



Innovative Membrane Technology Delivering Superior Performance

Baleen Process Solutions a Nalco Champion Partner
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February 7th 2018

Making compliance **simple**

Safe

Clean

Efficient

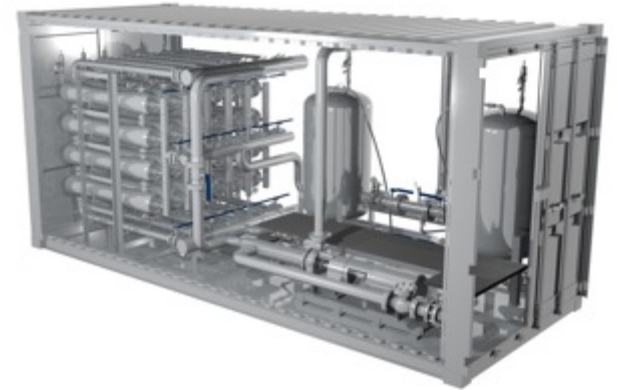


Technology

KLEENFLUX

Complex Water Challenges

- Composite Membrane
 - Micro Filtration Range
 - Handles High Oil Concentrations
 - Back Washable
 - Cleanable
 - Reusable



Process Flow w/ Kleen Flux



Separation Vessel (150PSI)

Retention vessel
used for bulk
oil/water separation



CP 28

Centrifugal for
pumping fluid
through process



SRV28

Solids removal



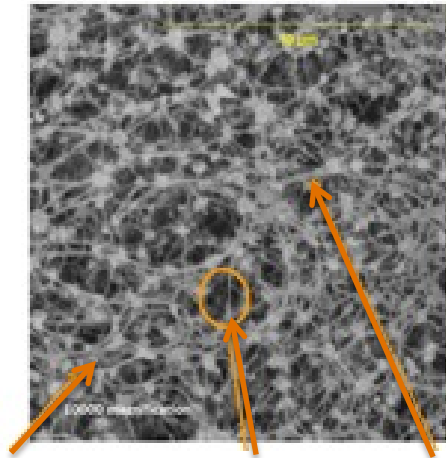
Kleen Flux 3

Reverse Emulsion
breaker / water
polishing for
overboard discharge



Overboard

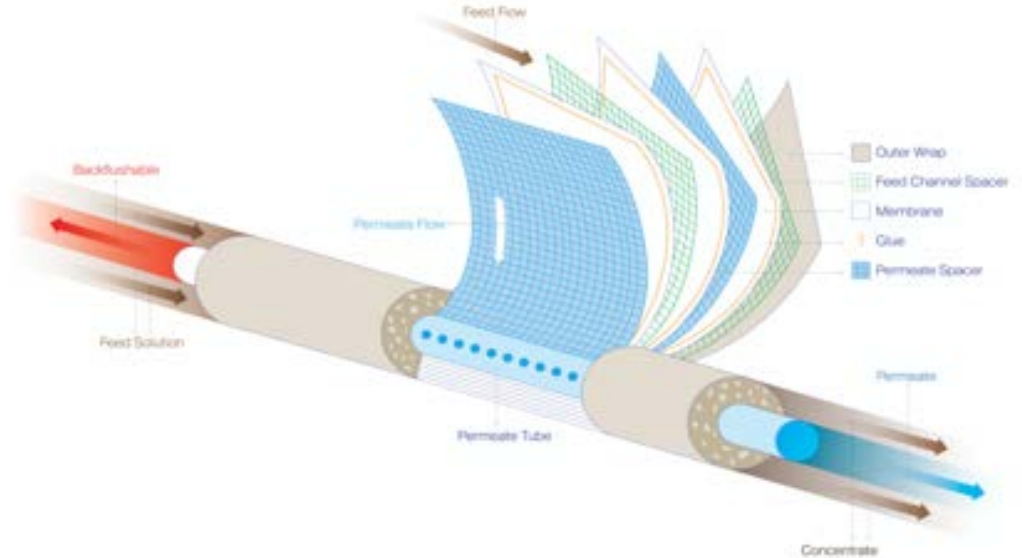
Micro Filtration Membrane



Filler aggregates
(with nanoporosity)

