

## GEOLOGIST'S REPORT

## DRILLING TIME AND SAMPLE LOG

|                                                        |                      |                      |
|--------------------------------------------------------|----------------------|----------------------|
| COMPANY <u>THUNDERBIRD DRILLING, INC.</u>              |                      | ELEVATIONS           |
| LEASE <u>#1 MERMIS</u>                                 |                      | K.B. <u>1802</u>     |
| FIELD <u>WILCAT</u>                                    |                      | D.F. <u>1799</u>     |
| LOCATION <u>NE SW NE</u>                               |                      | GL. <u>1797</u>      |
| SEC. <u>33</u> TWS. <u>12 S</u> RNG. <u>15 W</u>       |                      | Measurements Are All |
| COUNTY <u>RUSSELL</u> STATE <u>KANSAS</u>              |                      | From <u>1802</u>     |
| CONTRACTOR <u>SAGE DRILLING CO.</u>                    |                      | CASING               |
| SPUD <u>8/68</u> COMP. <u>8/68</u>                     | SURFACE <u>210 W</u> |                      |
| RTD <u>3262</u> LTD <u>-</u>                           | PRODUCTION           |                      |
| MUD UP <u>2700</u> TYPE MUD <u>SALT</u>                | ELECTRICAL SURVEYS   |                      |
| SAMPLES SAVED FROM <u>2650</u> TO <u>3262</u>          |                      | <u>NONE</u>          |
| DRILLING TIME KEPT FROM <u>2650</u> TO <u>3262</u>     |                      |                      |
| SAMPLES EXAMINED FROM <u>2650</u> TO <u>3262</u>       |                      |                      |
| GEOLOGICAL SUPERVISION FROM <u>2750</u> TO <u>3262</u> |                      |                      |
| GEOLOGIST ON WELL <u>CHARLES R. MAYFIELD</u>           |                      |                      |

REMARKS:

