

LIGO-C962713 00-V



PROCESS SYSTEMS INTERNATIONAL, INC.

20 Walkup Drive, Westborough, MA 01581

LIGO PROJECT FAX COVER SHEET

TO: Allen Sibley

SENDING FAX NO.: (508) 898-0322

SENDER: Paul Hendry

TELEPHONE NO.: (508) 898-0230

c/o Ms. Linda Turner
M/S 51-33
Fax: (818) 304-9834

DATE: 10/25/96

SUBJECT: Cambridge Acoustical Associates Data for the Prototype Vessel Data Rvw

REFERENCE: V049-PL-307

MESSAGE:

see attached

cc: Project File
R. Bagley
D. McWilliams

SHT 1 of 22

**PROCESS SYSTEMS INTERNATIONAL, INC.****20 Walkup Drive, Westborough, MA 01581**

Fax No.: (818) 304-9834

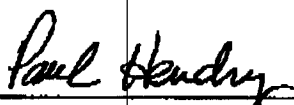
October 25, 1996
V049-PL-307**Mr. Allen Sibley c/o Ms. Linda Turner**
CALIFORNIA INSTITUTE OF TECHNOLOGY
LIGO Project
102-33 East Bridge Laboratory
Pasadena, CA 91125**Subject: Cambridge Acoustical Associates Data for the Prototype Vessel Data Review**

Dear Allen:

Enclosed please find Cambridge Acoustical Associates results of their source measurements and acoustic predictions for an end station. We are transmitting this for LIGO's review and information prior to next week's meeting.

Please contact me if you have any questions or comments.

Sincerely,

for 
Richard Bagley
LIGO Project Manager

REB/hml

cc: J. Worden - WA Site
LIGO File PL-307

CAMBRIDGE ACOUSTICAL ASSOCIATES, INC.
CONSULTING IN ACOUSTICS • NOISE & VIBRATION • STRUCTURAL & FLUID DYNAMICS

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25 October 1996**Process Systems International, Inc.
20 Walkup Drive
Westborough, Ma 01581****Attn.: Richard Bagley****Enclosed please find the results of our source measurements and our acoustic predictions for the end station. A brief description of each figure follows:****Fig 1. Low frequency (below 450 Hz) structureborne measurement of Turbomolecular pump at pump's flange with background noise level****Fig 2. High frequency structureborne measurement of Turbomolecular pump at pump's flange with background noise level (only peaks are above background)****Fig 3. Low frequency (below 450 Hz) structureborne measurement of Turbomolecular pump at base of pump's support with background noise level****Fig 4. High frequency structureborne measurement of Turbomolecular pump at base of pump's support with background noise level (only peaks are above background)****Fig 5. Structureborne measurement of Short Cryopump with background noise level****Fig 6. Structureborne measurement of Large Ion Pump with background noise level (no difference between source and background)****Fig 7. Structureborne measurement of Small Ion Pump Controller with background noise level****Fig 8. Structureborne measurement of Turbo Backing Pump with background noise level****Fig 9. Low frequency (below 450 Hz) structureborne measurement of Vent & Purge System measured in a noisy mechanical room**

Fig 10. High frequency structureborne measurement of Vent & Purge System measured in a noisy mechanical room

Fig 11. Noise Measurement of Turbomolecular Pump with background noise level

Fig 12. Noise Measurement of Large Ion Pump with background noise level

Fig 13. Noise Measurement of Small Ion Pump Controller Pump with background noise level

Fig 14. Noise Measurement of Large Ion Pump Controller with background noise level

Fig 15. Noise Measurement of Turbomolecular Backing Pump

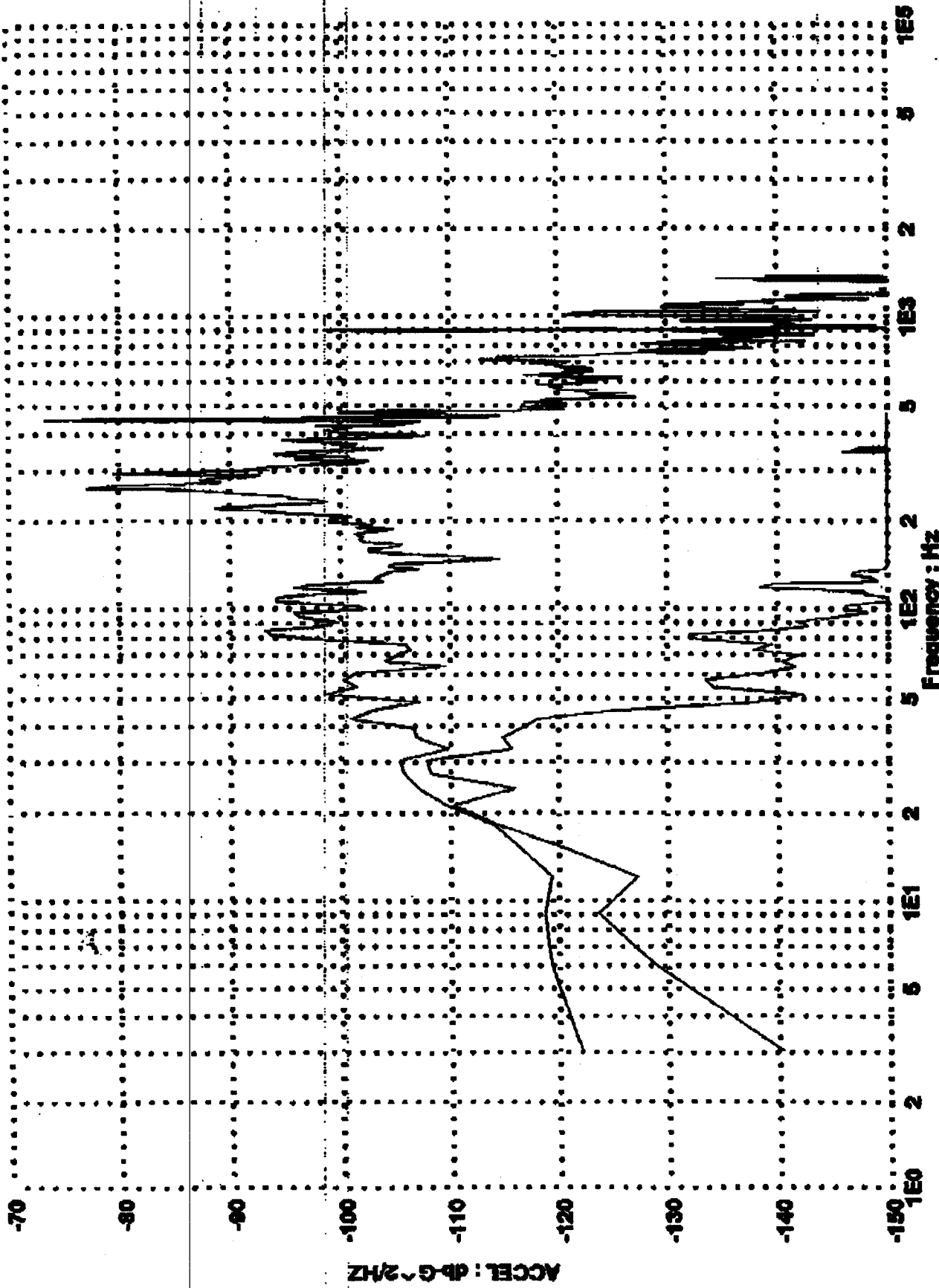
Fig 16. Noise measurement of Vent & Purge System with background noise measured in a noisy mechanical room

