

**WELL INFORMATION**

Company: NORSTAR PETROLEUM INC.  
Address: 88 INVERNESS CIR E, UNIT F104  
ENGLEWOOD, CO 80112

Well Name: CBCF #6-31

Location: 1642' FNL & 802' FEL  
SECTION 31-T14S-R21W  
TREGO COUNTY, KANSAS

API: 15-195-23075-00-00  
Field: MADDIE

K. B. Elevation: 2073  
Ground Elevation: 2066

Rotary Depth: 4050  
Log Depth: 4051

Spud Date: 11/20/2018

Drilling Completed: 11/27/2018

Completion: OIL WELL - CHEROKEE B SAND  
Surface Casing: 8 & 5/8" SET @ 225'

Production Casing: 4.5" SET @ 4048'

Formation at TD: MISSISSIPPIAN  
Drilling Fluid Type: CHEMICAL

Rig Contractor: STP DRILLING, RIG #1  
Logger: ELI

Logs Run: DI, CND w/PE, ML

Wellsite Geologist: LARRY P. FRIEND

**FORMATION DEPTHS**

COMPARED TO:  
CRAWFORD OIL CO.  
CBCF #2-31  
W2-NE 31-T14S-R21W

| FORMATION DEPTHS | SAMPLE       | LOG          |     |
|------------------|--------------|--------------|-----|
| STONE CORRAL     | 1443 (+630)  | 1438 (+635)  | +1  |
| BS STONE CORRAL  | 1485 (+588)  | 1482 (+591)  | -1  |
| HEEBNER SHALE    | 3450 (-1377) | 3448 (-1375) | -5  |
| LANSING          | 3490 (-1417) | 3488 (-1415) | -6  |
| STARK SHALE      | 3675 (-1602) | 3670 (-1597) | -7  |
| BKC              | 3749 (-1676) | 3746 (-1673) | -6  |
| PAWNEE           | 3836 (-1763) | 3835 (-1762) | -10 |
| LABETTE SHALE    | 3895 (-1822) | 3895 (-1822) | -11 |
| FT. SCOTT        | 3914 (-1841) | 3914 (-1841) | -11 |
| CHEROKEE B SAND  | 3933 (-1860) | 3936 (-1863) | -15 |
| CHEROKEE E SAND  | 3960 (-1887) | 3959 (-1886) | -13 |
| KUTINA SAND      | 3973 (-1900) | 3972 (-1899) | -8  |
| MISS             | 3990 (-1917) | 3992 (-1919) | +4  |

