# WELL ANALYSIS CORPORATION

## AUDIO DETECTION SURVEY

WELL TYPE
GS

BFW

COMPANY: SOUTHERN CALIF. GAS CO.
WELL: FREW 4
FIELD: ALISO CANYON
COUNTY: LOS ANGELES
STATE: CALIFORNIA

LOCATION:
DISTRICT 2

API NUMBER: 0403700667
SEC: 29 TWN: 3N RNG: 16W

OTHER SVC:

PERMANENT DATUM: GROUND LEVEL ELEV: 2419.75'

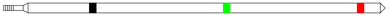
LOG MEASURED FROM KB 8.25' ABOVE PERM DATUM

DRILLING MEASURED FROM

-ELEVATIONS-
KB: 2428.00 Ft.
DF: Ft.
GL: 2419.75 Ft.

| | | | | | |
|---|---|---|---|---|---|
| DATE LOG RAN | 04-08-2016 | PRESSURE | FLOWING | INJECTION | SHUT-IN |
| RUN NUMBER | ONE | TUBING PSI | | | 1243 |
| EFFECTIVE DEPTH | 8602' | CASING PSI | | | 1243 |
| PICKUP DEPTH | 8594' | INJECTION RATE | N\|A | | |
| BOT LOGGED INT | 8594' | OBSERVED RATE | N\|A | | |
| TOP LOGGED INT | 100' | R/A SOURCE | N\|A | | |
| TYPE OF INJECT | GAS | ACTIVITY | N\|A | | |
| FLUID IN WELL | O/W/G | HALF LIFE | N\|A | | |
| FLUID LEVEL | N\|A | | | | |
| WELL STATUS | STATIC | | | PRODUCTION DATA | |
| MAX TEMPERATURE | 186.1 F. | OIL Gr. | N\|A | OIL = | N\|A |
| AT DEPTH | 8594.0' | GAS Gr. | N\|A | GAS= | N\|A |
| TEMPERATURE SENS | 1 F/DIV. | MPP | N\|A | BHP = | N\|A |
| LOGGING SPEED | 100 FPM | | | WATER= | N\|A |
| RECORDED BY | M.LANZER | | | | |
| WITNESSED BY | N\|A | | | | |
| EMAIL TO | A.KARGAR | | | | |
| DEPTH CORRELATION | LINER TOP | | | | |

### TOOL DIAGRAM



### Equipment Data

| | | | |
|---|---|---|---|
| Collar Locator | ■ 1.375" | | |
| Temperature Tool | 🟩 1.375" | | |
| Audio Detector | 🟥 1.375" | | |
| | | | |
| | | | |
| | | | |

