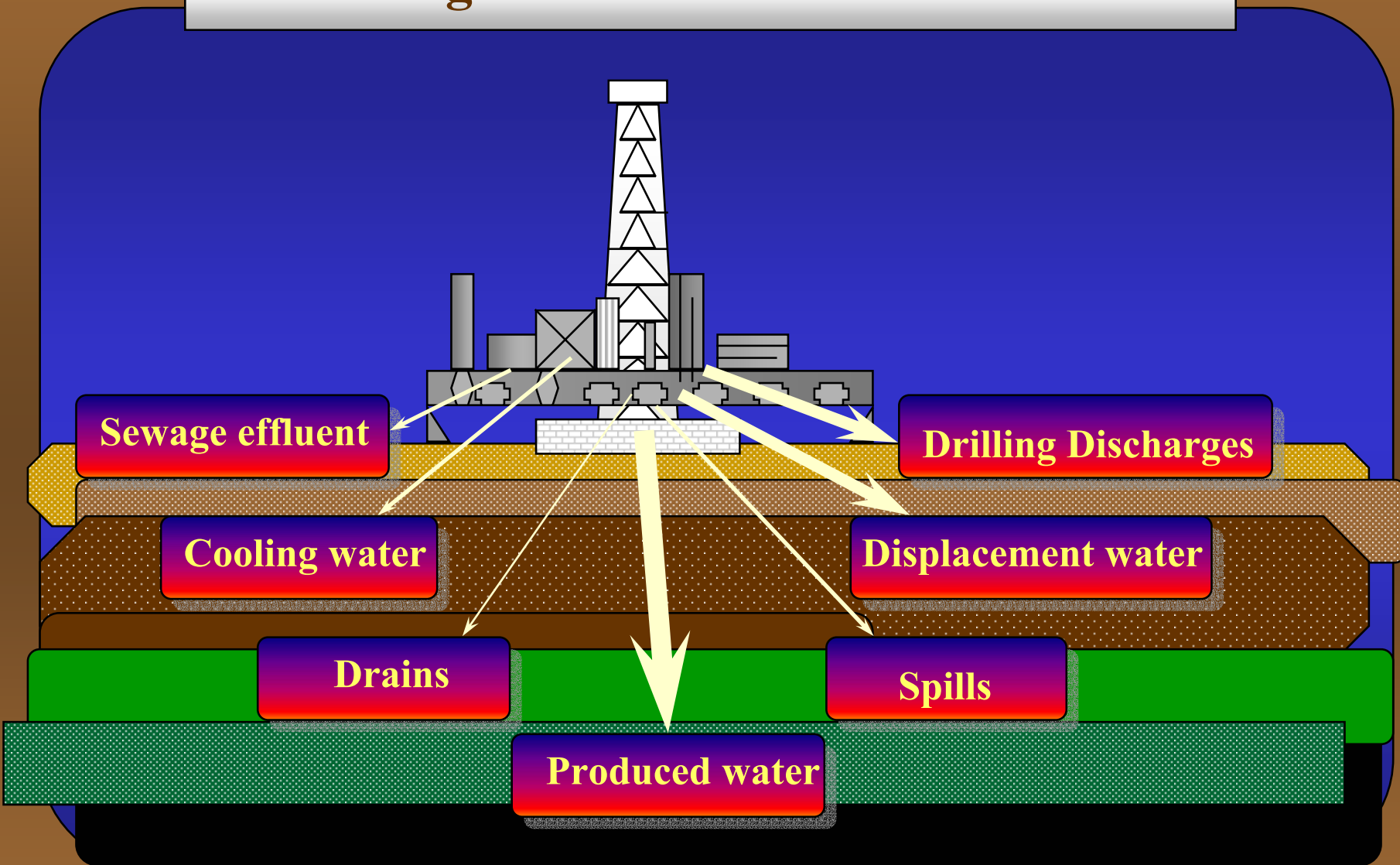


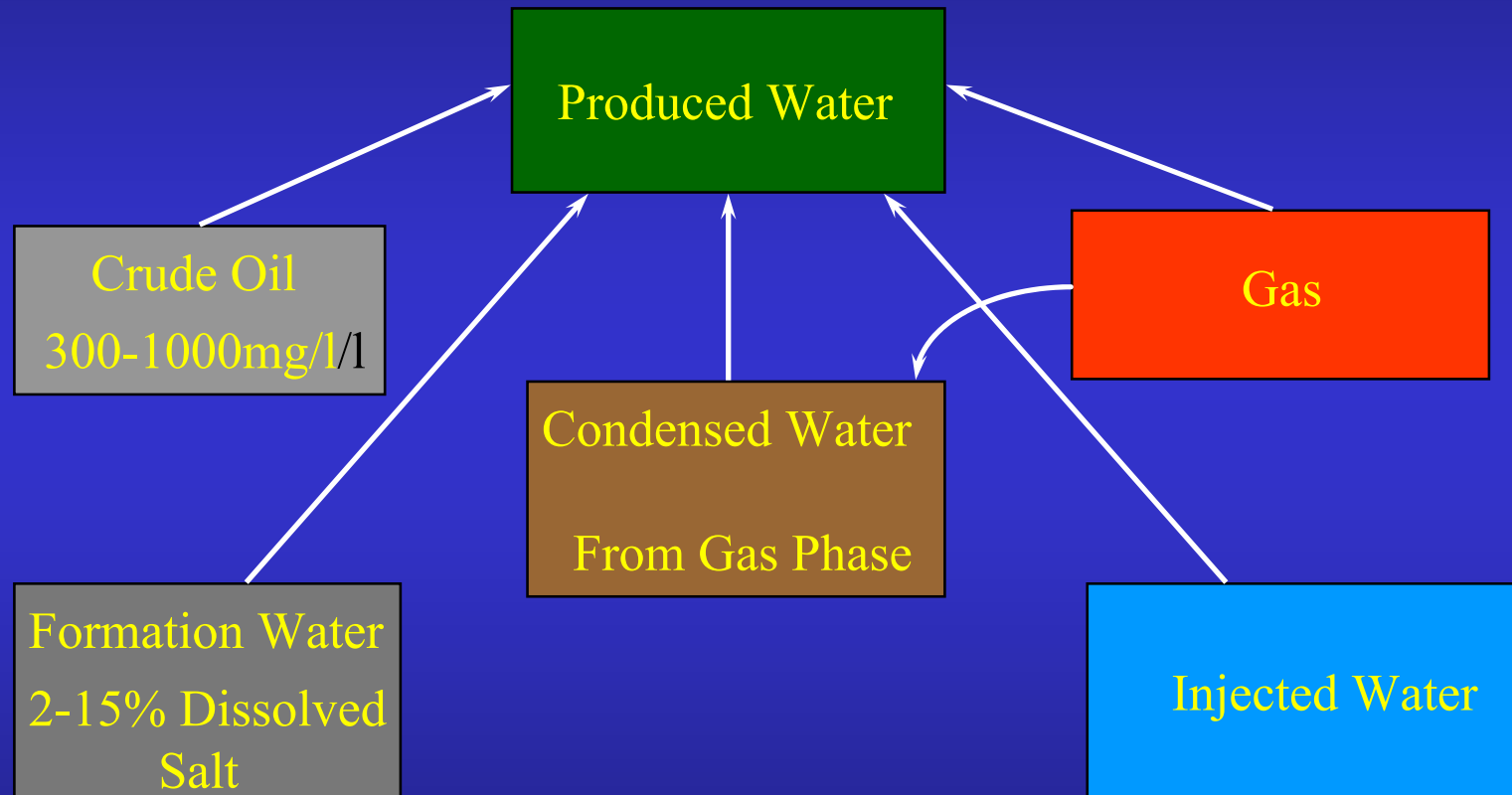
**Highly Efficient
and Novel Technology for
Separation of Oil
From Water
Using Fine Screens**

**William A. Greene
SpinTek Filtration LLC**

Discharge Sources From Oil Production



Composition of Produced Water



Discharge limits for produced water

- **Current discharge limit for produced water in the US is 29 mg/l**
- In 1993-95 there was a strong drive to reduce the discharge limit.
- For a short period of time the target was 7 mg/l.
- It has returned to 29m g/l due to the lack of reliable equipment yielding the 7 m g/l target.