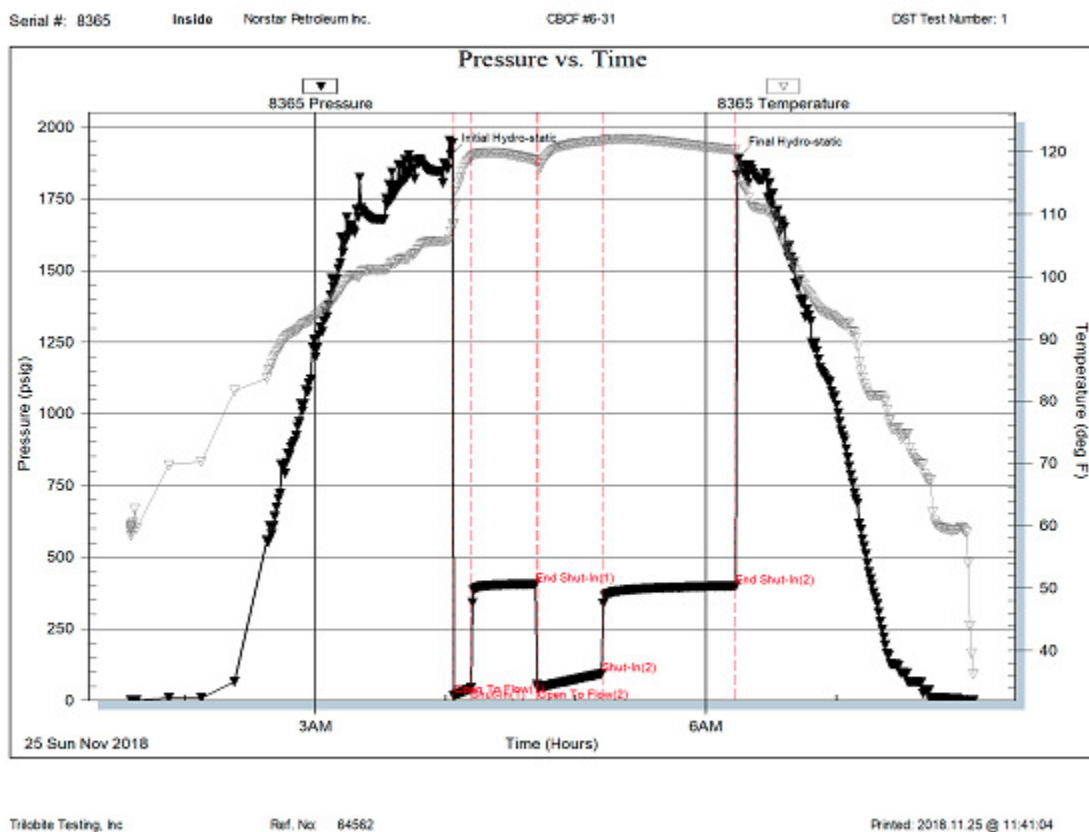
**NOTES**

DUE TO A POSITIVE DRILL STEM TEST AND ALSO LOG EVALUATION, IT WAS DECIDED TO RUN 4.5" CASING AND PRODUCE THE CHEROKEE B SAND.  
LARRY FRIEND

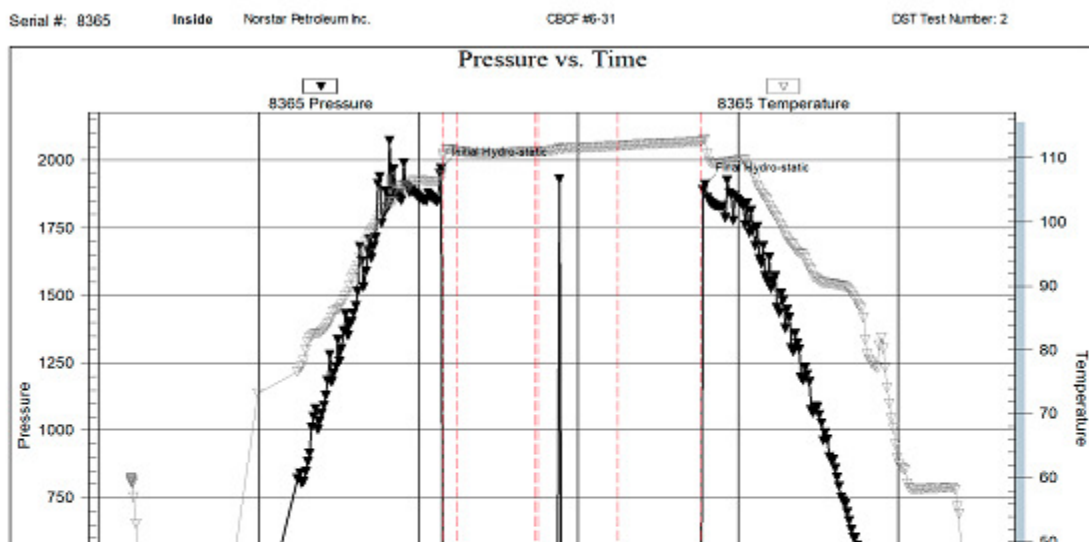
### DRILLSTEM TESTS

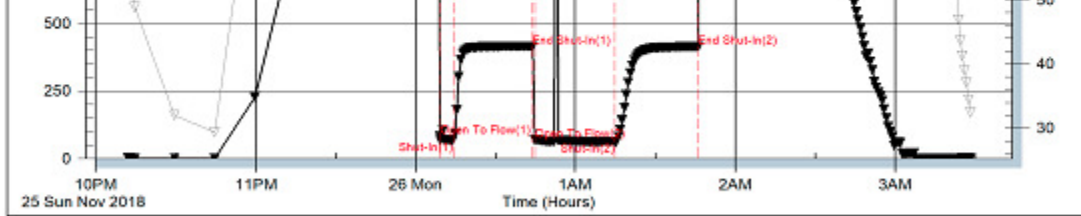
| No | Interval  | Formation       |
|----|-----------|-----------------|
| 1  | 3928-3937 | CHEROKEE B SAND |
| 2  | 3940-3950 | CHEROKEE SAND   |
| 3  | 3942-3971 | CHEROKEE E SAND |
| 4  | 3967-3979 | KUTINA SAND     |

### DST #1 CHART - CHEROKEE "B"



### DST #2 CHART - CHEROKEE SAND





Tribble Testing, Inc.