Porosity

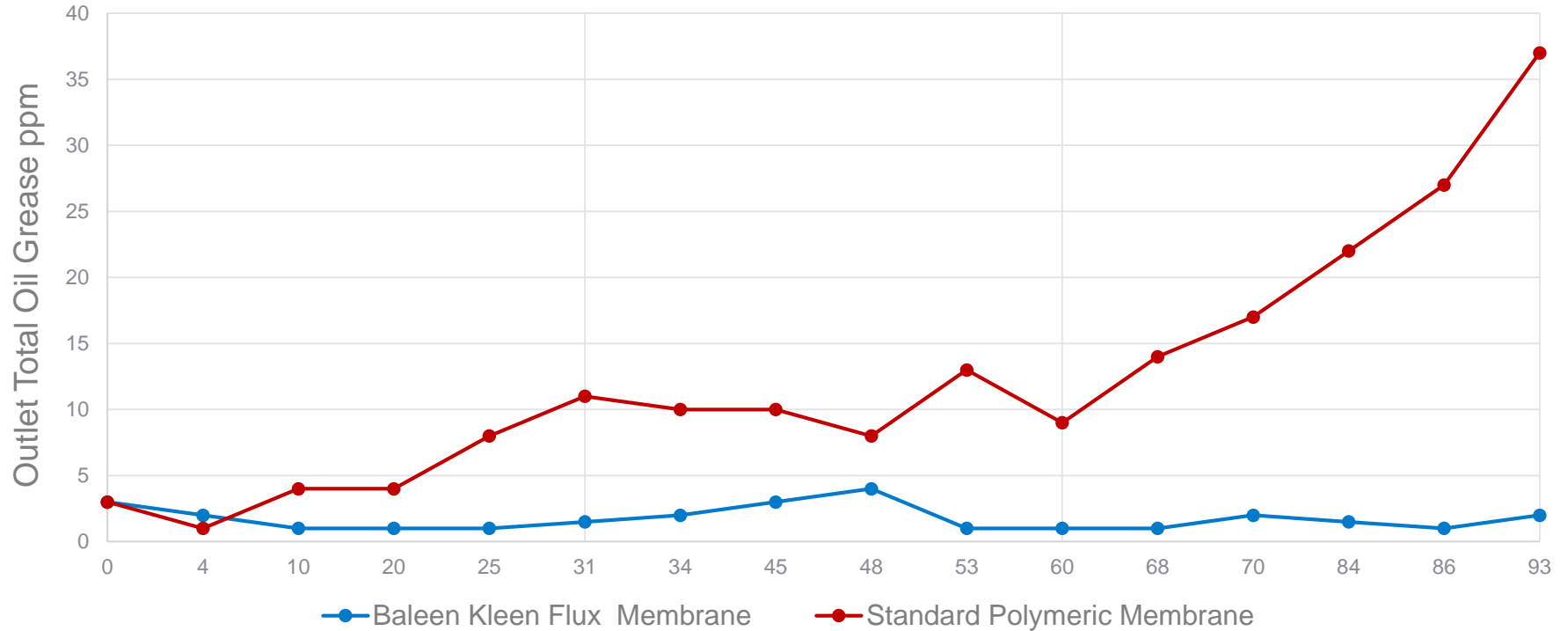
Polymer Fibril



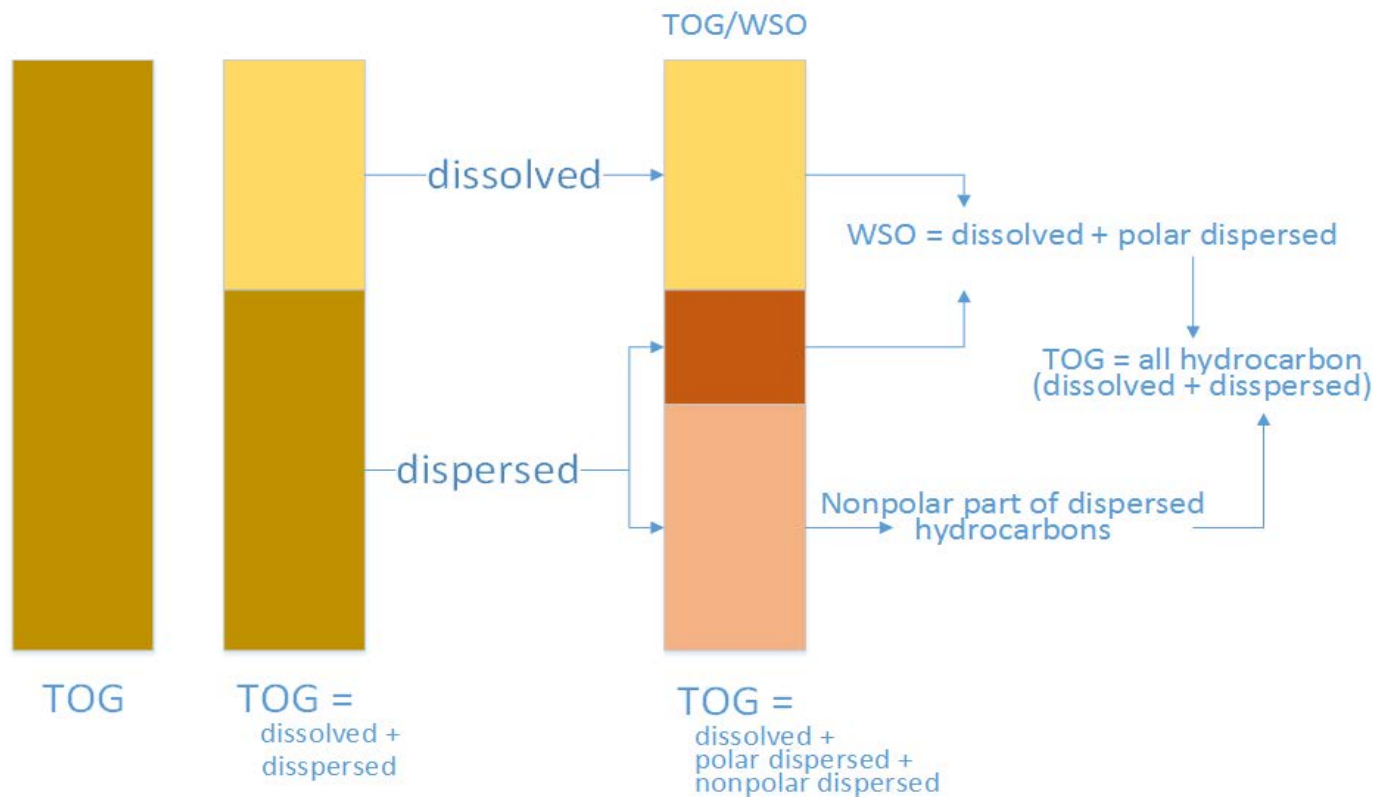
Hydrophilic/Hydrophobic hybrid creates capillary forces
Uniformed pore spaces optimizing filtration

Laboratory Data

Inlet Total Oil & Grease = 2,500ppm



What does the Industry call Water Soluble Organics?



ASTM 1664 Gravimetric Laboratory Results

Lab ID: 19011055-003

Matrix: AQUEOUS

Client Sample ID Inlet

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
OIL & GREASE, TOTAL					E1664A	Analyst: HXW
Oil & Grease, Total	427	4.4		mg/L	1	1/29/2019 7:03:00 AM
SILICA GEL TREATED HEM (SGT-HEM)					E1664A	Analyst: HXW
Oil & Grease, Petroleum	196	4.4		mg/L	1	1/29/2019 9:34:00 AM

$$\begin{aligned} \text{TOG} - \text{TPH} &= \text{WSO} \\ 427 - 196 &= 231 \end{aligned}$$

