

# **Novel Applications of HTSD beyond Crude Oil**

**Expanding HTSD techniques to diversified /complex matrices  
including Bitumens , Bio-crude products and Tar Sand/Shale Derived  
Syncrudes**

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Crude Oil Quality Association ~ Houston Program

by

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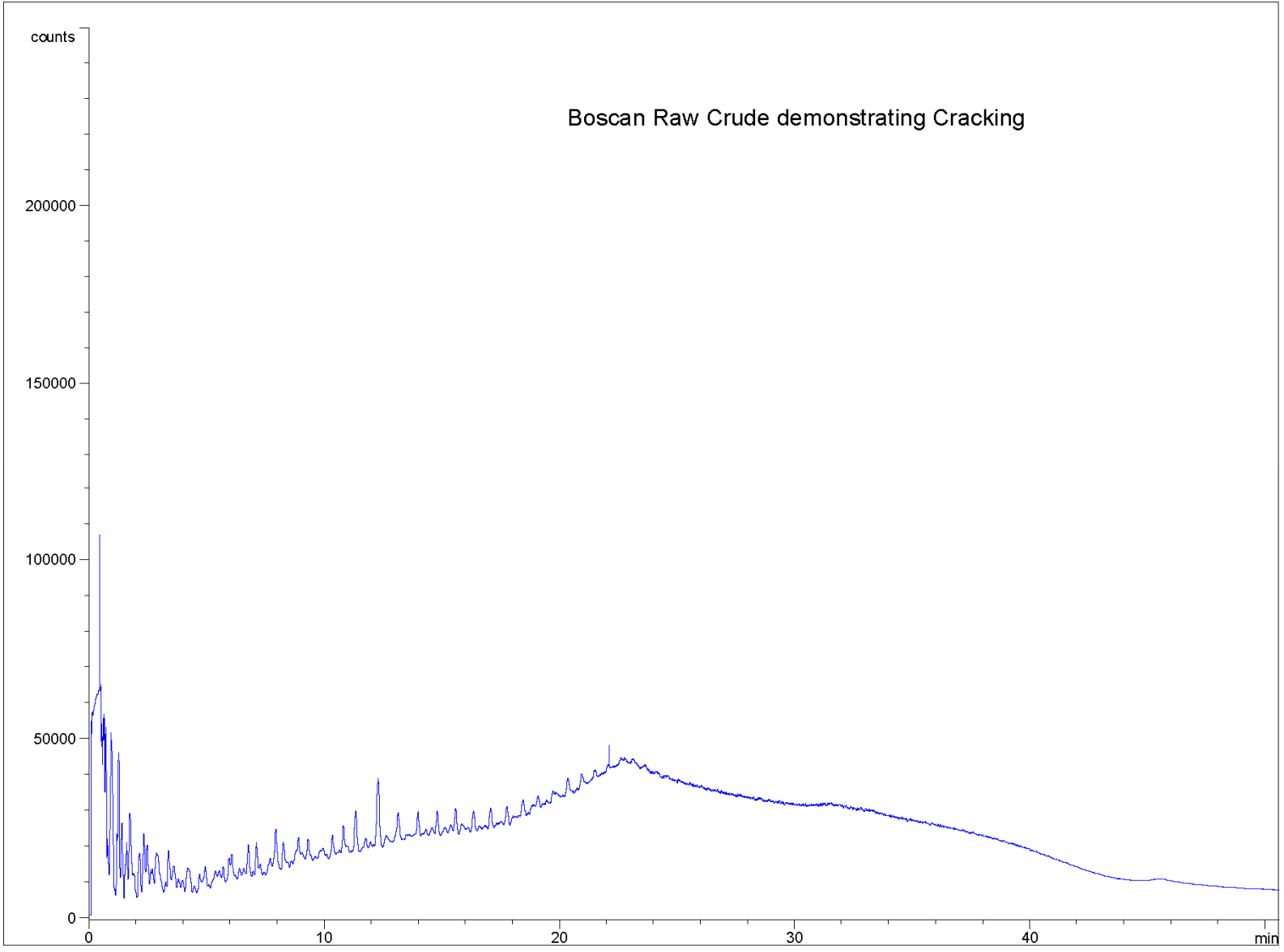
## **Scope:**

