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2008 FACILITY NOISE SURVEY

FOR

NORLITE CORPORATION
COHOES, NEW YORK

Prepared for
Norlite Corporation
628 S. Saratoga Street
Cohoes, NY 12047

Prepared by: John J. Earshen

Technical Report AA-2159

April 20, 2009

2008 FACILITY NOISE SURVEY FOR NORLITE CORPORATION COHOES, NEW YORK

INTRODUCTION

Angevine Acoustical Consultants, Inc. (AAC) was retained by Norlite Corporation to conduct exploratory environmental noise surveys at, and adjoining, the facility for manufacturing lightweight aggregate in the Town of Colonie and City of Cohoes, New York. The objective was to perform an assessment of noise levels in accordance with a proposal submitted to New York State Department of Environmental Conservation (NYSDEC) on March 31, 2008 as referenced in the 373 HW/APC Permit Special Condition 9. Based on comments from NYSDEC particular focus was placed on the Brighton Pointe development approximately 2600 feet (½ mile) north of the facility. Throughout the study reference to NYSDEC regulations for solid waste facilities 6 NYCRR Part 360-1.14(p) was used.

Normally the facility is in continuous operation twenty-four hours per day over the entire year. This places constraints on the abilities to identify and measure noise contributions from individual equipment sources at the receiving points of interest. In limited cases, it is feasible to conduct noise surveys during short periods when some individual sources at the facility can be selectively turned off and on. Otherwise, this is not possible because other groups of sources are operating jointly and cannot be operated individually (e.g. kilns and integrated auxiliary components).

A unique opportunity to conduct surveys occurred on Saturday, October 4, 2008. Norlite planned a complete plant wide shut-down to enable repairs to the high voltage power system at the facility. Norlite selected this day based on favorable weather predictions and the need to complete the repairs before the winter season approached. The repairs required disconnecting power to the facility from the high voltage connection to the National Grid utility line. This disconnect rendered the plant totally without power for many hours. It was therefore possible to survey continuously noise levels at five designated points of reception during day and night hours with and without plant operation. It was anticipated that a clear differentiation would be possible between noise generated by the facility versus noise generated by community activities such as vehicle traffic, rail traffic, aviation traffic, and other commercial and industrial sources.

Plant operations with shutdown of shale feed to the kilns started at approximately 1:00 a.m. on the morning of Saturday, October 4, 2008. Power to the facility was disconnected by 7:00 a.m. Power was restored to the facility at approximately 9:30 p.m. on the evening of Saturday, October 4, 2008. Resumption of plant operations began with re-heating the kilns shortly after power-up.

Survey effort began at 4:00 p.m. on Friday, October 3, 2008 and concluded at approximately 11:00 p.m. on the night of Saturday, October 4, 2008. This gave a broad opportunity to assess and identify noise levels at the survey points with the Norlite facility operating and shutdown. Weather conditions were ideal for the surveys and were clear and cool with prevailing light breezes.

Sound surveys utilized continuously operating loggers positioned at five points of reception in and around the facility shown on Figure 1. The loggers were set to monitor "A" weighted sound pressure levels and store levels averaged over 15 minute increments. The instruments conform to specifications for type 2 sound level meters under ANSI S1.4, 1983 (R2006). To support identification and properties of particular sources, spot measurements were made with a precision grade sound level meter conforming to ANSI S1.4 1983 (R2006). A high resolution spectrum analyzer was also used to differentiate among various sources producing tonal components.

FINDINGS

Results of Continuous Noise Level Logging

Continuous data logging was used to evaluate the general A weighted broad band background noise levels at various receptor locations. The community around the Norlite facility is in a very active urban area with noise contributions from activities such as vehicle traffic, rail traffic, aviation traffic, and other commercial and industrial sources. The area is surrounded by major local, state and interstate roads including State Route 32, State Route 7 (Alternate 7), Interstate 787, and Interstate 87. Canadian Pacific (D & H) railroad has an active transportation line that runs along the eastern boundary of the plant. The facility is located under the approach and departure air corridor for the Albany International Airport which is approximately 4 air miles west of the facility. It was found that the general broad band background noise in and around the facility is approximately 50 dBA.

The reference standard from the 6 NYCRR Part 360 regulations for an urban area for A-weighted hourly-average noise levels ($L_{eqA\text{-}1hr}$) are:

7:00 a.m. to 10:00 p.m.	67 dBA
10:00 p.m. to 7:00 a.m.	57 dBA

Although Part 360 permits monitoring for portions of an hour, the loggers were set for continuous monitoring of A-weighted sound levels to avoid approximation of results. The loggers were programmed to compute and record the average sound levels in time increments of one-quarter hour ($L_{eqA\text{-}15min}$). Use of such higher resolution time averaging permits examination of the sound level time histories in greater detail. The data can be readily interpreted as one-hour average sound levels ($L_{eqA\text{-}1hr}$) for direct comparison to the Part 360 standards. The results show greater detail without loss of information because the hourly averages are directly related to quarter hour averages. Confusion is avoided because the hour average over four adjacent quarters cannot exceed the maximum value of any of the four.

Results from each logger are shown graphically in Figures 2 through 6. Each plot is labeled with a numerical location shown in Figure 1 and is accompanied with a table of quarter-hour average values from which it is derived. Each plot is annotated with the time duration of Norlite plant shutdown. This assists in determination of potential contributions from Norlite above the broad band background noise levels. The tables accompanying plots for each survey location list computed 15 minute duration L_{eqA} average levels. In addition there is a column listing L_{max} for each increment. These are the single highest levels sensed in each 15 minute increment. They correspond to the maximum A-weighted sound level that would be displayed on a sound level meter continuously monitoring at survey locations.

Figure 2 presents data for Location 1 at a residence at 11 Hilltop Drive at Brighton Pointe north of the facility. Sound levels for both night and day are below the 57 dBA threshold. It is evident from the graph that Norlite appears to have little to no effect on the baseline noise levels at the Brighton Pointe development.

Figure 3 presents data for Location 2 which is at the southeast corner of the facility. The logger was located approximately 70 feet west of the active Canadian Pacific (D & H) railroad line. There are multiple road crossings along the couple of miles of track running north and south through the City of Cohoes. Under Federal Railroad Administration mandates, these types of crossings require full horn sounding. Furthermore the full horn sound levels must peak between 90 and 110 dBA at a distance of 100 feet in front of the

locomotive. Such short duration high levels from the railroad may not skew the data to be over the Part 360 standards which pertain to hour long averages.

Consider the highest quarter hour average level of 68.0 dBA during plant shutdown at 4:09 p.m. (16:09:07). From the table, the single maximum level (L_{max}) during the quarter was 85.5 dBA. This illustrates how a short duration of a single high level may not exceed the Part 360 standards.

Figure 4 presents data for Location 3 near Alternate Route 7 at the southeastern end of the Southern Overburden Storage Area near the storm water retention ponds. Grading operations occurred during the recording period. Grading was conducted from approximately 7:00 a.m. to 2:00 p.m. on Saturday, October 4, 2008. All standards are met for both day and night activities.

Figure 5 presents data for Location 4 on the west side of the quarry. Little to no plant activity affects the overall noise levels at this location. Noise levels are within the standard.

Figure 6 presents data for Location 5 on the north side of the facility near the Bilinski Meat Packing Plant. During the set up and spot measurements done on Friday night, October 3, 2008, a group of teenagers were seen and heard in the area. The area shows evidence that this is a "hang out" area for the teenagers. There is a strong indication that the high noise levels are caused by local sources near the microphone of the logger rather than any operation from Norlite. This is particularly evident for the data recordings during Saturday daytime, October 4, 2008 with the facility in shutdown mode. Results were contaminated by local contributions which cannot be attributed to Norlite. Records for this monitoring location are not reliable.

Surveys to Explore Tonal Components

Tonal Component surveys were conducted at a number of different locations in and around the facility on Friday evening, October 3, 2008, during the remainder of the Norlite plant outage on Saturday, October 4, 2008, and also on November 1, 2008 when the plant was in full operation. These locations are highlighted on Figure 1 as Locations A, B, C, and Vac.

Tonal surveys started with exploratory measurements at the Norlite facility to identify sound frequencies emitted by certain major units of operating equipment that could potentially impact receivers outside the

facility. The exclusion criterion applied was that a received component from a Norlite source at a specific operating frequency would not exceed 40 dBA. Note that the general broadband background noise in the area was 50 dBA. Meeting the 10 dBA margin indicates that the component examined would not be perceived as a tonal component.

At Norlite Kiln 1 and Kiln 2 induced draft (ID) fans and the vacuum truck were selected for tonal component investigation. Also of interest was the Finish Plant Dust Collector Fan. Measurements for both tonal components and broad band sound were made at Locations A and B (see Fig. 1). No significant tonal components were observed for the collector fan. Broad band sound was at a level at the nearest external receiver within the Part 360 standards. No further investigation of this source was conducted.

High resolution measurements were made at Kiln 1 and Kiln 2 for frequency identification. Results are listed in Table A.

Measurements in 1/3 octave bands were made at a distance of 50 feet from a vacuum truck with the defective muffler. Results are shown in Figure 7 with throttle set at 3/4. Next measurements were made with the throttle set on FULL. Curiously the truck made more noise at the 3/4 setting.

Figures 7 and 8 show 1/3 octave band levels in dBZ for operation at 3/4 and full throttle settings. Note that the 1/3 octave band levels are in dBZ and thus not A-weighted. Along with each are noted A-weighted L_{eqA} levels of 83.4 and 81.1 dBA for 3/4 and full throttle respectively. There is no error here. The vacuum truck was found to be noisier at the lower setting. After repairs and replacement of a muffler, the truck was substantially quieter and fully compliant with Part 360 requirements of less than 80 dBA at 50 feet.

