



a global Onshore/Offshore service leader in ...

WATER TREATMENT | PIPELINE | WELL TESTING | WASTEWATER | RENTALS | NITROGEN SERVICES



CETCO
OILFIELD
SERVICES
COMPANY

cetcooilfieldservices.com



Produced Water Polishing Promotes Compliance During Conventional System Upsets

John Occhipinti, Jarid Hugonin,
Tim Power, and Jerry Darlington

CETCO Oilfield Services Philosophy

Remove the Components that Cause
Oil & Grease and Toxicity Violations

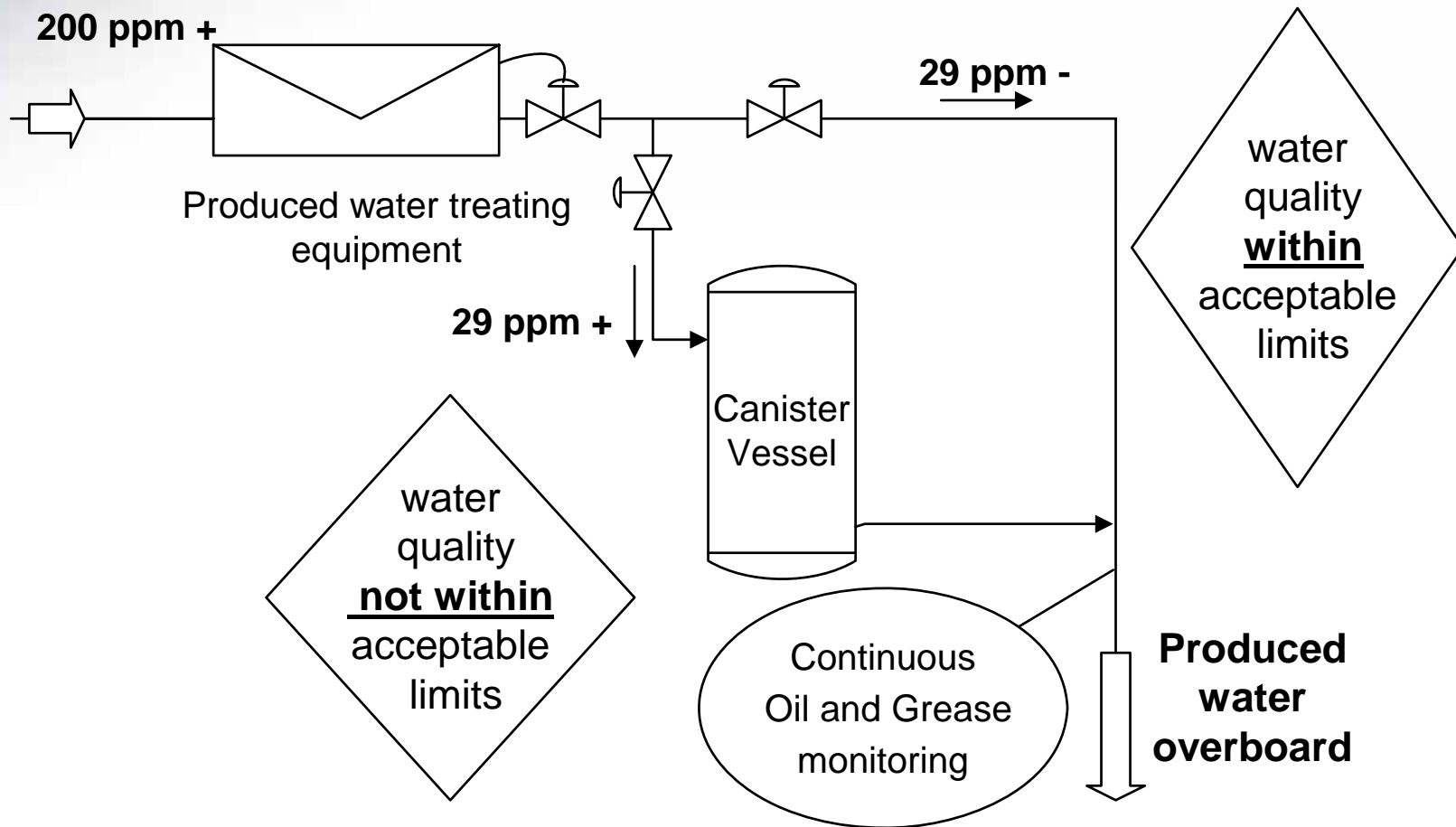
Presentation Topics

- Review of two filtration media systems to ensure produced water compliance
- Case Studies - comparison of advantages and disadvantages
- Data and examples from trials

Why Use Filtration Media For Water Polishing?

