

LASER INTERFEROMETER GRAVITATIONAL WAVE OBSERVATORY  
- LIGO -  
CALIFORNIA INSTITUTE OF TECHNOLOGY  
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

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This is an internal working note  
of the LIGO Project.

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# 1 LIGO TOP-LEVEL DOCUMENTS

## 1.1. DCC Information

T970050-xx DCC Document Listing  
L960641-05 Electronic Submissions to the Document Control Center (instructions)  
G960249-00 Electronic Submissions to LIGO Document Control Center (DCC) (flowchart)  
L970164-02 Procedures for Release of Controlled Drawings and Specifications  
E960024-00 Document Change Notice (DCN) -- completed example

## 1.2. Management Documentation

### 1.2.1. Project Plans and Policies

M950046-A LIGO PROJECT SYSTEM SAFETY PLAN  
M960076-A LIGO PROJECT QUALITY ASSURANCE PLAN  
E960099-B LIGO RELIABILITY PROGRAM PLAN  
L970529-00 LIGO modem pool at Caltech

### 1.2.2. Annual Reports

M970007-01 Annual Report (December 1995 through November 1996)

### 1.2.3. Quarterly Reports

M960024-00 Quarterly Progress Report (December 1995 through February 1996)  
M960055-00 Quarterly Progress Report (March 1996 through May 1996)  
M970034-00 Quarterly Report (December 1996 through February 1997)  
M970080-00 Quarterly Report (March 1997 through May 1997)  
M970138-00 Quarterly Report (June 1997 through August 1997)

### 1.2.4. Monthly Reports

M970017-01 Monthly Progress Report (End of December 1996)  
M970033-00 Monthly Progress Report (End of January 1997)  
M970042-00 Monthly Progress Report (End of March 1997)

### 1.2.5. Proposals

M950020-01 LIGO Operations, 1997-2001  
M960051-A LETTER OF INTENT FOR A RESEARCH AND DEVELOPMENT PROGRAM FOR ADVANCED LIGO DETECTORS BY THE LIGO MIT/CALTECH GROUPS  
M970001-01 Revised Proposal for a Research and Development Program For Advanced Detectors by the LIGO MIT/Caltech Groups - FY 1997 Proposal Budget

## **1.2.6. Review Presentation Materials**

### **1.2.6.1 NSF Review April 13-17, 1997**

G970068-00 LIGO DATA PROCESSING  
 G970071-01 BEAM TUBE BAKEOUT  
 G970075-01 LIGO Project Cost/Schedule Status  
 G970091-00 LIGO Control and Data System Control and Monitoring

## **1.3. Publications**

P940008-00 Measurement of Optical Path Fluctuations due to Residual Gas in the LIGO 40  
 Meter Interferometer  
 P950017-02 The Laser Interferometer Gravitational-Wave Observatory (LIGO) Project  
 P960024-A PRINCIPLES OF CALCULATING ALIGNMENT SIGNALS IN COMPLEX  
 RESONANT OPTICAL INTERFEROMETERS  
 P960031-C The Laser Interferometer Gravitational Wave Observatory Project LIGO  
 P960041-02 Recent Research on the LIGO 40 m Interferometer  
 P960042-00 Development of Laser Interferometers for Gravitational Wave Detection:  
 Abstract and Summary  
 P970002-00 Modeling LIGO Data Analysis

## **1.4. System Engineering Documentation**

### **1.4.1. System Requirements**

D970307-00 LIGO SYSTEMS FUNCTIONAL BLOCK DIAGRAM  
 E950018-02 LIGO Science Requirements Document (SRD)  
 E950111-A LIGO Naming Conventions  
 E960036-A LIGO EMI CONTROL PLAN AND PROCEDURES  
 E960099-B LIGO RELIABILITY PROGRAM PLAN  
 E960010-A LIGO Sites Alignment Requirements  
 E950083-B Science Requirements for the LIGO Beam Tube Baffles  
 T970130-B Specification of a Common Data Frame Format for Interferometric Gravitational  
 Wave Detectors (IGWD)