Of particular interest at Location 1 were some sounds associated with Norlite's operation. In late August and September 2008 reports were received by Norlite from neighbors to the north at Brighton Pointe. They commented that a loud periodic "humming" sound was coming from the facility. Norlite investigated the issue and determined the sound was coming from its vacuum truck. The vacuum truck is used to remove material from process equipment prior to maintenance activities. The use of the vacuum truck is infrequent about once every few weeks. Depending on plant needs the unit maybe used on day or night shift. Norlite determined the exhaust muffler needed to be replaced. A new muffler was ordered from the manufacturer and the replacement was complete on October 8, 2008.

On November 1, 2008, off-site surveys were made at Location 1 (Hilltop Drive) and Location C to the east

(shown on Figure 1). Location C was about 450 feet west of a nearby manufacturing facility. There is a high correlation at that location with the frequencies recorded at location 1. (See Table A.)

Despite the loss of high resolution data for the vacuum truck it is evident that no tonal components were measured at location 1 above 40 dBa. In particular, components that may be related to Kiln 1 and Kiln 2 ID sources are well below the criterion level of 40 dBA.

In response to a follow-on request, a spot, high resolution survey was made on Tuesday, November 25, 2008, at Tailfeather Court in Morning View Farms. The development is located northwest of the facility and is shown on Figure 1 as Location D. This measurement was made with the plant in full operation and was based on comments received from NYSDEC in its letter to Norlite dated October 10, 2008. Figure 9 shows the only frequency (not A-weighted) recorded at the site. The adjusted level with A-weighting would be approximately 30dBA. The recorded level is low and could not be perceived by the surveyors. The frequency detected is presumed to be emitted from a nearby small power transformer in the area.

SUMMARY

Norlite took the opportunity of a plant wide shutdown on Saturday, October 4, 2008 to make noise assessments of plant operations and to determine their effects on the areas surrounding the facility. During the day of October 4 there was no noise contribution from the plant to the surrounding areas and it was possible to evaluate background noise levels in the surrounding community. Based on comments from NYSDEC, particular attention was directed to the Brighton Pointe development approximately 2600 feet (½ mile) north of the facility.

The community around the Norlite facility was found to be a very active urban area with noise contributions from activities such as vehicle traffic, rail traffic, aviation traffic, and other commercial and industrial sources. The area is surrounded by major local, state and interstate roads including State Route 32, State Route 7 (Alternate 7), Interstate 787, and Interstate 87. Canadian Pacific (D & H) railroad has an active transportation line that runs along the eastern boundary of the plant. The plant is located under the approach and departure air corridor for the Albany International Airport which is approximately 4 air miles west of

the facility. It was found that the general broad band background noise in and around the facility is approximately 50 dBA.

With the use of continuous data loggers, it was found that the general broad band background noise in and around the facility is approximately 50 dBA.

In reviewing reports received fall of 2008, Norlite discovered an isolated case of a single source of noise (humming) that could be heard and distinguished outside the facility. The source was the Norlite vacuum truck; the truck was repaired and no tonal components from it are able to be perceived outside the facility. Furthermore the truck is now fully compliant with the part 360 limit of 80 dBA at 50 ft from an internal combustion source.

By participation in the exploratory environmental noise study, Norlite has been able to identify any impacts the facility may have on the surrounding area in regards to noise. The tonal component investigations and analyses enabled Norlite to pin point specific frequencies related to the facility operations. In doing so, it was demonstrated that plant originated specific frequencies are not perceivable above background levels at the critical point of reception north of the Norlite facility. It is concluded that Norlite sources have little to no effect on the surrounding area in regards to noise and that no further investigation is needed.

ANGEVINE ACOUSTICAL CONSULTANTS, Inc.

Prepared by: _____
John J. Earshen
Senior Acoustical Consultant

4/20/09
JJE:dmf
Att: Figures

Technical Report AA-2159

APPENDIX A

Survey Instruments

ANGEVINE ACOUSTICAL CONSULTANTS, Inc.

List of Survey Instruments

SOUND TEST AA-2159
DATE: October 3-5, 2008

SOUND LEVEL METER:

☐	CEL 593.C1R ½" mic mk250 preamp CEL 527	s/n 3/0991604 s/n 2039 s/n 3/099/1527			
☒	Larson Davis 831 ½" mic 377B20 preamp PRM831	s/n 0001466 s/n 105288 s/n 10126	☒	Larson Davis 831 ½" mic 377B20 preamp PRM831	s/n 0001057 s/n 1020238 s/n 0141
☒	Rion SA-77 ½" mic BK4176R Preamp NH-174	s/n 10151076 s/n 1583199 s/n 61582	☐	Rion SA-78 ½" mic Preamp	s/n 00730055 s/n s/n
☐	Larson Davis 800B ½" mic 2559 preamp 826B	s/n 0327 s/n 1422 s/n 141			
☒	Metrosonics db3100	s/n 1163		¼" mic mk3100R	s/n NA
☒	Metrosonics db3100	s/n 1658		¼" mic mk3100R	s/n 2351
☒	Metrosonics db3100	s/n 3980		¼" mic mk3100R	s/n 4722
☒	Metrosonics db3100	s/n 4415		¼" mic mk3100R	s/n NA
☒	Metrosonics db3100	s/n 4418		¼" mic mk3100R	s/n NA
☐	Metrosonics db3080	s/n 1414		¼" mic	s/n NA
☐	Metrosonics db3080	s/n 1505		¼" mic	s/n NA
☐	Metrosonics db3080	s/n 1511		¼" mic	s/n NA
☐	Metrosonics db3080	s/n 4049		¼" mic	s/n NA
☐	Metrosonics db3080	s/n 3819		¼" mic	s/n NA
☐	Metrosonics db3080	s/n 4401		¼" mic	s/n NA

CALIBRATOR:

☐	CEL 284/2	s/n 02512942	☐	GenRad 1562A s/n 6818
☒	CEL 284/2	s/n 4/09921209	☐	GenRad 1562A s/n 20934
☐	GenRad 1562	s/n HP138	☐	GenRad 1567 s/n 15350
☐	GenRad 1562	s/n IT109	☐	Larson Davis CA250 s/n 0206
☐	Metrosonics cl304	s/n 2054		
☐	Metrosonics cl304	s/n 4541		
☐	Metrosonics cl304	s/n 3067		
☐	Metrosonics cl304	s/n 5523		
☐	Metrosonics cl304	s/n 01379		

WEATHER:

☒ Clear ☒ and Partial Cloudy ☐ Rain ☐ Fog ☐ Snowing ☐ Snow on Ground ☐ Wet Streets
Temperature = _____ °F Winds = Below 5 mph Relative Humidity = _____ %

Loc. 1, #11Hilltop Drive

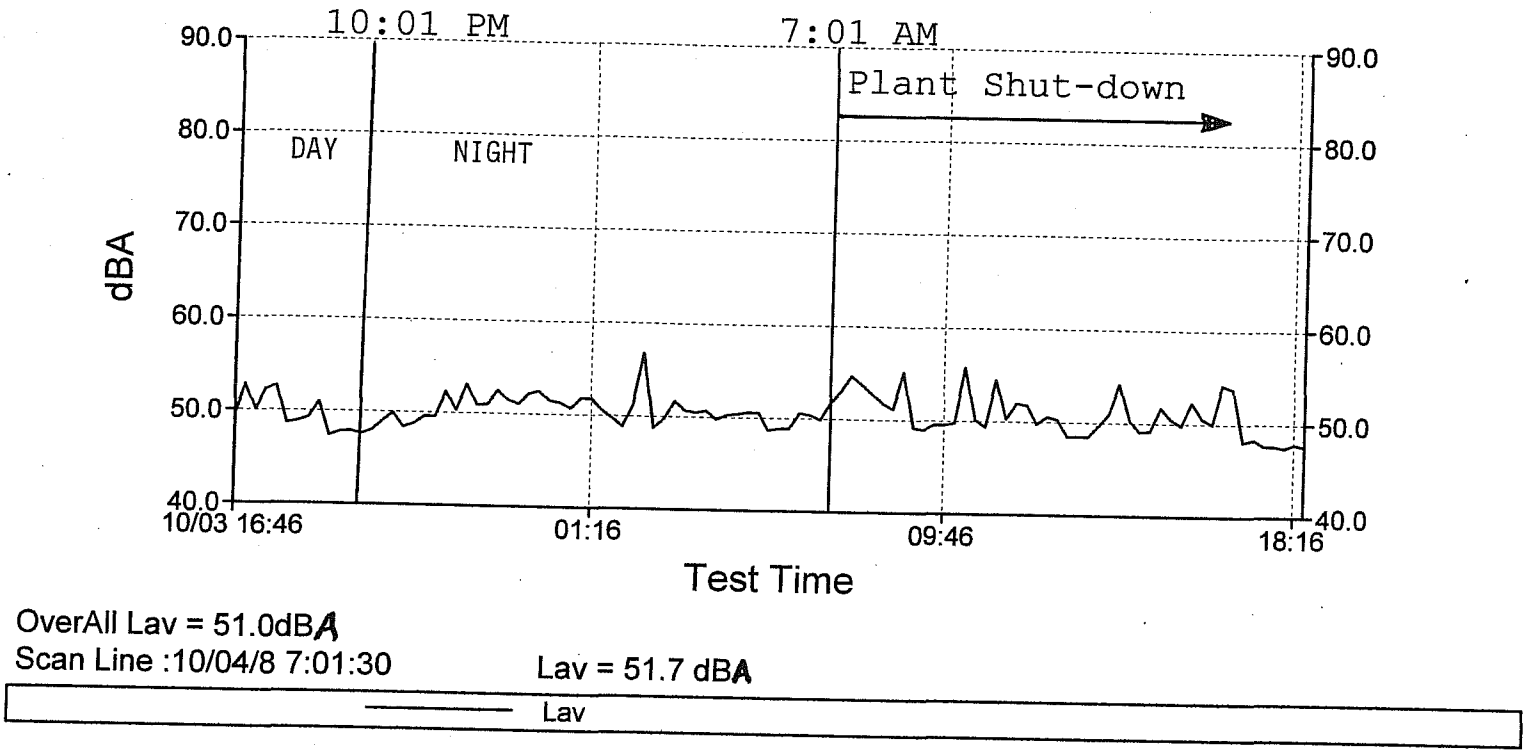

Figure 2. $L_{eqA\text{-}15min}$ plotted in increments of one-quarter hour.

