



5.50/9-74-010

**ENVIRONMENTAL NOISE MEASUREMENTS
ON INTERSTATE 57 DURING AND
AFTER TRUCK STRIKE**

JUNE 1974

**OFFICE OF NOISE ABATEMENT
AND CONTROL**

Washington, D.C. 20460

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by

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**Report Prepared under Agreement between Environmental Protection
Agency, Office of Noise Abatement and Control and Construction
Engineering Research Laboratory of the U.S. Department of the Army**

FOREWORD

The nationwide independent truck drivers' strike of February 1974, afforded a unique opportunity to ascertain the noise impact of trucks on highway noise. For an approximate one-week period beginning February 1, truck traffic—a major contributant to highway noise—was curtailed as between 100,000 and 200,000 independent truckers went on strike.

In response to the impending strike, EPA's Office of Noise Abatement and Control sought the collection of data during and after the strike in order to quantify the impact of truck traffic to overall highway noise. EPA assigned the task to the Construction Engineering Research Laboratory (CERL) of the U. S. Army Corps of Engineers. Acting under interagency agreement with EPA, CERL measured highway noise along Interstate 57 between Champaign and Rantoul, Illinois. Data collection, which began February 1, lasted two weeks thus including approximately equal periods of strike and poststrike (i. e. normal) conditions.

To permit the calculation of day, night, and day-night equivalent energy sound levels, noise data, classified according to level, were collected daily at 7 am and 10 pm. With the assistance of the State of Illinois Highway Office, traffic count data were simultaneously collected.


FINDINGS

Although data were limited, a very definite increase in equivalent sound level and traffic flow were observed for the period of February 9 to 11 (the post-strike period). The increase, which was 4dB for the day-night level, is

believed to be caused by the truck contribution to the noise environmental for the following reasons:

1. The increase in night level was greater than that for daytime level. Trucks constitute a higher percentage of nighttime traffic than daytime traffic.
2. The statistical distributions show a larger increase for higher energy levels after strike settlement than do the middle or lower levels. This contribution would come primarily from trucks.

While it is realized that more quantitative results would have required a well planned comprehensive monitoring program, this rather small program has illustrated that trucks significantly impact on highway noise. Because of its importance, EPA is pleased to make the following CERL report available to the public.



Alvin F. Meyer, Jr.
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for Noise Control Programs

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ENVIRONMENTAL NOISE MEASUREMENTS ON INTERSTATE 57 DURING AND AFTER TRUCK STRIKE

BACKGROUND

Environmental noise has been shown to be an adverse factor in the health and welfare of our society. Vehicle noise, and notably truck noise, is considered a major source of environmental noise. The recent truck strike of February 1974 with its corresponding decrease in truck traffic on interstate highways offered a unique opportunity for correlating truck traffic with environmental noise.

PURPOSE

The purpose of these measurements was to measure the "environment noise" near Interstate 57 in Illinois both during and after the truck strike in order to, if possible, correlate the decreased truck traffic with the decreased level of environmental noise.

SCOPE

Measurements were made of the acoustical distribution of the A-weighted noise level at a rural location along Interstate 57 between Champaign and Rantoul, Illinois, for a continuous period of 14 days. Simultaneous measurements were made of the traffic flow on the two sides of the freeway.

PROCEDURE

Two B&K Model 166 Environmental Noise Classifiers were used. One was set for the range 45 to 75 dBA, and the other was set for the range 70 to 100 dBA. A single microphone with wind screen on a tripod at an elevation of 1.2 meters above the ground surface (B&K Model 4117) simultaneously fed the

two classifiers. Electric power was brought to the classifiers over a 230-meter extension cord which was run from the nearest structure. The traffic measurement units were the standard unit used by the State of Illinois, Department of Transportation. Both the traffic counters and the classifiers were checked and read at 7:00 a. m. and 10:00 p. m. of each day, including weekends. Calibration was performed on the classifiers during each checking period, using a suitable single frequency calibrator.

SITE

The general location of the site is shown in Figure 1. It is approximately midway between Champaign and Rantoul, Illinois on the east side of Interstate 57. The northernmost corner of the State of Illinois truck and snow plow compound was used to house the equipment in a secure area. Figure 2 is a more detailed rendering of the actual site. It should be noted that the area in which the equipment and microphone was placed was a park-like setting and that the closest highway equipment was more than 110 meters from the measurement microphone. The microphone itself was located 20 meters from the center of the nearest line of traffic. Figure 2 also shows the general distances for the interstate highway.

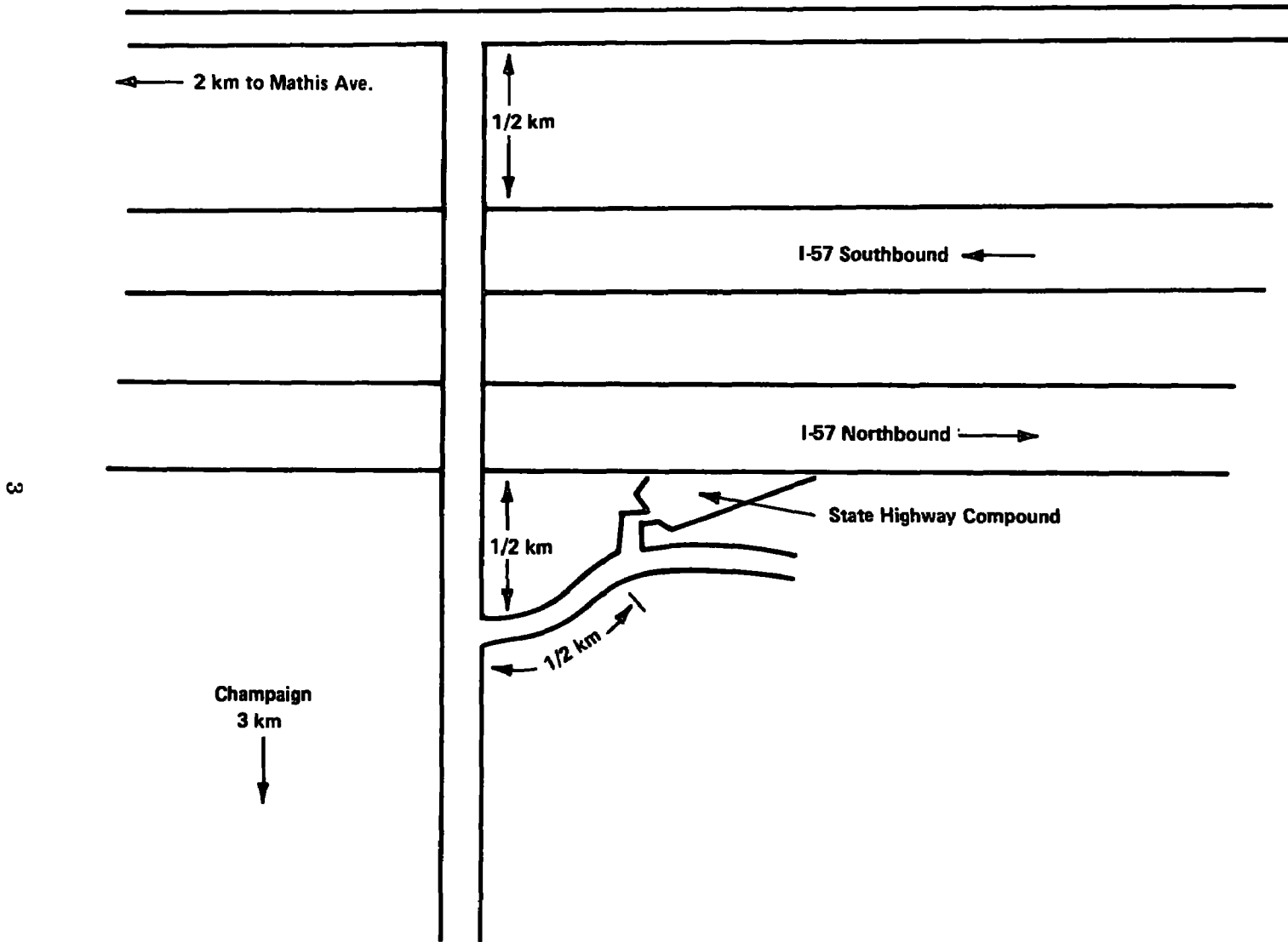


Figure 1. General Site Plan

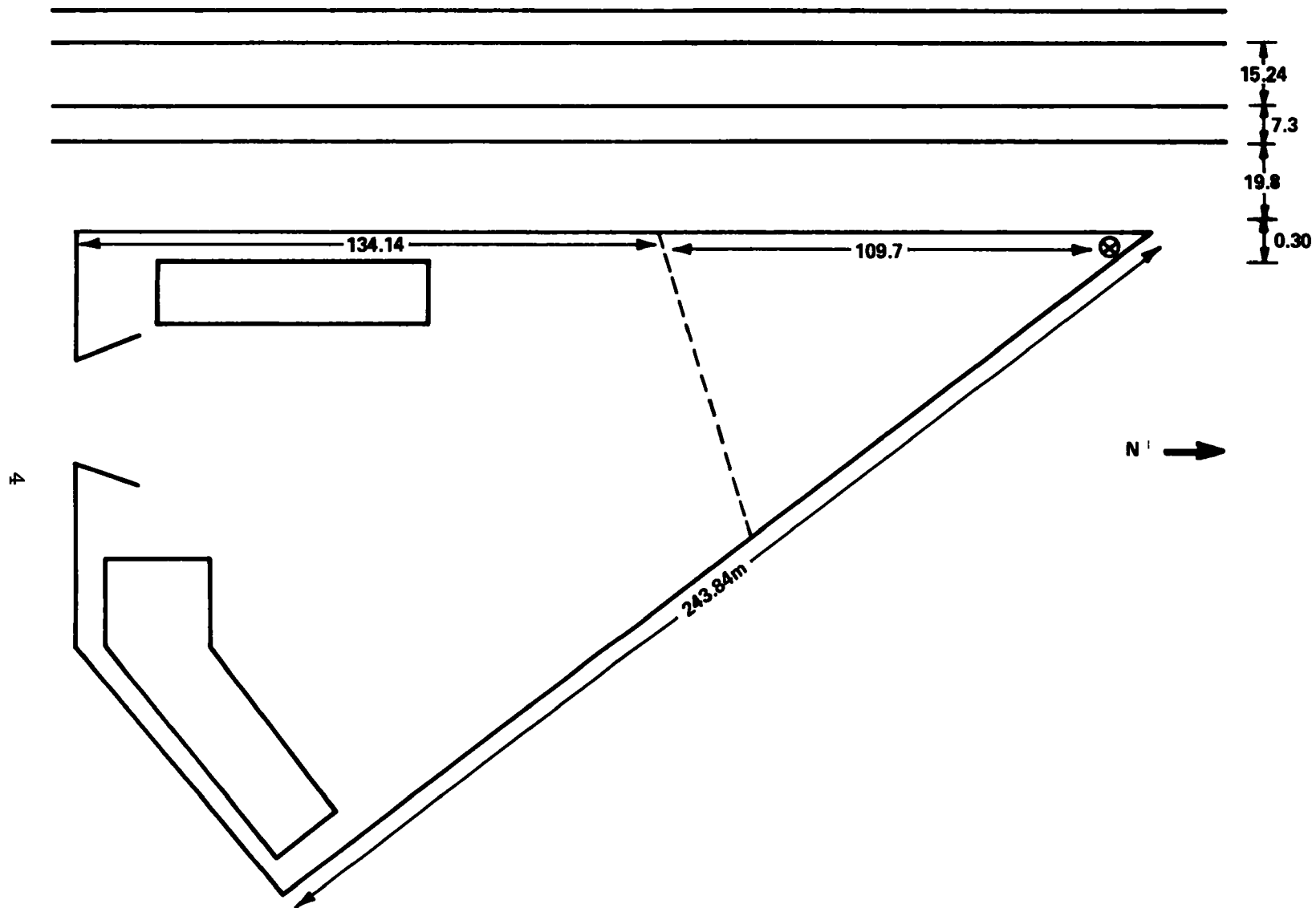


Figure 2. Detailed Site Plan

DATA

The following is a compilation by days of the raw and reduced data. For each day, the raw data during the daytime period (7 a. m. to 10 p. m.) and the raw data during the nighttime period (10 p. m. to 7 a. m.) is given. The traffic count during the day and night and the calculated L_{eq} during the day and night are shown along with L_{dn} for that day. Following this information for each day and night is a graph of the levels recorded on the statistical distribution analyzers. Due to the weather, traffic counts could not be made during the entire period. Light snow and its associated snow plowing precluded the use of rubber tube sensors across the highway surface during plowing. Thus, traffic count data is available only for a few days shortly after the beginning of the measurement period (as soon as we were able to obtain equipment from the state) and during the end of the measurement period (it snowed during the middle of the measurement period).

Data Window Legend

LEVERETT ROAD VEHICLE MEASUREMENTS

Test No. _____ Date _____ Time _____

| | | | |
|-------|-------|-------|---------------------|
| 41-45 | | | |
| 45-47 | 47-50 | 50-52 | 52-55 |
| 55-57 | 57-60 | 60-62 | 62-65 |
| 65-67 | 67-70 | 70-72 | 72- end block |

45 dBA minutes

| | | | |
|-------|-------|-------|---------------------|
| 70-72 | 73-75 | 75-77 | 77-80 |
| 80-82 | 82-85 | 85-87 | 87-90 |
| 90-92 | 92-95 | 95-97 | 97- end block |

70 dBA minutes

Wind Direction _____

Wind Speed _____

Temperature _____

Weather Conditions _____

Raw Vehicle Count Northbound _____

Raw Vehicle Count Southbound _____

L_{eq} _____

L_{dn} _____

LEVERETT ROAD VEHICLE MEASUREMENTS

Test No. 1 Date 1 Feb 74 Time 2205

| | | | |
|------|------|------|------|
| 0.0 | | | |
| 0.0 | 1.8 | 8.4 | 36.0 |
| 24.1 | 42.9 | 22.2 | 36.3 |
| 17.2 | 21.5 | 8.7 | 15.3 |

45 dBA 232.8 minutes

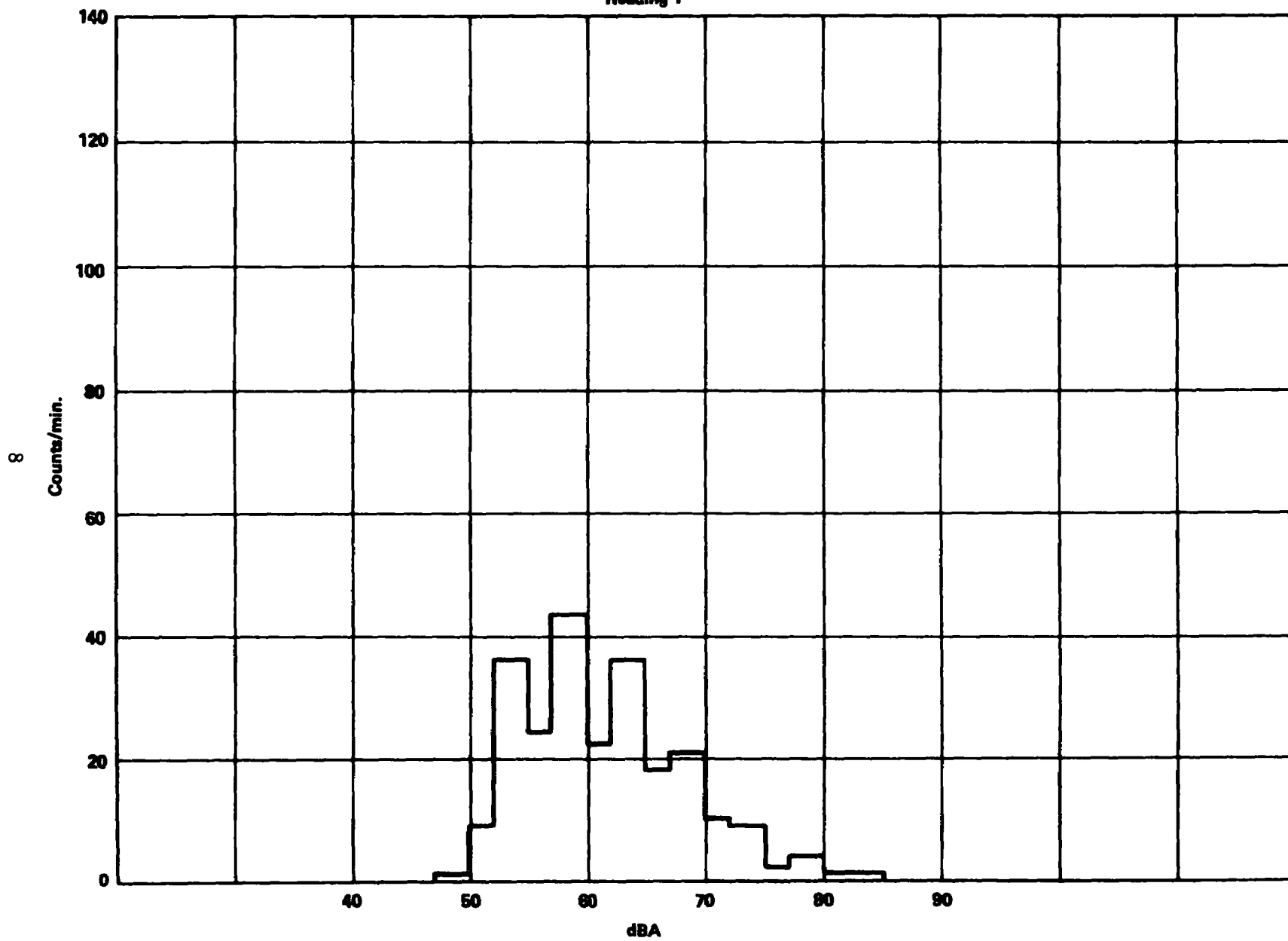
| | | | |
|------|-----|-----|-----|
| 10.2 | 8.6 | 2.0 | 4.1 |
| 1.4 | 1.2 | 0.3 | 0.1 |
| 0.0 | 0.0 | 0.0 | 0.0 |

