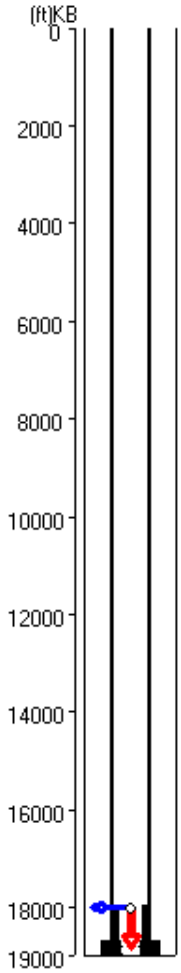


SplitFlow - Split Flow Hydraulics Model

| | | | |
|-----------|------------|-------------|----------|
| Date | 23/01/2017 | Legal | |
| Operator | IDT | Contractor | |
| Well name | ERD1 | Type of job | |
| Location | XX | Prepared by | G Hunter |
| Comments | | | |



| Wellbore intervals (from top to down) | | | |
|---------------------------------------|--------------------|---------|----------|
| # | Description | ID (in) | MD (ft) |
| 1 | Casing OD = 13.375 | 12.347 | 3768.00 |
| 2 | Open Hole | 12.250 | 19000.00 |

| Pressure drop across motor | | | | |
|----------------------------|-----|-----|-----|-----|
| Q (gpm) | 600 | 700 | 800 | 950 |
| DP (psi) | 600 | 700 | 800 | 950 |

| Work strings (from top to down) | | | | | | | | | |
|---------------------------------|---------------|---------|---------|-----------|--------------|-----------|-----------|-----------------|-------------|
| # | Description | OD (in) | ID (in) | Len. (ft) | W/Tool joint | TJOD (in) | TJID (in) | Joint Len. (ft) | TJLen. (ft) |
| 1 | DP Premium | 5.500 | 4.778 | 17947.00 | Yes | 6.938 | 3.000 | 29.00 | 2.00 |
| 2 | HWDP | 5.500 | 3.313 | 750.00 | Yes | 7.250 | 3.500 | 29.00 | 2.00 |
| 3 | DC | 8.000 | 2.813 | 65.00 | No | 0.000 | 0.000 | 0.00 | 0.00 |
| 4 | WF Dailey Hyd | 8.000 | 3.000 | 18.00 | No | 0.000 | 0.000 | 0.00 | 0.00 |
| 5 | AVS | 8.000 | 2.360 | 14.00 | No | 7.250 | 3.500 | 29.00 | 2.00 |
| 6 | DC | 8.000 | 2.813 | 155.00 | No | 0.000 | 0.000 | 0.00 | 0.00 |
| 7 | Stabiliser | 8.000 | 2.810 | 5.00 | No | 0.000 | 0.000 | 0.00 | 0.00 |
| 8 | MWD | 8.000 | 2.500 | 25.00 | No | 8.625 | 2.500 | 0.00 | 0.00 |
| 9 | Stabiliser | 8.000 | 2.810 | 4.00 | No | 0.000 | 0.000 | 0.00 | 0.00 |
| 10 | RSS | 8.250 | 2.000 | 15.00 | No | 12.250 | 0.000 | 0.00 | 0.00 |
| 11 | Bit | 12.000 | 1.035 | 2.00 | No | 0.000 | 0.000 | 0.00 | 0.00 |

| Circulation sub: Location: 18000.00 (ft) Downward port: Wide open | | | | | | |
|---|--------------------|---|---|----|----|-----------|
| Sideway port | No. of Nozzle | 1 | 1 | 1 | 1 | TFA (in2) |
| | nozzle ID (1/32in) | 8 | 8 | 10 | 10 | 0.252 |

Nozzle discharge coefficient: .95

| Bit information: | | | |
|--------------------|----|--|-----------|
| No. of nozzle | 6 | | TFA (in2) |
| Nozzle ID (1/32in) | 15 | | 1.035 |

| Mud properties | | | | | | |
|----------------|-----------------|---------|----------------|----------------|-------|---------------------|
| MW (ppg) | Rheology model | PV (cP) | YP (lb/100ft2) | GS (lb/100ft2) | n (-) | K (lb-f-s^n/100ft2) |
| 12.00 | Bingham plastic | 22 | 13.0 | 10.0 | n/a | n/a |

Total flow rate: 800 (gpm)

Output table and graph

| | | | |
|----|-------------------------------|-----------|-------|
| 1 | Auto-fill tool is located at | 18000.00 | (ft) |
| 2 | Total flow rate | 800 | (gpm) |
| 3 | Sideway port nozzle TFA | 0.252 | (in2) |
| 4 | Downward port | Wide open | |
| 5 | Bit nozzle TFA | 1.035 | (in2) |
| 6 | Pump pressure | 4647 | (psi) |
| 7 | Bottom hole pressure (BHP) | 12019 | (psi) |
| 8 | Bottom hole ECD | 12.17 | (ppg) |
| 9 | Flow split - sideway (%) | 34 | (%) |
| 10 | Flow split - downward (%) | 66 | (%) |
| 11 | Flow rate - sideway | 270 | (gpm) |
| 12 | Flow rate - downward | 530 | (gpm) |
| 13 | Pressure drop - sideway port | 1273 | (psi) |
| 14 | Pressure drop - downward port | 0 | (psi) |
| 15 | Pressure drop - bit | 289 | (psi) |

Flow rate distribution (%)
■ Sideway: 34% ■ Downward: 66%

