



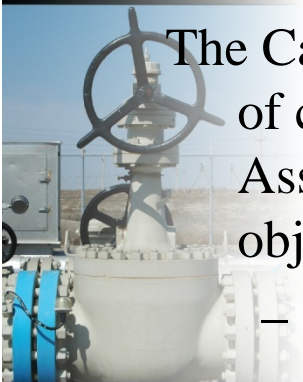
COQA Update

October 22, 2009
Houston





CCQTA Background



The Canadian Crude Quality Technical Association membership consists of companies from multiple segments of the Canadian oil industry. The Association is established with the following educational and scientific objectives:

- To facilitate communications among industry stakeholders
- To provide a forum for the presentation and consideration of proposals for industry projects related to any aspect of crude oil quality.
- To improve industry knowledge and awareness of crude oil quality through the cooperative exchange of technical information among industry sectors.





CCQTA Background

- CCQTA does not typically fund projects, but acts as a facilitator for projects
 - Provides meeting venues, phone and web-conferencing support, and third party accounting to project groups
- CCQTA currently has 60 member companies





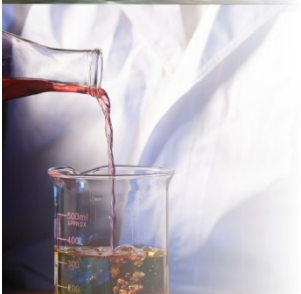
Active Projects



- Condensate Quality
- Iron Fouling
- NGL Contamination



- Oilsands Bitumen Processability
- Phosphorus in Crude Oil
- Fluorocarbons in Crude





Project Proposals

- On-line Contaminant Monitoring
- TAN Project – Phase IV
- Measurement of H₂S in Crude





ACTIVE PROJECTS



Condensate Quality Project



- This project is focused on understanding potential contamination sources in condensate streams



- Presently working to identify the nature of elevated particulates in the CRW feeder streams and the source of these particulates





Condensate Quality Project Participants



– ARC- in kind

Shell Canada

– Keyera

Imperial Oil

– Provident

Shell US Pipelines

– Devon

ConocoPhillips

– Encana





Iron Fouling Project



- This project is conducting an investigation of the role of iron in Canadian crude oils and condensates as an emulsion stabilizer, a process foulant and a process contaminant
 - Presently testing cat feed and produced crude emulsions for iron based/related contaminants





Iron Fouling Project Participants



- BP
- ConocoPhillips
- Flint Hills Resources
- CITGO
- NCUT
- Imperial Oil Limited
- Maxxam – in kind

Nalco
NCRA
Chevron Canada
Encana
Grace Davison
Suncor
ARC – in kind





NGL Contamination Project



- The project has examined the source(s) of fC_4 contamination and is now looking into the nature of reboiler foulant common to several NGL fractionation plants. Presently



- Testing of NGL feed
- Preparing Final Report

- Project is near completion





NGL Contamination Participants

- ARC- in kind
- BP
- Keyera
- Maxxam - in kind
- Pall Filters - in kind
- Shell

Alberta Envirofuels
Dow Chemical
Imperial Oil
Nova Corporation
Provident
ConocoPhillips


Oilsands Bitumen Processability

- This project examines the potential refinery operability issues associated with processing dilbits/synbits
 - Presently finalizing properties and contaminant testing.
 - Completing preliminary coking and fouling studies



Oilsands Bitumen Processability

Project Participants

- 
- BP
 - ConocoPhillips
 - NCRA
 - CITGO
 - Shell
 - MEG Energy



Work in kind

- 
- Maxxam
 - BakerPetrolite

Encana
NCUT
Suncor
Marathon
Devon
Total

Champion
ARC



Phosphorus in Crude Oil



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



- Presently monitoring the effects of alternate (new) chemistries combined with the imposition of a spec in Canadian crude



- Investigating the “possible migration” of the phosphorus issue to other streams (e.g. Condensate, Heavy Oil)

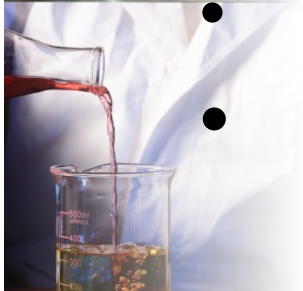


Phosphorus in Crude Oil Participants



- BP
- Chevron Canada
- Clearwater Inc.
- Enerchem
- Imperial Oil Limited
- New Alta
- Total
- TESORO

- CCS Energy
- Gibsons
- ConocoPhillips
- Halliburton
- Maxxam Analytics
- Suncor
- BJ Services
- CITGO





Fluorocarbons in Crude Oil



- The project is examining the potential refinery impact of fluorocarbon foaming agent usage in well stimulation/fracturing
 - Currently operating with limited start-up funding to allow for an initial assessment of the impact of fluorine based chemistries
 - Participation is open to all interested CCQTA members





PROJECT PROPOSALS

On-line Contaminant Monitoring

- This project proposes to employ existing instrumentation to undertake on-line monitoring of crude oil contamination
 - Currently, Nuclear Magnetic Resonance (NMR), Laser-Induced Breakdown Spectroscopy (LIBS), and Electron Spin Resonance (ESR) are being considered as possible technologies
 - Samples are to be provided to equipment manufacturers to assess method capabilities





TAN Project – Phase IV



- Two project directions are being considered
 1. More detailed corrosion work with bitumen gas oils
 2. Impact on blending on projected corrosion rates.



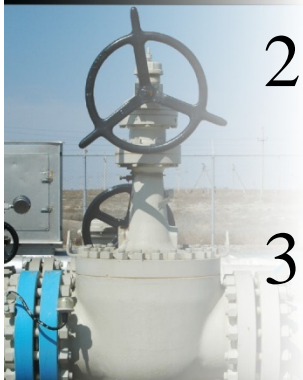
- Project scope is to be finalized in December. Items under considerations include



1. higher shear rates than Phase III, targeting simulated pipe flow rates of 15 – 20 fps



TAN Project – Phase IV



2. Reduced sample residence time to minimize decarboxylation
3. Speciation of both sulphur and naphthenic acids



4. Investigation of degradation/decarboxylation products and their role on corrosion
5. Additive impact testing



6. Corrosion assessment of crude blending



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