### WITS\_WITSML Record 4 Hydraulics Record Variable Mapping

|  |  |  |
| --- | --- | --- |
| **WITS Record ID:** 04 | **Logical Record Type:** 154 | **Auto/Manual:** Automatic |
| **Trigger:** [EVENT] Transmit at a specified time interval (secs) | | |
| **Data Source:** Data acquired in real-time while circulating drilling fluid. Not sent if no circulation is taking place. Minimum and maximum values reset when record is transmitted. Other items should reflect the input and output variables used in the most recent hydraulics calculation prior to transmission. | | |
| **Data Typology:** Reference (Ref), Date\_Time\_Stamp(Dts), Real-time-Measure (Rtm), Real-time-Signal (Rts), Limit (Lim), Set-Point (Spt), Calculation (Cal), Distribution (Dis), Command (Com), Parameter (Par), Synthetic Value (Syn), Alarm (Alm), Interpreted (Int), Modeled (Mod), Observed (Obs), Code (Cod), Count (Cnt), Cumulative (Cml), Status (Sta), Expected (Exp), Estimated (Est) | | |
| **Data Field Types:** A = Alphanumeric String, L = 32 bit 2's complement signed integer, S = 16 bit 2's complement signed integer, F = 32 bit IEEE single precision floating point, E = Engineering, B = Boolean (1 if True and 0 if False), D = Date, T = Time, V = Variant, IL = Integer List, FL = Float List, EL = Engineering List, TL = Text List | | |
| **Reserved Characters:** Comma (,) - Separates Fields, Semi Colon (;) - Separates Items in a Standard Record, Colon (:) - Separates items in Date and Time Fields, Ampersand (&) - Separates items in a List | | |
| **Data Mnemonic Abbreviations:** Raw (Raw), Average (Avg), Max (Max), Min (Min), Mean (Men), Root-Mean-Square (Rms), Percent (Pct), Error (Err), Correlation (Cor), Probability (Prob), Variance (Var), Spread (Spd), Mean-Absolute-Deviation (Mad), Ratio (Rat), Standard Deviation (Std), Mode (Mod), Weighted Mean (Wtm), Dispersion (Dis), Product (Pro), Sum (Sum), Cumulative Sum (Csm), Corrected (Cor), Adjusted (Adj), Instantaneous (Ins), State (Sta), Observed (Obs), Expected (Exp), Observed-Cumulative (ObC), Expected-Cumulative (ExC), Total (Tot), Reported (Rep), Interpolated (Itp), Period (Per), Currency (Cur) | | |

| WITS  Record / Item | Description | STD WITS Long Mnemonic | Operator Mnemonic for WITSML & OSIsoft PI & ODA | Field Type | Length | Typology | Transmit Units (FPS) | Transmit Units (Metric) | Data System Type |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0401 | Well Identifier | WELLID | WID | A | 16 | Ref | ---- | ---- | Unique Well ID |
| 0402 | Sidetrack/Hole Sect No. | STKNUM | SKNO | S | 2 | Ref | ---- | ---- | Unique Wellbore ID |
| 0403 | Record Identifier | RECID | RID | S | 2 | Ref | ---- | ---- | Identification |
| 0404 | Sequence Identifier | SEQID | SQID | L | 4 | Ref | ---- | ---- | Identification |
| 0405 | Date | DATE | DATE | L | 4 | Dts | ---- | ---- | Date |
| 0406 | Time | TIME | TIME | L | 4 | Dts | ---- | ---- | Time |
| 0407 | Activity Code | ACTCOD | ACTC | S | 2 | Cod | ---- | ---- | Activity |
| 0408 | Depth Hole (meas) | DEPTMEAS | DMEA | F | 4 | Obs | F | M | Depth |
| 0409 | Depth Hole (vert) | DEPTVERT | DVER | F | 4 | Cal | F | M | Depth |
| 0410 | Depth Bit (meas) | DEPTBITM | DBTM | F | 4 | Obs | F | M | Valid |
| 0411 | Depth Bit (vert) | DEPTBITV | DBTV | F | 4 | Cal | F | M | Depth |
| 0412 | Mud Density In (avg) | MDIA | MDIA | F | 4 | Cal | PPG | KGM3 | Type |
| 0413 | Mud Flow In (avg) | MFIA | MFIA | F | 4 | Cal | GPM | L/M | Calculation |
| 0414 | Standpipe Pressure (avg) | SPPA | SPPA | F | 4 | Cal | PSI | KPA | Calculation |
| 0415 | Plastic Viscosity | PV | PV | F | 4 | Obs | CP | CP | Calculation |
| 0416 | Yield Point | YP | YP | F | 4 | Cal | PHSF | PA | Calculation |
| 0417 | Pressure Loss - bit | PLB | PLB | F | 4 | Cal | PSI | KPA | Calculation |
| 0418 | Pressure Loss - string | PLDS | PLDS | F | 4 | Cal | PSI | KPA | Calculation |
| 0419 | Pressure Loss - annulus | PLA | PLA | F | 4 | Cal | PSI | KPA | Calculation |
| 0420 | Pressure Loss - surface | PLSU | PLSU | F | 4 | Cal | PSI | KPA | Calculation |
| 0421 | Pressure Loss – mud motor | PLMM | PLMM | F | 4 | Est | PSI | KPA | Calculation |
| 0422 | Pressure Loss - MWD tool | PLMWD | PLMW | F | 4 | Est | PSI | KPA | Reference |
| 0423 | Pressure Loss - % at bit | PLPB | PLPB | F | 4 | Est | % | % | Reference |
| 0424 | Bit Hydraulic Power | BHP | BHP | F | 4 | Cal | HP | KW | Reference |
| 0425 | Bit Hydraulic Power/Area | BHPA | BHPA | F | 4 | Cal | HSI | KWM2 | Calculation |
| 0426 | Jet Impact Force | JIF | JIF | F | 4 | Cal | LB | KDN | Calculation |
| 0427 | Jet Velocity | JV | JV | F | 4 | Cal | FPS | M/S | Calculation |
| 0428 | Annular Velocity (min) | AVELN | AVN | F | 4 | Cal | FPM | M/S | Reference |
| 0429 | Annular Velocity (max) | AVELX | AVX | F | 4 | Cal | FPM | M/S | Reference |
| 0430 | ECD at Total Depth | ECDTD | ECDT | F | 4 | Cal | PPG | KGM3 | Reference |
| 0431 | ECD at Bit | ECDBIT | ECDB | F | 4 | Cal | PPG | KGM3 | Reference |
| 0432 | ECD at Casing Shoe | ECDCSG | ECDC | F | 4 | Cal | PPG | KGM3 | Reference |
| 0433 | Pump Hydraulic Power | PHP | PHP | F | 4 | Cal | HP | KW | Reference |
| 0434 | Calc/Obs Press.Loss ratio | PLCO | PLCO | F | 4 | Cal | % | % | Reference |
| 0435 | < SPARE 1 > | SPARE1 | SPR1 | F | 4 |  | ---- | ---- | Reference |
| 0436 | < SPARE 2 > | SPARE2 | SPR2 | F | 4 |  | ---- | ---- | Reference |
| 0437 | < SPARE 3 > | SPARE3 | SPR3 | F | 4 |  | ---- | ---- | Reference |
| 0438 | < SPARE 4 > | SPARE4 | SPR4 | F | 4 |  | ---- | ---- | Reference |
| 0439 | < SPARE 5 > | SPARE5 | SPR5 | F | 4 |  | ---- | --- | Reference |