Ref. No. 64563

Printed: 2018.11.26 @ 07:18:00

### DST #3 CHART - CHEROKEE E

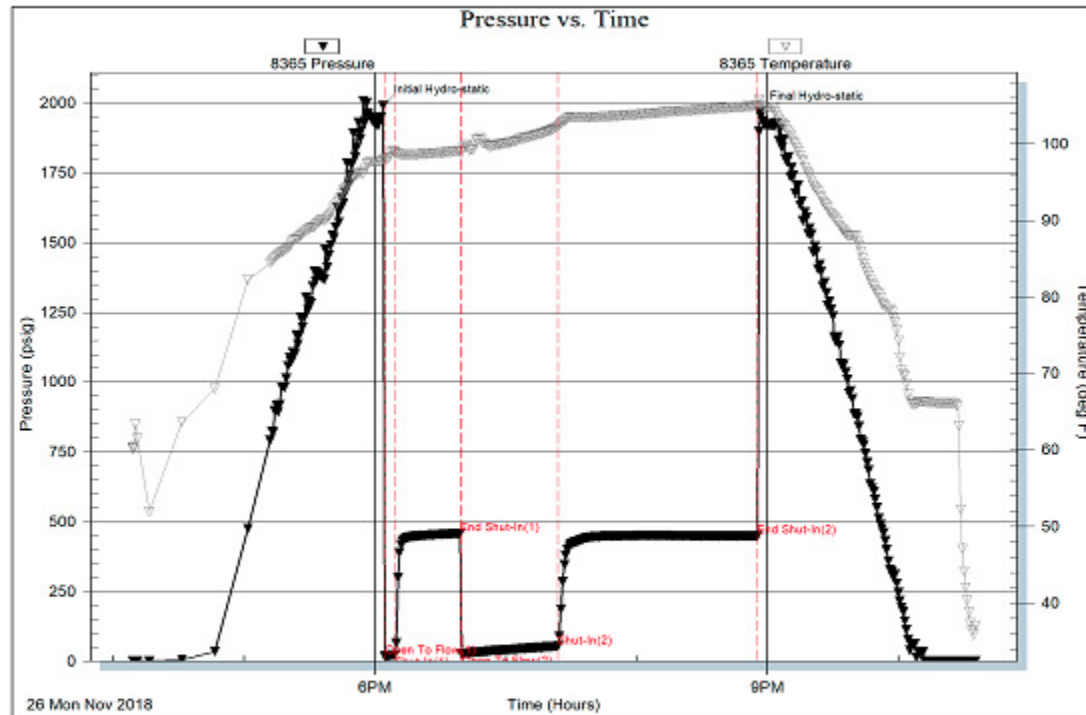
Serial #: 8365

Inside

Norstar Petroleum Inc.

CBCF #6-31

DST Test Number: 3



Tribble Testing, Inc.

Ref. No. 64564

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### DST #4 CHART - KUTINA SAND

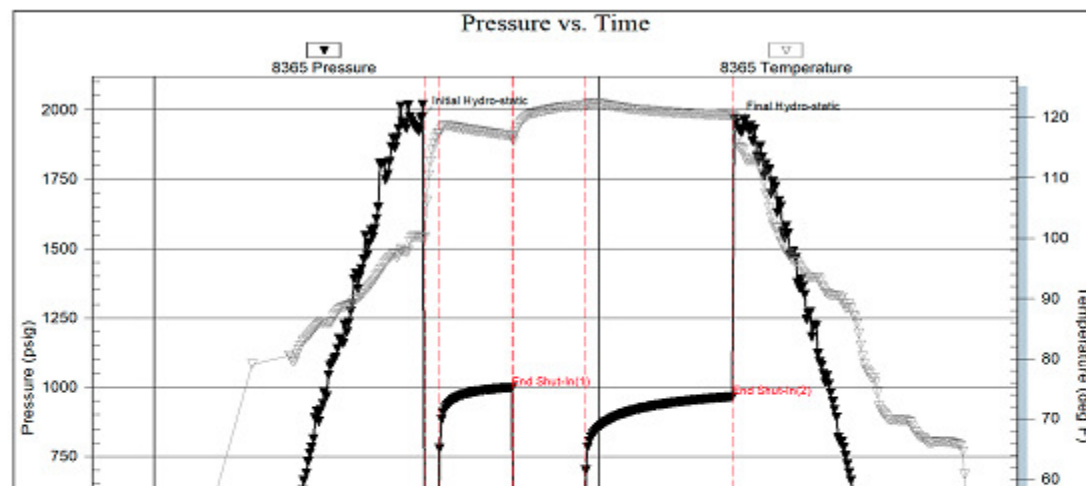
Serial #: 8365

Inside

Norstar Petroleum Inc.

