



APPROVED	
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LIGO - E970021-01-B

IDENTIFICATION			
Specification 809			
REFERENCE NO. 953571		SHT 1 OF 2	
OFFICE LIGO		REVISION 1D	
MADE BY WAC	CHKD BY PBS	MADE BY WAC	CHKD BY MLT
DATE 2/1/96	DATE 2/2/96	DATE 6/3/96	DATE 6/3/96

TITLE	LIQUID NITROGEN TRAP SPECIFICATION
PRODUCT	PUMP PORT HARDWARE LIQUID NITROGEN TRAP

Note: Revisions are not indicated on this specification.

1.0 SCOPE

- 1.1 This specification outlines the requirements for the liquid nitrogen refrigerated cold traps used in a UHV vacuum system of the LIGO Beam Tube.
- 1.2 Vendor shall indicate the tag number of all items on drawings.
- 1.3 Vendor shall indicate the equipment tag numbers in all correspondence with CBI.
- 1.4 Vendor shall contact CBI if any of the specifications set forth in this document detracts from the performance or useful life of the components or unnecessarily increases the cost.
- 1.5 The equipment shall be tagged with the following tag number:
LNT-1 Through LNT-10

2.0 DESIGN REQUIREMENTS

- 2.1 Ten cold traps shall be provided. The vacuum containing shell (type 304 or 304L) must be capable of bakeout at 250°C while the trap is full of liquid nitrogen. The materials of construction shall not include hydrocarbons.
- 2.2 The units shall be a nominal 10" size.
- 2.3 The units shall be provided with 13.25" CF type flanged inlets and outlets.
- 2.4 The units shall be provided with a nitrogen inlet and vent line.
- 2.5 The units shall be designed to be installed in a horizontal line.
- 2.6 Care shall be exercised to ensure that the entire cryogenic surface which is exposed to the vacuum is well cooled by the liquid nitrogen. Long thermal paths must be made of a material which is very conductive, such as copper. The cryogenic surfaces shall have at least 1 square meter of surface area. The measured area will include both sides of all chevrons and other chilled components which are totally contained in the vacuum envelope.



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2.7 The cryogenic surfaces should be highly reflective to minimize heat transfer from the vacuum envelope. Copper or other materials which have a low reflectivity shall be nickel plated.

3.0 SPECIAL DETAILS

3.1 The cold traps shall be leak tested to 1×10^{-10} std cc/sec of helium. A copy of the leak test reports shall be provided with the cold traps.

3.2 The cold traps shall be cleaned for UHV service. The vendor shall supply their cleaning procedure in the quotation.

3.3 The cold traps shall be packaged for shipment to prevent contamination to the cleaned cold traps.

3.4 The cold traps shall be packaged for shipment to prevent damage to the CF flanges and the rest of the components.

4.0 INFORMATION TO BE PROVIDED IN THE PROPOSAL

4.1 The vendor shall not take exception to the CBI specification unless the vendors quotation specifically states that exceptions are taken to the specification and lists the exceptions by paragraph number with a description of the exception. CBI will assume complete conformance unless the vendor specifically states an exception.

4.2 The vendor shall state the price and delivery of each component specified.

5.0 INFORMATION TO BE PROVIDED AFTER RECEIPT OF ORDER

5.1 Delivery schedule for approval drawings and equipment.

5.2 Approval drawings including materials of construction, overall dimensions, flange details, fill & vent sizes, etc. Approval drawings will be provided within two weeks after order.

5.3 Operations manual - with equipment.