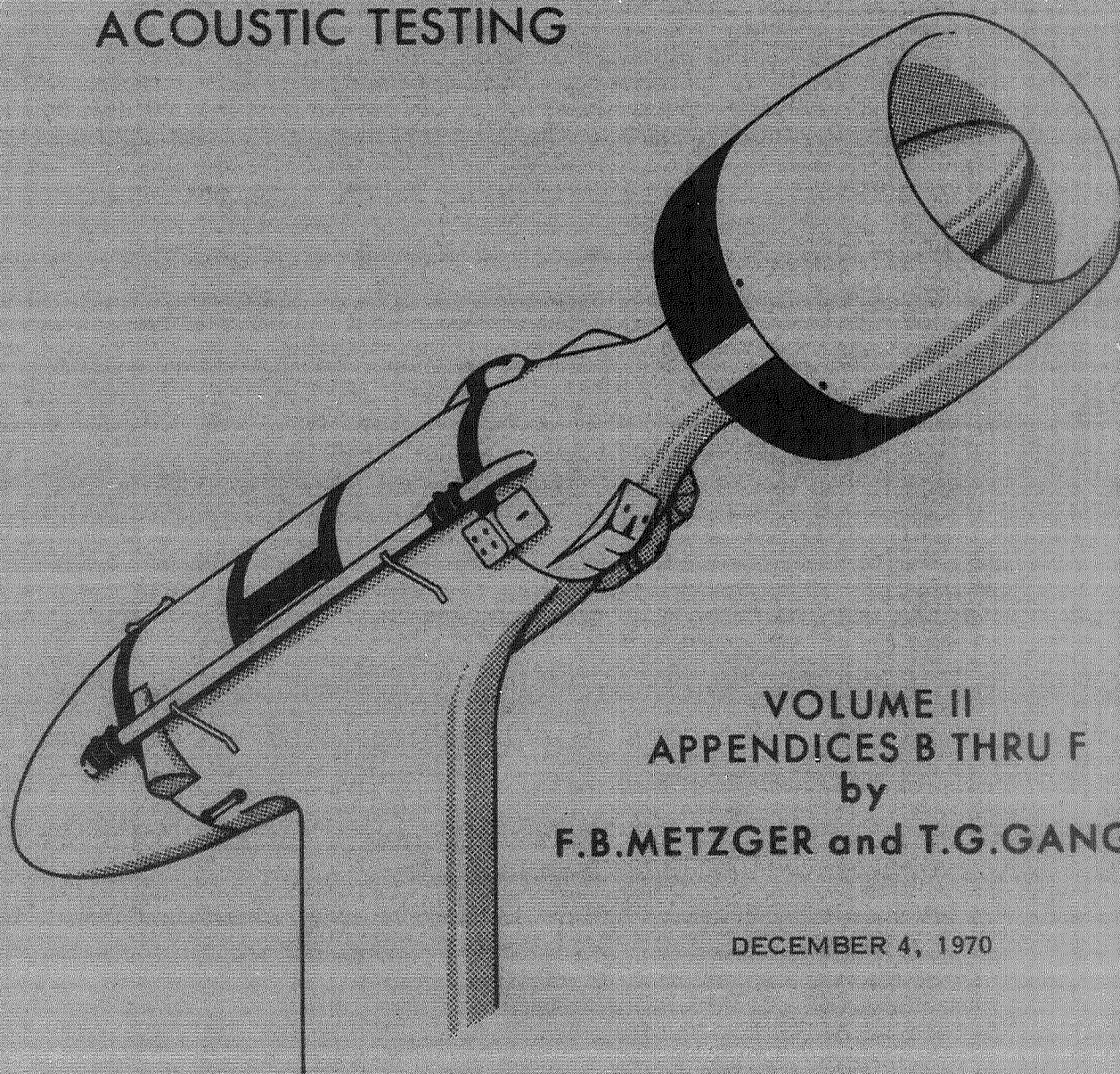


N71-25784
NASA CR11842-2

PROP-FAN CASE FILE COPY

RESULTS OF INITIAL PROP-FAN MODEL ACOUSTIC TESTING

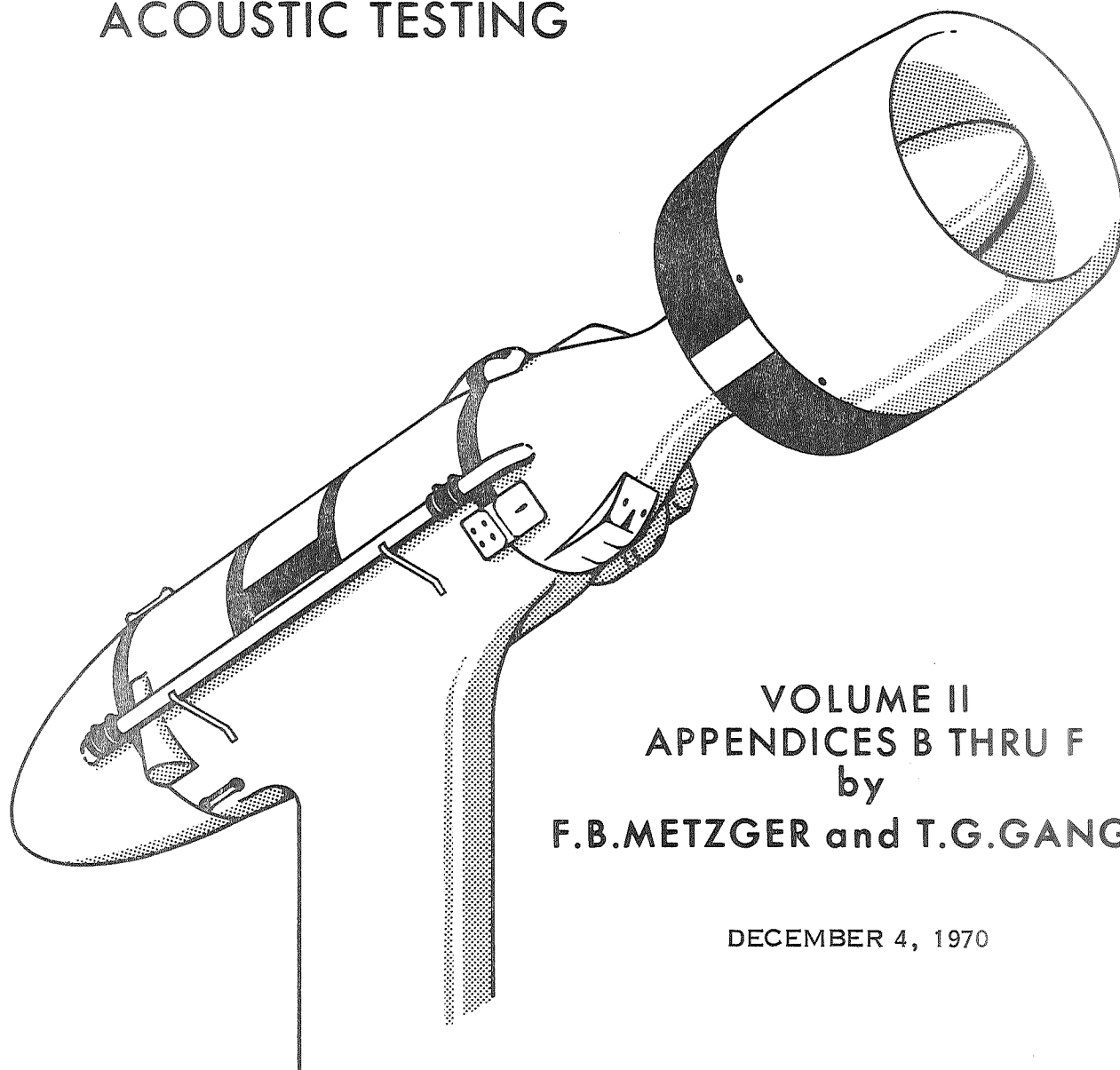


VOLUME II
APPENDICES B THRU F
by
F.B.METZGER and T.G.GANGER

DECEMBER 4, 1970

PROP-FAN

RESULTS OF INITIAL PROP-FAN MODEL ACOUSTIC TESTING



VOLUME II
APPENDICES B THRU F
by
F.B.METZGER and T.G.GANGER

DECEMBER 4, 1970

Distribution of this report is provided in the interest of information exchange. Responsibility for the contents resides in the author or organization that prepared it.

ACKNOWLEDGEMENT:

The data presented is the results of cooperative program of NASA (Langley Research Center) and Hamilton Standard Division UAC.

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RESULTS OF INITIAL
PROP-FAN MODEL
ACOUSTIC TESTING

Volume II
Appendices B, C, D, E, and F

December 4, 1970

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INTRODUCTION

This volume contains all of the stationary microphone test data from the Prop-Fan Model Test plus an evaluation of the accuracy of the data. Appendix B contains the discussion of accuracy of the data. Appendix C contains the One-Third Octave Band data for the far-field tests conducted with the Static Shroud installed. Appendix D contains the Narrow Band data for the far-field tests conducted with the Static Shroud installed. Appendix E contains the One Third Octave Band data for the near-field tests conducted with the Static Shroud installed. Appendix F contains the One Third Octave Band data for the far-field tests conducted with the Compromise Shroud installed.

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APPENDIX B

PROP-FAN MODEL NOISE DATA
ACCURACY CONSIDERATIONS

INTRODUCTION

The Prop-Fan model test data is unique in that the test item is a simple aerodynamic configuration, the test environment is close to ideal, and a range of operating conditions were tested. In order to make the data from this program useful to other acoustic investigators, an analysis of the accuracy of the data presented has been conducted. This analysis which is summarized below includes evaluation of: (1) measurement and analysis system frequency response, (2) averaging time during data reduction, (3) influence of ground reflection on the test data, and (4) influence of total background noise on the test data.

SYSTEM FREQUENCY RESPONSE

Prior to testing, the CEC VR3300 tape recorder frequency response was determined by recording oscillator signals at various frequencies from 100 to 40 KHz at a constant input voltage and playing back on the Hamilton Standard data reduction system. Since the Spectral Dynamics analyzer used for narrow band analysis is limited to 20 KHz, the test data was played back at one-half the tape speed used during recording to allow analysis to 40 KHz. Consequently, the frequency characteristics were determined for all channels at both 15 ips (record speed) and 7 1/2 ips (playback speed). Figure 1B shows the response range for all channels. It should be noted that the only data analyzed at 15 ips was the narrow band directivity analysis for the first five harmonics, where the frequency of interest did not exceed 10 KHz. Therefore, the record-playback system frequency response is considered flat within 1.5 dB over the frequency range of interest.

It is left then, to apply the microphone response at zero degree incidence (see Reference 1), to the results of Figure 1B. In doing so, the overall system frequency response becomes flat ± 1 dB for all channels over the frequency range of interest; i.e., 100 to 20 KHz at 7 1/2 ips and 100 to 10 KHz at 15 ips).

DATA REDUCTION AVERAGING TIME

For the data reduction using one-third octave filters, an averaging time of eight seconds was selected to facilitate data reduction while minimizing statistical error. In order to determine this error, a single five-minute data point was analyzed continuously using an eight-second averaging time. The results, as shown on Figure 2B, indicate the spread of data to be 3 dB or less in all but two of the one-third octaves considered.

In like manner, an averaging time of 0.5 second was chosen for the narrow band (50 Hz constant bandwidth filter) analysis to limit the statistical error to 1.6 dB with a confidence limit of 95% (2σ). However, since the narrow band analysis is made from a two-second data loop, compensation cannot be made for variation in the signal level over a period of time, due to

tone fluctuation caused by rpm change, unsteady inflow, etc. Therefore, Figure 3B is supplied to show a typical variation of tone noise for the first six harmonics over a 340-second time period.

In analyzing the sweep data, which was recorded from a microphone traversing at approximately 0.5 degree per second, it was necessary to select an averaging time which would minimize the statistical error without sacrificing the directional character of the data. To make such a selection, a highly directional test case was analyzed using 1, 1.5, 2, and 3 seconds averaging time. Based on the results, as shown on Figure 4B, a 1.5 averaging time (which averages over approximately 0.75 degrees of microphone travel) was chosen.

GROUND REFLECTION

When noise propagating from a source is measured in the proximity of a ground plane, consideration must be given to the possibility of interference at the receiver location due to ground reflection. To assess ground reflection, it is necessary to know the source and receiver locations relative to the ground and to each other, the impedance of the ground, and the directional character of the source and receiver.

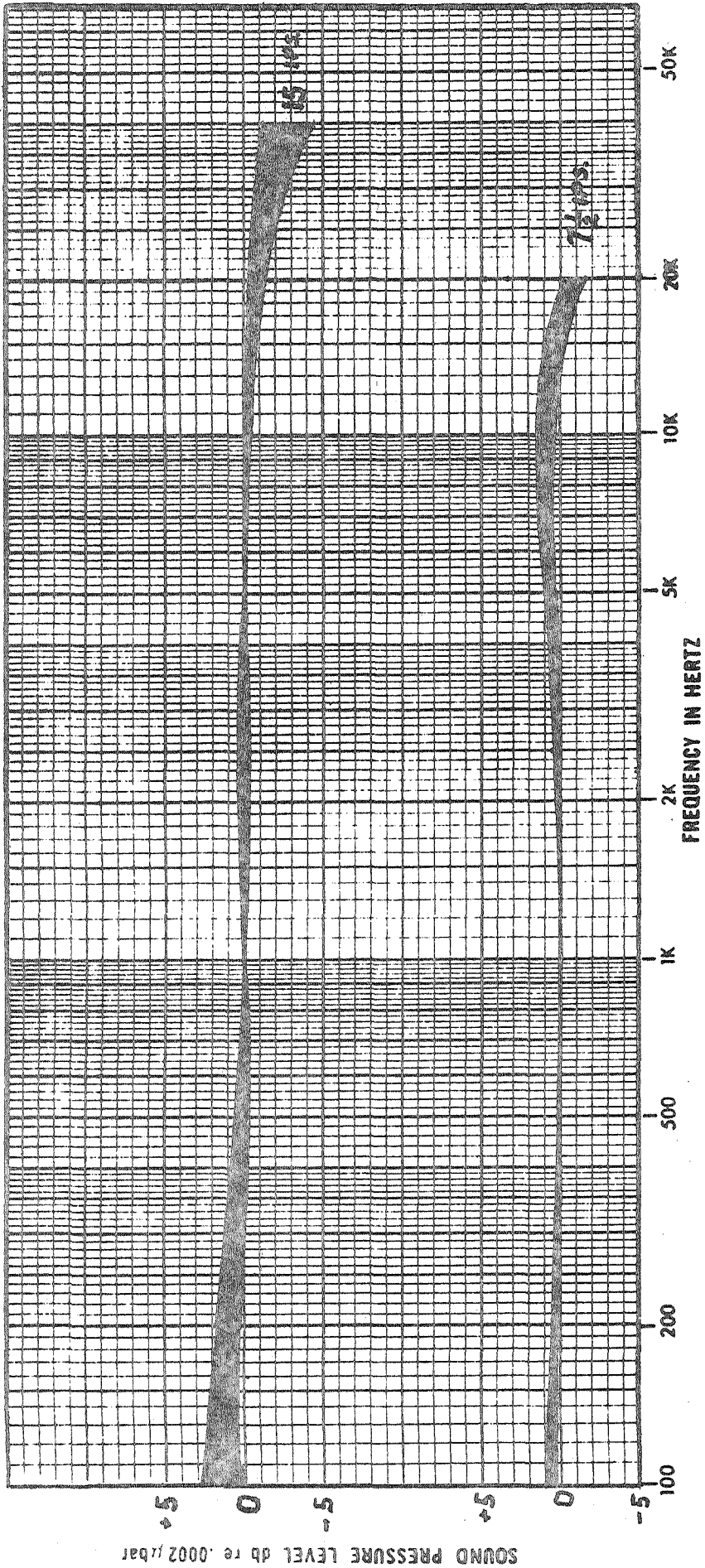
Using the information and procedures described in reference 2, the reflection index (i.e., the difference between the measured sound pressure level and the sound pressure level that would exist in a free field) was determined based on experimental impedance values for grassy surfaces and the assumption of a point noise source. From the reflection index, it is a simple task to calculate the difference in level between the direct wave and the reflected wave. This information, combined with the knowledge of the directional character of the reflected wave, permitted the calculation of the reflected wave sound pressure level at the receiver location.

At all but one location, the reflected wave noise level was at least 10 dB below the direct wave noise level which causes an interference of less than 0.4 dB. At the 10' 157° receiver location, however, the directional character of the source was such to cause the maximum lobe to propagate along the reflected wave path in the direction of the receiver location. The result, as indicated on Figure 5B, shows the reflected wave to be as little as 6 dB below the direct wave in the mid-frequencies, which gives rise to a maximum interference error of 1 dB. It should be noted that the directional characteristics of the receiver (microphone) were also considered in this analysis.

While the analysis above indicates a less than ideal situation, the effect on the data of ground reflection is not considered significant.

TOTAL BACKGROUND NOISE

Prior to each set of tests, background noise measurements were made at each input gain setting of the tape recorder signal conditioners, for each microphone. These recordings, when played back through the data reduction system, include ambient acoustic noise as well as the electrical noise of the recording system, playback system, and analyzer system. These total background noise levels are shown on each of the data curves of Appendices C, D, E, and F.



Comments, Sketches, Etc.

Hamilton Standard **U** DIVISION OF UNITED AIRCRAFT CORP. **A.** SPECTRUM ANALYSIS

TITLE *CFC VR3300 Frequency Response*

ANALYSIS EQUIPMENT _____

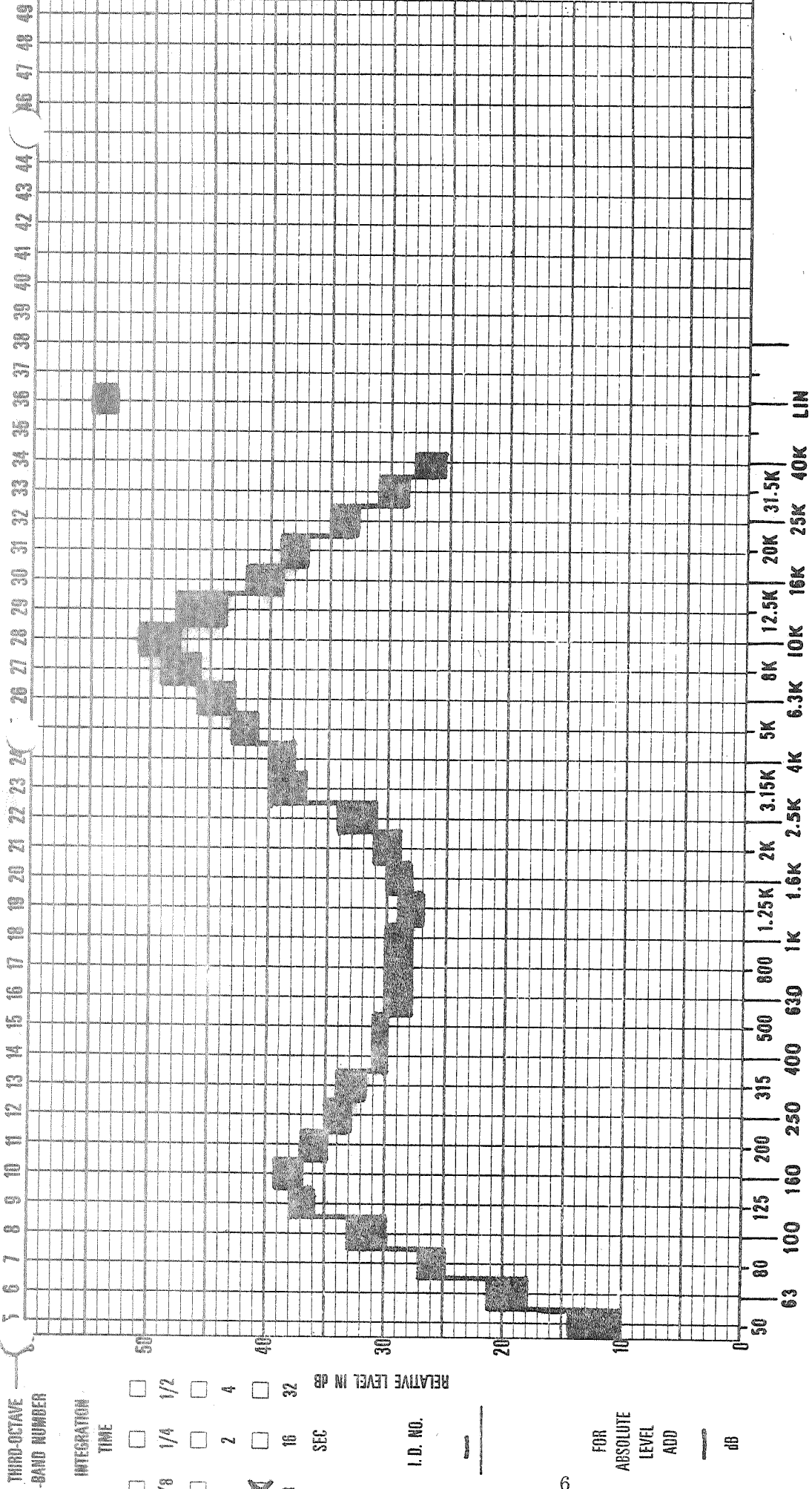
Sheet ___ of ___ Date _____ Analyzed by _____

Figure 1B

GENERAL RADIO-COMPANY, WEST CONCORD, MASS.

1322 DC RECORDER & 1921 REAL TIME ANALYZER

322-5648 FOR USE WITH 1322 DC RECORDER & 1921 REAL TIME ANALYZER



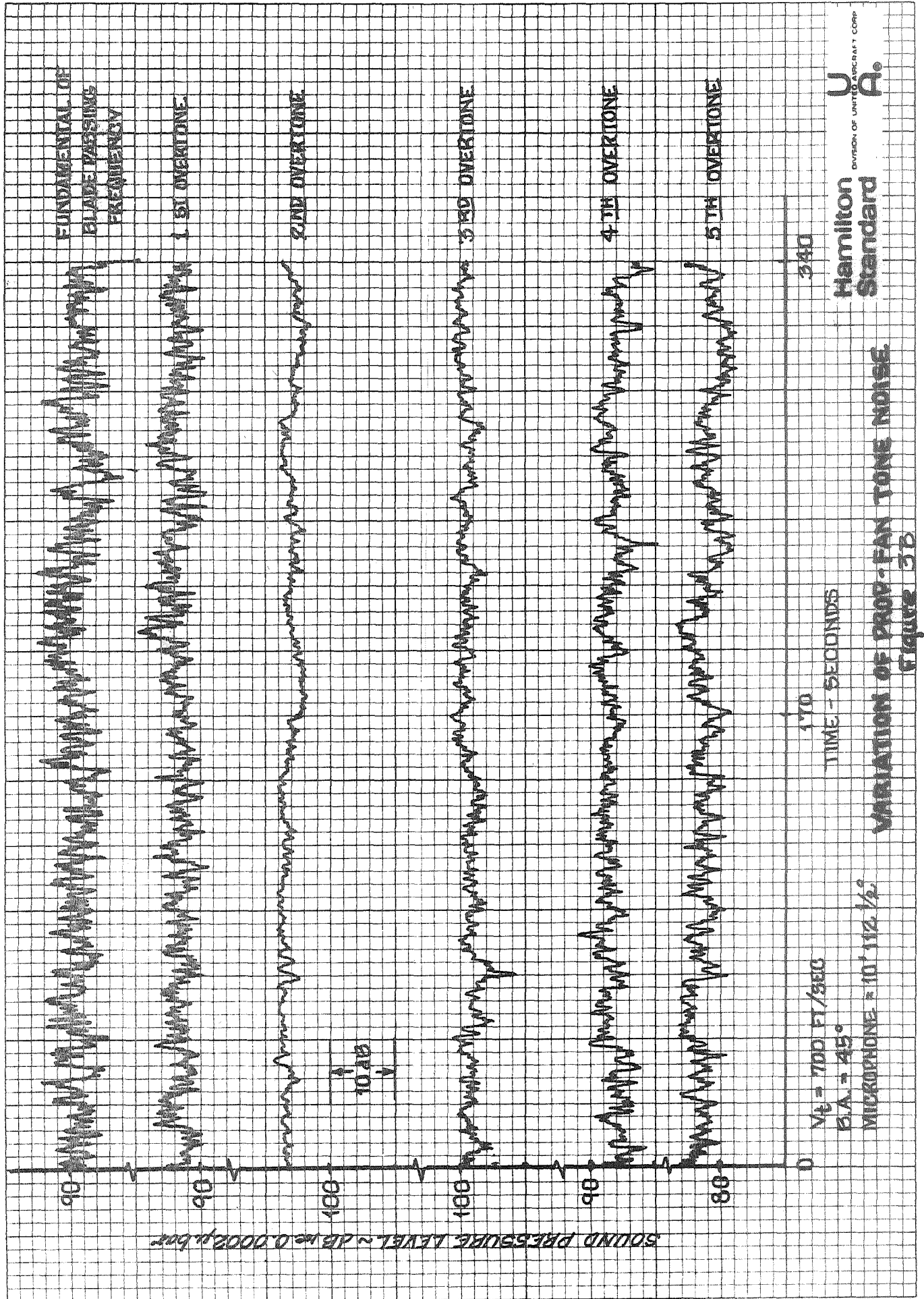
THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND ANALYSIS

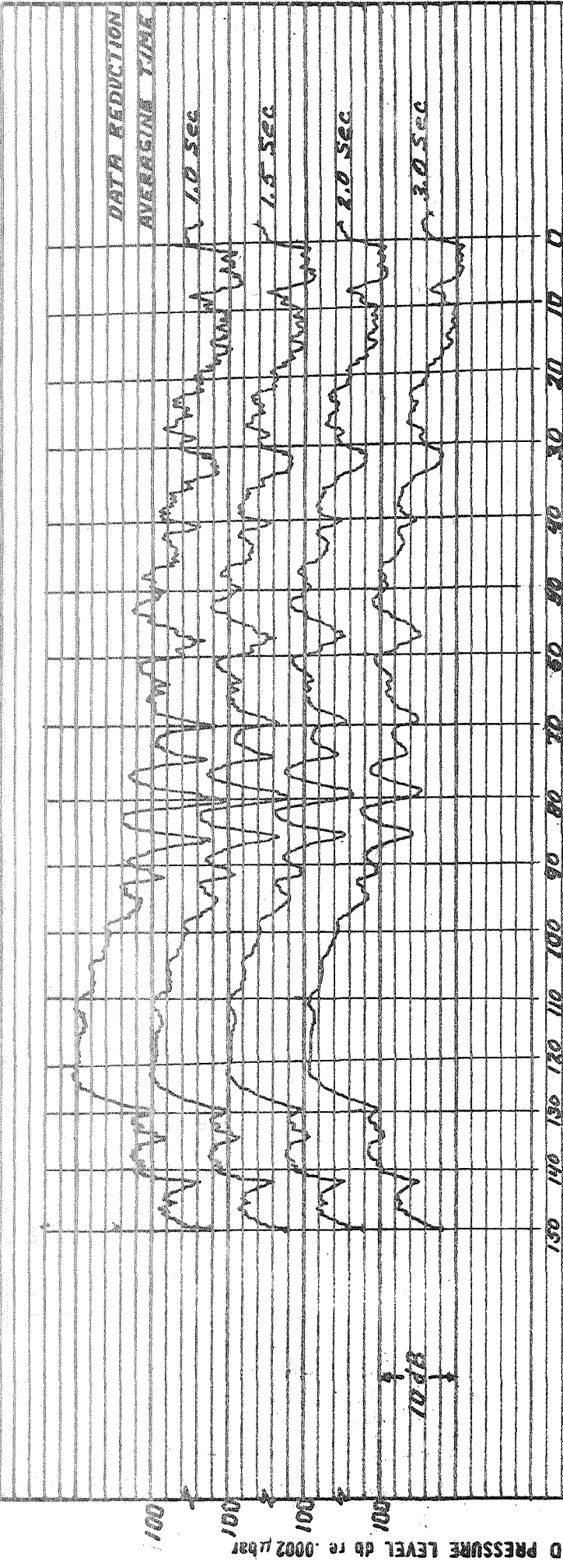
Figure 2B PROP - FAN NOISE VARIABILITY



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VARIATION OF PROP-FAN TONE NOISE
Figure 30

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A.



ANGLE FROM PROP FAN C. ~ DEG.

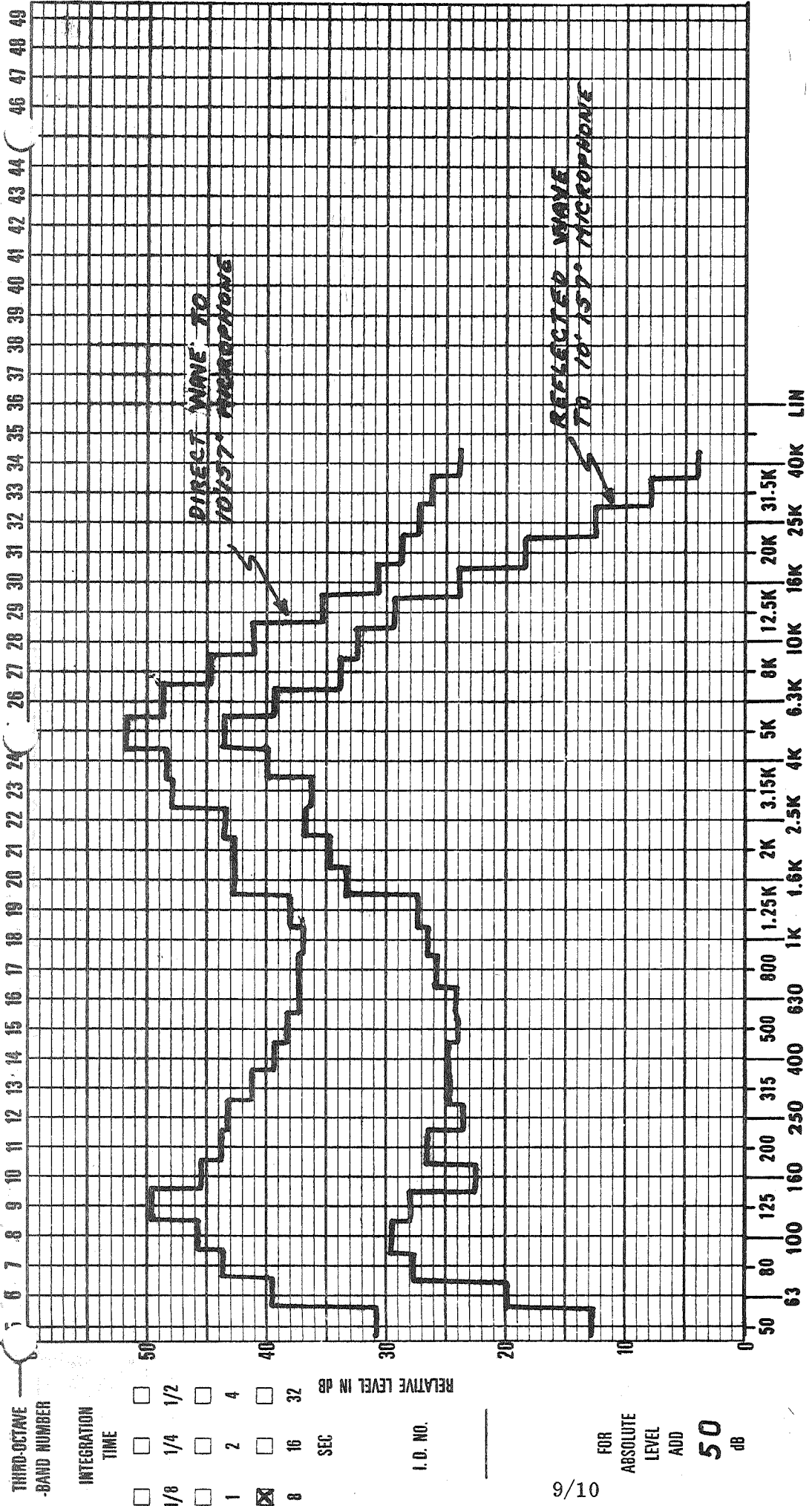
Hamilton
Standard
DIVISION OF UNITED AIRCRAFT CORP.
U A

DIRECTIVITY ANALYSIS

EFFECT OF AVERAGING TIME
ON DIRECTIVITY ANALYSIS

SHROUD STATIC
 BLADE ANGLE 45°
 TIP SPEED 687 FT/SEC
 MICROPHONE LOCATION 10' SWEEP

FIGURE 4B PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

RELATIVE LEVEL IN DB

I.O. NO.

FOR ABSOLUTE LEVEL ADD 50 dB

- 1/8
- 1/4
- 1
- 2
- 4
- 8
- 16
- 32

THIRD-OCTAVE BAND CENTER FREQUENCY IN HZ

SHROUD STATIC

BLADE ANGLE 45°

TIP SPEED 700 FT/SEC

MICROPHONE LOCATION AS NOTED

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THIRD-OCTAVE-BAND ANALYSIS

Figure 5B EFFECT OF GROUND REFLECTION

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APPENDIX C

STATIC SHROUD FAR FIELD
ONE-THIRD OCTAVE BAND DATA

THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

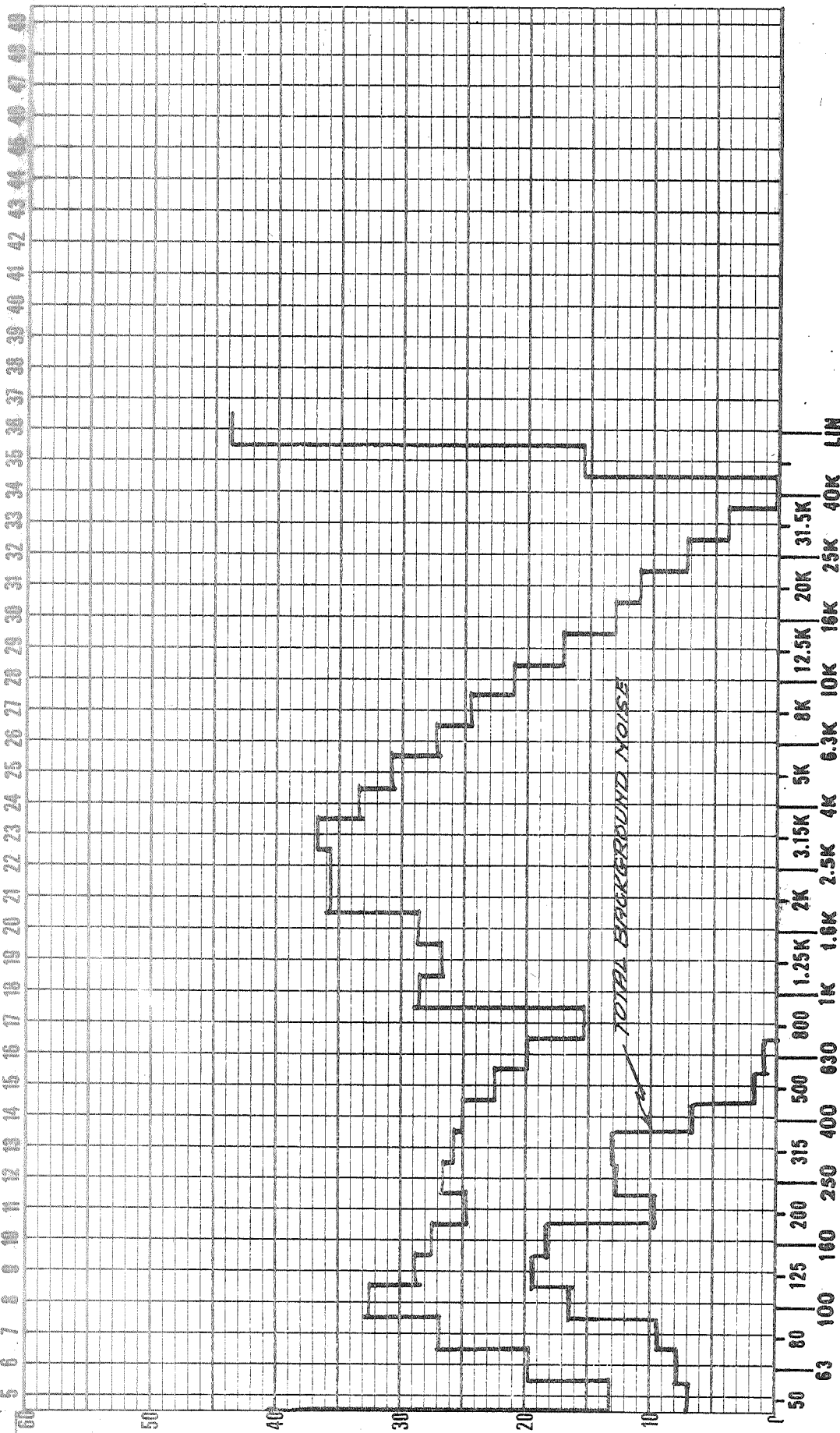
- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

RELATIVE LEVEL IN DB

I.D. NO.

RUN 11

FOR
ABSOLUTE
LEVEL
ADD
50
dB



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

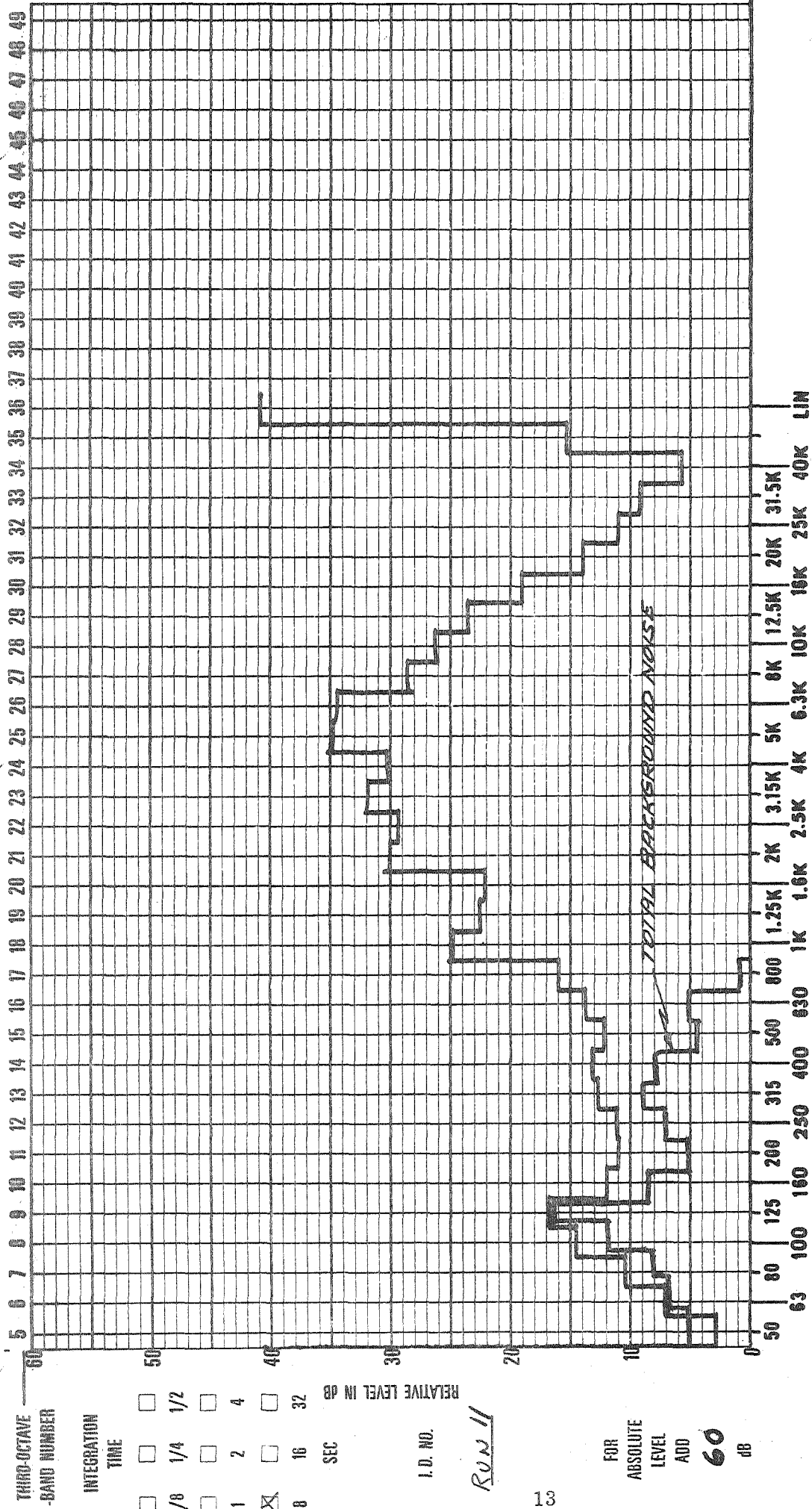
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THIRD-OCTAVE-BAND
ANALYSIS

SHROUD STATIC
BLADE ANGLE 35°
TIP SPEED 500 FT/SEC
MICROPHONE 13 1/2' 90° ON GROUND
LOCATION

Figure 1c PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

RELATIVE LEVEL IN dB

I.D. NO.

Row 11

FOR ABSOLUTE LEVEL ADD 60 dB

SHROUD STATIC

BLADE ANGLE 35°

TIP SPEED 500 FT/SEC

MICROPHONE LOCATION 10' 22 1/2°

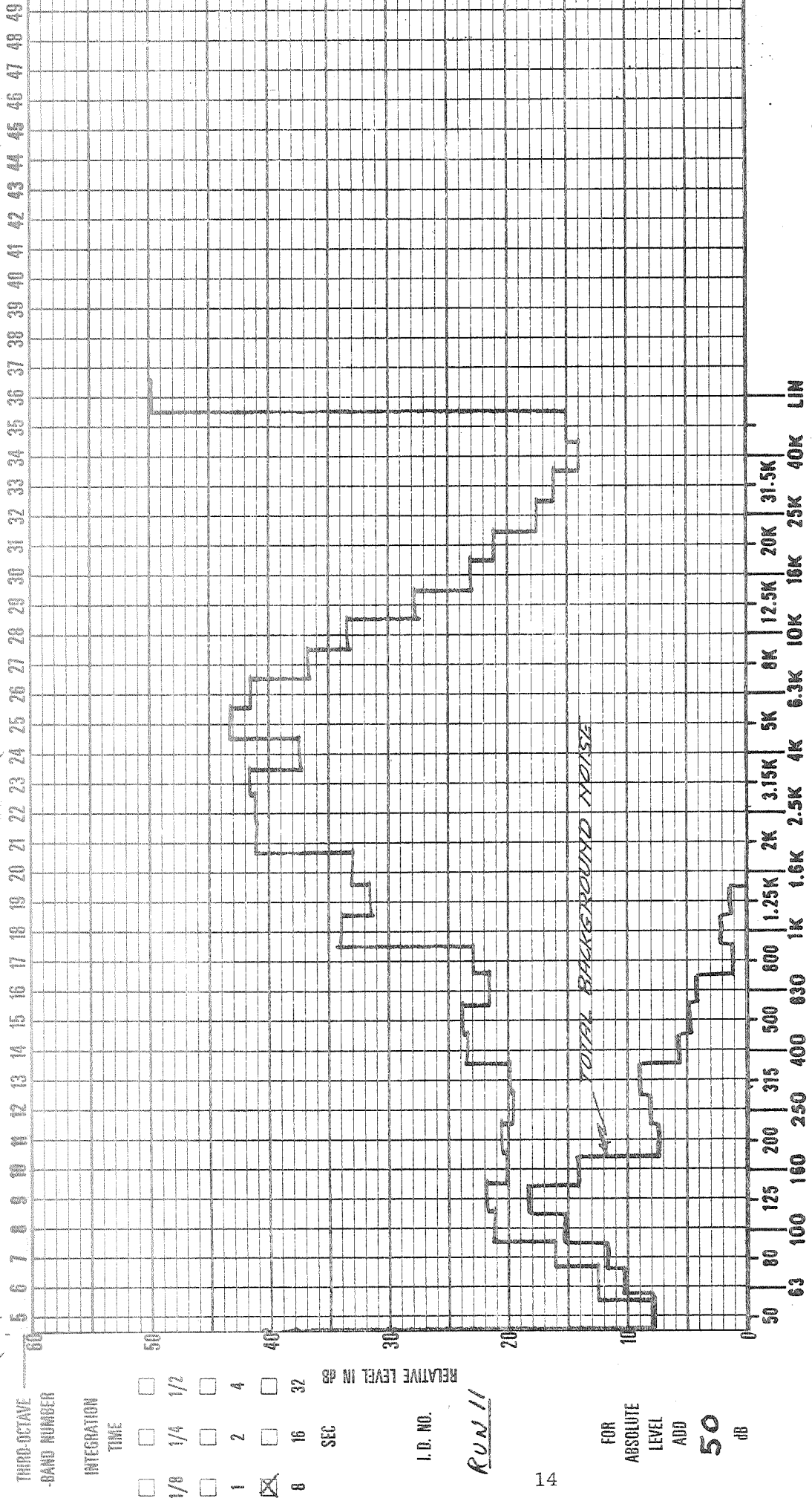
THIRD-OCTAVE-BAND CENTER FREQUENCY IN Hz

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THIRD-OCTAVE-BAND ANALYSIS

Figure 2C PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

SEC

I. D. NO.

Run 11

FOR ABSOLUTE LEVEL ADD 50 dB

THIRD-OCTAVE BAND CENTER FREQUENCY IN HZ

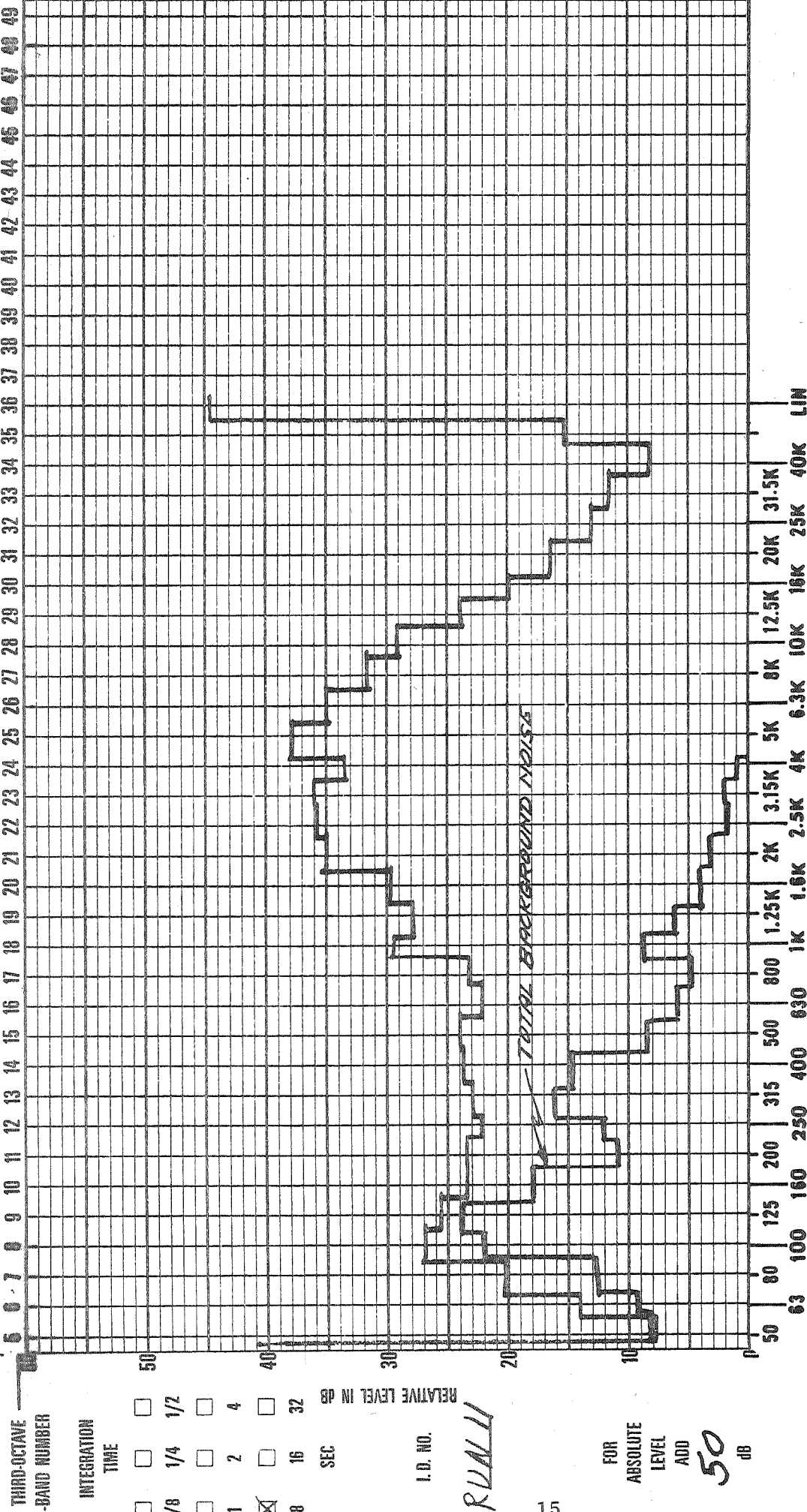
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THIRD-OCTAVE-BAND ANALYSIS

SHROUD STATIC
 BLADE ANGLE 35°
 TIP SPEED 500 FT/SEC
 MICROPHONE LOCATION 10' 45°

Figure 3C PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND NUMBER

INTEGRATION TIME

- 50
- 1/8
- 1/4
- 1
- 2
- 4
- 8
- 16
- 32

RELATIVE LEVEL IN DB

I. D. NO.

RUALI

FOR ABSOLUTE LEVEL ADD 50 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

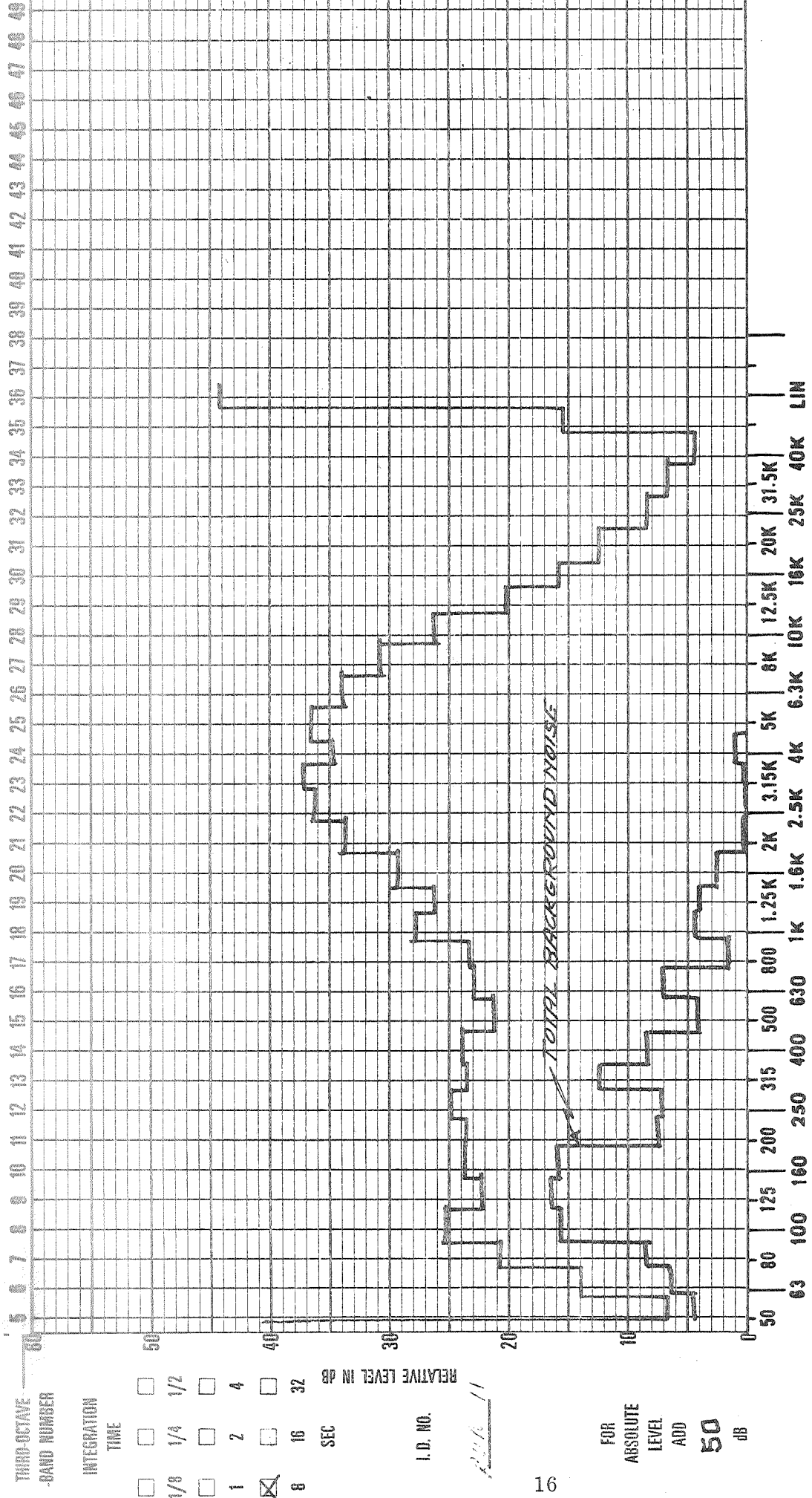
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THIRD-OCTAVE-BAND ANALYSIS

SHROUD STATIC
 BLADE ANGLE 35°
 TIP SPEED 500 FT/SEC
 MICROPHONE LOCATION 10' 67 1/2°

Figure 4C PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND NUMBER

INTEGRATION TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

RELATIVE LEVEL IN DB

I.D. NO.

Page 11

FOR ABSOLUTE LEVEL ADD 50 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND ANALYSIS

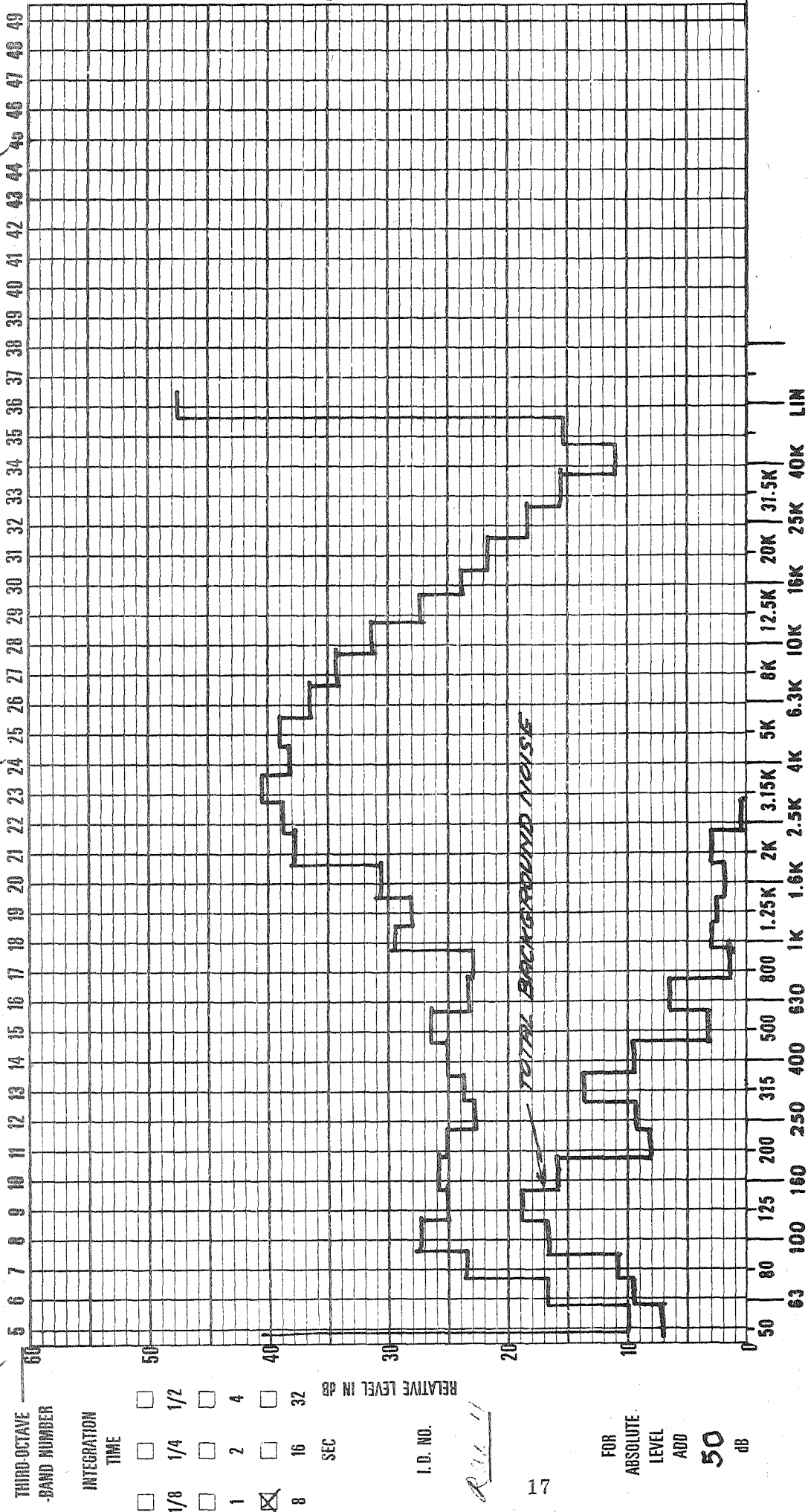
SHROUD STATIC

BLADE ANGLE 35°

TIP SPEED 500 FT/SEC

MICROPHONE LOCATION 10' 90°

Figure 5c PROP-FAN MODEL NOISE



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

RELATIVE LEVEL IN DB

I.D. NO.

Roll 11

FOR
ABSOLUTE
LEVEL
ADD
50
dB

Hamilton
Standard

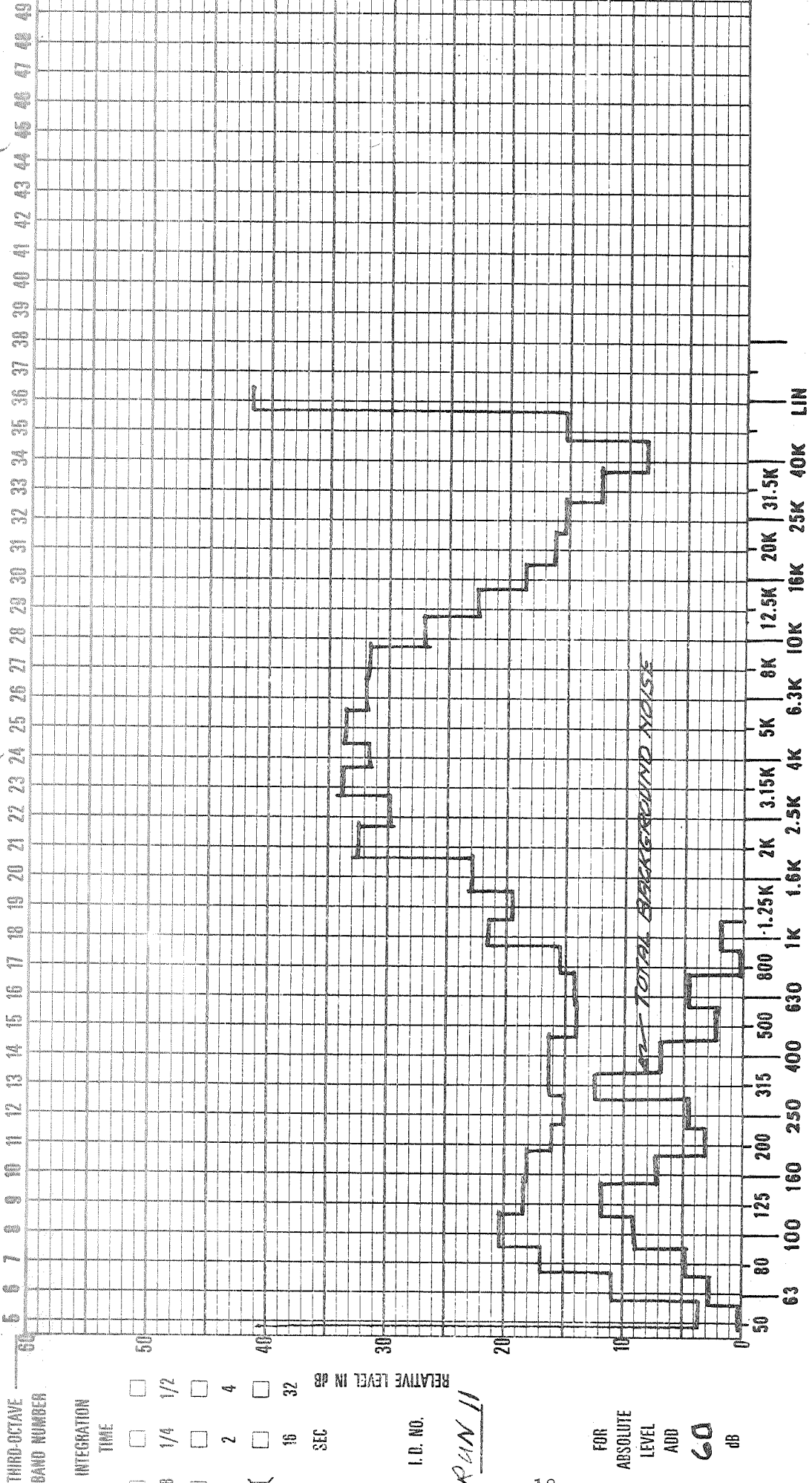
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THIRD-OCTAVE-BAND
ANALYSIS

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD STATIC
BLADE ANGLE 35°
TIP SPEED 500 FT/SEC
MICROPHONE 10' 112 1/2°
LOCATION

Figure 6 PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND NUMBER

INTEGRATION TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

RELATIVE LEVEL IN dB

I.D. NO.

RUN II

FOR ABSOLUTE LEVEL ADD 60 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN Hz

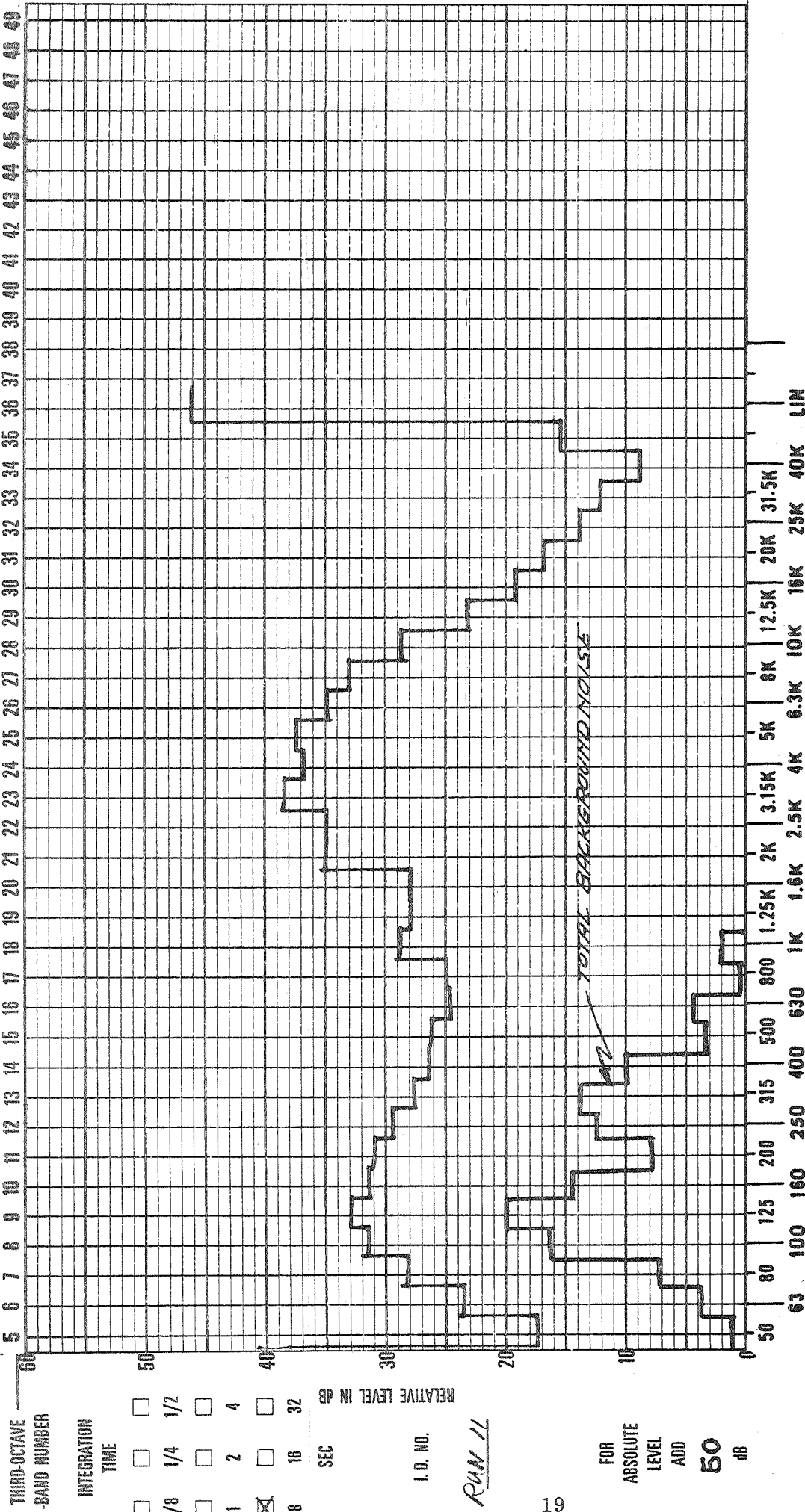
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THIRD-OCTAVE-BAND ANALYSIS

SHROUD STATIC
 BLADE ANGLE 35°
 TIP SPEED 500 FT/SEC
 MICROPHONE LOCATION 10' 135°

Figure 7c PROP-FAN MODEL NOISE



SHROUD STATIC
 BLADE ANGLE 35°
 TIP SPEED 500 FT/SEC
 MICROPHONE LOCATION 10' 157 1/2°

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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 THIRD-OCTAVE-BAND ANALYSIS

Figure 8c PROP-FAN MODEL NOISE

THIRD-OCTAVE-BAND NUMBER

INTEGRATION TIME

1/8

1/4

1/2

1

2

4

8

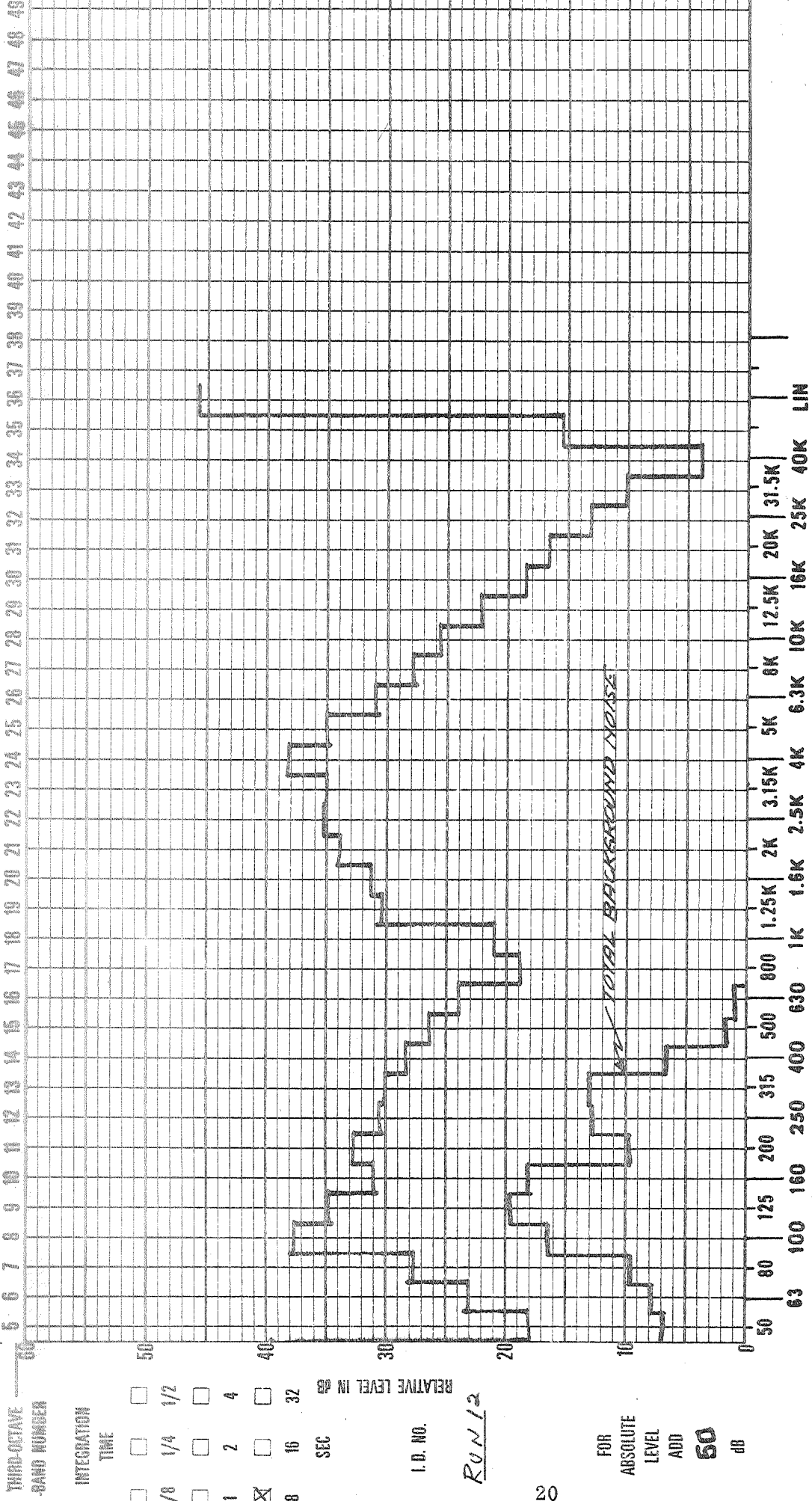
16

32

SEC

I.D. NO.

Run 11



- THIRD-OCTAVE-BAND NUMBER
- INTEGRATION TIME
- 1/8
 - 1/4
 - 1/2
 - 1
 - 2
 - 4
 - 8
 - 16
 - 32
- SEC

I.D. NO.
Run 12

FOR ABSOLUTE LEVEL ADD **60** dB

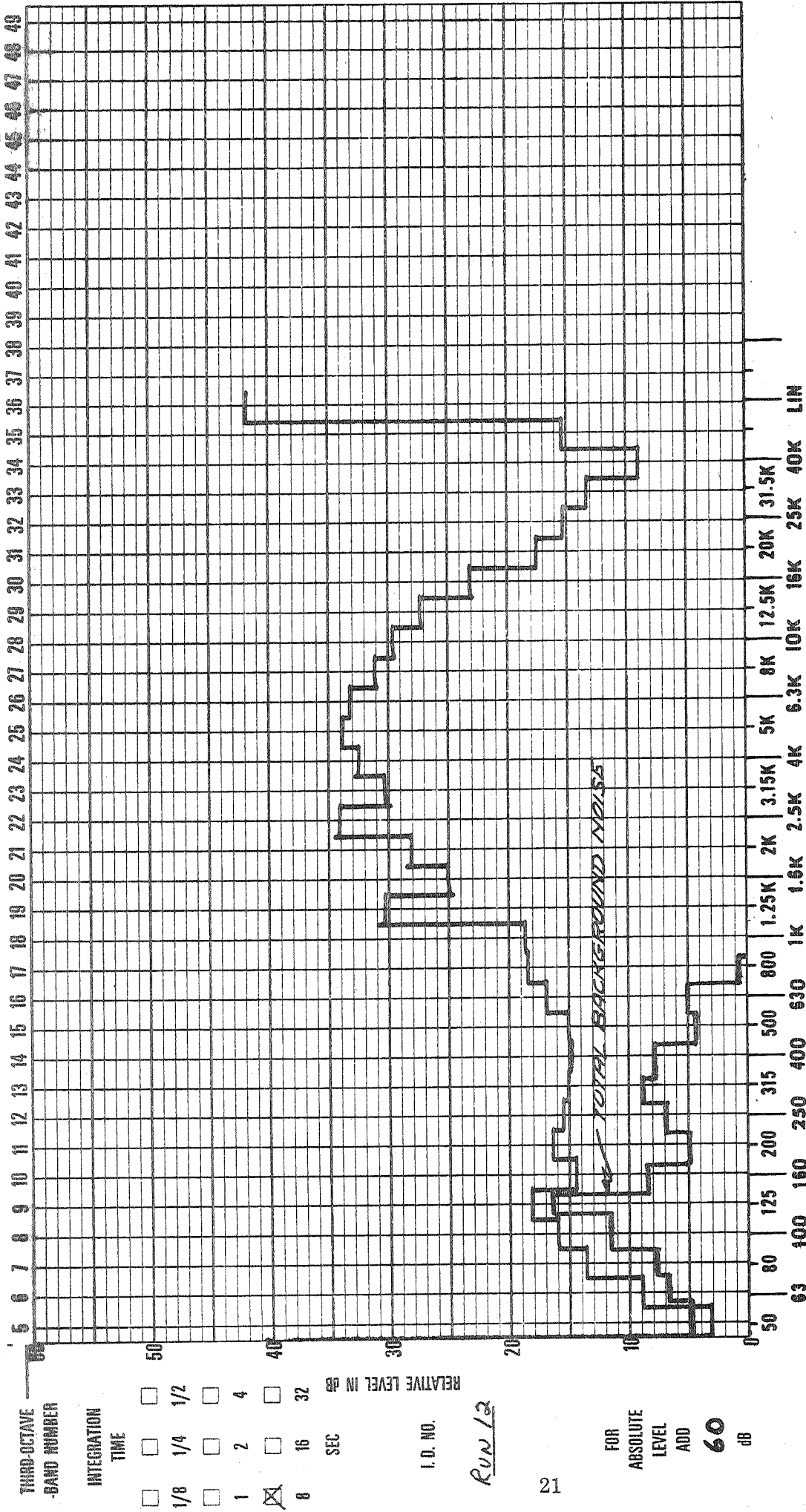
Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

SHROUD STATIC
 BLADE ANGLE 35°
 TIP SPEED 600 FT/SEC
 MICROPHONE LOCATION 13 1/2' 90° ON GROUND

Figure 9C PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

FOR ABSOLUTE LEVEL ADD 60 dB

I.D. NO.

Run 12

THIRD-OCTAVE BAND CENTER FREQUENCY IN Hz

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

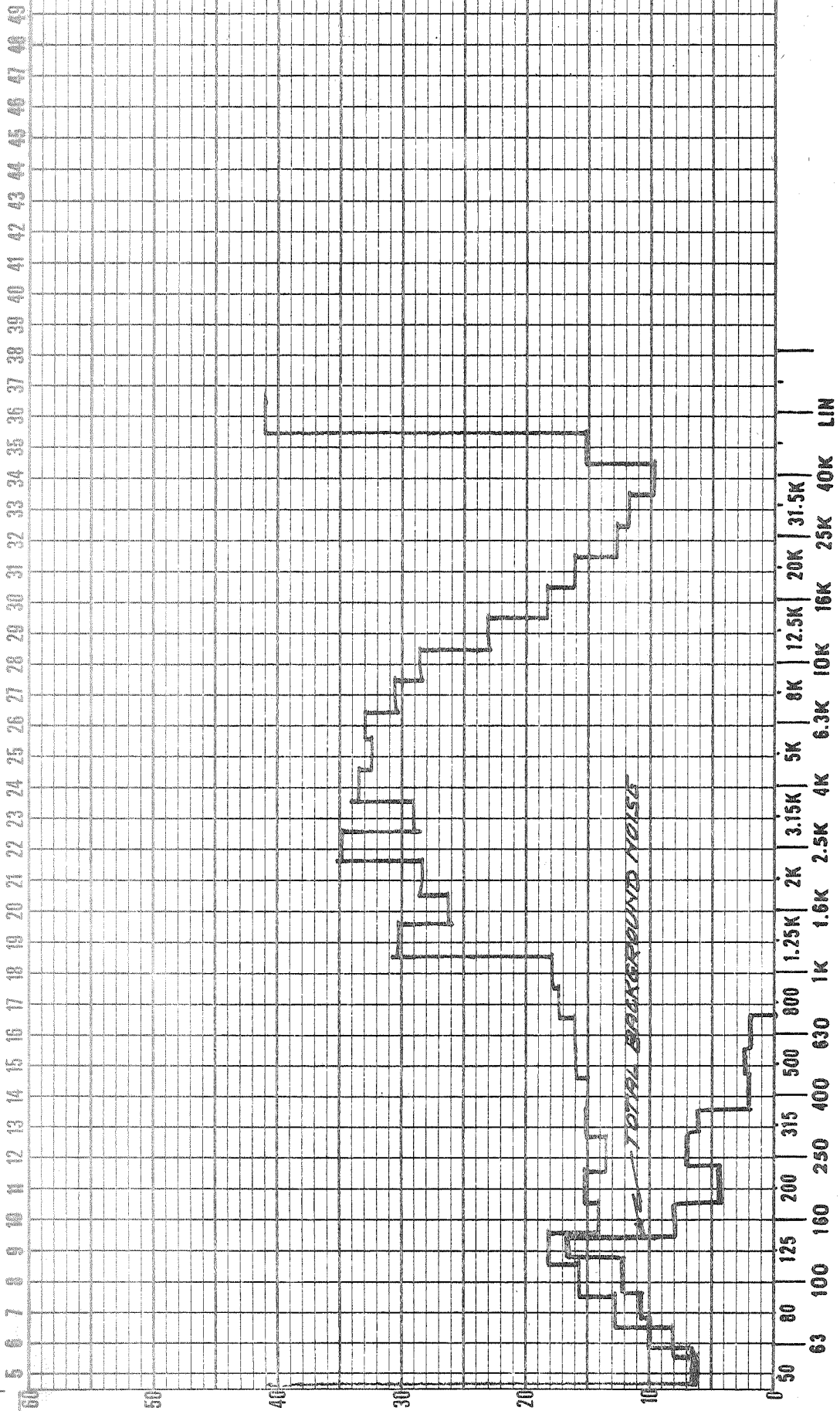
SHROUD STATIC

BLADE ANGLE 35°

TIP SPEED 609 FT/SEC

MICROPHONE LOCATION 10' 22 1/2"

Figure 10 PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

RELATIVE LEVEL IN DB

I.D. NO.

FOR ABSOLUTE LEVEL ADD 60 dB

- 1/8
- 1/4
- 1/2
- 2
- 4
- 8
- 16
- 32

RUN 12

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD STATIC

BLADE ANGLE 35°

TIP SPEED 600 FT/SEC

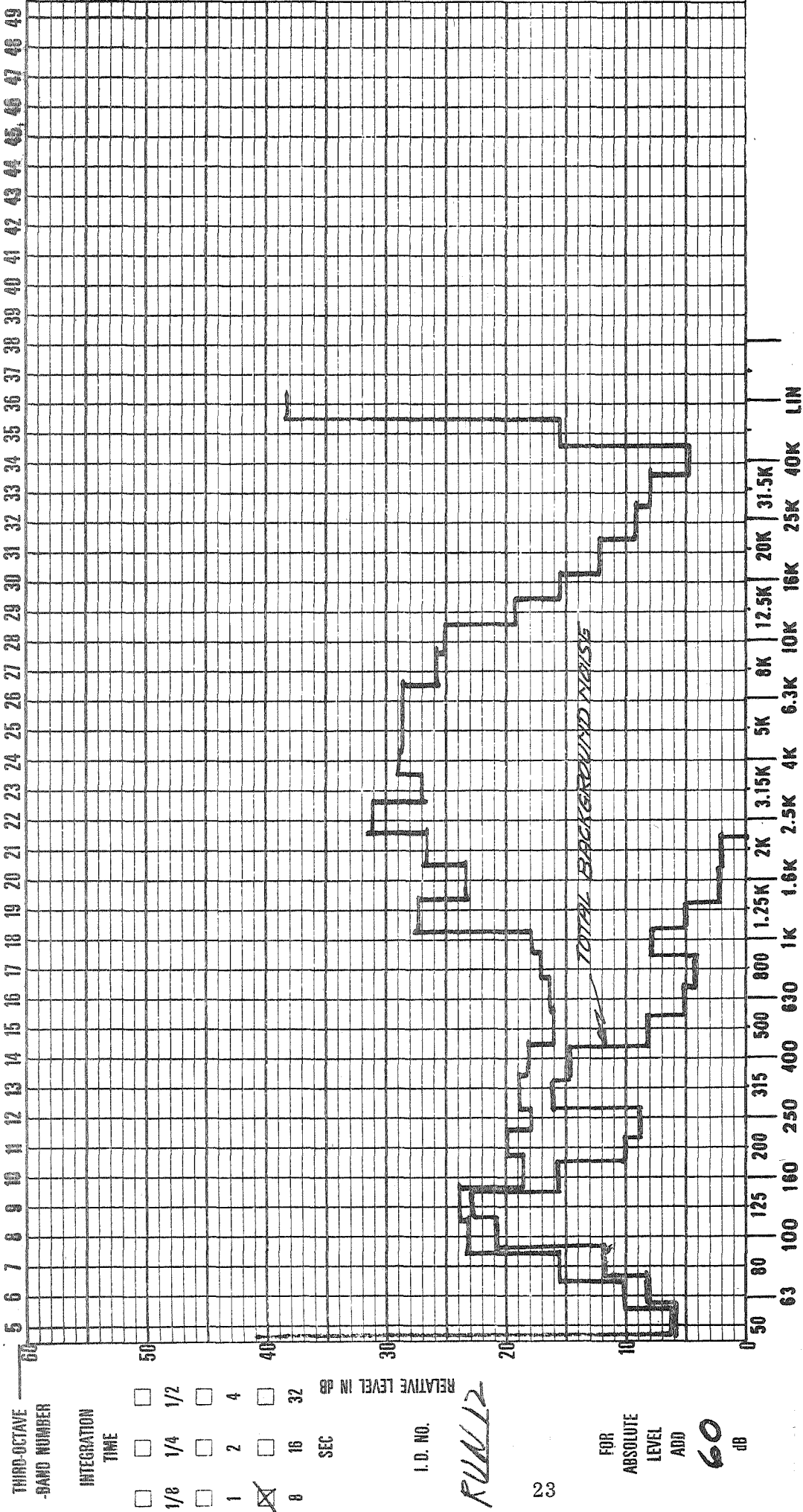
MICROPHONE LOCATION 10' 45"

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THIRD-OCTAVE-BAND ANALYSIS

Figure 11C PROP-FAN MODEL NOISE



SHROUD STATIC
 BLADE ANGLE 35°
 TIP SPEED 600 FT/SEC
 MICROPHONE LOCATION 10' 67 1/2°

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND ANALYSIS

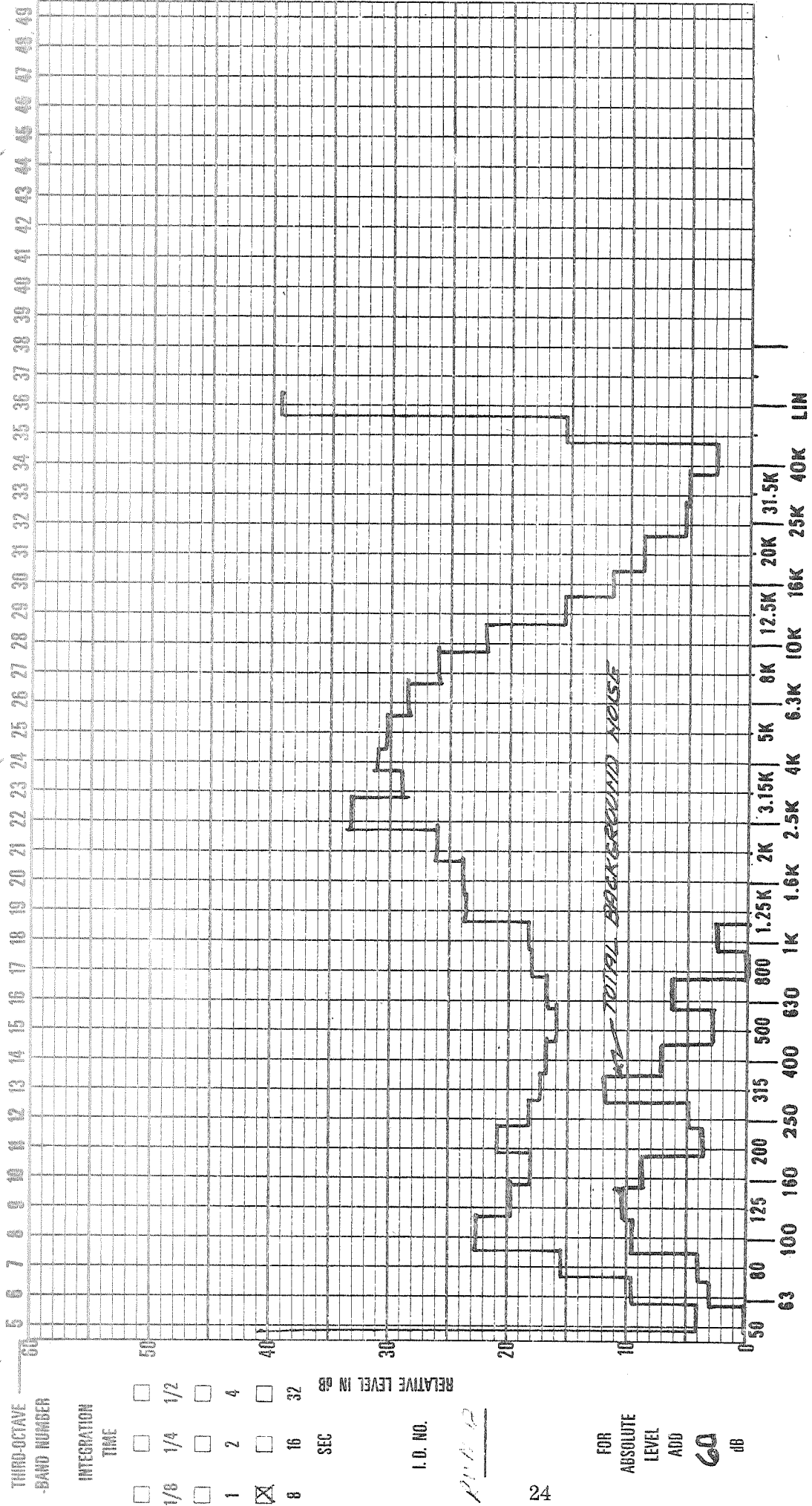
Figure 1a PROP-FAN MODEL NOISE

- THIRD-OCTAVE BAND NUMBER
- INTEGRATION TIME
 - 1/8
 - 1/4
 - 1/2
 - 1
 - 2
 - 4
 - 8
 - 16
 - 32
- SEC

I.D. NO.

RUN 12

FOR ABSOLUTE LEVEL ADD **60** dB



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

1/8 1/4 1/2 1 2 4 8 16 32 60

RELATIVE LEVEL IN DB

FOR ABSOLUTE LEVEL ADD 60 DB

I.D. NO. R1112

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD STATIC

BLADE ANGLE 35°

TIP SPEED 600 FT/SEC

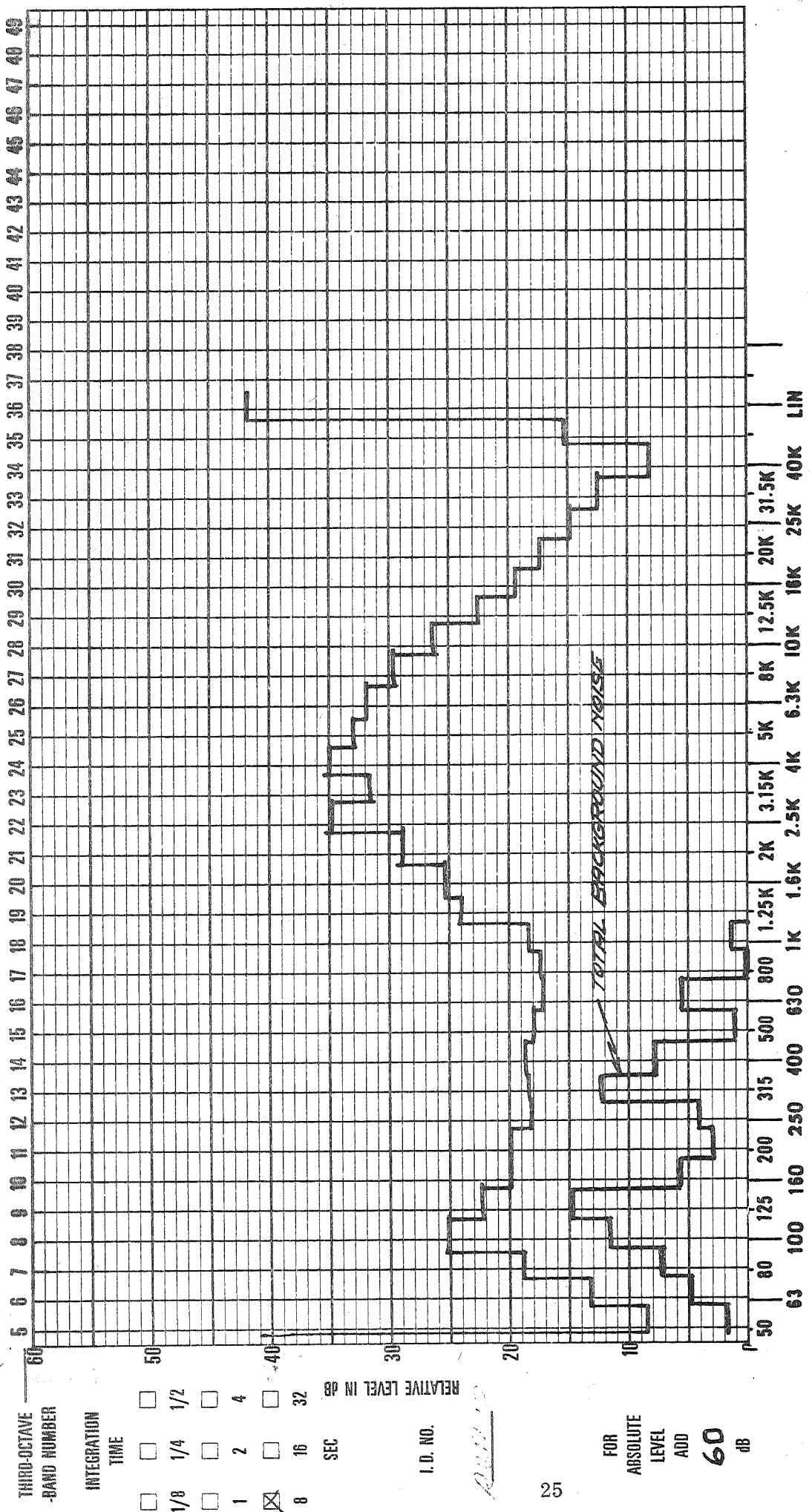
MICROPHONE LOCATION 10' 90°

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THIRD-OCTAVE-BAND ANALYSIS

Figure 13C PROP-FAN MODEL NOISE



SHROUD STATIC
 BLADE ANGLE 35°
 TIP SPEED 600 FT/SEC
 MICROPHONE LOCATION 10' 112 1/2°

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND ANALYSIS

Figure 14C PROP-FAN MODEL NOISE

I.D. NO.

25

THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

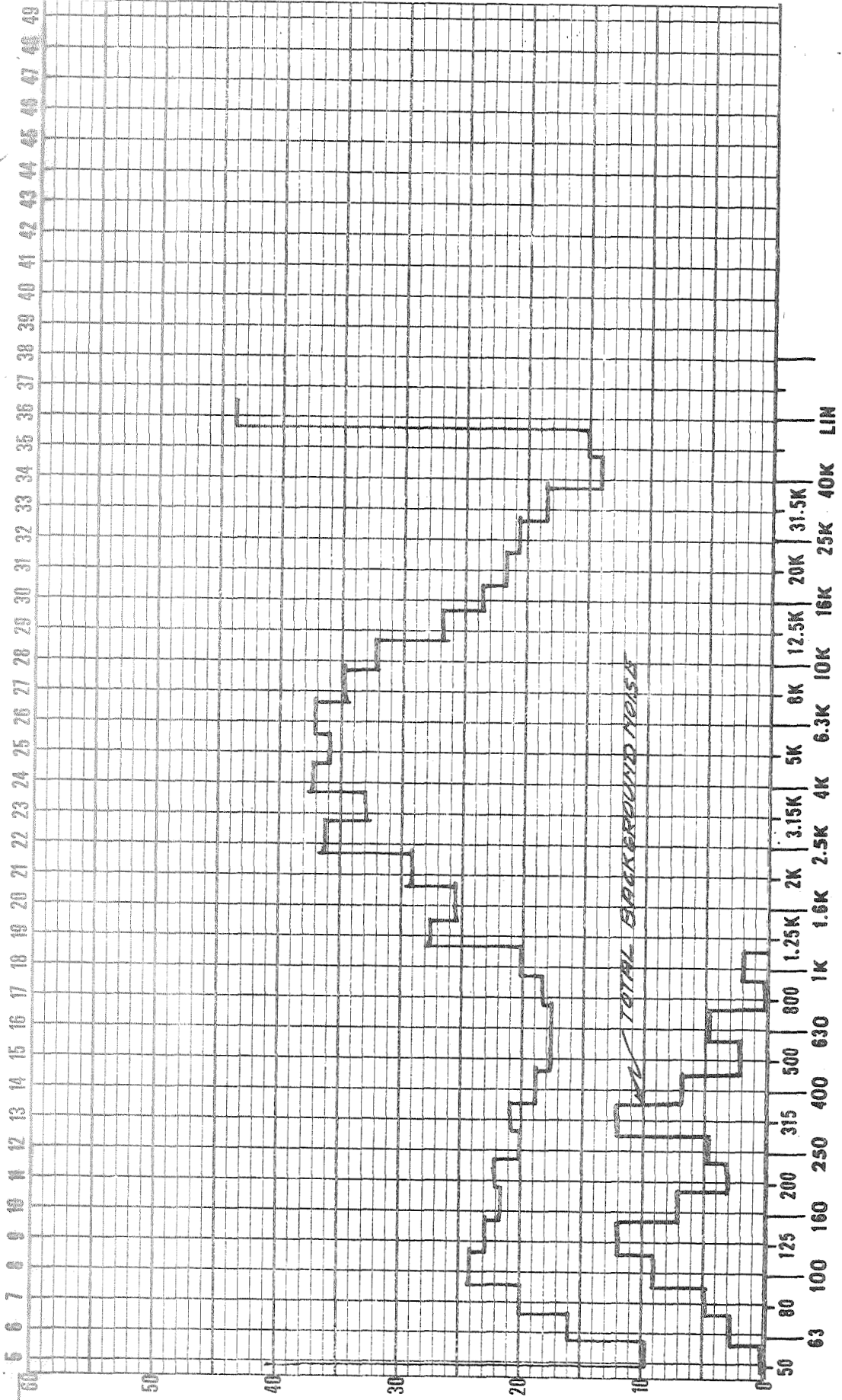
RELATIVE LEVEL IN dB

I.D. NO.

- 50
- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32
- SEC

RUN 12

FOR
ABSOLUTE
LEVEL
ADD
60
dB



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND
ANALYSIS

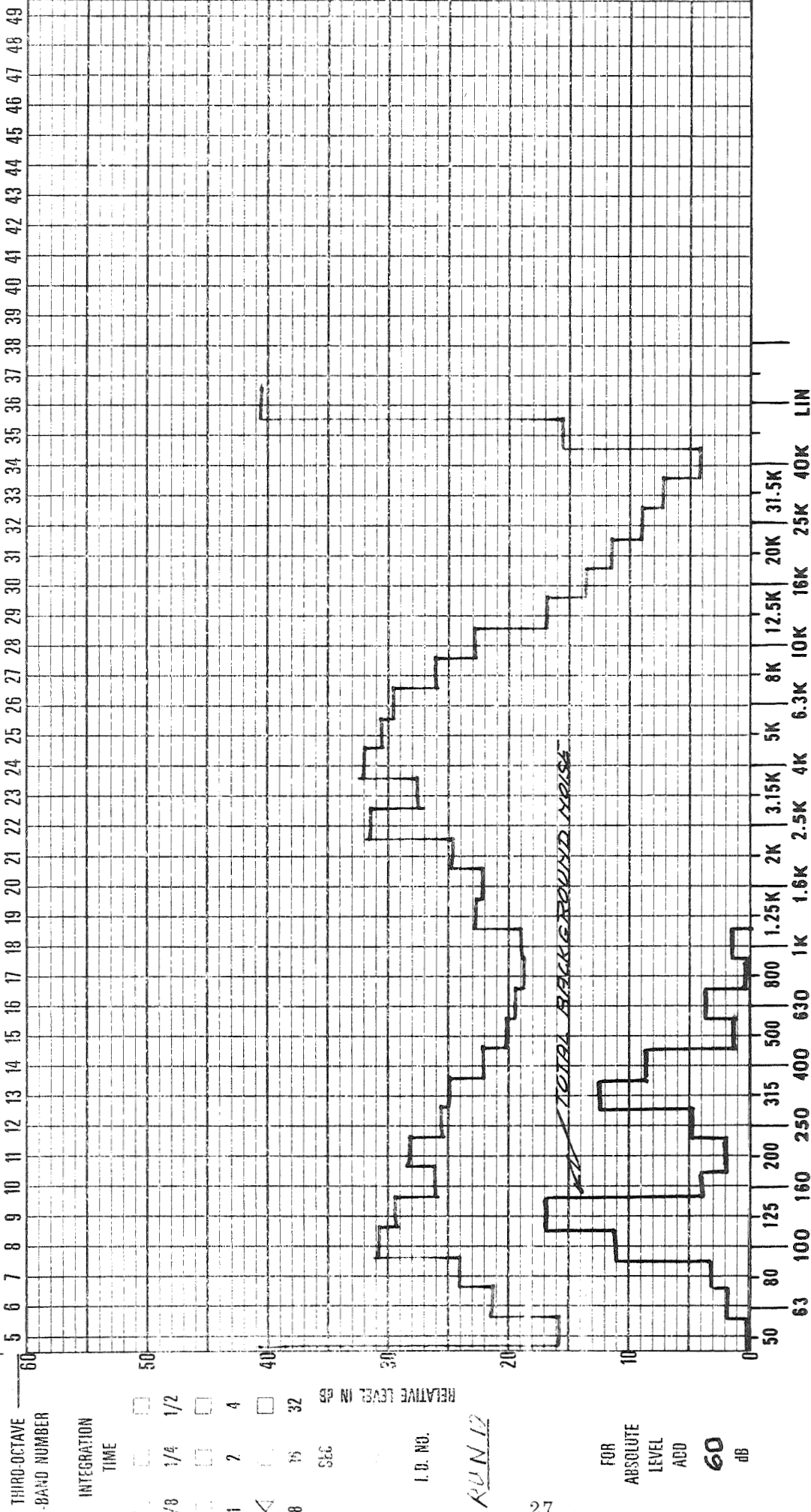
SHROUD STATIC

BLADE ANGLE 35°

TIP SPEED 600 FT/SEC

MICROPHONE
LOCATION 10' 135°

Figure 15C PROP-FAN MODEL NOISE



SHROUD STATIC
 BLADE ANGLE 35°
 TIP SPEED 600 FT/SEC
 MICROPHONE LOCATION 10' 157 1/2°

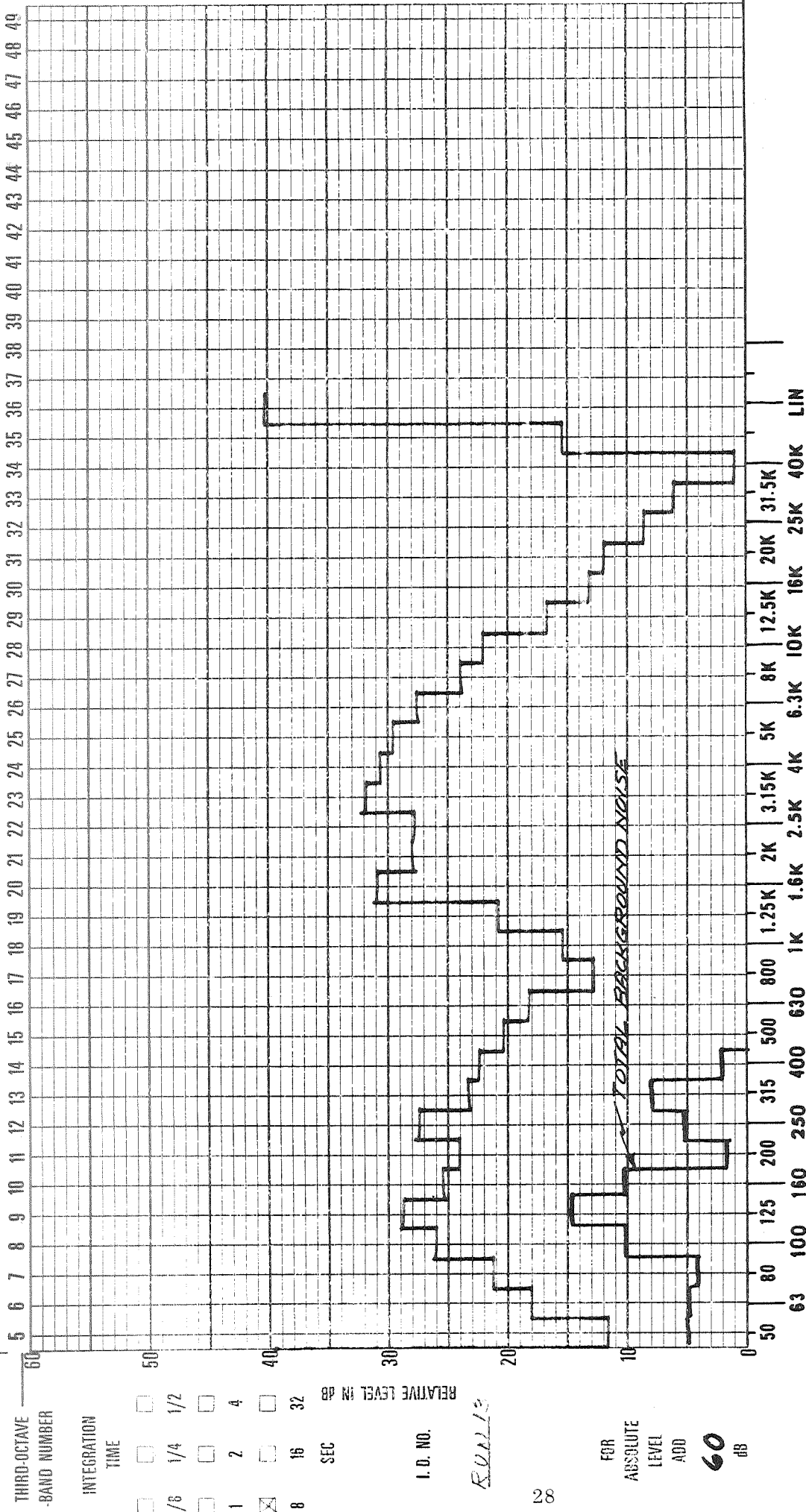
THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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UNIVERSITY OF MICHIGAN

THIRD-OCTAVE-BAND ANALYSIS

Figure 14 PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND ANALYSIS

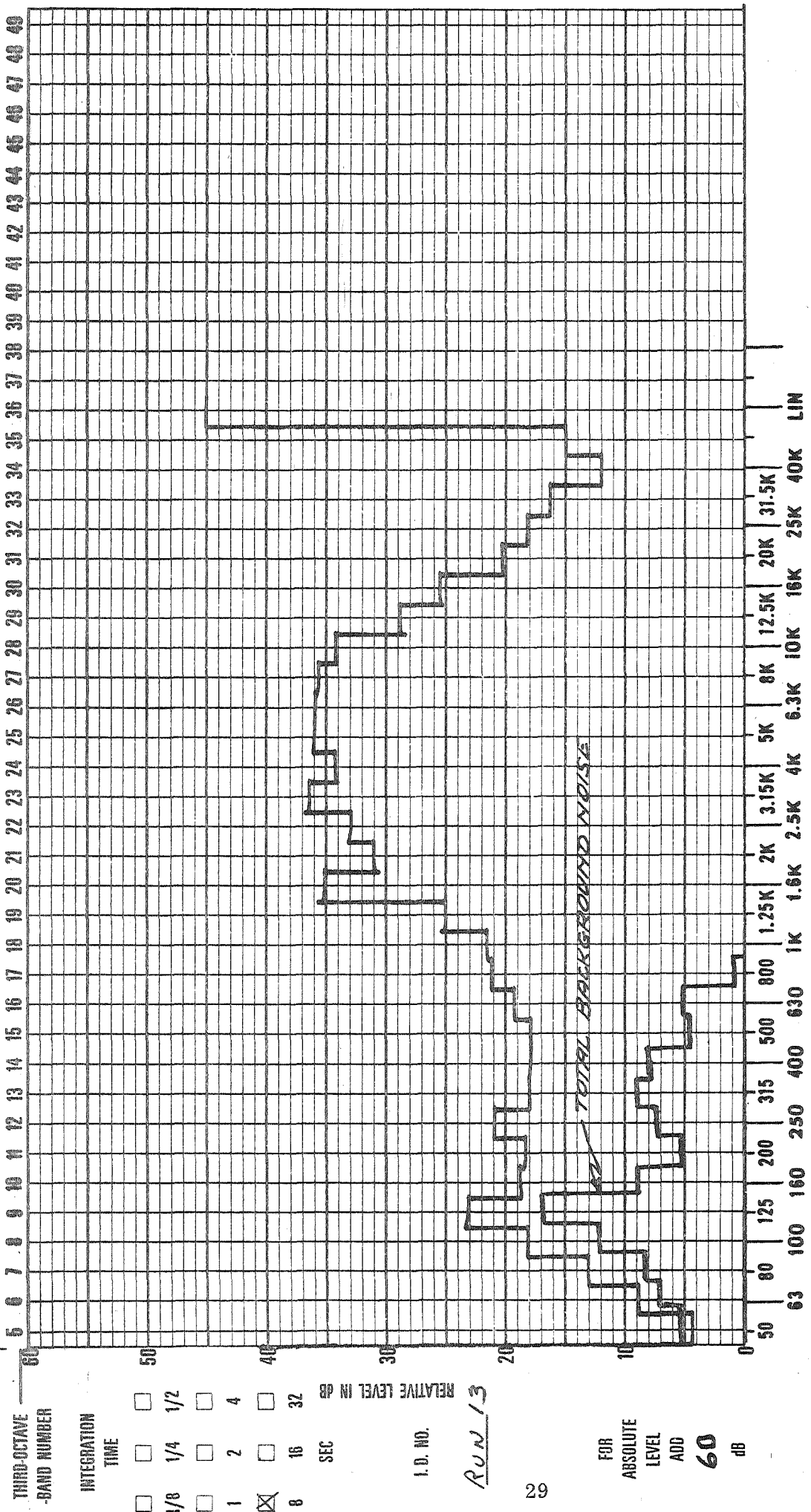
SHROUD STATIC

BLADE ANGLE 35°

TIP SPEED 700 FT/SEC

MICROPHONE LOCATION 13 1/2' 90° ON GROUND

Figure 17c PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND ANALYSIS

SHROUD STATIC
BLADE ANGLE 35°
TIP SPEED 700 FT/SEC
MICROPHONE LOCATION 10' 22 1/2°

THIRD-OCTAVE-BAND NUMBER

INTEGRATION TIME

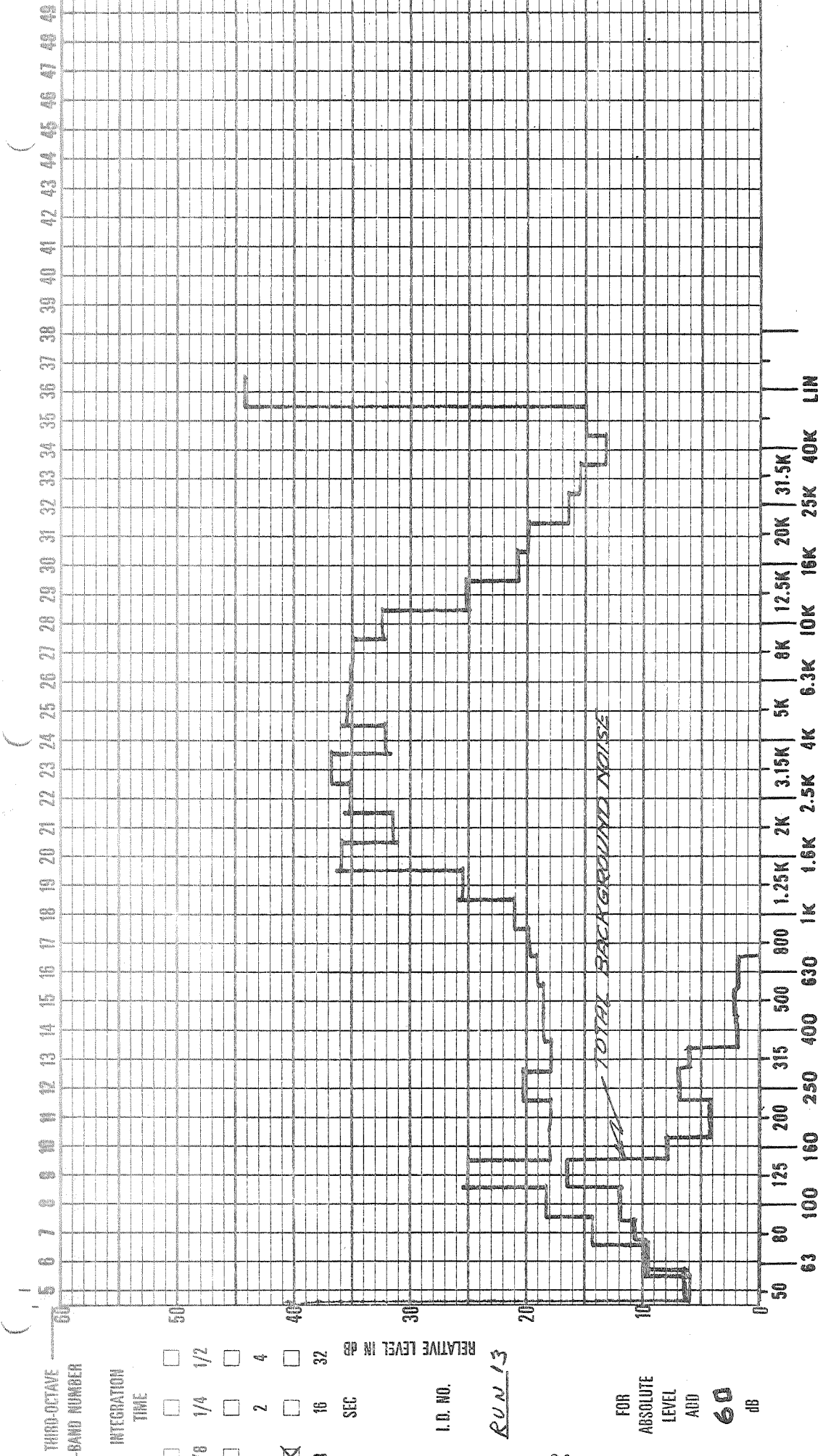
RELATIVE LEVEL IN DB

I.D. NO.

FOR ABSOLUTE LEVEL ADD 60 dB

RUN 13

Figure 18C PROP-FAN MODEL NOISE



SHROUD STATIC
 BLADE ANGLE 35°
 TIP SPEED 700 FT/SEC
 MICROPHONE LOCATION 10' 45"

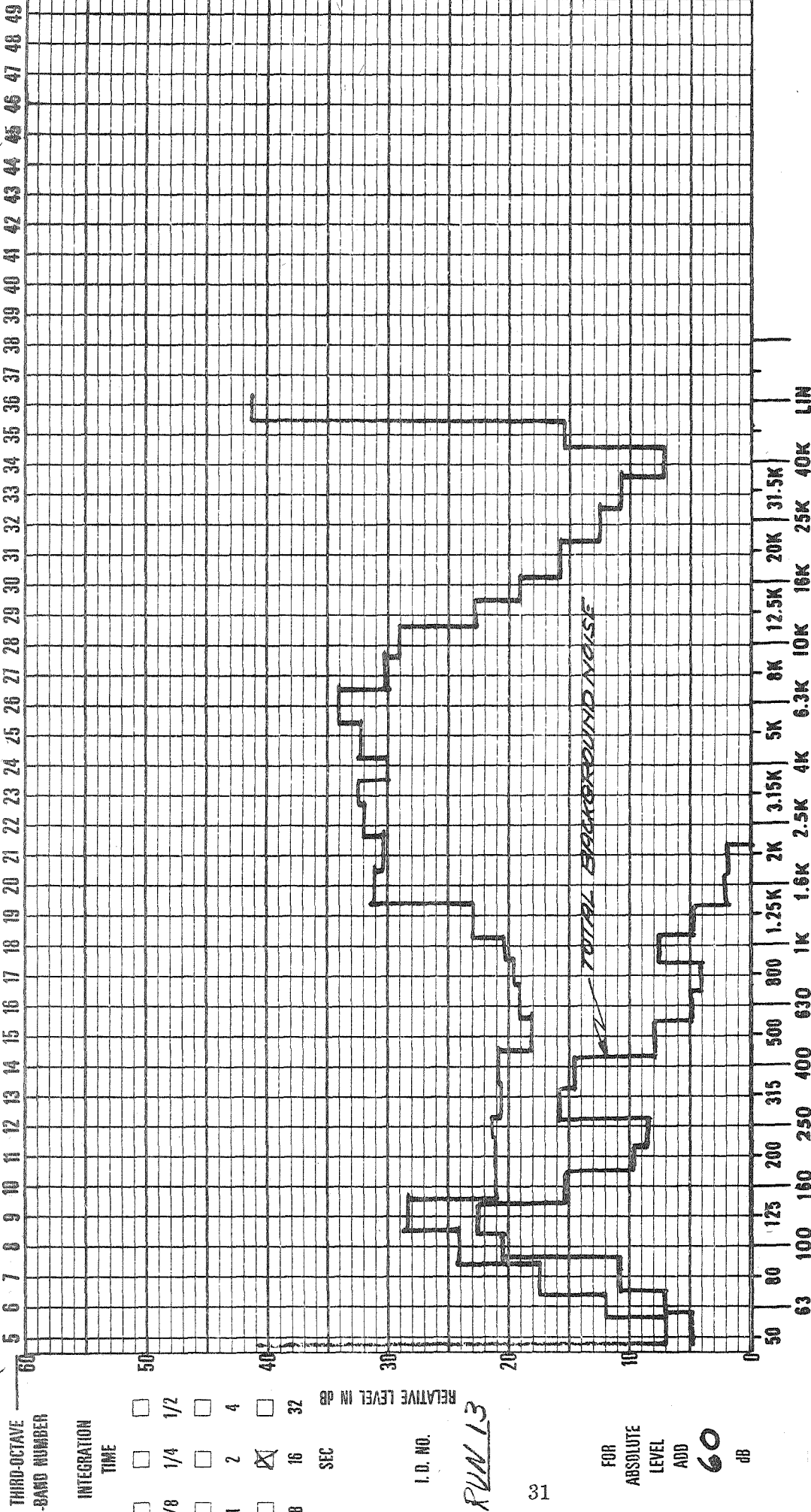
THIRD-OCTAVE BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND ANALYSIS

Figure 19C PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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DEPARTMENT OF COMMERCE, BUREAU OF STANDARDS

THIRD-OCTAVE-BAND ANALYSIS

SHROUD STATIC
BLADE ANGLE 35°
TIP SPEED 700 FT/SEC
MICROPHONE LOCATION 10' 67 1/2°

Figure 20c PROP-FAN MODEL NOISE

THIRD-OCTAVE -BAND NUMBER

INTEGRATION TIME

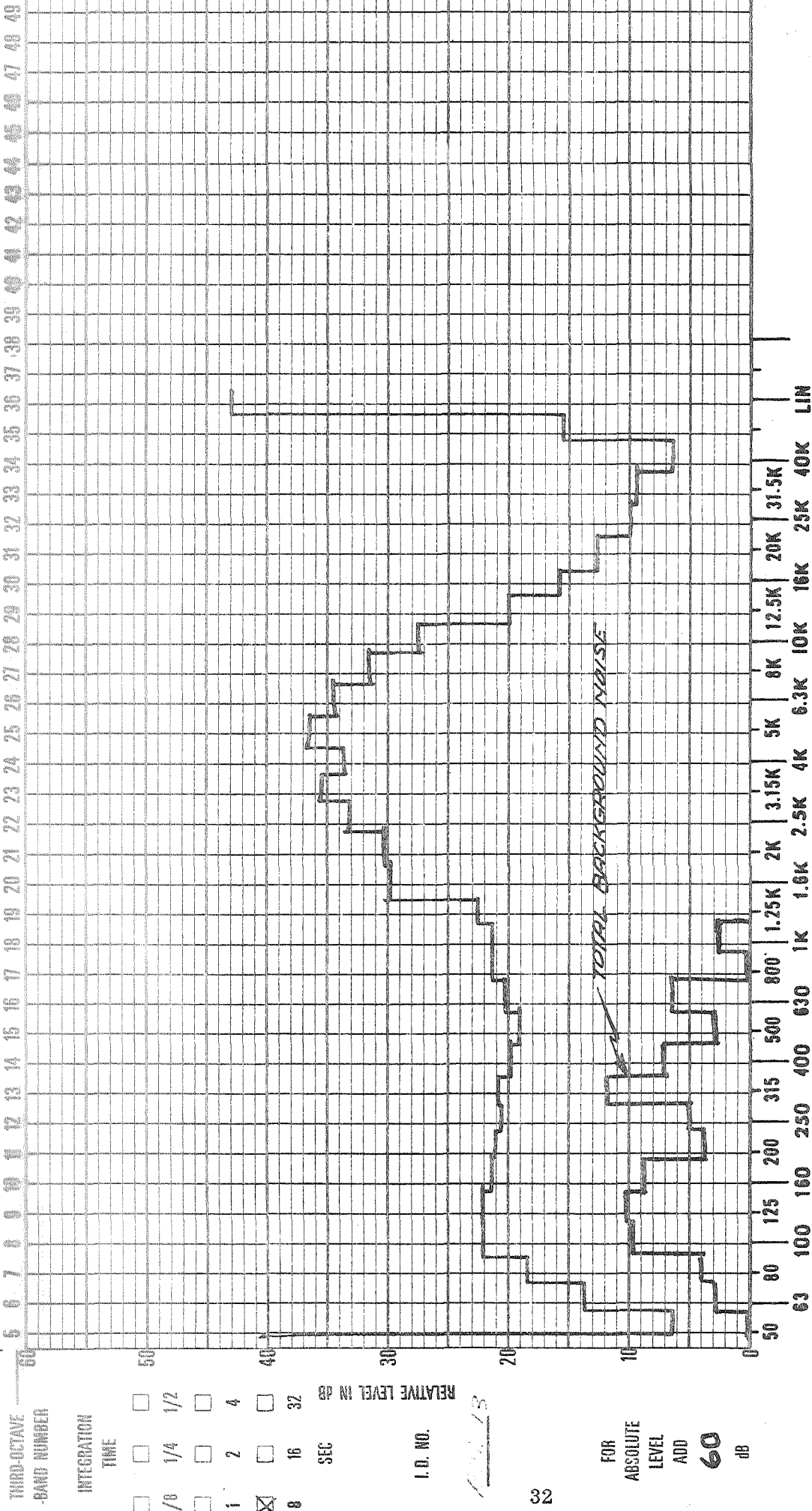
1/8 1/4 1/2 1 2 4 8 16 32

RELATIVE LEVEL IN DB

I. D. NO.

RUN 13

FOR ABSOLUTE LEVEL ADD 60 dB



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

RELATIVE LEVEL IN dB

I.D. NO.

32

FOR ABSOLUTE LEVEL ADD 60 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

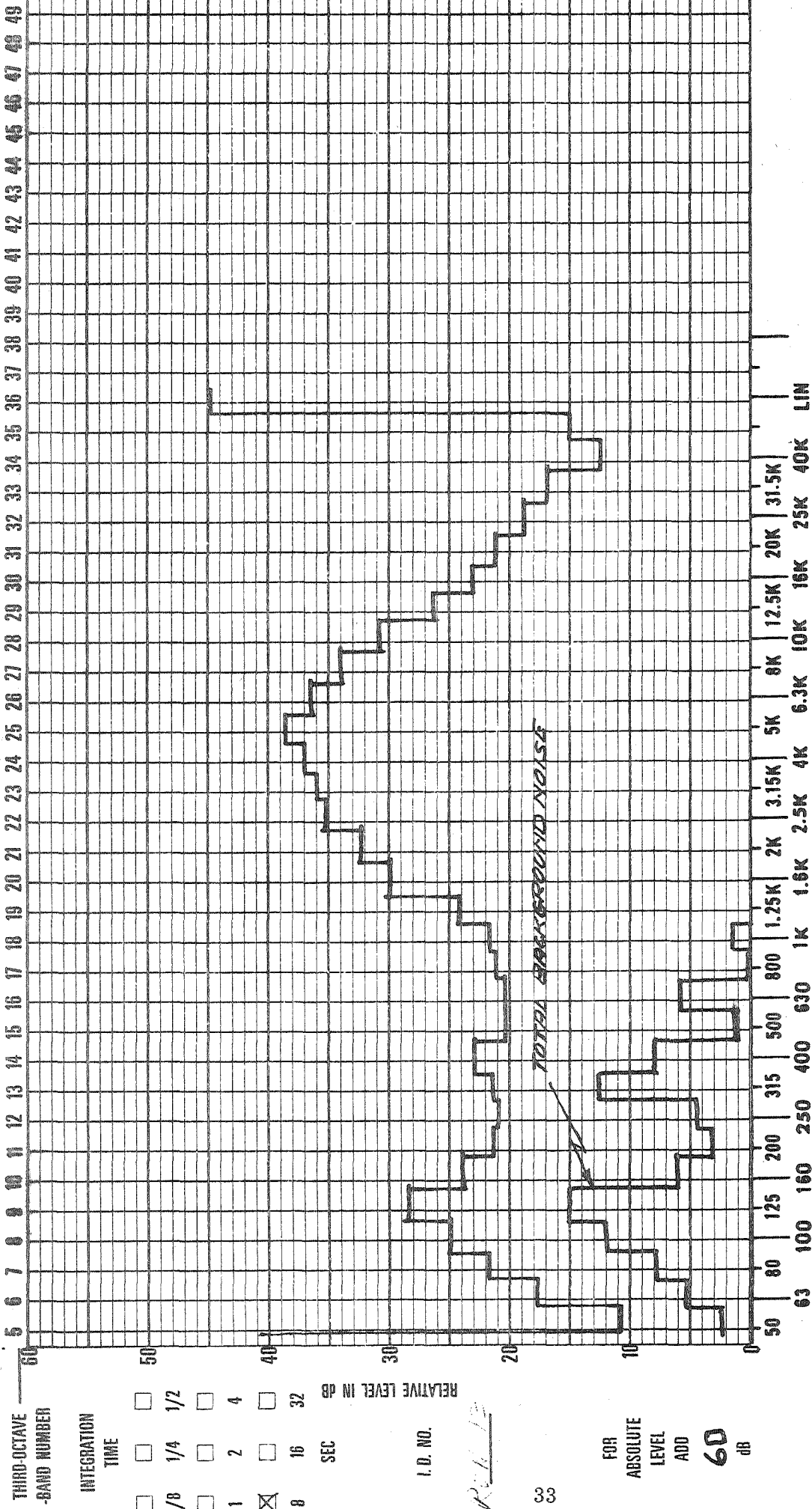
Hamilton Standard

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THIRD-OCTAVE-BAND ANALYSIS

SHROUD STATIC
 BLADE ANGLE 35°
 TIP SPEED 700 FT/SEC
 MICROPHONE LOCATION 10', 90°

Figure 21C PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER: 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49

INTEGRATION TIME: 1/8 1/4 1/2 1 2 4 8 16 32

SEC

RELATIVE LEVEL IN DB

I.D. NO. *Ref 12*

FOR ABSOLUTE LEVEL ADD 60 dB

THIRD-OCTAVE BAND CENTER FREQUENCY IN HZ

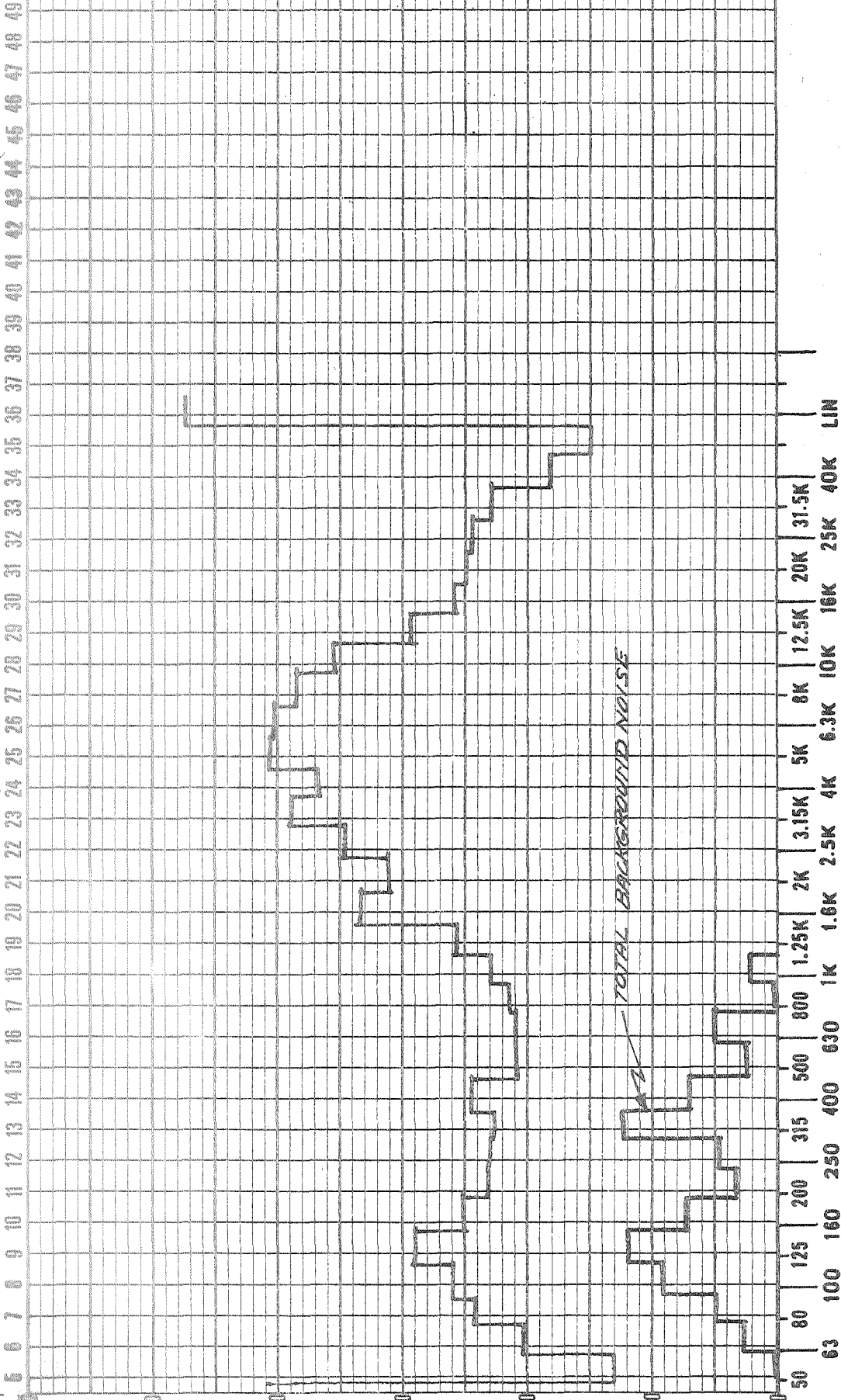
SHROUD STATIC
 BLADE ANGLE 35°
 TIP SPEED 700 FT/SEC
 MICROPHONE LOCATION 10' 112 1/2°

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THIRD-OCTAVE-BAND ANALYSIS

Figure 22 PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

1/8

1/4

1/2

1

2

4

8

16

32

SEC

RELATIVE LEVEL IN dB

I.D. NO. R0113

FOR ABSOLUTE LEVEL ADD 60 dB

THIRD-OCTAVE BAND CENTER FREQUENCY IN HZ

SHROUD STATIC

BLADE ANGLE 35°

TIP SPEED 700 FT/SEC

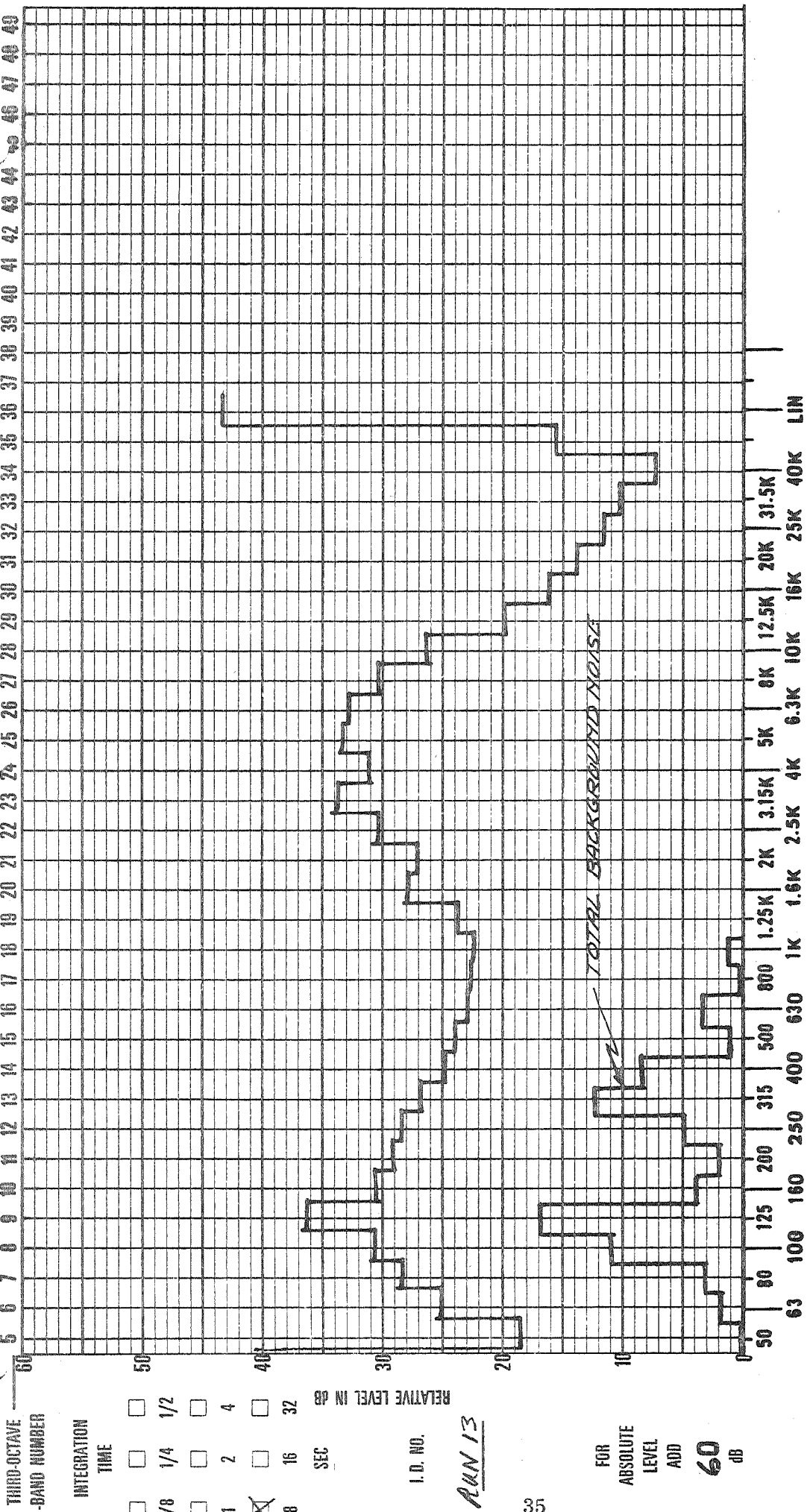
MICROPHONE LOCATION 10' 135°

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

Figure 23C PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

1/8 1/4 1/2 4 32

1 2 8 16 32

SEC

I.D. NO.

RUN 13

FOR ABSOLUTE LEVEL ADD 60 dB

SHROUD STATIC

BLADE ANGLE 35°

TIP SPEED 700 FT/SEC

MICROPHONE LOCATION 10' 15 1/2"

THIRD-OCTAVE BAND CENTER FREQUENCY IN HZ

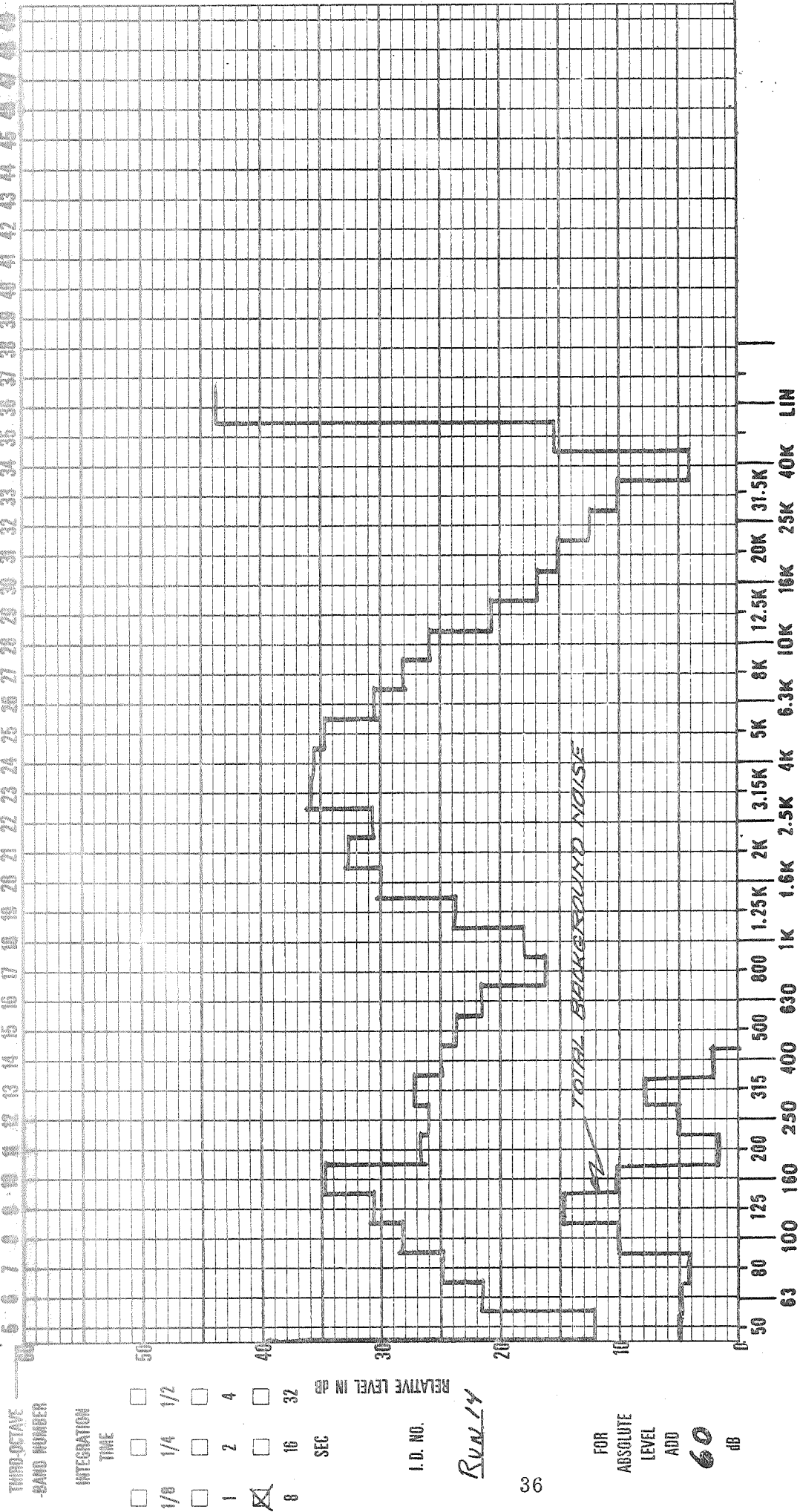
Hamilton Standard

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THIRD-OCTAVE-BAND ANALYSIS

Figure 24C PROP-FAN MODEL NOISE



SHROUD STATIC
 BLADE ANGLE 35°
 TIP SPEED 800 FT/SEC
 MICROPHONE LOCATION 13 1/2' 90° ON GROUND

THIRD-OCTAVE-BAND CENTER FREQUENCY IN Hz

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Standard

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3-500-01-100-01-01-01-01-01

THIRD-OCTAVE-BAND
ANALYSIS

THIRD-OCTAVE-BAND NUMBER
 INTEGRATION TIME
 50
 1/8
 1/4
 1/2
 1
 2
 4
 8
 16
 32
 SEC

I.D. NO.

RUN 14

FOR ABSOLUTE LEVEL ADD 60 dB

Figure 35c PROP-FAN MODEL NOISE

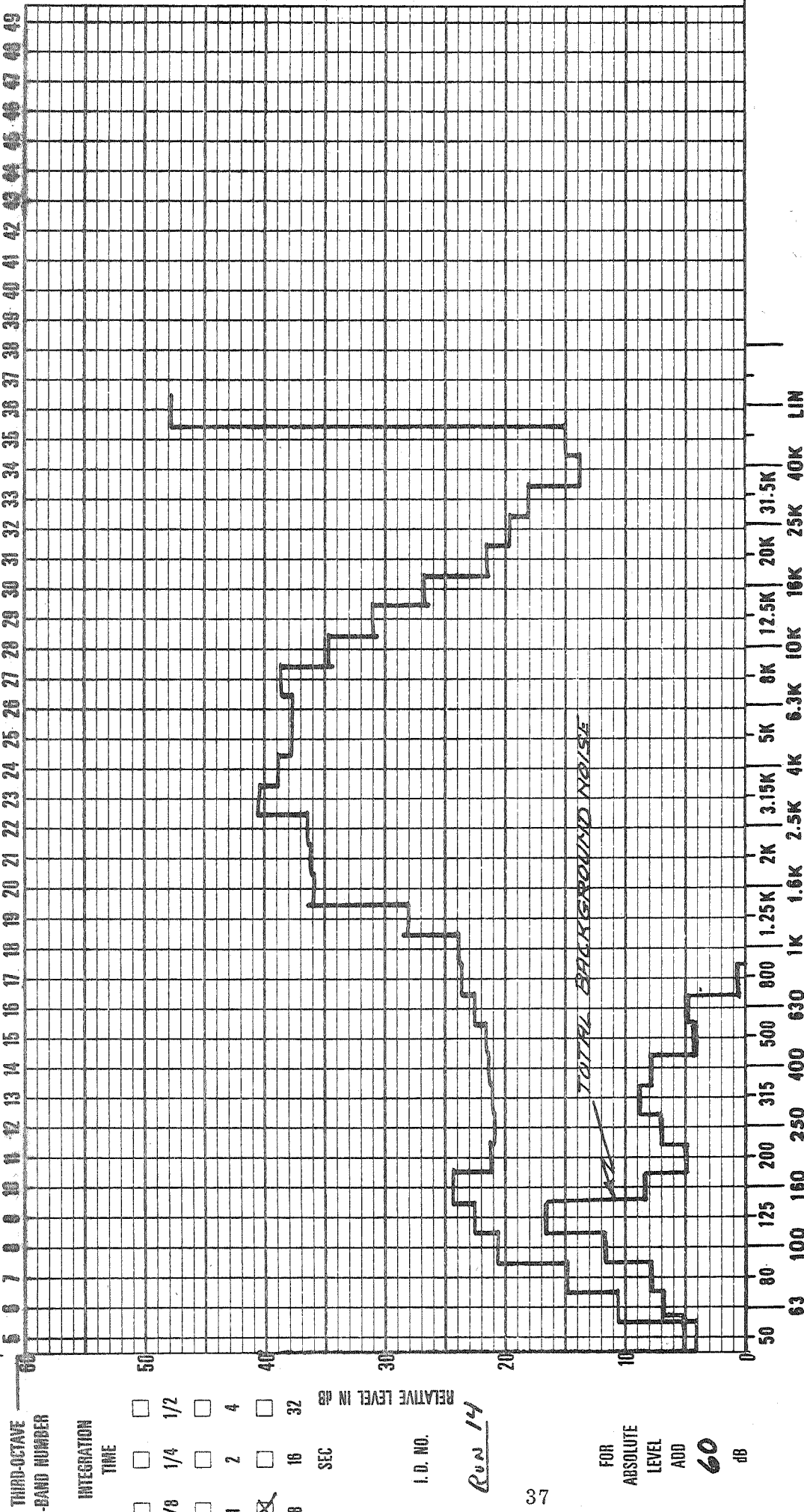
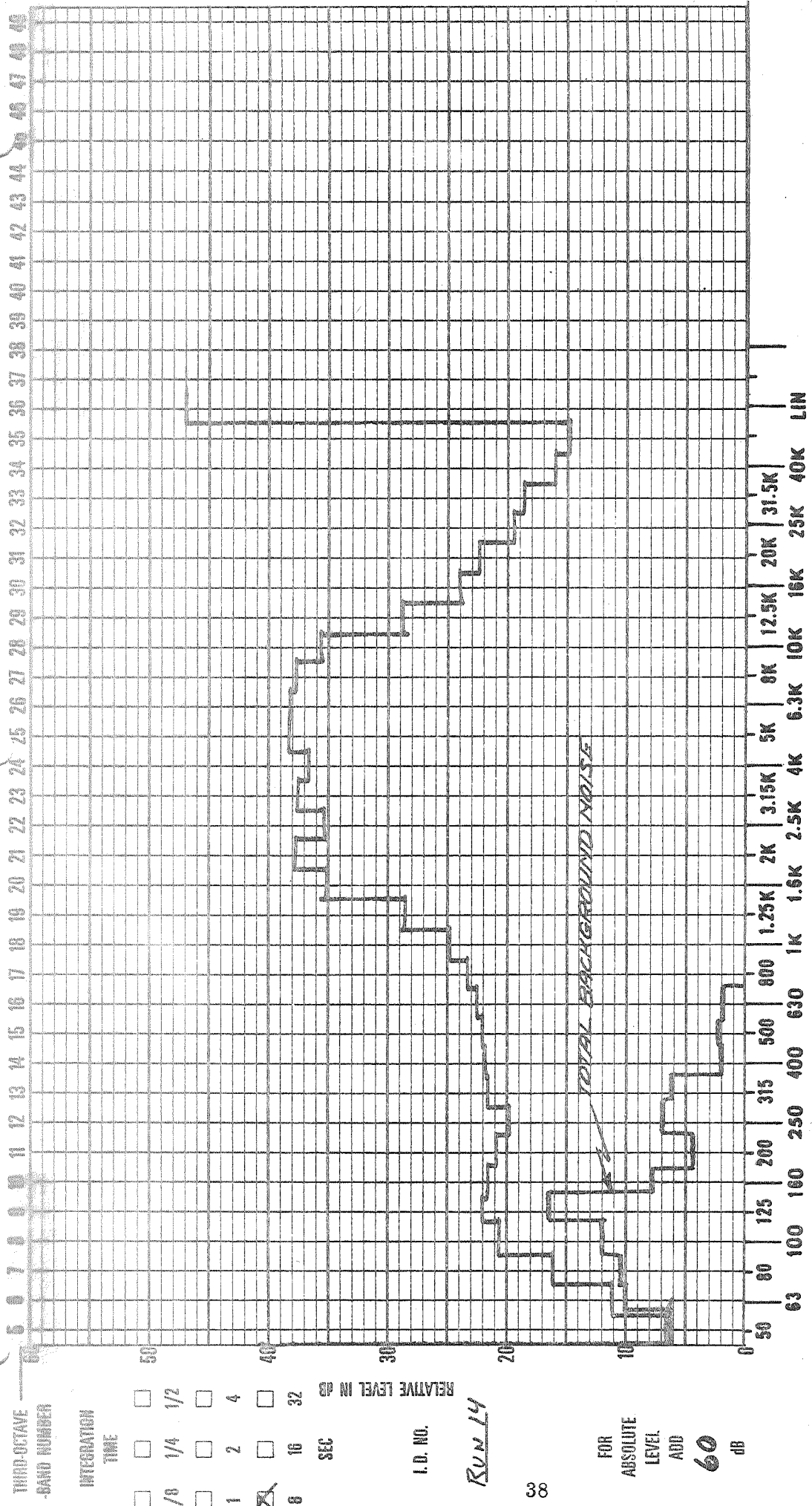


Figure 26 PROP - FAN MODEL NOISE

THIRD-OCTAVE-BAND
ANALYSIS



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

SHROUD STATIC
 BLADE ANGLE 35°
 TIP SPEED 800 FT/SEC
 MICROPHONE LOCATION 10' 45"

THIRD-OCTAVE-BAND NUMBER: 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49

INTERACTION TIME:
 1/8
 1/4
 1/2
 1
 2
 4
 8
 16
 32
 SEC

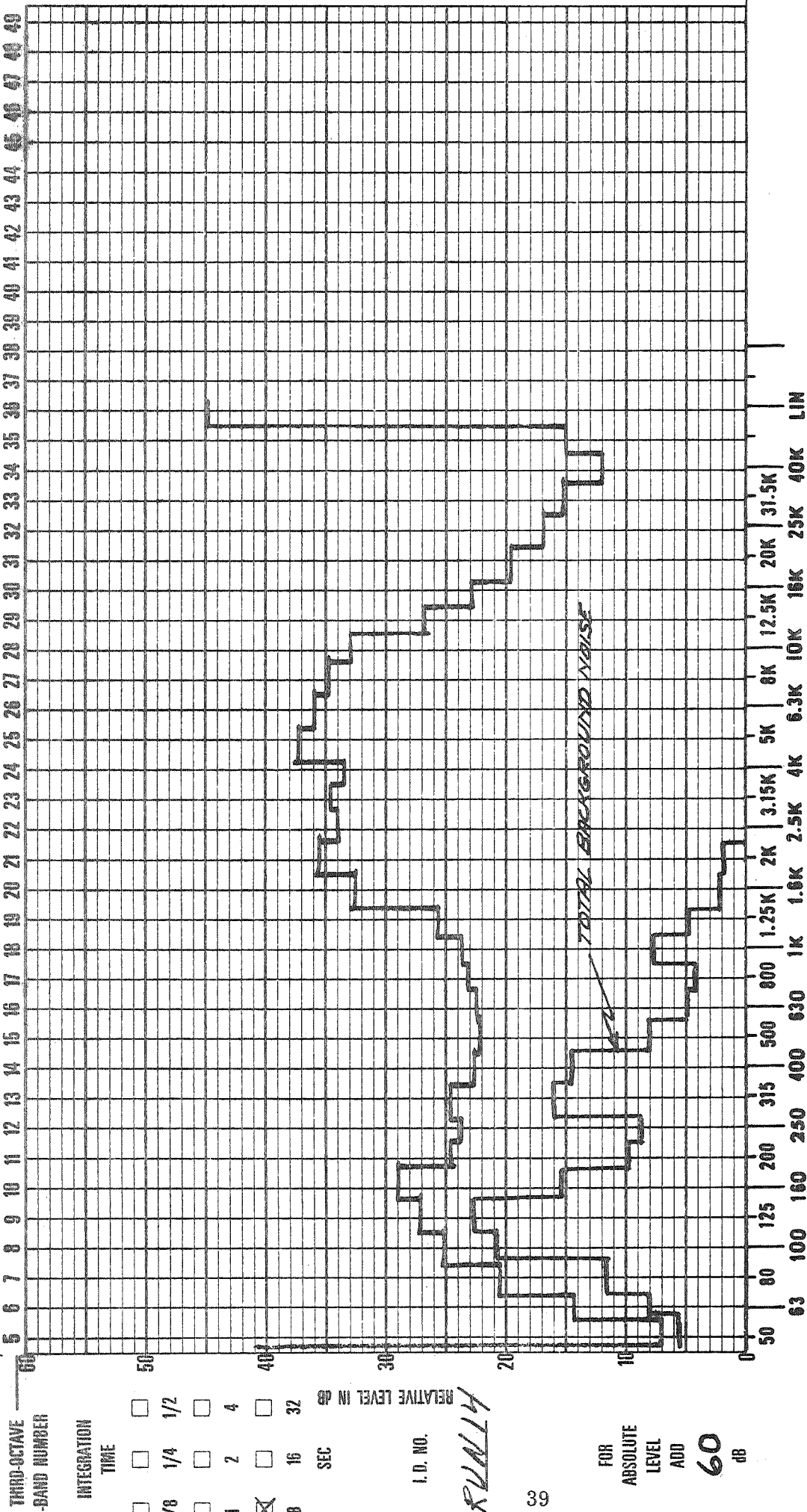
RELATIVE LEVEL IN DB

I.D. NO.

