

## **Current Status of LAPD Cryogenic Safety Documentation for Run 2 Version 8.20.12**

In general, modifications of existing documents use **yellow highlighted** text to note changes within the document text. Spreadsheets such as the component list use **red text** to note new items. Notes requiring new signatures are labeled as such.

- [1.1 System equipment and operation description, UPDATED, 6-12-12 rev](#)  
(1.1\_LAPD\_system\_description\_2nd\_run.pdf, 107.7 kB)

The description has been updated for run 2 and is ready for review.

- [1.2 Flowsheets, 6-26-12 rev, approved](#) (444897\_working.pdf, 1.1 MB)

The flow sheets have been updated for run 2 and are ready for review. The current revision will be signed off after any errors the panel finds are corrected.

- [1.3 Component list, 6-25-12 rev, UPDATED](#)  
(lapd\_valve\_and\_instrument\_list\_rev\_27\_plus\_LBNE\_35T.pdf, 235.6 kB)

The component list has been updated for run 2 is ready for review.

- ~~[1.4a Control loop and interlock description, rev 8-15-11, approved](#) (LAPD Interlock and control description v2.pdf, 97.2 kB)~~

This document is obsolete and was deleted.

- [1.4b PLC interlock documentation \(.xlsx file\), 8-20-11 rev, approved](#) (LAPD PC4 Interlock Logic.xlsx, 362.7 kB)

This document has been updated for run 2 and is ready for review.

- [2.1a System procedures, 9-9-11 rev, approved](#)  
(combined\_procedures\_and\_schematics\_v\_\_9\_9\_11.pdf, 11.1 MB)

The procedures will be updated for run 2. They are not yet updated.

- [2.1b Commissioning plan, 4-20-11 rev, approved](#) (commish\_plan.pdf, 49.8 kB)

The commissioning plan has not been updated nor is an update planned.

- [2.1c Emergency procedures, 9-6-11 rev, approved](#) (LAPD Emergency Procedures.pdf, 1.9 MB)

The emergency procedures have not been updated nor is an update planned.

- [2.3 System expert list, 9-6-11 rev, approved](#) (expert\_list.pdf, 497.9 kB)

The system expert list has not been updated nor is an update planned.

- [3.1 FMEA – 6.25.12 rev, UPDATED](#) (FMEA\_rev\_27.pdf, 435.4 kB)

The FMEA has been updated to reflect the P&ID changes. The FMEA is ready for review.

- [3.2 What-If Analysis, 7-8-11 rev, approved](#) (what\_if\_5032TA\_Form\_v1.pdf, 53.3 kB)

The What-If Analysis has not been updated nor is an update planned.

- [3.5a PC4 Enclosure ODH analysis, 7-26-11 rev, approved](#) (LAPD ODH analysis rev 110726-1.pdf, 2.8 MB)

This ODH analysis has not been updated and the project feels that it is valid for Run 2. If the updated ODH given to the panel June 14 2012 that suggests that PC4 is ODH 0 with both LAPD and LAR35 in operation is accepted before LAPD run 2 and its measures can be implemented in time then the project would like that ODH analysis to supersede this analysis.

- [3.5b PC4 Gas Shed ODH Analysis, 9-8-11 rev, approved](#) (Gas Shed ODH assessment report 110908c.pdf, 305.6 kB)

The gas shed ODH analysis has not been updated nor is an update planned.

- [3.5c ODH system check out, 3-5-12 rev, posted to document ODH system test after power outage](#) (ODH\_system\_check\_out\_2.pdf, 238.0 kB)
- [3.5c ODH system check out, 7-26-11 rev, posted to document ODH system test](#) (ODH\_system\_check\_out.pdf, 246.0 kB)
- [3.5d PC3 upstream ODH barrier and fan with streamers, 7-27-11 rev, posted to document ODH barrier installation](#) (IMG\_0149.JPG, 1.7 MB)

Prior to the 2<sup>nd</sup> LAPD run the ODH system will again be checked out and the PC3 fan operation verified.

