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**TEST OF ACOUSTIC TONE SOURCE AND  
PROPULSION PERFORMANCE OF C8A BUFFALO SUPPRESSOR NOZZLE**

by C. C. Marrs, D. L. Harkonen, and J. V. O'Keefe

May 1974

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| <p>Results are presented for a static acoustic and propulsion performance ground test conducted at the Boeing hot nozzle facility on the C8A Buffalo noise suppressor nozzle.</p> <p>Various methods to remove a nozzle-associated 2000-Hz tone are evaluated. Results of testing this rectangular-array lobed nozzle for propulsion performance and acoustic directivity are reported. Recommendations for future nozzle modifications and further testing are included.</p> <p>Appendix A contains the test plan. Appendix B presents the test log. Appendix C contains plots of the one-third octave sound pressure levels recorded during the test. Appendix D describes the acoustic data recording and reduction systems. The performance data is tabulated in Appendix E.</p> |  |  |  |  |            |
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# TEST OF ACOUSTIC TONE SOURCE AND PROPULSION PERFORMANCE OF C8A BUFFALO SUPPRESSOR NOZZLE

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## INTRODUCTION AND SUMMARY

Following completion of the full scale test of the suppressor nozzle on the C8A Buffalo airplane (ref. 1), three factors still required clarification: (1) the origin and removal of a 2000-Hz tone believed to be caused by the lobed nozzle, (2) the acoustic directivity effect relative to the major and minor axis of the rectangular-array nozzle, and (3) measurement of the nozzle performance.

To accomplish the above objectives, one of the lobed nozzles was tested on the hot nozzle facility, figures 1 and 2, at North Boeing Field. This facility could not provide sufficient air to flow the full nozzle area; therefore, the four outside lobes were blocked initially. With this blockage, nozzle pressure ratios up to 1.5 were achieved with exhaust gas temperatures up to 510°C (950°F).

Acoustic data, on a 15.2-m (50-ft) polar array, were recorded simultaneously with performance data. Ground-mounted microphones were used so that ground reflections would be eliminated and not confuse the acoustic analysis. (For use of flush-mounted microphones, see ref. 2). Various configurations were evaluated in a step-by-step procedure until the 2000-Hz tone was eliminated.

The testing showed that no appreciable change in the tone came about with internal upstream fairing changes, but that when the lobe exits were suitably altered, in relation to each other, the tone was eliminated. The lobe exit relationship was changed in three ways: by blocking every other lobe, as in figure 3, thus doubling the lobe spacing; by adding a splitter plate between the lobes per figures 4 and 5, extending 12.7 cm (5 in.) aft of the nozzle exit; and by adding plugs with tubes for more exit breakup, per figure 6. All three of these procedures eliminated the tone. The assumption that the tone is generated by the nozzle exit geometry and spacing seems well-founded. The exact mechanism involved is still not completely understood.

The acoustic directivity of the rectangular-array nozzle was determined by recording data with the nozzle in the horizontal and then in the vertical plane. Figure 7 shows the nozzle in the vertical position. A marked reduction in the one-third octave SPL and OASPL levels occurs when the data is

recorded off the minor axis of the nozzle. The original estimate (ref. 1) of 2 PNdB reduction (at 1.5 NPR) due to directivity has now been altered to 6 PNdB per the results of this test program. Figure 8 (from ref. 1) shows the acoustic characteristics confirmed during this test program, and predicted levels for an advanced (BNS-3) nozzle discussed in the recommendation section of this report.

Velocity- and discharge-coefficient measurements were made on the partially blocked nozzle by using the facility's single-component thrust measurement cell and sonic venturi airflow meter. As indicated in figure 9, a velocity coefficient of 0.95 was measured at a nozzle pressure ratio of 1.5. This can be extrapolated to about 0.96 at the Buffalo airplane takeoff pressure ratio of 1.9. Some air leakage was evident around the rotation bearing attachment flange, with resultant lowering of the  $C_V$  value. The measured  $C_V$  levels are therefore somewhat below the true level. As indicated in figure 9, the fences installed in the secondary passages did not result in any measurable penalty in static performance.

It is recommended that research be continued to identify the mechanism of the 2000-Hz tone and to specify the means for eliminating or avoiding it.

## PROCEDURAL DISCUSSION

### TEST HARDWARE AND FACILITY DESCRIPTION

The hot nozzle facility, located at the north end of Boeing Field, is capable of airflows in the order of 20 kg (40 lb) per second at temperatures of 500°C (950°F). The interface duct at the exit of the facility is 30.5 cm (12 in.) in diameter. Thus, to adapt the "pants" section from a Spey split-flow Rolls Royce engine, a transition was fabricated (fig. 1) connecting the duct to the pants section.

As the facility was to be used for testing only one nozzle, a splitter plate was installed in the pants section and transition so the flow would duplicate as much as possible the full scale flow lines. The exit for the second nozzle on the pants section was sealed off at the rotation flange.

The airflow capacity of the test facility was not adequate to fill all 13 lobes of the nozzle; therefore the four outer lobes were blocked internally. This did not impair the acoustic characteristics of the nozzle; the baseline sound spectrums obtained from this test closely matched those obtained from the airplane static test reported in reference 1.

The area surrounding the test facility is made up of smooth concrete and is ideal for ground surface mounted microphone installations (ref. 2).

Nine microphones were located on a 15.2-m (50-ft) polar array, as measured from the nozzle exit plane and centerline. The microphones were located with the diaphragm 1.27 cm (0.5 in.) above the concrete surface, at angles of 90°, 100°, 110°, 115°, 120°, 125°, 130°, 135°, 140° relative to the inlet (see appendix A).

As illustrated in appendix A, total pressure and temperature instrumentation was installed at the entrance to the split-flow plenum and pants section, and total pressure rakes were fitted at the lobe nozzle exit plane. Performance coefficients (velocity and discharge) were computed using both rake locations as charging stations. The thrust produced by the lobe nozzle was measured by a single-component load cell of 900-kg (2000-lb) range. Nozzle airflow was measured with a calibrated sonic venturi installed upstream of the facility burner.

### TEST PROCEDURES

Following the completion of a configuration buildup, the propulsion and acoustic instrumentation was checked and calibrated. If the weather was within specifications shown in appendix A, the

test was started with a nozzle pressure ratio (NPR) of 1.2 and an exhaust gas temperature of 371.1 °C (700 °F). Then the pressure ratio and temperature were increased in 0.1 NPR steps to a maximum of 1.7 NPR at 510 °C (950 °F). Propulsion and acoustic data were recorded at each NPR increment.

In the event of light rain, a single microphone at 115° from the inlet was used to measure the acoustic data. This data was displayed on-line from the one-third octave analyzer described in appendix D. No magnetic tape recording was made. It should be noted that even when the weather was good and the full microphone array was being recorded, the 115° microphone was tied into the on-line one-third octave analyzer and the traces recorded. Therefore, a quick comparison could be made between the various configurations.

## TEST RESULTS

### ACOUSTIC MEASUREMENTS

The first step in the test program was to run the lobed nozzle on the test rig and establish a baseline, with emphasis on being able to produce the 2000-Hz tone which existed during the NASA Ames airplane test program (ref. 1).

Runs 1 and 2 were made with nine lobes of the nozzle flowing. The weather was very marginal but data was recorded "on-line" at the 115° location for nozzle pressure ratios of 1.2 through 1.6. The acoustic results proved to be satisfactory and the 2000-Hz tone was reproduced at NPR 1.6. See figure 10.

Attempts were made to remove the 2000-Hz tone by a process of elimination. Figure 11 shows that adding a fairing to the leading and trailing edge of the secondary flow area struts was ineffective. It had been thought that the angle of attack of these struts, relative to the airstream, could have caused turbulence which resulted in the problem tone. Next it was decided to block all flow through the secondary channels. This was accomplished by fitting a piece of aluminum sheet over all the lobes and filling any voids with asbestos cloth. Results of this run (No. 4) are also shown in figure 11. No reduction of the tone occurred.

The next step was to remove an aerodynamic fairing which originally was installed internally between each lobe. This fairing was closed on the upstream end, but open on the downstream end, a configuration which left the possibility of the creation of a resonating chamber or whistle type of noise generator. Results of removing the tube fairings are shown in figure 12. The tone was still not affected.

In order to reduce the number of lobes involved in the remaining tone source tests, the nozzle was blocked down to five lobes flowing. Figure 13 shows the resultant one-third octave spectra; the 2000-Hz tone is still evident. In the remainder of the acoustic tests five lobes were used and run 6 was considered the baseline. Tube nozzle ends were then added (fig. 6) to the exit of the primary lobes. Nine lobes were fitted with these tube ends, with a resultant flow area equivalent to five lobes in the normal configuration. The tube ends removed the 2000-Hz tone, and effectively reduced the noise level relative to the lobed nozzle (fig. 13). However, this was not a practical solution due to the high thrust loss and weight penalties for a flight tube nozzle configuration.



While the tube nozzle ends were installed, the acoustic directivity of the rectangular array nozzle was evaluated before continuing the tone source tests. This evaluation was best made at this point of the test program because of the number of lobes in operation (nine) and hardware for the next test configuration was in fabrication.

To determine the nozzle directivity, an acoustic run was made with the nozzle major axis projecting through the centerline of the 90° microphone; then the nozzle was rotated 90° and acoustic data were again recorded. Figures 14 through 18 show the results. In summary, the noise measured off the short axis was 2 to 6 dB quieter than off the long axis. This difference depended on the power setting, with the directivity effect diminishing as the NPR was increased. It should be noted that the tube ends were installed in this test series, but as the overall aspect ratio was near three, the results of the directivity evaluation should be valid for the proposed BNS-3 lobe nozzle.

The tests completed prior to the directivity evaluation indicated that the 2000-Hz tone was related to an interaction between the lobes of the nozzle, probably at the exit plane. In an attempt to pinpoint the exact cause, three test configurations were run: five alternate lobes flowing, with four blocked (fig. 19); four alternate lobes flowing (fig. 19), namely the lobes which were blocked for the previous run; and with fences or splitters installed in the secondary flow channels extending 12.7 cm (5 in.) aft of the nozzle exit plane (fig. 20.). All three configurations removed the tone. It was originally thought that the tone was caused by upstream turbulence in each lobe, and that because of the relationship of the lobe exits the tones were amplified externally. Narrow band analysis (10-cycle bandwidth) per figures 21 through 29 shows that no such tone exists in the individual lobes and therefore the amplification theory is invalid.

The final conclusion as to the cause of the tone is that it is created by an interaction engendered by the shape and spacing of the lobes. It is not known what effect small changes in lobe spacing would have on the frequency of the tones, nor just what the minimum spacing change would be to completely eliminate the tone.

Methods of eliminating the tone are:

- 1) Change the lobe spacing.
- 2) Alter the lobe exit by converging near the exit plane, in effect, changing the exit flow characteristics slightly. (This solution is speculative.)

- 3) Change the lobe exit shape to a multi-element, large breakup configuration (deep corrugations on lobe exits).
- 4) Add a splitter (fence) between the lobes. Further testing would be required to determine the minimum size fence required.

### NOZZLE PERFORMANCE

It was hoped that the transition-diffuser with the internal splitter plate would provide even pressure profiles at the entrance to the engine split-flow "pants" section. Examination of the pressures sensed by the two 4-probe total pressure rakes at the "D" shaped section revealed considerable distortion (as much as 3.5 psia out of 23 psia) at an average nozzle pressure ratio of 1.5. The brief test period did not allow investigation of the cause of the problem but evidently the area rate change was too severe to control the flow expansion immediately downstream of the burner choke plate. Performance data based on the distorted upstream conditions would be meaningless and are not presented here.

Nozzle performance was instead computed on the basis of total pressure measurements at the lobe exit plane. Two 4-probe rakes were positioned in the center of the lobes to sense the nozzle supply pressure. This is a sound practice provided the lobes are not unreasonably long. To minimize the effects of spanwise distortion, believed caused by the poor entrance conditions, the total pressure rakes were alternately positioned on lobes 1 and 4 and lobes 2 and 3, as shown in figure 9. Because of facility airflow limitations, six of the outer lobes were blocked to decrease the flow area. This was accomplished during the first tests by internally blocking the lobes. Levels of  $C_V$  as low as 0.90 were measured. The problem was traced to a large amount of leakage around the nozzle internal blocker plates. In the  $C_V$  equation, any mass flow that is leaking (not producing thrust) will drive the  $C_V$  parameter down. The unused lobes were then sealed externally. The  $C_V$  level rose to 0.95 at a nozzle pressure of 1.5 as indicated in figure 9. This level can be extrapolated to about 0.96 at takeoff power (NPR = 1.9). Some leakage is still evident around the nozzle-rotation bearing-attachment flange. This means that the measured  $C_V$  level is somewhat below the true level.

The discharge coefficient ( $C_D$ ) level of the lobe nozzle was measured also. The  $C_D$  levels for ambient and heated air, presented in figure 30, are essentially constant at 0.95 through the range of pressure ratios tested. The discharge coefficient levels are not particularly important with regard to nozzle thrust performance but are useful in selecting the target nozzle exit area to provide proper engine match. The  $C_D$  values measured with 11 lobes flowing during the engine tests (ref. 1) varied from 0.93 to 0.94 for this range of pressure ratios.

## RECOMMENDATIONS

This test program has shown that the 2000-Hz tone can be eliminated, and that greater noise suppression exists due to nozzle directivity than was originally predicted. With this knowledge in mind, it is recommended that further design and testing can provide a flight nozzle with the suppression shown in figure 8 (shown as BNS-3).

Model BNS-3 would consist of a lobe-type nozzle similar to the one tested (BNS-1), the main change occurring in the lobe exits. These would have deep penetration (high perimeter) corrugated ends.

To determine the actual effect of changing the lobe exit geometry, a Boeing hot-nozzle-facility test of a BNS-1 nozzle modified to BNS-3 geometry is recommended. The lobes of the BNS-1 nozzle would be removed, and seven new lobes of the BNS-3 configuration would be welded in place.

Propulsion and acoustic tests would be performed on the modified nozzle, and the results supplied in time to support a design effort for flight hardware.

Boeing Commercial Airplane Company

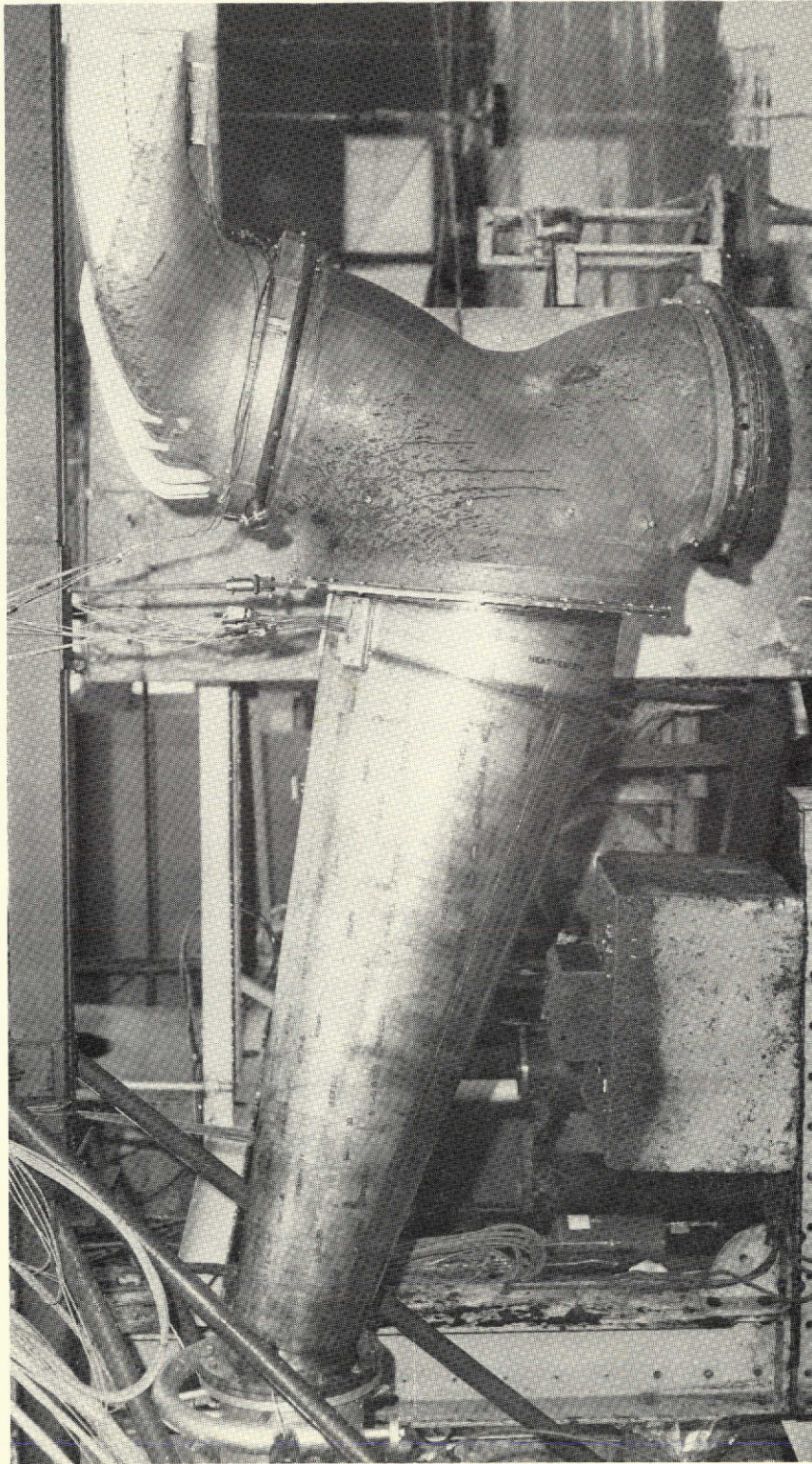
P.O. Box 3707

Seattle, Washington 98124, May 30, 1974

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## REFERENCES

1. Marrs, C. C.; Harkonen, D. L.; and O'Keefe, J. V.: Static Noise Tests on Augmentor Wing-Jet STOL Research Aircraft (C8A Buffalo). Boeing document D6-41324-1, May 1974. NASA CR-137520]
2. McKaig, Merle B.: Use of Flush-Mounted Microphone to Acquire Free-Field Data. AIAA paper 74-92, February 1974.



*FIGURE 1.—C8A BUFFALO LOBED NOZZLE MOUNTED  
ON BOEING HOT NOZZLE TEST FACILITY*

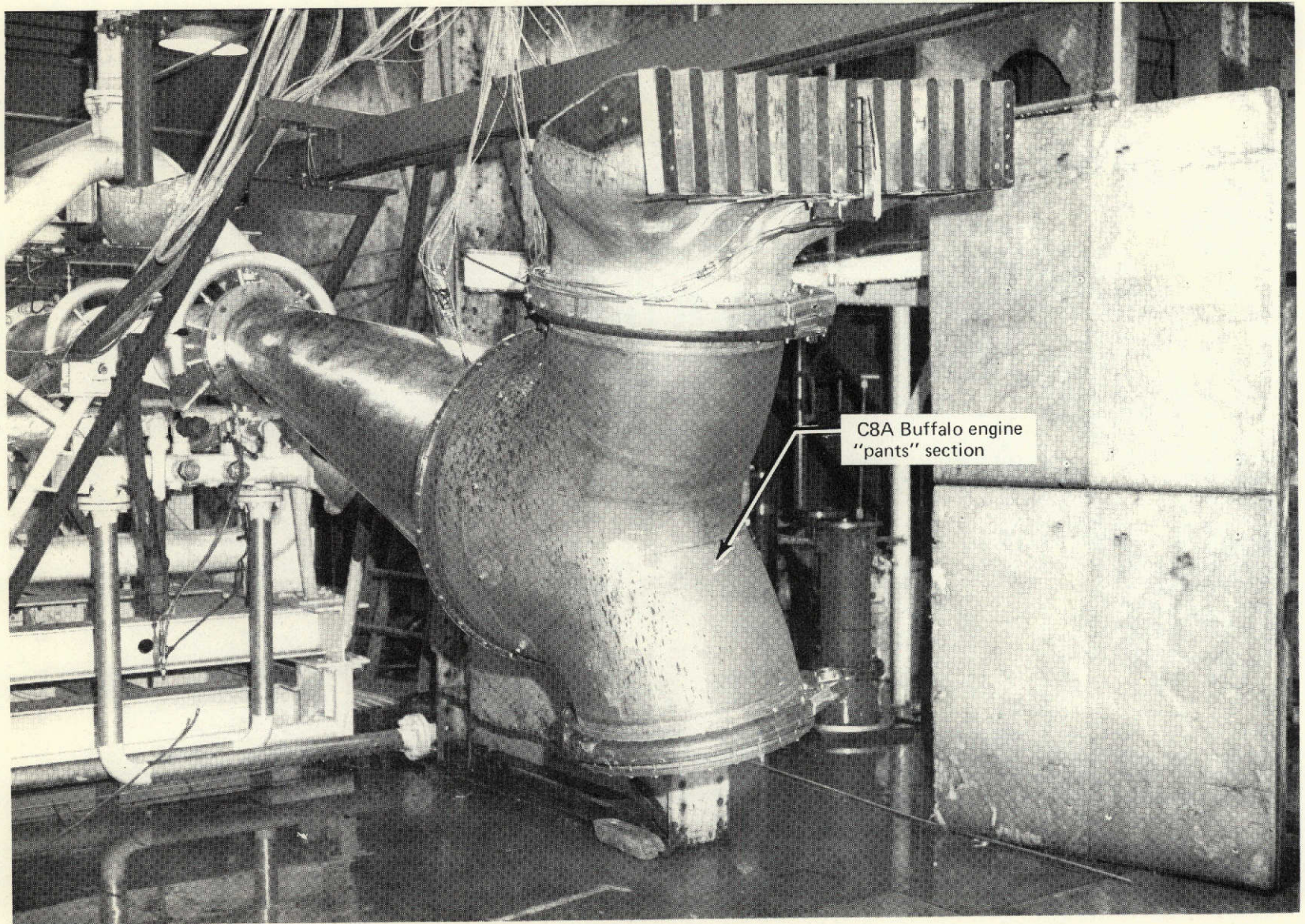


FIGURE 2.—C8A BUFFALO 13-LOBE SUPPRESSOR NOZZLE

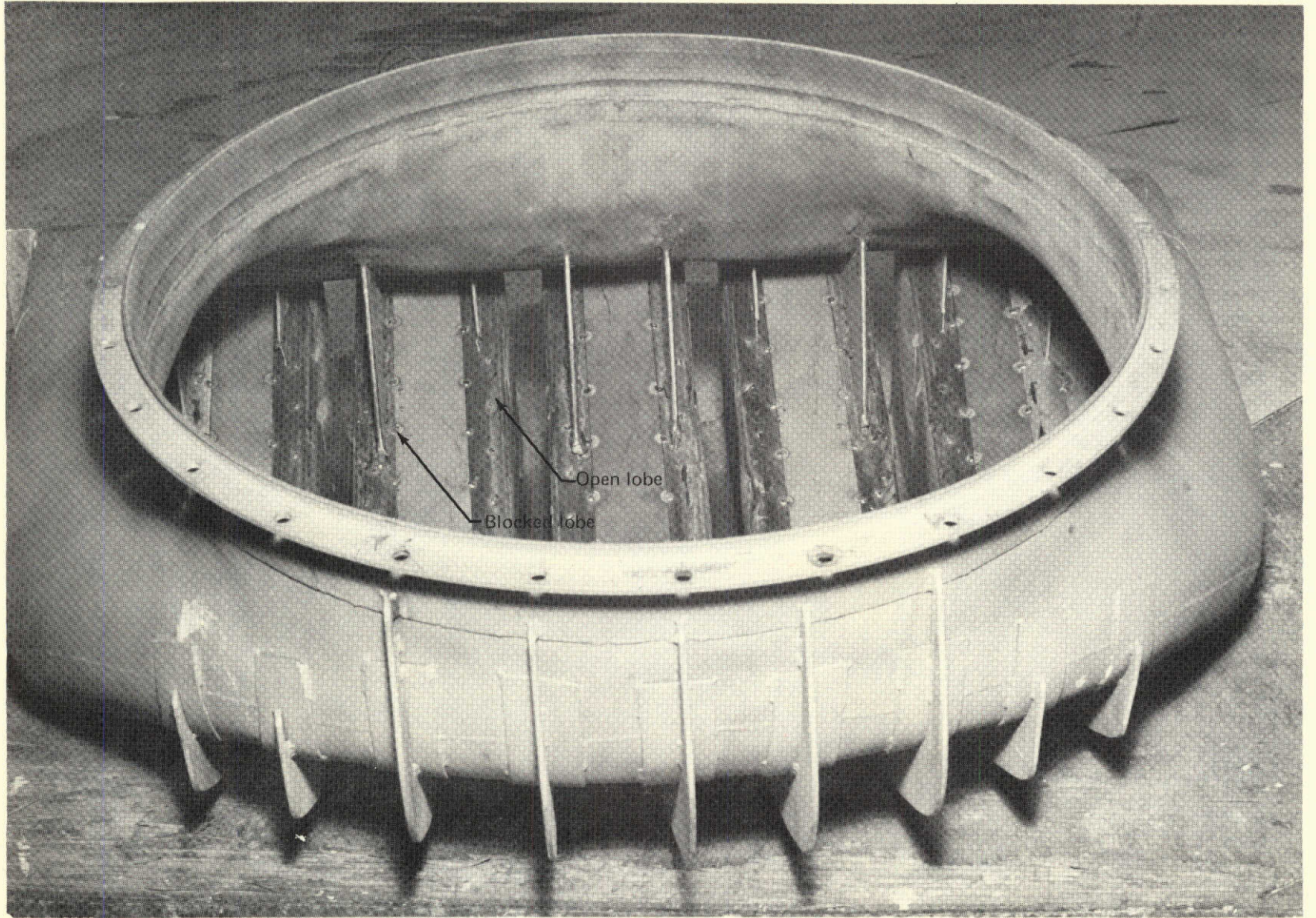


FIGURE 3.—INSIDE VIEW OF C8A BUFFALO SUPPRESSOR NOZZLE, UPSTREAM LOBE BLOCKERS INSTALLED

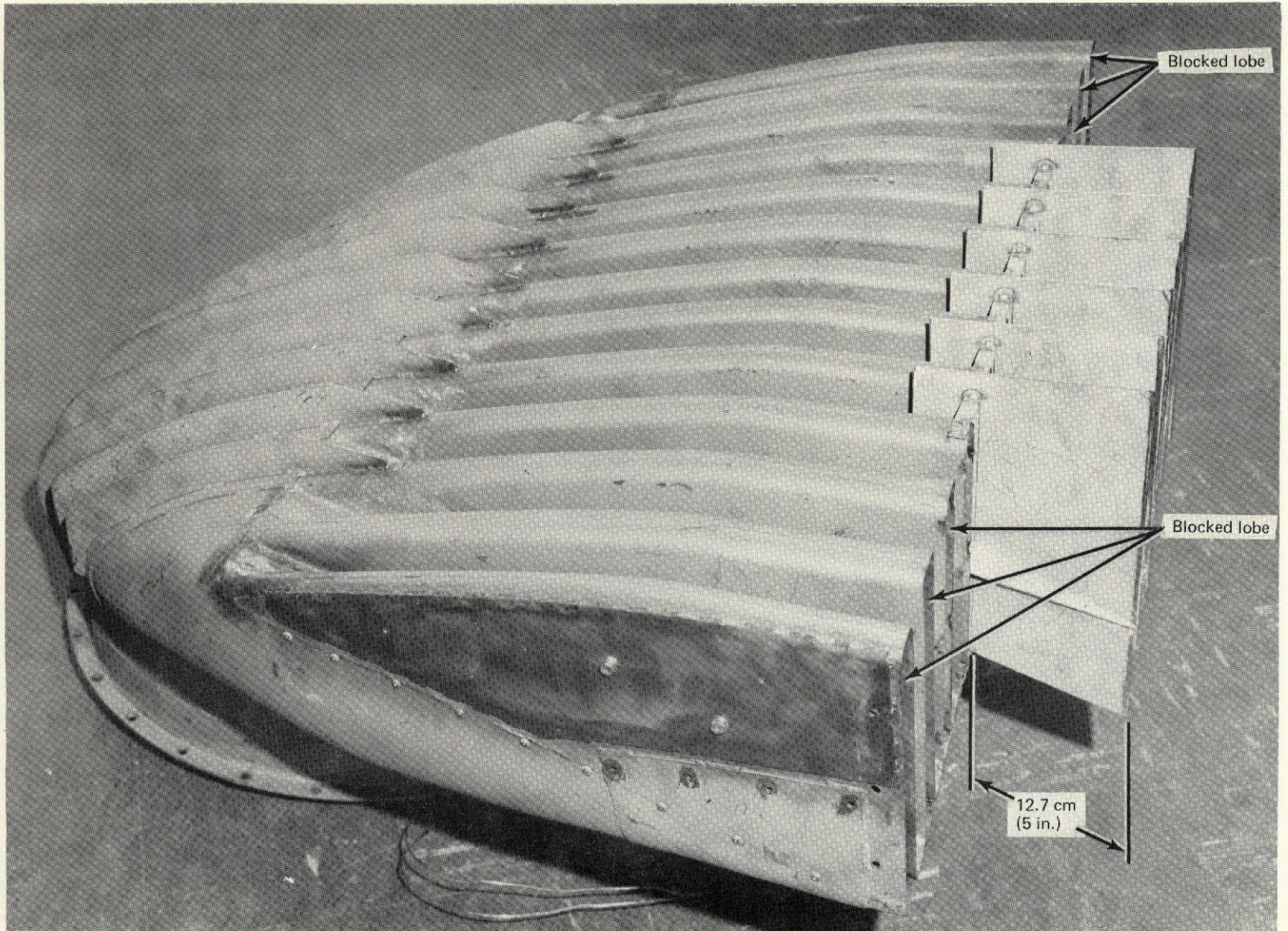


FIGURE 4.—C8A BUFFALO LOBED NOZZLED WITH SECONDARY FLOW SPLITTERS (FENCES) INSTALLED



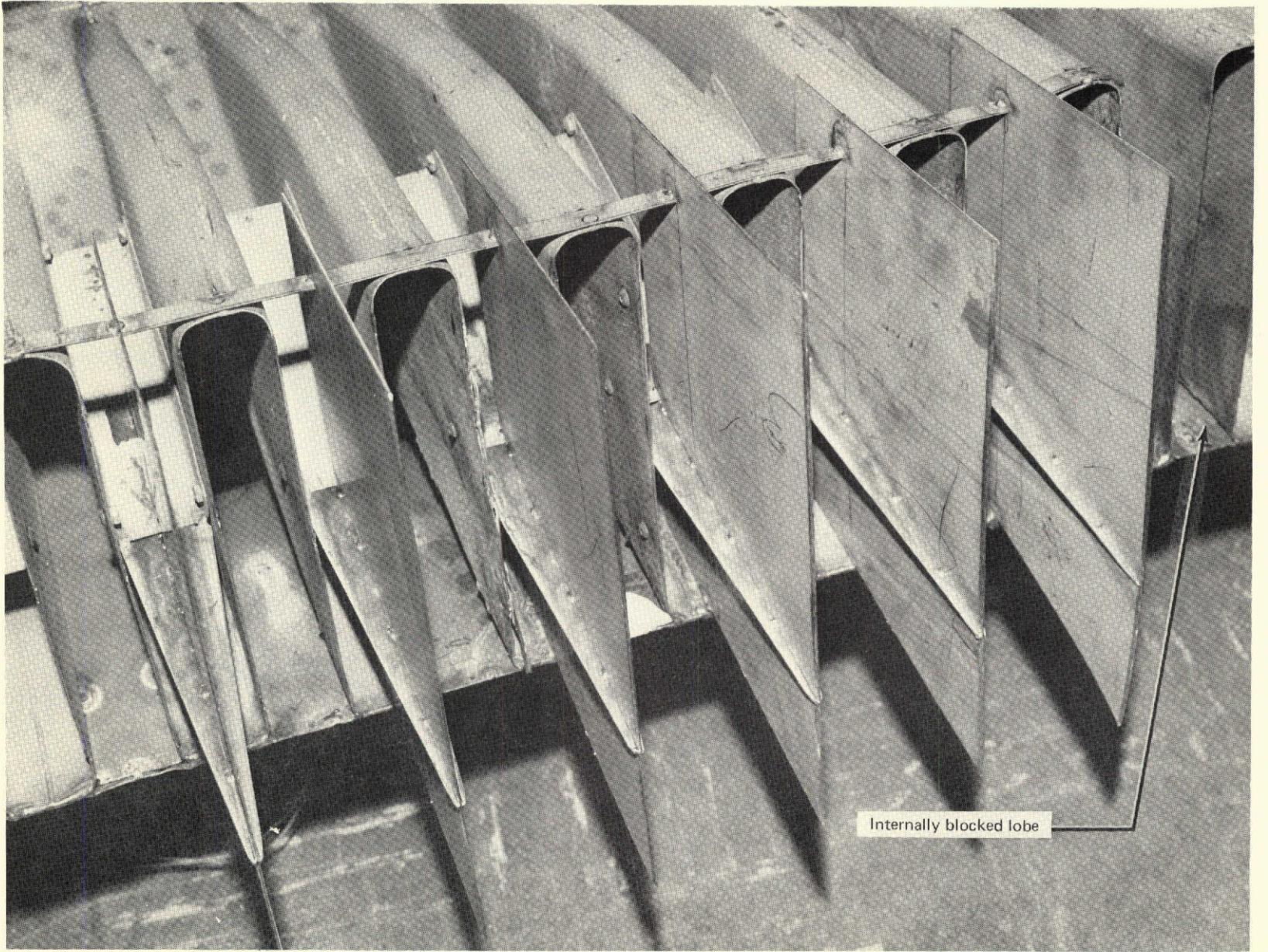


FIGURE 5.—AFT VIEW OF SECONDARY FLOW SPLITTERS (FENCES)

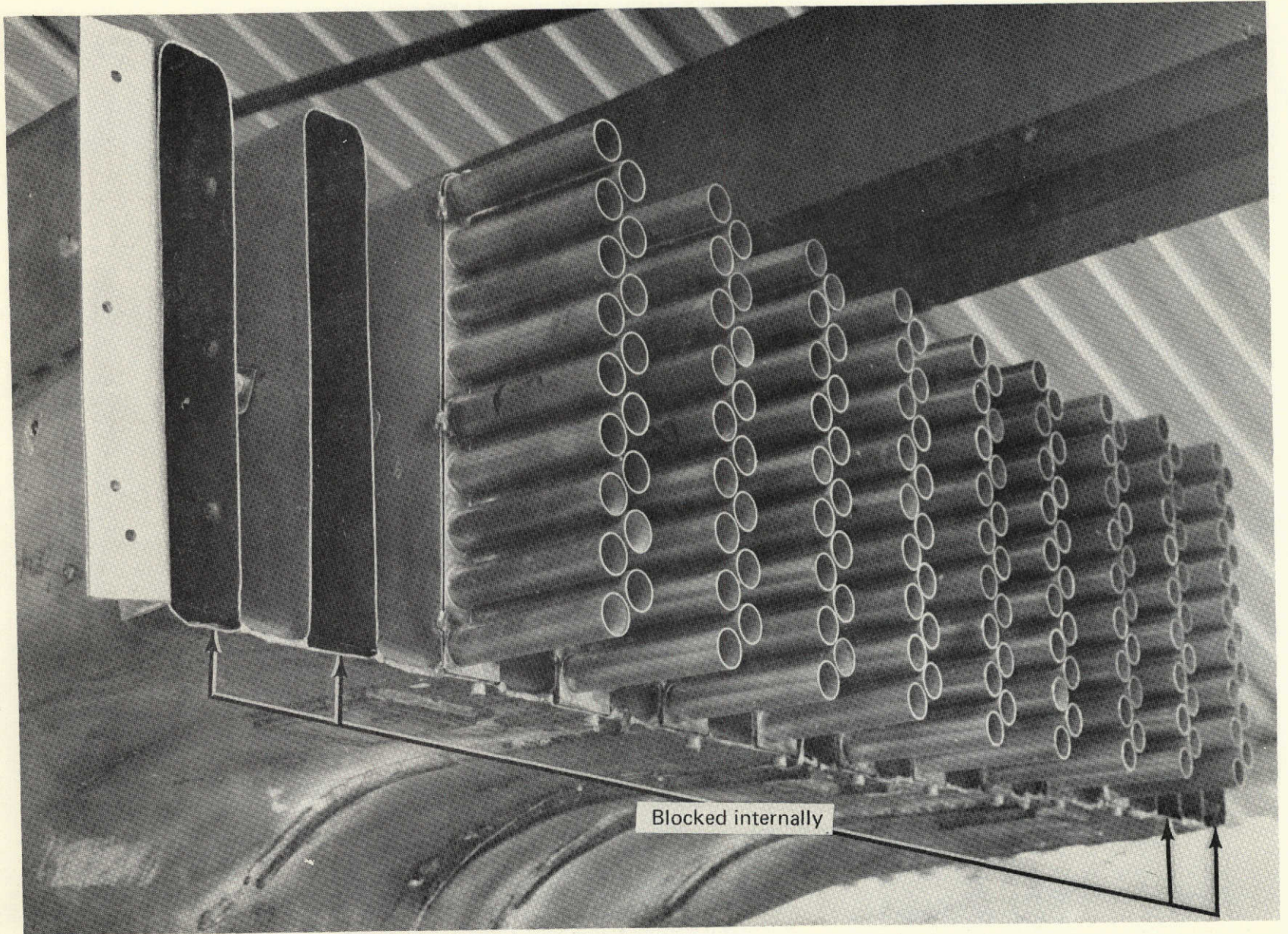
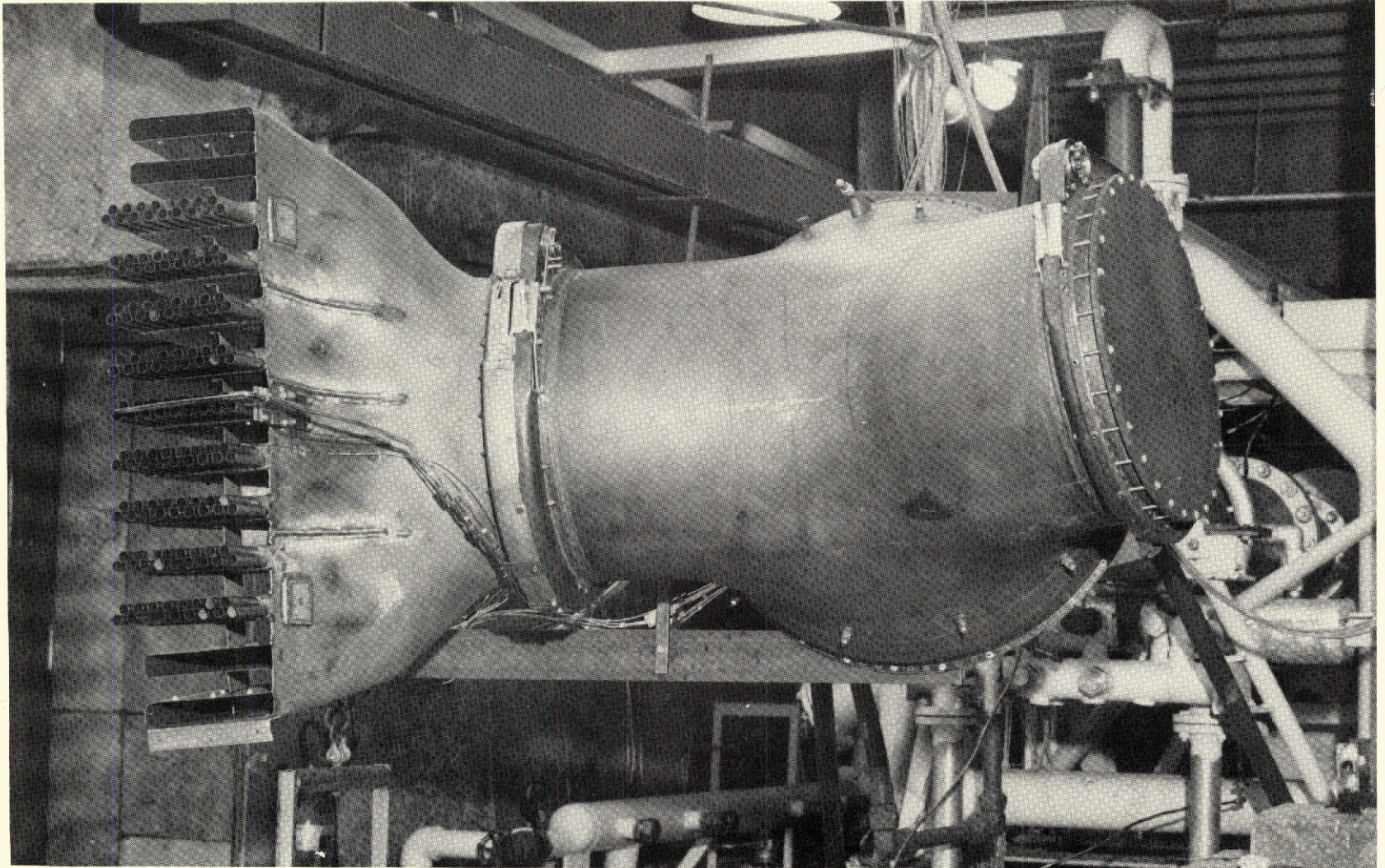
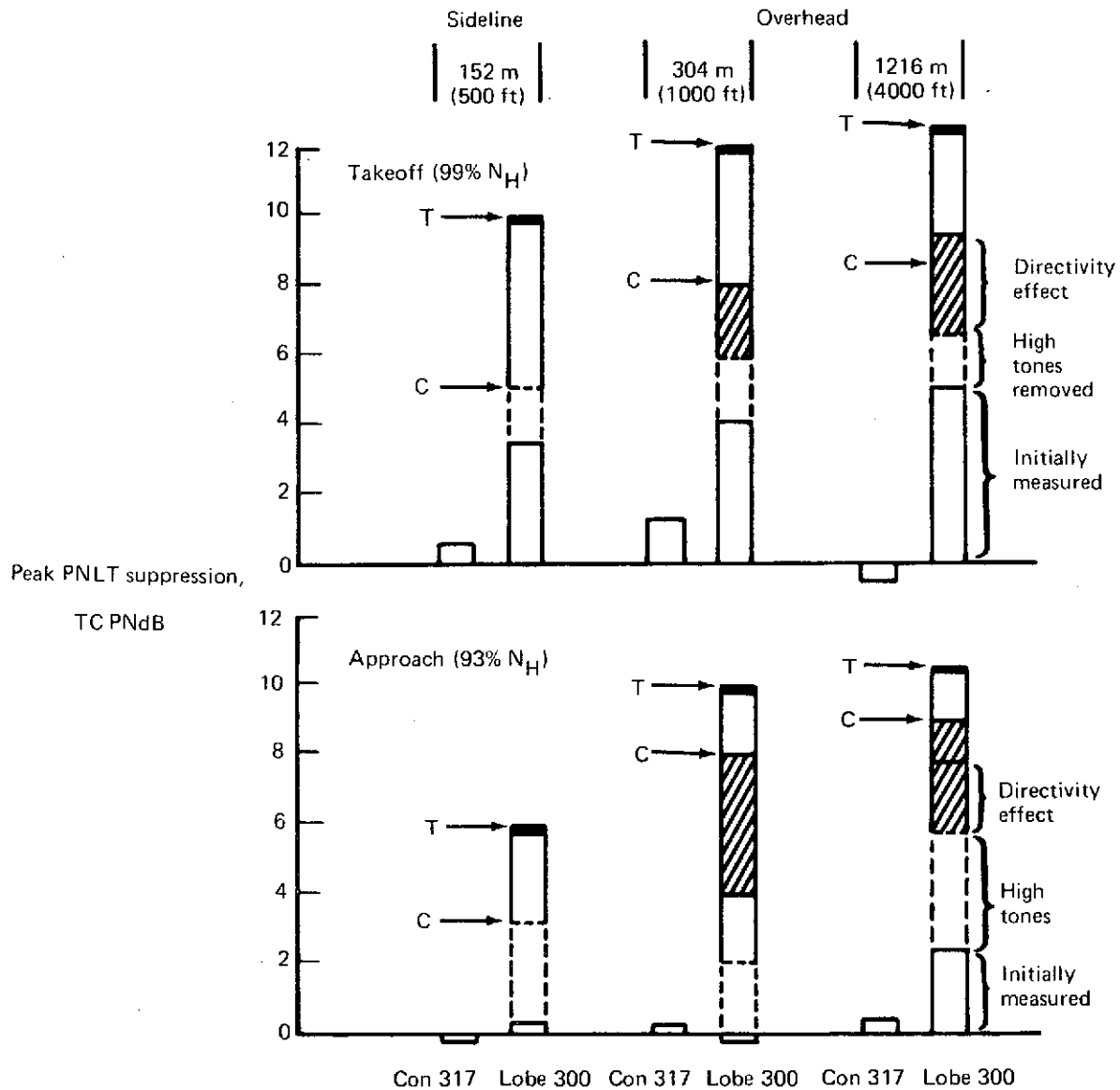


FIGURE 6.—TUBE ENDS INSTALLED ON NINE LOBES, REMAINING FOUR BLOCKED

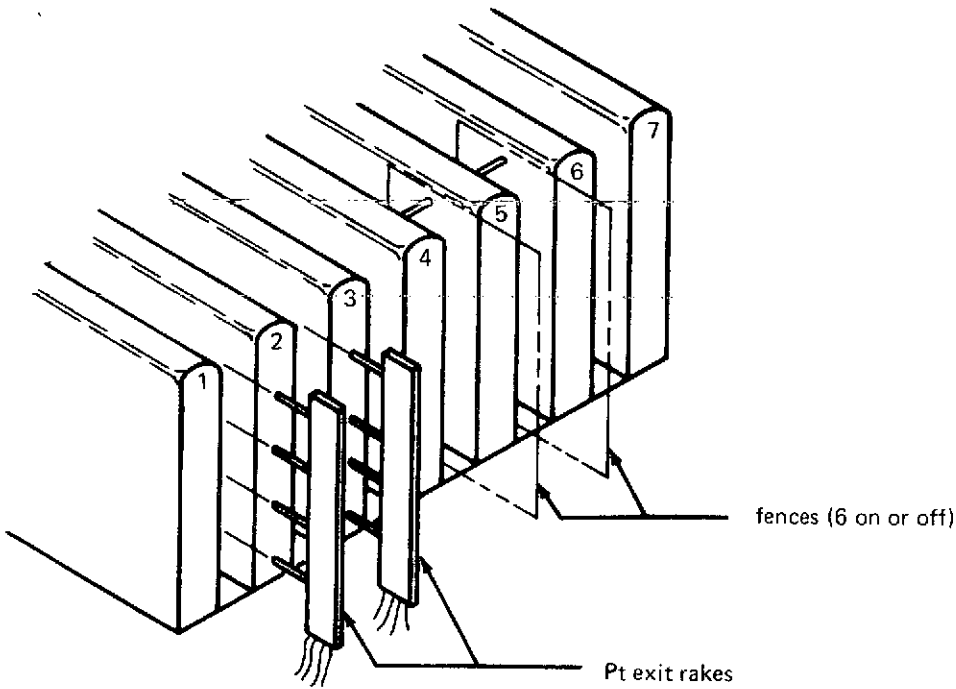


*FIGURE 7.—C8A LOBE NOZZLE IN VERTICAL POSITION FOR DIRECTIVITY EVALUATION*

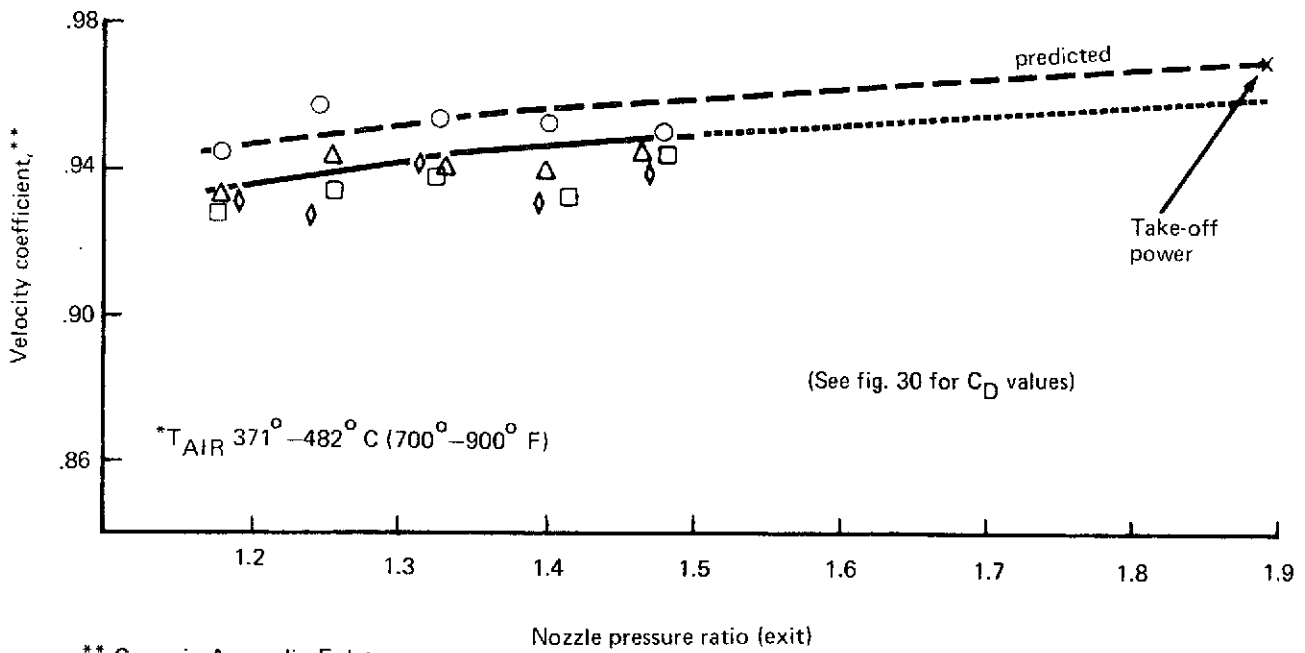


All data, colander removed.  
 Con 317 = conical, 2045 cm<sup>2</sup> (317 in.<sup>2</sup>)  
 Lobe 300 = lobe, 1936 cm<sup>2</sup> (300 in.<sup>2</sup>)  
 C = peak reduction confirmed during hot nozzle rig test  
 T = BNS-3 target values

FIGURE 8.—FIXED AREA NOZZLE ACOUSTIC SUMMARY CHART



| run  | exit rake loc. | T <sub>AIR</sub> | fences (6) |
|------|----------------|------------------|------------|
| ○ 14 | lobes 1 & 4    | hot*             | on         |
| □ 16 | lobes 2 & 3    | hot              | on         |
| ◇ 18 | lobes 2 & 3    | hot              | off        |
| △ 19 | lobes 1 & 4    | hot              | off        |



\*\*  $C_{VPE}$  in Appendix E data output

FIGURE 9.—LOBE NOZZLE PERFORMANCE, SEVEN LOBES FLOWING

Add 4.9 dB to obtain octave band level

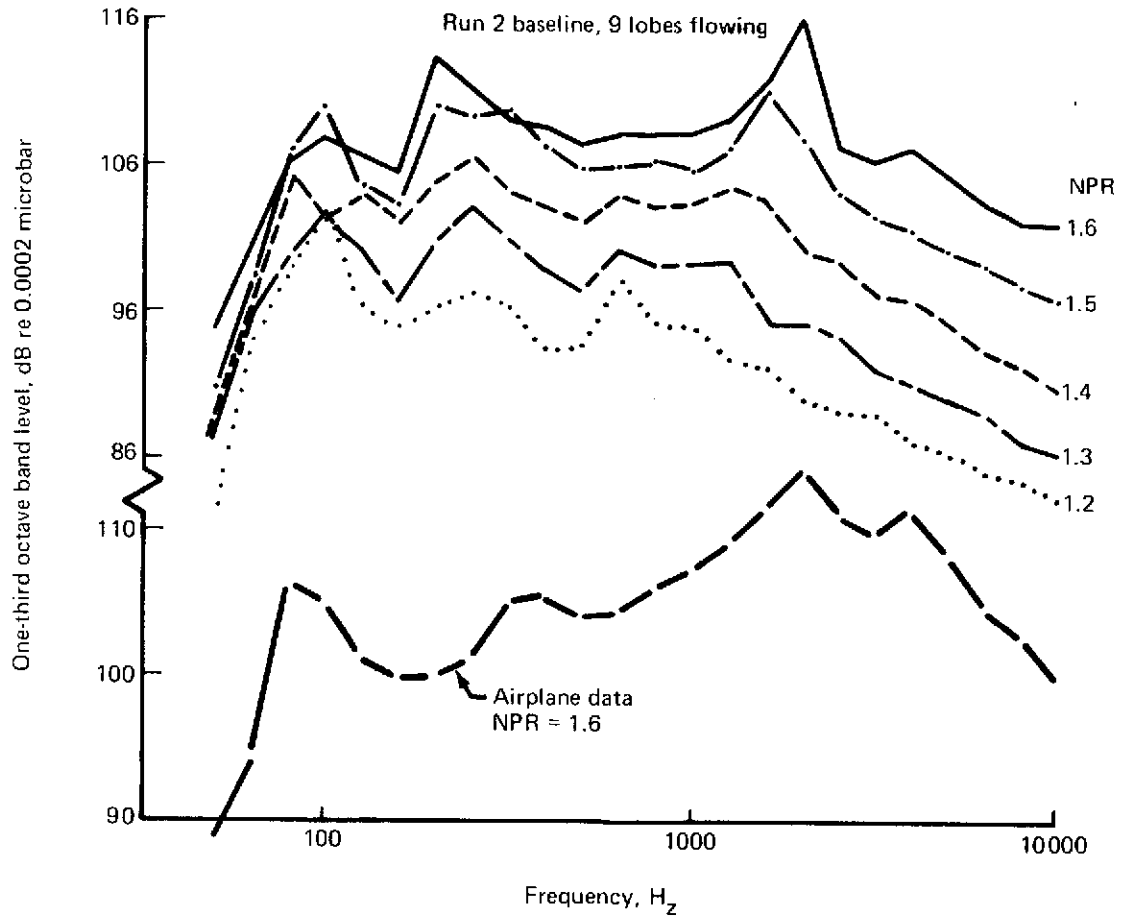


FIGURE 10.—LOBED NOZZLE SPL BASELINE, 115° LOCATION

Add 4.9 DB to obtain octave band level

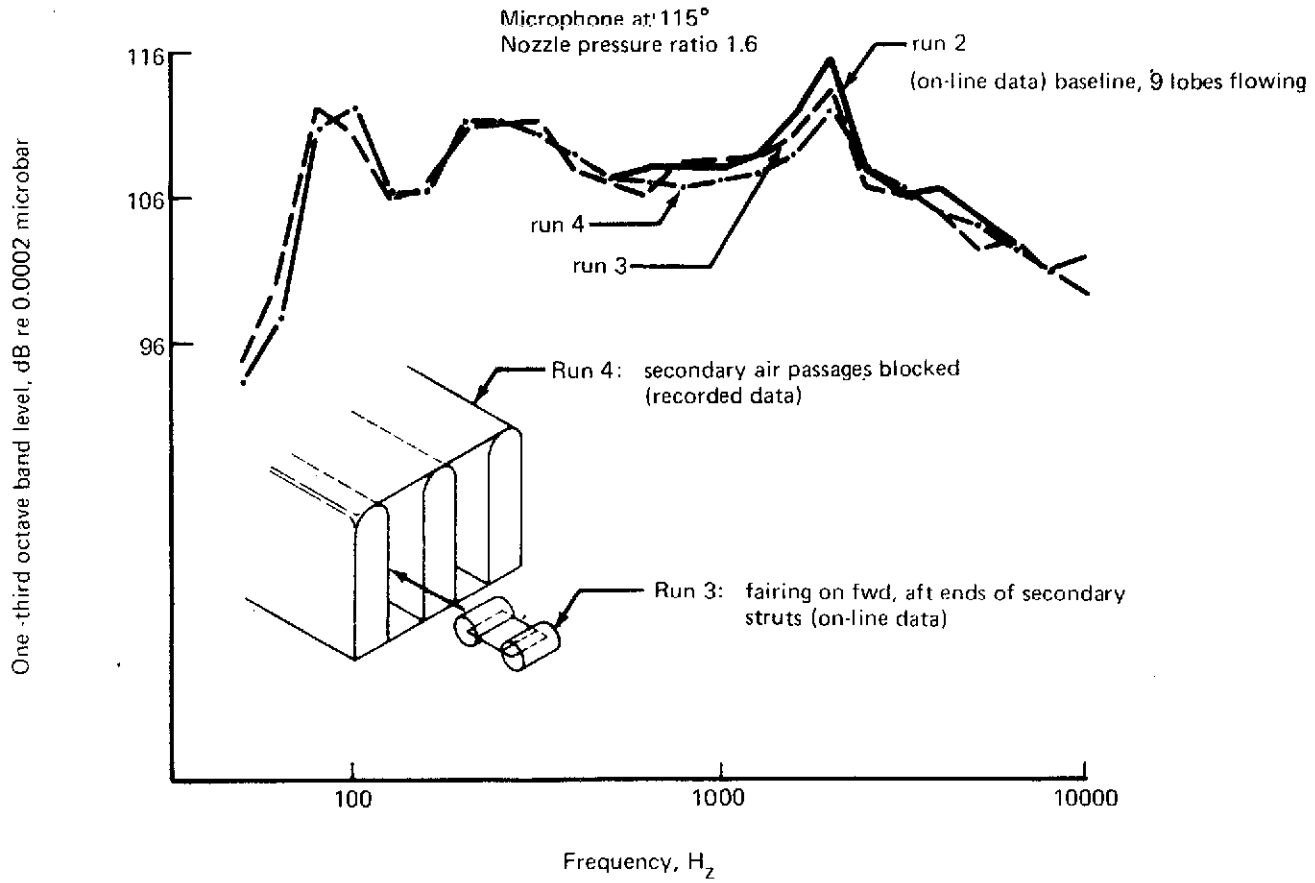


FIGURE 11.—FAIRING AND SECONDARY FLOW BLOCKAGE EFFECTS ON SPL SPIKE

Add 4.9 dB to obtain octave band level

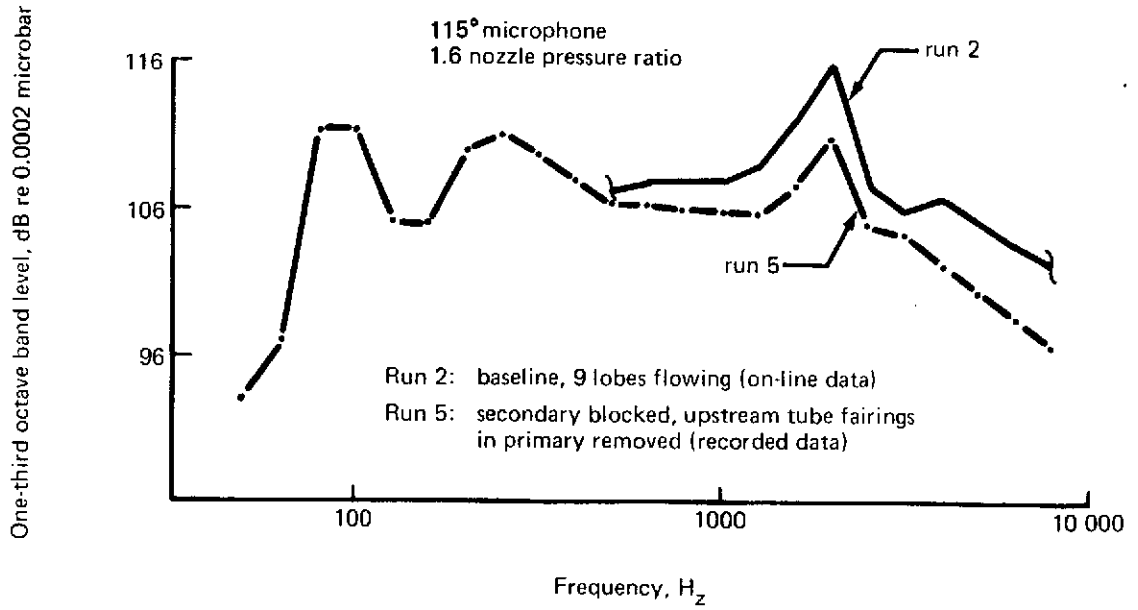


FIGURE 12.—EFFECT ON SPL SPIKE OF REMOVING UPSTREAM TUBE FAIRINGS



Add 4.9 dB to obtain octave band level

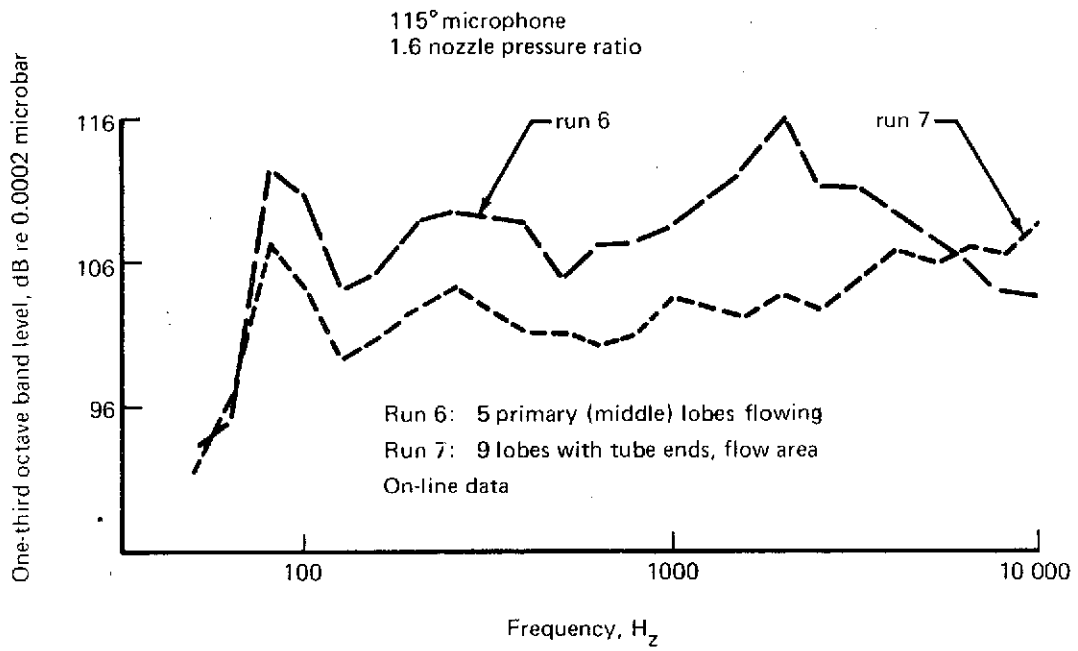


FIGURE 13.—EFFECT ON SPL SPIKE UPON ADDING TUBE ENDS

See figure 16 for nozzle orientation with respect to microphones

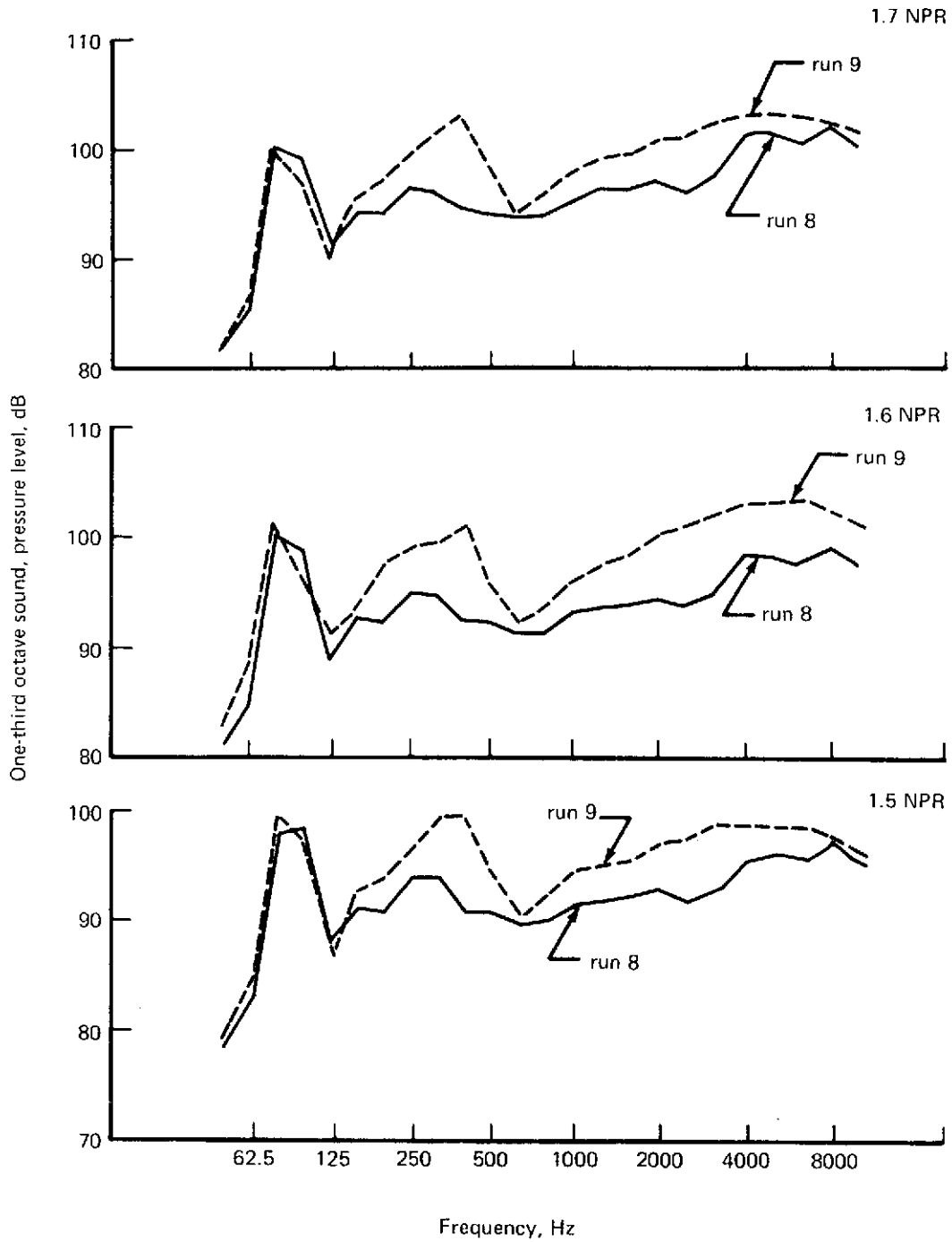


FIGURE 14.—ACOUSTIC DIRECTIVITY EFFECT AT 110° ANGLE

See figure 16 for nozzle orientation with respect to microphones

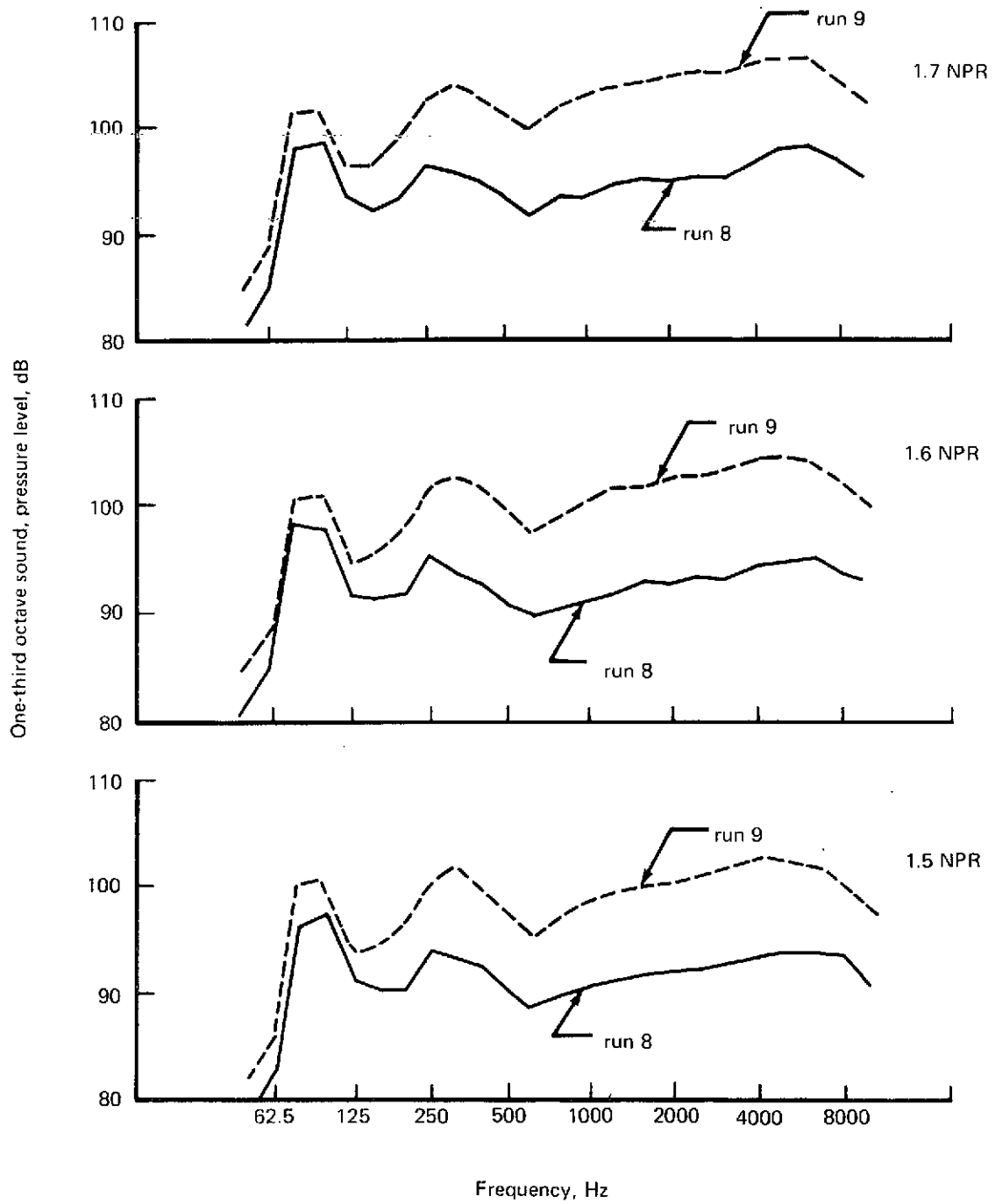


FIGURE 15.—ACOUSTIC DIRECTIVITY EFFECT AT 130° ANGLE

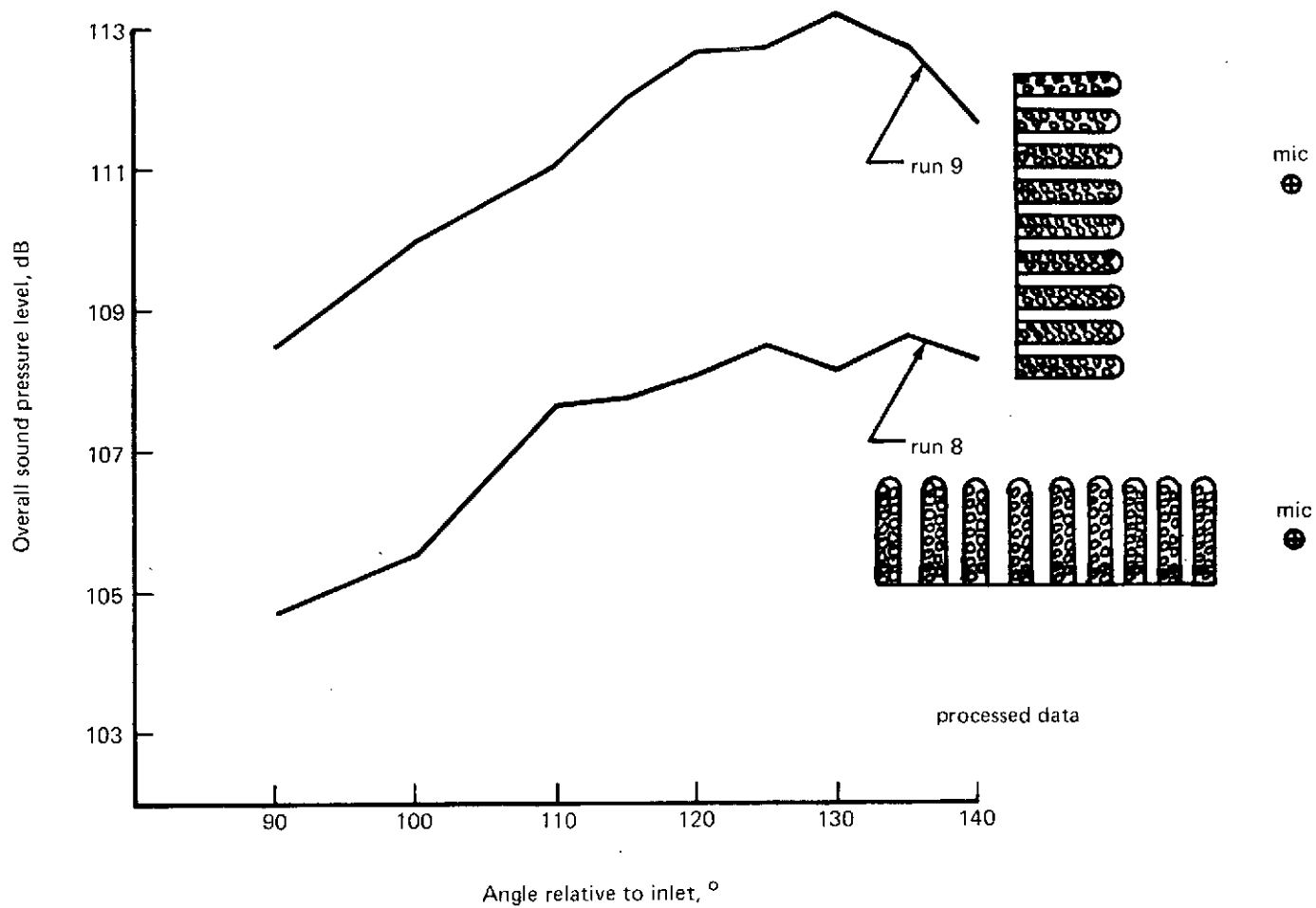


FIGURE 16.—ACOUSTIC DIRECTIVITY AT NOZZLE PRESSURE RATIO OF 1.5

See figure 16 for nozzle orientation with respect to microphones

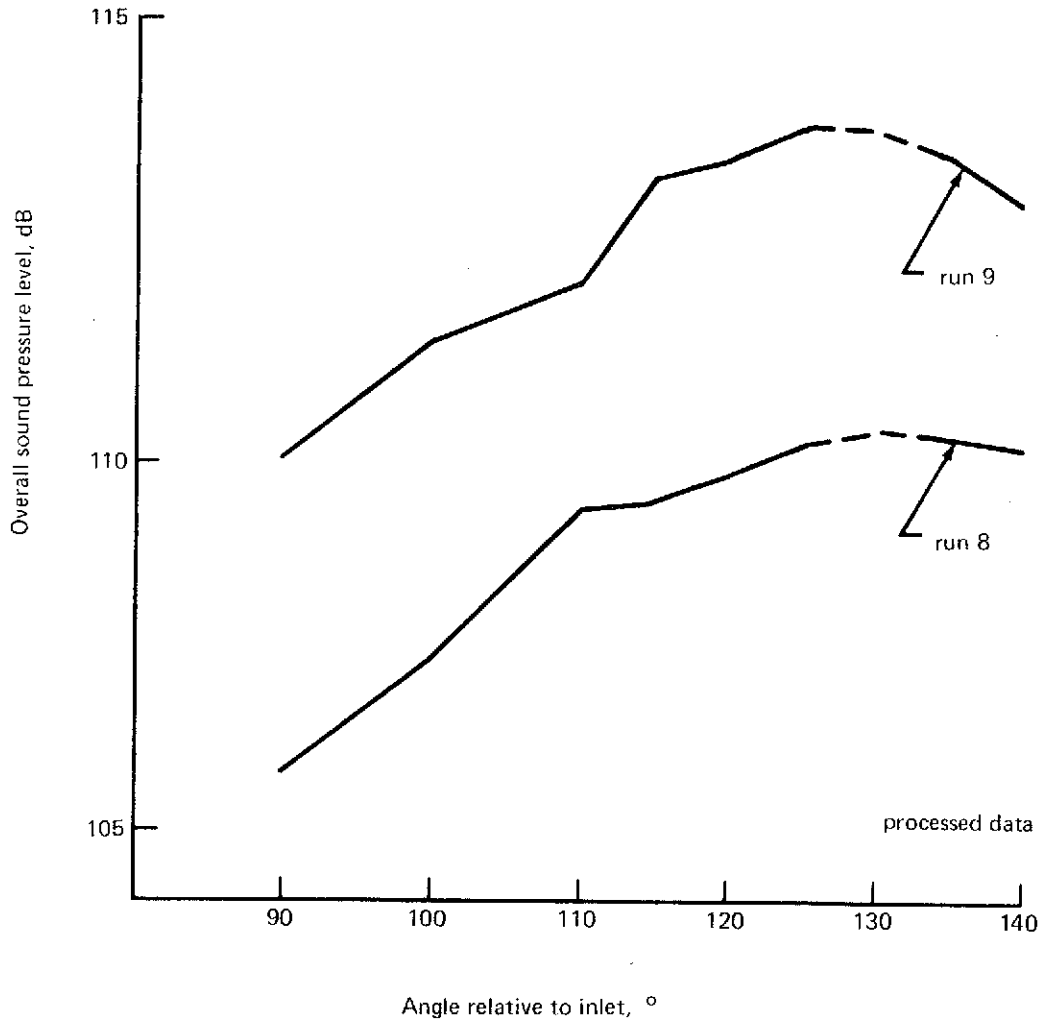


FIGURE 17.—ACOUSTIC DIRECTIVITY AT NOZZLE PRESSURE RATIO OF 1.6

See figure 16 for nozzle orientation with respect to microphones

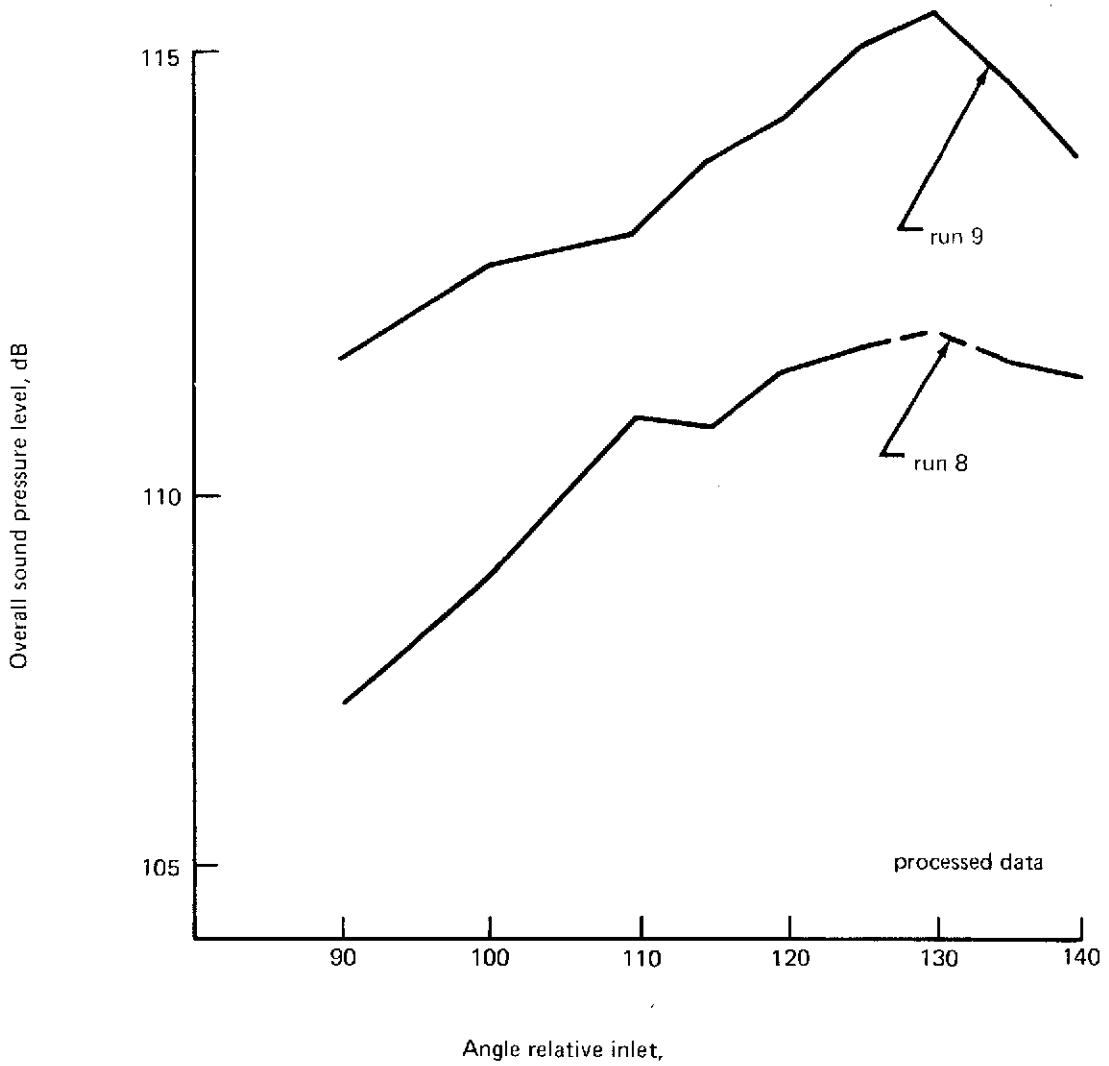
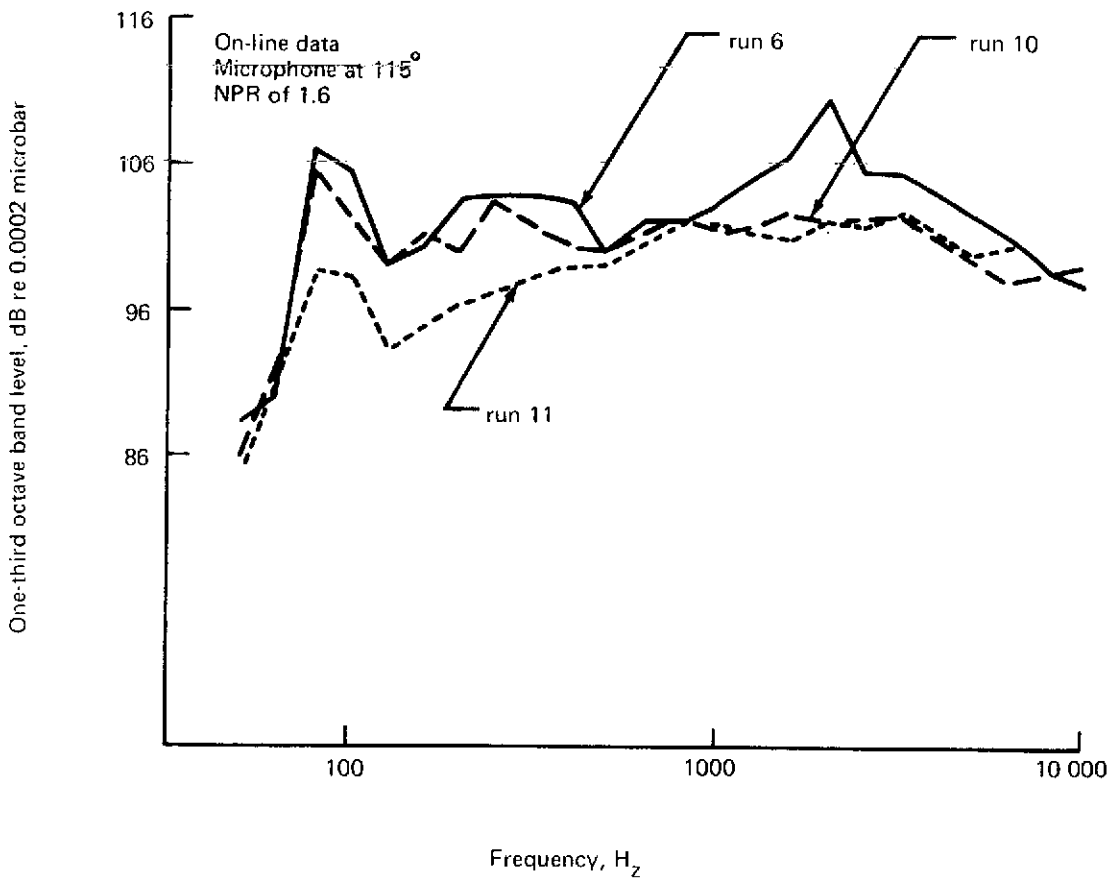




FIGURE 18.—ACOUSTIC DIRECTIVITY AT NOZZLE PRESSURE RATIO OF 1.7



 Run 6: 5 center primary lobes flowing.

 Run 10: 5 alternate primary lobes flowing.


 Run 11: 4 alternate primary lobes flowing.

FIGURE 19.—SPL SPIKE REMOVAL WITH ALTERNATE LOBES FLOWING

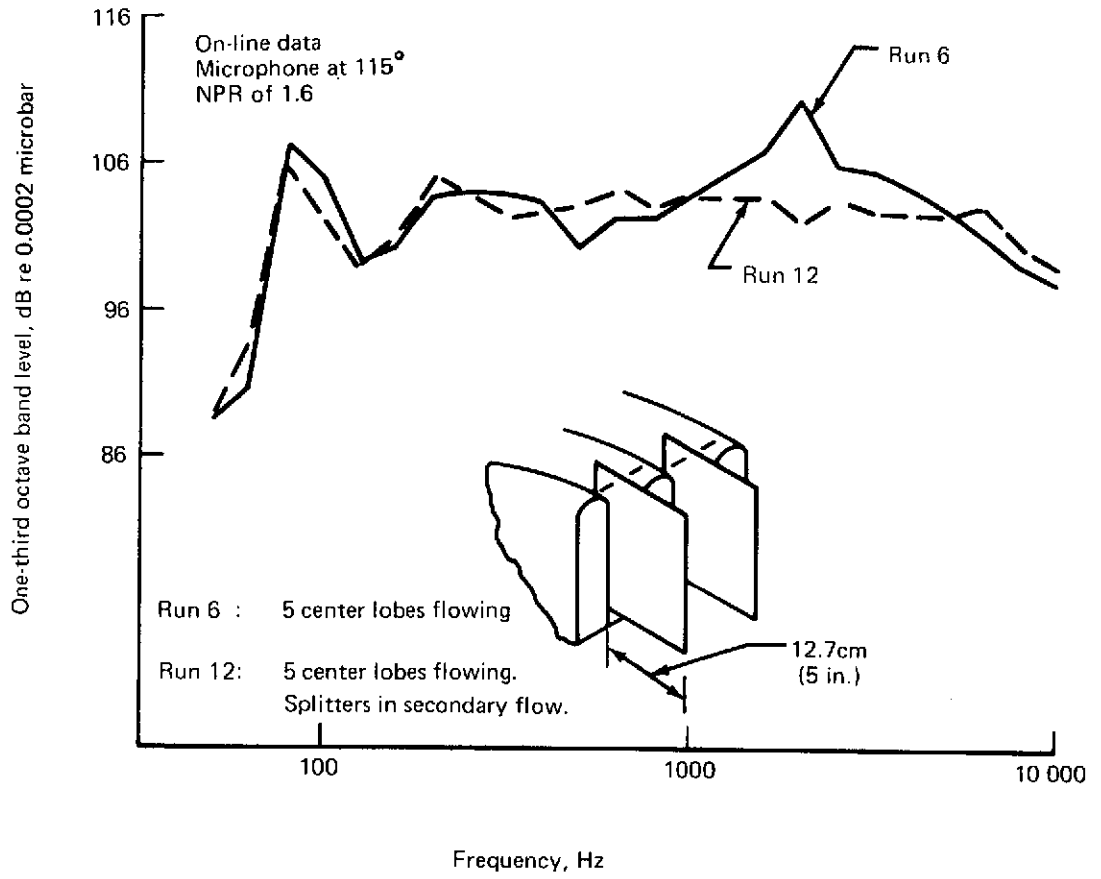


FIGURE 20.—SPL SPIKE REMOVAL WITH SECONDARY-FLOW SPLITTERS



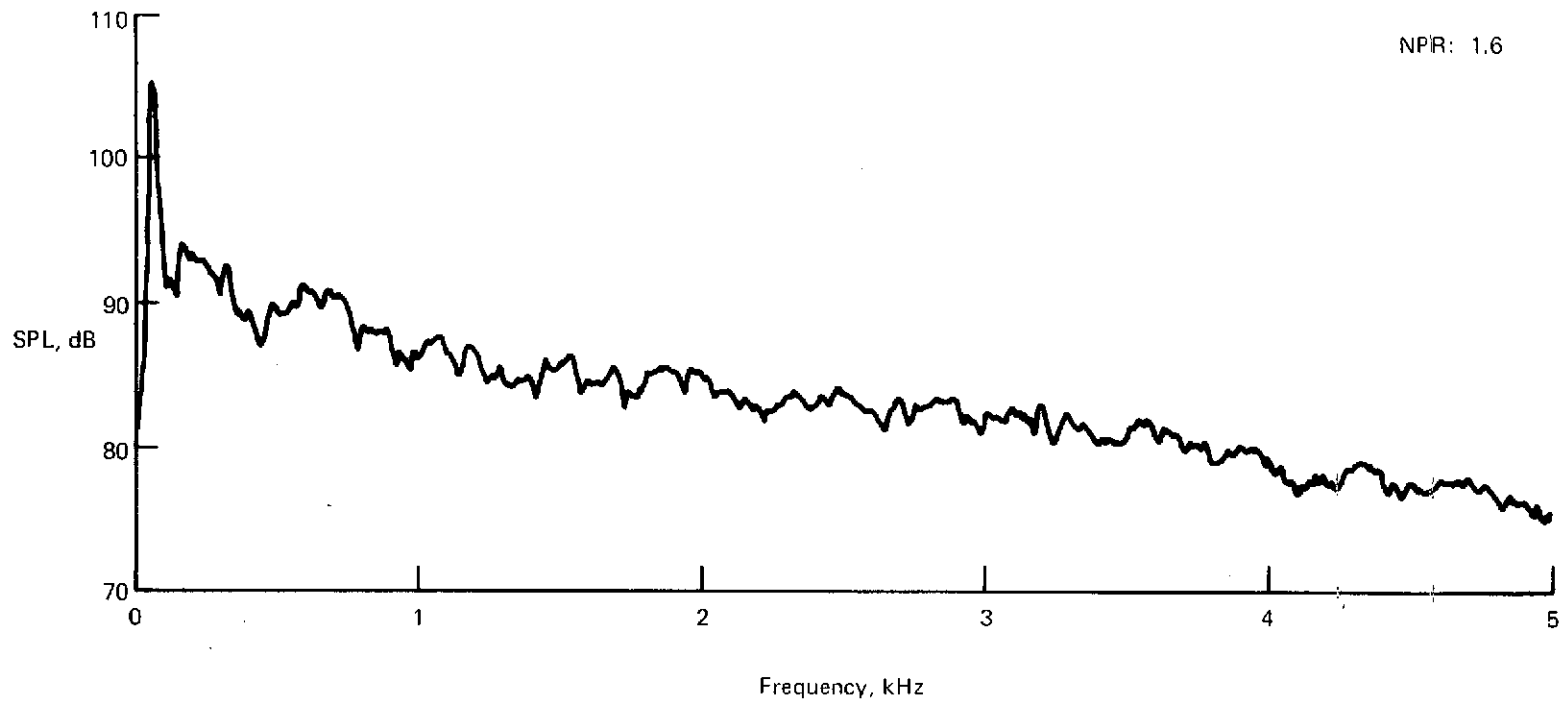


FIGURE 21.—NARROW-BAND ACOUSTICS OF RUN 10 AT 115° ANGLE

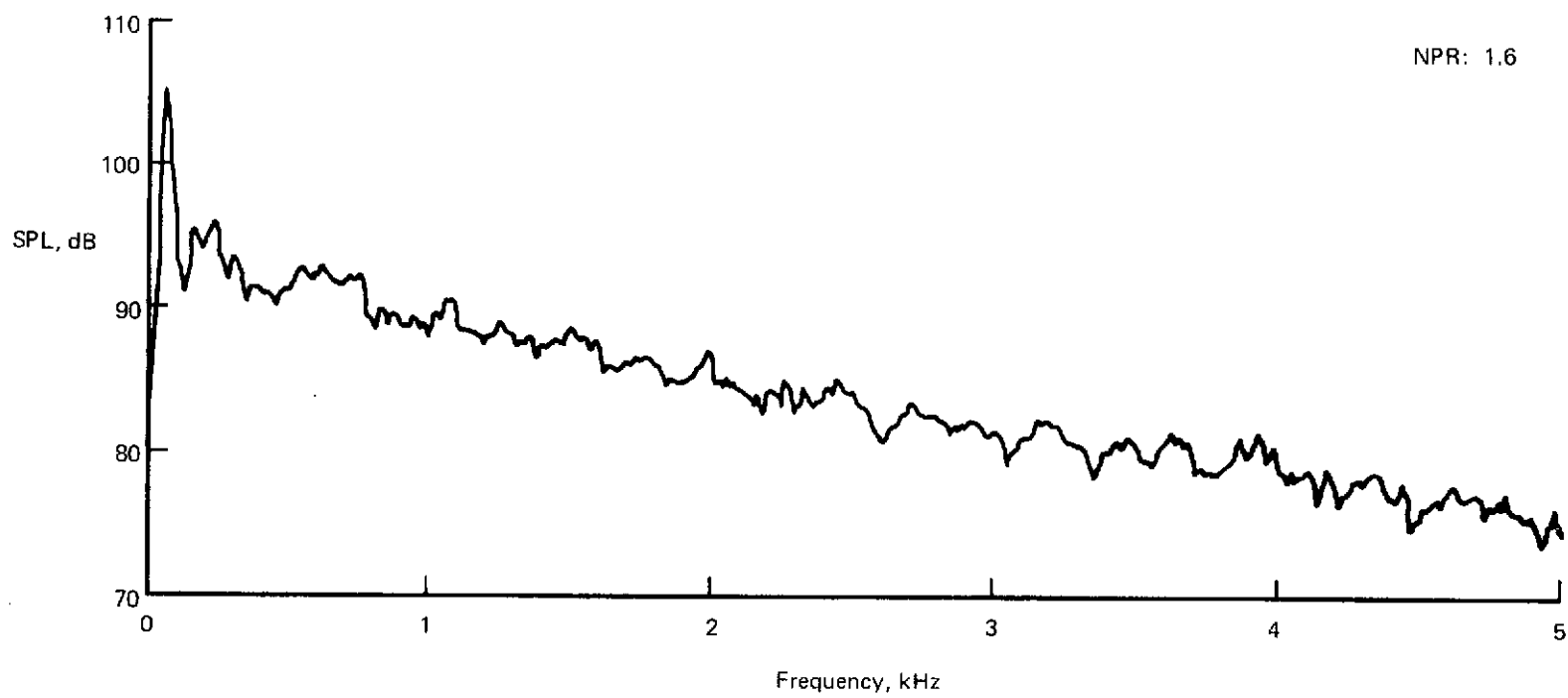


FIGURE 22.—NARROW-BAND ACOUSTICS OF RUN 10 AT 120° ANGLE

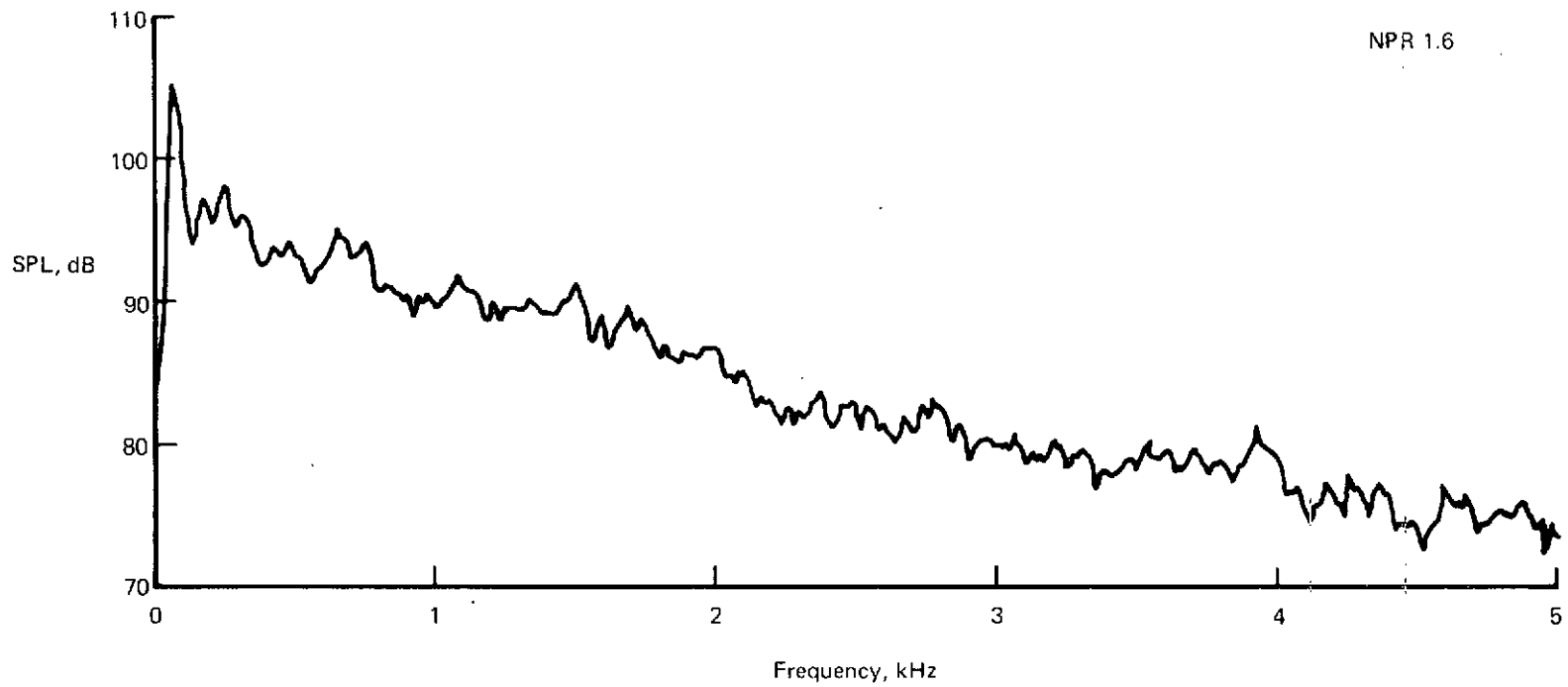


FIGURE 23.—NARROW-BAND ACOUSTICS OF RUN 10 AT 130° ANGLE

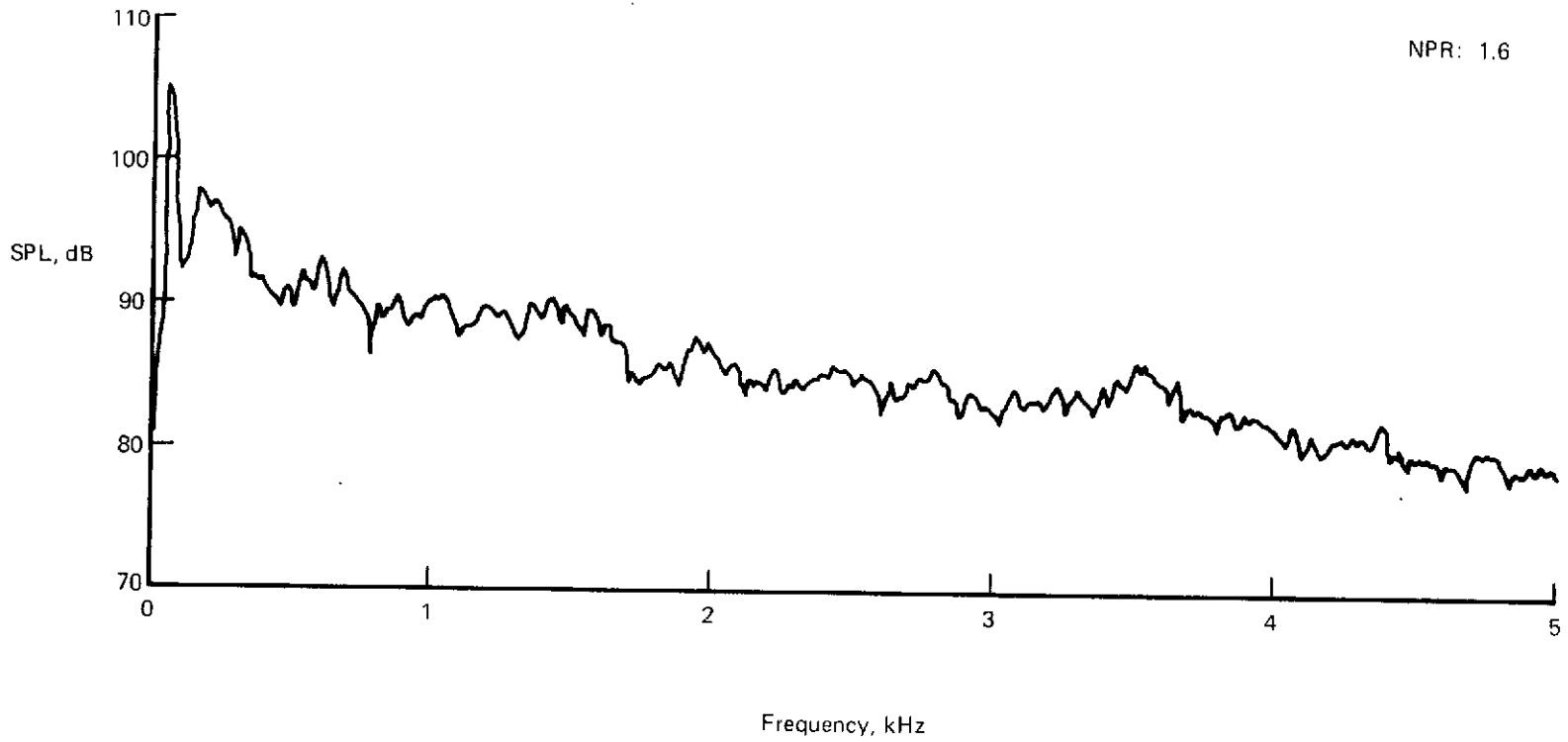


FIGURE 24.—NARROW-BAND ACOUSTICS OF RUN 11 AT 115° ANGLE

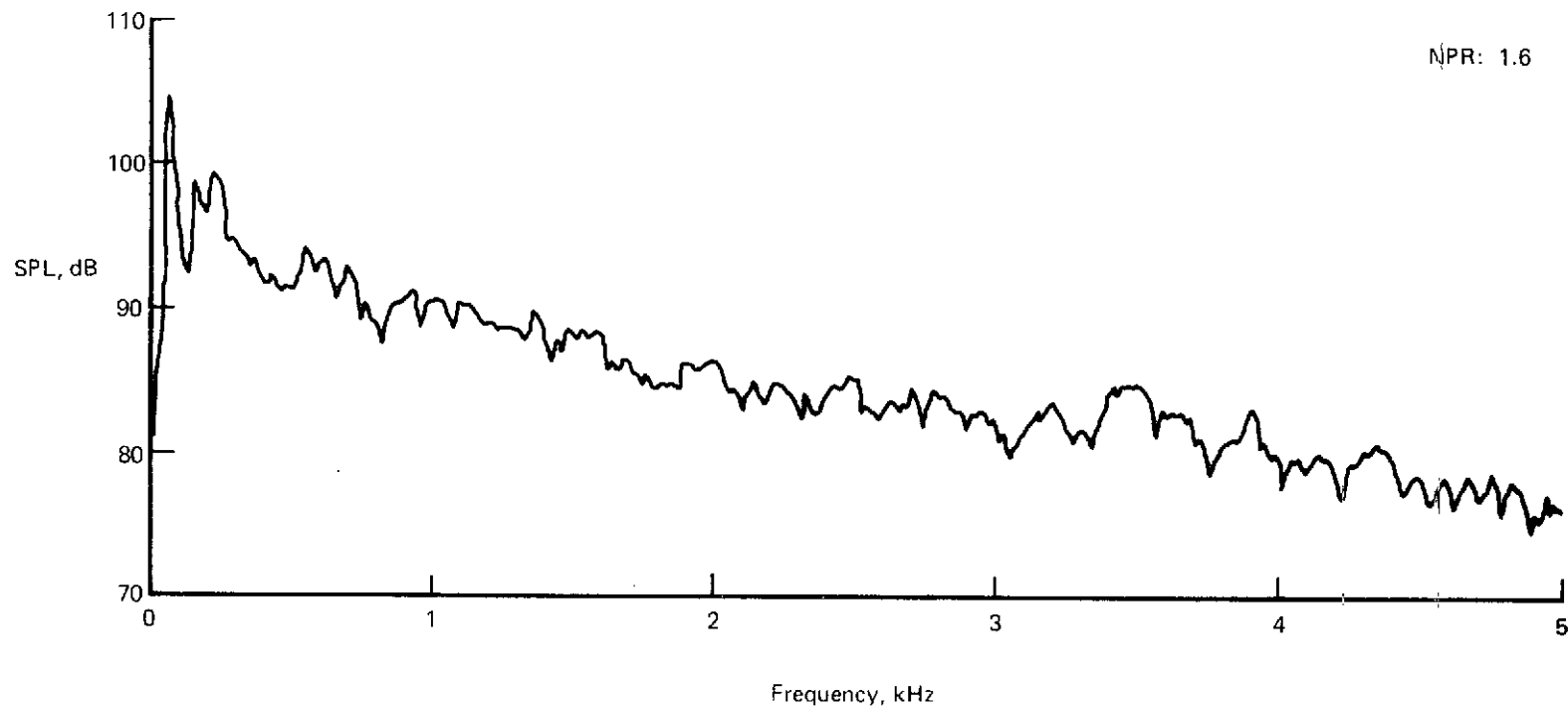


FIGURE 25.—NARROW-BAND ACOUSTICS OF RUN 11 AT 120° ANGLE

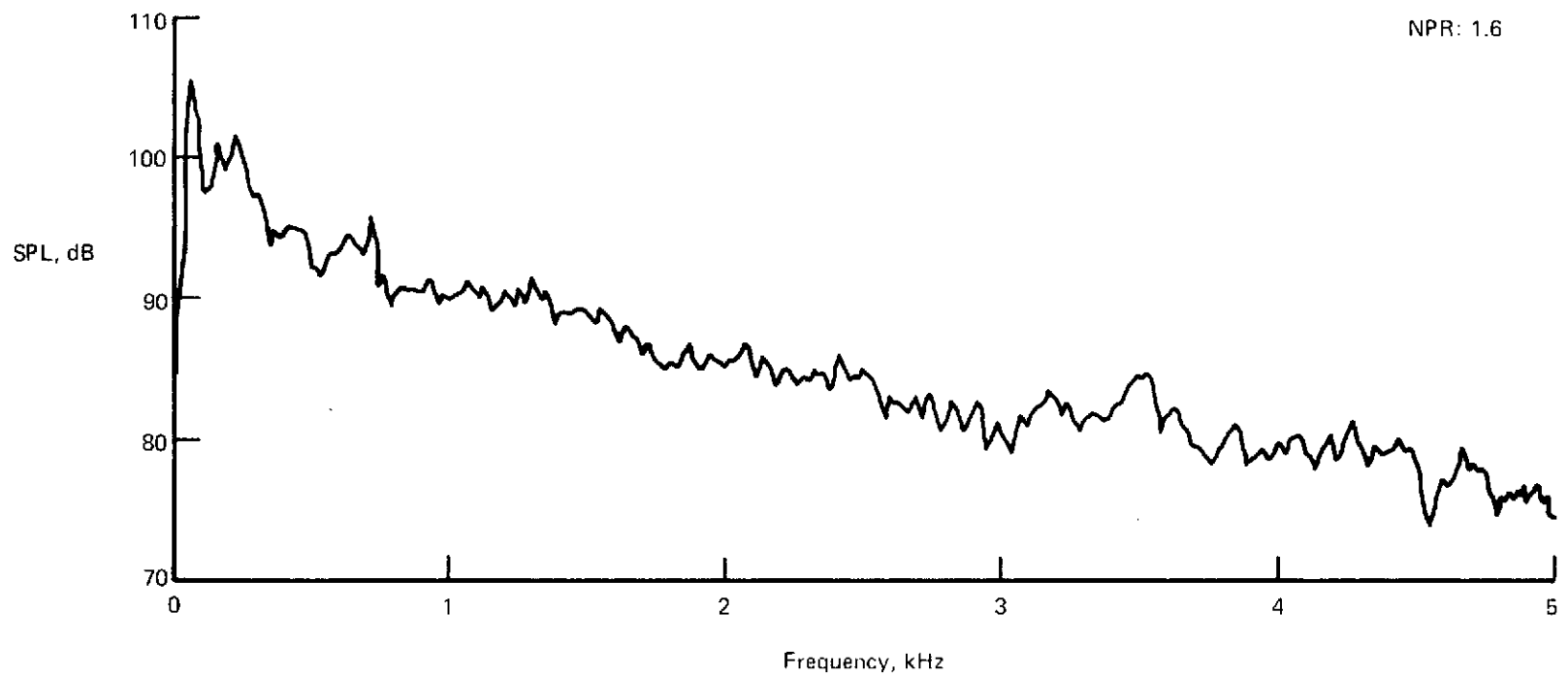


FIGURE 26.—NARROW-BAND ACOUSTICS OF RUN 11 AT 130° ANGLE

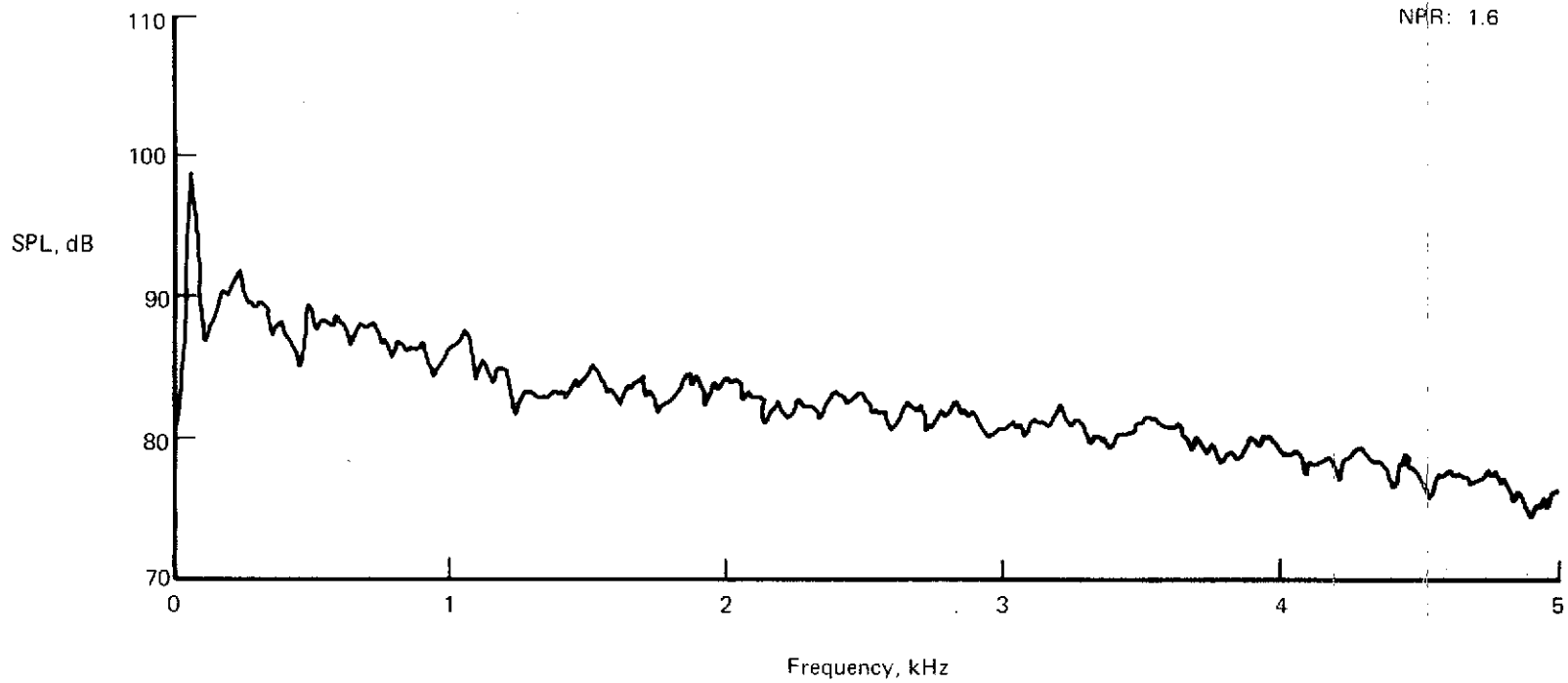


FIGURE 27.—NARROW-BAND ACOUSTICS OF RUN 12 AT 115° ANGLE

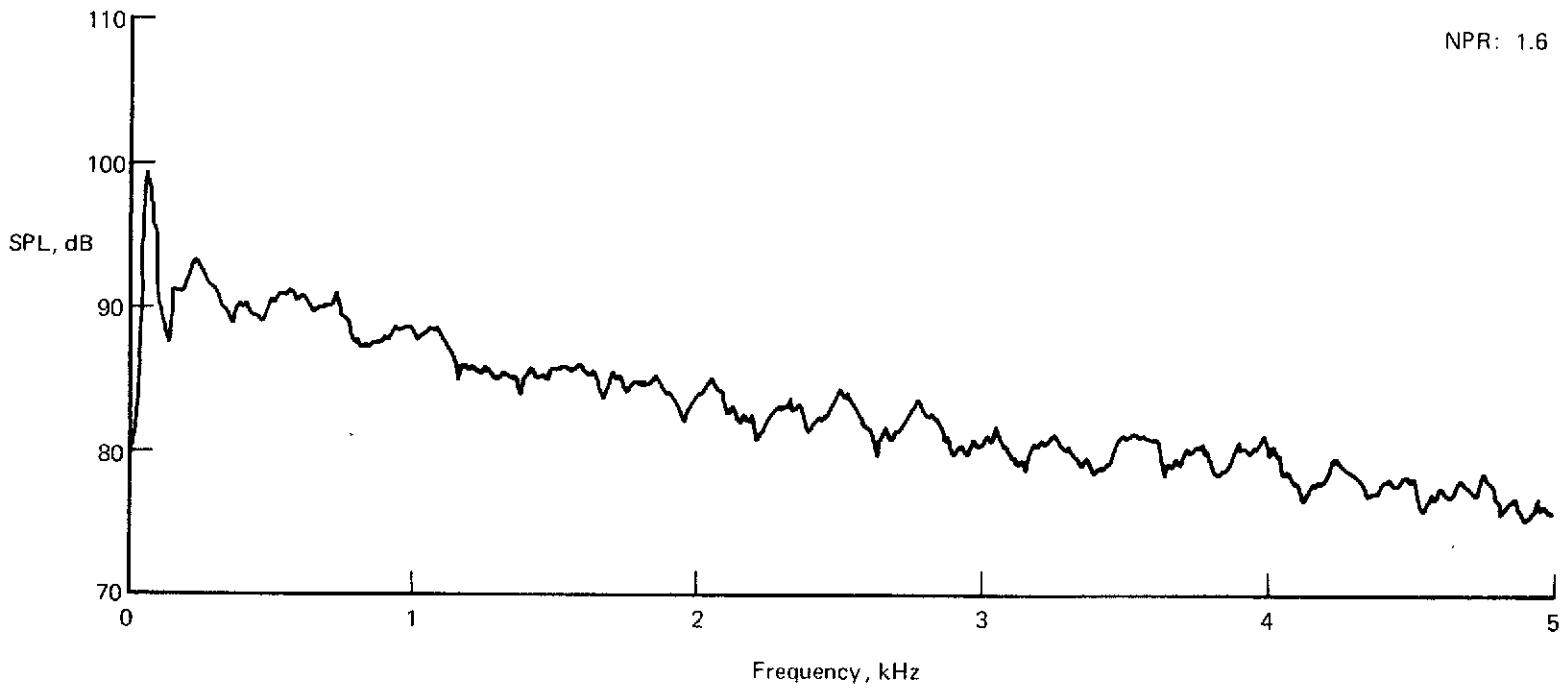


FIGURE 28.—NARROW-BAND ACOUSTICS OF RUN 12 AT 120° ANGLE



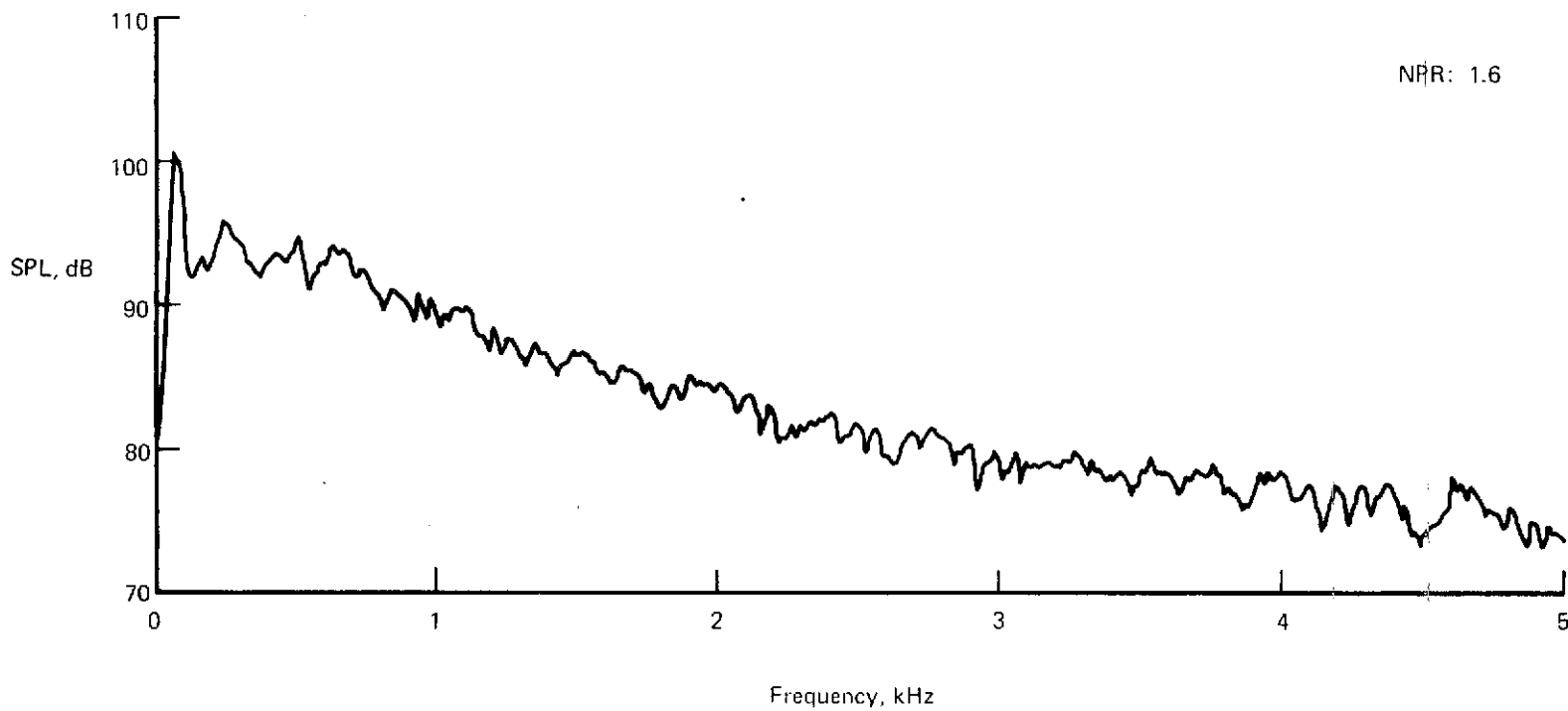
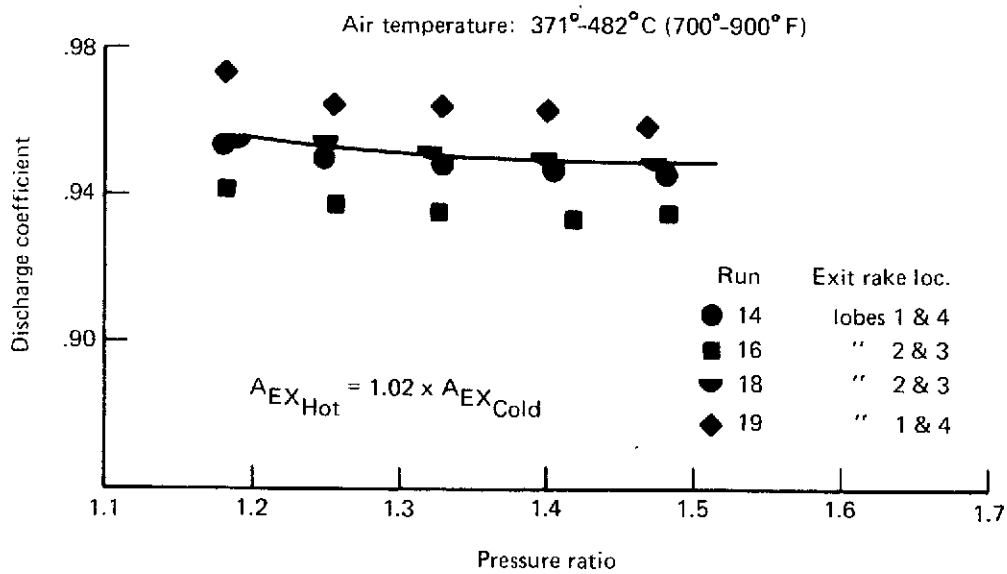
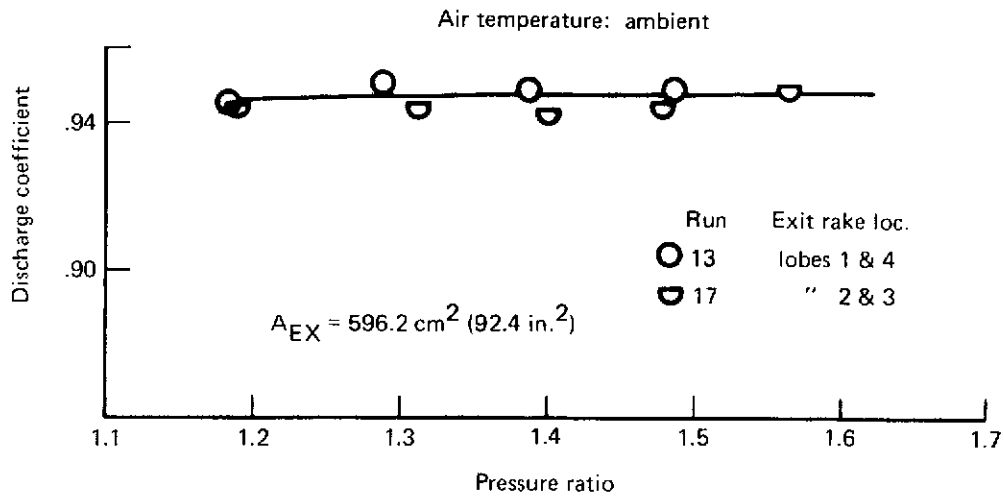


FIGURE 29.—NARROW-BAND ACOUSTICS OF RUN 12 AT 130° ANGLE



**FIGURE 30.—LOBE NOZZLE PERFORMANCE, DISCHARGE COEFFICIENT VERSUS PRESSURE RATIO**

## APPENDIX A

### ORIGINAL TEST PLAN

Acoustic and performance tests will be conducted on one of the lobe suppressor nozzles that was tested on the Buffalo aircraft. The mechanical laboratories' hot nozzle test facility (HNTF) will be used; it is equipped with heated air and thrust measurement capability and is located in an acoustic arena. A transition diffuser will be built to adapt the facility interface to the split-flow plenum "pants" and nozzle assembly. Facility burner and airflow limitations allow tests on only one lobe nozzle with several lobes blocked.

The objectives of the test are to:

- 1) Identify and eliminate a 2000-Hz tone that was measured during a previous test.
- 2) Measure the acoustic directivity effect of the rectangular-array lobe nozzle.
- 3) Measure the thrust performance of the suppressor nozzle.

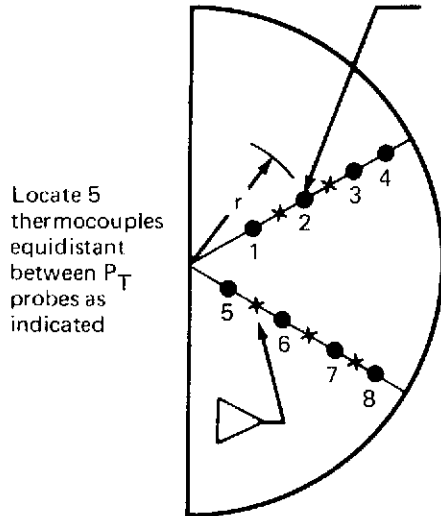
See figure A-1 for a plan view of the test setup, acoustic arena, and the proposed tone source identification tests. The tone source identification tests are exploratory in nature and will examine several potential causes of the tone, varying from edge effects (Aeolian tones) in both secondary and primary passages to lobe nozzle aerodynamic characteristics. The tube breakup nozzles are intended to completely alter the lobe nozzle flow characteristics in the event that the tones are not eliminated by any of the other methods. See figure A-2 for tone source hardware.

The acoustic directivity effect of the nozzle will be measured by recording acoustic data with the nozzle rotated  $90^\circ$  relative to the normal position. The maximum nozzle pressure ratio will be limited to about 1.3 ( $T_{\text{air}} = 750^\circ\text{F}$ ) with four lobes blocked (nine lobes flowing).

Facility thrust and mass flow measurement capability will be used to determine the nozzle velocity and discharge coefficients under heated air conditions. The performance coefficients will be determined at two charging stations: (1) entrance to the split-flow plenum; and (2) the nozzle exit station (see fig. A-1).

## PERFORMANCE INSTRUMENTATION AND CALCULATIONS

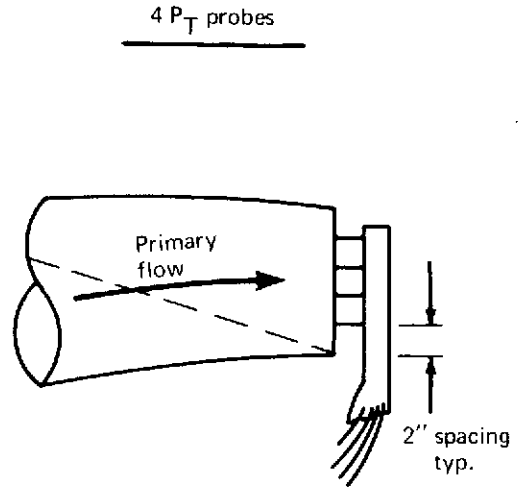
Station 1 (plenum entrance)



$P_T$  probe radii, in.

- $r_1 = 4$
- $r_2 = 8$
- $r_3 = 11$
- $r_4 = 12.5$
- $r_5 = 2$
- $r_6 = 6$
- $r_7 = 9$
- $r_8 = 11.5$

Station 2 (nozzle exit)



The fully expanded jet velocity and the ideal mass flow will be computed from the arithmetic average of the two  $P_T$  rakes at station 1 and the arithmetic average of the probes on the nozzle exit rake at station 2.

$$V_{I1} = \sqrt{\frac{2\gamma g R T_1}{\gamma - 1} \left[ 1 - \left( \frac{P_A}{\bar{P}_{T1}} \right)^\gamma \right]}$$

$$W_{I1} = A_{geo} \frac{\bar{P}_{T1}}{\sqrt{T_1}} \sqrt{\frac{\gamma g}{R}} \sqrt{\frac{2}{\gamma - 1} \left[ \left( \frac{\bar{P}_{T1}}{P_A} \right)^\gamma - 1 \right]} \sqrt{\left( \frac{\bar{P}_{T1}}{P_A} \right)^{-\frac{\gamma + 1}{\gamma}}}$$

Repeat the above computations based on the average pressure ratio measured at the nozzle exit station and obtain  $V_{I2}$  and  $W_{I2}$ . Compute and print out the velocity and discharge coefficients for the two charging stations:

$$C_V = \frac{F_m}{m_m \cdot V_I}, C_D = \frac{m_m}{m_I}$$

The total temperature to be used will be the average of the five measured at station 1. The geometric nozzle exit area will be the cold area plus 2 percent:

$$A_{geo} = \text{No. of Lobes Flowing} \times 13.2 \text{ in.}^2 \times 1.02$$

Compute  $\gamma$  as a function of the total temperature at station 1.

Print out the individual total pressure and temperature measurements for each probe in psia and degrees fahrenheit.

## ACOUSTICS

The acoustic microphone array will consist of eight 1/2-in. microphones located on a 50-ft radius centered on the nozzle exit. All microphones on the 50-ft radius will be ground mounted with the microphone face 1/2 in. above the ground surface.

The acoustic data will be recorded on 1-in. magnetic tape with a record speed of 30 in./sec.

Data presentation will be in one-third octave, and OASPL at the microphone location. Extrapolation to sideline distances, if required, will be decided on later in the program.

On-line one-third octave data will be used for the 110 microphone location. This will help in making decisions which will support the 2 kHz tone evaluation:

Atmospheric conditions will fall within the following limits:

Wind: no greater than 10 kt maximum  
no gusts greater than  $\pm 1.5$  kt

Humidity: 30 to 90 percent (no mist or rain)

Temperature: 32° to 90°F

## TEST CONFIGURATIONS AND TEST CONDITIONS

| Nozzle | Tone source configuration | Nozzle rotation | P <sub>T</sub> exit rake | Station <sup>-1</sup> pressure ratios and temperature settings  |
|--------|---------------------------|-----------------|--------------------------|---|
| 9 Lobe | None                      | 90°             | On                       | 1.1, 650° F; 1.2, 700° F; 1.3, 750° F <sub>a</sub>              |
| 9 Lobe | None                      | 0°              | On                       | 1.1, 650° F; 1.2, 700° F; 1.3, 750° F <sub>a</sub>              |
| 7 Lobe | None <sup>b</sup>         | 0°              | On                       | 1.3, 750° F; 1.4, 800° F; 1.5, 850° F; 1.6, 900° F <sub>c</sub> |
|        | None <sup>b</sup>         | 0°              | Off                      | 1.3, 750° F; 1.4, 800° F; 1.5, 850° F; 1.6, 900° F <sub>c</sub> |
|        | 1                         | 0°              | Off                      | c   |
|        | 2                         | 0°              | Off                      | c   |
|        | 3                         | 0°              | Off                      | c   |
|        | 4                         | 0°              | Off                      | c   |
| 7 Lobe | 5 d                       | 0°              | Off                      | c   |
|        | 6 d                       | 0°              | Off                      | c   |

<sup>a</sup>Max. flow condition will be controlled by burner operation limits.

<sup>b</sup>Baseline.

<sup>c</sup>Flow conditions where 2 kHz tone occurs will be noted and set during tone source tests.

<sup>d</sup>These configuration changes will require nozzle removal and installation in the fabrication shop.

Note: A back pressure device (choke plate) may be required at the facility - transition interface to keep the burner mach number (0.2) within operation limits. The acoustic signature and level produced by the choke plate versus flow rate will be identified and accounted for prior to recording any test nozzle data.

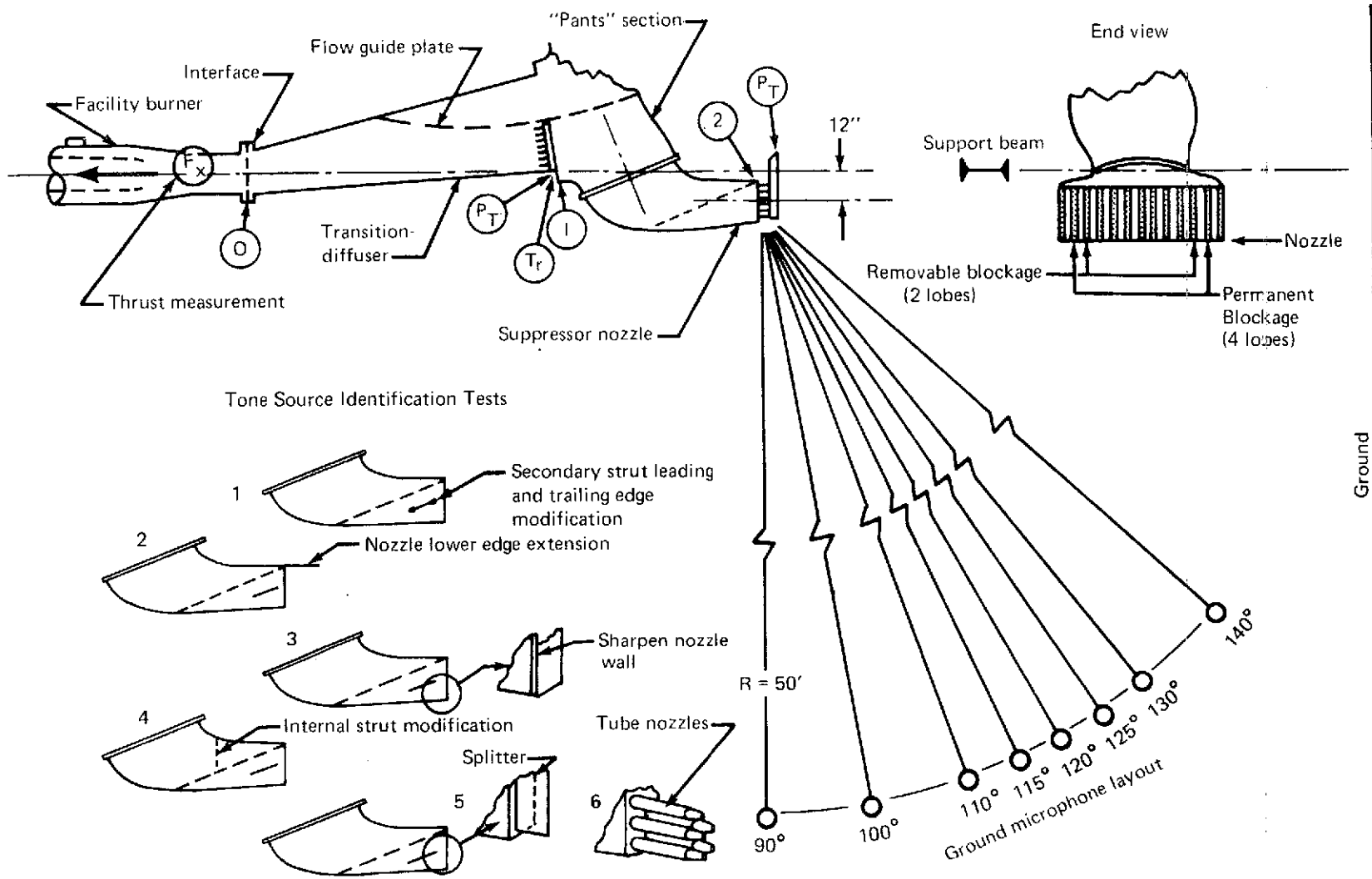
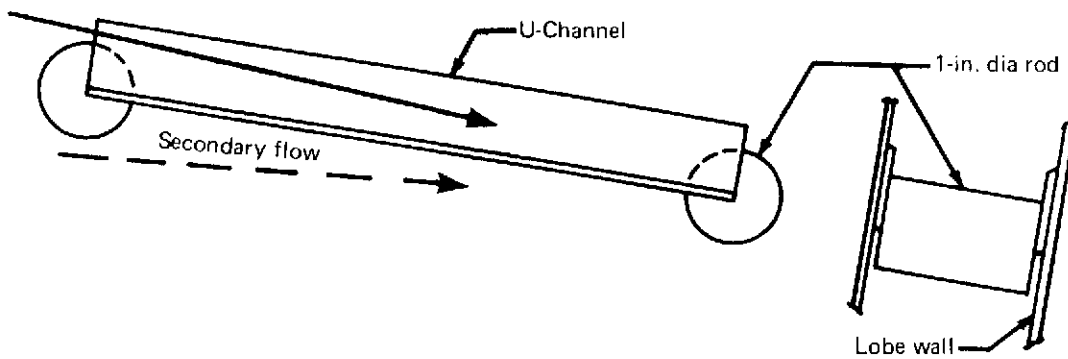
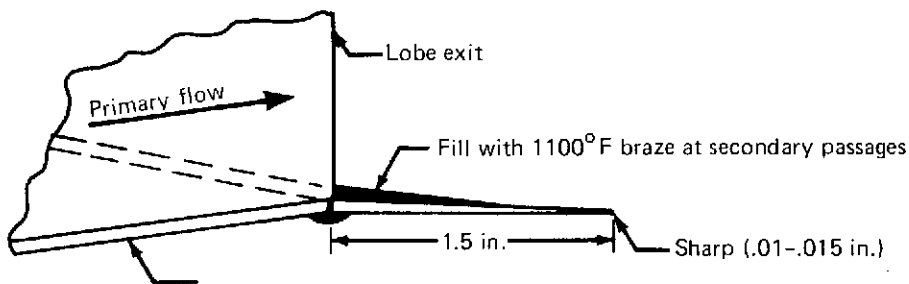


FIGURE A-1.—TONE SOURCE IDENTIFICATION FACILITY AND TESTS

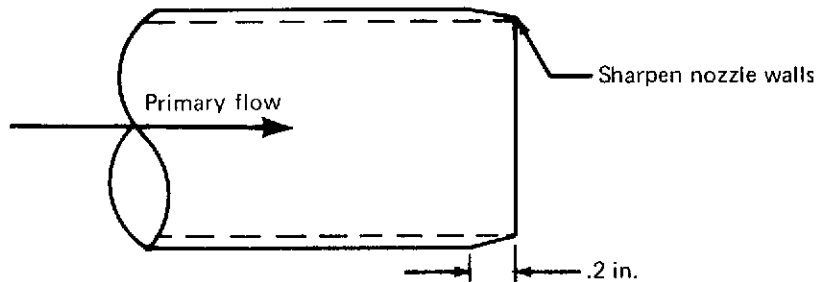
a) Secondary strut leading and trailing edge modification



b) Full span lower edge extension

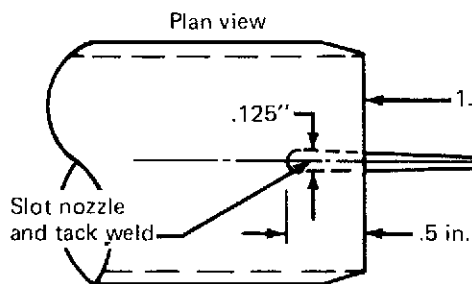


c) Lobe, plan view



d) Internal modifications—to be determined

e) Lobe splitter



f) Tube nozzles

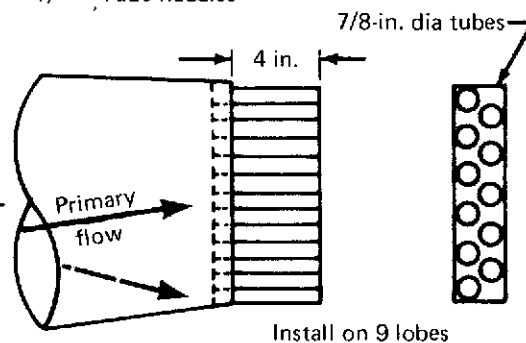


FIGURE A-2.—TONE SOURCE IDENTIFICATION HARDWARE



**APPENDIX B**

**TEST LOG**

| Run            | Condition | O.A.T. ° F | Humidity | Pressure ratio | Exhaust temp. ° F | Configuration  | Notes   |
|----------------|-----------|------------|----------|----------------|-------------------|--|---|
| 1 <sup>a</sup> | 1         |            | Rain     | 1.6            | 900               | Baseline 9 lobes flowing.  | 1 microphone, in a plastic bag, at 115° F loc. 12-12-73   |
| 2              | 1         | 47         | 92       | 1.2            | 700               | Baseline 9 lobes flowing.  | 1 microphone at 115° loc. (no bag) on line data only. 12-17-73  |
|                | 2         | 47         | 92       | 1.3            | 750               |  |   |
|                | 3         | 47         | 92       | 1.4            | 800               |  |   |
|                | 4         | 47         | 92       | 1.5            | 850               |  |   |
|                | 5         | 47         | 92       | 1.6            | 900               |  |   |
| 3              | 1         | 48         | 86       | 1.4            | 800               | Fairings on fwd and aft, end of secondary struts.  | 1 microphone at 115° loc. on line data only. 12-17-73   |
|                | 2         | 48         | 86       | 1.5            | 850               |  |   |
|                | 3         | 48         | 86       | 1.6            | 900               |  |   |
| 4              | 1         | 47         | 86       | 1.4            | 800               | All flow through secondary al. plate over top of lobes and asbestor in secondary channels. | Full microphone array recorded. 12-18-73  |
|                | 2         | 47         | 86       | 1.5            | 850               |  |   |
|                | 3         | 47         | 86       | 1.6            | 900               |  |   |
| 5              | 1         | 52         | 82       | 1.4            | 800               | Secondary blocked per run # 4, tube fairings. In primary flow removed.                     | Full microphone array recorded, extra exit probe. In outer lobe number 5 press probe broke. Splitter in diffuser broken loose on one side. 12-19-73 |
|                | 2         | 52         | 82       | 1.5            | 850               |  |   |
|                | 3         | 52         | 82       | 1.6            | 900               |  |   |
| 6              | 1         | 51         | 62       | 1.3            | 750               | 5 primary lobes flowing. No secondary block.   | Single microphone at 115° on line data only. 12-19-73   |
|                | 2         | 51         | 62       | 1.4            | 800               |  |   |
|                | 3         | 51         | 62       | 1.5            | 850               |  |   |
|                | 4         | 51         | 62       | 1.6            | 900               |  |   |
| 7              | 1         | 52         | 88       | 1.3            | 750               | 9 lobes with tube ends.  | 1 microphone at 115° F location, on line data only. No 5 press probe repaired-no exit rakes. 12-20-73   |
|                | 2         | 52         | 88       | 1.4            | 800               |  |   |
|                | 3         | 52         | 88       | 1.5            | 850               |  |   |
|                | 4         | 52         | 88       | 1.6            | 900               |  |   |

| Run | Condition | O.A. T. ° F | Humidity | Pressure ratio | Exhaust temp. ° F | Configuration   | Notes  |
|-----|-----------|-------------|----------|----------------|-------------------|---|--|
| 8   | 1         | 52          | 88       | 1.3            | 750               | 9 lobes with tube ends.   | Directionality test. Full microphone array<br>12-20-73 |
|     | 2         | 52          | 11       | 1.4            | 800               |   |  |
|     | 3         | 52          | 11       | 1.5            | 850               |   |  |
|     | 4         | 52          | 11       | 1.6            | 900               |   |  |
|     | 5         | 52          | 11       | 1.7            | 950               |   |  |
| 9   | 1         | 34          | 66       | 1.3            | 750               | 9 lobes with tube ends.   | Directionality test. 1-2-74                            |
|     | 2         | 34          | 66       | 1.4            | 800               |   |  |
|     | 3         | 34          | 66       | 1.5            | 850               |   |  |
|     | 4         | 34          | 66       | 1.6            | 900               |   |  |
|     | 5         | 34          | 66       | 1.7            | 950               |   |  |
| 10  | 1         | 32          |          | 1.3            | 750               | 5 lobes flowing alternate lobes blocked   | Tone source test, full mic. array.<br>1-3-74           |
|     | 2         | 32          |          | 1.4            | 800               |   |  |
|     | 3         | 32          |          | 1.5            | 850               |   |  |
|     | 4         | 32          |          | 1.6            | 900               |   |  |
| 11  | 1         | 21          |          | 1.3            | 750               | 4 lobes flowing alternate but opposite lobes from run 10.   | Full microphone array.<br>1-7-74                       |
|     | 2         | 21          |          | 1.4            | 800               |   |  |
|     | 3         | 21          |          | 1.5            | 850               |   |  |
|     | 4         | 21          |          | 1.6            | 900               |   |  |
| 12  | 1         | 21          |          | 1.3            | 750               | 5 center lobes flowing with splitters in the secondary flow, extending 5" aft of the nozzle exit. | Full microphone array.                                 |
|     | 2         | 21          |          | 1.4            | 800               |   |  |
|     | 3         | 21          |          | 1.5            | 850               |   |  |
|     | 4         | 21          |          | 1.6            | 900               |   |  |
| 13  | 1         |             |          | 1.2            | Amb               | 7 lobes-fences in secondary exit rakes on lobes 1 & 4.  | Performance run only.                                  |
|     | 2         |             |          | 1.3            |                   |   |  |
|     | 3         |             |          | 1.4            |                   |   |  |
|     | 4         |             |          | 1.5            |                   |   |  |

| Run | Condition | O.A.T. ° F | Humidity | Pressure ratio | Exhaust temp. ° F | Configuration                                  | Notes  |
|-----|-----------|------------|----------|----------------|-------------------|--|--|
| 14  | 1         |            |          | 1.2            | 700               | Same as run 13.                                | Performance run only.                                      |
|     | 2         |            |          | 1.3            | 750               |  |  |
|     | 3         |            |          | 1.4            | 800               |  |  |
|     | 4         |            |          | 1.5            | 850               |  |  |
|     | 5         |            |          | 1.6            | 900               |  |  |
| 15  | 1         |            |          | 1.2            | Amb               | Same as run 13 except rakes on lobes (2) & (3) | Performance only cold flow.                                |
|     | 2         |            |          | 1.3            |                   |  |  |
|     | 3         |            |          | 1.4            |                   |  |  |
|     | 4         |            |          | 1.5            |                   |  |  |
| 16  | 1         |            |          | 1.2            | 700               | Same as run 15                                 | Performance only hot flow.                                 |
|     | 2         |            |          | 1.3            | 750               |  |  |
|     | 3         |            |          | 1.4            | 800               |  |  |
|     | 4         |            |          | 1.5            | 850               |  |  |
|     | 5         |            |          | 1.6            | 900               |  |  |
| 17  | 1         |            |          | 1.2            | Amb               | 7 lobes flowing. Secondary fences removed.     | P.T. rakes on lobes 2 & 3<br>Performance, only, cold flow. |
|     | 2         |            |          | 1.3            |                   |  |  |
|     | 3         |            |          | 1.4            |                   |  |  |
|     | 4         |            |          | 1.5            |                   |  |  |
|     | 5         |            |          | 1.6            |                   |  |  |
| 18  | 1         |            |          | 1.2            | 700               | Same as run 17 rakes on 2 & 3                  | Hot flow. performance only.                                |
|     | 2         |            |          | 1.3            | 750               |  |  |
|     | 3         |            |          | 1.4            | 800               |  |  |
|     | 4         |            |          | 1.5            | 850               |  |  |
|     | 5         |            |          | 1.6            | 900               |  |  |
| 19  | 1         |            |          | 1.2            | 700               | Baseline rakes on 1, 4                         | Performance only 1-16-74                                   |
|     | 2         |            |          | 1.3            | 750               |  |  |
|     | 3         |            |          | 1.4            | 800               |  |  |
|     | 4         |            |          | 1.5            | 850               |  |  |
|     | 5         |            |          | 1.6            | 900               |  |  |

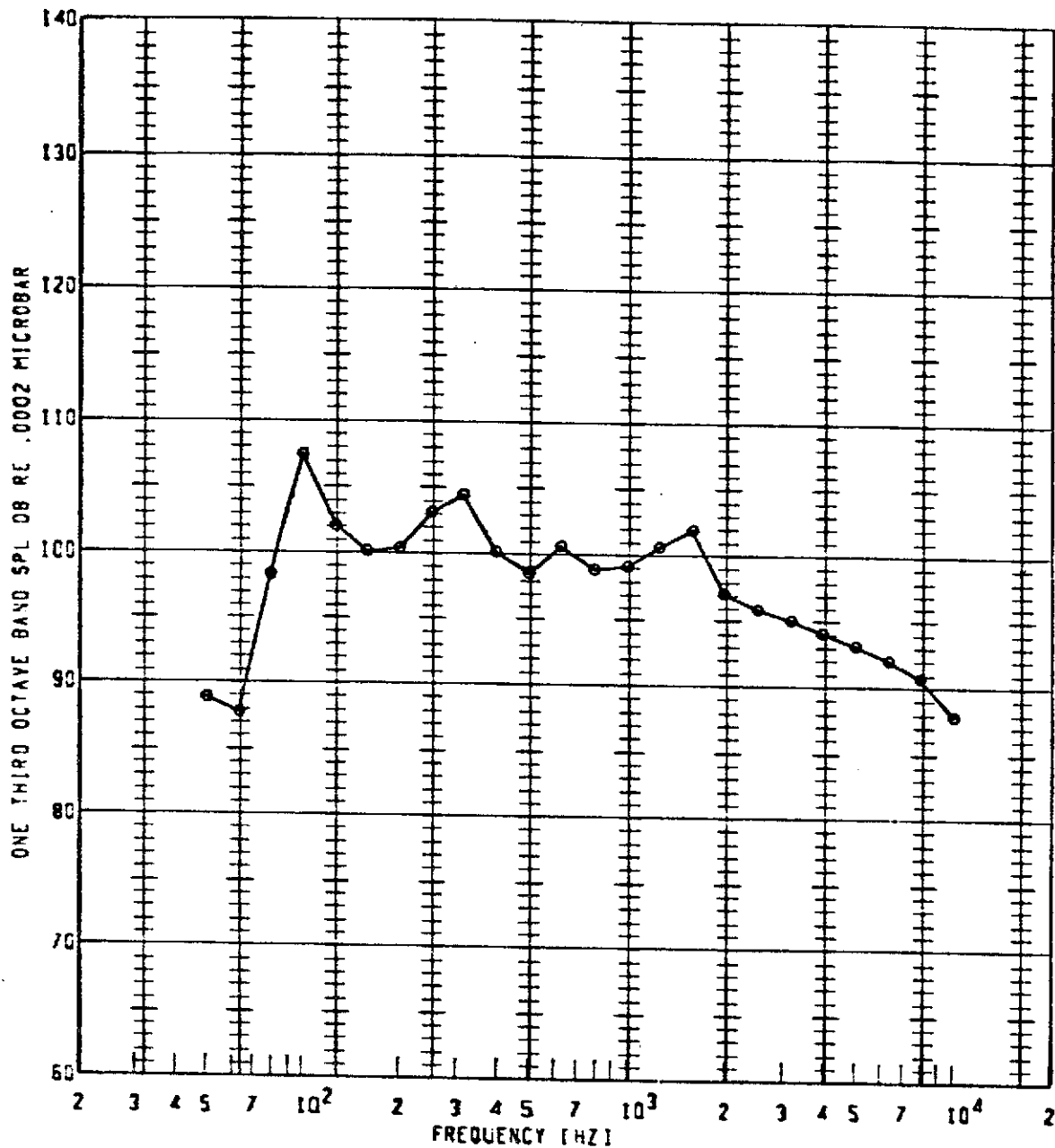
| Run | Condition | O.A.T. ° F | Humidity | Pressure ratio | Exhaust temp. ° F | Configuration            | Notes                                  |
|-----|-----------|------------|----------|----------------|-------------------|--------------------------|--|
| 20  | 1         | 49         | 56       | 1.2            | 700               | Baseline 7 lobes flowing | Acoustic array (full) 1-17-74          |
|     | 2         | 49         | 56       | 1.3            | 750               |                          | ↓<br>EGT thermocouple broke on cond 5. |
|     | 3         | 49         | 56       | 1.4            | 800               |                          |  |
|     | 4         | 49         | 56       | 1.5            | 850               |                          |  |
|     | 5         | 49         | 56       | 1.6            | 900               |                          |  |

APPENDIX C

PLOTS OF RECORDED DATA, ONE-THIRD OCTAVE  
BAND SOUND PRESSURE LEVEL

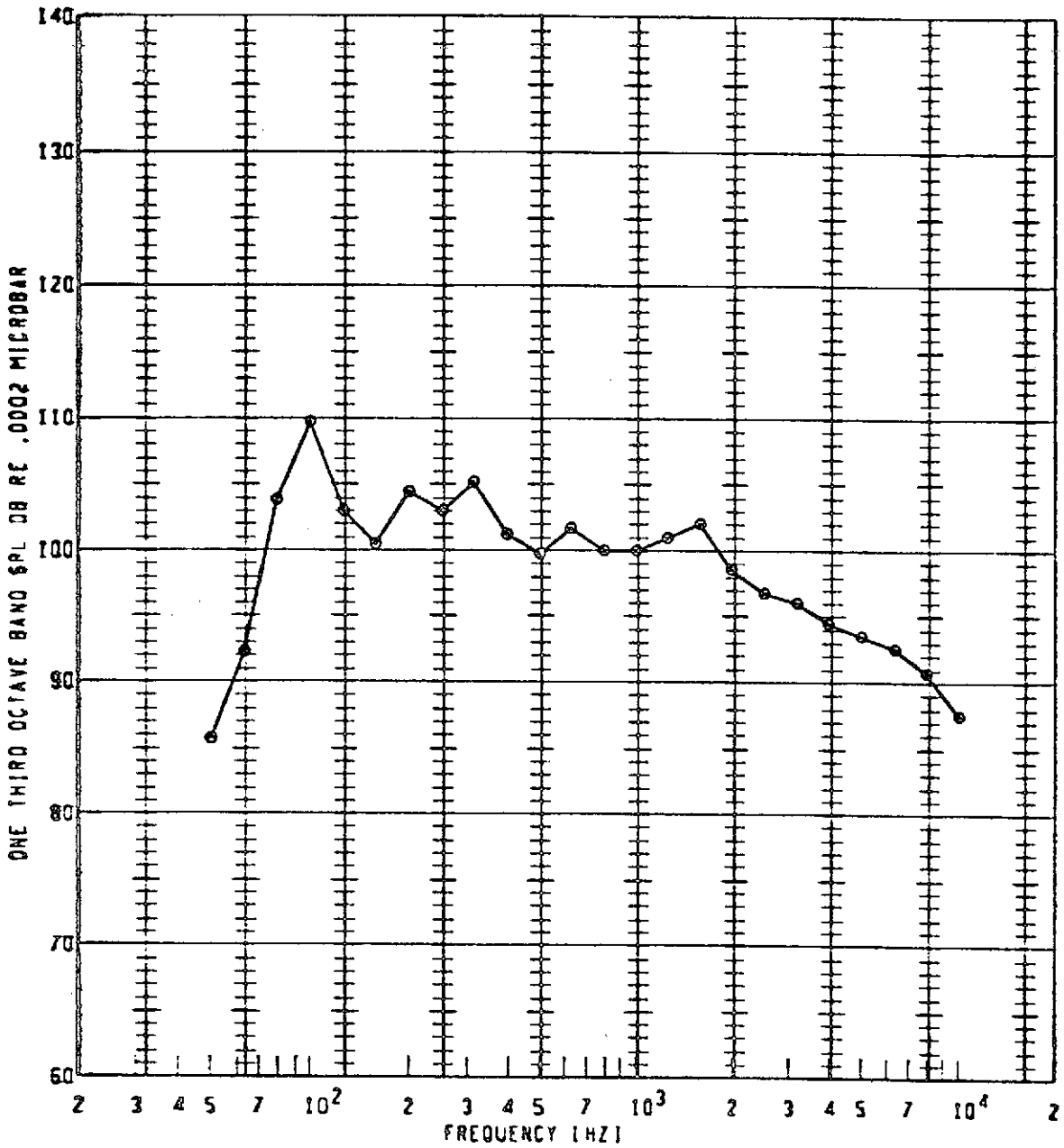
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BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RLN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL [DB] | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 45         | 800      | 1.400          | 90             | 50FP              | 113.8      | 10           |            |

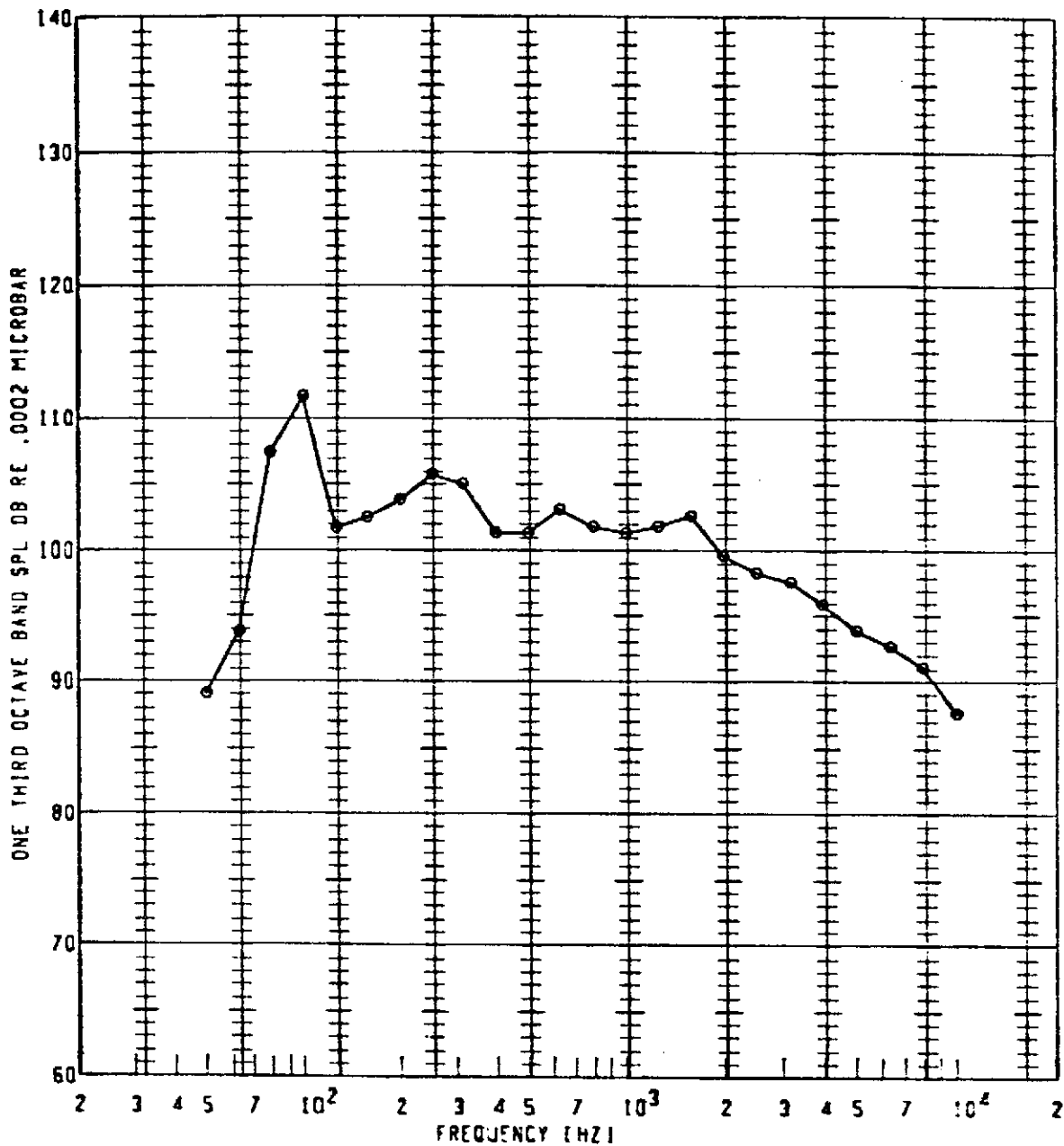
BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| ●           | 46         | 800      | 1.400          | 100            | SOFP              | 115.3      | 10           | 19         |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | DASPL (DB) | GAIN SETTING | SPECIAL ID |

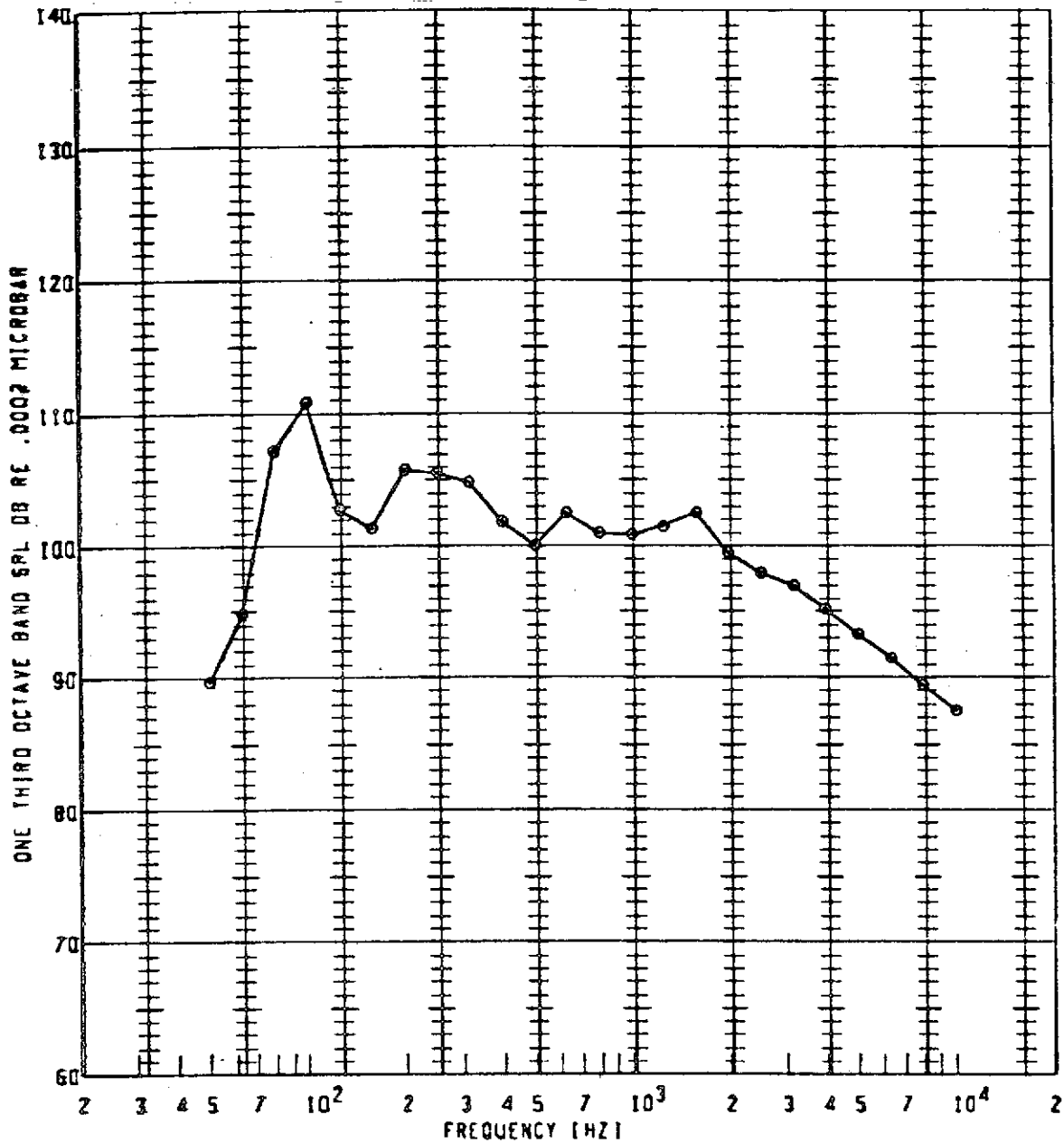


BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



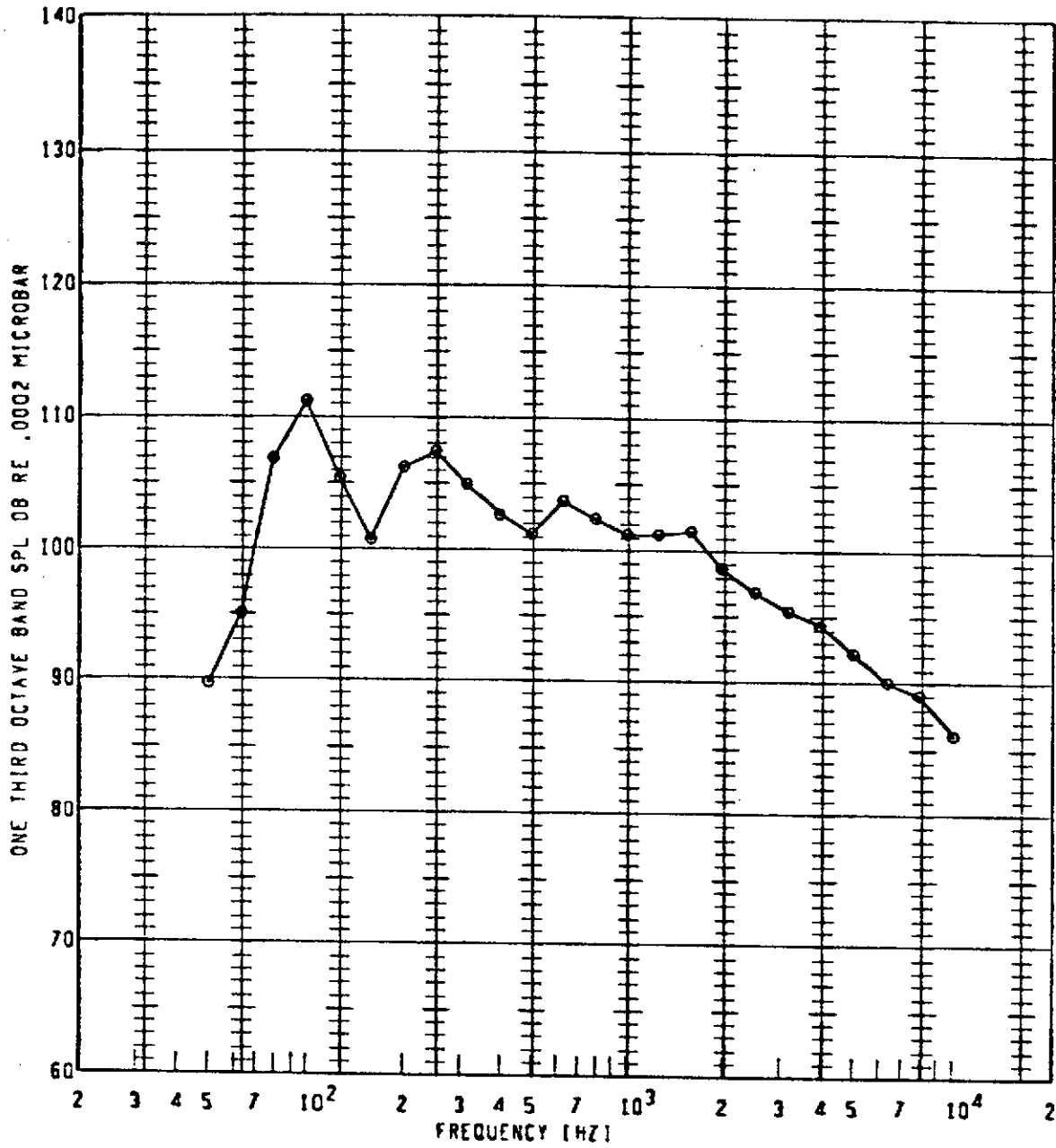
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 4G         | 800      | 1.400          | 110            | 50FP              | 116.8      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



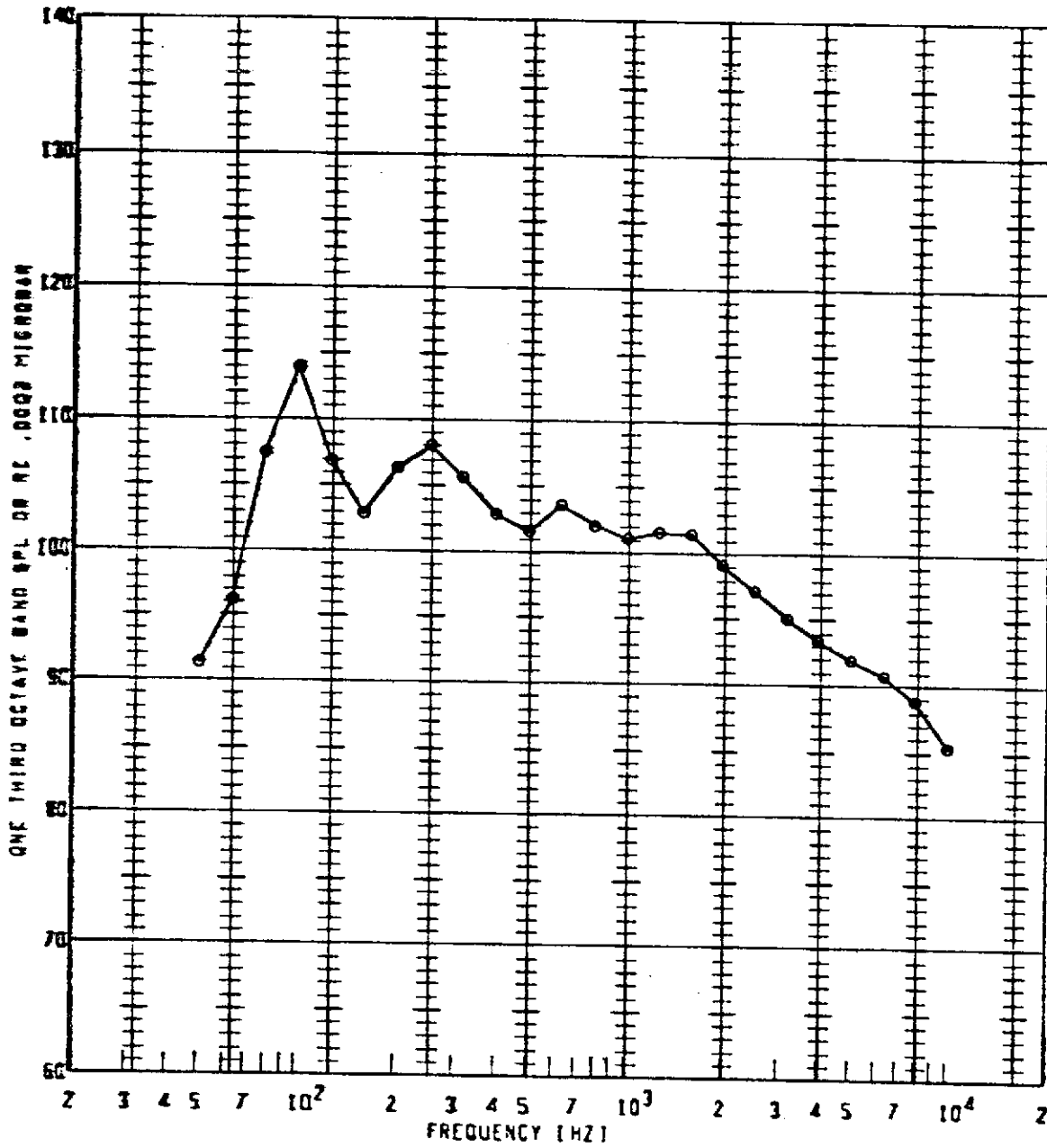
| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | CASPL (DB) | GAIN SETTING | SPECIAL IO |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| g          | 4G         | 800      | 1.400          | 115            | SOFP              | 116.4      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



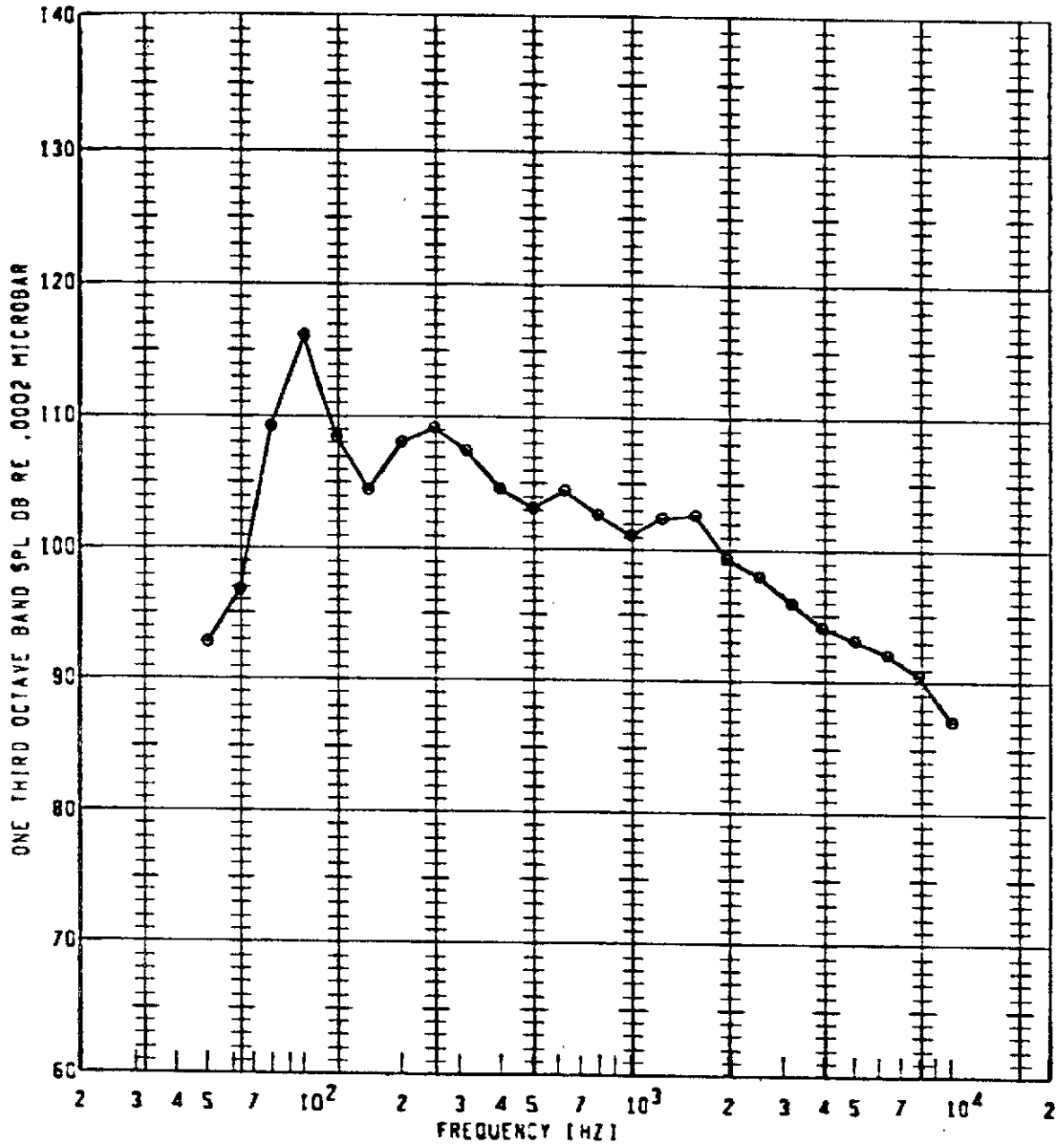
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ○           | 4G         | 800      | 1.400          | 120            | 50FP              | 116.9      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



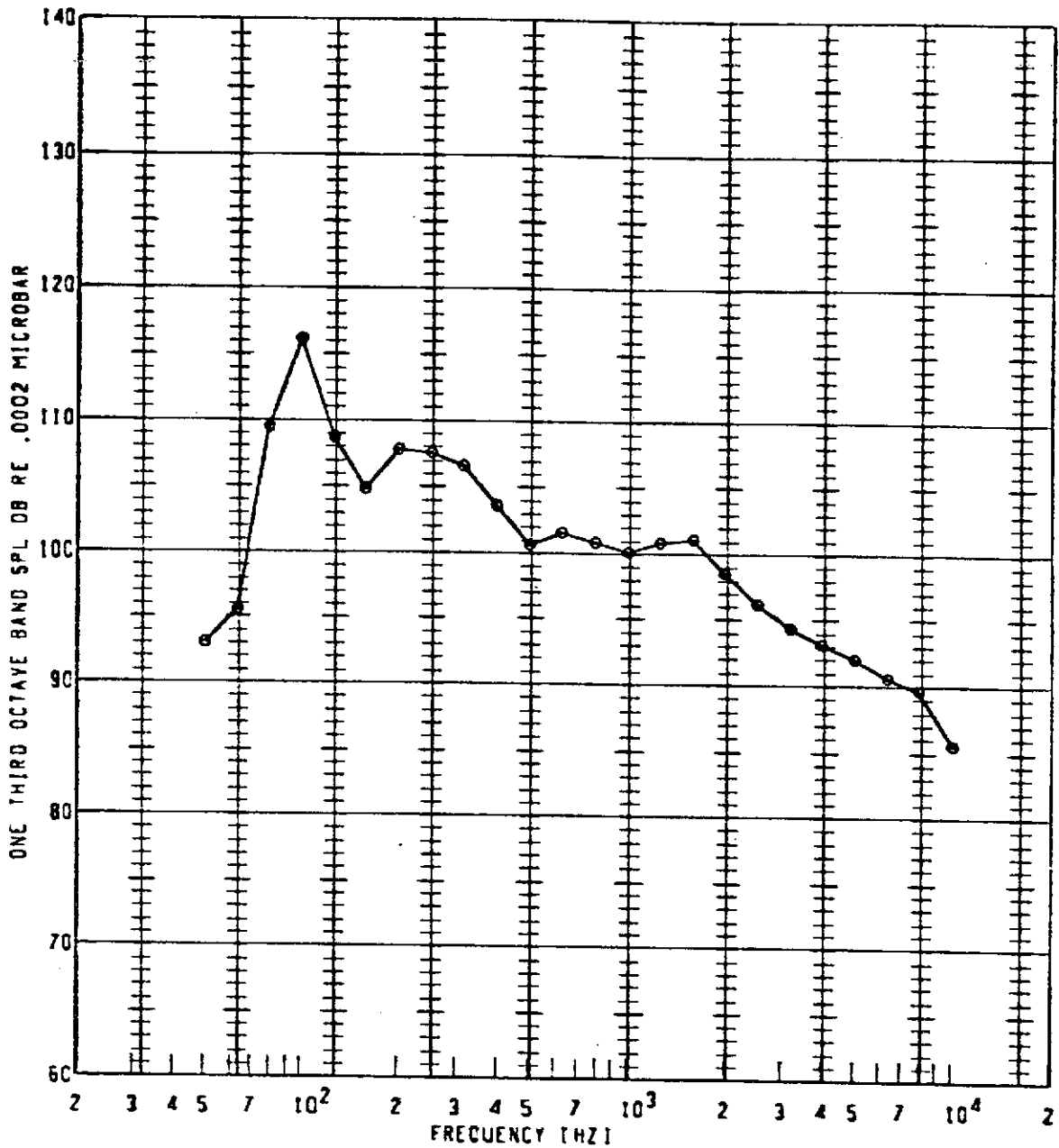
| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | SAPL (DB) | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|-----------|--------------|------------|
| o          | 4G         | 800      | 1.400          | 125            | 50FP              | 118.2     | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



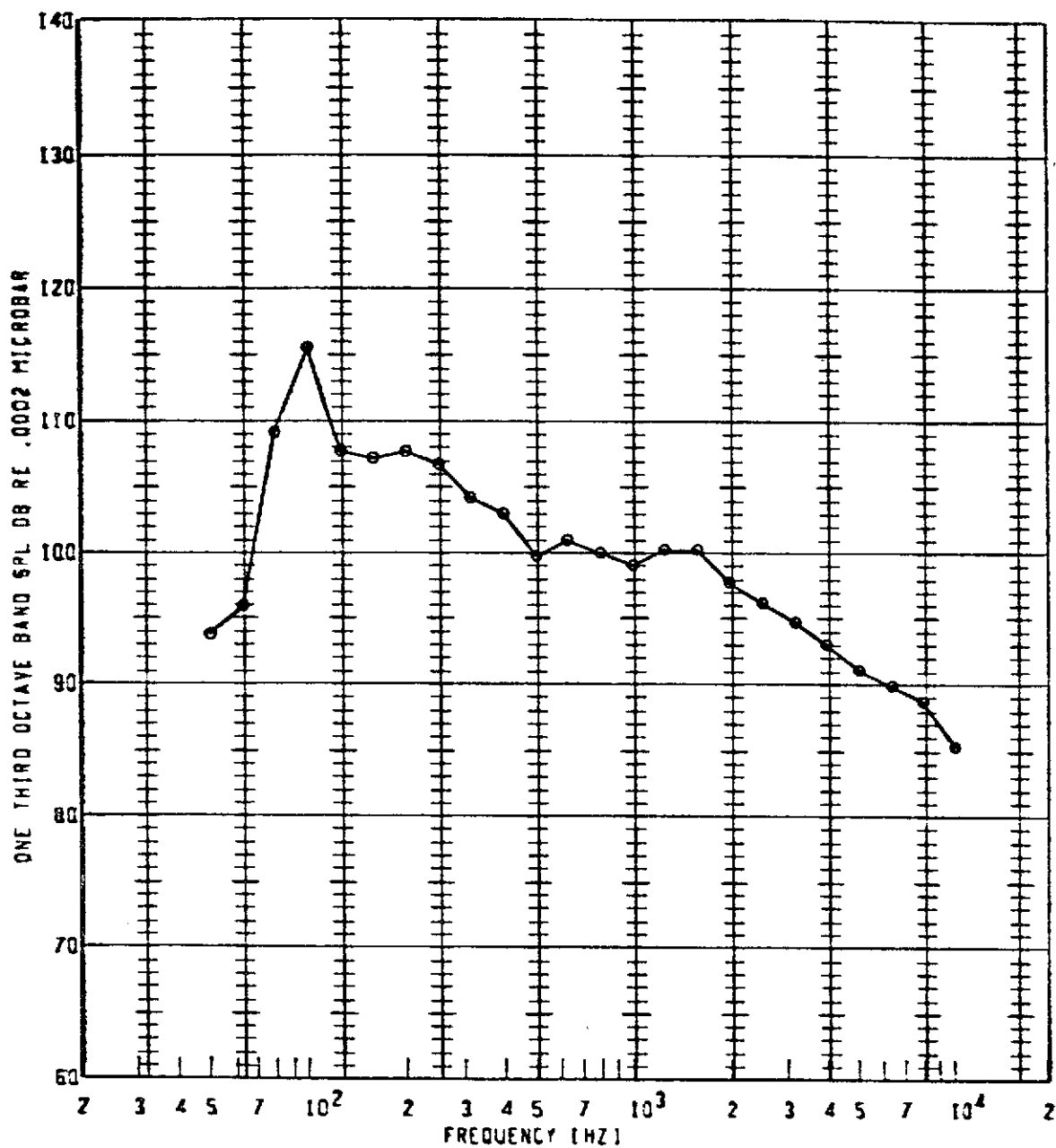
| PLT SYM30L | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e          | 46         | 800      | 1.400          | 130            | 50FP              | 119.9      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