RUN 14

FOR ABSOLUTE LEVEL ADD 60 DB

Figure 27c PROP-FAN MODEL NOISE



SHROUD STATIC
 BLADE ANGLE 35°
 TIP SPEED 800 FT/SEC
 MICROPHONE LOCATION 10' 67 1/2°

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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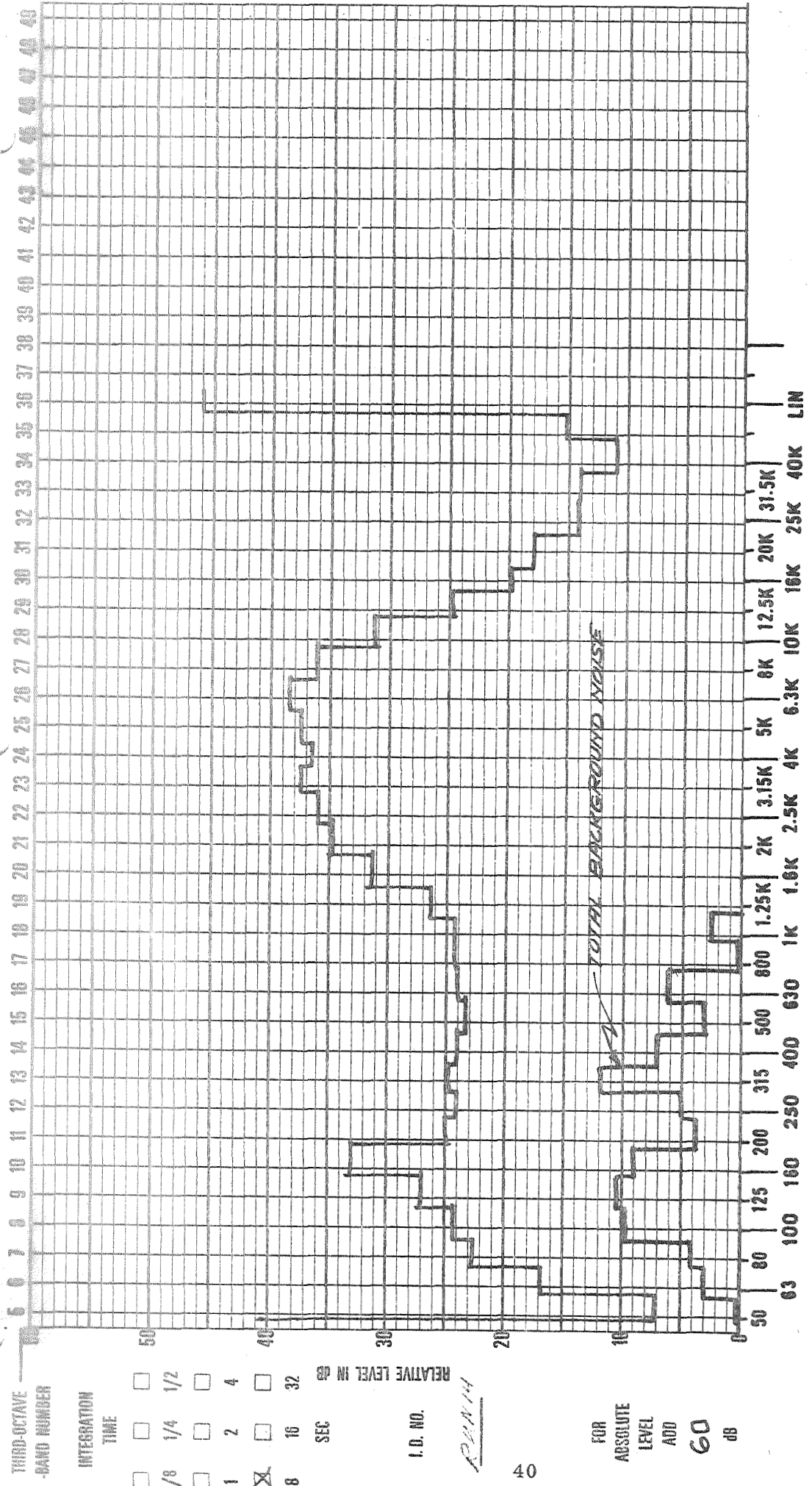


THIRD-OCTAVE-BAND ANALYSIS

Figure 28c PROP-FAN MODEL NOISE

THIRD-OCTAVE-BAND NUMBER
 INTEGRATION TIME
 1/8
 1/4
 1/2
 1
 2
 4
 8
 16
 32
 SEC
 RELATIVE LEVEL IN DB
 I.D. NO. R21114

FOR ABSOLUTE LEVEL ADD 60 dB



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

- 1/8
 - 1/4
 - 1/2
 - 1
 - 2
 - 4
 - 8
 - 16
 - 32
 - 60
- SEC

I.D. NO.

RAWH

40

FOR
ABSOLUTE
LEVEL
ADD
60
dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

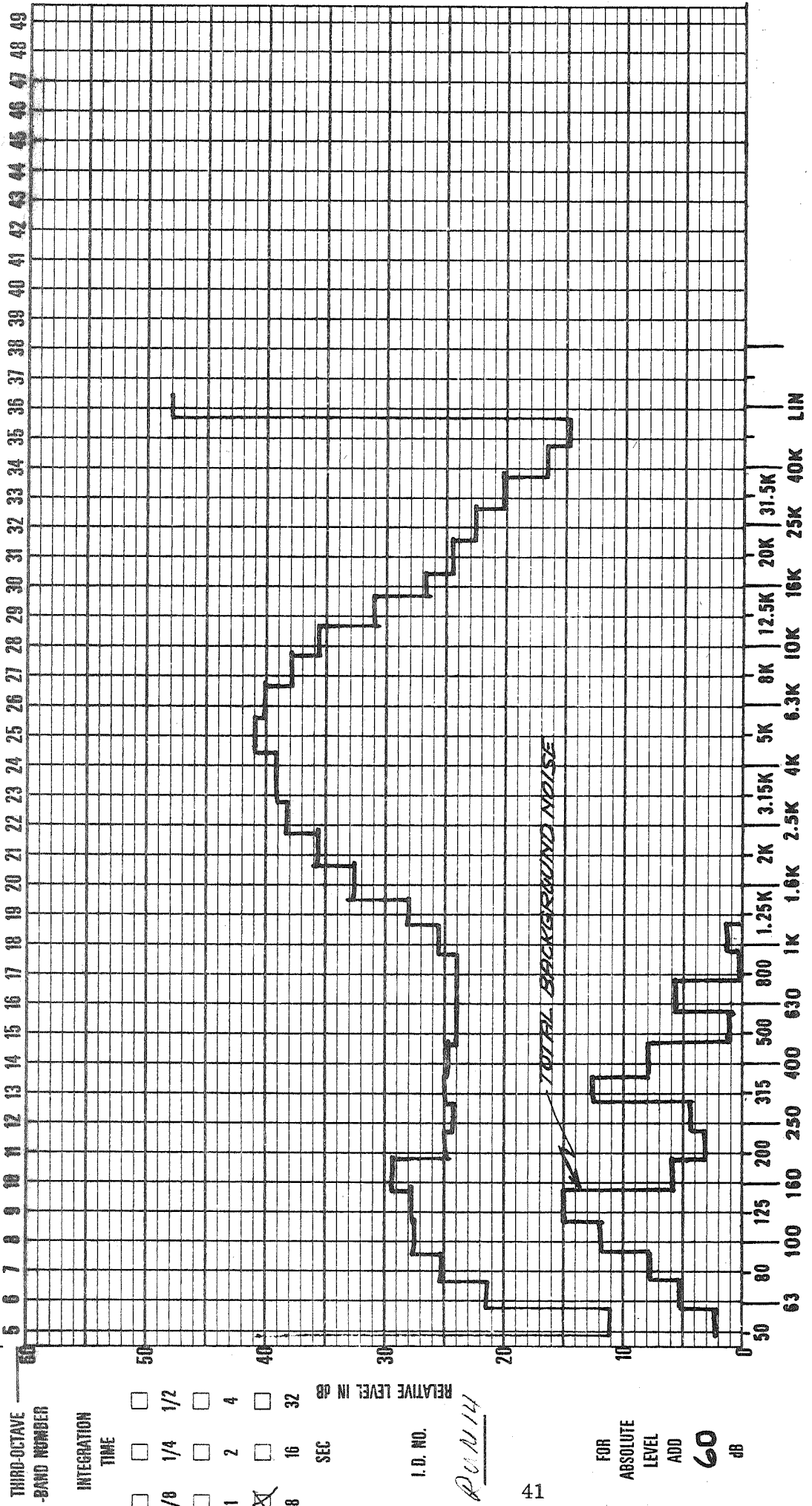
Hamilton
Standard



THIRD-OCTAVE-BAND
ANALYSIS

SHROUD STATIC
 BLADE ANGLE 35°
 TIP SPEED 800 FT/SEC
 MICROPHONE
 LOCATION 10' 90°

Figure 29C PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

RELATIVE LEVEL IN dB

I. D. NO.

FOR ABSOLUTE LEVEL ADD

60 dB

50 1/8 1 8 16 32

1 2 4

SEC

RUN 14

SHROUD STATIC

BLADE ANGLE 35°

TIP SPEED 800 FT/SEC

MICROPHONE LOCATION 10' 112 1/2°

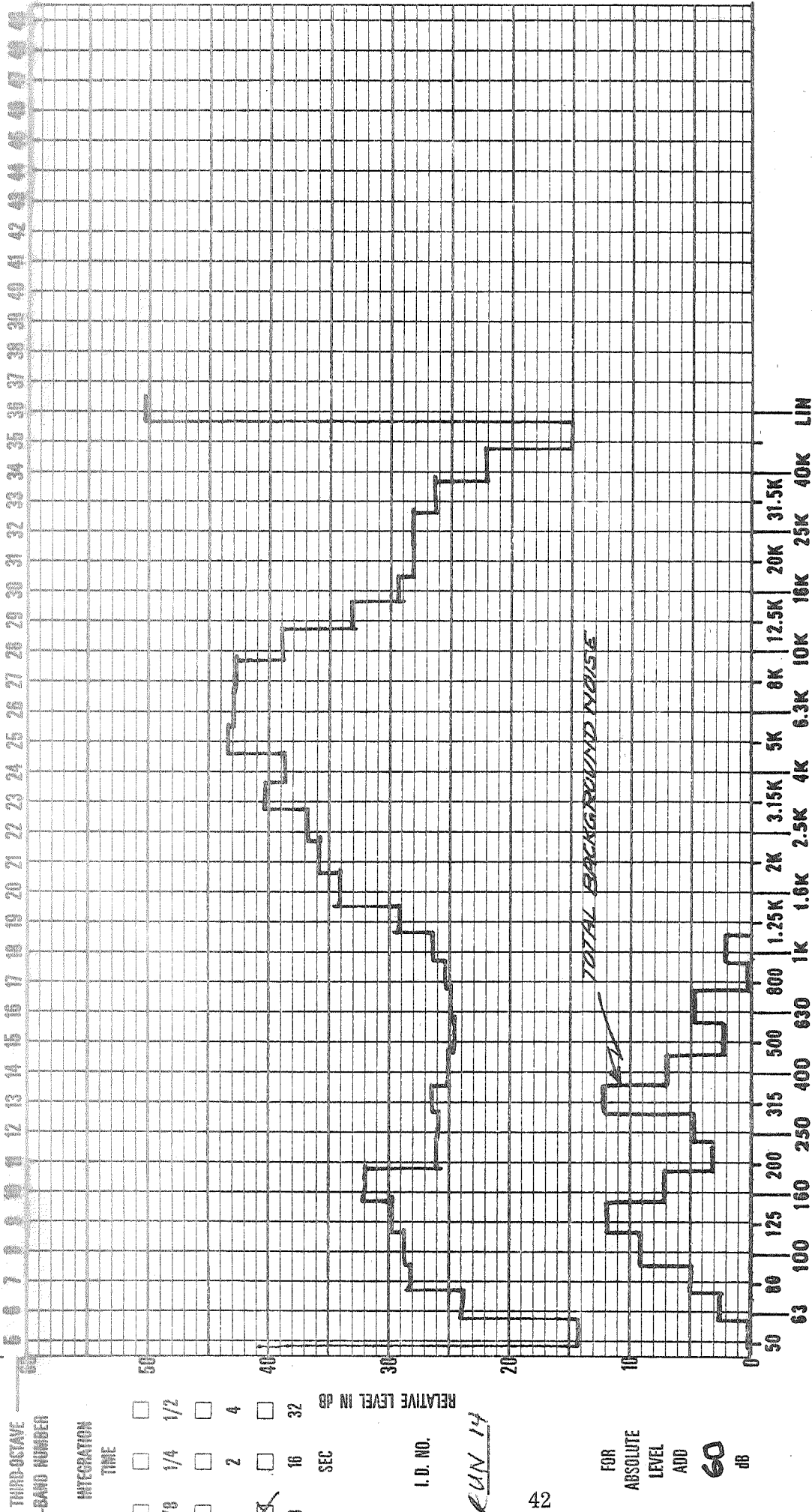
THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard

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THIRD-OCTAVE-BAND ANALYSIS

Figure 80C PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

- 1/8
 - 1/4
 - 1/2
 - 1
 - 2
 - 4
 - 8
 - 16
 - 32
- SEC

I. D. NO.

RUN 14

42

FOR ABSOLUTE LEVEL ADD 60 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

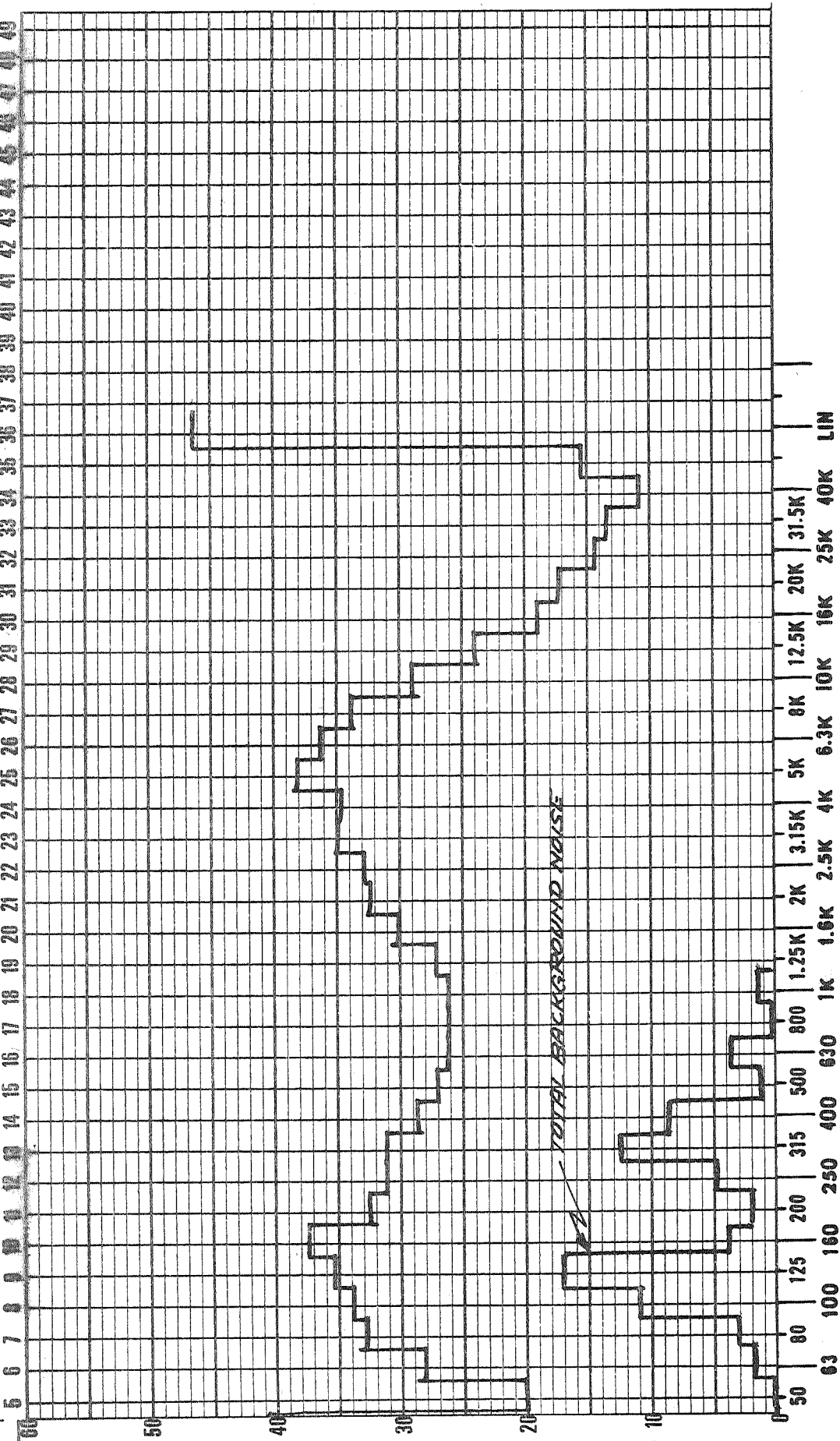
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THIRD-OCTAVE-BAND ANALYSIS

SHROUD STATIC
 BLADE ANGLE 35°
 TIP SPEED 800 FT/SEC
 MICROPHONE LOCATION 10' 135°

Figure 3/c PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD STATIC
 BLADE ANGLE 35°
 TIP SPEED 800 FT/SEC
 MICROPHONE LOCATION 10' 15 1/2"

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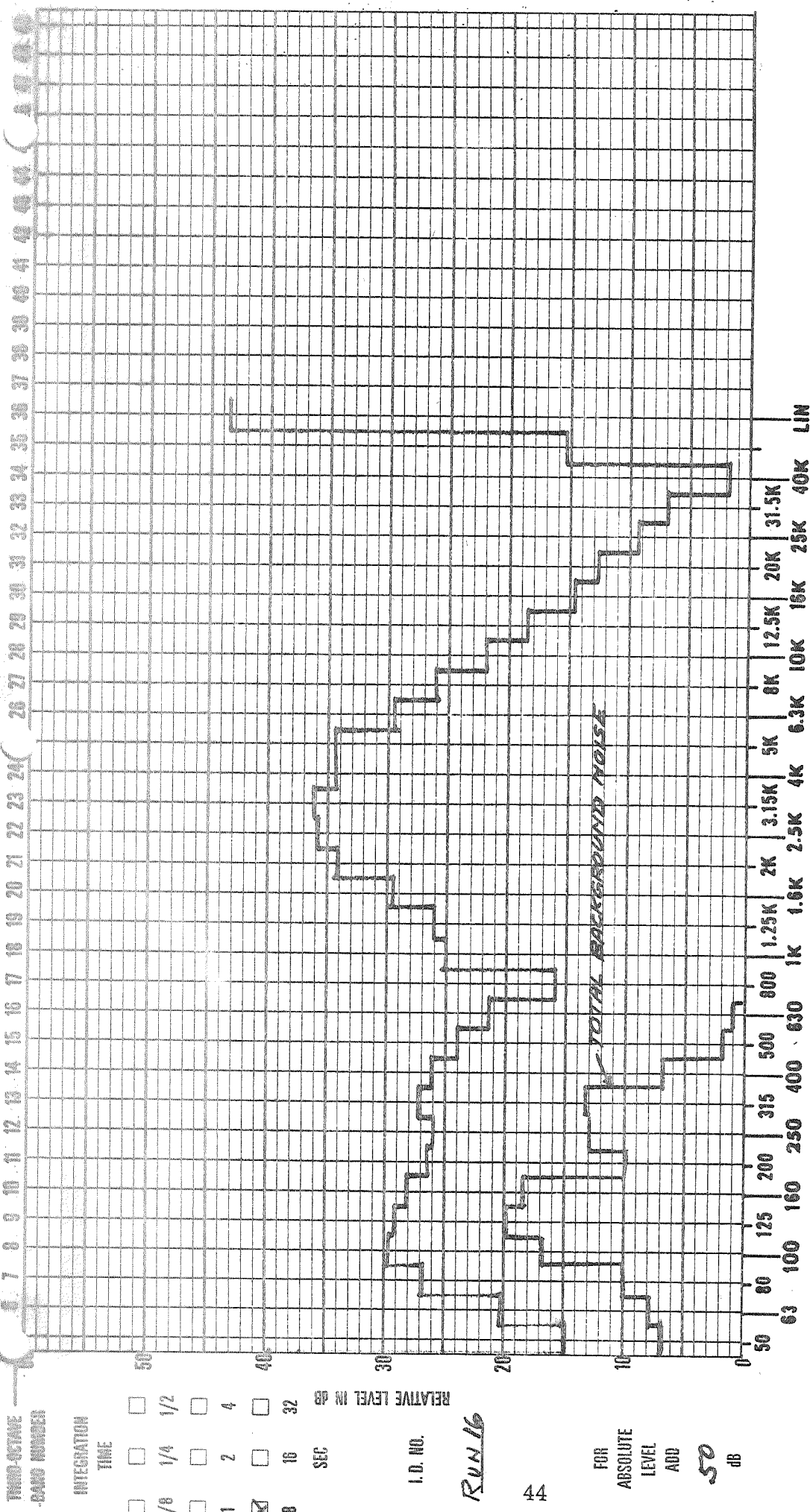


THIRD-OCTAVE-BAND ANALYSIS

Figure SAC PROP-FAN MODEL NOISE

THIRD-OCTAVE-BAND NUMBER
 INTEGRATION TIME
 1/8 1/4 1/2 4 32
 1 2 8 16 60
 SEC
 I.D. NO.
RUN 14

FOR ABSOLUTE LEVEL ADD 60 dB



THIRD-OCTAVE-BAND NUMBER

INTEGRATION TIME

1/8 1/4 1/2 1 2 4 8 16 32

SEC

I.D. NO.

Run 16

44

FOR ABSOLUTE LEVEL ADD

50 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND ANALYSIS

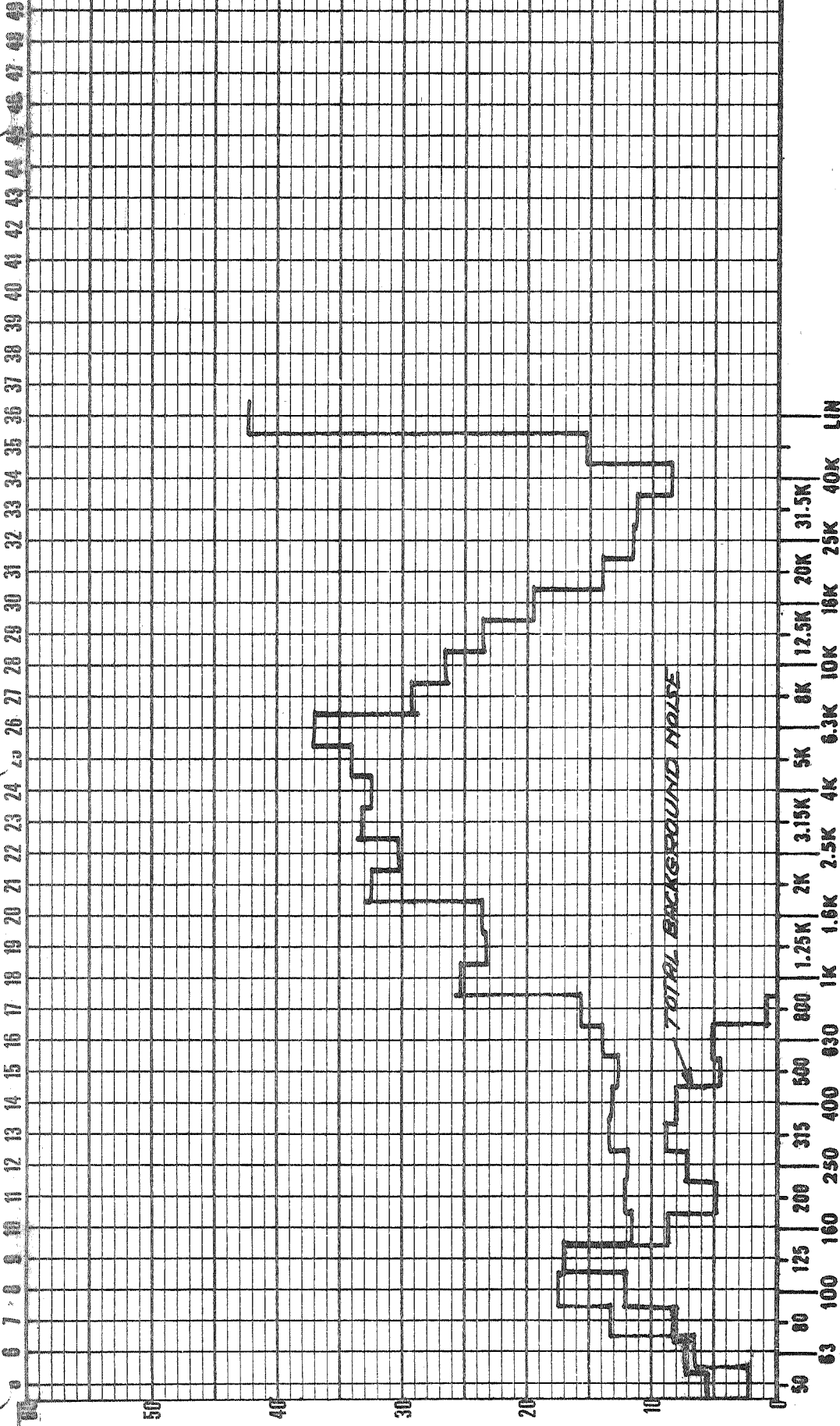
SHROUD STATIC

BLADE ANGLE 40°

TIP SPEED 500 FT/SEC

MICROPHONE LOCATION 13 1/2', 90° ON GROUND

Figure 33c PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

RELATIVE LEVEL IN DB

I. D. NO.

Run 16

FOR ABSOLUTE LEVEL ADD

60 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD STATIC

BLADE ANGLE 40°

TIP SPEED 500 FT/SEC

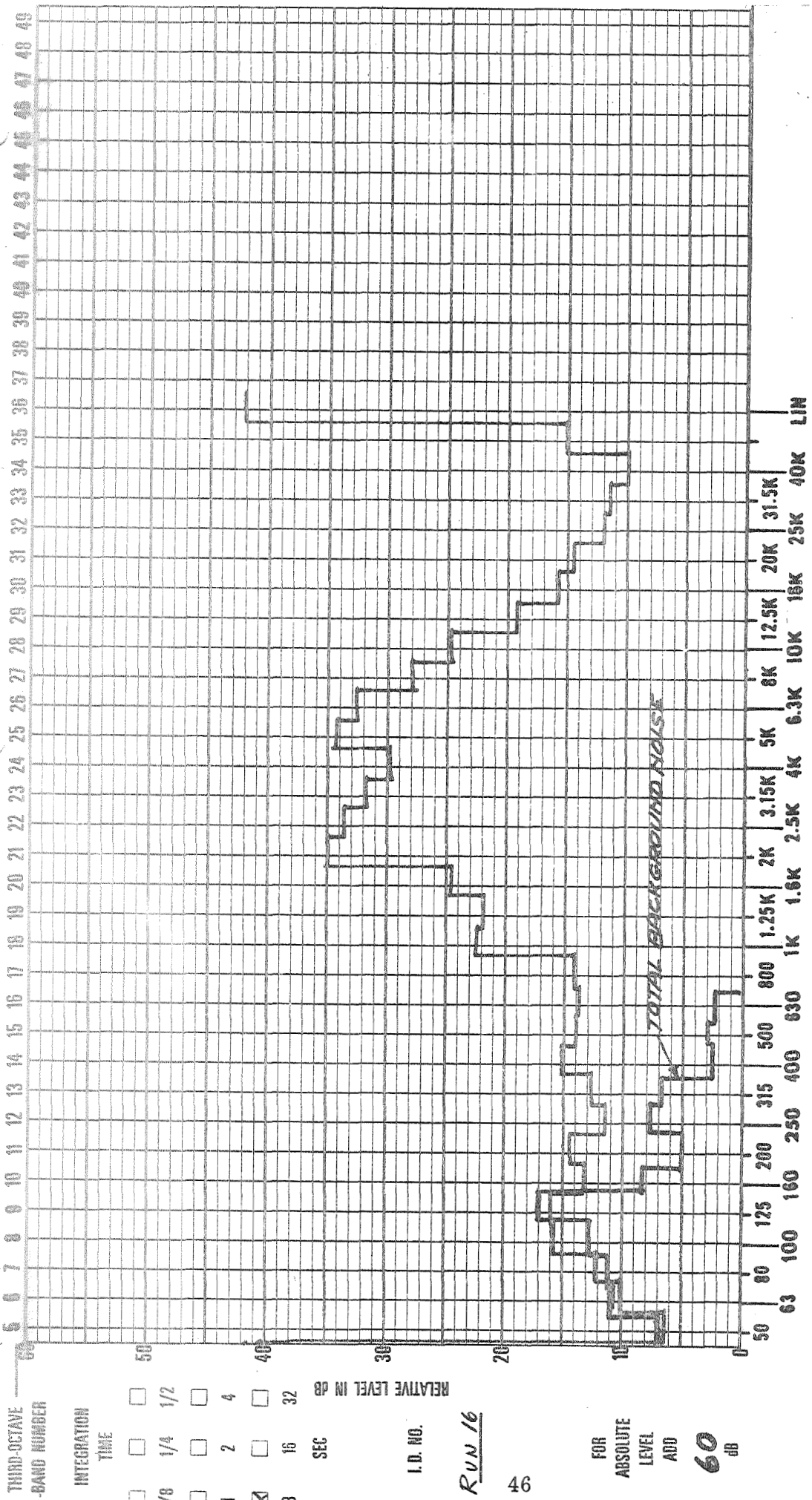
MICROPHONE LOCATION 10' 22 1/2°

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THIRD-OCTAVE-BAND ANALYSIS

Figure 34c PROP-FAN MODEL NOISE



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

RELATIVE LEVEL IN DB

I.D. NO.

FOR
ABSOLUTE
LEVEL
ADD

60
dB

- 50
- 1/8
- 1
- 2
- 4
- 8
- 16
- 32

Run 16

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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Standard



THIRD-OCTAVE-BAND
ANALYSIS

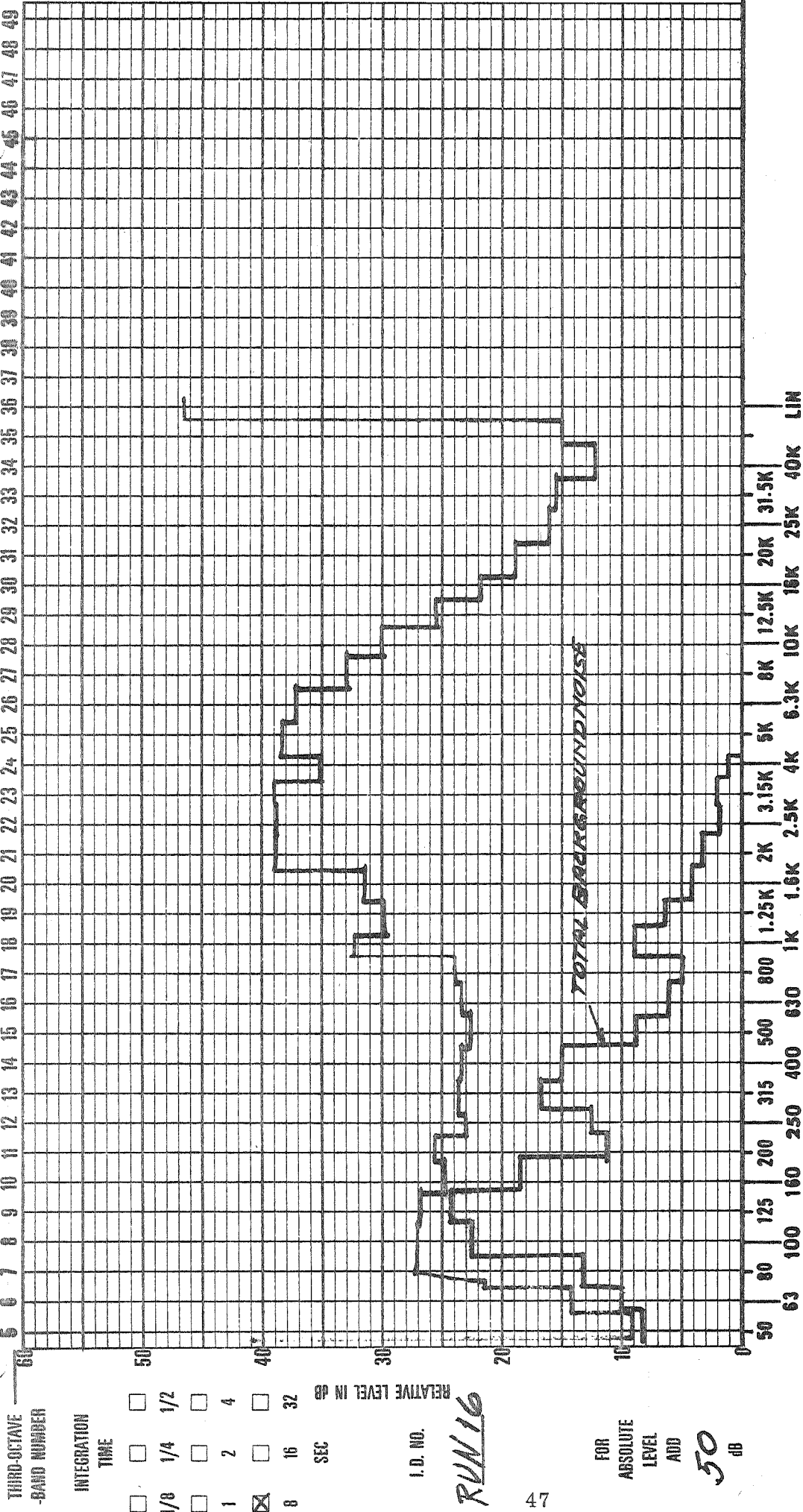
SHROUD STATIC

BLADE ANGLE 40°

TIP SPEED 500 FT/SEC

MICROPHONE
LOCATION 10' 45"

Figure 352 PROP-FAN MODEL NOISE



THIRD-OCTAVE -BAND NUMBER 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49

INTEGRATION TIME
 50
 1/8 1/4 1/2
 1 2 4
 8
 32
 SEC

I.D. NO.
RUN 16

FOR ABSOLUTE LEVEL ADD 50 dB

SHROUD STATIC
 BLADE ANGLE 40°
 TIP SPEED 500 FT/SEC
 MICROPHONE LOCATION 10' 67 1/2°

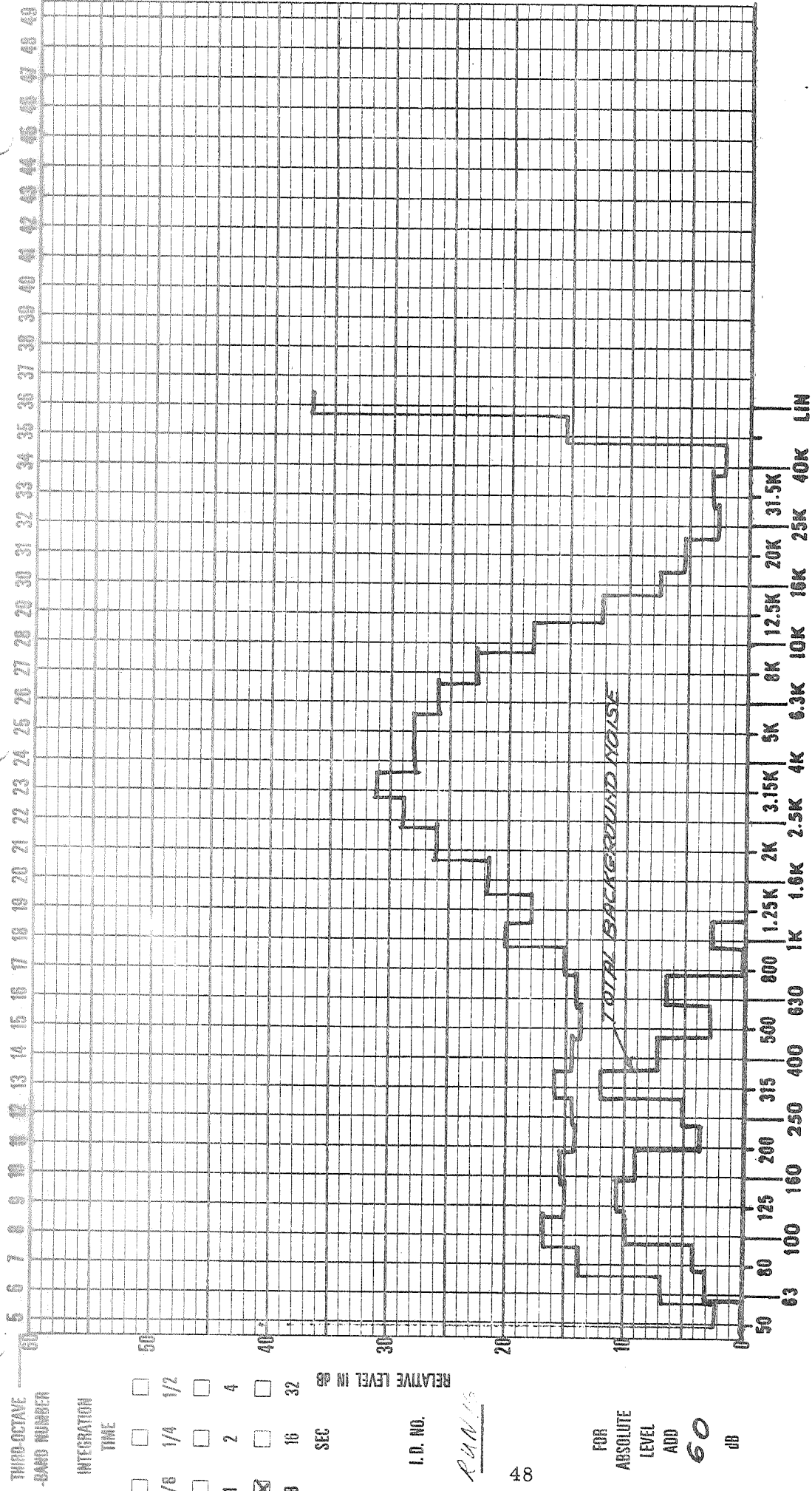
THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard

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THIRD-OCTAVE-BAND ANALYSIS

Figure 36c PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

RELATIVE LEVEL IN dB

I.D. NO.

FOR ABSOLUTE LEVEL ADD 60 dB

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

RUN 15

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD STATIC

BLADE ANGLE 40°

TIP SPEED 500 FT/SEC

MICROPHONE LOCATION 10' 90°

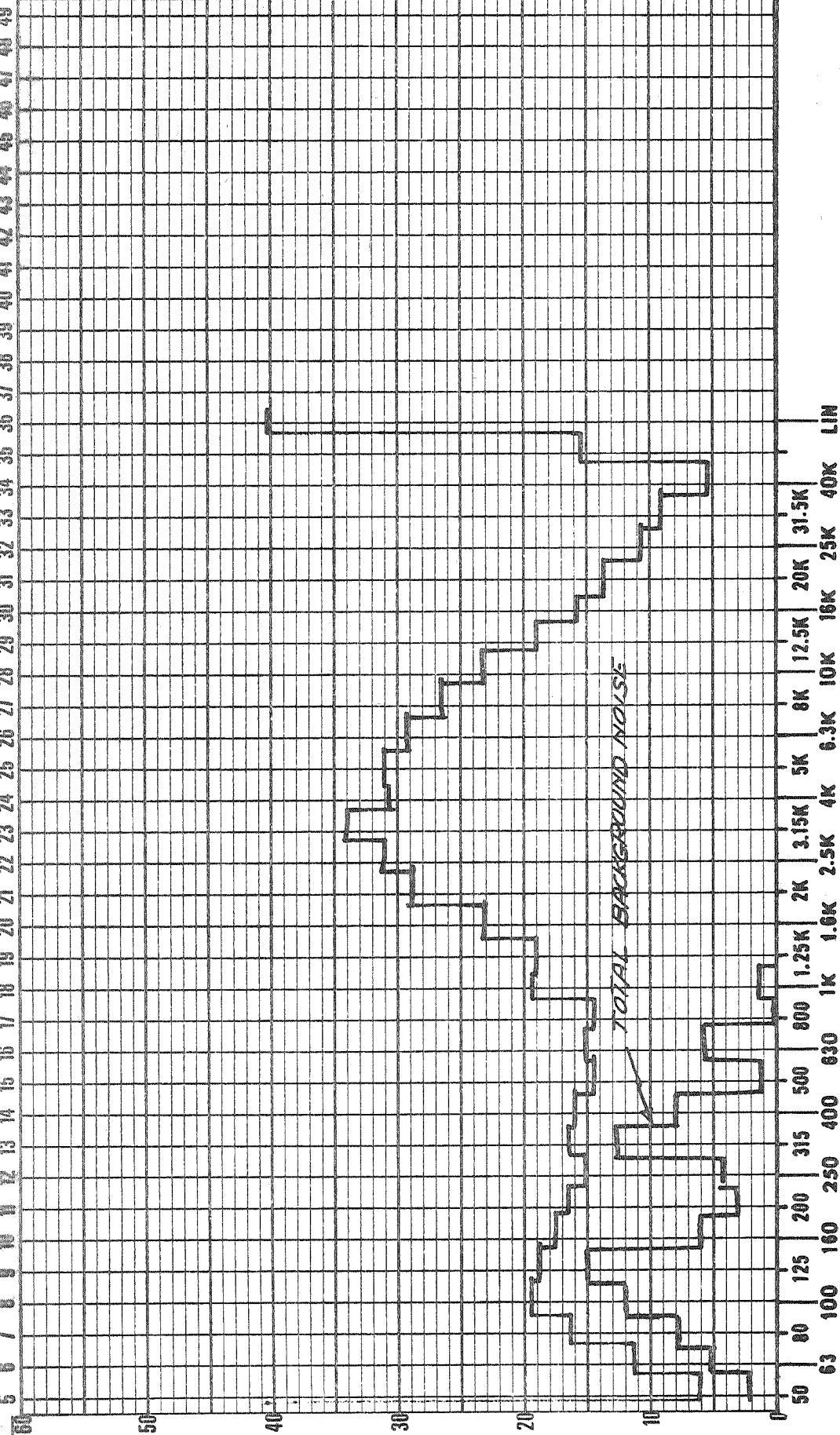
Hamilton Standard

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THIRD-OCTAVE-BAND ANALYSIS

Figure 37 PROP-FAN MODEL NOISE



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

RELATIVE LEVEL IN DB

I. D. NO.

FOR
ABSOLUTE
LEVEL
ADD

60
dB

50
 1/8
 1/4
 1
 2
 4
 8
 16
 32
 SEC

RUN 16

SHROUD STATIC

BLADE ANGLE 40°

TIP SPEED 500 FT/SEC

MICROPHONE LOCATION 10' 112 1/2°

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

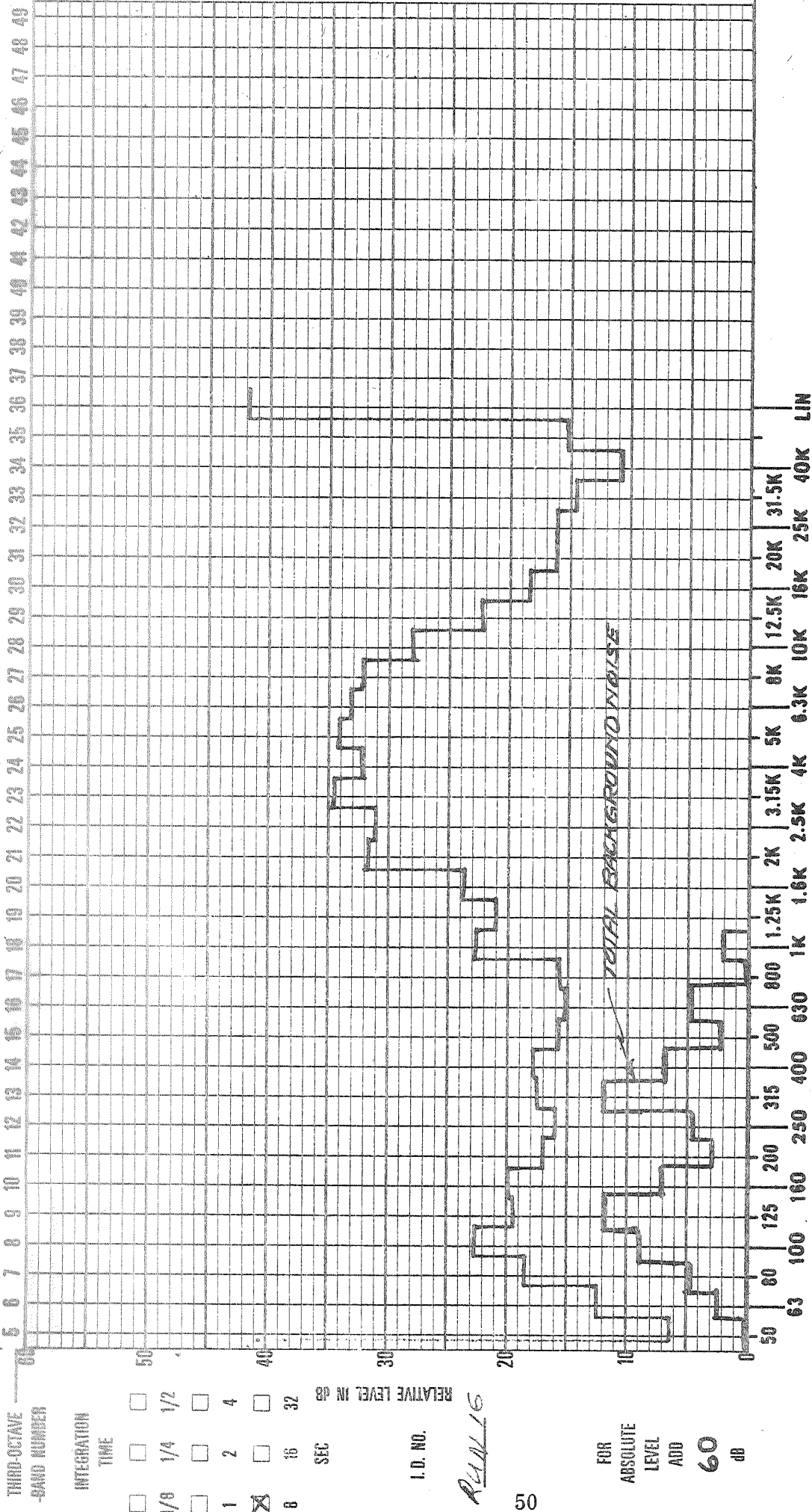
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THIRD-OCTAVE-BAND
ANALYSIS

Figure 58c PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

RELATIVE LEVEL IN DB

I.D. NO.

FOR ABSOLUTE LEVEL ADD

60 dB

50

RAN 16

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD STATIC

BLADE ANGLE 40°

TIP SPEED 500 FT/SEC

MICROPHONE LOCATION 10' 135°

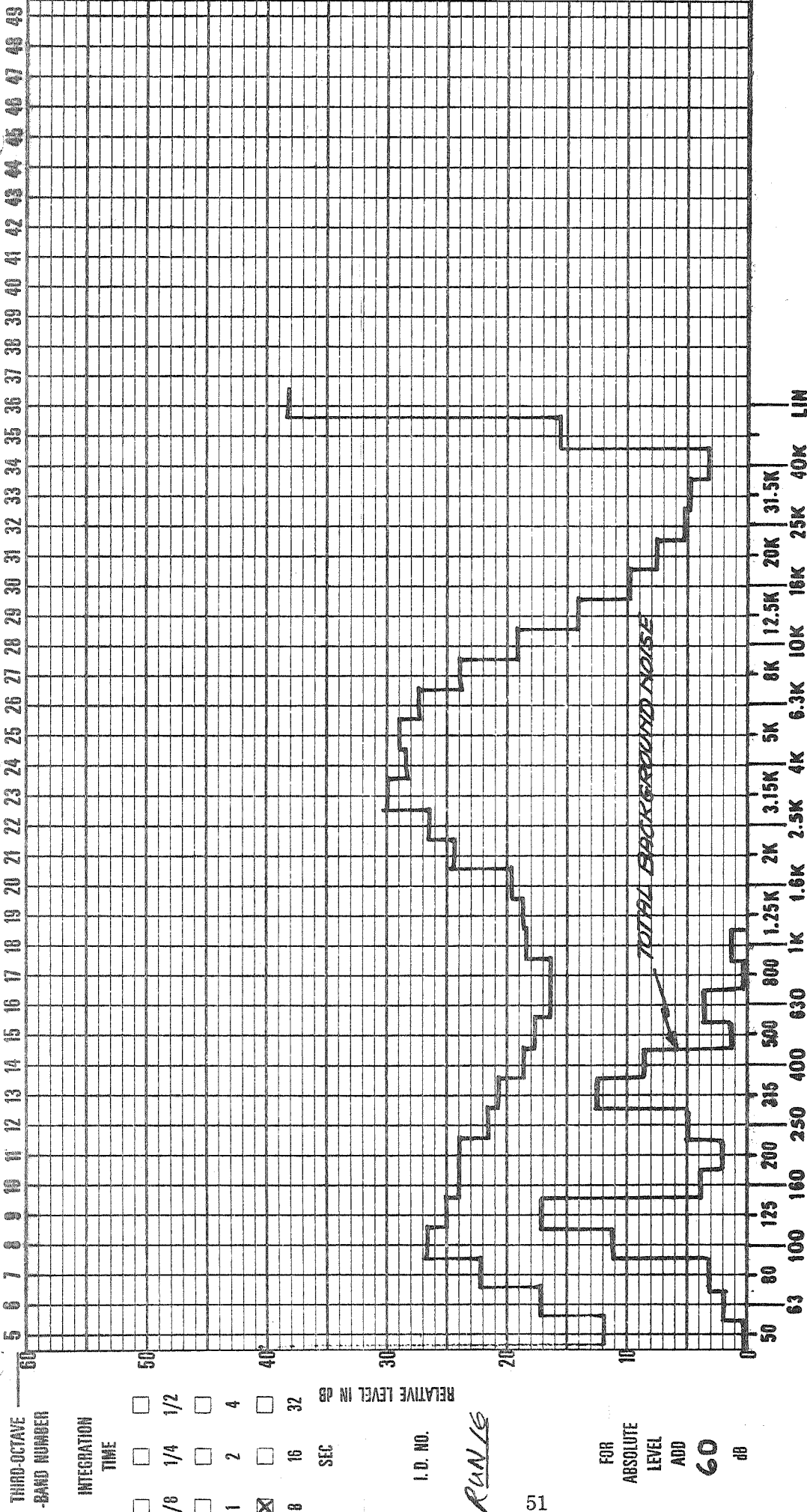
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THIRD-OCTAVE-BAND ANALYSIS

Figure 39c PROP-FAN MODEL NOISE



SHROUD STATIC
 BLADE ANGLE 40°
 TIP SPEED 500 FT/SEC
 MICROPHONE LOCATION 10' 157 1/2°

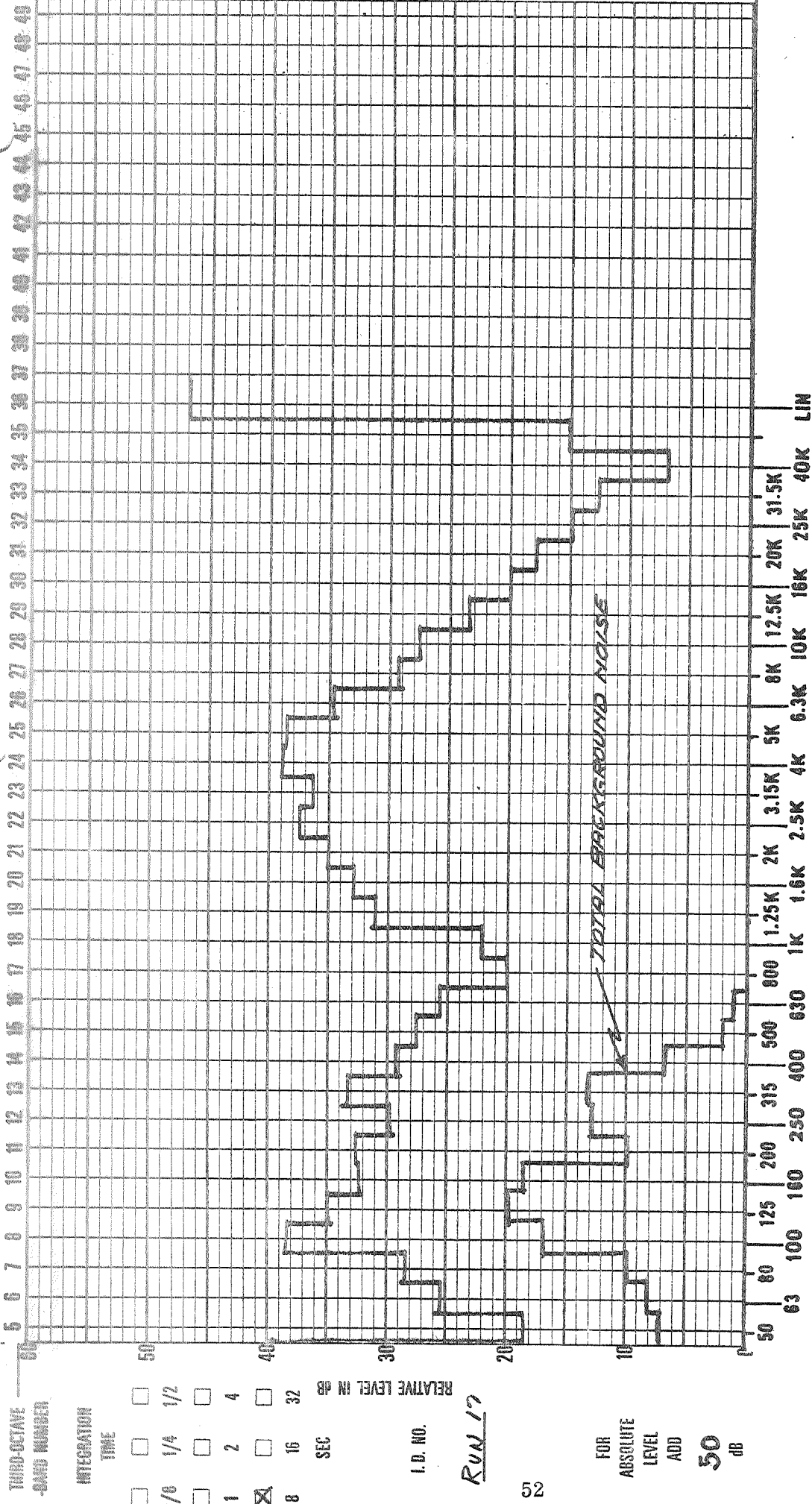
THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

Figure 40c PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND ANALYSIS

SHROUD STATIC
BLADE ANGLE 40°
TIP SPEED 600 FT/SEC
MICROPHONE LOCATION 13 1/2' 90° ON GROUND

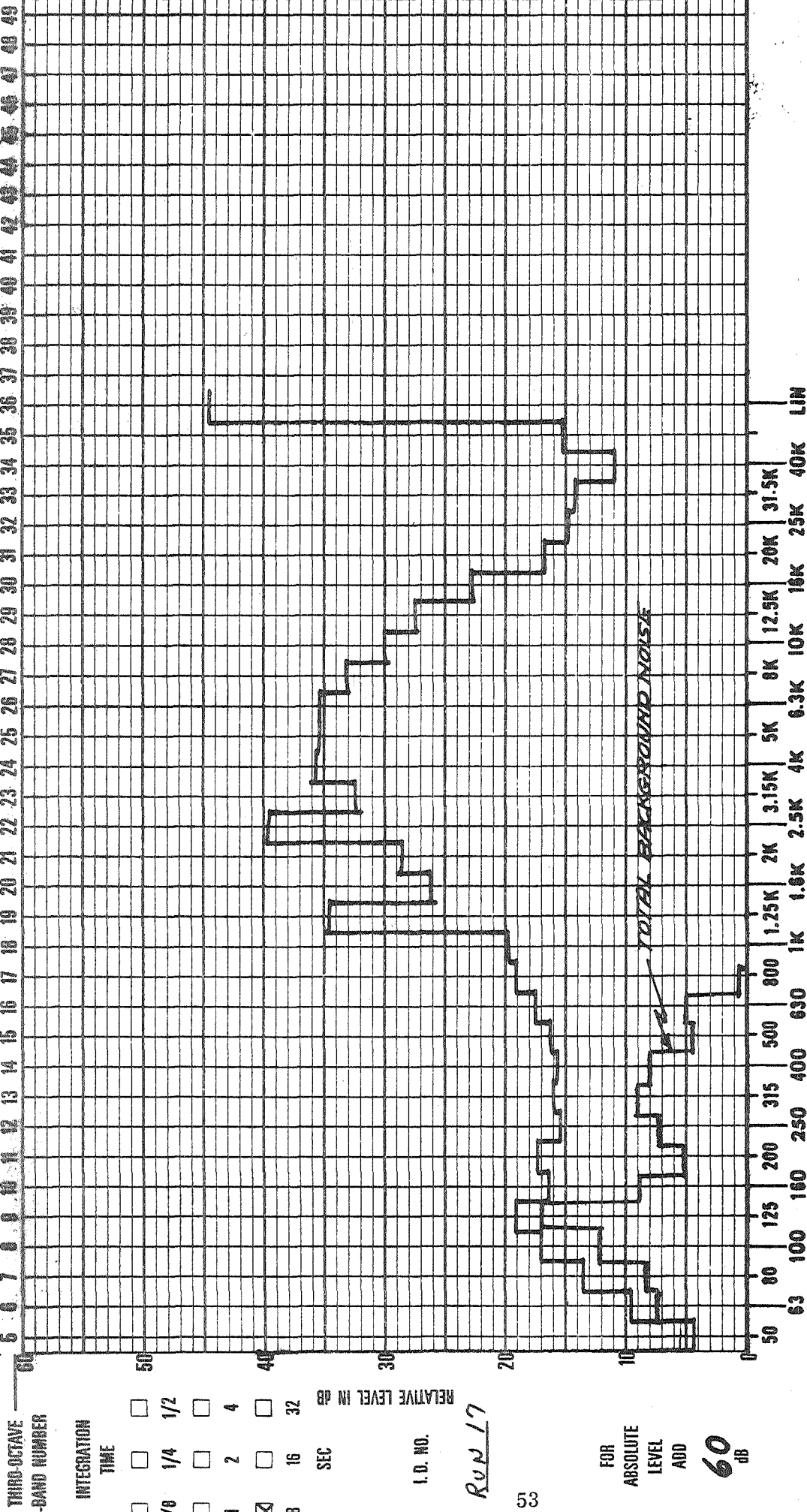
Figure 4/C PROP-FAN MODEL NOISE

THIRD-OCTAVE-BAND NUMBER: 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49

ITERATION TIME:
 1/8
 1/4
 1/2
 1
 2
 4
 8
 16
 32
 SEC

I.D. NO. RUN 17

FOR ABSOLUTE LEVEL ADD 50 dB



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

RELATIVE LEVEL IN DB

I.D. NO.

Run 17

FOR
ABSOLUTE
LEVEL
ADD
60
dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

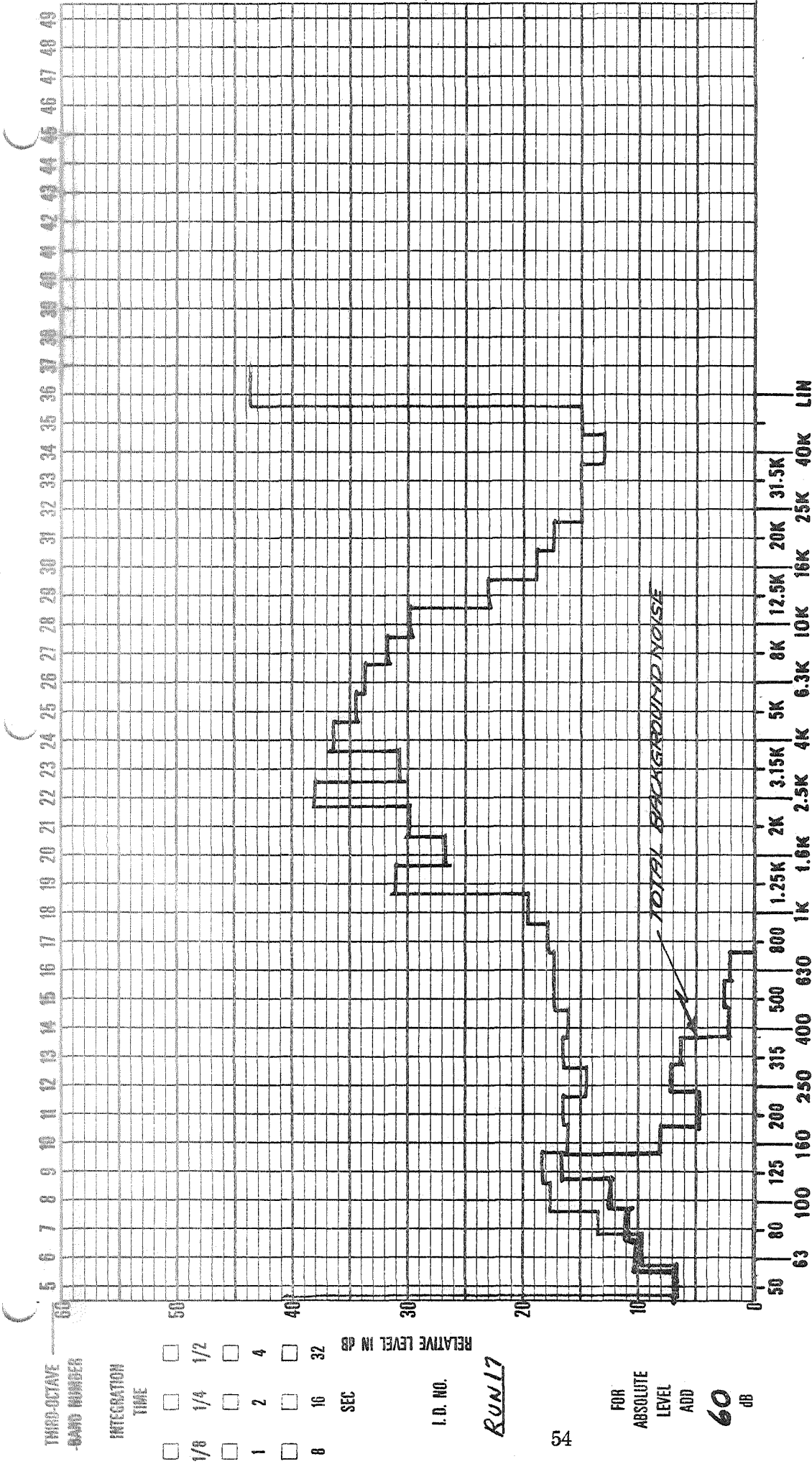
Hamilton
Standard



THIRD-OCTAVE-BAND
ANALYSIS

SHROUD STATIC
BLADE ANGLE 40°
TIP SPEED 600 FT/SEC
MICROPHONE LOCATION 10' 22 1/2°

Figure 42c PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

RELATIVE LEVEL IN DB

I.D. NO.

RUN17

54

FOR ABSOLUTE LEVEL ADD

60 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

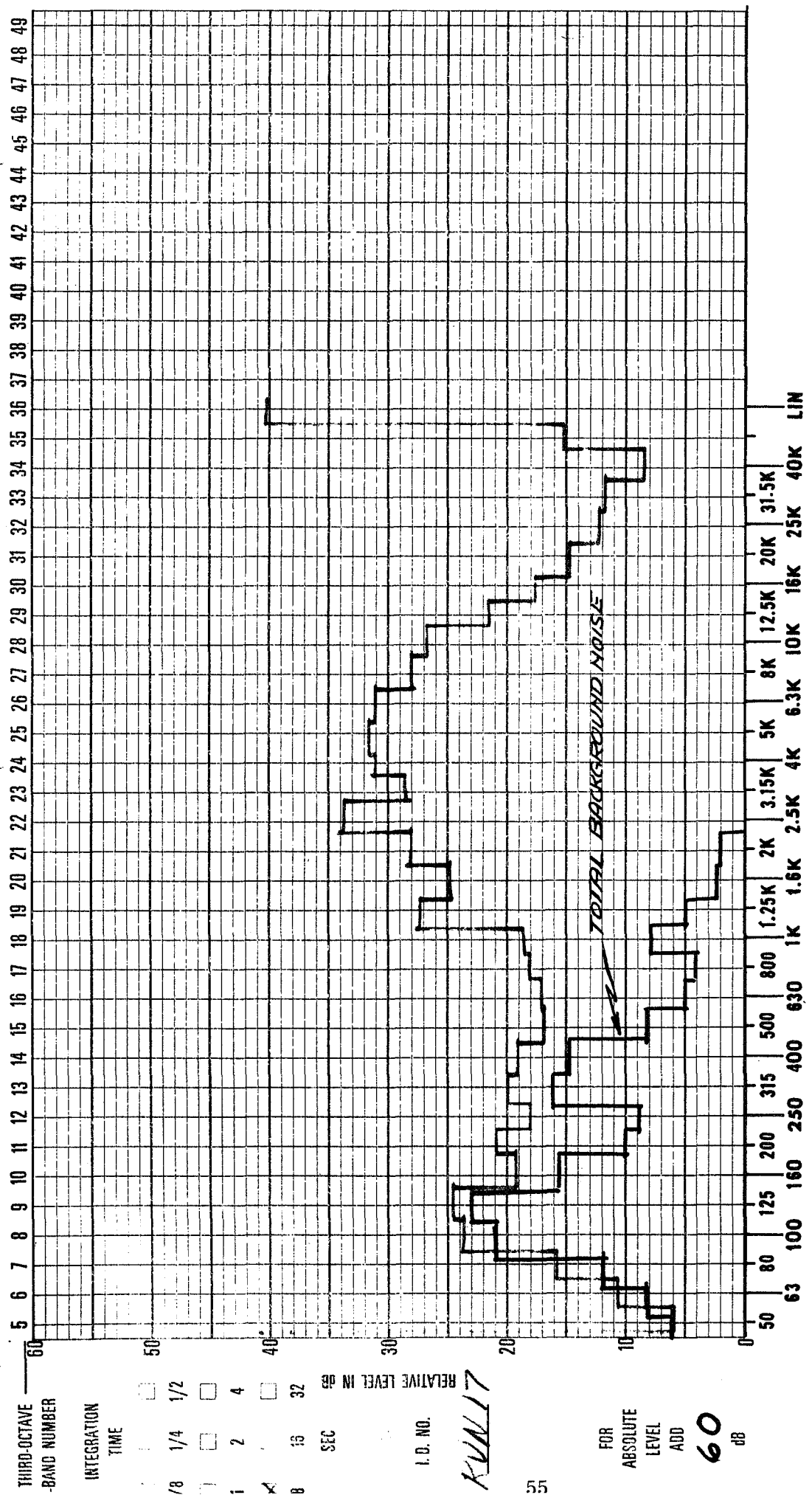
Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

SHROUD STATIC
 BLADE ANGLE 40°
 TIP SPEED 600 FT/SEC
 MICROPHONE LOCATION 10' 45°

Figure 43c PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND
ANALYSIS

SHROUD STATIC
BLADE ANGLE 40°
TIP SPEED 600 FT/SEC
MICROPHONE LOCATION 10' 67 1/2°

THIRD-OCTAVE-BAND NUMBER: 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49

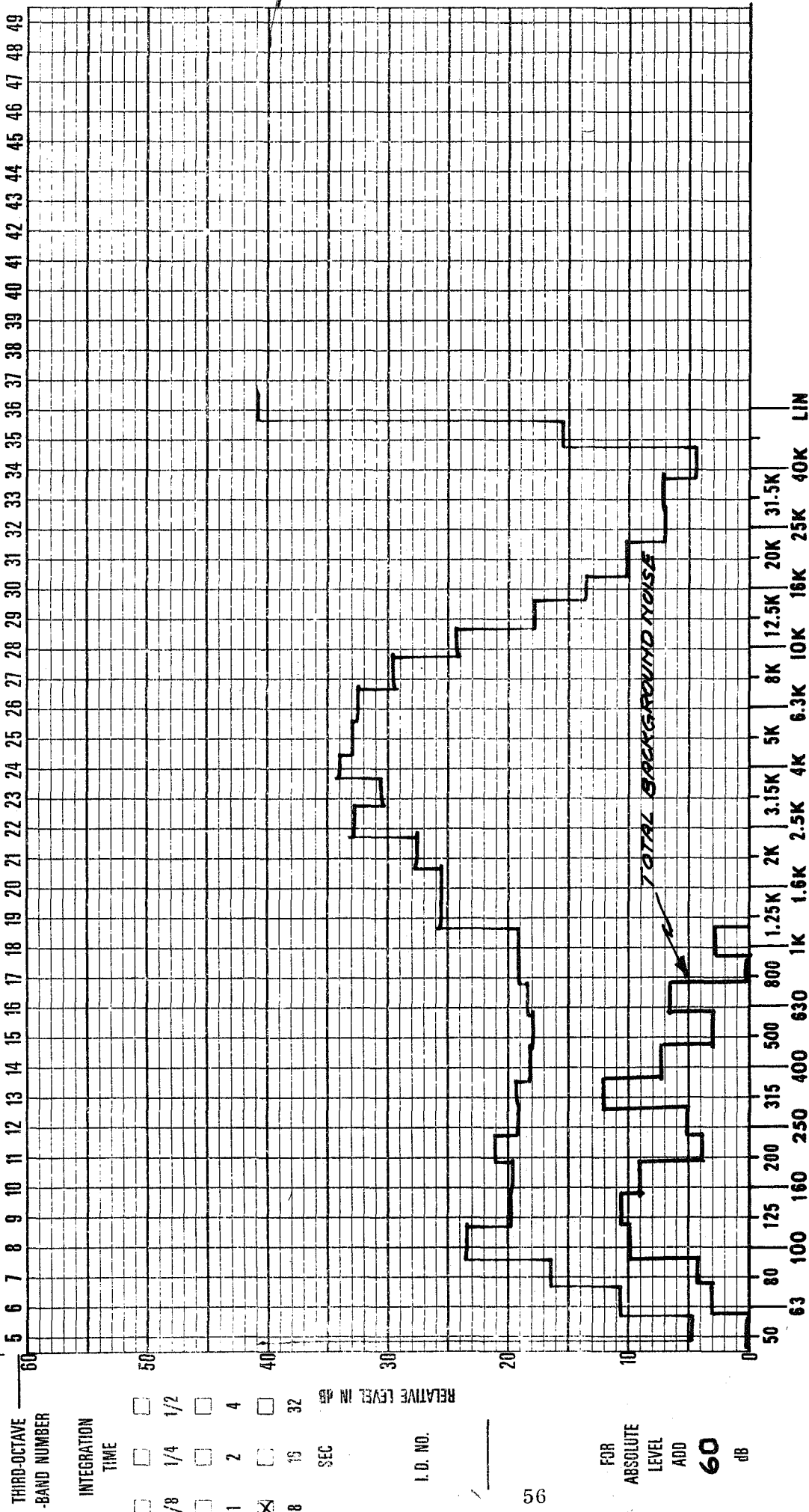
INTEGRATION TIME: 1/8 1/4 1/2 2 4 8 16 32 SEC

RELATIVE LEVEL IN DB

I.D. NO. KV117

FOR ABSOLUTE LEVEL ADD 60 dB

Figure 44c PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49

INTEGRATION TIME
 1/8
 1/4
 1/2
 2
 4
 8
 15
 32

RELATIVE LEVEL IN DB
 60
 50
 40
 30
 20
 10
 0

I.D. NO. _____

FOR ABSOLUTE LEVEL ADD 60 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

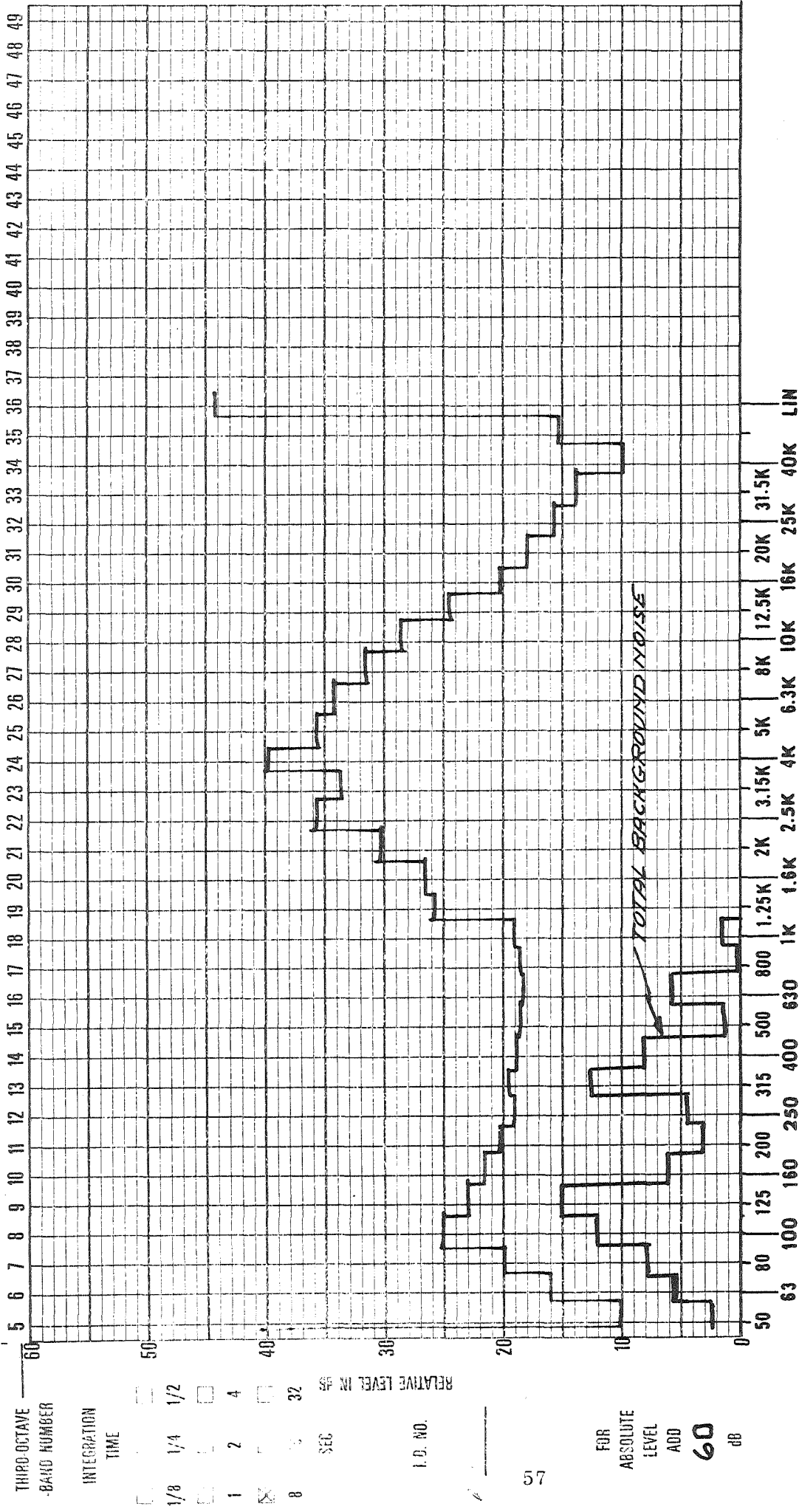
Hamilton Standard

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THIRD-OCTAVE-BAND ANALYSIS

SHROUD STATIC
 BLADE ANGLE 40°
 TIP SPEED 600 FT/SEC
 MICROPHONE LOCATION 10' 90°

Figure 452 PROP-FAN MODEL NOISE



SHROUD STATIC
 BLADE ANGLE 40°
 TIP SPEED 600 FT/SEC
 MICROPHONE LOCATION 10' 112 1/2°

THIRD-OCTAVE-BAND CENTER FREQUENCY IN Hz

Hamilton Standard
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 THIRD-OCTAVE-BAND ANALYSIS

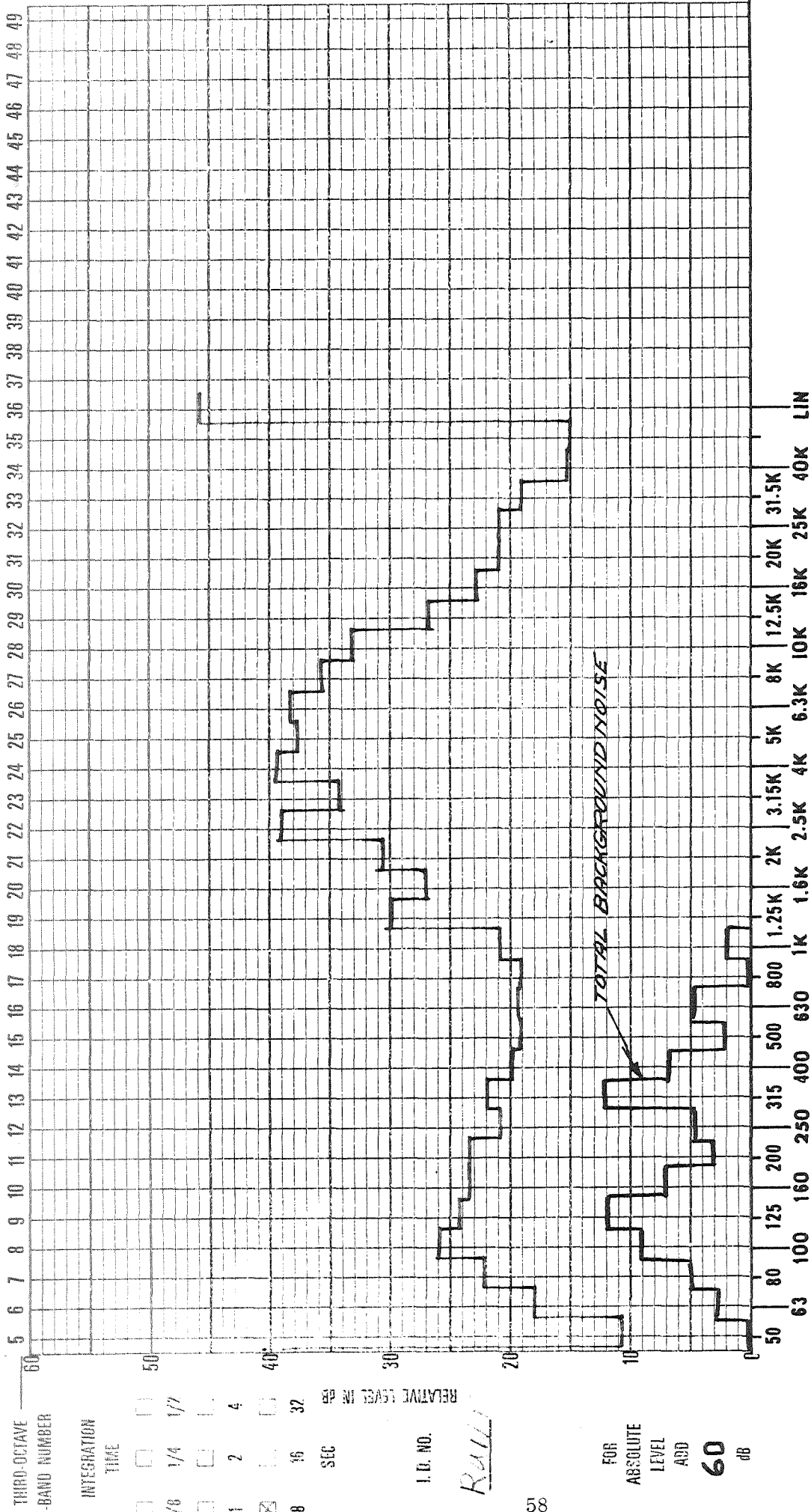
Figure 46c PROP-FAN MODEL NOISE

THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

RELATIVE LEVEL IN DB

I.D. NO.



SHROUD STATIC
 BLADE ANGLE 40°
 TIP SPEED 600 FT/SEC
 MICROPHONE LOCATION 10' 135°

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard

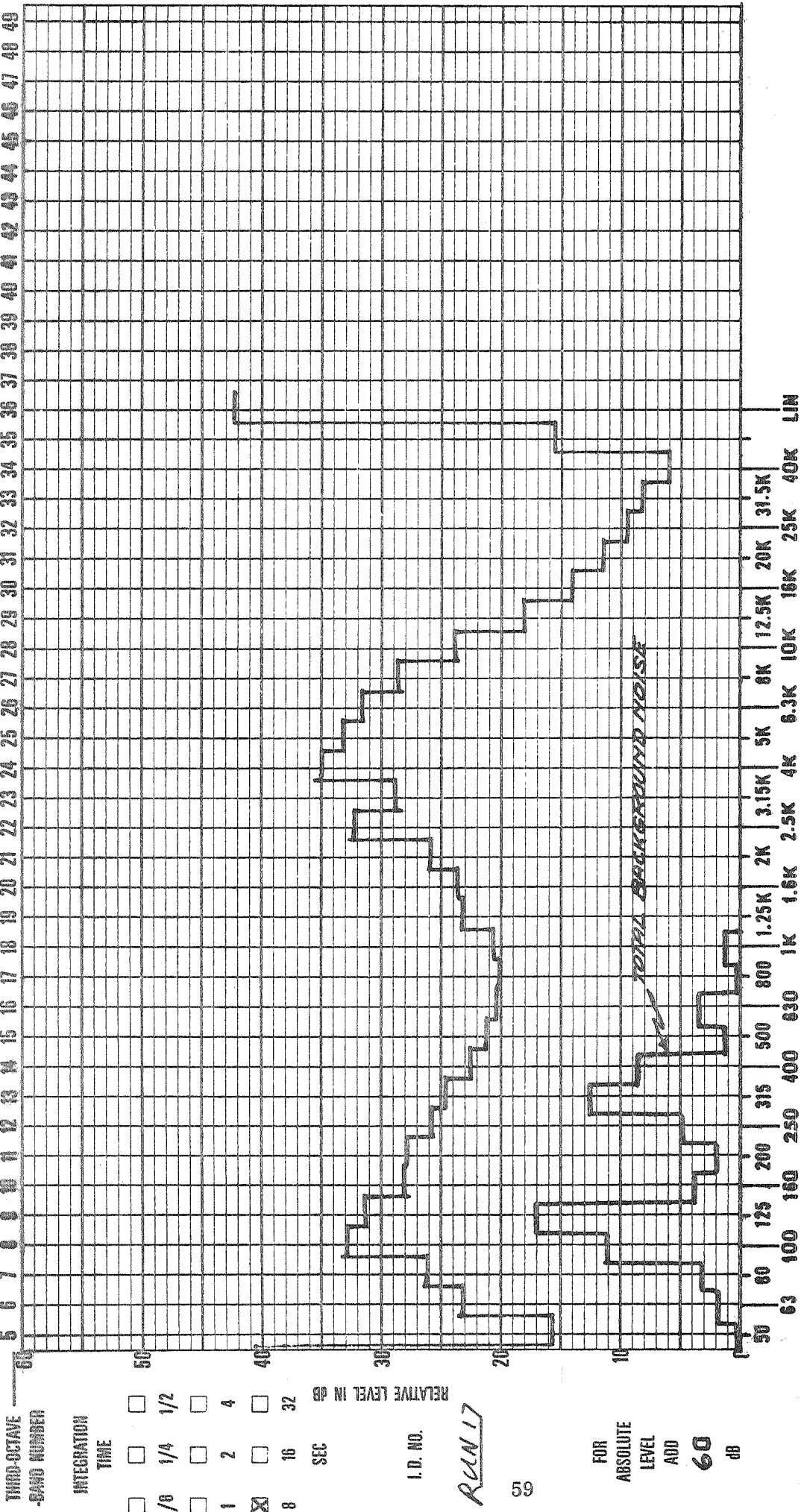
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THIRD-OCTAVE-BAND ANALYSIS

Figure 47c PROP-FAN MODEL NOISE

I.D. NO. Roll

FOR ABSOLUTE LEVEL ADD 60 dB



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

1/6 1/4 1/2 2 4 8 16 32

SEC

I.D. NO.

RUN 17

FOR ABSOLUTE LEVEL ADD 60 dB

THIRD-OCTAVE BAND CENTER FREQUENCY IN HZ

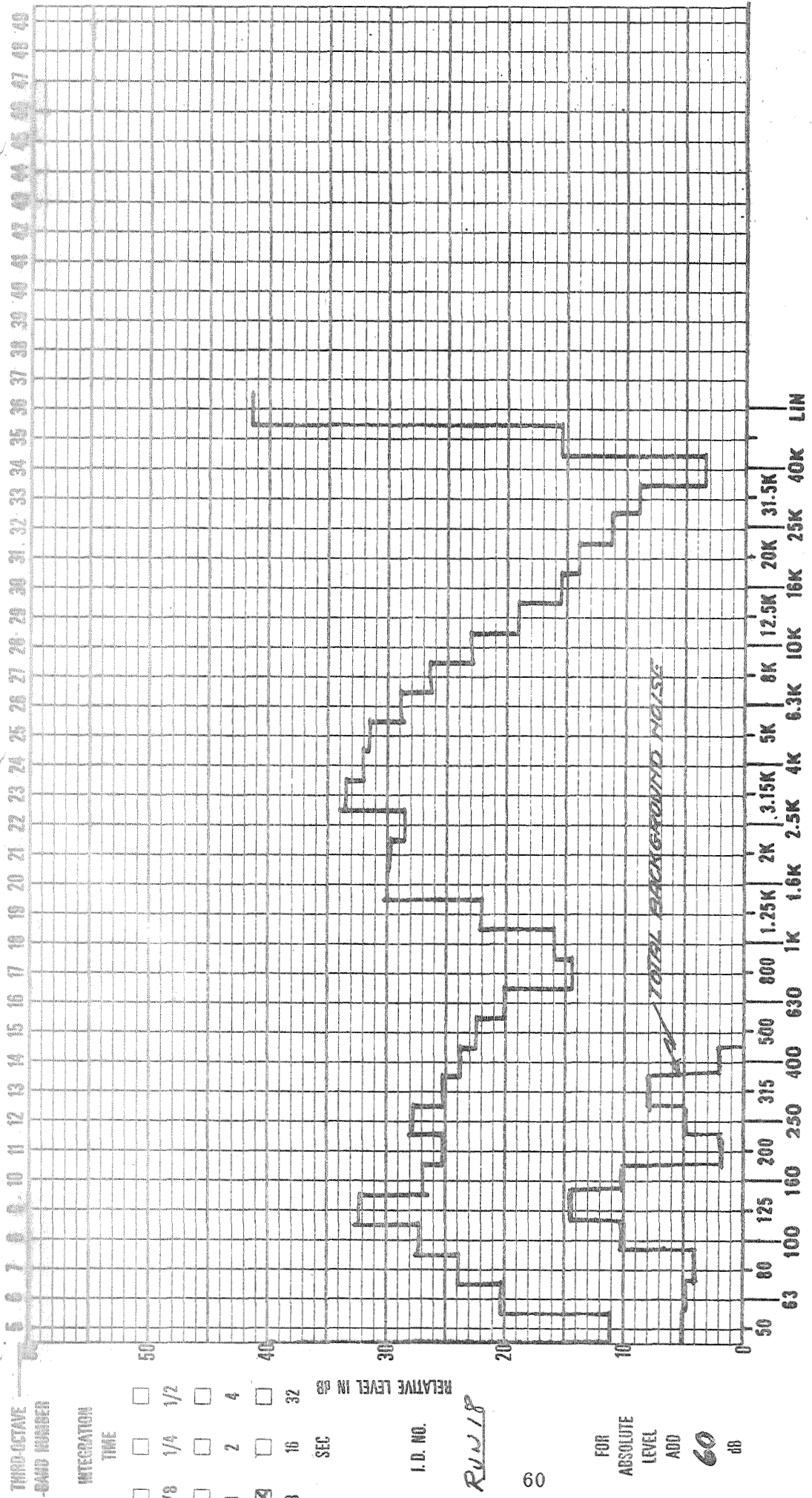
SHROUD STATIC
 BLADE ANGLE 40°
 TIP SPEED 600 FT/SEC
 MICROPHONE LOCATION 10' 157 1/2°

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

Figure 48C-PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND ANALYSIS

SHROUD STATIC
BLADE ANGLE 40°
TIP SPEED 700 FT/SEC
MICROPHONE LOCATION 13 1/2, 90° ON GROUND

THIRD-OCTAVE-BAND NUMBER: 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49

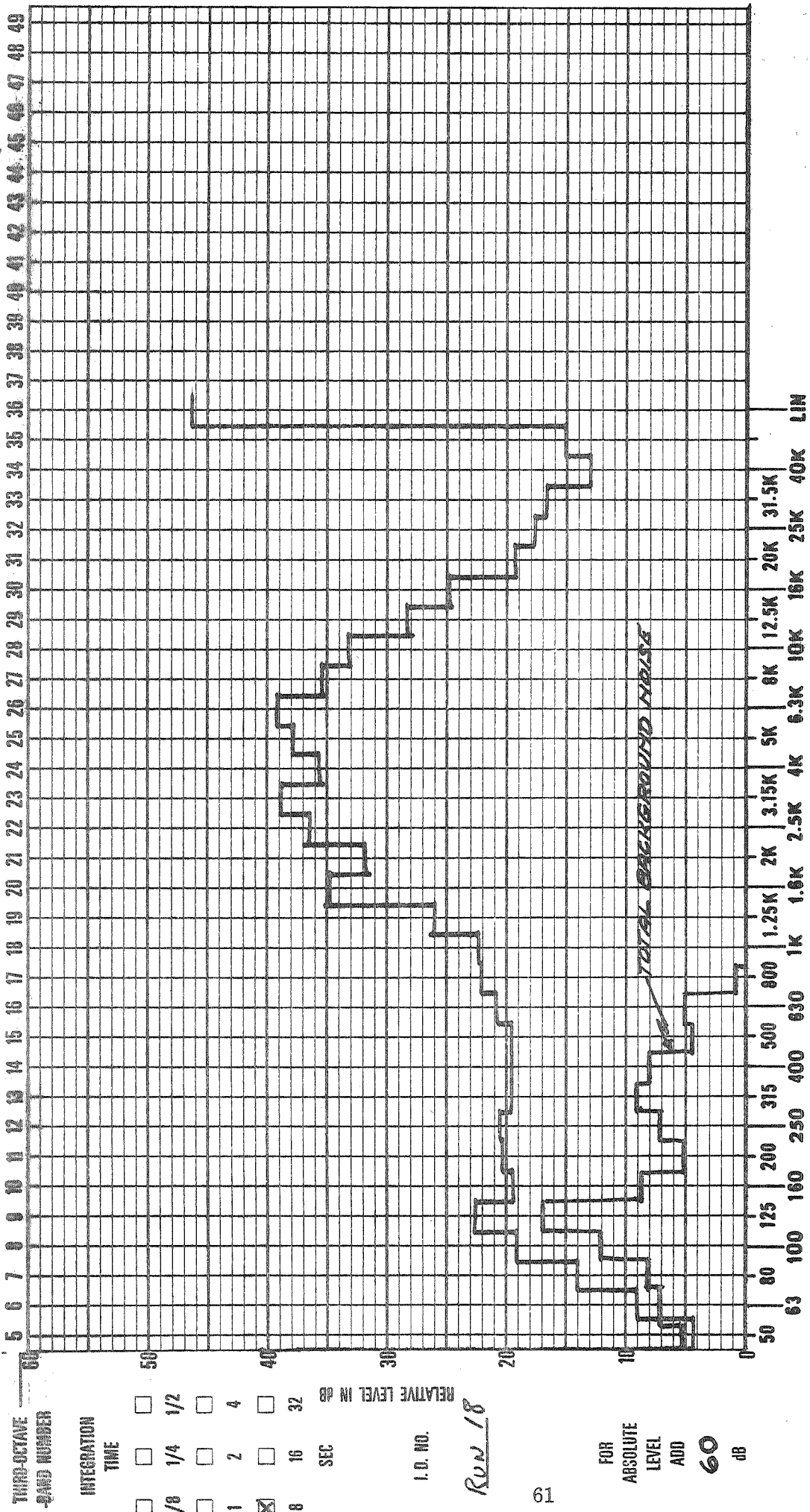
INTEGRATION TIME:
 1/8
 1/4
 1/2
 1
 2
 4
 8
 16
 32
 SEC

RELATIVE LEVEL IN DB

I. D. NO. Run 18

FOR ABSOLUTE LEVEL ADD 60 dB

Figure 49c PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND NUMBER

INTEGRATION TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

SEC

I.D. NO.

Run 18

FOR ABSOLUTE LEVEL ADD 60 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

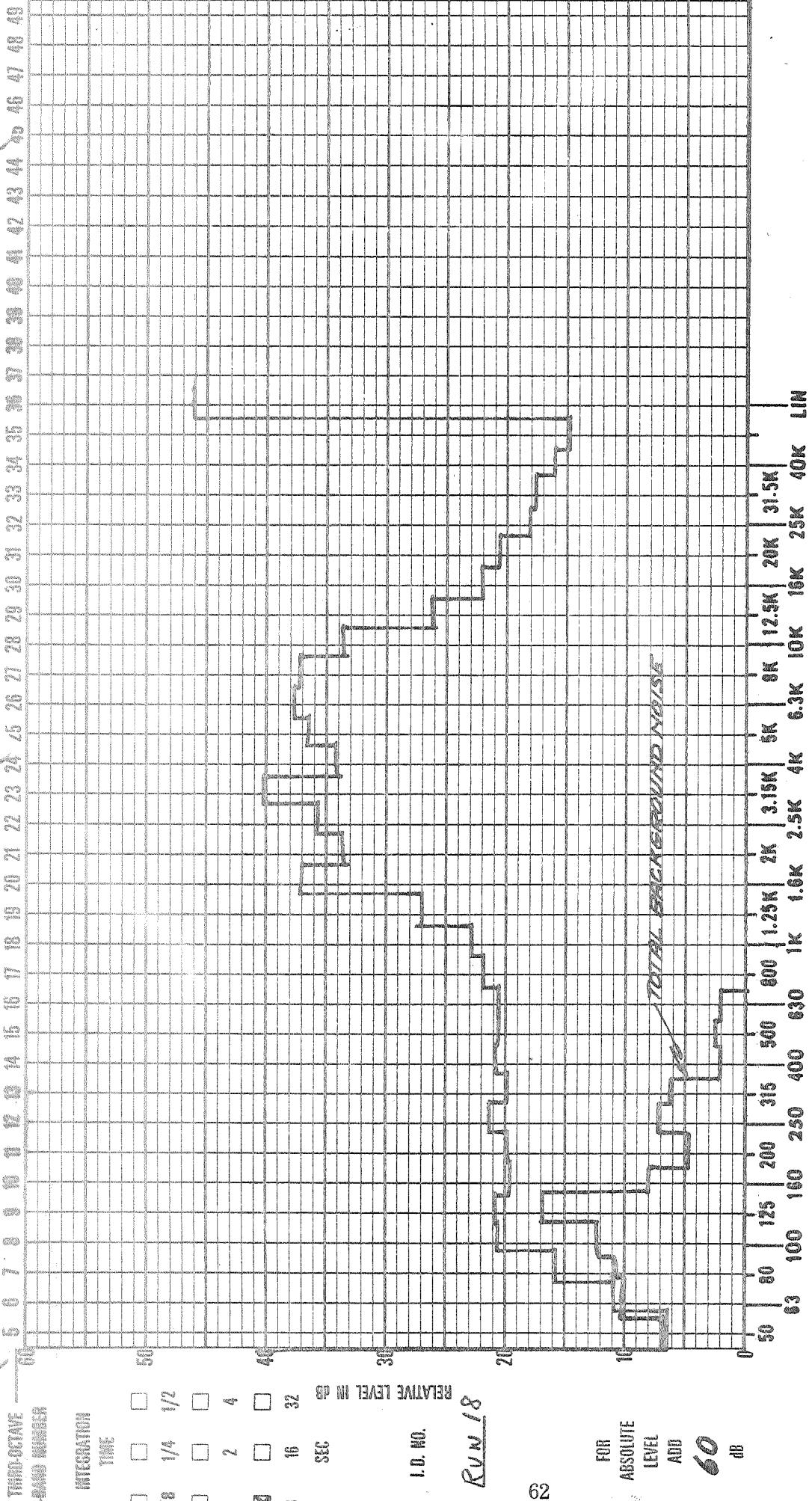
SHROUD STATIC

BLADE ANGLE 40°

TIP SPEED 700 FT/SEC

MICROPHONE LOCATION 10' 22 1/2"

Figure 506 PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

RELATIVE LEVEL IN DB

I.D. NO.

Run 18

FOR ABSOLUTE LEVEL ADD 60 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

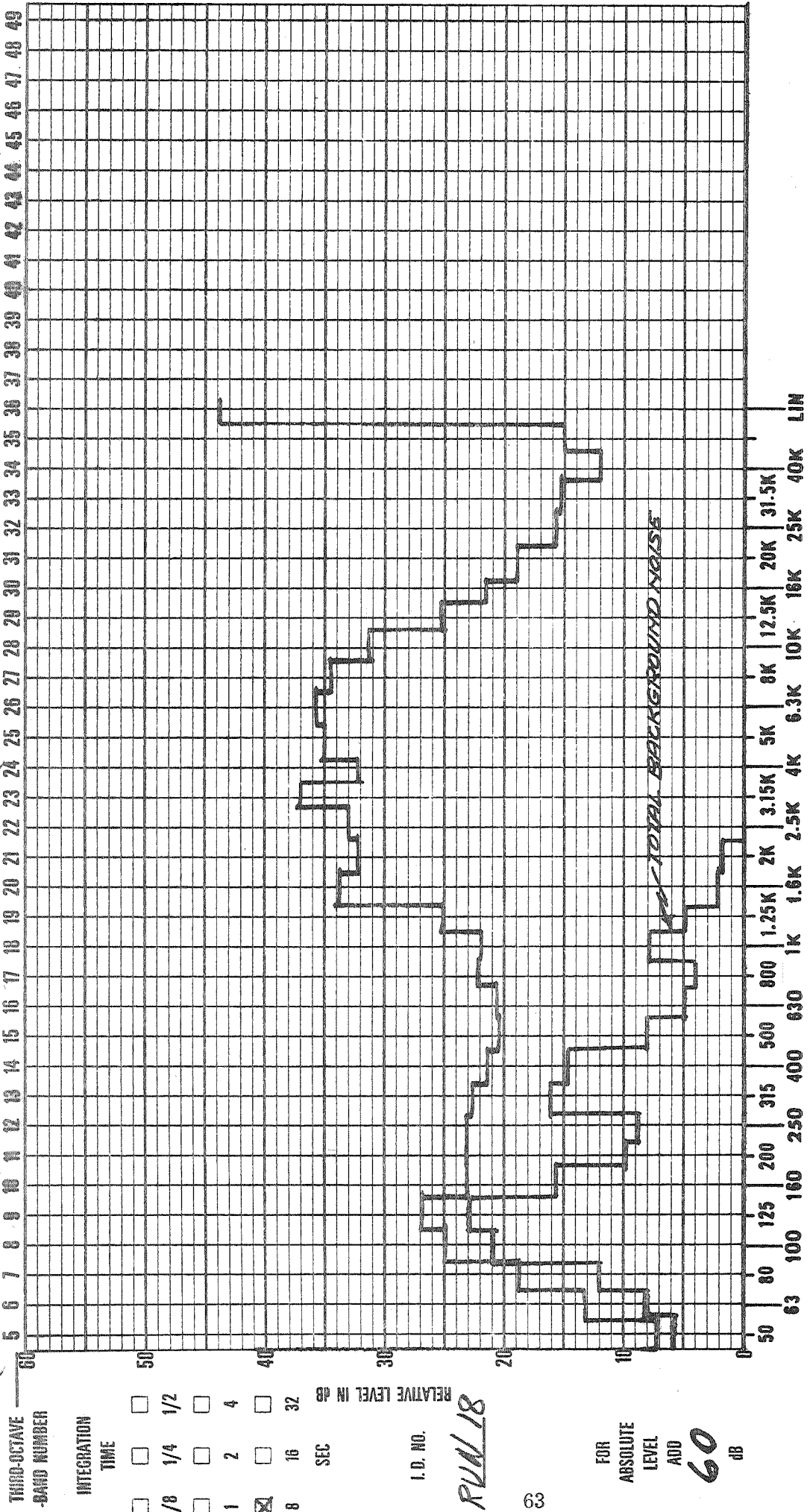
Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

SHROUD STATIC
 BLADE ANGLE 40°
 TIP SPEED 700 FT/SEC
 MICROPHONE LOCATION 10' 45°

Figure 57C PROP-FAN MODEL NOISE



SHROUD STATIC
 BLADE ANGLE 40°
 TIP SPEED 700 FT/SEC
 MICROPHONE LOCATION 10' 67 1/2°

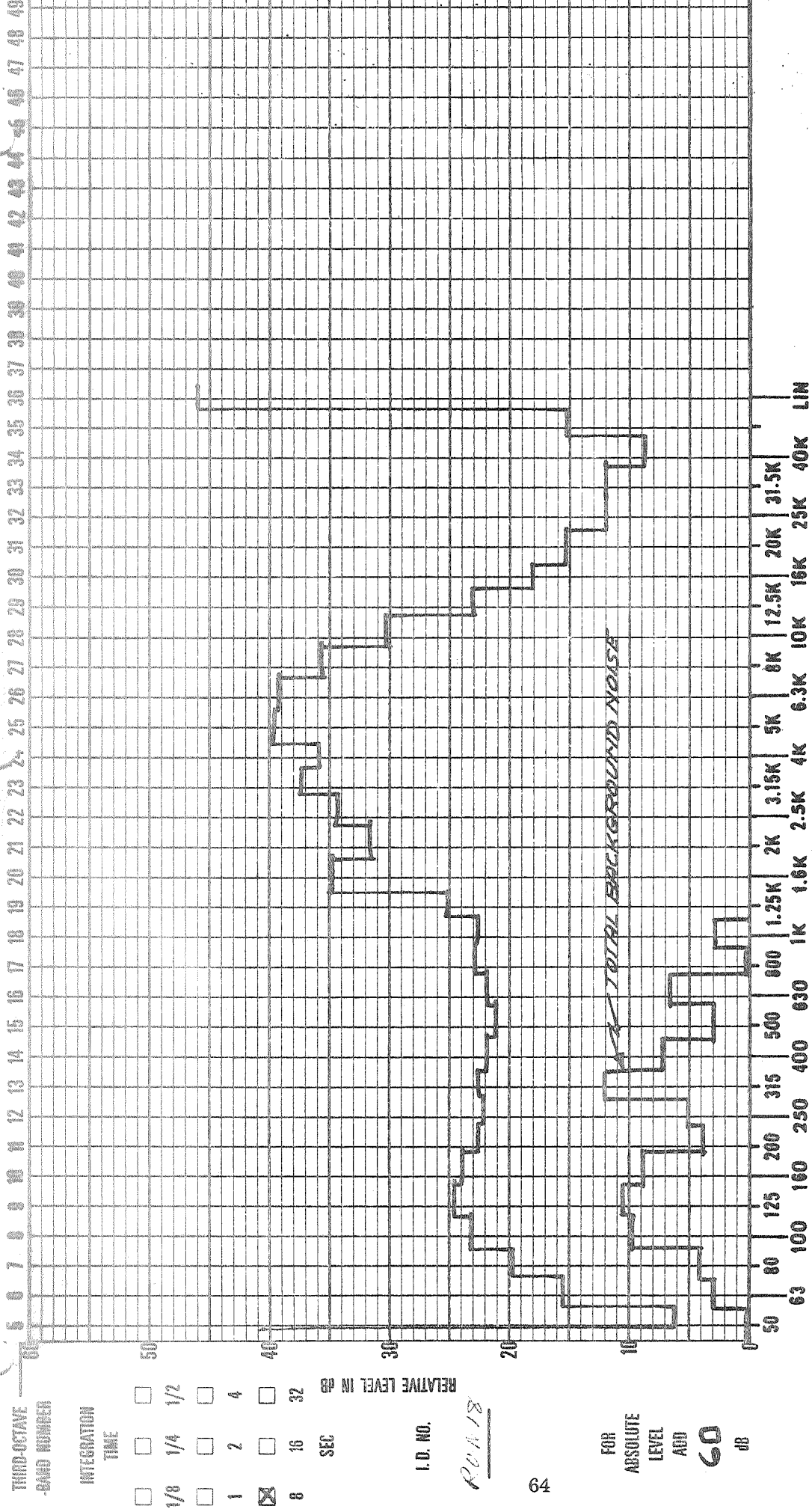
THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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 THIRD-OCTAVE-BAND ANALYSIS

Figure 5a PROP-FAN MODEL NOISE

THIRD-OCTAVE-BAND NUMBER
 INTEGRATION TIME
 1/8 1/4 1/2 1 2 4 8 16 32
 SEC
 I.D. NO. RVAL18

FOR ABSOLUTE LEVEL ADD 60 dB



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

1/8 1/4 1/2 1 2 4 8 16 32 64

SEC

RELATIVE LEVEL IN dB

I.D. NO. RA 118

FOR ABSOLUTE LEVEL ADD 60 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN Hz

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

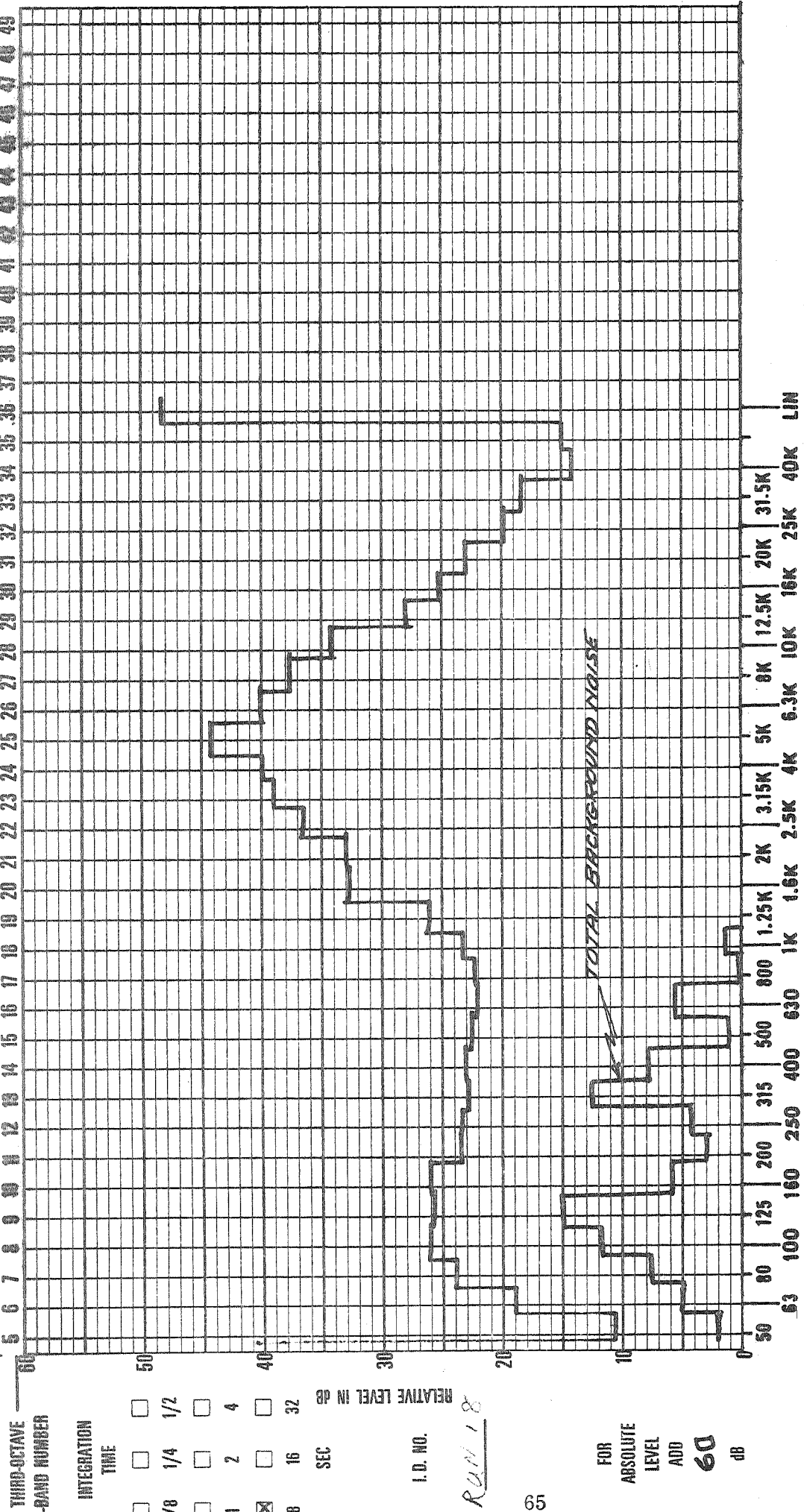
SHROUD STATIC

BLADE ANGLE 40°

TIP SPEED 700 FT/SEC

MICROPHONE LOCATION 10' 90°

Figure 53C PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND CENTER FREQUENCY IN Hz

SHROUD STATIC
 BLADE ANGLE 40°
 TIP SPEED 700 FT/SEC
 MICROPHONE LOCATION 10' 112 1/2°

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

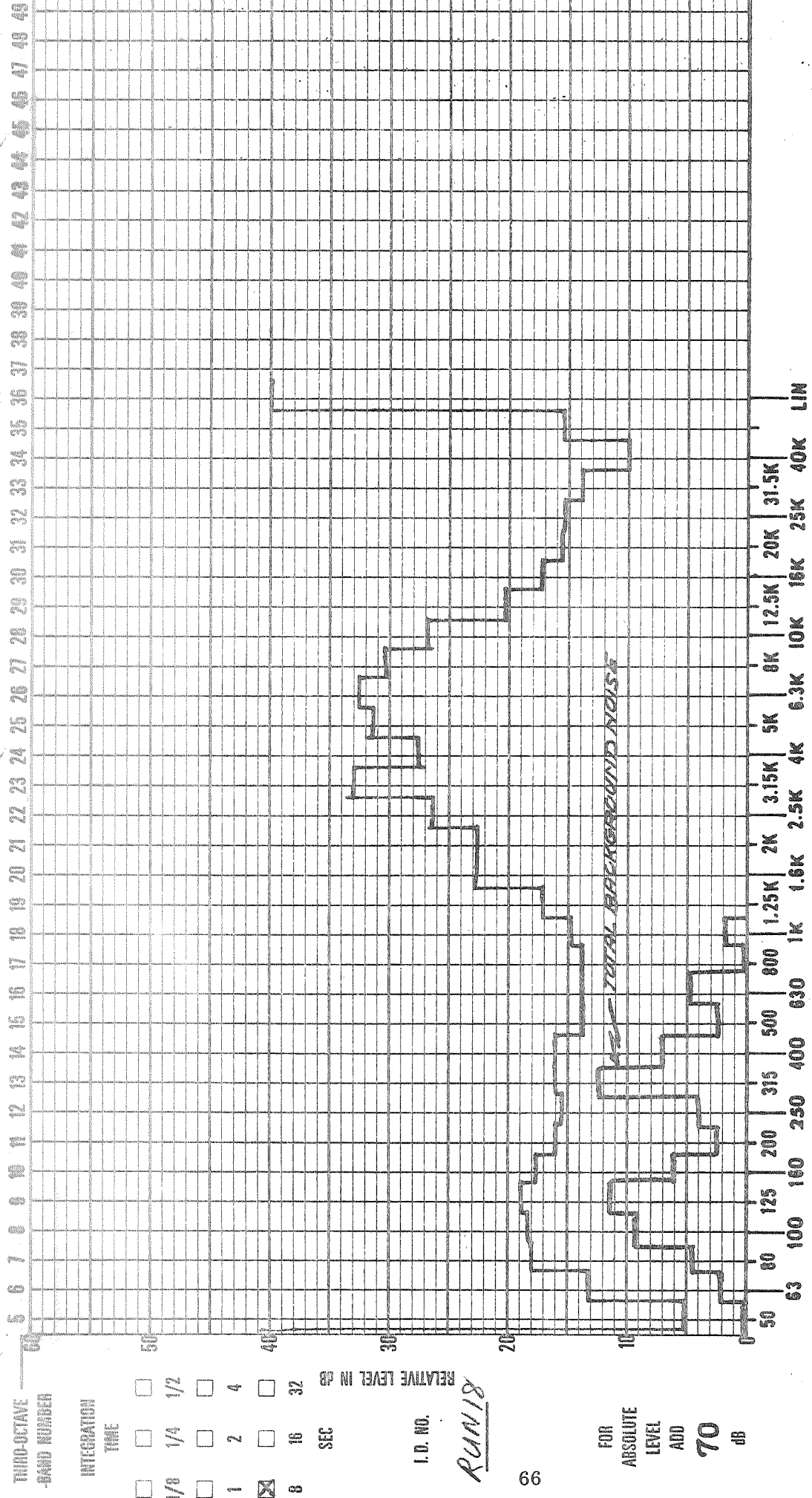
Figure 54C PROP-FAN MODEL NOISE

THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

FOR ABSOLUTE LEVEL ADD 60 dB

I.D. NO. RUN 18



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

1/8

1/4

1/2

1

2

4

8

16

32

SEC

RELATIVE LEVEL IN DB

I.D. NO.

RUN 18

FOR ABSOLUTE LEVEL ADD

70 dB

THIRD-OCTAVE BAND CENTER FREQUENCY IN HZ

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

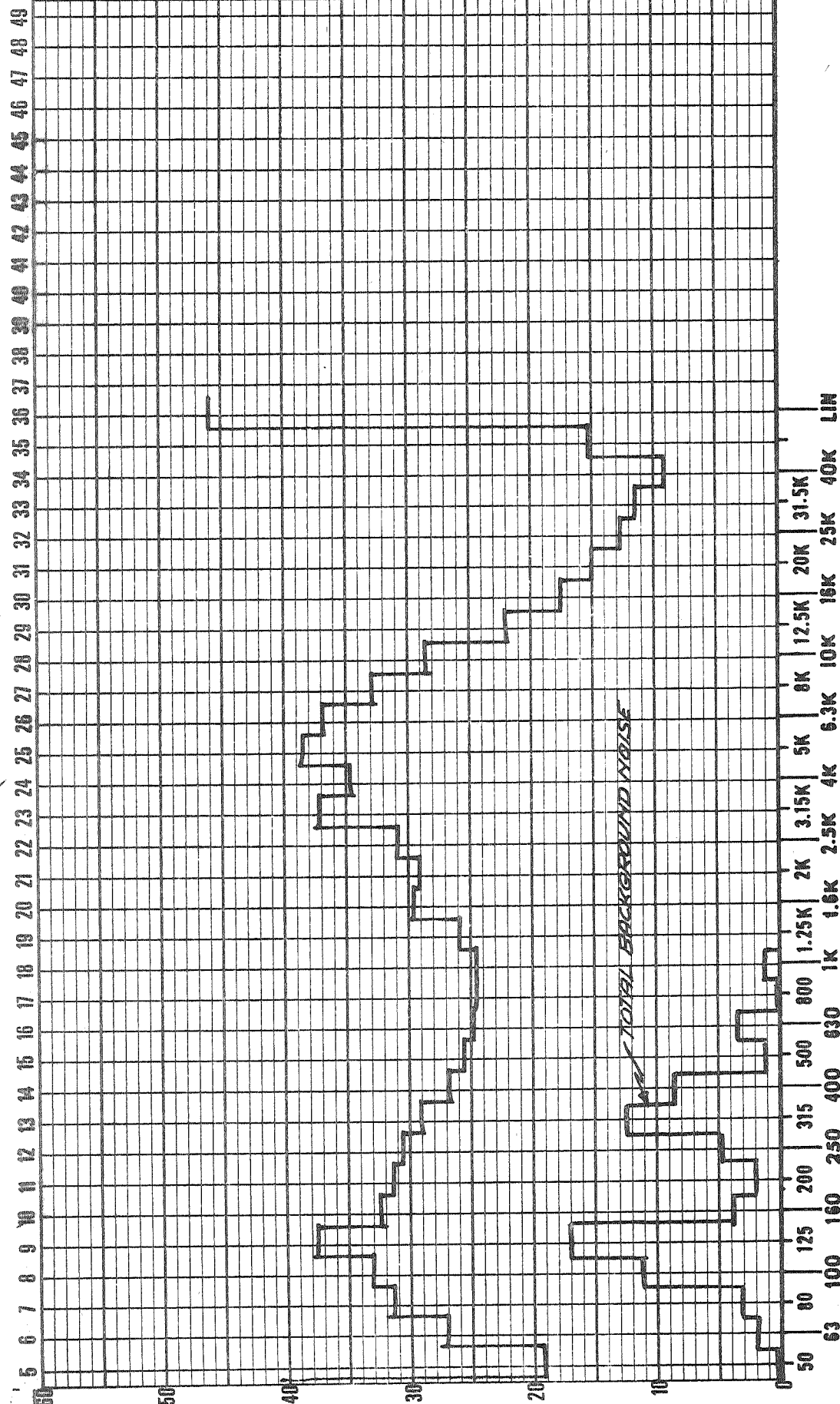
SHROUD STATIC

BLADE ANGLE 40°

TIP SPEED 700 FT/SEC

MICROPHONE LOCATION 10' 135°

Figure 55c-PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND ANALYSIS

SHROUD STATIC
BLADE ANGLE 40°
TIP SPEED 700 FT/SEC
MICROPHONE LOCATION 10' 157 1/2°

THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

RELATIVE LEVEL IN DB

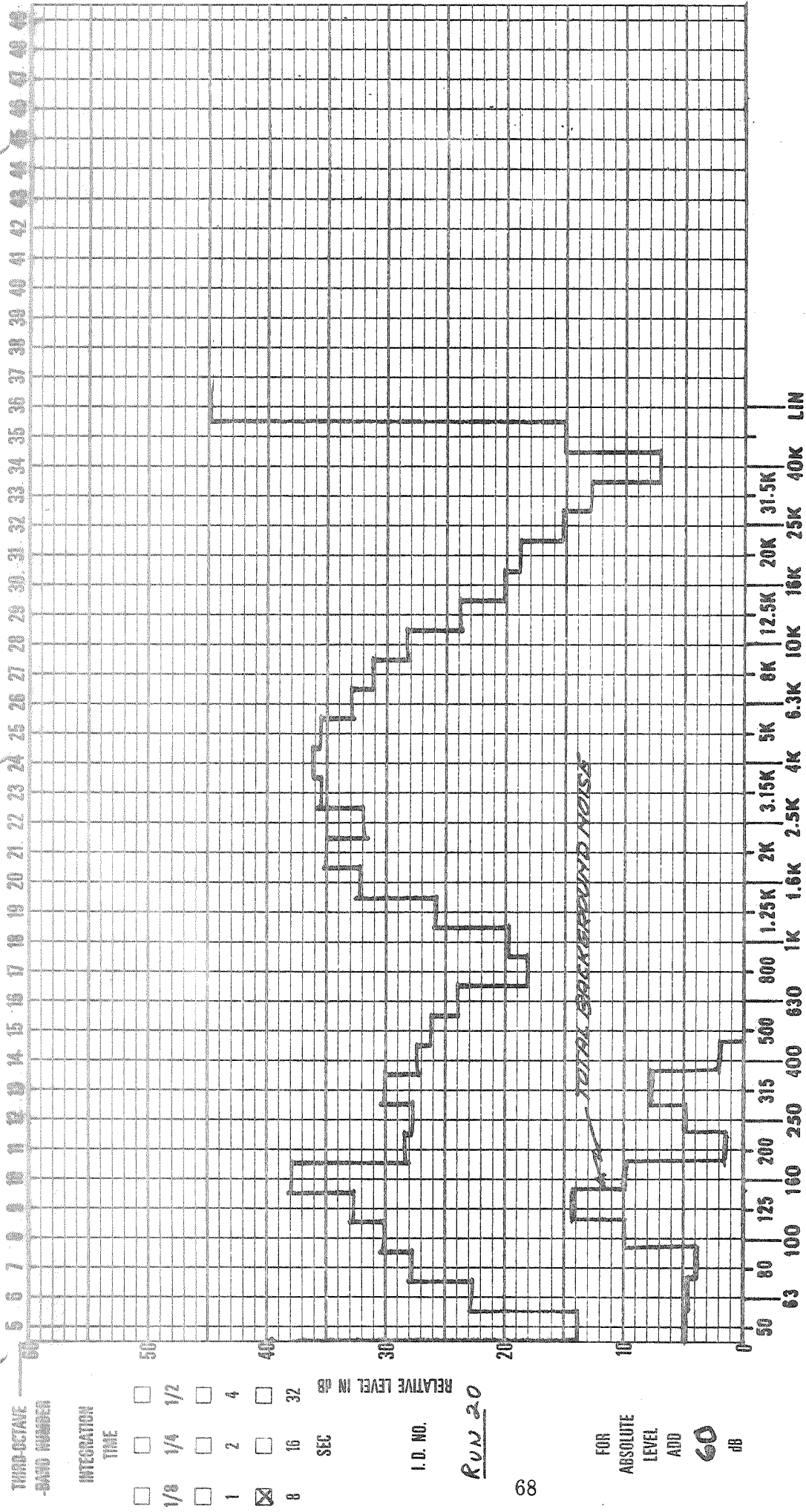
I.D. NO.

RUN 18

FOR ABSOLUTE LEVEL ADD

60 DB

Figure 56C PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER: 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49

INTEGRATION TIME: 1/8, 1/4, 1/2, 1, 2, 4, 8, 16, 32

SEC: 1, 2, 4, 8, 16, 32

I. D. NO. RUN 20

RELATIVE LEVEL IN DB

FOR ABSOLUTE LEVEL ADD 60 dB

THIRD-OCTAVE BAND CENTER FREQUENCY IN Hz

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

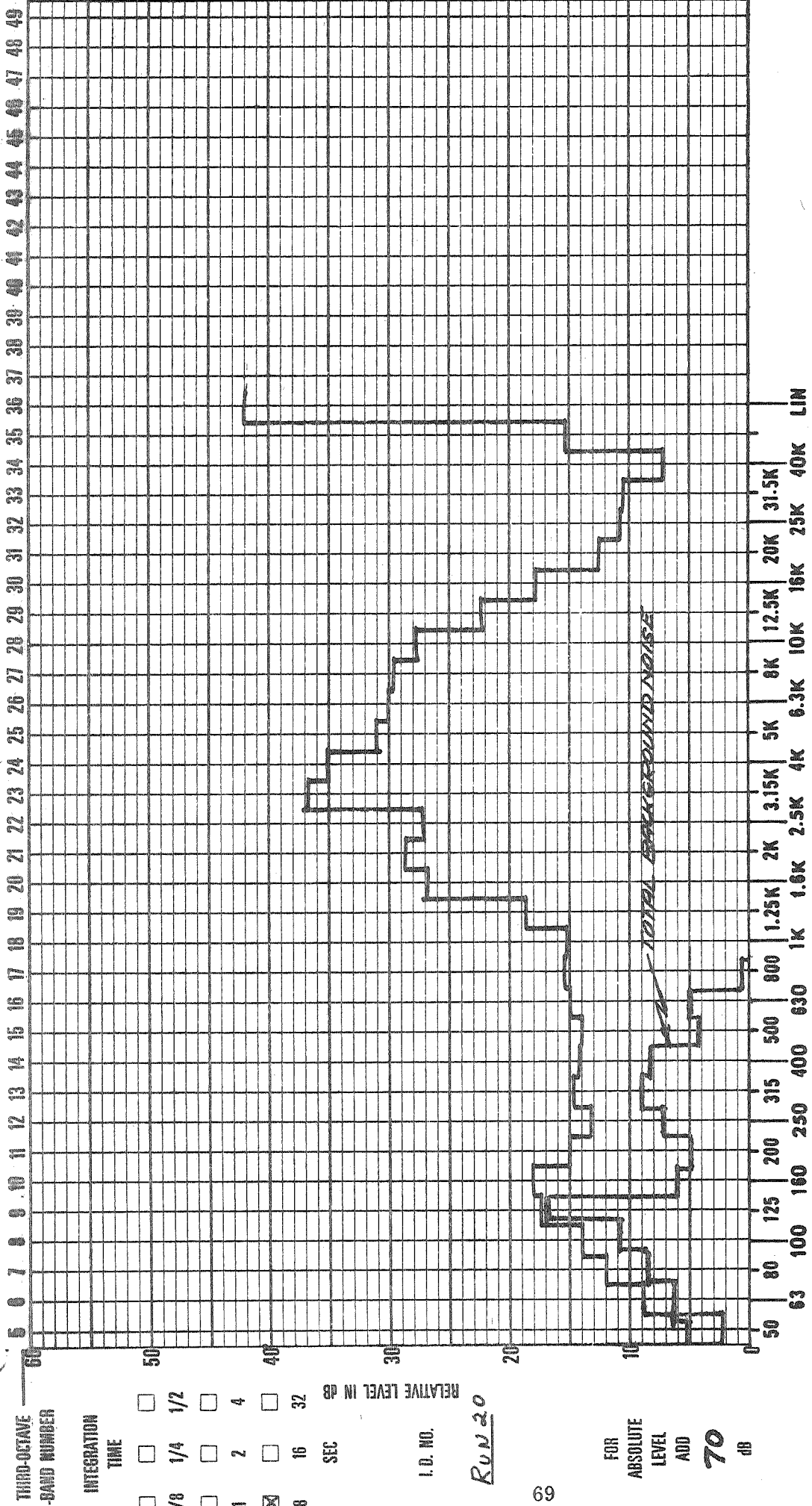
SHROUD STATIC

BLADE ANGLE 40°

TIP SPEED 800 FT/SEC

MICROPHONE LOCATION 13 1/2 90° ON GROUND

Figure 57c PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD STATIC
 BLADE ANGLE 40°
 TIP SPEED 800 FT/SEC
 MICROPHONE LOCATION 10' 22 1/2"

Hamilton Standard
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 U A^R
 THIRD-OCTAVE-BAND ANALYSIS

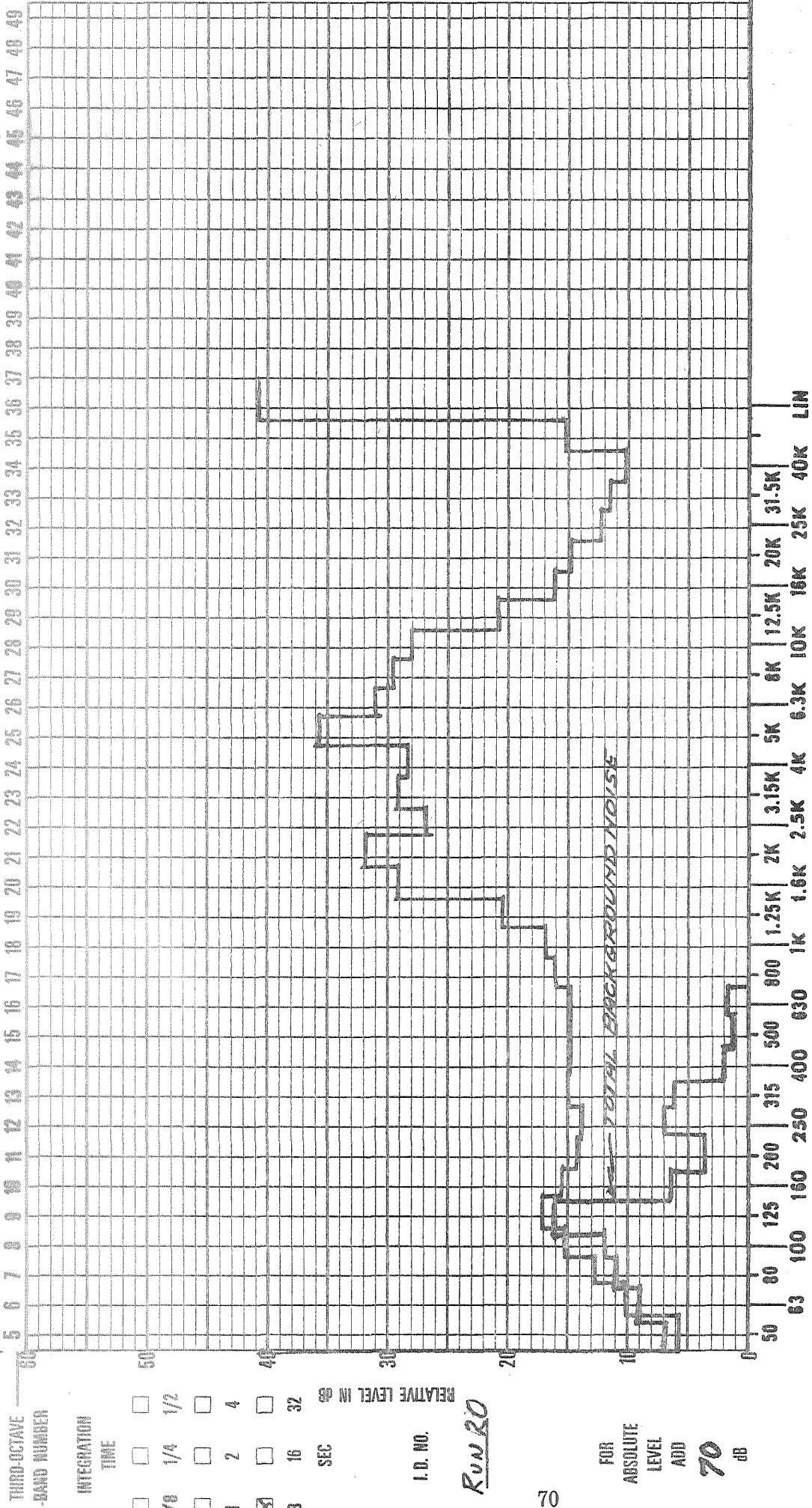
Figure 58c PROP-FAN MODEL NOISE

THIRD-OCTAVE-BAND NUMBER: 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49

INTEGRATION TIME:
 1/8
 1/4
 1/2
 2
 4
 8
 16
 32

FOR ABSOLUTE LEVEL ADD: 70 dB

I.D. NO. Run 20



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

RELATIVE LEVEL IN DB

I.D. NO.

Run 20

70

FOR ABSOLUTE LEVEL ADD 70 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

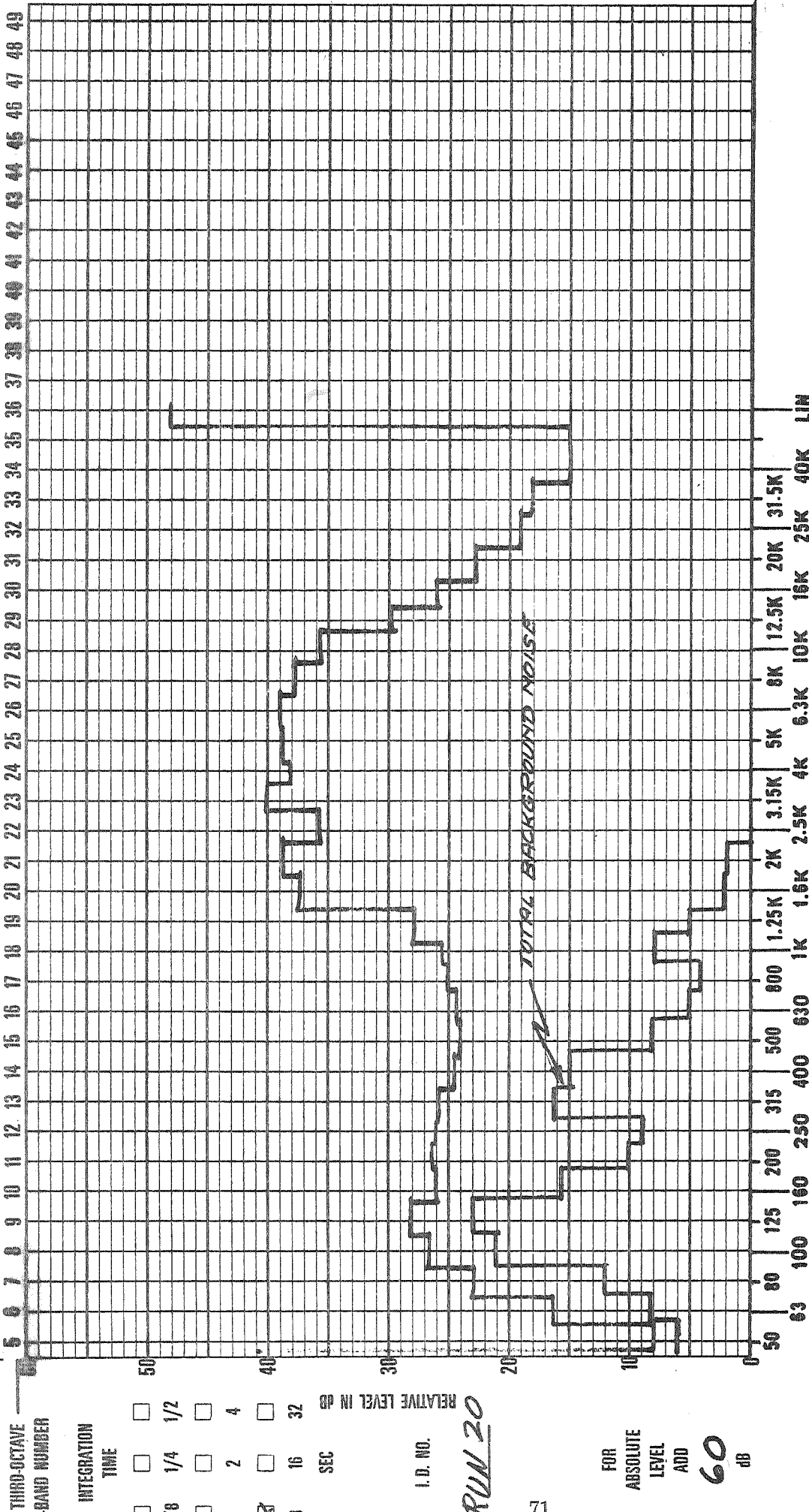
Hamilton Standard

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THIRD-OCTAVE-BAND ANALYSIS

SHROUD STATIC
 BLADE ANGLE 40°
 TIP SPEED 800 FT/SEC
 MICROPHONE LOCATION 10' 45"

Figure 59c PROP-FAN MODEL NOISE



SHROUD STATIC
 BLADE ANGLE 40°
 TIP SPEED 800 FT/SEC
 MICROPHONE LOCATION 10' 67 1/2°

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard

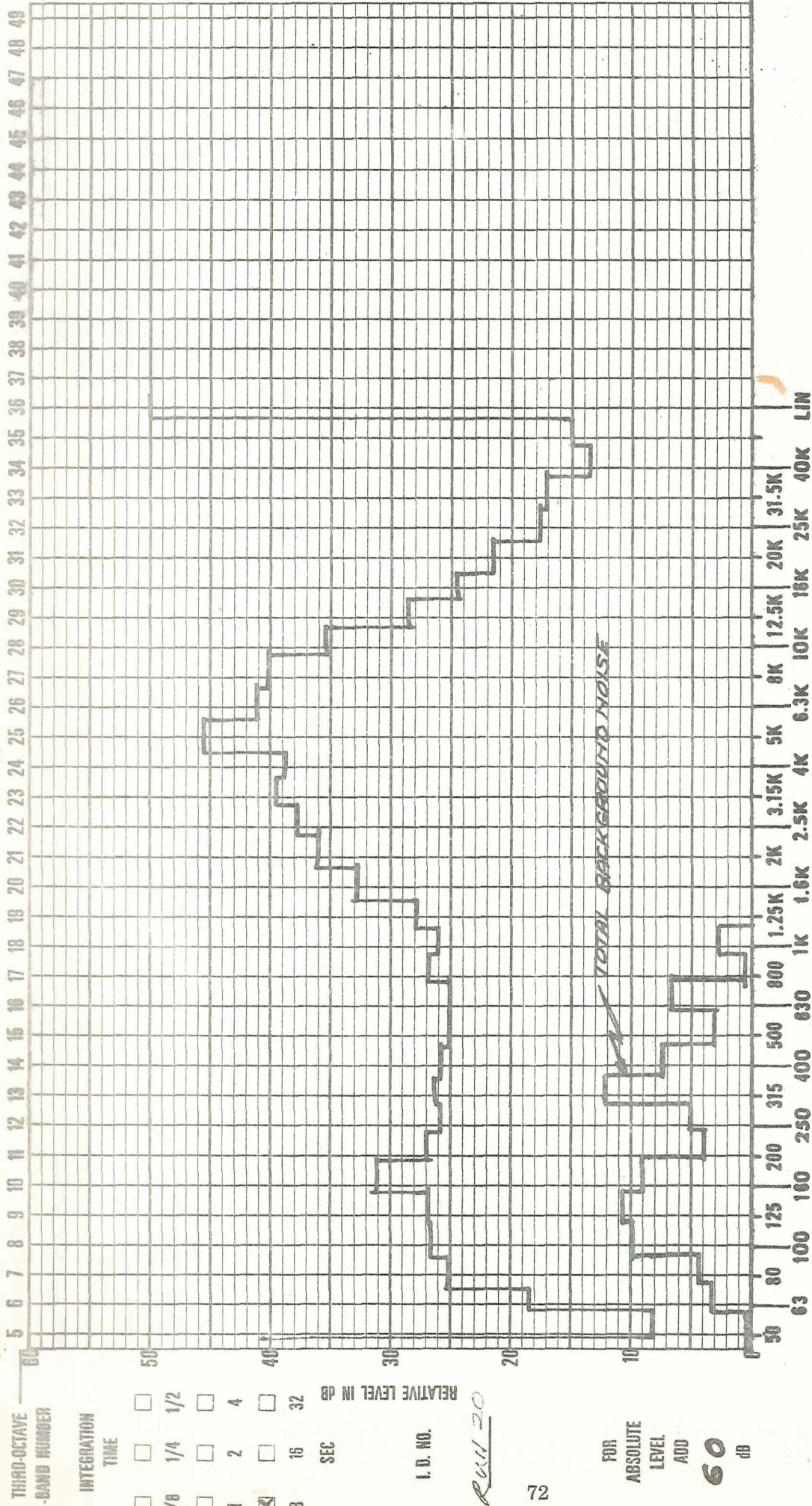
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THIRD-OCTAVE-BAND ANALYSIS

Figure 60C-PROP-FAN MODEL NOISE

FOR ABSOLUTE LEVEL ADD 60 dB

I.D. NO. RUN 20



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

- 1/8
 - 1/4
 - 1/2
 - 1
 - 2
 - 4
 - 8
 - 16
 - 32
- SEC

I. D. NO.

RUN 20

FOR
ABSOLUTE
LEVEL
ADD
60
dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

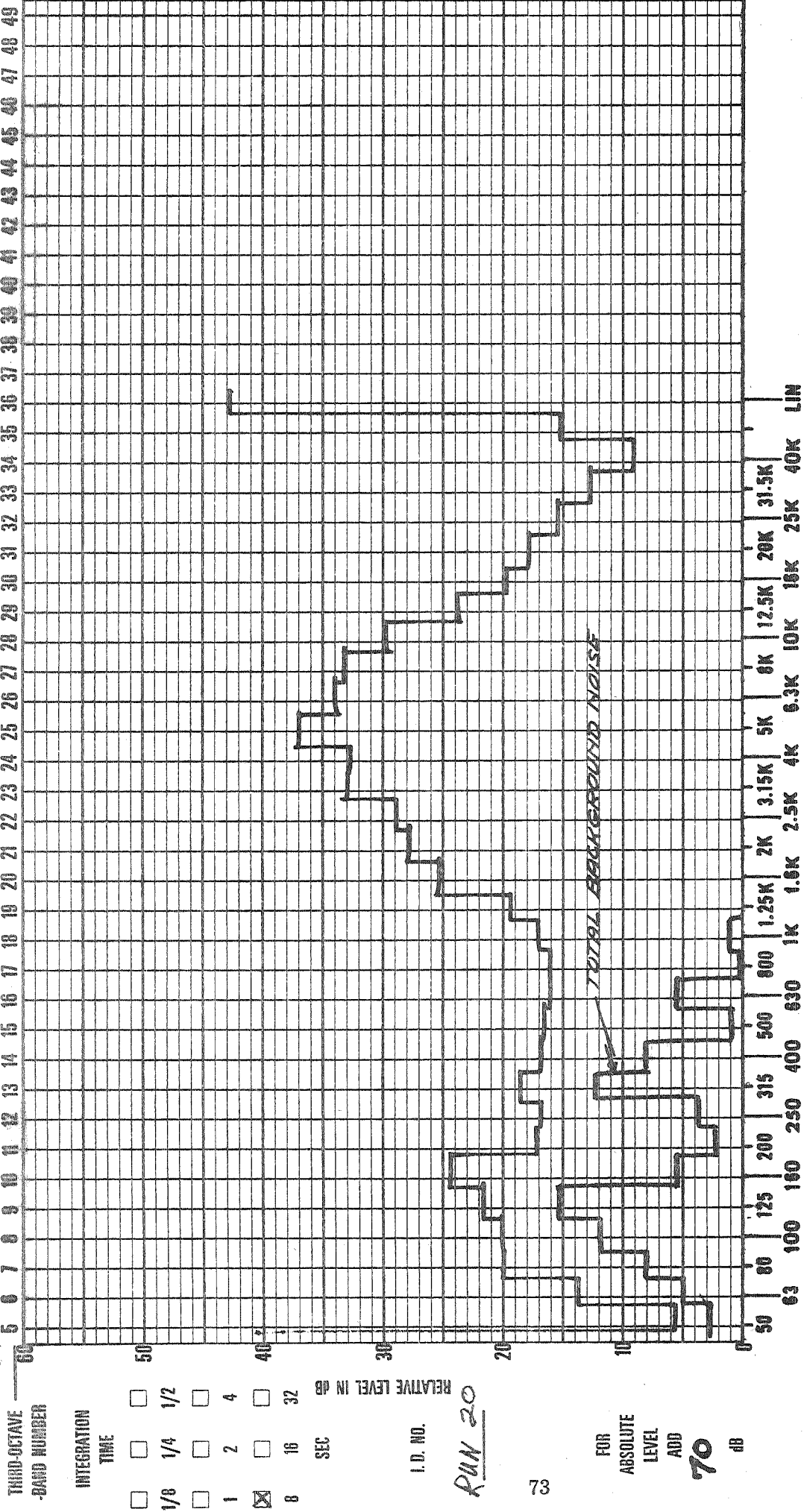
Hamilton
Standard

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THIRD-OCTAVE-BAND
ANALYSIS

SHROUD STATIC
BLADE ANGLE 40°
TIP SPEED 800 FT/SEC
MICROPHONE 10' LOCATION 90°

Figure 6 PROP-FAN MODEL NOISE



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

- 1/8
 - 1/4
 - 1/2
 - 1
 - 2
 - 4
 - 8
 - 16
 - 32
- SEC

I.D. NO.

RUN 20

FOR
ABSOLUTE
LEVEL
ADD
70
dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

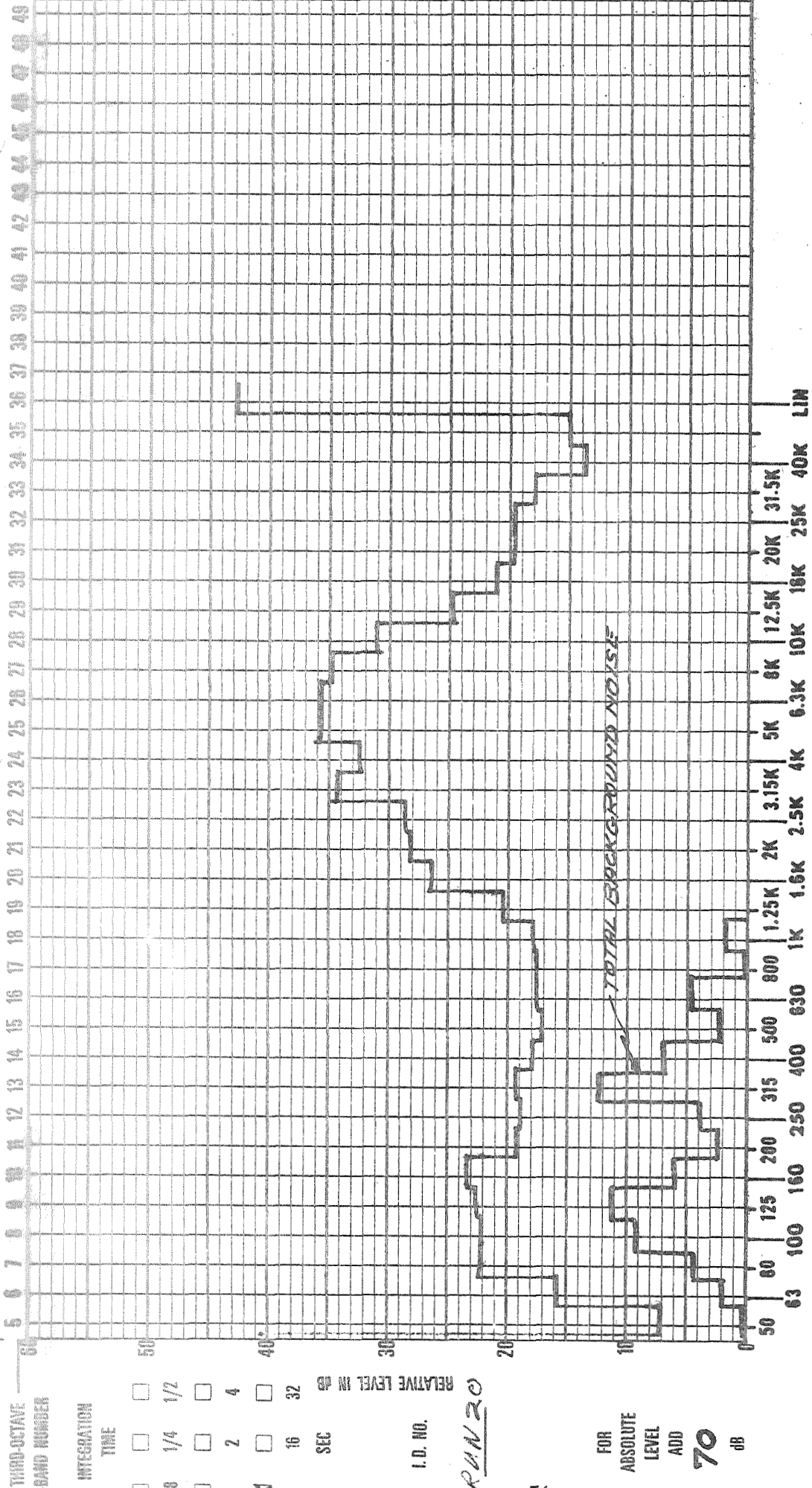
Hamilton
Standard



THIRD-OCTAVE-BAND
ANALYSIS

SHROUD STATIC
 BLADE ANGLE 40°
 TIP SPEED 800 FT/SEC
 MICROPHONE LOCATION 10' 112 1/2°

Figure 6-2c PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND NUMBER: 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49

INTEGRATION TIME:
 1/8
 1/4
 1
 2
 4
 8
 16
 32
 SEC

I.D. NO.
RUN 20

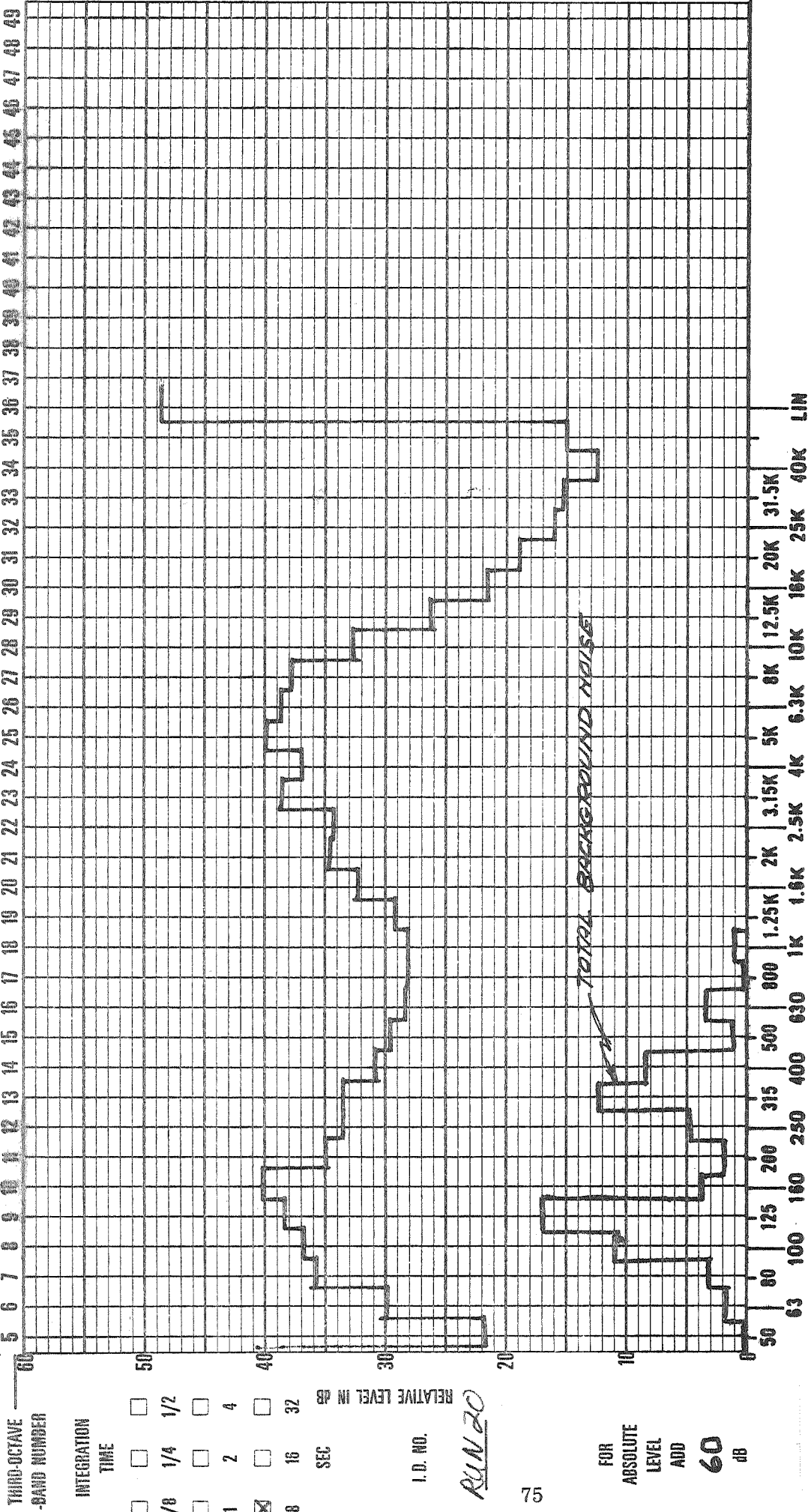
FOR ABSOLUTE LEVEL ADD **70** dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD STATIC
 BLADE ANGLE 40°
 TIP SPEED 800 FT/SEC
 MICROPHONE LOCATION 10' 135°

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Figure 63c PROP-FAN MODEL NOISE



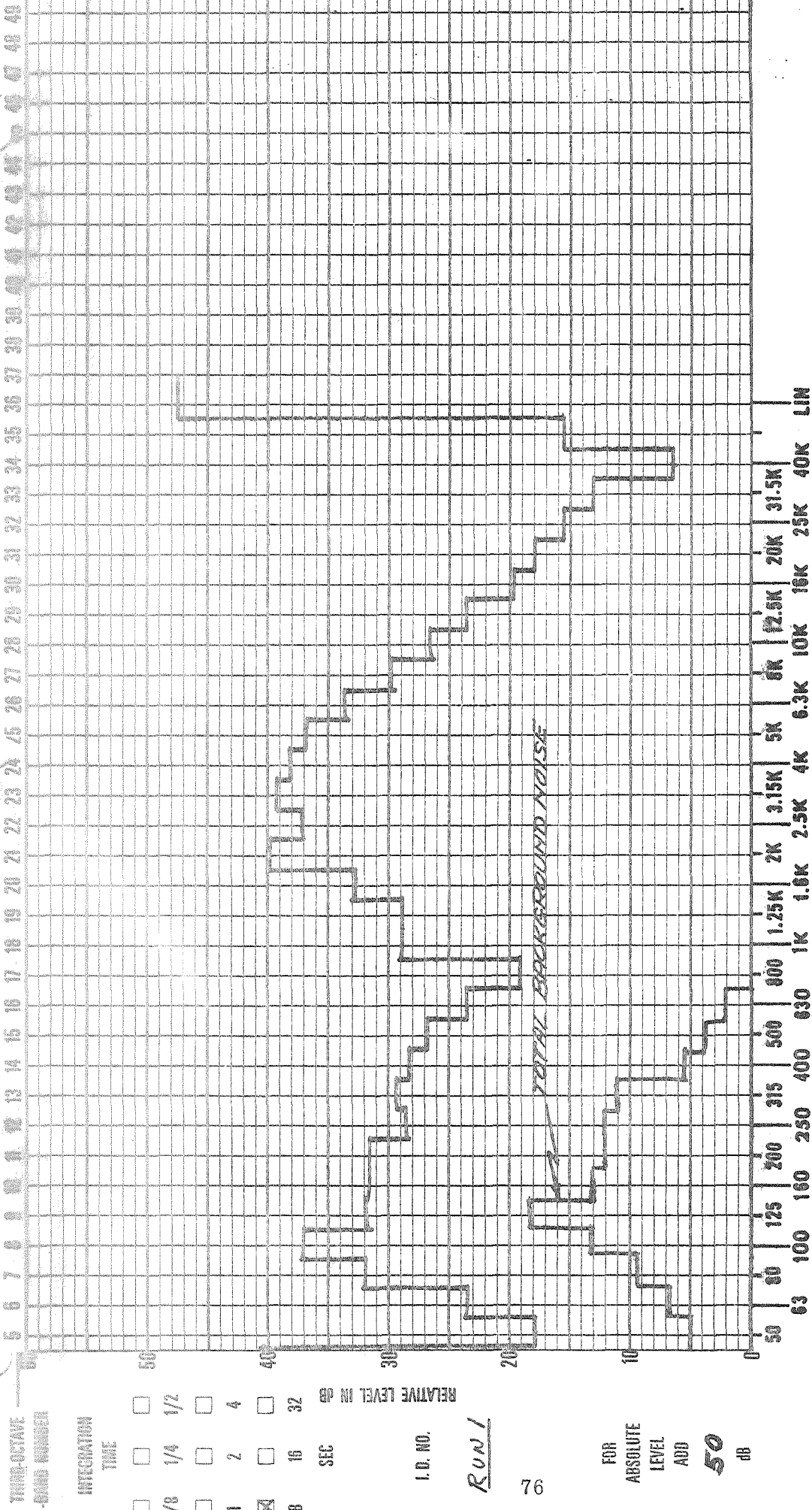
THIRD-OCTAVE BAND CENTER FREQUENCY IN HZ

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

Figure 64C PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

1/8

1/4

1/2

1

2

4

8

16

32

SEC

RELATIVE LEVEL IN DB

I.D. NO.