Notes:
Figure 2 presents data for Location 1 at a residence at 11 Hilltop Drive at Brighton Pointe north of the facility. Sound levels for both night and day are below the 57 dBA threshold. It is evident from the graph that Norlite appears to have little to no effect on the baseline noise levels at the Brighton Pointe development.

In late summer of 2008 repots were received that regarding a "humming noise" being sporadically perceived allegedly from Norlite. This was identified to emissions from a vacuum truck having a defective muffler. After repair and replacement attention was focused on additional surveys to confirm that the potential problem was resolved. (See: Survey to Explore Tonal Components.)

NORLITE LOCATION 1

<<< TABULAR TIME HISTORY REPORT FROM FILE 31001 >>>

Test Location.....Norlite
Employee Name.....
Employee Number...
Department.....
Comment.....

Calibrator Type & Serial #...
Calibrator Calibration Date..

METROSONICS db-3100 SN 1658 V1a7
REPORT PRINTED 04/20/09 AT 12:49:10
OF PERIODS: 106 MODE: CONTINUOUS
PERIOD LENGTH: 0:15:00
TIME HISTORY CUTOFF: NONE
Ln(1): 90.0% Ln(2): 99.0%

The loggers were enclosed in waterproof containers and were operating during installation and removal. Handling generated artificats in the microphones. The cut-off lines in the table separate the contaminated readings.

DATE: 10/03/08

INT	TIME	Lav	Lmx
1	16:31:30	59.4	83.9
2	16:46:30	49.3	58.6
3	17:01:30	52.7	69.9
4	17:16:30	50.0	67.6
5	17:31:30	52.2	66.1
6	17:46:30	52.6	72.9
7	18:01:30	48.6	53.5
8	18:16:30	48.8	55.8
9	18:31:30	49.2	58.6
10	18:46:30	50.9	68.1
11	19:01:30	47.3	49.5
12	19:16:30	47.7	50.1
13	19:31:30	47.8	52.8
14	19:46:30	47.5	49.4
15	20:01:30	47.9	52.8
16	20:16:30	48.9	59.3
17	20:31:30	49.8	64.1
18	20:46:30	48.3	50.4
19	21:01:30	48.7	50.9
20	21:16:30	49.5	59.2
21	21:31:30	49.5	59.5
22	21:46:30	52.2	76.7
23	22:01:30	50.2	53.2
24	22:16:30	53.0	70.7
25	22:31:30	50.8	54.8
26	22:46:30	50.9	56.8
27	23:01:30	52.4	57.5
28	23:16:30	51.4	56.6
29	23:31:30	51.0	53.8
30	23:46:30	52.1	57.8
31	0:01:30	52.4	58.5
32	0:16:30	51.4	57.8
33	0:31:30	51.2	57.0
34	0:46:30	50.6	55.5
35	1:01:30	51.7	57.3
36	1:16:30	51.7	57.7
37	1:31:30	50.5	56.2
38	1:46:30	49.7	56.1
39	2:01:30	48.8	53.4
40	2:16:30	51.1	61.7
41	2:31:30	56.7	79.4
42	2:46:30	48.7	52.6
43	3:01:30	49.7	54.7
44	3:16:30	51.6	61.3
45	3:31:30	50.6	59.9
46	3:46:30	50.4	57.1
47	4:01:30	50.6	58.5
48	4:16:30	49.7	56.2
49	4:31:30	50.2	56.4
50	4:46:30	50.3	54.9
51	5:01:30	50.5	56.1
52	5:16:30	50.5	56.0
53	5:31:30	48.6	55.1

INT	TIME	L_{av}	L_{max}
54	5:46:30	48.8	51.5
55	6:01:30	48.8	55.1
56	6:16:30	50.5	60.3
57	6:31:30	50.3	59.7
58	6:46:30	49.8	53.9
59	7:01:30	51.7	62.2
60	7:16:30	52.9	56.1
61	7:31:30	54.6	58.5
62	7:46:30	53.7	61.3
63	8:01:30	52.7	56.3
64	8:16:30	51.7	54.7
65	8:31:30	51.1	57.3
66	8:46:30	55.1	73.1
67	9:01:30	49.1	54.4
68	9:16:30	48.9	56.6
69	9:31:30	49.5	53.5
70	9:46:30	49.5	53.3
71	10:01:30	49.7	54.7
72	10:16:30	55.7	75.9
73	10:31:30	50.1	59.4
74	10:46:30	49.3	61.1
75	11:01:30	54.4	74.5
76	11:16:30	50.2	62.0
77	11:31:30	51.9	66.7
78	11:46:30	51.7	68.6
79	12:01:30	49.7	62.5
80	12:16:30	50.5	61.6
81	12:31:30	50.2	63.7
82	12:46:30	48.4	56.8
83	13:01:30	48.4	55.5
84	13:16:30	48.4	53.4
85	13:31:30	49.6	59.0
86	13:46:30	50.9	59.8
87	14:01:30	54.1	62.6
88	14:16:30	50.2	61.9
89	14:31:30	49.0	63.2
90	14:46:30	49.1	60.1
91	15:01:30	51.6	66.1
92	15:16:30	50.4	63.8
93	15:31:30	49.7	58.8
94	15:46:30	52.2	64.6
95	16:01:30	50.5	63.9
96	16:16:30	49.9	59.8
97	16:31:30	54.1	62.1
98	16:46:30	53.7	61.4
99	17:01:30	48.0	50.6
100	17:16:30	48.3	53.9
101	17:31:30	47.6	54.0
102	17:46:30	47.6	50.4
103	18:01:30	47.4	51.0
104	18:16:30	47.8	50.1
105	18:31:30	47.5	53.5
106	18:46:30	67.9	86.8

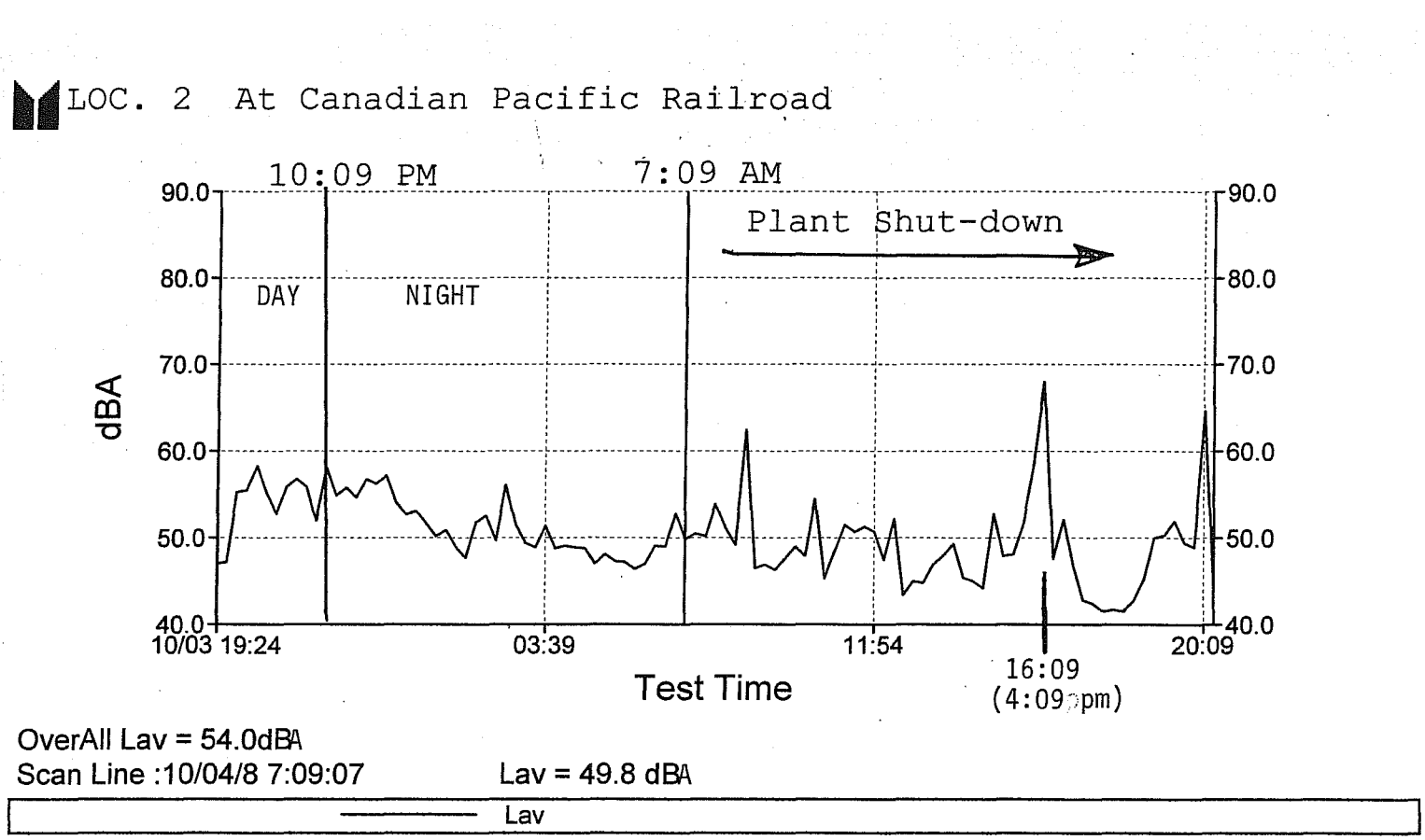

Figure 3. $L_{eqA\text{-}15min}$ plotted in increments of one-quarter hour.

