



MAINE POWER RELIABILITY PROGRAM

A CENTRAL MAINE POWER COMPANY PROGRAM
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April 7, 2010

Mr. Ron Hodsdon, Chairman
Town of Pownal
Planning Board
Mallett Hall
429 Hallowell Road
Pownal, ME 04069

**RE: Supplemental Information Filing
Central Maine Power Company - Maine Power Reliability Program**

Dear Mr. Hodsdon:

TRC, on behalf of Central Maine Power Company (CMP), is pleased to submit this additional information package to address concerns expressed by the Pownal Planning Board and citizens regarding the sound levels at the Surowiec Substation. This package includes the following information:

1. A discussion of the existing sound producing equipment at the Surowiec Substation;
2. A report describing the existing operational sound levels of the Surowiec Substation as demonstrated by the sound testing program conducted in March 2010;
3. A discussion of the effects of the Maine Power Reliability Program (MPRP) on existing substation sound levels and the use of the existing transformer and reactor banks; and
4. A discussion of potential mitigation under evaluation by CMP to reduce the sound level at the Surowiec Substation.

1. Existing Surowiec Substation Sound Producing Equipment

There are two types of noise generating equipment at the Surowiec Substation; the transformer and the two inductor (commonly referred to as reactor) banks. The transformer, which is housed within a building, is in continual operation and produces a consistent, low level of sound that does not vary significantly based on typical load conditions at Surowiec.

The two reactor banks are used on an intermittent basis by CMP to control high voltage by compensating for capacitive charging¹ from lightly loaded transmission lines. When

¹ In alternating current power transmission and distribution, volt-ampere reactive (VAR) is a unit used to measure reactive power in an AC electric power system. A VAR is essentially magnetic power, which causes a phase shift between voltage and current sine wave curves.

transmission lines are energized to conduct power used by businesses and homes, VARs are generated in the lines due to the physics of producing and transmitting electricity. As power flows in the lines, these VARs are absorbed and used to transmit power from locations where it is generated to locations where it is used by consumers. As the demand for power during the night decreases, less power is generated by the sources of electricity and transmitted across the wires. The VARs generated by the transmission lines are greater than the amount absorbed because of low transmission and a condition with excess VARs is created. One or both reactor banks may be placed into operation in response to high voltage conditions when excess VARs are prevailing and causing other potentially serious power quality issues such as over-voltage. When one or both reactor banks are operating they produce audible sound. When the reactor banks are not operating they produce no sound. The reactors are the main sources of noise at the Surowiec Substation.

2. Existing Operation Sound Levels at the Surowiec Substation

In response to concerns expressed by the Pownal Planning Board and citizens, CMP conducted comprehensive sound level testing on March 6 – 7, 2010 at the Surowiec Substation to document the sound levels produced by the substation. This testing was conducted in addition to CMP's annual noise monitoring program that has been in place since 1999. The March testing was done under multiple operational scenarios, including operation of the reactors.

The March 2010 sound testing was conducted in accordance with industry accepted American National Standards Institute (ANSI) standards. The sound testing program was conducted by Mr. Thomas S. Adams of TRC, who is Board Certified by the Institute of Noise Control Engineering and has 36 years experience performing noise surveys and conducting noise analyses for numerous types of industrial facilities. Mr. Adams also holds a Master of Science Degree in Physics from Valdosta State University.

The March 2010 sound level testing program was conducted, with the goal of assessing the current sound levels that have prompted Planning Board and public concern, evaluating how these levels compare to the Town's noise standard,² and providing a basis for discussing potential mitigation. A copy of the report with the monitoring results is attached. In addition, these results are summarized below.

As part of the recent monitoring, nine monitoring locations along or near lot lines were selected. The monitoring results show that at none of these locations does the sound generated by the substation exceed the Town's standard. The substation complies with the Town's ordinance.

In addition, eight other monitoring locations were selected within CMP's property and not along lot lines in order to develop a full understanding of the sound generated by the substation. These additional monitoring points include one location immediately adjacent to the reactors, one location within CMP's lot on the opposite side of Allen Road, and six locations along the edge of Allen Road.