- Surging
- New Wells
- Bringing on Old Wells
- Wells Watering Out - overloading system
- Decreased Maintenance - man power
- Prevent Acid Addition into System
- Reduce Chemical Cost
- Ensure Compliance

Produced Water Polishing



CETCO

Oil from Water Removal Technologies

- CrudeSep[®] - a vertical induced gas oil floatation separator
- CrudeSorb[®] - filtration media that operates on adsorption technology
- Hi-Flow[™] - filtration media that operates on adsorption and coalescence technology

CETCO Oleophilic Adsorption Media

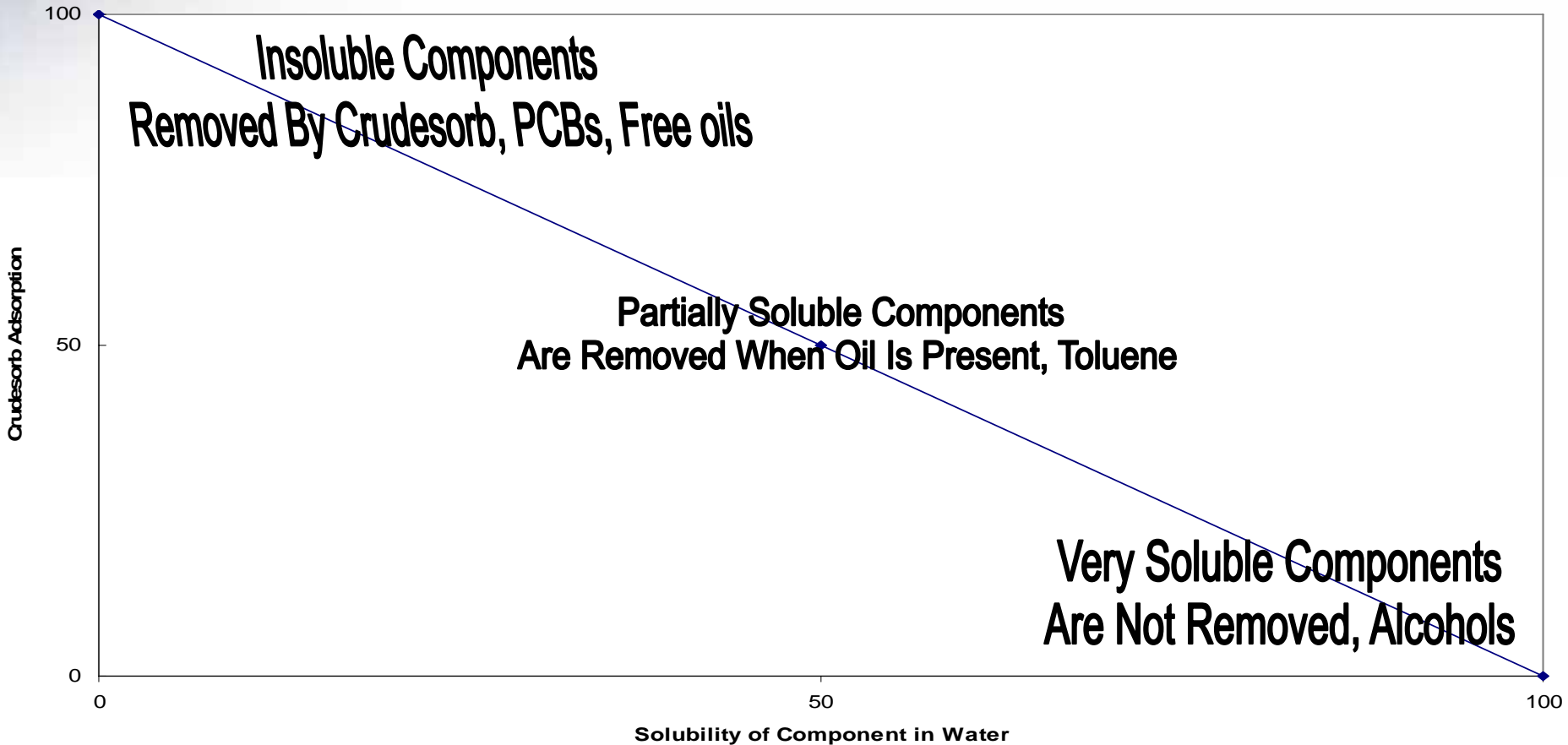
- Family of oleophilic filtration media collectively known as CrudeSorb provides unique capability for produced water polishing in emergency bypass situations.
- The CrudeSorb media is the best media in the marketplace for removing oil from acid flowbacks and completion fluids.
- The CrudeSorb media works well for short term produced water polishing situations. It is a good solution for emergency bypass filtration to ensure compliance.

