

# OILFIELD RESEARCH LABORATORIES

536 NORTH HIGHLAND - CHANUTE, KANSAS 66720 - PHONE (316) 431-2650

August 12, 1981

Hastert Oil Company  
325 North Spruce  
Garnett, Kansas 66032

Gentlemen:

Enclosed herewith is the report of the analysis of the rotary core taken from the Setter Lease, Well No. 1, located in Anderson County, Kansas and submitted to our laboratory on August 5, 1981.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES

*Sanford A. Michel*  
Sanford A. Michel *by B.L.*

SAM/kas

5 c to Garnett, Kansas

# Oilfield Research Laboratories

## GENERAL INFORMATION & SUMMARY

Company Hastert Oil Company Lease Setter Well No. 1  
 Location 660' FNL & 300' FEL NW $\frac{1}{4}$   
 Section 2 Twp. 20S Rge. 20E County Anderson State Kansas

Elevation, Feet .....

Name of Sand..... Squirrel

Top of Core ..... 619.0

Bottom of Core ..... 652.0

Top of Sand ..... 619.0

Bottom of Sand ..... 652.0

Total Feet of Permeable Sand ..... 31.0

Total Feet of Floodable Sand ..... 0.

### Distribution of Permeable Sand: Permeability Range Millidarcys

Feet

Cum. Ft.

0 - 10

3.9

3.9

10 - 20

5.7

9.6

20 - 30

13.4

23.0

30 - 45

8.0

31.0

Average Permeability Millidarcys ..... 22.9

Average Percent Porosity ..... 19.5

Average Percent Oil Saturation ..... 24.7

Average Percent Water Saturation ..... 58.6

Average Oil Content, Bbls./A. Ft. .... 373.

Total Oil Content, Bbls./Acre ..... 11,577.

Average Percent Oil Recovery by Laboratory Flooding Tests ..... 0.

Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft. .... 0.

Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre ..... 0.

Total Calculated Oil Recovery, Bbls./Acre ..... -

-2-

The core was sampled and the samples sealed in plastic bags by a representative of the client. Fresh water mud was used as a drilling fluid.

As requested by the client, only samples 1 through 11 were subjected to flooding susceptibility tests. Since these samples did not respond to flooding susceptibility tests, no calculated recovery is given.

FORMATION CORED

The detailed log of the formation cored is as follows:

| <u>Depth Interval,<br/>Feet</u> | <u>Description</u>                             |
|---------------------------------|------------------------------------------------|
| 619.0 - 622.0                   | Light brown sandstone.                         |
| 622.0 - 624.0                   | Grayish light brown shaly sandstone.           |
| 624.0 - 628.1                   | Light brown sandstone.                         |
| 628.1 - 630.3                   | Grayish light brown shaly sandstone.           |
| 630.3 - 631.0                   | Light brown sandstone.                         |
| 632.0 - 648.3                   | Grayish light brown sandstone.                 |
| 648.3 - 649.3                   | Grayish light brown shaly sandstone.           |
| 649.3 - 650.3                   | Grayish light brown sandstone.                 |
| 650.3 - 651.0                   | Grayish light brown micaceous shaly sandstone. |
| 651.0 - 652.0                   | Light brown sandstone.                         |