Completion Flow Back Study



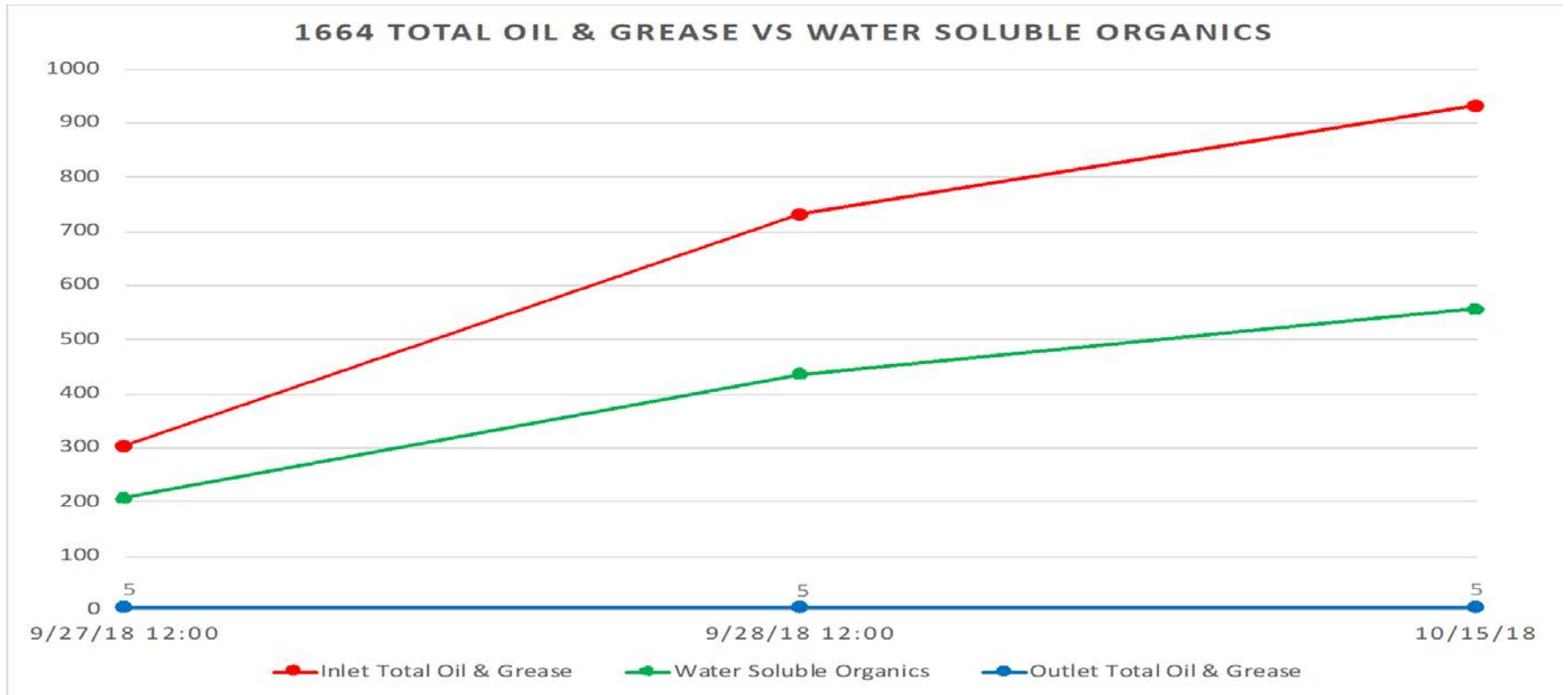
Completion Flow Back Study



Completion Flow Back Study



Completion Fluid Flow Back Study

