Attachment 2
RETROFIT VERIFICATION APPLICATION OUTLINE

1. **Introduction**
   1.1 Manufacturer and product identification
   1.2 Type of verification being sought
      1.2.1 Selection of specific engine family and application
      1.2.2 Diesel retrofit system design (*model, catalyst, precious metal loading, size, etc.*)
      1.2.3 Claim of emission reduction
   1.3 Status of Vehicle Code 27156 exemption

2. **Diesel Retrofit System Information**
   2.1 General description of the diesel retrofit system
      2.1.1 Discussion of principles of operation
      2.1.2 Schematics depicting operation
   2.2 Description of regeneration method
      2.2.1 Operating condition requirements for regeneration (*e.g., exhaust temperature, backpressure limit, etc.*)
      2.2.2 Thresholds and control logic integrated into the retrofit system to activate regeneration (if applicable)
      2.2.3 Description of backpressure monitor including threshold and control logic (if applicable)
   2.3 Favorable operating conditions
   2.4 Unfavorable operating conditions and associated reduction in performance
   2.5 Identification of failure modes and associated consequences
   2.6 Fuel requirements and misfueling considerations
   2.7 Retrofit system installation requirements
   2.8 Retrofit system maintenance requirements

3. **Testing Background**
   3.1 Identification of specific engine family and application for verification
   3.2 Emission reduction test information
      3.2.1 Test facility identification
      3.2.2 Test procedure description (*de-greening period, test cycle, etc.*)
      3.2.3 Quality assurance and quality control
   3.3 Durability test information
      3.3.1 Test facility/field application identification
      3.3.2 Test procedure description (*field or bench, test cycle, etc.*)
      3.3.3 Quality assurance and quality control

4. **Test Results**
   4.1 Emission reduction test results and comments
   4.2 Durability test results and comments
5. **Discussion**

5.1 Compatibility of the diesel retrofit system with the engine

5.1.1 Effects of diesel retrofit system on overall engine performance

5.1.2 Effect of diesel retrofit system on engine backpressure

5.1.3 Additional load on engine (*magnitude, frequency, etc.*)

5.1.4 Effect of diesel retrofit system on fuel consumption

5.1.5 Engine oil consumption considerations

5.2 Compatibility of the diesel retrofit system with the application

5.2.1 Typical temperature profiles, duty cycles and other relevant parameters from field-collected data for the intended application

5.2.2 Comparison of operating conditions suitable for the diesel retrofit system with those expected in the application

5.3 Discussion on all potential safety issues (*e.g., uncontrolled regeneration, lack of proper maintenance, extended periods of vehicle idling, etc.*)

6. **References**

7. **Appendices**

A. Laboratory test reports (*include raw test data and quality assurance and quality control documentation*)

B. Diesel retrofit system label

C. Owner’s manual

C.1 Installation procedure

C.2 Maintenance requirements

C.3 Backpressure monitor instructions (if applicable)

C.4 Fuel requirements

C.5 Fuel penalty

C.6 Durability statement

C.7 Warranty and liability policy

C.8 Contact information for waste disposal

C.9 Contact information for replacement components and maintenance supplies

C.10 Safety considerations

D. Other supporting documentation