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Refer to: LIGO-L1400082-v2

From: Michael Landry  
To: David Shoemaker; Installation Acceptance Review Team (J. Giaime, M. Levine, V. Sandberg, C. Torrie)  
CC: D. Coyne, B. O'Reilly, F. Raab

## Re: LLO Installation Acceptance Review Report

The LLO Installation Acceptance Review Committee met on three occasions by teleconference to consider acceptance materials and status. The review was guided by the charge (<https://dcc.ligo.org/LIGO-L1400017>), with particular emphasis on the formulation of punchlist items for remaining work. Here we recommend that the LLO installation be formally accepted, with the provisos that i) punchlist items be addressed, and ii) the aLIGO Project assign staff and monitor progress and completion of those items.

The review team would like to thank Calum Torrie, Brian O'Reilly and Dennis Coyne for their hard work and timely efforts in preparing documents and responding to queries and input. We congratulate LLO and aLIGO staff on a successful installation.

### Details and findings of the review:

- 1) The committee read 'instance' (chamber, PSL, VE, DAQ) documents collected at <https://dcc.ligo.org/LIGO-E1400153> and provided written feedback to Torrie/Coyne/O'Reilly. Discussions on these issues were held at the review meetings and the resulting actions were captured in the punchlist <https://dcc.ligo.org/LIGO-E1400152>. The punchlist contains an enumerated list of prioritized items for completion. Also included in the punchlist XLS file are minor items (typically documentation fixes), under separate tabs, to also be completed at a lower priority. There is some overlap with punchlist items and the aLIGO integration issue and ECR tracker (<https://services.ligo-wa.caltech.edu/integrationissues/>) however these are typically noted in the punchlist.
- 2) The review team found the integration plan (<https://dcc.ligo.org/LIGO-T1200437>) mostly complete. We recommend that the Project flesh out what phase-3 tests are to be done (or to be documented) that were not part of the installation acceptance review. One way that this might be done is to revise [M1000211](#) (and the documents referred to therein) to include these specifics. An example is that single-tank SEI closed-loop performance, a phase-3 task, appears to fall in a missing scope between the current review material and the work planned in [T1200437](#). Furthermore, we encourage communication between integration teams at

- the observatories, in order to minimize the time to replicate commissioning efforts at one site or another. This includes good documentation practice such as red-lining/modifying drawings, SVN of code, robust logs, etc.
- 3) Software was not reviewed in any substantive fashion. However, subsystem software presently in use appears to function to support use of the installed equipment, e.g. cavities lock, suspensions and seismic platforms are controlled, etc. Software will be reviewed comprehensively as part of the Systems Review phase.
  - 4) In considering Operations readiness to assume responsibility of equipment repair and software updates, no objections were raised. Furthermore, significant confidence was expressed in the coordination capabilities of integration/operations and non-Project staff, regarding detector tuning.