

Examples of Field Experience with ViPA Technology

Field Experience in Jorin's Process Investigations

Field Experience Using the Jorin ViPA During 2004

BP Marlin

Aim

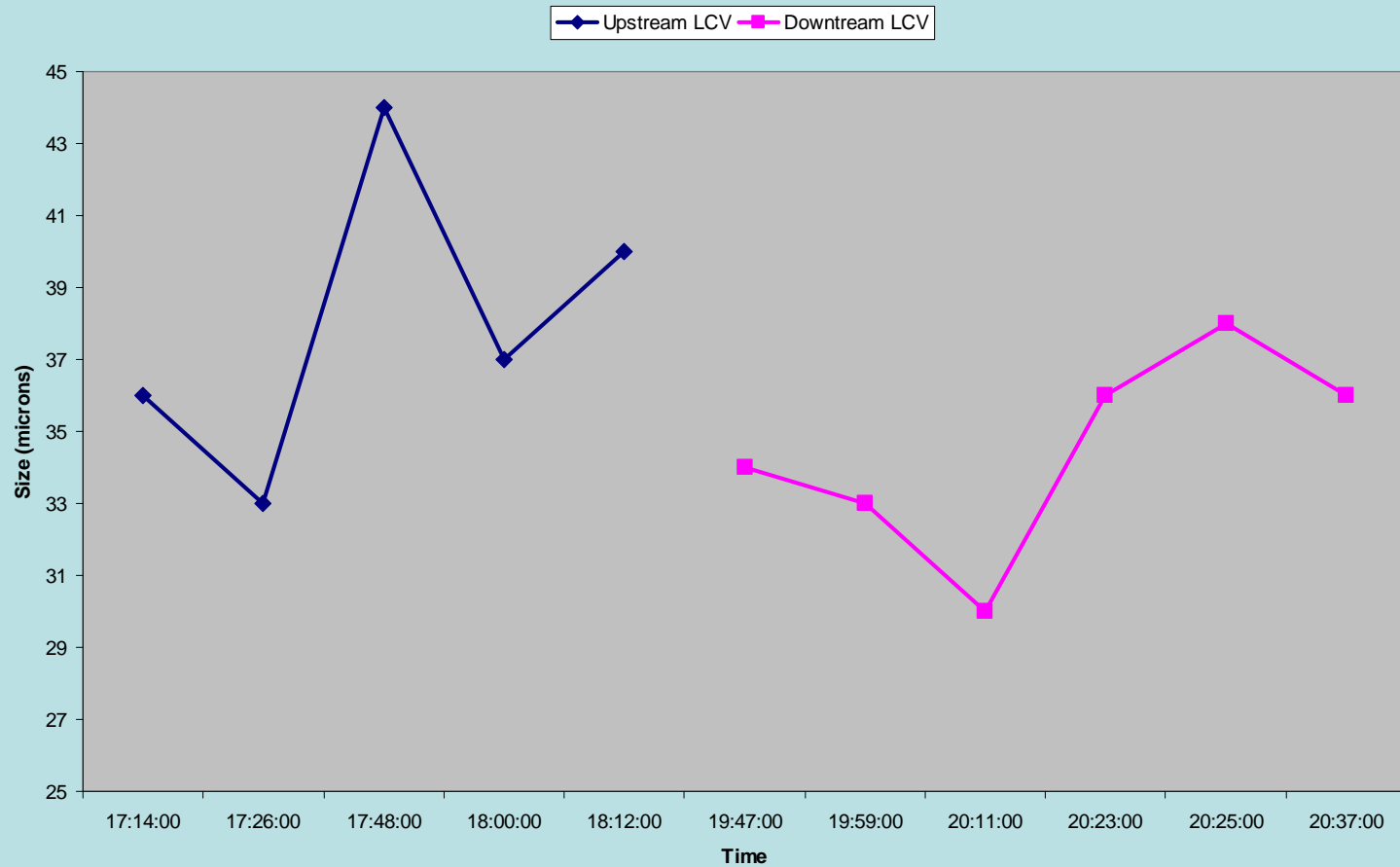
- Investigate High Overboard OIW, Was Cause Shear Created by LCV?