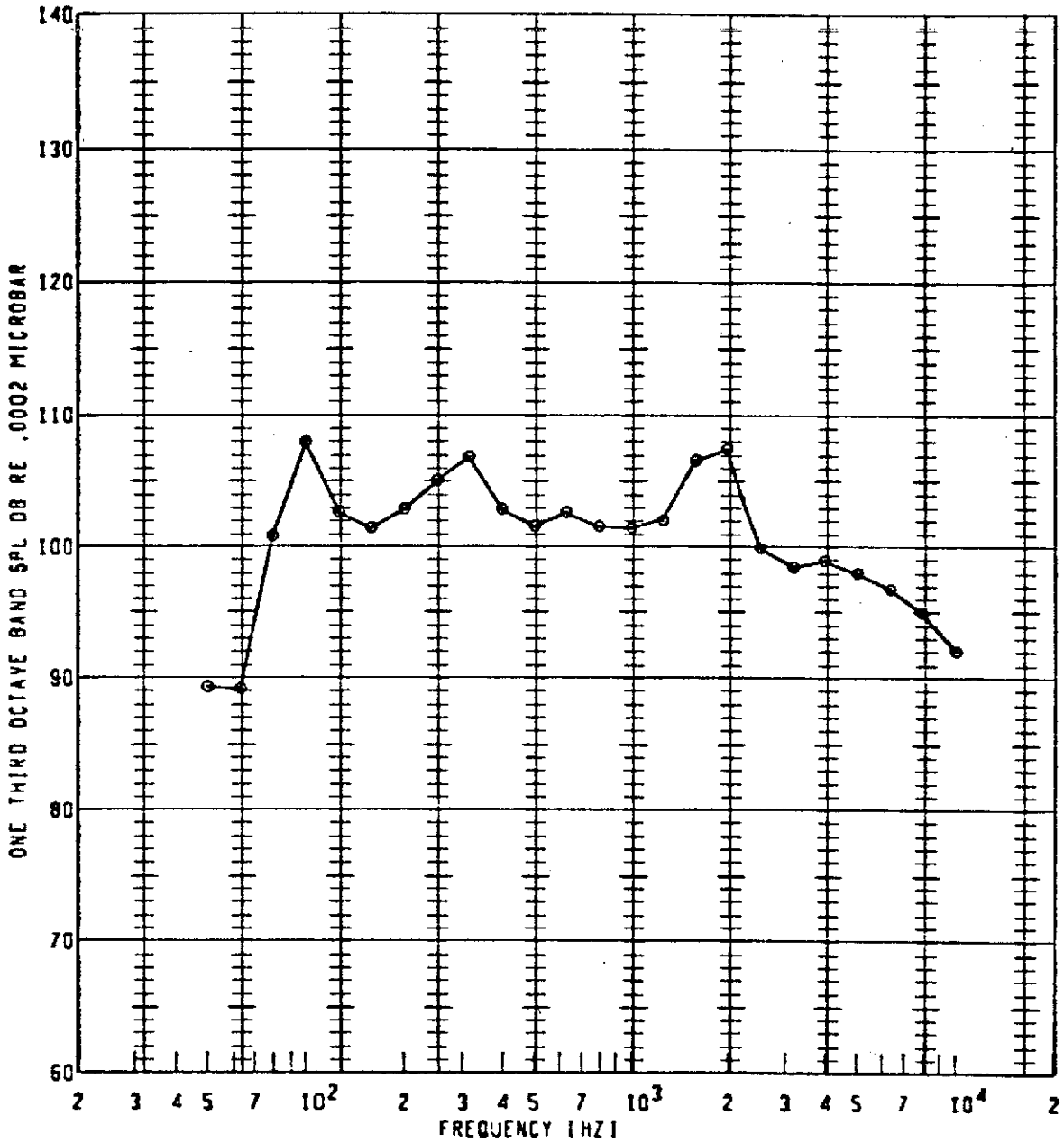
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | CASPL [DB] | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| o           | 46         | 800      | 1.400          | 135            | 50FP              | 119.5      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OSPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|-----------|--------------|------------|
| ⊙           | 45         | 800      | 1.400          | 140            | 50FP              | 119.0     | 10           |            |

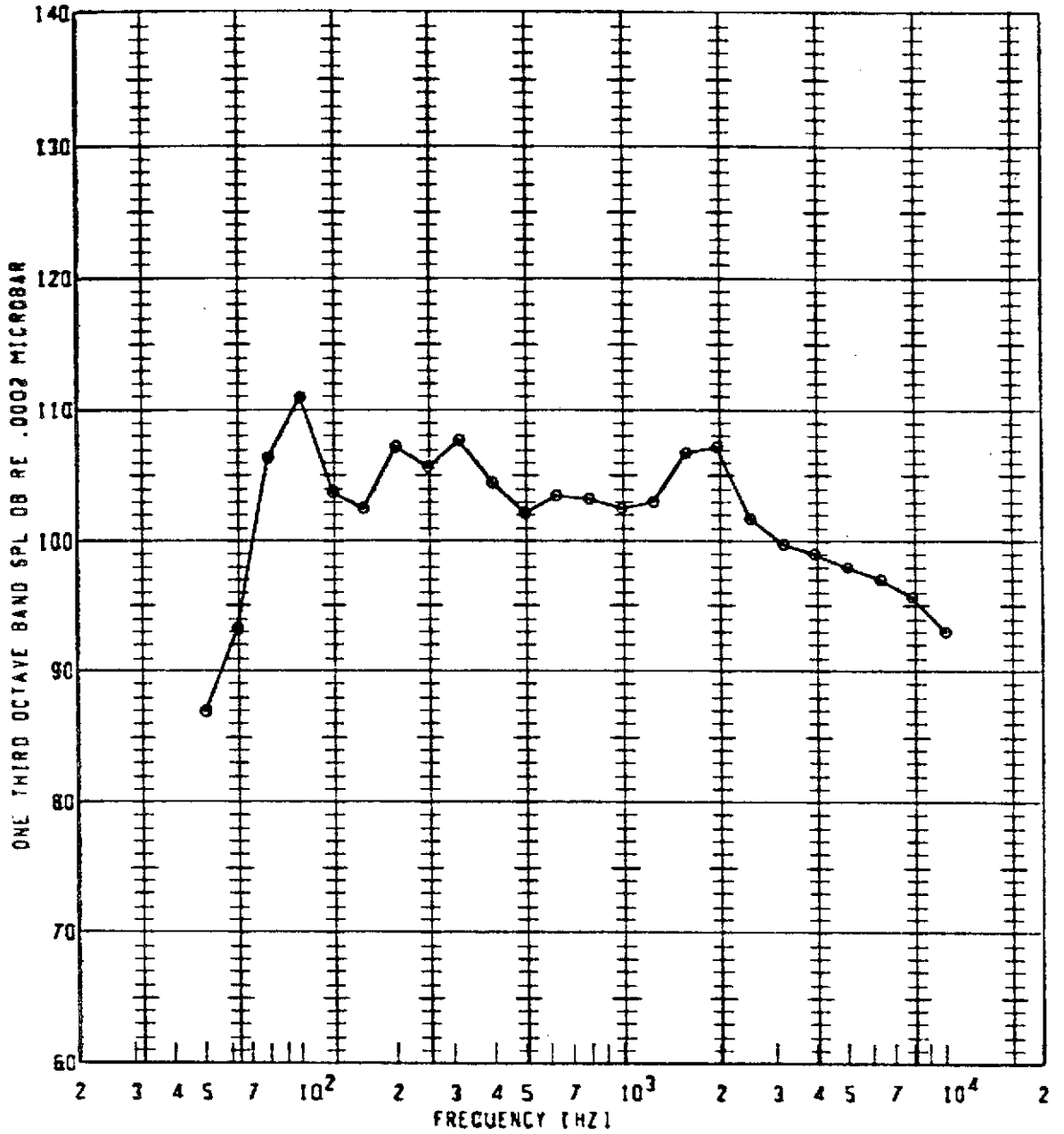
**BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY**



| <u>PLOT SYMBOL</u> | <u>RUN NUMBER</u> | <u>JET TEMP</u> | <u>PRESSURE RATIO</u> | <u>ANGLE RE INLET</u> | <u>OBSERVER LOCATION</u> | <u>QASPL (DB)</u> | <u>GAIN SETTING</u> | <u>SPECIAL ID</u> |
|--------------------|-------------------|-----------------|-----------------------|-----------------------|--------------------------|-------------------|---------------------|-------------------|
| e                  | 4G                | 850             | 1.500                 | 90                    | 50FP                     | 116.5             | 0                   |                   |

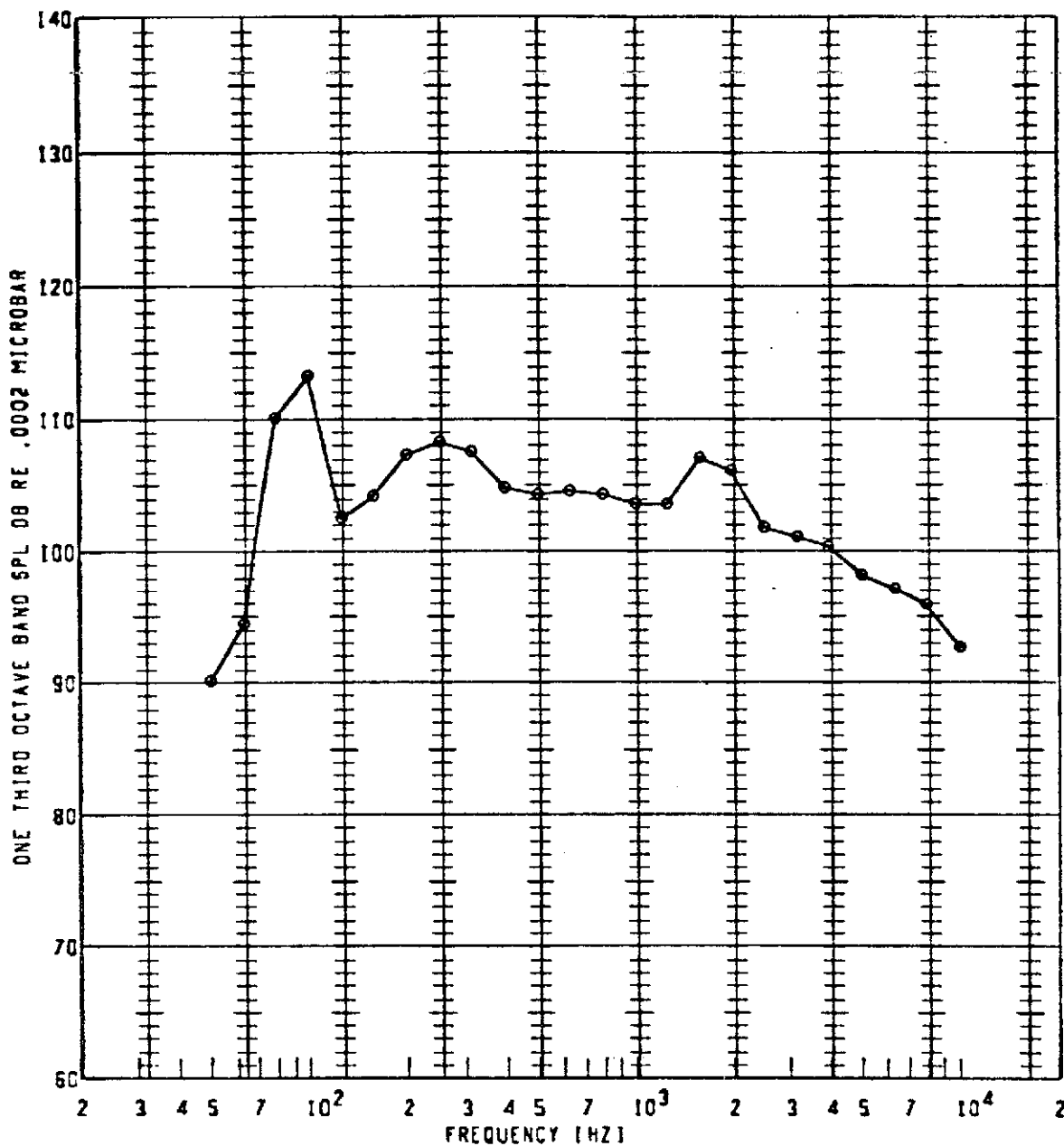


BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



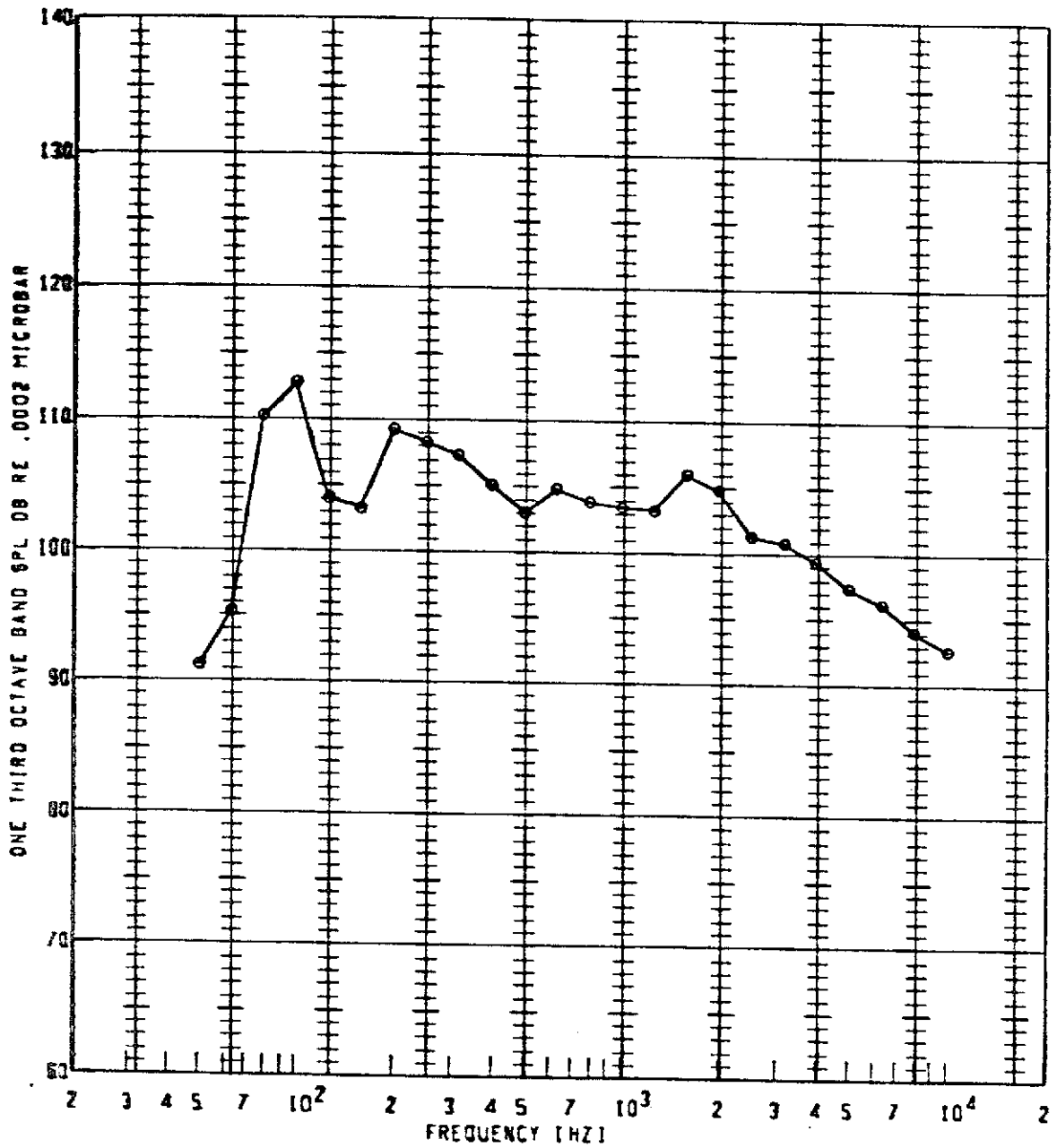
| Plot Symbol | Run Number | Jet Temp | Pressure Ratio | Angle re Inlet | Observer Location | QASPL (dB) | Gain Setting | Special ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 4G         | 850      | 1.500          | 100            | 50FP              | 118.0      | C            |            |

BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



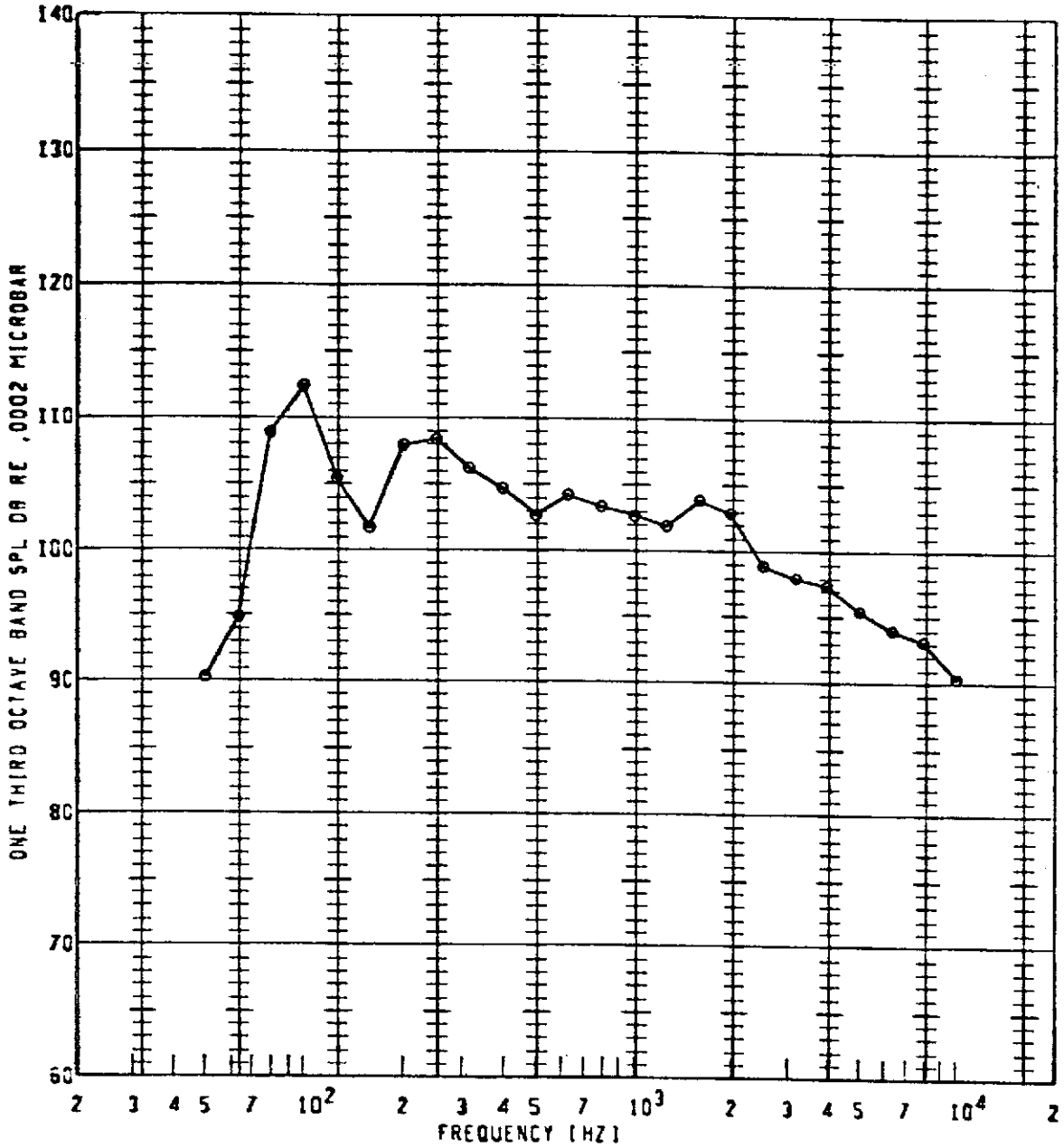
| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙          | 4G         | 850      | 1.500          | 110            | 50FP              | 119.3      | 0            |            |

BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



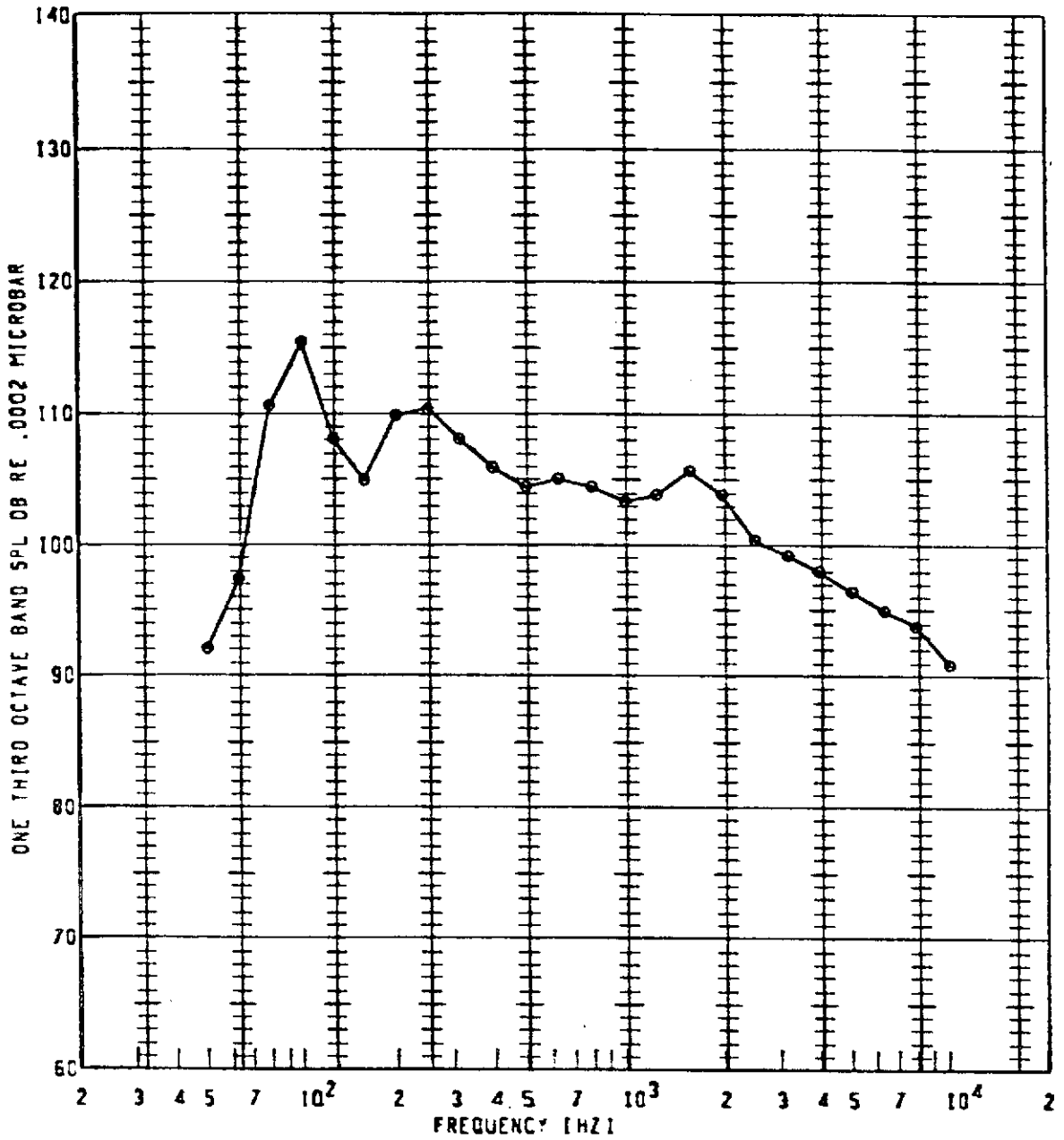
| PLDT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| 0           | 4G         | 850      | 1.500          | 115            | SCFP              | 119.1      | 0            |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



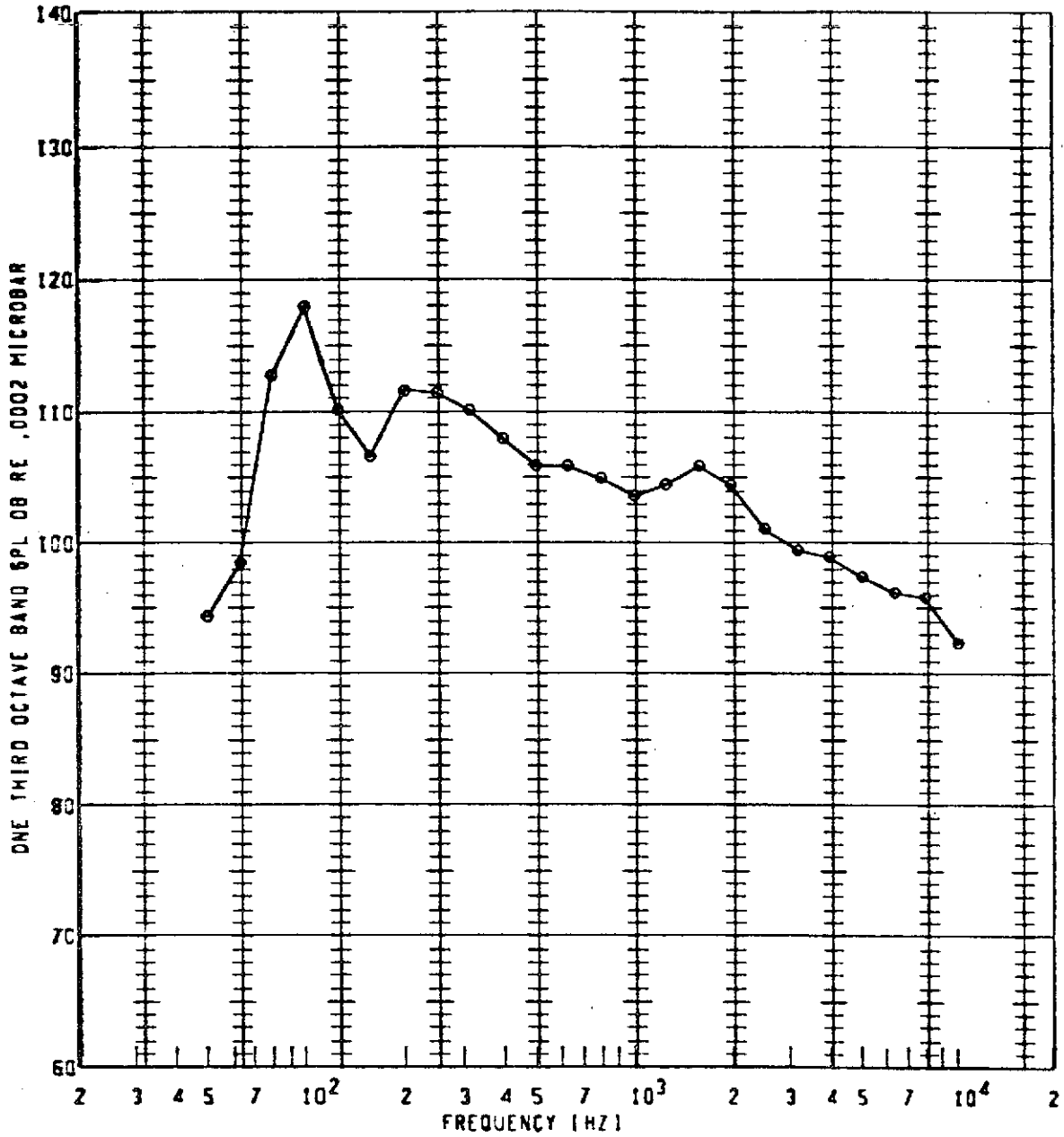
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 4G         | 850      | 1.500          | 120            | 50FP              | 118.3      | 0            |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



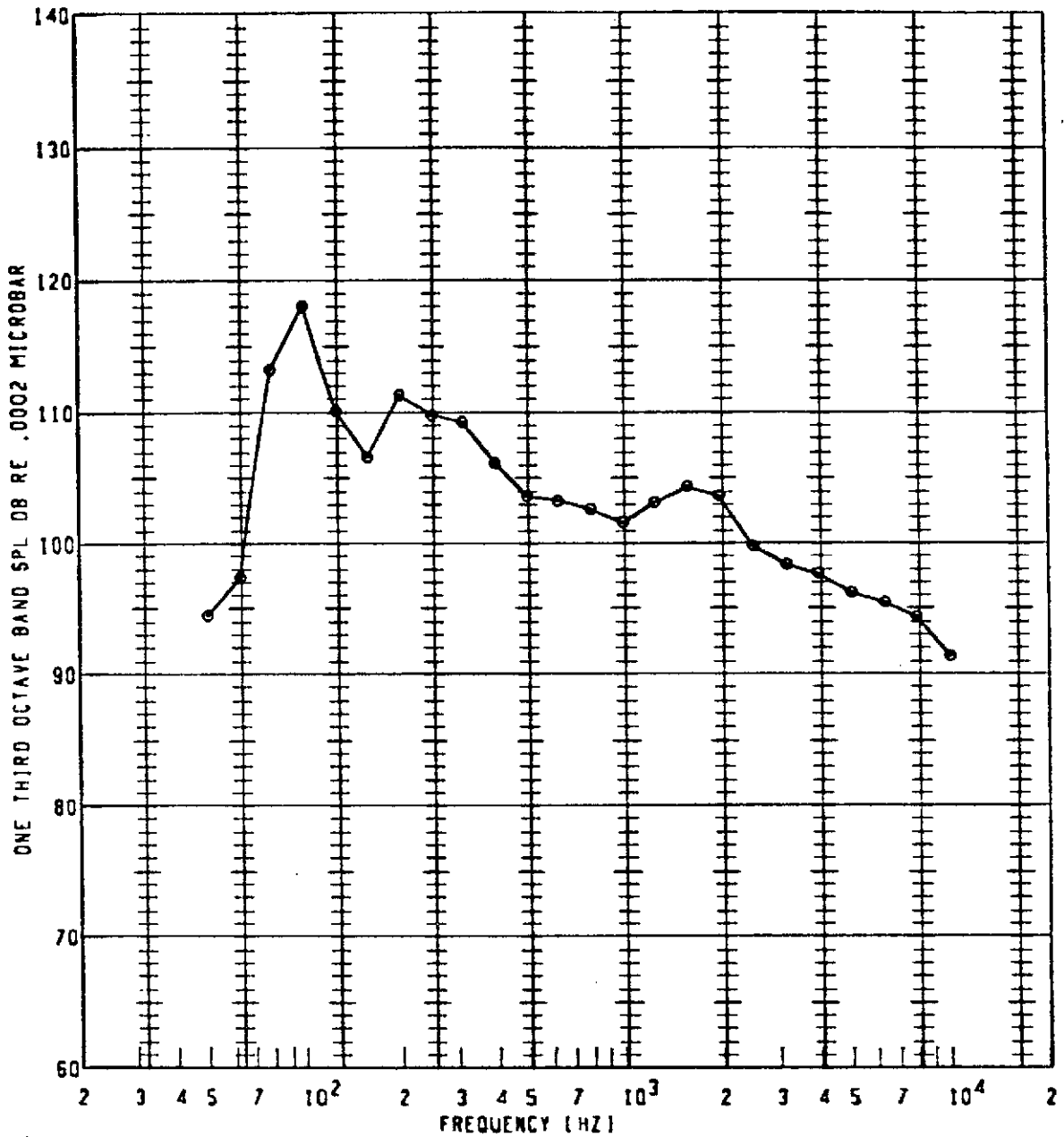
| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | CASP. (DB) | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e          | 46         | 850      | 1.500          | 125            | SOFP              | 120.4      | 0            |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



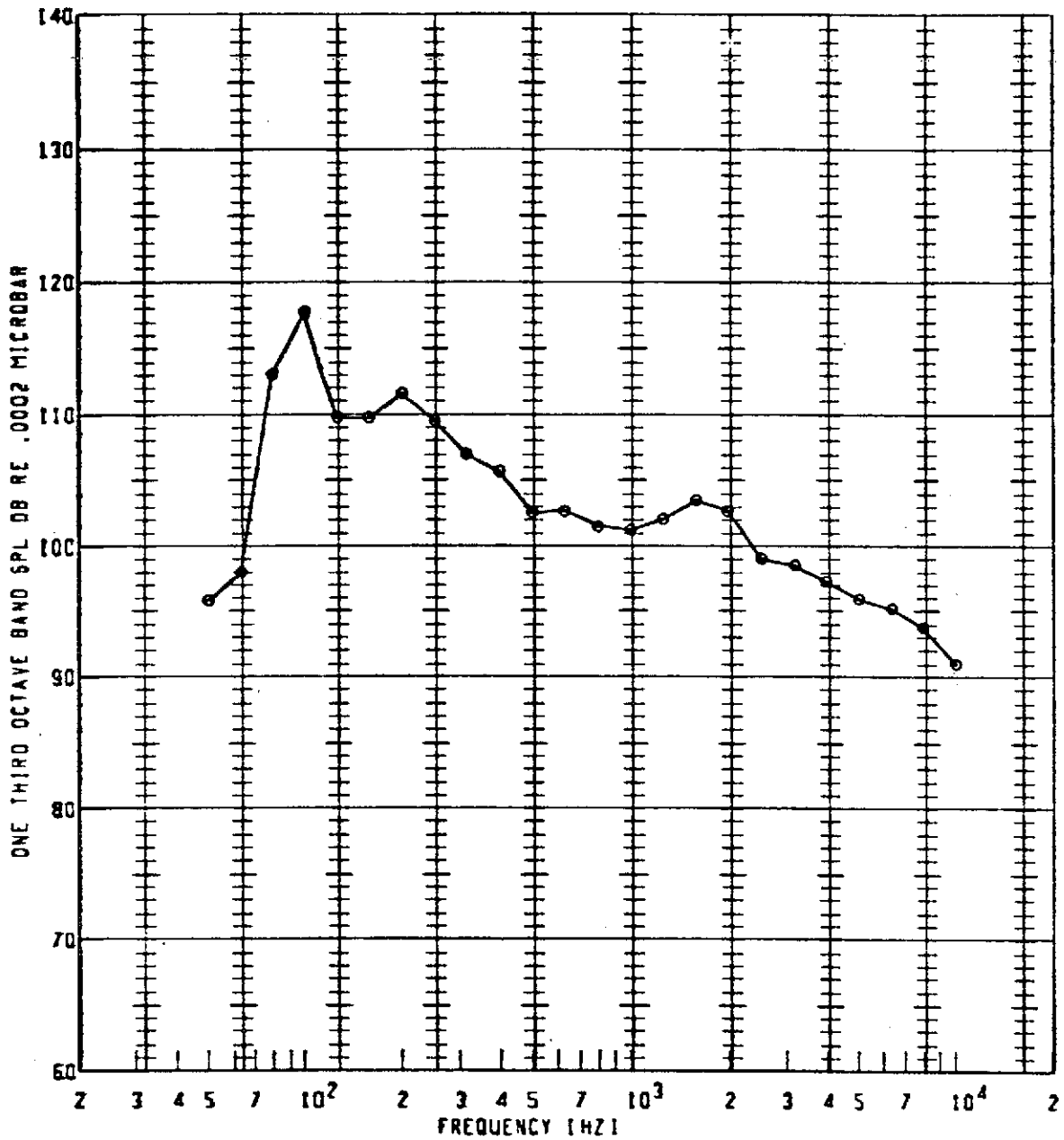
| SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | DASPL (DB) | GAIN SETTING | SPECIAL ID |
|--------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e      | 4G         | 850      | 1.500          | 130            | 50FP              | 122.3      | 0            |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 46         | 850      | 1.500          | 135            | 50FP              | 121.9      | 0            |            |

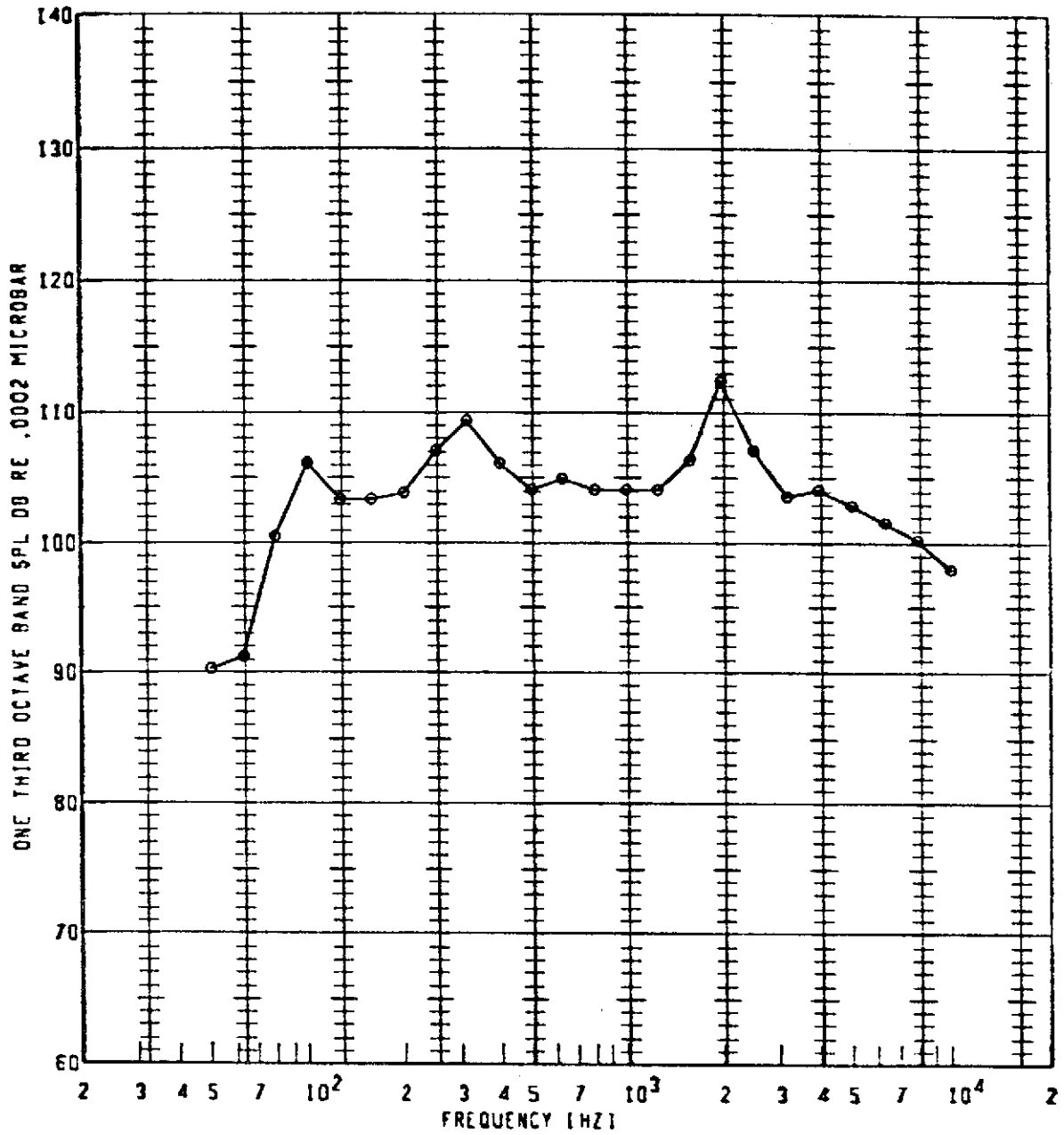
BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e          | 4G         | 850      | 1.500          | 140            | 50FP              | 121.6      | 0            |            |

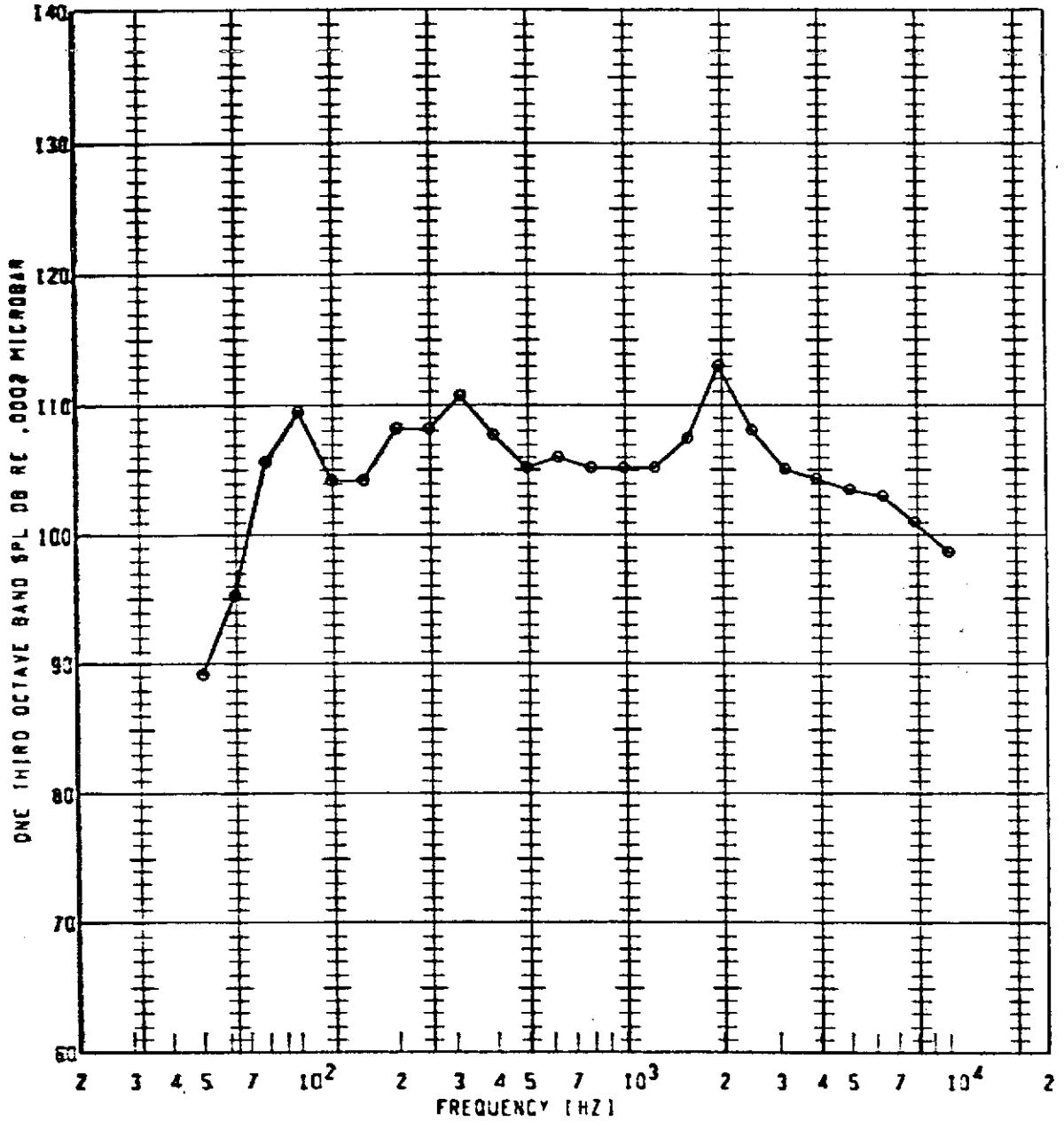


BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



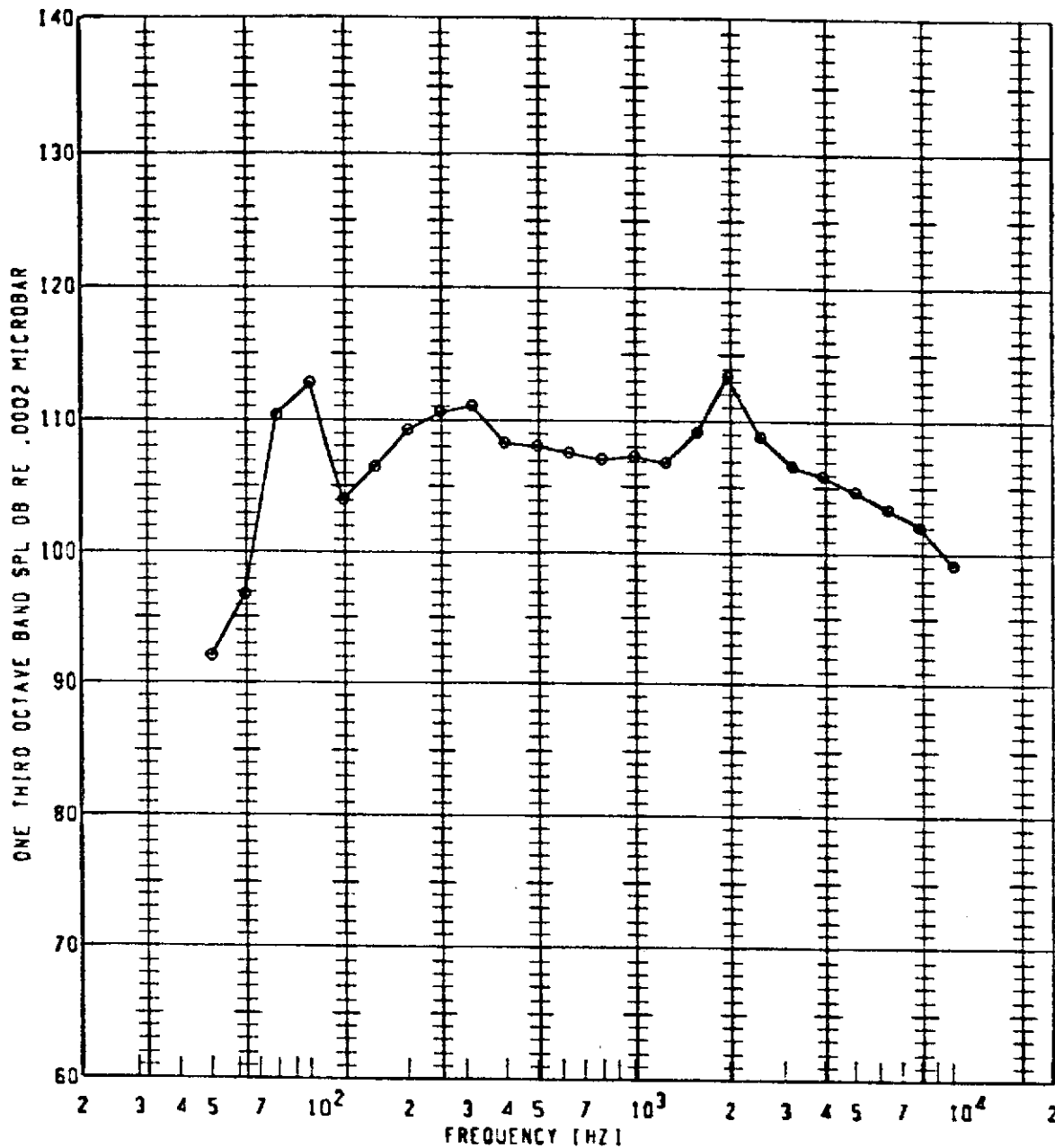
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 46         | 900      | 1.600          | 90             | 50FP              | 119.0      | 0            |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



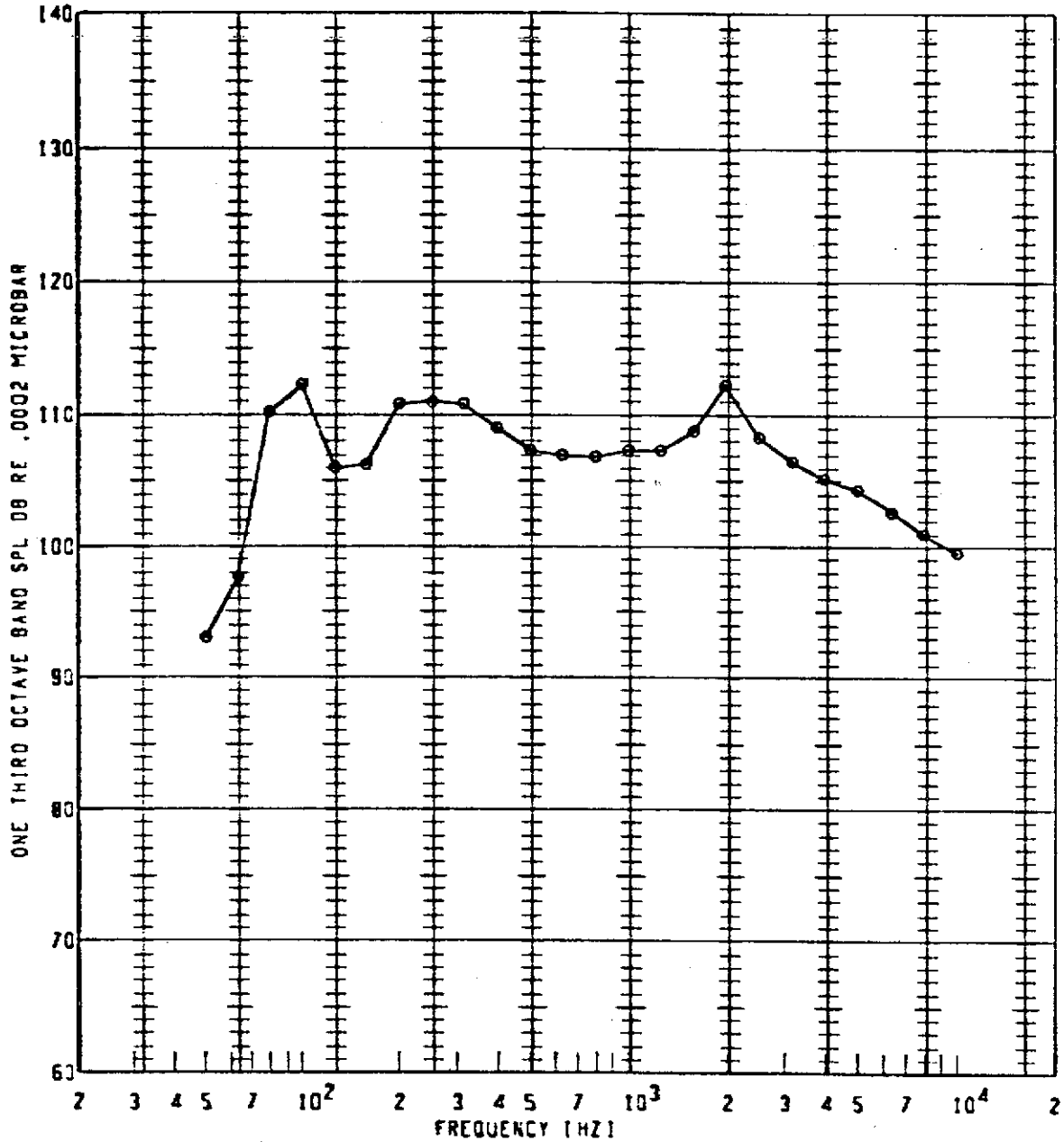
| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | GASPL (DB) | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e          | 4G         | 900      | 1.600          | 100            | 50FP              | 120.4      | 0            |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



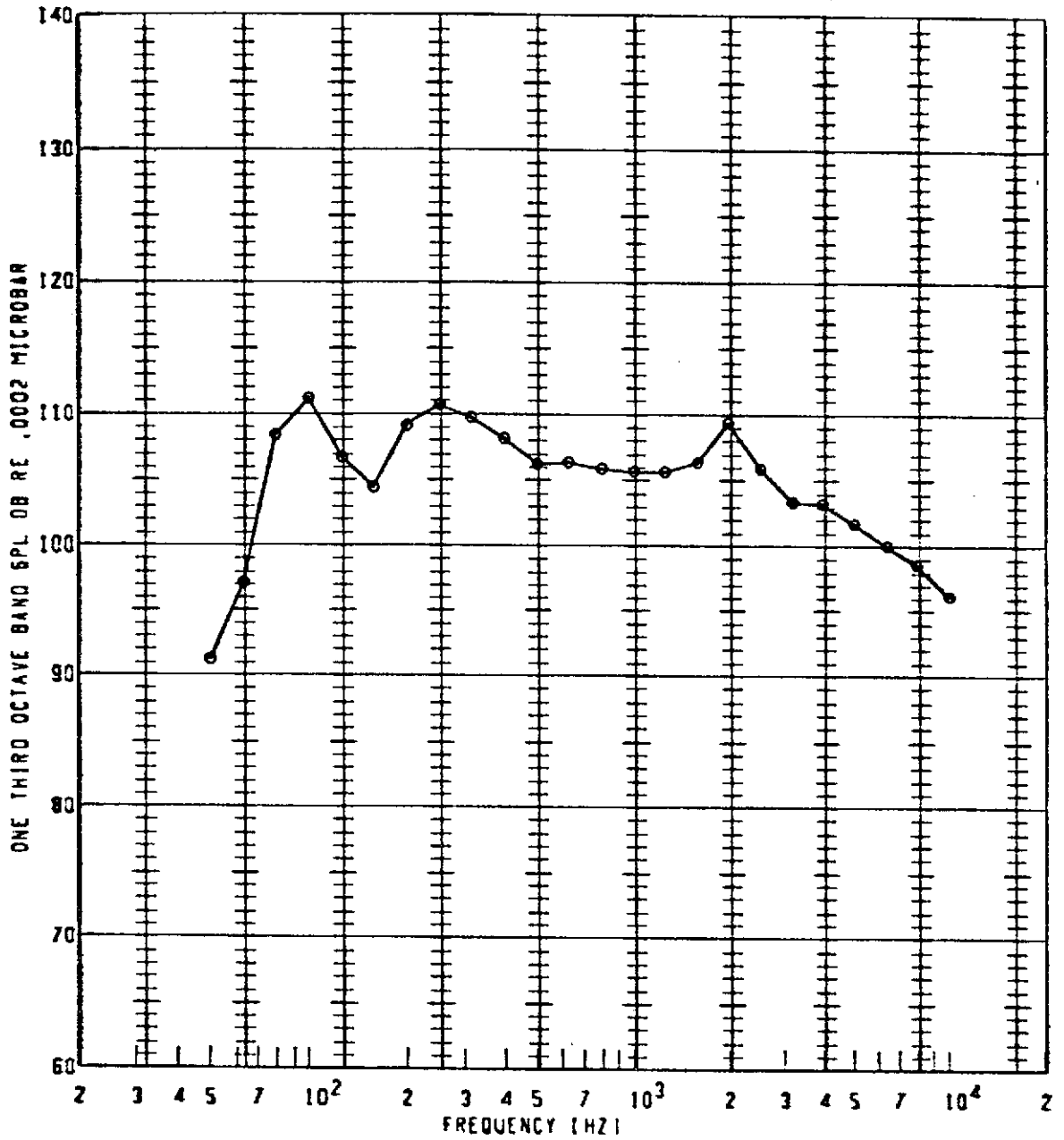
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTINGS | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|---------------|------------|
| ○           | 46         | 900      | 1.600          | 110            | SOP               | 122.0      | 0             |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



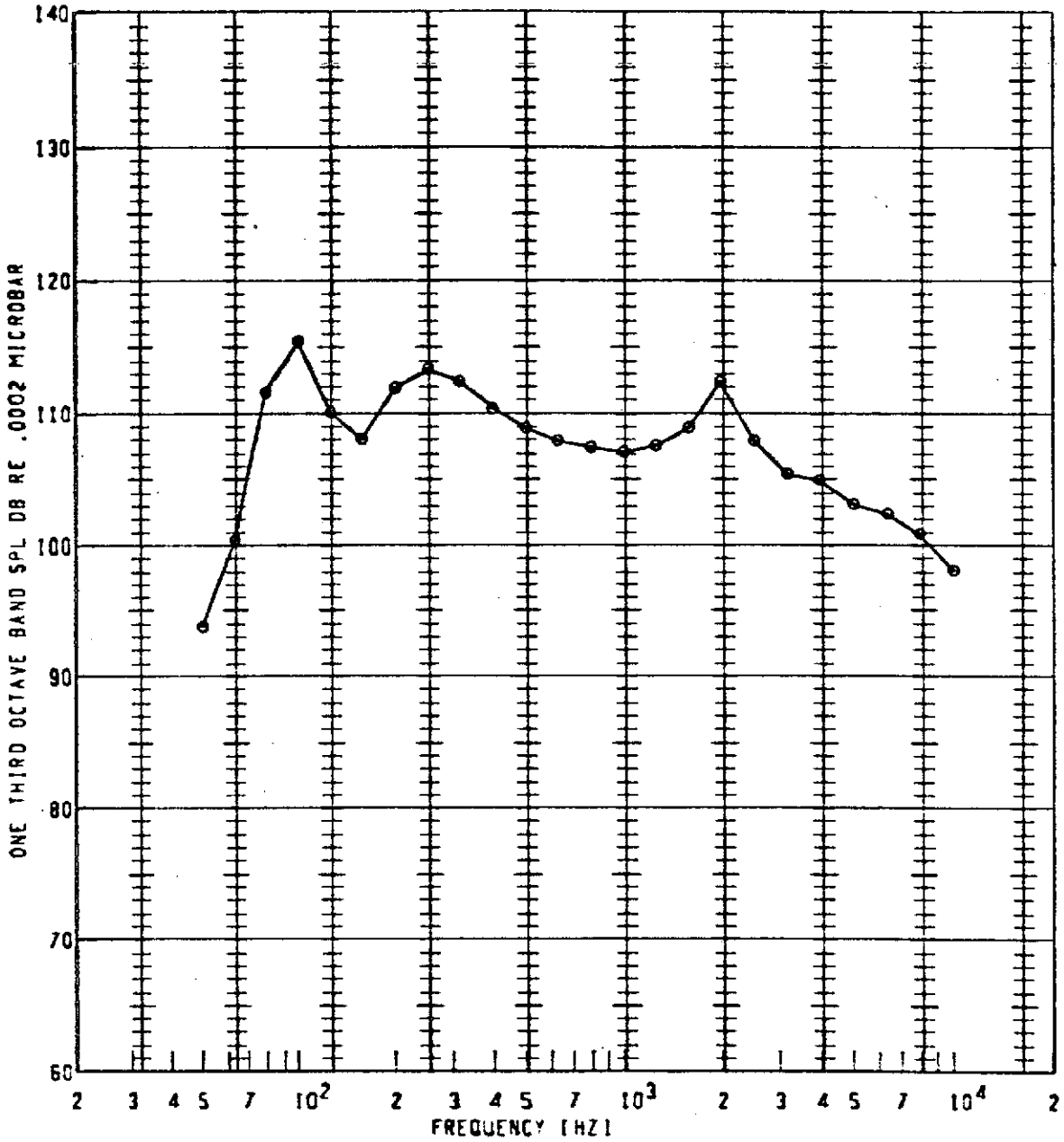
| PLT SYMCL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | JASPL (DB) | GAIN SETTING | SPECIAL ID |
|-----------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e         | 46         | 900      | 1.600          | 115            | 50FP              | 121.8      | 0            |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



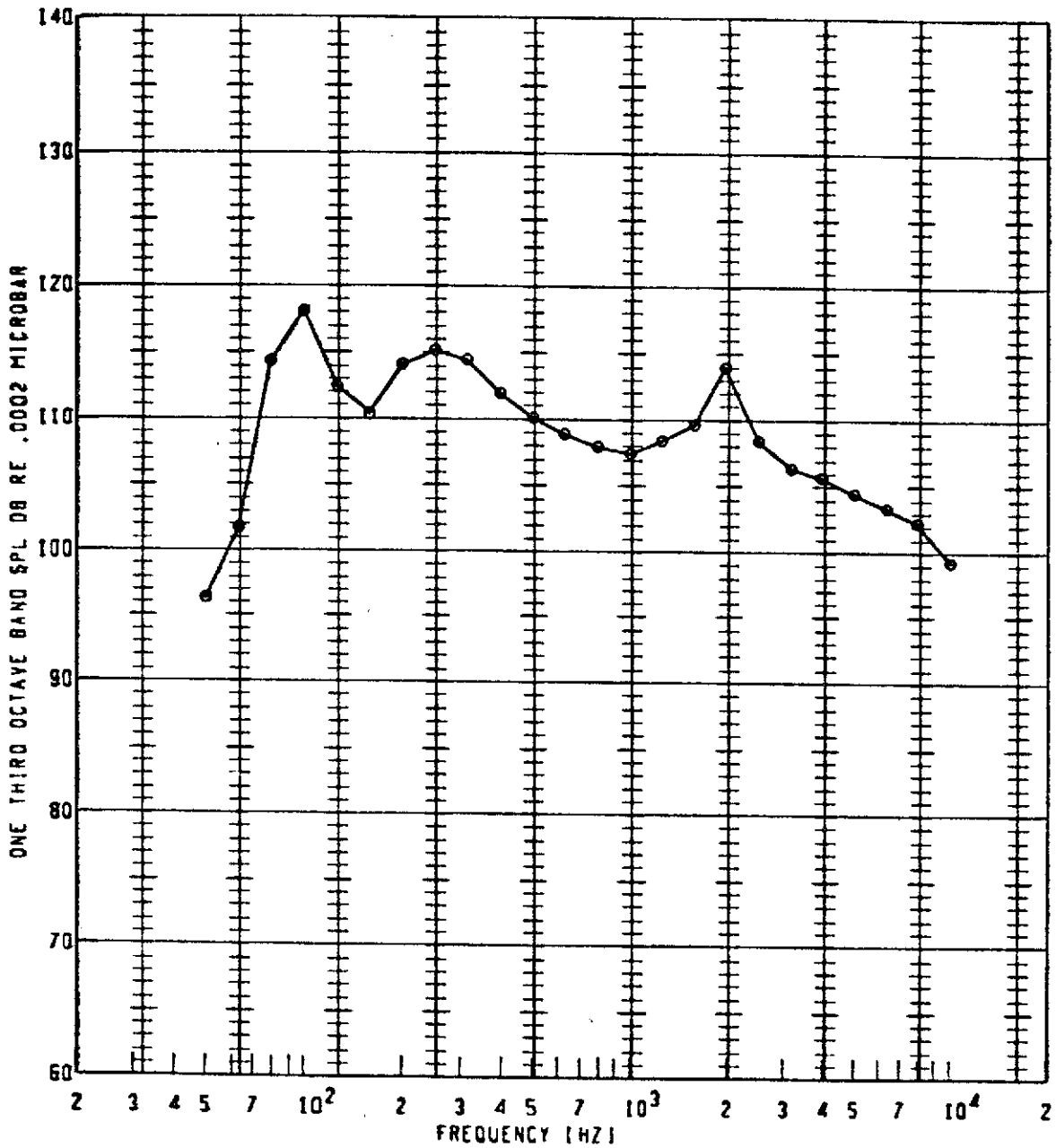
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 46         | 900      | 1.600          | 120            | 50FP              | 120.4      | 0            |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



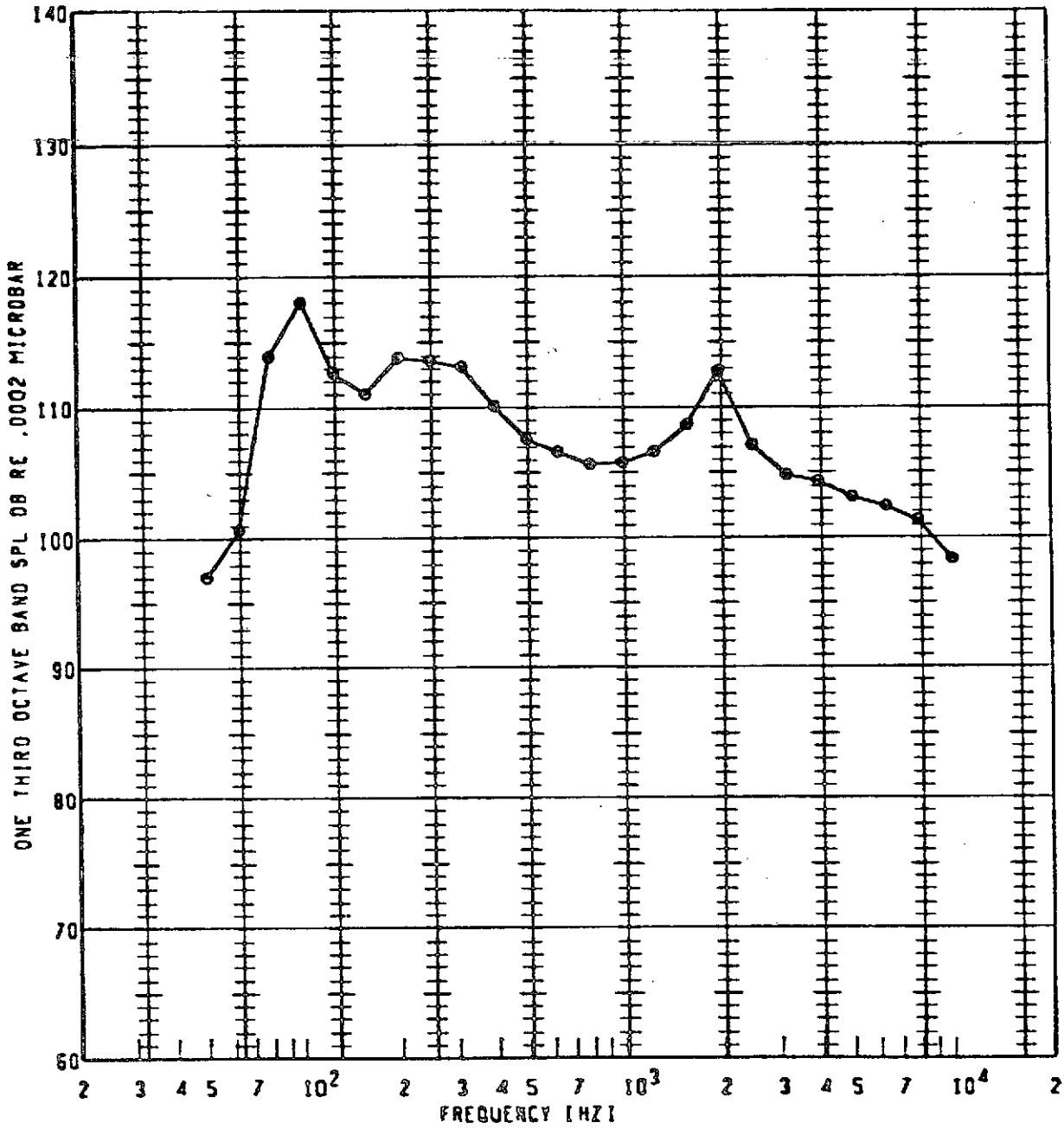
| PLLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|--------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e            | 46         | 900      | 1.600          | 125            | SOFP              | 123.2      | 0            |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e          | 4G         | 900      | 1.600          | 130            | 50FP              | 125.0      | 0            |            |

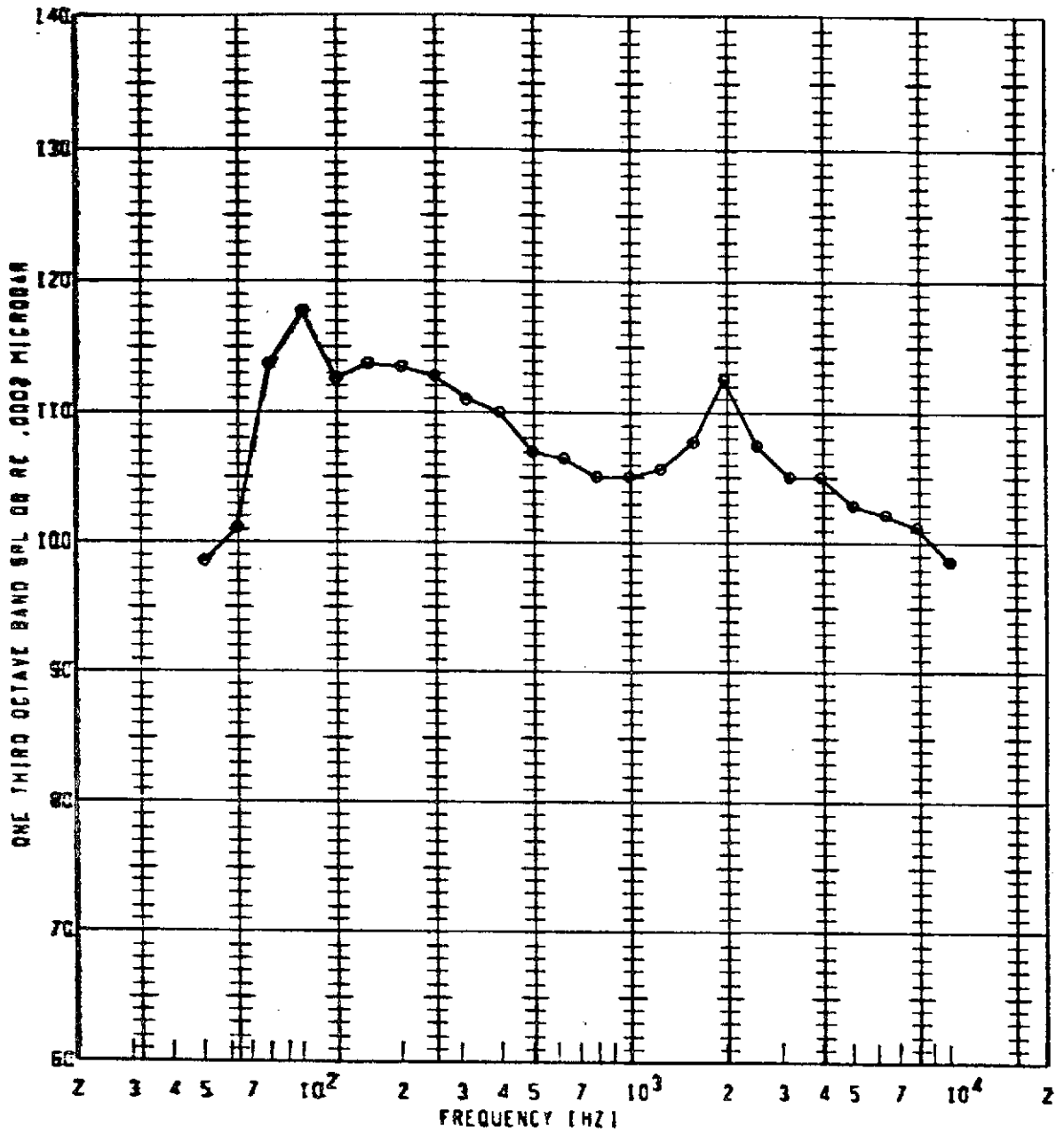
BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ○           | 46         | 900      | 1.600          | 135            | 50FP              | 124.2      | 0            |            |

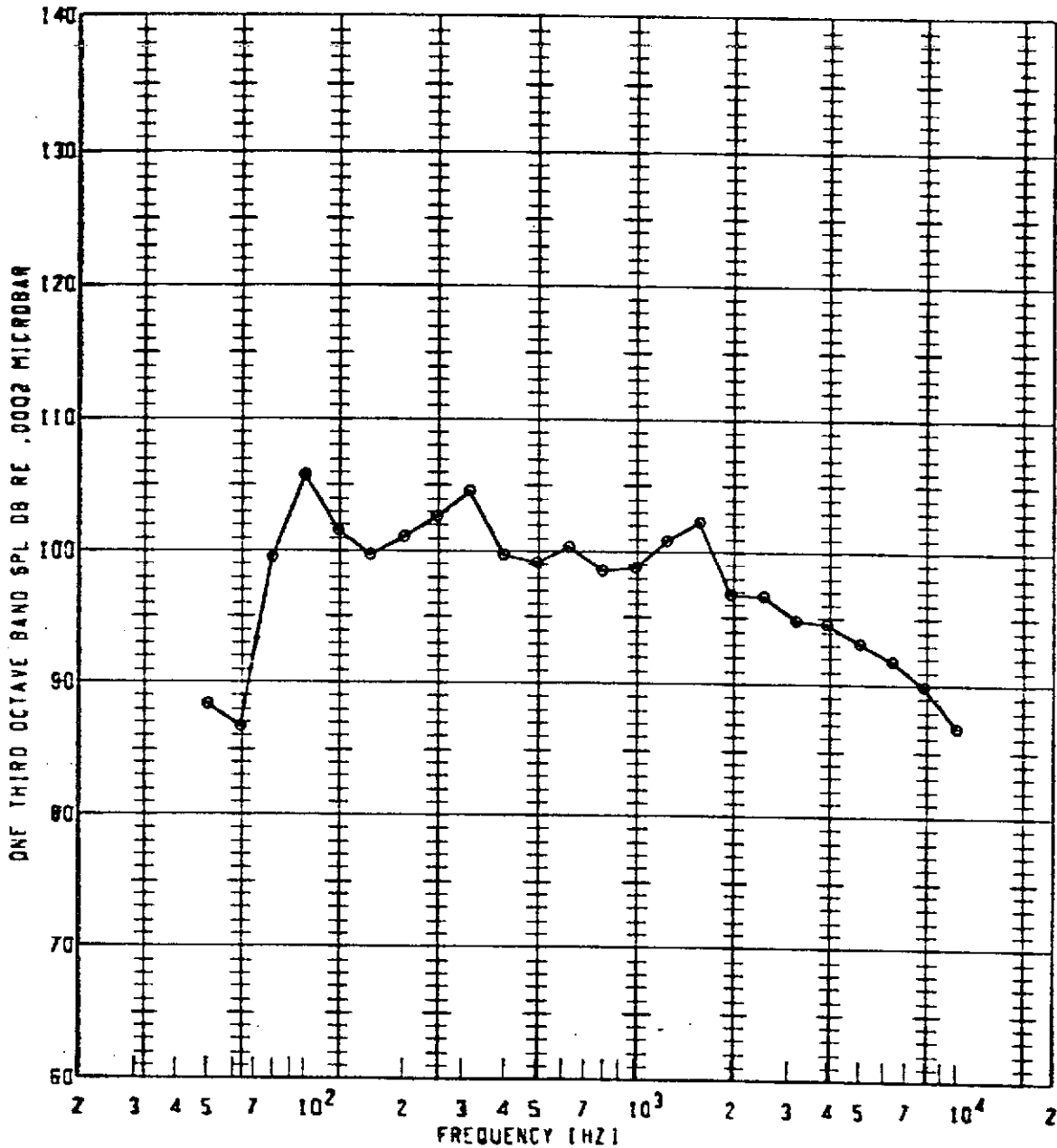


BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



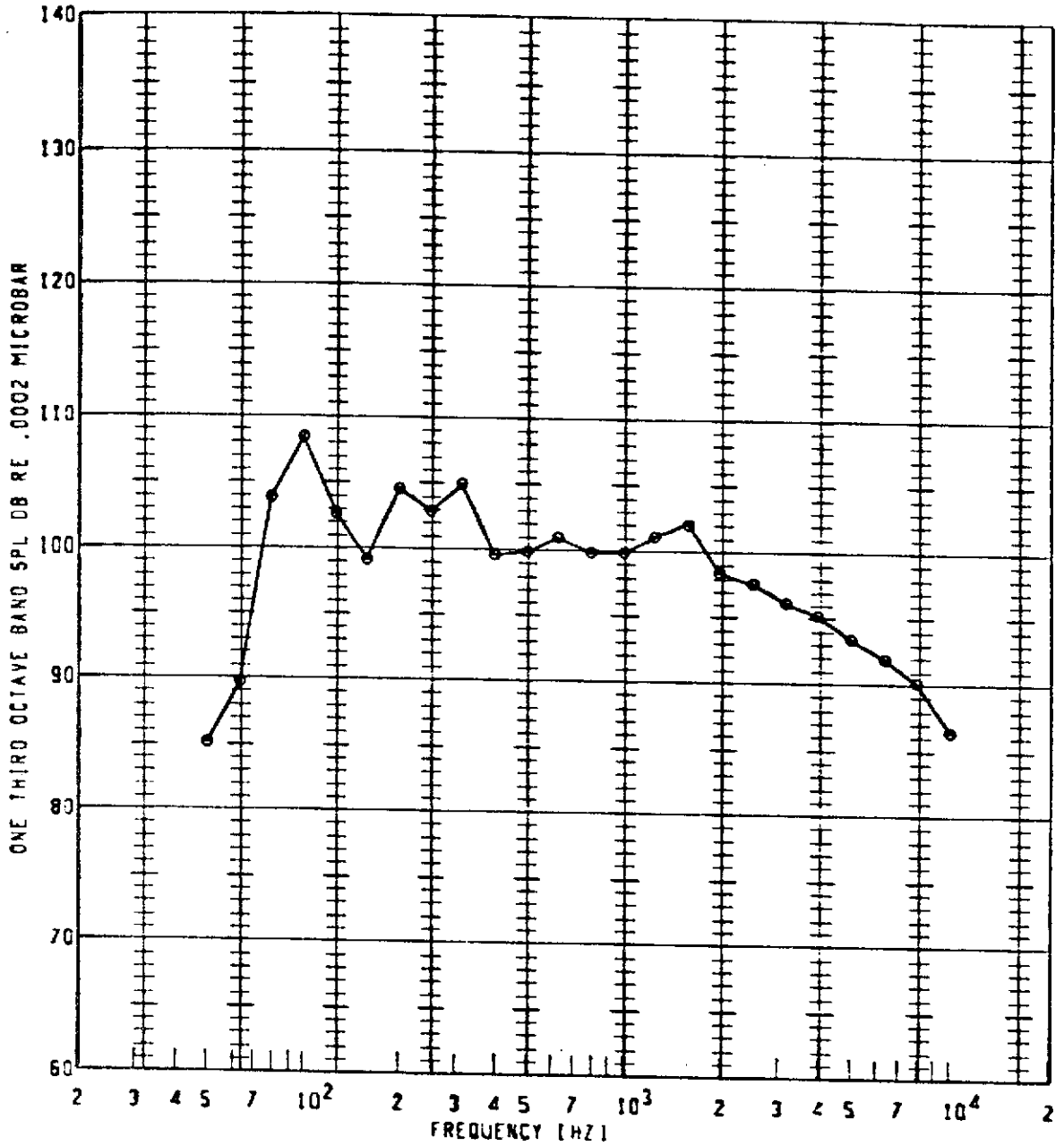
| PLCT SYMCL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ●          | 46         | 900      | 1.600          | 140            | 50FP              | 124.0      | 0            |            |

BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



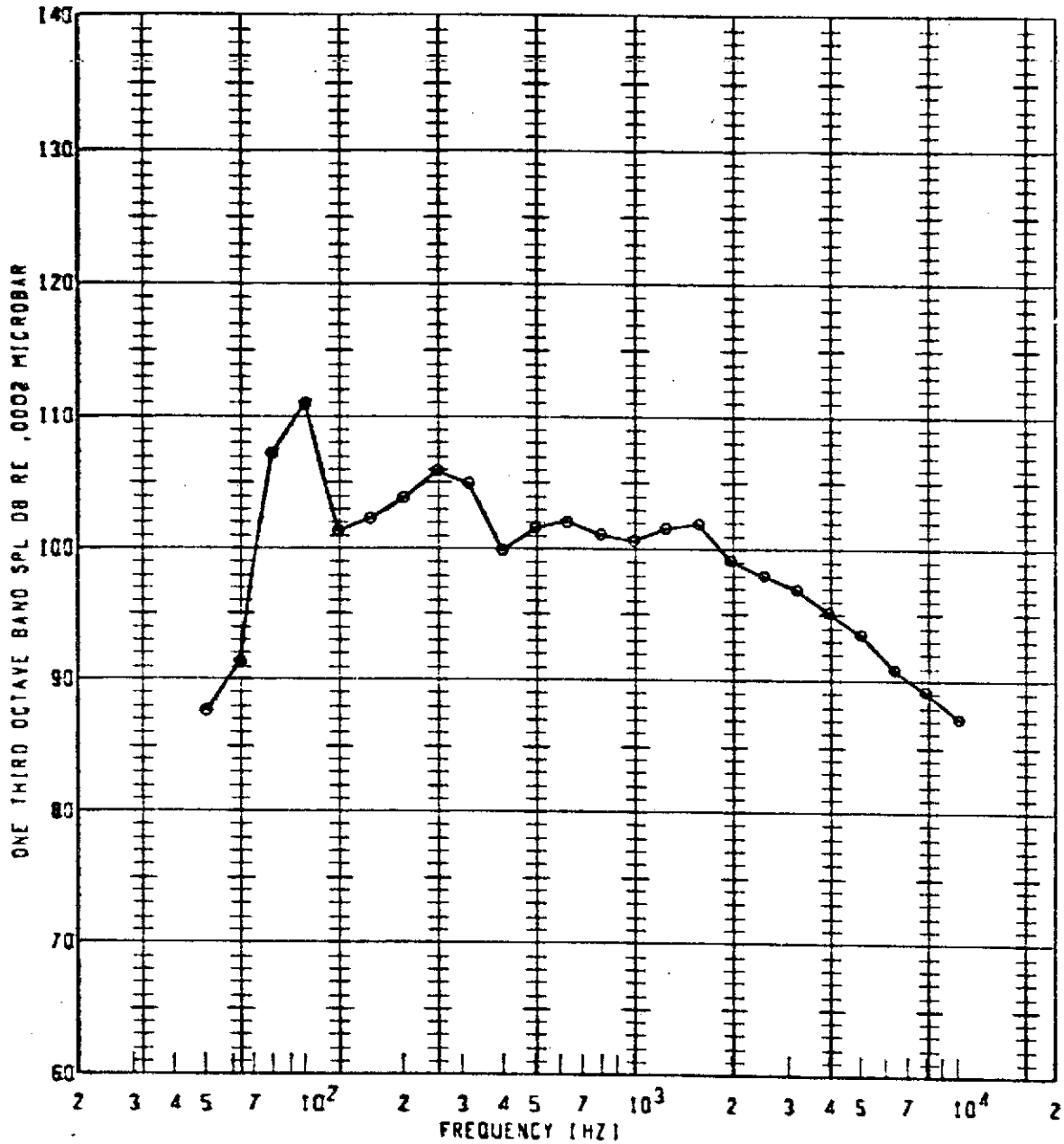
| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL IC |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e          | 5G         | 800      | 1.400          | 90             | 50FP              | 113.5      | 10           | REF NOZZLE |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



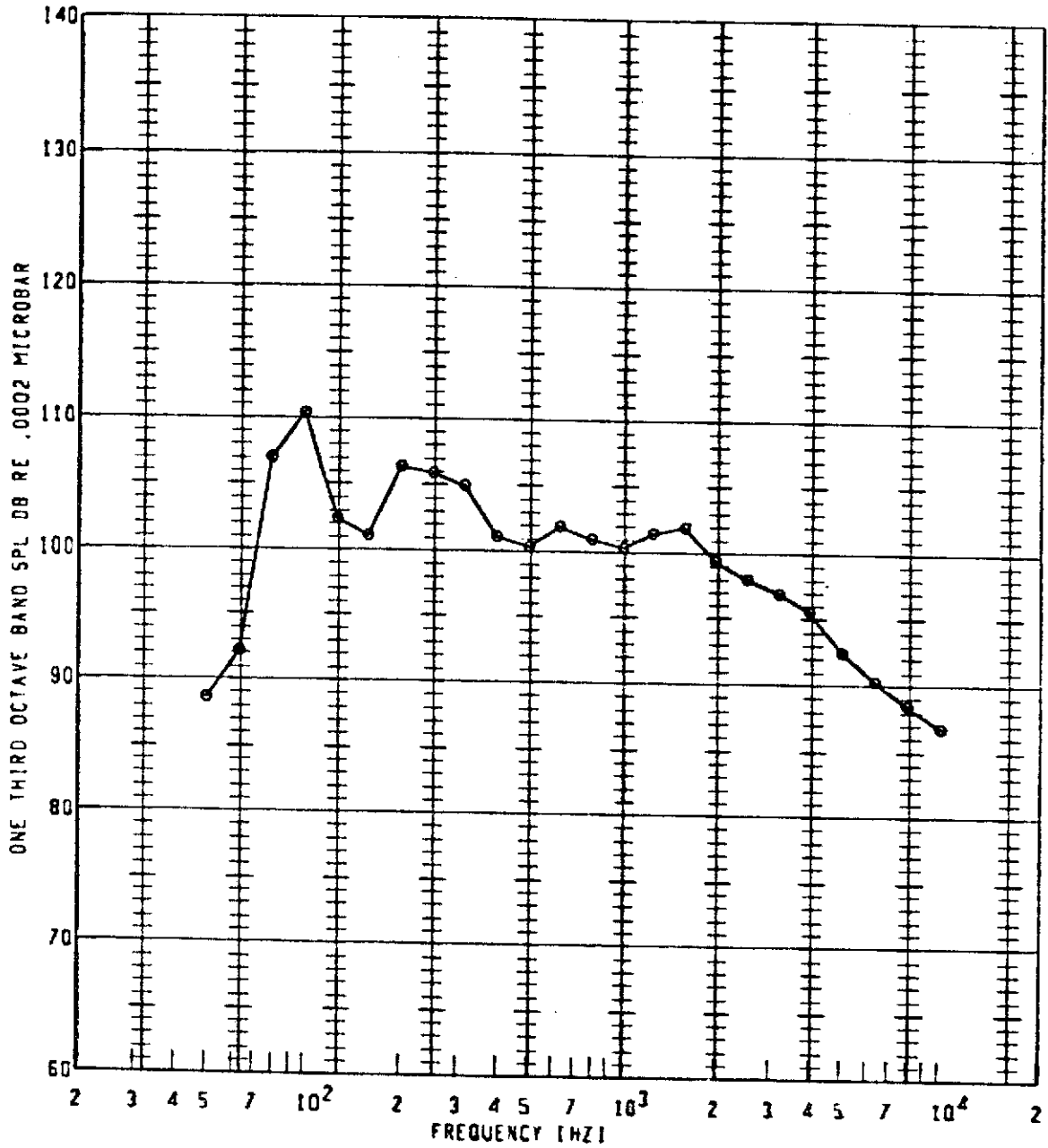
| Plot Symbol | Run Number | Jet Temp | Pressure Ratio | Angle re Inlet | Observer Location | QASPL (db) | Gain Setting | Special ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 5G         | 800      | 1.400          | 100            | 50FP              | 114.0      | 10           | REF NOZZLE |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



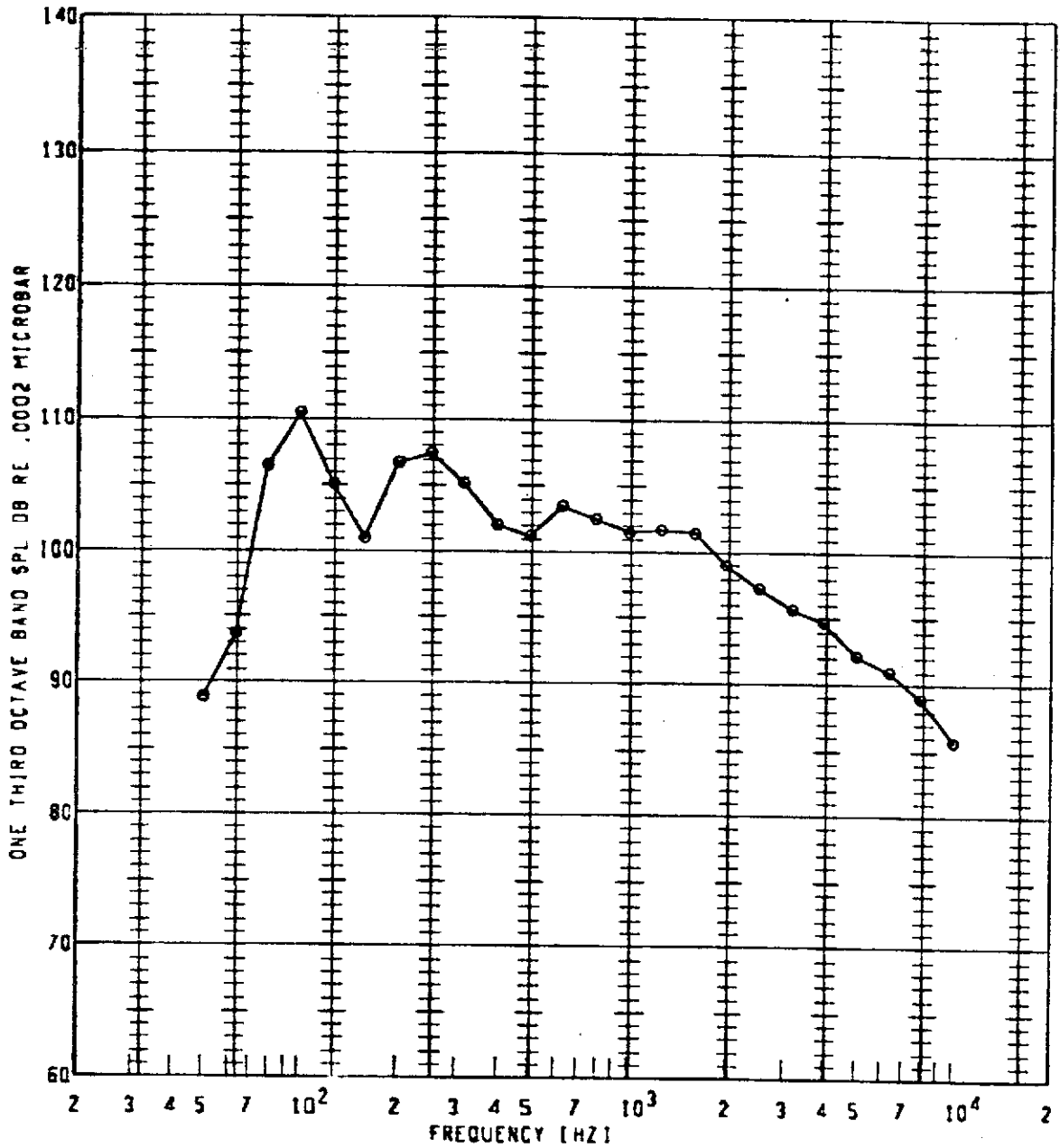
| PLT SYM30L | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | CASPL (DB) | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙          | 5G         | 800      | 1.400          | 110            | SCFP              | 116.3      | 10           | REF NOZZLE |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



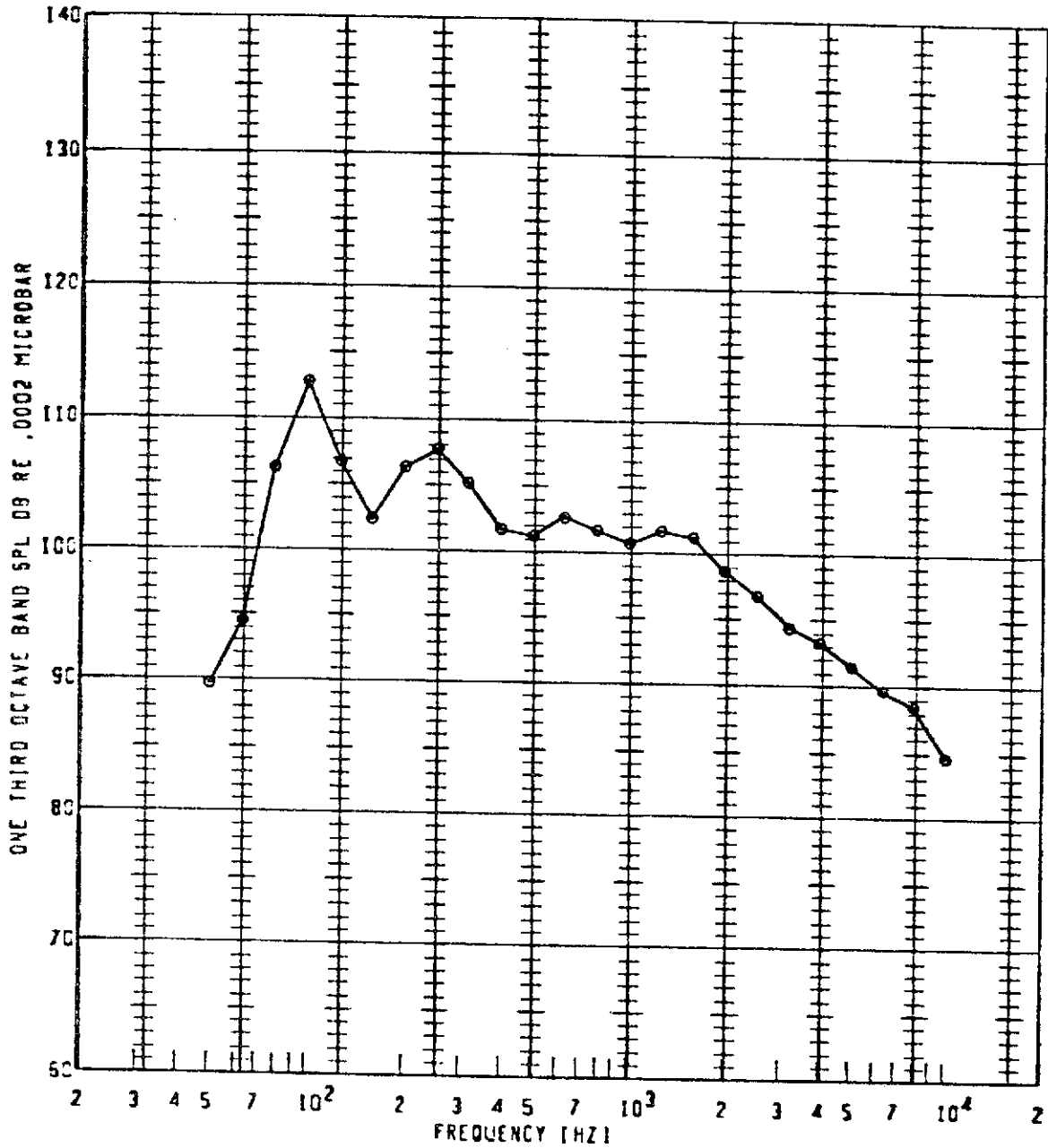
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL    |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊕           | 56         | 800      | 1.400          | 115            | 50FP              | 116.3      | 10           | REF NOZZLE |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



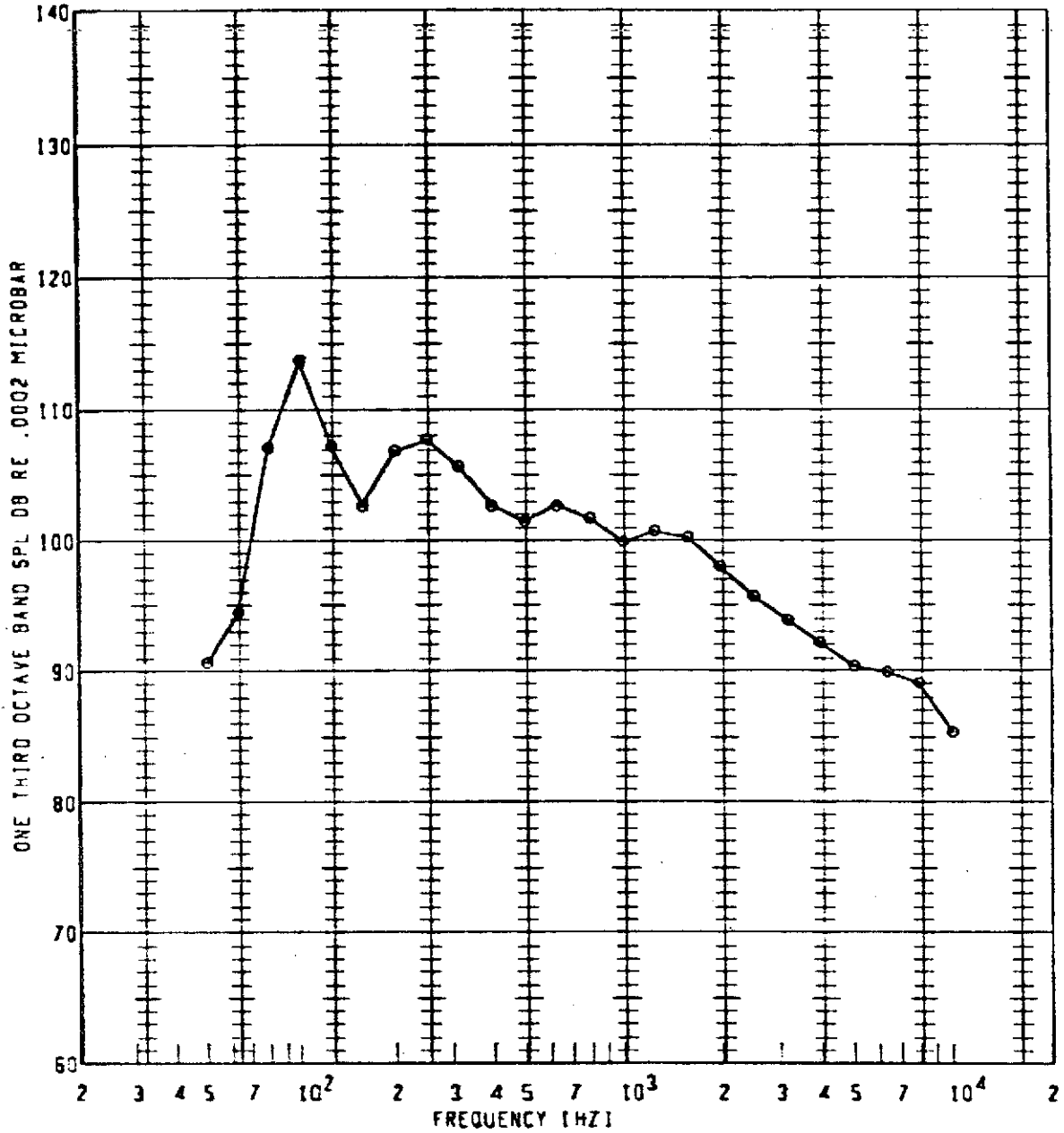
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 56         | 800      | 1.400          | 120            | 50FP              | 116.8      | 10           | REF NOZZLE |

BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL [DB] | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙          | 50         | 800      | 1.400          | 125            | 50FP              | 117.4      | 10           | REF NOZZLE |

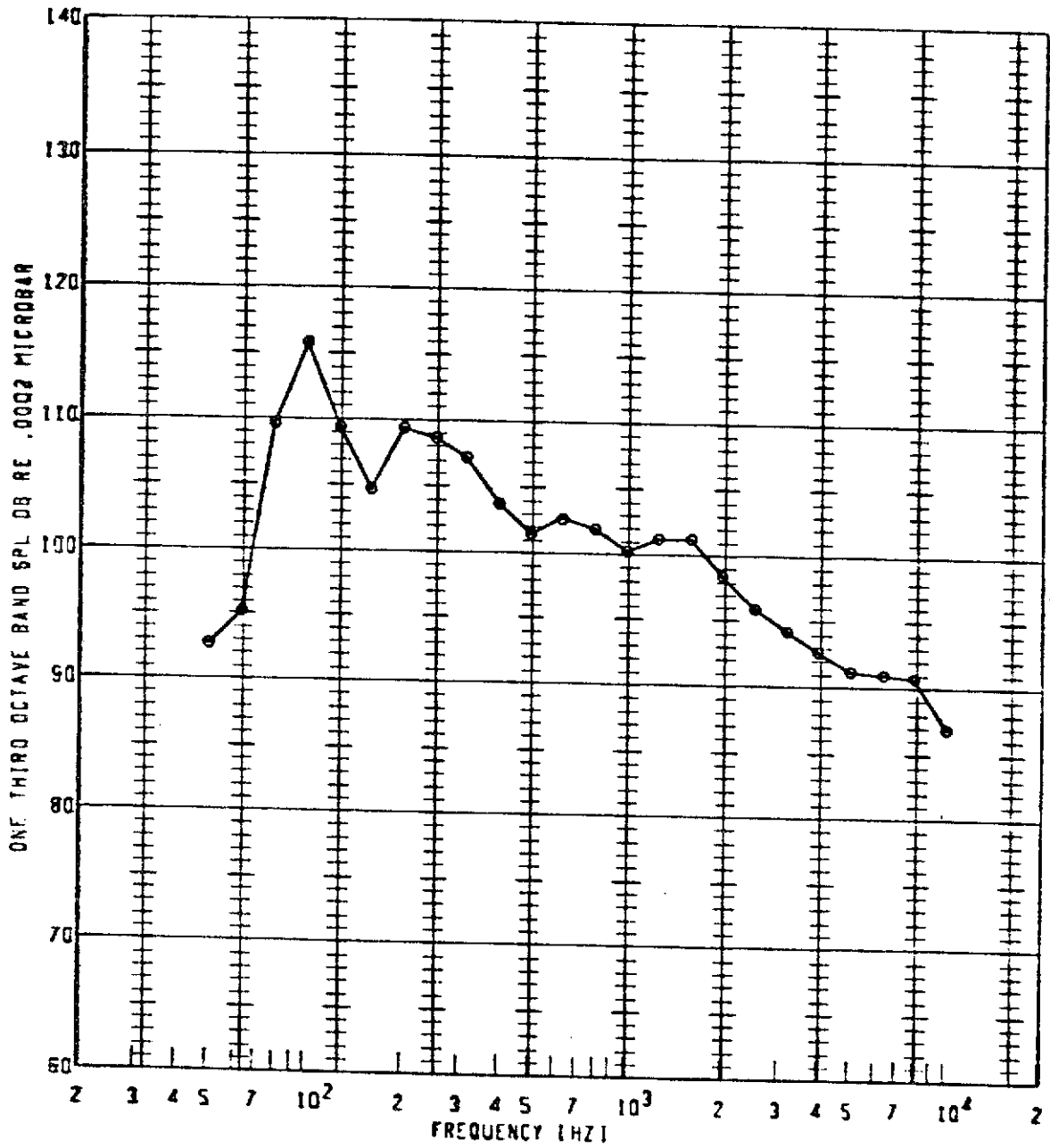
BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | CASPL LOSS | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e          | 55         | 800      | 1.400          | 130            | 50FP              | 117.9      | 10           | REF NOZZLE |

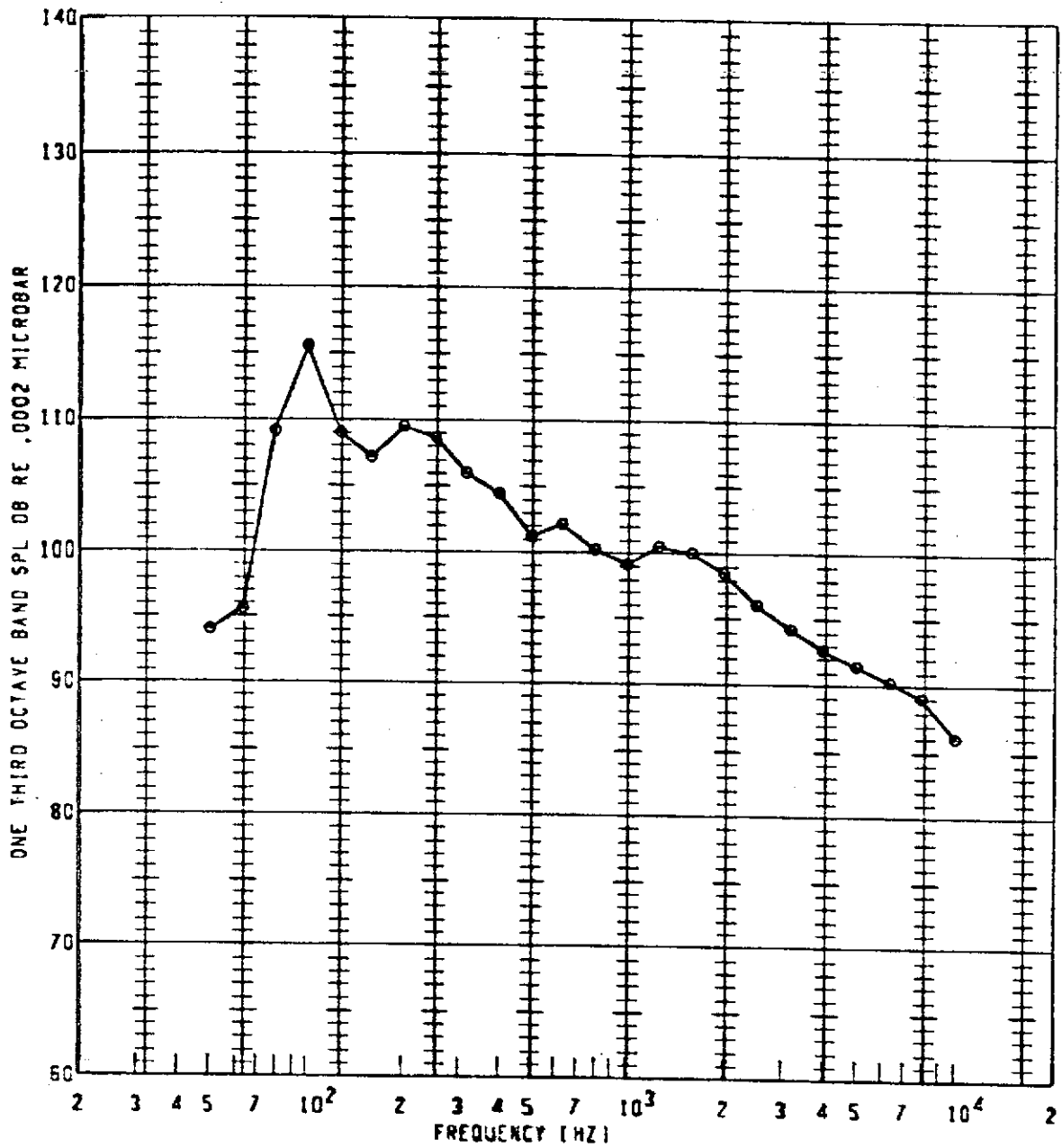


BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



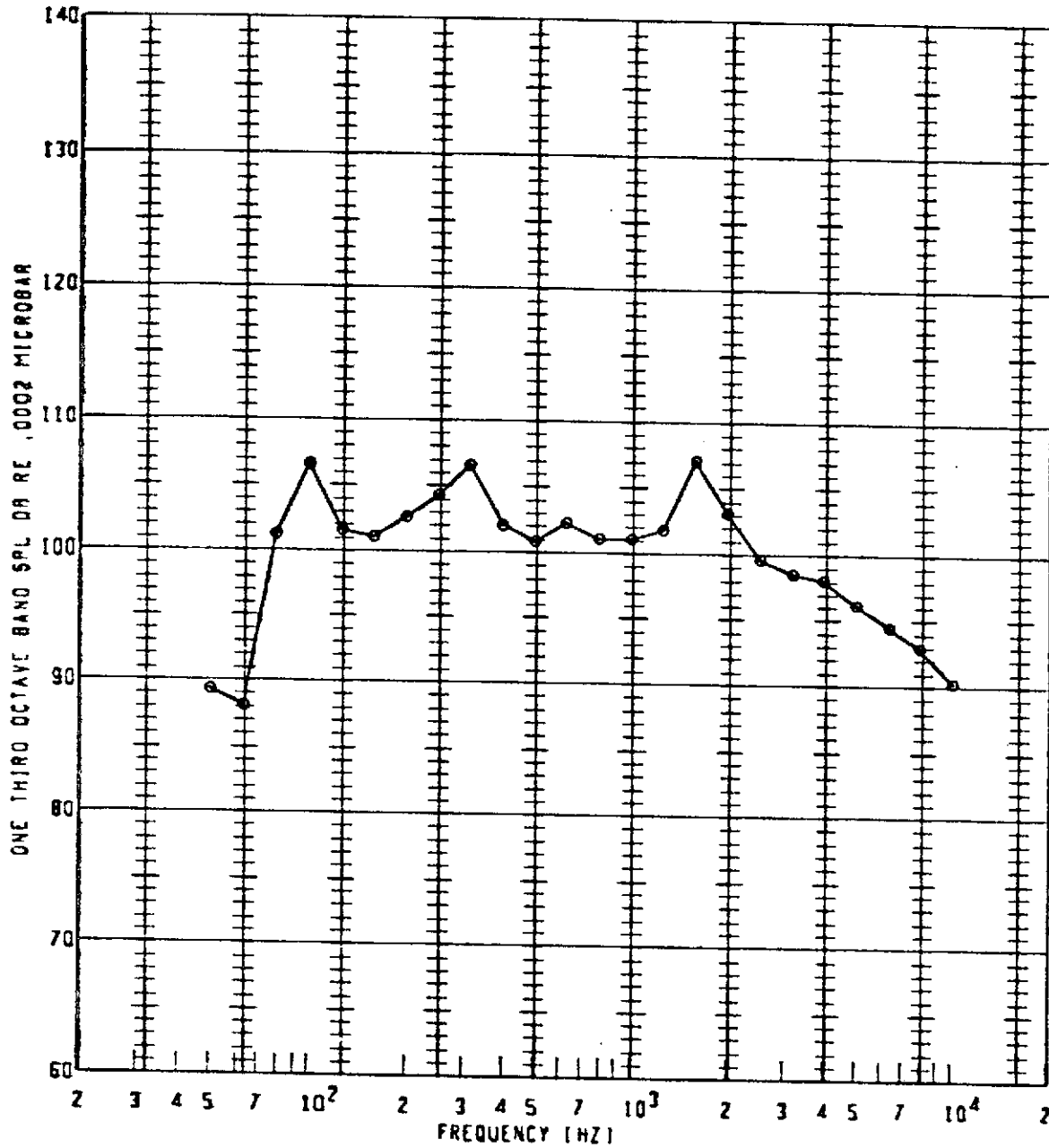
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL IC |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 55         | 800      | 1.400          | 135            | 50FP              | 119.7      | 10           | REF NOZZLE |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



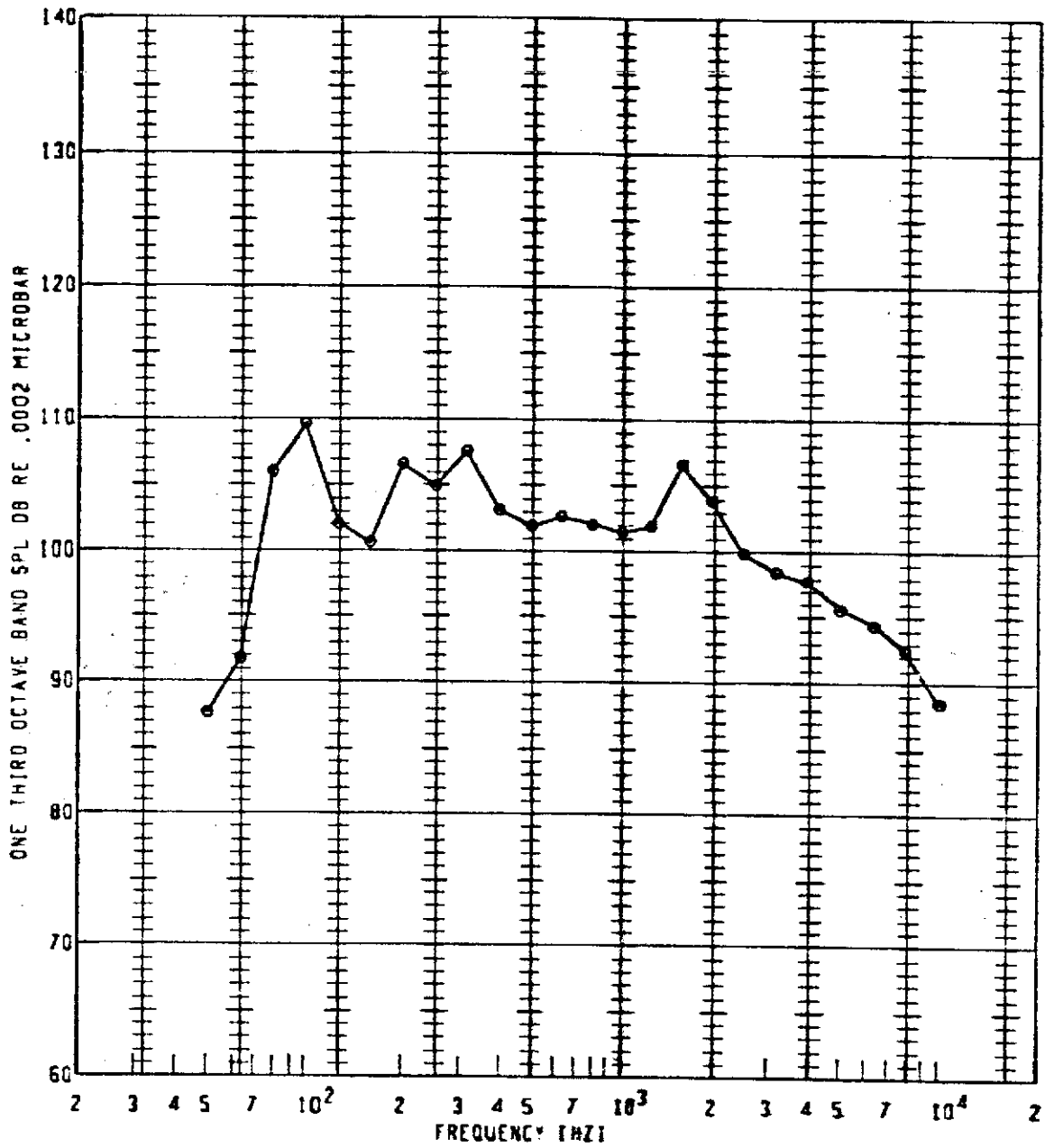
| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e          | 56         | 800      | 1.400          | 140            | 50FP              | 119.5      | 10           | REF NOZZLE |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



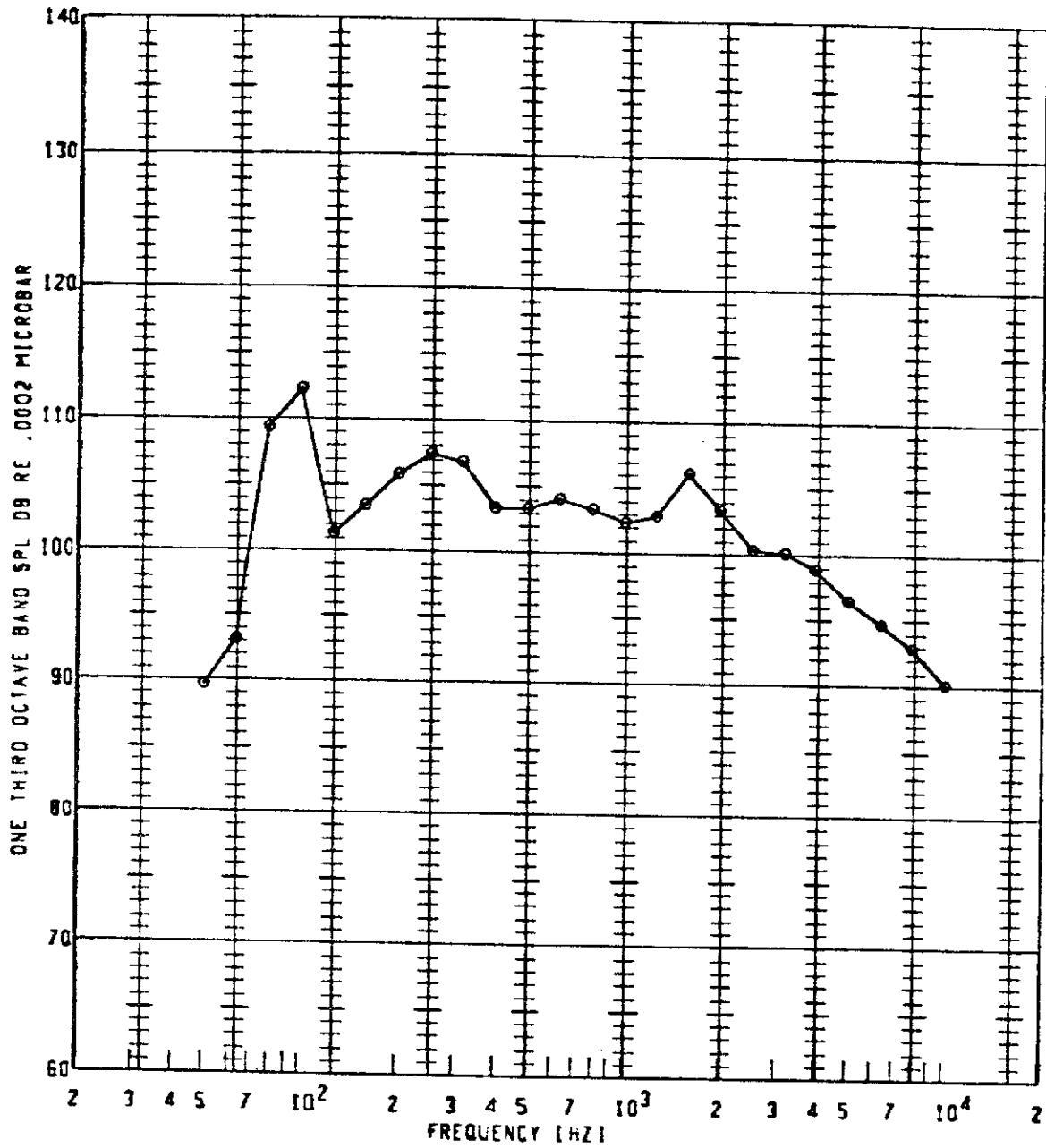
| PLCT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 56         | 850      | 1.500          | 90             | 50FP              | 115.7      | C            |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



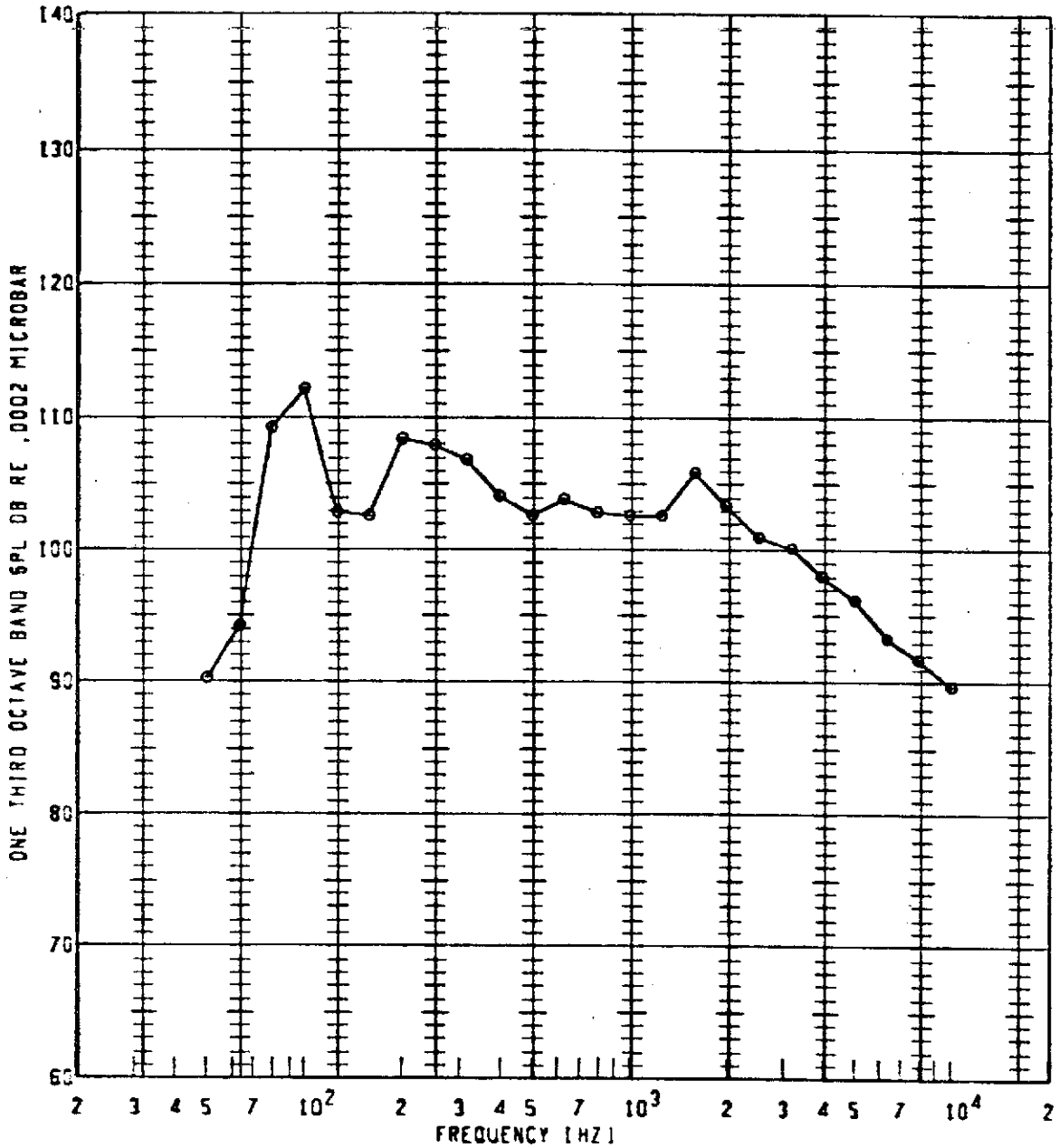
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 5G         | 850      | 1.500          | 100            | 50FP              | 117.0      | 0            |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



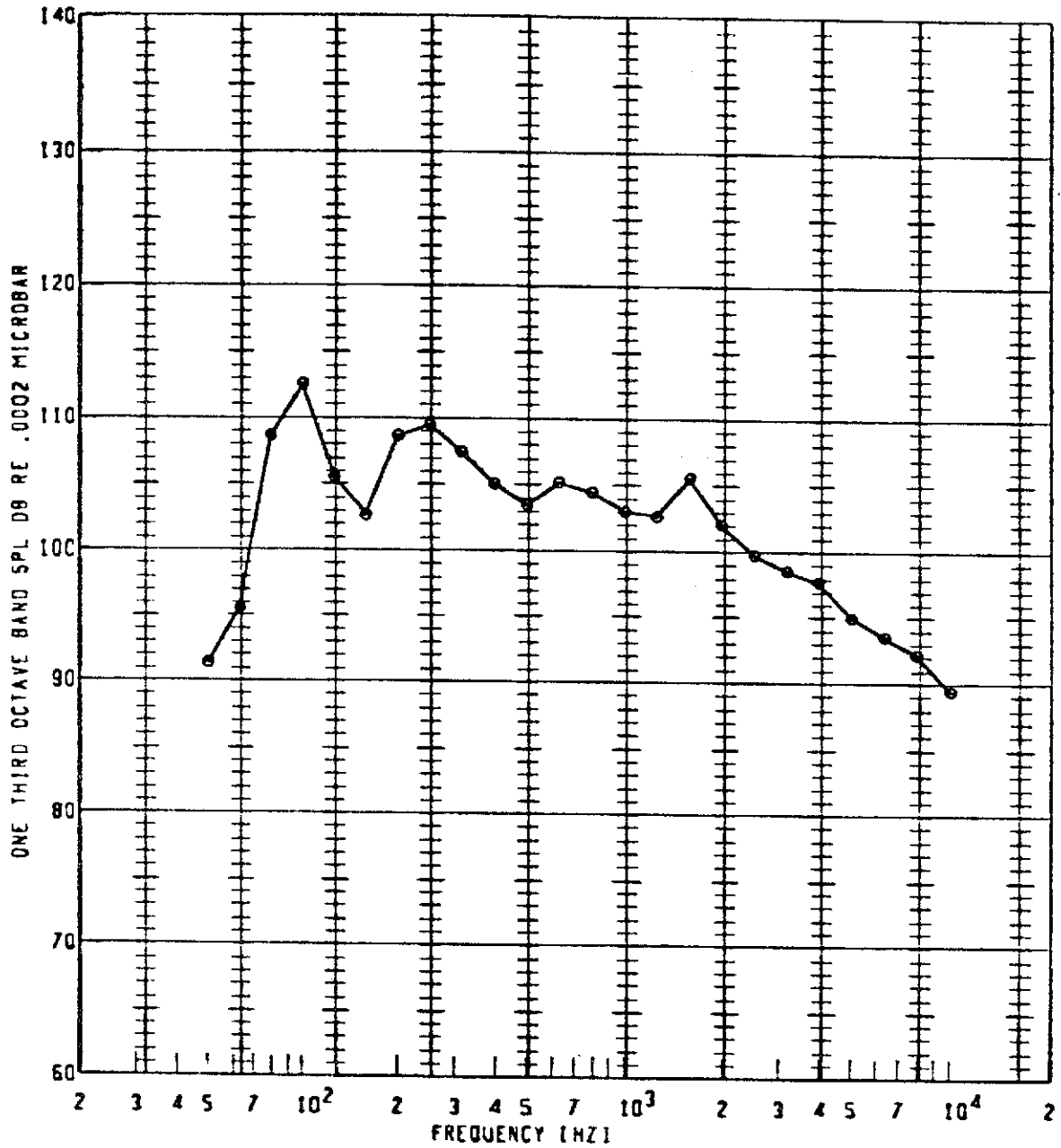
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL [DB] | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 56         | 850      | 1.500          | 110            | SCFP              | 110.3      | 0            |            |

BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST -- HOT NOZZLE TEST FACILITY



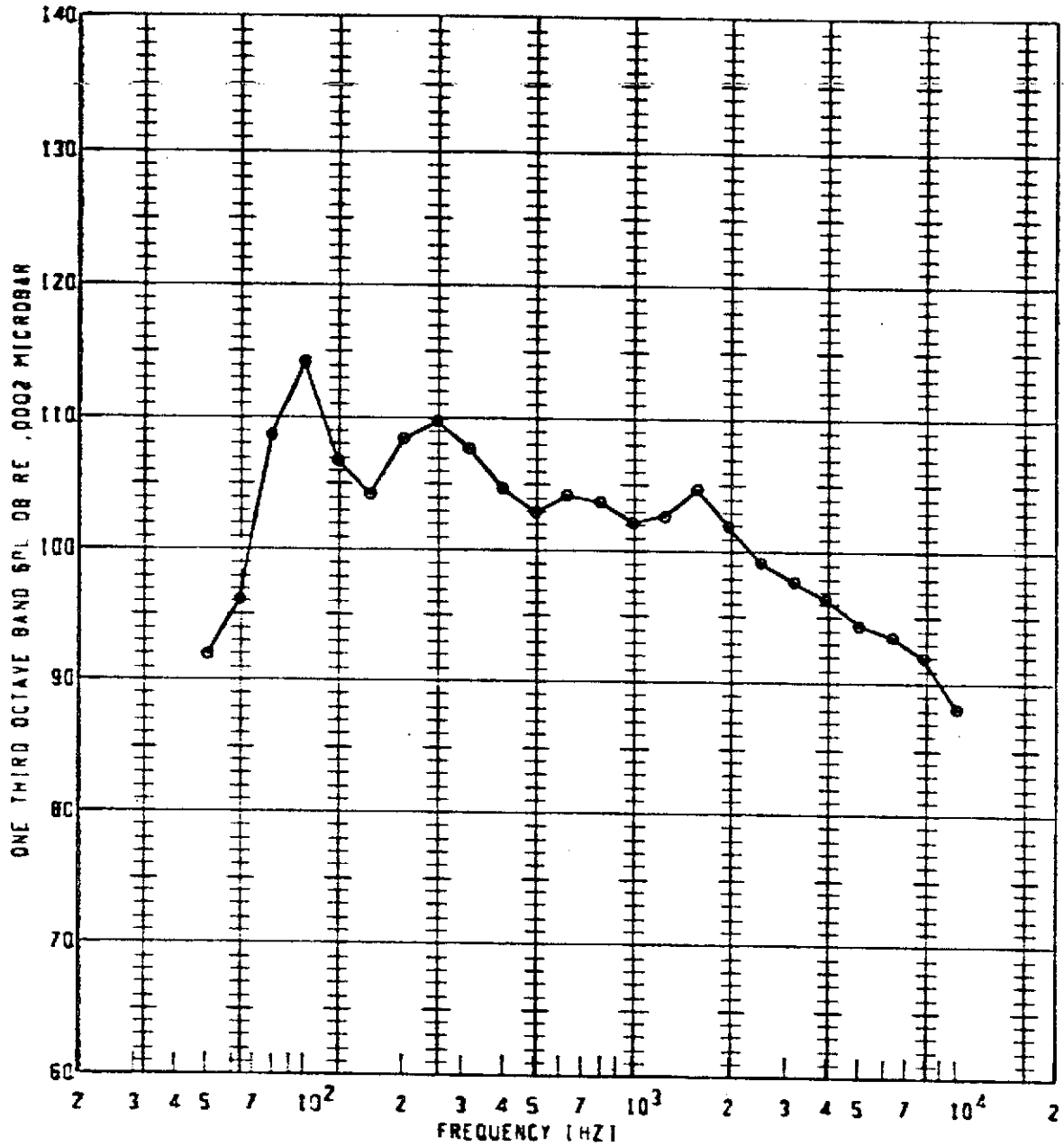
| Plot Symbol | Run Number | Jet Temp | Pressure Ratio | Angle Re Inlet | Observer Location | Gaspl (db) | Gain Setting | Special ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 5G         | 850      | 1.500          | 115            | 50FP              | 118.4      | 0            |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| PLCT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 5G         | 850      | 1.500          | 120            | 50FP              | 118.8      | 0            |            |

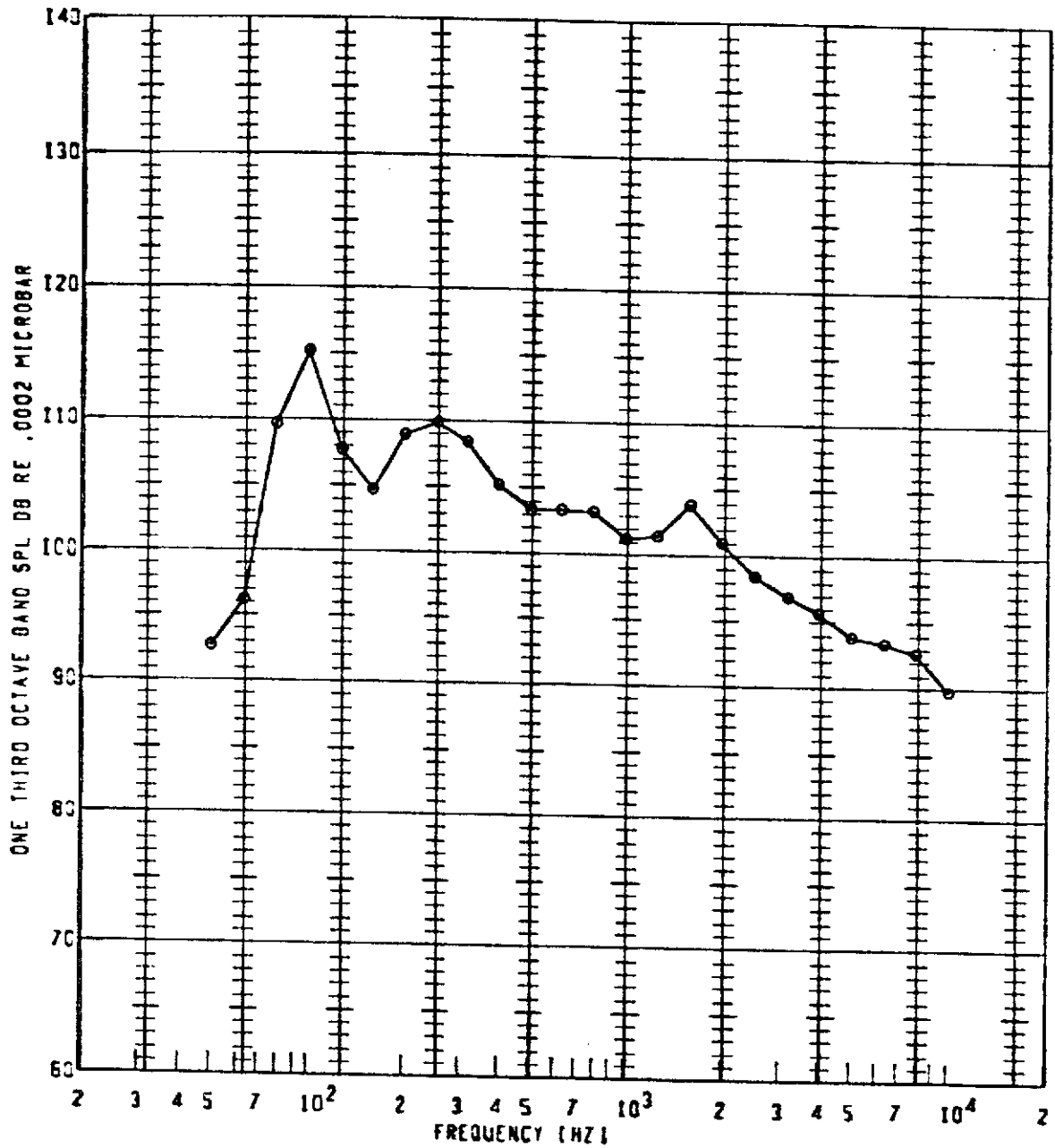
**BUFFALO SUPPRESSOR NOZZLE TONE TO TEST - HOT NOZZLE TEST FACILITY**



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 56         | 850      | 1.500          | 125            | 50FP              | 119.3      | 0            |            |

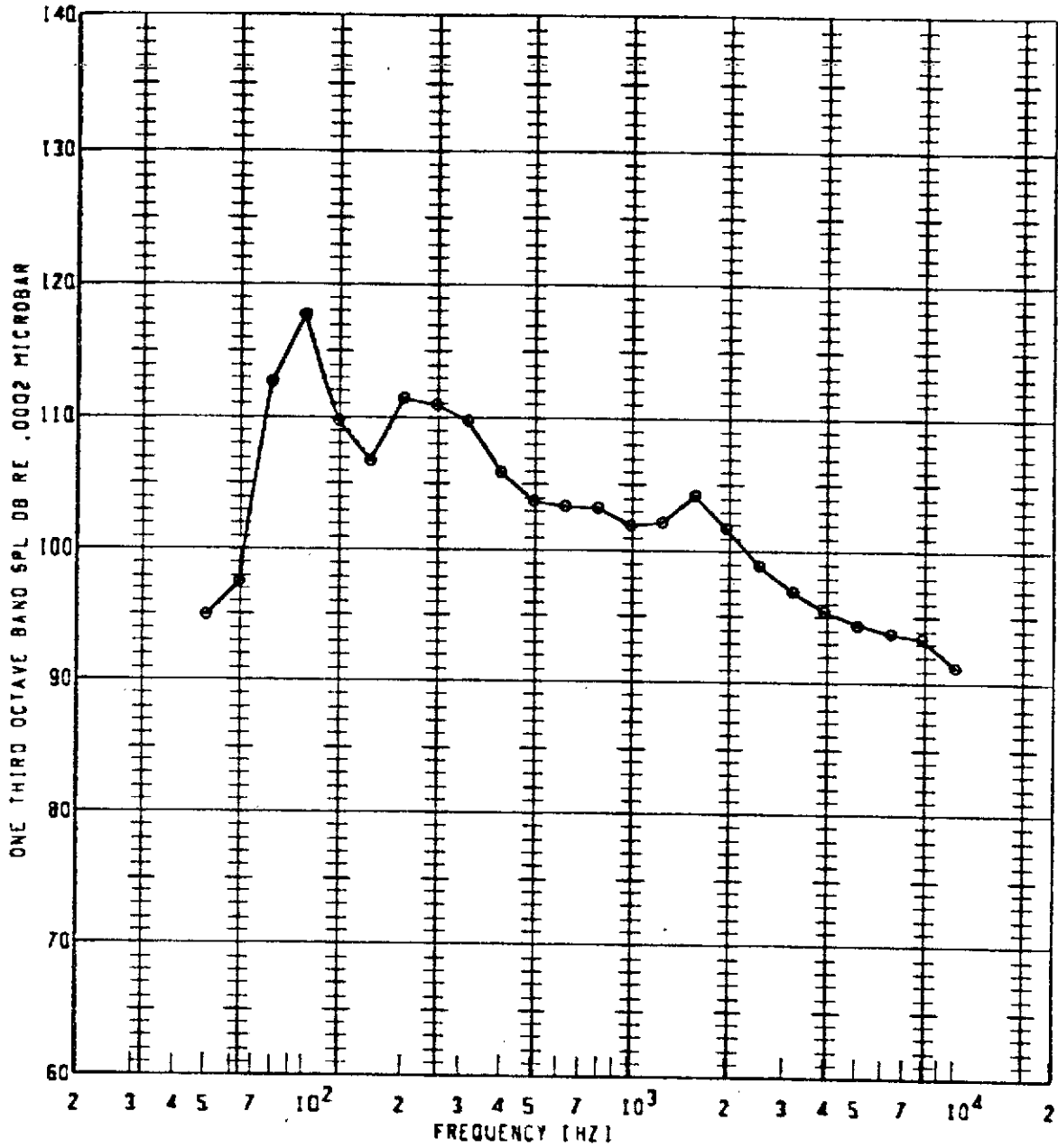


BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|--------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ●      | 56         | 850      | 1.500          | 130            | 50FP              | 119.8      | C            |            |

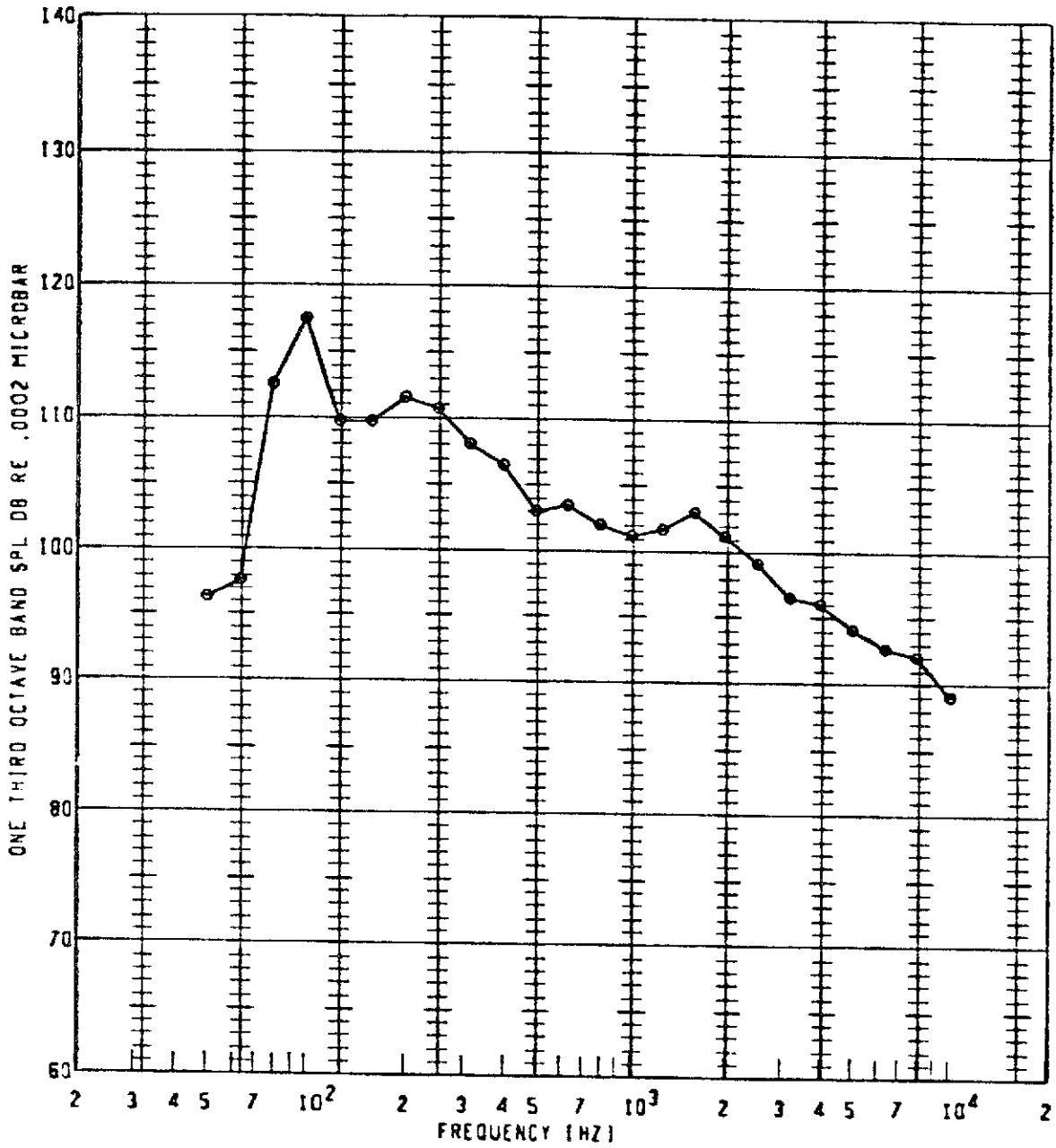
BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| o           | 50         | 850      | 1.500          | 135            | SOFP              | 121.7      | 0            |            |

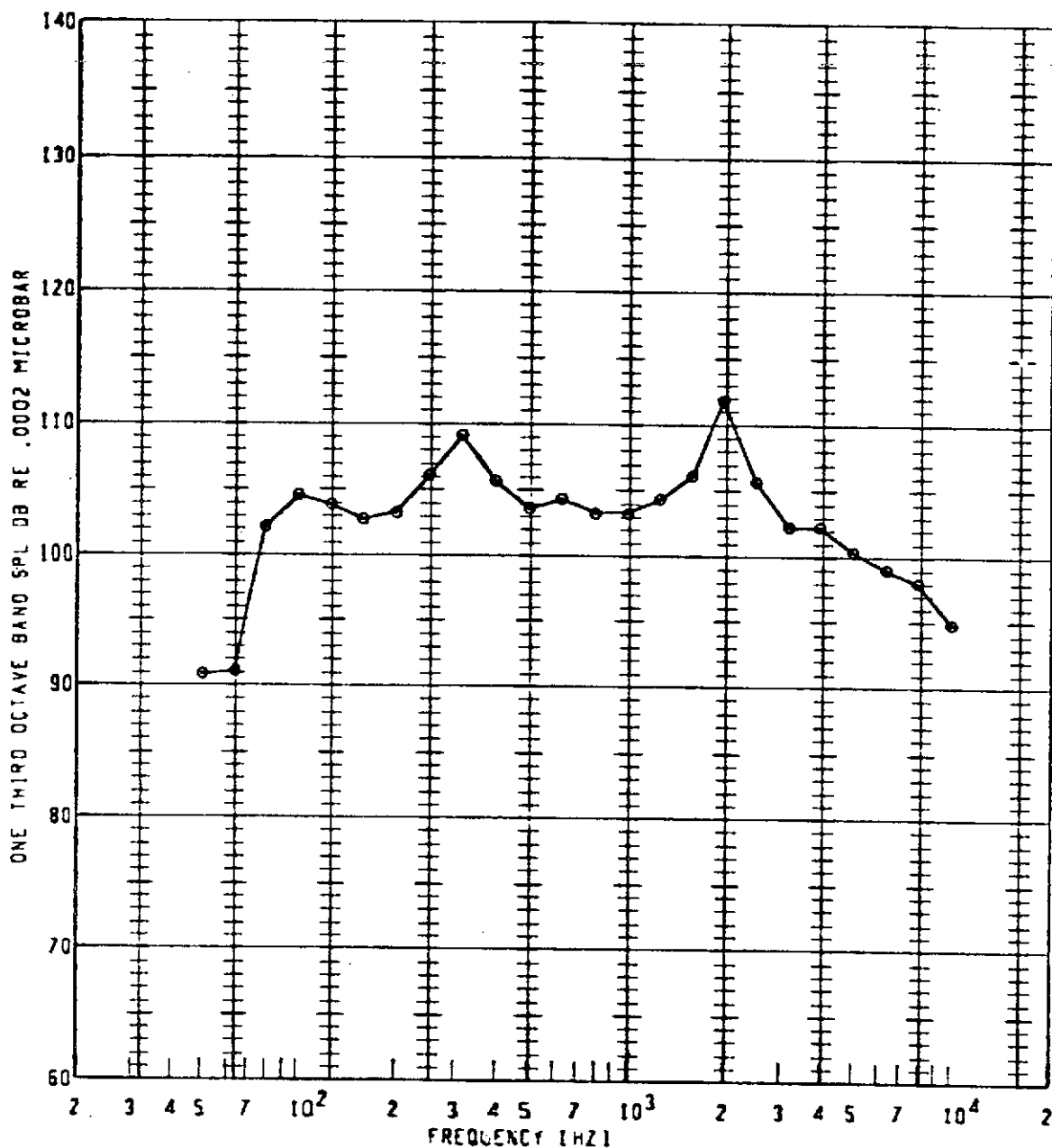
C-2

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



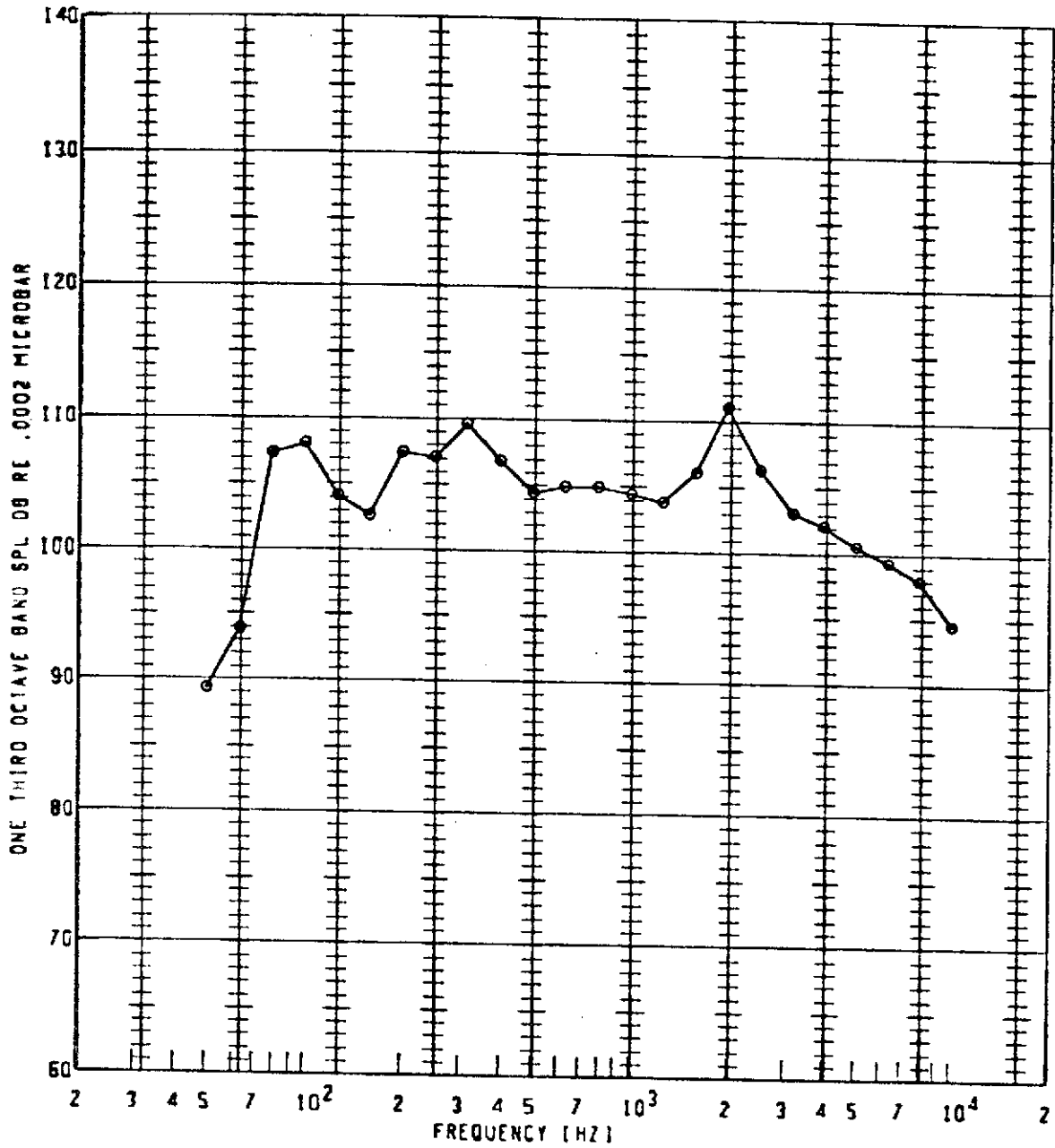
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | CASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 50         | 850      | 1.500          | 140            | 50FP              | 121.6      | 0            |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



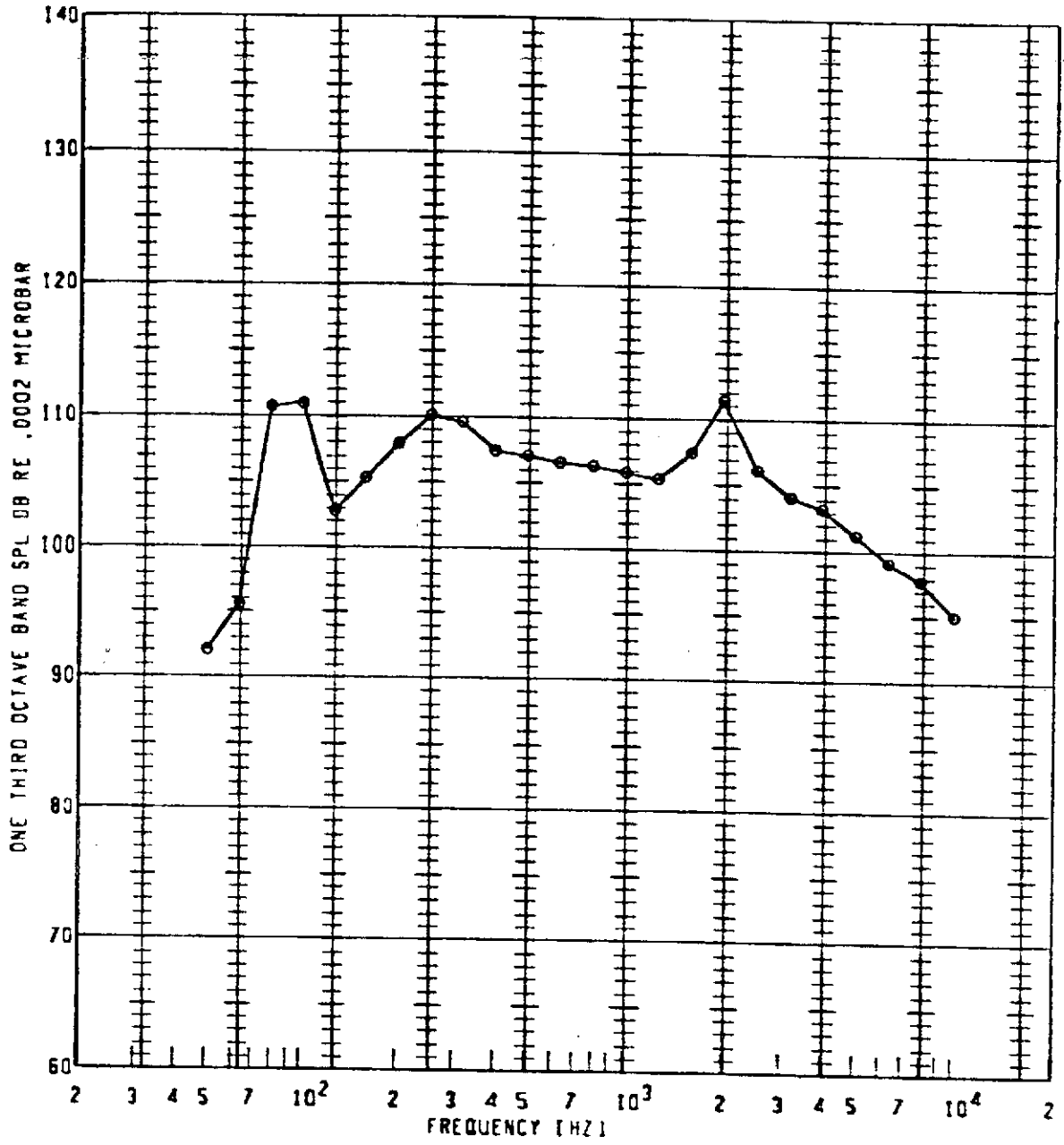
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 56         | 900      | 1.600          | 90             | SGFP              | 118.3      | 0            |            |

BUFFALO SUPPRESSOR NOZZLE TONE TO TEST - HOT NOZZLE TEST FACILITY



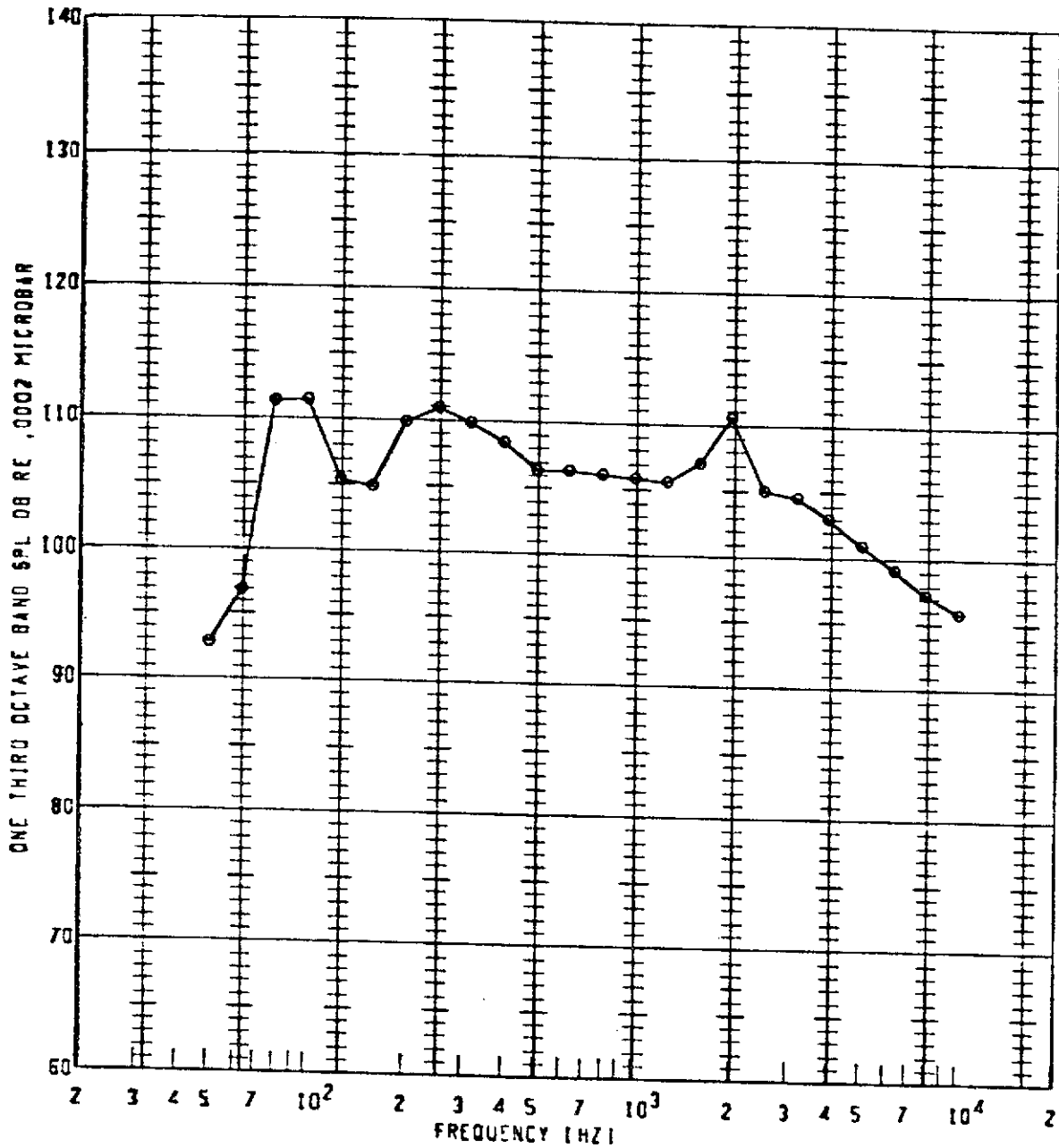
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 56         | 900      | 1.600          | 100            | 5GFP              | 119.2      | 0            |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



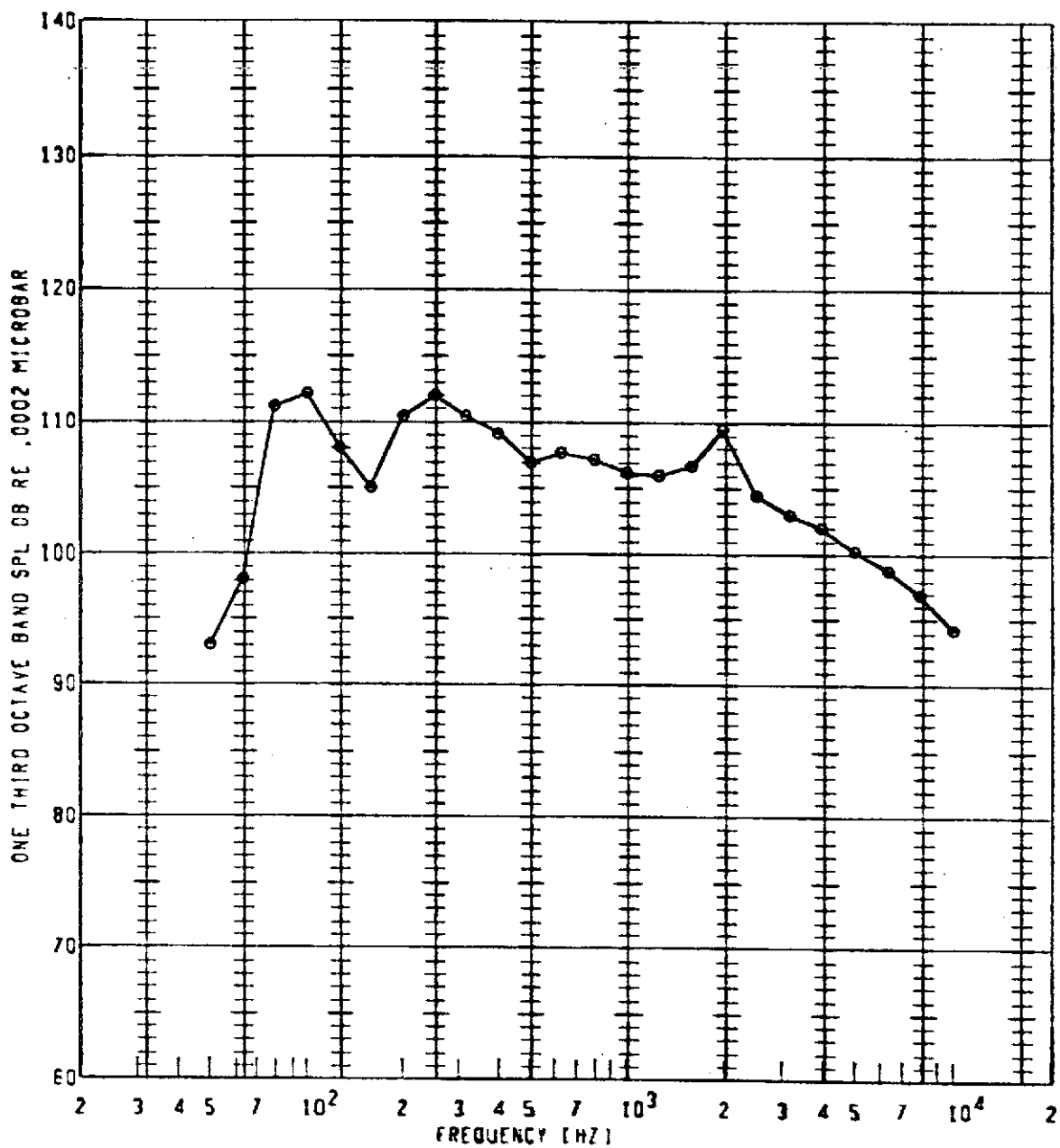
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | CASPL [dB] | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 56         | 900      | 1.600          | 110            | 50FP              | 123.6      | 0            |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 56         | 900      | 1.600          | 115            | 50°P              | 120.8      | 0            |            |

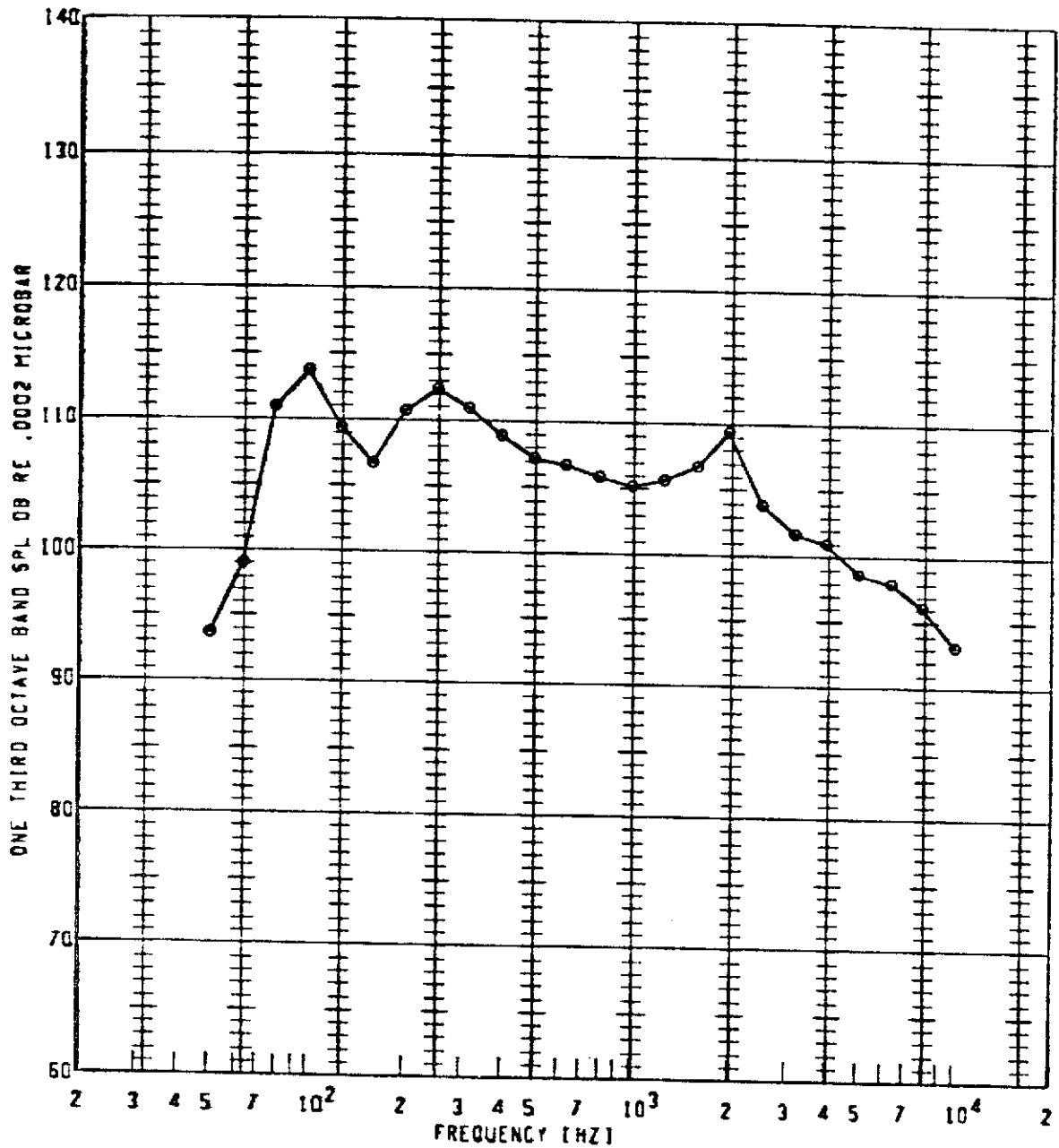
BUFFALO SUPPRESSOR NOZZLE TONE TO TEST - NOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | GASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 50         | 900      | 1.600          | 120            | 50FP              | 121.3      | 0            |            |

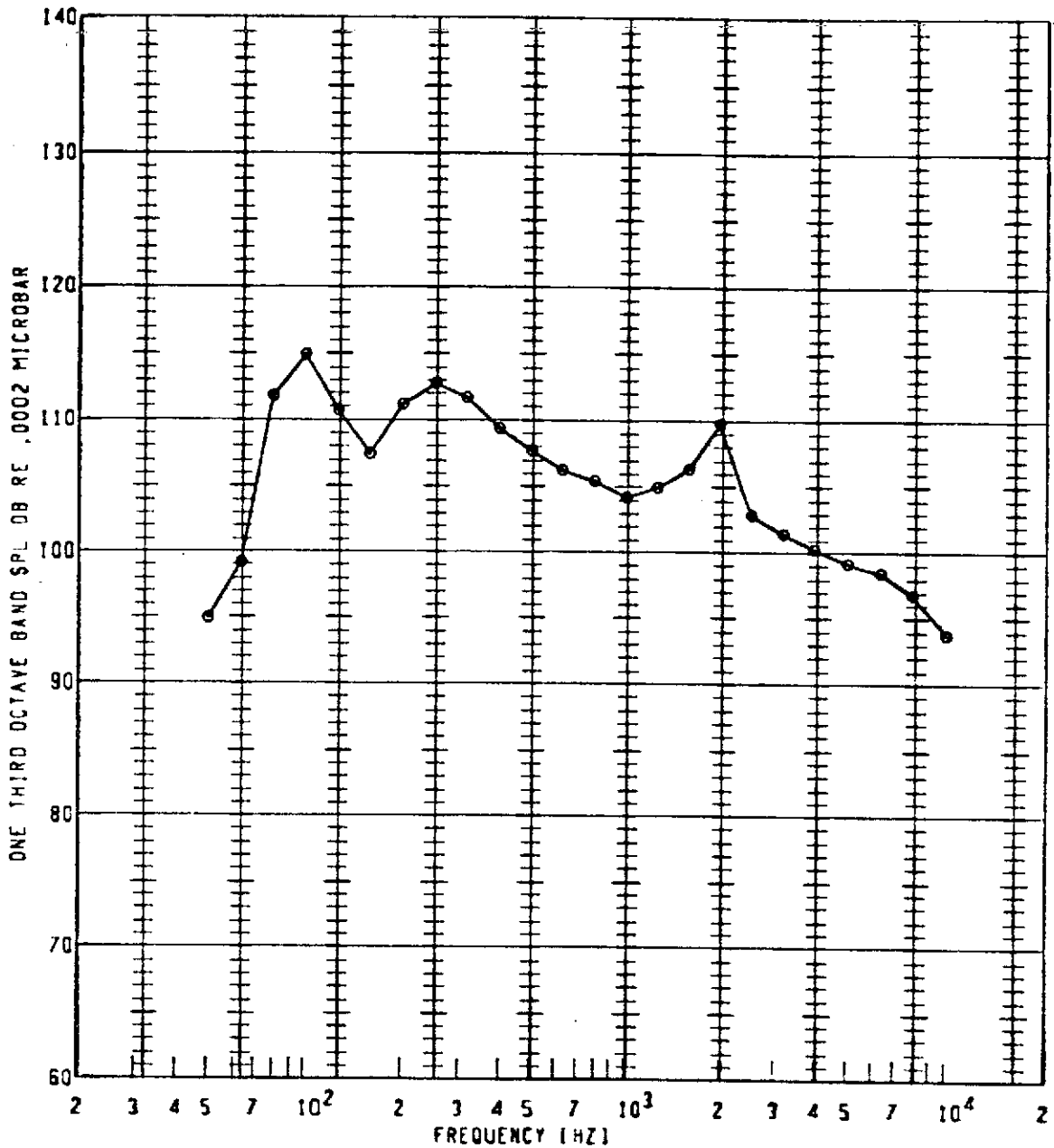


BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



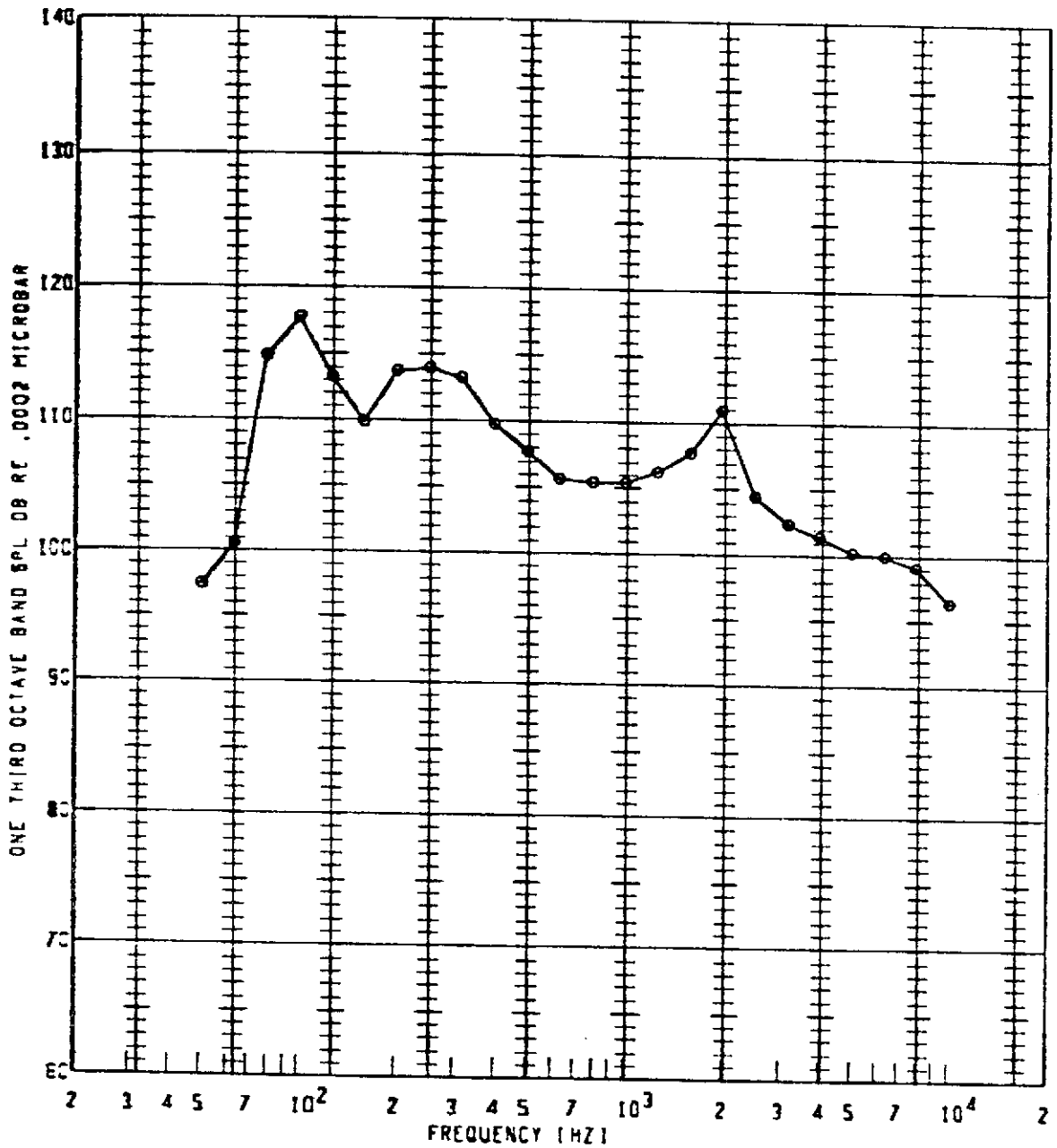
| Plot Symbol | Run Number | Jet Temp | Pressure Ratio | Angle re Inlet | Observer Location | Gaspl (dB) | Gain Setting | Special ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 55         | 900      | 1.600          | 125            | 50FP              | 121.5      | 0            | 10         |

BUFFALO SUPPRESSOR NOZZLE-TONE 10 TEST - HOT NOZZLE TEST FACILITY



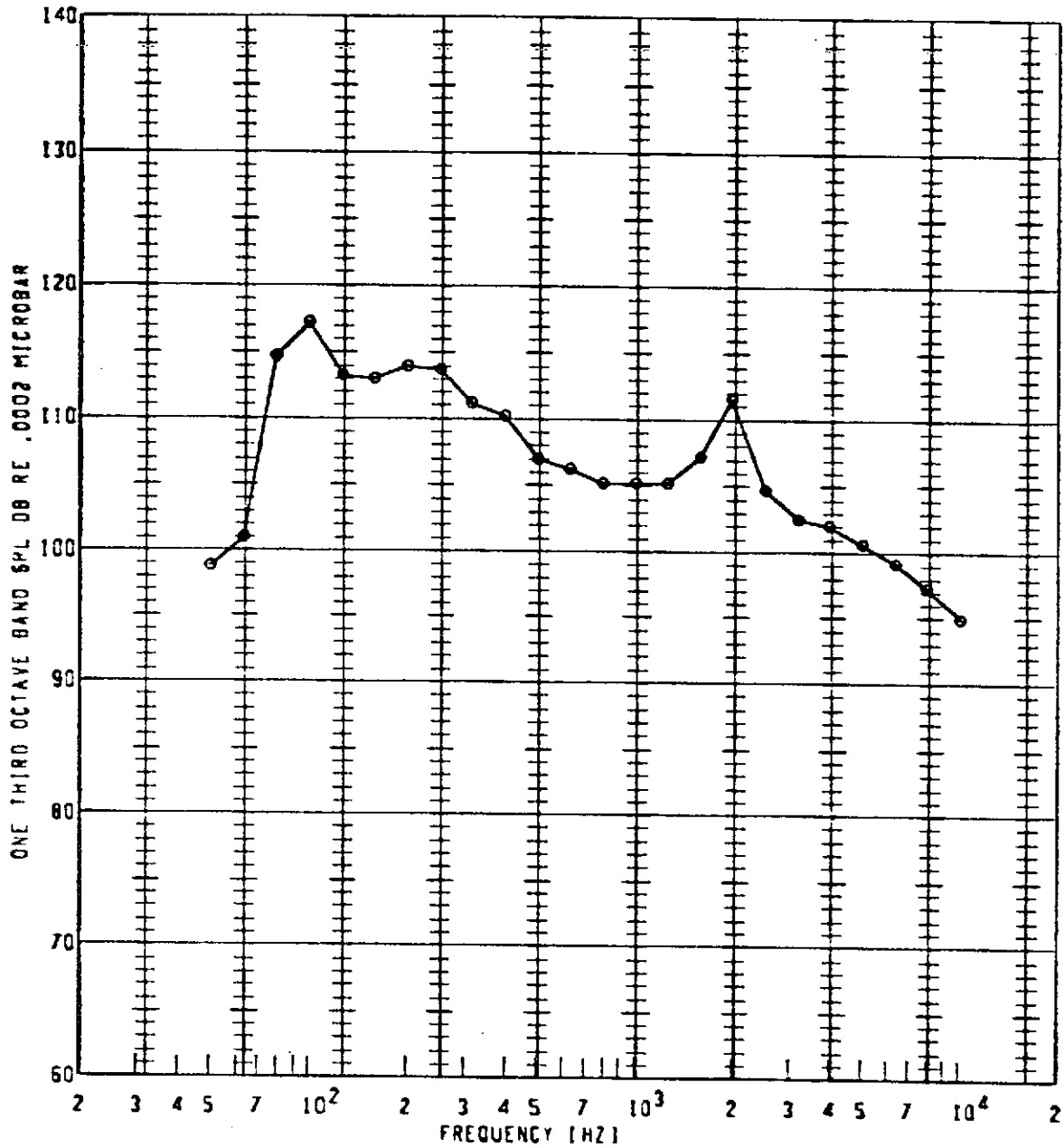
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL IO |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 56         | 900      | 1.600          | 130            | 50FP              | 122.0      | 0            |            |

BUFFALO SUPPRESSOR NOZZLE TONE TO TEST - HOT NOZZLE TEST FACILITY



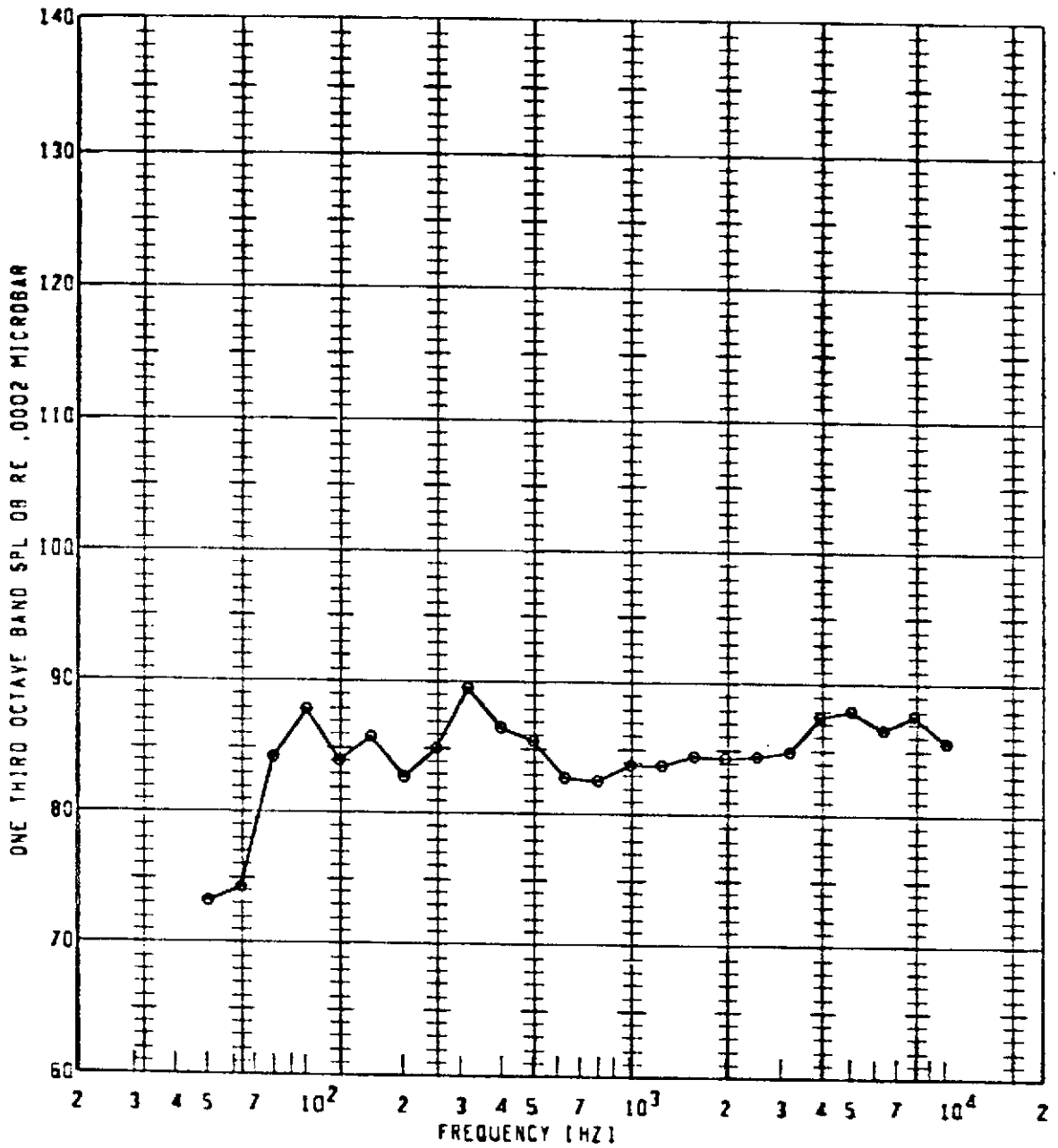
| PLT SYM | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|---------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| 8       | 56         | 900      | 1.600          | 135            | SOFP              | 123.9      | 0            |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



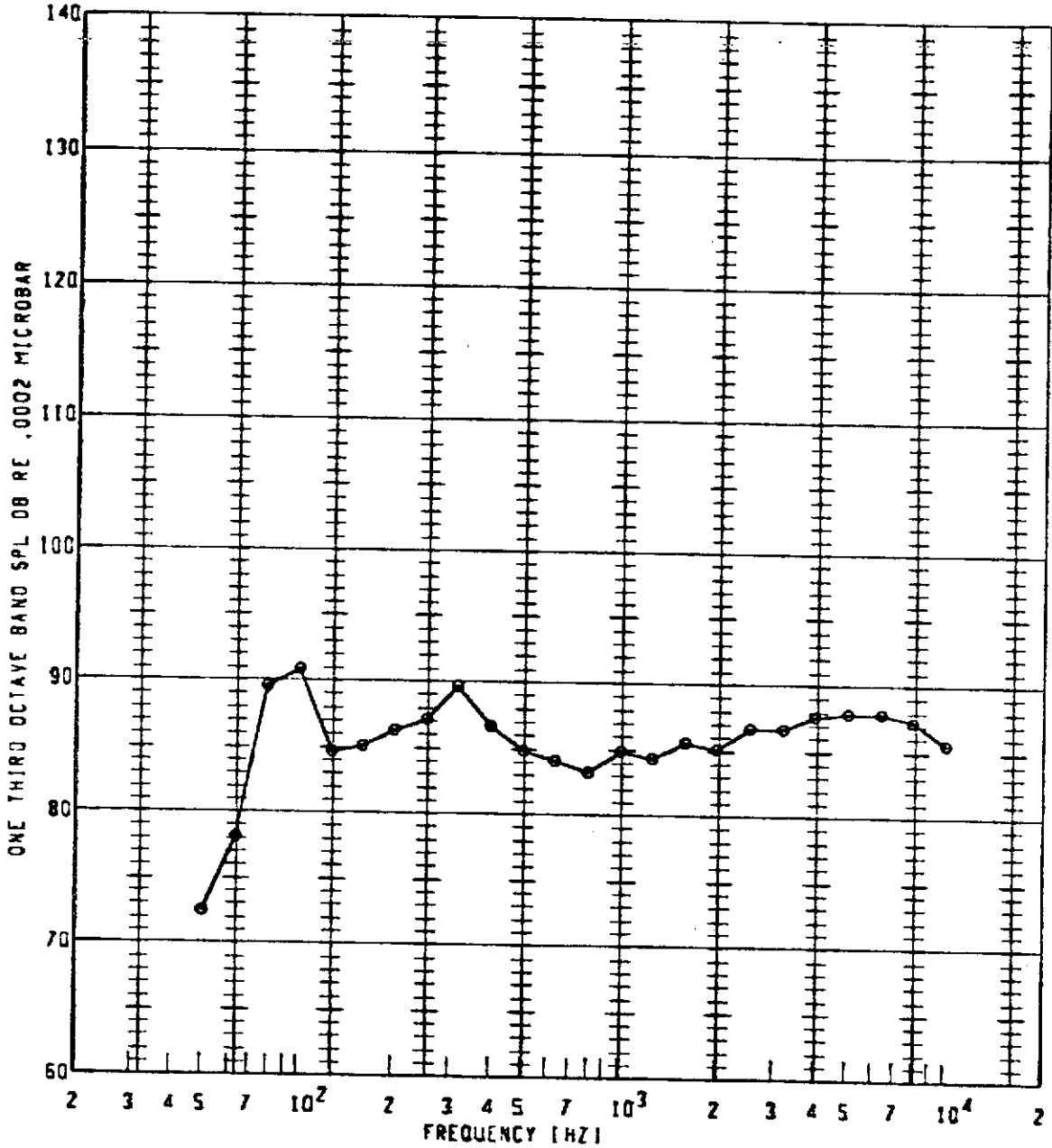
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | CASPL [DB] | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 56         | 900      | 1.600          | 140            | SQFP              | 123.9      | 0            |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