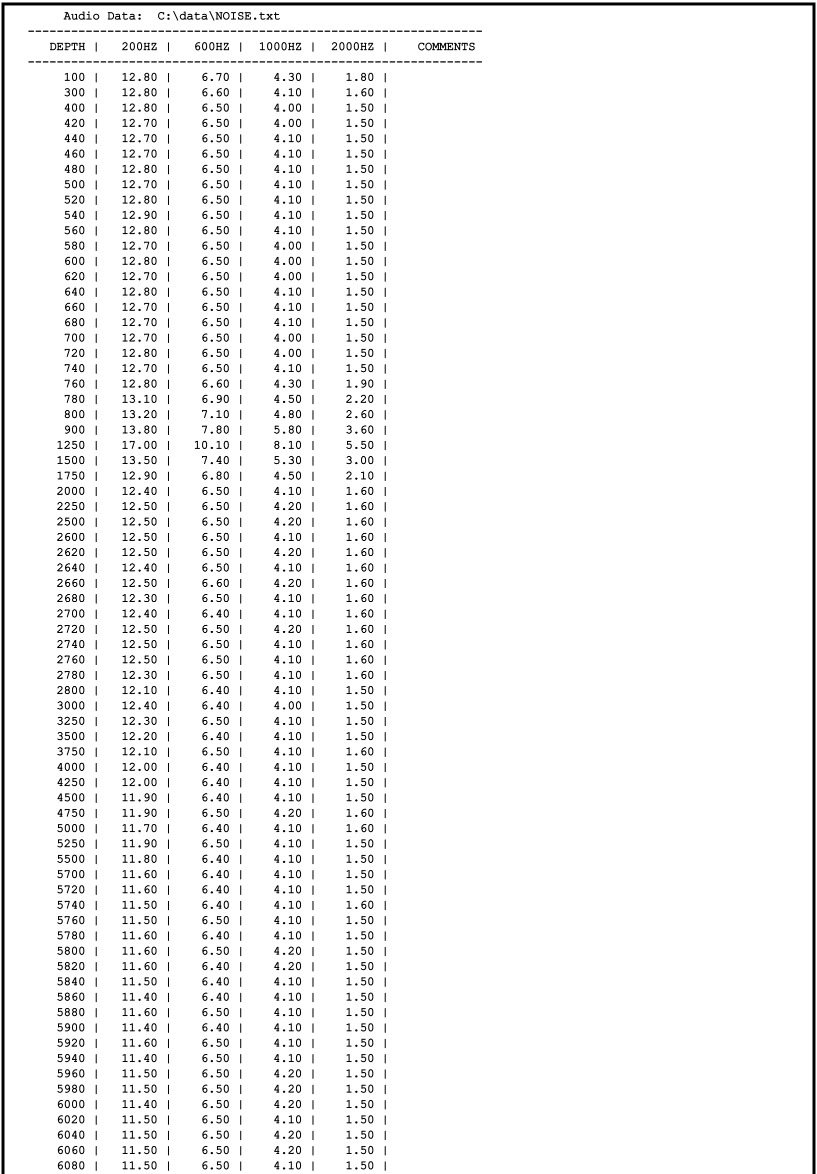
### Remarks/Survey Results

SAND TAG MARKERS: UNAVAILABLE

### CASING AND TUBING RECORD

| SIZE | WT(#) | FROM | TO | SIZE | WT(#) | FROM | TO |
|---|---|---|---|---|---|---|---|
| 13.375" | 54.5 | SURFACE | 770' | 2.375" | 4.20 | SURFACE | 8163' |
| 7.000" | 23.0 | SURFACE | 8280' | | | | |
| 5.500" | 20.0 | SURFACE | 8224' | | | | |
| 5.000" | 20.0 | 8244' | 8602' | | | | |

| STR. | PIPE DIA. | PERFORATIONS |
|---|---|---|
| A | 5.000" | 8279'-8602'. |
| | | PACKERS: 8160'-8163'. |
| | | MANDRELS: 8053'-8059'. |
| | | SLEEVES: 8093'-8095'. |
| | | NO-GO: 8127'. |