Found

- No Shear across LCV but High Solids Causing Upsets

BP Marlin

Comparison of Oil Droplet Size Across Level Control Valve



Field Experience Using the Jorin ViPA During 2004

Albemarle

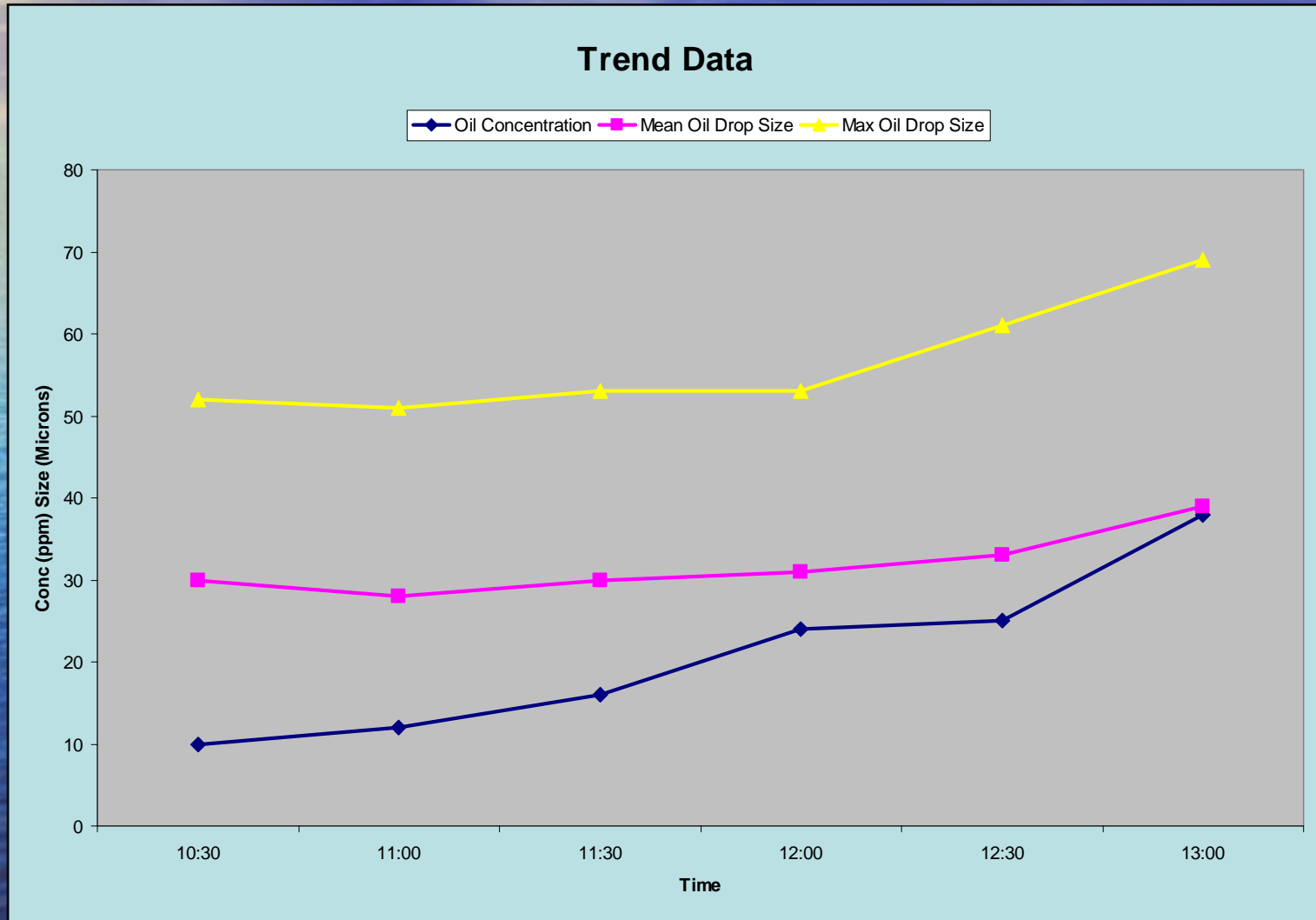
Aim

- Was it Possible to Provide Early Warning of OIW Upsets

Found

- Trend Information Provided Early Warning and Correlation with Infrared OIW was Excellent