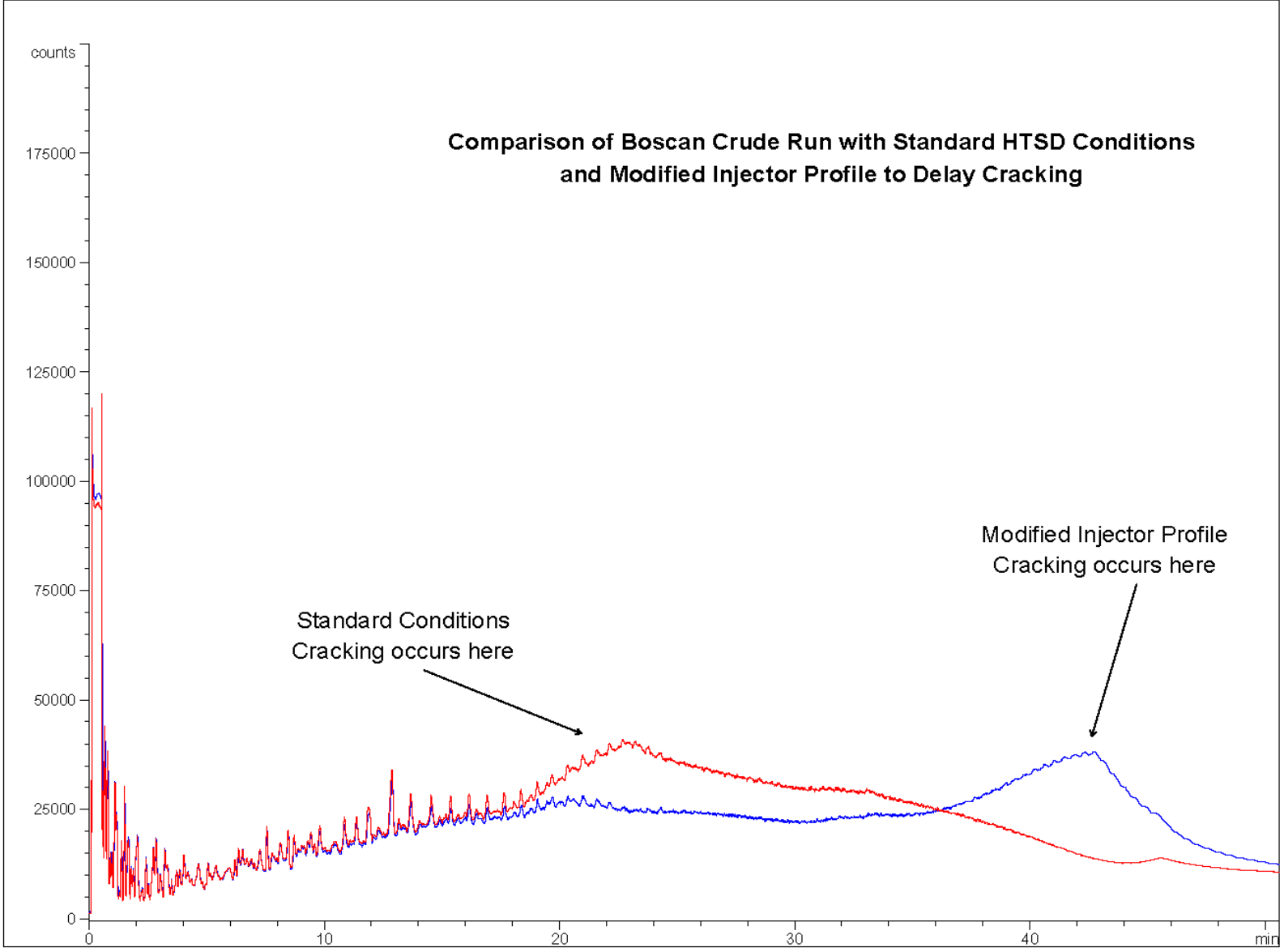
- **Heavy Crackable Crudes**
  - **Boscan Crude**
- **Heavy oils derived from Tar Sands/ Oil Shale**
  - **Bitumens**
- **Bio Fuels**
  - **Bio Crudes**
  - **Bio Diesel**
  - **Algal Fuels**