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     Audio Data:  C:\data\NOISE.txt
 ---------------------------------------------------------------
    DEPTH |   200HZ |   600HZ |  1000HZ |  2000HZ |    COMMENTS
 ---------------------------------------------------------------
      100 |   12.80 |    6.70 |    4.30 |    1.80 |
      300 |   12.80 |    6.60 |    4.10 |    1.60 |
      400 |   12.80 |    6.50 |    4.00 |    1.50 |
      420 |   12.70 |    6.50 |    4.00 |    1.50 |
      440 |   12.70 |    6.50 |    4.10 |    1.50 |
      460 |   12.70 |    6.50 |    4.10 |    1.50 |
      480 |   12.80 |    6.50 |    4.10 |    1.50 |
      500 |   12.70 |    6.50 |    4.10 |    1.50 |
      520 |   12.80 |    6.50 |    4.10 |    1.50 |
      540 |   12.90 |    6.50 |    4.10 |    1.50 |
      560 |   12.80 |    6.50 |    4.10 |    1.50 |
      580 |   12.70 |    6.50 |    4.00 |    1.50 |
      600 |   12.80 |    6.50 |    4.00 |    1.50 |
      620 |   12.70 |    6.50 |    4.00 |    1.50 |
      640 |   12.80 |    6.50 |    4.10 |    1.50 |
      660 |   12.70 |    6.50 |    4.10 |    1.50 |
      680 |   12.70 |    6.50 |    4.10 |    1.50 |
      700 |   12.70 |    6.50 |    4.00 |    1.50 |
      720 |   12.80 |    6.50 |    4.00 |    1.50 |