### **1.4.2. Modeling and Data Analysis**

T970159-02 LIGO Data Analysis System Design Requirements  
 T970160-04 LIGO Data Analysis System Conceptual Design.  
 G970064-00 Modeling LIGO Data Analysis  
 G970135-00 What We've Learned About What We've Learned About "FRAMES"  
 G970156-00 Computer Languages Computer Languages why all the fuss about why all the  
 fuss about C++  
 T970100-A LIGO Data Analysis Software Specification Issues  
 T970101-A Strain Calibration in LIGO  
 M970013-02 A Proposal for the First Experiment for Validation of the 40m End-to-End Model  
 M970065-B White Paper Outlining the Data Analysis System (DAS) for LIGO I

- T970128-02 Quantization Noise in Ligo Interferometers
- T970167-00 LIGO Science Benchmarks
- T970166-01 Benchmark tests for inspiraling binary searches for LDAS

### **1.4.3. Alignment**

- E960010-A LIGO Sites Alignment Requirements
- L960348-01 LIGO Coordinate Names and Reference Designations - CAUTION
- T950004-B Derivation of Global and Local Coordinate Axes for the LIGO Sites
- T950107-A Orientation of the LIGO Beam Center Lines with respect to foundation slabs
- T960176-C Determination of the as-built LIGO Global Coordinate Axes for Hanford, WA
- T960042-A Alignment Tolerances and Re-Alignment Criteria for the LIGO Beam Tubes
- T970117-A LIGO Site-to-Site Separation

### **1.4.4. Testing, Measurements and Analysis**

- T960128-00 Radiation Pressure Noise in LIGO
- T970054-00 Beam Tube Dynamics

### **1.4.5. Layout Drawings**

- T960051-02 INTEGRATED LAYOUT DRAWINGS: USAGE & MAINTENANCE
- D970008-A Chamber & Rack Designations - WA (Corner Station)
- D970009-A Chamber & Rack Designations - WA (Mid Station)
- D970010-A Chamber & Rack Designations - WA (End Station)

### **1.4.6. Other**

- E950107-00 LIGO Foundation Thickness Decision: Minutes of Integration Meeting on 8 December 1995
- E950108-00 LIGO Configuration Change to Nd:YAG Lasers: Impact on Facilities Chiller Requirements
- T950066-02 RESPONSE TO MULTIPLE ACTION ITEMS IN PARSONS' "REQUIREMENTS DEFINITION WORKSHEET"

## **2 FACILITIES DOCUMENTATION**

### **2.1. Vacuum Equipment**

### **2.2. Beam Tube**

#### **2.2.1. Design Requirements and Qualification**

- T960042-A Alignment Tolerances and Re-Alignment Criteria for the LIGO Beam Tubes
- T960125-00 Beam Tube Qualification Test

**2.2.2. Baffles**

E950083-B	Science Requirements for the LIGO Beam Tube Baffles
E960028-A	Specification, Porcelain Coating of Beam Tube Baffles
E960037-A	COMPONENT SPECIFICATION: MECHANICAL FABRICATION OF BEAM TUBE BAFFLES
E960038-00	DCN for E960028-A and E960037-A
T970053-00	Baffle Glaze Shedding

**2.2.3. Bakeout**

E960123-03	Beam Tube Bakeout Design Requirements Document
E970125-A	COMPONENT SPECIFICATION: BEAM TUBE MODULE INSULATION
T960124-00	ISSUES AND CONSIDERATIONS ON THE BEAM TUBE BAKE
T960178-01	Beam Tube Bakeout Conceptual Design
T970148-00	Beam Tube Bakeout Preliminary Design
G960181-00	BEAM TUBE BAKEOUT
G960241-00	BEAM TUBE BAKEOUT DESIGN REQUIREMENTS REVIEW
L970483-00	Beam Tube Bakeout Design Requirements Review - Responses to Recommendations
G970217-00	BEAM TUBE BAKEOUT PRELIMINARY DESIGN REVIEW

**2.2.4. Testing, Measurements and Analysis**

T970054-00	Beam Tube Dynamics
T970110-00	Information for the Beam Tube Pumpdown
T970111-00	Data from Beam Tube Pump Down II
L970429-00	Technical Board Meeting to Review Beam Tube HX2 Vacuum Test Results

