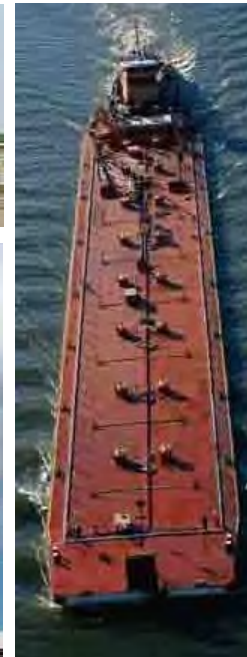
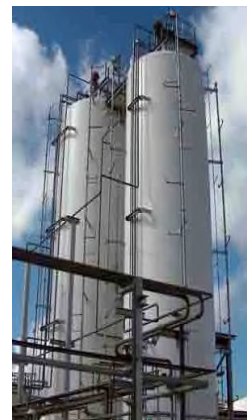
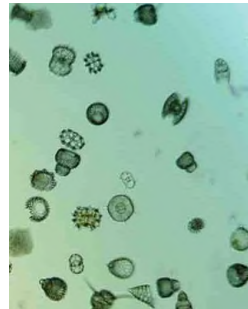


# ORYXE ENERGY



## Biodiesel Emissions Test Summary

- ORYXE Energy set out to demonstrate the efficacy of a new biodiesel additive technology.
- Testing was conducted at the West Virginia University (WVU) Engine and Emissions Research Laboratory (EERL), recognized by CARB for heavy-duty diesel emission testing.
- Testing demonstrated the technology eliminates the NOx bump associated with biodiesel blends.

- Objective to examine emissions of treated B20 relative to untreated EPA diesel.
- 1992 Detroit Diesel Series 60 engine.
- Three fuels compared
  - **Base fuel** (EPA diesel, ULS 10% aromatics, 48 Cetane from Chevron Phillips)
  - **B20** (Same EPA diesel with 20%, by volume, soy-based biodiesel from West Central)
  - **B20 treated with ORYXE Additive**
- Each fuel tested using 40 CFR Part 86, Subpart N diesel engine testing cycle and the average “hot” start emissions were compared.