² Section V.9.b.2 of the Town's Site Plan Review Ordinance contains the noise standard: "The volume of sound, measured by a sound level meter and frequency weighting network (manufactured according to standards prescribed by the American Standards Association), inherently and recurrently generated shall not exceed 60 decibels at lot boundaries, excepting air raid sirens and similar warning devices."

At the February Planning Board meeting the Board discussed whether compliance with the Town's noise standard should be measured along the edge of Allen Road. An assumption that appeared to be part of this discussion was that, while CMP owns the property on both sides of Allen Road, CMP does not own the land under the road itself. Also at the time of that discussion the Board was uncertain about whether CMP's property has been identified as a single lot by the Town on its tax maps. Since the February meeting we have investigated whether, based on the noise standard in the Town's Site Plan Review Ordinance, compliance should be measured along Allen Road. The answer is no, compliance should not be measured along Allen Road, doing so would be inconsistent with the Site Plan Review Ordinance requirement for the following reasons:

1. CMP is the record title holder for the fee interest in the land in and under Allen Road abutting its property on both sides of Allen Road. The public interest in Allen Road is an easement for the right to travel. Thus, CMP is the record fee interest holder in one large, contiguous lot that includes the land adjacent to and under Allen Road. Measuring sound levels along Allen Road would mean measuring sound within CMP's lot. This is not required by the Ordinance.
2. Consistent with CMP's fee interest in this one contiguous lot, the Town's tax maps recognize the land in question as a single lot. (See Tax Map 3, Lot 83.) Measuring sound levels along Allen Road would be inconsistent with the Town's treatment of this property as a single lot and would mean measuring sound within CMP's lot.

Accordingly, the sound monitoring results measured along Allen Road that are noted below and included in the sound testing report are illustrative only. However, we hope providing this information will help the Board develop a full understanding of the sound generated by the substation and assist us all in evaluating potential mitigation alternatives.

All the monitoring locations, both those approximate compliance locations and those that are solely illustrative, take into account the fact that the transformer building acts as a partial barrier to the transmission of reactor sound, and were positioned to obtain as direct and unobstructed a line of sight (and hearing) as possible to the reactors. The measurements were conducted when other extraneous sources of noise (traffic, etc.) were at a minimum, such that mainly substation sound levels were measured.

As noted above, the sound generating sources at the substation include the transformer and two reactor banks. Although the transformer is in continual operation, the two reactor banks are used intermittently in response to high voltage conditions on CMP's system. As such, three substation operational scenarios were tested to document the sound levels produced by the substation across all operating conditions:

- Transformer only in operation;
- Transformer and one reactor bank in operation; and
- Transformer and both (two) reactor banks in operation.

The monitoring results for these three scenarios capture the full range of sound levels generated by the substation.

The noise testing program revealed that the transformer is a minor contributor to sound levels in the area. The sound generated by the substation primarily is attributable to the reactors. Sound levels generated during transformer-only operation were low, and well below the Pownal noise ordinance limit at all lot line locations. Even at the monitoring locations within CMP's lot the sound level generated by the transformer alone was well below 60 dBA. Testing of the transformer along with one reactor bank operating and with two reactor banks operating revealed that under both of these scenarios the substation sound was audible at all lot line locations, as well as within CMP's lot. Under both scenarios, however, the Town's standard was met at all lot line monitoring locations. Within CMP's lot, at two monitoring locations along Allen Road adjacent to the substation yard (sites #4 and #5), monitoring results slightly exceeded 60 dBA; one such reading was 60.2 dBA and the other was 64.0 dBA. As noted above, however, neither location is a point where compliance is measured since these locations are within CMP's lot, Tax Map 3, Lot 83. These were the only two monitoring results above 60 dBA outside of the substation yard.