Albemarle



Field Experience Using the Jorin ViPA During 2004

Separator Vendor

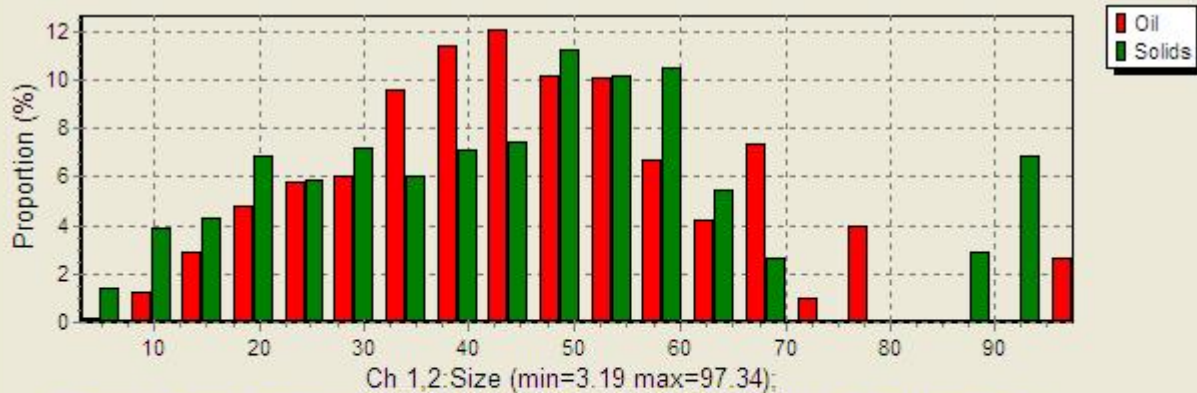
Aim

- Prove Efficiency of New Separator Design

Found

- Inlet and Outlet Data Showed Only Minor Differences

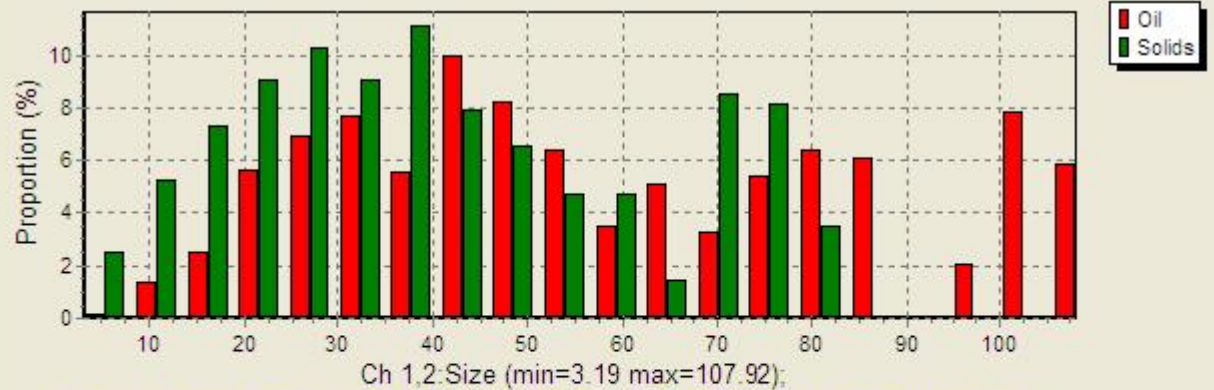
Separator Vendor



Attr=Size; Cl=Oil; Gr=Histo; Weight=Vol/Total.

Mean=45.88; Min=3.19; Max=97.34; d10=22.79; d50=44.44;
Graph shows Size (user class Oil).

Mean=45.19; Min=3.19; Max=93.60; d10=17.31; d50=45.41;
Graph shows Size (user class Solids).



Attr=Size; Cl=Oil; Gr=Histo; Weight=Vol/Total.

Mean=58.50; Min=3.19; Max=107.92; d10=24.62; d50=53.16; d90=101.21; N=1748.00; Conc(ppM)=96.41;
Graph shows Size (user class Oil).

Attr=Size; Cl=Solids; Gr=Histo; Weight=Vol/Total.

Mean=41.67; Min=3.19; Max=82.85; d10=15.33; d50=38.91; d90=72.64; N=3077.00; Conc(ppM)=37.93;
Graph shows Size (user class Solids).