Notes:
Figure 3 presents data for Location 2 which is at the southeast corner of the facility. The logger was located approximately 70 feet west of the active Canadian Pacific (D & H) railroad line. There are multiple road crossings along the couple of miles of track running north and south through the City of Cohoes. Under Federal Railroad Administration mandates, these types of crossings require full horn sounding. Furthermore the full horn sound levels must peak between 90 and 110 dBA at a distance of 100 feet in front of the locomotive. Such short duration high levels from the railroad may not skew the data to be over the Part 360 standards which pertain to hour long averages.

Consider the highest quarter hour average level of 68.0 dBA during plant shutdown at 4:09 p.m. (16:09:07). From the table, the single maximum level (L_{max}) during the quarter was 85.5 dBA. This illustrates how a short duration of a single high level may not exceed the Part 360 standards.

Night limits can be exceeded by RR source.

NORLITE LOCATION 2

<<< TABULAR TIME HISTORY REPORT FROM FILE 31002 >>>

Test Location.....Norlite
Employee Name.....
Employee Number...
Department.....
Comment.....

Calibrator Type & Serial #...
Calibrator Calibration Date..

METROSONICS db-3100 SN 3980 V1.7
REPORT PRINTED 04/20/09 AT 12:49:22
OF PERIODS: 103 MODE: CONTINUOUS
PERIOD LENGTH: 0:15:00
TIME HISTORY CUTOFF: NONE
Ln(1): 90.0% Ln(2): 99.0%

The loggers were enclosed in waterproof containers and were operating during installation and removal. Handling generated artificats in the microphones. The cut-off lines in the table separate the contaminated readings.

DATE: 10/03/08

INT	TIME	Lav	Lmx
1	19:09:07	55.8	82.4
2	19:24:07	46.9	50.1
3	19:39:07	47.1	49.2
4	19:54:07	55.2	74.6
5	20:09:07	55.4	63.1
6	20:24:07	58.2	67.7
7	20:39:07	55.1	61.3
8	20:54:07	52.7	56.9
9	21:09:07	55.8	77.2
10	21:24:07	56.7	63.7
11	21:39:07	55.8	64.9
12	21:54:07	51.9	55.4
13	22:09:07	58.0	77.1
14	22:24:07	54.8	62.2
15	22:39:07	55.7	64.2
16	22:54:07	54.6	59.8
17	23:09:07	56.7	62.0
18	23:24:07	56.2	64.2
19	23:39:07	57.1	62.8
20	23:54:07	54.0	58.2
21	0:09:07	52.6	56.7
22	0:24:07	53.0	58.8
23	0:39:07	51.6	58.5
24	0:54:07	50.1	52.4
25	1:09:07	50.8	55.8
26	1:24:07	48.9	51.9
27	1:39:07	47.6	55.2
28	1:54:07	51.7	60.9
29	2:09:07	52.5	60.1
30	2:24:07	49.6	54.7
31	2:39:07	56.0	74.3
32	2:54:07	51.5	59.2
33	3:09:07	49.3	55.8
34	3:24:07	48.8	52.7
35	3:39:07	51.3	59.1
36	3:54:07	48.7	55.2
37	4:09:07	49.0	54.6
38	4:24:07	48.8	54.4
39	4:39:07	48.7	52.5
40	4:54:07	46.9	52.3
41	5:09:07	48.0	53.1
42	5:24:07	47.2	53.3
43	5:39:07	47.1	53.3
44	5:54:07	46.3	51.4
45	6:09:07	46.9	51.4
46	6:24:07	49.0	54.6
47	6:39:07	48.9	54.1
48	6:54:07	52.7	61.8
49	7:09:07	49.8	52.8
50	7:24:07	50.4	55.0
51	7:39:07	50.1	62.5
52	7:54:07	53.8	61.4
53	8:09:07	51.0	58.3

INT	TIME	L_{av}	L_{max}
54	8:24:07	49.1	53.9
55	8:39:07	62.4	85.2
56	8:54:07	46.4	55.6
57	9:09:07	46.8	50.5
58	9:24:07	46.2	52.4
59	9:39:07	47.5	53.4
60	9:54:07	48.9	55.8
61	10:09:07	47.8	52.0
62	10:24:07	54.4	74.6
63	10:39:07	45.2	52.5
64	10:54:07	48.4	62.5
65	11:09:07	51.4	69.7
66	11:24:07	50.6	64.6
67	11:39:07	51.2	68.9
68	11:54:07	50.6	66.9
69	12:09:07	47.4	63.6
70	12:24:07	52.1	67.9
71	12:39:07	43.3	49.5
72	12:54:07	44.9	57.9
73	13:09:07	44.7	50.6
74	13:24:07	46.8	56.3
75	13:39:07	47.9	59.5
76	13:54:07	49.2	68.5
77	14:09:07	45.3	57.2
78	14:24:07	44.9	56.5
79	14:39:07	44.1	48.3
80	14:54:07	52.7	69.7
81	15:09:07	47.8	60.0
82	15:24:07	48.0	62.0
83	15:39:07	51.6	68.3
84	15:54:07	58.1	80.4
85	16:09:07	68.0	85.5
86	16:24:07	47.5	65.1
87	16:39:07	52.0	59.1
88	16:54:07	46.7	59.7
89	17:09:07	42.7	53.5
90	17:24:07	42.3	54.0
91	17:39:07	41.4	43.9
92	17:54:07	41.6	50.5
93	18:09:07	41.4	45.9
94	18:24:07	42.6	46.3
95	18:39:07	45.1	52.0
96	18:54:07	49.9	54.1
97	19:09:07	50.2	57.9
98	19:24:07	51.8	75.2
99	19:39:07	49.3	54.3
100	19:54:07	48.8	57.5
101	20:09:07	64.6	88.8
102	20:24:07	43.4	46.8
103	20:39:07	68.2	89.3

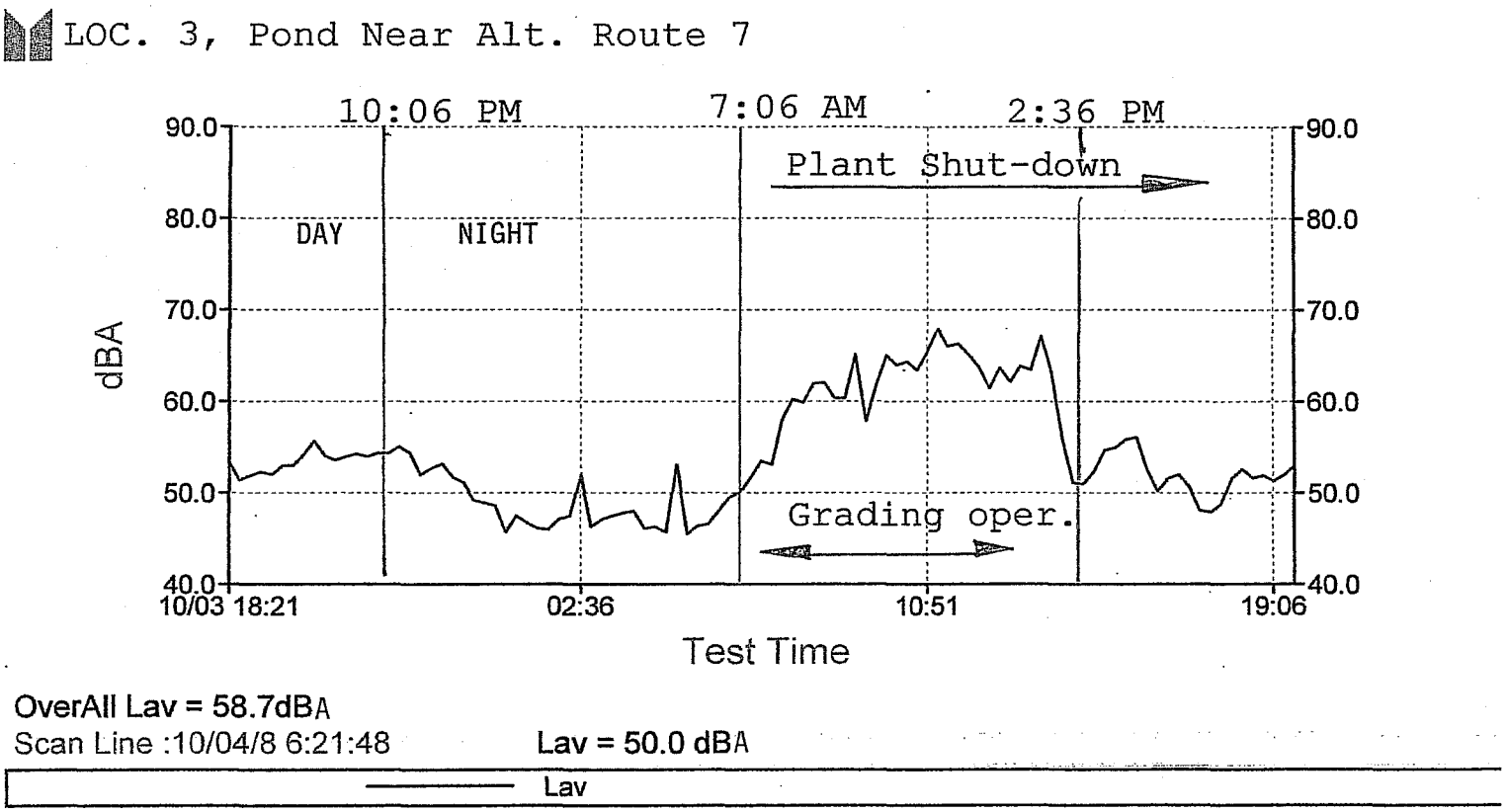

Figure 4. $L_{eqA\text{-}15min.}$ plotted in increments of one-quarter hour.

