

DONALD J. PFUNDSTEIN  
President & Managing  
Director

214 N. Main Street  
P.O. Box 1415  
Concord, NH 03301

Ph. (603) 545-3600  
Ph: (800) 528-1181  
Fax: (603) 228-6204  
pfundstein@gcglaw.com

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**VIA HAND DELIVERY, ELECTRONIC MAIL  
AND REGULAR U.S. MAIL**

Mr. Thomas S. Burack, Chairman  
New Hampshire Site Evaluation Committee  
c/o New Hampshire Department of Environmental Services  
29 Hazen Drive  
P.O. Box 95  
Concord, New Hampshire 00302-0095

**In Re: Tennessee Gas Pipeline Company  
Concord Lateral Expansion Project  
Docket: 2008-02; Response to Ms. Desrosiers**

Dear Chairman Burack:

Tennessee Gas Pipeline Company ("Tennessee") has reviewed Ms. Carol M. Desrosiers' letter dated December 26, 2009, to the New Hampshire Site Evaluation Committee ("Committee") regarding her concerns about Tennessee's Post Construction Sound Survey filed with the Committee on December 23, 2009 (the "Sound Survey"). To comply with the requirement of the Order of Notice of Public Hearing and Meeting issued January 5, 2010, Tennessee hereby files its response, which is numbered to correlate with the three questions raised in Ms. Desrosiers' letter.

**While this response demonstrates that the methodology and conclusions of the Sound Survey were scientifically valid, Tennessee always strives to be a good neighbor and in this instance, Ms. Desrosiers' concerns can be most effectively satisfied by taking supplemental measurements at her residence and at the NSA 4 residence in closest proximity to the compressor station (the "Station" and "NSA 4 Residence") to confirm compliance with the Federal Energy Regulatory Commission ("FERC") sound level. Those two supplemental measurements would be conducted at a recommended distance of approximately twenty five feet from the residence, as further discussed in this response. Because the measurement locations will necessarily be outside the public right of way, it will require landowner consent. If such consent is withheld, Tennessee would request that this offer of**

additional measurement be deemed void. Tennessee would respectfully request an additional sixty days to accommodate the necessary synchronization of testing conditions that are explained in further detail in this response letter.

Tennessee's objectives of being a good neighbor, minimizing station sound, and ensuring compliance with the FERC sound level are reflected in the Station design and construction in which Tennessee incorporated many sound-minimizing technologies. Notably, the Station building has twelve inch thick acoustically insulated walls, ventilation openings with five foot long duct silencers, and a double door with acoustic insulation. All outdoor piping is treated with acoustic insulation. A low-sound gas aftercooler was utilized and a high performance turbine exhaust silencer was installed. The Committee applauded these efforts to reduce sound levels to levels that are well below the FERC standard. See Decision Issuing Certificate of Site and Facility, dated March 12, 2009 at p. 28.

Tennessee respectfully offers the following response to Ms. Desrosiers' concerns regarding the Sound Survey conducted on behalf of this state of the art facility:

**I. Landowner Permission to Test at Residences**

**A. Landowner Permission Is Neither Necessary Nor Practical**

Ms. Desrosiers asks a good question: namely, why weren't landowners contacted so sound surveys "could be conducted at the actual residences?" Tennessee seeks to avoid inconvenience to landowners in carrying out its sound surveying obligations. Where conditions within a nearby public right of way are acoustically similar to those at a residence, Tennessee has not pursued homeowner permission to take measurements on a homeowner's property directly at their residence. FERC does not require that homeowners be actively engaged in the sound testing process.

There are also very practical reasons why sound testing practice does not seek to engage landowners. Obtaining landowner permission for sound testing frequently presents challenges, including identifying correct contact information and more extreme circumstances such as isolating aggressive or loud animals that could pose a safety concern for the sound measurement specialist or otherwise potentially compromise the accuracy of measurements due to barking.