RUN 1

FOR ABSOLUTE LEVEL ADD

50 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

SHROUD STATIC

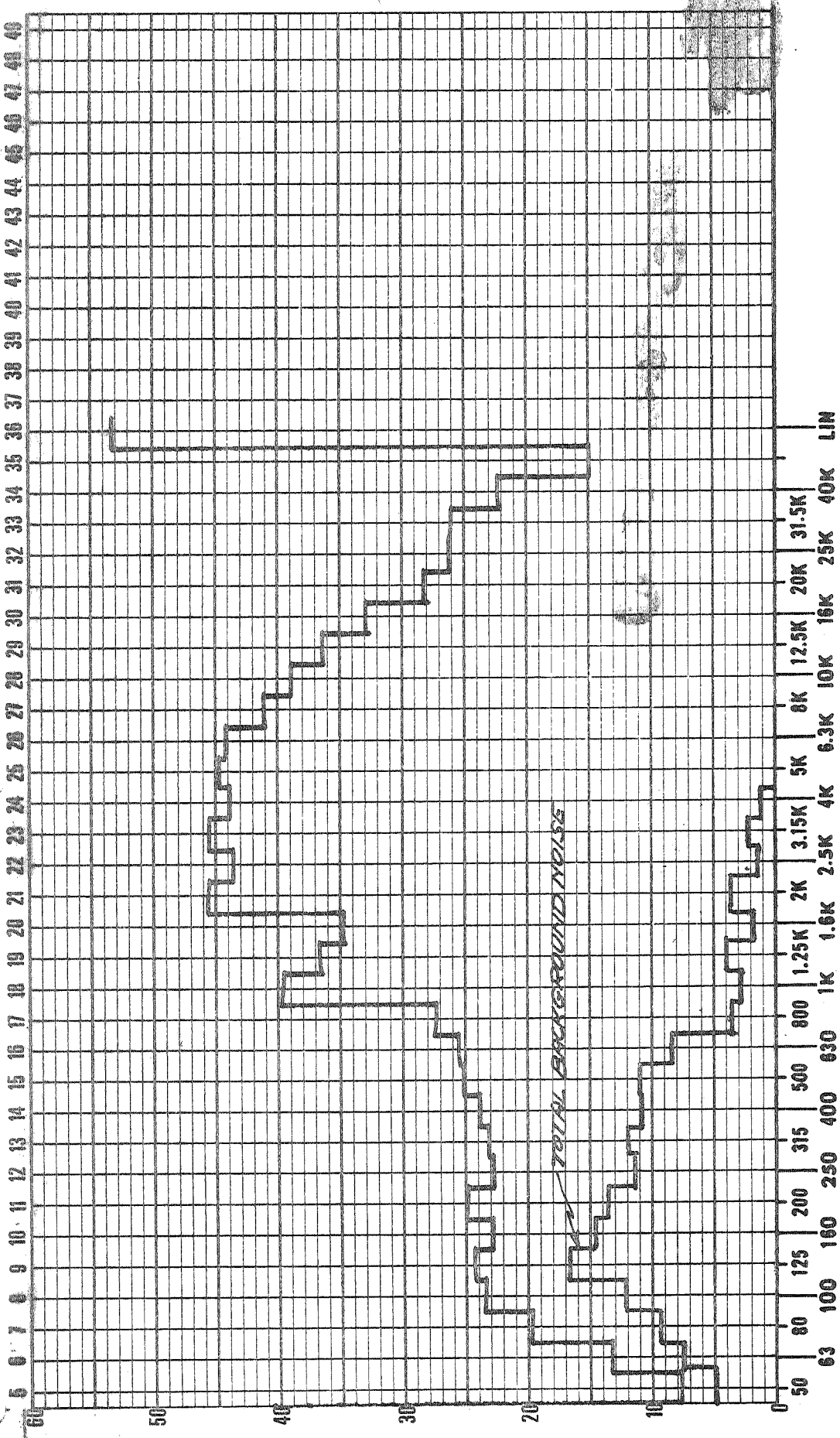
BLADE ANGLE 45°

TIP SPEED 500 FT/SEC

MICROPHONE 1 1/2' ON GROUND

LOCATION 90°

Figure 65c PROP-FAN MODEL NOISE



THIRD-OCTAVE -BAND NUMBER

INTEGRATION TIME

RELATIVE LEVEL IN DB

I.D. NO.

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32
- 60

RUALI

FOR ABSOLUTE LEVEL ADD

50 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

SHROUD STATIC

BLADE ANGLE 45°

TIP SPEED 500 FT/SEC

MICROPHONE LOCATION 10' 22 1/2"

Figure 66 PROP-FAN MODEL NOISE

THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

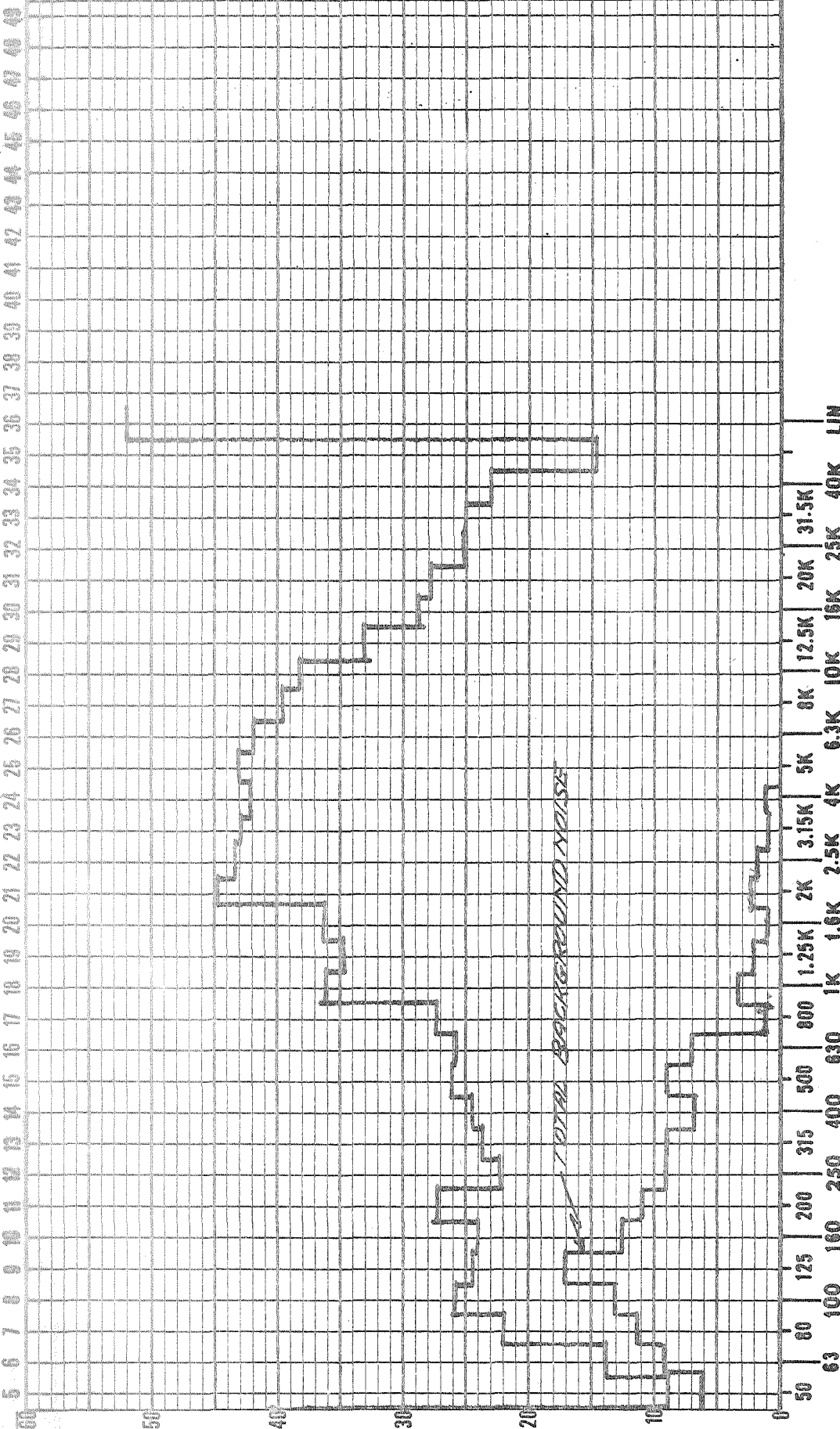
- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

RELATIVE LEVEL IN dB

I.D. NO.

RUN 1

FOR
ABSOLUTE
LEVEL
ADD
50
dB



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

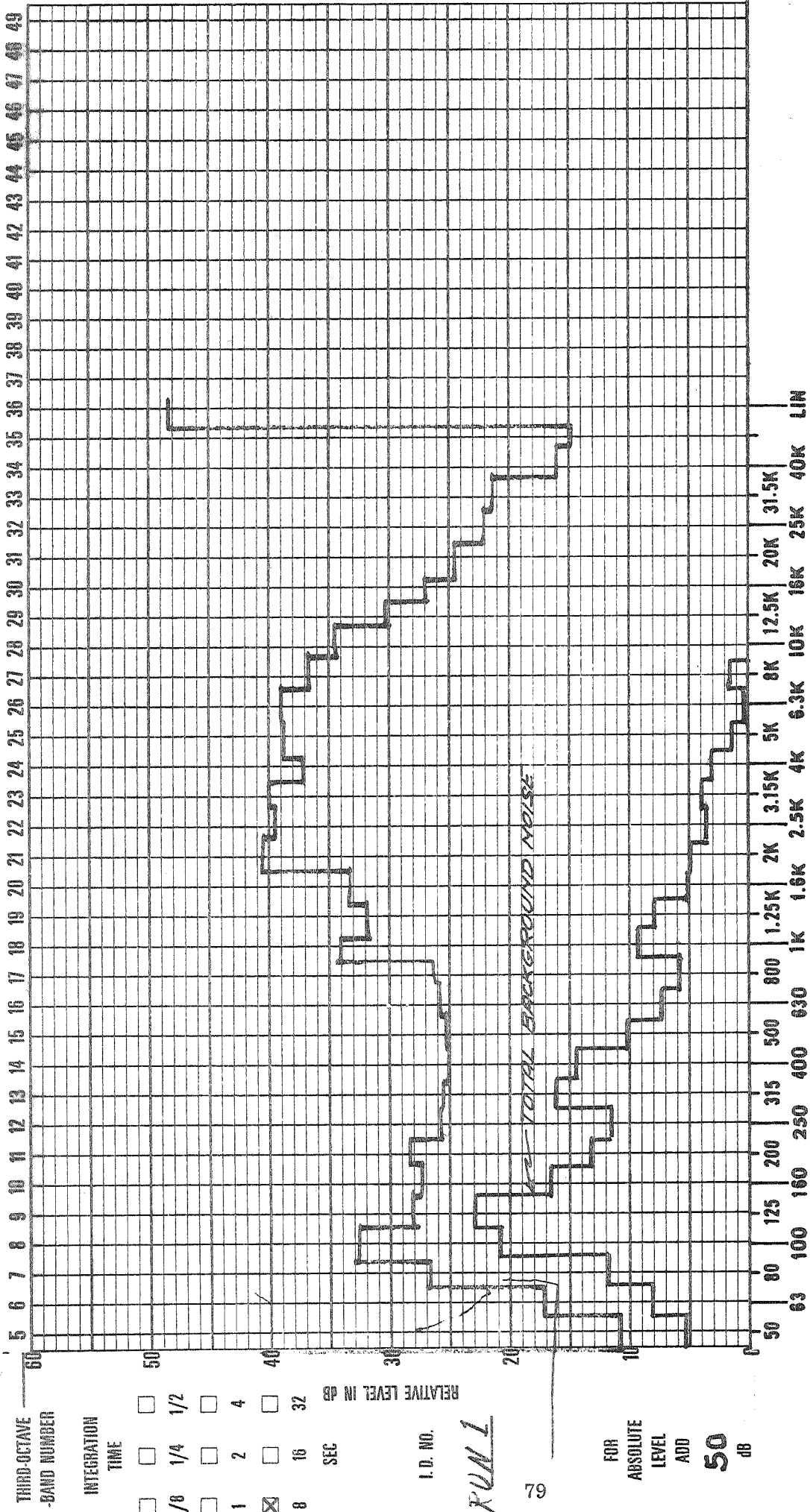
Hamilton
Standard



THIRD-OCTAVE-BAND
ANALYSIS

SHROUD STATIC
 BLADE ANGLE 45°
 TIP SPEED 500 FT/SEC
 MICROPHONE 10'45°
 LOCATION

Figure 6 7C PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD STATIC
 BLADE ANGLE 45°
 TIP SPEED 500 FT/SEC
 MICROPHONE LOCATION 10' 67 1/2°

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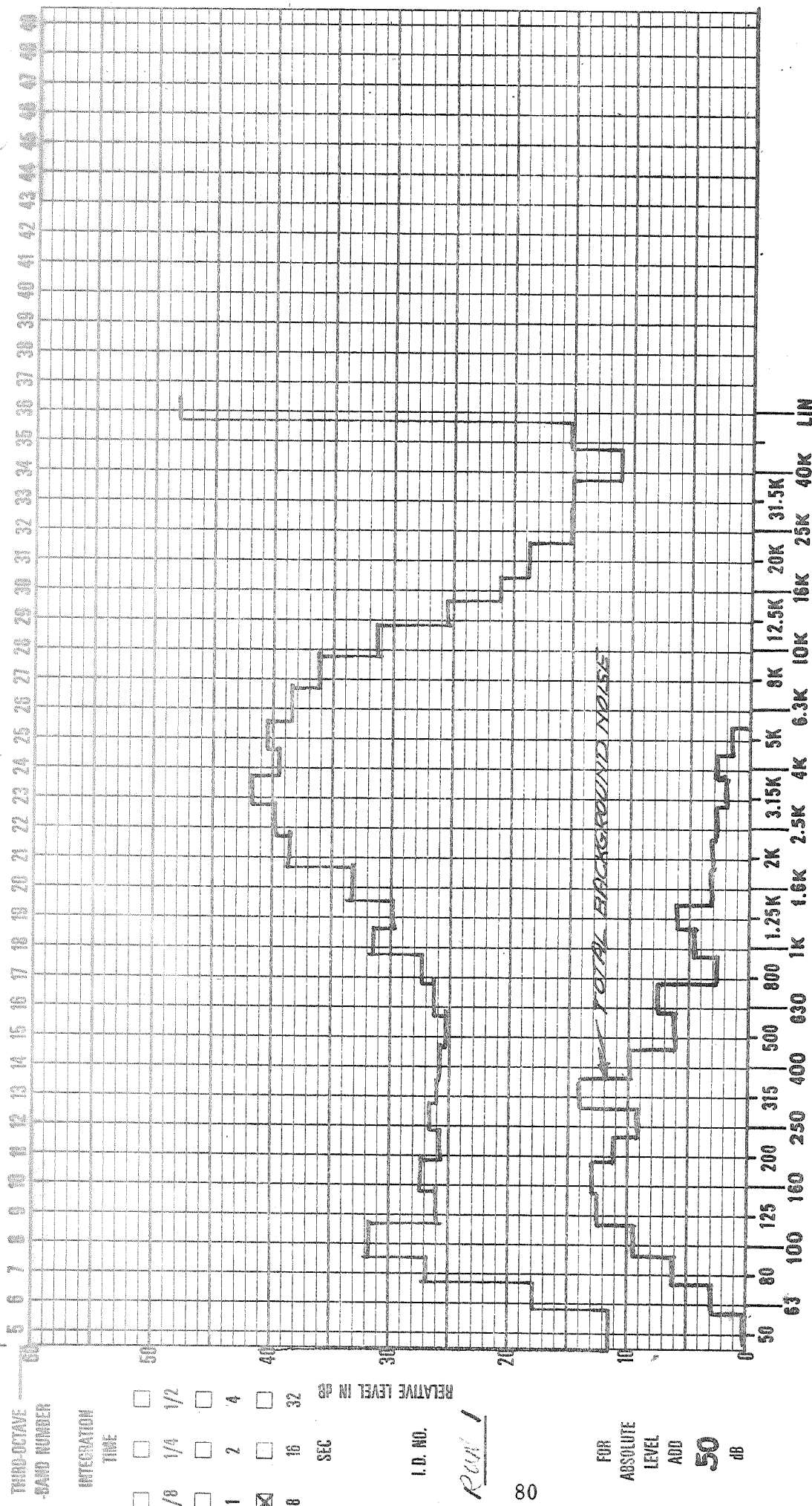
THIRD-OCTAVE-BAND ANALYSIS

Figure 68C PROP-FAN MODEL NOISE

- THIRD-OCTAVE BAND NUMBER
- INTEGRATION TIME
- 1/8
 - 1/4
 - 1/2
 - 1
 - 2
 - 4
 - 8
 - 16
 - 32
- RELATIVE LEVEL IN DB
- SEC
- I. D. NO.

RUN 1

FOR ABSOLUTE LEVEL ADD 50 dB



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

SHROUD STATIC
 BLADE ANGLE 45°
 TIP SPEED 500 FT/SEC
 MICROPHONE LOCATION 10' 90°

THIRD-OCTAVE-BAND NUMBER
 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

INTEGRATION TIME
 1/8
 1/4
 1/2
 1
 2
 4
 16
 32
 SEC

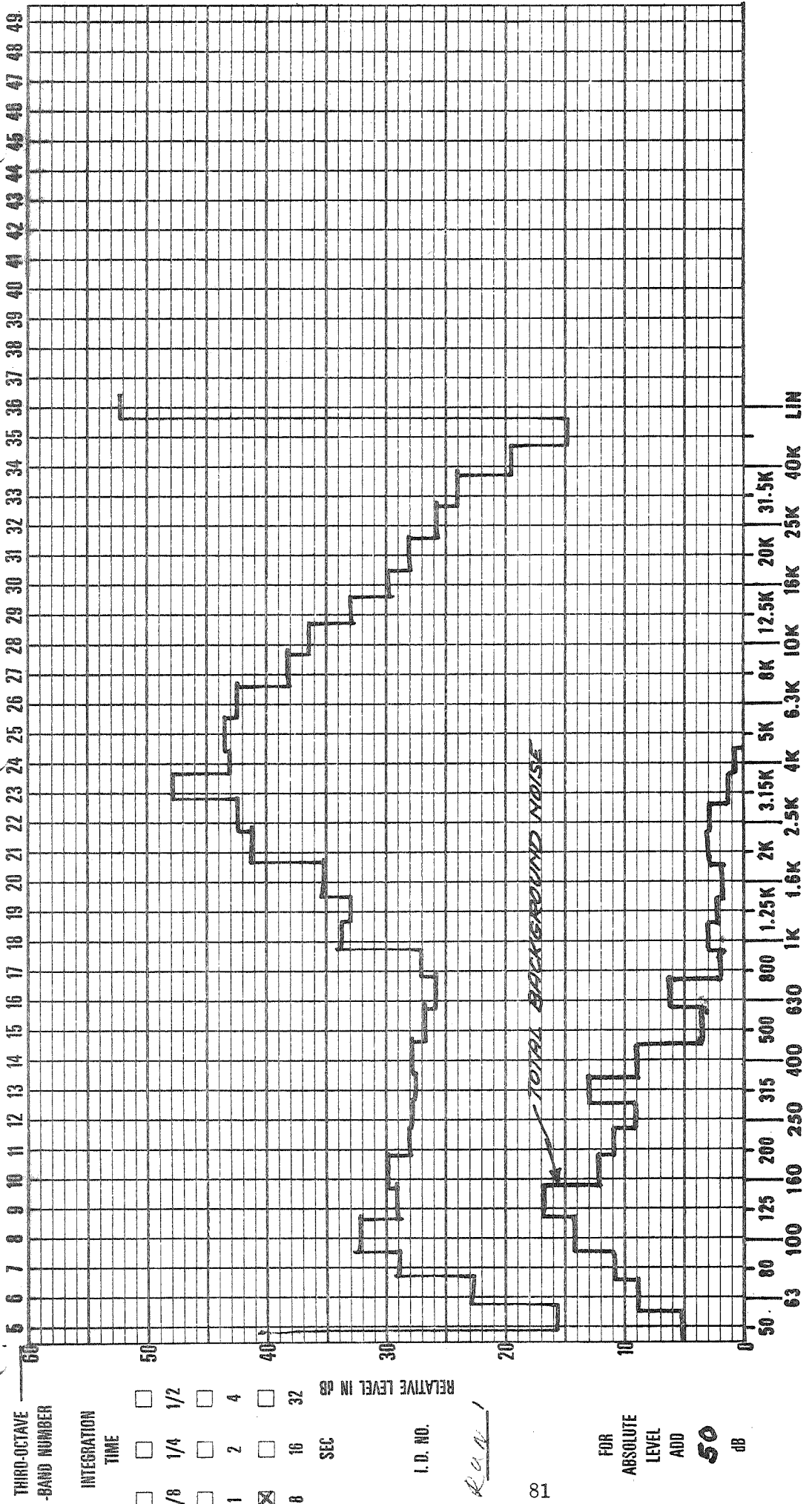
I.D. NO.

Run 1

80

FOR ABSOLUTE LEVEL ADD
50 dB

Figure 69c PROP-FAN MODEL NOISE



SHROUD STATIC
 BLADE ANGLE 45°
 TIP SPEED 500 FT/SEC
 MICROPHONE LOCATION 10' 112 1/2"

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard

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THIRD-OCTAVE-BAND ANALYSIS

Figure 70c PROP-FAN MODEL NOISE

THIRD-OCTAVE-BAND NUMBER

INTEGRATION TIME

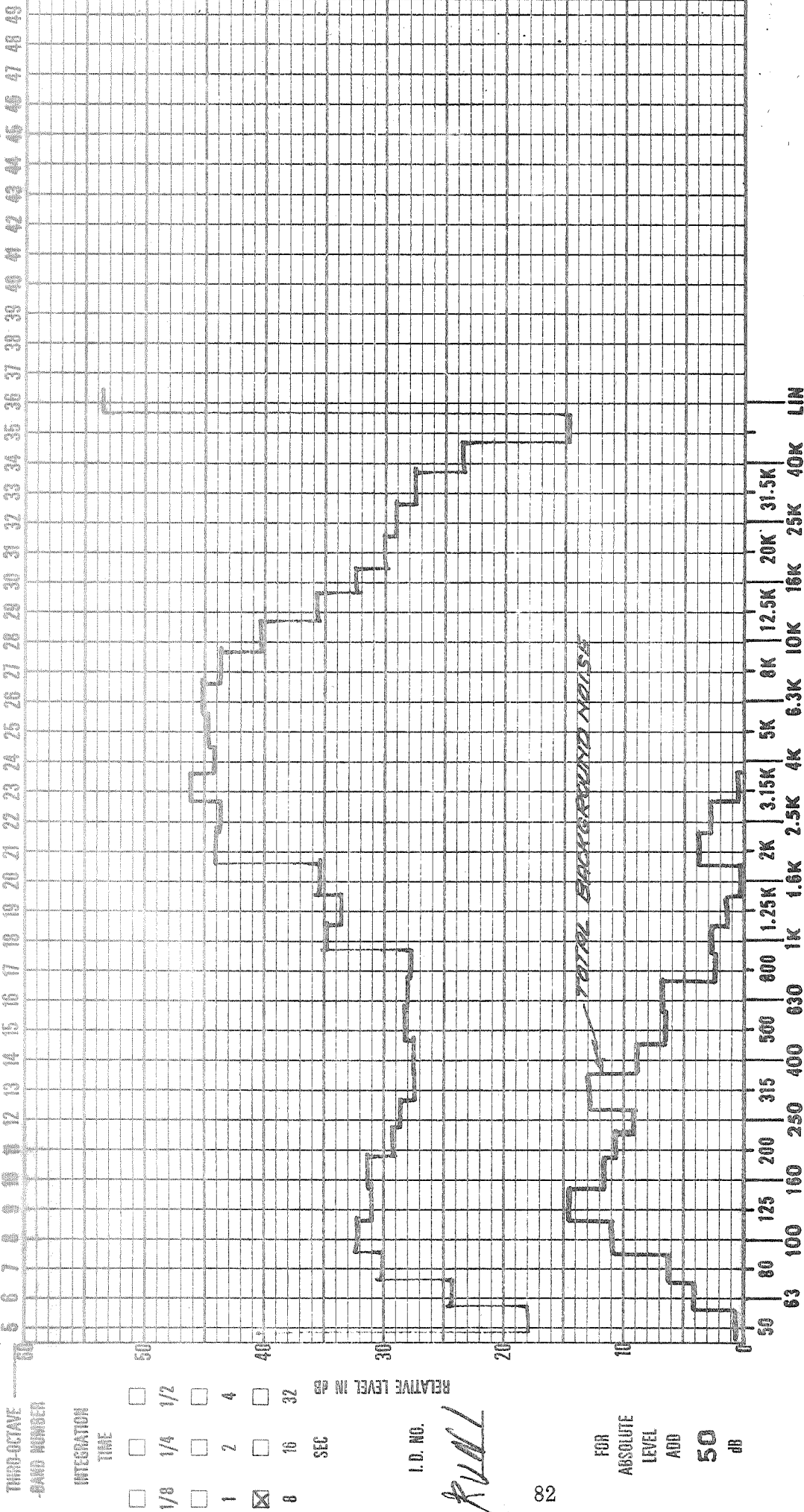
1/8 1/4 1/2 4 32

8

SEC

I.D. NO. RAM

FOR ABSOLUTE LEVEL ADD 50 dB



THIRD-OCTAVE BAND NUMBER 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49

RELATIVE LEVEL IN DB

INTEGRATION TIME

FOR ABSOLUTE LEVEL ADD 50 dB

I.D. NO. *RULL*

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD STATIC

BLADE ANGLE 45°

TIP SPEED 500 FT/SEC

MICROPHONE LOCATION 10' 135°

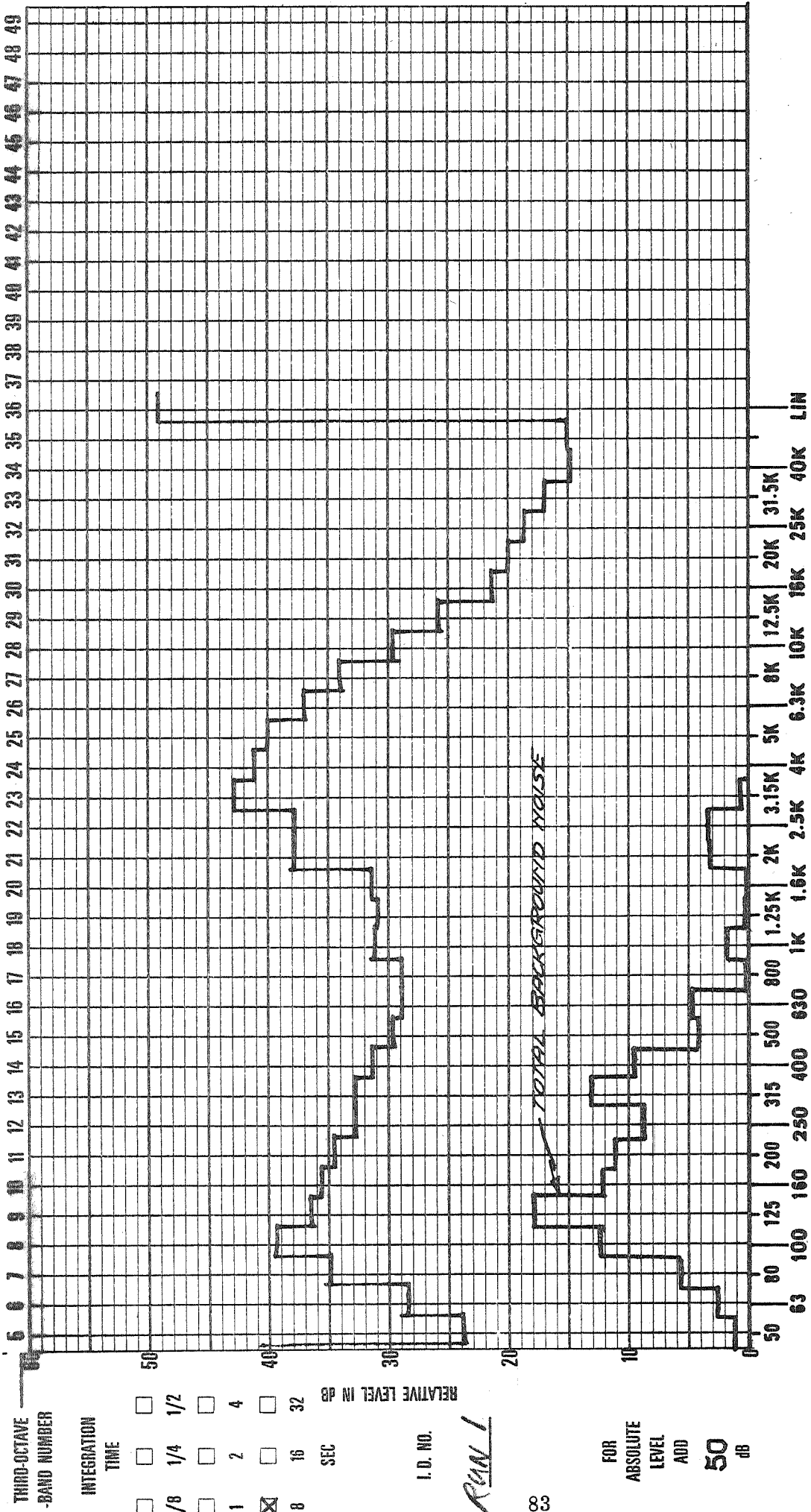
Hamilton Standard.

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THIRD-OCTAVE-BAND ANALYSIS

Figure 7/c PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

1/8 1/4 1/2 2 4 8 16 32 50

SEC

I.D. NO.

RUN 1

FOR ABSOLUTE LEVEL ADD

50 dB

THIRD-OCTAVE BAND CENTER FREQUENCY IN HZ

SHROUD STATIC

BLADE ANGLE 45°

TIP SPEED 500 FT/SEC

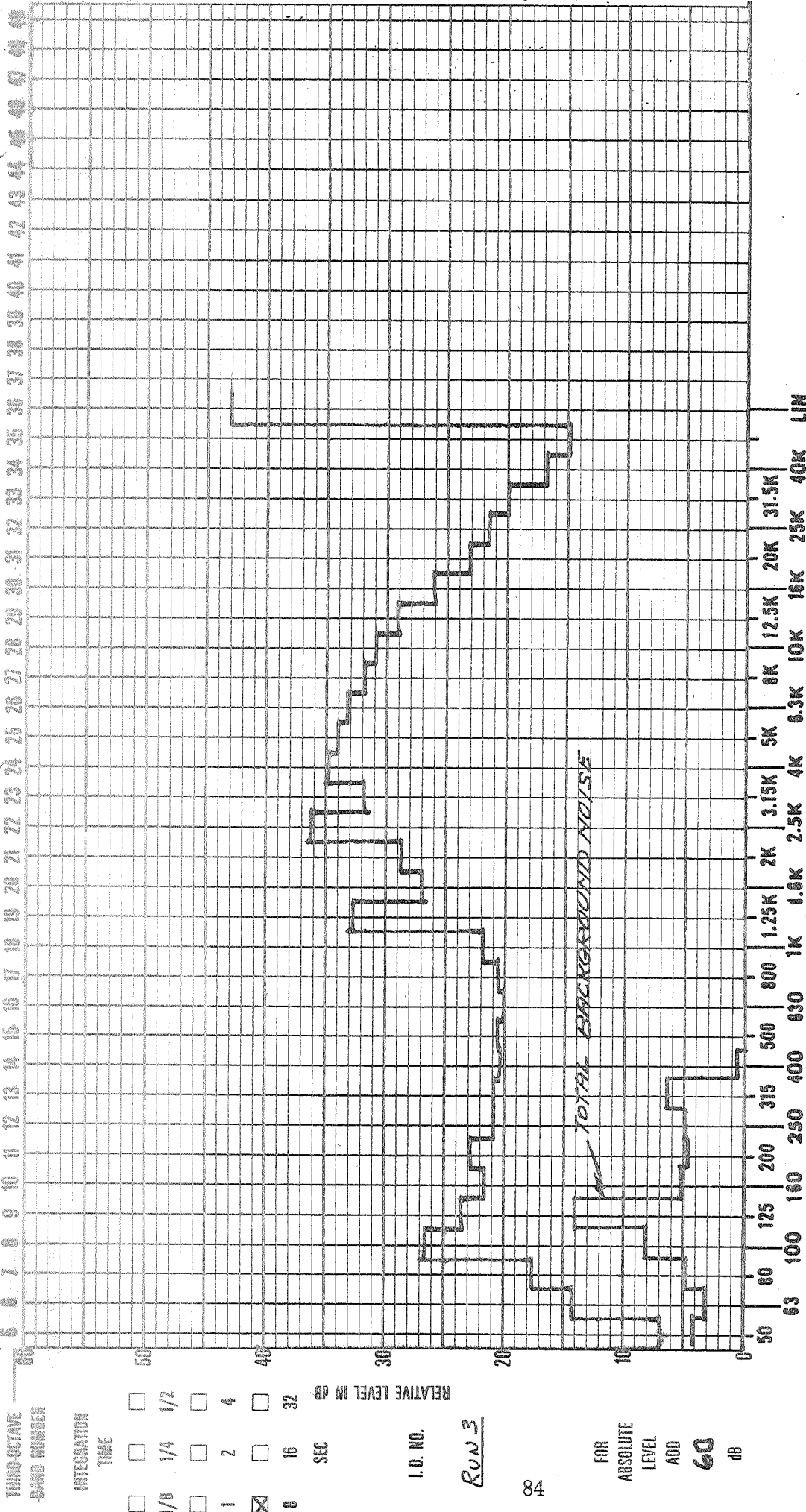
MICROPHONE LOCATION 10' 157 1/2°

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

Figure 7A PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

RELATIVE LEVEL IN dB

I.D. NO.

Run 3

FOR ABSOLUTE LEVEL ADD 60 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

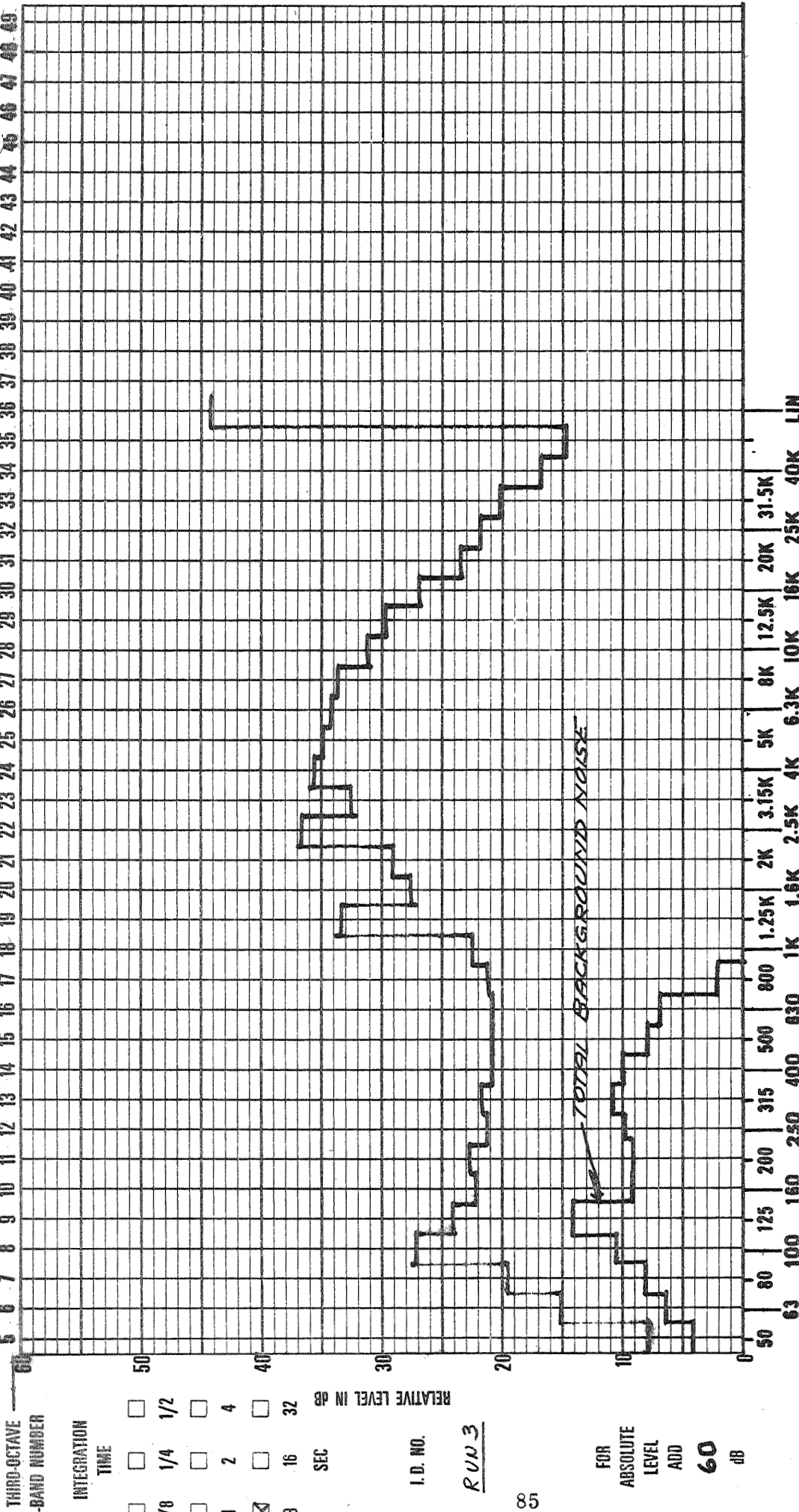
SHROUD STATIC

BLADE ANGLE 45°

TIP SPEED 600 FT/SEC

MICROPHONE 1' LOCATION 132° 90° ON GROUND

Figure 73 PROP-FAN MODEL NOISE



SHROUD STATIC
 BLADE ANGLE 45°
 TIP SPEED 600 FT/SEC
 MICROPHONE LOCATION 10' 22 1/2"

THIRD-OCTAVE-BAND CENTER FREQUENCY IN Hz

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

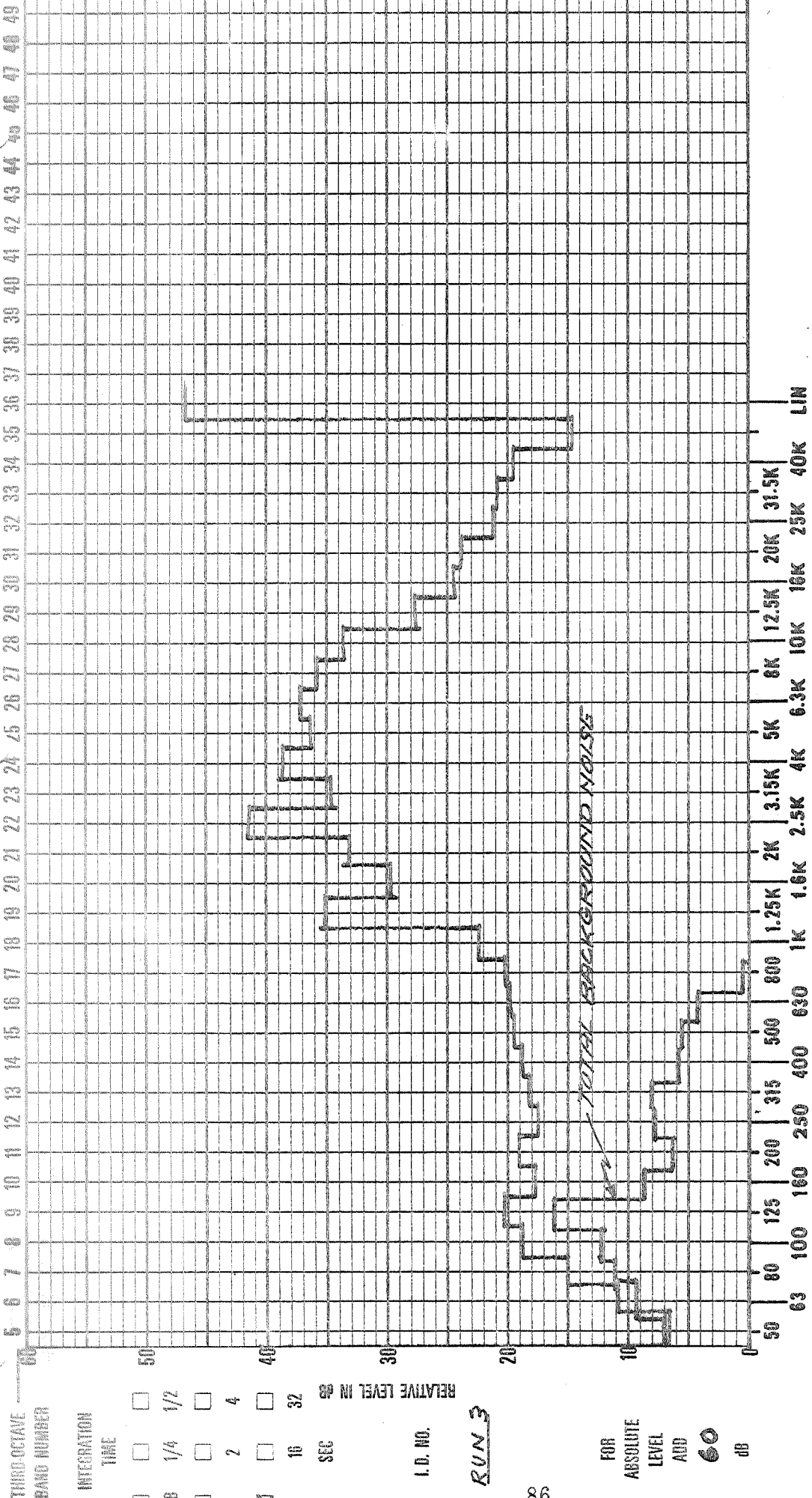
Figure 74C-PROP-FAN MODEL NOISE

THIRD-OCTAVE-BAND NUMBER
 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49

INTEGRATION TIME
 1/8
 1/4
 1/2
 1
 2
 4
 8
 16
 32
 SEC

I.D. NO. RUN 3

FOR ABSOLUTE LEVEL ADD 60 dB



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

SHROUD STATIC
 BLADE ANGLE 45°
 TIP SPEED 600 FT/SEC
 MICROPHONE LOCATION 10' 45°

THIRD-OCTAVE-BAND NUMBER

INTEGRATION TIME

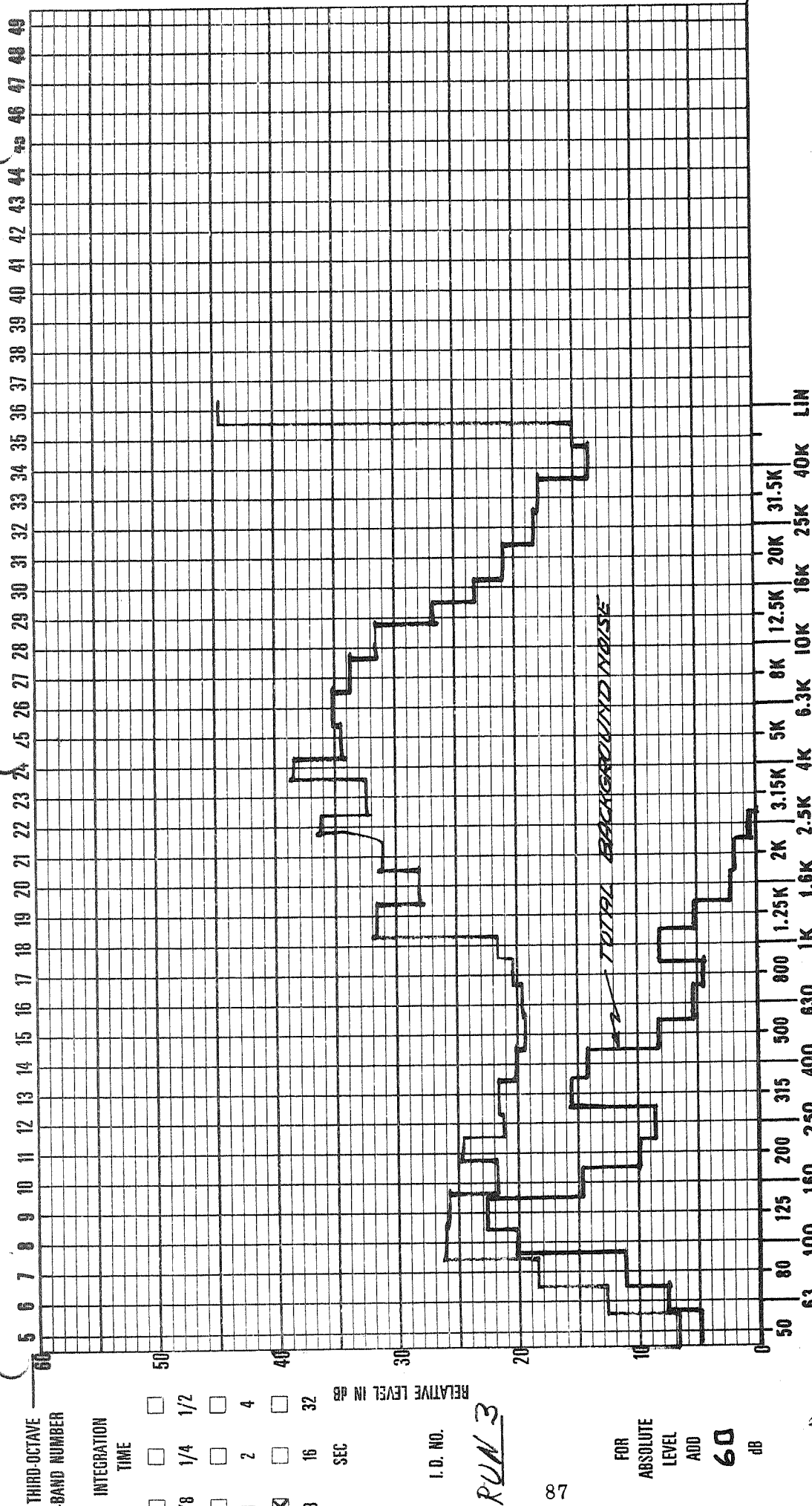
- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

I.D. NO.

RUN 3

FOR ABSOLUTE LEVEL ADD **60** dB

Figure 752-PROP-FAN MODEL NOISE



SHROUD STATIC
 BLADE ANGLE 45°
 TIP SPEED 600 FT/SEC
 MICROPHONE LOCATION 10' 67 1/2°

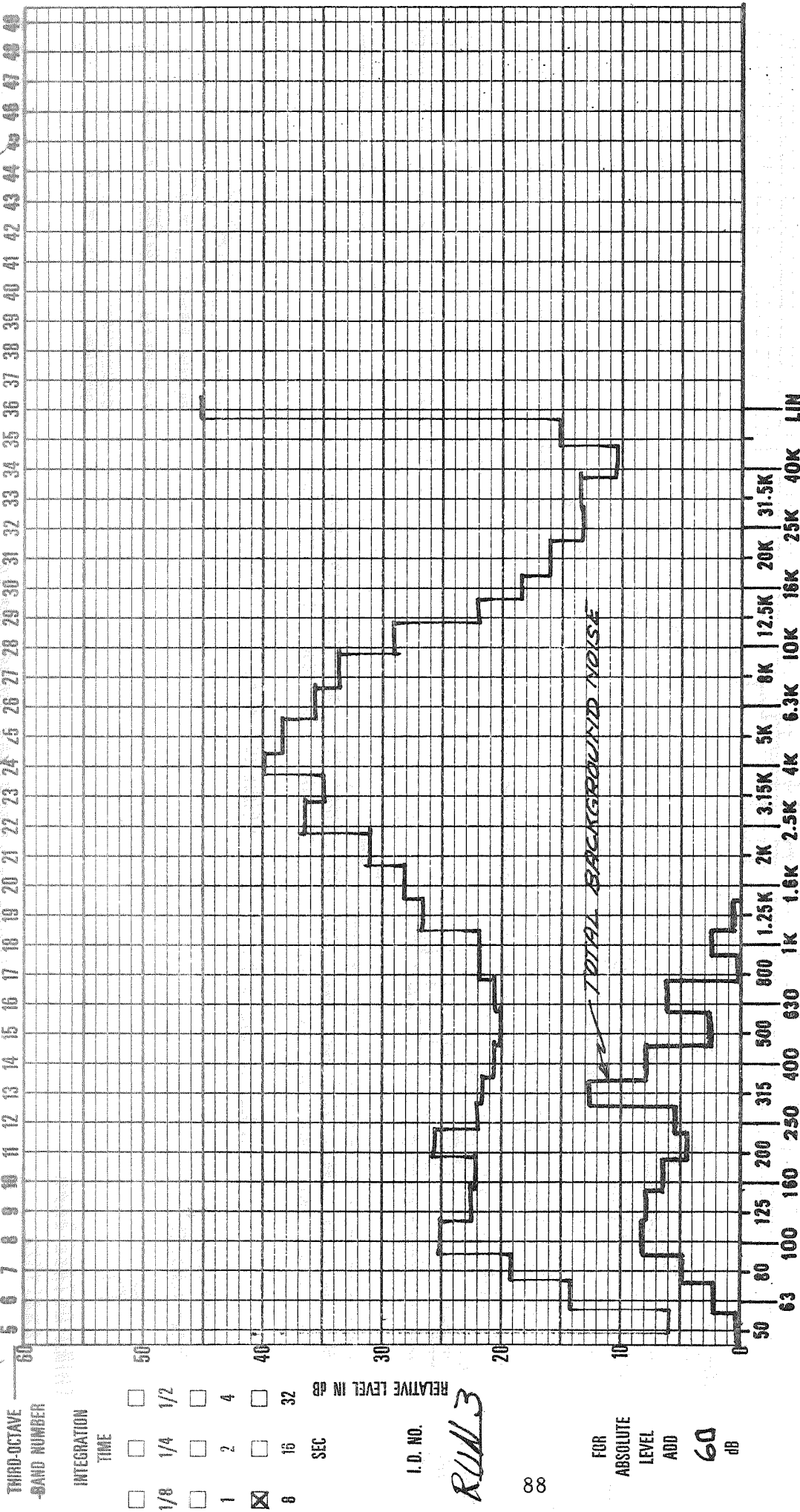
THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard

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THIRD-OCTAVE-BAND ANALYSIS

Figure 76c PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

SEC

I.D. NO.

RUN 3

FOR ABSOLUTE LEVEL ADD 60 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

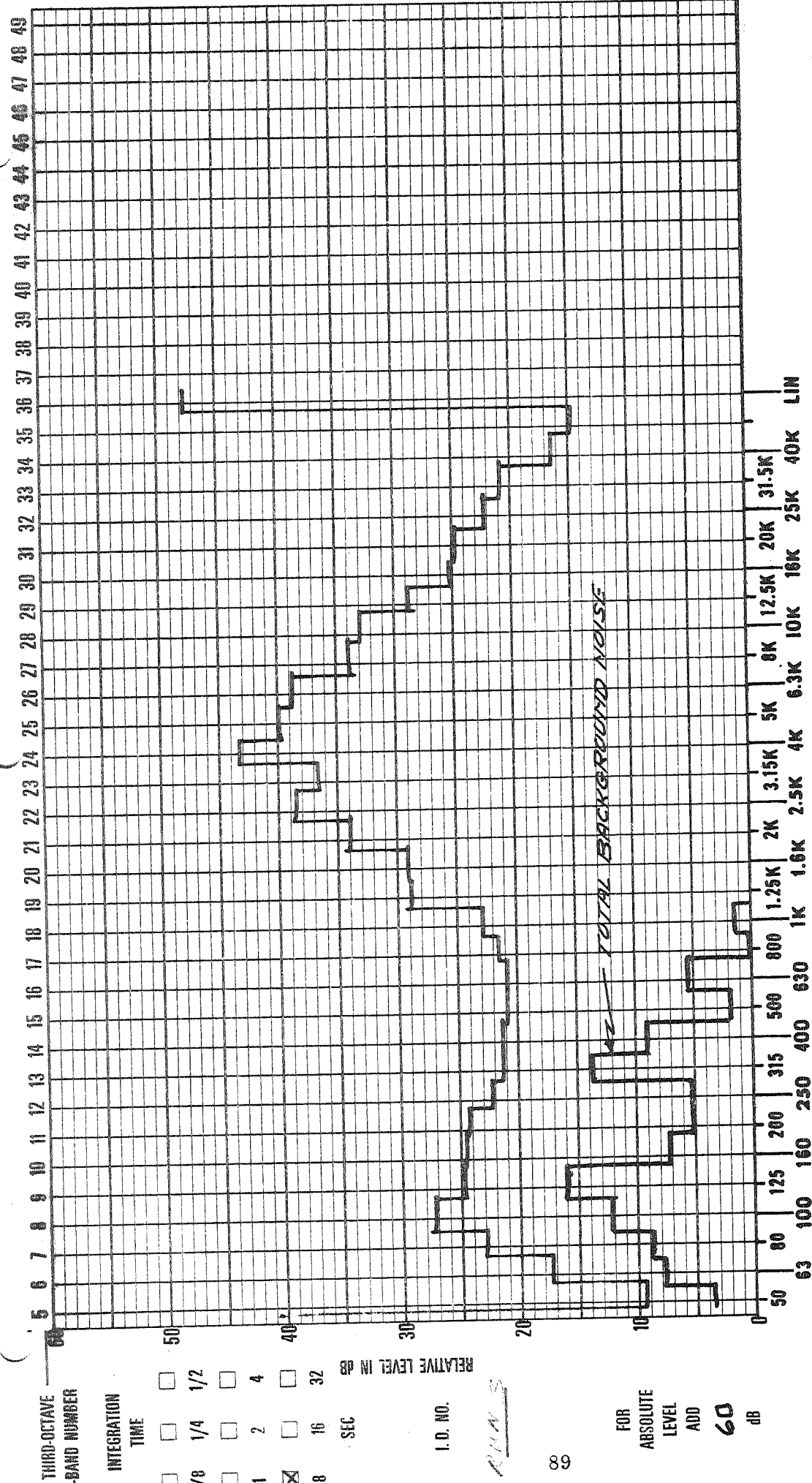
Hamilton Standard

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THIRD-OCTAVE-BAND ANALYSIS

SHROUD STATIC
BLADE ANGLE 45°
TIP SPEED 600 FT/SEC
MICROPHONE LOCATION 10' 90°

Figure 77c PROP-FAN MODEL NOISE



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

RELATIVE LEVEL IN DB

I. D. NO.

RUN 3

FOR
ABSOLUTE
LEVEL
ADD
60
dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

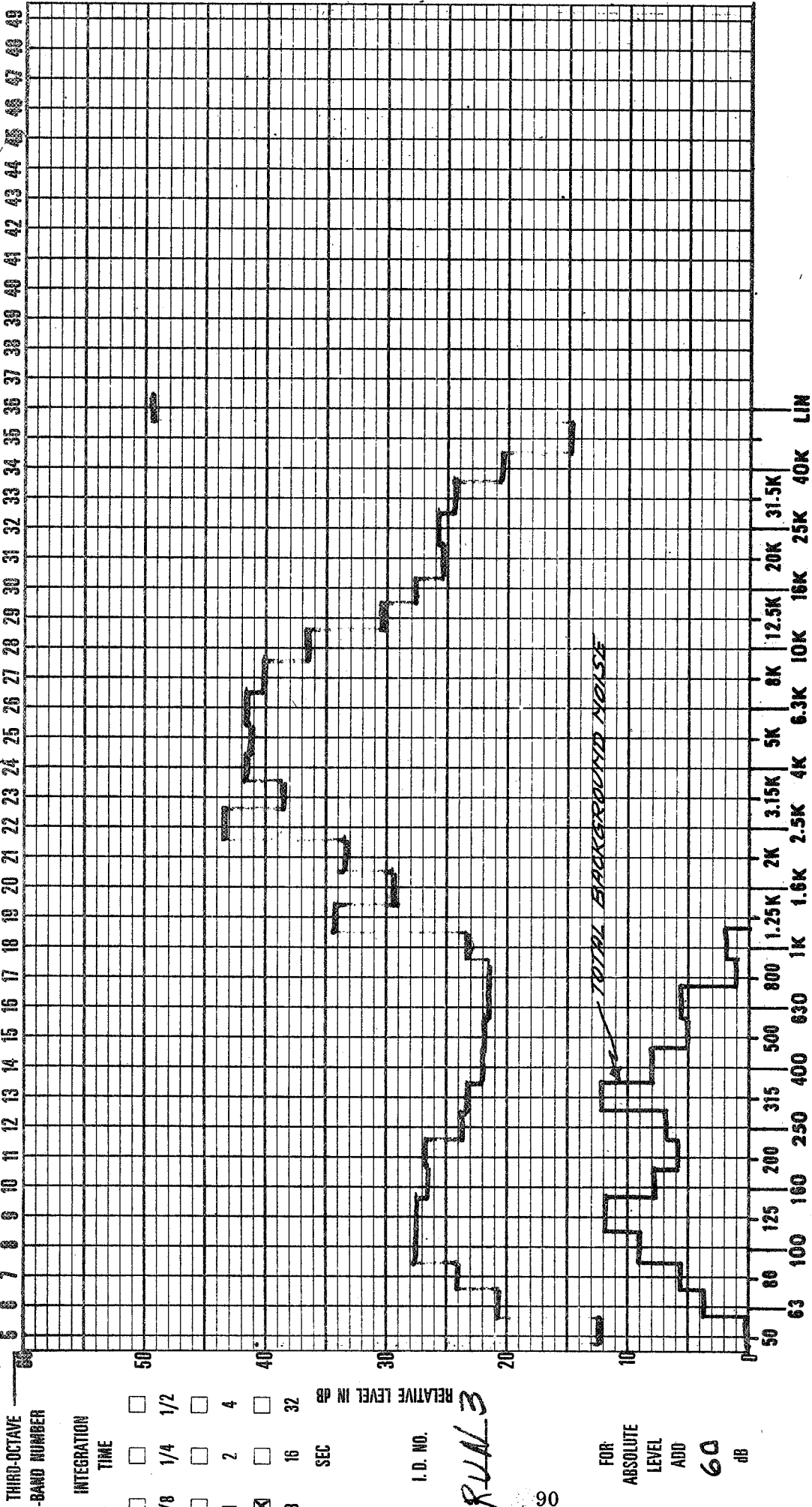
Hamilton
Standard

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THIRD-OCTAVE-BAND
ANALYSIS

SHROUD STATIC
 BLADE ANGLE 45°
 TIP SPEED 600 FT/SEC
 MICROPHONE 10' 112 1/2°
 LOCATION

Figure 7 PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD STATIC
 BLADE ANGLE 45°
 TIP SPEED 600 FT/SEC
 MICROPHONE LOCATION 10' 135°

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

Figure 79C PROP-FAN MODEL NOISE

THIRD-OCTAVE BAND NUMBER 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49

INTEGRATION TIME

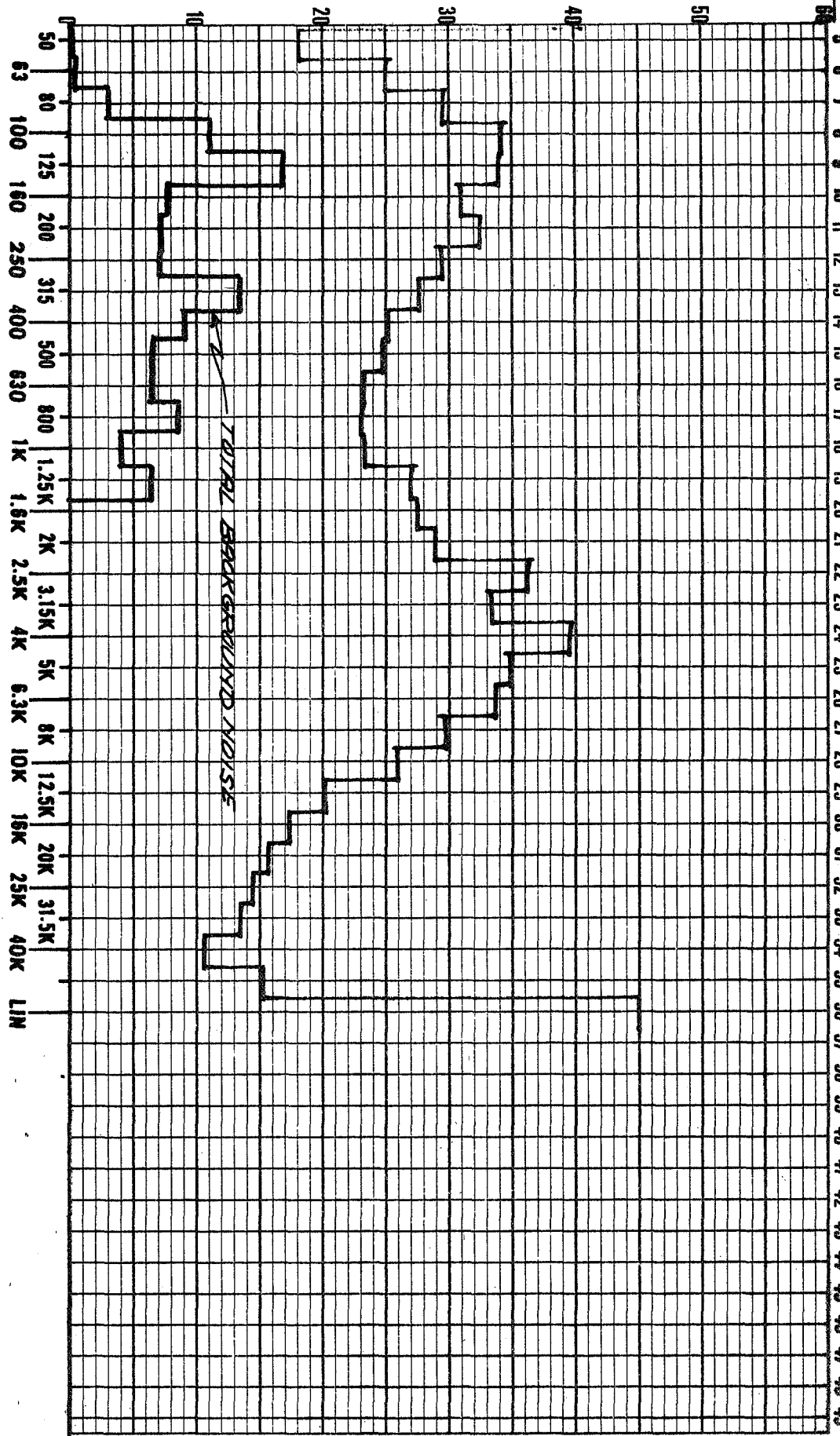
- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

I. D. NO. **RELATIVE LEVEL IN dB**

Run 3

91

FOR ABSOLUTE LEVEL ADD **60** dB



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

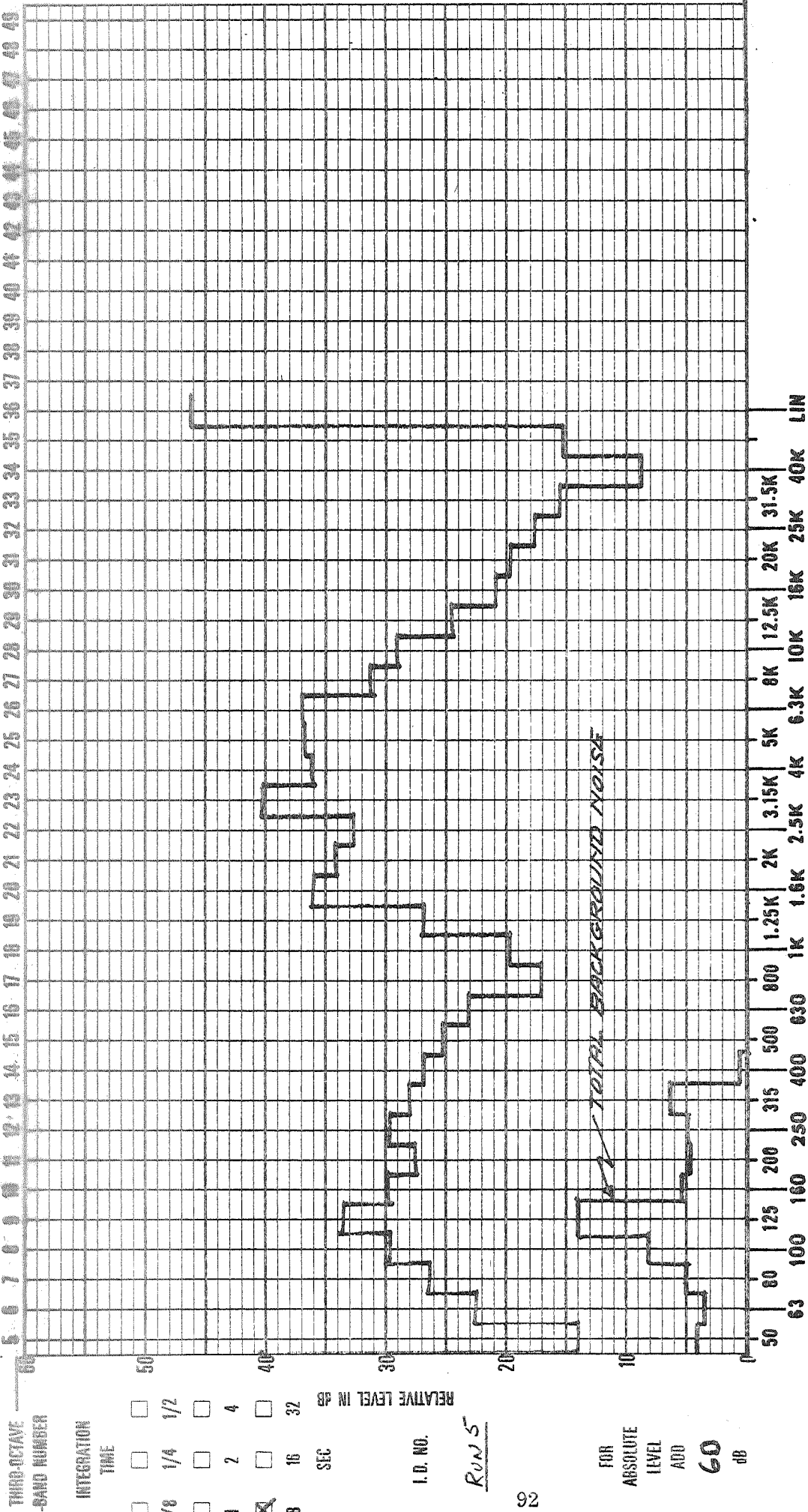
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THIRD-OCTAVE-BAND ANALYSIS

SHROUD STATIC
 BLADE ANGLE 45°
 TIP SPEED 600 FT/SEC
 MICROPHONE LOCATION 10' 157 1/2"

Figure 80c PROP-FAN MODEL NOISE



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

RELATIVE LEVEL IN dB

I.D. NO.

Run 5

FOR
ABSOLUTE
LEVEL
ADD
60
dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN Hz

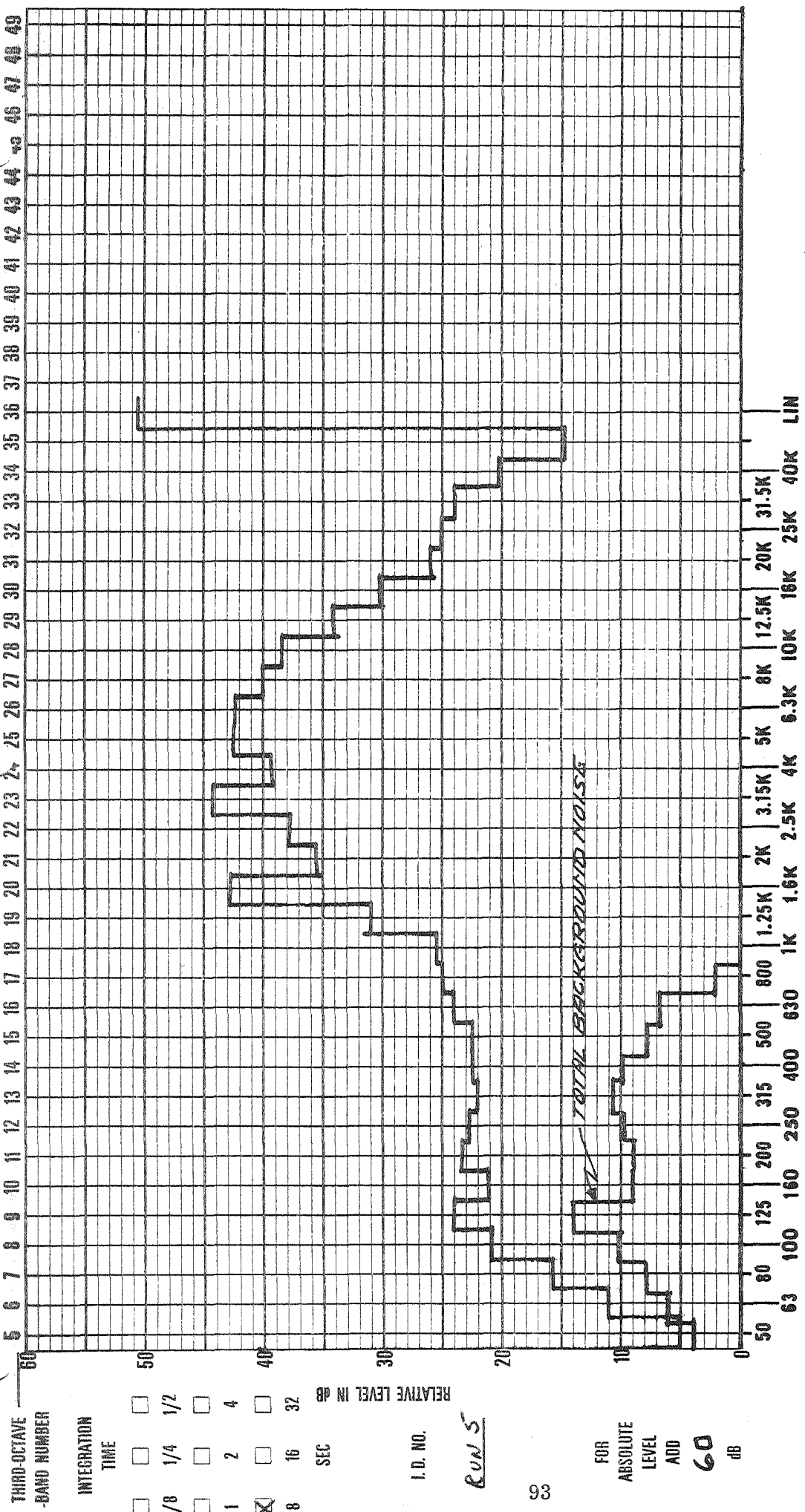
Hamilton
Standard



THIRD-OCTAVE-BAND
ANALYSIS

SHROUD STATIC
BLADE ANGLE 45°
TIP SPEED 700 FT/SEC
MICROPHONE LOCATION 13' 90° ON GROUND

Figure 8 PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

RELATIVE LEVEL IN DB

I.D. NO.

FOR ABSOLUTE LEVEL ADD

60 dB

RUN 5

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD STATIC

BLADE ANGLE 45°

TIP SPEED 700 FT/SEC

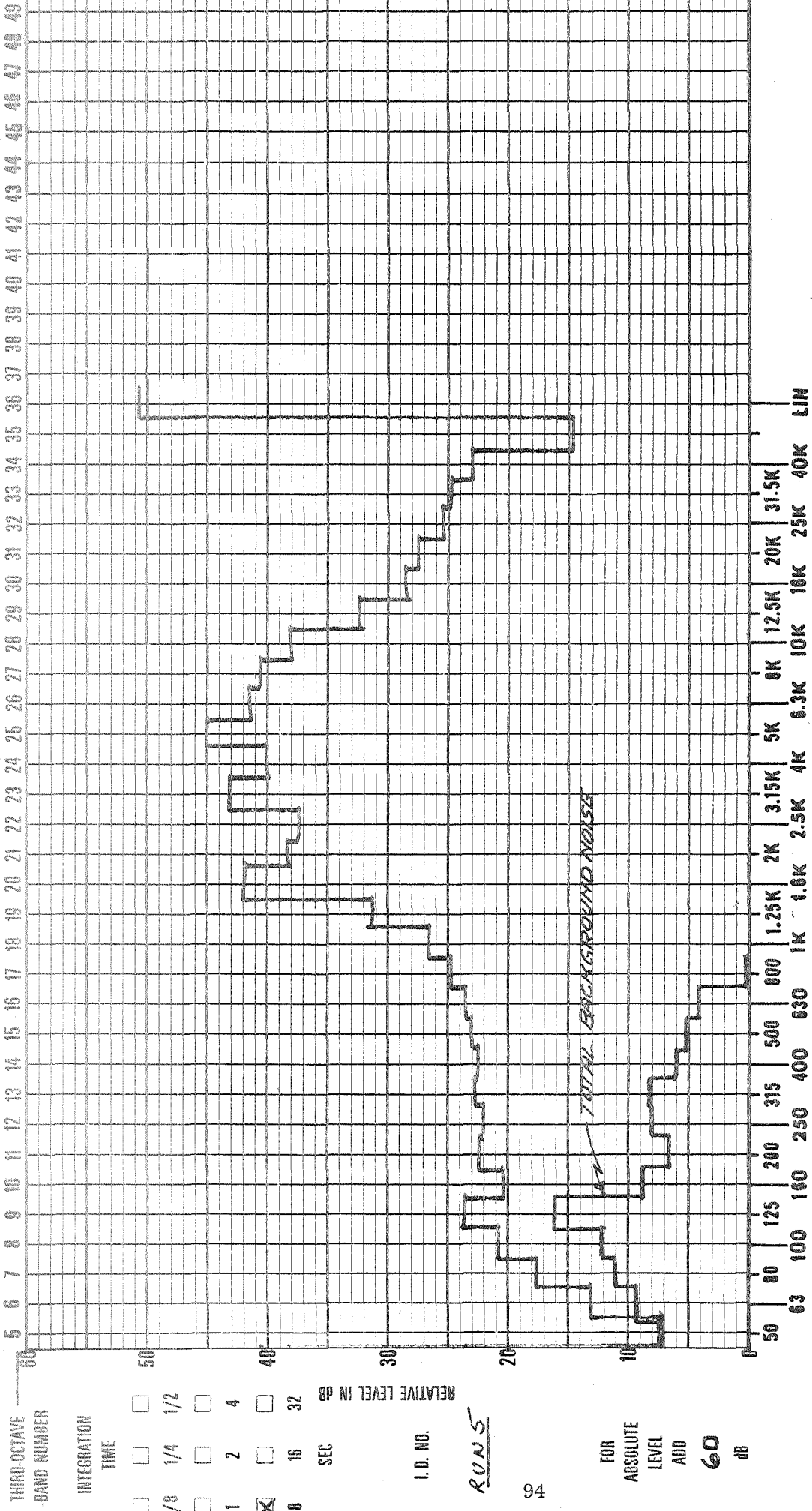
MICROPHONE LOCATION 10' 22 1/2°

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THIRD-OCTAVE-BAND ANALYSIS

Figure 82c PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND CENTER FREQUENCY IN Hz

SHROUD STATIC
 BLADE ANGLE 45°
 TIP SPEED 700 FT/SEC
 MICROPHONE LOCATION 10' 45°

THIRD-OCTAVE-BAND NUMBER

INTEGRATION TIME

1/8 1/4 1/2 4 32

8 16 32

SEC

I.D. NO.

RUN 5

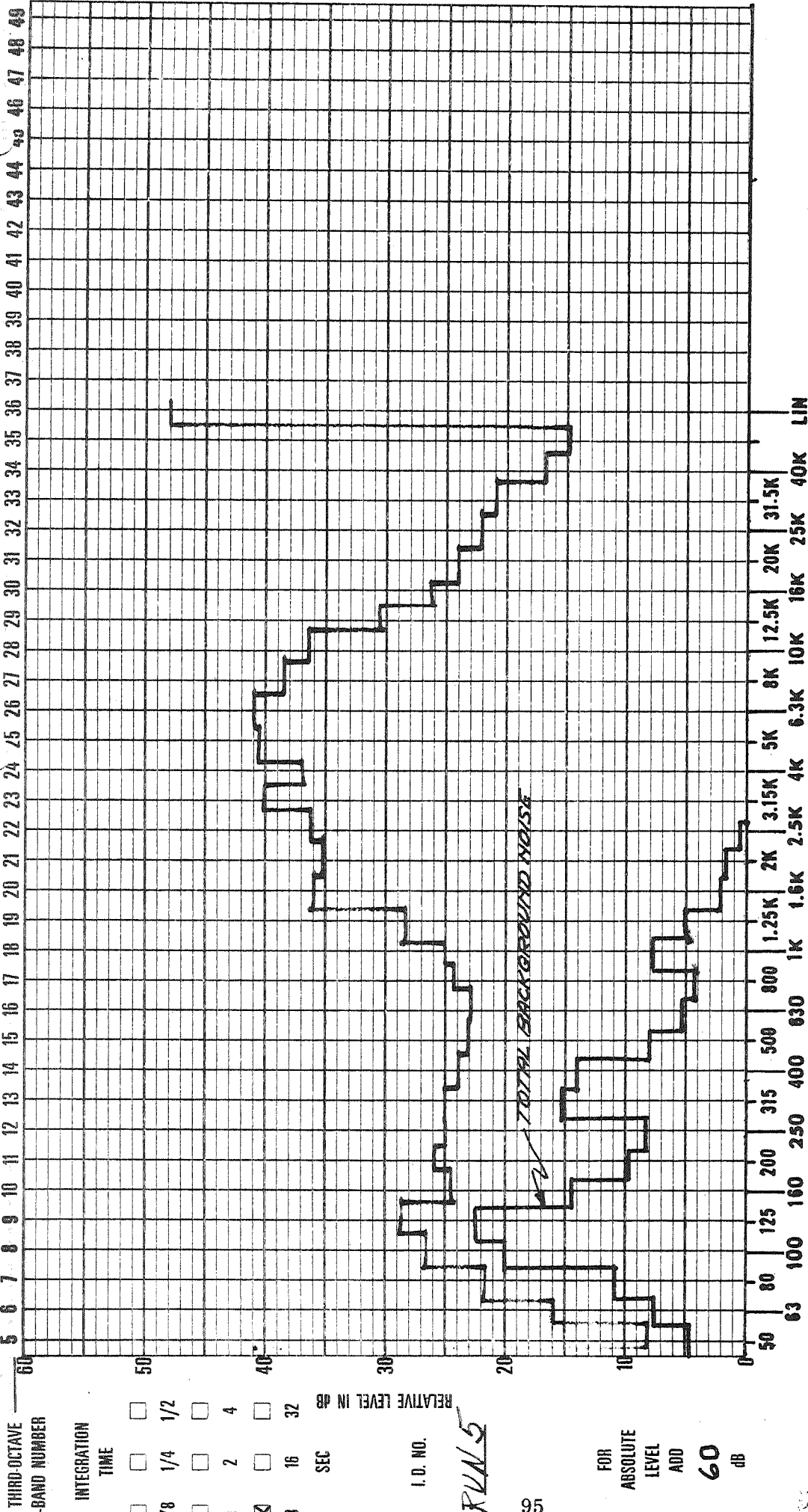
FOR ABSOLUTE LEVEL ADD 60 dB

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THIRD-OCTAVE-BAND ANALYSIS

Figure 83C PROP-FAN MODEL NOISE



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

I. D. NO.

RUN 5

FOR
ABSOLUTE
LEVEL
ADD
60
dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

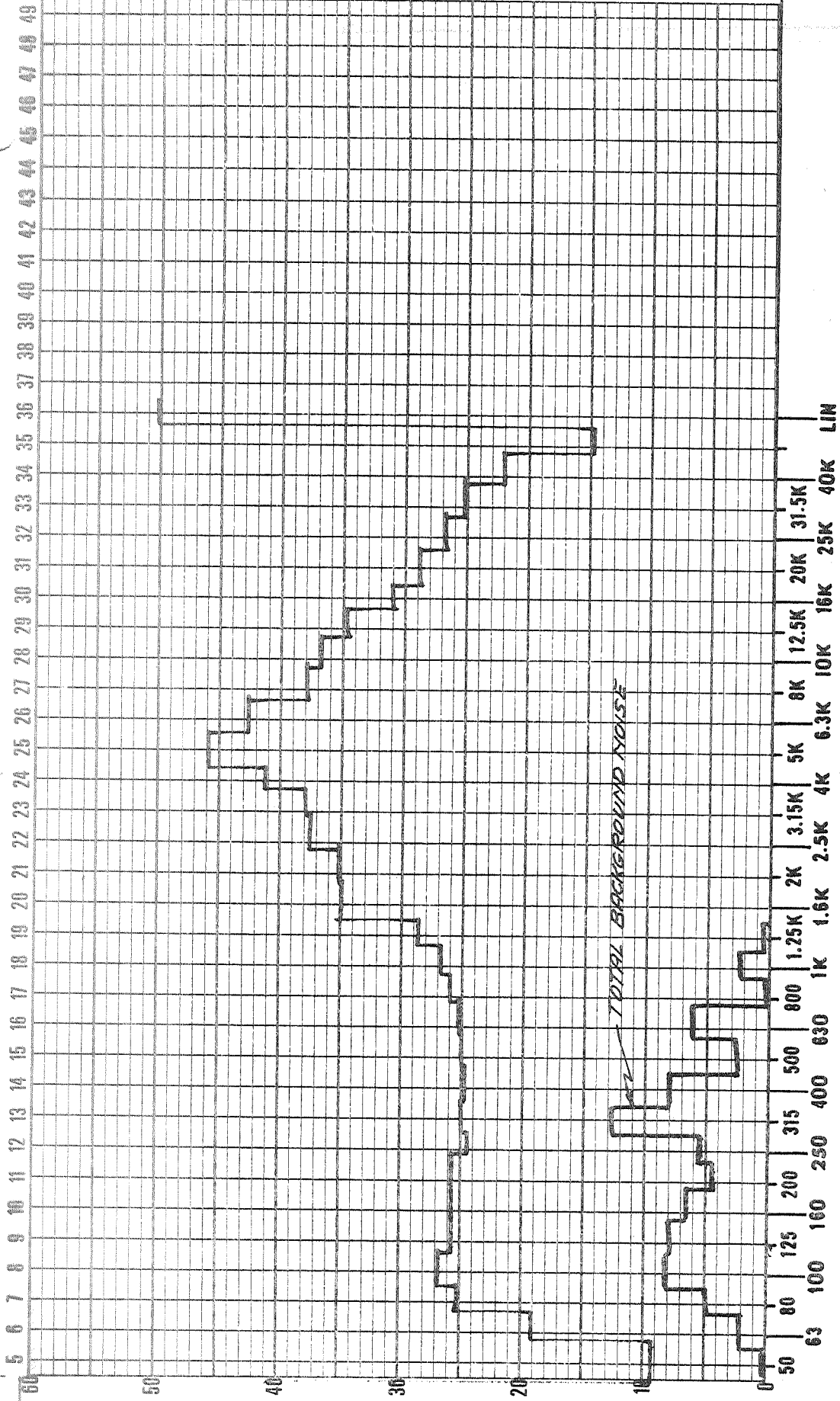
Hamilton
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THIRD-OCTAVE-BAND
ANALYSIS

SHROUD STATIC
 BLADE ANGLE 45°
 TIP SPEED 700 FT/SEC
 MICROPHONE LOCATION 10' 67 1/2°

Figure 84C PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER: 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49

INTEGRATION TIME: 1/8 1/4 1/2 1 2 4 8 16 32

RELATIVE LEVEL IN DB: 50 40 30 20 10 0

I.D. NO. *RUN 5*

FOR ABSOLUTE LEVEL ADD 60 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

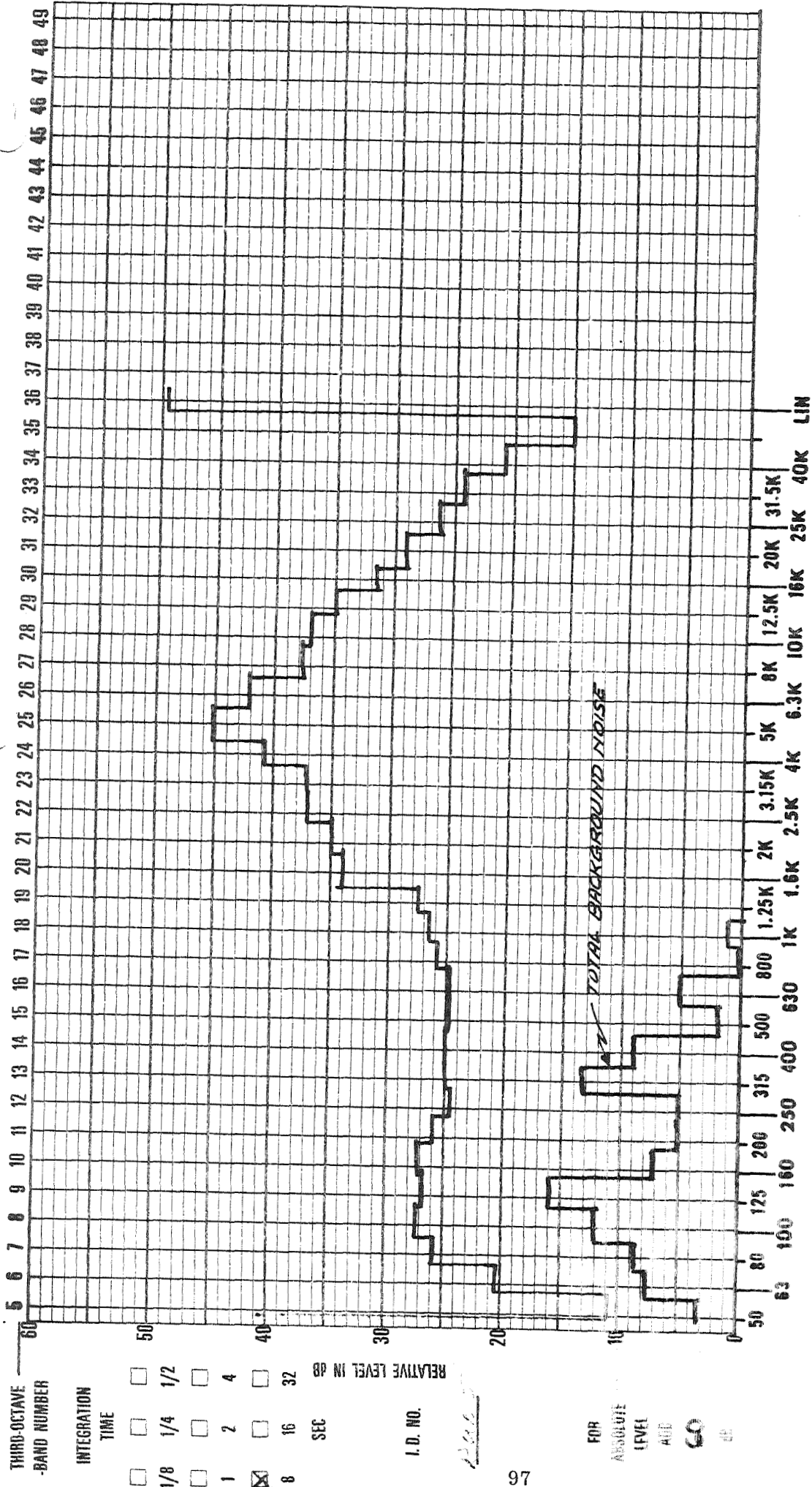
Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

SHROUD STATIC
 BLADE ANGLE 45°
 TIP SPEED 700 FT/SEC
 MICROPHONE LOCATION 10' 90°

Figure 85C PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND ANALYSIS

SHROUD STATIC
BLADE ANGLE 45°
TIP SPEED 700 FT/SEC
MICROPHONE LOCATION 10' 112.1/2°

Figure 86c PROP-FAN MODEL NOISE

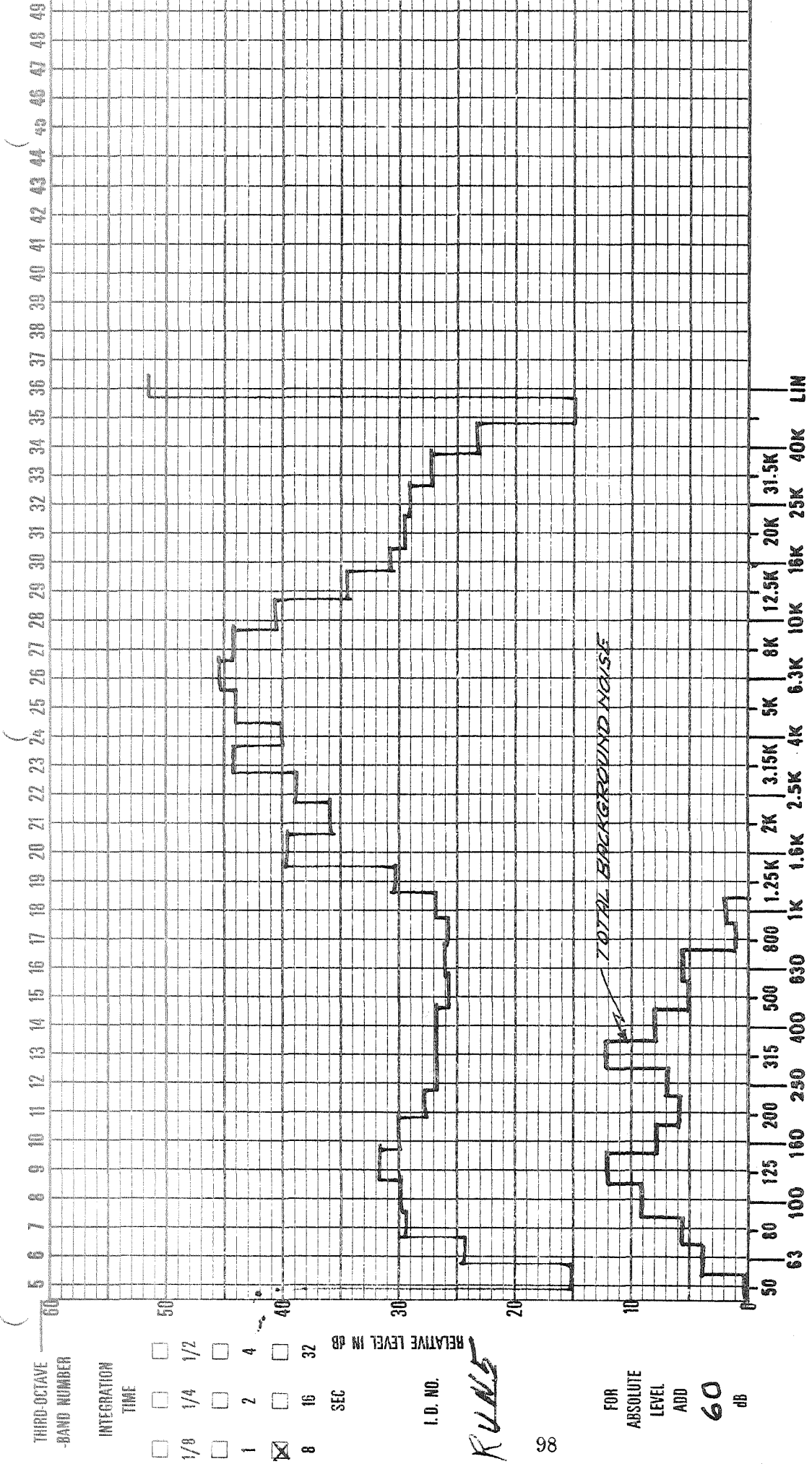
THIRD-OCTAVE -BAND NUMBER: 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49

INTEGRATION TIME:
 1/8
 1/4
 1/2
 1
 2
 4
 8
 16
 32
 SEC

RELATIVE LEVEL IN DB

I.D. NO. 2245

FOR ABSOLUTE LEVEL ADD 60 DB



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD STATIC
 BLADE ANGLE 45°
 TIP SPEED 700 FT/SEC
 MICROPHONE LOCATION 10' 135°

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 THIRD-OCTAVE-BAND ANALYSIS

Figure 87C-PROP-FAN MODEL NOISE

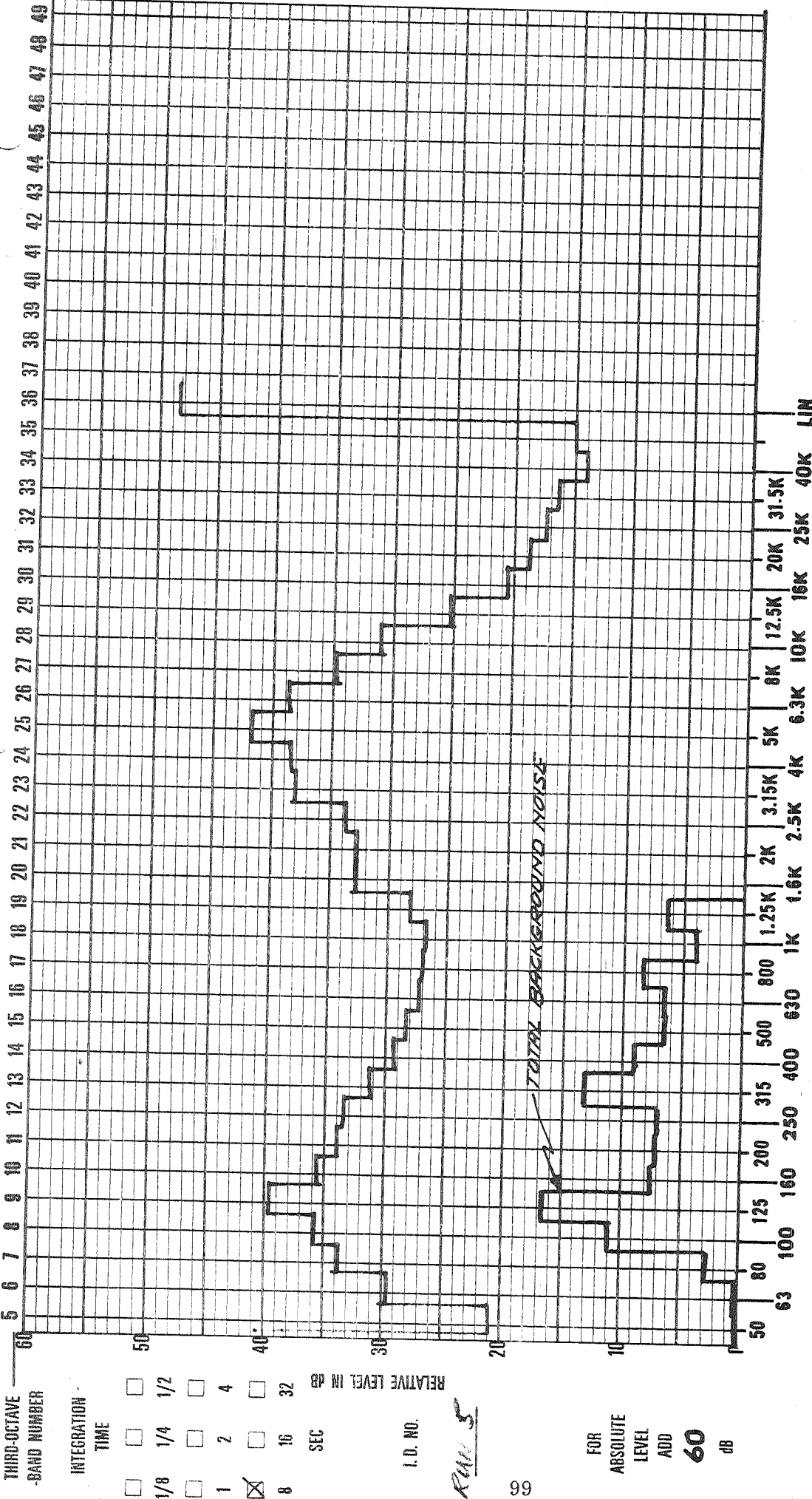
THIRD-OCTAVE-BAND NUMBER: 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49

INTEGRATION TIME:
 1/8
 1/4
 1/2
 1
 2
 4
 8
 16
 32
 SEC

RELATIVE LEVEL IN DB

I.D. NO. RUN 5

FOR ABSOLUTE LEVEL ADD 60 dB



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

RELATIVE LEVEL IN DB

I.D. NO.

Real 5

96

FOR
ABSOLUTE
LEVEL
ADD
60
dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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Standard

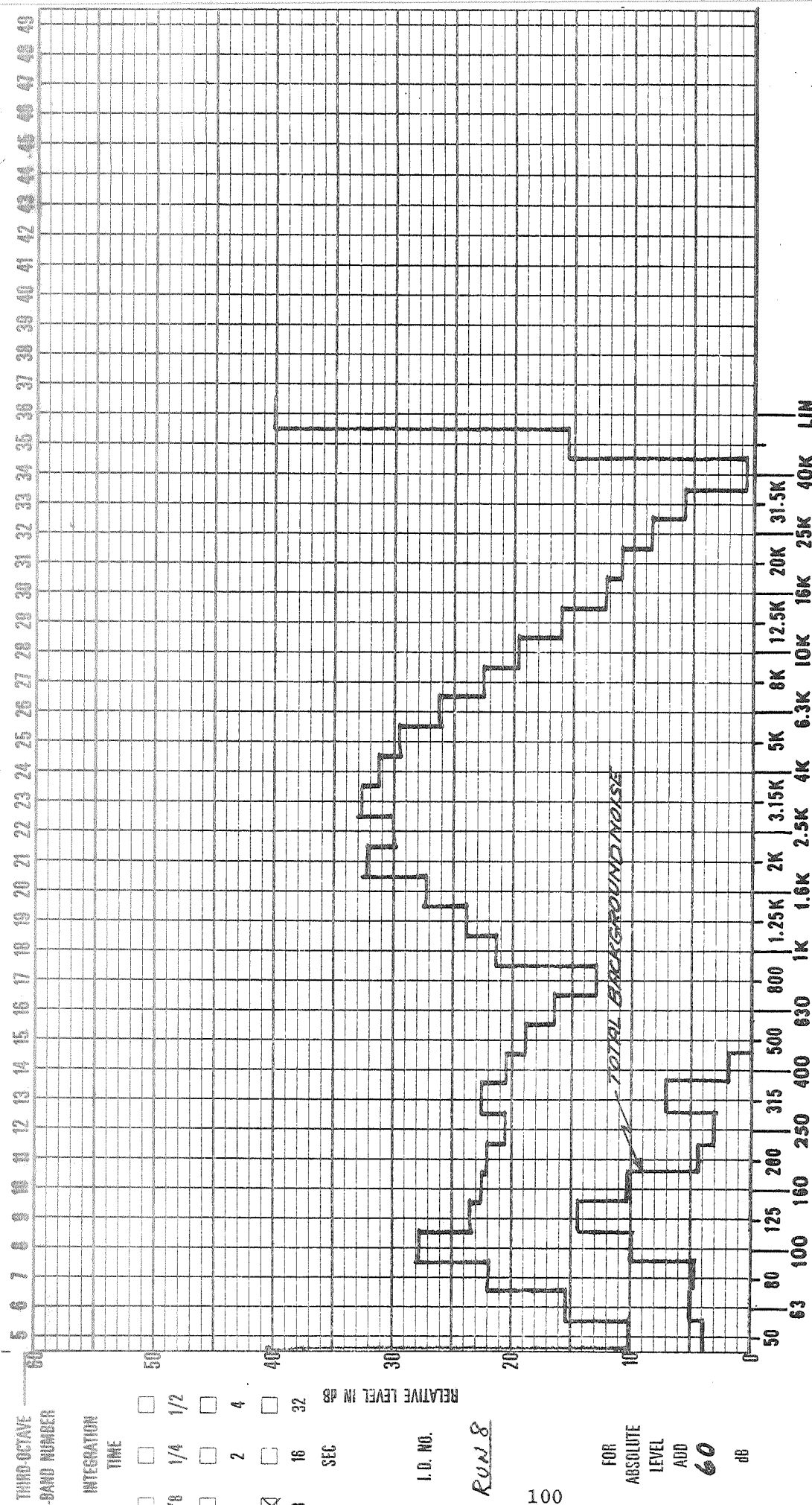
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THIRD-OCTAVE-BAND
ANALYSIS

SHROUD STATIC
 BLADE ANGLE 45°
 TIP SPEED 700 FT/SEC
 MICROPHONE LOCATION 10' 157 1/2°

Figure 88c PROP-FAN MODEL NOISE

SHROUD STATIC
BLADE ANGLE 50°
TIP SPEED 500 FT/SEC
MICROPHONE LOCATION 13 1/2 90° ON GROUND



THIRD-OCTAVE-BAND CENTER FREQUENCY IN Hz

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THIRD-OCTAVE-BAND
ANALYSIS

Figure 89c PROP-FAN MODEL NOISE

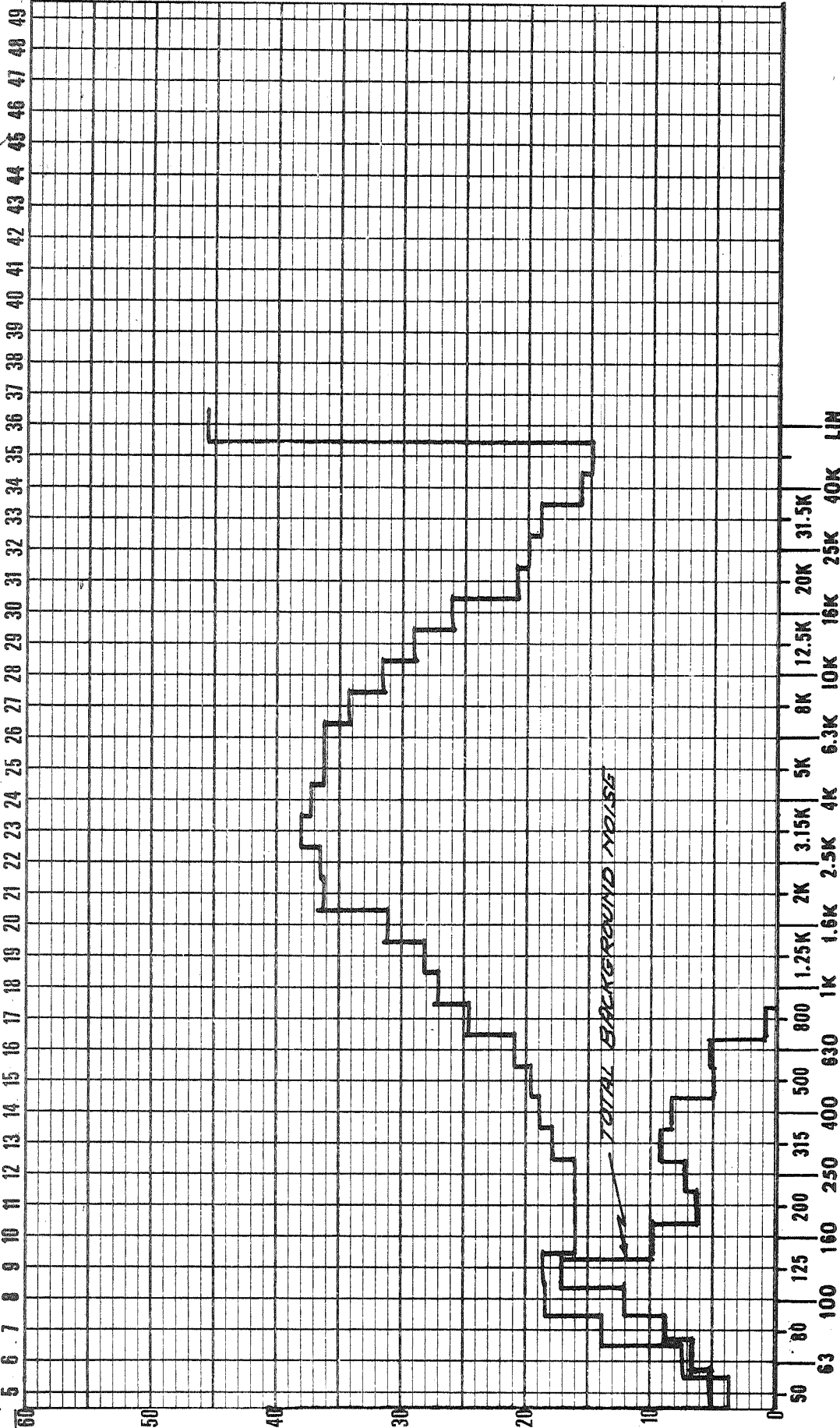
- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32
- 40

I.D. NO.

RUN 8

100

FOR
ABSOLUTE
LEVEL
ADD
60
dB



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

RELATIVE LEVEL IN DB

I.D. NO.

RUN 8

FOR ABSOLUTE LEVEL ADD

60 DB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND ANALYSIS

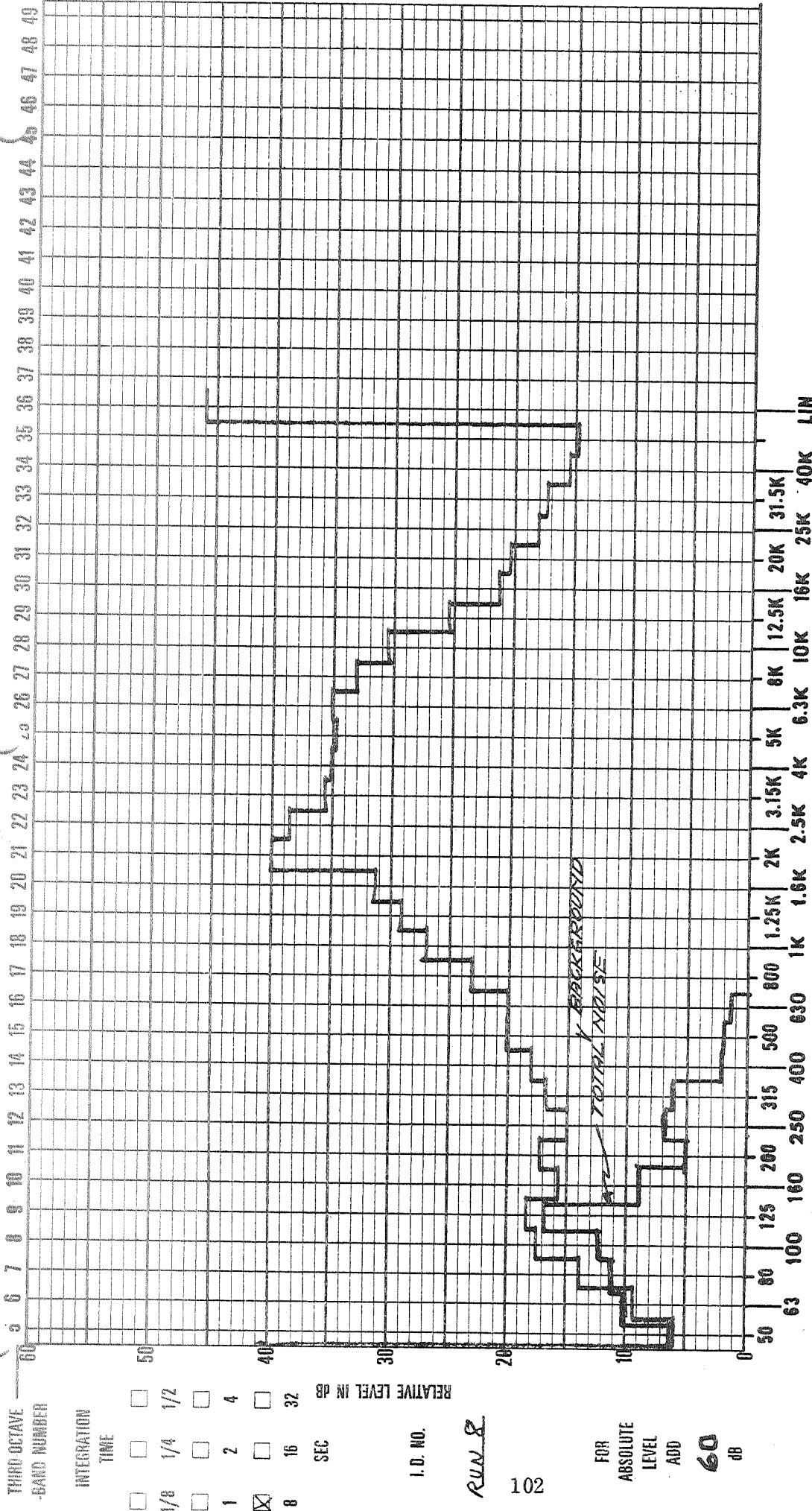
SHROUD STATIC

BLADE ANGLE 50°

TIP SPEED 500 FT/SEC

MICROPHONE LOCATION 10' 22 1/2°

Figure 90c PROP-FAN MODEL NOISE



THIRD OCTAVE BAND NUMBER 60
 INTEGRATION TIME
 50
 1/4
 1/2
 4
 2
 8
 16
 32
 SEC
 I.D. NO. RUN 8

102

FOR ABSOLUTE LEVEL ADD **60** dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

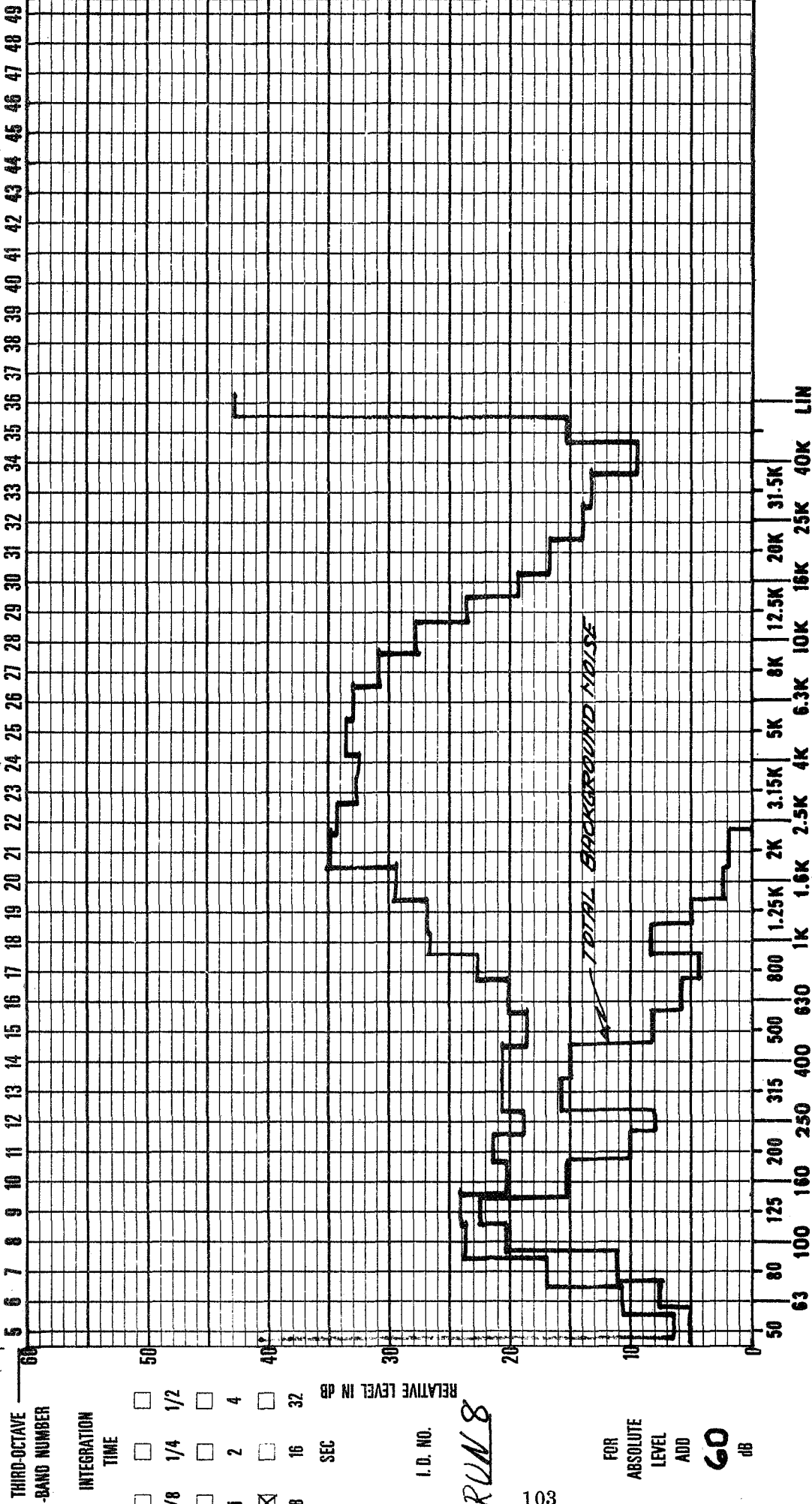
Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

SHROUD STATIC
 BLADE ANGLE 50°
 TIP SPEED 500 FT/SEC
 MICROPHONE LOCATION 10' 45°

Figure 9/c PROP-FAN MODEL NOISE



SHROUD STATIC
 BLADE ANGLE 50°
 TIP SPEED 500 FT/SEC
 MICROPHONE LOCATION 10' 67 1/2°

THIRD-OCTAVE-BAND CENTER FREQUENCY IN Hz

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THIRD-OCTAVE-BAND
ANALYSIS

Figure 92C PROP-FAN MODEL NOISE

THIRD-OCTAVE-BAND NUMBER

INTEGRATION TIME

1/8

1/4

1/2

2

4

8

16

32

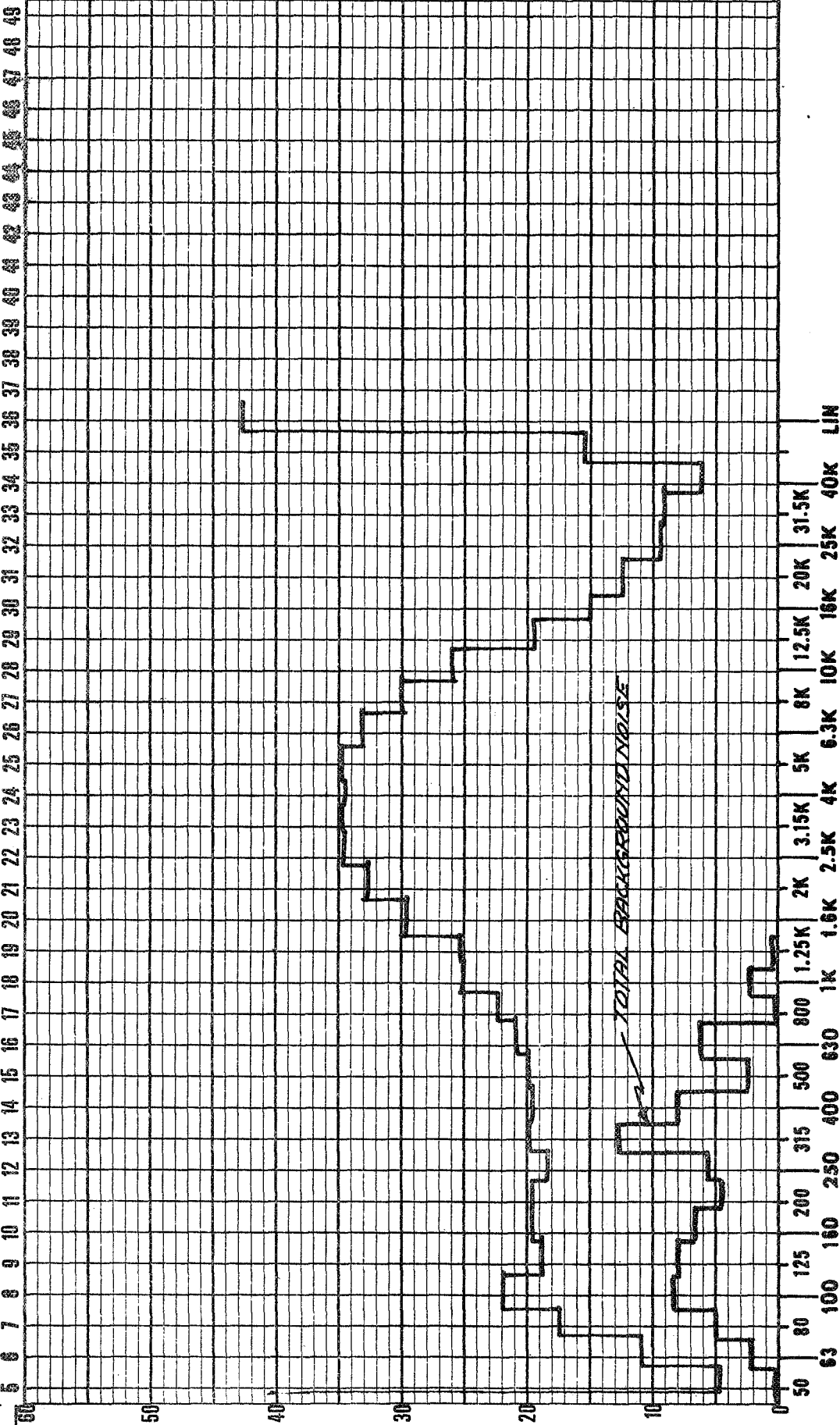
SEC

I.D. NO.

RUN 8

FOR ABSOLUTE LEVEL ADD

60 dB



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

RELATIVE LEVEL IN dB

I.D. NO.

FOR ABSOLUTE LEVEL ADD 60 dB

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

PAR

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD STATIC

BLADE ANGLE 50°

TIP SPEED 500 FT/SEC

MICROPHONE LOCATION 10' 90°

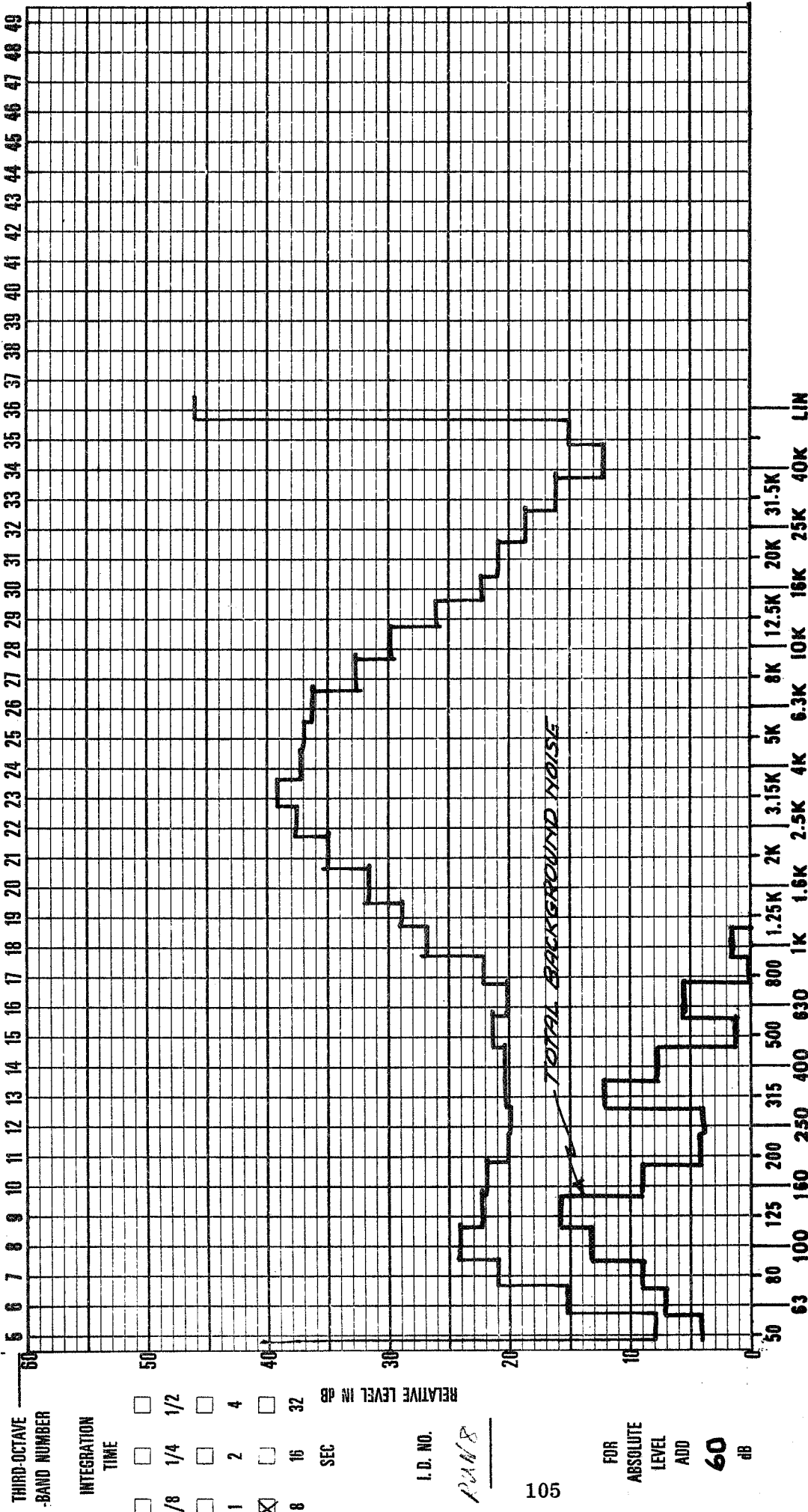
Hamilton Standard

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THIRD-OCTAVE-BAND ANALYSIS

Figure 92C PROP-FAN MODEL NOISE

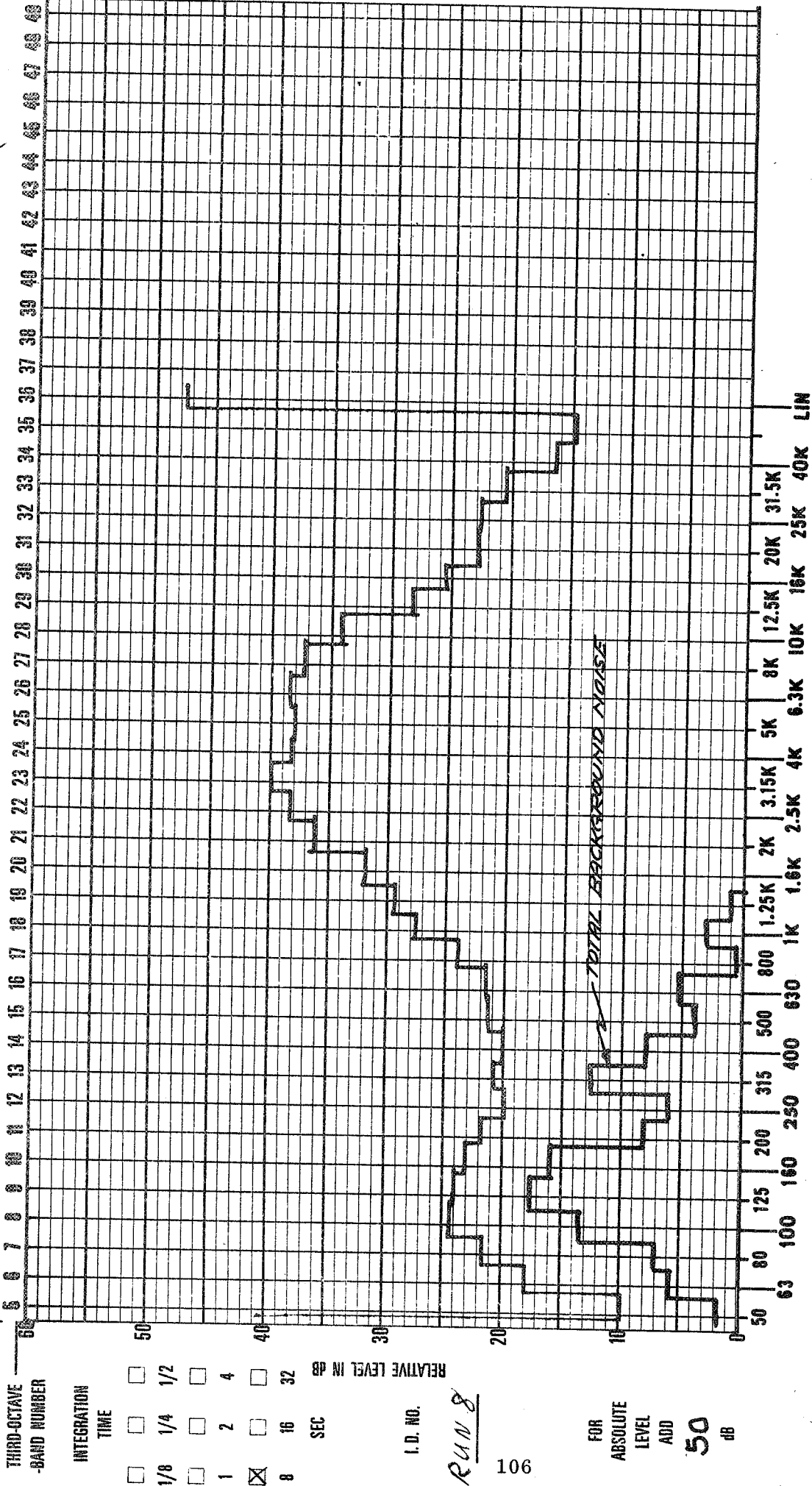
SHROUD STATIC
BLADE ANGLE 50°
TIP SPEED 500 FT/SEC
MICROPHONE LOCATION 10' 112 1/2°



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND ANALYSIS

Figure 94 PROP-FAN MODEL NOISE



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

- 1/8
 - 1/4
 - 1/2
 - 1
 - 2
 - 4
 - 8
 - 16
 - 32
- RELATIVE LEVEL IN DB

I.D. NO.

Run 8

FOR
ABSOLUTE
LEVEL
ADD
50
dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

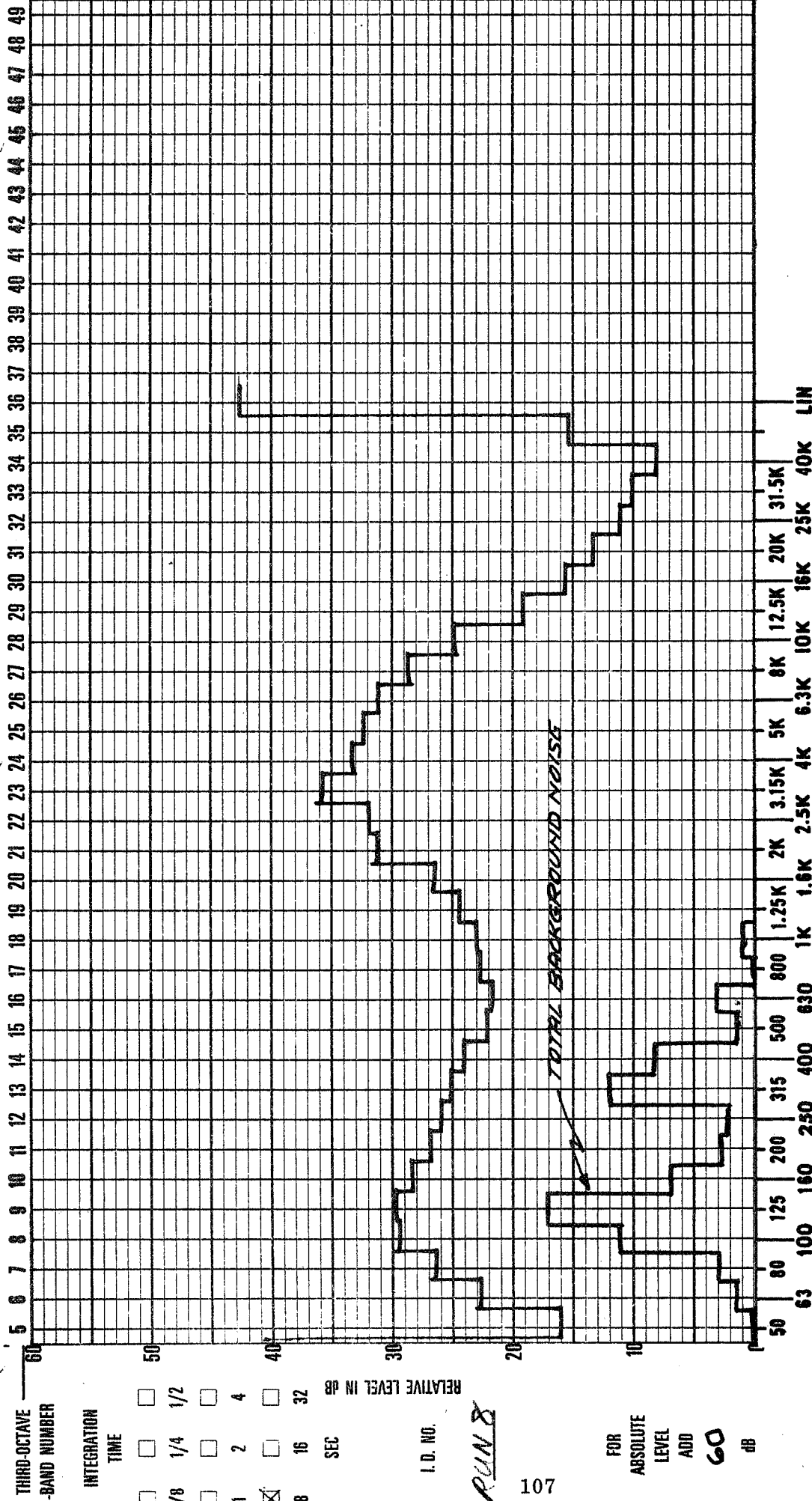
Hamilton
Standard

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THIRD-OCTAVE-BAND
ANALYSIS

SHROUD STATIC
BLADE ANGLE 50°
TIP SPEED 500 FT/SEC
MICROPHONE
LOCATION 10' 135°

Figure 95C PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD STATIC
 BLADE ANGLE 50
 TIP SPEED 500 FT/SEC
 MICROPHONE LOCATION 10' 15" 1/2

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

Figure 96C PROP-FAN MODEL NOISE

THIRD-OCTAVE-BAND NUMBER

INTEGRATION TIME

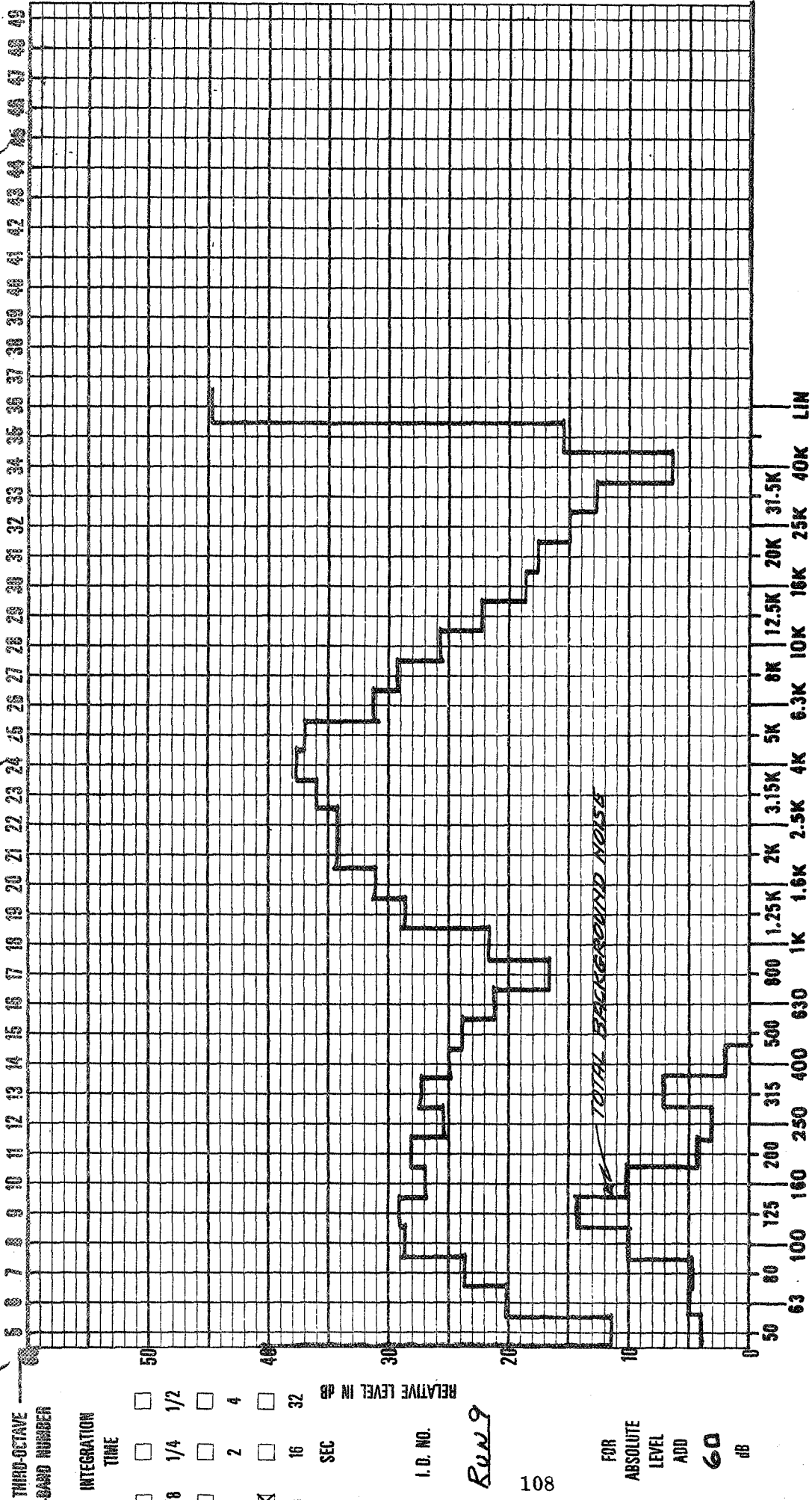
- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

RELATIVE LEVEL IN dB

I.D. NO.

RUN 8

FOR ABSOLUTE LEVEL ADD 60 dB



THIRD-OCTAVE BAND NUMBER 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49

INTEGRATION TIME
 1/8
 1/4
 1/2
 1
 2
 4
 8
 16
 32
 SEC

RELATIVE LEVEL IN DB

I.D. NO. *Run 9*

FOR ABSOLUTE LEVEL ADD **60** dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

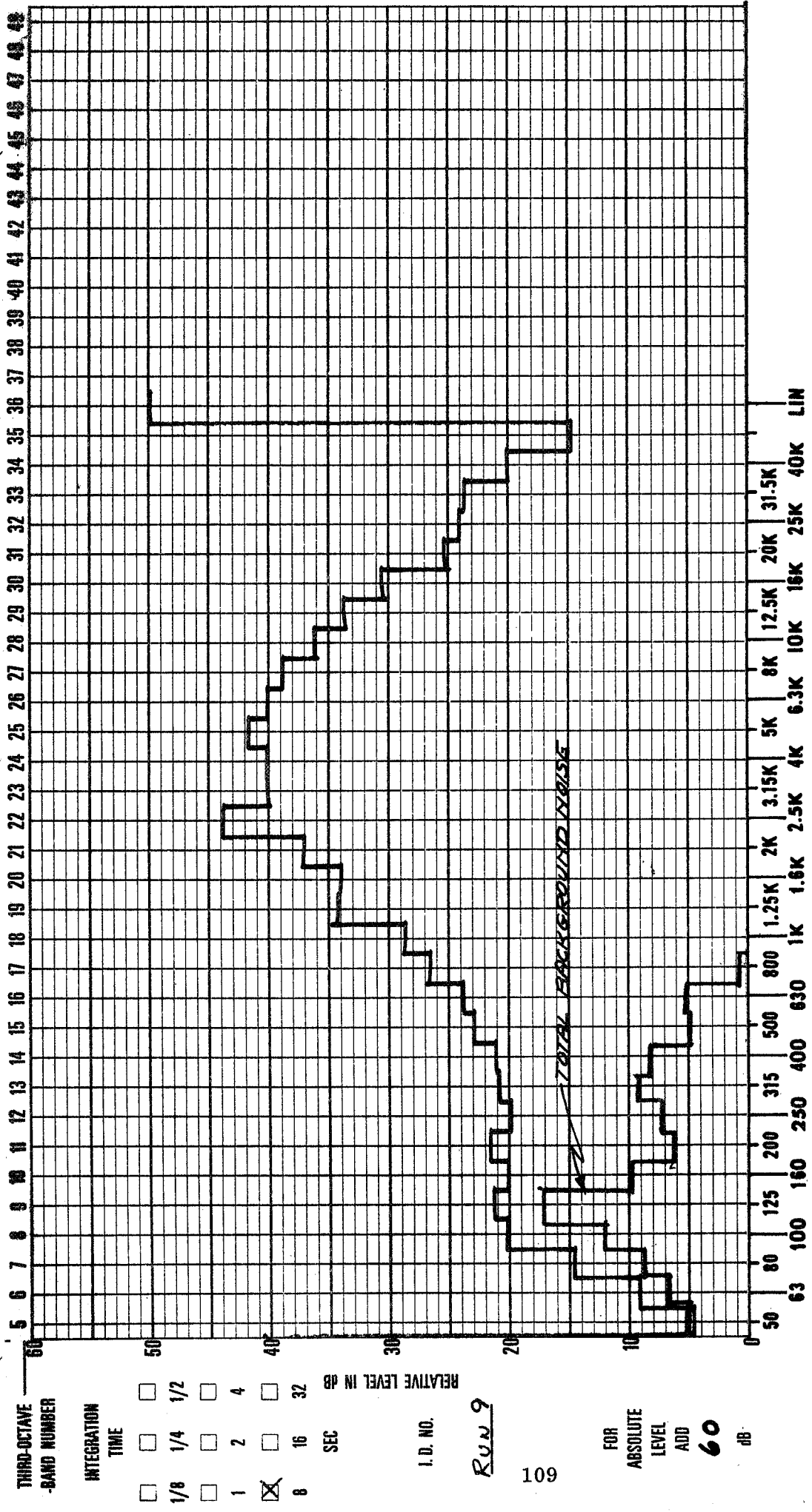
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THIRD-OCTAVE-BAND ANALYSIS

SHROUD STATIC
 BLADE ANGLE 50°
 TIP SPEED 600 FT/SEC
 MICROPHONE LOCATION 1' 13 1/2 90° ON GROUND

Figure 97C PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD STATIC
 BLADE ANGLE 50°
 TIP SPEED 600 FT/SEC
 MICROPHONE LOCATION 10' 22 1/2"

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THIRD-OCTAVE-BAND ANALYSIS

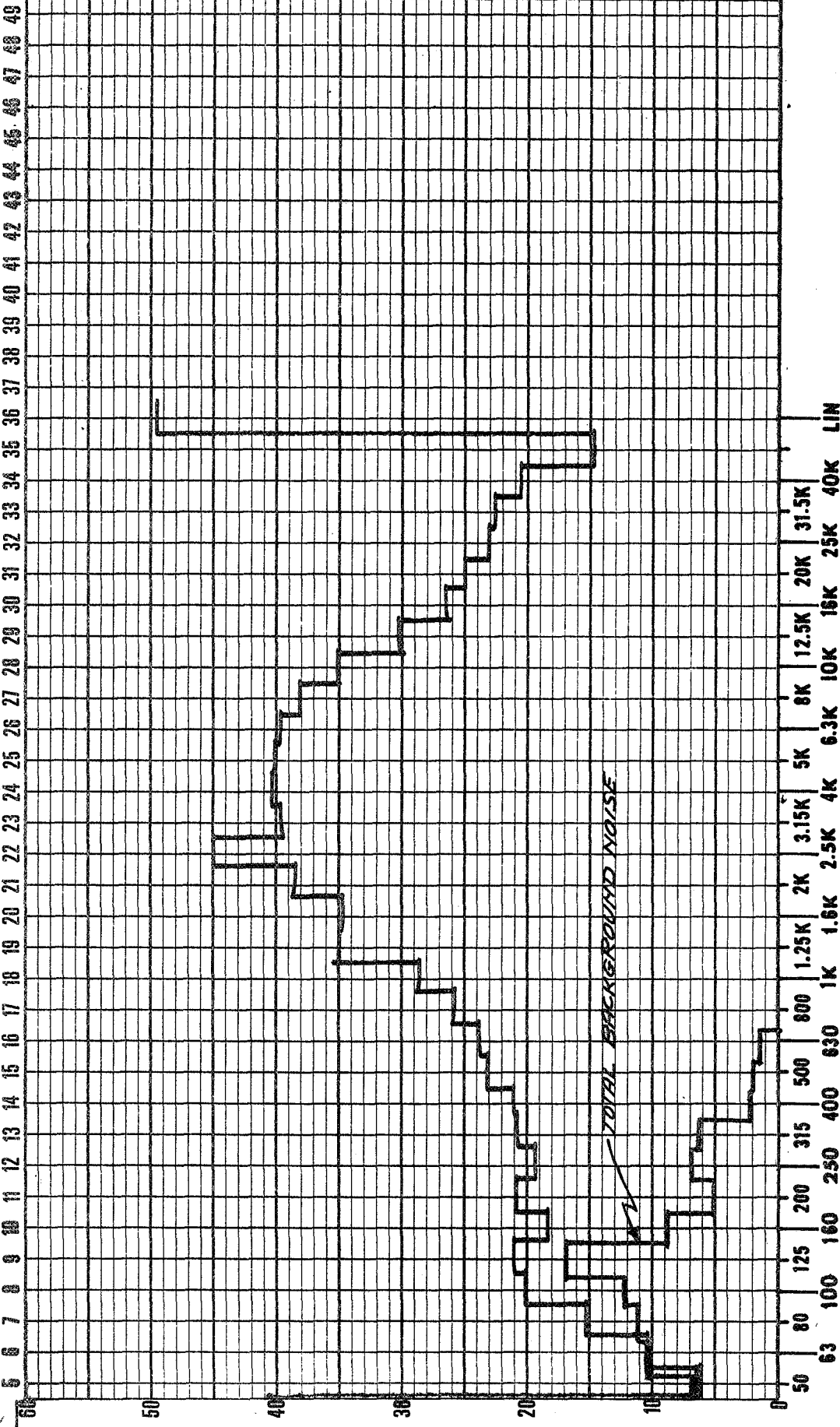
Figure 98C PROP-FAN MODEL NOISE

THIRD-OCTAVE-BAND NUMBER
 INTEGRATION TIME
 1/8
 1/4
 1/2
 1
 2
 4
 8
 16
 32
 SEC

I. D. NO.

Run 9

FOR ABSOLUTE LEVEL ADD
 60 dB



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

RELATIVE LEVEL IN dB

I.D. NO.

Run 9

110

FOR
ABSOLUTE
LEVEL
ADD
60
dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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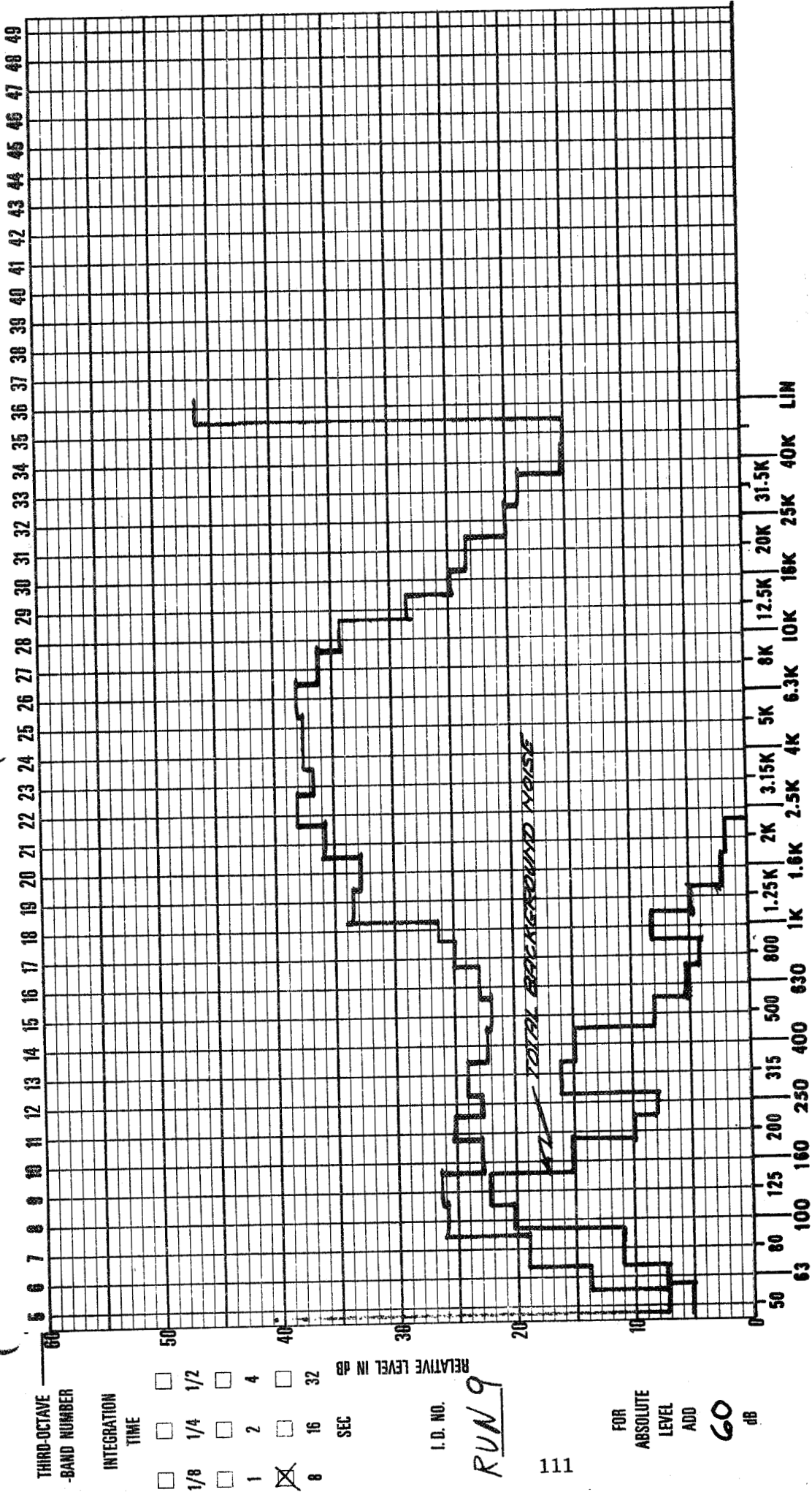


THIRD-OCTAVE-BAND
ANALYSIS

SHROUD STATIC
 BLADE ANGLE 50°
 TIP SPEED 600 FT/SEC
 MICROPHONE LOCATION 10' 45°

Figure 79C PROP-FAN MODEL NOISE

SHROUD STATIC
BLADE ANGLE 50°
TIP SPEED 600 FT/SEC
MICROPHONE LOCATION 10' 67 1/2°



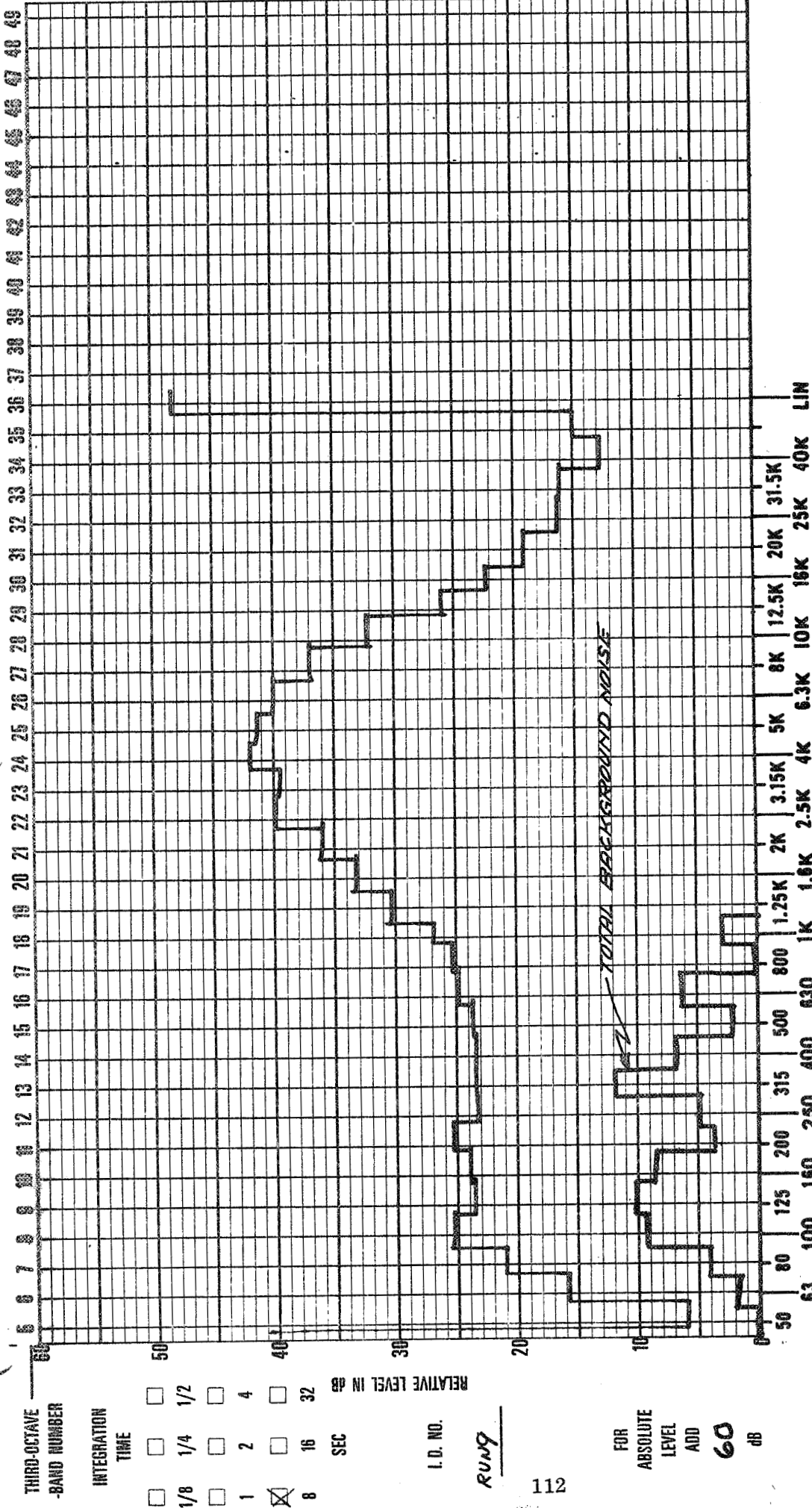
THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

Figure 1000 PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

RELATIVE LEVEL IN dB

I.D. NO.