Notes:
Figure 4 presents data for Location 3 near Alternate Route 7 at the southeastern end of the Southern Overburden Storage Area near the storm water retention ponds. Grading operations occurred during the recording period. Grading was conducted from approximately 7:00 a.m. to 2:00 p.m. on Saturday, October 4, 2008. All standards are met for both day and night activities.

Night and day limits are met.

NORLITE LOCATION 3

<<< TABULAR TIME HISTORY REPORT FROM FILE 31003 >>>

Test Location.....Norlite
Employee Name.....
Employee Number...
Department.....
Comment.....

Calibrator Type & Serial #...
Calibrator Calibration Date..

METROSONICS db-3100 SN 4415 V1.7
REPORT PRINTED 04/20/09 AT 12:49:35
OF PERIODS: 104 MODE: CONTINUOUS
PERIOD LENGTH: 0:15:00
TIME HISTORY CUTOFF: NONE
Ln(1): 90.0% Ln(2): 99.0%

The loggers were enclosed in waterproof containers and were operating during installation and removal. Handling generated artificats in the microphones. The cut-off lines in the table separate the contaminated readings.

DATE: 10/03/08

INT	TIME	Lav	Lmx
1	18:06:48	70.6	100.0
2	18:21:48	53.4	65.6
3	18:36:48	51.3	62.4
4	18:51:48	51.8	56.0
5	19:06:48	52.2	56.8
6	19:21:48	51.9	54.7
7	19:36:48	52.9	58.5
8	19:51:48	52.9	58.0
9	20:06:48	54.1	58.4
10	20:21:48	55.6	70.2
11	20:36:48	54.0	59.8
12	20:51:48	53.5	57.8
13	21:06:48	53.9	63.4
14	21:21:48	54.2	57.7
15	21:36:48	53.9	59.5
16	21:51:48	54.3	67.0
17	22:06:48	54.3	71.7
18	22:21:48	55.0	61.0
19	22:36:48	54.3	59.0
20	22:51:48	51.9	57.1
21	23:06:48	52.6	58.6
22	23:21:48	53.1	61.6
23	23:36:48	51.6	55.9
24	23:51:48	51.0	56.1
25	0:06:48	49.1	58.3
26	0:21:48	48.8	52.9
27	0:36:48	48.5	57.2
28	0:51:48	45.6	53.1
29	1:06:48	47.4	54.5
30	1:21:48	46.6	56.4
31	1:36:48	46.0	57.6
32	1:51:48	45.9	54.7
33	2:06:48	47.0	54.2
34	2:21:48	47.4	56.2
35	2:36:48	51.8	74.5
36	2:51:48	46.2	53.7
37	3:06:48	47.0	55.6
38	3:21:48	47.4	56.8
39	3:36:48	47.7	56.7
40	3:51:48	47.9	56.6
41	4:06:48	46.0	54.3
42	4:21:48	46.2	52.2
43	4:36:48	45.6	53.2
44	4:51:48	53.0	62.2
45	5:06:48	45.4	53.0
46	5:21:48	46.3	52.3
47	5:36:48	46.5	53.9
48	5:51:48	47.9	54.5
49	6:06:48	49.4	55.5
50	6:21:48	50.0	56.1
51	6:36:48	51.6	59.9
52	6:51:48	53.4	58.0
53	7:06:48	53.0	66.0

INT	TIME	L_{av}	L_{max}
54	7:21:48	58.0	63.9
55	7:36:48	60.2	65.5
56	7:51:48	59.8	65.7
57	8:06:48	61.9	66.1
58	8:21:48	62.0	68.7
59	8:36:48	60.3	74.0
60	8:51:48	60.3	70.2
61	9:06:48	65.1	72.2
62	9:21:48	57.8	71.1
63	9:36:48	61.8	73.7
64	9:51:48	65.0	69.8
65	10:06:48	63.9	68.3
66	10:21:48	64.3	72.5
67	10:36:48	63.4	70.4
68	10:51:48	65.4	71.7
69	11:06:48	67.9	74.3
70	11:21:48	66.0	73.2
71	11:36:48	66.3	73.6
72	11:51:48	65.1	74.0
73	12:06:48	63.7	71.4
74	12:21:48	61.4	73.0
75	12:36:48	63.6	74.9
76	12:51:48	62.1	74.7
77	13:06:48	63.8	72.2
78	13:21:48	63.4	73.2
79	13:36:48	67.1	75.3
80	13:51:48	63.1	74.4
81	14:06:48	55.9	70.7
82	14:21:48	51.0	56.9
83	14:36:48	50.9	56.6
84	14:51:48	52.3	69.9
85	15:06:48	54.6	64.6
86	15:21:48	54.9	74.8
87	15:36:48	55.8	71.0
88	15:51:48	56.0	72.5
89	16:06:48	52.4	72.5
90	16:21:48	50.1	59.7
91	16:36:48	51.5	59.2
92	16:51:48	51.9	59.5
93	17:06:48	50.6	54.9
94	17:21:48	48.0	52.0
95	17:36:48	47.8	54.7
96	17:51:48	48.7	58.9
97	18:06:48	51.5	58.9
98	18:21:48	52.5	56.6
99	18:36:48	51.5	55.3
100	18:51:48	51.8	56.1
101	19:06:48	51.2	56.1
102	19:21:48	51.9	66.7
103	19:36:48	52.9	65.8
104	19:51:48	77.8	104.2

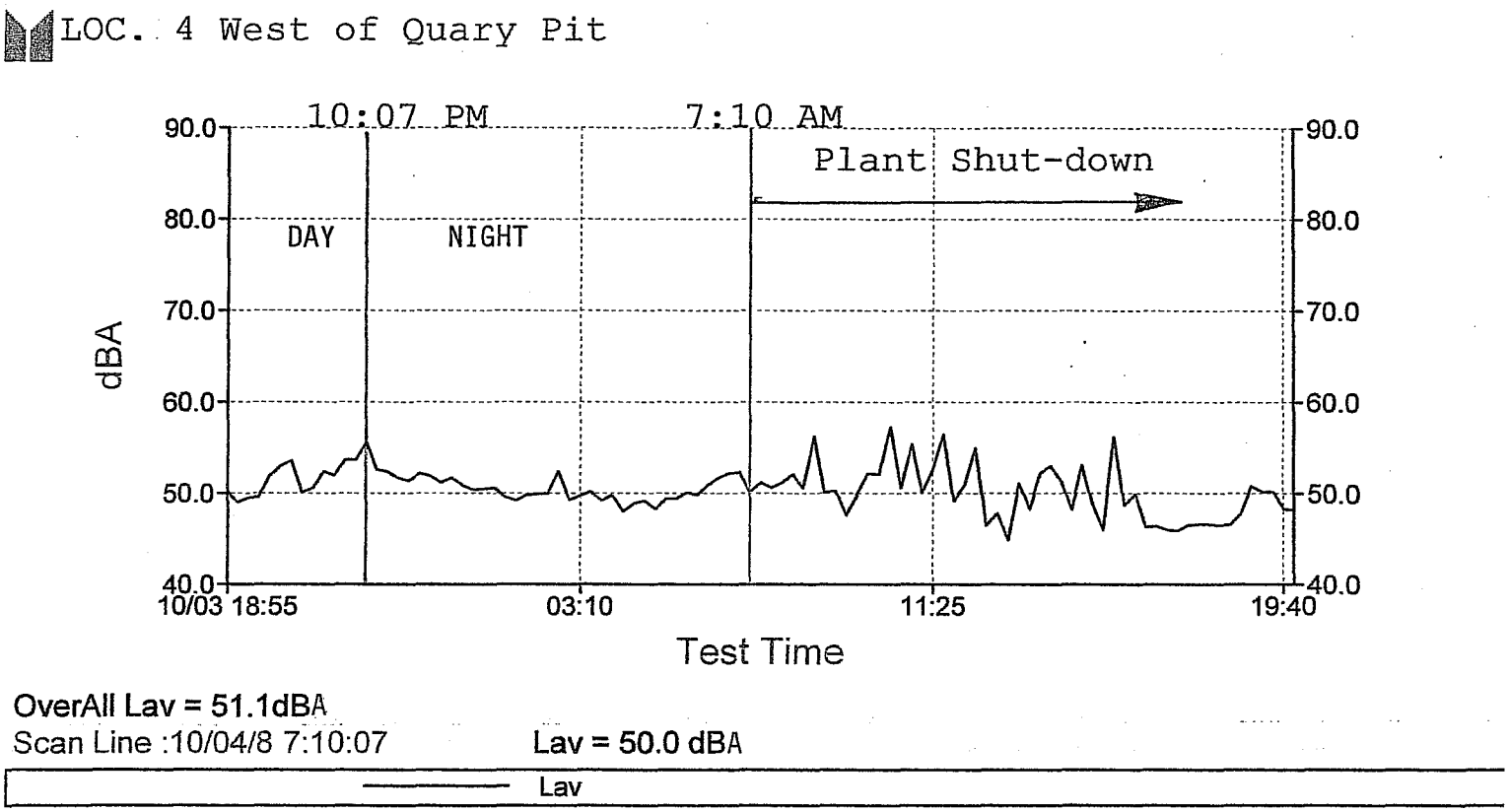

Figure 5. $L_{eqA\text{-}15min.}$ plotted in increments of one-quarter hour.