# Heavy Crackable Crudes







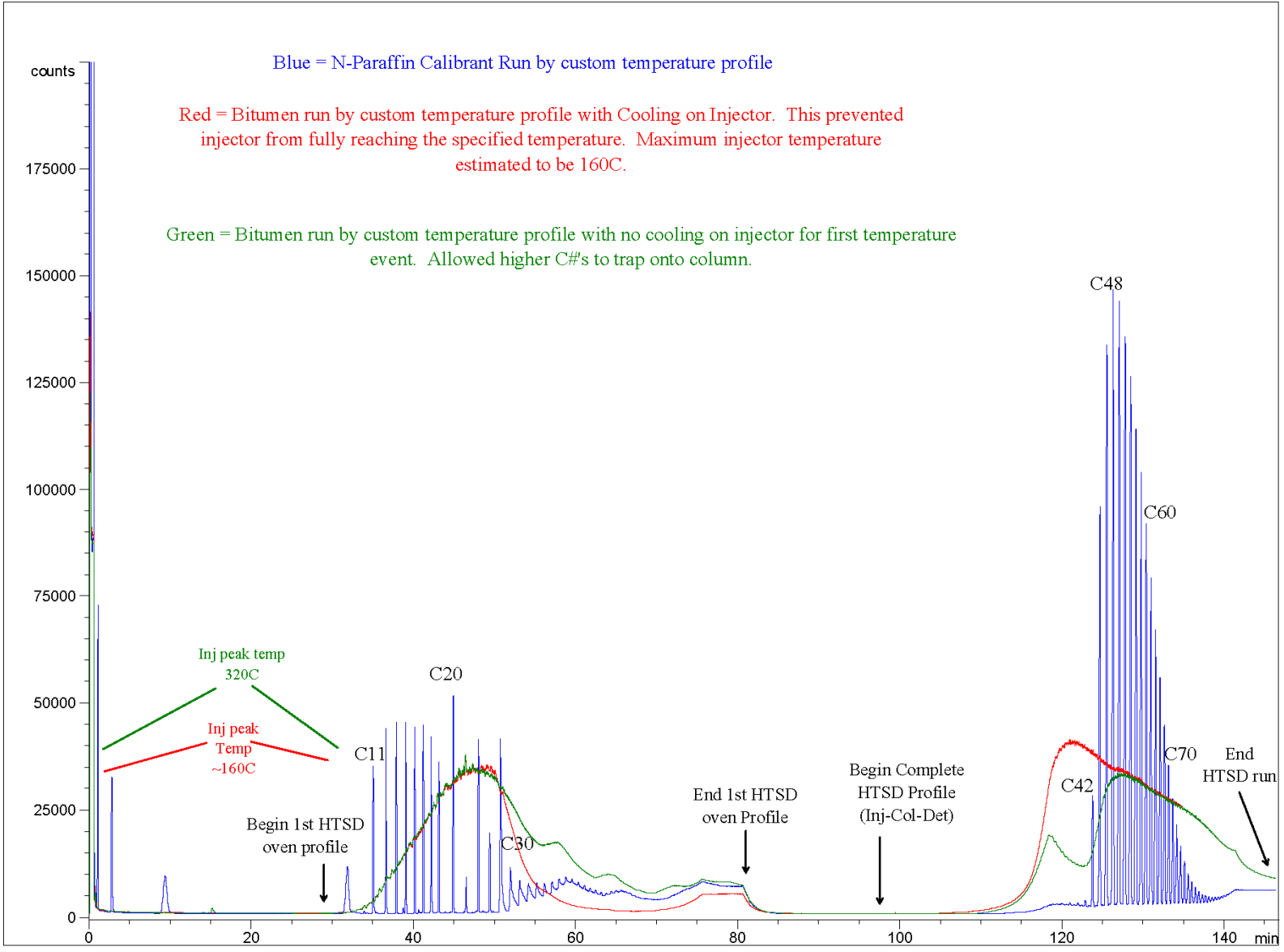
## Boscan Crude Recovery Compared

<b>Temp, °F</b>	<b>HTSD Recovery, % Standard Conditions</b>	<b>HTSD Recovery, % Modified Injector Profile</b>
<b>180</b>	<b>0.4</b>	<b>0.4</b>
<b>360</b>	<b>3.1</b>	<b>3.2</b>
<b>480</b>	<b>6.9</b>	<b>6.8</b>
<b>650</b>	<b>16.1</b>	<b>15.5</b>
<b>750</b>	<b>23.1</b>	<b>22.0</b>
<b>800</b>	<b>27.5</b>	<b>25.8</b>
<b>900</b>	<b>38.9</b>	<b>33.4</b>
<b>1000</b>	<b>50.2</b>	<b>41.0</b>
<b>1100</b>	<b>60.7</b>	<b>48.6</b>
<b>1200</b>	<b>70.4</b>	<b>57.3</b>

