation, extensive redesign or extensive repair to meet the criteria and bases stated in the purchase documents or to otherwise establish the adequacy of the item to fulfill its intended function; or
- d. a significant deviation from performance specifications which require extensive evaluation, extensive redesign, or extensive repair to establish the adequacy of the item to perform its intended function.

NOTE: When appropriate, an SDDR form shall also be submitted in accordance with Section 6.2.

*(Reference 10, Atomic Energy CFR, Part 50.55, Paragraph (e).)

- 6.4 A written report shall also be prepared and submitted by the Supplier to the Buyer documenting the cause and formal corrective action taken by the Supplier to preclude repetition of deficiencies reported in accordance with Section 6.2 and 6.3 of the specification. This report shall be made an attachment to the SDDR form or Significant Deficiency Report.
- 6.5 Engineering and Quality Verification Documents shall be submitted to the Buyer in accordance with the requirements of the purchase or contract documents including the provisions on Form G-321-D.
- 6.6 Copies of completed quality related records (Supplier and lower-tier suppliers) shall be retained by the Supplier in accordance with the applicable provisions of ANSI N45.2.9, "Requirements for Collection, Storage, and Maintenance of Quality Assurance Records for Nuclear Power Plants", using the commercial operation start date as the base date. No quality related record shall be destroyed or otherwise disposed of without written permission of the Buyer.
- 6.7 All quality related records, procedures, and qualifications shall be available for examination by the Buyer or the Buyer's authorized agents.
- 6.8 The following American National Standards Institute (ANSI) Standards are supplemental to ANSI Standard N45.2 and set forth more detailed requirements and guidance for certain activities. When invoked by the technical specification, the extent to which the individual requirements of these Standards apply will depend on the nature and scope of the work to be performed and the importance of the item or service involved. These supplemental Standards apply as specified in the bid, purchase or contract documents and are listed herein for reference purposes only:
- a. ANSI N45.2.1, "Cleaning of Fluid Systems and Associated Components During the Construction Phase of Nuclear Power Plants"
 - b. ANSI N45.2.2, "Packaging, Shipping, Receiving, Storage and Handling of Items for Nuclear Power Plants"
 - c. ANSI N45.2.3, "Housekeeping During the Construction Phase of Nuclear Power Plants"

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- d. ANSI N45.2.4, "Installation, Inspection, and Testing Requirements for Instrumentation and Electric Equipment During the Construction Phase of Nuclear Power Generating Stations"
- e. ANSI N45.2.5, "Supplementary Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete and Structural Steel During the Construction Phase of Nuclear Power Plants"
- f. ANSI N45.2.6, "Qualifications of Inspection, Examination, and Testing Personnel for the Construction Phase of Nuclear Power Plants"
- g. ANSI N45.2.8, "Supplementary Quality Assurance Requirements for Installation, Inspection, and Testing of Mechanical Equipment and Systems for the Construction Phase of Nuclear Power Plants"
- h. ANSI N45.2.11, "Quality Assurance Requirements for the Design of Nuclear Power Plants"
- i. ANSI N45.2.12, "Requirements for Auditing of Quality Assurance Programs for Nuclear Power Plants"
- j. ANSI N45.2.13, "Quality Assurance Requirements for Control of Procurement of Items and Services for Nuclear Power Plants"

7.0 BUYER'S QUALITY ASSURANCE SURVEILLANCE

- 7.1 All designing, procuring, manufacturing, processing, assembling, testing, examination, and inspection operations performed by the Supplier and his lower-tier suppliers are subject to surveillance by the Buyer or the Buyer's authorized agents. This surveillance shall in no way relieve the Supplier of any contractual responsibilities nor shall it limit, in any way, any other rights of the Buyer under the purchase order or contract. The term Surveillance, as used herein, includes inspection, survey, and audit activities.

- 7.2 The Buyer's Inspector(s), or the Buyer's authorized agents shall be given free access to the Supplier's and lower-tier supplier's facilities and records to inspect and report on the work pertaining to this procurement, in all phases of design, manufacturing, and testing.
- 7.3 The Supplier shall give the Buyer's Inspector at least five (5) working days prior notice of all tests and other check points in the manufacturing/fabrication program specifically requested by the Inspector, after a joint review of the Supplier's work plan(s) and this specification.
- 7.4 If the requirements of this specification have not been fulfilled, the Buyer's Inspector or any other Buyer's authorized agent has the authority to refuse to release any item for shipment.