A measurement control site (Site #16) was also established directly adjacent to the reactor banks to monitor any variation in the sound output of the reactors and transformer during the testing program. The control site data showed that reactor sound levels varied very little while in operation. The maximum sound level measured at the control site was 72 dBA with one reactor bank in operation and 75 dBA with both reactor banks in operation. Sound levels measured at the control site with only the transformer in operation showed greater variability due to the fact that the transformer sound levels are low, and that the presence of other ambient sources (e.g., occasional vehicle traffic, aircraft, birds, etc.) contributed to the measured sound levels and were more significant than transformer sound at times.

The full sound testing report has been included as Attachment 1 with this letter. This report includes a detailed discussion of the testing methodology and tabulated results of the testing program. The report also includes figures showing the test site locations at the substation.

3. Effects of the MPRP on Equipment Operation at the Surowiec Substation

As previously explained at prior Board meetings, the proposed expansion of the Surowiec Substation for the MPRP does not include the addition of any noise-generating equipment such as transformers or reactors. The proposed upgrade of the substation includes (1) the rebuild of the existing 345 kV bus on the north side of the substation to accommodate the new 345 kV lines; and (2) the addition of one new 115 kV breaker to the 115 kV bus on the south side of the substation to improve system operability. Switches and other minor equipment will also be added to the substation. This type of equipment emits only low levels of sound on an intermittent and infrequent basis. This new equipment will not have a noticeable influence on sound levels at the substation.

Today, the Surowiec Substation in Pownal has the only reactors in Maine south of the Bangor area. To improve reliability and power quality and add capability to the bulk transmission system, the MPRP will install autotransformers with the same sized reactor banks as Surowiec at three new substations on the CMP bulk transmission system. The MPRP will add dual reactors at the proposed Larrabee Road Substation in Lewiston, which can be used to help control high voltages. There will also be reactors installed at the proposed Coopers Mills Substation in Windsor and Albion Road Substation in Benton as part of MPRP. This additional reactive capability on CMP's system will lead to less frequent use of the Surowiec Substation reactors.

4. Proposed Mitigation Measures to Reduce Sound Levels at the Surowiec Substation

CMP understands the town's concern and is sympathetic to the public's request for additional noise reduction at Surowiec Substation. In response, CMP has conducted a review of sound abatement options and has ruled out several options that are either not compatible with the operation of the reactors or have been found to not significantly reduce sound levels. CMP continues to diligently study other engineering options, one of which is the replacement of the existing reactors with new reactors that have enhanced sound performance characteristics that allow for operation at lower decibel levels over the life of the product, and intends to provide the results of these studies at the next planning board meeting.

We look forward to meeting with the Planning Board again on April 21, 2010. If you have any questions in the interim please let me know.

Sincerely,



Richard C. Paquette, Jr., PWS
Senior Environmental Scientist

Attachment 1

**Surowiec Substation
Sound Level Testing Report
April 2010**



Sound Level Testing Report

Surowiec Substation Pownal, Maine

Prepared for:
Maine Power Reliability Program
Central Maine Power Company
25 Pearl Street, Suite 2
Portland, ME 04101

Prepared by:
TRC Environmental Corporation
57 East Willow Street
Millburn, New Jersey 07041

April 2010

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1.0 INTRODUCTION

Central Maine Power (CMP) contracted TRC to design and conduct a noise testing program at their existing Surowiec substation in Pownal, Maine. The March 2010 sound level testing program was conducted, with the goal of assessing the current sound levels that have prompted Planning Board and public concern, evaluating how these levels compare to the Town's noise standard and providing a basis for discussing potential mitigation. Testing was conducted for various substation operating conditions, including all sources operating simultaneously. The noise testing was conducted on March 6 – 7, 2010 in accordance with industry accepted ANSI standards.

2.0 TESTING PROCEDURES AND REQUIREMENTS

The objective of the noise testing program was to quantify sound from the existing CMP Surowiec Substation located on Allen Road in Pownal, Maine at various locations within the substation property and along lot line locations. The measurement procedures and requirements are discussed in subsequent sections of this report.

