LASER INTERFEROMETER GRAVITATIONAL-WAVE OBSERVATORY

ADVANCED LIGO PARTICULATE SPECIMEN RECORD

Instructions:

1) If not already familiar with sample collection procedures, read the following before proceeding:
    - LIGO-E1201096: Contamination Sample Handling – How to receive, use, send, and store samples
    - LIGO-T1300014: Aligo, BSC Flooring + HAM ISI, Witness Sample Placement Guidelines
2) If needed, obtain a particulate sampling kit from Calum Torrie or purchase the supplies outlined in E1201096. It is helpful to have a variety of Class B tweezers and picks on hand for in-vacuum collection.
3) Reserve a new document number (T-type) from the LIGO Document Control Center. Each sample must have a unique DCC number.
4) Add the DCC number to the list of related documents for one of the three groupings listed below. This is done by changing the metadata. Do not create a new revision.
    - LIGO-T1300196: Grouping of 4” Wafer Specimens
    - LIGO-T1300197: Grouping of 1” Optic Specimens
    - LIGO-T1300198: Grouping of “FBI” Carbon Adhesive Tab Specimens
5) Complete this form for **ALL** specimens, regardless of the collection method. Provide as much information as possible. There should be one record per specimen. Do not include data for multiple specimens in one record.
6) File the completed form on the DCC under the reserved number as v1.
7) Ship a printed copy of the completed form(s) with the particulate samples(s) to Calum Torrie at Caltech.
8) Send Calum Torrie an e-mail notification when a particulate sample package is in route. Include the relevant DCC numbers, and indicate whether or not testing results are urgent.
9) Analysis of the collected samples will be posted as v2 for each DCC record.

To avoid destroying samples and/or harming the person opening the packages, please ensure the samples are properly packaged per LIGO-E1201096.

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Only one sample per record

DCC number: (e.g. LIGO-T13xxxxx-v1)	T1700533-v1
Date collected:	November 2, 2017
Collected by:	Chandra Romel
E-mail address:	chandra.romel@ligo.org
Phone number:	509-372-8123
Site:	☒ Hanford ☐ Livingston
Collection method:	☐ 1" Optics ☒ Carbon Tabs (FBI Kit) ☐ Silicon Wafers
Specimen location:	XBM near cryo-baffle on in-vacuum SS tube surface
Particulate material: *(Best guess)*	Unknown: hard dark brown/black color - maybe a lubricant/grease. Flaked off by chipping at it with sharp metal edges.
History: *(Length of time in chamber, purges, etc.)*	First time noticing; unknown how long contamination has been there. Guessing since installation of tube. Chandra noticed last year XBM vacuum pressure was higher than YBM when isolated and assumed an ion pump was failing or there was an air leak (no leaks found after He leak checking). Perhaps it was actually due to outgassing from this contamination (https://alog.ligo-wa.caltech.edu/aLOG/index.php?callRep=36095 & https://alog.ligo-wa.caltech.edu/aLOG/index.php?callRep=36104).
Notes:	Betsy Weaver first noticed the contamination on the in-vacuum ceiling of XBM near the cryo-baffle. Chandra Romel and Travis Sadecki entered chamber to inspect and clean. Chandra scraped the spots with a small flat head screw driver and collected on Al foil and dry wipers and it fell. Surfaces (top and bottom) were then wiped with IPA wipes until they wiped clean. As we were leaving, Travis noticed the side wall splattered with these same types of spots. The next day Chandra and Rakesh entered the chamber to clean and collect samples. We used small flat head screw drivers and pointed scraper tools to scrape away as much as possible while collecting onto wipers. We wiped all surfaces with IPA wipers while minimizing shedding of wipers (beam tube surface is quite rough). Chandra collected some flakes on dry wipers to be transferred to FBI adhesive kits. Calum Torrie mailed four viles. Chandra filled two with sample flakes and mailed back to CIT in preparation for FTIR analysis by JPL.
Photographs: *(Before, during, and after)*	see aLOGs: https://alog.ligo-wa.caltech.edu/aLOG/index.php?callRep=39270 https://alog.ligo-wa.caltech.edu/aLOG/index.php?callRep=39208