Technology for suspended oil removal

1-5 mg/l, flux 20-30 gfd

UF Membrane

10 mg/l, 80-90% red

Activated Carbon

Centrifuge

40 mg/l, 75 % red

Rotating Hydrocyclone

40 mg/l, 50% red

Flotation

50 mg/l, 25-50% red

Plate Separator

150 mg/l, 40% red

SC+Matrix Tower

5-20 mg/l, flux 3000-5000gfd, 90-98 % reduction

Increased cost and system complexity

0.1

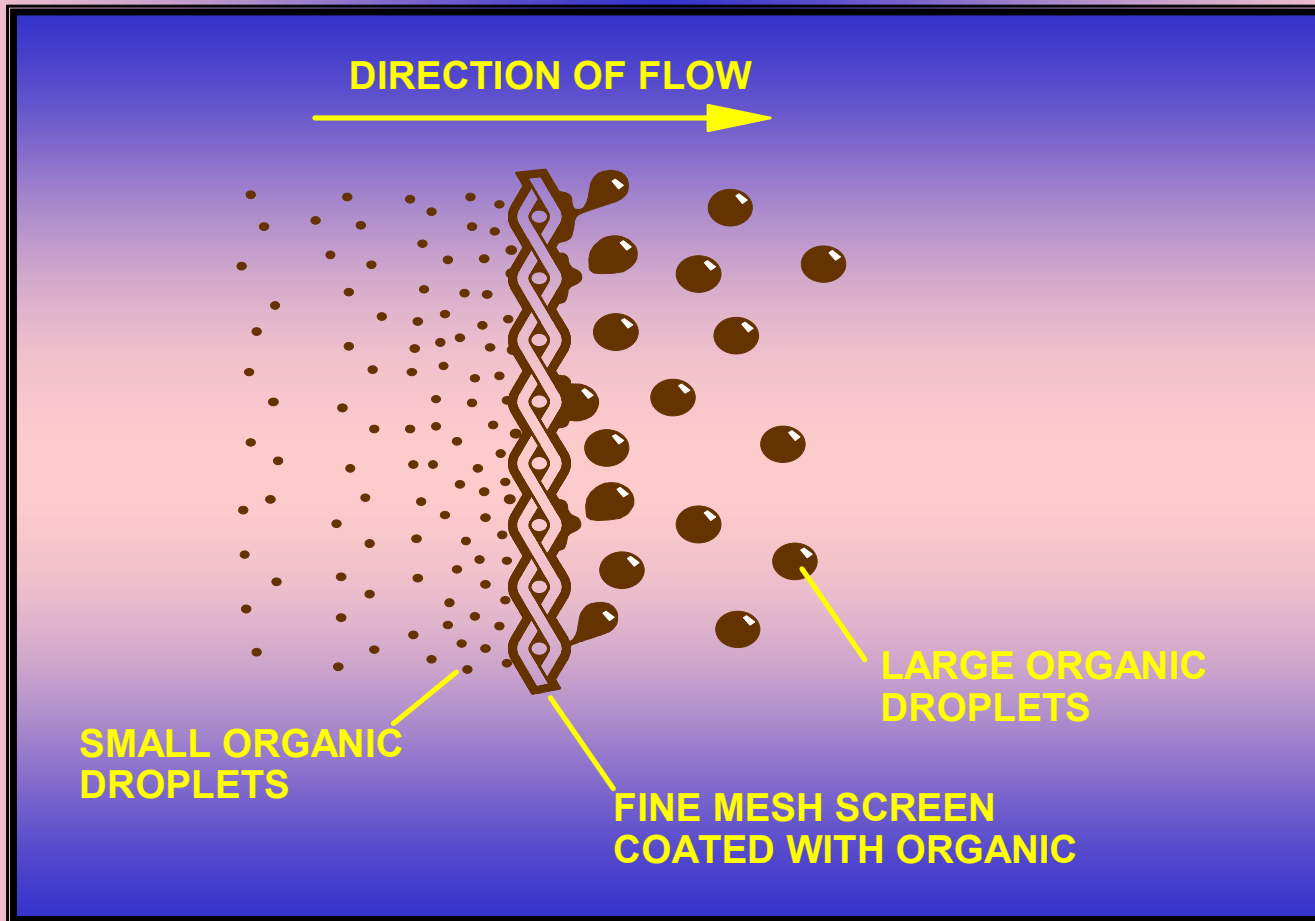
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10