RUN9

FOR ABSOLUTE LEVEL ADD 60 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

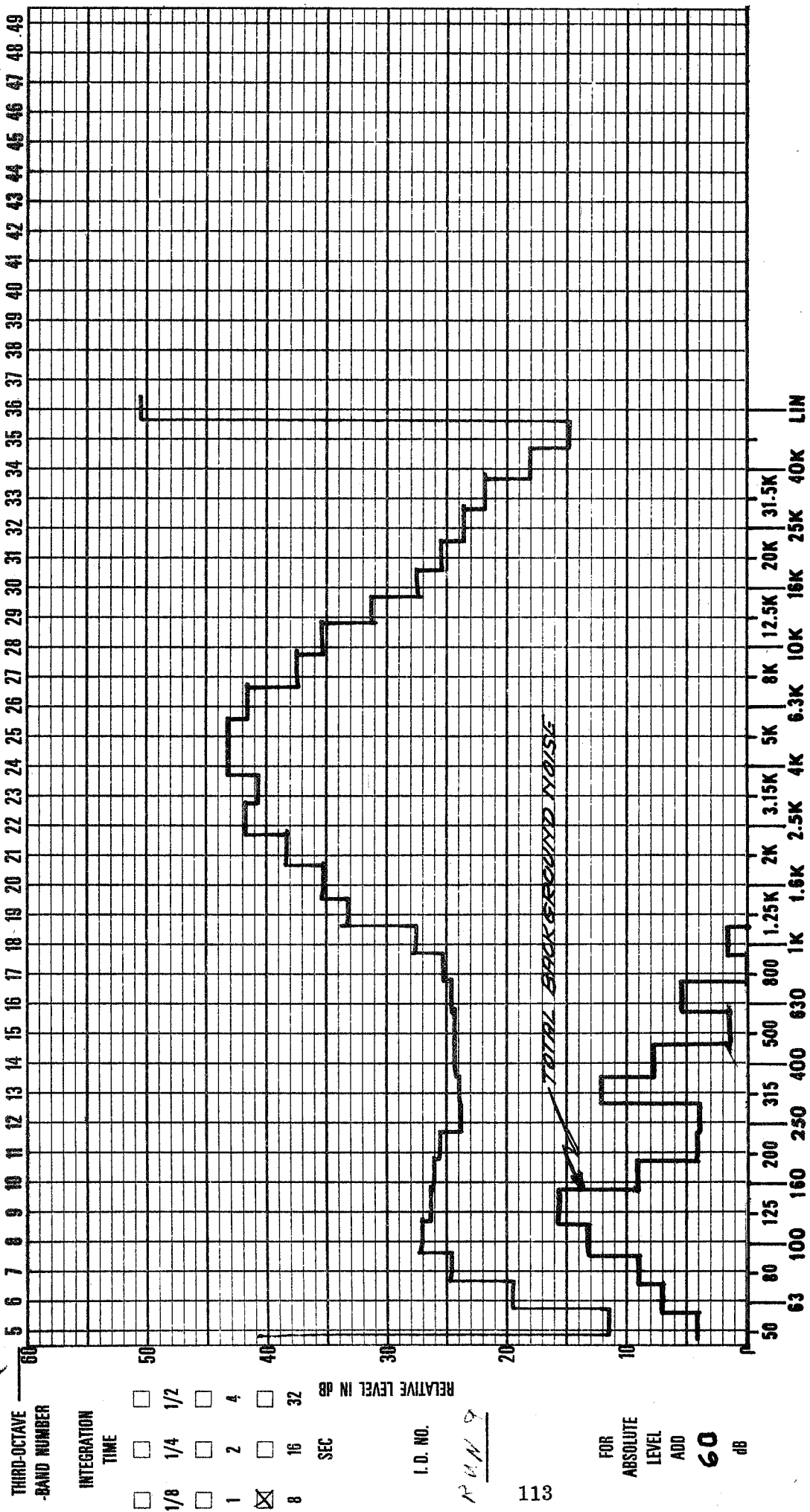
SHROUD STATIC
 BLADE ANGLE 50°
 TIP SPEED 600 FT/SEC
 MICROPHONE LOCATION 10' 90°

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THIRD-OCTAVE-BAND ANALYSIS

Figure 10/c PROP-FAN MODEL NOISE



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

RELATIVE LEVEL IN DB

I.D. NO.

1009

FOR
ABSOLUTE
LEVEL
ADD
60
dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

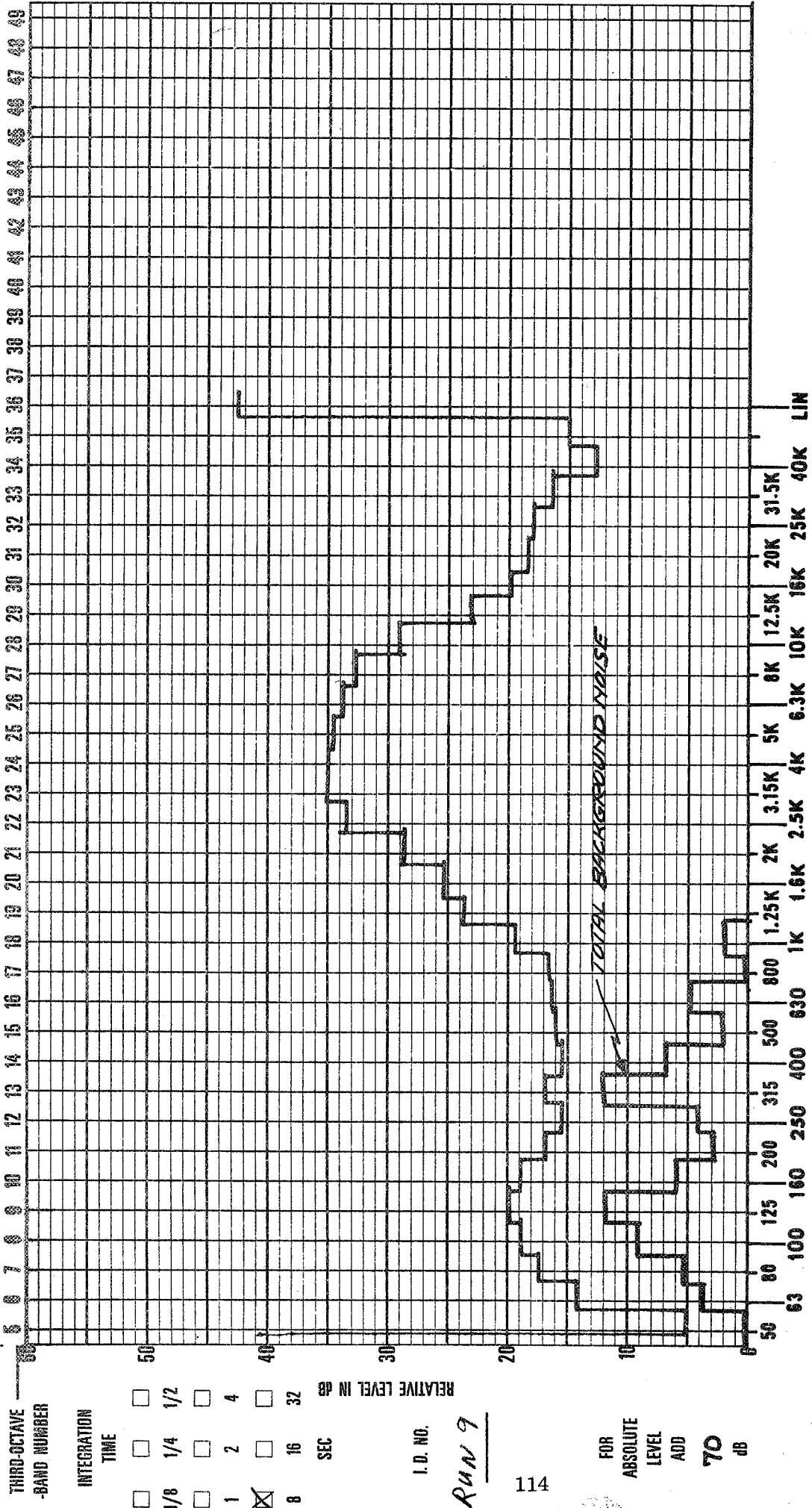
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THIRD-OCTAVE-BAND
ANALYSIS

SHROUD STATIC
BLADE ANGLE 50°
TIP SPEED 600 FT/SEC
MICROPHONE LOCATION 10' 112 1/2°

Figure 102C PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

RELATIVE LEVEL IN DB

I.D. NO.

RUN 9

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

FOR ABSOLUTE LEVEL ADD 70 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD STATIC

BLADE ANGLE 50°

TIP SPEED 600 FT/SEC

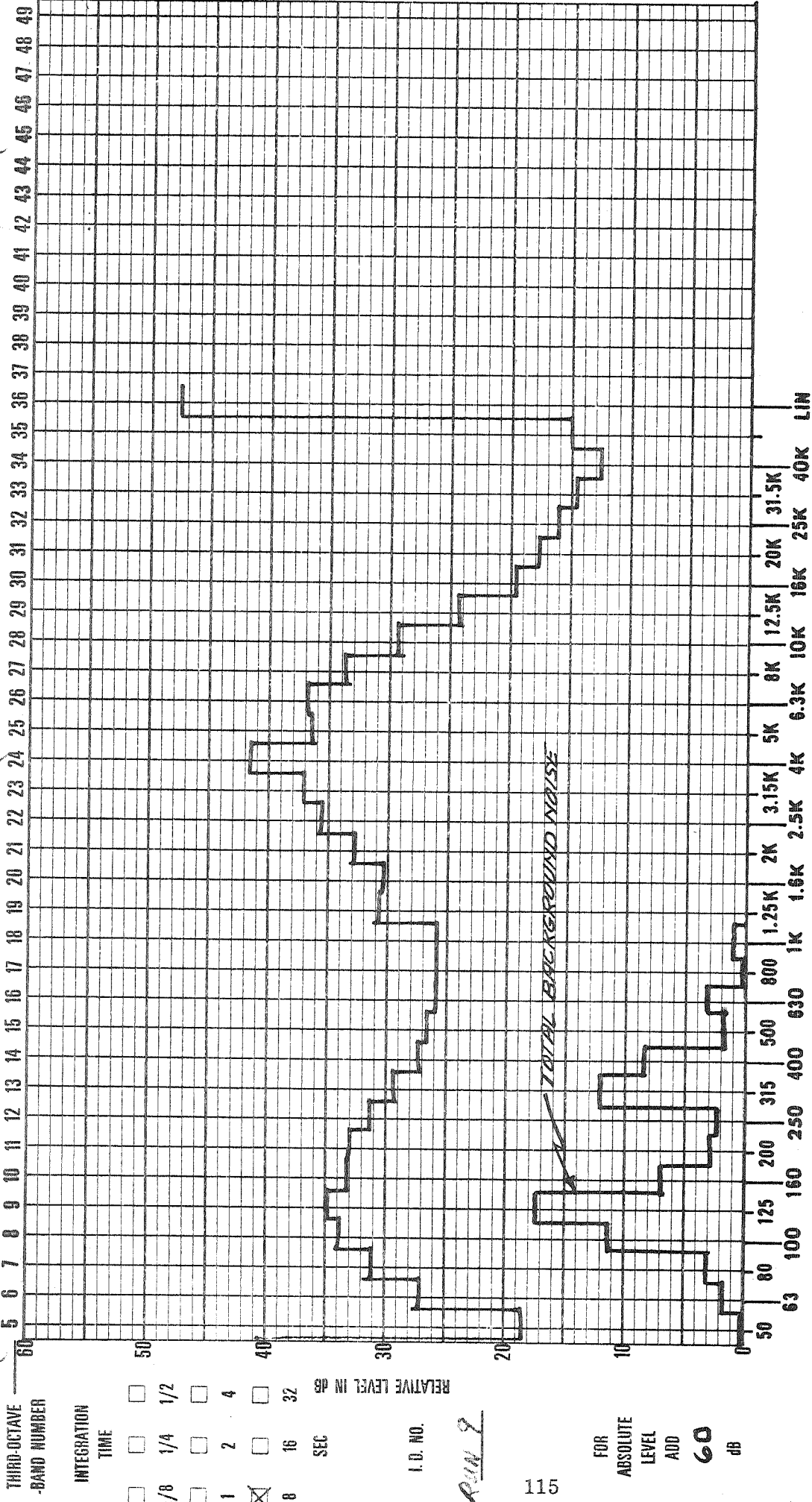
MICROPHONE LOCATION 10' 135°

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

Figure 103C PROP-FAN MODEL NOISE



HSER 5787

SHROUD STATIC
 BLADE ANGLE 50°
 TIP SPEED 600 FT/SEC
 MICROPHONE LOCATION 10' 15 1/2"

THIRD-OCTAVE BAND CENTER FREQUENCY IN HZ

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 THIRD-OCTAVE-BAND ANALYSIS

- THIRD-OCTAVE BAND NUMBER
- INTEGRATION TIME
- 1/8
 - 1/4
 - 1/2
 - 1
 - 2
 - 4
 - 8
 - 16
 - 32
- SEC

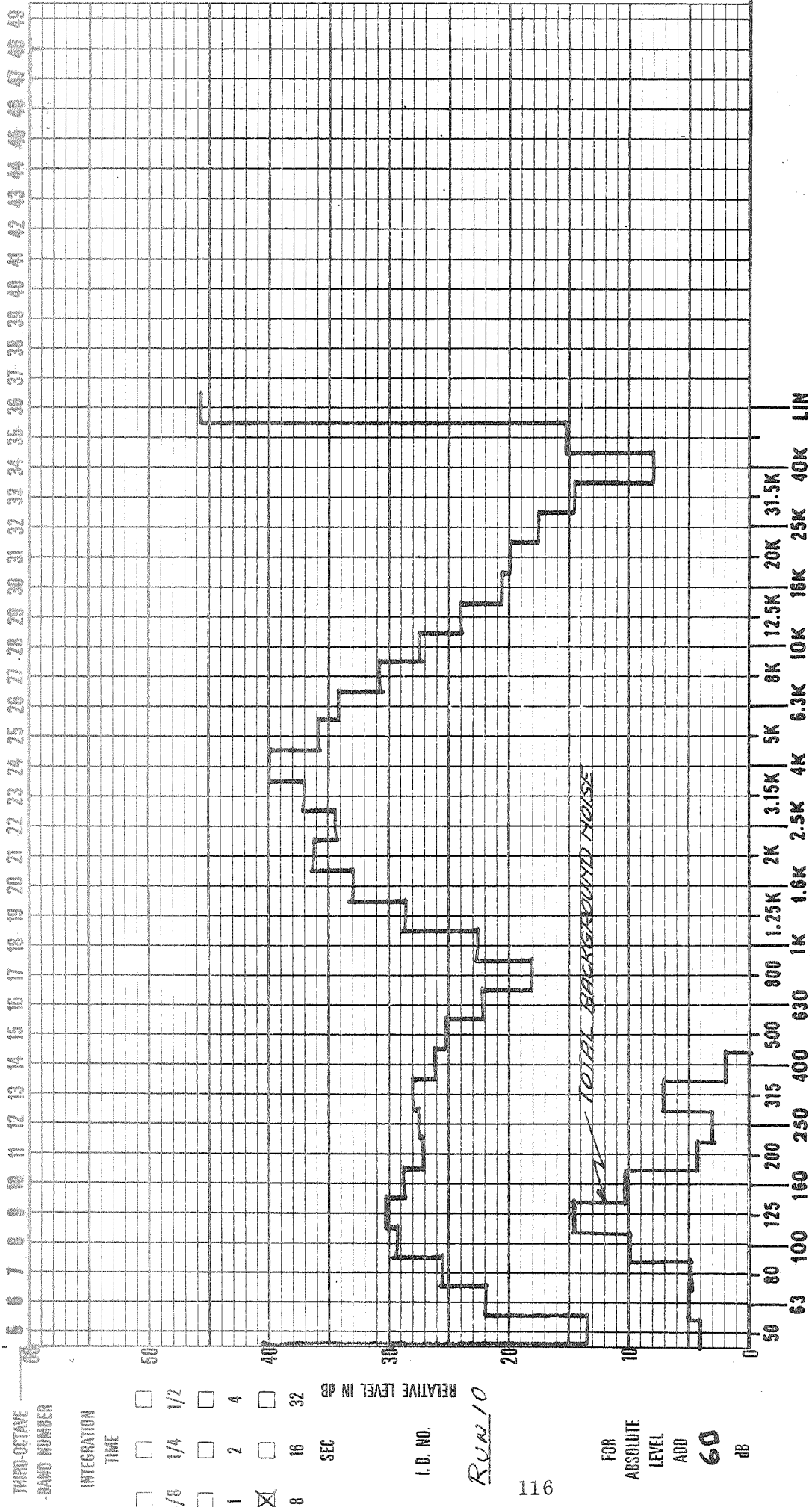
RELATIVE LEVEL IN DB

I. D. NO.

Run 9

FOR ABSOLUTE LEVEL ADD 60 dB

Figure 154C PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49

INTEGRATION TIME
 1/8
 1/4
 1/2
 2
 4
 8
 16
 32
 SEC

I.D. NO. RUN 10

FOR ABSOLUTE LEVEL ADD 60 dB

SHROUD STATIC
 BLADE ANGLE 50
 TIP SPEED 626 FT/SEC
 MICROPHONE LOCATION 13 1/2' 90° ON GROUND

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

50 63 80 100 125 160 200 250 315 400 500 630 800 1K 1.25K 1.6K 2K 2.5K 3.15K 4K 5K 6.3K 8K 10K 12.5K 16K 20K 25K 31.5K 40K LIN

RELATIVE LEVEL IN DB

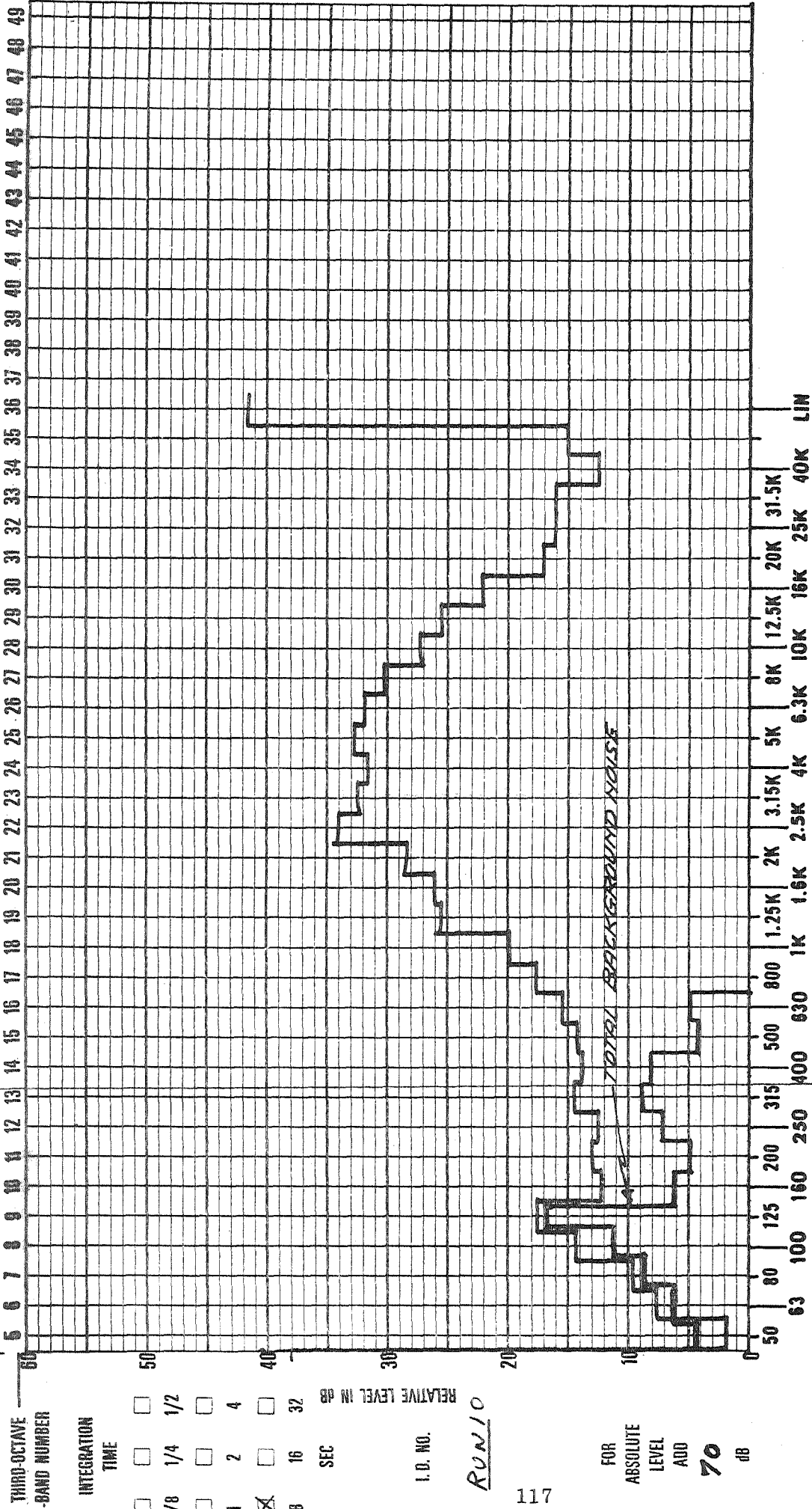
0 10 20 30 40 50

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THIRD-OCTAVE-BAND ANALYSIS

Figure 1052 PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND NUMBER

INTEGRATION TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

RELATIVE LEVEL IN DB

I.D. NO.

RUN10

FOR ABSOLUTE LEVEL ADD 70 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

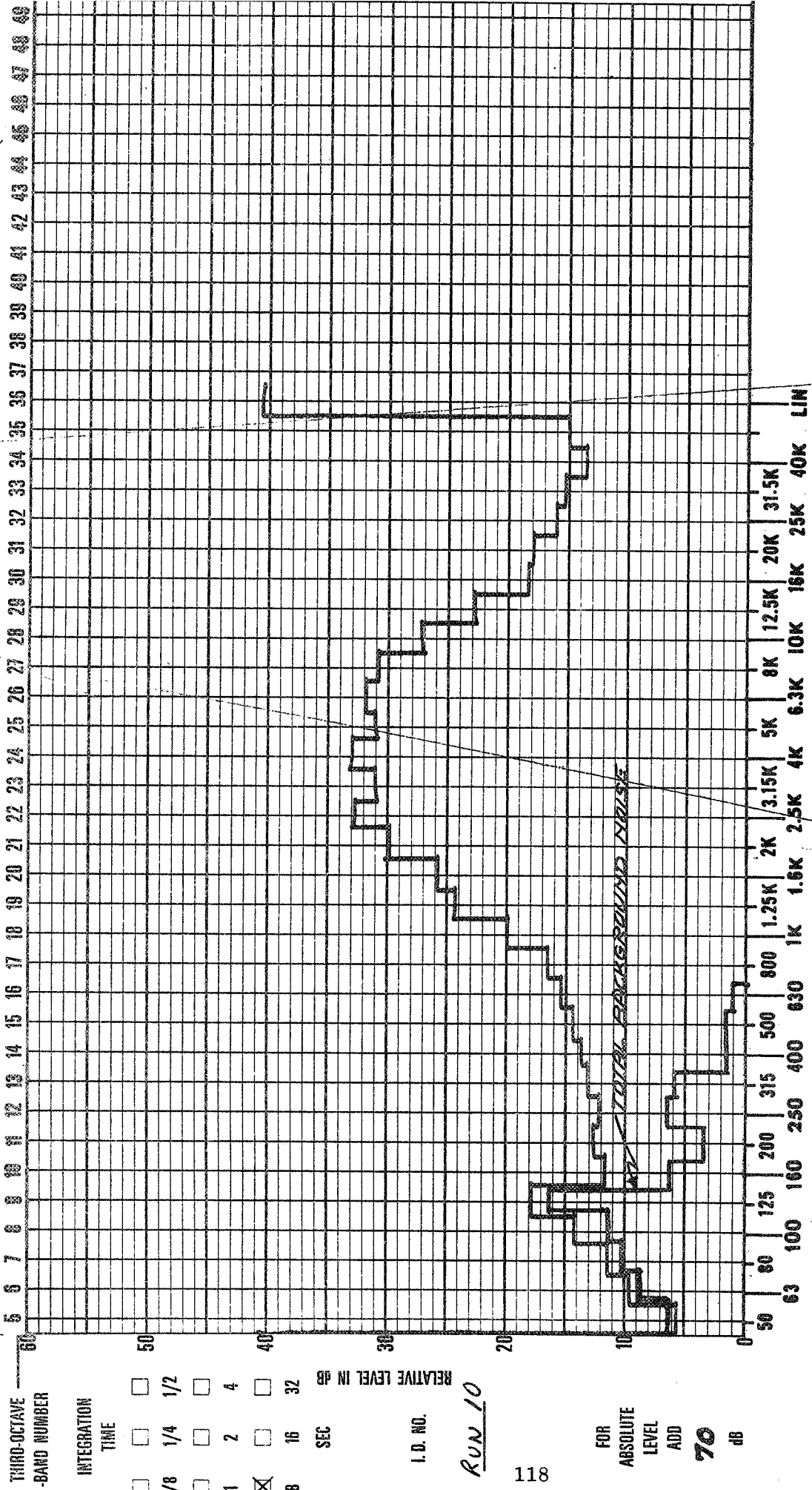
Hamilton Standard

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THIRD-OCTAVE-BAND ANALYSIS

SHROUD STATIC
 BLADE ANGLE .50
 TIP SPEED 626 FT/SEC
 MICROPHONE LOCATION 10' 22 1/2°

Figure 106c PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

- 1/8
 - 1/4
 - 1/2
 - 1
 - 2
 - 4
 - 8
 - 16
 - 32
- SEC

I.D. NO.

RUN 10

FOR ABSOLUTE LEVEL ADD 70 dB

THIRD-OCTAVE BAND CENTER FREQUENCY IN HZ

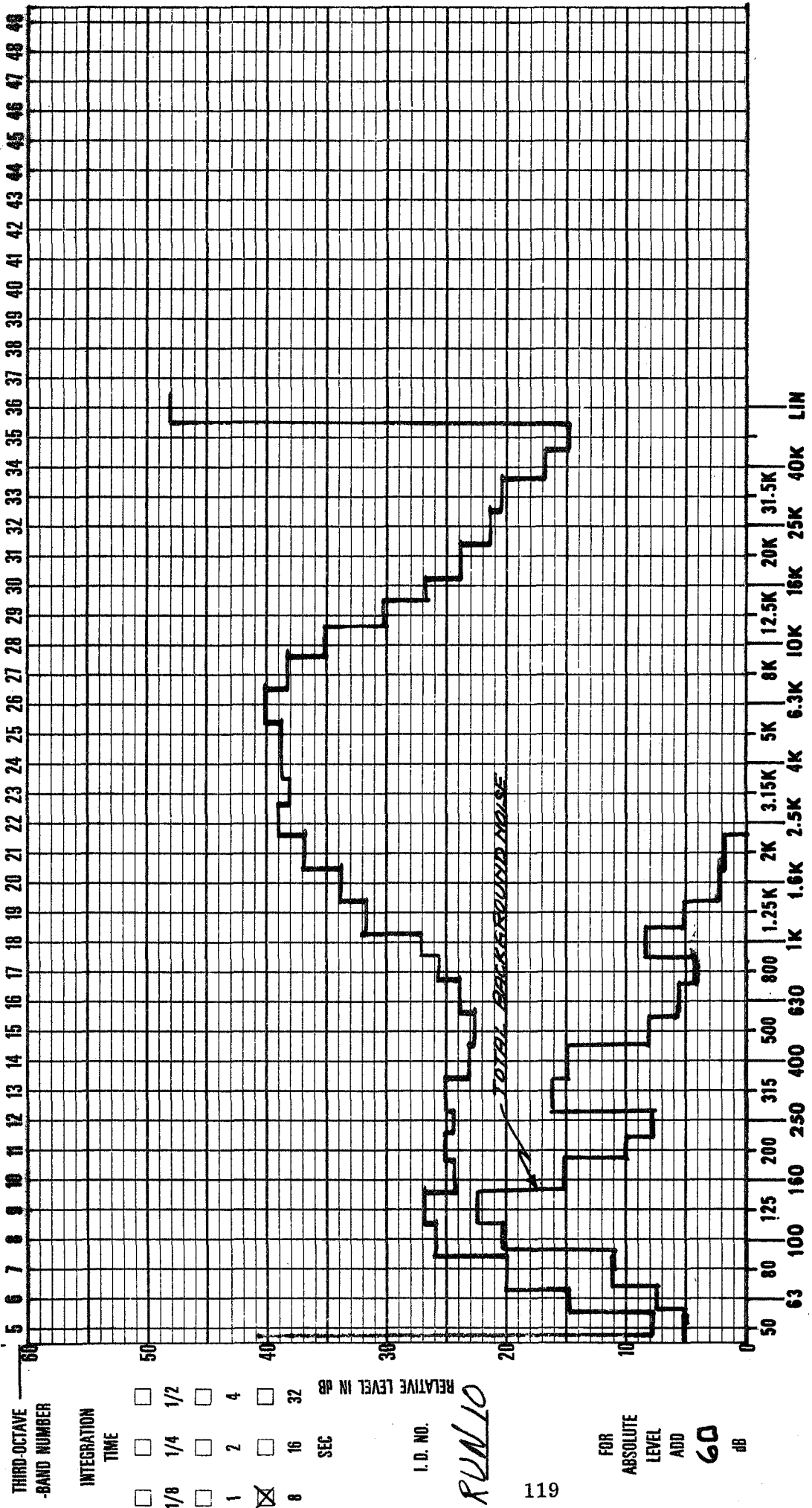
Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

SHROUD STATIC
 BLADE ANGLE 50
 TIP SPEED 626 FT/SEC
 MICROPHONE LOCATION 10' 45°

Figure 107C PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND NUMBER

INTEGRATION TIME

1/8 1/4 1/2 1 2 4 8 16 32

RELATIVE LEVEL IN dB

I.D. NO. **RUN 10**

FOR ABSOLUTE LEVEL ADD **60** dB

SHROUD STATIC

BLADE ANGLE 50

TIP SPEED 626 FT/SEC

MICROPHONE LOCATION 10' 6 1/2"

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

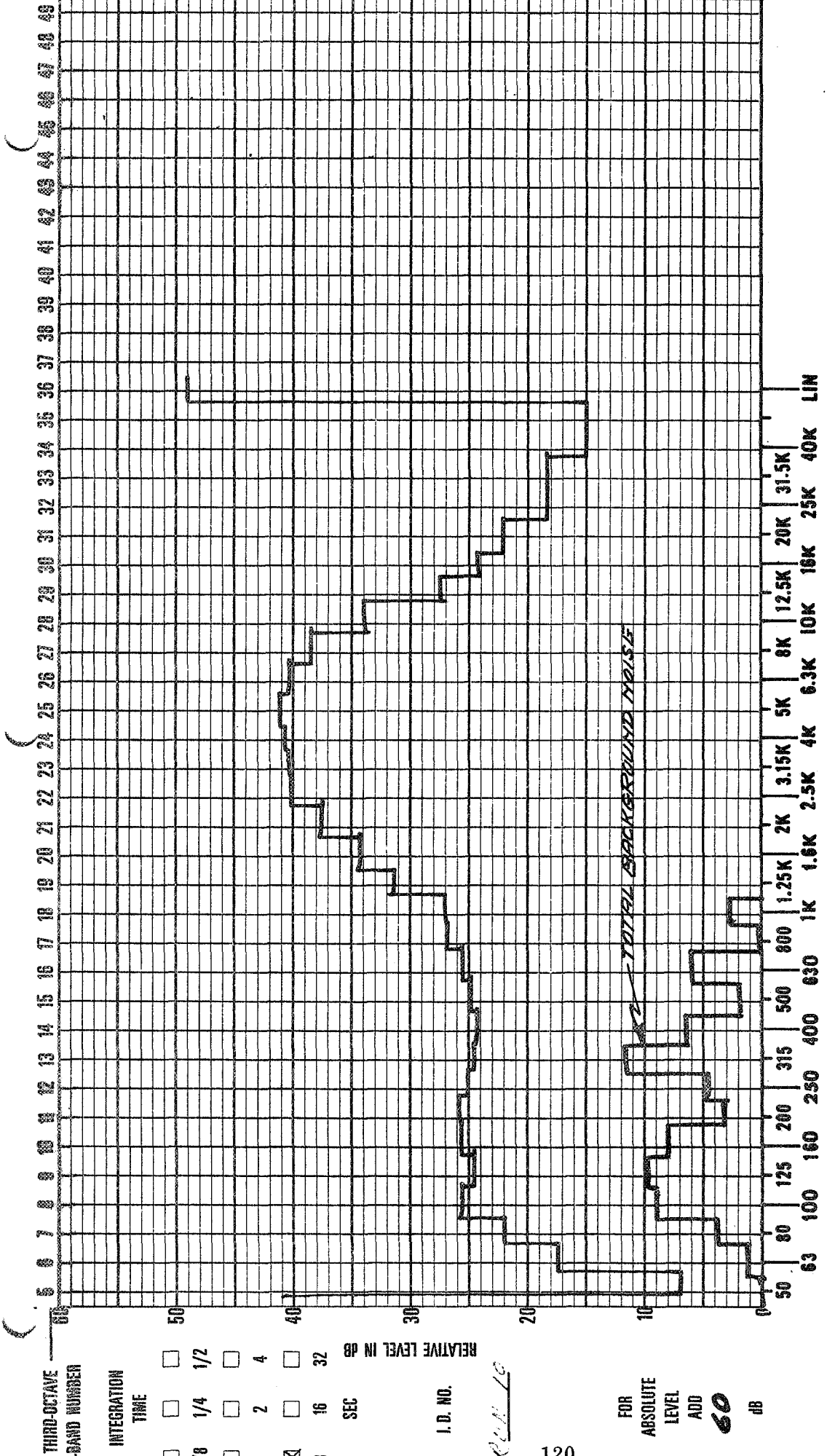
Hamilton Standard

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THIRD-OCTAVE-BAND ANALYSIS

Figure 108 PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

RELATIVE LEVEL IN DB

I. D. NO.

FOR ABSOLUTE LEVEL ADD 60 dB

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

Run 10

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD STATIC

BLADE ANGLE 50

TIP SPEED 626 FT/SEC

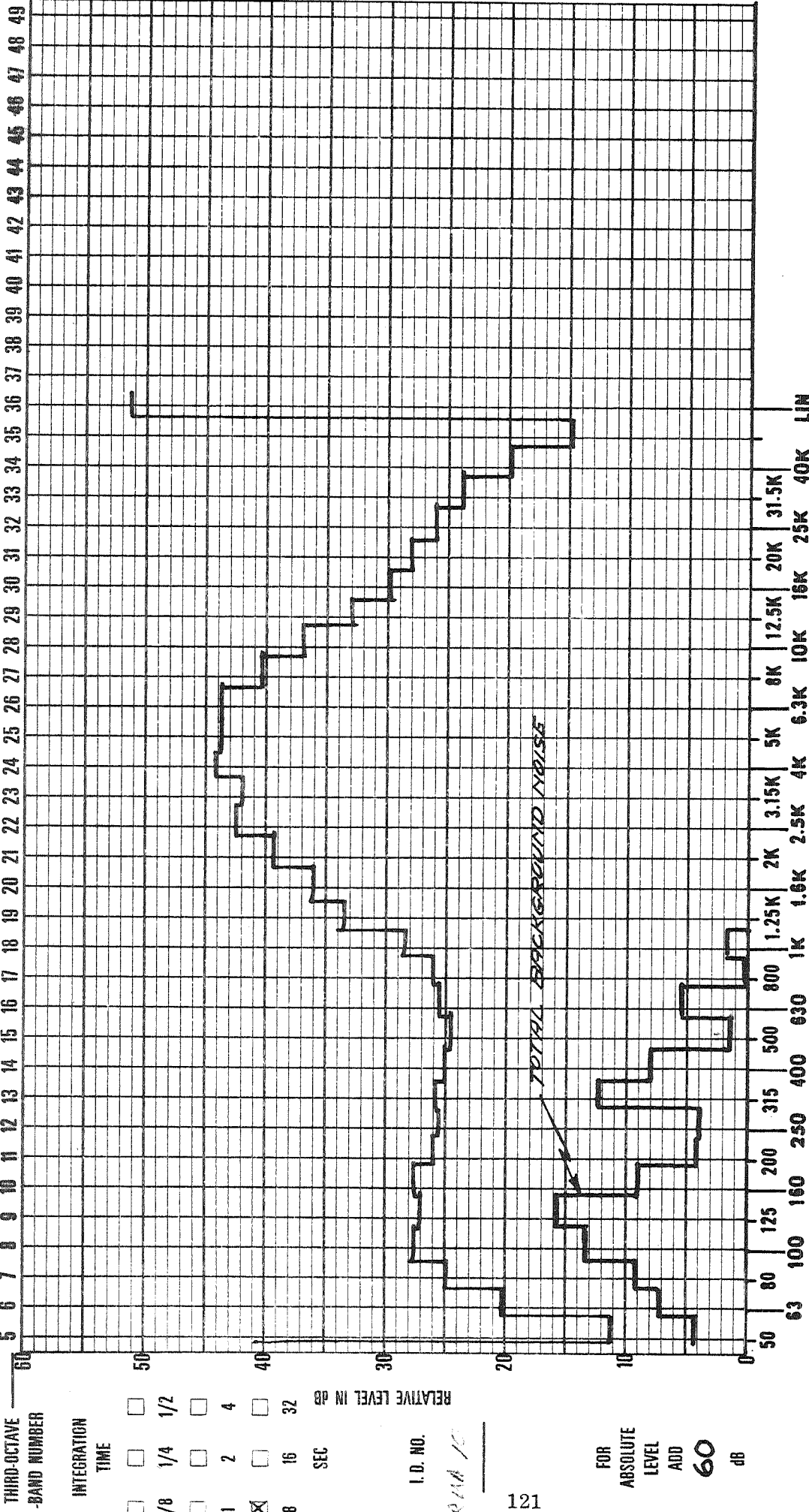
MICROPHONE LOCATION 10' 90°

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

Figure 109 PROP-FAN MODEL NOISE



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

RELATIVE LEVEL IN dB

I. D. NO.

10112

FOR
ABSOLUTE
LEVEL
ADD
60
dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

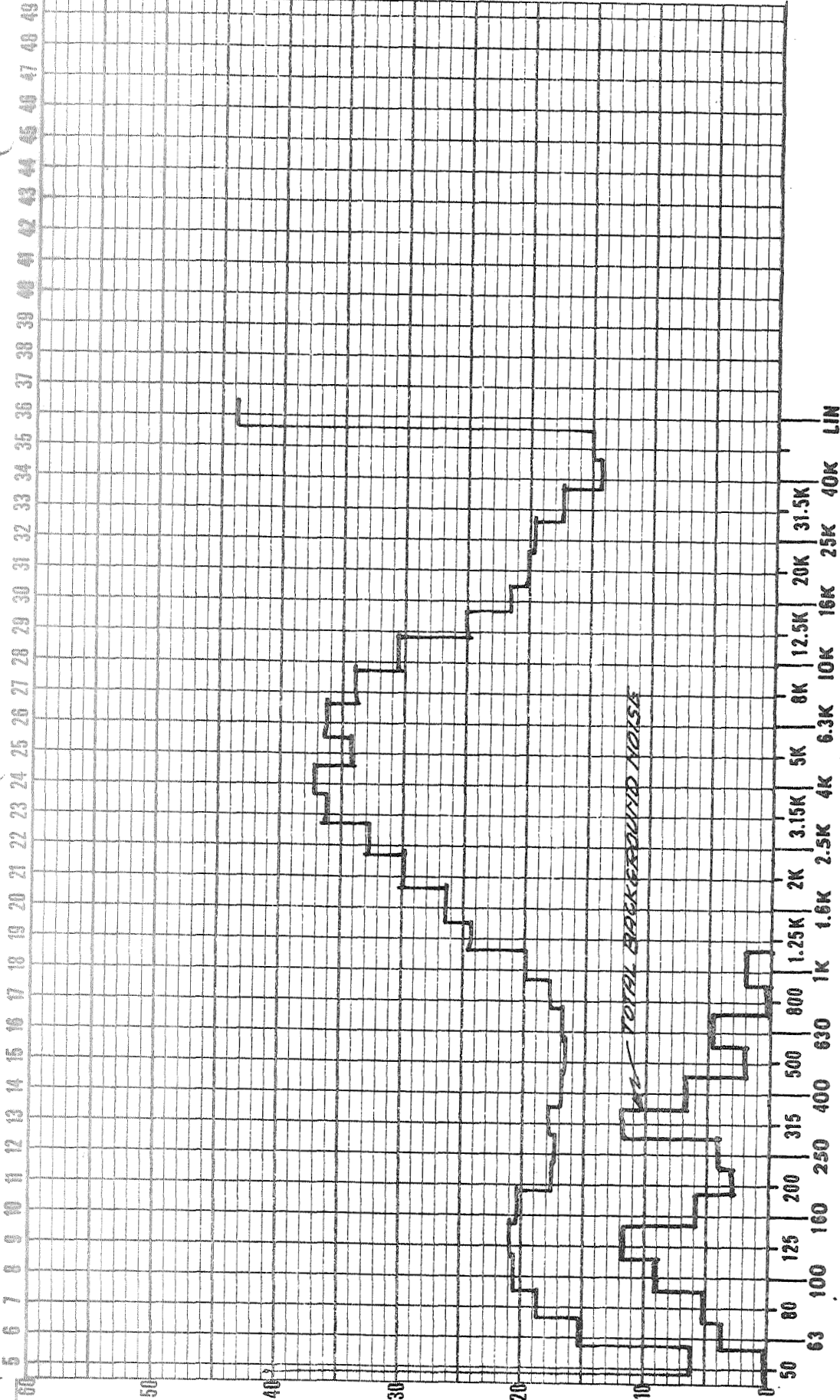
Hamilton
Standard



THIRD-OCTAVE-BAND
ANALYSIS

SHROUD STATIC
 BLADE ANGLE 50
 TIP SPEED 626 FT/SEC
 MICROPHONE LOCATION 10' 11 1/2"

Figure 110C-PROP-FAN MODEL NOISE



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

- 50
- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32
- SEC

RELATIVE LEVEL IN DB

I.D. NO.

RUN 10

FOR
ABSOLUTE
LEVEL
ADD
70
dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

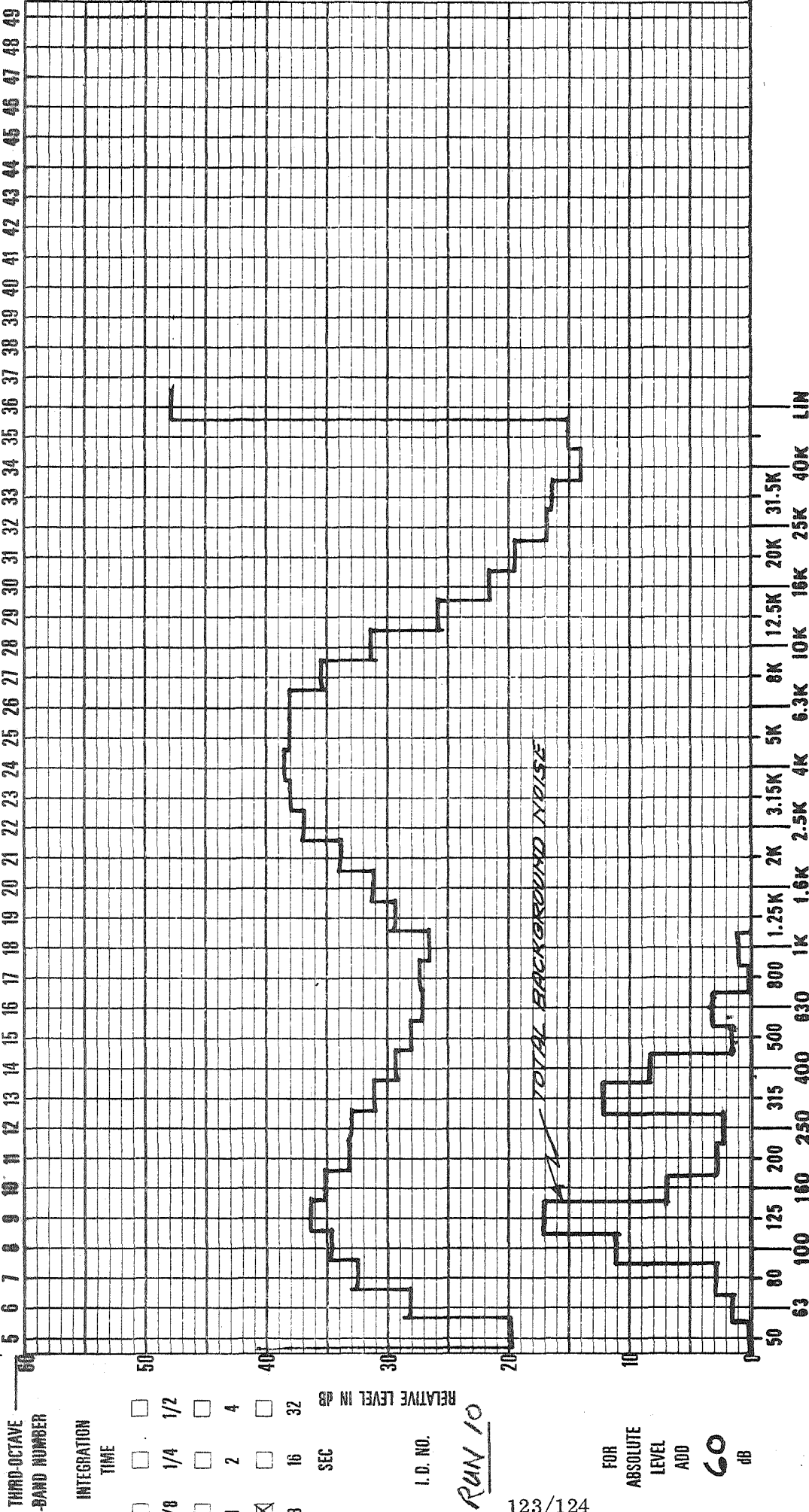
Hamilton
Standard

U
A
DIVISION OF UNITED AIRCRAFT CORP

THIRD-OCTAVE-BAND
ANALYSIS

SHROUD STATIC
 BLADE ANGLE 50
 TIP SPEED 626 FT/SEC
 MICROPHONE LOCATION 10' 135°

Figure III-C PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

RELATIVE LEVEL IN DB

I.D. NO.

RUN 10

FOR ABSOLUTE LEVEL ADD 60 dB

SHROUD STATIC
 BLADE ANGLE 50
 TIP SPEED 626 FT/SEC
 MICROPHONE LOCATION 10' 157 1/2°

THIRD-OCTAVE BAND CENTER FREQUENCY IN HZ

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

Figure 112c PROP-FAN MODEL NOISE

Hamilton
Standard

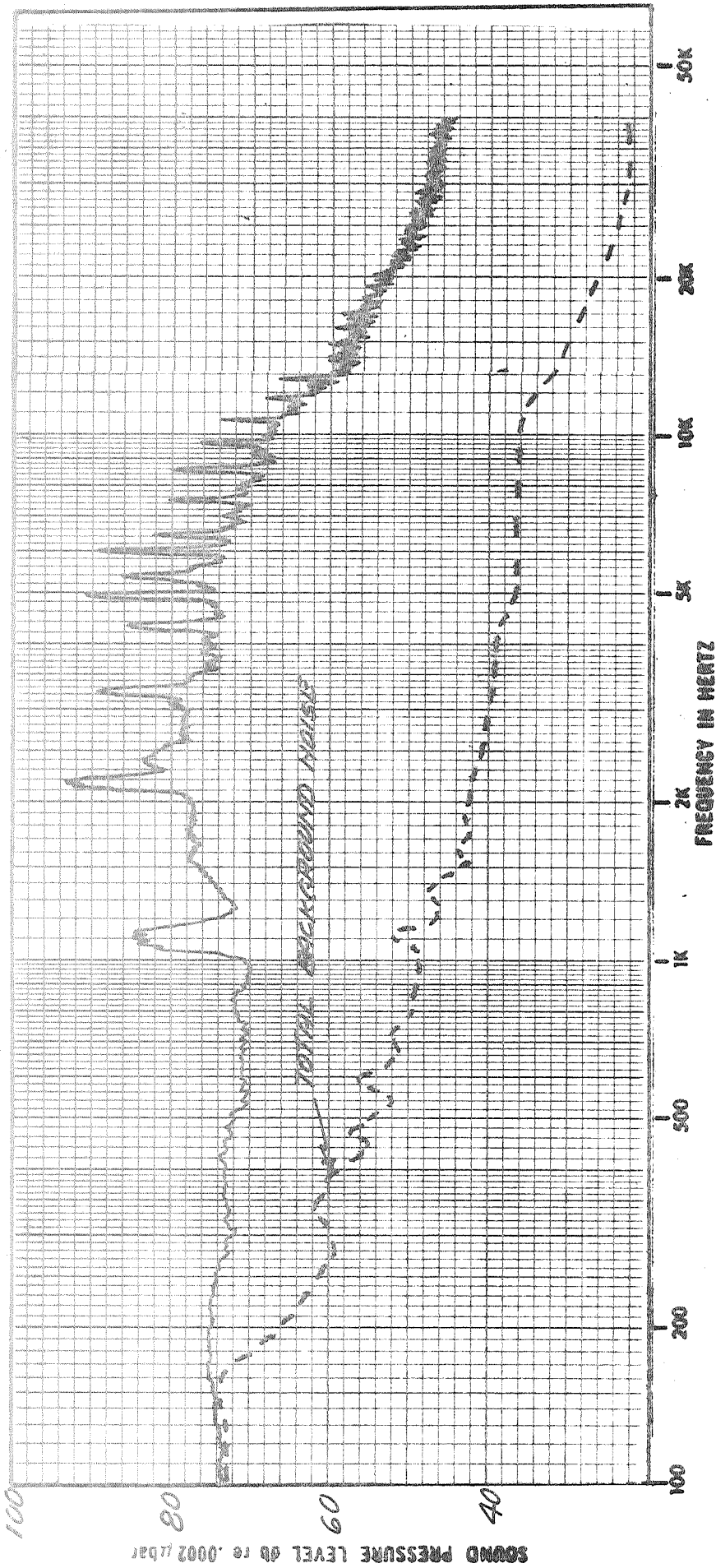
DIVISION OF UNITED AIRCRAFT CORPORATION

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HSER 5787

APPENDIX D

STATIC SHROUD FAR FIELD
NARROW BAND DATA



Comments, Sketches, Etc.

Hamilton Standard
 DIVISION OF UNITED AIRCRAFT CORP. • SPECTRUM ANALYSIS

TITLE PROP-FAN MODEL NOISE

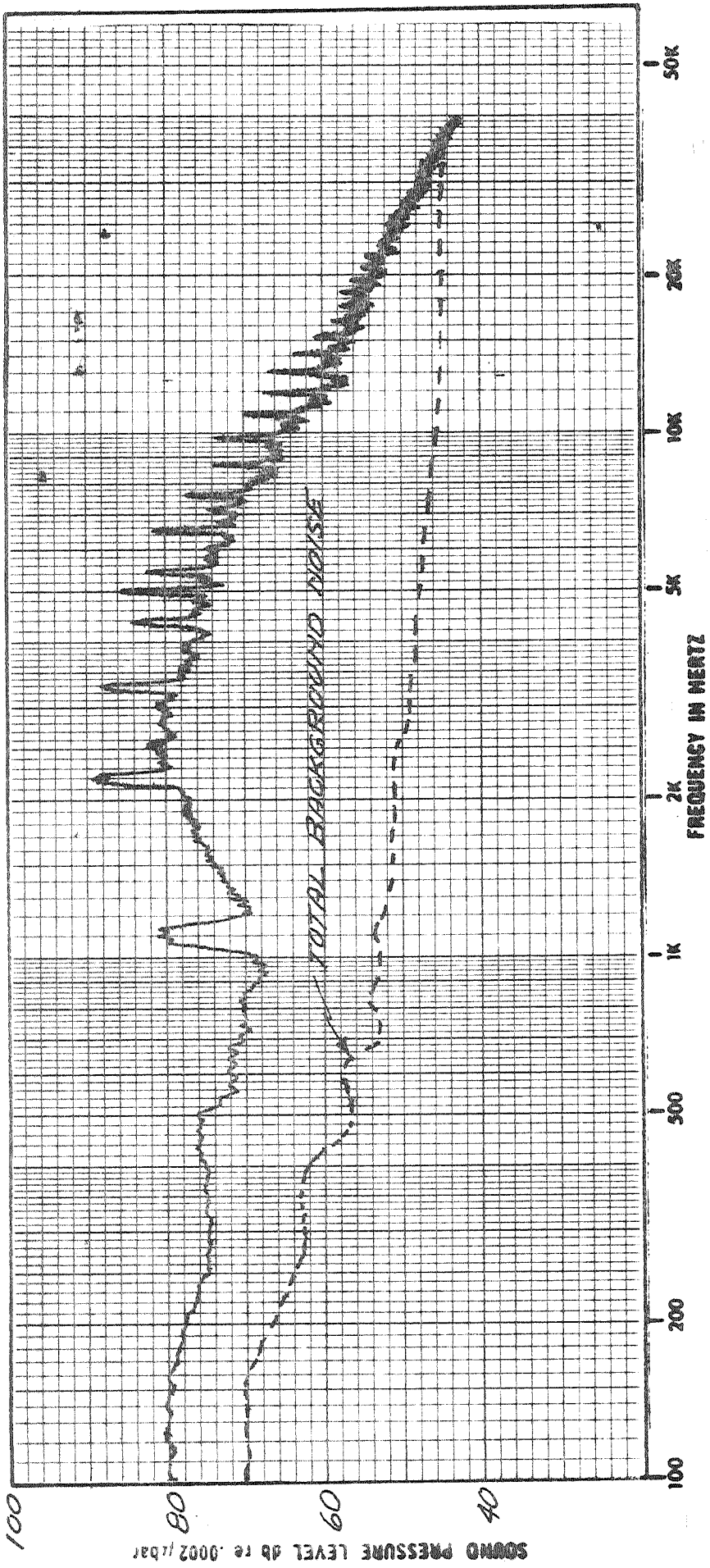
SHROUD STATIC
 BLADE ANGLE 35°
 TIP SPEED 500 FT/SEC
 MICROPHONE 10' 45°

ANALYSIS EQUIPMENT AVERAGING TIME 0.5 SEC

50 Hz FILTER

Sheet ___ of ___ Date ___ Analyzed by ___

Figure 1D



Comments, Sketches, Etc.

Hamilton  DIVISION OF UNITED AIRCRAFT CORP. **SPECTRUM ANALYSIS**
 Standard **A.**

TITLE PROP-FAN MODEL NOISE

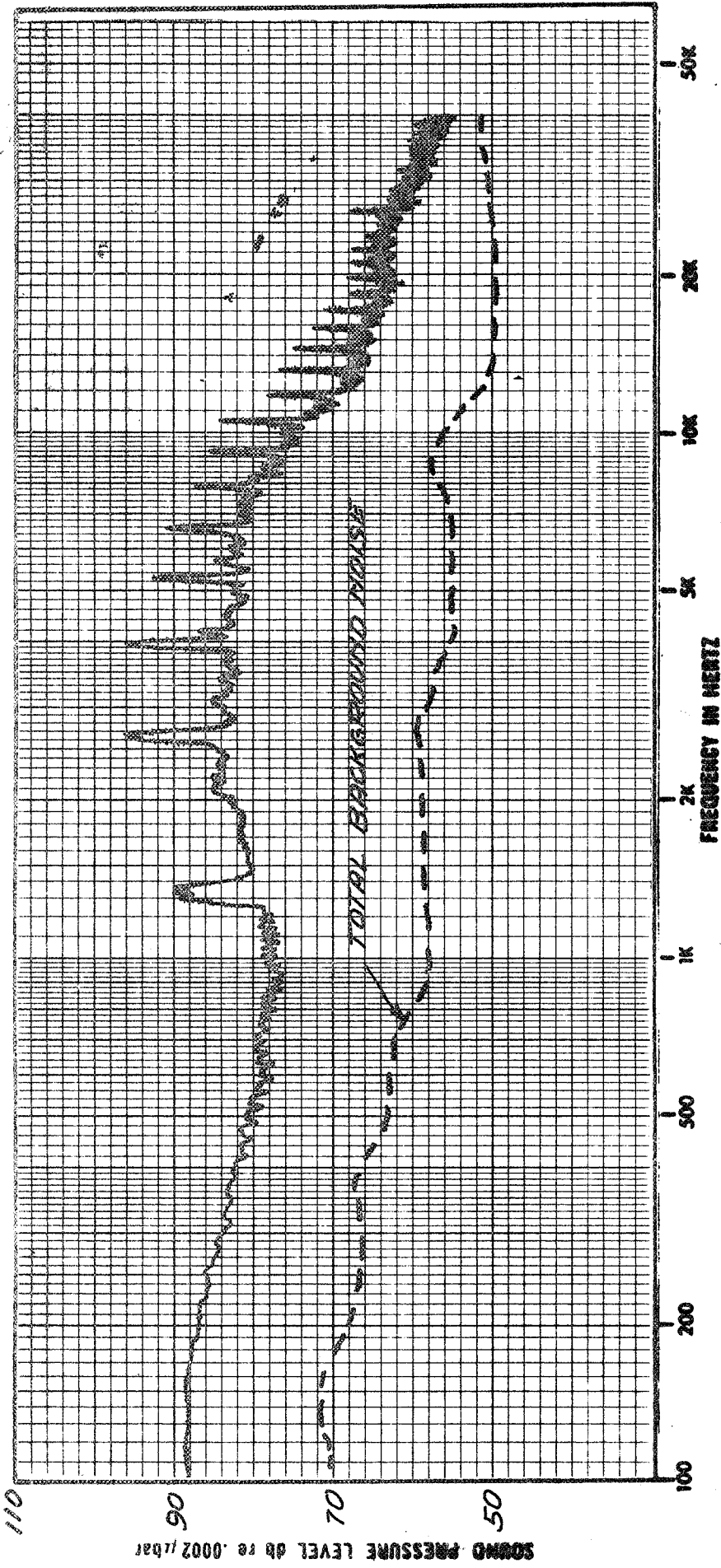
SHROUD STATIC
 BLADE ANGLE 35°
 TIP SPEED 500 FT/SEC
 MICROPHONE LOCATION 10' 112 1/2°

ANALYSIS EQUIPMENT AVERAGING TIME 0.5 SEC

50 HZ FILTER

Sheet ___ of ___ Date ___ Analyzed by ___

Figure 2D



Hamilton Standard
DIVISION OF UNITED AIRCRAFT CORP.
A. SPECTRUM ANALYSIS

TITLE PROP-FAN MODEL NOISE

ANALYSIS EQUIPMENT AVERAGING TIME 0.5 SEC

50 HZ FILTER

Sheet ___ of ___ Date ___ Analyzed by ___

Comments, Stretches, Etc.

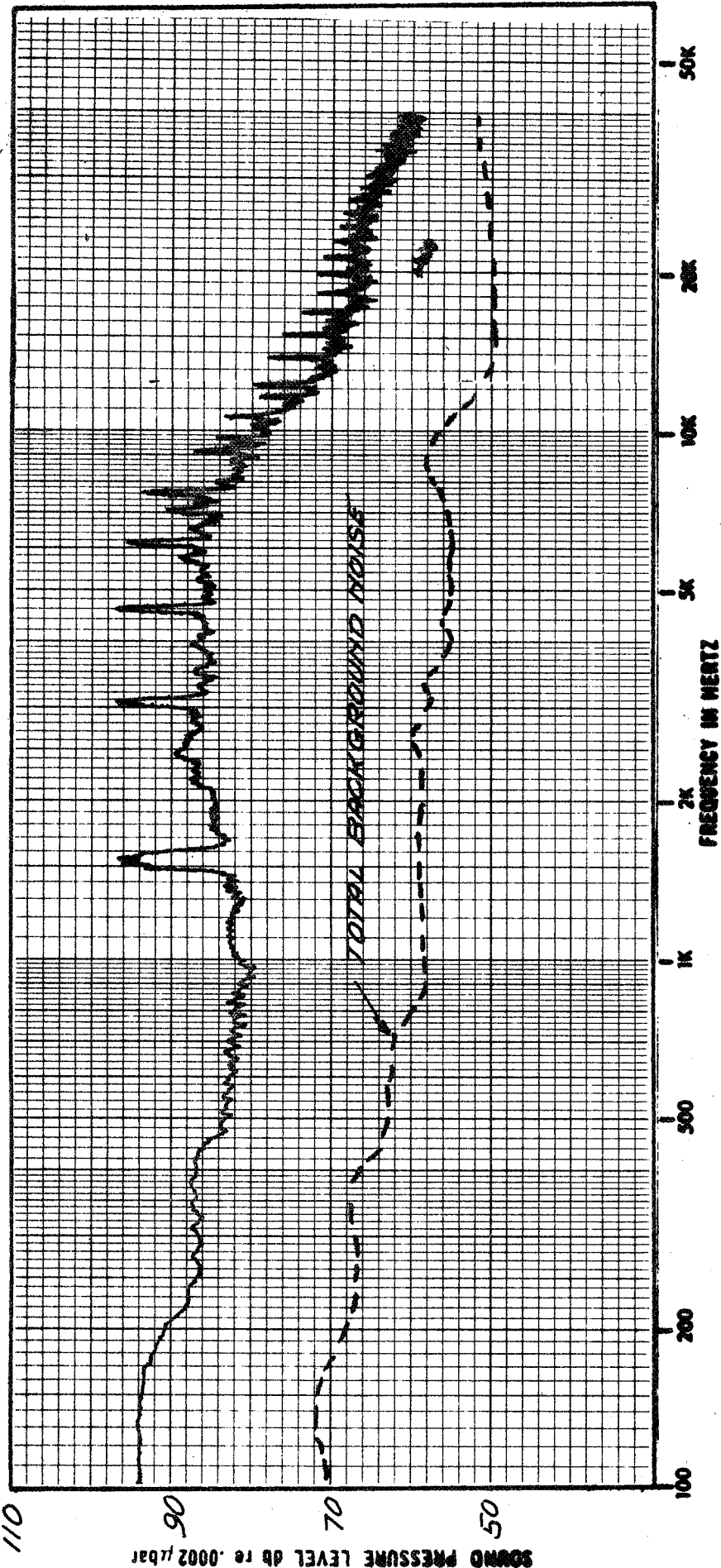
SHROUD STATIC

BLADE ANGLE 35°

TIP SPEED 600 **FT/SEC**

MICROPHONE LOCATION 10' 135°

Figure 3D



Comments, Sketches, Etc.

Hamilton  DIVISION OF UNITED TECHNOLOGIES CORP. • SPECTRUM ANALYSIS

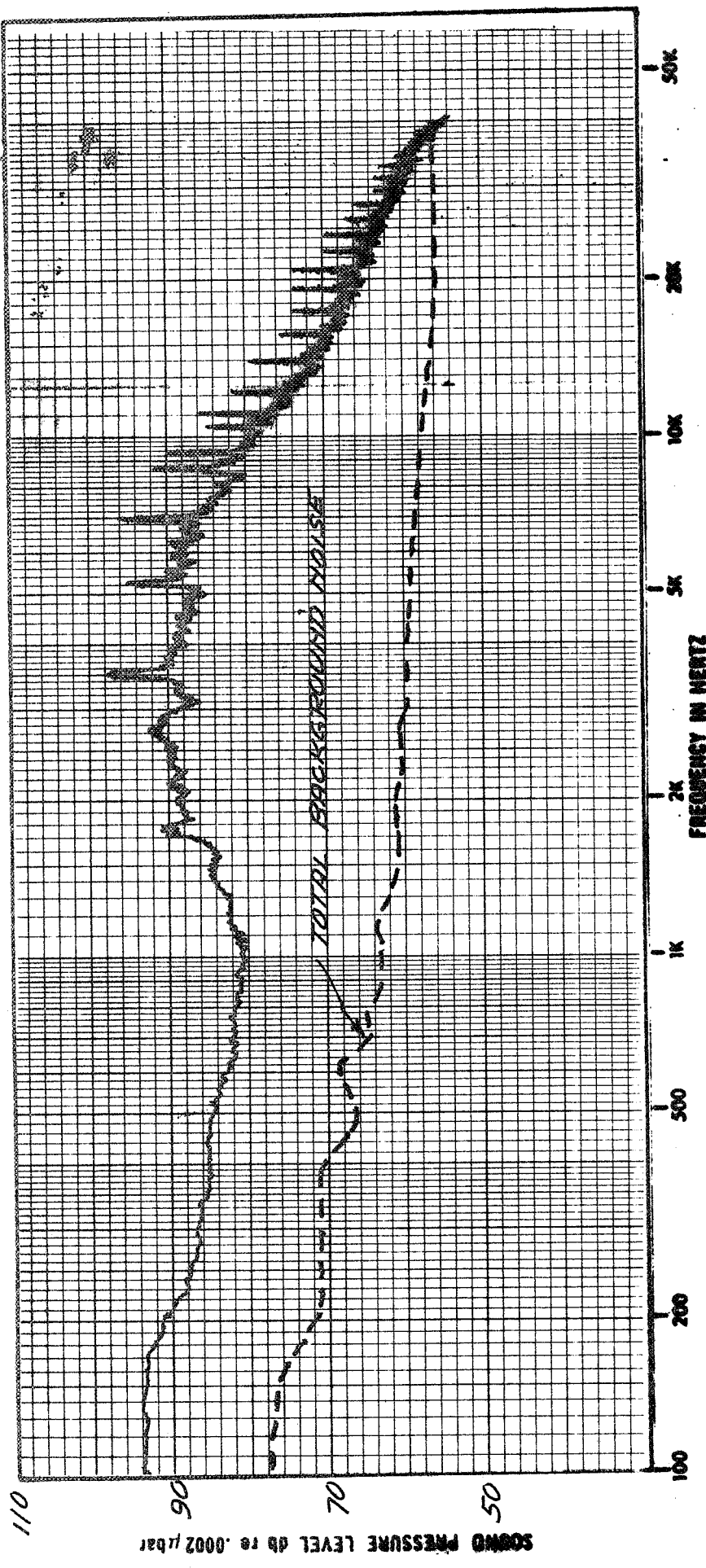
TITLE PROP-FAN MODEL NOISE

ANALYSIS EQUIPMENT AVERAGING TIME 0.5Sec

50 Hz FILTER

Sheet ___ of ___ Date ___ Analyzed by ___

SHROUD STATIC
 BLADE ANGLE 35°
 TIP SPEED 700 FT/SEC
 MICROPHONE LOCATION 10' 135°



Comments, Sketches, Etc.

Hamilton Standard DIVISION OF UNITED AIRCRAFT CORP. **SPECTRUM ANALYSIS**

A.

TITLE PROP-FAN MODEL NOISE

ANALYSIS EQUIPMENT 50 Hz FILTER AVERAGING TIME 0.5 SEC

Sheet ___ of ___ Date ___ Analyzed by ___

SHROOD STATIC

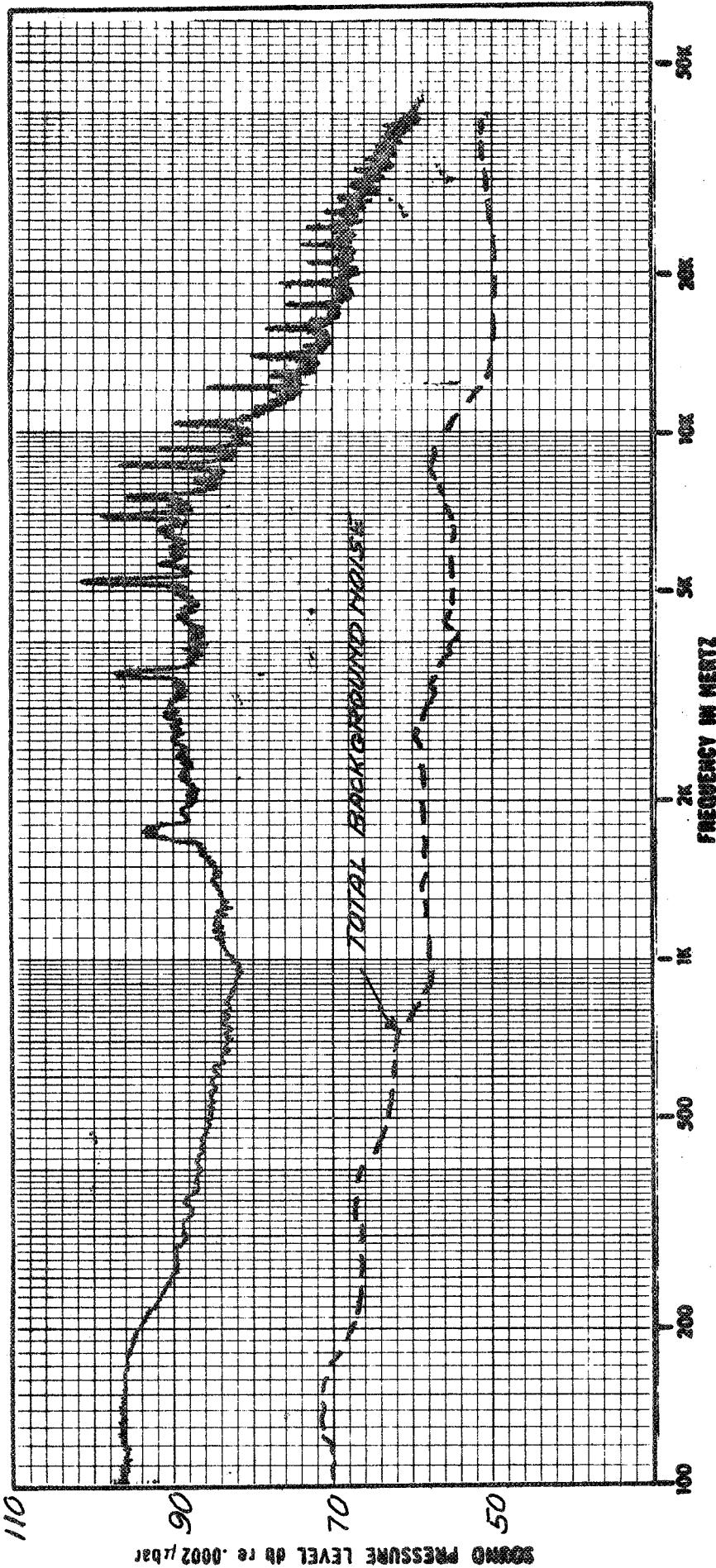
BLADE ANGLE 35°

TIP SPEED 800 FT/SEC

MICROPHONE 10' 11 1/2°

LOCATION

Figure 50



Comments, Sketches, Etc.

SHROUD STATIC
 BLADE ANGLE 35°
 TIP SPEED 800 FT/SEC
 MICROPHONE LOCATION 10' 135°

Hamilton DIVISION OF UNIVERSAL SCISSORS CORP. SPECTRUM ANALYSIS

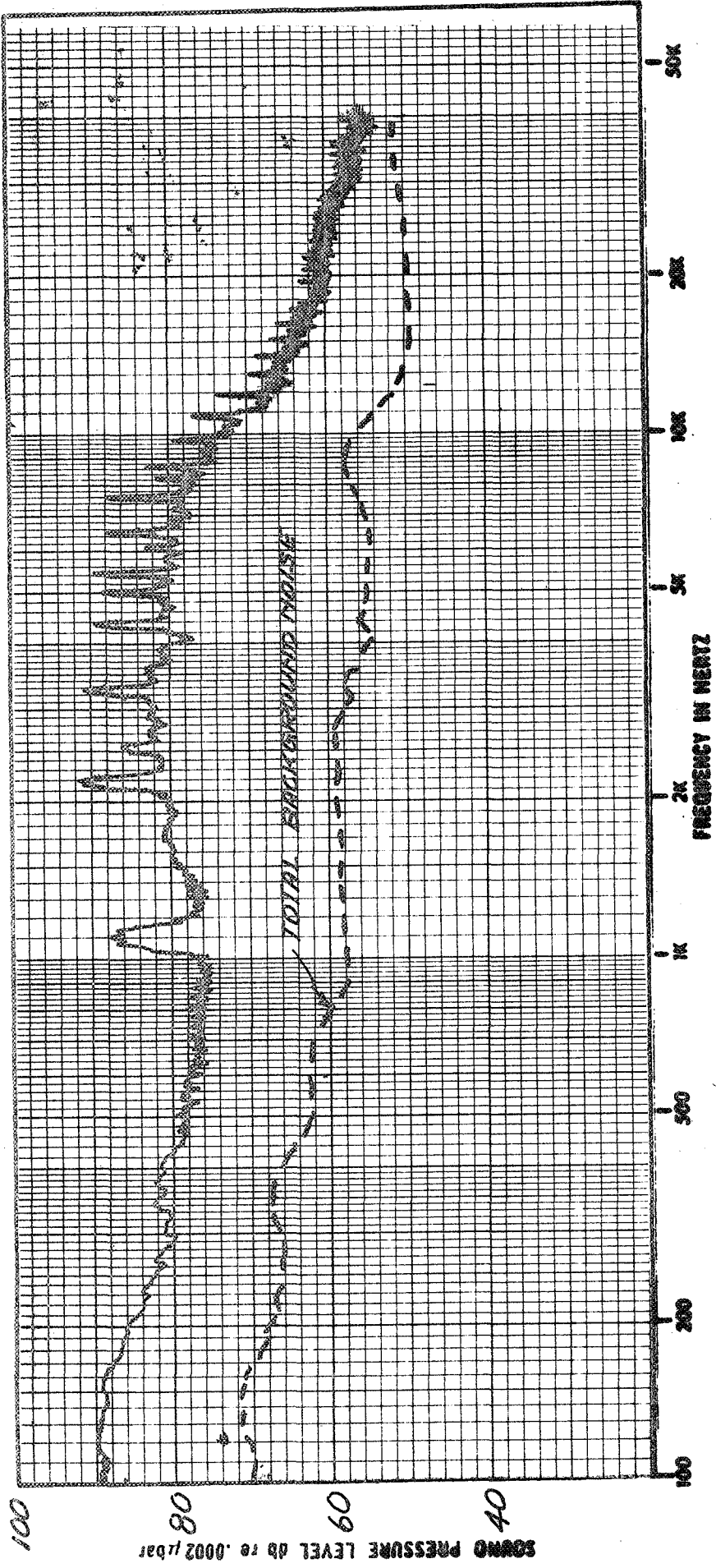
TITLE PROP-FAN MODEL NOISE

ANALYSIS EQUIPMENT AVERAGING TIME 0.5 SEC

50 HZ FILTER

Sheet ___ of ___ Date ___ Analyzed by ___

Figure 6D



Comments, Sketches, Etc.

Hamilton Standard
DIVISION OF UNITED AIRLINES CORP.
U. A. **SPECTRUM ANALYSIS**

TITLE PROP-FAN MODEL NOISE

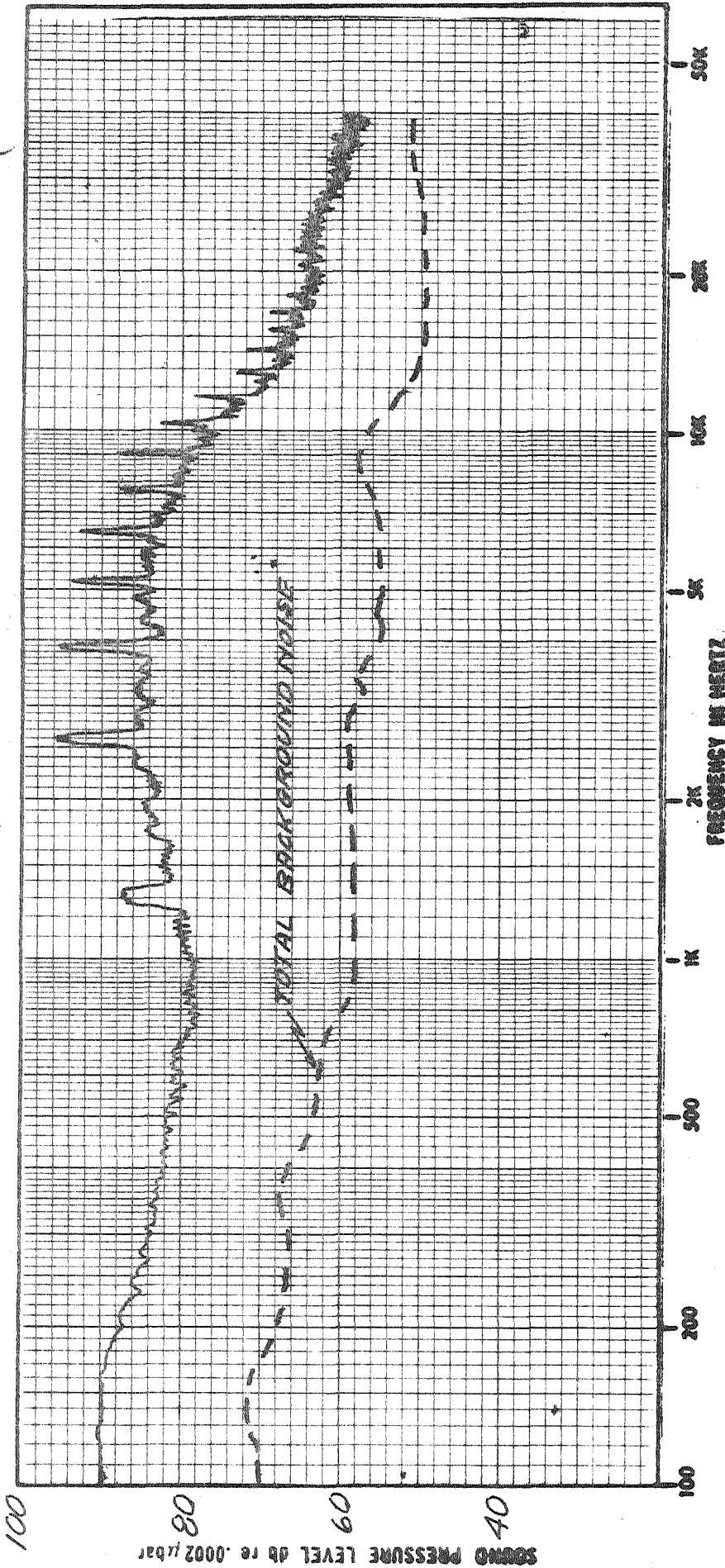
SHROUD STATIC
 BLADE ANGLE 40°
 TIP SPEED 500 FT/SEC
 MICROPHONE LOCATION 10' 135°

ANALYSIS EQUIPMENT AVERAGING TIME 0.5 SEC

50 Hz FILTER

Sheet ___ of ___ Date ___ Analyzed by ___

Figure 7D



Hamilton **U** DIVISION OF UNITED AIRCRAFT CORP. **SPECTRUM ANALYSIS**
Standard A.

TITLE PROP-FAN MODEL NOISE

ANALYSIS EQUIPMENT AVERAGING TIME 0.5 SEC

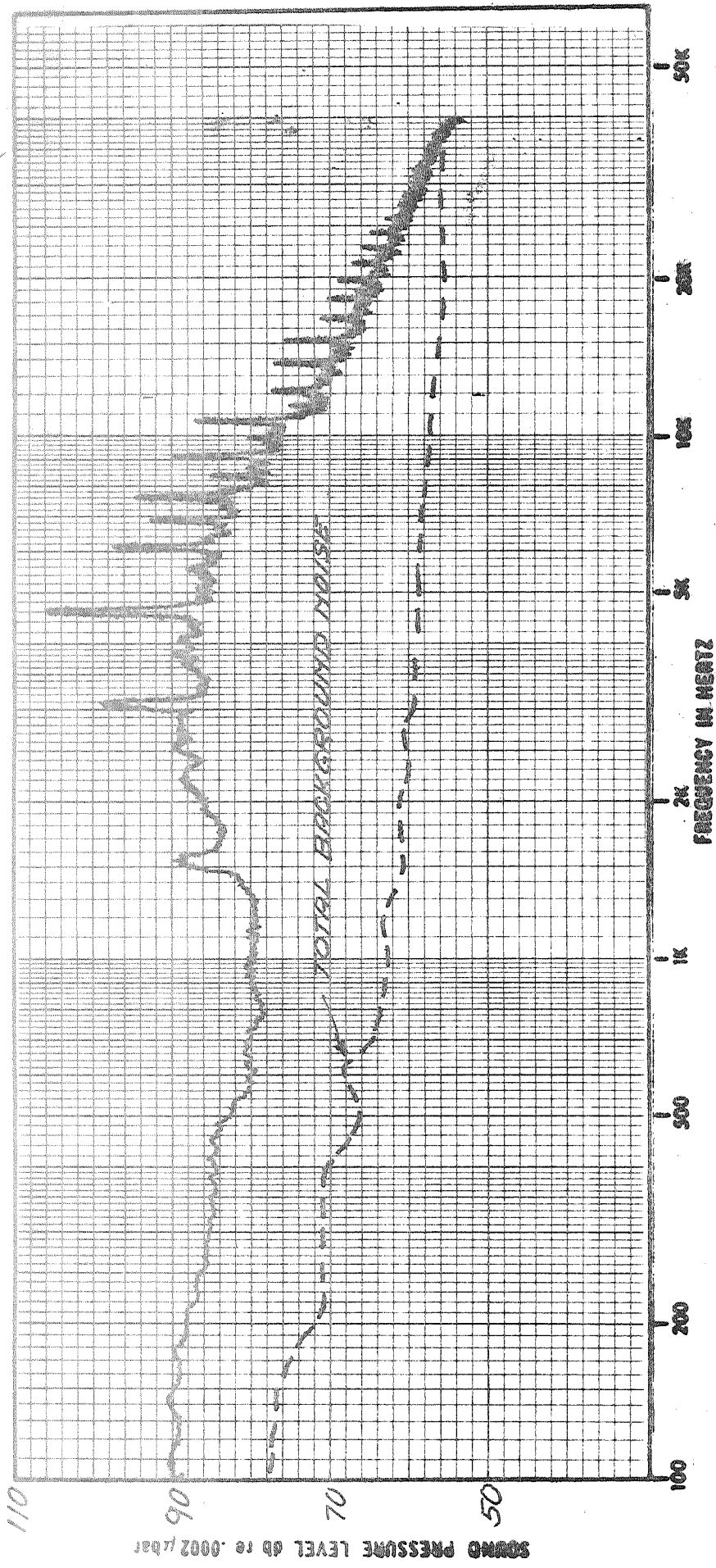
50 HZ FILTER

Sheet ___ of ___ Date ___ Analyzed by ___

Comments, Sketches, Etc.

SHROUD STATIC
 BLADE ANGLE 40°
 TIP SPEED 600 FT/SEC
 MICROPHONE 10' 135°
 LOCATION

Figure 8D



Hamilton DIVISION OF UNITED AIRCRAFT CORP. STANDARD **A.** SPECTRUM ANALYSIS

TITLE PROP-FAN MODEL NOISE

ANALYSIS EQUIPMENT AVERAGING TIME 0.55Sec

50 Hz FILTER

Sheet ___ of ___ Date ___ Analyzed by ___

Comments, Statistics, Etc.

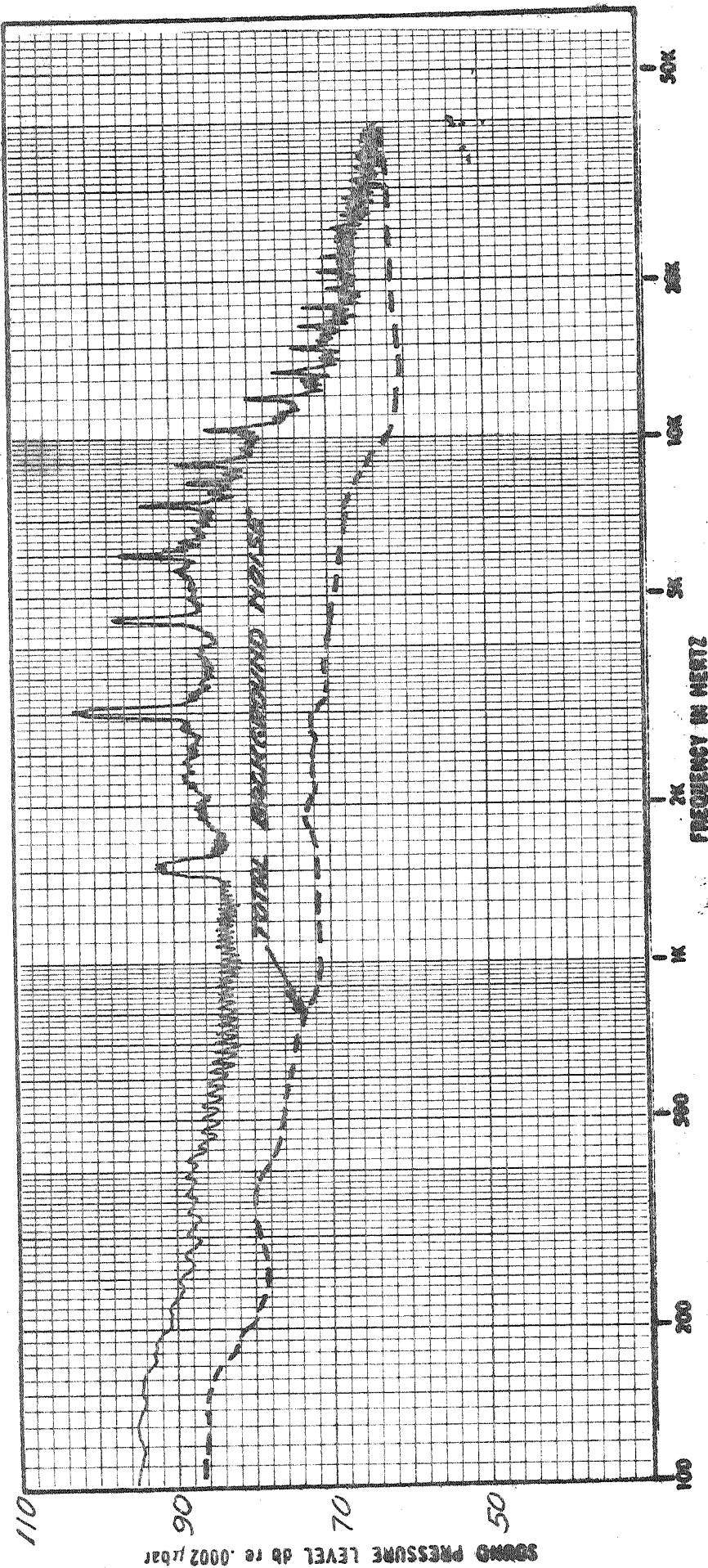
SHROUD STATIC

BLADE ANGLE 40°

TIP SPEED 700 FT/SEC

MICROPHONE LOCATION 10' 11 1/2°

Figure 9D



Hamilton Standard
 DIVISION OF UNITED CARBIDE CORP.
A. SPECTRUM ANALYSIS

TITLE PROP-FAN MODEL NOISE

ANALYSIS EQUIPMENT AVERAGING TIME 0.5SEC

50 Hz FILTER

Sheet ___ of ___ Date ___ Analyzed by ___

Comments, Statistics, Etc.

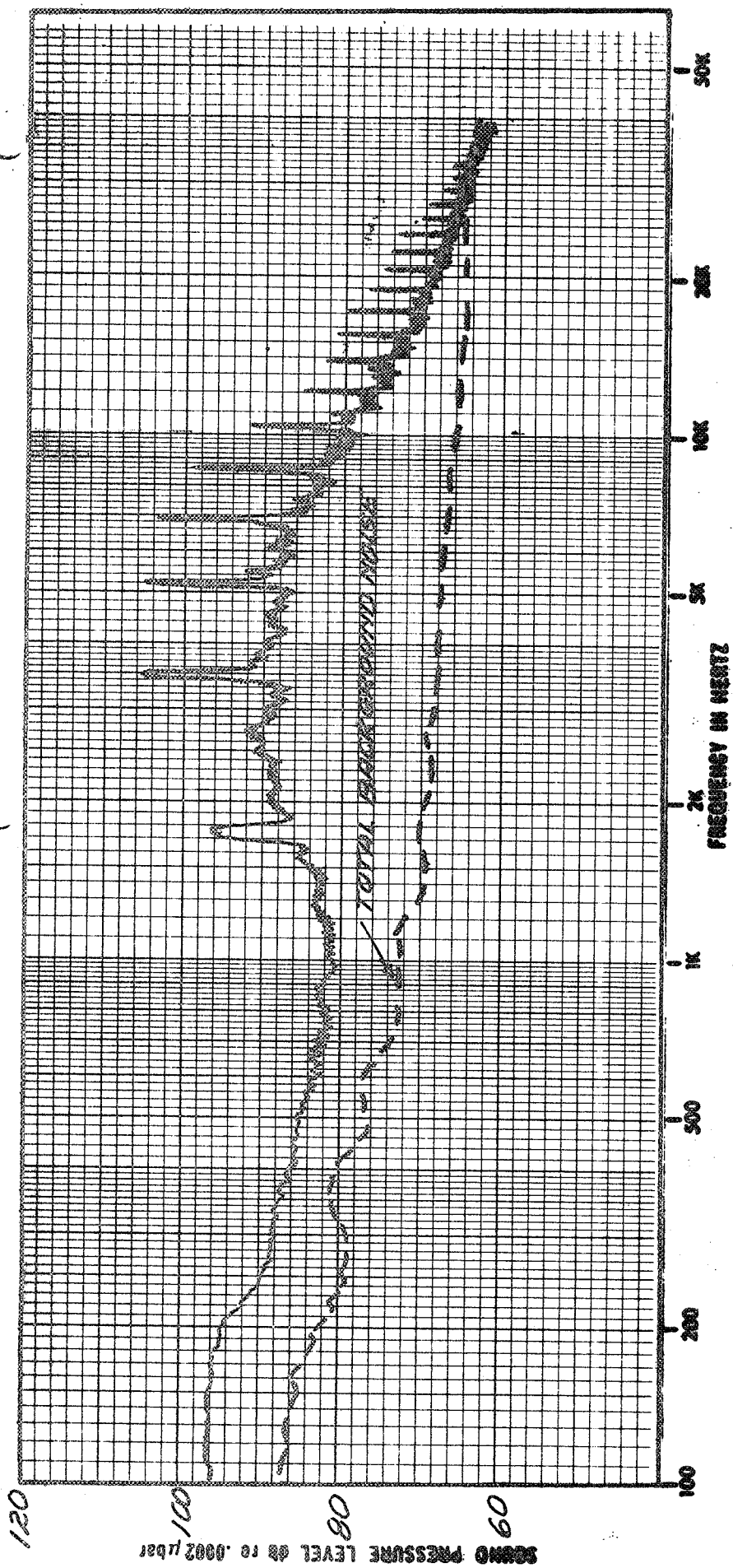
SHIELD STATIC

BLADE ANGLE 40°

TIP SPEED 700 FT/SEC

MICROPHONE LOCATION 10' 135°

Figure 10D



Hamilton DIVISION OF UNITED CARBIDE CORP.
Standard **A.** **SPECTRUM ANALYSIS**

TITLE PROP-FAN MODEL NOISE

ANALYSIS EQUIPMENT AVERAGING TIME 0.5 SEC

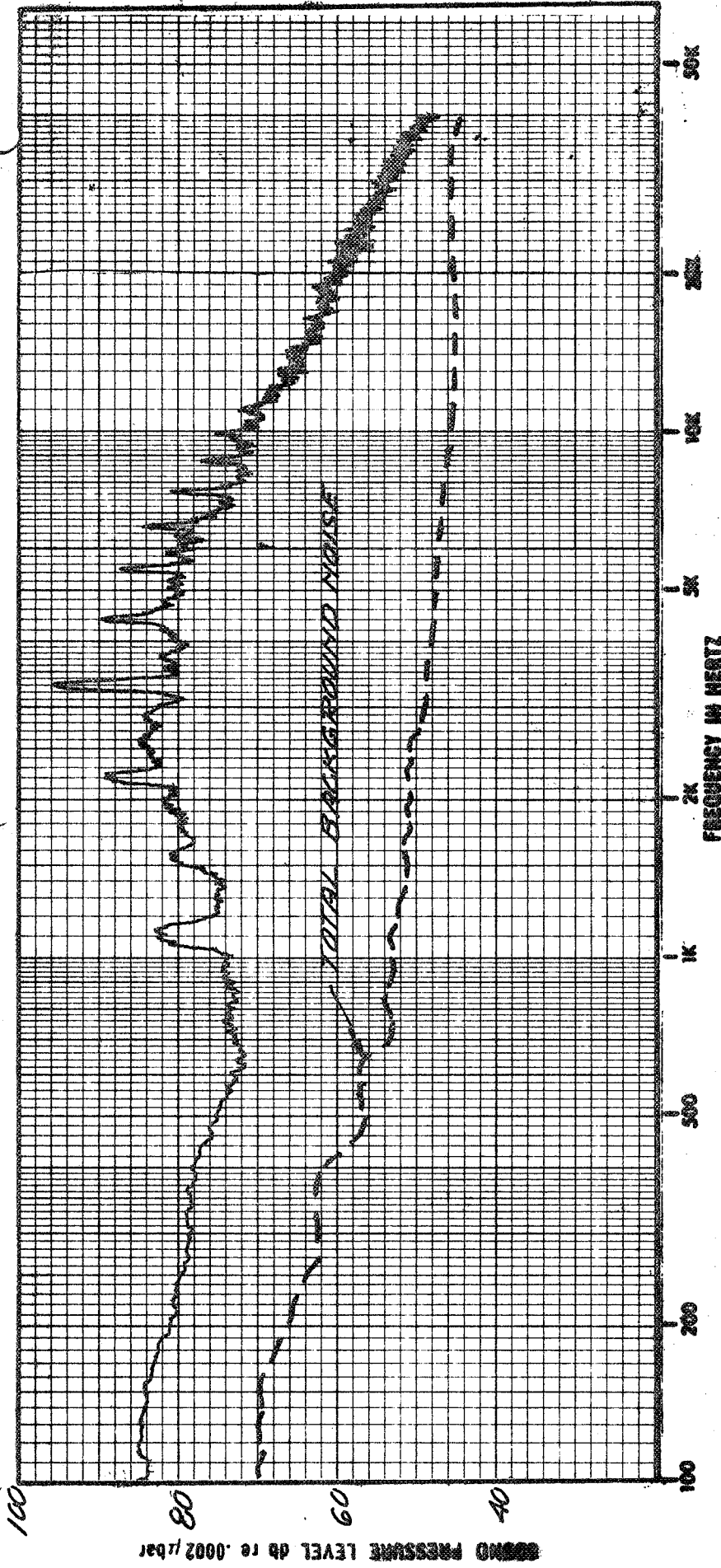
50 HZ FILTER

Sheet ___ of ___ Date ___ Analyzed by ___

Comments, Statistics, Etc.

SHROUD STATIC
 BLADE ANGLE 40°
 TIP SPEED 800 FT/SEC
 MICROPHONE LOCATION 10' 112 1/2°

Figure 11D



Hamilton **U** DIVISION OF UNITED AIRCRAFT CORP. **A.** SPECTRUM ANALYSIS Standard

TITLE PROP-FAN MODEL NOISE

ANALYSIS EQUIPMENT AVERAGING TIME 0.5 Sec

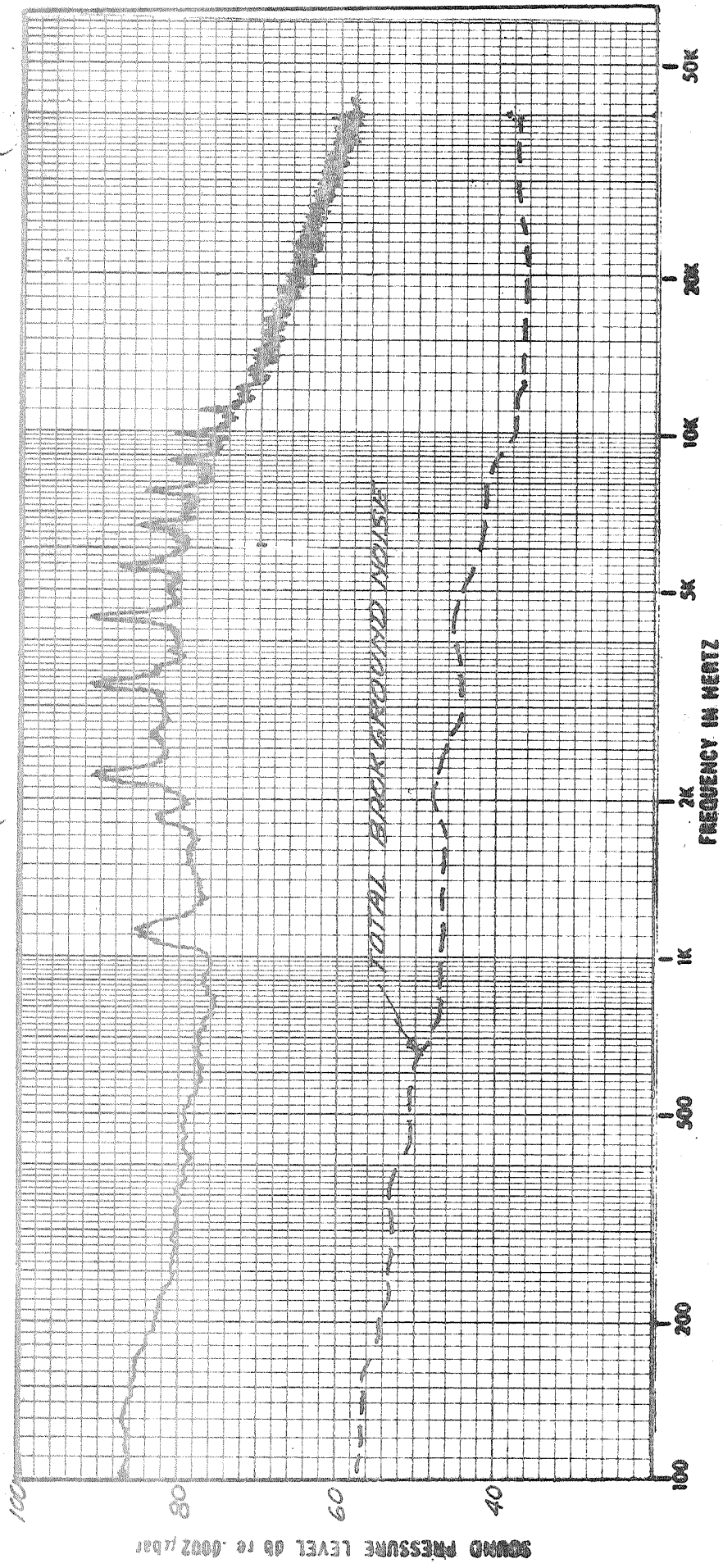
50 Hz FILTER

Sheet of Date Analyzed by

Comments, Sketches, Etc.

SHROUD STATIC
 BLADE ANGLE 45°
 TIP SPEED 500 FT/SEC
 MICROPHONE LOCATION 10' 11 1/2°

Figure 13D



Hamilton DIVISION OF UNITED TECHNOLOGIES CORP. **SPECTRUM ANALYSIS**

TITLE PROP-FAN NOISE

ANALYSIS EQUIPMENT AVERAGING TIME 0.5 SEC

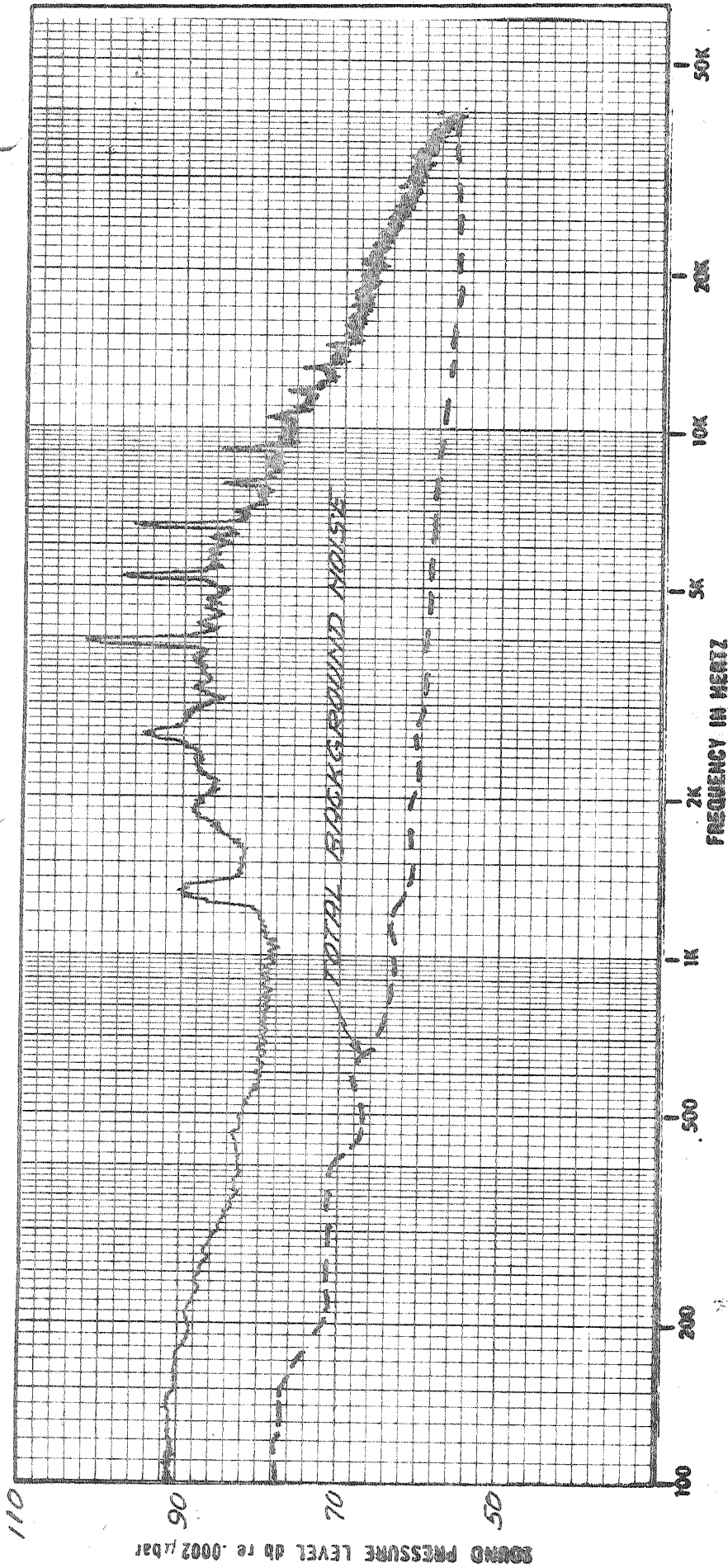
50 Hz FILTER

Sheet ___ of ___ Date ___ Analyzed by ___

Comments, Sketches, Etc.

SHROUD STATIC
 BLADE ANGLE 45°
 TIP SPEED 500 FT/SEC
 MICROPHONE LOCATION 10' 135°

Figure 13D



Hamilton Standard
DIVISION OF UNITED AIRCRAFT CORP.
U A. **SPECTRUM ANALYSIS**

TITLE PROP-FAN MODEL NOISE

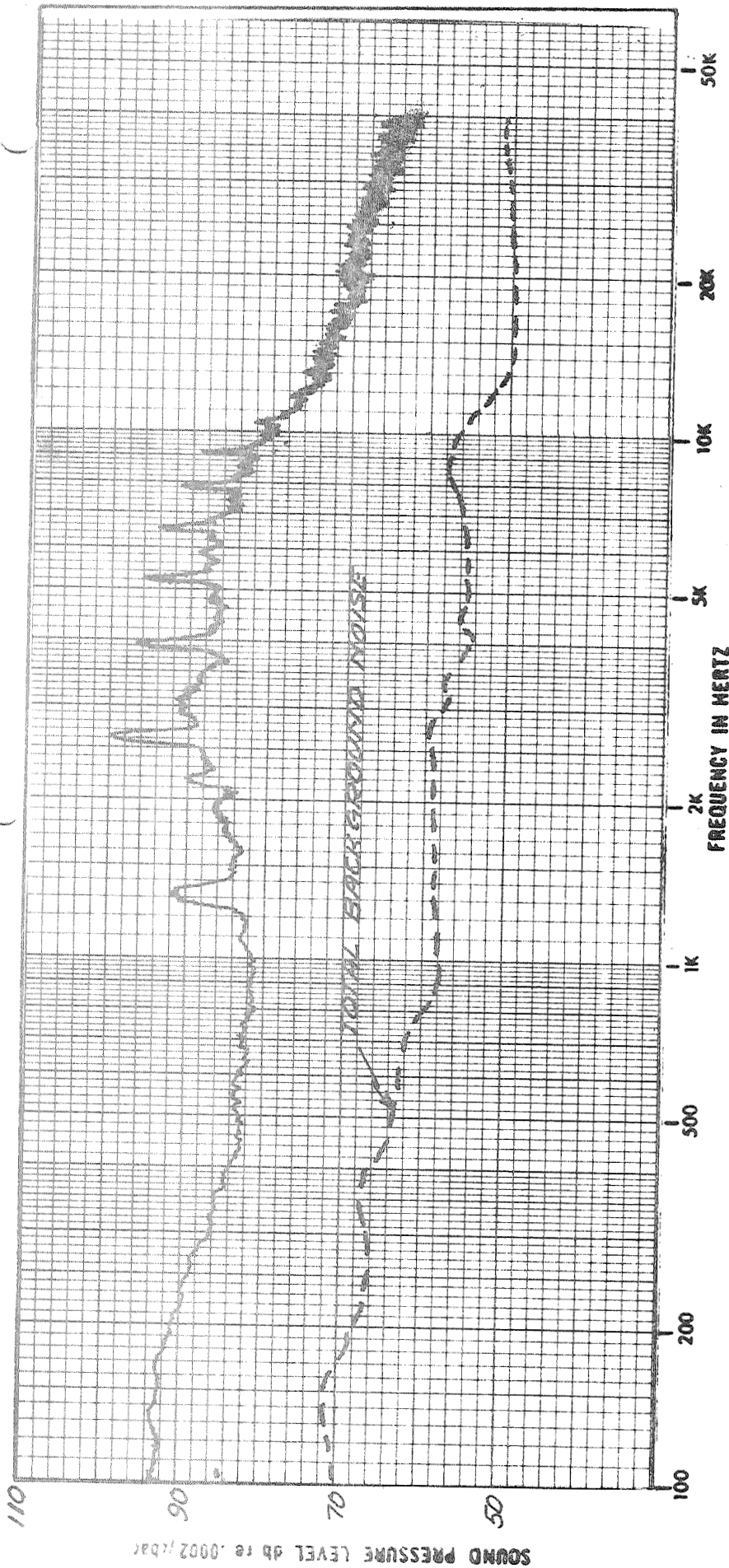
ANALYSIS EQUIPMENT 50 Hz FILTER AVERAGING TIME 0.5 SEC

Sheet ___ of ___ Date ___ Analyzed by ___

Comments, Sketches, Etc.

SHROUD STATIC
 BLADE ANGLE 45°
 TIP SPEED 600 FT/SEC
 MICROPHONE LOCATION 10' 11 1/2"

Figure 14D



HAMILTON STANDARD
 DIVISION OF UNITED TECHNOLOGICAL CORP. • SPECTRUM ANALYSIS

TITLE PROP-FAN MODEL NOISE

ANALYSIS EQUIPMENT AVERAGING TIME 0.5 SEC

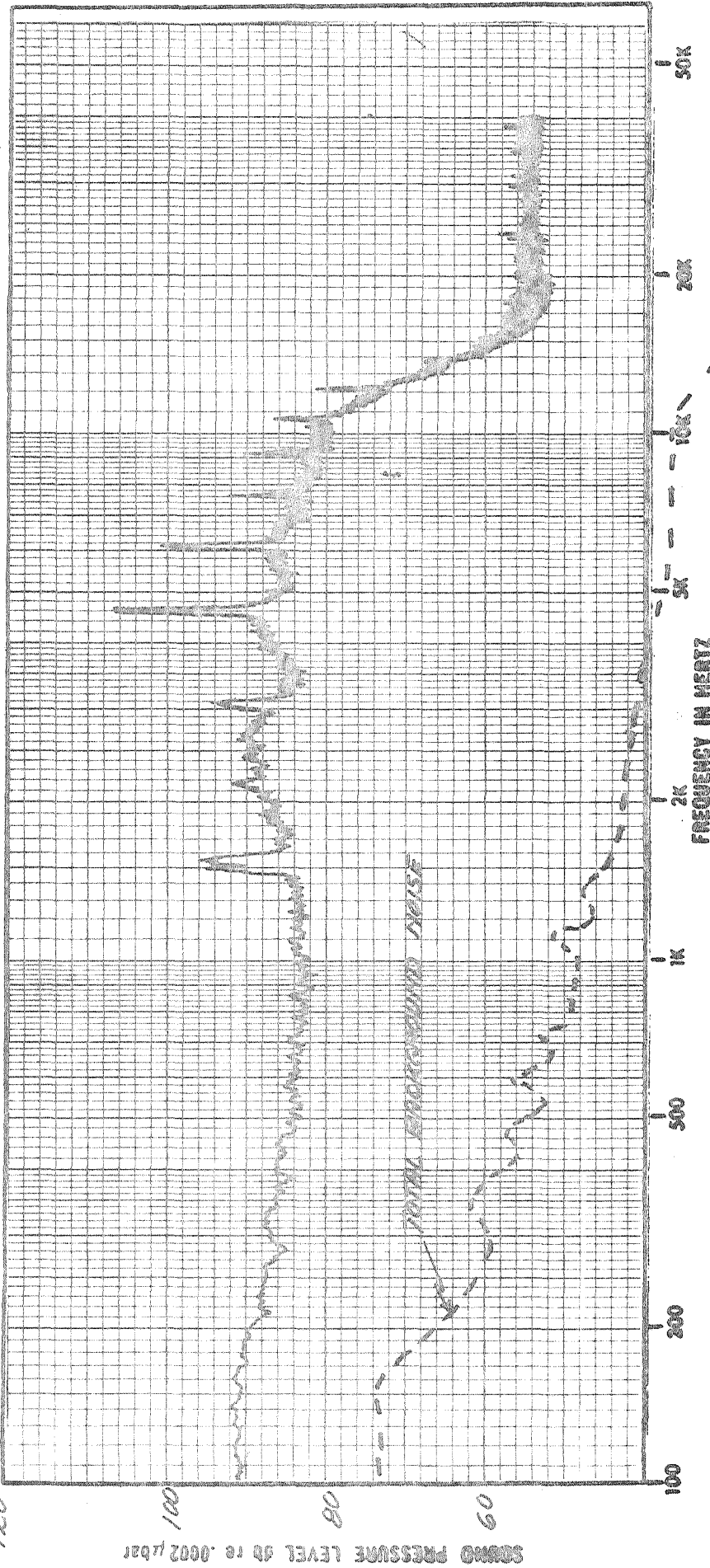
50 HZ FILTER

Sheet ___ of ___ Date ___ Analyzed by ___

Comments, Sketches, Etc.

SHROUD STATIC
 BLADE ANGLE 45°
 TIP SPEED 600 FT/SEC
 MICROPHONE LOCATION 10' 135°

Figure 15D



Hamilton **U** DIVISION OF UNITED CARBIDE CORP. **SPECTRUM ANALYSIS**
Standard A.

TITLE PROP-FAN MODEL NOISE

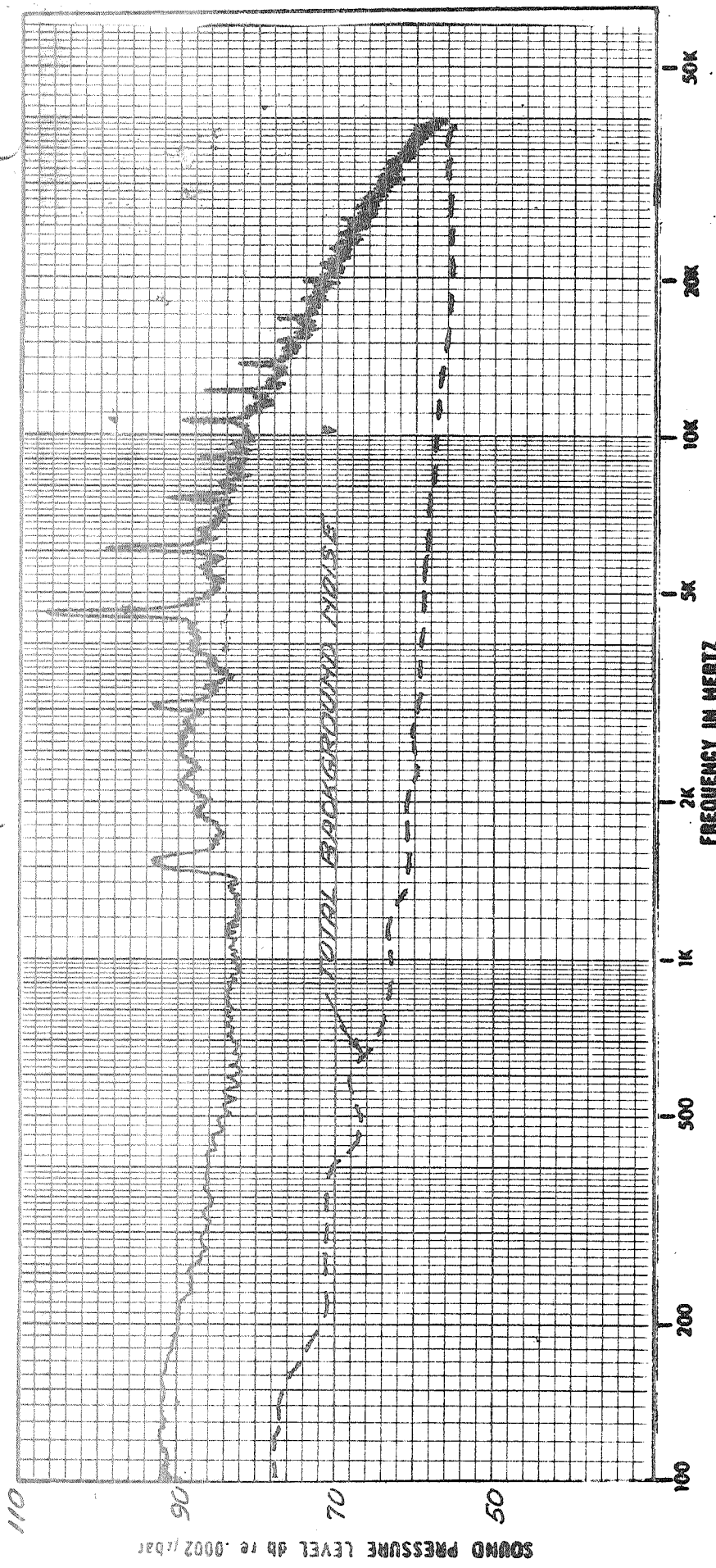
ANALYSIS EQUIPMENT AVERAGING TIME 0.5 SEC
 50 HZ FILTER

Sheet ___ of ___ Date ___ Analyzed by ___

Comments, Sketches, Etc.

SHROUD STATIC
 BLADE ANGLE 45°
 TIP SPEED 700 FT/SEC
 MICROPHONE LOCATION 10', 90°

Figure 16D



Hamilton **U** DIVISION OF UNITED AIRCRAFT CORP. **SPECTRUM ANALYSIS**
Standard A.

TITLE PROP-FAN MODEL NOISE

ANALYSIS EQUIPMENT AVERAGING TIME 0.5 SEC

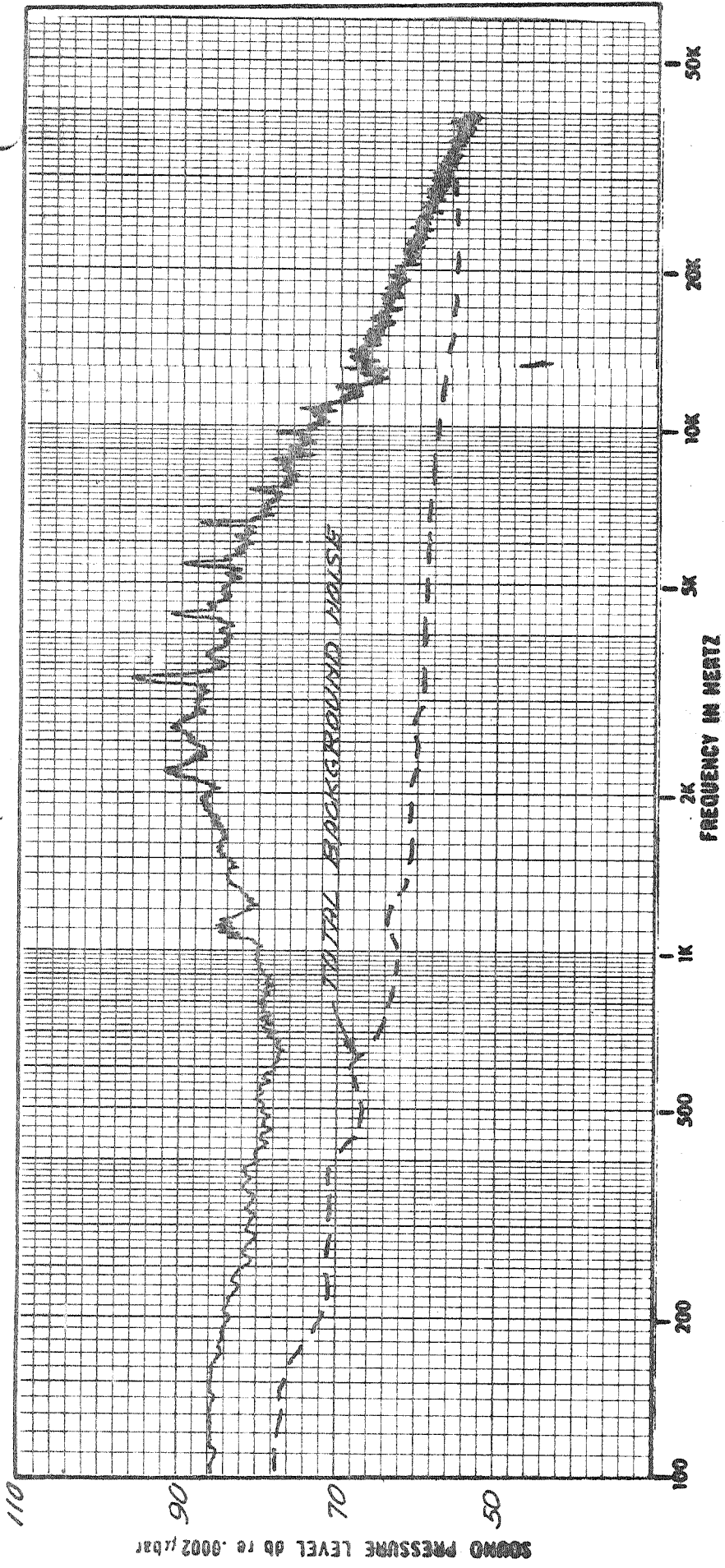
50 HZ FILTER

Sheet ___ of ___ Date ___ Analyzed by ___

Comments, Sketches, Etc.

SHROUD STATIC
 BLADE ANGLE 45°
 TIP SPEED 700 FT/SEC
 MICROPHONE 10' 112 1/2°
 LOCATION

Figure 17D



Hamilton Standard
 DIVISION OF UNITED AIRCRAFT CORP. • SPECTRUM ANALYSIS

TITLE PROP-FAN MODEL NOISE

ANALYSIS EQUIPMENT AVERAGING TIME 0.5 SEC

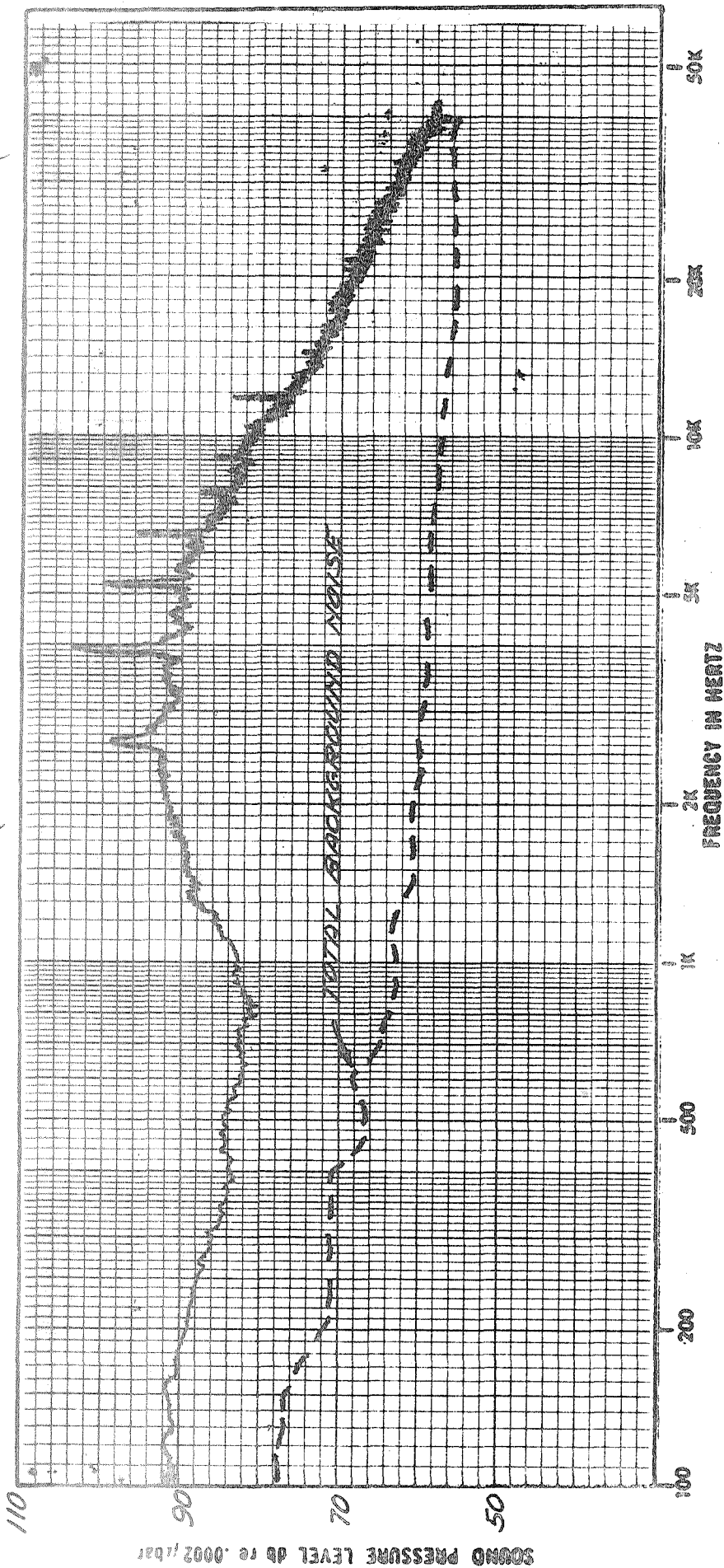
50 HZ FILTER

Sheet ___ of ___ Date ___ Analyzed by ___

Comments, Sketches, Etc.

SHROUD STATIC
 BLADE ANGLE 50°
 TIP SPEED 500 FT/SEC
 MICROPHONE LOCATION 10' 11 1/2"

Figure 18D



Comments, Sketches, Etc.

SHROUD STATIC
 BLADE ANGLE 50°
 TIP SPEED 600 FT/SEC
 MICROPHONE 10' 11 1/2"
 LOCATION

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Standard A. SPECTRUM ANALYSIS

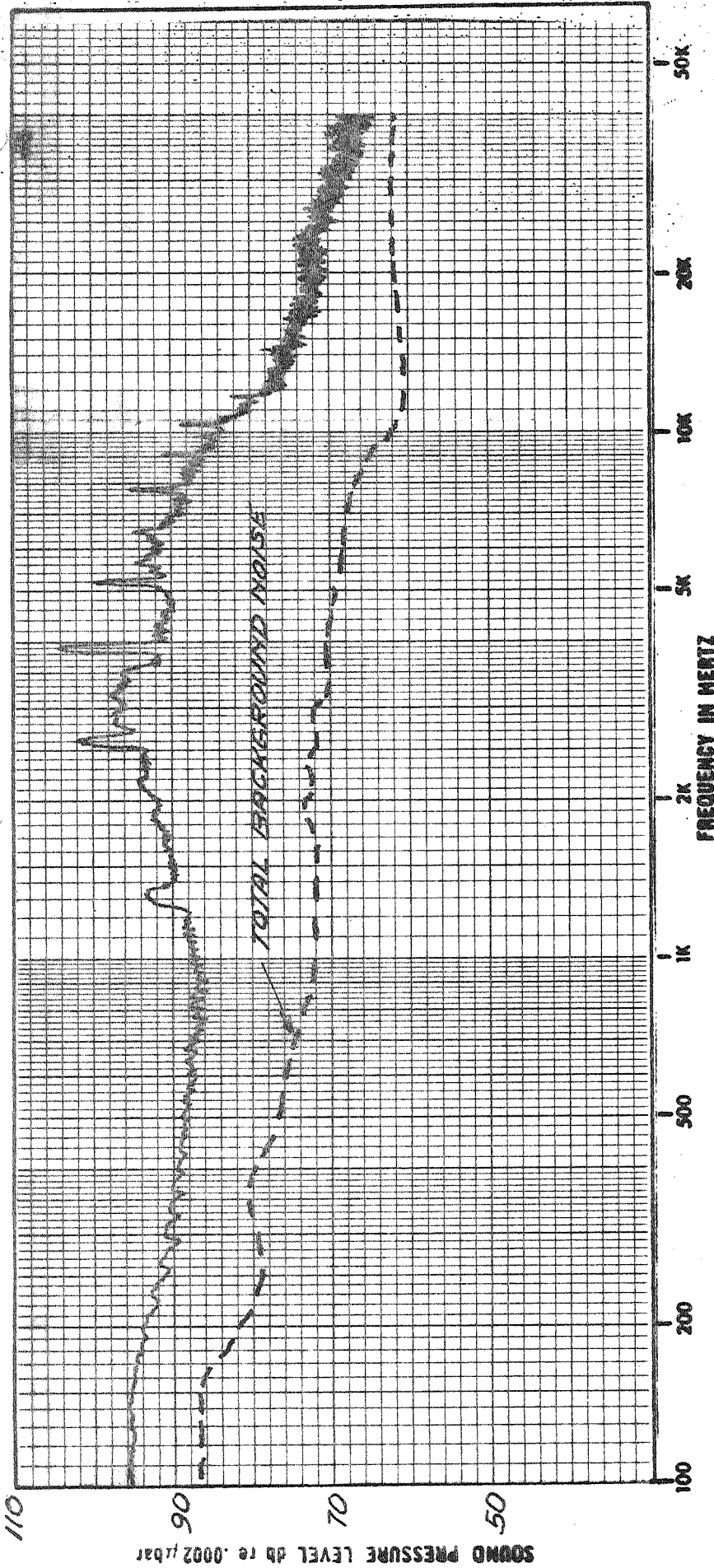
TITLE PROP-FAN MODEL NOISE

ANALYSIS EQUIPMENT AVERAGING TIME 0.5 SEC

50 Hz FILTER

Sheet ___ of ___ Date ___ Analyzed by ___

Figure 19D



Comments, Sketches, Etc.

SHROUD STATIC
 BLADE ANGLE 50°
 TIP SPEED 600 FT/SEC
 MICROPHONE 10' 135°
 LOCATION

Hamilton **U** DIVISION OF UNITED AIRCRAFT CORP. **SPECTRUM ANALYSIS**
 Standard **A.**

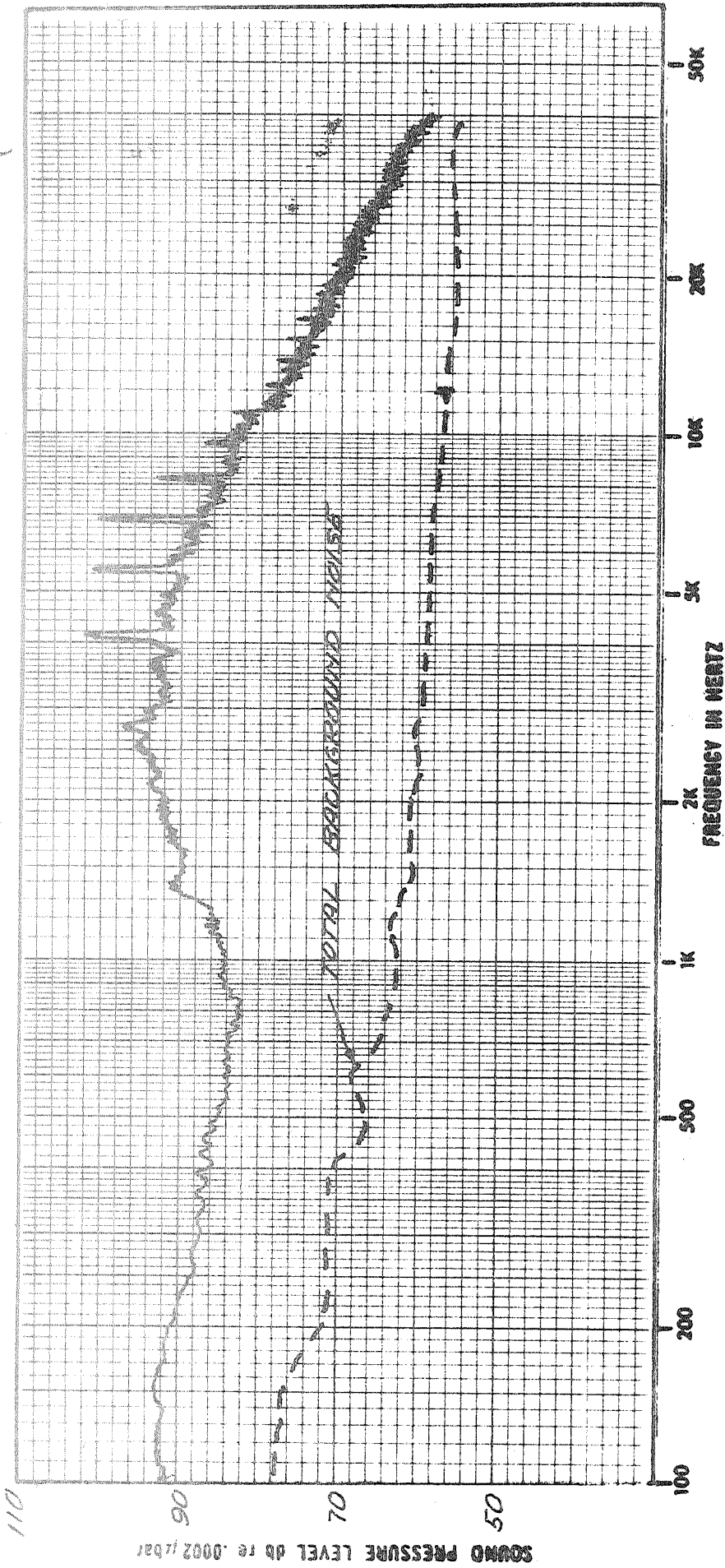
TITLE PROP-FAN MODEL NOISE

ANALYSIS EQUIPMENT AVERAGING TIME 0.5 SEC

50 HZ FILTER

Sheet ___ of ___ Date ___ Analyzed by ___

Figure 20D



Comments, Sketches, Etc.

Hamilton **U** DIVISION OF UNITED AIRCRAFT CORP. **SPECTRUM ANALYSIS**
Standard **A.**

TITLE PROP-FAN MODEL NOISE

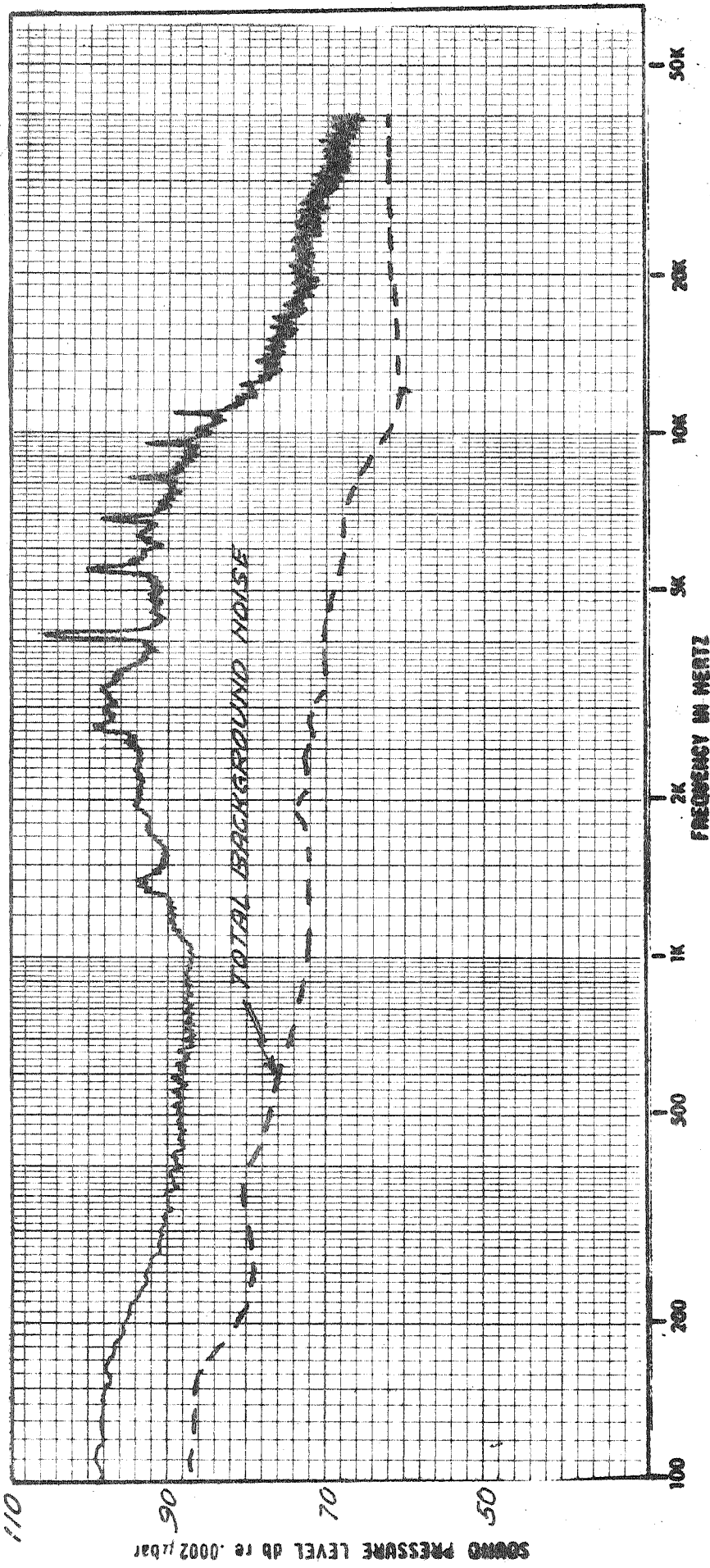
ANALYSIS EQUIPMENT AVERAGING TIME 0.5 SEC

20 Hz FILTER

Sheet ___ of ___ Date ___ Analyzed by ___

SHROUD STATIC
 BLADE ANGLE 50°
 TIP SPEED 626 FT/SEC
 MICROPHONE LOCATION 10' 11 1/2"

Figure 21D



Hamilton **U** DIVISION OF UNITED AIRLINES CORP. **SPECTRUM ANALYSIS**
Standard A.

TITLE PROP-FAN MODEL NOISE

ANALYSIS EQUIPMENT AVERAGING TIME 0.5 SEC

50 HZ FILTER

Sheet ___ of ___ Date ___ Analyzed by ___

Comments, Sketches, Etc.

SHROUD STATIC

BLADE ANGLE 50°

TIP SPEED 626 FT/SEC

MICROPHONE LOCATION 10' 135°

Figure 22D

Hamilton
Standard

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APPENDIX E

STATIC SHROUD NEAR FIELD
ONE-THIRD OCTAVE BAND DATA

THIRD-OCTAVE
BAND NUMBER

INTEGRATION
TIME

- 50
- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

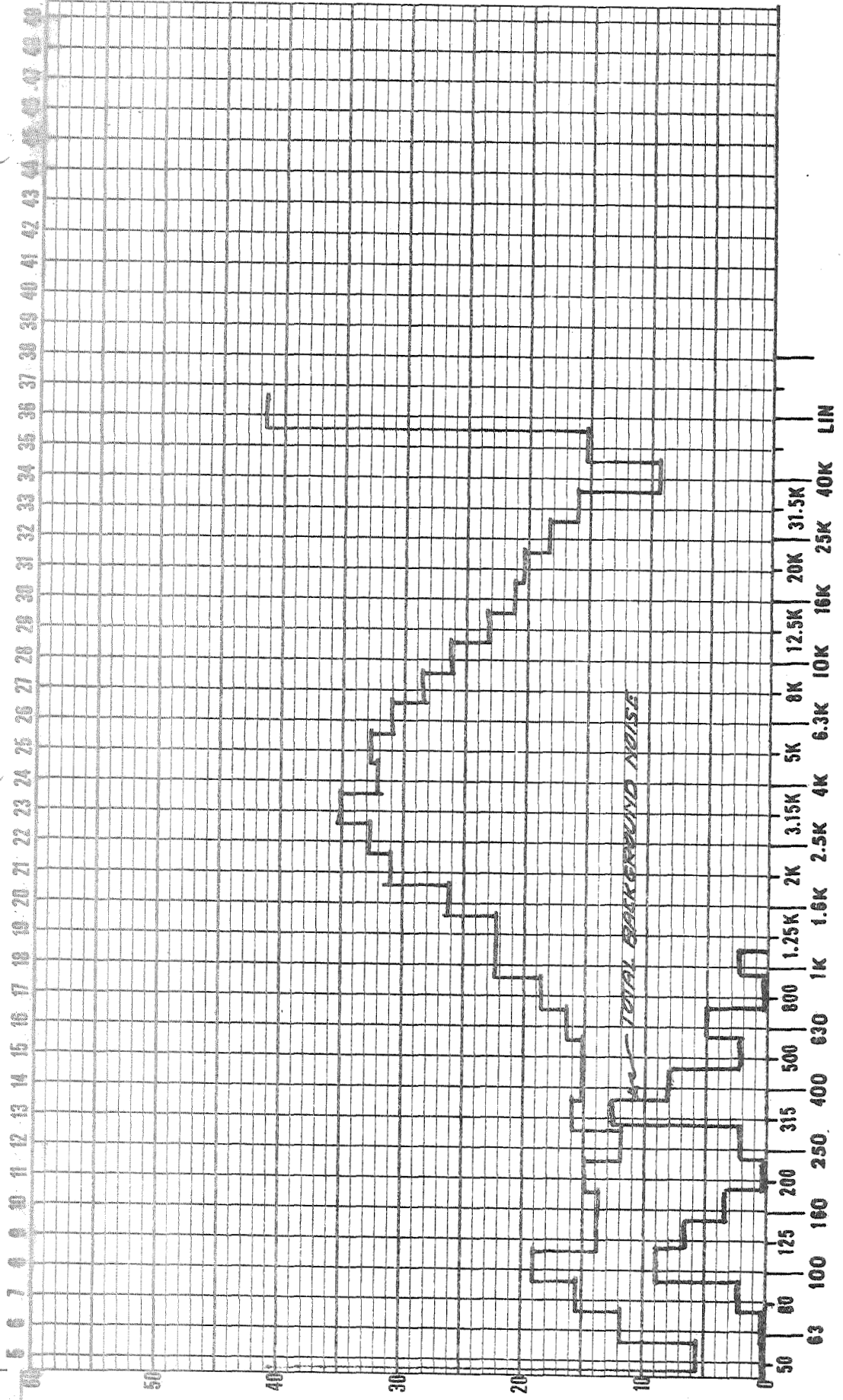
RELATIVE LEVEL IN dB

I. D. NO.

RUN 46

FOR
ABSOLUTE
LEVEL
ADD
70
dB

150



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

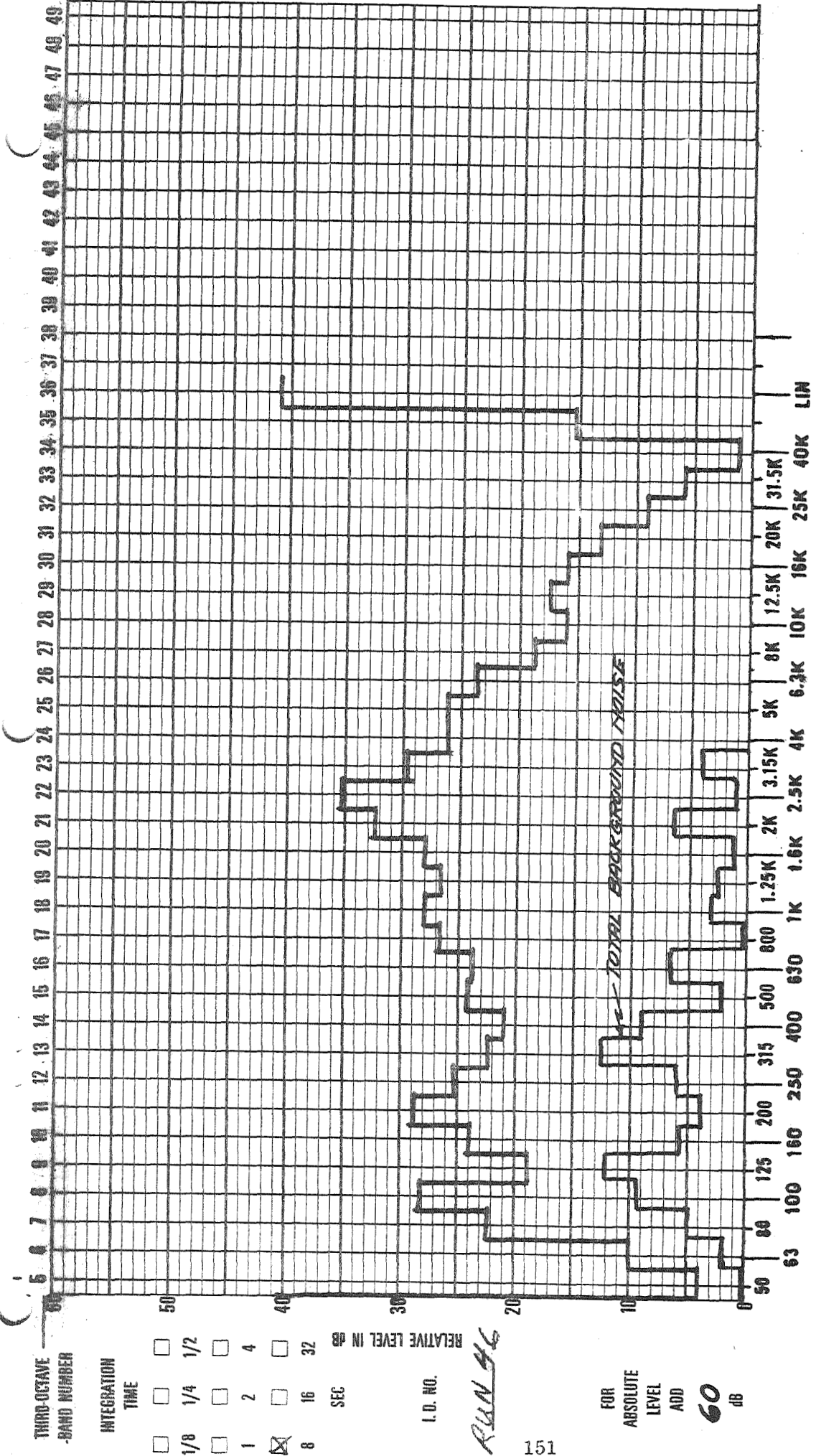
Hamilton
Standard

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THIRD-OCTAVE-BAND
ANALYSIS

SHROUD STATIC
 BLADE ANGLE 35
 TIP SPEED 500 FT/SEC
 MICROPHONE LOCATION 2' SIDELINE
2' REAR

Figure 1/E PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER
 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49

INTEGRATION TIME
 1/8
 1/4
 1/2
 2
 4
 8
 16
 32
 SEC

RELATIVE LEVEL IN DB
 I.D. NO.
 RUN 46

FOR ABSOLUTE LEVEL ADD 60 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

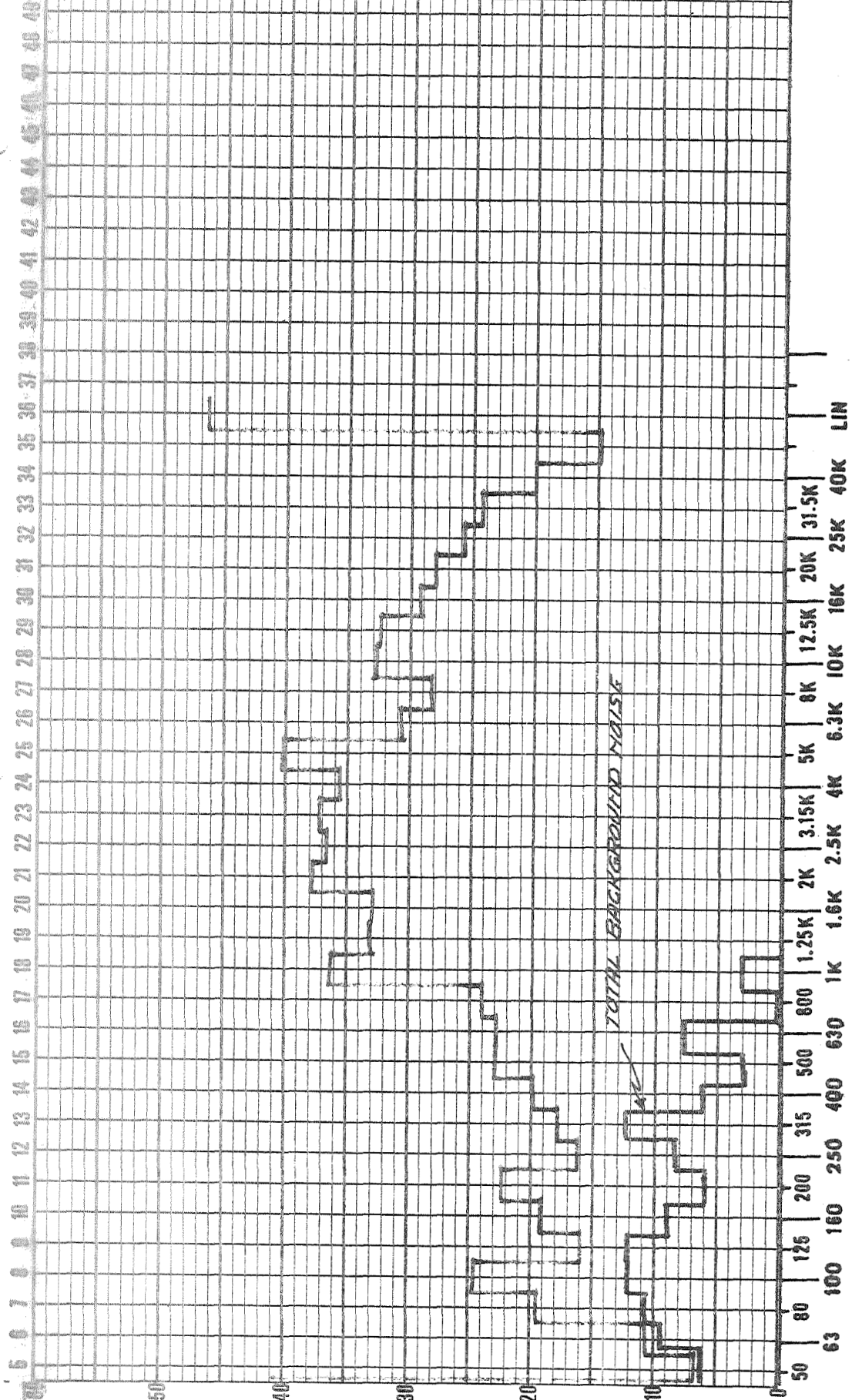
Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

SHROUD STATIC
 BLADE ANGLE 35°
 TIP SPEED 500 FT/SEC
 MICROPHONE LOCATION 2' SIDELINE
PLANE OF ROTATION

Figure 2E PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD STATIC
 BLADE ANGLE 35
 TIP SPEED 500 FT/SEC
 MICROPHONE LOCATION 2' SIDELINE
2' FWD

THIRD-OCTAVE-BAND NUMBER
 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49

INTEGRATION TIME
 1/8
 1/4
 1/2
 1
 2
 4
 8
 16
 32
 SEC

I.D. NO.
RUN 46

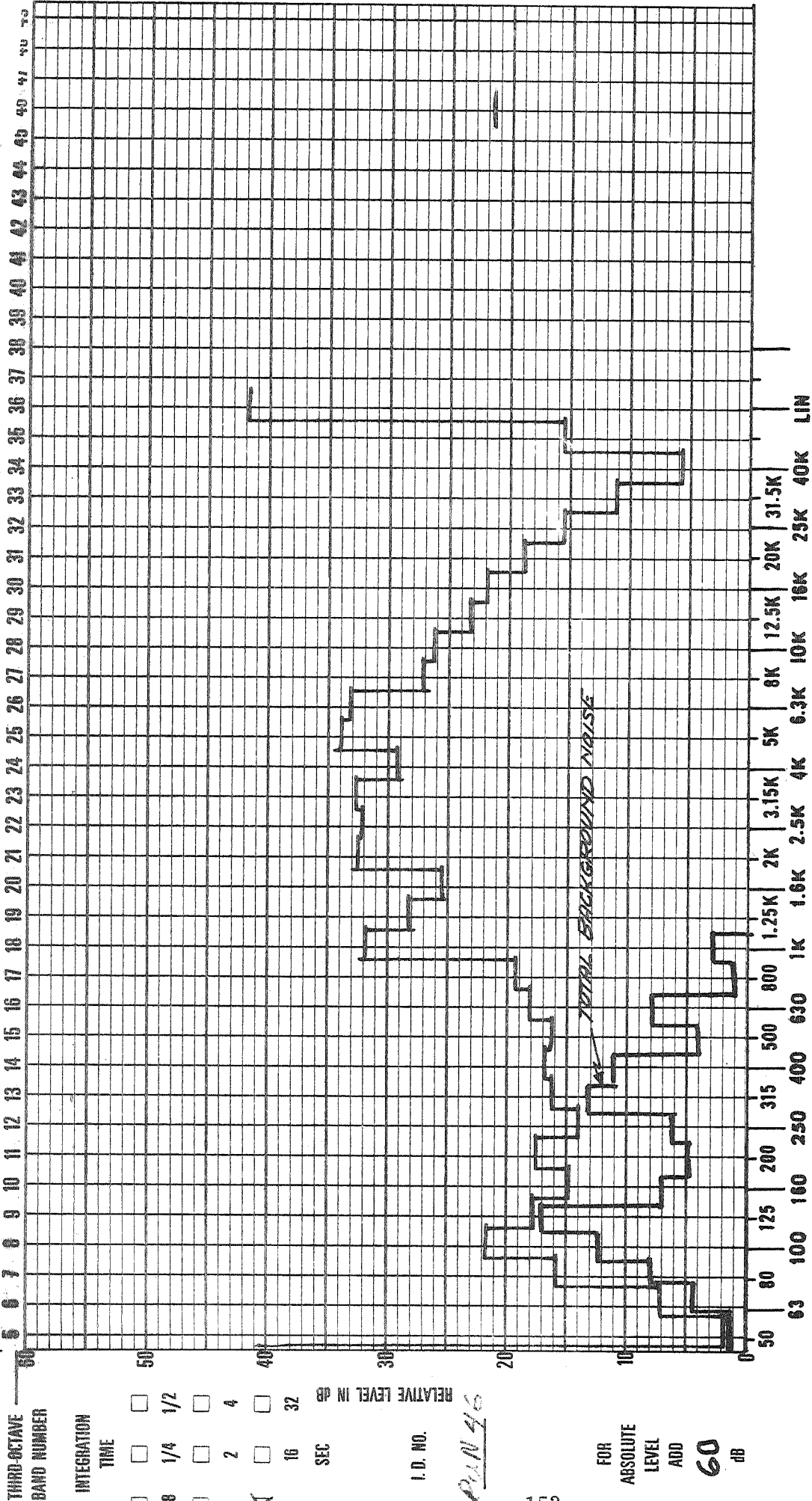
FOR ABSOLUTE LEVEL ADD 60 dB

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

Figure 3E PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND CENTER FREQUENCY IN HZ

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

SHROUD STATIC
 BLADE ANGLE 35°
 TIP SPEED 500 FT/SEC
 MICROPHONE LOCATION 2' SIDELINE
6' FWD

THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

1/8 1/4 1/2 4

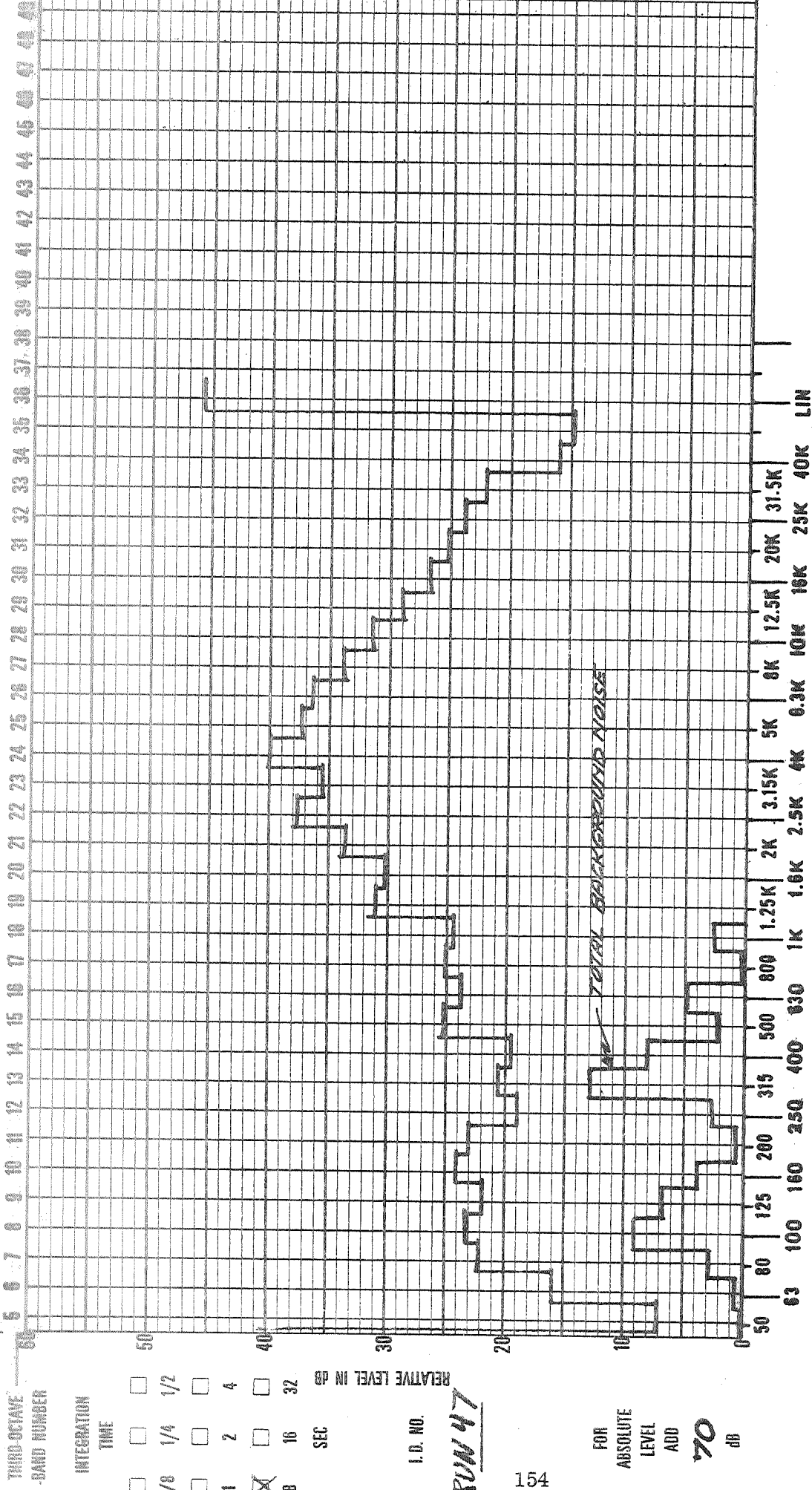
1 2 8 16 32

SEC

I. D. NO.

PAN 46

Figure 4/E PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

1/8

1/4

1/2

1

2

4

8

16

32

SEC

RELATIVE LEVEL IN DB

I.D. NO.