- [3.5e Condenser PV note, UPDATED, amended, 6-18-12 rev, pages 6-8 new](#) (condenser\_note\_amendment\_1\_run2.pdf, 10.0 MB)

The condenser pressure vessel note has been amended to note the installation of the coil restraints. The pressure retaining features and relief valve sizing are unchanged. This amendment is ready for review. *Signature required.*

- [3.5f Phase Separator PV note, 3-4-11 rev, approved](#) (phase\_sep\_note\_signed1.pdf.pdf, 3.2 MB)

The phase separator pressure vessel note has not been updated nor is an update planned.

- [3.5g Tank engr note, 9-2-11 rev, approved](#)  
(LAPD\_tank\_pressure\_vessel\_note\_v\_9\_2\_11\_div\_signed.pdf, 24.0 MB)

The LAPD tank engineering note has not been updated. However the new center flange details are described in entry 3.5k.

- [3.5h Molecular sieve and oxygen filter PV notes, UPDATED, 6-18-12 rev](#)  
(filter\_vessel\_pressure\_vessel\_note\_v4\_run2.pdf, 24.0 MB)

The molecular sieve pressure vessel note has been amended to note the installation of screens and slotted plates to replace the sintered metal discs for filter material containment. The oxygen filter was replaced by the spare filter vessel which has not previously been in service. Thus a new pressure vessel engineering note was made for the oxygen filter which is identical to the original oxygen filter note except for noting the repairs. The repairs do not change the pressure retaining features or relief valve sizing that was previously approved. The molecular sieve has not yet returned from the repair shop, when it does return a picture of the repair stamp and the repair report will be added to the note. The amendment and new note are ready for initial review. *Signatures required.*

- [3.5i LN2 supply and LAr supply piping engr note, 6-25-12 rev, UPDATED](#)  
(LN2\_piping\_engineering\_note\_combined\_v4\_run2.pdf, 28.3 MB)

The piping note is amended to note the LN2 tie in for the LBNE 35T. Fabrication is not yet finished however the note is ready for initial review and a *signature is required*. Before and after pictures of the new piping will be provided after fabrication.

- [3.5j Argon purification piping engineering note, 6-25-12 rev, UPDATED](#)  
(LAr\_piping\_note\_v17\_run2.pdf, 61.9 MB)

The piping note is amended to note the addition of LBNE 35T tie ins and other changes. Fabrication is not yet finished however the note is ready for initial review and a *signature is required*.

- [3.5k Run 2 tank center flange for Long Bo TPC, 7-3-12, NEW](#)  
(Tank\_center\_flange\_for\_run\_2\_with\_long\_bo.pdf, 1.7 MB)

This document describes the new tank center flange that will be installed for LAPD run 2 to support the Long Bo TPC. The final flange drawing is now included and ready for review.

- [Reference - Cryogenic safety review recommendations to Division Head \(Run 1\)](#)  
(LAPD\_recommendation\_letter\_110912\_1.pdf, 60.7 kB)

This document is retained for reference.

- [Reference - LAPD PPD ORC Signed \(Run 1\)](#) (LAPD\_ORC\_signed.pdf, 755.7 kB)

This document is retained for reference.

- [Reference - LAPD controls overview for PPD electrical ORC, rev 5-9-11, approved](#) (controls\_overview.pdf, 221.2 kB)

This document is retained for reference.

- [Reference - PC4 building drawings](#) (PC4 building drawings.pdf, 2.2 MB)

This document is retained for reference.

- [Reference - PC4 hazard map, UPDATED, 6.18.12 rev](#) (PC4\_hazards.pdf, 985.4 kB)

The hazard map has been updated to note the location of the 35T cryostat. When the 35T has cryogenic hazards the map will again be updated.

- [Reference - Piping failure rate source](#) (piping failure rates w ref info.pdf, 767.7 kB)

This document is retained for reference.

- [Reference - Pressure vessel failure rate sources](#) (pres ves failure rate data w ref info.pdf, 917.9 kB)

This document is retained for reference.

[Reference - Status and response to issues raised during the 8.26.11 safety panel walk thru, 9.6.11 rev, tasks were completed](#) (walk\_thru\_correspondence.pdf, 534.8 kB)

This document is retained for reference.