



Project Updates

Crude Oil Quality Group (COQG) Meeting
Long Beach, CA
February 26, 2009





Project List

- **Active projects**

- Iron Fouling
- Phosphorous in Crude Oil
- Oilsands Bitumen Processability
- TAN Project
- NGL Contamination
- Condensate/Diluent Quality

- **Project Proposals**

- On-Line Contaminant Monitoring
- Water Free Desalting
- Fluorocarbons in Crude



Iron Fouling

- **Scope**

- Examine the Role of Iron in Canadian Crude and Condensate
 - 🔥 Role as an emulsion stabilizer - desalter operations
 - 🔥 Role as a process foulant – distillation units, furnaces, filters, etc
 - 🔥 Role in catalyst fouling or deactivation

- **Current Activity**

- Sample of cat feed with high iron content being tested
 - 🔥 supplied by Grace Davison
- Emulsion samples being tested for the presence of iron species
 - 🔥 supplied by PERF project
- Improved, more comprehensive method for deposit analysis being developed by the Alberta Research Council (ARC)





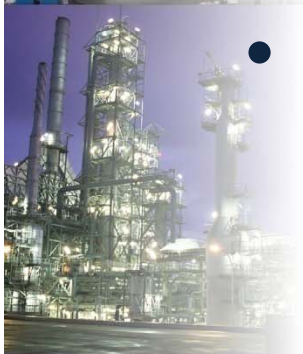
Phosphorous in Crude Oil

- **Initial CCQTA project in 1995**

- Distillation tower fouling in three refineries
- Potential sources of P were identified
- Encouraged and facilitated development of alternate chemistries with less P or less volatile P
- Enforcement of volatile P concentration began in early 2007.

- **Current Activity**

- Pipeline monitoring indicates a reduction in volatile P content of crude during 2008, linked to:
 - ⬮ Reduced market activity
 - ⬮ Increased use of low volatile phosphorus alternatives
- Working to enlist government (ERCB's) support for the segregation of gas well fracturing fluid returns as waste





Oil Sands Bitumen Processability

- **Scope**

- Study unique features of Canadian Oilsands Bitumen that may enhance or impede processability.
 - 🔥 Solids, salts
 - 🔥 TAN, Asphaltenes
- Phase I → Front end - desalting
- Phase II → Back end – distillation, coking, cracking etc..

- **Current Activity**

- Collecting 2nd round of samples for additional salt/solids testing, and coking/fouling studies
- Development of an improved, more comprehensive method for deposit analysis by the Alberta Research Council (ARC)



TAN Project

- **Scope**

- Phase II

- Detailed study of Naphthenic acids in crude and crude fractions
 - Corrosion testing including some benchmark crudes

- Phase III

- Development of a novel corrosion testing apparatus (NCUT)
 - Testing of gas-oil fractions of several Canadian Heavy Crudes and refinery benchmark gas-oils

- **Current Activity**

- Testing of an Arab Heavy gas oil sample (high sulfur/low TAN)
 - Preparing summary report for review in March
 - Developing proposal for Phase IV testing



NGL Contamination

- **Scope**

- Understand the source of NGL plant fouling and potential impact on condensate quality
- Protocols and equipment designed to collect particulate material
- Protocols established for characterization of particulate material
- Work currently underway to collect and characterize additional samples and analyze data

- **Current Activity**

- Collecting and testing samples of NGL Fractionator feed
- Development of an improved, more comprehensive method for deposit analysis (Alberta Research Council, ARC)



Condensate Quality

- **Scope**

- Focus primarily on contaminant issues with railed and common diluent pool condensates

- **Current Activity**

- Testing of NGL Fractionator produced, and railed-in condensates
- Preparing a sampling and testing protocol for other condensate sources
- Development of an improved, more comprehensive method for deposit analysis (Alberta Research Council, ARC)



On-Line Contaminant Monitoring

- **Scope**

- Identify target contaminants for monitoring.
- Determine existing capabilities
- Select a location/plant for testing of existing/new technologies
- Determine effectiveness of monitoring tool(s)

- **Current Activity**

- Bring interested parties together in March to gauge interest and establish area of focus
- Undertake a review of existing capabilities
- Contact expert parties from other industry sectors for input/participation



Water Free Desalting

- **Scope**

- Investigate options for reducing water requirements for refinery desalting
 - 🔥 Crude filtration to remove brine/salt/solids
 - 🔥 Desalter brine desalination
 - 🔥 Reduction of salt/brine content at the production site

- **Current Activity**

- Project proposal being reviewed by PERF members
- Bring interested parties together at March CCQTA meeting to gauge interest levels
- Contact expert parties from other industry sectors for input/participation



Fluorocarbons in Crude

- **Initial Scope**

- Solicit information from members and interested parties on:
 - 🔥 the types and concentrations of fluorocarbons used in various oilfield chemicals.
 - 🔥 available information, tests, studies etc. on use and impact of fluorocarbons on refinery processes.
 - 🔥 available information on impact of fluorocarbons in finished refinery products and stability of fluorocarbons in typical refinery unit operations.

- **Next Steps**

- Bring interested parties together in March to identify participants
- Project development funding provided by the CCQTA



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