Inlet (above)
& Outlet (right)

Shell Auk

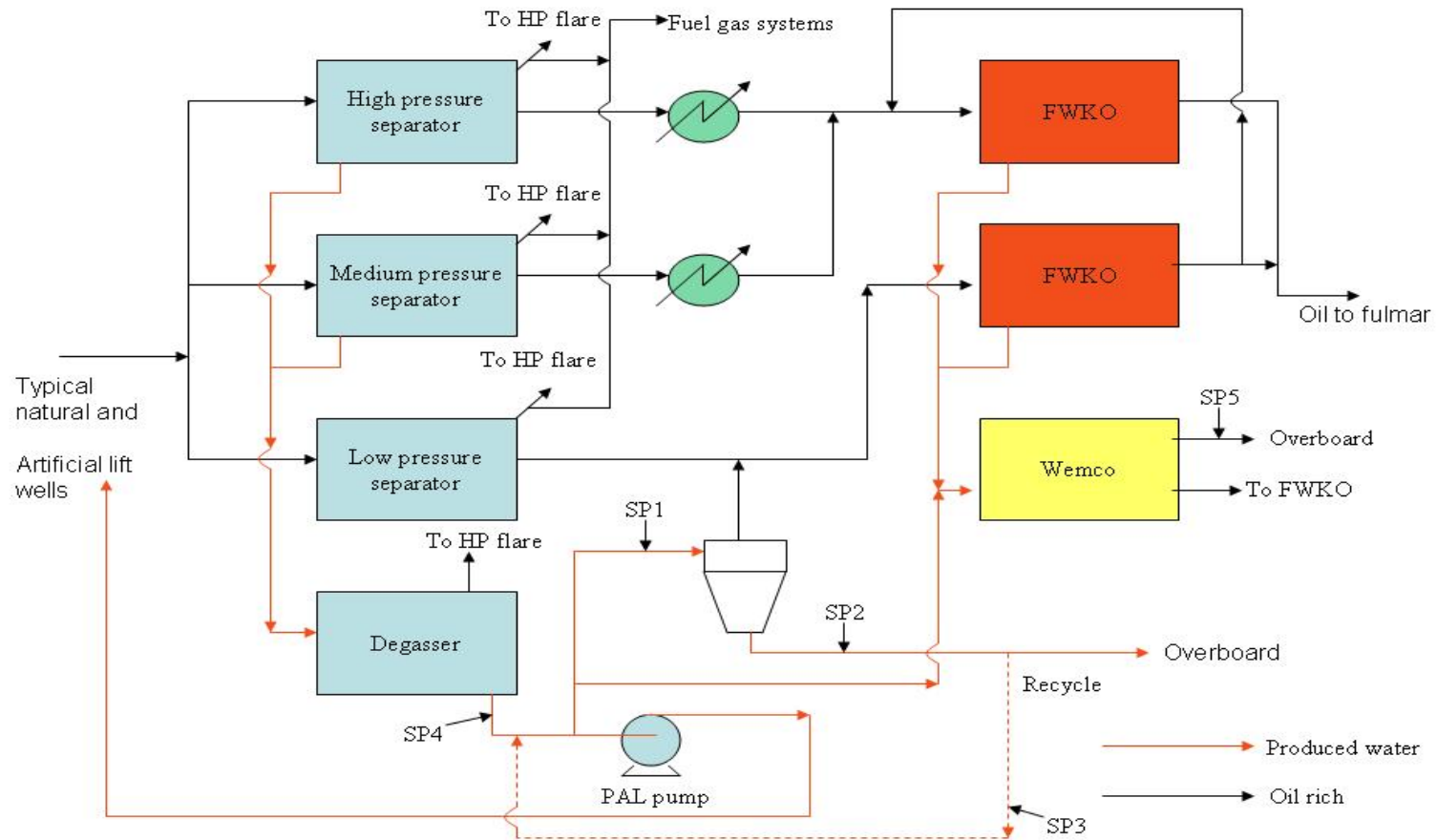
Aim

- Investigate Changes in Water Treatment Process Since Previous Investigation

Found

- Cyclone Efficiency Decreased
- Oil Droplet Size Increased
- Recycle Line Recycling 87% of Solids
- Solids Retention in Vessels Reducing Residence Time