70 dBA 232.8 minutes

Wind Direction NE
 Wind Speed 10-14
 Temperature 32
 Weather Conditions Clear

Raw Vehicle Count Northbound _____
 Raw Vehicle Count Southbound _____
 L_{eq} 68.60
 L_{dn} _____

Reading 1



LEVERETT ROAD VEHICLE MEASUREMENTS

Test No. 2 Date 2 Feb 74 Time 0656

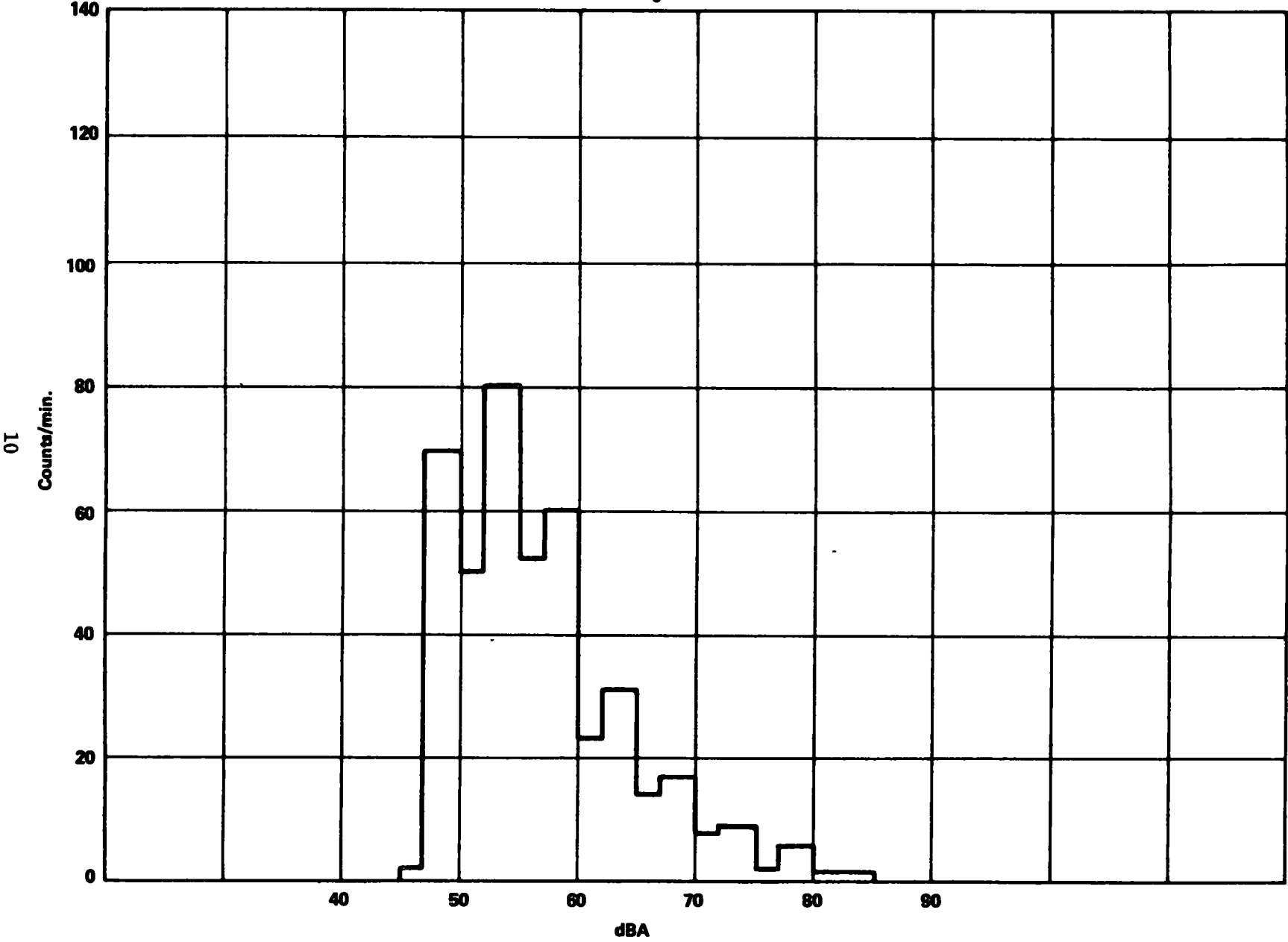
| | | | |
|--------|-------|------|---------|
| 97.6 | | | |
| 2.3 | 69.3 | 50.0 | 80.0 |
| 52.0 | 60.8 | 23.4 | 31.6 |
| 14.2 | 16.9 | 7.3 | 19.2 |
| 45 dBA | 526.3 | | minutes |

| | | | |
|--------|-------|-----|---------|
| 8.4 | 8.8 | 2.3 | 5.6 |
| 2.1 | 1.7 | 0.2 | 0.1 |
| 0.0 | 0.1 | 0.0 | 0.1 |
| 70 dBA | 526.3 | | minutes |

Wind Direction _____
 Wind Speed _____
 Temperature _____
 Weather Conditions _____

Raw Vehicle Count Northbound _____
 Raw Vehicle Count Southbound _____
 L_{eq} 66.15
 L_{dn} _____

Reading 2



LEVERETT ROAD VEHICLE MEASUREMENTS

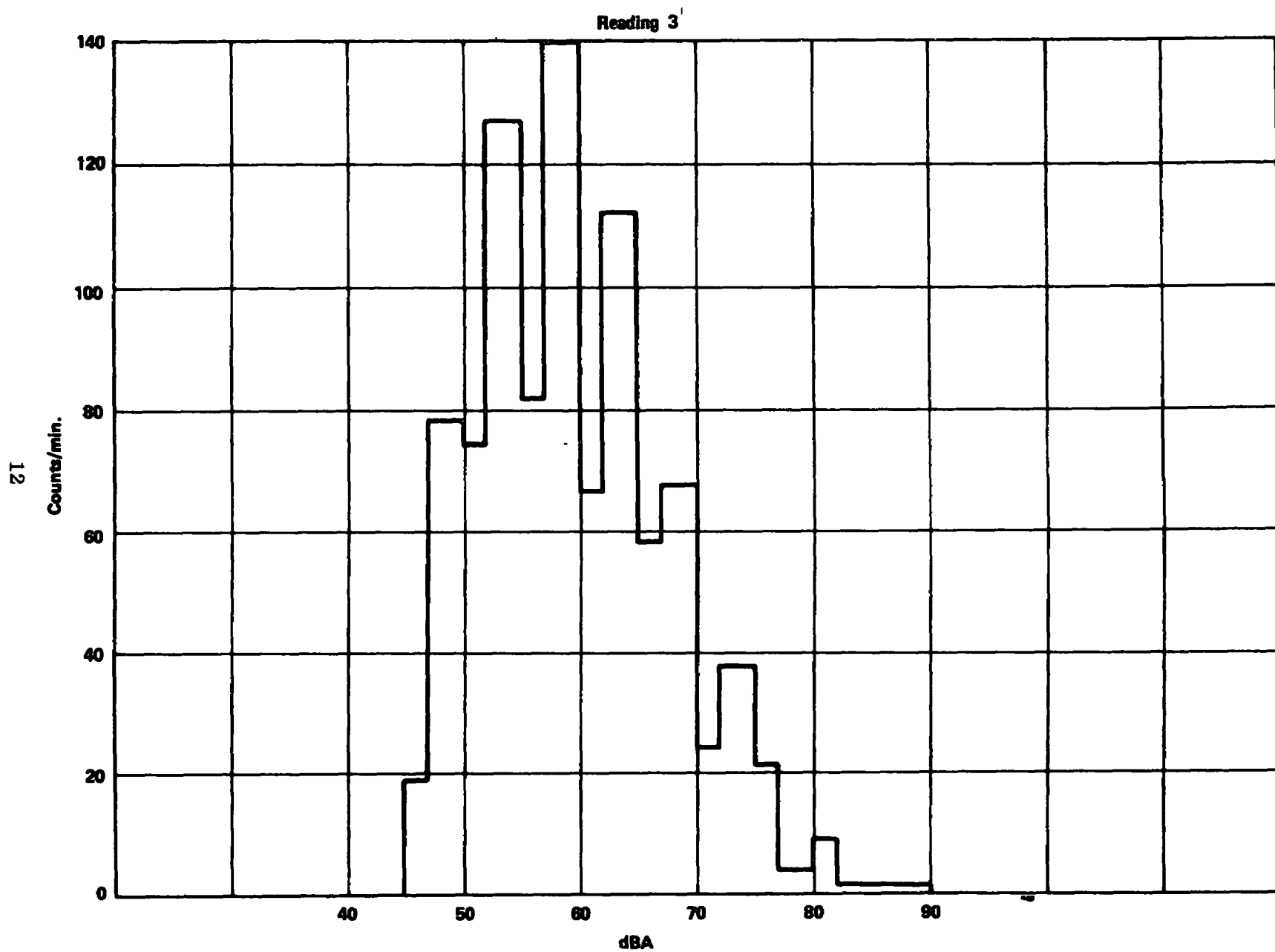
Test No. 3 Date 2 Feb 74 Time 2157

| | | | |
|--------|-------|------|---------|
| 12.9 | | | |
| 18.8 | 77.2 | 76.0 | 126.9 |
| 81.3 | 139.5 | 66.2 | 111.7 |
| 57.7 | 66.9 | 23.9 | 37.4 |
| 45 dBA | 901.4 | | minutes |

| | | | |
|--------|-------|-----|---------|
| 29.2 | 21.2 | 4.2 | 9.0 |
| 3.2 | 3.6 | 0.7 | 0.3 |
| 0.1 | 0.1 | 0.0 | 0.0 |
| 10 dBA | 901.4 | | minutes |

Wind Direction NE
 Wind Speed 3-5
 Temperature 31
 Weather Conditions Clear

Raw Vehicle Count Northbound _____
 Raw Vehicle Count Southbound _____
 L_{eq} 67.30
 L_{dn} _____



LEVERETT ROAD VEHICLE MEASUREMENTS

Test No. 4 Date 3 Feb 74 Time 0700

| | | | |
|--------|--------------|-----|------|
| 0.6 | | | |
| 5.8 | 9.0 | 8.0 | 11.9 |
| 4.6 | 5.1 | 2.3 | 3.8 |
| 2.0 | 2.3 | 1.1 | 1.9 |
| 45 dBA | 58.8 minutes | | |

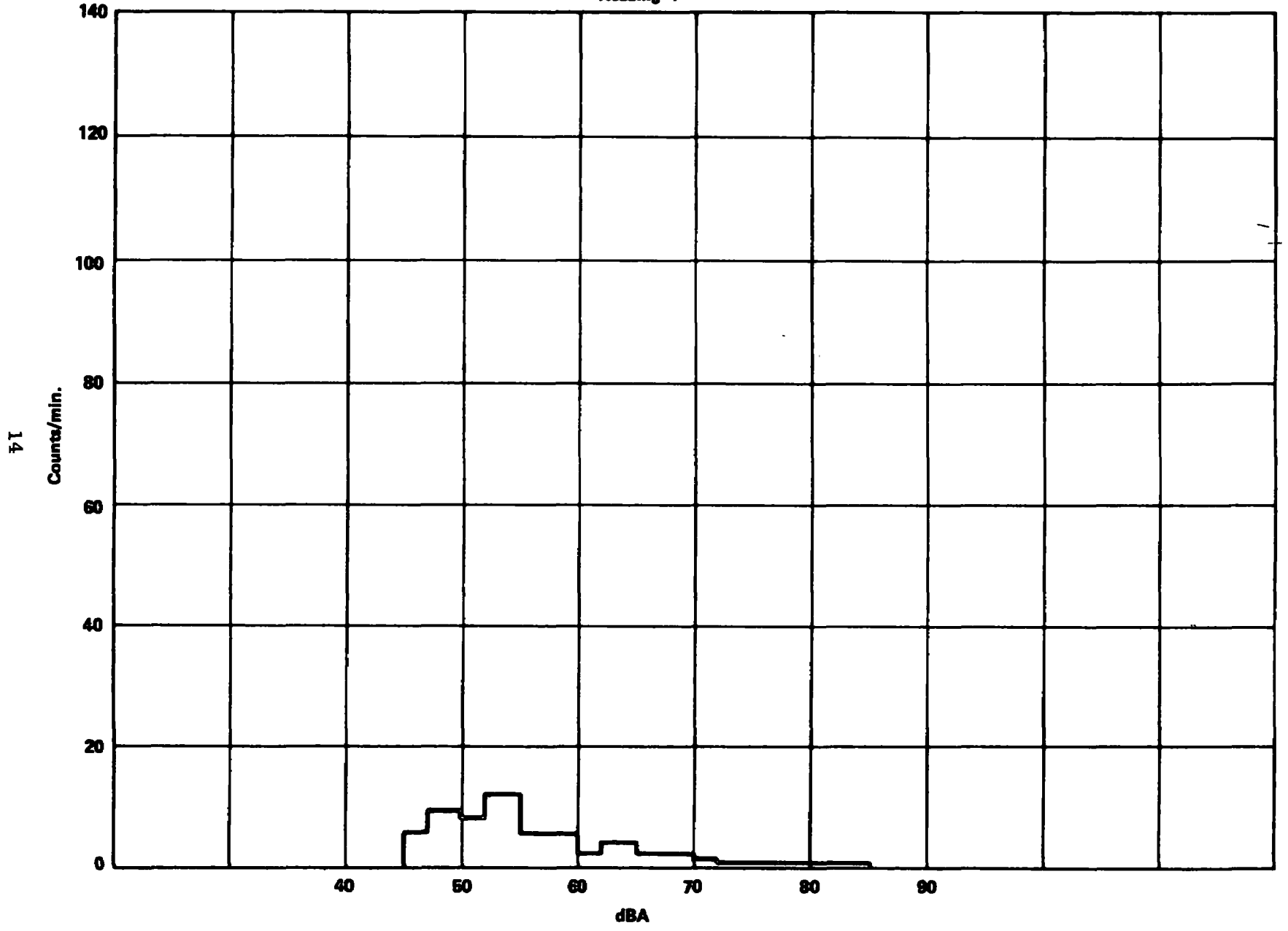
| | | | |
|--------|--------------|-----|-----|
| 1.0 | 0.8 | 0.3 | 0.7 |
| 0.2 | 0.2 | 0.1 | 0.0 |
| 0.0 | 0.0 | 0.0 | 0.0 |
| 70 dBA | 58.8 minutes | | |

Wind Direction _____
 Wind Speed _____
 Temperature _____
 Weather Conditions _____

Raw Vehicle Count Northbound _____
 Raw Vehicle Count Southbound _____
 L_{eq} _____
 L_{dn} _____

Y

Reading 4



14

LEVERETT ROAD VEHICLE MEASUREMENTS

Test No. 5 Date 3 Feb 74 Time 2154

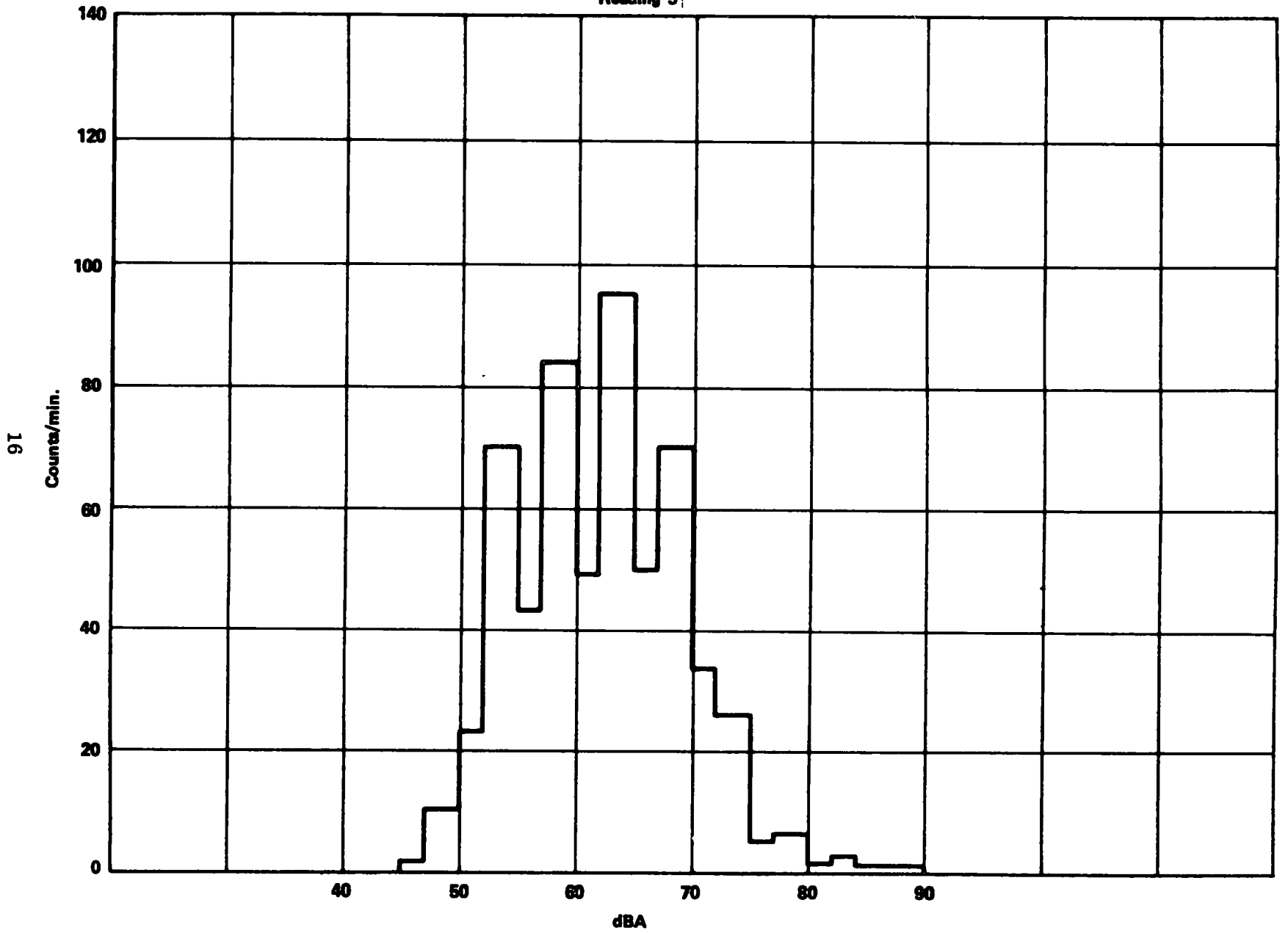
| | | | |
|--------|-------|------|---------|
| 0.0 | | | |
| 1.8 | 10.6 | 23.0 | 69.5 |
| 43.1 | 84.3 | 49.2 | 95.6 |
| 50.1 | 69.4 | 29.5 | 39.5 |
| 45 dBA | 565.3 | | minutes |

| | | | |
|--------|-------|-----|---------|
| 34.3 | 26.4 | 4.9 | 7.3 |
| 1.9 | 2.3 | 0.6 | 0.3 |
| 0.0 | 0.0 | 0.1 | 0.0 |
| 70 dBA | 565.3 | | minutes |