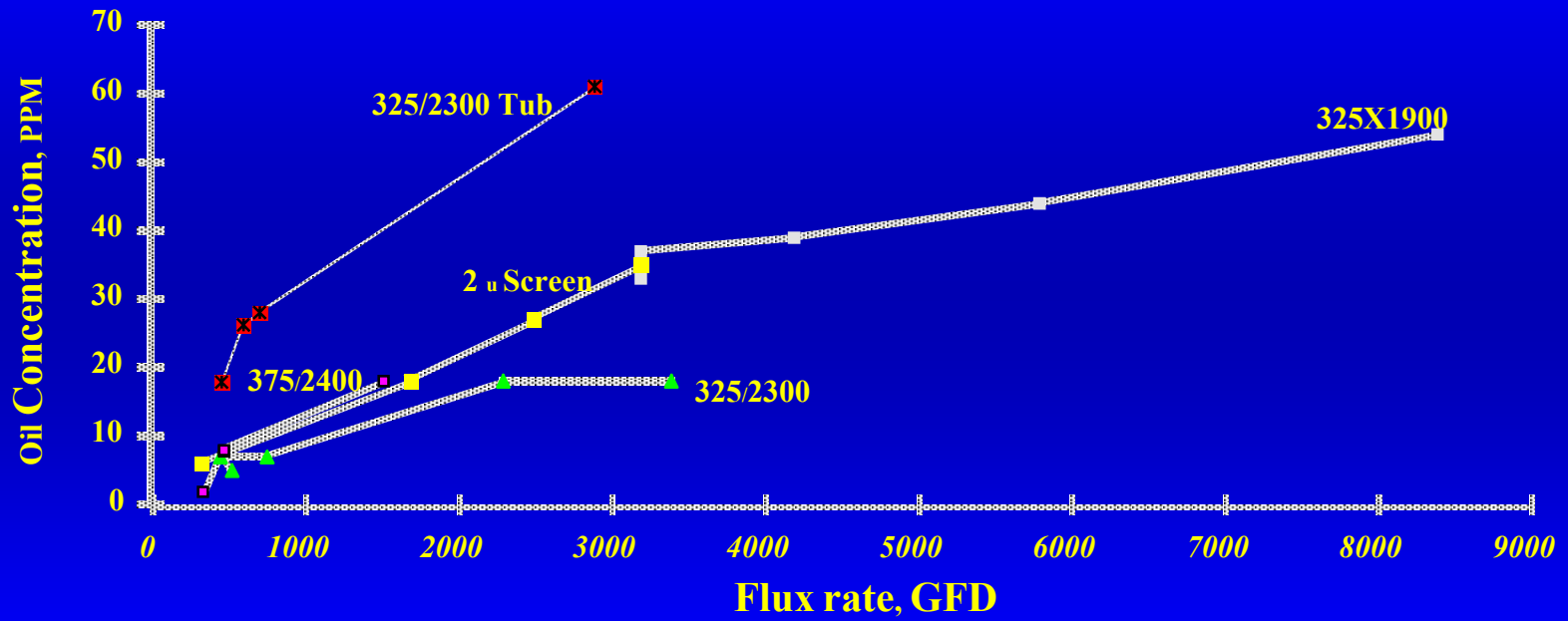
100

Oil Droplet Size, microns

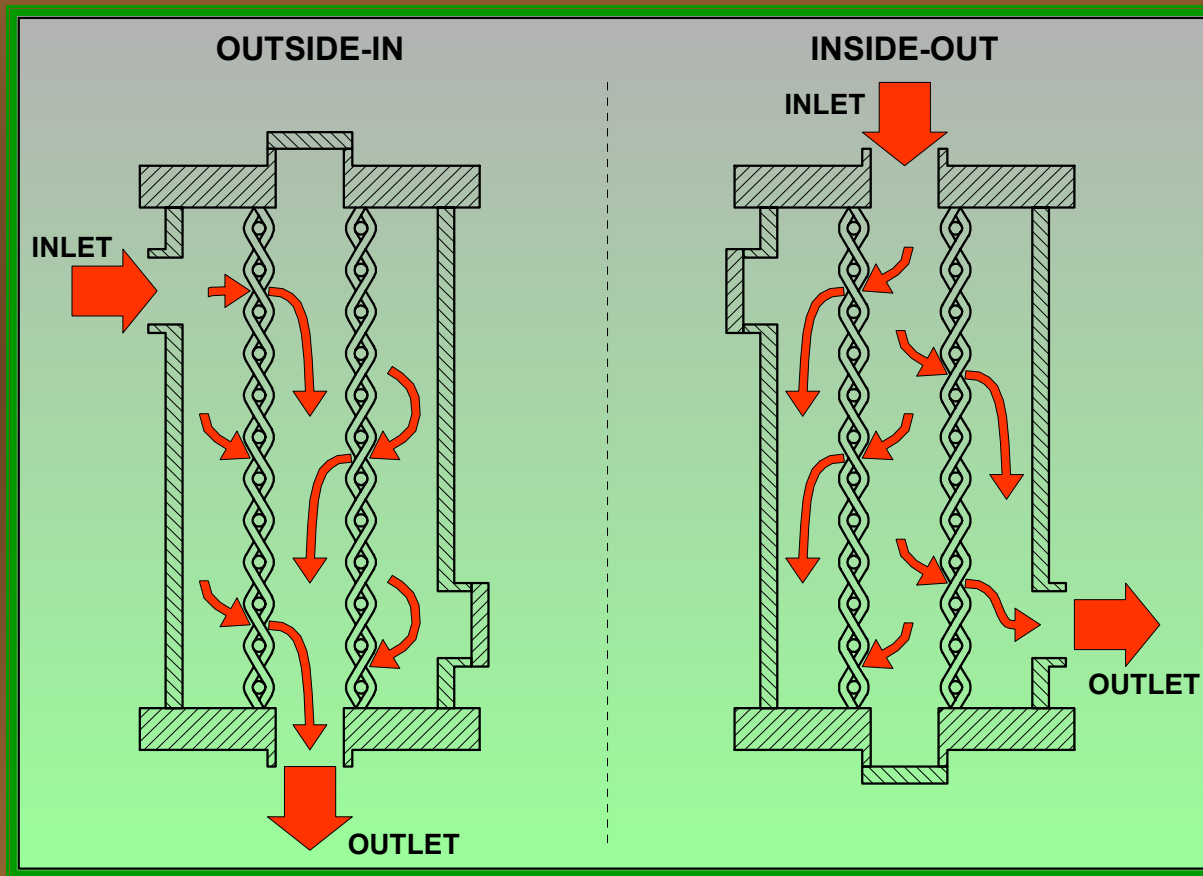
Mechanism of Coalescence