RUN 47

FOR ABSOLUTE LEVEL ADD

70 dB

THIRD-OCTAVE BAND CENTER FREQUENCY IN HZ

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

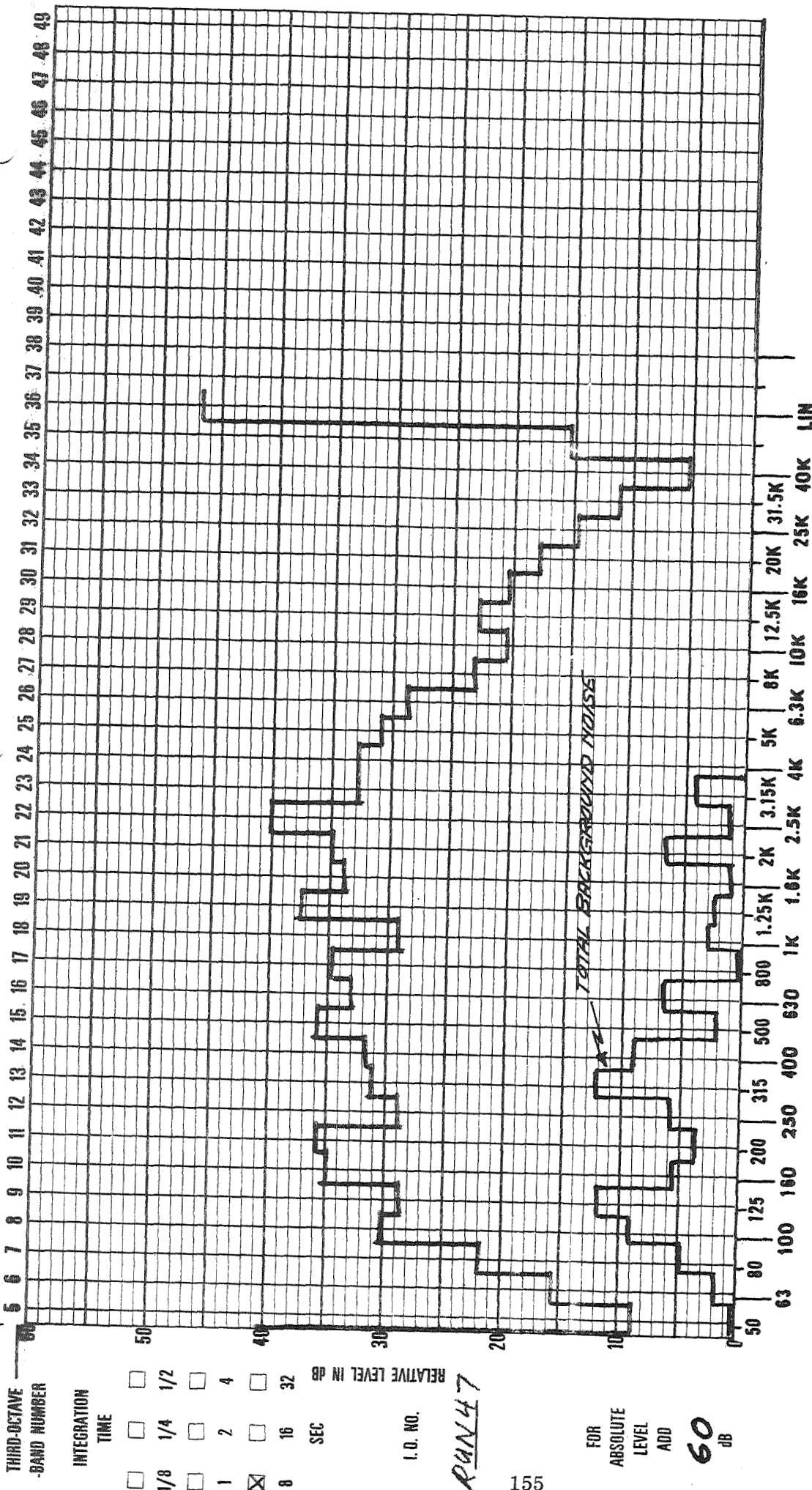
SHROUD STATIC

BLADE ANGLE 35°

TIP SPEED 600 FT/SEC

MICROPHONE LOCATION 2' SIDELINE
2' REAR

Figure 5E PROP-FAN MODEL NOISE



SHROUD STATIC
 BLADE ANGLE 35°
 TIP SPEED 600 FT/SEC
 MICROPHONE LOCATION 2' SIDELINE
PLANE OF ROTATION

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

Figure 6E PROP-FAN MODEL NOISE

THIRD-OCTAVE-BAND NUMBER: 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49

RELATIVE LEVEL IN DB

INTEGRATION TIME

1/8

1/4

1/2

1

2

4

8

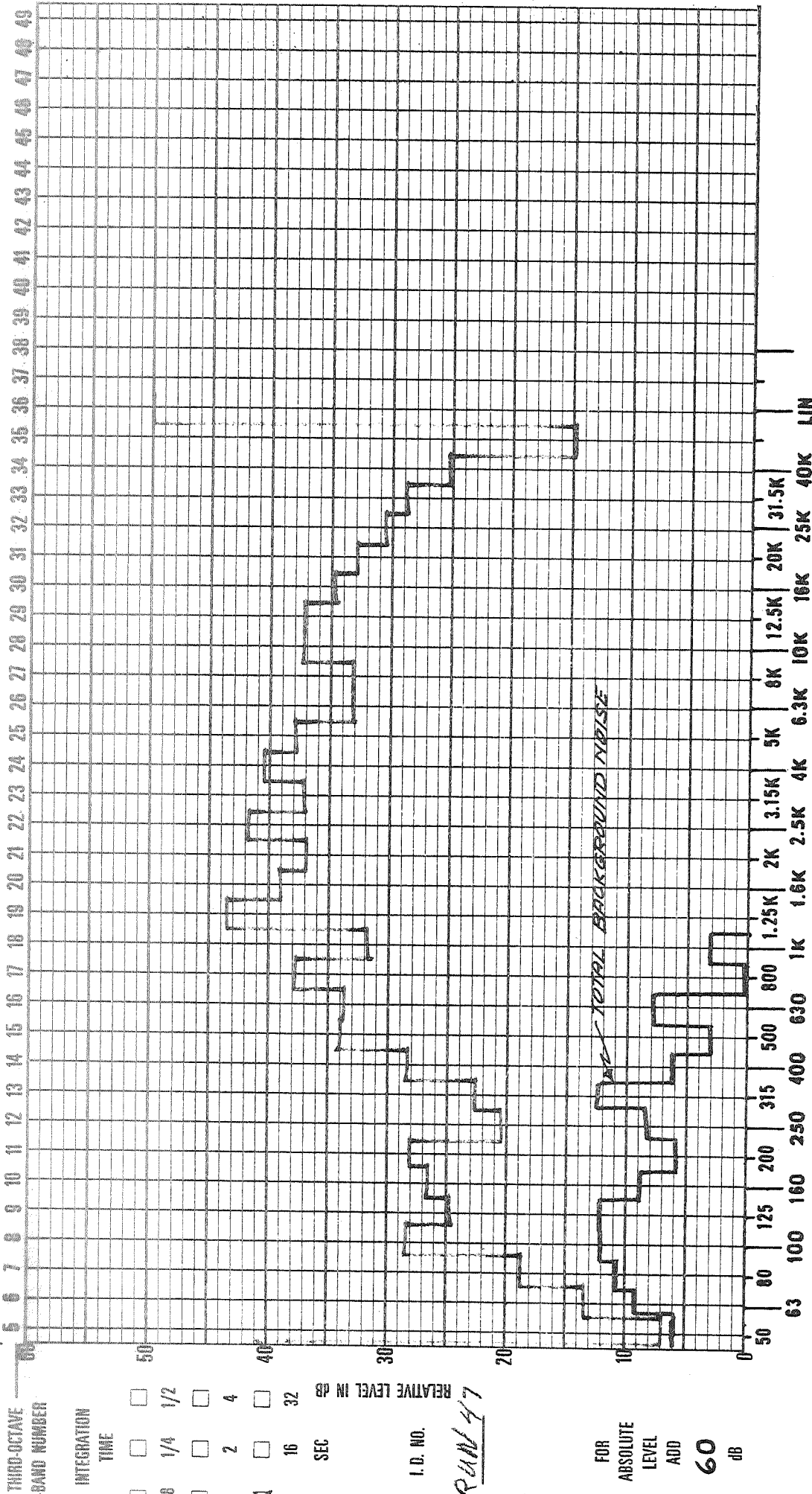
16

32

SEC

I.D. NO. R4N47

FOR ABSOLUTE LEVEL ADD 60 dB



THIRD-OCTAVE-BAND NUMBER

INTEGRATION TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32
- 60

RELATIVE LEVEL IN DB

I. D. NO.

RUN 47

FOR ABSOLUTE LEVEL ADD 60 dB

Hamilton Standard



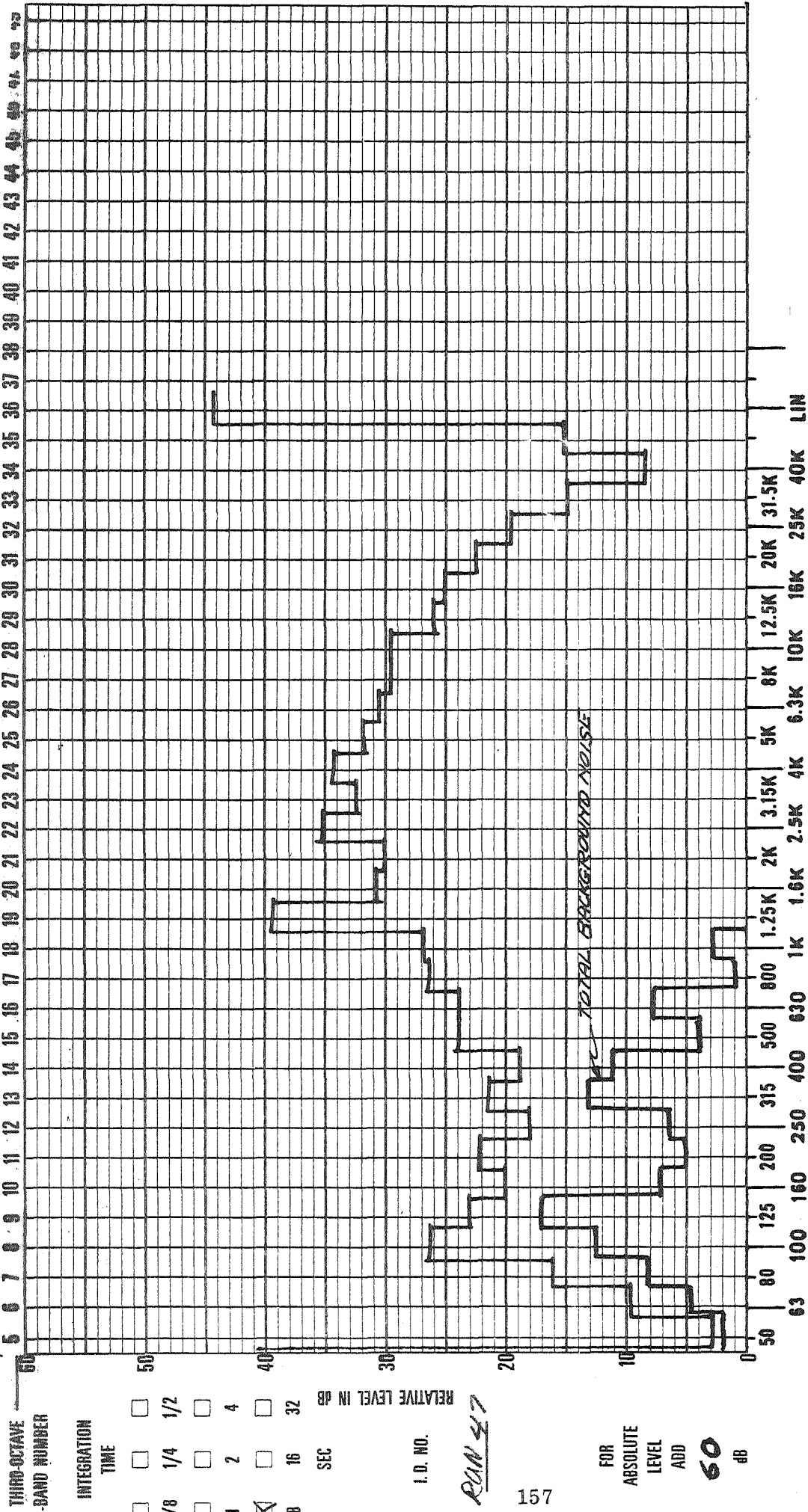
DIVISION OF UNITED AIRCRAFT CORP.

THIRD-OCTAVE-BAND ANALYSIS

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD STATIC
 BLADE ANGLE 35°
 TIP SPEED 600 FT/SEC
 MICROPHONE LOCATION 2' SIDELINE
2' FWD.

Figure 7E PROP-FAN MODEL NOISE



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

SEC

RELATIVE LEVEL IN DB

I.D. NO.

RUN 47

FOR
ABSOLUTE
LEVEL
ADD
60
dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

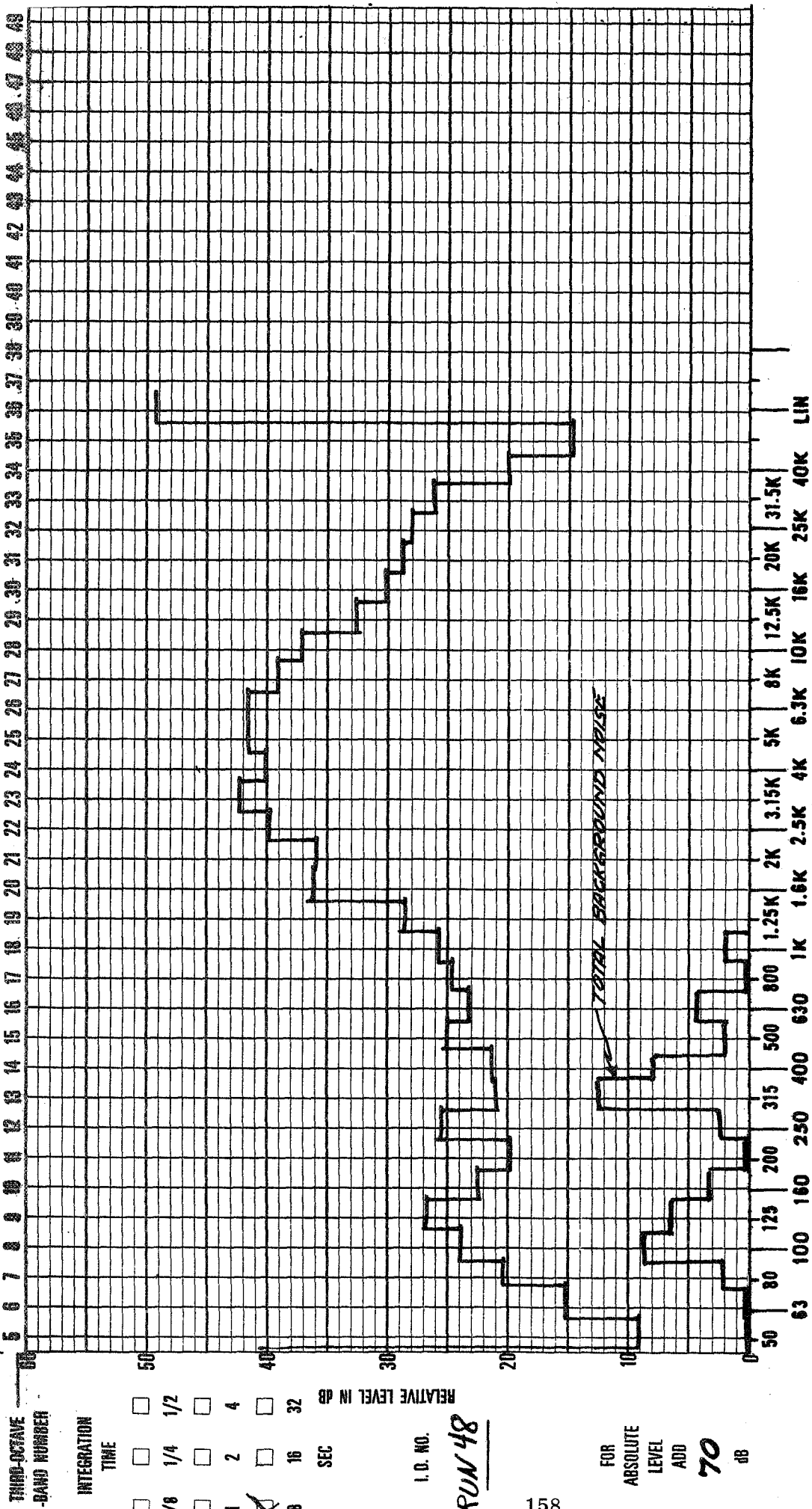
Hamilton
Standard

U
A_r
DIVISION OF UNITED AIRCRAFT CORP.

THIRD-OCTAVE-BAND
ANALYSIS

SHROUD STATIC
BLADE ANGLE 35°
TIP SPEED 600 FT/SEC
MICROPHONE LOCATION 2' SIDELINE
6' FWD.

Figure 8E PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD STATIC
 BLADE ANGLE 35°
 TIP SPEED 700 FT/SEC
 MICROPHONE LOCATION 2' SIDELINE
2' REAR

Hamilton Standard
 U A
 DIVISION OF UNITED AIRCRAFT CORP.
 THIRD-OCTAVE-BAND ANALYSIS

THIRD-OCTAVE-BAND NUMBER: 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50

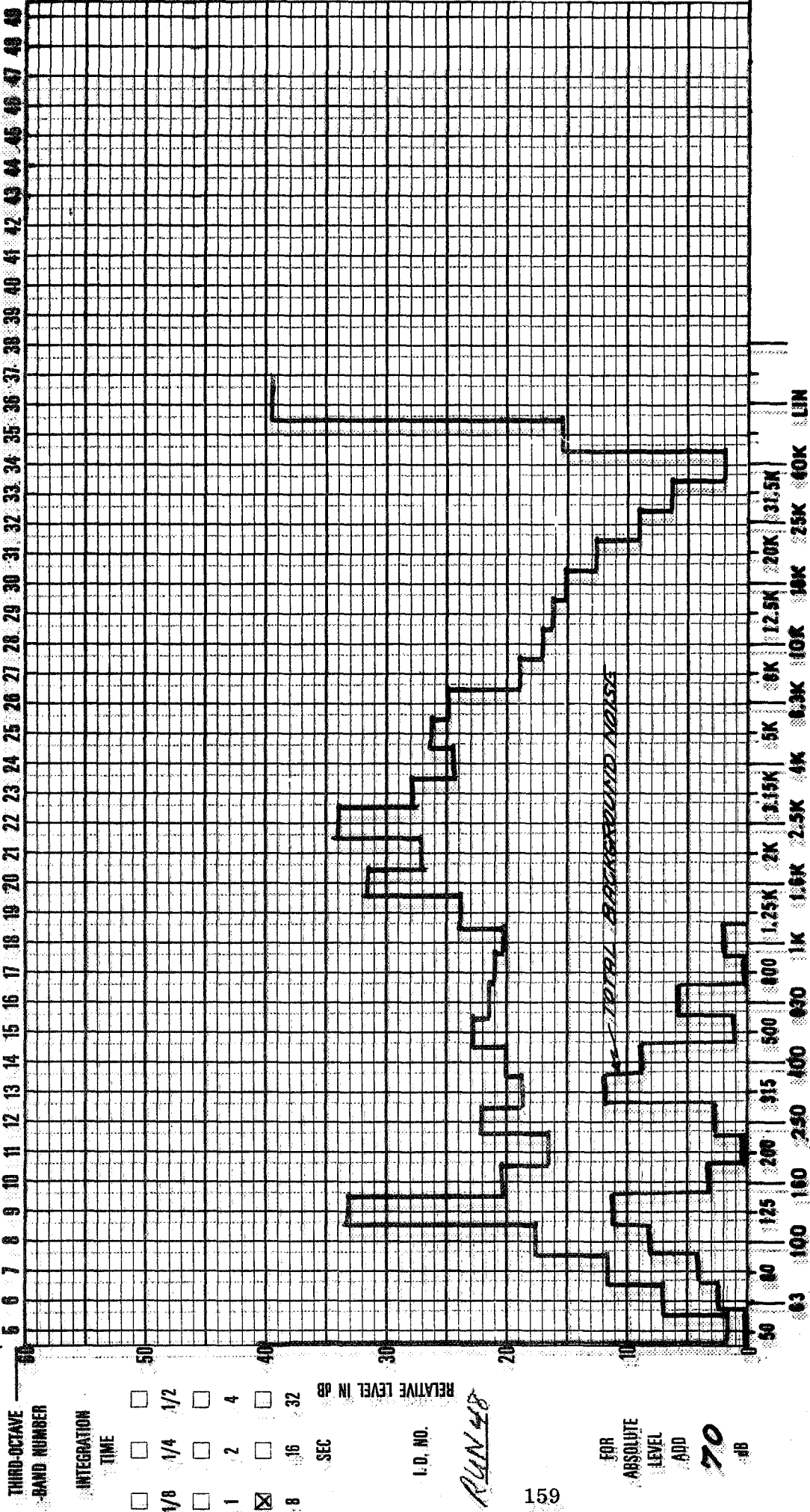
INTEGRATION TIME:
 1/8
 1/4
 1
 2
 4
 8
 16
 32
 SEC

RELATIVE LEVEL IN DB

I.D. NO. RUN 48

FOR ABSOLUTE LEVEL ADD 70 DB

Figure 9E PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

- 1/8
 - 1/4
 - 1/2
 - 1
 - 2
 - 4
 - 8
 - 16
 - 32
- SEC

I.D. NO.

RUN 48

FOR ABSOLUTE LEVEL ADD 70 DB

Hamilton Standard

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THIRD-OCTAVE-BAND ANALYSIS

SHROUD STATIC

BLADE ANGLE 35°

TIP SPEED 1100 FT/SEC

MICROPHONE LOCATION 2' SIDELINE PLANE OF ROTATION

Figure 10E PROP-FAN MODEL NOISE

THIRD-OCTAVE
-BAND NUMBER

5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49

INTEGRATION
TIME

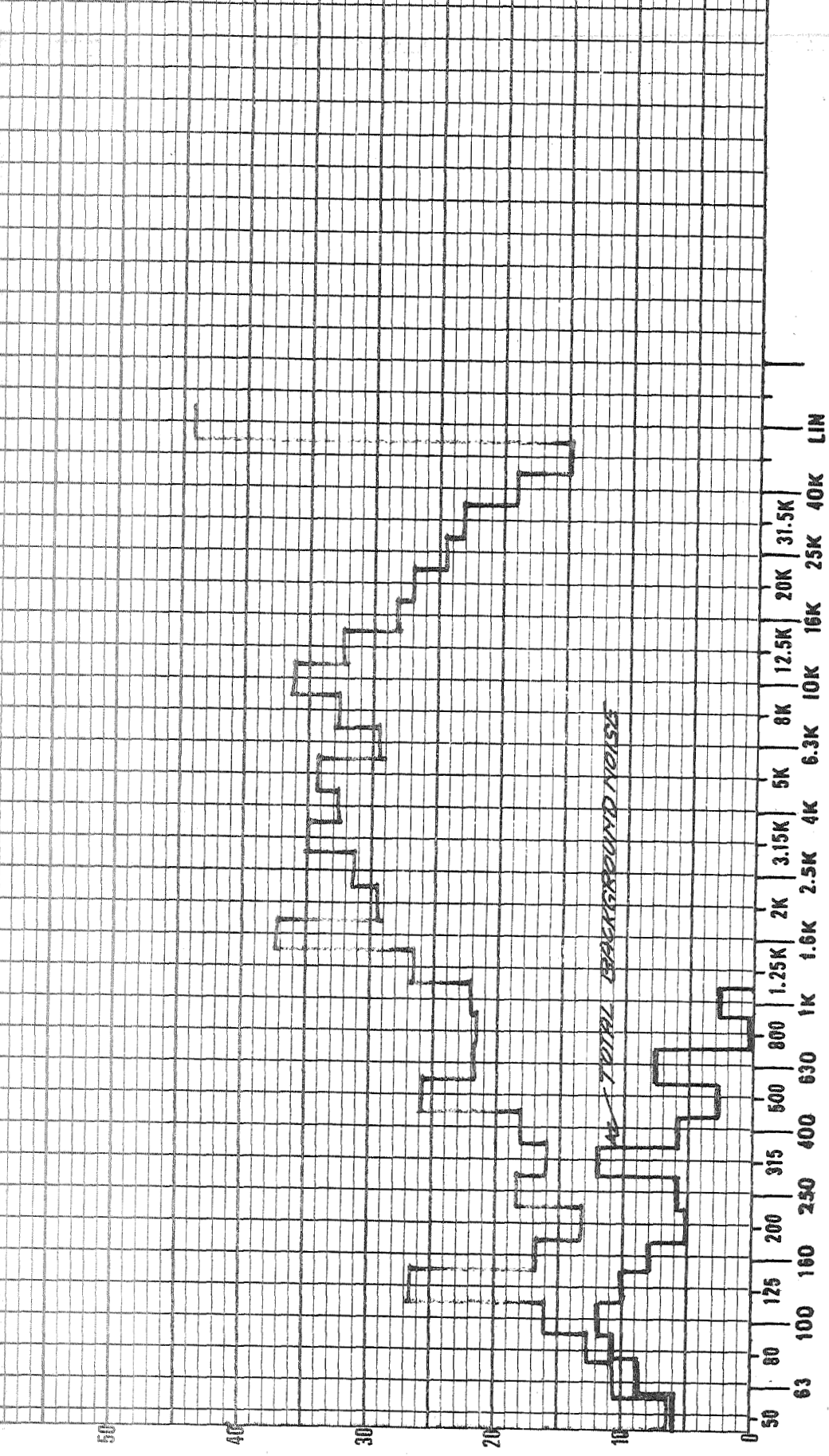
- 50
 - 1/8
 - 1/4
 - 1
 - 2
 - 4
 - 8
 - 16
 - 32
- RELATIVE LEVEL IN DB
- SEC

I.D. NO.

RUN 48

160

FOR
ABSOLUTE
LEVEL
ADD
70
dB



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton
Standard

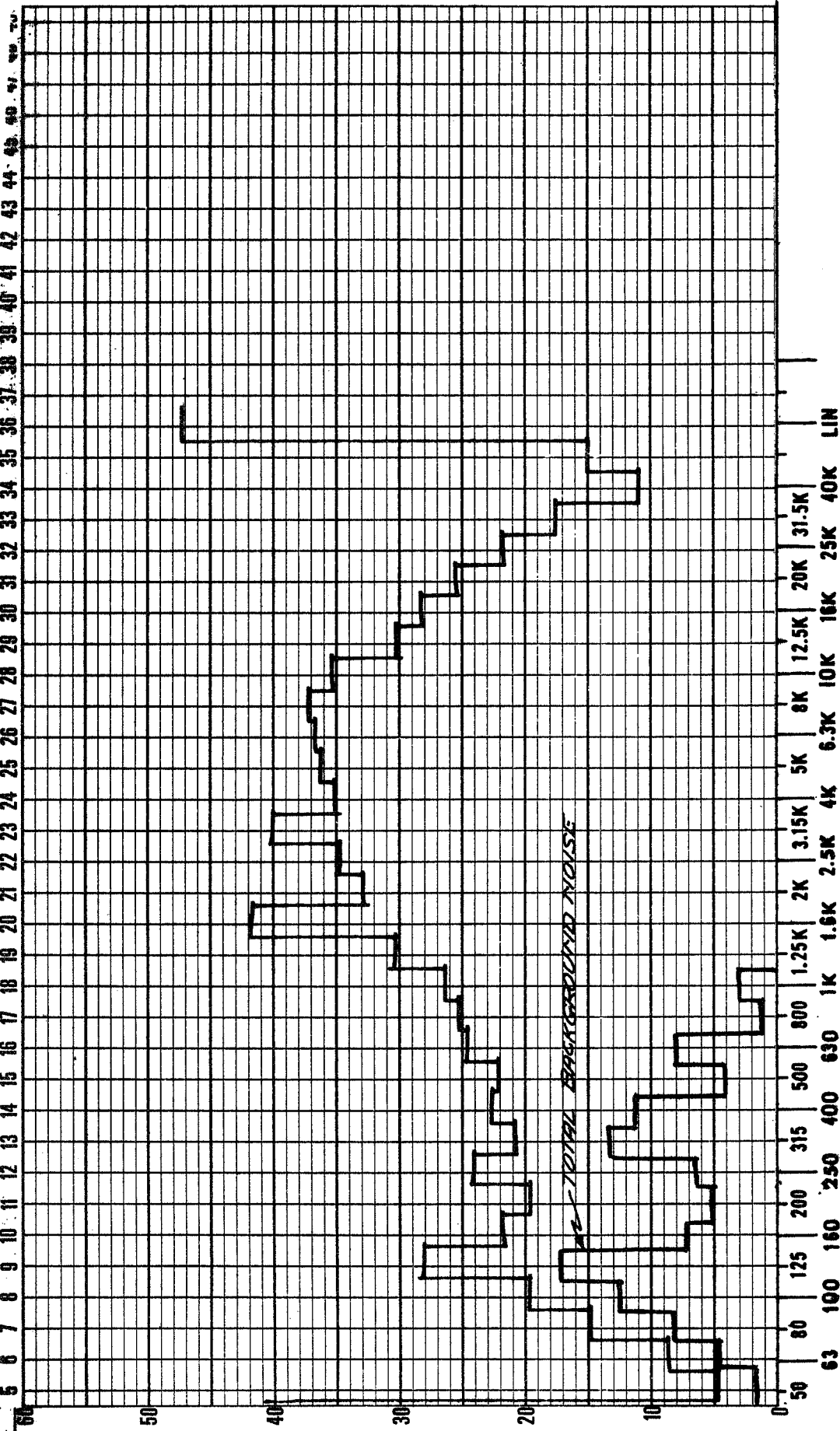
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THIRD-OCTAVE-BAND
ANALYSIS

SHROUD STATIC
 BLADE ANGLE 35°
 TIP SPEED 700 FT/SEC
 MICROPHONE LOCATION 2' SIDELINE
2' FWD.

Figure 1/E PROP-FAN MODEL NOISE

SHROUD STATIC
BLADE ANGLE 35°
TIP SPEED 700 FT/SEC
MICROPHONE LOCATION 2' SIDELINE
6' FWD.



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND ANALYSIS

Figure 12E PROP-FAN MODEL NOISE

THIRD-OCTAVE -BAND NUMBER

INTEGRATION TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

SEC

RELATIVE LEVEL IN DB

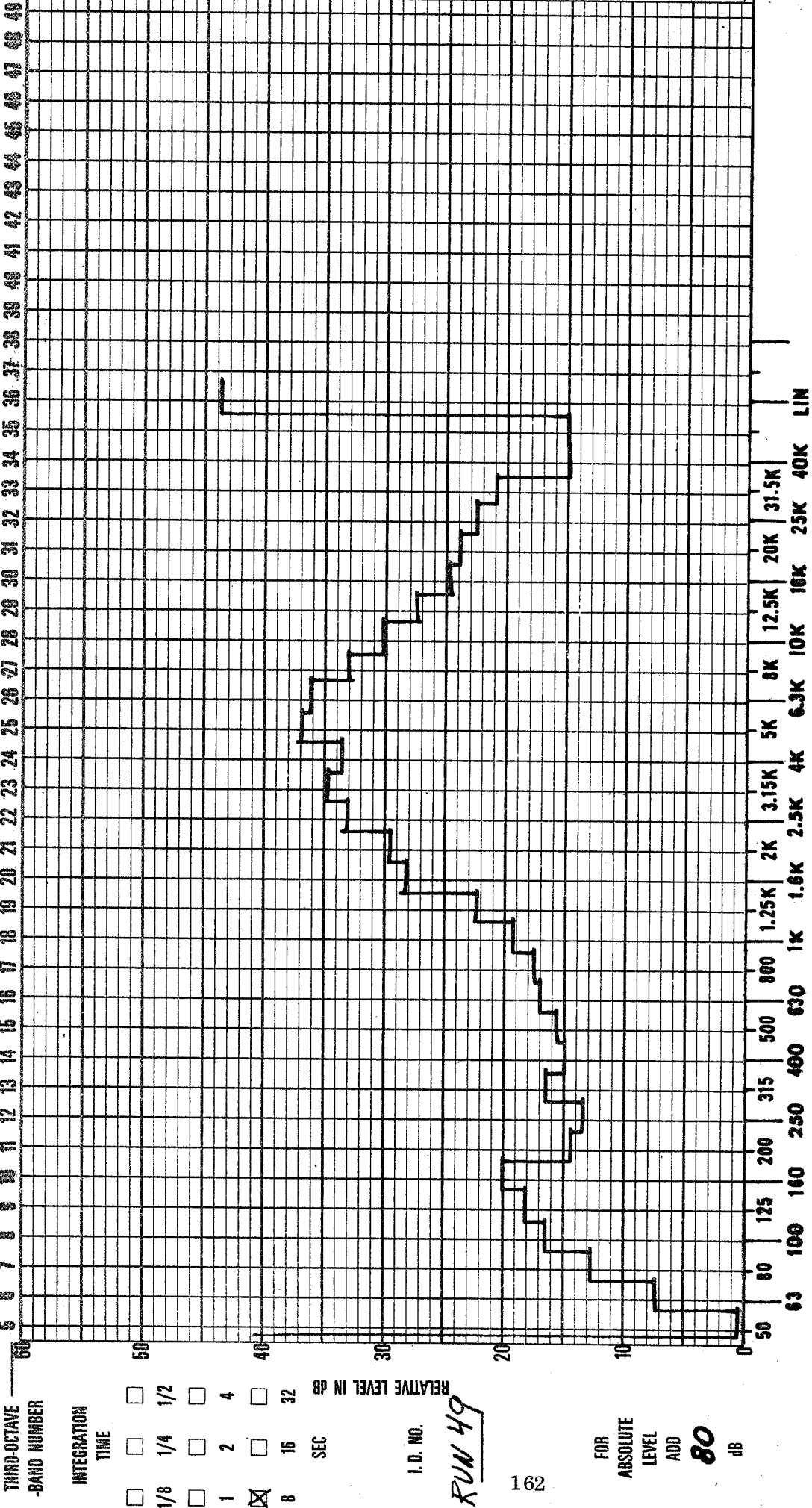
I. D. NO.

RUN 48

FOR ABSOLUTE LEVEL ADD

60 dB

SHROUD STATIC
 BLADE ANGLE 35°
 TIP SPEED 800 FT/SEC
 MICROPHONE LOCATION 2' SIDELINE
2' REAR



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

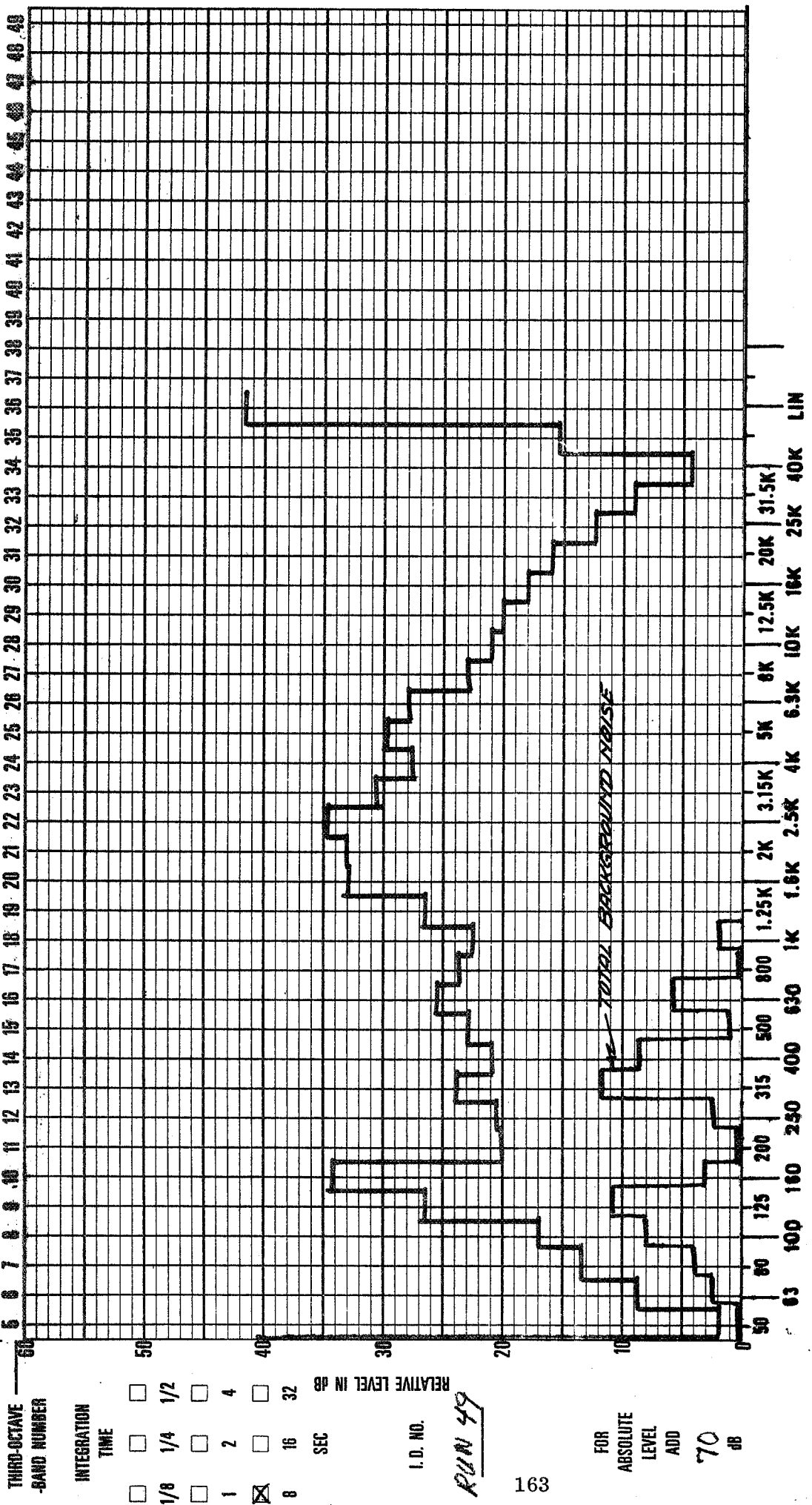
RELATIVE LEVEL IN DB

I. D. NO.

RUN 49

FOR ABSOLUTE LEVEL ADD **80** dB

Figure 13E PROP-FAN MODEL NOISE



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

RELATIVE LEVEL IN dB

I.D. NO.

RUN 49

FOR
ABSOLUTE
LEVEL
ADD
70
dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

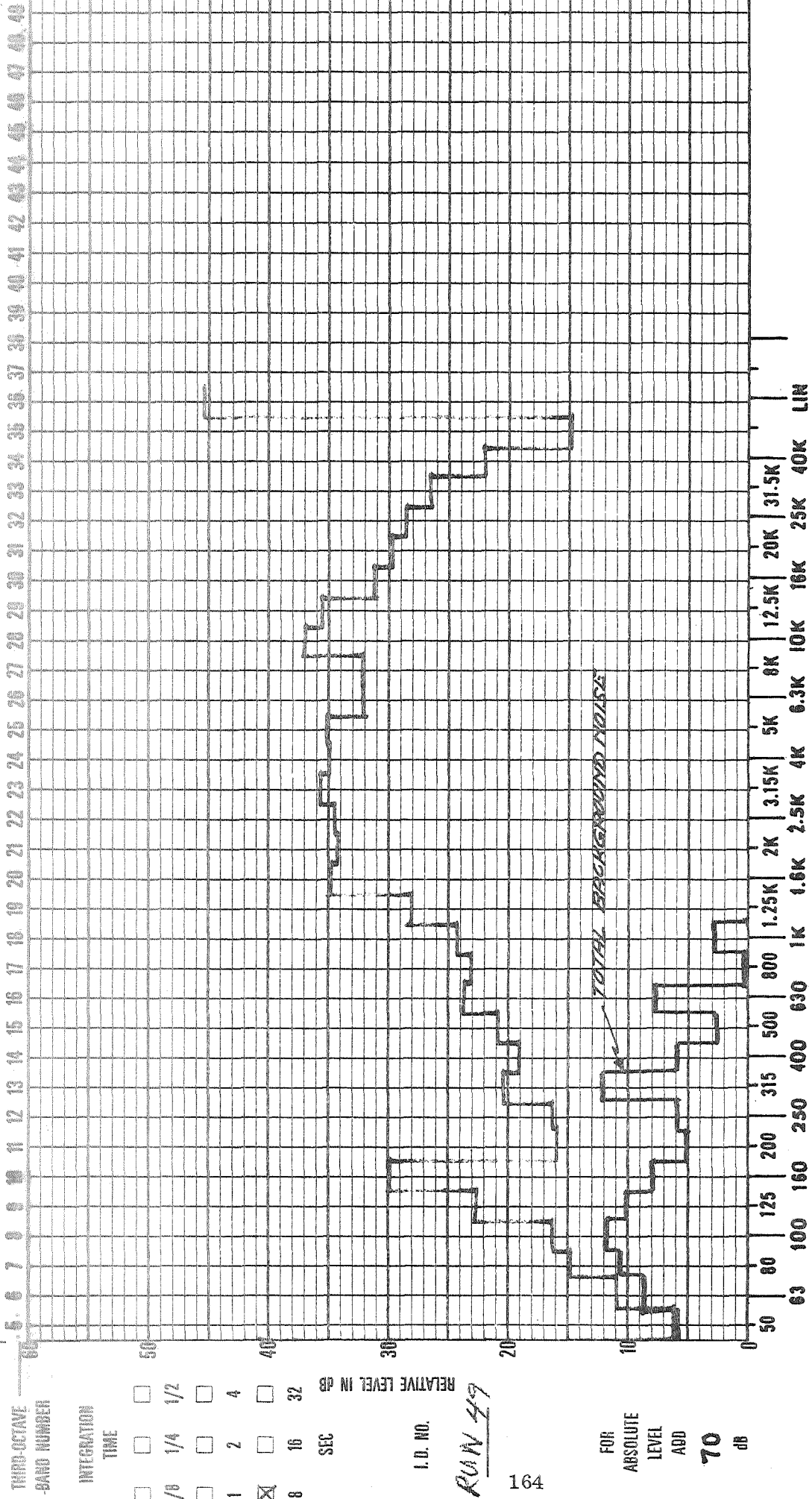
SHROUD STATIC
 BLADE ANGLE 35°
 TIP SPEED 800 FT/SEC
 MICROPHONE LOCATION 2' SIDELINE
PLANE OF ROTATION

Hamilton
Standard



THIRD-OCTAVE-BAND
ANALYSIS

Figure 14E PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND NUMBER

INTEGRATION TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

RELATIVE LEVEL IN DB

I.D. NO.

RUN 49

164

FOR ABSOLUTE LEVEL ADD 70 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

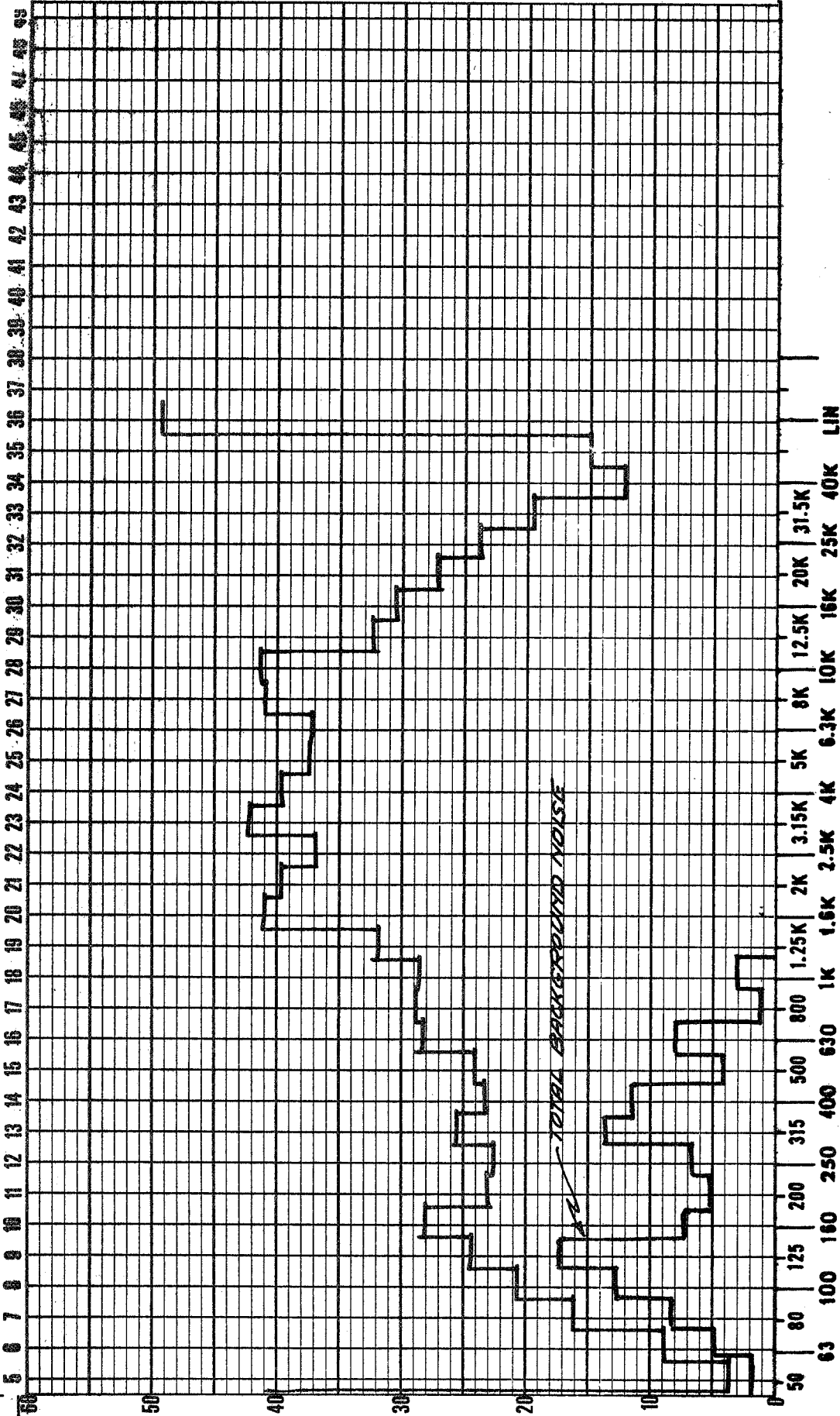
Hamilton Standard

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THIRD-OCTAVE-BAND ANALYSIS

SHROUD STATIC
 BLADE ANGLE 35°
 TIP SPEED 800 FT/SEC
 MICROPHONE LOCATION 2' SIDELINE
2' FWD.

Figure 15E PROP-FAN MODEL NOISE



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

RELATIVE LEVEL IN dB

I. D. NO.

RAN 49

165

FOR
ABSOLUTE
LEVEL
ADD
60
dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND
ANALYSIS

SHROUD STATIC
 BLADE ANGLE 35°
 TIP SPEED 800 FT/SEC
 MICROPHONE LOCATION 2' SIDELINE
6' FWD

Figure 16E PROP-FAN MODEL NOISE

THIRD-OCTAVE
-BAND NUMBER

5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

INTEGRATION
TIME

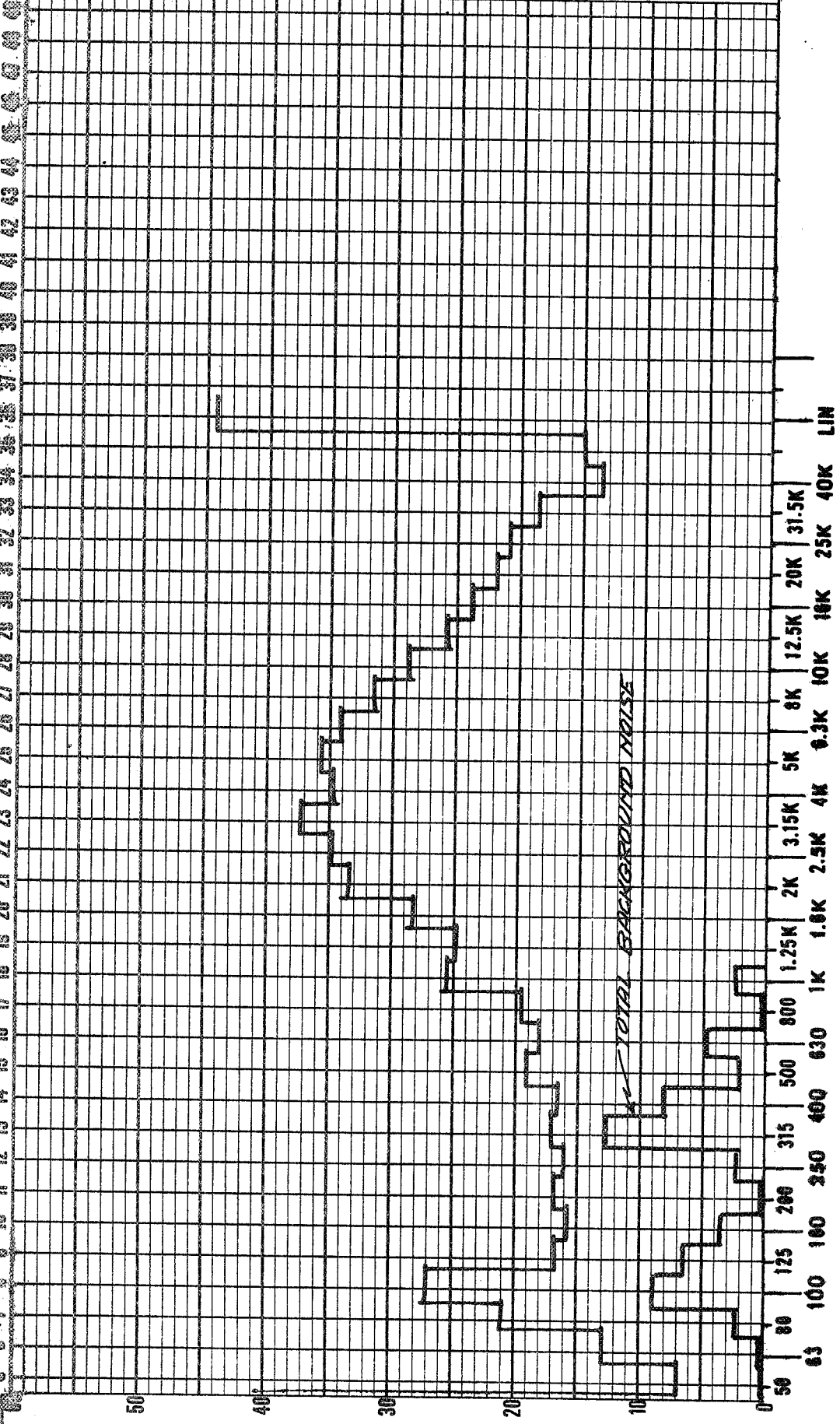
- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

RELATIVE LEVEL IN db

I. D. NO.

RUN 42

FOR
ABSOLUTE
LEVEL
ADD
70
db



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

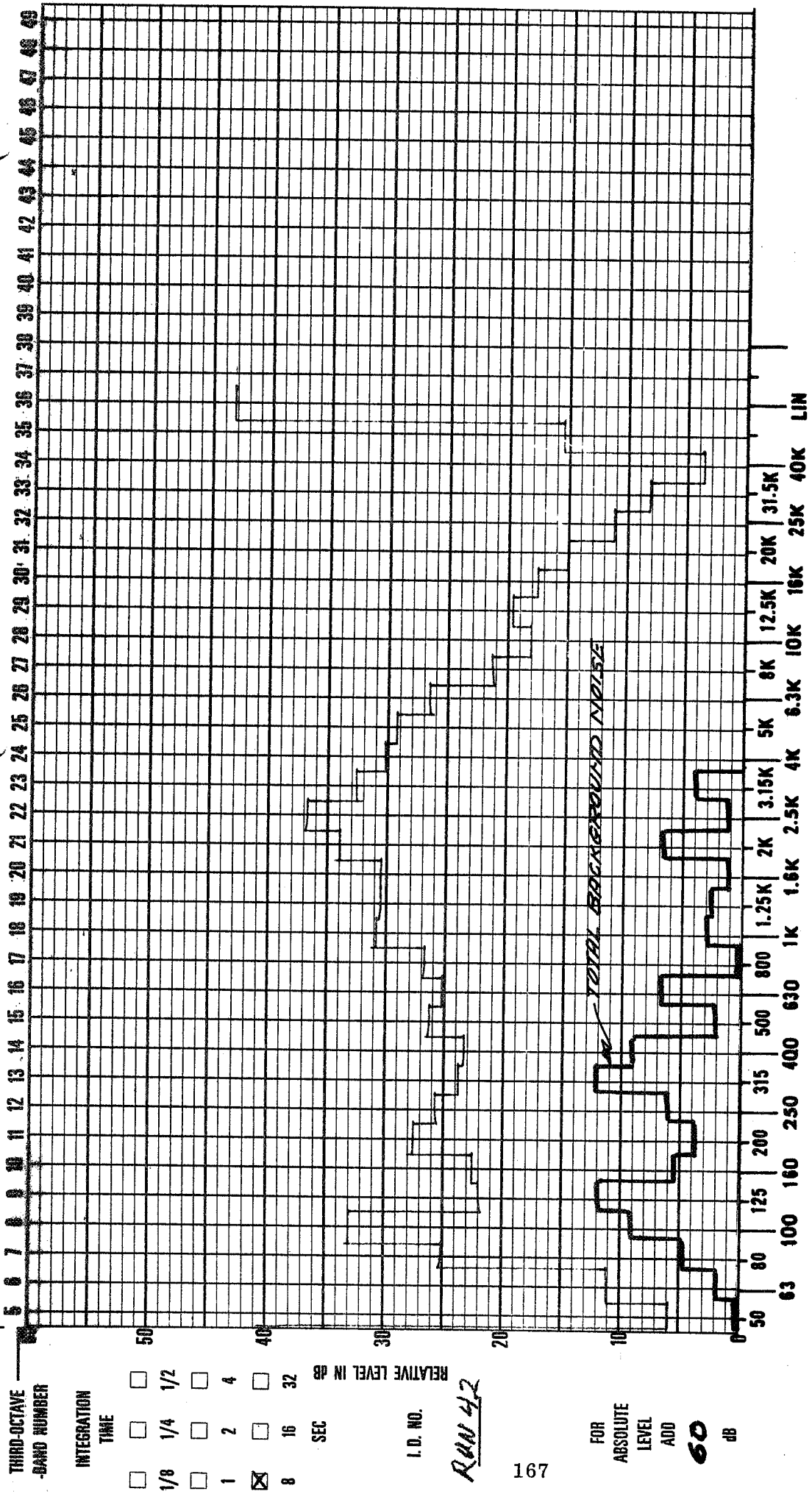
Hamilton
Standard

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THIRD-OCTAVE-BAND
ANALYSIS

SHROUD STATIC
 BLADE ANGLE 40°
 TIP SPEED 500 FT/SEC
 MICROPHONE LOCATION 2' SIDELINE
2' REAR

Figure 17E PROP-FAN MODEL NOISE



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

RELATIVE LEVEL IN DB

FOR
ABSOLUTE
LEVEL
ADD

60
dB

50
40
30
20
10
0

50
1/4
1/2
1
2
4
8
16
32
SEC

I. D. NO.

RUN 412

167

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THIRD-OCTAVE-BAND
ANALYSIS

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

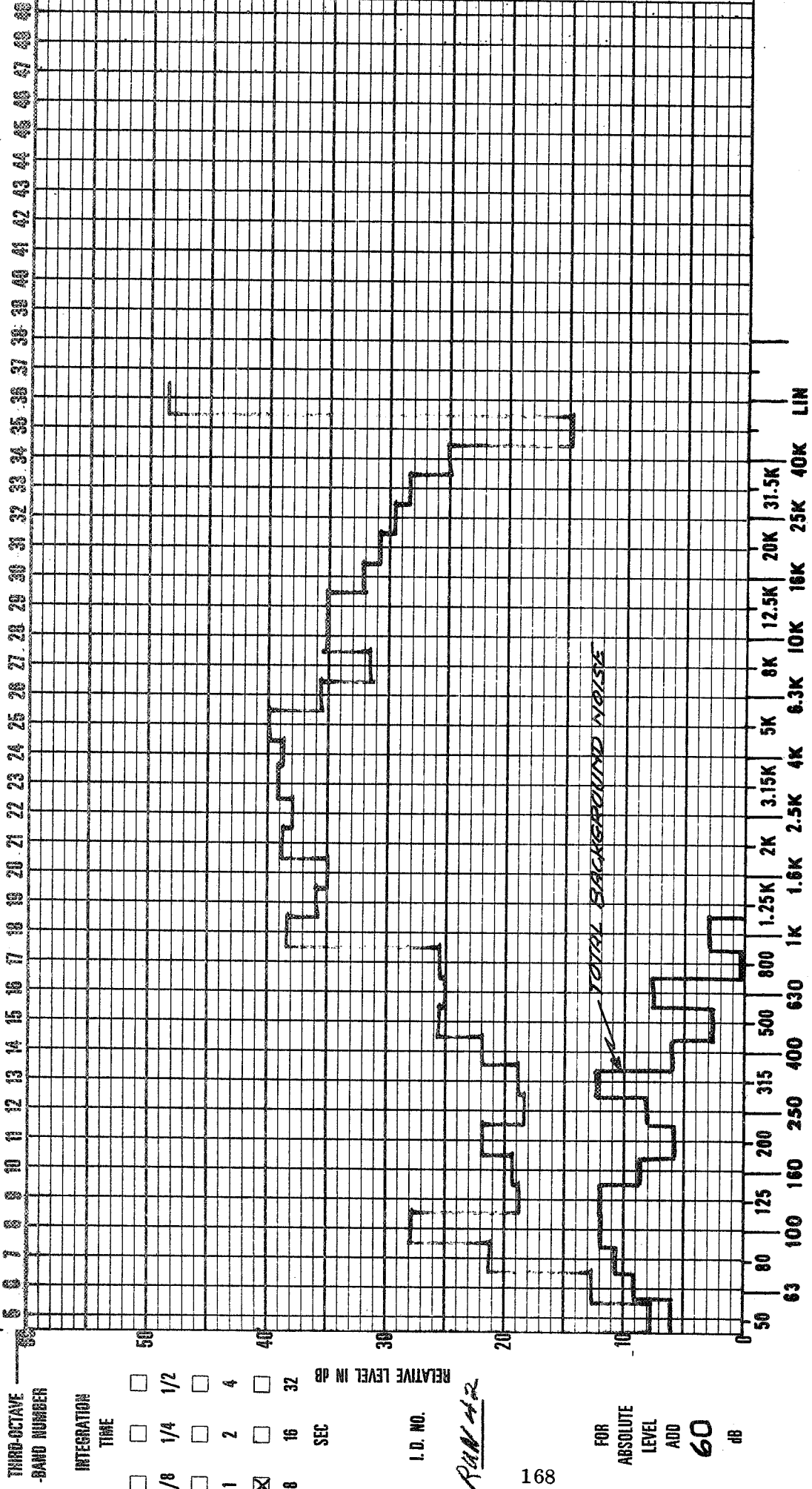
SHROUD STATIC

BLADE ANGLE 40°

TIP SPEED 500 FT/SEC

MICROPHONE
LOCATION 2' SIDELINE
PLANE OF ROTATION

Figure 18E PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND NUMBER 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49

RELATIVE LEVEL IN DB

INTEGRATION TIME

1/8

1/4

1/2

1

2

4

8

16

32

SEC

I.D. NO. RAN-42

FOR ABSOLUTE LEVEL ADD 60 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD STATIC

BLADE ANGLE 40°

TIP SPEED 500 FT/SEC

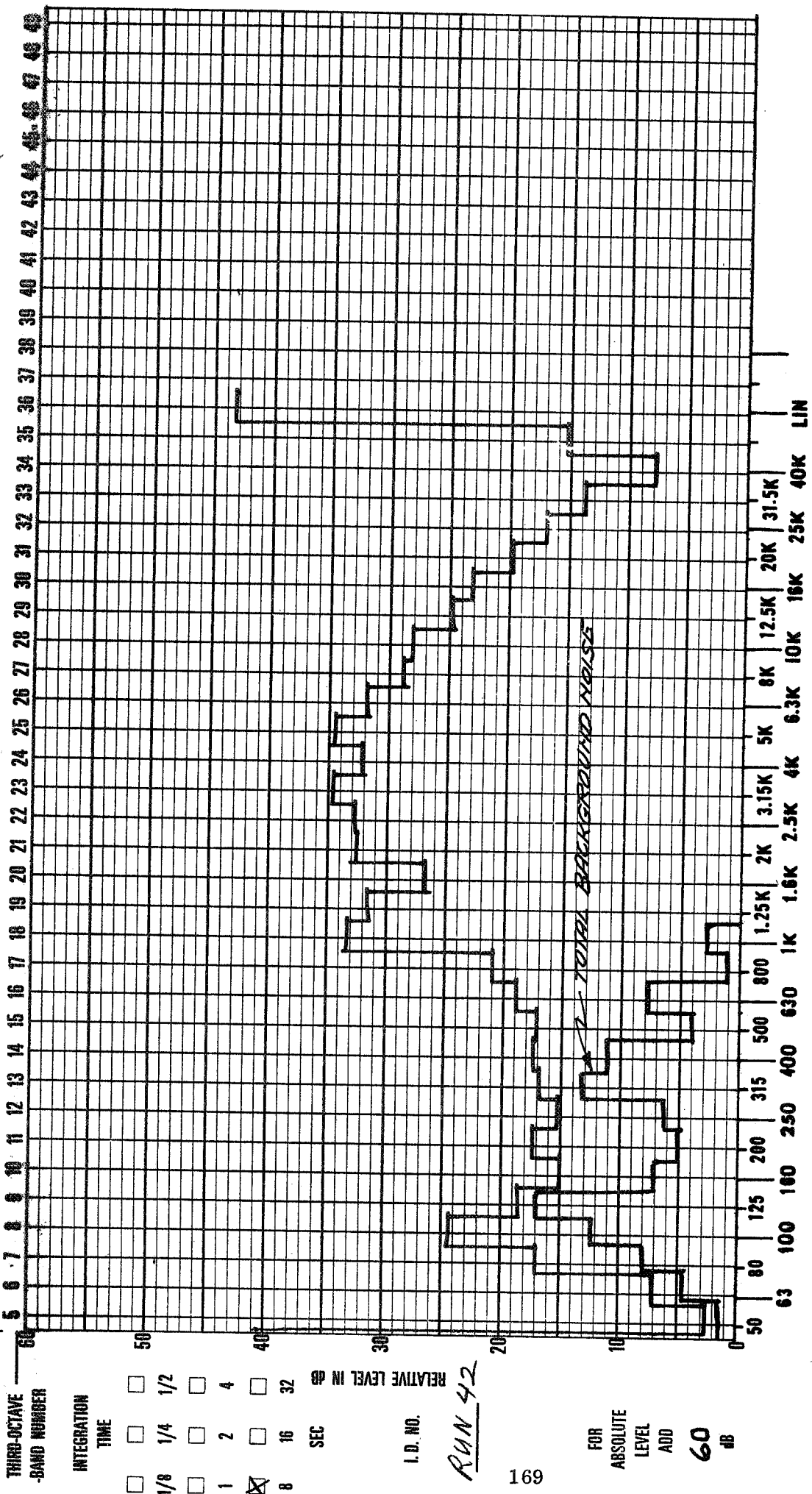
MICROPHONE LOCATION 2' Sideline
2' FWD.

HAMILTON Standard



THIRD-OCTAVE-BAND ANALYSIS

Figure 19E PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard

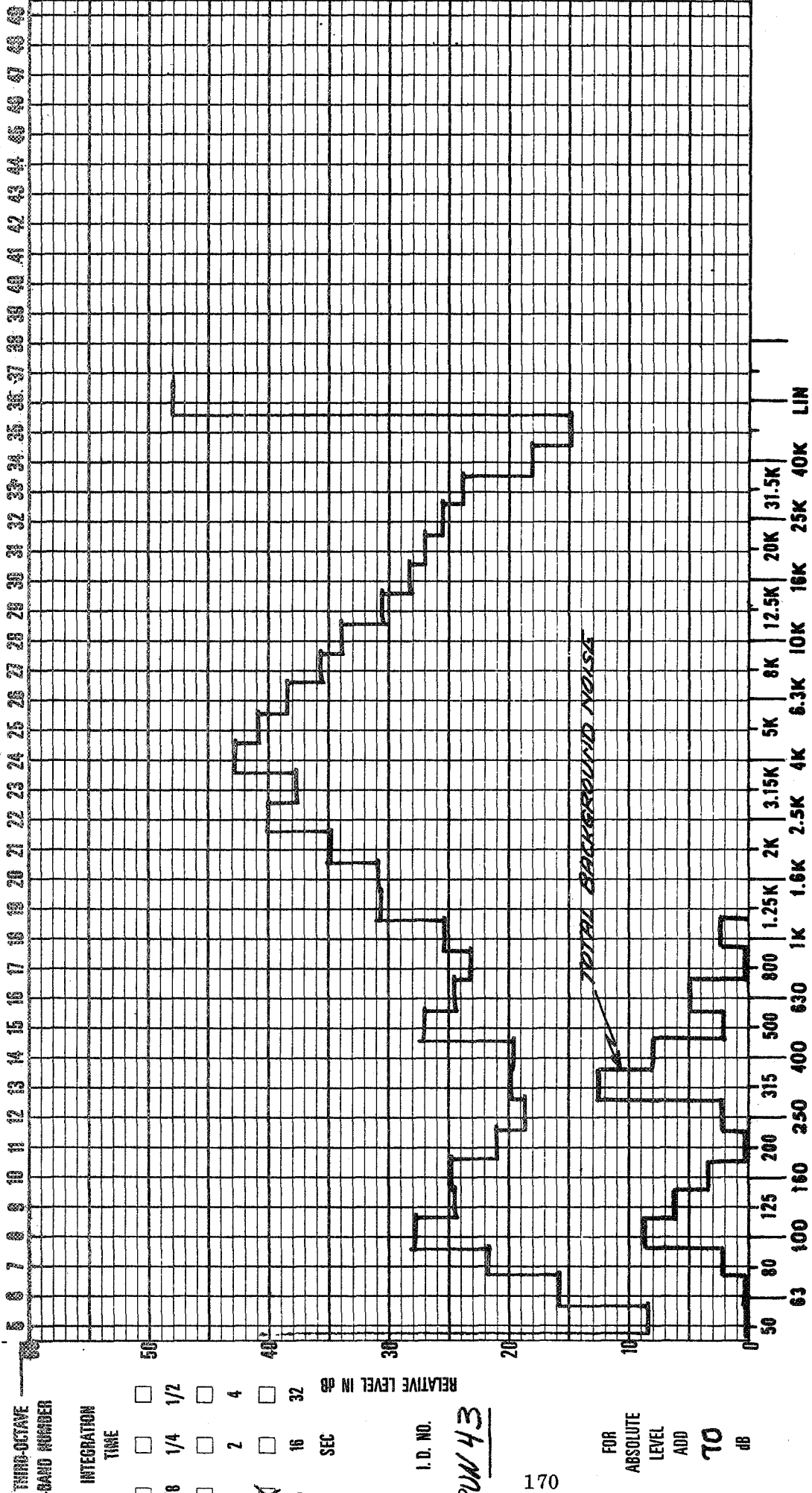
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THIRD-OCTAVE-BAND ANALYSIS

SHROUD STATIC
BLADE ANGLE 40°
TIP SPEED 500 FT/SEC
MICROPHONE LOCATION 2' SIDELINE
6' FWD.

Figure 20EPROP-FAN MODEL NOISE

I.D. NO. RUN 42



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

RELATIVE LEVEL IN dB

I.D. NO.

RUN 43

170

FOR ABSOLUTE LEVEL ADD 70 dB

THIRD-OCTAVE BAND CENTER FREQUENCY IN HZ

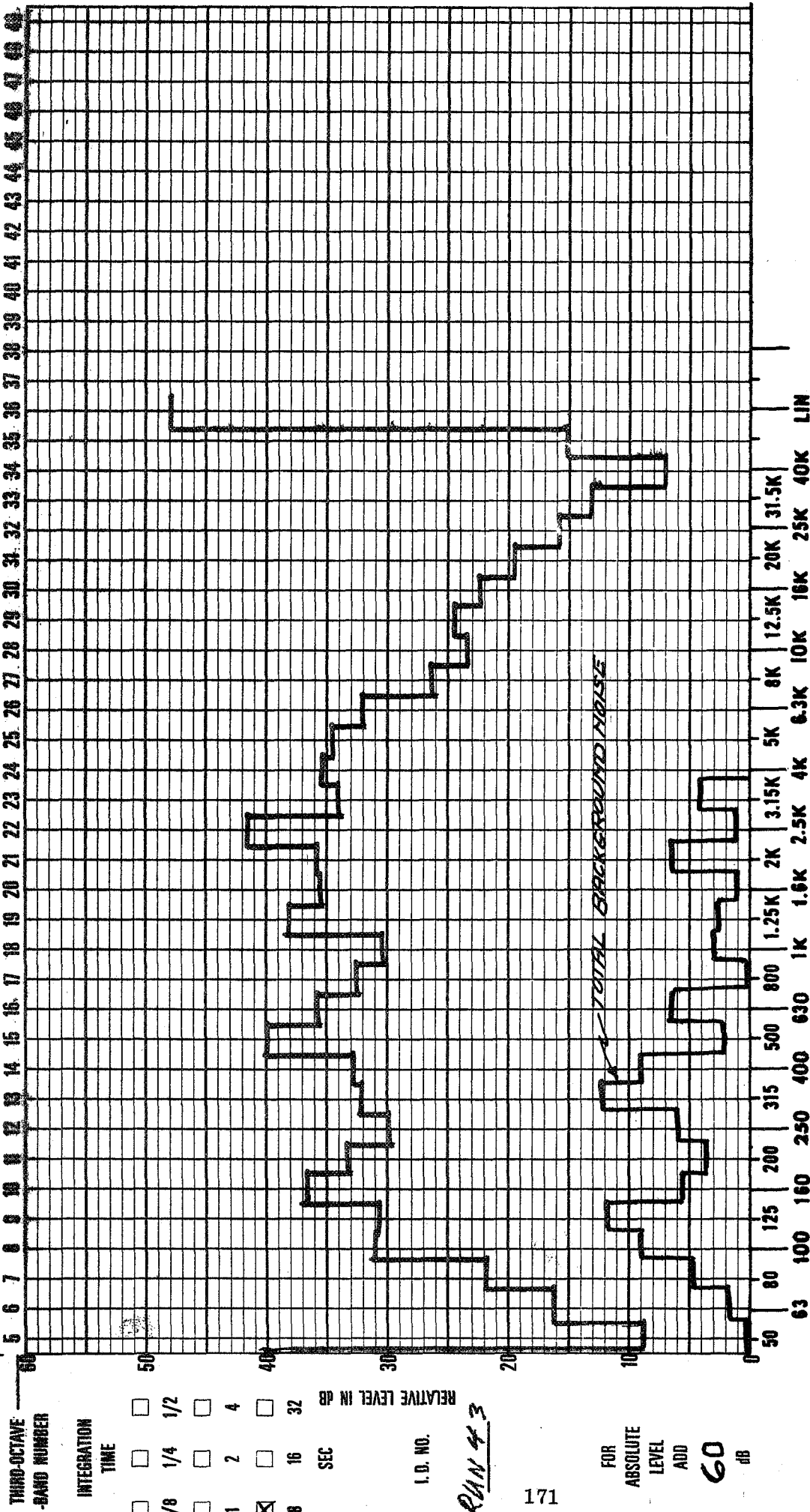
Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

SHROUD STATIC
 BLADE ANGLE 40°
 TIP SPEED 600 FT/SEC
 MICROPHONE LOCATION 2' SIDELINE
2' REAR

Figure 2/E PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

SEC

I.D. NO.

RUN 43

FOR ABSOLUTE LEVEL ADD 60 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

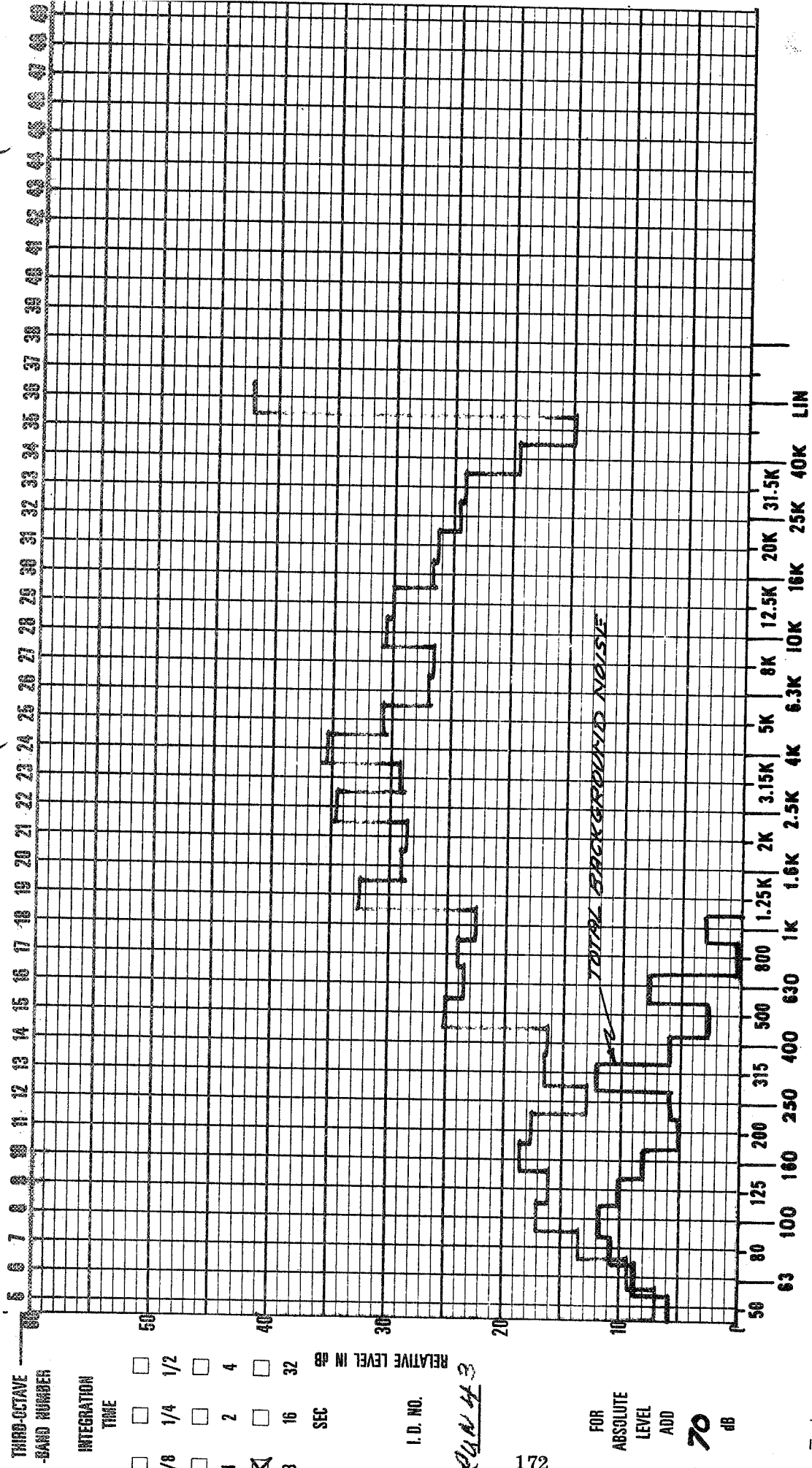
Hamilton Standard

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THIRD-OCTAVE-BAND ANALYSIS

SHROUD STATIC
 BLADE ANGLE 40
 TIP SPEED 600 FT/SEC
 MICROPHONE LOCATION 2' SIDELINE
 PLANE OF ROTATION

Figure 22E PROP-FAN MODEL NOISE



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

RELATIVE LEVEL IN dB

I.D. NO.

RUN 43

172

FOR
ABSOLUTE
LEVEL
ADD
70
dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

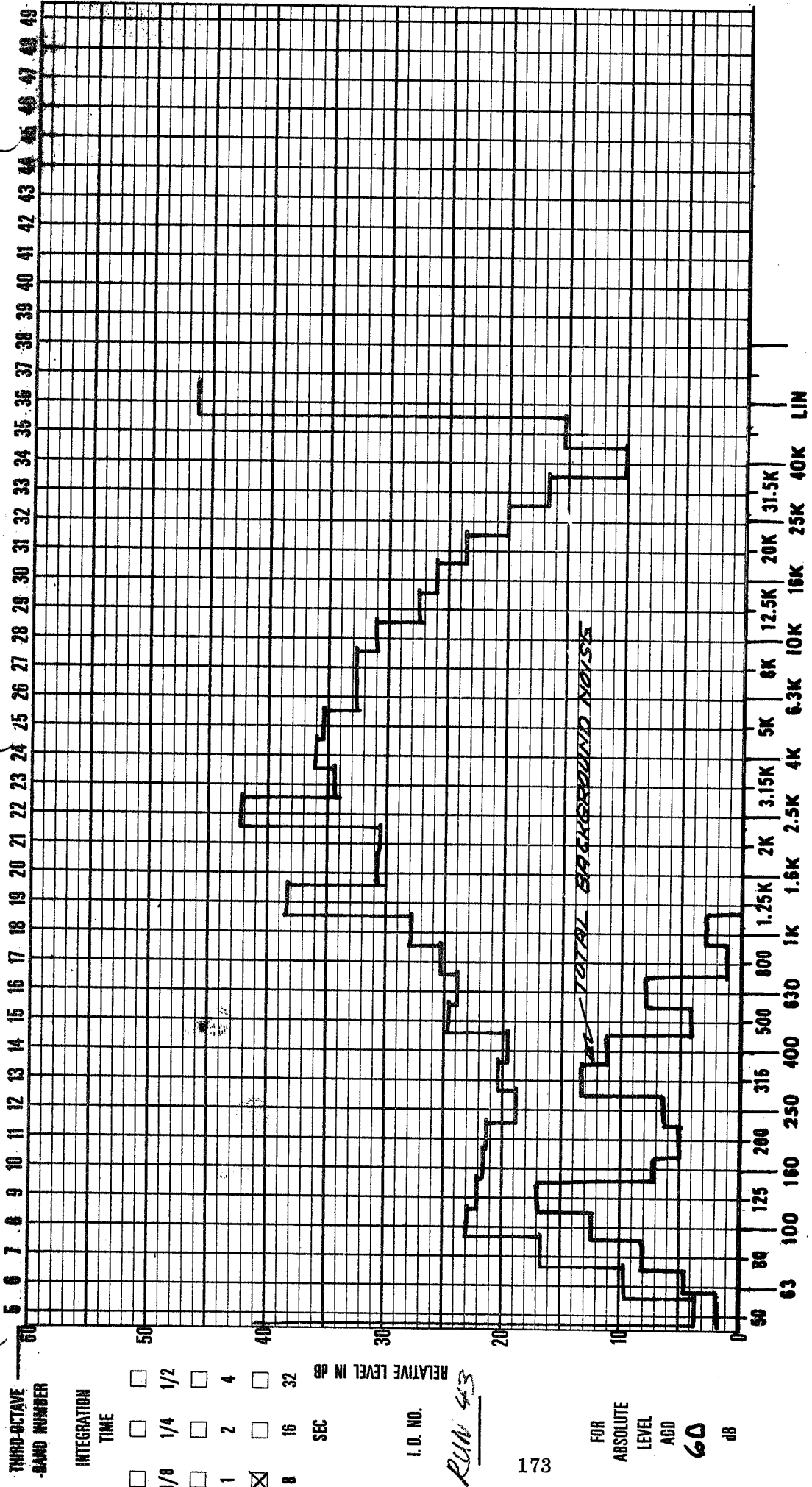
Hamilton
Standard

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THIRD-OCTAVE-BAND
ANALYSIS

SHROUD STATIC
 BLADE ANGLE 40°
 TIP SPEED 600 FT/SEC
 MICROPHONE LOCATION 2' SIDELINE
2' FWD.

Figure 23E PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

I.D. NO.

RUN 43

FOR ABSOLUTE LEVEL ADD 60 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard

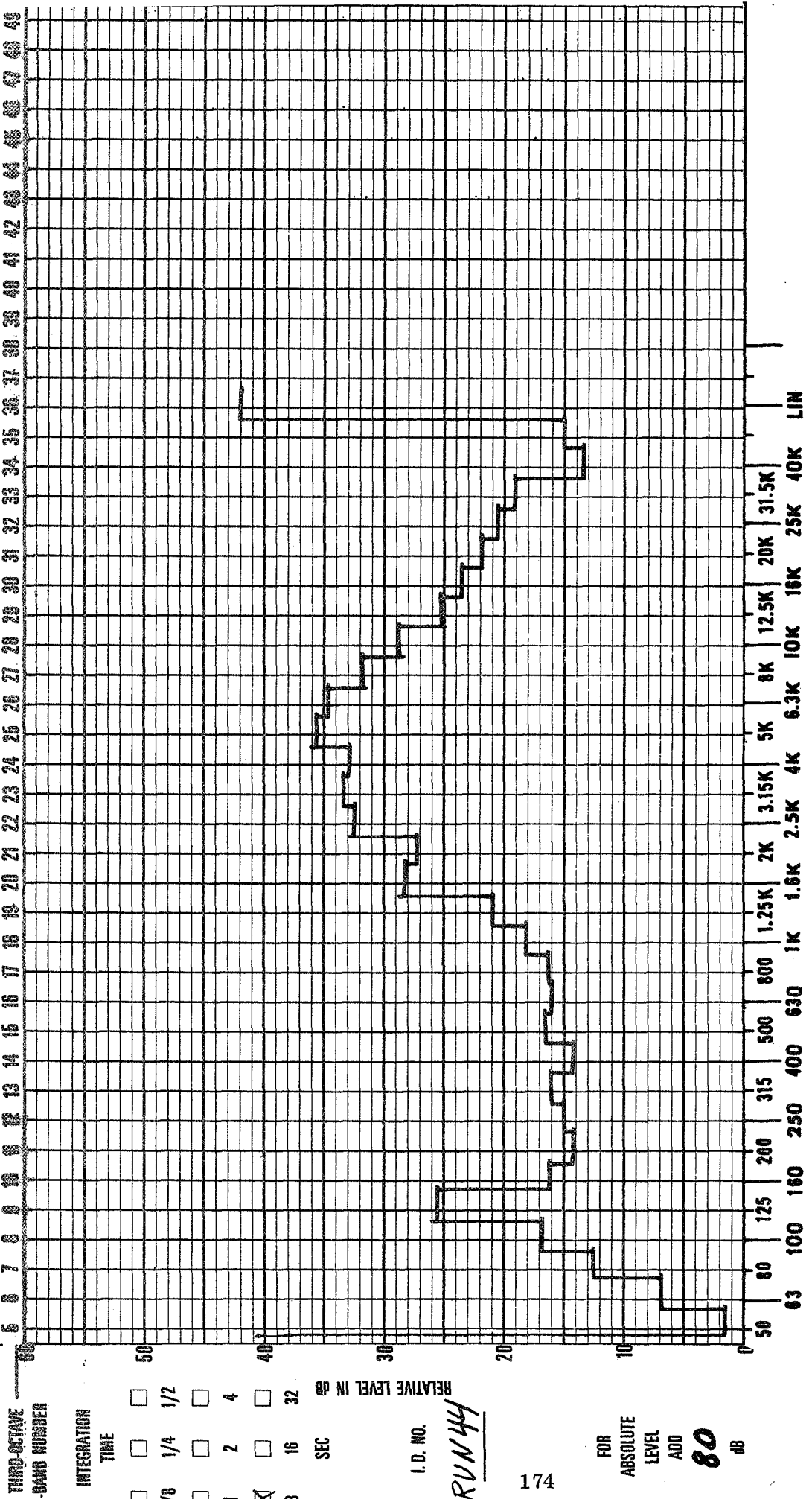


THIRD-OCTAVE-BAND ANALYSIS

SHROUD STATIC
 BLADE ANGLE 40°
 TIP SPEED 600 FT/SEC
 MICROPHONE LOCATION 2' SIDELINE
6' FWD

Figure 24E PROP-FAN MODEL NOISE

SHROUD STATIC
 BLADE ANGLE 40°
 TIP SPEED 700 FT/SEC
 MICROPHONE LOCATION 2' SIDELINE
6' FWD.



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

Figure 25E-PROP-FAN MODEL NOISE

THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

I.D. NO.

RUN 44

FOR ABSOLUTE LEVEL ADD **80** dB

SHROUD STATIC
BLADE ANGLE 40°
TIP SPEED 700 FT/SEC
MICROPHONE LOCATION 2' SIDELINE
PLANE OF ROTATION

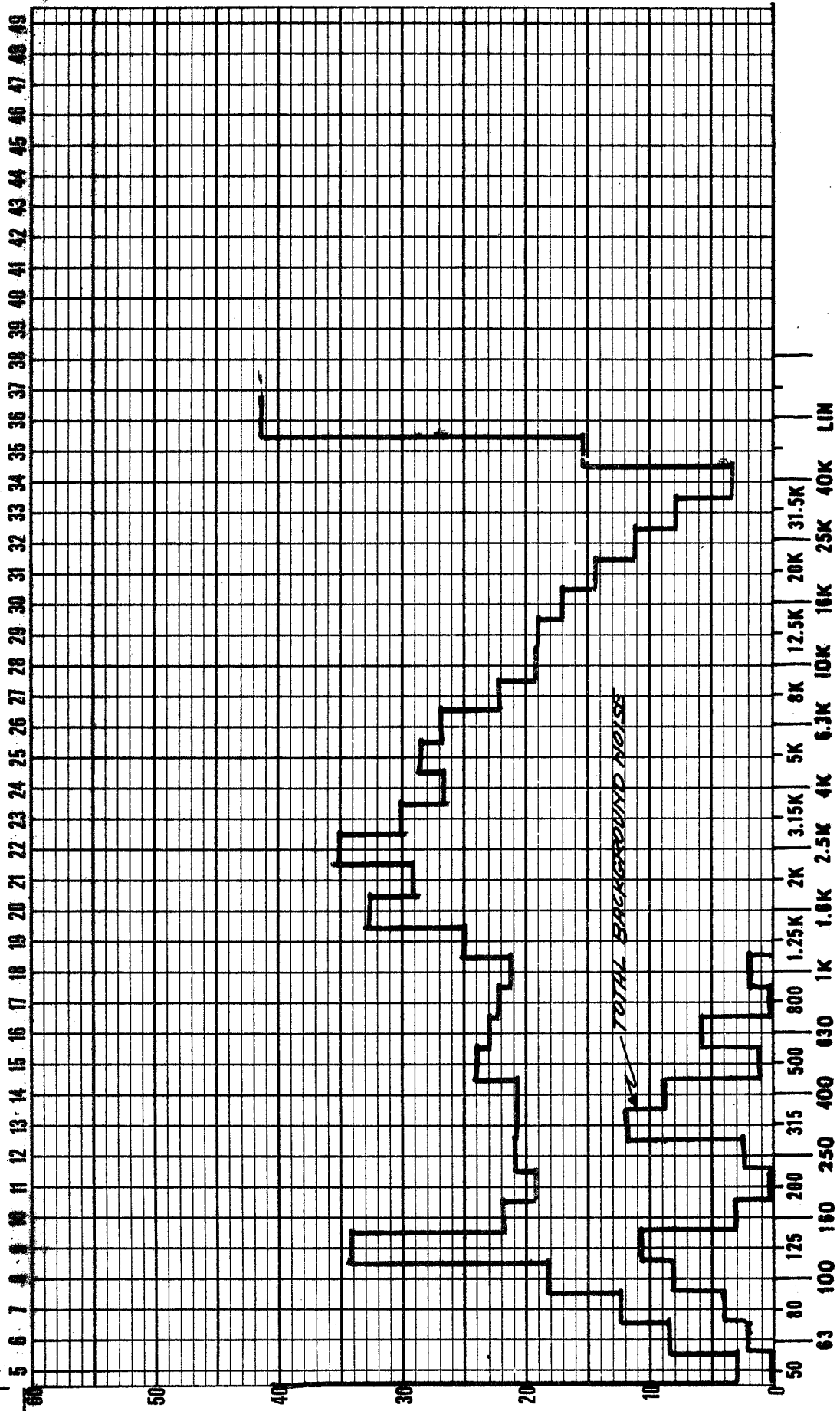
THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

Figure 36E PROP-FAN MODEL NOISE



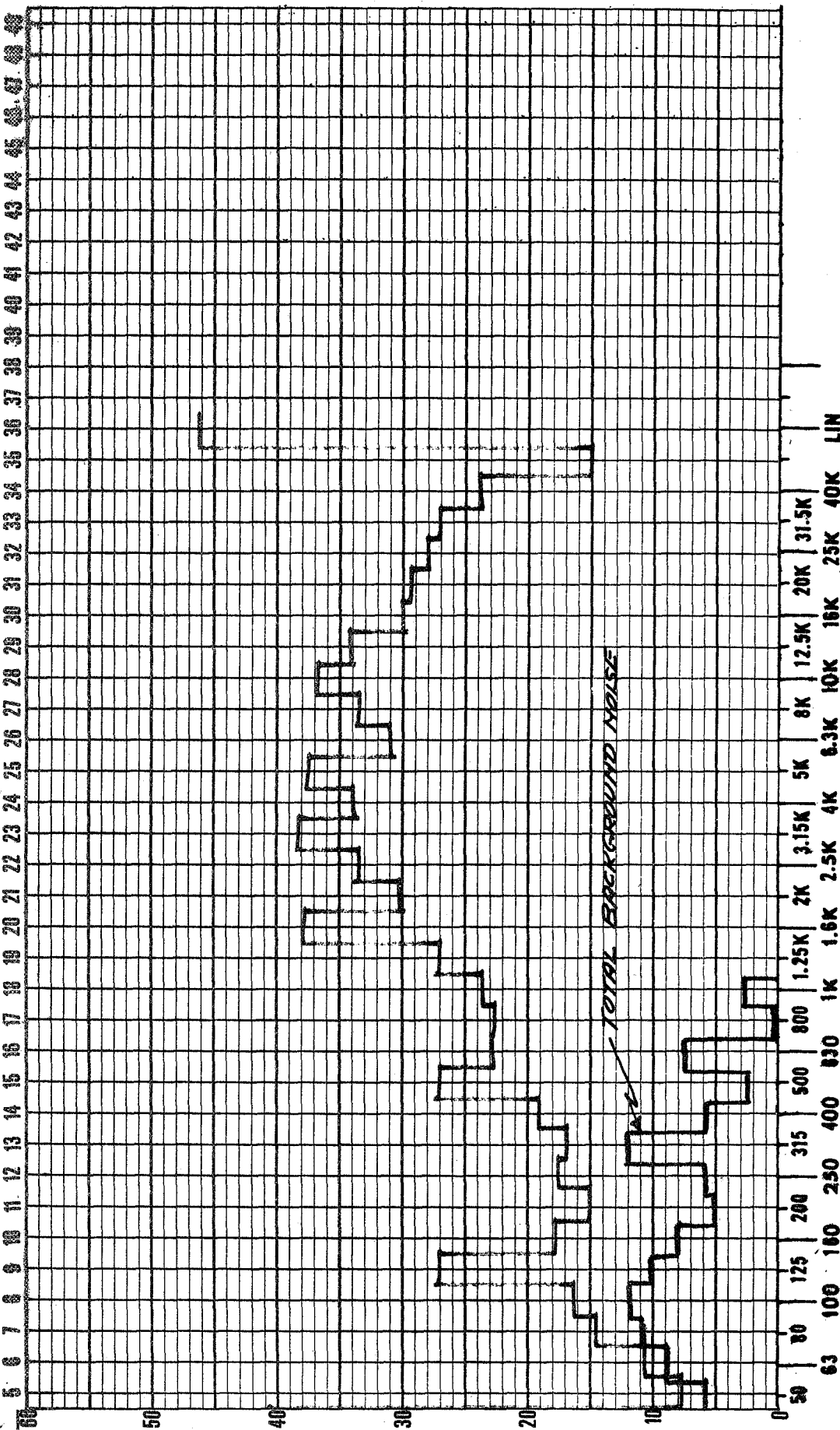
THIRD-OCTAVE-BAND NUMBER: 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49

RELATIVE LEVEL IN DB

INTEGRATION TIME: 1/8, 1/4, 1/2, 1, 2, 4, 8, 16, 32, 60

I. D. NO. RUN 44

FOR ABSOLUTE LEVEL ADD 70 dB



THIRD-OCTAVE BAND NUMBER: 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49

INTEGRATION TIME: 1/8, 1/4, 1, 2, 4, 8, 16, 32

I.D. NO. RUN 444

FOR ABSOLUTE LEVEL ADD **70** dB

THIRD-OCTAVE BAND CENTER FREQUENCY IN HZ

SHROUD STATIC
 BLADE ANGLE 40°
 TIP SPEED 700 FT/SEC
 MICROPHONE LOCATION 2' SIDELINE
2' FWD.

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THIRD-OCTAVE-BAND ANALYSIS

Figure 27E PROP-FAN MODEL NOISE

THIRD-OCTAVE BAND NUMBER 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49

INTEGRATION TIME

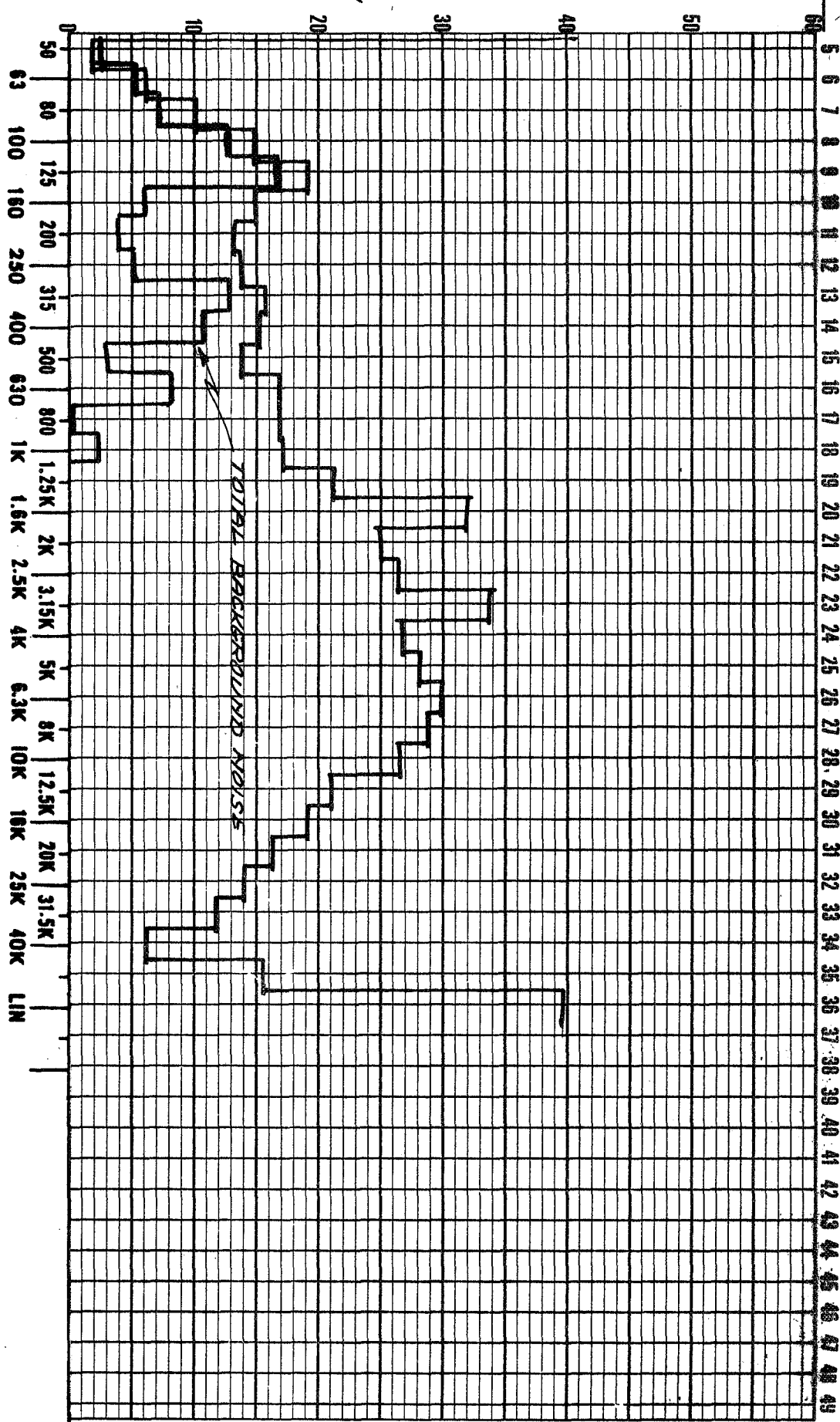
- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

L.D. NO.

RUN 44

177

FOR ABSOLUTE LEVEL ADD 70 db



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard

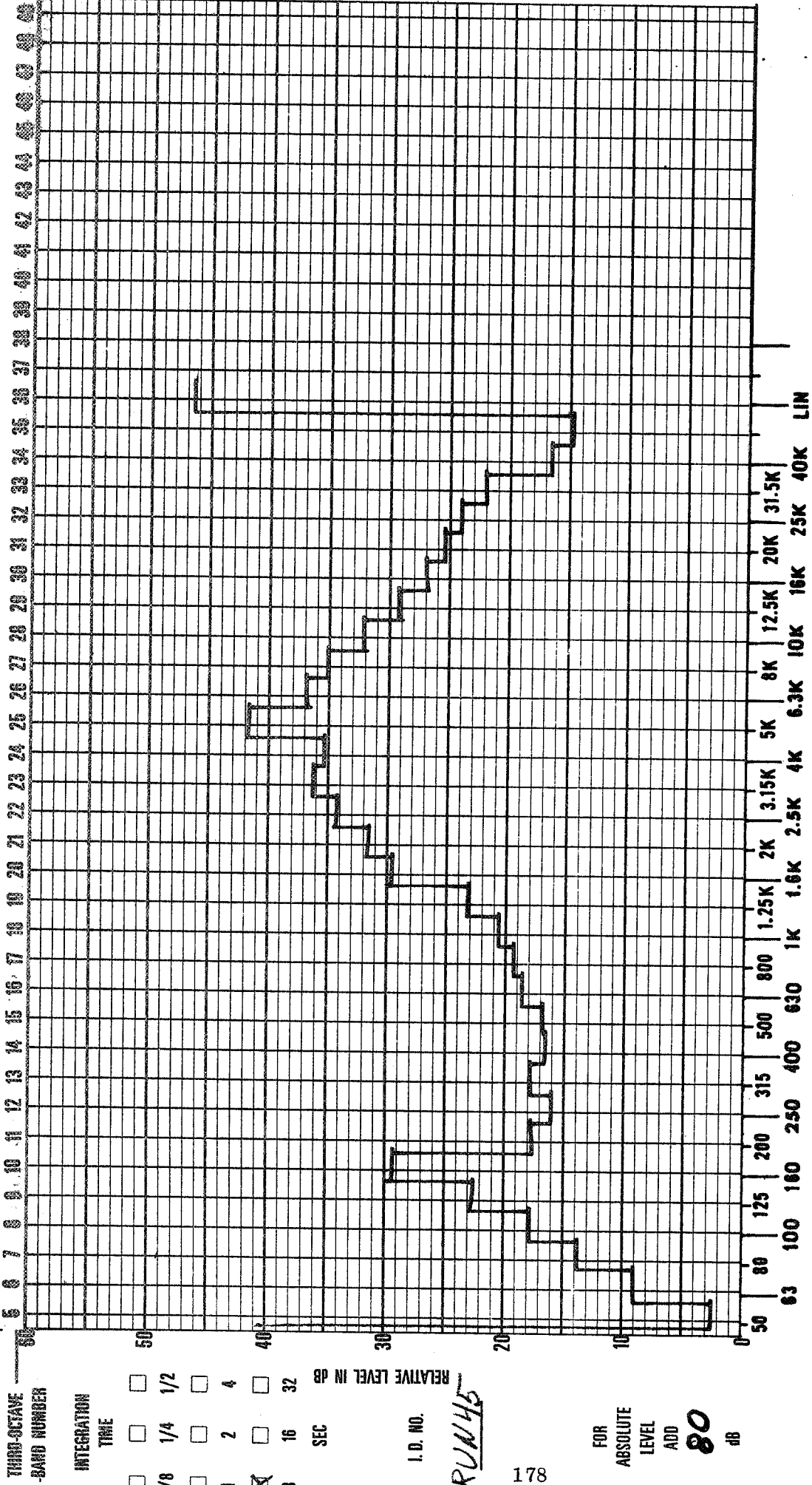
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THIRD-OCTAVE-BAND ANALYSIS

SHROUD STATIC
 BLADE ANGLE 40°
 TIP SPEED 700 FT/SEC
 MICROPHONE LOCATION 2' SIDELINE
6' FWD.

Figure 28E PROP-FAN MODEL NOISE

SHROUD STATIC
BLADE ANGLE 40°
TIP SPEED 800 FT/SEC
MICROPHONE LOCATION 2' SIDELINE
2' REAR



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND ANALYSIS

THIRD-OCTAVE-BAND NUMBER: 50, 49, 48, 47, 46, 45, 44, 43, 42, 41, 40, 39, 38, 37, 36, 35, 34, 33, 32, 31, 30, 29, 28, 27, 26, 25, 24, 23, 22, 21, 20, 19, 18, 17, 16, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5

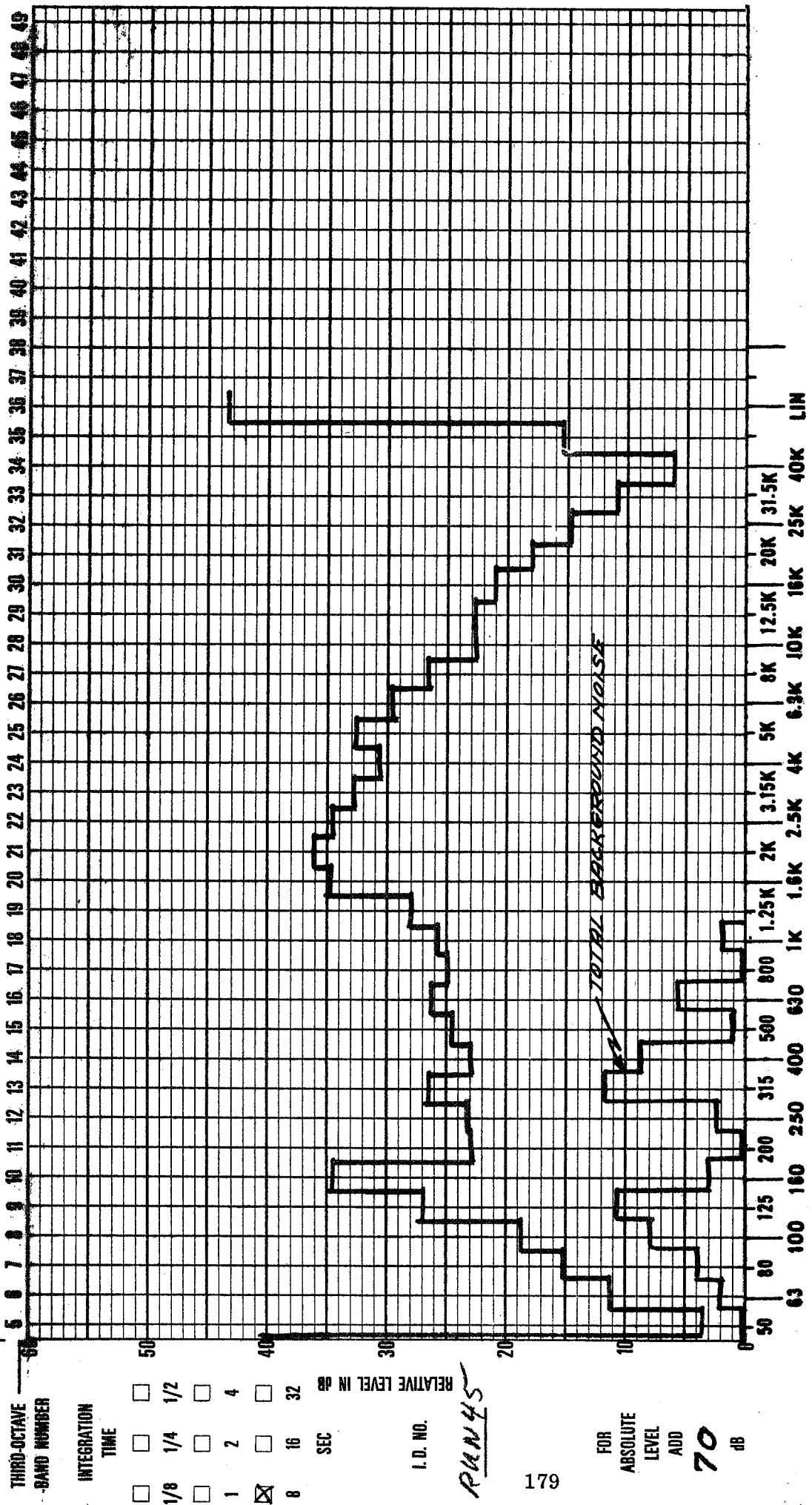
INTEGRATION TIME: 50, 1/8, 1/4, 1, 2, 4, 8, 16, 32

RELATIVE LEVEL IN DB

I.D. NO. RUNHS

FOR ABSOLUTE LEVEL ADD 80 dB

Figure 27E PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD STATIC
 BLADE ANGLE 40°
 TIP SPEED 800 FT/SEC
 MICROPHONE LOCATION 2' SIDELINE
PLANE OF ROTATION

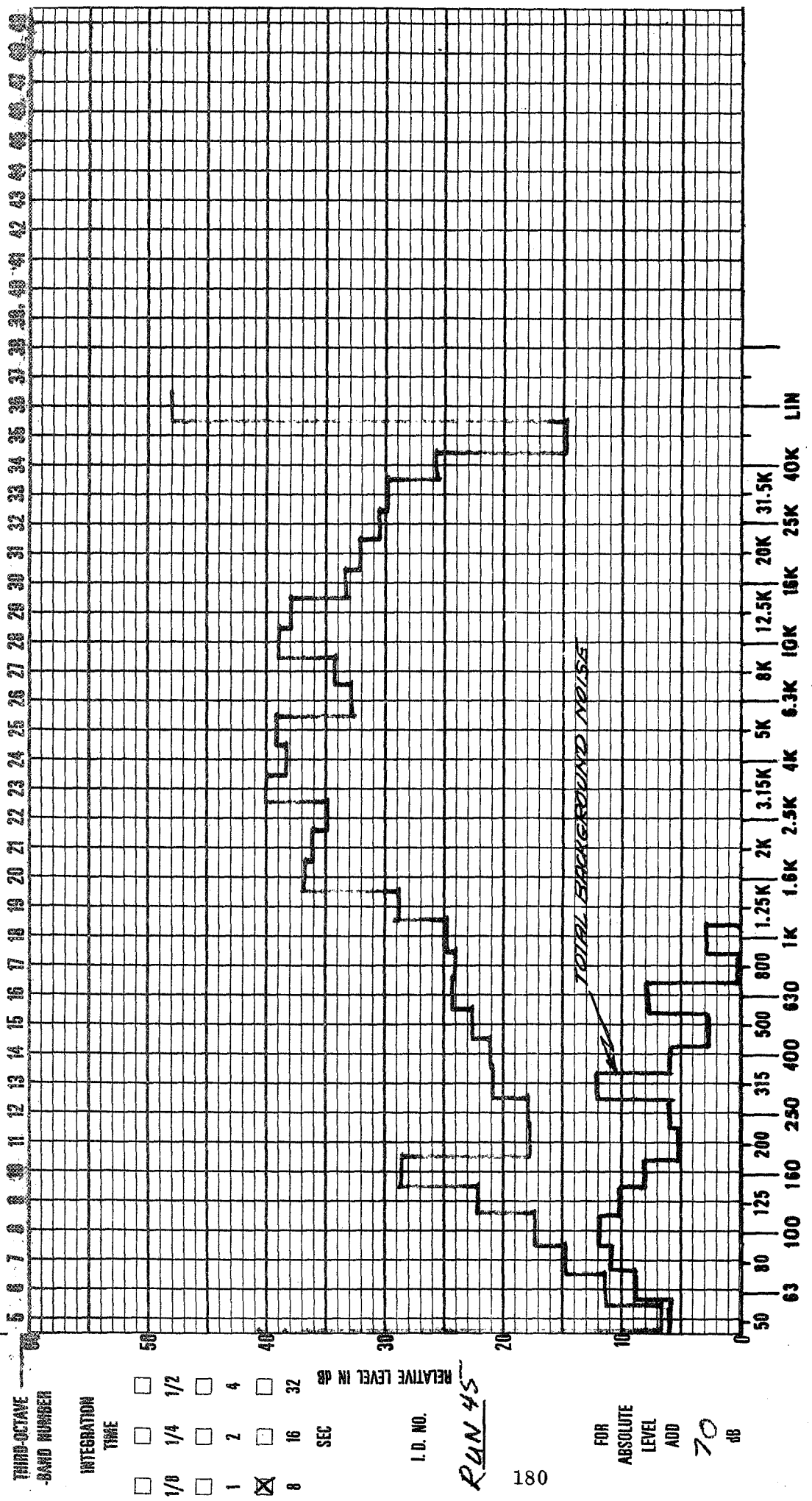
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 THIRD-OCTAVE-BAND ANALYSIS

Figure 30E PROP-FAN MODEL NOISE

I.D. NO. R14N45

FOR ABSOLUTE LEVEL ADD 70 dB

SHROUD STATIC
 BLADE ANGLE 40°
 TIP SPEED 800 FT/SEC
 MICROPHONE LOCATION 2' SIDELINE
2' FWD.



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND ANALYSIS

Figure 3/E PROP-FAN MODEL NOISE

I.D. NO. RAN 45

SHROUD STATIC
BLADE ANGLE 40°
TIP SPEED 800 FT/SEC
MICROPHONE LOCATION 2' SIDELINE
6' FWD

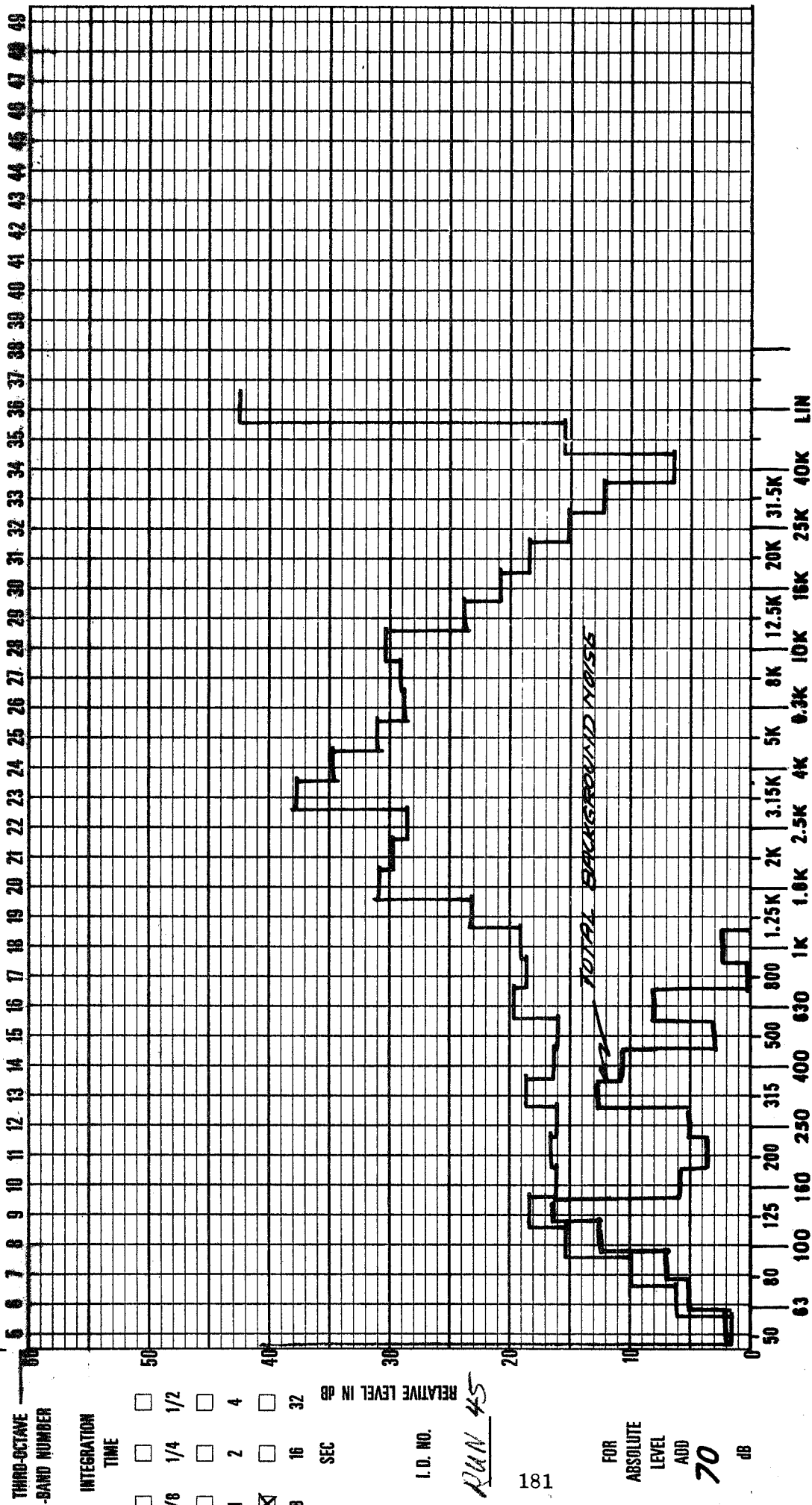
THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton
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THIRD-OCTAVE-BAND
ANALYSIS

Figure 32E PROP-FAN MODEL NOISE



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

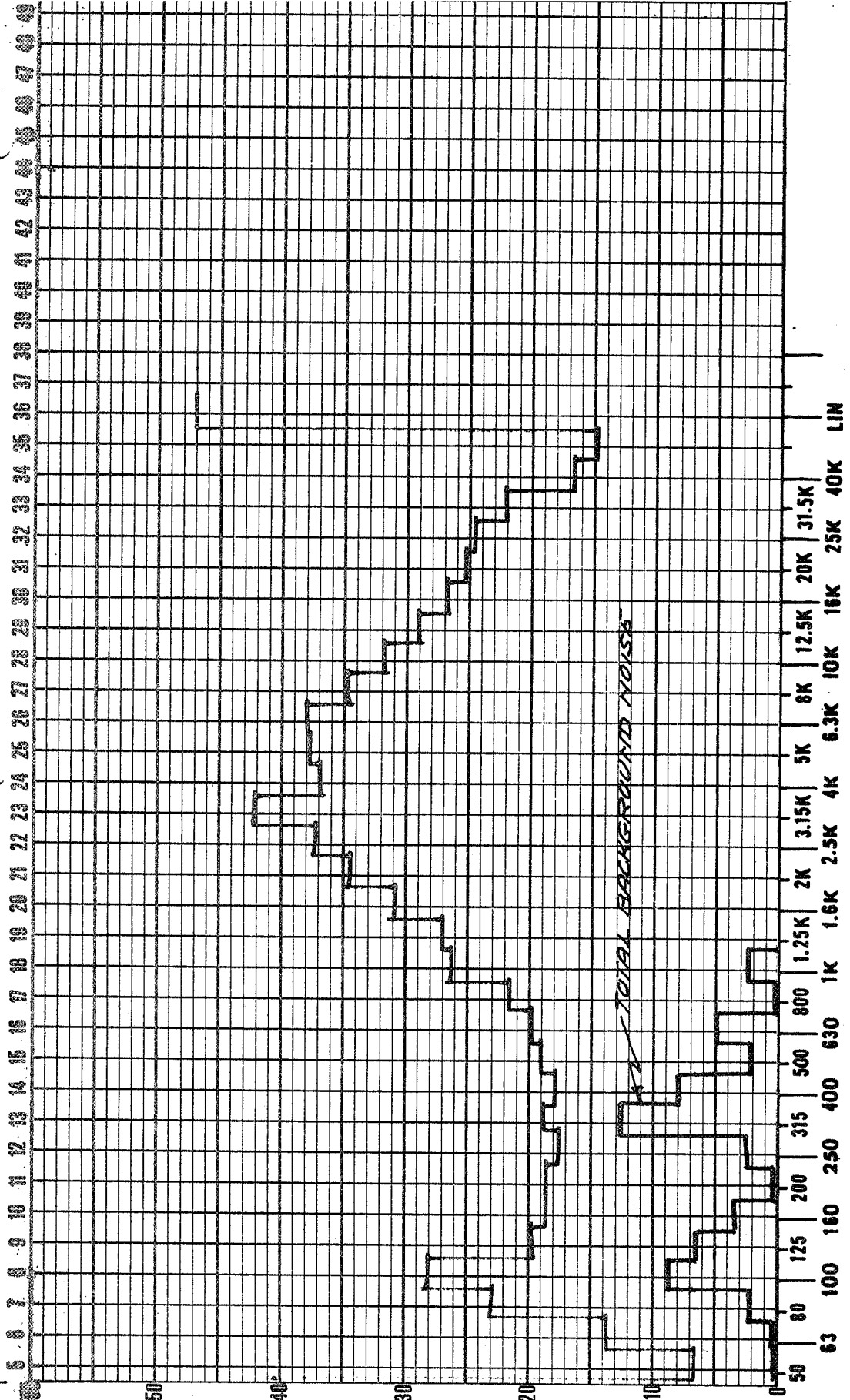
RELATIVE LEVEL IN DB

I. D. NO.

RUN 45

181

FOR
ABSOLUTE
LEVEL
ADD
70
dB



THIRD-OCTAVE BAND NUMBER: 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

RELATIVE LEVEL IN DB

INTEGRATION TIME: 1/8 1/4 1/2 1 2 4 8 16 32 50

I.D. NO. RUN 36

FOR ABSOLUTE LEVEL ADD **70** dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

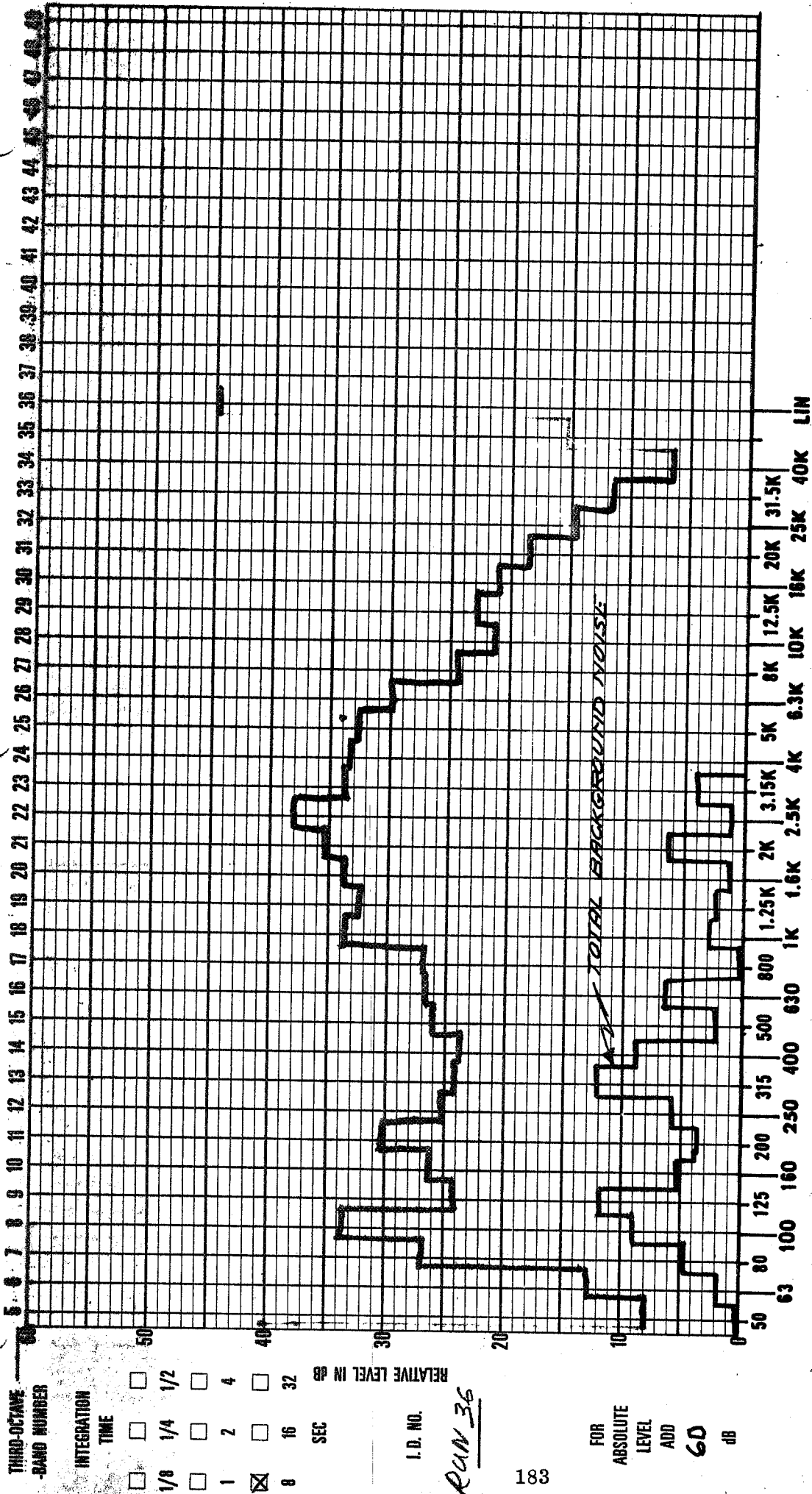
Hamilton Standard

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THIRD-OCTAVE-BAND ANALYSIS

SHROUD STATIC
 BLADE ANGLE 45°
 TIP SPEED 500 FT/SEC
 MICROPHONE LOCATION 2' Sideline, 2' Rear

Figure 33E PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND NUMBER

INTEGRATION TIME

1/8 1/4 1/2 1 2 4 8 16 32 40*

SEC

RELATIVE LEVEL IN DB

I.D. NO.

RUN 36

FOR ABSOLUTE LEVEL ADD 60 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

SHROUD STATIC

BLADE ANGLE 45°

TIP SPEED 500 FT/SEC

MICROPHONE LOCATION 2' SIDELINE PLANE OF ROTATION

Figure 34E PROP-FAN MODEL NOISE

THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

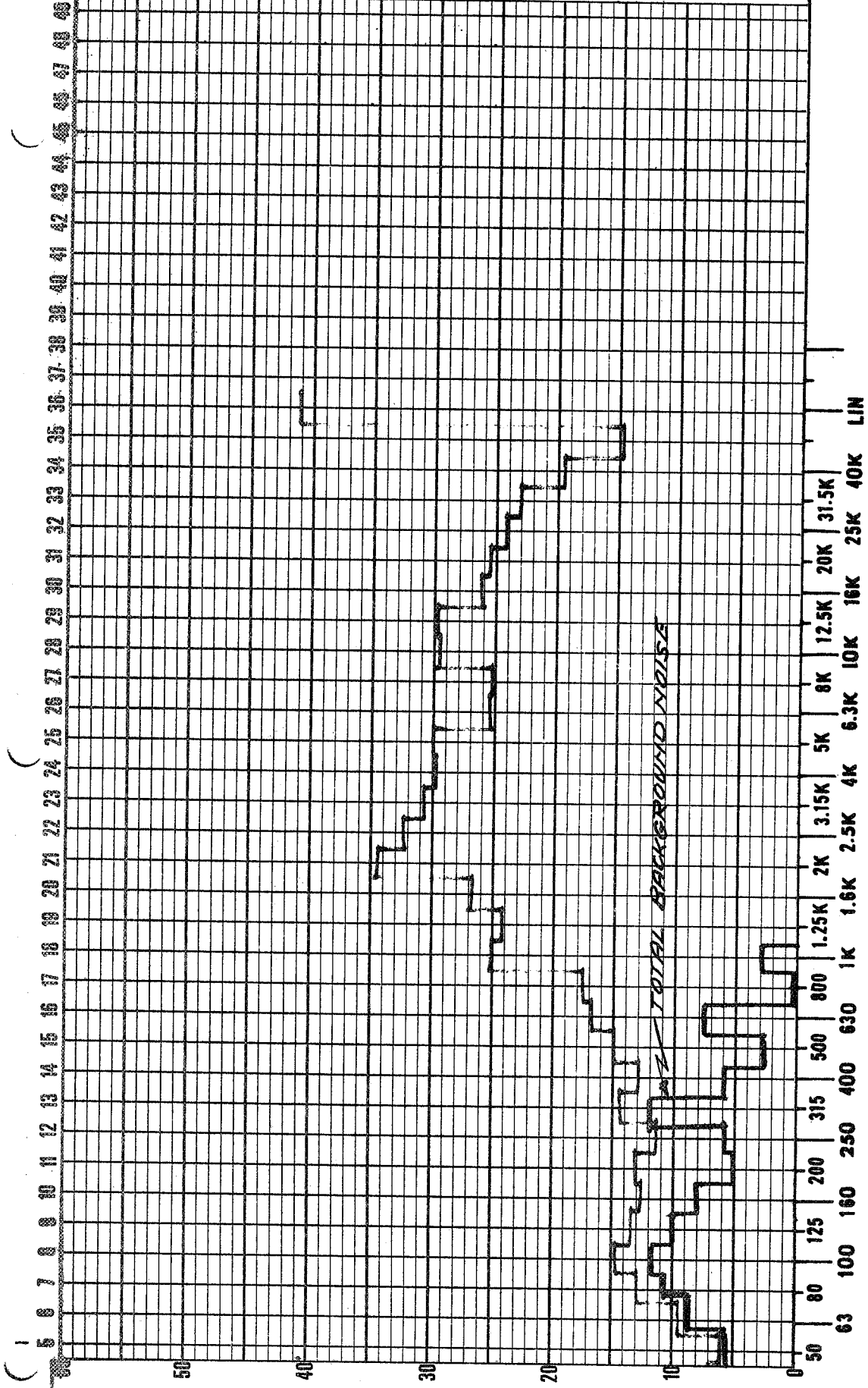
RELATIVE LEVEL IN DB

I.D. NO.

RUN 36

184

FOR
ABSOLUTE
LEVEL
ADD
70
dB



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

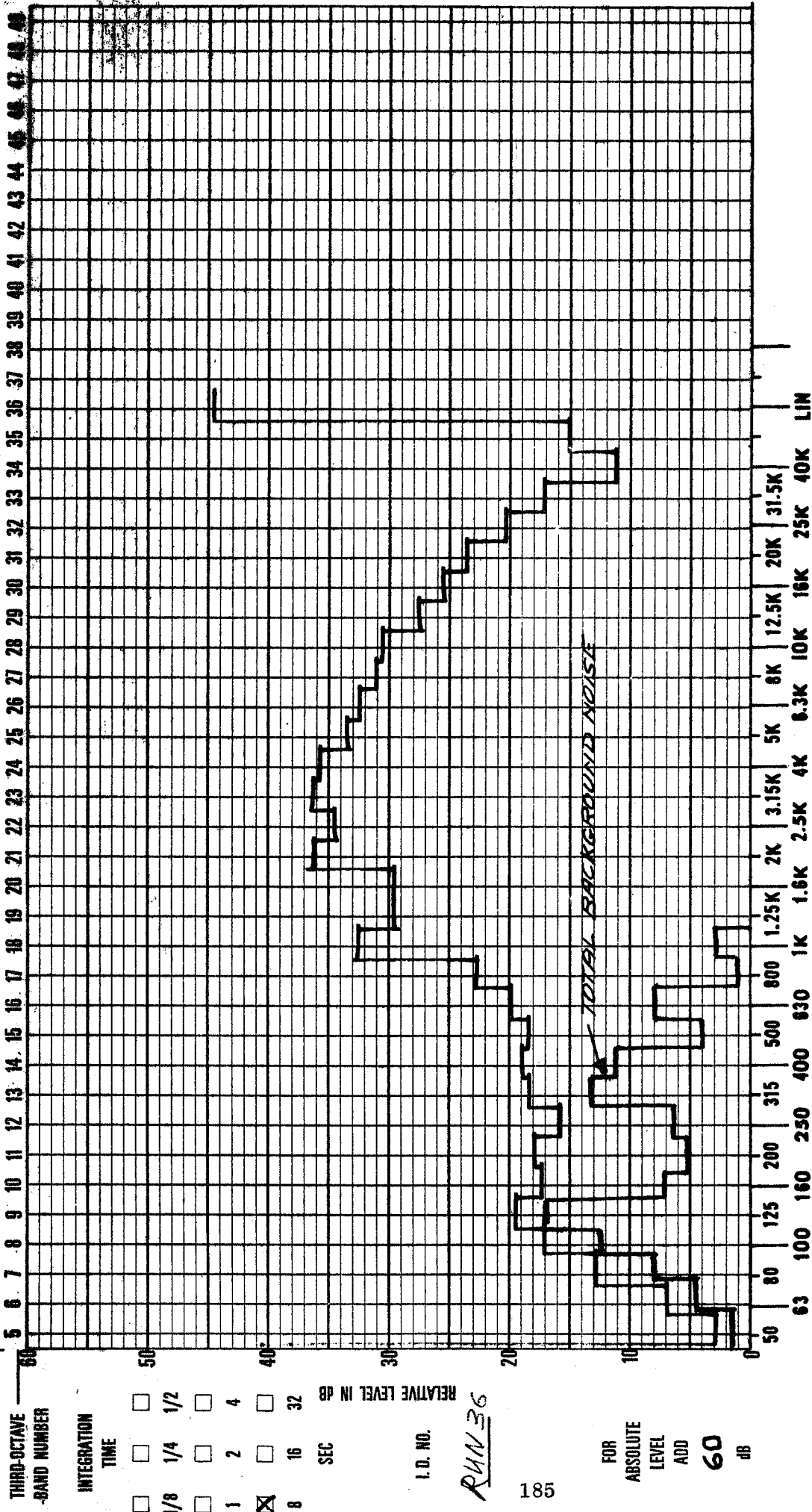
Hamilton
Standard

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THIRD-OCTAVE-BAND
ANALYSIS

SHROUD STATIC
 BLADE ANGLE 45°
 TIP SPEED 500 FT/SEC
 MICROPHONE LOCATION 2' SIDELINE
2' FWD

Figure 35E PROP-FAN MODEL NOISE



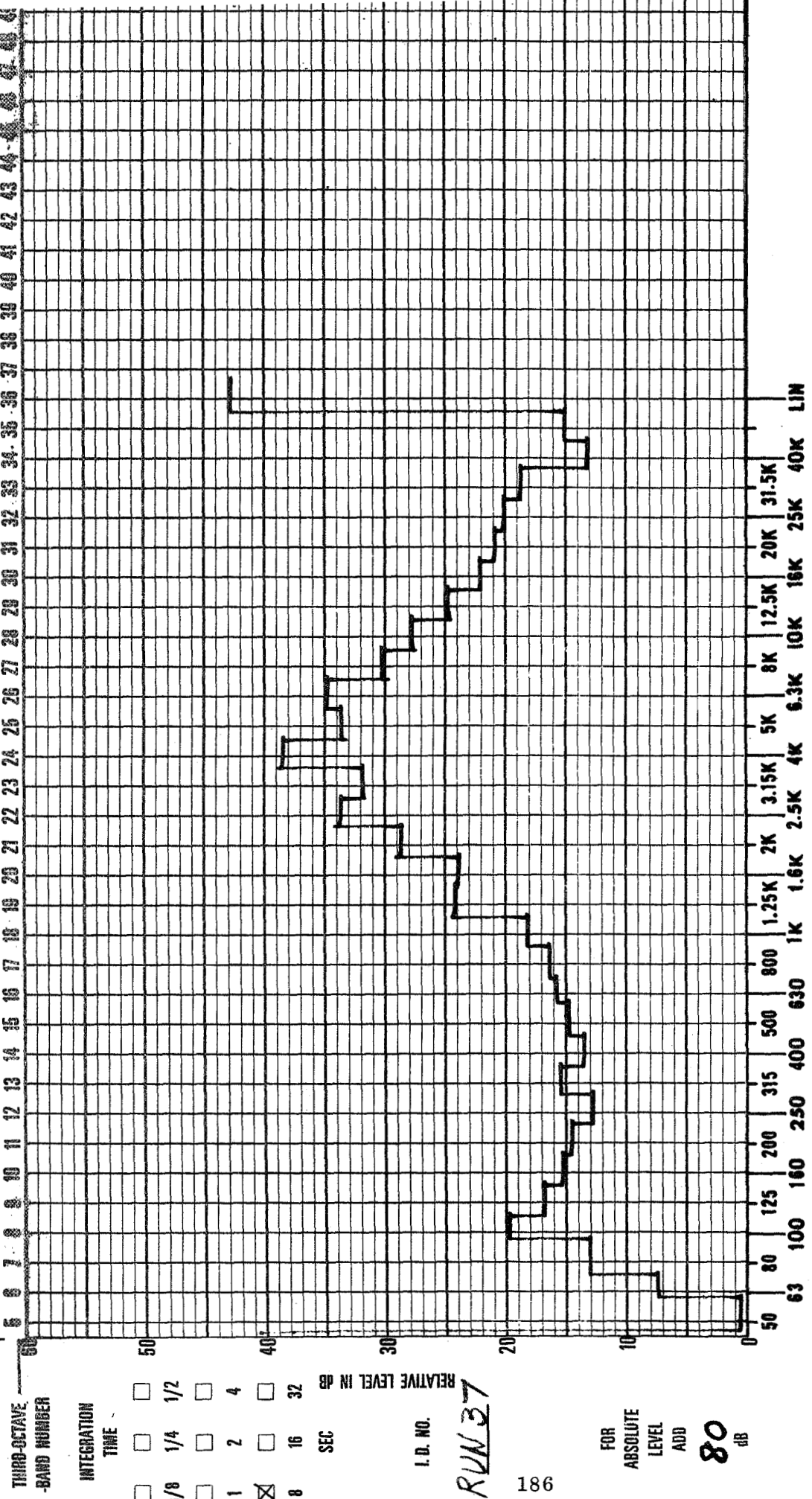
SHROUD STATIC
 BLADE ANGLE 45°
 TIP SPEED 500 FT/SEC
 MICROPHONE LOCATION 2' side line, 6' End.