Fig 17. Noise level prediction in End Station at BSC-9 Nozzles

Fig 18. Noise level prediction in End Station at Manifold Section A-7

Sincerely

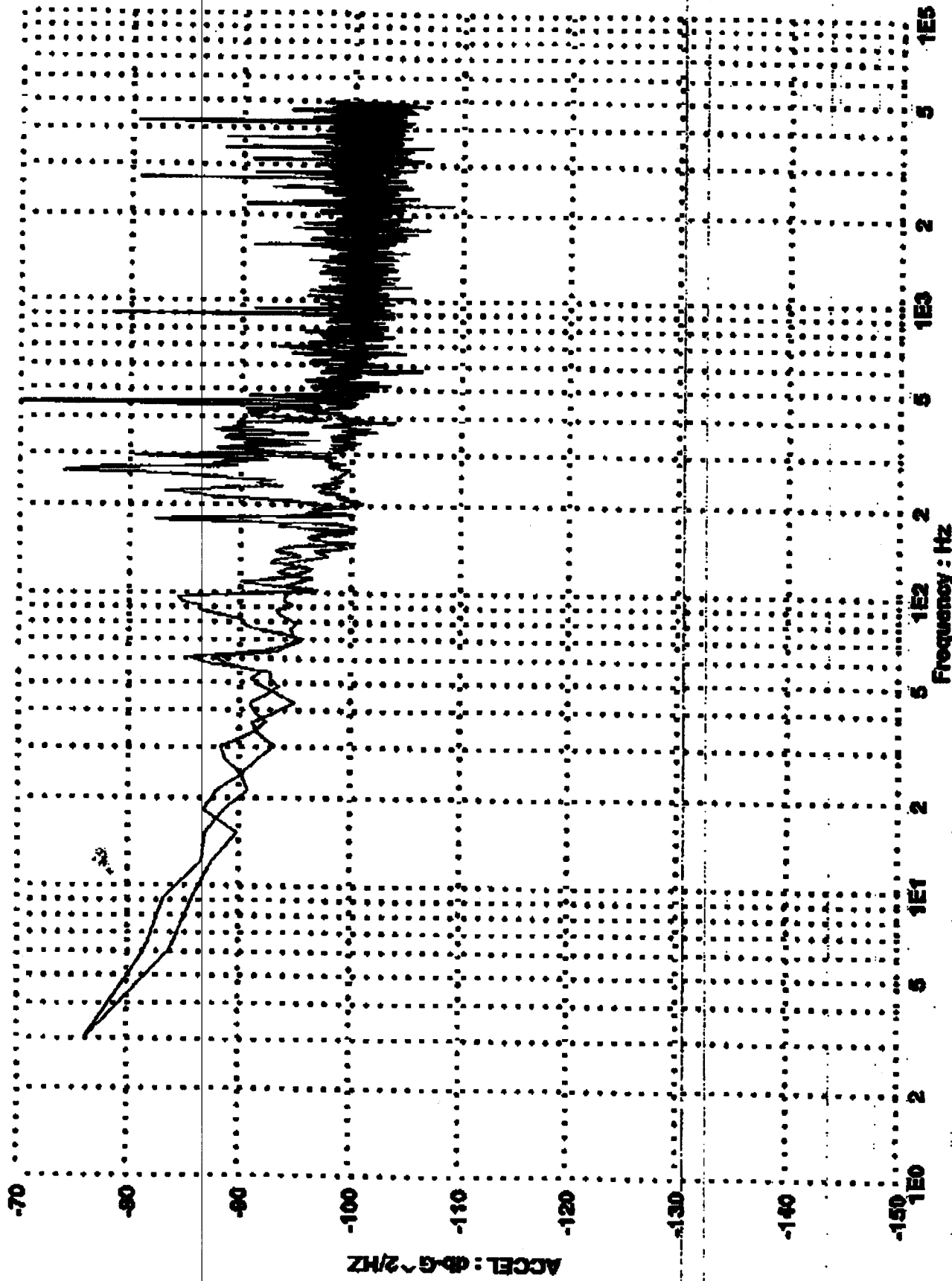
Kyle Martini



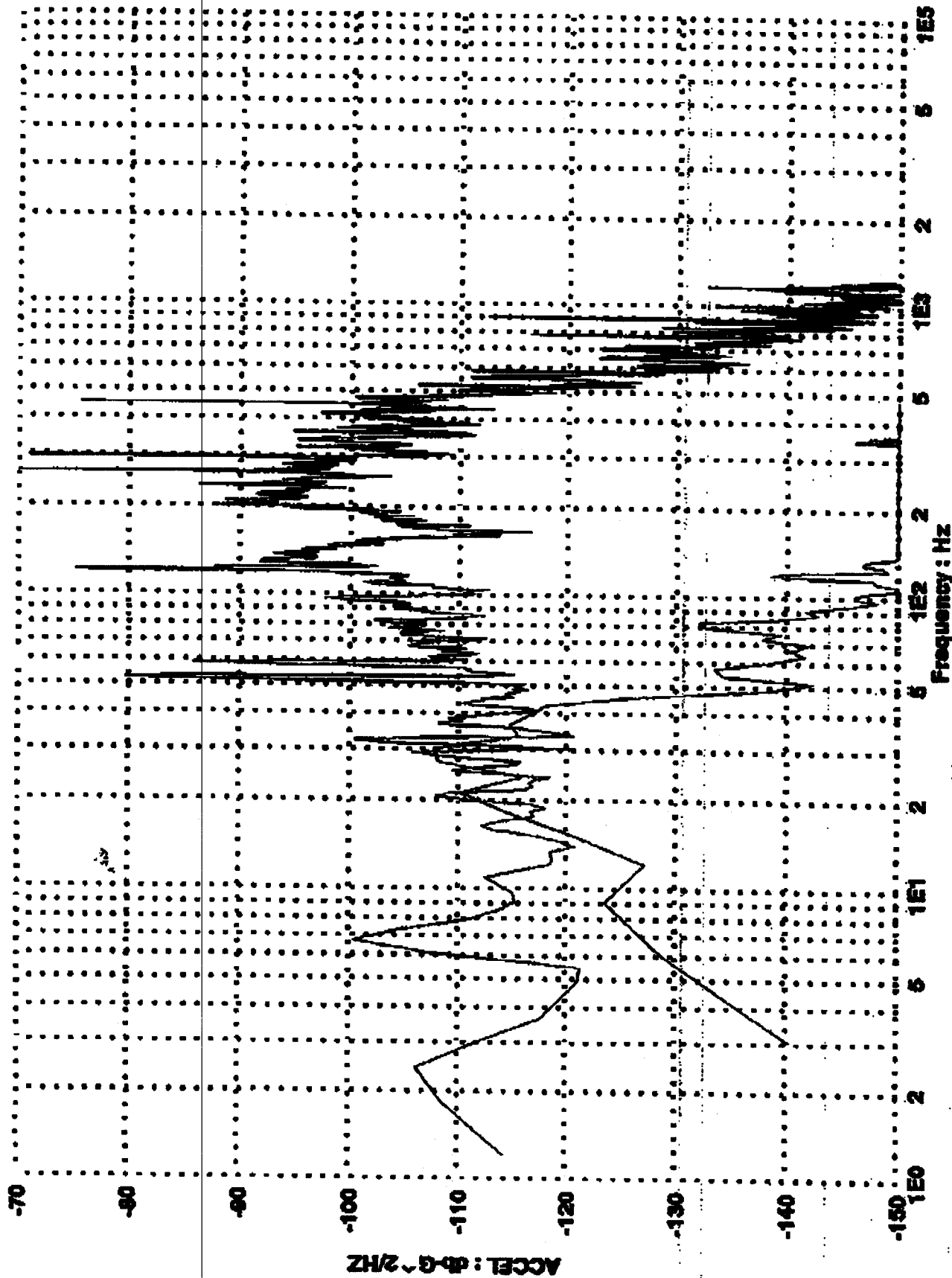
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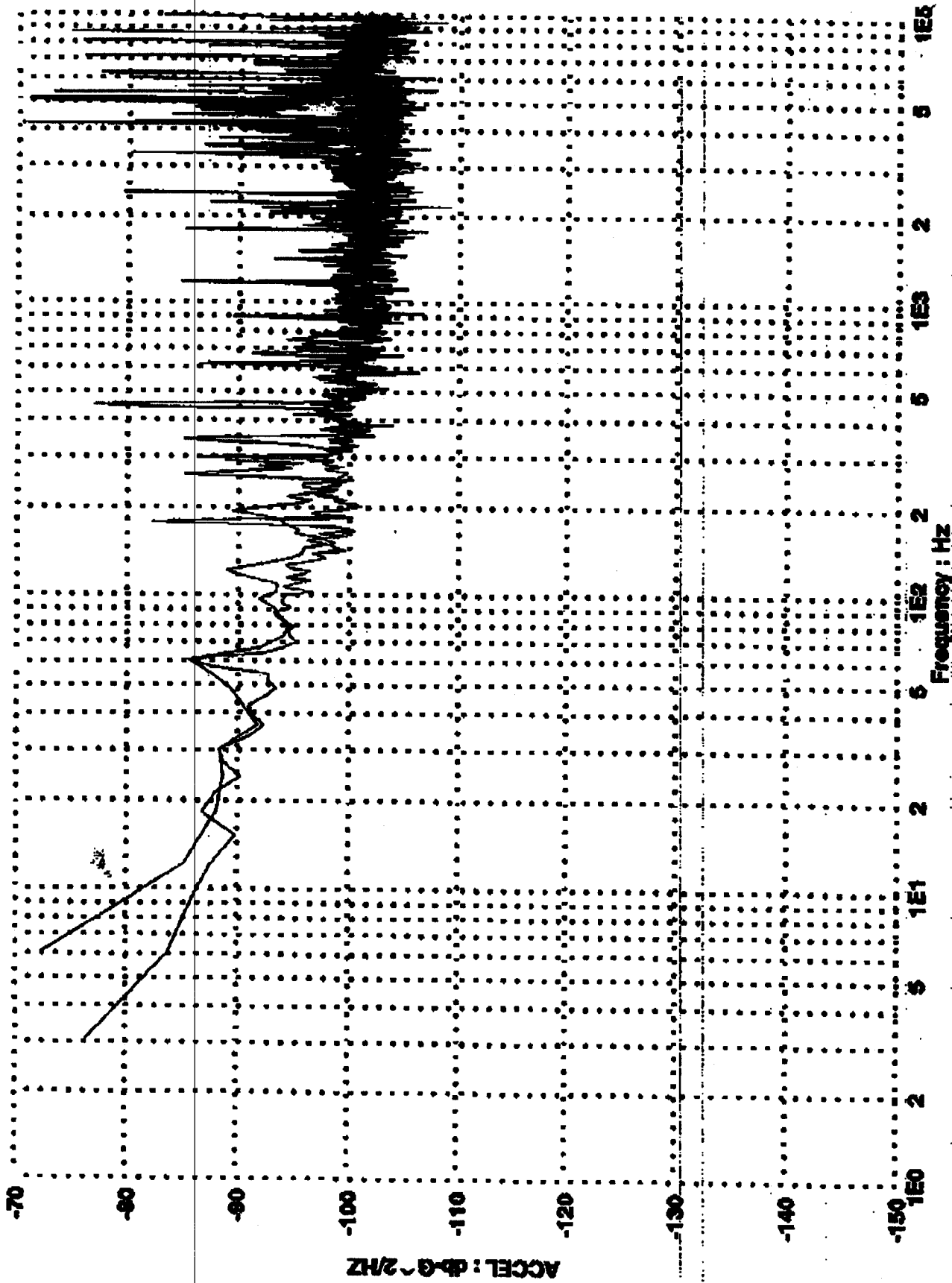
F/L1 - TURBO MOLECULAR 9/25/96 LOW FREQUENCY