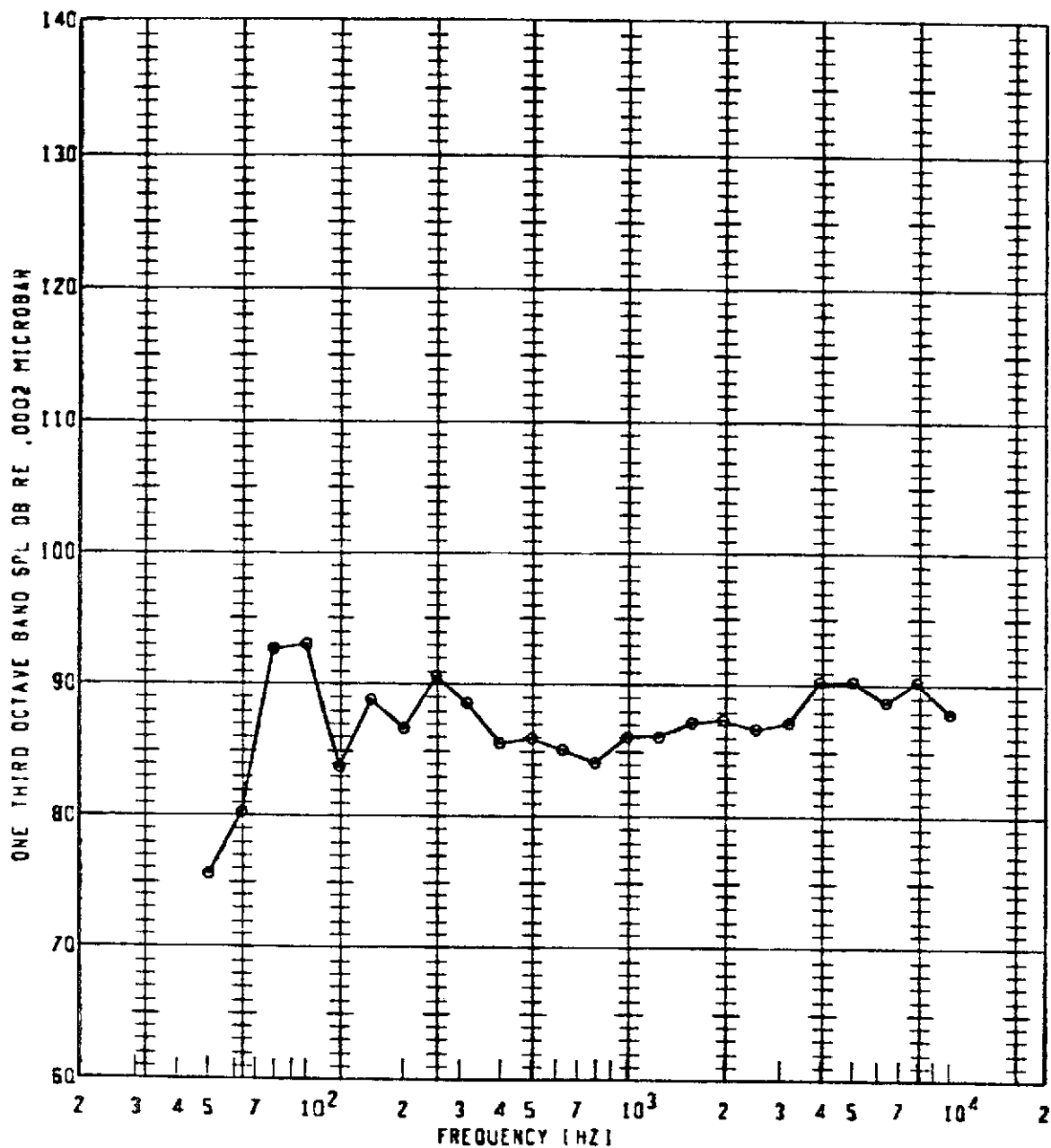
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | DASPL [dB] | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 85         | 750      | 1.300          | 90             | SOFP              | 99.2       | 20           | 13         |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



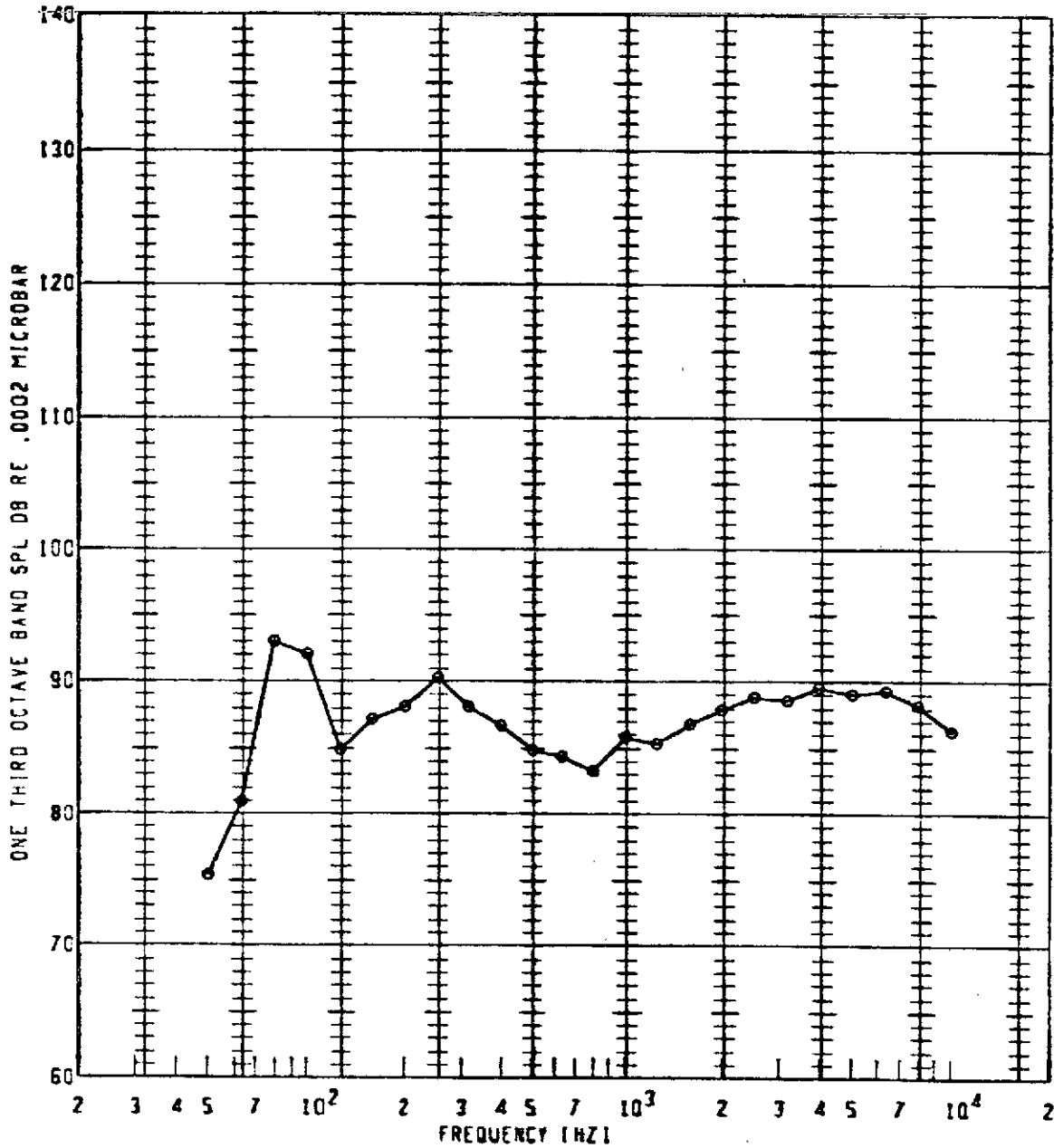
| Plot Symbol | Run Number | Jet Temp | Pressure Ratio | Angle re Inlet | Observer Location | OASPL (dB) | Gain Setting | Special ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 80         | 750      | 1.300          | 100            | 50FP              | 100.3      | 20           |            |

BUFFALO SUPPRESSOR NOZZLE TONE TO TEST - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 80         | 750      | 1.303          | 110            | 50FP              | 102.0      | 20           |            |

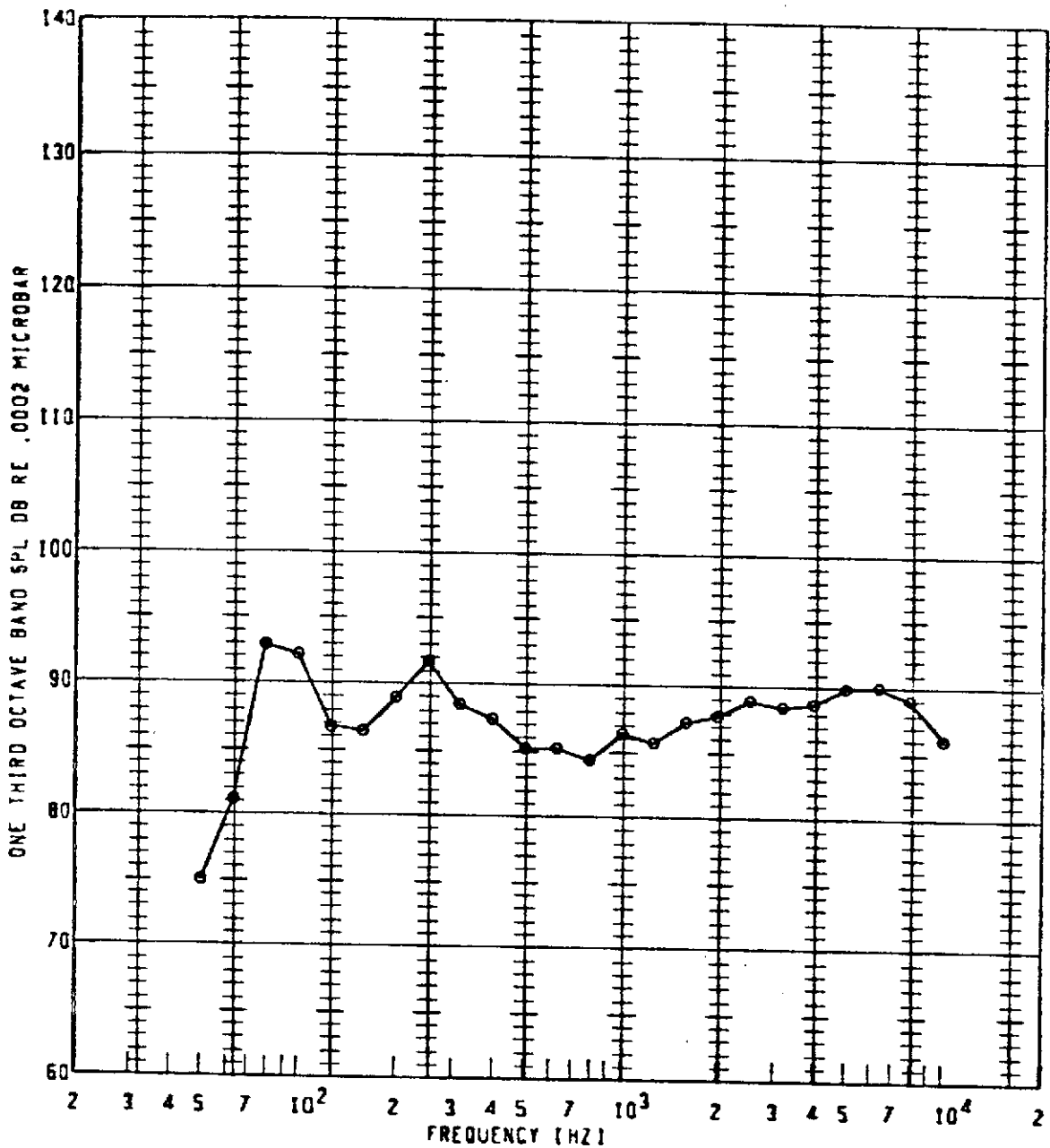
BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - ~~NO~~ NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| o           | 86         | 750      | 1.300          | 115            | 50FP              | 101.8      | 20           |            |

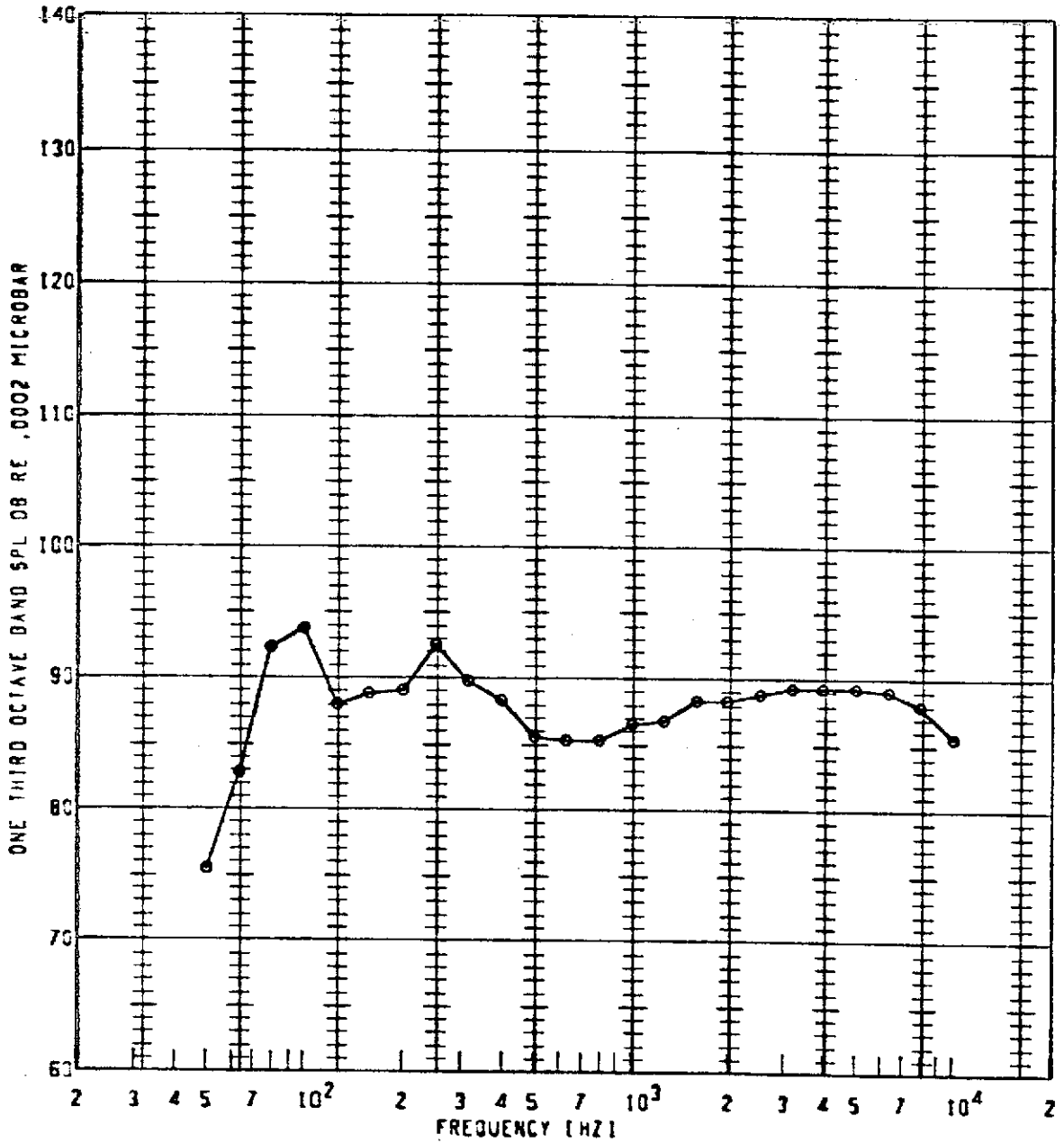


BUFFALO SUPPRESSOR NOZZLE TONE IQ TEST - HOT NOZZLE TEST FACILITY



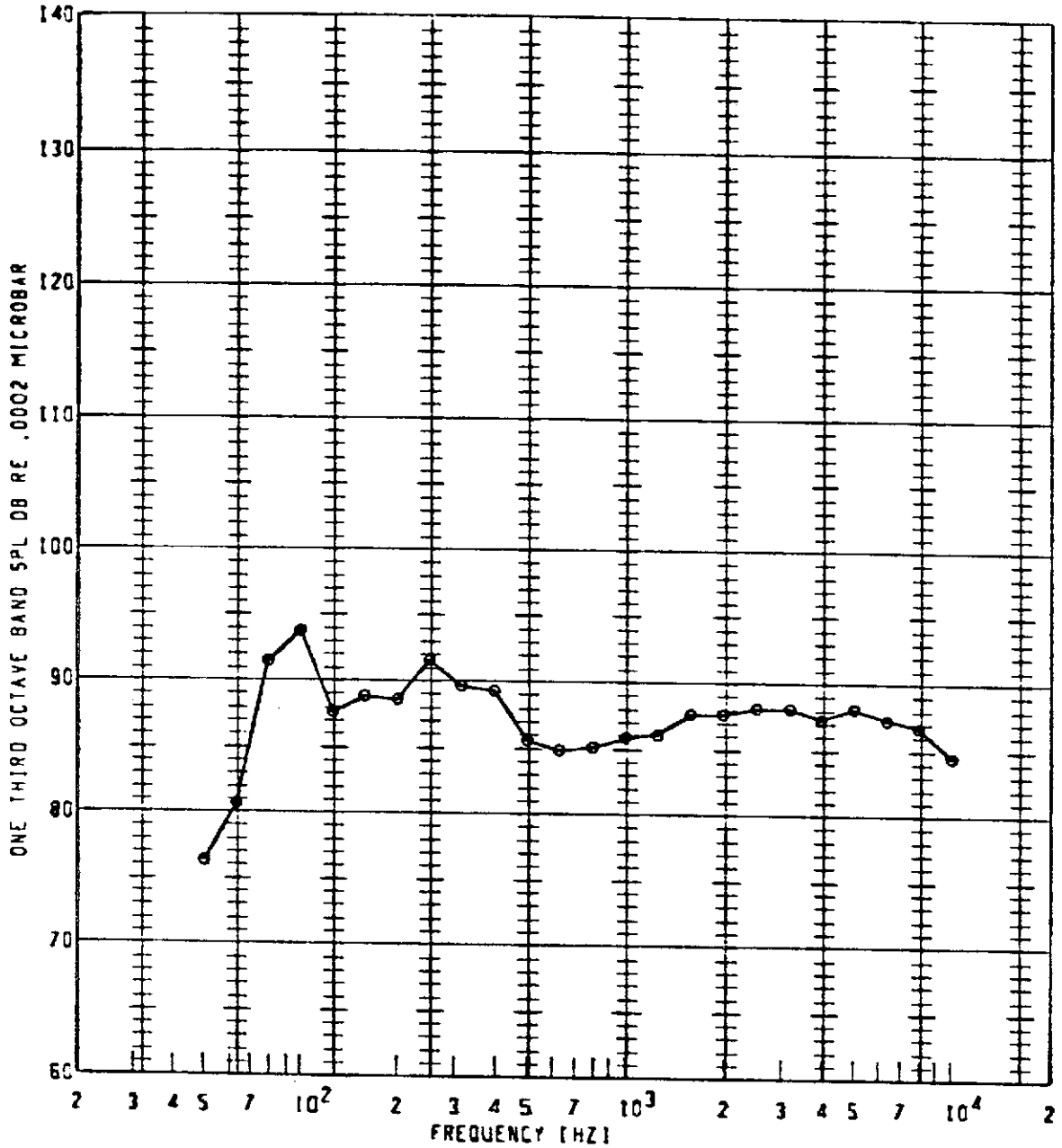
| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e          | 86         | 750      | 1.300          | 120            | 50FP              | 102.2      | 20           |            |

BUFFALO SUPPRESSOR NOZZLE TONE TO TEST - HOT NOZZLE TEST FACILITY



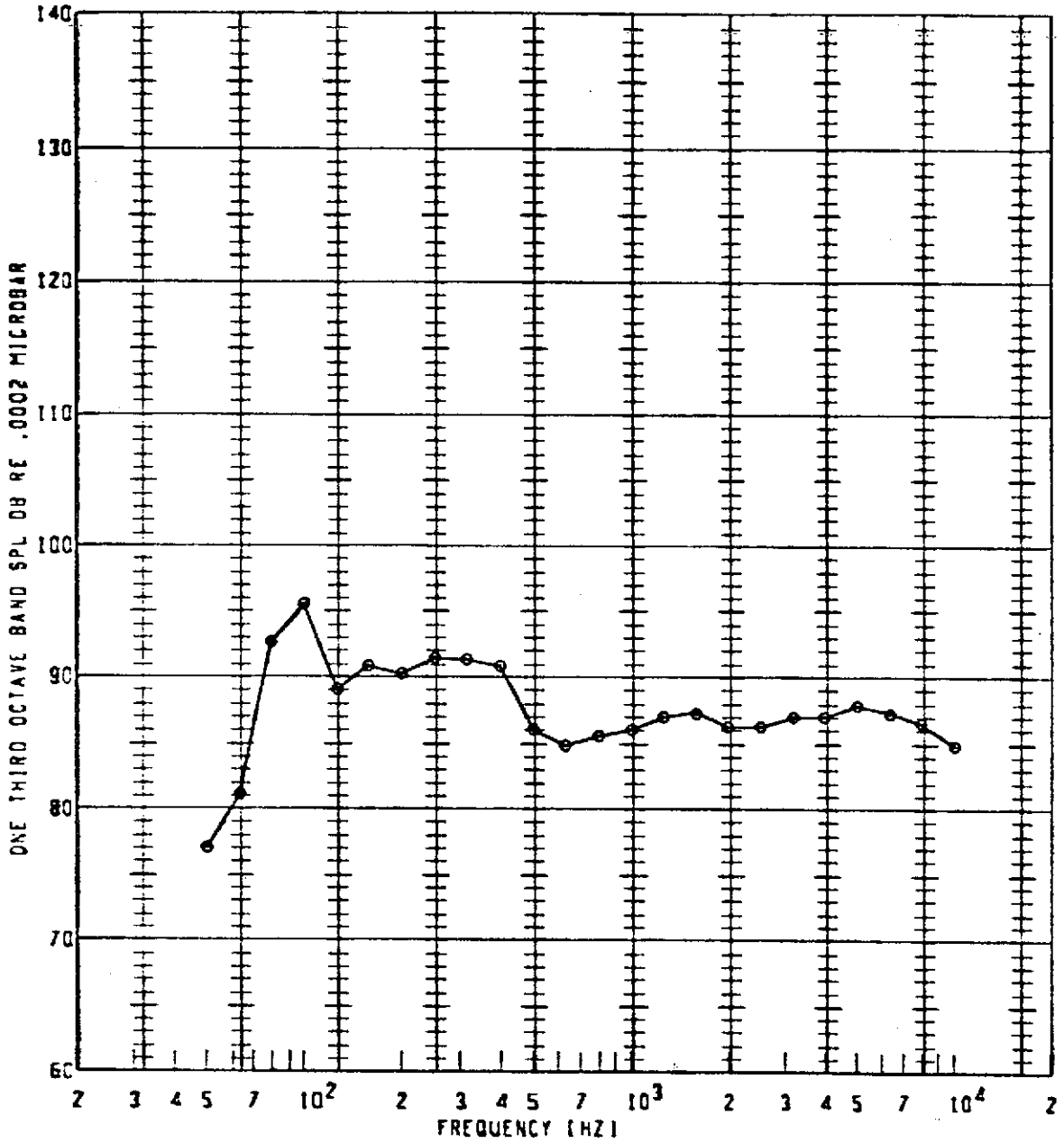
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | JASPL (dB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 86         | 750      | 1.300          | 125            | 50FP              | 102.6      | 20           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - NOT NOZZLE TEST FACILITY



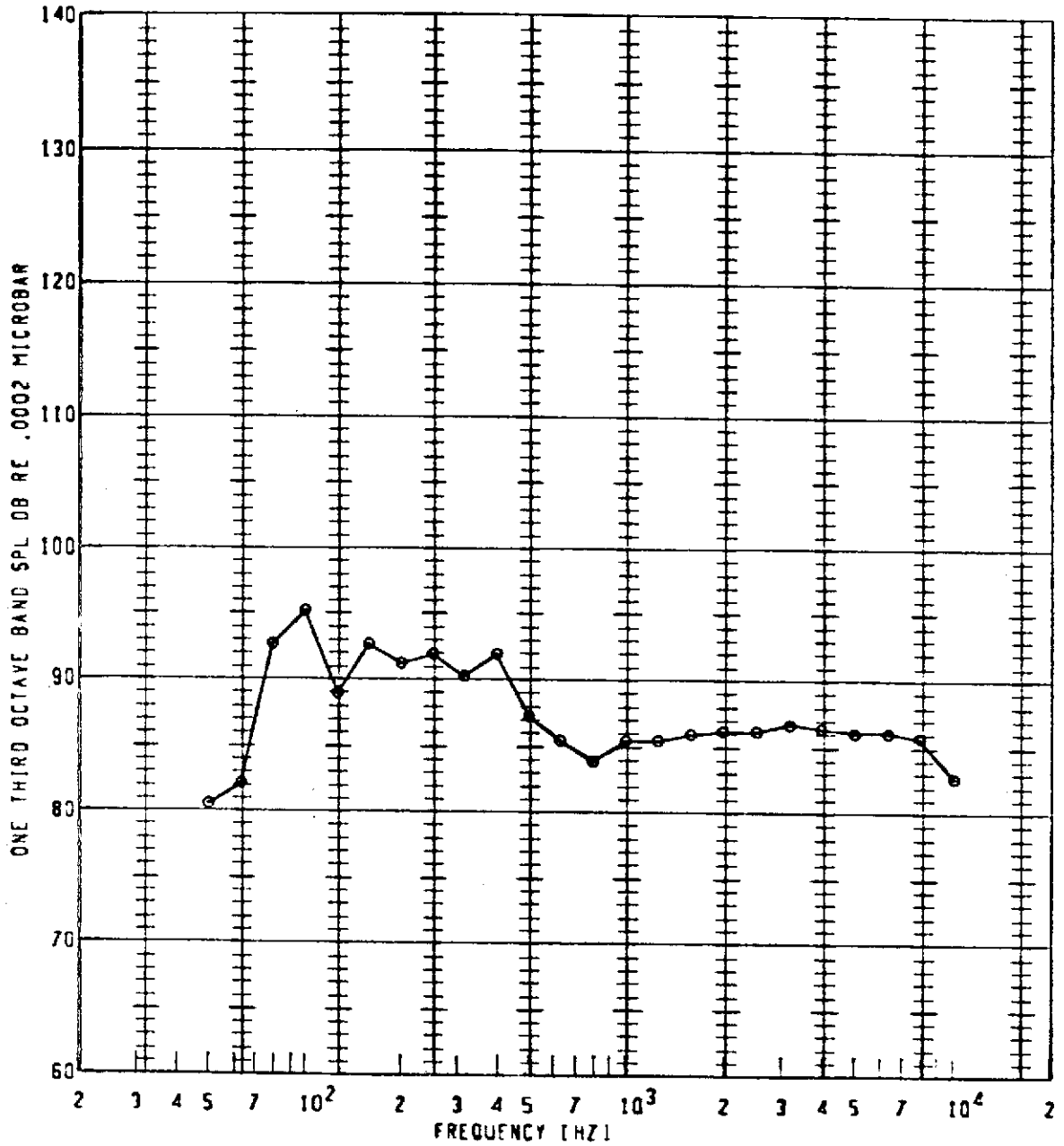
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | CASPL [dB] | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| o           | 80         | 750      | 1.300          | 130            | 50FP              | 102.0      | 20           |            |

~~BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY~~



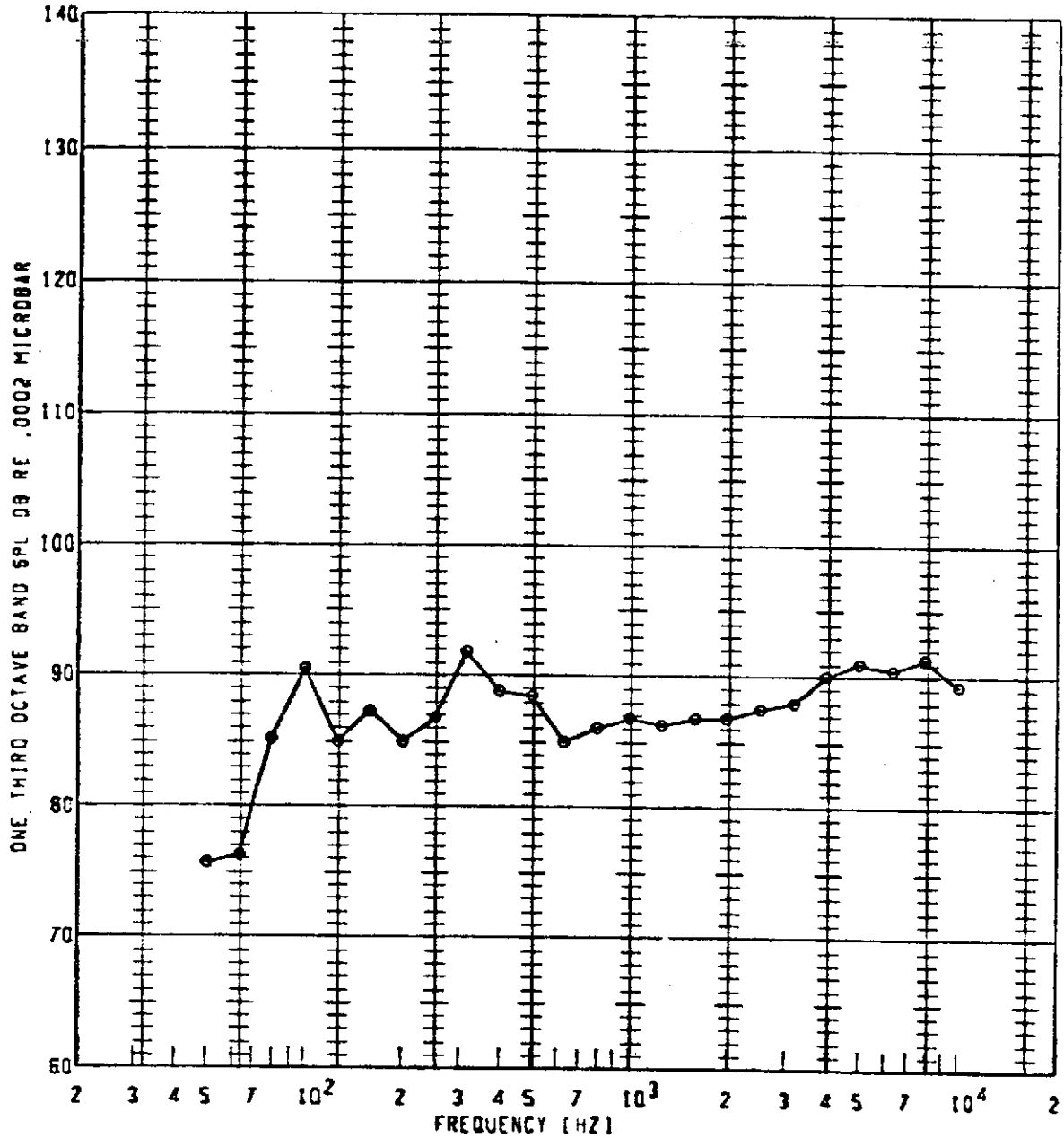
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | CASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 86         | 750      | 1.300          | 135            | 50FP              | 102.8      | 20           |            |

BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



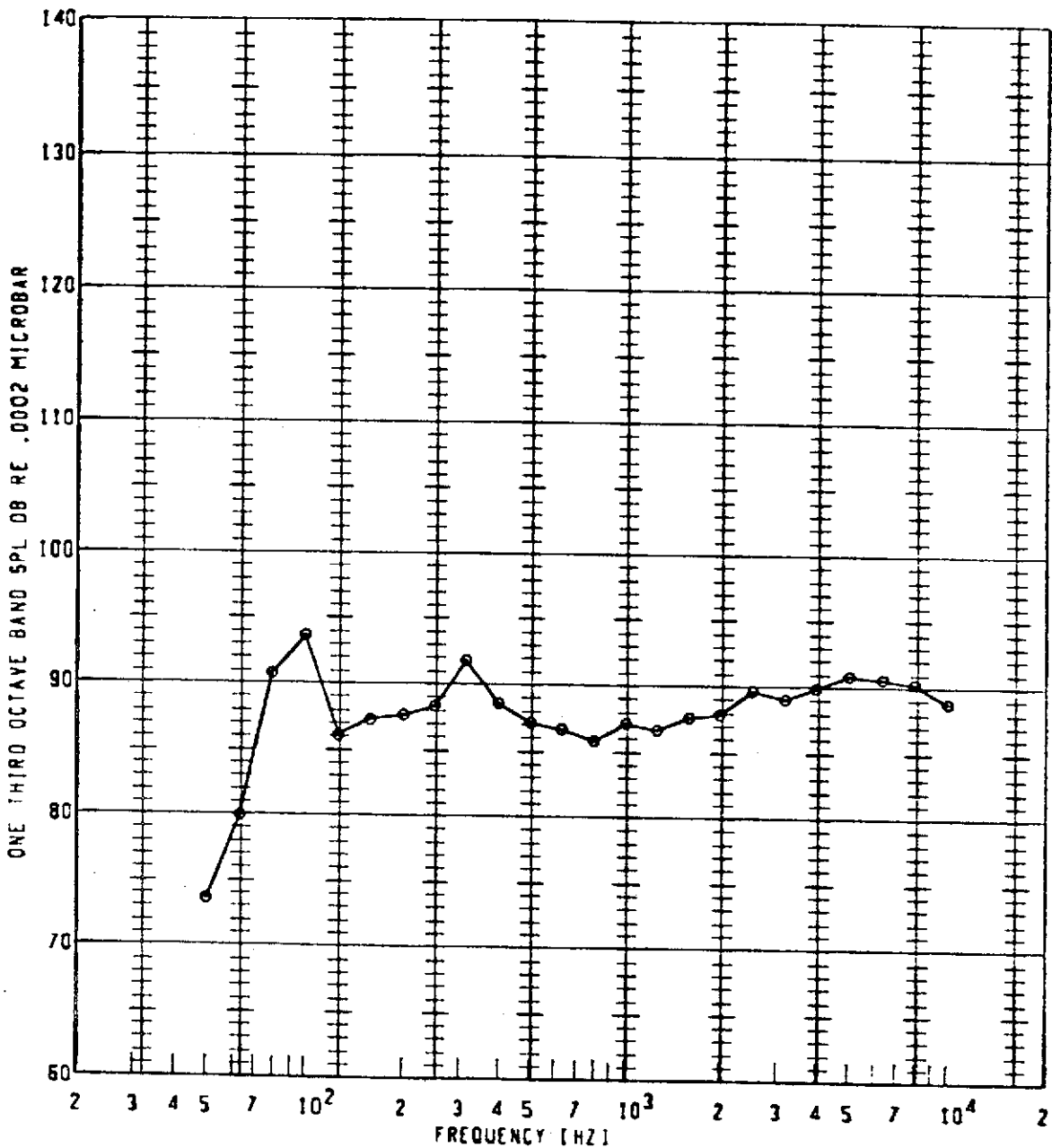
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 86         | 750      | 1.300          | 140            | 50FP              | 102.8      | 20           |            |

**BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY**



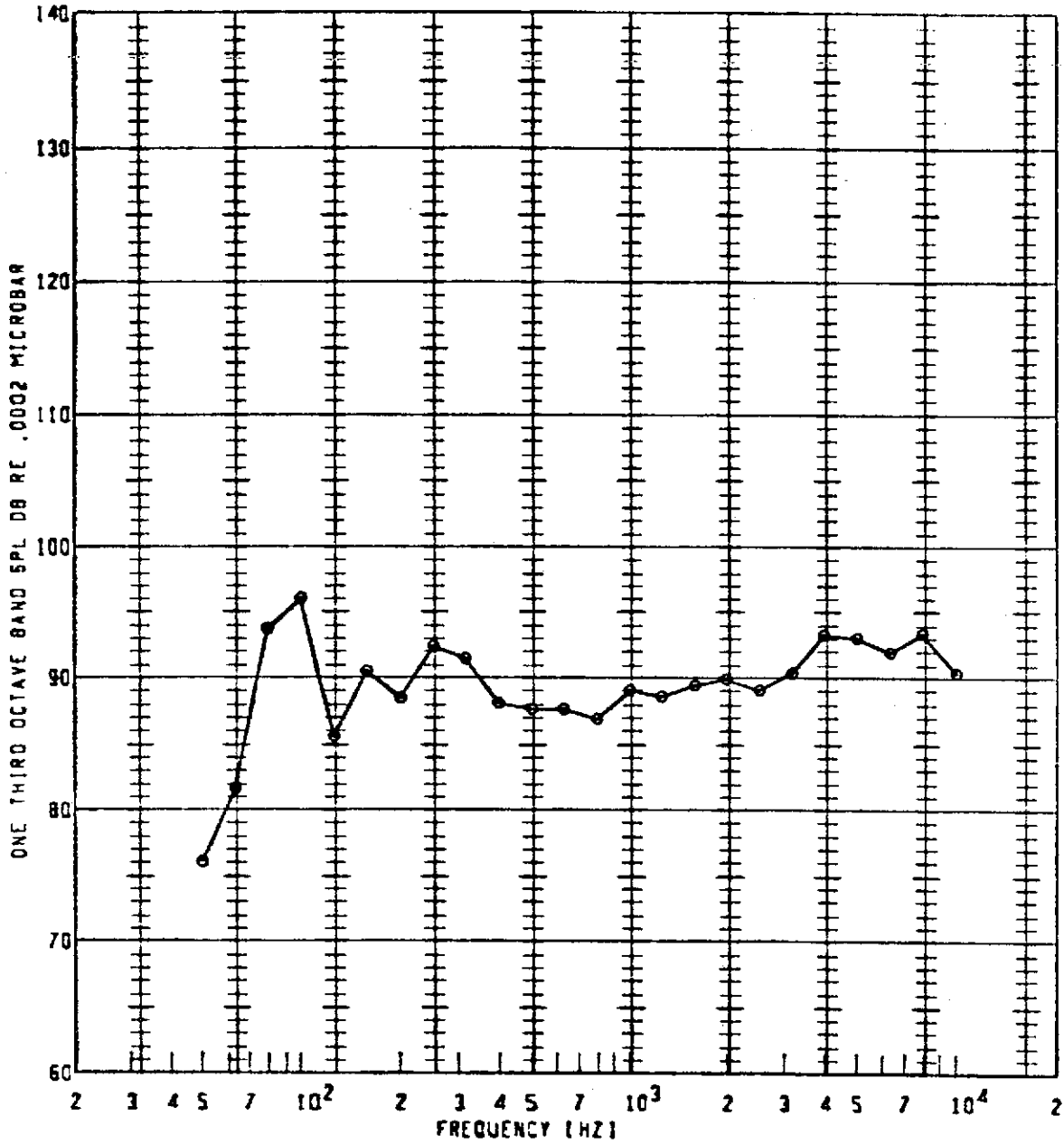
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | CASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 85         | 800      | 1.400          | 90             | 50FP              | 101.9      | 20           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL [DB] | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 86         | 800      | 1.400          | 100            | 50FP              | 102.6      | 20           |            |

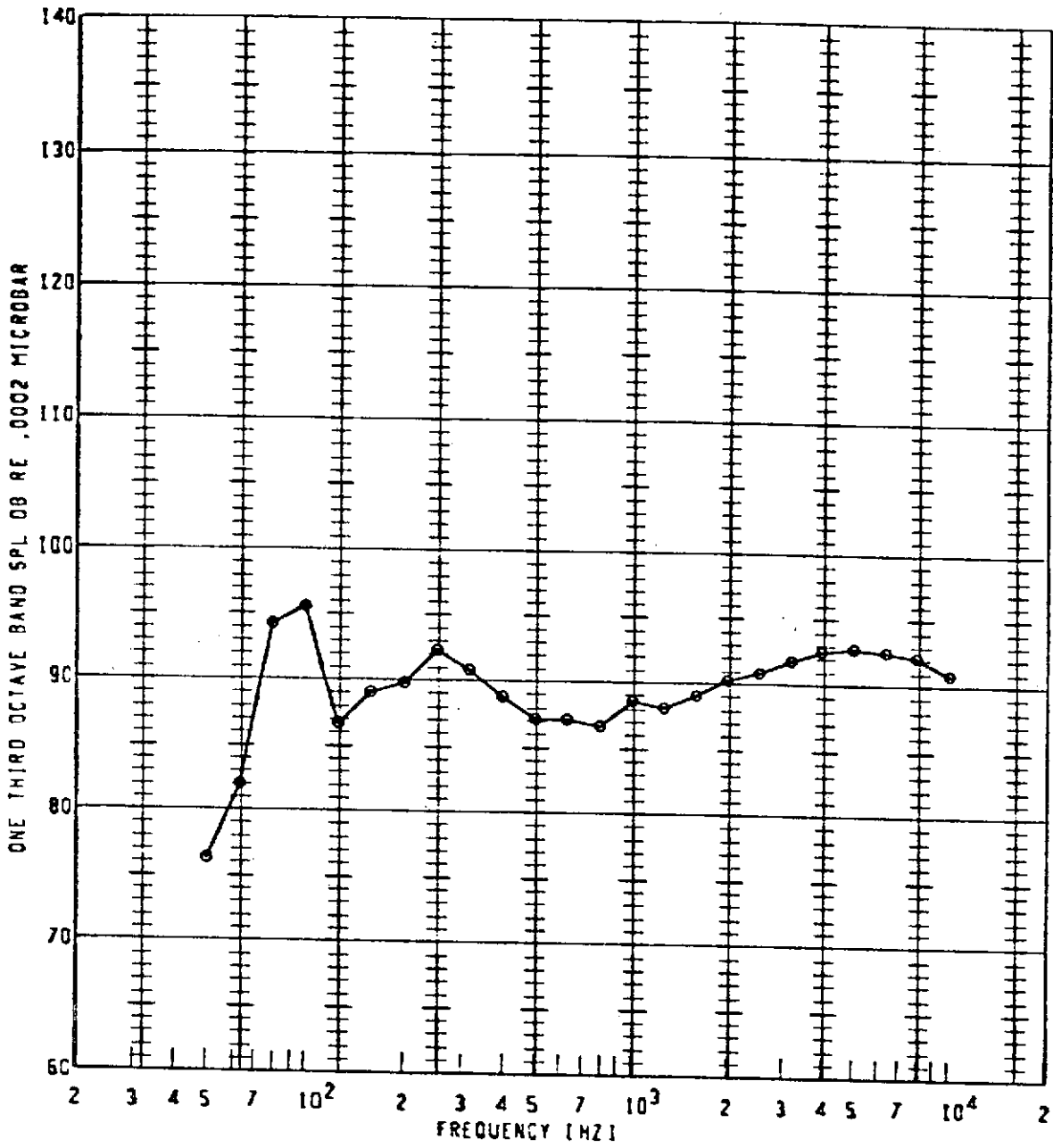
BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| Plot Symbol | Run Number | Jet Temp | Pressure Ratio | Angle re Inlet | Observer Location | OASPL (dB) | Gain Setting | Special ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| o           | 86         | 800      | 1.400          | 110            | SOFP              | 104.5      | 20           |            |

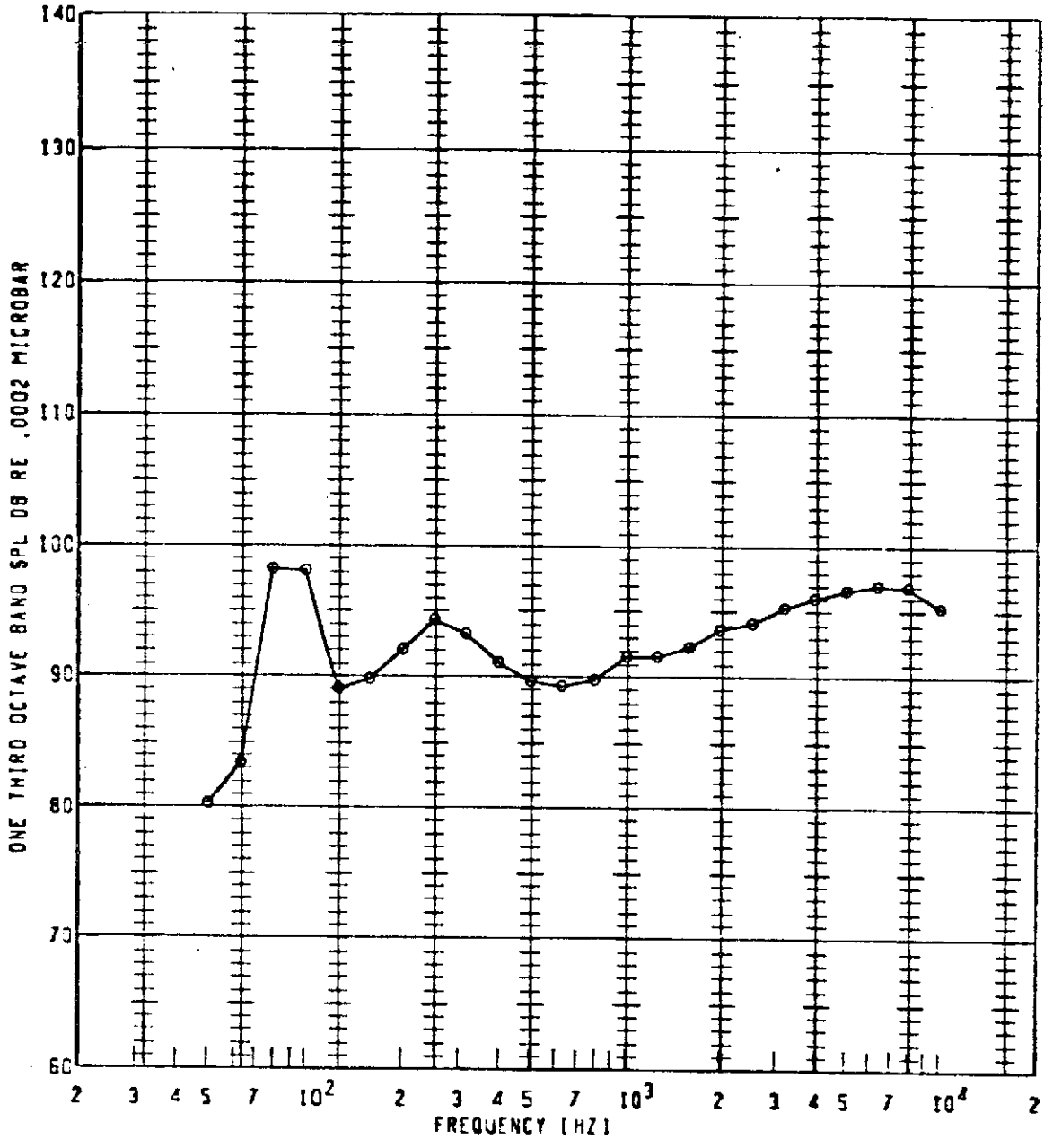


BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



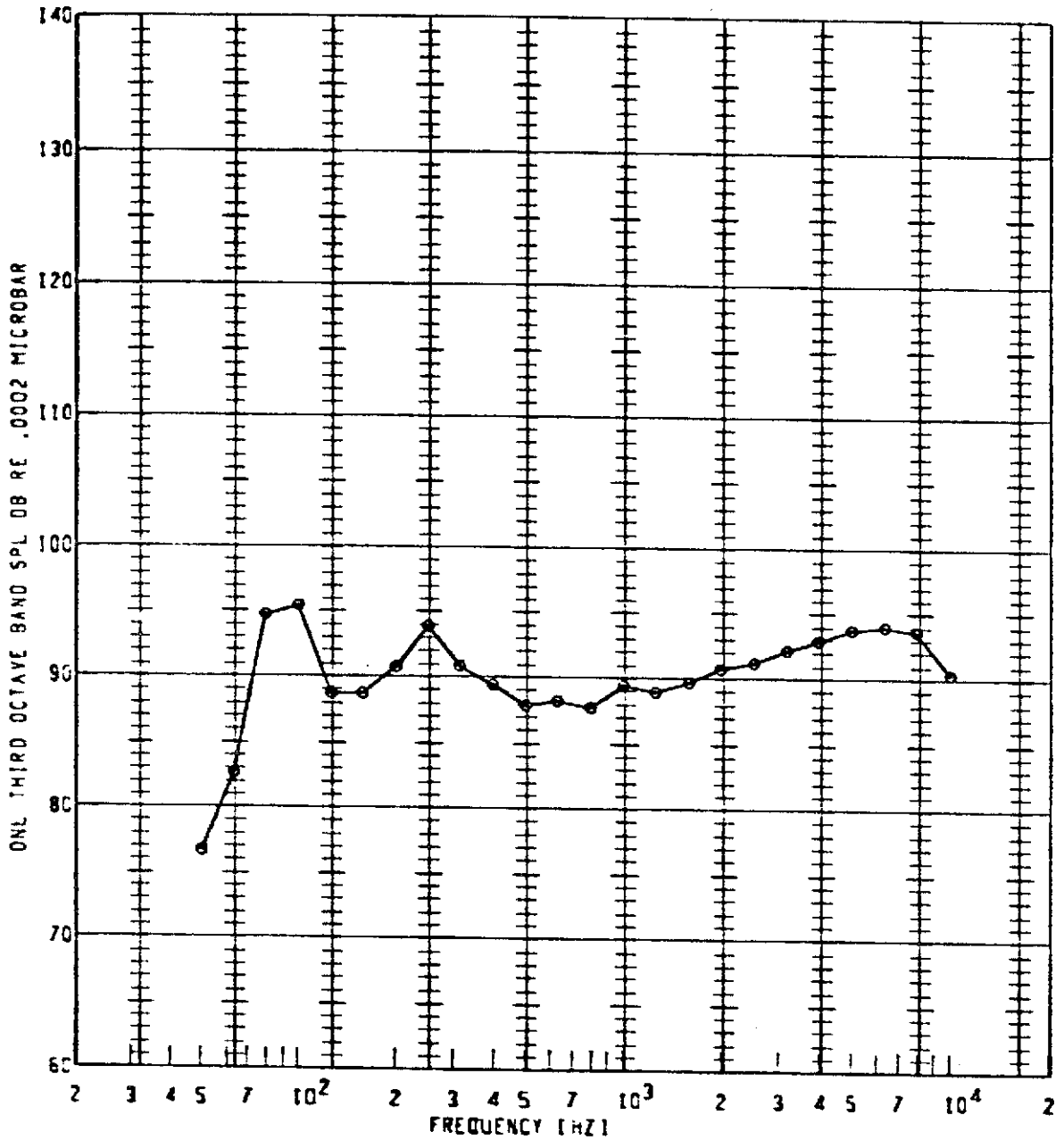
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 8G         | 800      | 1.400          | 115            | 50FP              | 104.5      | 20           |            |

**BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY**



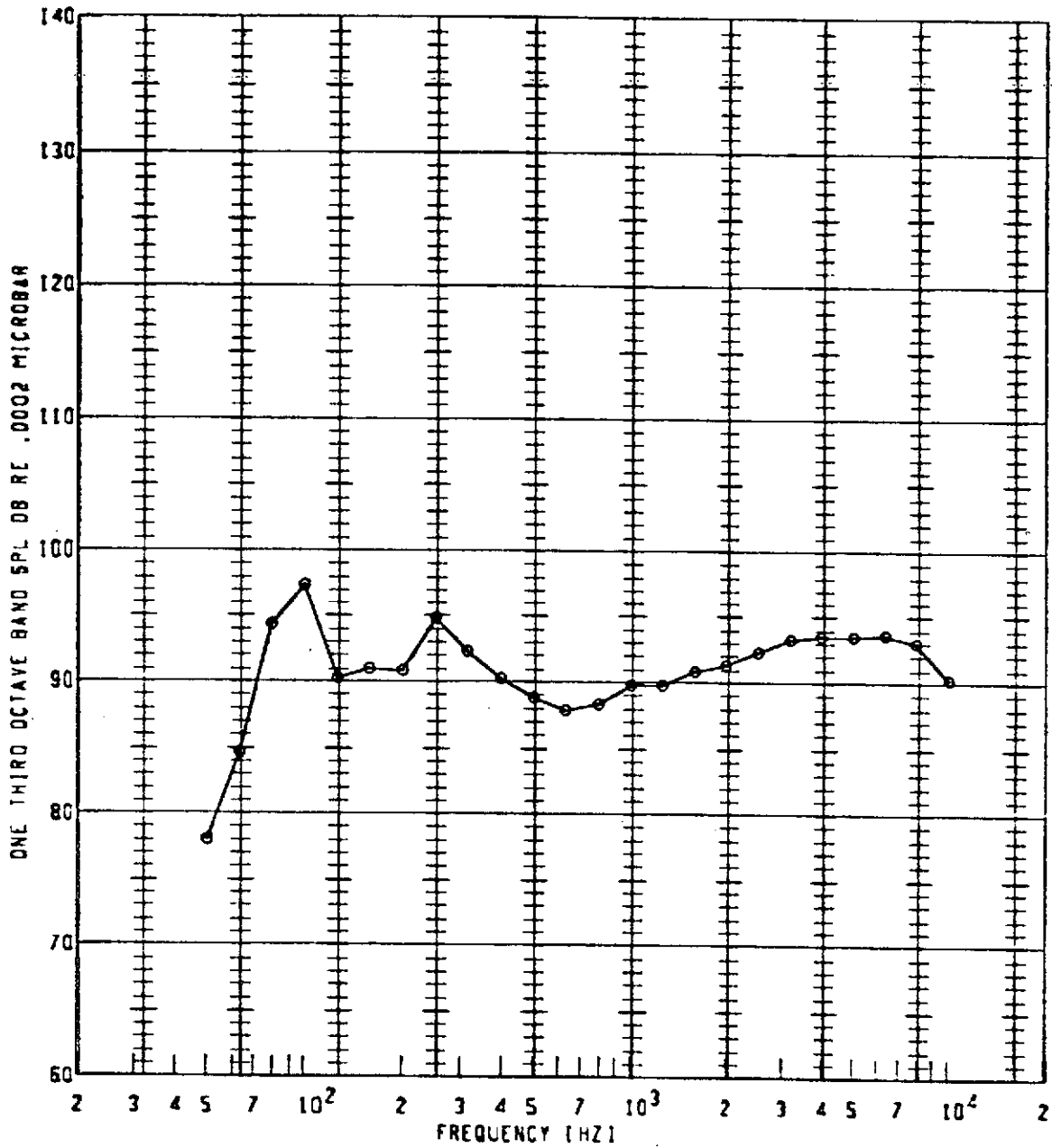
| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | GASPL (DB) | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| o          | 86         | 850      | 1.500          | 115            | SCFP              | 107.8      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



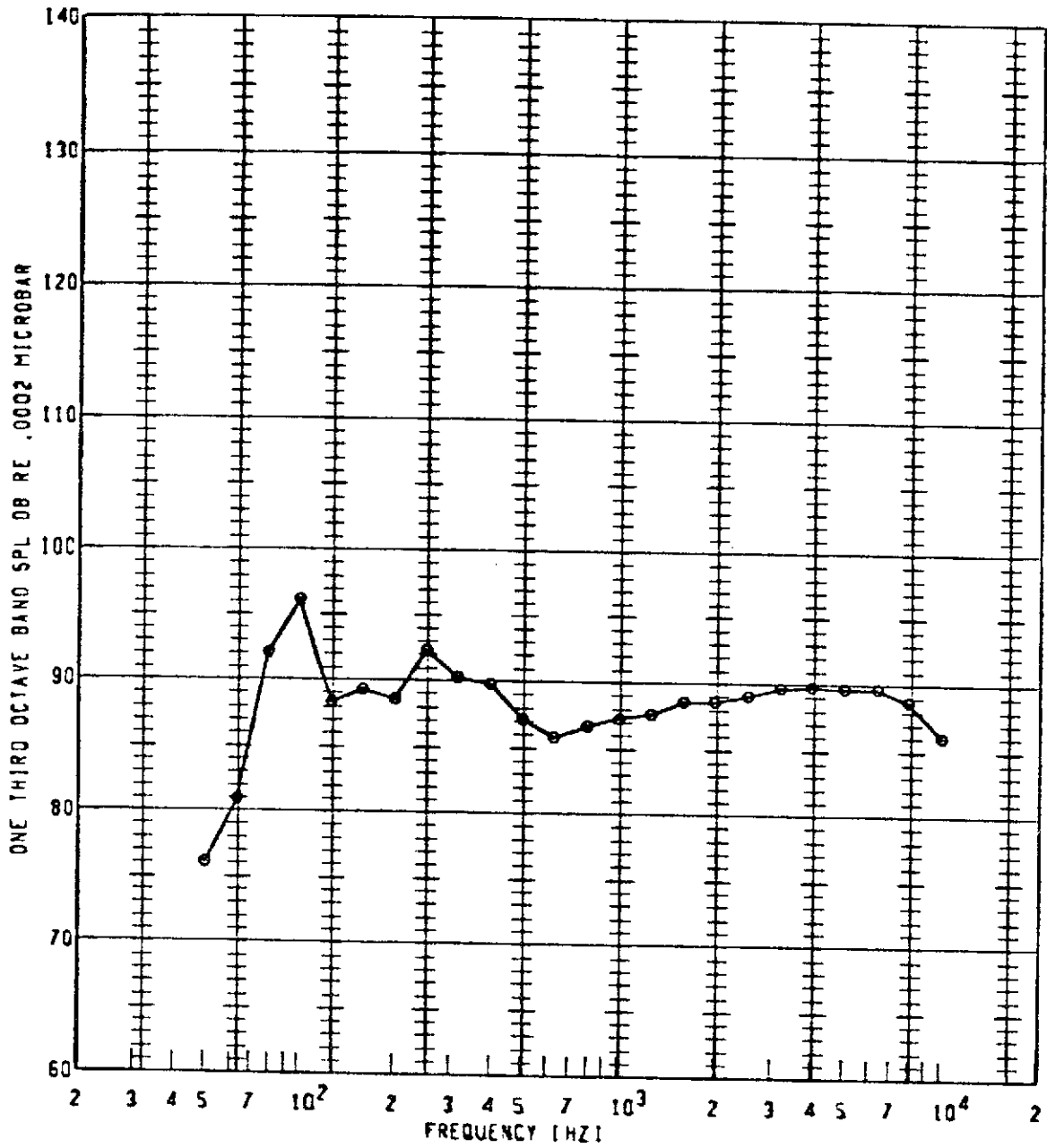
| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | SASPL (DB) | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e          | 80         | 800      | 1.400          | 120            | SQFP              | 105.1      | 20           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



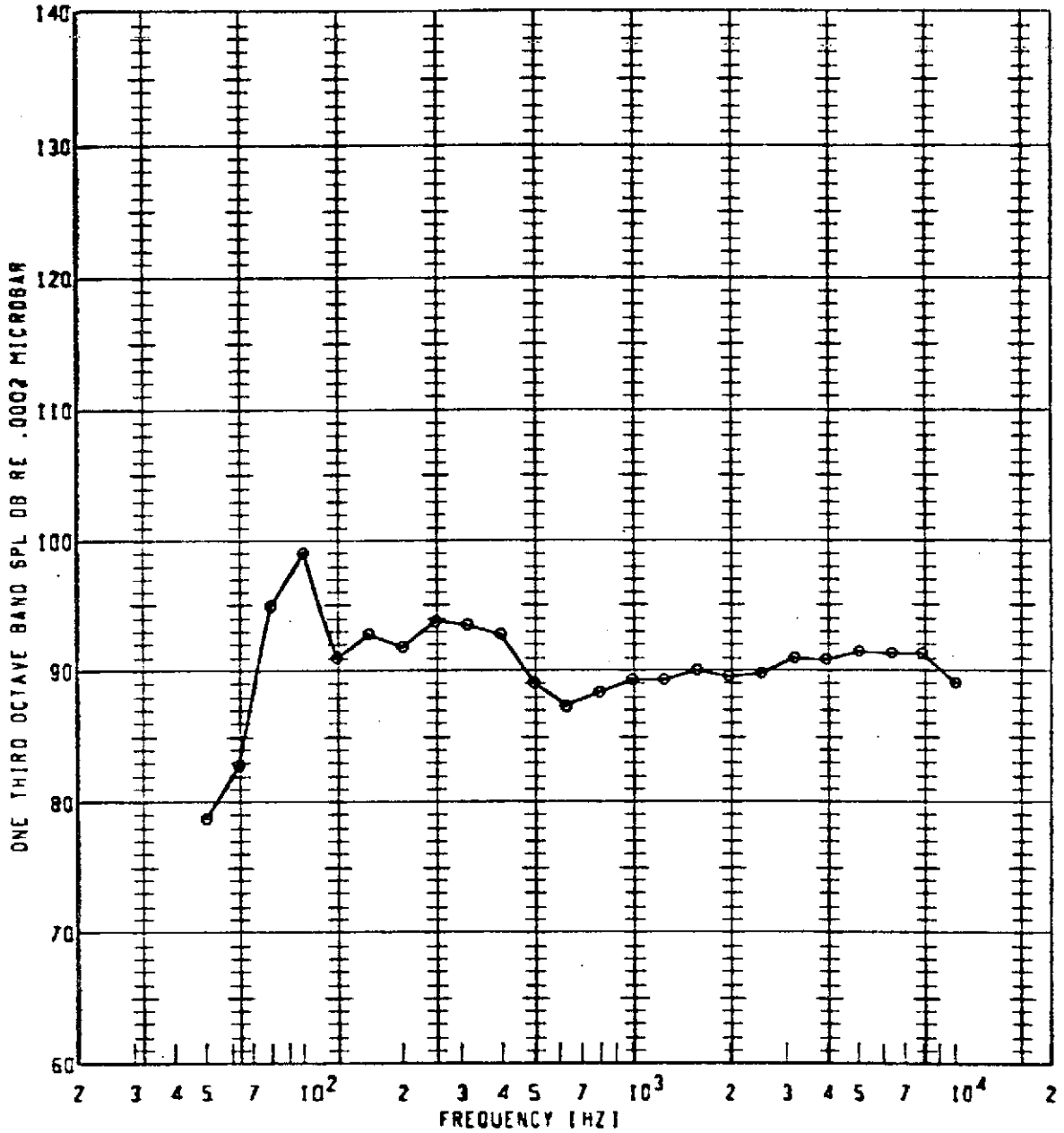
| PLT SYMCL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-----------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e         | 80         | 800      | 1.400          | 125            | 50FP              | 105.8      | 20           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



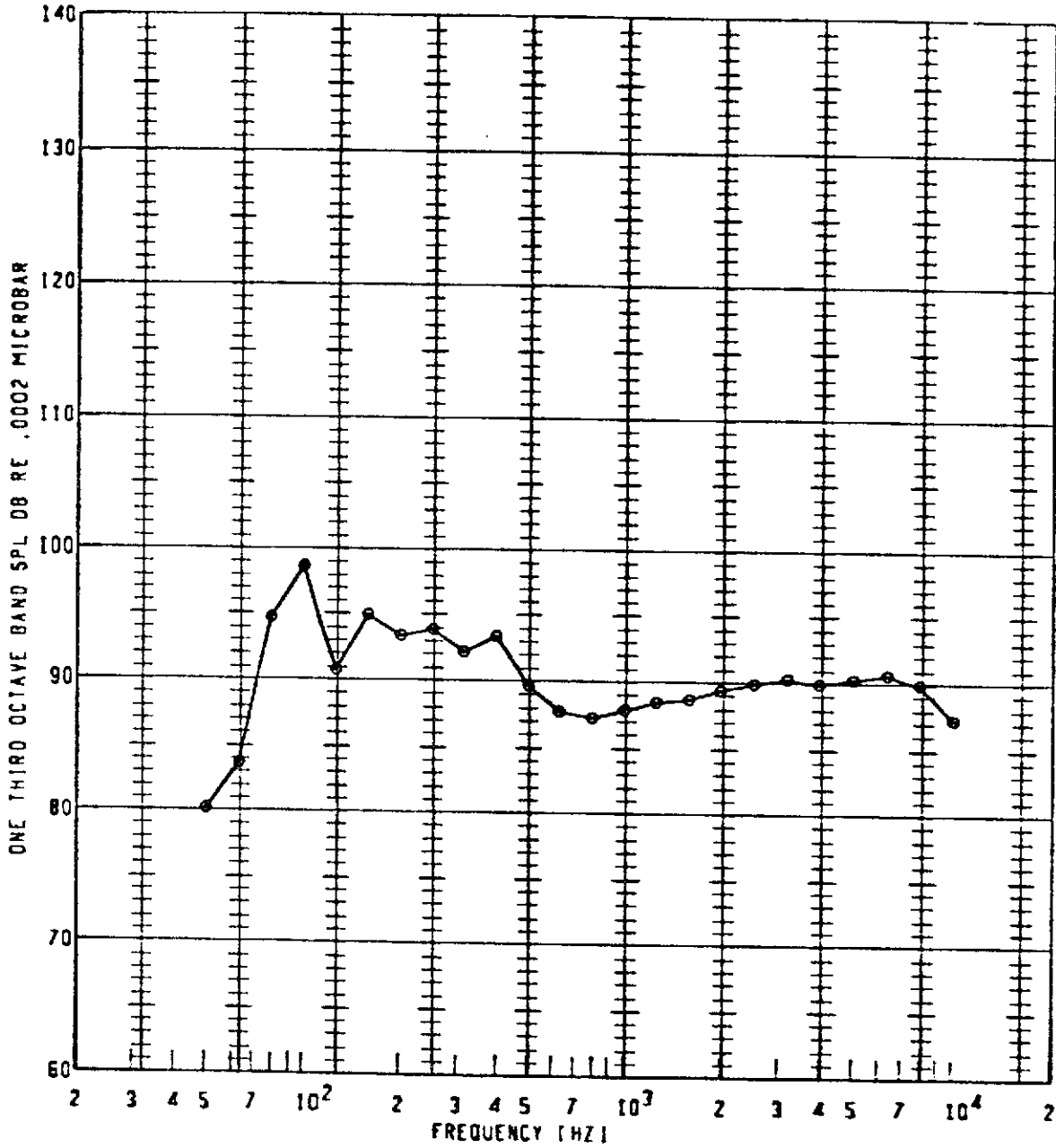
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 86         | 800      | 1.400          | 130            | SGFP              | 103.3      | 20           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



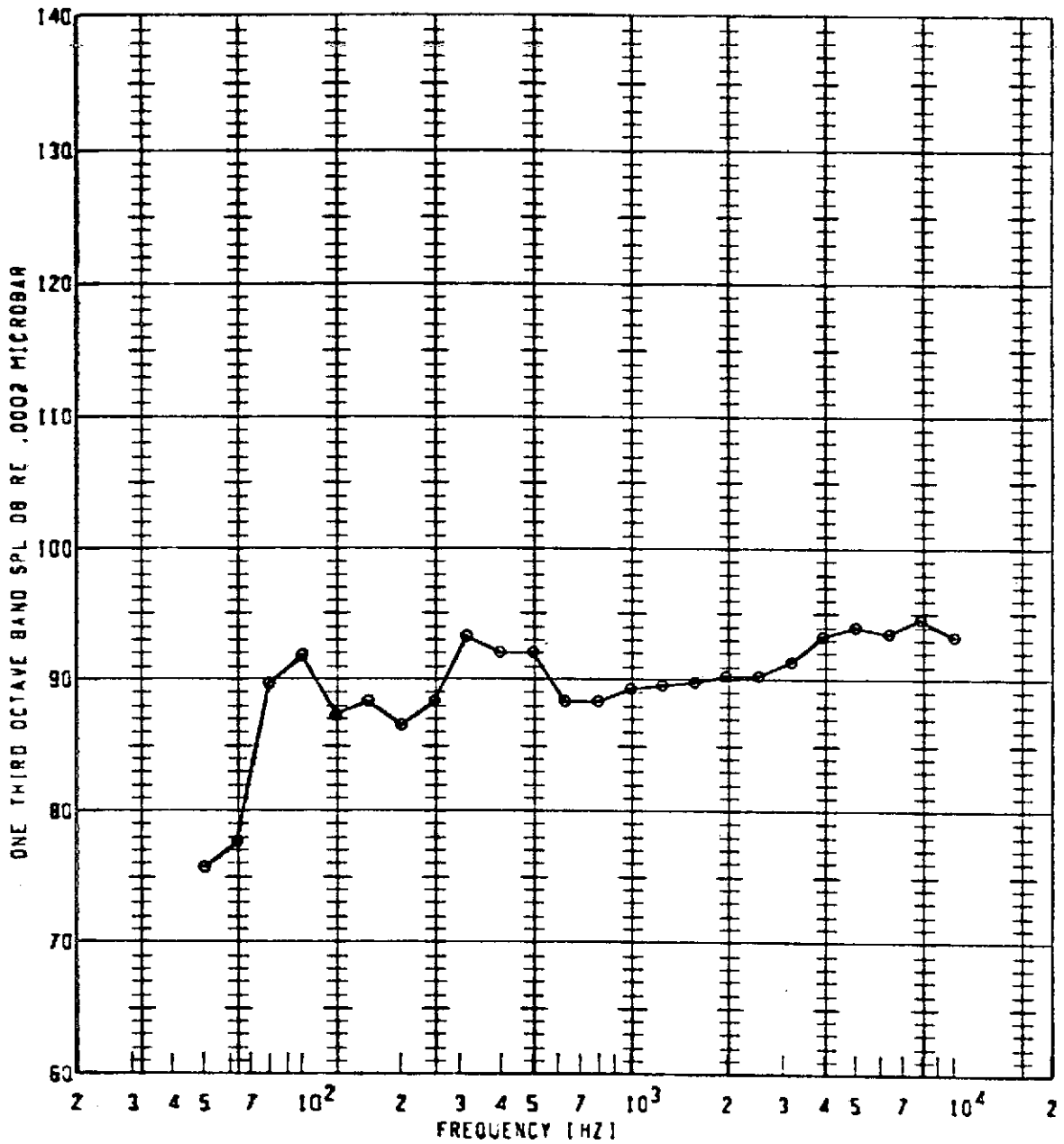
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 86         | 800      | 1.400          | 135            | 50'P              | 105.6      | 20           |            |

BUFFALO SUPPRESSOR NOZZLE TONE IQ TEST - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 80         | 800      | 1.400          | 140            | SQFP              | 105.5      | 20           |            |

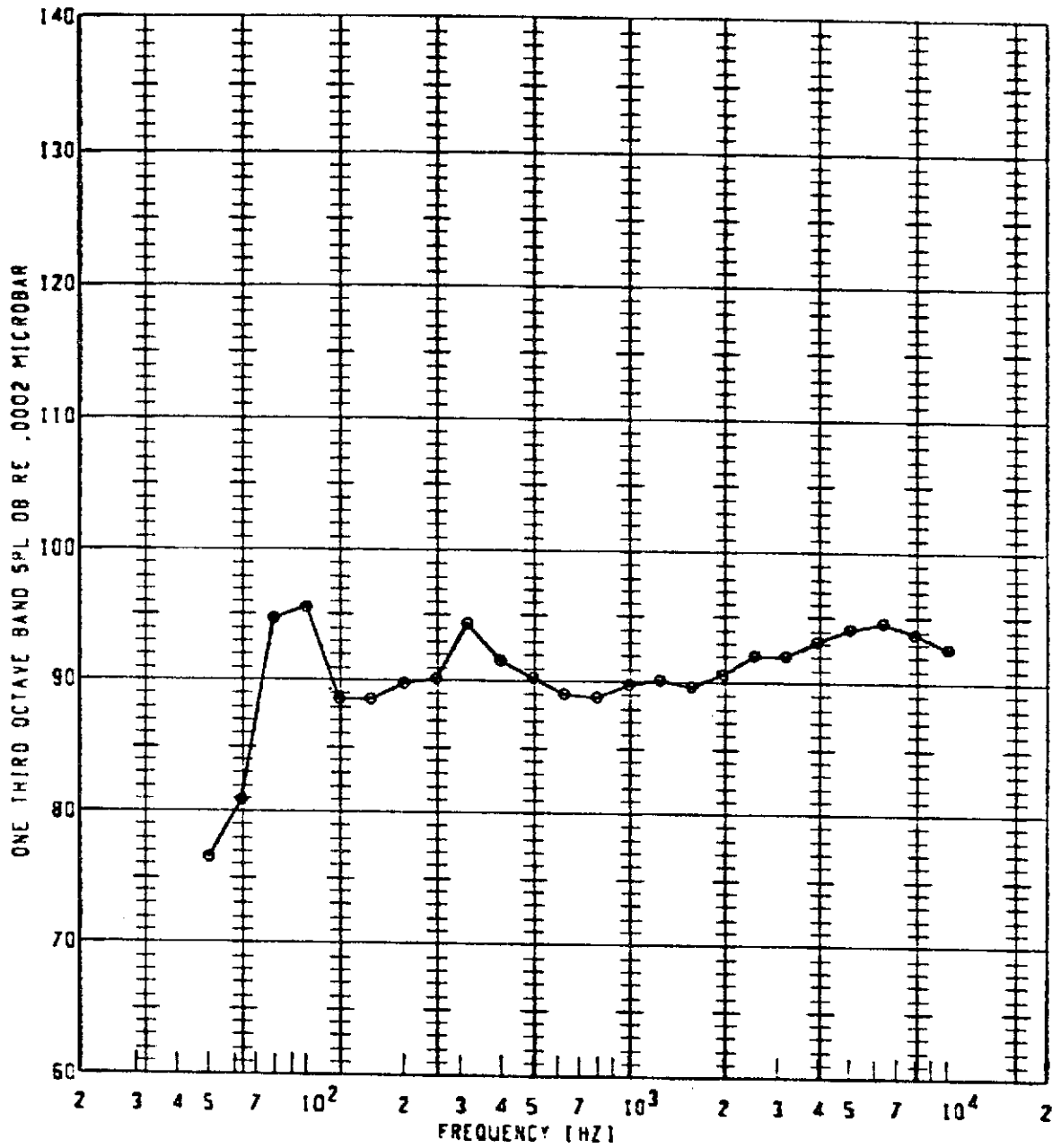
BUFFALO SUPPRESSOR NOZZLE TONE IO TEST - HOT NOZZLE TEST FACILITY



| Plot Symbol | Run Number | Jet Temp | Pressure Ratio | Angle Re Inlet | Observer Location | 0ASPL (dB) | Gain Setting | Special IO |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 86         | 850      | 1.500          | 90             | 50FP              | 104.7      | 20           |            |

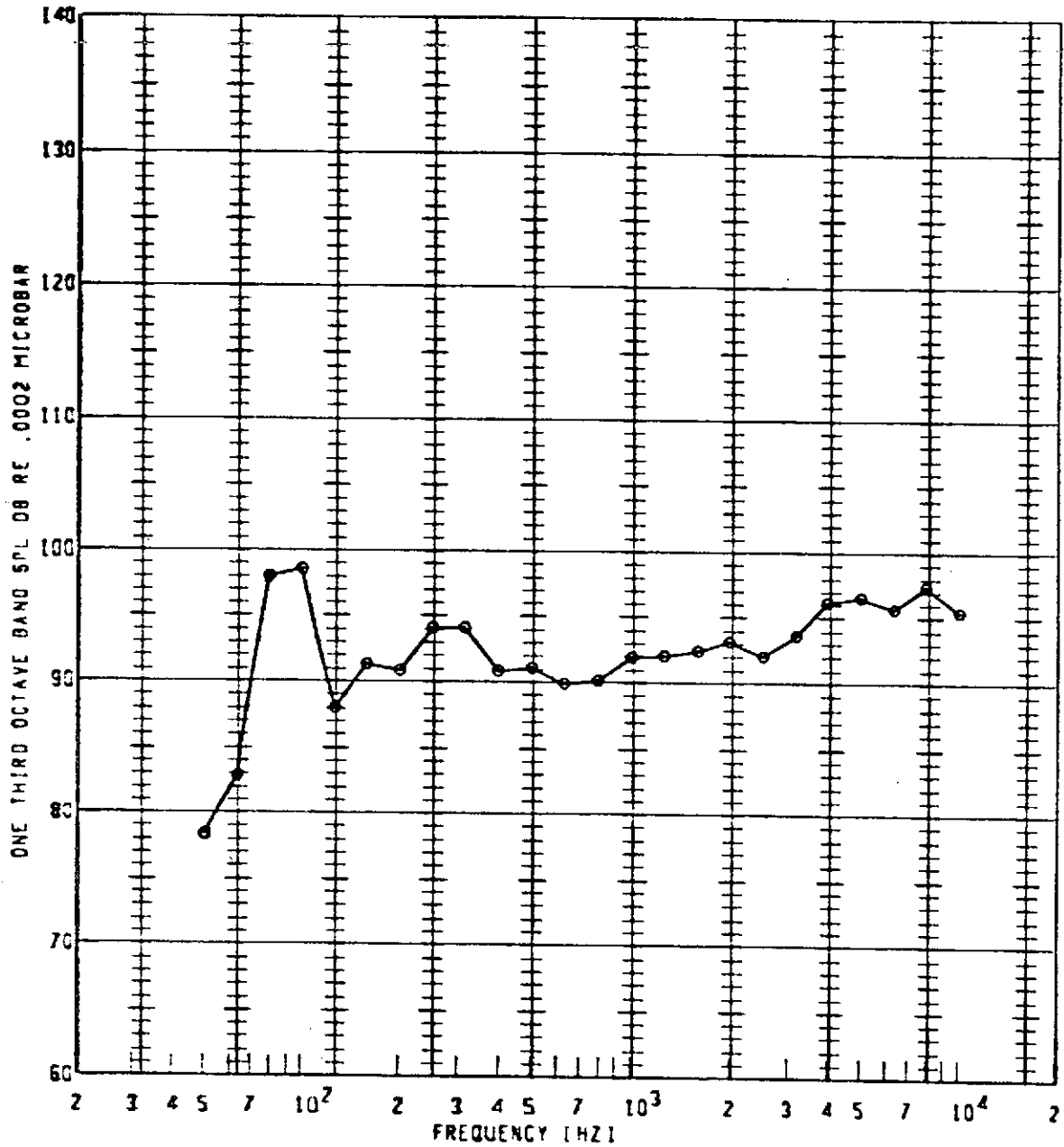


BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



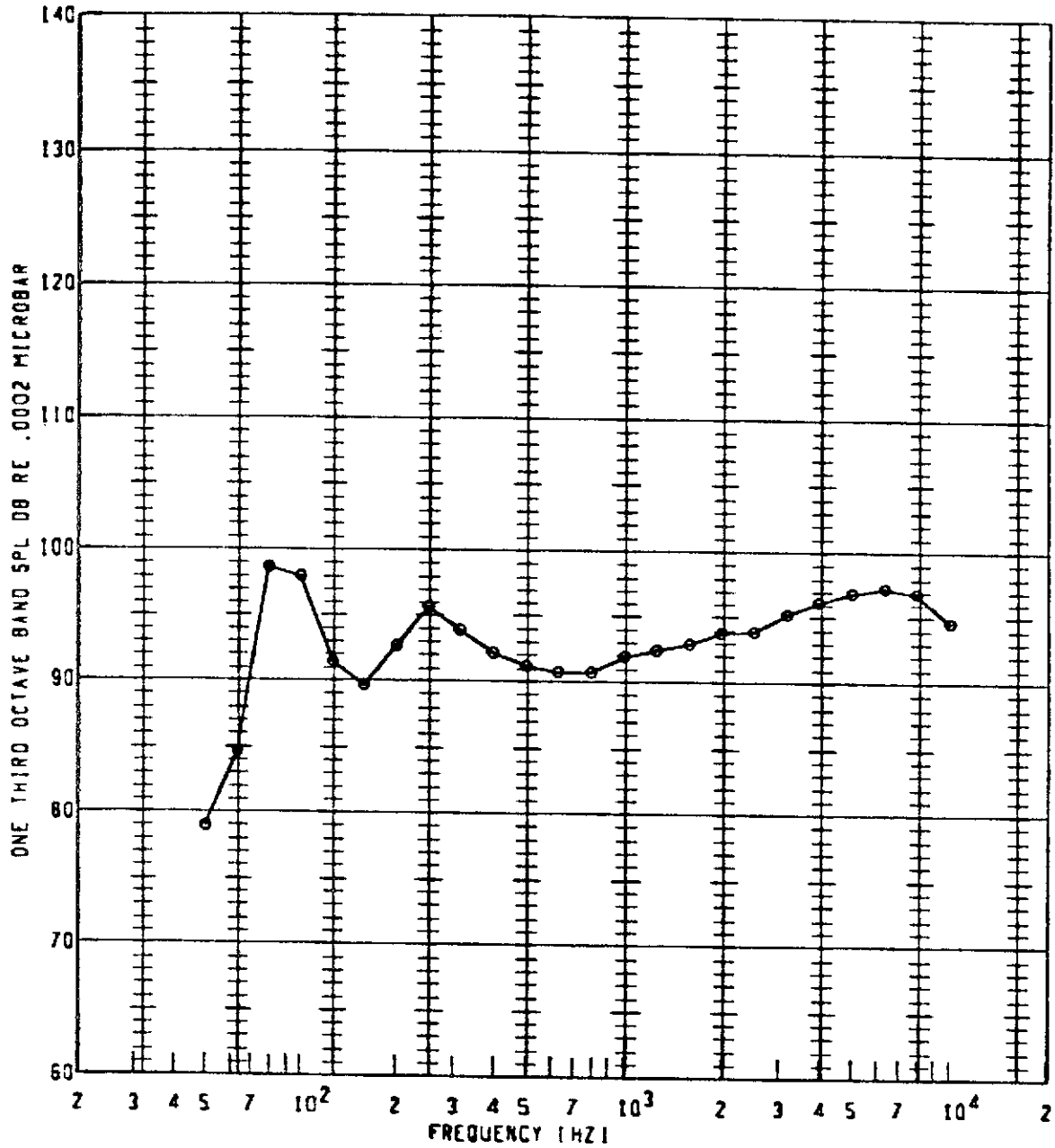
| Plot Symbol | Run Number | Jet Temp | Pressure Ratio | Angle re Inlet | Observer Location | CASPL (dB) | Gain Setting | Special ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| o           | 86         | 850      | 1.500          | 100            | 50FP              | 105.6      | 20           |            |

BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



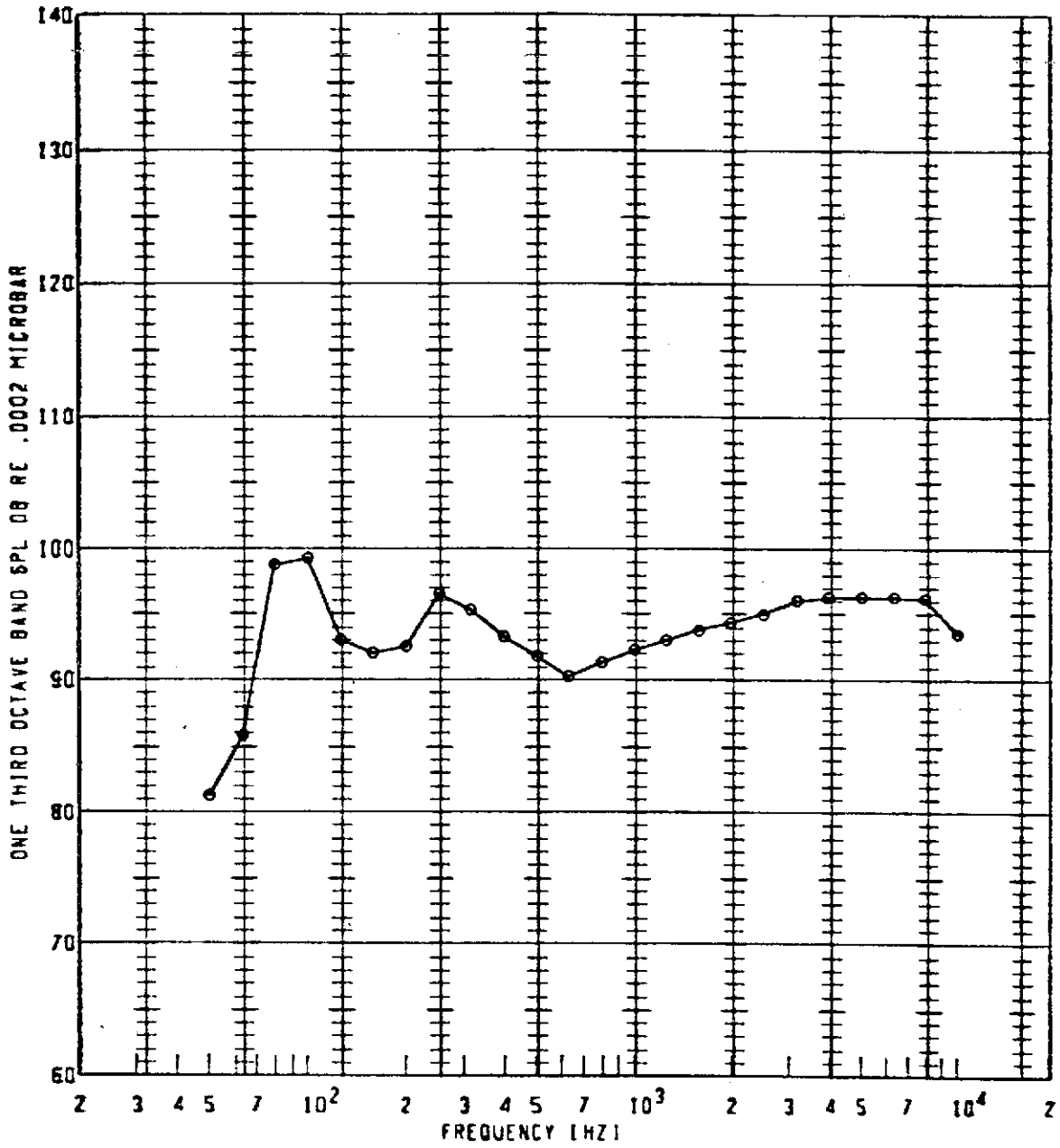
| PLCT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | CASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 80         | 850      | 1.500          | 110            | 50FP              | 107.7      | 20           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



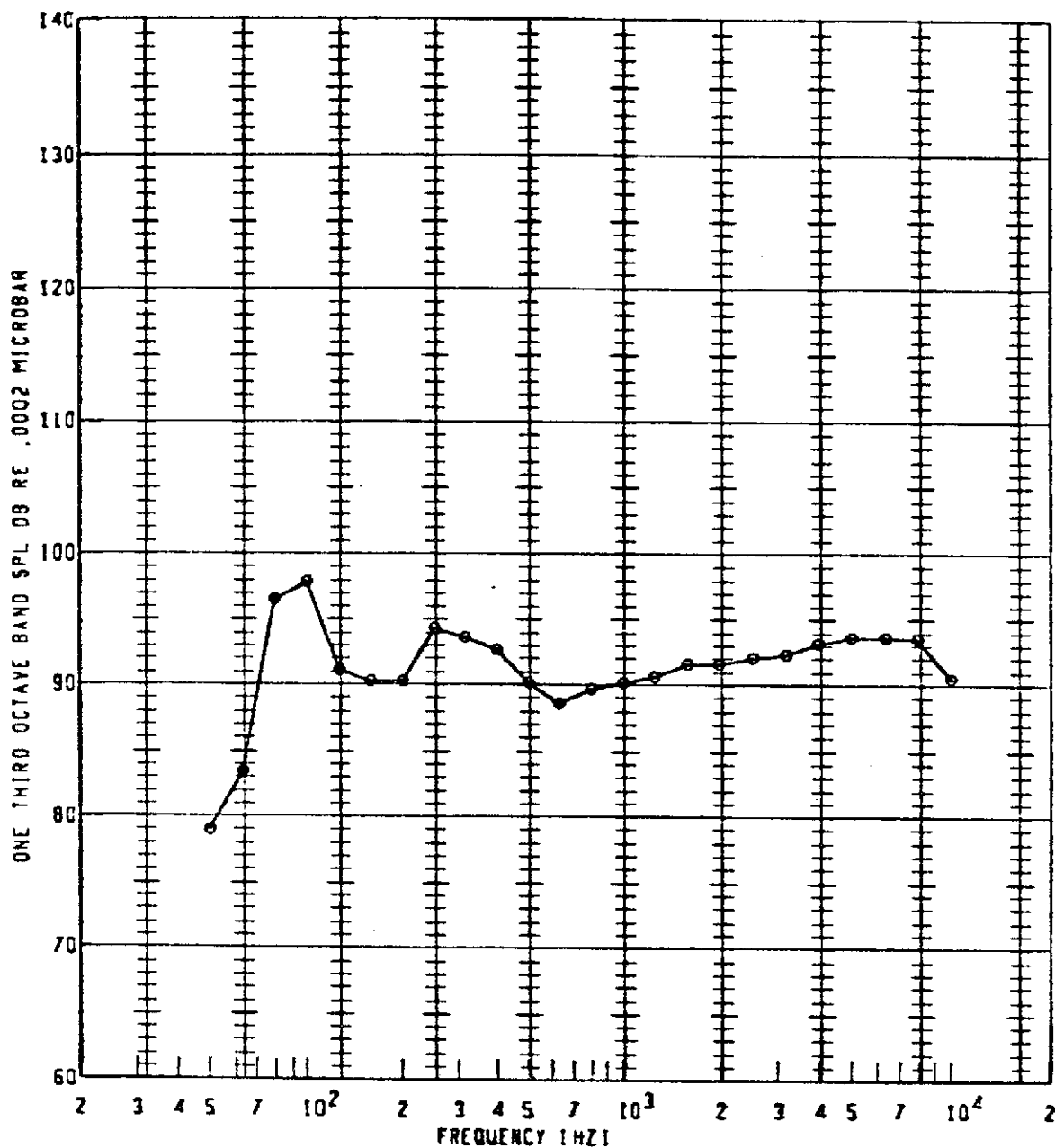
| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙          | 86         | 850      | 1.500          | 120            | 50FP              | 108.1      | 20           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



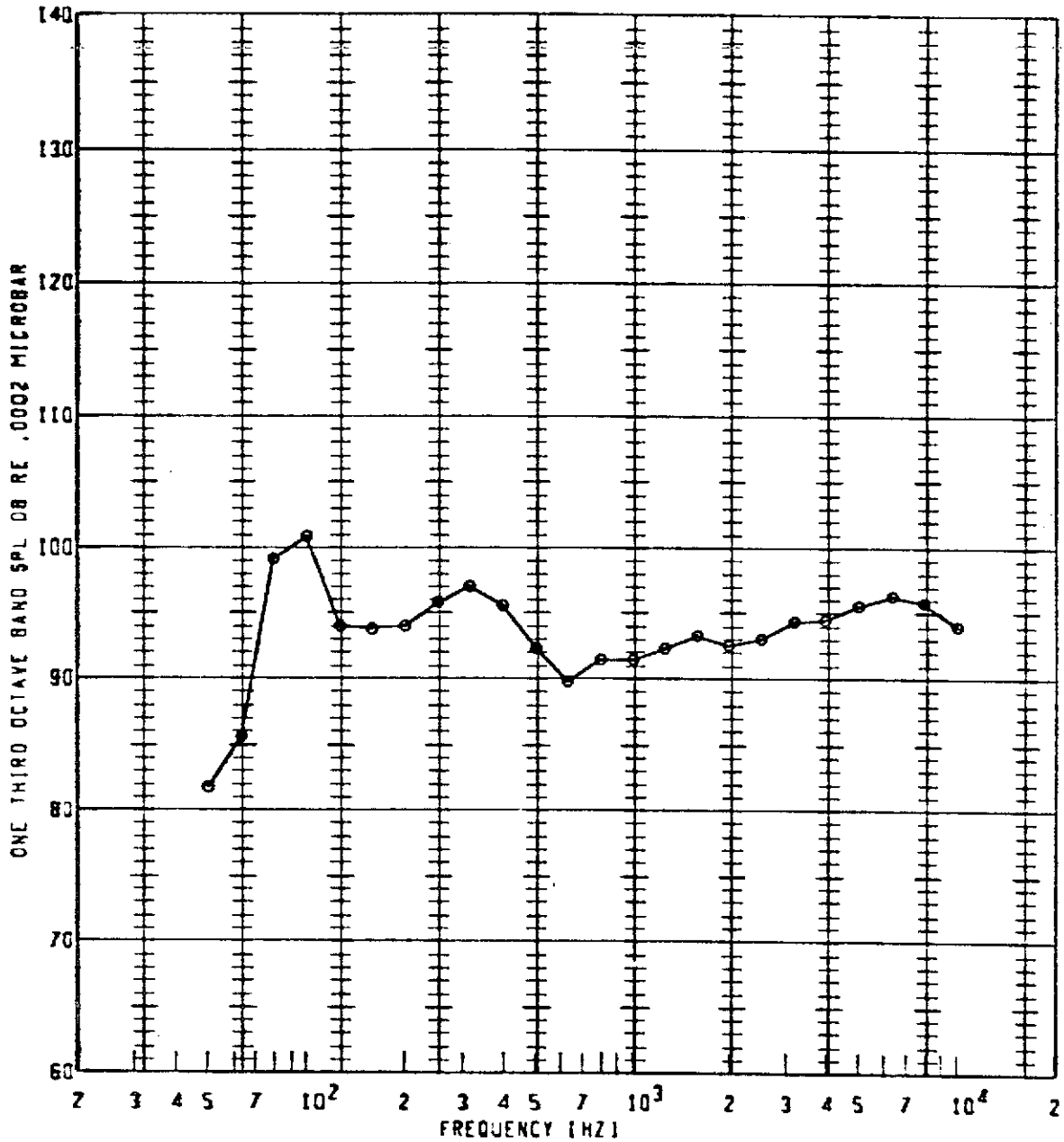
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OSPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|-----------|--------------|------------|
| e           | 86         | 850      | 1.500          | 125            | 50FP              | 100.5     | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



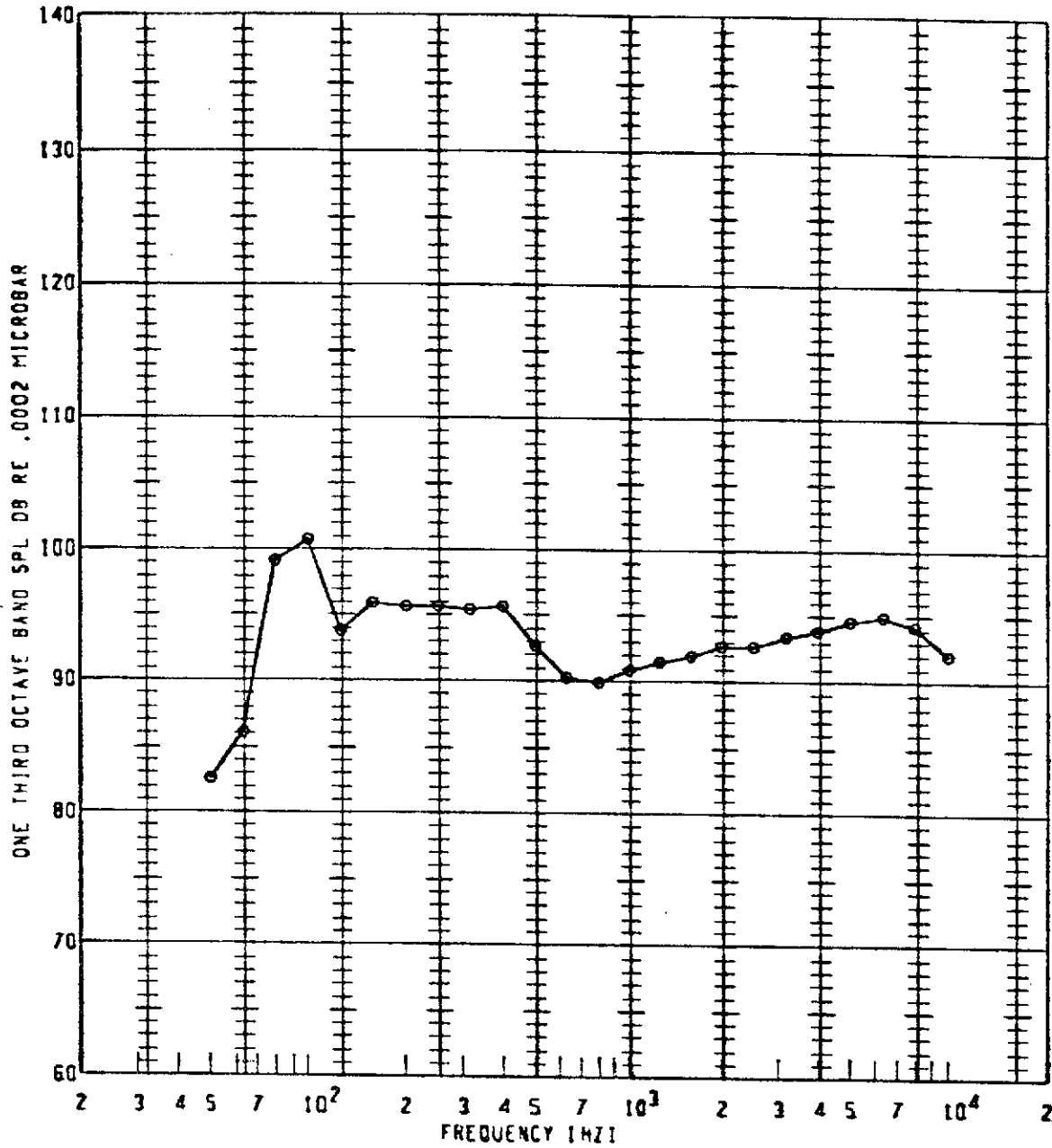
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL [DB] | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 86         | 850      | 1.500          | 130            | 50-P              | 100.2      | 20           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



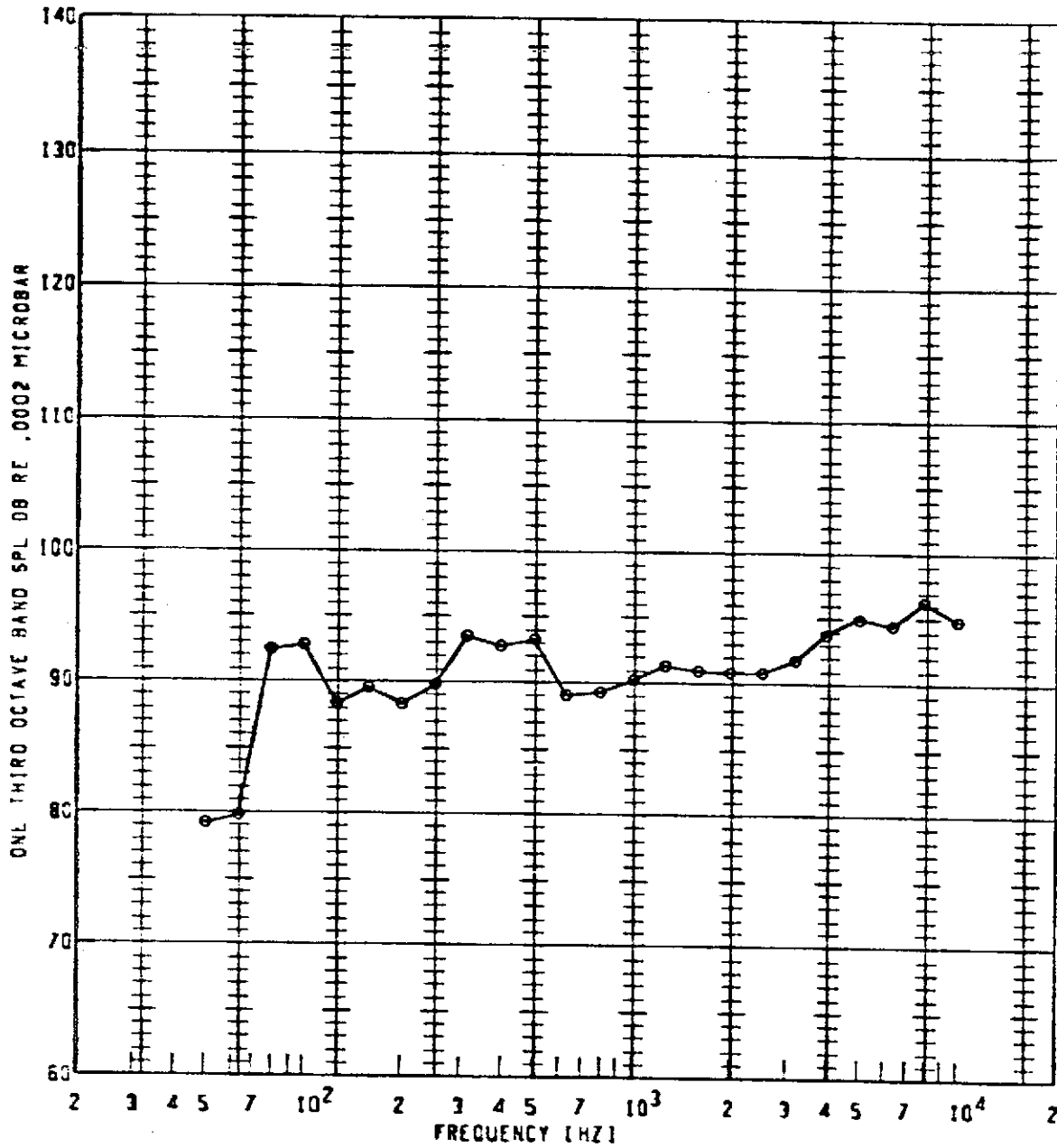
| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OSPL (DB) | GAIN SETTINGS | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|-----------|---------------|------------|
| e          | 86         | 850      | 1.500          | 135            | 50FP              | 108.7     | 20            |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (dB) | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| o          | 86         | 850      | 1.500          | 140            | SOFP              | 108.3      | 20           |            |

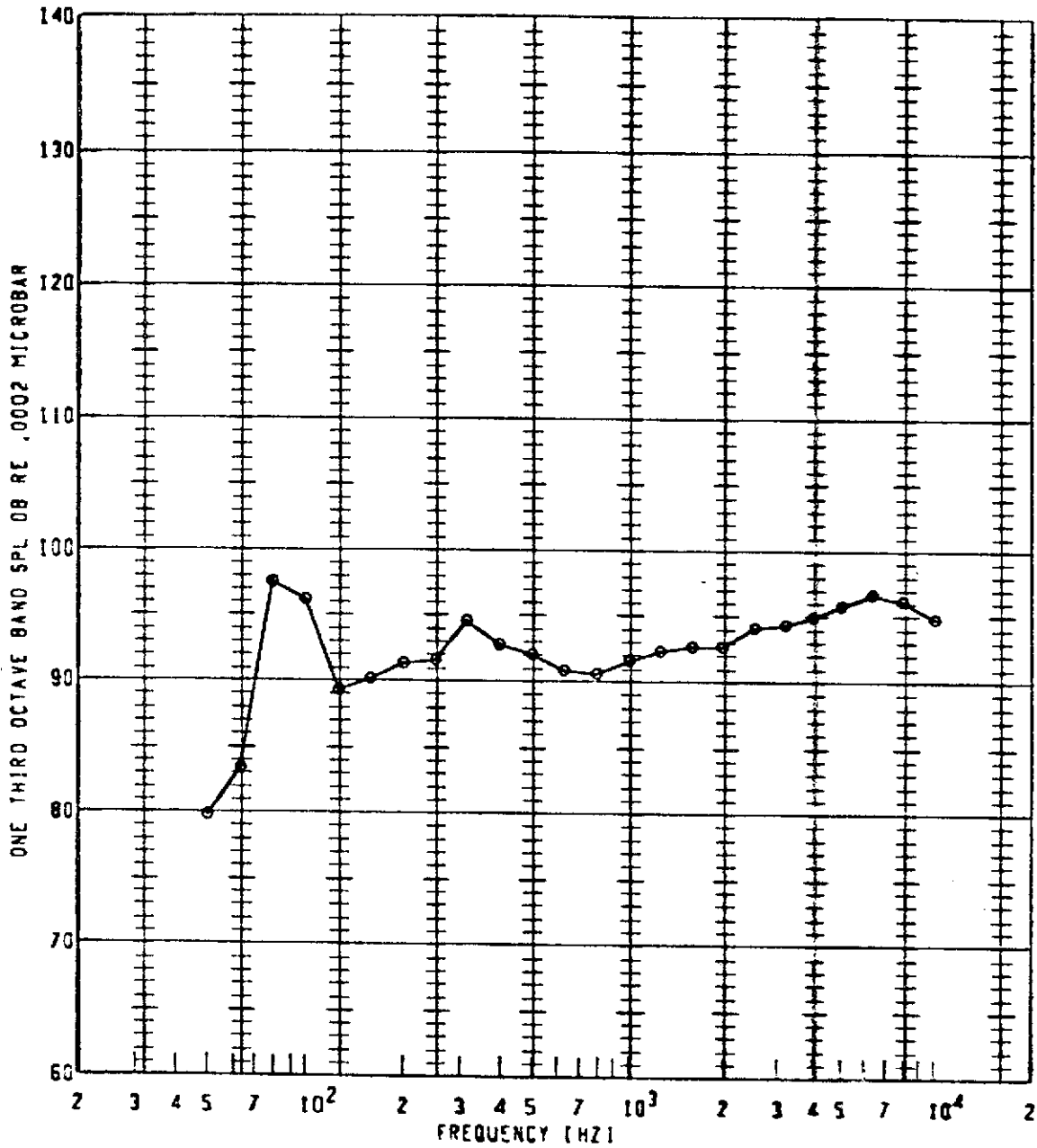
BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | DASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 89         | 900      | 1.600          | 90             | 50FP              | 105.8      | 10           |            |

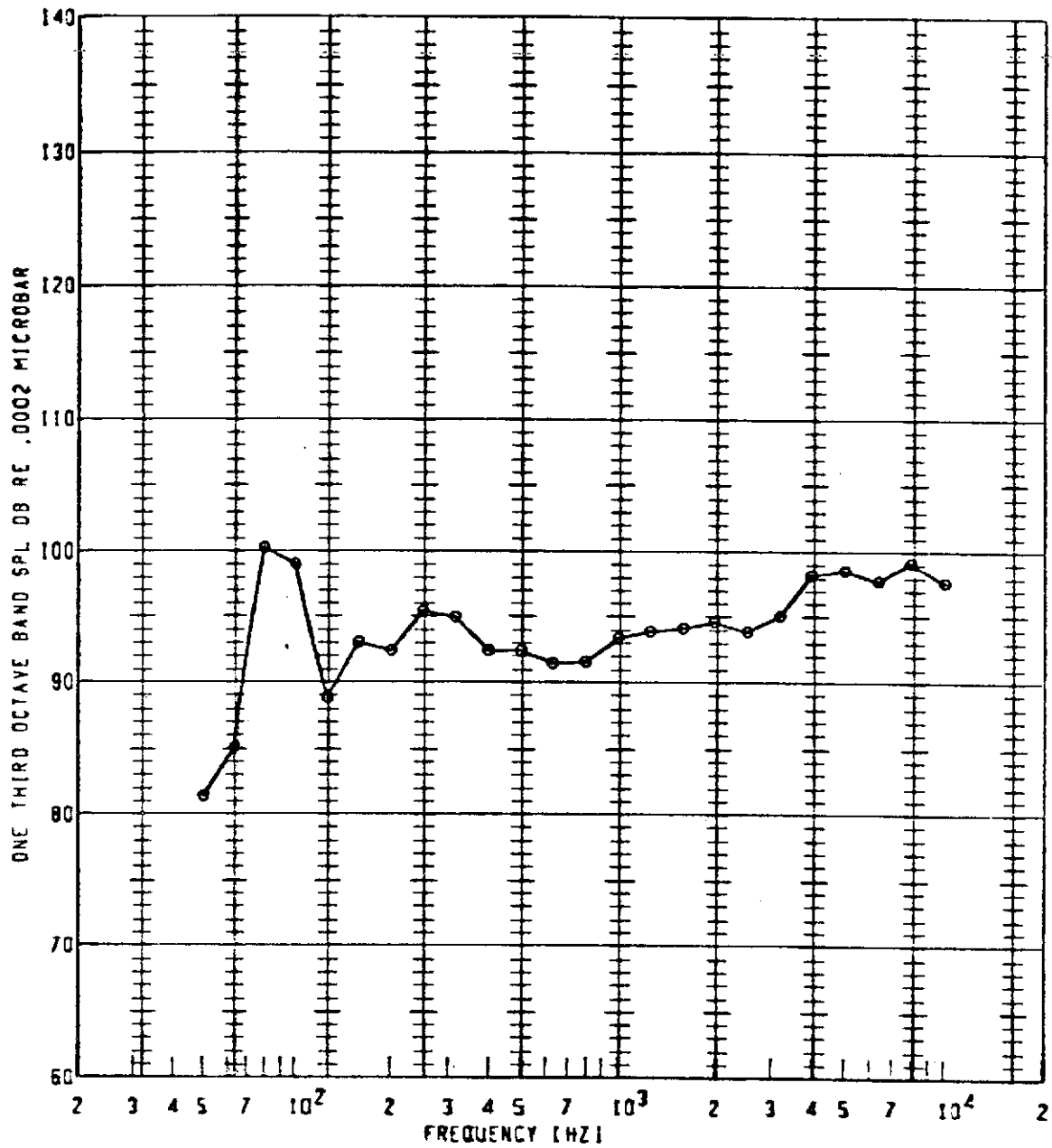


BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



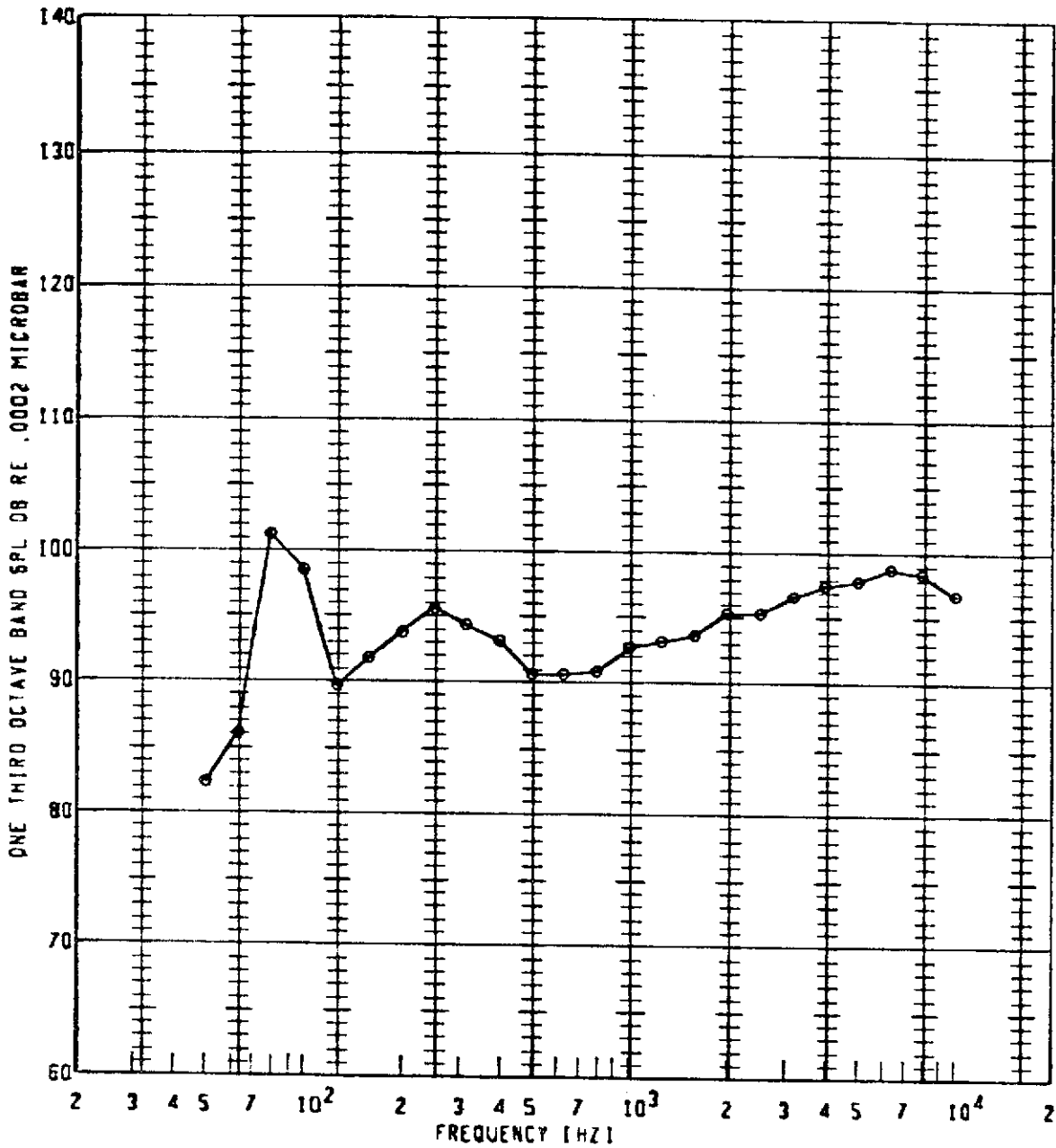
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | SACN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 86         | 900      | 1.600          | 100            | 50FP              | 107.3      | 20           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



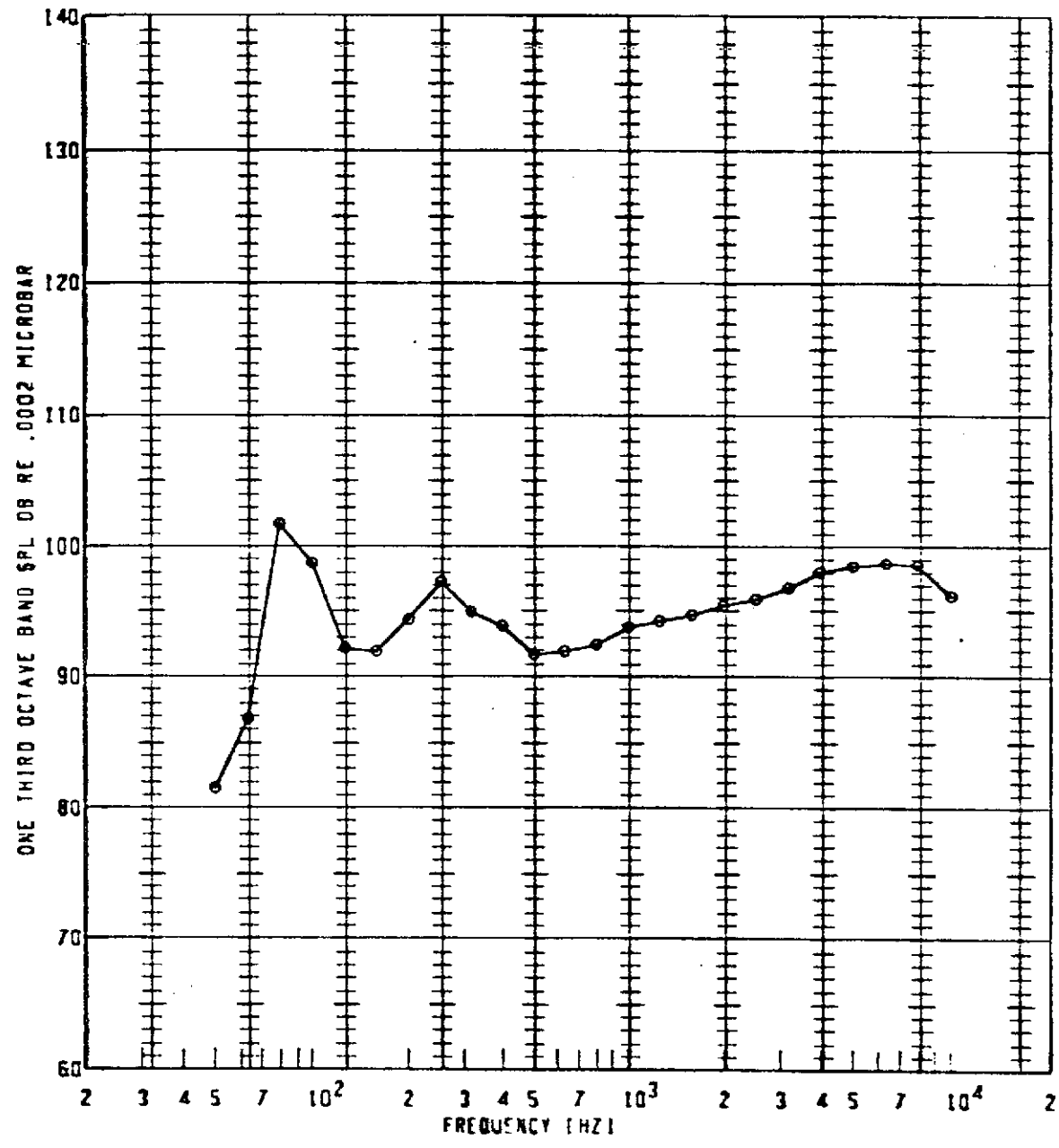
| Plot Symbol | Run Number | Jet Temp | Pressure Ratio | Angle Re Inlet | Observer Location | GasPL (db) | Gain Setting | Special ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 86         | 900      | 1.500          | 110            | 50 P              | 109.3      | 10           | 10         |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



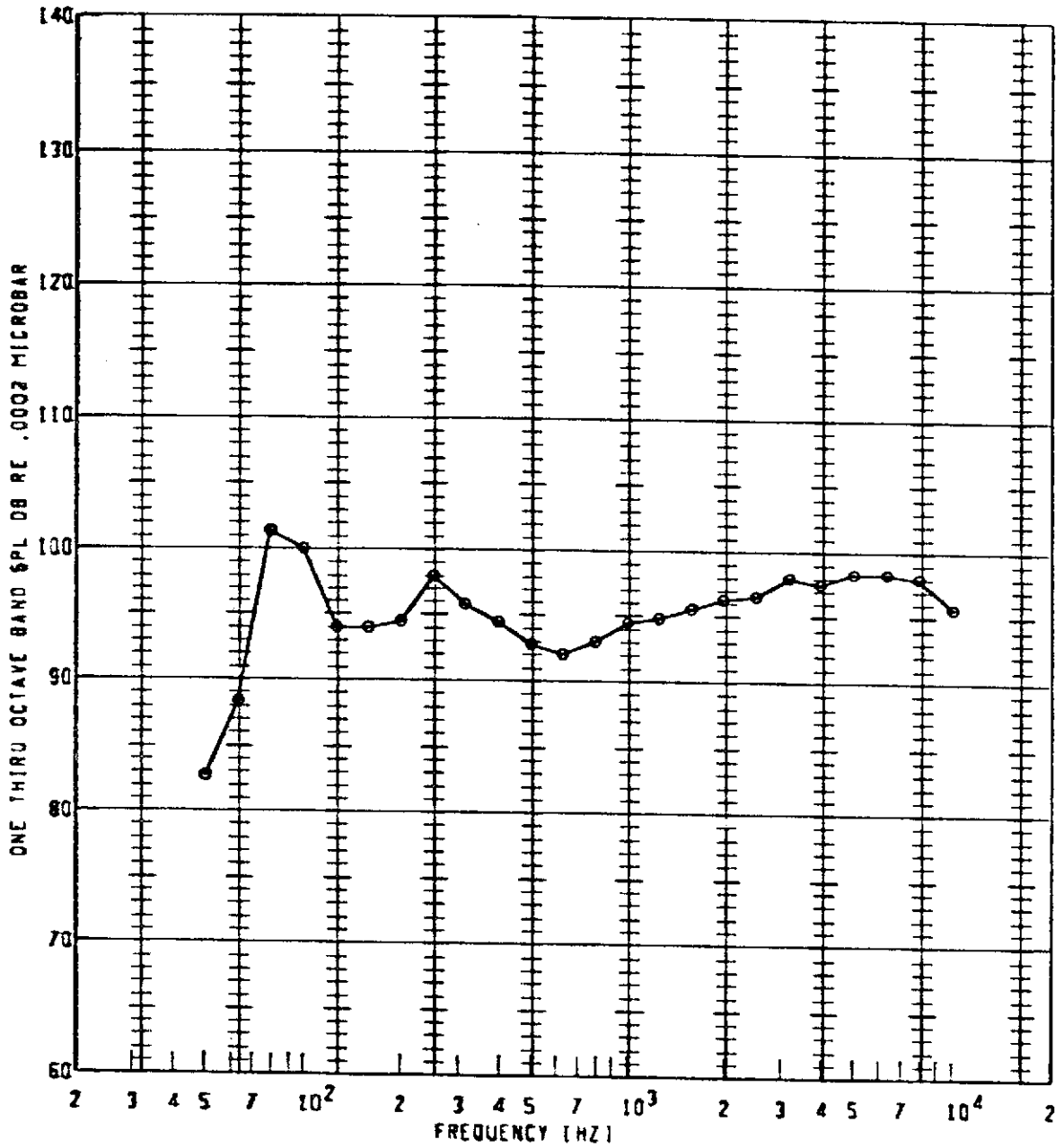
| PLT<br>SYMBOL | RUN<br>NUMBER | JET<br>TEMP | PRESSURE<br>RATIO | ANGLE<br>RE INLET | OBSERVER<br>LOCATION | QASPL<br>(DB) | GAIN<br>SETTING | SPECIAL<br>ID |
|---------------|---------------|-------------|-------------------|-------------------|----------------------|---------------|-----------------|---------------|
| e             | 85            | 900         | 1.600             | 115               | 50FP                 | 109.4         | 10              |               |

**BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY**



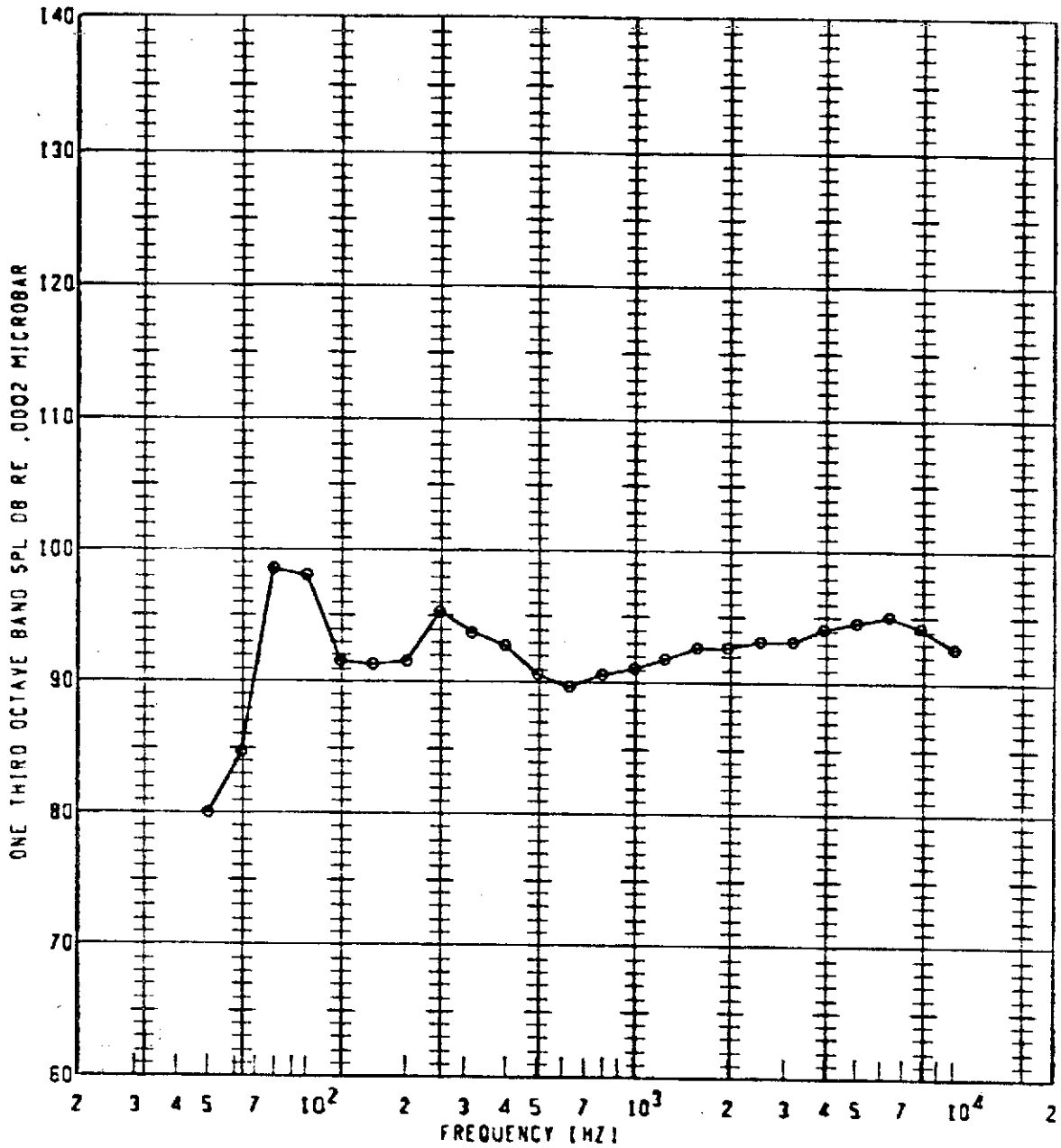
| ●           | 86         | 900      | 1.600          | 120            | 50FP              | 109.8      | 20           |            |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL IO |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



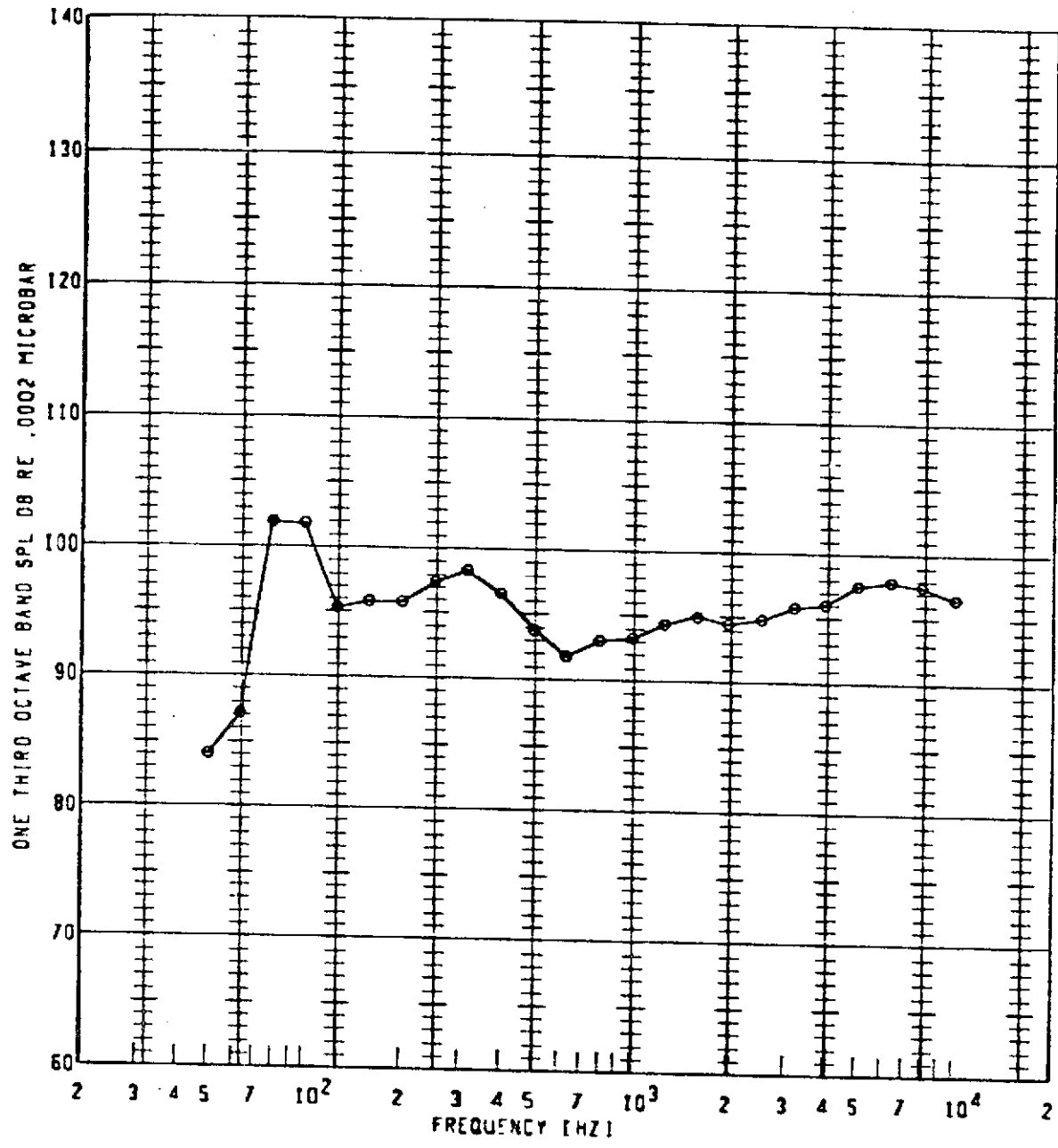
| Plot Symbol | Run Number | Jet Temp | Pressure Ratio | Angle Re Inlet | Observer Location | Gaspl (db) | Gain Setting | Special IO |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 80         | 900      | 1.600          | 125            | 50FP              | 110.2      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



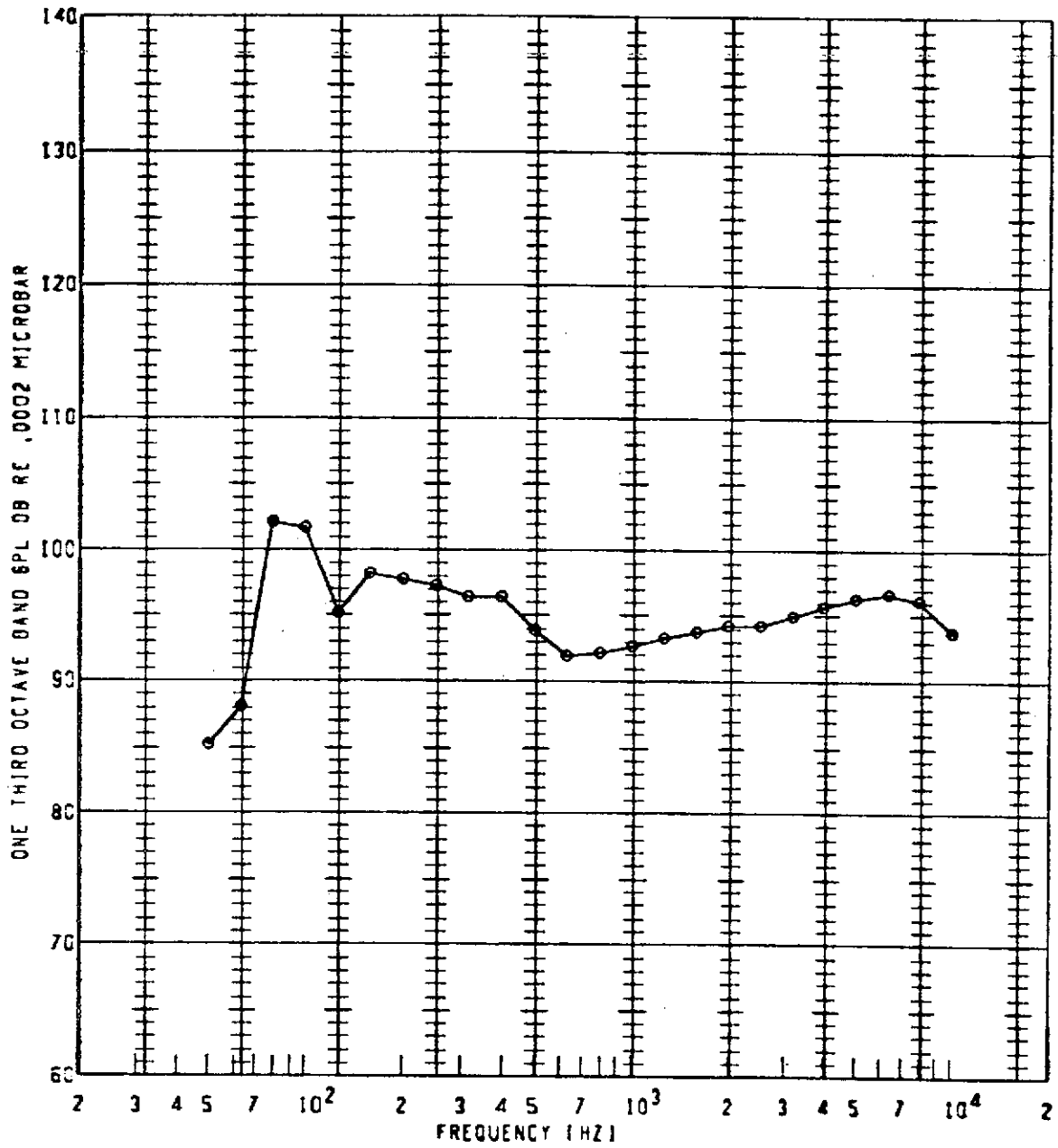
| SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|--------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙      | 86         | 900      | 1.600          | 130            | 50FP              | 107.2      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 86         | 900      | 1.600          | 135            | 50FP              | 110.3      | 10           |            |

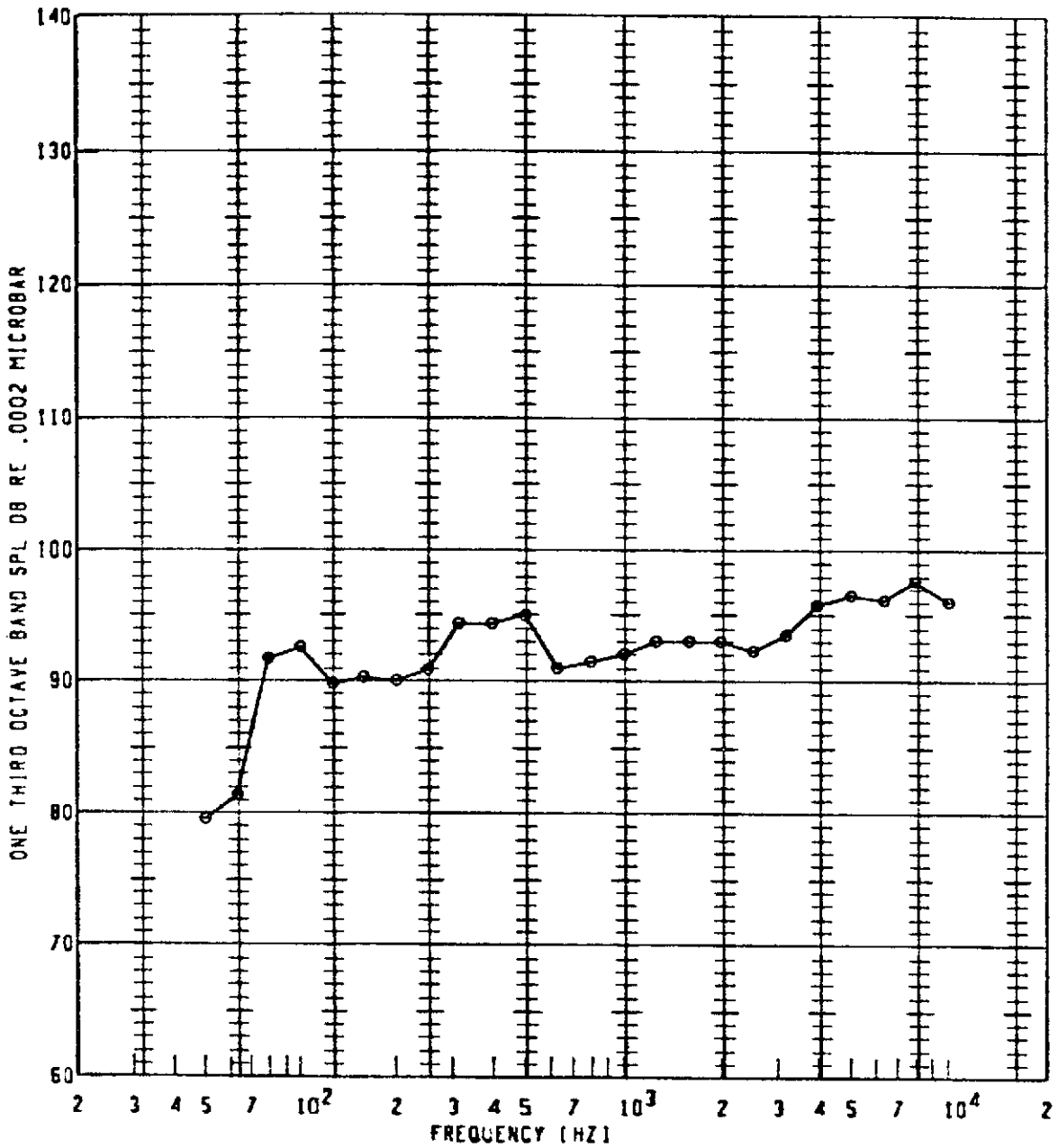
BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| PLGT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 86         | 900      | 1.600          | 140            | 50FP              | 110.1      | 10           |            |

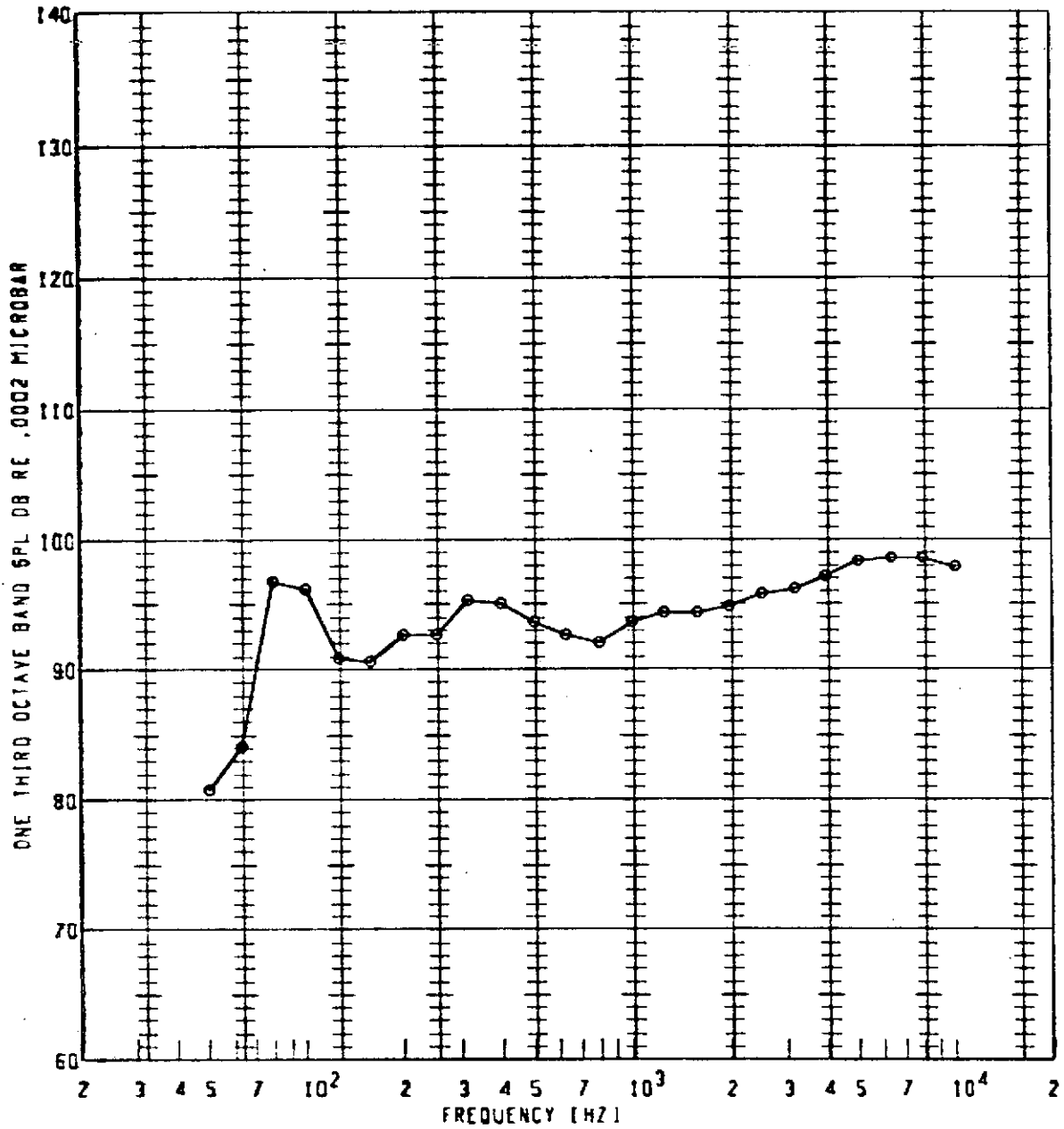


BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



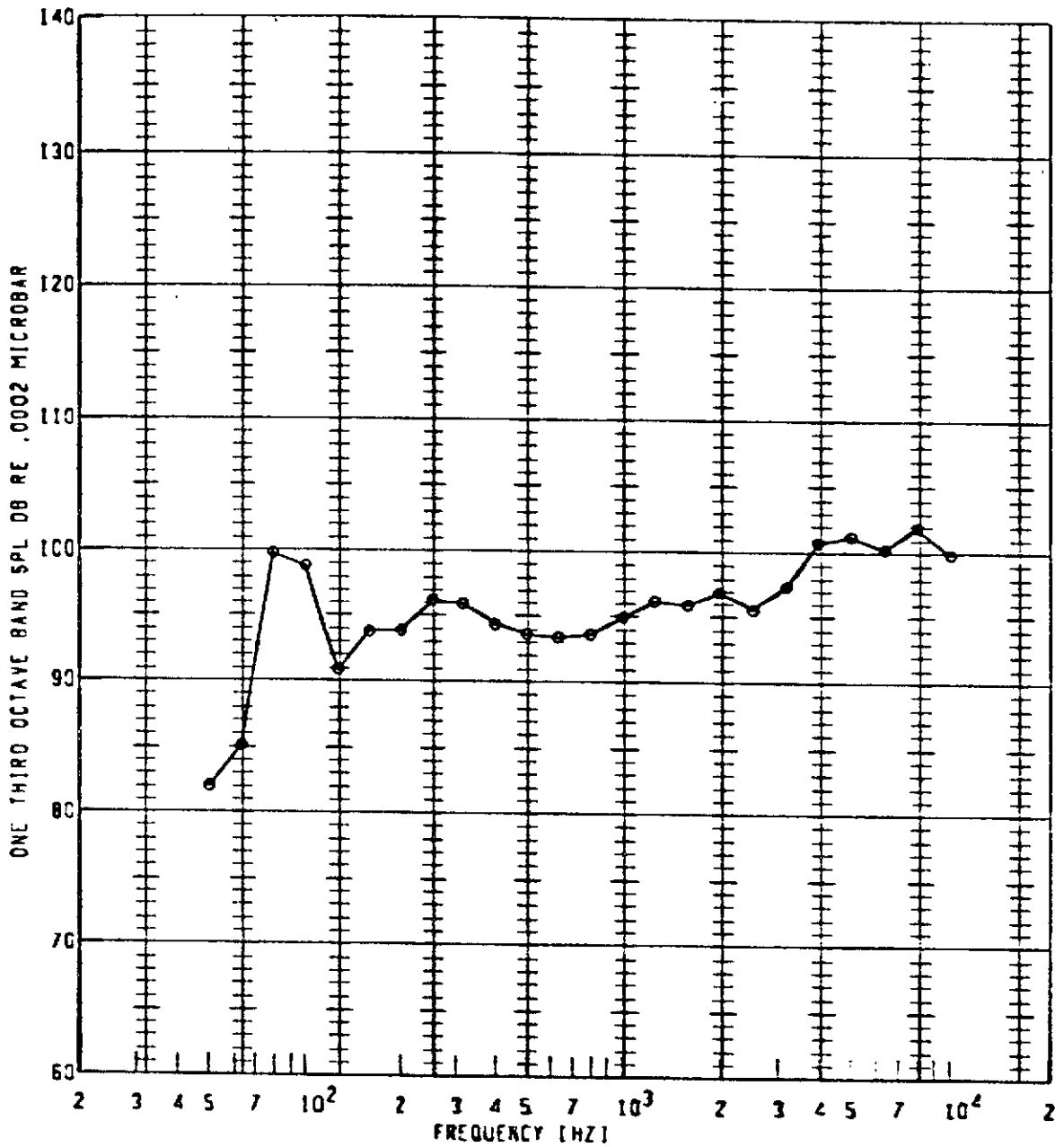
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL IO |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| o           | 85         | 950      | 1.700          | 90             | 5CFP              | 107.2      | 10           |            |

**BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY**



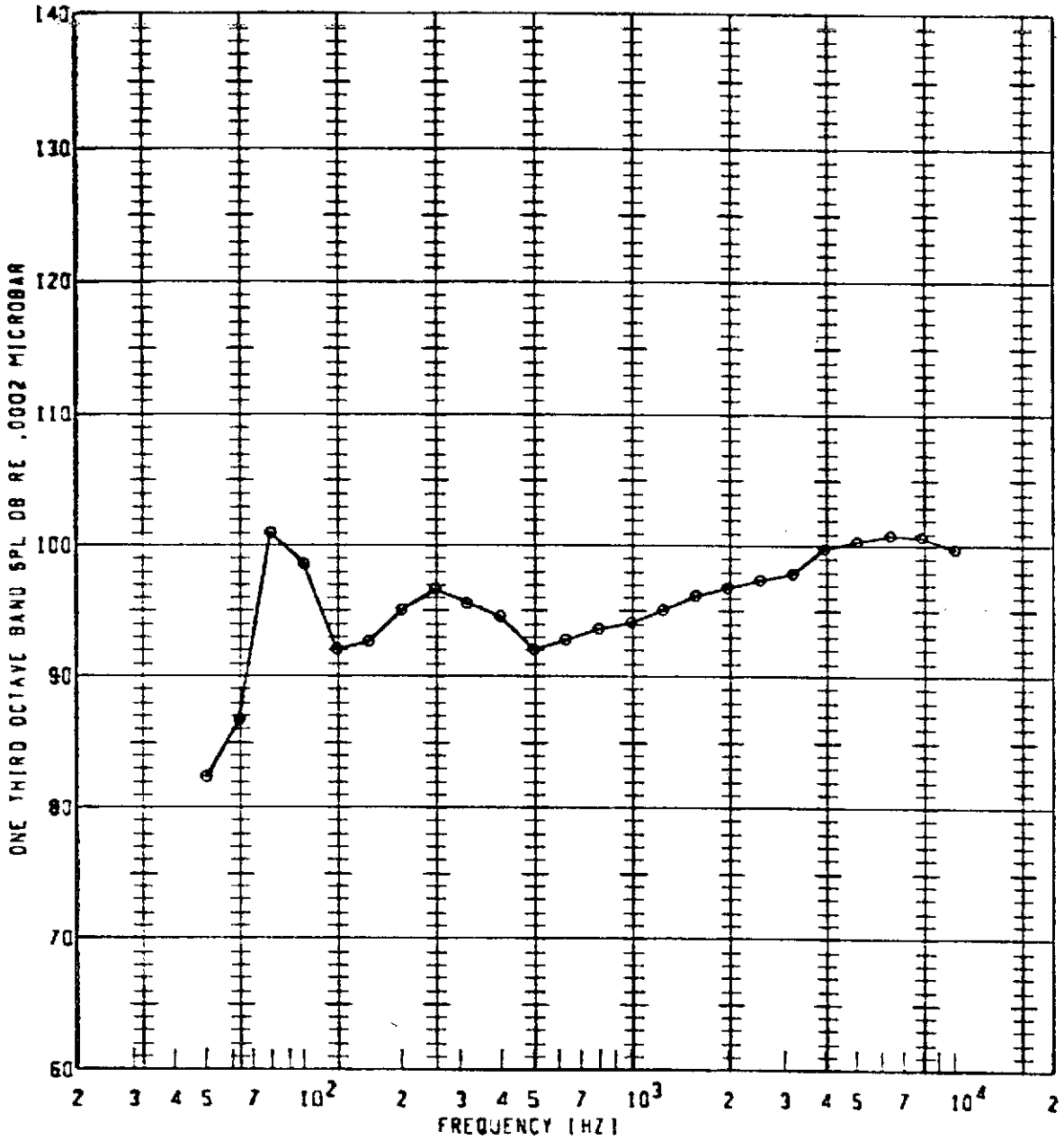
| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e          | 86         | 950      | 1.700          | 100            | 50FP              | 108.9      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE IB TEST - HOT NOZZLE TEST FACILITY



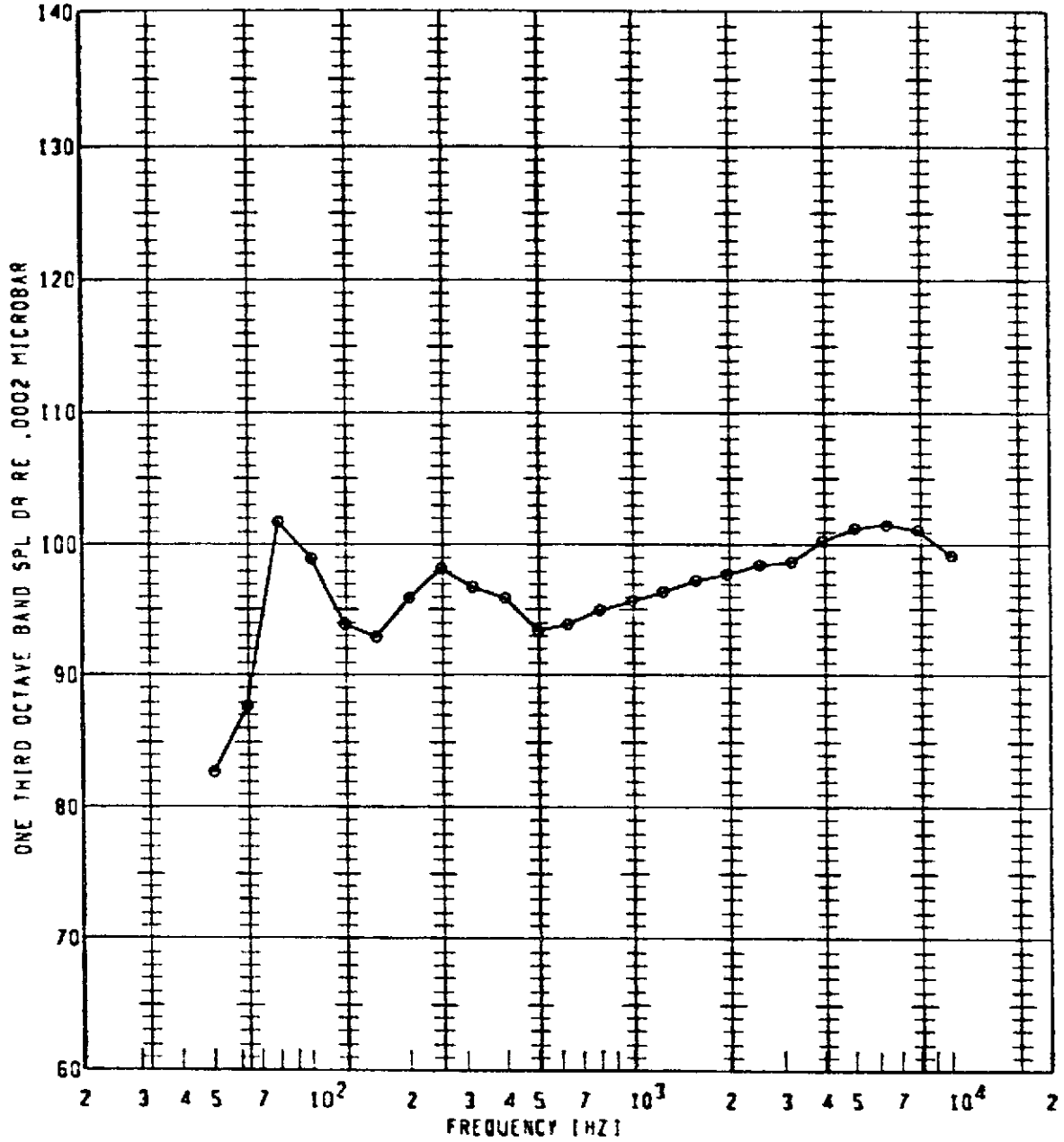
| Plot Symbol | Run Number | Jet Temp | Pressure Ratio | Angle re Inlet | Observer Location | Gaspl ID#1 | Gain Setting | Special ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 86         | 950      | 1.700          | 110            | SOFP.             | 111.0      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



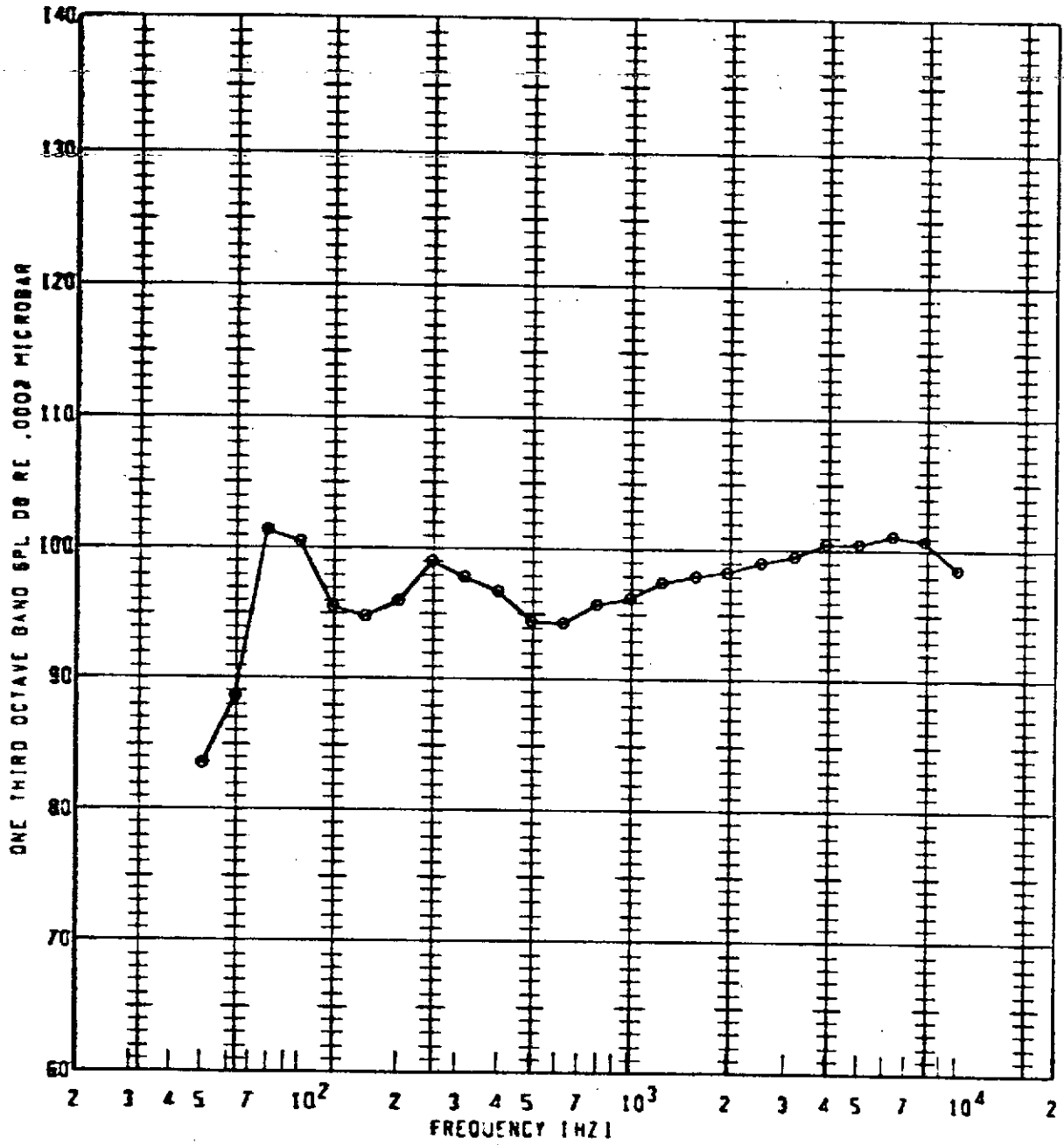
| PLGT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | DASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 86         | 950      | 1.700          | 115            | 50FP              | 110.9      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



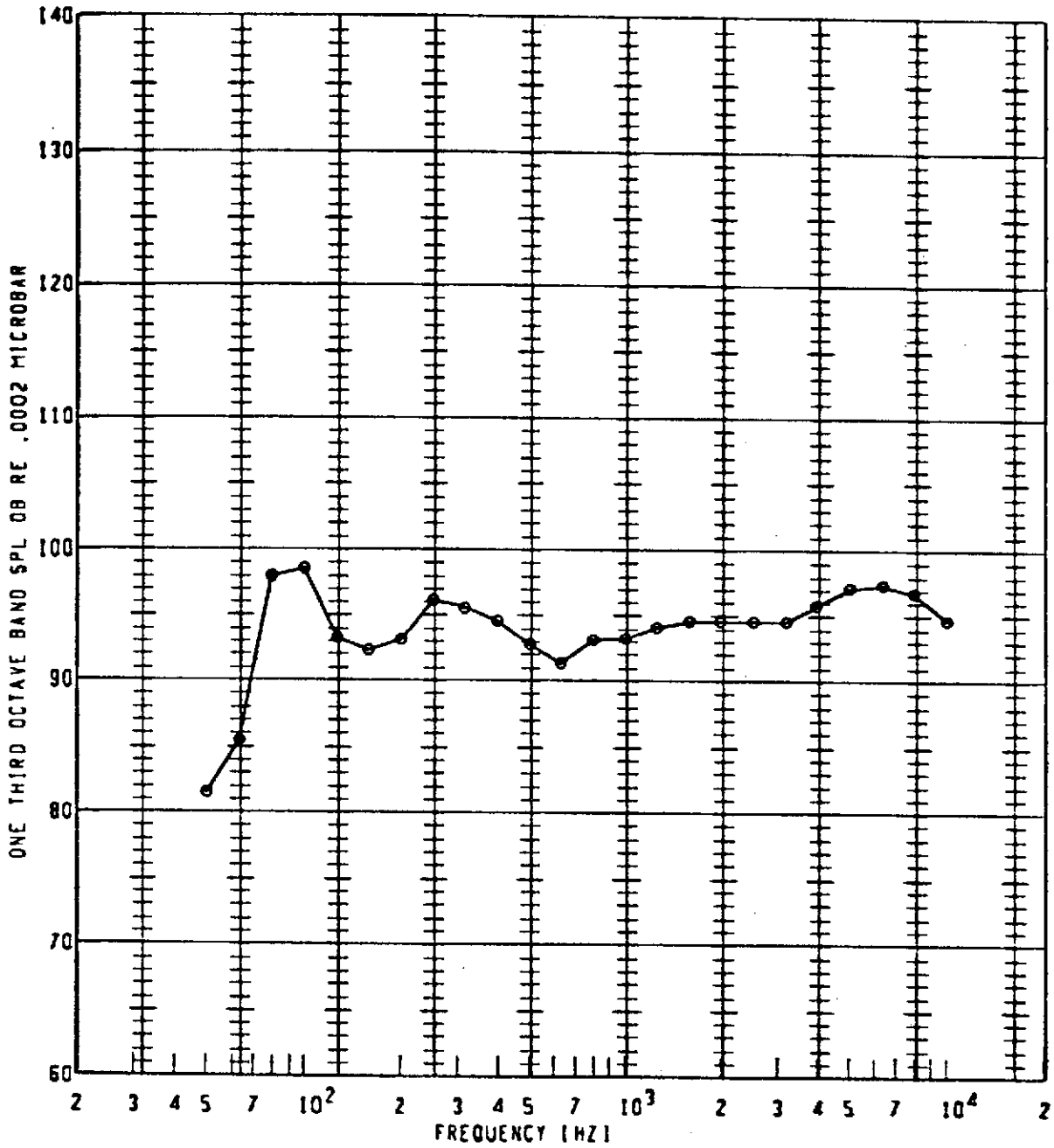
| PLCT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL [DB] | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 86         | 950      | 1.700          | 120            | 50FP              | 111.7      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



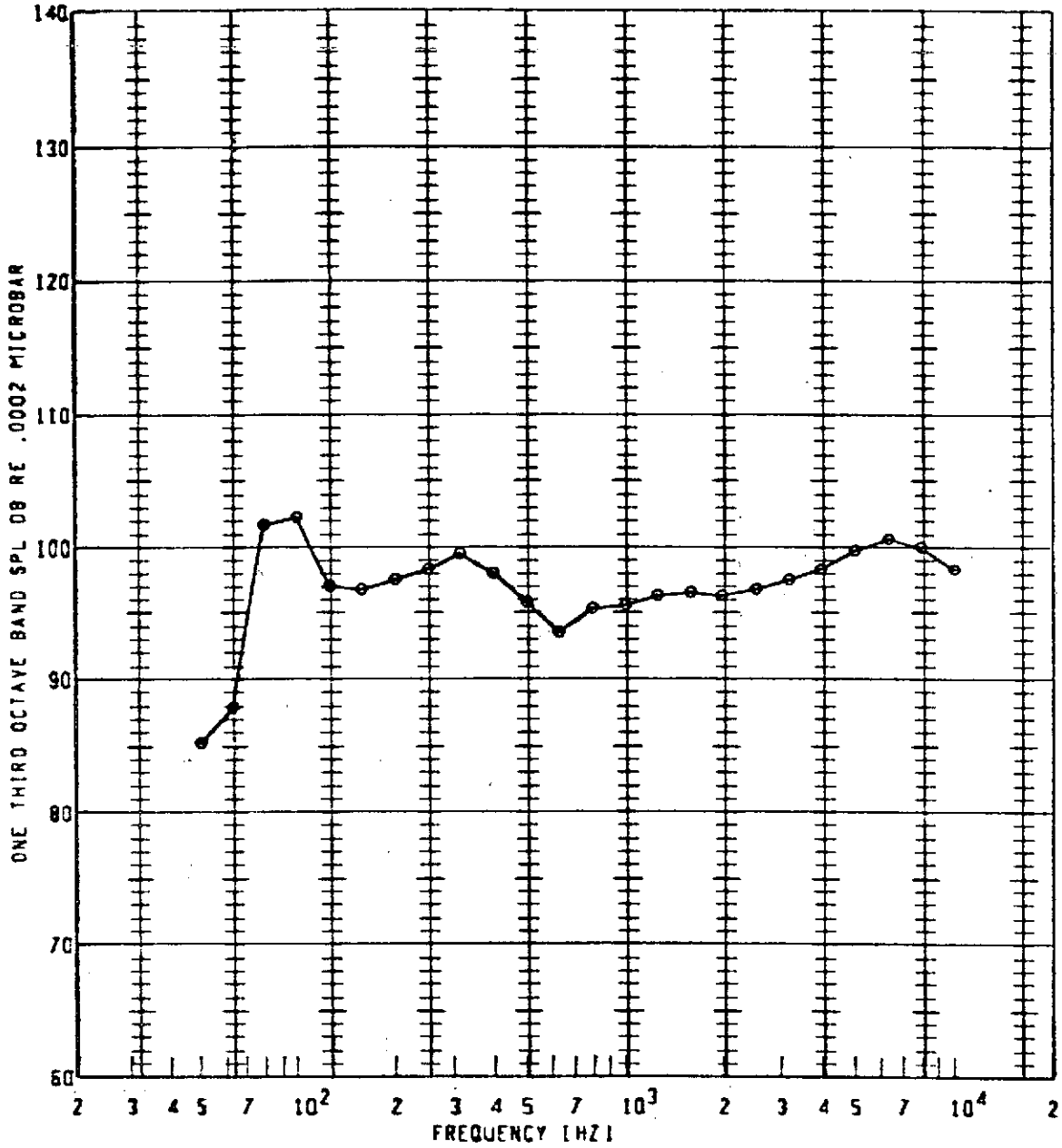
| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| •          | 86         | 950      | 1.700          | 125            | 5JFP              | 112.0      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| ●           | 86         | 950      | 1.700          | 130            | 50FP              | 108.7      | 10           |            |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |

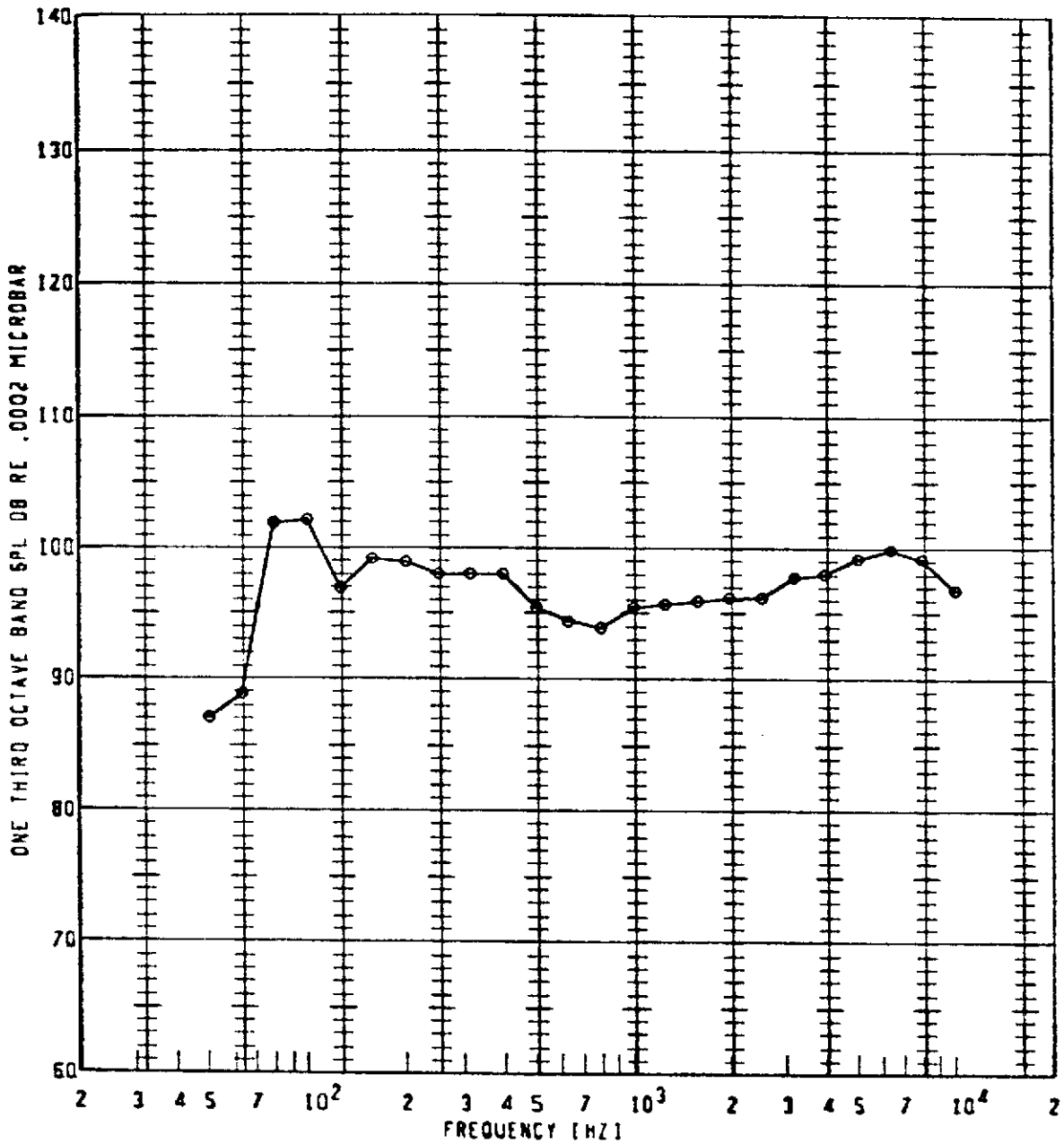
BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



| Plot Symbol | Run Number | Jet Temp | Pressure Ratio | Angle re Inlet | Observer Location | OASPL (dB) | Gain Setting | Special ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| o           | 86         | 950      | 1.700          | 135            | SCFP              | 111.8      | 10           |            |

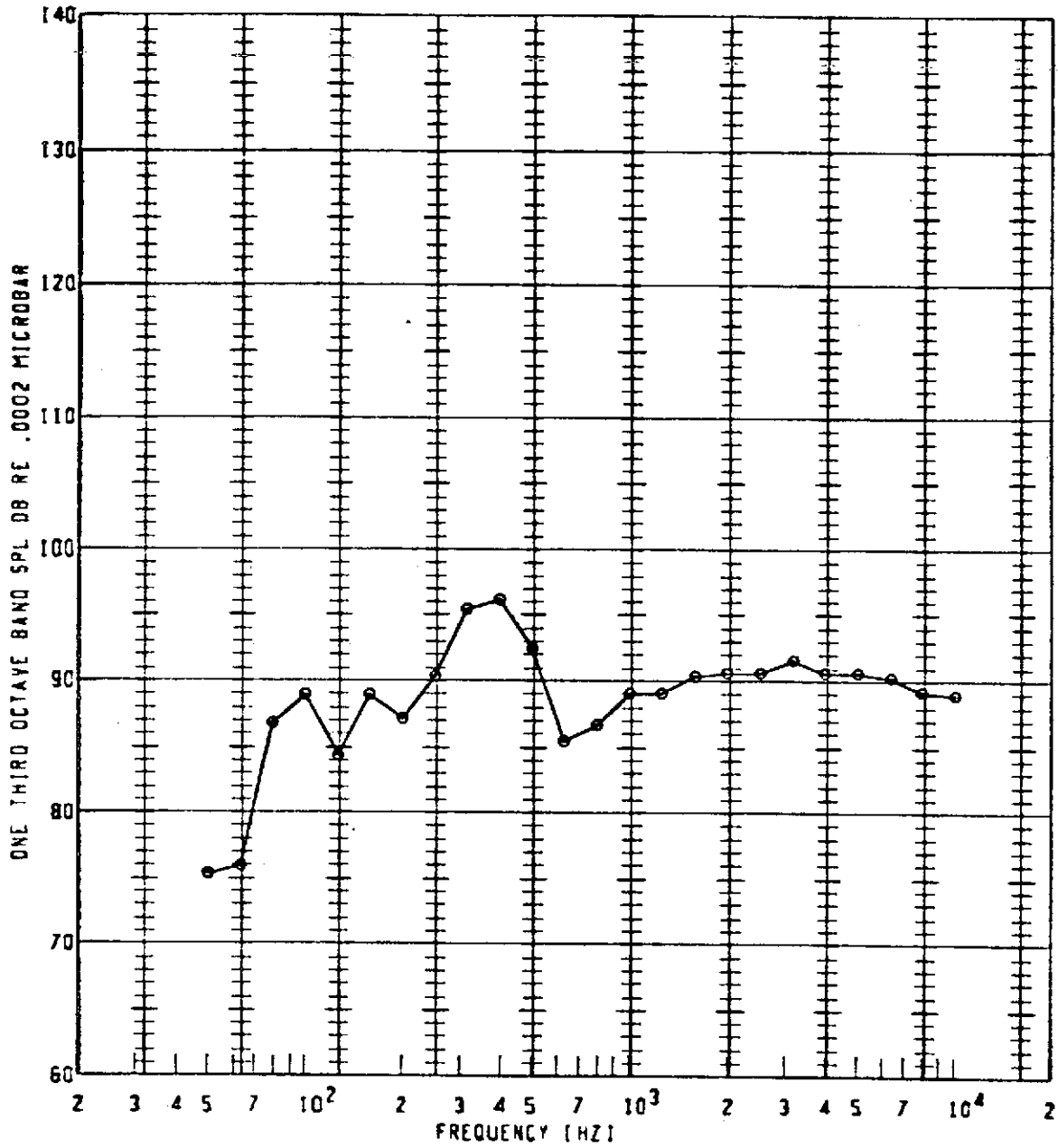


BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



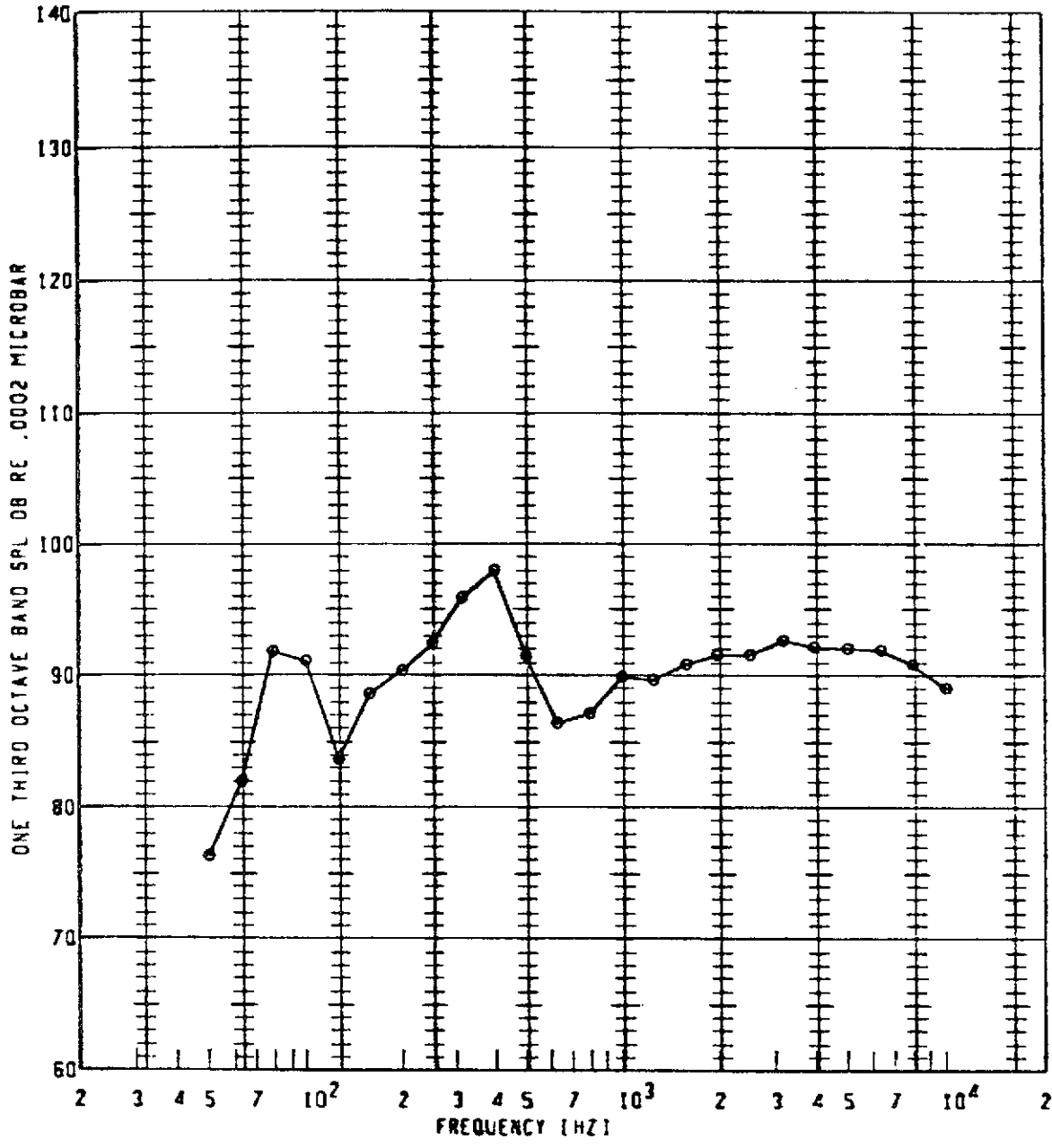
| PLCT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ●           | 85         | 950      | 1.700          | 140            | 50FP              | 111.6      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



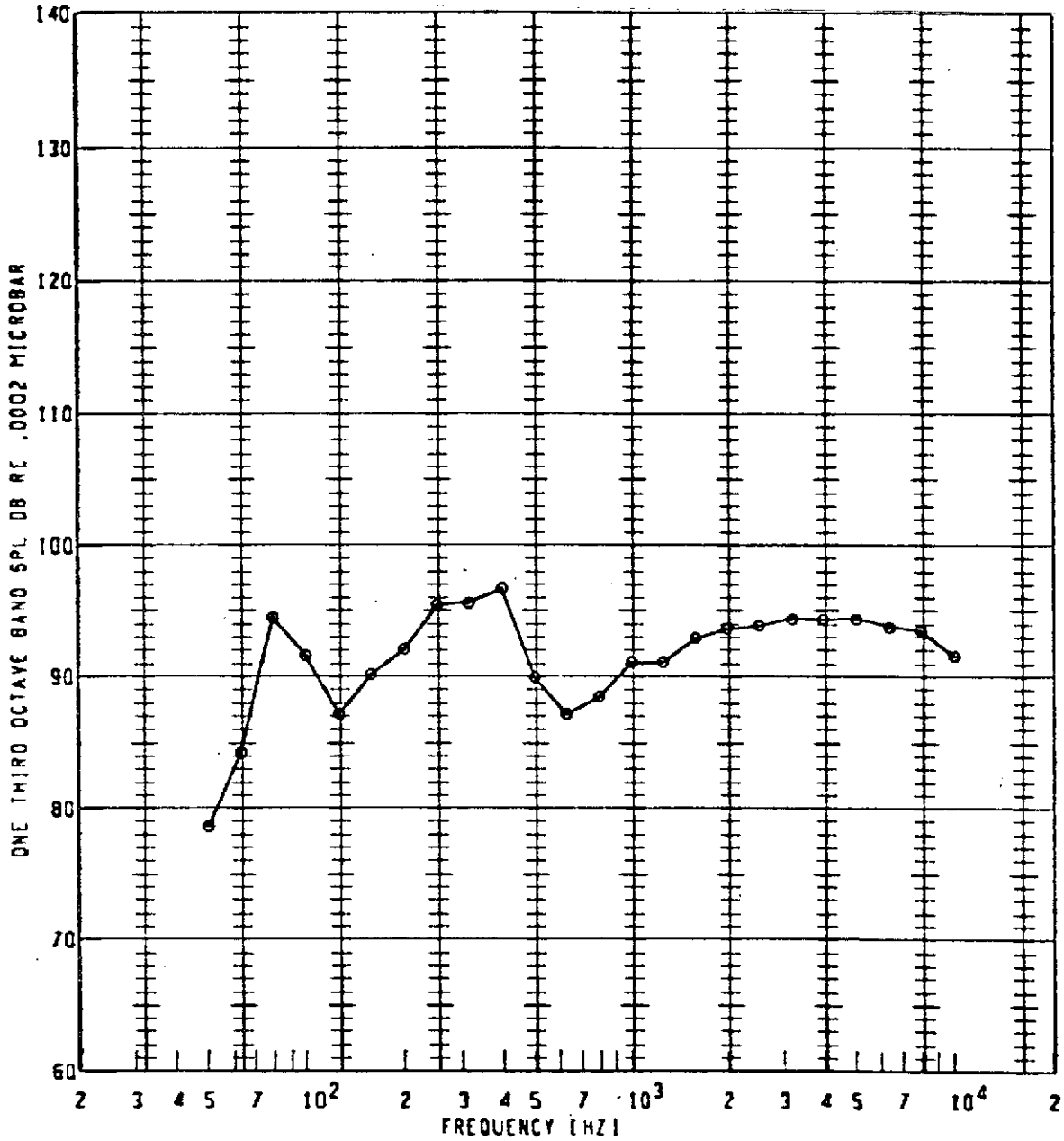
| PLT SYMCL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | GASPL (DB) | GAIN SETTING | SPECIAL ID |
|-----------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e         | 90         | 750      | 1.300          | 90             | 50FP              | 104.1      | 20           |            |

BUFFALO SUPPRESSOR NOZZLE TONE IB TEST - HOT NOZZLE TEST FACILITY



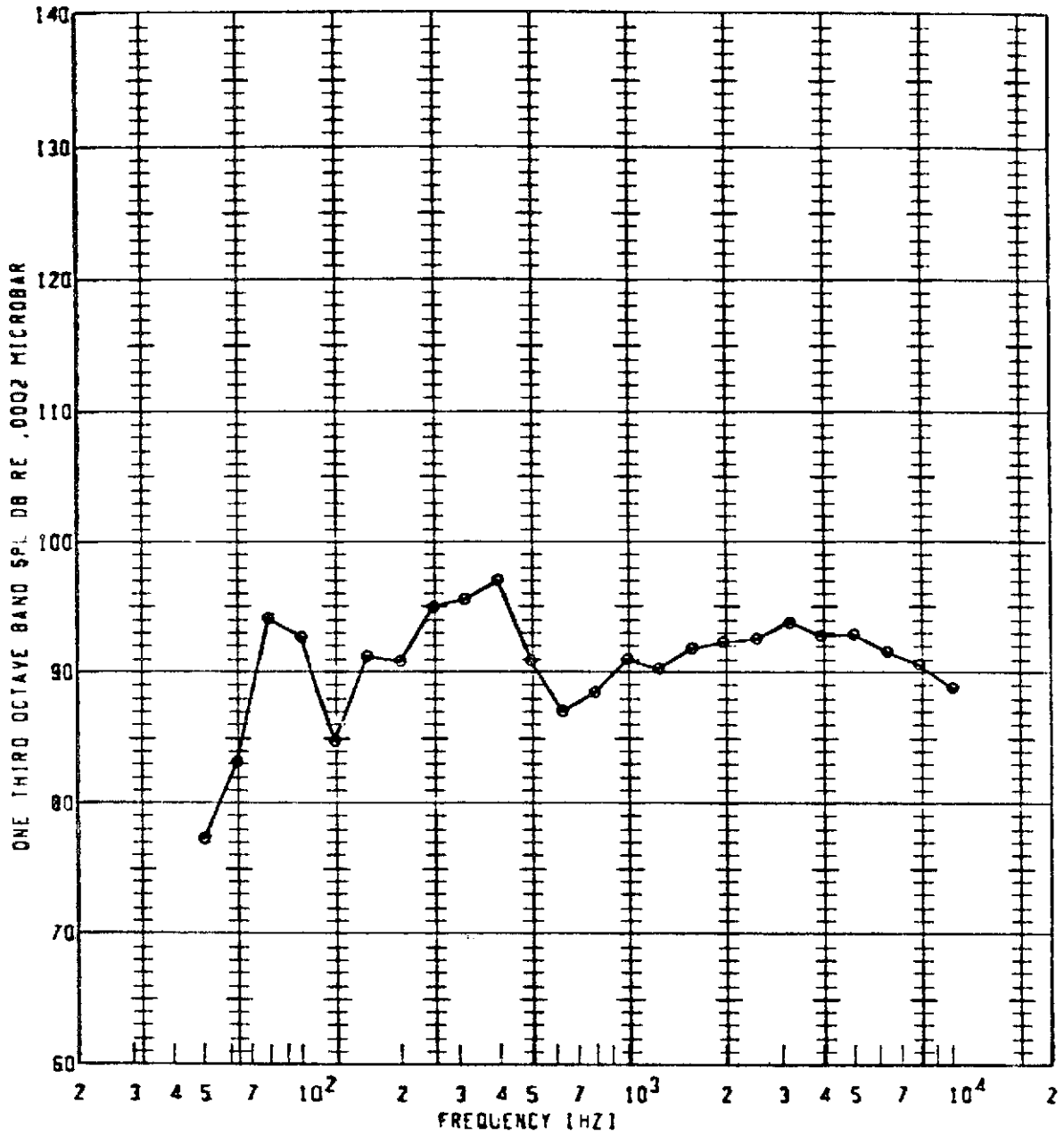
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL IO |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 96         | 750      | 1.300          | 100            | SJFP              | 105.3      | 20           | 10         |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



