Crude Desalter Level Problems and the Nuclear Option

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Separation vessels
Desalters
What technologies are used to measure interface level in separation vessels?
Separation Measurements

When the interface is “clean”, several technologies can be used

- Guided Wave Radar
- Displacers
- Differential Pressure
- Capacitance
- Bubblers
- Nuclear
Clean Interface

Most interface level technologies measure a physical characteristic of the process fluids and infer a level.
Reality with Emulsions

Manual Sampling Systems
Resulting in Over / Under treatment of emulsion
Water too high into the grid
Oil under carry into the WWTP
How effective are they really???
Emulsion layers

When there are emulsions present, which technologies can be used?

Nuclear
Emulsion layers

Cannot track both the bottom and the top of the emulsion at the same time.
Crude Desalters
MDA Technology Components

- Fixed radiation based profile system consisting of
  - Flange mounted source holder
  - Small Cesium sources in a drywell
  - High sensitivity density gauges mounted on the outside of the vessel
Density Profile
Density Profile

10-D-001 Level Indication

10-D-001 WATER BALANCE

D-001 WATER IN
- 23.1 MGH 
- 0.1 MGH 
- 35.3 MGH 
- 5.8 MGH

D-001 WATER OUT
- 72.0 MGH
Density Profile
Conclusion

Nuclear measurement technologies can measure the emulsion.

Nuclear technology tends to have a higher reliability.

Lower Lifetime cost of ownership