Figure 5 presents data for Location 4 on the west side of the quarry. Little to no plant activity affects the overall noise levels at this location. Noise levels are within the standard.

Night and day limits met.

NORLITE LOCATION 4

<<< TABULAR TIME HISTORY REPORT FROM FILE 31004 >>>

Test Location.....Norlite
Employee Name.....
Employee Number...
Department.....
Comment.....

Calibrator Type & Serial #...
Calibrator Calibration Date..

METROSONICS db-3100 SN 4418 V1.7
REPORT PRINTED 04/20/09 AT 12:49:48
OF PERIODS: 103 MODE: CONTINUOUS
PERIOD LENGTH: 0:15:00
TIME HISTORY CUTOFF: NONE
Ln(1): 90.0% Ln(2): 99.0%

The loggers were enclosed in waterproof containers and were operating during installation and removal. Handling generated artificats in the microphones. The cut-off lines in the table separate the contaminated readings.

DATE: 10/03/08

INT	TIME	Lav	Lmx
1	18:40:07	74.8	101.8
2	18:55:07	50.3	56.2
3	19:10:07	48.9	52.2
4	19:25:07	49.4	51.8
5	19:40:07	49.5	51.9
6	19:55:07	51.8	57.8
7	20:10:07	52.9	63.5
8	20:25:07	53.5	68.7
9	20:40:07	50.0	55.3
10	20:55:07	50.5	53.9
11	21:10:07	52.3	66.9
12	21:25:07	51.9	57.5
13	21:40:07	53.6	67.1
14	21:55:07	53.6	58.3
15	22:10:07	55.5	70.5
16	22:25:07	52.5	57.5
17	22:40:07	52.3	57.4
18	22:55:07	51.6	54.1
19	23:10:07	51.3	54.6
20	23:25:07	52.1	60.0
21	23:40:07	51.8	56.7
22	23:55:07	51.1	54.8
23	0:10:07	51.6	58.2
24	0:25:07	50.8	59.3
25	0:40:07	50.3	52.8
26	0:55:07	50.4	56.1
27	1:10:07	50.5	56.9
28	1:25:07	49.5	56.9
29	1:40:07	49.1	53.7
30	1:55:07	49.7	54.7
31	2:10:07	49.8	54.9
32	2:25:07	49.9	53.9
33	2:40:07	52.3	70.1
34	2:55:07	49.2	52.1
35	3:10:07	49.6	53.4
36	3:25:07	50.1	55.4
37	3:40:07	49.1	54.7
38	3:55:07	49.7	56.8
39	4:10:07	47.9	50.4
40	4:25:07	48.8	52.0
41	4:40:07	49.1	54.2
42	4:55:07	48.2	53.8
43	5:10:07	49.3	56.8
44	5:25:07	49.3	55.0
45	5:40:07	50.0	54.1
46	5:55:07	49.7	53.3
47	6:10:07	50.8	54.3
48	6:25:07	51.6	61.3
49	6:40:07	52.1	56.1
50	6:55:07	52.2	61.8
51	7:10:07	50.0	56.2
52	7:25:07	51.1	55.9
53	7:40:07	50.5	56.6

INT	TIME	L_{av}	L_{max}
54	7:55:07	51.1	53.9
55	8:10:07	52.0	55.9
56	8:25:07	50.5	55.9
57	8:40:07	56.2	74.8
58	8:55:07	50.0	54.3
59	9:10:07	50.2	62.0
60	9:25:07	47.5	57.2
61	9:40:07	49.8	53.3
62	9:55:07	52.1	58.1
63	10:10:07	52.0	57.0
64	10:25:07	57.2	73.0
65	10:40:07	50.5	55.2
66	10:55:07	55.3	71.3
67	11:10:07	50.0	64.9
68	11:25:07	52.5	67.6
69	11:40:07	56.4	72.8
70	11:55:07	49.1	65.0
71	12:10:07	50.8	66.6
72	12:25:07	54.9	71.1
73	12:40:07	46.4	54.5
74	12:55:07	47.7	62.9
75	13:10:07	44.8	51.9
76	13:25:07	51.0	65.8
77	13:40:07	48.2	59.2
78	13:55:07	52.1	66.5
79	14:10:07	52.9	67.7
80	14:25:07	51.3	67.6
81	14:40:07	48.1	58.4
82	14:55:07	53.0	68.9
83	15:10:07	48.7	66.7
84	15:25:07	45.9	60.4
85	15:40:07	56.1	73.1
86	15:55:07	48.6	62.1
87	16:10:07	49.8	67.3
88	16:25:07	46.2	51.3
89	16:40:07	46.3	49.6
90	16:55:07	45.9	50.6
91	17:10:07	45.8	52.3
92	17:25:07	46.4	51.4
93	17:40:07	46.5	54.0
94	17:55:07	46.5	54.1
95	18:10:07	46.4	48.9
96	18:25:07	46.5	48.9
97	18:40:07	47.7	52.1
98	18:55:07	50.7	52.9
99	19:10:07	50.1	57.8
100	19:25:07	50.1	71.5
101	19:40:07	48.2	50.9
102	19:55:07	48.1	50.5
103	20:10:07	78.0	103.6

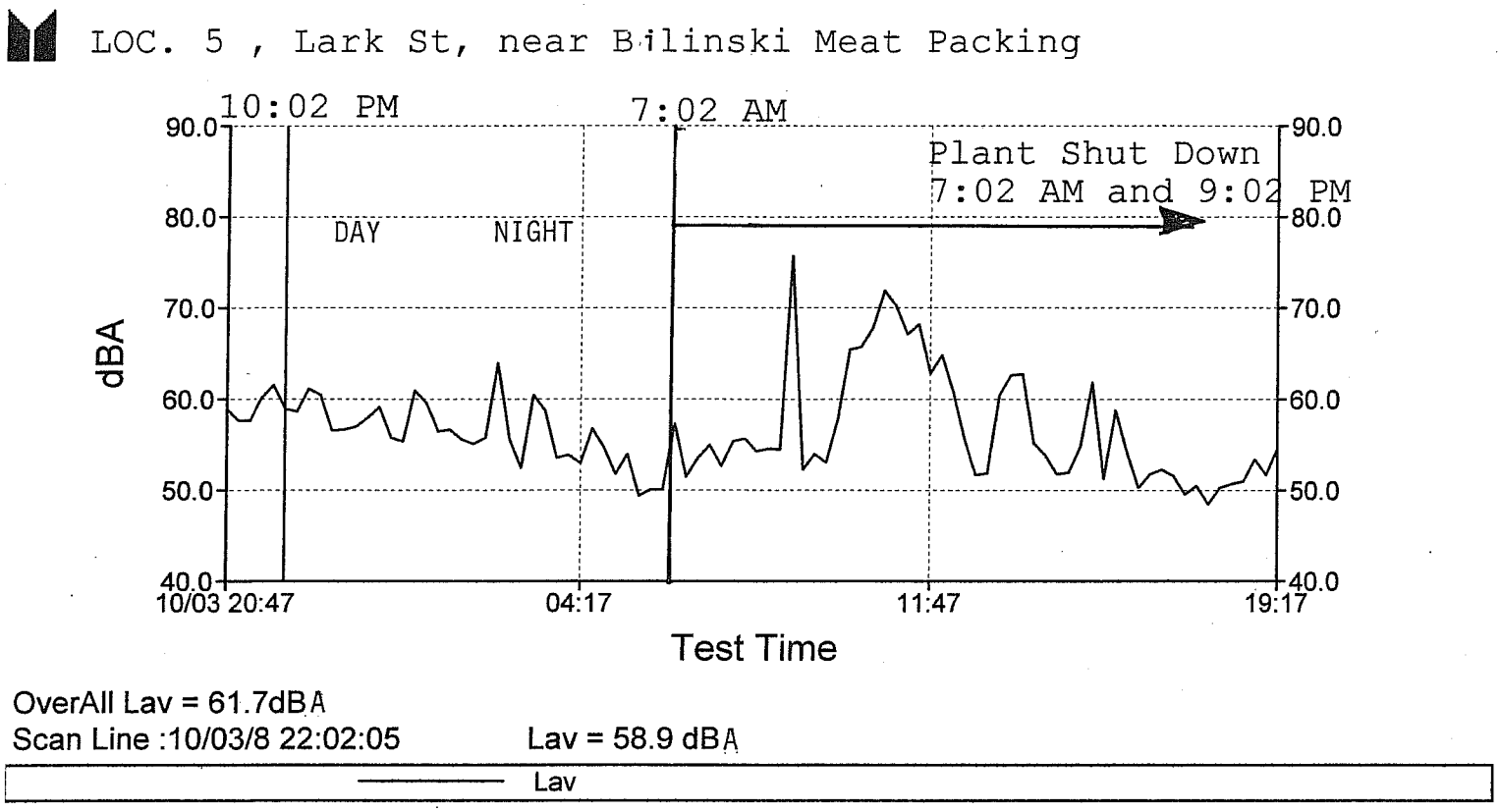

Figure 6. $L_{eqA\text{-}15min.}$ plotted in increments of one-quarter hour.