CBCF #6-31

DST Test Number: 4





Tribble Testing, Inc

Ref. No: 64565

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## ROCK TYPES

|  |          |  |           |  |       |  |           |
|--|----------|--|-----------|--|-------|--|-----------|
|  | Anhyprim |  | Dolsec    |  | Ss    |  | Shcol     |
|  | Cht      |  | Lmst fw<7 |  | Shgy  |  | Slst      |
|  | Coal     |  | Lmst fw>7 |  | Shblk |  | Ool grnst |

## ACCESSORIES

### MINERAL

- Carbonaceous Flakes
- ▲ Chert, dark
- △ Dolomitic
- △ Chert White

### FOSSIL

- Oolites

## OTHER SYMBOLS

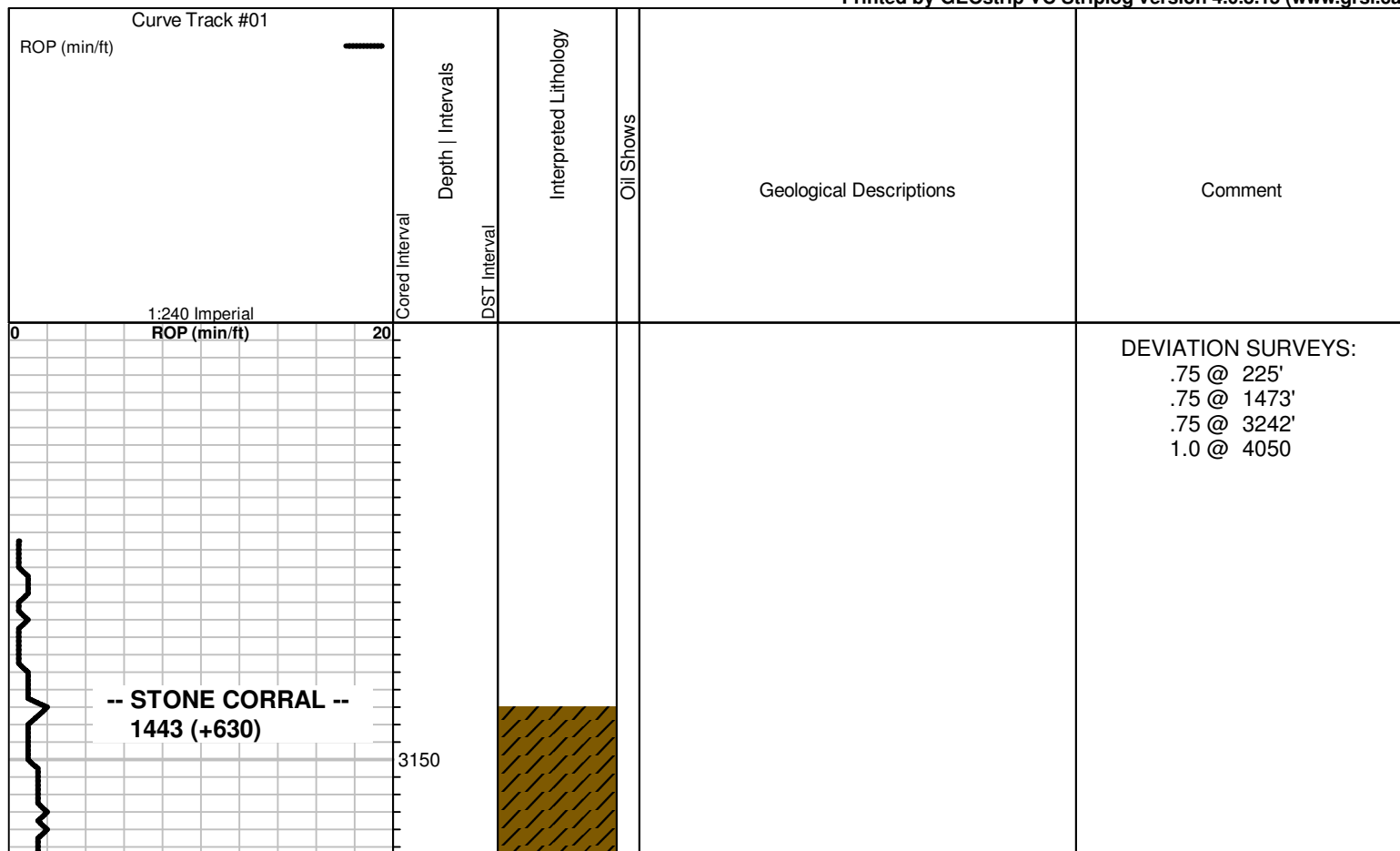
### OIL SHOWS

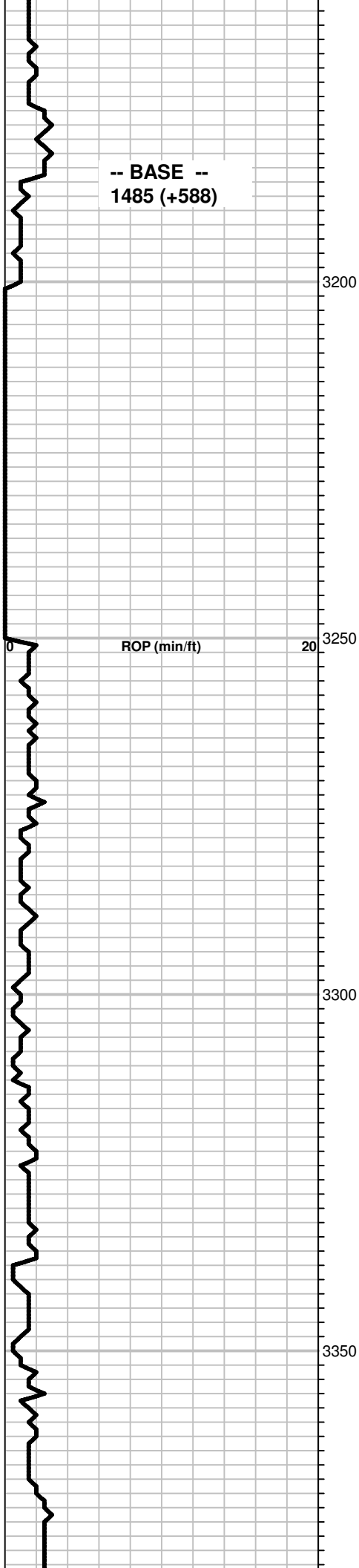
- Even Stn
- Spotted Stn 50 - 75 %
- Spotted Stn 25 - 50 %
- Spotted Stn 1 - 25 %
- Questionable Stn
- D Dead Oil Stn
- Fluorescence

### INTERVALS

- Core
- DST

Printed by GEOstrip VC Striplog version 4.0.8.15 (www.grsi.ca)





60: LS, TAN-BRN, FOSS, PR-GD XLN POR; TR. BRN CHERT; NS

70: LS, TAN, VFXLN, DSE

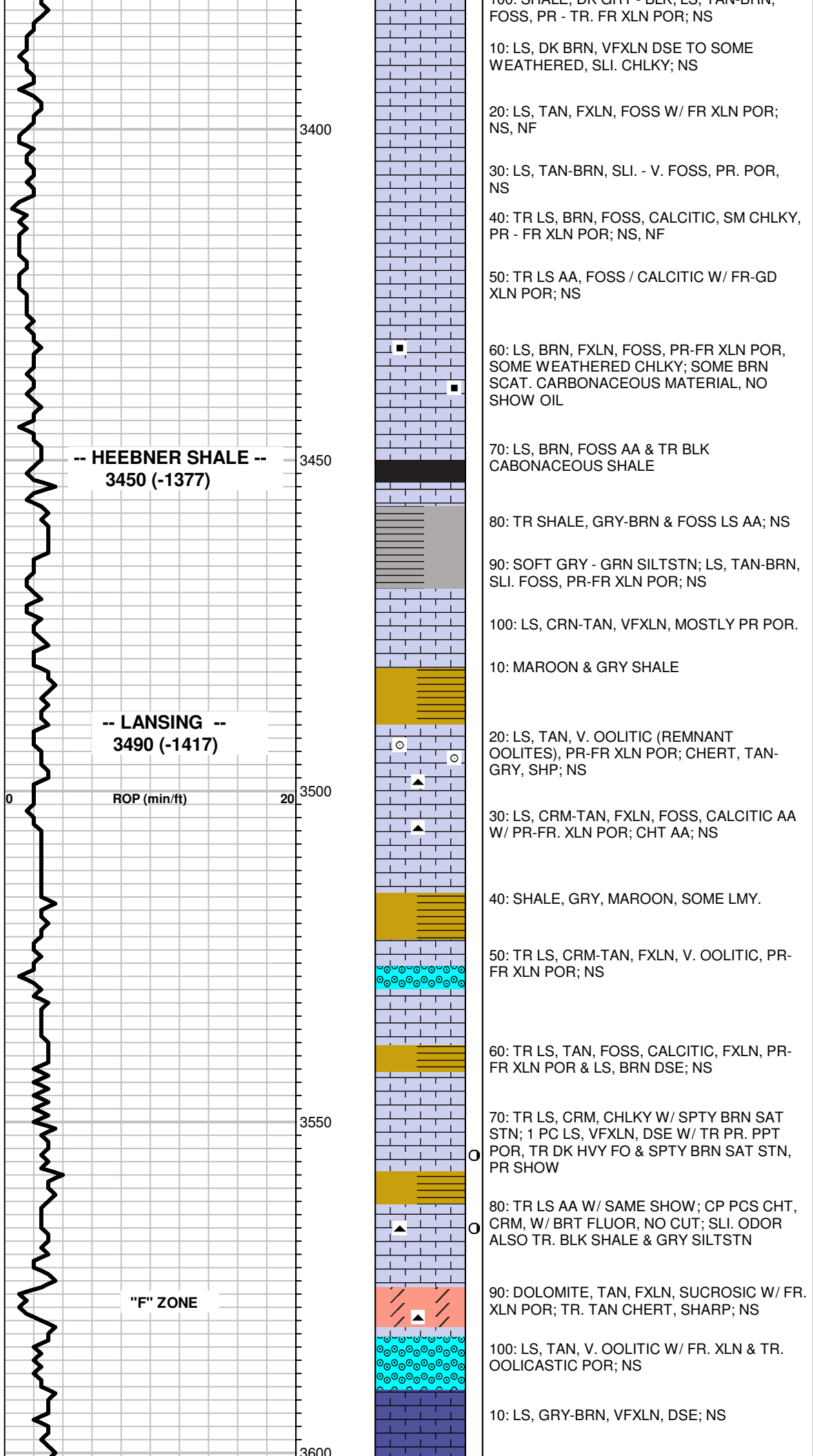
80: LS, GRY, PR. POR; TR. GRY CHT; TR GRY SILTSTN; NS