Wind Direction NNW
 Wind Speed 8-10
 Temperature 19
 Weather Conditions Clear

Raw Vehicle Count Northbound _____
 Raw Vehicle Count Southbound _____
 L_{eq} 68.85
 L_{dn} 74.42

Reading 5



LEVERETT ROAD VEHICLE MEASUREMENTS

Test No. 6 Date 4 Feb 74 Time 0656

| | | | |
|------|------|------|-------|
| 0.0 | | | |
| 3.3 | 48.6 | 82.0 | 173.4 |
| 36.2 | 46.7 | 19.0 | 35.3 |
| 14.7 | 19.2 | 10.0 | 23.8 |

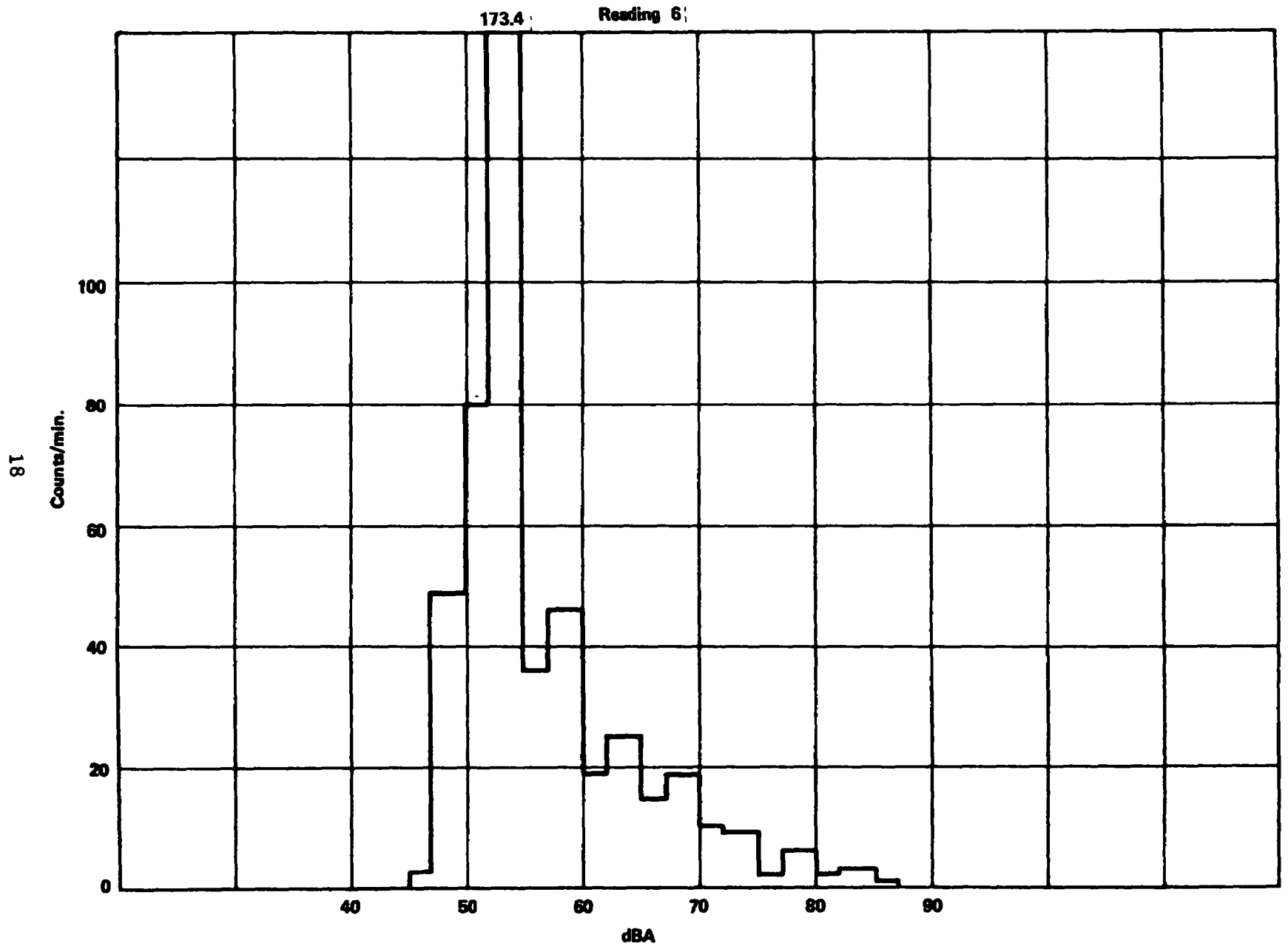
45 dBA 511.4 minutes

| | | | |
|------|-----|-----|-----|
| 10.1 | 9.7 | 2.5 | 5.5 |
| 2.5 | 3.1 | 1.0 | 0.5 |
| 0.1 | 0.0 | 0.0 | 0.1 |

70 dBA 511.4 minutes

Wind Direction 14
 Wind Speed 8-11
 Temperature 14
 Weather Conditions Clear

Raw Vehicle Count Northbound
 Raw Vehicle Count Southbound
 L_{eq} 67.85
 L_{dn} 74.42



LEVERETT ROAD VEHICLE MEASUREMENTS

Test No. 7 Date 4 Feb 74 Time 2152

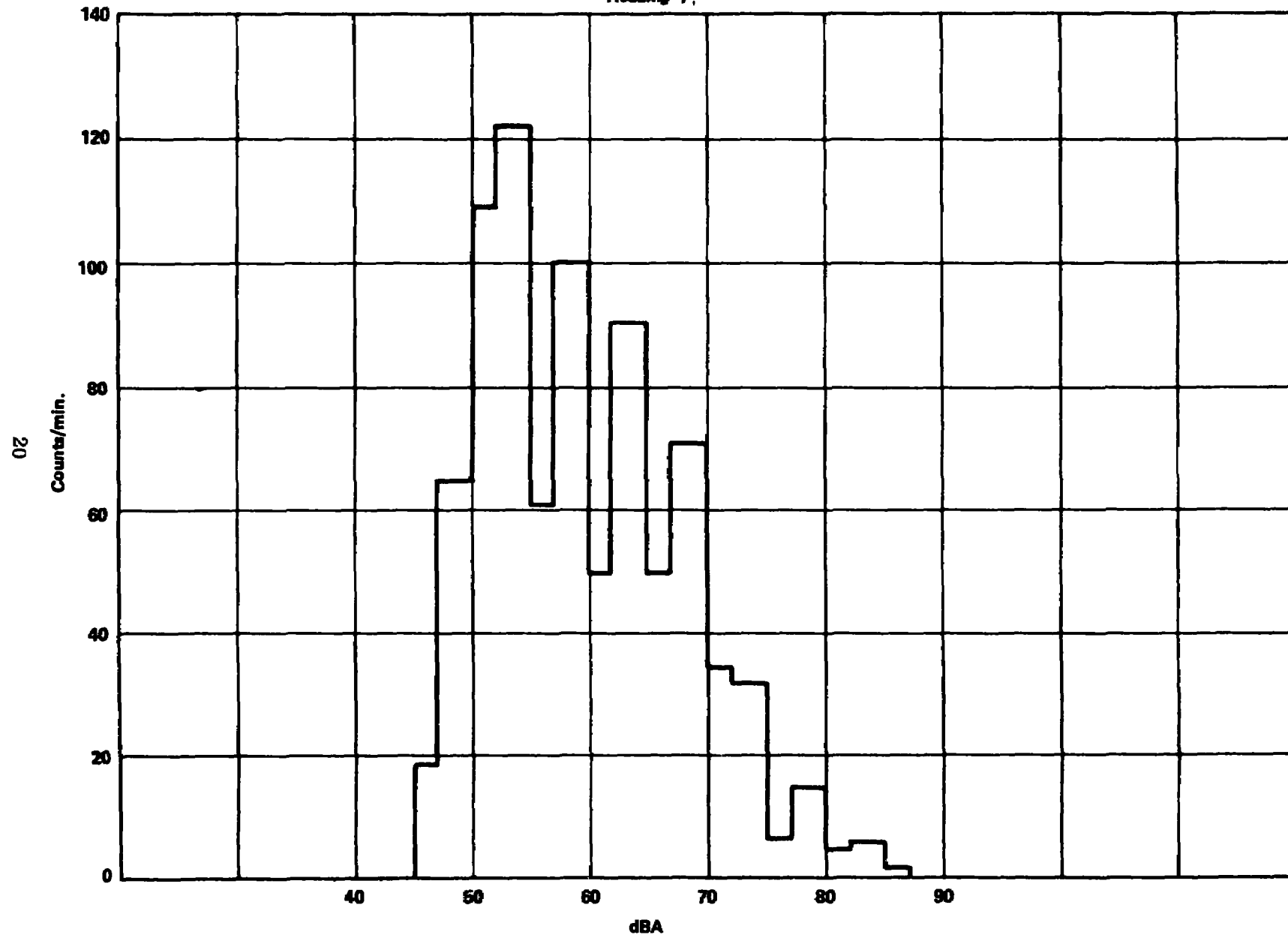
| | | | |
|--------|--------------|-------|---------|
| 18.1 | | | |
| 18.7 | 64.7 | 109.0 | 121.9 |
| 60.7 | 100.5 | 49.4 | 95.2 |
| 49.7 | 71.2 | 31.6 | 62.9 |
| 45 dBA | <u>858.8</u> | | minutes |

| | | | |
|--------|--------------|-----|---------|
| 34.5 | 31.7 | 6.8 | 15.0 |
| 5.4 | 6.4 | 2.0 | 0.7 |
| 0.0 | 0.0 | 0.1 | 0.1 |
| 70 dBA | <u>858.8</u> | | minutes |

Wind Direction ESE
 Wind Speed 6-8
 Temperature 22
 Weather Conditions Clear

Raw Vehicle Count Northbound _____
 Raw Vehicle Count Southbound _____
 L_{eq} 69.33
 L_{dn} 72.36

Reading 7:



LEVERETT ROAD VEHICLE MEASUREMENTS

Test No. 8 Date 5 Feb 74 Time 0700

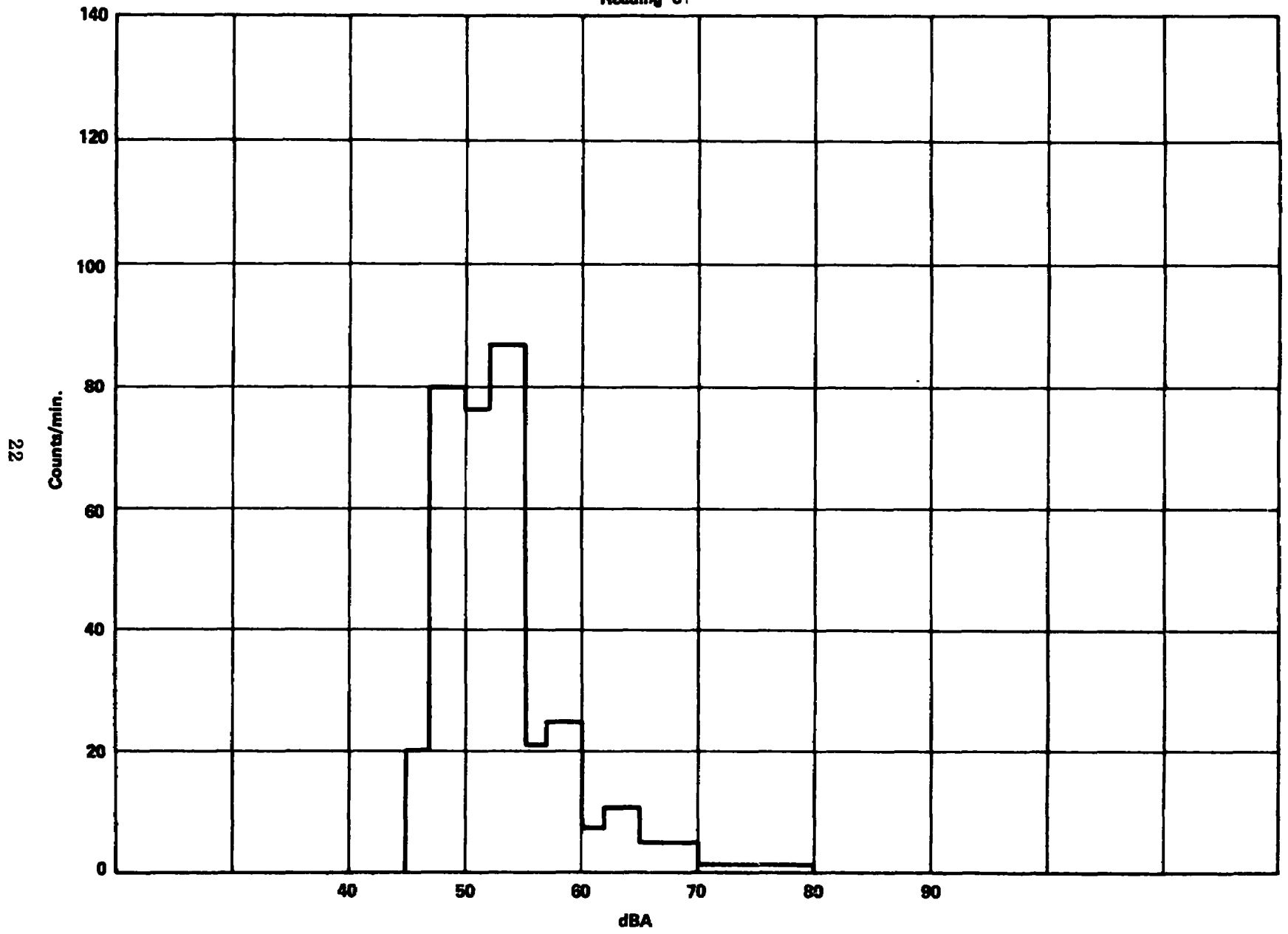
| | | | |
|--------|-------|------|---------|
| 0.9 | | | |
| 20.1 | 79.9 | 76.0 | 87.6 |
| 20.7 | 24.4 | 7.7 | 11.4 |
| 4.9 | 4.9 | 2.2 | 7.3 |
| 45 dBA | 349.3 | | minutes |

| | | | |
|--------|-------|-----|---------|
| 2.0 | 1.9 | 0.6 | 2.8 |
| 1.5 | 1.2 | 0.3 | 0.1 |
| 0.0 | 0.1 | 0.1 | 0.0 |
| 70 dBA | 349.3 | | minutes |

Wind Direction ESE
 Wind Speed 12-16
 Temperature 21
 Weather Conditions Clear

Raw Vehicle Count Northbound _____
 Raw Vehicle Count Southbound _____
 L_{eq} 66.90
 L_{dn} 72.36

Reading 81



22

LEVERETT ROAD VEHICLE MEASUREMENTS

Test No. 9 Date 5 Feb 74 Time 2156

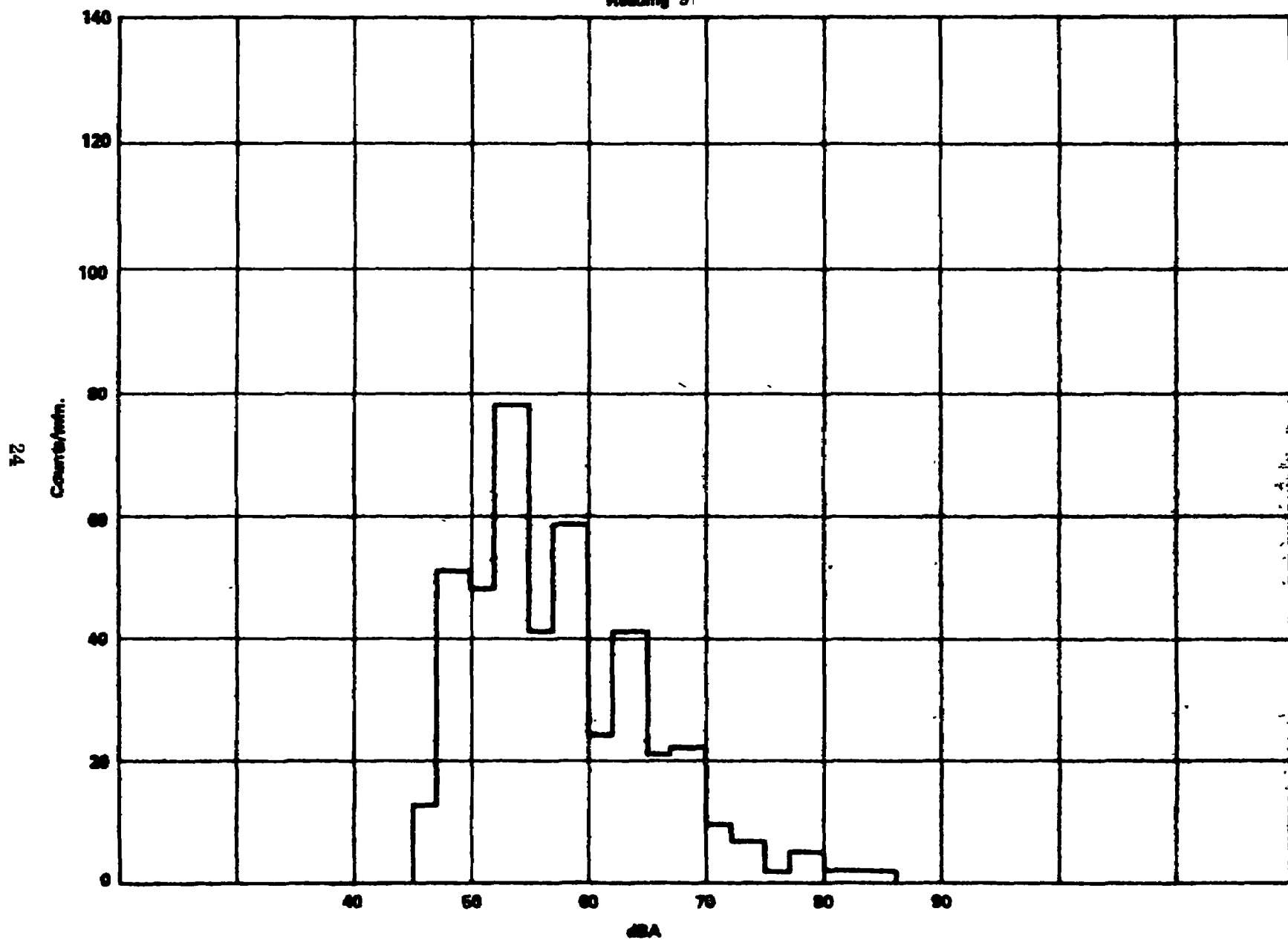
| | | | |
|--------|-------|------|---------|
| 8.2 | | | |
| 12.8 | 50.7 | 48.0 | 77.7 |
| 41.4 | 58.7 | 24.1 | 40.9 |
| 21.2 | 22.5 | 8.3 | 17.3 |
| 45 dBA | 433.8 | | minutes |

| | | | |
|--------|-------|-----|---------|
| 10.2 | 7.5 | 1.6 | 5.0 |
| 2.3 | 2.2 | 0.5 | 0.1 |
| 0.1 | 0.0 | 0.0 | 0.0 |
| 70 dBA | 433.8 | | minutes |

