This document covers the technical content for acceptance review of an Advanced LIGO (aLIGO) System. See document [M1300468](https://dcc.ligo.org/LIGO-M1300468) for an overview of the aLIGO acceptance process.

# aLIGO System Definition

*The scope of this aLIGO System Acceptance Review is an entire interferometer detector system at a LIGO observatory. All of the documentation cited in this acceptance document must be filed electronically in the LIGO Document Control Center (DCC) and linked in a document tree accessible from the root node entered below.*

|  |  |
| --- | --- |
| **Interferometer** [*L1 or H1*]: |  |
| **DCC document tree root node:** |  |

# System Design

*If there are any caveats or explanatory notes regarding the documentation cited in the table below, then add these notes to the table entries.*

|  |  |
| --- | --- |
| **Requirements:**  *[enter a linked list of DCC documents addressing performance and generic requirements]* |  |
| **System Description:**  *[enter a linked list of DCC documents which provide a description of the system]* |  |
| **Reliability/Availability:** *[enter a linked list of DCC documents which address system reliability/availability, including a System FMECA, an availability model and an operational spares plan]* |  |

# System Layouts/Drawings

*Enter hyperlinked DCC document number(s) for each drawing in the table below. If elements of the table are not applicable, enter “not applicable”. All chamber-level, assembly drawings can be found listed at* [*E1200562*](https://dcc.ligo.org/LIGO-E1200562) *and found linked under* [*D0901491*](https://dcc.ligo.org/LIGO-D0901491)*.*

|  |  |
| --- | --- |
| **Optical Layout:**  *[enter a linked list of DCC documents addressing the optical layout]* |  |
| **Coordinate Systems:**  *[enter a linked list of DCC documents defining the coordinate systems employed]* |  |
| **Opto-Mechanical Layouts:**  *[enter a linked list of DCC top-assembly drawings for each building and chamber.  N.B.: Chamber top-assembly drawings are reviewed in the installation acceptance reviews]* | |
| **Building** | **Next Level** (Chambers, Rooms, Enclosures, Rooms) |
| Corner Station: |  |
| X-End Station: |  |
| Y-End Station: |  |

# Contamination Control

|  |  |
| --- | --- |
| **General Contamination Documents:**  *[general requirements and procedures]* |  |
| **Hydrocarbon Contamination:**  *[documents specific to hydrocarbon contamination including qualification tests for UHV compatible materials and an estimate of the residual gas load in the system]* |  |
| **Particulate Contamination:**  *[documents specific to particulate contamination including cleaning procedures, sampling/measurement techniques and an assessment of the surface particulate contamination level in the system]* |  |

# Configuration Control

|  |  |
| --- | --- |
| **Configuration Control System:**  *[list of documents describing the configuration control system, policies and guides]* |  |
| **Interfaces:**  *[collect a list of all interface definition]* |  |
| **Records of Decisions & Agreements (RODAs):**  *[collect a list of all RODAs]* |  |
| **Technical Review Board (TRB) Reports:**  *[collect a list of all RODAs issued during the project]* |  |
| **Engineering Change Requests (ECRs):**  *[collect a list of all approved and completed ECRs issued during the project]* |  |
| **Document Change Notices (DCNs):**  *[collect a list of all DCNs issued during the project]* |  |

# System Performance Models

|  |  |
| --- | --- |
| **GWINC:**  *[]* |  |
| **Noise Budget:**  *[]* |  |
| **SIS:**  *[]* |  |

# Supervisory Control & Monitoring

|  |  |
| --- | --- |
| **Interferometer Automation System (Guardian):**  *[]* |  |
| **Operation Manual(s)/Guide(s):**  *[]* |  |
| **Channel List:**  *[]* |  |
| **Control Room Tools/System:**  *[]* |  |
| **Remote Access:**  *[]* |  |

# Integrated System Testing

*Note: All post-installation, stand-alone, in situ, checkout/testing of subsystem assemblies (phases 2 and 3 per* [*M1000211*](https://dcc.ligo.org/LIGO-M1000211)*) must be completed, be successful and be documented and reviewed as part of the installation reviews:*

* *phase 2: pre-installed, post-storage, test results for the assembly (testable item)*
* *phase 3: stand-alone, in situ test results for the assembly (testable item)*

*The integrated testing (phase 4 testing per* [*M1000211*](https://dcc.ligo.org/LIGO-M1000211)*) is covered under this system acceptance review. For each of the integrated tests listed in the table below, a list of documents covering test plans/procedures and a test report are required.*

|  |  |
| --- | --- |
| **Input Mode Cleaner (IMC) Testing:**  *[]* |  |
| **Half Interferometer (HIFO) Testing:**  *[]* |  |
| **Dual Recycled Michelson Interferometer (DRMI) Testing:**  *[]* |  |
| **Full Interferometer Testing:**  *[]* |  |

# Unresolved Installation/Integration Issues and ECRs

*If/as applicable, provide a hyperlinked list of integration issues and pending or incomplete Engineering Change Requests (ECRs) which are still unresolved. See* [*M1300323*](https://dcc.ligo.org/LIGO-M1300323) *for a description of the Integration Issue and ECR Tracker.*

|  |  |
| --- | --- |
| Tracker # *[hyperlinked]* | Title/description |
|  |  |
|  |  |

# Acceptance Completeness Review

*This System Acceptance review is also a meta-review of all of the preceding Subsystem Fabrication Acceptance Reviews and all of the Installation Instance Acceptance Reviews. Consequently a check that all of the reviews have been completed and that all of the “punch list items” (action items) have been addressed is necessary. Update the two acceptance tracking documents noted below and indicate the state of completeness in the table below.*

|  |  |
| --- | --- |
| **Subsystem Fabrication & Installation Acceptance Reviews** | **State of Completeness** |
| aLIGO Fabrication Acceptance Review Tracking ([G1300115](https://dcc.ligo.org/G1300115)) |  |
| aLIGO Installation Acceptance Reviews Tracking ([G1301153](https://dcc.ligo.org/G1301153)) |  |