



Association Activities and Project Updates

COQA Meeting
Salt Lake City
June 9, 2011





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
- Bitumen Dewatering
- Shrinkage Calculation
- H₂S PVT Modeling



ACTIVE PROJECTS



Condensate Quality Project

This project is focused on understanding contamination sources in condensate streams

- Work completed on modifying ASTM D4807 for filterable solids testing of CRW feeder stream testing.
- Developing procedure to quantify asphaltenes within Total Particulate in condensate.
- Exploring the development of quick/on-line procedure for benzene measurement in condensate.



Condensate Quality Project Participants



AITF- 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 controlling 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 | CCS Energy |
| Chevron Canada | Gibsons |
| ConocoPhillips | Flint Hills |
| Enerchem | Halliburton |
| Imperial Oil Limited | Suncor |
| Maxxam Analytics | New Alta |
| Total | BJ Services |
| Tesoro | Citgo |
| Intertek Caleb Brett | XOS |





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

Nexen

Chevron

Imperial Oil

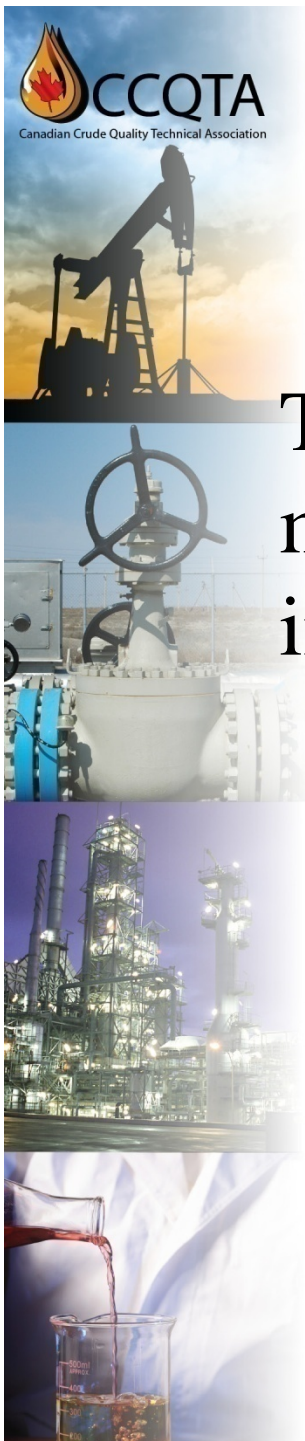
Suncor

Statoil

Total

Flint Hills

AITF



H₂S In Crude Measurement OBJECTIVES

To develop an effective and standard methodology for measuring liquid 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 phase H₂S in fuel oils (IP 570)

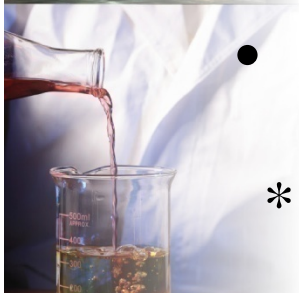


H₂S In Crude Measurement

Current Participants



- Kinder Morgan
- Astra Energy
- Inspectorate America Corporation*
- Maxxam Analytics
- PETROBRAS
- Suncor Energy
- Koch
- Baker Petrolite
- Cenovus
- Coffeyville Resources*
- ConocoPhillips
- Valero*
- Total
- Transport Canada



* = COQA Member (2010)- Not current CCQTA Member



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 separately and 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 completed and designed to cover a wide range of key variables.
 - e.g. asphaltene content, aromaticity, paraffin content, conductivity
- Phase 2 will involve compatibility testing of blended Canadian and non-Canadian crudes.



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 March
- 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

- MWD XRF technology selected for at-line testing
- A refinery site (ConocoPhillips) has been identified for plant testing



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
- Will look at both the inorganic and organic components of emulsions



Bitumen Dewatering

- This project proposes to develop a standardized method for obtaining clean bitumen samples from emulsions
- Project will focus on sample collection and preparation
 - Dewatering
 - Solids removal
- Intended to be applicable to all bitumen on core samples
- Initially assess the capabilities of Super Critical Fluid Extraction