CrudeSorb[®]

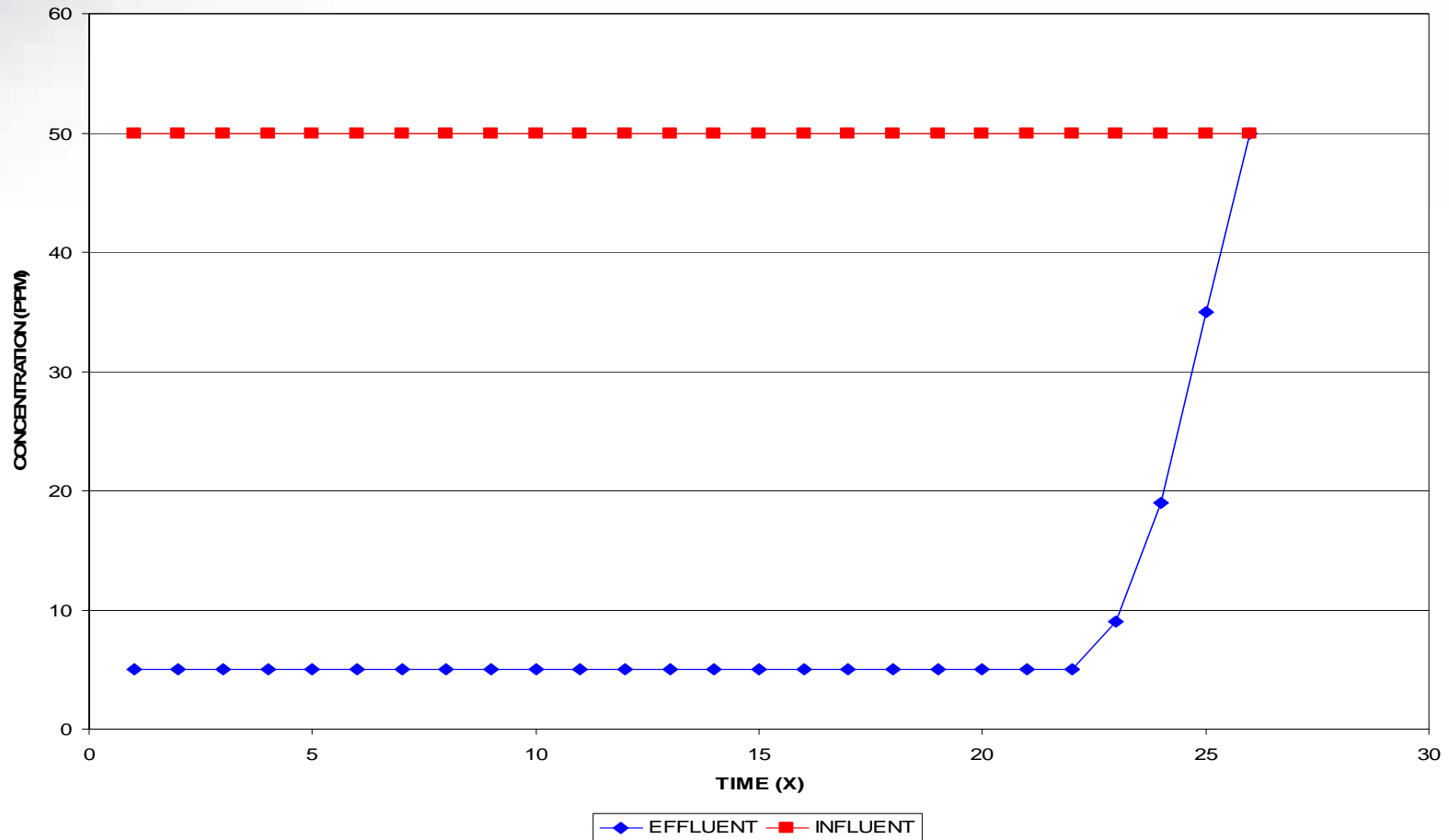
- Granular Oleophilic Adsorption Media
- High Selectivity for Insoluble Oil & Grease Contributors
- Organic Adsorption Follows Component Solubility Principle

