



1 February 2008

Mr. Douglas Best
 VT Transco
 366 Pinnacle Ridge Rd
 Rutland, VT 05701

Dear Doug,

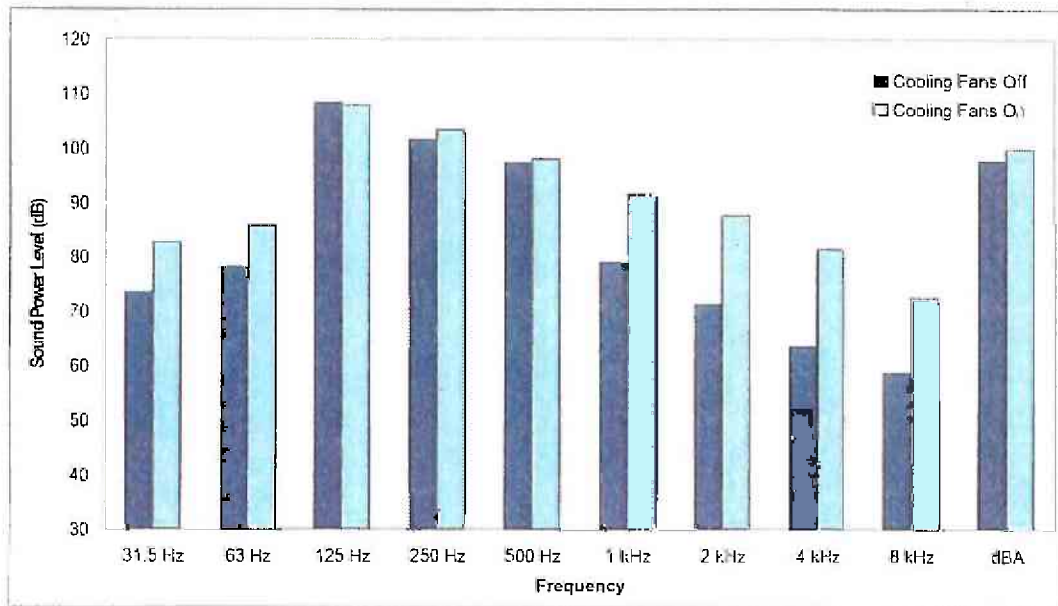
As requested, post-construction sound monitoring was completed at the Blissville substation located approximately two miles south of VT 4A and just west of Blissville Road. Two types of sound level monitoring were conducted. These included short-term measurements of the new 115 kV phase shifting transformer and short-term fence-line measurements.

SOUND POWER LEVELS OF NEW TRANSFORMERS

Short-term measurements were taken of the new transformer in accordance with *IEEE Standards Test Code for Liquid-Immersed Distribution, Power and Regulating Transformers* (IEEE Std. C57.12.90-1999), so that the sound power level could be calculated. It was measured with and without cooling fans operating.

These measurements were conducted on November 1, 2007. Two Cesva SC310, ANSI Type I integrating sound level meters were used to log the sound pressure level at 1/3 octave band center frequencies from 20 Hz to 10 kHz. Each meter was calibrated before and after the measurements, and both microphones were fitted with windscreens.

The monitored sound pressure levels were used to calculate the total sound power level of the transformer according to IEC 60076-10 (*Power Transformers – Part 10: Determination of Sound Levels*). Figure 1 shows the calculated sound power levels at each octave band for the new 115 kV phase shifting transformer. The sound levels are highest at the 125 Hz octave band followed by the 250 Hz and 500 Hz octave band. This corresponds with the magneto-restriction frequency of the transformer of 120 Hz (twice the current cycle of 60 Hz) and its harmonics 240 Hz and 480 Hz.

Figure 1: Sound Power Levels (dB) of the New 115 kV Phase Shifting Transformer

The average sound pressure level of the 115 kV phase shifting transformer without the fans is 75 dBA which is 9 dB below the NEMA TR-1 standard of 84 dBA, and with fans, it is 76 dBA which is 11 dB below the 87 dBA NEMA TR-1 standard.