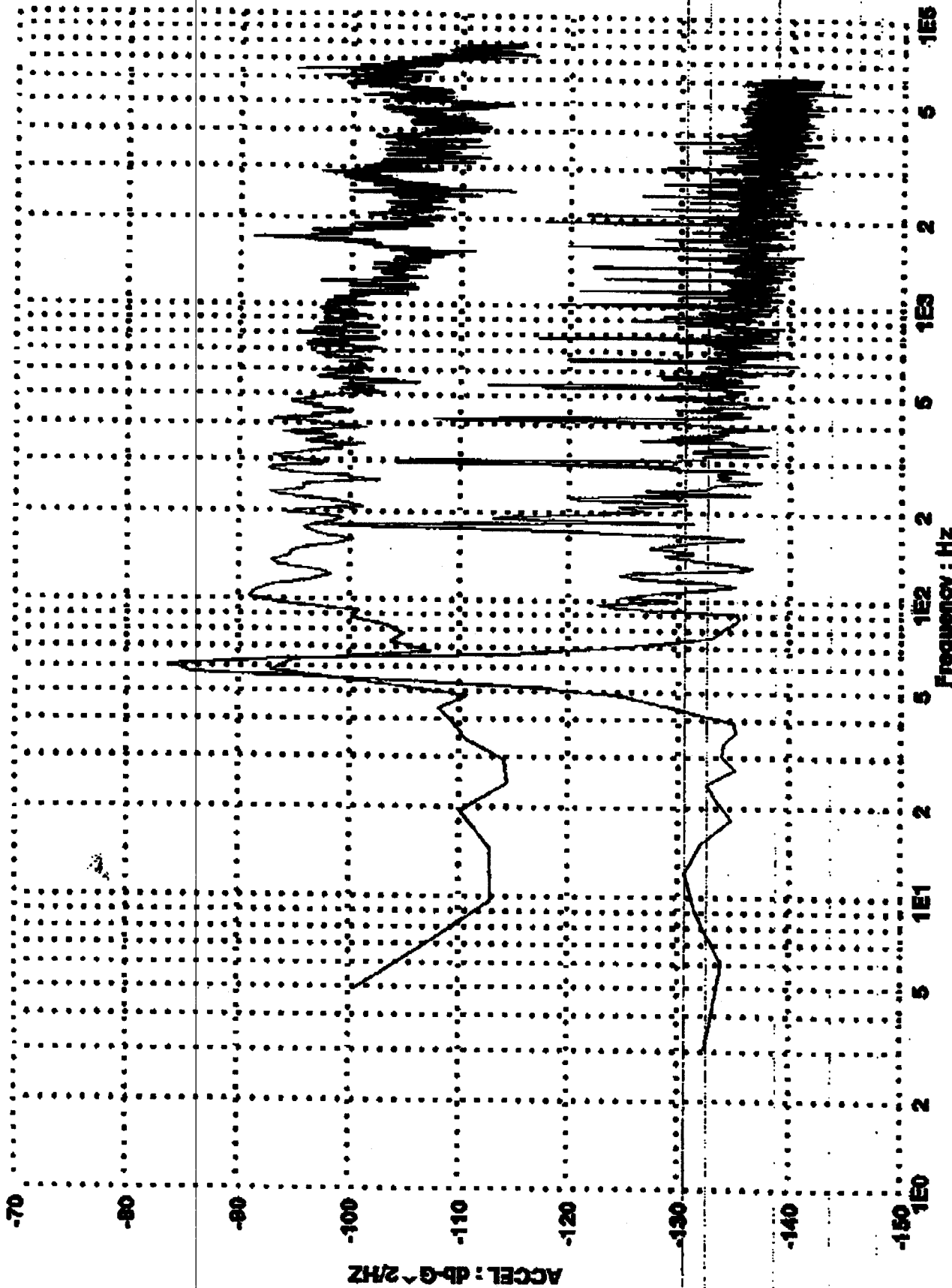
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 2.- TURBO MOLECULAR 9/25/96 HIGH FREQUENCY