2.1 Applicable Standards

All noise measurements and procedures utilized in performing this compliance testing were in conformance with the minimum following noise standards:

- ANSI S1.4-1983 or IEC651:1979/IEC804:1985 (Specification for Sound Level Meters)
- ANSI S1.13-1971 (Methods for the Measurement of Sound Pressure Levels) or later revisions
- ANSI S12.9-1993/Part 3 (Quantities and Procedures for Description and Measurement of Environmental Sound. Part 3: Short-Term Measurements with an Observer Present) or later revisions

2.2 Town of Pownal Noise Ordinance

The Town of Pownal has a noise standard in Section V.9.b.2 of its Site Plan Review Ordinance. The ordinance states: *“The volume of sound, measured by a sound level meter and frequency weighting network (manufactured according to standards prescribed by the American Standards Association), in inherently and recurrently generated shall not exceed 60 decibels at lot boundaries, excepting air raid sirens and similar warning devices.”* It is noted that the ordinance does not specifically mention A-weighted decibels. However, A-weighting is nearly universally used in local noise ordinances and is assumed for the Pownal ordinance as well.

2.3 Measurement Conditions

To meet the requirements of the aforementioned standards, the noise testing program was conducted under the following conditions:

- The six substation reactors (two banks of three each) were both operating normally.
- The substation transformer was operating normally.

- Testing was conducted under three scenarios that included only the transformer operating, the transformer operating along with only one reactor bank operating, and the transformer operating along with both reactor banks operating.
- No precipitation occurred during the measurement periods.
- Ambient temperature was between 14 F and 122 F.
- Measurements were taken during periods of light winds (wind speeds did not exceed 10 to 15 miles per hour).
- The meter microphones were mounted at a nominal height of 5 feet (1.5 meters) above grade and were fitted with foam windscreens.

2.4 Determination of Substation Noise Level

The L_{90} noise level is the statistical noise descriptor that was used for determining the substation generated noise levels and subsequent compliance status. The L_{90} is a statistical measurement which represents the sound level exceeded 90 percent of the time, also referred to as the residual noise level. This type of measurement essentially excludes short term, intrusive noise sources, such as aircraft overflights or occasional traffic passing by. The nature of the noise generated by the substation sources (steady, even noise levels) is better measured using the L_{90} descriptor.

3.0 NOISE TESTING PROGRAM

3.1 Methodology

The noise generating sources at the substation include the transformer and two reactor banks. These sources are shown on Figure 1. The noise testing locations selected to test these sources are depicted on Figure 2. A total of nine measurement locations were utilized along or near lot line areas. In addition, eight other monitoring locations were selected within CMP's property and not along lot lines in order to develop a full understanding of the sound generated by the substation. These additional monitoring points include one location immediately adjacent to the reactors, one location within CMP's lot on the opposite side of Allen Road, and six locations along the edge of Allen Road. These last six locations also are within CMP's lot. CMP is the record title holder for the fee interest in the land in and under Allen Road abutting its property on both sides of Allen Road. Thus, CMP is the record fee holder of one contiguous lot. This lot has been identified by the Town as Lot 83 on Tax Map 3.

All the test points account for the fact that the transformer building acts as a partial barrier to reactor sound, and were positioned to obtain as direct and unobstructed a line of sight as possible to the reactors. The measurements were conducted when other extraneous sources of noise (traffic, etc.) were at a minimum, such that mainly substation noise levels were measured. Sound generated by the two reactor banks and the transformer were steady in level (as is demonstrated by the control data later in this report). As such, long-term measurement of facility sound was not required, and a short-term measurement of nominally five minutes at each of the 16 locations was used for quantifying substation-generated noise. The measurement times were abbreviated at locations where the extraneous sounds were minimal or not present.

Because testing was done over the course of several hours, it was important to determine if the sound levels from the reactors and transformer varied in level over the course of the testing program. The short-term data was therefore supplemented by continuous measurement of sound at a control test location immediately adjacent to the reactors, which are the main noise sources at the substation (Figure 2). The noise measurements at this control location consisted of continuous measurement (in 10 second averaging intervals) of the overall A-weighted sound levels while short-term measurements were being conducted at the property line locations. The onsite continuous meter was used as a control to determine if noise levels emitted by the reactors remained constant during the testing period. The continuous data revealed very steady sound levels, demonstrating that long term

measurements were not required. The internal clocks of both meters were synchronized prior to testing.