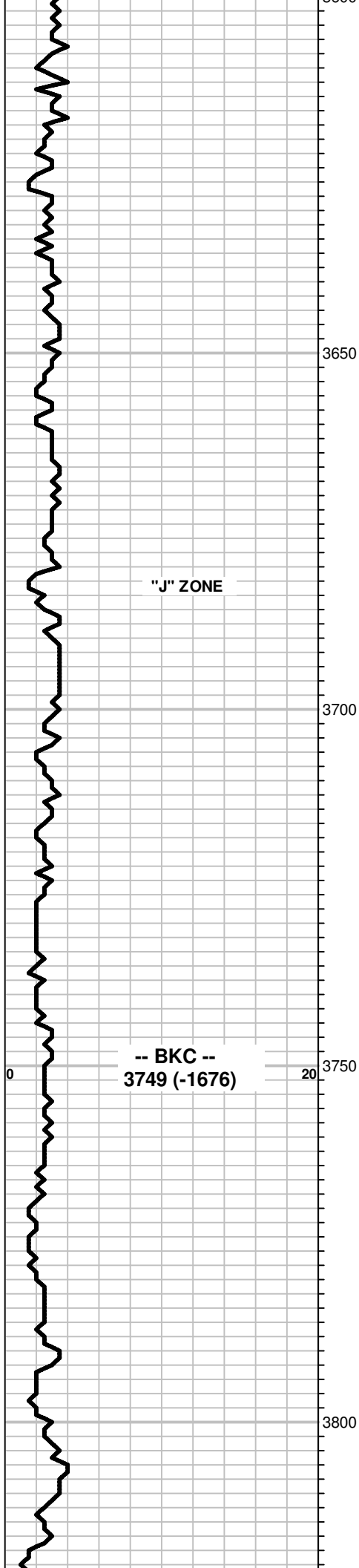
90: LS, GRY-BRN, VF-FXLN, PR POR, NS

100: SHALE, DK GRY - BLK; LS, TAN-BRN

CONNECTIONS PULLING TITE SO MUDED UP EARLY AT 3192.

SAMPLES START AT 3350 FT.





20: LS, AS ABOVE; NS

30: LS, AA, NO POR; TR. CHERT, GRY; NS

40: LS, AA AND SHALE, GRY, BRN, BLK.

50: TR LS TAN, FOSS, CALCITIC W/ PR - TR  
FR. XLN POR; CHT GRY - BRN; NS

60: LS, GRY-BRN VFXLN, DSE; TR. SHALE  
GRY - BLK; NS

70: SHALE, GRY; LS, GRY-BRN, DSE; NS

80: LS, BRN, VFXLN, DSE; NS

90: LS, AA; SHALE RED & TR, GRY STICKY  
SHALE.

100: LS, CRM-TAN, FXLN, OOLITIC W/ FR-GD  
OOLIC. POR; NS, NF

10: LS, GRY-BRN, DSE; TR GRY-GRN  
SILTSTN

20: LS, CRM-TAN, FXLN, V. OOLITIC, SLI.  
CALCITE FILL, PR-FR XLN POR & TR. PR.  
OOLIC. POR; NS, NF

30: LS, GRY-BRN, VF-FXLN, SOME OOLITIC  
W/ PR. XLN POR; NS

40: LS, TAN-BRN, FXLN, SOME OOLITIC, PR.  
VIS. POR; NS

50 & 60: LS, TAN-BRN, VF-FXLN, SLI. FOSS,  
TR. OOLITIC, PR-FR. XLN POR; NS

70 & 80: SHALE, RED, GRY, GRN, BLK.