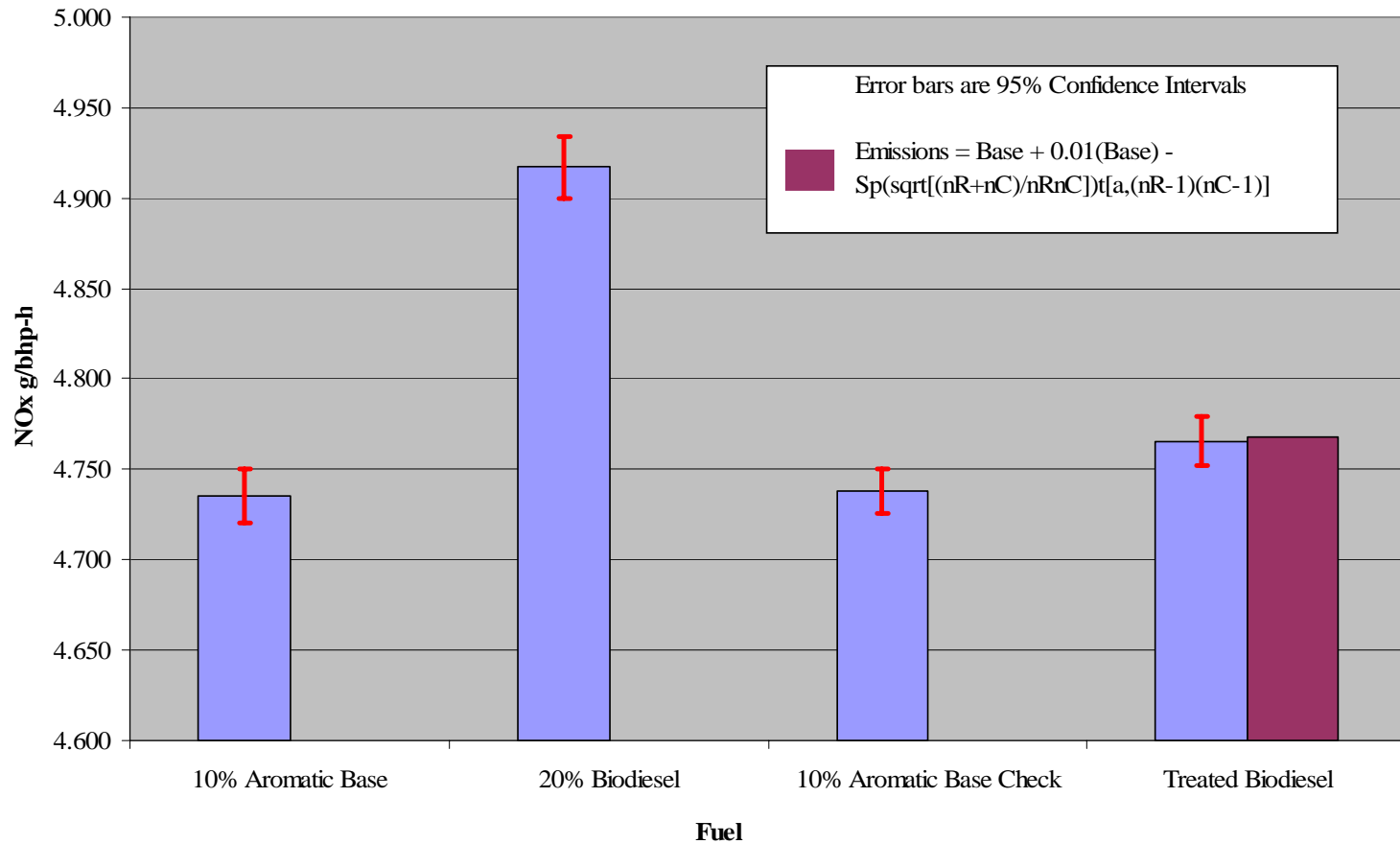
Hot Starts			Pollutants			
			THC	CO	NOx	PM
<b>Base Fuel (1)</b>	Run 1	<b>9 HS</b>	<b>0.143</b>	<b>3.256</b>	<b>4.735</b>	<b>0.233</b>
<b>Base Fuel</b>	Run 2	<b>5 HS</b>	<b>0.140</b>	<b>3.241</b>	<b>4.738</b>	<b>0.240</b>
<b>Base Fuel Avg. Run 1 and 2</b>			<b>0.142</b>	<b>3.249</b>	<b>4.737</b>	<b>0.237</b>
<b>B20 (2)</b>		<b>9 HS</b>	<b>0.133</b>	<b>2.940</b>	<b>4.917</b>	<b>0.191</b>
% Reduction over Base Fuel			6.0%	9.5%	-3.8%	19.2%
<b>B20 Treated w/ ORYE</b>		<b>6 HS</b>	<b>0.115</b>	<b>2.735</b>	<b>4.766</b>	<b>0.190</b>
% Reduction over Base Fuel			18.7%	15.8%	-0.6%	19.7%
% Reduction over B20 Blend			13.5%	7.0%	3.1%	0.5%