Even when there is not a dog or similar complication to address, coordination of homeowner permission with the testing conditions required to obtain accurate sound measurements can be difficult and potentially burdensome on the landowner. For instance, sound measurements must be taken when the Station is operating at full load. The ability to run the Station at full load is dictated by variable pipeline conditions. The ability to operate at full load may only be available for as little as one to two hours at a time and notice of those opportunities is typically only one or two days in advance. Additionally, the measurements require appropriate weather conditions, notably an absence of substantial wind (a sound source

itself) or rainfall. It is not uncommon to schedule and attempt several measurement sessions before the proper combination of operating conditions and weather is achieved.

Synchronization of these circumstances and testing conditions must occur within sixty days of placing the Station in service under the FERC Order's requirements. Tennessee typically does not contact homeowners in advance of taking measurements because of the complexity of coordinating these variables in conjunction with a landowner's scheduling requirements and the potential burden that repeated testing can impose on homeowners.

#### **B. Acoustic Sound Measurements Cannot Be Taken Directly at a Residence**

Ms. Desrosiers inquires why the measurements were not taken directly at the residences. In conducting the Sound Survey every effort was made to isolate Station sound from other sound sources to provide the most accurate measurement of sound attributable to the Station at the NSAs. The residences located in the NSAs are themselves a sound source owing to the mechanical and occupant sounds that can emanate from within. Also, the structures can cause non-Station environmental sound sources in the area (such as roads, wildlife, and wind) to reflect and be amplified, thereby compromising the accuracy of the measurements of the operational sound attributable exclusively to the Station. In fact, sound surveys are recommended to be taken twenty-four feet or farther from any surface where reflections may influence the measurement.<sup>1</sup>

Even after HFP applied a distance adjustment to account for the distance between Ms. Desrosiers' residence and the nearest measurement location (being the measurement location for NSA 2, which was approximately 130 feet from her residence), the resulting calculated reading of 52.4 dB(A) Ldn at her residence is well under the FERC maximum of 55 dB(A) Ldn.<sup>2</sup>

Ms. Desrosiers further comments that the hedge in front of her house along Mammoth Road could possibly affect the measurements. In fact, leaf rustle was a significant consideration in choosing the measurement locations. The previously cited ANSI Standard notes that "nearby reflecting objects should also be avoided since they may increase the level of the background

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<sup>1</sup> American National Standards Institute Standard S12.9-1993/Part 3 (R2008) "Quantities and Procedures for Description and Measurement of Environmental Sound. Part 3: Short-term measurements With An Observer Present." (the "ANSI Standard") Section 8.1 (b) of the ANSI Standard, states: "Microphones should be located 7.5 m [24.6 feet] or farther from any surface where reflections may influence the measured sound pressure levels. If measurements are taken within 7.5 m of such surfaces, the effect, if any, of the reflecting surface on the measured data shall be determined from the experimental data."

<sup>2</sup> Given a sound pressure level (L1) at one distance (D1) from a point sound source, the sound level (L2) at another distance (D2) can be calculated from the formula:  $L2 = L1 + 20 \cdot \log(D1/D2)$ . The sound level (L2) for the Desrosiers' residence is therefore calculated to be 52.4 dB(A) Ldn where L1 is the sound level at the NSA 2 measurement location (50.9 dB(A) Ldn), D1 is the distance from the NSA 2 measurement location to the Station (800 feet), and D2 is the distance from the Desrosiers' residence to the Station (670 feet).

sound (e.g., sound produced by the rustling of leaves).” Therefore, the measurement locations for NSA 2 and NSA 3 were selected in part because of the limited number of trees in close proximity and because there were no structures obstructing the line-of-sight between the measurement location and the Station equipment. Similar efforts would be employed in selecting supplemental measurement locations in closer proximity to the Desrosiers’ residence and at the NSA 4 residence.

Ms. Desrosiers’ recollection that the turbine “sounded like an airplane was immediately overhead throttling back when landing” is inconsistent with the HFP measurement taker’s observations reported in the Sound Survey that the Station “was observably quiet . . . [and] was not the dominant environmental sound source.” The Committee may recall Tennessee’s Exhibit #18, which equated a sound level of 55 dB(A) Ldn (the FERC maximum sound level at a pre-existing NSA) and which was substantially higher than the measured levels in the Sound Survey, with sound associated with normal conversation at five feet. It is possible that Ms. Desrosiers was referring to either a short-term station blowdown event or a rare event of recycling of gas at the Station utilizing the Station’s recycle valves, which causes non-typical and elevated piping sound.