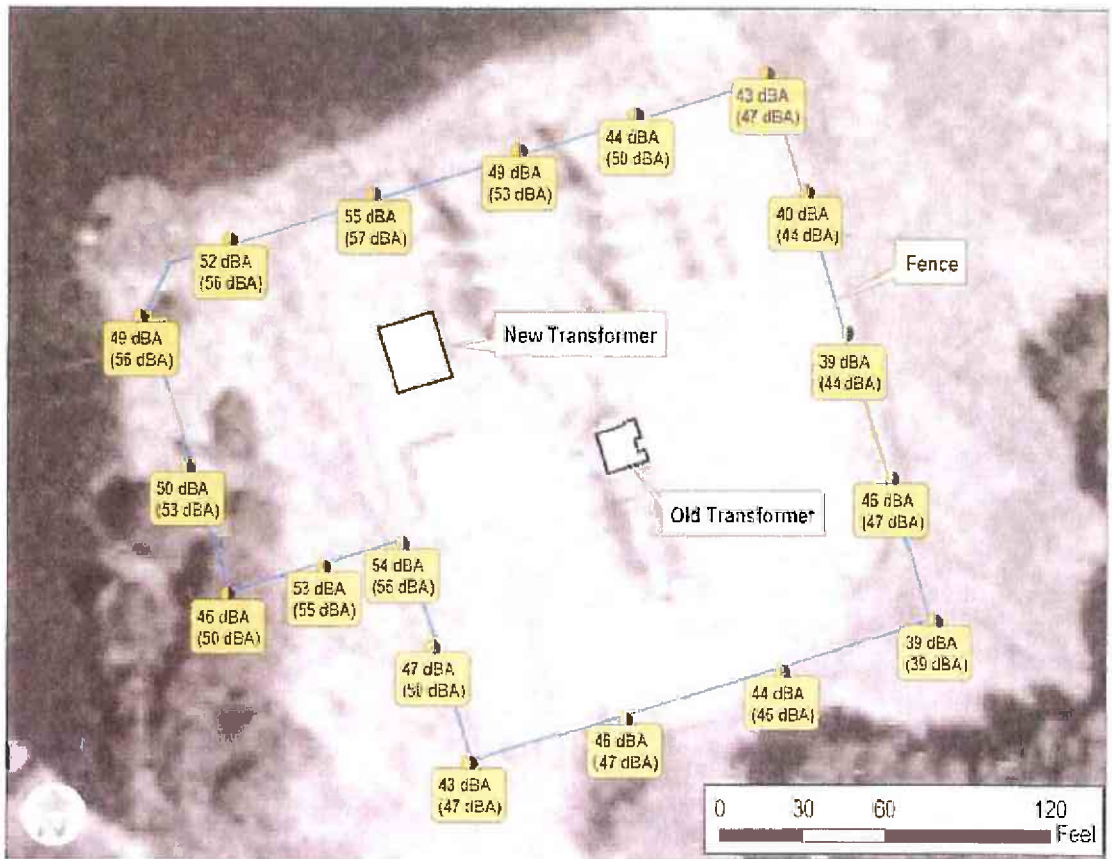
FENCE-LINE MEASUREMENTS

Sound level measurements were also conducted at approximately 50 foot intervals around the fence-line on November 1, 2007 with and without cooling fans operating. A Cesva SC310, ANSI Type I integrating sound level meter was used for these measurements as well. The meter was calibrated before and after the measurements and the microphone was fitted with a windscreen.

Figure 2 shows the results of these measurements. Sound pressure levels without cooling fans operating are shown on top and sound levels with cooling fans operating are shown below in parenthesis. As shown in Figure 2, sound levels are typically a few decibels higher when the cooling fans are operating.



Figure 2: Fence-line Sound Level Measurements (dBA). "Fans on" shown in parentheses.



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CONCLUSIONS

Sound level measurements were made of the Blissville PST and at the substation fence line. Overall sound levels of the PST are 9 dB below the NEMA TR-1 standard with fans off and 11 dB with fans on. Based on the results of our monitoring, no additional noise mitigation is recommended.

Please contact me if you have any questions.

Sincerely,

Resource Systems Group, Inc.



Kenneth Kaliski, P.E., INCE Bd. Cert.
Director

