

CALIFORNIA INSTITUTE OF TECHNOLOGY
Laser Interferometer Gravitational Wave Observatory (LIGO) Project

To/Mail Code: J. B. Camp/51-33
From/Mail Code: A. Abramovici/51-33 *AA*
Phone/FAX: 395-4895/304-9834
Refer to: LIGO-T95043-01-R
Date: September 13, 1995

Subject: New entries for the "Approved Materials List."

In order to support design activities related to integrating the 12 m mode cleaner with the 40 m interferometer, I suggest that the following items be declared "Provisionally Approved" for use in the Mk II vacuum system:

1. Picomotors, Models 830X-V, made by New Focus.
 - Cleaning: no cleaning.
 - Bake: minimum 24 h at 80°C
2. PZT stacks Models AE0203xx and AE0503xx, made by NEC and distributed by ThorLabs.
 - Cleaning: ultrasound, 10 minutes in ethanol
 - Bake: minimum 24 h at 80°C
3. Ryton, a low outgassing plastic material, currently in use with the 12 m mode cleaner, in the form of vanes and connectors.
 - Cleaning: ultrasound, 10 minutes in methyl-ethyl-ketone, 10 minutes in isopropyl-alcohol.
 - Bake: minimum 72 h at 120°C

All the above items have passed VSA screening based on the "less than 10^{-11} torr for the sum of M=41,43,53,55,57 hydrocarbon fragments" criterion, as illustrated in the attached mass spectra. It is understood that parts or subassemblies using any of the above items will have to pass the vacuum preparation procedures described above and RGA screening before installation in Mk II.

AA:aa

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J. Heefner

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To/Mail Code: J. B. Camp/51-33
From/Mail Code: A. Abramovici/51-33 AA
Phone/FAX: 395-4895/304-9834
Refer to: LIGO-T95003-00-R
Date: September 12, 1995

Subject: New entries for the "Approved Materials List."

In order to support design activities related to integrating the 12 m mode cleaner with the 40 m interferometer, I suggest that the following items be declared "Provisionally Approved" for use in the Mk II vacuum system:

1. Picomotors, Model 830X-V, made by New Focus.
2. PZT stacks Models AE0203xx and AE0503xx, made by NEC and distributed by ThorLabs.
3. Ryton, a low outgassing plastic material, currently in use with the 12 m mode cleaner, in the form of vanes and connectors.

All the above items have passed VSA screening based on the "less than 10^{-11} torr for the sum of M=41,43,53,55,57 hydrocarbon fragments" criterion. It is understood that parts or subassemblies using any of the above items will have to pass the established vacuum preparation/screening procedures before installation in Mk II.

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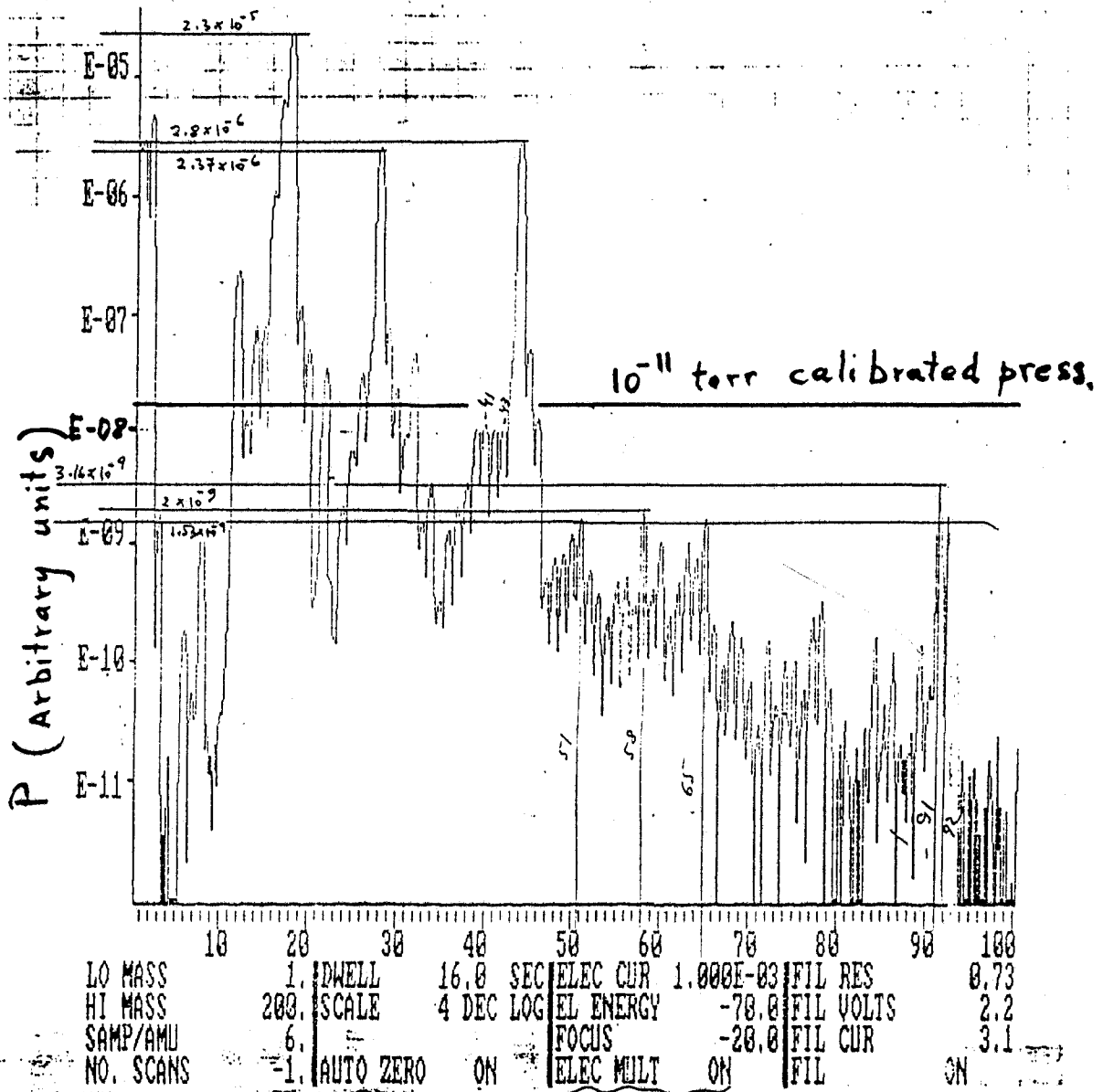