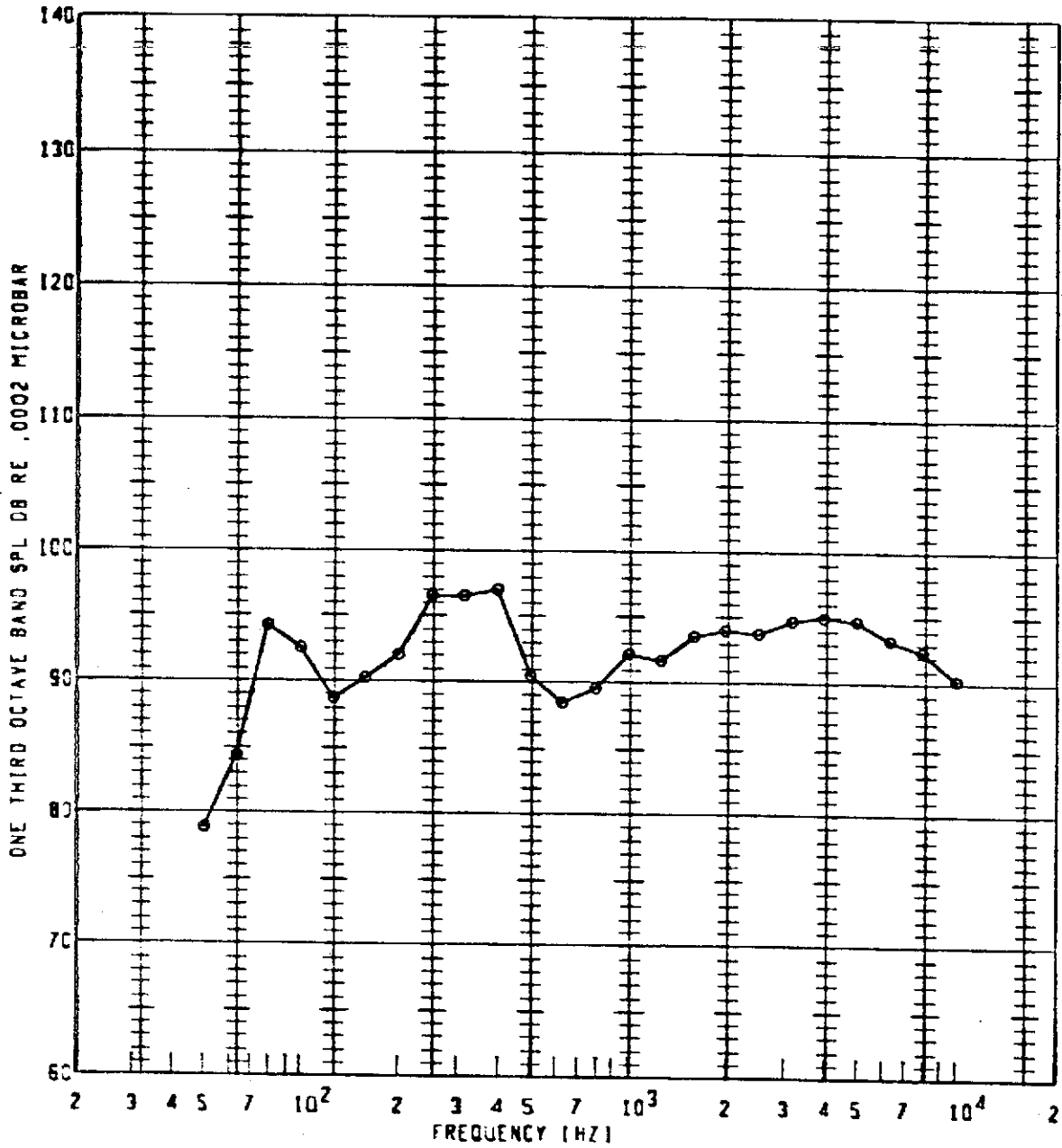
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 96         | 750      | 1.300          | 115            | 50 <sup>CP</sup>  | 106.5      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



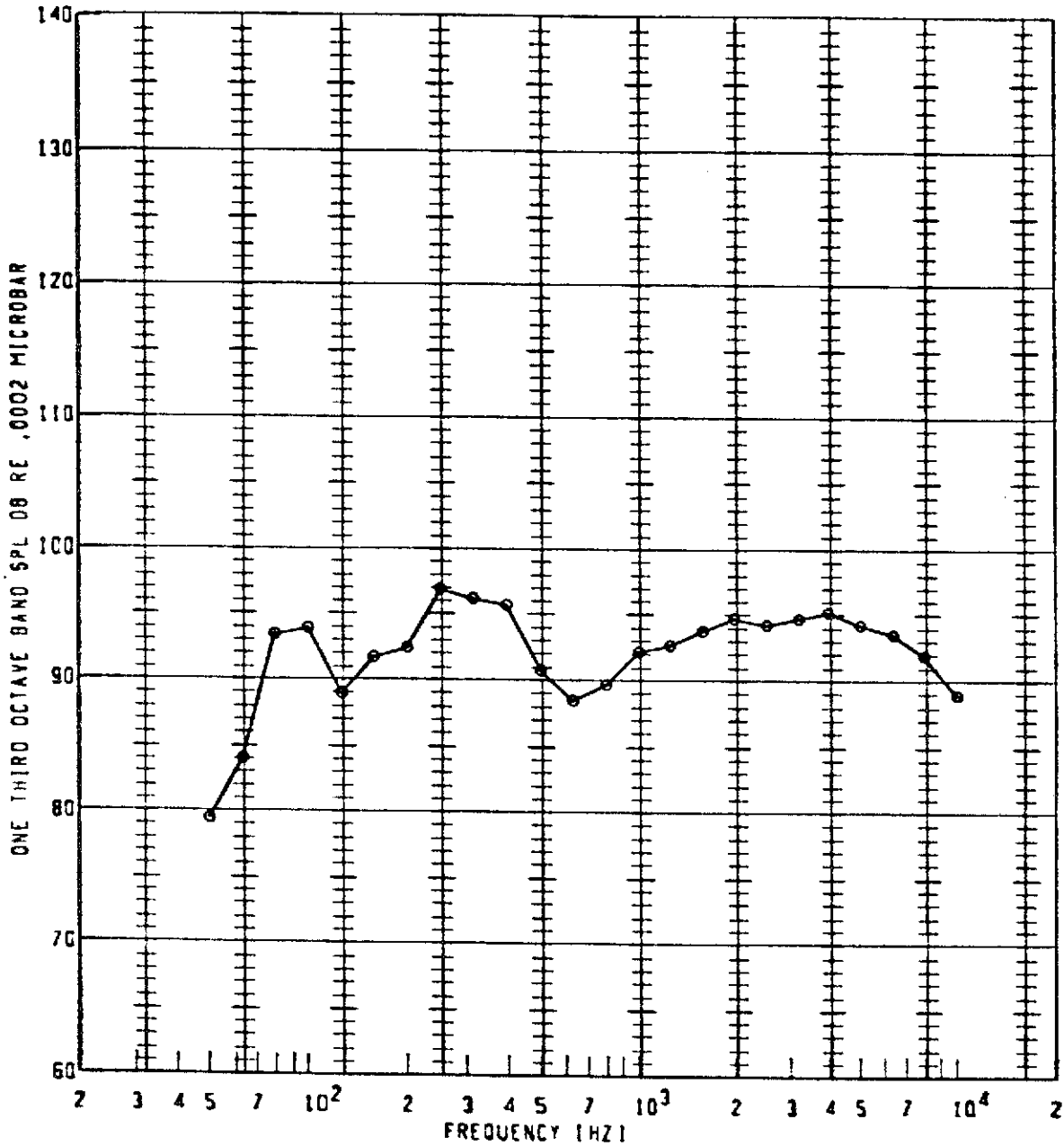
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| o           | 96         | 750      | 1.300          | 110            | 50FP              | 105.9      | 20           |            |

BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



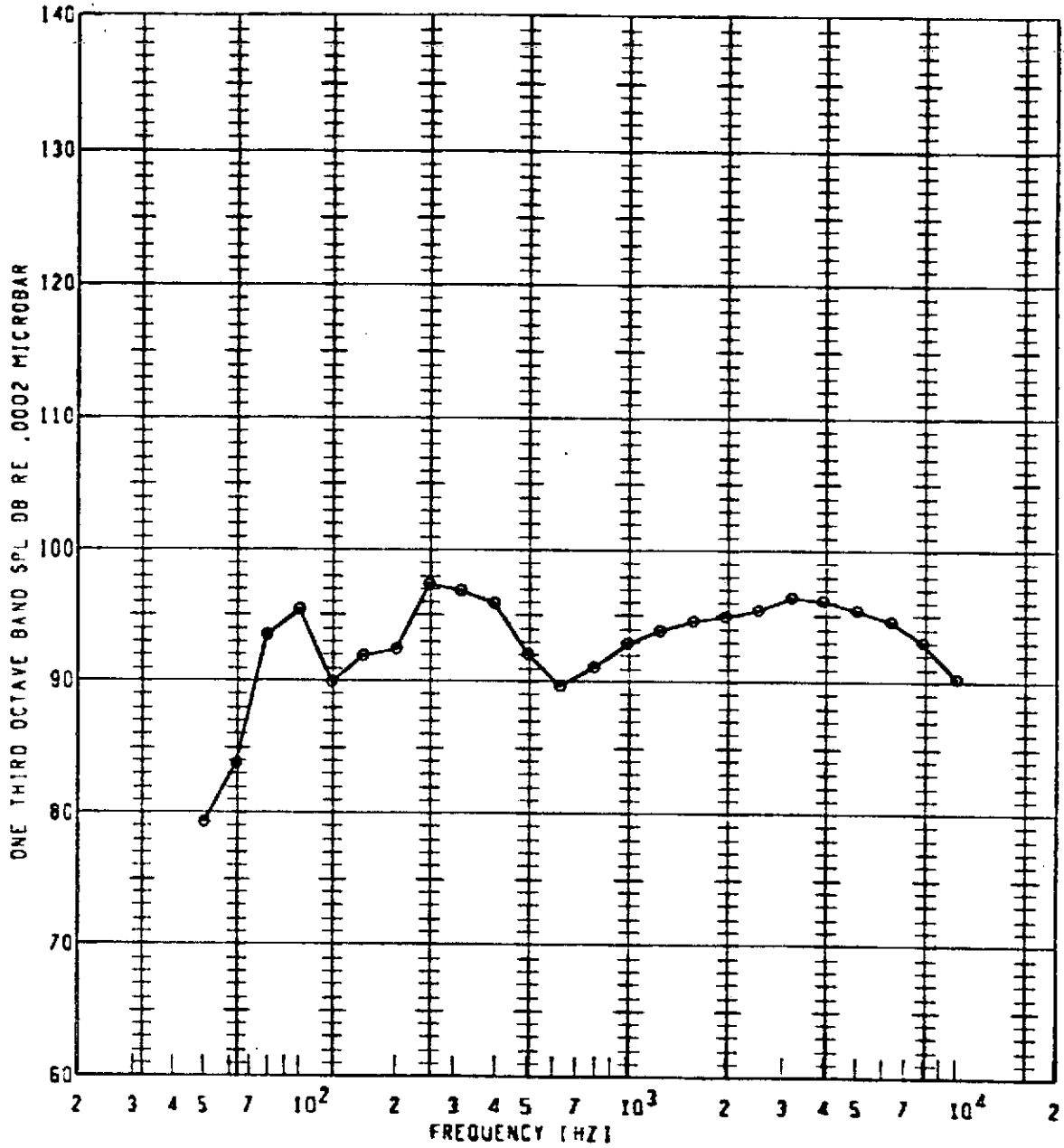
| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | CASPL (DB) | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e          | 96         | 750      | 1.300          | 120            | 50°P              | 106.9      | 20           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 96         | 750      | 1.300          | 125            | 50FP              | 106.9      | 10           |            |

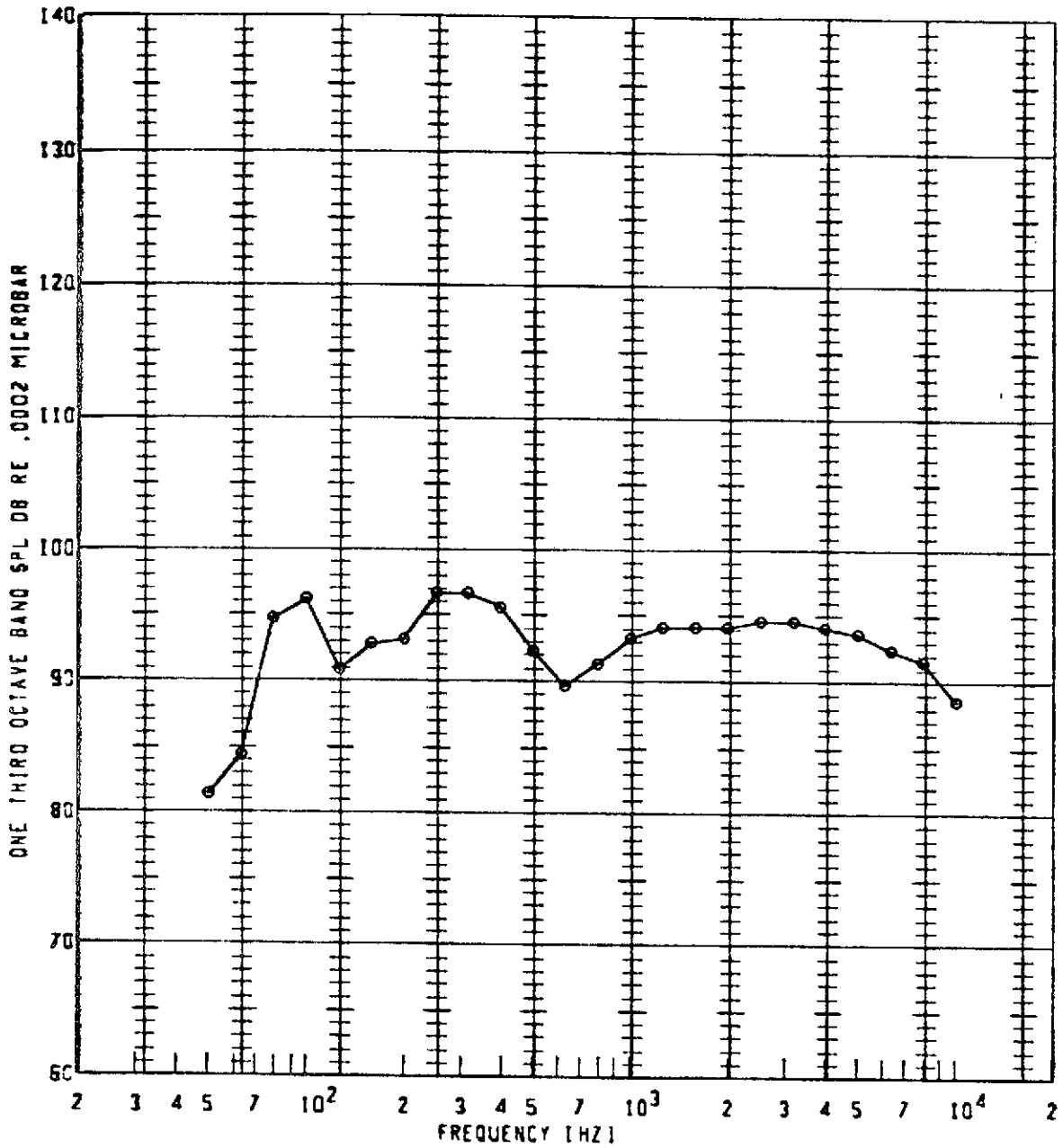
BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 96         | 750      | 1.300          | 130            | SQFP              | 107.8      | 10           |            |

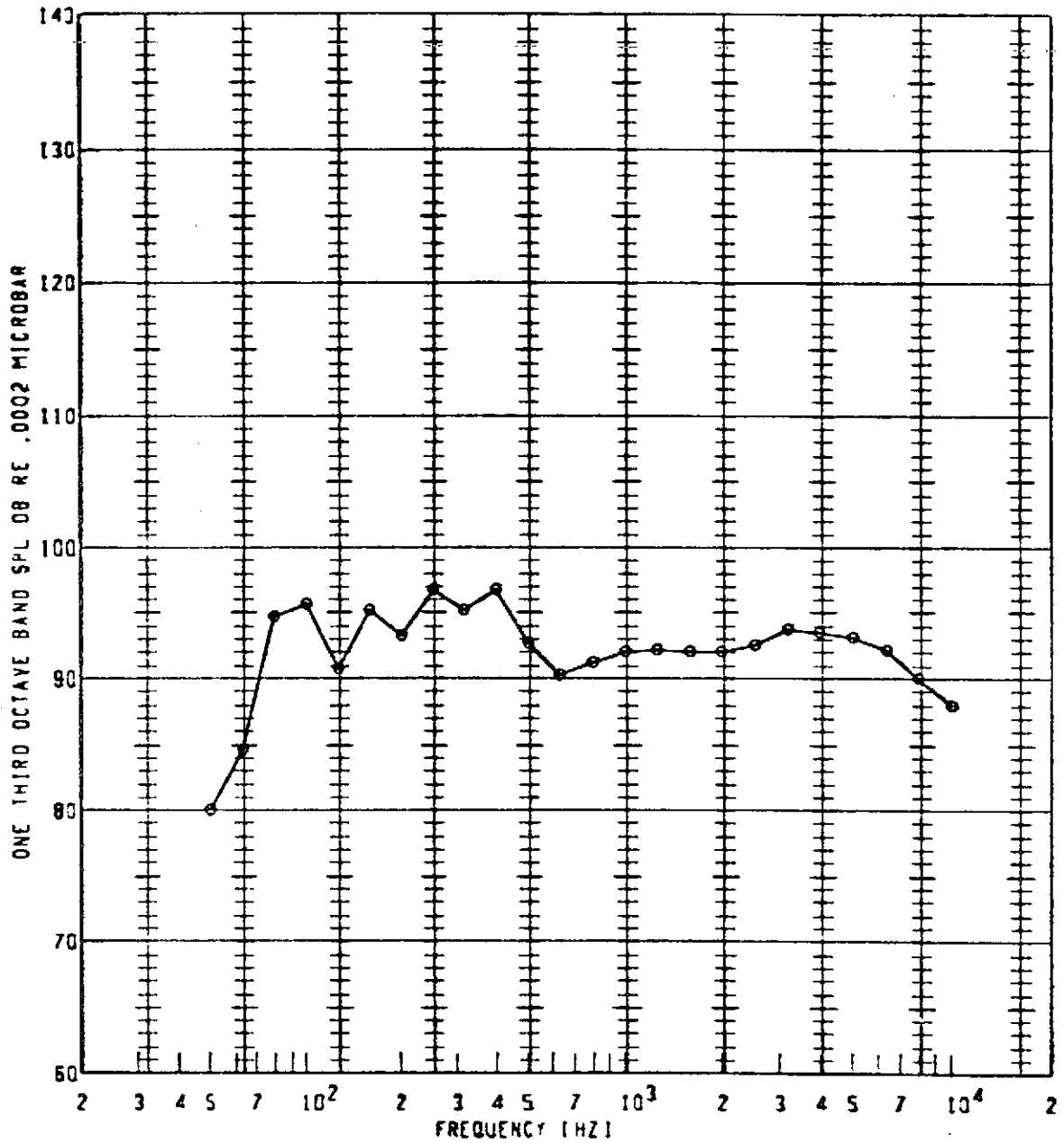


BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



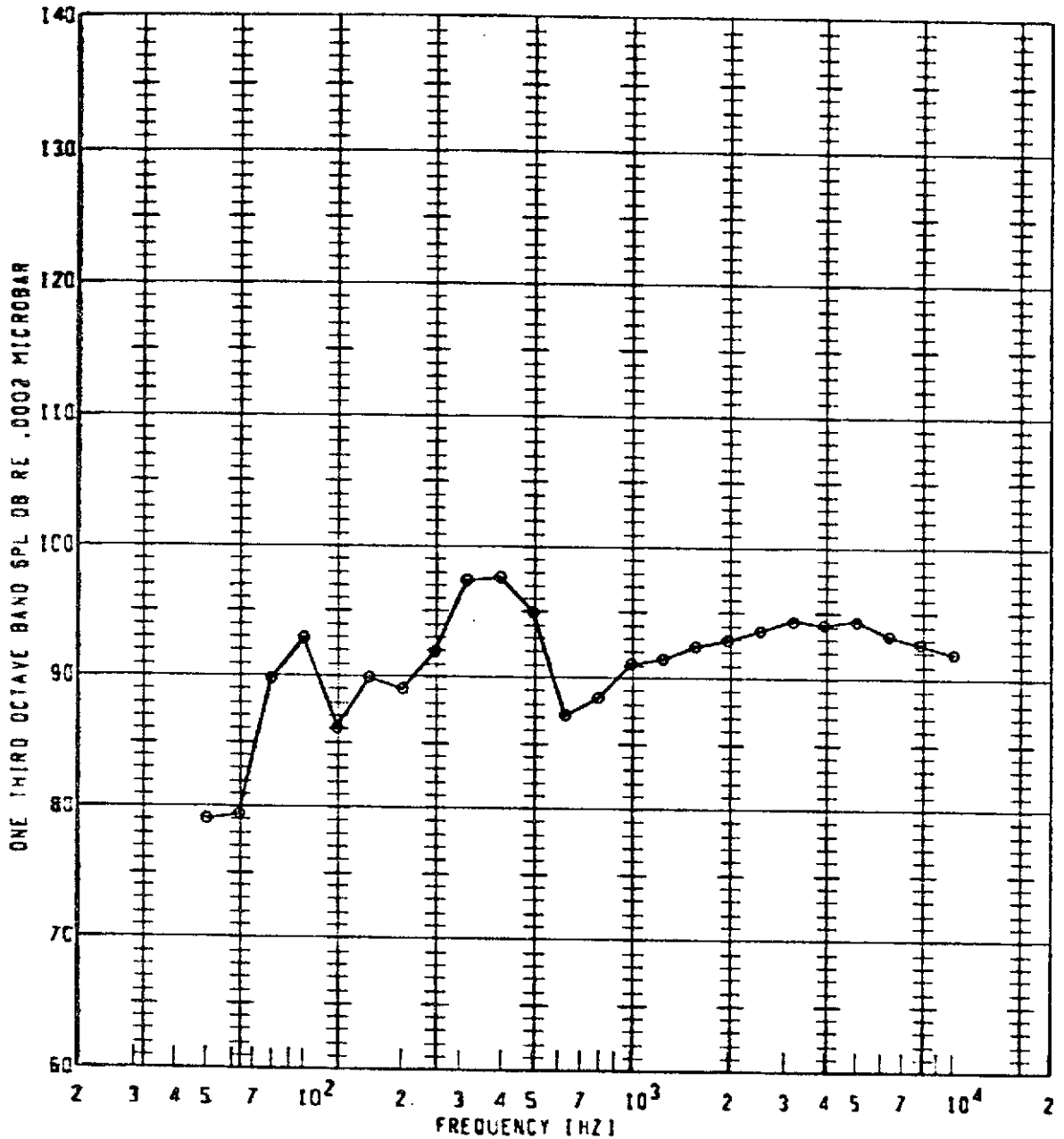
| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | CASPL (DB) | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e          | 96         | 750      | 1.300          | 135            | 50FP              | 107.3      | 10           |            |

**BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY**



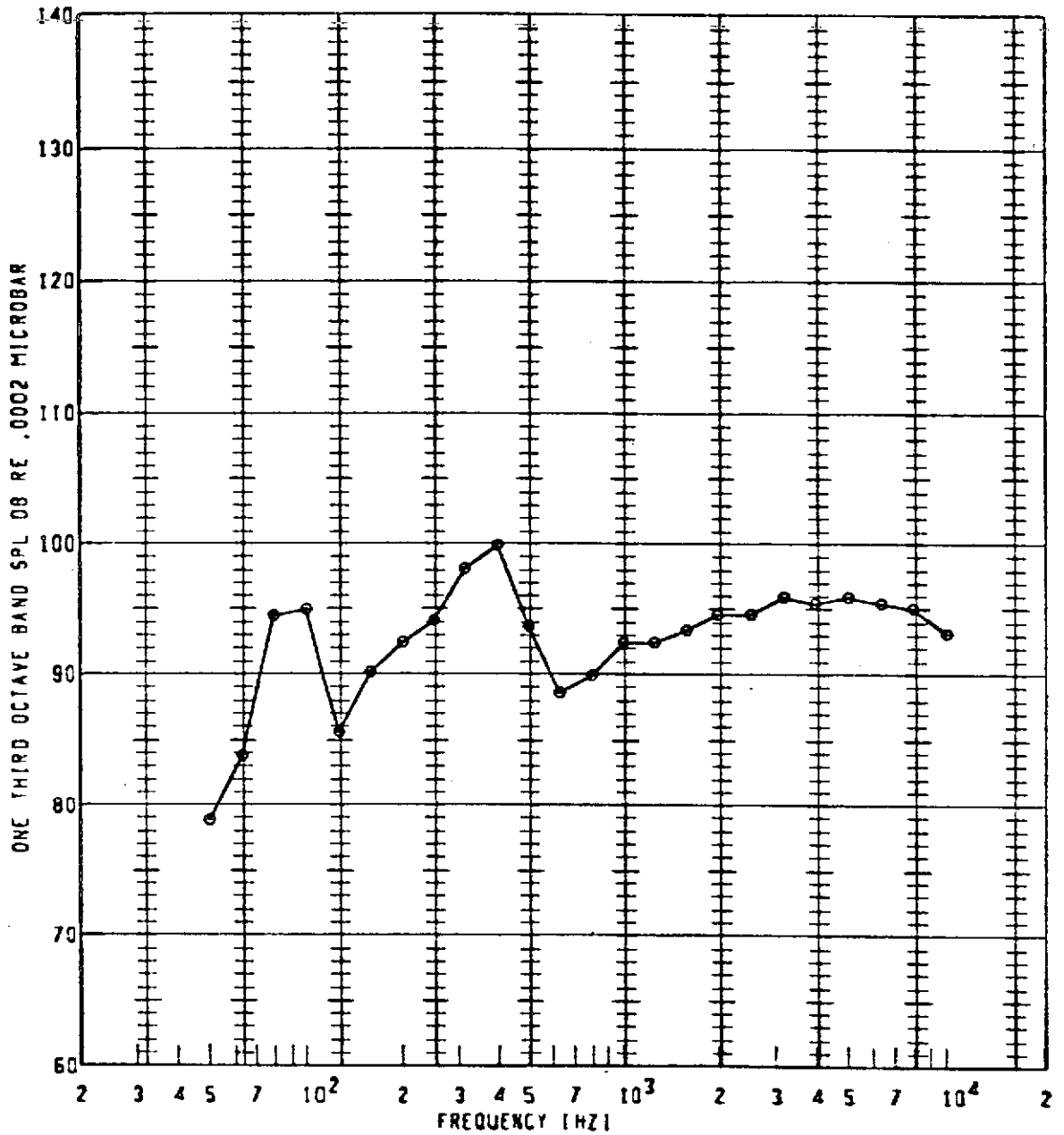
| PLT<br>SYMBOL | RUN<br>NUMBER | JET<br>TEMP | PRESSURE<br>RATIO | ANGLE<br>RE INLET | OBSERVER<br>LOCATION | OASPL<br>(DB) | GAIN<br>SETTING | SPECIAL<br>ID |
|---------------|---------------|-------------|-------------------|-------------------|----------------------|---------------|-----------------|---------------|
| ⊙             | 96            | 750         | 1.300             | 140               | 50FP                 | 106.9         | 10              |               |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



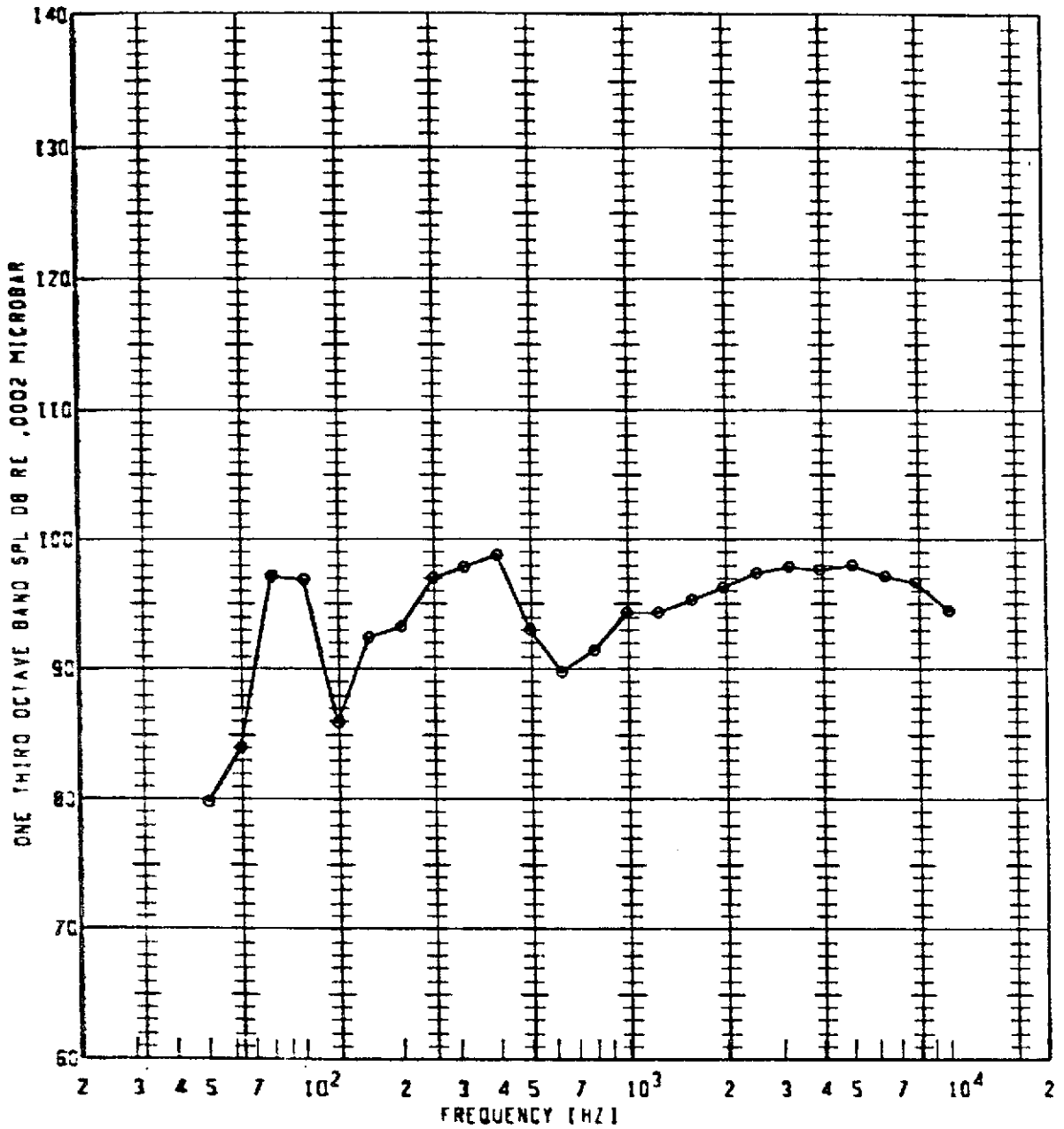
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 96         | 800      | 1.400          | 90             | 50FP              | 106.5      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



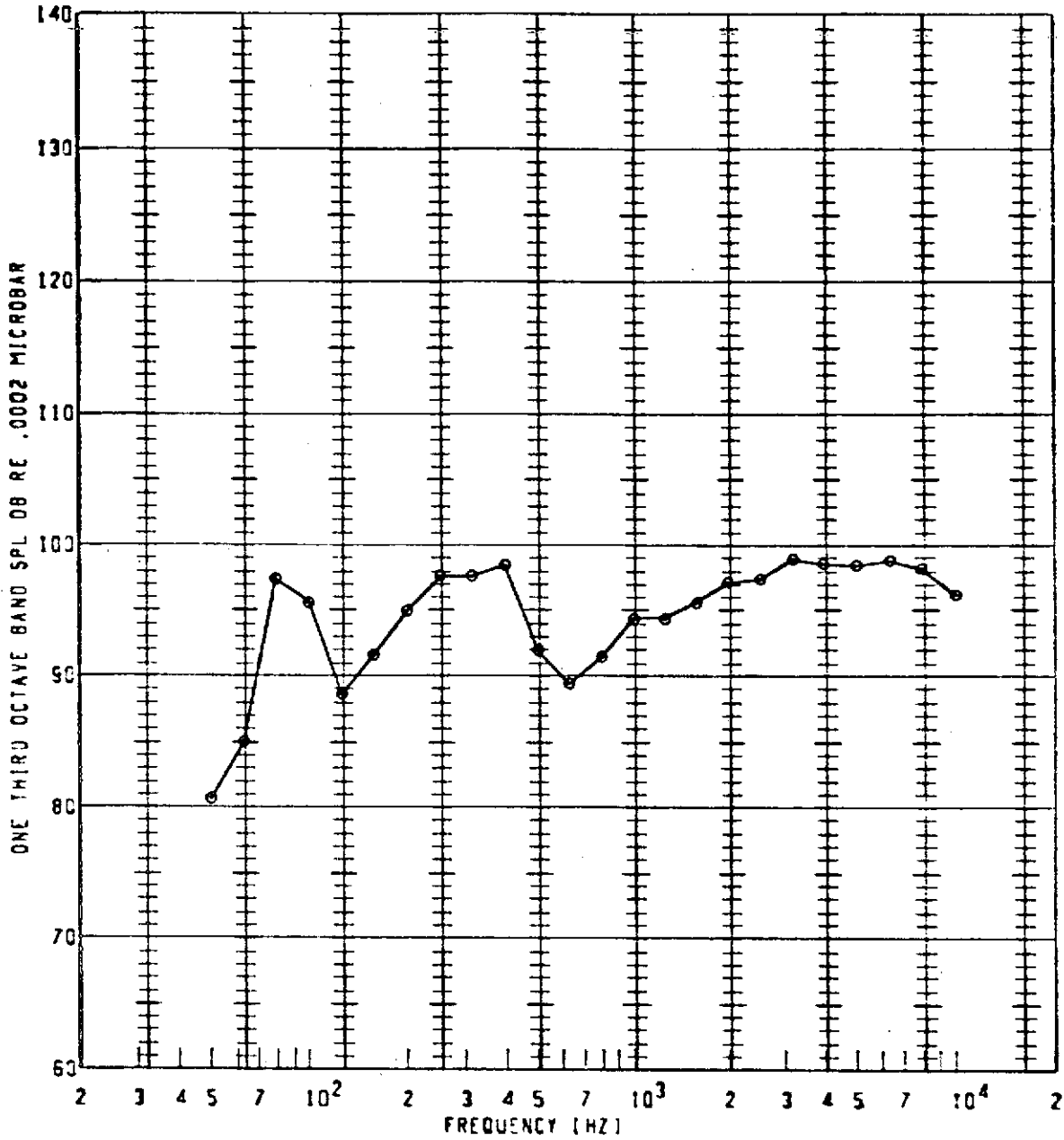
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL TDB1 | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 90         | 800      | 1.400          | 100            | 50FP              | 108.0      | 20           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



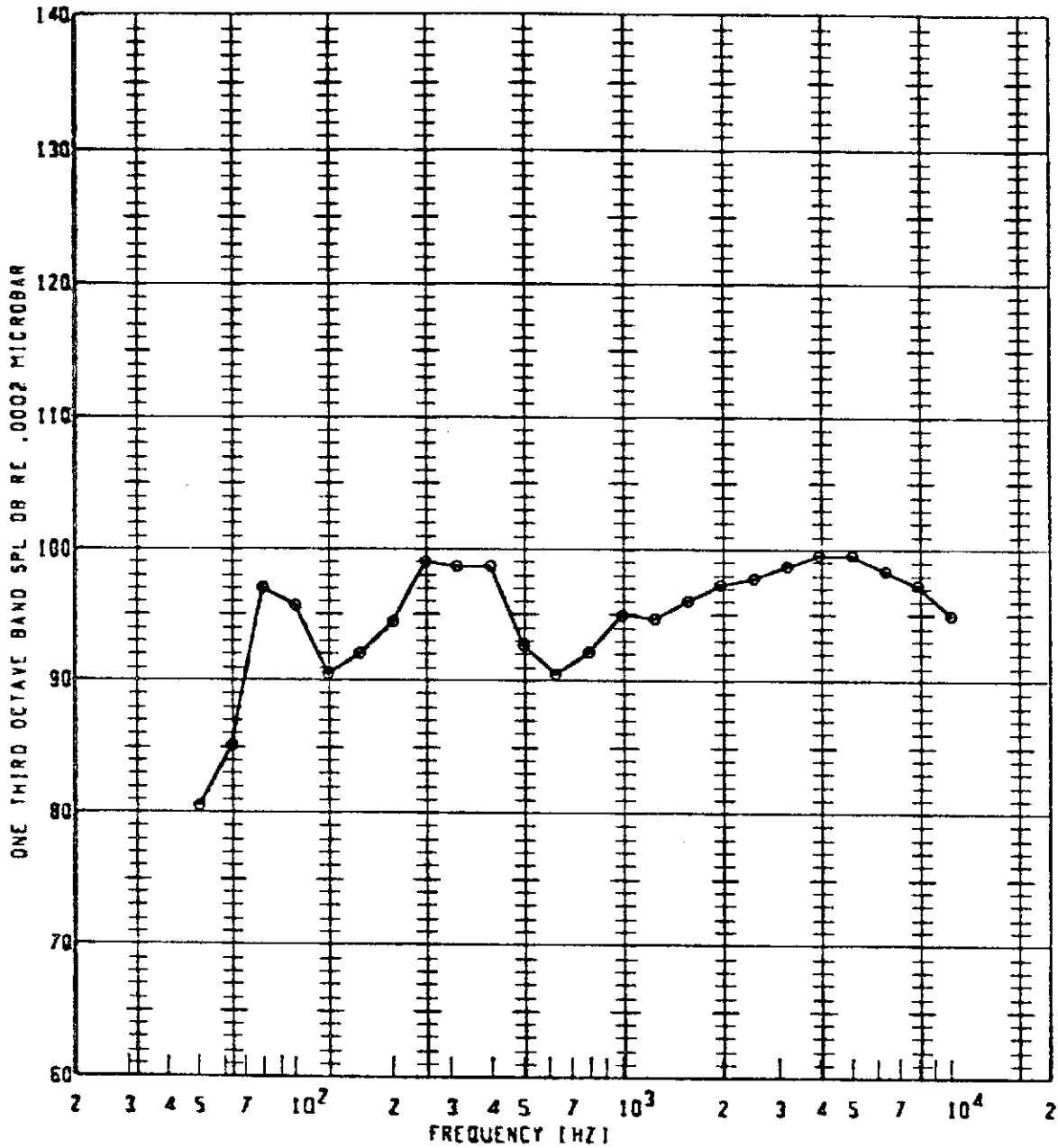
| Plot Symbol | Run Number | Jet Temp | Pressure Ratio | Angle Re Inlet | Observer Location | Gaspl (db) | Gain Setting | Special ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 95         | 800      | 1.400          | 110            | 50FP              | 109.4      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



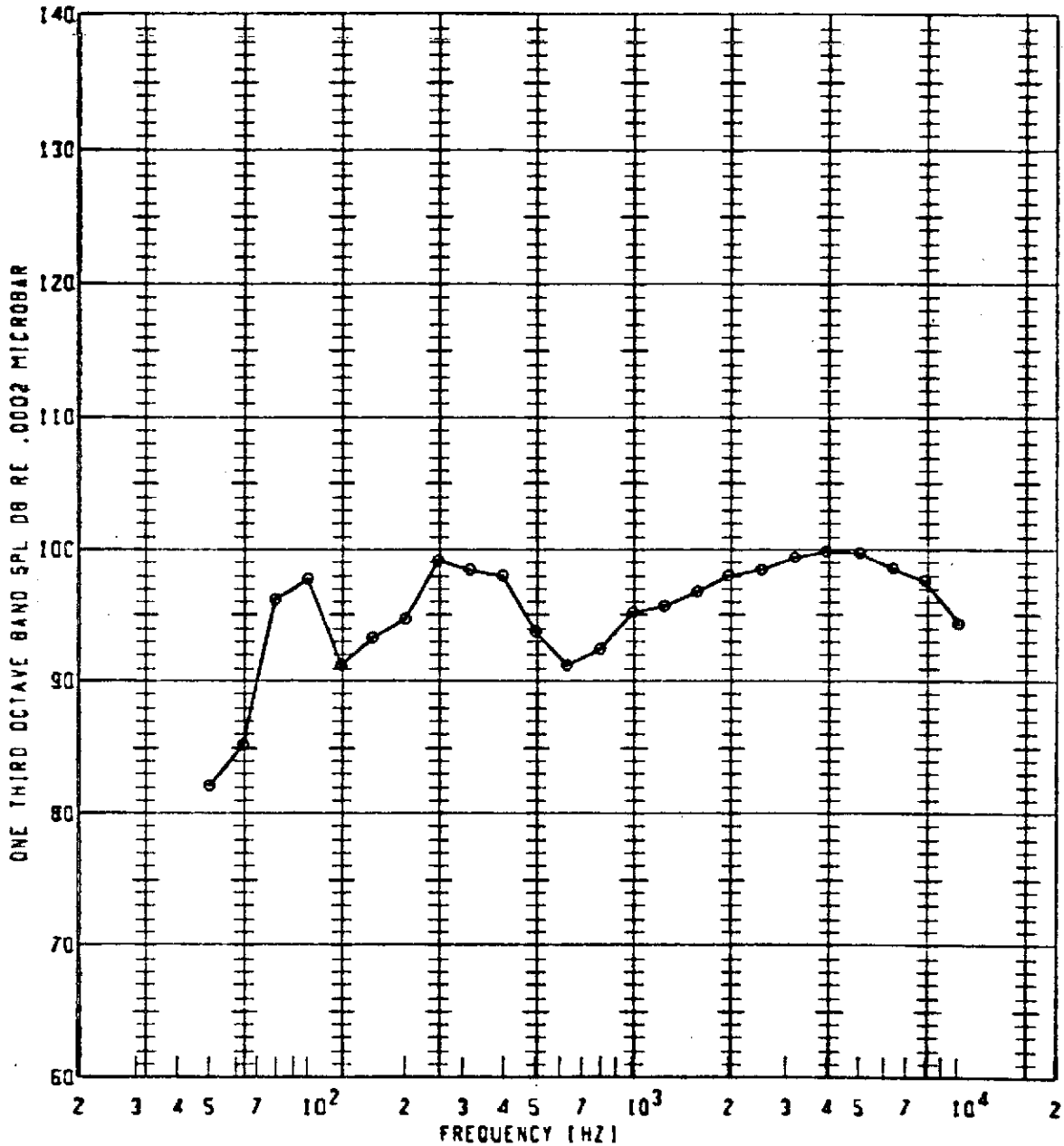
| PLT SYMCL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-----------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e         | 96         | 800      | 1.400          | 115            | 50FP              | 109.9      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| PLCT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| •           | 96         | 800      | 1.400          | 120            | 50FP              | 110.2      | 20           |            |

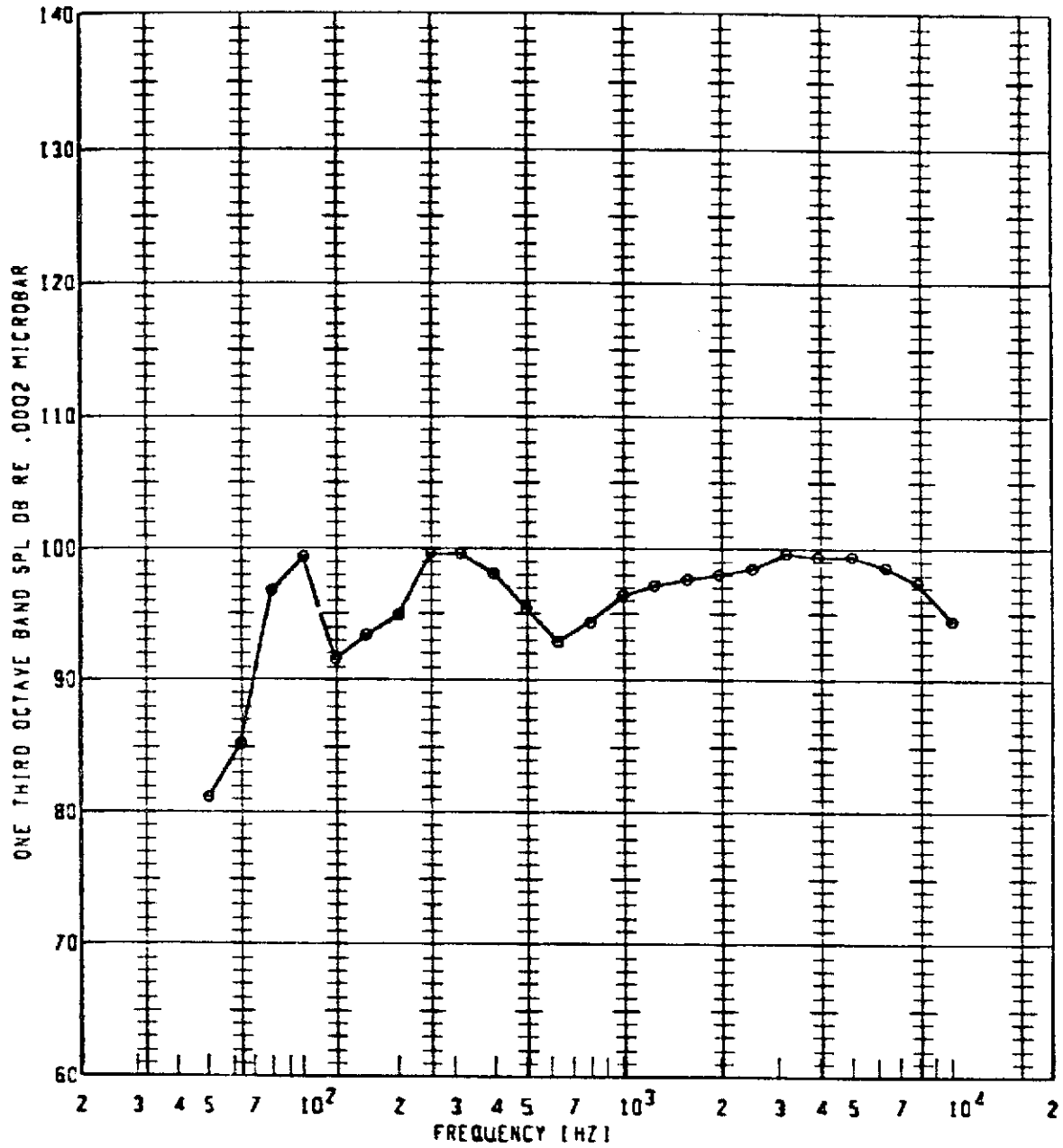
BUFFALO SUPPRESSOR NOZZLE TONE TO TEST - HOT NOZZLE TEST FACILITY



| PLCT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 96         | 800      | 1.400          | 125            | SOFP              | 110.5      | 10           |            |

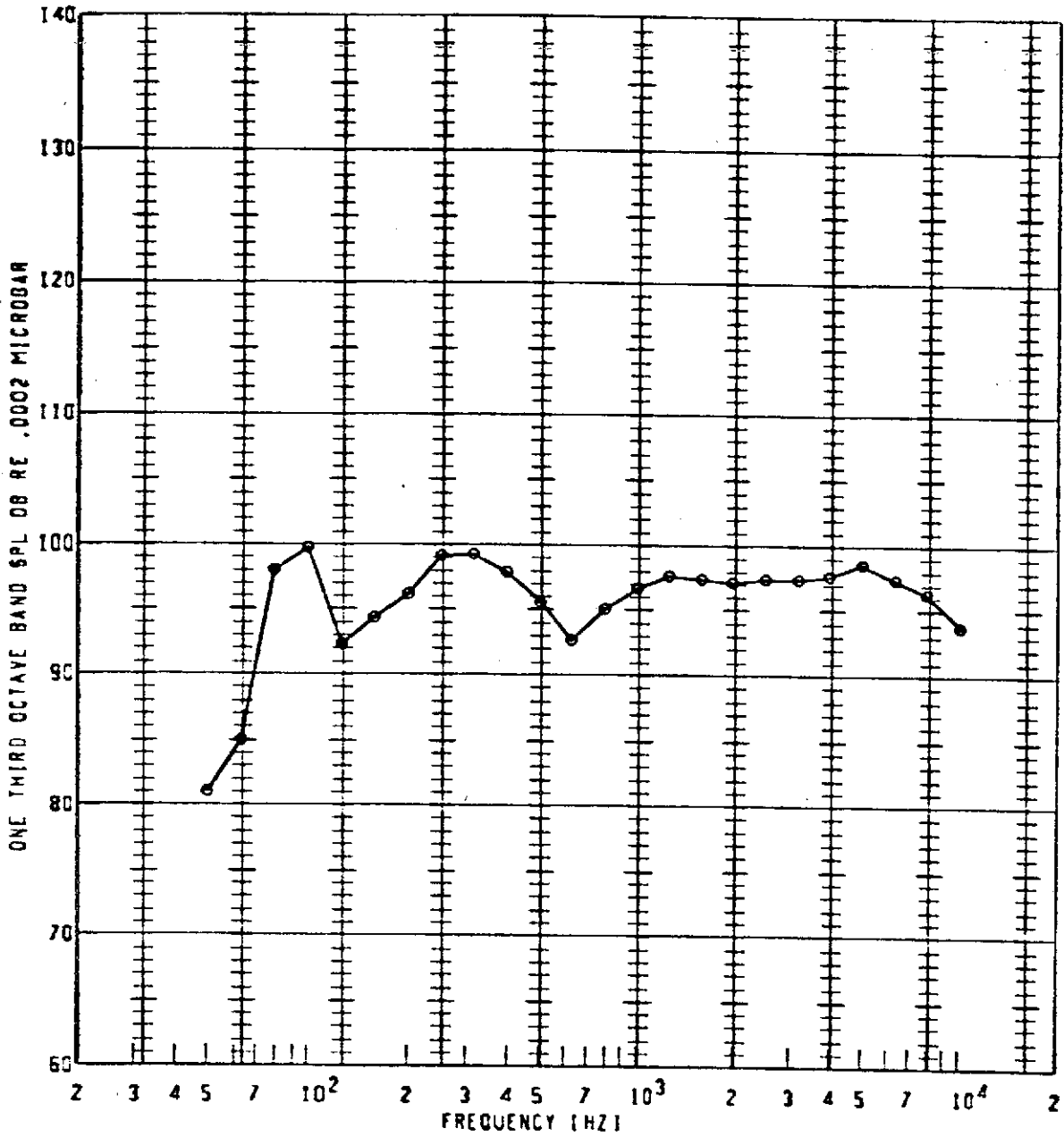


BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



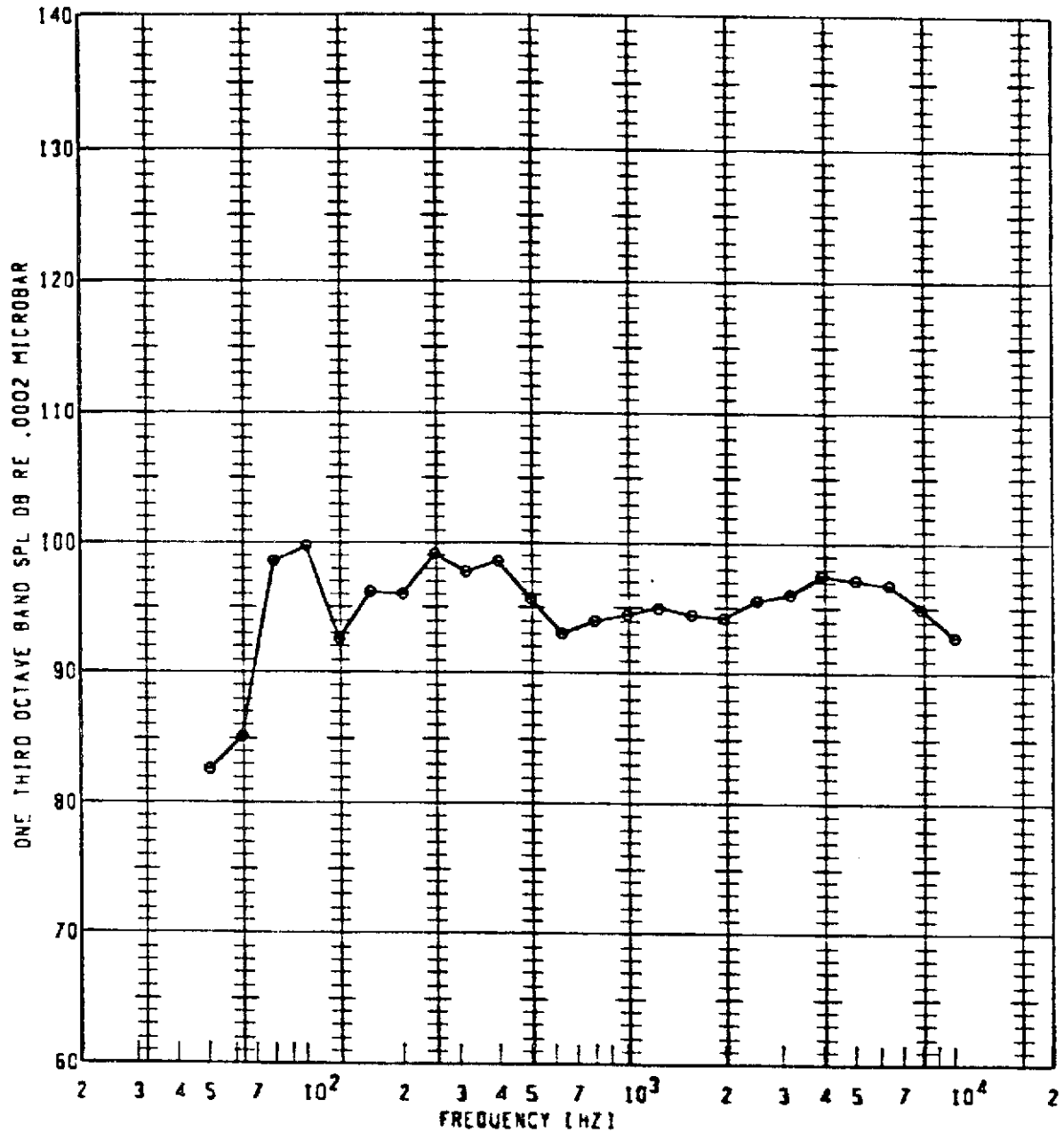
| PLCT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | CASPL [OBS] | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|-------------|--------------|------------|
| e           | 96         | 800      | 1.400          | 130            | 50FP              | 110.9       | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



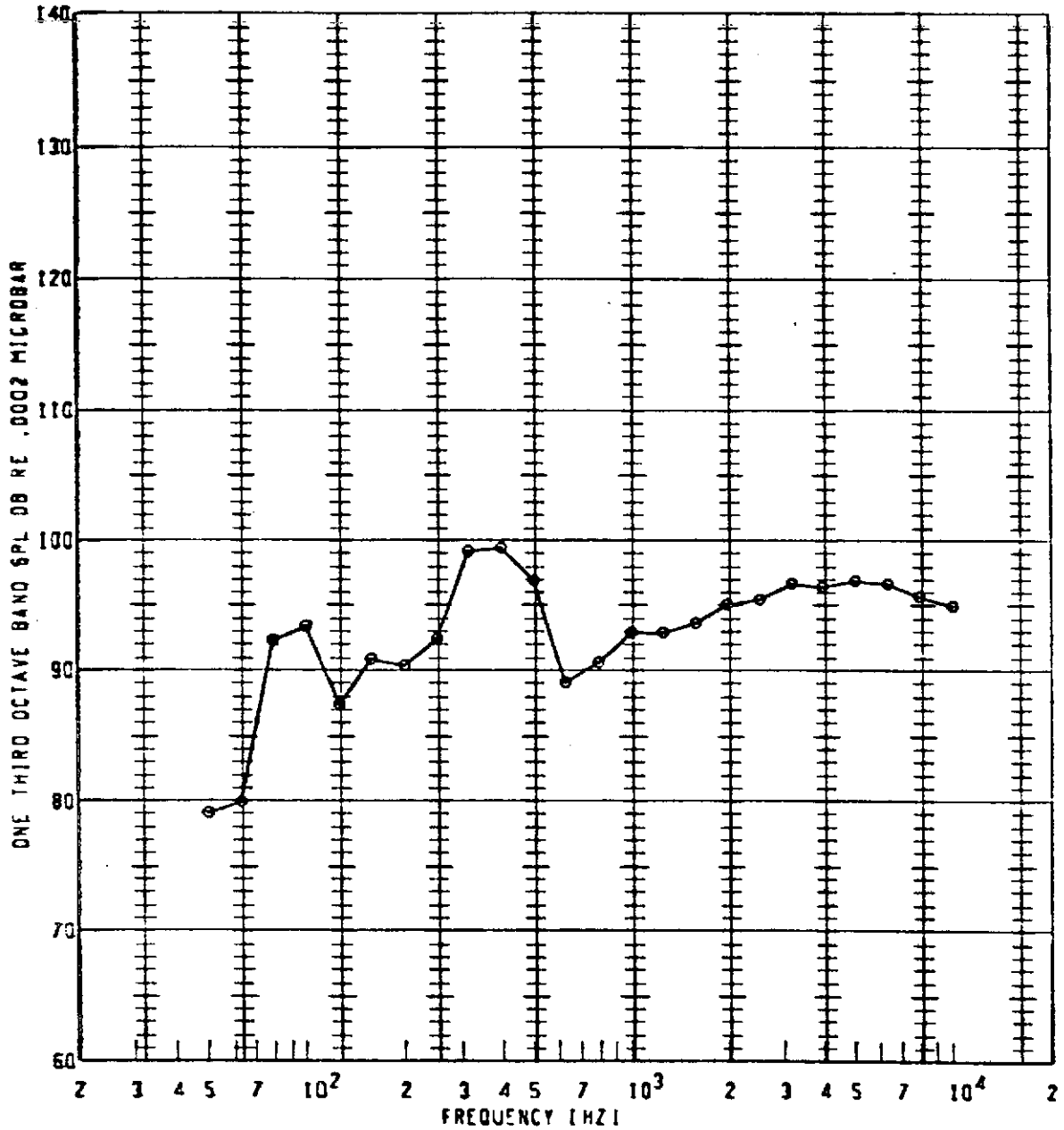
| Plot Symbol | Run Number | Jet Temp | Pressure Ratio | Angle re Inlet | Observer Location | GasPL (dB) | Gain Setting | Special ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| o           | 90         | 800      | 1.400          | 135            | SOPP              | 110.5      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



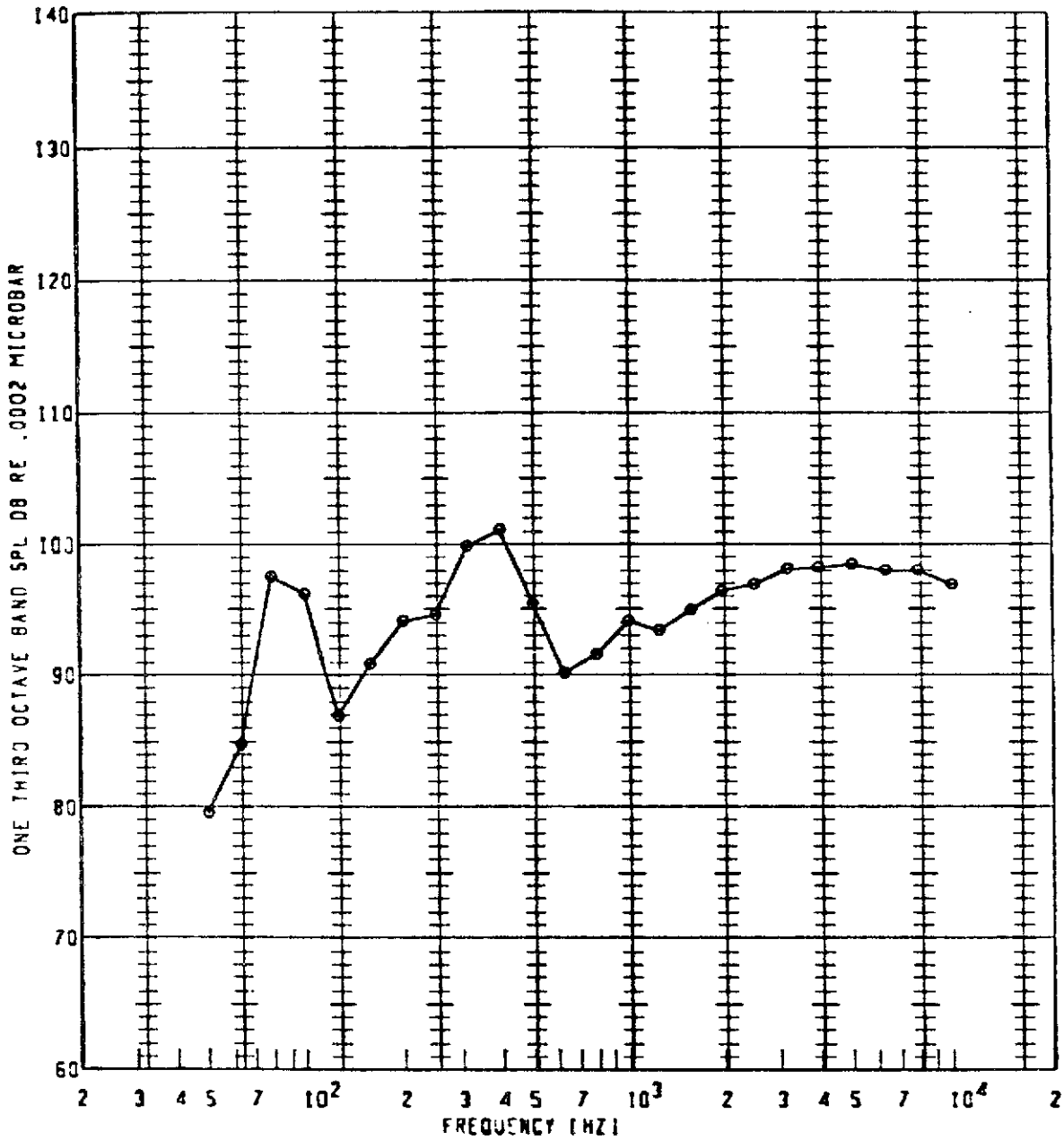
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (09) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 96         | 800      | 1.400          | 140            | 50FP              | 109.8      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE TO TEST = HOT NOZZLE TEST FACILITY



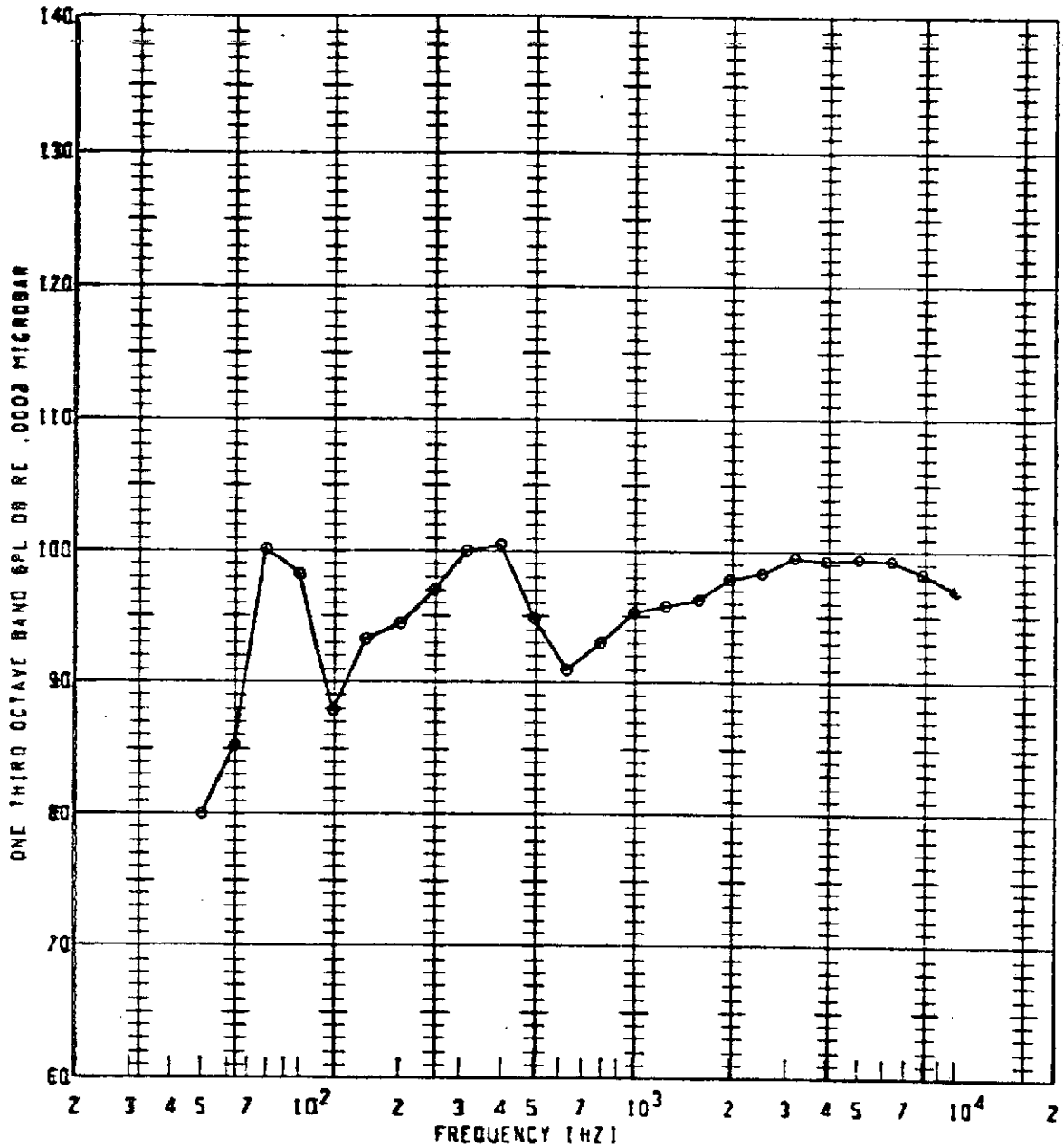
| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙          | 96         | 850      | 1.500          | 90             | 50FP              | 108.5      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



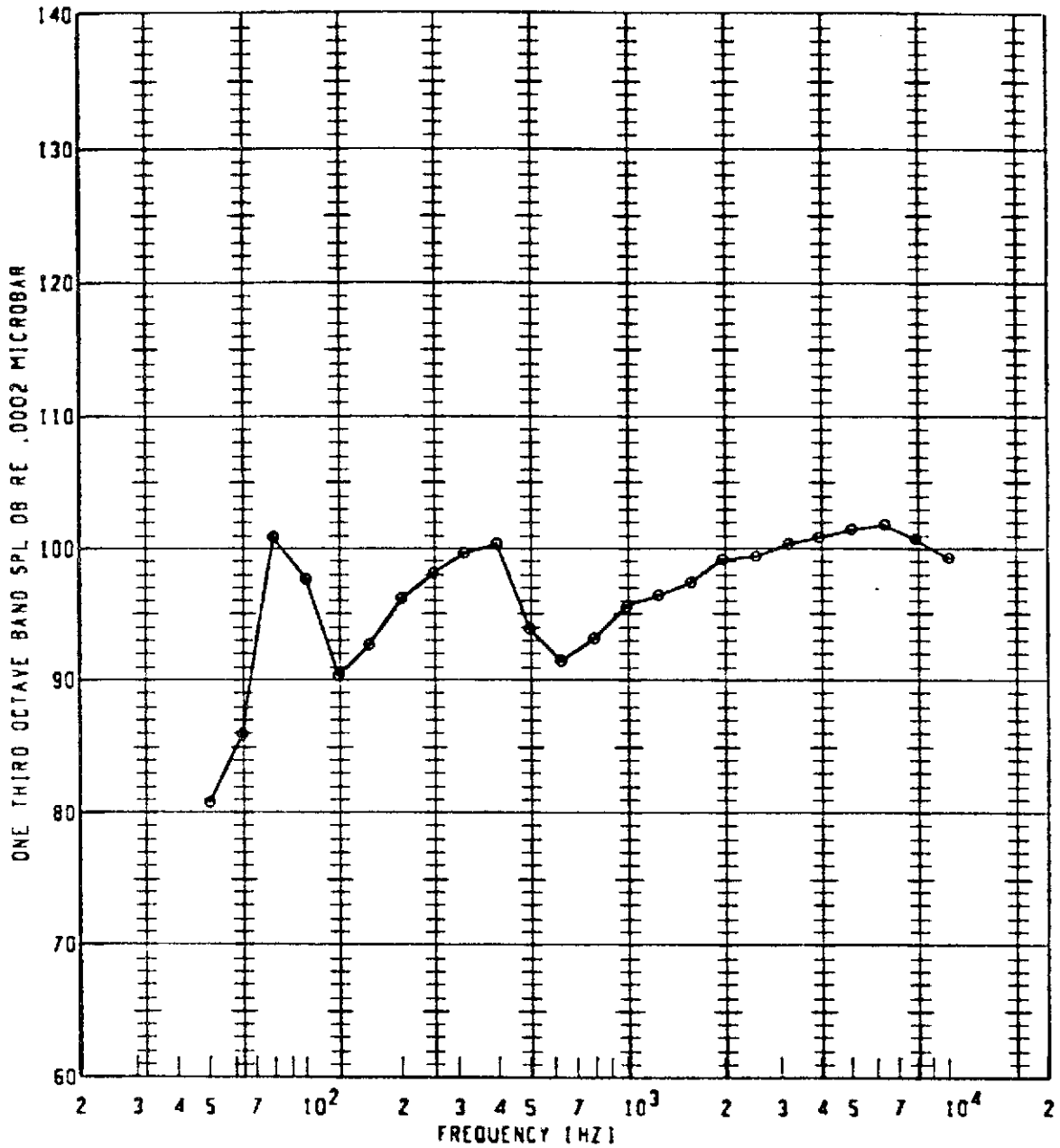
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 96         | 850      | 1.500          | 100            | 50FP              | 110.0      | 10           |            |

**BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY**



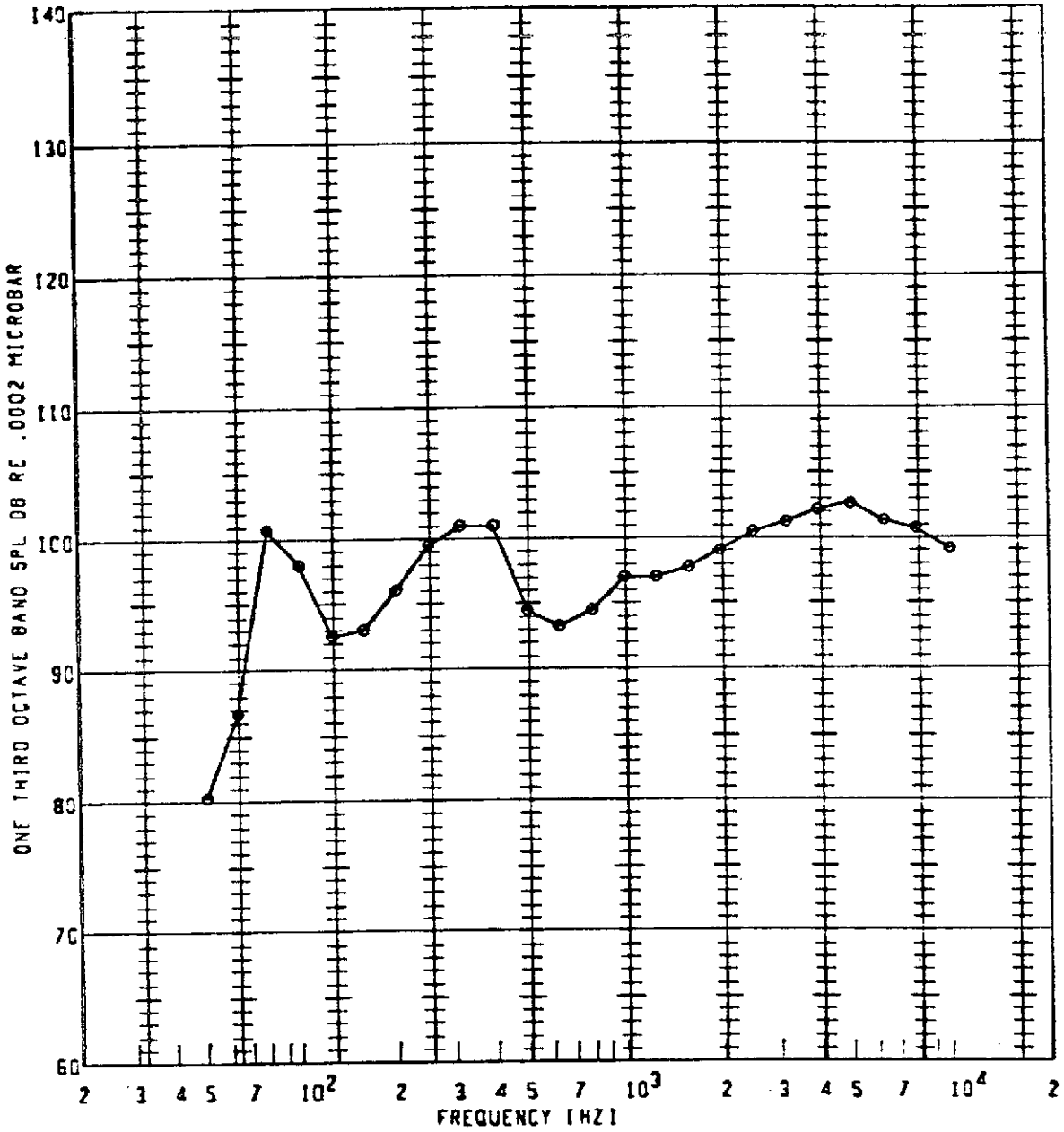
| PLCT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 96         | 850      | 1.500          | 110            | 50FP              | 111.0      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



| Plot Symbol | Run Number | Jet Temp | Pressure Ratio | Angle Re Inlet | Observer Location | QASPL (dB) | Gain Setting | Special ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 9C         | 850      | 1.500          | 115            | 50FP              | 112.0      | 10           |            |

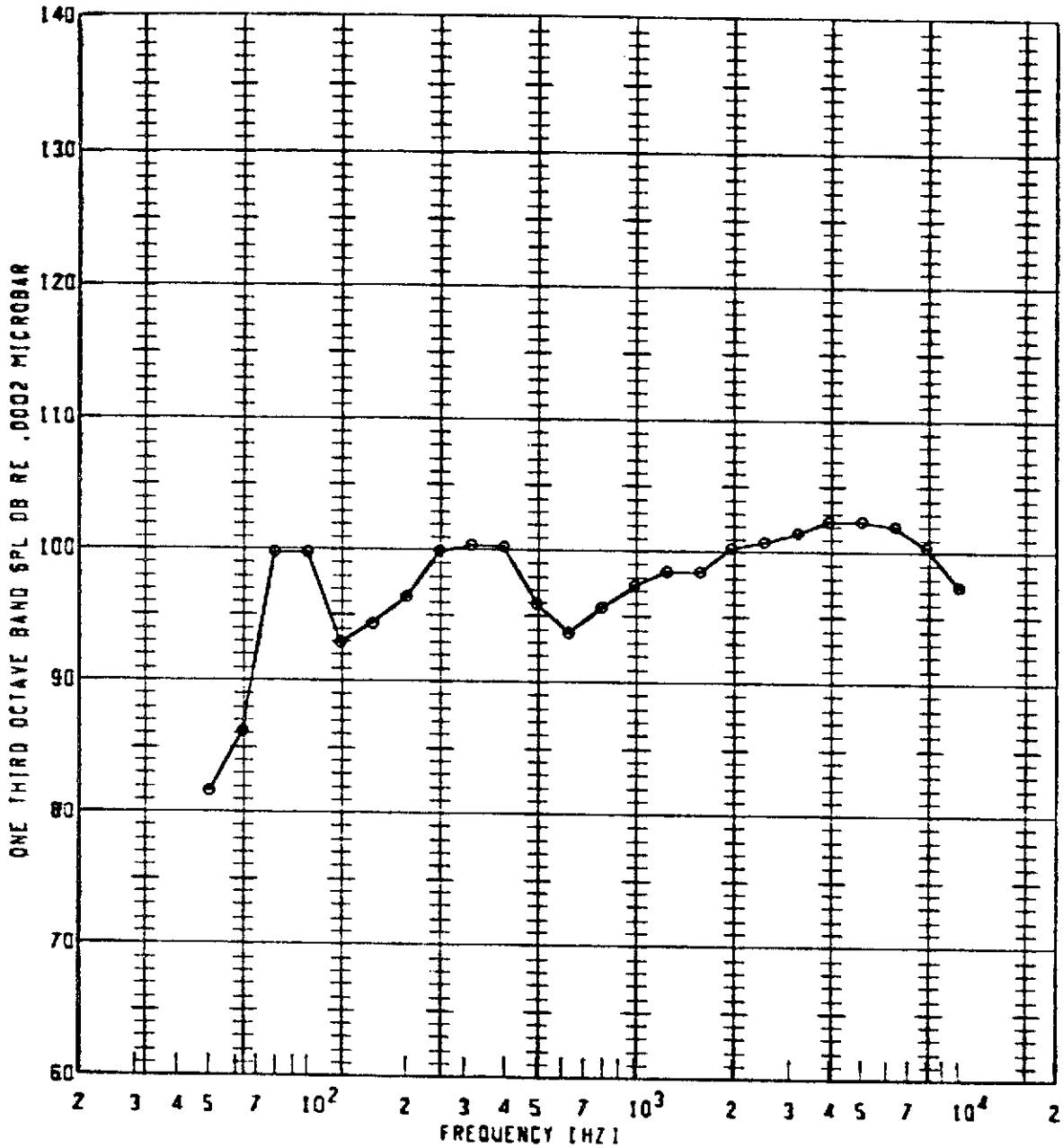
BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| o          | 96         | 850      | 1.500          | 120            | 50FP              | 112.7      | 10           |            |

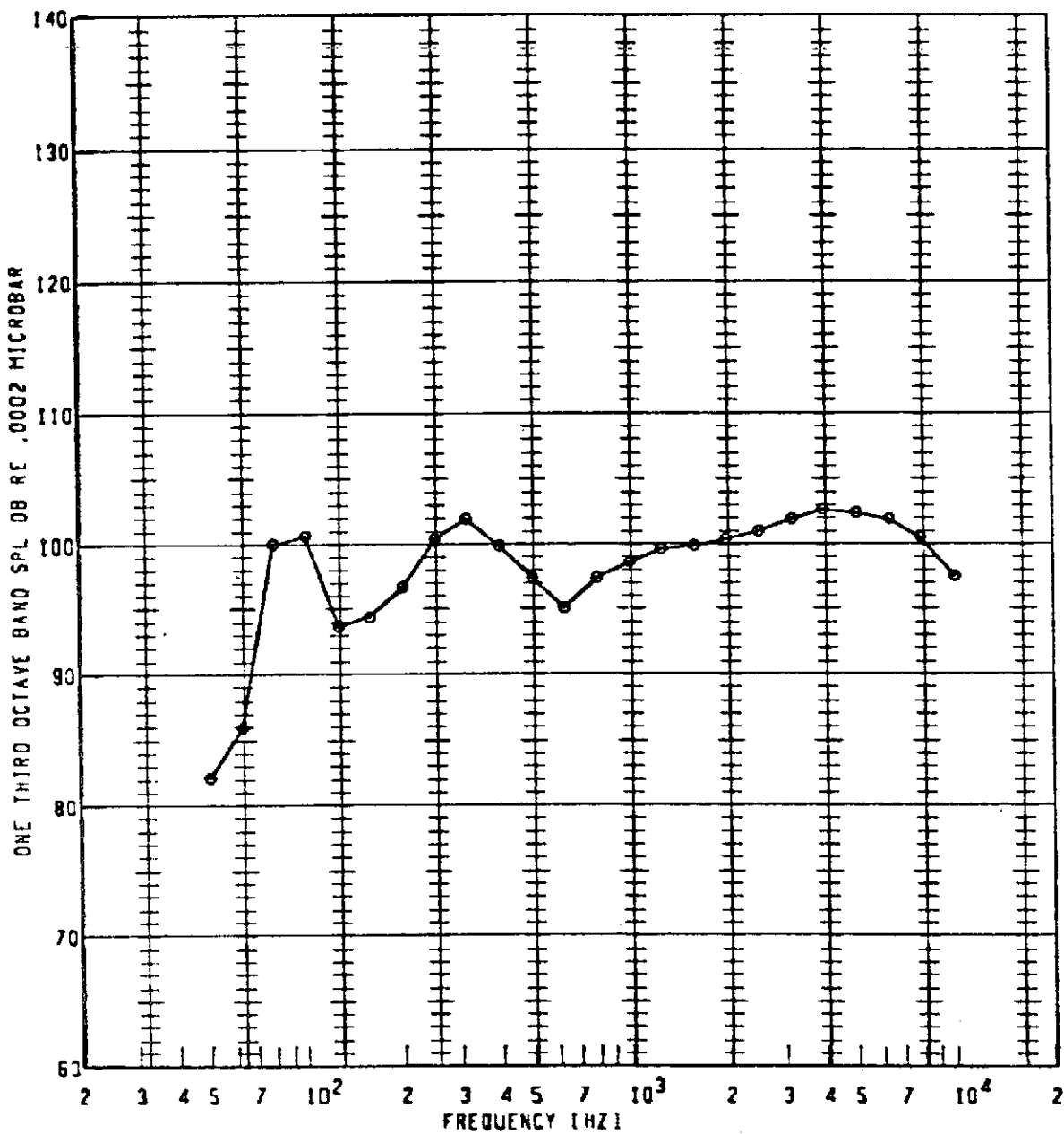


BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



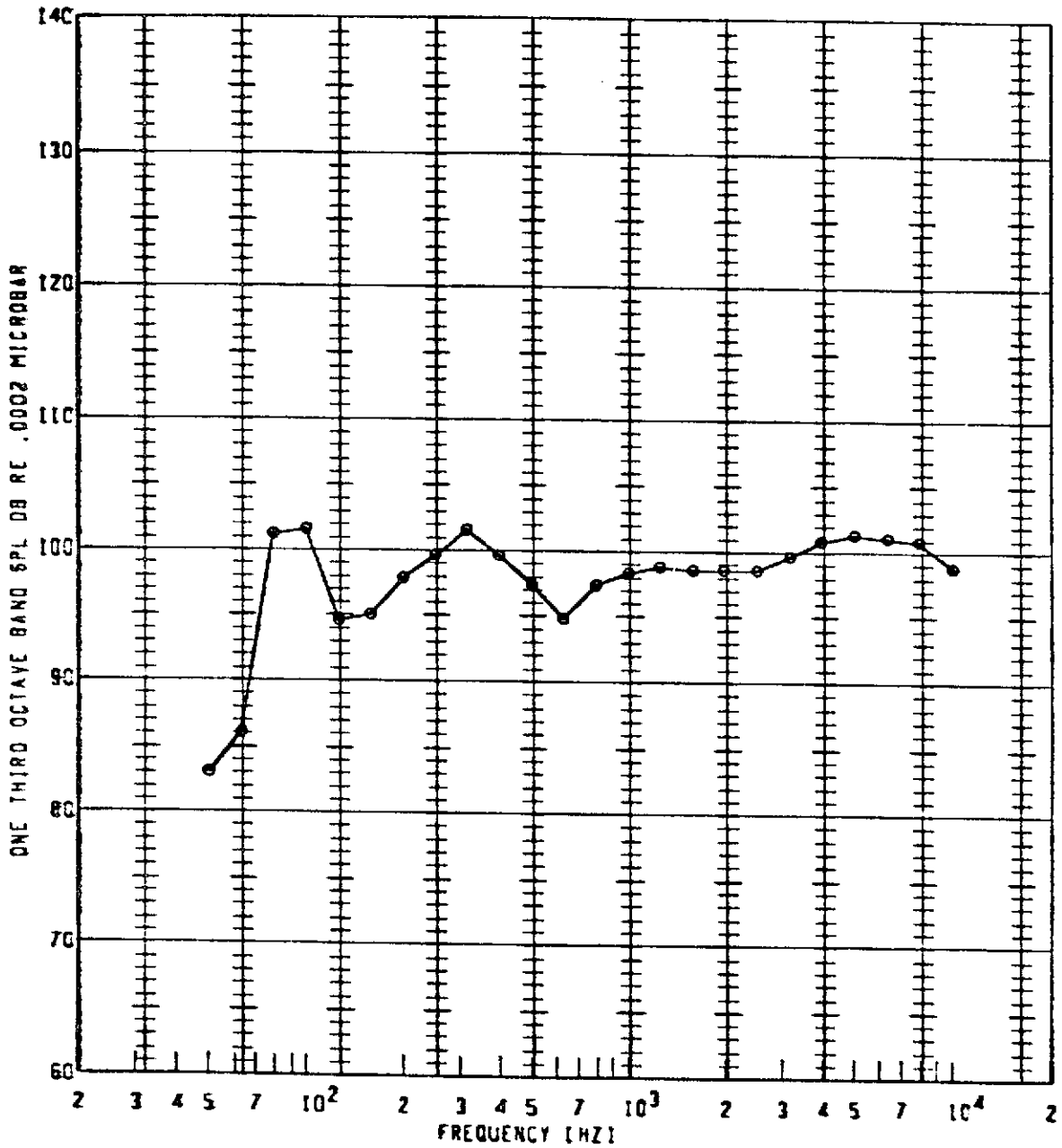
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| o           | 96         | 850      | 1.500          | 125            | 50FP              | 112.8      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



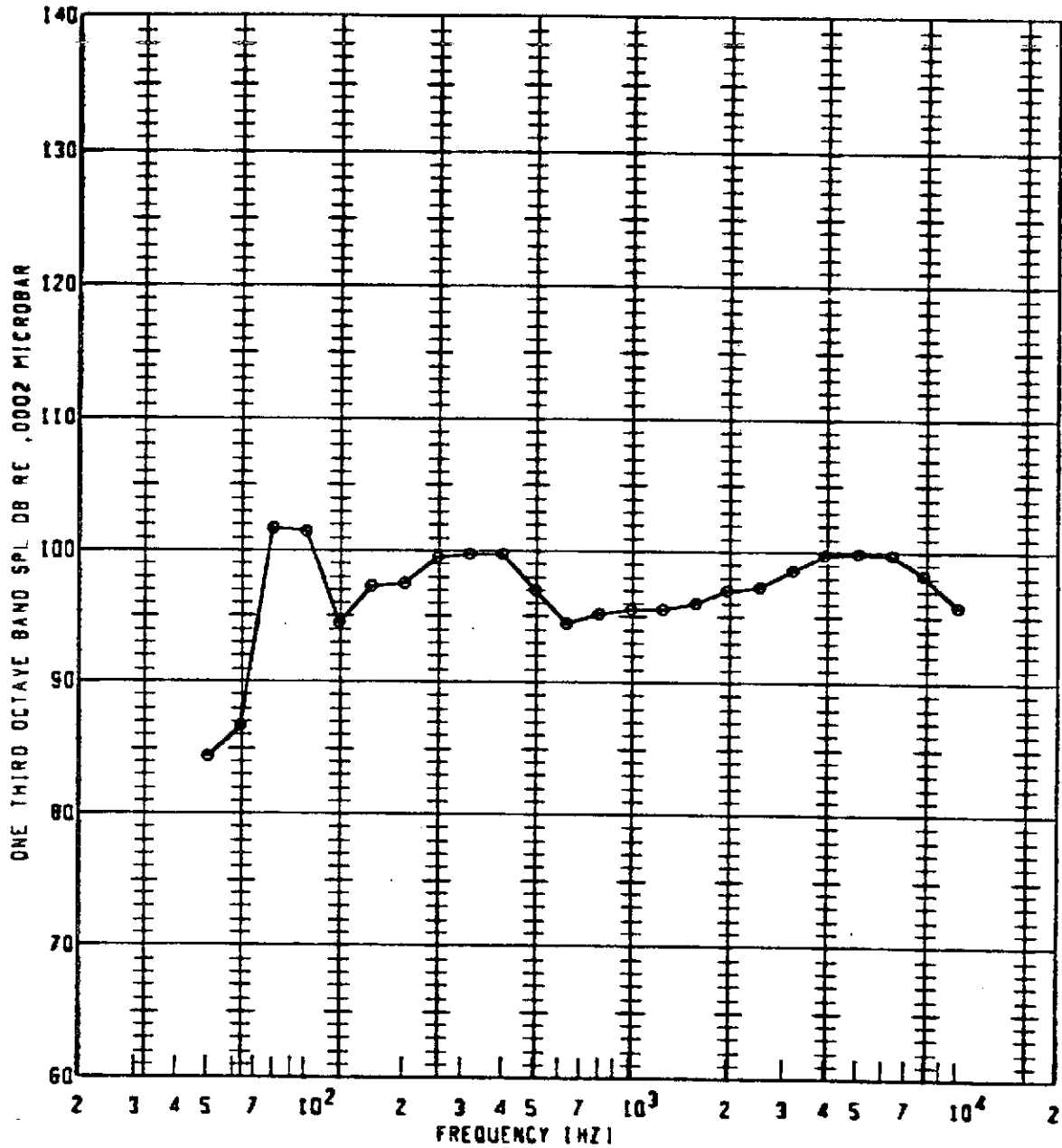
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| o           | 95         | 850      | 1.500          | 130            | 50FP              | 113.3      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



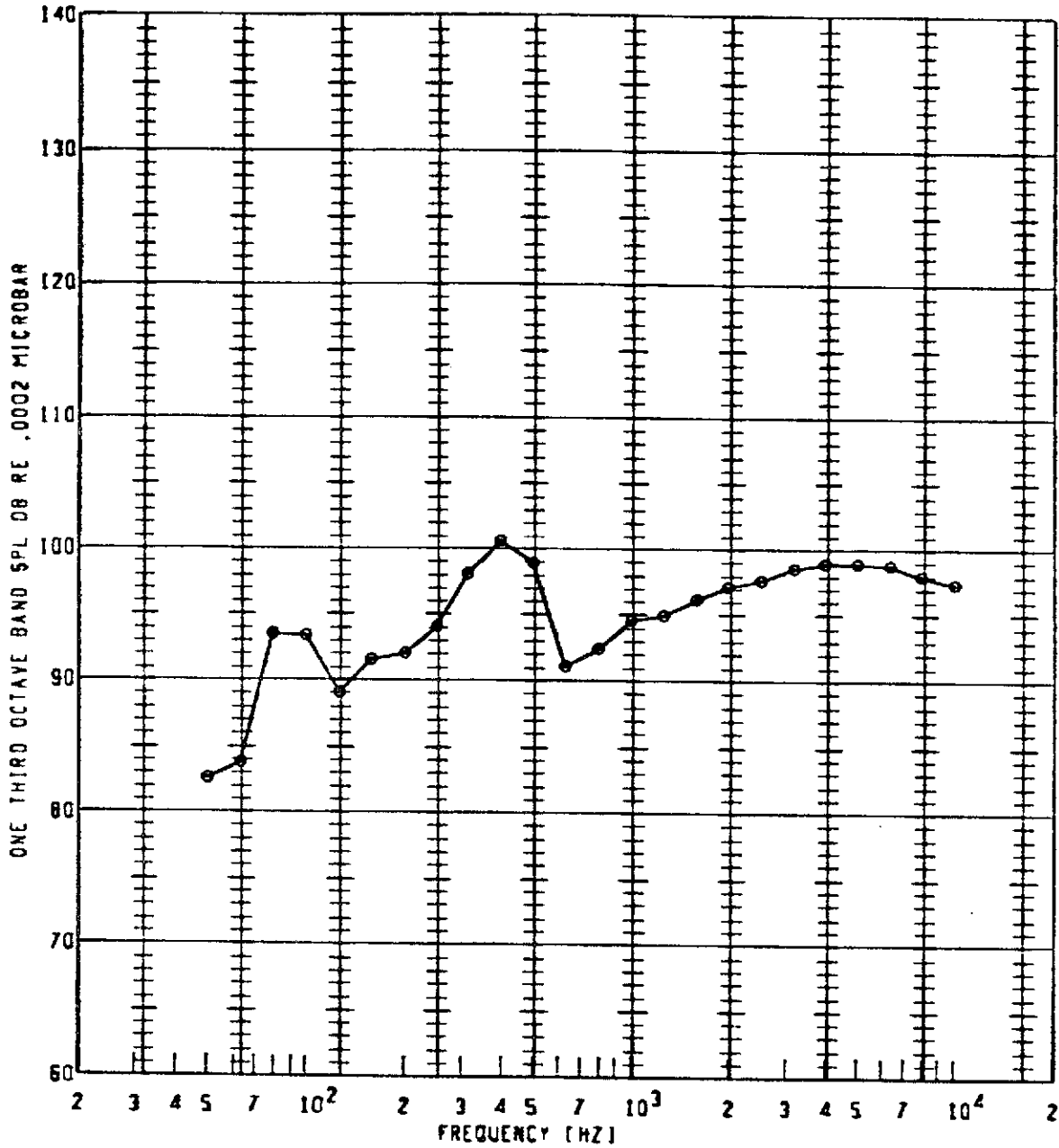
| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e          | 96         | 850      | 1.500          | 135            | 50FP              | 112.8      | 10           |            |

**BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY**



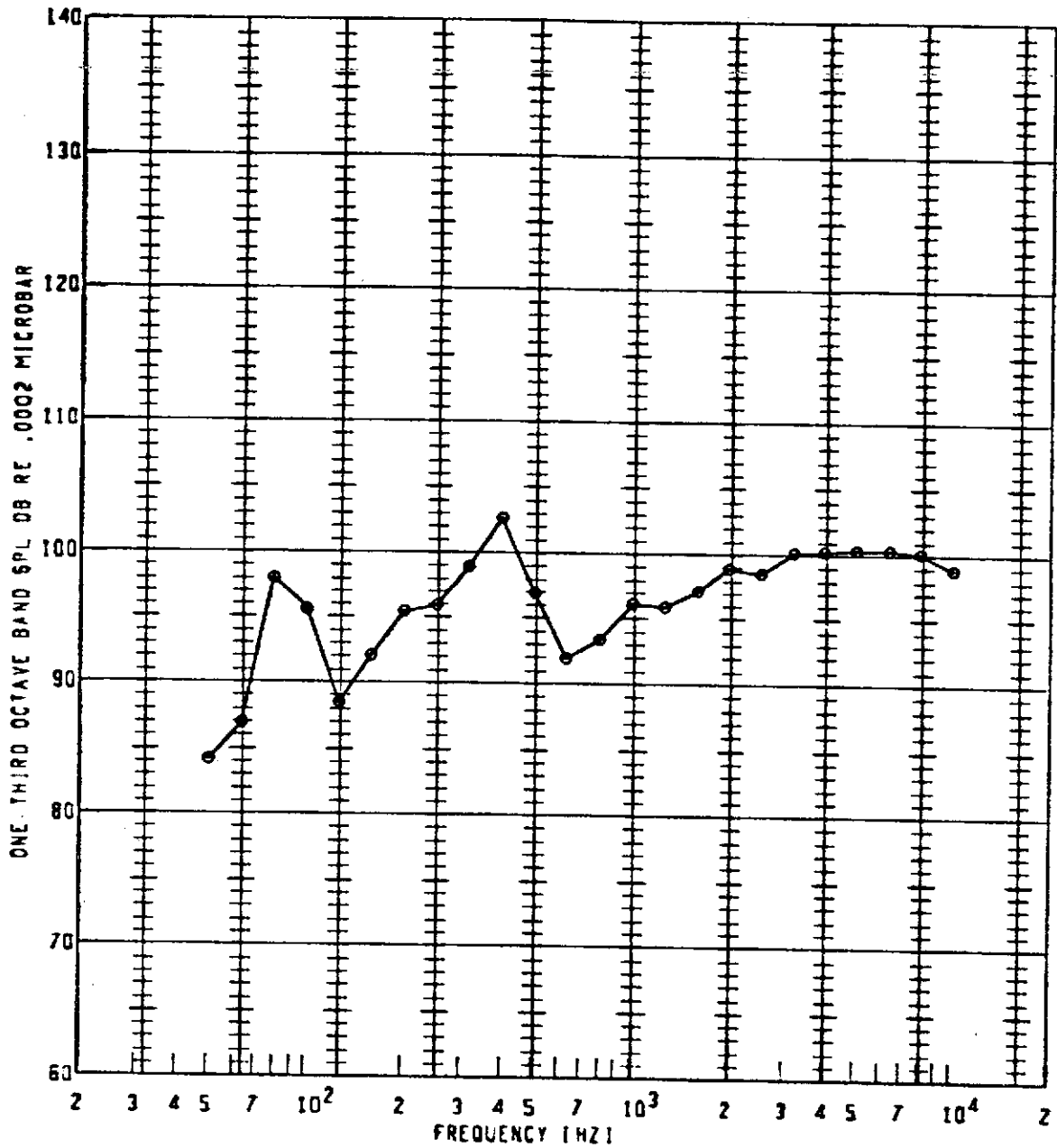
| <u>PLOT SYMBOL</u> | <u>RUN NUMBER</u> | <u>JET TEMP</u> | <u>PRESSURE RATIO</u> | <u>ANGLE RE INLET</u> | <u>OBSERVER LOCATION</u> | <u>QASPL (DB)</u> | <u>GAIN SETTING</u> | <u>SPECIAL ID</u> |
|--------------------|-------------------|-----------------|-----------------------|-----------------------|--------------------------|-------------------|---------------------|-------------------|
| e                  | 96                | 850             | 1.500                 | 140                   | 50FP                     | 111.7             | 10                  |                   |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



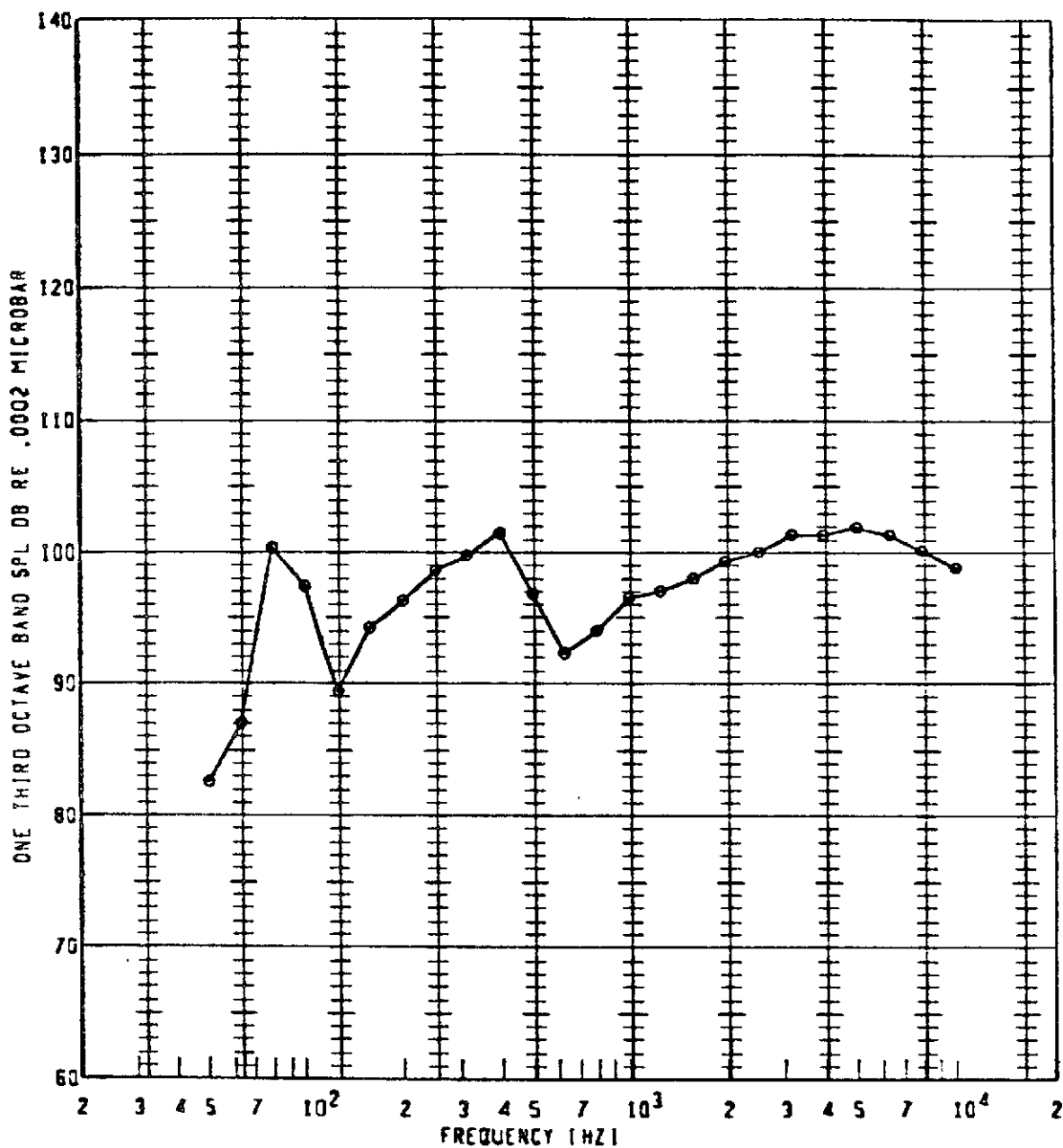
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | DASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 96         | 900      | 1.600          | 90             | 50FP              | 110.1      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



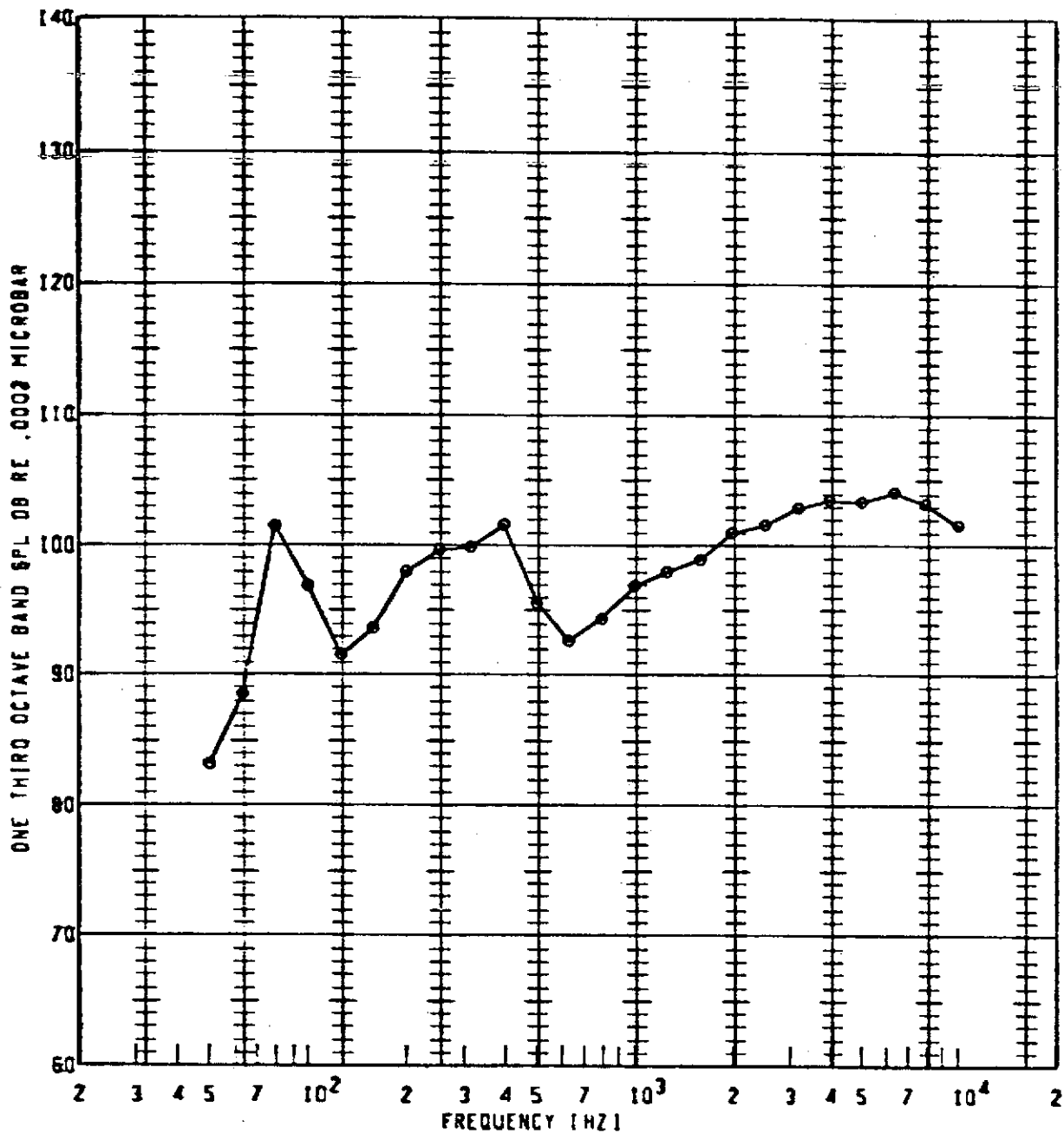
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 96         | 900      | 1.600          | 100            | 50FP              | 111.6      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 96         | 900      | 1.600          | 110            | SGFP              | 112.4      | 10           |            |

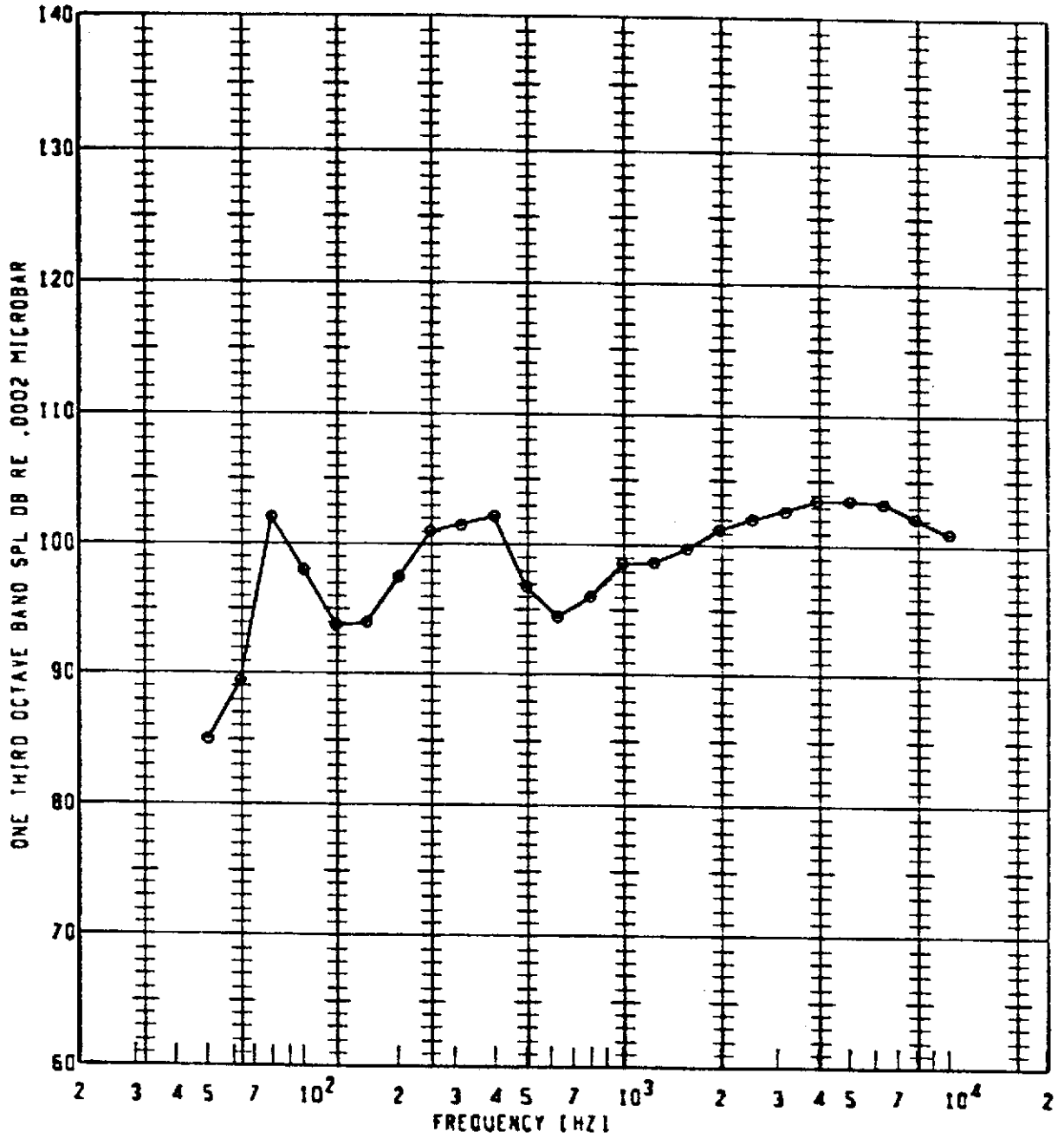
**BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY**



| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e          | 96         | 900      | 1.600          | 115            | 50FP              | 113.8      | 10           |            |

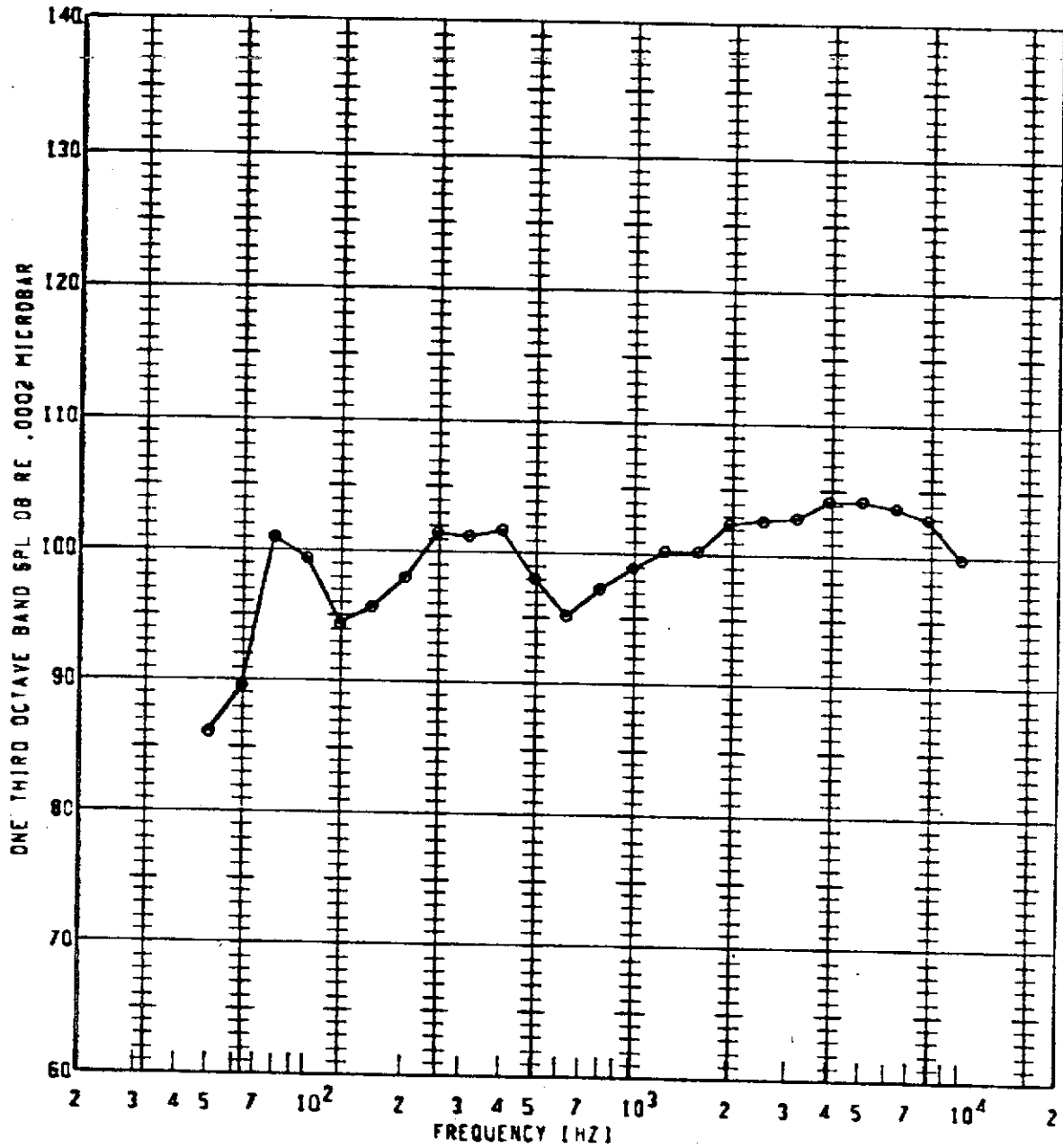


BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



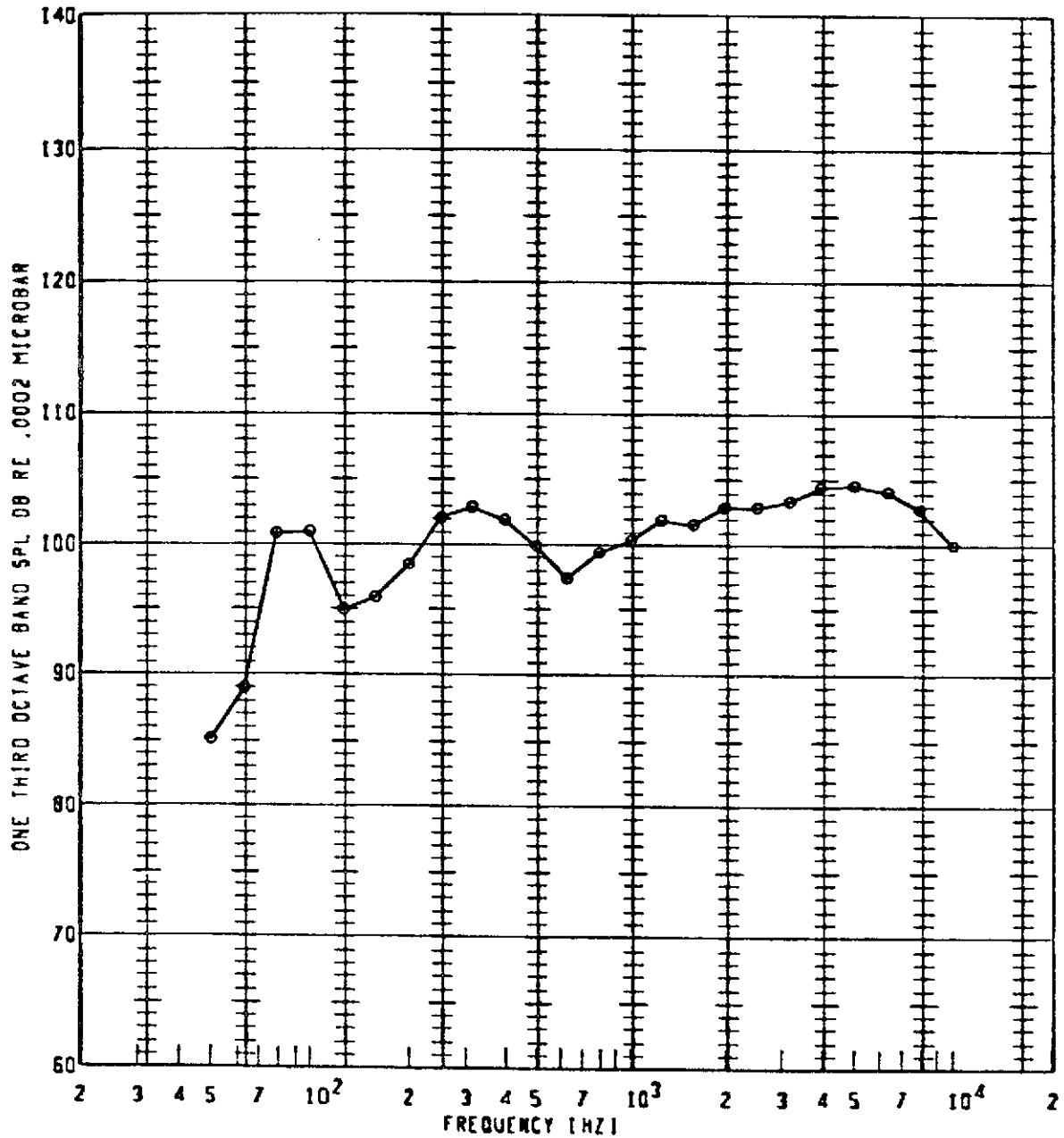
| PLGT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | CASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 96         | 900      | 1.600          | 120            | 50FP              | 114.1      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



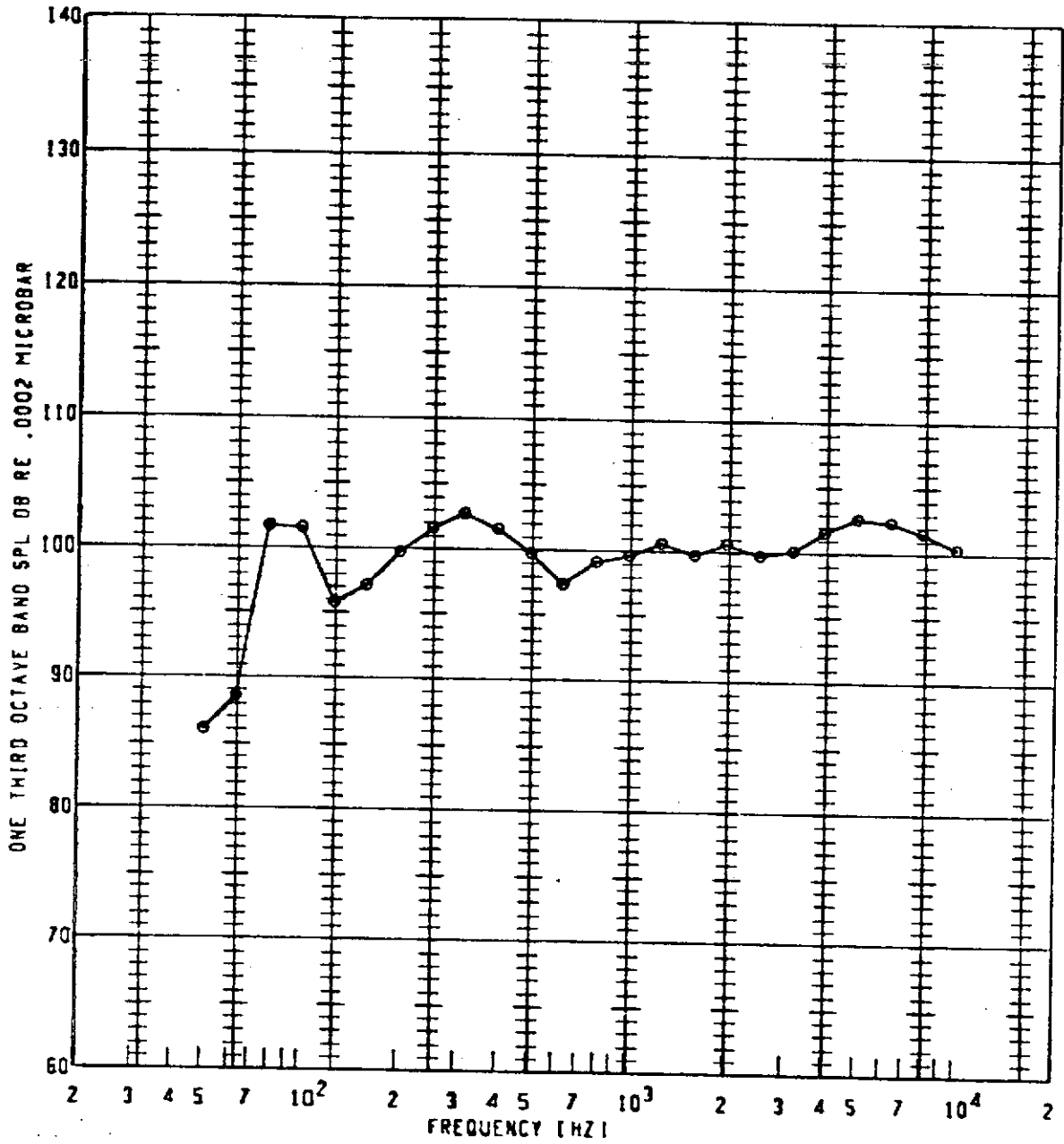
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ●           | 96         | 900      | 1.600          | 125            | 50FP              | 114.5      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



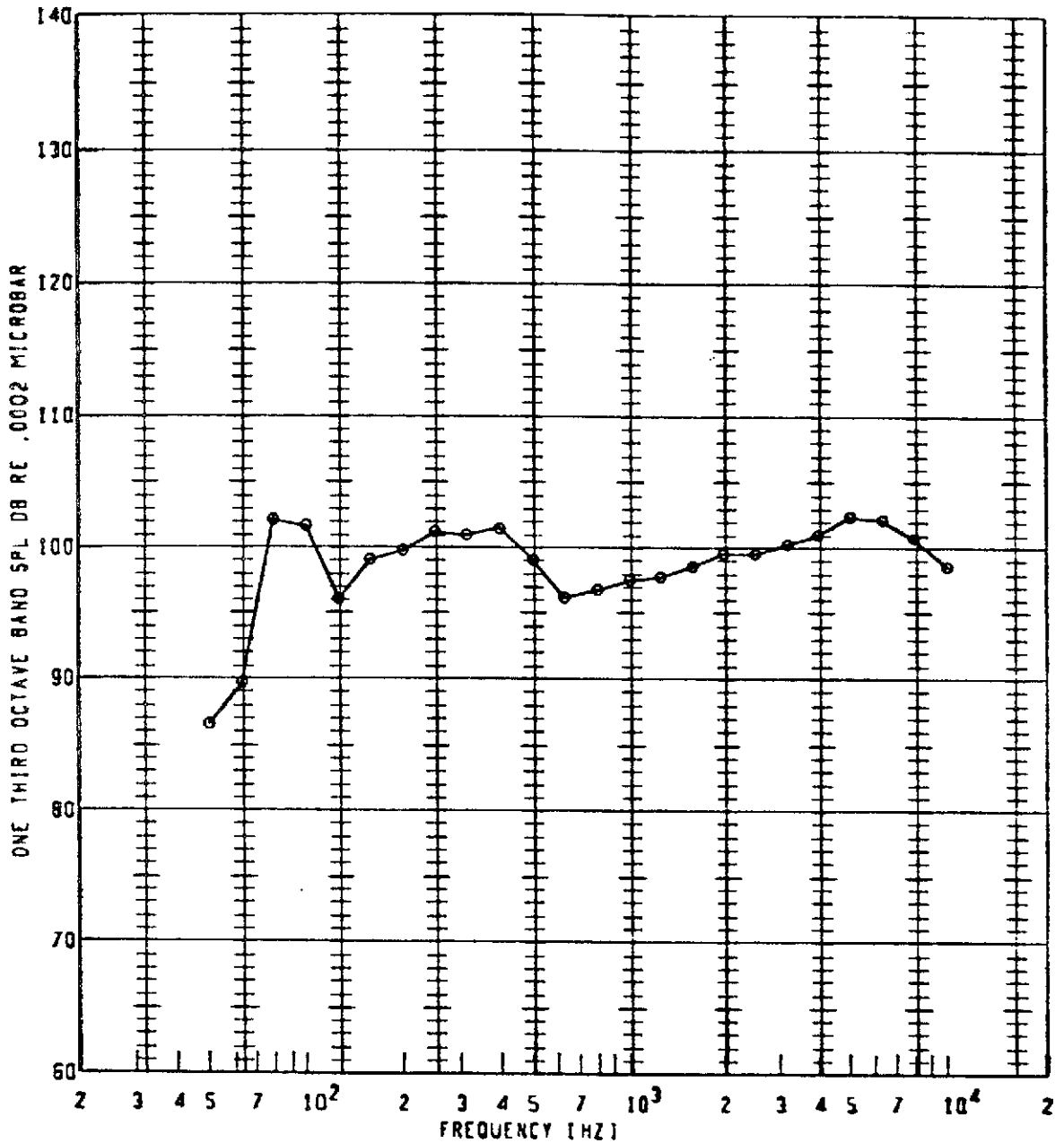
| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e          | 90         | 900      | 1.600          | 130            | 50FP              | 115.2      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



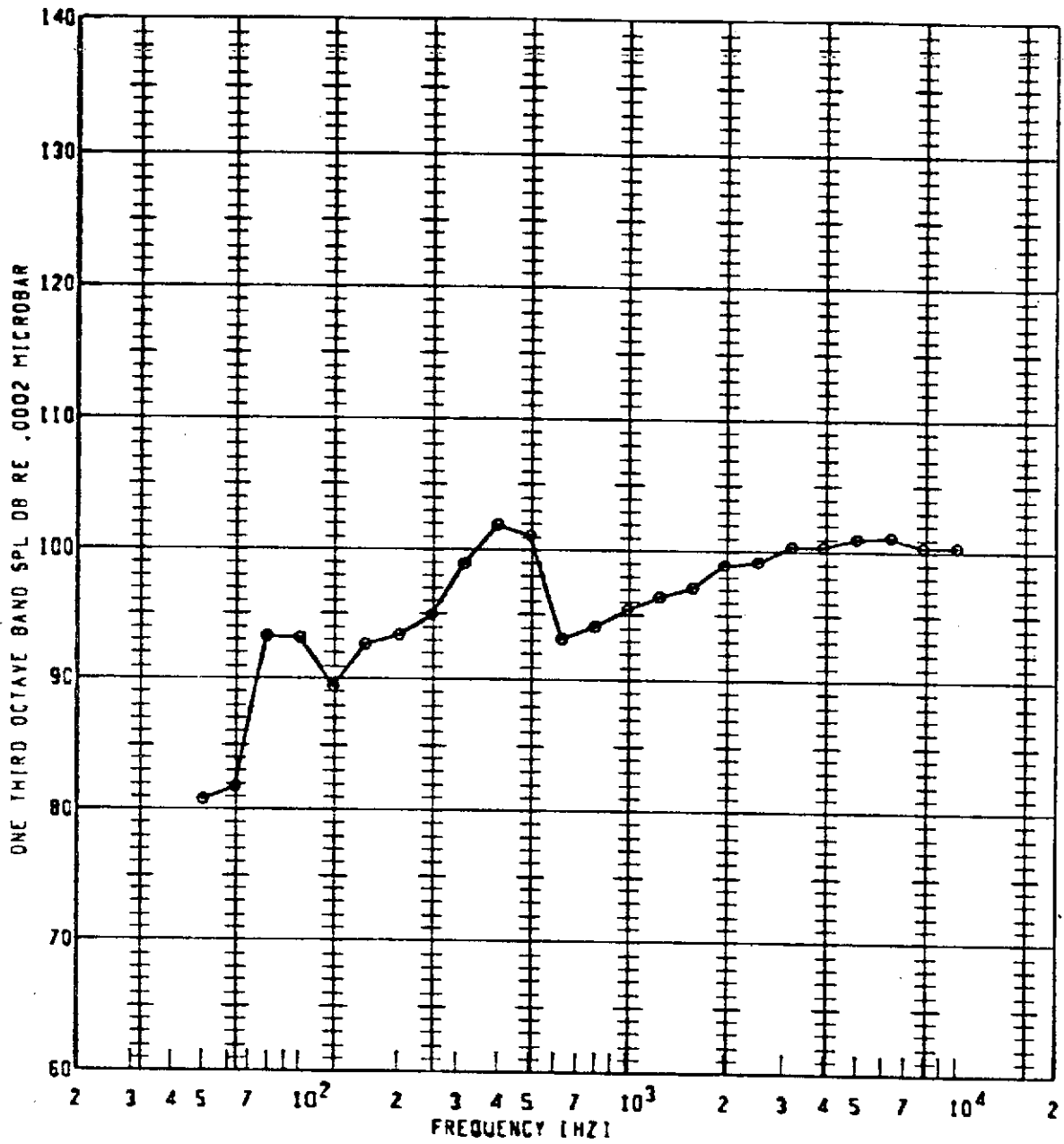
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL [DB] | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 96         | 900      | 1.600          | 135            | 50FP              | 114.1      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE TO TEST - HOT NOZZLE TEST FACILITY



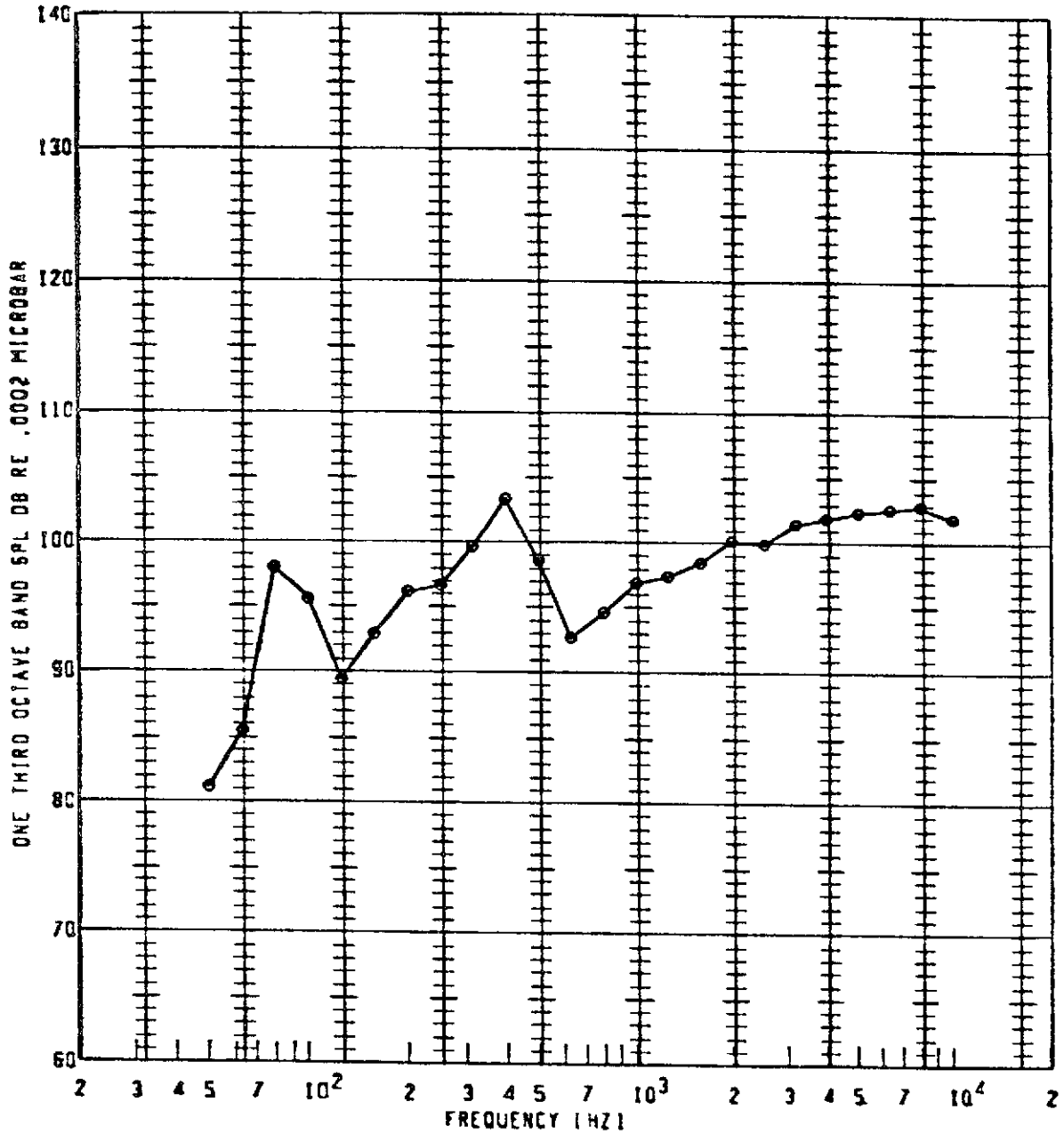
| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙          | 96         | 900      | 1.600          | 140            | 50FP              | 113.5      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



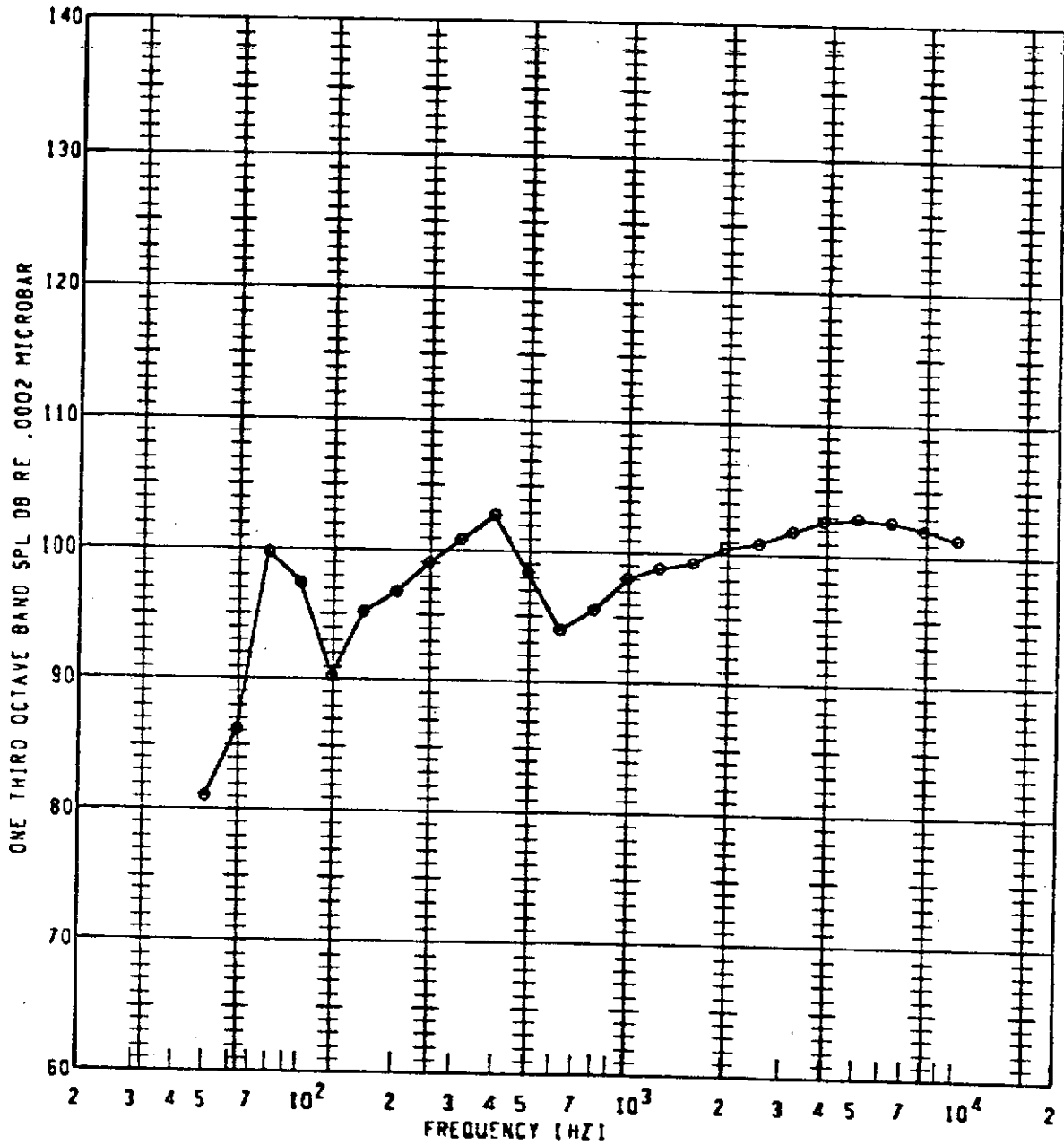
| PLCT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 96         | 950      | 1.700          | 90             | 50FP              | 111.8      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 96         | 950      | 1.700          | 100            | 50FP              | 113.1      | 10           |            |

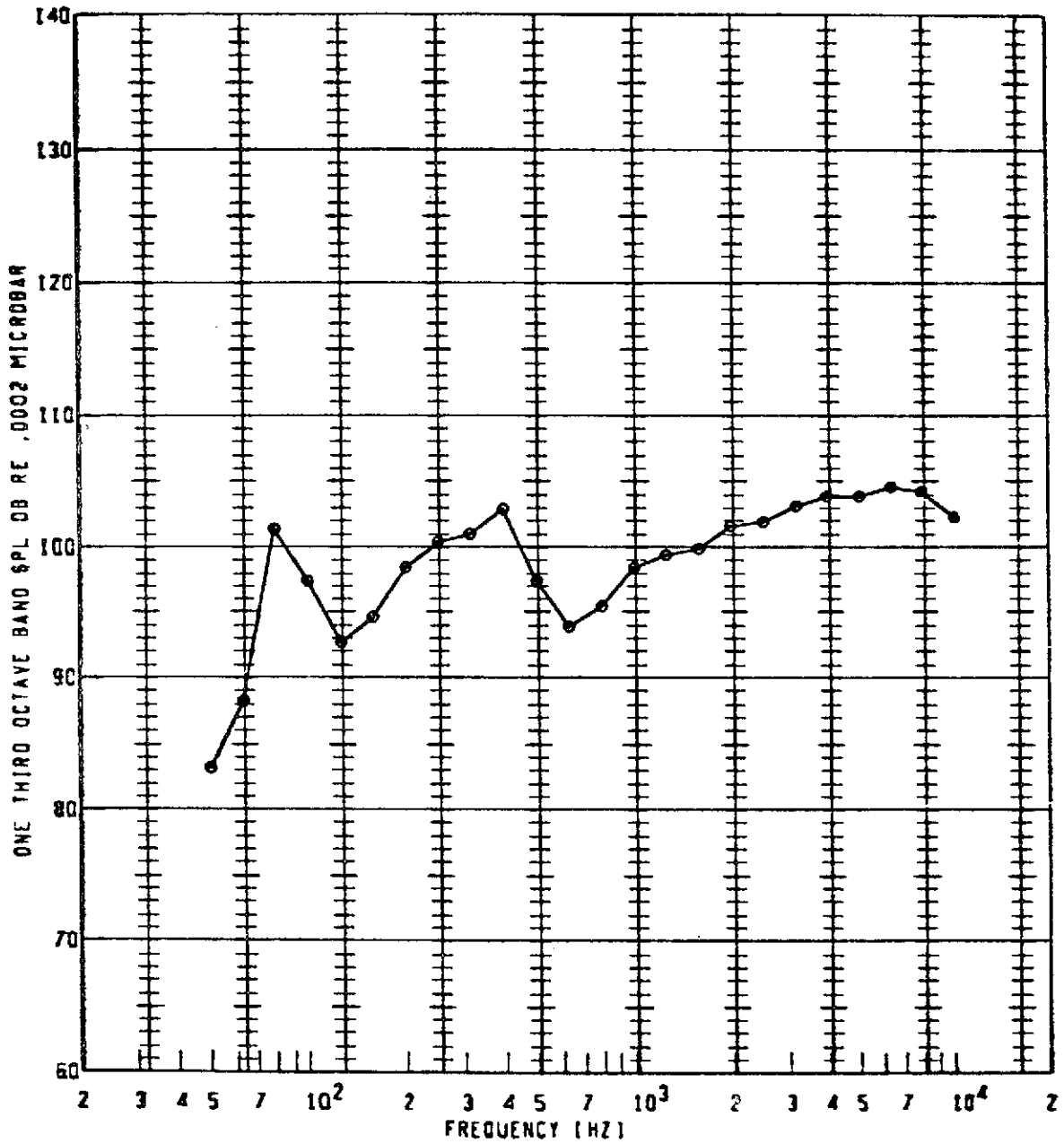
BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 96         | 950      | 1.700          | 110            | 50FP              | 113.5      | 10           |            |

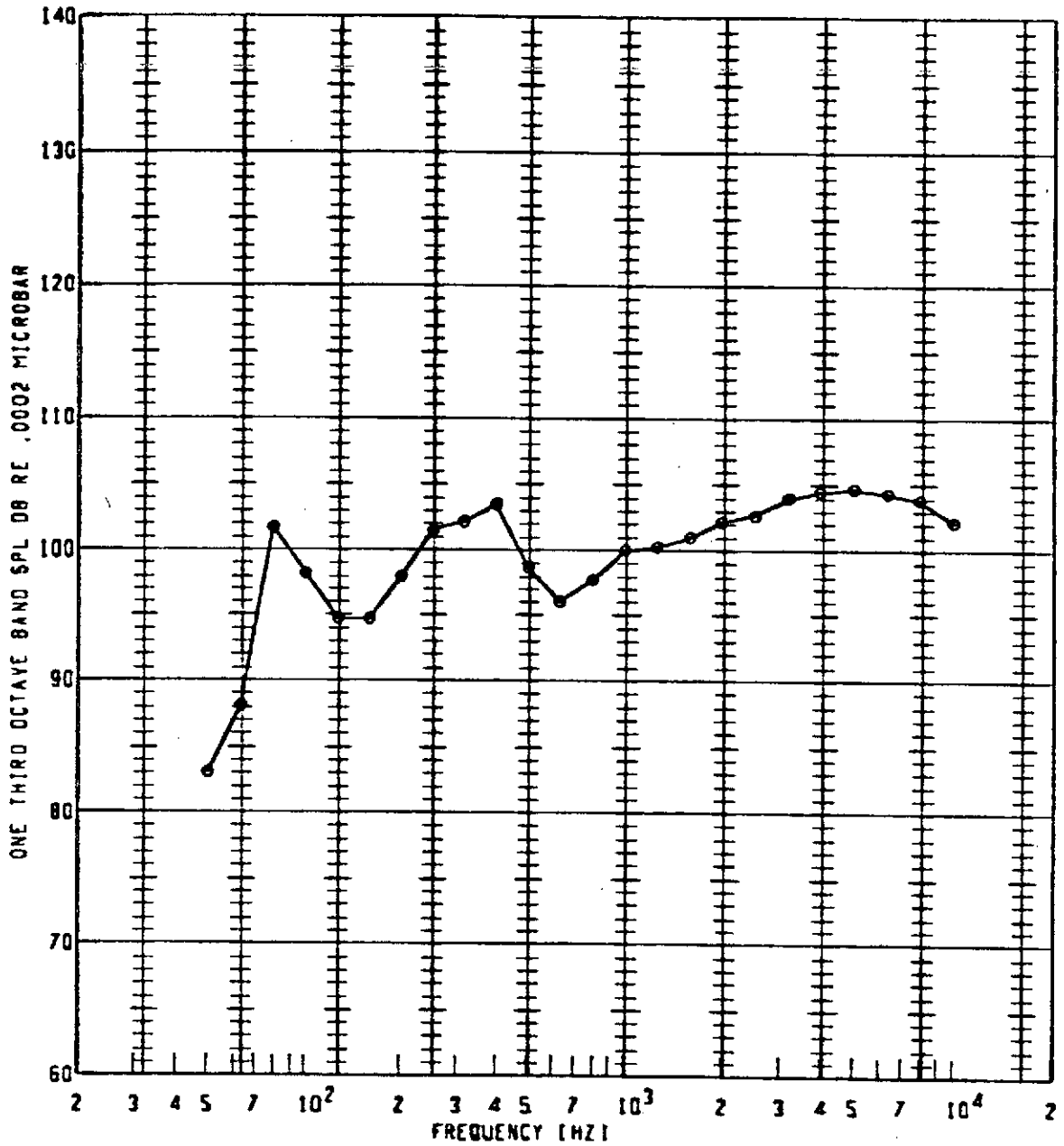


BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



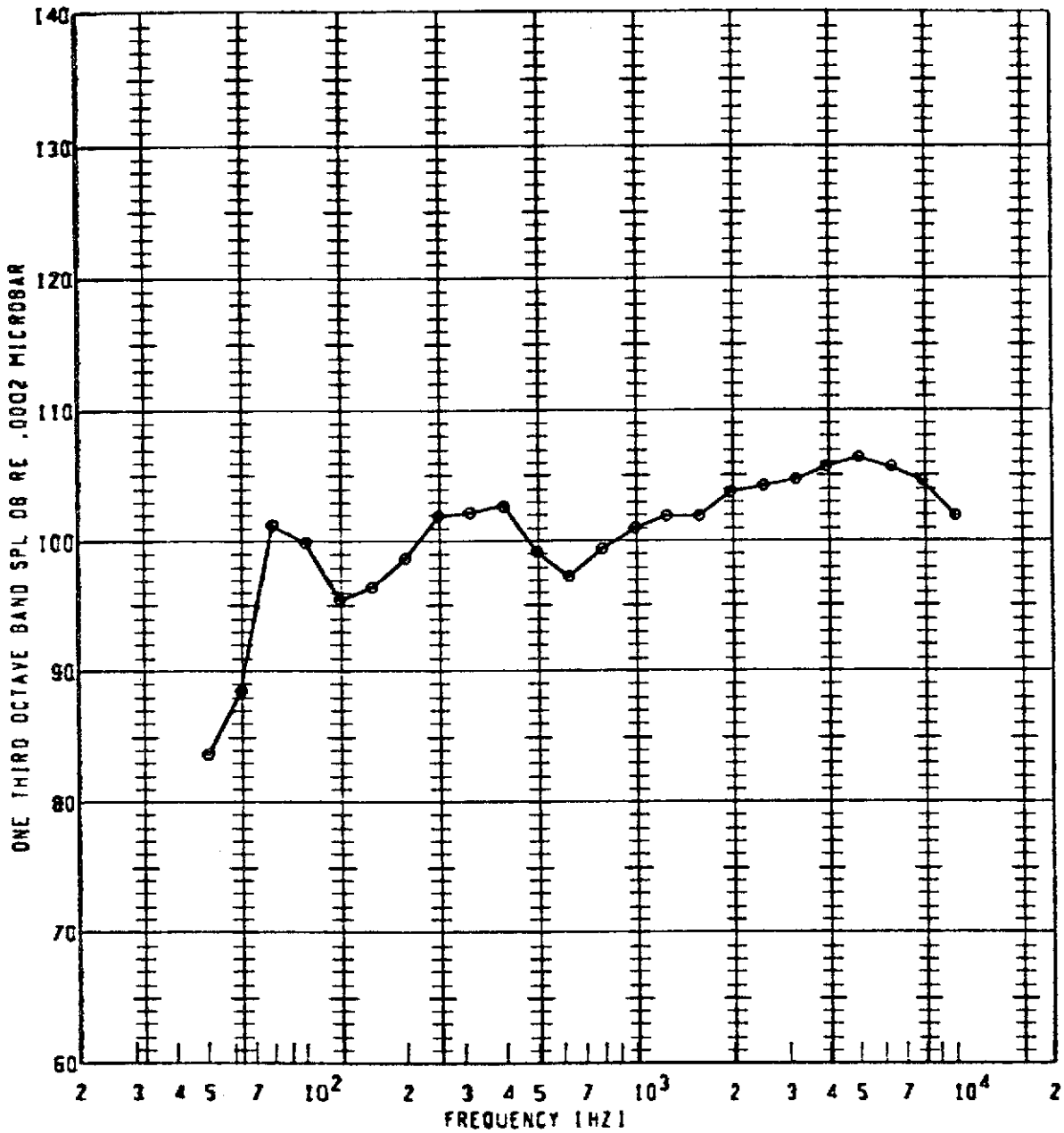
| PLT SYMCL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-----------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ○         | 90         | 950      | 1.700          | 115            | SQFP              | 114.5      | 0            |            |

BUFFALO SUPPRESSOR NOZZLE TONE IB TEST - HOT NOZZLE TEST FACILITY



| ●           | 96         | 950      | 1.700          | 120            | SOFP              | 115.1      | 10           |            |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |

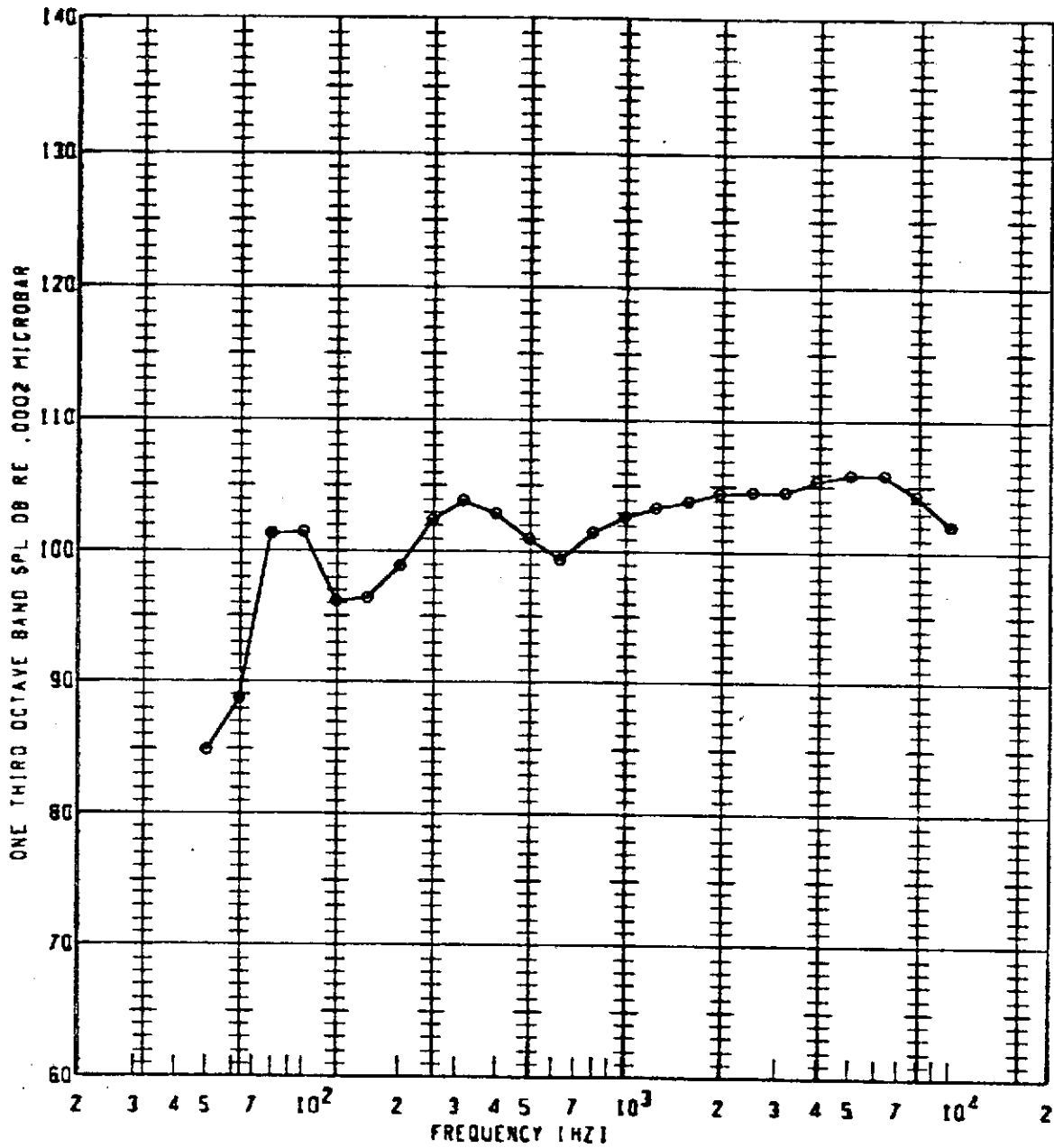
BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OSPL (DB) | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|-----------|--------------|------------|
| ⊙          | 96         | 950      | 1.700          | 125            | SOFP              | 116.0     | 0            |            |

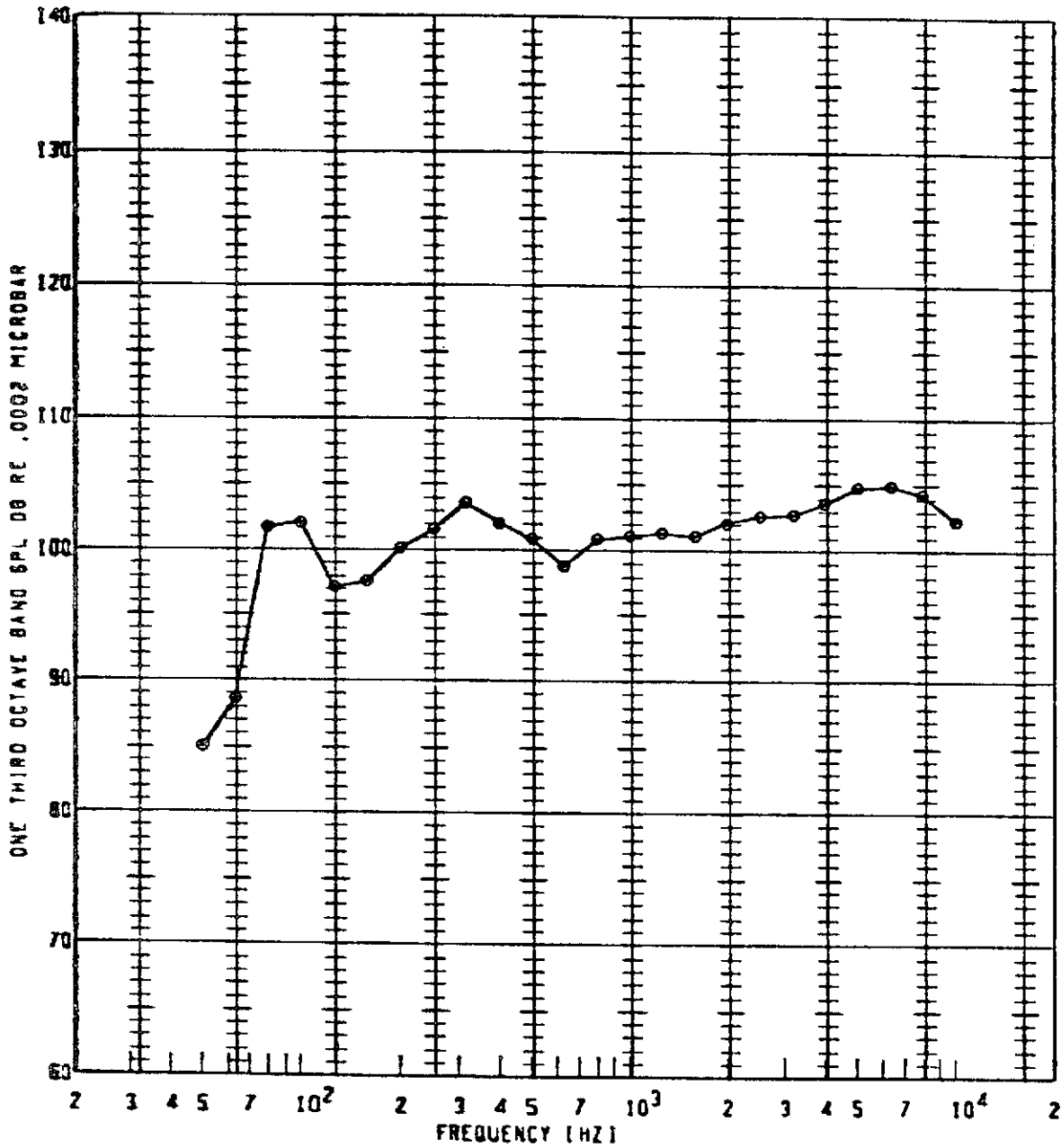
C-3

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



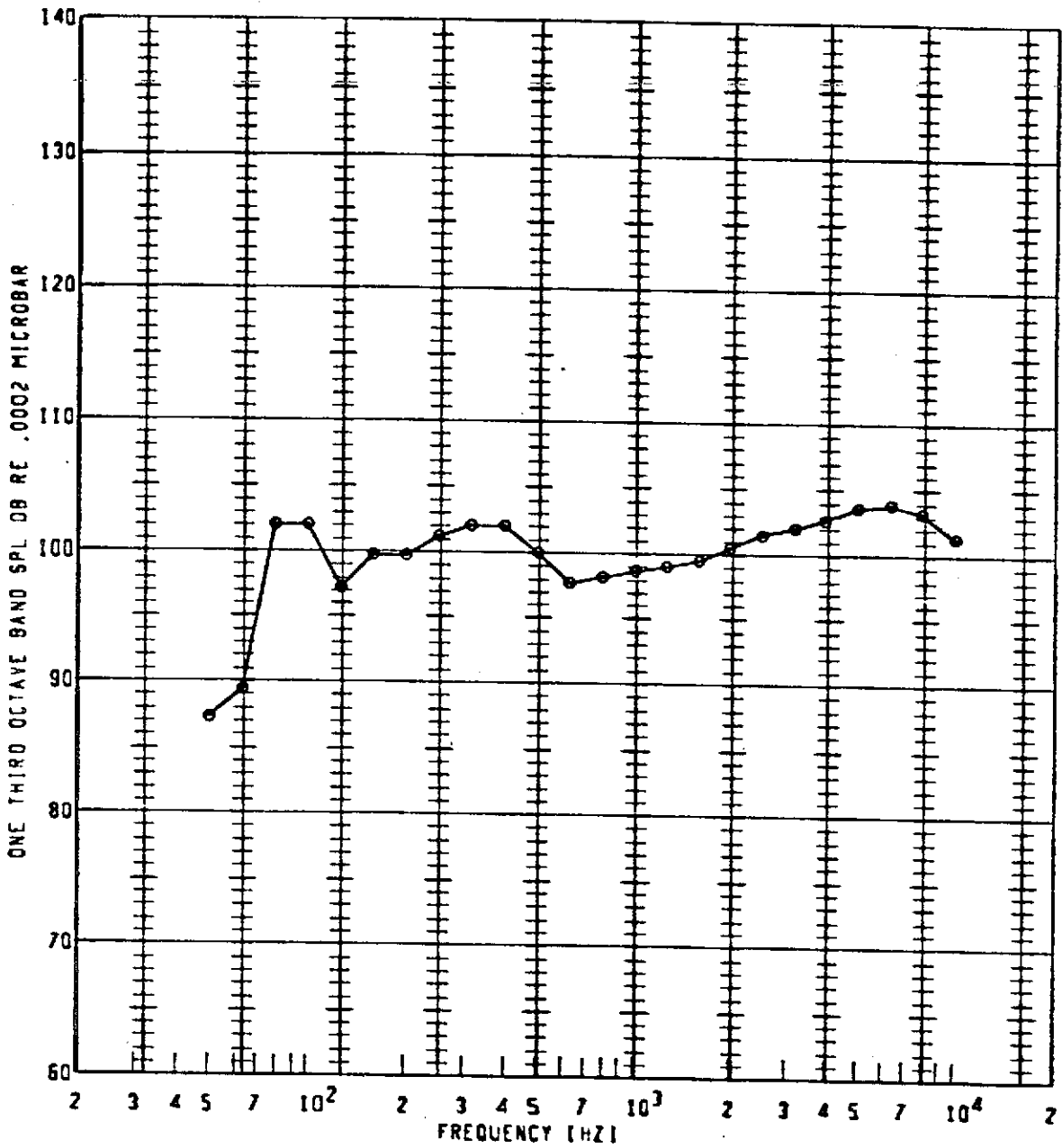
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 96         | 950      | 1.700          | 130            | 50FP              | 116.5      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



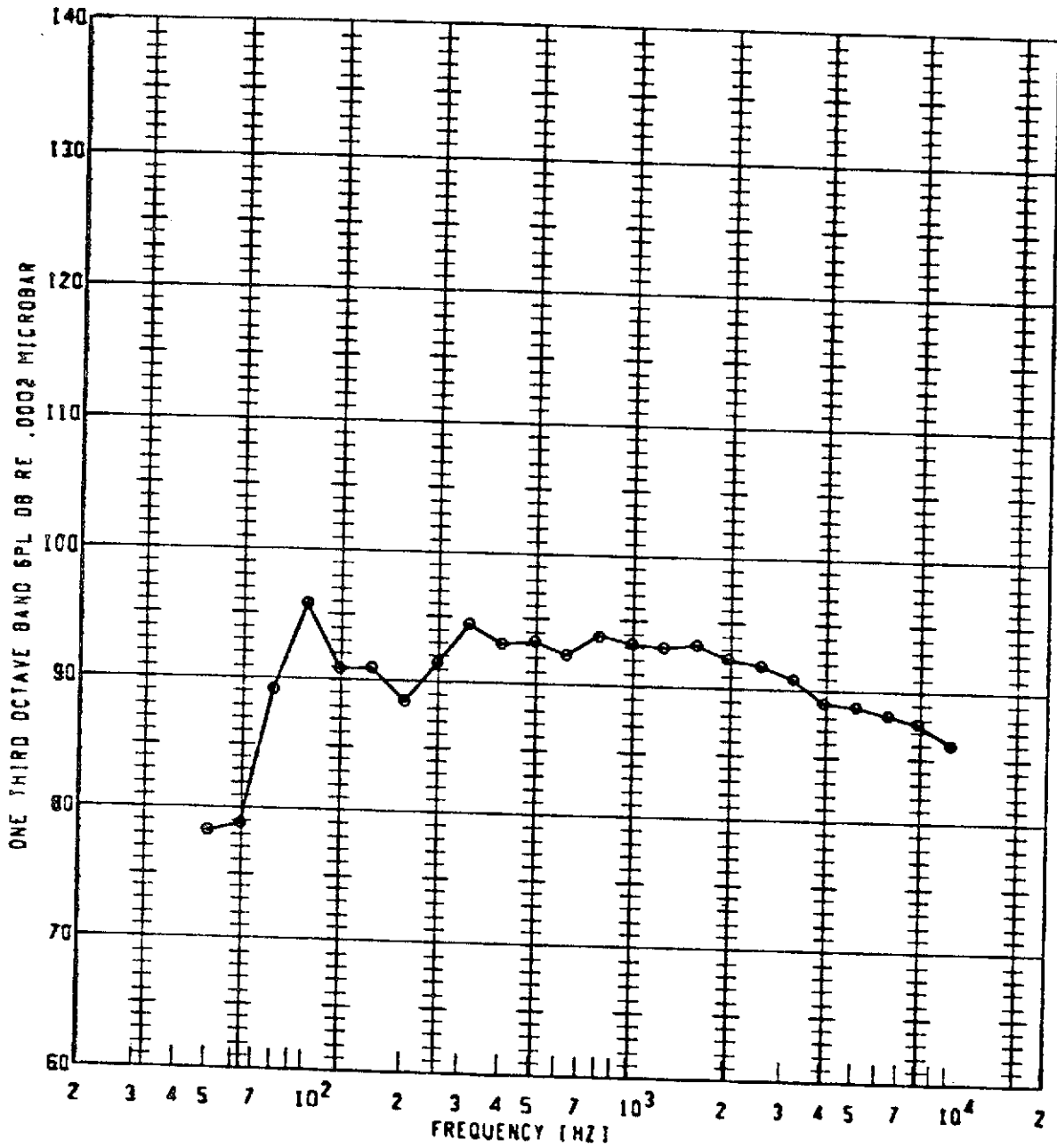
| PLGT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | DASPL (DB) | GAIN SETTING | SPECIAL IO |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 90         | 950      | 1.700          | 135            | SOFP              | 115.6      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



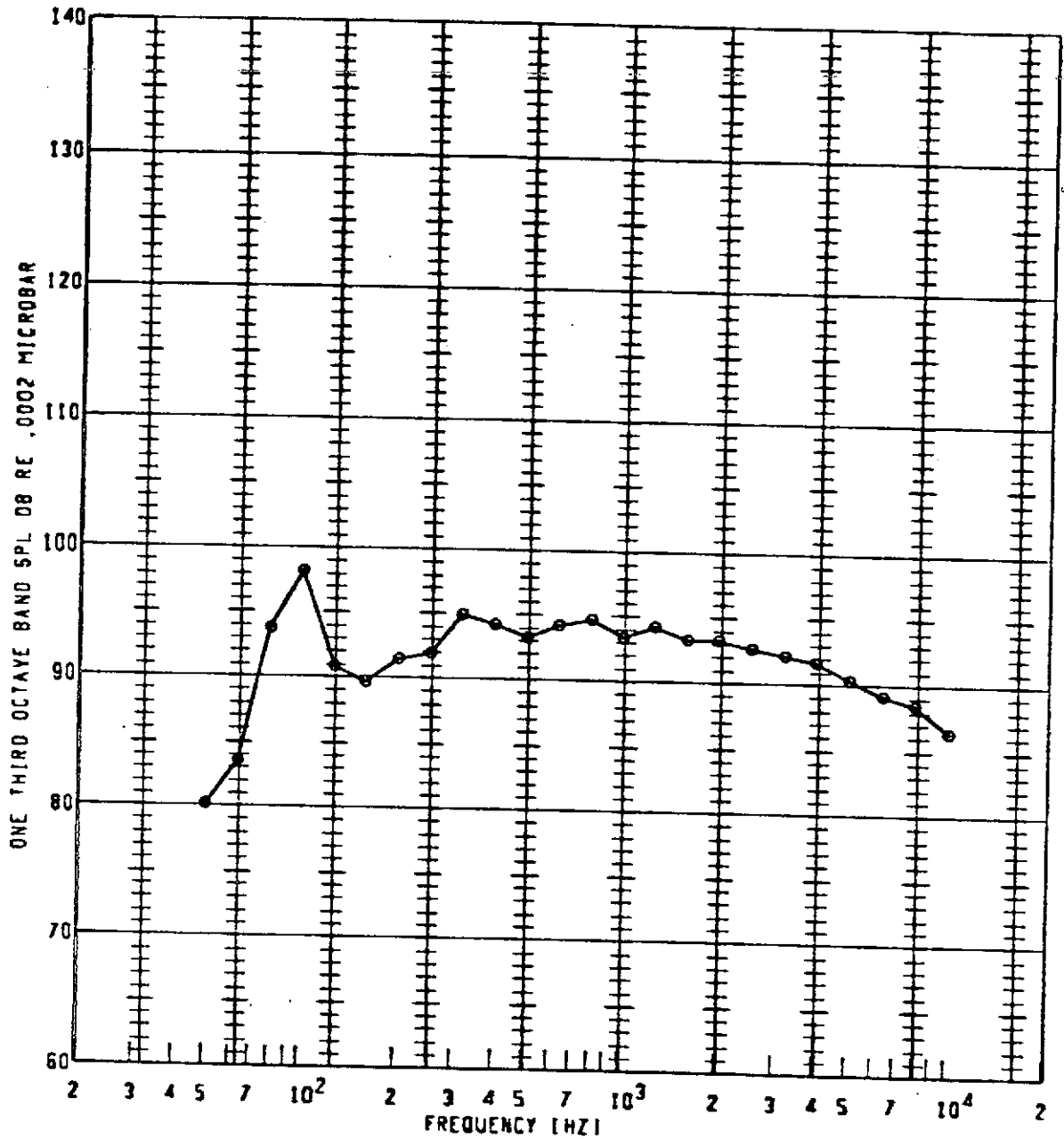
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| o           | 96         | 950      | 1.700          | 140            | SOFP              | 114.6      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | DASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 106        | 750      | 1.300          | 90             | 50FP              | 105.4      | 20           |            |

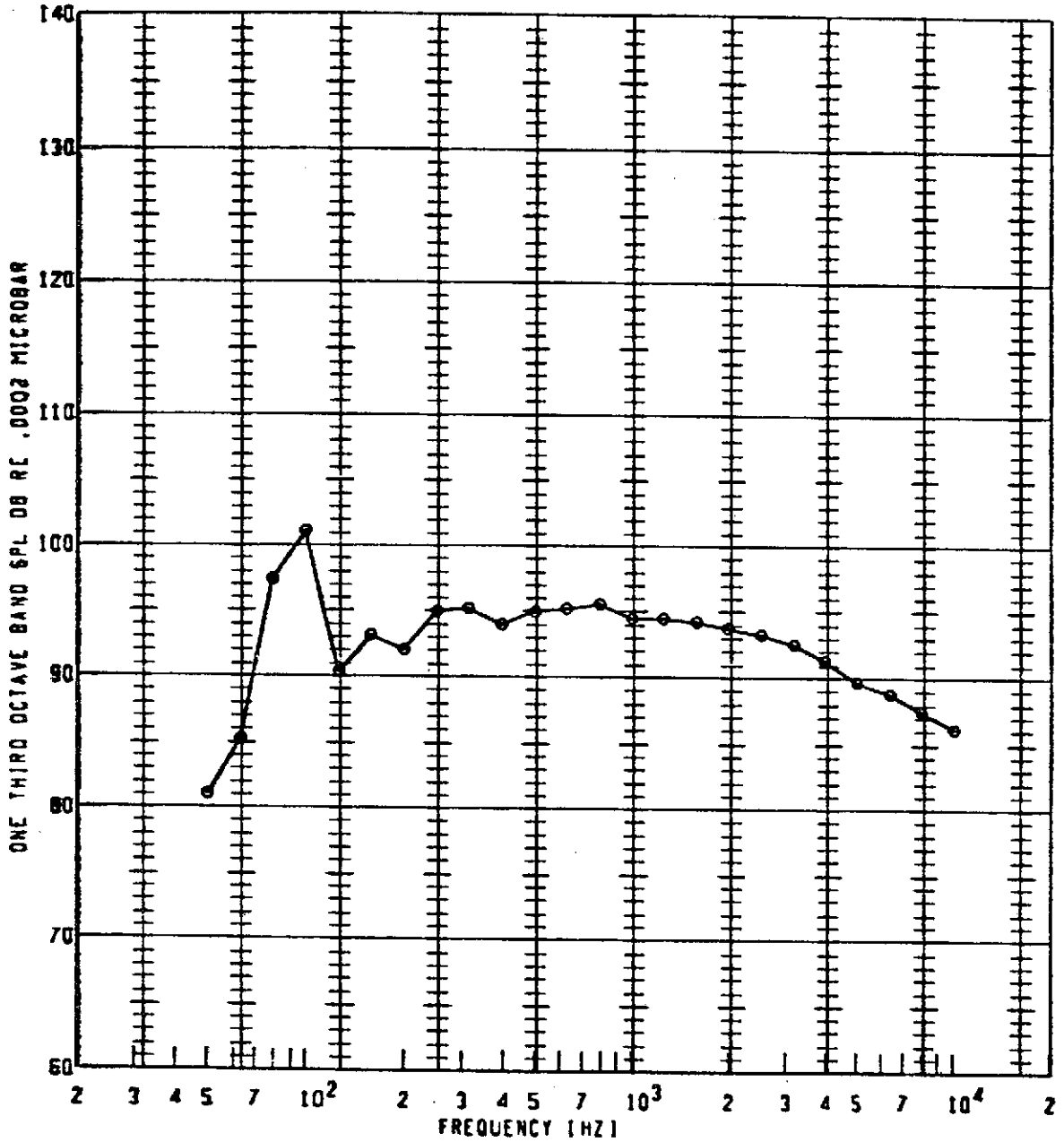
BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| o           | 100        | 750      | 1.300          | 100            | 50FP              | 106.5      | 20           |            |

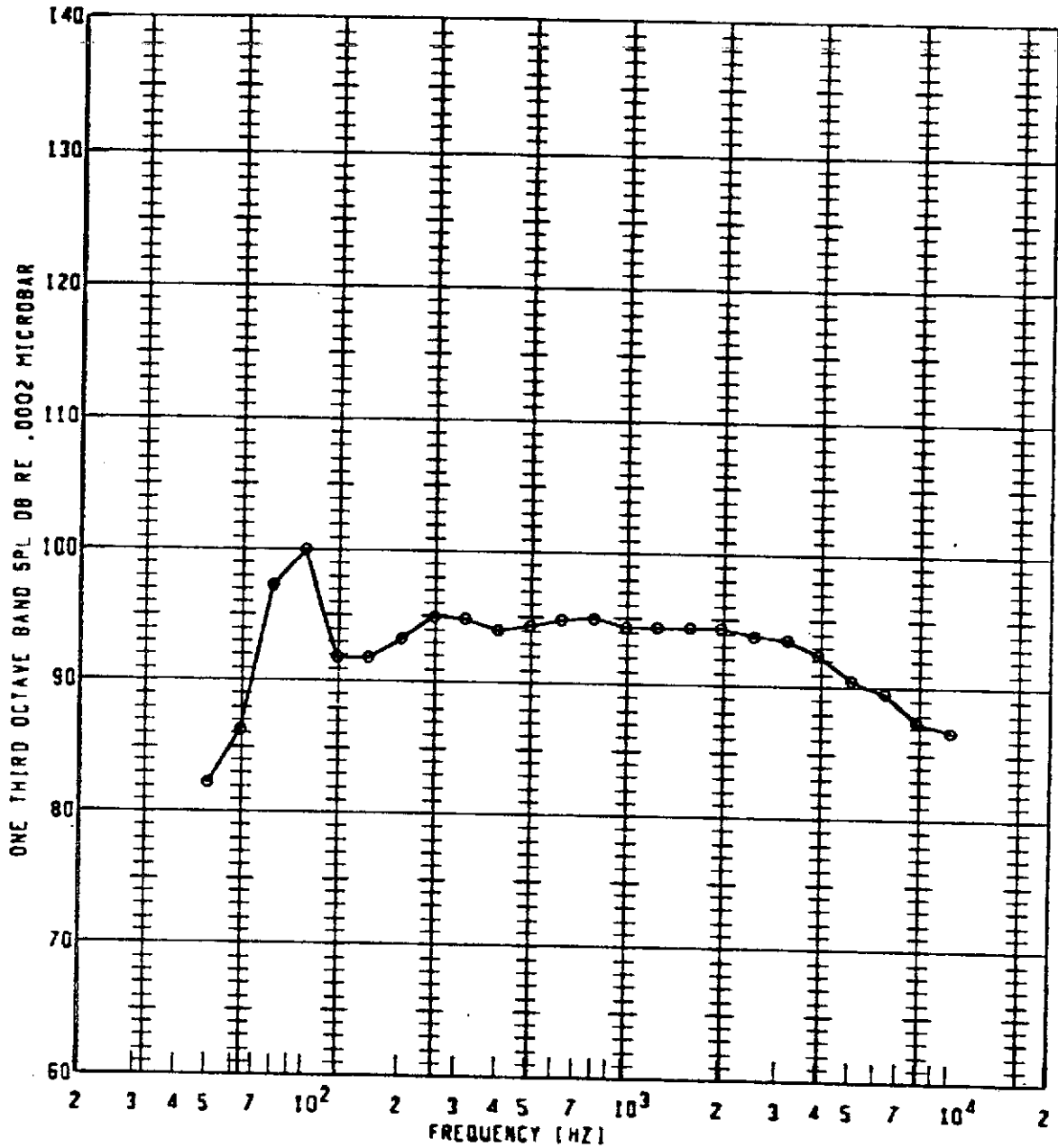


BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



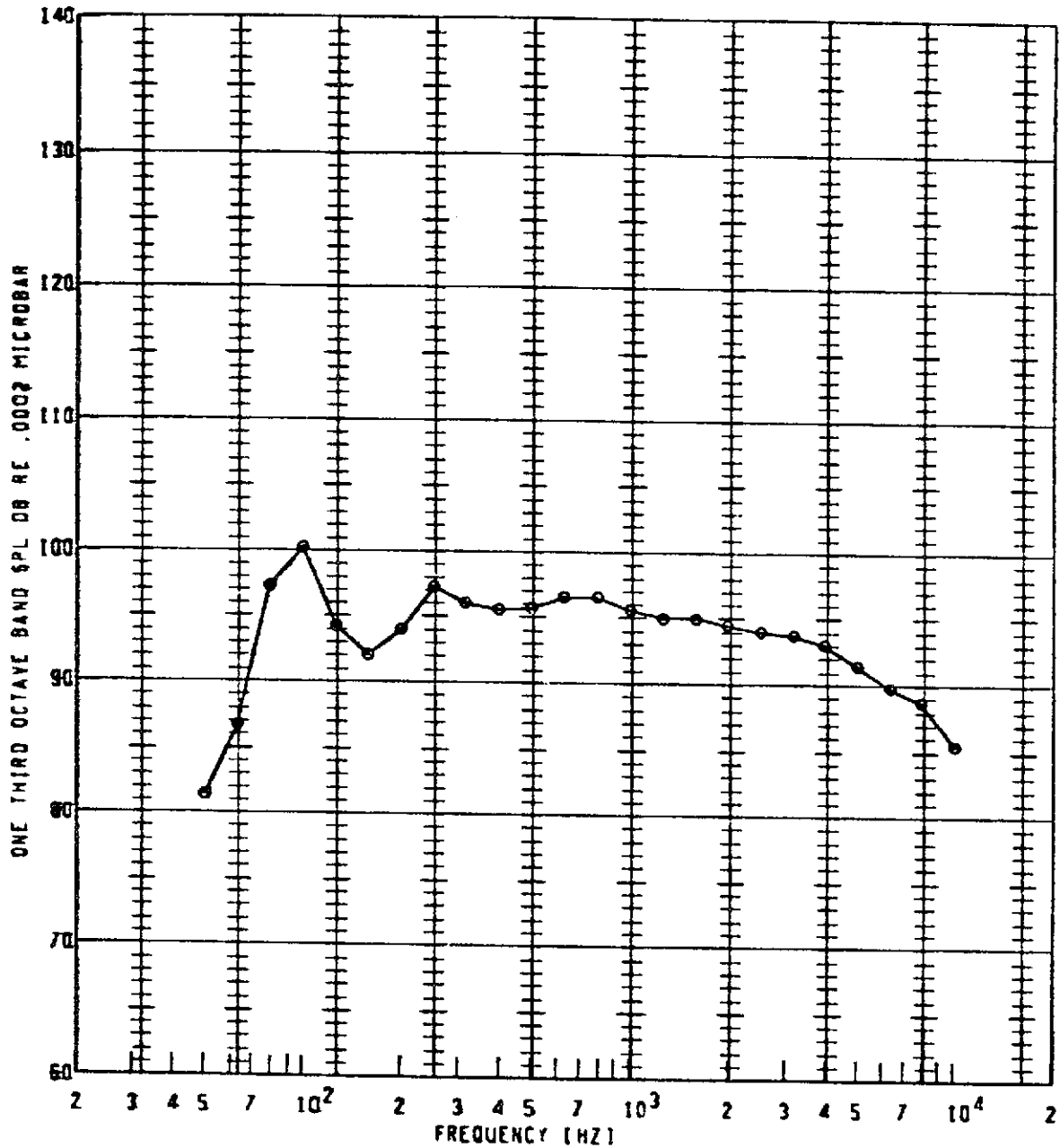
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL TO |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 106        | 750      | 1.300          | 110            | 50FP              | 107.8      | 20           |            |

**BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY**



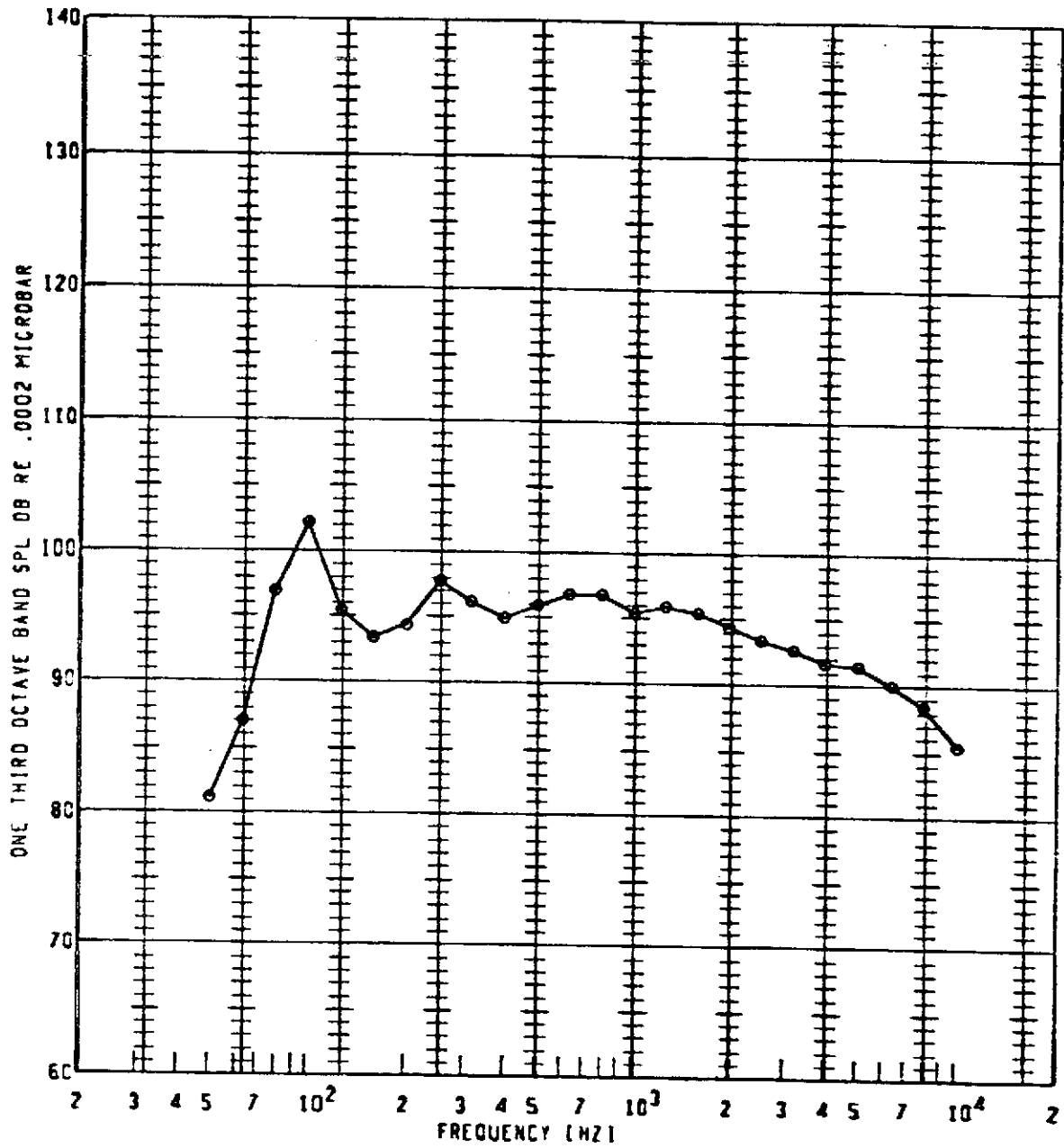
| Plot Symbol | Run Number | Jet Temp | Pressure Ratio | Angle re Inlet | Observer Location | QASPL (dB) | Gain Setting | Special ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 106        | 750      | 1.300          | 115            | 50FP              | 107.7      | 10           |            |