**2.3. Civil Construction****2.3.1. Design Requirements**

E950101-00	Telecommunications requirements for Hanford, WA Site.
E950106-00	LIGO Requirements and Options for Facilities Monitoring and Control System (FMCS)

**3 DETECTOR DOCUMENTATION****3.1. Detector System Documentation**

E960112-05	Detector Subsystems Requirements
E960022-03	LIGO Vacuum Compatibility, Cleaning Methods and Qualification Procedures
E960050-A	LIGO Vacuum Compatible Materials List
T950065-A	Guidelines for Design Requirement Documents
L970196-00	Part Numbers and Serialization of Detector Hardware
L970164-02	Procedure for Release of Controlled Drawings and Specifications

T960083-A	Derivation of CDS Rack Acoustic Noise Specifications
E960108-A	Recommendation of parameter choices in 2 km interferometer design.
T960019-00	Frequency, Intensity and Oscillator Noise in the LIGO
T960120-00	Misalignment-Beam Jitter Coupling in LIGO
T960122-00	Proposed initial detector MC and RC baseline lengths
T970068-00	Recycling Cavity and Mode Cleaner Cavity Baseline Dimensions
D970002-00	Recycling Cavity Dimensional Range
D970003-00	Recycling Cavity Layout
T960128-00	Radiation Pressure Noise in LIGO
T960136-00	Estimates for Motions due to Sound Fields
T960140-00	Fast Estimation of Transverse Fields in High Finesse Optical Cavities
T960189-00	LIGO calibration accuracy
T970007-00	Modelling the Performance of an Initial-LIGO Detector with Realistically Imperfect Optics
G960250-00	Modelling the Performance of an Initial-LIGO Interferometer with Realistically-Deformed Optics
L970042-00	Internal Modes of Testmasses
T970077-00	Gravitational Deflection of LIGO Optics in a 9-Point Hindle Mount
T970091-00	Determination of the Wedge Angles for the Core Optics Components
T952008-00	A Tutorial For the Fast Fourier Transform Interferometer Simulator
G950061-02	A Summary and Future Preview of the FFT Simulation Initiative in LIGO
T960187-01	Effect of Microseismic Noise on a LIGO Interferometer
T970059-01	The Effect of Earth Tides on LIGO Interferometers
T970101-A	Strain Calibration in LIGO
T970128-02	Quantization Noise in Ligo Interferometers
T970167-00	LIGO Science Benchmarks
T970166-01	Benchmark tests for inspiraling binary searches for LDAS
T970149-00	Influence of the stray magnetic field generated by the Faraday isolator on SOS mirror actuators

## 3.2. Suspensions and Seismic Isolation

### 3.2.1. Suspensions

T950011-19	Suspension Design Requirements
E970037-00	SMALL OPTICS SUSPENSION ASSEMBLY SPECIFICATION
E970038-00	LARGE OPTICS SUSPENSION SPECIFICATION
E970080-00	SMALL OPTICS SUSPENSION ASSEMBLY QUALITY CONFORMANCE WORKSHEET
E970132-00	LARGE OPTICS SUSPENSION ASSEMBLY QUALITY CONFORMANCE WORKSHEET
T960074-07	Suspension Preliminary Design
E960098-01	PRELIMINARY DESIGN REVIEW Suspension System (SUS)
L970338-00	Settlement of SUS PDR Action Items for SOS
L970528-00	Settlement of SUS PDR Action Items for LOS
T970135-02	Small Optics Suspension Final Design (Mechanical System)
T970158-06	Large Optics Suspension Final Design (Mechanical System)

T960179-00	Small Optics Suspension Prototype Test Results
T960151-01	Large and Small Optics Suspension Electronics Design Requirements
T970113-00	Large and Small Optics Suspension Electronics Preliminary Design
G970219-00	LIGO LOS and SOS Electronics PDR
E970123-A	LIGO SUSPENSION SYSTEM RELIABILITY PREDICTION REPORT
L960596-00	Cross-coupling in the suspension controllers
T960040-00	RESPONSE OF PENDULUM TO MOTION OF SUSPENSION POINT
T960126-01	Magnet size considerations; interference and coil power dissipation
T960137-00	Note on Electrostatics in the LIGO suspensions
T970149-00	Influence of the stray magnetic field generated by the Faraday isolator on SOS mirror actuators