(1) Base fuel 10% aromatics and 48 Cetane

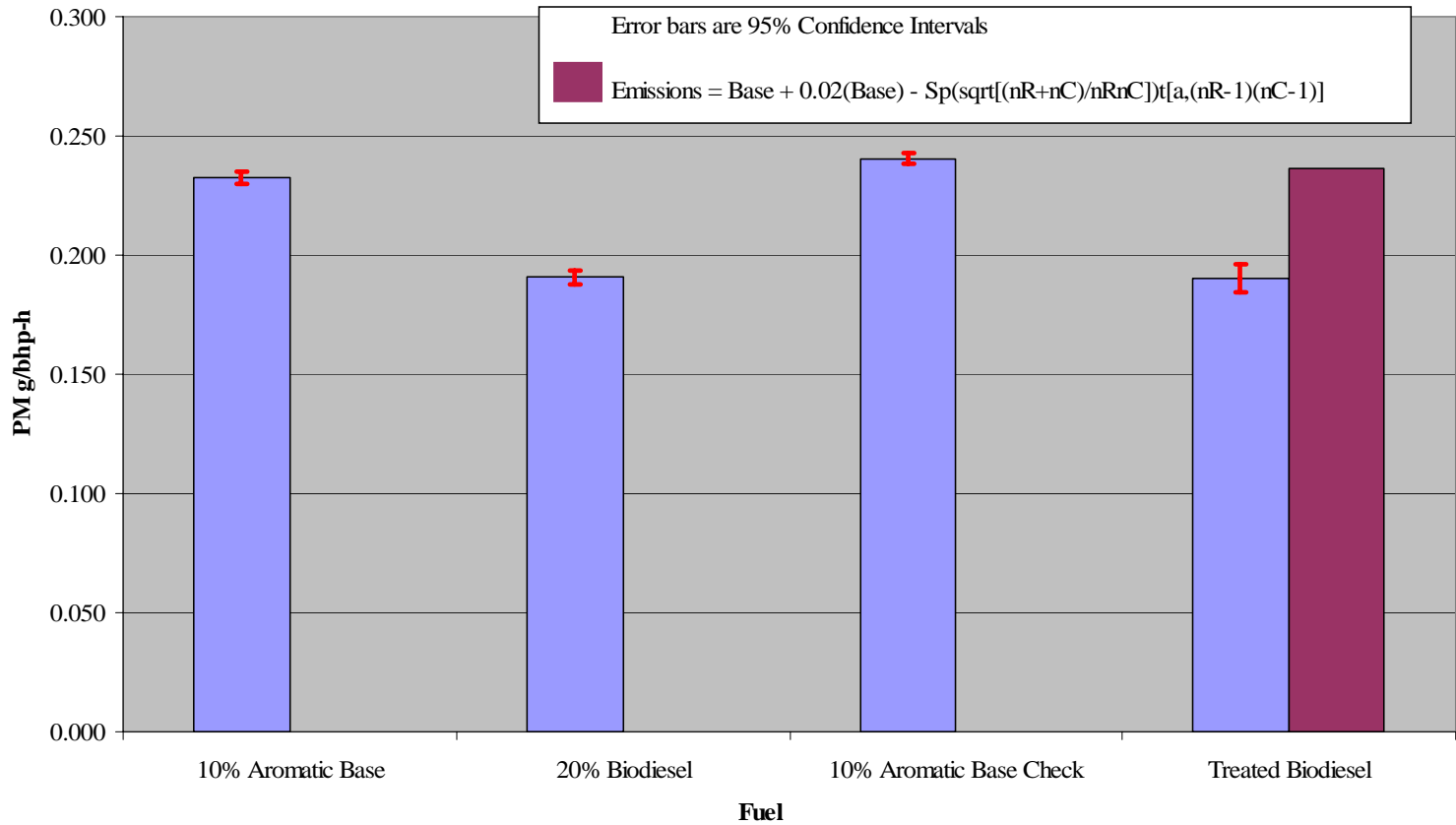
(2) Biodiesel composed of 20% biodiesel from soy + 80% base fuel

