



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**  
**REGION 2**  
**290 Broadway**  
**New York, NY 10007-1866**

May 28, 2002

Mr. John T. Higgins, P.E., Director  
Bureau of Application Review and Permitting  
Division of Air Resources  
New York State Department of  
Environmental Conservation  
625 Broadway  
Albany, New York 12233-3251

Re: Pollution Control Project Exemption Request  
Tennessee Gas Pipeline – Compressor Stations 229, 245 and 254

Dear Mr. Higgins:

This is in response to Tennessee Gas Pipeline's (TGP's) February 5, 2002 request to the Region 2 Office of the U.S. Environmental Protection Agency (EPA) for a Pollution Control Project Exemption determination at TGP's three natural gas compressor stations in New York. EPA Region 2 coordinated this response with our HQ's Office of Air Quality Planning and Standards, Office of Enforcement and Compliance Assurance and Office of General Counsel.

**Background**

TGP operates three (3) natural gas compressor stations in New York State: Compressor Stations 229, 245 and 254, located in Eden, West Winfield, and Nassau, NY, respectively. At these compressor stations, TGP operates a total of 17 Worthington UTC-165 reciprocating compressor engines that burn natural gas. The UTC-165 engines were subject to New York's Reasonably Available Control Technology (RACT) standards for 2-cycle lean burn engines codified under 6NYCRR Part 227-2.4(f)(2)(i) with a presumptive NOx RACT standard of 3 g/bhp-hr. However, based on TGP's demonstration of engine design limitations associated with type of engine and the non-availability from the original equipment manufacturer of a low emission combustion kit, the NYSDEC approved an alternative 7 g/bhp-hr NOx RACT limit for these UTC engines. This RACT retrofit (first retrofit) involved changes to the following major components: pre-combustion chambers, check valves, upgrade turbocharger and upgrade intercooler. According to TGP, among low-speed gas-fired compressor engines, the Worthington engines have exhibited higher combustion component maintenance and lower combustion stability than most other makes. TGP reports that the net result for operators of

these units since the RACT retrofit has been higher maintenance costs due to combustion component replacement and a relatively high level of resources used to maintain engine balance and proper engine operation. Specifically, TGP indicated that Worthington engines have a tendency to score liners, break piston rings and crack power cylinder heads requiring a high level of maintenance. Therefore, TGP felt the need to develop a new technology to ensure that the above operational problems were minimized and approached the NYSDEC with a proposed R&D combustion retrofit on two similar UTC engines at Compressor Stations 229 and 254.

The R&D combustion retrofit was a development from the R&D efforts at Colorado State University's Large Bore Engine Test Bed and was aimed at minimizing operational problems outlined above in this letter. According to TGP, prior to this R&D project, the technology had not been applied to a Worthington UTC engine, either on a pilot scale or in actual commercial operations. After reviewing the proposal, the NYSDEC granted approvals in July of 2000 to proceed with the R&D project. Under the NYSDEC approval terms, the R&D project would not be subject to NSR/PSD review if the goals of the project were not met and TGP would be allowed to return to its original configuration, without triggering NSR/PSD review. On the other hand, if the R&D was successful, then TGP would need to apply for all necessary approvals.

In July of 2001, after several months of testing, TGP deemed the project at Compressor Station 254 (the High Pressure Fuel Injection-HPFi retrofit) to be an operational success and claimed no apparent increase in emission rates of NO<sub>x</sub>, CO, or VOC. The R&D project at Station 229 is currently undergoing operational evaluation and TGP is expected to deem the project complete on or before June 1, 2002. Some of the operational benefits realized by the R&D technology at these two stations include: improved combustion stability; less misfire and detonations; lower wear and tear on the moving parts; lower maintenance---less engine balancing and repair/replacement of combustion components. Due to the operational success of this R&D retrofit (second retrofit), TGP is requesting NYSDEC to grant appropriate approvals to enable the installation of the HPFi retrofit on all remaining TGP's 15 UTC engines in New York. TGP is also requesting that a pollution control project exemption for PSD be granted for this proposed project. According to a report provided by TGP, under this second retrofit, average NO<sub>x</sub> emissions for three test runs have been 5.7 g/bhp-hr and average CO emissions (also for three test runs) have been 4.0 g/bhp-hr.