### **3.2.2. Seismic Isolation**

T960065-03	Seismic Isolation Design Requirements Document
T960066-00	Seismic Isolation Conceptual Design
M960038-00	DESIGN REQUIREMENTS REVIEW Seismic Isolation
M970104-00	PRELIMINARY DESIGN REVIEW: Seismic Isolation System (SEI)
M970048-02	PRELIMINARY DESIGN REVIEW: Seismic Isolation (SEI) Actuator System
M970049-00	PRELIMINARY DESIGN REVIEW: Seismic Isolation (SEI) System Assembly Sequence and Fixturing
M970082-01	FIRST ARTICLE FABRICATION READINESS REVIEW Seismic Isolation System (SEI): In Vacuo Hardware
T970142-00	Action Item Response Report: FIRST ARTICLE FABRICATION READINESS REVIEW for the Seismic Isolation System (SEI)
L970061-01	Specification Guidance for Seismic Component Cleaning, Baking and Shipping Preparation
E970063-01	LIGO Seismic Isolation System: Fabrication Process Specification
E970130-00	Material, Process, Handling, and Shipping Specification for Fluorel Parts
D972219-00	LIGO ISOLATION SYSTEM COIL SPRING SEAT
D972714-00	LIGO ISOLATION STACK FLUOREL SHIM
T970069-01	Requirements for Creep Testing of SEI Spring Elements
T970168-00	Viton Spring Seat Vacuum Bake Qualification

## **3.3. Lasers and Optics**

### **3.3.1. General Documentation**

L970042-00	Internal Modes of Testmasses
T970077-00	Gravitational Deflection of LIGO Optics in a 9-Point Hindle Mount
T970091-00	Determination of the Wedge Angles for the Core Optics Components
G950061-02	A Summary and Future Preview of the FFT Simulation Initiative in LIGO

### **3.3.2. Prestabilized Laser**

E950081-06	Nd 3+ Laser Target Specifications
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T950030-03	Prestabilized Laser Design Requirements
T970080-09	(Infrared) Pre-stabilized Laser (PSL) Design Requirements
T970087-04	(Infrared) Pre-stabilized Laser (PSL) Conceptual Design
M970044-00	LIGO Detector Review Report - Preliminary Design Review (PDR) - Design and Fabrication of Nd <sup>3+</sup> Lasers
L970108-00	(Review of) LightWave Electronics (LWE) Laser Reliability Plan
T970145-00	Performance of VCO/AOM frequency shifter
T970115-00	(Infrared) Pre-stabilized Laser (PSL) Electronics Design Requirements
T970114-00	IR PSL CDS CONCEPTUAL DESIGN DOCUMENT

### 3.3.3. Input Output Optics

T960093-02	Input Output Optics Design Requirements Document
L970447-00	Settlement of IOO DRR Action Items
T970143-00	Design Considerations for LIGO Mode-Matching Telescopes
T970144-00	Input Optics Preliminary Design
T970149-00	Influence of the stray magnetic field generated by the Faraday isolator on SOS mirror actuators

### 3.3.4. Core Optics

E950099-04	Core Optics Components Requirements (1064 nm)
T970071-01	Core Optics Support Design Requirements Document
T970072-01	Core Optics Support Conceptual Design
G970067-00	Core Optics Support Design Requirements Review
T970109-00	Spectral Analysis of Coated Optic Phase Maps

#### 3.3.4.1 Recycling Mirror Specifications

##### 3.3.4.2 Input Test Mass Specifications

E960093-A	COMPONENT SPECIFICATION: SUBSTRATE, INPUT TEST MASS
D960787-A	INPUT TEST MASS SUBSTRATE, 4K
D960803-A	INPUT TEST MASS SUBSTRATE, 2K
E960095-A	COMPONENT SPECIFICATION: MIRROR BLANK MATERIAL, INPUT TEST MASS