      740 |   12.70 |    6.50 |    4.10 |    1.50 |
      760 |   12.80 |    6.60 |    4.30 |    1.90 |
      780 |   13.10 |    6.90 |    4.50 |    2.20 |
      800 |   13.20 |    7.10 |    4.80 |    2.60 |
      900 |   13.80 |    7.80 |    5.80 |    3.60 |
     1250 |   17.00 |   10.10 |    8.10 |    5.50 |
     1500 |   13.50 |    7.40 |    5.30 |    3.00 |
     1750 |   12.90 |    6.80 |    4.50 |    2.10 |
     2000 |   12.40 |    6.50 |    4.10 |    1.60 |
     2250 |   12.50 |    6.50 |    4.20 |    1.60 |
     2500 |   12.50 |    6.50 |    4.20 |    1.60 |
     2600 |   12.50 |    6.50 |    4.10 |    1.60 |
     2620 |   12.50 |    6.50 |    4.20 |    1.60 |
     2640 |   12.40 |    6.50 |    4.10 |    1.60 |
     2660 |   12.50 |    6.60 |    4.20 |    1.60 |
     2680 |   12.30 |    6.50 |    4.10 |    1.60 |
     2700 |   12.40 |    6.40 |    4.10 |    1.60 |
     2720 |   12.50 |    6.50 |    4.20 |    1.60 |
     2740 |   12.50 |    6.50 |    4.10 |    1.60 |
     2760 |   12.50 |    6.50 |    4.10 |    1.60 |
     2780 |   12.30 |    6.50 |    4.10 |    1.60 |
     2800 |   12.10 |    6.40 |    4.10 |    1.50 |
     3000 |   12.40 |    6.40 |    4.00 |    1.50 |
     3250 |   12.30 |    6.50 |    4.10 |    1.50 |