Removal of Oil & Grease Contributors by CrudeSorb[®]

Adsorption of Component Based on Solubility Parameters

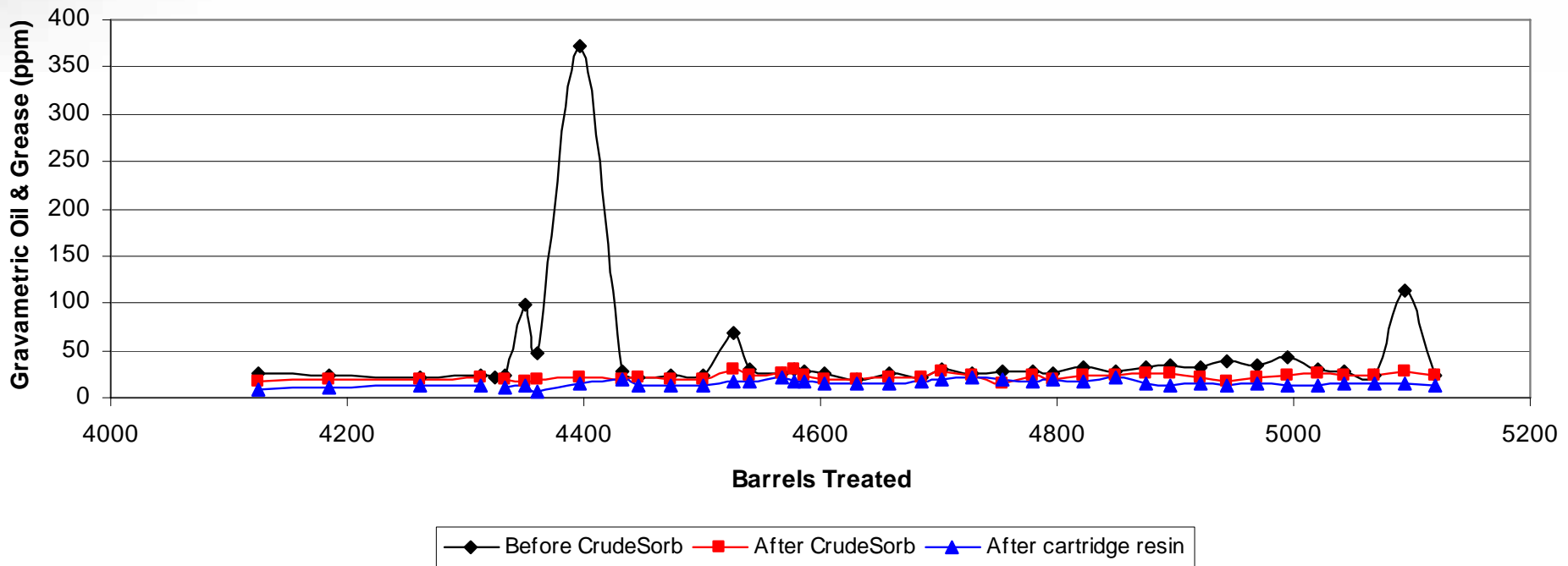


Adsorption Profile for CrudeSorb[®]