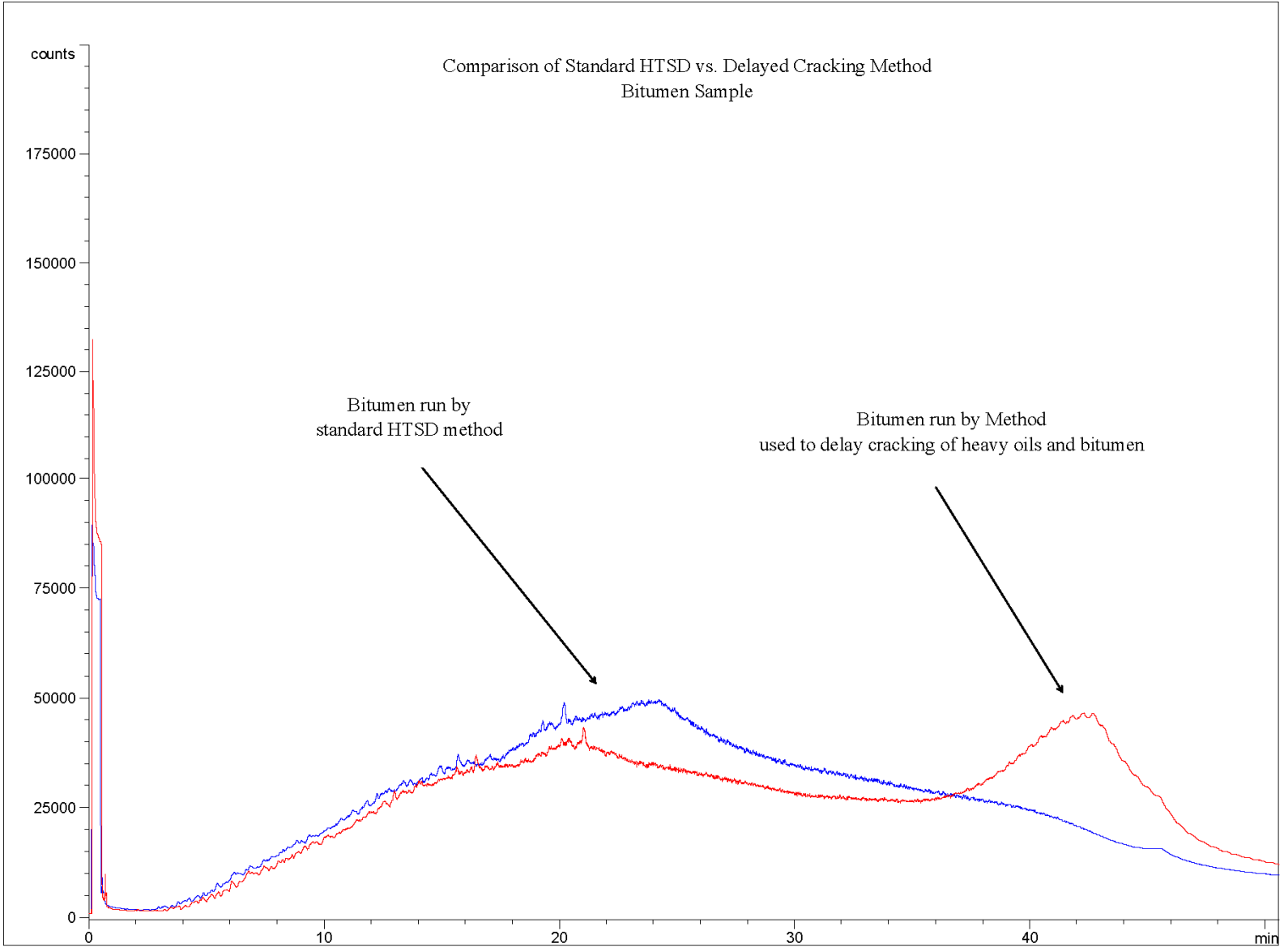
# Tar Sand/Oil Shale Derived Heavy Oils

- **Peace River Bitumen**
- **Peace River Bitumen Extracts**



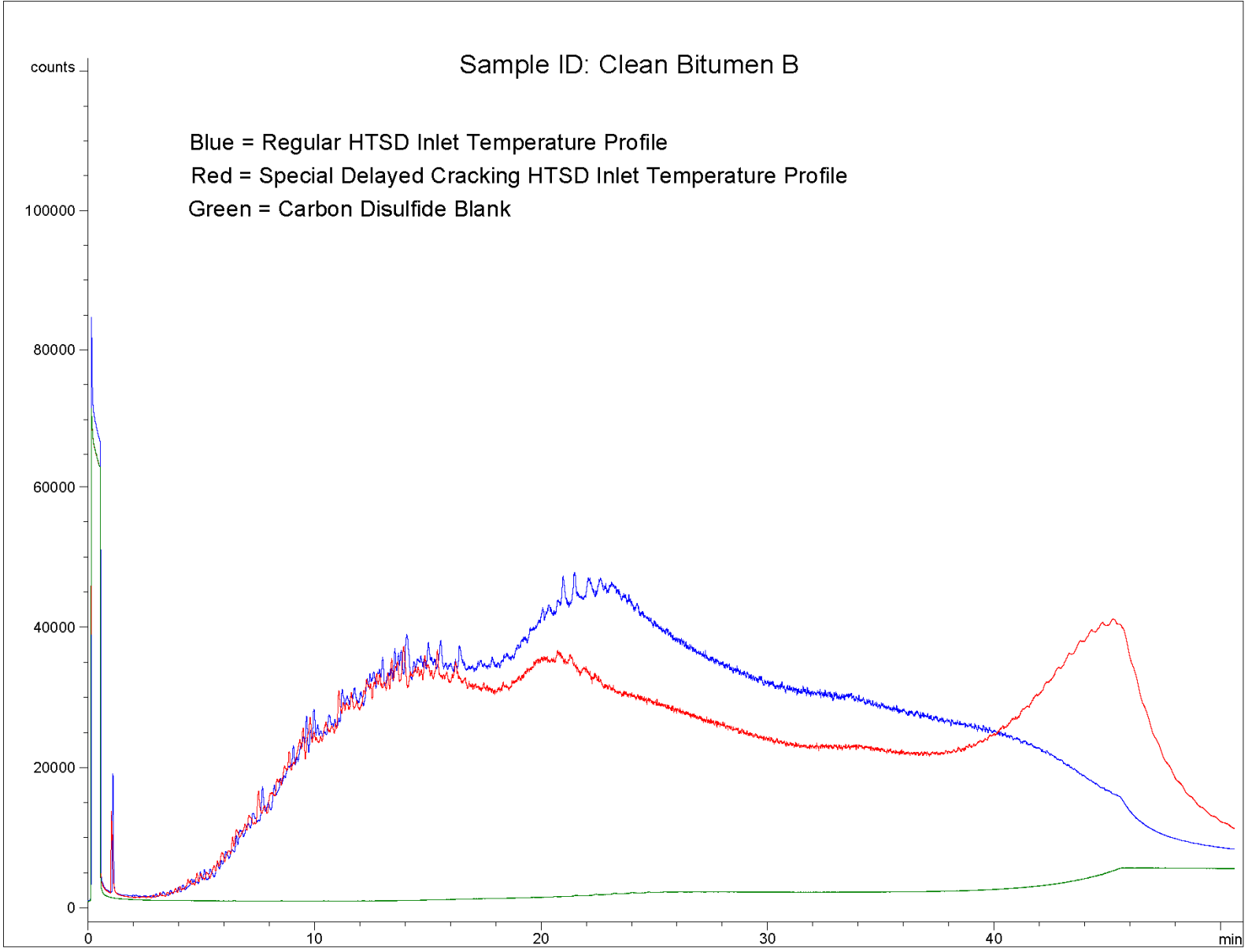






## Bitumen Recovery Compared

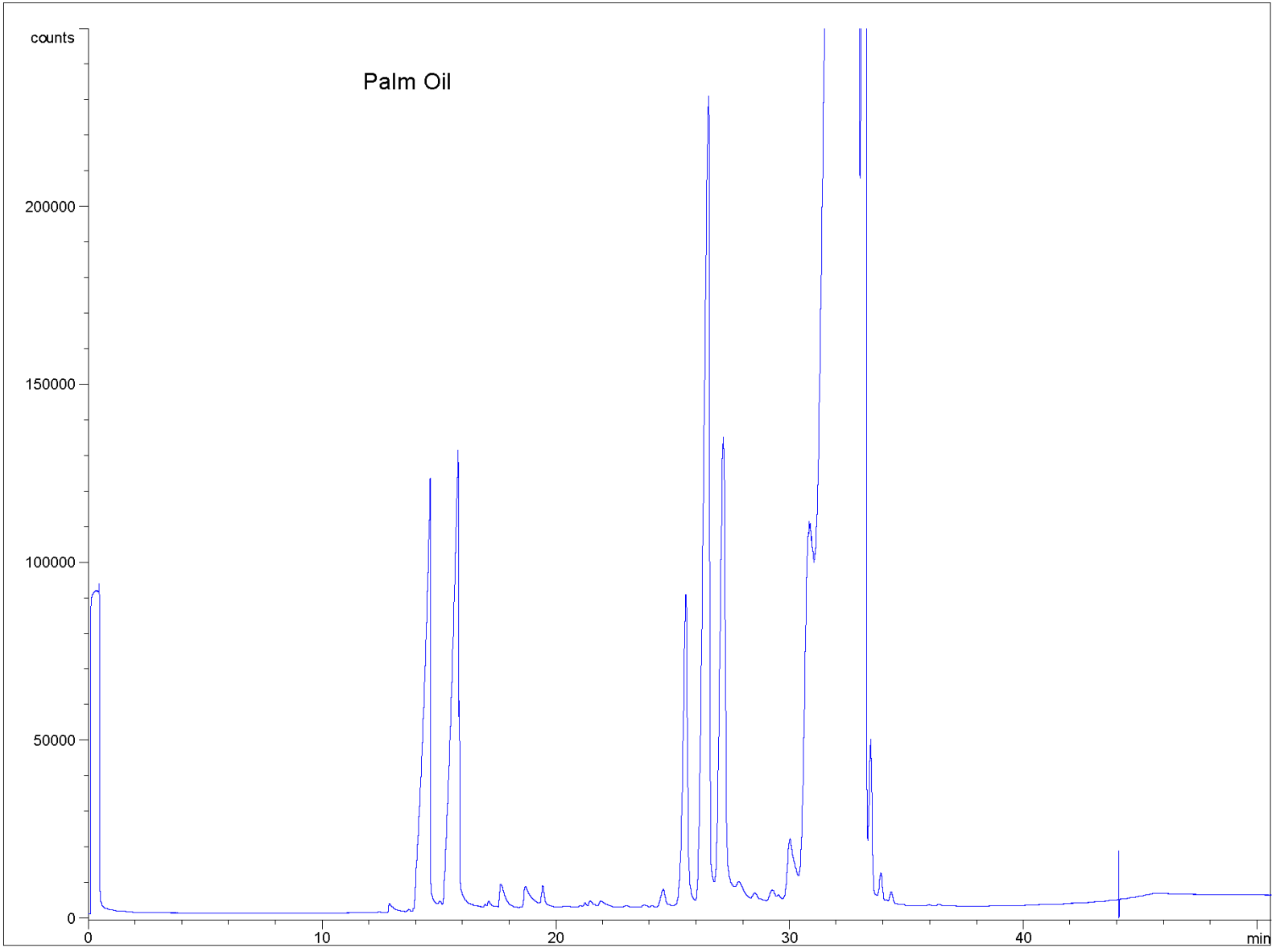
<b>Temp, °F</b>	<b>HTSD Recovery, % Standard Conditions</b>	<b>HTSD Recovery, % Modified Injector Profile</b>
<b>480</b>	<b>2.3</b>	<b>2.4</b>
<b>650</b>	<b>11.6</b>	<b>11.9</b>
<b>750</b>	<b>20.0</b>	<b>20.4</b>
<b>800</b>	<b>25.1</b>	<b>25.2</b>
<b>900</b>	<b>36.6</b>	<b>34.6</b>
<b>1000</b>	<b>48.5</b>	<b>43.4</b>
<b>1100</b>	<b>58.5</b>	<b>51.6</b>
<b>1200</b>	<b>67.5</b>	<b>60.0</b>