##### 3.3.4.3 Beam Splitter Specifications

E960100-A	COMPONENT SPECIFICATION: SUBSTRATE, BEAM SPLITTER
D960789-A	BEAM SPLITTER SUBSTRATE
E960094-A	COMPONENT SPECIFICATION: MIRROR BLANK MATERIAL, BEAM SPLITTER

##### 3.3.4.4 End Test Mass Specifications

E960102-A	COMPONENT SPECIFICATION: SUBSTRATE, END TEST MASS
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D960791-A END TEST MASS SUBSTRATE  
 E960097-A COMPONENT SPECIFICATION: MIRROR BLANK MATERIAL, FOLDING  
 MIRROR, END TEST MASS

### 3.3.4.5 Folding Mirror Specifications

E960101-A COMPONENT SPECIFICATION: SUBSTRATE, FOLDING MIRROR  
 D960790-A FOLDING MIRROR SUBSTRATE  
 E960097-A COMPONENT SPECIFICATION: MIRROR BLANK MATERIAL, FOLDING  
 MIRROR, END TEST MASS

### 3.3.5. Core Optics Components Carrying Case Drawings

D970085-A Project Material List - Large Core Optic Component (COC) and Beam Splitter  
 Optic Assemblies  
 D970064-B COC Carrier Shipping Compartment Assembly  
 D970065-B COC Carrier Shipping Compartment Details

#### 3.3.5.1 Large Core Optics Component Carrier Assembly

D961460-C Large Core Optic Component (COC) Carrier Assembly  
 D970006-B Material List - Large Core Optic Component (COC) Carrier Assembly

D961425-C Core Optic Component (COC) Carrier, Base Assembly  
 D961421-D Core Optic Component (COC) Carrier, Base Plate  
 D961422-A Core Optic Component (COC) Carrier, Base Pad  
 D961424-B Core Optic Component (COC) Carrier, Base Cover  
 D961451-A Core Optic Component (COC) Carrier, Handle Plate

D961434-B Large Core Optic Component (COC) Carrier, Standoff Assembly  
 D961423-A Core Optic Component (COC) Carrier, Side Pad  
 D961426-B Core Optic Component (COC) Carrier, Pressure Disc  
 D961432-A Large Core Optic Component (COC) Carrier, Standoff

D961444-B Large Core Optic Component (COC) Carrier, Hinged Standoff Assembly  
 D961423-A Core Optic Component (COC) Carrier, Side Pad  
 D961426-B Core Optic Component (COC) Carrier, Pressure Disc  
 D961440-A Large Core Optic Component (COC) Carrier, Standoff Bracket  
 D961442-A Large Core Optic Component (COC) Carrier, Hinged Standoff  
 D961473-A Core Optic Component (COC) Carrier, Standoff Clevis Pin

D961454-B Large Core Optic Component (COC) Carrier, Indexed Standoff Assembly  
 D961423-A Core Optic Component (COC) Carrier, Side Pad  
 D961426-B Core Optic Component (COC) Carrier, Pressure Disc  
 D961452-A Large Core Optic Component (COC) Carrier, Indexed Standoff

D961450-B Core Optic Component (COC) Carrier, Top Plate Assembly  
 D961449-C Core Optic Component (COC) Carrier, Top Plate  
 D961466-A Core Optic Component (COC) Carrier, Pad Guide  
 D970005-A Core Optic Component (COC) Carrier, Toggle Screw, Modified