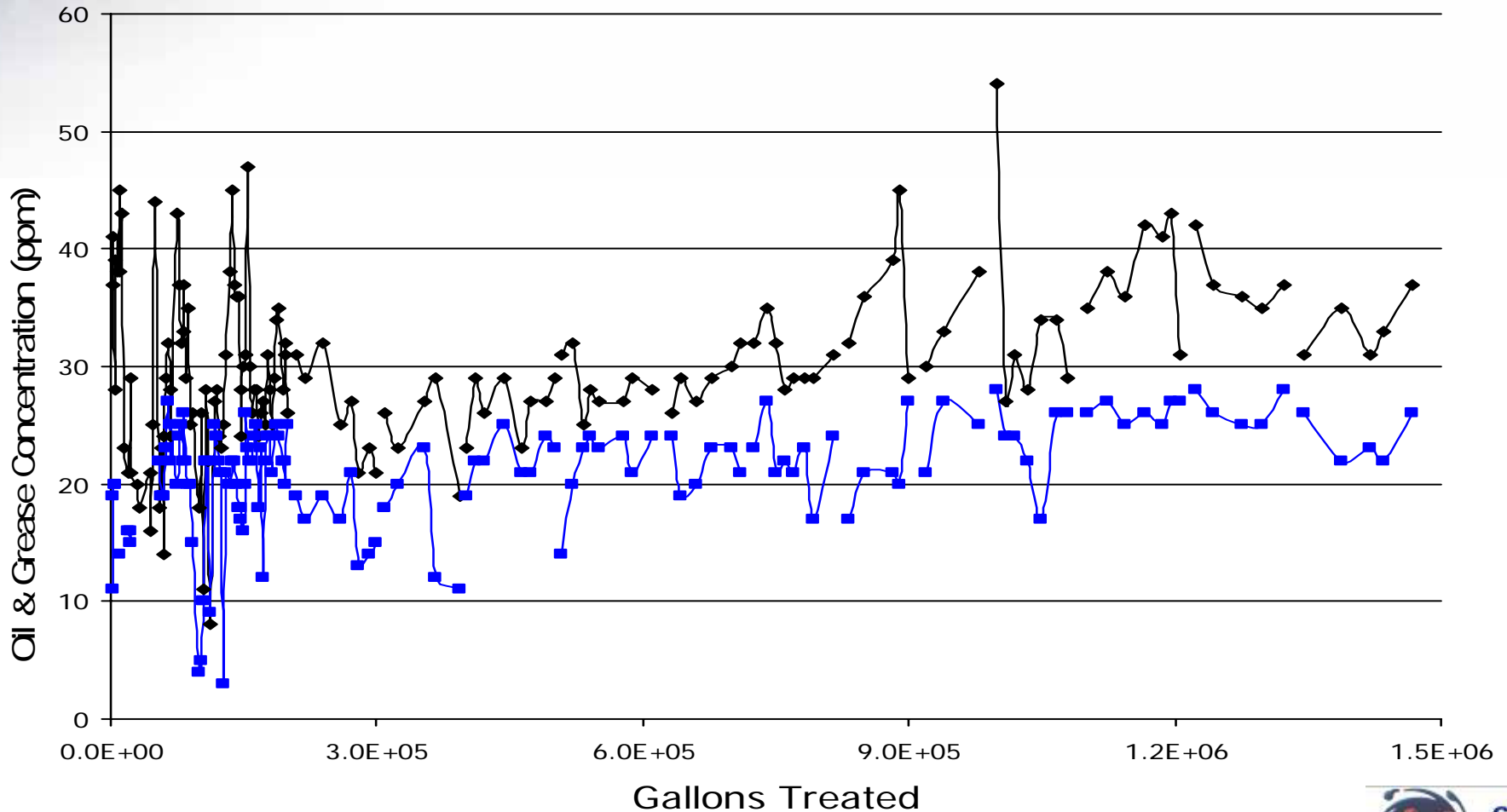
Effect of CrudeSorb® on Water Clarifier Treated Floatation Cell Effluent