**BUFFALO SUPPRESSOR NOZZLE TONE TO TEST - HOT NOZZLE TEST FACILITY**



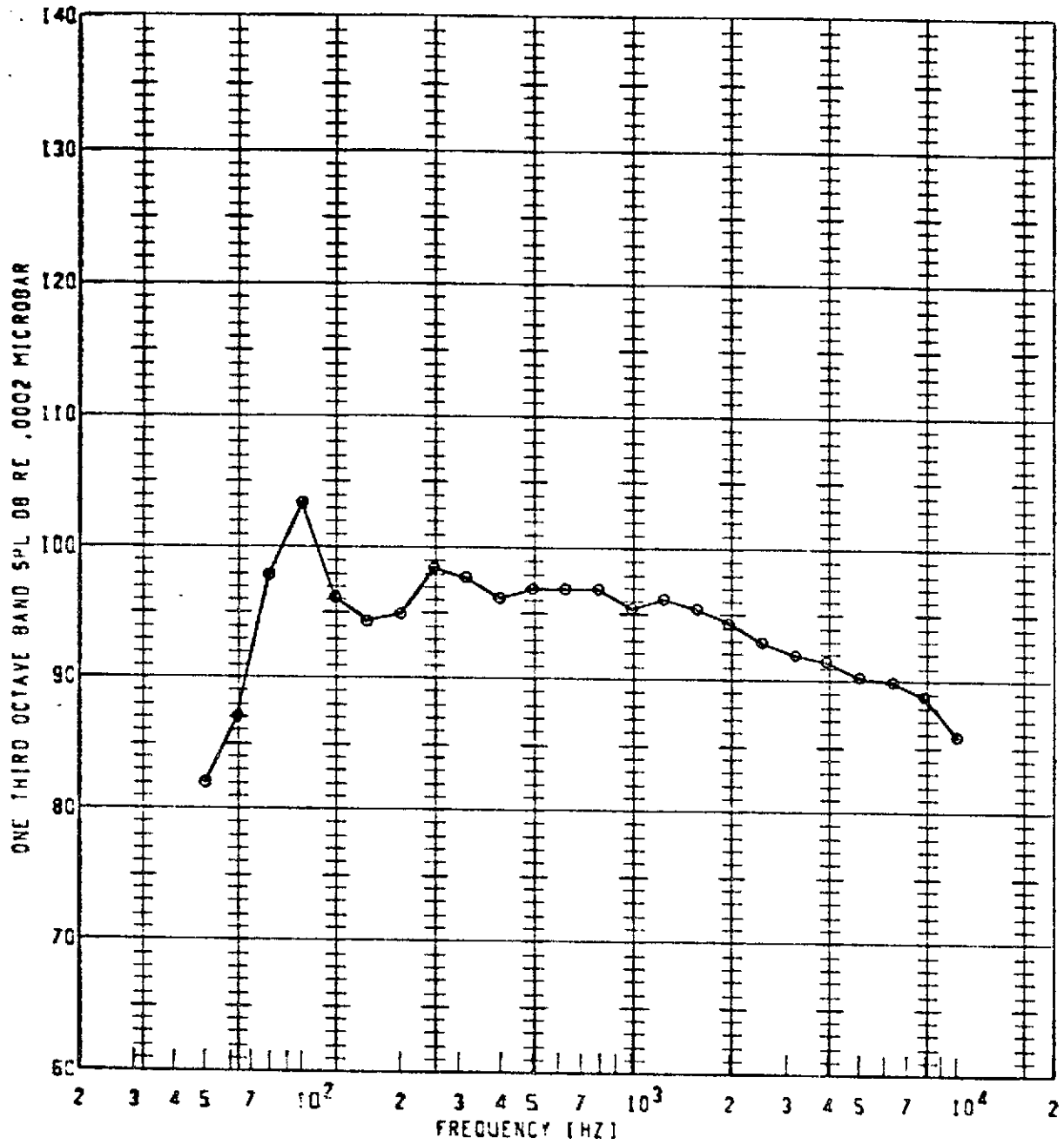
| <u>PLOT SYMBOL</u> | <u>RUN NUMBER</u> | <u>JET TEMP</u> | <u>PRESSURE RATIO</u> | <u>ANGLE RE INLET</u> | <u>OBSERVER LOCATION</u> | <u>OASPL (DB)</u> | <u>GAIN SETTING</u> | <u>SPECIAL ID</u> |
|--------------------|-------------------|-----------------|-----------------------|-----------------------|--------------------------|-------------------|---------------------|-------------------|
| e                  | 106               | 750             | 1.300                 | 120                   | 50FP                     | 108.5             | 20                  |                   |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



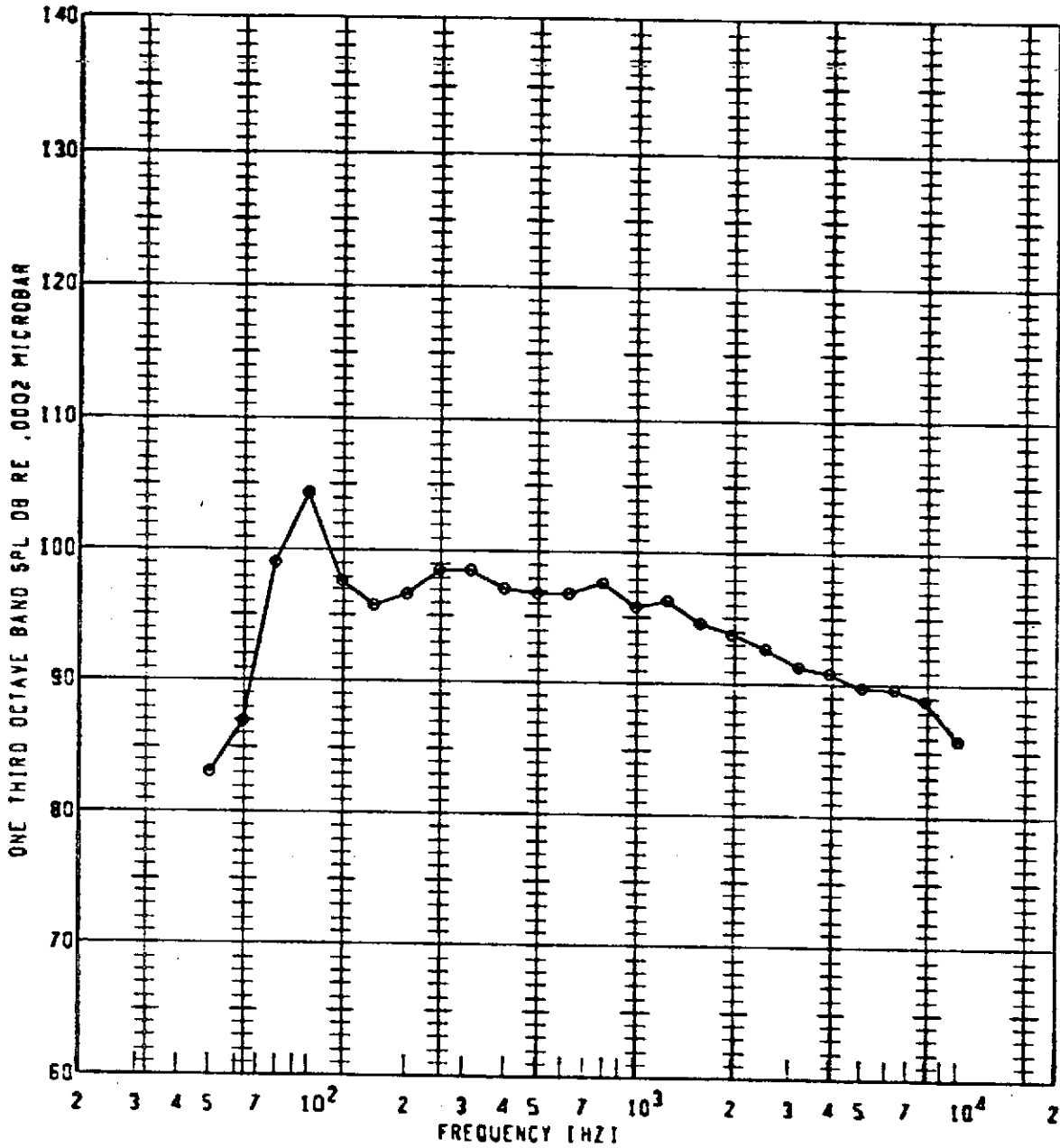
| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ○          | 10G        | 750      | 1.300          | 125            | 50FP              | 109.0      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



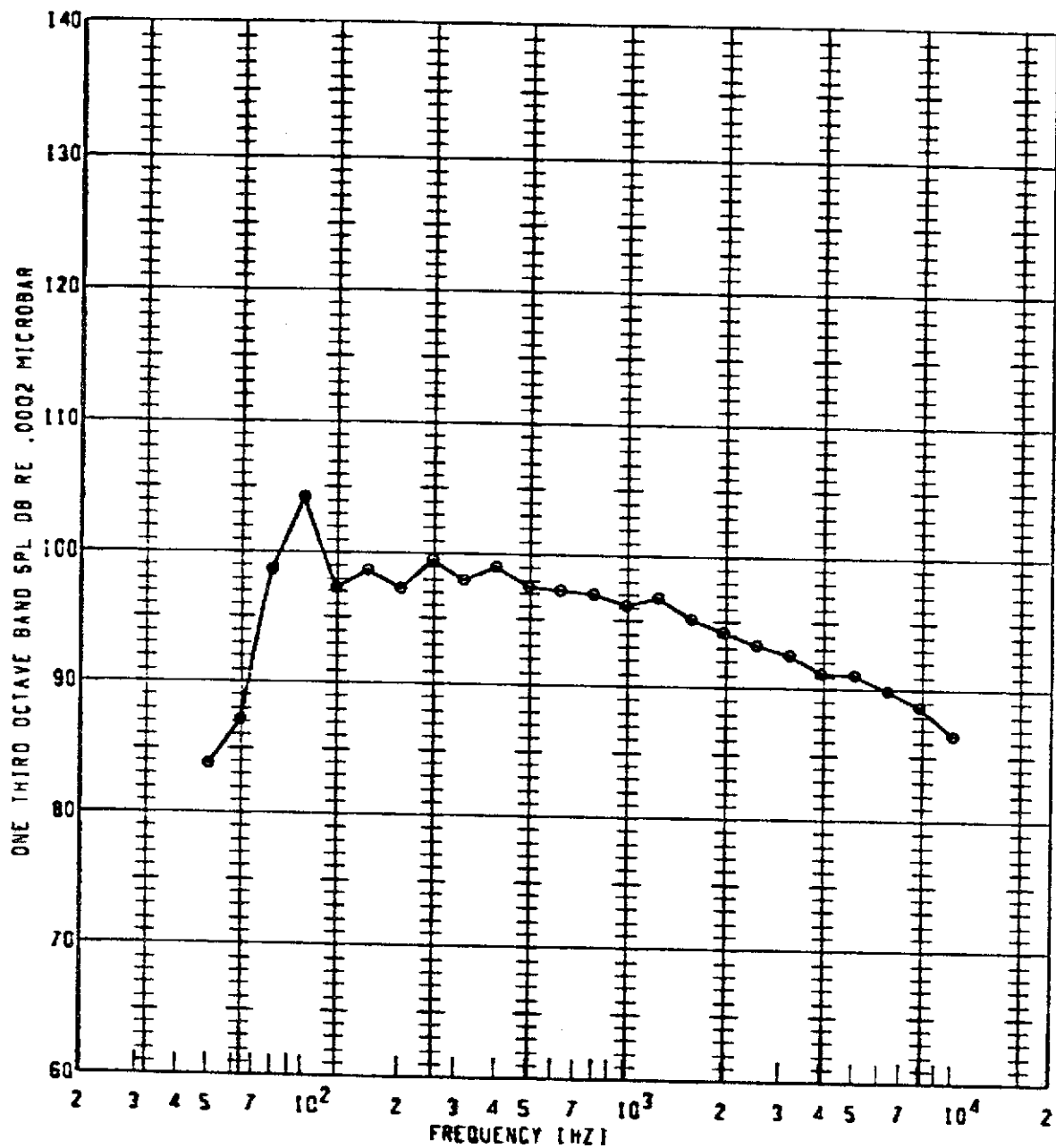
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | CASPL [DB] | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ○           | 10G        | 750      | 1.300          | 130            | 50FP              | 109.6      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



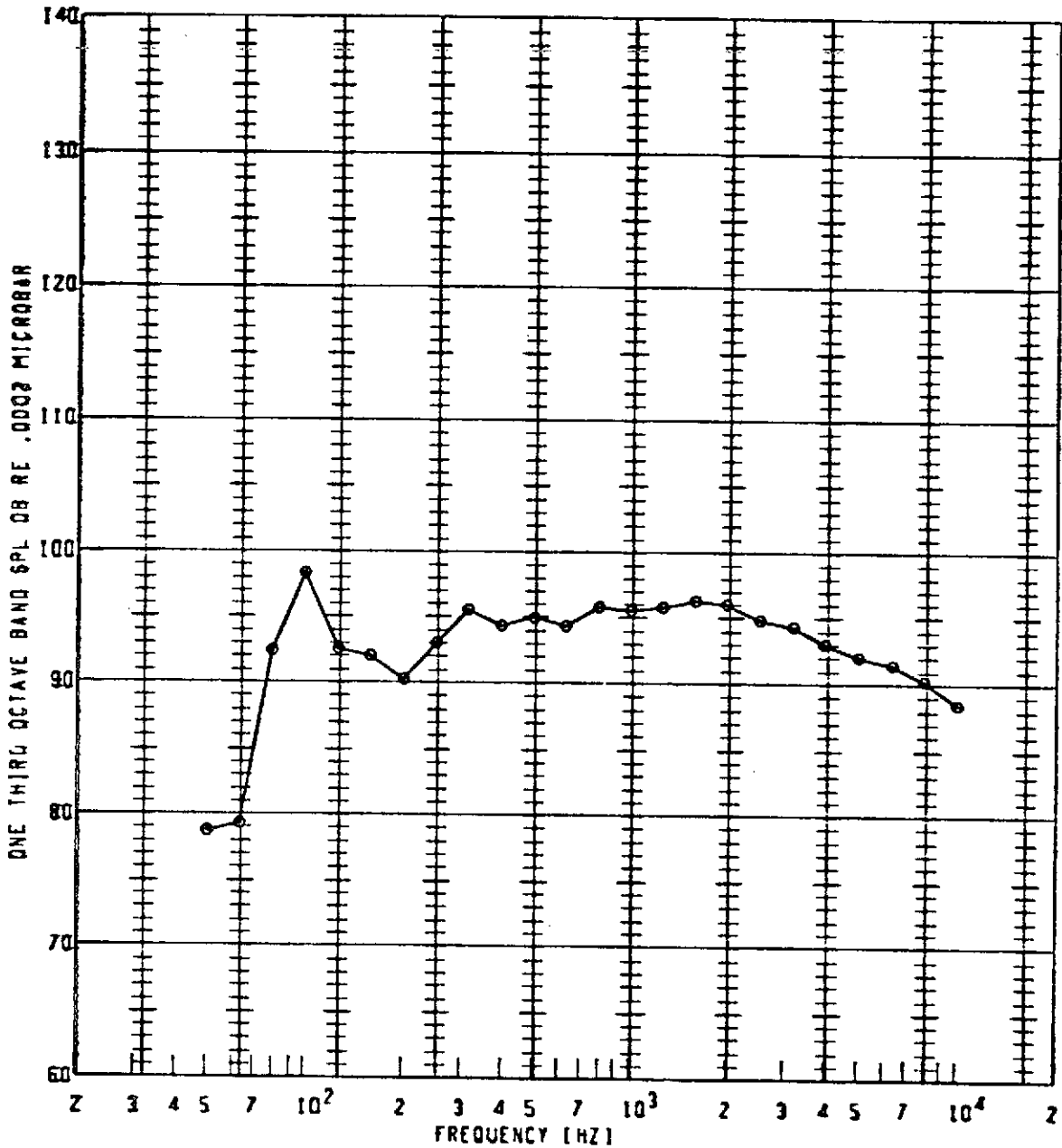
| Plot Symbol | Run Number | Jet Temp | Pressure Ratio | Angle Re Inlet | Observer Location | CASPL (dB) | Gain Setting | Special ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊖           | 100        | 750      | 1.300          | 135            | 50FP              | 110.2      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE TO TEST - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | DASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| •           | 106        | 750      | 1.300          | 140            | 50FP              | 110.6      | 10           |            |

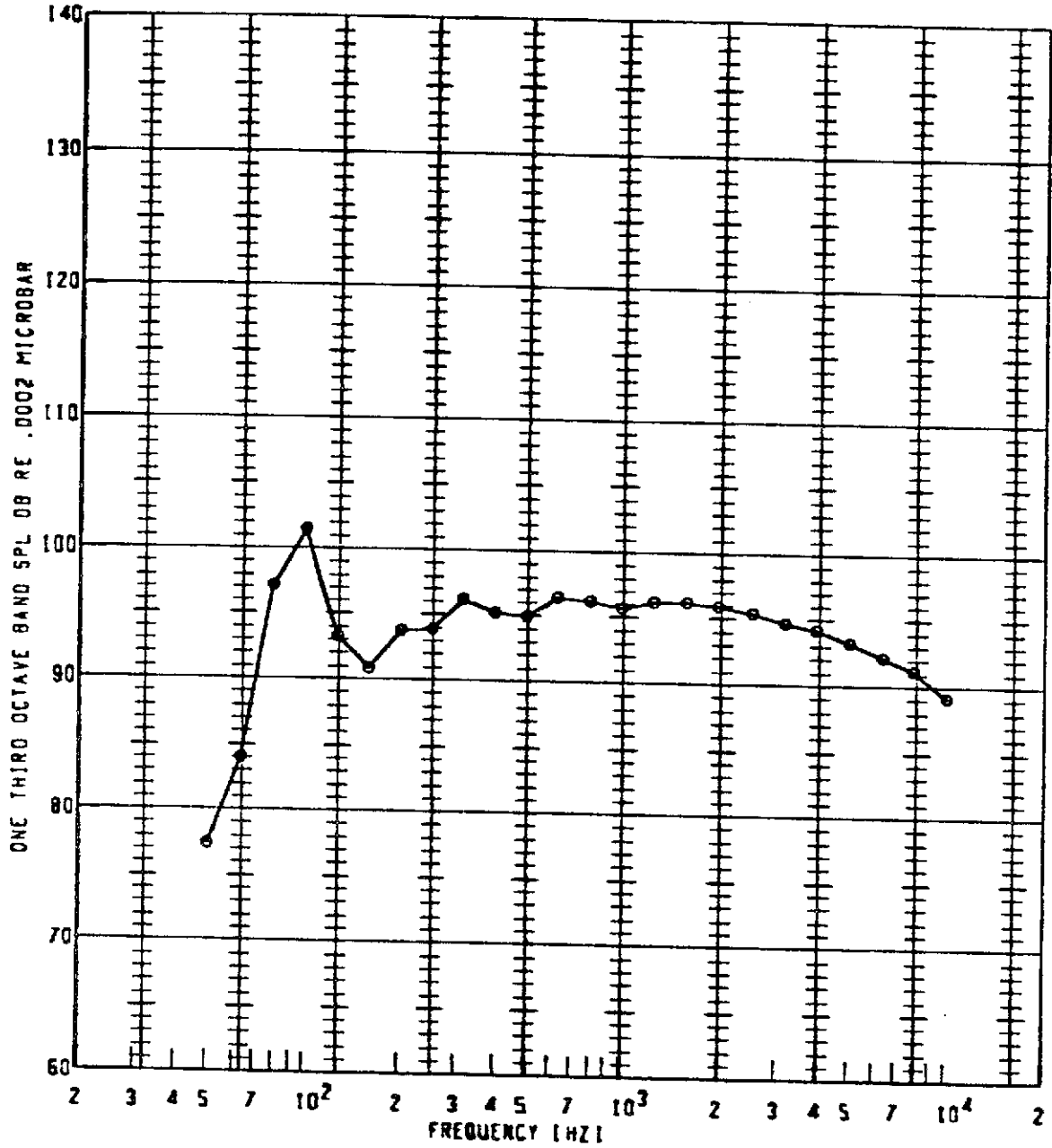
BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| a          | 100        | 800      | 1.400          | 90             | 50FP              | 107.7      | 10           |            |

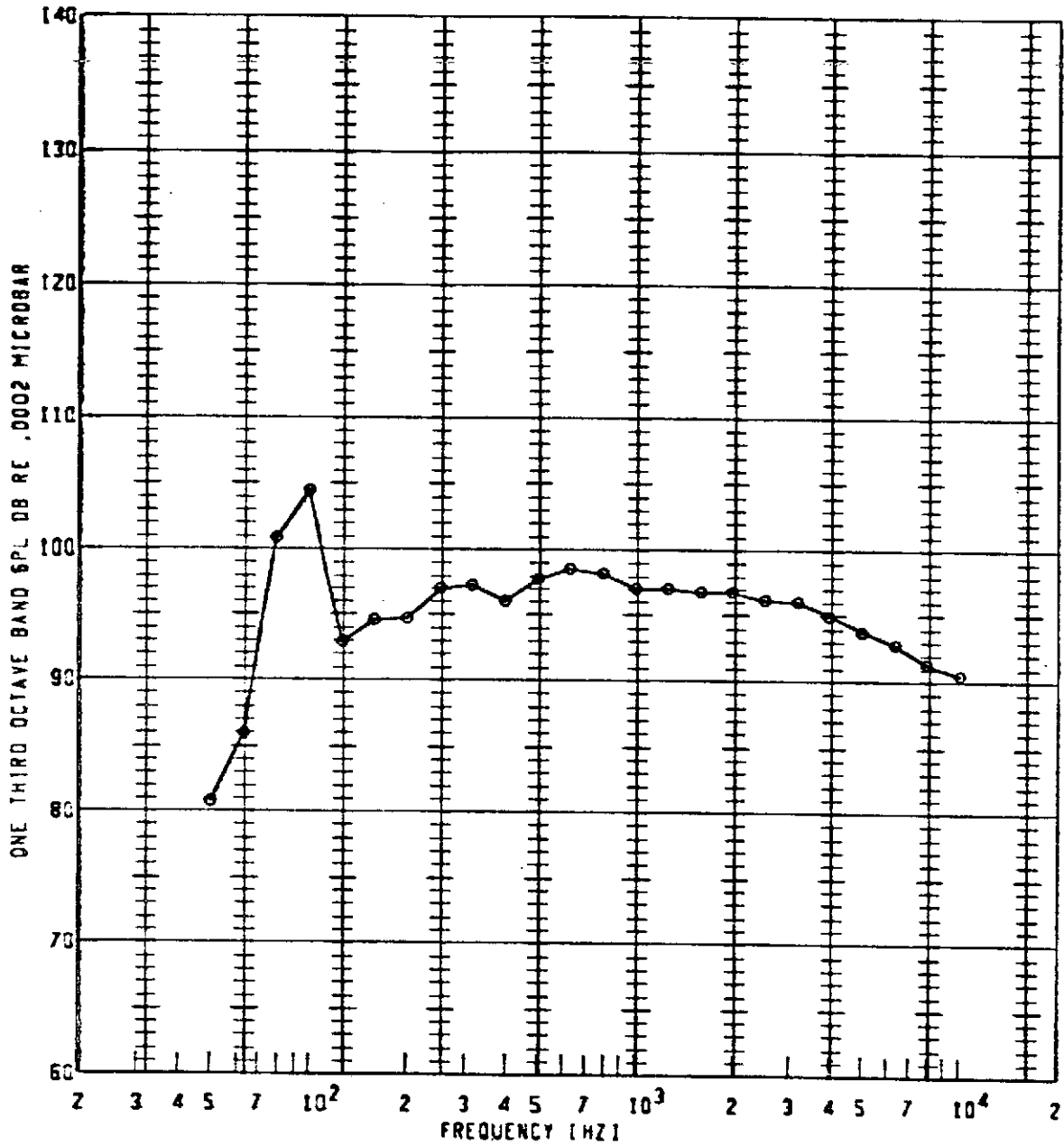


BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



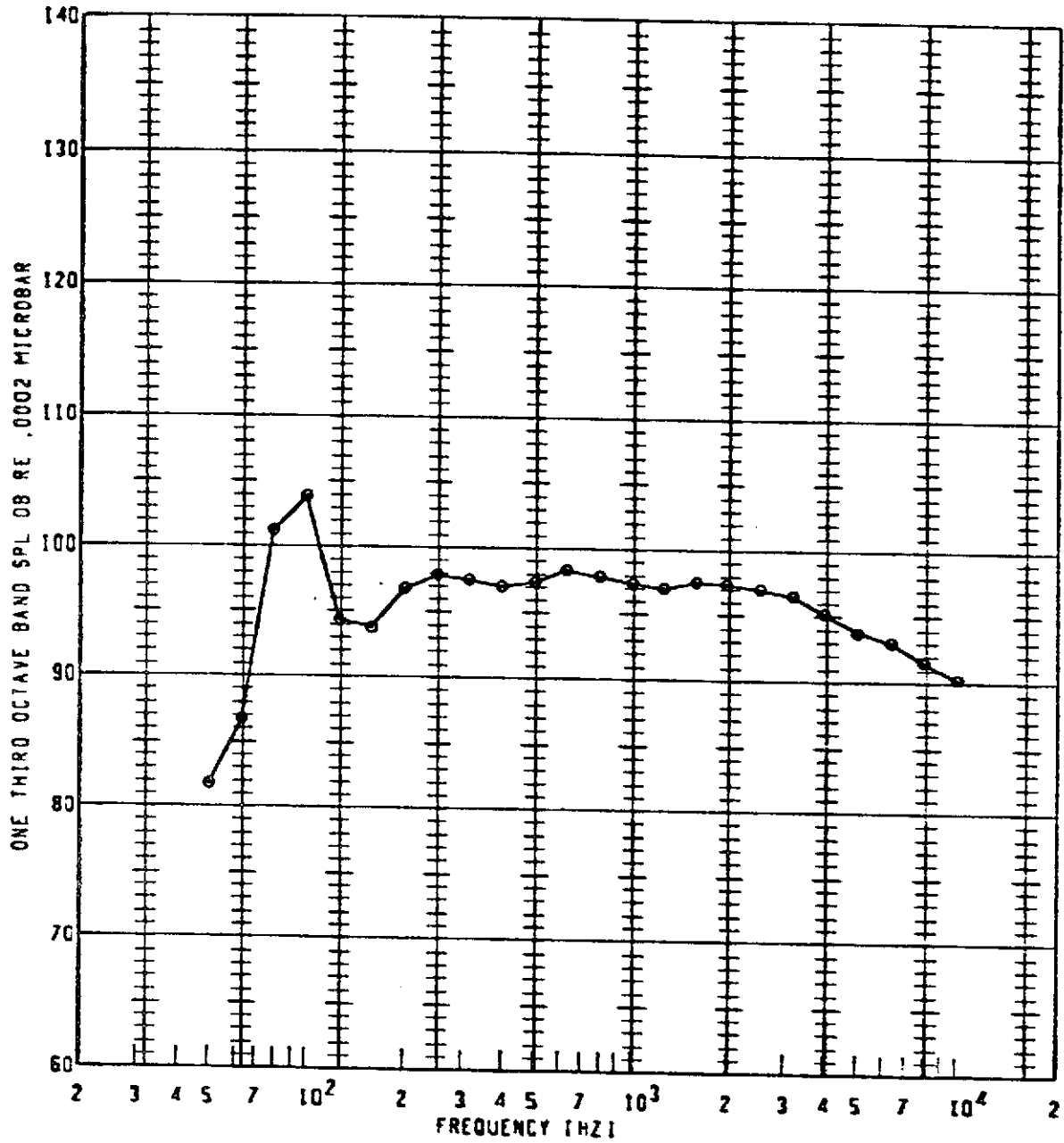
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL [DB] | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 106        | 800      | 1.400          | 100            | 50FP              | 108.9      | 20           |            |

BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



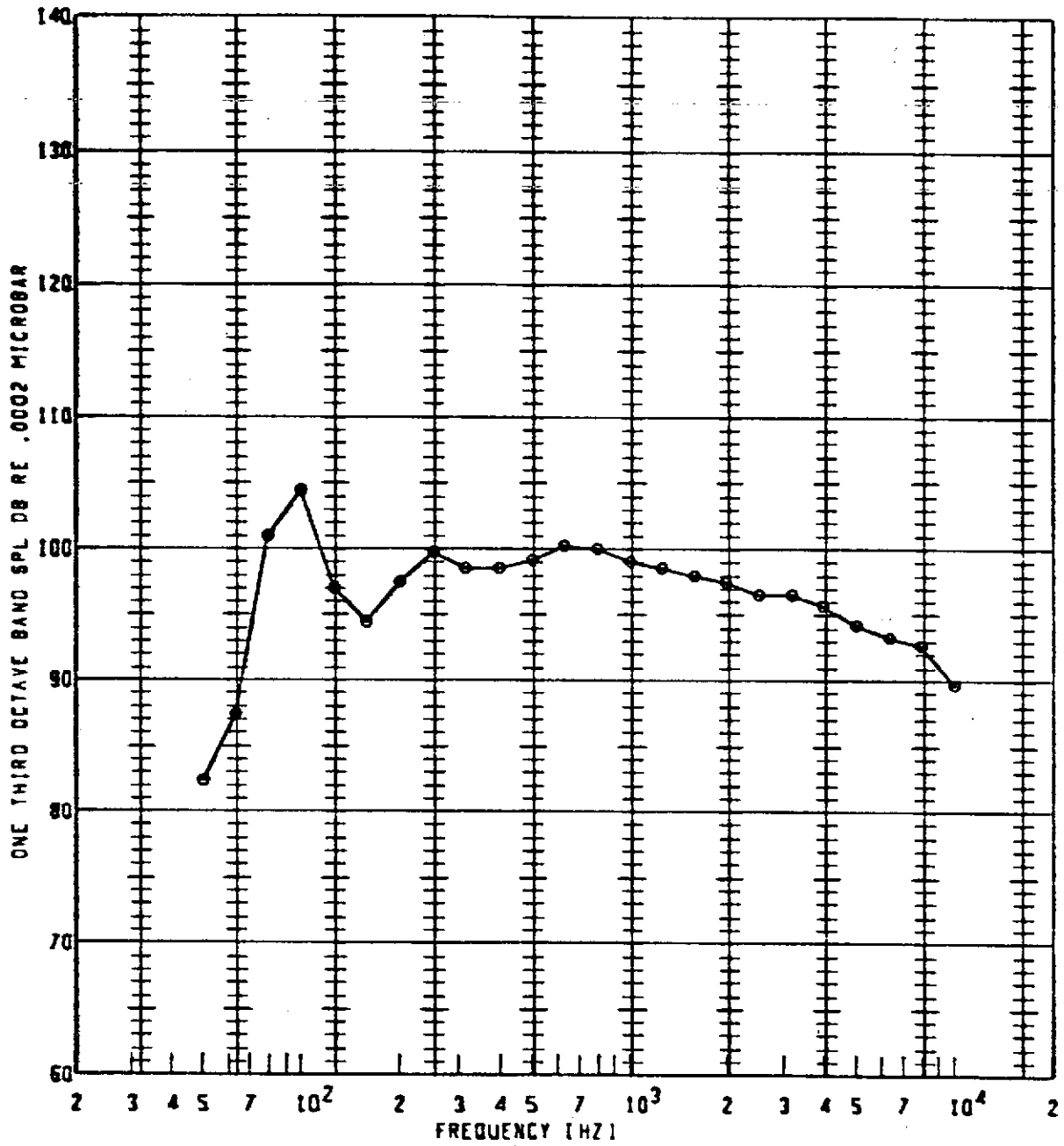
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ○           | 100        | 800      | 1.400          | 110            | 50FP              | 110.8      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



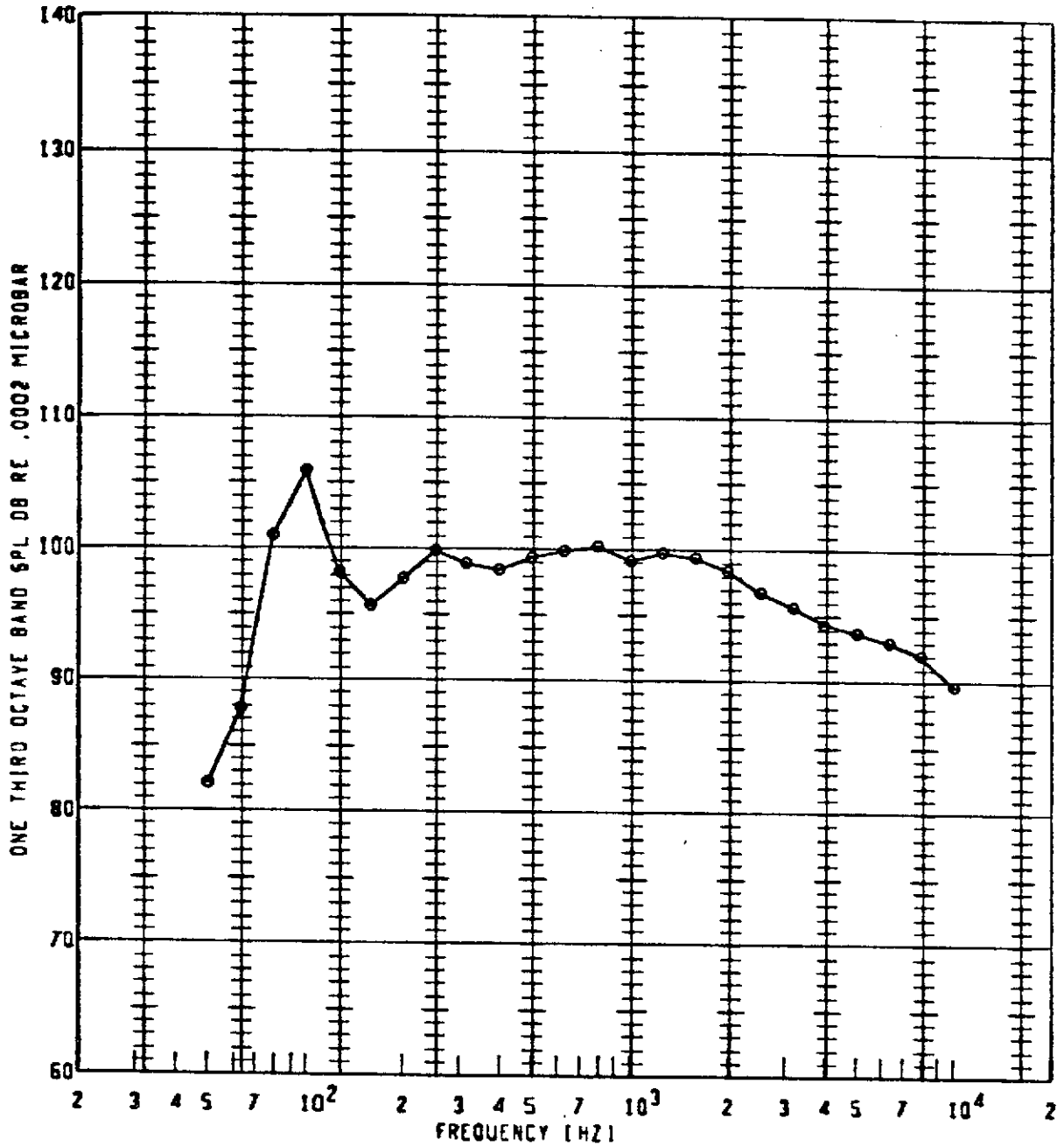
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | DASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 106        | 800      | 1.400          | 115            | 50FP              | 110.9      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



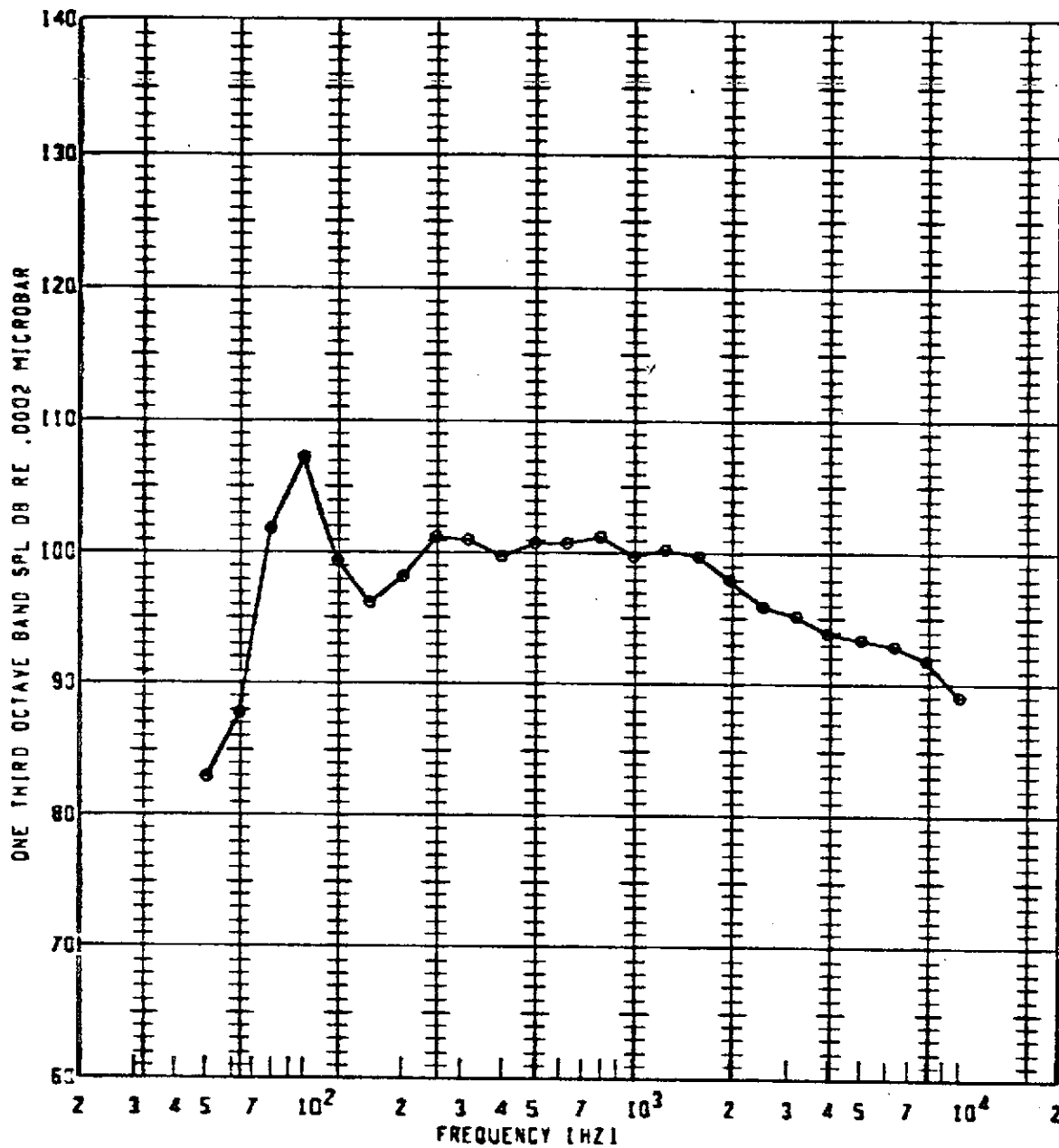
| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e          | 106        | 800      | 1.400          | 120            | 50FP              | 111.9      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



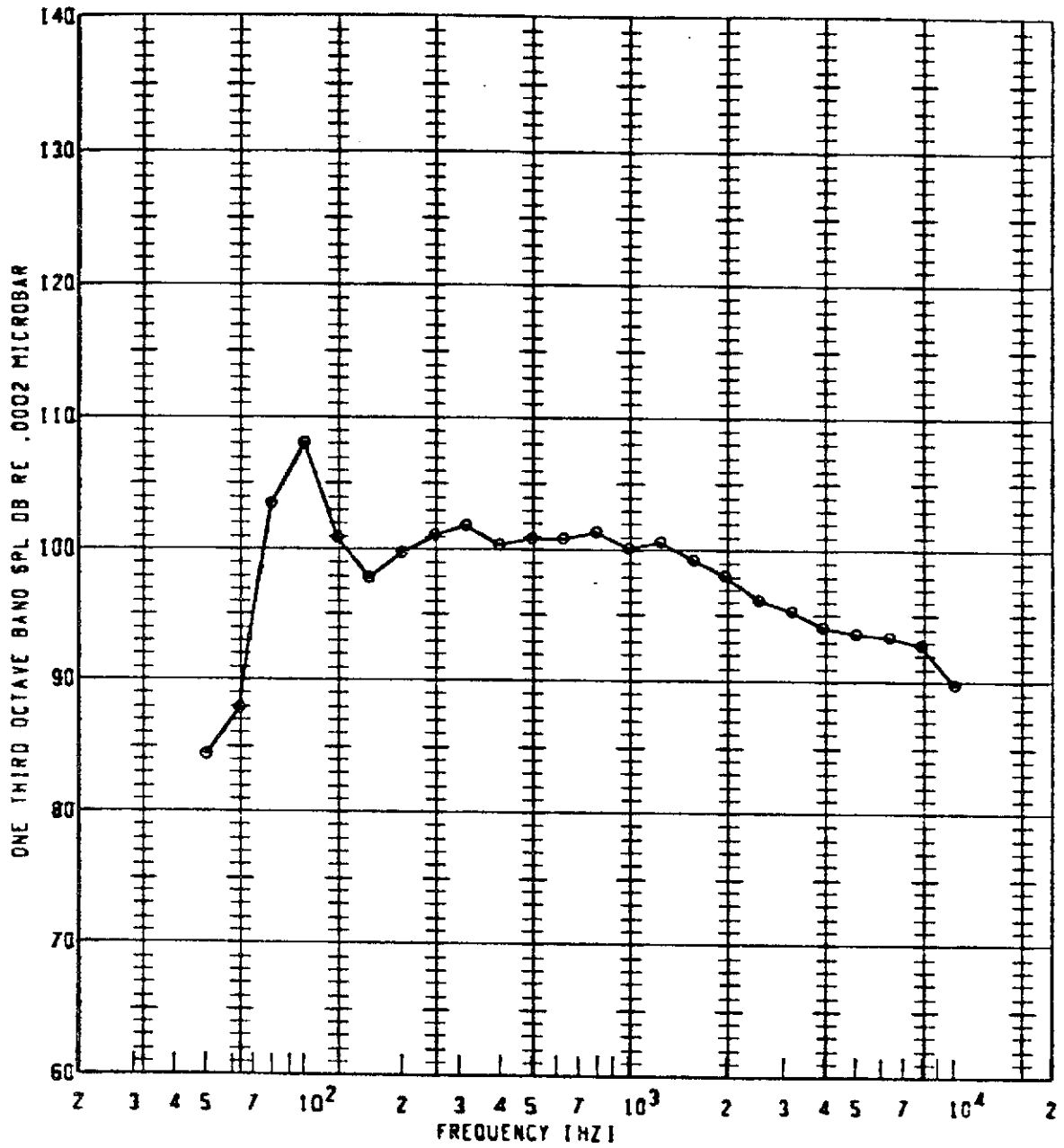
| ●           | 106        | 800      | 1.400          | 125            | SGFP              | 112.4      | 10           |            |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |

**BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY**



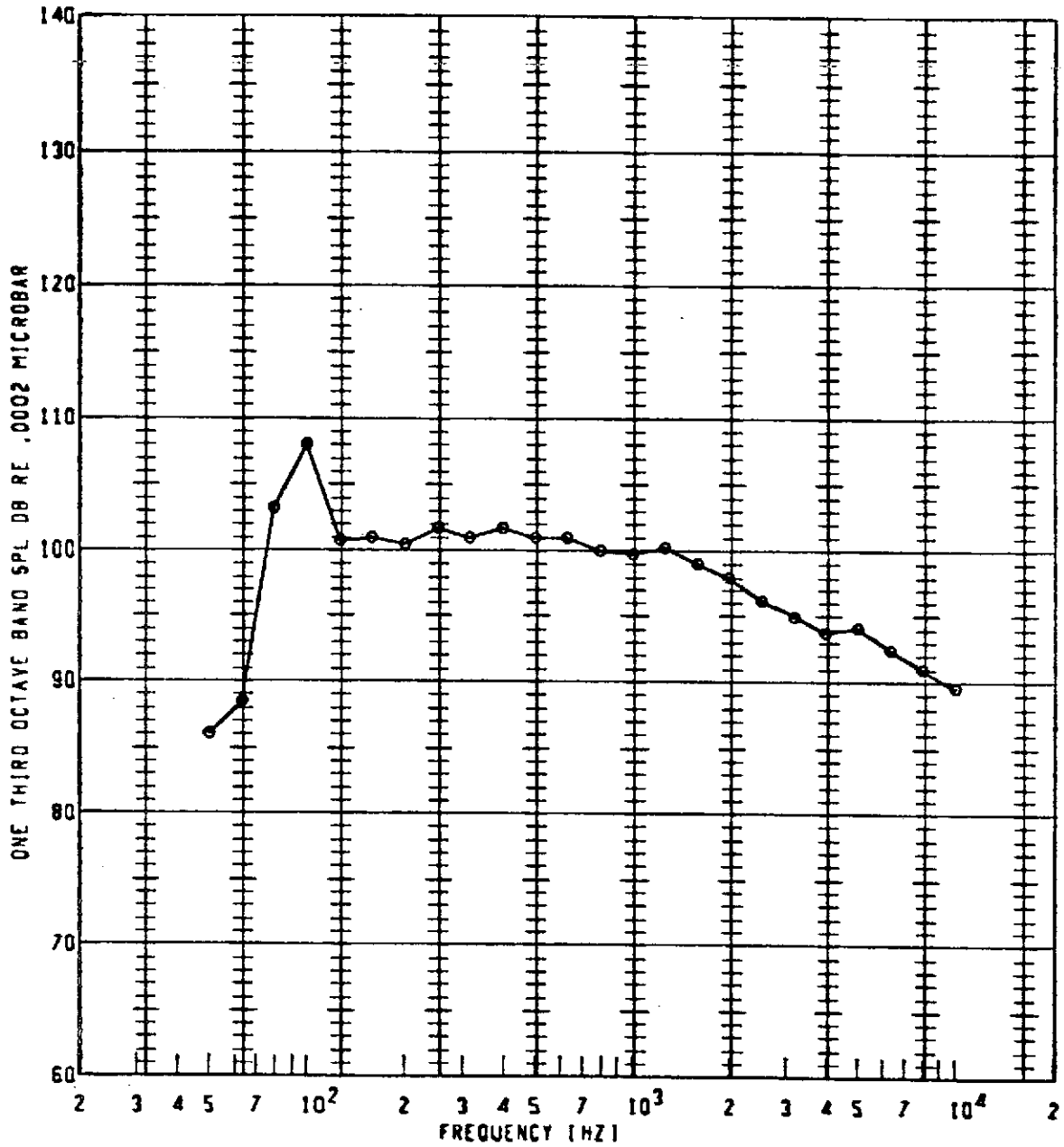
| <u>PLOT SYMBOL</u> | <u>RUN NUMBER</u> | <u>JET TEMP</u> | <u>PRESSURE RATIO</u> | <u>ANGLE RE INLET</u> | <u>OBSERVER LOCATION</u> | <u>GASPL (DB)</u> | <u>GAIN SETTING</u> | <u>SPECIAL ID</u> |
|--------------------|-------------------|-----------------|-----------------------|-----------------------|--------------------------|-------------------|---------------------|-------------------|
| o                  | 106               | 800             | 1.400                 | 130                   | 50FP                     | 113.2             | 10                  |                   |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 106        | 800      | 1.400          | 135            | 50FP              | 113.9      | 10           |            |

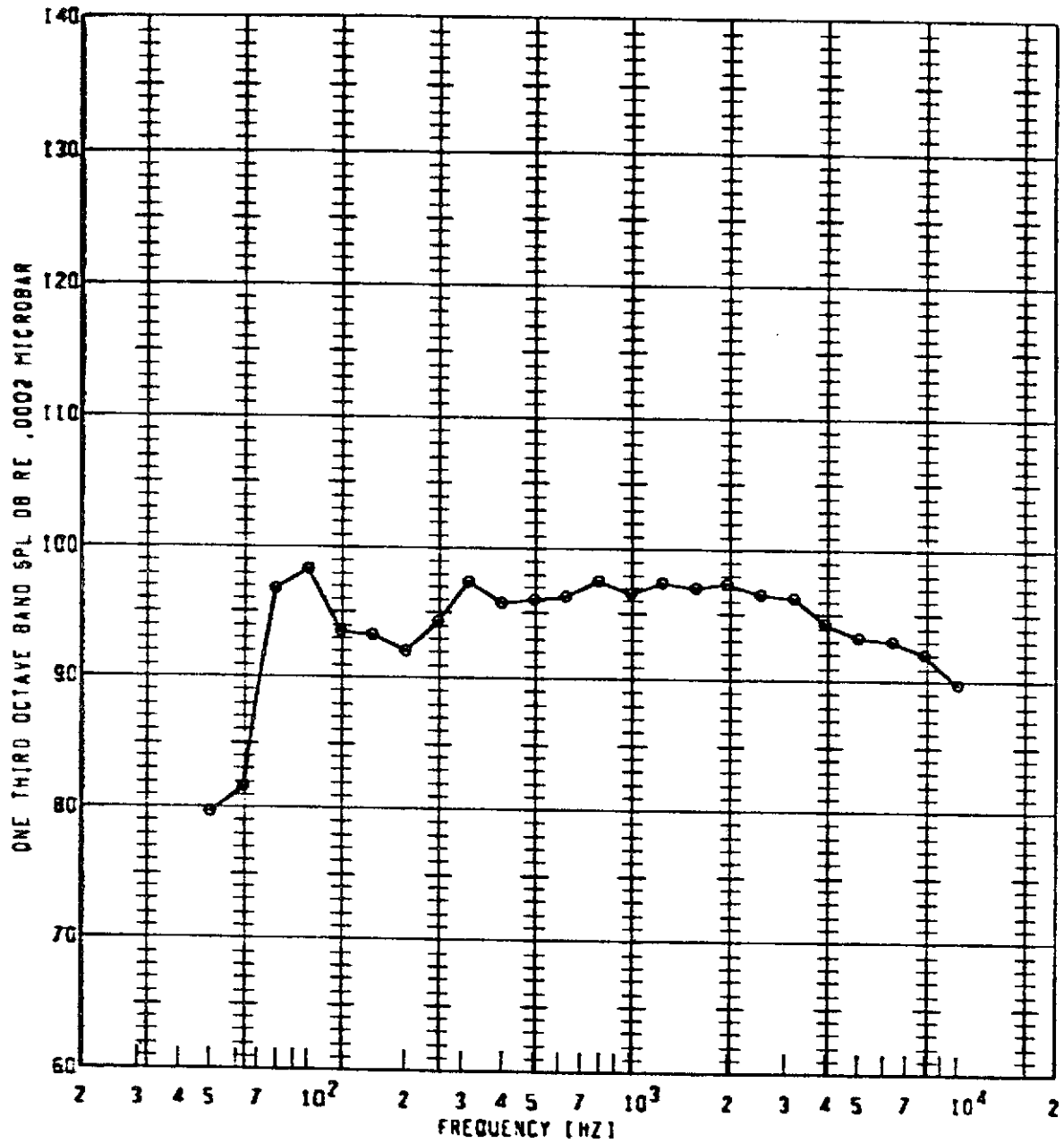
BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| PLT SYM | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|---------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e       | 106        | 800      | 1.400          | 140            | SOFP              | 113.9      | 10           |            |

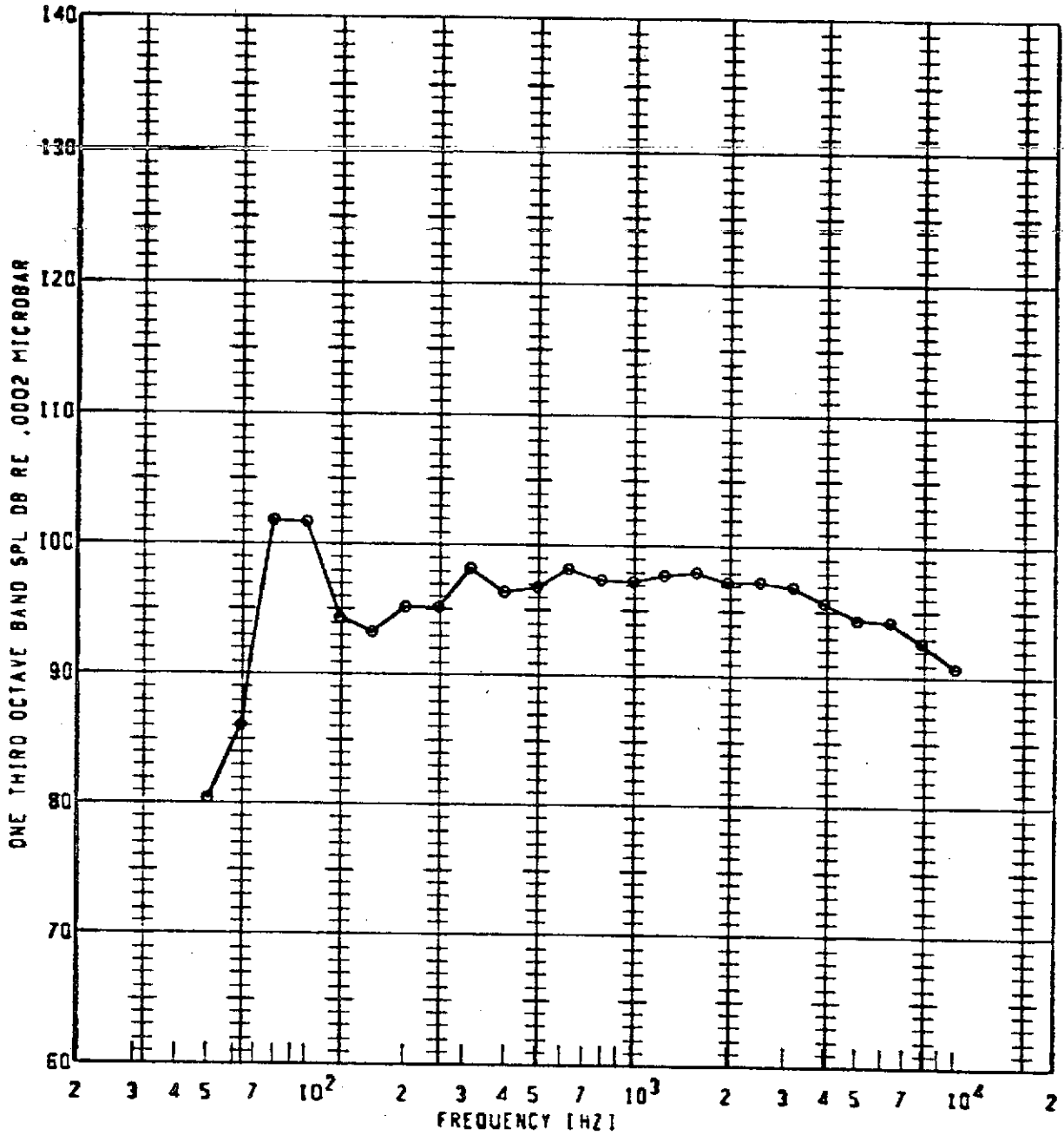


BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



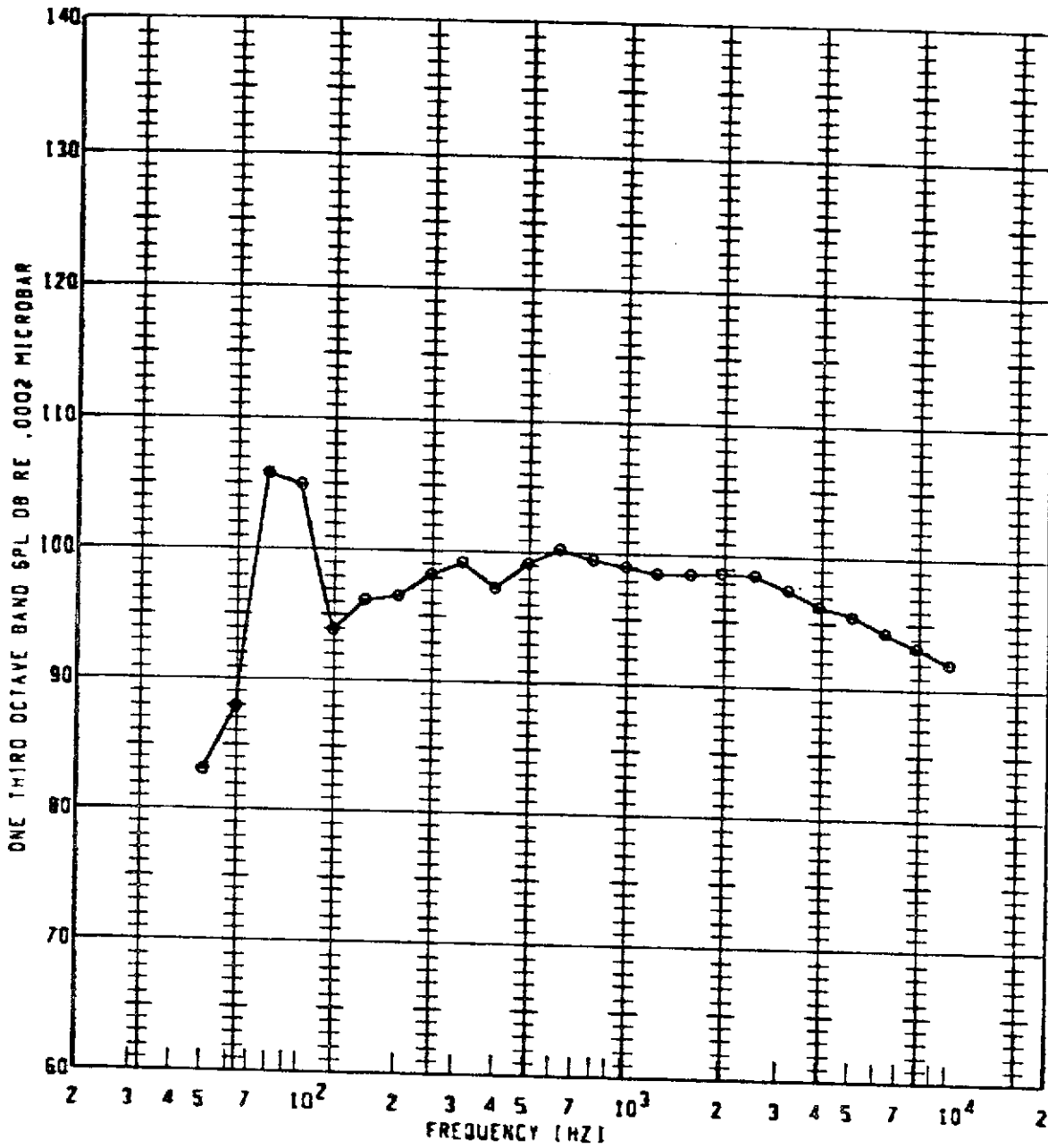
| ●           | 106        | 850      | 1.500          | 90             | 50FP              | 109.1      | 10           |            |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |

BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



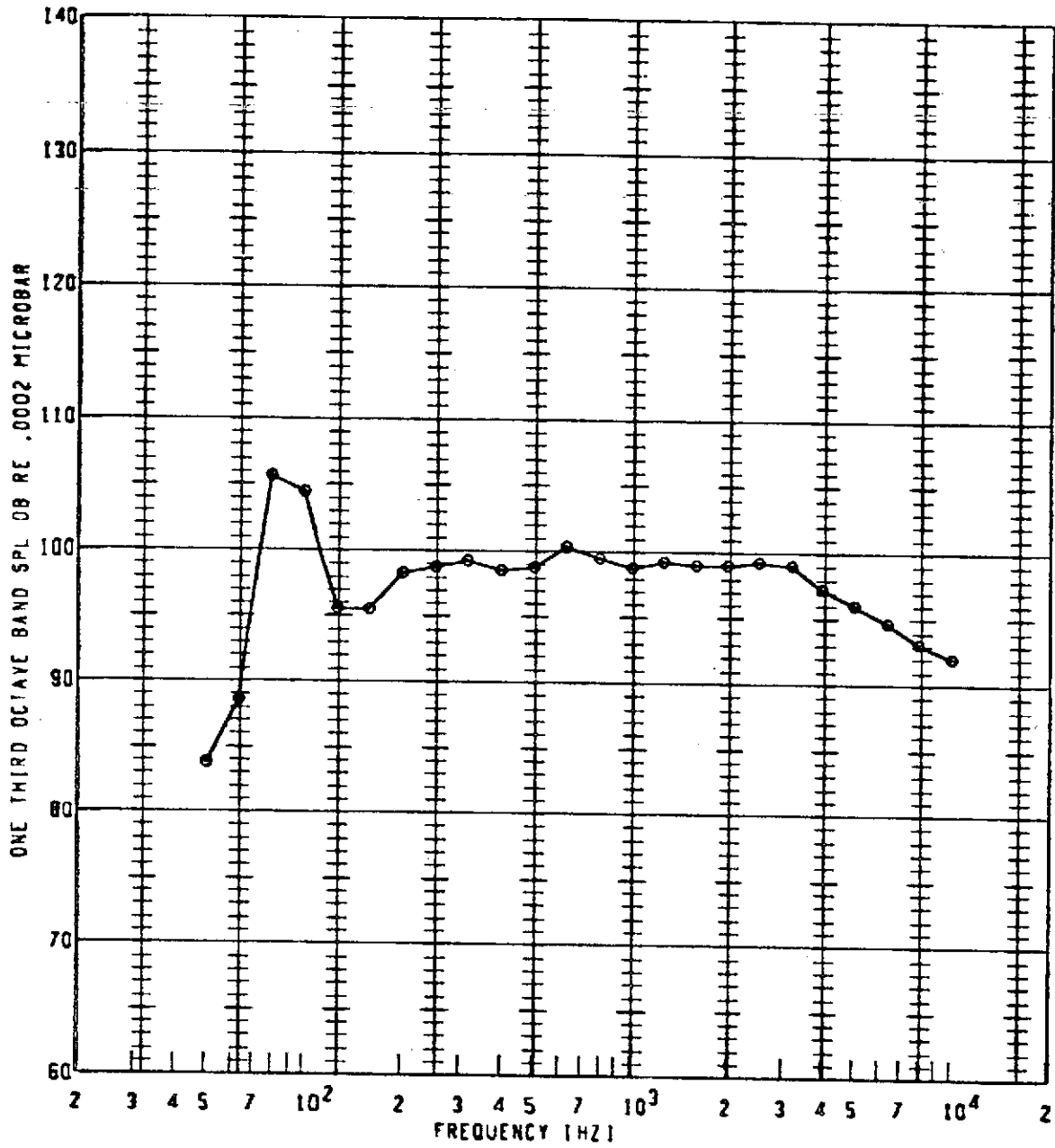
| PLGT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|---------|
| ⊙           | 106        | 850      | 1.500          | 100            | 50FP              | 110.6      | 10           | 10      |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



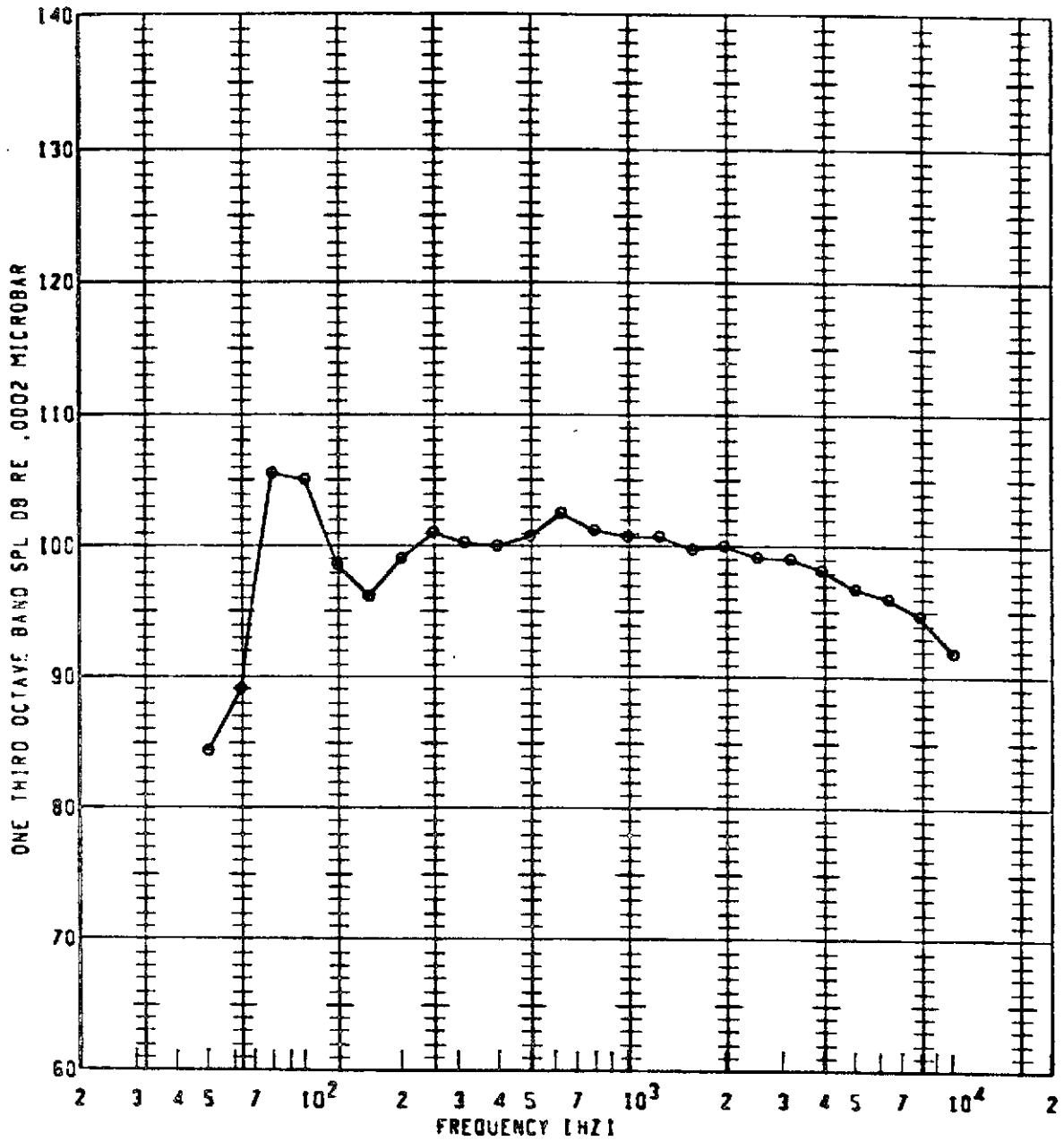
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OSPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|-----------|--------------|------------|
| ⊙           | 106        | 850      | 1.500          | 110            | 50FP              | 112.7     | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



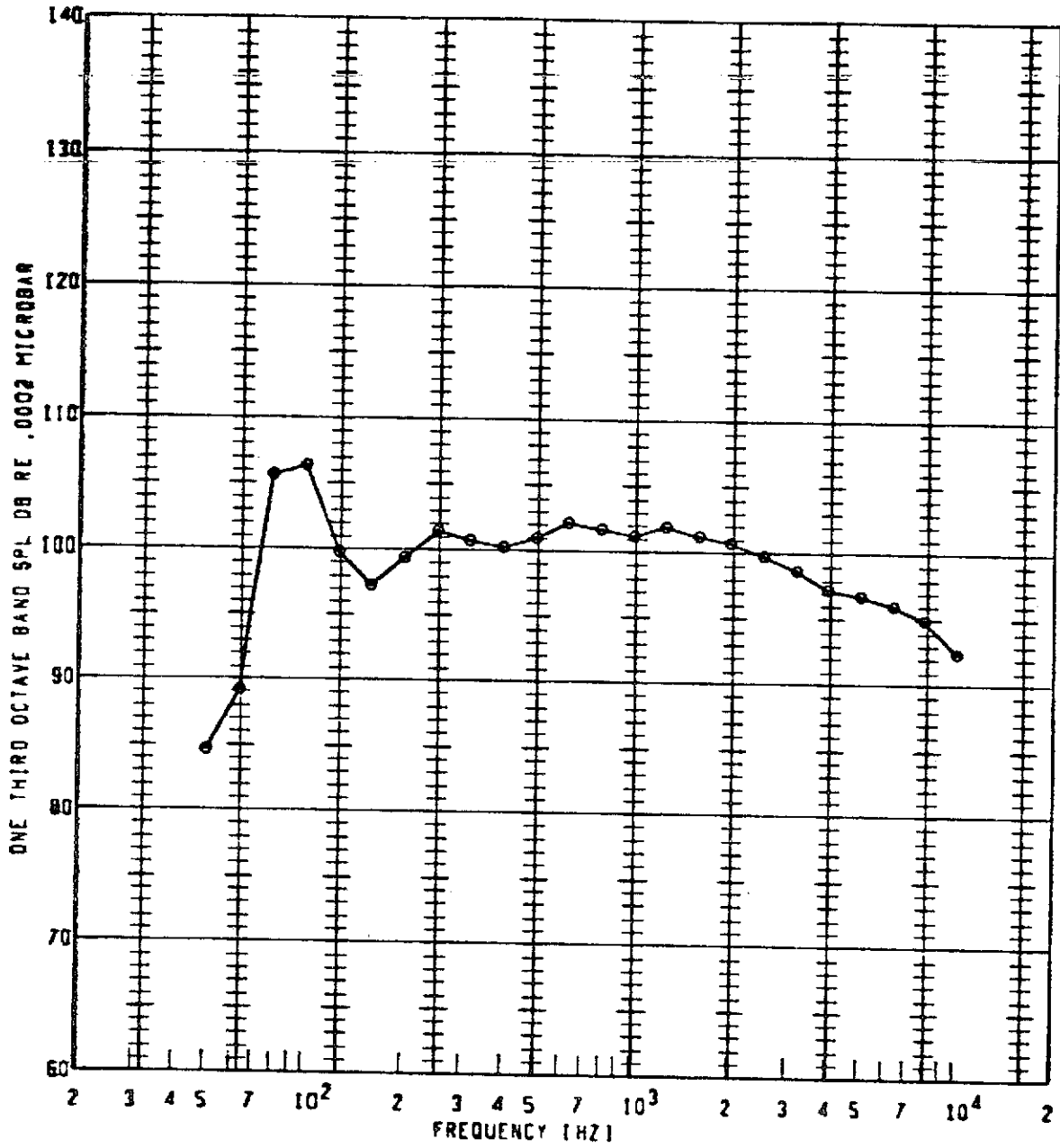
| PLBT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 106        | 850      | 1.500          | 115            | 50FP              | 112.9      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



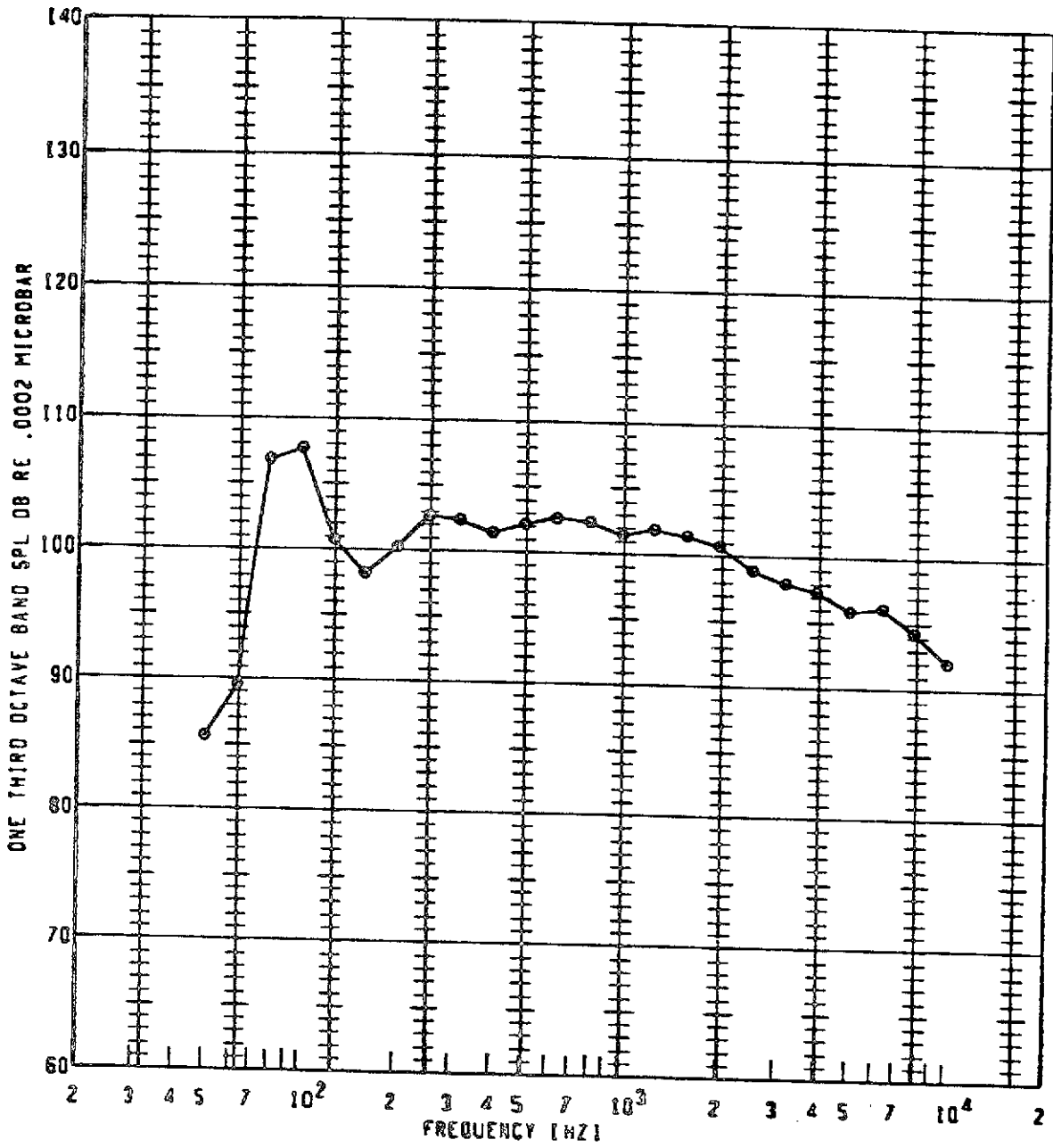
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 106        | 850      | 1.500          | 120            | SOFP              | 113.8      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



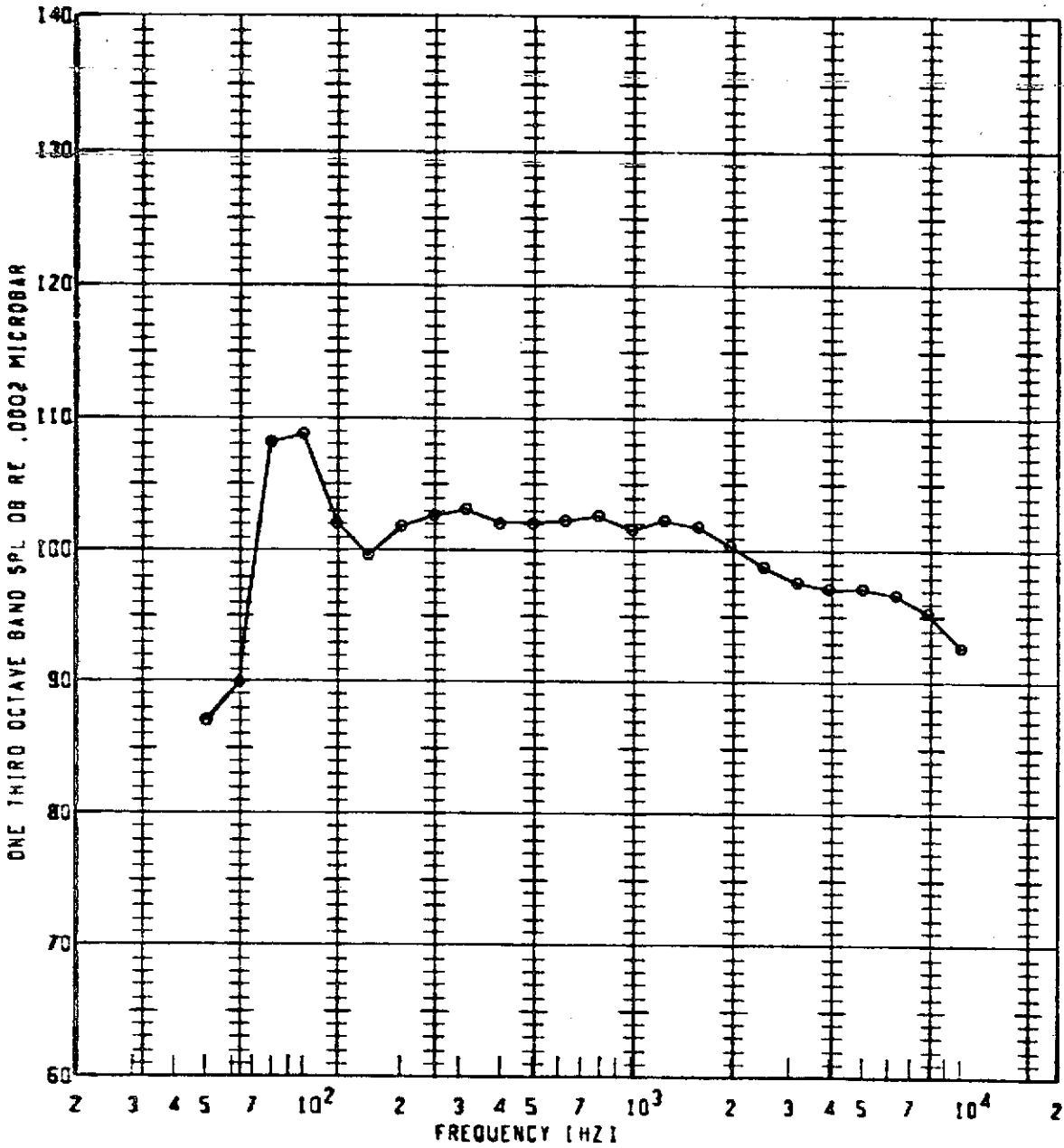
| Plot Symbol | Run Number | Jet Temp | Pressure Ratio | Angle Re Inlet | Observer Location | CASPL (dB) | Gain Setting | Special ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| o           | 106        | 850      | 1.500          | 125            | 50FP              | 114.4      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL [DB] | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 106        | 850      | 1.500          | 130            | 50FP              | 115.1      | 10           |            |

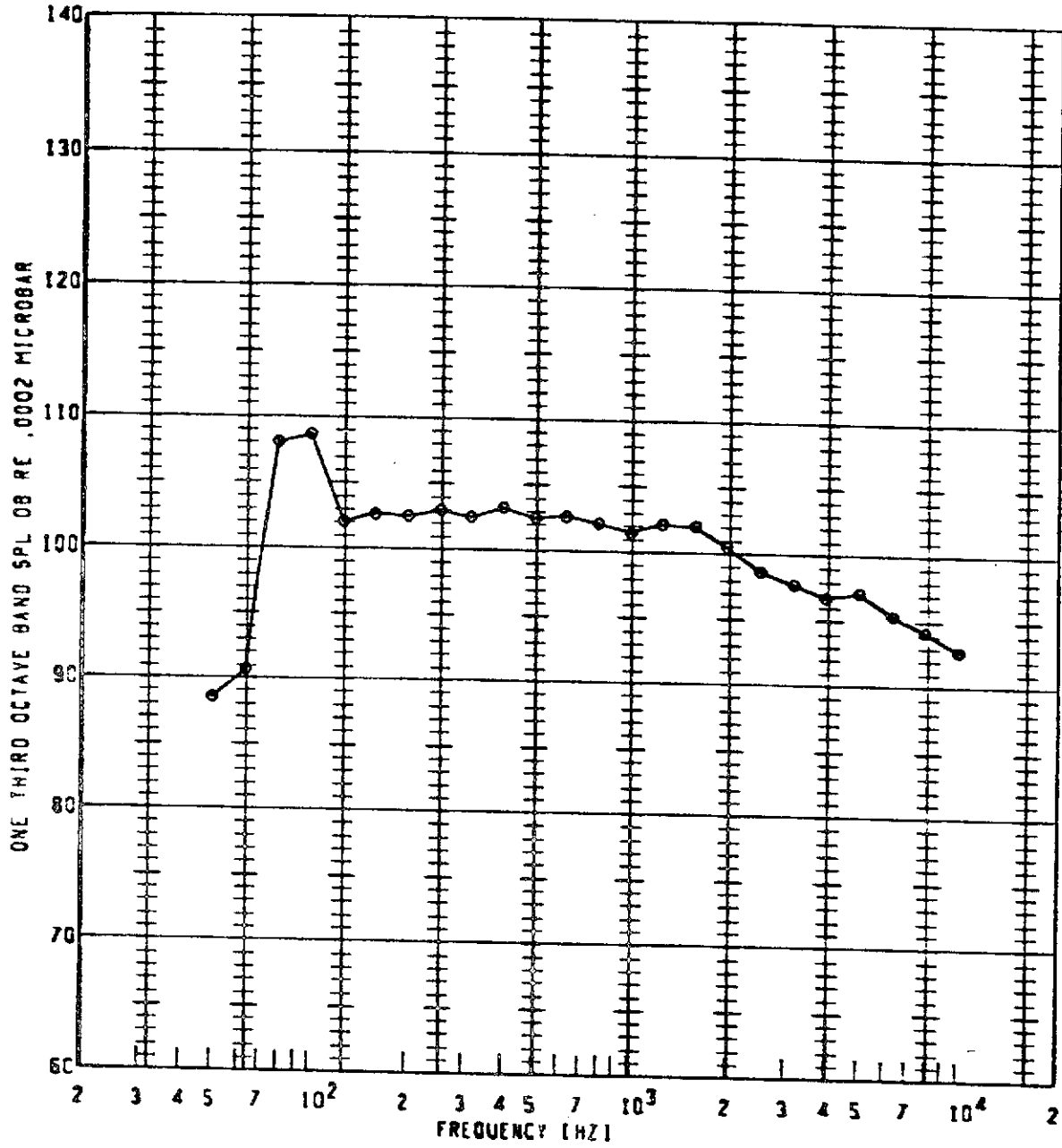
BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| PLDT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 106        | 850      | 1.500          | 135            | SQFP              | 115.8      | 10           |            |

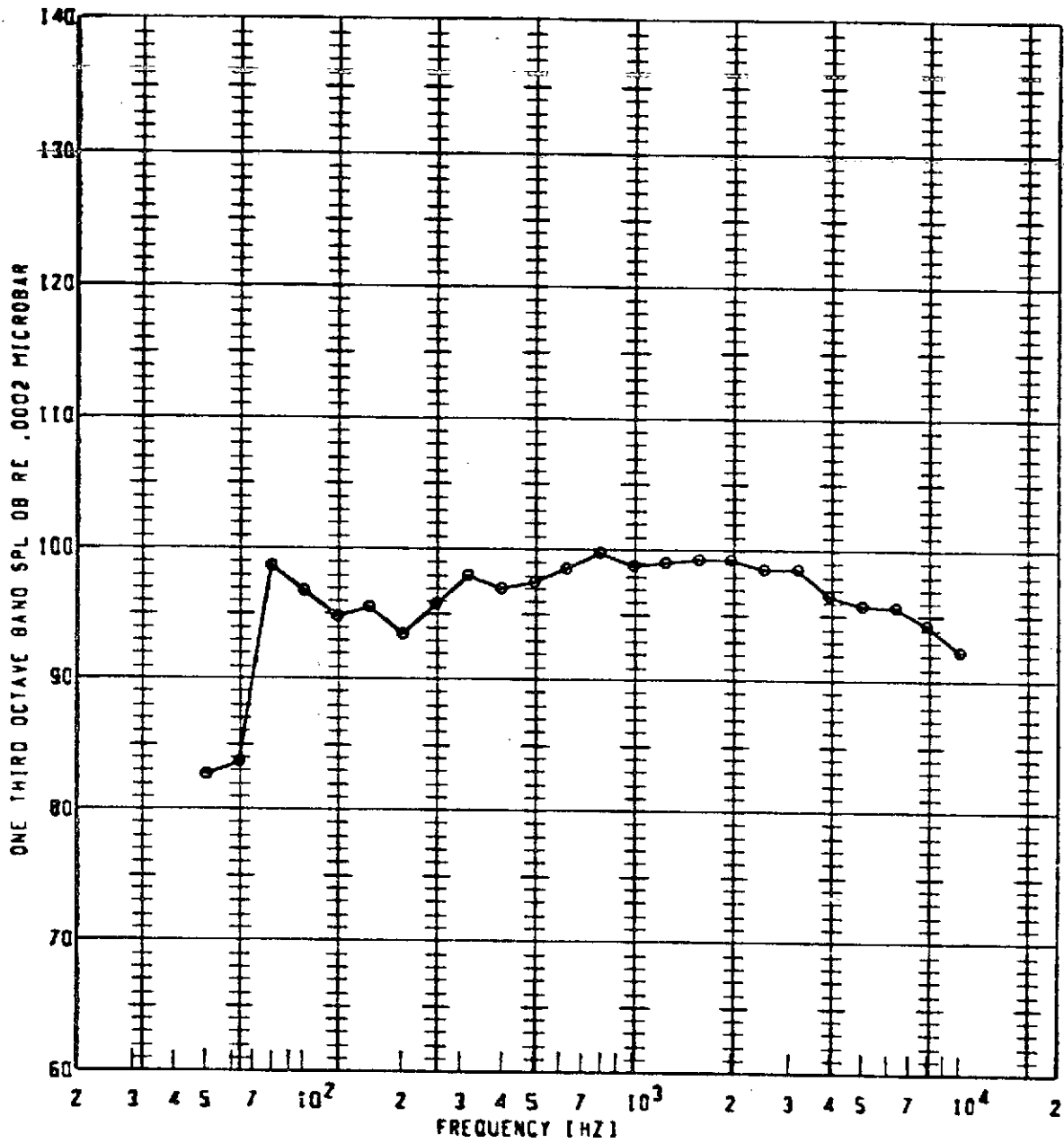


BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



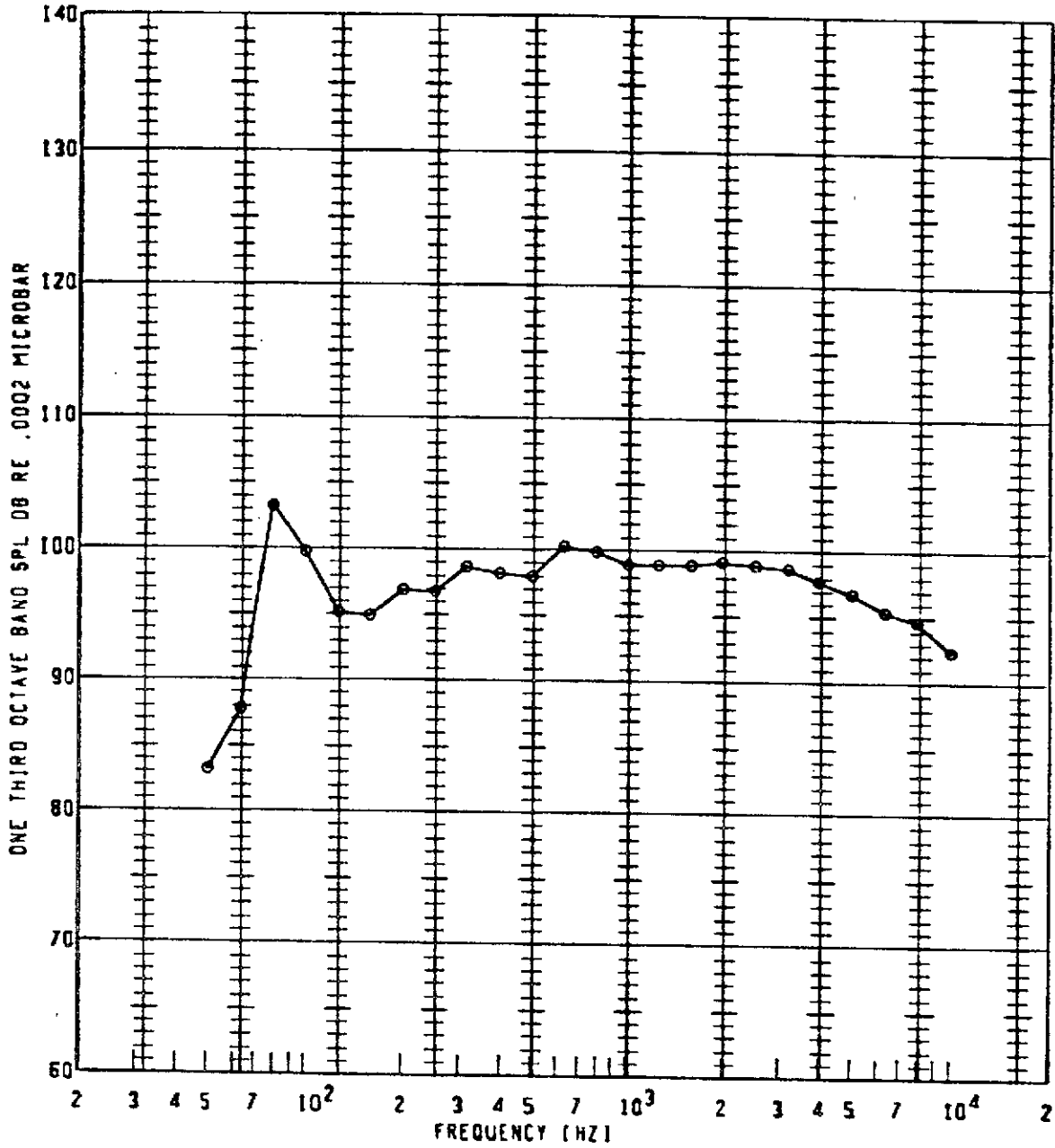
| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | CASPL (DB) | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙          | 106        | 850      | 1.500          | 140            | 50FP              | 115.9      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



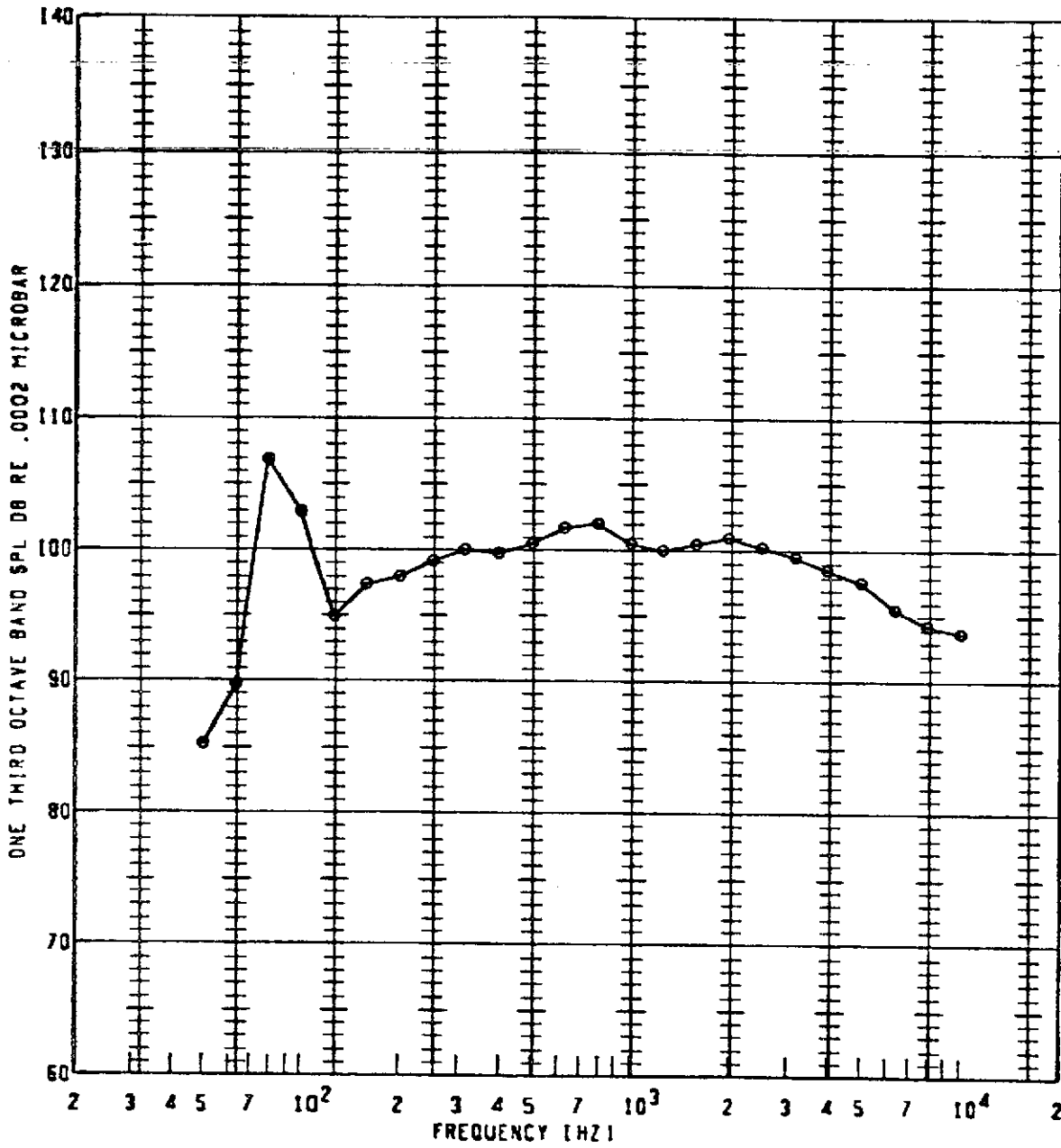
| Plot Symbol | Run Number | Jet Temp | Pressure Ratio | Angle re Inlet | Observer Location | QASPL [dB] | Gain Setting | Special ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 106        | 900      | 1.600          | 90             | 50FP              | 110.9      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



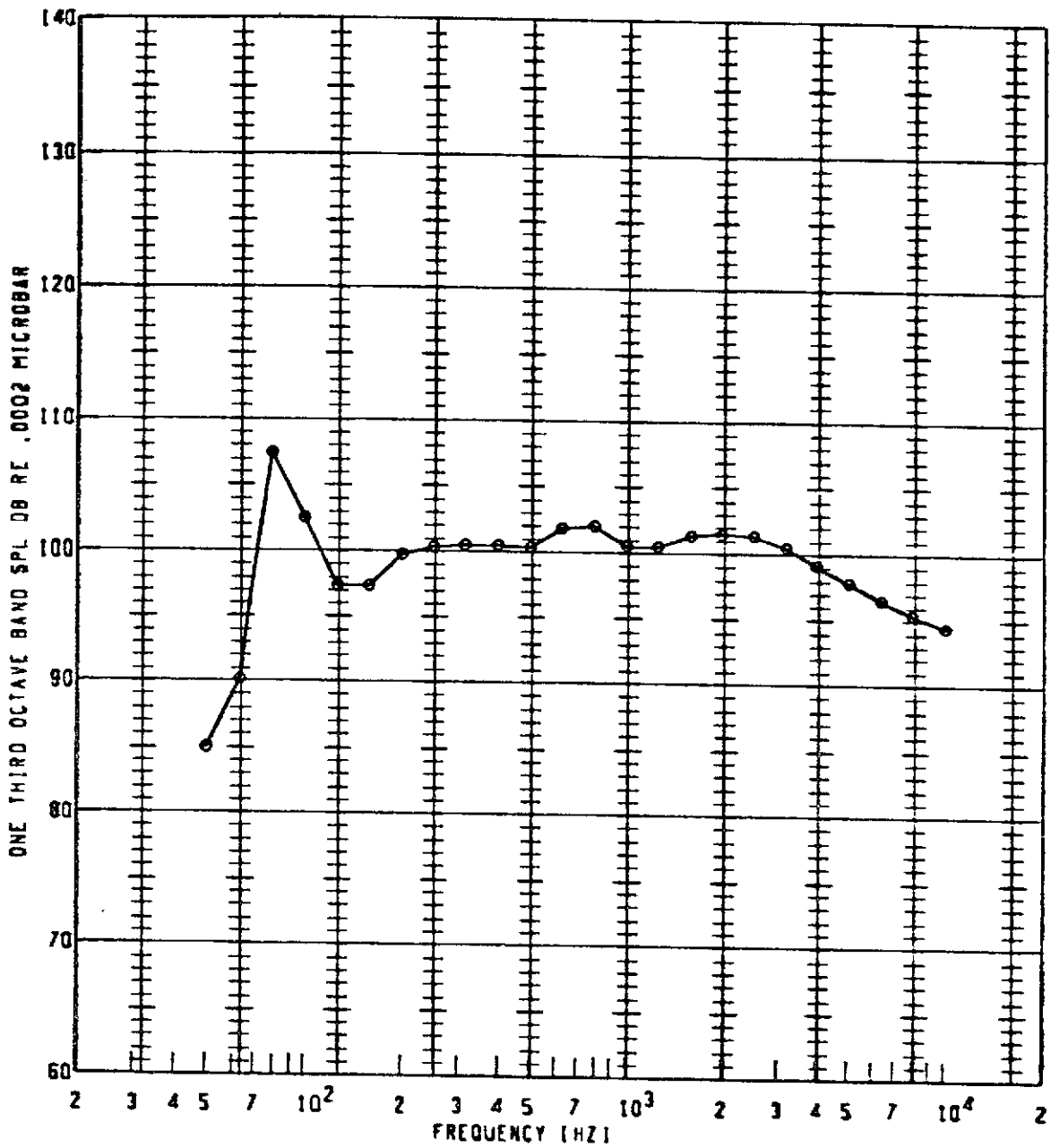
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| o           | 100        | 900      | 1.600          | 100            | SOFP              | 111.9      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



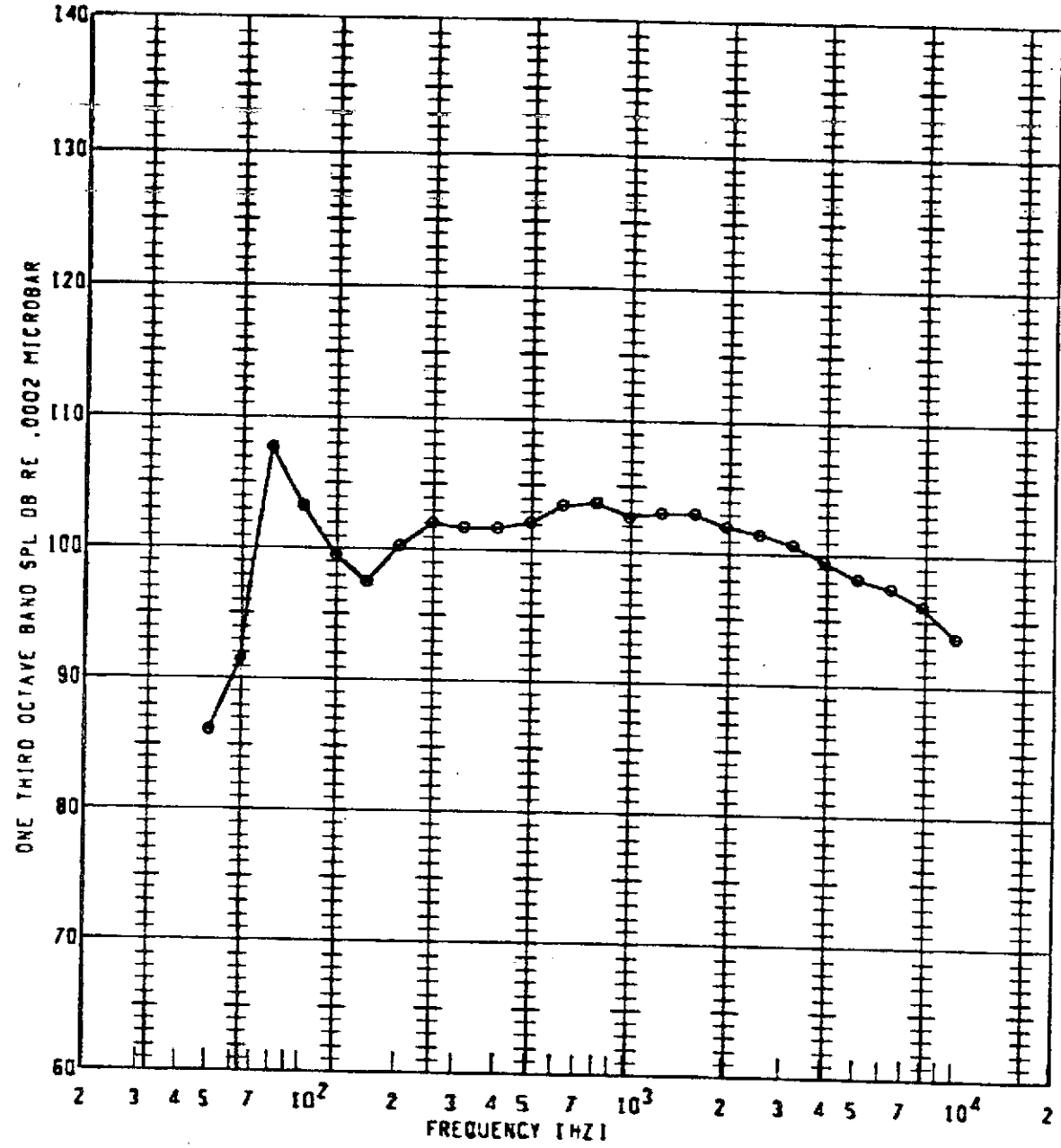
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL [DB] | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 106        | 900      | 1.600          | 110            | 50FP              | 113.8      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



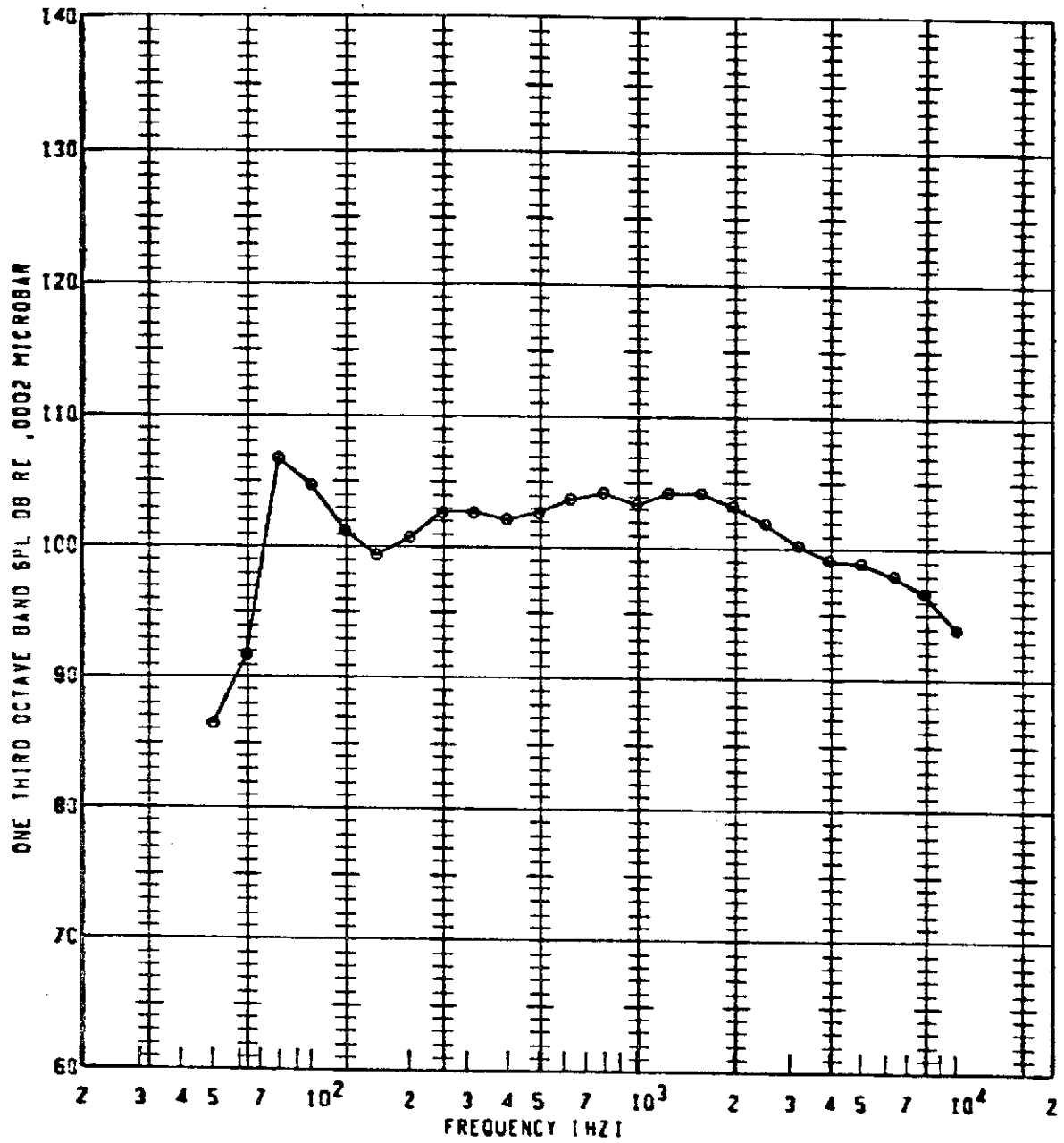
| <u>PLOT SYMBOL</u> | <u>RUN NUMBER</u> | <u>JET TEMP</u> | <u>PRESSURE RATIO</u> | <u>ANGLE RE INLET</u> | <u>OBSERVER LOCATION</u> | <u>QASPL (DB)</u> | <u>GAIN SETTING</u> | <u>SPECIAL IO</u> |
|--------------------|-------------------|-----------------|-----------------------|-----------------------|--------------------------|-------------------|---------------------|-------------------|
| ⊙                  | 106               | 900             | 1.600                 | 115                   | 50FP                     | 114.3             | 10                  |                   |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



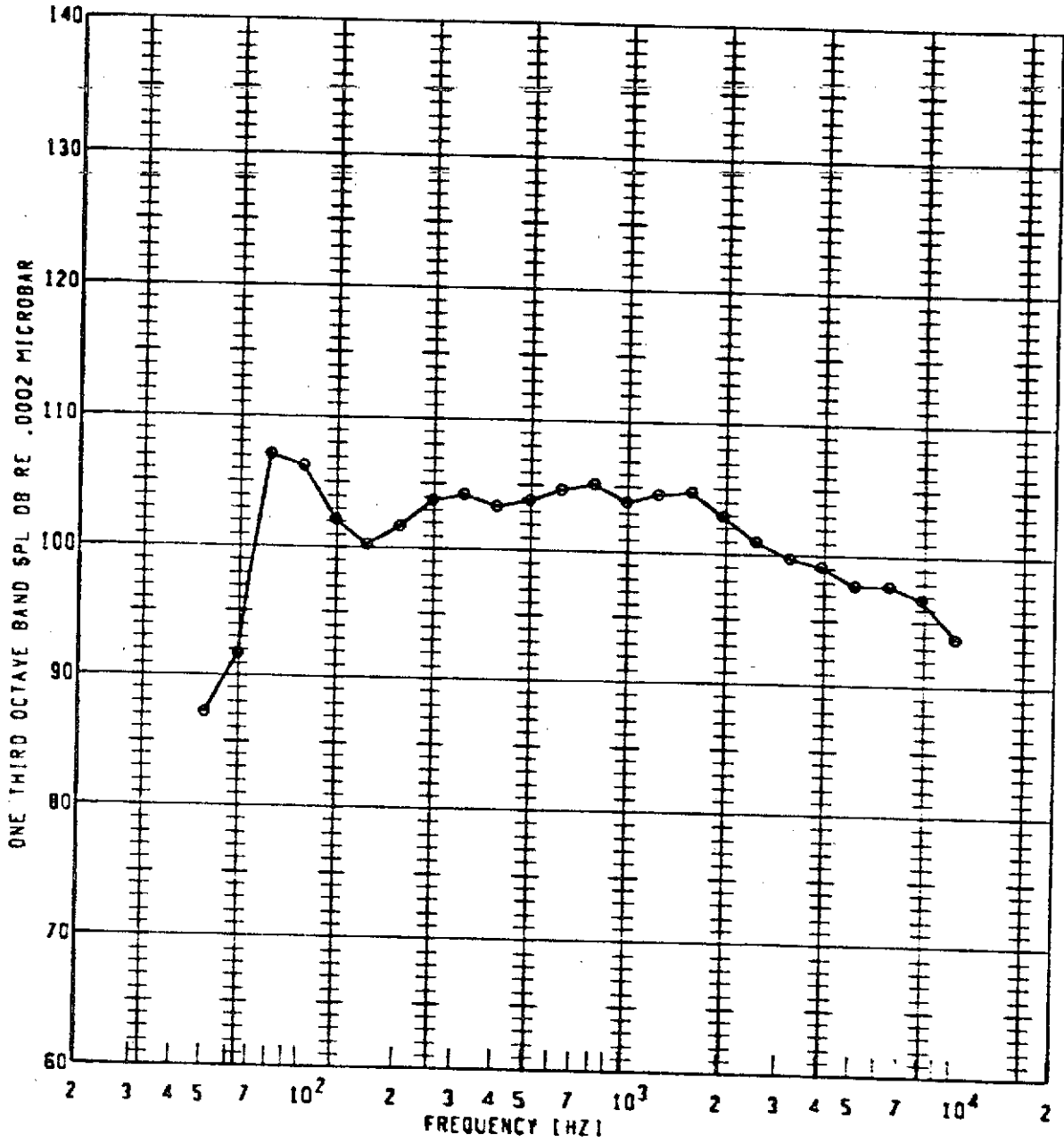
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ○           | 106        | 900      | 1.600          | 120            | 50FP              | 115.3      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



| Plot Symbol | Run Number | Jet Temp | Pressure Ratio | Angle Re Inlet | Observer Location | QASPL (DB) | Gain Setting | Special ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| o           | 105        | 900      | 1.600          | 125            | 50FP              | 115.9      | 0            |            |

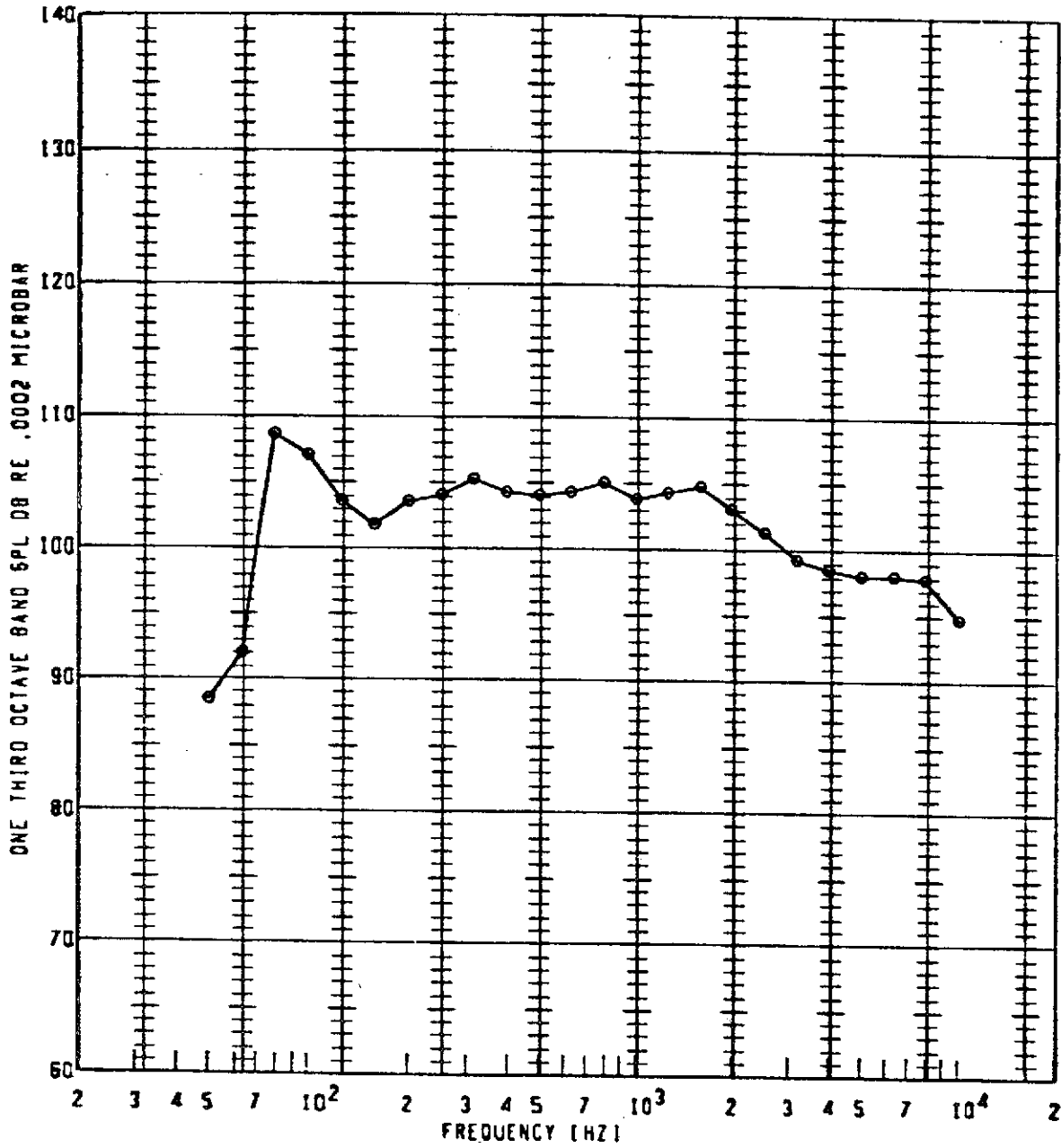
BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| PLQT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL [DB] | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 106        | 900      | 1.600          | 130            | 50FP              | 116.5      | C            |            |

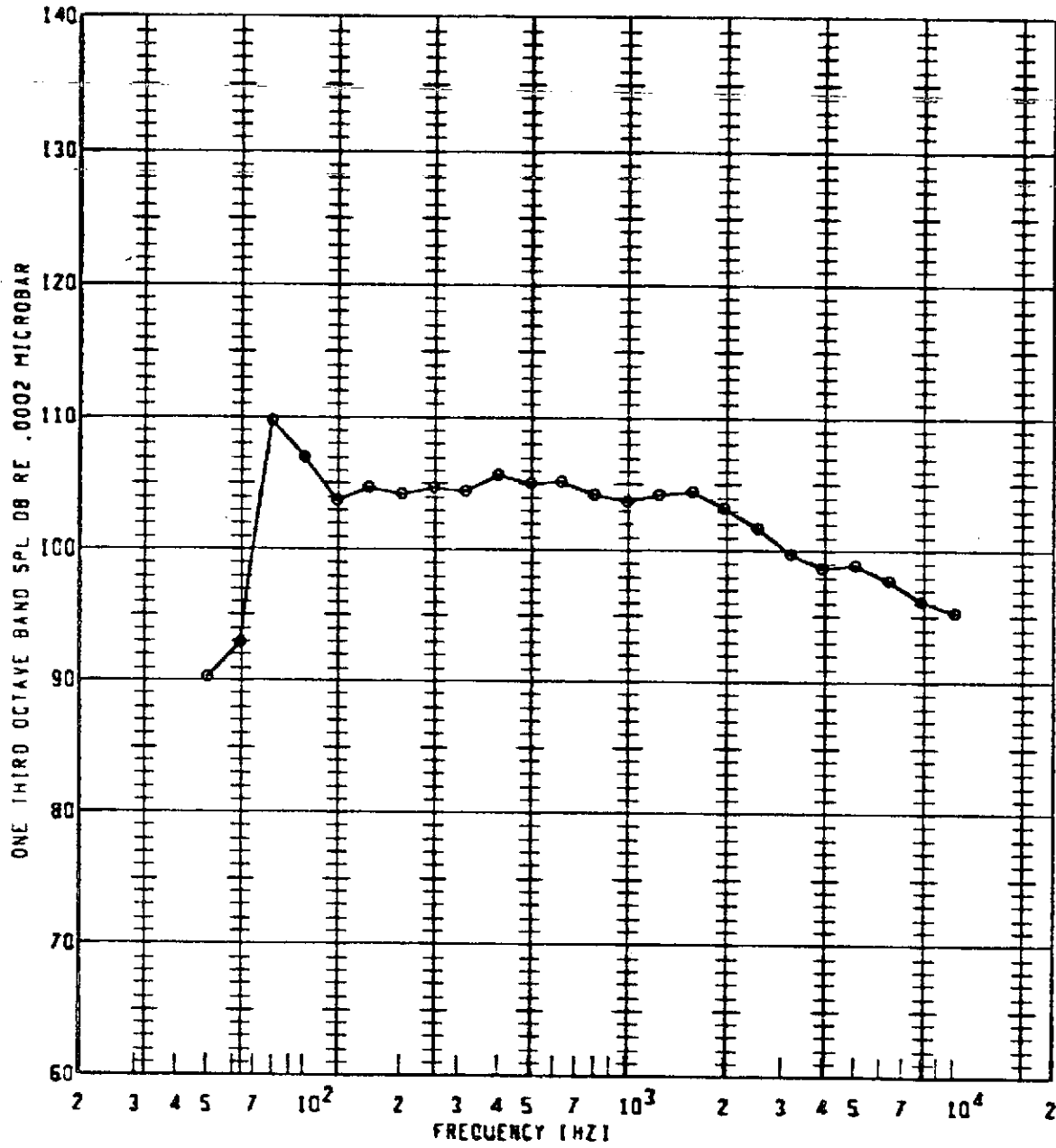


BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



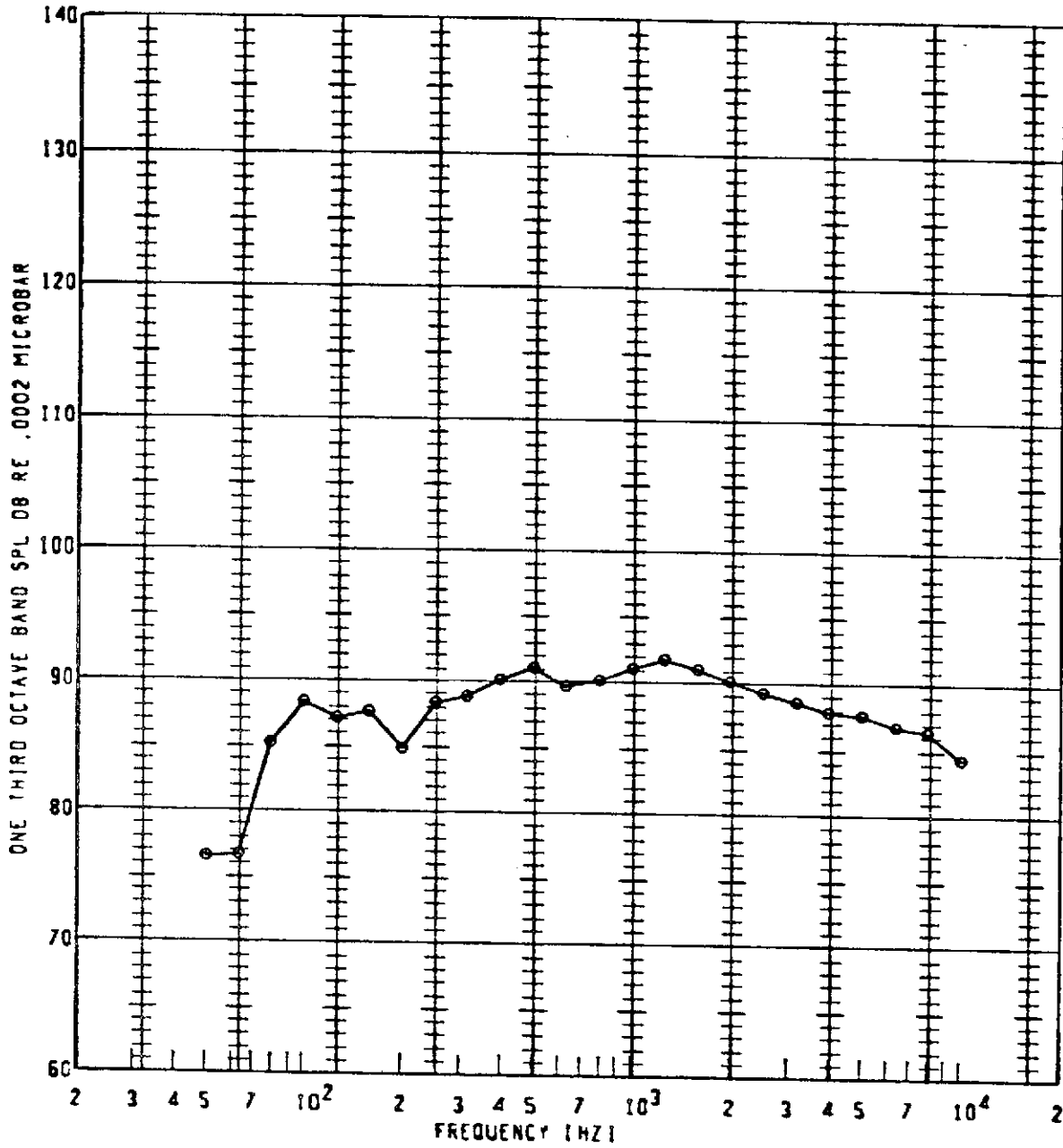
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 106        | 900      | 1.600          | 135            | 50FP              | 117.1      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



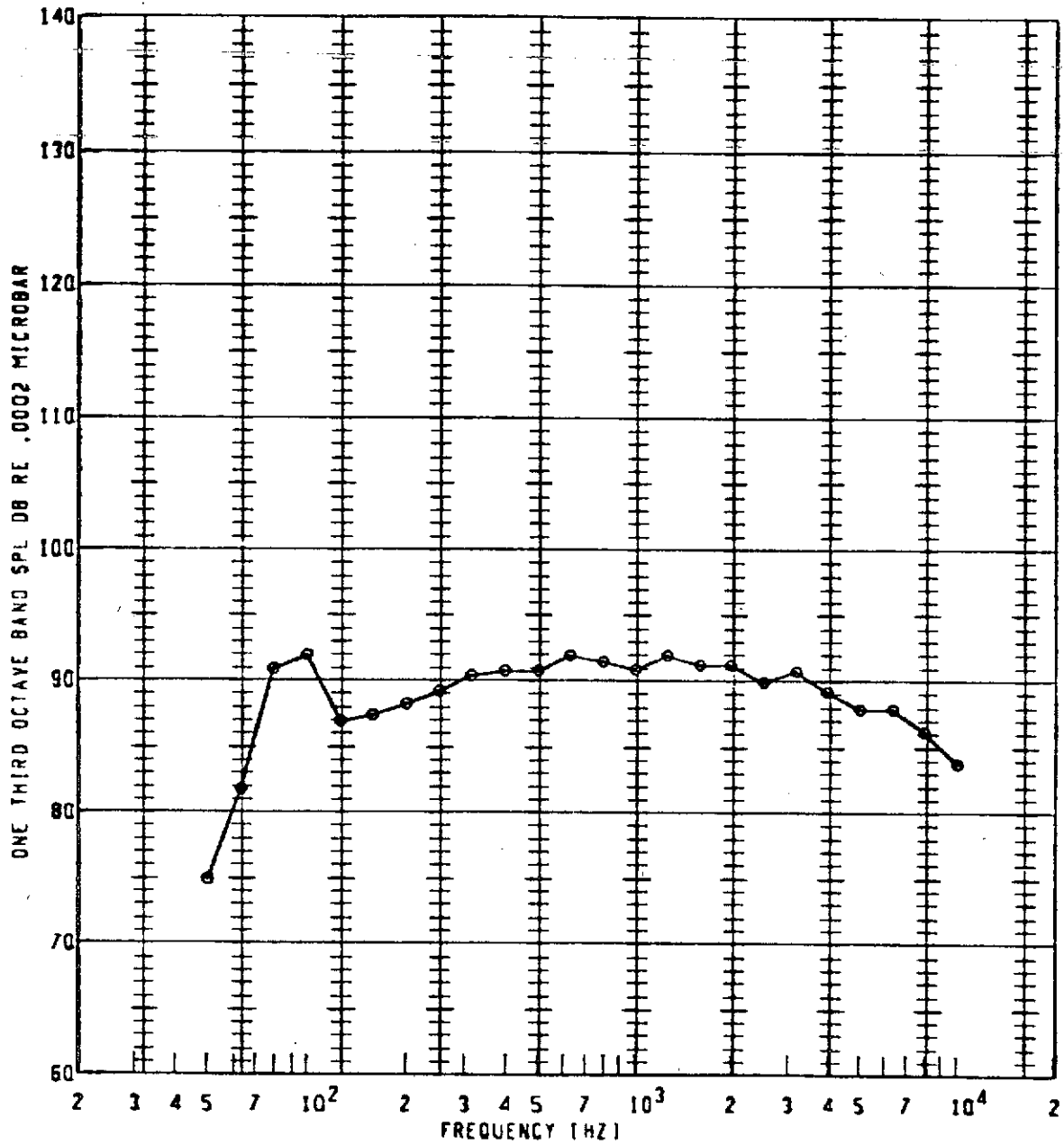
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 106        | 900      | 1.600          | 140            | 50FP              | 117.5      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



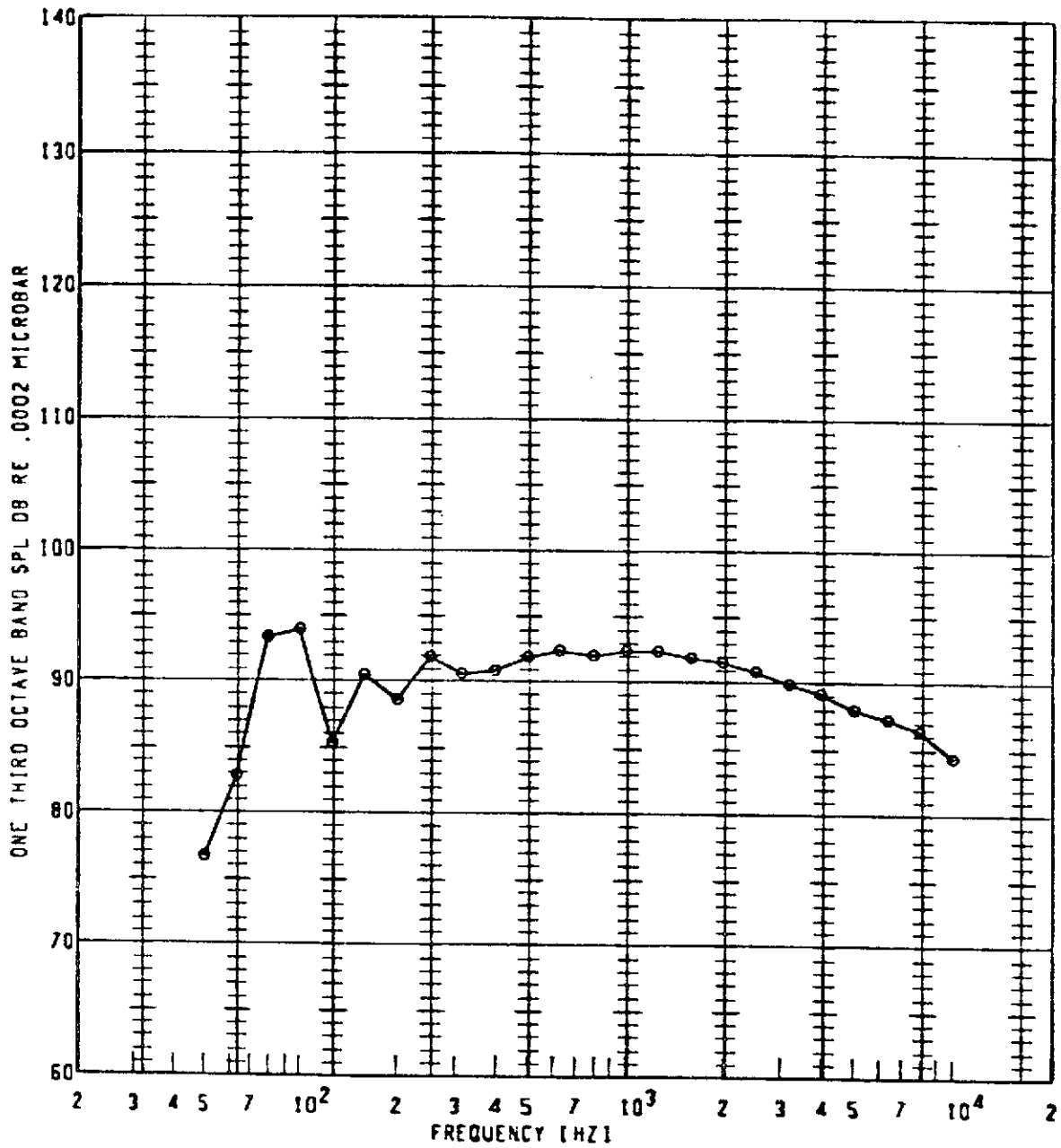
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCAT:CN | CASPL (09) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 116        | 750      | 1.300          | 90             | 50FP              | 102.4      | 20           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



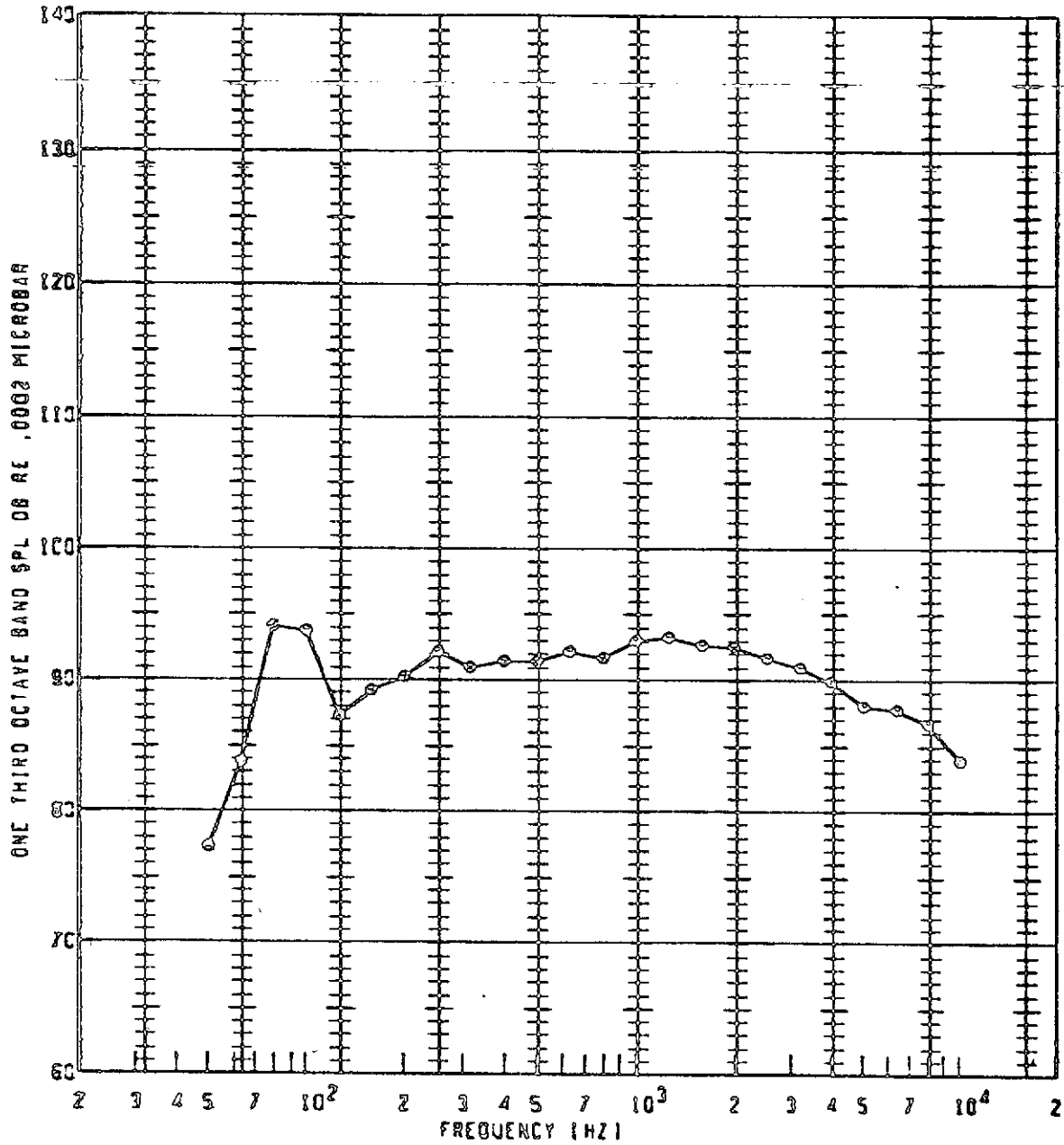
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 116        | 750      | 1.300          | 100            | 50:P              | 103.4      | 20           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



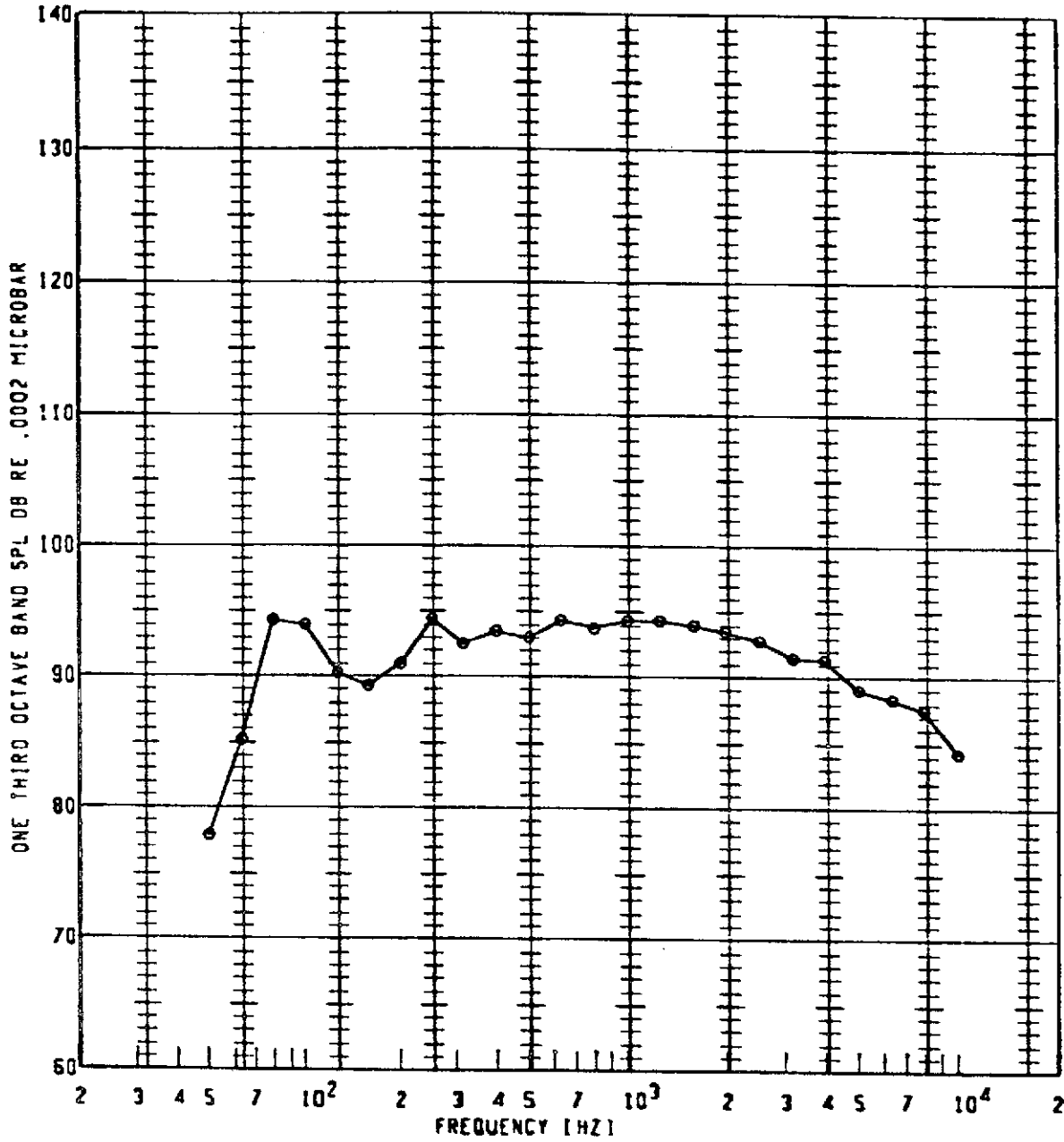
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | DASPL [DB] | GAIN SETTING | SPECIAL IO |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| 0           | 116        | 750      | 1.300          | 110            | 50FP              | 104.4      | 20           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



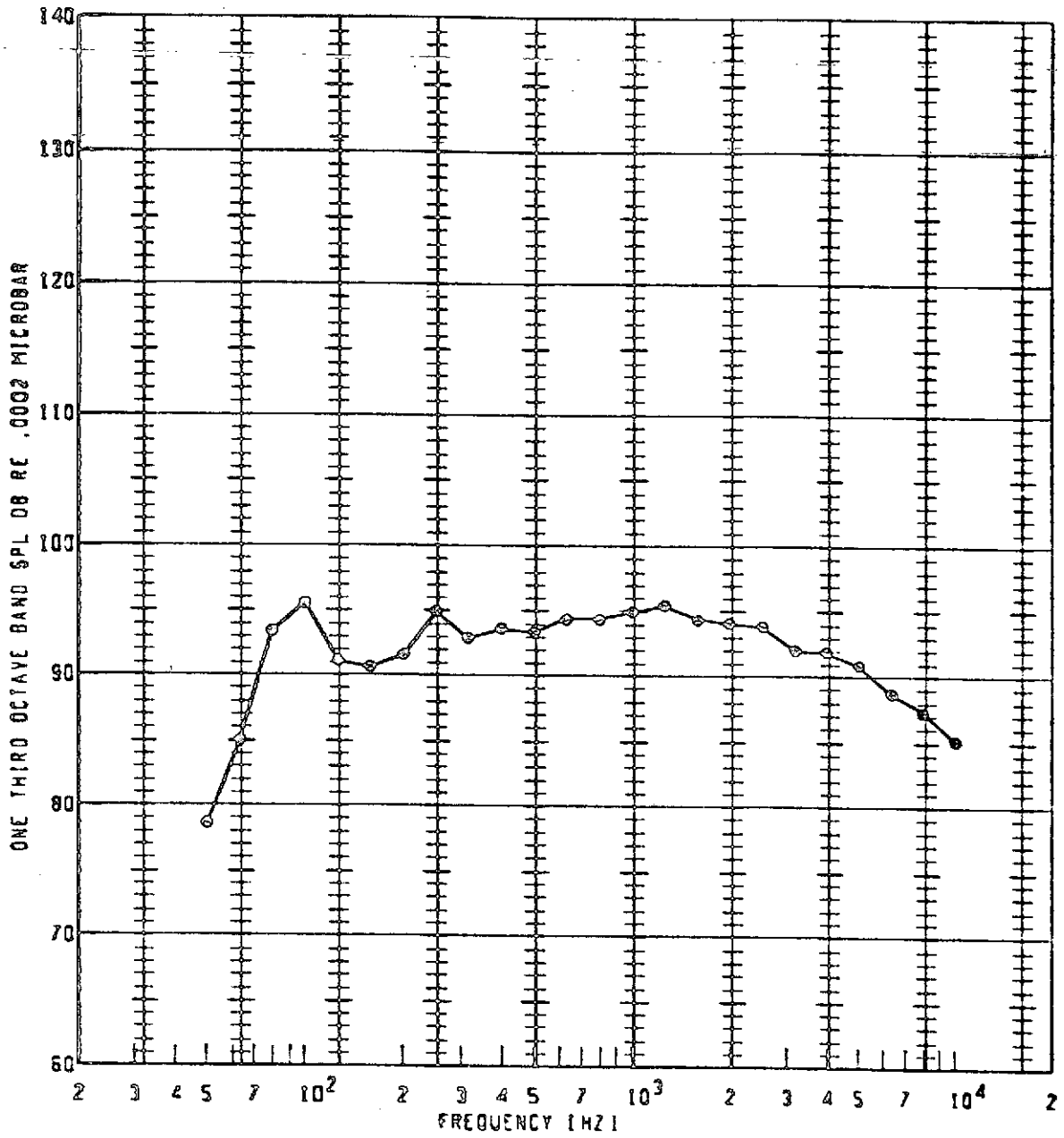
| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙          | 116        | 750      | 1.300          | 115            | 50FP              | 104.8      | 20           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL [DB] | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 116        | 750      | 1.300          | 120            | 50FP              | 106.0      | 20           |            |

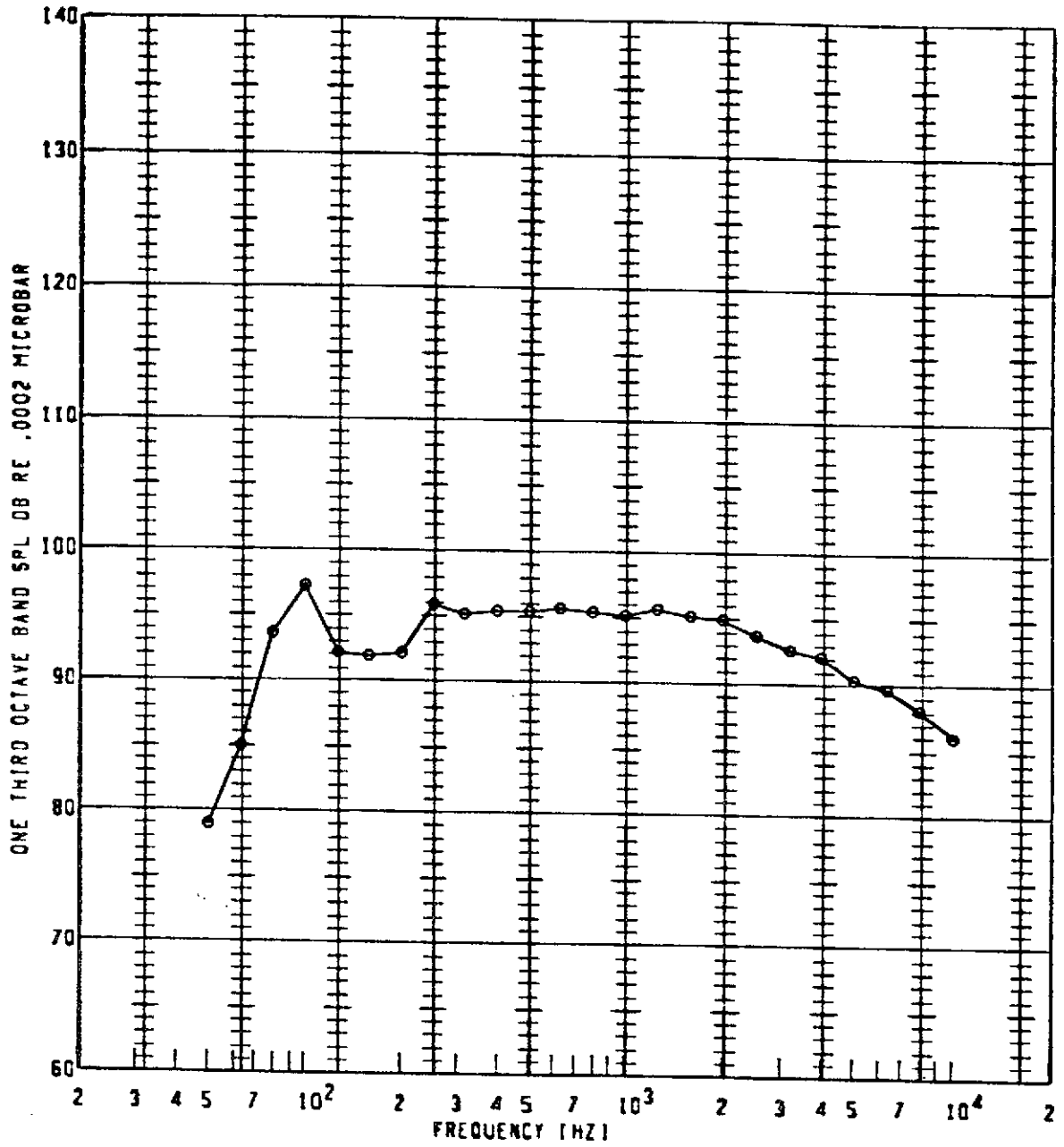
BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 116        | 750      | 1.300          | 125            | 50FP              | 106.6      | 10           |            |

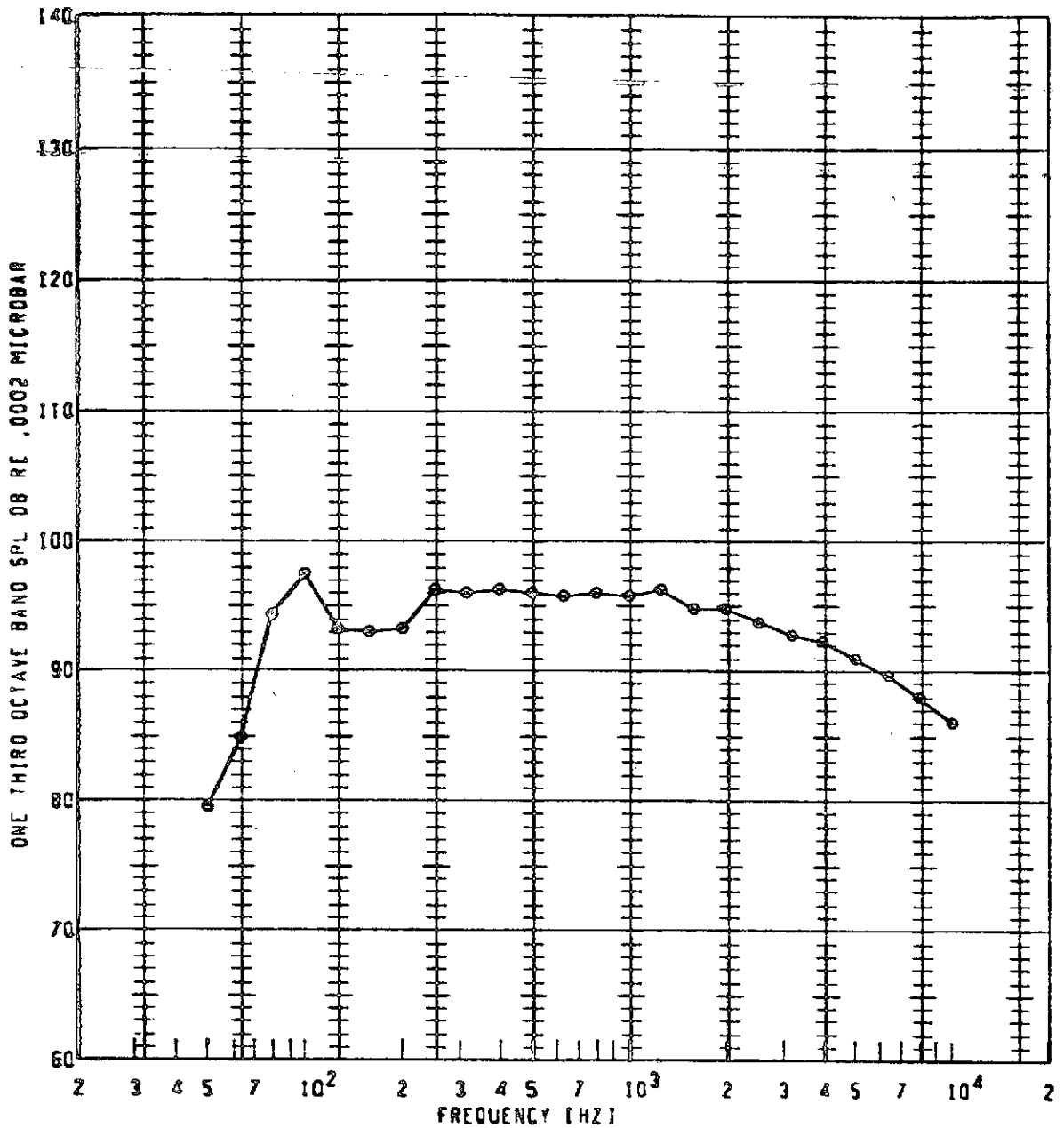


BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



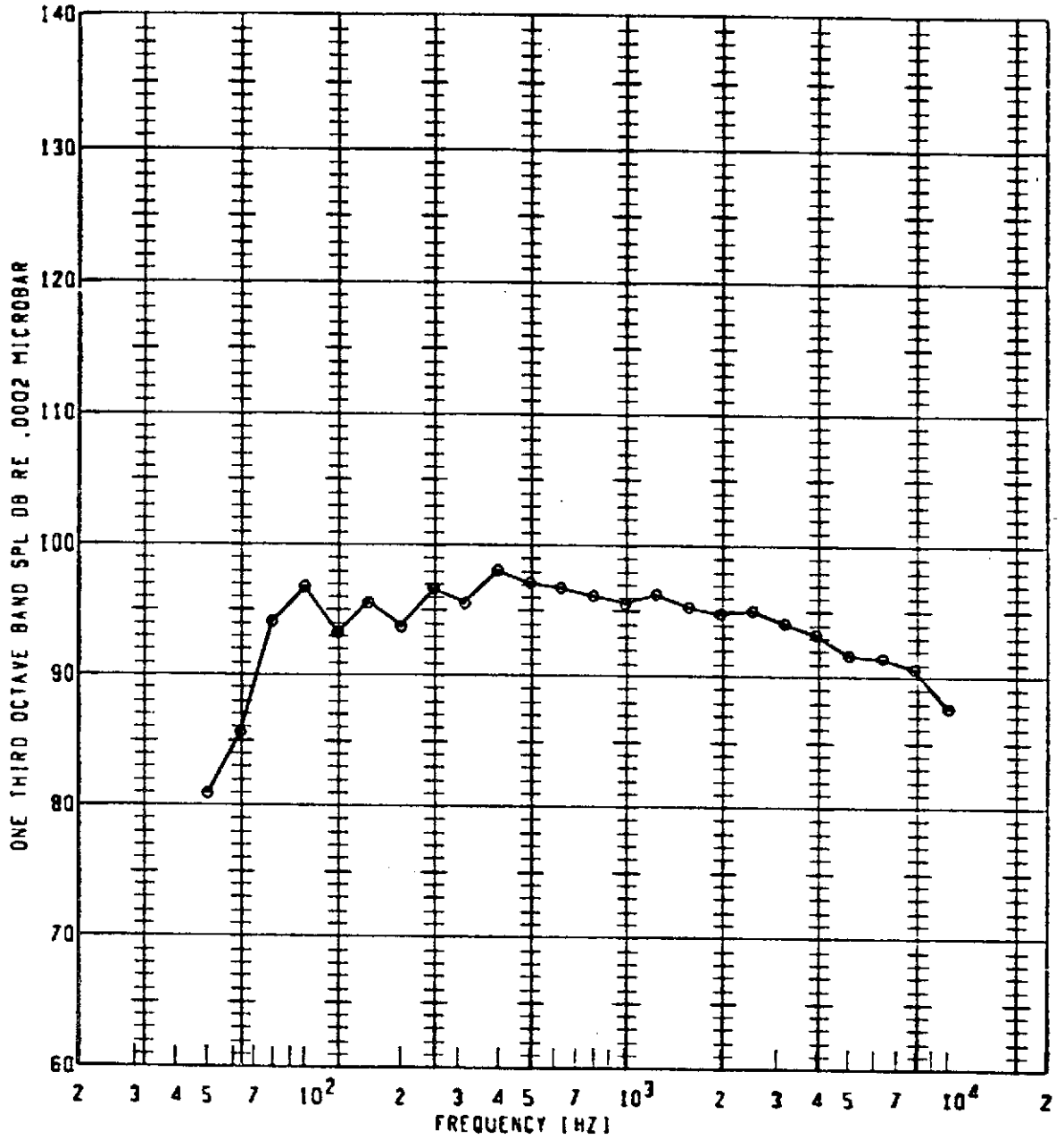
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OSPL (dB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|-----------|--------------|------------|
| ●           | 116        | 750      | 1.300          | 130            | 50FP              | 107.5     | 20           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



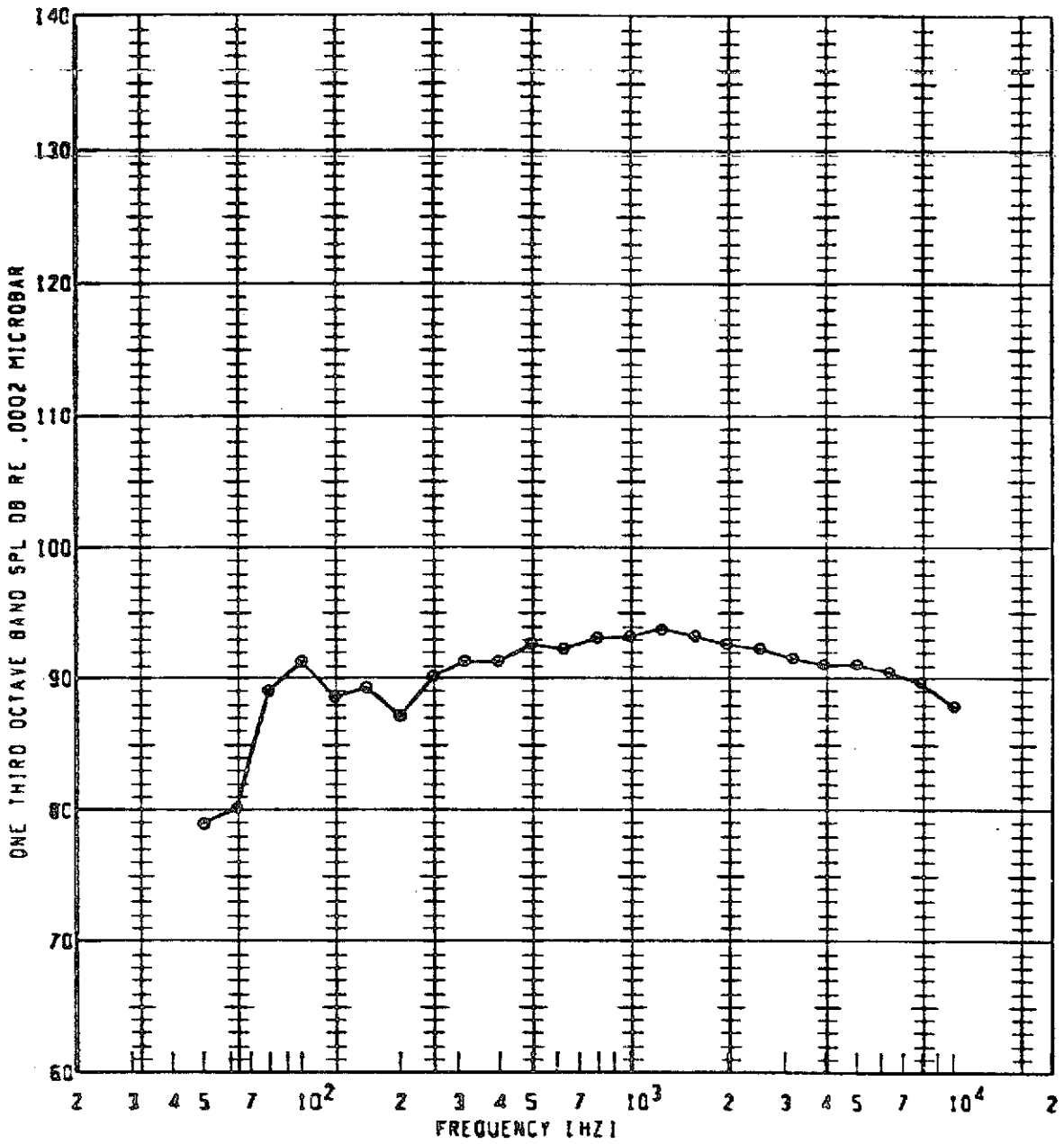
| Plot Symbol | Run Number | Jet Temp | Pressure Ratio | Angle re Inlet | Observer Location | CASPL (dB) | Gain Setting | Special ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ○           | 115        | 750      | 1.300          | 135            | 50FP              | 108.0      | 20           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



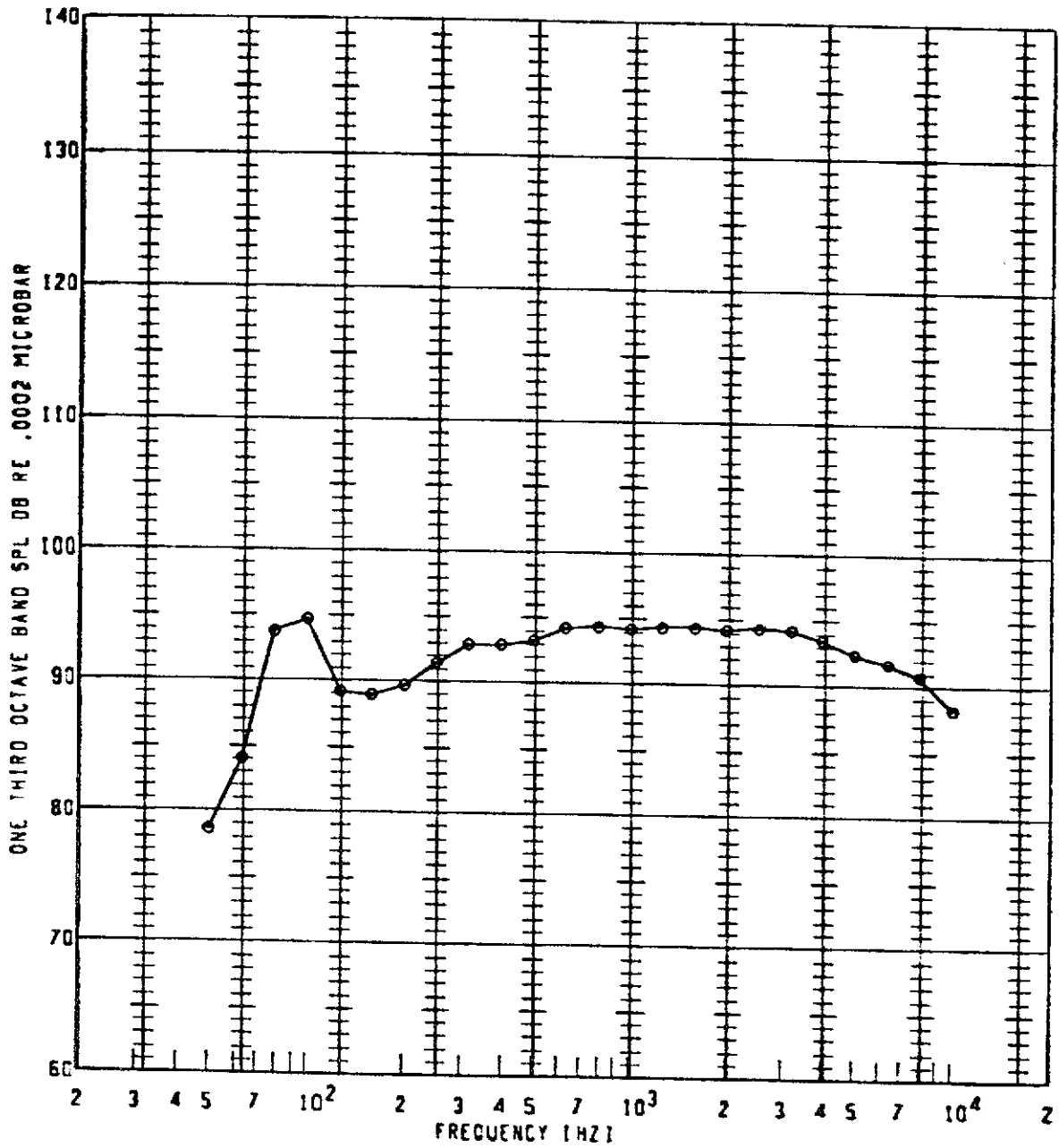
| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | CASPL (DB) | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙          | 116        | 750      | 1.300          | 140            | SCFP              | 108.5      | 20           |            |

BUFFALO SUPPRESSOR NOZZLE TONE DB TEST - HOT NOZZLE TEST FACILITY



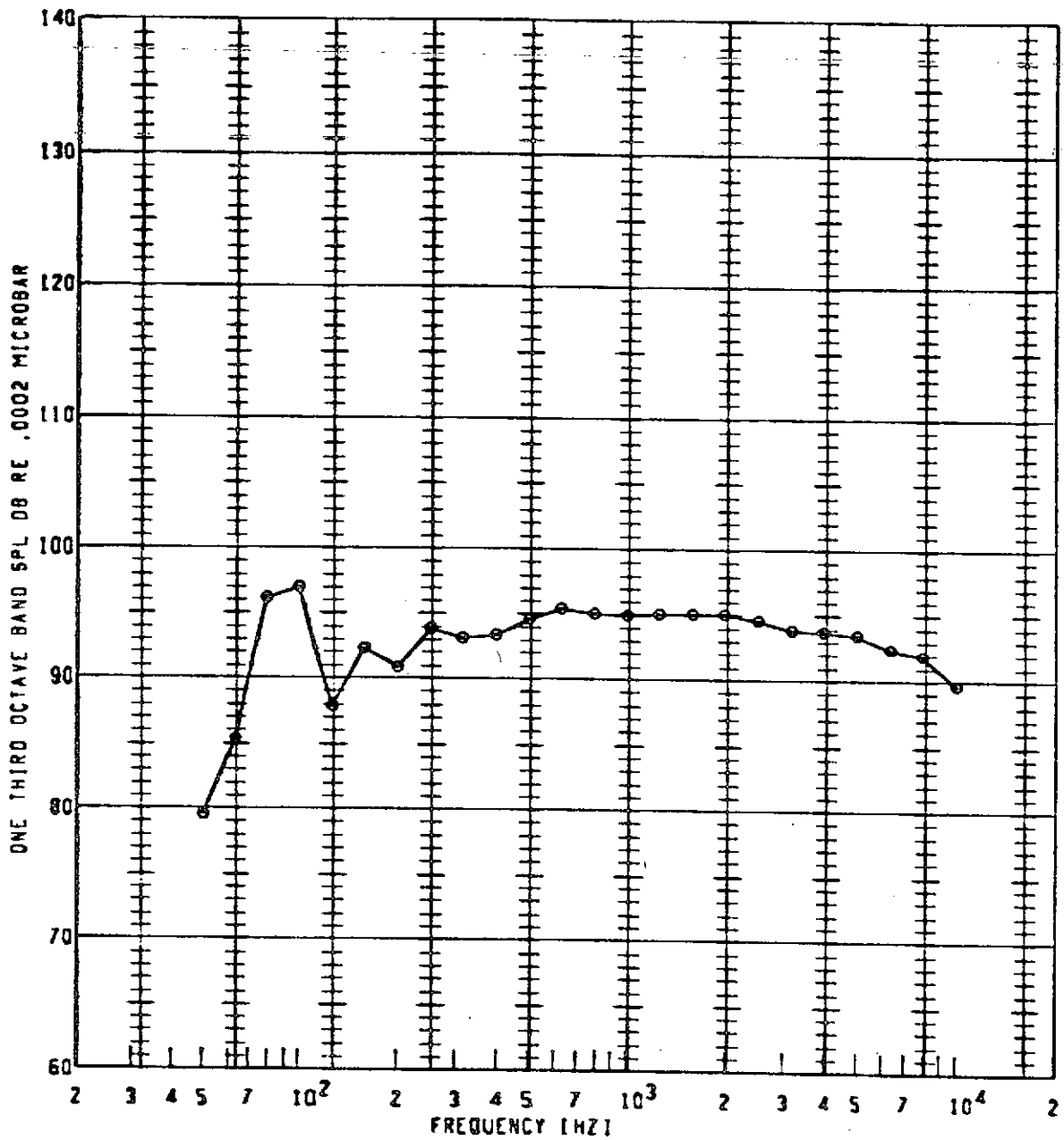
| PLT SYMCL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL [DB] | GAIN SETTING | SPECIAL ID |
|-----------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙         | 116        | 800      | 1.400          | 90             | 50FP              | 104.8      | 20           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



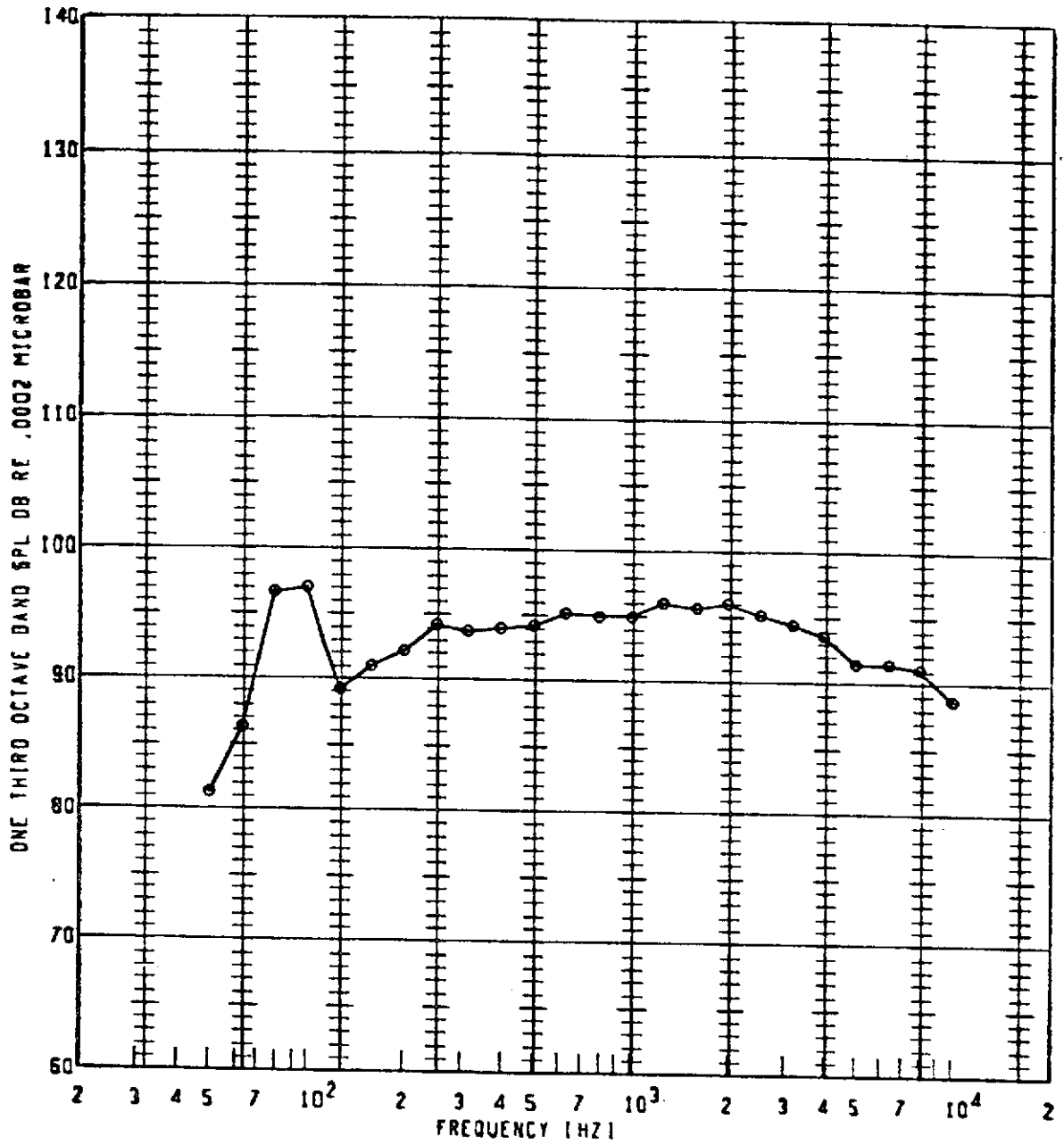
| Plot Symbol | Run Number | Jet Temp | Pressure Ratio | Angle re Inlet | Observer Location | CASPL [dB] | Gain Setting | Special ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 116        | 800      | 1.400          | 100            | 50FP              | 106.5      | 20           |            |

BUFFALO SUPPRESSOR NOZZLE TONE TO TEST - HOT NOZZLE TEST FACILITY



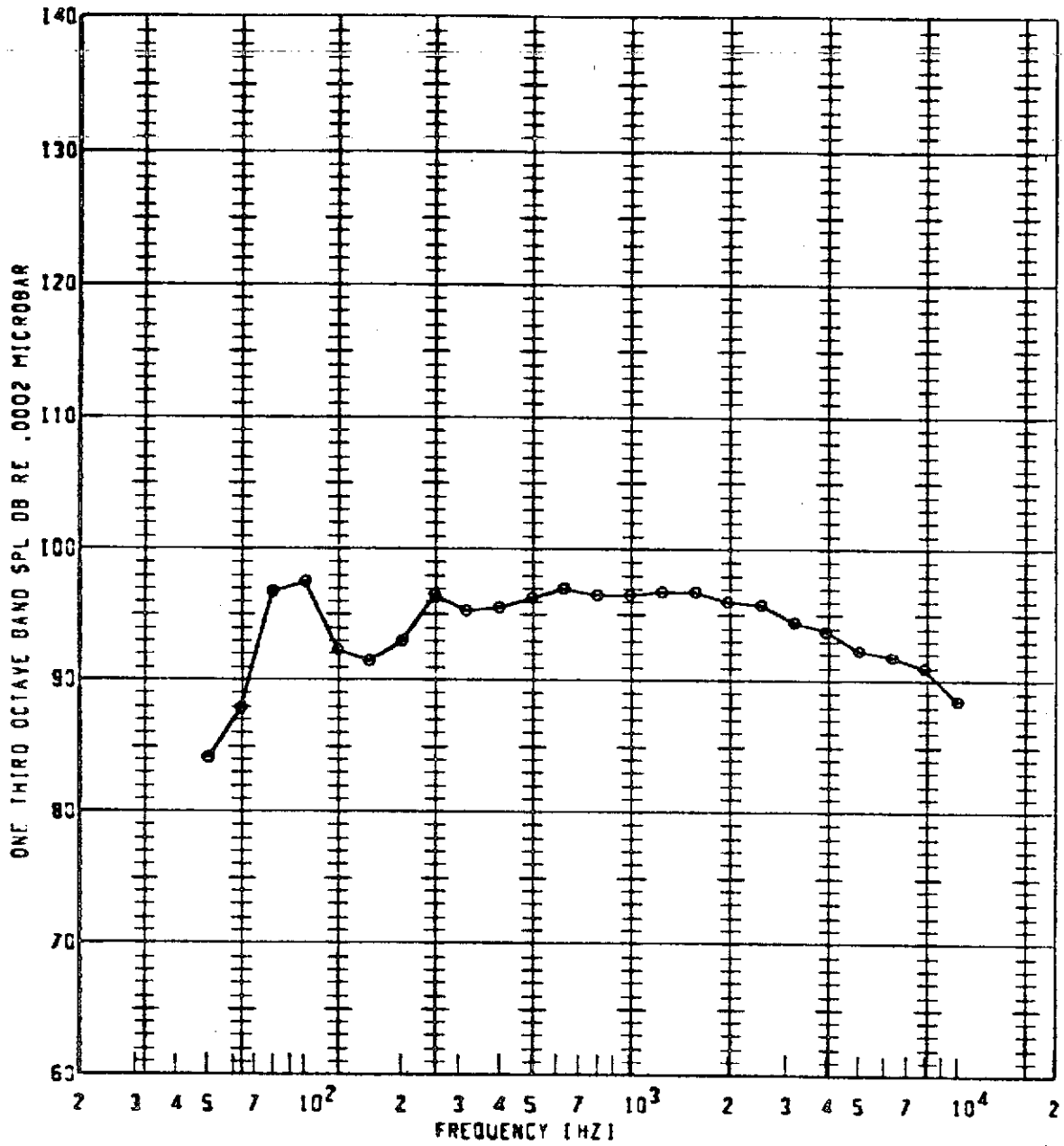
| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | DASPL (DB) | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙          | 116        | 800      | 1.400          | 110            | 50FP              | 137.5      | 20           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 116        | 800      | 1.400          | 115            | 50FP              | 107.7      | 10           |            |

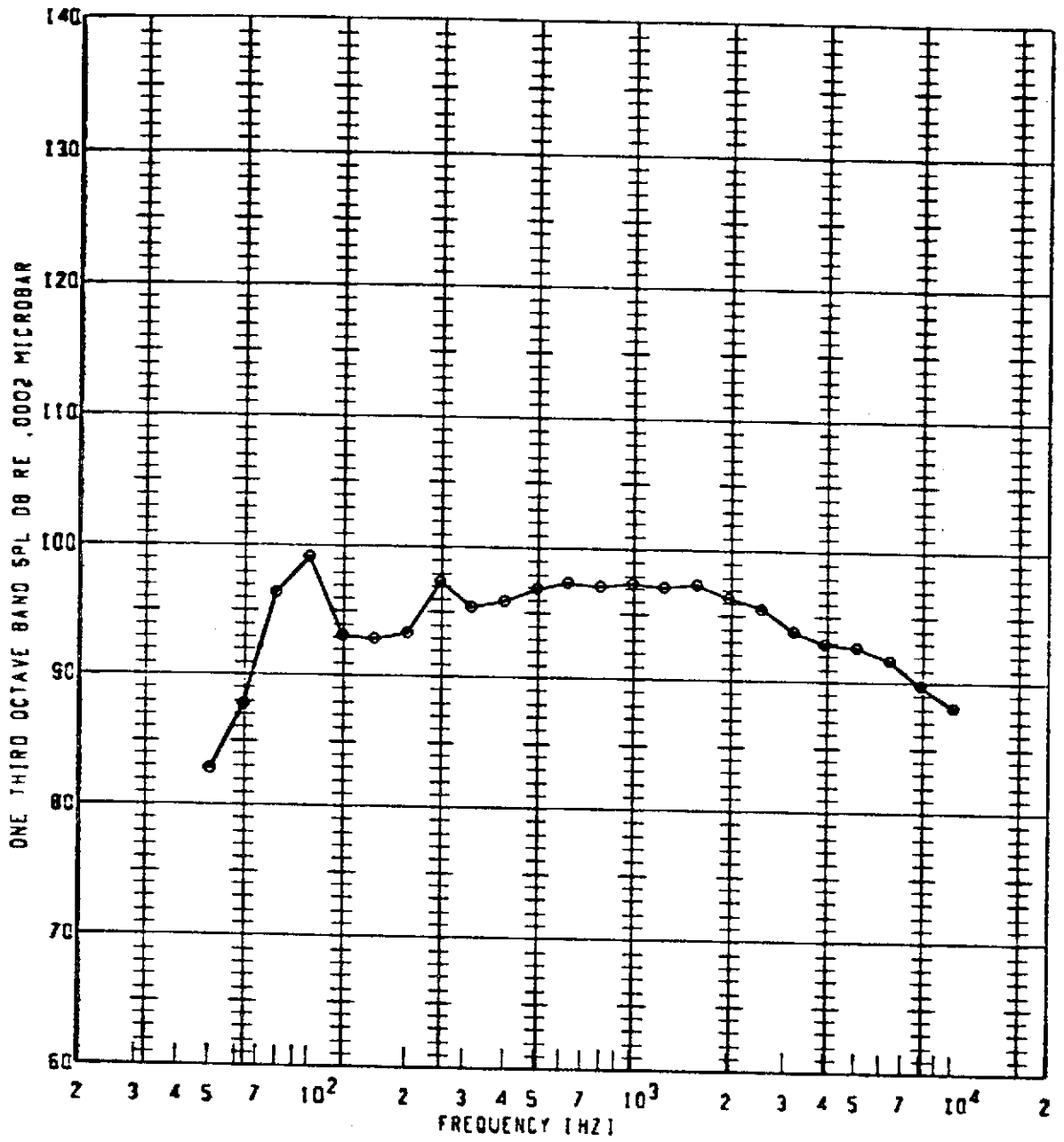
BUFFALO SUPPRESSOR NOZZLE TONE TO TEST - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | GASPL (DB) | GAIN SETTING | SPECIAL IC |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ●           | 116        | 800      | 1.400          | 120            | SCFP              | 100.7      | 20           |            |

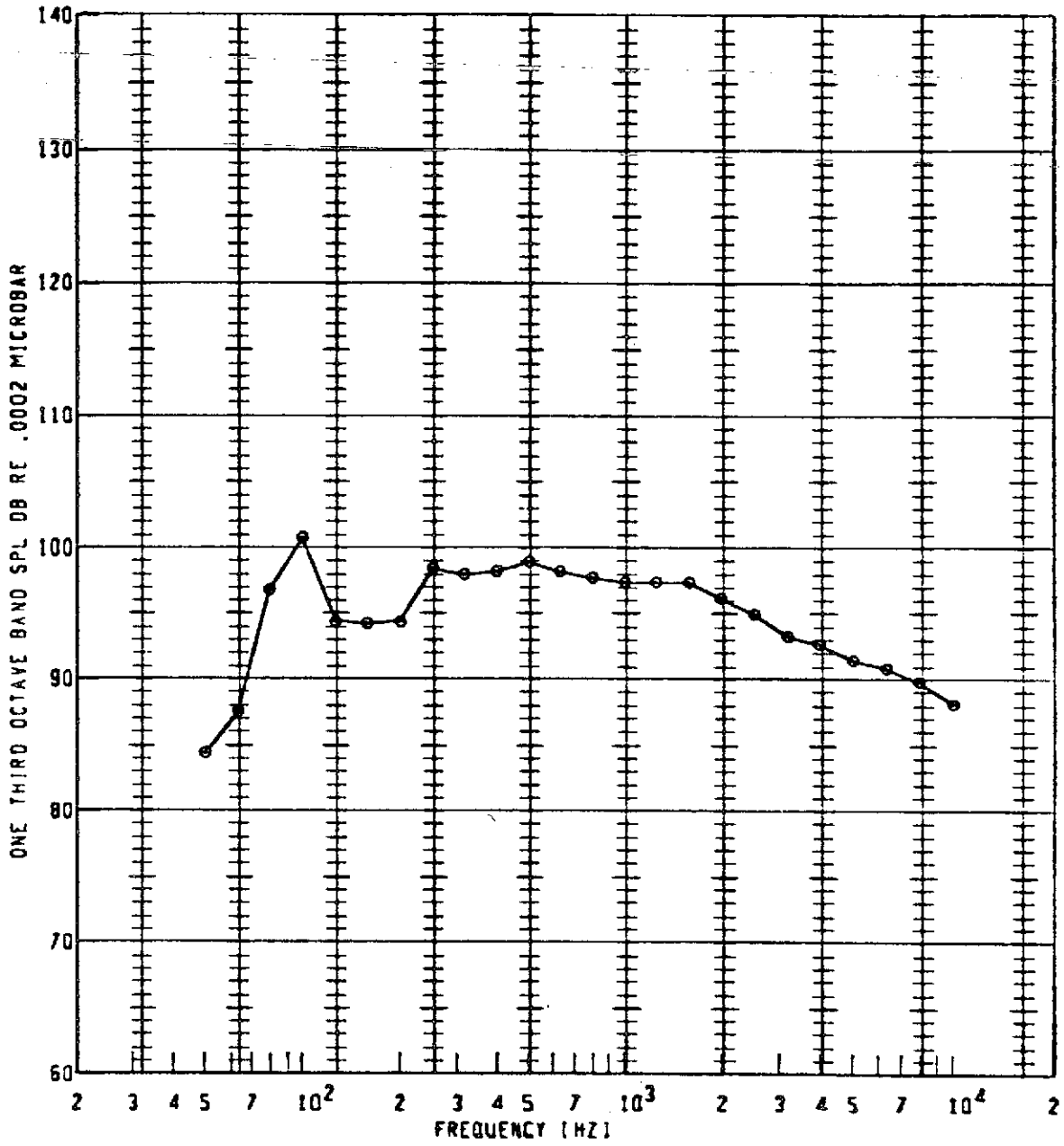


BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



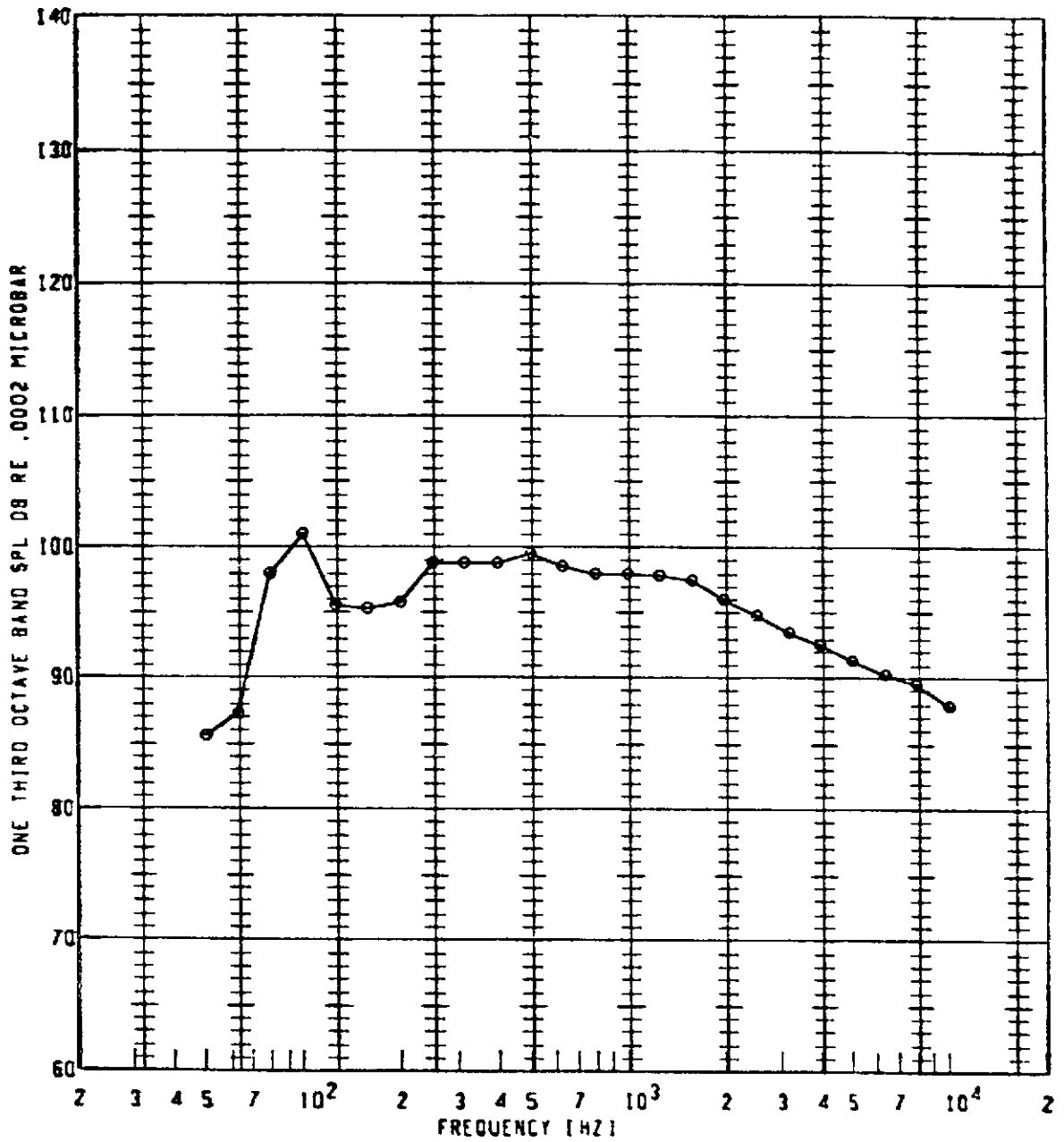
| PLGT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | GASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ●           | 115        | 800      | 1.400          | 125            | 50FP              | 109.1      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