Wind Direction ESE
 Wind Speed 7-9
 Temperature 30
 Weather Conditions Clear

Raw Vehicle Count Northbound _____
 Raw Vehicle Count Southbound _____
 L_{eq} 67.28
 L_{dn} _____

Reading 9



24

LEVERETT ROAD VEHICLE MEASUREMENTS

Test No. 10 Date 6 Feb 74 Time 0659

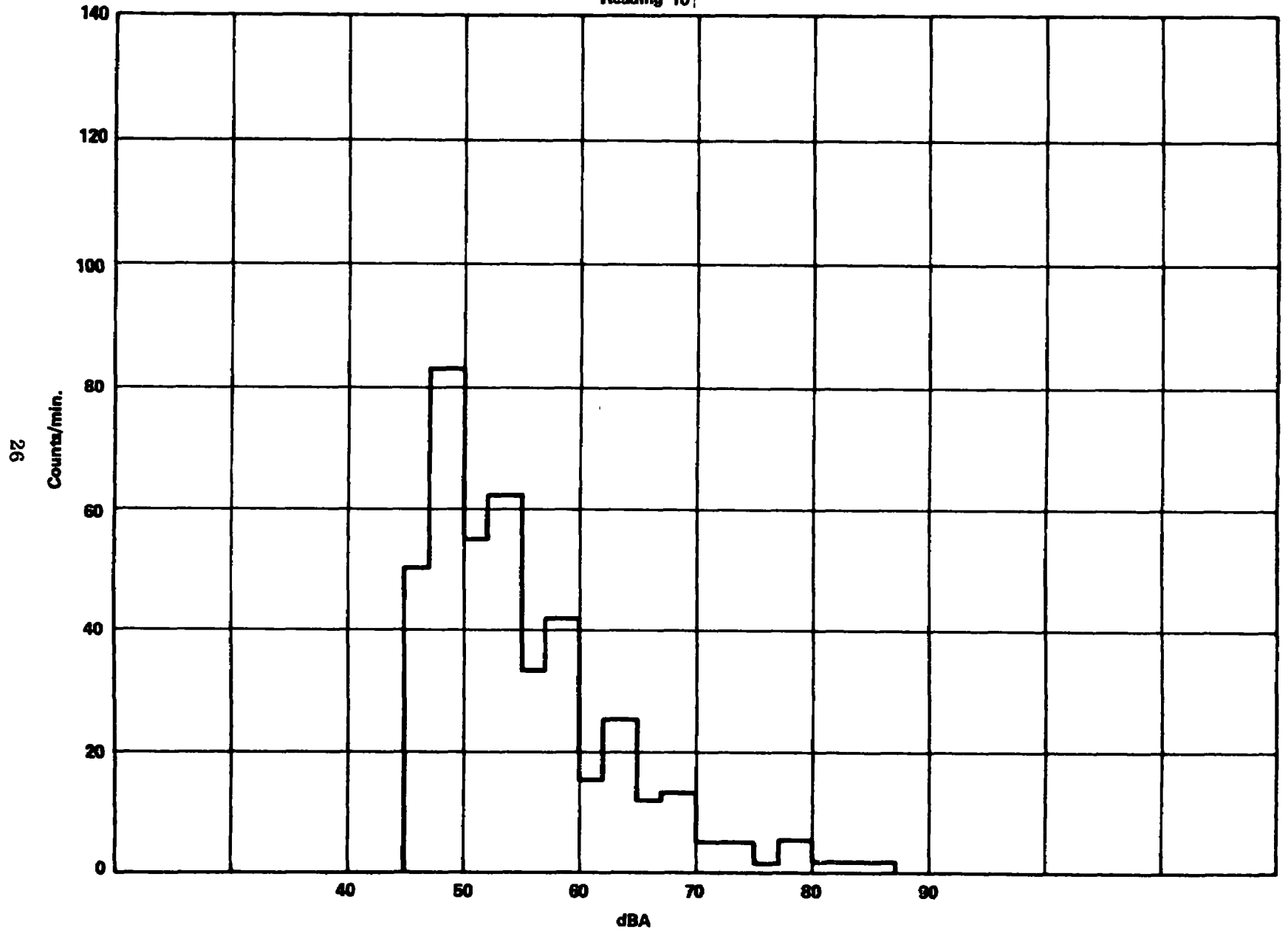
| | | | |
|--------|-------|------|---------|
| 150.1 | | | |
| 50.5 | 83.0 | 54.8 | 62.0 |
| 32.9 | 42.2 | 15.3 | 25.6 |
| 11.8 | 13.1 | 5.3 | 15.9 |
| 45 dBA | 532.5 | | minutes |

| | | | |
|--------|-------|-----|---------|
| 0.1 | 5.4 | 1.4 | 5.4 |
| 2.5 | 2.4 | 0.4 | 0.3 |
| 0.1 | 0.0 | 0.0 | 0.0 |
| 70 dBA | 532.5 | | minutes |

Wind Direction _____
 Wind Speed _____
 Temperature 31
 Weather Conditions Rain

Raw Vehicle Count Northbound 584
 Raw Vehicle Count Southbound 557
 L_{eq} 65.30
 L_{dn} _____

Reading 10



LEVERETT ROAD VEHICLE MEASUREMENTS

Test No. 11 Date 7 Feb 74 Time 1310

1.1

| | | | |
|------|------|------|------|
| 6.5 | 21.3 | 50.0 | 29.3 |
| 39.3 | 67.4 | 33.1 | 53.4 |
| 28.7 | 37.3 | 17.0 | 38.4 |

45 dBA 431.1 minutes

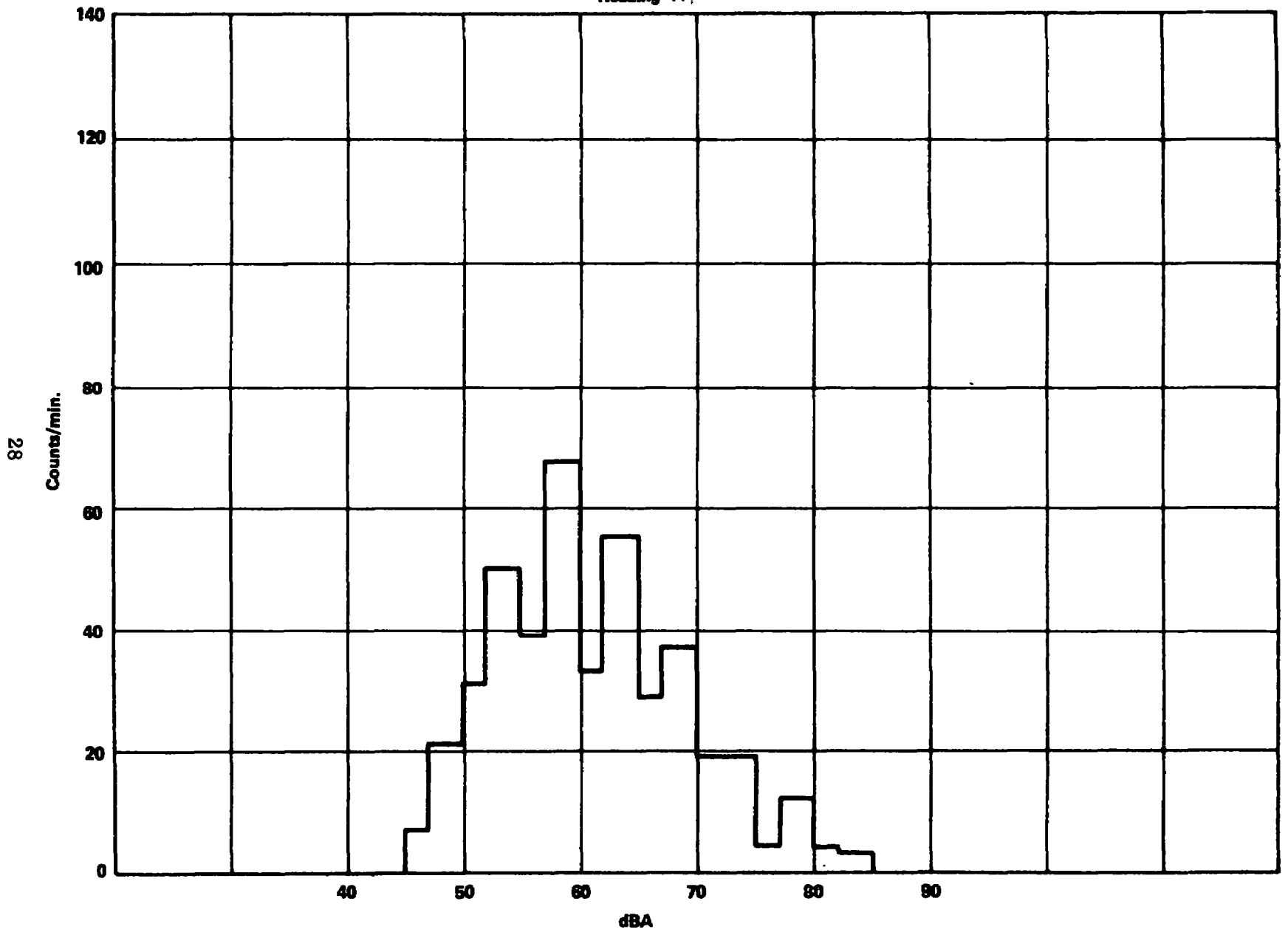
| | | | |
|------|------|-----|------|
| 19.9 | 19.1 | 4.4 | 11.6 |
| 4.0 | 3.7 | 1.1 | 0.5 |
| 0.1 | 0.1 | 0.1 | 0.0 |

70 dBA 431.1 minutes

Wind Direction NNE
 Wind Speed 6.7
 Temperature 18
 Weather Conditions Freezing Rain

Raw Vehicle Count Northbound _____
 Raw Vehicle Count Southbound _____
 L_{eq} _____
 L_{dn} _____

Reading 11



LEVERETT ROAD VEHICLE MEASUREMENTS

Test No. 12 Date 7 Feb 74 Time 2220

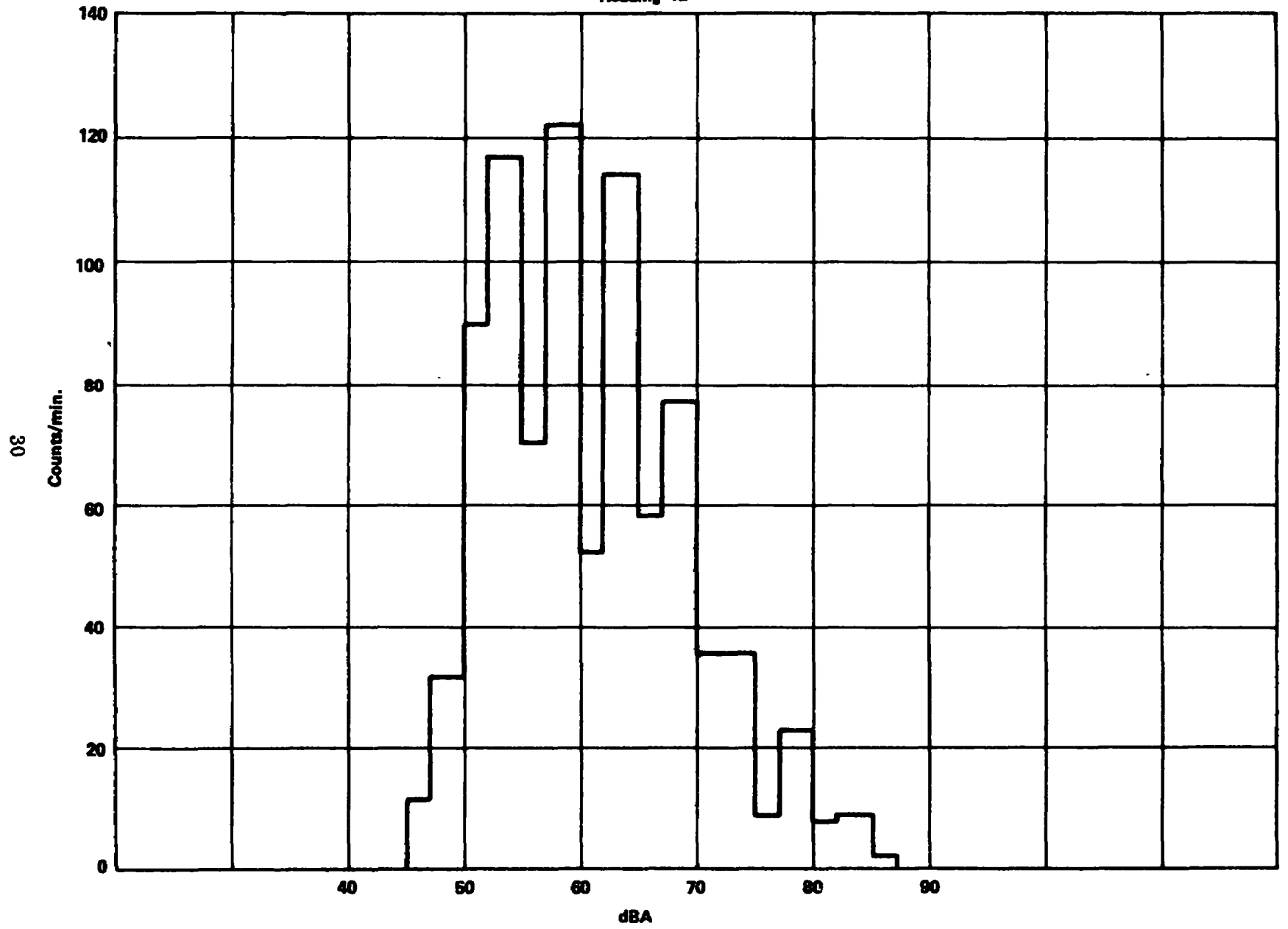
| | | | |
|--------|-------|-------|---------|
| 23.8 | | | |
| 11.5 | 31.6 | 130.0 | 77.0 |
| 70.3 | 121.6 | 52.2 | 114.7 |
| 57.7 | 76.6 | 35.1 | 87.1 |
| 46 dBA | 894.1 | | minutes |

| | | | |
|--------|-------|-----|---------|
| 36.7 | 36.6 | 9.3 | 23.8 |
| 8.4 | 9.0 | 2.2 | 0.9 |
| 0.1 | 0.1 | 0.1 | 0.0 |
| 70 dBA | 894.1 | | minutes |

Wind Direction NE
 Wind Speed 6-8
 Temperature 18
 Weather Conditions Clear

Raw Vehicle Count Northbound _____
 Raw Vehicle Count Southbound _____
 L_{eq} 70.43
 L_{dn} 75.64

Reading 12:



