

NTRD Program Disclaimers

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

Contract Number: 582-5-70807-0002

Grantee: County of El Paso

Date Submitted: 2-9-06

Report for the **Monthly** period:

Starting Date 1-1-06

Ending Date 1-31-06

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

To date, El Paso County, Ruby Mountain Inc., the Idaho National Lab (INL), and Border Quality Campaign of El Paso del Norte have been coordinating with industry and local service providers in El Paso on the development of the natural gas shuttle bus for El Paso County. This has included the following:

- ARBOC regarding manufacture of the bus.
- Bell Power Systems about the installation of the Cummins 5.9L natural gas engine into the International 3200 chassis, including details regarding anticipated engine and transmission performance, natural gas fuel system plumbing and installation issues and logistics.
- Collaboration with Diesel Repair of Arizona on size parameters and chassis storage cavity configurations in relation to tank availability. Coordinate tank selection and logistics for tanks to be shipped to installation facility.
- Conducted interviews with fleet service managers using selected engine to determine in-use durability, serviceability and overall performance level of selected engine.
- Held meetings with Sun Metro to discuss providing service and possible repairs for engine and fuel system. Reviewed facilities, equipment and processes at transit maintenance headquarters.
- Facility visits to Sun Metro maintenance garage to determine Cummins engine parts and serviceable items of importance and their relation to engine performance and diagnostics
- Coordination among project partners on findings of fuel storage availability and selections and engine service/repair consideration and maintenance requirements needed for project application.
- Continued work on Task 1 NTRD Contract Deliverable related to a report on the final design for fabrication of the project vehicle.
- Met with Cummins Westport representatives and held discussions with Bell Power Systems regarding the identification of local warranty service providers for the Cummins natural gas engine in the El Paso area.

Additionally, the project team continued testing the economizer valve. To simulate the actual operations of the new valve the INL connected it to an MDE cryogenic tank filled with liquid nitrogen. As the nitrogen vaporizes, it passes through the valve and allows pressure to build. When enough pressure builds on the vapor side, the shuttle valve slides up closing off the input from the liquid side and allows pressurized gas to be fed to the engine. Testing this past month was promising but a minor modification on the length of the shuttle valve was identified. The INL

will have the minor redesign completed by February 6th and a replacement part built for final testing by February 10th.

Regarding the CNG tanks, final design for the placement of these tanks was performed at the bus manufacturer and the final selection was identified and a purchase order was put in place. The tanks are being purchased from a surplus in Arizona and will be shipped to Bell Power for installation.

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

Task 1: Engineering Design and Packaging

Section II: Problems/Solutions

<p>Problem(s) Identified</p> <p><i>(Please report anticipated or unanticipated problem(s) encountered and its effect on the progress of the project)</i></p>	<p>Existing valve design resulted in insufficient control upon LNG vaporization causing irregular fuel flow through the shuttle valve. While the vehicle would have operated within acceptable parameters under the current valve configuration, INL engineers felt magnetic control of the shuttle valve would result in increased efficiency and tighter fuel control.</p>
<p>Proposed Solution(s)</p> <p><i>(Please report any possible solution(s) to the problem(s) that were considered/encountered)</i></p>	<p>Modify the length of the shuttle valve within the economizer valve to control the shuttle valve more comprehensively through a magnetic process as opposed to gravity control.</p>

<p>Action(s) Conducted and Results</p> <p><i>(Please describe the action(s) taken to resolve the problem(s) and its effect)</i></p>	<p>A minor redesign to the economizer valve has been ordered and will be completed by February 6th. Final testing for the replacement part will be completed by February 10th. Results will be forwarded in next month's report.</p>
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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)*

Work in the next month of the project period will focus on the following contract tasks:

Task 2: Installation and Fabrication

2.2 Task Statement: The performing party will install and fabricate the necessary components to construct the transit bus with ADA capabilities with the HLA and the LNG engine.

2.2.1 Install and fabricate the necessary components to construct the transit bus with ADA capabilities with the HLA and the LNG engine

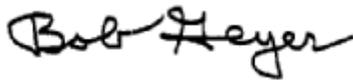
2.2.1.1 Install low-floor chassis

2.2.1.2 Fabricate and install HLA mounting system

2.2.1.3 Develop wiring/plumbing interfaces to engine and brakes

2.2.1.4 Design interface software to manage engine and brake systems

2.2.1.5 Install hardware/software in chassis



Date: 2/10/2006

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.*