     3500 |   12.20 |    6.40 |    4.10 |    1.50 |
     3750 |   12.10 |    6.50 |    4.10 |    1.60 |
     4000 |   12.00 |    6.40 |    4.10 |    1.50 |
     4250 |   12.00 |    6.40 |    4.10 |    1.50 |
     4500 |   11.90 |    6.40 |    4.10 |    1.50 |
     4750 |   11.90 |    6.50 |    4.20 |    1.60 |
     5000 |   11.70 |    6.40 |    4.10 |    1.60 |
     5250 |   11.90 |    6.50 |    4.10 |    1.50 |
     5500 |   11.80 |    6.40 |    4.10 |    1.50 |
     5700 |   11.60 |    6.40 |    4.10 |    1.50 |
     5720 |   11.60 |    6.40 |    4.10 |    1.50 |
     5740 |   11.50 |    6.40 |    4.10 |    1.60 |
     5760 |   11.50 |    6.50 |    4.10 |    1.50 |
     5780 |   11.60 |    6.40 |    4.10 |    1.50 |
     5800 |   11.60 |    6.50 |    4.20 |    1.50 |
     5820 |   11.60 |    6.40 |    4.20 |    1.50 |
     5840 |   11.50 |    6.40 |    4.10 |    1.50 |
     5860 |   11.40 |    6.40 |    4.10 |    1.50 |
     5880 |   11.60 |    6.50 |    4.10 |    1.50 |
     5900 |   11.40 |    6.40 |    4.10 |    1.50 |
     5920 |   11.60 |    6.50 |    4.10 |    1.50 |
     5940 |   11.40 |    6.50 |    4.10 |    1.50 |
     5960 |   11.50 |    6.50 |    4.20 |    1.50 |
     5980 |   11.50 |    6.50 |    4.20 |    1.50 |