LEVERETT ROAD VEHICLE MEASUREMENTS

Test No. 13 Date 8Feb74 Time 0727

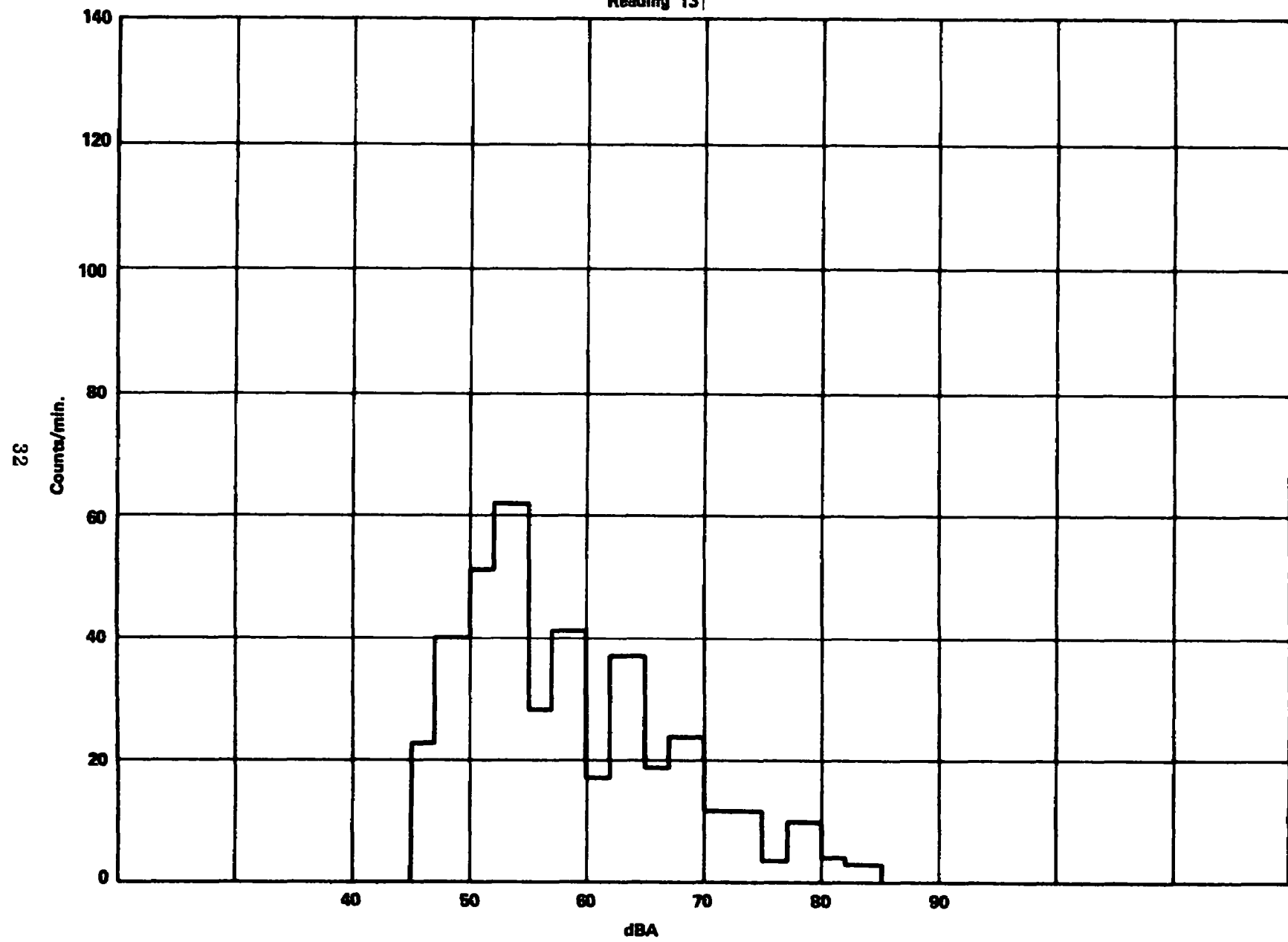
| | | | |
|--------|-------|------|---------|
| 152.6 | | | |
| 22.7 | 39.6 | 51.2 | 62.0 |
| 28.4 | 41.3 | 17.3 | 37.0 |
| 18.5 | 24.2 | 11.3 | 31.1 |
| 45 dBA | 538.9 | | minutes |

| | | | |
|--------|-------|-----|---------|
| 11.9 | 11.8 | 3.4 | 9.6 |
| 3.9 | 3.1 | 0.6 | 0.3 |
| 0.0 | 0.0 | 0.1 | 0.0 |
| 70 dBA | 538.9 | | minutes |

Wind Direction NNE
 Wind Speed 5-6
 Temperature 15
 Weather Conditions Clear

Raw Vehicle Count Northbound _____
 Raw Vehicle Count Southbound _____
 L_{eq} 68.34
 L_{dn} 75.64

Reading 13



LEVERETT ROAD VEHICLE MEASUREMENTS

Test No. 14 Date 8 Feb 74 Time 2147

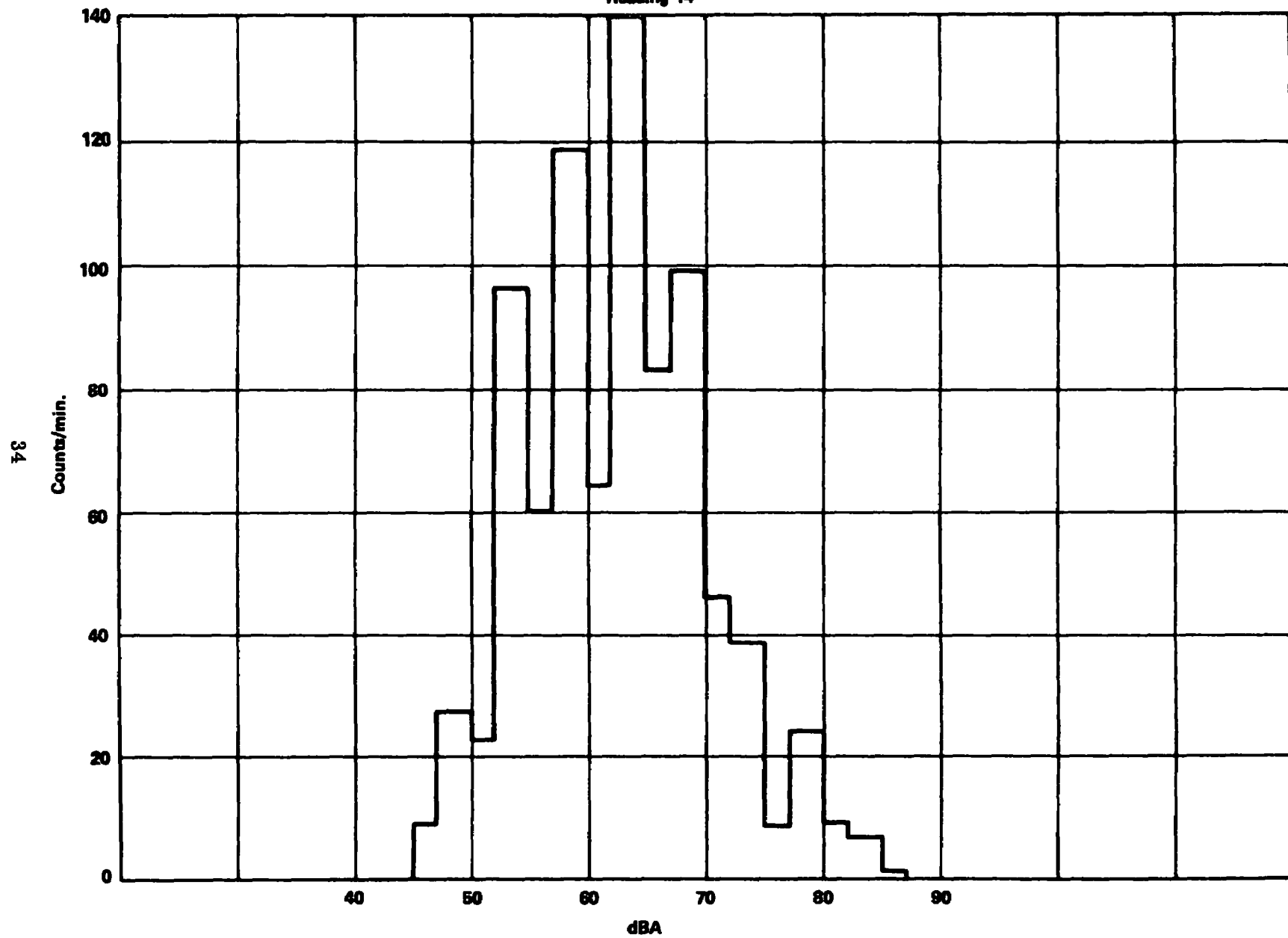
| | | | |
|--------|--------------|------|---------|
| 5.8 | | | |
| 8.5 | 27.3 | 22.1 | 96.0 |
| 59.8 | 117.8 | 64.1 | 140.8 |
| 82.6 | 98.1 | 40.1 | 83.1 |
| 45 dBA | <u>852.7</u> | | minutes |

| | | | |
|--------|--------------|-----|---------|
| 45.8 | 38.4 | 9.2 | 23.9 |
| 9.0 | 7.3 | 1.2 | 0.6 |
| 0.0 | 0.0 | 0.1 | 0.1 |
| 70 dBA | <u>852.7</u> | | minutes |

Wind Direction NE
 Wind Speed 4-6
 Temperature 19
 Weather Conditions Clear

Raw Vehicle Count Northbound 4483
 Raw Vehicle Count Southbound 4984
 L_{eq} 70.26
 L_{dn} 73.75

Reading 14¹



LEVERETT ROAD VEHICLE MEASUREMENTS

Test No. 15 Date 9 Feb 74 Time 0707

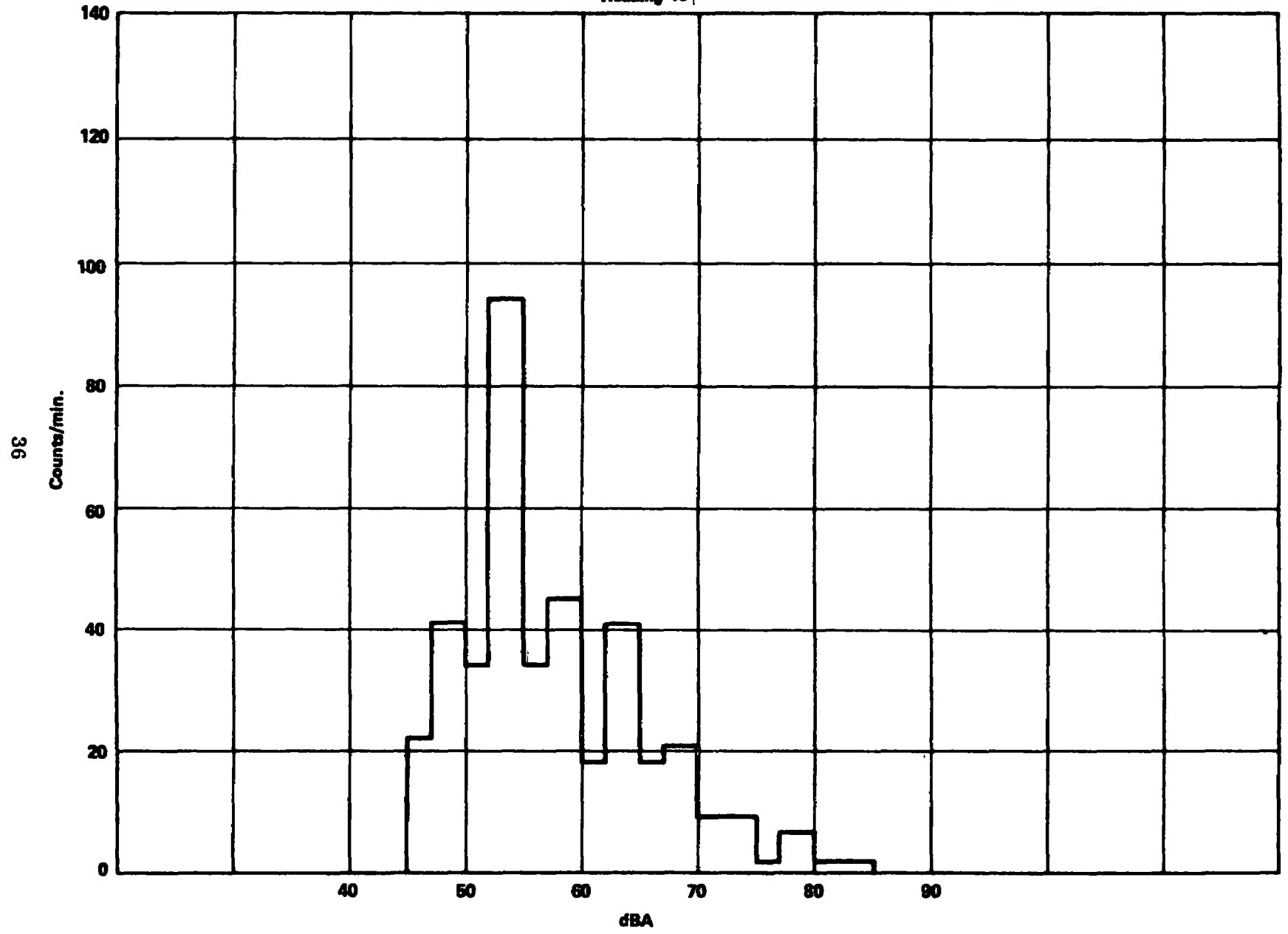
| | | | |
|--------|------|-------|---------|
| 154.4 | | | |
| 21.6 | 41.3 | 36.0 | 93.8 |
| 33.6 | 45.4 | 18.0 | 41.2 |
| 18.0 | 20.7 | 8.0 | 21.5 |
| 45 dBA | | 555.4 | minutes |

| | | | |
|--------|-----|-------|---------|
| 8.7 | 9.3 | 2.4 | 6.6 |
| 2.3 | 1.9 | 0.5 | 0.3 |
| 0.1 | 0.0 | 0.0 | 0.1 |
| 70 dBA | | 555.4 | minutes |

Wind Direction 0
 Wind Speed 0
 Temperature 22
 Weather Conditions Clear

Raw Vehicle Count Northbound _____
 Raw Vehicle Count Southbound _____
 L_{eq} 66.59
 L_{dn} 73.75

Reading 15 |



LEVERETT ROAD VEHICLE MEASUREMENTS

Test No. 16 Date 9 Feb 74 Time 2154

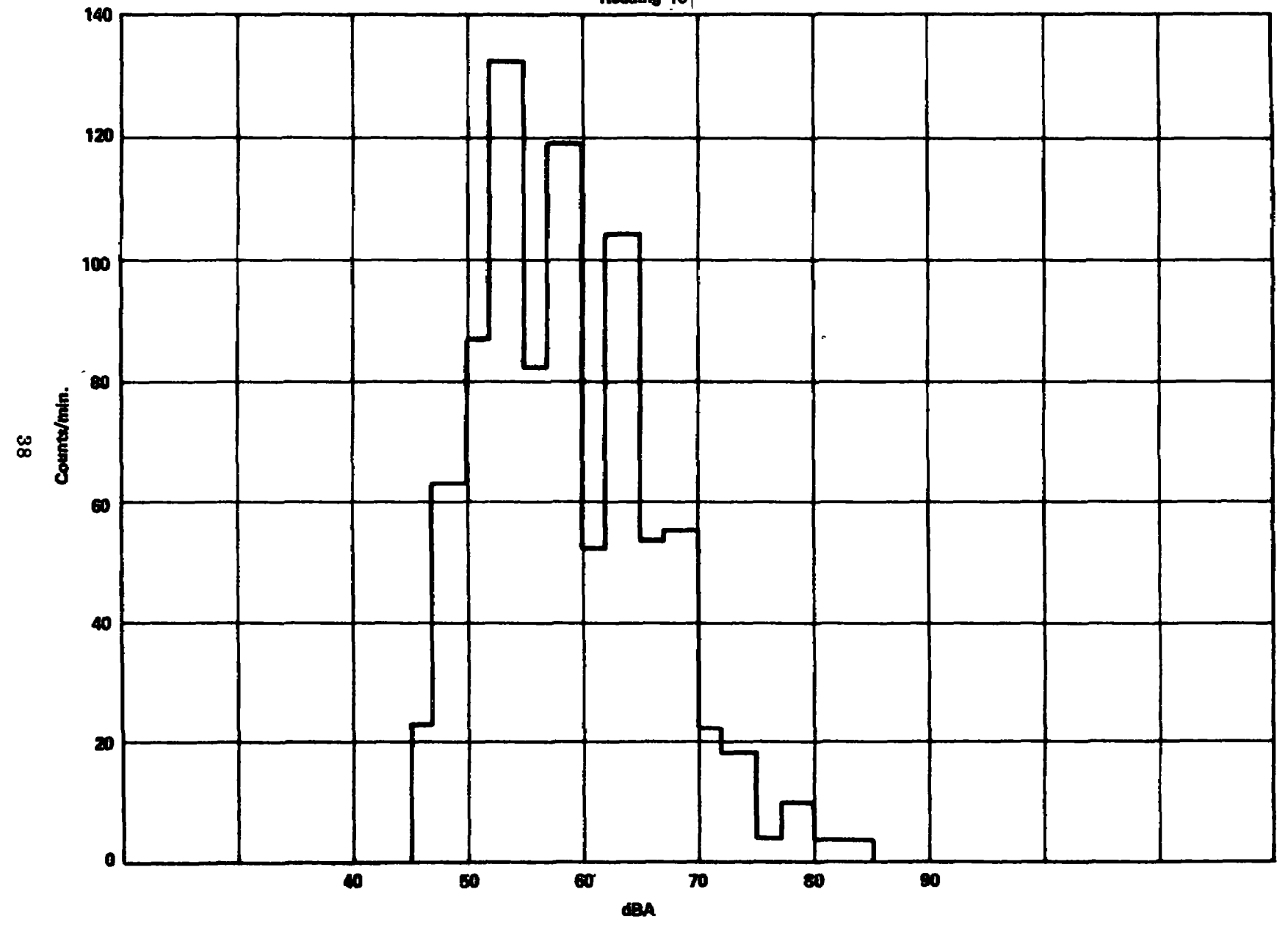
| | | | |
|--------|-------|------|---------|
| 53.0 | | | |
| 23.1 | 62.8 | 86.8 | 132.0 |
| 81.6 | 119.3 | 51.8 | 103.8 |
| 53.9 | 55.0 | 19.5 | 35.6 |
| 45 dBA | 881.6 | | minutes |

| | | | |
|--------|-------|-----|---------|
| 22.5 | 17.7 | 3.7 | 9.5 |
| 3.7 | 3.4 | 0.6 | 0.3 |
| 0.1 | 0.0 | 0.0 | 0.0 |
| 70 dBA | 881.6 | | minutes |

Wind Direction 0
 Wind Speed 0
 Temperature 32
 Weather Conditions Clear

Raw Vehicle Count Northbound 3657
 Raw Vehicle Count Southbound 4191
 L_{eq} 66.91
 L_{dn} 71.35

Reading 16



LEVERETT ROAD VEHICLE MEASUREMENTS

Test No. 17 Date 10Feb74 Time 0658

168.7

| | | | |
|------|------|------|------|
| 34.8 | 52.9 | 50.0 | 97.6 |
| 25.7 | 34.3 | 12.5 | 25.4 |
| 10.9 | 11.7 | 3.4 | 8.2 |

48 dBA

536.7

minutes

| | | | |
|-----|-----|-----|-----|
| 4.0 | 3.0 | 0.9 | 2.2 |
| 1.2 | 1.1 | 0.2 | 0.1 |
| 0.0 | 0.0 | 0.1 | 0.0 |