DF: 0.61 Hz T-Lo: 0.ms T-Hi: 1000.ms FFT: 4096 WindHANN Sm: 0.
 3- TURBO MOLECULAR 9/25/96 LOW FREQUENCY BASE

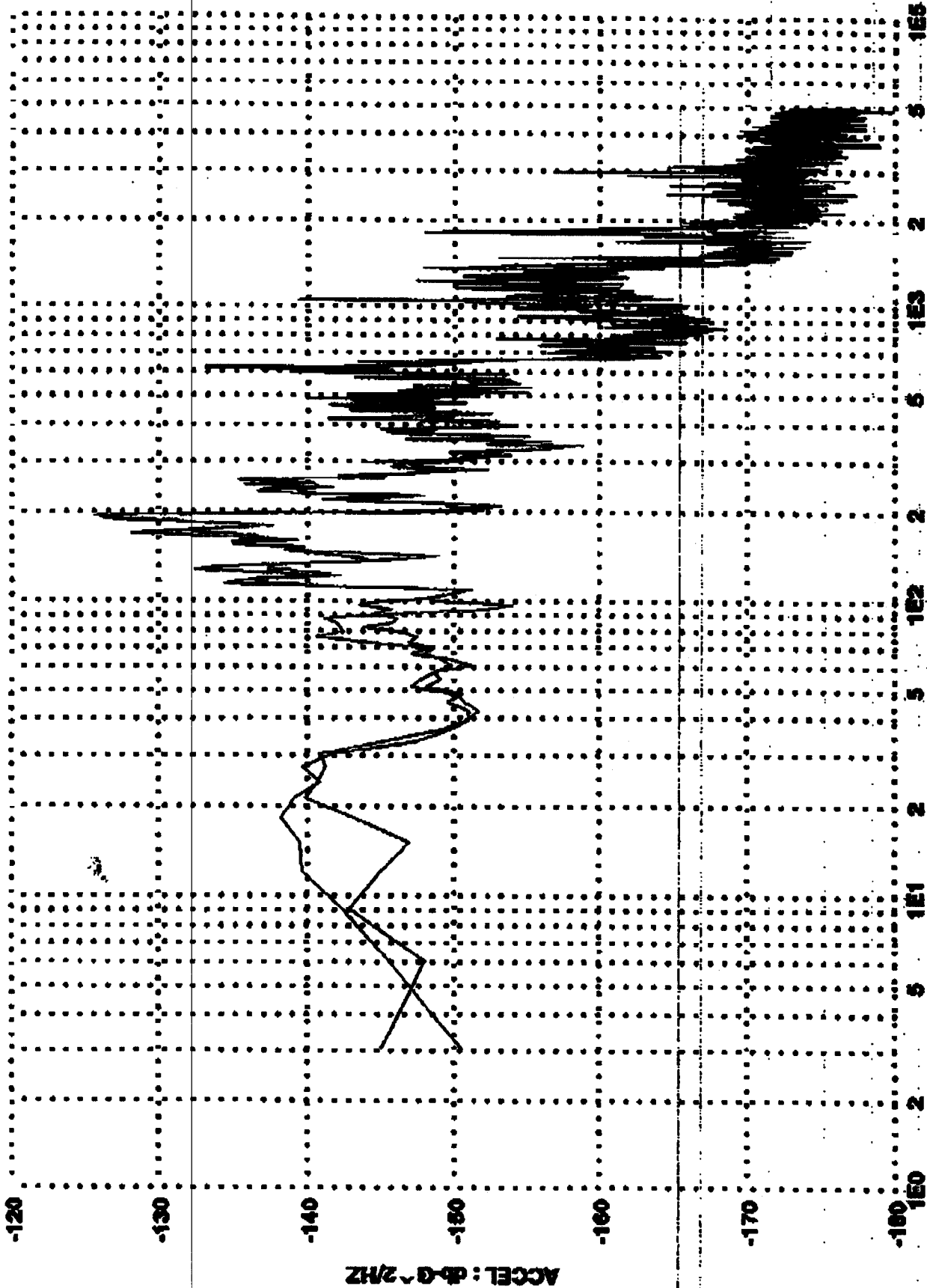


DF: 0.10 Hz T-Loc 0.ms T-Hi: 104.ms FFT: 4096 WINDHAMN Sm: 0.
 4 - TURBO MOLECULAR 9/25/96 HIGH FREQUENCY BASE



DF: 4.00 Hz T-Lo: 0.ms T-Hi: 200.ms FFT: 4096 Wind:HANN Sm: 0.
 S- SHORT CRYOPUMP 10/0/96

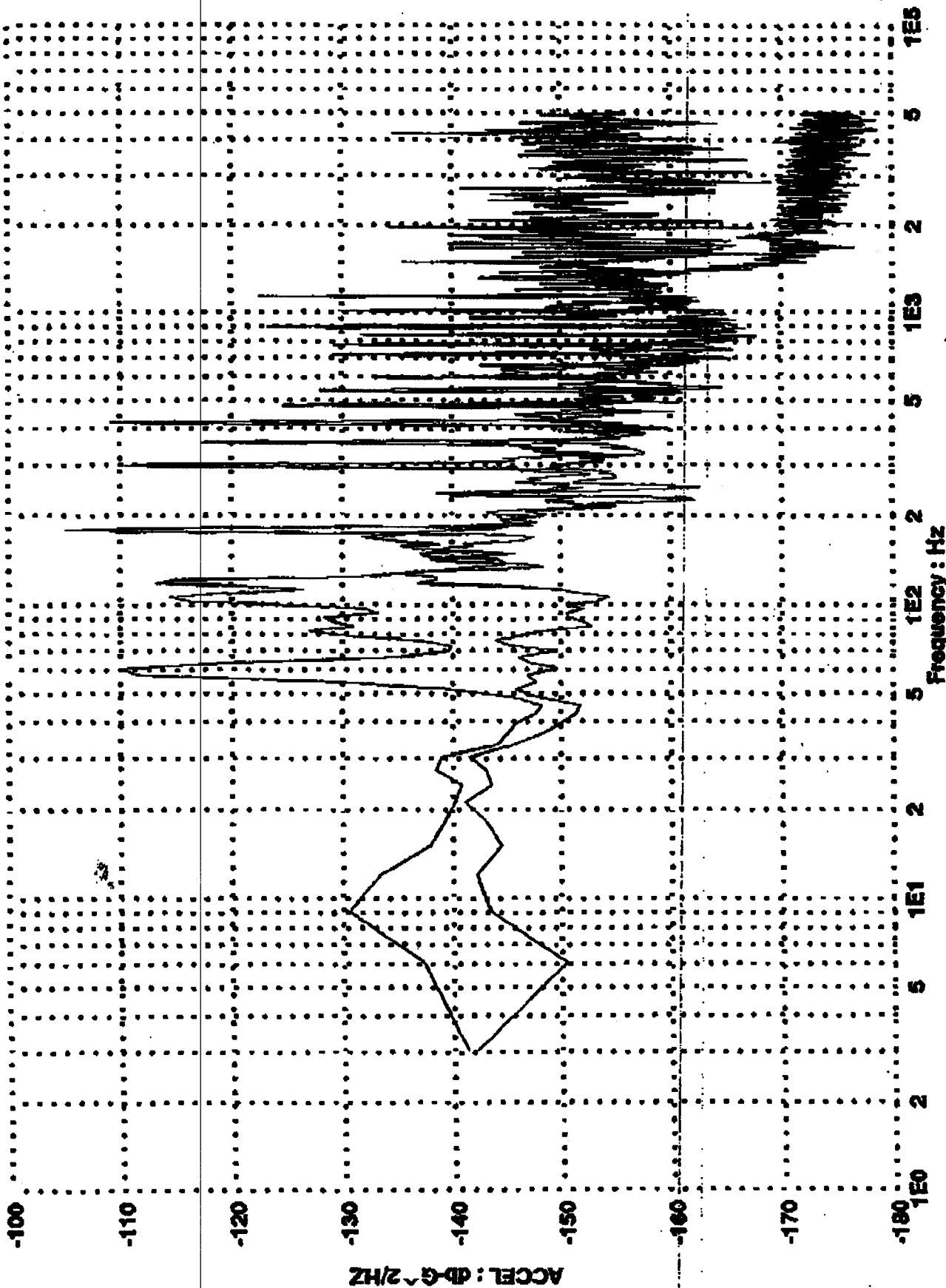
TOTAL P.09



Frequency: Hz

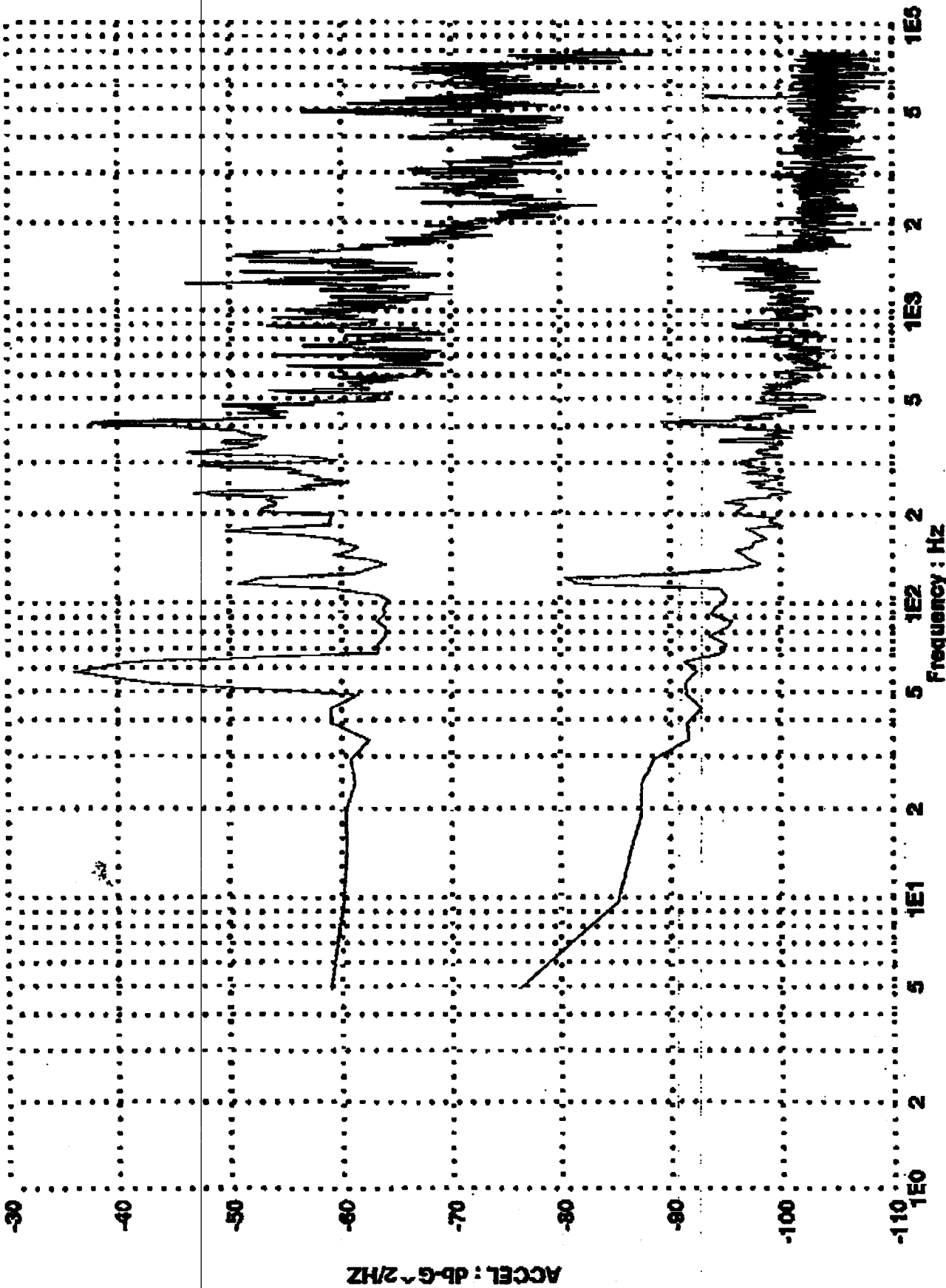
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6- LARGE ION PUMP 10/9/96