     6000 |   11.40 |    6.50 |    4.20 |    1.50 |
     6020 |   11.50 |    6.50 |    4.10 |    1.50 |
     6040 |   11.50 |    6.50 |    4.20 |    1.50 |
     6060 |   11.50 |    6.50 |    4.20 |    1.50 |
     6080 |   11.50 |    6.50 |    4.10 |    1.50 |
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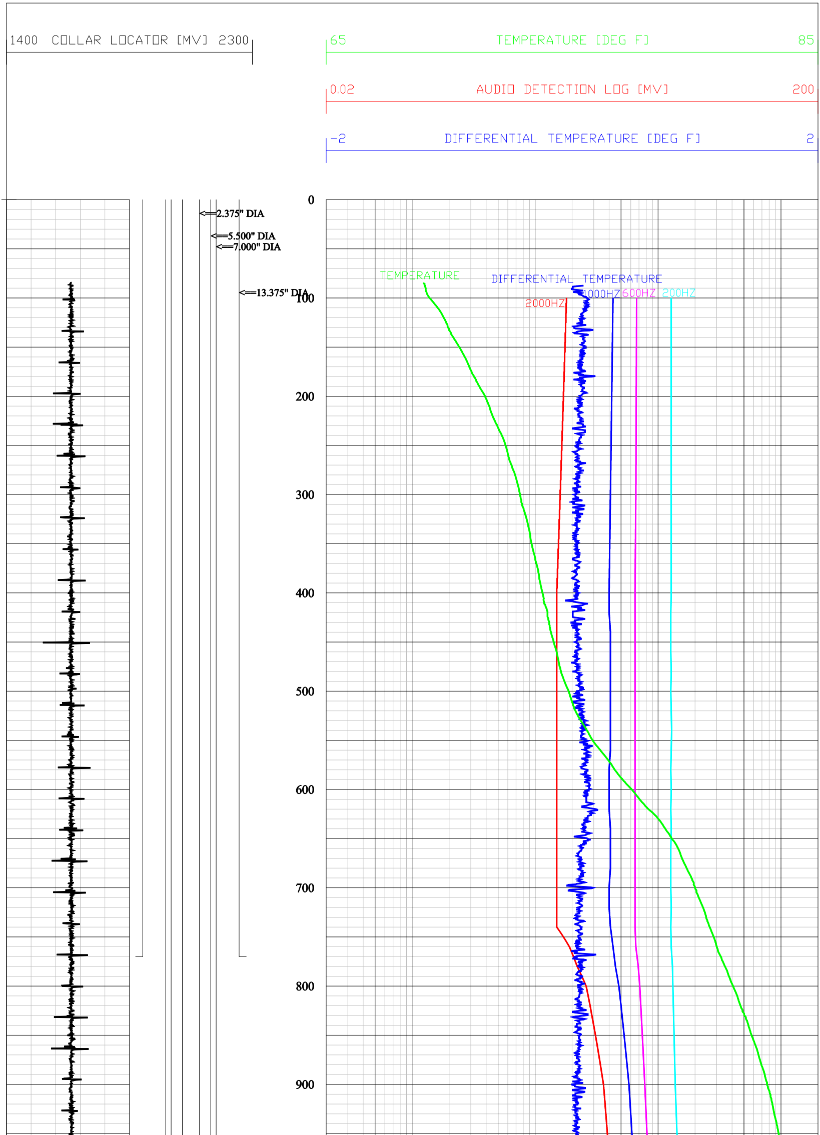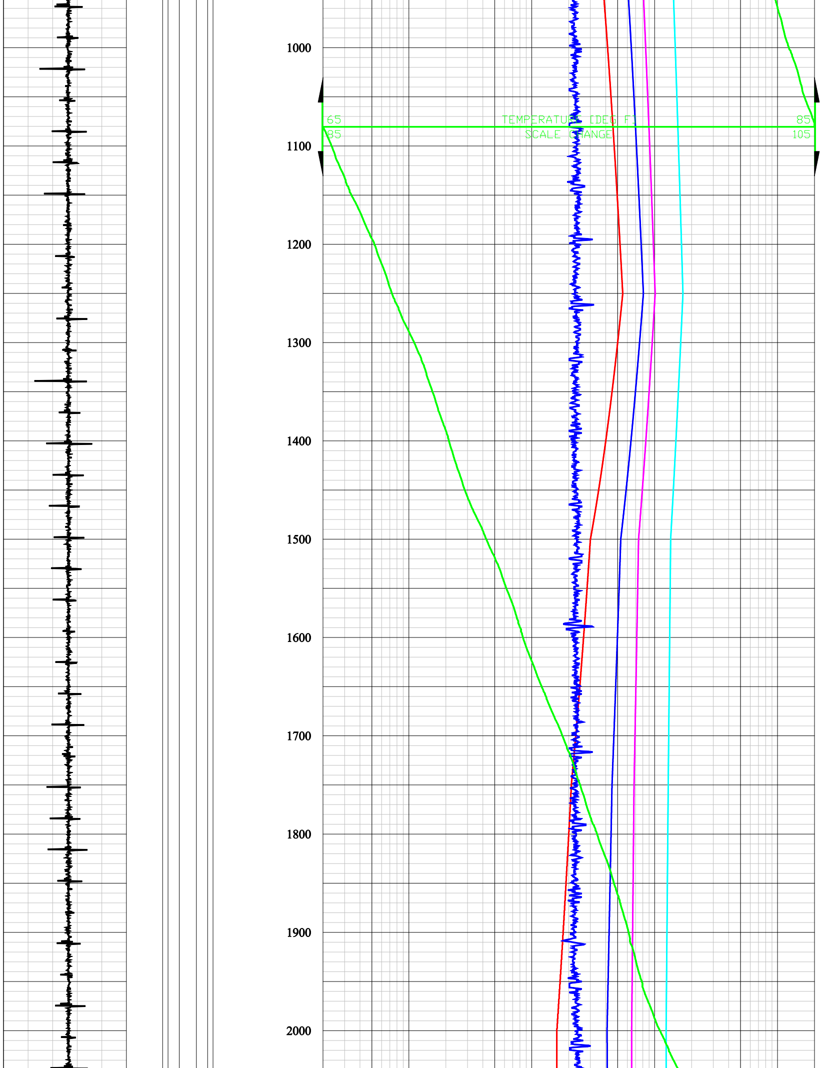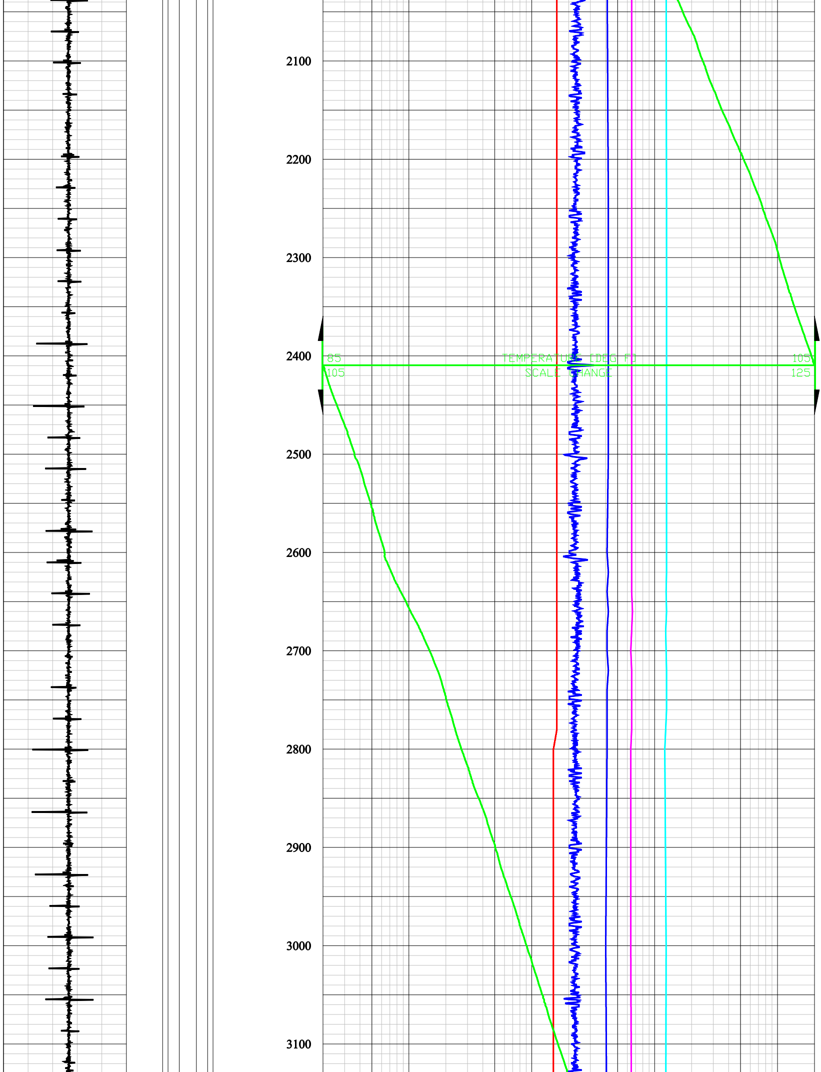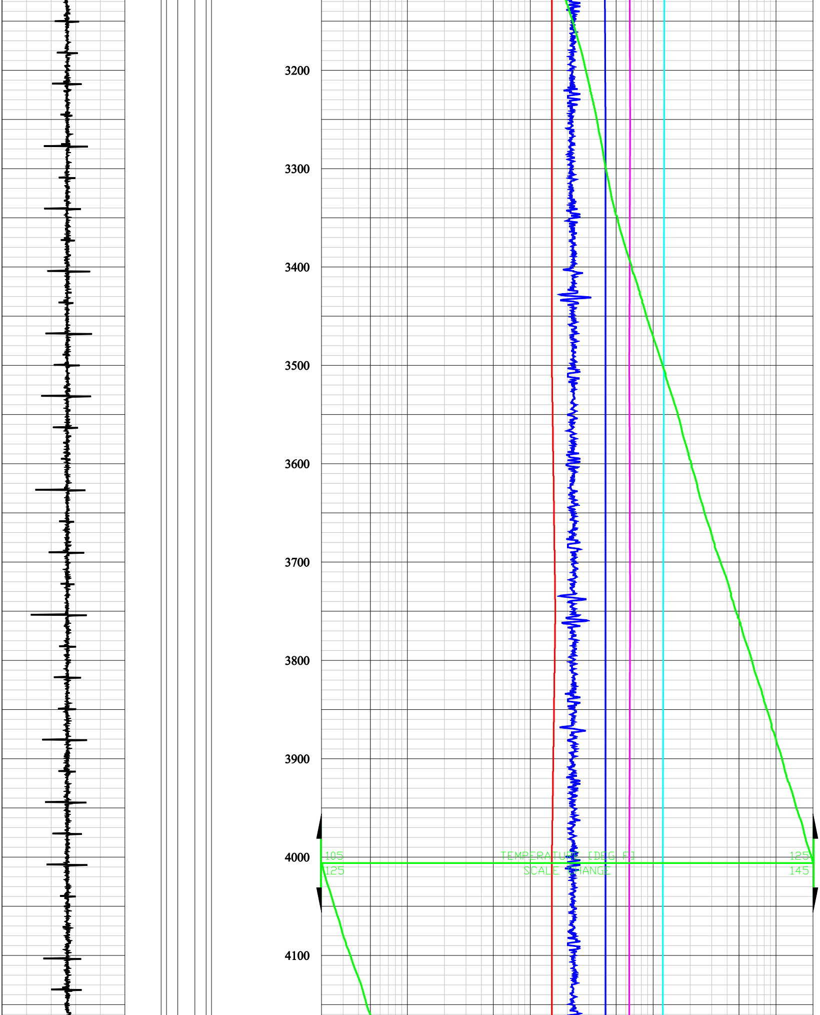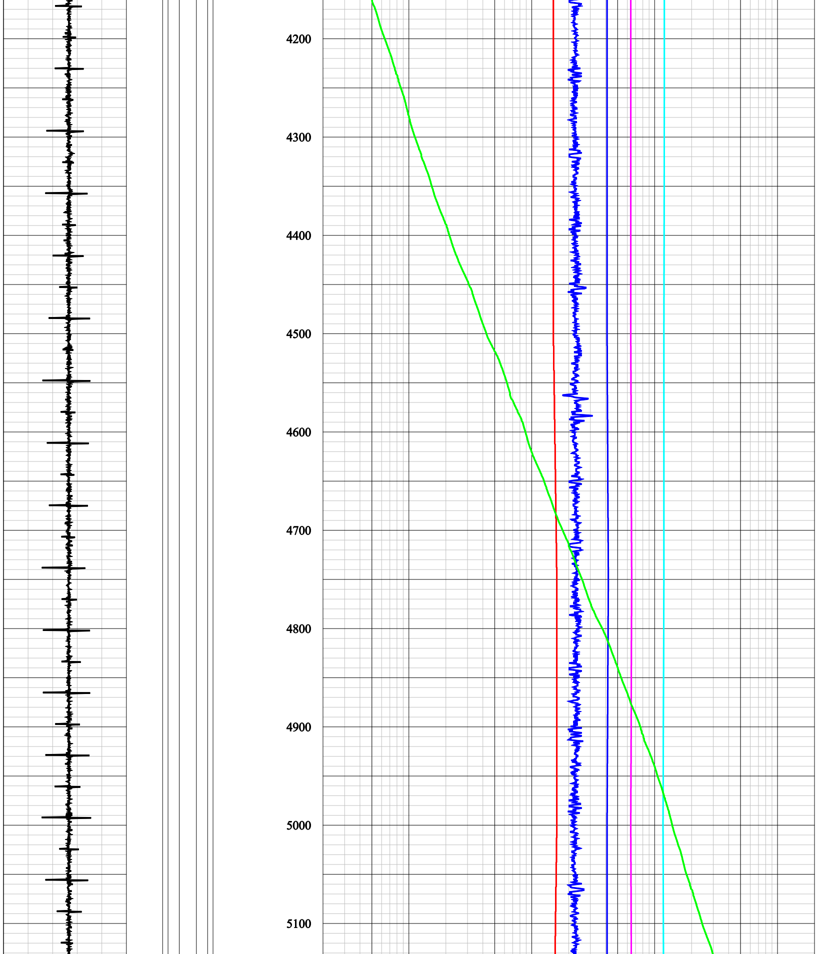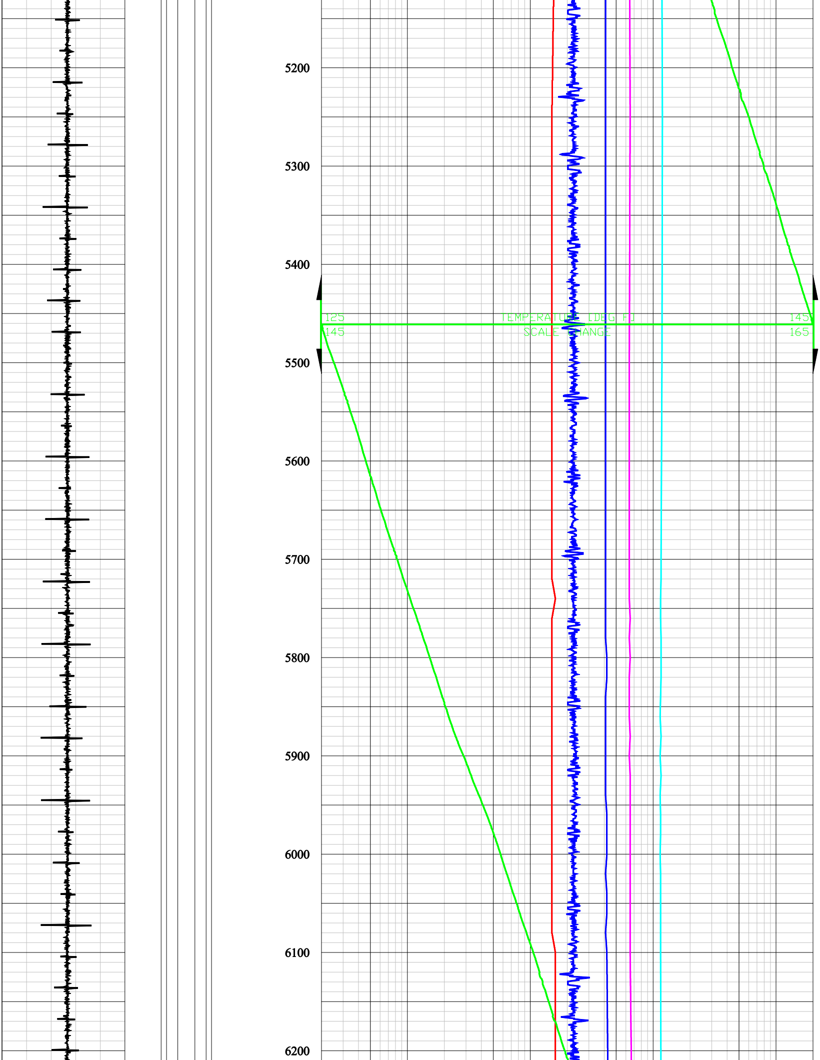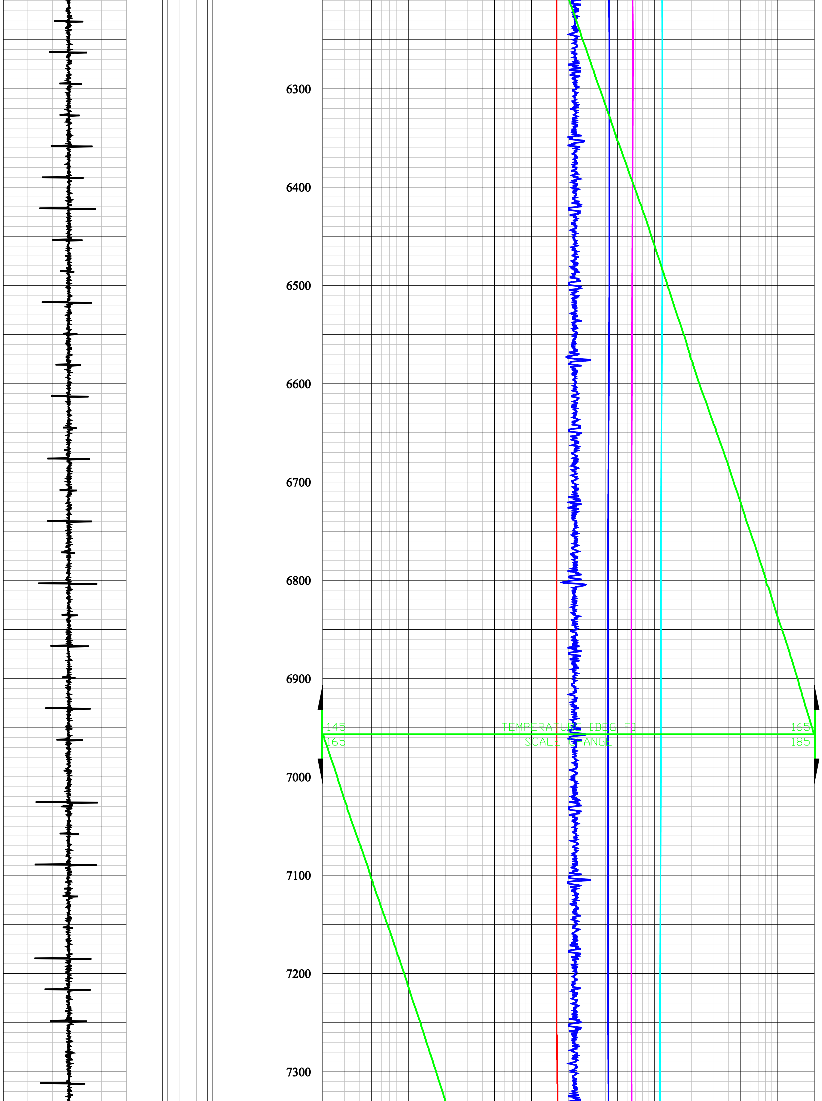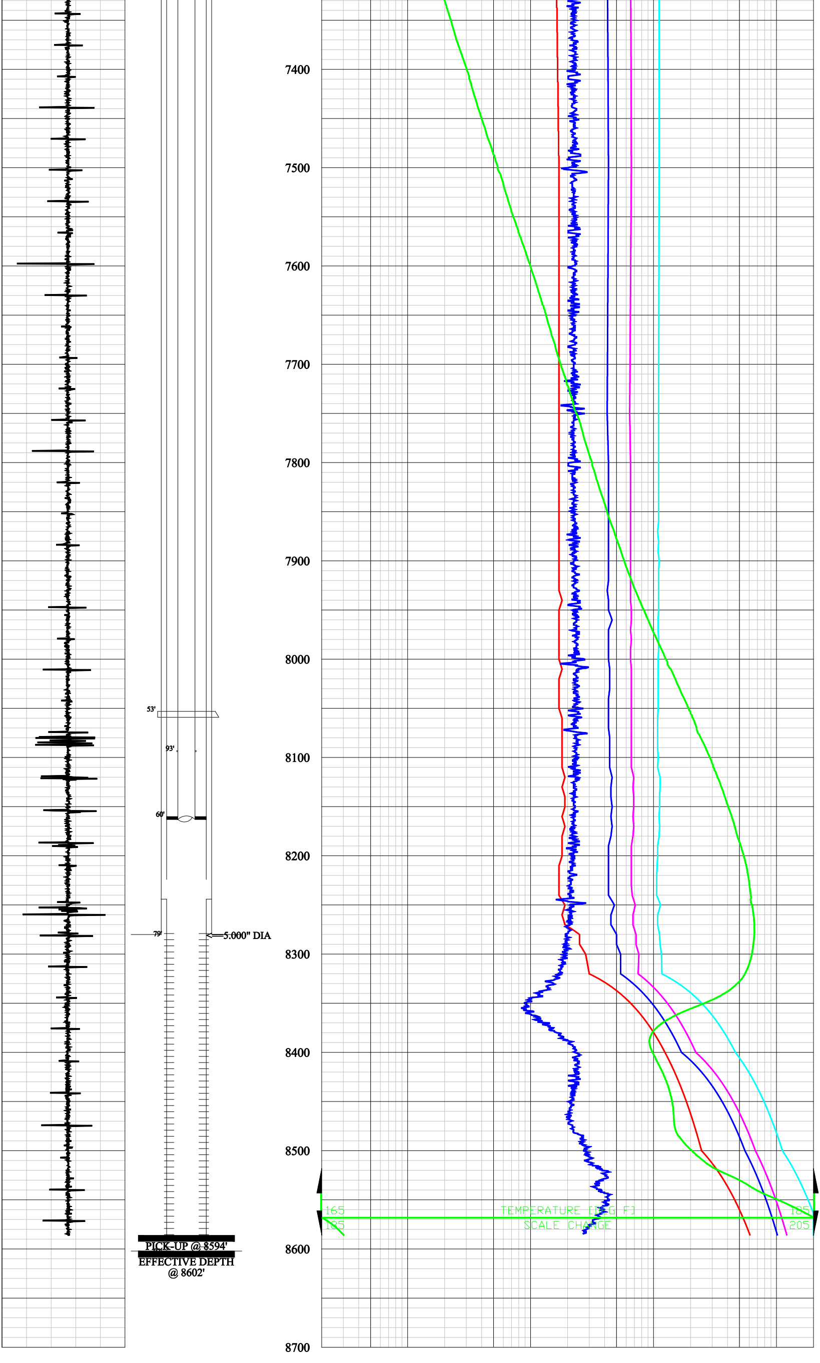```
   6100 |   11.50 |    6.50 |    4.20 |    1.60 |
   6250 |   11.60 |    6.70 |    4.30 |    1.60 |
   6500 |   11.60 |    6.60 |    4.30 |    1.60 |
   6750 |   11.30 |    6.50 |    4.20 |    1.60 |
   7000 |   11.30 |    6.50 |    4.20 |    1.60 |
   7250 |   11.10 |    6.50 |    4.20 |    1.60 |
   7500 |   11.10 |    6.60 |    4.30 |    1.70 |
   7750 |   11.00 |    6.40 |    4.20 |    1.70 |
   7800 |   11.00 |    6.50 |    4.30 |    1.70 |
   7810 |   11.00 |    6.50 |    4.30 |    1.70 |
   7820 |   11.00 |    6.50 |    4.30 |    1.70 |
   7830 |   11.00 |    6.50 |    4.30 |    1.70 |
   7840 |   11.00 |    6.50 |    4.30 |    1.70 |