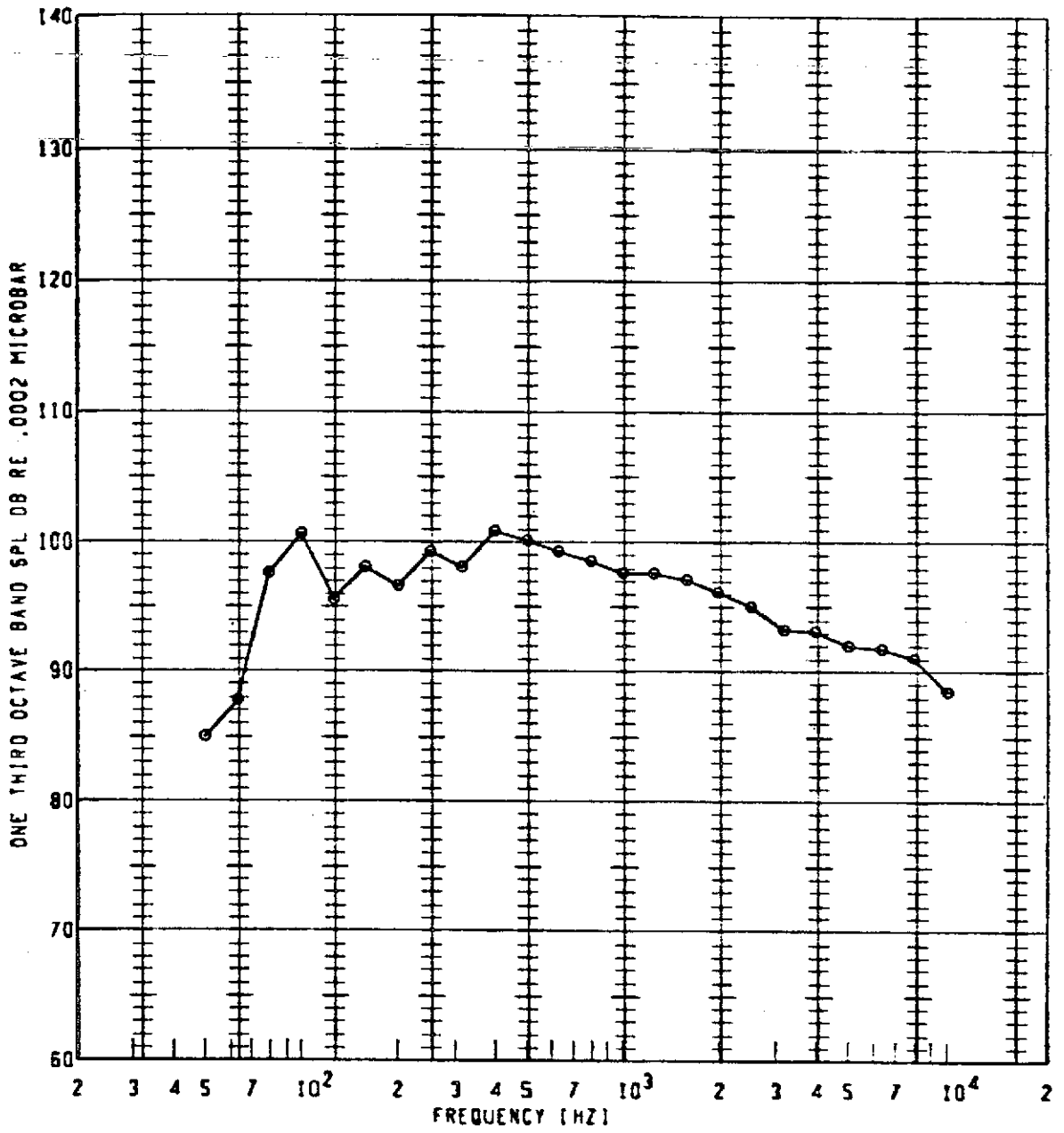
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | CASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 116        | 800      | 1.400          | 130            | SOPP              | 109.9      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



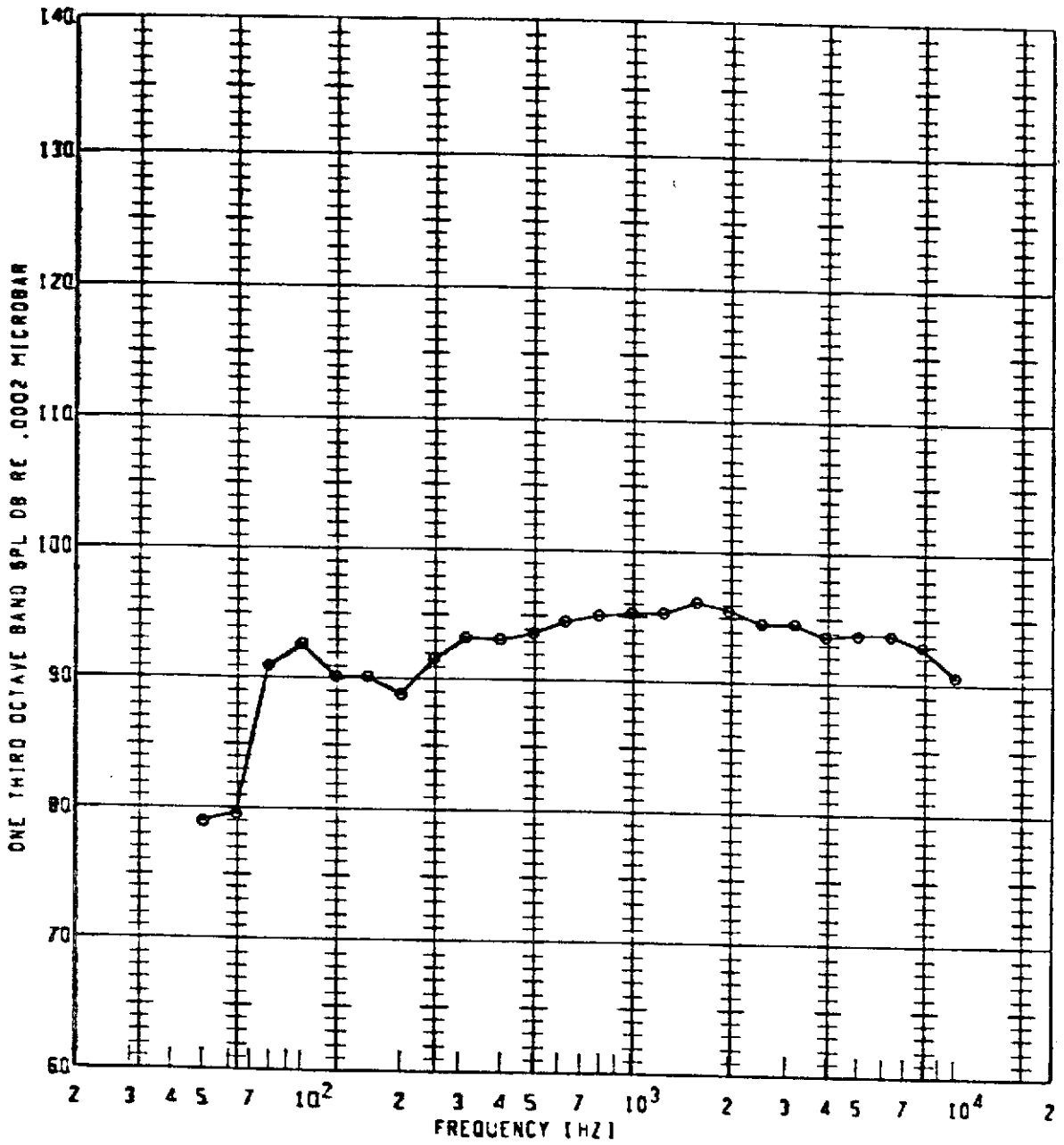
| PLBT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | DASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 116        | 800      | 1.400          | 135            | 50FP              | 110.3      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



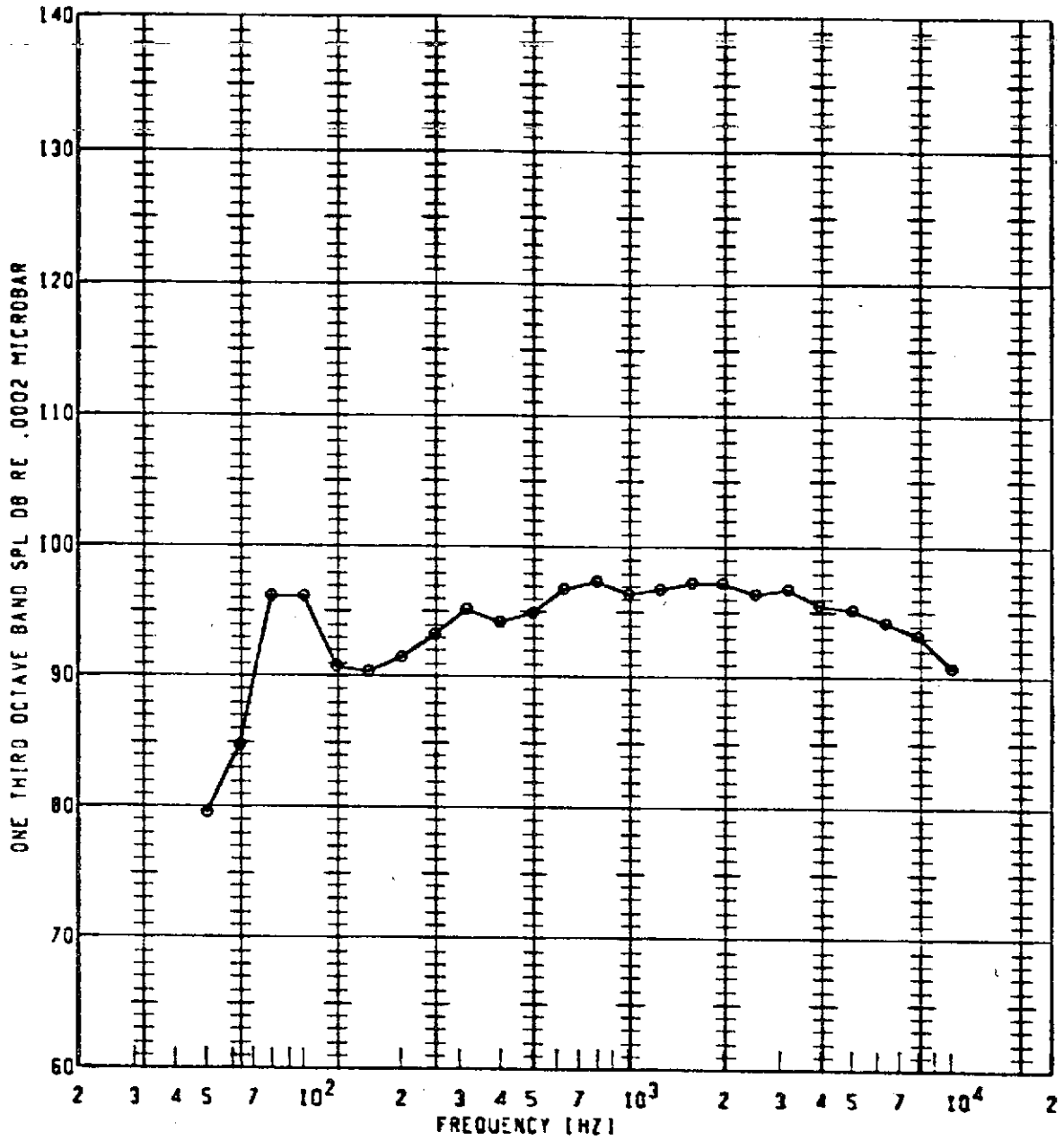
| ● | 116 | 800 | 1.400 | 140 | 50FP | 110.8 | 10 |  |
|---|-----|-----|-------|-----|------|-------|----|--|
| ● | 116 | 800 | 1.400 | 140 | 50FP | 110.8 | 10 |  |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



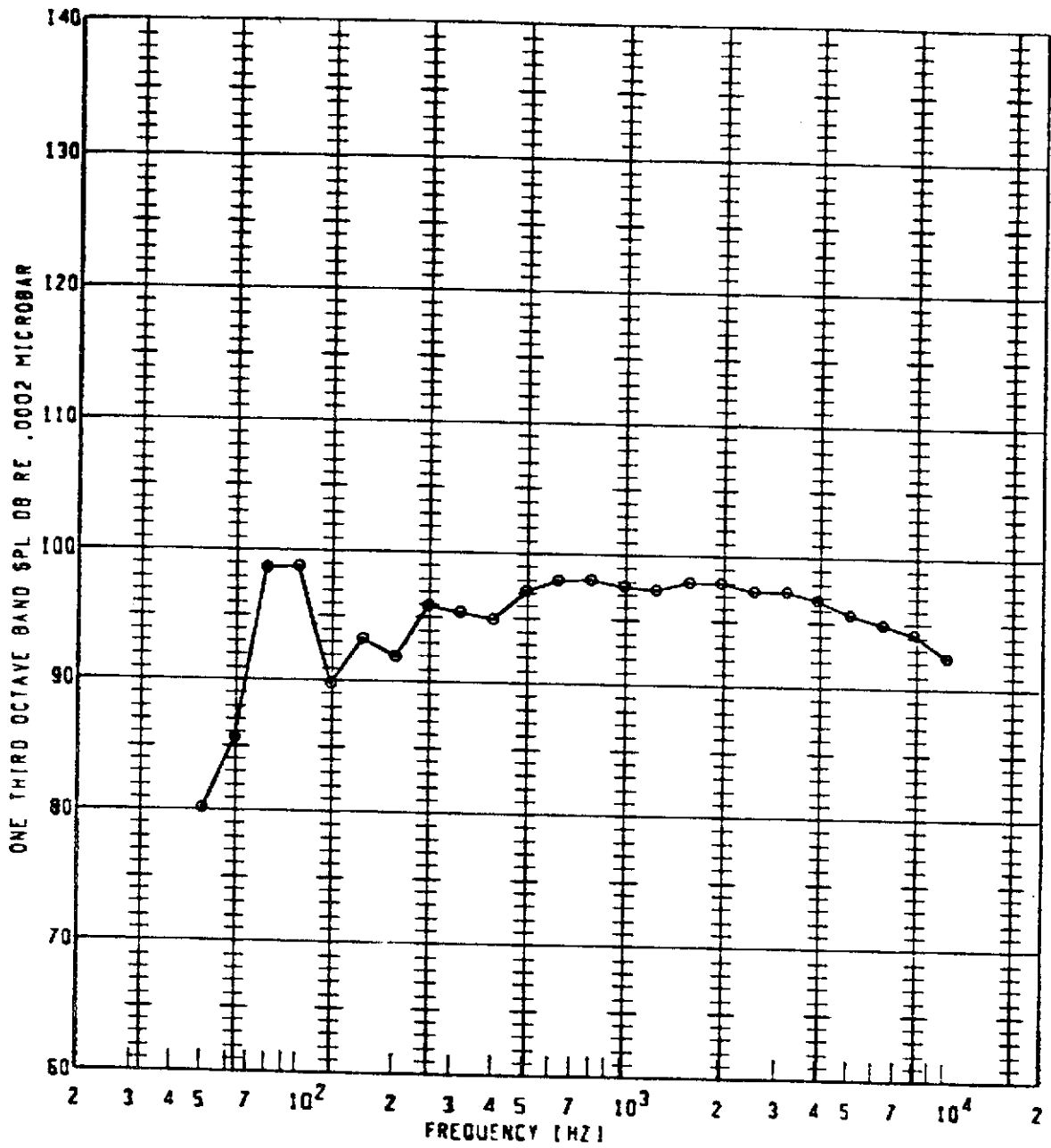
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | DASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ○           | 116        | 850      | 1.500          | 90             | 50FP              | 107.0      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE 10' TEST - HOT NOZZLE TEST FACILITY



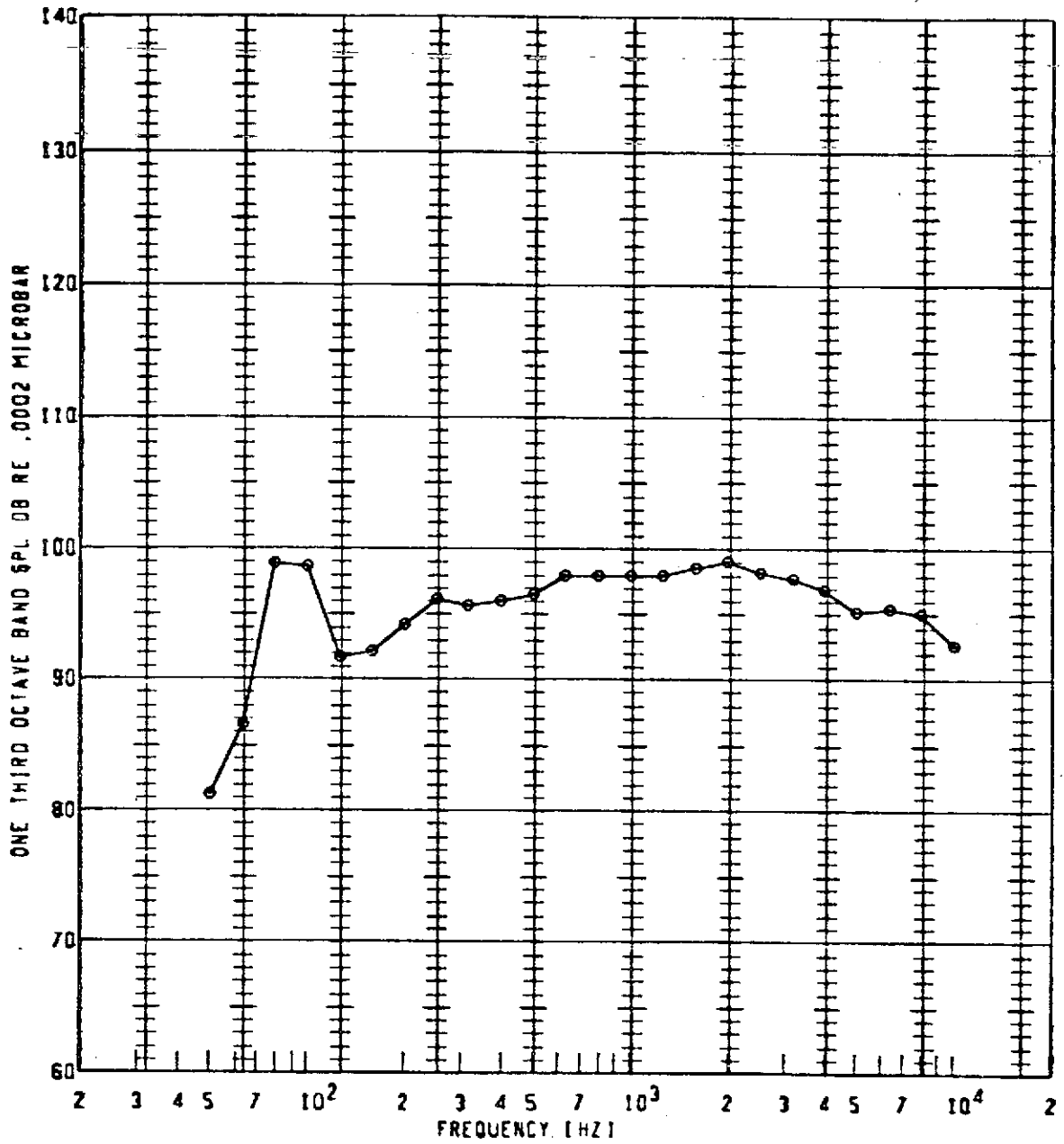
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 116        | 850      | 1.500          | 100            | SQFP              | 109.7      | 20           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ○           | 116        | 850      | 1.500          | 110            | 50°P              | 109.9      | 10           |            |

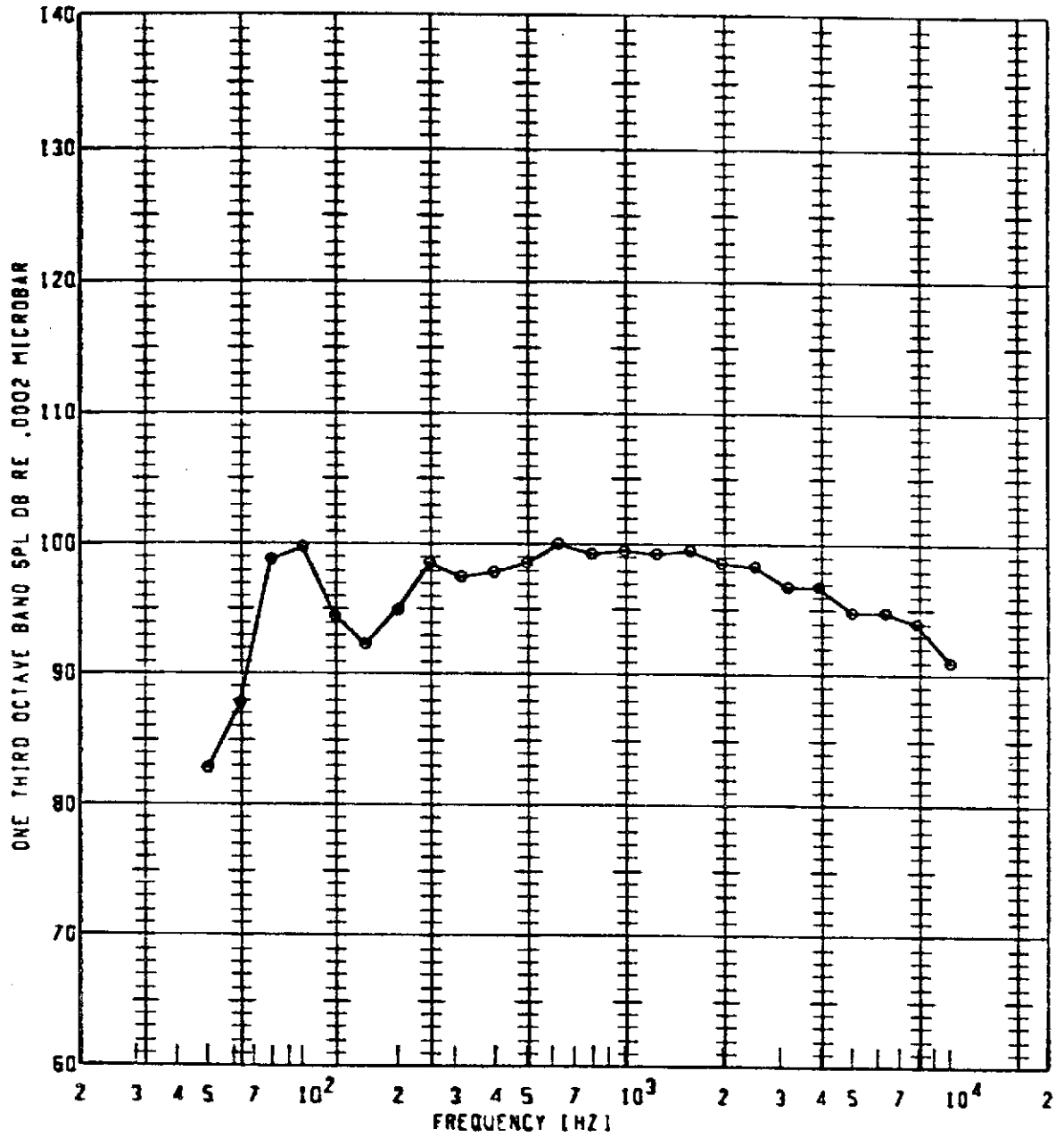
BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 116        | 850      | 1.500          | 115            | 50FP              | 110.3      | 10           |            |

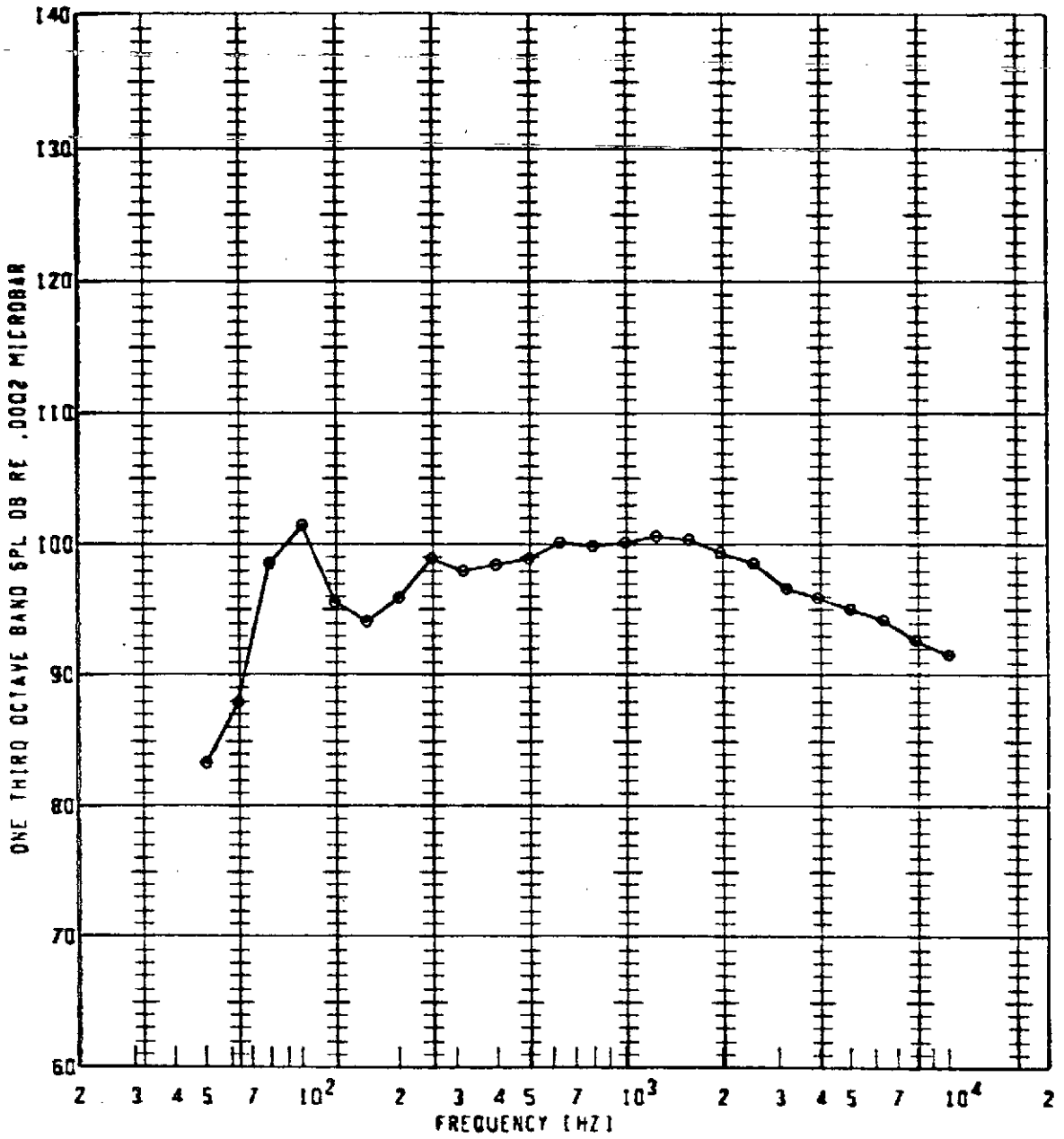


BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



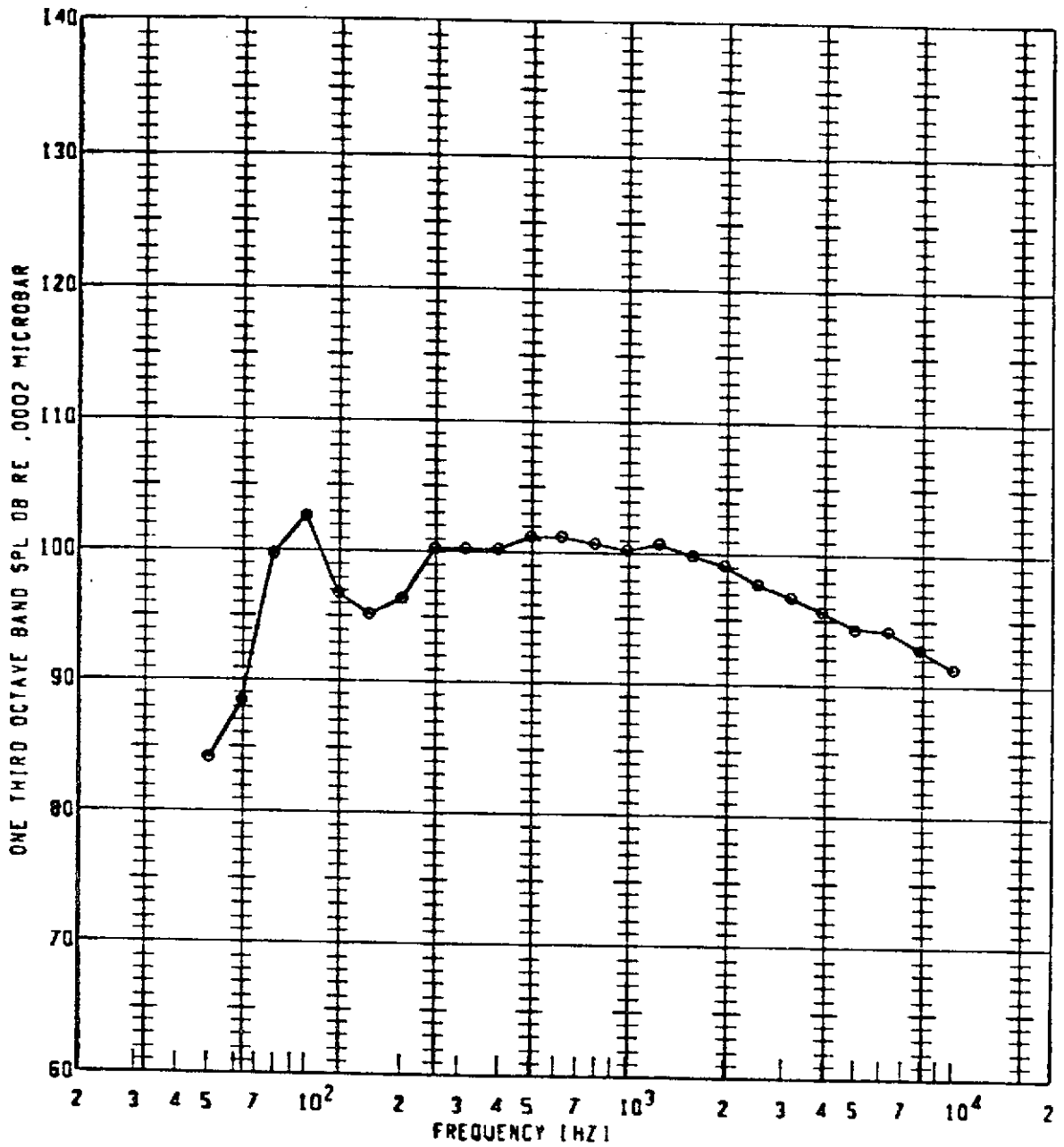
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 116        | 850      | 1.500          | 120            | 50FP              | 111.1      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



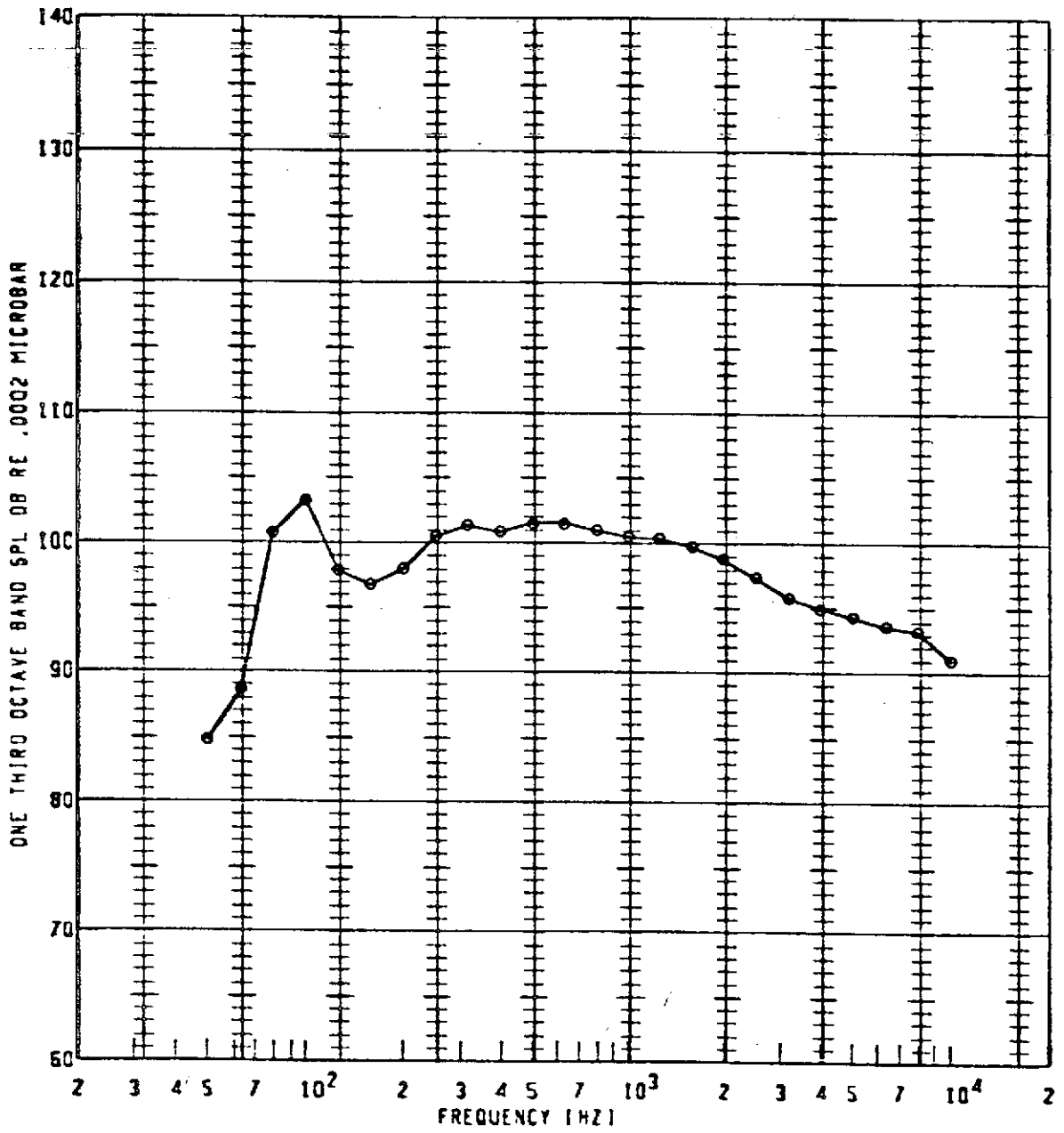
| PLT<br>SYMBOL | RUN<br>NUMBER | JET<br>TEMP | PRESSURE<br>RATIO | ANGLE<br>RE INLET | OBSERVER<br>LOCATION | CASPL<br>(DB) | GAIN<br>SETTING | SPECIAL<br>ID |
|---------------|---------------|-------------|-------------------|-------------------|----------------------|---------------|-----------------|---------------|
| ⊙             | 116           | 850         | 1.500             | 125               | 50FP                 | 111.7         | 10              |               |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



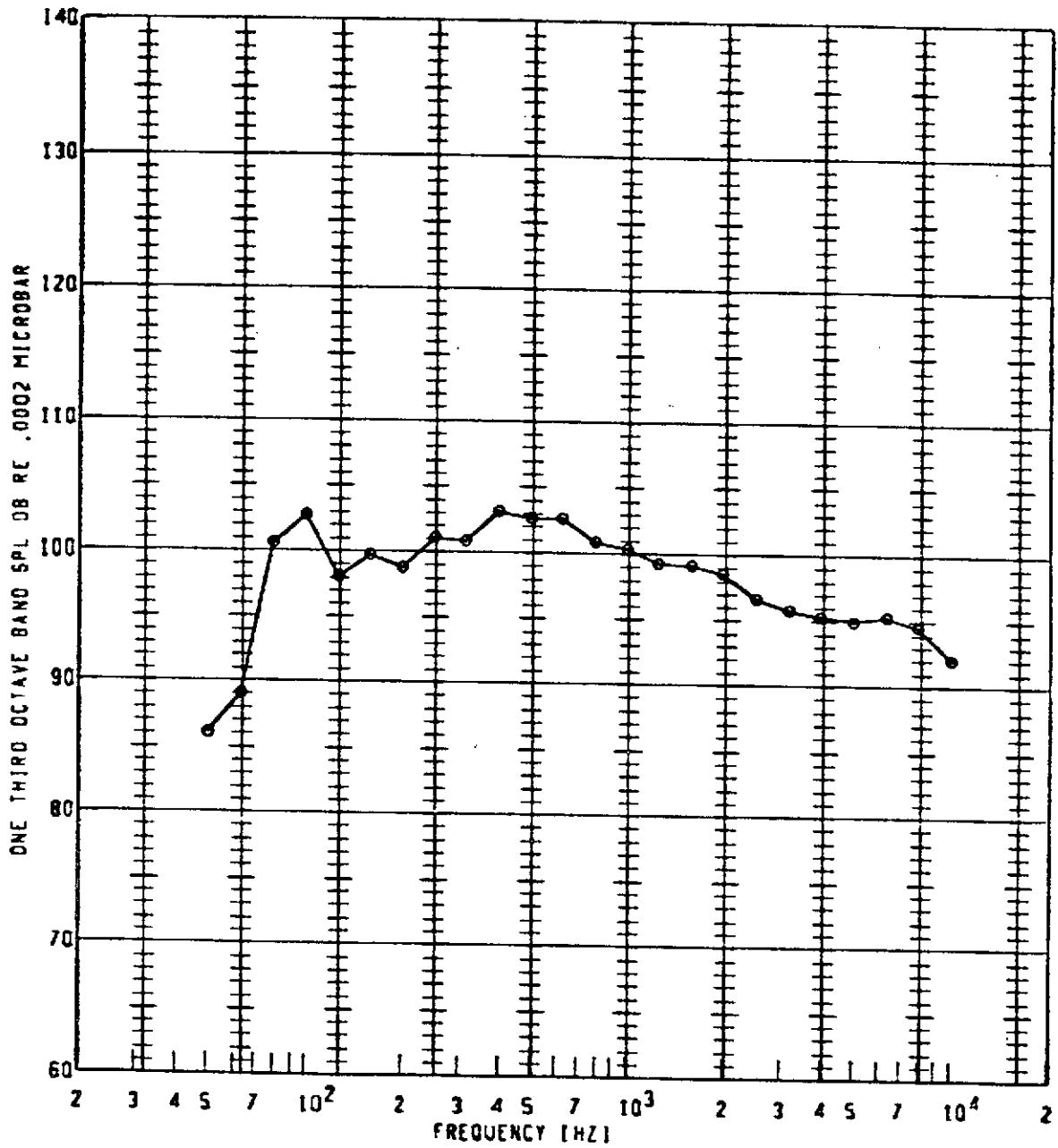
| ● | 116 | 850 | 1.500 | 130 | 50FP | 112.4 | 10 |  |
|---|-----|-----|-------|-----|------|-------|----|--|
| ● | 116 | 850 | 1.500 | 130 | 50FP | 112.4 | 10 |  |

BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



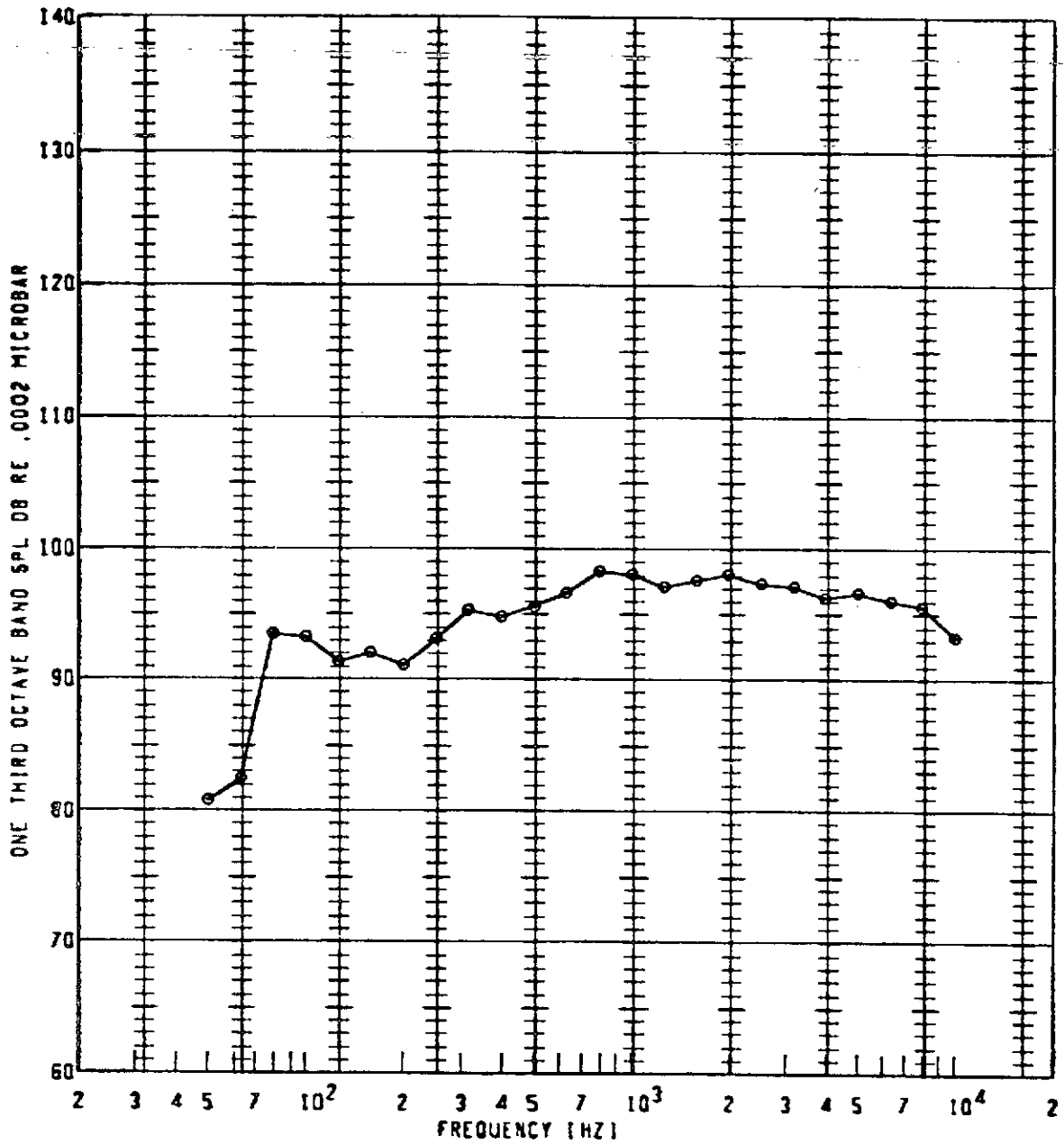
| PLT<br>SYMBOL | RUN<br>NUMBER | JET<br>TEMP | PRESSURE<br>RATIO | ANGLE<br>RE INLET | OBSERVER<br>LOCATION | OASPL<br>(DB) | GAIN<br>SETTING | SPECIAL<br>ID |
|---------------|---------------|-------------|-------------------|-------------------|----------------------|---------------|-----------------|---------------|
| ⊙             | 116           | 850         | 1.500             | 135               | 5JFP                 | 112.8         | 10              |               |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



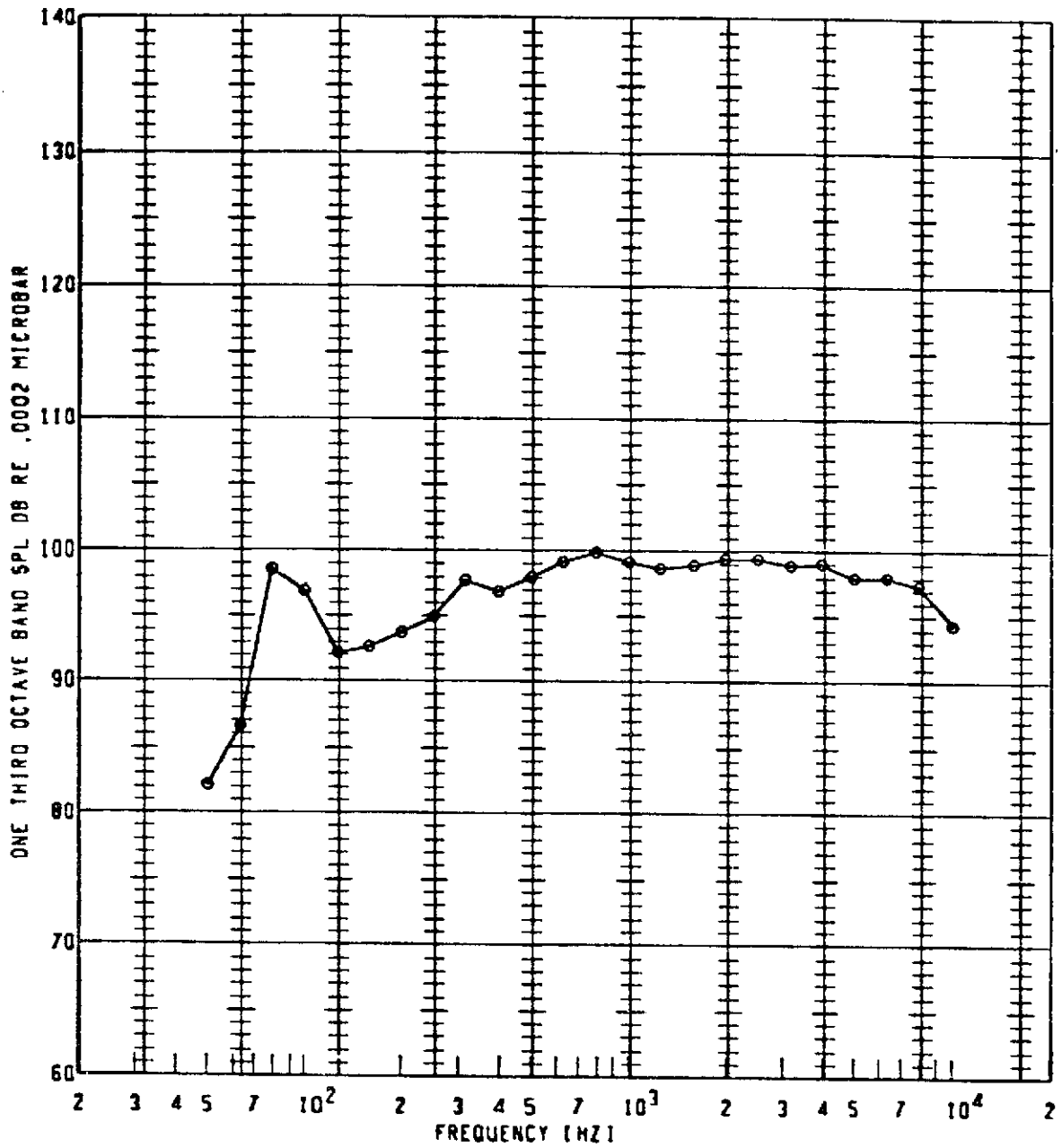
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL [DB] | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 116        | 850      | 1.500          | 140            | SOFP              | 113.1      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



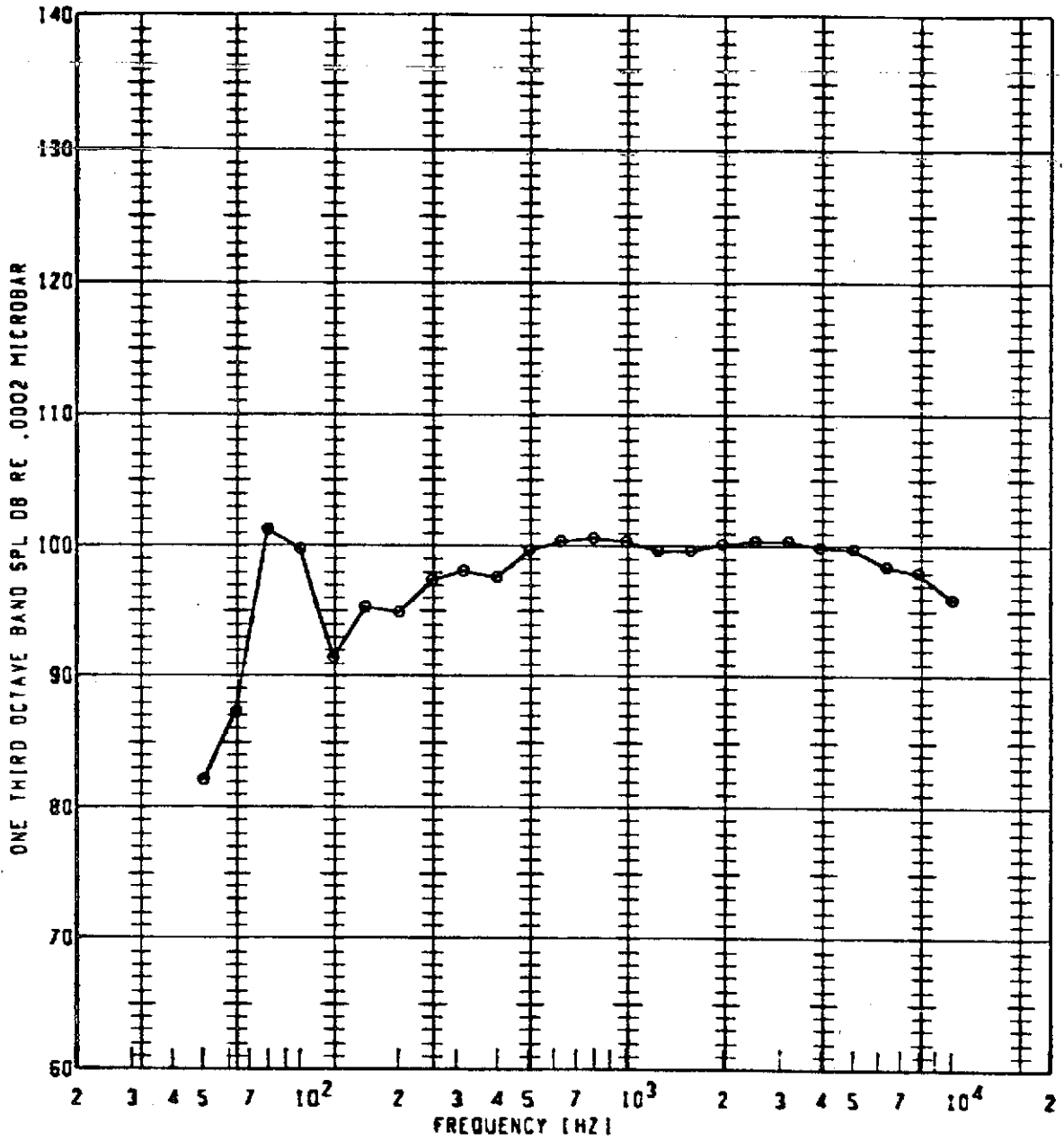
| Plot Symbol | Run Number | Jet Temp | Pressure Ratio | Angle re Inlet | Observer Location | QASPL (dB) | Gain Setting | Special ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 116        | 900      | 1.600          | 90             | 50FP              | 109.3      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | GASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 116        | 900      | 1.600          | 100            | 50FP              | 111.3      | 10           |            |

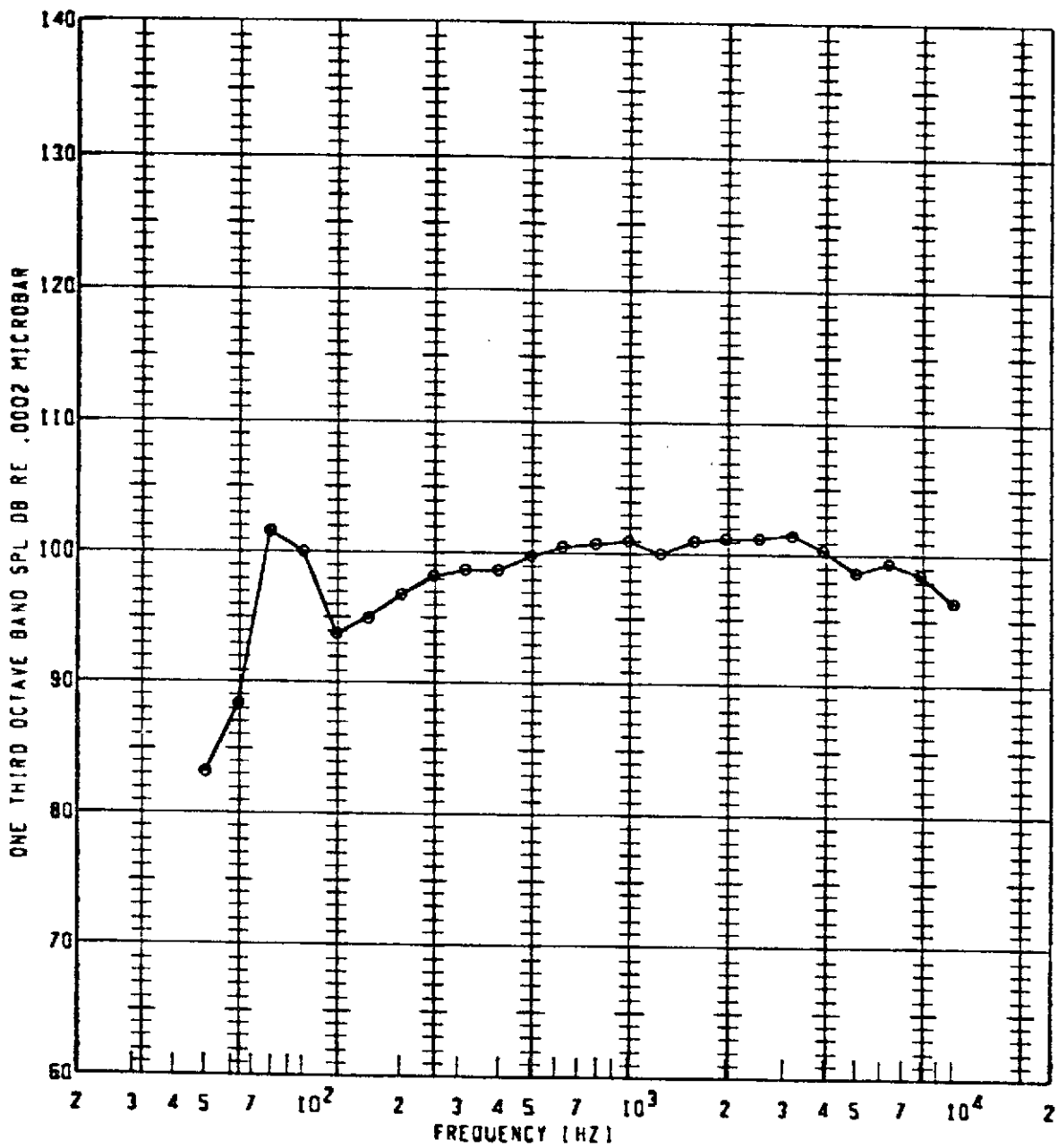
BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 116        | 900      | 1.600          | 110            | 50FP              | 112.5      | 10           |            |

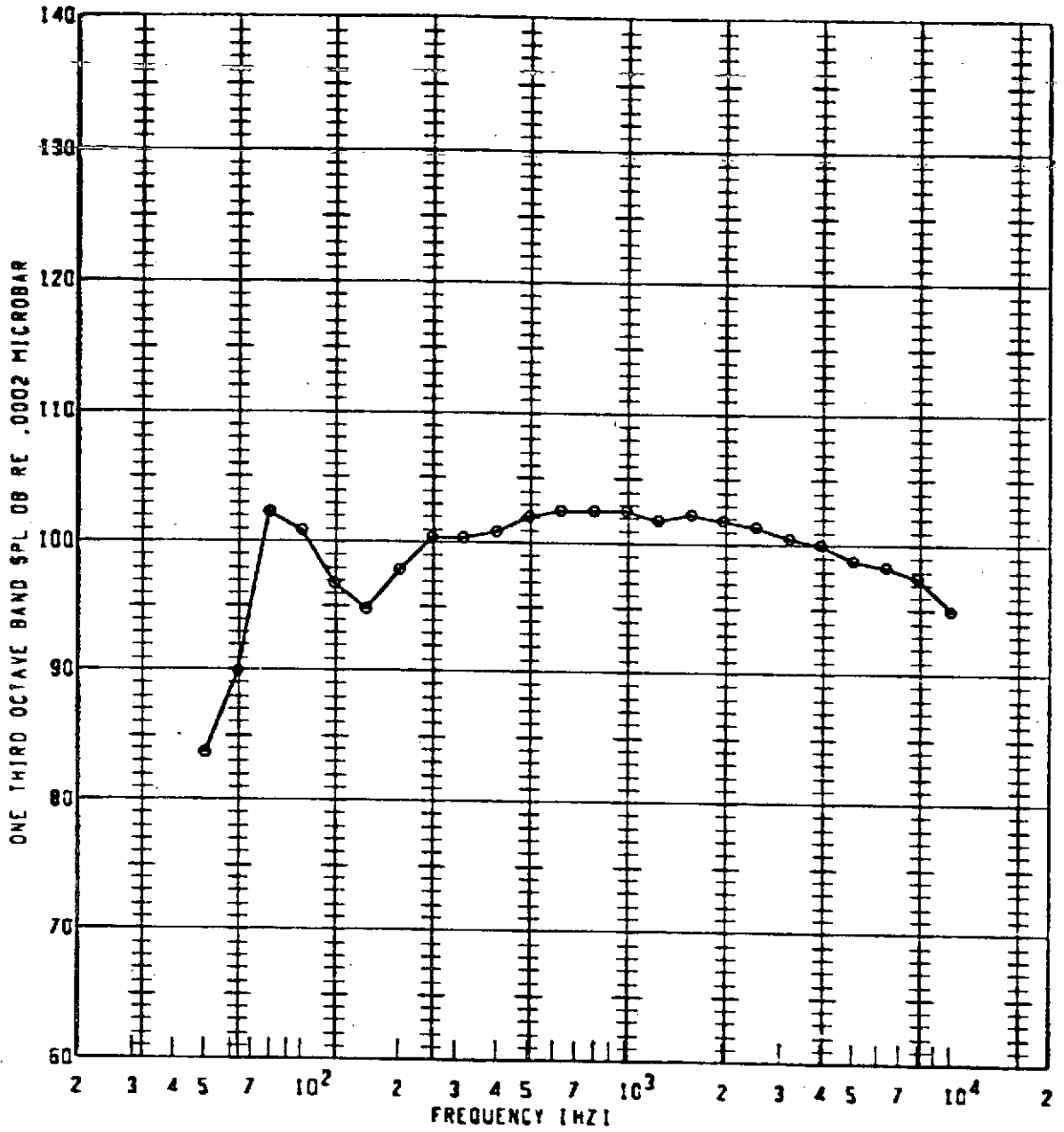


BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



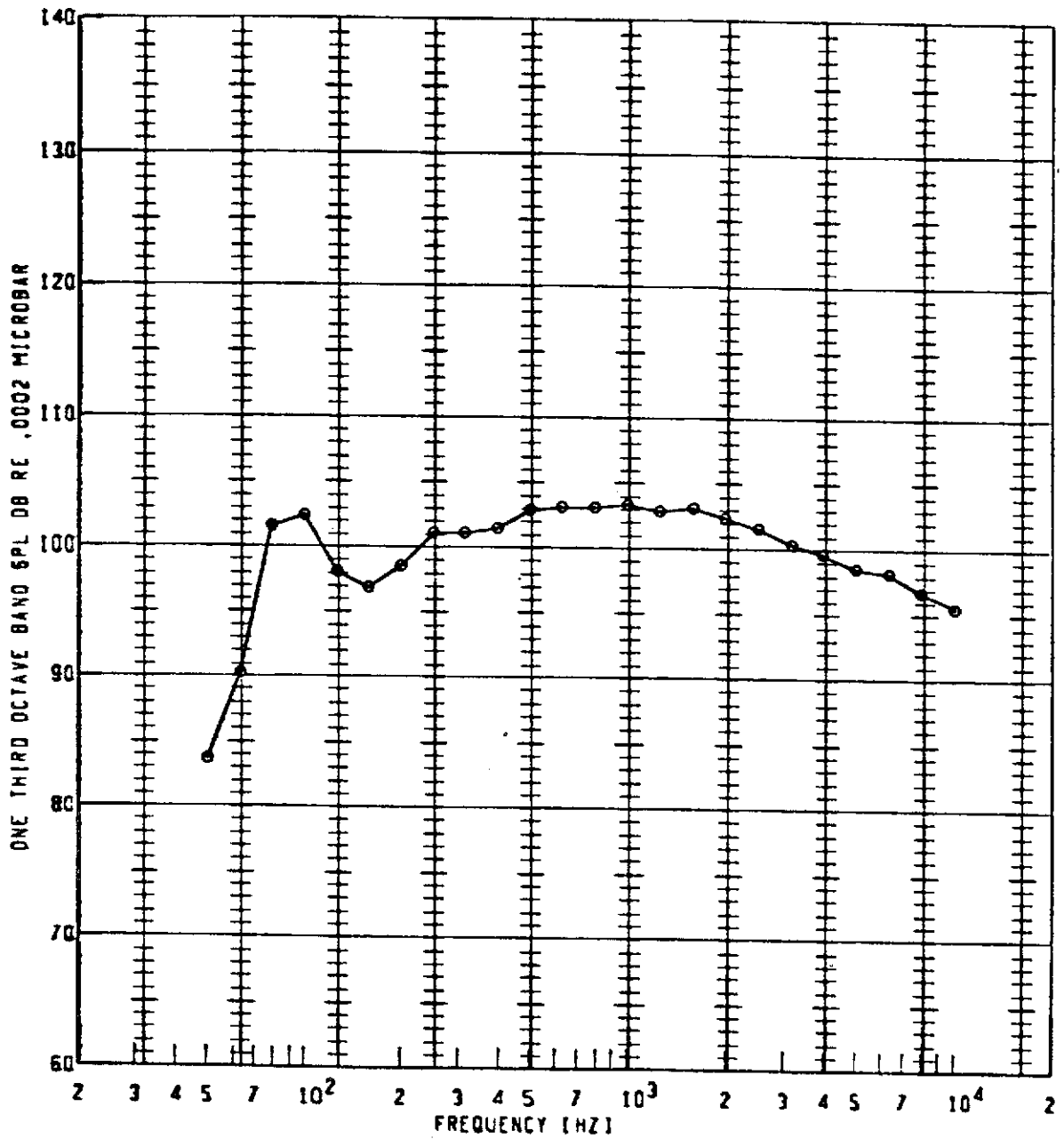
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| •           | 116        | 900      | 1.600          | 115            | SCFP              | 113.1      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



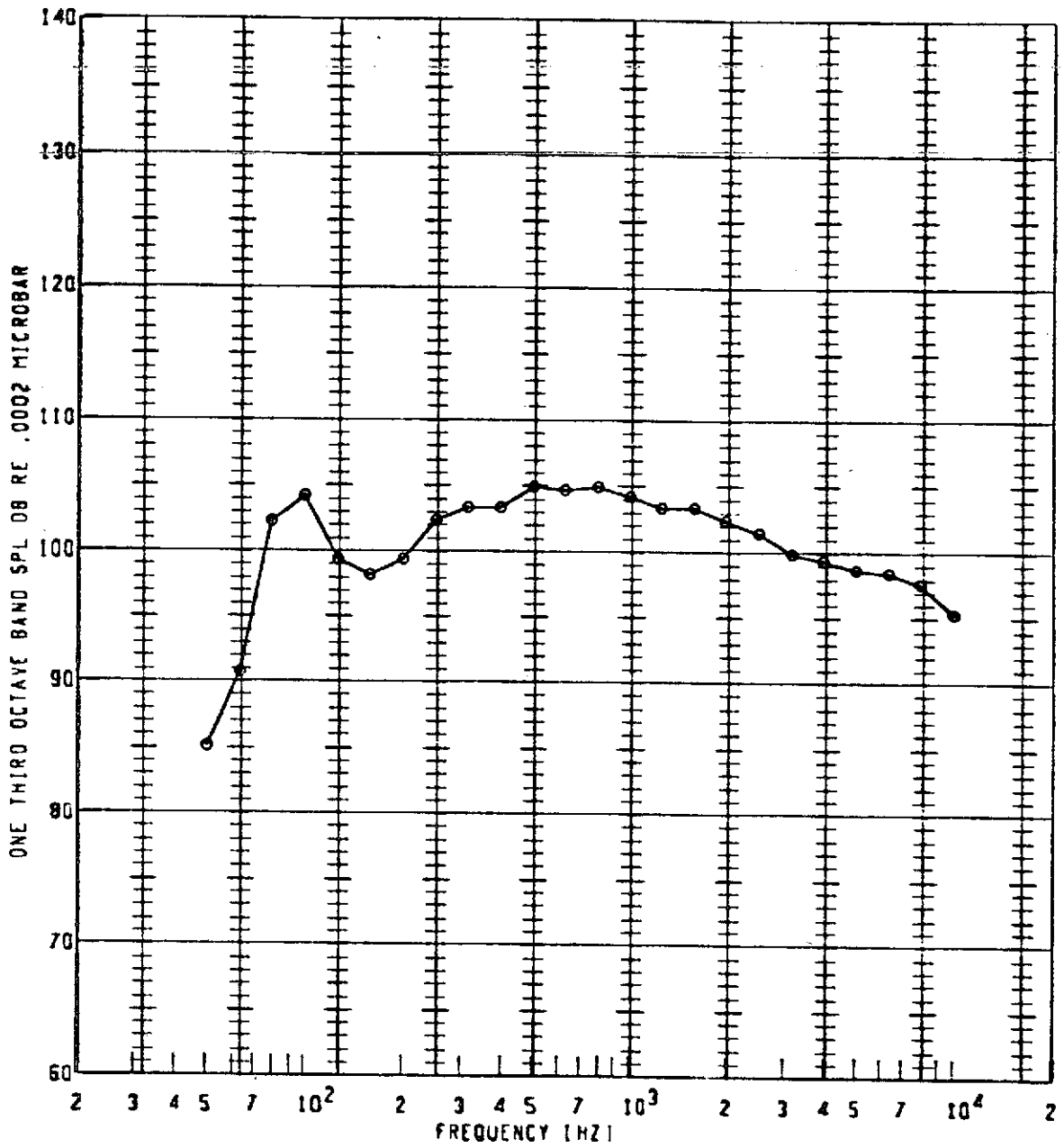
| Plot Symbol | Run Number | Jet Temp | Pressure Ratio | Angle re Inlet | Observer Location | DASPL (dB) | Gain Setting | Special ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 116        | 900      | 1.600          | 120            | 50FP              | 114.0      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



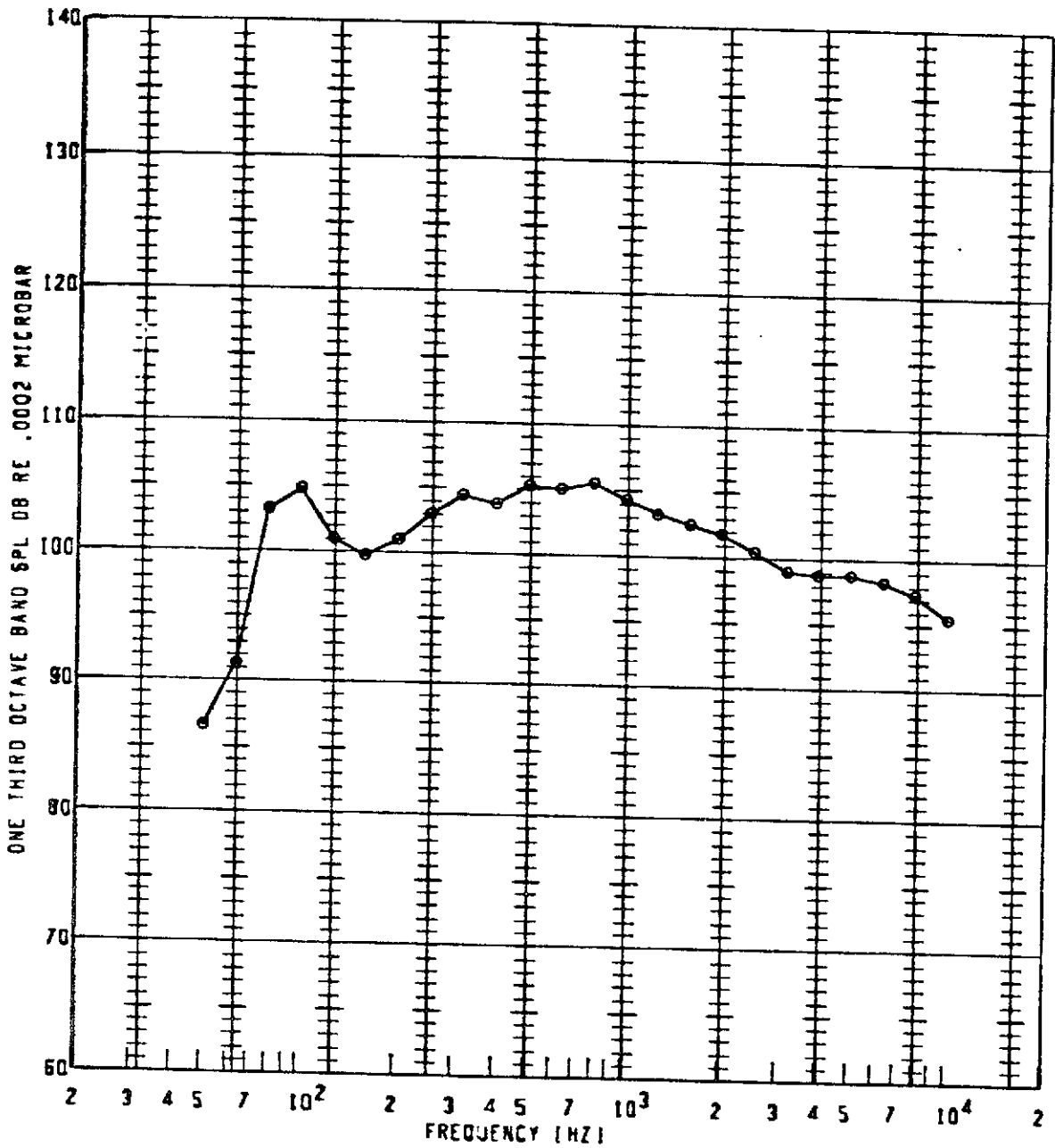
| ●           | 116        | 900      | 1.600          | 125            | 50FP              | 114.6      | 10           |            |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |

BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



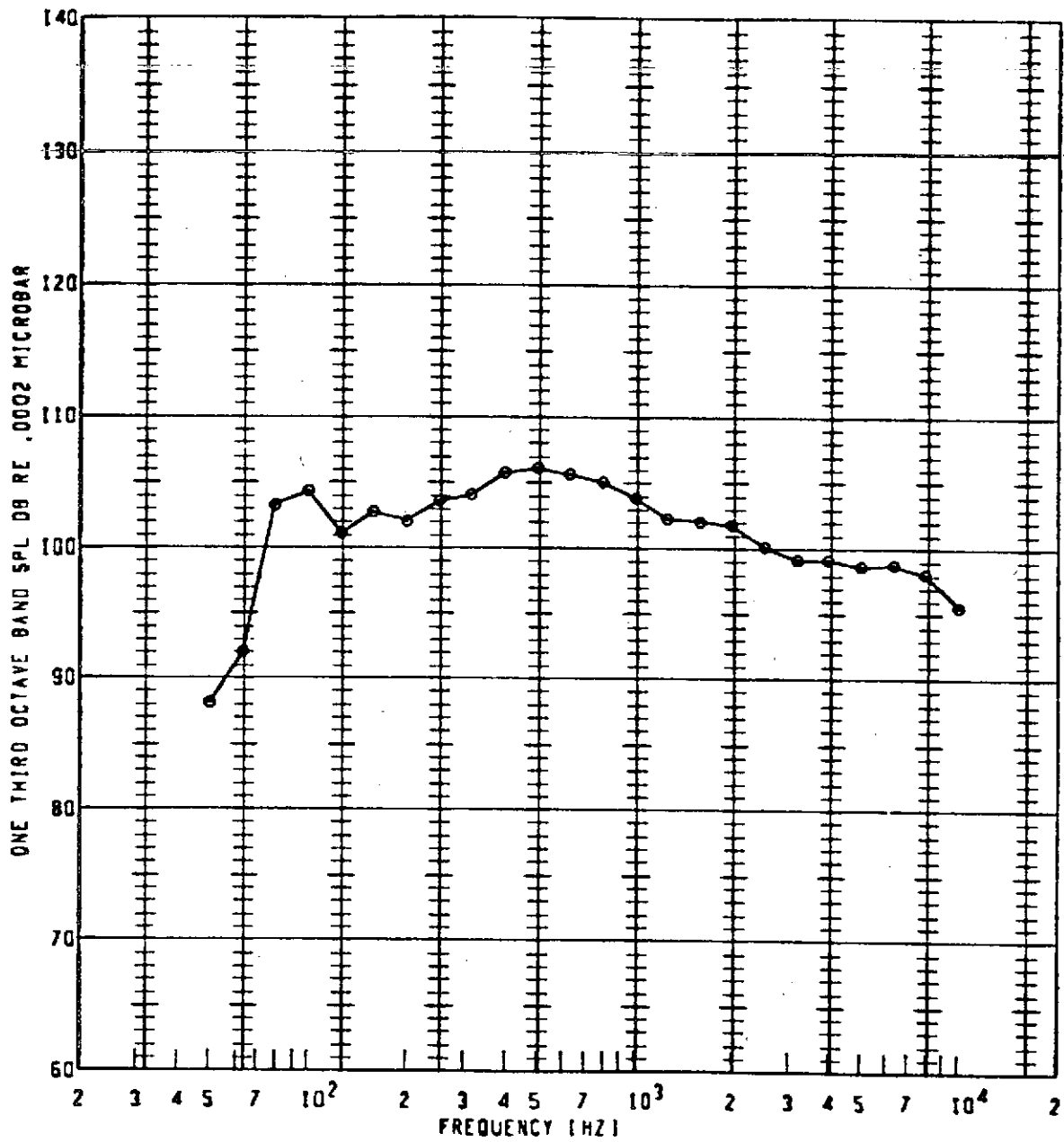
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | DASPL (DB) | GAIN SETTING | SPECIAL TD |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 116        | 900      | 1.600          | 130            | 50FP              | 115.6      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



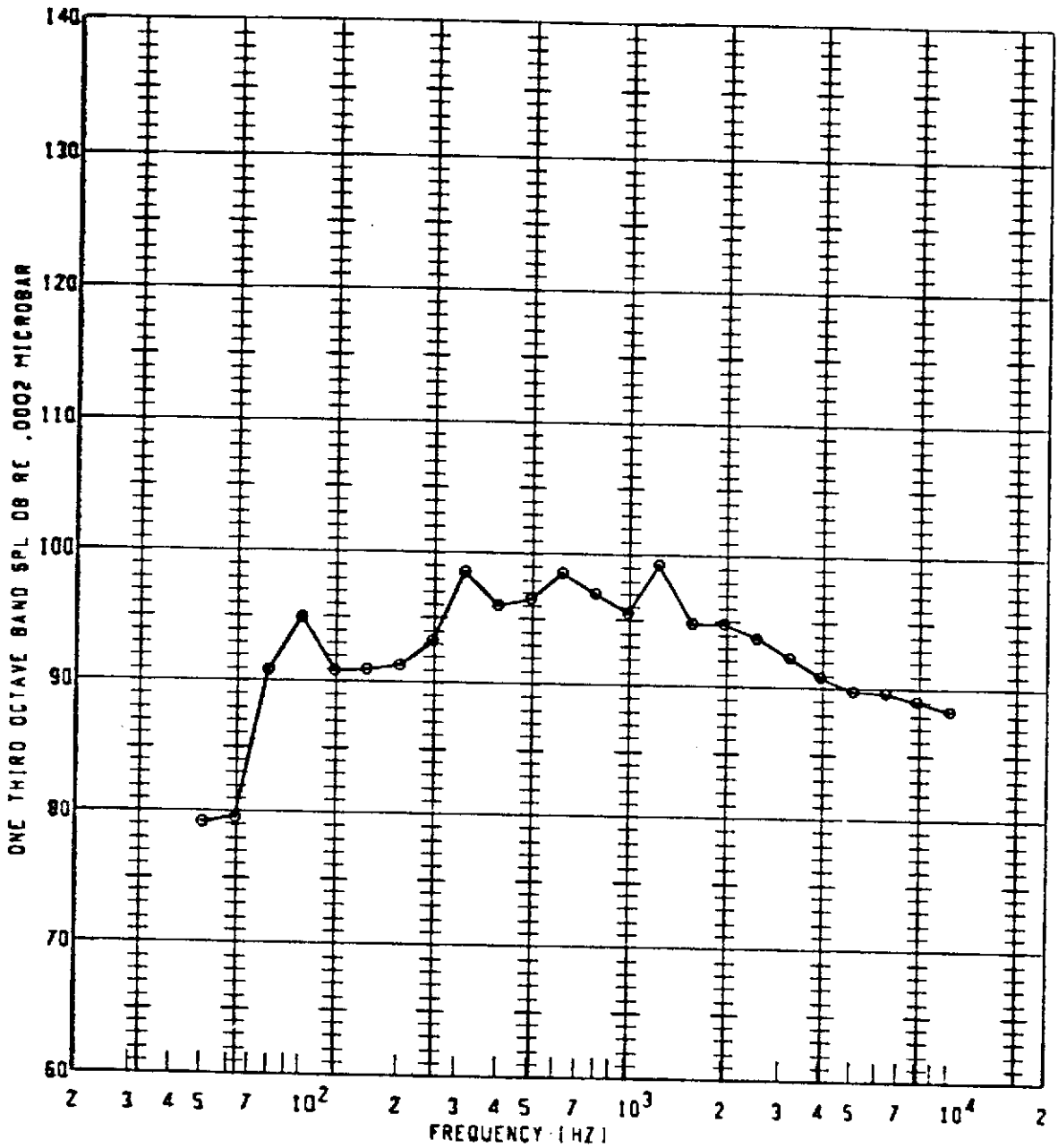
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 116        | 900      | 1.600          | 135            | 50FP              | 115.9      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



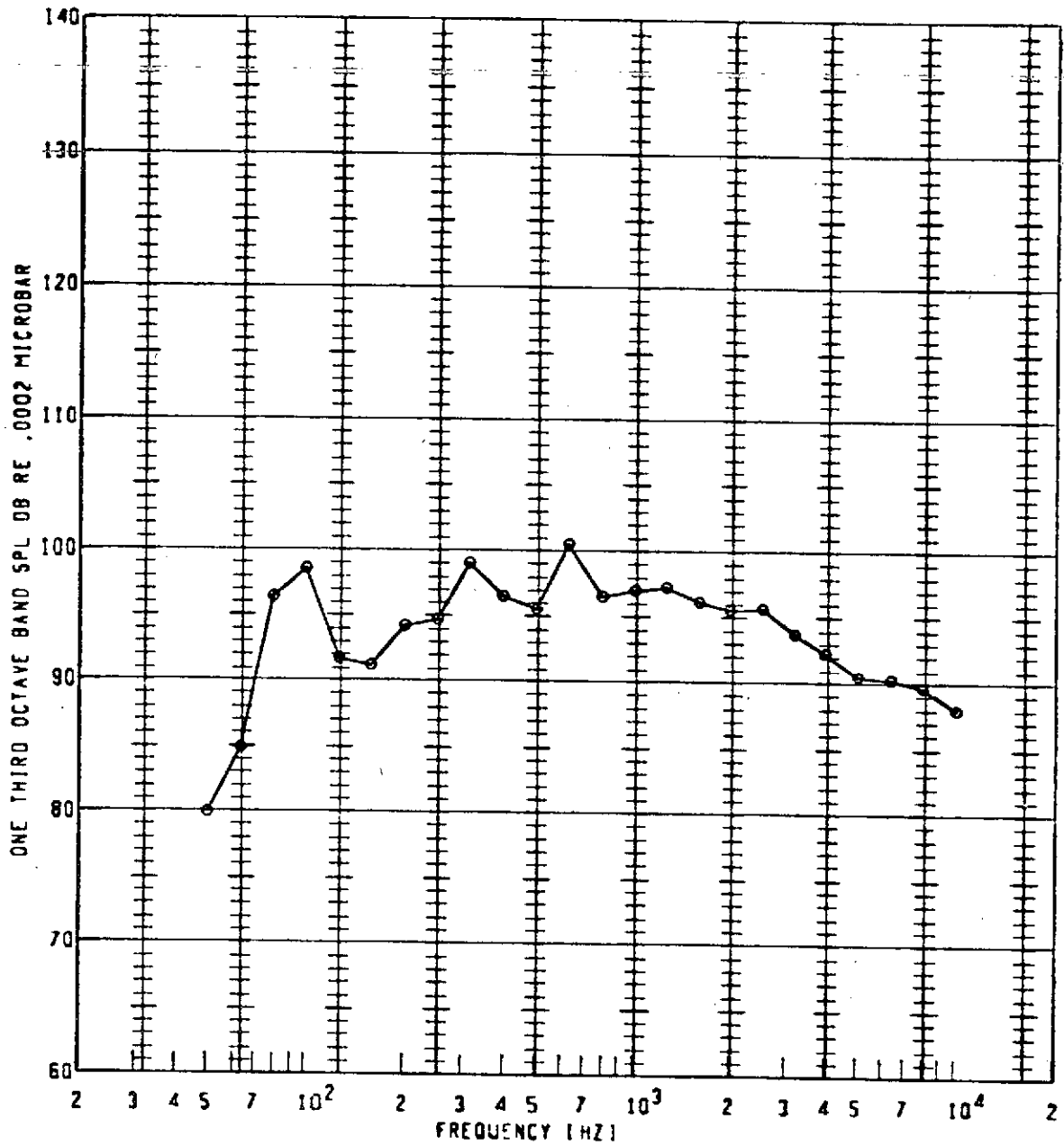
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 116        | 900      | 1.600          | 140            | 50FP              | 116.2      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| <u>PLOT SYMBOL</u> | <u>RUN NUMBER</u> | <u>JET TEMP</u> | <u>PRESSURE RATIO</u> | <u>ANGLE RE INLET</u> | <u>OBSERVER LOCATION</u> | <u>OASPL (DB)</u> | <u>GAIN SETTING</u> | <u>SPECIAL ID</u> |
|--------------------|-------------------|-----------------|-----------------------|-----------------------|--------------------------|-------------------|---------------------|-------------------|
| ⊙                  | 126               | 750             | 1.300                 | 90                    | 50FP                     | 108.1             | 10                  |                   |

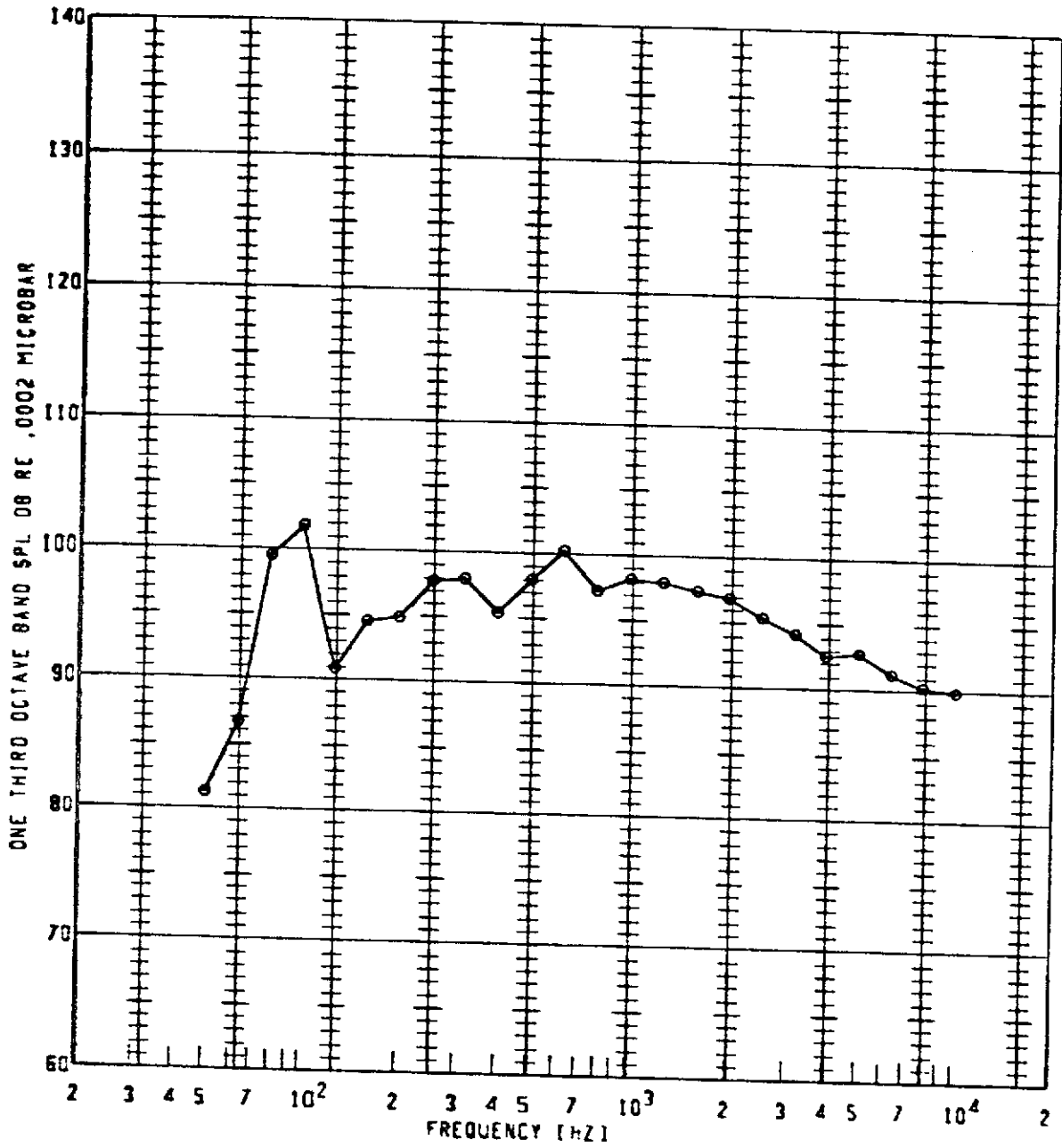
BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| o           | 126        | 750      | 1.300          | 100            | 50' P             | 109.1      | 20           |            |

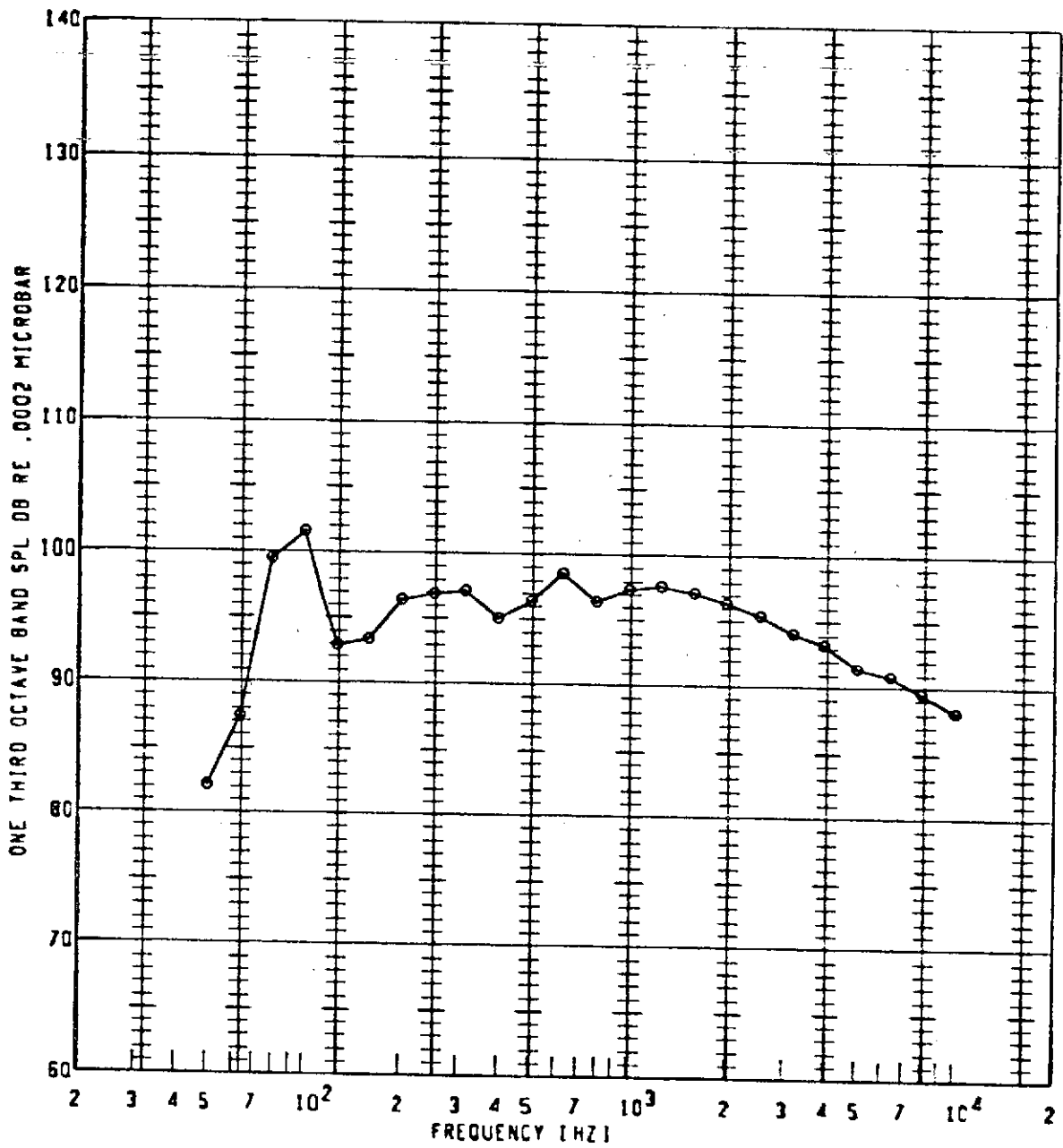


BUFFALO SUPPRESSOR NOZZLE TONE TO TEST - HOT NOZZLE TEST FACILITY



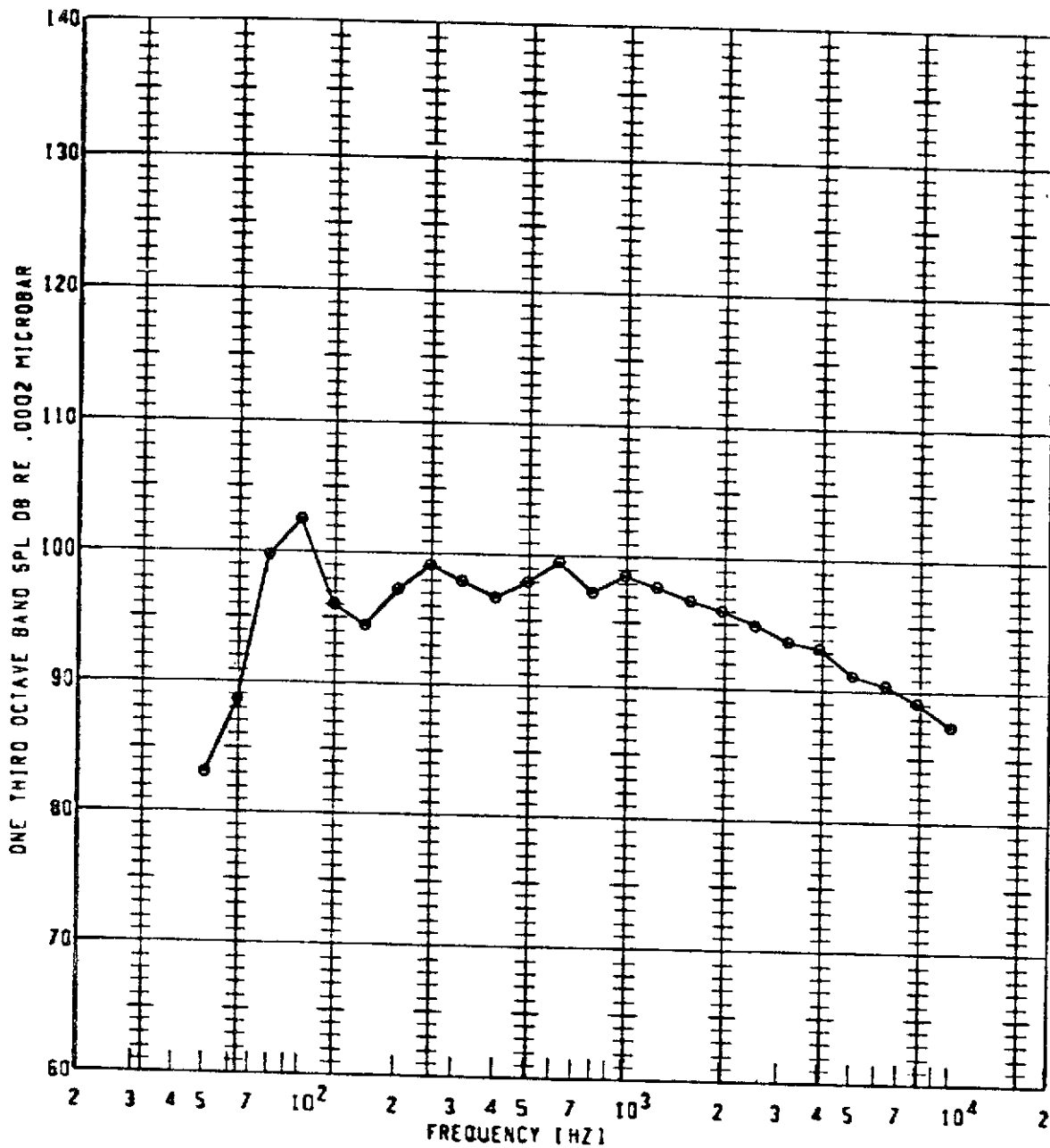
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | DASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| •           | 126        | 750      | 1.300          | 110            | SOFP              | 110.2      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



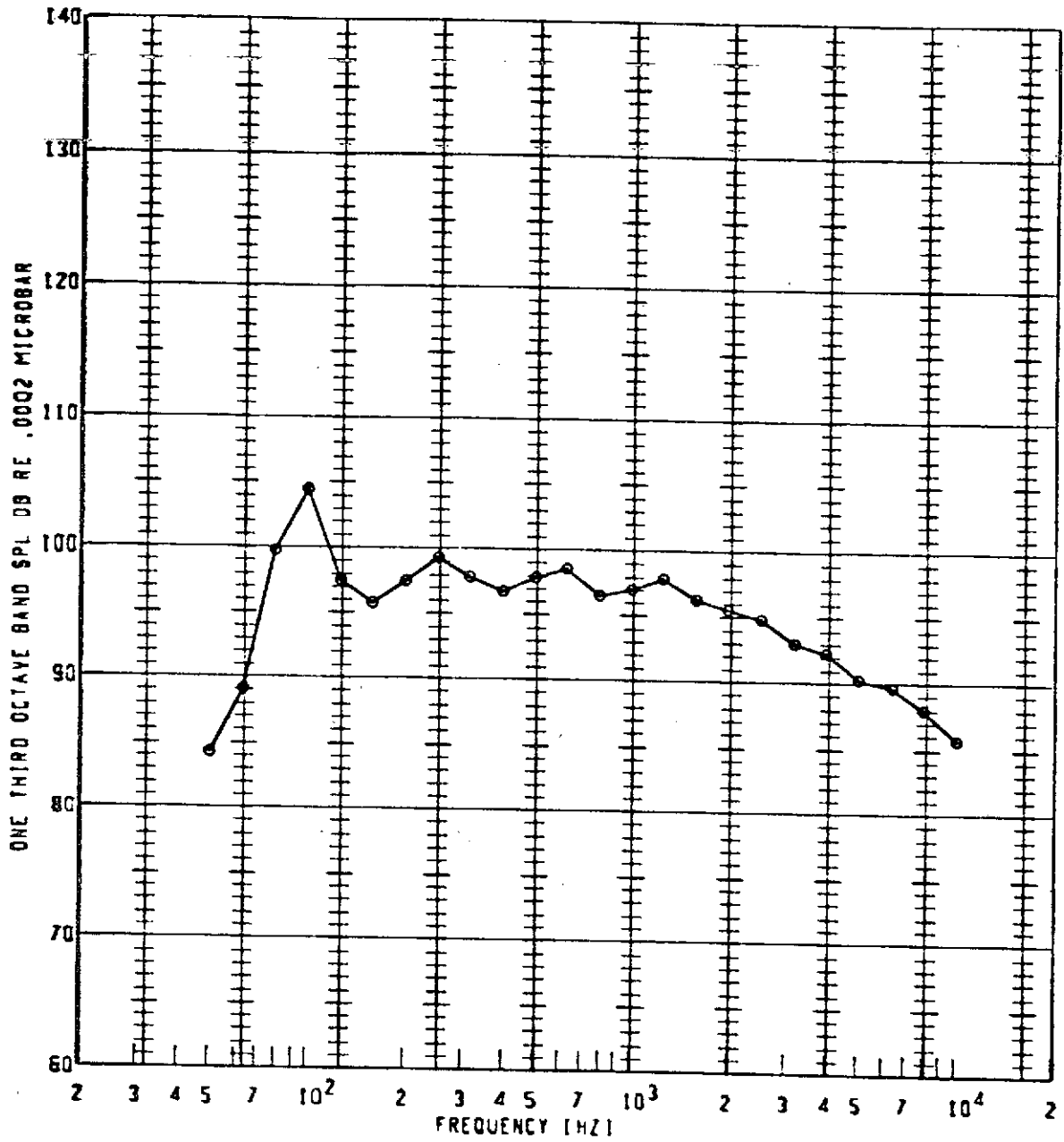
| Plot Symbol | Run Number | Jet Temp | Pressure Ratio | Angle re Inlet | Observer Location | QASPL (dB) | Gain Setting | Special ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 126        | 750      | 1.300          | 115            | 50FP              | 109.8      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



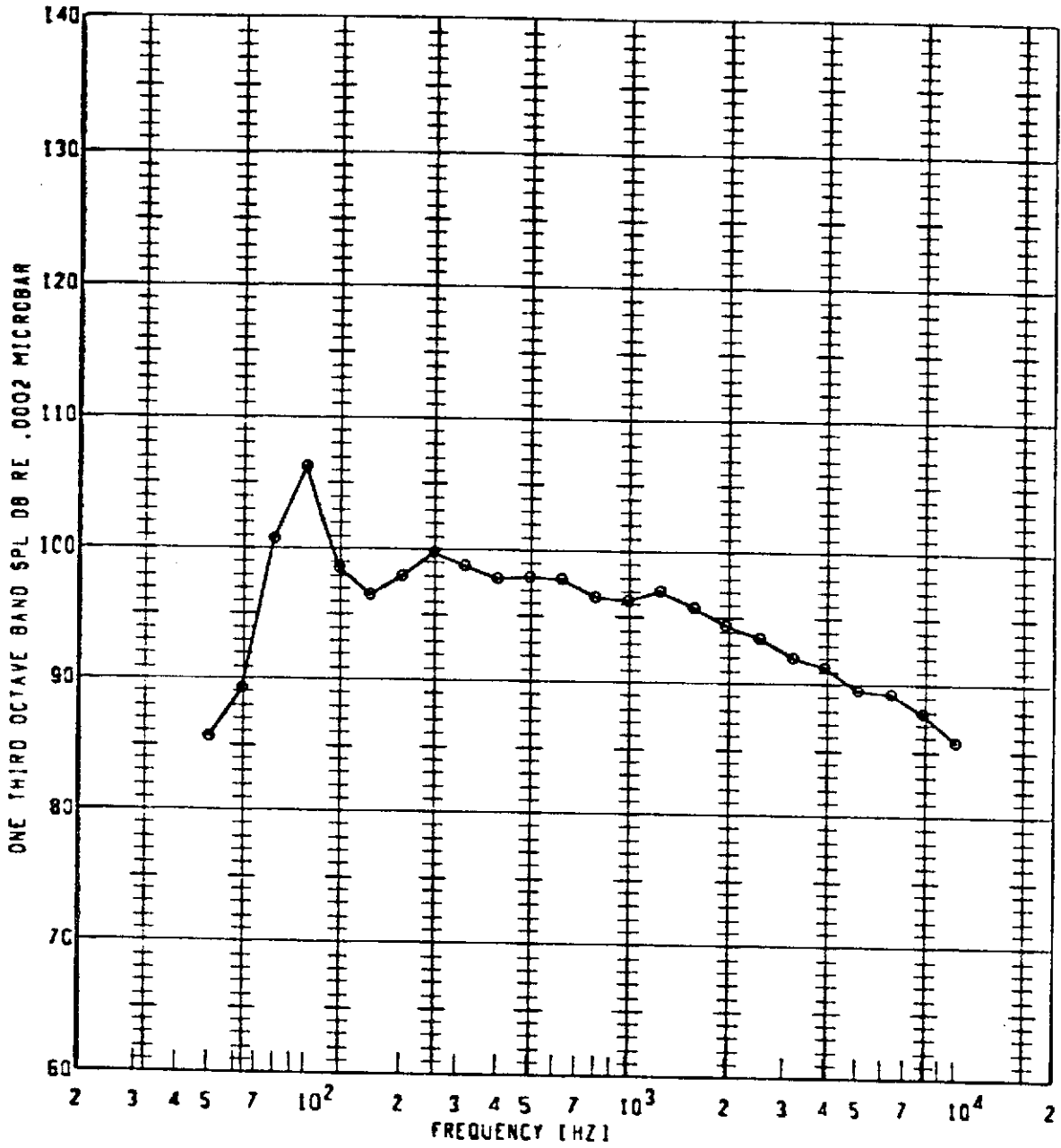
| PLT<br>SYMBOL | RUN<br>NUMBER | JET<br>TEMP | PRESSURE<br>RATIO | ANGLE<br>RE INLET | OBSERVER<br>LOCATION | DASPL<br>(DB) | GAIN<br>SETTING | SPECIAL<br>ID |
|---------------|---------------|-------------|-------------------|-------------------|----------------------|---------------|-----------------|---------------|
| ⊙             | 126           | 750         | 1.300             | 120               | SCFP                 | 110.5         | 20              |               |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



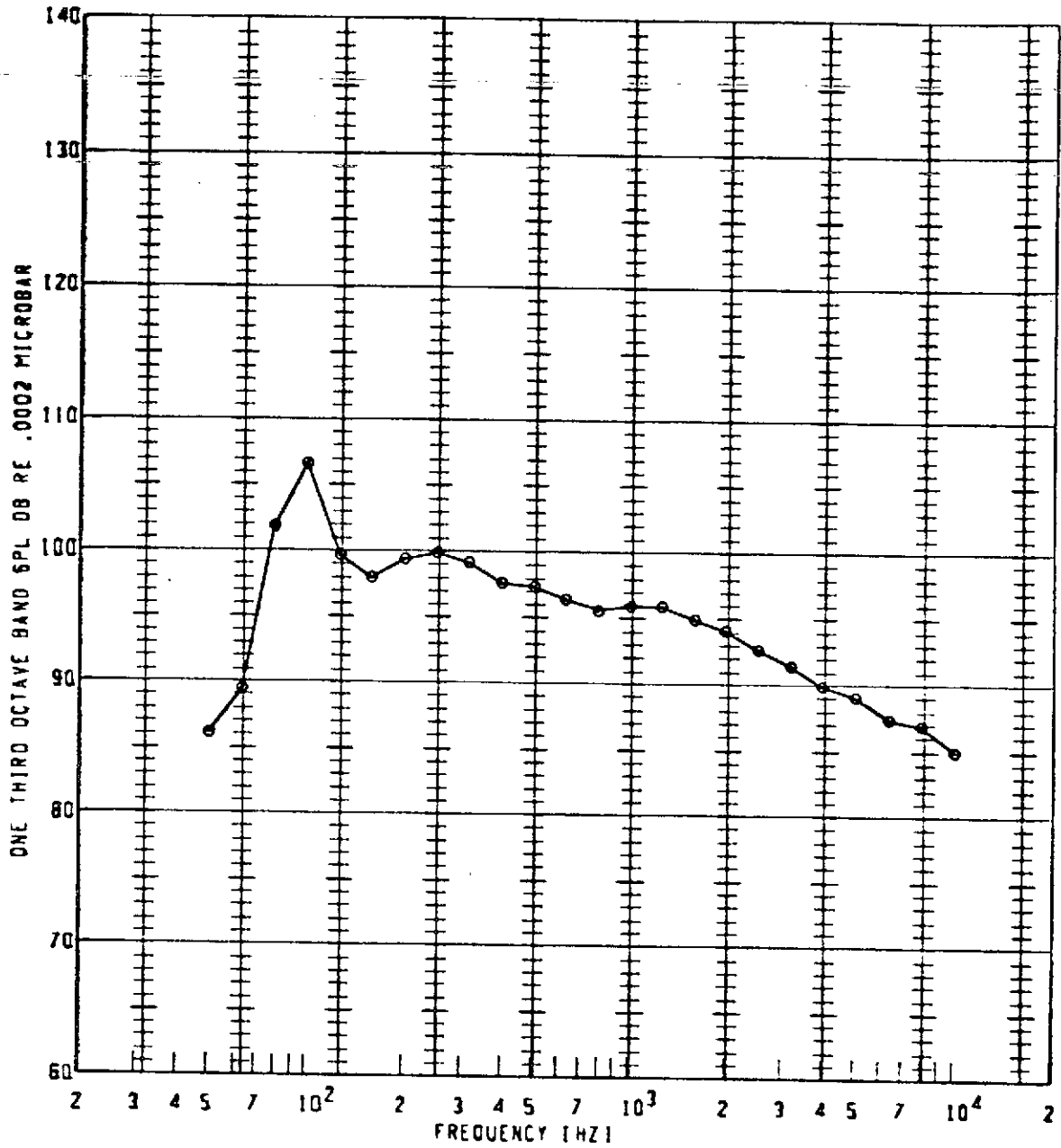
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | CASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ●           | 126        | 750      | 1.300          | 125            | 50FP              | 110.8      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



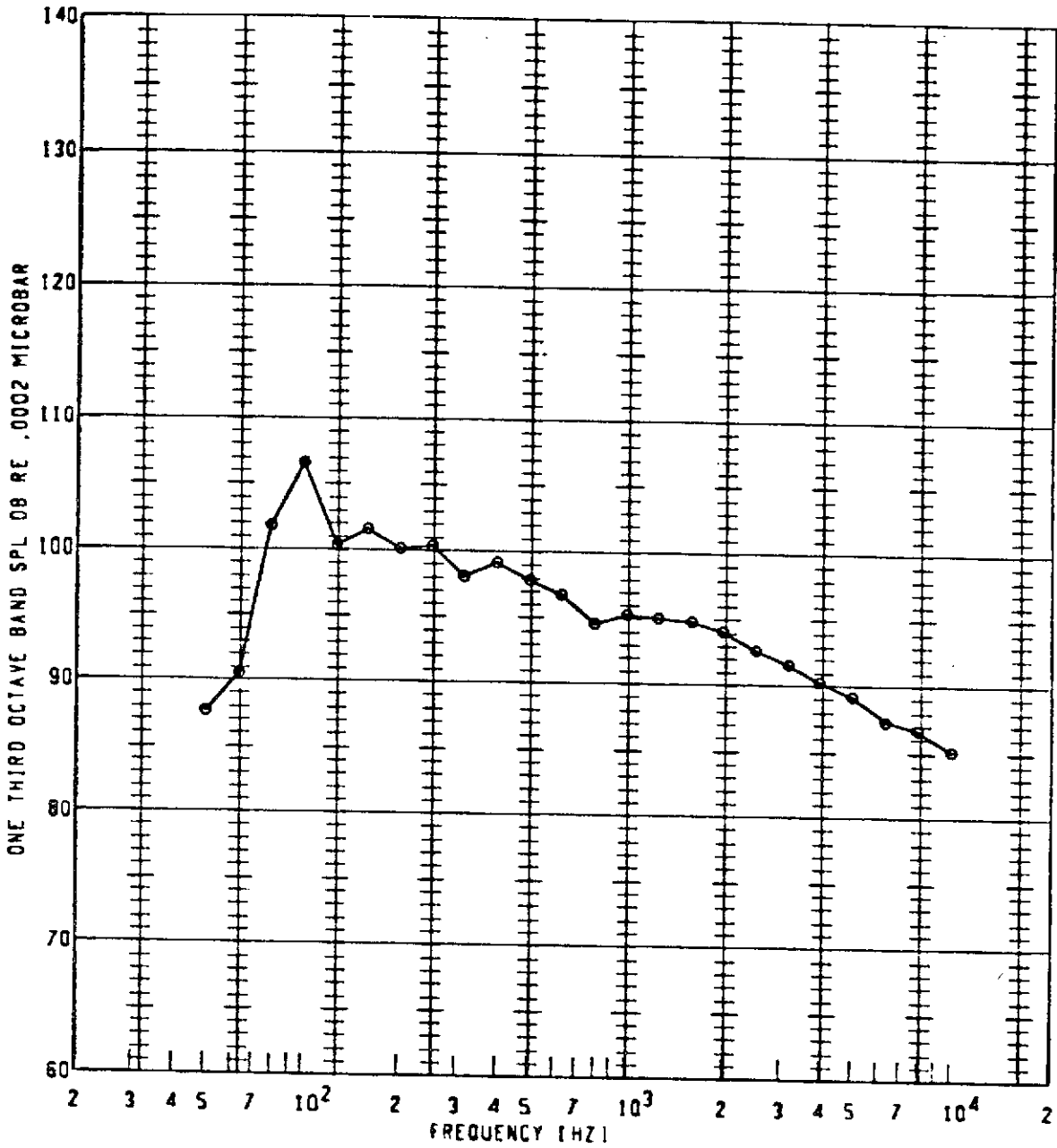
| ● | 126 | 750 | 1.300 | 130 | 50FP | 111.4 | 10 |  |
|---|-----|-----|-------|-----|------|-------|----|--|
| ● | 126 | 750 | 1.300 | 130 | 50FP | 111.4 | 10 |  |

BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



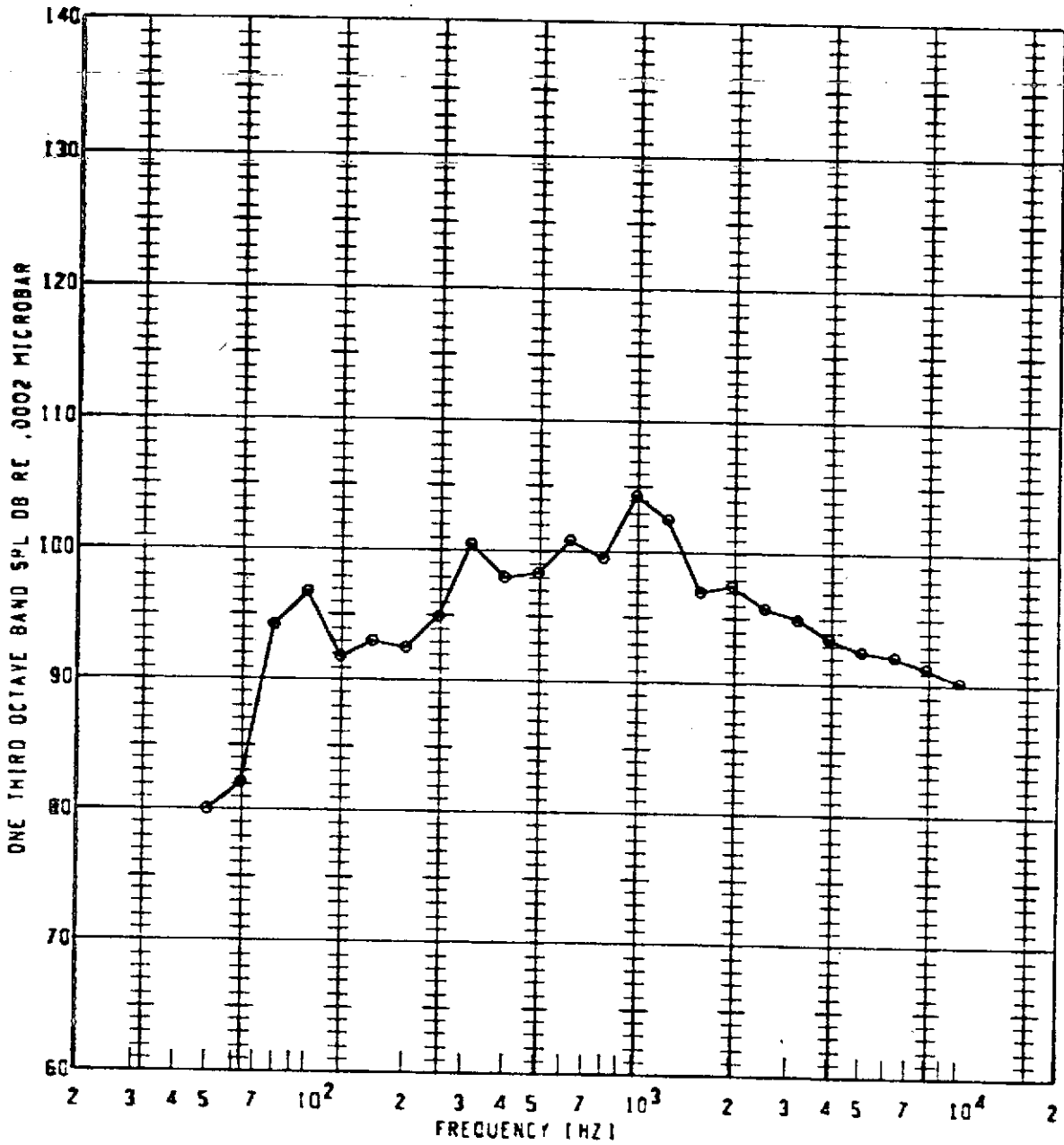
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 126        | 750      | 1.300          | 135            | 50FP              | 111.6      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 126        | 750      | 1.300          | 140            | 50FP              | 111.9      | 10           |            |

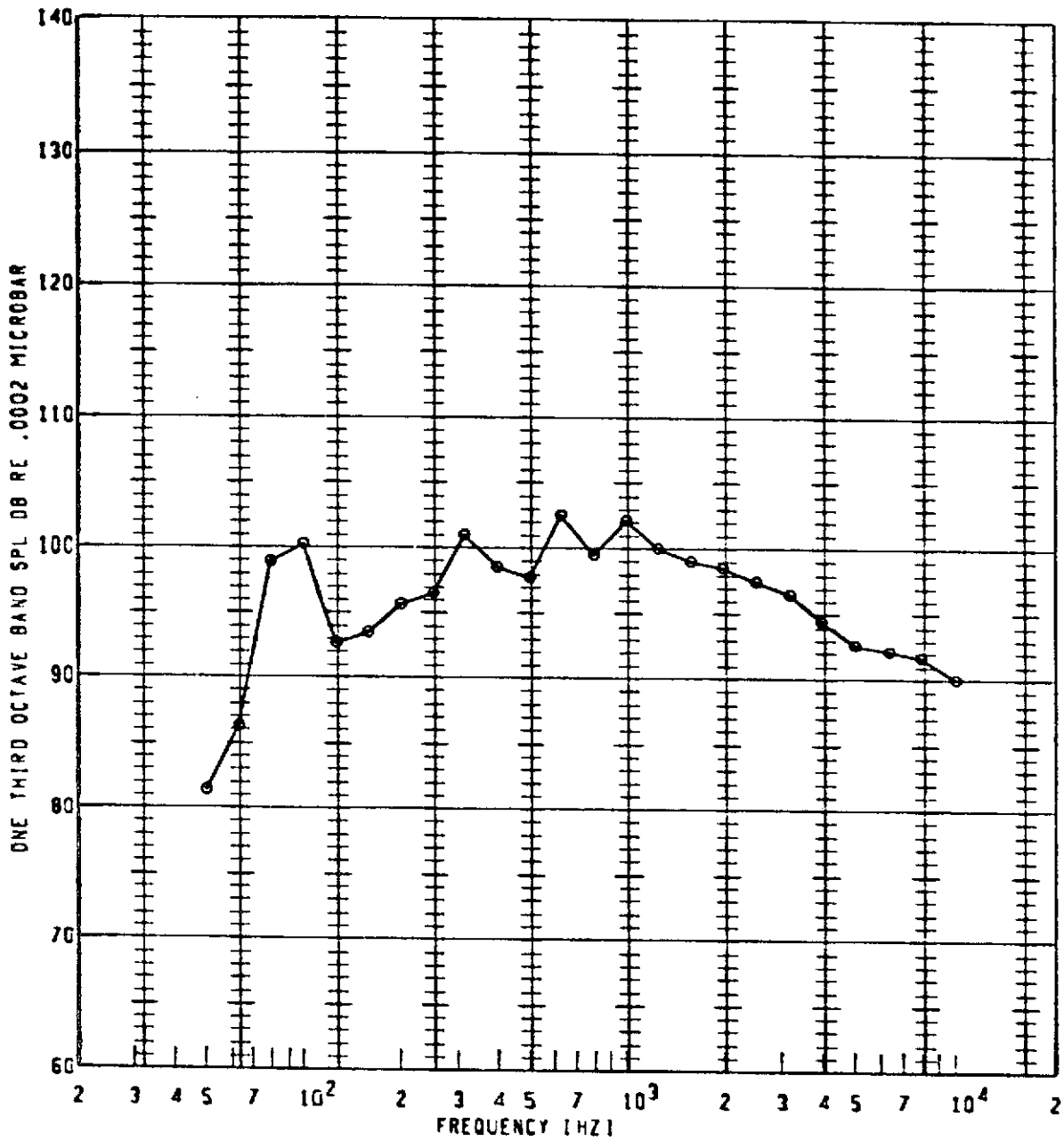
BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | CASPL (DB) | GAIN SETTING | SPECIAL IO |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| o          | 126        | 800      | 1.400          | 90             | 50FP              | 111.2      | 10           |            |

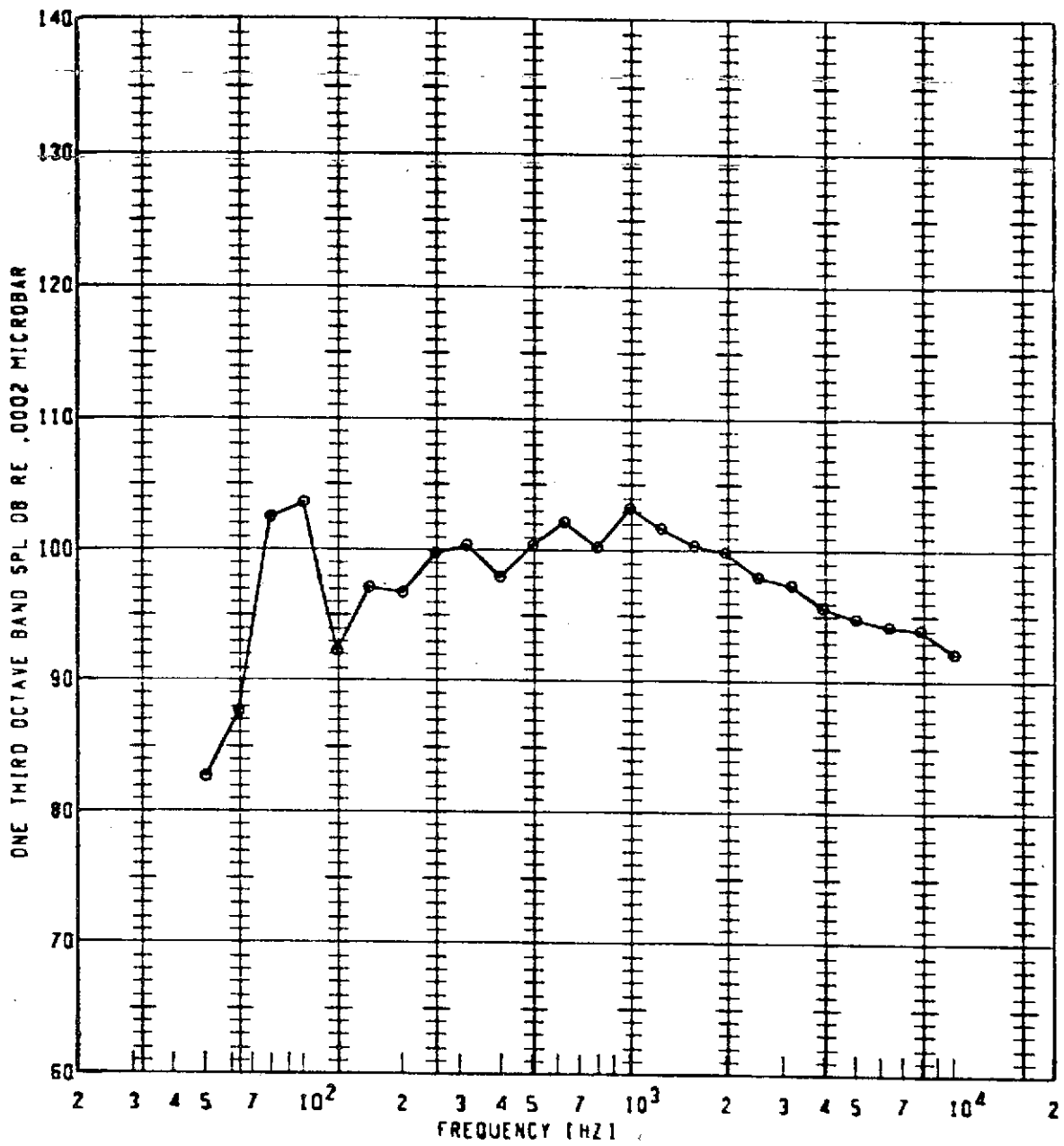


BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



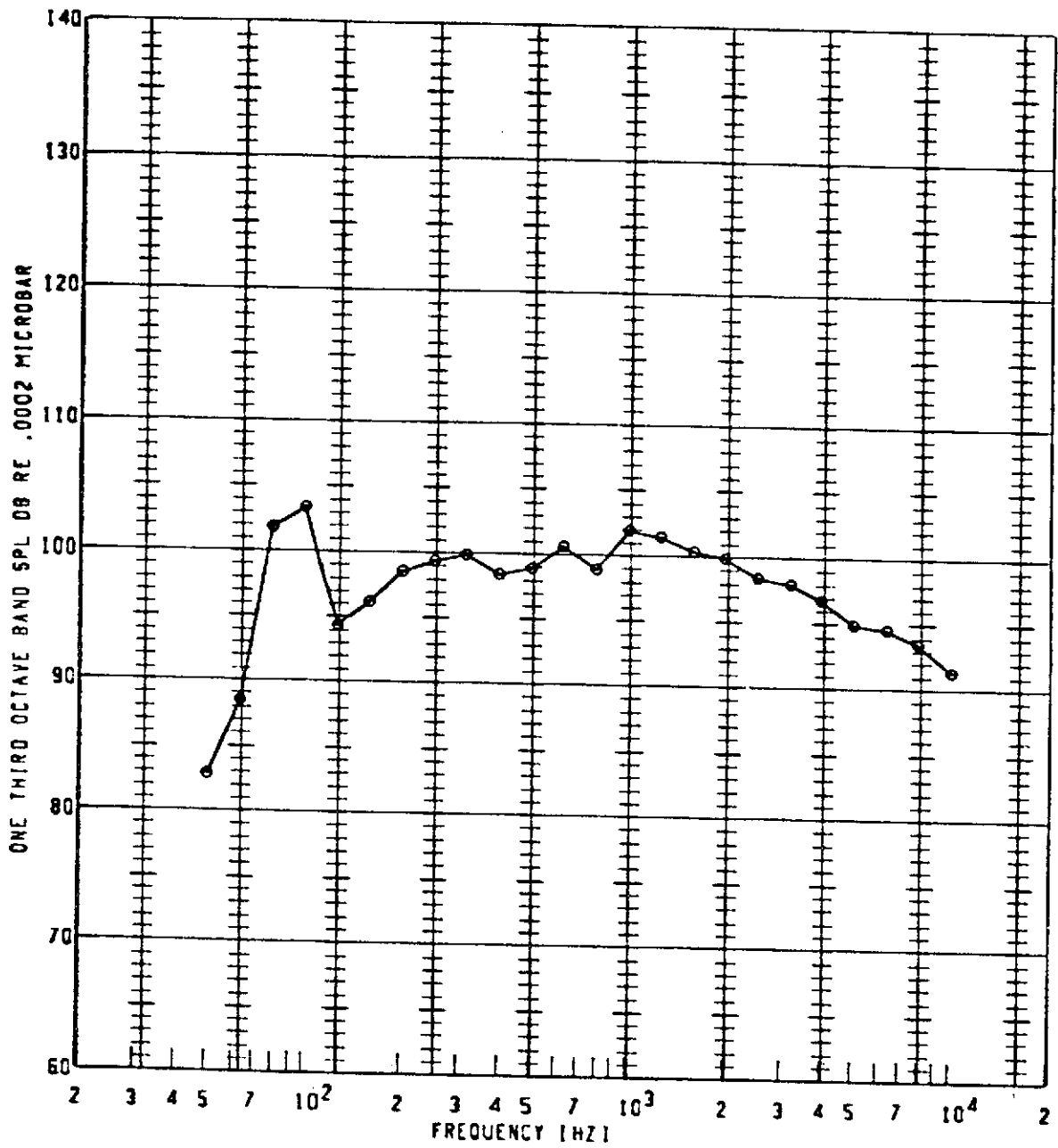
| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | GASPL (DB) | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙          | 126        | 800      | 1.400          | 100            | 50FP              | 111.6      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



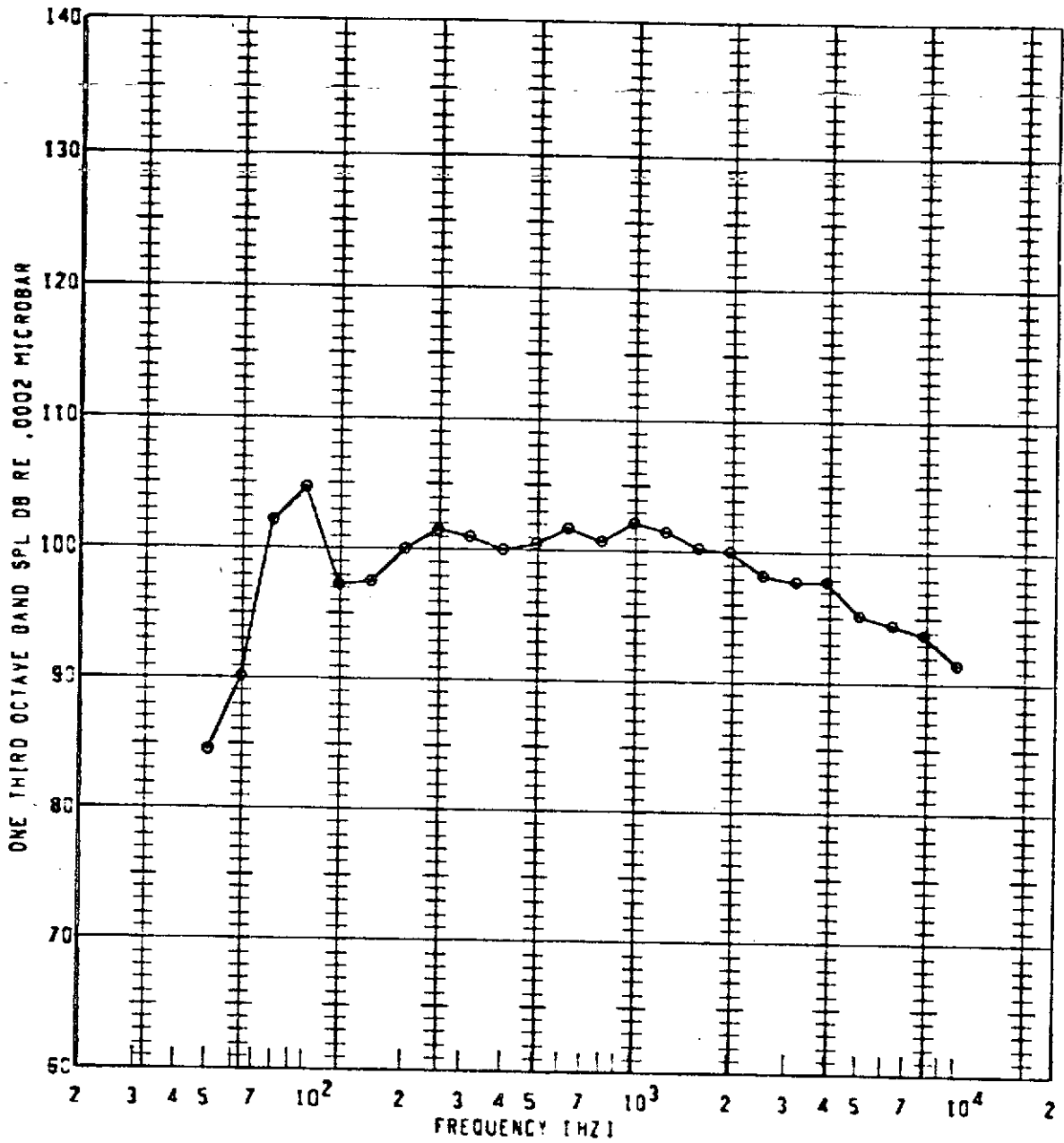
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 126        | 800      | 1.400          | 110            | 50FP              | 113.0      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



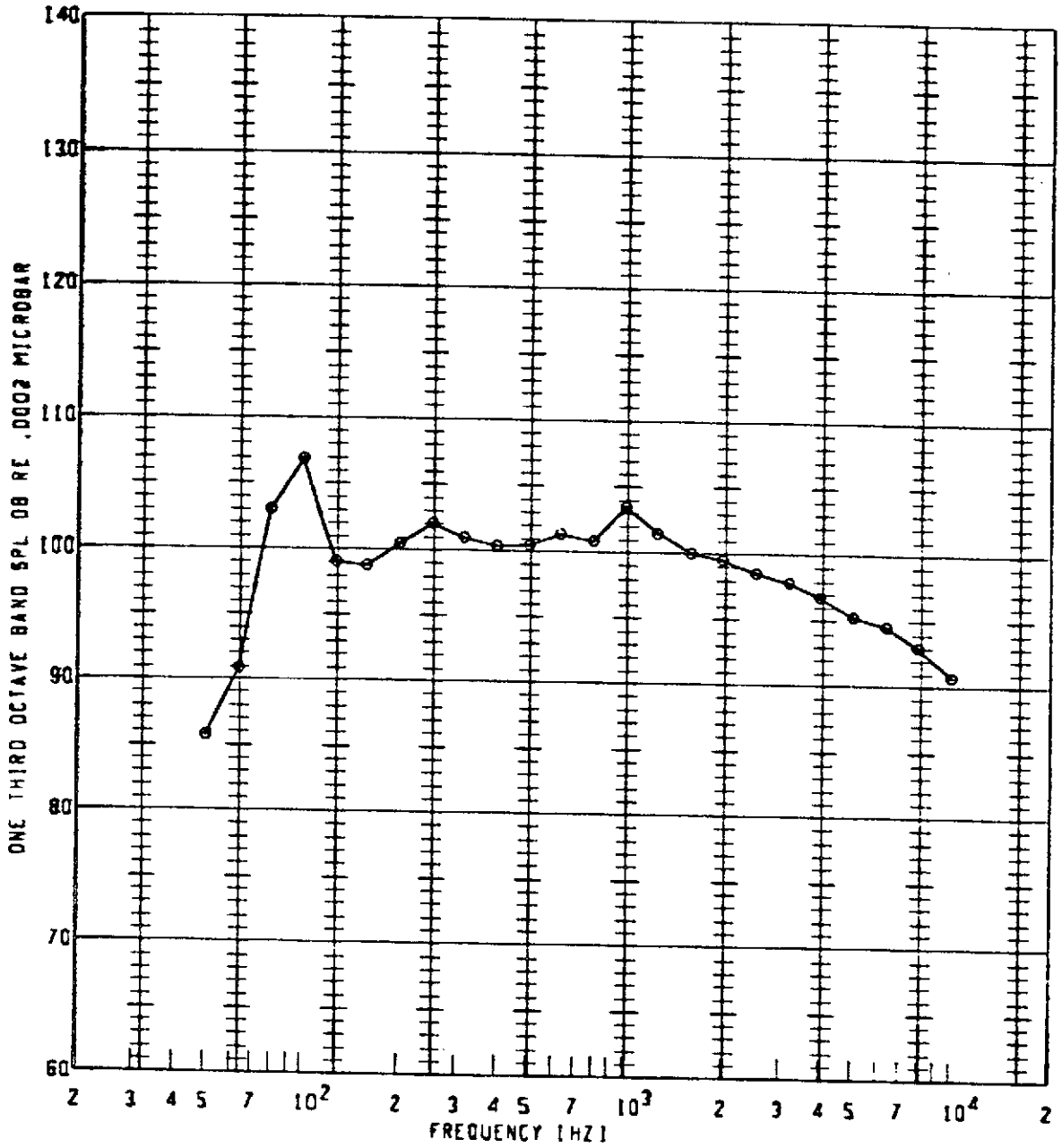
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL [DB] | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 126        | 800      | 1.400          | 115            | 50FP              | 112.6      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



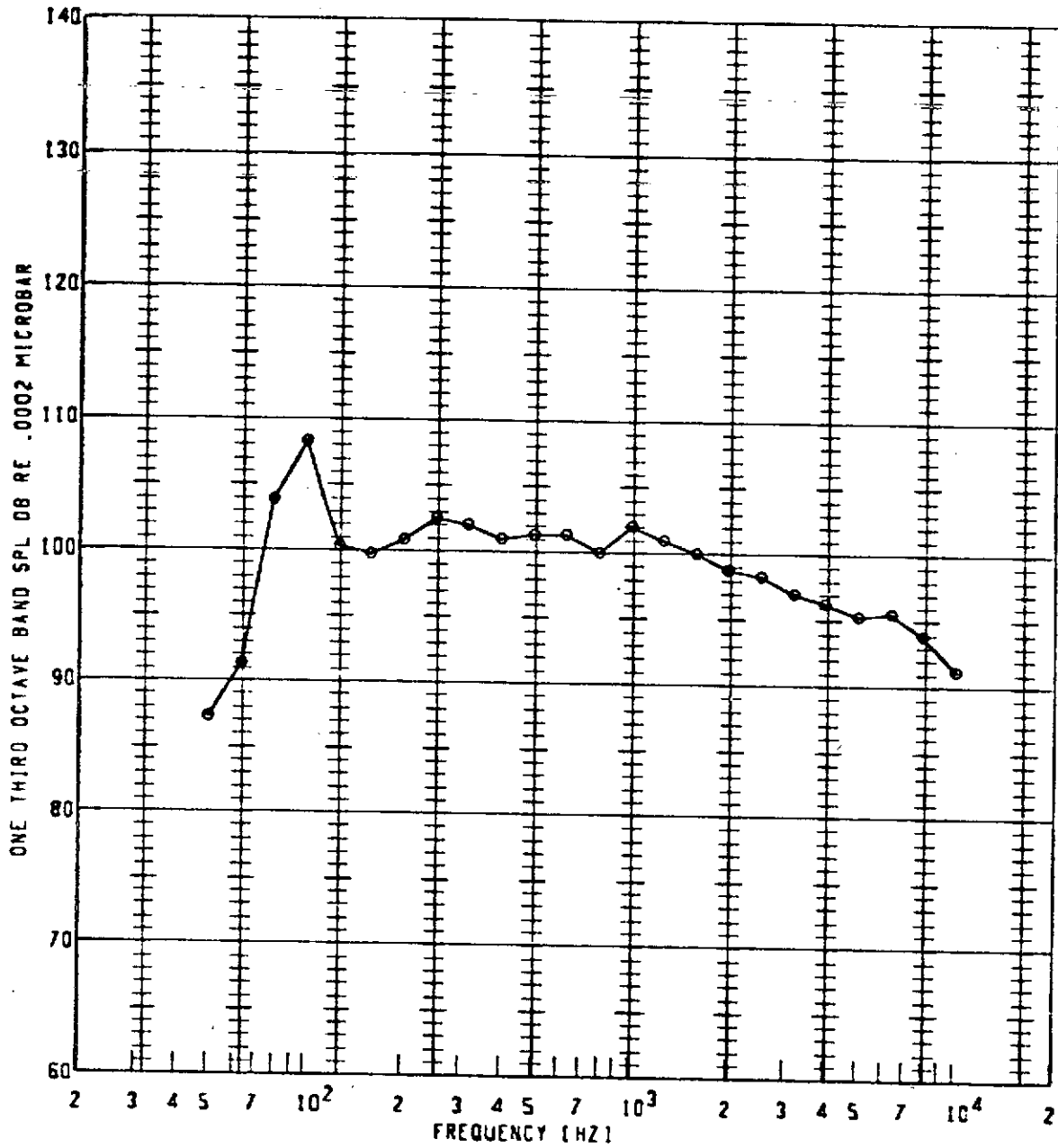
| ●           | 126        | 800      | 1.400          | 120            | 50FP              | 113.5      | 10           | 10         |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



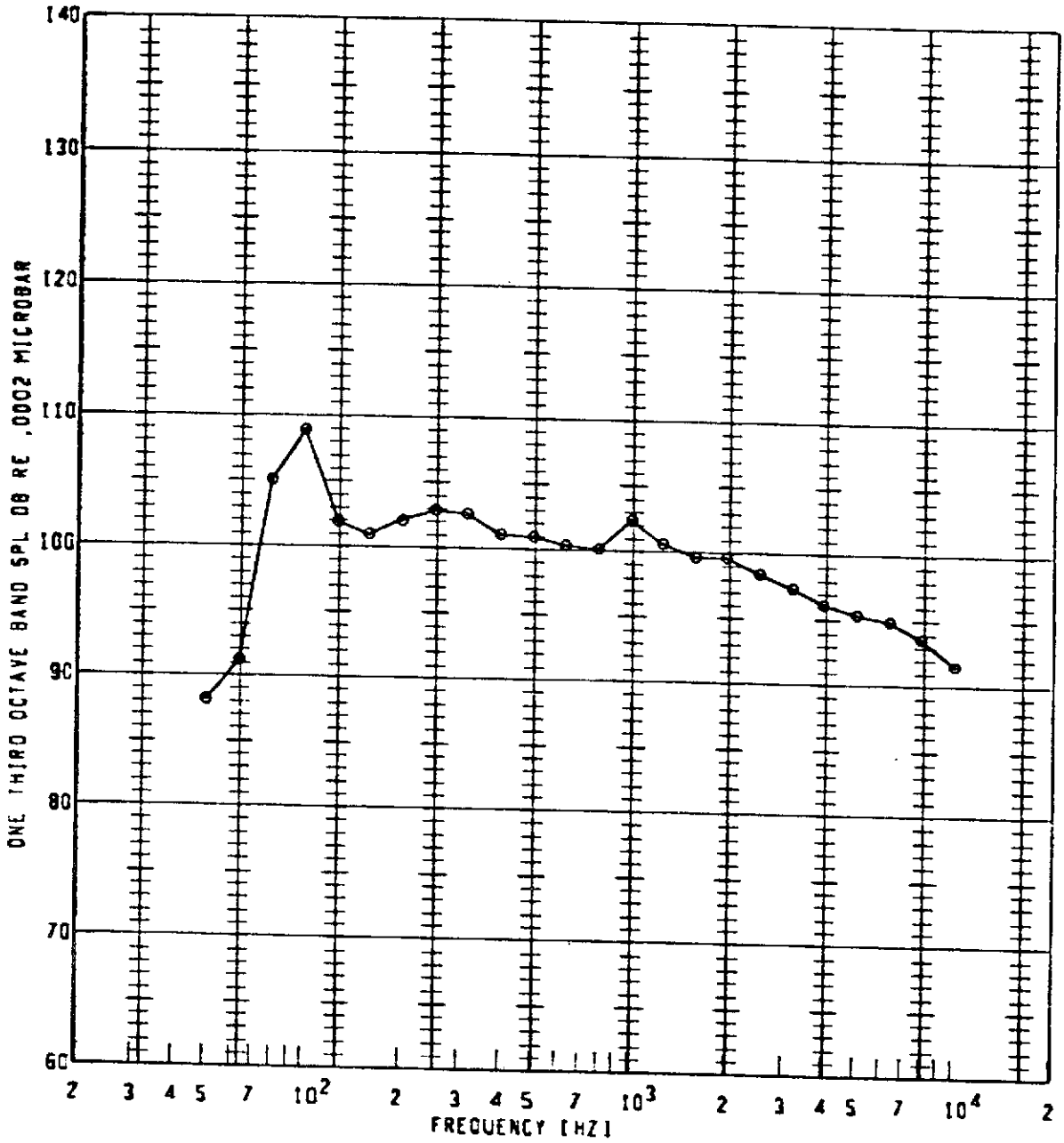
| PLLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTINGS | SPECIAL ID |
|--------------|------------|----------|----------------|----------------|-------------------|------------|---------------|------------|
| ⊙            | 126        | 800      | 1.400          | 125            | 50FP              | 114.1      | 10            |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



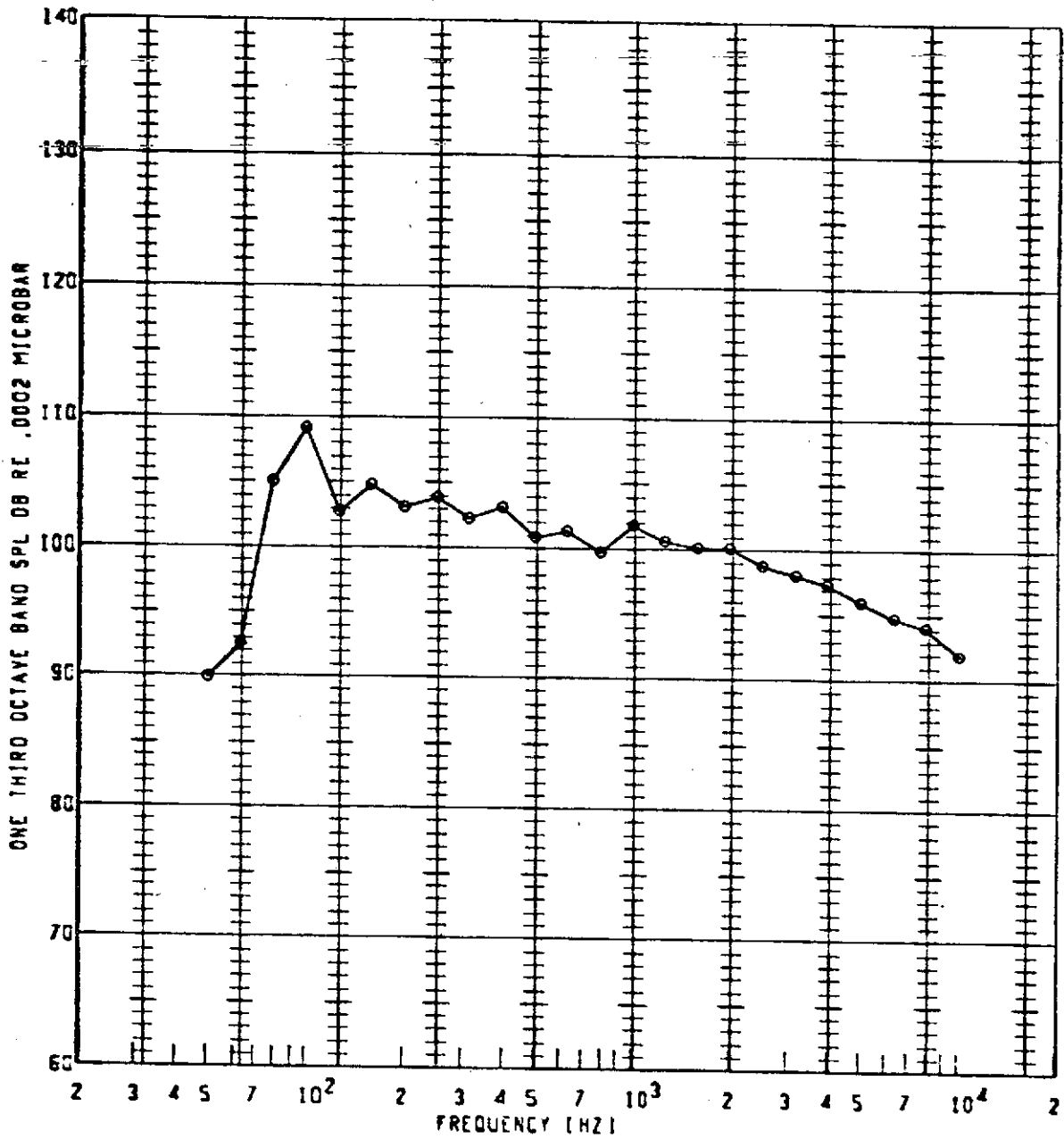
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | DASPL [DB] | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 126        | 800      | 1.400          | 130            | 50FP              | 114.5      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| Plot Symbol | Run Number | Jet Temp | Pressure Ratio | Angle re Inlet | Observer Location | CASPL (dB) | Gain Setting | Special ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 126        | 800      | 1.400          | 135            | 50FP              | 115.0      | 10           |            |

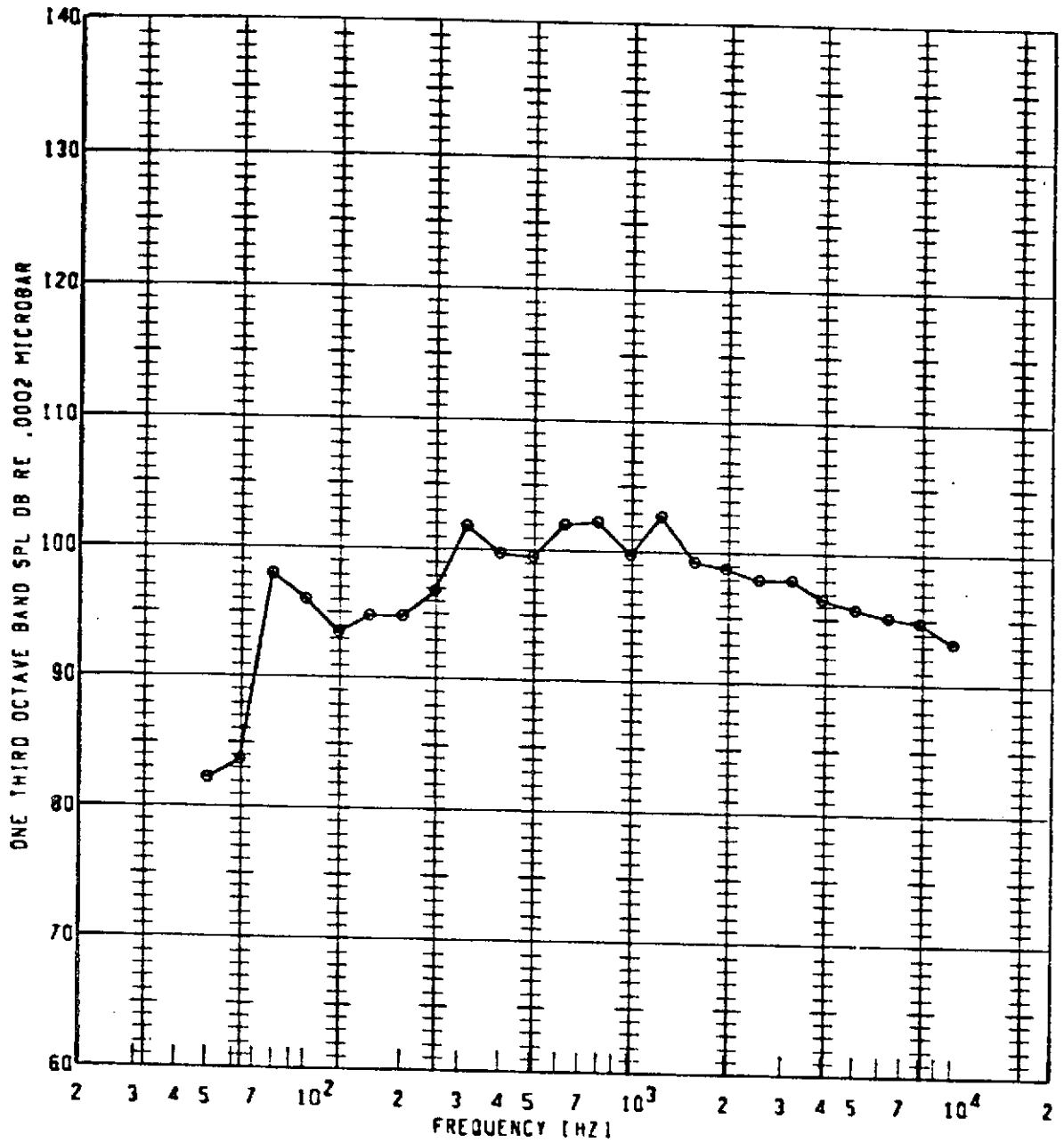
BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | DASPL (DB) | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e          | 126        | 800      | 1.400          | 140            | 50FP              | 115.6      | 10           |            |

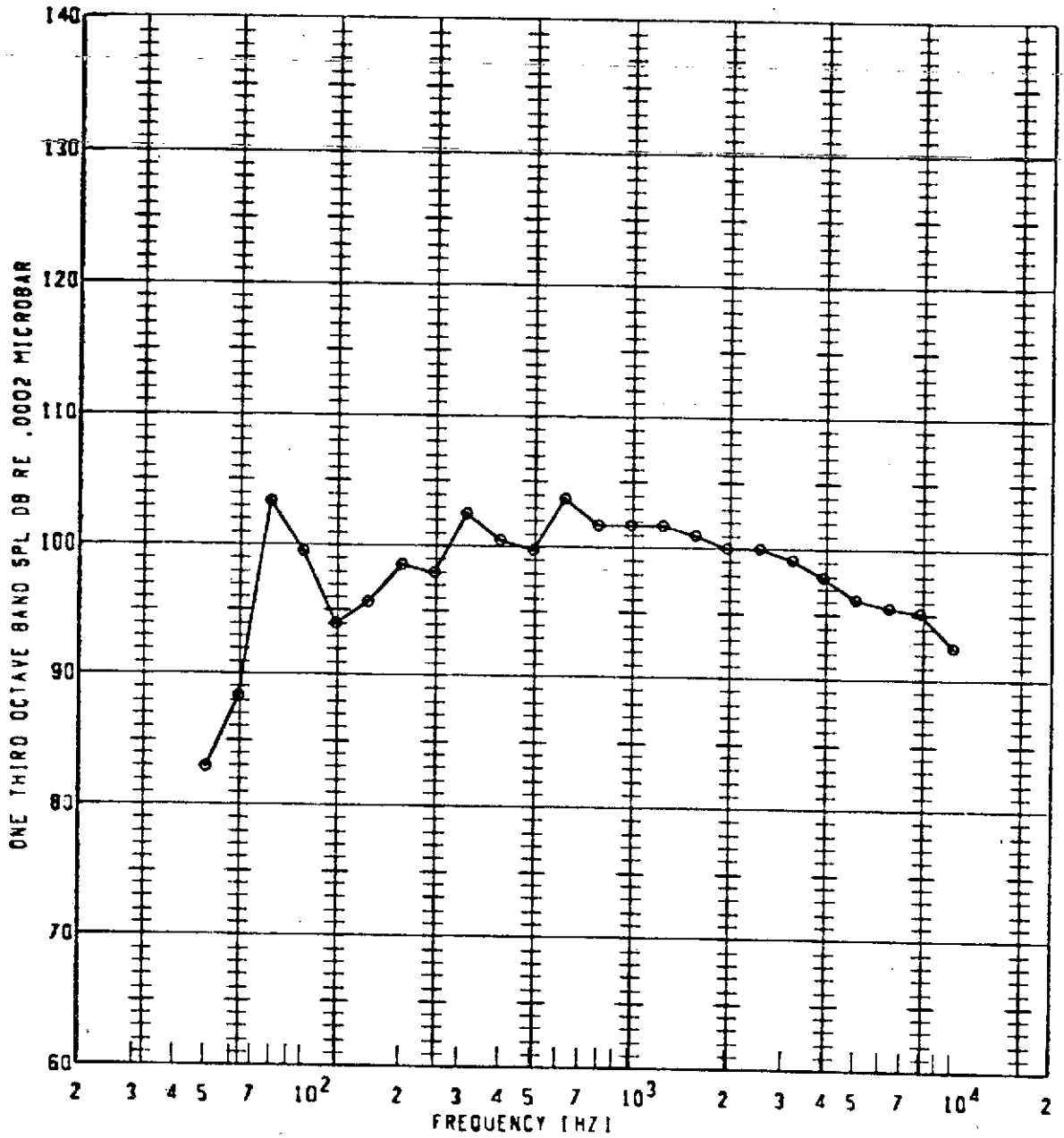


BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



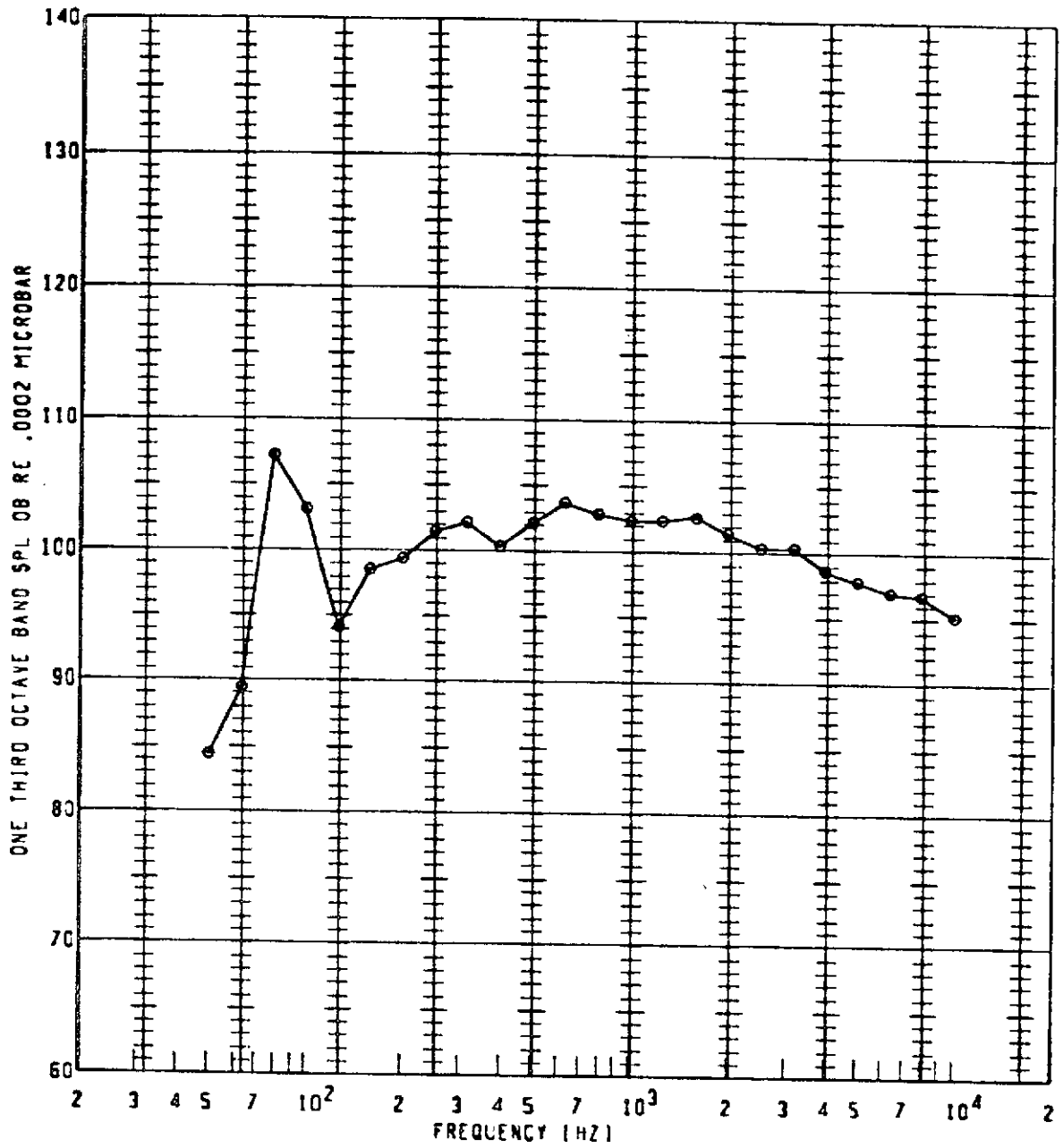
| ●           | 126        | 850      | 1.500          | 90             | 50FP              | 112.2      | 10           |            |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
| ●           | 126        | 850      | 1.500          | 90             | 50FP              | 112.2      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



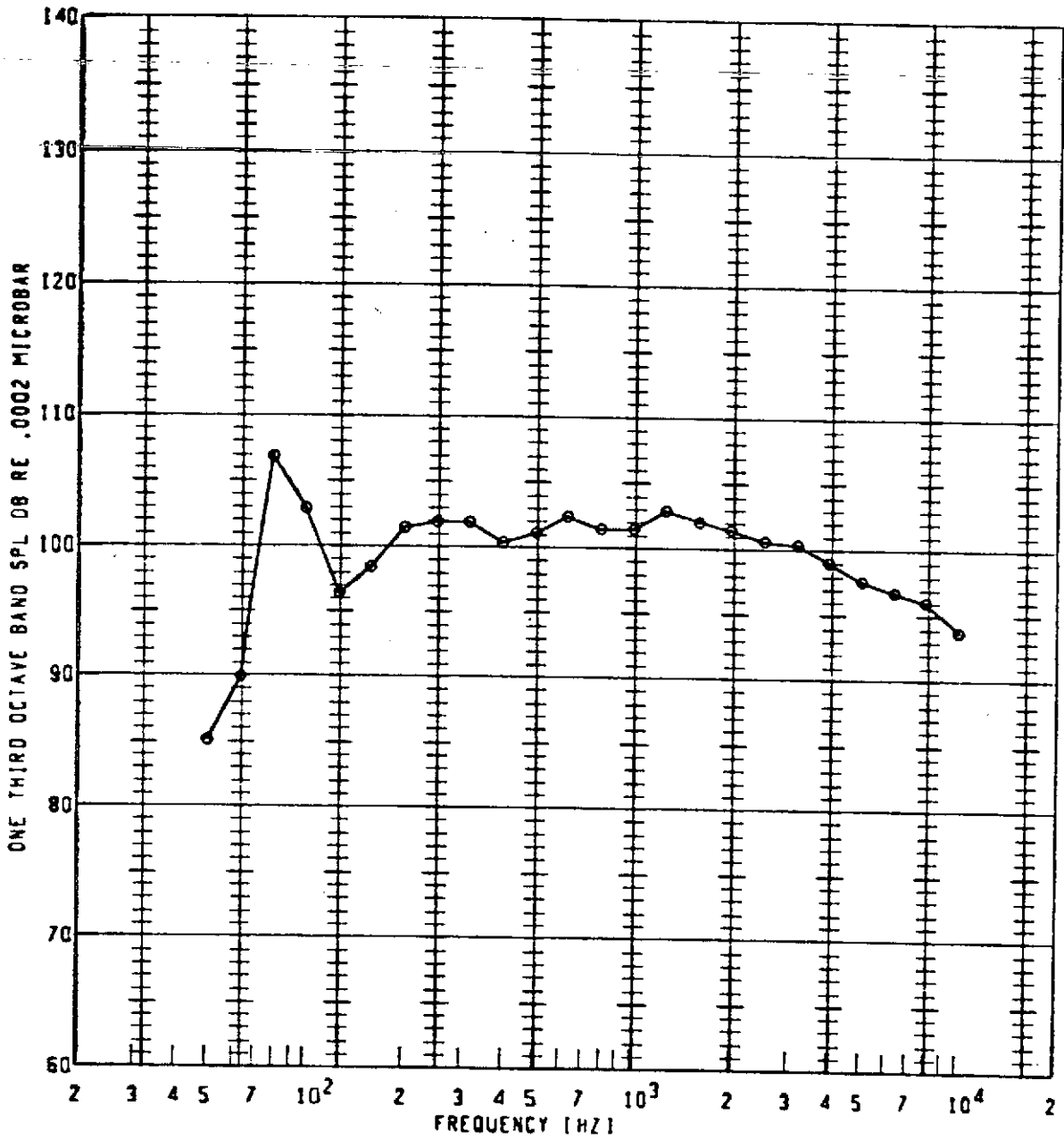
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 126        | 850      | 1.500          | 100            | 50FP              | 113.4      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙          | 126        | 850      | 1.500          | 110            | SCFP              | 114.9      | 10           |            |

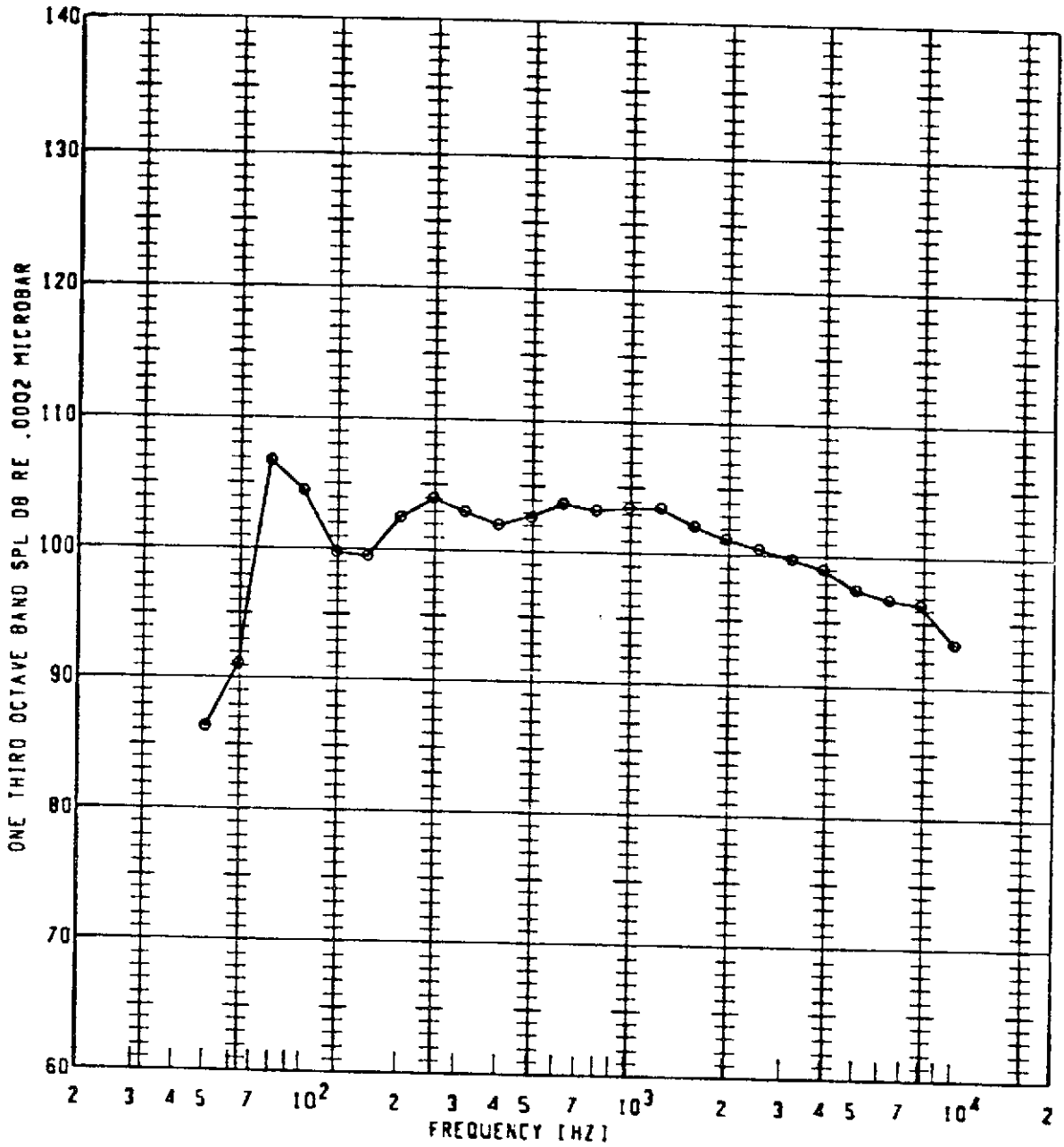
BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | DASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 126        | 850      | 1.500          | 115            | SOFP              | 114.6      | 10           |            |

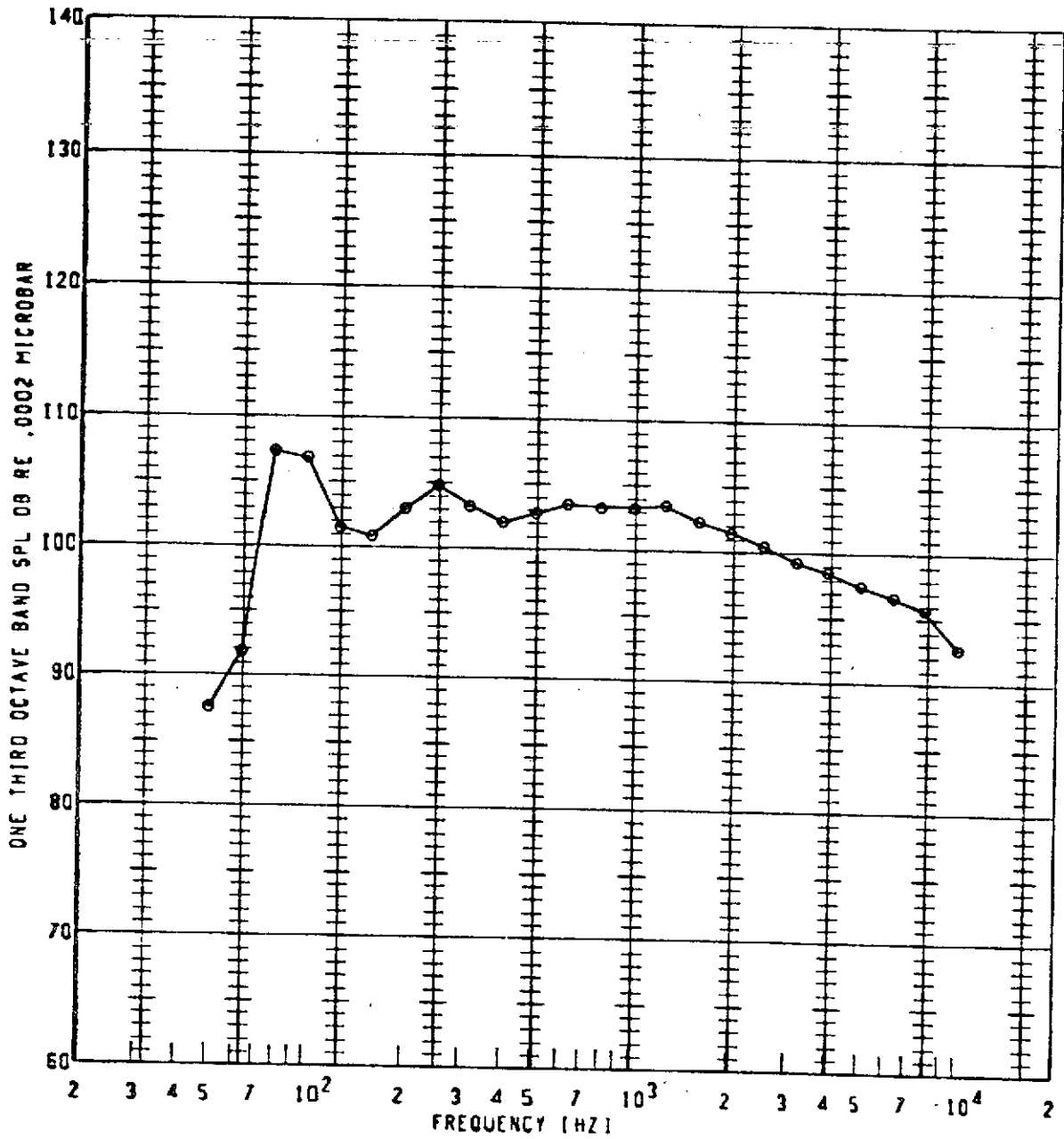
C-4

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



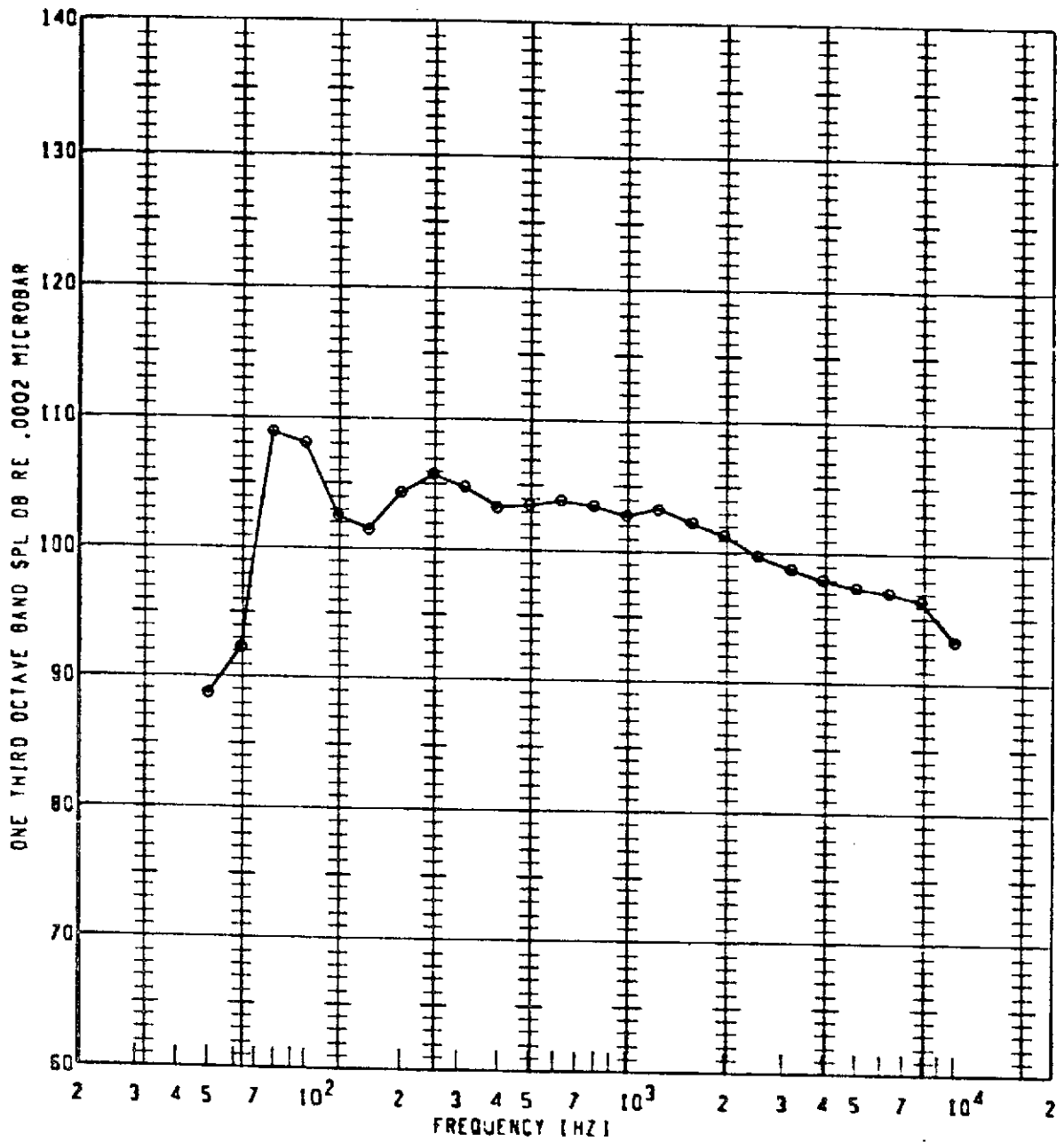
| PLLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OSPL (DB) | GAIN SETTING | SPECIAL ID |
|--------------|------------|----------|----------------|----------------|-------------------|-----------|--------------|------------|
| ⊙            | 126        | 850      | 1.500          | 120            | 50°P              | 115.5     | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



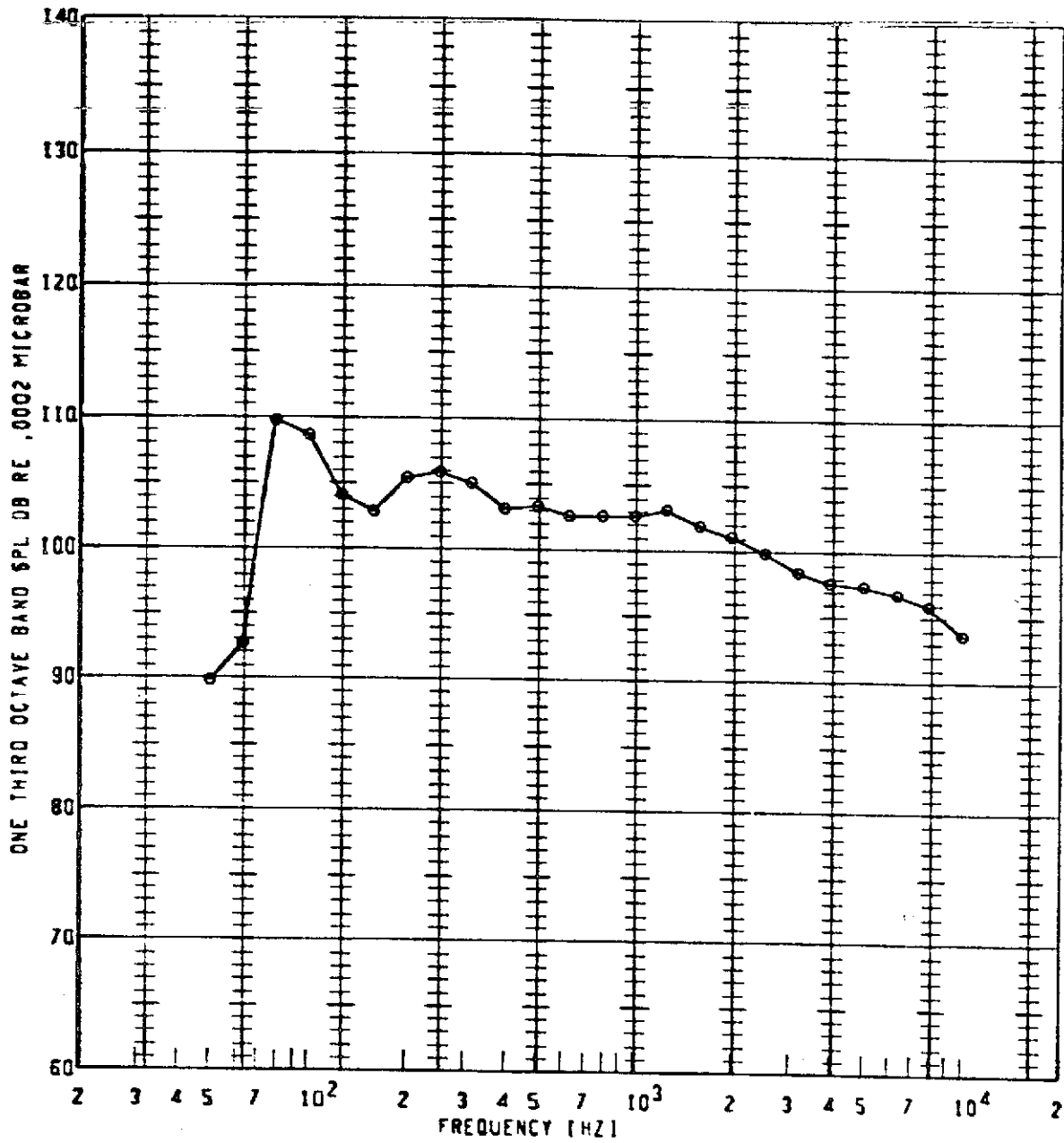
| PLCT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|---------|
| ○           | 126        | 850      | 1.500          | 125            | 50FP              | 116.0      | 10           | 0       |

BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | CASPL (DB) | GAIN SETTING | SPECIAL IO |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 126        | 850      | 1.500          | 130            | 50FP              | 116.7      | 10           |            |

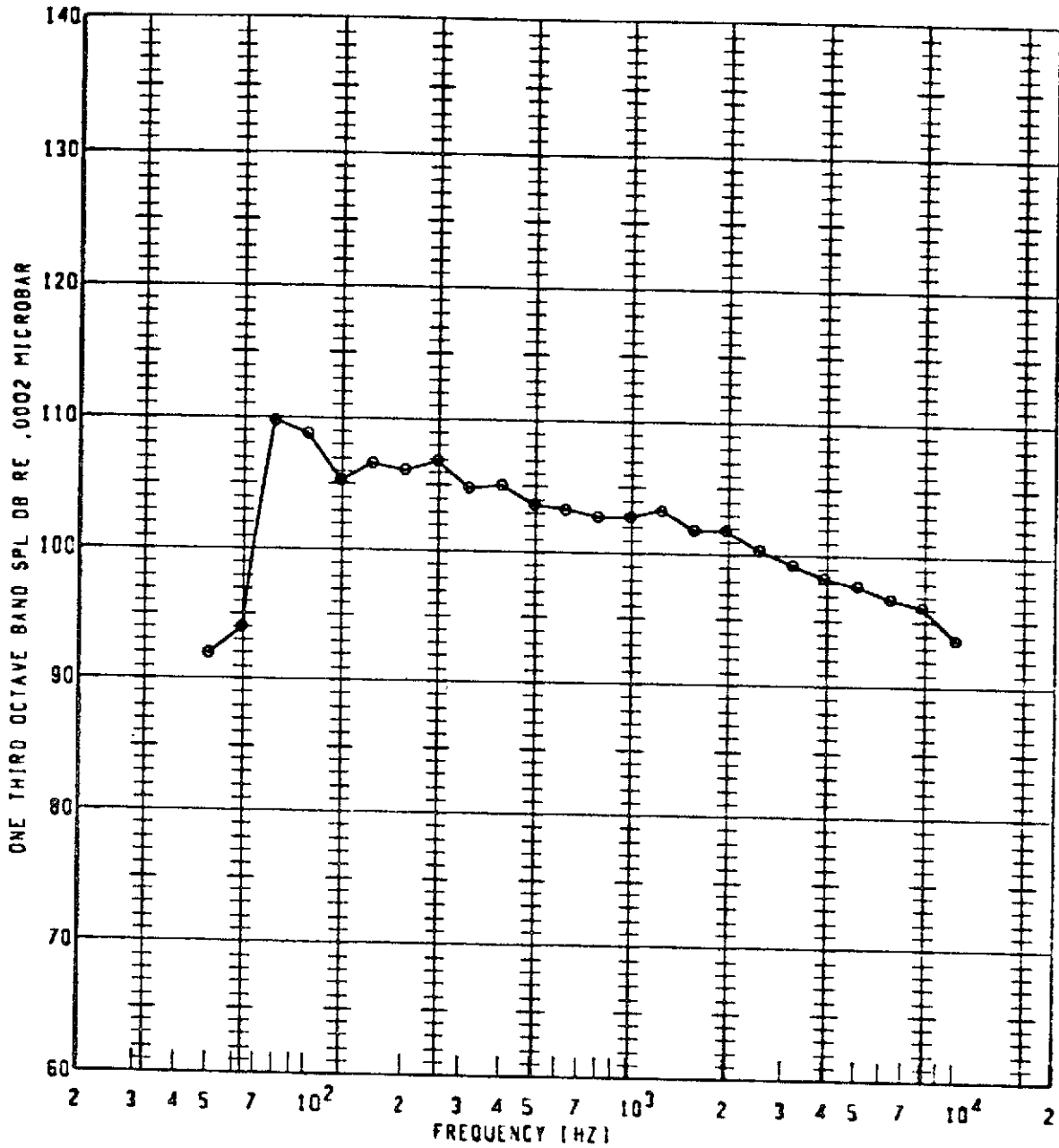
BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| PLCT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | DASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 126        | 850      | 1.500          | 135            | 50FP              | 117.0      | 10           |            |