Figure 6 presents data for Location 5 on the north side of the facility near the Bilinski Meat Packing Plant. During the set up and spot measurements done on Friday night, October 3, 2008, a group of teenagers were seen and heard in the area. The area shows evidence that this is a "hang out" area for the teenagers. There is a strong indication that the high noise levels are caused by local sources near the microphone of the logger rather than any operation from Norlite. This is particularly evident for the data recordings during Saturday daytime, October 4, 2008 with the facility in shutdown mode. Results were contaminated by local contributions which cannot be attributed to Norlite.

There is a strong indication that high noise levels recorded were caused by local noise sources close to the microphone of the logger. Thus the data are not reliable.

Night and day measured levels are not within the 67 and 57 dBA limits, but cannot be attributed to Norlite operating. Records for this monitoring location are not reliable.

NORLITE LOCATION 5

<<< TABULAR TIME HISTORY REPORT FROM FILE 31005 >>>

Test Location.....Norlite
Employee Name.....
Employee Number...
Department.....
Comment.....

Calibrator Type & Serial #...
Calibrator Calibration Date..

METROSONICS db-3100 SN 1163 V1.7
REPORT PRINTED 04/20/09 AT 12:50:01
OF PERIODS: 93 MODE: CONTINUOUS
PERIOD LENGTH: 0:15:00
TIME HISTORY CUTOFF: NONE
Ln(1): 90.0% Ln(2): 99.0%

The loggers were enclosed in waterproof containers and were operating during installation and removal. Handling generated artificats in the microphones. The cut-off lines in the table separate the contaminated readings.

DATE: 10/03/08

INT	TIME	Lav	Lmx
1	20:32:05	79.2	108.3
2	20:47:05	58.9	74.8
3	21:02:05	57.6	67.6
4	21:17:05	57.6	70.7
5	21:32:05	60.1	71.4
6	21:47:05	61.5	73.3
7	22:02:05	58.9	67.1
8	22:17:05	58.6	71.7
9	22:32:05	61.1	71.5
10	22:47:05	60.4	74.3
11	23:02:05	56.5	64.5
12	23:17:05	56.6	61.9
13	23:32:05	56.9	58.8
14	23:47:05	57.9	67.1
15	0:02:05	59.1	67.7
16	0:17:05	55.7	60.3
17	0:32:05	55.3	57.8
18	0:47:05	60.9	66.7
19	1:02:05	59.5	68.3
20	1:17:05	56.4	60.2
21	1:32:05	56.6	60.9
22	1:47:05	55.5	61.5
23	2:02:05	55.0	59.0
24	2:17:05	55.7	58.8
25	2:32:05	63.9	81.2
26	2:47:05	55.6	64.3
27	3:02:05	52.4	57.3
28	3:17:05	60.4	68.0
29	3:32:05	58.7	69.1
30	3:47:05	53.5	60.4
31	4:02:05	53.8	67.8
32	4:17:05	52.9	60.7
33	4:32:05	56.7	70.3
34	4:47:05	54.6	68.2
35	5:02:05	51.7	55.8
36	5:17:05	53.9	69.5
37	5:32:05	49.3	65.4
38	5:47:05	50.0	56.1
39	6:02:05	50.0	55.8
40	6:17:05	57.2	71.6
41	6:32:05	51.4	58.1
42	6:47:05	53.5	57.9
43	7:02:05	54.9	59.5
44	7:17:05	52.6	57.9
45	7:32:05	55.3	59.9
46	7:47:05	55.6	61.4
47	8:02:05	54.2	61.2
48	8:17:05	54.5	61.3
49	8:32:05	54.4	64.2
50	8:47:05	75.7	100.9
51	9:02:05	52.2	60.7
52	9:17:05	53.9	62.0
53	9:32:05	53.0	60.3

INT	TIME	L_{av}	L_{max}
54	9:47:05	57.8	72.0
55	10:02:05	65.4	71.0
56	10:17:05	65.7	73.1
57	10:32:05	67.8	71.3
58	10:47:05	71.9	76.2
59	11:02:05	70.2	76.0
60	11:17:05	67.1	73.6
61	11:32:05	68.2	76.4
62	11:47:05	62.8	74.5
63	12:02:05	64.8	69.8
64	12:17:05	60.7	71.6
65	12:32:05	55.5	71.1
66	12:47:05	51.6	62.2
67	13:02:05	51.8	57.5
68	13:17:05	60.4	68.6
69	13:32:05	62.6	69.0
70	13:47:05	62.7	71.7
71	14:02:05	55.1	66.7
72	14:17:05	53.8	78.8
73	14:32:05	51.7	57.4
74	14:47:05	51.9	65.3
75	15:02:05	54.7	72.4
76	15:17:05	61.8	80.4
77	15:32:05	51.2	64.1
78	15:47:05	58.7	72.6
79	16:02:05	54.1	66.9
80	16:17:05	50.2	56.3
81	16:32:05	51.7	57.9
82	16:47:05	52.2	67.1
83	17:02:05	51.5	58.5
84	17:17:05	49.5	53.9
85	17:32:05	50.4	59.1
86	17:47:05	48.4	53.2
87	18:02:05	50.2	55.2
88	18:17:05	50.6	56.7
89	18:32:05	50.9	54.3
90	18:47:05	53.3	67.3
91	19:02:05	51.6	56.0
92	19:17:05	54.6	75.1
93	19:32:05	90.8	111.9

Figure 7. **Vacuum at 50', 3/4 throtle, 10-04-08, File 042**
(Before repairs — level was 83.4 dBA - NOT AN ERROR)

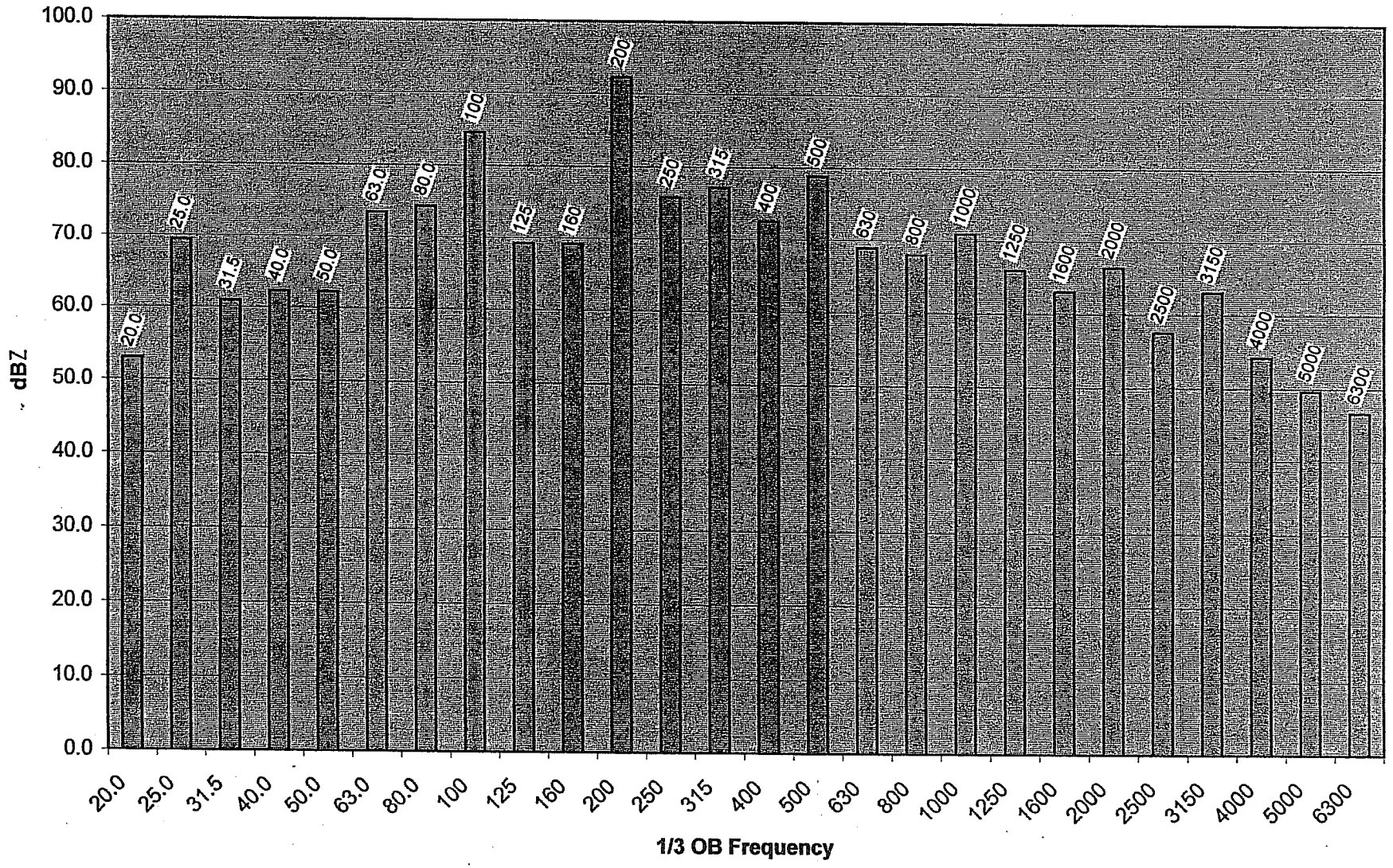

Figure 8. **Vacuum at 50', Full throtle, 10-04-08, File 043**

(Before repairs -- level was 81.1 dBA)