   7850 |   11.00 |    6.50 |    4.30 |    1.70 |
   7860 |   11.00 |    6.50 |    4.30 |    1.70 |
   7870 |   10.80 |    6.50 |    4.30 |    1.70 |
   7880 |   11.00 |    6.50 |    4.30 |    1.70 |
   7890 |   10.90 |    6.50 |    4.30 |    1.70 |
   7900 |   11.10 |    6.50 |    4.30 |    1.70 |
   7910 |   11.00 |    6.50 |    4.30 |    1.70 |
   7920 |   11.00 |    6.50 |    4.30 |    1.70 |
   7930 |   11.00 |    6.50 |    4.20 |    1.70 |
   7940 |   11.00 |    6.50 |    4.30 |    1.80 |
   7950 |   11.00 |    6.60 |    4.30 |    1.70 |
   7960 |   10.90 |    6.60 |    4.60 |    1.70 |
   7970 |   10.90 |    6.50 |    4.30 |    1.70 |
   7980 |   11.00 |    6.60 |    4.30 |    1.70 |
   7990 |   11.00 |    6.50 |    4.30 |    1.70 |
   8000 |   10.90 |    6.50 |    4.30 |    1.70 |
   8010 |   10.90 |    6.60 |    4.40 |    1.80 |
   8020 |   10.90 |    6.60 |    4.40 |    1.70 |
   8030 |   10.90 |    6.60 |    4.40 |    1.70 |
   8040 |   10.90 |    6.60 |    4.30 |    1.70 |
   8050 |   10.90 |    6.60 |    4.30 |    1.70 |
   8060 |   10.80 |    6.60 |    4.30 |    1.80 |
   8070 |   10.80 |    6.60 |    4.30 |    1.80 |
   8080 |   10.80 |    6.60 |    4.40 |    1.80 |
   8090 |   10.80 |    6.60 |    4.40 |    1.80 |