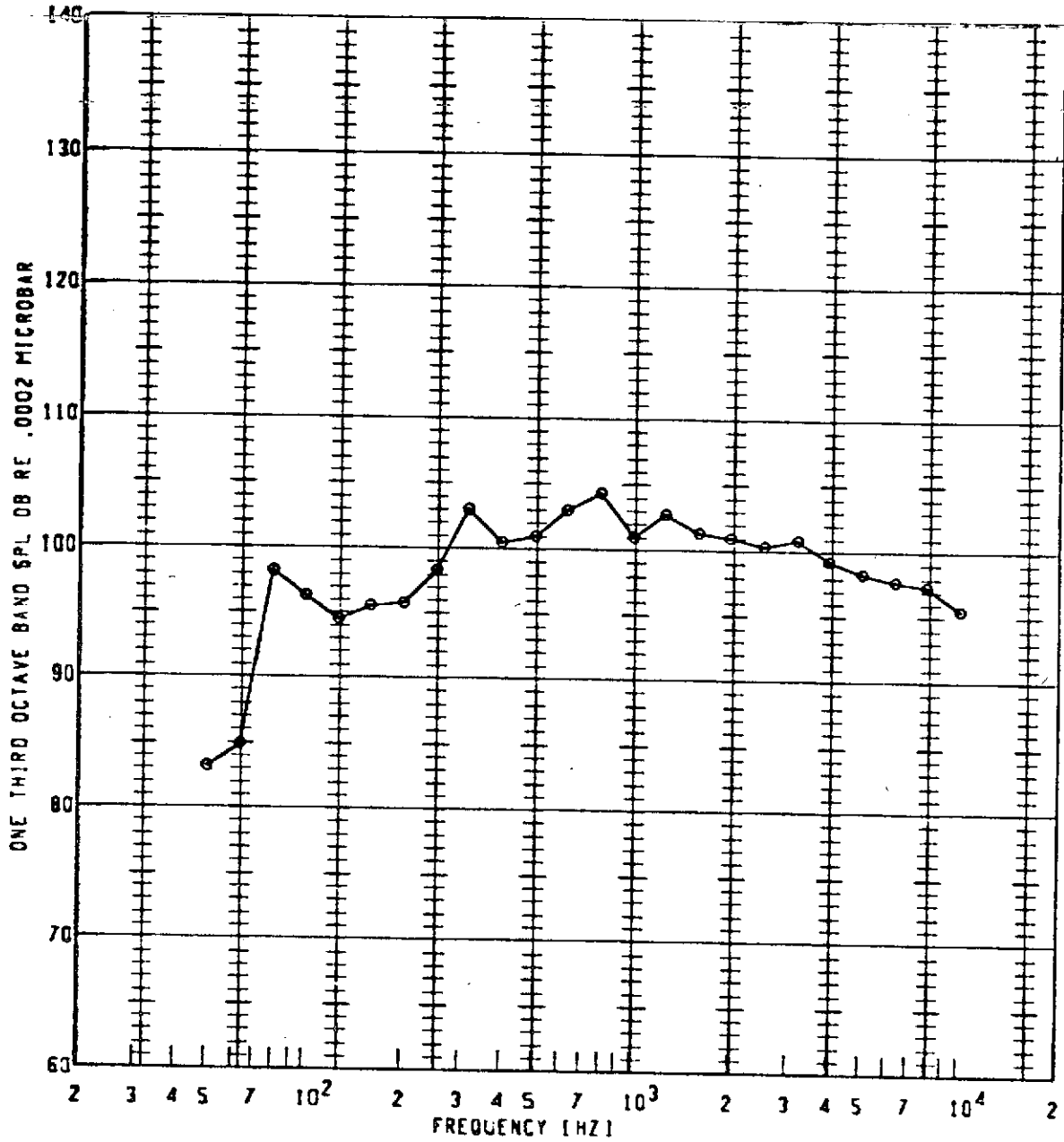


BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



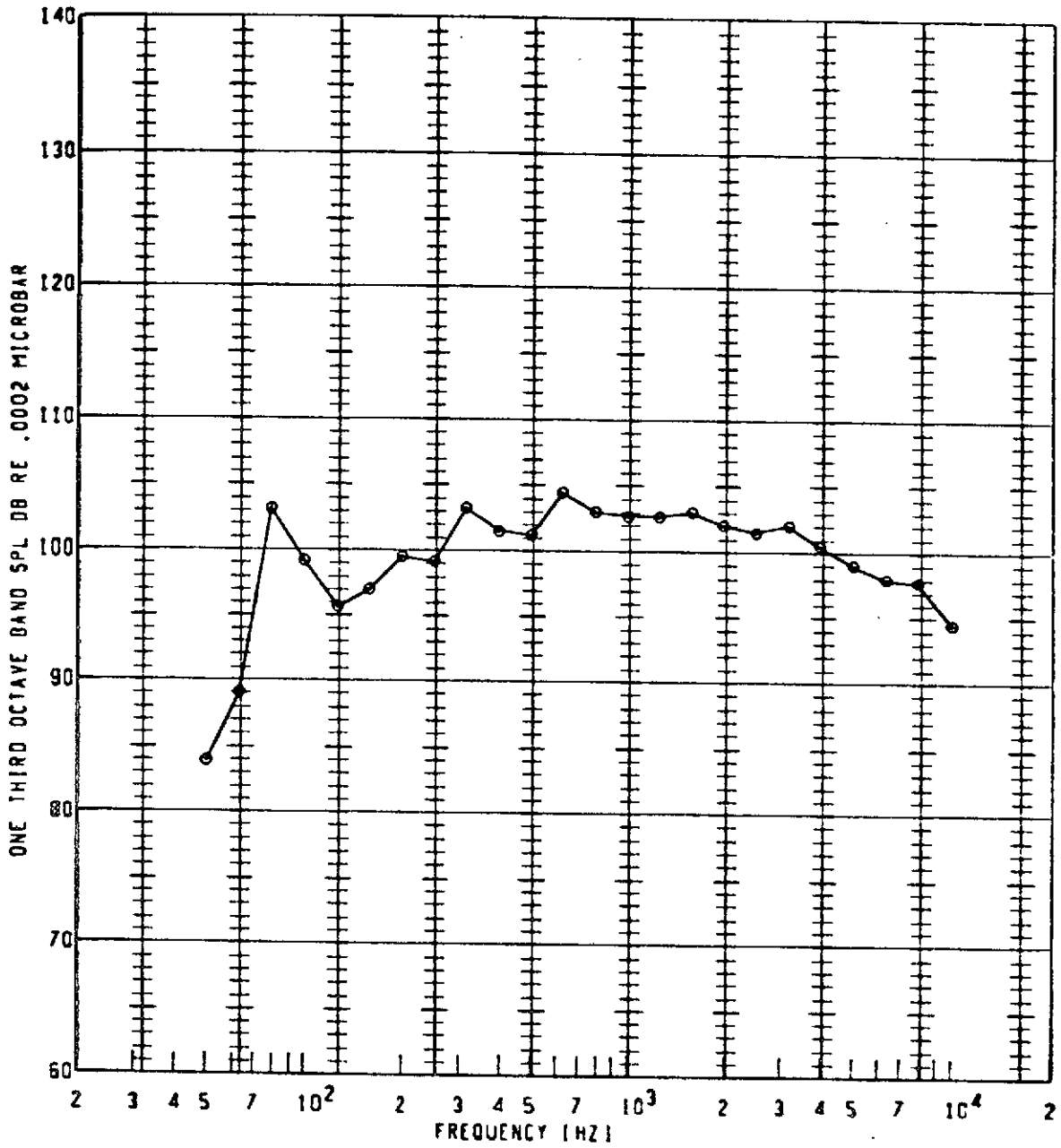
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 126        | 850      | 1.500          | 140            | 50°P              | 117.7      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



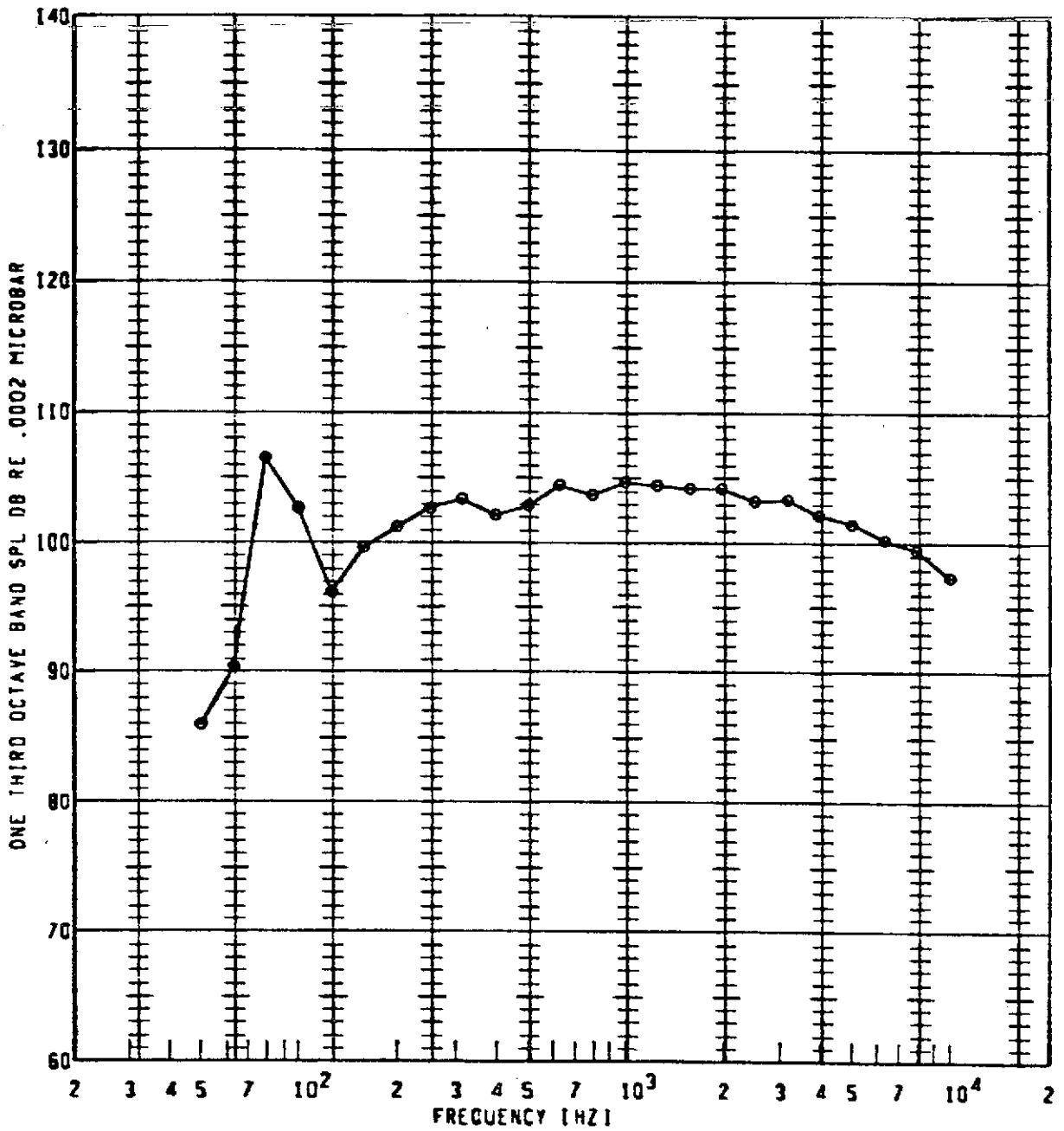
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | DASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 126        | 900      | 1.600          | 90             | 50FP              | 113.6      | 10           |            |

**BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY**



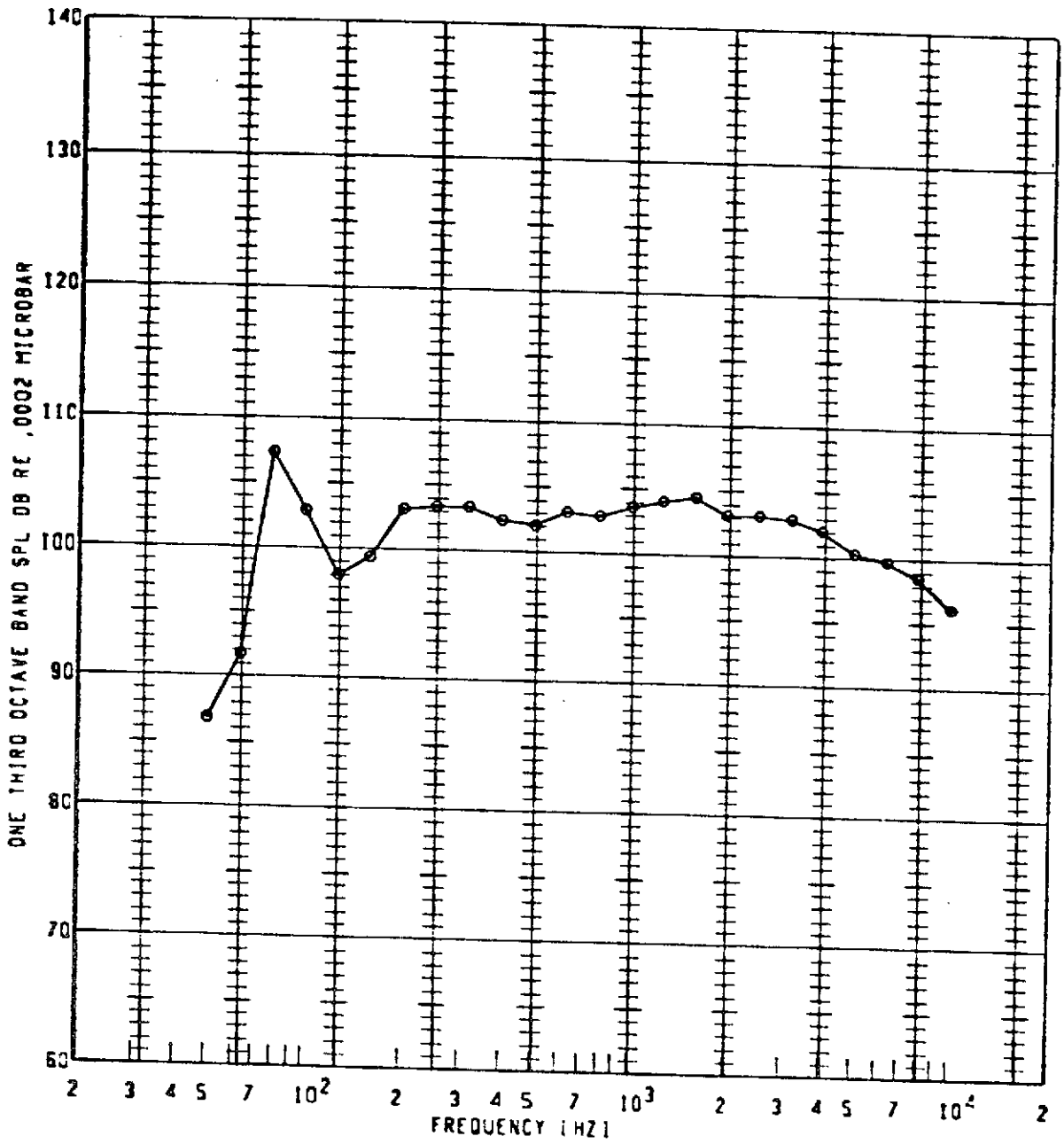
| <u>PLOT SYMBOL</u> | <u>RUN NUMBER</u> | <u>JET TEMP</u> | <u>PRESSURE RATIO</u> | <u>ANGLE RE INLET</u> | <u>OBSERVER LOCATION</u> | <u>OASPL (DB)</u> | <u>GAIN SETTING</u> | <u>SPECIAL ID</u> |
|--------------------|-------------------|-----------------|-----------------------|-----------------------|--------------------------|-------------------|---------------------|-------------------|
| e                  | 126               | 900             | 1.600                 | 100                   | 50FP                     | 114.6             | 10                  |                   |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



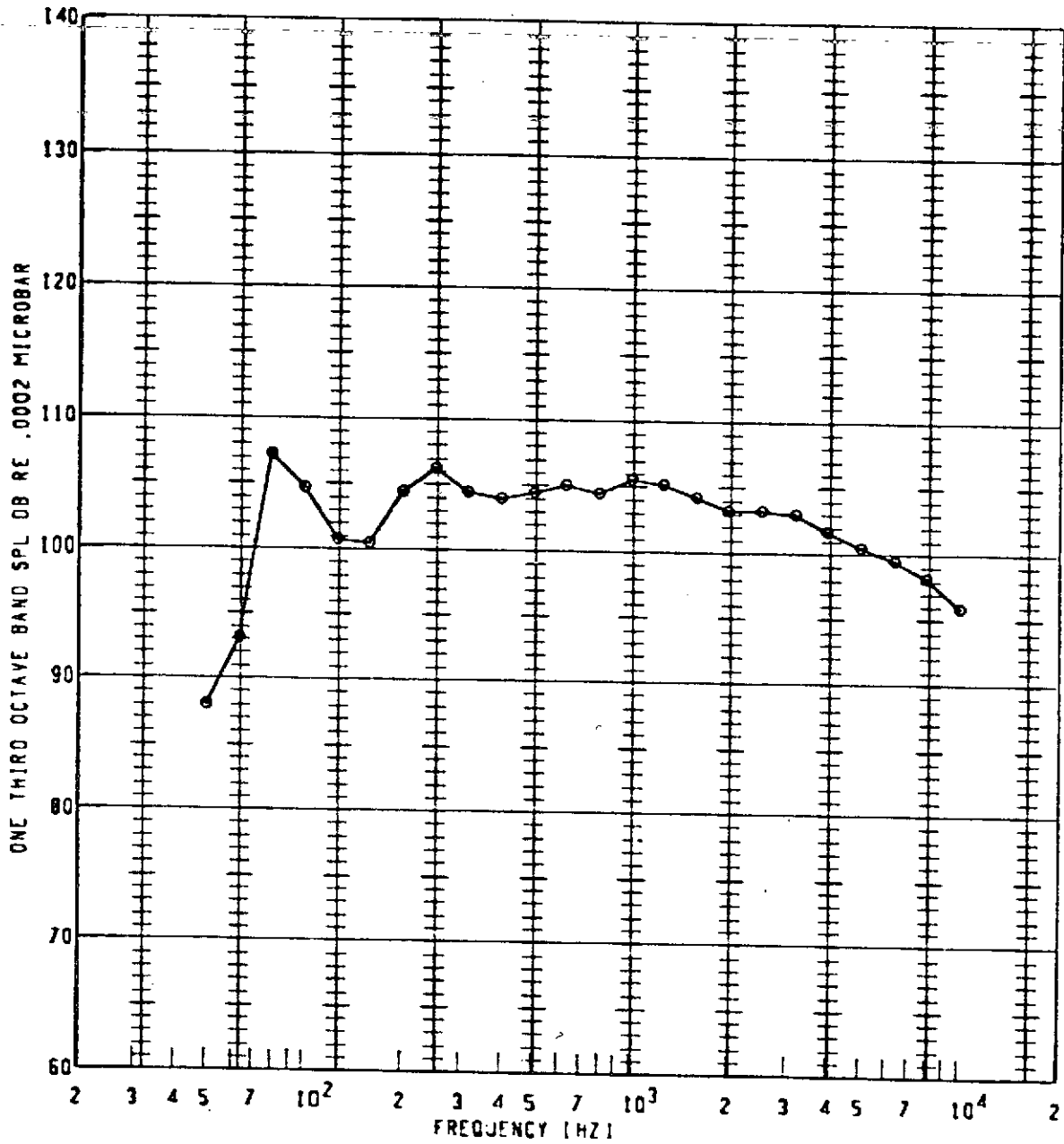
| ● | 126 | 900 | 1.600 | 110 | 50FP | 116.3 | 10 |  |
|---|-----|-----|-------|-----|------|-------|----|--|
| ● | 126 | 900 | 1.600 | 110 | 50FP | 116.3 | 10 |  |

BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



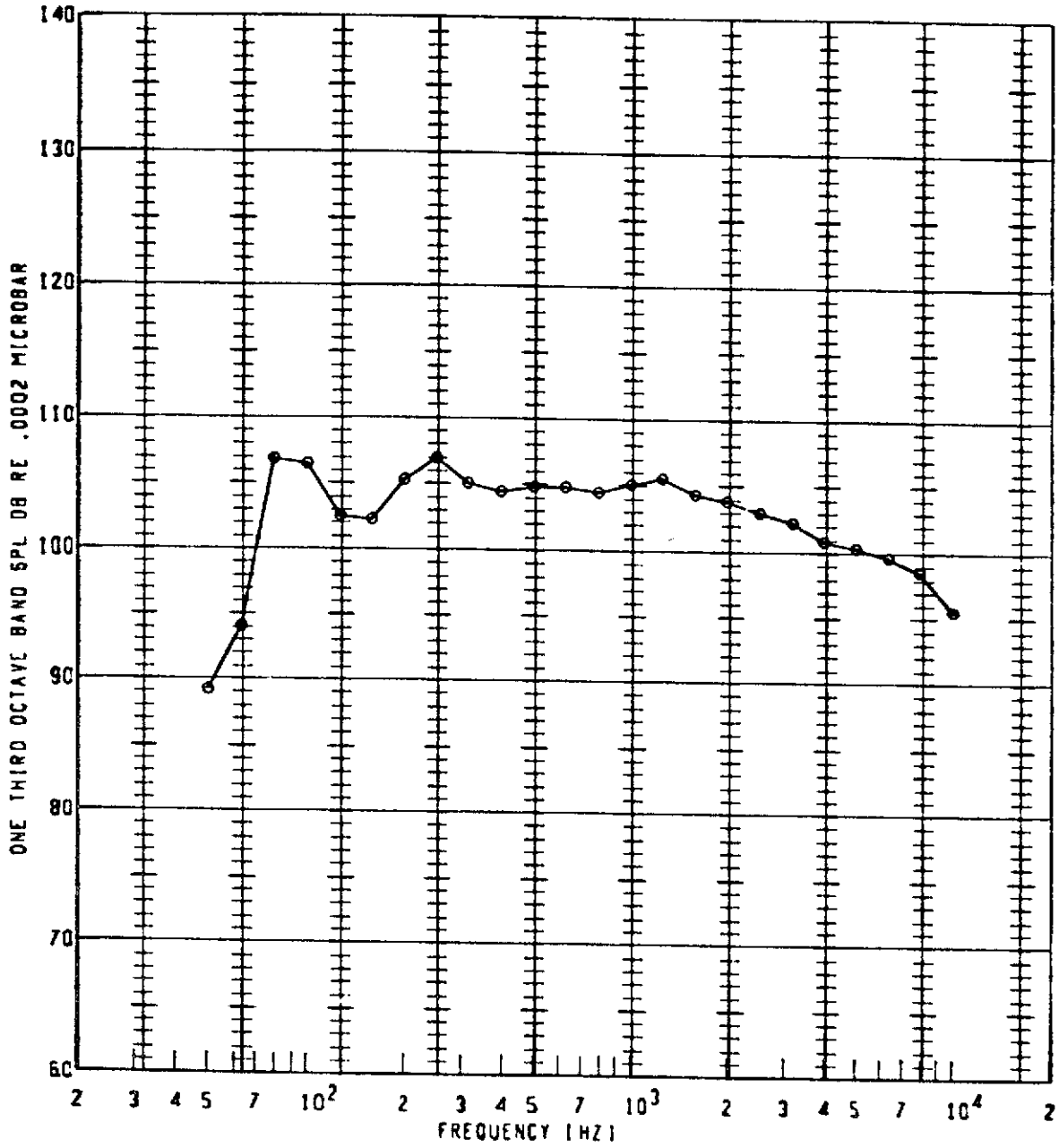
| Plot Symbol | Run Number | Jet Temp | Pressure Ratio | Angle Re Inlet | Observer Location | QASPL (dB) | Gain Setting | Special ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 126        | 900      | 1.600          | 115            | 50FP              | 116.1      | 0            | 10         |

BUFFALO SUPPRESSOR NOZZLE TONE TO TEST - HOT NOZZLE TEST FACILITY



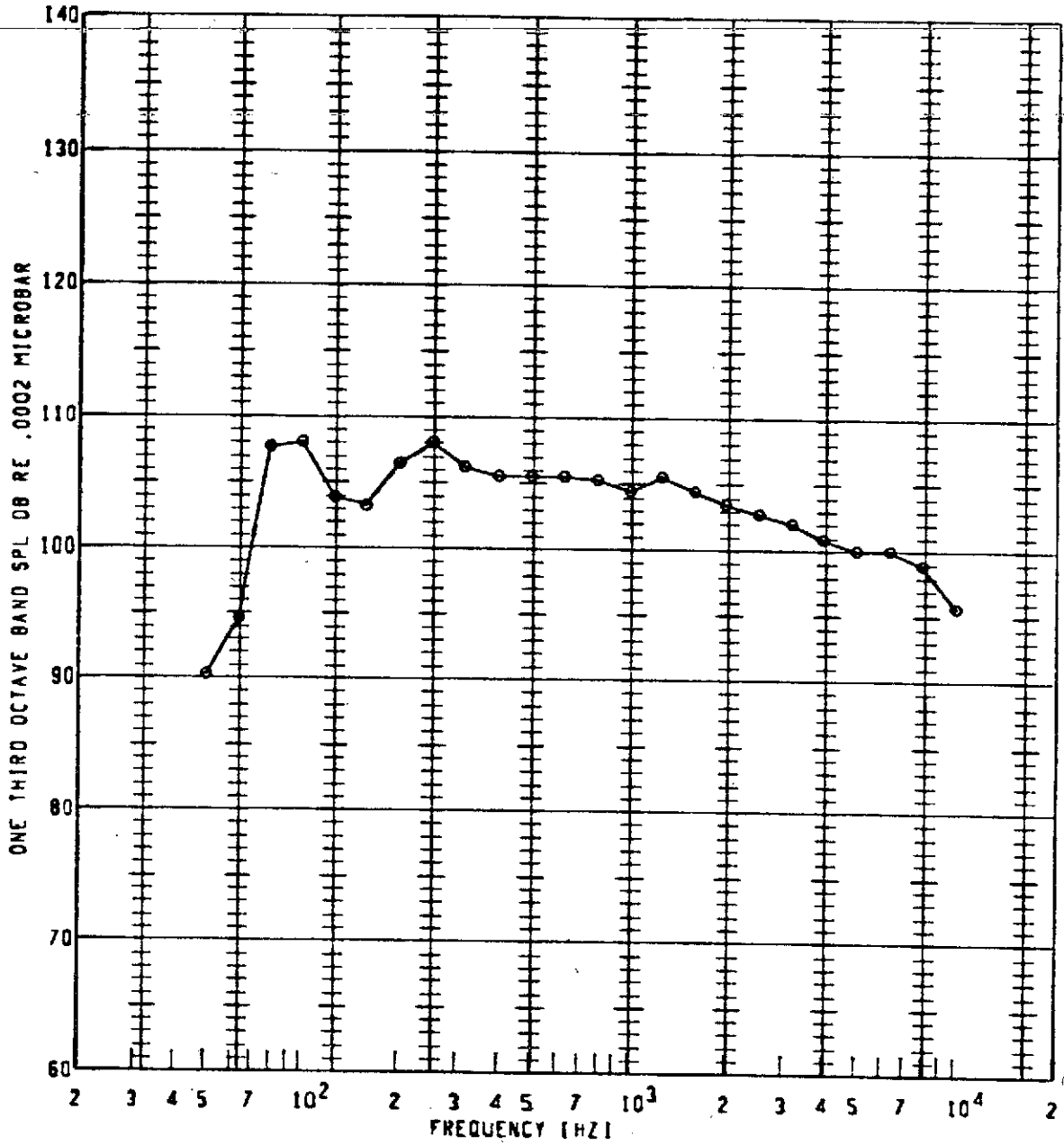
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | CASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 126        | 900      | 1.600          | 120            | 50FP              | 117.2      | 10           |            |

BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| PLCT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | CASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 126        | 900      | 1.600          | 125            | 50FP              | 117.5      | C            |            |

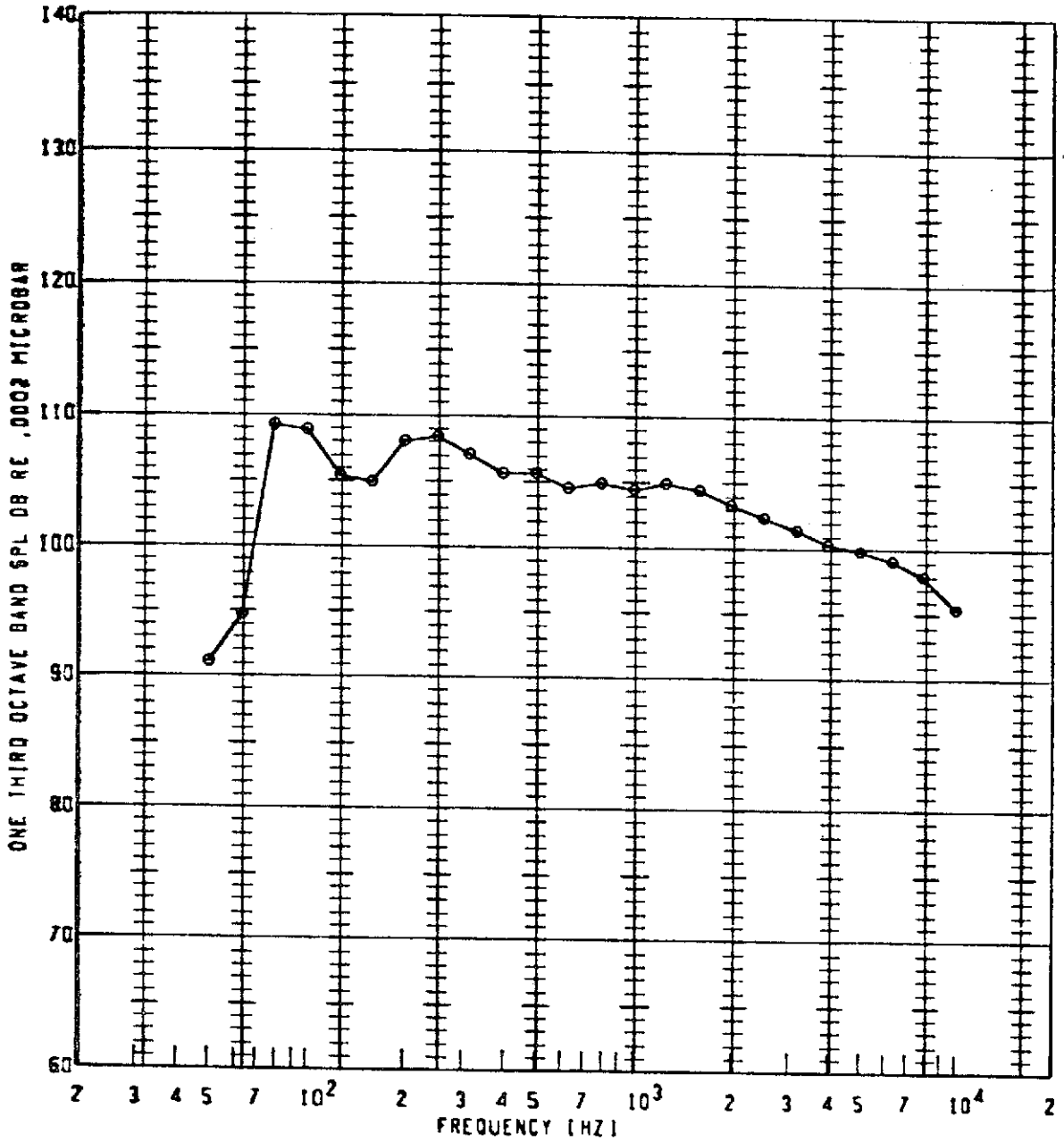
BUFFALO SUPPRESSOR NOZZLE TONE ID TEST - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| e           | 126        | 900      | 1.600          | 130            | 50FP              | 118.2      | 0            |            |

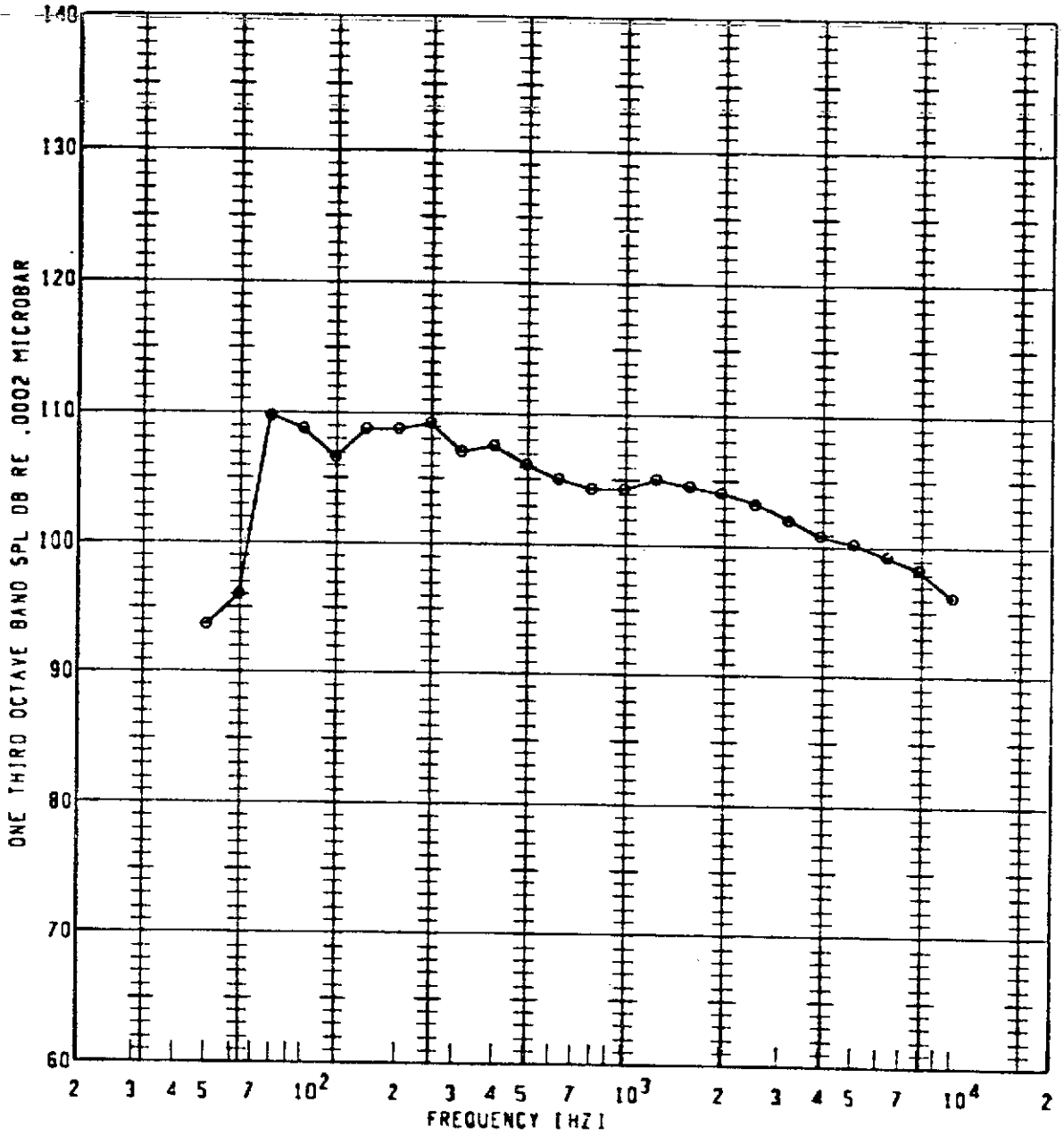


BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



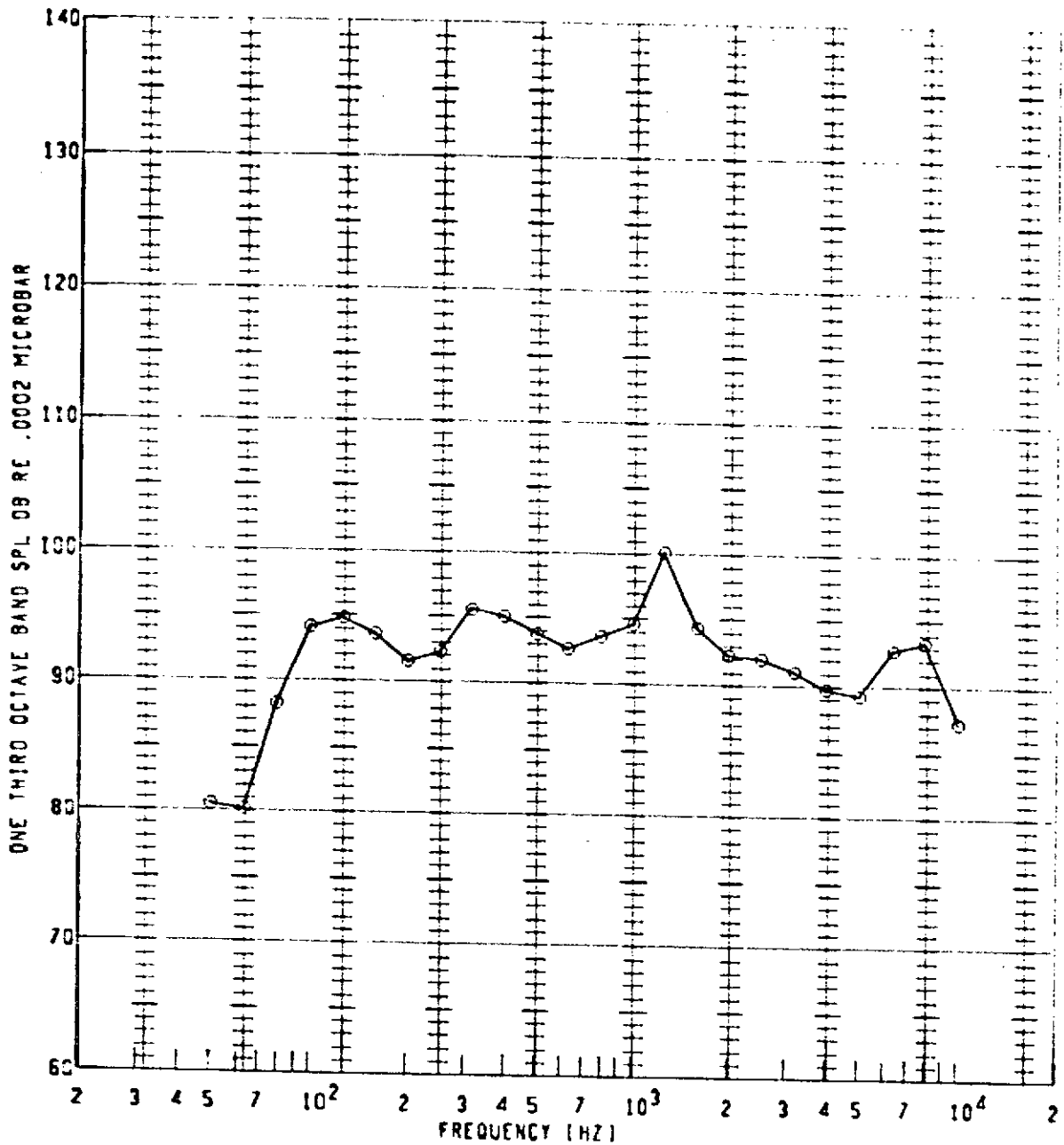
| ●           | 126        | 900      | 1.600          | 135            | 50FP              | 118.6      | 10           |            |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | CASPL (DB) | GAIN SETTING | SPECIAL ID |

BUFFALO SUPPRESSOR NOZZLE TONE 10 TEST - HOT NOZZLE TEST FACILITY



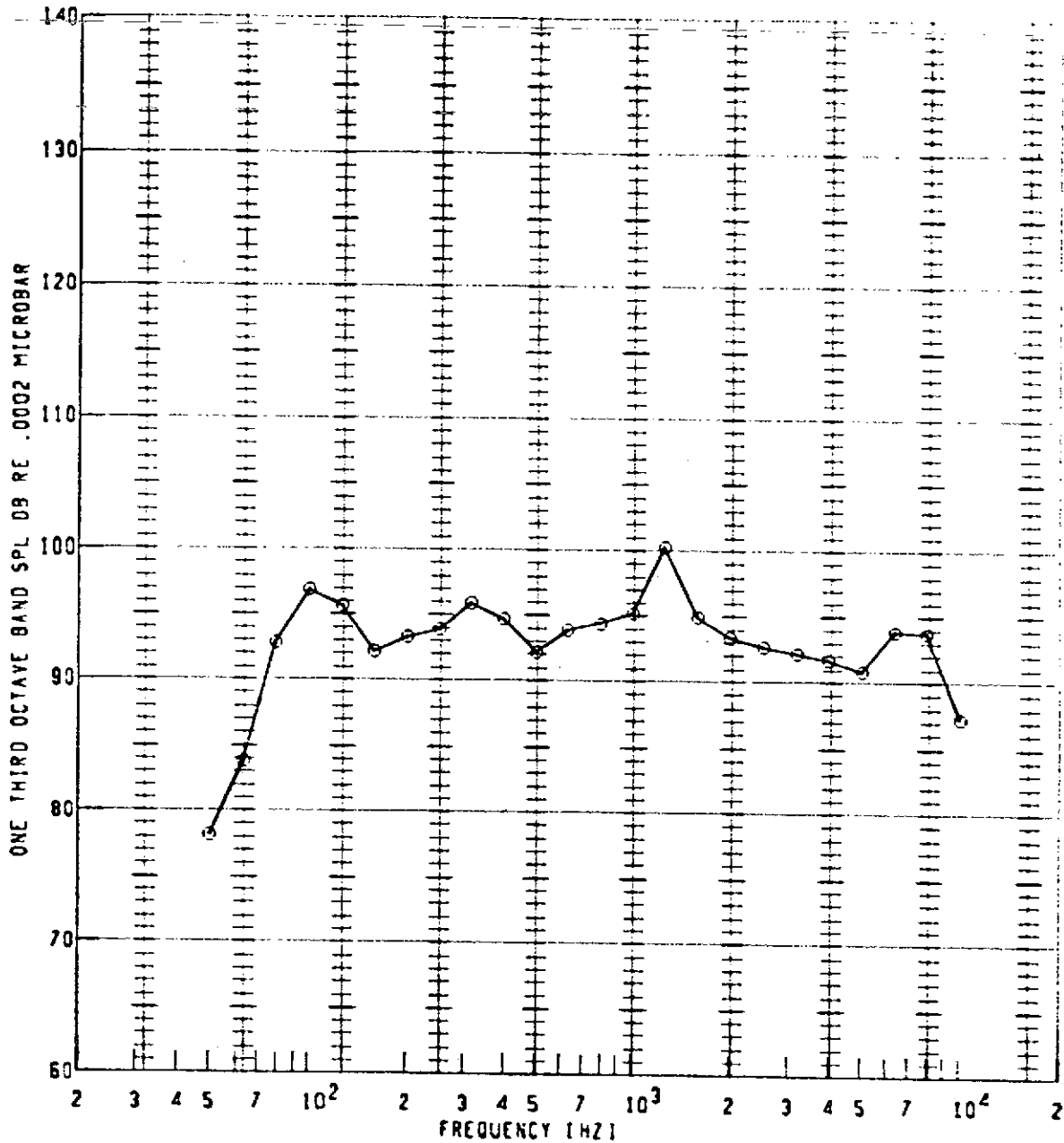
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL [DB] | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 126        | 900      | 1.600          | 140            | 50FP              | 119.4      | 0            |            |

BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



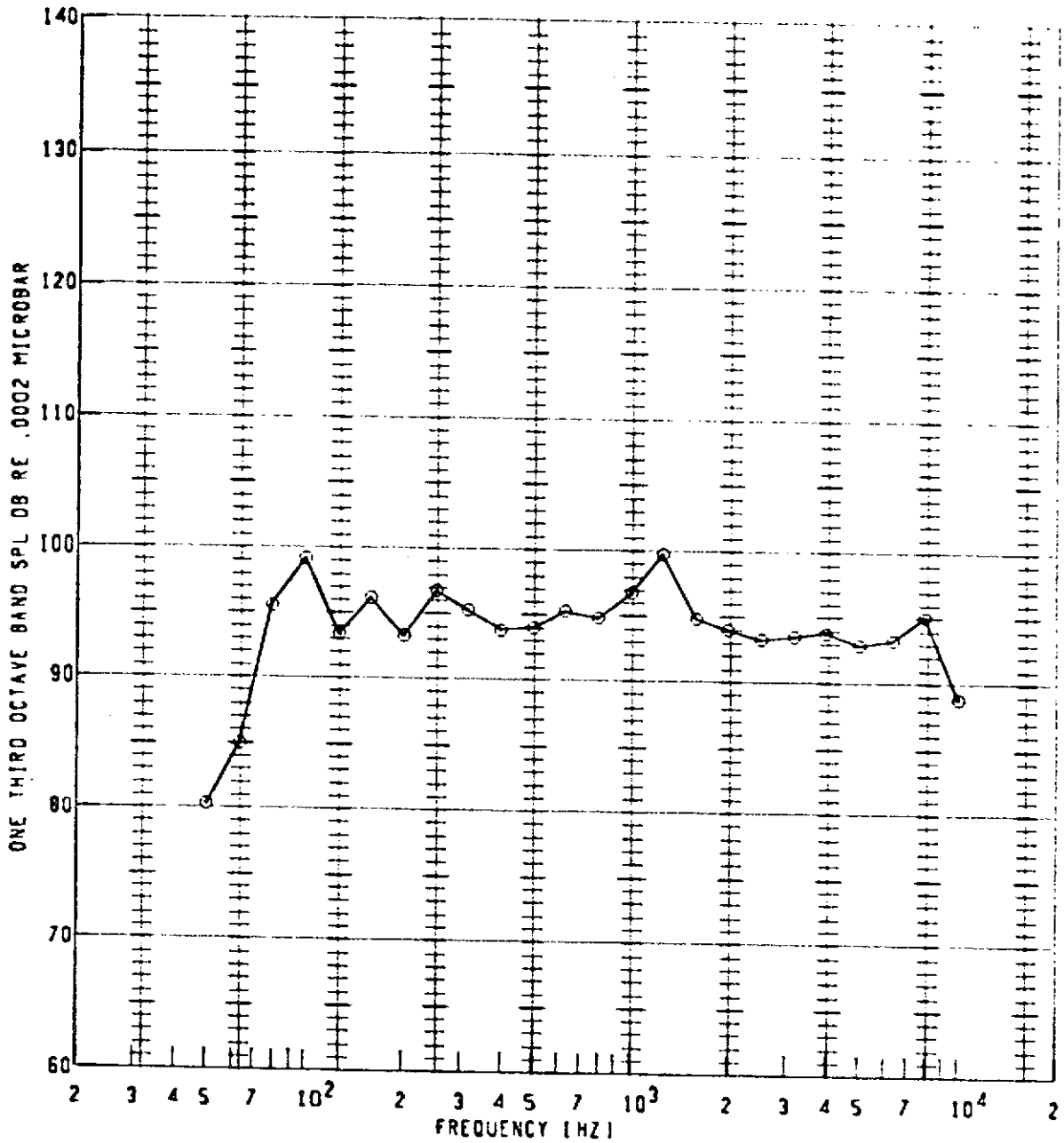
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | CASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 206        | 700      | 1.200          | 90             | 50FP              | 107.2      | 10           |            |

BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



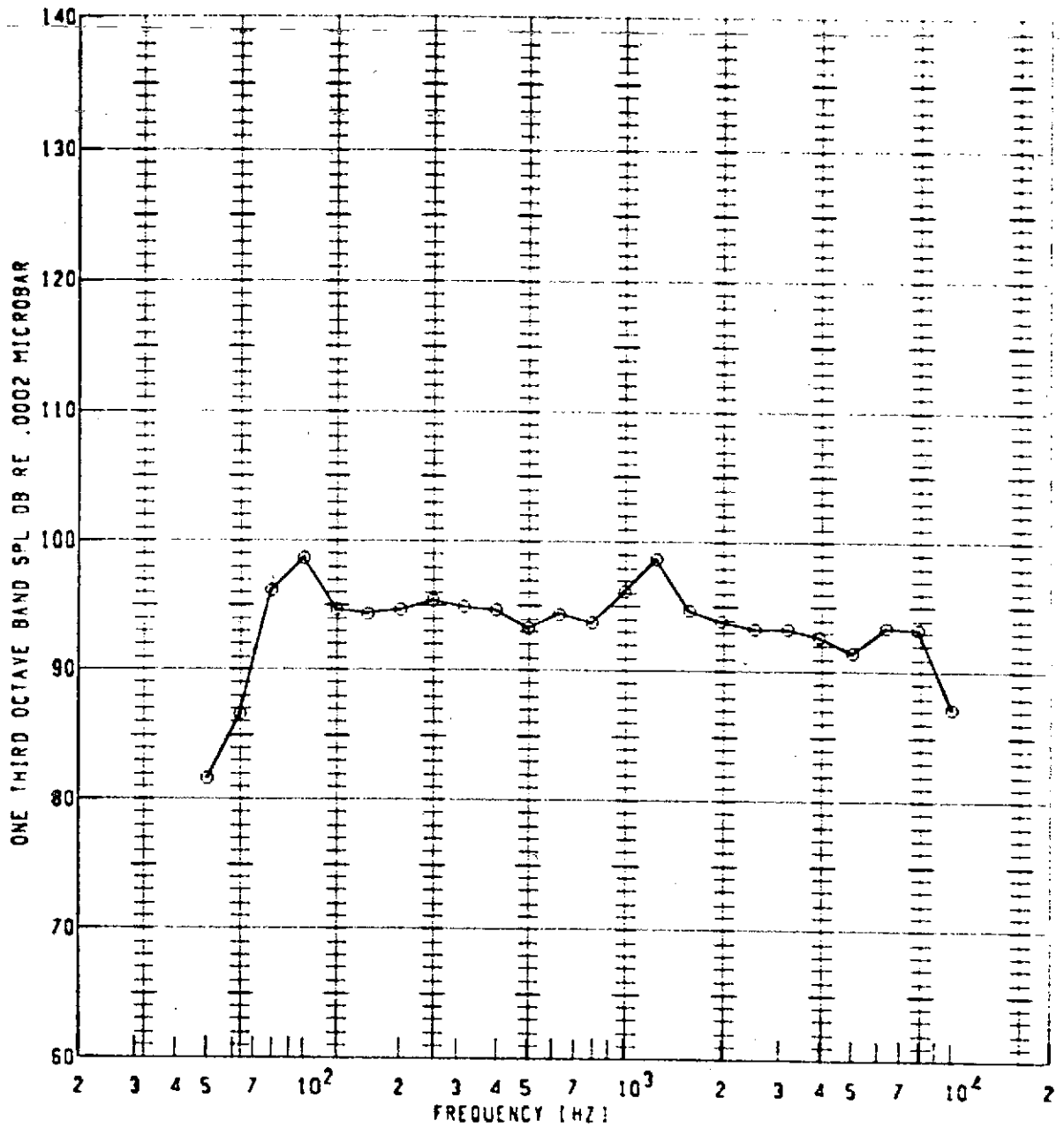
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (OBI) | GAIN SETTING | SPECIAL |
|-------------|------------|----------|----------------|----------------|-------------------|-------------|--------------|---------|
| ⊙           | 206        | 700      | 1.200          | 100            | 50FP              | 107.9       | 20           | 13      |

BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



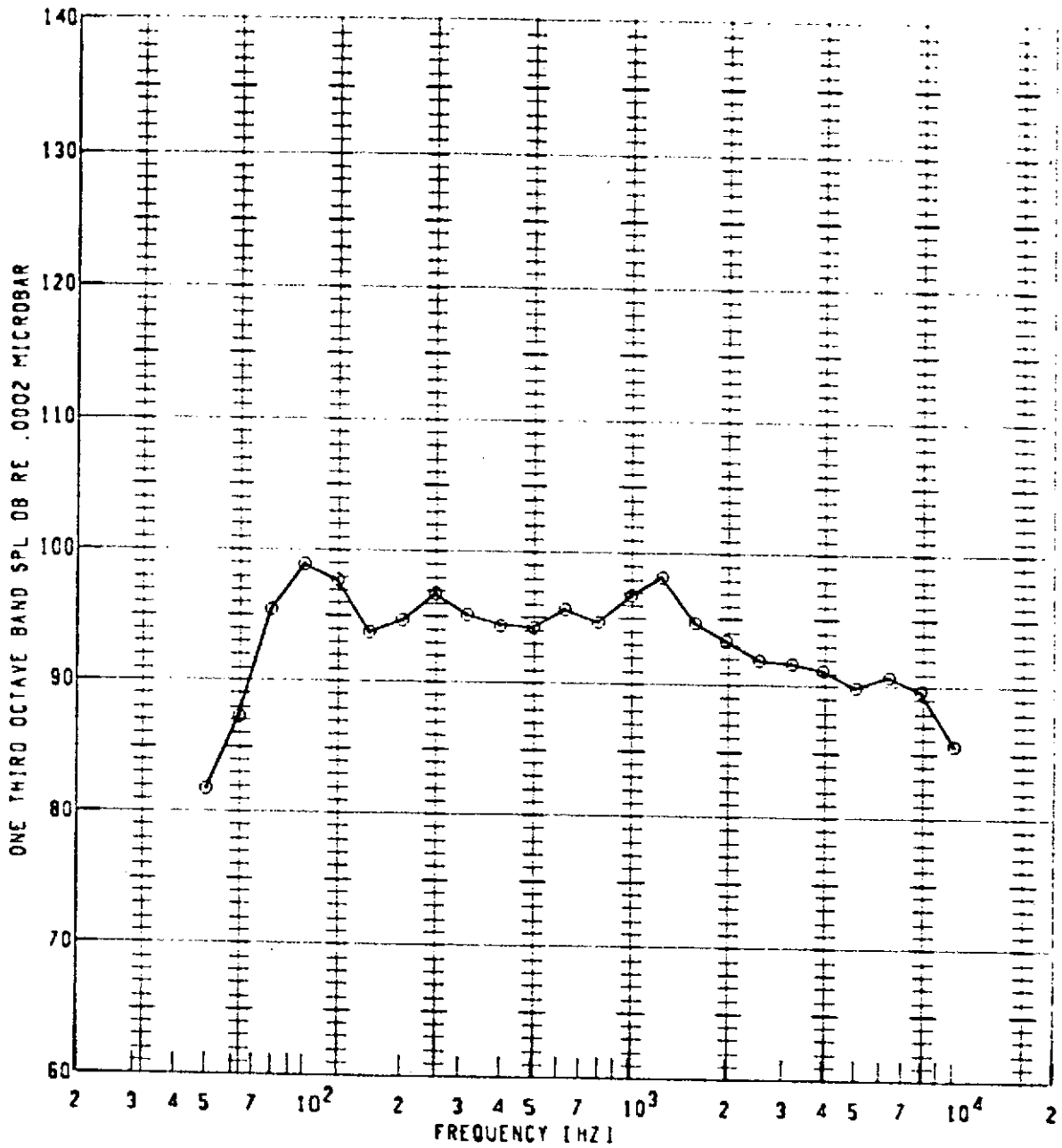
| Plot Symbol | Run Number | Jet Temp | Pressure Ratio | Angle re Inlet | Observer Location | OASPL (dB) | Gain Setting | Special ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 206        | 700      | 1.200          | 110            | 50FP              | 108.8      | 10           | 10         |

BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



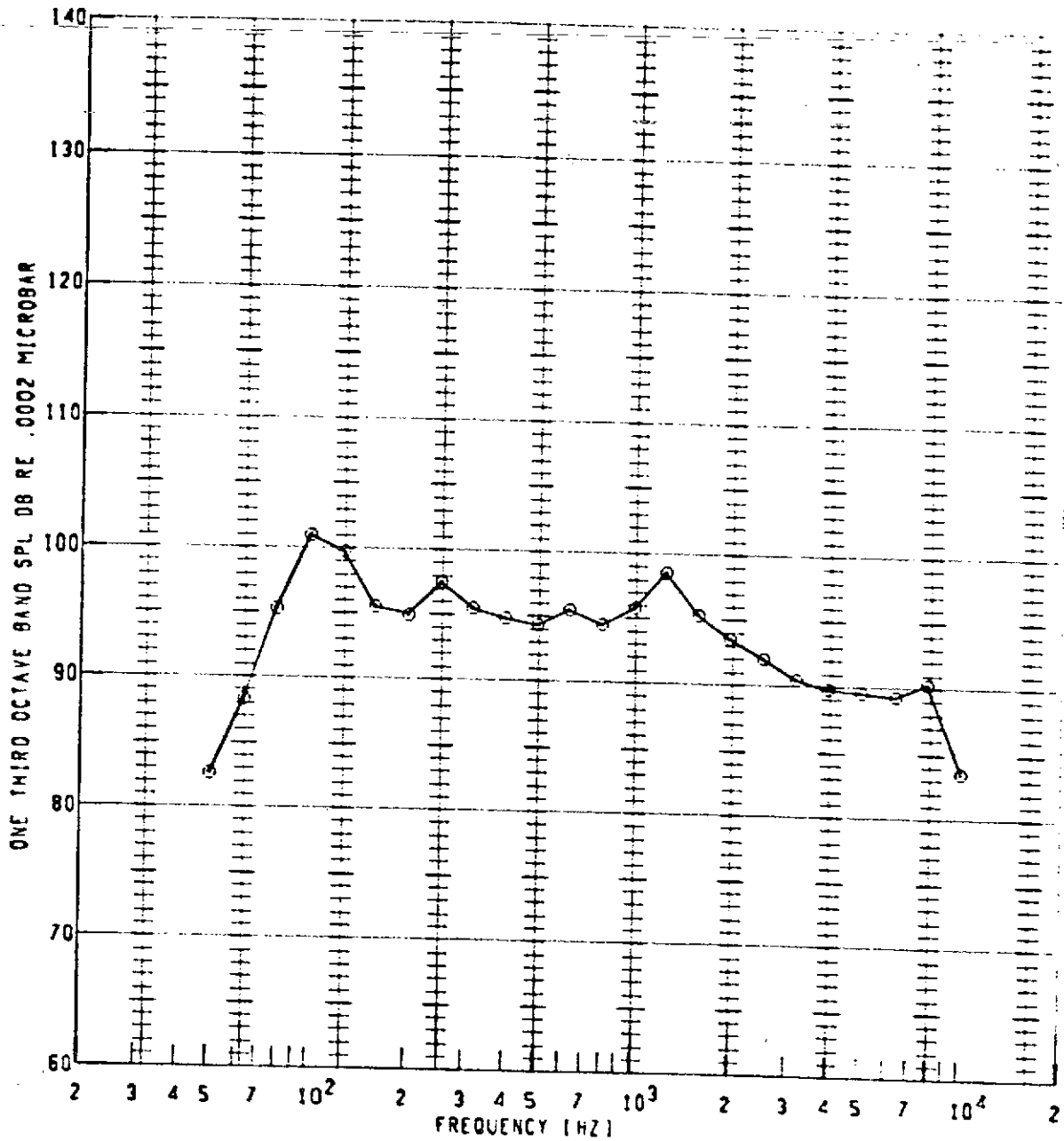
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ○           | 200        | 700      | 1.200          | 115            | 50FP              | 108.2      | 10           |            |

BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL [DB] | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 20G        | 700      | 1.200          | 120            | 50FP              | 108.3      | 20           |            |

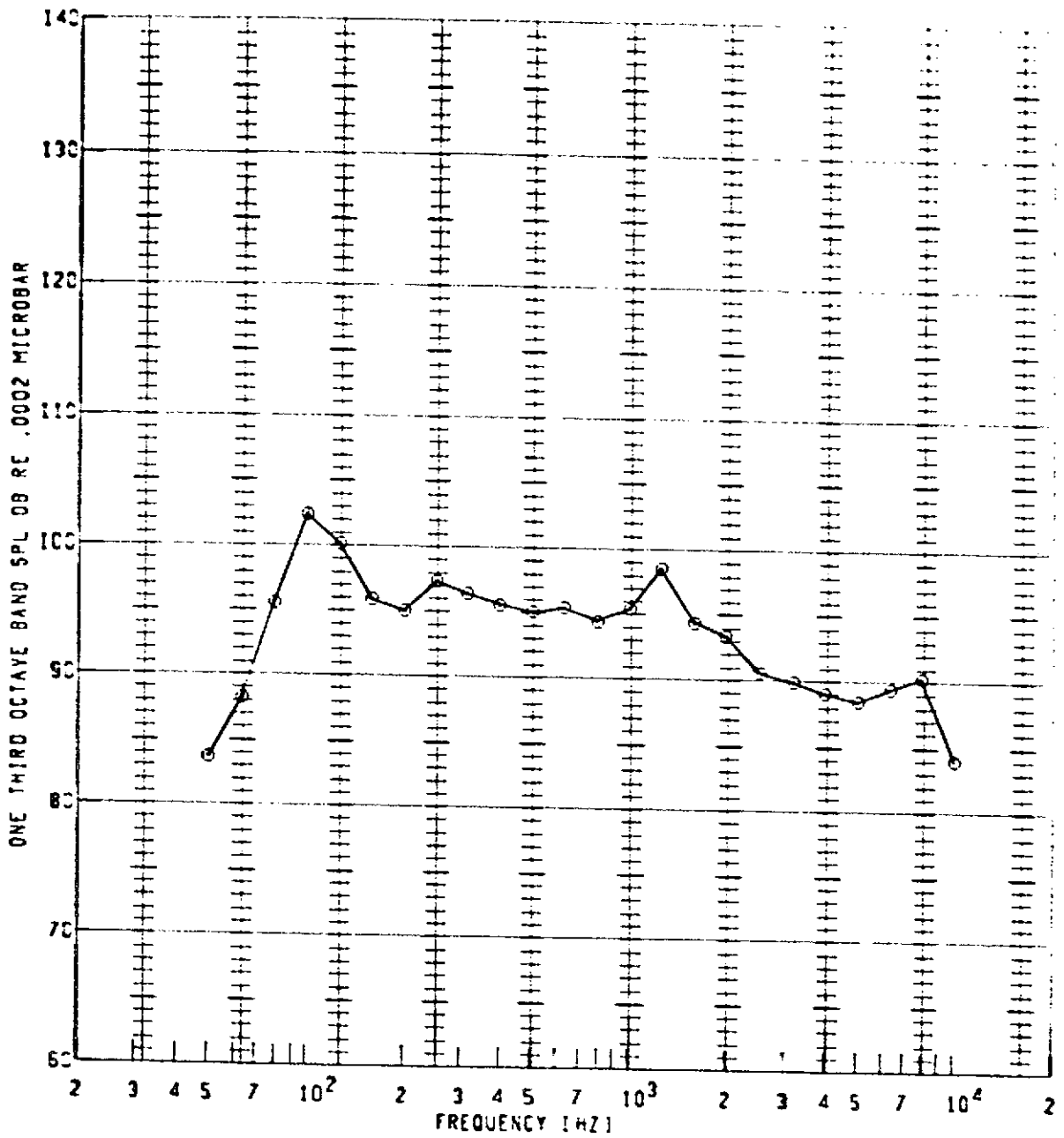
BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | GASPL (09) | GAIN SETTINGS | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|---------------|------------|
| ⊙           | 206        | 700      | 1.200          | 125            | 50FP              | 108.9      | 10            |            |

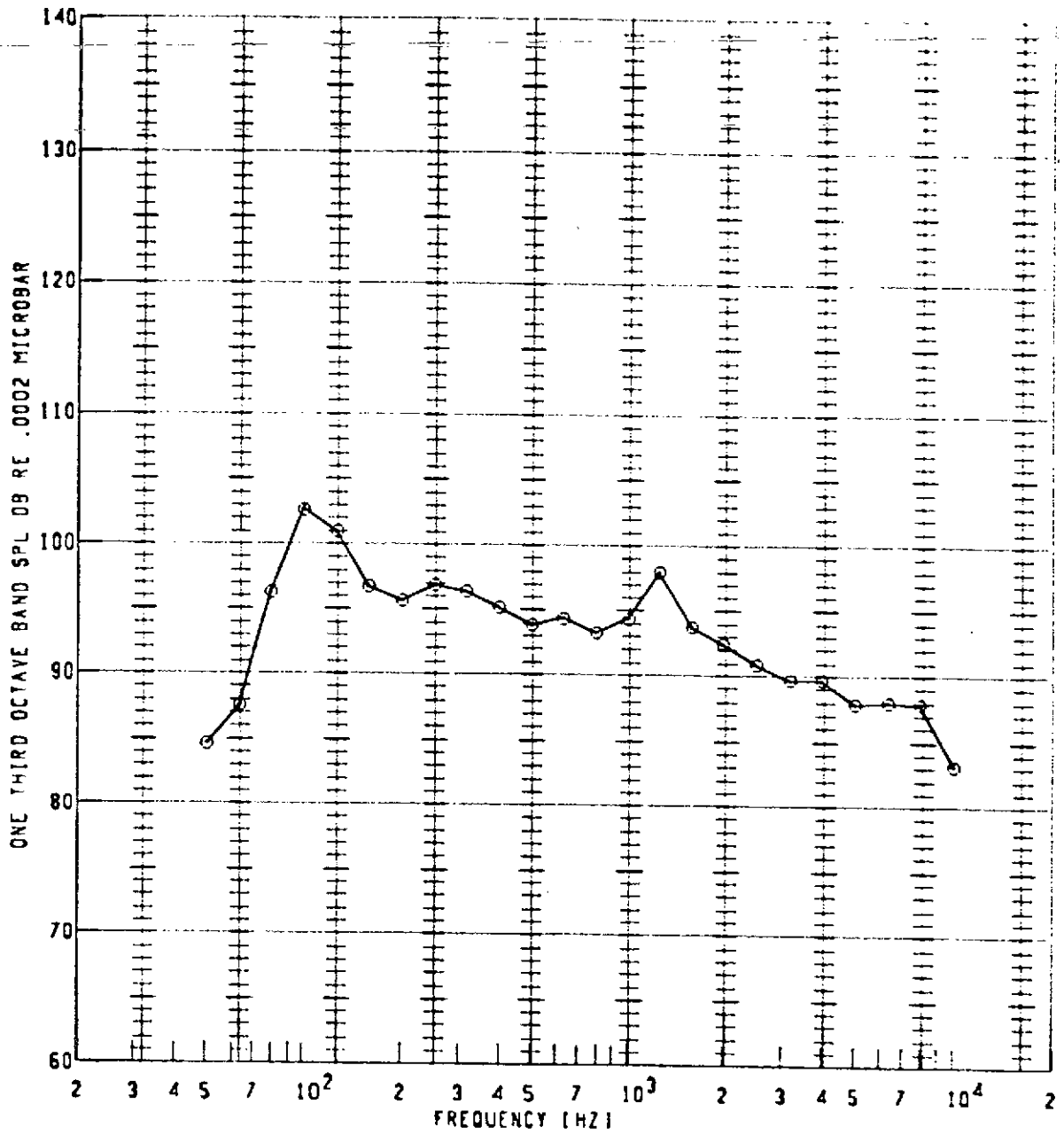


BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



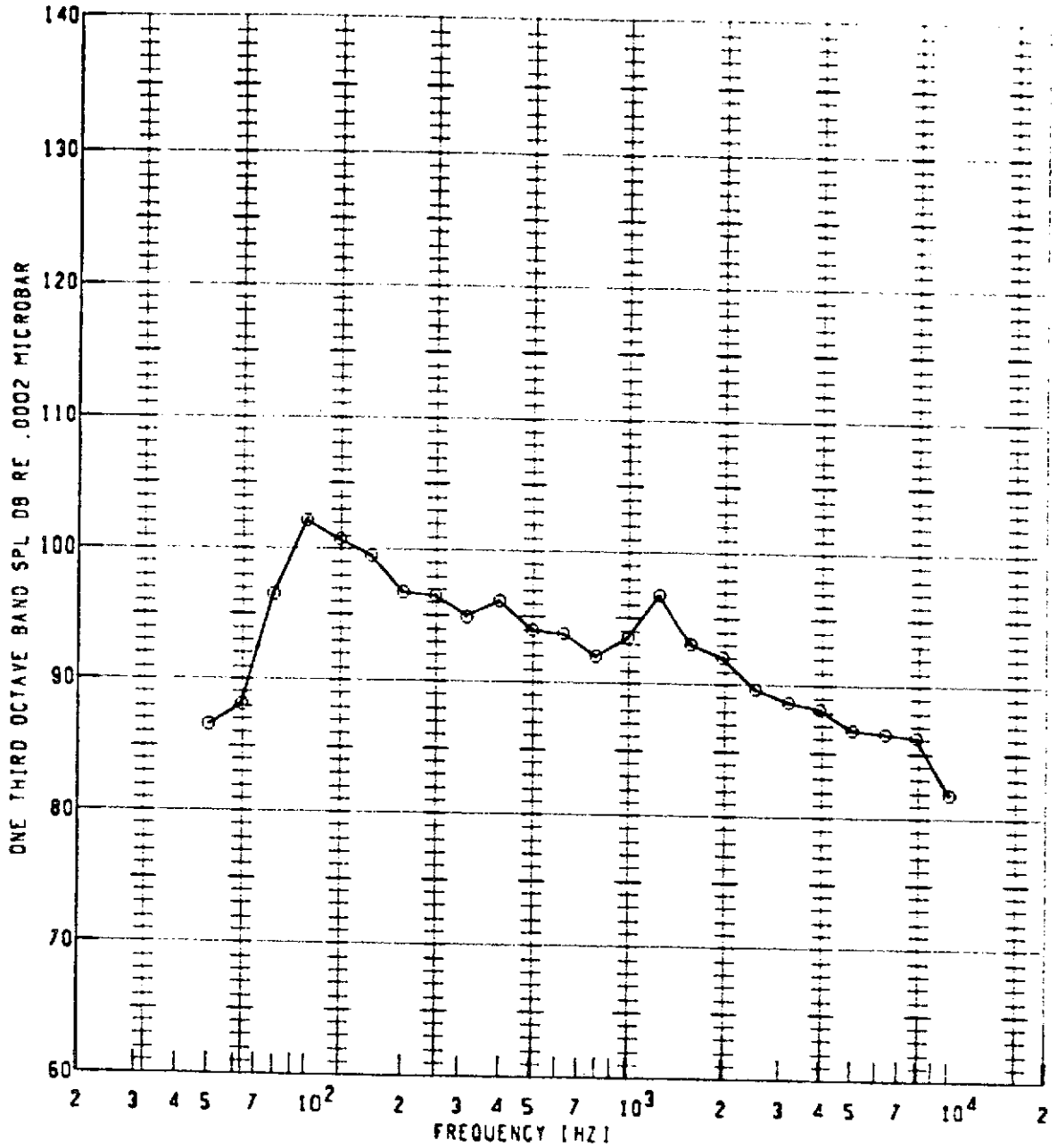
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | GASP (dB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|-----------|--------------|------------|
| ⊙           | 206        | 700      | 1.200          | 130            | 50FP              | 109.2     | 10           | 10         |

BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



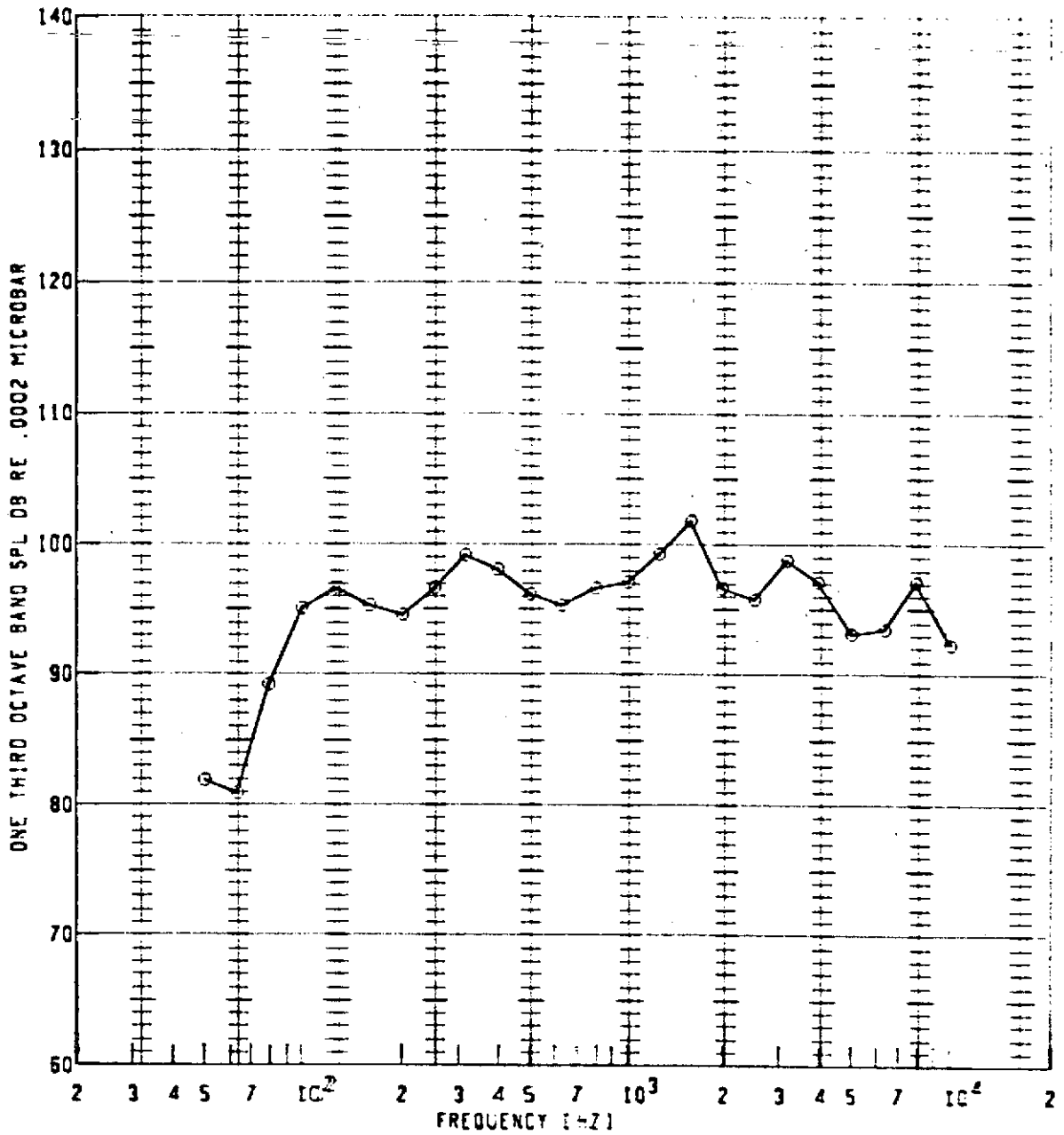
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | GASPL (DB) | GAIN SETTING | SPECIAL |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|---------|
| ⊙           | 206        | 700      | 1.200          | 135            | 50FP              | 109.2      | 10           | 10      |

BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



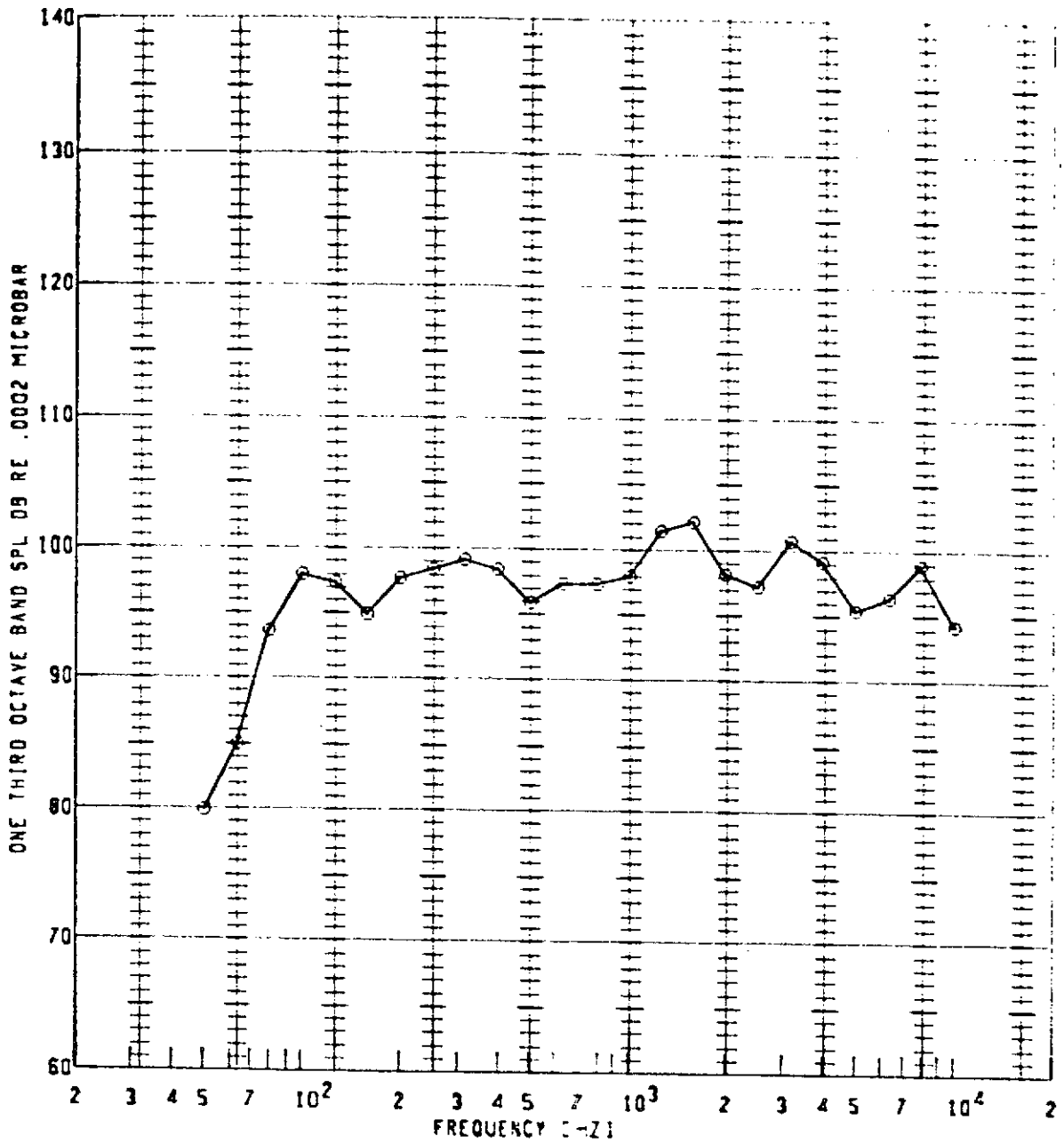
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ○           | 200        | 700      | 1.200          | 140            | 50FP              | 109.0      | 10           |            |

BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



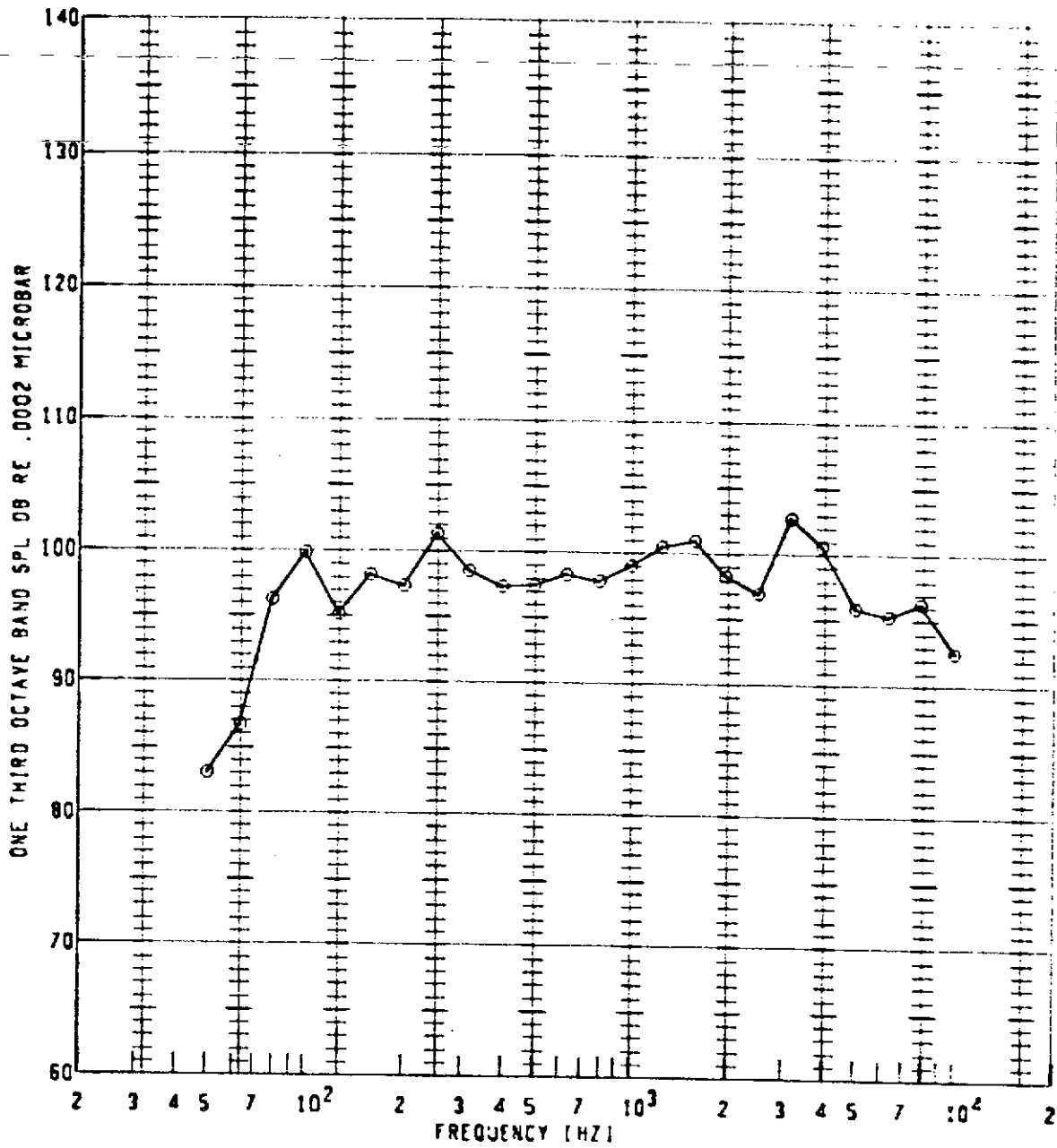
| Plot Symbol | Run Number | Jet Temp | Pressure Ratio | Angle Re Inlet | Observer Location | CASPL (DB) | Gain Setting | Special ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 206        | 750      | 1.300          | 90             | 50FP              | 110.3      | 10           |            |

BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



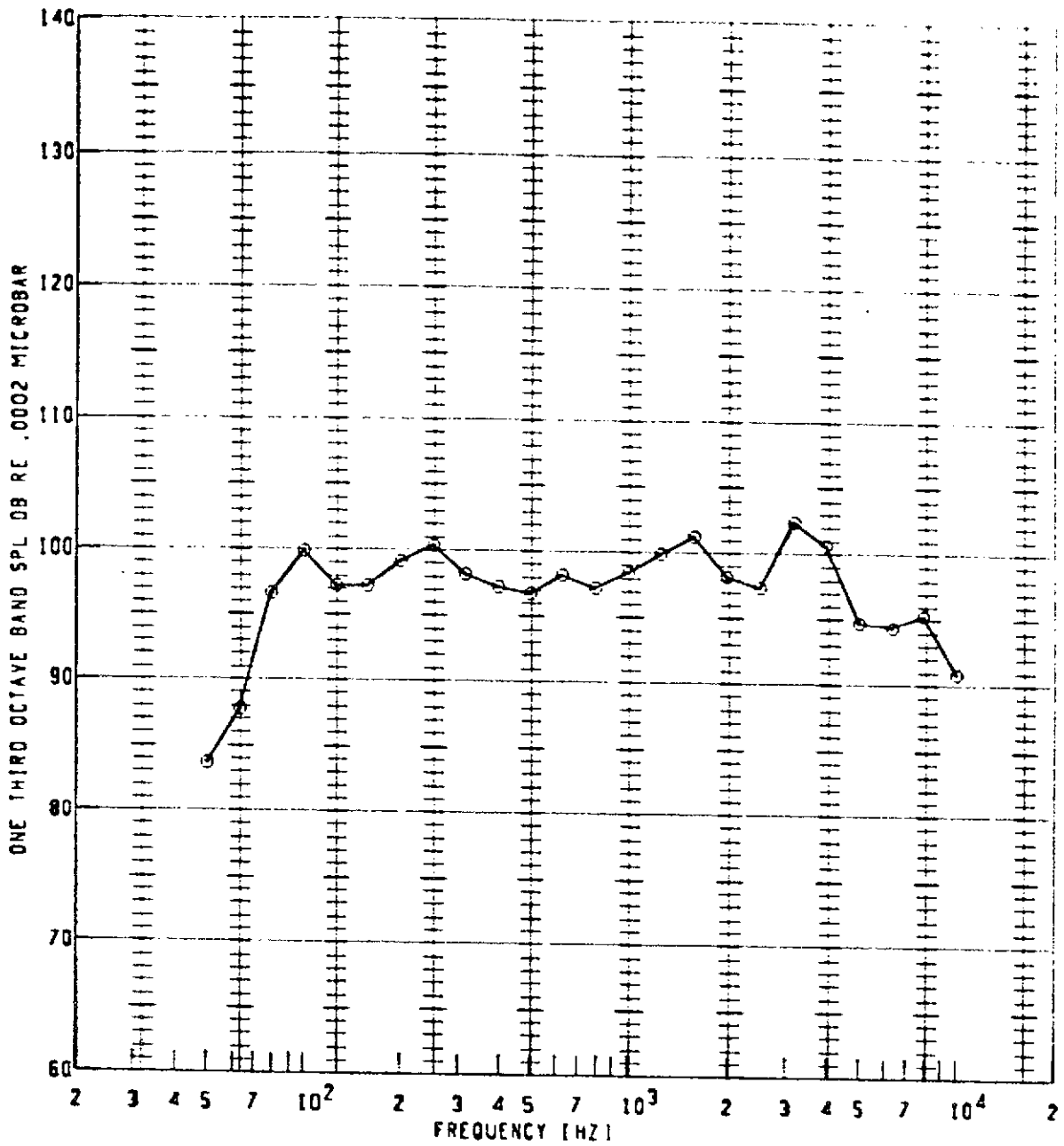
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ○           | 200        | 750      | 1.300          | 100            | 50FP              | 111.7      | 10           |            |

BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



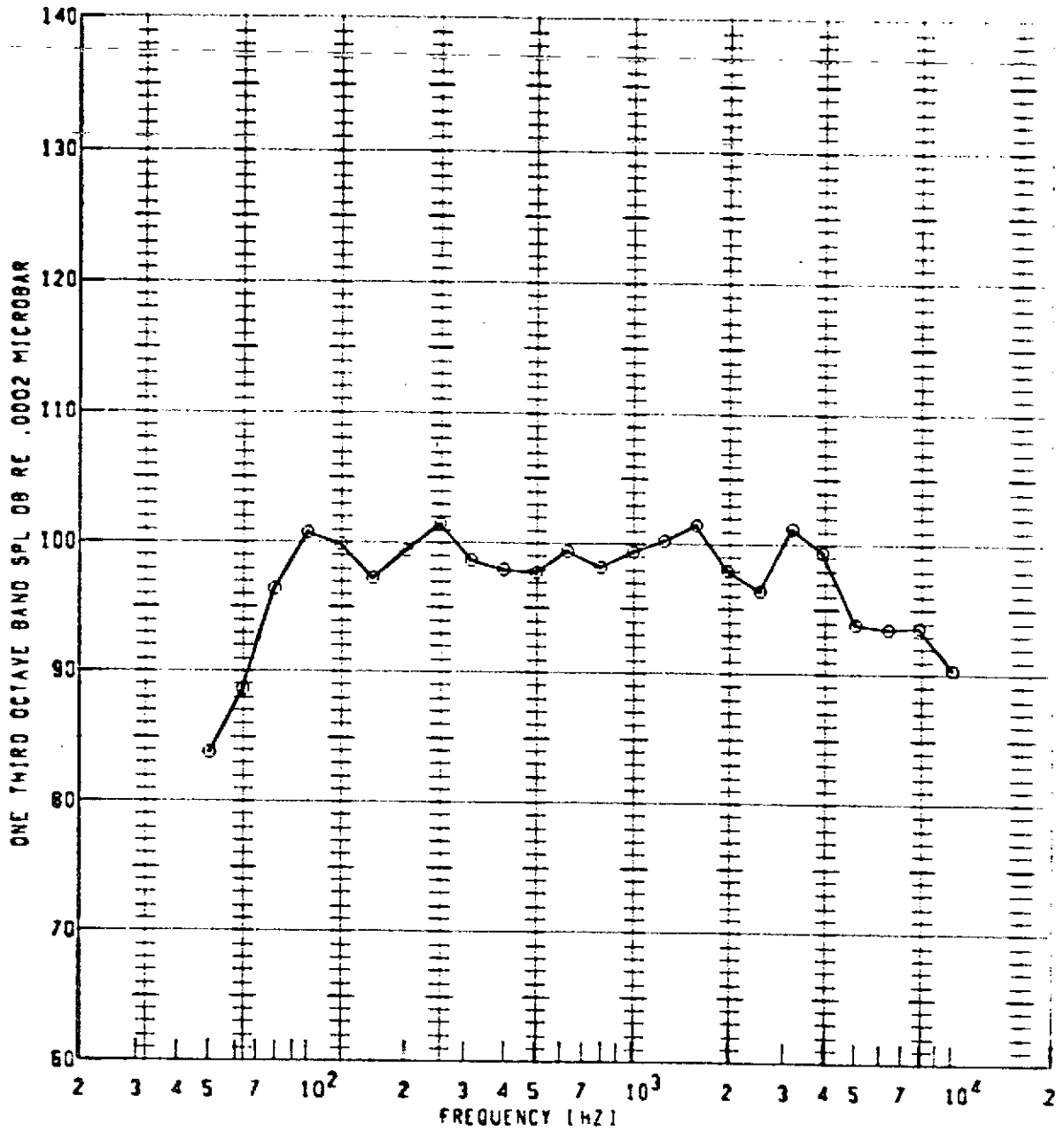
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|---------|
| ○           | 206        | 750      | 1.300          | 110            | SQFP              | 112.1      | 10           | 10      |

BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | CASPL (DB) | GAIN SETTING | SPECIAL IO |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 206        | 750      | 1.300          | 115            | 50FP              | 111.9      | 10           |            |

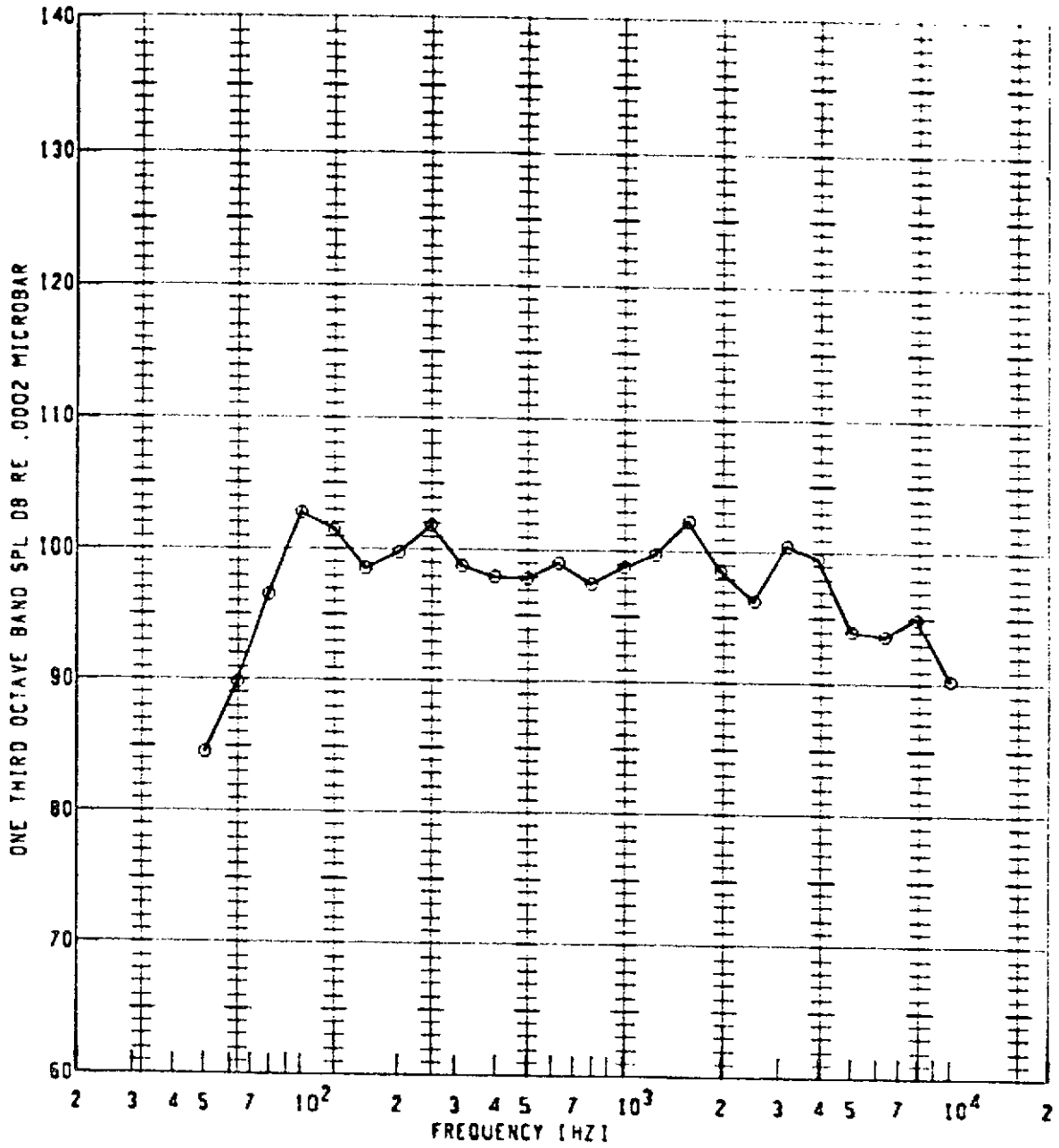
BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | GASPL (OBI) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|-------------|--------------|------------|
| ⊙           | 206        | 750      | 1.300          | 120            | 50FP              | 112.1       | 10           |            |

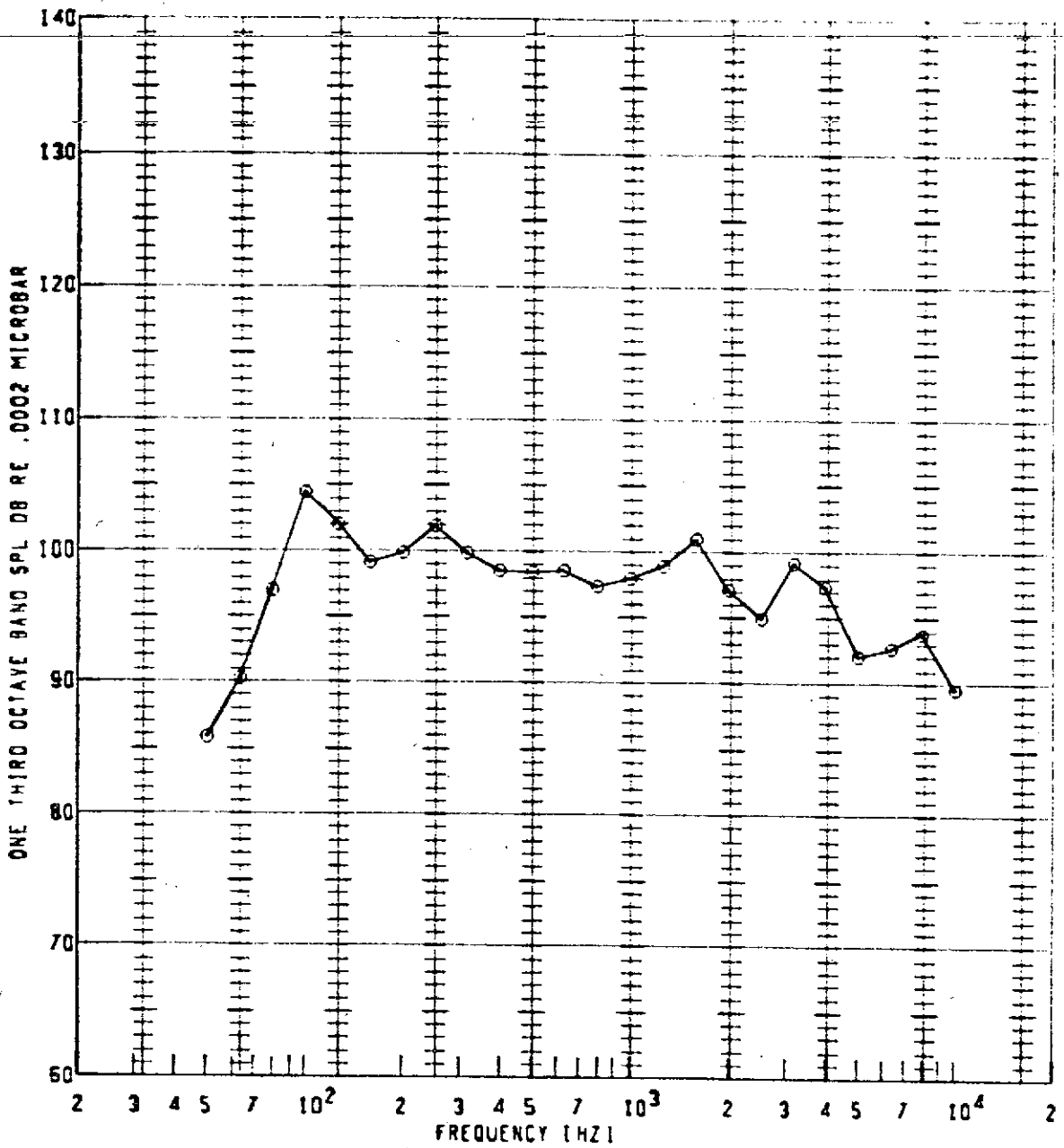


BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



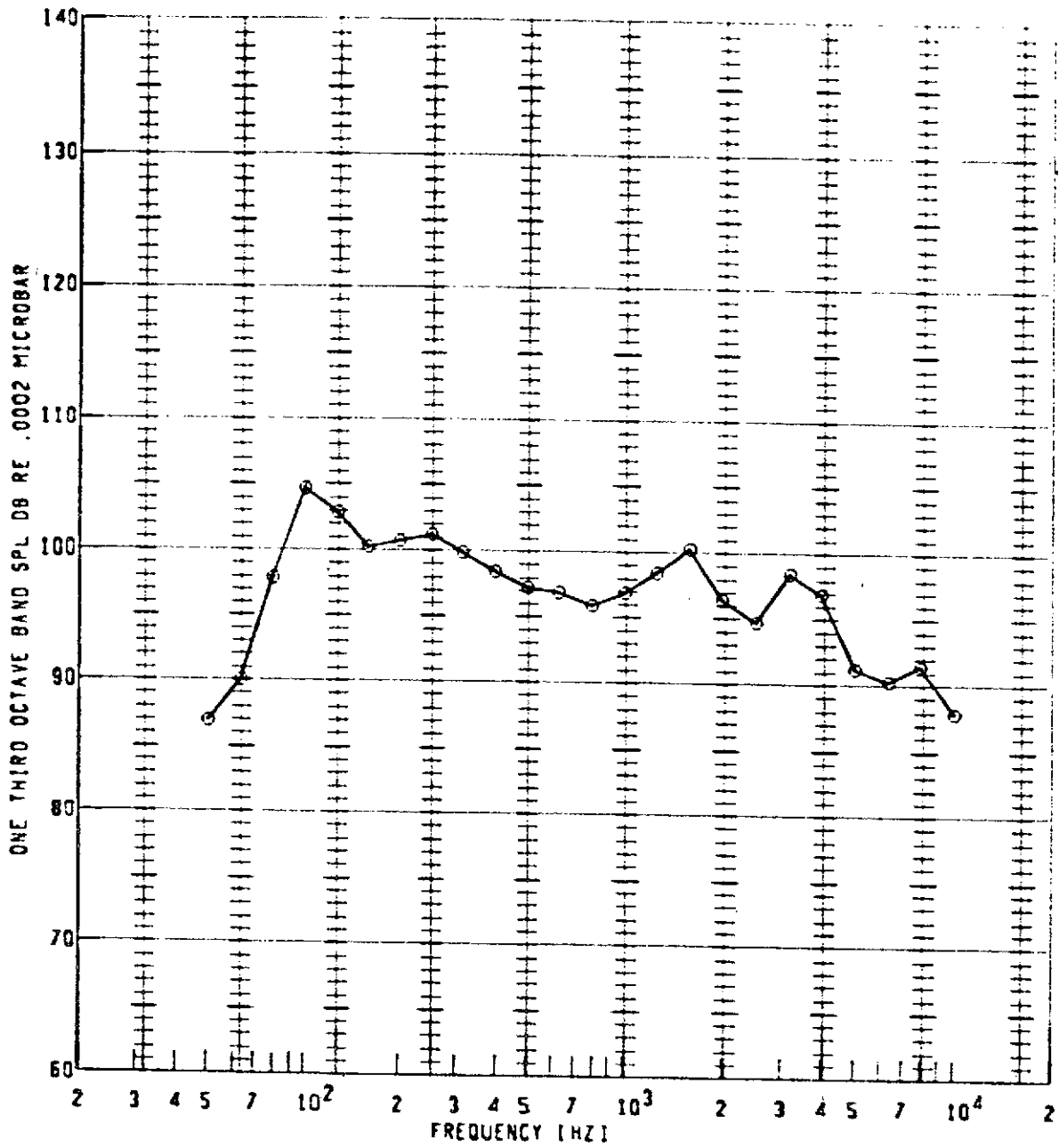
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ○           | 200        | 750      | 1.300          | 125            | 50FP              | 112.5      | 10           | 10         |

BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



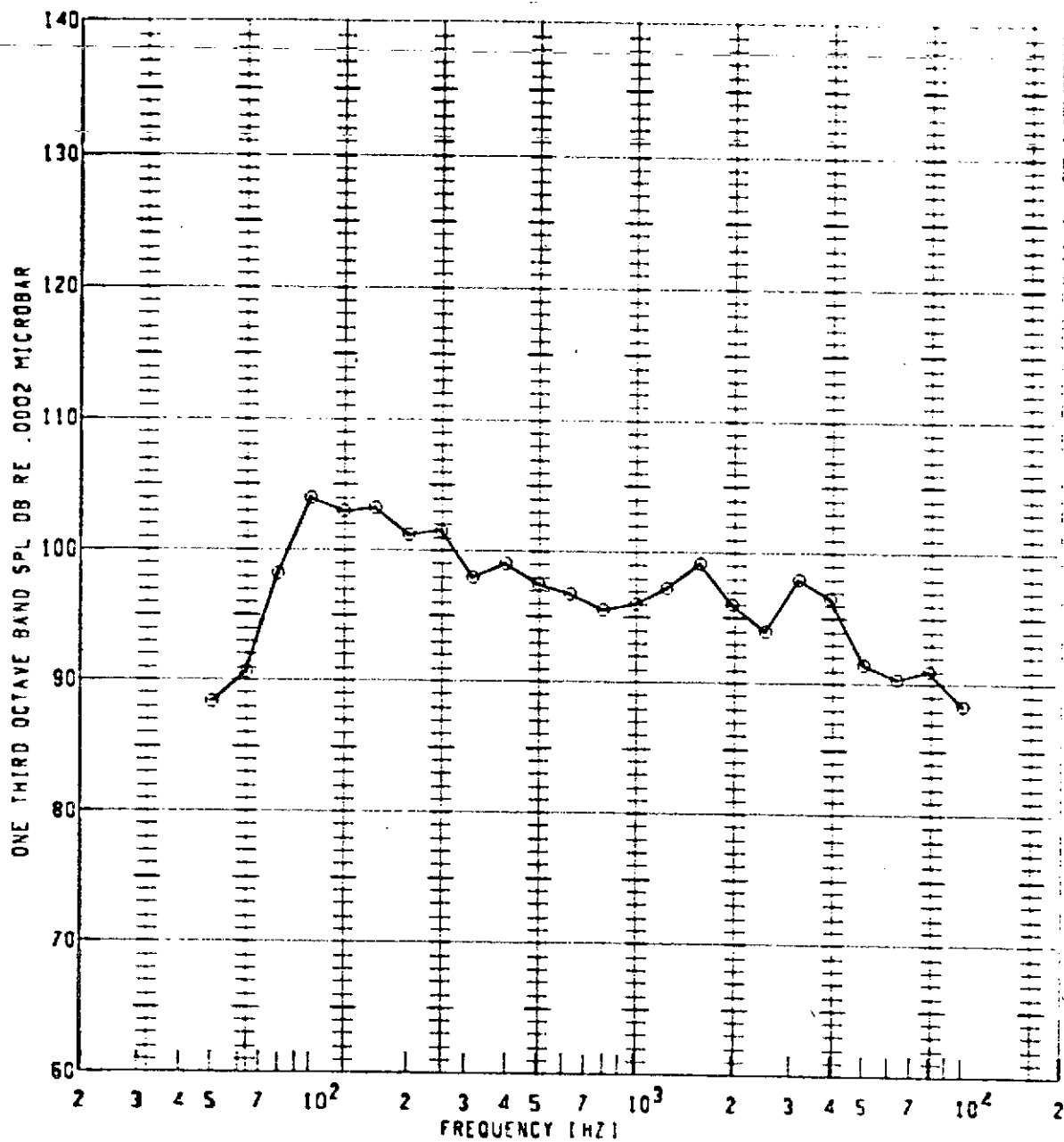
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL [DB] | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ○           | 206        | 750      | 1.300          | 130            | 50FP              | 112.4      | 10           |            |

BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



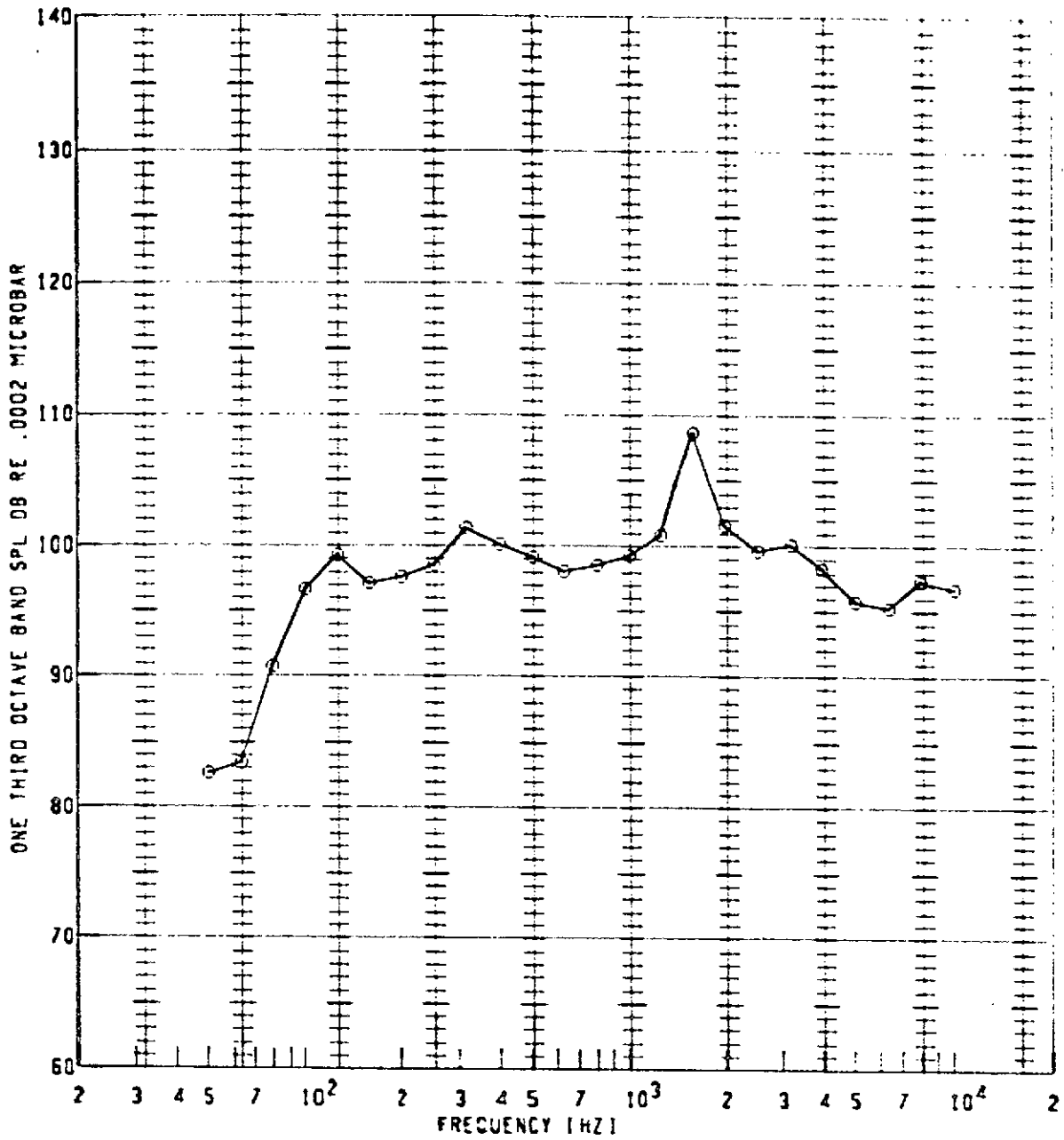
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | GASPL | GAIN SETTING | SPECIAL |
|-------------|------------|----------|----------------|----------------|-------------------|-------|--------------|---------|
| ⊙           | 206        | 750      | 1.300          | 135            | 50FP              | 112.3 | 10           | 10      |

BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



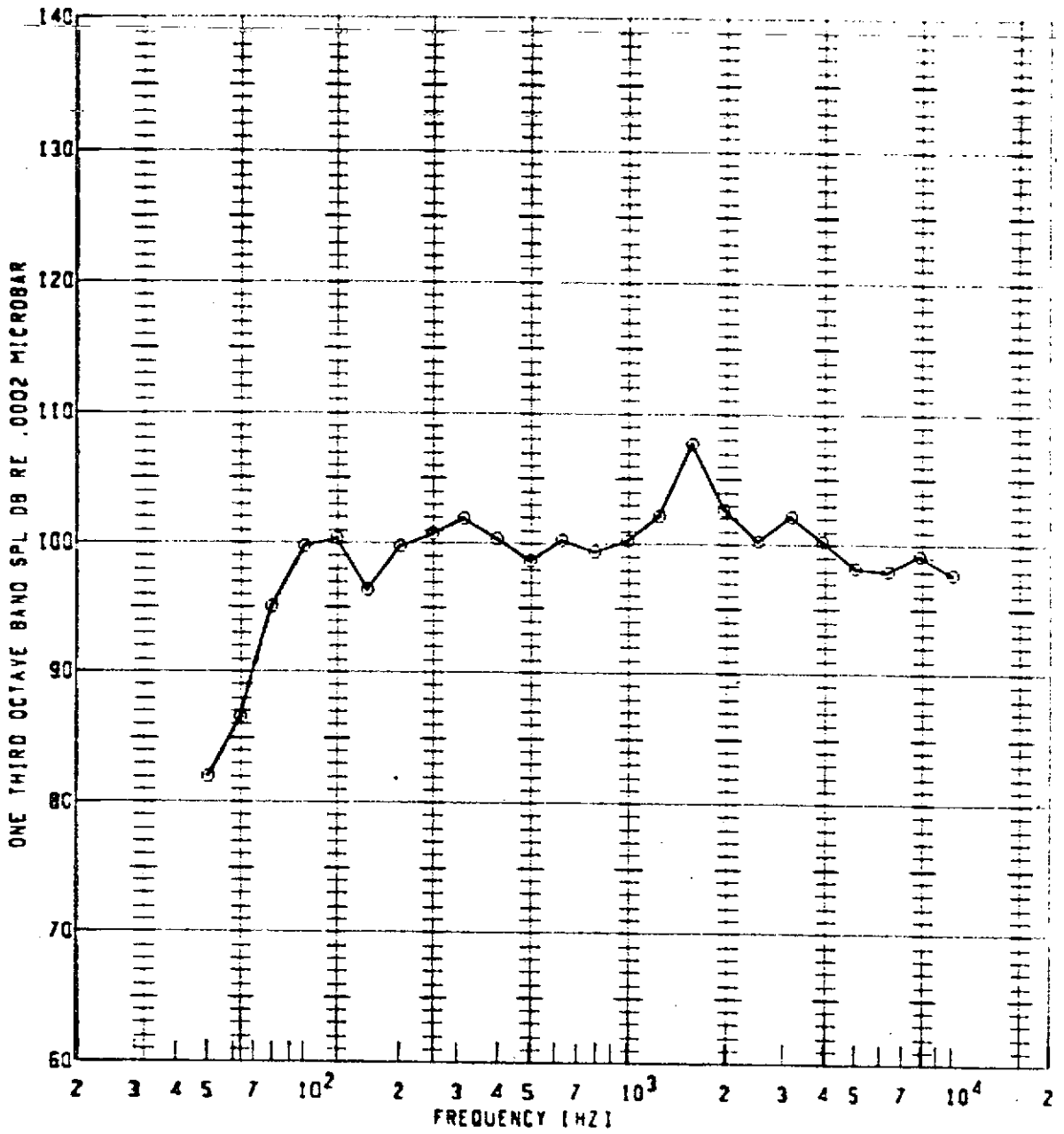
| PLGT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| @           | 206        | 750      | 1.300          | 140            | 50FP              | 112.3      | 10           | 10         |

BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



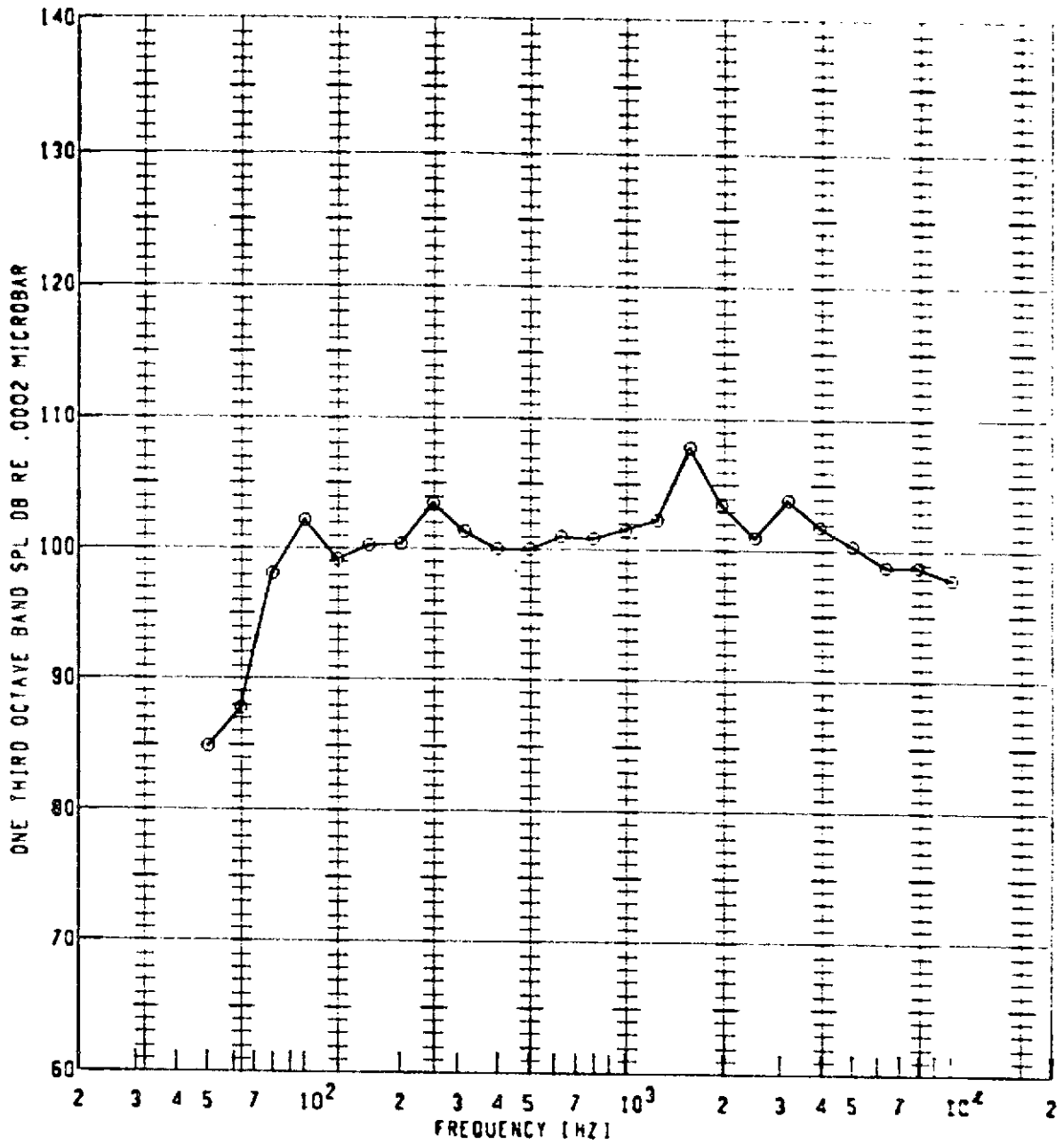
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | GASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 206        | 800      | 1.400          | 90             | 50FP              | 113.6      | 10           |            |

BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



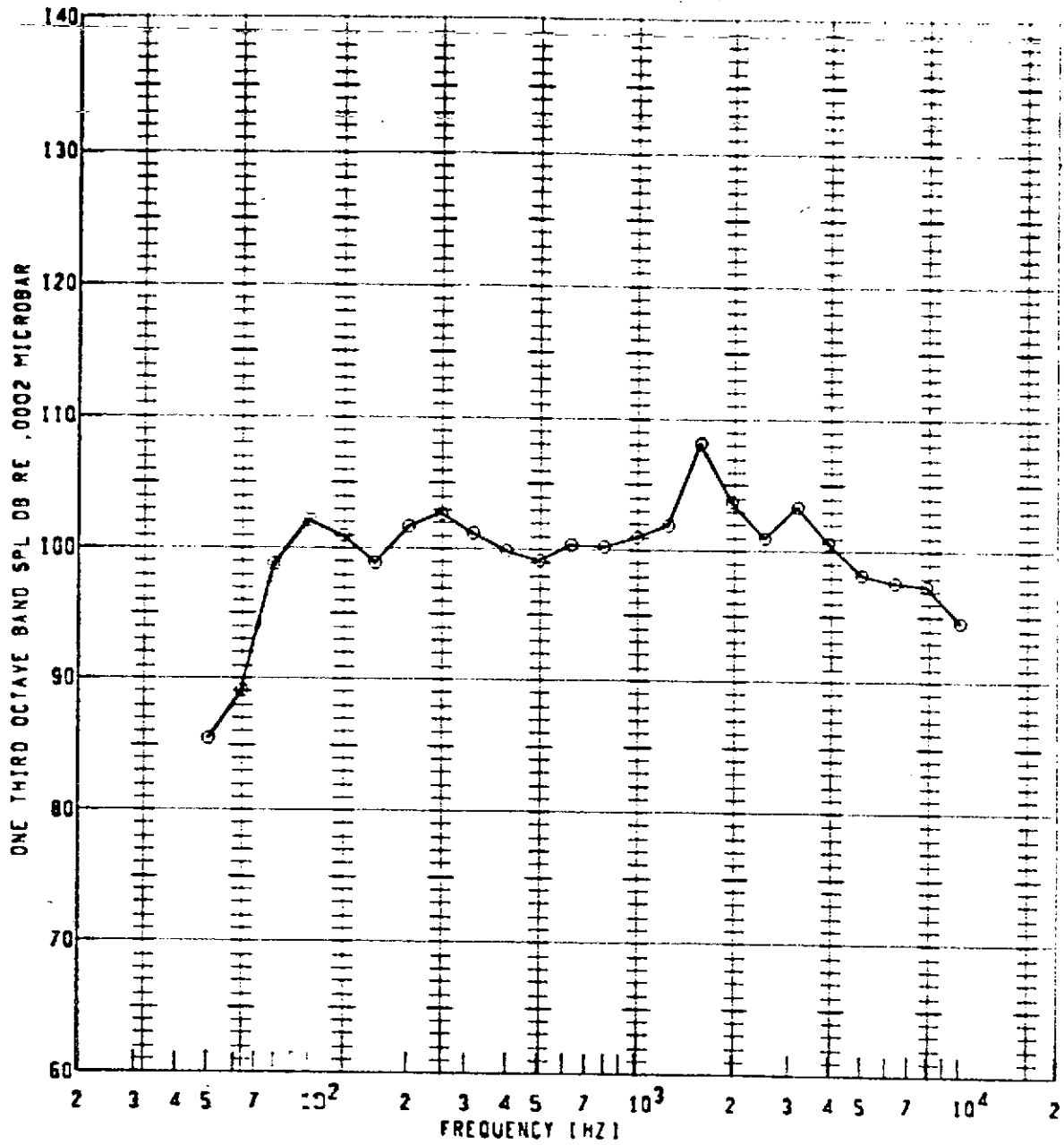
| PLCT SYMBO | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | GASPL (DB) | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊖          | 206        | 800      | 1.400          | 100            | 50FP              | 114.3      | 10           |            |

BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | CASPL (DB) | GAIN SETTING | SPECIAL |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|---------|
| ⊙           | 206        | 800      | 1.400          | 110            | 50FP              | 115.2      | 10           | 13      |

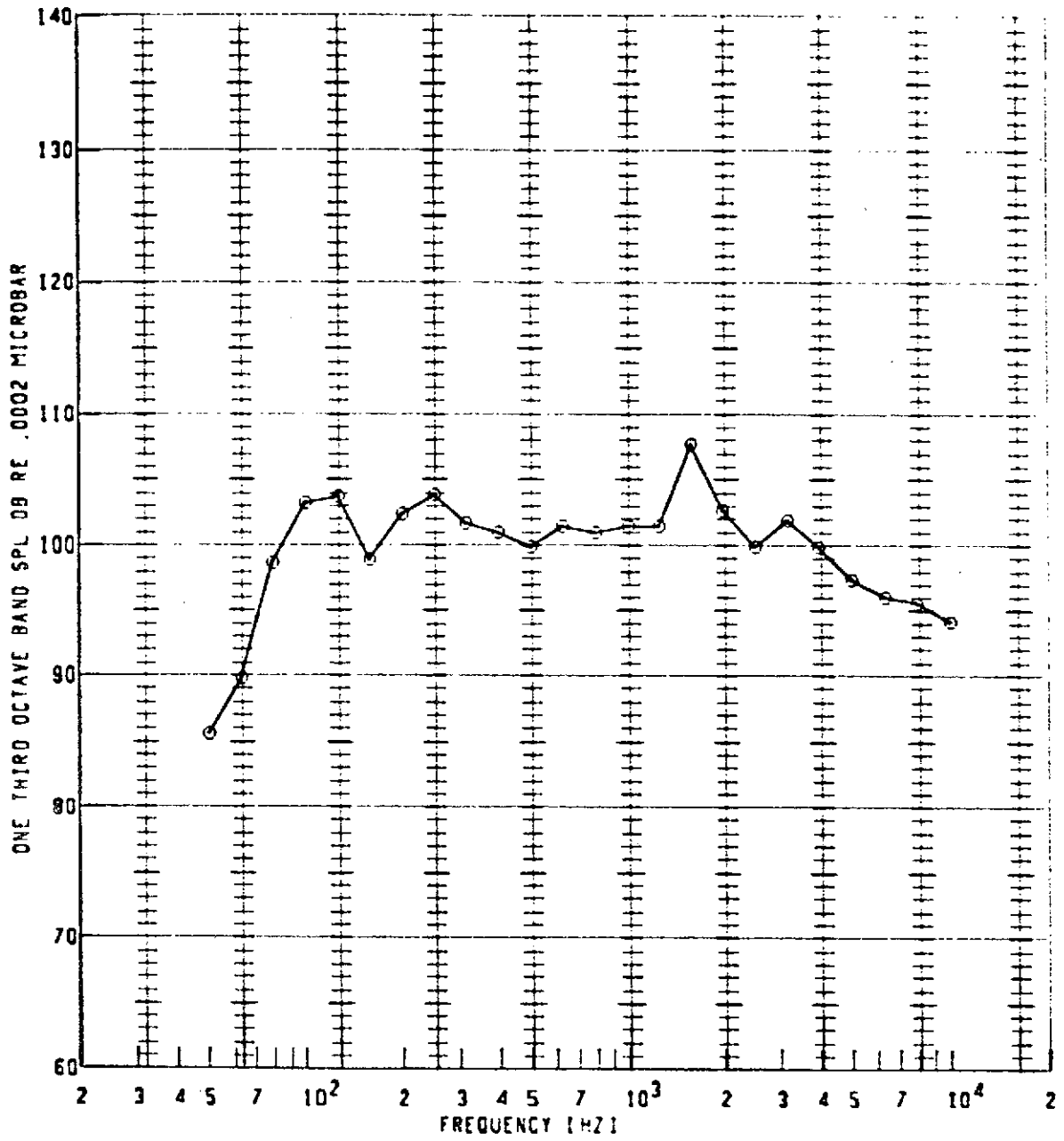
BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



| SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|--------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ○      | 200        | 800      | 1.400          | 115            | 50FP              | 115.0      | 10           |            |

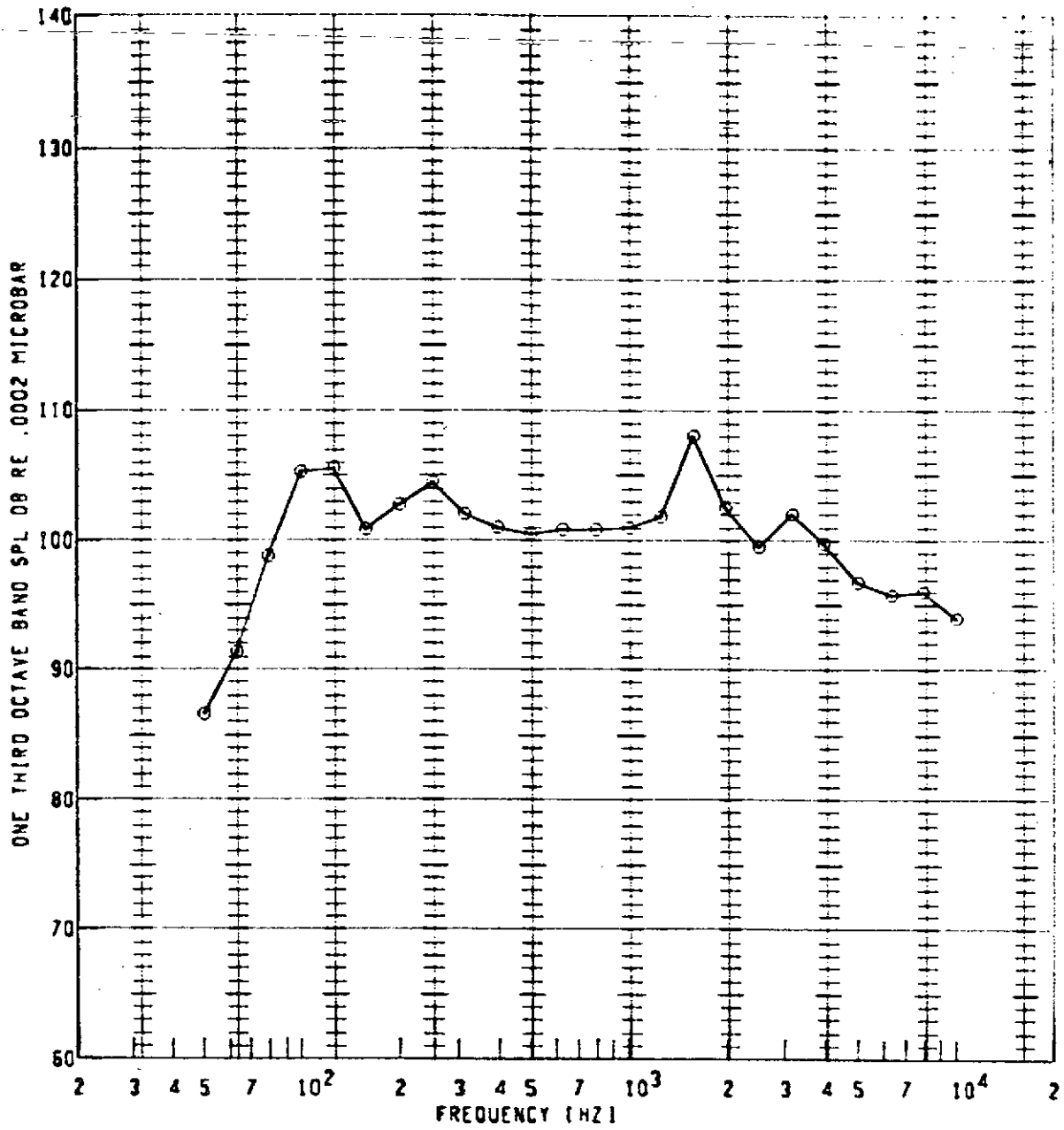


BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



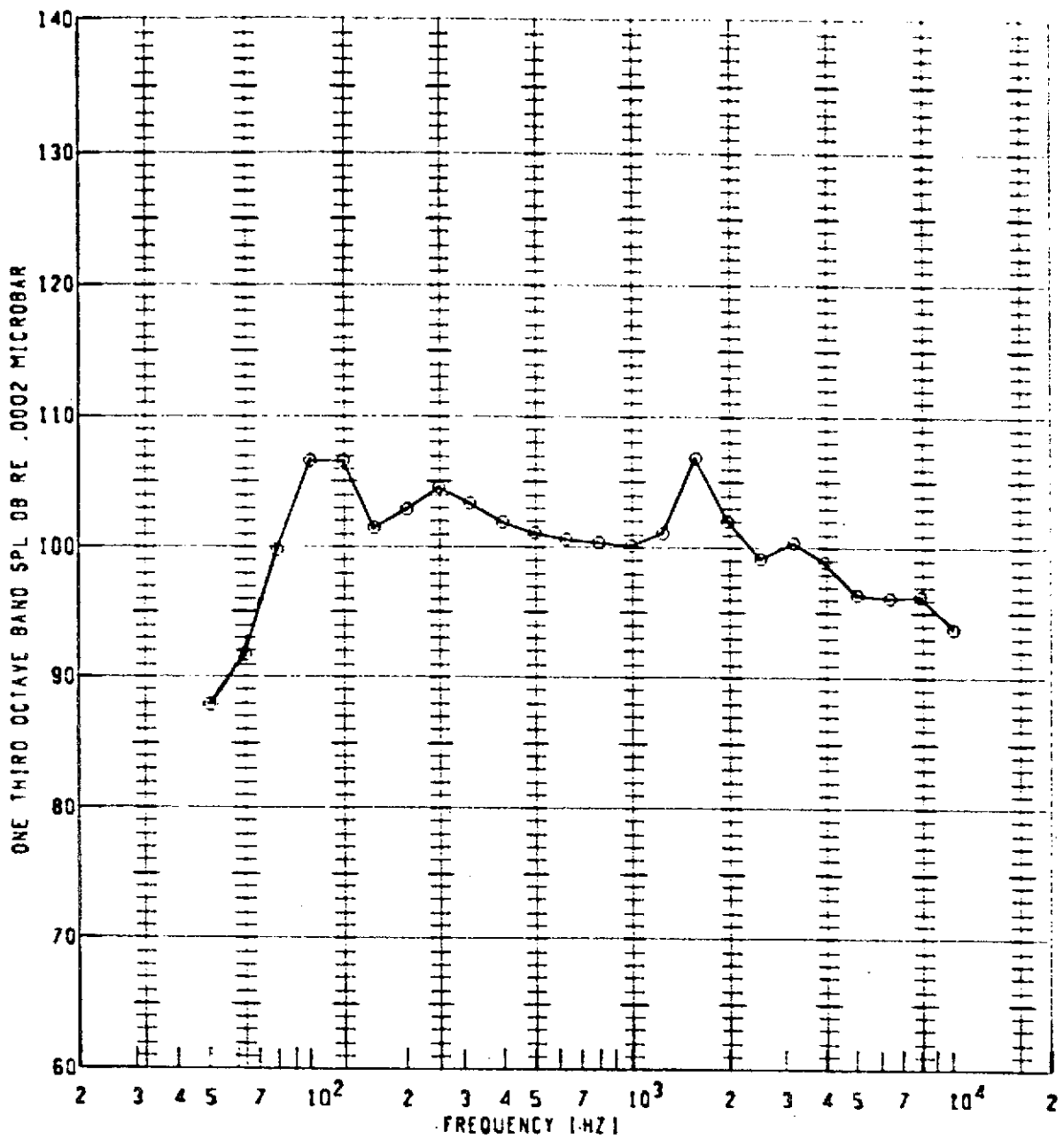
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL [DB] | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 206        | 800      | 1.400          | 120            | 50FP              | 115.1      | 10           |            |

BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



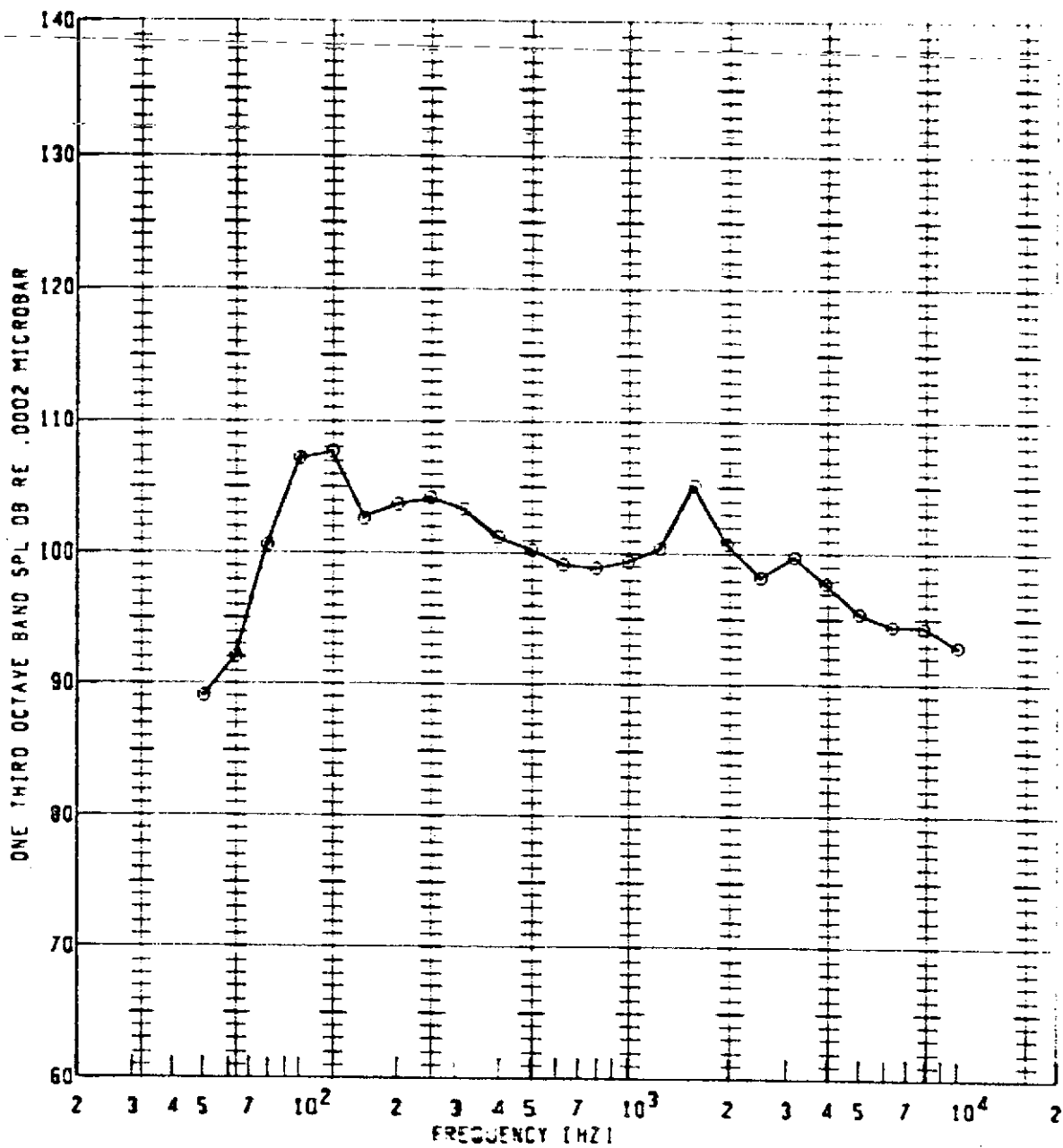
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | GASPL (DB) | GAIN SETTING | SPECIAL IO |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 200        | 800      | 1.400          | 125            | 50FP              | 115.6      | 10           |            |

BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



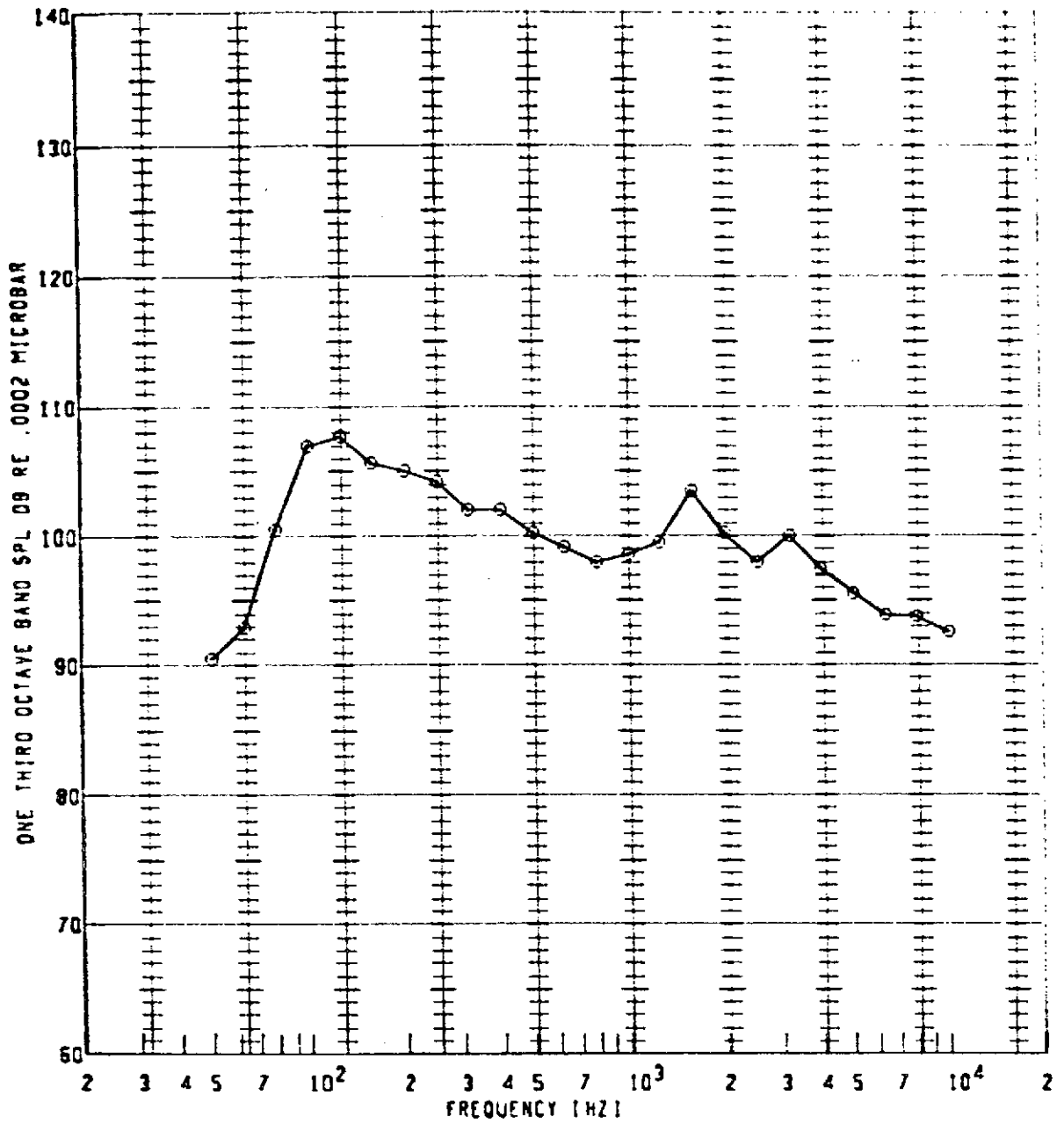
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | DASPL (DB) | GAIN SETTING | SPECIAL TO |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 205        | 800      | 1.400          | 130            | 50FP              | 115.7      | 10           |            |

BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



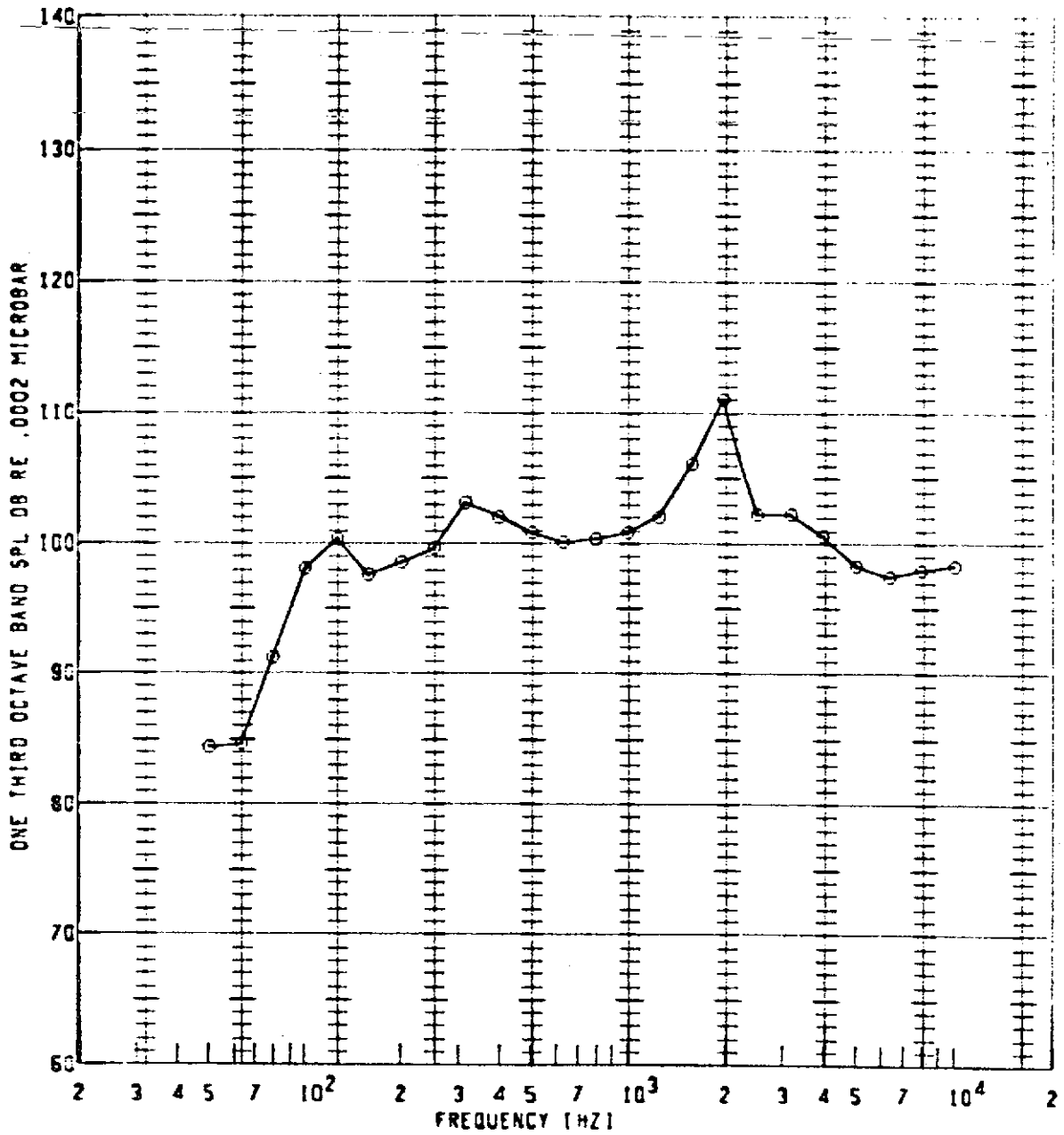
| SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | SASPL (DB) | GAIN SETTING | SPECIAL ID |
|--------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙      | 206        | 800      | 1.400          | 35             | 50FP              | 115.5      | 10           |            |

BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



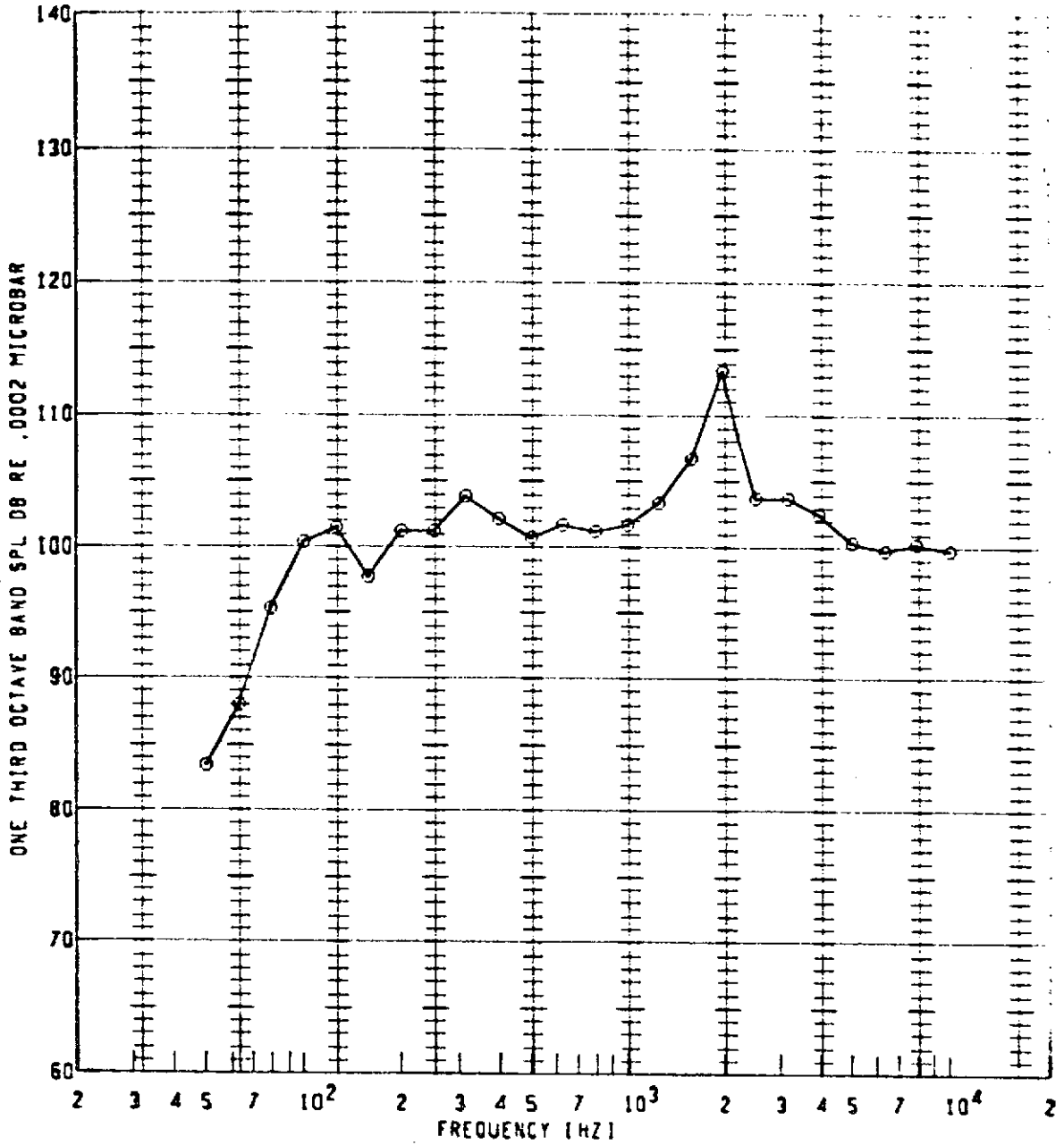
| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | CASPL | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|-------|--------------|------------|
| ⊙          | 206        | 800      | 1.400          | 140            | 50FP              | 105.5 | 10           |            |

BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



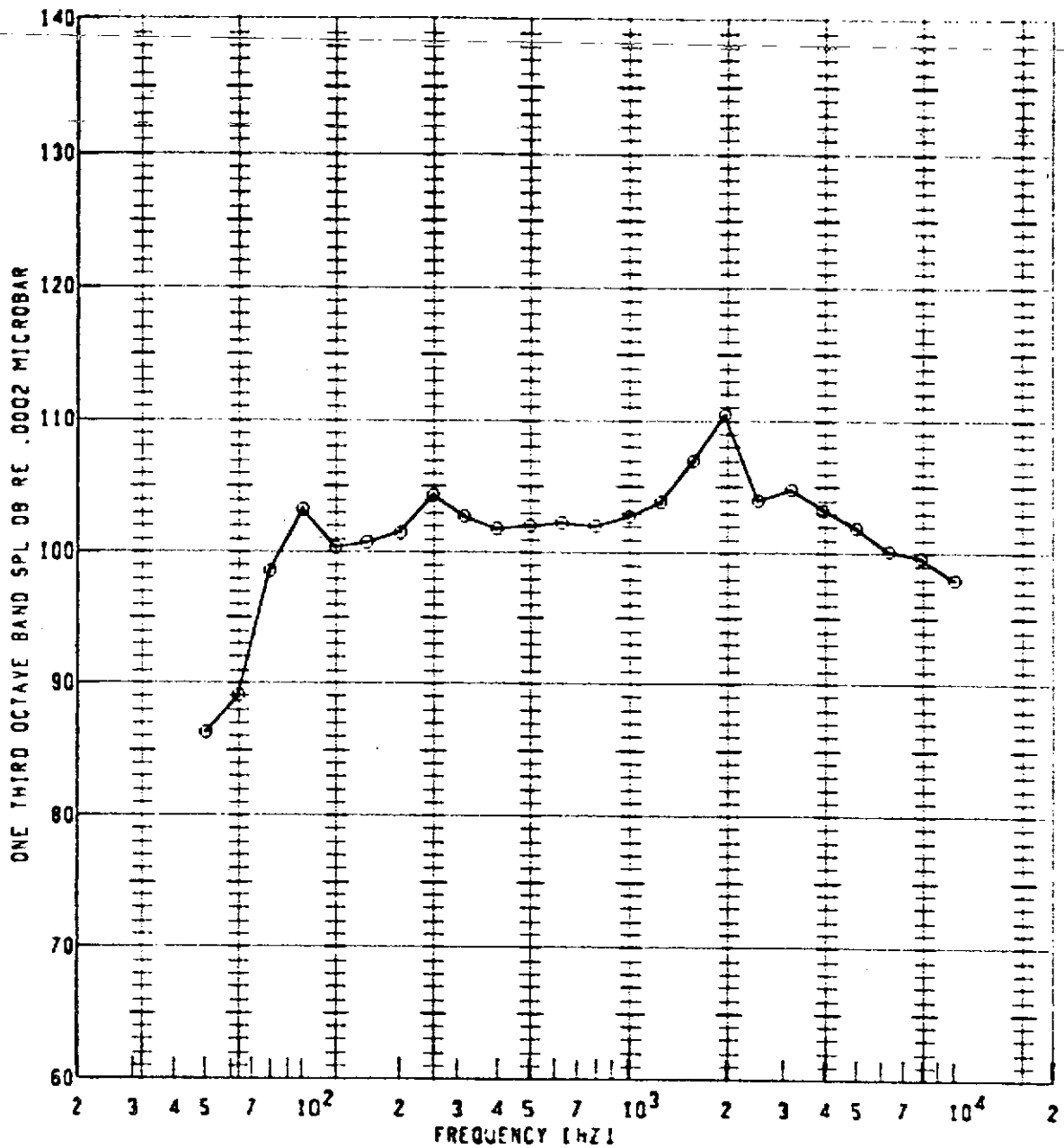
| PLCT<br>SYMB. | RUN<br>NUMBER | JET<br>TEMP | PRESSURE<br>RATIO | ANGLE<br>RE INLET | OBSERVER<br>LOCATION | OSPL<br>(DB) | GAIN<br>SETTING | SPECIAL<br>ID |
|---------------|---------------|-------------|-------------------|-------------------|----------------------|--------------|-----------------|---------------|
| ⊙             | 20G           | 850         | 1.500             | 90                | 50FP                 | 115.8        | 0               |               |

BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL IO |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ○           | 206        | 850      | 1.500          | 100            | 50FP              | 117.4      | 10           |            |

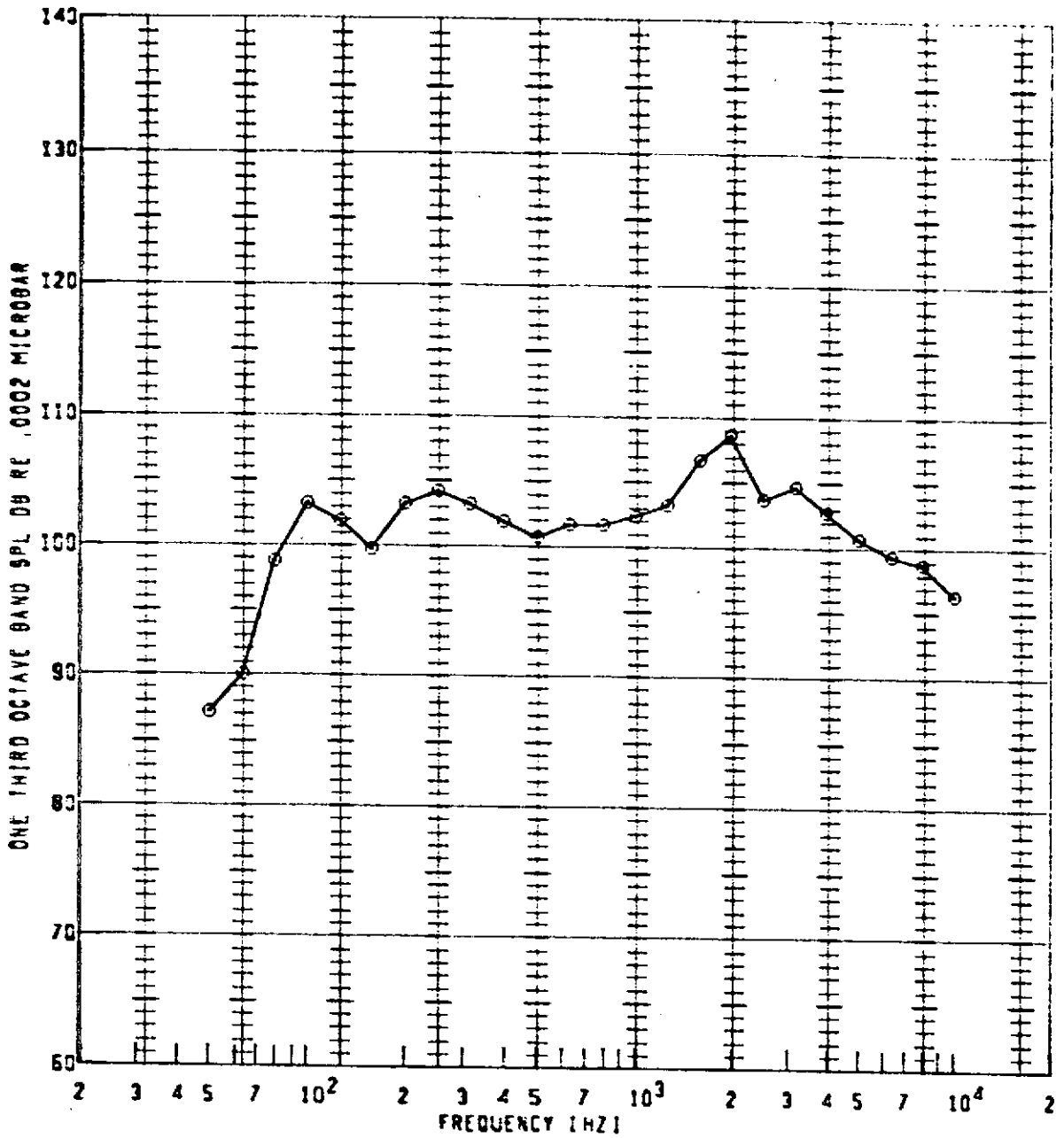
BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 200        | 850      | 1.500          | 110            | 50FP              | 117.0      | 10           |            |

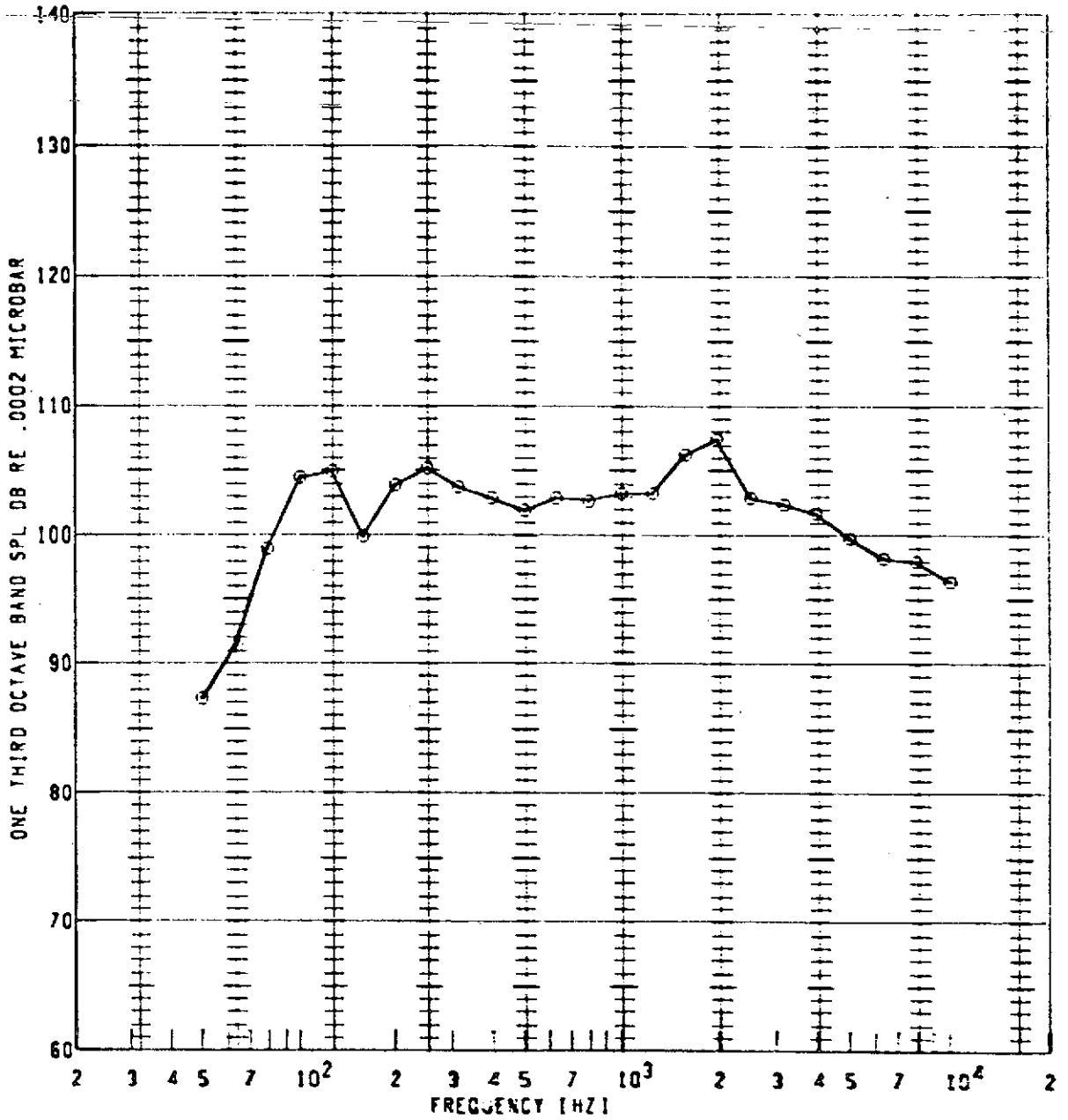


BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



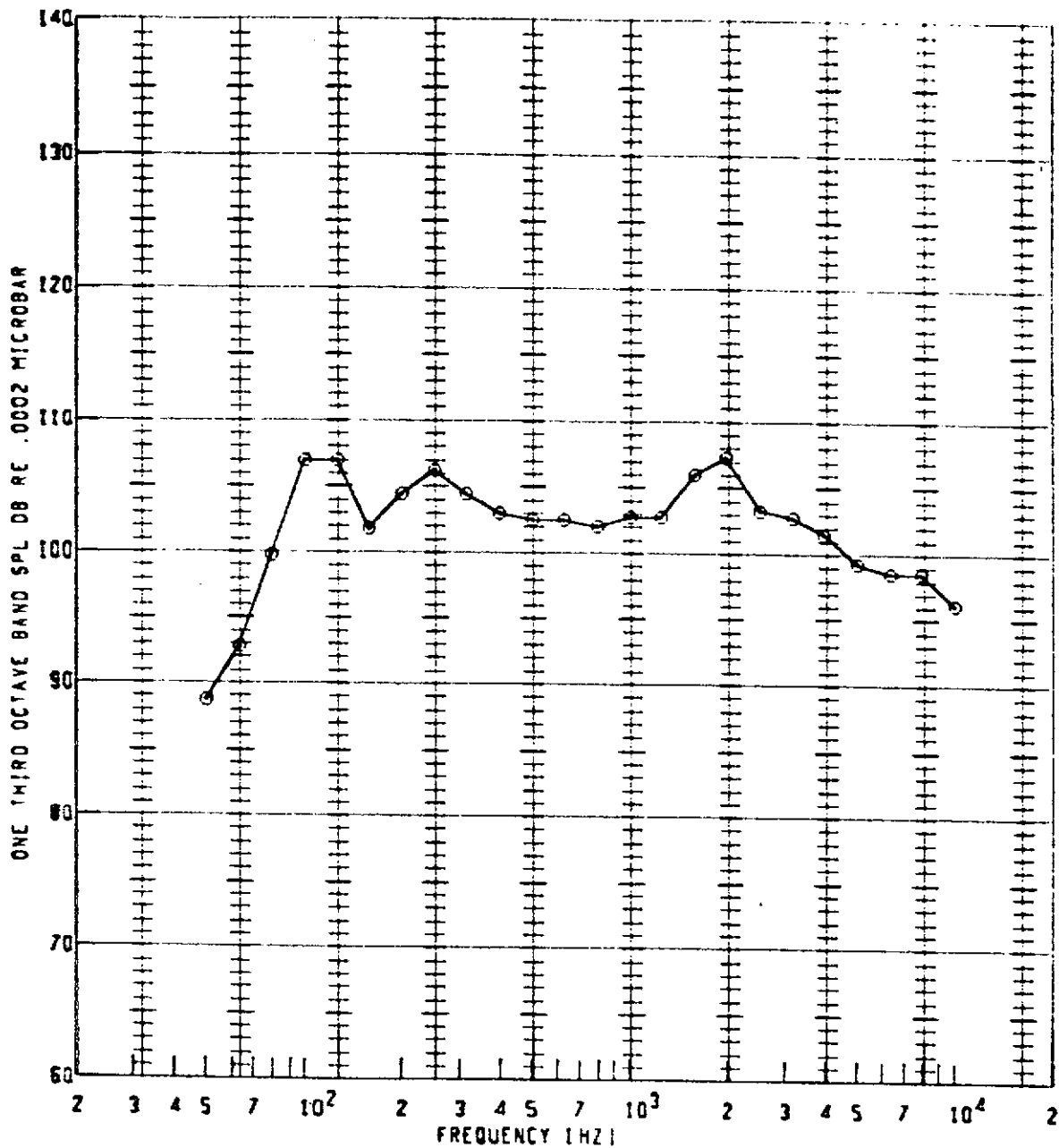
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ○           | 206        | 850      | 1.500          | 115            | 50FP              | 116.5      | 10           |            |

BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



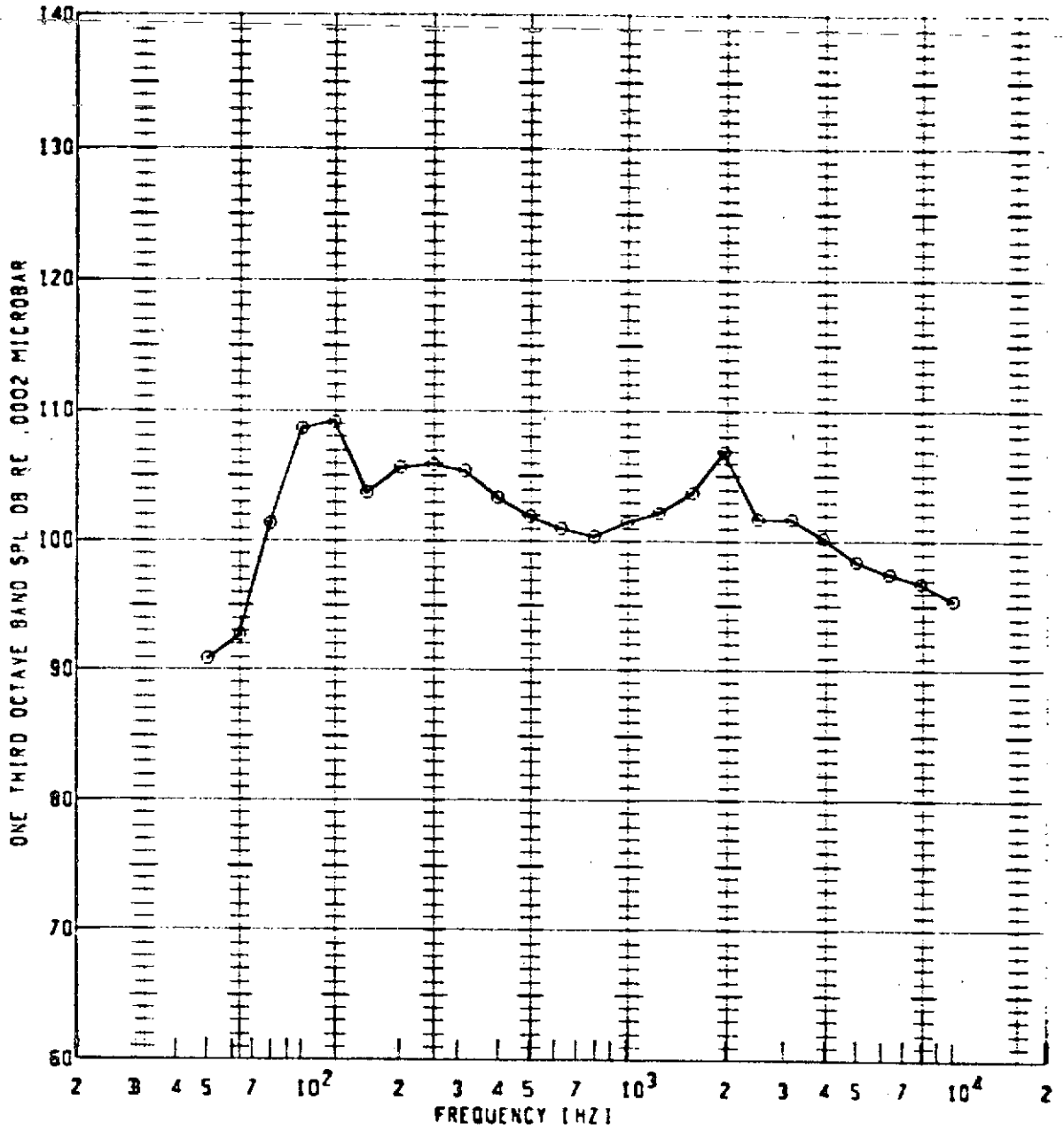
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | CASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 206        | 850      | 1.500          | 120            | 50FP              | 116.5      | 10           |            |

BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



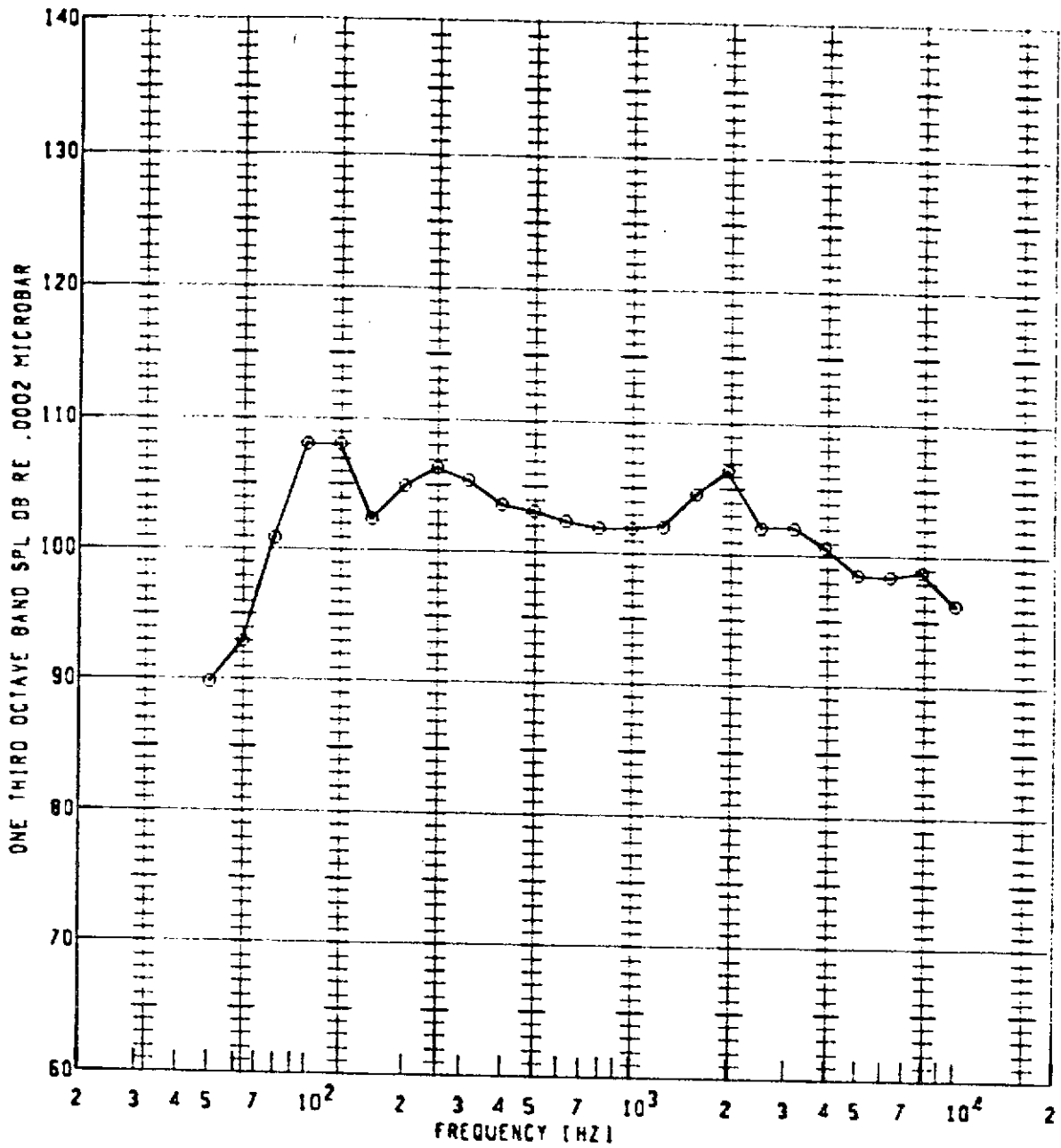
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL TO |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 200        | 850      | 1.500          | 125            | 50FP              | 117.1      | 0            |            |

BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



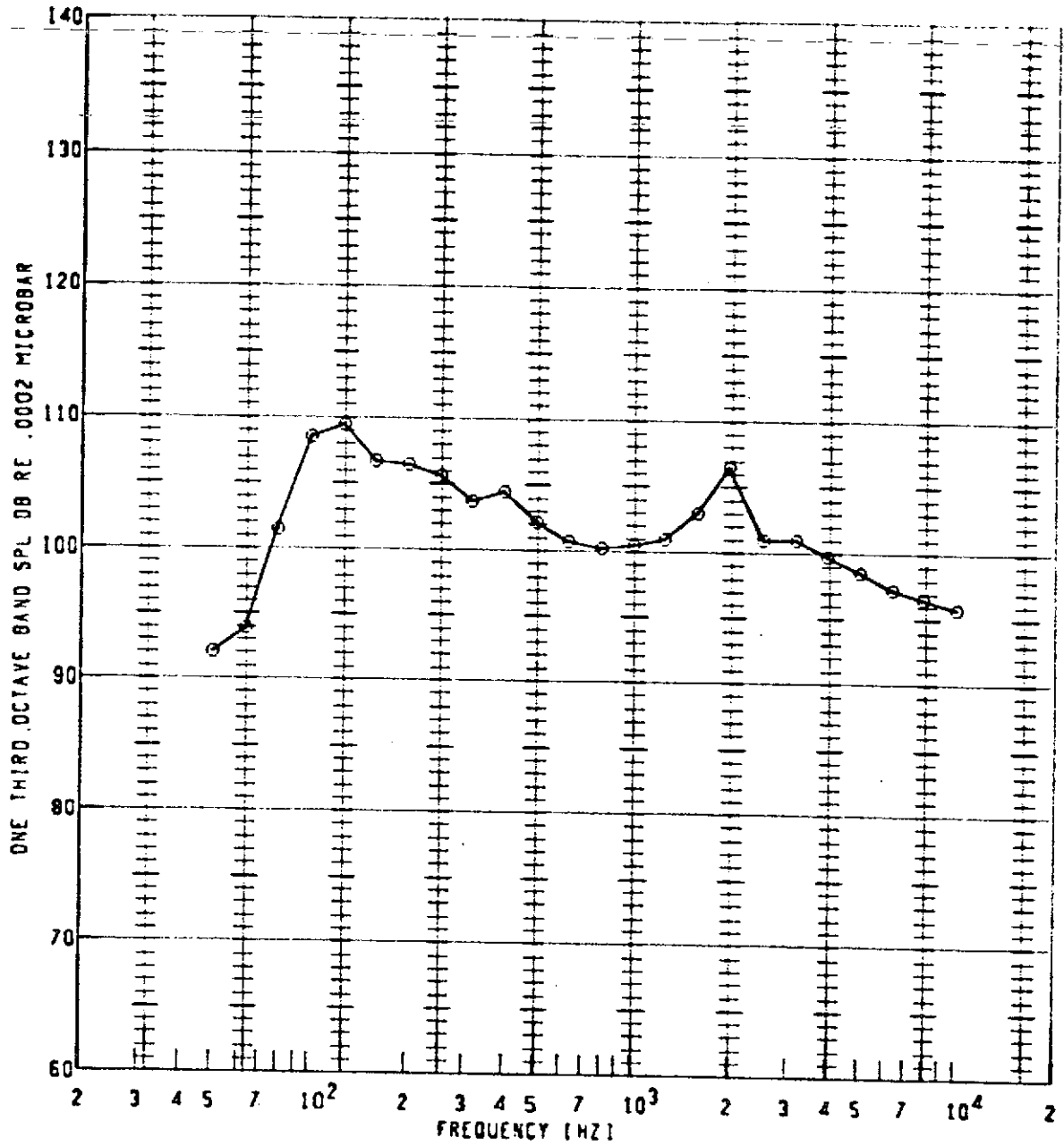
| PLGT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | CASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 206        | 850      | 1.500          | 135            | 50FP              | 117.3      | 10           |            |

BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



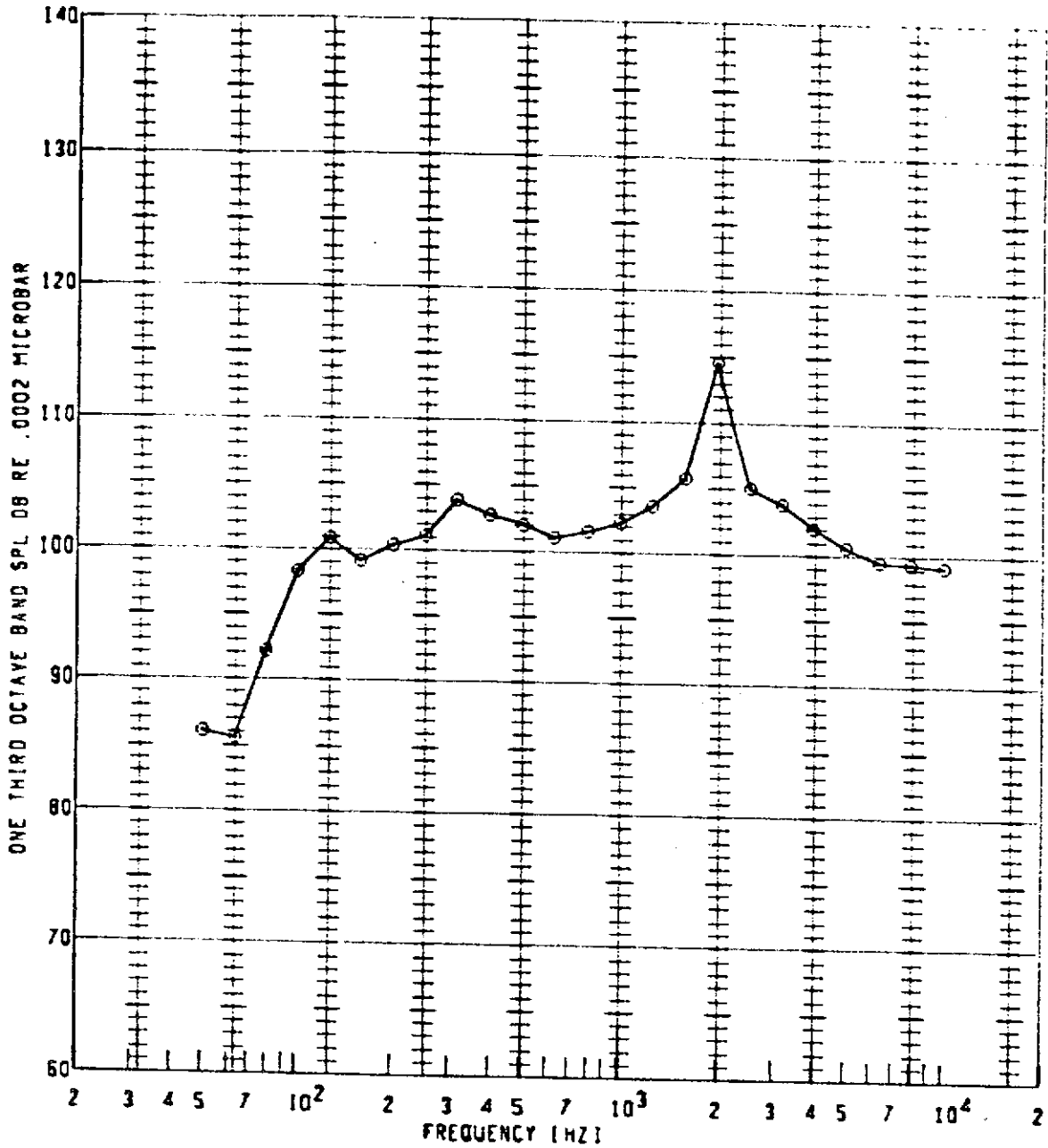
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 206        | 850      | 1.500          | 130            | 50FP              | 117.2      | 10           |            |

BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



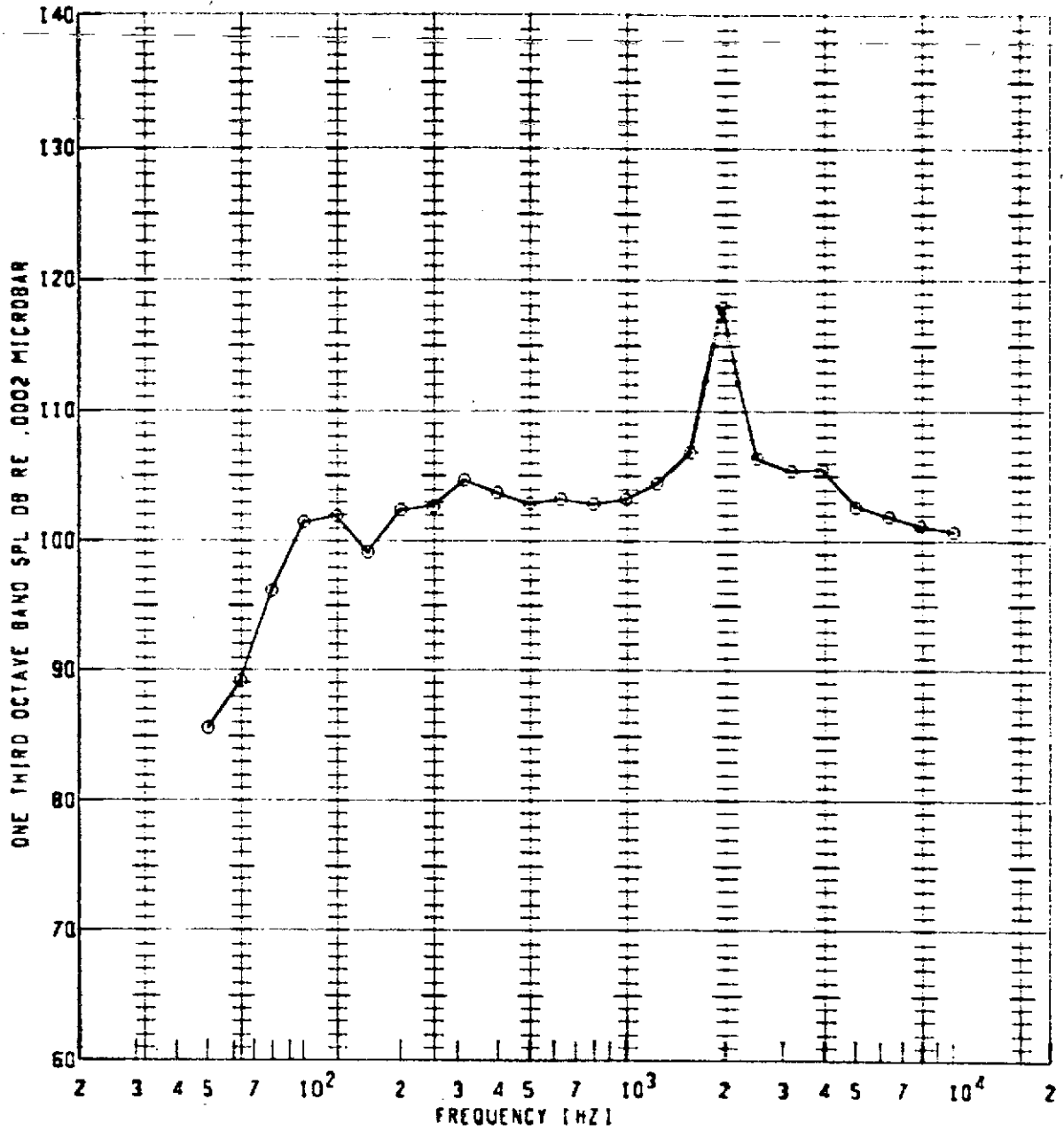
| SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL IO |
|--------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙      | 200        | 850      | 1.500          | 140            | 50FP              | 117.3      | 10           | 10         |

BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 206        | 900      | 1.600          | 90             | 50FP              | 117.9      | 0            |            |

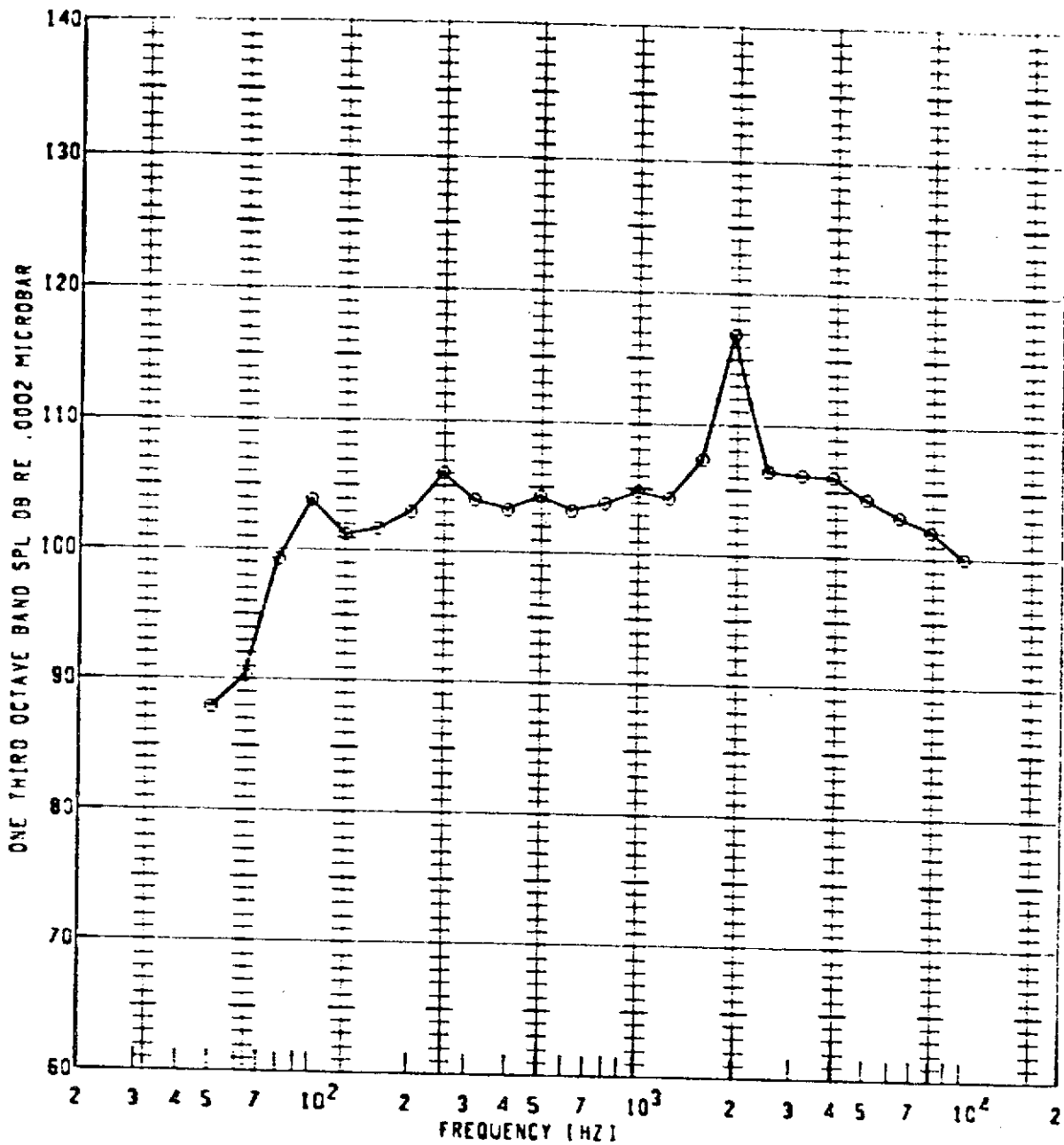
BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



| PLT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | CASPL | GAIN SETTING | SPECIAL ID |
|------------|------------|----------|----------------|----------------|-------------------|-------|--------------|------------|
| ⊙          | 200        | 900      | 1.600          | 100            | 50FP              | 120.3 | 0            |            |

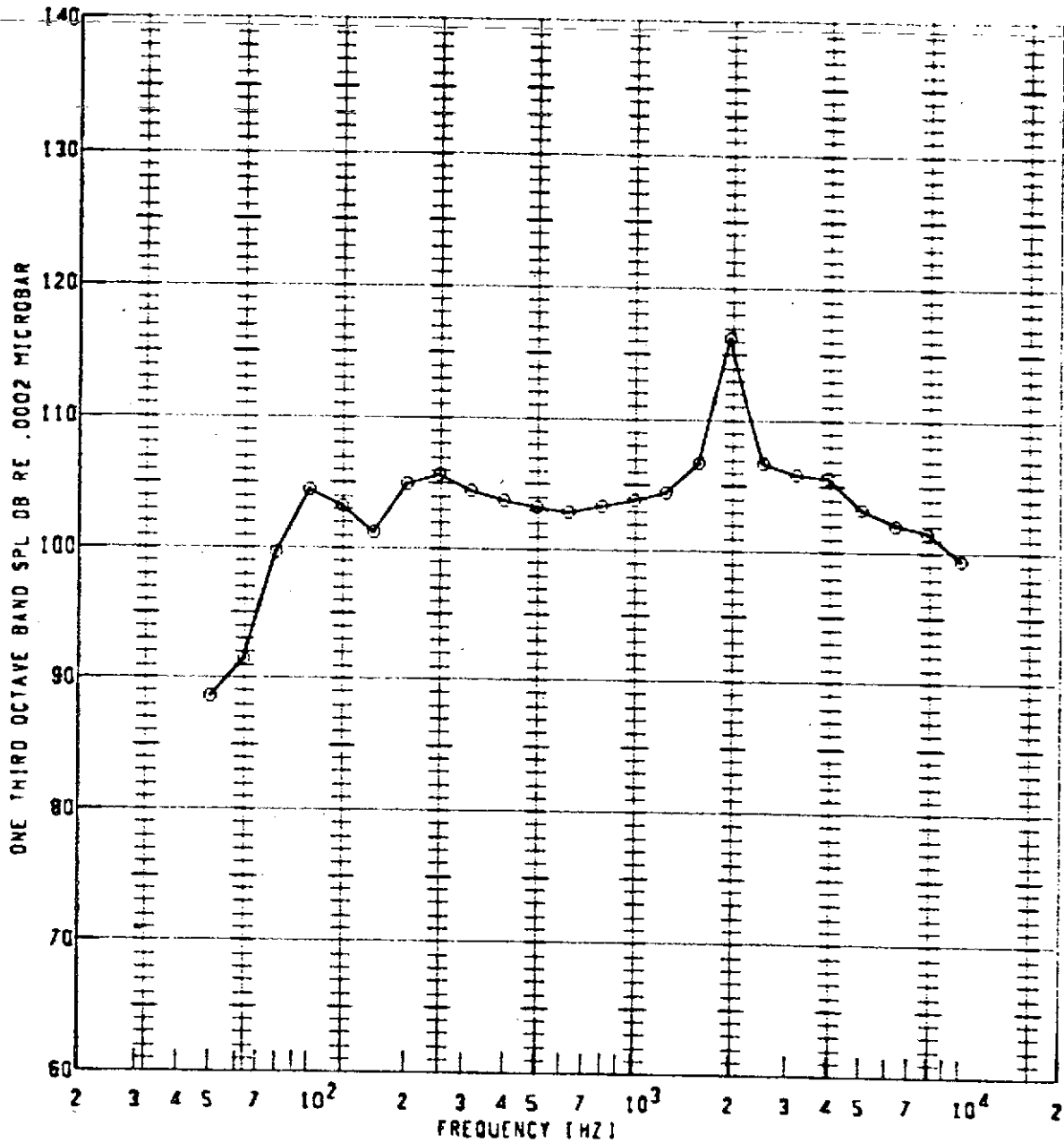


BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



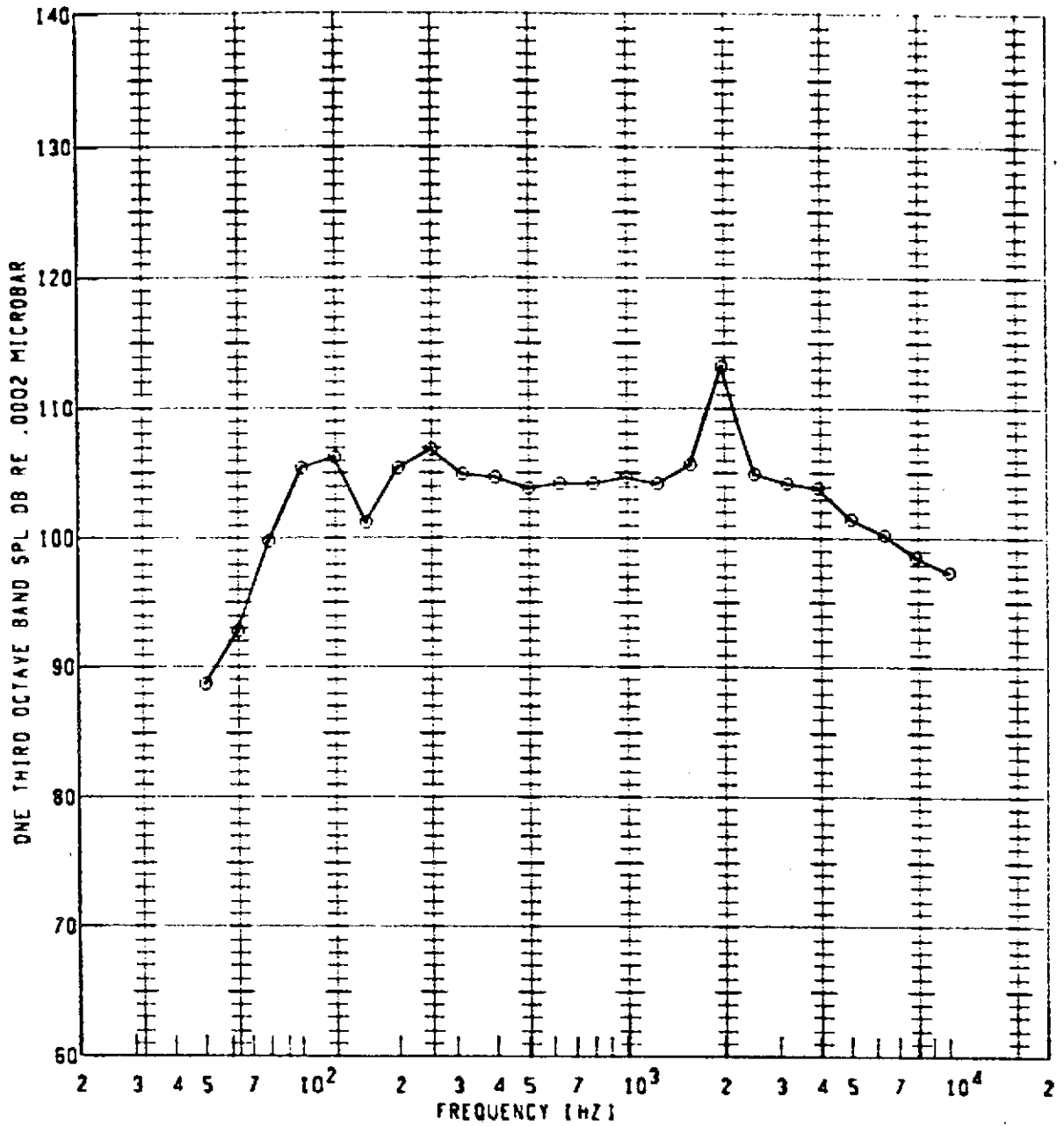
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|---------|
| ⊙           | 200        | 900      | 1.600          | 110            | 50FP              | 120.1      | 0            | 10      |

BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



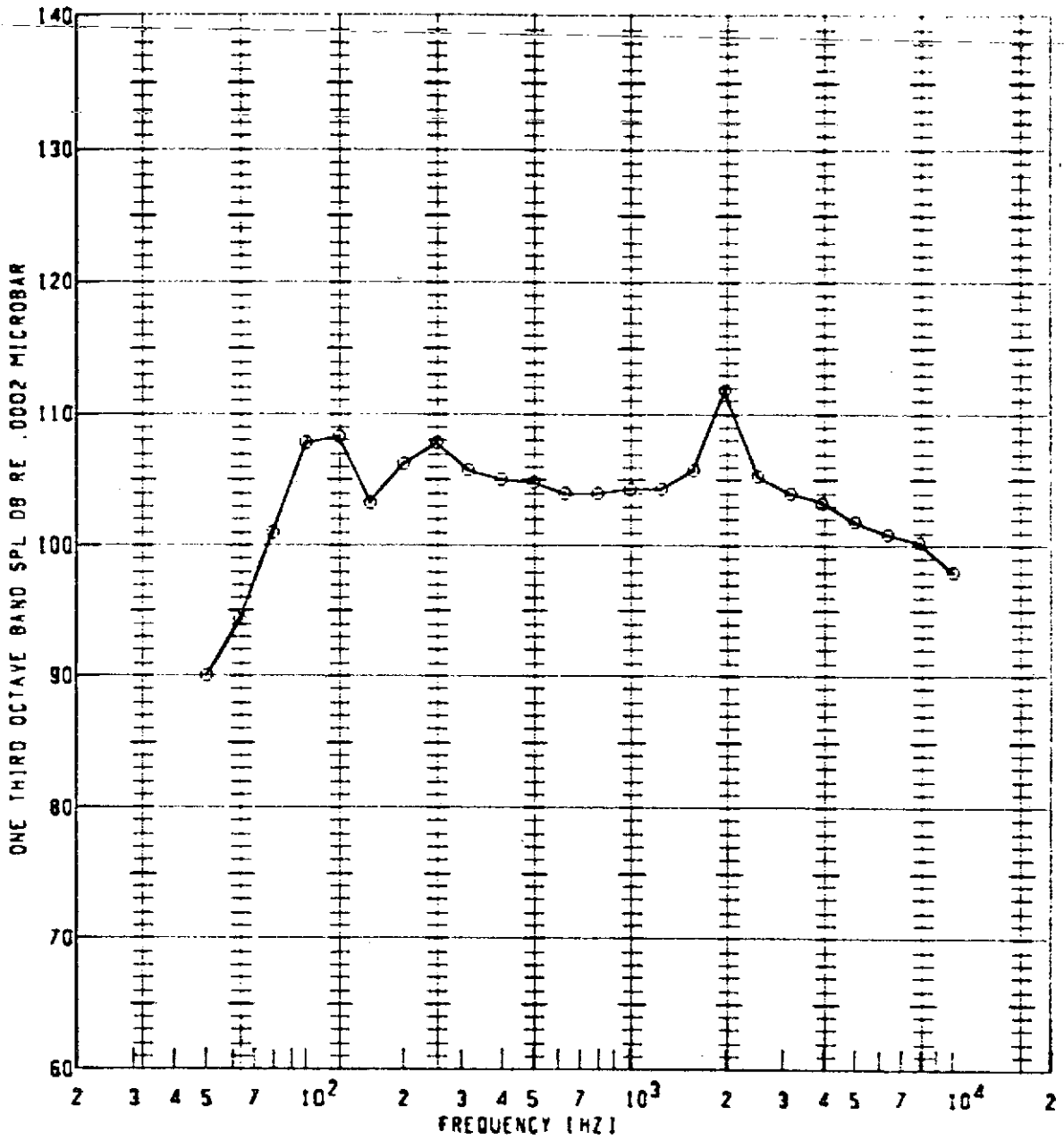
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OSPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|-----------|--------------|------------|
| ⊙           | 206        | 900      | 1.600          | 115            | SOFP              | 119.8     | 0            |            |

BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



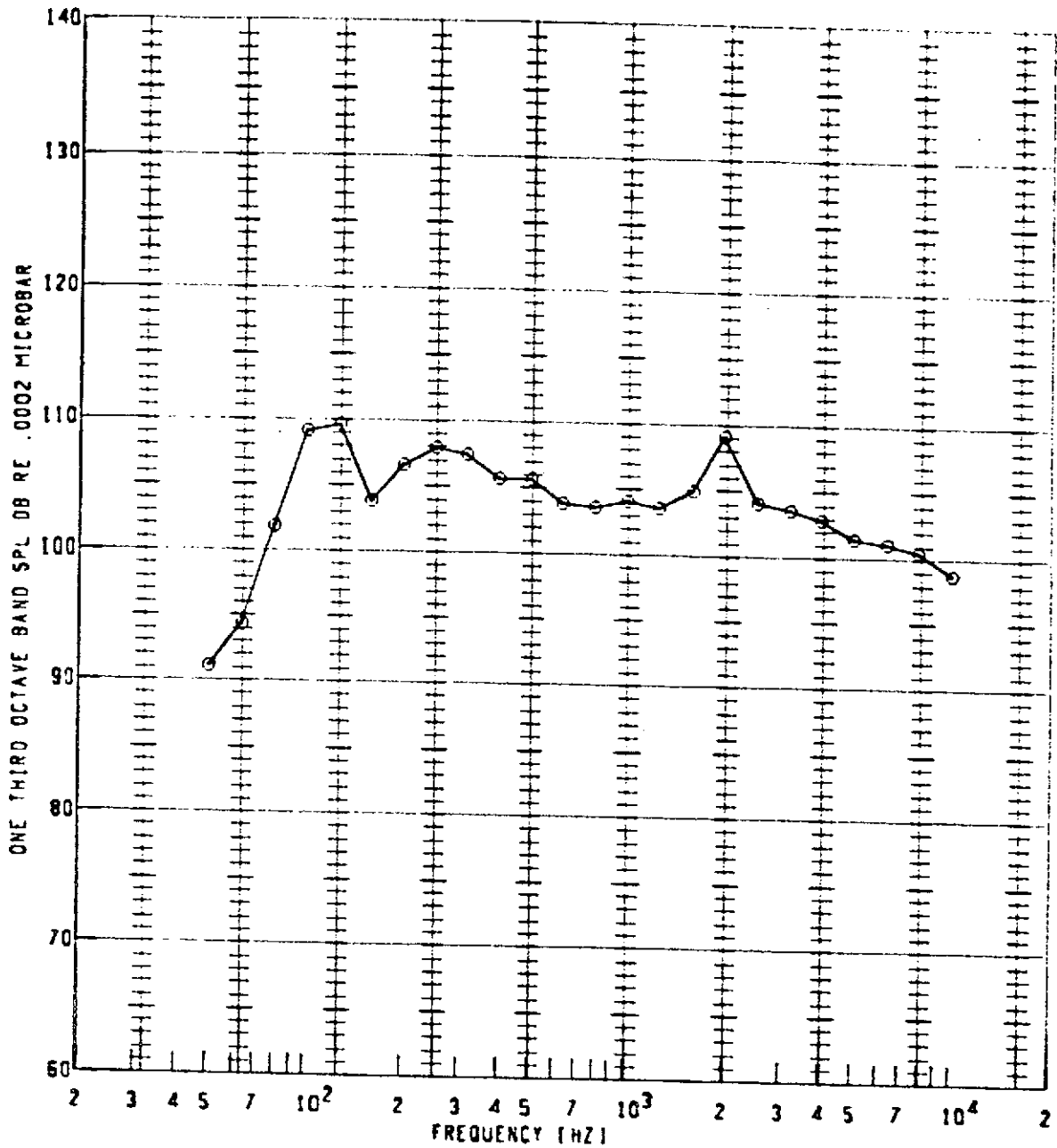
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | OASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ○           | 206        | 900      | 1.600          | 120            | 50FP              | 118.7      | 10           |            |

BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



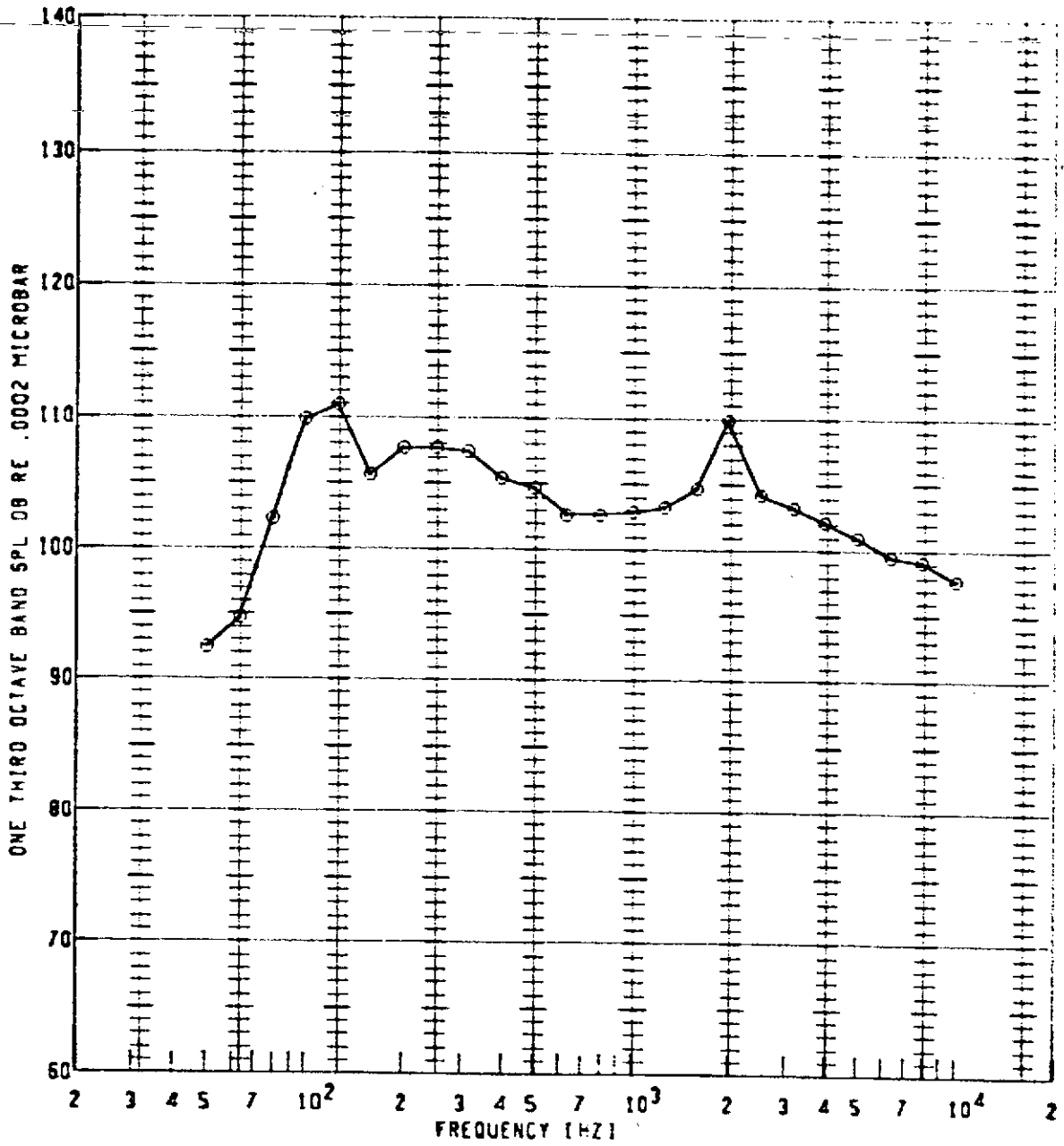
| SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|--------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ○      | 206        | 900      | 1.600          | 125            | 50FP              | 119.0      | 0            |            |

BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



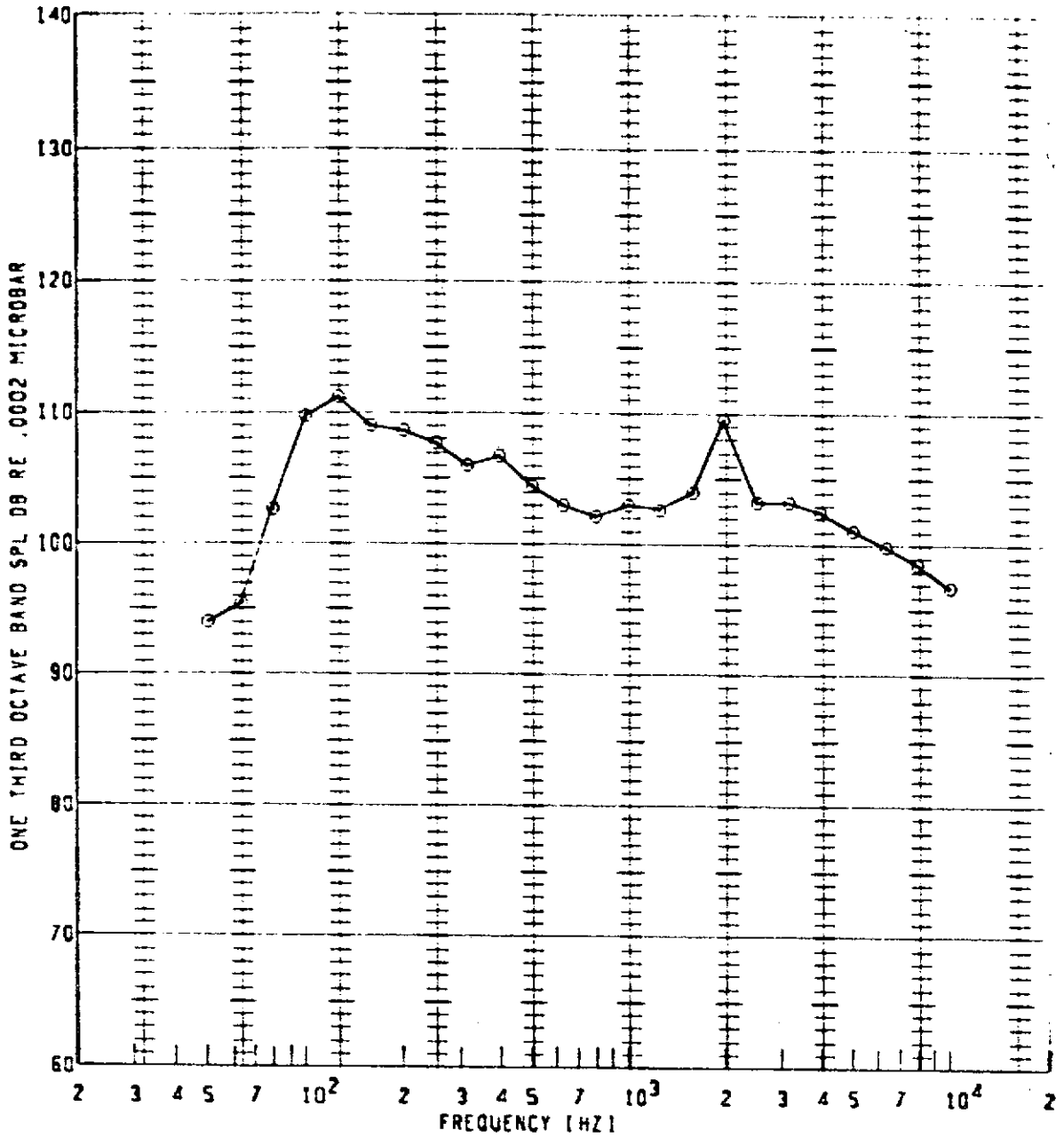
| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | QASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 206        | 900      | 1.600          | 130            | 50FP              | 118.9      | 0            | 13         |

BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



| Plot Symbol | Run Number | Jet Temp | Pressure Ratio | Angle Re Inlet | Observer Location | OSPL (dB) | Gain Setting | Special ID |
|-------------|------------|----------|----------------|----------------|-------------------|-----------|--------------|------------|
| ⊙           | 200        | 900      | 1.600          | 135            | 50FP              | 119.1     | 0            |            |

BUFFALO NOZZLE JET NOISE SUPPRESSION - HOT NOZZLE TEST FACILITY



| PLOT SYMBOL | RUN NUMBER | JET TEMP | PRESSURE RATIO | ANGLE RE INLET | OBSERVER LOCATION | CASPL (DB) | GAIN SETTING | SPECIAL ID |
|-------------|------------|----------|----------------|----------------|-------------------|------------|--------------|------------|
| ⊙           | 200        | 900      | 1.500          | 140            | 50FP              | 119.3      | 0            |            |

## APPENDIX D

### ACOUSTIC RECORDING AND REDUCTION SYSTEM

#### SYSTEM CALIBRATIONS

Two types of calibration are performed on the data acquisition system prior to recording test data. The first determines the frequency response of the microphone, preamplifier, cables, and signal conditioning equipment. This is performed before and after each test, using the electrostatic actuator method illustrated in figure D-1. The sweep oscillator frequency is referenced to an electronic counter, certified and calibrated by the Boeing Flight Test Laboratory. The laboratory maintains test standards, references, and equipment with calibration accuracy traceable to the U.S. Bureau of Standards. When the frequency response of the system relative to 250 Hz has been determined, corrections are computed for each one-third octave band and applied to the data during reduction to obtain true SPL in dB.

The second calibration is an end-to-end sensitivity check performed each day before and after a test. An acoustic pistonphone calibrator with a constant, known SPL at 250 Hz is applied to each microphone, and the calibrator signal recorded on magnetic tape. This reference is used during the data reduction process to determine system sensitivity. The device used, a Bruel & Kjaer model 4220 pistonphone, has a certification traceable to the U.S. Bureau of Standards through a secondary standard maintained by the Boeing Metrology Laboratory.

The tape recorder and reproducer is not included in frequency response calibrations performed in the field. The tape machines are tested and certified by the Boeing Flight Test Laboratory for a flat frequency response when operated in the FM mode. Response at 30 in./sec is flat from dc to 10 kHz.

#### DATA ACQUISITION PROCEDURES

The complete data acquisition system is shown in figure D-2. Microphones are placed in their windscreens in an inverted position over a smooth concrete surface with the diaphragm 1/2 in. above and parallel to the ground plane. The measurement point locations are shown in figure D-3 with respect to the nozzle exit plane.

Each microphone is calibrated to determine its sensitivity and then placed in the physical configuration that is to be used for data acquisition. The noise floor of each channel is then



determined and recordings made prior to the engine test runs. The noise floor of the B & K 1/2-in. microphone systems used for this test is on the order of 10 to 15 microvolts electrical output, equivalent to 32 to 37 dB SPL overall. The recorded noise floor, however, contains both electrical noise floor and acoustic ambient background noise. The latter usually dominates the noise floor recordings, particularly at frequencies below 1000 Hz.

Data recordings are made for 16 sec during a stabilized nozzle pressure ratio setting. The tape recorded sample includes voice identification and an IRIG 'B' time code reference on track 14. A written tape log includes:

- Run identification
- Gain settings used for recording each condition
- Time code at the start of the recording
- Equivalent SPL of the calibration signal
- Date, engineer, and serial numbers of recording equipment and microphones

#### ACOUSTIC DATA REDUCTION PROCEDURE

Acoustic data recorded on 14-track analog tape was reproduced and analyzed in one-third octave bands at Acoustic Laboratory facilities in Seattle. The basic analysis system, figure D-4, consists of an analog tape reproducer, General Radio model 1921 one-third octave analyzer, time code reader, PDP8-I computer, digital magnetic tape recorder, and associated monitor, control, interface, and peripheral service equipment.

The operator controls the analysis through a teletype keyboard, used for entering calibration, frequency response compensation, and measurement point identification information into the computer. The General Radio analyzer includes a bank of 24 one-third octave band filters, covering the frequency range of 50 to 10 kHz. The filters meet International Standard IEC 225 and USA Standard 51.11-1966 Class III requirements and are calibrated with both sine wave and random noise inputs. The true rms detector section of the analyzer has a dynamic range of 60 dB and a resolution of  $\pm 0.25$  dB. The square law response of the detector is verified by the "two sine wave" insert method per IEC 179, par. 8.5.

Frequency response compensation and sensitivity calibration information are added to the one-third octave band data in the computer and output on a digital magnetic tape in a format compatible with existing CDC-6600 computer software.

All components of the reduction system are periodically certified to manufacturer's specifications by the Boeing Flight Test Calibration Laboratory.

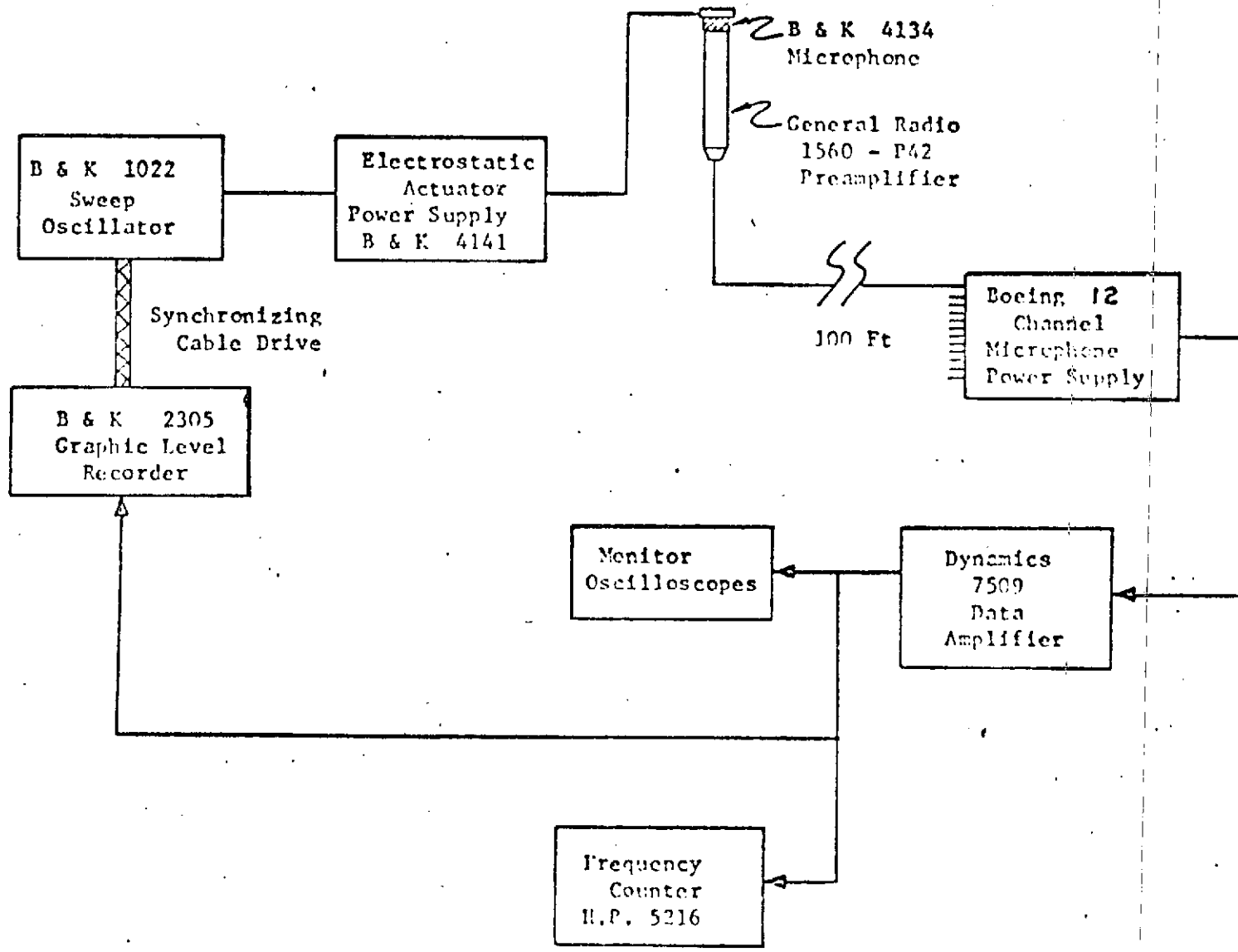


FIGURE D-1.—DATA ACQUISITION SYSTEM CALIBRATION SCHEMATIC

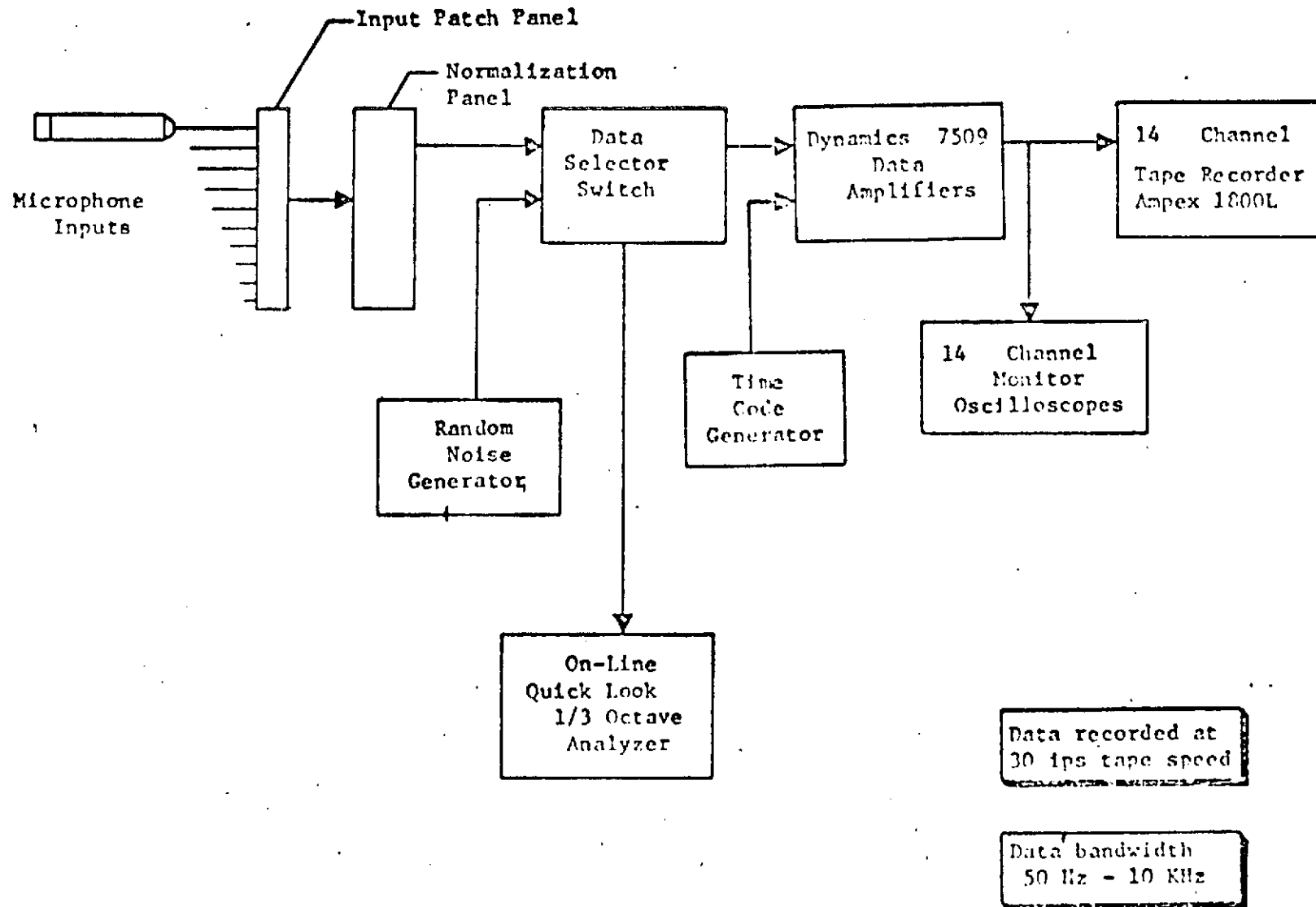


FIGURE D-2.—DATA ACQUISITION SYSTEM

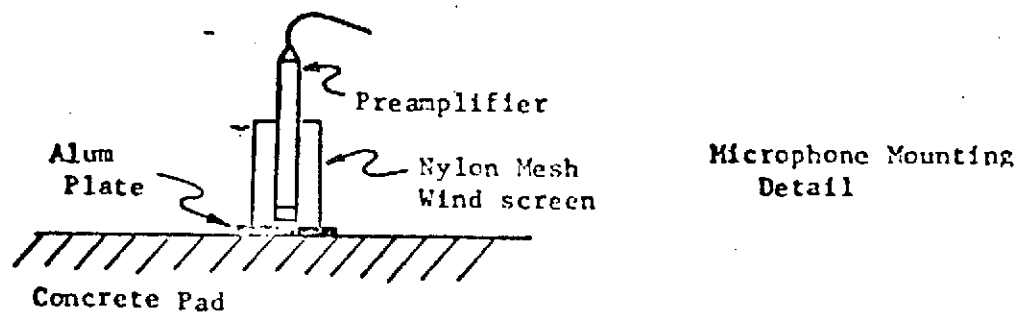
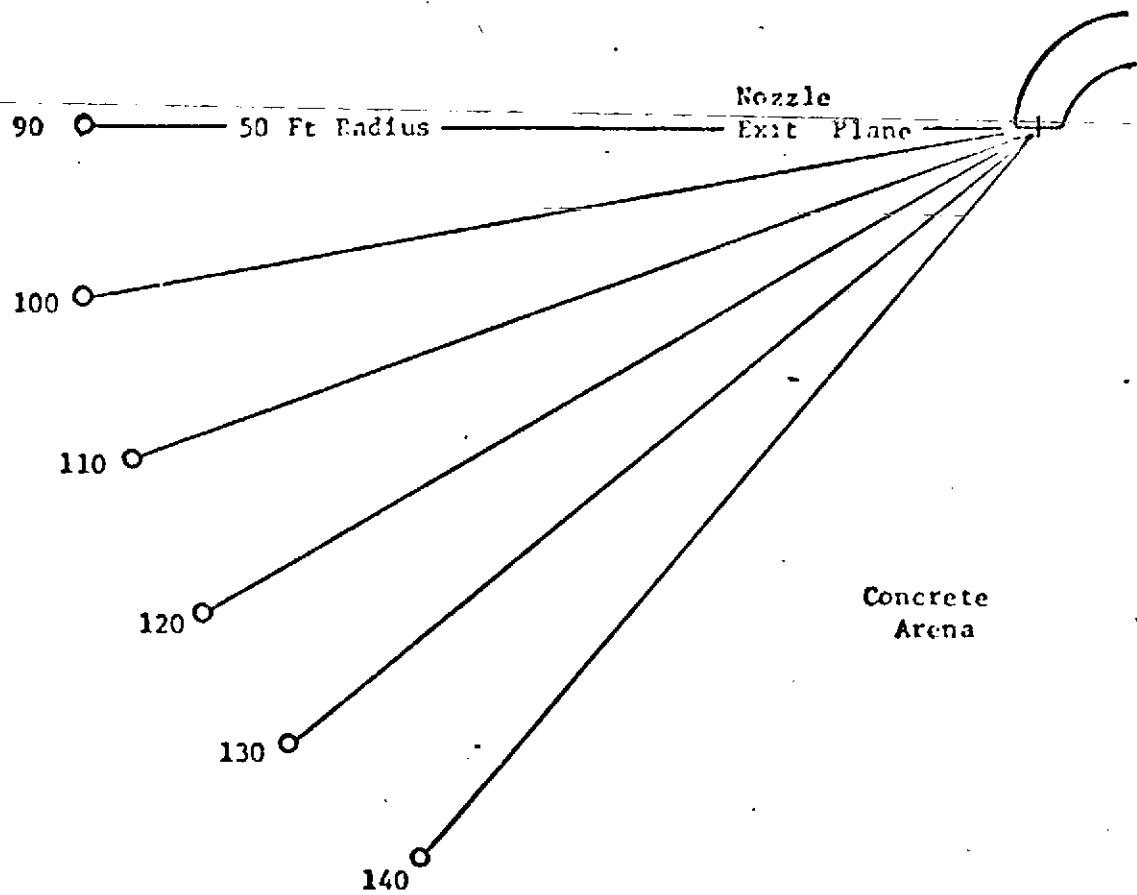


FIGURE D-3.—DATA ACQUISITION MICROPHONE ARRAY

REPRODUCIBILITY OF THE ORIGINAL PAGE IS POOR

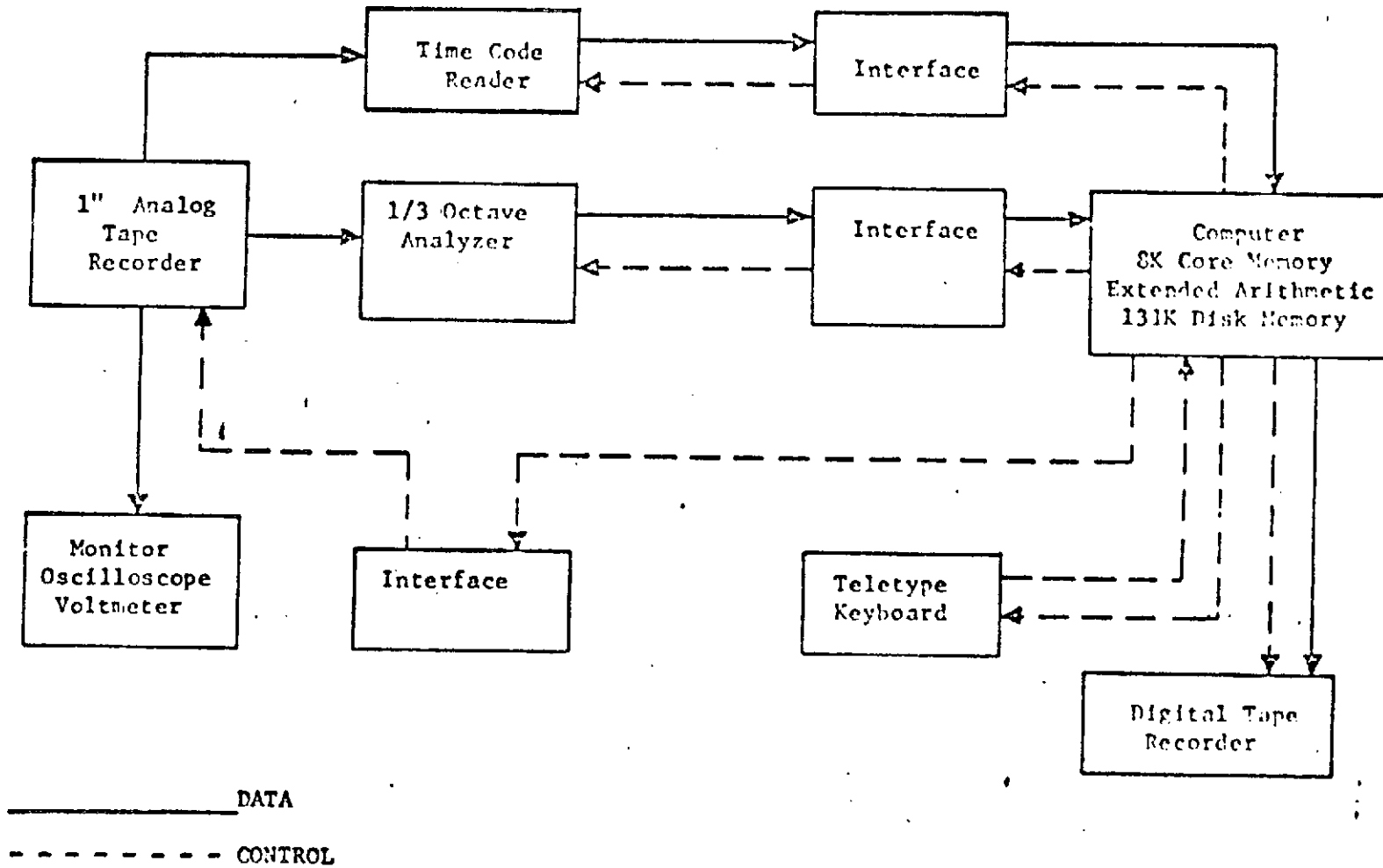


FIGURE D-4.—ACOUSTIC DATA REDUCTION SYSTEM

**APPENDIX E**  
**TABULATION OF PROPULSION**  
**PERFORMANCE DATA**

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### PERFORMANCE DATA OUTPUT NOMENCLATURE\*

|        |   |
|--------|---|
| APRI   | cold geometric nozzle exit area, in. <sup>2</sup>                                     |
| AEFF   | effective primary area (discharge coefficient X the geometric area), in. <sup>2</sup> |
| APRIH  | hot geometric area using a factor adjusted for the gas temperature, in. <sup>2</sup>  |
| APRIH2 | hot geometric area (cold geometric area adjusted by 2% for heat), in. <sup>2</sup>    |
| A*     | throat area of the sonic venturi, in. <sup>2</sup>                                    |
| P2     | sonic venturi throat static pressure, psia  |
| P1     | sonic venturi upstream static pressure, psia  |
| TT     | total temperature of airflow through venturi, °F                                      |
| PT     | sonic venturi upstream total pressure, psia   |
| Gamma  | specific heat ratio of air flowing through venturi                                    |
| Z      | compressibility factor based on venturi conditions                                    |
| REYN   | flow Reynolds number at venturi   |
| CD     | sonic venturi discharge coefficient   |
| WA     | measured airflow rate, lb <sub>f</sub> /sec   |
| W-Fuel | burner fuel flow rate, lb <sub>f</sub> /sec   |
| PTARE  | rig static tare pressure used for force measurement tare adjustment, psig             |
| FTARE  | force measurement tare adjustment due to rig static pressure, lb <sub>f</sub>         |

\*Listed in sequence encountered in following computer printout.

|          |   |
|----------|---|
| FX       | measured nozzle thrust, $lb_f$  |
| FCOR     | measured nozzle thrust corrected for ambient pressure, $lb_f$                     |
| FIP      | isentropic thrust, $lb_f$   |
| FIDL     | not used  |
| PTN      | average split flow plenum entrance total pressure ( $P_{T1}$ in test plan), psia  |
| TTN      | average split flow plenum entrance total temperature ( $T_{T1}$ in test plan), °F |
| PTE      | average nozzle exit total pressure ( $P_{T2}$ in test plan), psia                 |
| PTN/PAMB | average split flow plenum entrance total pressure ratio                           |
| TTN/TAMB | average split flow plenum entrance total temperature ratio                        |
| WPRI     | measured airflow plus fuel flow, $lb_f/sec$                                       |
| WCOR     | flow rate corrected to standard temperature and pressure                          |
| WSUM     | not used  |
| WIP      | isentropic flow rate based on cold geometric area ( $A_{pri}$ ), $lb_f/sec$       |
| WIPH     | isentropic flow rate based on APRIH, $lb_f/sec$                                   |
| WIPH2    | isentropic flow rate based on APRIH2, $lb_f/sec$                                  |
| VIP      | isentropic velocity based on $P_{TN}/P_{AMB}$                                     |
| GAMMAP   | specific heat ratio based on TTN  |
| ZP       | compressibility factor based on test nozzle conditions                            |
| CDP      | nozzle discharge coefficient based on $P_{TN}/P_{AMB}$ and $A_{pri}$              |
| CDPH     | nozzle discharge coefficient based on $P_{TN}/P_{AMB}$ and APRIH                  |



|          |  |
|----------|--|
| CDPH2    | nozzle discharge coefficient based on $P_{TN}/P_{AMB}$ and APRIH2  |
| CVP      | nozzle velocity coefficient based on $P_{TN}/P_{AMB}$              |
| $C_V$    | same as CVP  |
| CGP      | nozzle thrust coefficient based on $P_{TN}/P_{AMB}$ and APRI       |
| CGPH     | nozzle thrust coefficient based on $P_{TN}/P_{AMB}$ and APRIH      |
| CGPH2    | nozzle thrust coefficient based on $P_{TN}/P_{AMB}$ and APRIH2     |
| CDPE     | nozzle discharge coefficient based on $P_{TNE}/P_{AMB}$ and APRI   |
| CDPEH2** | nozzle discharge coefficient based on $P_{TNE}/P_{AMB}$ and APRIH2 |
| CVPE**   | nozzle velocity coefficient based on $P_{TNE}/P_{AMB}$             |
| WIPE     | isentropic airflow rate based on $P_{TNE}/P_{AMB}$ and APRI        |
| WIPEH    | isentropic airflow rate based on $P_{TNE}/P_{AMB}$ and APRIH       |
| VIPE     | isentropic jet velocity based on $P_{TNE}/P_{AMB}$                 |
| GAMMAPE  | specific heat ratio based on nozzle exit conditions                |
| ZPE      | compressibility factor based on nozzle exit conditions             |
| VE1      | not used   |
| VE2      | not used   |

\*\*Used in final performance data in figures 9 and 30.

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HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR  
NOZZLE NOISE TONE SOURCE IDENTIFICATION  
TEST 23991F - HNTF

INPUT DATA

| RUN | COND | DATE   | TEST NO | FAMB   | TAMB  | APRI   | AEFF   | APRIH  | 1.02 APRI |
|-----|------|--------|---------|--------|-------|--------|--------|--------|-----------|
| 13. | 1.   | 11074. | 2399.   | 14.802 | 34.20 | 92.400 | 81.858 | 92.299 | 94.248    |

PRIMARY FLOW DATA

| A#     | P2     | P1      | TT     | PT      | GAMMA  | Z     | REYN      | CD    | WA      | W-FUEL |
|--------|--------|---------|--------|---------|--------|-------|-----------|-------|---------|--------|
| 8.5519 | 59.642 | 124.678 | 35.980 | 125.514 | 1.4194 | .9954 | 12034283. | .9939 | 25.6599 | .0000  |

| PTARE  | FTARE | FX      | FCOR    | FIP     | FIDL    | PTN    | TTN    | PTE    |
|--------|-------|---------|---------|---------|---------|--------|--------|--------|
| 25.640 | .385  | 363.693 | 361.066 | 421.371 | 421.371 | 17.539 | 31.633 | 17.107 |

| PTN/FAMB | TTN/TAMB | WPRI   | WCOR   | WSUM   | WIP    | WPH    | WPH2   | VIP     | GAMMAP | ZP    |
|----------|----------|--------|--------|--------|--------|--------|--------|---------|--------|-------|
| 1.185    | .995     | 25.660 | 20.925 | 25.660 | 28.964 | 28.933 | 29.544 | 528.341 | 1.4028 | .9993 |

| ODP   | ODPH  | ODPH2 | CVF   | CV    | CGF   | CGPH  | CGPH2 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| .8859 | .8869 | .8685 | .8631 | .8631 | .7646 | .7655 | .7497 |

| ODPE  | ODPH2 | CVPE  | WIFE   | WIFEH  | VIPE    | GAMMAPE | ZPE   | VE1  | VE2  |
|-------|-------|-------|--------|--------|---------|---------|-------|------|------|
| .9644 | .9455 | .9329 | 26.617 | 27.139 | 488.837 | 1.4027  | .9993 | .000 | .000 |

PRIMARY NOZZLE TOTAL PRESSURES

1) 17.140 2) 17.599 3) 17.909 4) 17.739 5) 17.080 6) 17.340 7) 17.699 8) 17.809

PRIMARY NOZZLE TOTAL TEMPERATURES

1) 32.100 2) \*\*\*\*\* 3) \*\*\*\*\* 4) 31.900 5) 31.050 6) 31.950 7) \*\*\*\*\* 8) \*\*\*\*\* 9) 31.890 10) 30.950

NOZZLE EXIT TOTAL PRESSURES - PTNE

1) 17.360 2) 17.380 3) 17.230 4) 17.080  
5) 16.490 6) 16.970 7) 17.130 8) 17.210

NOZZLE STATIC PRESSURES - PSNE

1) \*\*\*\*\* 2) \*\*\*\*\*

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## HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR  
NOZZLE NOISE TONE SOURCE IDENTIFICATION  
TEST 2399TF - HNTF

## INPUT DATA

| RUN | COND | DATE   | TEST NO | FAMB   | TAMB  | APR1   | AEFF   | APR1H  | 1.02 APR1        |
|-----|------|--------|---------|--------|-------|--------|--------|--------|------------------|
| 13. | 2.   | 11074. | 2399.   | 14.602 | 34.20 | 92.400 | 82.716 | 92.276 | APR1H2<br>94.248 |

## PRIMARY FLOW DATA

| A*     | P2     | P1      | TT     | PT      | GAMMA  | Z     | REYN      | CD    | WA      | W-FUEL |
|--------|--------|---------|--------|---------|--------|-------|-----------|-------|---------|--------|
| 6.5519 | 75.032 | 156.851 | 37.320 | 157.903 | 1.4242 | .9944 | 15135950. | .9940 | 32.2974 | .0000  |

| PTARE  | FTARE | FX      | FCOR    | FIP     | FIDL    | PTN    | TTN    | FTE    |
|--------|-------|---------|---------|---------|---------|--------|--------|--------|
| 35.700 | .535  | 562.188 | 558.159 | 644.416 | 644.416 | 19.077 | 31.317 | 18.436 |

| PTN/FAMB | TTN/TAMB | WFR1   | WCCR   | WSUM   | WIF    | WIPH   | WIPH2  | VIF     | GAMMAP | ZF    |
|----------|----------|--------|--------|--------|--------|--------|--------|---------|--------|-------|
| 1.269    | .994     | 32.297 | 24.208 | 32.297 | 36.079 | 36.030 | 36.800 | 641.955 | 1.4030 | .9993 |

| CDP   | CDPH  | CDPH2 | CVF   | CV    | CGF   | CGPH  | CGPH2 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| .8952 | .8964 | .8776 | .8724 | .8724 | .7810 | .7820 | .7657 |

| CDPE  | CDPH2 | CVFE  | WIFE   | WIFPH  | VIFE    | GAMMAPE | ZFE   | VE1  | VE2  |
|-------|-------|-------|--------|--------|---------|---------|-------|------|------|
| .9695 | .9505 | .9355 | 33.314 | 33.981 | 598.637 | 1.4029  | .9993 | .000 | .000 |

## PRIMARY NOZZLE TOTAL PRESSURES

1) 18.728 2) 19.647 3) 19.857 4) 19.368 5) 18.438 6) 18.508 7) 18.888 8) 19.178

## PRIMARY NOZZLE TOTAL TEMPERATURES

1) 32.350 2) \*\*\*\*\* 3) \*\*\*\*\* 4) 31.250 5) 30.500 6) 32.000 7) \*\*\*\*\* 8) \*\*\*\*\* 9) 31.150 10) 30.650

## NOZZLE EXIT TOTAL PRESSURES - PTNE

1) 18.898 2) 18.818 3) 18.588 4) 18.408  
5) 17.569 6) 18.199 7) 18.399 8) 18.588

## NOZZLE STATIC PRESSURES - PSNE

1) \*\*\*\*\* 2) \*\*\*\*\*

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HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR  
NOZZLE NOISE TONE SOURCE IDENTIFICATION  
TEST 2399TF - HNTF

INPUT DATA

| RUN | COND | DATE   | TEST NO | PAMB   | TAMB  | AFR1   | AEFF   | AFR1H  | 1.02 AFR1 |
|-----|------|--------|---------|--------|-------|--------|--------|--------|-----------|
| 13. | 3.   | 11074. | 2399.   | 14.802 | 34.20 | 92.400 | 82.791 | 92.257 | 94.248    |

PRIMARY FLOW DATA

| A*     | P2     | P1      | TT     | PT      | GAMMA  | Z     | REYN      | CD    | WA      | W-FUEL |
|--------|--------|---------|--------|---------|--------|-------|-----------|-------|---------|--------|
| 8.5519 | 86.822 | 181.275 | 38.360 | 182.491 | 1.4279 | .9936 | 17487728. | .9941 | 37.3386 | .0000  |

| FTARE  | FTARE | FX      | FCOR    | FIP     | FIDL    | FTN    | TTN    | FTE    |
|--------|-------|---------|---------|---------|---------|--------|--------|--------|
| 43.690 | .655  | 740.779 | 735.469 | 842.132 | 842.132 | 20.541 | 31.230 | 19.707 |

| PTN/PAMB | TTN/TAMB | WFR1   | WGOR   | WSUM   | WIP    | WIFH   | WIFH2  | VIF     | GAMMAP | ZF    |
|----------|----------|--------|--------|--------|--------|--------|--------|---------|--------|-------|
| 1.388    | .994     | 37.339 | 25.988 | 37.339 | 41.672 | 41.608 | 42.506 | 725.690 | 1.4033 | .9992 |

| COF   | COFH  | COFH2 | CVF   | CV    | CGF   | CGFH  | CGFH2 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| .8900 | .8974 | .8784 | .8796 | .8796 | .7882 | .7894 | .7727 |

| COFE  | COFEH2 | CVFE  | WIFE   | WIFEH  | VIFE    | GAMMAPE | ZFE   | VE1  | VE2  |
|-------|--------|-------|--------|--------|---------|---------|-------|------|------|
| .9674 | .9484  | .9384 | 38.598 | 39.370 | 680.201 | 1.4031  | .9992 | .000 | .000 |

PRIMARY NOZZLE TOTAL PRESSURES

1) 19.877 2) 20.796 3) 21.266 4) 20.766 5) 19.717 6) 20.167 7) 20.826 8) 20.916

PRIMARY NOZZLE TOTAL TEMPERATURES

1) 30.950 2) \*\*\*\*\* 3) \*\*\*\*\* 4) 31.800 5) 30.300 6) 31.250 7) \*\*\*\*\* 8) \*\*\*\*\* 9) 32.100 10) 30.800

NOZZLE EXIT TOTAL PRESSURES - FTNE

1) 20.307 2) 20.227 3) 19.897 4) 19.637  
5) 18.518 6) 19.487 7) 19.747 8) 19.637

NOZZLE STATIC PRESSURES - PSNE

1) \*\*\*\*\* 2) \*\*\*\*\*

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## HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR  
NOZZLE NOISE TONE SOURCE IDENTIFICATION  
TEST 2399TF - HNTF

## INPUT DATA

| RUN | COND | DATE   | TEST NO | FAMB   | TAMB  | APRI   | AEFF   | APR1H  | 1.02 APRI |
|-----|------|--------|---------|--------|-------|--------|--------|--------|-----------|
| 13. | 4.   | 11074. | 2399.   | 14.802 | 34.25 | 92.400 | 83.264 | 92.240 | 94.248    |

## PRIMARY FLOW DATA

| A*       | P2       | P1      | TT      | FT       | GAMMA    | Z       | REYN      | CD      | WA      | W-FUEL |
|----------|----------|---------|---------|----------|----------|---------|-----------|---------|---------|--------|
| 0.5519   | 97.532   | 203.517 | 38.880  | 204.881  | 1.4312   | .9930   | 19651250. | .9943   | 41.9506 | .0000  |
| PTARE    | FTARE    | FX      | FCOR    | FIP      | FIDL     | FTN     | TTN       | FTC     |         |        |
| 30.260   | .754     | 917.706 | 911.128 | 1035.853 | 1035.853 | 22.010  | 31.083    | 21.016  |         |        |
| PTN/FAMB | TTN/TAMB | WFR1    | WOCR    | WSUM     | WIF      | WIPH    | WIPH2     | VIF     | GAMMAP  | ZP     |
| 1.487    | .994     | 41.951  | 27.246  | 41.951   | 46.554   | 46.473  | 47.485    | 734.448 | 1.4035  | .9991  |
| CDP      | CDPH     | CDPH2   | CVF     | CV       | CGF      | CGPH    | CGPH2     |         |         |        |
| .9011    | .9027    | .8835   | .8859   | .8859    | .7983    | .7997   | .7827     |         |         |        |
| CDPE     | CDPH2    | CVPE    | WIPE    | WIPH     | VIPE     | GAMMAPE | ZPE       | VE1     | VE2     |        |
| .9684    | .9494    | .9394   | 43.320  | 44.186   | 749.203  | 1.4033  | .9992     | .000    | .000    |        |

## PRIMARY NOZZLE TOTAL PRESSURES

1) 21.166 2) 22.385 3) 23.114 4) 22.474 5) 20.896 6) 21.396 7) 22.105 8) 22.544

## PRIMARY NOZZLE TOTAL TEMPERATURES

1) 31.000 2) \*\*\*\*\* 3) \*\*\*\*\* 4) 32.000 5) 30.000 6) 32.000 7) \*\*\*\*\* 8) \*\*\*\*\* 9) 31.500 10) 30.000

## NOZZLE EXIT TOTAL PRESSURES - PTNE

1) 21.645 2) 21.665 3) 21.256 4) 20.986  
5) 19.667 6) 20.696 7) 20.996 8) 21.216

## NOZZLE STATIC PRESSURES - PSNE

1) \*\*\*\*\* 2) \*\*\*\*\*

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HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR

NOZZLE NOISE TONE SOURCE IDENTIFICATION

TEST 2399TP - MNTF

| RUN | COND | FTN/PAMB | TTN/TAMB | CDP   | CDPH  | CVP   | CV    | CGP   | CGPH  | APR1H  |
|-----|------|----------|----------|-------|-------|-------|-------|-------|-------|--------|
| 13. | 1.   | 1.185    | .995     | .8859 | .8869 | .8631 | .8631 | .7646 | .7655 | 92.299 |
| 13. | 2.   | 1.289    | .994     | .8952 | .8964 | .8724 | .8724 | .7810 | .7820 | 92.276 |
| 13. | 3.   | 1.388    | .994     | .8960 | .8974 | .8796 | .8796 | .7882 | .7894 | 92.257 |
| 13. | 4.   | 1.487    | .994     | .9011 | .9027 | .8859 | .8859 | .7983 | .7997 | 92.240 |

| CDPH2 | CGPH2 | CDPE  | CDPEH2 | CVPE  | APR1H2 |
|-------|-------|-------|--------|-------|--------|
| .8685 | .7497 | .9644 | .9455  | .9329 | 94.248 |
| .8776 | .7657 | .9695 | .9505  | .9355 | 94.248 |
| .8784 | .7727 | .9674 | .9484  | .9384 | 94.248 |
| .8835 | .7827 | .9684 | .9494  | .9394 | 94.248 |

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## HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR  
NOZZLE NOISE TONE SOURCE IDENTIFICATION  
TEST 2399TF - HNTF

## INPUT DATA

| RUN | COND | DATE   | TEST NO | PAMB   | TAMB  | APRI   | AEFF   | APRIH  | 1.02 APRI |
|-----|------|--------|---------|--------|-------|--------|--------|--------|-----------|
| 14. | 1.   | 11074. | 2399.   | 14.800 | 34.25 | 92.400 | 82.218 | 93.594 | 94.248    |

## PRIMARY FLOW DATA

| A*     | P2     | P1     | TT     | PT     | GAMMA  | Z     | REYN     | CD    | WA      | W-FUEL |
|--------|--------|--------|--------|--------|--------|-------|----------|-------|---------|--------|
| 8.5519 | 38.110 | 79.705 | 34.750 | 80.239 | 1.4125 | .9970 | 7681411. | .9937 | 16.3604 | .0167  |

| PTARE  | FTARE | FX      | FCOR    | FIP     | FIDL    | FTN    | TTN     | PTE    |
|--------|-------|---------|---------|---------|---------|--------|---------|--------|
| 19.490 | .292  | 360.048 | 357.515 | 413.367 | 413.367 | 17.474 | 719.250 | 17.038 |

| FTN/PAMB | TTN/TAMB | WFR1   | WCOR   | WSUM   | WIF    | WIFH   | WIFH2  | VIF     | GAMMAP | ZP     |
|----------|----------|--------|--------|--------|--------|--------|--------|---------|--------|--------|
| 1.181    | 2.387    | 16.397 | 20.791 | 16.397 | 18.428 | 18.666 | 18.796 | 811.099 | 1.3716 | 1.0010 |

| CDP   | CDPH  | CDPH2 | CVP   | CV    | CGP   | CGPH  | CGPH2 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| .8898 | .8785 | .8724 | .8710 | .8710 | .7750 | .7651 | .7598 |

| CDPE  | CDPEH2 | CVPE  | WIFE   | WIFEH  | VIFE    | GAMMAPE | ZPE    | VE1  | VE2  |
|-------|--------|-------|--------|--------|---------|---------|--------|------|------|
| .9713 | .9523  | .9443 | 16.881 | 17.219 | 748.148 | 1.3712  | 1.0010 | .000 | .000 |

## PRIMARY NOZZLE TOTAL PRESSURES

1) 16.818 2) 17.457 3) 18.087 4) 17.937 5) 16.798 6) 16.928 7) 17.457 8) 18.307

## PRIMARY NOZZLE TOTAL TEMPERATURES

1) 729.400 2) \*\*\*\*\* 3) \*\*\*\*\* 4) 720.000 5) 707.000 6) 729.800 7) \*\*\*\*\* 8) \*\*\*\*\* 9) 720.500 10) 708.800

## NOZZLE EXIT TOTAL PRESSURES - PTNE

1) 17.328 2) 17.368 3) 17.188 4) 17.008  
5) 16.309 6) 16.858 7) 17.068 8) 17.158

## NOZZLE STATIC PRESSURES - PSNE

1) \*\*\*\*\* 2) \*\*\*\*\*

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HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR  
NOZZLE NOISE TONE SOURCE IDENTIFICATION  
TEST 2399TP - HNTF

INPUT DATA

| RUN | COND | DATE   | TEST NO | PAMB   | TAMB  | APRI   | AEFF   | APRIH  | 1.02 APRI |
|-----|------|--------|---------|--------|-------|--------|--------|--------|-----------|
| 14. | 2.   | 11074. | 2399.   | 14.800 | 34.30 | 92.400 | 81.740 | 93.635 | 94.248    |

PRIMARY FLOW DATA

| A*     | P2     | P1     | TT     | FT     | GAMMA  | Z     | REYN     | CD    | WA      | W-FUEL |
|--------|--------|--------|--------|--------|--------|-------|----------|-------|---------|--------|
| 8.5519 | 43.550 | 91.146 | 35.080 | 91.758 | 1.4142 | .9966 | 8787190. | .9937 | 18.7364 | .0197  |

| PTARE  | FTARE | FX      | FCOR    | FIP     | FIDL    | FTN    | TTN     | FTE    |
|--------|-------|---------|---------|---------|---------|--------|---------|--------|
| 24.640 | .370  | 488.510 | 485.074 | 554.085 | 554.085 | 18.483 | 759.263 | 17.861 |

| PTN/PAMB | TTN/TAMB | WFR1   | WGOR   | WSUM   | WIP    | WFR1   | WFR2   | VIF     | GAMMAP | ZF     |
|----------|----------|--------|--------|--------|--------|--------|--------|---------|--------|--------|
| 1.249    | 2.468    | 18.758 | 22.865 | 18.758 | 21.204 | 21.488 | 21.629 | 950.368 | 1.3704 | 1.0008 |

| CDP   | CDPH  | CDPH2 | CVF   | CV    | CGF   | CGPH  | CGPH2 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| .8846 | .8730 | .8673 | .8817 | .8817 | .7799 | .7697 | .7646 |

| CDPE  | CDPE2 | CVPE  | WIFE   | WIFEH  | VIPE    | GAMMAPE | ZPE    | VE1  | VE2  |
|-------|-------|-------|--------|--------|---------|---------|--------|------|------|
| .9686 | .9496 | .9564 | 19.367 | 19.754 | 876.131 | 1.3697  | 1.0008 | .000 | .000 |

PRIMARY NOZZLE TOTAL PRESSURES

1) 17.617 2) 18.466 3) 19.615 4) 19.336 5) 17.547 6) 17.657 7) 18.277 8) 19.326

PRIMARY NOZZLE TOTAL TEMPERATURES

1) 769.500 2) \*\*\*\*\* 3) \*\*\*\*\* 4) 756.500 5) 750.000 6) 770.000 7) \*\*\*\*\* 8) \*\*\*\*\* 9) 758.500 10) 751.200

NOZZLE EXIT TOTAL PRESSURES - FTNE

1) 18.257 2) 18.337 3) 18.067 4) 17.847  
5) 16.868 6) 17.607 7) 17.877 8) 18.007

NOZZLE STATIC PRESSURES - PSNE

1) \*\*\*\*\* 2) \*\*\*\*\*



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## HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR  
NOZZLE NOISE TONE SOURCE IDENTIFICATION  
TEST 2399TF - HNTF

## INPUT DATA

| RUN | COND | DATE   | TEST NO | PAMB   | TAMB  | APRI   | AEFF   | APRIH  | 1.02 APRI |
|-----|------|--------|---------|--------|-------|--------|--------|--------|-----------|
| 14. | 3.   | 11074. | 2399.   | 14.800 | 34.40 | 92.400 | 81.914 | 93.689 | 94.248    |

## PRIMARY FLOW DATA

| A*     | P2     | P1      | TT     | PT      | GAMMA  | Z     | REYN     | CD    | WA      | W-FUEL |
|--------|--------|---------|--------|---------|--------|-------|----------|-------|---------|--------|
| 8.5519 | 49.000 | 102.534 | 35.560 | 103.221 | 1.4160 | .9962 | 9884290. | .9938 | 21.0835 | .0237  |

| PTARE  | FTARE | FX      | FCOR    | FIP     | FIDL    | PTN    | TTN     | PTE    |
|--------|-------|---------|---------|---------|---------|--------|---------|--------|
| 30.140 | .452  | 633.968 | 629.509 | 716.701 | 716.701 | 19.669 | 809.450 | 18.879 |

| PTN/PAMB | TTN/TAMB | WRI    | WCR    | WSUM   | WIP    | WIFH   | WIFH2  | VIF      | GAMMAP | ZP     |
|----------|----------|--------|--------|--------|--------|--------|--------|----------|--------|--------|
| 1.329    | 2.569    | 21.107 | 24.669 | 21.107 | 23.809 | 24.141 | 24.285 | 1092.477 | 1.3686 | 1.0005 |

| CDP   | CDPH  | CDPH2 | CVP   | CV    | CGP   | CGPH  | CGPH2 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| .8865 | .8743 | .8691 | .8846 | .8846 | .7842 | .7734 | .7688 |

| CDPE  | CDPH2 | CVPE  | WIFE   | WIFEH  | VIFE     | GAMMAPE | ZPE    | VE1  | VE2  |
|-------|-------|-------|--------|--------|----------|---------|--------|------|------|
| .9664 | .9474 | .9536 | 21.841 | 22.278 | 1013.411 | 1.3678  | 1.0005 | .000 | .000 |

## PRIMARY NOZZLE TOTAL PRESSURES

1) 18.476 2) 19.425 3) 21.024 4) 20.894 5) 18.456 6) 18.606 7) 19.485 8) 20.964

## PRIMARY NOZZLE TOTAL TEMPERATURES

1) 820.500 2) \*\*\*\*\* 3) \*\*\*\*\* 4) 806.000 5) 800.600 6) 820.500 7) \*\*\*\*\* 8) \*\*\*\*\* 9) 807.600 10) 801.900

## NOZZLE EXIT TOTAL PRESSURES - FTNE

1) 19.346 2) 19.485 3) 19.166 4) 18.856  
5) 17.637 6) 18.566 7) 18.866 8) 19.086

## NOZZLE STATIC PRESSURES - PSNE

1) \*\*\*\*\* 2) \*\*\*\*\*

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HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR  
NOZZLE NOISE TONE SOURCE IDENTIFICATION  
TEST 2399TF - HNTF

INPUT DATA

| RUN | COND | DATE   | TEST NO | PAMB   | TAMB  | APR1   | AEFF   | APR1H  | 1.02 APR1<br>APR1H2 |
|-----|------|--------|---------|--------|-------|--------|--------|--------|---------------------|
| 14. | 4.   | 11074. | 2399.   | 14.800 | 34.40 | 92.400 | 82.445 | 93.753 | 94.248              |

PRIMARY FLOW DATA

| AA     | P2     | P1      | TT     | PT      | GAMMA  | Z     | REYN      | CD    | WA      | W-FUEL |
|--------|--------|---------|--------|---------|--------|-------|-----------|-------|---------|--------|
| 8.5519 | 53.390 | 111.729 | 36.020 | 112.478 | 1.4174 | .9959 | 10767762. | .9938 | 22.9758 | .0276  |

| PTARE  | FTARE | FX      | FCOR    | FIP     | FIDL    | PTN    | TTN     | PTC    |
|--------|-------|---------|---------|---------|---------|--------|---------|--------|
| 34.740 | .521  | 774.559 | 769.111 | 868.681 | 868.681 | 20.793 | 863.366 | 19.890 |

| PTN/PAMB | TTN/TAMB | WPR1   | WCR    | WSUM   | WIP    | WPRH   | WPRH2  | VIP      | GAMMAP | ZP     |
|----------|----------|--------|--------|--------|--------|--------|--------|----------|--------|--------|
| 1.405    | 2.678    | 23.003 | 25.966 | 23.003 | 25.781 | 26.159 | 26.297 | 1214.992 | 1.3666 | 1.0002 |

| CDP   | CDPH  | CDPH2 | CVF   | CV    | CGF   | CGPH  | CGPH2 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| .8923 | .8794 | .8748 | .8916 | .8916 | .7956 | .7841 | .7800 |

| CDPE  | CDPE2 | CVFE  | WIFE   | WIFEH  | VIPE     | GAMMAPE | ZPE    | VE1  | VE2  |
|-------|-------|-------|--------|--------|----------|---------|--------|------|------|
| .9656 | .9467 | .9534 | 23.822 | 24.299 | 1136.251 | 1.3658  | 1.0002 | .000 | .000 |

PRIMARY NOZZLE TOTAL PRESSURES

1) 19.306 2) 20.275 3) 22.373 4) 22.422 5) 19.356 6) 19.495 7) 20.524 8) 22.592

PRIMARY NOZZLE TOTAL TEMPERATURES

1) 875.000 2) \*\*\*\*\* 3) \*\*\*\*\* 4) 859.800 5) 854.000 6) 876.500 7) \*\*\*\*\* 8) \*\*\*\*\* 9) 859.400 10) 855.900

NOZZLE EXIT TOTAL PRESSURES - FTNE

1) 20.414 2) 20.574 3) 20.225 4) 19.895  
5) 18.416 6) 19.555 7) 19.925 8) 20.115

NOZZLE STATIC PRESSURES - PSNE

1) \*\*\*\*\* 2) \*\*\*\*\*

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HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR  
 NOZZLE NOISE TONE SOURCE IDENTIFICATION  
 TEST 23997P - HNTF

| INPUT DATA        |          |         |         |          |          |         |           |          |         | 1.02   |
|-------------------|----------|---------|---------|----------|----------|---------|-----------|----------|---------|--------|
| RUN               | COND     | DATE    | TEST NO | PAMB     | TAMB     | APRI    | AIEFF     | APRIH    | APRIH2  | APRI   |
| 14.               | 5.       | 11074.  | 2399.   | 14.800   | 34.65    | 92.400  | 82.947    | 93.822   | 94.248  |        |
| PRIMARY FLOW DATA |          |         |         |          |          |         |           |          |         |        |
| A*                | P2       | P1      | TT      | PT       | GAMMA    | Z       | REYN      | CD       | WA      | W-FUEL |
| 6.5519            | 57.170   | 119.549 | 36.400  | 120.350  | 1.4185   | .9956   | 11519098. | .9939    | 24.5857 | .0318  |
| FTARE             | FTARE    | FX      | FCOR    | FIP      | FIDL     | FTN     | YTN       | PTC      |         |        |
| 39.190            | .588     | 910.932 | 904.525 | 1017.267 | 1017.267 | 21.924  | 920.667   | 20.938   |         |        |
| PTN/PAMB          | TTN/TAMB | WRI     | WCR     | WSUM     | WIF      | WIF1    | WIF2      | VIP      | GAMMAP  | ZP     |
| 1.481             | 2.792    | 24.617  | 26.919  | 24.617   | 27.423   | 27.645  | 27.971    | 1329.528 | 1.3645  | 1.0000 |
| CDP               | CDP1     | CDP2    | CVF     | CV       | CGP      | CGP1    | CGP2      |          |         |        |
| .8977             | .8841    | .8601   | .8955   | .8955    | .8039    | .7917   | .7881     |          |         |        |
| CDPE              | CDPE2    | CVPE    | WIPE    | WIFE1    | VIPE     | GAMMAPE | ZPE       | VE1      | VE2     |        |
| .9644             | .9455    | .9501   | 25.526  | 26.036   | 1253.034 | 1.3635  | .9999     | .000     | .000    |        |

## PRIMARY NOZZLE TOTAL PRESSURES

1) 20.225 2) 21.274 3) 23.561 4) 23.691 5) 20.295 6) 20.454 7) 21.733 8) 24.161

## PRIMARY NOZZLE TOTAL TEMPERATURES

1) 937.800 2) \*\*\*\*\* 3) \*\*\*\*\* 4) 912.500 5) 910.600 6) 938.600 7) \*\*\*\*\* 8) \*\*\*\*\* 9) 913.500 10) 911.000

## NOZZLE EXIT TOTAL PRESSURES - PTNE

1) 21.563 2) 21.733 3) 21.274 4) 20.904  
 5) 19.256 6) 20.594 7) 20.974 8) 21.204

## NOZZLE STATIC PRESSURES - PSNE

1) \*\*\*\*\* 2) \*\*\*\*\*

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HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR

NOZZLE NOISE TONE SOURCE IDENTIFICATION

TEST 23991P - HNTF

| RUN | COND | FTN/FAMB | TTN/TANG | CDP   | CDPH  | CVP   | CV    | CGP   | CGPH  | AFR1H  |
|-----|------|----------|----------|-------|-------|-------|-------|-------|-------|--------|
| 14. | 1.   | 1.181    | 2.387    | .8898 | .8785 | .8710 | .8710 | .7750 | .7651 | 93.594 |
| 14. | 2.   | 1.249    | 2.468    | .8846 | .8730 | .8817 | .8817 | .7799 | .7697 | 93.635 |
| 14. | 3.   | 1.329    | 2.569    | .8865 | .8743 | .8846 | .8846 | .7842 | .7734 | 93.689 |
| 14. | 4.   | 1.405    | 2.678    | .8923 | .8794 | .8916 | .8916 | .7956 | .7841 | 93.753 |
| 14. | 5.   | 1.481    | 2.792    | .8977 | .8841 | .8955 | .8955 | .8039 | .7917 | 93.822 |

| CDPH2 | CGPH2 | CDPE  | CDPEH2 | CVPE  | AFR1H2 |
|-------|-------|-------|--------|-------|--------|
| .8724 | .7598 | .9713 | .9523  | .9443 | 94.248 |
| .8673 | .7646 | .9686 | .9496  | .9564 | 94.248 |
| .8691 | .7688 | .9664 | .9474  | .9536 | 94.248 |
| .8748 | .7800 | .9656 | .9467  | .9534 | 94.248 |
| .8801 | .7881 | .9644 | .9455  | .9501 | 94.248 |

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## HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR  
 NOZZLE NOISE TONE SOURCE IDENTIFICATION  
 TEST 2399TP - HNTF

## INPUT DATA

| RUN | COND | DATE   | TEST NO | PAMB   | TAMB  | AFRI   | AEFF   | APRIH  | 1.02 APRI |
|-----|------|--------|---------|--------|-------|--------|--------|--------|-----------|
| 15. | 1.   | 11174. | 2399.   | 14.765 | 26.30 | 92.400 | 80.210 | 92.285 | 94.248    |

## PRIMARY FLOW DATA

| A*       | P2       | P1      | TT      | PT      | GAMMA   | Z       | REYN      | CD      | WA      | W-FUEL |
|----------|----------|---------|---------|---------|---------|---------|-----------|---------|---------|--------|
| 8.5519   | 59.995   | 125.519 | 30.050  | 126.361 | 1.4202  | .9951   | 12321136. | .9939   | 25.9984 | .0000  |
| PTARE    | FTARE    | FX      | FCOR    | FIP     | FIDL    | FTN     | TTN       | PTE     |         |        |
| 25.900   | .389     | 369.771 | 368.041 | 435.819 | 435.819 | 17.665  | 25.517    | 17.309  |         |        |
| PTN/PAMB | TTN/TAMB | WRI     | WCR     | WSUM    | WIP     | WIRH    | WIRH2     | VIF     | GAMMAP  | ZP     |
| 1.196    | .998     | 25.998  | 20.919  | 25.998  | 29.950  | 29.912  | 30.549    | 539.341 | 1.4029  | .9993  |
| CDP      | CDPH     | CDPH2   | CVF     | CV      | CGF     | CGFH    | CGFH2     |         |         |        |
| .8681    | .8682    | .8510   | .8485   | .8485   | .7365   | .7374   | .7221     |         |         |        |
| CDPE     | CDPEH2   | CVPE    | WIFE    | WIFEH   | VIPE    | GAMMAPE | ZPE       | VE1     | VE2     |        |
| .9260    | .9079    | .8998   | 28.075  | 28.636  | 508.551 | 1.4028  | .9993     | .000    | .000    |        |

## PRIMARY NOZZLE TOTAL PRESSURES

1) 17.293 2) 17.742 3) 18.002 4) 17.812 5) 17.233 6) 17.492 7) 17.842 8) 17.902

## PRIMARY NOZZLE TOTAL TEMPERATURES

1) 26.000 2) \*\*\*\*\* 3) \*\*\*\*\* 4) 26.000 5) 25.000 6) 26.000 7) \*\*\*\*\* 8) \*\*\*\*\* 9) 25.500 10) 24.600

## NOZZLE EXIT TOTAL PRESSURES - PTNE

1) 17.253 2) 17.472 3) 17.293 4) 17.213  
 5) 17.173 6) 17.432 7) 17.392 8) 17.243

## NOZZLE STATIC PRESSURES - PSNE

1) \*\*\*\*\* 2) \*\*\*\*\*

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HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR  
NOZZLE NOISE TONE SOURCE IDENTIFICATION  
TEST 2399TF - HNTF

INPUT DATA

| RUN | COND | DATE   | TEST NO | PAMB   | TAMB  | APRI   | AEFF   | APRIH  | 1.02 APRI |
|-----|------|--------|---------|--------|-------|--------|--------|--------|-----------|
| 15. | 2.   | 11174. | 2399.   | 14.765 | 26.60 | 92.400 | 80.897 | 92.264 | 94.248    |

PRIMARY FLOW DATA

| A*     | P2     | P1      | TT     | PT      | GAMMA  | Z     | REYN      | CD    | WA      | W-FUEL |
|--------|--------|---------|--------|---------|--------|-------|-----------|-------|---------|--------|
| 6.5519 | 73.525 | 153.612 | 30.825 | 154.642 | 1.4246 | .9941 | 15093664. | .9940 | 31.8463 | .0000  |

| PTARE  | FTARE | FX      | FCOR    | FIP     | FIDL    | PTN    | TTN    | PTE    |
|--------|-------|---------|---------|---------|---------|--------|--------|--------|
| 34.640 | .520  | 546.280 | 543.724 | 633.321 | 633.321 | 19.063 | 24.783 | 18.531 |

| PTN/PAMB | TTN/TAMB | WFR1   | WCR    | WSUM   | WIP    | WRH    | WRH2   | VIF     | GAMMAF | ZF    |
|----------|----------|--------|--------|--------|--------|--------|--------|---------|--------|-------|
| 1.291    | .996     | 31.846 | 23.727 | 31.846 | 36.375 | 36.321 | 37.102 | 639.637 | 1.4031 | .9992 |

| CDP   | CDPH  | CDPH2 | CVF   | CV    | CGF   | CGPH  | CGPH2 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| .8755 | .8768 | .8583 | .8626 | .8626 | .7552 | .7563 | .7404 |

| CDPE  | CDPEH2 | CVFE  | WIFE   | WIFEH  | VIFE    | GAMMAFE | ZFE   | VE1  | VE2  |
|-------|--------|-------|--------|--------|---------|---------|-------|------|------|
| .9342 | .9158  | .9129 | 34.091 | 34.773 | 654.581 | 1.4030  | .9992 | .000 | .000 |

PRIMARY NOZZLE TOTAL PRESSURES

1) 18.711 2) 19.590 3) 19.840 4) 19.361 5) 18.401 6) 18.551 7) 18.921 8) 19.131

PRIMARY NOZZLE TOTAL TEMPERATURES

1) 26.000 2) \*\*\*\*\* 3) \*\*\*\*\* 4) 24.600 5) 23.800 6) 25.500 7) \*\*\*\*\* 8) \*\*\*\*\* 9) 25.000 10) 23.800

NOZZLE EXIT TOTAL PRESSURES - PTNE

1) 18.451 2) 18.741 3) 18.481 4) 18.421  
5) 18.362 6) 18.691 7) 18.691 8) 18.421

NOZZLE STATIC PRESSURES - PSNE

1) \*\*\*\*\* 2) \*\*\*\*\*

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HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR  
 NOZZLE NOISE TONE SOURCE IDENTIFICATION  
 TEST 23991P - HNTF

## INPUT DATA

| RUN | COND | DATE   | TEST NO | FAMB   | TAMB  | APRI   | AEPF   | APRIH  | 1.02 APRI |
|-----|------|--------|---------|--------|-------|--------|--------|--------|-----------|
| 15. | 3.   | 11174. | 2399.   | 14.765 | 26.40 | 92.400 | 81.777 | 92.242 | 94.248    |

## PRIMARY FLOW DATA

| A*       | P2       | P1      | TT      | PT      | GAMMA   | Z       | REYN      | CD      | WA      | W-FUEL |
|----------|----------|---------|---------|---------|---------|---------|-----------|---------|---------|--------|
| 8.5519   | 87.045   | 181.798 | 31.075  | 183.017 | 1.4291  | .9931   | 17907466. | .9942   | 37.7453 | .0000  |
| PTARE    | FTARE    | FX      | FCOR    | FIP     | FIDL    | PTN     | TTN       | FTE     |         |        |
| 43.880   | .658     | 751.682 | 748.164 | 857.704 | 857.704 | 20.707  | 23.867    | 20.017  |         |        |
| PTN/FAMB | TTN/TAMB | WFR1    | WCR     | WSUM    | WIP     | WIP1    | WIP2      | VIP     | GAMMA   | ZP     |
| 1.402    | .995     | 37.745  | 25.866  | 37.745  | 42.649  | 42.575  | 43.901    | 731.104 | 1.4034  | .9991  |
| CDP      | CDP1     | CDP2    | CVF     | CV      | CGF     | CGP1    | CGP2      |         |         |        |
| .8850    | .8866    | .8677   | .8764   | .8764   | .7756   | .7770   | .7854     |         |         |        |
| CDPE     | CDPE2    | CVPE    | WIFE    | WIFEH   | VIPE    | GAMMAPE | ZPE       | VE1     | VE2     |        |
| .9399    | .9214    | .9216   | 40.161  | 40.964  | 695.220 | 1.4033  | .9992     | .000    | .000    |        |

## PRIMARY NOZZLE TOTAL PRESSURES

1) 20.030 2) 21.059 3) 21.368 4) 20.889 5) 19.860 6) 20.270 7) 20.909 8) 21.269

## PRIMARY NOZZLE TOTAL TEMPERATURES

1) 24.200 2) \*\*\*\*\* 3) \*\*\*\*\* 4) 24.600 5) 23.000 6) 24.200 7) \*\*\*\*\* 8) \*\*\*\*\* 9) 23.600 10) 23.400

## NOZZLE EXIT TOTAL PRESSURES - PTNE

1) 19.990 2) 20.320 3) 19.930 4) 19.850  
 5) 19.820 6) 20.240 7) 20.130 8) 19.880

## NOZZLE STATIC PRESSURES - PSNE

1) \*\*\*\*\* 2) \*\*\*\*\*

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CALCULATION DATE 2/19/74

MOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR

NOZZLE NOISE TONE SOURCE IDENTIFICATION

TEST 2399TF - HNTF

INPUT DATA

| RUN | COND | DATE   | TEST NO | PAMB   | TAMB  | AFRI   | AEFF   | AFRIH  | 1.02 AFRI |
|-----|------|--------|---------|--------|-------|--------|--------|--------|-----------|
|     |      |        |         |        |       |        |        |        | AFRIH2    |
| 15. | 4.   | 11174. | 2399.   | 14.765 | 26.50 | 92.400 | 82.559 | 92.223 | 94.248    |

PRIMARY FLOW DATA

| A#     | P2     | F1      | TT     | FT      | GAMMA  | Z     | REYN      | CD    | WR      | W-FUEL |
|--------|--------|---------|--------|---------|--------|-------|-----------|-------|---------|--------|
| 8.5519 | 97.745 | 204.169 | 30.925 | 205.538 | 1.4327 | .9923 | 20170600. | .9943 | 42.4554 | .0000  |

| PTARE  | FTARE | FX      | FCOR    | FIP      | FIDL     | PTN    | TTN    | FTE    |
|--------|-------|---------|---------|----------|----------|--------|--------|--------|
| 30.410 | .756  | 926.084 | 921.750 | 1051.862 | 1051.862 | 22.175 | 23.000 | 21.352 |

| PTN/PAMB | TTN/TAMB | WFRI   | WOCR   | WSUM   | WIP    | WIPH   | WIPH2  | VIF     | GAMMAP | ZP    |
|----------|----------|--------|--------|--------|--------|--------|--------|---------|--------|-------|
| 1.502    | .993     | 42.455 | 27.142 | 42.455 | 47.516 | 47.425 | 48.466 | 797.133 | 1.4037 | .9991 |

| CDP   | CDPH  | CDPH2 | CVP   | CV    | CGP   | CGPH  | CGPH2 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| .8935 | .8952 | .8760 | .8804 | .8804 | .7867 | .7882 | .7712 |

| CDPE  | CDPEH2 | CVPE  | WIFE   | WIFPH  | VIPE    | GAMMAPE | ZPE   | VE1  | VE2  |
|-------|--------|-------|--------|--------|---------|---------|-------|------|------|
| .9459 | .9274  | .9220 | 44.882 | 45.779 | 761.215 | 1.4035  | .9991 | .000 | .000 |

PRIMARY NOZZLE TOTAL PRESSURES

1) 21.448 2) 22.687 3) 23.057 4) 22.407 5) 21.169 6) 21.628 7) 22.288 8) 22.717

PRIMARY NOZZLE TOTAL TEMPERATURES

1) 23.400 2) \*\*\*\*\* 3) \*\*\*\*\* 4) 23.400 5) 22.200 6) 23.000 7) \*\*\*\*\* 8) \*\*\*\*\* 9) 23.600 10) 22.200

NOZZLE EXIT TOTAL PRESSURES - PTNE

1) 21.269 2) 21.708 3) 21.249 4) 21.169  
5) 21.059 6) 21.568 7) 21.558 8) 21.199

NOZZLE STATIC PRESSURES - PSNE

1) \*\*\*\*\* 2) \*\*\*\*\*



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HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR

NOZZLE NOISE TONE SOURCE IDENTIFICATION

TEST 2399TF - HNTF

| RUN | COND | PTN/PAHB | TTN/TAMB | CDP   | CDPH  | CVP   | CV    | CGP   | CGPH  | AFRIN  |
|-----|------|----------|----------|-------|-------|-------|-------|-------|-------|--------|
| 15. | 1.   | 1.196    | .998     | .8681 | .8692 | .8485 | .8485 | .7365 | .7374 | 92.285 |
| 15. | 2.   | 1.291    | .996     | .8755 | .8768 | .8626 | .8626 | .7552 | .7563 | 92.264 |
| 15. | 3.   | 1.402    | .995     | .8850 | .8866 | .8764 | .8764 | .7756 | .7770 | 92.242 |
| 15. | 4.   | 1.502    | .993     | .8935 | .8952 | .8804 | .8804 | .7867 | .7882 | 92.223 |

| CDPH2 | CGPH2 | CDPE  | CDPE2 | CVPE  | AFRIN2 |
|-------|-------|-------|-------|-------|--------|
| .8510 | .7221 | .9260 | .9079 | .8998 | 94.248 |
| .8583 | .7404 | .9342 | .9158 | .9129 | 94.248 |
| .8677 | .7604 | .9399 | .9214 | .9216 | 94.248 |
| .8760 | .7712 | .9459 | .9274 | .9220 | 94.248 |

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HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR  
NOZZLE NOISE TONE SOURCE IDENTIFICATION  
TEST 2399TF - HNTF

| INPUT DATA        |          |         |         |         |         |         |          |         |         | 1.02   | APRI |
|-------------------|----------|---------|---------|---------|---------|---------|----------|---------|---------|--------|------|
| RUN               | COND     | DATE    | TEST NO | PAMB    | TAMB    | APRI    | AEPF     | APRIH   | APRIH2  | APRIH2 |      |
| 16.               | 1.       | 11174.  | 2399.   | 14.764  | 26.50   | 92.400  | 82.804   | 93.559  | 94.248  |        |      |
| PRIMARY FLOW DATA |          |         |         |         |         |         |          |         |         |        |      |
| A*                | P2       | P1      | TT      | FT      | GAMMA   | Z       | REYN     | CD      | WA      | W-FUEL |      |
| 8.5519            | 38.074   | 79.639  | 25.825  | 80.173  | 1.4131  | .9967   | 7869766. | .9937   | 16.5216 | .0161  |      |
| PTARE             | FTARE    | FX      | FCOR    | FIP     | FIDL    | FTN     | TTN      | FTE     |         |        |      |
| 19.580            | .294     | 359.266 | 357.609 | 412.062 | 412.062 | 17.409  | 700.617  | 17.068  |         |        |      |
| PTN/PAMB          | TTN/TAMB | WFR1    | WOCR    | WSUM    | WIP     | WIFH    | WIFH2    | VIF     | GAMMAP  | ZF     |      |
| 1.179             | 2.387    | 16.538  | 20.680  | 16.538  | 18.454  | 18.686  | 18.823   | 801.665 | 1.3727  | 1.0012 |      |
| CDP               | CDPH     | CDPH2   | CVF     | CV      | CGF     | CGPH    | CGPH2    |         |         |        |      |
| .6962             | .8850    | .8786   | .8719   | .8719   | .7613   | .7717   | .7680    |         |         |        |      |
| CDPE              | CDPH2    | CVPE    | WIFE    | WIFH1   | VIFE    | GAMMAPE | ZFE      | VE1     | VE2     |        |      |
| .9592             | .9404    | .9282   | 17.241  | 17.586  | 753.028 | 1.3724  | 1.0012   | .000    | .000    |        |      |

PRIMARY NOZZLE TOTAL PRESSURES

1) 16.792 2) 17.391 3) 18.021 4) 17.821 5) 16.742 6) 16.862 7) 17.401 8) 18.241

PRIMARY NOZZLE TOTAL TEMPERATURES

1) 706.500 2) \*\*\*\*\* 3) \*\*\*\*\* 4) 703.000 5) 692.000 6) 708.800 7) \*\*\*\*\* 8) \*\*\*\*\* 9) 701.400 10) 692.000

NOZZLE EXIT TOTAL PRESSURES - PTNE

1) 17.042 2) 17.252 3) 17.032 4) 16.952  
5) 16.902 6) 17.172 7) 17.162 8) 17.012

NOZZLE STATIC PRESSURES - PSNE

1) \*\*\*\*\* 2) \*\*\*\*\*

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CALCULATION DATE 2/19/74

HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR

NOZZLE NOISE TONE SOURCE IDENTIFICATION

TEST 2399TF - HNTF

## INPUT DATA

| RUN | COND | DATE   | TEST NO | PAMB   | TAMB  | APRI   | AEFF   | APRIH  | 1.02 APRI |
|-----|------|--------|---------|--------|-------|--------|--------|--------|-----------|
| 16. | 2.   | 11174. | 2399.   | 14.764 | 26.75 | 92.400 | 82.375 | 93.629 | 94.248    |

## PRIMARY FLOW DATA

| A*     | P2     | P1     | TT     | FT     | GAMMA  | Z     | REYN     | CD    | WA      | W-FUEL |
|--------|--------|--------|--------|--------|--------|-------|----------|-------|---------|--------|
| 8.5519 | 44.074 | 92.322 | 26.400 | 92.941 | 1.4151 | .9962 | 9121788. | .9937 | 19.1567 | .0203  |

| PTARE  | FTARE | FX      | FCOR    | FIP     | FIDL    | PTN    | TTN     | PTE    |
|--------|-------|---------|---------|---------|---------|--------|---------|--------|
| 25.440 | .382  | 904.598 | 502.271 | 574.695 | 574.695 | 18.564 | 758.700 | 18.065 |

| PTN/PAMB | TTN/TAMB | WRI    | WCR    | WSUM   | WIP    | WIPH   | WIPH2  | VIP     | GAMMAP | ZF     |
|----------|----------|--------|--------|--------|--------|--------|--------|---------|--------|--------|
| 1.257    | 2.505    | 19.177 | 23.267 | 19.177 | 21.511 | 21.797 | 21.941 | 964.187 | 1.3705 | 1.0008 |

| CDP   | CDPH  | CDPH2 | CVP   | CV    | CGF   | CGPH  | CGPH2 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| .8915 | .8798 | .8740 | .8780 | .8780 | .7828 | .7725 | .7674 |

| CDPE  | CDPEH2 | CVPE  | WIFE   | WIFEH  | VIPE    | GAMMAPE | ZPE    | VE1  | VE2  |
|-------|--------|-------|--------|--------|---------|---------|--------|------|------|
| .9552 | .9365  | .9338 | 20.077 | 20.478 | 906.617 | 1.3700  | 1.0008 | .000 | .000 |

## PRIMARY NOZZLE TOTAL PRESSURES

1) 17.671 2) 18.530 3) 19.669 4) 19.459 5) 17.631 6) 17.711 7) 18.361 8) 19.479

## PRIMARY NOZZLE TOTAL TEMPERATURES

1) 766.800 2) \*\*\*\*\* 3) \*\*\*\*\* 4) 756.500 5) 751.800 6) 768.000 7) \*\*\*\*\* 8) \*\*\*\*\* 9) 757.500 10) 752.000

## NOZZLE EXIT TOTAL PRESSURES - PTNE

1) 18.031 2) 18.321 3) 17.991 4) 17.901  
5) 17.691 6) 18.231 7) 18.201 8) 17.951

## NOZZLE STATIC PRESSURES - PSNE

1) \*\*\*\*\* 2) \*\*\*\*\*

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HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR  
NOZZLE NOISE TONE SOURCE IDENTIFICATION  
TEST 2399TF - HNTF

INPUT DATA

| RUN | COND | DATE   | TEST NO | PAMB   | TAMB  | AFR1   | AEFF   | AFRTH  | 1.02 AFR1 |
|-----|------|--------|---------|--------|-------|--------|--------|--------|-----------|
| 16. | 3.   | 11174. | 2399.   | 14.764 | 27.00 | 92.400 | 82.531 | 93.694 | 94.248    |

PRIMARY FLOW DATA

| A*     | P2     | P1      | TT     | PT      | GAMMA  | Z     | REYN      | CD    | WA      | W-FUEL |
|--------|--------|---------|--------|---------|--------|-------|-----------|-------|---------|--------|
| 8.5519 | 48.634 | 101.728 | 27.375 | 102.410 | 1.4166 | .9959 | 10034351. | .9938 | 21.0992 | .0238  |

| PTARE  | FTARE | FX      | FCOR    | FIP     | FIDL    | FTN    | TTN     | PTE    |
|--------|-------|---------|---------|---------|---------|--------|---------|--------|
| 30.030 | .450  | 634.049 | 631.125 | 715.717 | 715.717 | 19.587 | 811.617 | 18.986 |

| PTN/PAMB | TTN/TAMB | WFR1   | WCOR   | WSUM   | WIP    | WFRH   | WFRH2  | VIP      | GAMMAP | ZP     |
|----------|----------|--------|--------|--------|--------|--------|--------|----------|--------|--------|
| 1.327    | 2.612    | 21.123 | 24.812 | 21.123 | 23.649 | 23.980 | 24.122 | 1090.160 | 1.3685 | 1.0005 |

| CDP   | CDPH  | CDPH2 | CVF   | CV    | CGF   | CGPH  | CGPH2 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| .8932 | .8809 | .8757 | .8859 | .8859 | .7913 | .7803 | .7758 |

| CDPE  | CDPH2 | CVPE  | WIFE   | WIFEH  | VIFE     | GAMMAPE | ZPE    | VE1  | VE2  |
|-------|-------|-------|--------|--------|----------|---------|--------|------|------|
| .9529 | .9342 | .9372 | 22.166 | 22.610 | 1030.492 | 1.3679  | 1.0005 | .000 | .000 |

PRIMARY NOZZLE TOTAL PRESSURES

1) 18.390 2) 19.290 3) 20.908 4) 20.828 5) 18.410 6) 18.530 7) 19.379 8) 20.958

PRIMARY NOZZLE TOTAL TEMPERATURES

1) 816.400 2) \*\*\*\*\* 3) \*\*\*\*\* 4) 805.000 5) 800.200 6) 815.600 7) \*\*\*\*\* 8) \*\*\*\*\* 9) 805.500 10) 827.000

NOZZLE EXIT TOTAL PRESSURES - FTNE

1) 18.930 2) 19.320 3) 18.920 4) 18.820  
5) 18.730 6) 19.160 7) 19.150 8) 18.860

NOZZLE STATIC PRESSURES - PSNE

1) \*\*\*\*\* 2) \*\*\*\*\*

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## HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR  
 NOZZLE NOISE TONE SOURCE IDENTIFICATION  
 TEST 2399TP - HNTF

## INPUT DATA

| RUN | COND | DATE   | TEST NO | PAMB   | TAMB  | APRI   | AEFF   | APRIH  | 1.02 APRI |
|-----|------|--------|---------|--------|-------|--------|--------|--------|-----------|
| 16. | 4.   | 11174. | 2399.   | 14.764 | 26.90 | 92.400 | 82.543 | 93.772 | 94.248    |

## PRIMARY FLOW DATA

| A*       | P2       | P1      | TT      | PT      | GAMMA    | Z       | REYN      | CD       | WA      | W-FUEL |
|----------|----------|---------|---------|---------|----------|---------|-----------|----------|---------|--------|
| 8.5519   | 53.484   | 111.833 | 28.575  | 112.582 | 1.4181   | .9956   | 11006439. | .9938    | 23.1802 | .0286  |
| PTARE    | FTARE    | FX      | FCOR    | FIP     | FIDL     | FTN     | TTN       | FTE      |         |        |
| 35.410   | .531     | 789.189 | 785.549 | 892.650 | 892.650  | 20.938  | 877.566   | 20.190   |         |        |
| PTN/PAMB | TTN/TAMB | WFR1    | WCR     | WUM     | WIP      | WIPH    | WIPH2     | VIP      | GAMMAP  | ZF     |
| 1.418    | 2.748    | 23.209  | 26.156  | 23.209  | 25.980   | 26.366  | 26.500    | 1237.467 | 1.3680  | 1.0002 |
| CDP      | CDPH     | CDPH2   | CVF     | CV      | CGF      | CGPH    | CGPH2     |          |         |        |
| .8933    | .8802    | .8758   | .8841   | .8841   | .7898    | .7782   | .7743     |          |         |        |
| CDPE     | CDPEH2   | CVFE    | WIFE    | WIFEH   | VIFE     | GAMMAPE | ZFE       | VE1      | VE2     |        |
| .9509    | .9322    | .9318   | 24.408  | 24.897  | 1174.106 | 1.3653  | 1.0002    | .000     | .000    |        |

## PRIMARY NOZZLE TOTAL PRESSURES

1) 19.439 2) 20.468 3) 22.456 4) 22.436 5) 19.449 6) 19.649 7) 20.758 8) 22.846

## PRIMARY NOZZLE TOTAL TEMPERATURES

1) 887.600 2) \*\*\*\*\* 3) \*\*\*\*\* 4) 871.000 5) 869.000 6) 888.800 7) \*\*\*\*\* 8) \*\*\*\*\* 9) 875.000 10) 874.000

## NOZZLE EXIT TOTAL PRESSURES - FTNE

1) 20.139 2) 20.618 3) 20.099 4) 19.979  
 5) 19.899 6) 20.408 7) 20.349 8) 20.039

## NOZZLE STATIC PRESSURES - PSNE

1) \*\*\*\*\* 2) \*\*\*\*\*

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HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR  
NOZZLE NOISE TONE SOURCE IDENTIFICATION  
TEST 2399TF - HNTF

| INPUT DATA |      |        |         |        |       |        |        |        |        | 1.02 AFR1 |
|------------|------|--------|---------|--------|-------|--------|--------|--------|--------|-----------|
| RUN        | COND | DATE   | TEST NO | FAMB   | TAMB  | AFR1   | AEFF   | AFR1H  | AFR1H2 |           |
| 16.        | 5.   | 11174. | 2399.   | 14.764 | 26.95 | 92.400 | 83.141 | 93.793 | 94.248 |           |

| PRIMARY FLOW DATA |        |         |        |         |        |       |           |       |         |        |  |
|-------------------|--------|---------|--------|---------|--------|-------|-----------|-------|---------|--------|--|
| A*                | P2     | P1      | TT     | FT      | GAMMA  | Z     | REYN      | CD    | WA      | W-FUEL |  |
| 6.5519            | 57.224 | 119.672 | 29.450 | 120.475 | 1.4193 | .9953 | 11759367. | .9939 | 24.7942 | .0316  |  |

| PTARE  | FTARE | FX      | FCOR    | FIP      | FIDL     | FTN    | TTN     | PIE    |
|--------|-------|---------|---------|----------|----------|--------|---------|--------|
| 39.570 | .594  | 921.226 | 916.977 | 1022.680 | 1022.680 | 21.914 | 905.533 | 21.110 |

| PTN/FAMB | TTN/TAMB | WFR1   | WCOR   | WSUM   | WIP    | WFRH   | WFRH2  | VIP      | GAMMAF | ZF     |
|----------|----------|--------|--------|--------|--------|--------|--------|----------|--------|--------|
| 1.484    | 2.805    | 24.826 | 27.010 | 24.826 | 27.591 | 28.037 | 28.142 | 1325.384 | 1.3654 | 1.0000 |

| CDP   | CDPH  | CDPH2 | CVF   | CV    | CGP   | CGPH  | CGPH2 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| .8998 | .8864 | .8821 | .9008 | .9008 | .8105 | .7965 | .7946 |

| CDPE  | CDPH2 | CVPE  | WIFE   | WIPFH  | VIPE     | GAMMAFE | ZFE    | VE1  | VE2  |
|-------|-------|-------|--------|--------|----------|---------|--------|------|------|
| .9529 | .9342 | .9444 | 26.052 | 26.573 | 1264.226 | 1.3646  | 1.0000 | .000 | .000 |

PRIMARY NOZZLE TOTAL PRESSURES

1) 20.229 2) 21.258 3) 23.595 4) 23.725 5) 20.319 6) 20.438 7) 21.647 8) 24.105

PRIMARY NOZZLE TOTAL TEMPERATURES

1) 916.800 2) \*\*\*\*\* 3) \*\*\*\*\* 4) 899.400 5) 897.500 6) 918.400 7) \*\*\*\*\* 8) \*\*\*\*\* 9) 902.600 10) 898.500

NOZZLE EXIT TOTAL PRESSURES - PTNE

1) 21.038 2) 21.577 3) 20.998 4) 20.878  
5) 20.738 6) 21.358 7) 21.328 8) 20.968

NOZZLE STATIC PRESSURES - PSNE

1) \*\*\*\*\* 2) \*\*\*\*\*

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HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR

NOZZLE NOISE TONE SOURCE IDENTIFICATION

TEST 2399TF - HNTF

| RUN | COND | FTN/PAMB | TTN/TAMB | CFP   | CFH   | CVF   | CV    | CGP   | CGH   | APR1H  |
|-----|------|----------|----------|-------|-------|-------|-------|-------|-------|--------|
| 16. | 1.   | 1.179    | 2.387    | .8962 | .8850 | .8719 | .8719 | .7813 | .7717 | 93.559 |
| 16. | 2.   | 1.257    | 2.505    | .8915 | .8798 | .8780 | .8780 | .7828 | .7725 | 93.629 |
| 16. | 3.   | 1.327    | 2.612    | .8932 | .8809 | .8859 | .8859 | .7913 | .7803 | 93.694 |
| 16. | 4.   | 1.418    | 2.748    | .8933 | .8802 | .8841 | .8841 | .7898 | .7782 | 93.772 |
| 16. | 5.   | 1.484    | 2.805    | .8998 | .8864 | .9008 | .9008 | .8105 | .7985 | 93.793 |

| CFP12 | CGH12 | CFPE  | CFPH12 | CVPE  | APR1H2 |
|-------|-------|-------|--------|-------|--------|
| .8786 | .7660 | .9592 | .9404  | .9282 | 94.248 |
| .8740 | .7674 | .9552 | .9365  | .9338 | 94.248 |
| .8757 | .7758 | .9529 | .9342  | .9372 | 94.248 |
| .8758 | .7743 | .9509 | .9322  | .9318 | 94.248 |
| .8821 | .7946 | .9529 | .9342  | .9444 | 94.248 |

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HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR  
NOZZLE NOISE TONE SOURCE IDENTIFICATION  
TEST 2399TP - HNTF

INPUT DATA

|     |      |        |         |        |       |        |        |        |                  |
|-----|------|--------|---------|--------|-------|--------|--------|--------|------------------|
| RUN | COND | DATE   | TEST NO | PAMB   | TAMB  | APRI   | AEFF   | APRIH  | 1.02 APRI        |
| 17. | 1.   | 11174. | 2399.   | 14.741 | 32.70 | 92.400 | 82.582 | 92.300 | APRIH2<br>94.248 |

PRIMARY FLOW DATA

|        |        |         |        |         |        |       |           |       |         |        |
|--------|--------|---------|--------|---------|--------|-------|-----------|-------|---------|--------|
| A*     | P2     | P1      | TT     | PT      | GAMMA  | Z     | REYN      | CD    | WA      | W-FUEL |
| 8.5519 | 60.941 | 127.401 | 37.320 | 128.255 | 1.4197 | .9954 | 12254680. | .9939 | 26.1873 | .0000  |

|        |       |         |         |         |         |        |        |        |
|--------|-------|---------|---------|---------|---------|--------|--------|--------|
| PTARE  | FTARE | FX      | FCOR    | FIP     | FIDL    | PTN    | TTN    | FTE    |
| 26.280 | .394  | 377.006 | 375.852 | 437.212 | 437.212 | 17.562 | 32.833 | 17.167 |

|          |          |        |        |        |        |        |        |         |        |       |
|----------|----------|--------|--------|--------|--------|--------|--------|---------|--------|-------|
| PTN/PAMB | TTN/TAMB | WFI    | WCR    | WSUM   | WIP    | WIPH   | WIPH2  | VIF     | GAMMAP | ZP    |
| 1.191    | 1.000    | 26.187 | 21.354 | 26.187 | 29.301 | 29.269 | 29.887 | 537.164 | 1.4028 | .9993 |

|       |       |       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|-------|-------|
| CDP   | CDPH  | CDPH2 | CVP   | CV    | CGP   | CGPH  | CGPH2 |
| .8937 | .8947 | .8762 | .8623 | .8623 | .7707 | .7715 | .7556 |

|       |        |       |        |        |         |         |       |      |      |
|-------|--------|-------|--------|--------|---------|---------|-------|------|------|
| CDPE  | CDPEH2 | CVPE  | WIFE   | WIFEH  | VIFE    | GAMMAPE | ZPE   | VE1  | VE2  |
| .9628 | .9439  | .9229 | 27.199 | 27.743 | 501.912 | 1.4027  | .9993 | .000 | .000 |

PRIMARY NOZZLE TOTAL PRESSURES

1) 17.169 2) 17.696 3) 17.928 4) 17.708 5) 17.089 6) 17.329 7) 17.728 8) 17.848

PRIMARY NOZZLE TOTAL TEMPERATURES

1) 33.000 2) \*\*\*\*\* 3) \*\*\*\*\* 4) 32.500 5) 32.500 6) 33.000 7) \*\*\*\*\* 8) \*\*\*\*\* 9) 32.500 10) 33.500

NOZZLE EXIT TOTAL PRESSURES - PTNE

1) 17.119 2) 17.346 3) 17.149 4) 17.099  
5) 17.009 6) 17.279 7) 17.249 8) 17.069

NOZZLE STATIC PRESSURES - PSNE

1) \*\*\*\*\* 2) \*\*\*\*\*



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HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR

NOZZLE NOISE TONE SOURCE IDENTIFICATION

TEST 2399TF - HNTF

## INPUT DATA

| RUN | COND | DATE   | TEST NO | FAMB   | TAMB  | AFRI   | AEFF   | AFRIH  | 1.02 AFRI |
|-----|------|--------|---------|--------|-------|--------|--------|--------|-----------|
| 17. | 2.   | 11174. | 2399.   | 14.741 | 32.65 | 92.400 | 83.537 | 92.277 | 94.248    |

## PRIMARY FLOW DATA

| A*     | P2     | F1      | TT     | PT      | GAMMA  | Z     | REYN      | CD    | WA      | W-FUEL |
|--------|--------|---------|--------|---------|--------|-------|-----------|-------|---------|--------|
| 0.5519 | 78.601 | 164.073 | 38.860 | 165.173 | 1.4251 | .9943 | 15776685. | .9941 | 33.7430 | .0000  |

| PTARE  | FTARE | FX      | FCOR    | FIP     | FIDL    | PTN    | TTN    | PTE    |
|--------|-------|---------|---------|---------|---------|--------|--------|--------|
| 37.670 | .565  | 613.395 | 611.518 | 700.195 | 700.195 | 19.374 | 34.667 | 18.822 |

| PTN/FAMB | TTN/TAMB | WFRI   | WCCR   | WSUM   | WIP    | WIFH   | WIFH2  | VIF     | GAMMAP | ZP    |
|----------|----------|--------|--------|--------|--------|--------|--------|---------|--------|-------|
| 1.314    | 1.004    | 33.743 | 24.988 | 33.743 | 37.323 | 37.274 | 38.070 | 667.637 | 1.4030 | .9993 |

| CDP   | CDPH  | CDPH2 | CVF   | CV    | CGF   | CGFH  | CGFH2 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| .9041 | .9053 | .8863 | .8760 | .8760 | .7920 | .7931 | .7765 |

| CDPE  | CDPEH2 | CVPE  | WIFE   | WIFEH  | VIFE    | GAMMAPE | ZPE   | VE1  | VE2  |
|-------|--------|-------|--------|--------|---------|---------|-------|------|------|
| .9621 | .9432  | .9245 | 35.074 | 35.775 | 632.649 | 1.4029  | .9993 | .000 | .000 |

## PRIMARY NOZZLE TOTAL PRESSURES

1) 18.947 2) 19.566 3) 19.596 4) 19.227 5) 18.757 6) 19.217 7) 19.766 8) 19.916

## PRIMARY NOZZLE TOTAL TEMPERATURES

1) 33.000 2) \*\*\*\*\* 3) \*\*\*\*\* 4) 33.000 5) 37.000 6) 33.000 7) \*\*\*\*\* 8) \*\*\*\*\* 9) 32.500 10) 39.500

## NOZZLE EXIT TOTAL PRESSURES - FTNE

1) 18.787 2) 19.077 3) 18.767 4) 18.677  
5) 18.657 6) 18.997 7) 18.937 8) 18.677

## NOZZLE STATIC PRESSURES - FSNE

1) \*\*\*\*\* 2) \*\*\*\*\*

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MOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR

NOZZLE NOISE TONE SOURCE IDENTIFICATION

TEST 23991P - HWTF

INPUT DATA

| RUN | COND | DATE   | TEST NO | PAMB   | TAMB  | AFRI   | AEPF   | APR1H  | 1.02 APR1 |
|-----|------|--------|---------|--------|-------|--------|--------|--------|-----------|
| 17. | 3.   | 11174. | 2399.   | 14.741 | 32.55 | 92.400 | 83.467 | 92.257 | 94.248    |

PRIMARY FLOW DATA

| A#     | P2     | P1      | TT     | PT      | GAMMA  | Z     | REYN      | CD    | WA      | W-FUEL |
|--------|--------|---------|--------|---------|--------|-------|-----------|-------|---------|--------|
| 8.5519 | 88.801 | 185.053 | 39.700 | 186.294 | 1.4282 | .9936 | 17791946. | .9942 | 38.0700 | .0000  |

| PTARE  | FTARE | FX      | FCOR    | FIP     | FIDL    | FTN    | TTN    | FTE    |
|--------|-------|---------|---------|---------|---------|--------|--------|--------|
| 44.230 | .663  | 768.936 | 766.584 | 871.823 | 871.823 | 20.656 | 32.500 | 19.960 |

| PTN/PAMB | TTN/TAMB | WFR1   | WOCR   | WSUM   | WIF    | WIPH   | WIPH2  | VIF     | GAMMAP | ZP    |
|----------|----------|--------|--------|--------|--------|--------|--------|---------|--------|-------|
| 1.401    | .998     | 38.070 | 26.384 | 38.070 | 42.144 | 42.079 | 42.987 | 736.800 | 1.4032 | .9992 |

| CDP   | CDPH  | CDPH2 | CVF   | CV    | CGF   | CGPH  | CGPH2 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| .9033 | .9047 | .8856 | .8820 | .8820 | .7967 | .7980 | .7811 |

| CDPE  | CDPE2 | CVPE  | WIFE   | WIPEH  | VIPE    | GAMMAPE | ZPE   | VE1  | VE2  |
|-------|-------|-------|--------|--------|---------|---------|-------|------|------|
| .9602 | .9414 | .9283 | 39.647 | 40.440 | 700.036 | 1.4031  | .9992 | .000 | .000 |

PRIMARY NOZZLE TOTAL PRESSURES

1) 20.086 2) 21.035 3) 21.325 4) 20.795 5) 19.786 6) 20.166 7) 20.865 8) 21.175

PRIMARY NOZZLE TOTAL TEMPERATURES

1) 33.000 2) \*\*\*\*\* 3) \*\*\*\*\* 4) 32.500 5) 31.500 6) 33.000 7) \*\*\*\*\* 8) \*\*\*\*\* 9) 33.000 10) 32.000

NOZZLE EXIT TOTAL PRESSURES - FTNE

1) 19.946 2) 20.266 3) 19.876 4) 19.816  
5) 19.746 6) 20.146 7) 20.076 8) 19.806

NOZZLE STATIC PRESSURES - PSNE

1) \*\*\*\*\* 2) \*\*\*\*\*

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HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR  
 NOZZLE NOISE TONE SOURCE IDENTIFICATION  
 TEST 23991P - HNTF

## INPUT DATA

|     |      |        |         |        |       |        |        |        |           |
|-----|------|--------|---------|--------|-------|--------|--------|--------|-----------|
| RUN | COND | DATE   | TEST NO | PAMB   | TAMB  | APR1   | AEPF   | APR1H  | 1.02 APR1 |
| 17. | 4.   | 11174. | 2399.   | 14.741 | 32.55 | 92.400 | 83.734 | 92.243 | APR1H2    |
|     |      |        |         |        |       |        |        |        | 94.248    |

## PRIMARY FLOW DATA

|        |        |         |        |         |        |       |           |       |         |        |
|--------|--------|---------|--------|---------|--------|-------|-----------|-------|---------|--------|
| A*     | P2     | P1      | TT     | FT      | GAMMA  | Z     | REYN      | CD    | WA      | W-FUEL |
| 8.5519 | 96.761 | 202.036 | 39.650 | 203.391 | 1.4308 | .9931 | 19462688. | .9942 | 41.6071 | .0000  |

|        |       |         |         |          |          |        |        |        |
|--------|-------|---------|---------|----------|----------|--------|--------|--------|
| PTARE  | FTARE | FX      | FCOR    | FIP      | FIDL     | FTN    | TTN    | FTE    |
| 50.030 | .750  | 905.749 | 902.978 | 1020.777 | 1020.777 | 21.788 | 31.833 | 20.962 |

|          |          |        |        |        |        |        |        |         |        |       |
|----------|----------|--------|--------|--------|--------|--------|--------|---------|--------|-------|
| PTN/PAMB | TTN/TAMB | WFR1   | WOCR   | WSUM   | WIF    | WIFH   | WIFH2  | VIF     | GAMMAP | ZP    |
| 1.478    | .999     | 41.607 | 27.319 | 41.607 | 45.913 | 45.835 | 46.832 | 789.349 | 1.4034 | .9992 |

|       |       |       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|-------|-------|
| CDP   | CDPH  | CDPH2 | CVF   | CV    | CGF   | CGPH  | CGPH2 |
| .9062 | .9078 | .8864 | .8873 | .8873 | .8041 | .8055 | .7883 |

|       |        |       |        |        |         |         |       |      |      |
|-------|--------|-------|--------|--------|---------|---------|-------|------|------|
| CDPE  | CDPEH2 | CVFE  | WIFE   | WIFEH  | VIFE    | GAMMAPE | ZFE   | VE1  | VE2  |
| .9627 | .9438  | .9321 | 43.220 | 44.085 | 751.384 | 1.4033  | .9992 | .000 | .000 |

## PRIMARY NOZZLE TOTAL PRESSURES

1) 21.065 2) 22.254 3) 22.533 4) 21.954 5) 20.805 6) 21.305 7) 22.034 8) 22.353

## PRIMARY NOZZLE TOTAL TEMPERATURES

1) 31.500 2) \*\*\*\*\* 3) \*\*\*\*\* 4) 32.500 5) 31.500 6) 31.500 7) \*\*\*\*\* 8) \*\*\*\*\* 9) 33.000 10) 31.000

## NOZZLE EXIT TOTAL PRESSURES - PTNE

1) 20.905 2) 21.335 3) 20.835 4) 20.765  
 5) 20.755 6) 21.215 7) 21.125 8) 20.765

## NOZZLE STATIC PRESSURES - PSNE

1) \*\*\*\*\* 2) \*\*\*\*\*

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HOT NOZZLE TEST FACILITY

CALCULATION DATE 2/19/74

BUFFALO SUPPRESSOR  
NOZZLE NOISE TO/E SOURCE IDENTIFICATION  
TEST 2399TP - HNTF

INPUT DATA

|     |      |        |         |        |       |        |        |        |                  |
|-----|------|--------|---------|--------|-------|--------|--------|--------|------------------|
| RUN | COND | DATE   | TEST NO | FAMB   | TAMB  | AFRI   | AEFF   | AFRIH  | 1.02 AFRI        |
| 17. | 5.   | 11174. | 2399.   | 14.741 | 32.80 | 92.400 | 84.376 | 92.226 | AFRIH2<br>94.248 |

PRIMARY FLOW DATA

|        |         |         |        |         |        |       |           |       |         |        |
|--------|---------|---------|--------|---------|--------|-------|-----------|-------|---------|--------|
| A*     | P2      | P1      | TT     | FT      | GAMMA  | Z     | REYN      | CD    | WA      | W-FUEL |
| 8.5519 | 105.681 | 220.761 | 39.225 | 222.241 | 1.4338 | .9924 | 21334654. | .9943 | 45.5335 | .0000  |

|        |       |          |          |          |          |        |        |        |
|--------|-------|----------|----------|----------|----------|--------|--------|--------|
| FTARE  | FTARE | FX       | FCOR     | FIP      | FIDL     | FTN    | TTN    | PTE    |
| 55.510 | .833  | 1064.547 | 1061.290 | 1189.604 | 1189.604 | 23.074 | 30.333 | 22.135 |

|          |          |        |        |        |        |        |        |         |        |       |
|----------|----------|--------|--------|--------|--------|--------|--------|---------|--------|-------|
| PTN/FAMB | TTN/TAMB | WFR1   | WCR    | WSUM   | WIP    | WFRH   | WFR2   | VIP     | GAMMAP | ZP    |
| 1.565    | .995     | 45.533 | 28.188 | 45.533 | 49.864 | 49.770 | 50.861 | 840.575 | 1.4037 | .9991 |

|       |       |       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|-------|-------|
| CDP   | CDPH  | CDPH2 | CVF   | CV    | CGF   | CGPH  | CGPH2 |
| .9132 | .9149 | .8953 | .8949 | .8949 | .8172 | .8187 | .8011 |

|       |       |       |        |        |         |         |       |      |      |
|-------|-------|-------|--------|--------|---------|---------|-------|------|------|
| CDPE  | CDPH2 | CVFE  | WIFE   | WIFPH  | VIPE    | GAMMAPE | ZFE   | VE1  | VE2  |
| .9674 | .9484 | .9367 | 47.067 | 48.028 | 803.020 | 1.4035  | .9991 | .000 | .000 |

PRIMARY NOZZLE TOTAL PRESSURES

1) 22.034 2) 23.372 3) 24.272 4) 23.672 5) 21.874 6) 22.373 7) 23.203 8) 23.792

PRIMARY NOZZLE TOTAL TEMPERATURES

1) 30.000 2) \*\*\*\*\* 3) \*\*\*\*\* 4) 31.000 5) 29.500 6) 31.000 7) \*\*\*\*\* 8) \*\*\*\*\* 9) 31.000 10) 29.500

NOZZLE EXIT TOTAL PRESSURES - PTNE

1) 21.984 2) 22.543 3) 22.054 4) 21.964  
5) 21.764 6) 22.363 7) 22.393 8) 22.014

NOZZLE STATIC PRESSURES - PSNE

1) \*\*\*\*\* 2) \*\*\*\*\*

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CALCULATION DATE 2/19/74

HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR

NOZZLE NOISE TONE SOURCE IDENTIFICATION

TEST 2399TP - HNTF

| RUN | COND | FTN/FAMB | TTN/TAMB | CDP   | CDPH  | CVP   | CV    | CGP   | CGPH  | AFR1H  |
|-----|------|----------|----------|-------|-------|-------|-------|-------|-------|--------|
| 17. | 1.   | 1.191    | 1.000    | .8937 | .8947 | .8623 | .8623 | .7707 | .7715 | 92.300 |
| 17. | 2.   | 1.314    | 1.004    | .9041 | .9053 | .8760 | .8760 | .7920 | .7931 | 92.277 |
| 17. | 3.   | 1.401    | .998     | .9033 | .9047 | .8820 | .8820 | .7967 | .7980 | 92.257 |
| 17. | 4.   | 1.478    | .999     | .9062 | .9078 | .8873 | .8873 | .8041 | .8055 | 92.243 |
| 17. | 5.   | 1.565    | .995     | .9132 | .9149 | .8949 | .8949 | .8172 | .8187 | 92.226 |

| CDPH2 | CGPH2 | CDPE  | CDPE2 | CVPE  | AFR1H2 |
|-------|-------|-------|-------|-------|--------|
| .8762 | .7556 | .9628 | .9439 | .9229 | 94.248 |
| .8863 | .7765 | .9621 | .9432 | .9245 | 94.248 |
| .8856 | .7811 | .9602 | .9414 | .9283 | 94.248 |
| .8884 | .7883 | .9627 | .9438 | .9321 | 94.248 |
| .8953 | .8011 | .9674 | .9484 | .9367 | 94.248 |

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CALCULATION DATE 2/19/74

HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR  
NOZZLE NOISE TONE SOURCE IDENTIFICATION  
TEST 2399TF - HNTF

INPUT DATA

| RUN | COND | DATE   | TEST NO | PAMB   | TAMB  | AFRI   | AEFF   | AFRIH  | AFRIH2 | 1.02 AFRI |
|-----|------|--------|---------|--------|-------|--------|--------|--------|--------|-----------|
| 18. | 1.   | 11574. | 2399.   | 14.349 | 53.28 | 92.400 | 83.437 | 93.592 | 94.248 |           |

PRIMARY FLOW DATA

| A*     | P2     | F1     | TT     | FT     | GAMMA  | Z     | REYN     | CD    | WA      | W-FUEL |
|--------|--------|--------|--------|--------|--------|-------|----------|-------|---------|--------|
| 6.5519 | 36.769 | 81.206 | 46.500 | 81.750 | 1.4119 | .9973 | 7579452. | .9937 | 16.4891 | .0165  |

| FTARE  | FTARE | FX      | FCOR    | FIP     | FIDL    | FTN    | TTN     | FTE    |
|--------|-------|---------|---------|---------|---------|--------|---------|--------|
| 20.830 | .312  | 372.088 | 381.083 | 425.356 | 425.356 | 17.068 | 720.683 | 16.699 |

| PTN/PAMB | TTN/TAMB | WFR1   | WCCR   | WSUM   | WIP    | WIFH   | WIFH2  | VIF     | GAMMAP | ZP     |
|----------|----------|--------|--------|--------|--------|--------|--------|---------|--------|--------|
| 1.189    | 2.301    | 16.506 | 21.439 | 16.506 | 18.279 | 18.514 | 18.644 | 829.140 | 1.3717 | 1.0010 |

| CDP   | CDPH  | CDPH2 | CVP   | CV    | CGP   | CGPH  | CGPH2 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| .9030 | .8915 | .8853 | .8748 | .8748 | .7899 | .7799 | .7744 |

| CDPE  | CDPH2 | CVPE  | WIPE   | WIFEH  | VIPE    | GAMMAPE | ZPC    | VE1  | VE2  |
|-------|-------|-------|--------|--------|---------|---------|--------|------|------|
| .9701 | .9511 | .9342 | 17.014 | 17.355 | 776.394 | 1.3714  | 1.0010 | .000 | .000 |

PRIMARY NOZZLE TOTAL PRESSURES

1) 16.397 2) 16.937 3) 17.676 4) 17.496 5) 16.377 6) 16.497 7) 17.066 8) 18.075

PRIMARY NOZZLE TOTAL TEMPERATURES

1) 727.400 2) \*\*\*\*\* 3) \*\*\*\*\* 4) 724.500 5) 710.000 6) 727.400 7) \*\*\*\*\* 8) \*\*\*\*\* 9) 724.000 10) 710.600

NOZZLE EXIT TOTAL PRESSURES - FTNE

1) 16.707 2) 16.907 3) 16.667 4) 16.577  
5) 16.517 6) 16.837 7) 16.777 8) 16.607

NOZZLE STATIC PRESSURES - PSNE

1) \*\*\*\*\* 2) \*\*\*\*\*

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CALCULATION DATE 2/19/74

## HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR  
NOZZLE NOISE TONE SOURCE IDENTIFICATION  
TEST 2399TF - HNTF

## INPUT DATA

| RUN | COND | DATE   | TEST NO | FAMB   | TAMB  | APRI   | AEFF   | APRIH  | 1.02 APRI |
|-----|------|--------|---------|--------|-------|--------|--------|--------|-----------|
| 18. | 2.   | 11574. | 2399.   | 14.349 | 53.36 | 92.400 | 83.170 | 93.606 | 94.248    |

## PRIMARY FLOW DATA

| A*     | P2     | P1     | TT     | FT     | GAMMA  | Z     | REYN     | CD    | WA      | W-FUEL |
|--------|--------|--------|--------|--------|--------|-------|----------|-------|---------|--------|
| 8.5519 | 43.559 | 91.236 | 47.040 | 91.848 | 1.4133 | .9970 | 8511976. | .9937 | 18.5259 | .0188  |

| PTARE  | FTARE | FX      | FCOR    | FIP     | FIDL    | FTN    | TTN     | FTE    |
|--------|-------|---------|---------|---------|---------|--------|---------|--------|
| 25.040 | .376  | 472.264 | 483.682 | 542.011 | 542.011 | 17.687 | 743.267 | 17.389 |

| PTN/FAMB | TTN/TAMB | WFR1   | WOCR   | WSLN   | WIF    | WIFH   | WIFH2  | VIP     | GAMMAF | ZP     |
|----------|----------|--------|--------|--------|--------|--------|--------|---------|--------|--------|
| 1.247    | 2.345    | 18.545 | 23.204 | 18.545 | 20.603 | 20.872 | 21.015 | 940.354 | 1.3713 | 1.0009 |

| CDP   | CDPH  | CDPH2 | CVF   | CV    | CGF   | CGPH  | CGPH2 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| .9001 | .8885 | .8825 | .8713 | .8713 | .7843 | .7742 | .7689 |

| CDPE  | CDPH2 | CVFE  | WIFE   | WIFPH  | VIFE    | GAMMAFE | ZFE    | VE1  | VE2  |
|-------|-------|-------|--------|--------|---------|---------|--------|------|------|
| .9696 | .9506 | .9314 | 19.126 | 19.508 | 879.687 | 1.3707  | 1.0009 | .000 | .000 |

## PRIMARY NOZZLE TOTAL PRESSURES

1) 17.046 2) 17.916 3) 18.895 4) 18.655 5) 16.996 6) 17.076 7) 17.686 8) 18.825

## PRIMARY NOZZLE TOTAL TEMPERATURES

1) 751.200 2) \*\*\*\*\* 3) \*\*\*\*\* 4) 742.800 5) 735.000 6) 751.600 7) \*\*\*\*\* 8) \*\*\*\*\* 9) 743.200 10) 735.600

## NOZZLE EXIT TOTAL PRESSURES - PTNE

1) 17.346 2) 17.636 3) 17.346 4) 17.256  
5) 17.156 6) 17.526 7) 17.536 8) 17.306

## NOZZLE STATIC PRESSURES - PSNE

1) \*\*\*\*\* 2) \*\*\*\*\*

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HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR  
NOZZLE NOISE TONE SOURCE IDENTIFICATION  
TEST 2399TF - HNTF

INPUT DATA

| RUN | COND | DATE   | TEST NO | FAMB   | TAMB  | AFRI   | AEFF   | APRTH  | 1.02 APRI |
|-----|------|--------|---------|--------|-------|--------|--------|--------|-----------|
| 18. | 3.   | 11574. | 2399.   | 14.349 | 53.36 | 92.400 | 83.598 | 93.682 | 94.248    |

PRIMARY FLOW DATA

| AP     | P2     | P1      | TT     | PT      | GAMMA  | Z     | REYN     | CD    | WA      | W-FUEL |
|--------|--------|---------|--------|---------|--------|-------|----------|-------|---------|--------|
| 8.5519 | 48.519 | 101.613 | 47.640 | 102.294 | 1.4148 | .9967 | 9474764. | .9938 | 20.6323 | .0229  |

| PTARE  | FTARE | FX      | FCOR    | FIP     | FIDL    | PTN    | TTN     | FTE    |
|--------|-------|---------|---------|---------|---------|--------|---------|--------|
| 30.410 | .456  | 616.164 | 631.060 | 691.437 | 691.437 | 18.940 | 803.083 | 18.354 |

| PTN/PAMB | TTN/TAMB | WRI    | WCOR   | WSUM   | WIF    | WIFH   | WIFH2  | VIP      | GAMMAP | ZP     |
|----------|----------|--------|--------|--------|--------|--------|--------|----------|--------|--------|
| 1.320    | 2.461    | 20.655 | 25.007 | 20.655 | 22.830 | 23.147 | 23.287 | 1077.032 | 1.3689 | 1.0006 |

| CDP   | CDFH  | CDFH2 | CVP   | CV    | CGP   | CGFH  | CGFH2 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| .9047 | .8924 | .8870 | .8911 | .8911 | .8062 | .7952 | .7904 |

| CDPE  | CDPEH2 | CVPE  | WIFE   | WIFEH  | VIPE     | GAMMAPE | ZPE    | VE1  | VE2  |
|-------|--------|-------|--------|--------|----------|---------|--------|------|------|
| .9669 | .9480  | .9443 | 21.362 | 21.789 | 1016.397 | 1.3683  | 1.0005 | .000 | .000 |

PRIMARY NOZZLE TOTAL PRESSURES

1) 17.736 2) 18.665 3) 20.303 4) 20.243 5) 17.766 6) 17.856 7) 18.635 8) 20.313

PRIMARY NOZZLE TOTAL TEMPERATURES

1) 809.600 2) \*\*\*\*\* 3) \*\*\*\*\* 4) 802.000 5) 796.600 6) 811.200 7) \*\*\*\*\* 8) \*\*\*\*\* 9) 802.500 10) 796.600

NOZZLE EXIT TOTAL PRESSURES - PTNE

1) 18.285 2) 18.675 3) 18.295 4) 18.185  
5) 18.075 6) 18.545 7) 18.515 8) 18.255

NOZZLE STATIC PRESSURES - PSNE

1) \*\*\*\*\* 2) \*\*\*\*\*



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CALCULATION DATE 2/19/74

## HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR  
NOZZLE NOISE TONE SOURCE IDENTIFICATION  
TEST 2399TF - HNTF

## INPUT DATA

| RUN | COND | DATE   | TEST NO | PAMB   | TAMB  | APR1   | AEFF   | APR1H  | 1.02 APR1 |
|-----|------|--------|---------|--------|-------|--------|--------|--------|-----------|
| 18. | 4.   | 11574. | 2399.   | 14.349 | 53.52 | 92.400 | 83.621 | 93.762 | 94.248    |

## PRIMARY FLOW DATA

| A*       | P2       | P1      | TT      | PT      | GAMMA    | Z       | REYN      | CD       | WA      | W-FUEL |
|----------|----------|---------|---------|---------|----------|---------|-----------|----------|---------|--------|
| 8.5519   | 52.629   | 110.177 | 48.175  | 110.916 | 1.4160   | .9965   | 10267413. | .9938    | 22.3696 | .0268  |
| PTARE    | FTARE    | FX      | FCOR    | FIP     | FIDL     | FTN     | TTN       | FTE      |         |        |
| 35.030   | .525     | 744.134 | 762.124 | 840.705 | 840.705  | 20.056  | 866.783   | 19.347   |         |        |
| FTN/PAMB | TTN/TAMB | WFR1    | WOCR    | WSUM    | WIF      | WIF1    | WIF2      | VIF      | GAMMAP  | ZP     |
| 1.398    | 2.585    | 22.396  | 26.244  | 22.396  | 24.748   | 25.112  | 25.243    | 1207.730 | 1.3664  | 1.0002 |
| CDP      | CDP1     | CDP2    | CVF     | CV      | CGP      | CGP1    | CGP2      |          |         |        |
| .9050    | .8918    | .8872   | .8851   | .8851   | .8010    | .7894   | .7853     |          |         |        |
| CDPE     | CDPE2    | CVFE    | WIFE    | WIFE1   | VIFE     | GAMMAFE | ZFE       | VE1      | VE2     |        |
| .9650    | .9461    | .9347   | 23.208  | 23.672  | 1143.687 | 1.3656  | 1.0002    | .000     | .000    |        |

## PRIMARY NOZZLE TOTAL PRESSURES

1) 18.575 2) 19.524 3) 21.722 4) 21.822 5) 18.655 6) 18.725 7) 19.664 8) 21.762

## PRIMARY NOZZLE TOTAL TEMPERATURES

1) 873.000 2) \*\*\*\*\* 3) \*\*\*\*\* 4) 865.400 5) 859.400 6) 874.500 7) \*\*\*\*\* 8) \*\*\*\*\* 9) 867.000 10) 861.400

## NOZZLE EXIT TOTAL PRESSURES - FTNE

1) 19.224 2) 19.744 3) 19.304 4) 19.154  
5) 18.994 6) 19.564 7) 19.534 8) 19.254

## NOZZLE STATIC PRESSURES - PSNE

1) \*\*\*\*\* 2) \*\*\*\*\*

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CALCULATION DATE 2/19/74

MOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR  
NOZZLE NOISE TONE SOURCE IDENTIFICATION  
TEST 2399TP - HNTF

INPUT DATA

| RUN | COND | DATE   | TEST NO | PAMB   | TAMB  | APRI   | AETF   | APR1H  | 1.02 APRI        |
|-----|------|--------|---------|--------|-------|--------|--------|--------|------------------|
| 18. | 5.   | 11574. | 2399.   | 14.349 | 53.56 | 92.400 | 84.307 | 93.803 | APRIH2<br>94.248 |

PRIMARY FLOW DATA

| A*     | P2     | P1      | TT     | PT      | GAMMA  | Z     | REYN      | CD    | WA      | W-FUEL |
|--------|--------|---------|--------|---------|--------|-------|-----------|-------|---------|--------|
| 8.5519 | 56.809 | 118.958 | 48.875 | 119.756 | 1.4172 | .9962 | 11074550. | .9938 | 24.1468 | .0303  |

| PTARE  | FTARE | FX      | FCOR    | FIP     | FIDL    | PTN    | TTN     | FTE    |
|--------|-------|---------|---------|---------|---------|--------|---------|--------|
| 39.700 | .595  | 887.344 | 908.797 | 988.240 | 988.240 | 21.144 | 908.466 | 20.392 |

| PTN/PAMB | TTN/TAMB | WFR1   | WGOR   | WSUM   | WIP    | WIFH   | WIFH2  | VIP      | GAMMAF | ZP     |
|----------|----------|--------|--------|--------|--------|--------|--------|----------|--------|--------|
| 1.474    | 2.666    | 24.177 | 27.292 | 24.177 | 26.498 | 26.900 | 27.028 | 1315.113 | 1.3651 | 1.0000 |

| CPF   | CDPH  | CDPH2 | CVF   | CV    | CGP   | CGFH  | CGFH2 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| .9124 | .8988 | .8945 | .8979 | .8979 | .8193 | .8070 | .8032 |

| COPE  | CDPH2 | CVFE  | WIFE   | WIFEH  | VIFE     | GAMMAFE | ZFE    | VE1  | VE2  |
|-------|-------|-------|--------|--------|----------|---------|--------|------|------|
| .9654 | .9464 | .9408 | 25.044 | 25.545 | 1255.210 | 1.3643  | 1.0000 | .000 | .000 |

PRIMARY NOZZLE TOTAL PRESSURES

1) 19.464 2) 20.373 3) 22.861 4) 23.180 5) 19.674 6) 19.594 7) 20.673 8) 23.350

PRIMARY NOZZLE TOTAL TEMPERATURES

1) 916.400 2) \*\*\*\*\* 3) \*\*\*\*\* 4) 906.200 5) 902.200 6) 916.000 7) \*\*\*\*\* 8) \*\*\*\*\* 9) 905.800 10) 904.200

NOZZLE EXIT TOTAL PRESSURES - FTNE

1) 20.293 2) 20.843 3) 20.353 4) 20.183  
5) 19.944 6) 20.633 7) 20.593 8) 20.293

NOZZLE STATIC PRESSURES - PSNE

1) \*\*\*\*\* 2) \*\*\*\*\*

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CALCULATION DATE 2/19/74

HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR

NOZZLE NOISE TONE SOURCE IDENTIFICATION

TEST 2399TP - HNTF

| RUN | COND | PTN/PAMB | TTN/TAHB | CDP   | CDPH  | CVF   | CV    | CGP   | CGPH  | AFRTH  |
|-----|------|----------|----------|-------|-------|-------|-------|-------|-------|--------|
| 18. | 1.   | 1.189    | 2.301    | .9030 | .8915 | .8748 | .8748 | .7899 | .7799 | 93.592 |
| 18. | 2.   | 1.247    | 2.345    | .9001 | .8885 | .8713 | .8713 | .7843 | .7742 | 93.606 |
| 18. | 3.   | 1.320    | 2.461    | .9047 | .8924 | .8911 | .8911 | .8062 | .7952 | 93.682 |
| 18. | 4.   | 1.398    | 2.585    | .9050 | .8918 | .8851 | .8851 | .8010 | .7894 | 93.762 |
| 18. | 5.   | 1.474    | 2.666    | .9124 | .8988 | .8979 | .8979 | .8193 | .8070 | 93.803 |

| CDPH2 | CGPH2 | CDPE  | CDPH2 | CVPE  | AFRTH2 |
|-------|-------|-------|-------|-------|--------|
| .8853 | .7744 | .9701 | .9511 | .9342 | 94.248 |
| .8825 | .7689 | .9696 | .9506 | .9314 | 94.248 |
| .8870 | .7904 | .9669 | .9480 | .9443 | 94.248 |
| .8872 | .7853 | .9650 | .9461 | .9347 | 94.248 |
| .8945 | .8032 | .9654 | .9464 | .9408 | 94.248 |

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CALCULATION DATE 2/19/74

MOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR  
NOZZLE NOISE TONE SOURCE IDENTIFICATION  
TEST 2399TF - HWTF

INPUT DATA

| RUN | COND | DATE   | TEST NO | FAMB   | TAMB  | APRI   | AEFF   | AFRIH  | AFRIH2 | 1.02 APRI |
|-----|------|--------|---------|--------|-------|--------|--------|--------|--------|-----------|
| 19. | 1.   | 11574. | 2399.   | 14.354 | 54.16 | 92.400 | 83.450 | 93.587 | 94.248 |           |

PRIMARY FLOW DATA

| A*     | P2     | P1     | TT     | PT     | GAMMA  | Z     | REYN     | CD    | WA      | W-FUEL |
|--------|--------|--------|--------|--------|--------|-------|----------|-------|---------|--------|
| 8.5519 | 38.244 | 79.990 | 49.400 | 80.526 | 1.4116 | .9975 | 7406977. | .9937 | 16.1932 | .0180  |

| PTARE  | FTARE | FX      | FCOR    | FIP     | FIDL    | PTN    | TTN     | PTE    |
|--------|-------|---------|---------|---------|---------|--------|---------|--------|
| 20.150 | .302  | 350.138 | 358.478 | 409.049 | 409.049 | 16.961 | 715.783 | 16.519 |

| PTN/FAMB | TTN/TAMB | WFR1   | WGOR   | WSUM   | WIF    | WIPH   | WIFH2  | VIP     | GAMMAP | ZF     |
|----------|----------|--------|--------|--------|--------|--------|--------|---------|--------|--------|
| 1.182    | 2.288    | 16.209 | 21.142 | 16.209 | 17.948 | 18.178 | 18.307 | 811.929 | 1.3719 | 1.0011 |

| CDP   | CDPH  | CDPH2 | CVP   | CV    | CGP   | CGPH  | CGPH2 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| .9031 | .8917 | .8854 | .8560 | .8560 | .7731 | .7633 | .7579 |

| CDPE  | CDPH2 | CVFE  | WIFE   | WIPH   | VIPE    | GAMMAPE | ZPE    | VE1    | VE2    |
|-------|-------|-------|--------|--------|---------|---------|--------|--------|--------|
| .9897 | .9703 | .9313 | 16.378 | 16.706 | 746.263 | 1.3714  | 1.0011 | 49.581 | 65.612 |

PRIMARY NOZZLE TOTAL PRESSURES

1) 16.332 2) 16.842 3) 17.381 4) 17.251 5) 16.312 6) 16.462 7) 17.091 8) 18.023

PRIMARY NOZZLE TOTAL TEMPERATURES

1) 719.200 2) \*\*\*\*\* 3) \*\*\*\*\* 4) 721.000 5) 706.000 6) 721.000 7) \*\*\*\*\* 8) \*\*\*\*\* 9) 720.500 10) 707.000

NOZZLE EXIT TOTAL PRESSURES - PTNE

1) 16.812 2) 16.842 3) 16.832 4) 16.462  
5) 15.853 6) 16.362 7) 16.552 8) 16.642

NOZZLE STATIC PRESSURES - PSNE

1) 14.334 2) 14.319

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HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR  
 NOZZLE NOISE TONE SOURCE IDENTIFICATION  
 TEST 2399TP - HNTF

## INPUT DATA

| RUN | COND | DATE   | TEST NO | PAMB   | TAMB  | APRI   | AEFF   | APRIH  | 1.02 APRI |
|-----|------|--------|---------|--------|-------|--------|--------|--------|-----------|
| 19. | 2.   | 11574. | 2399.   | 14.354 | 53.92 | 92.400 | 82.693 | 93.617 | 94.248    |

## PRIMARY FLOW DATA

| A*     | P2     | P1     | TT     | FT     | GAMMA  | Z     | REYN     | CD    | WA      | W-FUEL |
|--------|--------|--------|--------|--------|--------|-------|----------|-------|---------|--------|
| 8.5519 | 44.204 | 92.492 | 51.150 | 93.112 | 1.4132 | .9971 | 8535336. | .9937 | 18.7038 | .0192  |

| PTARE  | FTARE | FX      | FCOR    | FIP     | FIDL    | PTN    | TTN     | PTE    |
|--------|-------|---------|---------|---------|---------|--------|---------|--------|
| 25.830 | .367  | 486.392 | 497.978 | 558.196 | 558.196 | 18.029 | 751.650 | 17.402 |

| PTN/PAMB | TTN/TAMB | WFR1   | WGOR   | WSUM   | WIF    | WIFH   | WIFH2  | VIP     | GAMMAP | ZP     |
|----------|----------|--------|--------|--------|--------|--------|--------|---------|--------|--------|
| 1.256    | 2.358    | 18.723 | 23.323 | 18.723 | 20.921 | 21.196 | 21.339 | 959.214 | 1.3709 | 1.0009 |

| CDP   | CDFH  | CDH2  | CVF   | CV    | CGF   | CGFH  | CGFH2 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| .8949 | .8833 | .8774 | .8714 | .8714 | .7798 | .7697 | .7645 |

| CDPE  | CDPEH2 | CVPE  | WIFE   | WIFEH  | VIPE    | GAMMAPE | ZPE    | VE1    | VE2    |
|-------|--------|-------|--------|--------|---------|---------|--------|--------|--------|
| .9608 | .9616  | .9458 | 19.090 | 19.471 | 883.722 | 1.3703  | 1.0006 | 62.724 | 78.418 |

## PRIMARY NOZZLE TOTAL PRESSURES

1) 17.111 2) 17.951 3) 19.049 4) 18.860 5) 17.121 6) 17.181 7) 17.871 8) 19.089

## PRIMARY NOZZLE TOTAL TEMPERATURES

1) 762.200 2) \*\*\*\*\* 3) \*\*\*\*\* 4) 755.500 5) 726.200 6) 761.800 7) \*\*\*\*\* 8) \*\*\*\*\* 9) 755.000 10) 749.200

## NOZZLE EXIT TOTAL PRESSURES - PTNE

1) 17.781 2) 17.861 3) 17.621 4) 17.371  
 5) 16.452 6) 17.131 7) 17.421 8) 17.561

## NOZZLE STATIC PRESSURES - PSNE

1) 14.322 2) 14.304

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HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR  
NOZZLE NOISE TONE SOURCE IDENTIFICATION  
TEST 2399TP - HNTF

INPUT DATA

| RUN | COND | DATE   | TEST NO | FAMB   | TAMB  | APRI   | AEFF   | APRIH  | 1.02 APRI |
|-----|------|--------|---------|--------|-------|--------|--------|--------|-----------|
| 19. | 3.   | 11574. | 2399.   | 14.354 | 53.96 | 92.400 | 83.302 | 93.689 | 94.248    |

PRIMARY FLOW DATA

| A*     | P2     | P1      | TT     | PT      | GAMMA  | Z     | REYN     | CD    | WA      | W-FUEL |
|--------|--------|---------|--------|---------|--------|-------|----------|-------|---------|--------|
| 8.5519 | 49.234 | 102.998 | 52.675 | 103.689 | 1.4146 | .9969 | 9476010. | .9938 | 20.8060 | .0227  |

| PTARE  | FTARE | FX      | FCOR    | FIP     | FIDL    | FTN    | TTN     | PTE    |
|--------|-------|---------|---------|---------|---------|--------|---------|--------|
| 30.730 | .461  | 618.559 | 633.293 | 707.805 | 707.805 | 19.083 | 809.700 | 18.330 |

| PTN/FAMB | TTN/TAMB | WFR1   | WOCR   | WSUM   | WIF    | WIF1   | WIF2   | VIF      | GAMMAF | ZF     |
|----------|----------|--------|--------|--------|--------|--------|--------|----------|--------|--------|
| 1.329    | 2.471    | 20.831 | 25.096 | 20.831 | 23.106 | 23.428 | 23.568 | 1093.241 | 1.3687 | 1.0005 |

| ODF   | ODPH  | ODPH2 | CVF   | CV    | CGF   | CGPH  | CGPH2 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| .9015 | .8891 | .8839 | .8739 | .8739 | .7879 | .7770 | .7724 |

| ODFE  | ODPH2 | CVFE  | WIFE   | WIFEH  | VIFE     | GAMMAFE | ZFE    | VE1    | VE2    |
|-------|-------|-------|--------|--------|----------|---------|--------|--------|--------|
| .9810 | .9617 | .9406 | 21.235 | 21.659 | 1015.756 | 1.3679  | 1.0005 | 62.727 | 62.997 |

PRIMARY NOZZLE TOTAL PRESSURES

1) 17.881 2) 18.900 3) 20.398 4) 20.268 5) 17.970 6) 18.000 7) 18.820 8) 20.428

PRIMARY NOZZLE TOTAL TEMPERATURES

1) 810.800 2) \*\*\*\*\* 3) \*\*\*\*\* 4) 802.000 5) 880.200 6) 809.600 7) \*\*\*\*\* 8) \*\*\*\*\* 9) 802.000 10) 773.600

NOZZLE EXIT TOTAL PRESSURES - PTNE

1) 18.800 2) 18.900 3) 18.570 4) 18.300  
5) 17.181 6) 18.010 7) 18.340 8) 18.540

NOZZLE STATIC PRESSURES - PSNE

1) 14.322 2) 14.298

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## HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR  
 NOZZLE NOISE TONE SOURCE IDENTIFICATION  
 TEST 2399TF - HNTF

## INPUT DATA

| RUN | COND | DATE   | TEST NO | FAHB   | TAMB  | AFR1   | AEFF   | AFR1H  | 1.02 AFR1        |
|-----|------|--------|---------|--------|-------|--------|--------|--------|------------------|
| 19. | 4.   | 11574. | 2399.   | 14.354 | 53.88 | 92.400 | 83.558 | 93.758 | AFR1H2<br>94.248 |

## PRIMARY FLOW DATA

| A*     | P2     | P1      | TT     | PT      | GAMMA  | Z     | REYN      | CD    | WA      | W-FUEL |
|--------|--------|---------|--------|---------|--------|-------|-----------|-------|---------|--------|
| 8.5519 | 53.124 | 111.183 | 53.560 | 111.928 | 1.4157 | .9967 | 10212977. | .9938 | 22.4510 | .0265  |

| PTARE  | FTARE | FX      | PCOR    | FIP     | FIDL    | PTN    | TTN     | PTE    |
|--------|-------|---------|---------|---------|---------|--------|---------|--------|
| 35.460 | .532  | 744.108 | 761.832 | 845.824 | 845.824 | 20.105 | 865.466 | 19.234 |

| FTN/FAHB | TTN/TAMB | WFR1   | WCR    | WSUM   | WIF    | WIFH   | WIFH2  | VIF      | GAMMAP | ZP     |
|----------|----------|--------|--------|--------|--------|--------|--------|----------|--------|--------|
| 1.401    | 2.580    | 22.478 | 26.262 | 22.478 | 24.856 | 25.221 | 25.353 | 1210.732 | 1.3665 | 1.0002 |

| CDP   | CDPH  | CDPH2 | CVF   | CV    | CGF   | CGFH  | CGFH2 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| .9043 | .6912 | .6866 | .8797 | .8797 | .7956 | .7840 | .7800 |

| CDPE  | CDPH2 | CVFE  | WIFE   | WIFEH  | VIFE     | GAMMAPE | ZPE    | VE1    | VE2    |
|-------|-------|-------|--------|--------|----------|---------|--------|--------|--------|
| .9791 | .9599 | .9411 | 22.958 | 23.417 | 1131.714 | 1.3656  | 1.0002 | 74.361 | 97.971 |

## PRIMARY NOZZLE TOTAL PRESSURES

1) 18.630 2) 19.629 3) 21.697 4) 21.787 5) 18.790 6) 18.780 7) 19.729 8) 21.797

## PRIMARY NOZZLE TOTAL TEMPERATURES

1) 871.800 2) \*\*\*\*\* 3) \*\*\*\*\* 4) 864.800 5) 859.000 6) 871.800 7) \*\*\*\*\* 8) \*\*\*\*\* 9) 865.800 10) 859.800

## NOZZLE EXIT TOTAL PRESSURES - PTNE

1) 19.729 2) 19.899 3) 19.569 4) 19.239  
 5) 17.841 6) 18.880 7) 19.249 8) 19.469

## NOZZLE STATIC PRESSURES - PSNE

1) 14.309 2) 14.276

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HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR  
NOZZLE NOISE TONE SOURCE IDENTIFICATION  
TEST 2399TF - HNTF

| INPUT DATA        |          |         |         |         |          |         |           |          |         | 1.02   | AFRI |
|-------------------|----------|---------|---------|---------|----------|---------|-----------|----------|---------|--------|------|
| RUN               | COND     | DATE    | TEST NO | FAMB    | TAMB     | AFRI    | AEFF      | AFRIH    | AFRIH2  | AFRIH2 |      |
| 19.               | 5.       | 11574.  | 2399.   | 14.354  | 53.96    | 92.400  | 83.783    | 93.796   | 94.248  |        |      |
| PRIMARY FLOW DATA |          |         |         |         |          |         |           |          |         |        |      |
| A*                | P2       | P1      | TT      | PT      | GAMMA    | Z       | REYN      | CD       | WA      | W-FUEL |      |
| 8.5519            | 56.654   | 118.534 | 54.300  | 119.329 | 1.4167   | .9965   | 10874542. | .9938    | 23.9268 | .0297  |      |
| PTARE             | FTARE    | FX      | FCOR    | FIP     | FIDL     | FTN     | TTN       | PTE      |         |        |      |
| 39.560            | .993     | 867.926 | 688.600 | 973.171 | 973.171  | 21.077  | 903.233   | 20.145   |         |        |      |
| PTN/FAMB          | TTN/TAMB | WFR1    | WCOR    | WSUM    | WIF      | WIF1    | WIF2      | VIP      | GAMMAP  | ZF     |      |
| 1.468             | 2.653    | 23.956  | 27.076  | 23.956  | 26.420   | 26.820  | 26.949    | 1306.986 | 1.3653  | 1.0000 |      |
| CDP               | CDP1     | CDP2    | CVF     | CV      | CGF      | CGF1    | CGF2      |          |         |        |      |
| .9067             | .8932    | .8890   | .6919   | .6919   | .8087    | .7966   | .7928     |          |         |        |      |
| CDPE              | CDPE2    | CVFE    | WIFE    | WIFE1   | WIFE     | GAMMAPE | ZPE       | VE1      | VE2     |        |      |
| .9744             | .9553    | .9467   | 24.587  | 25.078  | 1231.268 | 1.3644  | 1.0000    | 77.629   | 99.228  |        |      |

PRIMARY NOZZLE TOTAL PRESSURES

1) 19.439 2) 20.496 3) 22.955 4) 23.115 5) 19.619 6) 19.549 7) 20.508 8) 22.936

PRIMARY NOZZLE TOTAL TEMPERATURES

1) 910.200 2) \*\*\*\*\* 3) \*\*\*\*\* 4) 901.000 5) 898.500 6) 909.800 7) \*\*\*\*\* 8) \*\*\*\*\* 9) 901.400 10) 898.500

NOZZLE EXIT TOTAL PRESSURES - PTNE

1) 20.698 2) 20.868 3) 20.528 4) 20.218  
5) 18.580 6) 19.789 7) 20.128 8) 20.348

NOZZLE STATIC PRESSURES - PSNE

1) 14.305 2) 14.274



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HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR

NOZZLE NOISE TONE SOURCE IDENTIFICATION

TEST 23991P - MNTF

| RUN | COND | FTN/FAMB | TTN/TAMB | CF    | CFH   | CVF   | CV    | CGP   | CGH   | AFR1H  |
|-----|------|----------|----------|-------|-------|-------|-------|-------|-------|--------|
| 19. | 1.   | 1.182    | 2.288    | .9031 | .8917 | .8560 | .8560 | .7731 | .7633 | 93.587 |
| 19. | 2.   | 1.256    | 2.358    | .8949 | .8833 | .8714 | .8714 | .7798 | .7697 | 93.617 |
| 19. | 3.   | 1.329    | 2.471    | .9015 | .8891 | .8739 | .8739 | .7879 | .7770 | 93.689 |
| 19. | 4.   | 1.401    | 2.560    | .9043 | .8912 | .8797 | .8797 | .7956 | .7840 | 93.758 |
| 19. | 5.   | 1.468    | 2.653    | .9067 | .8932 | .8919 | .8919 | .8087 | .7966 | 93.796 |

| CFH2  | CGH2  | CFE   | CFD2  | CFE   | AFR1H2 |
|-------|-------|-------|-------|-------|--------|
| .8854 | .7579 | .9697 | .9703 | .9313 | 94.248 |
| .8774 | .7645 | .9608 | .9616 | .9458 | 94.248 |
| .8839 | .7724 | .9810 | .9617 | .9406 | 94.248 |
| .8866 | .7800 | .9791 | .9599 | .9411 | 94.248 |
| .8690 | .7928 | .9744 | .9553 | .9467 | 94.248 |

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HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR  
NOZZLE NOISE TONE SOURCE IDENTIFICATION  
TEST 2399TP - HNTF

INPUT DATA

| RUN | COND | DATE   | TEST NO | FAMB   | TAMB  | APRI   | AEFF   | APRIH  | 1.02 APRI |
|-----|------|--------|---------|--------|-------|--------|--------|--------|-----------|
| 20. | 1.   | 11774. | 2399.   | 14.814 | 45.48 | 92.400 | 86.764 | 93.560 | 94.248    |

PRIMARY FLOW DATA

| AA     | P2     | P1     | TT     | PT     | GAMMA  | Z     | REYN     | CD    | WA      | W-FUEL |
|--------|--------|--------|--------|--------|--------|-------|----------|-------|---------|--------|
| 0.5519 | 40.164 | 84.063 | 47.020 | 84.627 | 1.4123 | .9973 | 7837444. | .9937 | 17.0630 | .0157  |

| PTARE  | FTARE | FX      | FCOR    | FIP     | FIDL    | FTN    | TTN     | FTE    |
|--------|-------|---------|---------|---------|---------|--------|---------|--------|
| 21.010 | .315  | 376.665 | 373.662 | 418.177 | 418.177 | 17.370 | 699.375 | 16.923 |

| PTN/PAMB | TTN/TAMB | WRI    | WCR    | WSUM   | WIP    | WIFH   | WIFH2  | VIF     | GAMMAP | ZP     |
|----------|----------|--------|--------|--------|--------|--------|--------|---------|--------|--------|
| 1.173    | 2.294    | 17.079 | 21.600 | 17.079 | 18.188 | 18.416 | 18.552 | 787.792 | 1.3728 | 1.0012 |

| CDP   | CDPH  | CDPH2 | CVF   | CV    | CGP   | CGPH  | CGPH2 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| .9390 | .9274 | .9206 | .9007 | .9007 | .8458 | .8353 | .8292 |

| CDPE   | CDPH2  | CVFE  | WIFE   | WIFDH  | VIFE    | GAMMAPE | ZPE    | VE1    | VE2    |
|--------|--------|-------|--------|--------|---------|---------|--------|--------|--------|
| 1.0324 | 1.0121 | .9833 | 16.543 | 16.874 | 721.661 | 1.3723  | 1.0012 | 53.020 | 67.597 |

PRIMARY NOZZLE TOTAL PRESSURES

1) 16.742 2) 17.302 3) 17.691 4) 17.731 5) 16.722 6) 16.662 7) 17.441 8) 18.271

PRIMARY NOZZLE TOTAL TEMPERATURES

1) 693.500 2) 703.500 3) \*\*\*\*\* 4) \*\*\*\*\* 5) \*\*\*\*\* 6) 695.000 7) 705.500 8) \*\*\*\*\* 9) \*\*\*\*\* 10) \*\*\*\*\*

NOZZLE EXIT TOTAL PRESSURES - PTNE

1) 17.232 2) 17.272 3) 17.052 4) 16.662  
5) 16.223 6) 16.732 7) 16.942 8) 17.052

NOZZLE STATIC PRESSURES - PSNE

1) 14.790 2) 14.775

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## HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR  
 NOZZLE NOISE TONE SOURCE IDENTIFICATION  
 TEST 2399TF - HNTF

## INPUT DATA

| RUN | COND | DATE   | TEST NO | FAMB   | TAMB  | AFR1   | AEFF   | AFR1H  | AFR1H2 | 1.02 AFR1 |
|-----|------|--------|---------|--------|-------|--------|--------|--------|--------|-----------|
| 20. | 2.   | 11774. | 2399.   | 14.814 | 45.48 | 92.400 | 85.075 | 93.632 | 94.248 |           |

## PRIMARY FLOW DATA

| A*     | P2     | P1     | TT     | PT     | GAMMA  | Z     | REYN     | CD    | WA      | W-FUEL |
|--------|--------|--------|--------|--------|--------|-------|----------|-------|---------|--------|
| 8.5519 | 45.584 | 95.404 | 46.780 | 96.044 | 1.4140 | .9969 | 6910953. | .9937 | 19.3821 | .0195  |

| PTARE  | FTARE | FX      | FCOR    | FIP     | FIDL    | FTN    | TTN     | FTE    |
|--------|-------|---------|---------|---------|---------|--------|---------|--------|
| 26.290 | .394  | 499.526 | 495.543 | 568.415 | 568.415 | 18.439 | 757.000 | 17.780 |

| PTN/FAMB | TTN/TAMB | WFR1   | WOCR   | WSUM   | WIF    | WFRH   | WFRH2  | VIP     | GAMMAP | ZP     |
|----------|----------|--------|--------|--------|--------|--------|--------|---------|--------|--------|
| 1.245    | 2.408    | 19.402 | 23.683 | 19.402 | 21.072 | 21.353 | 21.494 | 942.614 | 1.3705 | 1.0008 |

| CDP   | CDPH  | CDPH2 | CVF   | CV    | CGP   | CGPH  | CGPH2 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| .9207 | .9086 | .9027 | .8788 | .8788 | .8091 | .7985 | .7933 |

| CDPE   | CDPEH2 | CVPE  | WIFE   | WIFPH  | VIFE    | GAMMAPE | ZPE    | VE1    | VE2    |
|--------|--------|-------|--------|--------|---------|---------|--------|--------|--------|
| 1.0159 | .9960  | .9601 | 19.097 | 19.479 | 862.762 | 1.3698  | 1.0008 | 63.102 | 82.450 |

## PRIMARY NOZZLE TOTAL PRESSURES

1) 17.521 2) 18.301 3) 19.350 4) 19.190 5) 17.521 6) 17.691 7) 18.420 8) 19.559

## PRIMARY NOZZLE TOTAL TEMPERATURES

1) 749.200 2) 764.200 3) \*\*\*\*\* 4) \*\*\*\*\* 5) \*\*\*\*\* 6) 750.000 7) 764.600 8) \*\*\*\*\* 9) \*\*\*\*\* 10) \*\*\*\*\*

## NOZZLE EXIT TOTAL PRESSURES - PTNE

1) 18.171 2) 18.261 3) 17.981 4) 17.751  
 5) 16.812 6) 17.521 7) 17.801 8) 17.941

## NOZZLE STATIC PRESSURES - PSNE

1) 14.780 2) 14.756

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HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR  
NOZZLE NOISE TONE SOURCE IDENTIFICATION  
TEST 23991F - HNTF

INPUT DATA

| RUN | COND | DATE   | TEST NO | PAMB   | TAMB  | APRI   | AEFF   | APRIH  | 1.02 APRI |
|-----|------|--------|---------|--------|-------|--------|--------|--------|-----------|
| 20. | 3.   | 11774. | 2399.   | 14.814 | 45.64 | 92.400 | 85.062 | 93.711 | 94.248    |

PRIMARY FLOW DATA

| A#     | P2     | P1      | TT     | PT      | GAMMA  | Z     | REYN     | CD    | WA      | W-FUEL |
|--------|--------|---------|--------|---------|--------|-------|----------|-------|---------|--------|
| 8.5519 | 90.334 | 105.349 | 46.460 | 106.056 | 1.4155 | .9966 | 9858452. | .9938 | 21.4215 | .0234  |

| FTARE  | FTARE | FX      | FCOR    | FIP     | FIDL    | FTN    | TTN     | FTE    |
|--------|-------|---------|---------|---------|---------|--------|---------|--------|
| 31.350 | .470  | 630.910 | 625.880 | 718.468 | 718.468 | 19.497 | 818.000 | 18.730 |

| FTN/PAMB | TTN/TAMB | WFR1   | WOCR   | WSUM   | WIP    | WIFH   | WIFH2  | VIF      | GAMMAF | ZP     |
|----------|----------|--------|--------|--------|--------|--------|--------|----------|--------|--------|
| 1.316    | 2.528    | 21.445 | 25.370 | 21.445 | 23.295 | 23.625 | 23.761 | 1077.927 | 1.3680 | 1.0005 |

| CDP   | CDPH  | CDPH2 | CVP   | CV    | CGP   | CGPH  | CGPH2 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| .9206 | .9077 | .9025 | .8781 | .8781 | .8084 | .7971 | .7925 |

| CDPE   | CDPEH2 | CVPE  | WIFE   | WIFEH  | VIFE    | GAMMAPE | ZPE    | VE1    | VE2    |
|--------|--------|-------|--------|--------|---------|---------|--------|--------|--------|
| 1.0044 | .9847  | .9477 | 21.351 | 21.778 | 998.775 | 1.3672  | 1.0005 | 68.475 | 86.636 |

PRIMARY NOZZLE TOTAL PRESSURES

1) 18.251 2) 19.080 3) 20.568 4) 20.558 5) 18.351 6) 18.470 7) 19.459 8) 21.218

PRIMARY NOZZLE TOTAL TEMPERATURES

1) 809.200 2) 827.400 3) \*\*\*\*\* 4) \*\*\*\*\* 5) \*\*\*\*\* 6) 809.600 7) 825.800 8) \*\*\*\*\* 9) \*\*\*\*\* 10) \*\*\*\*\*

NOZZLE EXIT TOTAL PRESSURES - PTNE

1) 19.210 2) 19.330 3) 19.010 4) 18.700  
5) 17.521 6) 18.440 7) 18.750 8) 18.680

NOZZLE STATIC PRESSURES - PSNE

1) 14.774 2) 14.750

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## HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR  
 NOZZLE NOISE TONE SOURCE IDENTIFICATION  
 TEST 2399TP - HNTF

## INPUT DATA

| RUN | COND | DATE   | TEST NO | FAMB   | TAMB  | APRI   | AEFF   | APRTH  | 1.02 APRI |
|-----|------|--------|---------|--------|-------|--------|--------|--------|-----------|
| 20. | 4.   | 11774. | 2399.   | 14.814 | 45.80 | 92.400 | 85.191 | 93.777 | 94.248    |

## PRIMARY FLOW DATA

| A*     | P2     | P1      | TT     | PT      | GAMMA  | Z     | REYN      | CD    | WA      | W-FUEL |
|--------|--------|---------|--------|---------|--------|-------|-----------|-------|---------|--------|
| 8.5519 | 54.754 | 114.604 | 46.360 | 115.372 | 1.4168 | .9963 | 10737624. | .9938 | 23.3178 | .0273  |

| PTARE  | FTARE | FX      | FCOR    | FIP     | FIDL    | FTN    | TTN     | FTE    |
|--------|-------|---------|---------|---------|---------|--------|---------|--------|
| 36.270 | .544  | 778.556 | 772.349 | 873.849 | 873.849 | 20.628 | 873.600 | 19.747 |

| PTN/FAMB | TTN/TAMB | WFR1   | WOCR   | WSUM   | WIP    | WIPH   | WIFH2  | VIF      | GAMMAP | ZP     |
|----------|----------|--------|--------|--------|--------|--------|--------|----------|--------|--------|
| 1.392    | 2.638    | 23.345 | 26.665 | 23.345 | 25.321 | 25.696 | 25.827 | 1204.333 | 1.3659 | 1.0002 |

| ODP   | ODPH  | ODPH2 | CVF   | CV    | CGF   | CGPH  | CGPH2 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| .9220 | .9084 | .9039 | .8909 | .8909 | .8214 | .8094 | .8053 |

| CDPE  | CDPH2 | CVFE  | WIFE   | WIPH   | VIFE     | GAMMAPE | ZPE    | VE1    | VE2    |
|-------|-------|-------|--------|--------|----------|---------|--------|--------|--------|
| .8984 | .9788 | .9535 | 23.382 | 23.850 | 1125.350 | 1.3650  | 1.0002 | 78.093 | 99.682 |

## PRIMARY NOZZLE TOTAL PRESSURES

1) 19.120 2) 20.089 3) 22.127 4) 22.257 5) 19.270 6) 19.280 7) 20.339 8) 22.546

## PRIMARY NOZZLE TOTAL TEMPERATURES

1) 865.000 2) 864.400 3) \*\*\*\*\* 4) \*\*\*\*\* 5) \*\*\*\*\* 6) 863.400 7) 881.600 8) \*\*\*\*\* 9) \*\*\*\*\* 10) \*\*\*\*\*

## NOZZLE EXIT TOTAL PRESSURES - FTNE

1) 20.289 2) 20.428 3) 20.059 4) 19.749  
 5) 18.331 6) 19.429 7) 19.729 8) 19.959

## NOZZLE STATIC PRESSURES - PSNE

1) 14.762 2) 14.729

LAE595 12/ 6/73

CALCULATION DATE 2/19/74

HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR  
NOZZLE NOISE TONE SOURCE IDENTIFICATION  
TEST 2399TP - HNTF

INPUT DATA

| RUN | COND | DATE   | TEST NO | FAMB   | TAMB  | APRI   | AEFF   | APRIH  | 1.02 APRI        |
|-----|------|--------|---------|--------|-------|--------|--------|--------|------------------|
| 20. | 5.   | 11774. | 2399.   | 14.814 | 45.92 | 92.400 | 85.584 | 93.842 | APRIH2<br>94.248 |

PRIMARY FLOW DATA

| A*     | P2     | P1      | TT     | PT      | GAMMA  | Z     | REYN      | CD    | WA      | W-FUEL |
|--------|--------|---------|--------|---------|--------|-------|-----------|-------|---------|--------|
| 8.5519 | 58.034 | 121.458 | 46.580 | 122.272 | 1.4178 | .9961 | 11380991. | .9939 | 24.7163 | .0309  |

| PTARE  | FTARE | FX      | FCOR    | FIP      | FIDL     | FTN    | TTN     | FTE    |
|--------|-------|---------|---------|----------|----------|--------|---------|--------|
| 40.360 | .606  | 905.874 | 898.652 | 1003.706 | 1003.706 | 21.582 | 925.875 | 20.657 |

| PTN/FAMB | TTN/TAMB | WFR1   | WCCR   | WSUM   | WIP    | WFRH   | WFRH2  | VIP      | GAMMAF | ZP    |
|----------|----------|--------|--------|--------|--------|--------|--------|----------|--------|-------|
| 1.457    | 2.740    | 24.747 | 27.541 | 24.747 | 26.718 | 27.135 | 27.253 | 1304.926 | 1.3639 | .9999 |

| CDP   | CDPH  | CDPH2 | CVF   | CV    | CGP   | CGPH  | CGPH2 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| .9262 | .9120 | .9061 | .9025 | .9025 | .8359 | .8231 | .8196 |

| CDPE  | CDPH2 | CVFE  | WIFE   | WIFEH  | VIFE     | GAMMAFE | ZFE   | VE1    | VE2     |
|-------|-------|-------|--------|--------|----------|---------|-------|--------|---------|
| .9942 | .9747 | .9574 | 24.891 | 25.389 | 1230.156 | 1.3630  | .9999 | 81.776 | 108.372 |

PRIMARY NOZZLE TOTAL PRESSURES

1) 19.879 2) 20.908 3) 23.336 4) 23.625 5) 20.079 6) 20.009 7) 21.108 8) 23.715

PRIMARY NOZZLE TOTAL TEMPERATURES

1) 916.800 2) 934.500 3) \*\*\*\*\* 4) \*\*\*\*\* 5) \*\*\*\*\* 6) 917.200 7) 935.000 8) \*\*\*\*\* 9) \*\*\*\*\* 10) \*\*\*\*\*

NOZZLE EXIT TOTAL PRESSURES - PTNE

1) 21.198 2) 21.368 3) 21.038 4) 20.718  
5) 19.090 6) 20.339 7) 20.648 8) 20.858

NOZZLE STATIC PRESSURES - PSNE

1) 14.757 2) 14.714

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CALCULATION DATE 2/19/74

HOT NOZZLE TEST FACILITY

BUFFALO SUPPRESSOR

NOZZLE NOISE TONE SOURCE IDENTIFICATION

TEST 2399TF - HNTF

| RUN | COND | PTN/PAHB | TTN/TAMB | CDP   | CDPH  | CVF   | CV    | CGP   | CGPH  | APRH   |
|-----|------|----------|----------|-------|-------|-------|-------|-------|-------|--------|
| 20. | 1.   | 1.173    | 2.294    | .9390 | .9274 | .9007 | .9007 | .8458 | .8353 | 93.566 |
| 20. | 2.   | 1.245    | 2.408    | .9207 | .9066 | .8788 | .8788 | .8091 | .7985 | 93.632 |
| 20. | 3.   | 1.316    | 2.528    | .9206 | .9077 | .8781 | .8781 | .8084 | .7971 | 93.711 |
| 20. | 4.   | 1.392    | 2.638    | .9220 | .9084 | .8909 | .8909 | .8214 | .8094 | 93.777 |
| 20. | 5.   | 1.457    | 2.740    | .9262 | .9120 | .9025 | .9025 | .8359 | .8231 | 93.842 |

| CDPH2 | CGPH2 | CDPE   | CDPH2  | CVPE  | APRH2  |
|-------|-------|--------|--------|-------|--------|
| .9206 | .8292 | 1.0324 | 1.0121 | .9833 | 94.248 |
| .9027 | .7933 | 1.0159 | .9980  | .9601 | 94.248 |
| .9025 | .7925 | 1.0044 | .9847  | .9477 | 94.248 |
| .9039 | .8053 | .9984  | .9788  | .9535 | 94.248 |
| .9081 | .8196 | .9942  | .9747  | .9574 | 94.248 |