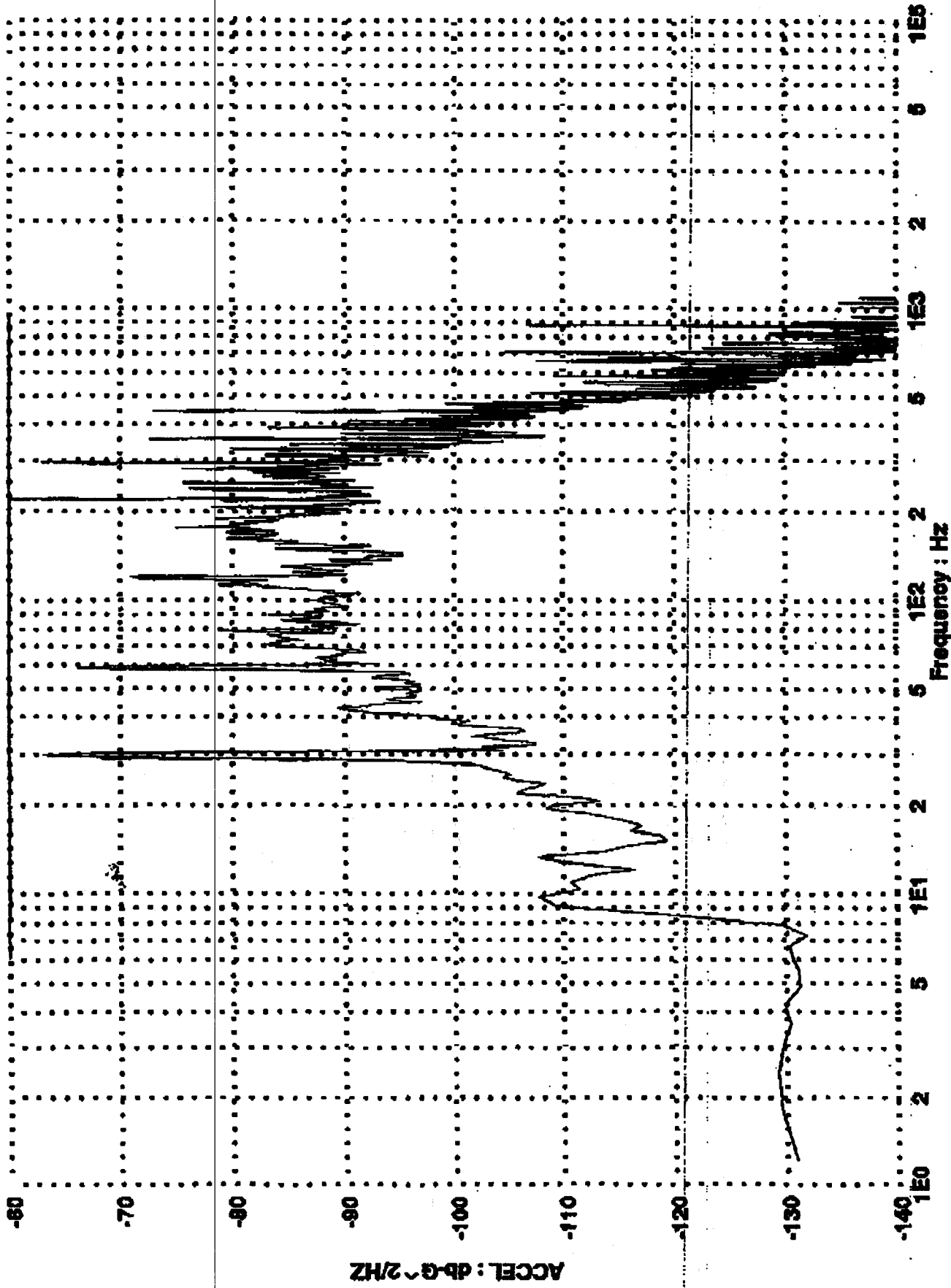
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7 - SMALL ION CONTROLLER 10/2/96

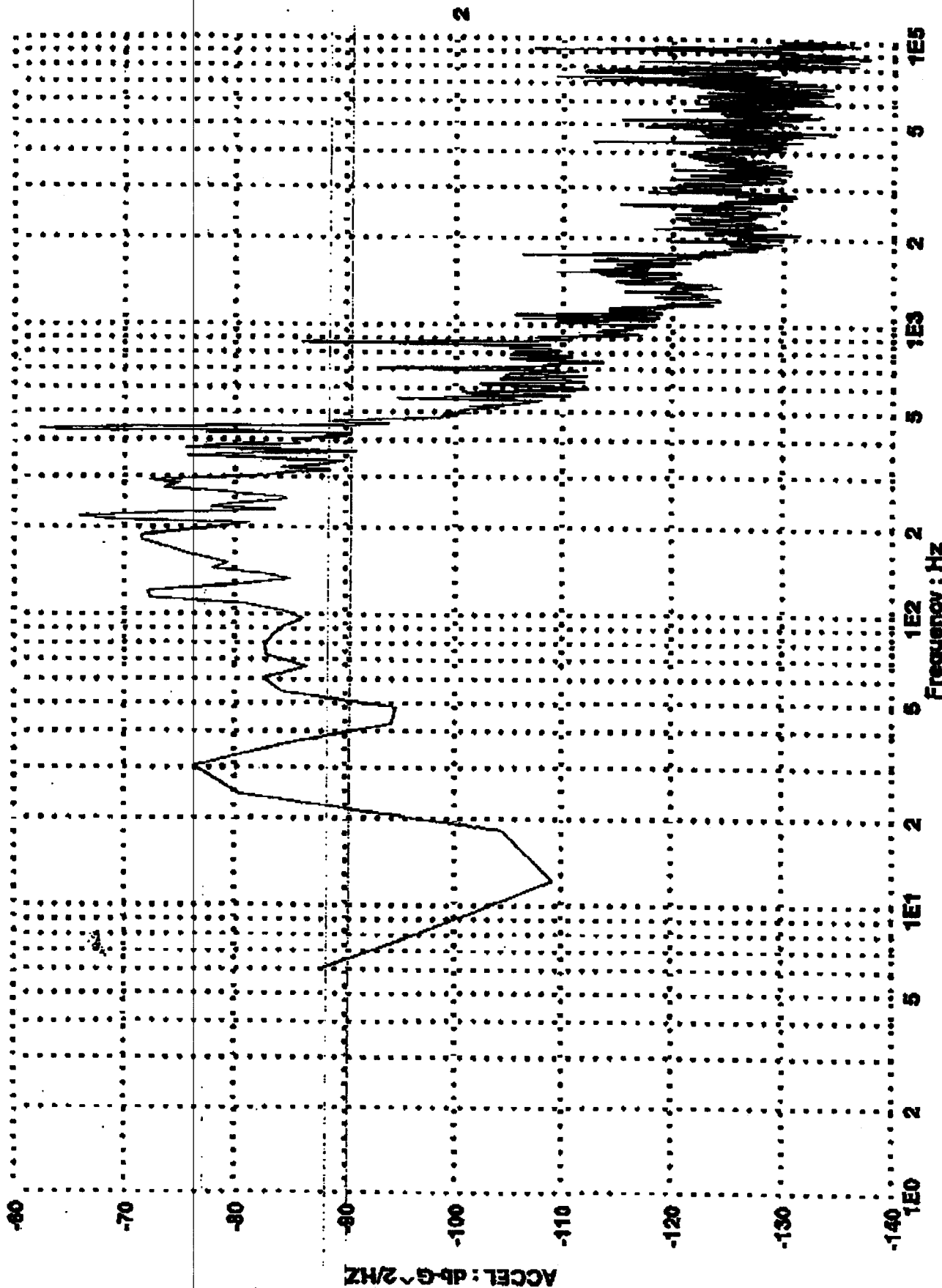


DF: 4.88 Hz T-Lo: 0.ms T-Ht: 205.ms FFT: 4096 Wind:HANN Sm: 0.

