Canadian Crude Quality Technical Association

Contact: secretary@ccqta.com

June 7, 2007
CCQTA

Active Projects List

• Heavy Oil Manual
• Iron Fouling
• NGL Contamination
• Phosphorus in Crude
• Oilsands Bitumen Processability
• TAN Phase III

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Heavy Oil Manual Project

Status

- Project funded by general membership
- Goal is to review methods applied to heavy oils and bitumens, identify issues associated with their application to a heavy oil matrix, and provide recommendations/upgrades to the test methods
- TAN, asphaltenes, Sample preparation and density completed
- Viscosity and distillation near completion
- Chlorides and sulfur underway
- Industry input welcome
- Project manager – Bryan Fuhr 1-780-450-5032
Iron Fouling Project

Goal

• Project goal is to understand role of iron as a contaminant in condensate and crude oil
  – as an emulsion stabilizer, as a process foulant, e.g., in furnaces, etc., as a process contaminant, e.g., catalytic units
• Evidence has been found that iron fouling of catalytic units can result from either organic iron or very fine inorganic iron particles
• Information suggests that the various refineries’ problems differ in nature of iron (organic vs. inorganic)
• Analysis is underway to identify the different species present on FCCU/cat feed catalyst
• Project manager - Jack Suggett - 1-780-645-2807
Iron Fouling Project
Participants

• BP
• ConocoPhillips
• Flint Hills Resources
• CITGO
• Nalco
• Chevron
• Encana
• Halliburton
• NCUT
• Maxxam
• Petro-Canada

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NGL Contamination Status

• Project is examining the nature and source of plant fouling associated with processing natural gas liquids & field butane
• Refiners employing mechanical filtration to help manage problem
• Fractionators continue to report reboiler fouling
• Work is focusing on tracking contamination back to a source
• Testing under way on C3+ from pipeline connections, trucked volumes, and condensate used for buffer
• Project manager – Bob Falkiner 1-416-441-7145
NGL Contamination
Participants

- ARC
- BP
- Keyera
- Maxxam
- Pall Filters

Alberta Envirofuels
Dow Chemical
Imperial Oil
Nova Corporation
Provident
Phosphorus in Crude Status

- 1st Qt. results of CAPP spec. pipeline testing shows little to no \textit{volatile} phosphorus
- Refinery \textit{total} phosphorus testing during the same period shows increasing and very significant levels of total phosphorus
- ENB has done volumetric blend of all SW feeders to provide samples, resulting in dilution of volatile P
- Letter sent to CAPP to advise that compositing of samples for the month likely to result in no hits
- Refinery results for Strathcona and Burnaby (for \textit{volatile} P) to be added to the enforcement program
- Project manager – Bruce Kennedy 1-416-986-6722
Phosphorus in Crude Project Participants

- BJ Services
- CCS Energy
- Chevron
- Clearwater
- Enerchem
- Halliburton
- REV Fluids
- BP
- Imperial Oil
- Maxxam
- NewAlta
- Petro-Canada
- United Refining

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Oilsands Bitumen Processability Project - Goal

• Project focuses on anticipated processability issues associated with refining oilsands bitumen
• Salts, solids, sulfur, nitrogen, metals identified as key area of concern/focus.
• Project manager – Bruce Randolph 1 - 918-661-5077
Oilsands Bitumen Processability Project - Participants

- BP
- ConocoPhillips
- NCRA
- CITGO
- Petro-Canada
- Encana
- NCUT
- Suncor
- Marathon

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Oilsands Bitumen Processability Project – Targeted Streams

• Produced oilsands bitumen, such as MacKay River, Christina Lake, Foster Creek, Firebag, Surmont, Albian Heavy

• Others, such as WCS, Cold Lake

• Questionnaire developed to request quality data from producers/marketers
Oilsands Bitumen Processability Project – Targeted Streams

• Some data requested is very expensive to generate and likely does not exist in production
• Project group to review and assess available quality data, as well as identify gaps from targeted data/streams
• Group to develop testing program to fill gaps on a priority basis
TAN Project Phase III

Goal

• Phase III goal is to validate results of Phase II by conducting corrosion testing under vacuum conditions
  – Minimize influence of \((H_2S)\) sulfur passivation
• First step involves validating new autoclave by running high Tan SJV
• Project manager – Randy Segato 1-403-920-8994
TAN Project Phase II

Project Participants

- ARC
- BP
- ConocoPhillips
- ENCANA
- IOL
- JACOS
- Marathon
- NCUT
- NCRA
- Petro-Canada
- Suncor

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TAN Project - Phase III Program

- Autoclave Testing of gas-oils under vacuum and high temperature
- Sulfur speciation of gas-oils
- Metal loss evaluation and SEM examination of test coupons
- Exploration of corrosive NA species in gas-oils using MS and iron powder corrosion

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TAN Project - Phase III
Proposed Samples ~10 gas-oils

- Repeat Samples
  - Oilsands #1
  - Oilsands #2
  - Bitumen #1
  - High TAN SJV

- New Samples
  - Upgrader gas-oils
    - Synbit blends
  - Others
  - WCS
TAN Project - Phase III

Status

• Autoclave construction almost complete
• Cold Lake gas-oil in shipment
• SJV high TAN gas-oil in shipment
• Other samples still pending
• Autoclave procedure in development
• Coupon preparation and analysis procedure in development
Next meetings

- Project meetings to be held in Calgary on June 19th & 20th.
- CCQTA AGM scheduled for June 20th.
- Project meetings scheduled for Edmonton in September.
- CCQTA GM in Calgary in December.