

DISCREPANCY REPORT

ROUTE TO A. BRADBROOK

DR NUMBER
4648

JOB NUMBER <u>V59049</u>	P.O. NO. <u>554661</u>	VENDOR <u>STANDARD STEEL</u>	SHEET <u>1</u> OF
PROJECT	ORIGINATOR <u>C. Wasiecki</u>	DATE <u>2-28-96</u>	REFER TO DR NUMBER

I T E M	DWG. ZONE	DISCREPANCIES (LIST CHARACTERISTICS, SPECIFICATIONS AND ACTUAL)	NO. ACC.	FOR REVIEW	QTY. OF PCS./DISPOSITION					REMARKS
					USE NO. ENGE	USE DWG. CHGE	RWK IN SHOP	RET. TO SUP.	SCRAP	
		<u>WE REC'D CMTR'S ON FLANGE MATERIAL, THAT IS GOING TO RANOR, INC.</u>		<u>3</u>		<u>✓</u>				
		<u>OUR SPEC. V049-2-040 Rev1 CALLS FOR THE SULFUR CONTENT TO BE 0.005%</u>								
		<u>& NO MORE.</u>								
		<u>THE CMTR'S WE REC'D FOR PARTS 110.5 00+.06/-0 X 104.25 ID T07-.06</u>								
		<u>SHIP LIST 48086 & 48087 HAVE A SULFUR CONTENT OF .006</u>								

CAUSE

SIGNATURE _____ DATE _____

DISPOSITION ---

OK to use, Revise spec to allow up to 0.006% Sulphur

Per Steve Dodman of Standard Steel their internal control limit for low sulphur steel is 0.006%

SIGNATURE D. C. McWilliams DATE 3-6-96

DISPOSITION CONCURRENCE

PROJECT MGR.	DATE	MFG. ENG.	DATE	QUALITY ASSURANCE	DATE
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REINSPECTION

SIGNATURE _____ DATE _____

AI/ANI _____ DATE _____

RETURN TO A BRADBROOK

Title: SPECIFICATION FOR STAINLESS STEEL FLANGE FORGINGS

SPECIFICATION FOR
STAINLESS STEEL FLANGE FORGINGS
FOR
LIGO VACUUM EQUIPMENT

Hanford, Washington
and
Livingston, Louisiana

PREPARED BY: D. Curtis *D. Curtis*

STRUCTURAL ENGINEER: R.O. Witt *R.O. Witt*

QUALITY ASSURANCE: A.R. Bradbrook *A.R. Bradbrook*

TECHNICAL DIRECTOR: D.A. McWilliam *D.A. McWilliam*

PROJECT MANAGER: Buch Bayly *Buch Bayly*

MAR 18 1996

Information contained in this specification and its attachments is proprietary in nature and shall be kept confidential. It shall be used only as required to respond to the specification requirements, and shall not be disclosed to any other party.

REV LTR.	BY-DATE	APPD. DATE	DESCRIPTION OF CHANGE
2	D.M.W. 3-15-96	REC from RB	REV SECT 3.5 (MAX SULFUR CONTENT) PER DEO #0094
1	REC 12/22/95	D.M.W.	REVISED SECT. 3.4, 3.5, 8.1, 9.1 DEO #0037
0	D.M.W.		ISSUED PER DEO 0021 (MAT'L PROCUREMENT)

PROCESS SYSTEMS INTERNATIONAL, INC.				SPECIFICATION	
INITIAL APPROVALS	PREPARED	DATE	APPROVED	DATE	Number A V049-2-040
	REC	11/21/95	REC	11/27/95	LIGO-E950120-02-V
					Rev. 2

Title

SPECIFICATION FOR STAINLESS STEEL FLANGE FORGINGS

SPECIFICATION TABLE OF CONTENTS

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- 2.0 Material Requirements
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- 10.0 Non-escort Privileges and Inspection Right

Attachment A LIGO Quality Assurance Requirements
Summary

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1.0 SCOPE

This specification covers the minimum technical requirements for the materials, fabrication, inspection, testing, preparation for shipping, shipment and delivery of the flange forgings to be used for manufacturing ultra high vacuum boundary equipment.

All attachments are incorporated herein by reference and made a part of this specification.

Information contained in this specification and its attachments is proprietary in nature and shall be kept confidential. It shall be used only as required to respond to the specification requirements, and shall not be disclosed to any other party.

2.0 MATERIAL REQUIREMENTS

2.1 This material shall conform to the requirements of ASME Specification SA-182 Grade F Type 304L as given in the ASME Code 1992 Edition through 1994 Addenda with the additional supplementary requirements described in this specification.

