

Title: aLIGO Installation Acceptance Document for WBSC2

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 BSC chamber LBSC2 and all of the equipment within and attached plus associated electronics racks.

Interferometer [<i>L1 or H1</i>]:	H1
Building(s)/Room(s) : [<i>e.g. corner/LVEA</i>]	LVEA
Vacuum Chamber(s) :	LBSC2
Electronics Rack Designation(s) :	H1-SEI-C5 , H1-SUS-C5 , H1-SUS-C6 , H1-SUS-R2
Optics Table(s)/Enclosure(s) Designation(s) :	Not applicable

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) : <i>[enter linked DCC document #(s); found under E1200023]</i>	E1200971-v1 was the initial procedure
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 c) Enter a list of hyperlinked electronic log entries detailing the experience in applying the baseline installation procedure	E1200971-v3 is revised version with updates based on as-built experience. The cartridge installation was carried out on 6 March 2013, recorded in LHO elog 5689 . Weight info is also included in that elog. The BS elliptical baffles installation was recorded in LHO elog 5875 .
Baseline or initial Alignment Procedure(s) : <i>[enter linked DCC document #(s); found under E1100734]</i>	E1200795-v1 was the initial procedure. E1200971-v2 has an associated JPG file from B. Bland containing installation notes. E1200971-V3 has updates from SYS,



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	perhaps incorporating B. Bland notes.
<p>As-Built/Aligned Procedure(s), either:</p> <p>a) Enter hyperlinked DCC number for revised or red-lined baseline alignment procedure, and/or</p> <p>b) Enter hyperlinked DCC number for separate document with alignment notes on deviations, changes in procedure, changes in tooling, etc., and/or</p> <p>c) Enter a list of hyperlinked electronic log entries detailing the experience in applying the baseline alignment procedure</p>	<p>E1200795-v6 is the as-built alignment procedure, including data.</p> <p>The LBSC2 cartridge alignment was recorded in LHO elog 5380. The BS elliptical baffles alignment was recorded in the same elog.</p>

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):	D0901142 aLIGO Systems, BSC2-H1 Top Level Chamber Assembly
Electronics Rack Drawing(s):	<p>D0901301 BSC SEI System Wiring Schematic</p> <p>D1100022 aLIGO SUS ITM and BS System Wiring Diagrams</p> <p>Also links in Section 1.</p>
Optics Table/Enclosure Drawing(s):	Not applicable since BSC2 has no associated tables.

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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”.

Assembly DCC D-Number	Assembly Name	ICS entry
D0901142	aLIGO Systems, BSC2-H1 Top Level Chamber Assembly	D0901142 ICS entry
	Viewports	T1200235
D0901301	Rack H1-SEI-C5	S1301866
D1100022	Rack H1-SUS-C5	S1301872
D1100022	Rack H1-SUS-C6	S1301873
D1100022	Rack H1-SUS-R2	S1301887

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	BSC-ISI	BSC-ISI Unit#3 in E1100990 Test results in E1100847	
SEI	HEPI	N/A	E1300839
SUS	BS Suspension (under Test Results)	E1300712 (DCC doc points to phase 3 results in	



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Subsystem	Testable Item	DCC document numbers	
		Phase 2	Phase 3
		general. Phase 2 are on SVN)	
Viewports	Leak and pressure testing.	E1300447 gives ICS link for viewport testing	
AOS/OptLev	BS OptLev		T1300563

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).

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

Tracker # [hyperlinked]	Title/description
#989	WBSC2 Issue tracker