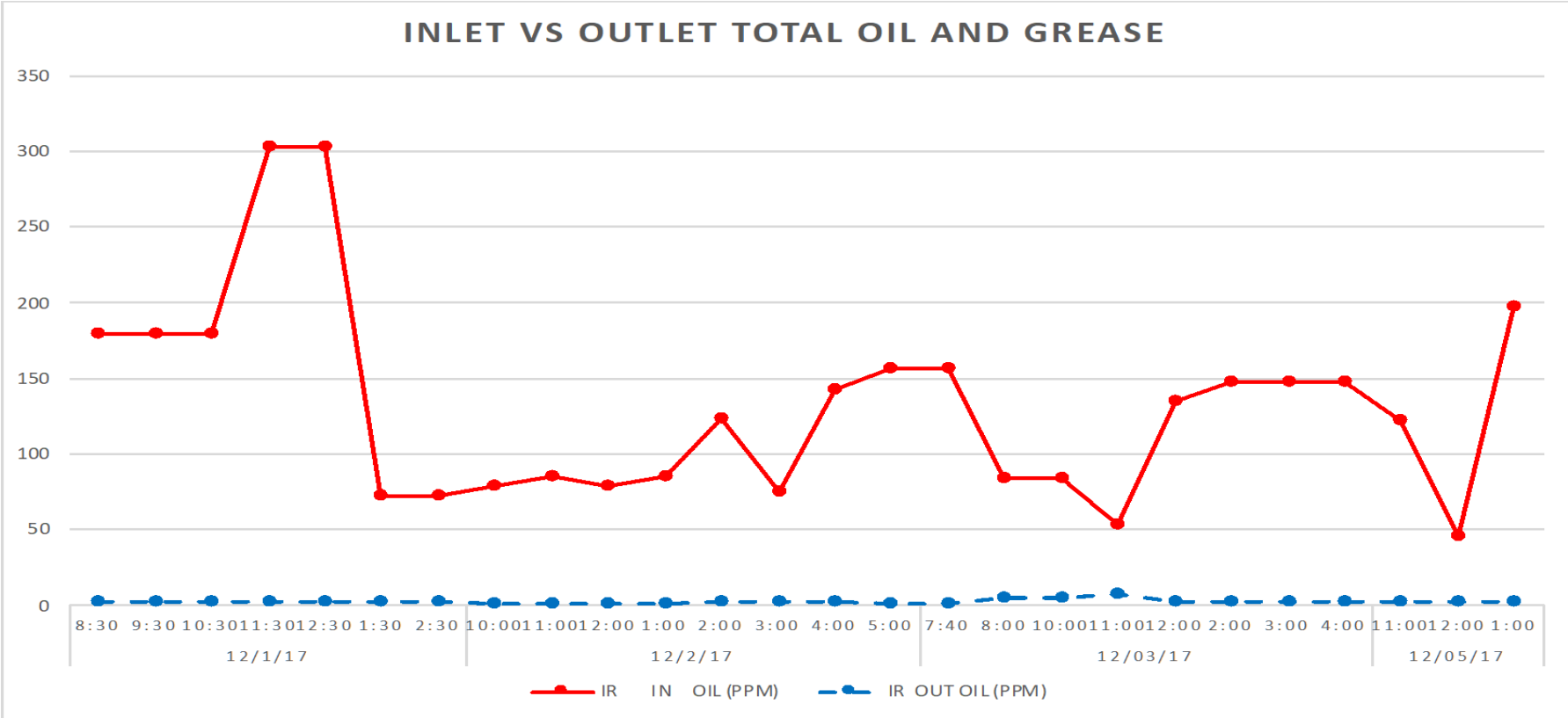


Field Data

West Texas Flow Back Water



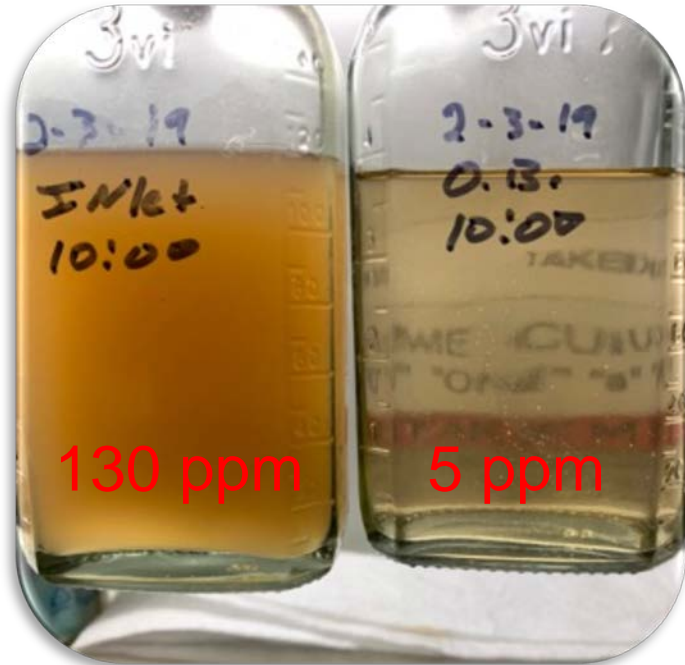
West Texas Flow Back Water