Shell Auk



Field Experience Using the Jorin ViPA During 2004



Shell Nelson

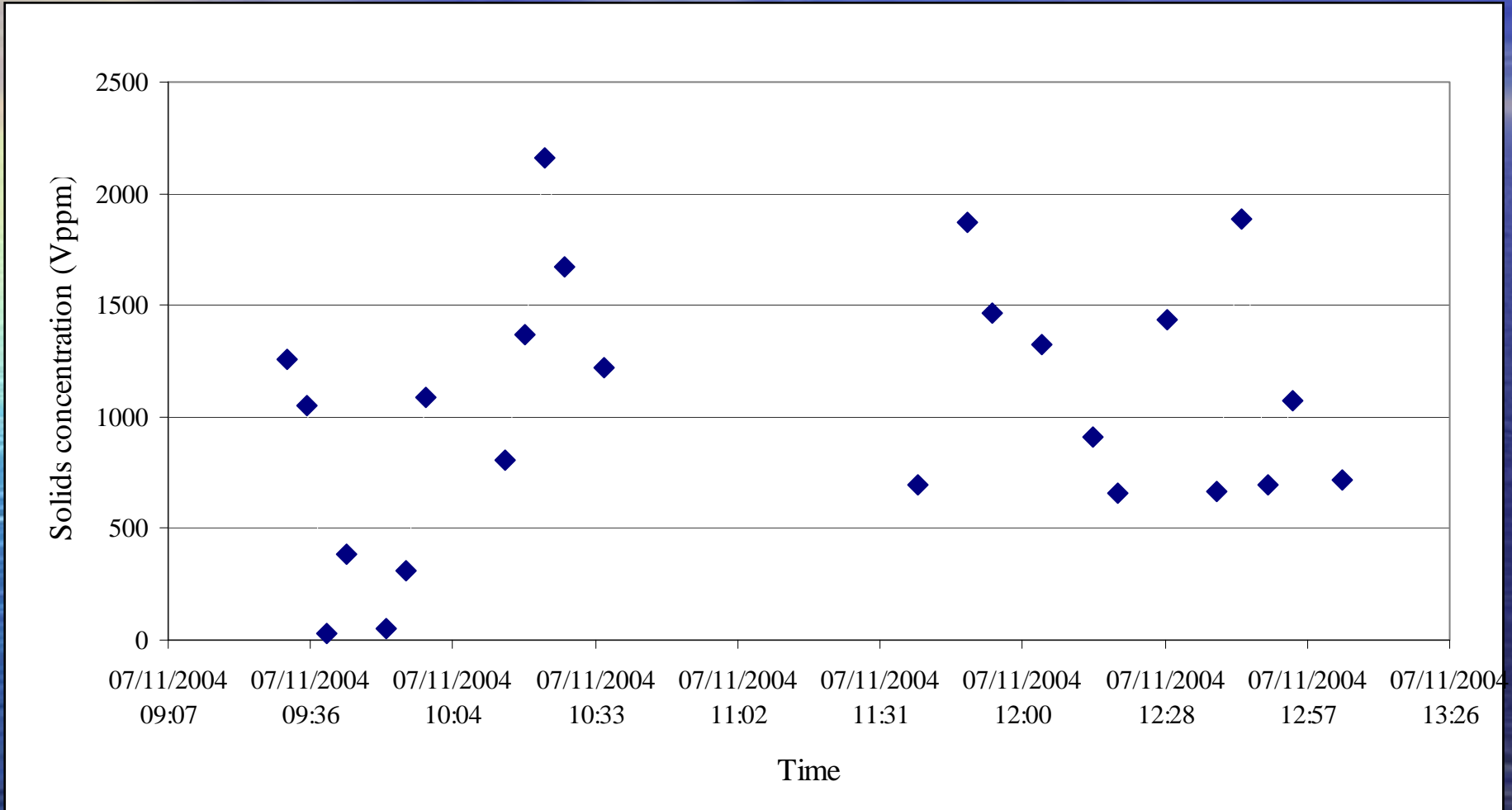
Aim

- Investigate Solids Loadings on PWRI Pumps

Found

- 95% of Number of Solids 0 – 20 microns
- 95% of Volume of Material in Large (80 + microns) Agglomerates of Oil & Solids