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard
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 THIRD-OCTAVE-BAND ANALYSIS

Figure 36 PROP-FAN MODEL NOISE

SHROUD STATIC
BLADE ANGLE 45°
TIP SPEED 600 FT/SEC
MICROPHONE LOCATION 2' SIDELINE
2' REAR



THIRD-OCTAVE-BAND CENTER FREQUENCY IN Hz

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THIRD-OCTAVE-BAND ANALYSIS

THIRD-OCTAVE-BAND NUMBER

INTEGRATION TIME

1/8

1/4

1/2

1

2

4

8

16

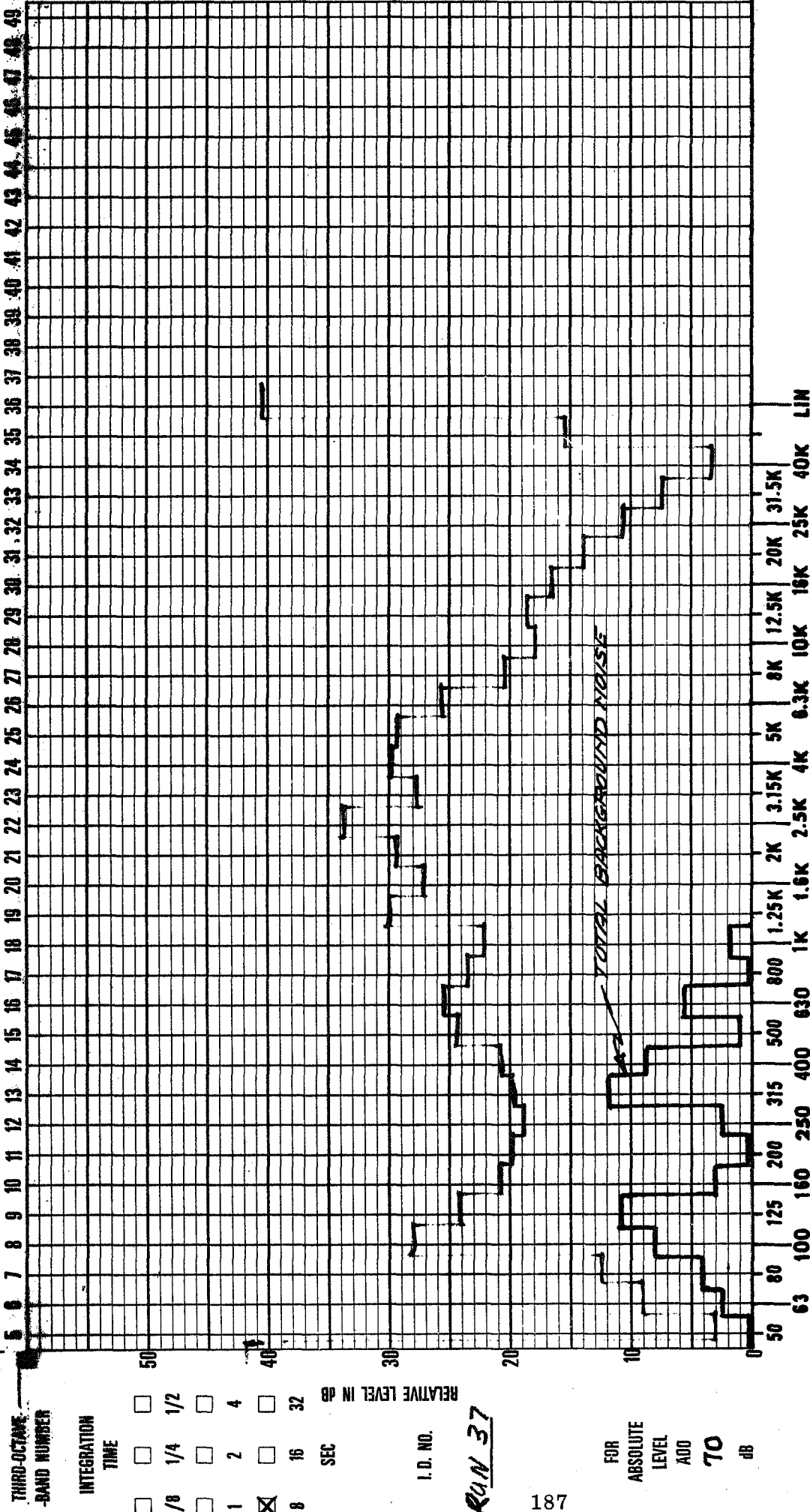
32

SEC

I.D. NO. RUN 37

FOR ABSOLUTE LEVEL ADD 80 dB

Figure 37E PROP-FAN MODEL NOISE



SHROUD STATIC
 BLADE ANGLE 45°
 TIP SPEED 600 FT/SEC
 MICROPHONE LOCATION 2' SIDELINE PLANE OF ROTATION

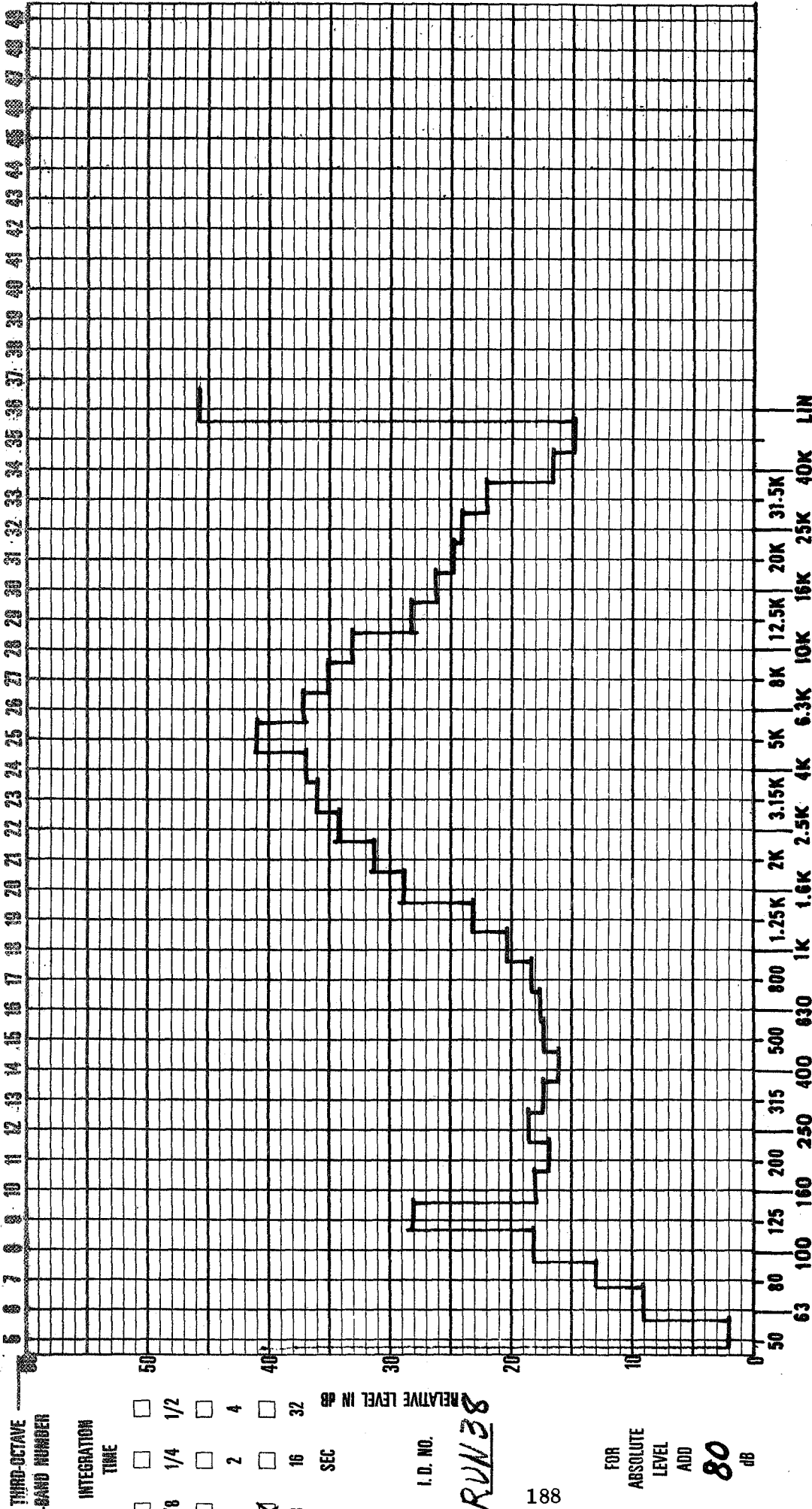
THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard

U A
 DIVISION OF UNITED AIRCRAFT CORP

THIRD-OCTAVE-BAND ANALYSIS

Figure 38E PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

- 1/8
- 1/4
- 1
- 8
- 2
- 4
- 16
- 32

RELATIVE LEVEL IN DB

I. D. NO.

RUN 38

FOR ABSOLUTE LEVEL ADD 80 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD STATIC
 BLADE ANGLE 45°
 TIP SPEED 700 FT/SEC
 MICROPHONE LOCATION 2' SIDELINE
2' REAR

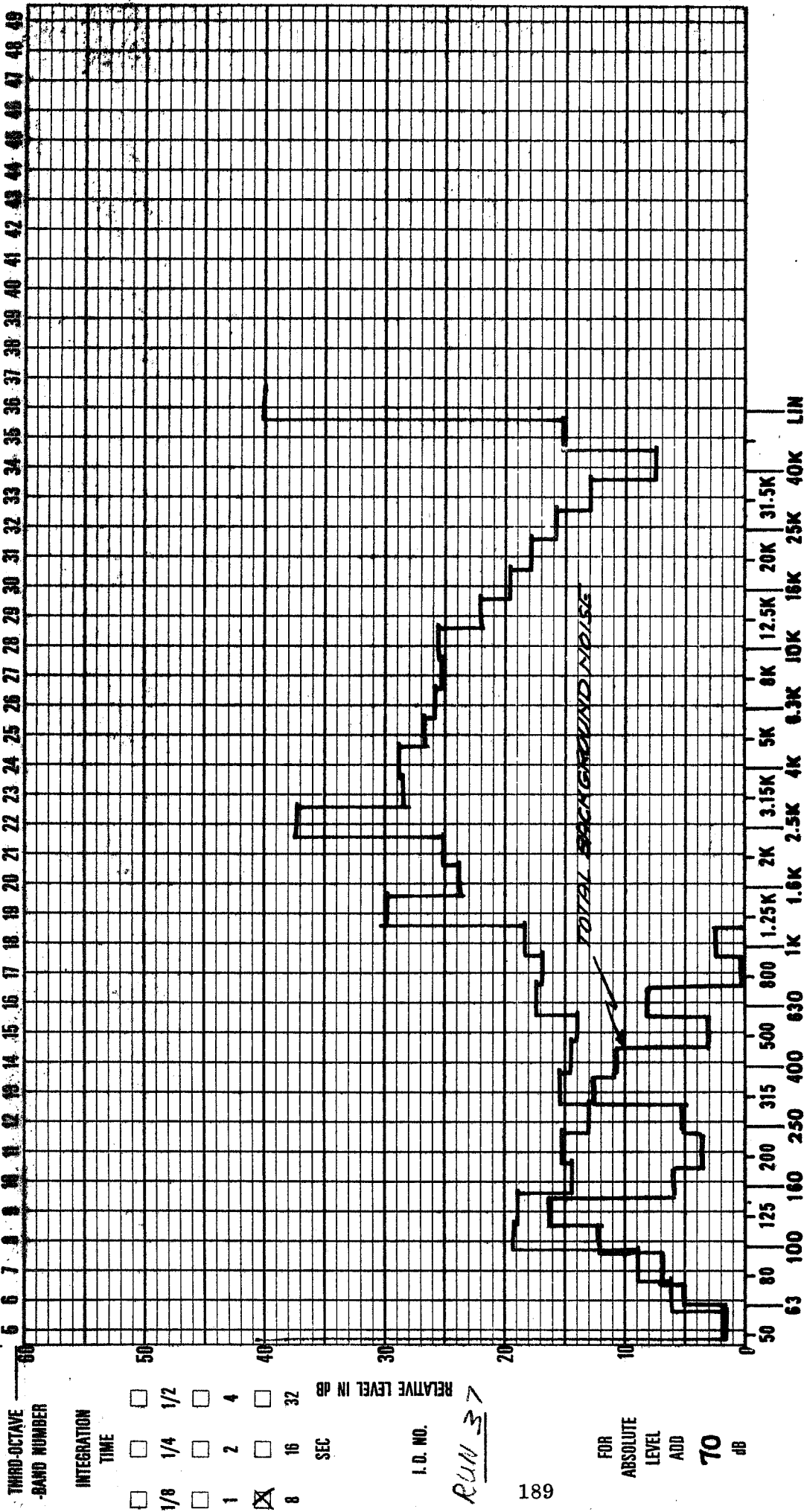
Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

Figure 4/E-PROP-FAN MODEL NOISE

SHROUD STATIC
BLADE ANGLE 45°
TIP SPEED 600 FT/SEC
MICROPHONE LOCATION 2' SIDELINE
6' FWD



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard

DIVISION OF UNITED AIRCRAFT CORP

U A¹

THIRD-OCTAVE-BAND ANALYSIS

Figure 40E PROP-FAN MODEL NOISE

I.D. NO.

RUN 37

FOR ABSOLUTE LEVEL ADD 70 dB

SHROUD STATIC
BLADE ANGLE 45°
TIP SPEED 600 FT/SEC
MICROPHONE LOCATION 2' SIDELINE
2' FWD

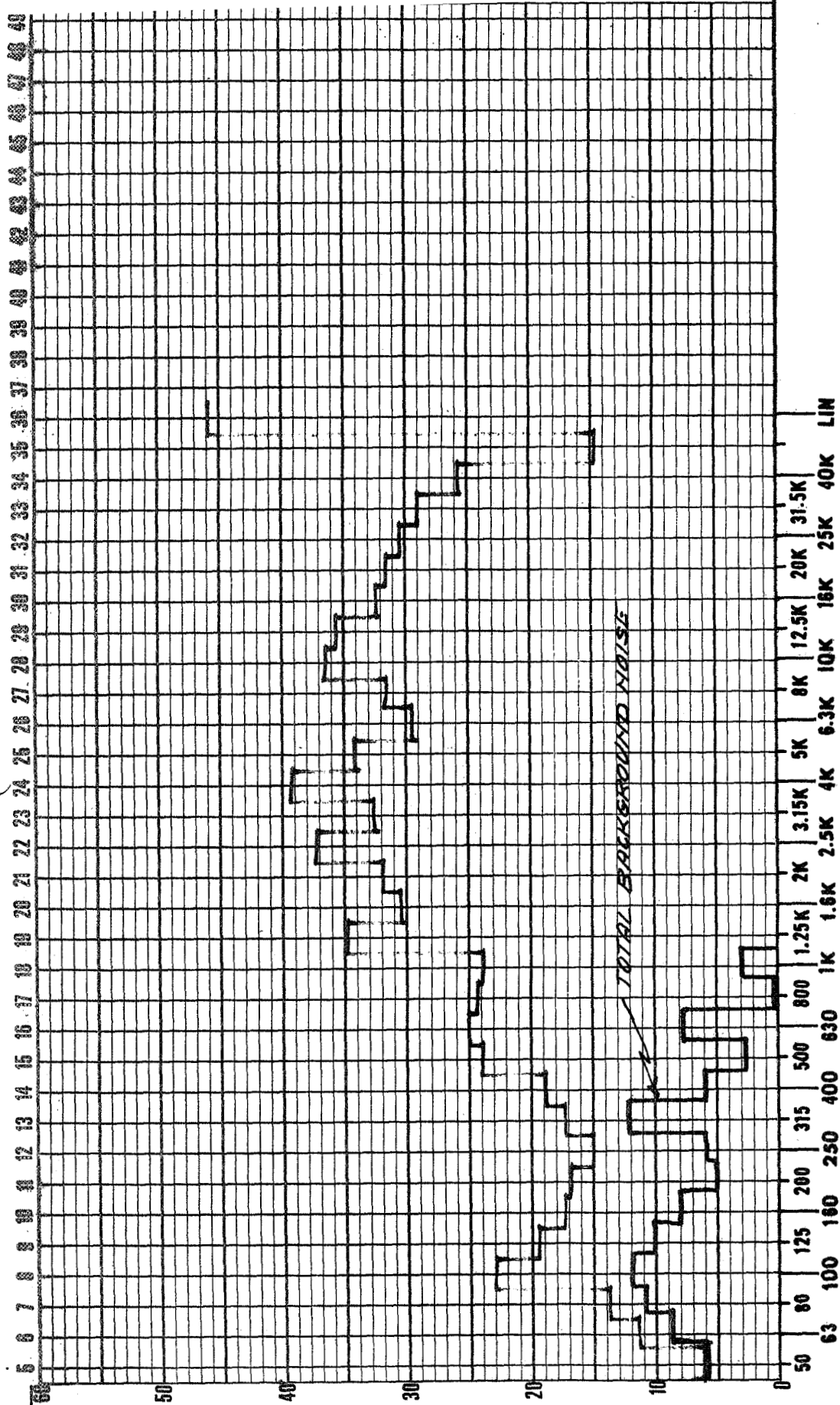
THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard

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THIRD-OCTAVE-BAND ANALYSIS

Figure 39E PROP-FAN MODEL NOISE



THIRD-OCTAVE - BAND NUMBER

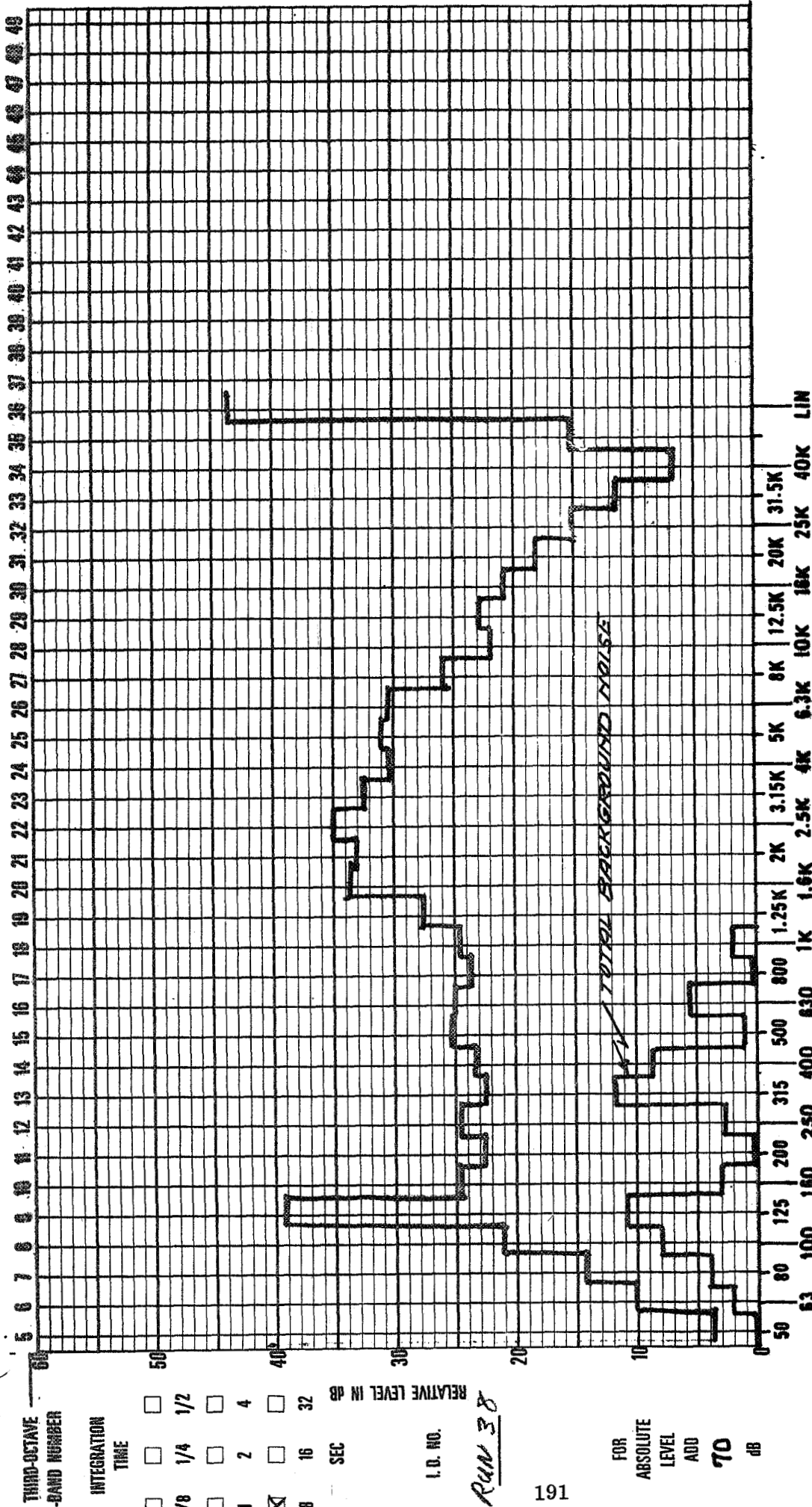
INTEGRATION TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

I. D. NO.

RUN 37

FOR ABSOLUTE LEVEL ADD 70 dB



SHROUD STATIC
 BLADE ANGLE 45°
 TIP SPEED 700 FT/SEC
 MICROPHONE LOCATION 2' SIDELINE PLANE OF ROTATION

THIRD-OCTAVE BAND CENTER FREQUENCY IN HZ

Hamilton Standard

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THIRD-OCTAVE-BAND ANALYSIS

Figure 42EPROP-FAN MODEL NOISE

I.D. NO. RUN 38

THIRD-OCTAVE
-BAND NUMBER

5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49

INTEGRATION
TIME

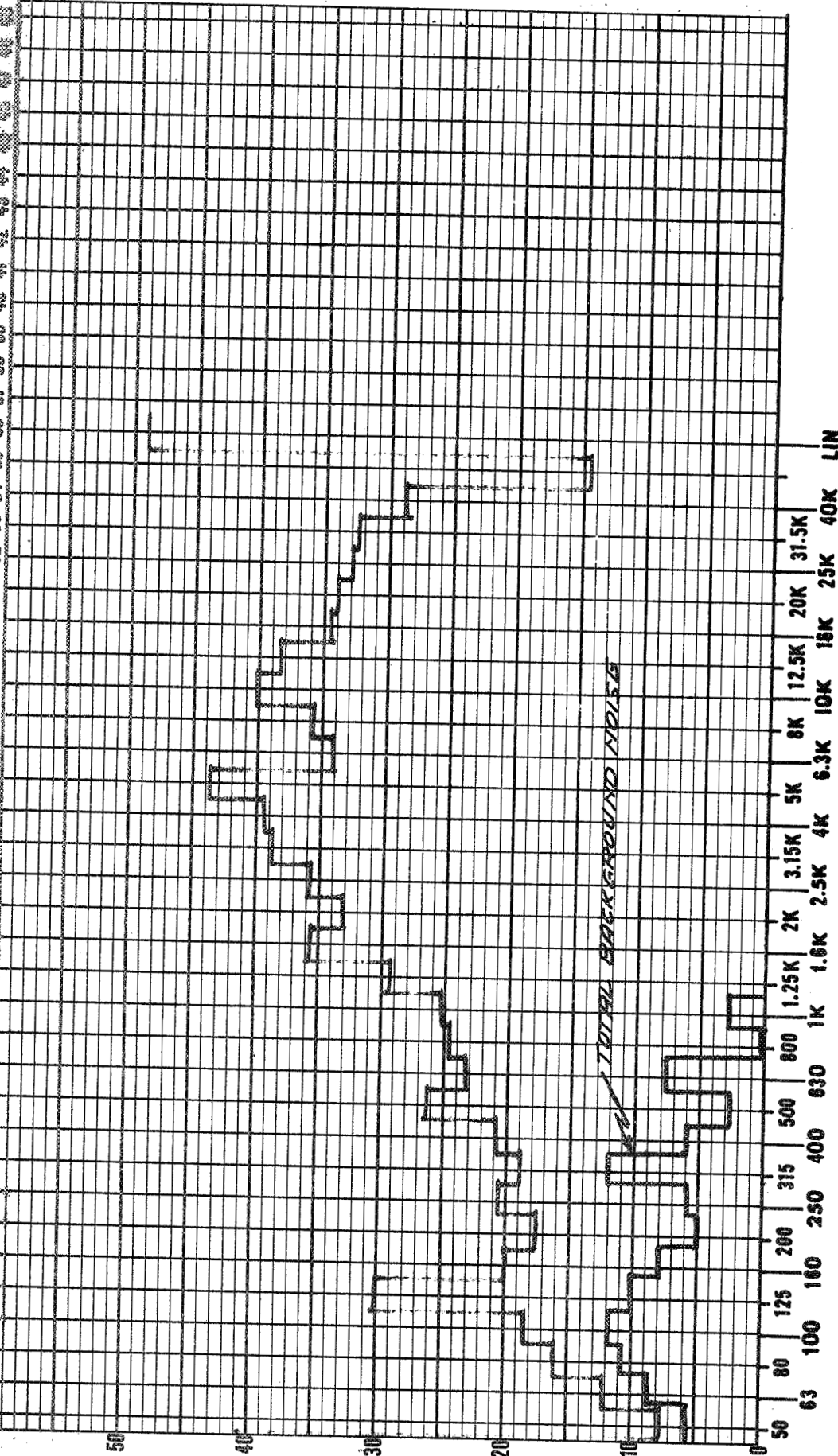
- 1/8
 - 1/4
 - 1/2
 - 1
 - 2
 - 4
 - 8
 - 16
 - 32
- SEC

I. D. NO.

RUN 38

192

FOR
ABSOLUTE
LEVEL
ADD
70
dB



THIRD-OCTAVE-BAND CENTER FREQUENCY IN Hz

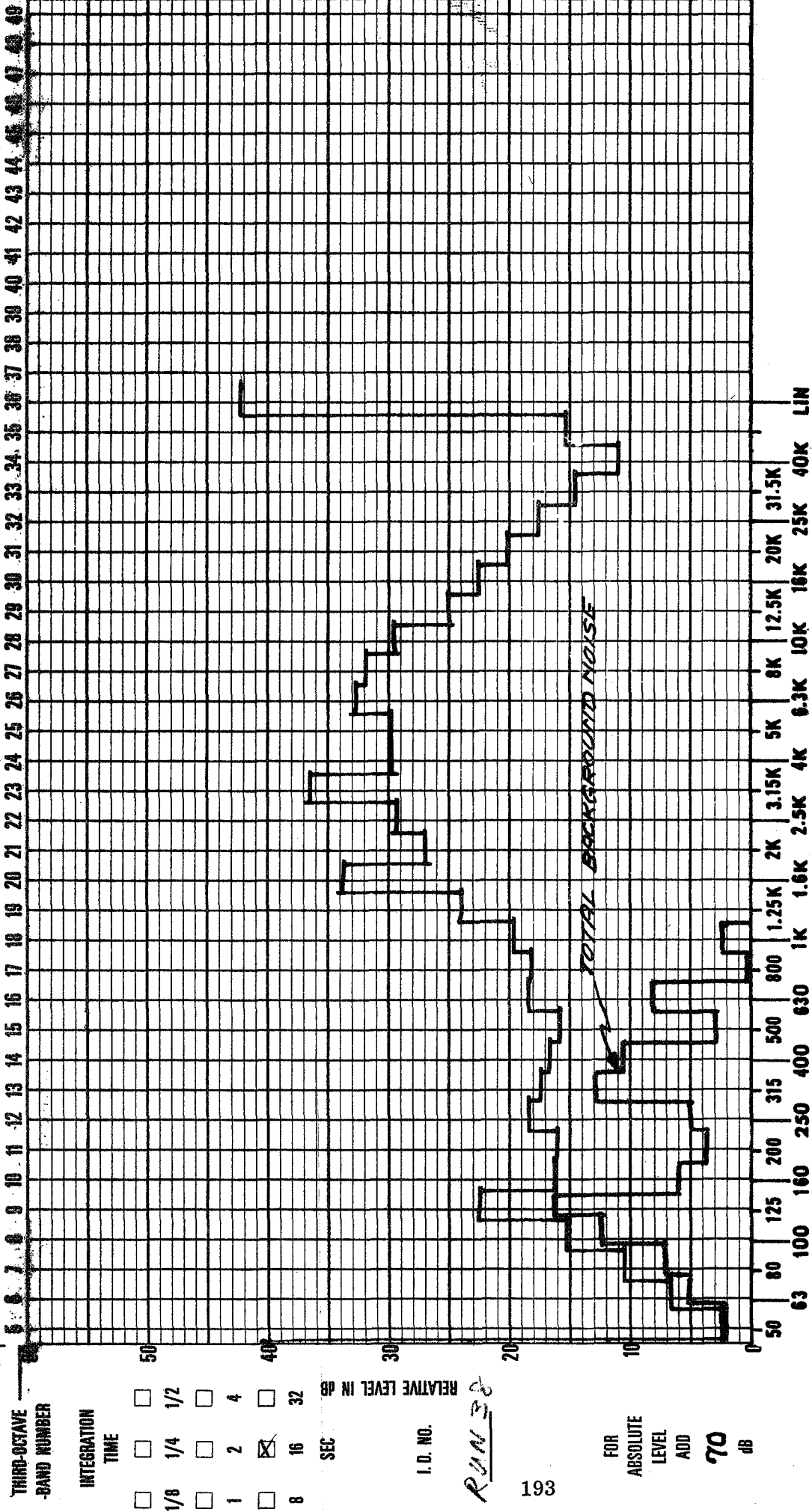
Hamilton
Standard

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THIRD-OCTAVE-BAND
ANALYSIS

SHROUD STATIC
 BLADE ANGLE 45°
 TIP SPEED 700 FT/SEC
 MICROPHONE LOCATION 2' SIDELINE
2' FWD

Figure 43E PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND NUMBER: 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49

INTEGRATION TIME: 1/8, 1/4, 1/2, 1, 2, 4, 8, 16, 32 SEC

I.D. NO.

RUN 32

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

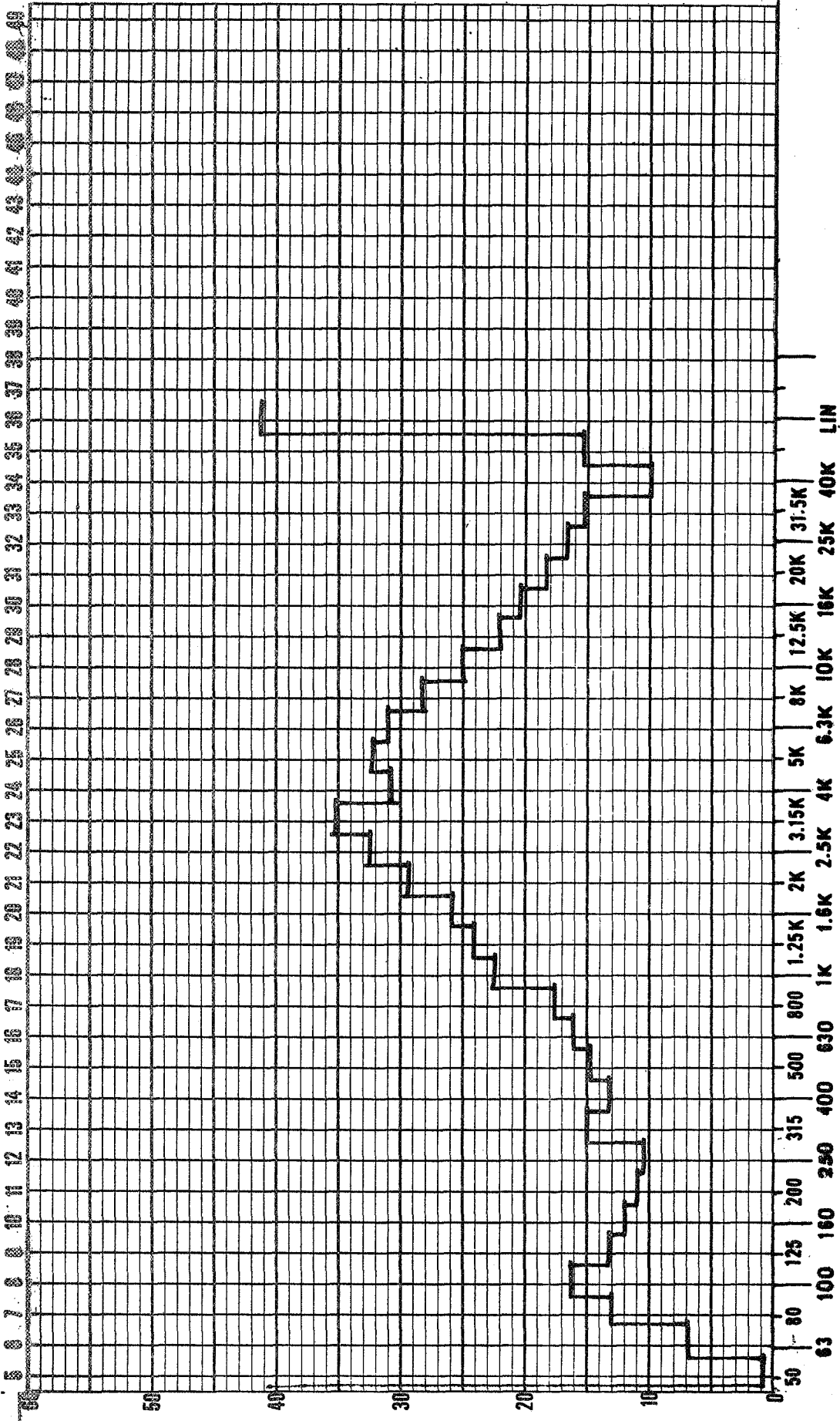
SHROUD STATIC
 BLADE ANGLE 45°
 TIP SPEED 700 FT/SEC
 MICROPHONE LOCATION 2' SIDELINE
6' FWD

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

Figure 44E PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

1/8 1/4 1/2 1 2 4 8 16 32 SEC

RELATIVE LEVEL IN DB

I. D. NO. RUN 40

FOR ABSOLUTE LEVEL ADD 80 DB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

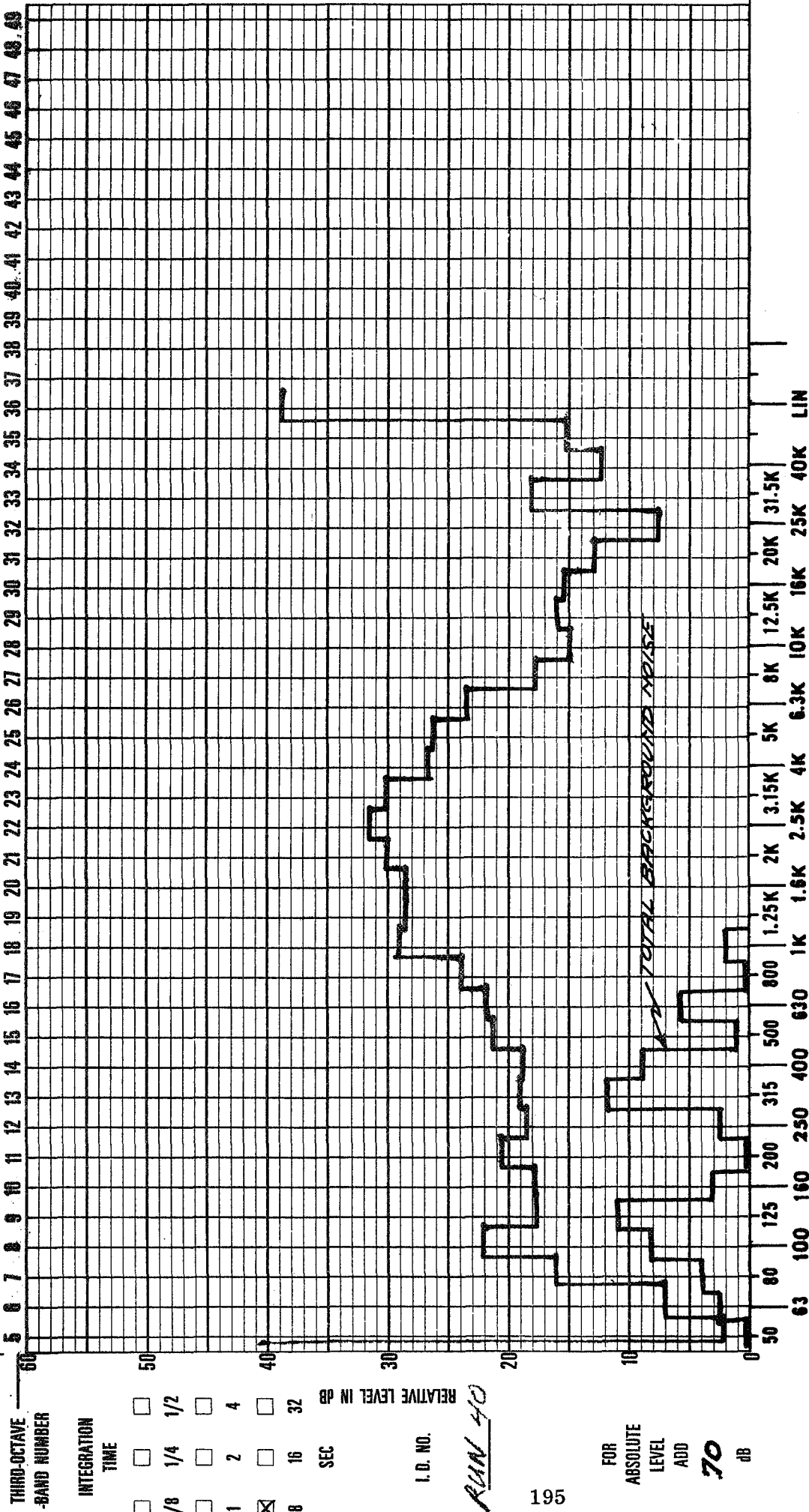
SHROUD STATIC
 BLADE ANGLE 50°
 TIP SPEED 500 FT/SEC
 MICROPHONE LOCATION 2' SIDELINE
2' REAR

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

Figure 45EPROP - FAN MODEL NOISE



SHROUD STATIC
 BLADE ANGLE 50°
 TIP SPEED 500 FT/SEC
 MICROPHONE LOCATION 2' SIDELINE PLANE OF ROTATION

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

Figure 46EPROP-FAN MODEL NOISE

THIRD-OCTAVE
-BAND NUMBER

5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49

INTEGRATION
TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

SEC

I.D. NO.

RUNHO

196

FOR
ABSOLUTE
LEVEL
ADD
70
dB

60
50
40
30
20
10
0

63 80 100 125 160 200 250 315 400 500 630 800 1K 1.25K 2K 3.15K 4K 5K 8K 12.5K 20K 31.5K
40K LIN

TOTAL BACKGROUND NOISE

THIRD-OCTAVE - BAND CENTER FREQUENCY IN HZ

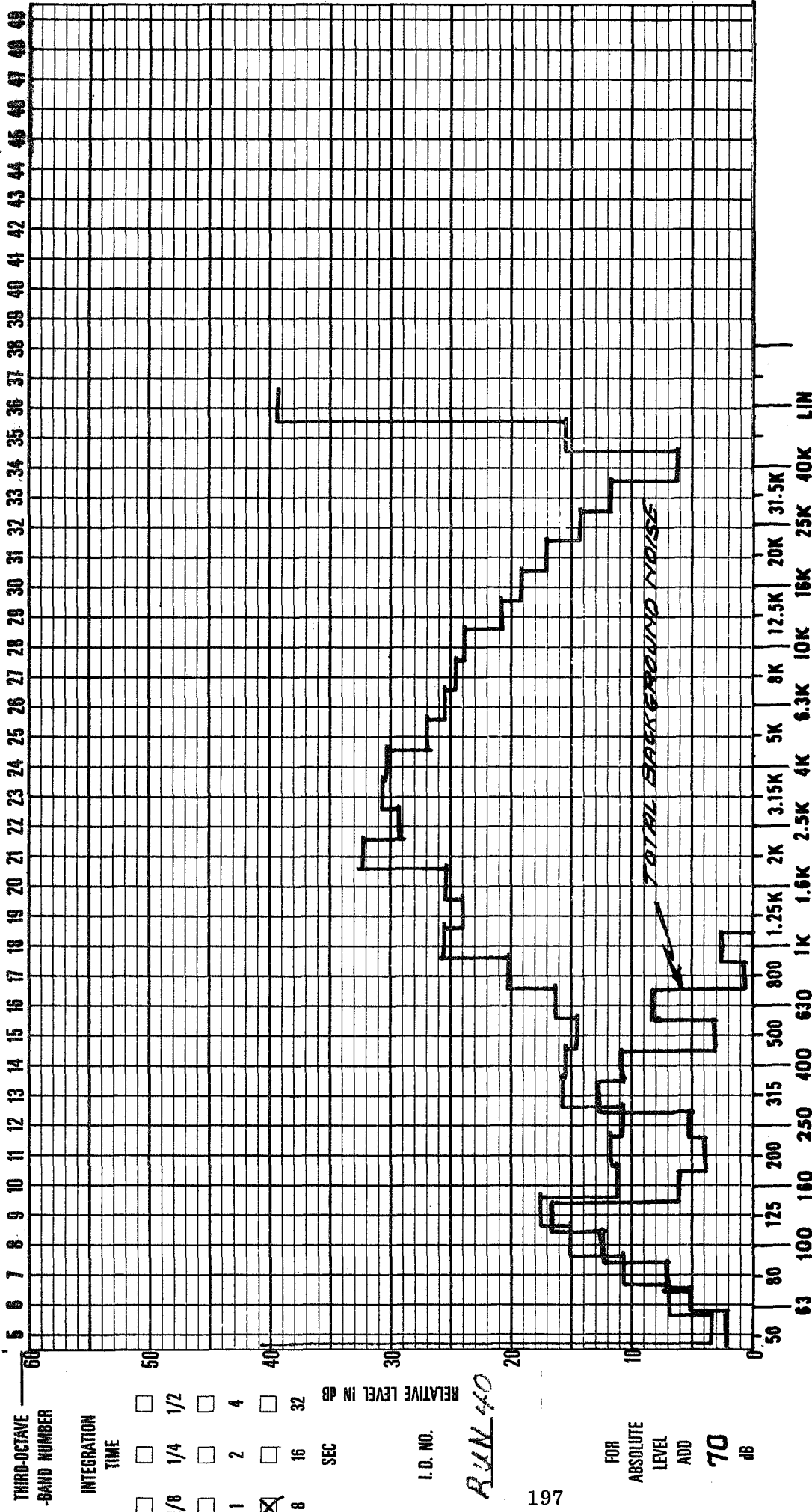
Hamilton
Standard



THIRD-OCTAVE-BAND
ANALYSIS

SHROUD STATIC
BLADE ANGLE 50°
TIP SPEED 500 FT/SEC
MICROPHONE LOCATION 2' SIDELINE
2' FWD

Figure 47EPROP - FAN MODEL NOISE



SHROUD STATIC
 BLADE ANGLE 50°
 TIP SPEED 500 FT/SEC
 MICROPHONE LOCATION 2' SIDELINE
6' FWD

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

Figure 48E PROP-FAN MODEL NOISE

THIRD-OCTAVE-BAND NUMBER

INTEGRATION TIME

1/8 1/4 1/2 1 2 4 8 16 32 60

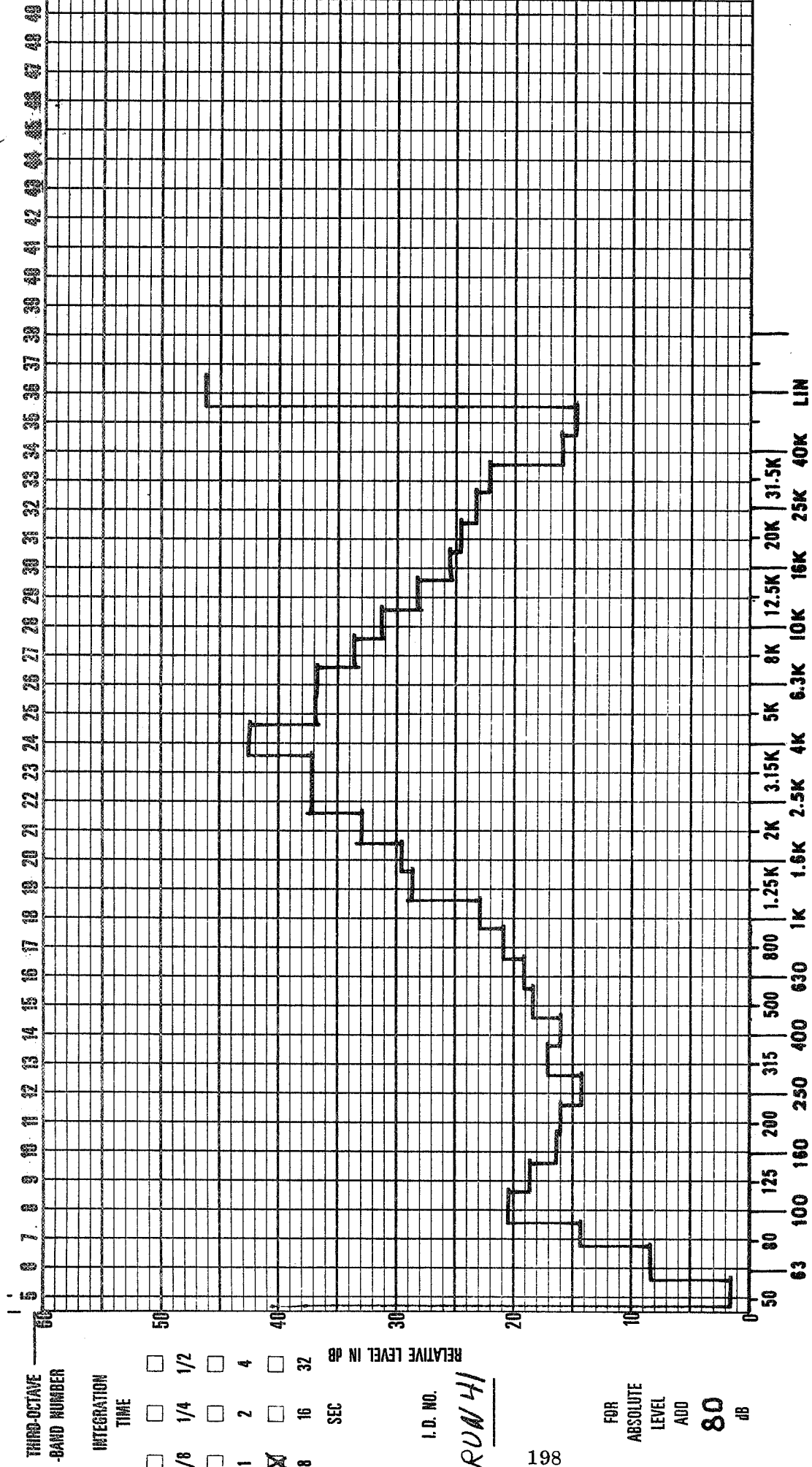
SEC

I.O. NO.

RUN 40

FOR ABSOLUTE LEVEL ADD 70 dB

SHROUD STATIC
BLADE ANGLE 50
TIP SPEED 600 FT/SEC
MICROPHONE LOCATION 2' SIDELINE
2' REAR



THIRD-OCTAVE-BAND NUMBER

INTEGRATION TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32
- 40

RELATIVE LEVEL IN DB

I.D. NO.

RUN 41

FOR ABSOLUTE LEVEL ADD 80 dB

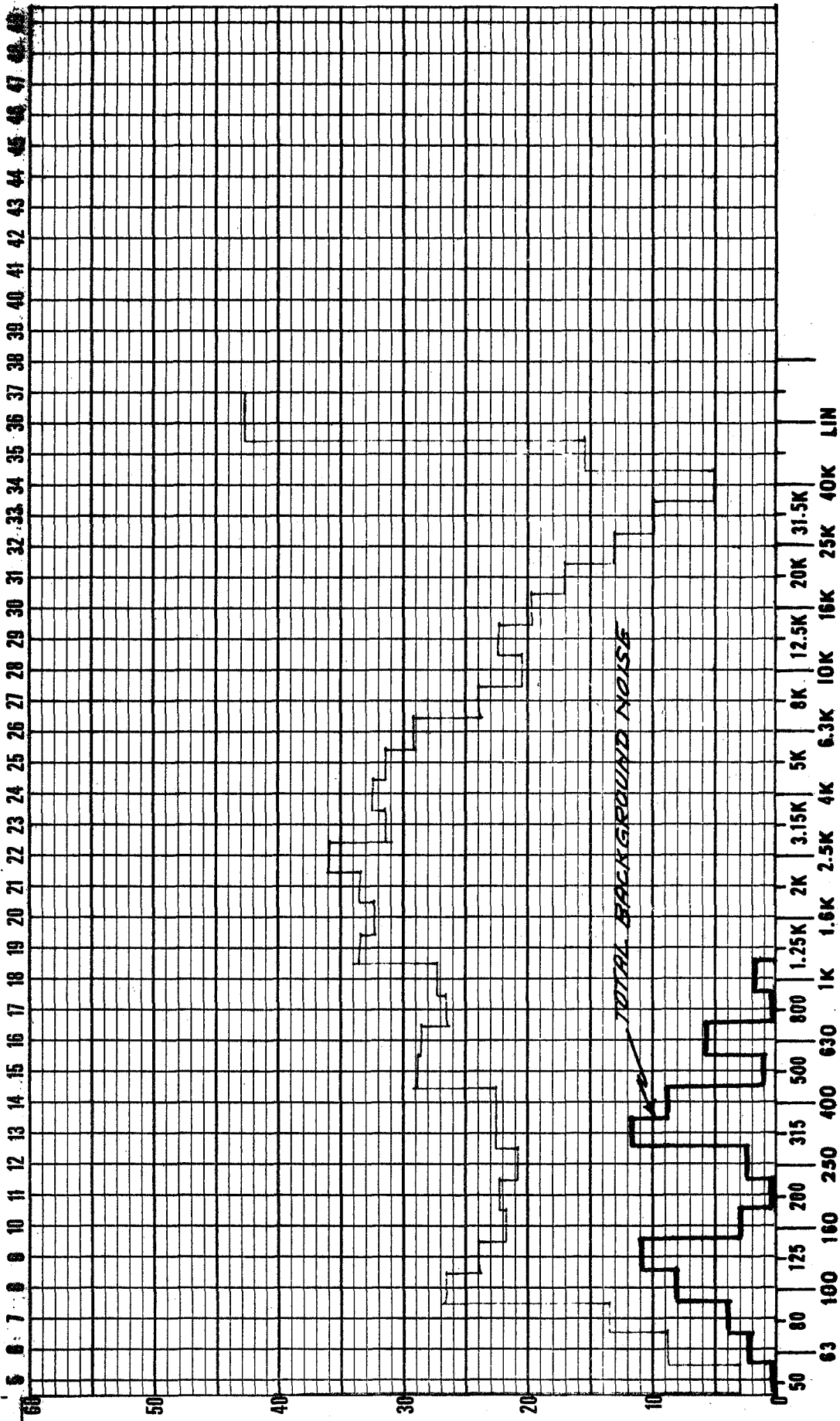
THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

Figure 49EPROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

RELATIVE LEVEL IN DB

I.D. NO.

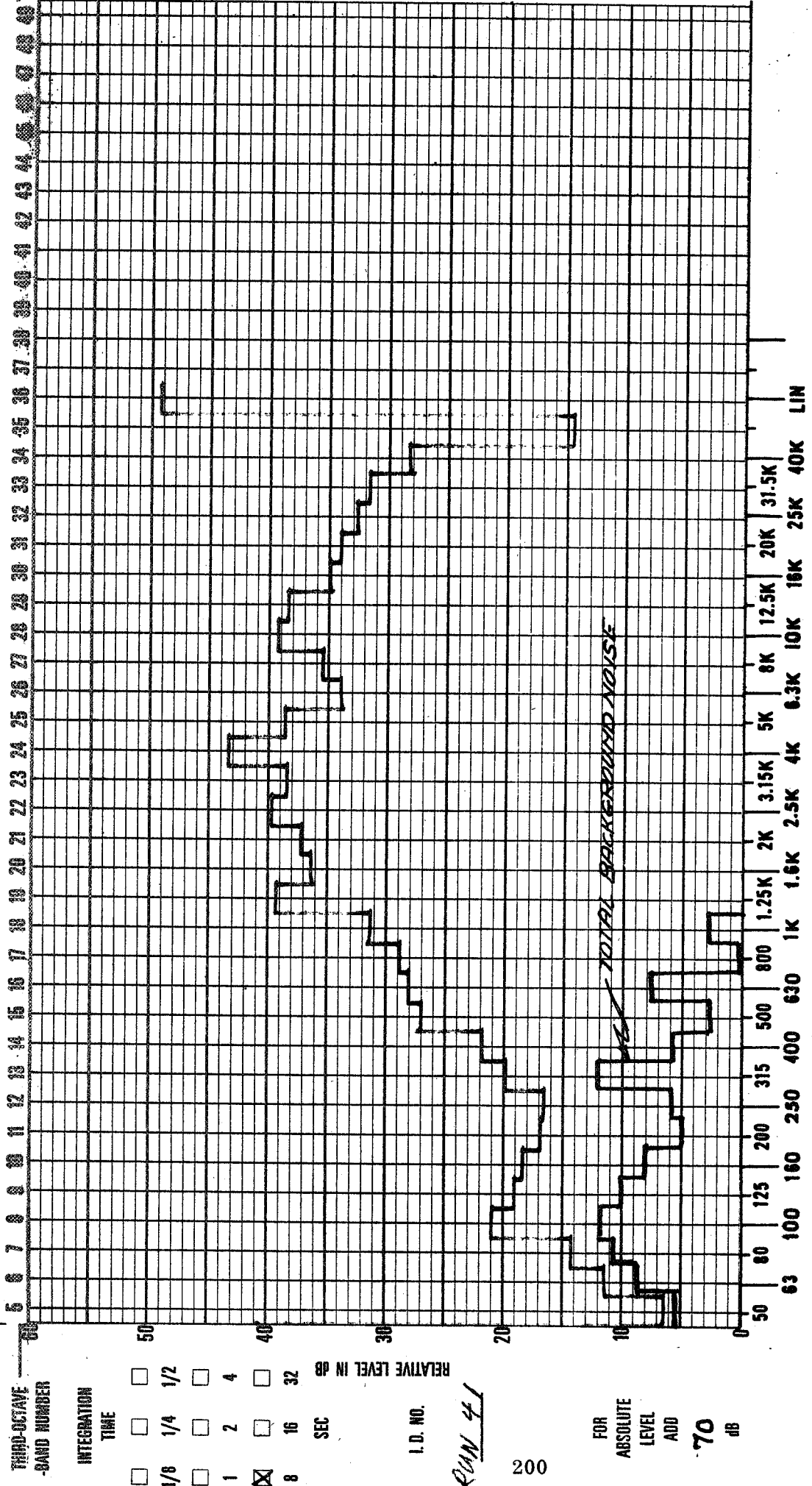
RUN 41

FOR ABSOLUTE LEVEL ADD 70 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD STATIC
 BLADE ANGLE 50°
 TIP SPEED 600 FT/SEC
 MICROPHONE LOCATION 2' SIDELINE PLANE OF ROTATION

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 THIRD-OCTAVE-BAND ANALYSIS



THIRD-OCTAVE-BAND NUMBER

INTEGRATION TIME

1/8 1/4 1/2 1 2 4 8 16 32 64

RELATIVE LEVEL IN DB

I.D. NO.

FOR ABSOLUTE LEVEL ADD 70 dB

RUN 41

200

SHROUD STATIC

BLADE ANGLE 50°

TIP SPEED 600 FT/SEC

MICROPHONE LOCATION 2' SIDELINE
2' FWD

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND ANALYSIS

Figure 5/E/PROP-FAN MODEL NOISE

SHROUD STATIC
BLADE ANGLE 50°
TIP SPEED 600 FT/SEC
MICROPHONE LOCATION 2' SIDELINE
6' FWD

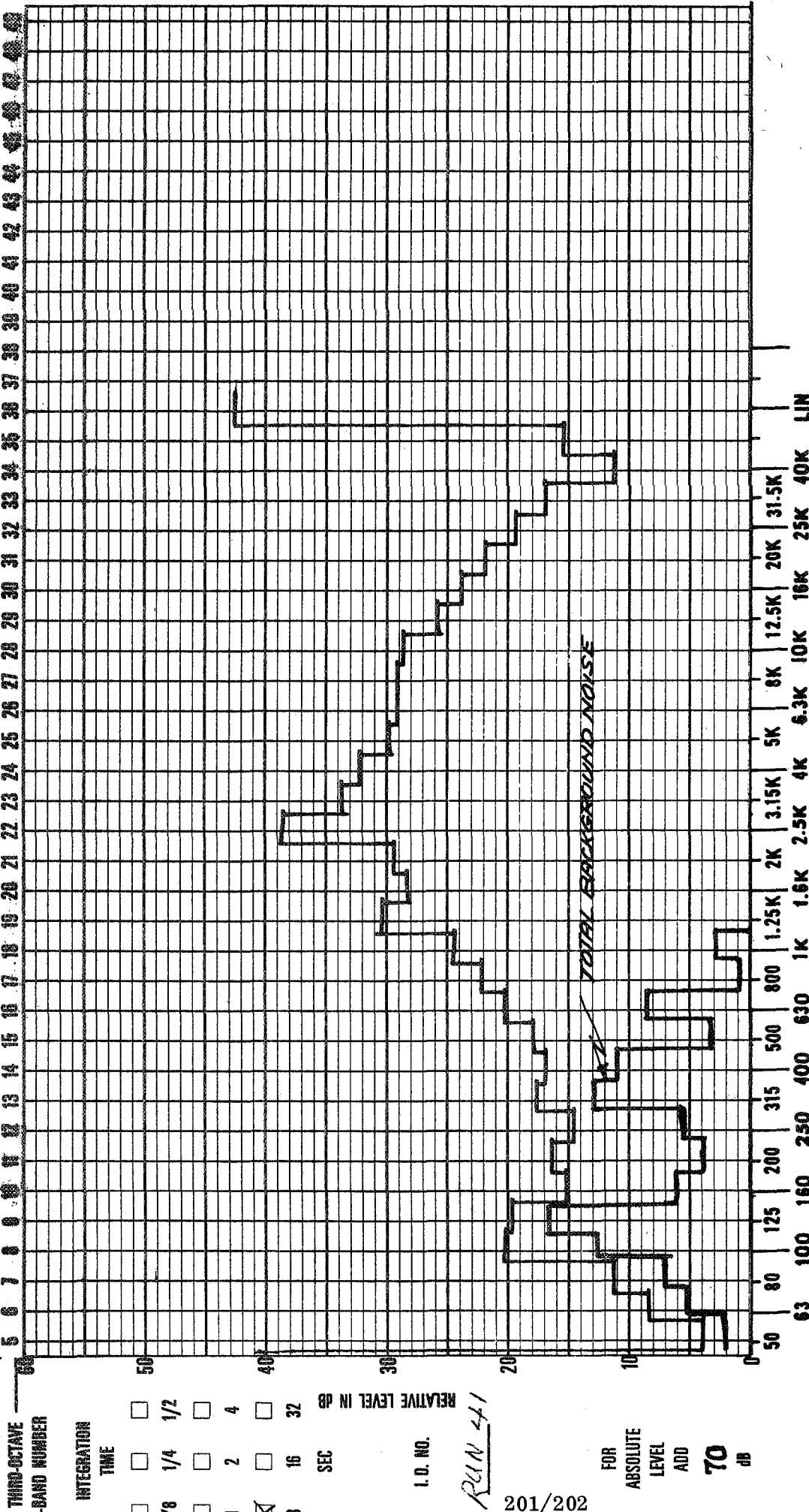
THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND
ANALYSIS

Figure 58E PROP - FAN MOPFI NOISE



THIRD-OCTAVE-BAND NUMBER

INTEGRATION TIME

RELATIVE LEVEL IN DB

I. O. NO.

FOR ABSOLUTE LEVEL ADD 70 dB

201/202

RUN 41

APPENDIX F

COMPROMISE SHROUD FAR FIELD
ONE-THIRD OCTAVE BAND DATA

THIRD-OCTAVE
BAND NUMBER

INTEGRATION
TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

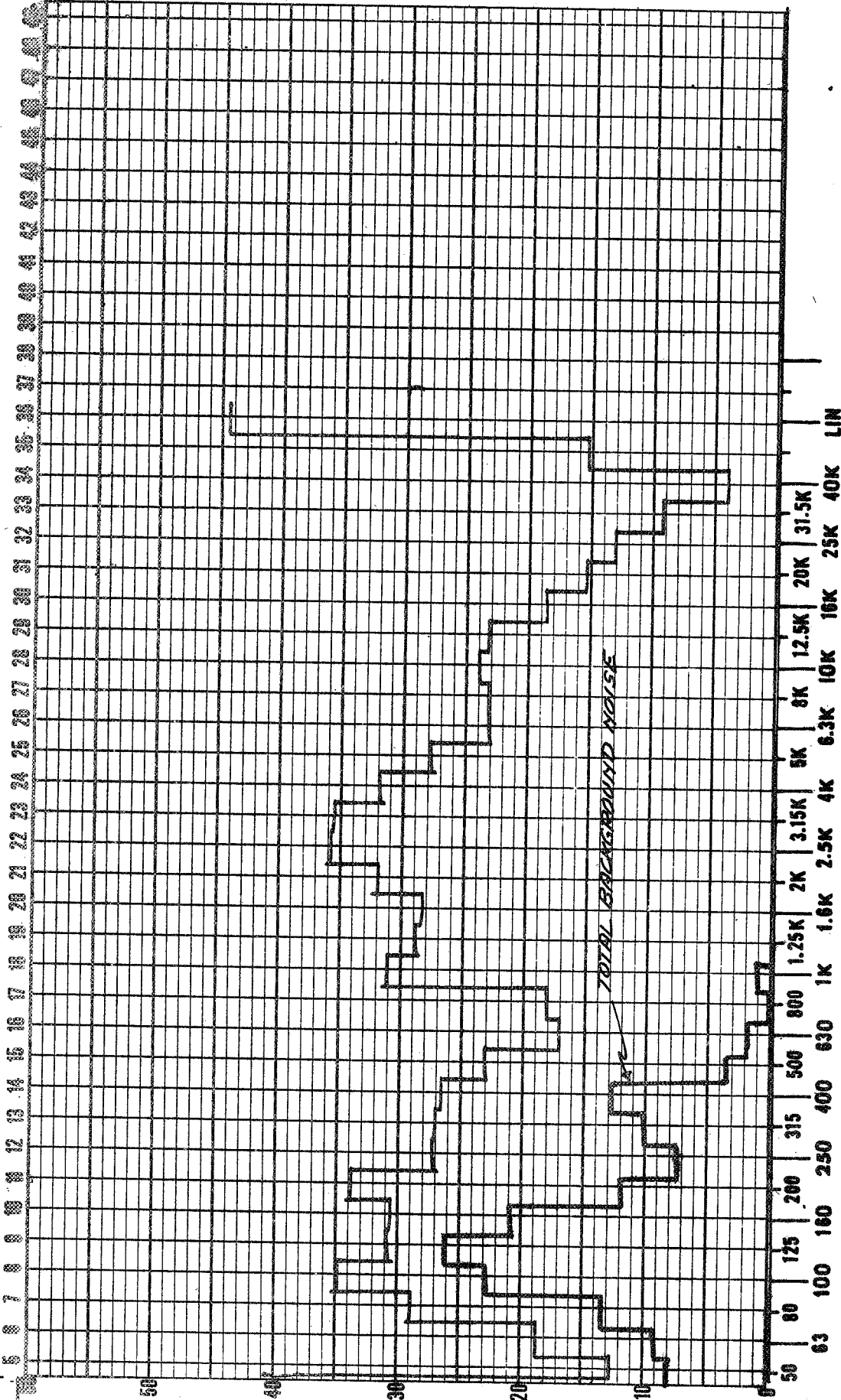
RELATIVE LEVEL IN dB

I.D. NO.

RUN 70

204

FOR
ABSOLUTE
LEVEL
ADD
50
dB



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND
ANALYSIS

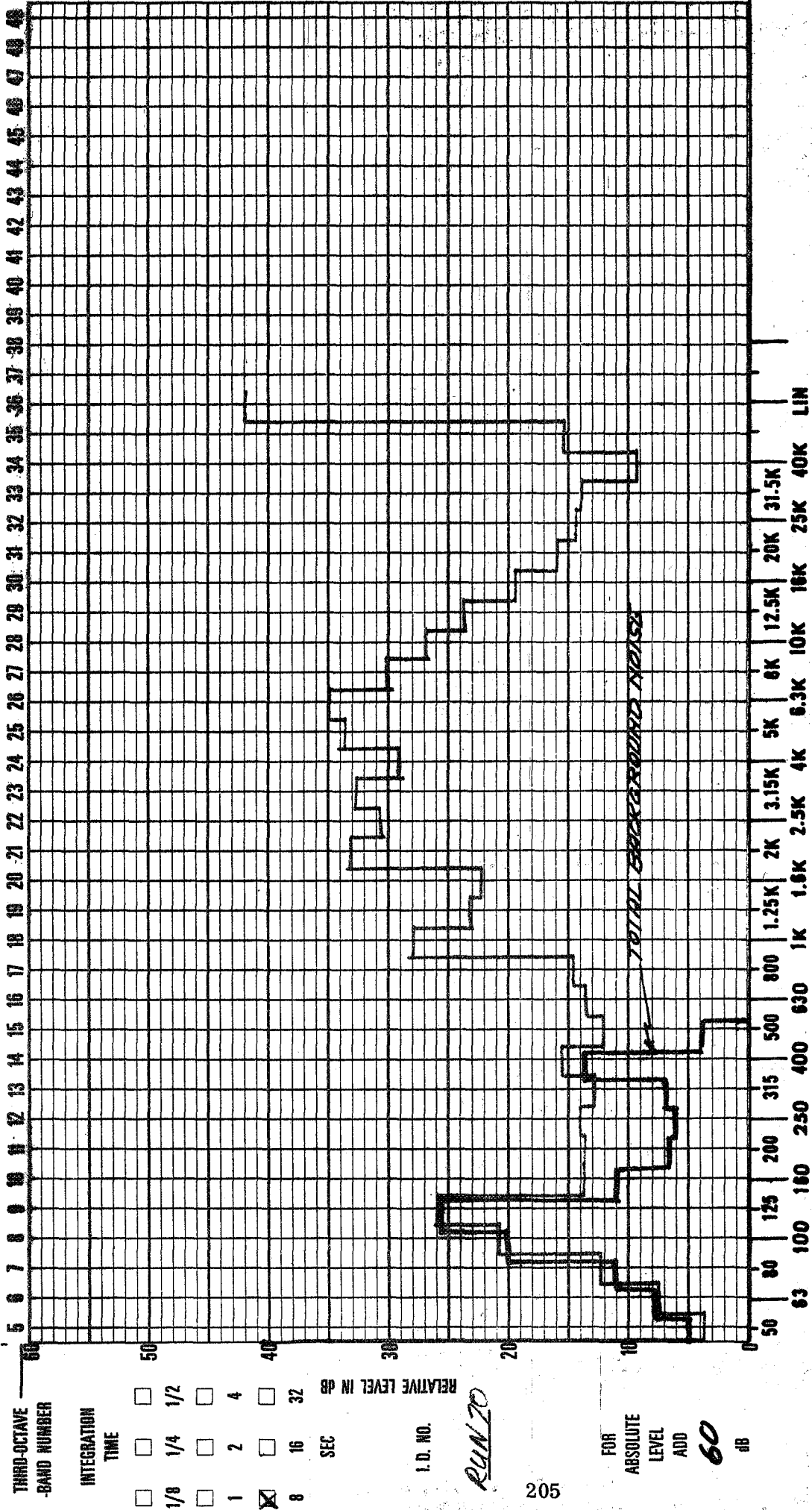
SHROUD COMPROMISE

BLADE ANGLE 30°

TIP SPEED 500 FT/SEC

MICROPHONE LOCATION 13 1/2' 90° ON GROUND

Figure 17- PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND NUMBER

INTEGRATION TIME

1/8

1/4

1/2

1

2

4

8

16

32

SEC

RELATIVE LEVEL IN DB

I. D. NO.

RUN 70

FOR ABSOLUTE LEVEL ADD

60 dB

SHROUD COMPROMISE

BLADE ANGLE 30°

TIP SPEED 500 FT/SEC

MICROPHONE LOCATION 10' 22 1/2°

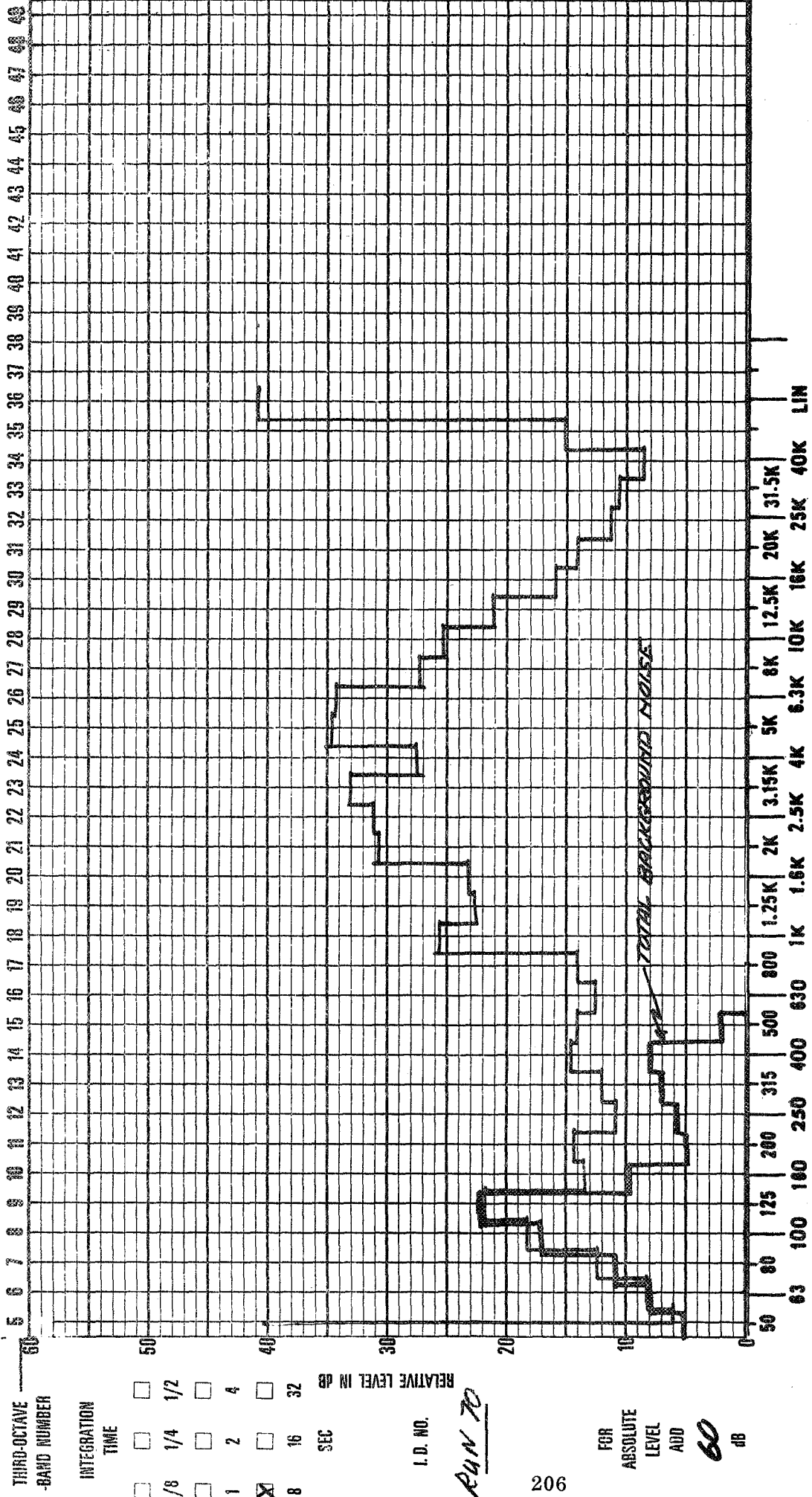
THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND ANALYSIS

Figure 2F PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49

INTEGRATION TIME
 1/8
 1/4
 1/2
 1
 2
 4
 8
 16
 32
 SEC

I.D. NO.

Run 70

FOR ABSOLUTE LEVEL ADD 60 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

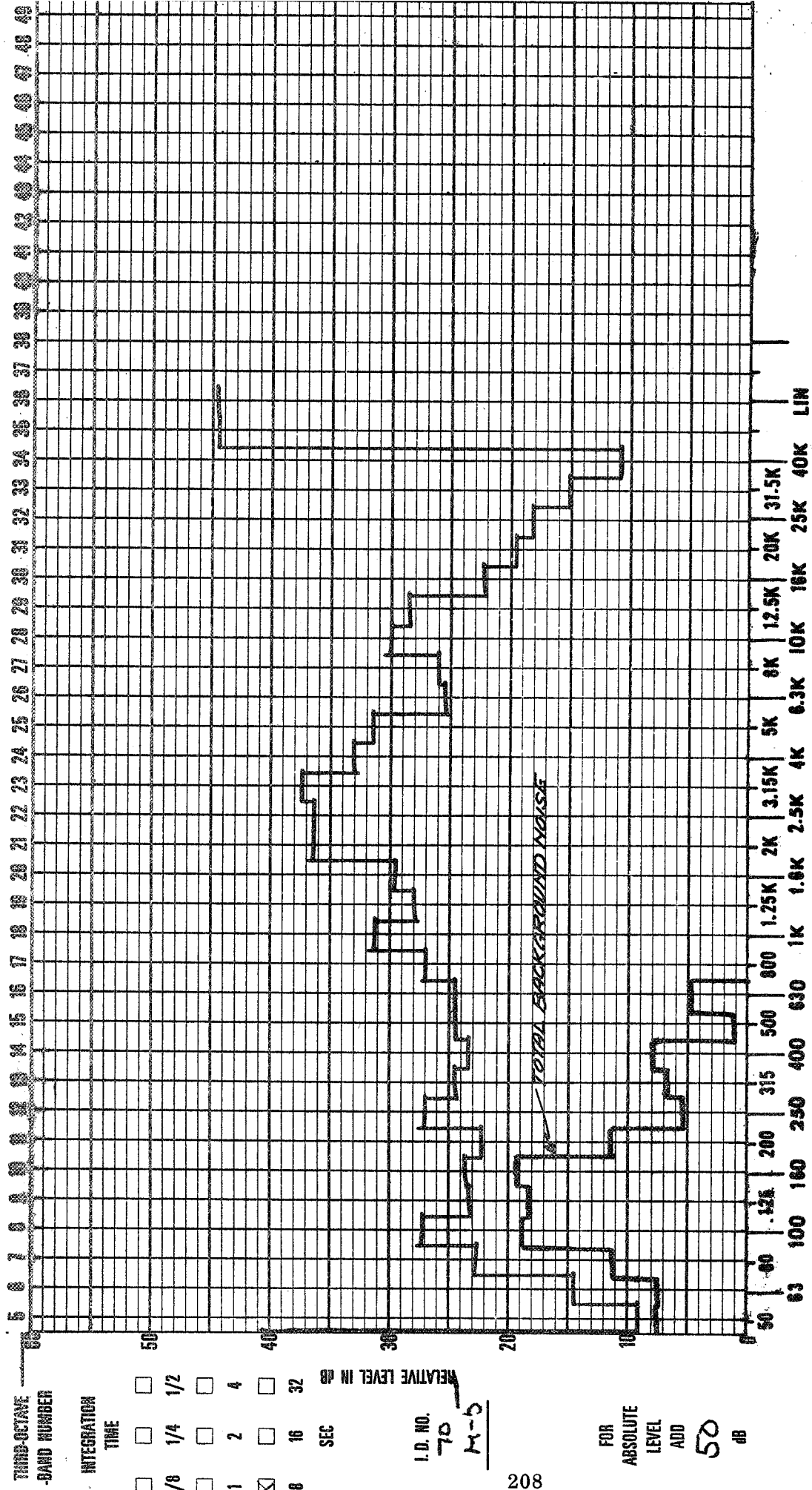
SHROUD COMPROMISE
 BLADE ANGLE 30°
 TIP SPEED 500 FT/SEC
 MICROPHONE LOCATION 10' 45°

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

Figure 3F PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD COMPROMISE
 BLADE ANGLE 30°
 TIP SPEED 500 FT/SEC
 MICROPHONE LOCATION 10' 90°

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

Figure 5F PROP-FAN MODEL NOISE

THIRD-OCTAVE-BAND NUMBER: 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49

INTEGRATION TIME:
 1/8
 1/4
 1/2
 2
 4
 8
 16
 32
 SEC

RELATIVE LEVEL IN DB: 50 60

I.D. NO. 70
M-5

FOR ABSOLUTE LEVEL ADD 50 DB

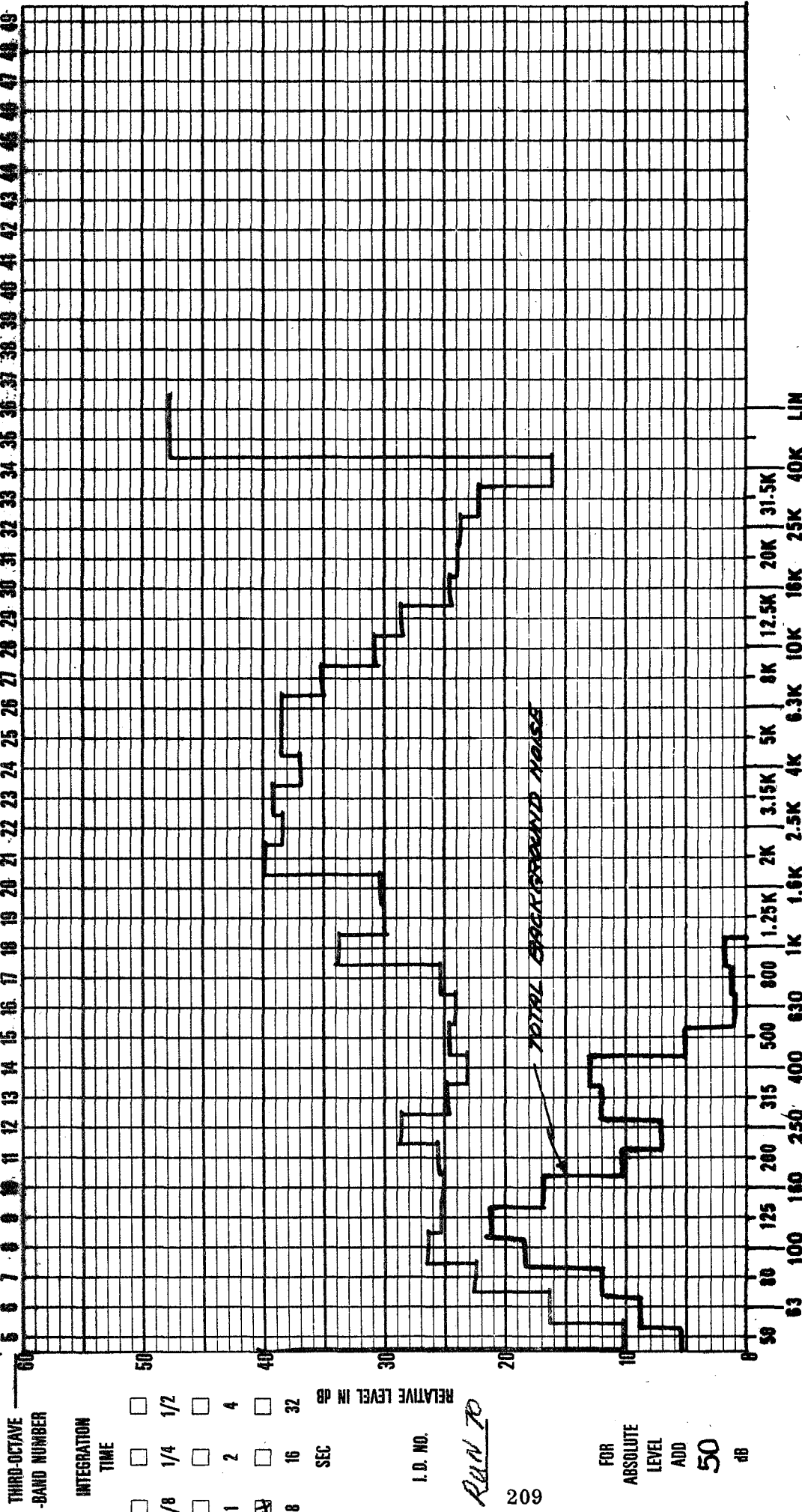
SHROUD COMPROMISE
BLADE ANGLE 30°
TIP SPEED 500 FT/SEC
MICROPHONE LOCATION 10' 112 1/2°

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton
Standard



THIRD-OCTAVE-BAND
ANALYSIS



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

- 1/8
 - 1/4
 - 1/2
 - 2
 - 4
 - 8
 - 16
 - 32
- SEC

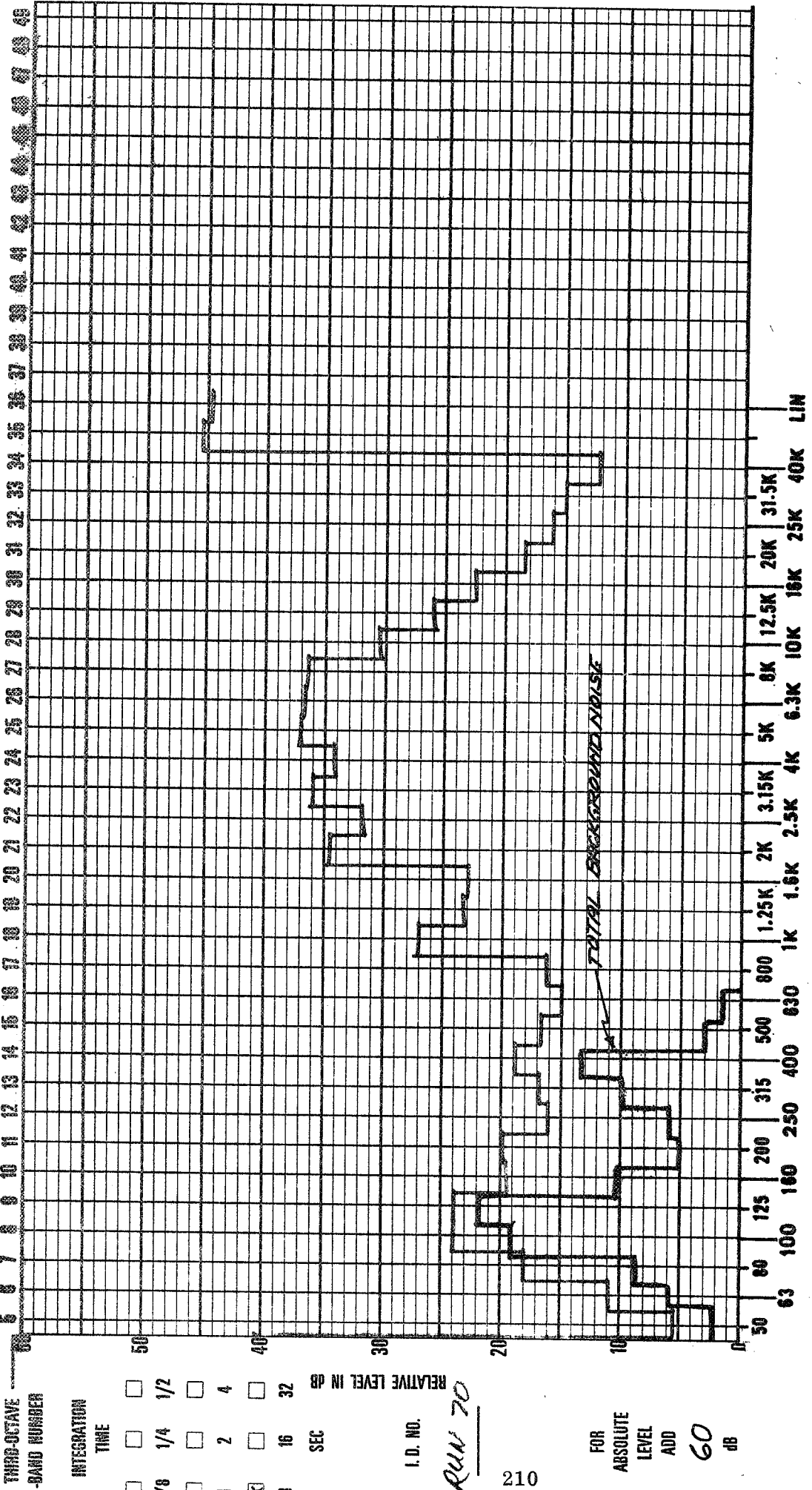
RELATIVE LEVEL IN DB

I.D. NO.

RUN 10

FOR
ABSOLUTE
LEVEL
ADD
50
dB

Figure 6 F PROP-FAN MODEL NOISE



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

- 1/8
 - 1/4
 - 1/2
 - 1
 - 2
 - 4
 - 8
 - 16
 - 32
- SEC

I.D. NO.

RUN 70

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

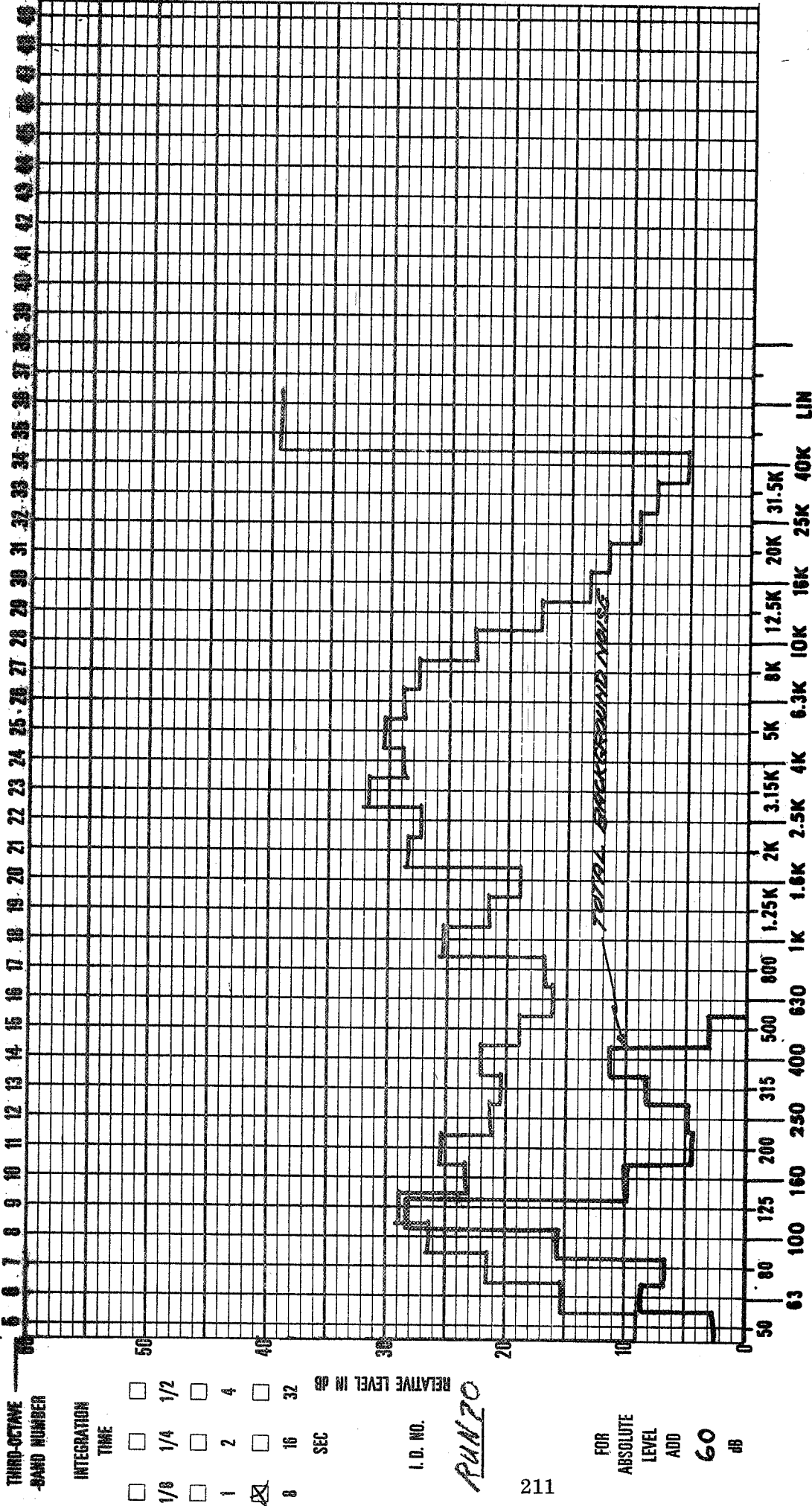
Hamilton
Standard

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THIRD-OCTAVE-BAND
ANALYSIS

SHROUD COMPROMISE
 BLADE ANGLE 30°
 TIP SPEED 500 FT/SEC
 MICROPHONE LOCATION 10' 135°

Figure 7F PROP-FAN MODEL NOISE



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

I.D. NO.

RUNZO

FOR
ABSOLUTE
LEVEL
ADD
60
dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

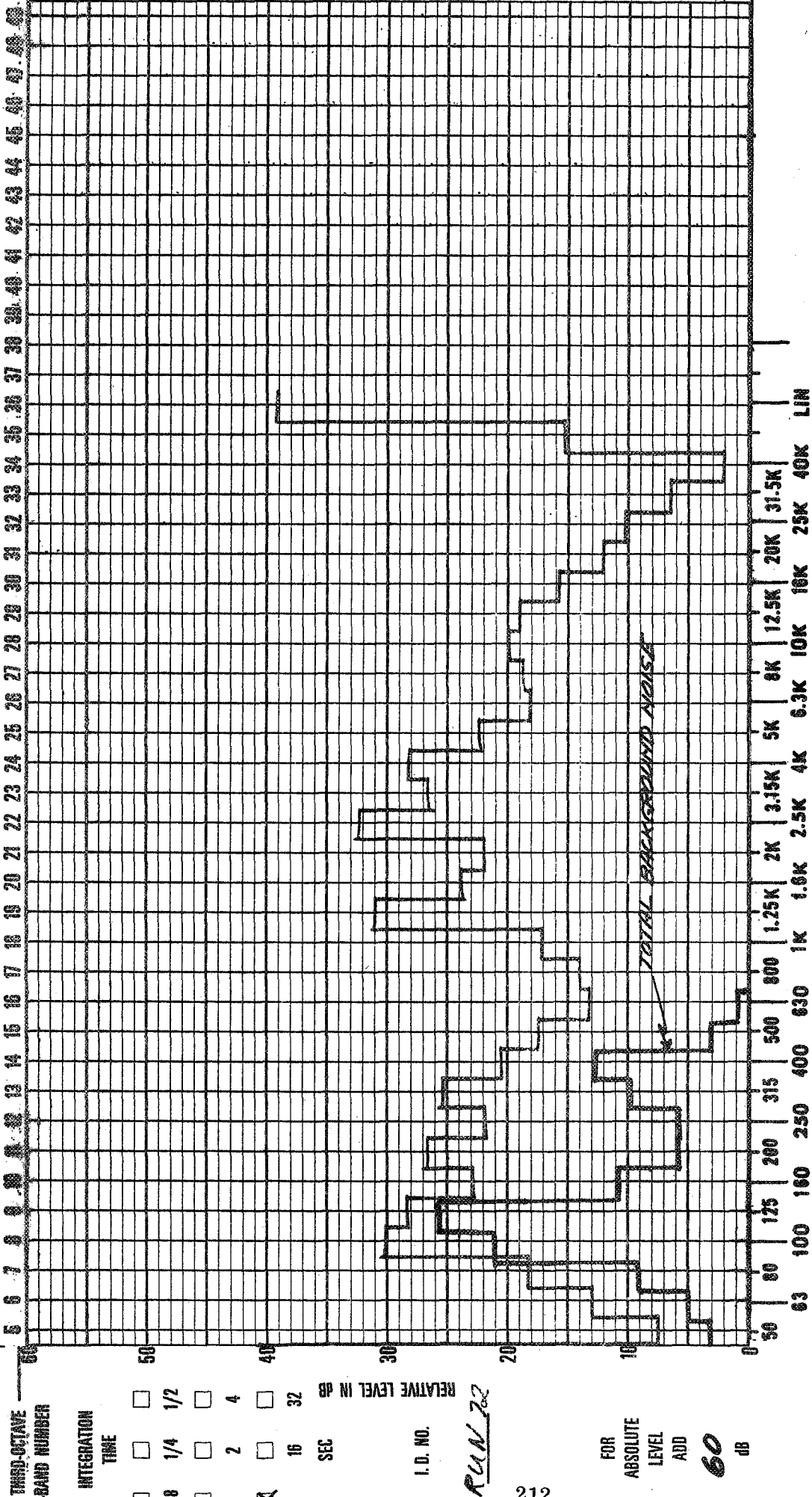
HAMILTON
STANDARD

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THIRD-OCTAVE-BAND
ANALYSIS

SHROUD COMPROMISE
BLADE ANGLE 30°
TIP SPEED 500 FT/SEC
MICROPHONE LOCATION 10' 157 1/2°

Figure 8F PROP-FAN MODEL NOISE



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

SEC

RELATIVE LEVEL IN DB

I. D. NO.

RUN 72

FOR
ABSOLUTE
LEVEL
ADD
60
dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton
Standard



THIRD-OCTAVE-BAND
ANALYSIS

SHROUD COMPROMISE

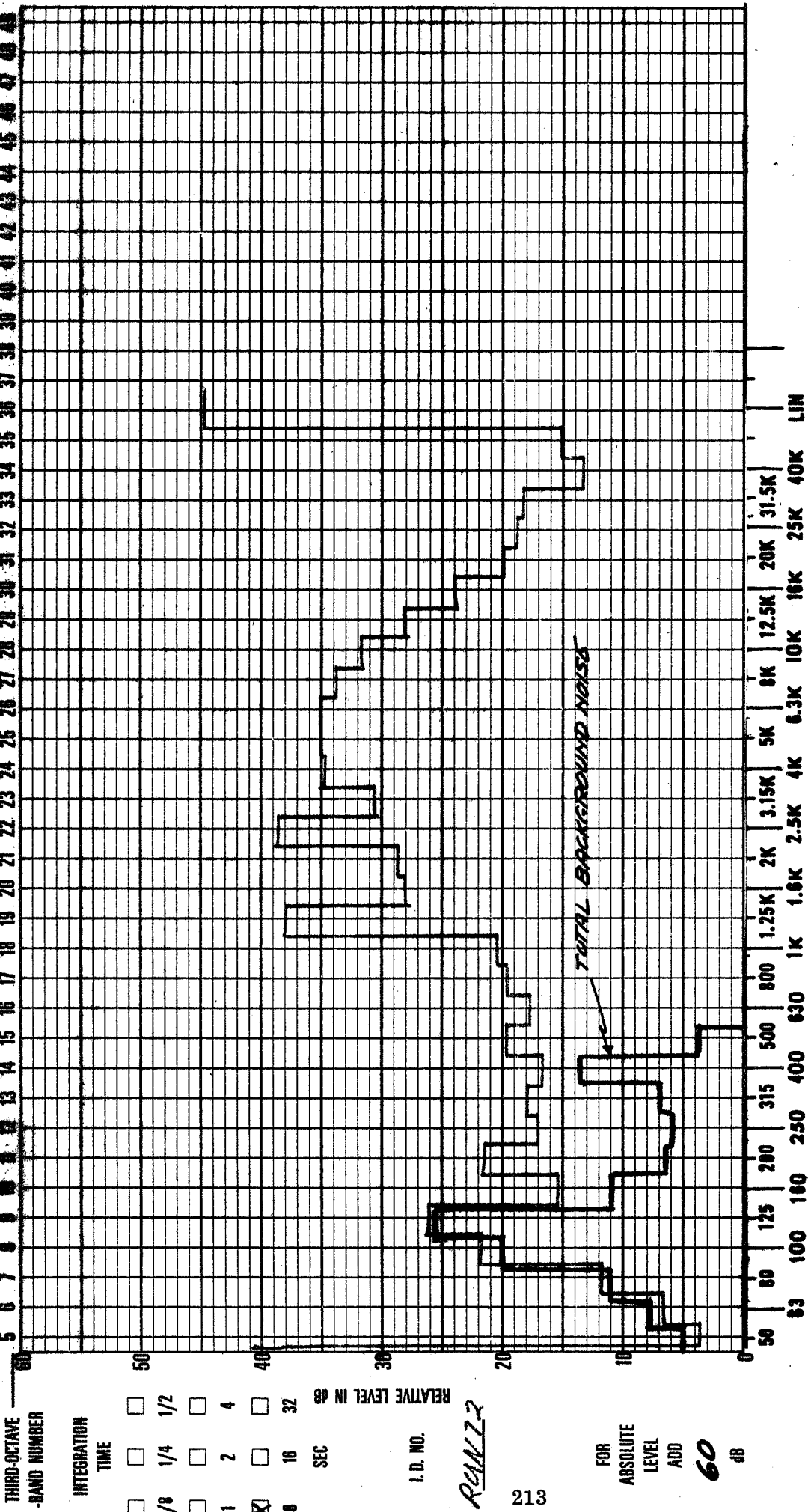
BLADE ANGLE 30°

TIP SPEED 600 FT/SEC

MICROPHONE
LOCATION 13 1/2' 90° ON GROUND

Figure 9F PROP-FAN MODEL NOISE

SHROUD COMPROMISE
BLADE ANGLE 30°
TIP SPEED 600 FT/SEC
MICROPHONE LOCATION 10' 22 1/2°



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

1/8

1/4

1/2

1

2

4

8

16

32

SEC

RELATIVE LEVEL IN dB

I. D. NO.

REINZZ

FOR ABSOLUTE LEVEL ADD 60 dB

THIRD-OCTAVE BAND CENTER FREQUENCY IN HZ

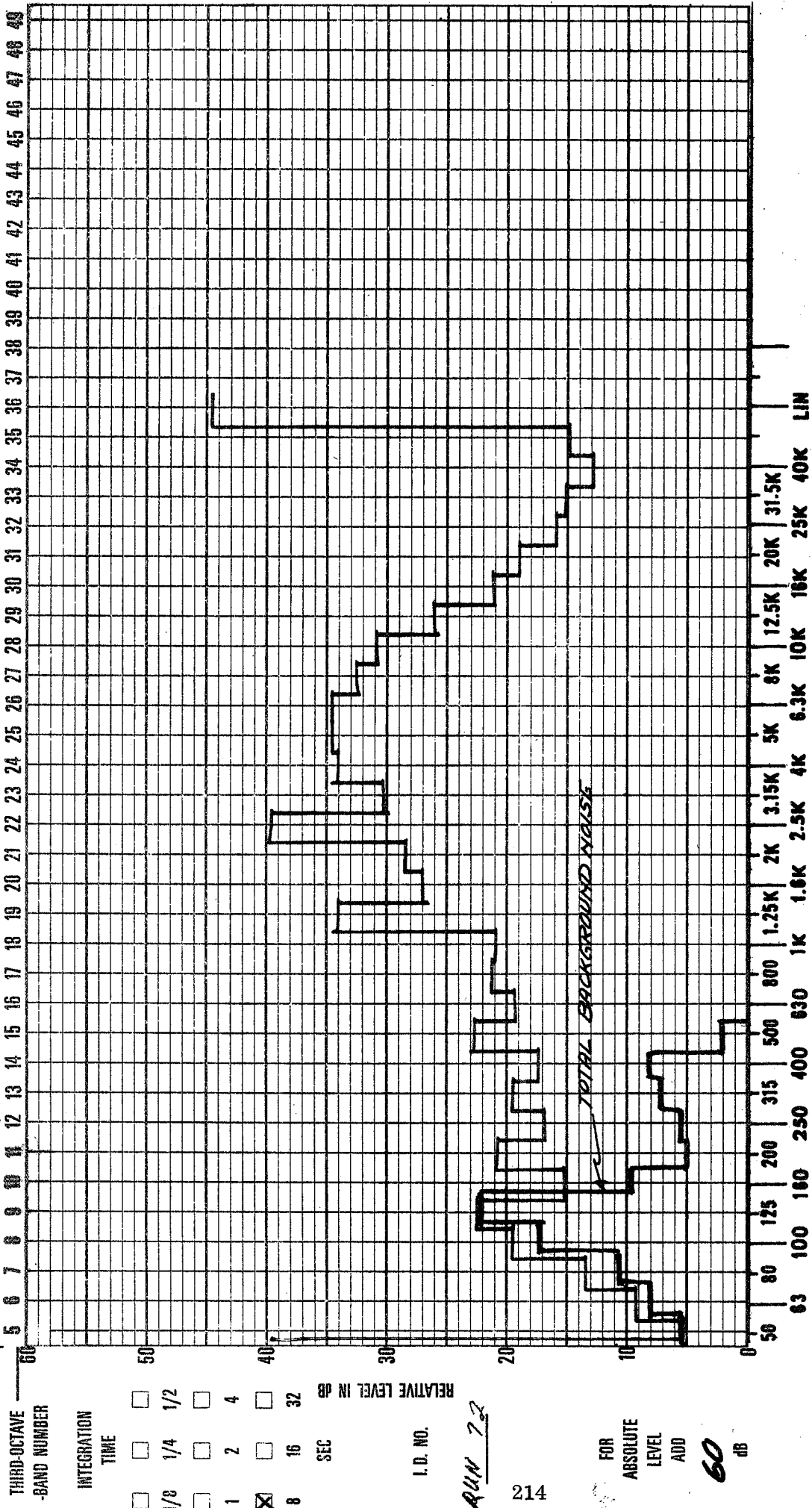
Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

Figure 10F PROP-FAN MODEL NOISE

SHROUD COMPROMISE
BLADE ANGLE 30°
TIP SPEED 600 FT/SEC
MICROPHONE LOCATION 10' 45"



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND ANALYSIS

THIRD-OCTAVE-BAND NUMBER: 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49

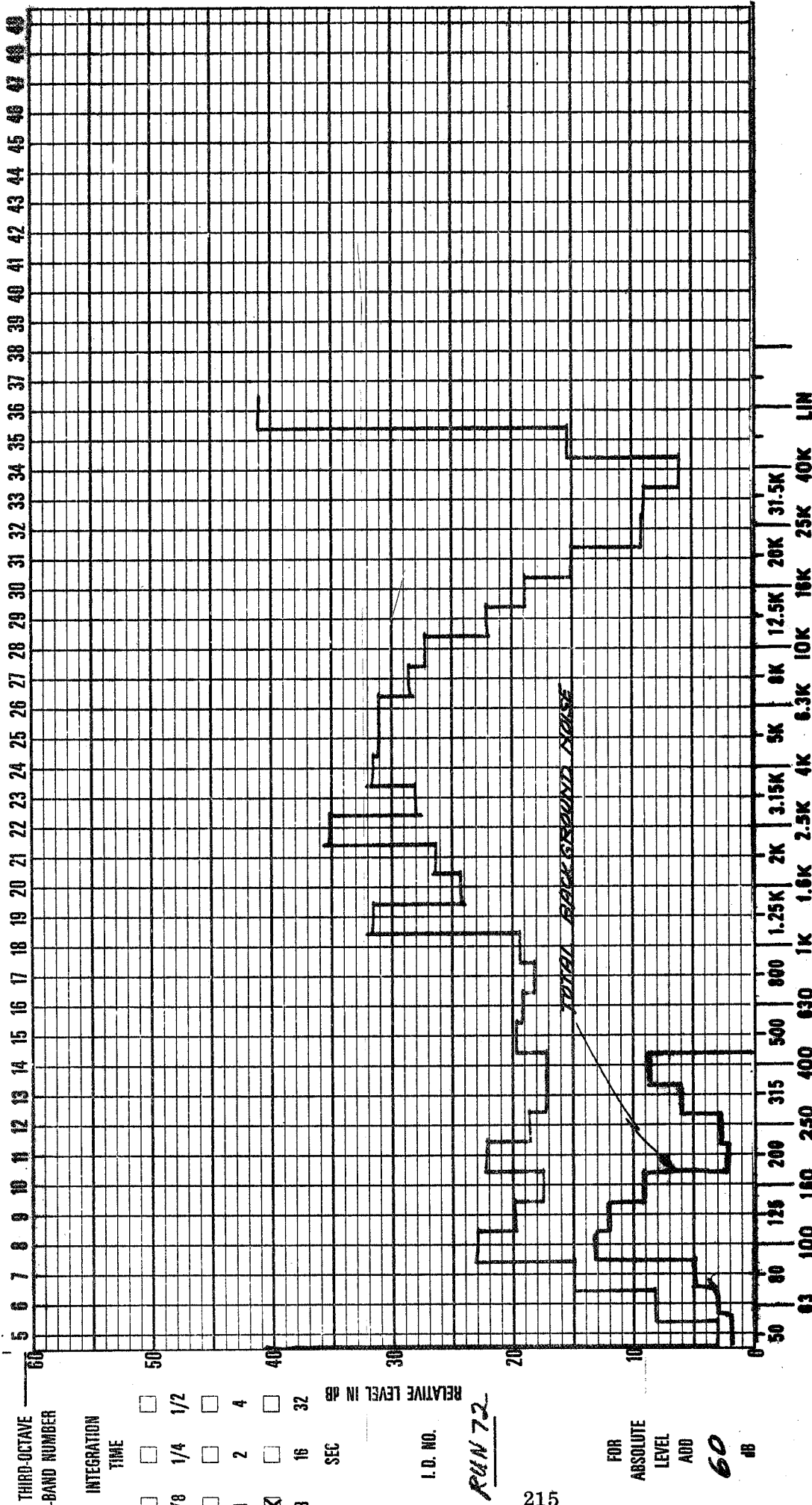
INTEGRATION TIME: 1/8 1/4 1/2 1 2 4 8 16 32

RELATIVE LEVEL IN DB: 60

I.D. NO. RUN 72

Figure // F PROP-FAN MODEL NOISE

SHROUD COMPROMISE
BLADE ANGLE 30°
TIP SPEED 600 FT/SEC
MICROPHONE LOCATION 10' 67 1/2"



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

I.D. NO.

RUN 72

FOR ABSOLUTE LEVEL ADD 60 DB

THIRD-OCTAVE BAND CENTER FREQUENCY IN HZ

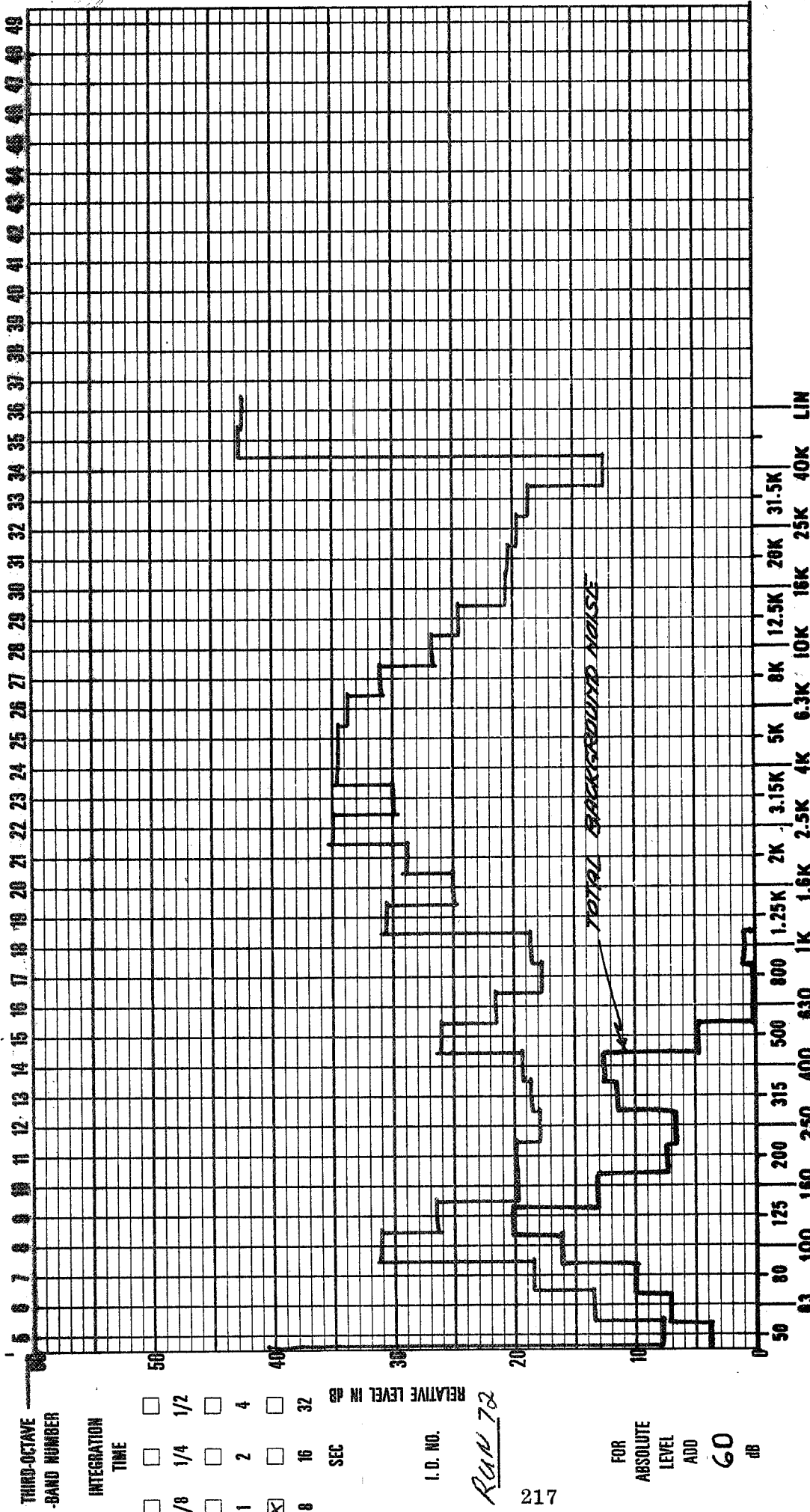
Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

Figure 1A/F PROP-FAN MODEL NOISE

SHROUD COMPROMISE
BLADE ANGLE 30°
TIP SPEED 600 FT/SEC
MICROPHONE LOCATION 10' 112 1/2°



THIRD-OCTAVE-BAND CENTER FREQUENCY IN Hz

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THIRD-OCTAVE-BAND ANALYSIS

Figure 14F PROP-FAN MODEL NOISE

THIRD-OCTAVE-BAND NUMBER

INTEGRATION TIME

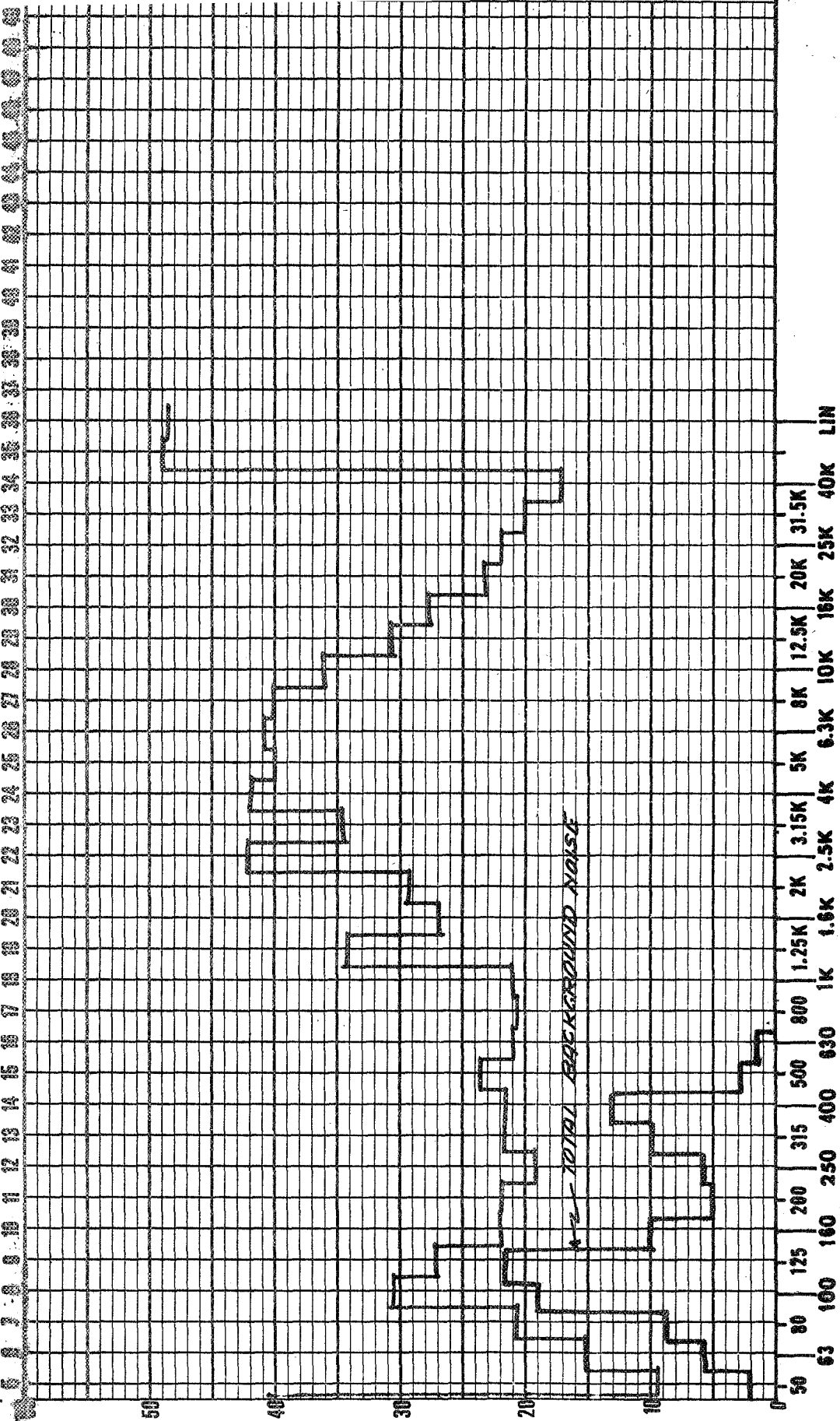
RELATIVE LEVEL IN dB

I.D. NO.

FOR ABSOLUTE LEVEL ADD 60 dB

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

Ran 72



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

RELATIVE LEVEL IN db

I.D. NO.

FOR ABSOLUTE LEVEL ADD 60 db

- 1/8
- 1
- 2
- 4
- 8
- 16
- 32
- 50
- 400

RUN 22

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD COMPROMISE

BLADE ANGLE 30°

TIP SPEED 600 FT/SEC

MICROPHONE LOCATION 10' 135°

Hamilton Standard

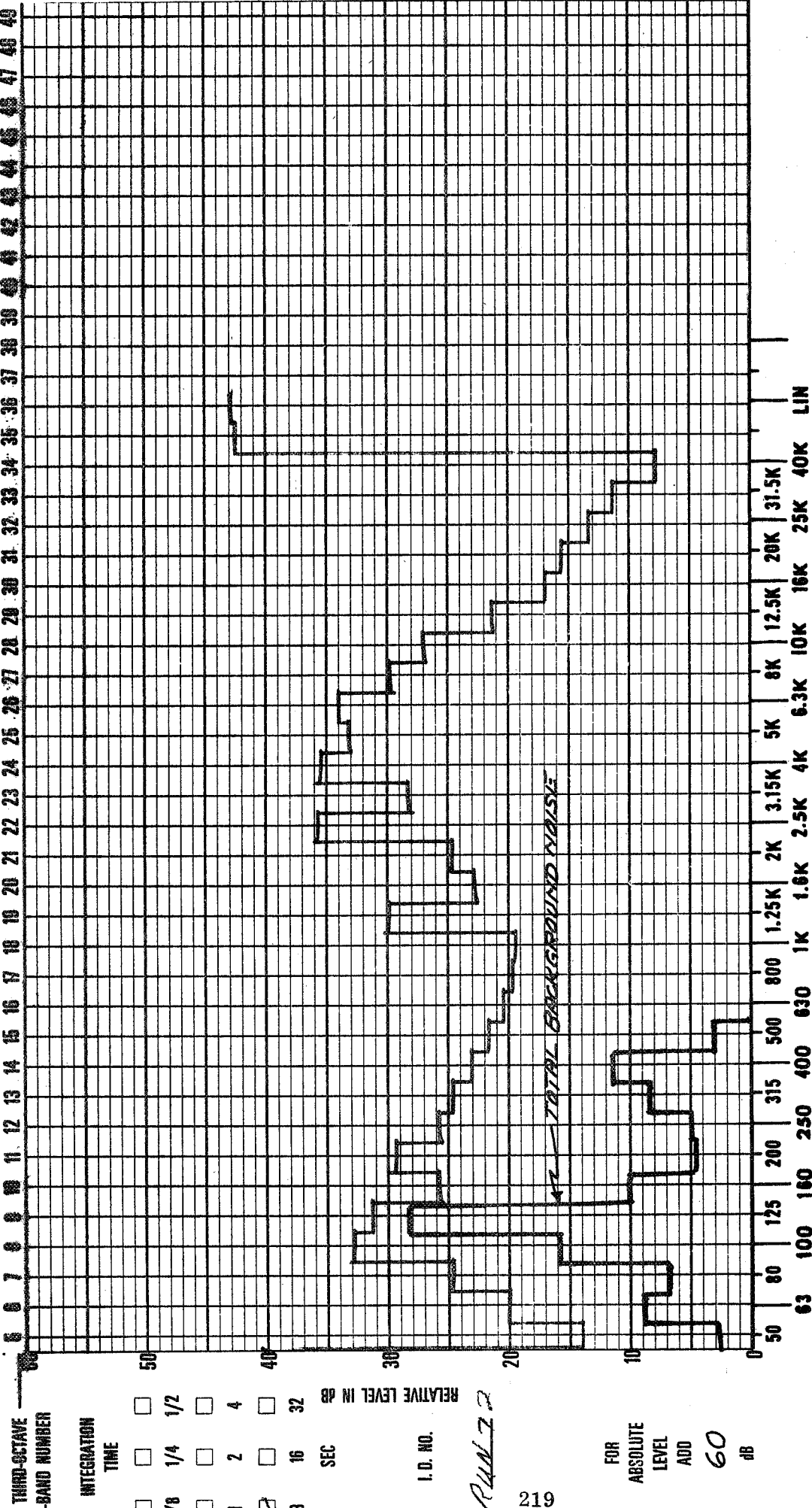
DIVISION OF UNITED AIRCRAFT CORP

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THIRD-OCTAVE-BAND ANALYSIS

Figure 15FPROP-FAN MODEL NOISE

SHROUD COMPROMISE
BLADE ANGLE 30°
TIP SPEED 600 FT/SEC
MICROPHONE LOCATION 10' 157 1/2°



THIRD-OCTAVE-BAND CENTER FREQUENCY IN Hz

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

Figure 16F PROP-FAN MODEL NOISE

THIRD-OCTAVE-BAND NUMBER: 1-49

INTEGRATION TIME: 1/8, 1/4, 1/2, 1, 2, 4, 8, 16, 32

RELATIVE LEVEL IN dB: 0, 10, 20, 30, 40, 50

I. D. NO. RUN 22

FOR ABSOLUTE LEVEL ADD 60 dB

THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

RELATIVE LEVEL IN DB

SEC

I.D. NO.

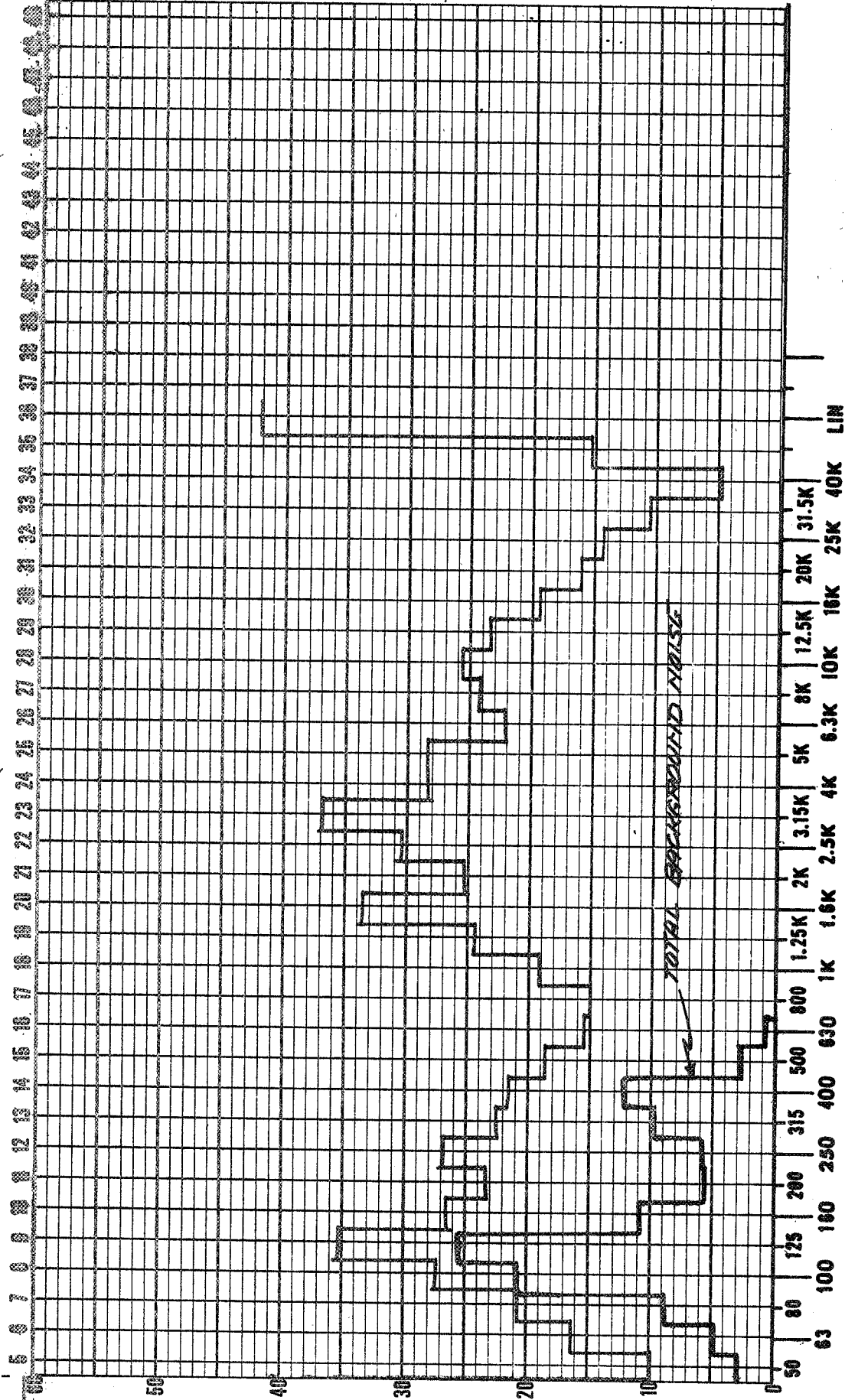
RUN 24

220

FOR
ABSOLUTE
LEVEL
ADD

60

dB



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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Standard

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**U
A_r**

THIRD-OCTAVE-BAND
ANALYSIS

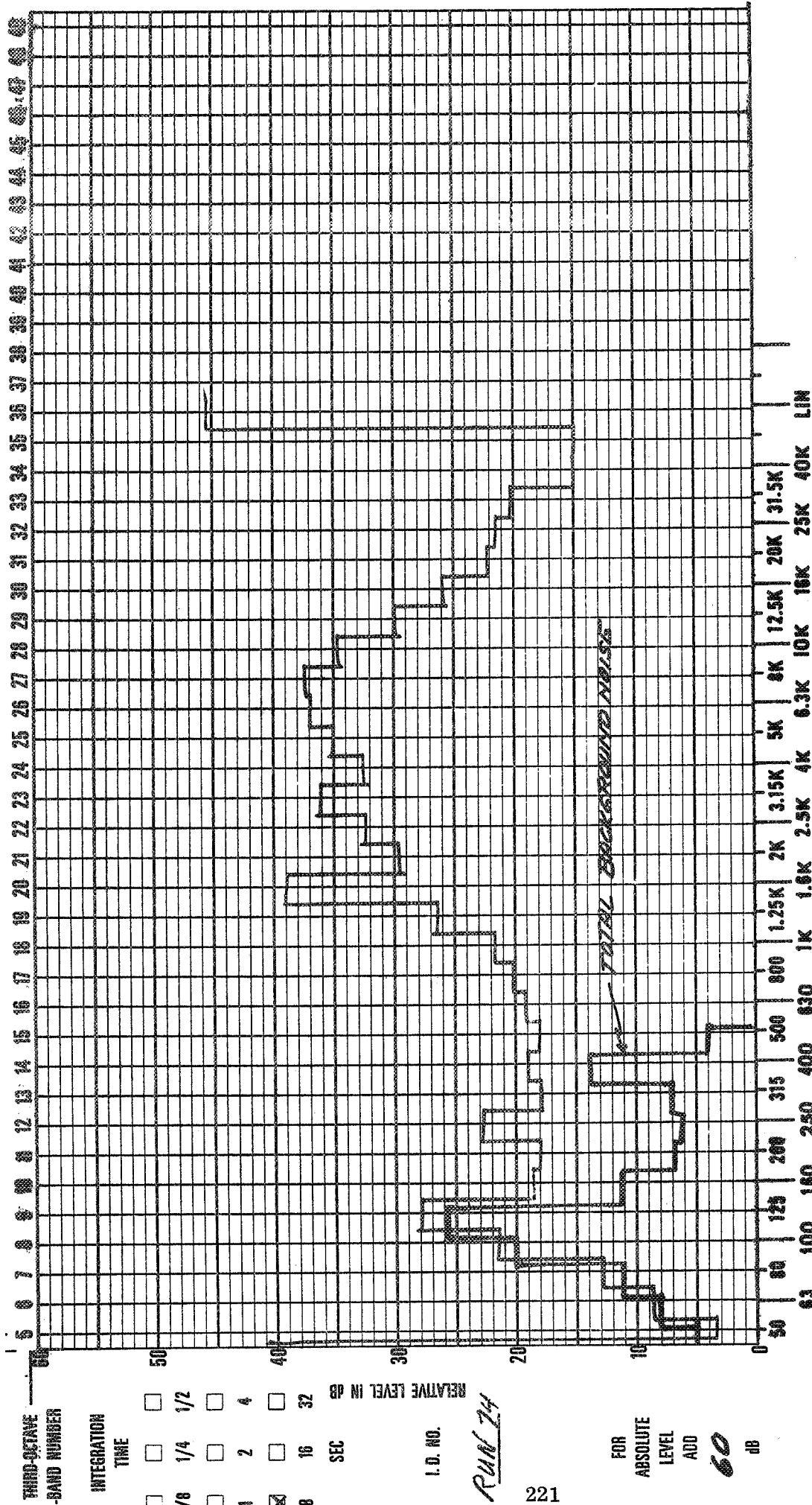
SHROUD COMPROMISE

BLADE ANGLE 30°

TIP SPEED 700 FT/SEC

MICROPHONE
LOCATION 13 1/2' 90° ON GROUND

Figure 17F PROP-FAN MODEL NOISE



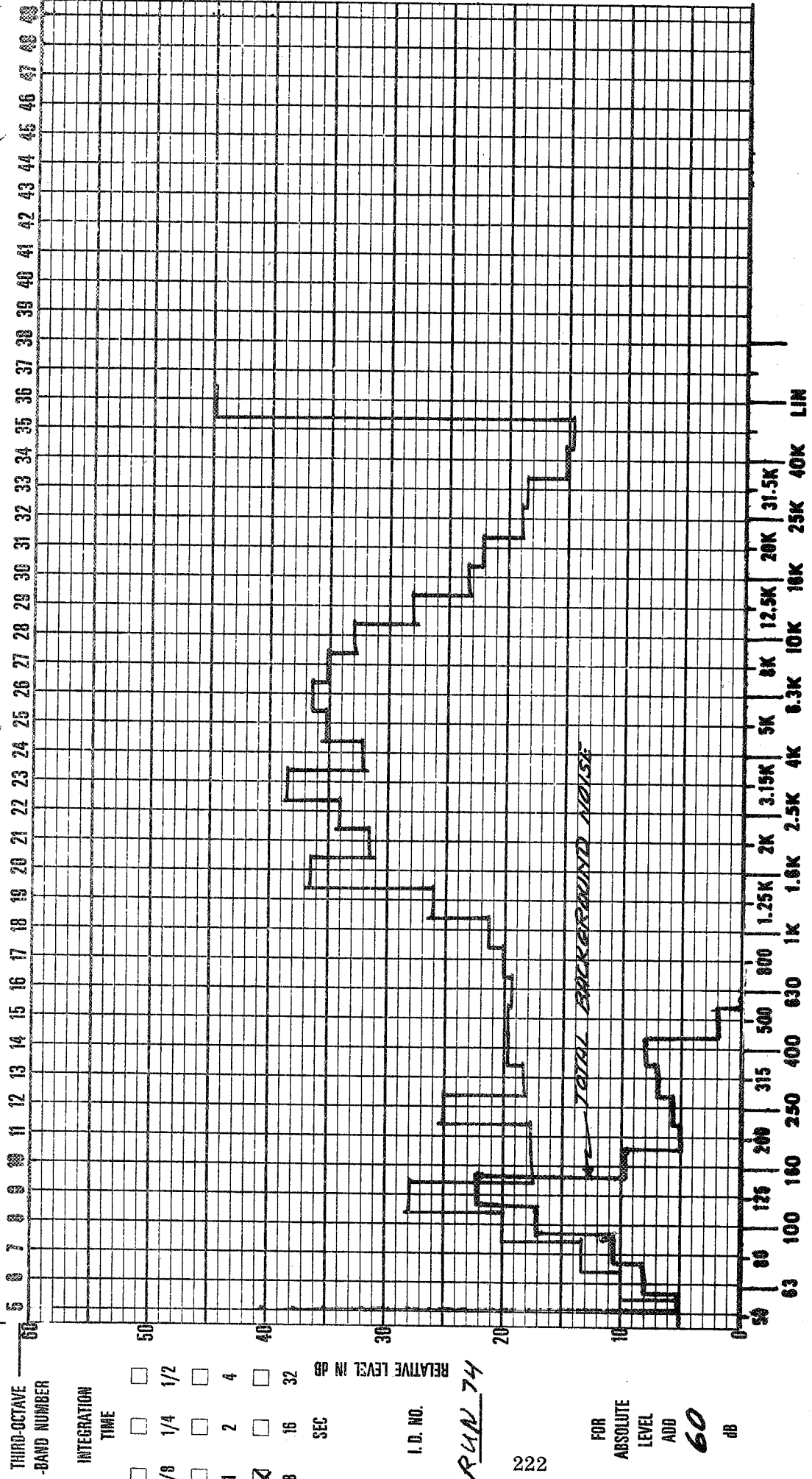
SHROUD COMPROMISE
 BLADE ANGLE 30°
 TIP SPEED 700 FT/SEC
 MICROPHONE LOCATION 10' 22 1/2°

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard
 U A
 DIVISION OF UNITED CARBIDE CORP.
 THIRD-OCTAVE-BAND ANALYSIS

Figure 18 = PROP-FAN MODEL NOISE

I.D. NO. RUN 74
 221



THIRD-OCTAVE BAND CENTER FREQUENCY IN HZ

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

SHROUD COMPROMISE
 BLADE ANGLE 30°
 TIP SPEED 700 FT/SEC
 MICROPHONE LOCATION 10' 45°

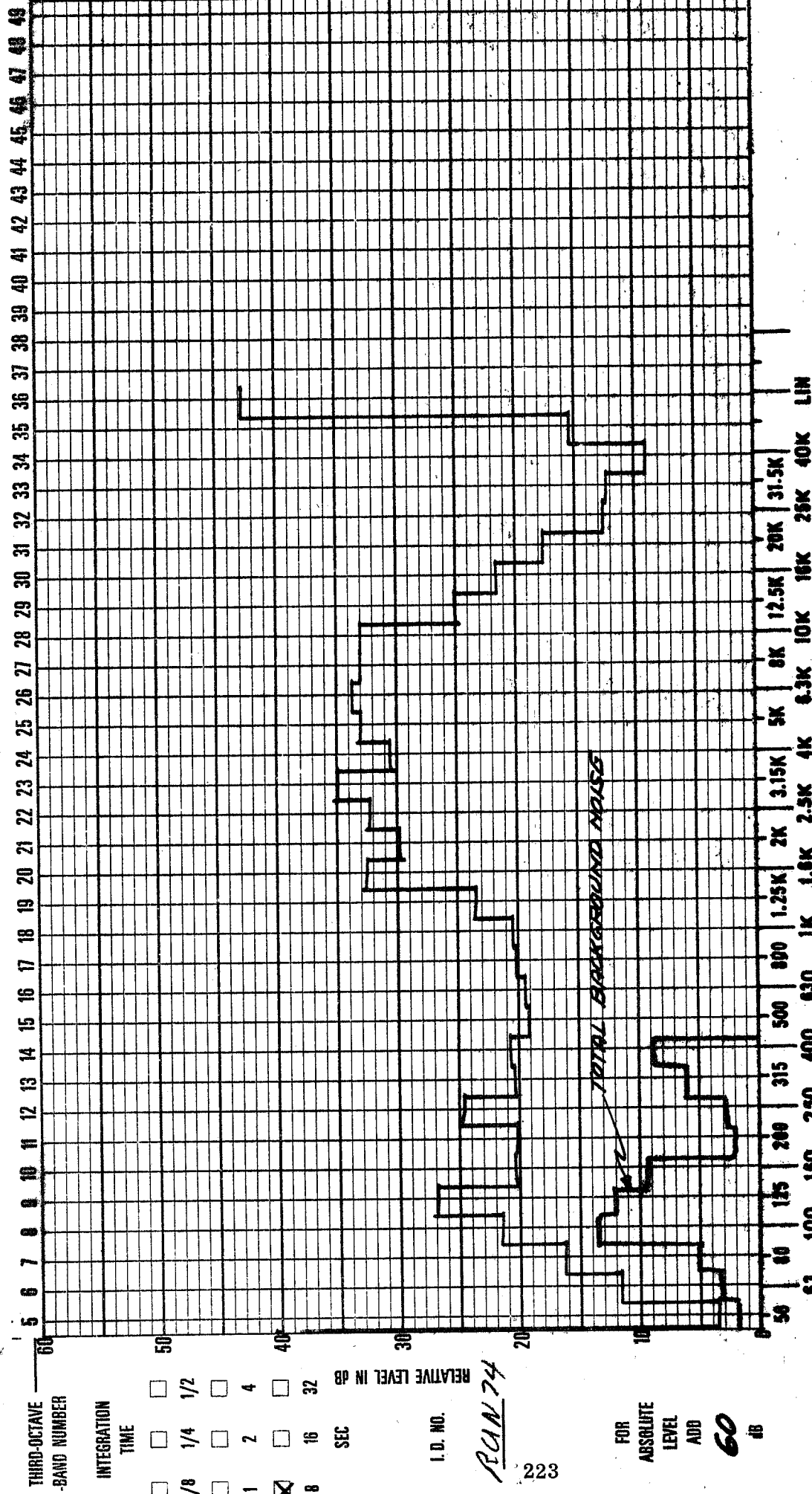
THIRD-OCTAVE BAND NUMBER: 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50

INTEGRATION TIME: 1/8, 1/4, 1/2, 4, 16, 32 SEC

I.D. NO. RUN 74

FOR ABSOLUTE LEVEL ADD 60 dB

Figure 19F PROP-FAN MODEL NOISE



SHROUD COMPROMISE
 BLADE ANGLE 30°
 TIP SPEED 700 FT/SEC
 MICROPHONE LOCATION 10' 67 1/2"

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard

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A
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THIRD-OCTAVE-BAND ANALYSIS

Figure 20F PROP-FAN MODEL NOISE

THIRD-OCTAVE-BAND NUMBER

INTEGRATION TIME

- 1/8
 - 1/4
 - 1/2
 - 1
 - 2
 - 4
 - 8
 - 16
 - 32
- SEC

I.D. NO.

PCAN 74

223

FOR ABSOLUTE LEVEL ADD 60 dB

SHROUD COMPROMISE
BLADE ANGLE 30°
TIP SPEED 700 FT/SEC
MICROPHONE LOCATION 10' 90°

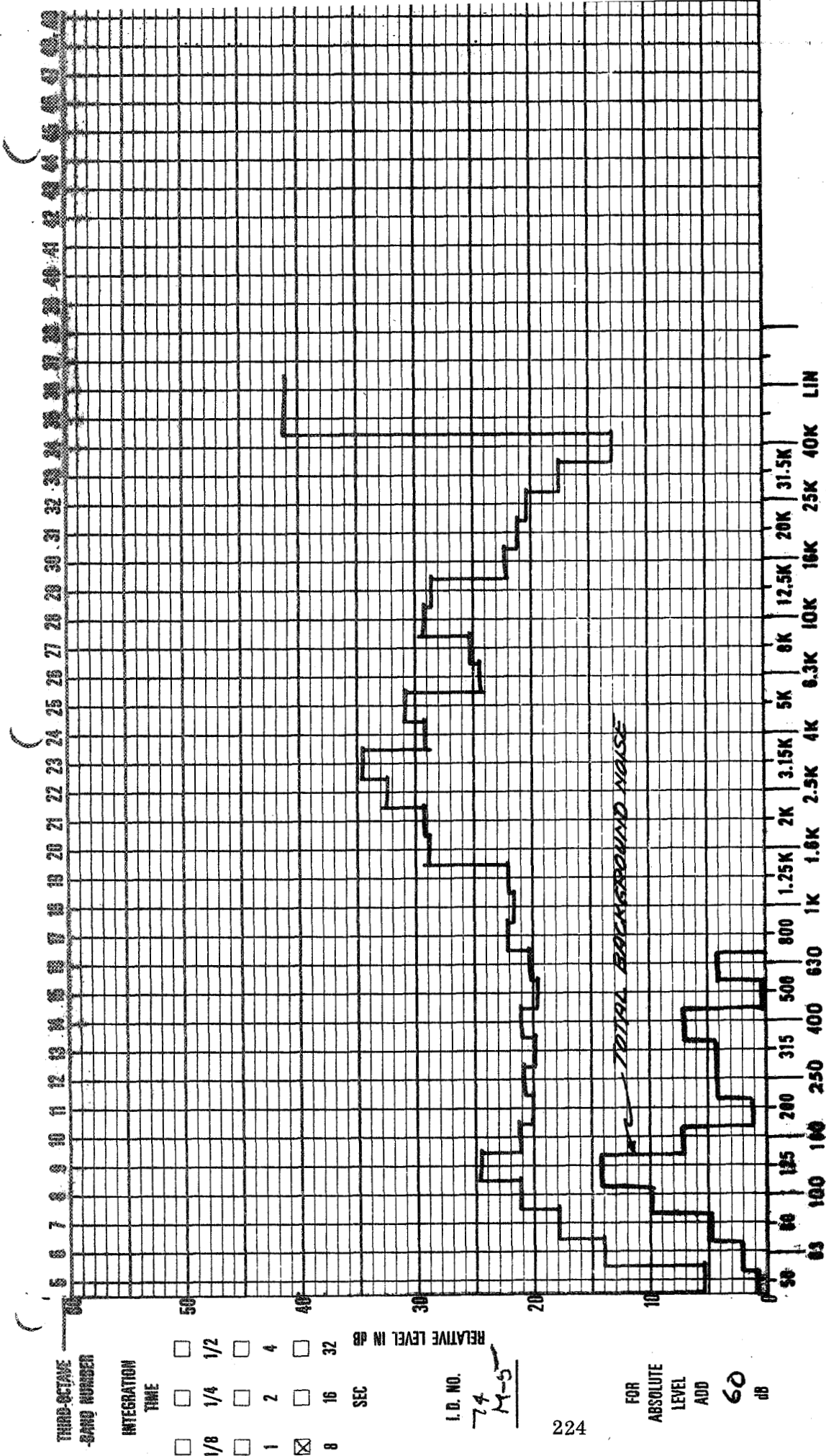
THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard

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A₁
DIVISION OF UNITED AIRCRAFT CORP.

THIRD-OCTAVE-BAND ANALYSIS

Figure 21F PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND NUMBER

INTEGRATION TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

RELATIVE LEVEL IN DB

I.D. NO. 74 M-5

FOR ABSOLUTE LEVEL ADD 60 dB

SHROUD COMPROMISE
BLADE ANGLE 30°
TIP SPEED 700 FT/SEC
MICROPHONE LOCATION 10' 11 1/2"

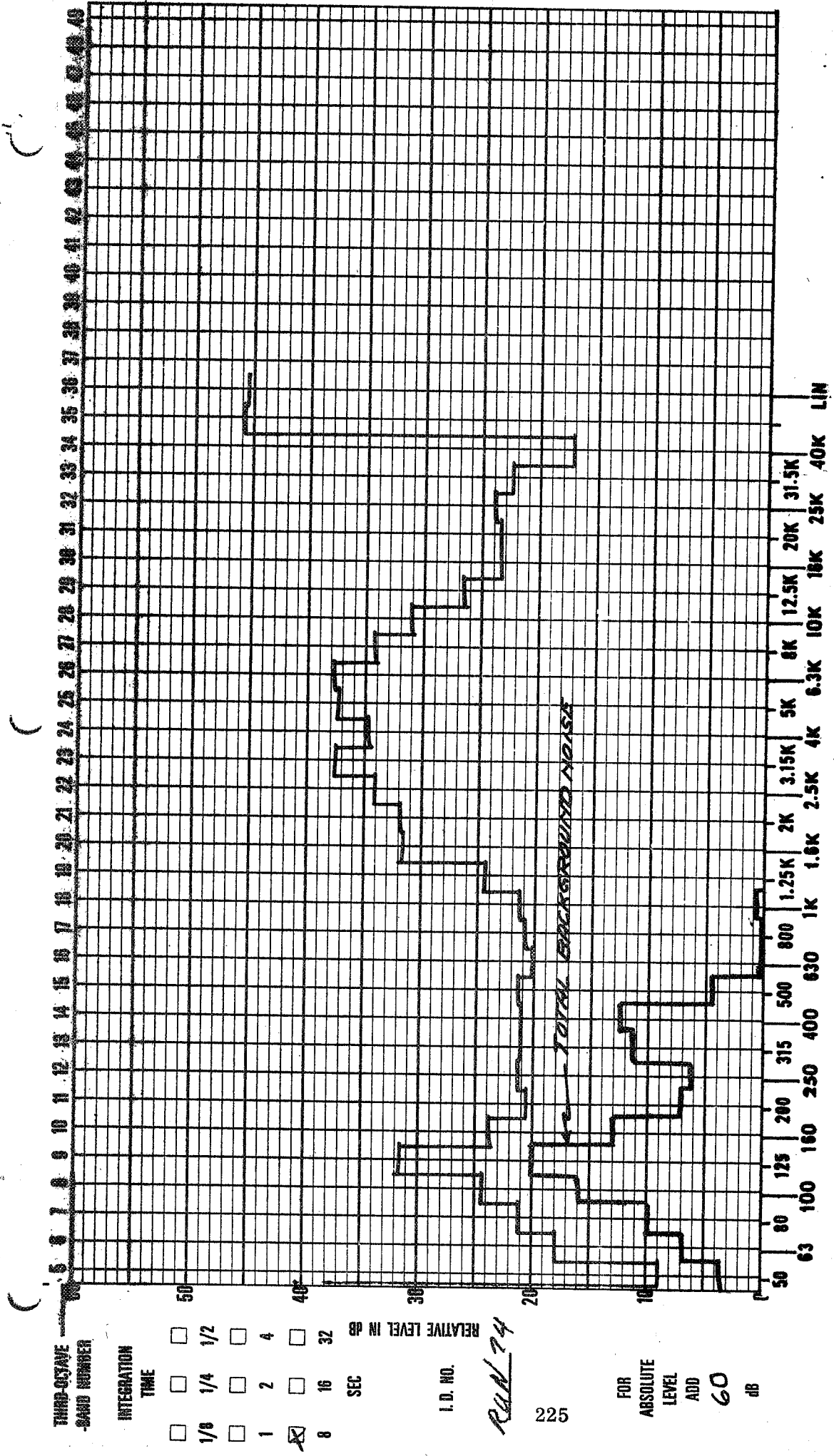
THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

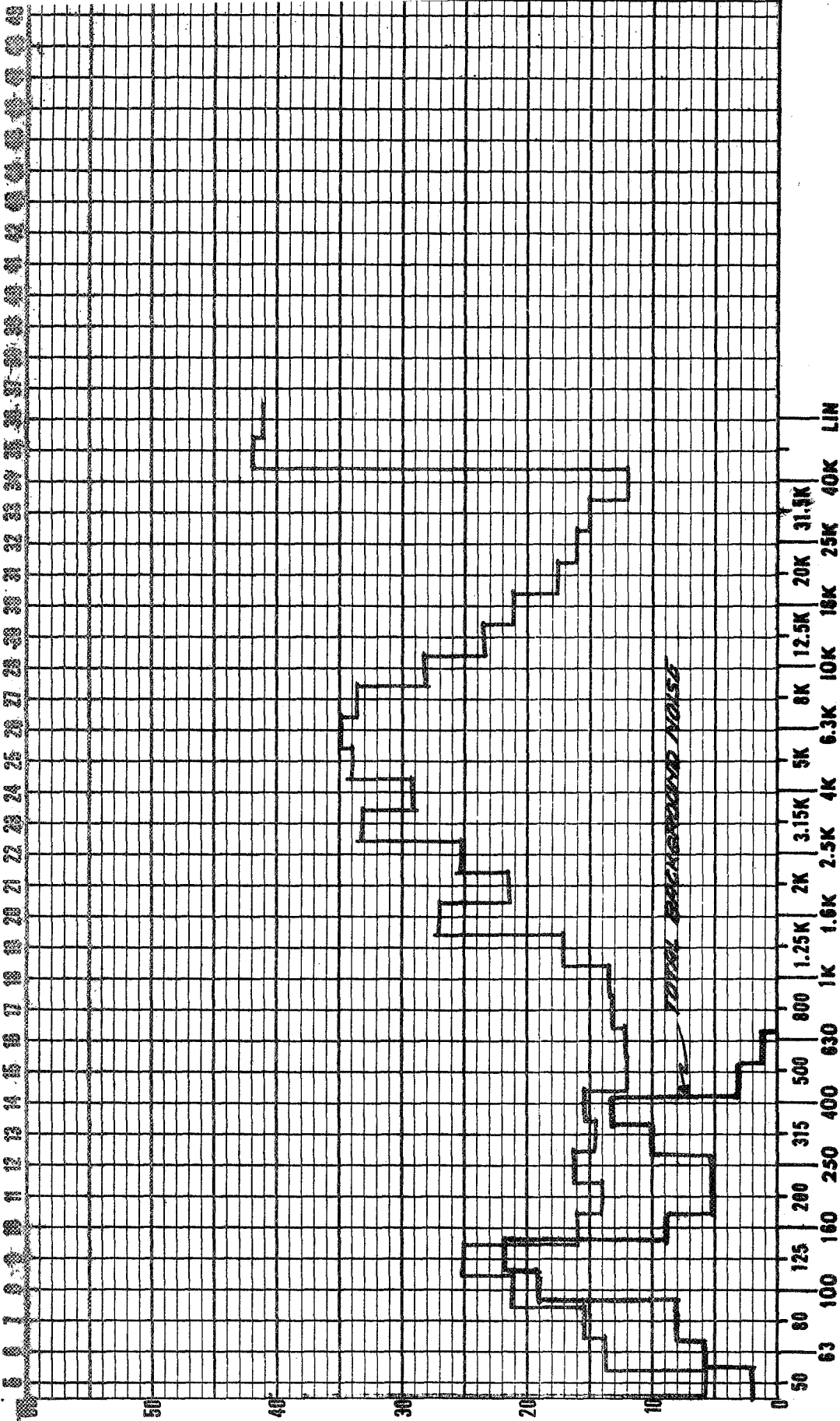
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THIRD-OCTAVE-BAND ANALYSIS

Figure 27-F-PROP-FAN MODEL NOISE





THIRD-OCTAVE
BAND NUMBER

INTEGRATION
TIME

- 50
- 1/8
- 1/4
- 1
- 2
- 4
- 8
- 16
- 32

RELATIVE LEVEL IN DB

I.D. NO.

RUN 74

226

FOR
ABSOLUTE
LEVEL
ADD
70
dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

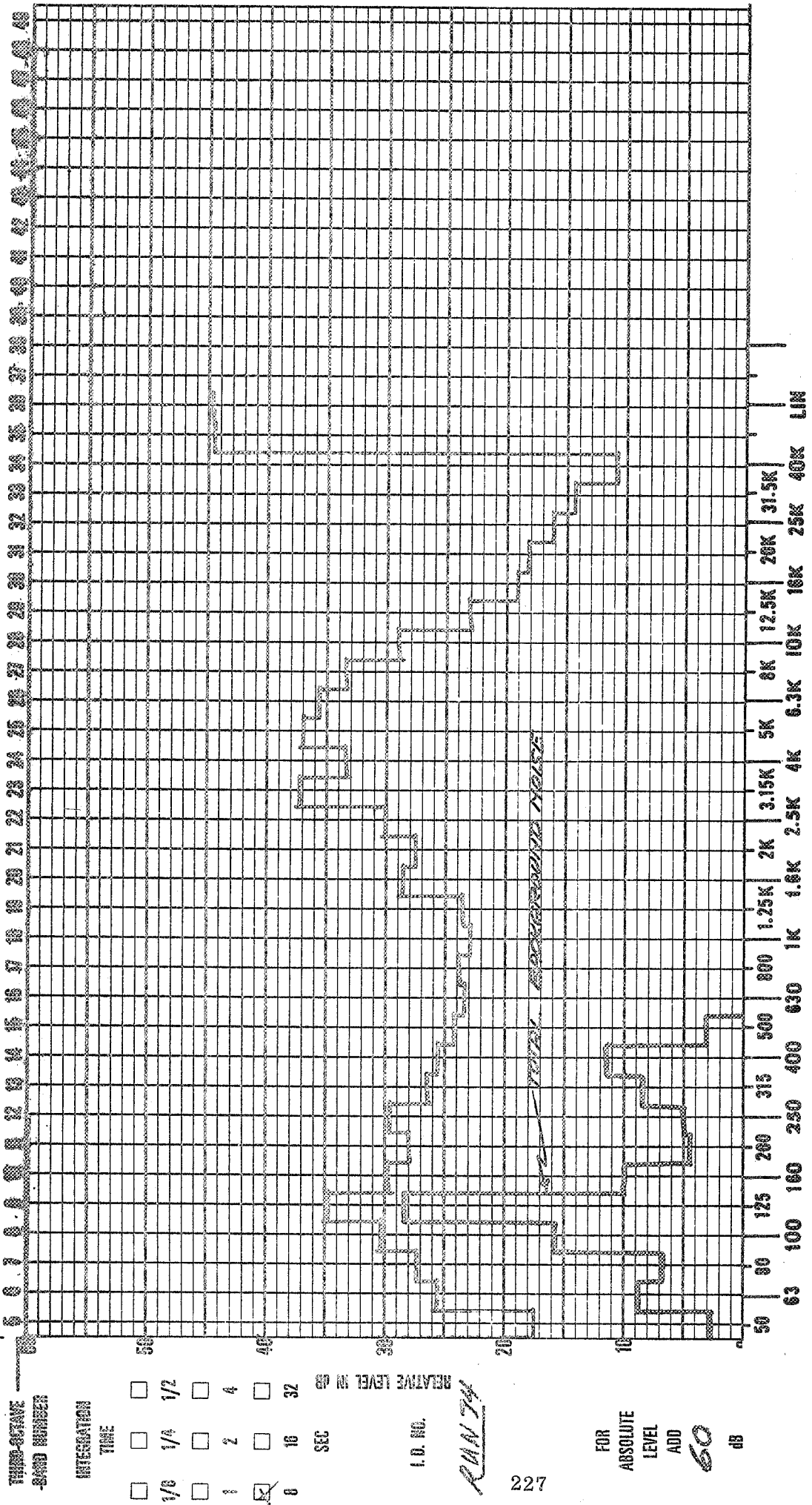
Hamilton
Standard

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THIRD-OCTAVE-BAND
ANALYSIS

SHROUD Compromise
BLADE ANGLE 30°
TIP SPEED 700 FT/SEC
MICROPHONE LOCATION 10' 135°

Figure 23FPROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND NUMBER

INTEGRATION TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

SEC

I.D. NO.

RAN 74

FOR ABSOLUTE LEVEL ADD 60 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

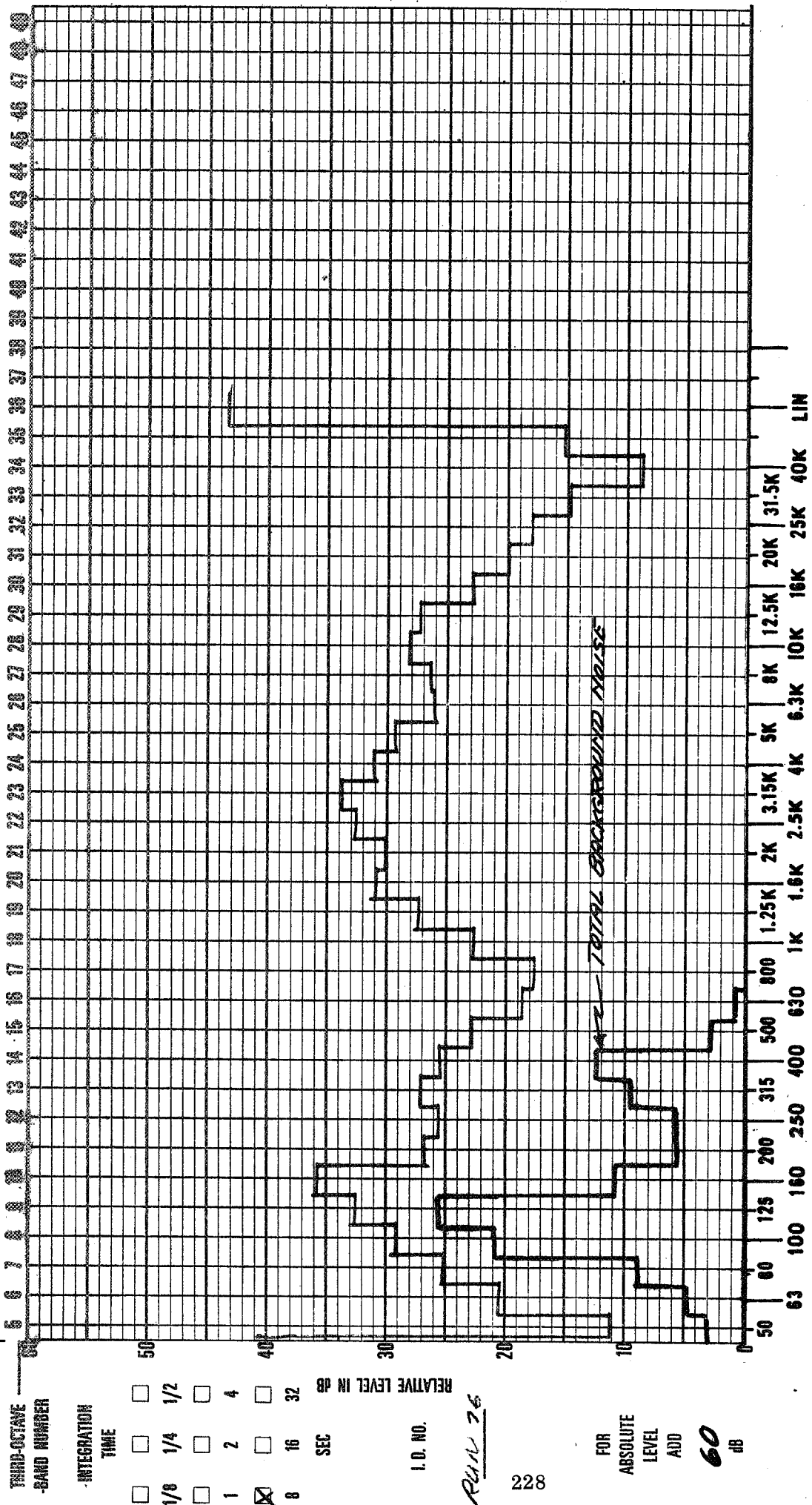
SHROUD COMPROMISE
 BLADE ANGLE 30°
 TIP SPEED 700 FT/SEC
 MICROPHONE LOCATION 10' 15 1/2"

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

Figure 24F PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

1/8 1/4 1/2 1 2 4 8 16 32

SEC

I.D. NO.