Completion Fluids Project

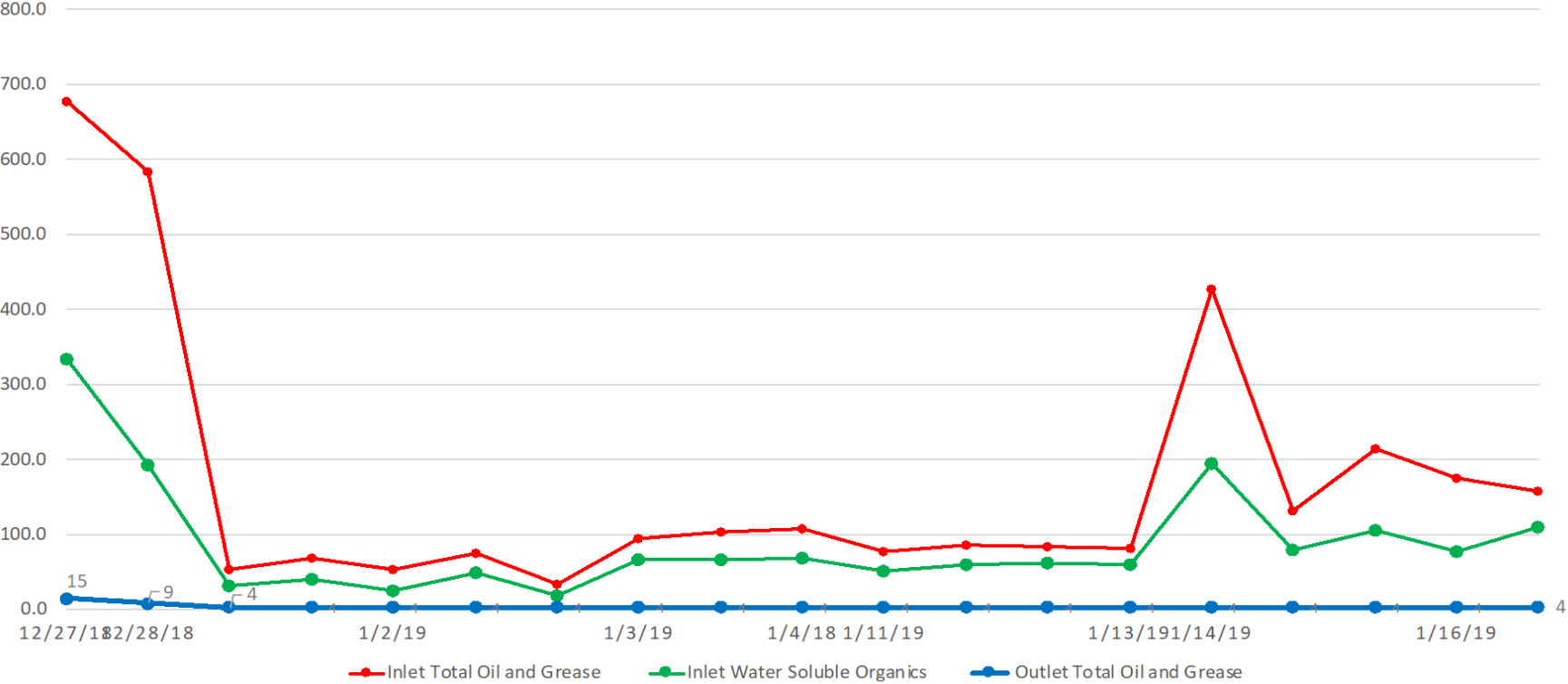


Completion Fluids Project



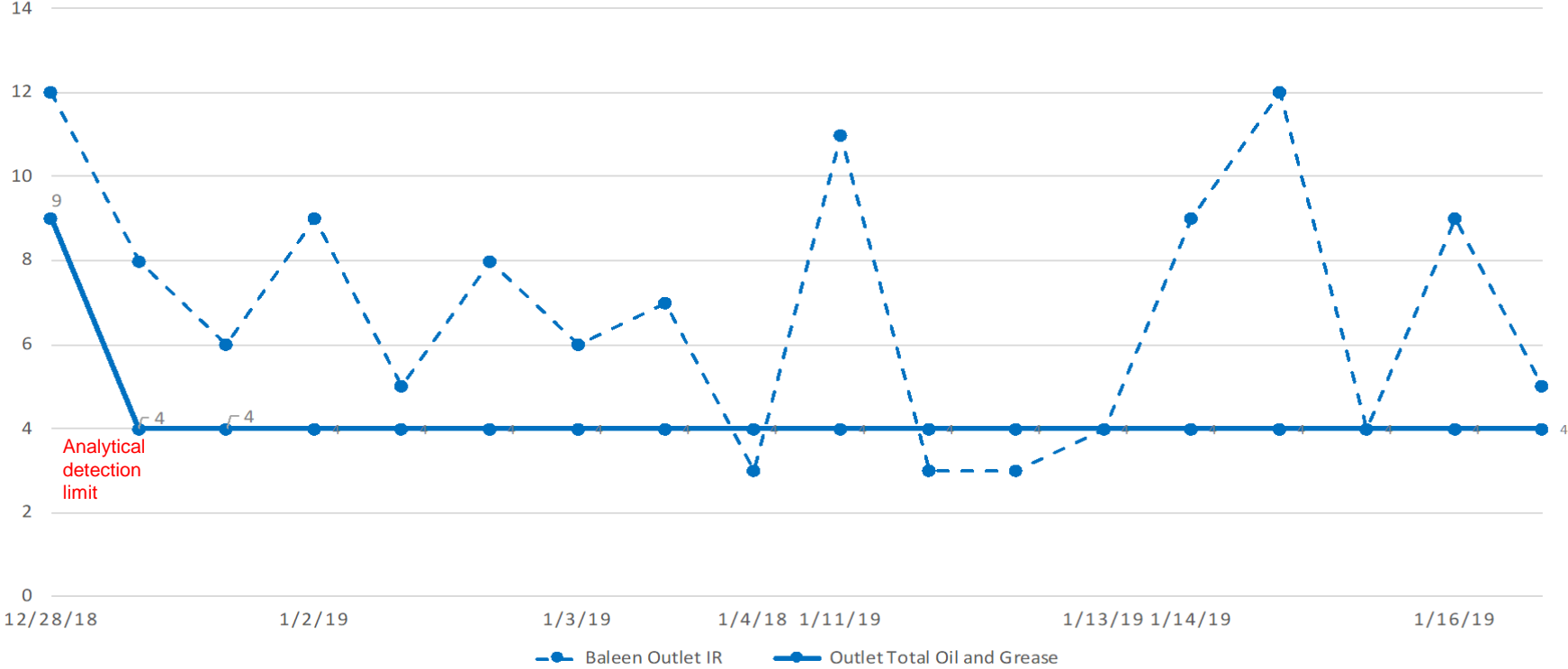
Completion Fluids Project

INLET 1664 TOTAL OIL & GREASE & WSO VS OUTLET 1664 TOTAL OIL & GREASE



Completion Fluids Project

1664 OUTLET TOTAL OIL & GREASE VS FIELD IR



Questions ?