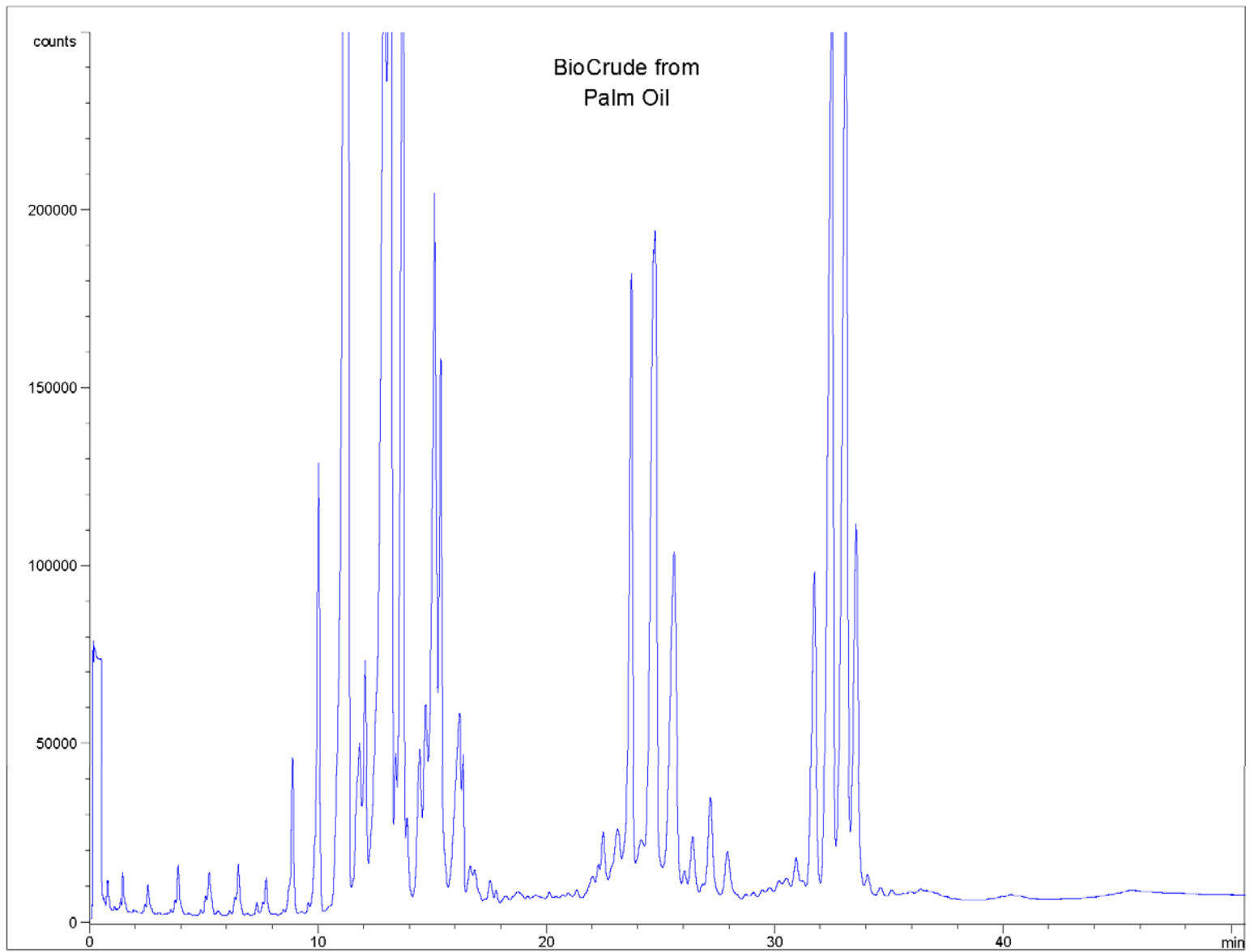


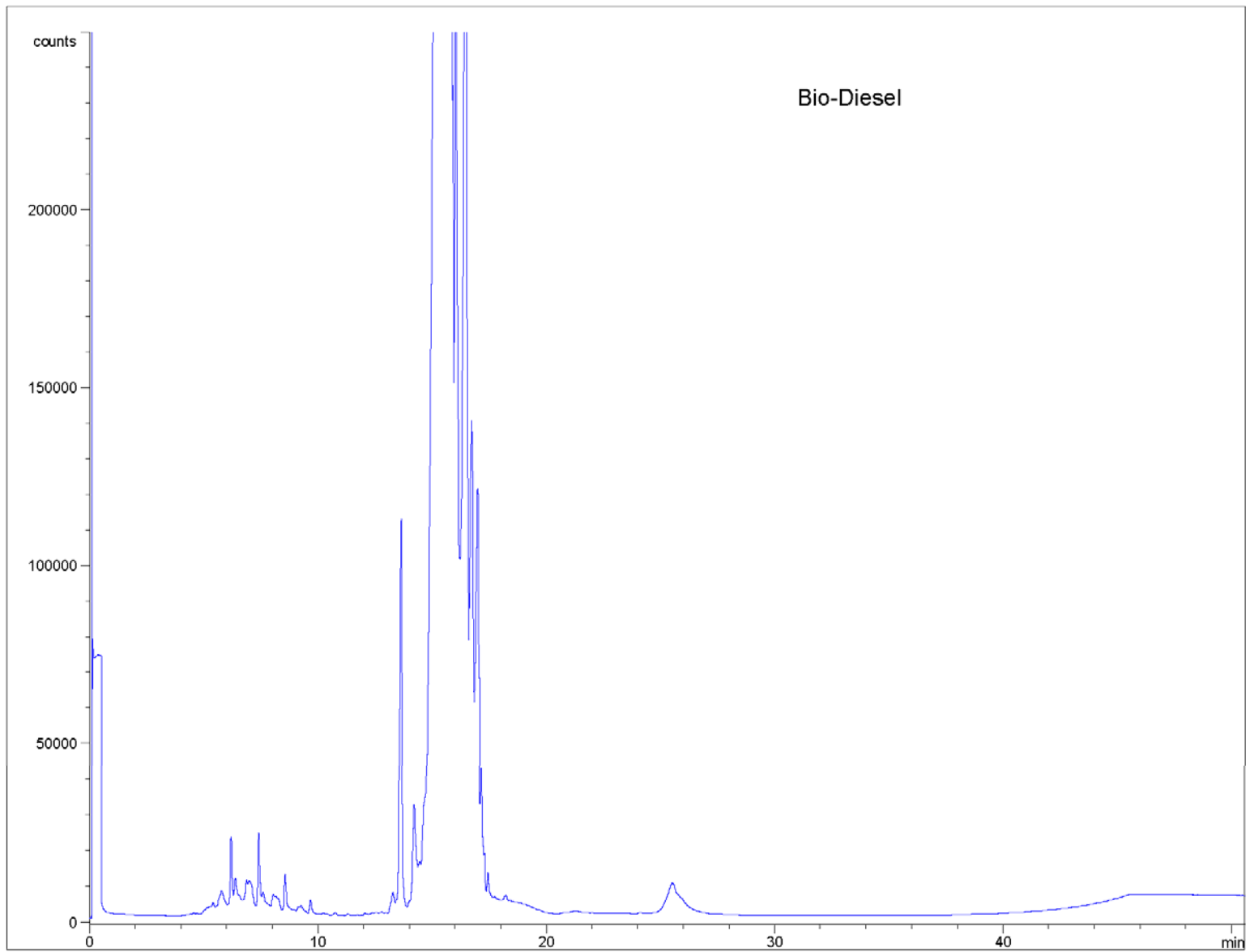
## **HTSD Applied to Bio