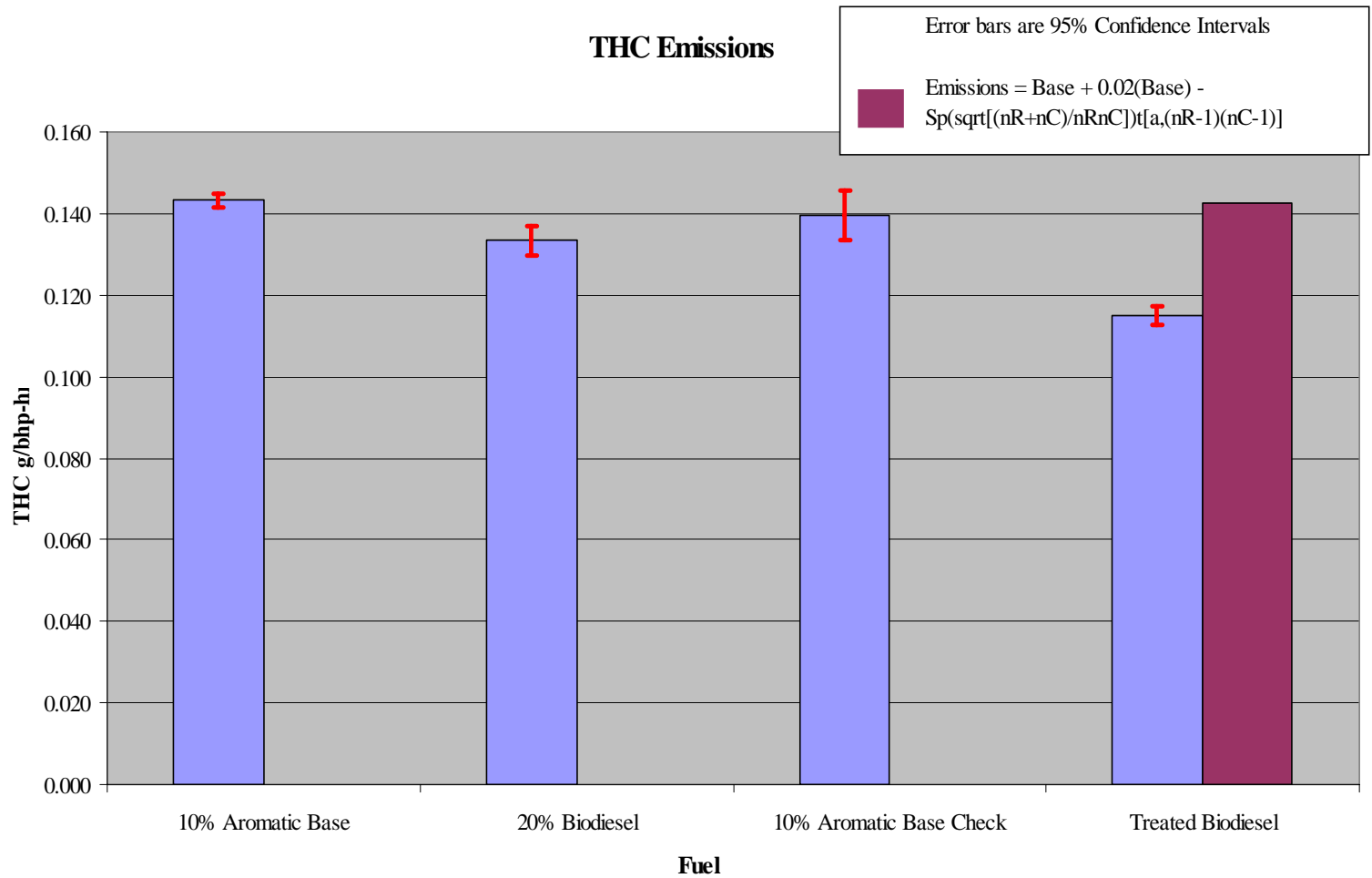


**NOx Emissions**



## PM Emissions





- Test results confirmed an increase in NOx from the addition of 20% biodiesel to standard EPA diesel. (3.8%)
- Results demonstrated lower or equivalent NOx, CO, THC, and PM for the B20 blend treated with ORYXE Energy additive when compared to the untreated base fuel and untreated B20 fuel.
- ORYXE Energy would like to continue working with CARB and others to further demonstrate our solution to the biodiesel NOx bump.