8 - TURBO BACKING PUMP 9/27/96

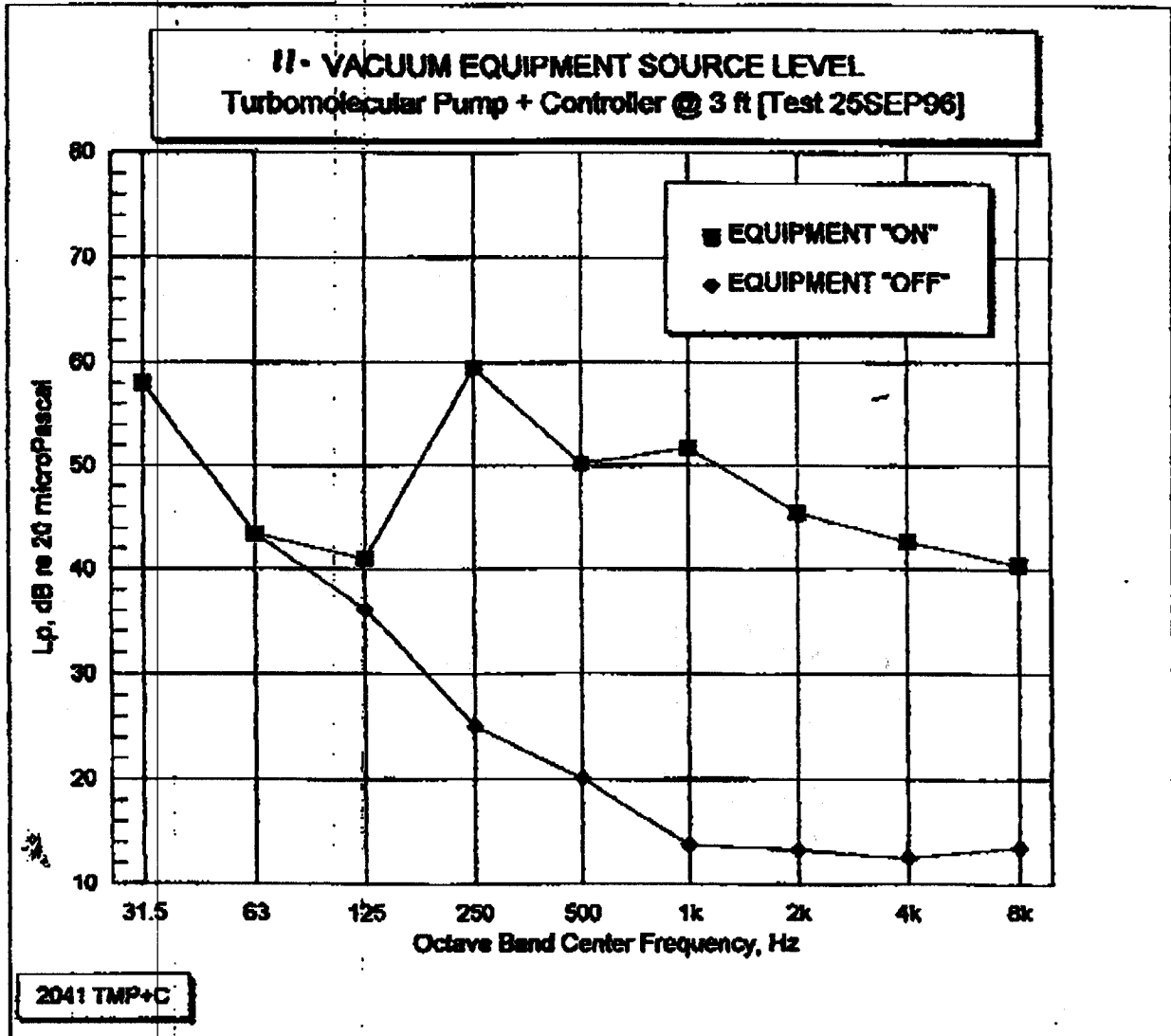


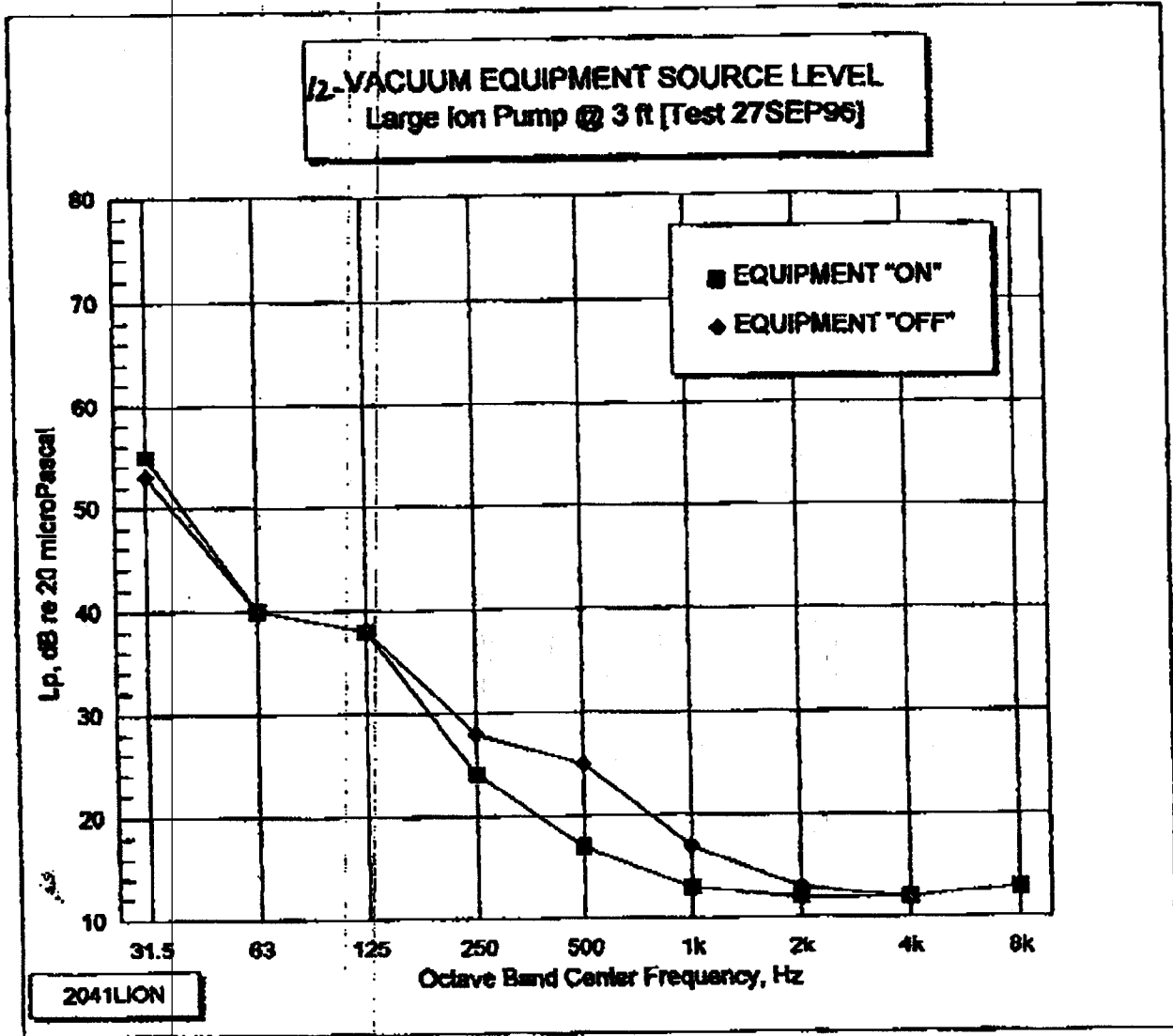
DF: 0.61 Hz T-Lo: 0.ms T-Hi: 1000.ms FFT: 4096 Wind:HANN Sm: 0.
 7-VENT & PURGE 6/4/96 LOW FREQUENCY



