

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-T047

Grantee: North Texas Bio-Energy, LLC

Date Submitted: 5/10/06

Report for the **Monthly** period: April 2006

Starting Date: 4/1/06

Ending Date: 4/30/06

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

- Product has been produced by Natural Resources Canada (the owner of the technology which North Texas Bio-Energy, LLC has licensed) and shipped to West Virginia University.
- Finalizing contract documents with West Virginia University, Dept. of Mechanical & Aerospace Engineering.
- Agreement with TCEQ has been amended to extend the deadline for test plan and fuel analysis submission
- Pilot production facility currently being designed by CJ Wheeler Process Consultant Inc. of Calgary, Alberta.
- Discussions with USDA regarding application of B&I Loan Guarantee to construction of production facilities.
- Fuel analysis has been conducted and is attached.

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

- Testing to satisfy Texas Low Emissions Diesel Standards

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>N/A</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>N/A</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>N/A</p>

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)*

- Execution of all required agreements with West Virginia University.
- Finalization of schedule for fuel analysis and testing
- Forward test plan to TCEQ for approval prior to conducting of testing
- Finalize designs for pilot production facility with CJ Wheeler.
- Continue discussions with USDA regarding application for loan guarantee for construction of future facilities.

 _____ Date: 5/10/06
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.*

CETC-Ottawa

Table 1 - Characteristics of SuperCetane produced from mustard seed oil

Elemental analysis			
Carbon	ASTM D-5291		85.72 wt %
Hydrogen	ASTM D-5291		15.17 wt %
Nitrogen	ASTM D-4629		< 7 ppm
Sulphur	ASTM D-5453		< 7 ppm
Oxygen	NAA		0.04 wt %
Density at 25°C	ASTM D-4052		780.2 kg/m ³
Specific gravity			0.7825
Cloud point	ASTM D-5773	70.9 °F	21.6 °C
Pour point	ASTM D-5949	71.6 °F	22.0 °C
Flash point	ASTM D-6450	248.0 °F	120.0 °C
Total acid number	ASTM D-664		0.109 mg KOH/g
Derived cetane number	ASTM D-6890		109.1
Lubricity	BOTD-M3		384 µm
Simulated distillation			
IBP (0.05%)	ASTM D-2887	346.5 °F	174.7 °C
5%		519.8 °F	271.0 °C
10%		556.2 °F	291.2 °C
20%		579.9 °F	304.4 °C
30%		583.2 °F	306.2 °C
40%		585.7 °F	307.6 °C
50%		598.5 °F	314.7 °C
60%		608.0 °F	320.0 °C
70%		610.9 °F	321.6 °C
80%		613.4 °F	323.0 °C
90%		615.2 °F	324.0 °C
95%		631.0 °F	332.8 °C
FBP		683.8 °F	362.1 °C

Table 2 - Composition of mustard seed oil-derived SuperCetane

Normal alkanes	
n-C ₁₅ H ₃₂ (pentadecane)	1.53 %***
n-C ₁₆ H ₃₄ (hexadecane)	2.84 %
n-C ₁₇ H ₃₆ (heptadecane)	34.61 %
n-C ₁₈ H ₃₈ (octadecane)	45.79 %
n-C ₁₉ H ₄₀ (nonadecane)	4.01 %
n-C ₂₀ H ₄₂ (eicosane)	1.56 %
Branched alkanes	6.49 %
*** Note: Based on peak surface area (GC-MS characterization)	