70 dBA

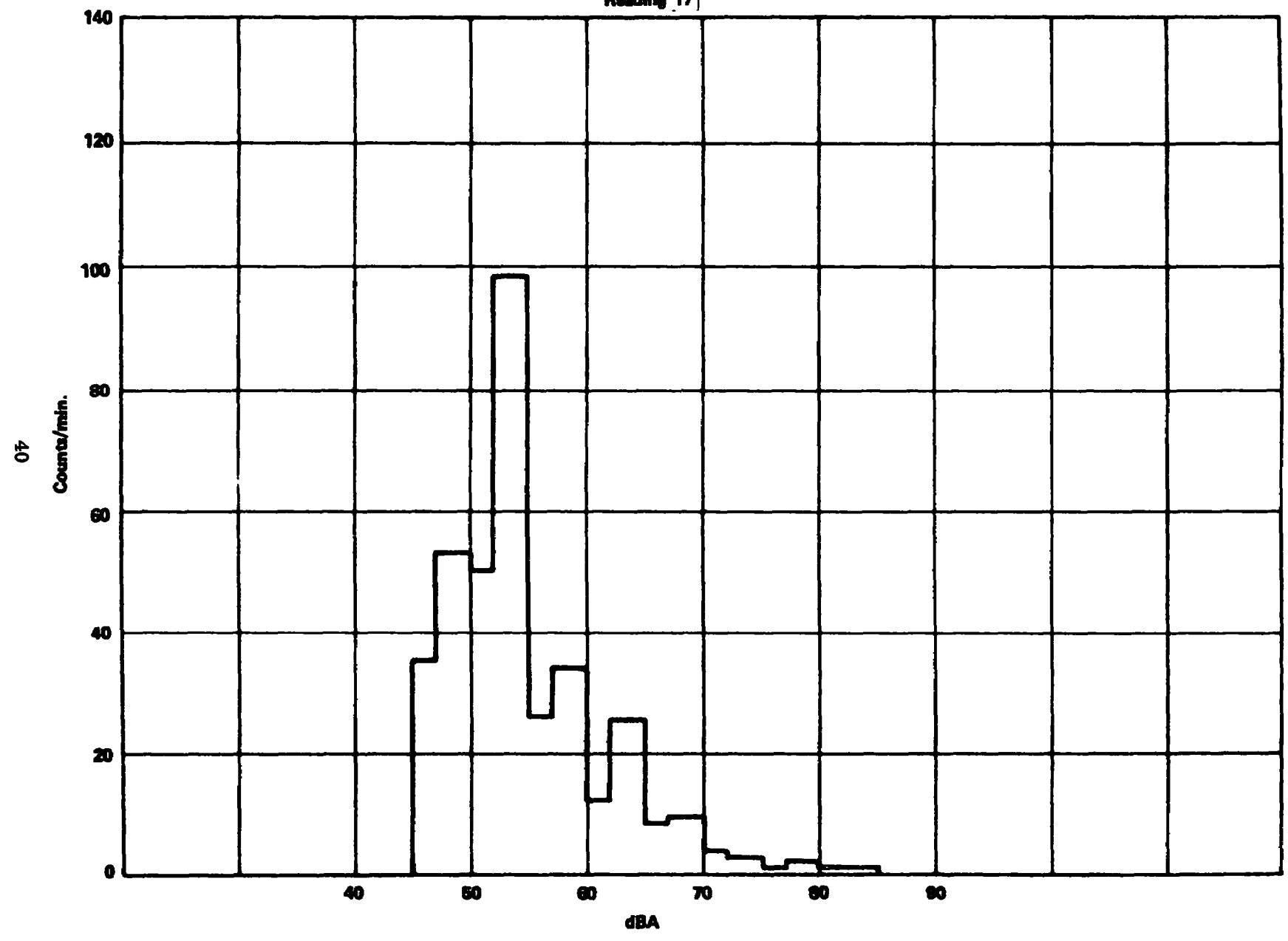
536.7

minutes

Wind Direction SW
 Wind Speed 10-12
 Temperature 28
 Weather Conditions Clear

Raw Vehicle Count Northbound 631
 Raw Vehicle Count Southbound 448
 L_{eq} 64.51
 L_{dn} 71.35

Reading 17



LEVERETT ROAD VEHICLE MEASUREMENTS

Test No. 18 Date 10 Feb 74 Time 7:27:0

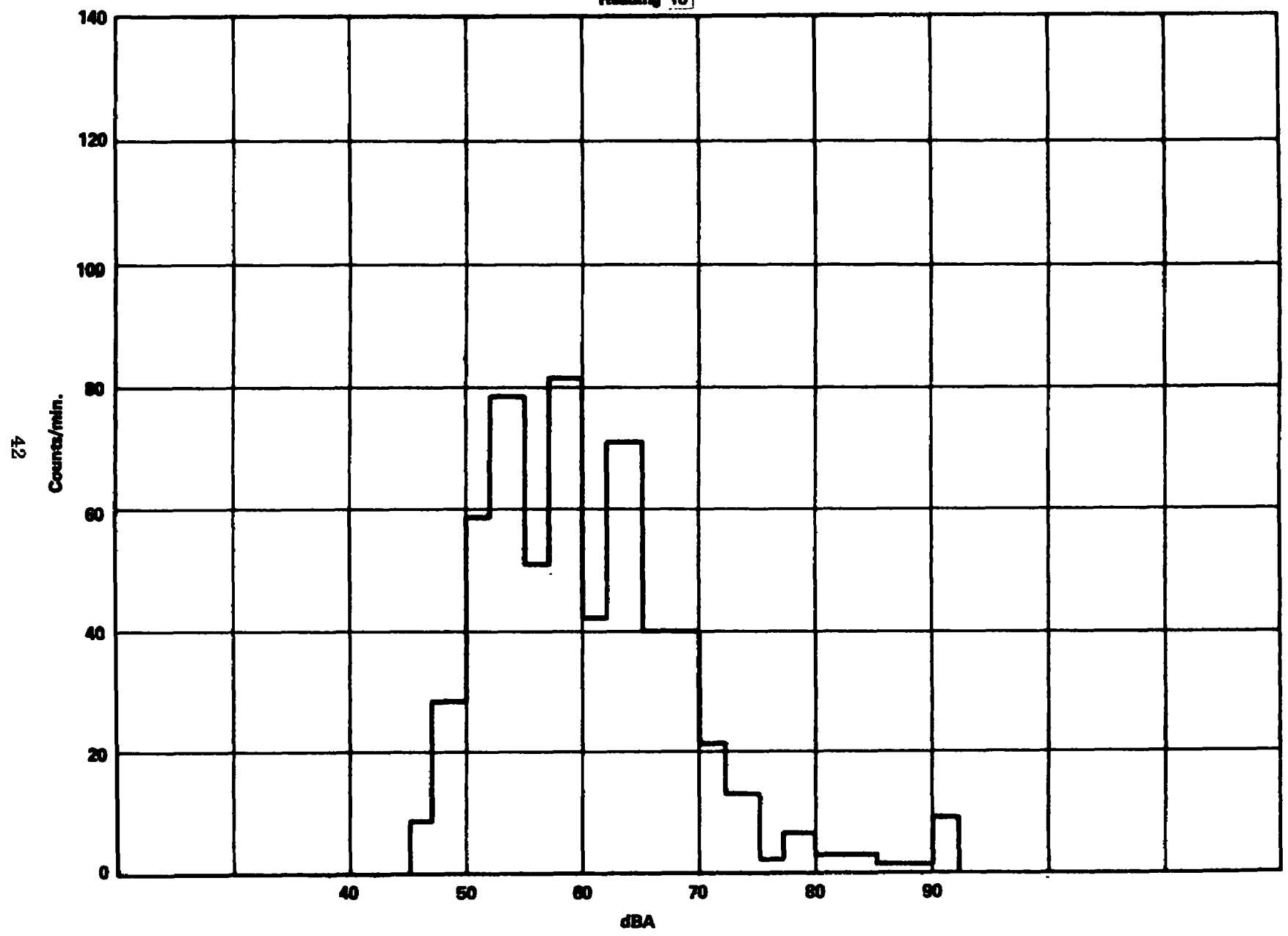
| | | | |
|--------|---------------|------|------|
| 0.0 | | | |
| 10.9 | 28.5 | 58.1 | 78.0 |
| 50.9 | 80.6 | 41.6 | 70.6 |
| 40.0 | 39.9 | 21.3 | 24.6 |
| 45 dBA | 535.7 minutes | | |

| | | | |
|--------|---------------|-----|-----|
| 19.6 | 12.9 | 2.5 | 6.6 |
| 2.6 | 2.6 | 0.8 | 1.4 |
| 2.1 | 0.0 | 1.4 | 1.0 |
| 70 dBA | 535.7 minutes | | |

Wind Direction NNW
 Wind Speed 10-12
 Temperature 16
 Weather Conditions CLEAR

Raw Vehicle Count Per Hour
 Raw Vehicle Count Per Minute
 L_{eq} 75.96
 L_{dn} 78.54

Reading 18



LEVERETT ROAD VEHICLE MEASUREMENTS

Test No. 19 Date 11/26/74 Time 0707

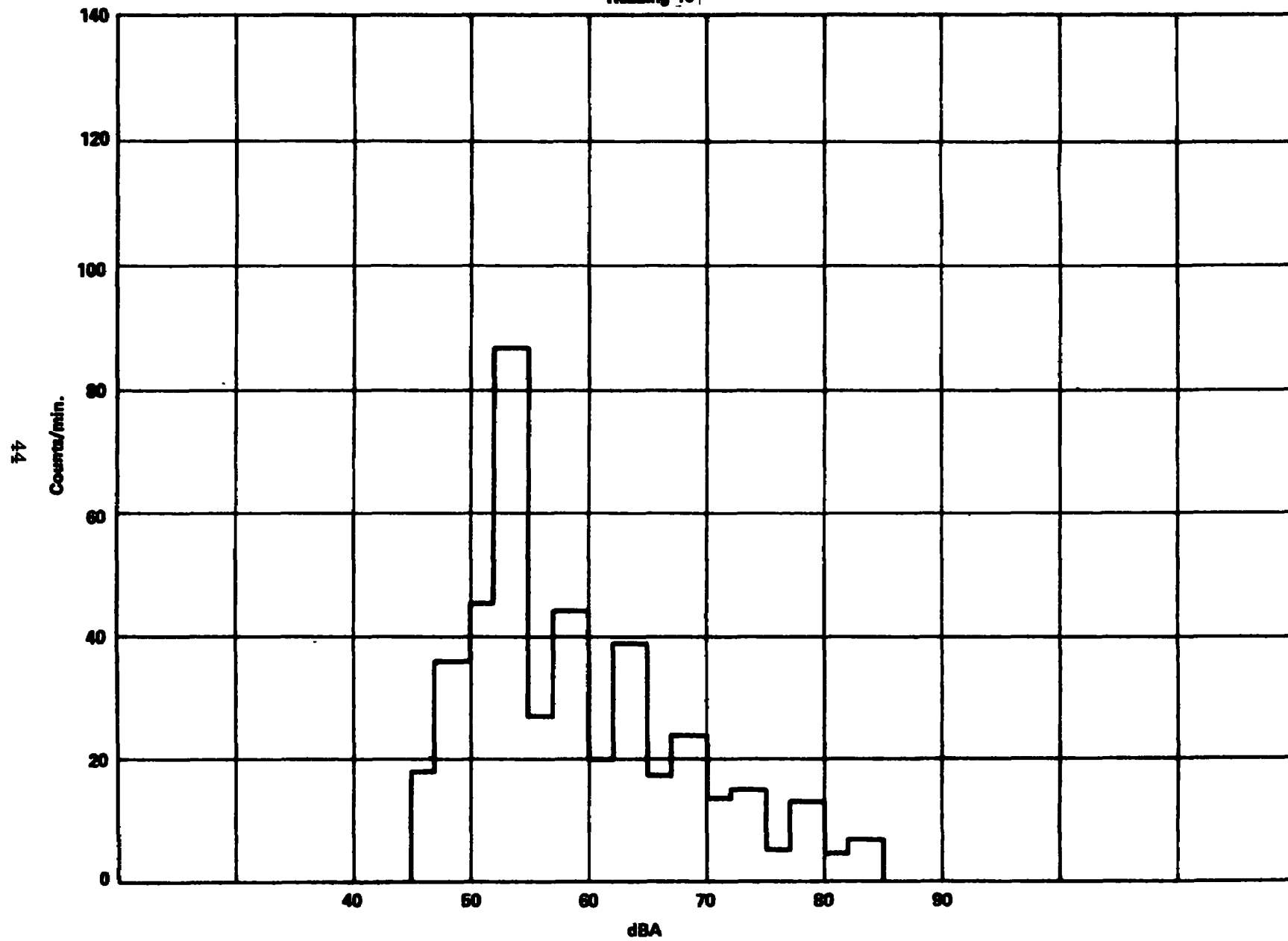
| | | | |
|--------|------|-------|---------|
| 71.3 | | | |
| 18.0 | 36.2 | 54.7 | 85.0 |
| 26.7 | 43.8 | 18.2 | 38.6 |
| 17.4 | 24.4 | 13.8 | 46.6 |
| 45 dBA | | 505.6 | minutes |

| | | | |
|--------|------|-------|---------|
| 12.6 | 15.1 | 4.9 | 12.7 |
| 5.3 | 6.8 | 2.0 | 1.0 |
| 0.0 | 0.1 | 0.2 | 0.0 |
| 70 dBA | | 505.6 | minutes |

Wind Direction 0
 Wind Speed 0
 Temperature 15
 Weather Conditions Clear

Raw Vehicle Count Northbound 1196
 Raw Vehicle Count Southbound 1200
 L_{eq} 71.25
 L_{dn} 73.54

Reading 19



LEVERETT ROAD VEHICLE MEASUREMENTS

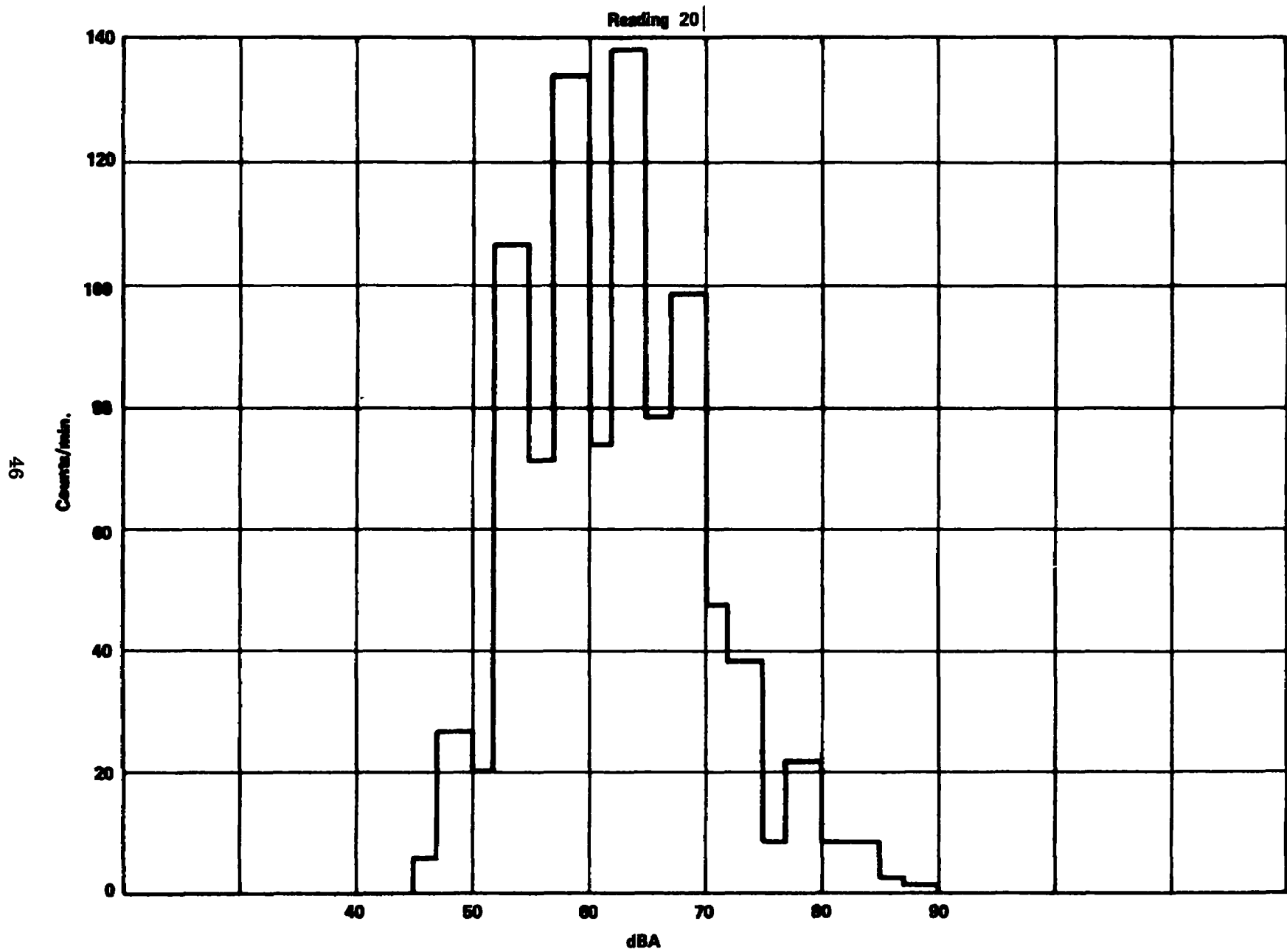
Test No. 20 Date 11 Feb 74 Time 2147

| | | | |
|--------|-------|------|---------------|
| 0.0 | | | |
| 6.2 | 26.4 | 20.0 | 106.5 |
| 70.9 | 132.9 | 73.1 | 137.1 |
| 78.5 | 97.6 | 42.1 | 79.6 |
| 45 dBA | | | 872.1 minutes |

| | | | |
|--------|------|-----|---------------|
| 47.0 | 37.6 | 8.4 | 21.4 |
| 8.1 | 8.2 | 1.9 | 0.7 |
| 0.0 | 0.1 | 0.1 | 0.0 |
| 70 dBA | | | 977.1 minutes |

