



Project Updates

COQA Meeting
February 24, 2011
San Antonio





Active Projects

1. Condensate Quality
2. Oil Sands Bitumen Processability
3. Phosphorus in Crude Oil
4. Tan Phase IV
5. H₂S in Crude
6. Heavy Oil Compatibility
7. Fluorocarbons in Crude
8. Crude Quality Tutorial



Project Proposals

- On-line Contaminant Monitoring
- 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.
5. Desaltability Testing of blends used in 4.



Oil Sands Bitumen Processability

Phase II - Participants



ConocoPhillips

Devon Canada

NCRA

Suncor

Marathon

Total



BakerPetrolite

Champion

Nalco

Cameron

CanmetENERGY 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
ConocoPhillips
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

Chevron

ConocoPhillips

Imperial Oil

NCRA

Suncor



Petrobras

Statoil

Shell

Total

Cenovus

Flint Hills



CanmetENERGY

AITF



H₂S 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)



H₂S In Crude Measurement PROGRESS TO DATE

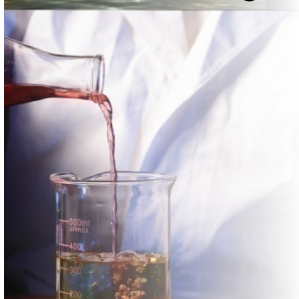
Progress to date has focused primarily on instrument development

- 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)



H₂S In Crude Measurement

CURRENT PARTICIPANTS



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

* = 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

CanmetENERGY

Chevron

ConocoPhillips



MEG Energy

Petrobras

Pembina Pipeline

Shell

Cenovus





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

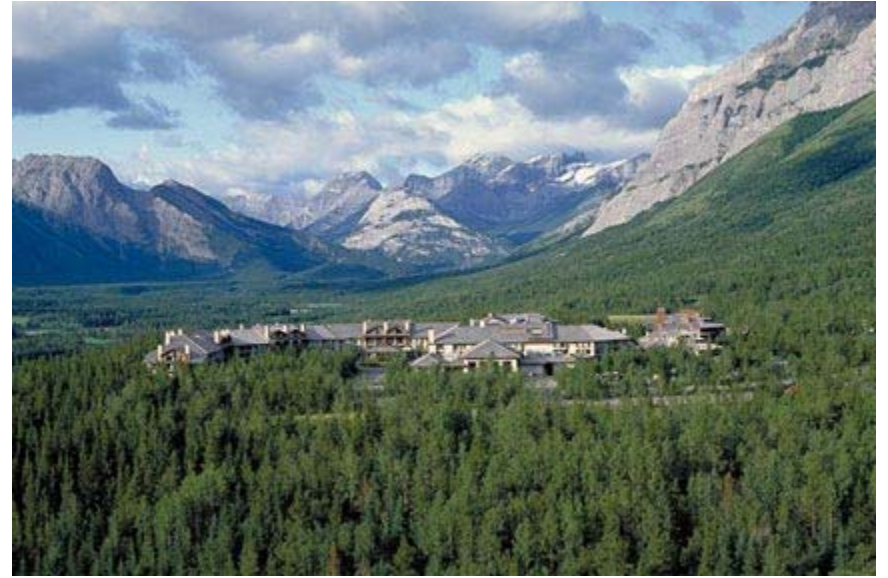


Emulsion Characterization

- 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

Randy Segato – CCQTA Vice-
President

- Ph: 403 296 4561
(recently changed)
- Email:
rsegato@suncor.com





CCQTA Contact Information

President

– Gerald Bruce

- Ph: 403 775-1835
- E-mail: gerald.bruce@megenergy.com

Secretary

– Andre Lemieux

- Ph: 780-975-3026
- E-mail: secretary@ccqta.com

...End ☺