Fig. 2. Outgassing data for Item 3 above, Ryton. The sample contained 30 D-type 9-pin connectors and 50 D-type 21-pin connectors, all made of Ryton. The data correspond to a pumping speed of 30 l/s.

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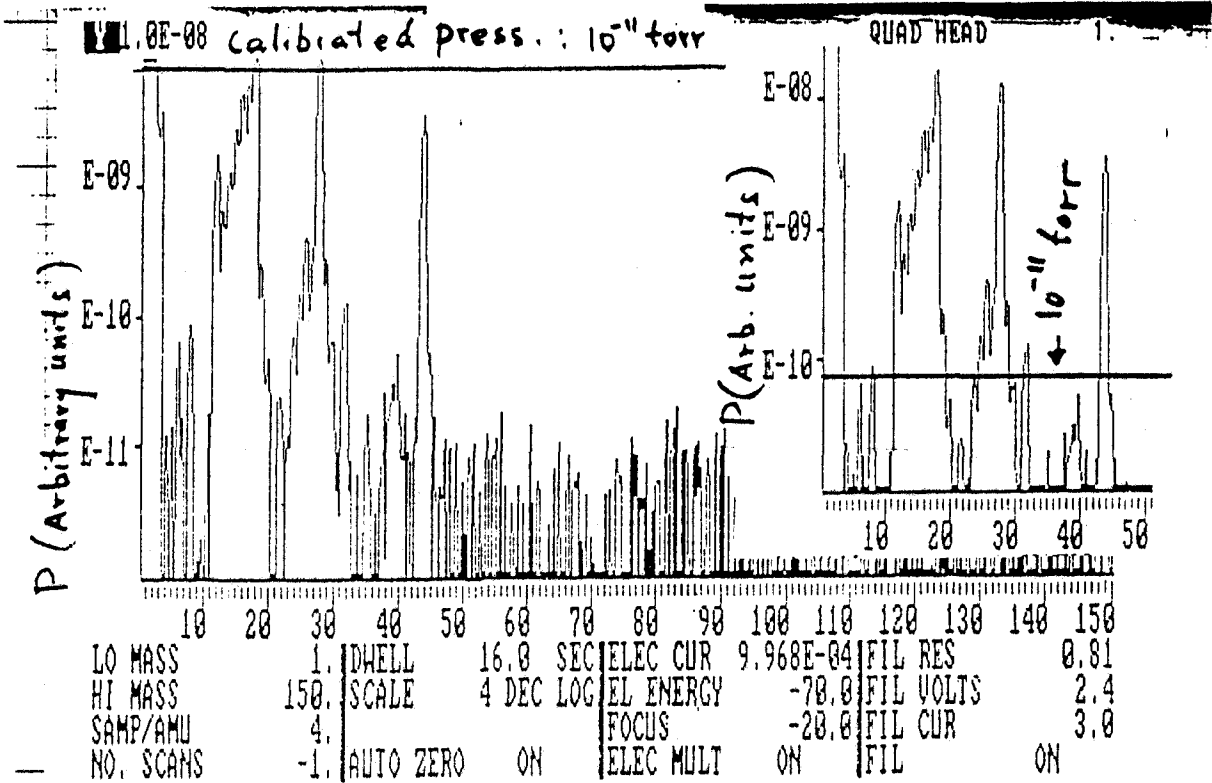


Fig. 1. Outgassing data for Item 1 above, Picomotor (one unit) Model 8301-V, made by New Focus. The tested unit was cleaned, then lubricated with Krytox LVP by the manufacturer. This device includes an NEC piezoelectric stack Model AE050310, listed above as Item 2. The data correspond to a pumping speed of 30 l/s.