Run 76

FOR ABSOLUTE LEVEL ADD 60 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD COMPROMISE

BLADE ANGLE 30°

TIP SPEED 800 FT/SEC

MICROPHONE LOCATION 13 1/2' 90° ON GROUND

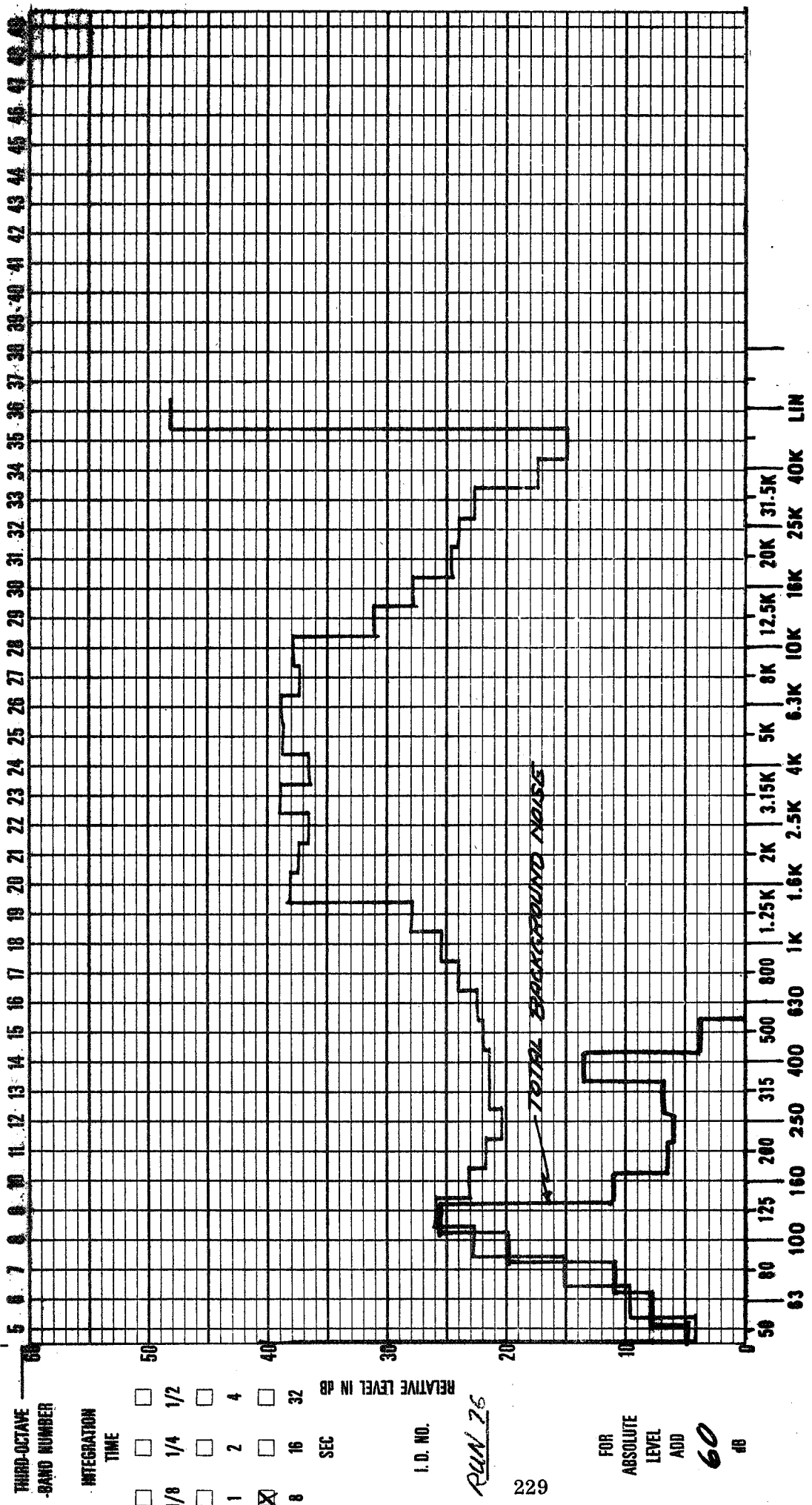
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THIRD-OCTAVE-BAND ANALYSIS

Figure 25F PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD COMPROMISE
 BLADE ANGLE 30°
 TIP SPEED 800 FT/SEC
 MICROPHONE LOCATION 10' 22 1/2°

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 THIRD-OCTAVE-BAND ANALYSIS

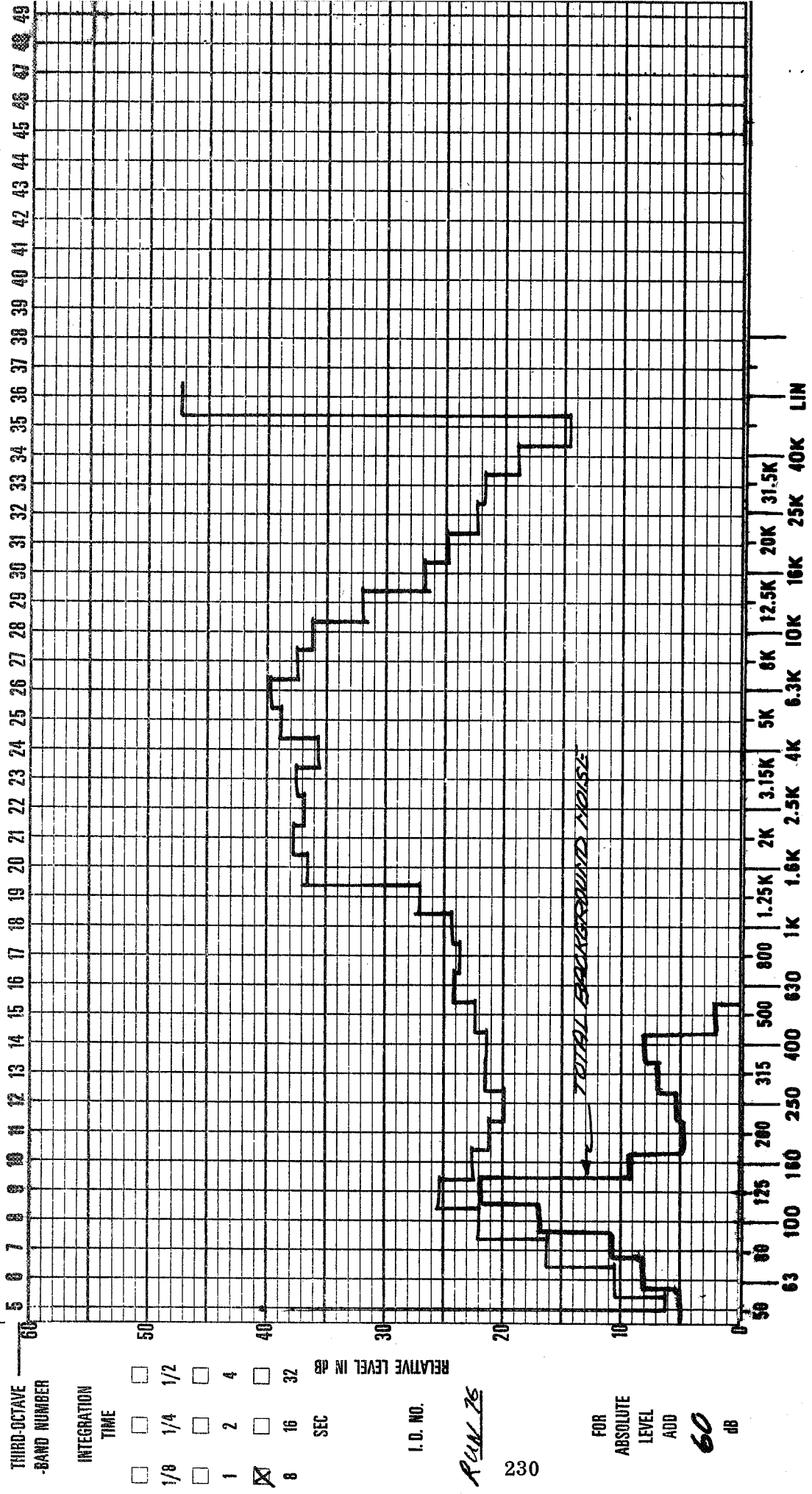
Figure 26F PROP-FAN MODEL NOISE

THIRD-OCTAVE-BAND NUMBER: 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50

INTEGRATION TIME:
 1/8
 1/4
 1/2
 1
 2
 4
 8
 16
 32
 SEC

I.D. NO. RUN 26

FOR ABSOLUTE LEVEL ADD 60 dB



THIRD-OCTAVE-BAND NUMBER: 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49

INTEGRATION TIME: 1/8 1/4 1/2 1 2 4 8 16 32

RELATIVE LEVEL IN DB: 60 50 40 30 20 10 0

I.D. NO. RUN 26

230

FOR ABSOLUTE LEVEL ADD 60 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN Hz

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THIRD-OCTAVE-BAND ANALYSIS

SHROUD COMPROMISE
BLADE ANGLE 30°
TIP SPEED 800 FT/SEC
MICROPHONE LOCATION 10' 45°

Figure 27F-PROP-FAN MODEL NOISE

SHROUD COMPROMISE
BLADE ANGLE 30°
TIP SPEED 800 FT/SEC
MICROPHONE LOCATION 10' 67 1/2°

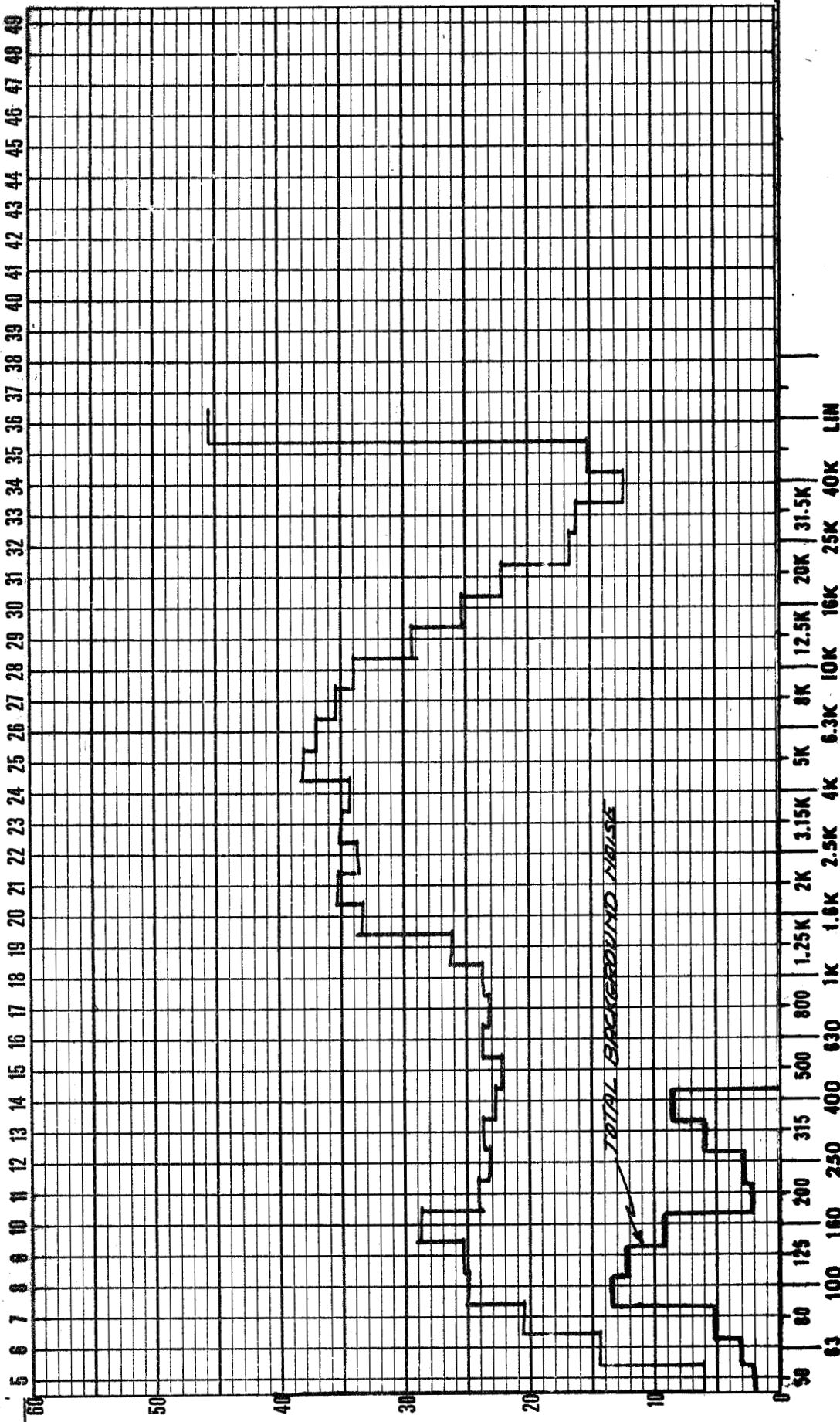
THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND
ANALYSIS

Figure 28F-PROP-FAN MODEL NOISE



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

- 1/8
- 1/4
- 1/2
- 2
- 4
- 8
- 16
- 32

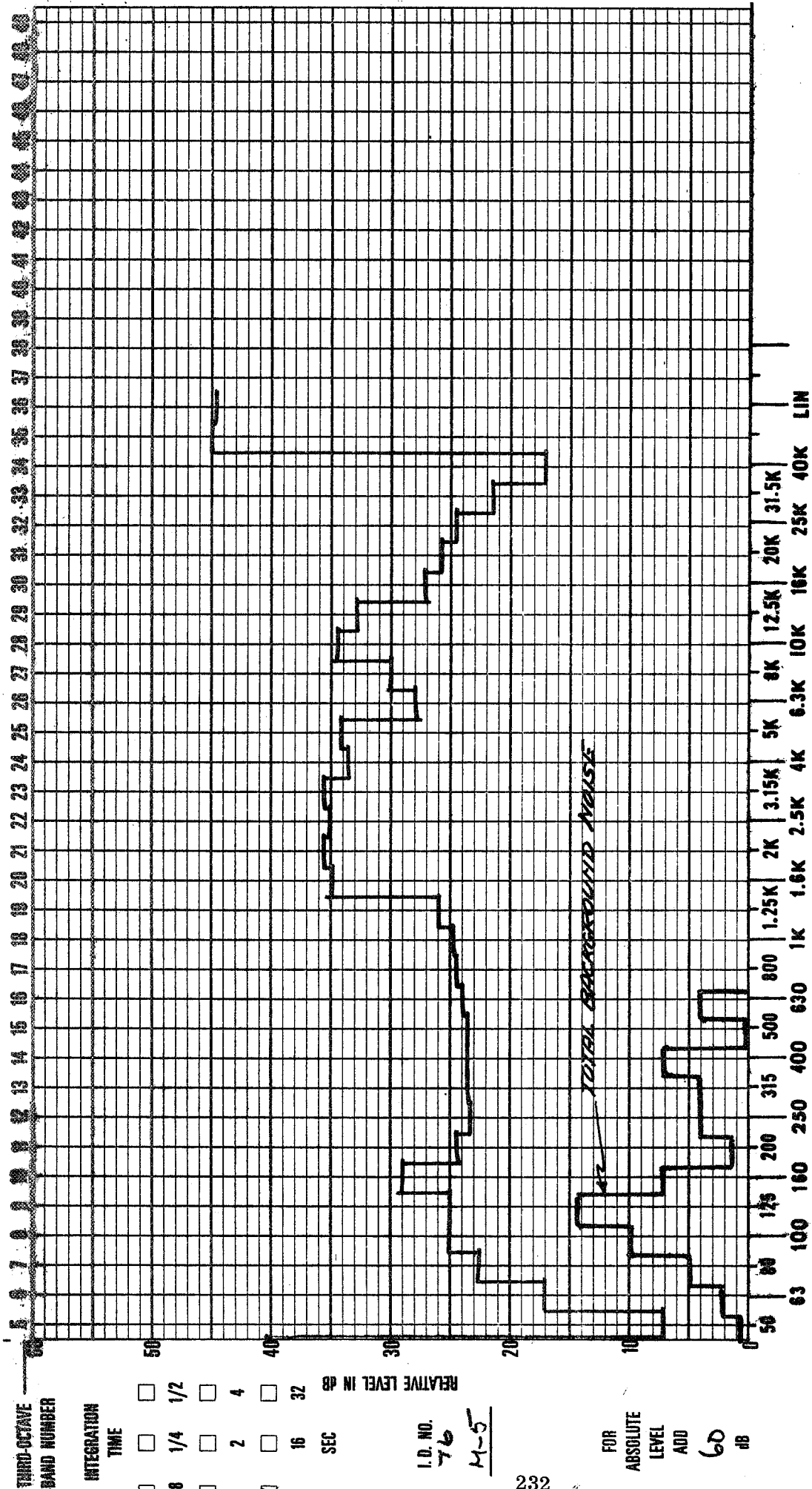
RELATIVE LEVEL IN DB

I. D. NO.

RUN 76

FOR
ABSOLUTE
LEVEL
ADD

60
dB



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

RELATIVE LEVEL IN dB

I.D. NO.

FOR ABSOLUTE LEVEL ADD 60 dB

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

76

M-5

THIRD-OCTAVE BAND CENTER FREQUENCY IN HZ

SHROUD Compromise

BLADE ANGLE 30°

TIP SPEED 800 FT/SEC

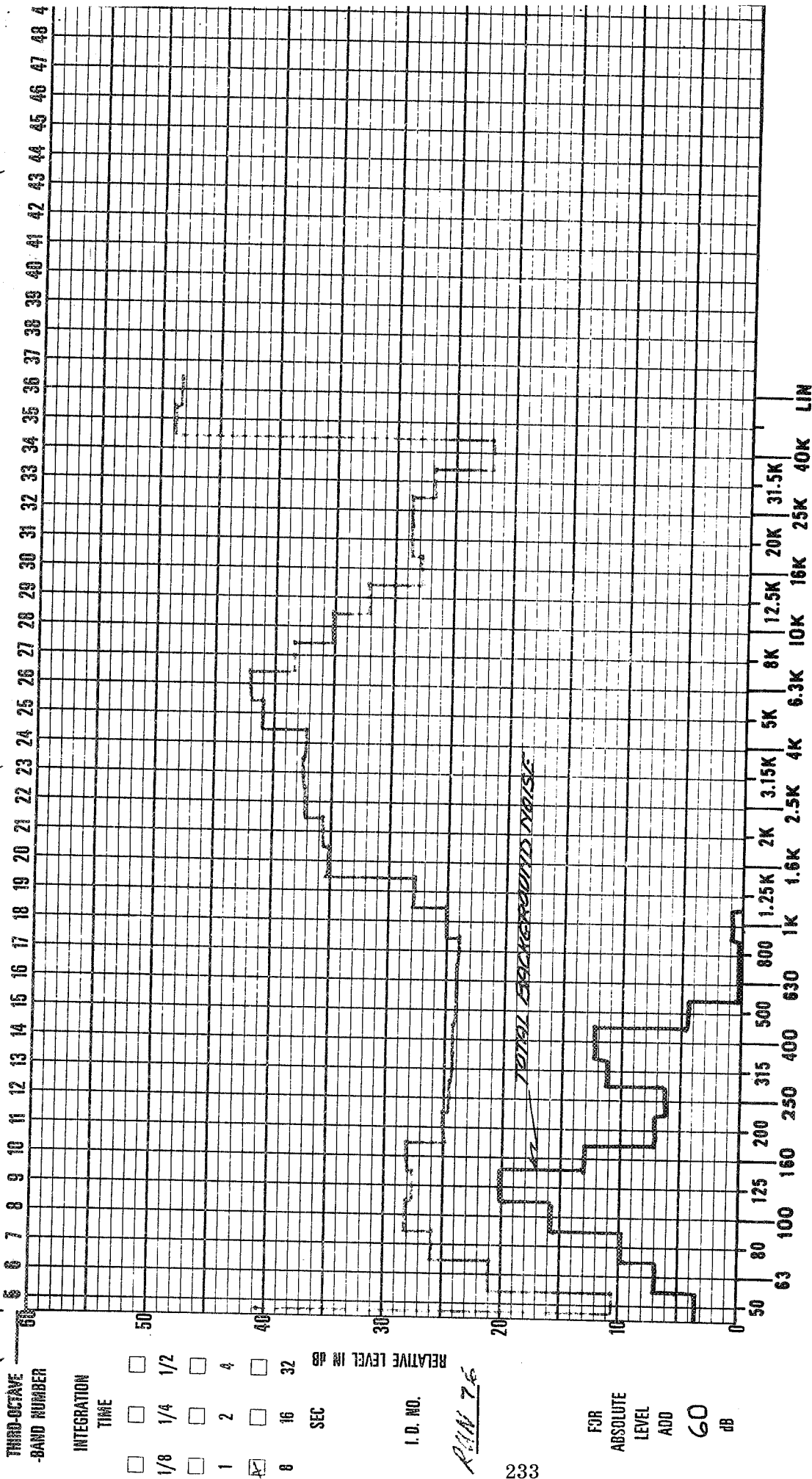
MICROPHONE LOCATION 10' 90°

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

Figure 29F PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

SHROUD COMPROMISE

BLADE ANGLE 30°

TIP SPEED 800 FT/SEC

MICROPHONE LOCATION 10' 11 1/2"

Figure 30F PROP-FAN MODEL NOISE

THIRD-OCTAVE BAND NUMBER 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49

INTEGRATION TIME

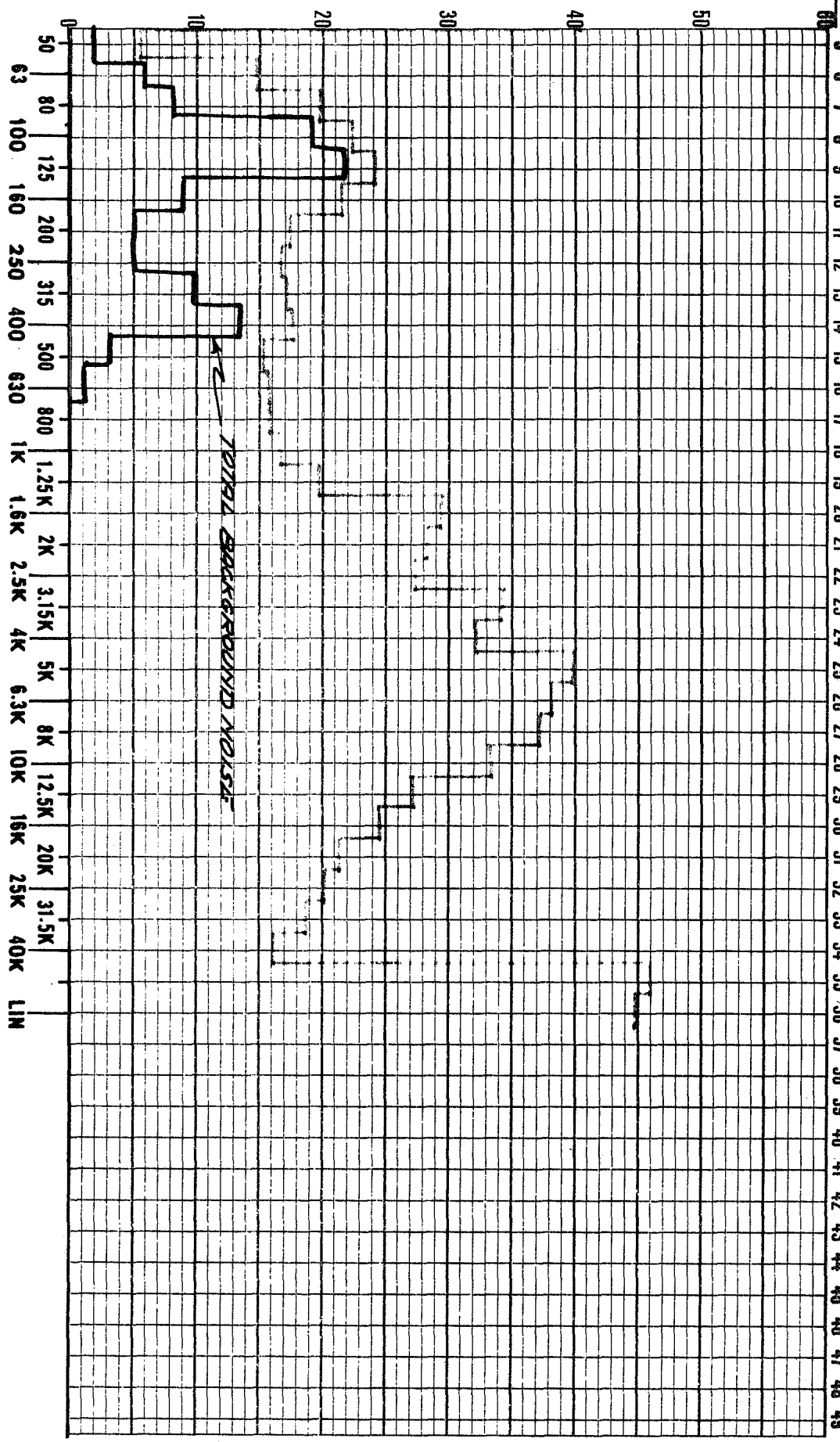
- 50
- 1/2
- 1/4
- 1/8
- 4
- 2
- 1
- 32
- 16
- 8

I. D. NO.

RELATIVE LEVEL IN DB

RUN 75
234

FOR ABSOLUTE LEVEL ADD 70 DB



THIRD-OCTAVE BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND ANALYSIS

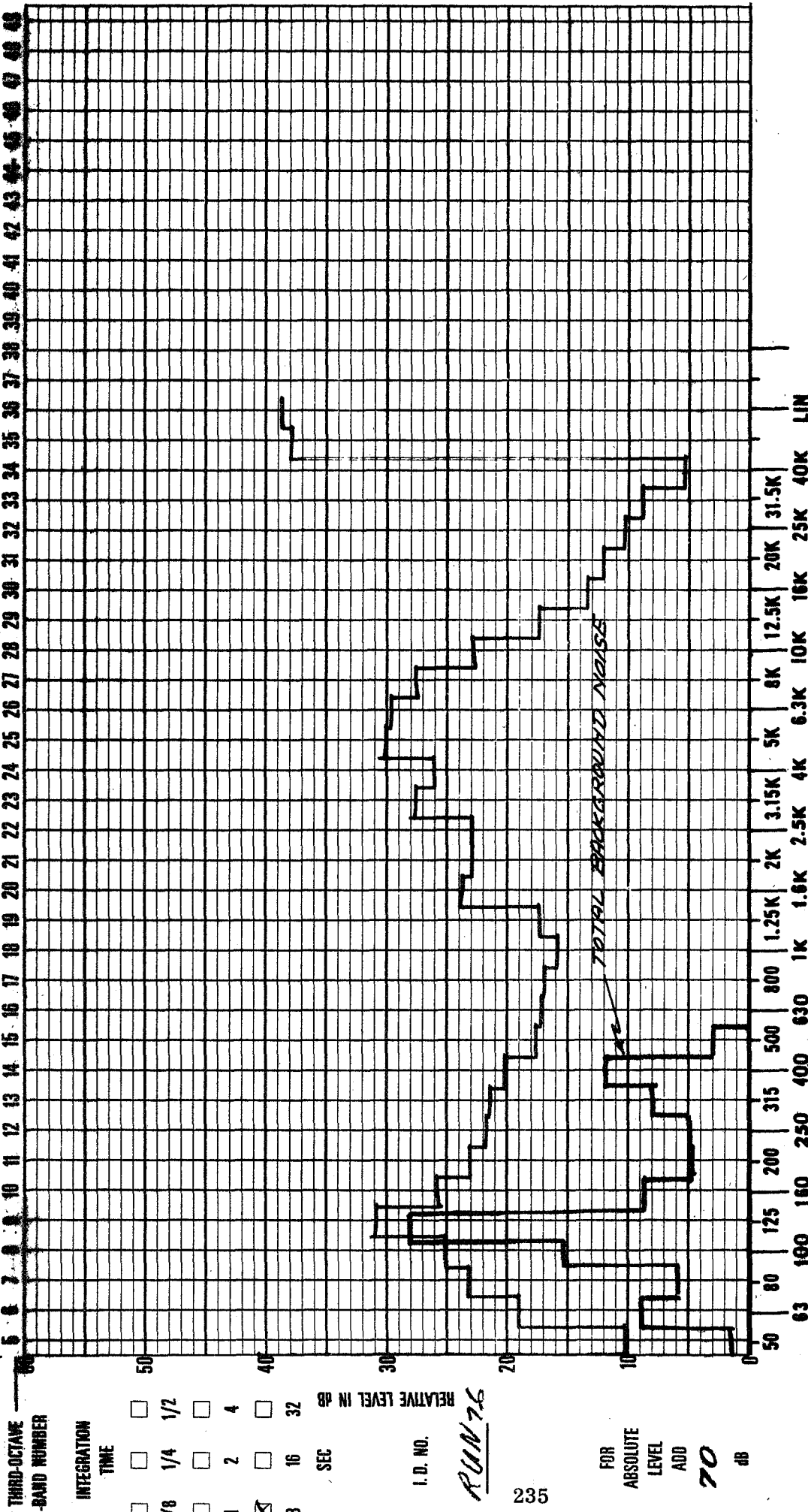
SHROUD Compromise

BLADE ANGLE 30°

TIP SPEED 800 FT/SEC

MICROPHONE LOCATION 10' 135°

Figure 3/F-PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

RELATIVE LEVEL IN DB

I.D. NO.

FOR ABSOLUTE LEVEL ADD

70 db

RUN 76

235

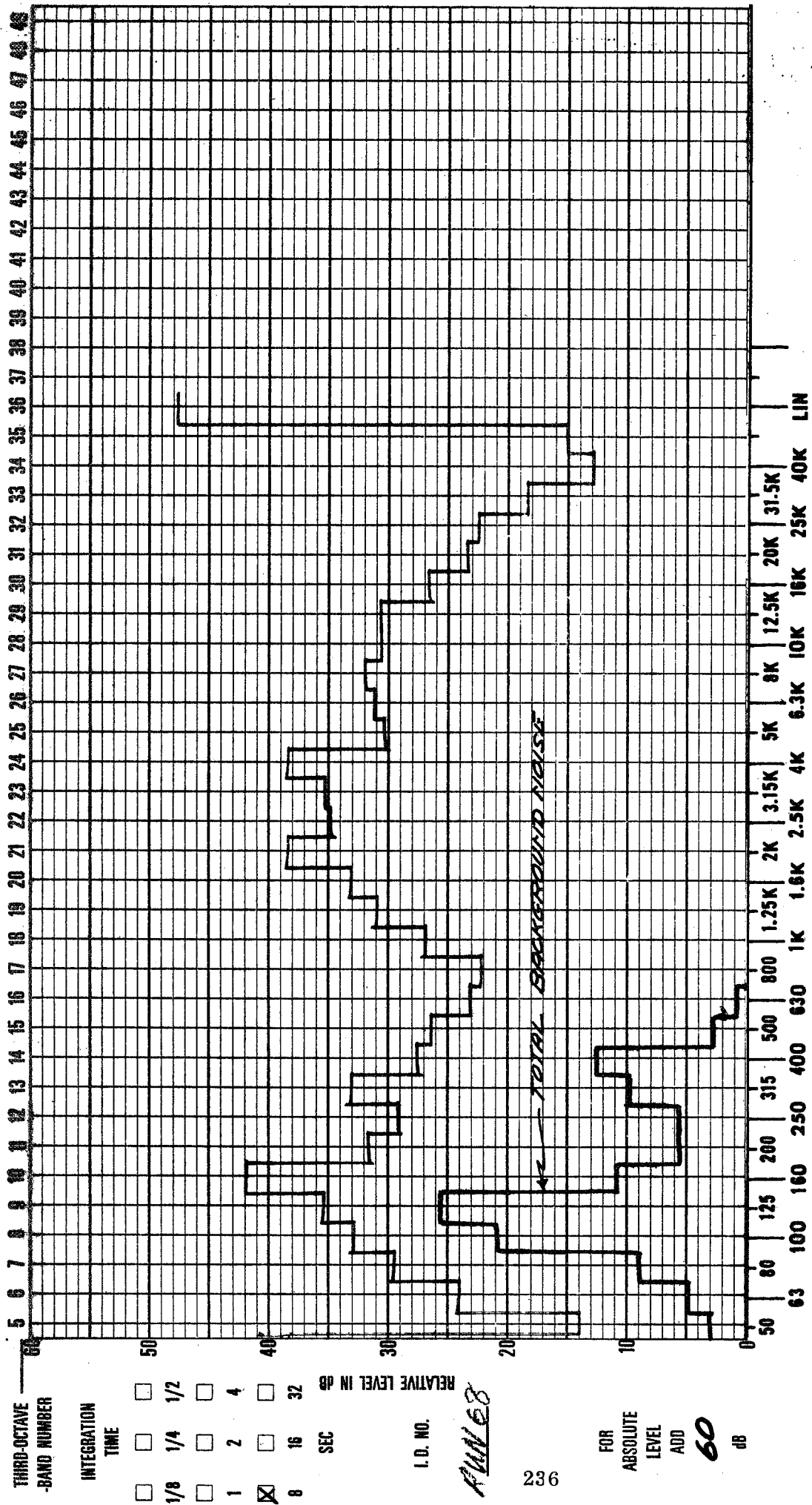
THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD COMPROMISE
 BLADE ANGLE 30°
 TIP SPEED 800 FT/SEC
 MICROPHONE LOCATION 10' 16 1/2"

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THIRD-OCTAVE-BAND ANALYSIS



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD COMPROMISE
 BLADE ANGLE 30°
 TIP SPEED 900 FT/SEC
 MICROPHONE LOCATION 13 1/2' 90° ON GROUND

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 THIRD-OCTAVE-BAND ANALYSIS

Figure 33 PROP-FAN MODEL NOISE

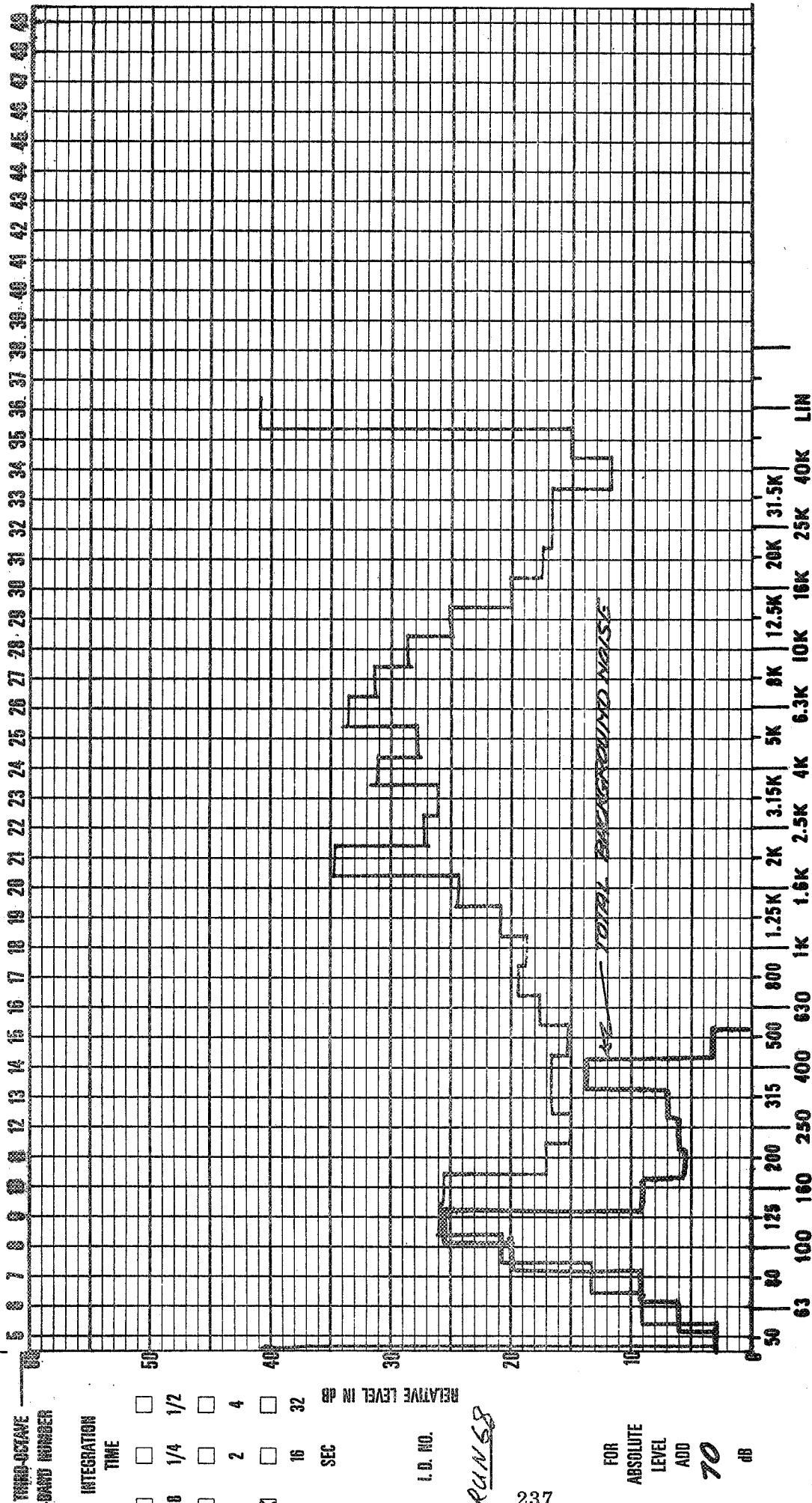
THIRD-OCTAVE-BAND NUMBER
 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49

INTEGRATION TIME
 1/8
 1/4
 1
 2
 4
 8
 16
 32
 50
 60

RELATIVE LEVEL IN dB

I.D. NO. *RUNES*

FOR ABSOLUTE LEVEL ADD 60 dB



THIRD-OCTAVE-BAND NUMBER 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49

RELATIVE LEVEL IN DB

INTEGRATION TIME

1/8

1/4

1/2

1

2

4

8

16

32

SEC

I.D. NO.

RUN 58

FOR ABSOLUTE LEVEL ADD 70 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD COMPROMISE

BLADE ANGLE 30°

TIP SPEED 900 FT/SEC

MICROPHONE LOCATION 10' 22 1/2"

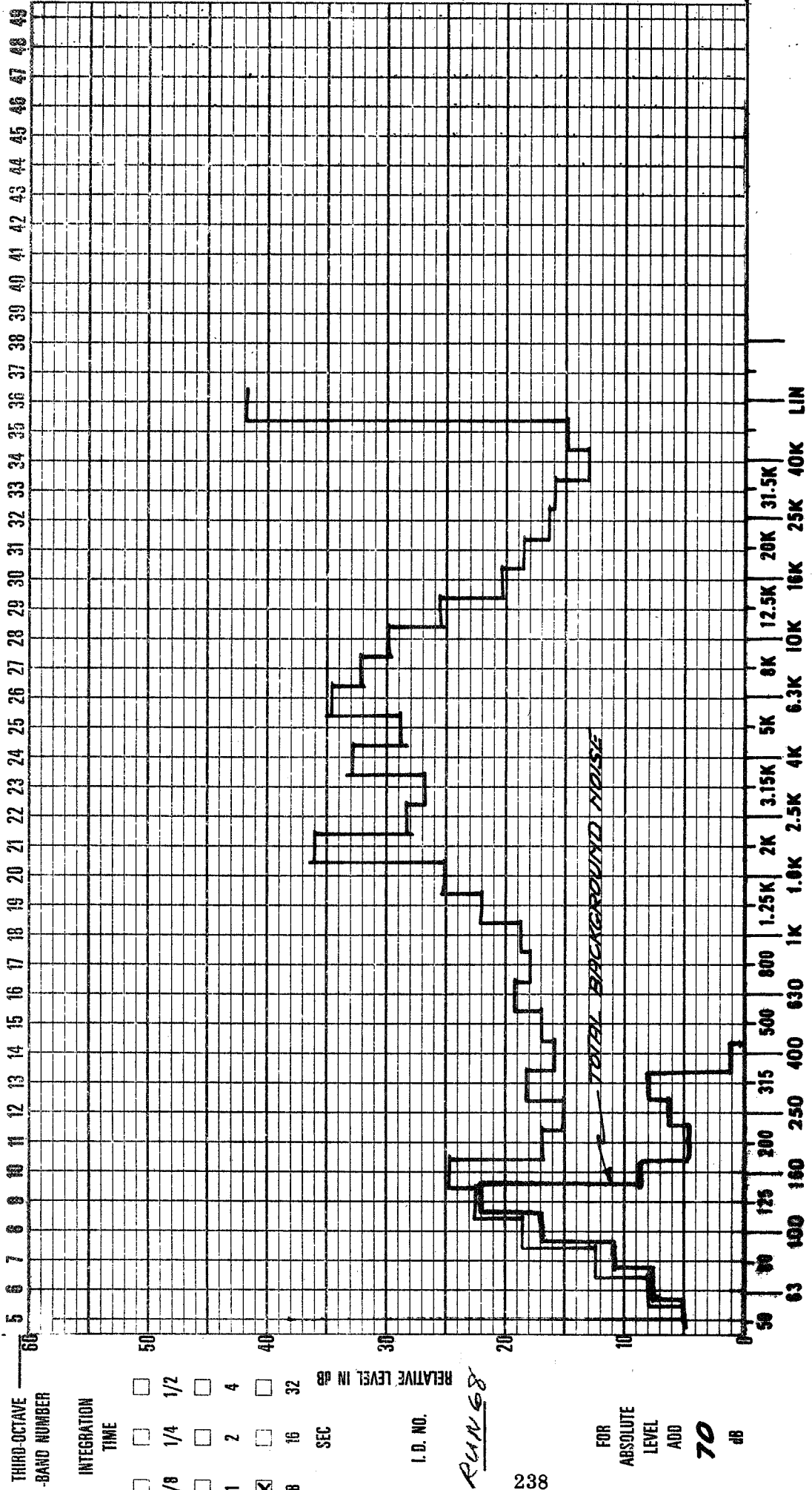
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THIRD-OCTAVE-BAND ANALYSIS

Figure 34F PROP-FAN MODEL NOISE



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

1/8 1/4 1/2

1 2 4

8 16 32

SEC

I.D. NO.

RUN 68

238

FOR
ABSOLUTE
LEVEL
ADD
70
dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND
ANALYSIS

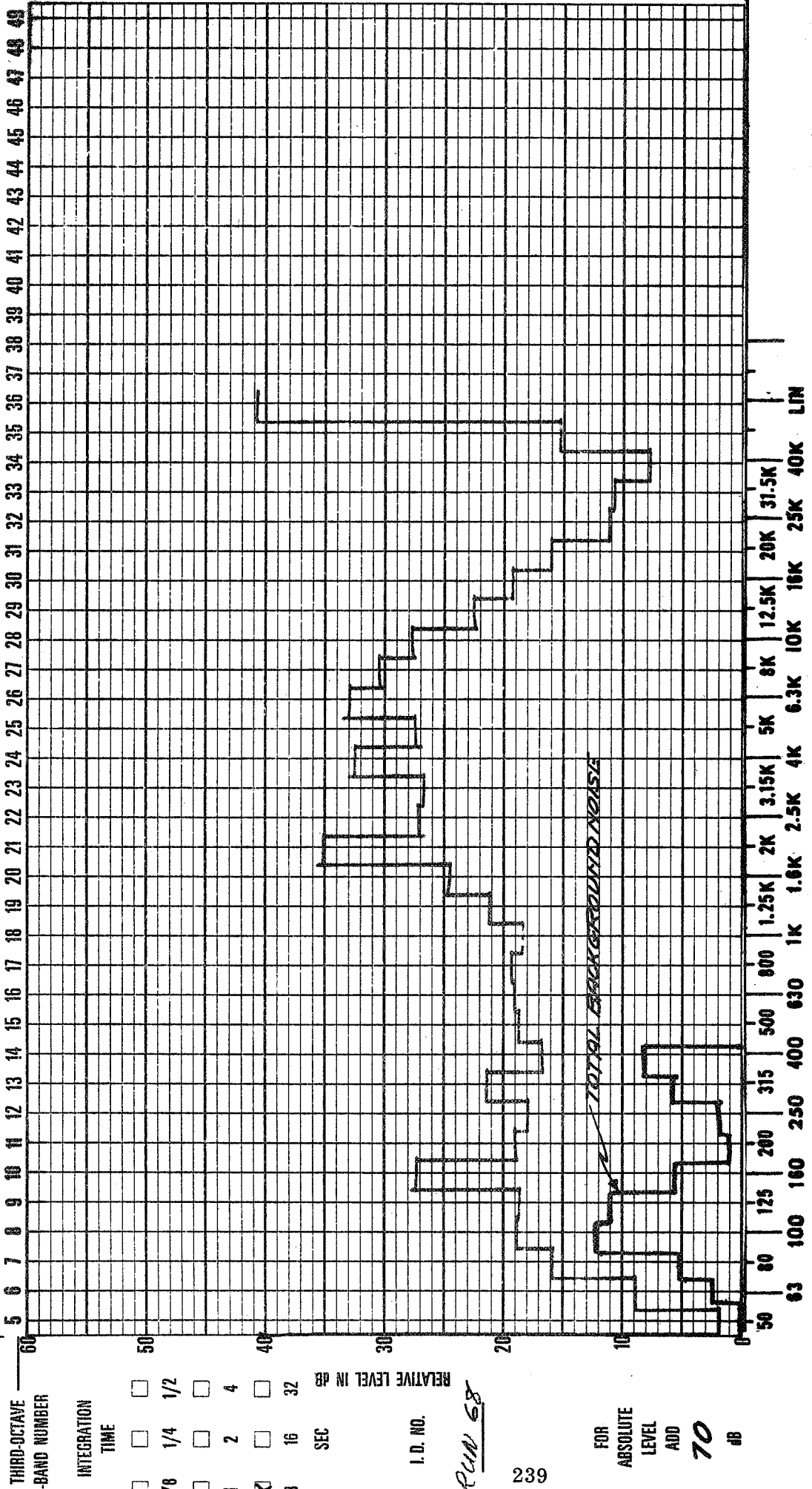
SHROUD COMPROMISE

BLADE ANGLE 30°

TIP SPEED 900 FT/SEC

MICROPHONE
LOCATION 10' 45°

Figure 35F PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

1/8 1/4 1/2 1 2 4 8 16 32

SEC

I.D. NO.

Run 58

FOR ABSOLUTE LEVEL ADD

70 dB

THIRD-OCTAVE BAND CENTER FREQUENCY IN Hz

SHROUD COMPROMISE

BLADE ANGLE 30°

TIP SPEED 900 FT/SEC

MICROPHONE LOCATION 10' 67 1/2°

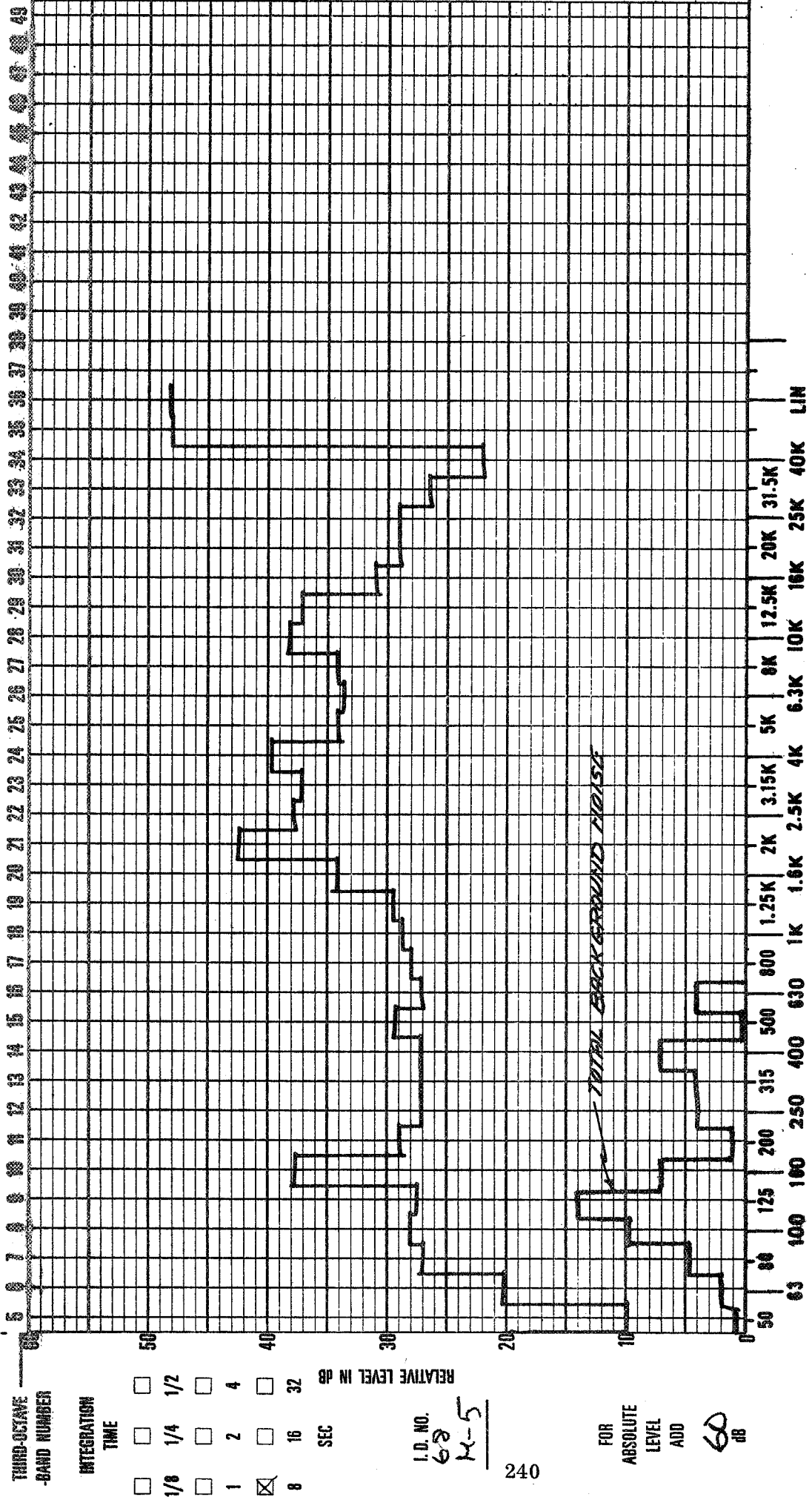
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THIRD-OCTAVE-BAND ANALYSIS

Figure 36-PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD COMPROMISE
 BLADE ANGLE 30°
 TIP SPEED 900 FT/SEC
 MICROPHONE LOCATION 10' 90°

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THIRD-OCTAVE-BAND ANALYSIS

Figure 37-F-PROP-FAN MODEL NOISE

THIRD-OCTAVE-BAND NUMBER

INTEGRATION TIME

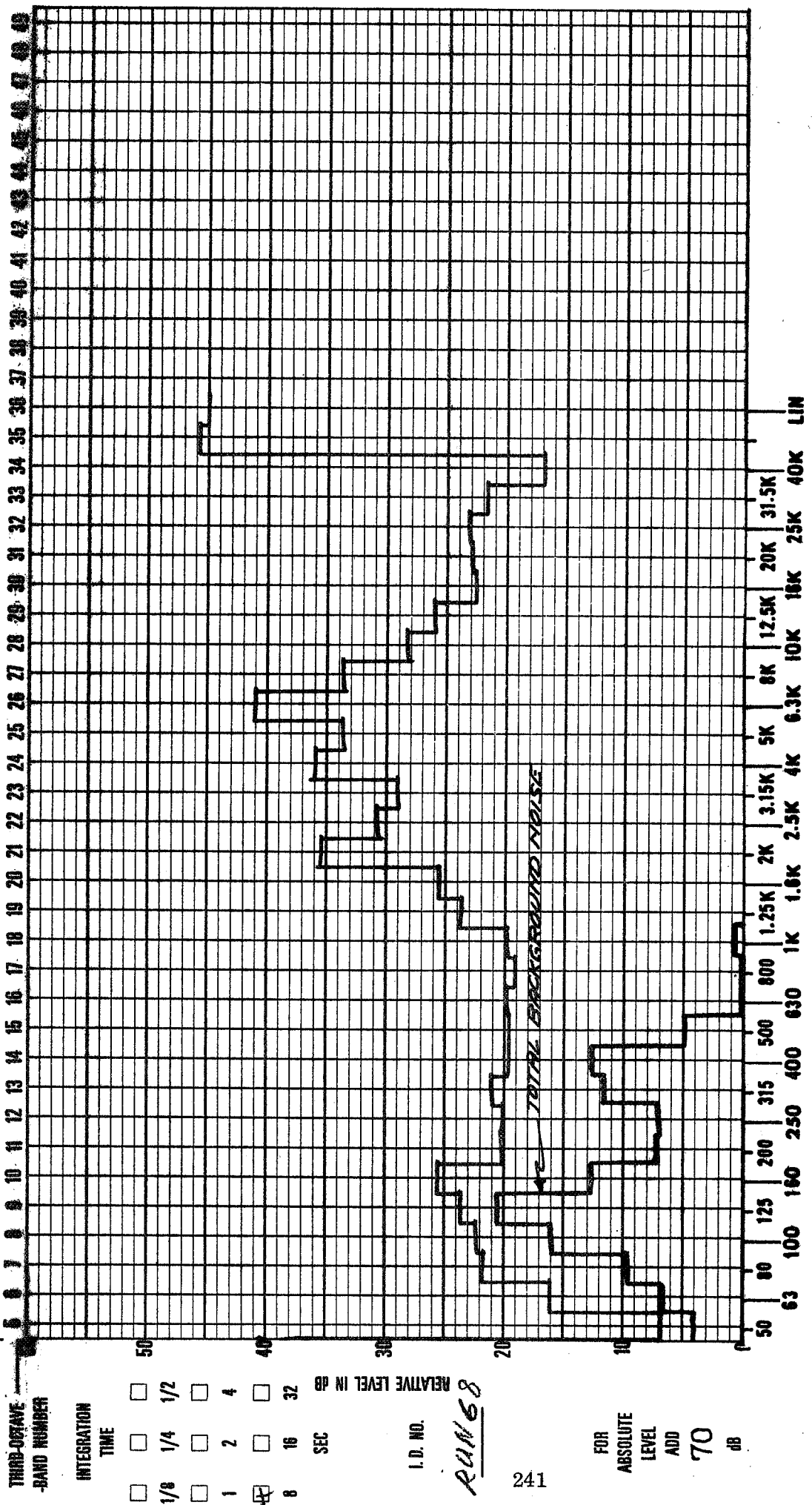
- 1/8
- 1/4
- 1
- 2
- 4
- 8
- 16
- 32

RELATIVE LEVEL IN DB

I.D. NO. 68 K-5

240

FOR ABSOLUTE LEVEL ADD 60 dB



THIRD-OCTAVE-BAND NUMBER

INTEGRATION TIME

1/8 1/4 1/2 4 32

1 2 8 16 32

SEC

I.D. NO.

RUN 68

FOR ABSOLUTE LEVEL ADD 70 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD COMPROMISE

BLADE ANGLE 30°

TIP SPEED 900 FT/SEC

MICROPHONE LOCATION 10' 112 1/2°

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THIRD-OCTAVE-BAND ANALYSIS

Figure 38F-PROP-FAN MODEL NOISE

SHROUD COMPROMISE
BLADE ANGLE 30°
TIP SPEED 900 FT/SEC
MICROPHONE LOCATION 10' 135°

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

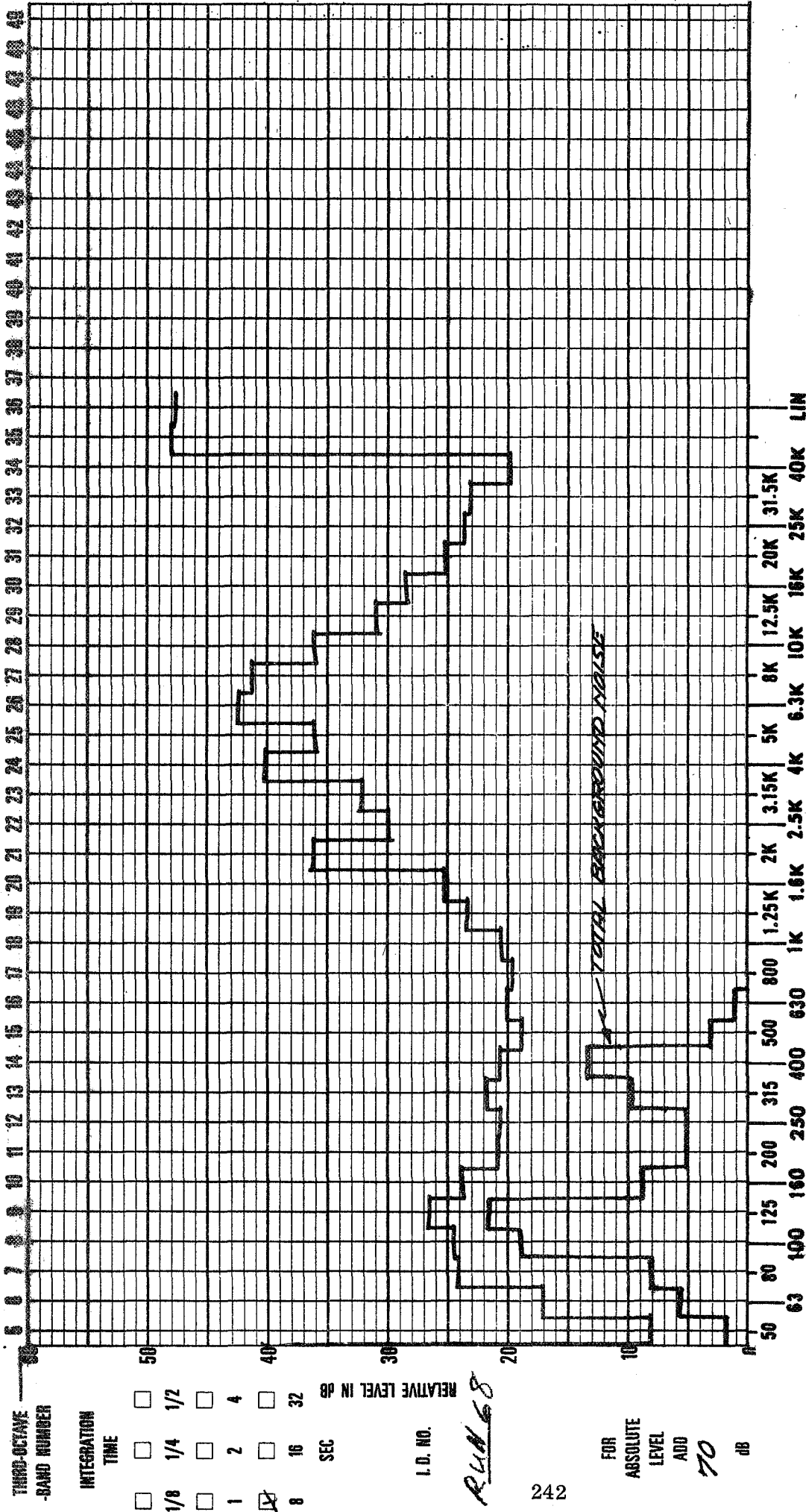
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Standard

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THIRD-OCTAVE-BAND
ANALYSIS

Figure 39F PROP-FAN MODEL NOISE



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

RELATIVE LEVEL IN DB

I.D. NO.

RUN 68

FOR
ABSOLUTE
LEVEL
ADD
70
dB

SHROUD COMPROMISE
BLADE ANGLE 30
TIP SPEED 900 FT/SEC
MICROPHONE LOCATION 10' 15 7 1/2"

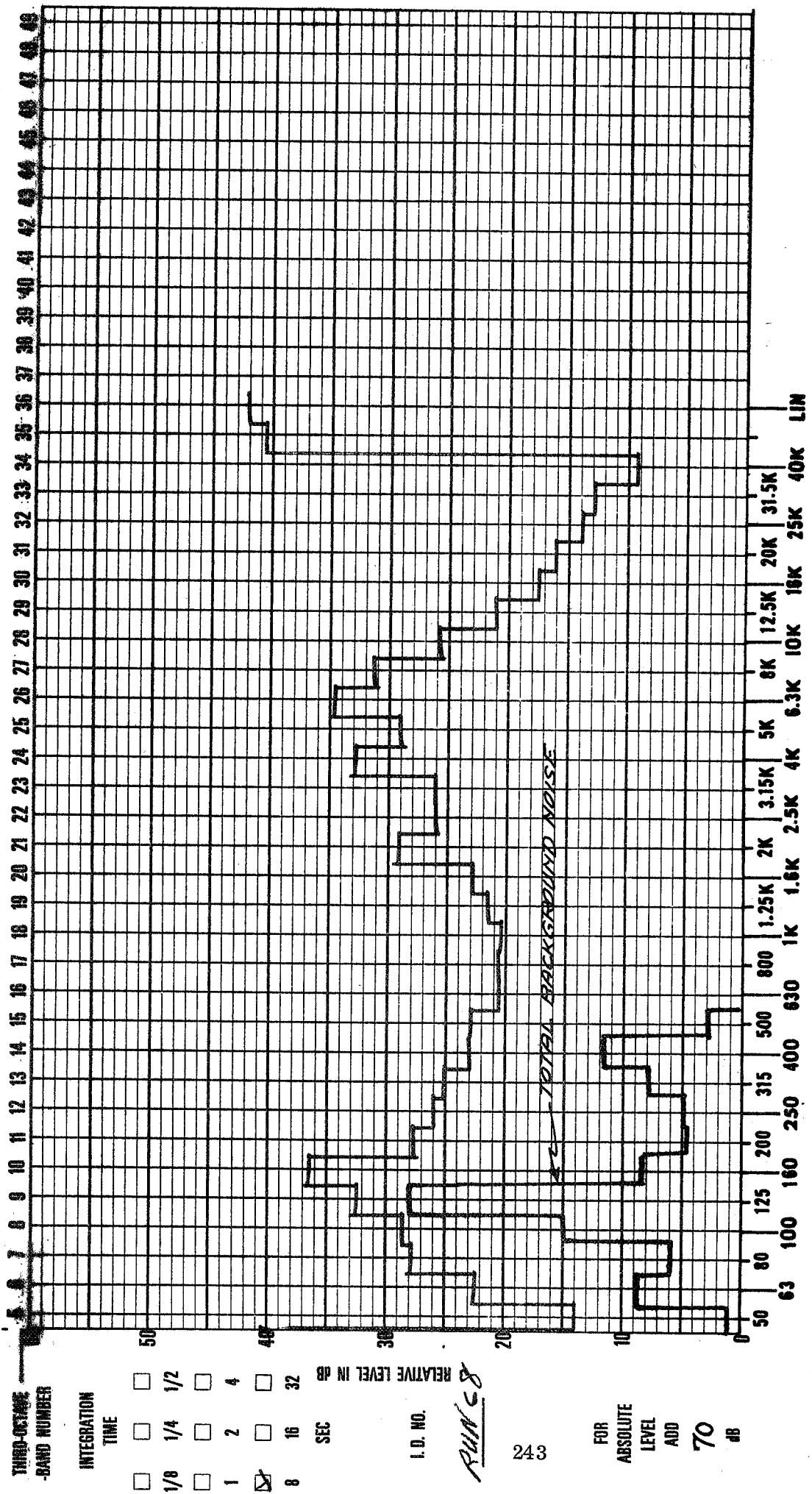
THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

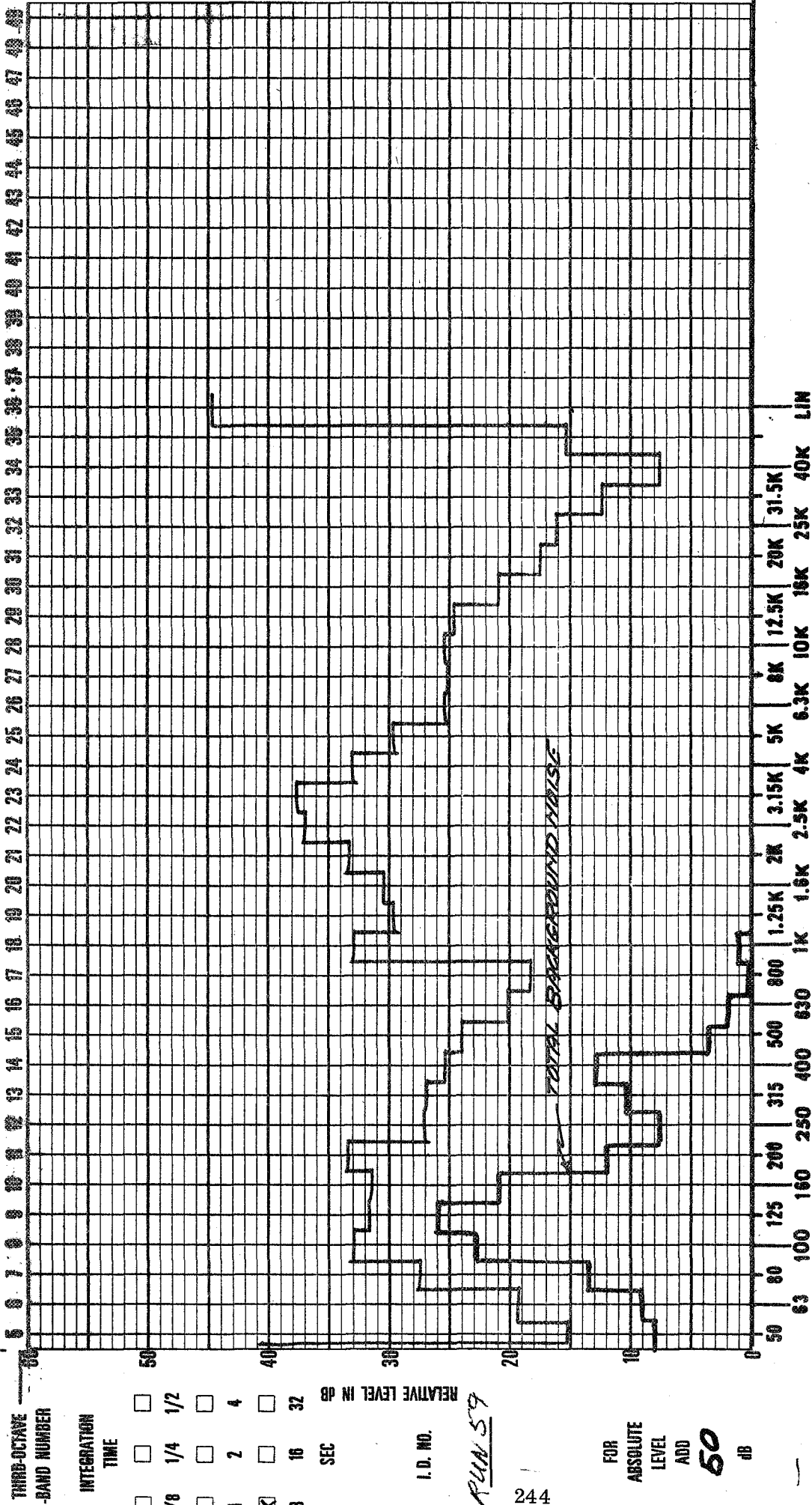
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THIRD-OCTAVE-BAND ANALYSIS

Figure 40F PROP-FAN MODEL NOISE





THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

RELATIVE LEVEL IN DB

I.D. NO.

RUN 59

FOR ABSOLUTE LEVEL ADD 50 dB

THIRD-OCTAVE BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND ANALYSIS

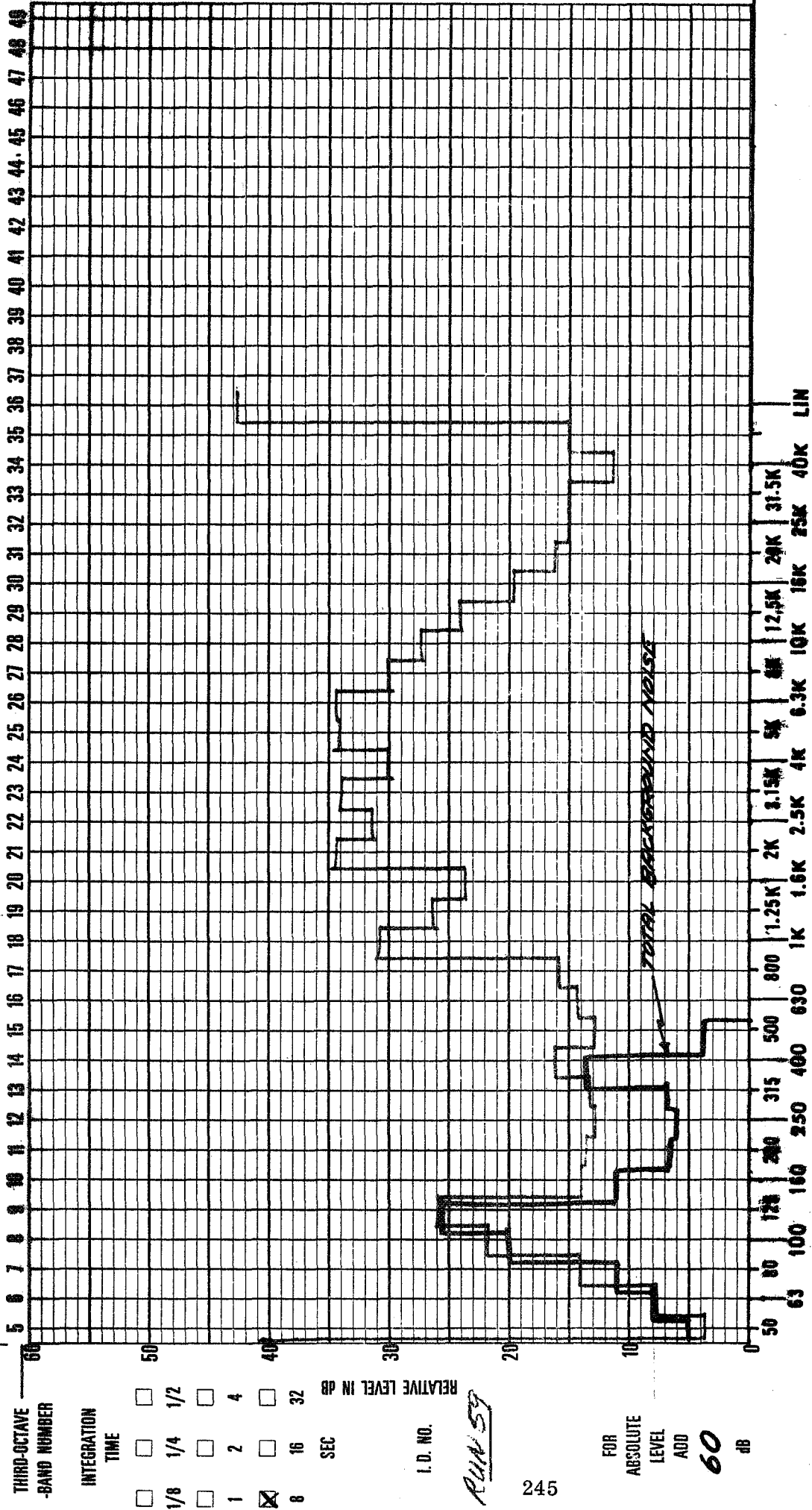
SHROUD COMPROMISE

BLADE ANGLE 40°

TIP SPEED 500 FT/SEC

MICROPHONE LOCATION 13 1/2° ON GROUND

SHROUD COMPROMISE
BLADE ANGLE 40°
TIP SPEED 500 FT/SEC
MICROPHONE LOCATION 10' 22 1/2"



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

1/8 1/4 1/2 1 2 4 8 16 32 60

SEC

I.D. NO.

RUN 59

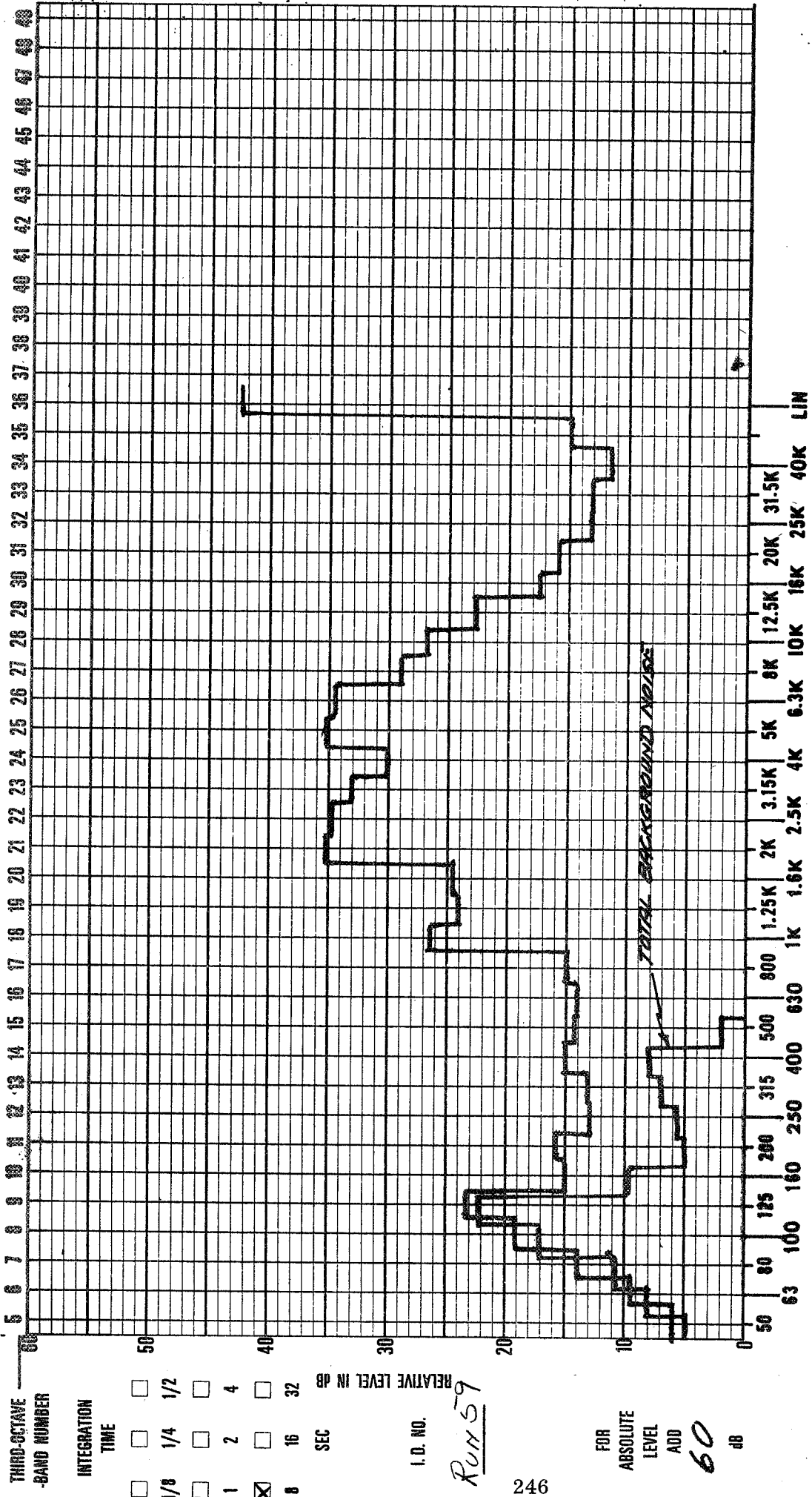
THIRD-OCTAVE BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND ANALYSIS

Figure 4a) F PROP - FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

- 1/8
 - 1/4
 - 1/2
 - 1
 - 2
 - 4
 - 8
 - 16
 - 32
- SEC

I.D. NO.

Run 59

FOR ABSOLUTE LEVEL ADD 60 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND ANALYSIS

SHROUD COMPROMISE
 BLADE ANGLE 40°
 TIP SPEED 500 FT/SEC
 MICROPHONE LOCATION 10' 45°

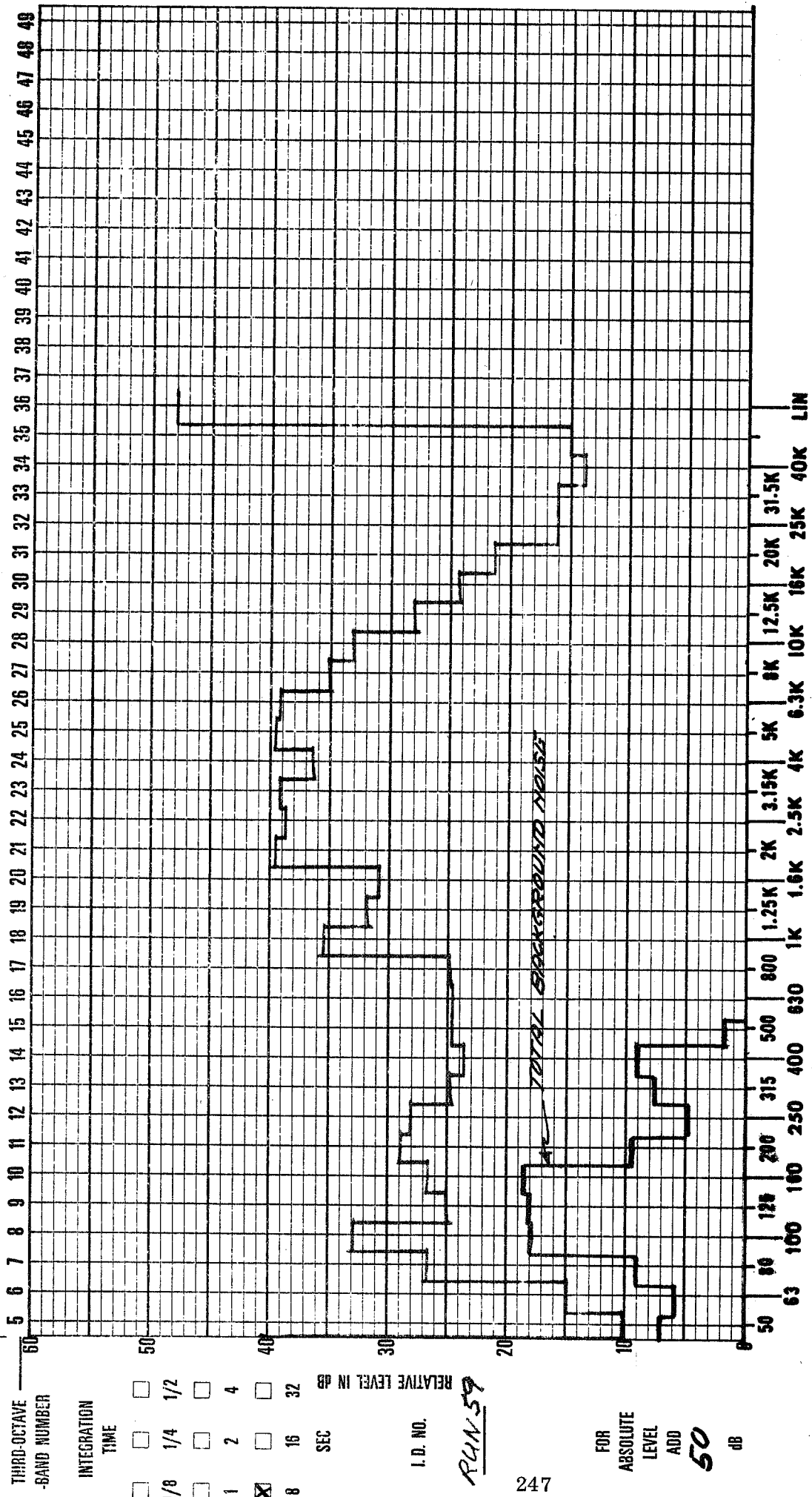
Figure 43F PROP-FAN MODEL NOISE

SHROUD COMPROMISE
BLADE ANGLE 40°
TIP SPEED 500 FT/SEC
MICROPHONE LOCATION 10' 67 1/2°

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard
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THIRD-OCTAVE-BAND ANALYSIS

Figure 44F-PROP-FAN MODEL NOISE



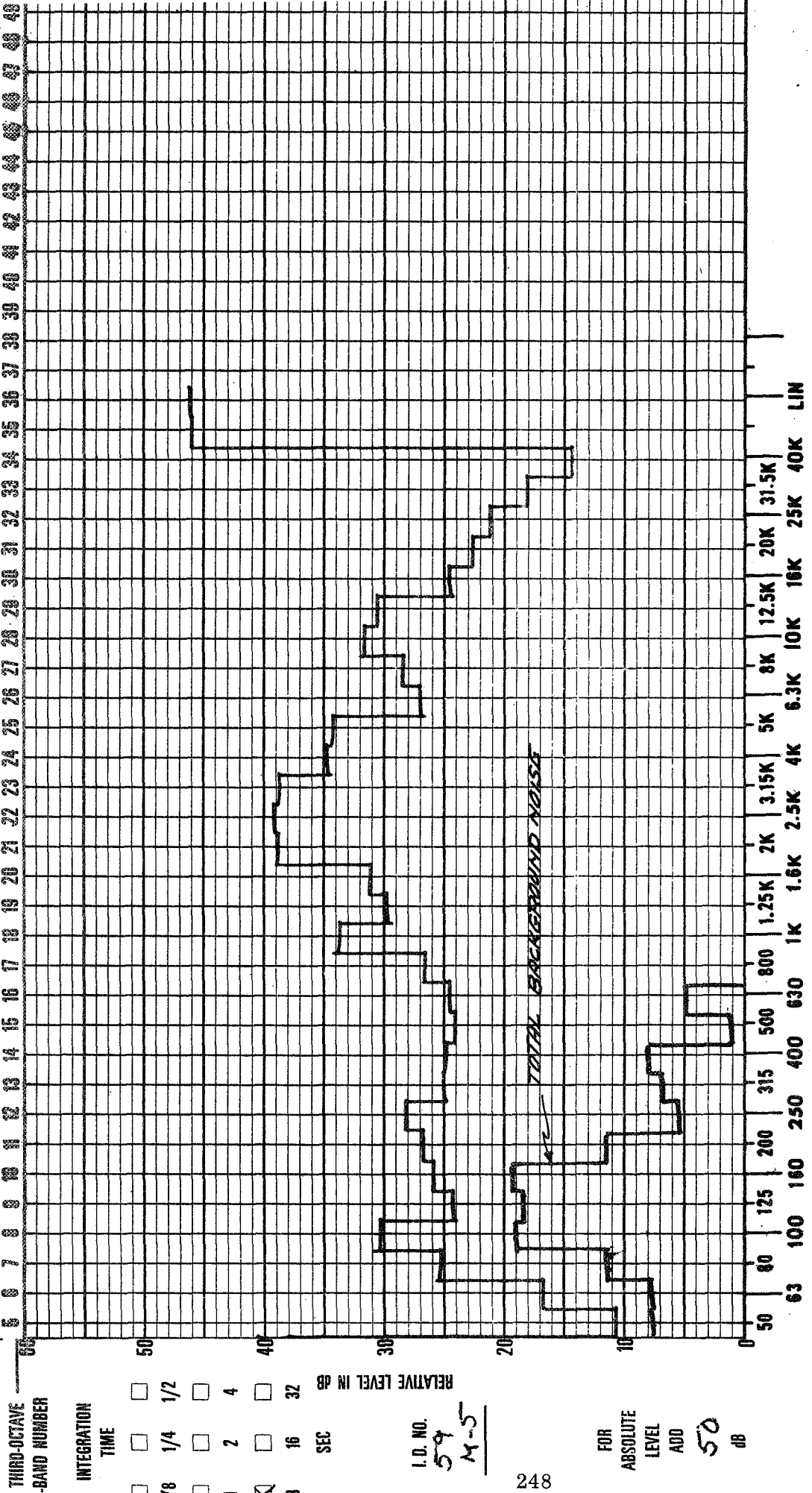
THIRD-OCTAVE-BAND NUMBER: 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49

INTEGRATION TIME: 1/8 1/4 1/2 1 2 4 8 16 32

RELATIVE LEVEL IN DB: 0 10 20 30 40 50 60

I.D. NO. RUN 59

FOR ABSOLUTE LEVEL ADD 50 dB



THIRD-OCTAVE-BAND NUMBER

INTEGRATION TIME

RELATIVE LEVEL IN DB

I.D. NO.

FOR ABSOLUTE LEVEL ADD

59
M-5

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD Compromise

BLADE ANGLE 40°

TIP SPEED 500 FT/SEC

MICROPHONE LOCATION 10', 90°

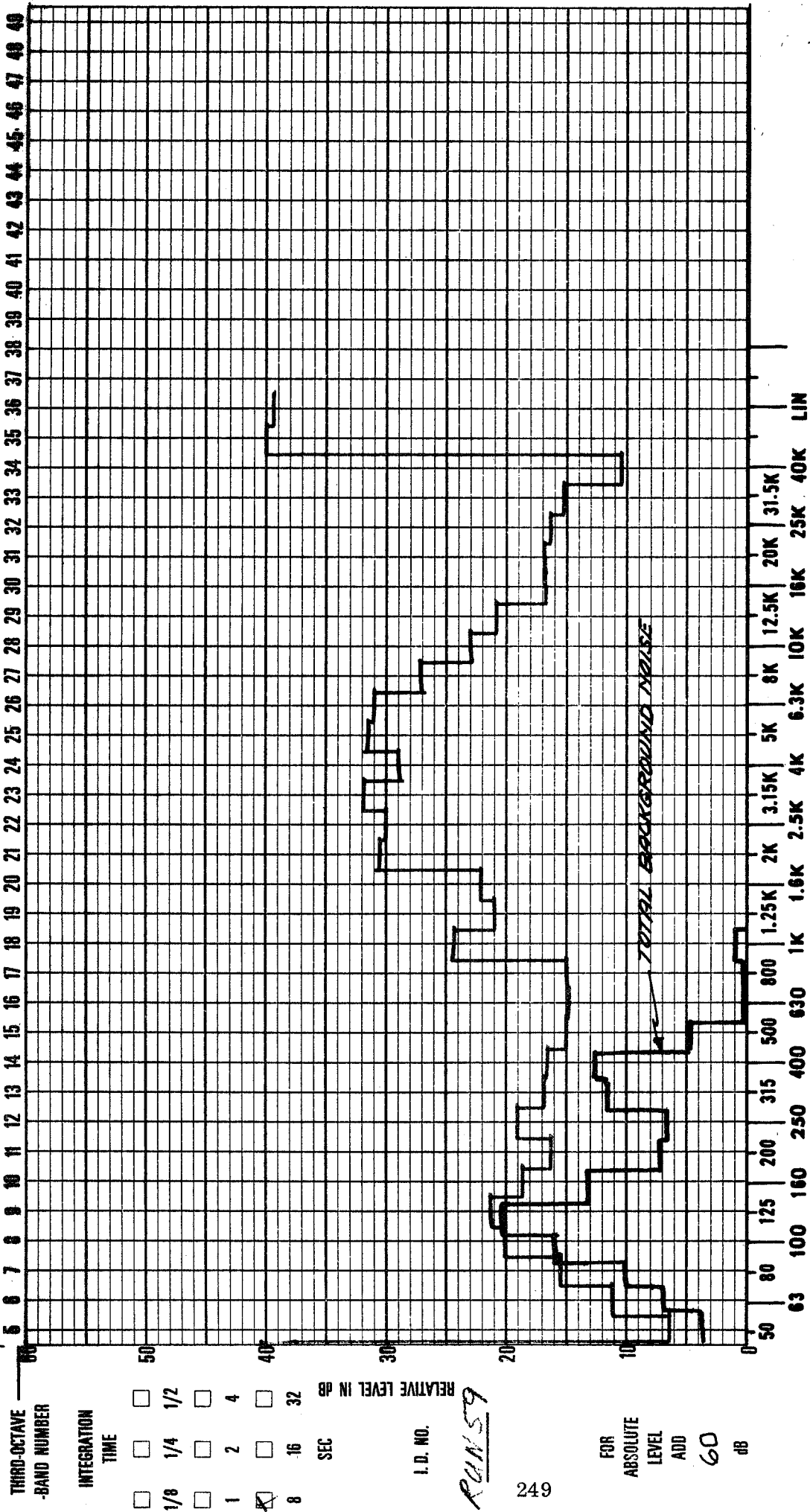
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THIRD-OCTAVE-BAND ANALYSIS

Figure 45-PROP-FAN MODEL NOISE

SHROUD COMPROMISE
BLADE ANGLE 40
TIP SPEED 500 FT/SEC
MICROPHONE LOCATION 10' 112 1/2"



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

THIRD-OCTAVE-BAND NUMBER

INTEGRATION TIME

RELATIVE LEVEL IN DB

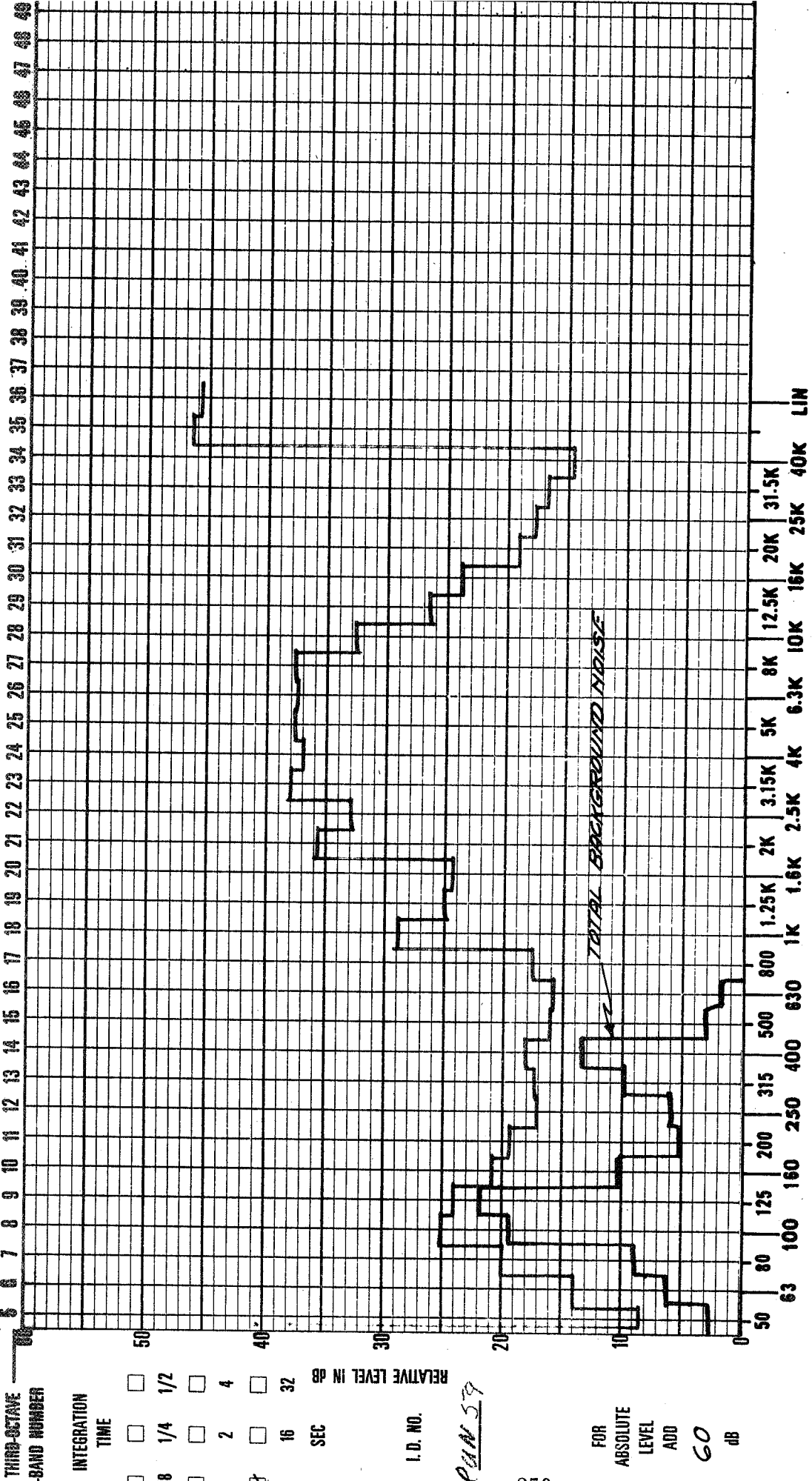
I.D. NO.

FOR ABSOLUTE LEVEL ADD

60 DB

RUN 59

Figure 46F PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32
- 60

I. D. NO.

PAN 57

250

FOR ABSOLUTE LEVEL ADD 60 dB

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

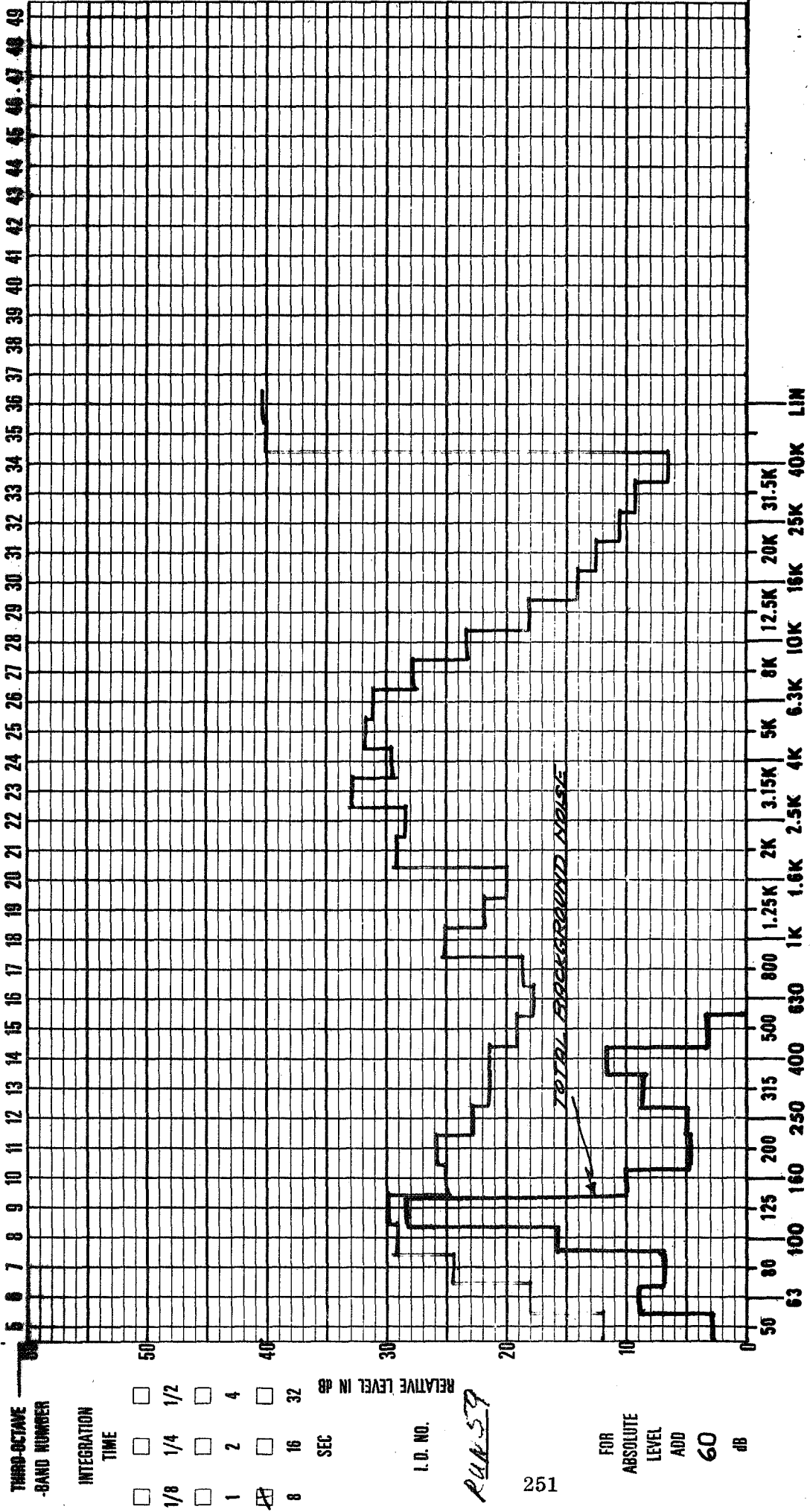
SHROUD COMPROMISE

BLADE ANGLE 40°

TIP SPEED 500 FT/SEC

MICROPHONE LOCATION 10' 135°

Figure 47F PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND NUMBER

INTEGRATION TIME

- 1/8
 - 1/4
 - 1/2
 - 1
 - 2
 - 4
 - 8
 - 16
 - 32
- SEC

I.D. NO.

RUN 59

251

FOR ABSOLUTE LEVEL ADD 60 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard

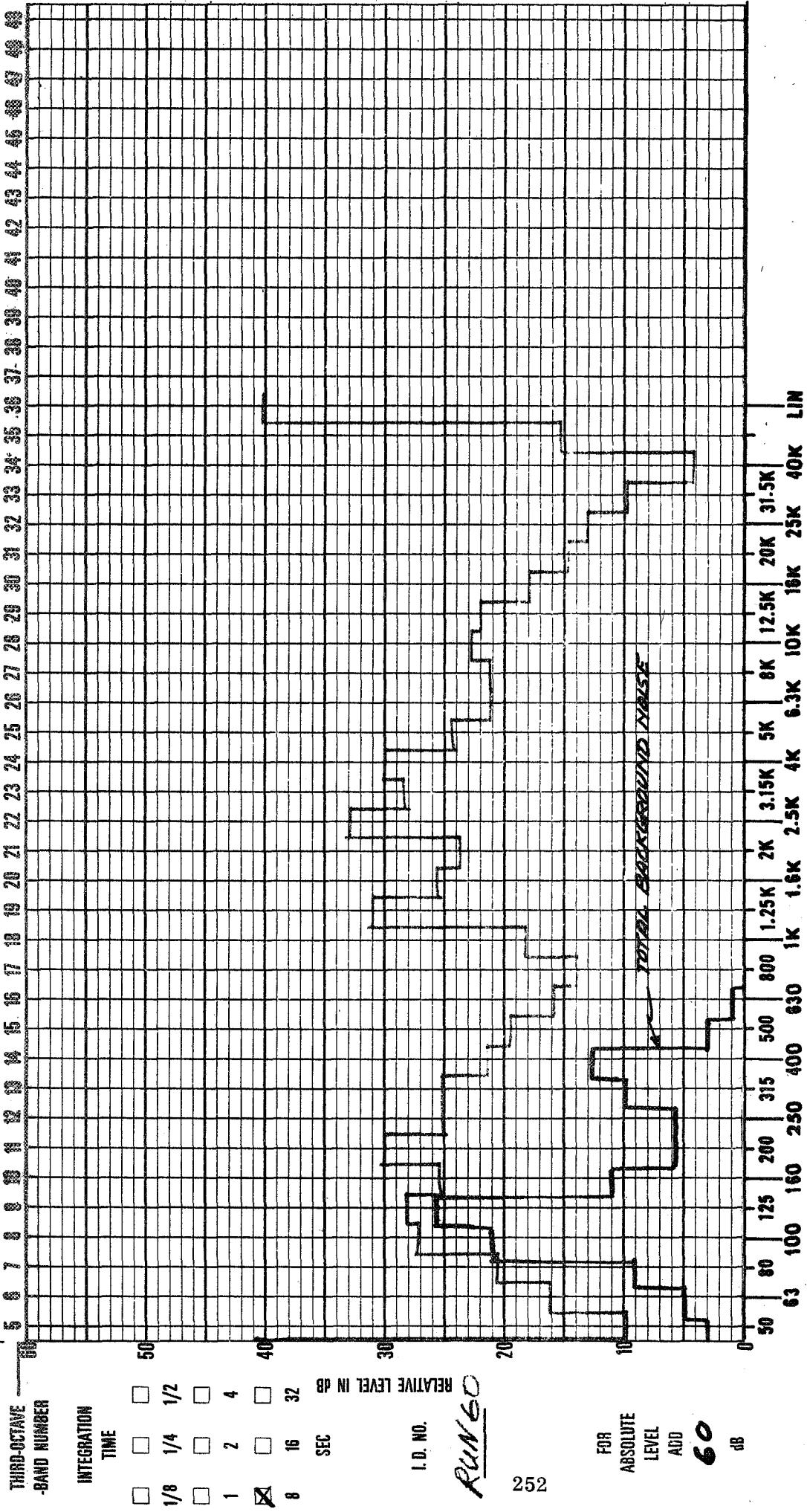
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THIRD-OCTAVE-BAND ANALYSIS

SHROUD COMPROMISE
 BLADE ANGLE 40°
 TIP SPEED 500 FT/SEC
 MICROPHONE LOCATION 10' 15 1/2°

HSER 5787

Figure 48F PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND ANALYSIS

SHROUD COMPROMISE
BLADE ANGLE 40°
TIP SPEED 600 FT/SEC

MICROPHONE LOCATION 13 1/2' 90° ON GROUND

Figure 49F PROP-FAN MODEL NOISE

SHROUD COMPROMISE
BLADE ANGLE 40°
TIP SPEED 600 FT/SEC
MICROPHONE LOCATION 10' 22 1/2°

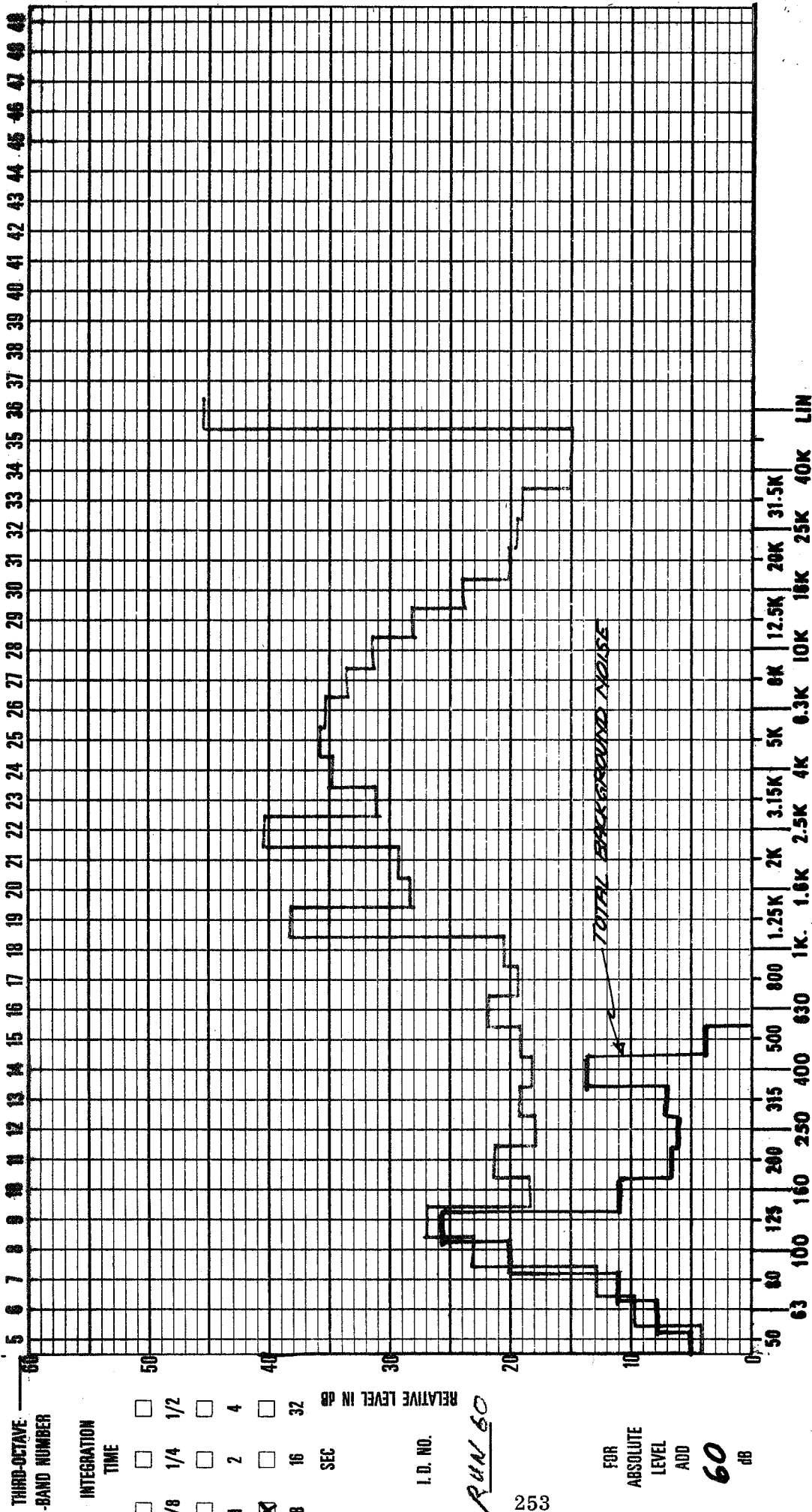
THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard

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THIRD-OCTAVE-BAND ANALYSIS

Figure 50 FPROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND NUMBER

INTEGRATION TIME

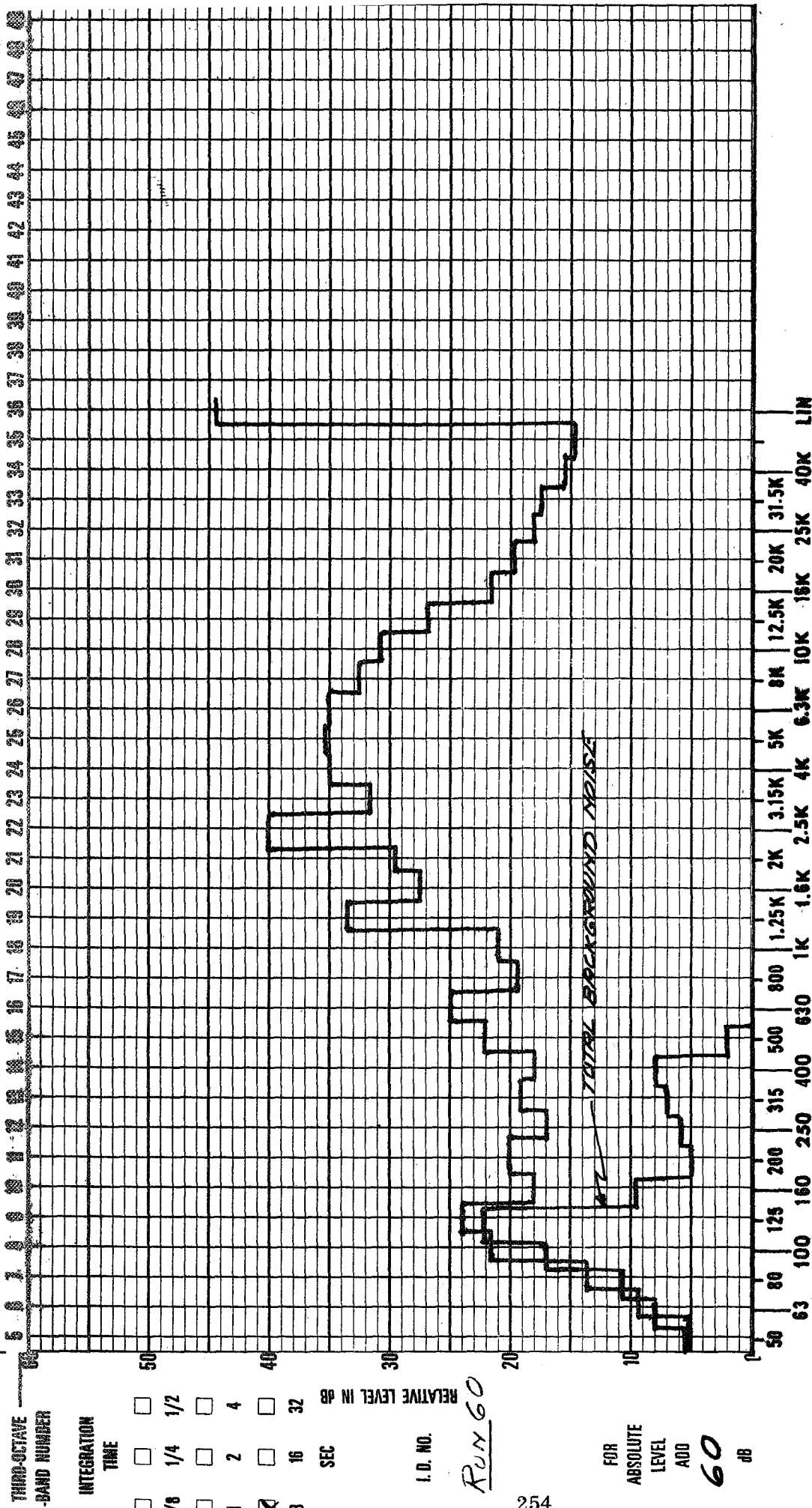
- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

RELATIVE LEVEL IN dB

I.D. NO.

RUN 60

FOR ABSOLUTE LEVEL ADD 60 dB



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

RELATIVE LEVEL IN DB

I. D. NO.

FOR ABSOLUTE LEVEL ADD

60 dB

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

Run 60

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD COMPROMISE

BLADE ANGLE 40°

TIP SPEED 600 FT/SEC

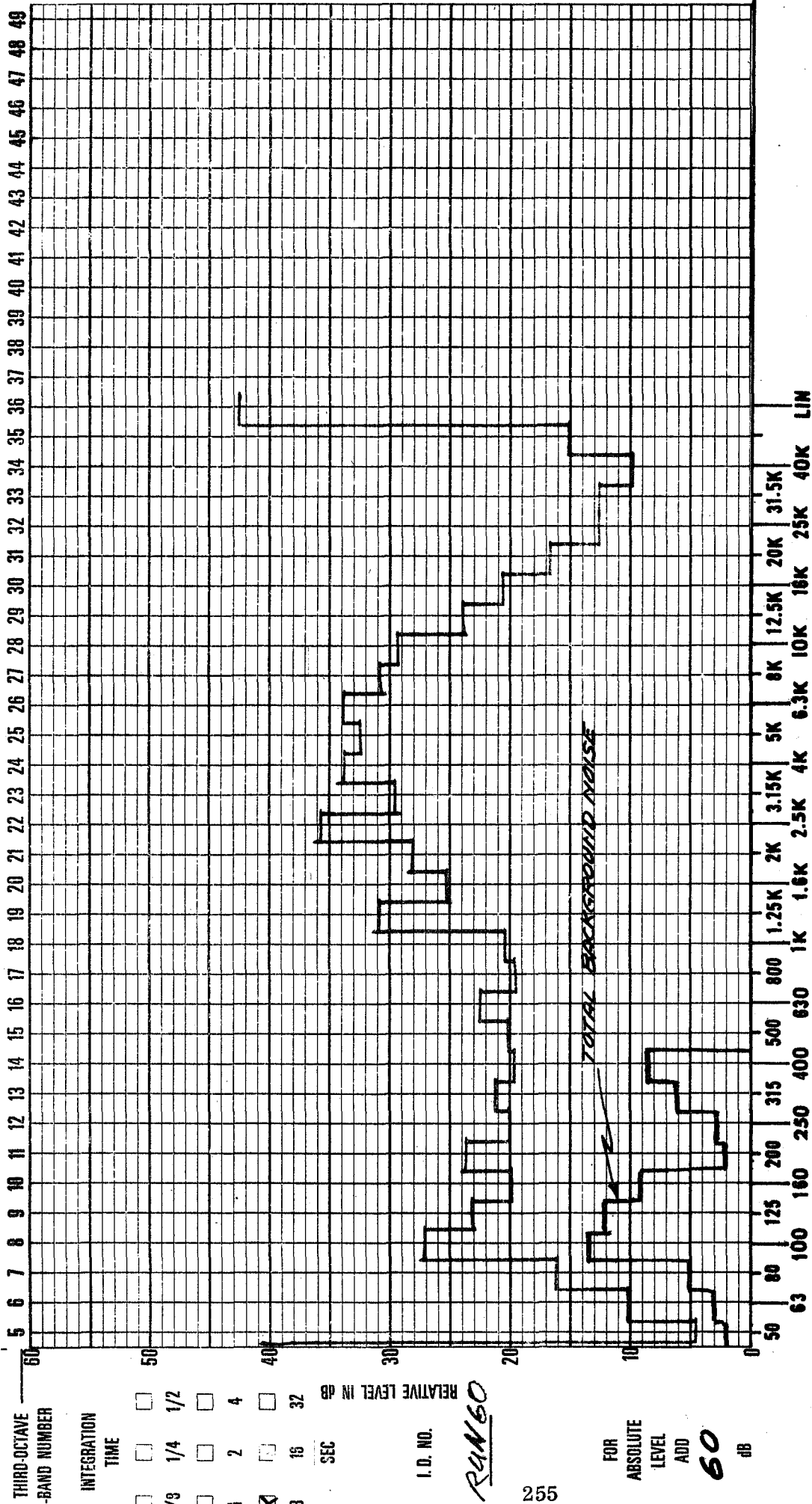
MICROPHONE LOCATION 10' 45°

Hamilton Standard

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THIRD-OCTAVE-BAND ANALYSIS

Figure 5/F PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND ANALYSIS

SHROUD COMPROMISE
BLADE ANGLE 40°
TIP SPEED 600 FT/SEC
MICROPHONE LOCATION 10' 67 1/2°

Figure 5A/F PROP-FAN MODEL NOISE

THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

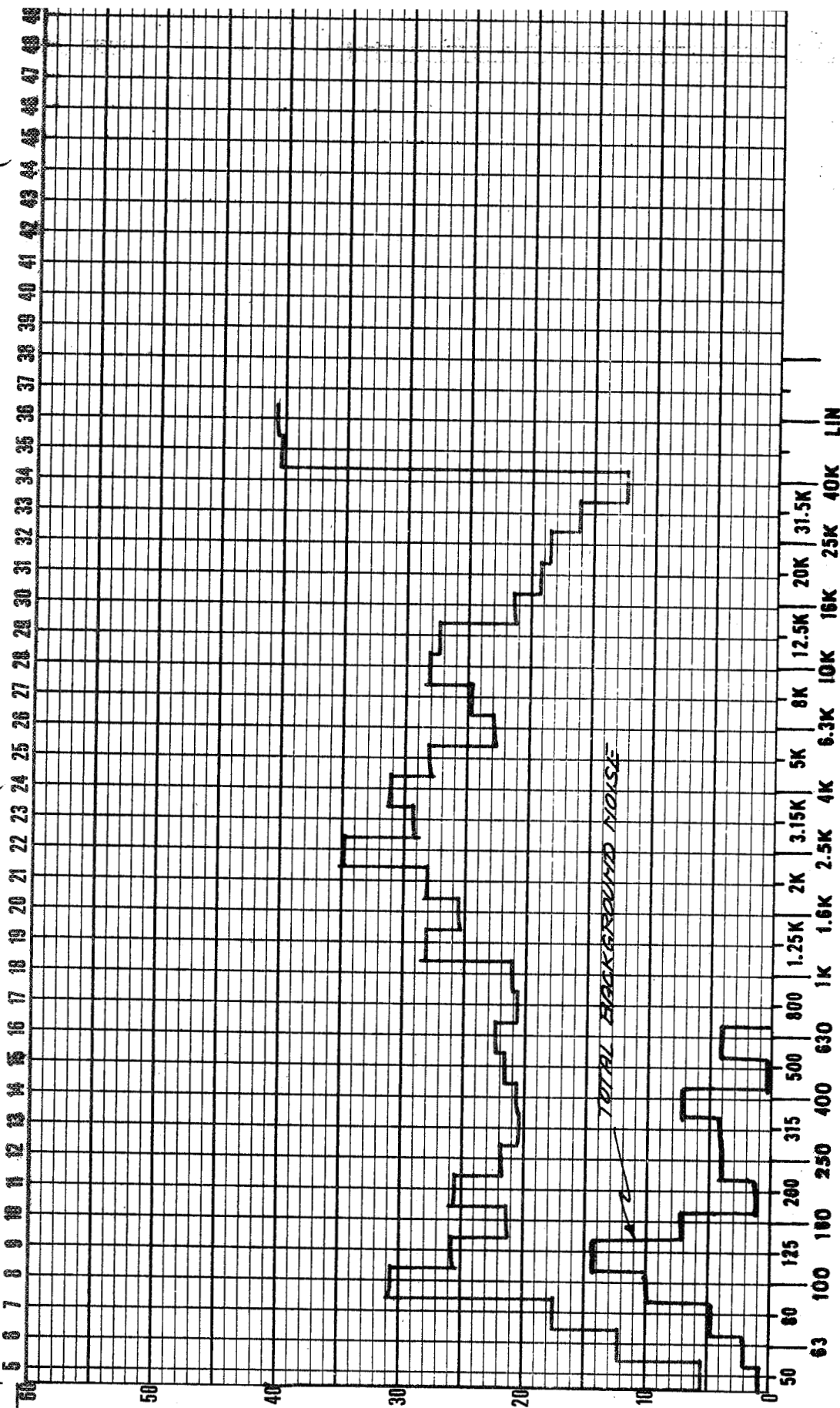
- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

RELATIVE LEVEL IN DB

I.D. NO.

60
M-5

FOR
ABSOLUTE
LEVEL
ADD
60
dB



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

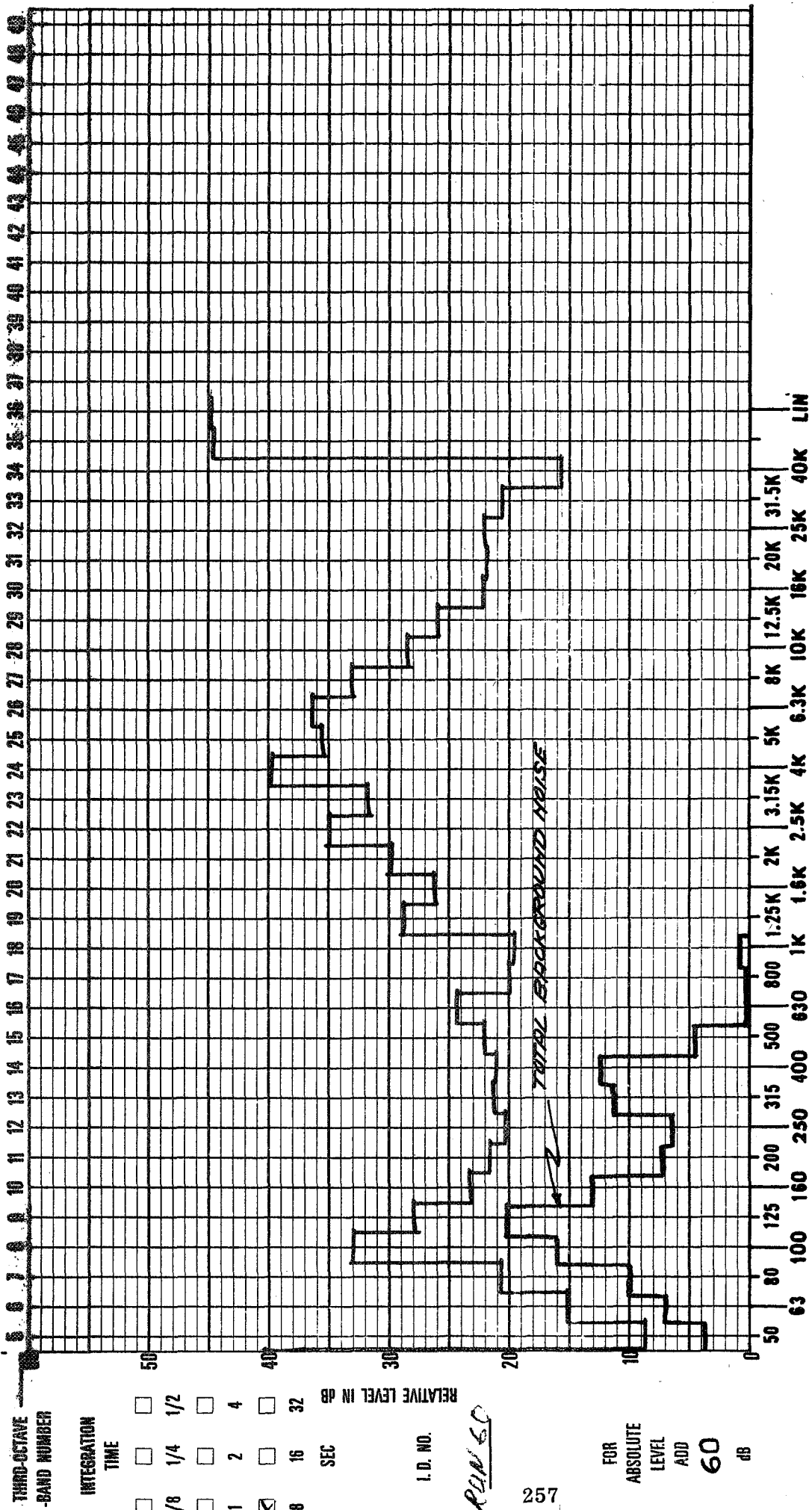
Hamilton
Standard

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THIRD-OCTAVE-BAND
ANALYSIS

SHROUD COMPROMISE
BLADE ANGLE 40°
TIP SPEED 600 FT/SEC
MICROPHONE LOCATION 10' 90°

Figure 53F PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton
Standard



THIRD-OCTAVE-BAND
ANALYSIS

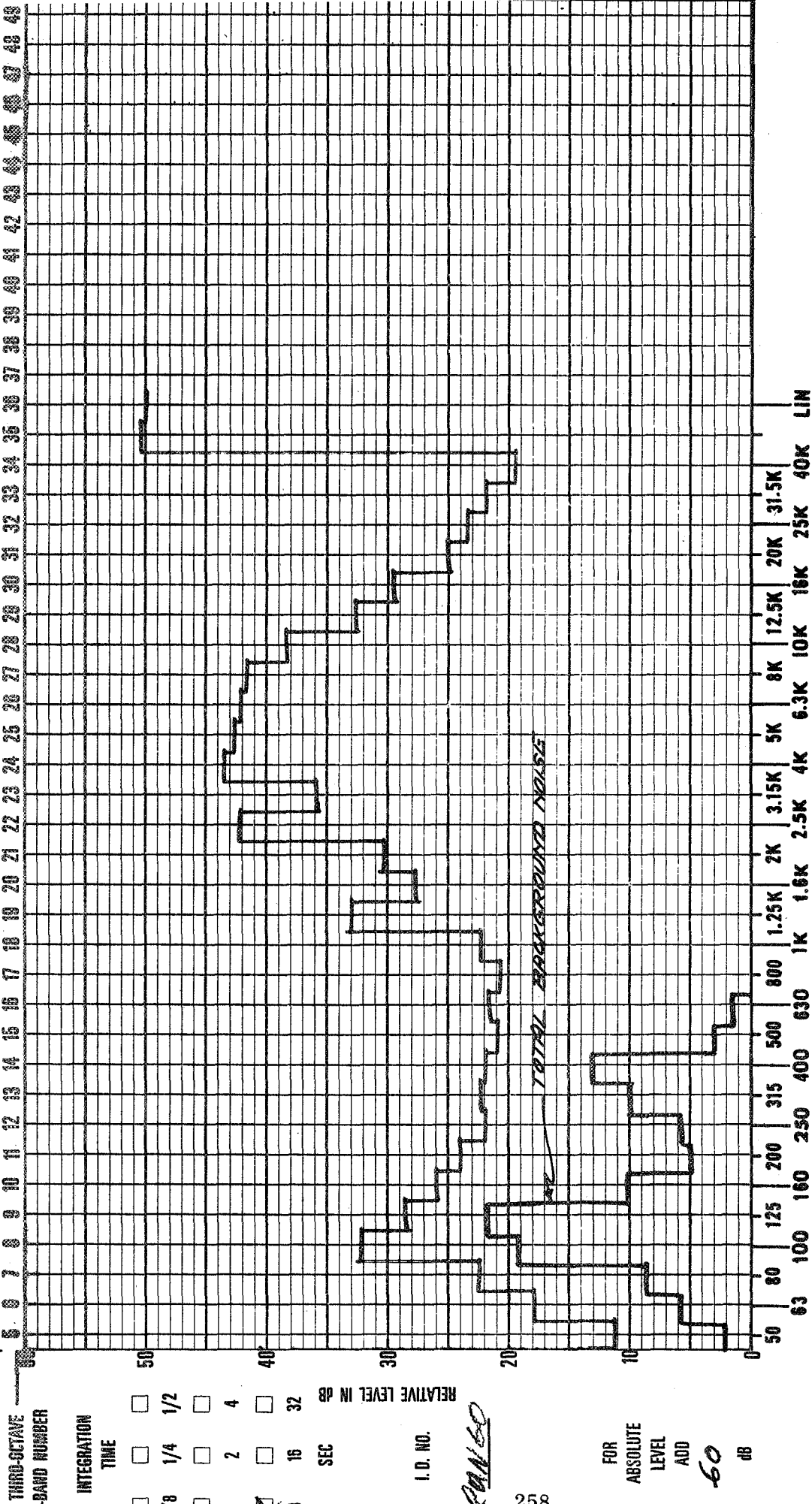
SHROUD COMPROMISE
BLADE ANGLE 40°
TIP SPEED 600 FT/SEC
MICROPHONE LOCATION 10' 112 1/2°

THIRD-OCTAVE-BAND NUMBER
INTEGRATION TIME
 1/8
 1/4
 1/2
 1
 2
 4
 8
 16
 32
 SEC
 I.D. NO.
 RELATIVE LEVEL IN dB

RUN 60

FOR ABSOLUTE LEVEL ADD 60 dB

Figure 54F PROP-FAN MODEL NOISE



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

- 1/8
 - 1/4
 - 1/2
 - 1
 - 2
 - 4
 - 8
 - 16
 - 32
- SEC

I. D. NO.

RAIN 50

FOR
ABSOLUTE
LEVEL
ADD
60
dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

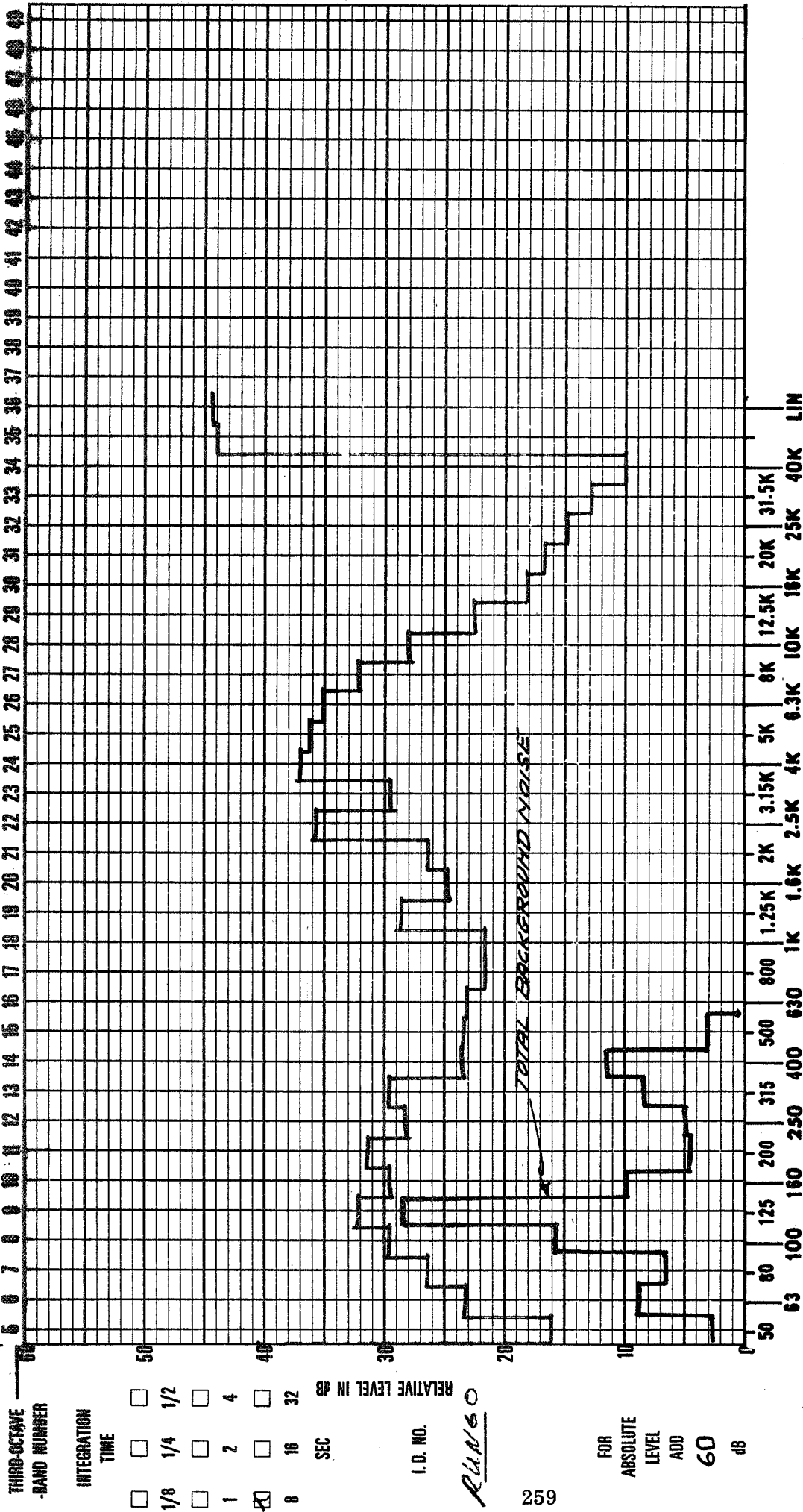
Hamilton
Standard



THIRD-OCTAVE-BAND
ANALYSIS

SHROUD COMPROMISE
BLADE ANGLE 40°
TIP SPEED 600 FT/SEC
MICROPHONE
LOCATION 10' 135°

Figure 557-PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND
ANALYSIS

SHROUD COMPROMISE
 BLADE ANGLE 40°
 TIP SPEED 600 FT/SEC
 MICROPHONE LOCATION 10' 15" 1/2

THIRD-OCTAVE-BAND NUMBER: 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49

INTEGRATION TIME:
 1/8
 1/4
 1/2
 1
 2
 4
 8
 16
 32
 SEC

RELATIVE LEVEL IN DB

I.D. NO. RUN 50

FOR ABSOLUTE LEVEL ADD 60 DB

Figure 56 PROP-FAN MODEL NOISE

THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

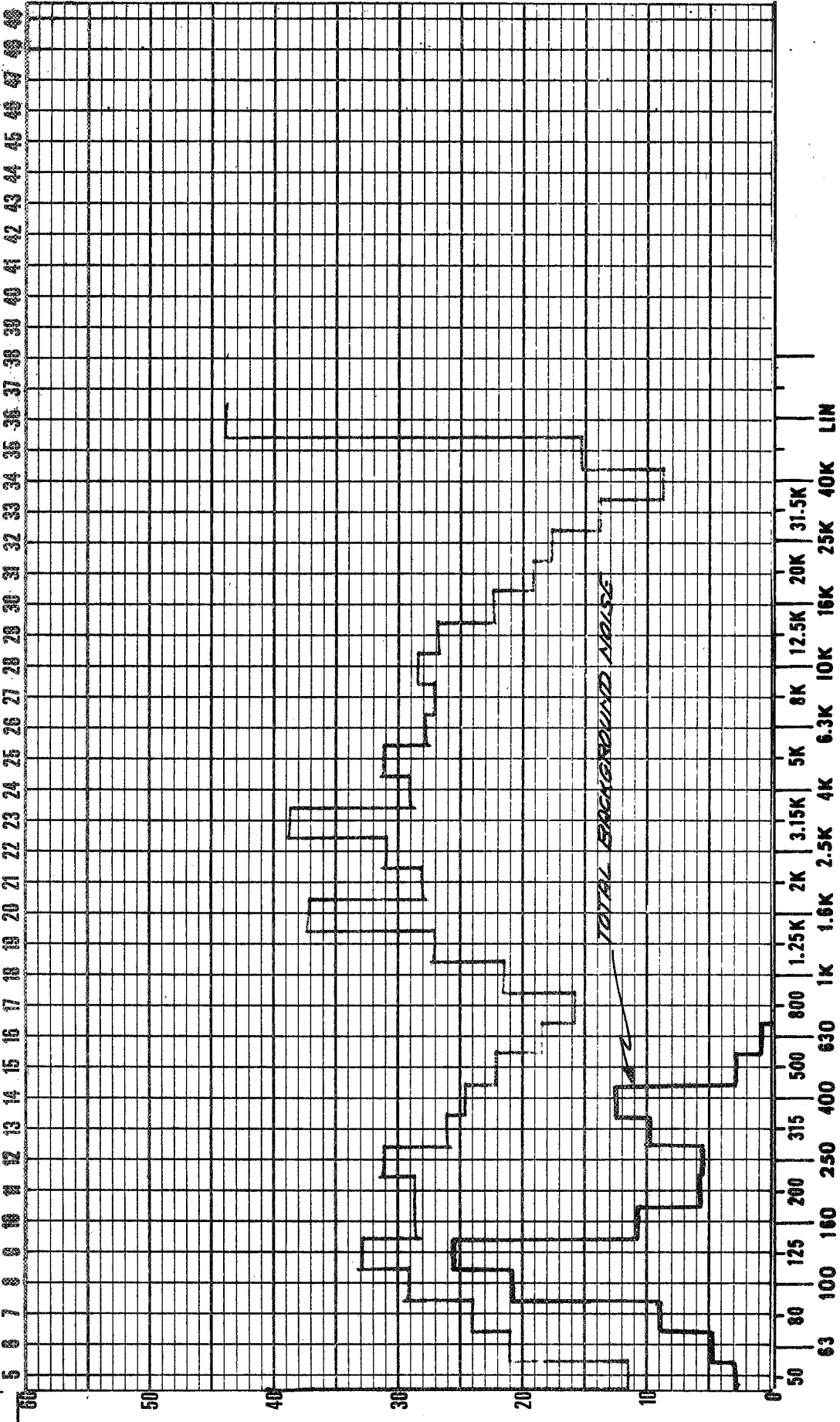
- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

I.D. NO.

RUN 61

260

FOR
ABSOLUTE
LEVEL
ADD
60
dB



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton
Standard



THIRD-OCTAVE-BAND
ANALYSIS

SHROUD COMPROMISE

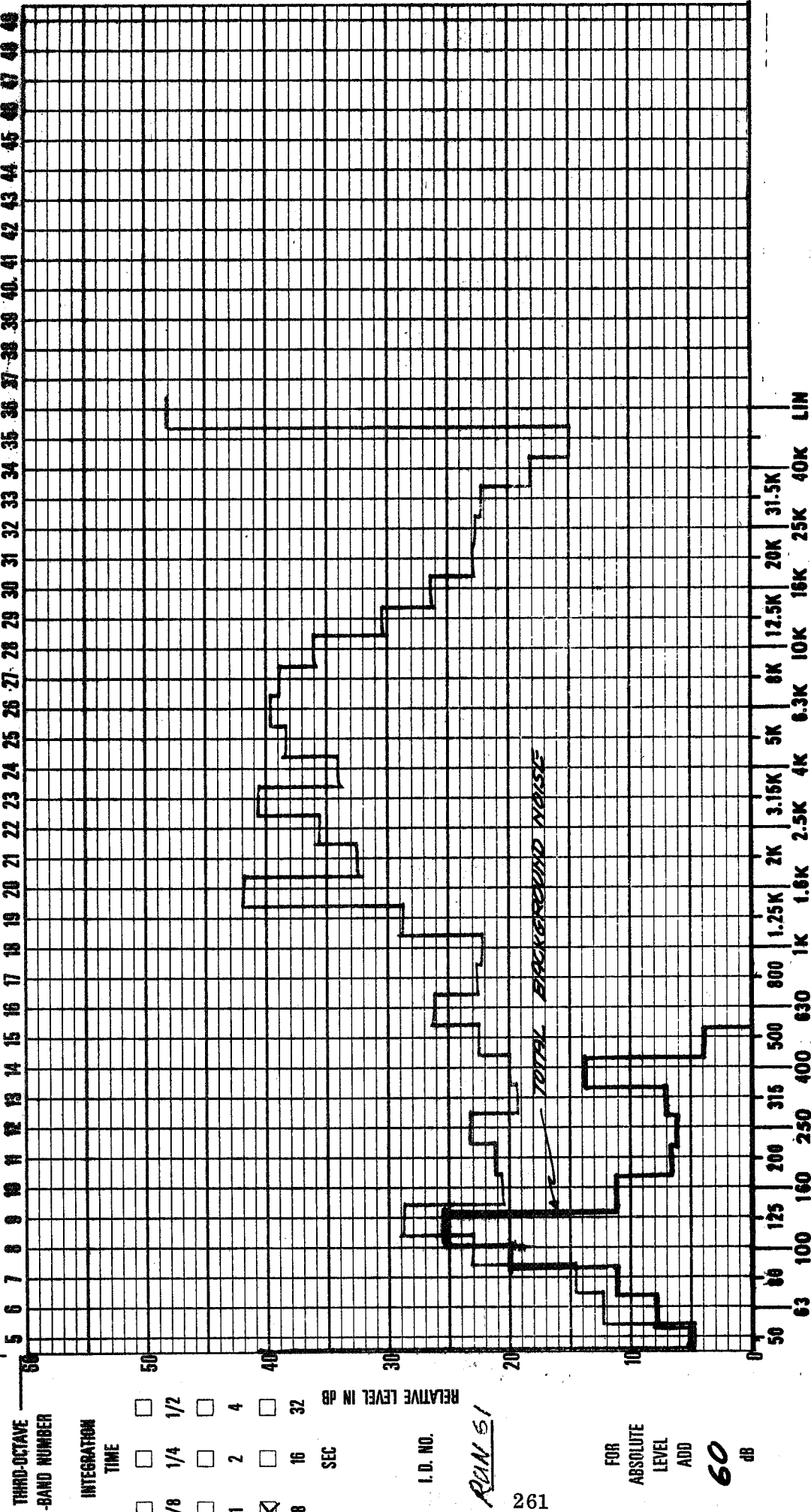
BLADE ANGLE 40°

TIP SPEED 700 FT/SEC

MICROPHONE
LOCATION 13 1/2' 90° ON GROUND

Figure 57F PROP-FAN MODEL NOISE

SHROUD COMPROMISE
BLADE ANGLE 40°
TIP SPEED 700 FT/SEC
MICROPHONE LOCATION 10' 22 1/2°



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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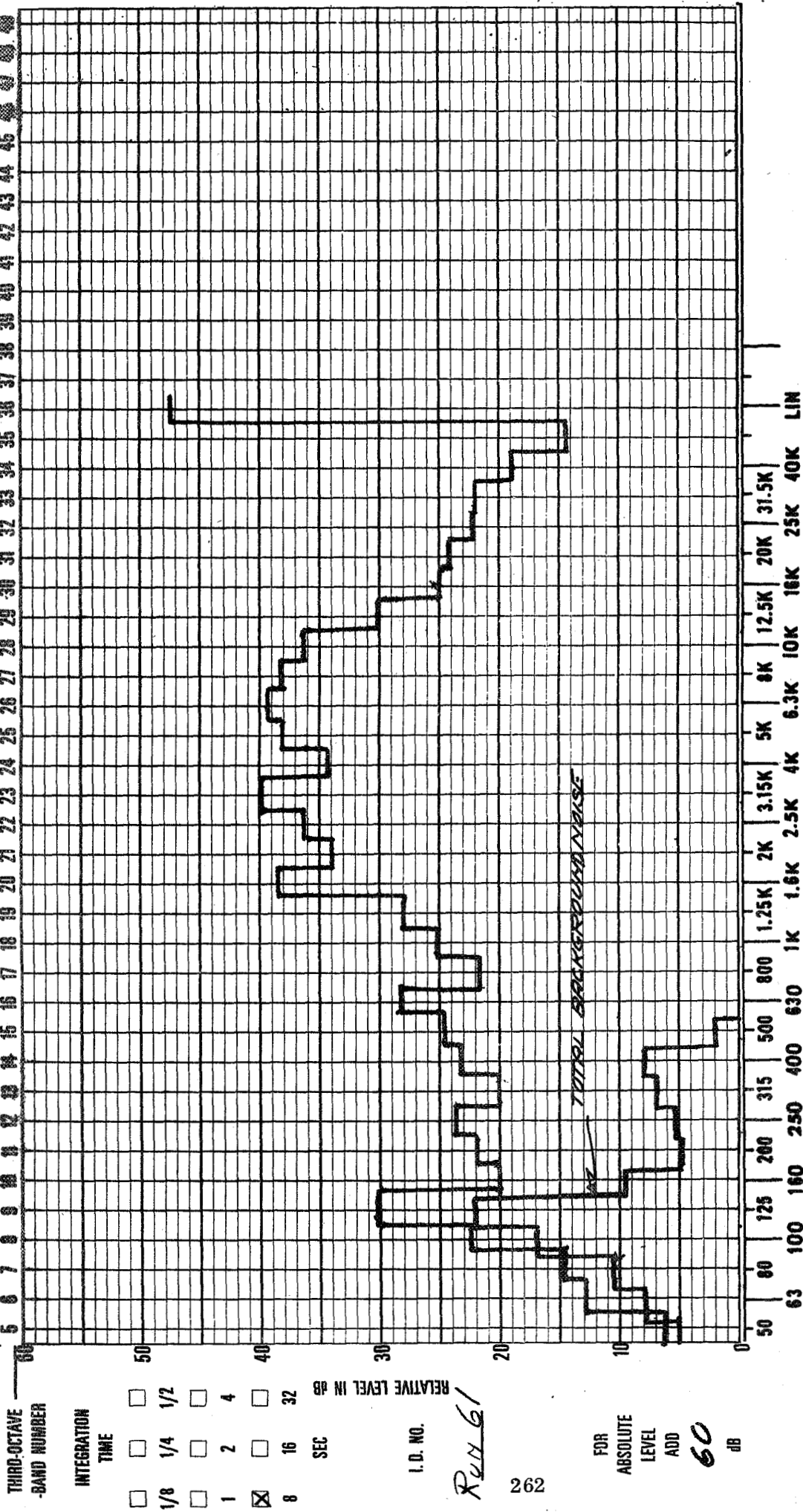
Figure 58F PROP-FAN MODEL NOISE

I.D. NO.

RUN 51

FOR ABSOLUTE LEVEL ADD

60 dB



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

- 1/8
 - 1/4
 - 1/2
 - 1
 - 2
 - 4
 - 8
 - 16
 - 32
- SEC

RELATIVE LEVEL IN dB

I.D. NO.

RENG1

262

FOR
ABSOLUTE
LEVEL
ADD
60
dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

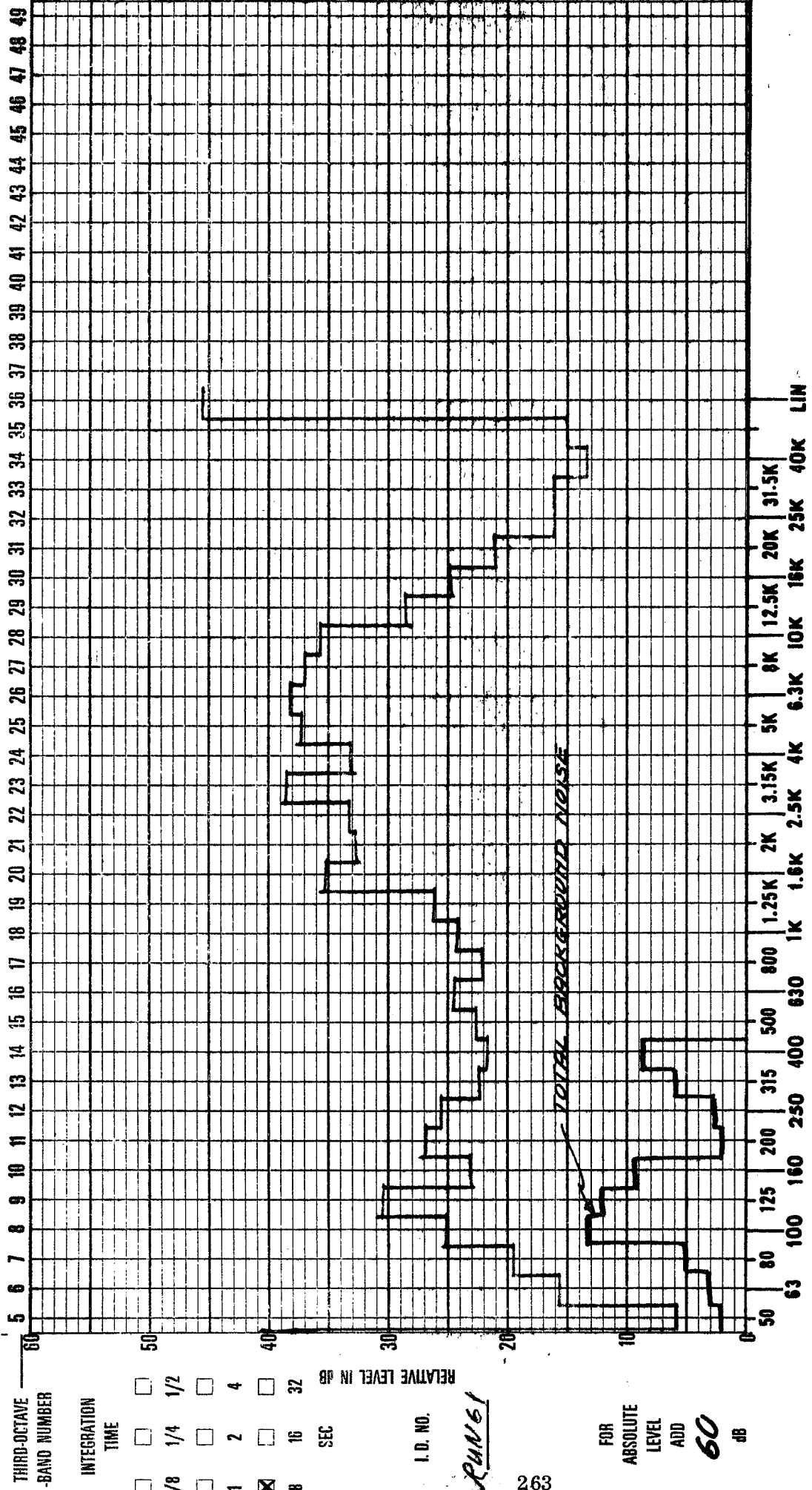
SHROUD COMPROMISE
BLADE ANGLE 40°
TIP SPEED 700 FT/SEC
MICROPHONE LOCATION 10' 45°

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Standard



THIRD-OCTAVE-BAND
ANALYSIS

Figure 59F PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD COMPROMISE
 BLADE ANGLE 40°
 TIP SPEED 700 FT/SEC
 MICROPHONE LOCATION 10' 67 1/2°

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

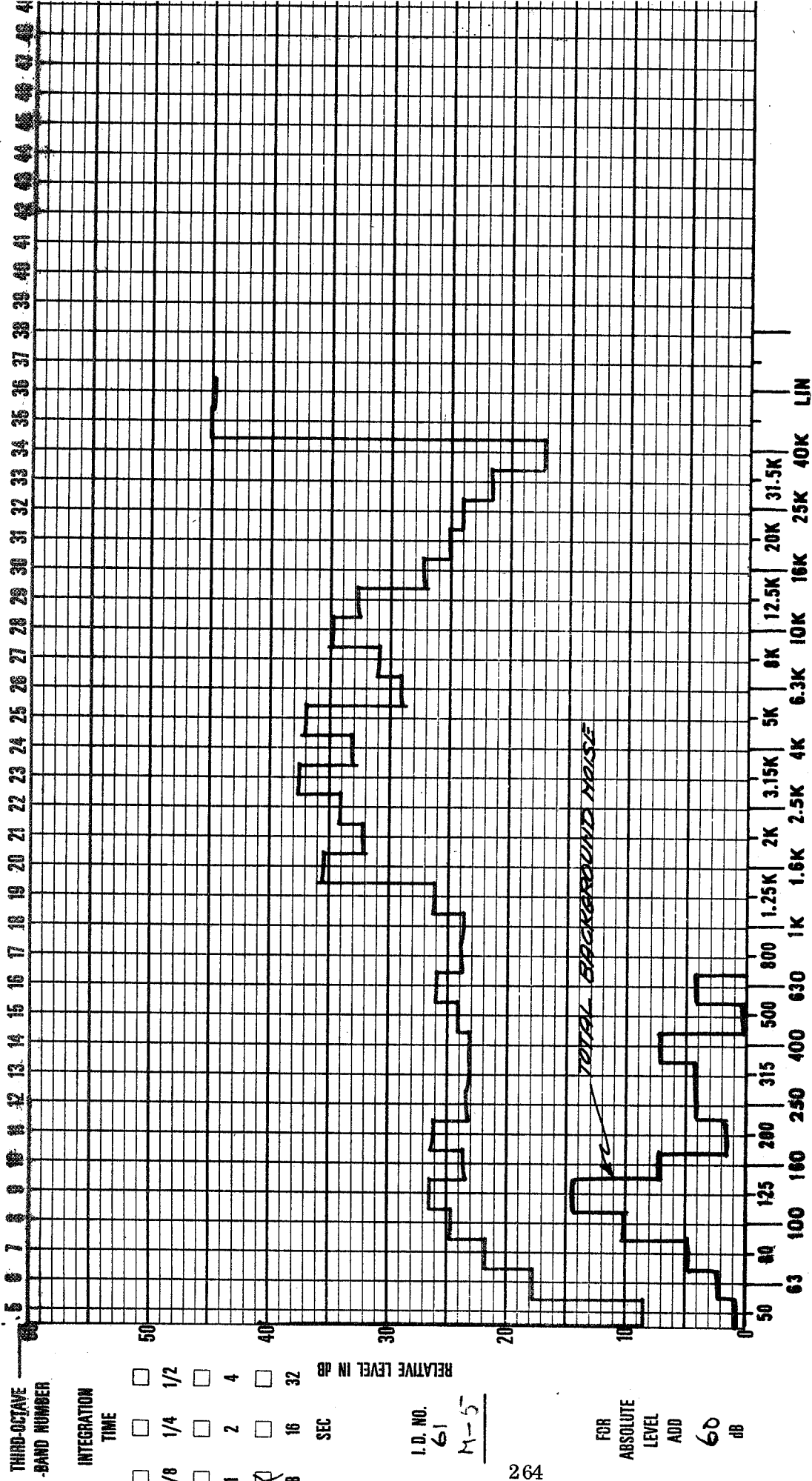
Figure 60F PROP-FAN MODEL NOISE

THIRD-OCTAVE-BAND NUMBER
 INTEGRATION TIME
 1/8
 1/4
 1
 2
 4
 8
 16
 32
 SEC

I.D. NO.