If the sound level at the control location changed during testing, then the test data at each short-term location were adjusted to reflect this change. In this manner, the test data reflect maximum substation sound output at each testing location. For example, if the sound level at the control location dropped by one dBA during the test, then the test data at the property line test location for the same time period was increased by one dBA in order to compensate for the change.

The following substation operating scenarios were tested:

- One reactor bank in operation (along with the transformer operating);
- Both reactor banks in operation (along with the transformer operating);
- Transformer only in operation.

The transformer was in operation during all testing scenarios.

The noise testing program was conducted by Mr. Thomas S. Adams, who is Board Certified by the Institute of Noise Control Engineering and has 36 years experience performing noise surveys and conducting noise analyses for numerous types of industrial facilities. Mr. Adams also holds a Master of Science Degree in Physics from Valdosta State University.

3.2 Instrumentation

A Rion Model NA-27 precision integrating sound level meter meeting the requirements of ANSI Standard S1.4-1983 for Type 1 precision meters was used for the property line short-term measurements. This meter was mounted on a tripod with the microphone at the standard height of five feet and the monitor was angled toward the source about 15 degrees from vertical. The microphone was equipped with a 3.5" diameter windscreen to reduce wind-generated noise. The instrumentation was field calibrated before and after the survey using a Bruel & Kjaer Type 4231 calibrator. The field checks showed no deviation from the prescribed calibration level.

A Larson-Davis Laboratories Model 820 precision integrating sound level meter meeting the requirements of ANSI Standard S1.4-1983 for Type 1 precision meters was used for continuous measurements at the control location (location 16). The noise measurements at this location

consisted of continuous measurement in ten second averaging periods of the overall A-weighted sound levels while measurements were taken at the other locations.

All meters had been calibrated by a calibration laboratory to NIST-traceable standards within one year of the testing program. Measurements were made with the meters set to “fast” response. The sound level meters were programmed to measure and log the L_{90} noise level. As discussed previously, the L_{90} is a statistical measurement which essentially excludes short term, intrusive noise sources, such as aircraft overflights or occasional traffic. All measured sound levels are reported to the nearest one-tenth decibel.

The contributing noise sources were identified and recorded, along with the prevailing meteorological conditions. Wind speed, wind direction, and temperature were measured by Mr. Adams using a hand held Kestrel 3000 weather meter. Sky conditions were observed and recorded.

4.0 TESTING RESULTS

The sound testing program revealed that the transformer, which is housed within a building, is a minimal contributor to area noise levels. The reactors are the main sound sources at the substation. Sound levels with the reactors in operation were found to be below the Town of Pownal noise ordinance limit of 60 dBA at all nine of the locations at or near the lot boundary. Measured sound levels at the locations within CMP's lot were below 60 dBA, with the exception of two locations proximate to the reactors where measured levels were 60.2 dBA and 64.0 dBA. These locations were not near the boundary of CMP's lot. Testing of the reactors was conducted during the nighttime hours. Transformer only testing was conducted in the morning. Meteorological conditions during the nighttime reactor testing program were ideal for favorable noise propagation and included very light to calm winds and clear skies. Temperatures at night ranged from 29 degrees F to 39 degrees F, and increased to 48 degrees F during the morning testing. Winds were very light and skies were clear during the morning testing.

Field data sheets are presented in Appendix A. The factory calibration certifications for all testing equipment are included as Appendix B. A discussion of the noise test findings is provided below.

4.1 Continuous Control Data

Data from the continuously recording meter that was installed as a control adjacent to the reactors are provided as a graph in Figure 3. The data measured while the reactors were in operation indicate that reactor sound shaped the sound environment at the control location. Sound levels varied very little while the reactors were in operation. Sound levels measured at the control location while only the transformer was in operation show much greater variability. This is due to the fact that transformer noise levels are low, and that the presence of other ambient sources (e.g., occasional vehicular traffic, aircraft, birds, etc.) contributed to the measured noise levels and were more significant than transformer noise at times. The spikes on the graph during transformer operation likely represent individual vehicle passes on Allen Road, along with chirping birds and other natural sounds. The transformer emit a very even sound, which is best presented by visualizing the graph with the spikes removed. The transformer sound contribution at this location is in the 40 dBA to 45 dBA range on the graph.