## RESULTS OF SATURATION &amp; PERMEABILITY TESTS

TABLE 1-B

Company Hastert Oil CompanyLease SetterWell No. 1

| Sample No. | Depth, Feet | Effective Porosity Percent | Percent Saturation |       |       | Oil Content Bbls. / A Ft. | Perm., Mill. | Feet of Sand |          | Total Oil Content | Perm. Capacity Ft. X md. |
|------------|-------------|----------------------------|--------------------|-------|-------|---------------------------|--------------|--------------|----------|-------------------|--------------------------|
|            |             |                            | Oil                | Water | Total |                           |              | Ft.          | Cum. Ft. |                   |                          |
| 1          | 619.5       | 19.0                       | 27                 | 46    | 73    | 398                       | 11.          | 1.0          | 1.0      | 398               | 11.00                    |
| 2          | 620.3       | 19.7                       | 23                 | 49    | 72    | 352                       | 11.          | 1.0          | 2.0      | 352               | 11.00                    |
| 3          | 621.4       | 22.5                       | 25                 | 39    | 64    | 436                       | 43.          | 1.0          | 3.0      | 436               | 43.00                    |
| 4          | 622.3       | 16.9                       | 40                 | 52    | 92    | 524                       | 6.7          | 1.0          | 4.0      | 524               | 6.70                     |
| 5          | 624.2       | 20.3                       | 27                 | 44    | 71    | 425                       | 31.          | 1.0          | 5.0      | 425               | 31.00                    |
| 6          | 625.5       | 19.5                       | 26                 | 49    | 75    | 393                       | 33.          | 1.0          | 6.0      | 393               | 33.00                    |
| 7          | 626.5       | 19.4                       | 19                 | 56    | 75    | 286                       | 44.          | 1.0          | 7.0      | 286               | 44.00                    |
| 8          | 627.6       | 19.8                       | 20                 | 58    | 78    | 307                       | 22.          | 1.1          | 8.1      | 338               | 24.20                    |
| 9          | 628.6       | 19.1                       | 20                 | 56    | 76    | 296                       | 26.          | 1.0          | 9.1      | 296               | 26.00                    |
| 10         | 629.3       | 16.6                       | 10                 | 78    | 88    | 129                       | 4.7          | 1.2          | 10.3     | 155               | 5.64                     |
| 11         | 630.4       | 19.4                       | 29                 | 41    | 70    | 437                       | 19.          | 0.7          | 11.0     | 306               | 13.30                    |
| 12         | 632.6       | 19.6                       | 21                 | 64    | 85    | 319                       | 20.          | 1.0          | 12.0     | 319               | 20.00                    |
| 13         | 633.6       | 19.3                       | 36                 | 49    | 85    | 539                       | 21.          | 1.0          | 13.0     | 539               | 21.00                    |
| 14         | 634.6       | 19.9                       | 30                 | 60    | 90    | 463                       | 24.          | 1.0          | 14.0     | 463               | 24.00                    |
| 15         | 635.5       | 20.1                       | 31                 | 60    | 91    | 483                       | 43.          | 1.0          | 15.0     | 483               | 43.00                    |
| 16         | 636.5       | 20.7                       | 21                 | 66    | 87    | 337                       | 38.          | 1.0          | 16.0     | 337               | 38.00                    |
| 17         | 637.6       | 18.1                       | 29                 | 64    | 93    | 407                       | 24.          | 1.0          | 17.0     | 407               | 24.00                    |
| 18         | 638.5       | 18.6                       | 18                 | 69    | 87    | 260                       | 11.          | 1.0          | 18.0     | 260               | 11.00                    |
| 19         | 639.6       | 20.4                       | 21                 | 63    | 84    | 332                       | 27.          | 1.0          | 19.0     | 332               | 27.00                    |
| 20         | 640.6       | 22.1                       | 25                 | 63    | 88    | 429                       | 37.          | 1.0          | 20.0     | 429               | 37.00                    |
| 21         | 641.4       | 20.2                       | 18                 | 75    | 93    | 282                       | 35.          | 1.0          | 21.0     | 282               | 35.00                    |
| 22         | 642.5       | 20.2                       | 13                 | 77    | 90    | 204                       | 20.          | 1.0          | 22.0     | 204               | 20.00                    |
| 23         | 643.5       | 17.1                       | 30                 | 65    | 95    | 398                       | 15.          | 1.0          | 23.0     | 398               | 15.00                    |
| 24         | 644.5       | 19.4                       | 29                 | 68    | 97    | 437                       | 25.          | 1.0          | 24.0     | 437               | 25.00                    |
| 25         | 645.5       | 19.7                       | 16                 | 74    | 90    | 245                       | 20.          | 1.0          | 25.0     | 245               | 20.00                    |
| 26         | 646.7       | 21.5                       | 27                 | 65    | 92    | 450                       | 29.          | 1.0          | 26.0     | 450               | 29.00                    |
| 27         | 647.4       | 21.2                       | 26                 | 51    | 77    | 428                       | 26.          | 1.3          | 27.3     | 556               | 33.80                    |
| 28         | 648.6       | 18.4                       | 28                 | 59    | 87    | 400                       | 1.7          | 1.0          | 28.3     | 400               | 1.70                     |
| 29         | 649.6       | 20.5                       | 26                 | 44    | 70    | 414                       | 25.          | 1.0          | 29.3     | 414               | 25.00                    |
| 30         | 650.5       | 17.3                       | 23                 | 60    | 83    | 309                       | 0.80         | 0.7          | 30.0     | 216               | 0.56                     |
| 31         | 651.5       | 18.3                       | 35                 | 47    | 82    | 497                       | 12.          | 1.0          | 31.0     | 497               | 12.00                    |