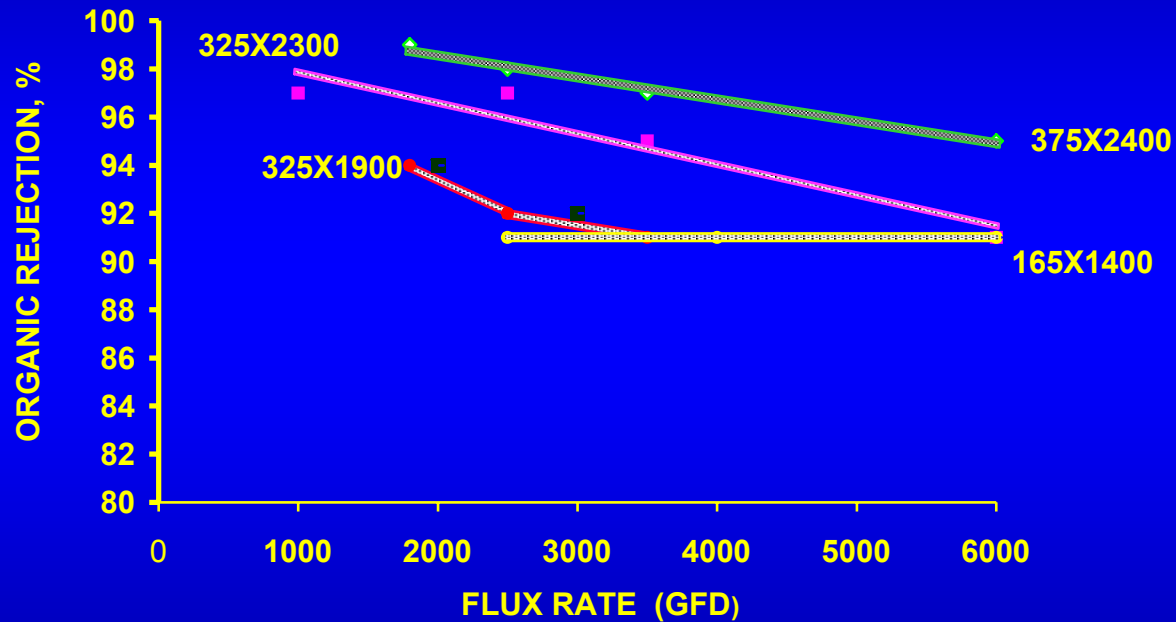
OIL CONCENTRATION VERSUS FLUX RATE FOR DIFFERENT MESH SCREENS (Cross Flow Filtration) (PRODUCED WATER)