INSTRUCTIONS FOR COMPLETING SDDR FORM

This form is used by a supplier to:

- a) Notify Bechtel of deviations from established requirements and document the supplier's proposed disposition, and
- b) Record Bechtel's approval of the established resolution.

A deviation is any departure from the requirements of the procuring documents which the supplier intends to incorporate in the completed item or service provided. Deviation disposition can be classified as Repair, Use-As-Is, or Modify Requirement.

Repair is defined as the process of restoring a nonconforming characteristic to a condition such that the capability of an item to function reliably and safely is unimpaired, even though that item still may not conform to the original requirements. Repair includes alterations to the properties of the material through heat-treating, welding, metal deposition, chemical processing, etc. This form is not to be used for cases where Bechtel has previously provided authorization to proceed using an approved repair procedure covering a specific type of repair; however, records must be maintained for each specific repair.

Acceptance of the Supplier Deviation Disposition Request by Bechtel does not relieve the Supplier from responsibility for the accuracy, adequacy, or suitability of the item or service being provided as defined in the procuring documents.

NOTE: Items marked by an asterisk (*) are for Bechtel use only.

Block No.	Entry Information
1.	Supplier's name and address. List lower-tier Supplier location (City and State) if applicable.
2.	Enter the Supplier's order number if one has been assigned.
3.	Enter Supplier's Part No. as applicable from the drawing, catalog, internal specification, etc. If the Deviation Request applies to all parts and additional space is needed, a list of parts to which the request applies may be attached.
4.	Enter Supplier's Part Name.
5.	Enter the date and the method (Spec. review, NDE, dielectric test, etc.) used to determine the deviation.
6.	List any previous SDDR's and their dates that have been submitted for similar deviations requested on this Purchase Order.
7.	Enter the Bechtel Purchase Order Number.
8.	Enter the Bechtel Requisition Item number and the part, tag or code number as it appears in the requisition. If additional space is needed, a separate sheet may be attached.
9.	Enter the Bechtel Part Name if one has been assigned.
10.	Enter the date and the method (TAX, phone, letter, etc.) used to notify the Bechtel Inspector.
11.	Enter the date and the method (TWX, phone, letter, etc.) used to notify Bechtel Engineering.
12.	As applicable, enter quantities or serial numbers of the items to which the deviation applies. If not serialized, record lot, batch, heat or other applicable identifying information.
13.	Describe the deviating characteristics and define the extent of the out-of-specification condition for each identified piece affected. Identify the location of the deviating characteristic by print coordinates or specific location, as applicable. Attach extra sheets, photographs, sketches, etc., as necessary.
14.	Identify disposition classification.
15.	Describe the proposed disposition and provide technical justification for Bechtel's evaluation. If the deviation is correctable by repair, submit a detailed repair procedure or reference the procedure previously approved (Level 1) by Bechtel for use in similar situations. Provide Bechtel control number, supplier control number and procedure title.
16.	Identify the nature of changes that may result on associated supplier documents (drawings, specs., procedures, installation instructions, etc.).
17.	Enter the name (typed or printed), signature and title of the supplier representative authorizing the disposition request and date signed.
*18.	Enter an X in the applicable boxes to define the action required by Bechtel Project Engineering.
*19.	Provide appropriate justification for the Bechtel action(s) indicated in Block 18. When changes to drawings, specifications, requisitions, or other Bechtel documents are involved, each document should be identified and the associated change briefly described. If other disciplines or suppliers are affected, indicate who they are and the document that initiated resolution of that involvement. "Other" follow-up action (e.g. the need for additional Bechtel calculations, additional drawings or sketches, inspection by a Project Engineering representative, etc.) should also be identified here.
*20.	GS - Signature of the responsible Discipline Group Supervisor approving the Engineering action and the approval date. QE - Signature of the Quality Engineer who reviewed and concurred with the disposition and the date signed. PE - Approval signature of the Bechtel Project Engineer and the date signed.
21.	Signature of the supplier's inspector or other representative authorized to verify that the accepted disposition was correctly accomplished.
*22.	Signature of the Bechtel Inspector or other representative verifying that the accepted disposition was correctly accomplished.