## **Discussion**

These TGP compressor stations are considered to be existing "major stationary sources" for attainment and nonattainment purposes because they have the potential to emit (PTE) in excess of 250 tons/year for CO (attainment) and in excess of 100 tons/year for NO<sub>x</sub> (nonattainment). However, these compressor stations operate mainly during the winter heating season with the actual hours of operation for each of the engines at less than 3,000 hours/year (< 34 % capacity factor).

John Seitz's July 1, 1994 memorandum titled "Pollution Control Projects and New Source Review (NSR) Applicability" provides that certain modifications may be eligible for a conditional exclusion from NSR/PSD as a pollution control project. However, these modifications must be reviewed on a case-by-case basis to determine if they qualify. They must

also be “environmentally beneficial,” and the permitting authority must afford the public an opportunity to review and comment on the source’s application for this exclusion. TGP believes that it qualifies for this exclusion.

While it appears that this second retrofit seems to provide for improved stability and reduced maintenance costs, EPA is not yet convinced that this second retrofit will reduce NO<sub>x</sub> and CO emissions on an actual basis. As stated above, TGP claims that emission factors with the second retrofit for NO<sub>x</sub> and CO are 5.7 g/bhp-hr and 4.0 g/bhp-hr, respectively.

With respect to the first retrofit, it is EPA’s understanding that a Compliance Test Report dated September 23, 1996, prepared by Tenneco Energy for the Worthington UTC-165 Unit 1A at Station 229 in Eden, New York, and deemed to be representative for all six UTC-165 engines at that station, indicated compliance with the NO<sub>x</sub> RACT variance of 7.0 g/bhp-hr with a measured average NO<sub>x</sub> emission rate of 4.5 g/bhp-hr for three test runs (results for CO during this test could not be located). Similarly, the NO<sub>x</sub> RACT compliance test conducted at Station 254 in Nassau, NY on August 14, 1996, showed an average NO<sub>x</sub> emission rate of 5.3 g/bhp-hr. For CO, it showed average emissions of 3.25 g/bhp-hr. Therefore, it seems that emissions factors with the second retrofit, while still meeting the RACT variance, will be actually increasing. TGP should explain how they can reconcile this increase as being a “pollution control project.”

In addition, TGP has stated that the primary reason they undertook the HPFi retrofit was for economic reasons, i.e., to minimize the higher maintenance costs that the original retrofit imposed on the engines. Page 2 of the John Seitz guidance states:

Furthermore, this guidance only applies to physical or operational changes whose primary function is the reduction of air pollutants subject to regulation under the Act at existing major sources.

In the case of TGP, the “primary function” seems to be to save on maintenance and repair costs, not the reduction of air pollutants. Based on this, it appears that TGP would not qualify for this PCP exclusion. Furthermore, Page 11 of the guidance suggests that the purpose of the pollution control policy is not to include projects that “while lowering operating costs or improving performance, coincidentally lowers a unit’s emission rate.” In TGP’s case, it appears that the primary purpose is to save on maintenance and repair costs. It is therefore EPA’s opinion that the project does not qualify for this exclusion. In addition, TGP has indicated that increased utilization of the compressor stations is foreseen in the near future. However, they claimed that this will be as a result of market conditions and not as a result of the modifications. Nonetheless, the modifications will enhance the viability of increased utilization.

## **Conclusion**

Based on the information we have received to date, it does not appear that the proposed retrofit qualifies for a pollution control project exemption. This letter is not a final agency action on the part of EPA. Rather, we hope that it will assist the state to obtain additional information from TGP so that New York can properly carry out its PSD applicability review of TGP’s permit application. If there is any additional information that demonstrates that actual emissions will

decrease as a result of the application of this new technology, please have TGP provide such information. After further inquiry, in the event this project still appears to be ineligible for the PCP exemption, TGP remains free to limit its potential to emit so that there will not be a “significant emissions” increase; however, the engines already modified would not be exempt from obtaining the requisite permits. If you have any questions please contact me at (212) 637-4074 or Frank Jon, of my staff, at (212) 637-4085.

Sincerely,

/s/

Steven C. Riva, Chief  
Permitting Section  
Air Programs Branch

cc: Gregory LaBarge, NYSDEC - Albany  
Richard Leone, NYSDEC Region 4  
Cheryl Webster, NYSDEC Region 9