

## **NTRD Program Disclaimers**

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**Texas Commission on Environmental Quality  
New Technology Research & Development (NTRD) Program  
Monthly Project Status Report**

Contract Number: \_\_\_\_\_582-5-70807-0007\_\_\_\_\_

Grantee: \_\_\_\_\_Lamar University\_\_\_\_\_

Date Submitted: \_\_\_\_\_July 15, 2006\_\_\_\_\_

Report for the Monthly period:

Starting Date \_\_\_\_\_June 15, 2006\_\_\_\_\_ Ending Date \_\_\_\_\_July 14, 2006\_\_\_\_\_

**Section I. Accomplishments** *(Please provide a bulleted list of project accomplishments as well as a description of their importance to the project.)*

- **New Control Valve Installed and Additional DPF Regeneration Tests Conducted –**  
The significant accomplishments include the following:
  1. A new control valve was installed in the DPF regeneration facility for maintaining a constant exhaust gas flow rate during the regeneration tests. The modification enables the project to accurately estimate the soot loading rate through measuring the differential pressure drop of DPF at a particulate flow rate. A typical set of correlation results between the soot loading rate and the differential pressure drop reading is given in Figure 1 in page 3 of this report.
  2. The original DPF filter was taken out from the holder for examination after 20 microwave regeneration tests including 15 off-line and 5 on-line. No apparent physical damages on filter cells were observed. The only noticeable difference is that a slight increase in pressure drop was observed as compared to a new filter. An accumulation of soot ash in the DPF wall was suspected to cause this slightly higher pressure drop.
  
- **Modifications Made for NO<sub>x</sub> Reduction Tests and Improved Results Observed –**  
The accomplishments are summarized below:
  1. The following two modifications were made for the VOC/CO catalytic reactor:
    - It was separated from the DeNO<sub>x</sub> reactor to achieve optimum temperatures, and
    - A by-pass line was installed to characterize the effect of the catalytic reactor.
  2. The VOC/CO reactor affects both CO and NO as shown in Table 1 in page 4.

**Indicate which part of the Grant Activities as defined in the grant agreement, the above accomplishments are related to:**

The above accomplishments are related to Tasks 1, 2, 3, and 4 described in the Scope of Work of the project.

## Section II: Problems/Solutions

<p><b>Problem(s) Identified</b></p> <p><i>(Please report anticipated or unanticipated problem(s) encountered and its effect on the progress of the project)</i></p>	None
<p><b>Proposed Solution(s)</b></p> <p><i>(Please report any possible solution(s) to the problem(s) that were considered/encountered)</i></p>	N.A.
<p><b>Action(s) Conducted and Results</b></p> <p><i>(Please describe the action(s) taken to resolve the problem(s) and its effect)</i></p>	N.A.

**Section III. Goals and Issues for Succeeding Period** *(Please provide a brief description of the goal(s) you hope to realize in the coming period and identify any notable challenges that can be foreseen)*

The goals for the next month are to:

1. continue to conduct on-line DPF regeneration experiments involving both periodic and continuous regeneration schemes;
2. continue to conduct long-term experiments to establish optimal NO<sub>x</sub> reduction conditions; and
3. test the re-designed DeNO<sub>x</sub>-VOC/CO catalyst packs.

The next Monthly Progress Report will be submitted to TCEQ on August 15, 2006.

**Figure 1. Soot Loading Test**

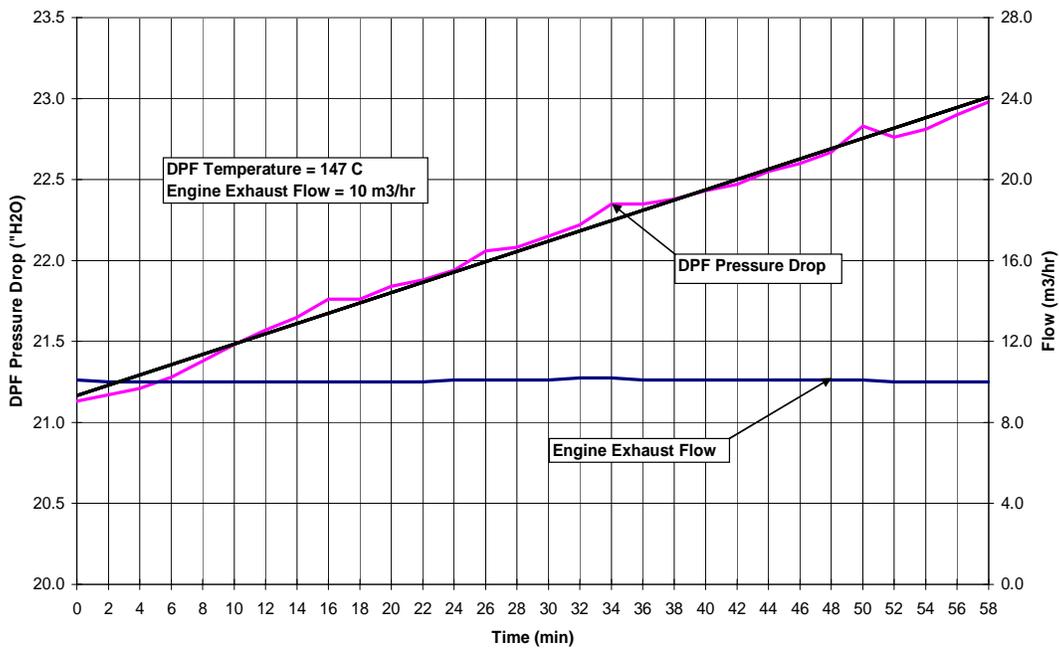


Table 1. DeNOx and VOC/CO Catalyst							
VOC/CO catalyst	NO Std Flow (cc/min)	HC <sup>(1)</sup> (cc/min)	Analysis				
			O2 %	CO ppm	NO ppm	NO2 ppm	NOx ppm
	NO Standard		0.2	0	1029	92	1121
<b>by-pass</b>	200	0	0.3	436	290	6	296
<b>on-line</b>	200	0	0.3	10	3	0	3

Note: (1) VOC/CO catalyst pack temperature = 219°C  
 (2) DeNOX pack temperature = 950°C  
 (3) NO standard is 1023 ppm NO in nitrogen

Date: 7/15/06

\_\_\_\_\_  
 Authorized Project Representative's Signature

**NOTE:** Please attach any additional information that you feel should be a part of your report or that may be required to meet the deliverable requirements for tasks completed during this reporting period.