		IDENTIFICATION MODSEQ LIGO-E950057-02-B			
TITLE	FINAL ALIGNMENT AND MODULE TESTING SEQUENCE	REFERENCE NO. 930212		SHT 1 OF 4	
		OFFICE RDE		REVISION 2	
PRODUCT	LIGO BEAM TUBE MODULES CALIFORNIA INSTITUTE OF TECHNOLOGY	MADE BY GLW	CHKD BY KHF	MADE BY SDH	CHKD BY WLR
		DATE 2/4/94	DATE 3/14/94	DATE 11/09/95	DATE 11/09/95

1.0 SCOPE

This procedure outlines the final installation and testing sequences to be followed during the testing of the of the beam tube modules after all beam tube can sections have been installed.

1) Detail or supporting procedures for final alignment and testing are referenced as required. See paragraph 3.0 for listing.

2) The sequence is based upon the following conditions:

1.1 All beam tube can sections for the beam tube module to be tested have been successfully HMS tested at time of fabrication, final cleaned and installed. The installed beam tube can sections have also had the closing weld joints HMS tested and locally cleaned.

1.2 All isolation valves to pump ports, LN2 pumps, accessories, and RGA monitoring equipment have been installed and commissioned and flange seals to pump ports and have been successfully HMS tested and locally cleaned. (At present, LN2 pumps etc. are not in the workscope, only the installation of the valves and blind covers are included.)

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Note

LN2 Pump Furnish and Installation
Is By Others.

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1.3 The permanent vacuum pump sets for the applicable beam tube module have been installed at each end of the module, tested and are operational. (INSTALLATION BY OTHERS)

M. Lellahian 11/10/95
CSI DATE

J Jones 11/10/95
CALTECH DATE

1.4 Preliminary alignment has been completed and all supports are installed.

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Reference

See
Initial & Final Alignment During Installation of
LIGO Beam Tube Modules Using GPS System
Doc ID "ALI-1"

See
Alignment Maintenance Using
Global Positioning System (GPS)
Doc ID "ALI-B"

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1.5 Beam tube module precast concrete cover has been installed by others.

2.0 FINAL ALIGNMENT AND TESTING SEQUENCE

2.1 Perform final alignment on each beam tube can section verifying alignment of the beam tube module.

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Reference

See
Initial & Final Alignment During Installation of
LIGO Beam Tube Modules Using GPS System
Doc ID "ALI-1"

See
Alignment Maintenance Using
Global Positioning System (GPS)
Doc ID "ALI-B"

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2.2 Complete alignment records and reports.

2.3 Perform RGA performance test of beam tube module. See Section 3.0 of procedure RGAPT.

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Reference

See
RGA Performance
Test of Beam Tube Modules
Doc ID "RGAPT"

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2.4 Complete RGA performance records and reports.

2.5 Skip step 2.6 if the results indicate no or acceptable inleakage.

2.6 Perform helium mass spectrometer hood test of beam tube module if step 2.3 was not acceptable.

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Reference

See
Helium Mass Spectrometer Hood
Test of Beam Tube Module
Doc ID "HMST5N"

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2.7 Install, inspect and checkout I^2R Bakeout equipment and controls.

2.8 Install, Inspect & Accept insulation of modules (by Others).

2.9 Perform bakeout of beam tube module under vacuum.

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Note

Bakeout of Beam Tube Module
Is By Others.

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2.10 Perform RGA performance test of beam tube module. See Section 3.0 of procedure RGAPT.

2.11 If after bakeout, unacceptable leakage rates are recorded, see "HMST5N" for decision tree and appropriate remedial operations.

2.12 If leakage rate is acceptable, complete RGA performance (air signature) test and HMS records and reports.

3.0 REFERENCED PROCEDURES AND SPECIFICATIONS

This installation sequence is to be used in conjunction with the following procedures and/or specifications:

3.1 Initial and Final Alignment During Installation of LIGO Beam Tube Modules using GPS System Doc ID "ALI-1"

3.2 Planned Approach to Leak Testing for LIGO Project
Doc ID "LIGOTP"

3.3 RGA Performance Test of Beam Tube Module
Doc ID "RGAPT"

3.5 Helium Mass Spectrometer Hood Test Beam Tube Module
Doc ID "HMST5N"

3.6 Insulation Specification (by Others, later).

3.7 I^2R Bakeout Specification (by Others, later).