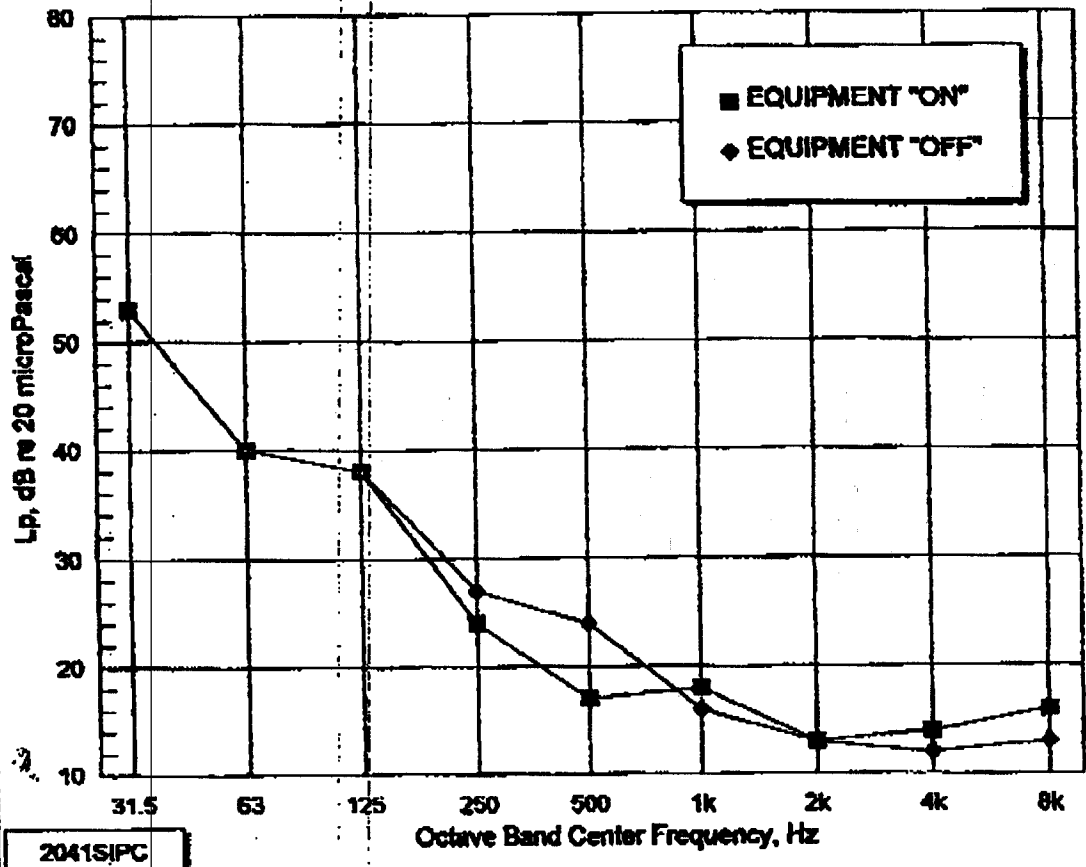
DF: 6.10 Hz T-Lo: 0.ms T-Hi: 164.ms FFT: 4096 Wind:HANN Sm: 0.
/0 VENT & PURGE 6/4/96 HIGH FREQUENCY

Cambridge Acoustical Associates, Inc.



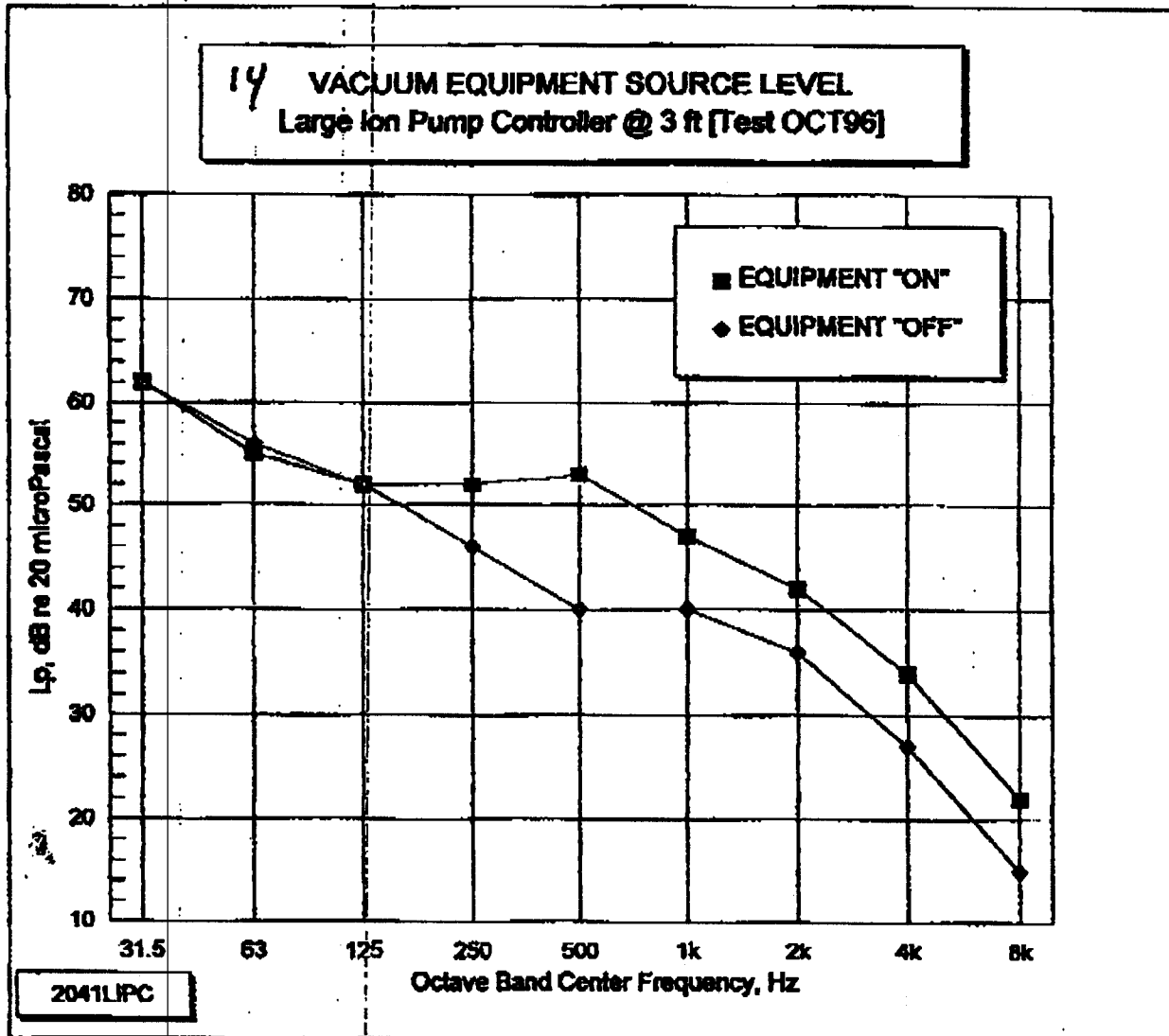


VACUUM EQUIPMENT SOURCE LEVEL
13 Small Ion Pump Controller @ 3 ft [Test 27SEP96]