Internal Flow Path of Mesh Screen Coalescer

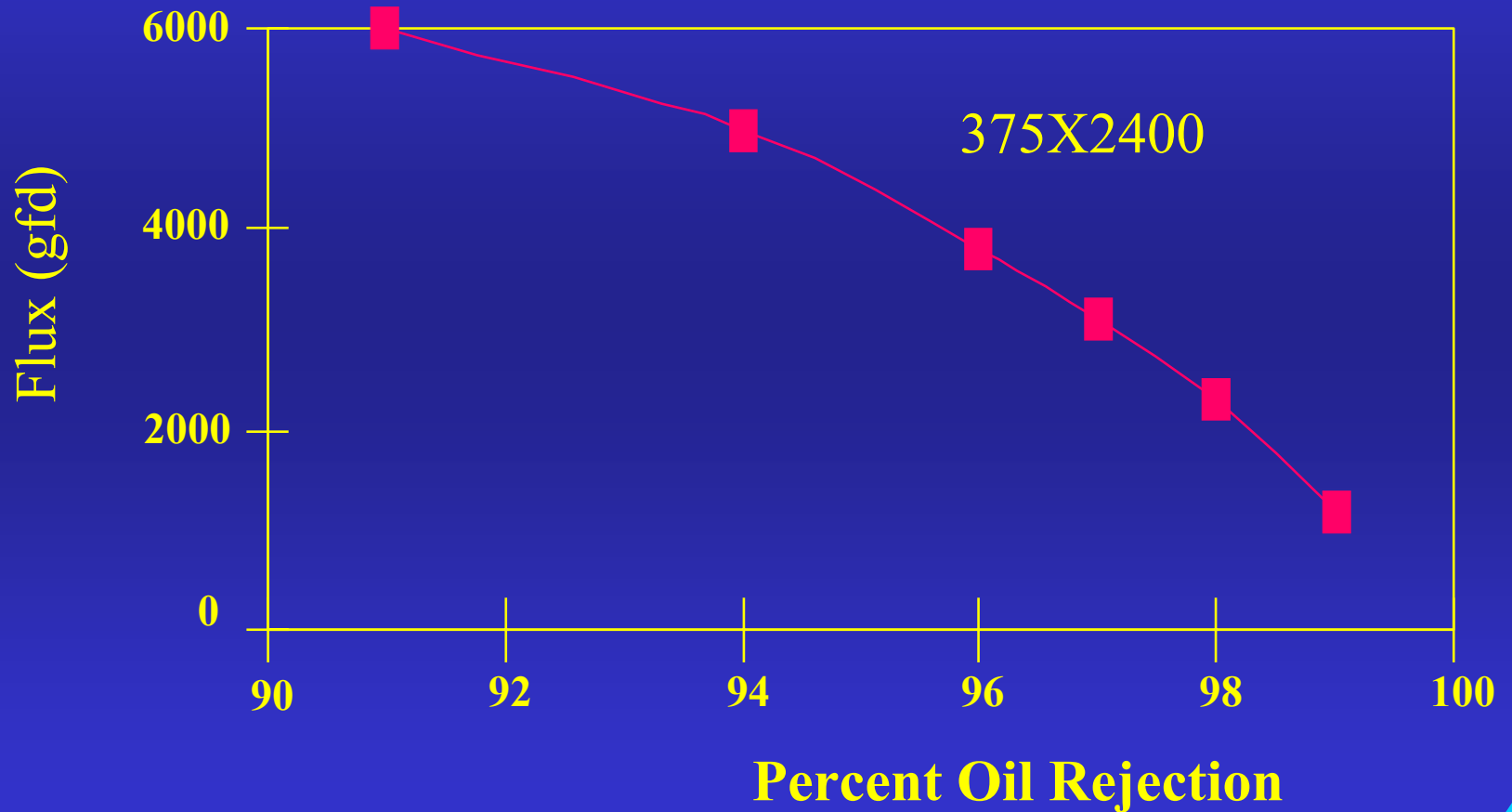


PRODUCED WATER SEPARATION USING DIFFERENT SIZES OF SS MESH SCREENS



Oil Rejection vs. Flux

(Initial Oil concentration 560Mg/L)



Flux Fluctuation and average oil concentration at the reverse flow mode (Oil Concentration of the feed-560 mg/L)