Wind Direction SSW
 Wind Speed 9-10
 Temperature 33
 Weather Conditions Clear

Raw Vehicle Count Northbound _____
 Raw Vehicle Count Southbound _____
 L_{eq} 70.37
 L_{dn} _____



LEVERETT ROAD VEHICLE MEASUREMENTS

Test No. 21 Date 13 Feb 74 Time 0720

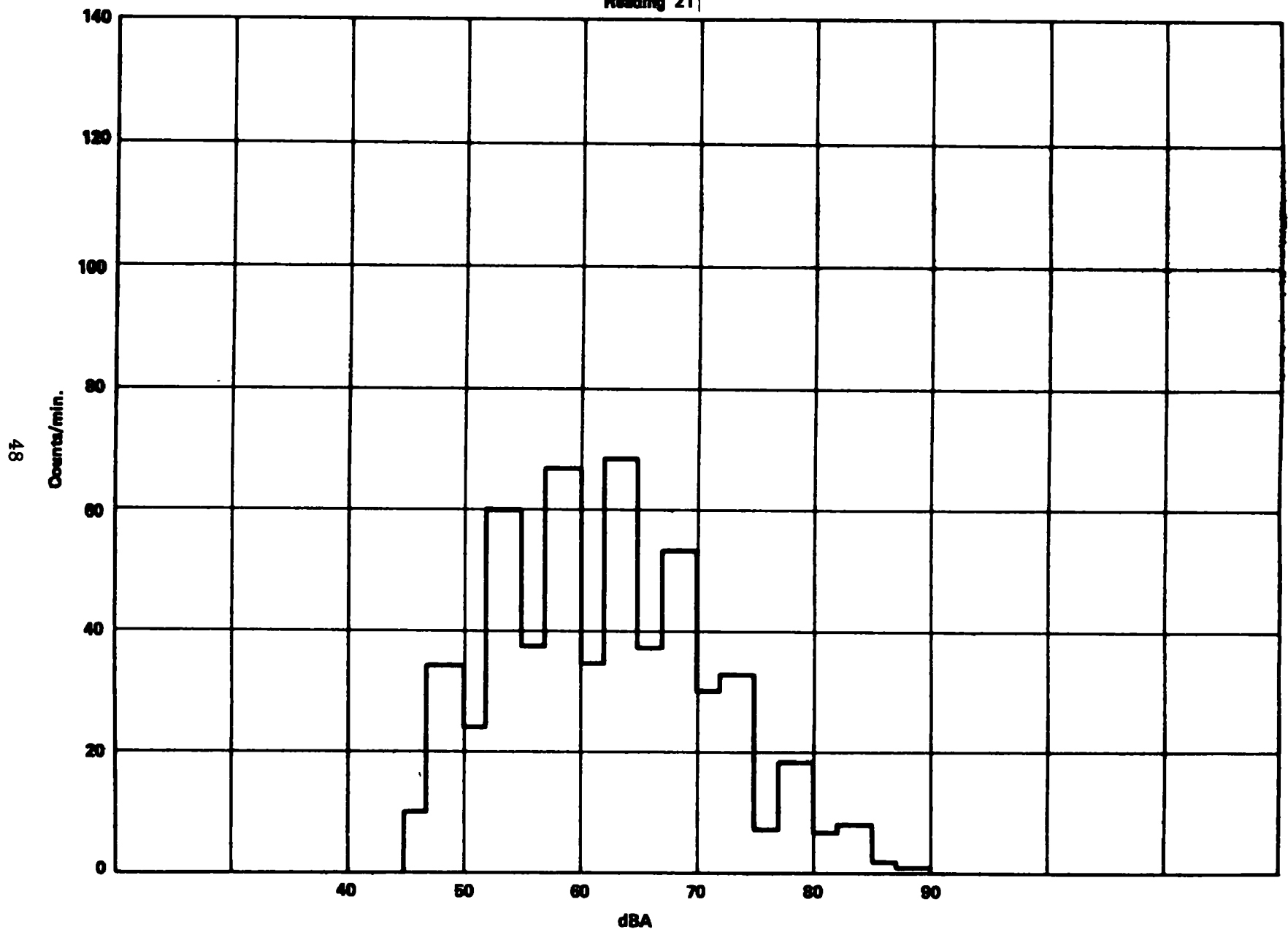
| | | | |
|--------|-------|---------|------|
| 25.4 | | | |
| 100 | 340 | 24.2 | 60.0 |
| 37.0 | 66.4 | 33.7 | 67.9 |
| 36.5 | 53.2 | 29.1 | 71.8 |
| 45 dBA | 554.2 | minutes | |

| | | | |
|--------|-------|---------|------|
| 29.6 | 32.5 | 7.2 | 18.3 |
| 6.6 | 8.3 | 2.4 | 1.3 |
| 0.0 | 0.1 | 0.1 | 0.1 |
| 70 dBA | 554.2 | minutes | |

Wind Direction S
 Wind Speed 4-5
 Temperature 31
 Weather Conditions Clear

Raw Vehicle Count Northbound 1365
 Raw Vehicle Count Southbound 1284
 L_{eq} 71.94
 L_{dn} _____

Reading 21 |



LEVERETT ROAD VEHICLE MEASUREMENTS

Test No. 22 Date 13 FEB 74 Time 2132

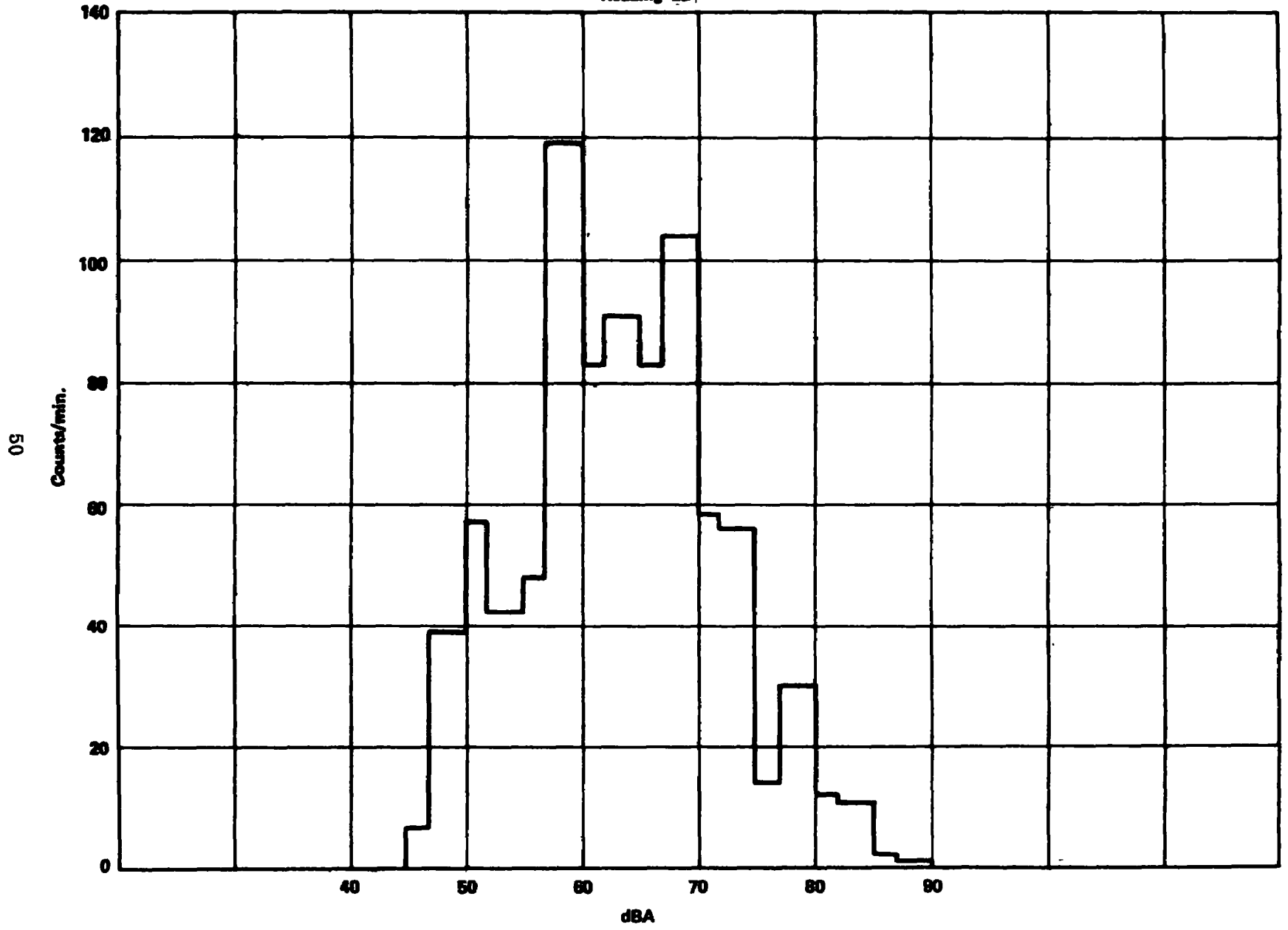
| | | | |
|--------|-------|------|---------|
| 00 | | | |
| 7.5 | 89.1 | 56.7 | 42.5 |
| 47.6 | 119.2 | 82.6 | 91.2 |
| 83.4 | 103.8 | 58.5 | 104.2 |
| 41 dba | 846.1 | | minutes |

| | | | |
|--------|-------|------|---------|
| 58.6 | 56.1 | 13.9 | 30.2 |
| 12.3 | 11.2 | 2.0 | 1.1 |
| 0.1 | 0.1 | 0.1 | 0.1 |
| TO dba | 846.1 | | minutes |

Wind Direction NNE
 Wind Speed 8-10
 Temperature 31
 Weather Conditions Clear

Raw Vehicle Count Northbound 4214
 Raw Vehicle Count Southbound 4697
 L_{eq} 71.72
 L_{dn} 77.80

Reading 22



LEVERETT ROAD VEHICLE MEASUREMENTS

Test No. 23 Date 4/16/74 Time 0715

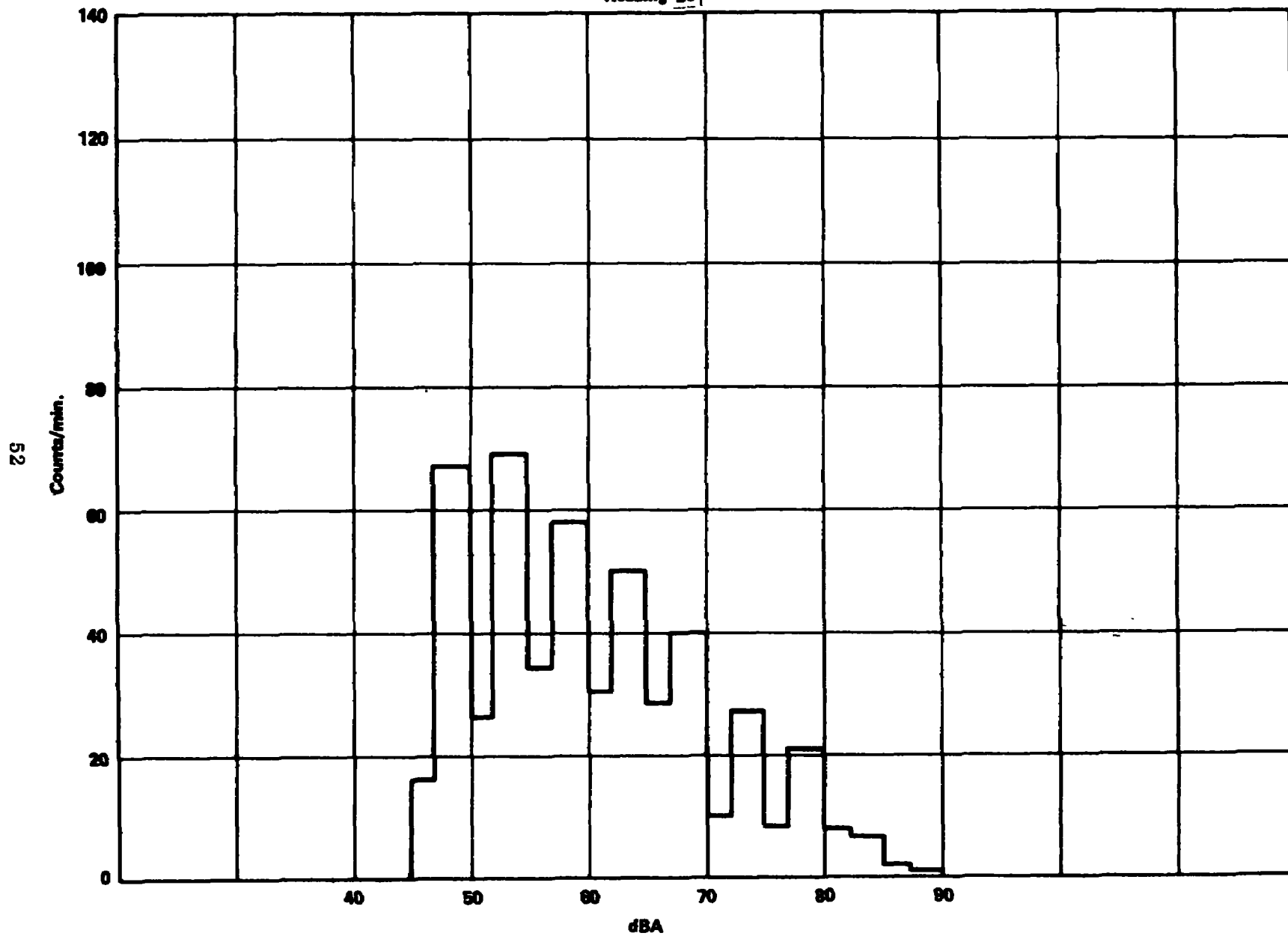
| | | | |
|--------|-------|---------|------|
| 50.9 | | | |
| 25.9 | 66.7 | 15.5 | 72.4 |
| 34.1 | 58.2 | 30.3 | 49.3 |
| 27.9 | 40.2 | 25.0 | 69.5 |
| 65 dBA | 575.5 | minutes | |

| | | | |
|--------|-------|---------|------|
| 10.1 | 26.9 | 7.5 | 20.9 |
| 8.5 | 7.5 | 1.6 | 0.9 |
| 0.2 | 0.1 | 0.0 | 0.1 |
| 70 dBA | 575.5 | minutes | |

Wind Direction NNE
 Wind Speed 4-7
 Temperature 27
 Weather Conditions Clear

Raw Vehicle Count Northbound 1451
 Raw Vehicle Count Southbound 1409
 L_{eq} 71.33
 L_{dn} 77.80

Reading 23



LEVERETT ROAD VEHICLE MEASUREMENTS

Test No. 24 Date 14 Feb 74 Time 2201

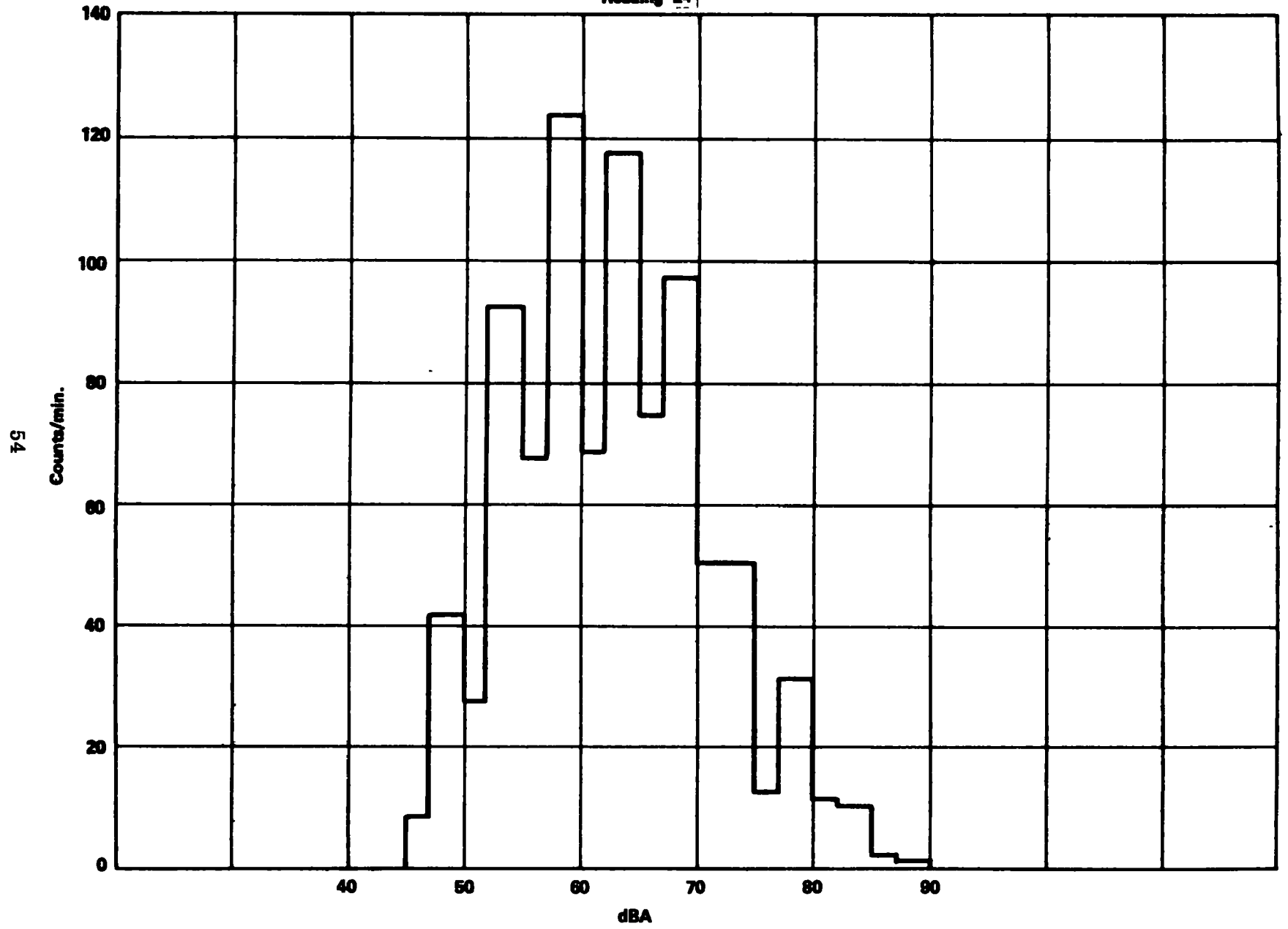
| | | | |
|--------|-------|------|---------|
| 0.0 | | | |
| 8.5 | 40.7 | 25.5 | 92.0 |
| 66.6 | 123.1 | 68.4 | 117.1 |
| 74.3 | 96.8 | 50.2 | 107.6 |
| 45 dBA | 878.3 | | minutes |

| | | | |
|--------|-------|------|---------|
| 48.8 | 50.0 | 11.6 | 30.7 |
| 11.4 | 9.8 | 1.6 | 0.8 |
| 0.2 | 0.1 | 0.0 | 0.0 |
| 70 dBA | 878.3 | | minutes |