D961418-A	Core Optic Component (COC) Carrier, Foot Assembly
D961469-B	Core Optic Component (COC) Carrier, Foot
D961470-A	Core Optic Component (COC) Carrier, Foot Pad
D961471-A	Core Optic Component (COC) Carrier, Captive Screw Bracket Assembly
D961431-A	Core Optic Component (COC) Carrier, Captive Screw
D961447-A	Core Optic Component (COC) Carrier, Captive Screw Bracket
D970001-A	Core Optic Component (COC) Carrier, Captive Screw Retaining Ring
D961472-A	Core Optic Component (COC) Carrier, Captive Screw Bracket Assembly, Locating
D961431-A	Core Optic Component (COC) Carrier, Captive Screw
D961448-A	Core Optic Component (COC) Carrier, Captive Screw Bracket, Locating
D970001-A	Core Optic Component (COC) Carrier, Captive Screw Retaining Ring
D961419-C	Core Optic Component (COC) Carrier, Cover Assembly
D961416-B	Core Optic Component (COC) Carrier, Carrier Cover
D970509-A	Core Optic Component (COC) Carrier, Valve Hole Plug, Inner
D970510-A	Core Optic Component (COC) Carrier, Valve Hole Plug, Outer
D970061-A	Core Optic Component (COC) Carrier, Seal Plate
D970004-B	Core Optic Component (COC) Carrier, Expansion Plug Installation Tool
D970168-B	Core Optic Component (COC) Carrier, Protective Sheet Assembly
D970167-B	Core Optic Component (COC) Carrier, Protective Sheet
D970166-B	Core Optic Component (COC) Carrier, Protective Sheet Bracket

### 3.3.5.2 Beam Splitter Optic Carrier Assembly

D961461-C	Beam Splitter Optic (BSO) Carrier Assembly
D970007-B	Material List - Beam Splitter Optic (BSO) Carrier Assembly
D961425-C	Core Optic Component (COC) Carrier, Base Assembly
D961421-D	Core Optic Component (COC) Carrier, Base Plate
D961422-A	Core Optic Component (COC) Carrier, Base Pad
D961424-B	Core Optic Component (COC) Carrier, Base Cover
D961451-A	Core Optic Component (COC) Carrier, Handle Plate
D961435-B	Beam Splitter Optic (BSO) Carrier, Standoff Assembly
D961423-A	Core Optic Component (COC) Carrier, Side Pad
D961426-B	Core Optic Component (COC) Carrier, Pressure Disc
D961433-A	Beam Splitter Optic (BSO) Carrier, Standoff
D961445-B	Beam Splitter Optic (BSO) Carrier, Hinged Standoff Assembly
D961423-A	Core Optic Component (COC) Carrier, Side Pad
D961426-B	Core Optic Component (COC) Carrier, Pressure Disc
D961440-A	Large Core Optic Component (COC) Carrier, Standoff Bracket
D961443-A	Beam Splitter Optic (BSO) Carrier, Hinged Standoff
D961473-A	Core Optic Component (COC) Carrier, Standoff Clevis Pin
D961455-B	Beam Splitter Optic (BSO) Carrier, Indexed Standoff Assembly
D961423-A	Core Optic Component (COC) Carrier, Side Pad
D961426-B	Core Optic Component (COC) Carrier, Pressure Disc
D961453-A	Beam Splitter Optic (BSO) Carrier, Indexed Standoff

D961450-B	Core Optic Component (COC) Carrier, Top Plate Assembly
D961418-A	Core Optic Component (COC) Carrier, Foot Assembly
D961469-B	Core Optic Component (COC) Carrier, Foot
D961470-A	Core Optic Component (COC) Carrier, Foot Pad
D961449-C	Core Optic Component (COC) Carrier, Top Plate
D961466-A	Core Optic Component (COC) Carrier, Pad Guide
D961471-A	Core Optic Component (COC) Carrier, Captive Screw Bracket Assembly
D961431-A	Core Optic Component (COC) Carrier, Captive Screw
D961447-A	Core Optic Component (COC) Carrier, Captive Screw Bracket
D970001-A	Core Optic Component (COC) Carrier, Captive Screw Retaining Ring
D961472-A	Core Optic Component (COC) Carrier, Captive Screw Bracket Assembly, Locating
D961431-A	Core Optic Component (COC) Carrier, Captive Screw
D961448-A	Core Optic Component (COC) Carrier, Captive Screw Bracket, Locating
D970001-A	Core Optic Component (COC) Carrier, Captive Screw Retaining Ring
D970005-A	Core Optic Component (COC) Carrier, Toggle Screw, Modified
D961419-C	Core Optic Component (COC) Carrier, Cover Assembly
D961416-B	Core Optic Component (COC) Carrier, Carrier Cover
D970509-A	Core Optic Component (COC) Carrier, Valve Hole Plug, Inner
D970510-A	Core Optic Component (COC) Carrier, Valve Hole Plug, Outer
D970061-A	Core Optic Component (COC) Carrier, Seal Plate
D970004-B	Core Optic Component (COC) Carrier, Expansion Plug Installation Tool
D970171-B	Beam Splitter Optic (BSO) Carrier, Protective Sheet Assembly
D970170-B	Beam Splitter Optic (BSO) Carrier, Protective Sheet
D970166-B	Core Optic Component (COC) Carrier, Protective Sheet Bracket