Shell Nelson



Field Experience Using the Jorin ViPA During 2004

Shell North Comorant

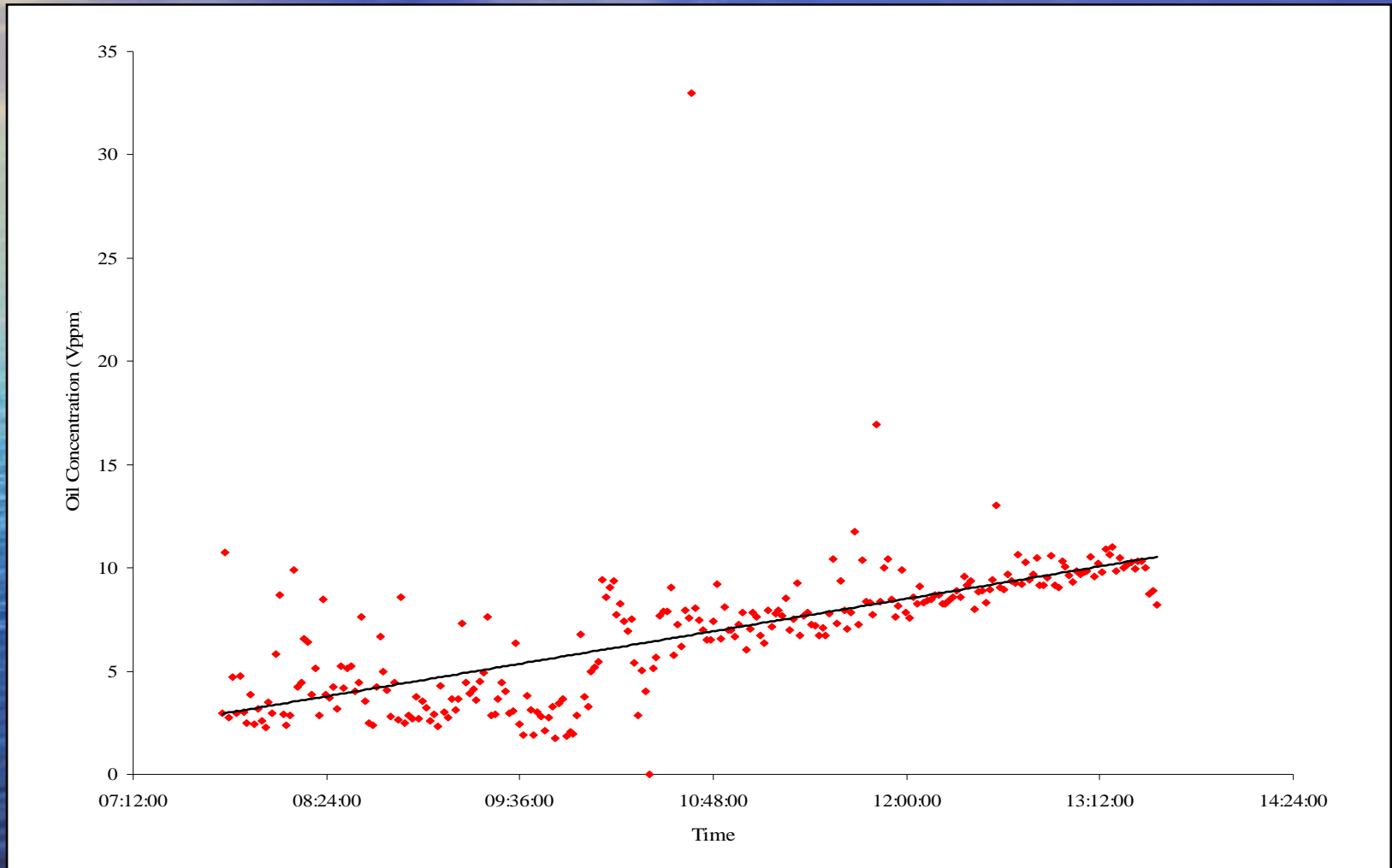
Aim

- Review Overboard Water Quality

Found

- Water Quality Well Controlled < 7 ppm OIW
- Peak OB Discharge Coincides with Increases in Small Oil Droplets – Variable Interface Level or Shear Source Sought to Explain Variable Levels of Small Droplets