Wind Direction NNE
 Wind Speed 6-10
 Temperature 27
 Weather Conditions Clear

Raw Vehicle Count Northbound 4547
 Raw Vehicle Count Southbound 4851
 L₉₅ 71.04
 L₅₀ 77.23

Reading 24



LEVERETT ROAD VEHICLE MEASUREMENTS

Test No. 25 Date 15 Feb 74 Time 0714

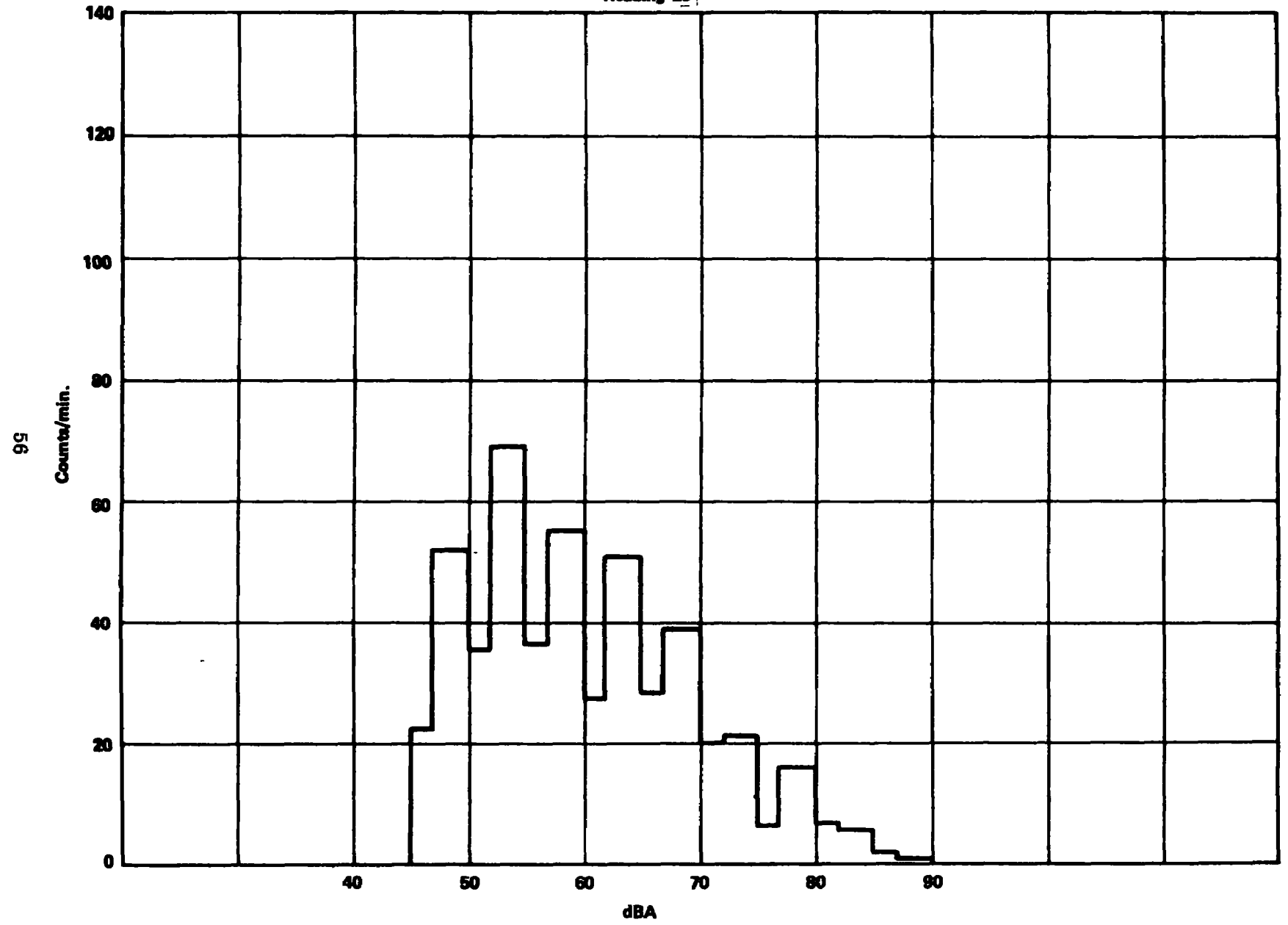
| | | | |
|--------|-------|------|---------|
| 58.2 | | | |
| 27.0 | 52.0 | 35.2 | 65.0 |
| 26.2 | 55.1 | 27.0 | 50.9 |
| 29.2 | 38.8 | 20.3 | 54.8 |
| 41 dBA | 547.7 | | minutes |

| | | | |
|--------|-------|-----|---------|
| 20.2 | 21.0 | 5.8 | 16.3 |
| 7.0 | 6.4 | 1.2 | 0.8 |
| 0.2 | 0.1 | 0.0 | 0.1 |
| 70 dBA | 547.7 | | minutes |

Wind Direction NNE
 Wind Speed 3-5
 Temperature 29
 Weather Conditions Clear

Raw Vehicle Count Northbound 1474
 Raw Vehicle Count Southbound 1634
 L_{eq} 70.78
 L_{dn} 77.23

Reading 25



LEVERETT ROAD VEHICLE MEASUREMENTS

Test No. 26 Date 15 Feb 74 Time 1415

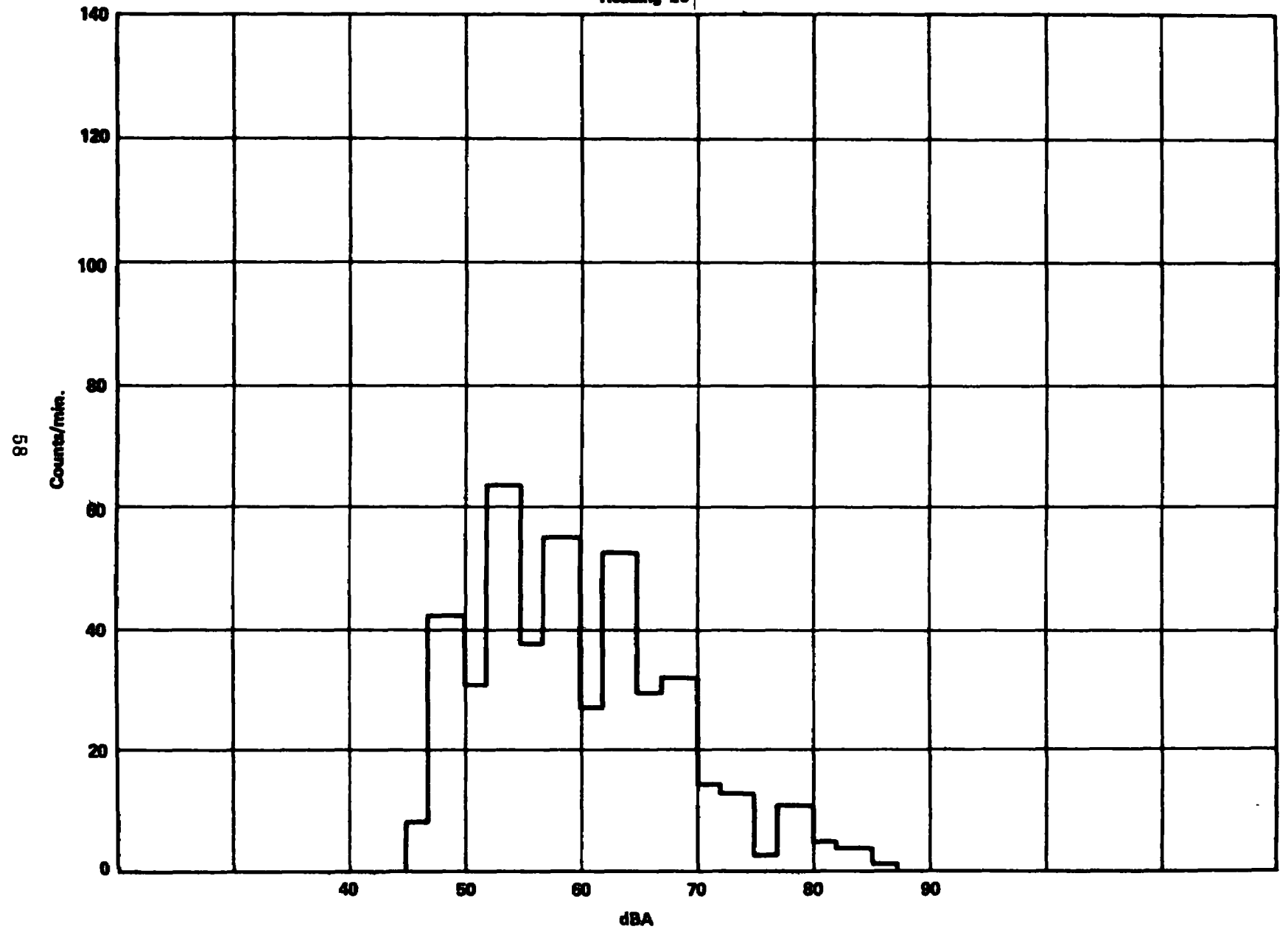
| | | | |
|--------|-------|------|---------|
| 0.3 | | | |
| 7.9 | 41.9 | 30.0 | 63.0 |
| 37.7 | 54.7 | 27.4 | 51.7 |
| 29.2 | 31.6 | 12.3 | 35.0 |
| 45 dBA | 425.1 | | minutes |

| | | | |
|--------|-------|-----|---------|
| 14.1 | 12.6 | 3.4 | 11.3 |
| 5.2 | 3.8 | 0.6 | 0.5 |
| 0.0 | 0.0 | 0.0 | 0.0 |
| 70 dBA | 425.1 | | minutes |

Wind Direction _____
 Wind Speed _____
 Temperature _____
 Weather Conditions _____

Raw Vehicle Count Northbound _____
 Raw Vehicle Count Southbound _____
 L_{eq} 69.77
 L_{dn} _____

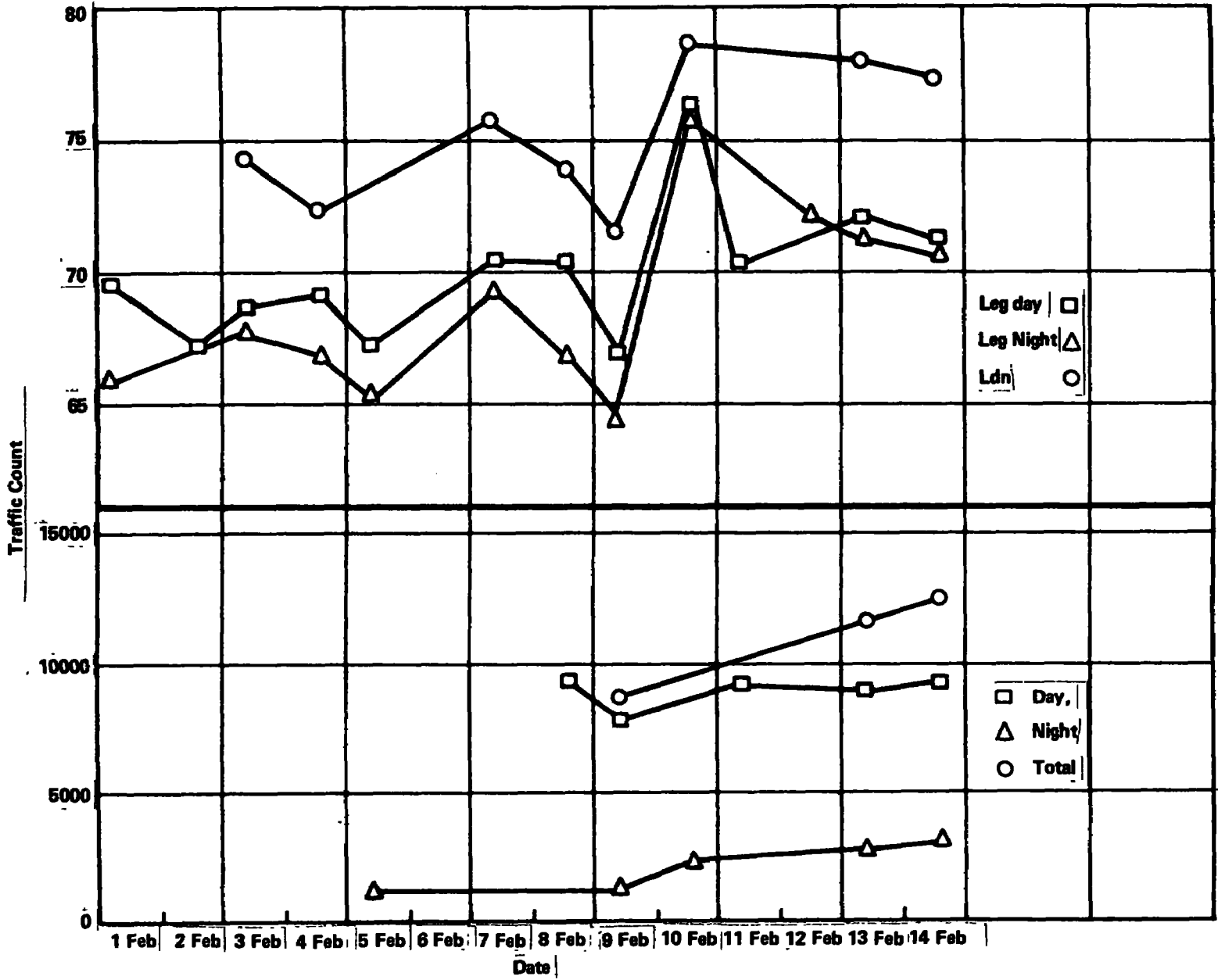
Reading 26



RESULTS

The results are shown on the following graph and corresponding chart. By dates, the L_{eq} per day and night and the L_{dn} are plotted along with the traffic measured in the near lane by day, by night, and total traffic. The raw data traffic measurements show that the flow is more or less equal in the two directions, so the total traffic, including the far lanes, can be considered double the traffic flow information given in the graph and chart.

09



| Date | Traffic Flow (Day) | Traffic Flow (Night) | L _{eq} (Day) | L _{eq} (Night) | L _{dn} |
|--------|--------------------|----------------------|-----------------------|-------------------------|-----------------|
| 1 Feb | | | 68.60 | 63.15 | |
| 2 Feb | | | 67.30 | | |
| 3 Feb | | | 68.85 | 67.85 | 74.42 |
| 4 Feb | | | 69.33 | 66.90 | 72.36 |
| 5 Feb | | 1266 | 67.28 | 65.30 | |
| 6 Feb | | | | | |
| 7 Feb | | | 70.43 | 68.34 | 75.64 |
| 8 Feb | 9467 | | 70.26 | 66.59 | 73.75 |
| 9 Feb | 7848 | 1079 | 66.91 | 64.51 | 71.35 |
| 10 Feb | | 2396 | 75.96 | 71.25 | 78.54 |
| 11 Feb | 9285 | | 70.37 | | |
| 12 Feb | | | | 71.94 | |
| 13 Feb | 8911 | 2860 | 71.72 | 71.33 | 77.80 |
| 14 Feb | 9398 | 3108 | 71.04 | 70.78 | 77.23 |

Summary Results of Traffic Flow and Noise Level

| | | | |
|---|--------------------------------------|---|------------------------------|
| BIBLIOGRAPHIC DATA SHEET | 1. Report No. 550/9-74-010 | 2. | 3. Recipient's Accession No. |
| 4. Title and Subtitle Environmental Noise Measurements on Interstate 57 During and After Truck Strike | | 5. Report Date June 1974 | |
| 7. Author(s) P.D. Schomer and B.L. Homans | | 8. Performing Organization Repr. No. | |
| 9. Performing Organization Name and Address Construction Engineering Research Laboratory U.S. Department of the Army | | 10. Project/Task/Work Unit No. | |
| 12. Sponsoring Organization Name and Address Environmental Protection Agency Office of Noise Abatement and Control Crystal Mall #2, 1921 Jefferson Davis Highway Arlington, Virginia 20460 | | 13. Type of Report & Period Covered Final | |
| 15. Supplementary Notes | | 14. | |
| 16. Abstracts <p>Noise and traffic-count data were recorded and analyzed during and immediately after a nationwide strike of independent truckers. This report presents statistical noise levels, equivalent sound level (L_{eq}), and day-night level (L_{dn}) for a two-week data-gathering period. From these results, it is possible to infer the truck contribution to highway noise.</p> | | | |
| 17. Key Words and Document Analysis. 17a. Descriptors TRUCK NOISE, HIGHWAY NOISE, L_{dn}, L_{eq} | | | |
| 17b. Identifiers/Open-Ended Terms | | | |
| 17c. COSATI Field/Group | | | |
| 18. Availability Statement Not restricted. Limited supply available in Office of Noise Abatement and Control. | | 19. Security Class (This Report) UNCLASSIFIED X | 21. No. of Pages |
| | | 20. Security Class (This Page) UNCLASSIFIED X | 22. Price |