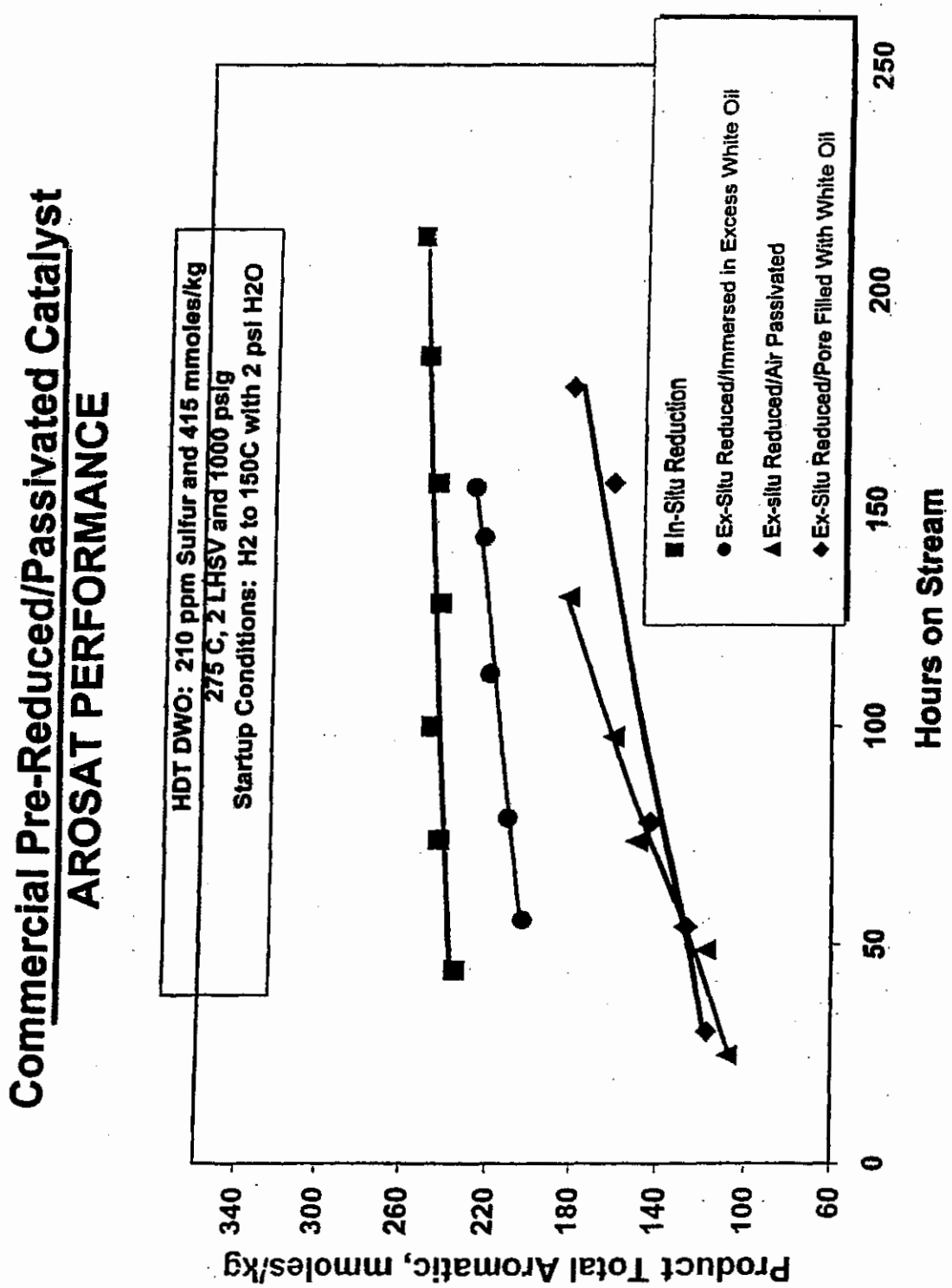
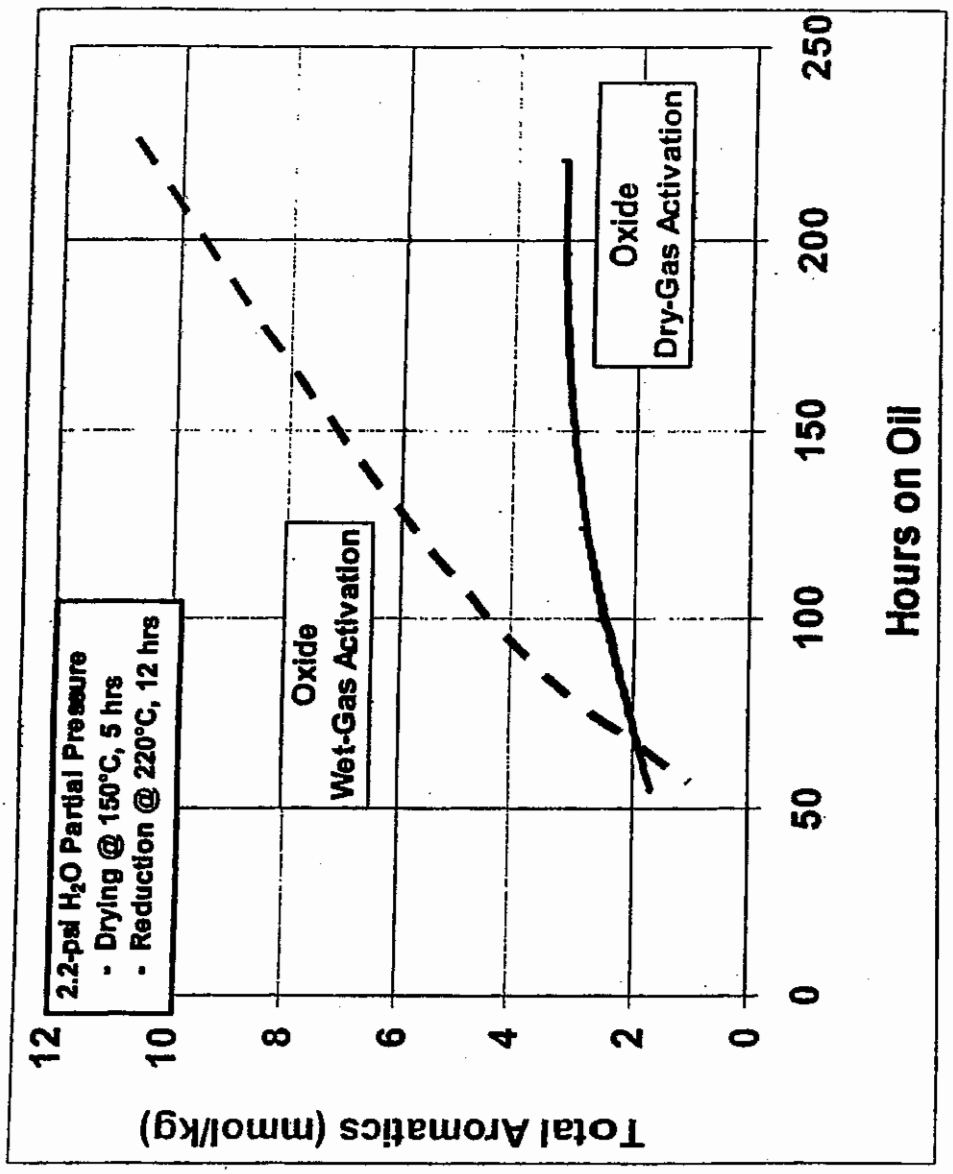
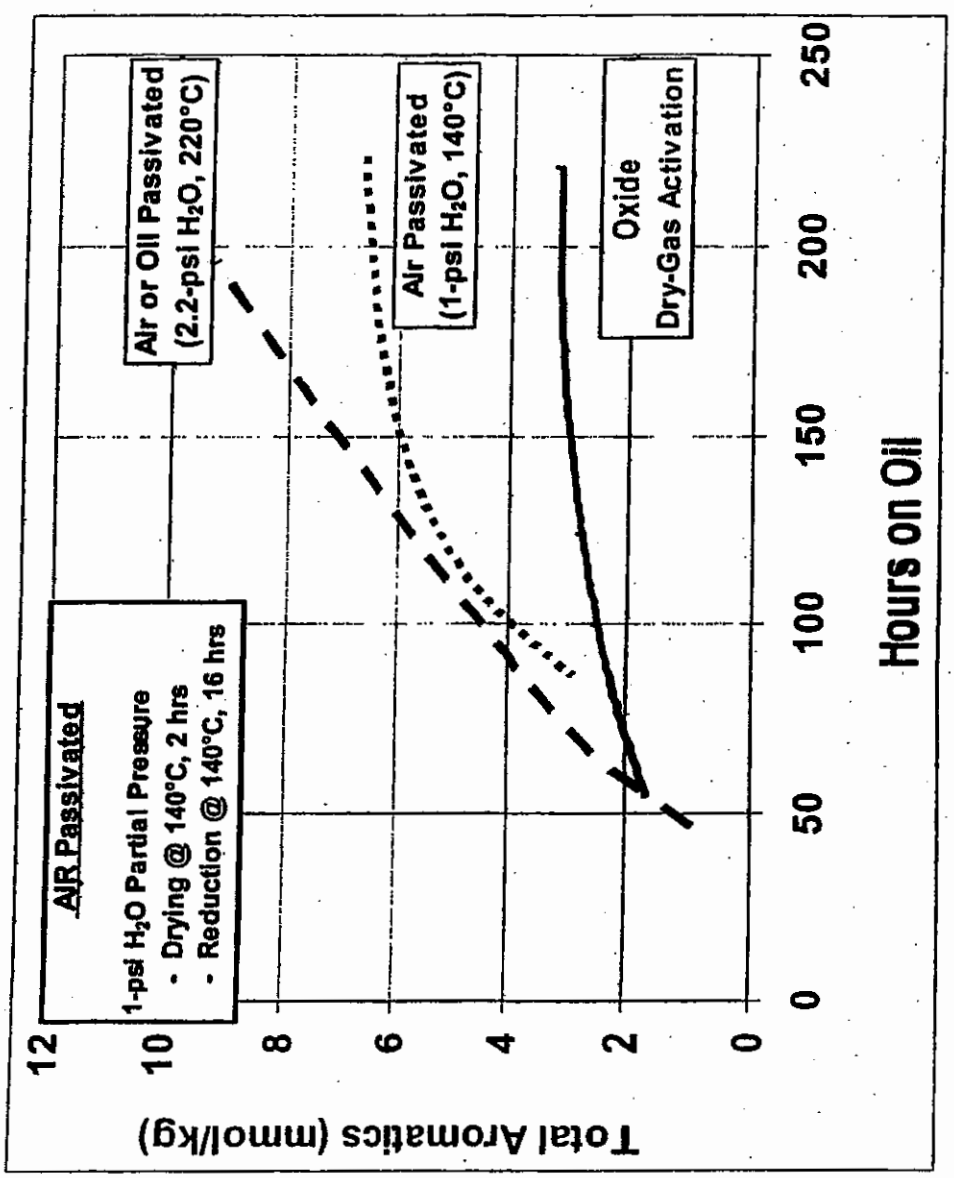
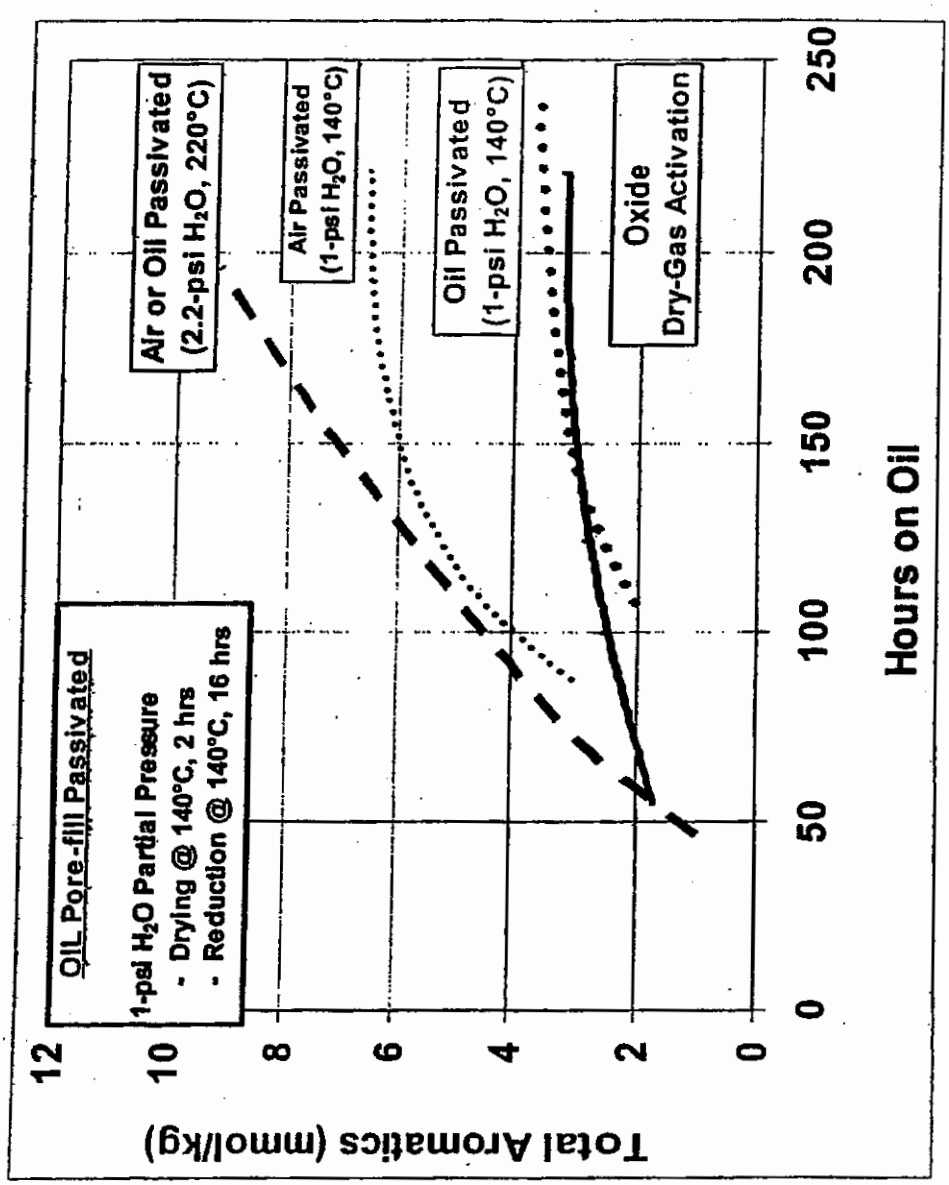

Commercial Pre-Reduced/Passivated Catalyst
AROSAT PERFORMANCE
HDT DWO: 210 ppm Sulfur and 415 mmoles/kg
275 C, 2 LHSV and 1000 psig
Startup Conditions: H2 to 150C with 2 psi H2O
