Survey of the quality measures in Crude-by-Rail sector and
Introduction to the COQA – Crude-by-Rail Subcommittee

Presentation to Crude Oil Quality Association
June 2013
1. Survey of the Crude-by-Rail sector from a quality perspective
   A. Facilities and measures present
   B. Common Concerns and remedies available
   C. Pinch points and Evolution

2. Crude Oil Quality Association - Crude-by-Rail (CBR) Subcommittee
   A. Mission Statement
   B. Initiatives and Engagement
Crude-by-Rail Industry Overview
### Crude by Rail Industry Overview - Facilities

Controls from a Capital or Personnel Perspective

<table>
<thead>
<tr>
<th>Facilities</th>
<th>Key Considerations</th>
<th>Controls</th>
<th>Accountability</th>
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</thead>
</table>
| Truck to Transloader and visa-a-versa (AKA – “Cowboy Style”) | - Low to no automation; Personnel and procedures dependent  
- Reactive to quality concerns  
- Can segregate down to specific well or truck driver/company  
- “Casual” and intentional blending | ![Weak] | ![Middle] |
| Truck to Tank to Tankcar (Field Battery Units) | - LACT or injection point assignable to a single or multiple parties  
- Limited blending dependent on ancillary equipment  
- Reactive but has the ability to manage quality | ![Middle] | ![Strong] |
| Truck to Tank to Tankcar (1000+ bbl Tanks) | - Reactive testing and controls available  
- Tolerances for off spec deliveries  
- Segregation of crude streams available  
- Light, sweet pricing Benchmark established in the Brent-related market | ![Strong] | ![Weak] |
| Pipeline to Tank to Tankcar | - Production information in real-time  
- Segregation and blending programs available  
- Procedures and planning can control quality streams | ![Strong] | ![Strong] |

**Strong**, **Weak**, **Middle**
Integrity issues concentrated on expanding volume and operator carelessness

- In field blending and crude spiking
  - NGL and “splash” blending
  - Methane and CO² suspended in crude streams
- BS&W monitoring should be stressed when receiving rail deliveries
  - Trash and other such debris inside crude
  - “Crude Watering”
- High H₂S deliveries
- Potential to test per car load and reject loads before delivery
- Not committed to a single market
- Able to work with providers to modify
- Volumes are manageable inside a larger system
  - Dilution is the solution

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Crude by Rail Industry Overview - Transition
Rail industry growing and talent and capital pouring in

- As market grows talent and capital directing towards the sector
  - Equipment shortage soon to be solved
  - Efficient trade routes developing
  - More value added services being applied
  - Product high grading and specialization
  - End users moving further and further down the value chain
  - Integration on a minor scale now available

(Source: Association of American Railroads (AAR), Surface Transportation Board (STB), Raymond James research)
Crude Oil Quality Association
Crude-by-Rail (CBR) Subcommittee
The Crude Oil Quality Association - Crude-by-Rail (CBR) Subcommittee is established to support the oil industry and principally its participants in the crude-by-rail sector to ensure that the integrity of the crude oil streams are upheld.

The CBR Committee hopes to achieve this purpose by:

1. Providing a forum for the free exchange of “best practices” amongst those engaged with the COQA

2. Serving as an intermediary for the oil industry with our partners in the rail industry and the rail industry’s regulators

3. Initiating research and industry collaboration on exceptions in the crude-by-rail sector
Crude-by-Rail – Initiatives and Engagement
Working within exiting venues and providing continued communication

- **Engaging rail service providers (Class 1 and Short lines)**
  - Understanding where rail company’s concerns are and working with our members to address them

- **Working within existing organizations and industry group within the Rail and Oil & Gas industries**
  - Dialoguing with regulators and providing peer reviewed and industry sound information
  - Ensuring that the energy industry has a presence in the rail transportation organization and visa-a-versa

- **Ensuring that this renewed medium is operated responsibly and safely, thus continuing to be provide an conduit for energy movements**