FLUID & FLOW ASSURANCE BOOKLET FOR GAS & OIL WELLS

Goal: Identify main reservoir fluid properties & flow assurance statues in each well of gas and oil fields including parameters listed in following table:

No.	Test	Comments
1	Fluid Density	atmospheric condition
2	Fluid Dynamic Viscosity	atmospheric condition
3	SARA Analysis	-
4	Asphaltene Content by IP143	-
5	Oil Molecular Weight	measured for atmospheric oil
6	Full Crude Oil Assay	crude oil characterization of whole crude oils including general properties of oil* & boiling-range fractions
7	Total Acid Number	total acidity number (TAN) of atmospheric oil
8	Viscosity Changes vs. Temperature	-
9	Wax Content	-
10	Wax Appearance Temperature (WAT)	-
11	Wax Disappearance Temperature (WDT)	-
12	Pour Point	-
13	Wax Gelation Point (Gel Point)	-
14	Full Analysis of Oilfield Waters**	-
15	BS&W	-
16	Heavy Organic Characterization	Including: XRD, XRF, FTIR
17	Surface Gas Composition & Gravity	-

No.	Test	Comments
18	Analysis of Asphaltene Structure	NMR, XRD, XRF, FTIR, GPC
19	Corrosion Inhibitor Analysis	Wheel Test
20	Full Analysis of Formation Water	TDS, pH, Salinity, Full ion identification, Stiff Diagram,...
21	Gas Analysis by Drager	CO_2, CO, H_2O, O_2, Hg, SO_2, ...
22	H2S analysis in filed	0-400,000 ppm
23	Full Sulfur Analysis	Butyl mercaptan, tert-Butyl mercaptan, Ethyl mercaptan, Isopropyl mercaptan,2-Mercaptoethanol, Methyl mercaptan, Propyl mercaptan, Carbonyl Sulphide, COS
24	Full Ammonia Analysis	Ammonia, Dimethylamine, N,N-Dimethylethylamine, Hydrazine, Methylamine, Triethylamine, Trimethylamine
25	pH Evaluation of Spent Acid	-
26	R. V. P	ASTM D323
27	Dew Point/ gas & air	ASTM D1142
28	Oil and Grease	SM 5520 C
29	Dissolved Oxygen	ASTM D888-92

* General properties of oil includes following parameters:

- Specific Gravity @ 15.56/15.56 ^{o}C
- ^{o}API
- Sulphur Content (total)
- H_2S Content
- Base Sediment & Water
- Water Content
- Salt Content
- Kinematic Viscosity @ 10 ^{o}C
- Kinematic Viscosity @ 20 ^{o}C
- Kinematic Viscosity @ 40 ^{o}C
- Pour point
- R.V.P.
- Asphaltenes
- Wax Content
- Carbon Residue (CONRD.)
- Nickel Content
- Vanadium Content
- Iron Content
- Lead Content
- Sodium Content

** Water analysis includes following items:

- Gravity
- Viscosity
- Salt Content
- Salt Composition
- Turbidity
- Conductivity
- Stiff Diagram

ACIDIZING TASKS FOR GAS & OIL WELLS

Goal: main acidizing tasks in each well of gas and oil fields focusing on quality control of acidizing additives and checking the quality-compatibility of used acid package both main acid and gelled acid:

No.	Test	Comments
1	Corrosion inhibitor (CI) evaluation	Dynamic condition at P & T
2	Corrosion inhibitor aid (CIA) evaluation	Dynamic condition at P & T
3	H2S scavenger evaluation	-
4	Iron control (IC) evaluation	-
5	De-Emulsifier evaluation	-
6	Anti-Sludge evaluation	-
7	Visco-elastic surfactant (VES) evaluation	Temperature: up to 300 ^{o}F; Pressure: 300 psi
8	Mutual solvent evaluation	-
9	Solubility test	-
10	Suspending agent evaluation	-
11	Retarding agent evaluation	-
12	Evaluation of preflush fluid- IFT check	at P & T
13	Evaluation of preflush fluid- wettability check	at P & T
14	Organic & inorganic deposit evaluation	EOM analysis, XRD, XRF, ...
15	Compatibility evaluation of acidizing additives	-