In-Situ Reduction
Ex-Situ Reduced/Immersed in Excess White Oil
Ex-situ Reduced/Air Passivated
Ex-Situ Reduced/Pore Filled With White Oil
Product Total Aromatic, mmoles/kg
340
300
260
220
180
140
100
60
0
50
100
150
200
250
Hours on Stream


Total Aromatics (mmol/kg)
12
10
8
6
4
2
0
0
50
100
150
200
250
Hours on Oil
2.2-psi H_2O Partial Pressure
- Drying @ 150°C, 5 hrs
- Reduction @ 220°C, 12 hrs
Oxide
Wet-Gas Activation
Oxide
Dry-Gas Activation


Total Aromatics (mmol/kg)
Hours on Oil
0
2
4
6
8
10
12
0
50
100
150
200
250
AIR Passivated
1-psi H2O Partial Pressure
- Drying @ 140°C, 2 hrs
- Reduction @ 140°C, 16 hrs
Air or Oil Passivated
(2.2-psi H2O, 220°C)
Air Passivated
(1-psi H2O, 140°C)
Oxide
Dry-Gas Activation


Total Aromatics (mmol/kg)
Hours on Oil
0
2
4
6
8
10
12
0
50
100
150
200
250
OIL Pore-fill Passivated
1-psi H2O Partial Pressure
- Drying @ 140°C, 2 hrs
- Reduction @ 140°C, 16 hrs
Air or Oil Passivated
(2.2-psi H2O, 220°C)
Air Passivated
(1-psi H2O, 140°C)
Oil Passivated
(1-psi H2O, 140°C)
Oxide
Dry-Gas Activation