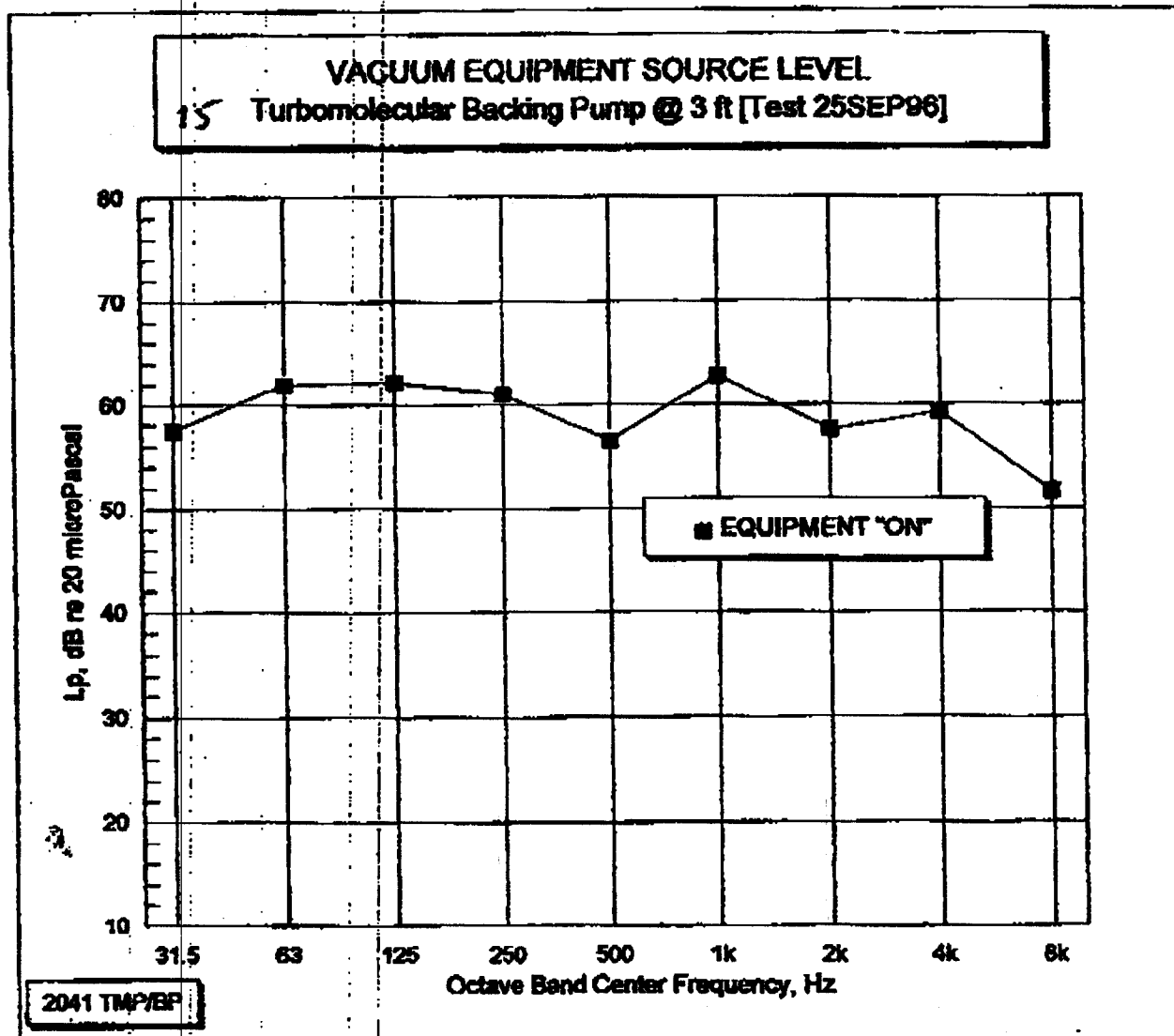


2041SIPC

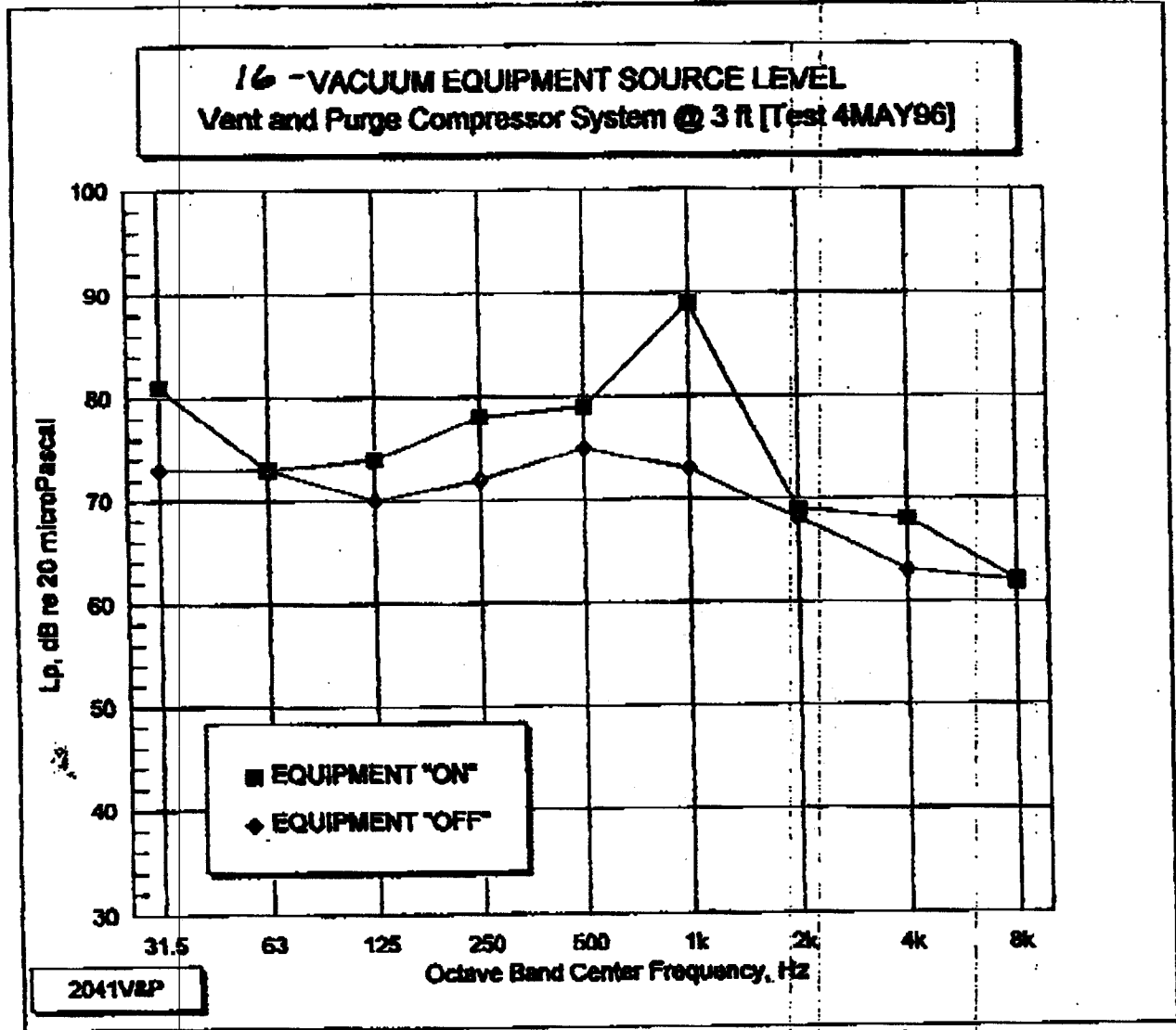
Cambridge Acoustical Associates, Inc.



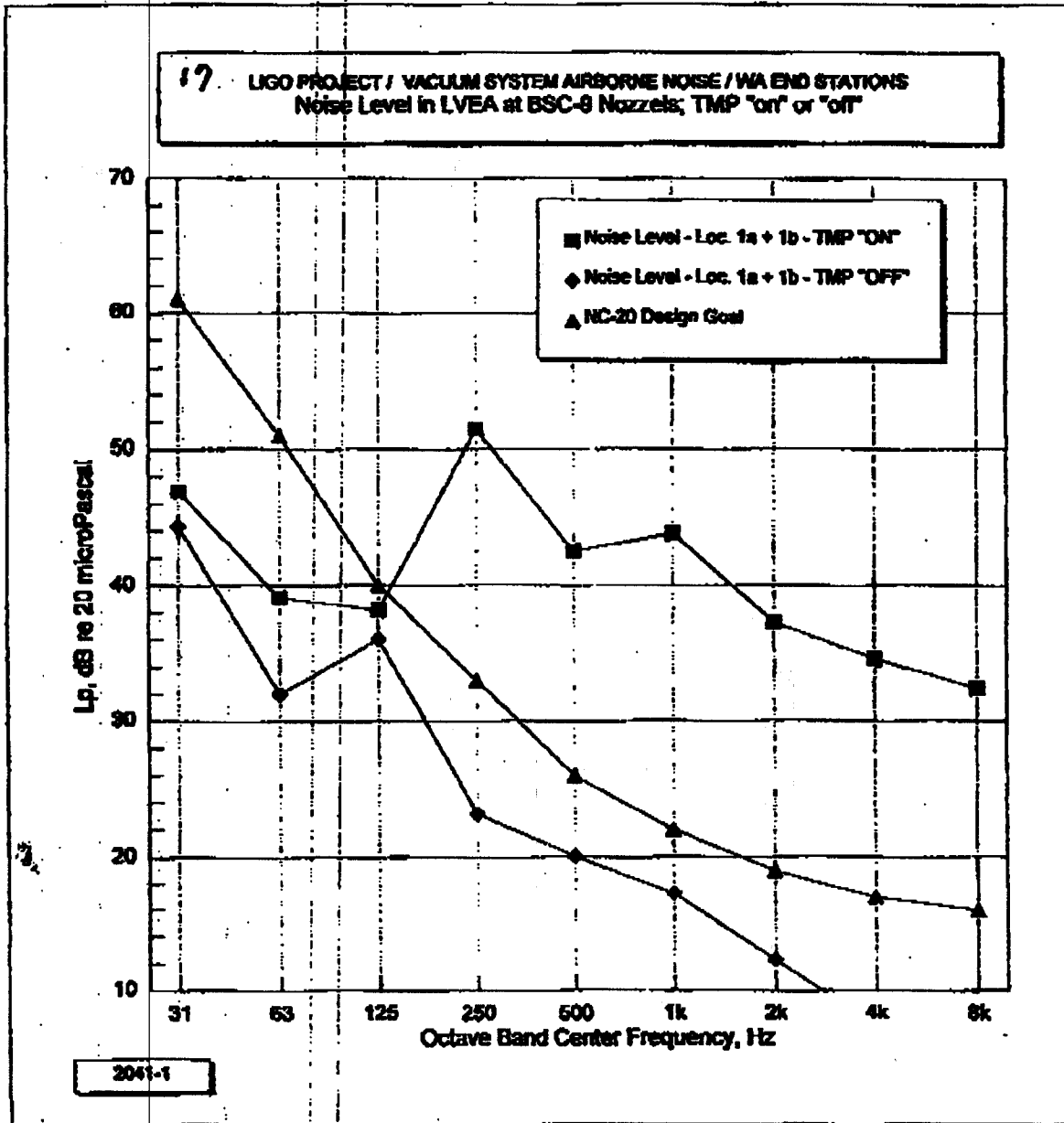
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