Gravametric Results for CrudeSorb and Resin for BP109 Floatation Cell Effluent



Effect of CrudeSorb® on GOM Platform Discharge

—◆— WEMCO —■— CRUDESORB



Hi-Flow™ Filtration Media

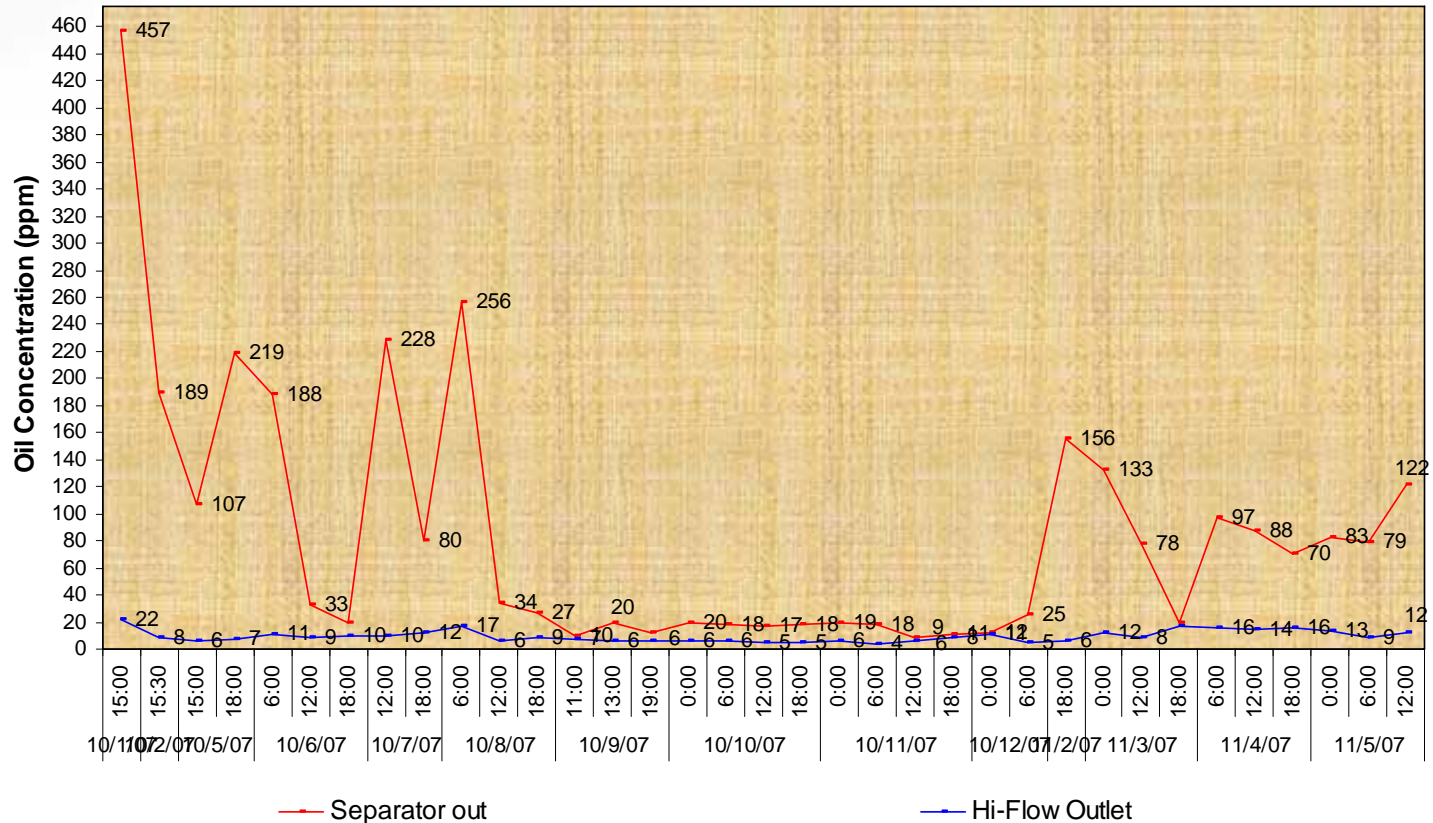
- Granular Hydrophobic Adsorption and Coalescence Filtration Media
- High Selectivity for Insoluble Oil & Grease Components
- Limited Removal of Water Soluble Components - works best when oil droplets are present

Comparison of CETCO Filtration Media CrudeSorb[®] vs. Hi-Flow[™]

	CrudeSorb	Hi-Flow
Mechanism	Adsorption	Adsorption & Coalescence
Components Removed	Insoluble oil & partial soluble components	Insoluble oil & grease components
Flow Rate	1x	8x
Capacity	1x media weight	100 x media weight