Shrinkage Calculation

- This project proposes to study the suitability of using existing shrinkage equations for bitumen & heavy oils with densities higher than 980 kg/m^3
- Phase I - Gather information on existing shrinkage models and the data set used to generate the
- Phase II - Gather information generated by private party testing on shrinkage for their production and review for gaps
- Phase III – If deemed necessary, test samples of bitumen & heavy crude oils with various diluents, including NGC, refinery naphtha, and light synthetic crude to provide data for inclusion into a refined shrinkage model



H₂S PVT Modeling

- This project proposes to develop models/nomograms for predicting H₂S vapor phase concentration in closed spaces (e.g. vessels, tanks, transport trucks, etc)
- Modeling to be based from measurements of H₂S in liquid, detailed component analyses of the liquids, and the selected scenarios and vapor spaces noted
- Anticipate production of nomographs for H₂S in vapor space based on H₂S in liquid and readily field measureable parameters.



CCQTA

June 2011 Meeting Schedule

Tuesday June 21st

8:30 am – 10:30 am – TAN Phase IV – Randy Segato (1 403 920 8994)

10:30 am – 1:00 pm – Emulsion Characterization- Open to all interested parties

1:00 pm – 3:00 pm – Oilsands Bitumen Processability – Eric Vettors (1 918 661 3233)

3:00 pm – 5:00 pm – Heavy Oil Compatibility/Stability Study – Raman Narayanan (1 403 889 9135)

Wednesday June 22nd

9:00 am – 11:00 am – Phosphorus – James Graham (1 403 231 6543)

11:30 pm – 1:00 pm – Executive Meeting - Open to all interested parties

1:30 pm – 3:30 pm – Condensate Quality – Bob Falkiner (1 416 441 7145)

3:30 pm – 5:00 pm – On line Contaminant Monitoring – Open to all interested parties

Thursday June 23rd

8:30 am – 10:00 am – H₂S Measurement in crude – Bill Lywood (1 780 481 1170)

10:00 am – 11:00 am – H₂S PVT Modeling - Open to all interested parties

11:30 am – 1:00 pm – Bitumen Dewatering and Shrinkage Calculation- Open to all interested parties

1:30 pm – 4:00 pm – CCQTA AGM- Open to all interested parties

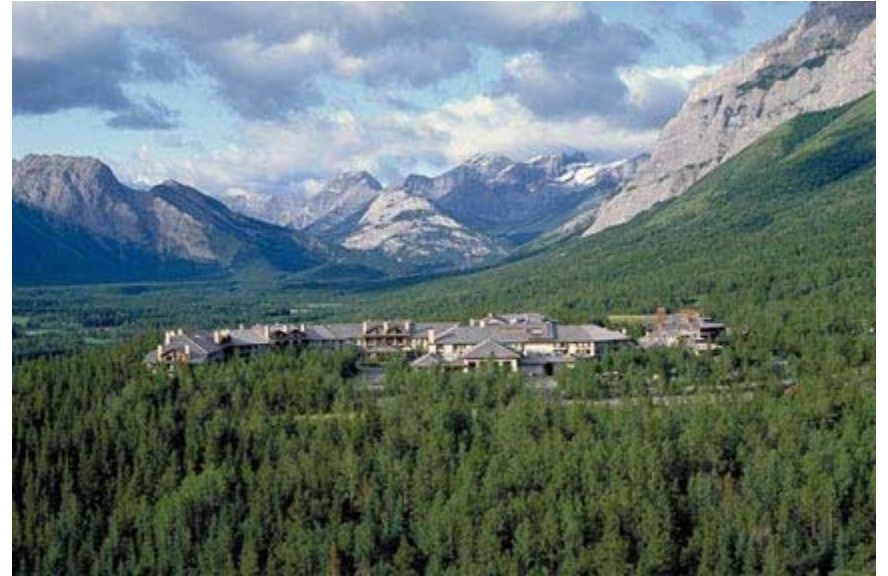
The Emulsion Characterization, On Line Contaminant Monitoring, H₂S PVT Modeling, Bitumen Dewatering and Shrinkage Calculation are all new projects and attendance is open to all interested parties.

The OSBP, Phosphorus, Condensate Quality, Tan Phase IV, H₂S Measurement in Crude, and Heavy Oil Compatibility projects are established projects and all non-project participants wishing to attend are required to obtain project manager approval prior to the meeting. Their phone numbers are listed next to their names.

Anyone else requiring meeting information or web-conferencing details, should contact the Secretary.



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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