4.2 Transformer Only

The existing transformer is housed within a concrete block building with a wood roof. Testing of the transformer was conducted on the morning of March 7, 2010 between 0817 and 1059. The reactor banks were both off. The testing results are provided in Table 1 and Figure 4. Measured sound levels at lot boundary locations were found to be low, and all were well below the Pownal noise ordinance limit. The transformer was audible at the most proximate interior locations (locations 2, 3, 4, 5, 6, and 17). Transformer noise was barely or not audible at the remaining locations. Because transformer sound levels were so low, it was not necessary to make any adjustments using the control data. Further, as discussed above, the control data were affected by other sources of noise not attributable to the transformer.

4.3 One Reactor Bank (KR1) in Operation

Reactor bank KR1 was put into operation and testing was conducted on March 6, 2010 between 2119 and 2349. The second reactor bank was off and the transformer was operating. Reactor sound was audible at all the test locations, but at low levels at the more distant locations. The testing results are provided in Table 2 and Figure 5. As discussed previously, the continuously recording meter installed next to the reactors was used as a control to determine if reactor sound changed during the test.

A review of the continuous data plot in Figure 1 reveals that the maximum sound level at the control location during the one reactor bank test was 72 dBA. This became the control sound level. If lower levels occurred during the test, then the property line location data were adjusted upward to compensate for this change.

These data and the correction required for the test data are also provided in Table 2. The final adjusted test data at each location is then presented. These data reveal that sound levels with one reactor bank in operation were below the ordinance limit at all locations at or near the lot boundary. Only location #4, within CMP's lot, was found to have a sound level greater than 60 dBA (64.0 dBA).

4.4 Both Reactor Banks in Operation

Immediately following the one reactor bank test, the second reactor bank (KR2) was put into operation. The transformer remained on during the entire testing program. Testing of both reactors was conducted during the period March 6, 2010 at 2357 through March 7, 2010 at 0217. As with the single reactor, sound from both reactors was audible at all monitoring locations. The sound testing results are provided in Table 3 and Figure 5.

Data from the control location were examined and the maximum sound level at the control location during the two reactor bank test was 75 dBA. As discussed above, the test data at all other locations were adjusted upward to compensate for any changes at the control location. These data are provided in Table 3. The final adjusted data reveal that noise levels with both reactor banks in operation were below the ordinance limit at the monitoring locations at or near the boundary of CMP lot. Only location #5, within CMP's lot, was found to have a sound level greater than 60 dBA (60.2 dBA). It is unclear why lower levels were measured at locations 1, 2 and 4 while both reactors were in operation than when only one bank was in operation. One possibility is that destructive interference of the sound waves from each reactor bank may have occurred at these close-in distances.

5.0 CONCLUSION

A sound testing program was conducted at Central Maine Power's existing Surowiec substation in Pownal, Maine. The testing program was designed to quantify the sound level generated by the substation at the boundary of CMP's lot, as well as at additional locations within CMP's lot. Measurements at the lot boundary locations were used to evaluate compliance with the Town of Pownal's noise ordinance limit. Testing was conducted for three substation operating conditions, including transformer only, transformer and one reactor, and the transformer and two reactors. The noise testing was conducted on March 6 – 7, 2010 in accordance with industry accepted ANSI standards.

The sound testing program revealed that the transformer is a minor contributor to sound levels in the area. Higher sound levels are generated by the reactors. Sound levels generated during transformer-only operation were low, and well below the Pownal noise ordinance limit at all lot boundary locations. Testing of the one reactor bank and two reactor bank scenarios revealed that reactor noise was audible at all monitoring locations. Measurements under all testing scenarios revealed that measured sound levels were below the Pownal ordinance limit at all lot boundary locations. Sound levels of greater than 60 dBA were only measured at two locations within CMP's lot near the reactors.