### 3.3.5.3 Metrology Interface Top Plate Assembly

D961468-B	Core Optic Component (COC) Carrier, Metrology Interface Top Plate Assembly
D961418-A	Core Optic Component (COC) Carrier, Foot Assembly
D961469-B	Core Optic Component (COC) Carrier, Foot
D961470-A	Core Optic Component (COC) Carrier, Foot Pad
D961466-A	Core Optic Component (COC) Carrier, Pad Guide
D961467-C	Core Optic Component (COC) Carrier, Metrology Interface Top Plate
D961471-A	Core Optic Component (COC) Carrier, Captive Screw Bracket Assembly
D961431-A	Core Optic Component (COC) Carrier, Captive Screw
D961447-A	Core Optic Component (COC) Carrier, Captive Screw Bracket
D970001-A	Core Optic Component (COC) Carrier, Captive Screw Retaining Ring
D961472-A	Core Optic Component (COC) Carrier, Captive Screw Bracket Assembly, Locating
D961431-A	Core Optic Component (COC) Carrier, Captive Screw
D961448-A	Core Optic Component (COC) Carrier, Captive Screw Bracket, Locating
D970001-A	Core Optic Component (COC) Carrier, Captive Screw Retaining Ring
D970005-A	Core Optic Component (COC) Carrier, Toggle Screw, Modified

## 3.4. Alignment and Length Sensing

### 3.4.1. Alignment Sensing/Control

T952007-04	Alignment Sensing/Control Design Requirements Document
T960134-00	Alignment Sensing/Control Conceptual Design
T970060-00	Alignment Sensing/Control Preliminary Design
T952013-00	Alignment Design Interfaces
T960103-00	ASC: Environmental Input to Alignment noise
T950049-00	ASC Centering Subsystem Description
T950069-00	Naming and Interface Definition for ASC Wavefront/Centering
T950073-00	Interferometer Requirement Flowdown To ASC
T950074-00	Naming and Interface Definition for ASC Initial Alignment
T970063-00	Response to Alignment Sensing and Control DRR2 Action Items
T970061-00	ASC CDS Design Requirements Document
T970062-00	ASC CDS Conceptual Design
T960138-00	ASC Channel Count

#### 3.4.1.1 Optical Lever

T950106-01	ASC Optical Lever Design Requirement Document
T950112-00	ASC Optical Lever Specification and Design Document
T950070-00	Naming Convention and Interface Definition for Optical Lever

#### 3.4.1.2 Wavefront Sensing

T960111-A	WAVEFRONT SENSOR
T960113-00	Modal Model Update 1: Interferometer Operators
T960114-B	Modal Model Update 2: GW-Sensitivity to Angular Misalignments
T960115-A	Modal Model Update 3: Small Angle Regime
T960116-00	Modal Model Update 4: Mode Mismatch
T960191-00	Modal Model Update 5 Large Angle Regime
T960118-00	Modal Model Update 6: Mode Cleaner
T970058-00	Modal Model Update 7 Angular Transfer Functions

### 3.4.2. Length Sensing/Control

T960058-03	Length Sensing and Control Design Requirements Document
T970138-00	LSC CDS Design Requirements
T970139-00	LSC CDS Conceptual Design
T970122-00	Length Sensing and Control Subsystem Preliminary Design
T952109-01	LIGO Length Sensing System: Design considerations for a tabletop prototype interferometer
T960067-00	Length Control RMS Deviations from Resonance
T960139-00	Shot noise sensitivity of the length control error signals
T970084-00	Frequency Response of the LIGO Interferometer
T970101-A	Strain Calibration in LIGO
G970192-00	Length Sensing and Control Subsystem Preliminary Design Review