90: LS, TAN-BRN, VFXLN, DSE; SHALE  
MAROON, GRY; NS

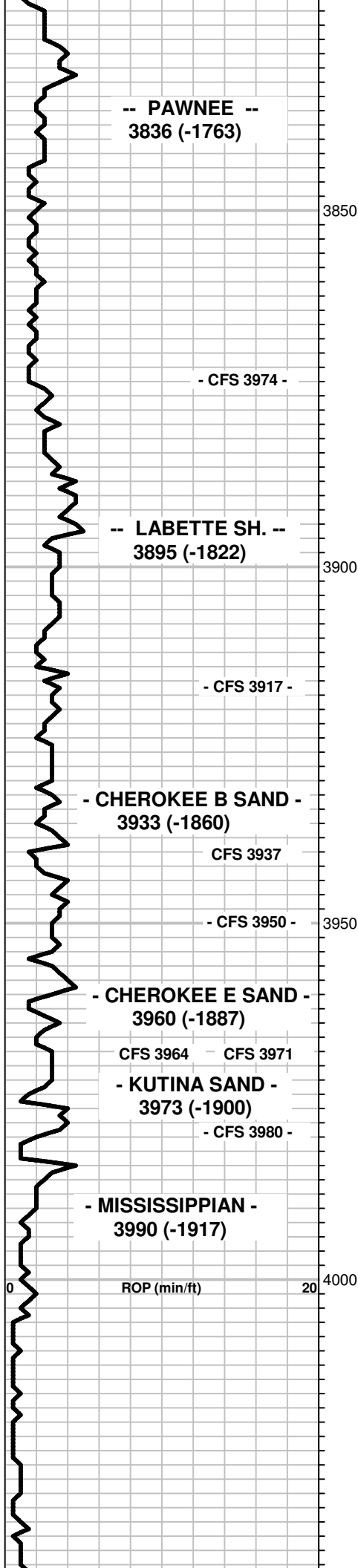
100: SHALE, GRY, MAROON, TR. GRN

10: LS, GRY-BRN, DSE; SHALE VARY  
COLORED; TR. GRY LMY SILTSTN.

20: SHALE VARY COLORED, LS, GRY-BRN,  
VFXLN, DSE; NS

30: MOSTLY VARY COLORED SHALE, SOME  
STICKY.

MUD @ 3770: WT: 9.0, VIS 55  
FILT 6.4, CHLOR 6,200, LCM 2



-- PAWNEE --  
3836 (-1763)

- CFS 3974 -

-- LABETTE SH. --  
3895 (-1822)

- CFS 3917 -

- CHEROKEE B SAND -  
3933 (-1860)

CFS 3937

- CFS 3950 -

- CHEROKEE E SAND -  
3960 (-1887)

CFS 3964 - CFS 3971

- KUTINA SAND -  
3973 (-1900)

- CFS 3980 -

- MISSISSIPPIAN -  
3990 (-1917)

ROP (min/ft)

20 4000

40 & 50: LS, BRN, VFXLN, DSE TO SOME  
WEATHERED CRM; SHALE AS ABV; TR.  
GRY-BRN CHT; NS

60: LS, TAN-BRN, VFXLN, DSE; TR. BRN LMY  
SILTSTN, TITE, NS

70: LS, CRM-TAN, PR-FR XLN POR, SM SLI.  
CHKLY; AND MUCH CHERT (40%), CRM-GRY  
SHP, SEV. PCS SLI. WEATH W/ PR.  
POROSITY ON EDGES, PR. SPTY LT SAT.  
STN, VSSFO SPTY BRT FLUR, FR STRING  
CUT, FR. OD

74: 30": LS, TAN, FXLN, HD TO SOME W/ FR.  
XLN. POR; MUCH CHERT (40%), CRM-GRY,  
SHP; NS

100: LS, BRN, VF-FXLN, DSE, SOME SLI. CHTY  
TO SOME CHERT, CRM-BRN, SHP; NS, NF

10: SHALE, BLK; LS, TAN. FXLN W/ REMNANT  
FOSSILS, PR. XLN. POR; NS

17: SHALE, BLK & SM. AMT. GRY SHLY  
SILTSTN.

40": SOFT GRY STICKY SHALE; TR. PYRITE

37: SHALE, GRY, BLK; TR. PYRITE

3937: 20": LS, BRN, FXLN, REMNANT  
OOLITES, PR. XLN POR; SHALE BLK; NS

40": TR SST, MOSTLY VF, TR FN & MD GRNS,  
FR WELL SRT, CLR, PR-GD POR, VSS LT FO  
LT YEL FLR, GD CRSH CUT, NO STN, S ODOR

3950 CIRC: ONLY TR SST, VF-F-MD GRND,  
PRLY SRT, CLR- TR. FROST, SBRD-SBANG,  
FR-GD POR, VS-GS LT FO, TR BRN SPTY  
STN, FR-GD FLUSH CUT, NO ODOR

3964 CIRC: SST, VF-FN, FR WELL SRT, CLR-  
FRSTED, SBRD, FR-GD POR, GSFO, MUCH  
DD BLK RESID OIL, SM W/ GD EVEN DK BRN  
SAT STN, NO FLUOR, GD CRUSH CUT, NO  
ODOR