FILE # A1701
10466-QA-1
FILE IDENTIFIER
003-1303
F 8 1

DuBose Steel, Inc.

Form D-19, Rev. 0

CERTIFIED MATERIALS TEST REPORT

Material Furnished To: Teledyn Brown Munsville, Ala. 35807	NO. _____ Date: <u>March 8, 1979</u>
Customer Order No. <u>173685</u> Delivery Copy No. <u>51360 and 51361</u>	ASME Quality System Cert. No. <u>M-2071</u> <u>March 31, 1981</u> expiration Date

TYPE	DESCRIPTION	TESTS PERFORMED
ASTM-A500 Gr. B	53pc. HT. E69479 1"x6"x6"x40' Square Tubing, HT. D64505	Chemical & Physical
ASTM-A500 Gr. B	83pc. HT. E68445 1"x4"x4"x40' Square Tubing	Chemical & Physical

CHECKED

HEAT CODE: MLK

DATE: 3-27-79

RELEASED - TBE

CLASS 2 & 3 USA ONLY

ROLL FRAME
00896 0368

This is to certify that this material has been supplied in accordance with the Quality System Program approved by the ASME as required by Section HCA-3800 of the Code.

This is to certify that the material described above and tested or examined as shown, meets or exceeds specification requirements noted:

ASTM A-36-

ASTM-A500 - 74a - Code Case 1644-5 *SAME AS CODE CASE 1644-6 3-27-79 RT*

Stephen M. Lanning
QA Manager

3/11/79
Date



ROLL FRAME
00096 0810

ROLL FRAME
00005 0126

MILL TEST REPORT WELDED STRUCTURAL STEEL TUBING

WELDED TUBE COMPANY OF AMERICA

MANUFACTURERS OF ELECTRIC WELDED CARBON ALLOY STEEL TUBING

1855 E 172nd ST. CHICAGO, ILLINOIS 60633
PHONE: (312) 848-4500

SOLD TO: Valley Steel
F.O. Box 503
St. Louis, Mo. 63166

DATE: 11-28-78 NO.: 0H33403

SHIPPED TO:

CUSTOMER P.O. No 929

HEAT NO.	OD SIZE	WALL THICKNESS	LENGTH	NO. PCS.	TOTAL FT.	YIELD	TENSILE	ELONG.	MIN. P.	B.	BI.
264505	6" x 6"	1/4"	40'0"	54	2160'0"	55,100	61,200	39%	.06	.008	.012
E69479	SAMB					58,100	64,800	39%	.05	.009	.014

CHECKED
MLJ
3-21-79
 X HEAT CODE
DATE
RELEASED - TUE
CLASS 2 F 3 215A
20 3 28
 QA REVIEW
SATISFACTORY.
DATE 3/5/79
INITIAL

THIS MATERIAL MEETS MINIMUM SPECIFICATIONS SET FORTH IN ASTM A-500-77 GRADE "B"
 COMPANIES WITH 15 TO 200,000 TONS CAPACITY
 3-21-79

THE ABOVE FIGURES APPEAR IN THE RECORDS OF WELDED TUBE COMPANY OF AMERICA AND ARE CERTIFIED AS BEING CORRECT BY: *M. J. J...*

CUSTOMER'S COPY

POST FRAME
0004 0329



MILL TEST REPORT WELDED STRUCTURAL STEEL TUBING

WELDED TUBE COMPANY OF AMERICA

MANUFACTURERS OF ELECTRIC WELDED CARBON ALLOY STEEL TUBING
1855 E 122nd ST CHICAGO, ILLINOIS 60633
PHONE (312) 646-4500

Valley Steel Products
SOLD TO P.O. Box 503
St. Louis, Mo. 63166

DATE 8-22-78 NO. GH31734

SHIPPED TO

CUSTOMER P.O. No. 1-410 repl

HEAT NO.	OD SIZE	GA.	LENGTH	NO. PCS.	TOTAL FT.	YIELD psi	TENS. psi	ELONG. 2" %	O.	PHI.	P.	S.	SI.
68445	4" x 4"	1/4"	40'0"	96	3840'0"	60,800	66,300	34%	.06	.71	.005	.016	.035
<p>CHECKED NLK HEAT CODE 3-21-79 DATE: 3-21-79 RELEASED - TBE 3-21-79 CL 55 2 63 254 0-6V 450-779</p>													
<p>THIS MATERIAL MEETS MINIMUM SPECIFICATIONS SET FORTH IN ASTM A-500-77 GRADE "B" COMPLIES WITH ASTM A500-74 & A500-77</p>													