RUN 61

FOR ABSOLUTE LEVEL ADD
60 dB



THIRD-OCTAVE-BAND NUMBER

INTEGRATION TIME

1/8 1/4 1/2 4 32

8 1 2 16 32

SEC

I.D. NO. 61 M-5

FOR ABSOLUTE LEVEL ADD 60 dB

SHROUD COMPROMISE

BLADE ANGLE 40°

TIP SPEED 700 FT/SEC

MICROPHONE LOCATION 10' 90°

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard

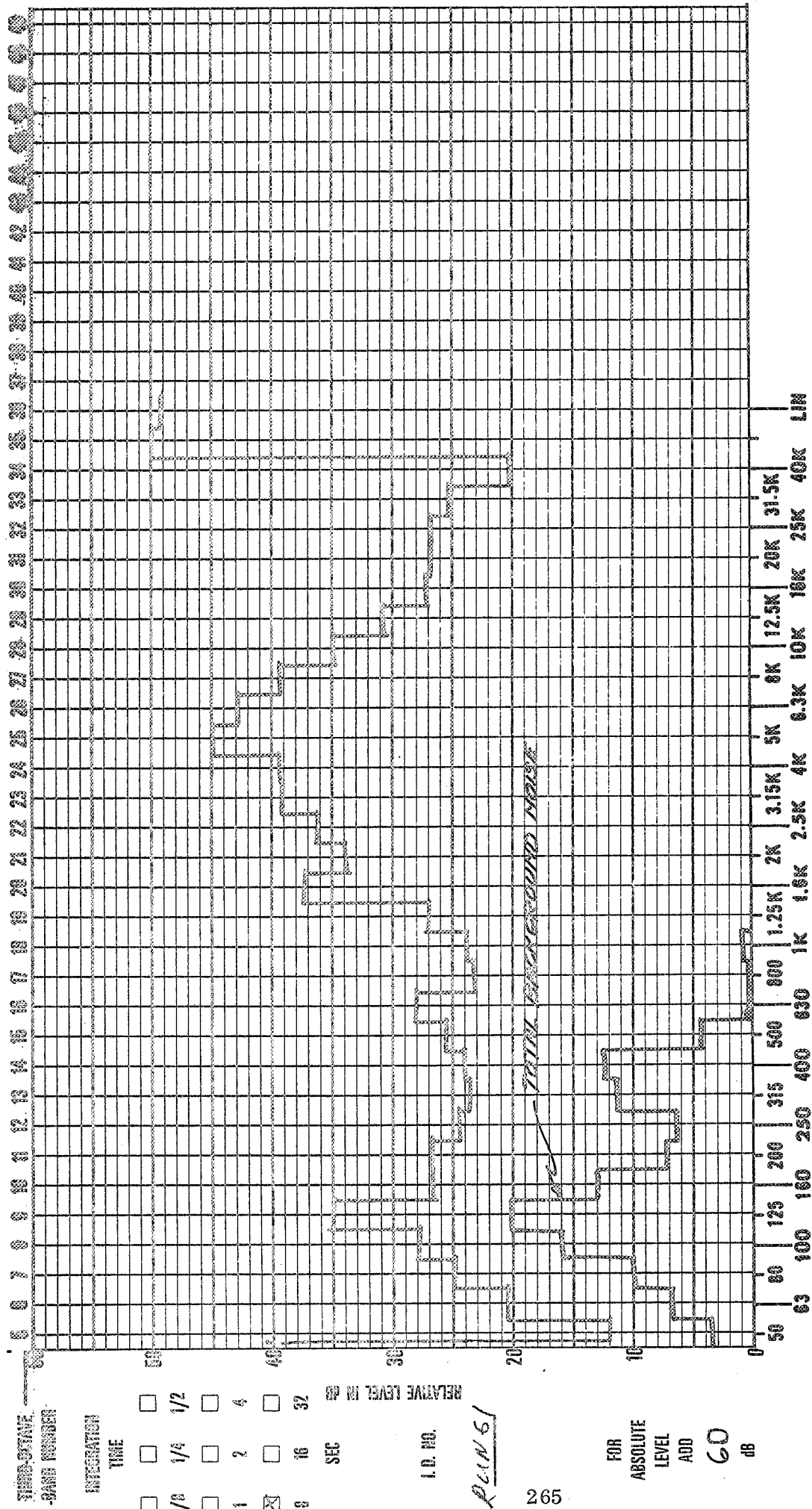
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THIRD-OCTAVE-BAND ANALYSIS

Figure 6/F PROP-FAN MODEL NOISE

SHROUD COMPROMISE
 BLADE ANGLE 40°
 TIP SPEED 700 FT/SEC
 MICROPHONE LOCATION 10' 11 1/2"



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND
ANALYSIS

Figure 62F-PROP-FAN MODEL NOISE

- THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ
- INTEGRATION TIME
- 1/8
 - 1/4
 - 1/2
 - 1
 - 2
 - 4
 - 8
 - 16
 - 32
- RELATIVE LEVEL IN DB
- I.D. NO.

RUNGS

FOR ABSOLUTE LEVEL ADD 60 dB

THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

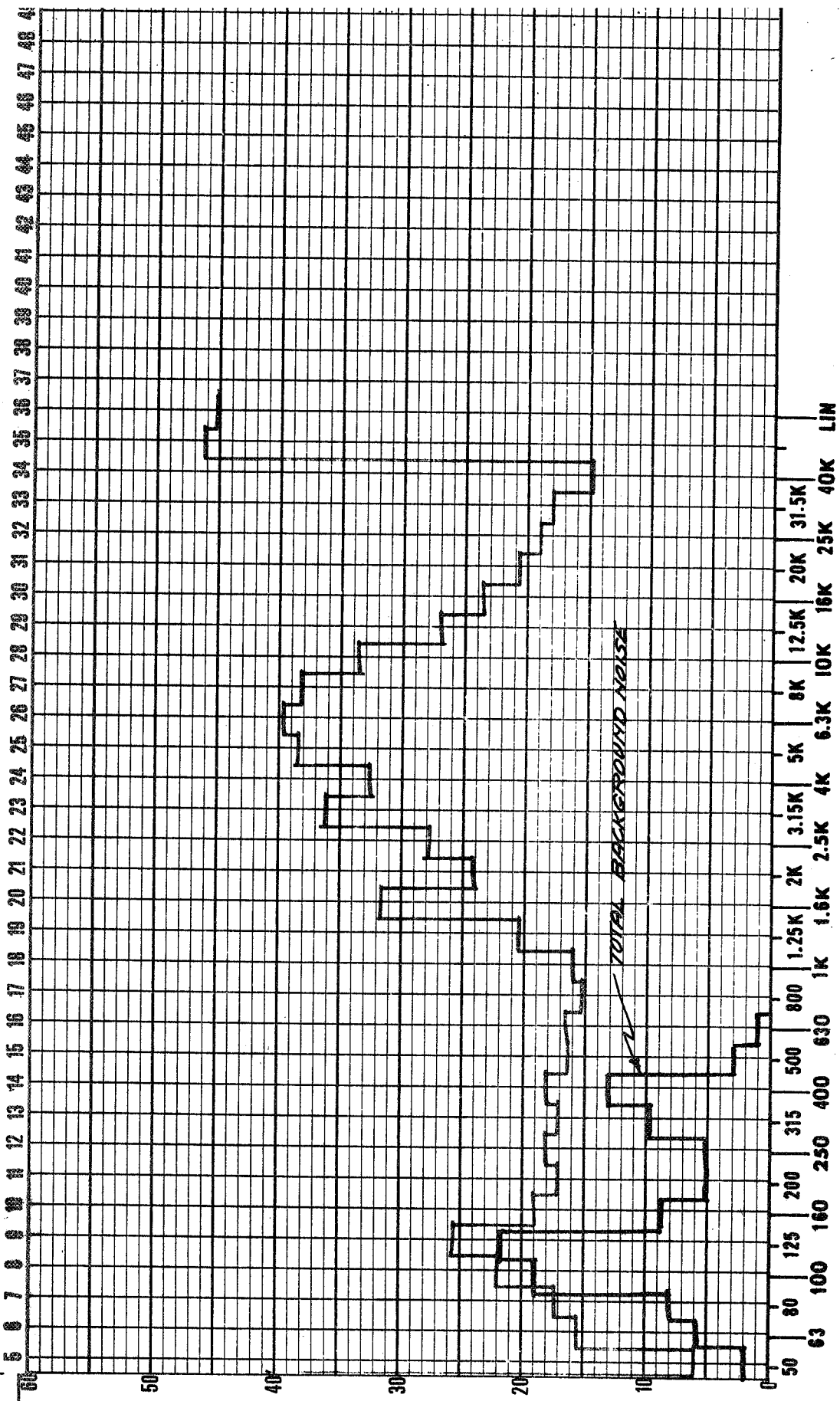
- 1/8
 - 1/4
 - 1/2
 - 1
 - 2
 - 8
 - 16
 - 32
- RELATIVE LEVEL IN dB

I.O. NO.

RANGE 1

266

FOR
ABSOLUTE
LEVEL
ADD
70
dB



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton
Standard

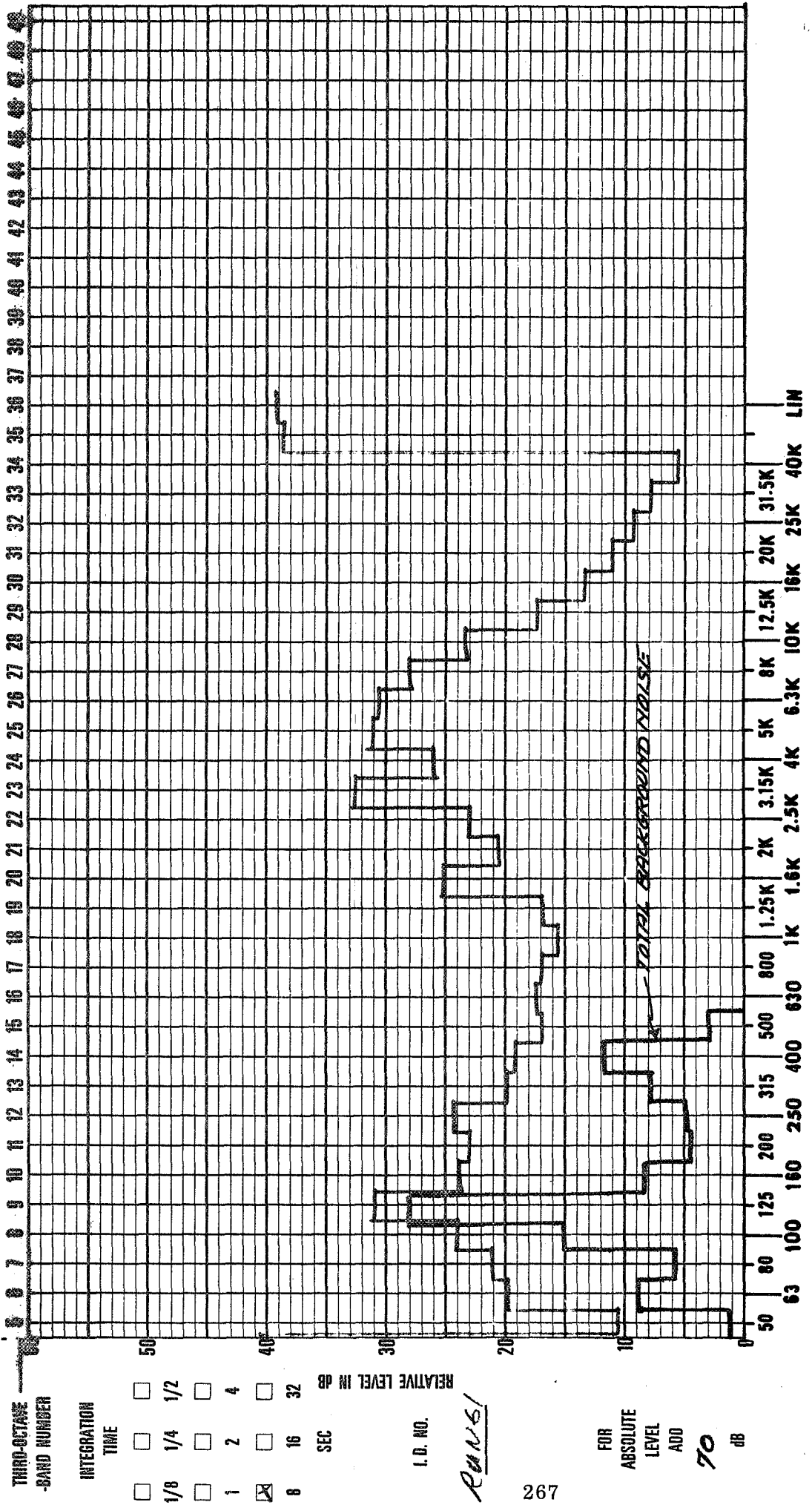
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THIRD-OCTAVE-BAND
ANALYSIS

SHROUD COMPROMISE
 BLADE ANGLE 40°
 TIP SPEED 700 FT/SEC
 MICROPHONE LOCATION 10' 135°

Figure 63FPROP-FAN MODEL NOISE

SHROUD COMPROMISE
BLADE ANGLE 40°
TIP SPEED 700 FT/SEC
MICROPHONE LOCATION 10' 157 1/2"



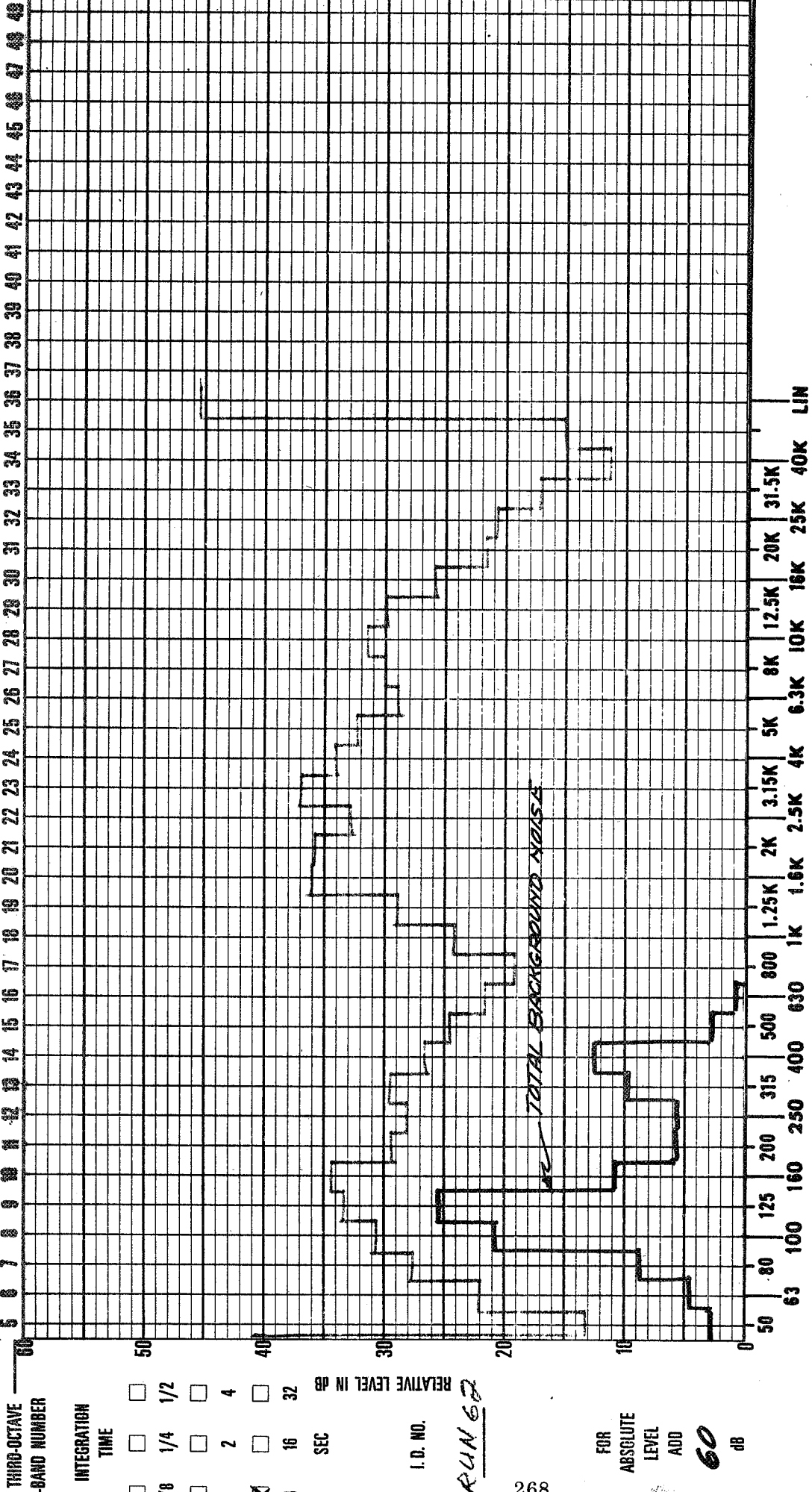
THIRD-OCTAVE-BAND CENTER FREQUENCY IN Hz

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

Figure 44F PROP-FAN MODEL NOISE



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

SEC

I. D. NO.

RUN 67

FOR
ABSOLUTE
LEVEL
ADD
60
dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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ANALYSIS

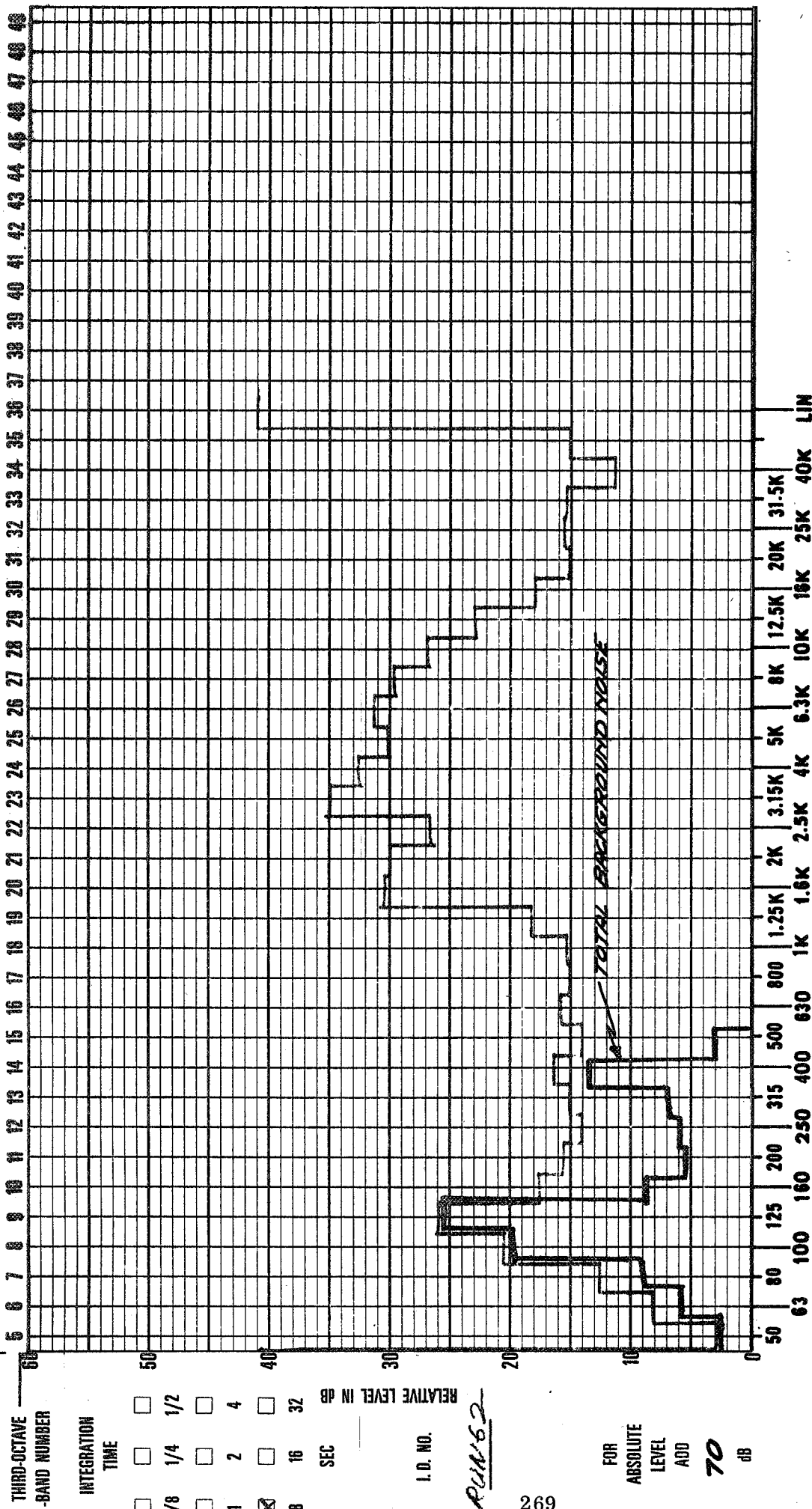
SHROUD COMPROMISE

BLADE ANGLE 40°

TIP SPEED 800 FT/SEC.

MICROPHONE LOCATION 1' 90° ON GROUND

Figure 65FPROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND NUMBER: 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49

INTEGRATION TIME

1/8

1/4

1/2

1

2

4

8

16

32

SEC

I.D. NO.

RUN 62

FOR ABSOLUTE LEVEL ADD 70 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN Hz

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THIRD-OCTAVE-BAND ANALYSIS

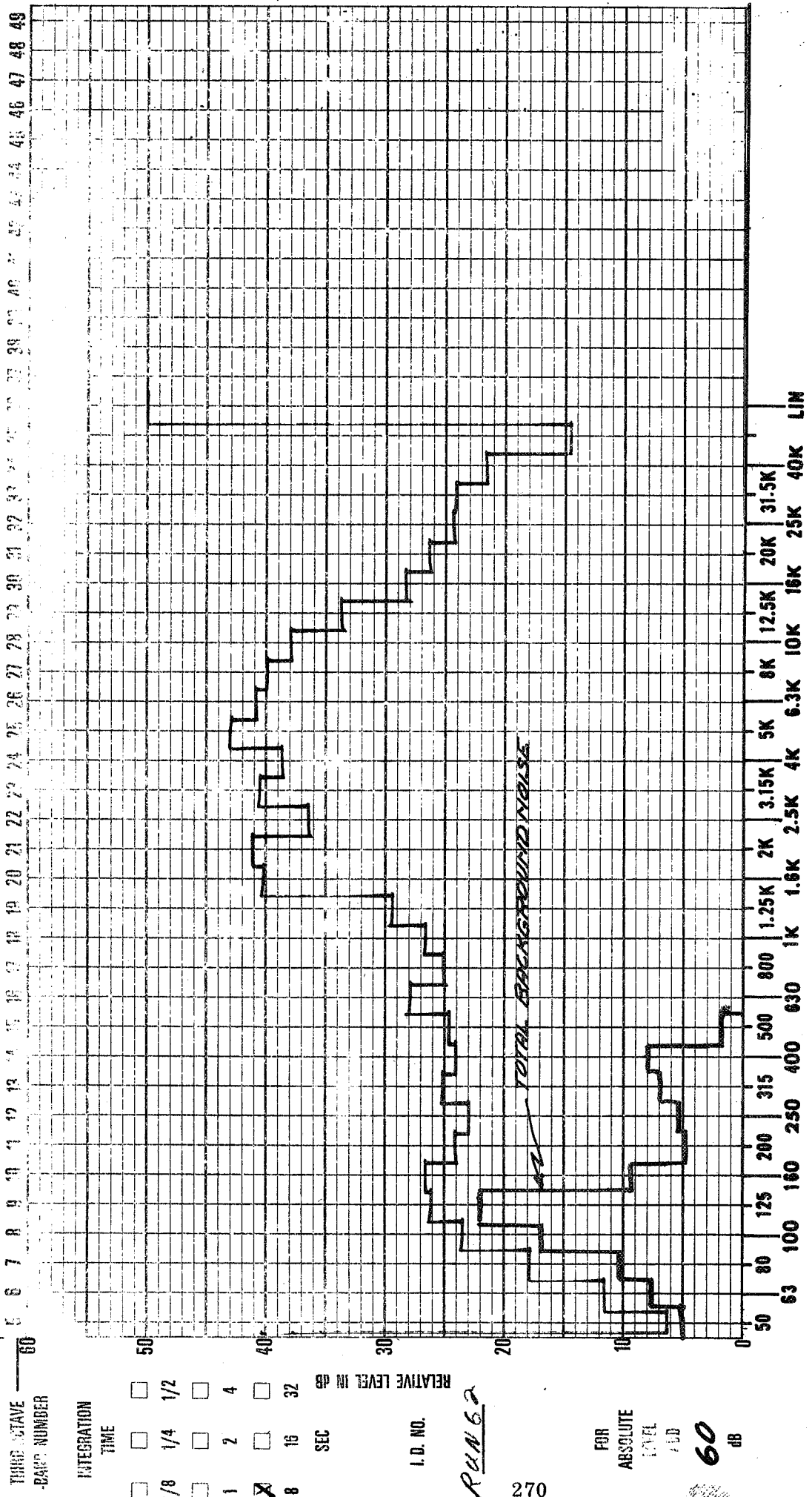
SHROUD COMPROMISE

BLADE ANGLE 40°

TIP SPEED 800 FT/SEC

MICROPHONE LOCATION 10' 22 1/2°

Figure 66F PROP-FAN MODEL NOISE



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

- 1/8
 - 1/4
 - 1/2
 - 1
 - 2
 - 4
 - 8
 - 16
 - 32
- SEC

RELATIVE LEVEL IN DB

I.D. NO.

RUN 62

270

FOR
ABSOLUTE
LEVEL
ADD
60
dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

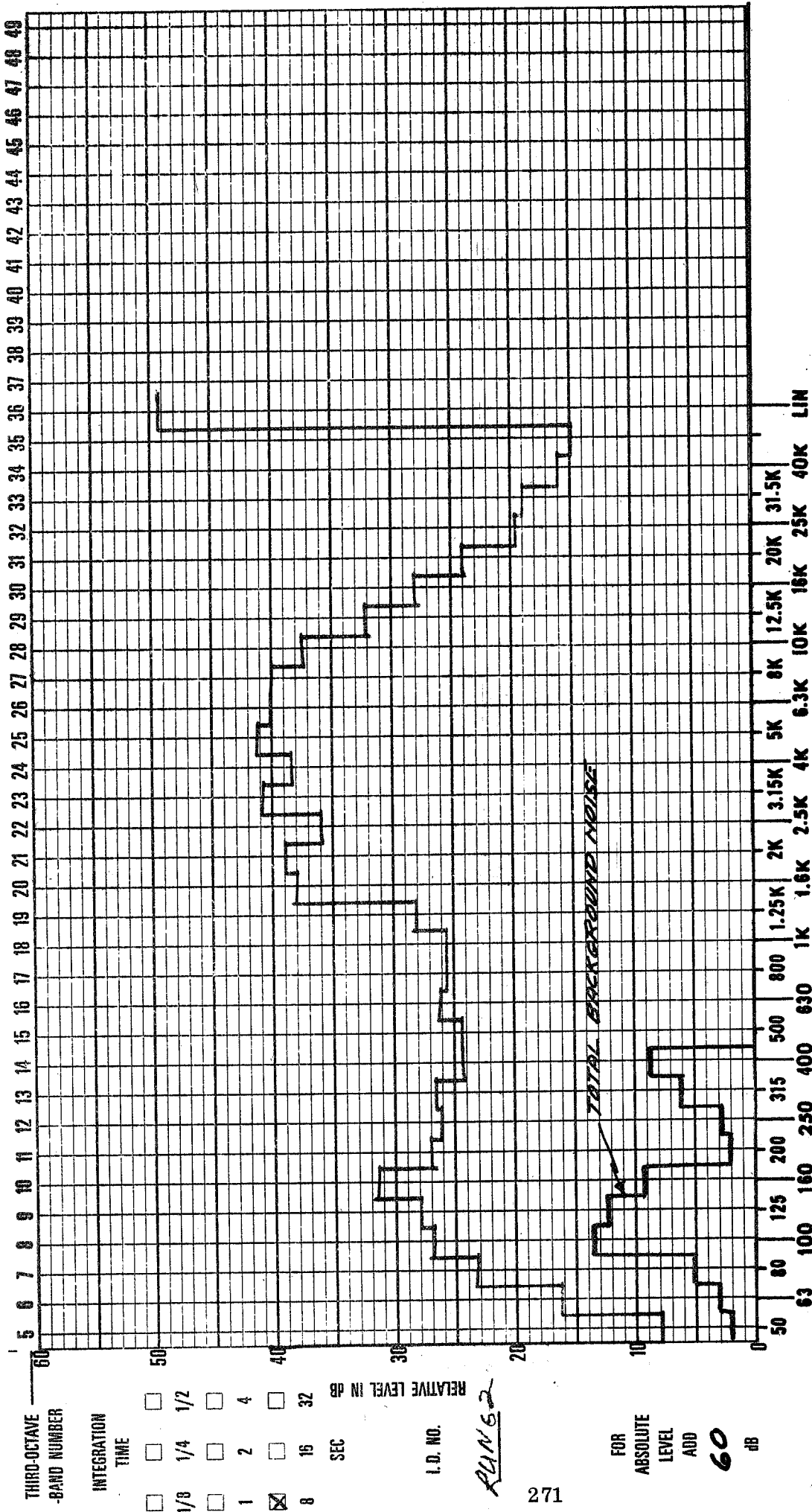
Hamilton
Standard



THIRD-OCTAVE-BAND
ANALYSIS

SHROUD COMPROMISE
BLADE ANGLE 90°
TIP SPEED 800 FT/SEC
MICROPHONE LOCATION 10' 45°

Figure 67F PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD COMPROMISE
 BLADE ANGLE 40°
 TIP SPEED 800 FT/SEC
 MICROPHONE LOCATION 10' 67 1/2°

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THIRD-OCTAVE-BAND ANALYSIS

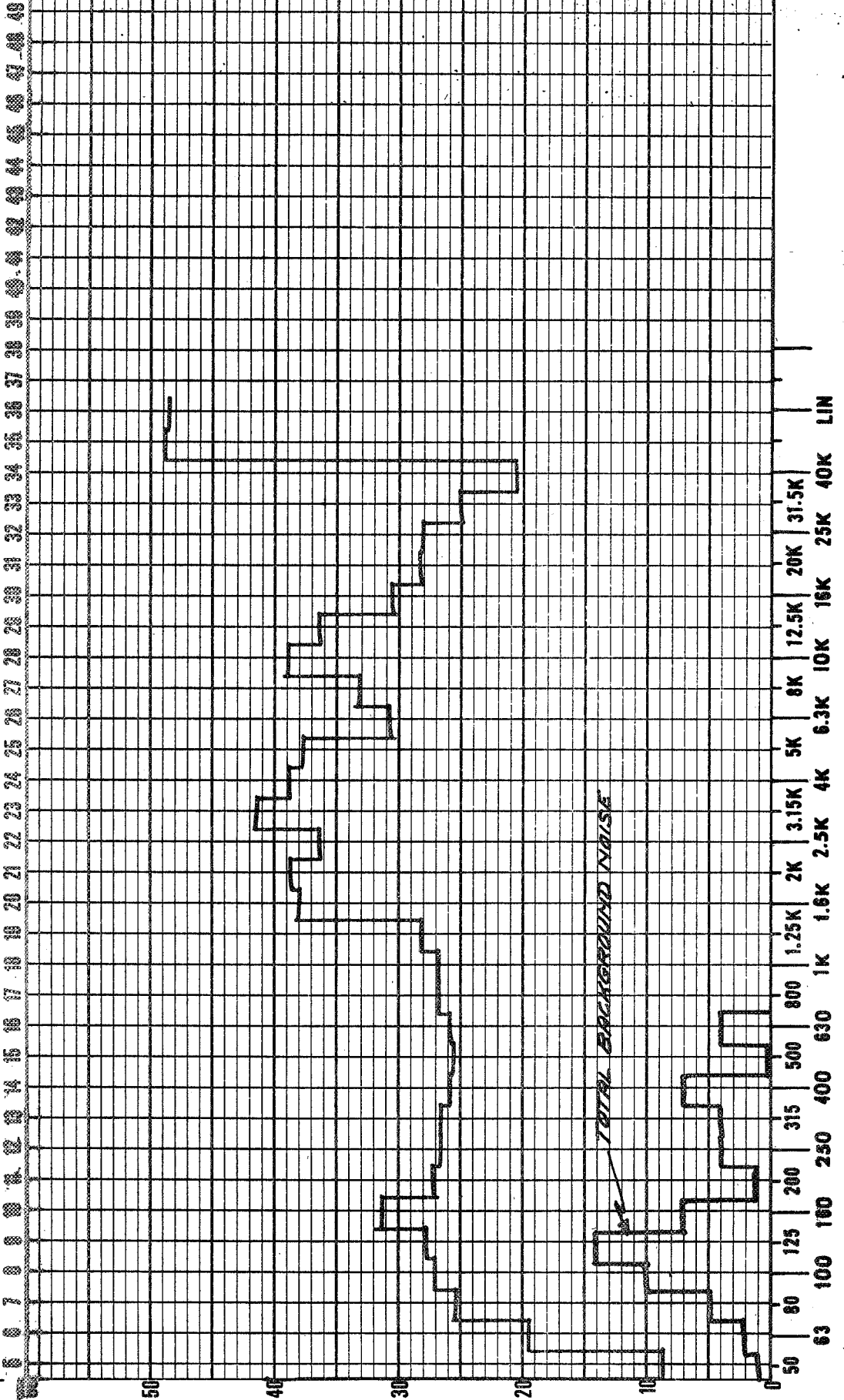
Figure 68F-PROP-FAN MODEL NOISE

- 1/8
 - 1/4
 - 1/2
 - 1
 - 2
 - 4
 - 8
 - 15
 - 32
- SEC

I.D. NO.

RUN 62

FOR ABSOLUTE LEVEL ADD 60 dB



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

RELATIVE LEVEL IN DB

I.D. NO.

FOR
ABSOLUTE
LEVEL
ADD

60
dB

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

62
K-5

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

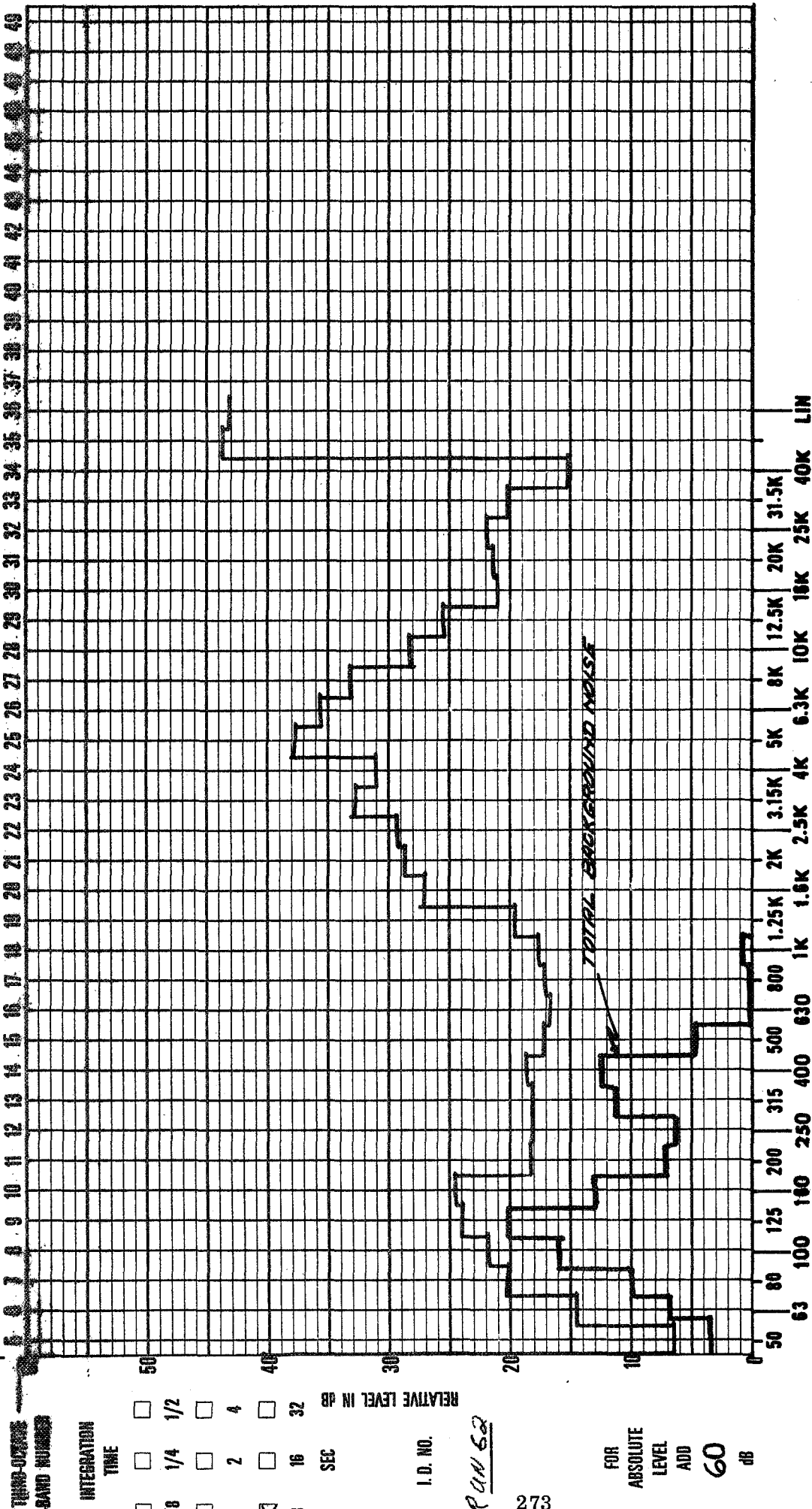
SHROUD COMPROMISE
 BLADE ANGLE 40°
 TIP SPEED 800 FT/SEC
 MICROPHONE LOCATION 10' 90°

Hamilton Standard

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THIRD-OCTAVE-BAND ANALYSIS

Figure 69F PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD COMPROMISE
 BLADE ANGLE 40°
 TIP SPEED 800 FT/SEC
 MICROPHONE LOCATION 10' 112 1/2°

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THIRD-OCTAVE-BAND
 ANALYSIS

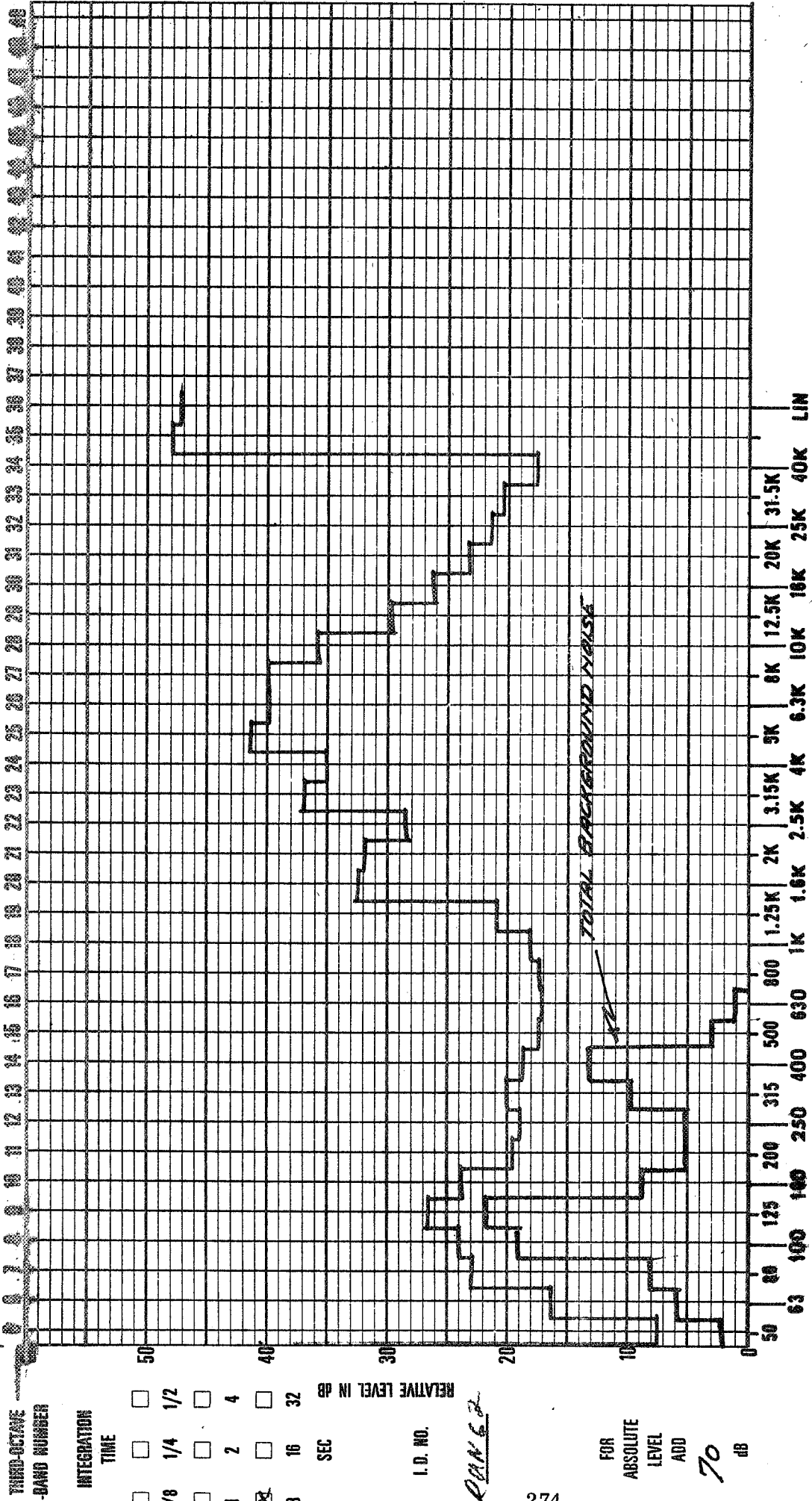
Figure 70F PROP-FAN MODEL NOISE

- THIRD-OCTAVE BAND NUMBER
- INTEGRATION TIME
- 1/8
 - 1/4
 - 1/2
 - 1
 - 2
 - 4
 - 8
 - 16
 - 32
- SEC

I. D. NO.

RAW 52

FOR ABSOLUTE LEVEL ADD 60 dB



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

RELATIVE LEVEL IN DB

I.D. NO.

RANGE 2

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

FOR ABSOLUTE LEVEL ADD 70 dB

THIRD-OCTAVE BAND CENTER FREQUENCY IN HZ

SHROUD COMPROMISE

BLADE ANGLE 40

TIP SPEED 800 FT/SEC

MICROPHONE LOCATION 10' 135°

Hamilton Standard

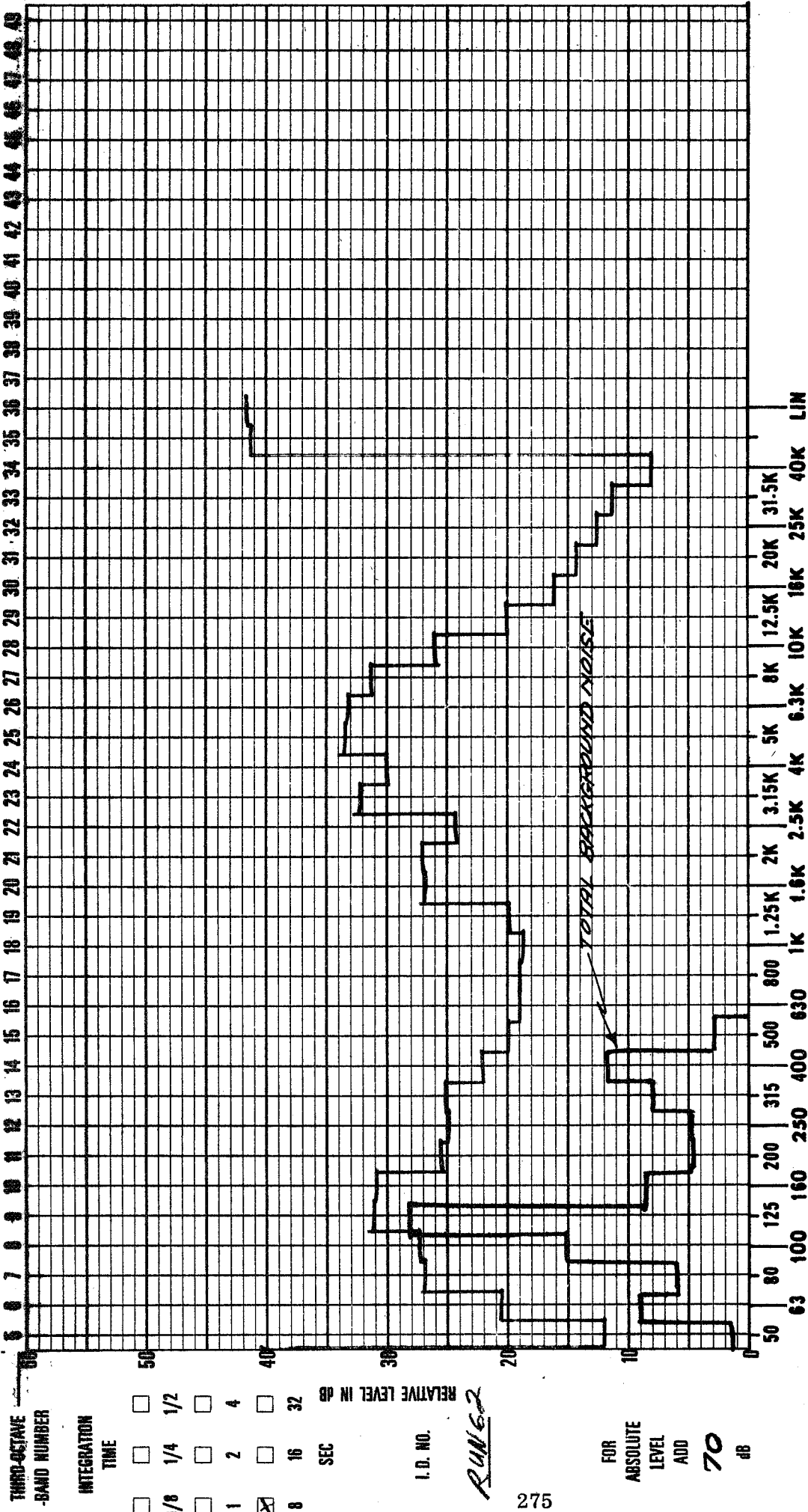
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THIRD-OCTAVE-BAND ANALYSIS

Figure 7/F PROP-FAN MODEL NOISE

SHROUD COMPROMISE
BLADE ANGLE 40°
TIP SPEED 800 FT/SEC
MICROPHONE LOCATION 10' 157 1/2°



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard

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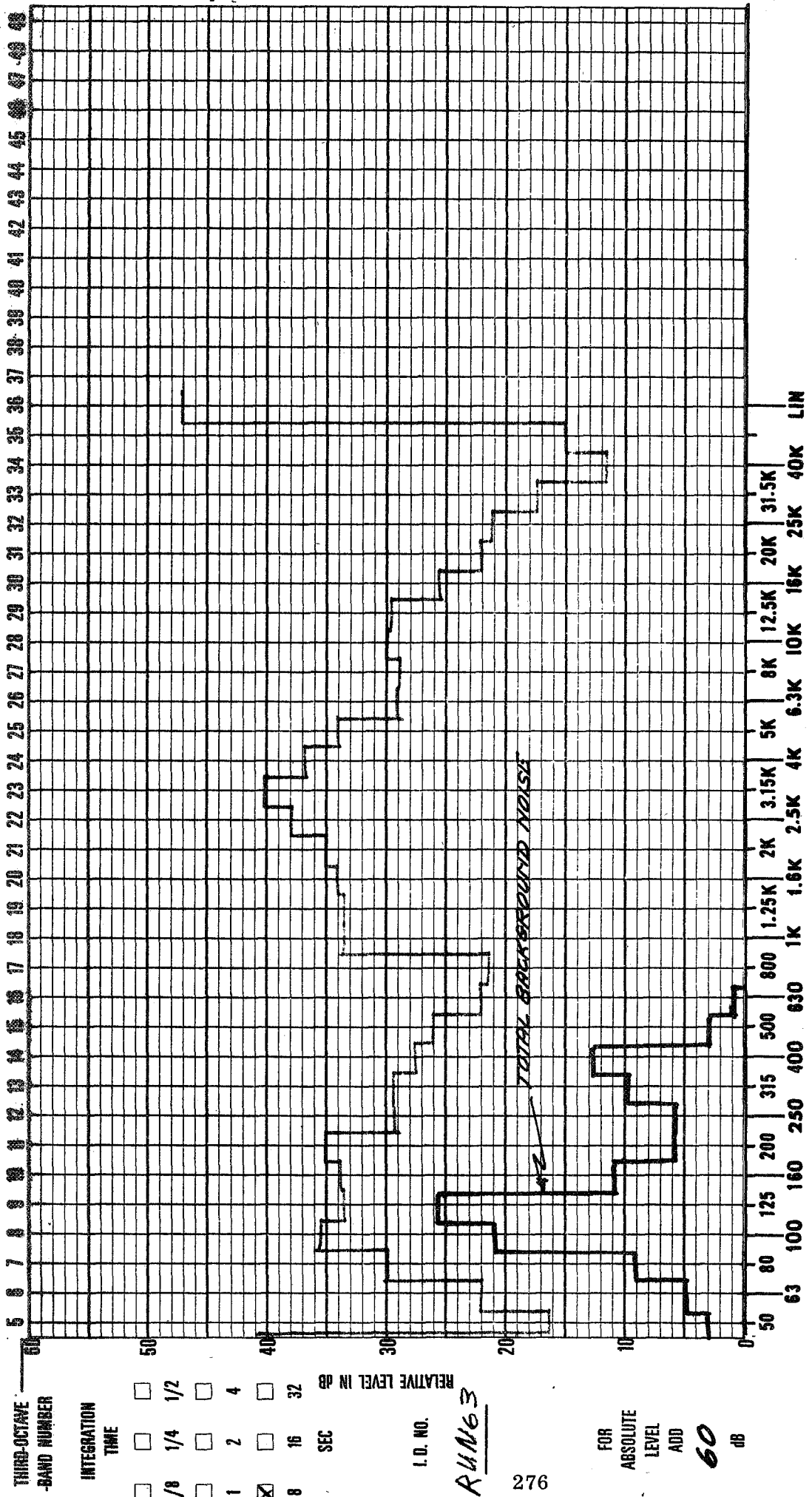
THIRD-OCTAVE-BAND ANALYSIS

Figure 72F PROP-FAN MODEL NOISE

THIRD-OCTAVE BAND NUMBER
INTEGRATION TIME
 1/8
 1/4
 1/2
 2
 4
 8
 16
 32
SEC

I.D. NO. RUN 62

FOR ABSOLUTE LEVEL ADD 70 dB



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

- 1/8
 - 1/4
 - 1/2
 - 1
 - 2
 - 4
 - 8
 - 16
 - 32
- SEC

I.D. NO.

RUN 63

FOR
ABSOLUTE
LEVEL
ADD
60
dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton
Standard

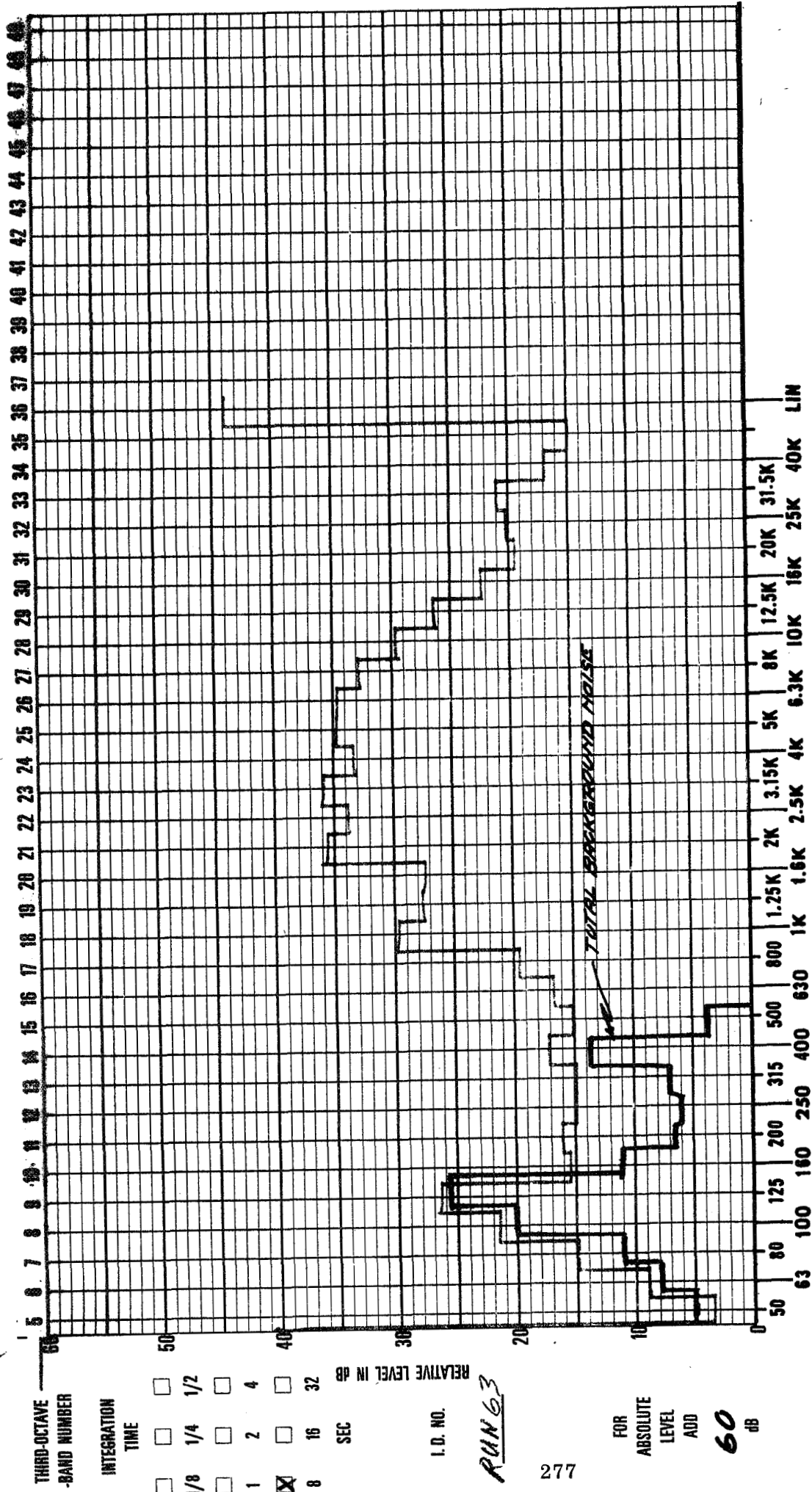
U
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DIVISION OF UNITED AIRCRAFT CORP

THIRD-OCTAVE-BAND
ANALYSIS

SHROUD COMPROMISE
BLADE ANGLE 45°
TIP SPEED 500 FT/SEC

MICROPHONE 13 1/2'
LOCATION 90° ON GROUND

Figure 73 PROP-FAN MODEL NOISE



SHROUD COMPROMISE
 BLADE ANGLE 45°
 TIP SPEED 500 FT/SEC
 MICROPHONE LOCATION 10' 22 1/2°

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton
Standard

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THIRD-OCTAVE-BAND
ANALYSIS

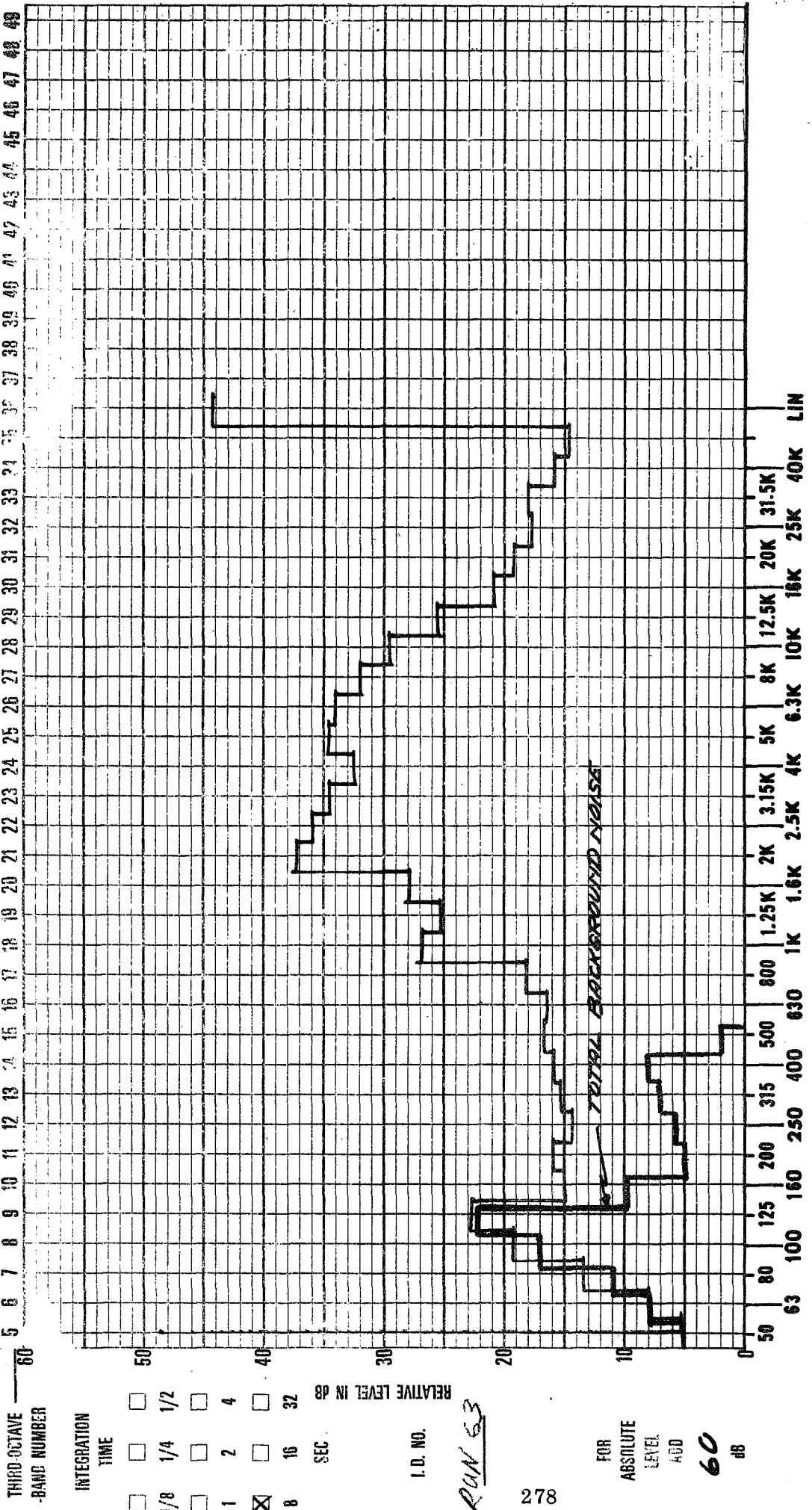
Figure 74F PROP-FAN MODEL NOISE

THIRD-OCTAVE -BAND NUMBER
 INTEGRATION TIME
 1/8
 1/4
 1/2
 2
 4
 8
 16
 32
 SEC

I.D. NO.
RUN 63

277

FOR ABSOLUTE LEVEL ADD
60 dB



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

- 1/8
 - 1/4
 - 1/2
 - 1
 - 2
 - 4
 - 8
 - 16
 - 32
- SEC

I.D. NO.

RUN 53

278

FOR
ABSOLUTE
LEVEL
ADD
60
dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton
Standard

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THIRD-OCTAVE-BAND
ANALYSIS

SHROUD COMPROMISE
BLADE ANGLE 45°
TIP SPEED 500 FT/SEC
MICROPHONE 10' 45°
LOCATION

Figure 75F PROP-FAN MODEL NOISE

SHROUD COMPROMISE
BLADE ANGLE 45°
TIP SPEED 500 FT/SEC
MICROPHONE LOCATION 10' 67 1/2"

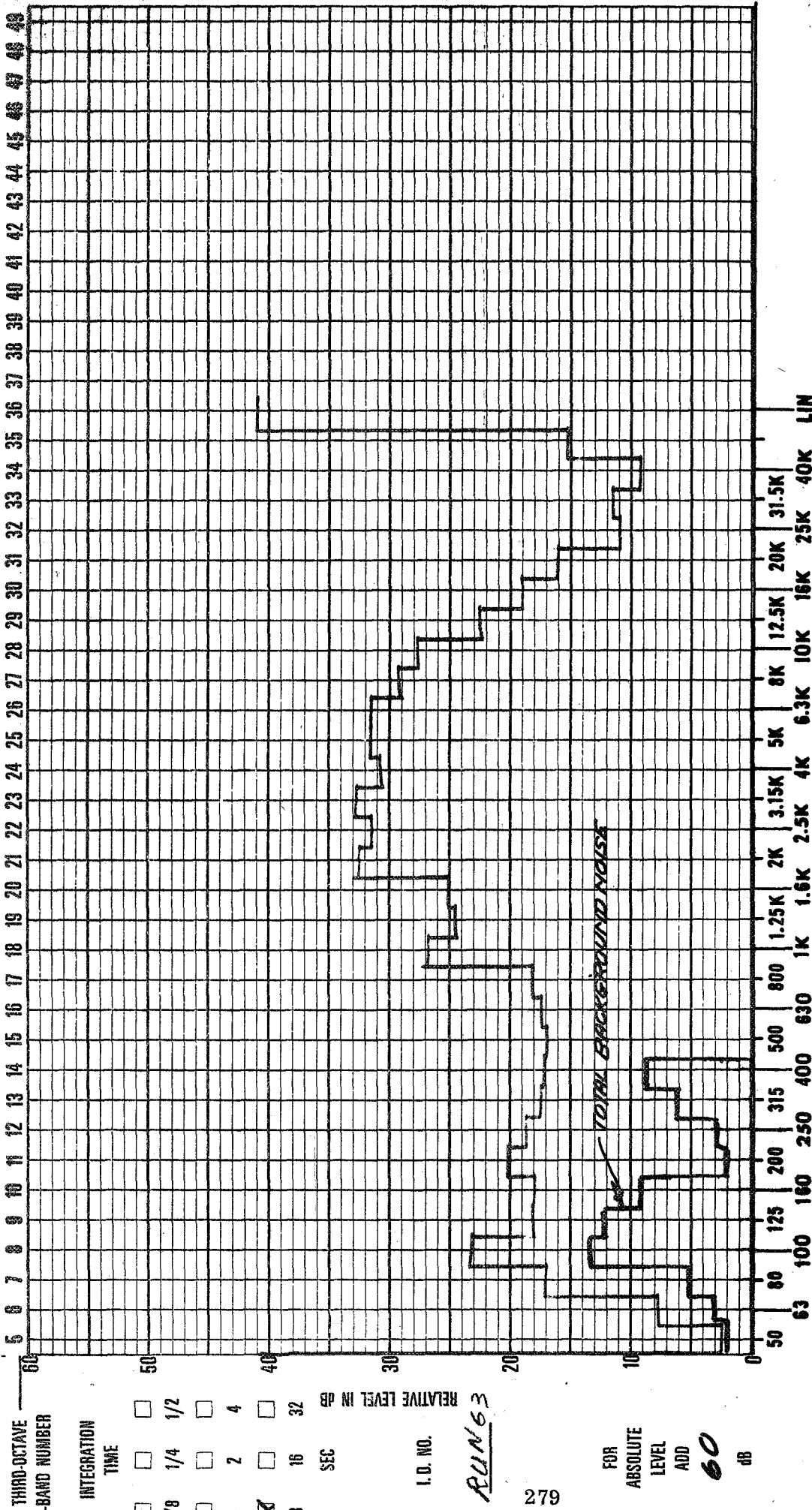
THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard

DIVISION OF UNITED AIRCRAFT CORP
A*

THIRD-OCTAVE-BAND ANALYSIS

Figure 76F PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

1/8 1/4 1/2 4 32

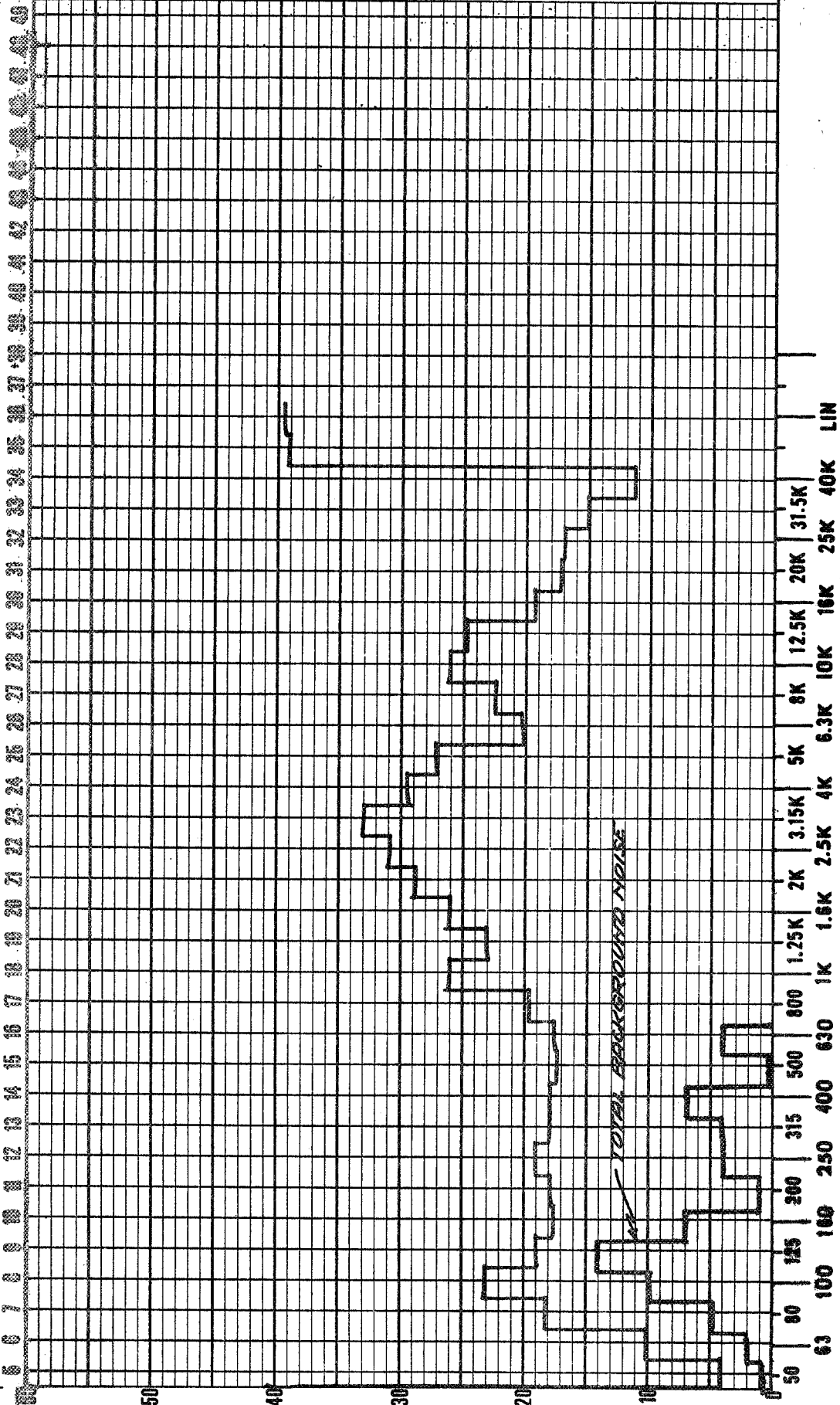
1 2 8 16 32

RELATIVE LEVEL IN DB

I.D. NO.

RUN 63

FOR ABSOLUTE LEVEL ADD 60 dB



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

- 1/8
- 1/4
- 1
- 8
- 16
- 32
- 4
- 40

I.D. NO.
63
A-5

FOR
ABSOLUTE
LEVEL
ADD
60
dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton
Standard

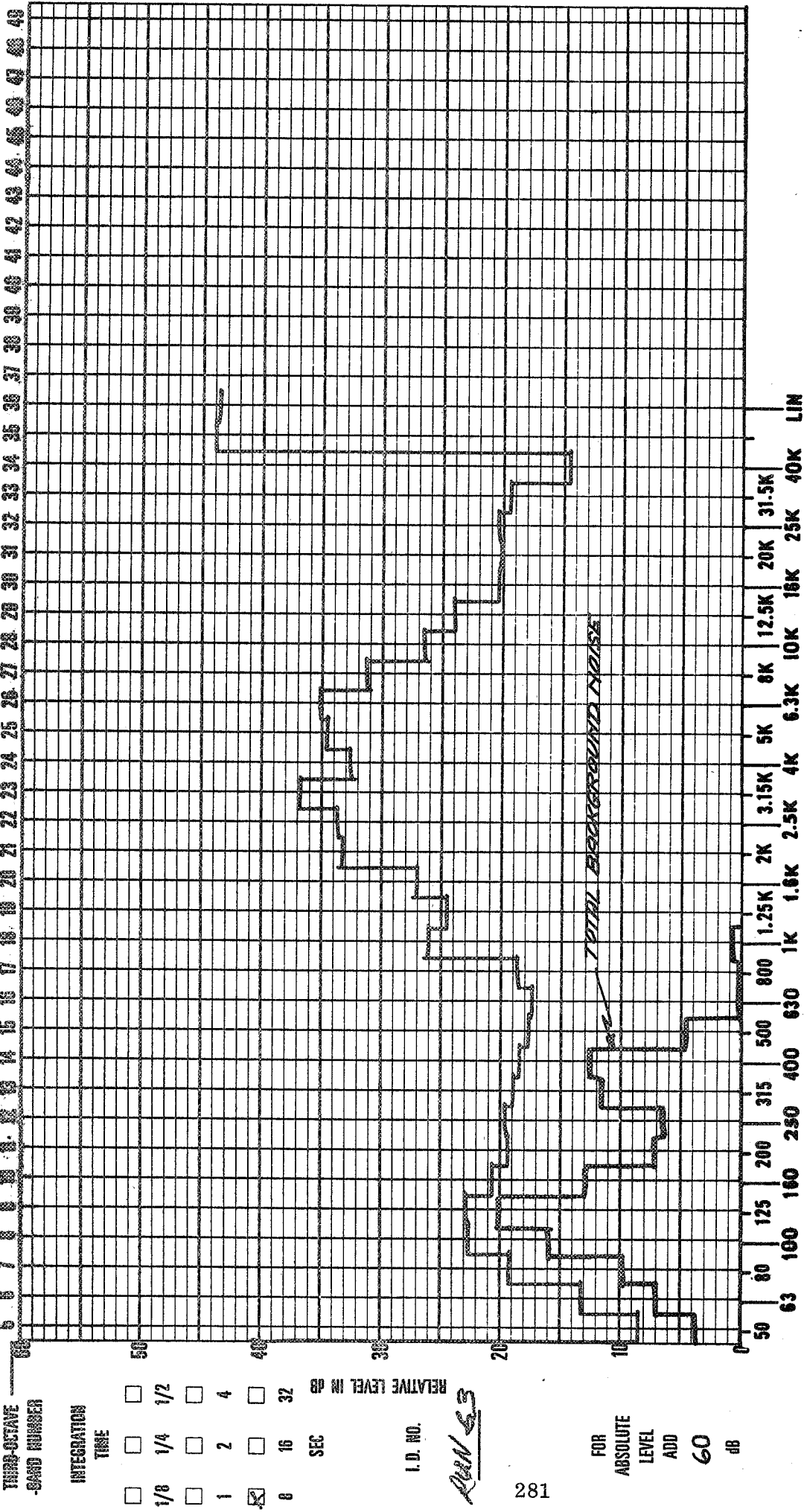
U
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THIRD-OCTAVE-BAND
ANALYSIS

SHROUD COMPROMISE
BLADE ANGLE 45°
TIP SPEED 500 FT/SEC
MICROPHONE
LOCATION 10' 90°

Figure 77F PROP-FAN MODEL NOISE

SHROUD COMPROMISE
BLADE ANGLE 45°
TIP SPEED 500 FT/SEC
MICROPHONE LOCATION 10' 112 1/2°



THIRD-OCTAVE BAND NUMBER: 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49

INTEGRATION TIME: 1/8 1/4 1/2 1 2 4 8 16 32

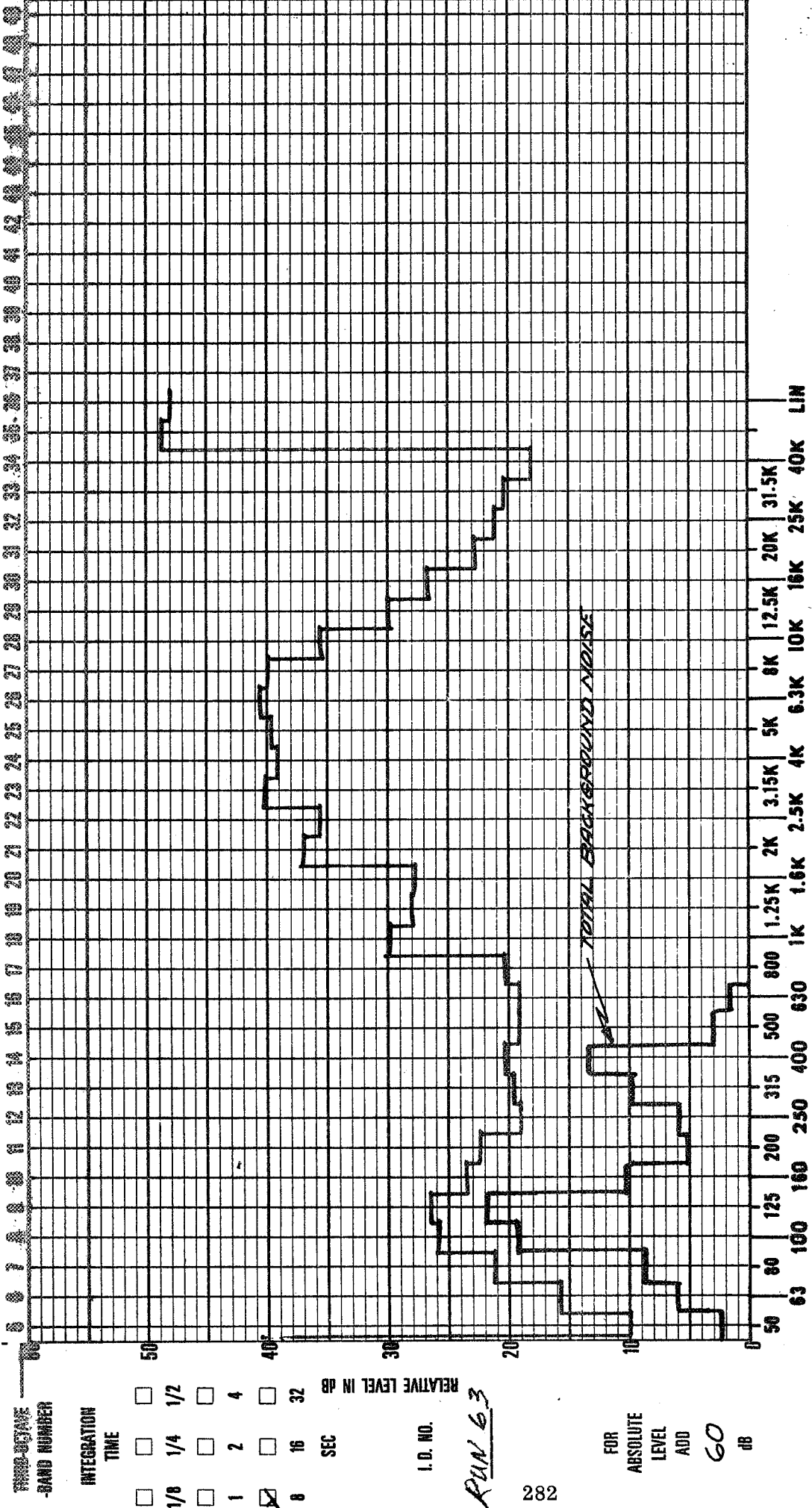
FOR ABSOLUTE LEVEL ADD: 60 dB

I.D. NO. Run 53

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND ANALYSIS

Figure 78- PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD COMPROMISE
 BLADE ANGLE 45
 TIP SPEED 500 FT/SEC
 MICROPHONE LOCATION 10' 125°

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

Figure 79F PROP-FAN MODEL NOISE

THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

- 1/8
- 1/4
- 1
- 2
- 4
- 8
- 16
- 32

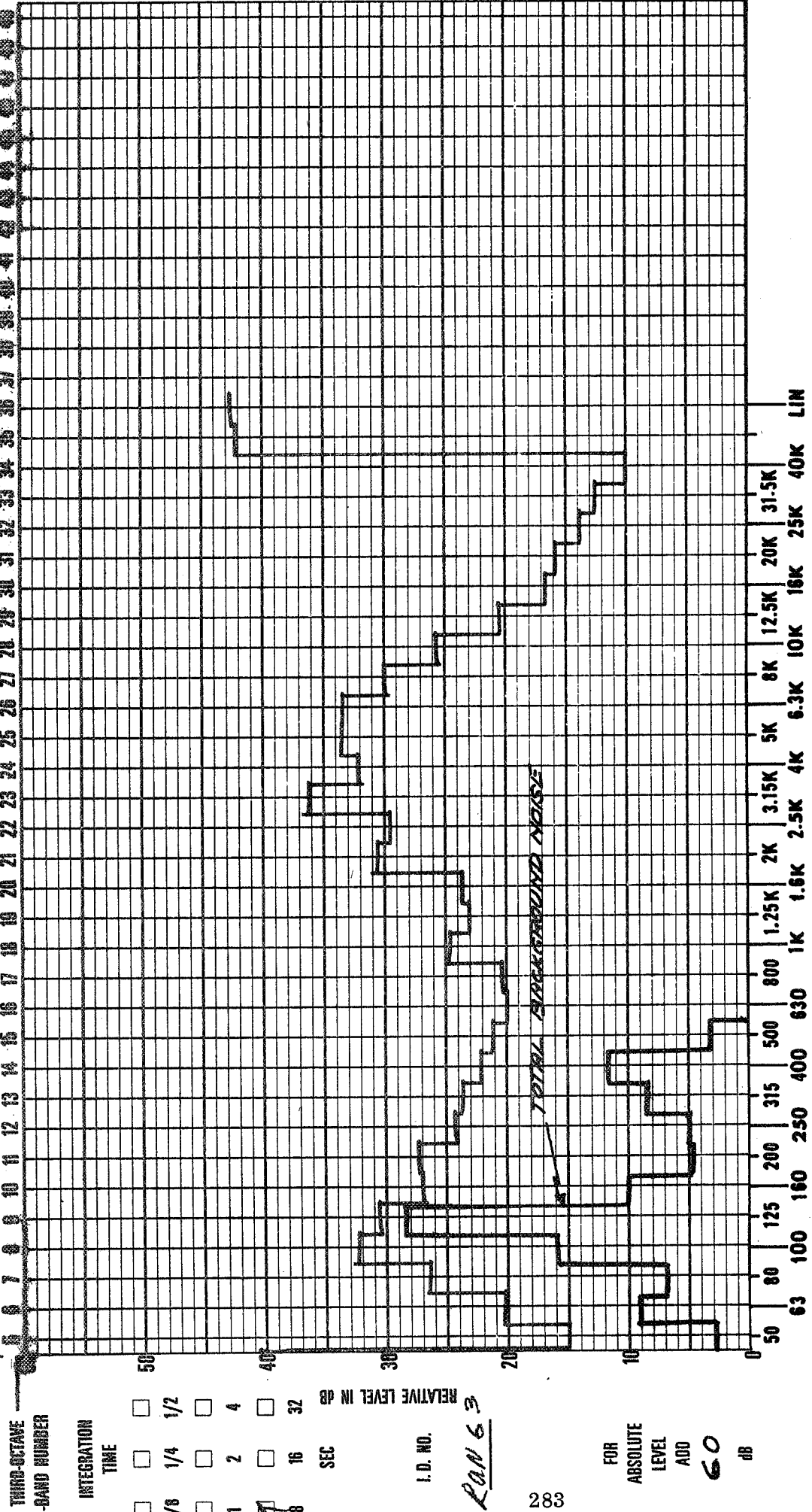
RELATIVE LEVEL IN DB

I. D. NO.

RUN 63

FOR ABSOLUTE LEVEL ADD 60 dB

SHROUD COMPROMISE
BLADE ANGLE 48°
TIP SPEED 500 FT/SEC.
MICROPHONE LOCATION 10' 157 1/2°



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND ANALYSIS

Figure 80F PROP-FAN MODEL NOISE

THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

1/8 1/4 1/2 1 2 4 8 16 32

SEC

RELATIVE LEVEL IN DB

I.D. NO. RAN 63

FOR ABSOLUTE LEVEL ADD 60 dB

THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

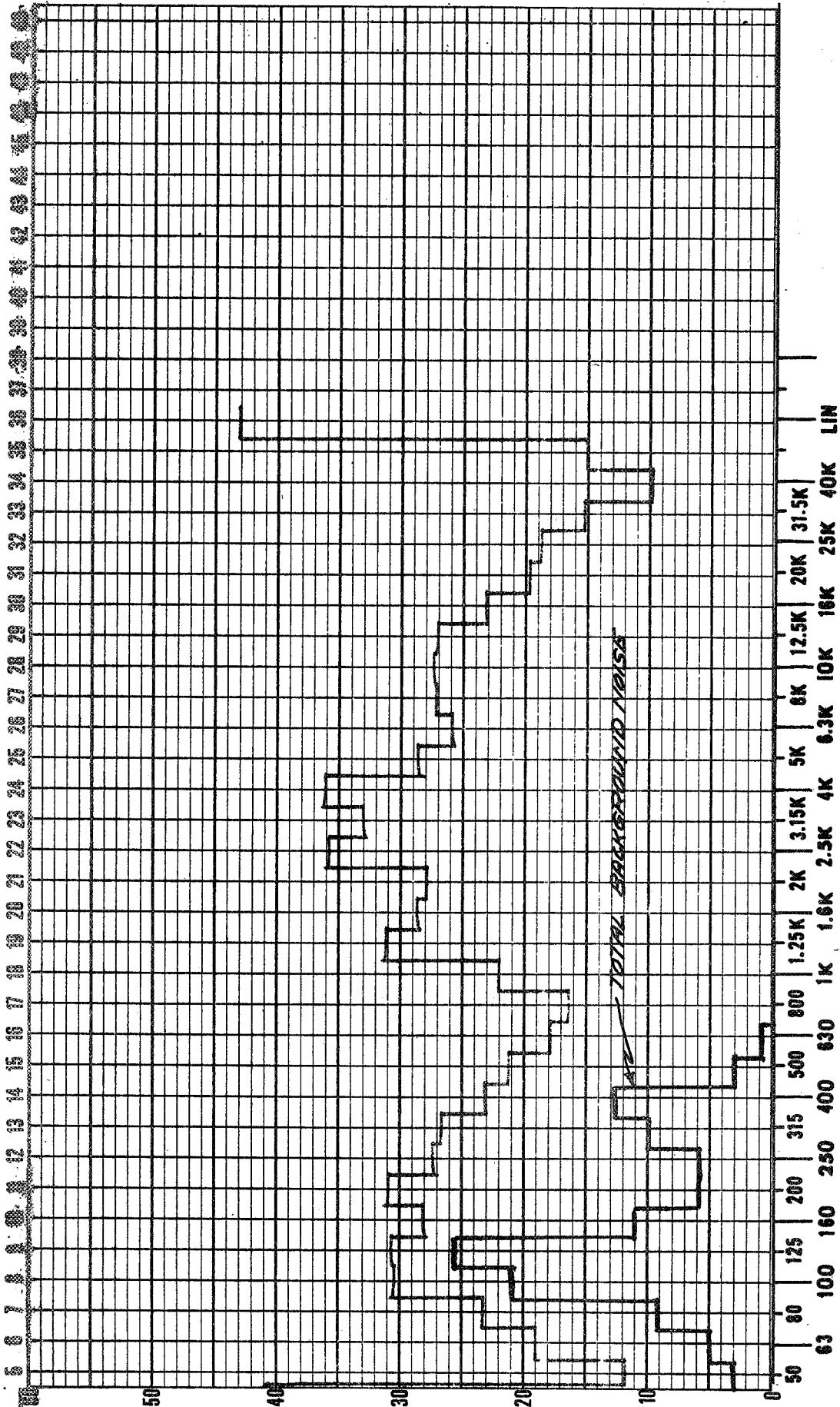
RELATIVE LEVEL IN DB

I. D. NO.

ACUN 64

284

FOR
ABSOLUTE
LEVEL
ADD
60
dB



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND
ANALYSIS

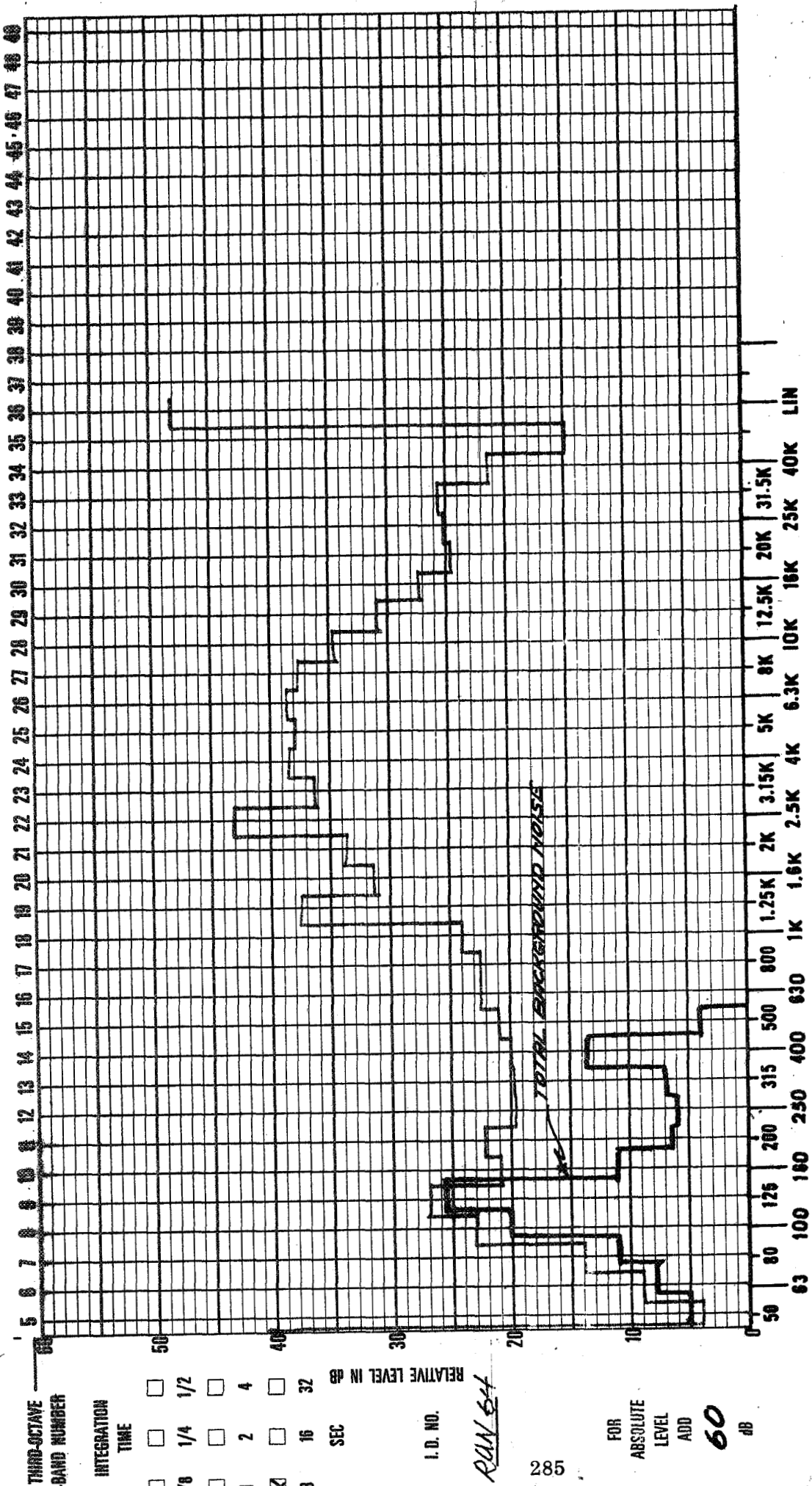
SHROUD COMPROMISE

BLADE ANGLE 45°

TIP SPEED 600 FT/SEC

MICROPHONE
LOCATION 13 1/2' 90° ON GROUND

Figure 8/F PROP-FAN MODEL NOISE



SHROUD COMPROMISE
 BLADE ANGLE 45°
 TIP SPEED 600 FT/SEC
 MICROPHONE 10' 22 1/2"
 LOCATION

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND
 ANALYSIS

Figure 285 PROP-FAN MODEL NOISE

THIRD-OCTAVE
 BAND NUMBER

INTEGRATION
 TIME

1/8 1/4 1/2 4 32

8

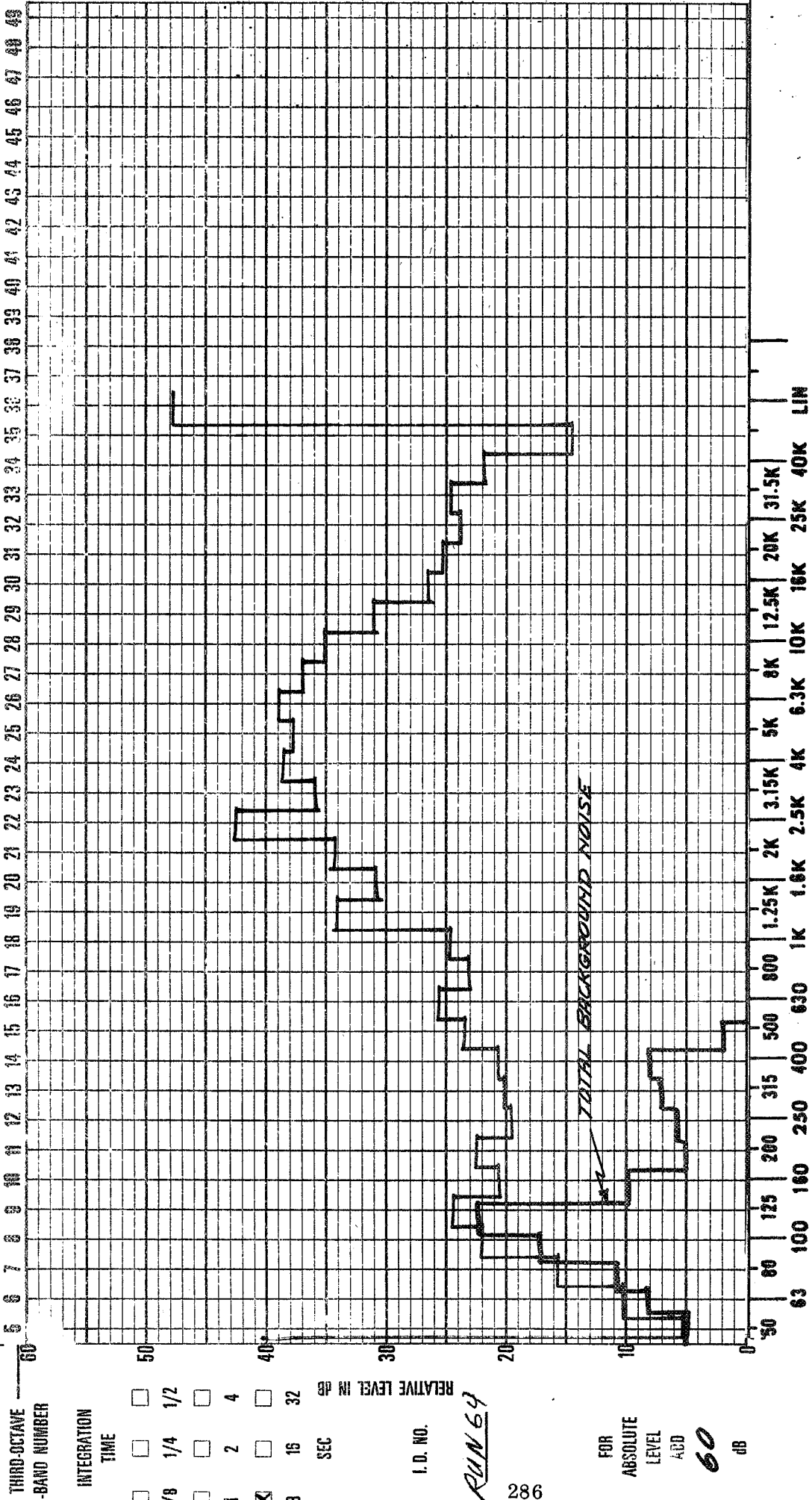
SEC

RELATIVE LEVEL IN dB

I. D. NO.

RUN 544

FOR
 ABSOLUTE
 LEVEL
 ADD
60
 dB



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

- 1/8
 - 1/4
 - 1/2
 - 1
 - 2
 - 4
 - 8
 - 16
 - 32
- SEC

I. D. NO.

RUN 64

286

FOR
ABSOLUTE
LEVEL
ADD
60
dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

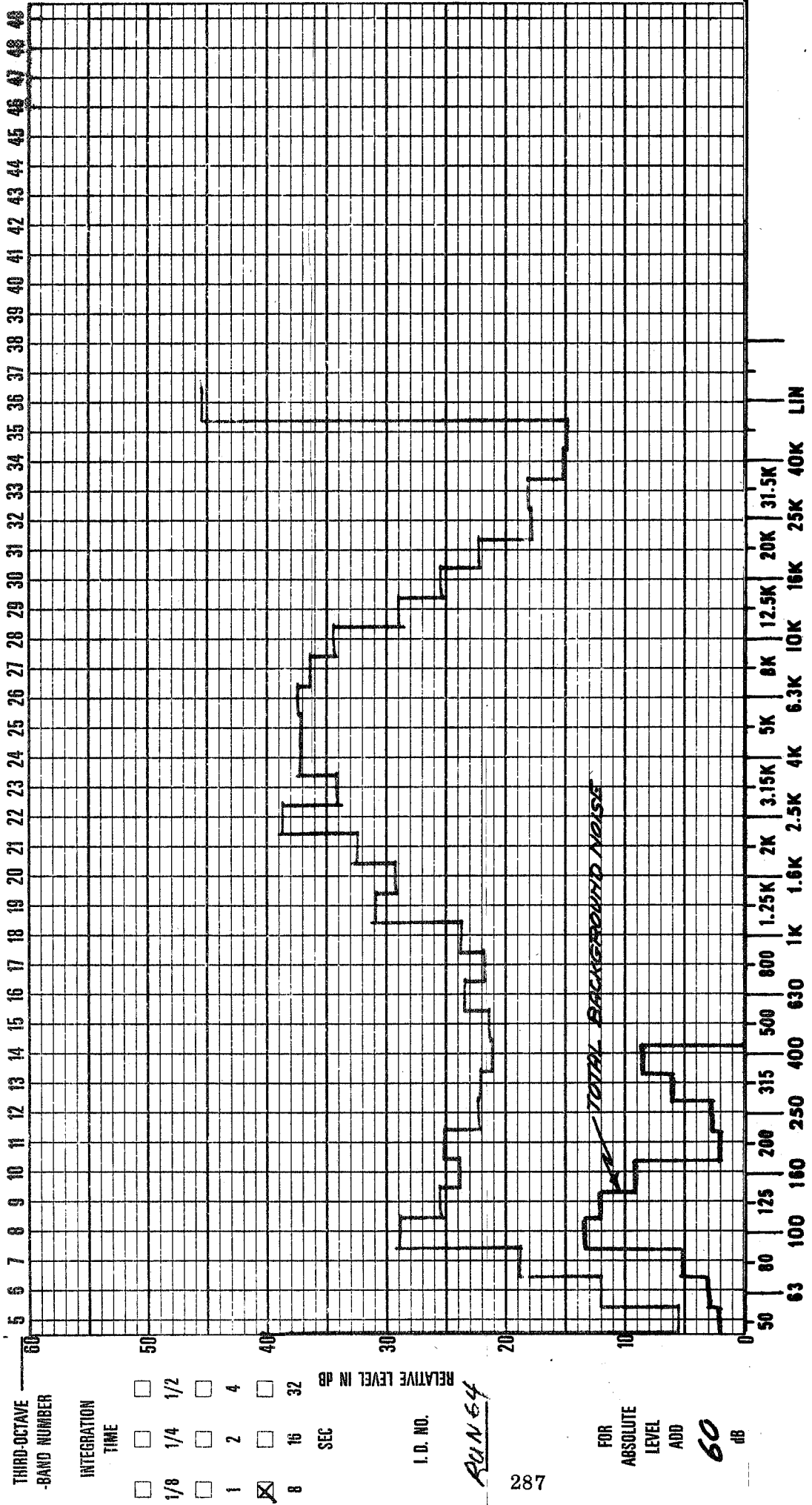
Hamilton
Standard



THIRD-OCTAVE-BAND
ANALYSIS

SHROUD COMPROMISE
BLADE ANGLE 45°
TIP SPEED 600 FT/SEC
MICROPHONE 10' LOCATION 45°

Figure 83F PROP-FAN MODEL NOISE



SHROUD COMPROMISE
 BLADE ANGLE 45°
 TIP SPEED 600 FT/SEC
 MICROPHONE LOCATION 10' 67 1/2°

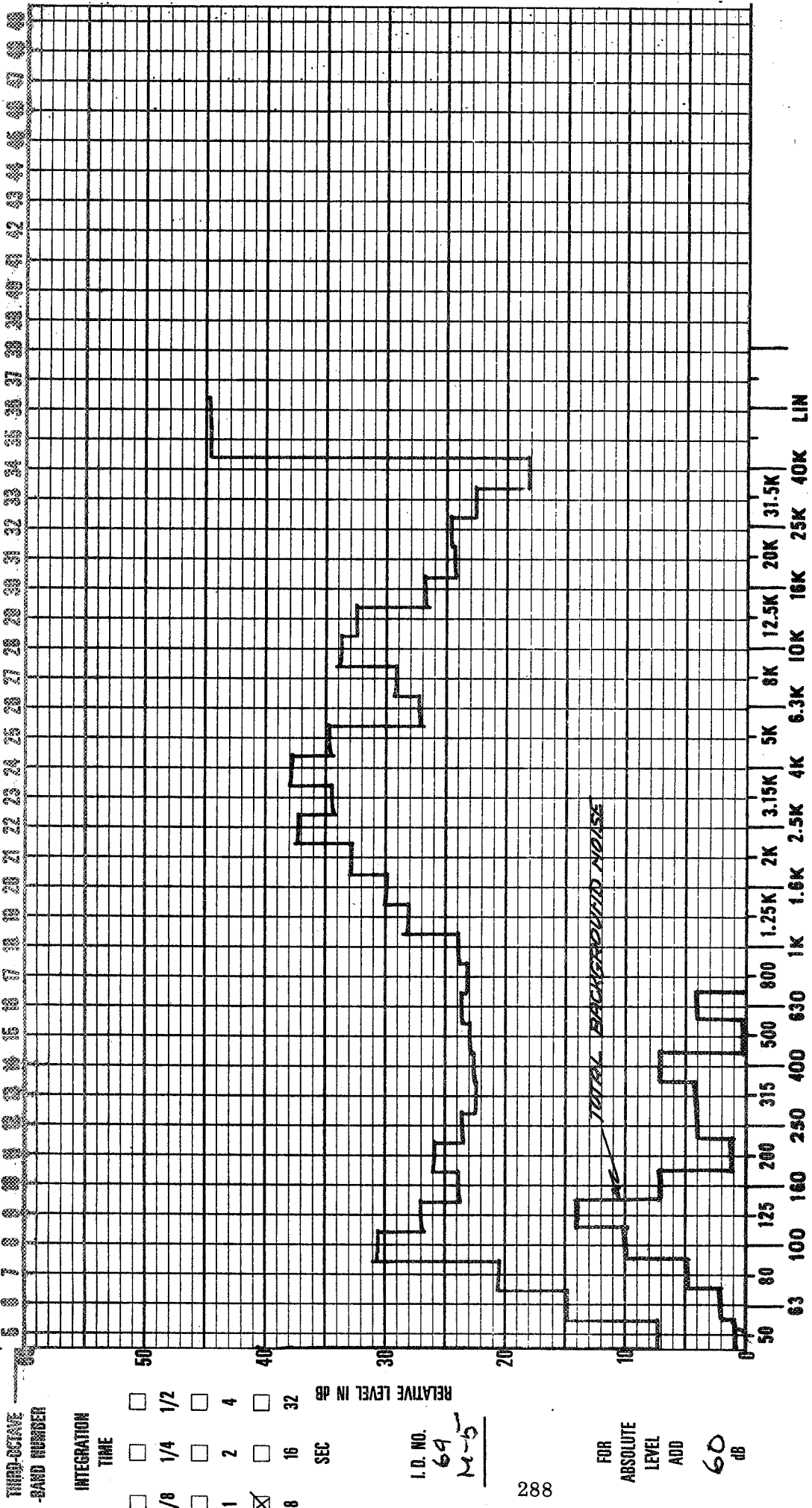
THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND ANALYSIS

Figure 84F PROP-FAN MODEL NOISE



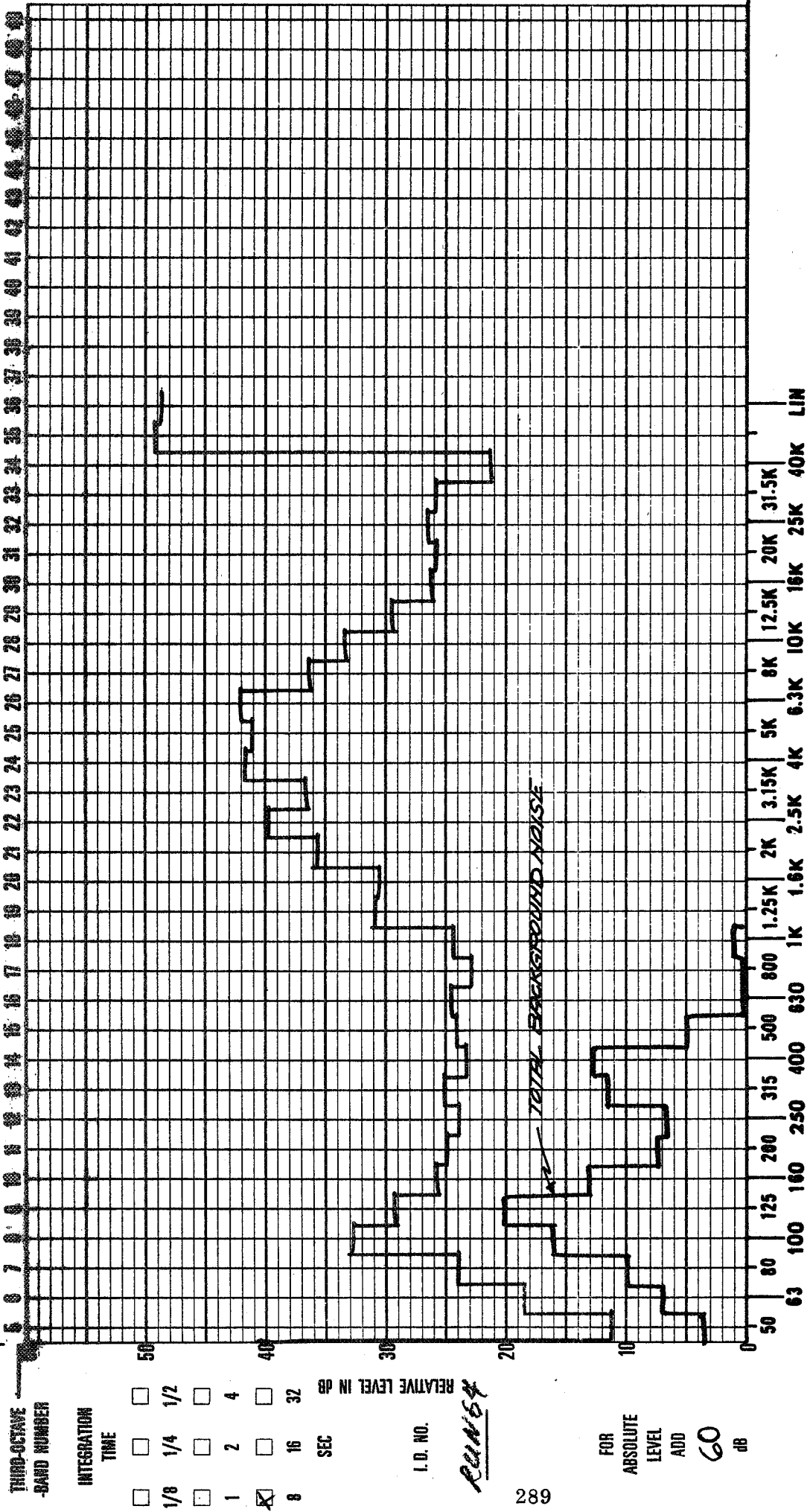
THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD COMPROMISE
 BLADE ANGLE 45°
 TIP SPEED 600 FT/SEC
 MICROPHONE LOCATION 10' 90°

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 THIRD-OCTAVE-BAND ANALYSIS

FIGURE 85F-PROP-FAN MODEL NOISE

THIRD-OCTAVE-BAND NUMBER: 1-50
 INTEGRATION TIME: 8 SEC
 RELATIVE LEVEL IN dB: 60 dB
 I.D. NO. 69
 NEW



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

SHROUD COMPROMISE
 BLADE ANGLE 45°
 TIP SPEED 600 FT/SEC
 MICROPHONE LOCATION 10' 11 1/2"

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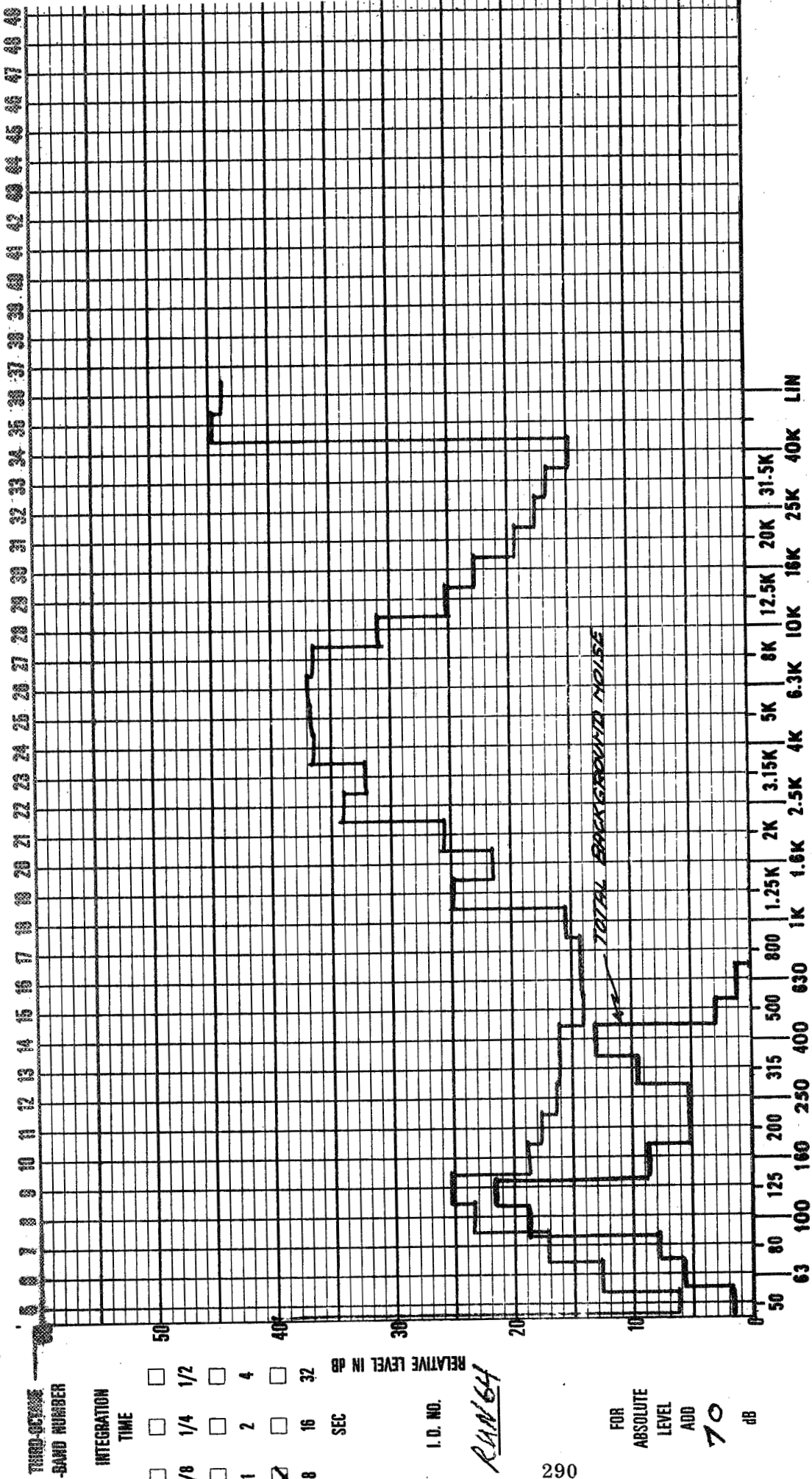
THIRD-OCTAVE-BAND ANALYSIS

Figure 86F PROP-FAN MODEL NOISE

- THIRD-OCTAVE-BAND NUMBER
- INTEGRATION TIME
- 1/8
 - 1/4
 - 1/2
 - 2
 - 4
 - 8
 - 16
 - 32
- SEC

I.D. NO.
RAMS4

FOR ABSOLUTE LEVEL ADD 60 dB



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32
- 40
- 50

RELATIVE LEVEL IN DB

I. D. NO.

RUN 64

FOR
ABSOLUTE
LEVEL
ADD
70
dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN Hz

Hamilton
Standard

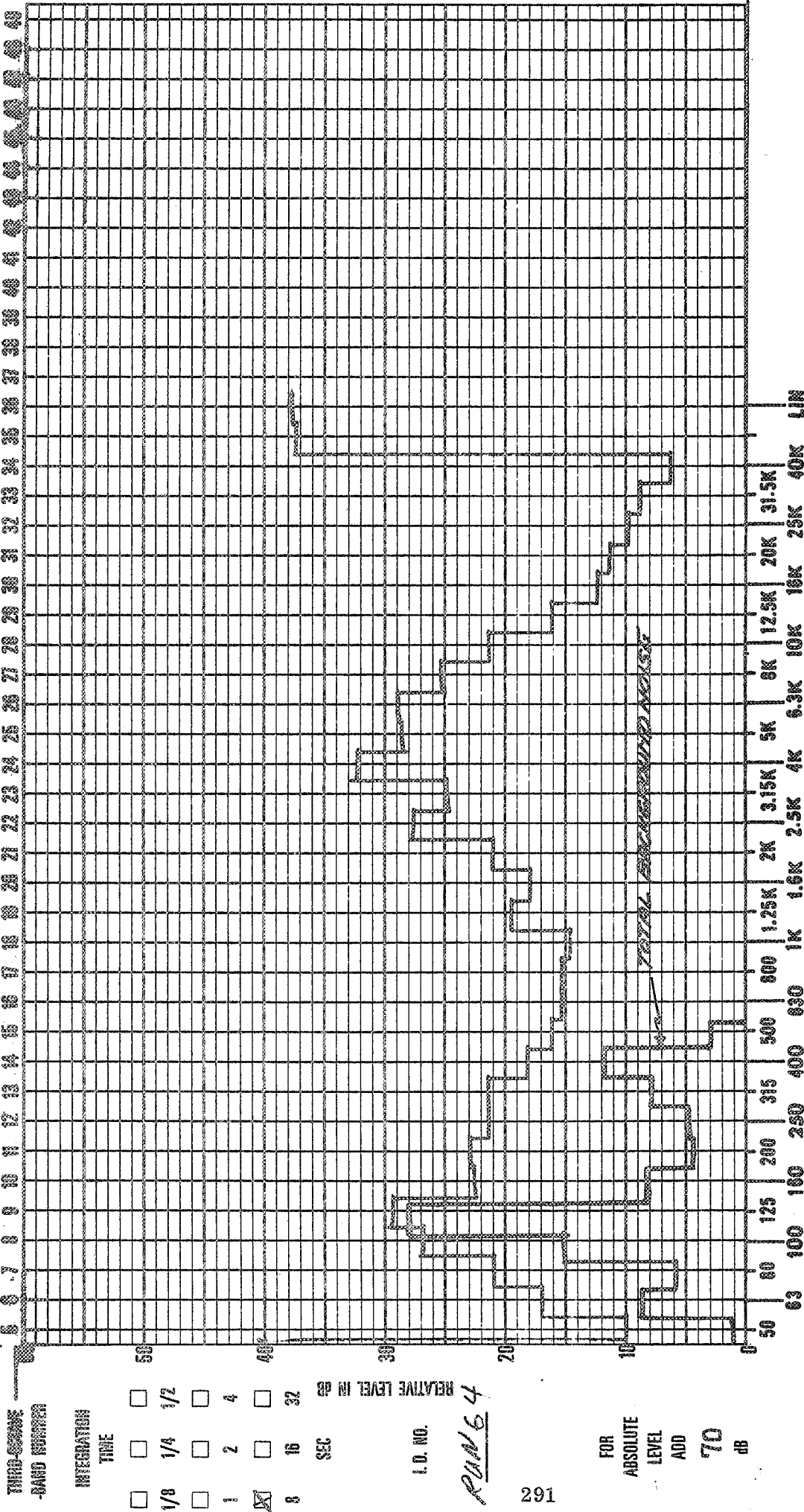
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THIRD-OCTAVE-BAND
ANALYSIS

SHROUD COMPROMISE
 BLADE ANGLE 45°
 TIP SPEED 600 FT/SEC
 MICROPHONE LOCATION 10' 135°

Figure 87F-PROP-FAN MODEL NOISE

SHROUD COMPROMISE
BLADE ANGLE 45°
TIP SPEED 600 FT/SEC
MICROPHONE LOCATION 10' 15 7/2°



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

- 1/8
 - 1/4
 - 1/2
 - 1
 - 2
 - 4
 - 8
 - 16
 - 32
- SEC

RELATIVE LEVEL IN DB

I.D. NO.

RUN 64

FOR
ABSOLUTE
LEVEL
ADD
70
dB

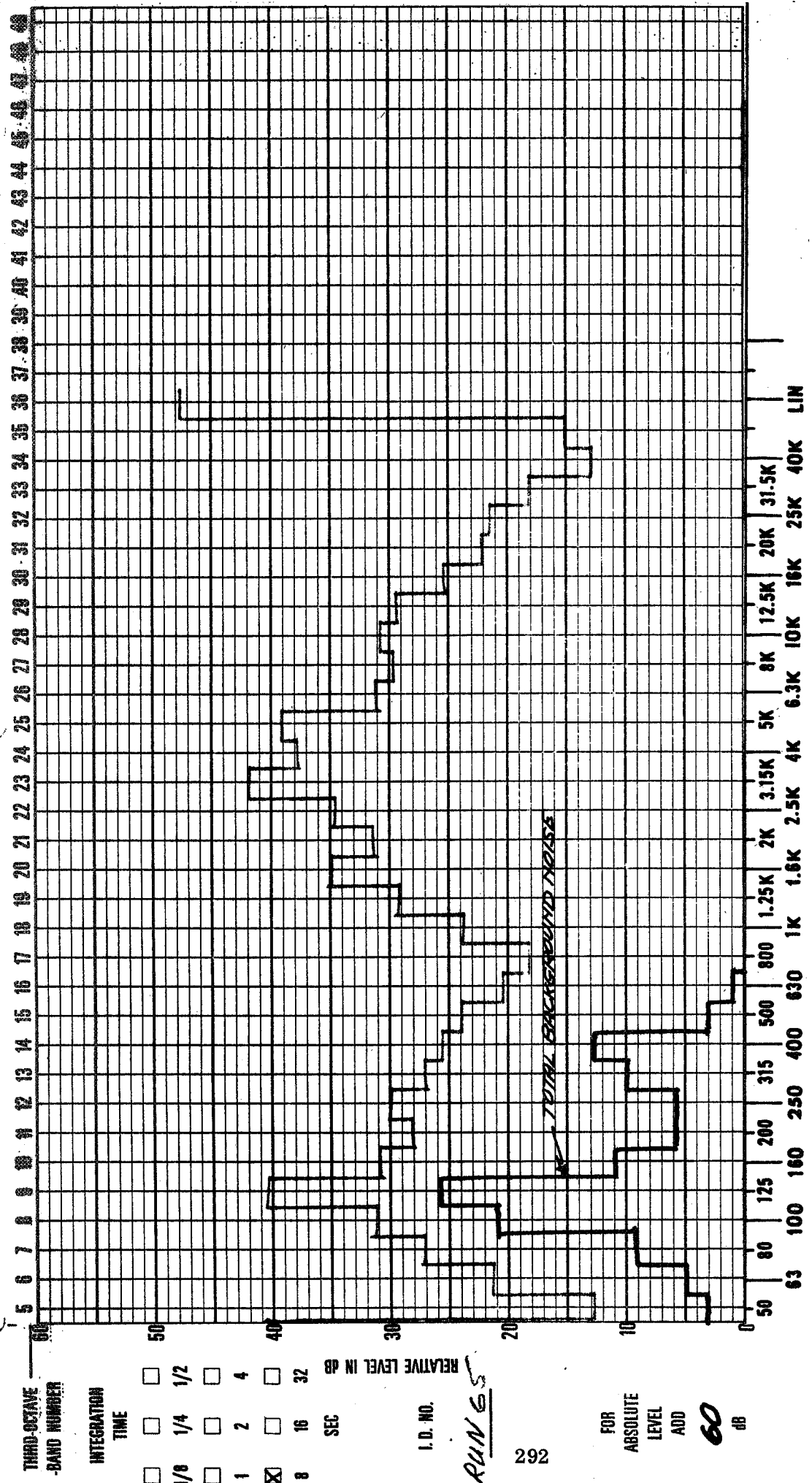
THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton
Standard



THIRD-OCTAVE-BAND
ANALYSIS

Figure 887- PROP-FAN MODEL NOISE



THIRD-OCTAVE
-BAND NUMBER

INTEGRATION
TIME

1/8 1/4 1/2 4 32

8 16 32

SEC

I. D. NO.

RUN 65

292

FOR
ABSOLUTE
LEVEL
ADD
60
dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

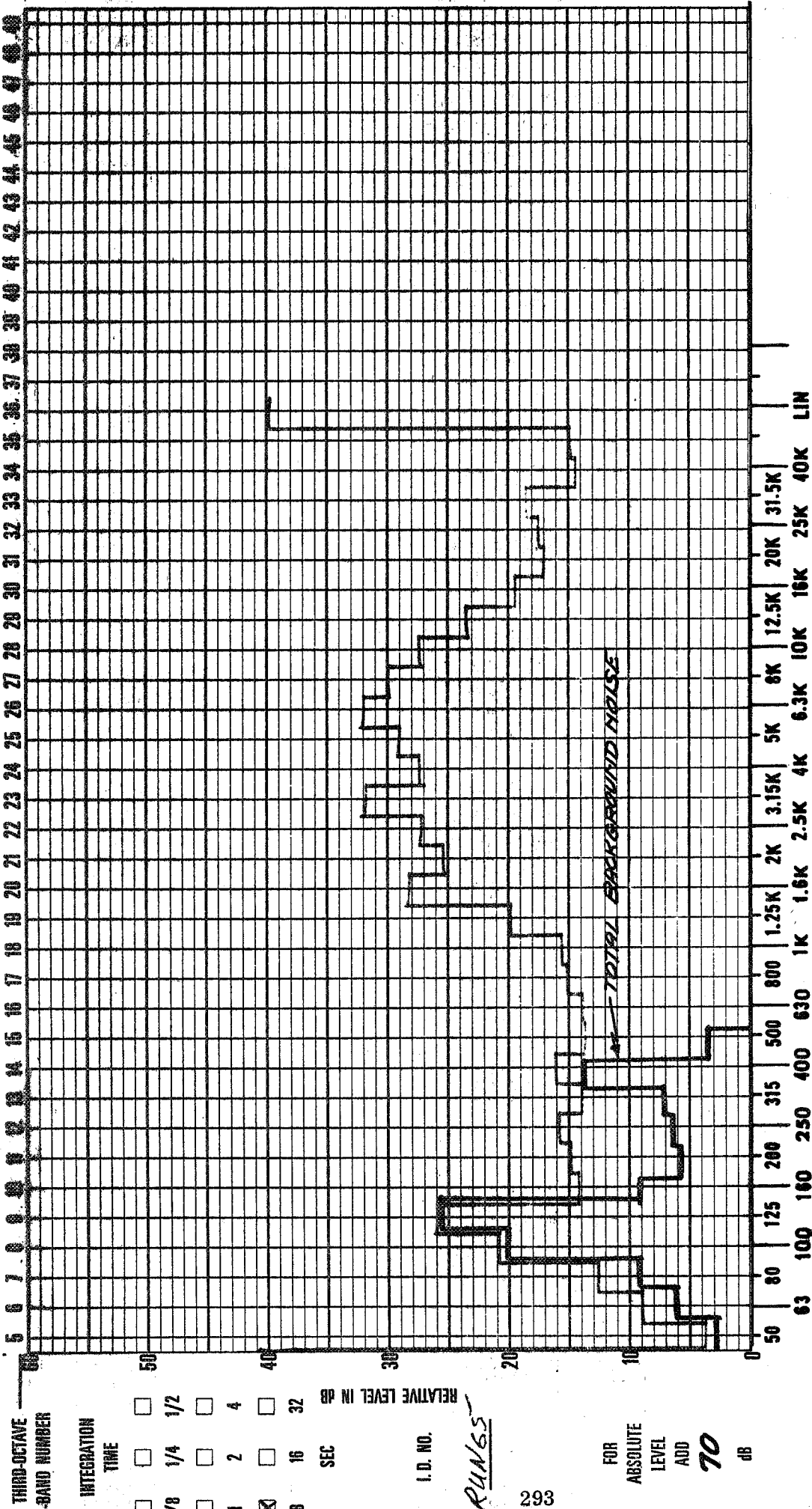
SHROUD COMPROMISE
BLADE ANGLE 45°
TIP SPEED 700 FT/SEC
MICROPHONE 132° 90° ON GROUND
LOCATION

Hamilton Standard



THIRD-OCTAVE-BAND
ANALYSIS

FIGURE 89F-PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

- 50
- 1/8
- 1/4
- 1
- 2
- 4
- 8
- 16
- 32
- SEC

I.D. NO.

RUNGS

293

FOR ABSOLUTE LEVEL ADD 70 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

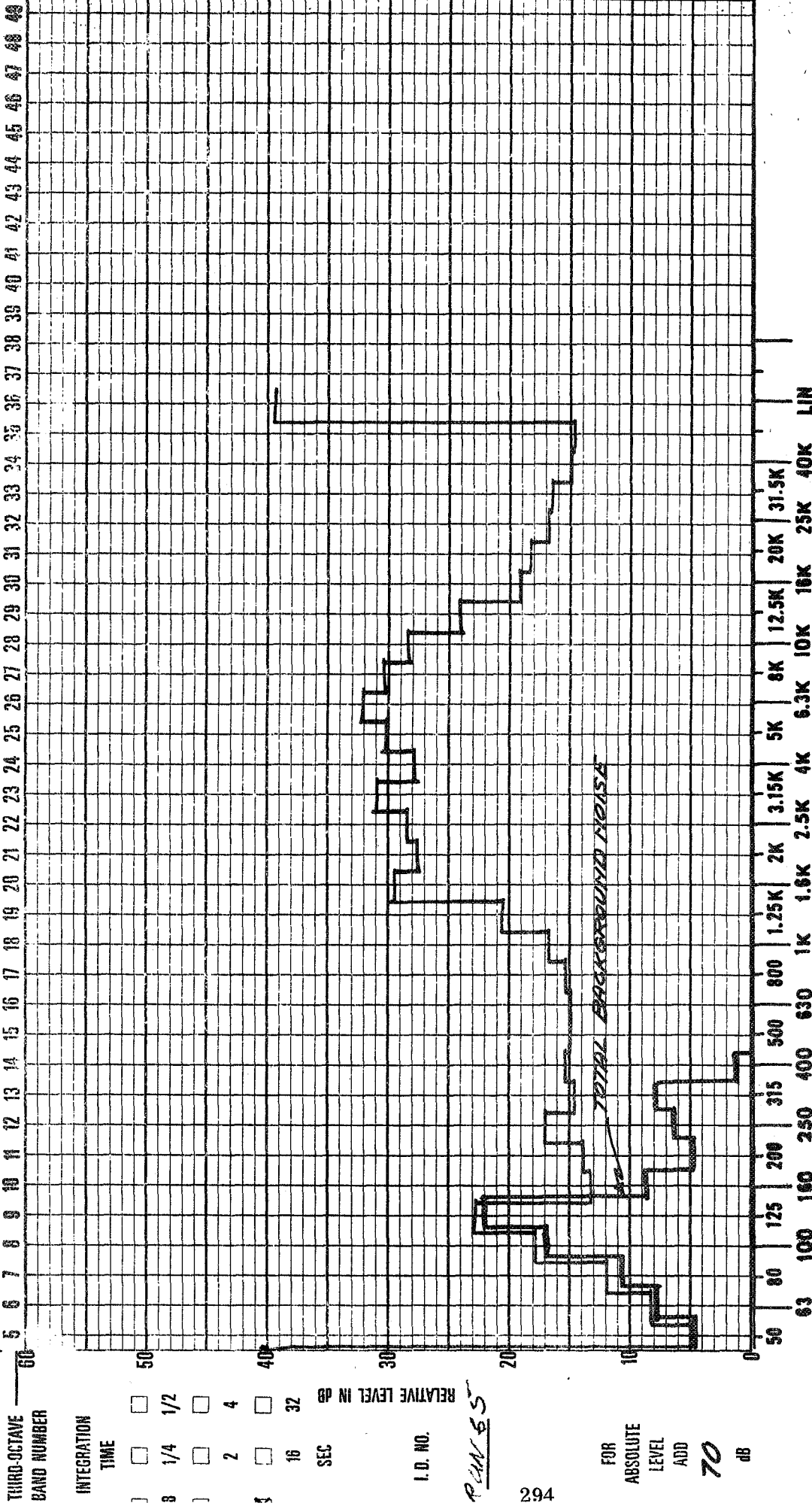
Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

SHROUD COMPROMISE
 BLADE ANGLE 45°
 TIP SPEED 700 FT/SEC
 MICROPHONE LOCATION 10' 22 1/2°

Figure 90F PROP-FAN MODEL NOISE



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND ANALYSIS

SHROUD COMPROMISE
BLADE ANGLE 45°
TIP SPEED 700 FT/SEC
MICROPHONE LOCATION 10' 45°

Figure 91F-PROP FAN MODEL NOISE

THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

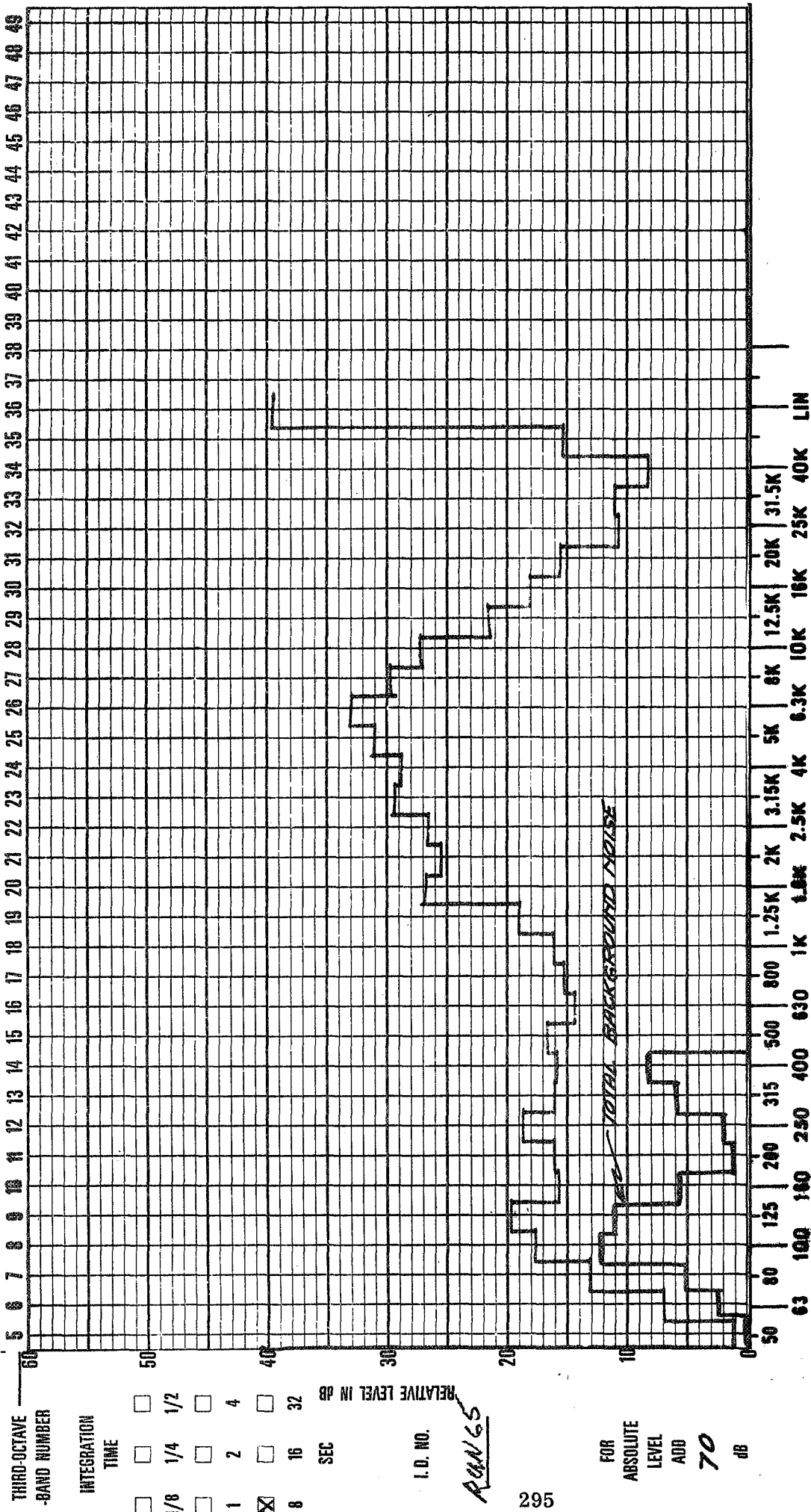
- 1/2
- 1
- 2
- 4
- 16
- 32

RELATIVE LEVEL IN DB

I.D. NO.

RUN 65

FOR ABSOLUTE LEVEL ADD 70 dB



THIRD-OCTAVE BAND NUMBER: 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49

RELATIVE LEVEL IN DB

INTEGRATION TIME

1/8

1/4

1/2

1

2

4

8

16

32

SEC

I.D. NO.

295

FOR ABSOLUTE LEVEL ADD 70 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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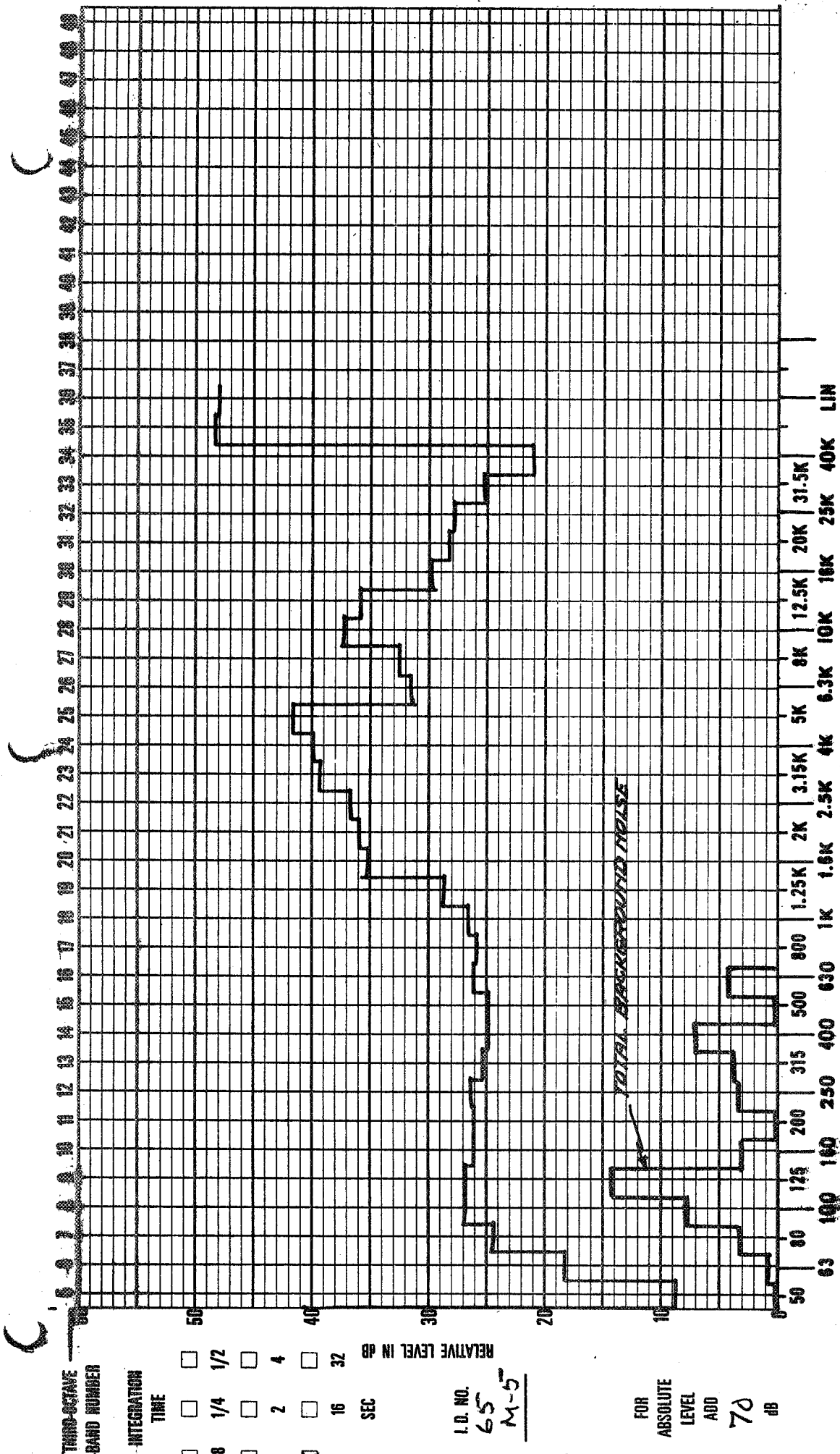
SHROUD COMPROMISE

BLADE ANGLE 45°

TIP SPEED 700 FT/SEC

MICROPHONE LOCATION 10' 67 1/2°

Figure 927 PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

- 1/8
- 1/4
- 1
- 2
- 4
- 8
- 16
- 32

I.D. NO. 65 M-5

FOR ABSOLUTE LEVEL ADD 70 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

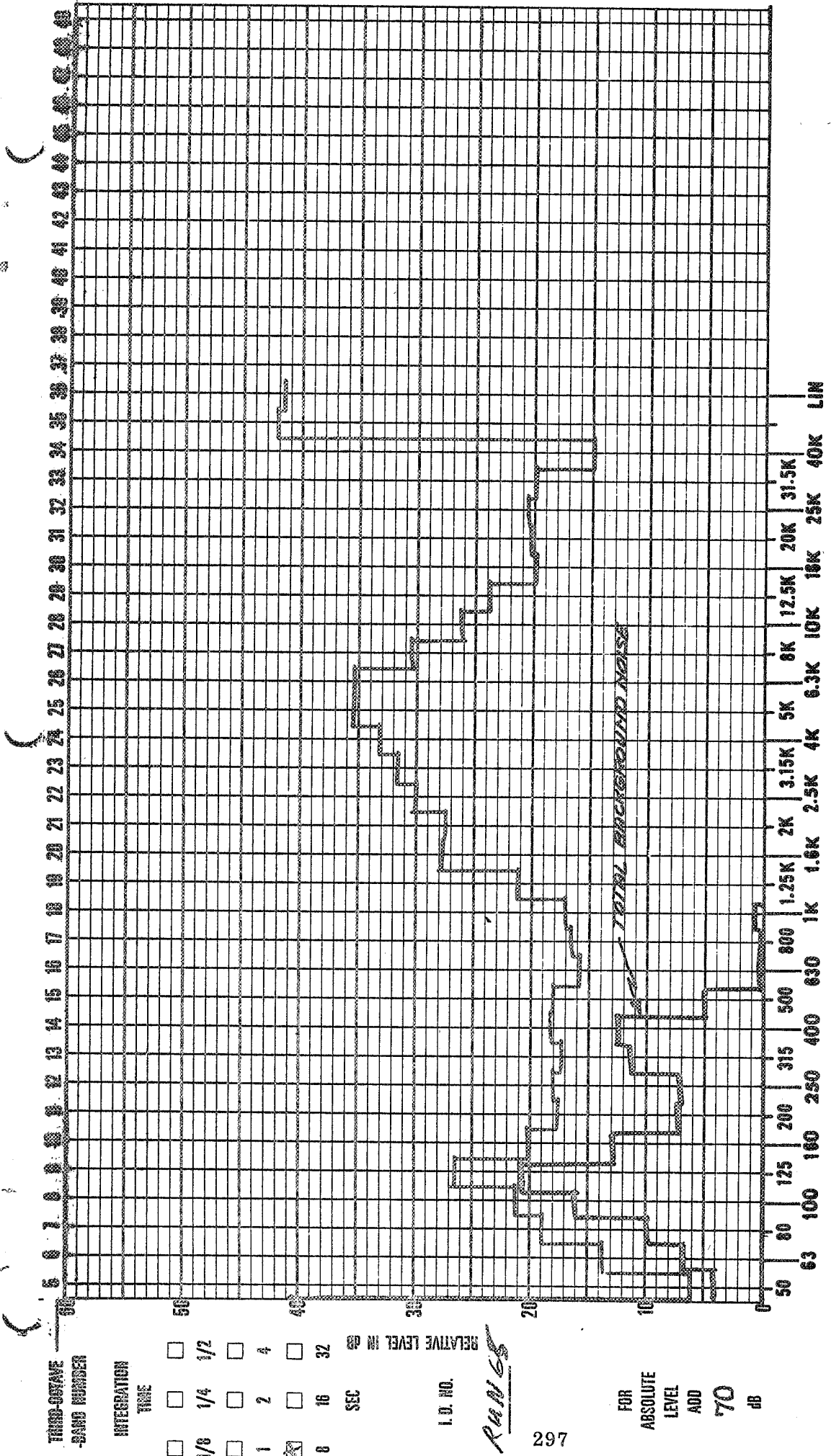
SHROUD COMPROMISE
 BLADE ANGLE 45°
 TIP SPEED 700 FT/SEC
 MICROPHONE LOCATION 10' 90°

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

Figure 23 F-PROP-FAN MODEL NOISE



THIRD-OCTAVE BAND NUMBER

INTEGRATION TIME

- 1/8
- 1/4
- 1/2
- 1
- 2
- 4
- 8
- 16
- 32

SEC

I.D. NO.

RUNES

FOR ABSOLUTE LEVEL ADD 70 dB

THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard



THIRD-OCTAVE-BAND ANALYSIS

SHROUD COMPROMISE _____
 BLADE ANGLE 45°
 TIP SPEED 700 FT/SEC
 MICROPHONE LOCATION 10' 11 1/2°

Figure 94F PROP-FAN MODEL NOISE

SHROUD COMPROMISE
 BLADE ANGLE 45°
 TIP SPEED 700 FT/SEC
 MICROPHONE LOCATION 10' 135°

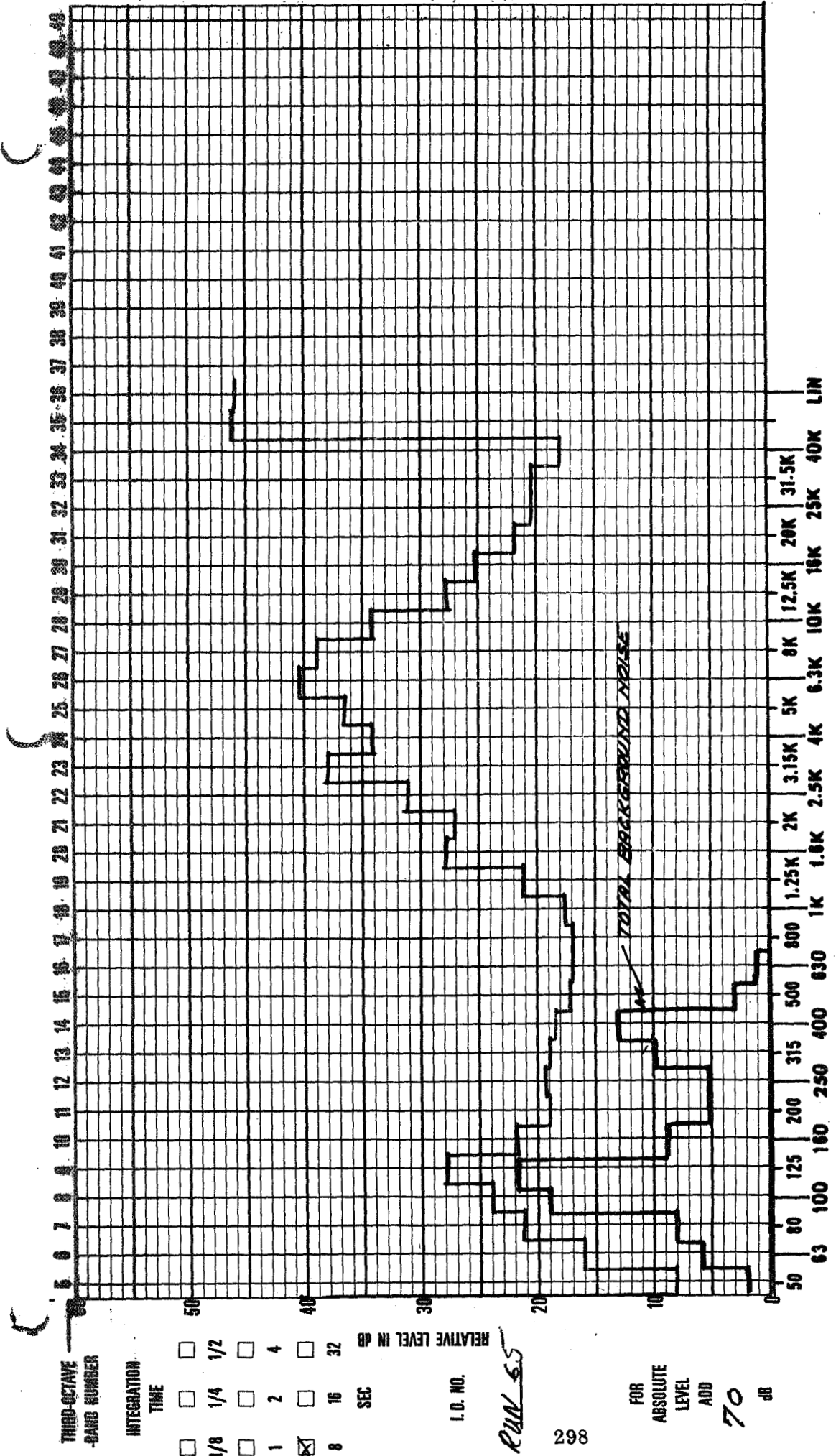
THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

Hamilton Standard

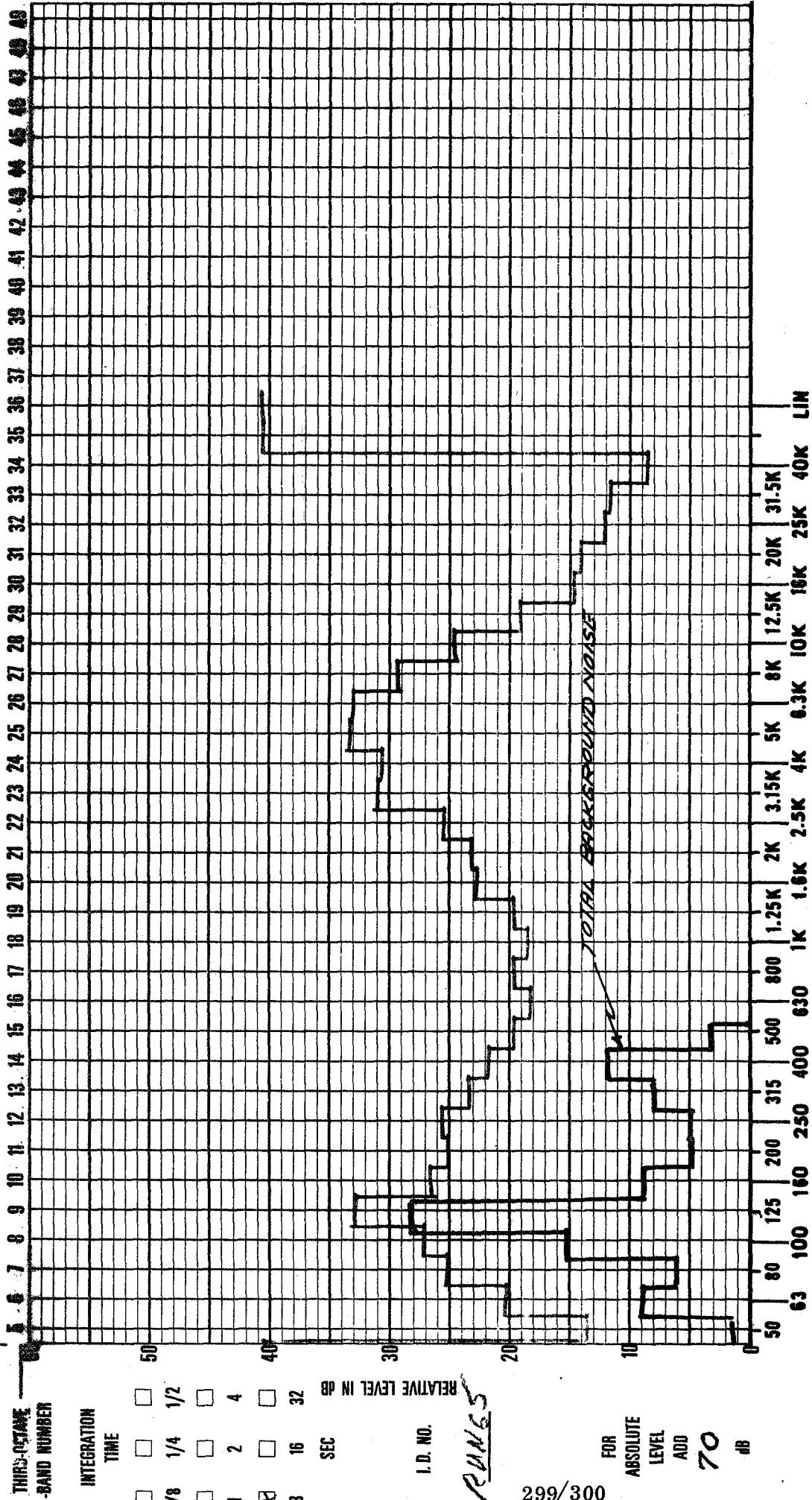
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THIRD-OCTAVE-BAND ANALYSIS

Figure 95-F PROP-FAN MODEL NOISE



SHROUD COMPROMISE
BLADE ANGLE 45°
TIP SPEED 700 FT/SEC
MICROPHONE LOCATION 10' 157 1/2°



THIRD-OCTAVE-BAND CENTER FREQUENCY IN HZ

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THIRD-OCTAVE-BAND ANALYSIS

Figure 9a= PROP-FAN MODEL NOISE

THIRD-OCTAVE BAND NUMBER: 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50

INTEGRATION TIME: 1/8, 1/4, 1/2, 1, 2, 4, 8, 16, 32

RELATIVE LEVEL IN DB: 0, 10, 20, 30, 40, 50

I. D. NO. *RUNES*

FOR ABSOLUTE LEVEL ADD 70 dB