3971 CIRC: SST, VF-FN, FRLY WELL SRT,  
SBAG-SBRD, CLR, PR-FR POR, GSFO, DK BN  
SAT STN, NO FLR, GD CRUSH CUT, NO  
ODOR

4030: TR SST, VF, WELL SORT, CLR, FR-GD  
POR & TR SST, VF-MD, PRLY SRT, TITE; NS

4040: CHERT, CRM-TAN, TR ORG, SHARP TO  
TR SLI. WEATH.; NS

50: CHERT, CRM, TAN, GRY, SHARP; NS

**DST #1: 3938-3937**

**TIMES: 8-30-30-60**

**IF: BLOW BUILT TO 10"**

**ISI: .5" BLOWBACK**

**FF: BLOW BOB IN 10"**

**32" TOTAL BUILD IN  
DIESEL**

**FSI: 1.5" BLOWBACK**

**REC:**

**170' GCO (10% G, 90%O)**

**50' MCO (90%O, 10%M)**

**10' MO (60%O, 40%M)**

**IFP: 18-44, FFP: 44-93#**

**SIP: 405-399#, TEMP: 120**

**SEE CHART ABOVE**

**PRE-DST SHORT TRIP @ 3874 UP  
TO 800'. TOOK ON SOME WATER  
BELIEVED TO BE FROM CEDAR  
HILLS SAND.**

**MUD @ 3950: WT 9.0, VIS 44, FILT  
12.0, LCM 2, CHLOR: 14,600**

**COMING OUT FOR DST 2 WELL  
STARTED FLOWING WATER.  
WENT BACK DOWN TO ANHY,  
MIXED WEIGHT MUD TO SHUT  
OFF WTR, THEN RAN TEST.**

**DST#2: 3940-3950**

**TIMES: 5-30-30-30**

**5' SLIDE TO SOLID BTM**

**IF: BLOW BUILT TO 3.5"**

**FF: FEW BUBBS, THEN DEAD  
FLUSHED TOOL- NO HELP  
NO BLOWBACKS**

**REC: 65' MUD W/ SHOW OIL  
IN TOOL**

**IFP: 83-66#, FFP: 70-63#**

**SIP: 415-414#, TEMP: 112**

**SEE CHART ABOVE**

**ALSO SST, VF-CSE, PRLY SRT,  
CLR-FRST, GSFO, F-GD FLSH  
CUT,  
NO ODOR  
CFS 3964**

**80 CIRC: TR. SST, VF, WELL SRT,  
SBANG, CLR, TITE, PR-FR POR,  
VGSFO, TR BLDG OIL, GD STN,  
NO FLUOR, GD CRUSH CUT, NO  
ODOR**

**MIXED MORE WT MUD BEFORE  
STARTING OUT FOR DST #3**

**DST #3: 3942-3971**

**TIMES: 5-30-45-90**

**IF: BLOW BUILT TO 1.5"**

**FF: BLOW BUILT TO 2.75"**

**NO BLOWBACKS**

**REC: 100' WATERY MUD, NS  
(20%W, 80%M)**

**WTR CHLOR: 19,000 PPM**

**MUD SYSTEM: 14,100 PPM**

**IFP: 18-23, FFP: 26-54#**

**SIP: 458-448#, TEMP: 104**

**SEE CHART ABOVE**

|                                                                                                                   |      |                                                                              |                                                                                  |                                                                                                                                                                                                                                                                                                                                                |
|-------------------------------------------------------------------------------------------------------------------|------|------------------------------------------------------------------------------|----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br><div>RTD 4050<br/>LTD 4051</div> | 4050 | <div>△△△△△<br/>△△△△△<br/>△△△△△<br/>△△△△△<br/>△△△△△<br/>△△△△△<br/>△△△△△</div> | 50 CIRC: CHERT AS ABOVE; TR. CRM-TAN<br>FXLN, CHTY DOLOMITE, HD, PR. POR; NS, NF | <div>MUD @ 3979: WT 9.5, VIS 50, FILT<br/>11.2, CHLOR: 14,700</div> <div>DST #4: 3967-3979<br/>TIMES: 5-30-30-60<br/>IF: BLOW BUILT TO 10"<br/>FF: BLOW BUILT BOB IN 8"<br/>TOTAL BUILD = 37" IN<br/>DIESEL<br/>REC: 496' MCW (95%W, 5%M)<br/>NO SHOW OIL<br/>IFP: 35-89#, FFP: 94-239#<br/>SIP: 997-964#, TEMP: 120<br/>SEE CHART ABOVE</div> |
|-------------------------------------------------------------------------------------------------------------------|------|------------------------------------------------------------------------------|----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|