An extensive database (10 years) of diesel samples incorporating all refining processes (distillation through product blending) enables development of robust, wide ranging property predictions independent of crude sources and refinery processing. Consistent attention to data integrity enables expanding model ranges well beyond any typical single unit or process operation. The following slides elucidate the consistency in spectra whether obtained 10 years ago or last week, from within a refinery or on a laboratory spectrometer.
All Diesels: (Data date range 1999 to present)

- Atmospheric Crude Straight Run
- Vacuum Crude Straight Run
- Coker Diesel
- FCC Diesel
- Diesel Hydro Cracker Feed
- Diesel Hydro Cracker Product
- Mild, Moderate and Severely Hydro Treated Diesel
- Blend Header Diesel
All Diesels – Aromatic and Olefin Region Expansion

3+ Ar
All Diesels – Aliphatic and Alpha Hydrogen Region Expansion

CH\textsubscript{2}

CH\textsubscript{3}

CH-C= and CH

[Diagram showing various molecular structures and spectral peaks]
Hydrotreating and Aromaticity

Hydrotreating Severity
None, Light, Medium, and Heavy
Diesel T50 (+/- 5.2 Deg F)
Diesel T90 (+/- 6.7 Deg F)
Diesel T90 (+/- 3.3 Deg C)
Diesel Cloud Point (+/- 1.5 Deg C)
3 Week Crude Unit Diesel Cloud Point (°C)

Measurement Interval = 30 minutes
NMR Parameters

Kero
- T5, T10, T50, T90, T95
- Cetane, Freeze Pt, Naphthalenes

Cetane, Freeze Pt, Naphthalenes

Kero PA
- T5, T95, Cetane

Diesel
- T5, T10, T50, T90, T95
- Cetane, Cloud Pt, Pour Pt

Diesel PA
- T5, T95, Cetane

Gas Oils
- T5, T10, T50, T80 (D2887)

Integrated Control
Immediate payback through improved diesel and kero yields.

Higher Yields and Improved Hydrotreating

Analyzer Shelter, Sulfur Analyzer