### 3.5. Control and Data System

T950054-02	CDS Control and Monitoring Design Requirements Document
T950120-01	CDS Control and Monitoring Conceptual Design
T960009-00	LIGO Data Acquisition System Design Requirements
T960010-00	CDS Data Acquisition System Conceptual Design
T970136-00	CDS Data Acquisition Preliminary Design
T970115-00	(Infrared) Pre-stabilized Laser (PSL) Electronics Design Requirements
T970114-00	IR PSL CDS CONCEPTUAL DESIGN DOCUMENT
T960151-01	Large and Small Optics Suspension Electronics Design Requirements
T970113-00	Large and Small Optics Suspension Electronics Preliminary Design
G970219-00	LIGO LOS and SOS Electronics PDR
T970061-00	ASC CDS Design Requirements Document
T970062-00	ASC CDS Conceptual Design
T970138-00	LSC CDS Design Requirements
T970139-00	LSC CDS Conceptual Design
T970165-00	PEM Data Acquisition Preliminary Design
D970532-00	Hanford PEM Data Acquisition System Preliminary System Layout
T960107-00	LIGO Interferometer Diagnostics System Design Requirements
T960108-00	Interferometer Diagnostics Conceptual Design
T960024-A	Vacuum Control and Monitoring System (VCMS) Design Requirements
T960037-00	Vacuum Control and Monitoring System (VCMS) Design
T970001-00	Vacuum Control and Monitoring System (VCMS) Final Design
T960014-00	Vacuum Feedthrough and Cabling Conceptual Design
T960177-00	LIGO Cable Numbering and Marking Standard
T970076-00	LIGO CDS VME Mainframe Specification
T960083-A	Derivation of CDS Rack Acoustic Noise Specifications

### 3.6. Physical Environment Monitor

T960127-02	Physical Environmental Monitor Design Requirements Document
T960145-00	Physical Environmental Monitor Conceptual Design
T970086-00	Physical Environmental Monitor Preliminary Design Document
G970026-00	Physics Environment Monitoring Preliminary Design Review
L970028-00	DESIGN REQUIREMENTS REVIEW Physics Environment Monitoring (PEM) Action Item Responses
M970137-01	PRELIMINARY DESIGN REVIEW Physics Environment Monitoring (PEM)

D970532-00 Hanford PEM Data Acquisition System Preliminary System Layout  
 T970165-00 PEM Data Acquisition Preliminary Design

## 4 R&D DOCUMENTATION

D961304-06 OPTICAL LAYOUT - 40m RECYCLING

G960172-00 THE FMI ALIGNMENT EFFORT  
 G970152-01 LIGO@ MIT: Transition to Operations and Advanced Detector R& D

M960114-00 Statement of Work: Replacement of Vertex Masses at 40m  
 M960115-00 Statement of Work: Installation of Side Chamber and Reconfiguration of Associated Optics at the 40m  
 M970013-02 A Proposal for the First Experiment for Validation of the 40m End-to-End Model

T950035-01 Measurement of the Ground Drift at the 40-m Lab  
 T950137-00 Description of the Electronics for the FMI Wavefront Experiment  
 T960013-02 Calculation of the Modulation Frequency for the 40m Power Recycling Interferometer  
 T960015-03 Calculation of Optical Parameters for the 40m Power Recycling Interferometer  
 T960072-00 Beam Splitter and Recycling Mirror Suspension Controller Design Requirements  
 T960073-00 40 Meter Recycling Electronics Design Requirements  
 T960162-02 Specifications of the 40m Test Mass Suspension Prototype  
 T960186-00 Procedure for Attaching the Fins and Hanging the PNI Mirrors  
 T970085-02 Correlation Function and Power Spectrum of Non-Stationary Shot Noise  
 T970090-00 Proposal for a table-top prototype resonant sideband extraction interferometer  
 T970099-00 Statement of Work: Change of Modulation Frequency at the 40m  
 T970102-00 40 Meter BS and RCM Suspension Controller Test Plan  
 T970103-00 BS and RCM Suspension Electronics Operator's Manual

# LIGO CONFIGURATION DOCUMENTATION