North Cormorant



PetroCanada Hanze

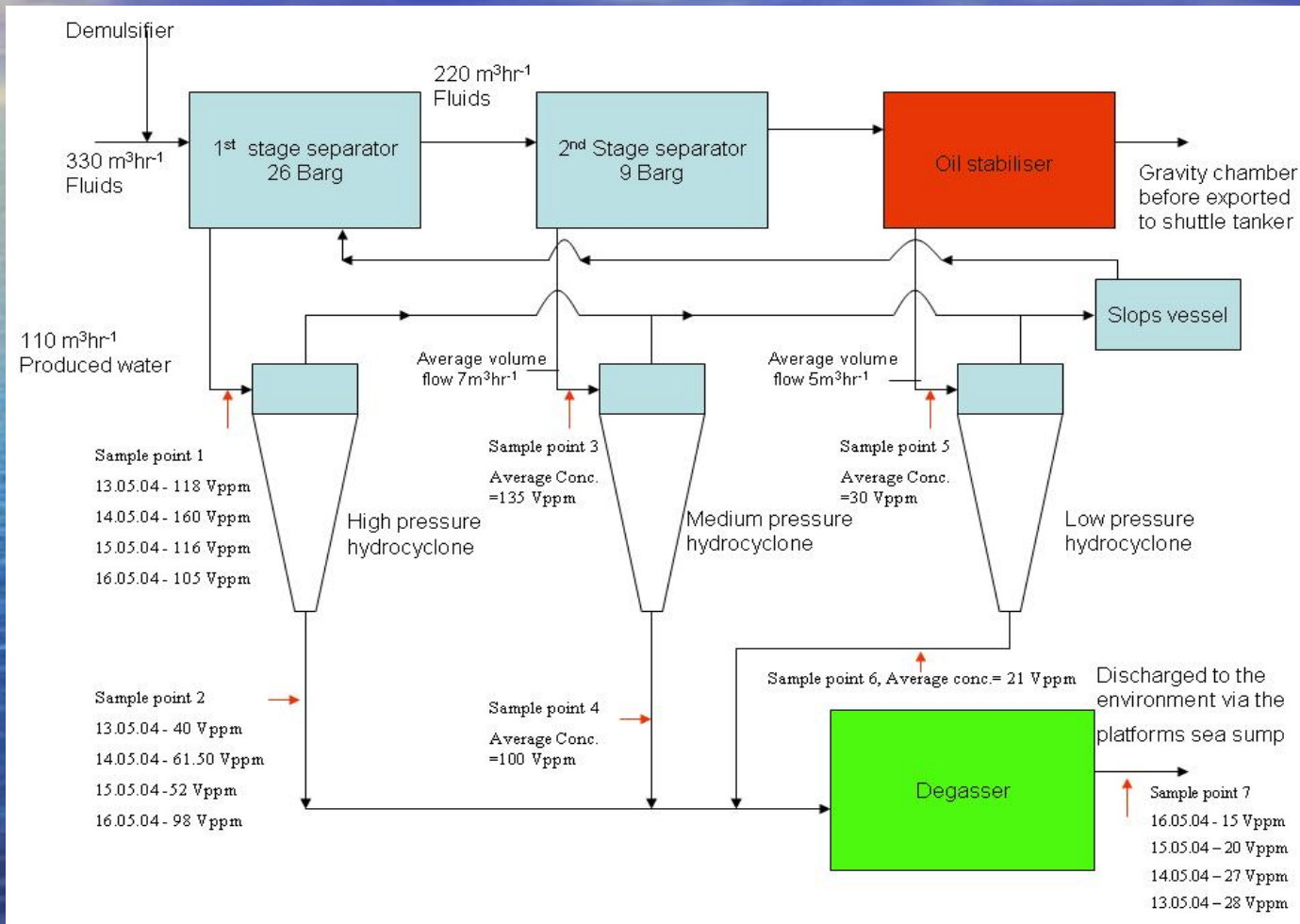
Aim – Investigate:

- Current Plant Performance
- Requirement for Additional Water Treatment Capacity
- Chemical Injection Performance