   8100 |   10.90 |    6.60 |    4.40 |    1.80 |
   8110 |   10.80 |    6.60 |    4.40 |    1.80 |
   8120 |   11.30 |    6.90 |    4.60 |    1.90 |
   8130 |   11.30 |    6.80 |    4.50 |    1.80 |
   8140 |   11.20 |    6.90 |    4.50 |    1.90 |
   8150 |   11.20 |    6.90 |    4.60 |    1.90 |
   8160 |   11.10 |    6.80 |    4.50 |    1.80 |
   8170 |   11.20 |    6.90 |    4.60 |    1.90 |
   8180 |   11.10 |    6.80 |    4.50 |    1.80 |
   8190 |   10.80 |    6.60 |    4.30 |    1.80 |
   8200 |   10.80 |    6.60 |    4.30 |    1.80 |
   8210 |   10.70 |    6.60 |    4.30 |    1.70 |
   8220 |   10.60 |    6.60 |    4.30 |    1.70 |
   8230 |   10.60 |    6.60 |    4.30 |    1.70 |
   8240 |   10.60 |    6.70 |    4.30 |    1.70 |
   8250 |   11.40 |    7.10 |    4.80 |    1.90 |    LINER TOP
   8260 |   10.80 |    6.80 |    4.50 |    1.80 |
   8270 |   10.80 |    6.80 |    4.50 |    1.90 |
   8280 |   11.20 |    7.20 |    5.00 |    2.50 |
   8290 |   11.30 |    7.20 |    5.00 |    2.50 |
   8300 |   11.60 |    7.60 |    5.40 |    2.80 |
   8320 |   11.70 |    7.50 |    5.40 |    3.00 |
   8400 |   46.40 |   22.10 |   16.90 |   12.40 |
   8500 |  111.90 |   67.40 |   55.40 |   24.60 |
   8586 |  230.40 |  121.50 |  101.80 |   61.00 |
```