Fuels**

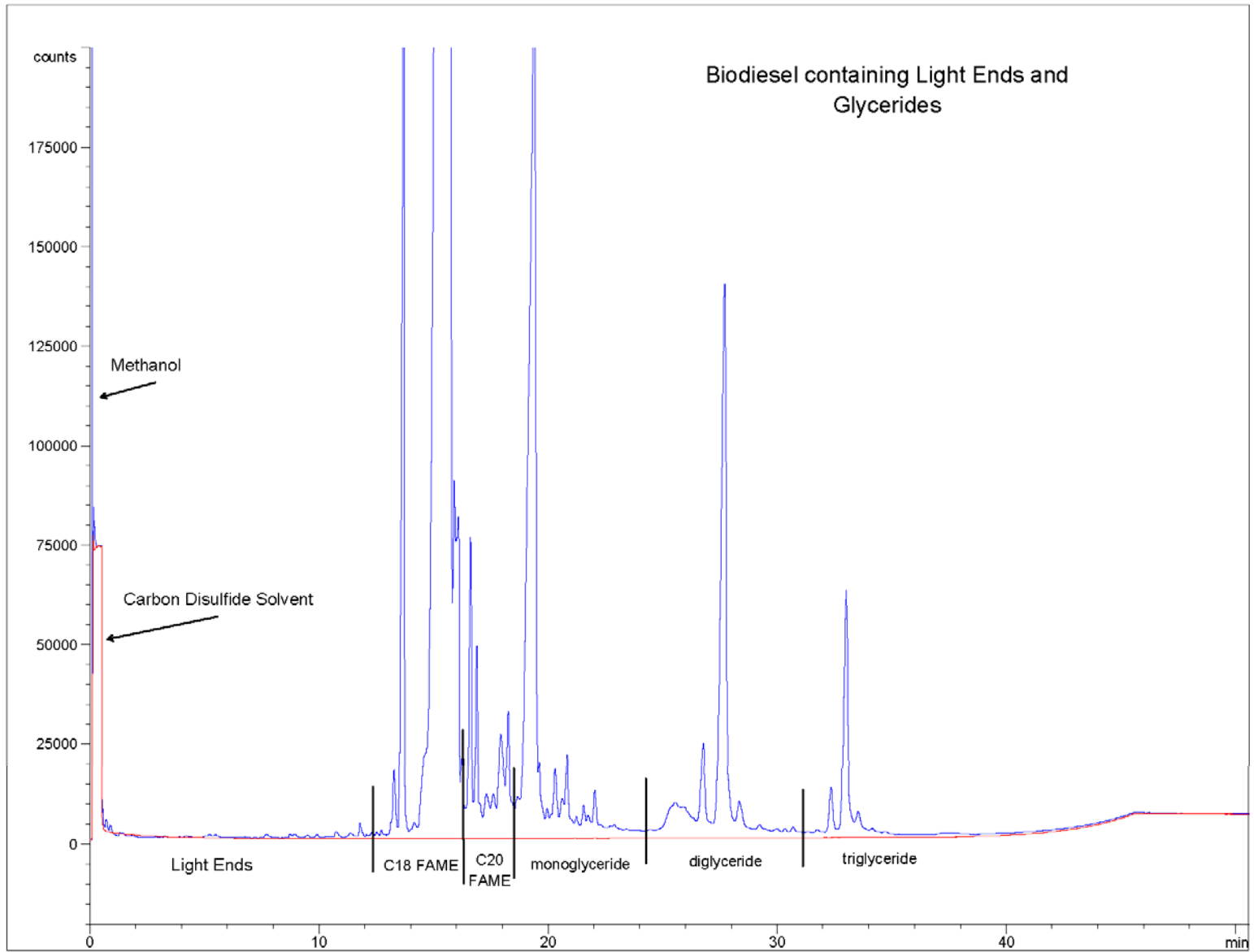
- **BioCrude**
- **BioDiesel**
- **Algal Derived Fuels**