Found

- MP Cyclones Inefficient Due to Low Mass Flow Rate
- Current Plant Capable of Treating 75% Increase Water Volume
- Slight Reduction in Chemical Demulsifier Dose Enhanced Performance

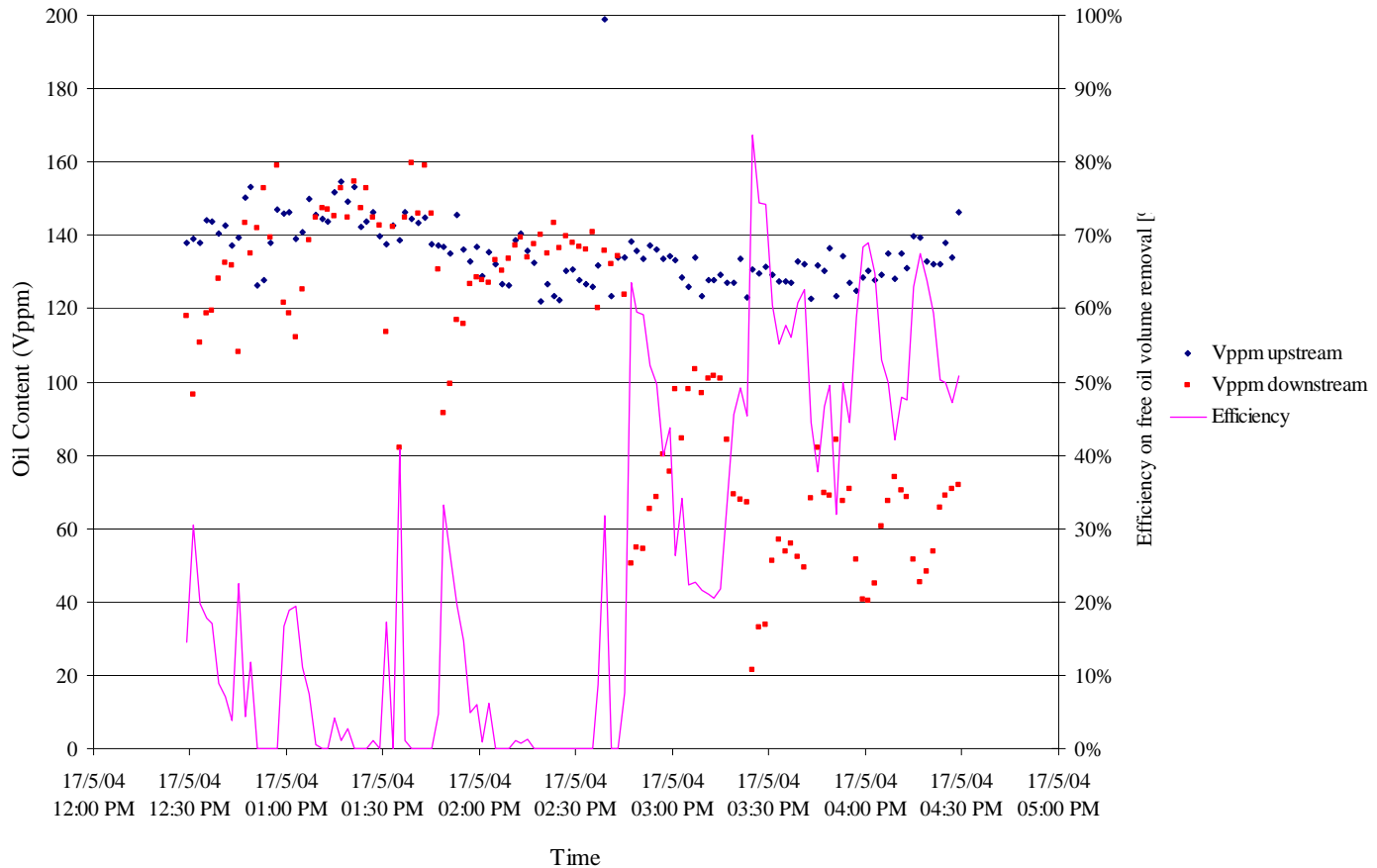
PetroCanada Hanze



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PetroCanada Hanze

MP hydrocyclone performance (sample point 3 & 4)



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