## **II. The Sound Measurements at the NSAs Are Well Below the FERC Standard of 55 dB(A) Ldn**

Ms. Desrosiers also inquires about the federal guidelines regarding the maximum level of 55 dB(A). Under the Certificate of Site and Facility, Tennessee is required to operate the Station in compliance with the FERC requirement that sound attributable to the operation of the Station during full loads at nearby NSAs does not exceed 55 dB(A) Ldn. The NSAs encompass the nearby residences. Therefore, the 55 dB(A) Ldn FERC sound level requirement cannot be exceeded at the residences. However, as discussed above, accurate measurements cannot be taken directly at a residence and the measurement locations were selected to minimize non-Station sound sources to obtain the most accurate reading of operational sound attributable to the Station. Federal regulations applicable to new compressor stations establish sound level requirements only at pre-existing NSAs, not for other locations on the parcels where an NSA is located. 18 C.F.R. §380.12

## **III. The Calculated Measurement at NSA 4 Complied With FERC Sound Requirements**

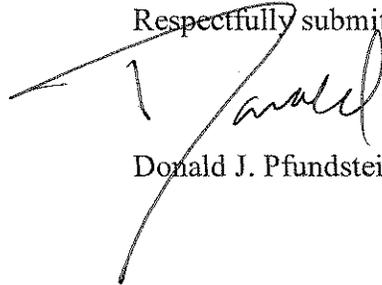
Ms. Desrosiers questions why a measurement was not taken at the NSA 4 Residence. Unlike NSAs 1, 2, and 3, where the public right of way was relatively close to the residences, the NSA 4 Residence is located down a long driveway such that a measurement taken in the public right of way would not yield acoustically similar conditions to those at the residence. However, the NSA 4 Residence was only eighty feet closer to the Station than NSA 3. HFP calculated that the eighty foot difference in distance would account for a mere 1.1 dB(A) increase in sound if the

Station were the dominant contributor, resulting in a calculated sound level for NSA 4 of 53.4 dB(A) Ldn, well under the FERC requirement maximum of 55 dB(A) Ldn.<sup>3</sup>

The Station's actual contribution to sound at the NSA was necessarily less than the reported levels in the Sound Survey because the Station was not the dominant observed sound contributor at the measurement locations. The NSA 3 measurement included other environmental sound sources such as tree leaf rustle and distant traffic sounds. Because the calculated sound level for NSA 4 of 53.4 dB(A) Ldn included these non-Station sounds further supports the Station's compliance with the FERC sound requirement at NSA 4. Taking into consideration the difficulty of coordinating landowner permission with the necessary testing conditions and the minimal increase in sound attributable to the comparable proximity between NSAs 3 and 4 to the Station, it was reasonable to use the measurement for NSA 3 in place of NSA 4.

**While the Sound Survey's testing methodology and conclusions were scientifically valid and demonstrate compliance with the FERC sound level, Tennessee will seek to further satisfy Ms. Desrosiers' concerns by taking supplemental measurements within the recommended distance from her residence and the NSA 4 Residence, provided that the necessary landowner consents can be obtained as described herein.**

Respectfully submitted,



Donald J. Pfundstein

cc: Ms. Carol M. Desrosiers  
Service List

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<sup>3</sup> Please refer to Footnote 2 for an explanation of the distance adjustment calculation. In this instance, the sound level (L2) for NSA 4 is calculated to be 53.4 dB(A) Ldn where D2 is the distance from NSA 4 to the Station (590 feet), D1 is the distance from the NSA 3 measurement location to the Station (800 feet), and L1 is the sound level at the NSA 3 measurement location (50.8 dB(A) Ldn).

**Certification**

I, David M. Jones, P.E., Senior Project Engineer, HFP Acoustical Consultants, Inc., hereby certify that I have read the above, and that I am the source of, and hereby adopt, the facts, representations and calculations concerning sound level issues contained therein.

A handwritten signature in black ink, appearing to read "David M. Jones", written over a horizontal line.

David M. Jones, P.E.