Active Projects

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- Emulsion Characterization
ACTIVE PROJECTS
Condensate Quality Project

This project is focused on understanding contamination sources in condensate streams

- Completed work on modifying ASTM D4807 for filterable solids testing of CRW feeder stream testing.
- Developing procedure to quantify role of wax and asphaltene on Total Particulate in condensate.
- Considering the development of quick/on-line procedure for benzene measurement in condensate.
Condensate Quality Project

Participants

ARC- in kind
Keyera
Provident
Devon
Cenovus
Maxxam – in kind
Intertek Caleb Brett – in kind

Shell Canada
Imperial Oil
Shell US Pipelines
ConocoPhillips
Pall – in kind
Suncor
Oil Sands Bitumen Processability

This project examines the potential refinery operability issues associated with processing dilbits/synbits. Phase II work will include:

1. Coking and fouling studies on three commercial dilbits.
2. Coking and fouling studies on a dilbit and synbit manufactured from the same bitumen.
3. Conductivity testing of bitumen blended with synthetic and three different condensate types.
Oil Sands Bitumen Processability

This project examines the potential refinery operability issues associated with processing dilbits/synbits. Phase II work will include:

4. Compatibility testing of 2 dilbits & 2 Canadian heavies blended with light crudes processed in the US.
Oil Sands Bitumen Processability
Phase II - Participants

ConocoPhillips
NCRA
Marathon
BakerPetrolite
Nalco
CanmetENERGY
Devon Canada
Suncor
Total
Champion
Cameron
AITF
Phosphorus in Crude Oil

Project focused on eliminating refinery fouling associated with the presence of volatile phosphorus in crude.

– Monitoring the effects of alternate (new) gellant chemistries combined with the imposition of a spec in Canadian crude.

– Recent evidence from feeder stream testing suggests that mitigation efforts are not working. Volatile P in light crude has returned to 2007 levels.

– Discussion on project’s future role
  • Results monitoring?
  • Development of additional P management options?
Phosphorus in Crude Oil
Participants

BP
Chevron Canada
ConocoPhilips
Enerchem
Imperial Oil Limited
Maxxam Analytics
Total
Tesoro
Intertek Caleb Brett

CCS Energy
Gibsons
Flint Hills
Halliburton
Suncor
New Alta
BJ Services
Citgo
TAN Project – Phase IV

Naphthenic acid corrosion testing of VGO samples using a small volume autoclave

- Crudes include Canadian heavies, dilbits, SJV, Brazilian high TAN.
- Lower residence times & higher shear rates.

Testing will also include:

- Decarboxylation product analysis.
- Coupon surface analysis (SEM & Pitting Analysis).
- Sulfur speciation and Naphthenic acid speciation.
Tan Phase IV
Project Participants

BP
ConocoPhillips
NCRA
Petrobras
Shell
Cenovus
CanmetENERGY
Chevron
Imperial Oil
Suncor
Statoil
Total
Flint Hills
AITF
H$_2$S In Crude Measurement

OBJECTIVES

To develop an effective and standard methodology for measuring liquid and vapor phase H2S in crude oils

- Method must be: a) operator independent, b) transportable for field use, and c) cost effective
- Method based on the adaptation and validation of an existing portable measurement device, currently certified for use in the measurement of liquid and vapor phase H2S in fuel oils (IP 570)
Progress to date has focused primarily on instrument development

- Samples collected in Edmonton in July 2010, shipped to Stanhope-Seta for analysis
- Adaptations to original IP570 apparatus
  - Chilled SPE cartridge system used to eliminate interference from light ends and mercaptans/ sulphides
- Subsequent phases to include:
  - H2S Measurement Comparison (AITF, Edmonton)
  - H2S Modeling and Prediction (CCQTA)
H$_2$S In Crude Measurement

CURRENT PARTICIPANTS

- Kinder Morgan
- Inspectorate America Corporation*
- PETROBRAS/CENPES
- Koch Supply and Trading
- Astra Energy
- Maxxam Analytics
- Suncor Energy
- Baker Petrolite*
- Coffeyville Resources*

* = COQA Corporate Member (2010)
H₂S In Crude Measurement

NEXT STEPS (to 2Q 2011)

H₂S Measurement Phase to commence in 1Q2011, expected completion is 2Q2011

- phase will focus on a comparison of existing H₂S measurement methods (ASTM D5705, D5623; UOP 163) to adapted IP570 method
- Stanhope-Seta personnel to perform comparison testing at AITF in Edmonton, AB
  - Samples to be taken from Canada and USA (?)
- Report to be presented at June CCQTA meeting
- H₂S modeling and prediction development to occur concurrently with H₂S measurement phase
Heavy Oil Compatibility

This project proposes to quantify the impact of instability/incompatibility on crude transportation, desalting and refinery processing.

– Phase 1 involves a review of test methods to determine “best” method for project needs.
– Initial sample collection nearly completed and designed to cover a wide range of key variables.
  - e.g. asphaltene content, aromaticity, paraffin content, conductivity
Heavy Oil Compatibility

Project Participants

Cameron
Chevron
MEG Energy
Pembina Pipeline
Cenovus

CanmetENERGY
ConocoPhillips
Petrobras
Shell

6/8 Active projects
Fluorocarbons in Crude Oil

The project is examining the potential refinery impact of fluorocarbon foaming agent usage in well stimulation/fracturing

– Awaiting results of Refinery Impact Study completed by 3M.
– No meeting/updates available in December
– Participation is open to all interested CCQTA members.
Crude Quality Tutorial

• This project proposes to develop crude quality presentation material ranging from ½ hour presentations to 1 day tutorials.

• Intended to cover all facets of crude oil quality.
  – Production, pipeline transport, refinery operation, waste handling, lab testing, etc.

• To be used for training purposes or as reference material by CCQTA members.

• Project is funded by the CCQTA membership.
PROJECT PROPOSALS
On-line Contaminant Monitoring

This project proposes to employ existing instrumentation to undertake at-line/on-line monitoring of crude oil contamination

- Preliminary results available with MWD XRF and LIBS technology.
- A refinery site has expressed interest in conducting at-line testing with selected equipment.
- Refinery sourced samples to be tested by technology suppliers
Emulsion Characterization

- This project proposes to develop standardized test methods to compare emulsions from different sites to find common causes.
- Initially suggested as a follow up activity in the Iron Fouling project
- Recent incidents of problematic emulsions in refinery desalters, slop systems, air flotation units, etc, have been reported and created a renewed interest in this subject
CCQTA/COQA Joint Meeting

Date
Scheduled for week of June 18th 2012

Location
Kananaskis Resort – located 90 km west of Calgary

Contact
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…End 😊