Table 1 – Transformer Only Operation Results

Surowiec Substation Noise Testing Results March 6-7, 2010 All Sound Levels in dBA			
Transformer Only - No Reactors - Approximate Lot Boundary Locations			
Location Number	Measured L90 Sound Level	Town of Pownal Noise Ordinance Limit	Ordinance Limit Exceeded
1	27.3	60	No
8	26.3	60	No
9	33.5	60	No
10	24.2	60	No
11	27.7	60	No
12	25.7	60	No
13	28.0	60	No
14	26.6	60	No
15	26.9	60	No
16	*	*	*
Transformer Only - No Reactors - Interior Locations			
2	30.0		
3	34.8		
4	44.7		
5	37.1		
6	30.4		
7	26.1		
17	30.7		

Table 2 – Transformer and One Reactor Bank (KR1) Operation Results

Surowiec Substation Noise Testing Results March 6-7, 2010 All Sound Levels in dBA							
One Reactor Bank (KR1) In Operation - Approximate Lot Boundary Locations							
Location Number	Measured L90 Sound Level	Maximum Sound Level at Control Location	Sound Level at Control Location While This Location was Tested	Correction	Final Sound Level at Location	Town of Pownal Noise Ordinance Limit	Ordinance Limit Exceeded
1	40.7	72	69.4	2.6	43.3	60	No
8	32.1	72	71.8	0.2	32.3	60	No
9	33.9	72	69.5	2.5	36.4	60	No
10	28.4	72	68.6	3.4	31.8	60	No
11	28.0	72	68.5	3.5	31.5	60	No
12	27.9	72	68.2	3.8	31.7	60	No
13	35.0	72	68.5	3.5	38.5	60	No
14	42.0	72	68.6	3.4	45.4	60	No
15	38.6	72	69.6	2.4	41.0	60	No
16	*	*	*	*	*	*	*
* Location 16 is the Control location							
One Reactor Bank (KR1) In Operation - Interior Locations							
2	50.9	72	70.2	1.8	52.7		
3	53.7	72	70.3	1.7	55.4		
4	61.5	72	69.5	2.5	64.0		
5	49.4	72	70.8	1.2	50.6		
6	42.5	72	71.2	0.8	43.3		
7	38.8	72	70.9	1.1	39.9		
17	51.3	72	70.1	1.9	53.2		

Table 3 – Transformer and Both Reactor Banks (KR1 & KR2) Operation Results

Surowiec Substation Noise Testing Results March 6-7, 2010 All Sound Levels in dBA							
Both Reactor Banks in Operation - Approximate Lot Boundary Locations							
Location Number	Measured L90 Sound Level	Maximum Sound Level at Control Location	Sound Level at Control Location While This Location was Tested	Correction	Final Sound Level at Location	Town of Pownal Noise Ordinance Limit	Ordinance Limit Exceeded
1	39.1	75	73.2	1.8	40.9	60	No
8	39.8	75	75.0	0	39.8	60	No
9	44.2	75	74.4	0.6	44.8	60	No
10	33.3	75	74.2	0.8	34.1	60	No
11	31.2	75	73.3	1.7	32.9	60	No
12	40.8	75	74.0	1	41.8	60	No
13	45.2	75	73.3	1.7	46.9	60	No
14	38.3	75	73.2	1.8	40.1	60	No
15	40.2	75	72.8	2.2	42.4	60	No
16	*	*	*	*	*	*	*
* Location 16 is the Control location							
Both Reactor Banks in Operation - Interior Locations							
2	46.2	75	73.8	1.2	47.4		
3	55.6	75	74.4	0.6	56.2		
4	57.3	75	74.2	0.8	58.1		
5	60.1	75	74.9	0.1	60.2		
6	58.9	75	74.6	0.4	59.3		
7	48.2	75	74.3	0.7	48.9		
17	54.7	75	75.0	0	54.7		

FIGURES
1 - 5

APPENDIX A
FIELD DATA SHEETS

APPENDIX B

SOUND LEVEL METER CALIBRATION CERTIFICATES