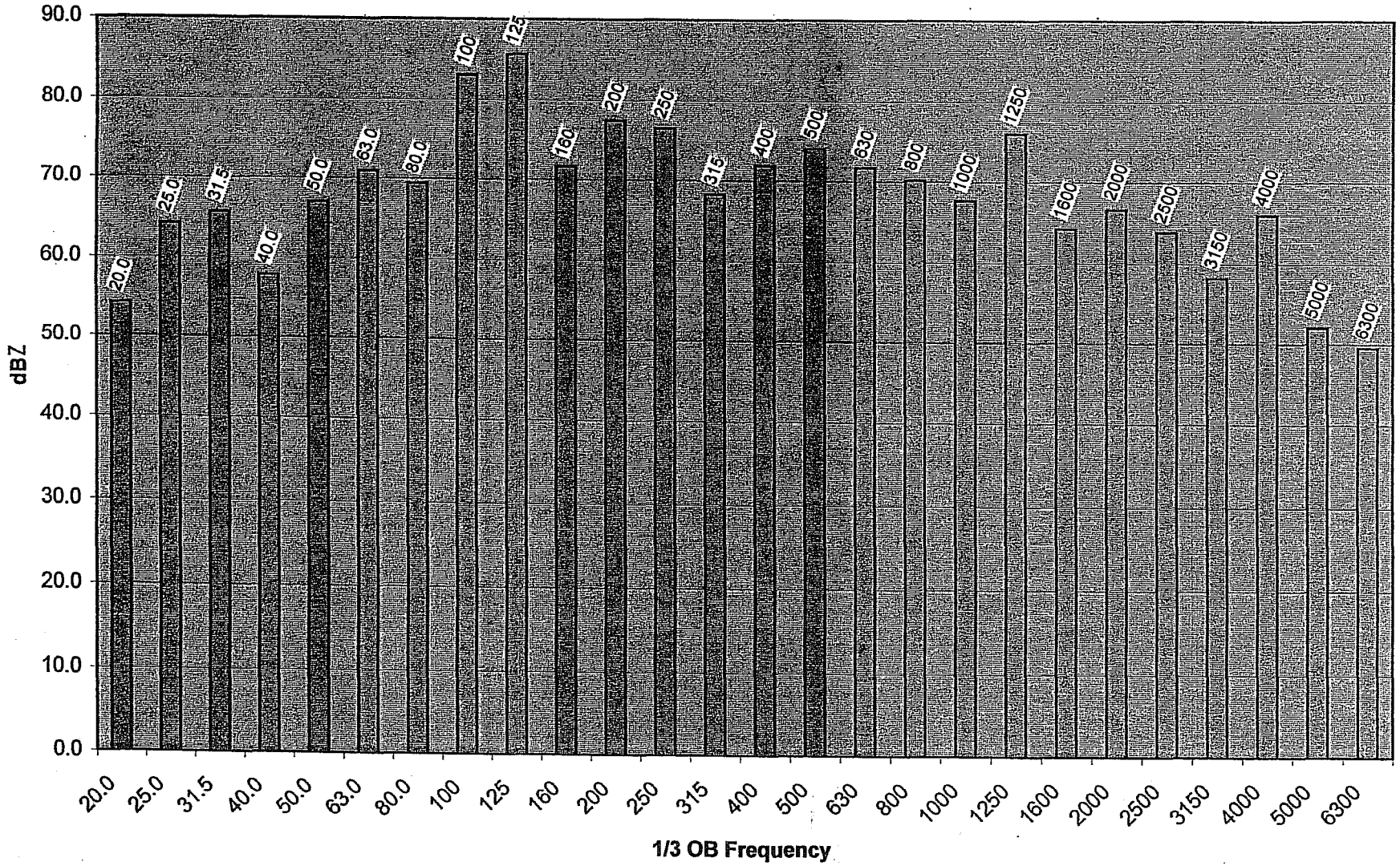

Figure 9, Norlite Surveys 11/25/08, Tuesday morning, Plant in Operation
Location D, Tailfeather Ct. (NW of Plant)
No wind, 120 Hz. Prominent, Power Transformer
Address 1, 200 Hz 80N122

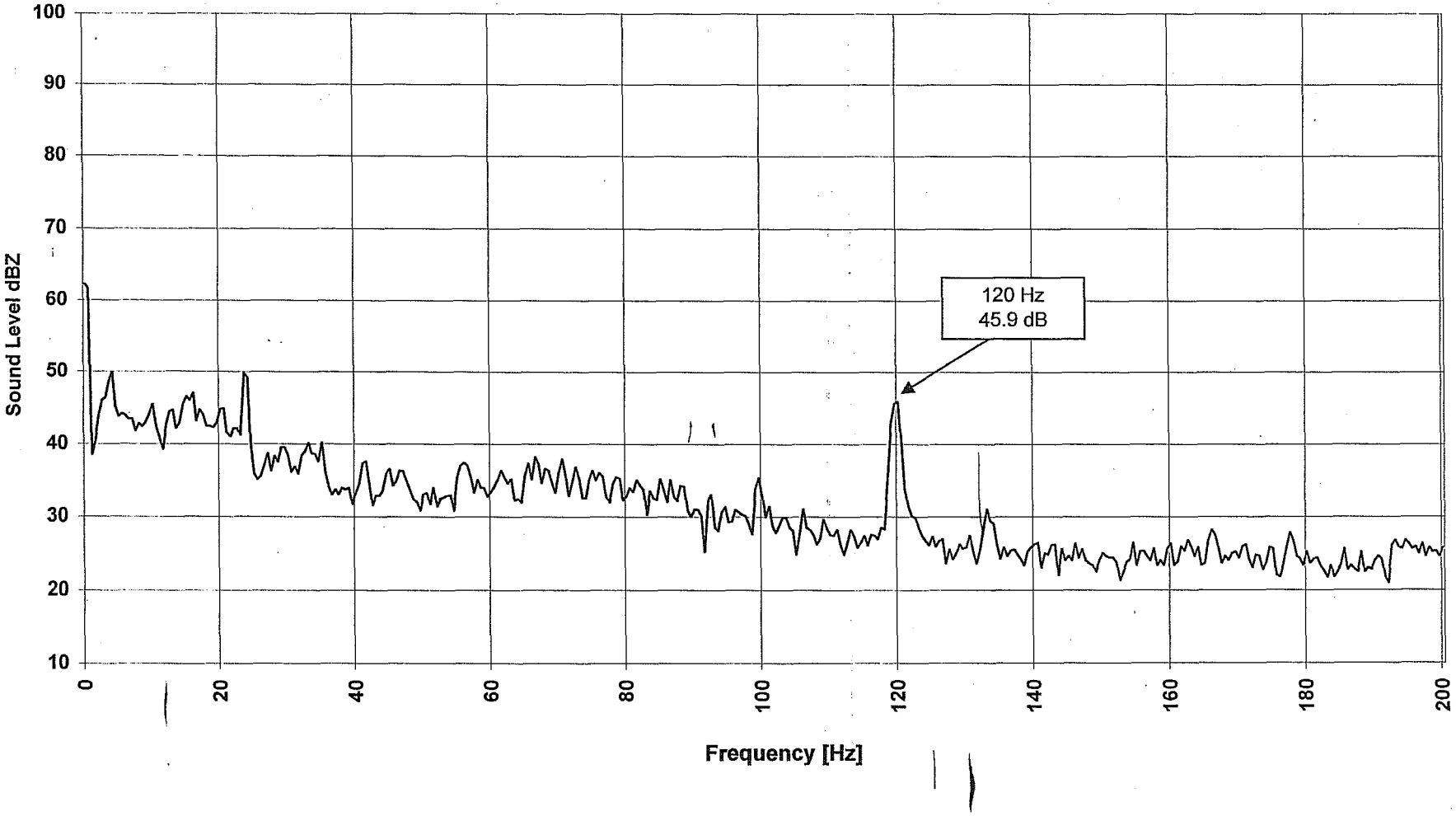

Table A High Resolution – Frequency vs Sound Level (dBZ), Various Sources 11/1/08 & dBA

Frequency Range (Hz)	ID KILN 1 @ 10 feet		ID KILN 2 @ 10 feet		Hilltop Drive Location 1		Surveys of 11/1/08 Location C	
	Hz / dBZ	dBA	Hz / dBZ	dBA	Hz / dBZ	dBA	Hz / dBZ	dBA
100					103.75 / 39.4	21	103.75 / 50.5	31
			125/87.5	71.5	118.75 / 40.3	23	118.75 / 53.9	37
	137.5/89.4	74.4			133.75 / 37	23	133.75 / 51.5	37
					147.5 / 42.8	22	147.5 / 60.8	47
150			177.5/79.1	67.	163.75 / 32	19	162.5 / 50.2	37
	185/71.5	60.			177.75 / 39.9	28	178.75 / 48.1	36
			187.5/80.9	69.	192.5 / 24.5	13	192.5 / 45.8	34
200					215 / 25.2	16	215 / 49.7	40
250					273.75 / 24	17	273.75 / 40.2	33
	280/75	68.			293.75 / 23.5	17	293.75 / 40.1	33
300							No Prominent Tones Between 300 Hz and 500 Hz	
350								
400								

*Format: XXX Hz / XX dBZ

Sound levels in dBZ are not frequency weighted

See Table A-1 for correcting dBZ to dBA

Table A-1
Relative Response for
A vs Z Weighting

Nominal Frequency Hz (In 1/3 octave steps)	A Weighting dB
10	-70.4
12.5	-63.4
16	-56.7
20	-50.5
25	-44.7
31.5	-39.4
40	-34.6
50	-30.2
63	-26.2
80	-22.5
100	-19.1
125	-16.1
160	-13.4
200	-10.9
250	- 8.6
315	- 6.6
400	- 4.8
500	- 3.2
630	- 1.9
800	- 0.8
1000	0
1250	+ 0.6
1600	+ 1.0
2000	- 1.2
2500	+ 1.3
3150	+ 1.2
4000	+ 1.0
5000	+ 0.5
6300	- 0.1
8000	- 1.1
10 000	- 2.5
12 500	- 4.3
16 000	- 6.6
20 000	- 9.3