Effectiveness of Hi-Flow Media on GOM Platform

11/5/07 Field data





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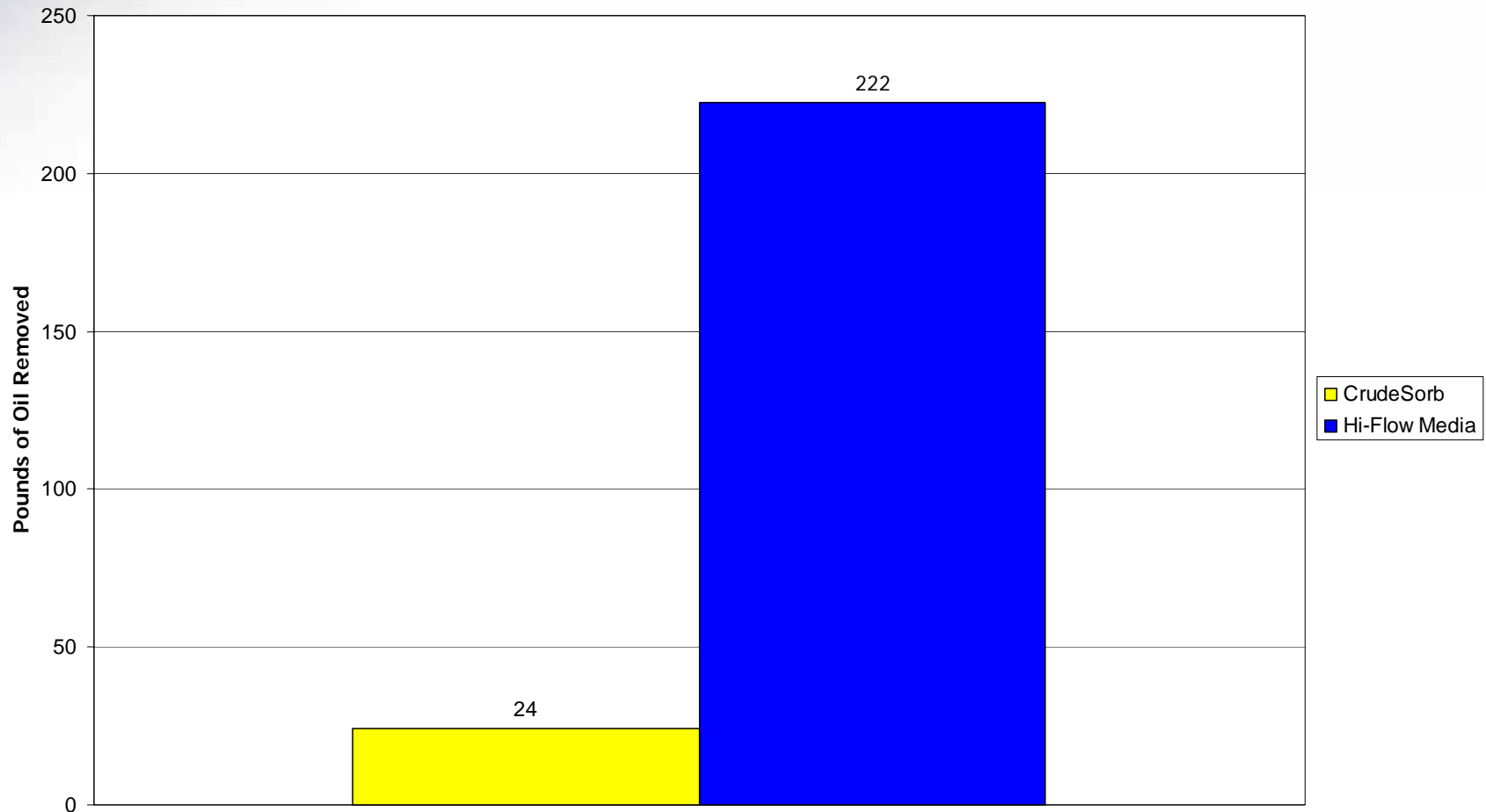
Onshore Filtration of Pipeline Fluid at a Flowrate of 55,000 BPD 1.2 Million Barrels

Day	Influent, ppm	Effluent, ppm
1	20	<5
2	23	<5
3	44	11
4	21	<5



CrudeSorb[®] vs. Hi-Flow[™] Media

Hi-Flow media flows 8x faster and removes 5x the oil!