2.2 Applicable Codes

2.2.1 ASME Boiler & Pressure Vessel Code, Section II, "Materials", 1992 Edition through 1994 Addenda.

2.2.2 ASTM A-700, "Standard Packages for Packaging, marking, and Loading Methods for Steel Products for Domestic Shipment".

2.3 Any apparent conflicts between the requirements given herein and the applicable ASME Specification shall be brought to the attention of PSI for clarification.

3.0 MANUFACTURE**3.1 Thickness Tolerance**

The forgings shall be rough machined to the thickness(es) specified in the purchase order.

3.2 ID/OD Tolerance

The forgings shall be furnished in the diameters and tolerances specified in the purchase order.

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SPECIFICATION FOR STAINLESS STEEL FLANGE FORGINGS

3.3 Flatness Tolerance

The machined forgings shall be flat to $\pm 1/16$ across the diameter.

3.4 Surface Finish

The surface finish of the forgings shall be 250 RMS on four sides.

3.5 Chemistry and Mechanical Properties

The material shall meet the chemistry and mechanical requirements as specified in SA 182 Grade F, 304L material specification. The final content of sulphur is to be limited to 0.006%.

3.6 No grinding with abrasive wheels, cloths or stones is permitted. No iron carbon steel or other contaminants (such as grease, oil or hydrocarbons) to come in contact with the forging after the cleaning process. Machining fluids shall be water soluble and free of oil and sulfur.

3.7 Cleanliness

The forgings are intended for use in a high vacuum application. Potential hydrocarbon contamination shall be eliminated. Also, the material shall be wrapped and covered at all times the material is not being processed to minimize possible exposure to contaminants. The forgings shall be steam cleaned prior to shipment.

4.0 MATERIAL TESTING

4.1 2" x 2" material coupons for each heat of material, must be supplied to PSI for approval prior to release for shipment. The coupons are to be cut from the same heat number, lot and thickness of material to be supplied.

5.0 INSPECTION/WITNESS

5.1 The purchaser shall have the right to witness all manufacturing processes.

5.2 The purchaser shall be informed 5 working days before the forging material is formed.

6.0 REJECTIONS AND REPAIR OF DEFECTS

6.1 No weld splices or repair welding is permitted to the material and forgings.

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7.0 IDENTIFICATION

- 7.1 Identification of the material shall be maintained through all manufacturing processes.
- 7.2 If material identity is lost, the forging shall be requalified by making all tests that were required for the material or as indicated in this specification.
- 7.3 Marking the finished materials with marking fluids, die stamps, and/or electro-etching is not permitted. A vibratory tool with a minimum tip radius of .005" is acceptable for marking the outside only of the finished materials. All other marking methods must be approved by the purchaser prior to use.

8.0 DOCUMENTATION

- 8.1 The Certified Material Test Report (CMTR) shall be provided to the purchaser with the shipment of the material, and available for review during inspection visits prior to shipment.
- 8.2 A record of the material thickness for each flange forging is required.

9.0 PACKAGING, STORING AND SHIPPING

- 9.1 The material shall be cleaned and protected from contamination prior to shipment. The material shall be shipped covered in a closed trailer or tightly wrapped with a waterproof covering if shipped on an open bed.

10.0 NON-ESCORT PRIVILEGES AND INSPECTION RIGHT

Non-escort privileges for Buyer, Owner, Government and Owner representatives to all areas of the facilities where the work is being performed shall be arranged. This will include access to fabrication, assembly, cleaning and test areas for the purpose of monitoring activities.

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ATTACHMENT "A"
LIGO QUALITY ASSURANCE REQUIREMENTS SUMMARY

LIGO VACUUM EQUIPMENT	VENDOR: V59049					JOB NO.: V59049	
EQUIPMENT: Flange Forgings	VENDOR ENG. OFFICE:					DWG. NO.:	
PSI P.O. NO:	VENDOR FACTORY:					SPECNO: V049-2-040	
TESTING INSPECTION AND DOCUMENTATION RECORD	Submittal After P.O.	Witnessed by PSI	Approval by PSI	Copies Req'd for PSI Files	Record in Mfr's File	Remarks:	
						Inspector:	
						Date:	
	MILESTONE SCHEDULE			X	2	X	
	VENDOR Q.A. PLAN			X	2	X	
	CLEANING PROCEDURE			X	2	X	
	PREP FOR SHIPMENT PROCEDURE			X	2	X	
	WELDING PROCEDURES						
	ASSEMBLY DRAWINGS						
	DESIGN REVIEW						
	CERTIFIED MATERIAL TEST REPORTS			X	2	X	
	IN-PROCESS INSPECTIONS		X		2	X	
	OPERATION & MAINTENANCE MANUALS						
	SHOP TEST PLAN						
SHOP TEST (WITH REPORT)							
SHOP DIMENSIONAL INSPECTION		X		2	X		

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