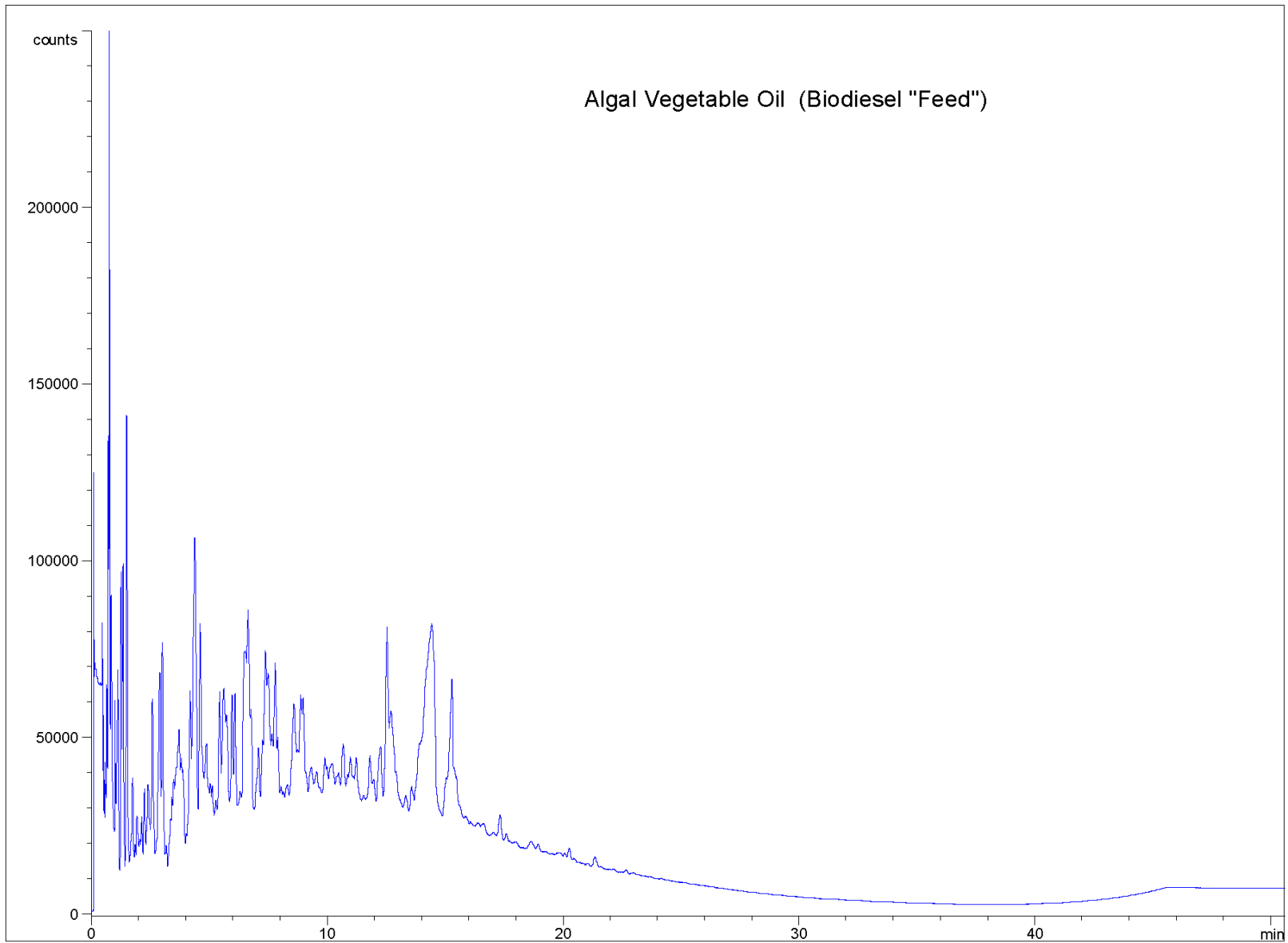


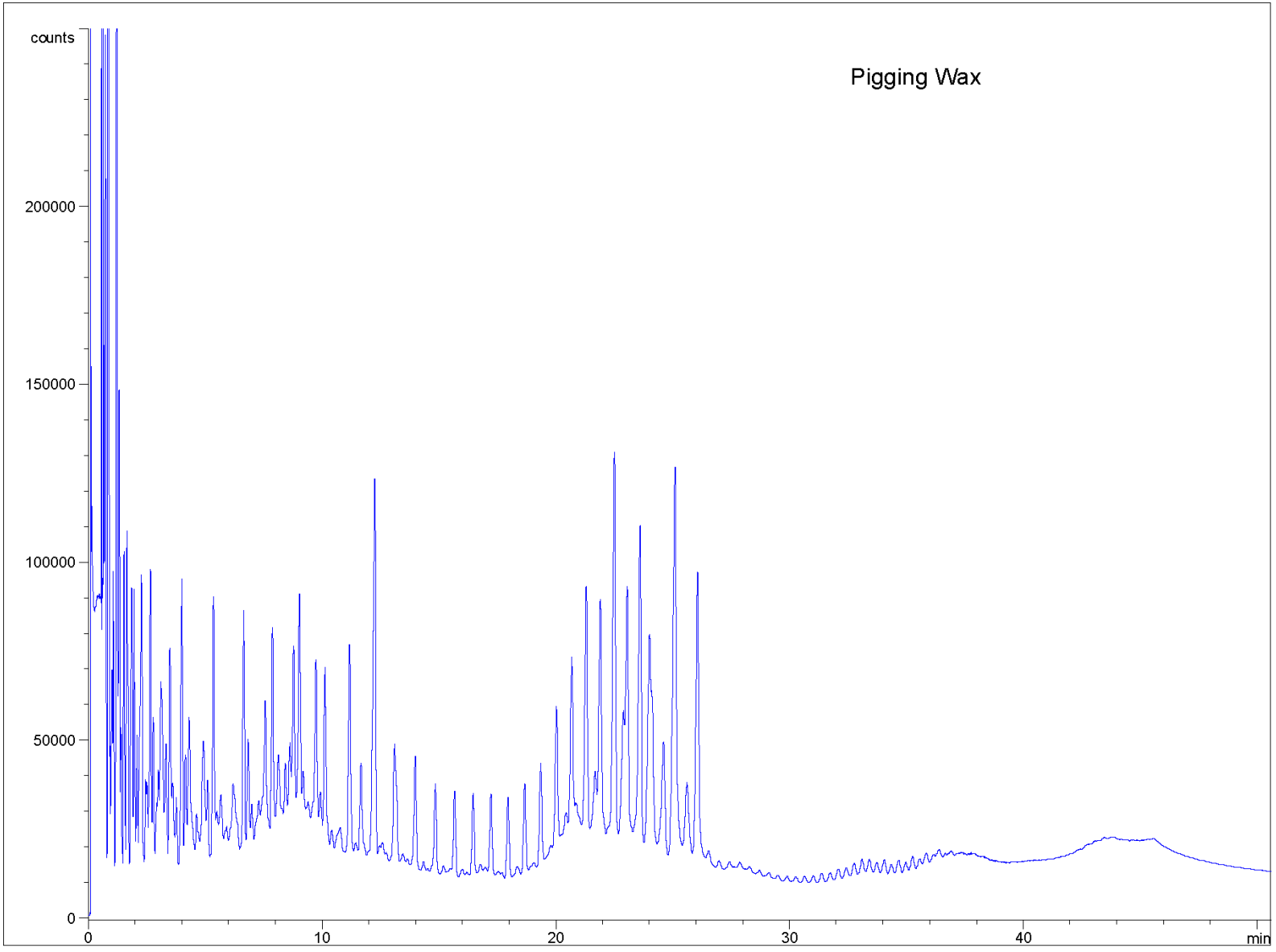












## **Summary:**

### **Benefits of HTSD in Extended Applications:**

- **Versatility**
- **Reproducibility**
- **Compares well with traditional Crude Oil HTSD**
- **Ability to Characterize Cracking**