CrudeSorb @ 1 gpm vs. Hi-Flow Media @ 8 gpm

Dual 66" Produced Water Polishing Unit



RFV 4000 DF Produced Water Polishing Unit

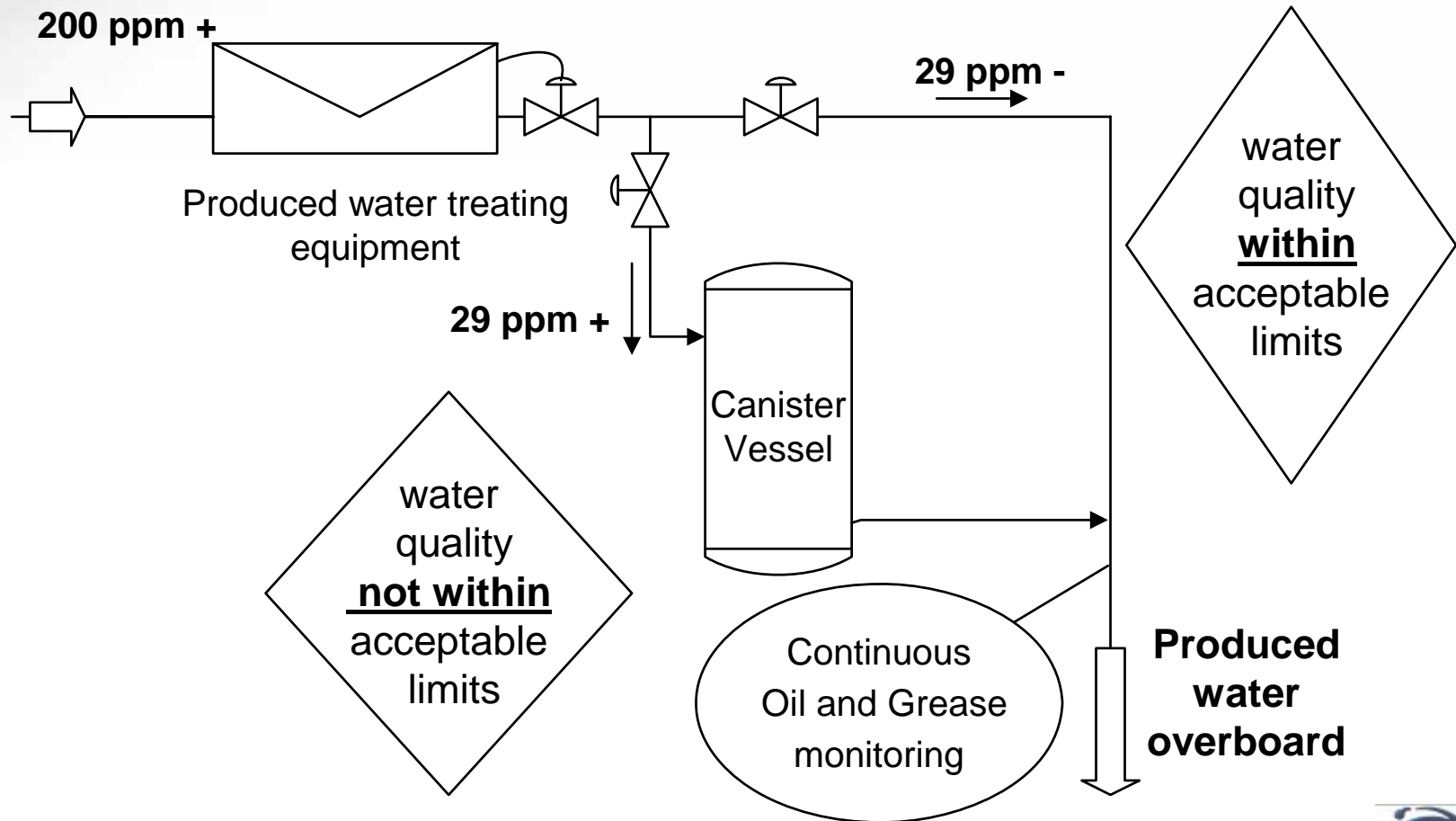


Top View of 66" Vessel Containing CrudeSorb[®] Canisters



Produced Water Polishing

CETCO filtration media provides a unique solution to ensure compliance!





HAPPY HOLIDAYS