QA REVIEW
SATISFACTORY
3/5/79
DATE
M.C. INITIAL

THE ABOVE FIGURES APPEAR IN THE RECORDS OF WELDED TUBE COMPANY OF AMERICA AND ARE CERTIFIED AS BEING CORRECT BY: M. Smith

CUSTOMER'S COPY

ROLL FRAME

00896 0781



Welded Tube Company of America logo with 'WCA' letters.

ROLL 1 1/2" x 6" FRAME
00005 0110

MILL TEST REPORT WELDED STRUCTURAL STEEL TUBING

WELDED TUBE COMPANY OF AMERICA

MANUFACTURER OF ELECTRIC WELDED CARBON KILN STEEL TUBING

1372nd ST. CHICAGO, ILLINOIS 60633
PHONE (312) 646 4500

SOLD TO Valley Steel
P.O. Box 503
St. Louis, Mo. 63166

DATE 11-28-78
ORDER NO. CH33403

CUSTOMER P.O. No. 229

HEAT NO	OD SIZE	G.A.	LENGTH	NO. PCS.	TOTAL FT.	YIELD (lb)	TENS (psi)	ELONG. 2" X	A	B	P	S
* 264505 E69479	6" x 6" SAME	1/4"	40'0"	54	2160'0"	55,100 58,100	61,200 64,800	39% 39%	.06 .05	.77 .77	.008 .009	.012 .014
<p>CHECKED</p> <p>HEAT CODE AVLI</p> <p>DATE: 3-21-79</p> <p>RELEASED - THE 283 USA ONLY</p>												
<p>THIS MATERIAL MEETS MINIMUM SPECIFICATIONS SET FORTH IN ASTM A-500-77 GRADE "B"</p> <p>COMPATIBLE WITH A500-77A5</p>												
<p>INITIAL SMC DATE 3/5/79</p> <p>QA REVIEW</p> <p>QUALITY SATISFACTORY</p>												

THE ABOVE FIGURES APPEAR IN THE RECORDS OF WELDED TUBE COMPANY OF AMERICA AND ARE CERTIFIED AS BEING CORRECT BY: *M. [Signature]*

CUSTOMER'S COPY

TELEDYNE BROWN ENGINEERING ATTACHMENT 4

HEAT CODE CROSS REFERENCE

CUSTOMER: Daniel International Corp. CONTRACT: 7186-SR-66001

STFEL

TBE HEAT CODE	MILL	MILL HEAT NUMBER	CMTR SHIP DATE
BMP	Lukens Steel Co.	D3898-6A	10-27-82
BMT ✓	Lukens Steel Co.	D3898-10F	
BQL ✓	U. S. Steel Corp.	74B809	
BZX ✓	Lukens Steel Co.	D3678-3M	
CED ✓	Lukens Steel Co.	C7666-1B	
CEL ✓	Lukens Steel Co.	C7461-2E	
CFH ✓	Lukens Steel Co.	C7666-7C	
CPY ✓	U. S. Steel Corp.	N14692	
NHQ ✓	Armco Steel Corp.	174476	
NKG ✓	Tubular Steel Inc.	772"A" & 772"B"	
NLK ✓	Welded Tube	E68445	
NLP ✓	Phoenix Steel Corp.	98862-21-03492	
NOD ✓	Bethlehem Steel	182J105	
NOM ✓	U. S. Steel Corp.	M82716	
NON ✓	U. S. Steel Corp.	T88113	
NOQ ✓	Merriman - Litton	82479	
NPH ✓	Welded Tube	226166	
NPI ✓	Welded Tube	04148P	
NPM ✓	Independence Tube	871871	
NQQ ✓	U. S. Steel Corp.	N97820	10-27-82

ROLL
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