D. & A.

**LEGEND**



| DEPTH | LITHOLOGY             | DRILLING TIME - In Minutes Per Foot<br>RATE OF PENETRATION DECREASES |     |     |     | SAMPLE DESCRIPTIONS                                                                           |
|-------|-----------------------|----------------------------------------------------------------------|-----|-----|-----|-----------------------------------------------------------------------------------------------|
|       |                       | 5'                                                                   | 10' | 15' | 20' |                                                                                               |
| 2650  |                       |                                                                      |     |     |     |                                                                                               |
| 60    |                       |                                                                      |     |     |     |                                                                                               |
| 66    | Howard (-864) 66      |                                                                      |     |     |     | 1st, white chalky foss. poor por. - no show.                                                  |
| 70    |                       |                                                                      |     |     |     |                                                                                               |
| 80    |                       |                                                                      |     |     |     |                                                                                               |
| 90    |                       |                                                                      |     |     |     |                                                                                               |
| 2700  | Topoka (-998) 60      |                                                                      |     |     |     | 1st, white foss. to chalky foss. - fair por. - no show.                                       |
| 10    |                       |                                                                      |     |     |     |                                                                                               |
| 20    |                       |                                                                      |     |     |     |                                                                                               |
| 30    |                       |                                                                      |     |     |     |                                                                                               |
| 40    |                       |                                                                      |     |     |     |                                                                                               |
| 50    |                       |                                                                      |     |     |     |                                                                                               |
| 60    |                       |                                                                      |     |     |     |                                                                                               |
| 70    |                       |                                                                      |     |     |     |                                                                                               |
| 80    |                       |                                                                      |     |     |     |                                                                                               |
| 90    |                       |                                                                      |     |     |     |                                                                                               |
| 2800  |                       |                                                                      |     |     |     |                                                                                               |
| 10    |                       |                                                                      |     |     |     |                                                                                               |
| 20    |                       |                                                                      |     |     |     |                                                                                               |
| 30    |                       |                                                                      |     |     |     |                                                                                               |
| 40    |                       |                                                                      |     |     |     |                                                                                               |
| 43    | Pal. Hills (-1001) 43 |                                                                      |     |     |     |                                                                                               |
| 50    |                       |                                                                      |     |     |     |                                                                                               |
| 60    |                       |                                                                      |     |     |     |                                                                                               |
| 70    |                       |                                                                      |     |     |     |                                                                                               |
| 80    |                       |                                                                      |     |     |     |                                                                                               |
| 83    |                       |                                                                      |     |     |     | 1st, white chalky foss., trace of fresh oil stain, abundant dead stain; no free oil, no odor. |
| 90    |                       |                                                                      |     |     |     |                                                                                               |
| 2900  |                       |                                                                      |     |     |     |                                                                                               |
| 10    |                       |                                                                      |     |     |     |                                                                                               |
| 20    |                       |                                                                      |     |     |     |                                                                                               |
| 30    |                       |                                                                      |     |     |     |                                                                                               |
| 23    | Heerline (-1121) 23   |                                                                      |     |     |     |                                                                                               |
| 30    |                       |                                                                      |     |     |     |                                                                                               |
| 41    | Tornado (-1139) 41    |                                                                      |     |     |     | 1st, white chalky sh. foss. disc. trace fresh stain, v. poor por. no free oil, no odor.       |
| 50    |                       |                                                                      |     |     |     |                                                                                               |
| 60    |                       |                                                                      |     |     |     |                                                                                               |
| 72    | San Jo (-1170) 72     |                                                                      |     |     |     | 1st, white chalky foss. disc. no show.                                                        |
| 80    |                       |                                                                      |     |     |     |                                                                                               |
| 90    |                       |                                                                      |     |     |     |                                                                                               |
| 3000  |                       |                                                                      |     |     |     |                                                                                               |
| 10    |                       |                                                                      |     |     |     | 1st, white chalky foss. w/sect. trace fresh stain, v. poor por. free oil, no odor.            |
| 20    |                       |                                                                      |     |     |     |                                                                                               |
| 21    |                       |                                                                      |     |     |     | 1st, white calc. to foss. chalky, poor to fair por. show of free oil, fair odor.              |
| 30    |                       |                                                                      |     |     |     |                                                                                               |
| 40    |                       |                                                                      |     |     |     |                                                                                               |
| 50    |                       |                                                                      |     |     |     | 1st, tan calc. to foss. sm. chalk v. poor por. weak sd. oil still, no odor.                   |
| 60    |                       |                                                                      |     |     |     |                                                                                               |
| 70    |                       |                                                                      |     |     |     | 1st, buff calc., gd. por., no show.                                                           |
| 80    |                       |                                                                      |     |     |     |                                                                                               |
| 90    |                       |                                                                      |     |     |     |                                                                                               |
| 3100  |                       |                                                                      |     |     |     |                                                                                               |
| 10    |                       |                                                                      |     |     |     | 1st, white chalk & chalky disc.                                                               |
| 20    |                       |                                                                      |     |     |     |                                                                                               |
| 30    |                       |                                                                      |     |     |     | 1st, white chalky foss., no show fair por.                                                    |
| 40    |                       |                                                                      |     |     |     |                                                                                               |
| 50    |                       |                                                                      |     |     |     | 1st, white foss., poor to fair por. no show.                                                  |
| 60    |                       |                                                                      |     |     |     |                                                                                               |
| 70    |                       |                                                                      |     |     |     |                                                                                               |
| 80    |                       |                                                                      |     |     |     |                                                                                               |
| 90    |                       |                                                                      |     |     |     |                                                                                               |
| 3200  |                       |                                                                      |     |     |     |                                                                                               |
| 10    |                       |                                                                      |     |     |     |                                                                                               |
| 18    | Base Kan (-1421) 18   |                                                                      |     |     |     |                                                                                               |
| 20    |                       |                                                                      |     |     |     |                                                                                               |
| 29    | Canby (-1421) 29      |                                                                      |     |     |     | 1st, tan calc. to calc., very poor por., fr. fresh oil, stable.                               |
| 30    |                       |                                                                      |     |     |     |                                                                                               |
| 40    |                       |                                                                      |     |     |     | int., varicol. calc. & sh.                                                                    |
| 50    |                       |                                                                      |     |     |     |                                                                                               |
| 60    |                       |                                                                      |     |     |     |                                                                                               |
| 62    | Canby (-1460) 62      |                                                                      |     |     |     |                                                                                               |
| 70    |                       |                                                                      |     |     |     |                                                                                               |
| 71    |                       |                                                                      |     |     |     | DST #1 3010-3030 Open 1 hr., weak blow + min. Rec. 2' mud.                                    |
|       |                       |                                                                      |     |     |     | IP 32-37°<br>RHP 58-37°/38°                                                                   |