ALIGO INSTALLATION INSTANCE ACCEPTANCE DOCUMENT

Title: aLIGO Installation Acceptance Document for WHAM5

This document covers the technical content for acceptance review of a subset of the Advanced LIGO (aLIGO) installation. See document M1300468 for an overview of the aLIGO acceptance process. Acceptance by Systems Engineering is to be indicated in the metadata for this document in the LIGO Document Control Center (DCC).

1 Installation Instance/Subset Definition

Insert a brief description of the subset of the aLIGO equipment which is covered under this installation acceptance document. Complete the entries in the following table. If elements of the table are not applicable, enter "not applicable".

This installation covers the HAM chamber WHAM5 and all of the equipment within and attached plus associated electronics racks.

Interferometer [*L1 or H1*]:	**H1**
Building(s)/**Room**(s): [*e.g. corner/LVEA*]	**LVEA**
Vacuum Chamber(s):	**WHAM5**
Electronics Rack Designation(s):	H1-SEI-C3, H1-SUS-C7, H1-SUS-C8, H1-SUS-R4 Note that the Capacitive Position Sensor readout boxes which sit on the cable trays do not have an official designation.
Optics Table(s)/Enclosure(s) Designation(s), and other equipment/assemblies related to this installation:	STS-2 Ground Seismometer.

2 Procedures

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

Baseline or initial Installation Procedure(s): *[enter linked DCC document #(s); found under E1200023]*	E1300205-v0 was the procedure enacted: V0, as there is no LHO-specific doc. Instead the LLO one is referred to, and E1300205-V0 has LHO-specific notes.
As-Built/Installed Procedure(s), either: a) Enter hyperlinked DCC number for revised or red-lined baseline install procedure, and/or b) Enter hyperlinked DCC number for separate document with installation notes on deviations, changes in procedure, changes in tooling, etc., and/or	No as-built notes were recorded in document. Installation of the WHAM5 ISI is described in LHO alog #3847. The installation of SR3 occurred on 7th May 2014 LHO elog #11754. The SRM was installed on 14th May 2014 as recorded here LHO alog 11901. The

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c) Enter a list of hyperlinked electronic log entries detailing the experience in applying the baseline installation procedure	OFI was installed 21 May 2014, alog #12011.
Baseline or initial Alignment Procedure(s): *[enter linked DCC document #(s); found under E1100734]*	E1200954-v3 was the initial procedure
As-Built/Aligned Procedure(s), either: a) Enter hyperlinked DCC number for revised or red-lined baseline alignment procedure, and/or b) Enter hyperlinked DCC number for separate document with alignment notes on deviations, changes in procedure, changes in tooling, etc., and/or c) Enter a list of hyperlinked electronic log entries detailing the experience in applying the baseline alignment procedure	E1200954-v4 is the as-built alignment procedure, with embedded notes. N.b. E1200954 indicates WHAM5 error in position; this is accounted for, see LHO alog #11436. SR3 alignment: LHO alog #11862. SRM and OFI summary of alignment, including links: LHO alog #12735 SRM IAS alignment: LHO alog #11992

3 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 and found linked under D0901491.

Applicable Building/Room Top-Level Drawing(s):	D0901469 aLIGO Systems Layout LHO Corner Station
Top-Level Chamber Assembly Drawing(s):	D0901129-v7 aLIGO Systems, WHAM5-H1 Top Level Chamber Assembly
Electronics Rack Drawing(s):	All drawings for the racks can be found by navigating through the links given in Section 1 and in the rack and cable tray layout drawing.
Optics Table/Enclosure Drawing(s):	None.
ITM Optical Lever Drawing(s):	LIGO-G1000740 Floor Occupancy, Optical Levers, LHO Corner Station.

4 Serial Number Records

Serial numbers are used to track a subset of the parts, particularly active elements (see M1000051) and electronics (with S-numbered documents; see T0900520). Enter the hyperlinked DCC document number(s), and name(s) for the highest level assembly(ies) covered by this installation acceptance document in the table below. Also enter the hyperlink to the ICS entry for the instance of this assembly in the Inventory Control System (ICS). If elements of the table are not applicable, enter "not applicable". If elements of the table are not available/missing, then enter "not available".

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Assembly DCC D-Number	Assembly Name	ICS entry
D0901129	aLIGO Systems, WHAM5-H1 Top Level Chamber Assembly	ICS entry click here: D0901129
D1000513	HEPI	Has some entries in above ICS record.

5 Testing

All post-installation, stand-alone, in situ, checkout/testing (phases 2 and 3 per M1000211) must be completed, be successful and be documented:

- *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)*

Note that integrated testing (phase 4 testing per M1000211) is covered under the system acceptance review, not this installation acceptance review. In the table below, enter hyperlinked DCC document number(s) for all of the relevant testing for the major subassemblies/subsystems covered within this installation instance/subset. If elements of the table are not applicable, enter "not applicable". If elements of the table are not available/missing, then enter "not available".

Subsystem	Testable Item	DCC document numbers	
		Phase 2	Phase 3
SEI	HAM-ISI	E1200509	
SEI	HEPI	N/A	N/A
SUS	SR3 and SRM Suspension	E1400161 and E1400123 (under *Test Results*)	
AOS/SLC/ Viewports	Leak and pressure testing.	E1300447. Leak and pressure testing was completed, refer to above link. All viewports were tagged at time of inspection and testing.	Visual inspection in-situ not completed, refer to bug list.
AOS/OFI	OFI Impulse Hammer Modal Testing	N/R	LHO alog #12175
AOS/TCS/ Temp Sensor	No testing required.	N/R	N/R

6 Installation Completeness

If/as applicable, provide a hyperlink reference to a list of remaining tasks to be completed before the installation is finished (i.e. a 'punch' list).

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Installation tasks remaining to be completed:	**All items are installed.**

7 Installation/Integration Issues and ECRs

If/as applicable, provide a hyperlinked list of integration issues and Engineering Change Requests (ECRs) encountered during installation and which are relevant to the installation subset/instance covered by this acceptance document. See M1300323 for a description of the Integration Issue and ECR Tracker.

The format of the url for the bug tracker is as follows e.g.

https://services.ligo-wa.caltech.edu/integrationissues/show_bug.cgi?id=826

bug_id*	***priority***	***bug_status***	***resolution***	***short_desc***
981	*High*	*Accepted*	*WhenVent*	*WHAM5 Issue Tracker*