

**LIGO** PROJECTCALIFORNIA INSTITUTE OF TECHNOLOGY  
PASADENA, CALIFORNIA 91125

## FACSIMILE COVER SHEET

LIGO FAX (818) 304-9834

TELEPHONE CONFIRMATION (818) 395-2966

TO Marty Tellalian  
CBITSCDATE  
FAX NUMBER  
OFFICE NUMBER

October 25, 1994

NUMBER OF PAGES (including this cover sheet): 2

FROM Larry K. Jones  
California Institute of Technology  
102-33 Bridge Laboratory  
Pasadena, CA 91125

OFFICE NUMBER (818) 395-2970

Attached is a marked-up e-mail from Rai outlining your conversation with him earlier this morning, with a few suggested corrections. Please review and let me know if you agree.

From weiss@tristan.mit.edu Tue Oct 25 07:20:48 1994  
 To: gerry@ligo.caltech.edu, ljones@ligo.caltech.edu  
 Subject: talk with Marty this morning

file:rwljones102594.txt  
 to: Larry Jones  
 from: R. Weiss October 25, 1994  
 concerning: Beamtube cleaning

Larry,

I talked with Marty this morning about the steps in the beam tube cleaning. The order of events we agreed on are:

1) Find out if the 8 ft sections that have been sitting outside in Chicago have the weeper sources either on inside or the outside.

2) If they are contaminated either inside or outside, use a 5% mixture of Mirachem and water in the steam Jenny with coverage times and pressures the same as the original steel cleaning. *INCREASED FOR PROPER WAND ROTATION*

*(CLEAN ONLY ONE 8' SECTION, SAVING THE SECOND.)*

3) Check if the weepers have been removed by step 2) using black light and isopropyl.

4) Follow with a steam cleaning (flush step) without Mirachem.

5) Check again with blacklight and isopropyl. If technique passes then go on to both QT tubes and clean with Mirachem 5% at 6" per minute and follow with pure steam at 12" per minute.

*CATCH EFFLUENT W/ FILTER PAPER*

Note: the mixture of Mirachem to water used by Chuck Sherlock in the coupon tests was 1/3 (30%), both the Mirachem manufacturer and I consider this concentration too high.

Alternate paths:

If the 8 foot sections do not have weepers, they have the cut off sections about 3 ft long from each end of the QT beam tubes. They will go with them next.

If these sections have poor statistics, Marty suggests using the outside of the QT tubes themselves. I told him that before he did this he should talk with you.

Finally:

If the Mirachem followed by steam does not work, they will commit to the isopropyl cleaning with the purge dam and covers over the trial tube section ends to cut down the fumes. They have an explosion hazard air sensor. The steps would be

1) Use the 8 ft section to begin with: steam clean as before.

2) Mount the dams and put in isopropyl. Roll the tubes first 180 degrees in one direction then 180 degrees in the other and remove the isopropyl.

3) Reinsert the dams and flush with a second isopropyl rinse.

4) Measure for weepers.

5) If successful, then go ahead with isopropyl on the already steam cleaned QT tube *(AFTER IT'S BEEN RECLEANED WITH STEAM & ROTATING WAND)*

6) Check for weepers

7) Steam clean the second QT tube

8) Collect stuff on the filter paper for analysis

9) Mount the purge dams and first isopropyl cleaning

10) empty

11) Rinse with second isopropyl

12) Check for weepers