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## SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

| Company                 |                          | Lease                                   |                                       | Setter                                 |                                       | Well No.                           |  |
|-------------------------|--------------------------|-----------------------------------------|---------------------------------------|----------------------------------------|---------------------------------------|------------------------------------|--|
| Hastert Oil Company     |                          |                                         |                                       |                                        |                                       | 1                                  |  |
| Depth Interval,<br>Feet | Feet of Core<br>Analyzed | Average<br>Permeability,<br>Millidarcys | Permeability<br>Capacity<br>Ft. x Md. |                                        |                                       |                                    |  |
| 619.0 - 652.0           | 31.0                     | 22.9                                    | 710.90                                |                                        |                                       |                                    |  |
| Depth Interval,<br>Feet | Feet of Core<br>Analyzed | Average<br>Percent<br>Porosity          | Average<br>Percent Oil<br>Saturation  | Average<br>Percent Water<br>Saturation | Average<br>Oil Content<br>Bbl./A. Ft. | Total Oil<br>Content<br>Bbls./Acre |  |
| 619.0 - 652.0           | 31.0                     | 19.5                                    | 24.7                                  | 58.6                                   | 373                                   | 11,577                             |  |

# Oilfield Research Laboratories

## RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

| Company    |             |                            | Hastert Oil Company     |              |              | Lease        |                     | Setter  |                               | Well No.                             |                                                | 1            |  |
|------------|-------------|----------------------------|-------------------------|--------------|--------------|--------------|---------------------|---------|-------------------------------|--------------------------------------|------------------------------------------------|--------------|--|
| Sample No. | Depth, Feet | Effective Porosity Percent | Original Oil Saturation |              | Oil Recovery |              | Residual Saturation |         | Volume of Water Recovered cc* | Effective Permeability Millidarcys** | Initial Fluid Production Pressure Lbs./Sq./In. |              |  |
|            |             |                            | %                       | Bbls./A. Ft. | %            | Bbls./A. Ft. | % Oil               | % Water |                               |                                      |                                                | Bbls./A. Ft. |  |
| 1          | 619.5       | 19.1                       | 27                      | 400          | 0            | 0            | 27                  | 57      | 400                           | 10                                   | 0.15                                           | 35           |  |
| 2          | 620.3       | 19.8                       | 23                      | 353          | 0            | 0            | 23                  | 67      | 353                           | 10                                   | 0.15                                           | 50           |  |
| 3          | 621.4       | 22.6                       | 25                      | 438          | 0            | 0            | 25                  | 60      | 438                           | 60                                   | 0.97                                           | 35           |  |
| 4          | 622.3       | 17.3                       | 39                      | 523          | 0            | 0            | 39                  | 54      | 523                           | 0                                    | Imp.                                           | -            |  |
| 5          | 624.2       | 20.4                       | 27                      | 427          | 0            | 0            | 27                  | 69      | 427                           | 82                                   | 1.50                                           | 30           |  |
| 6          | 625.5       | 19.6                       | 26                      | 395          | 0            | 0            | 26                  | 68      | 395                           | 88                                   | 1.57                                           | 30           |  |
| 7          | 626.5       | 19.3                       | 19                      | 284          | 0            | 0            | 19                  | 72      | 284                           | 10                                   | 0.15                                           | 50           |  |
| 8          | 627.6       | 19.7                       | 20                      | 306          | 0            | 0            | 20                  | 75      | 306                           | 78                                   | 1.12                                           | 25           |  |
| 9          | 628.6       | 19.2                       | 20                      | 298          | 0            | 0            | 20                  | 69      | 298                           | 18                                   | 0.22                                           | 35           |  |
| 10         | 629.3       | 10.5                       | 25                      | 204          | 0            | 0            | 25                  | 64      | 204                           | 0                                    | Imp.                                           | -            |  |
| 11         | 630.4       | 19.5                       | 29                      | 439          | 0            | 0            | 29                  | 50      | 439                           | 10                                   | 0.30                                           | 50           |  |

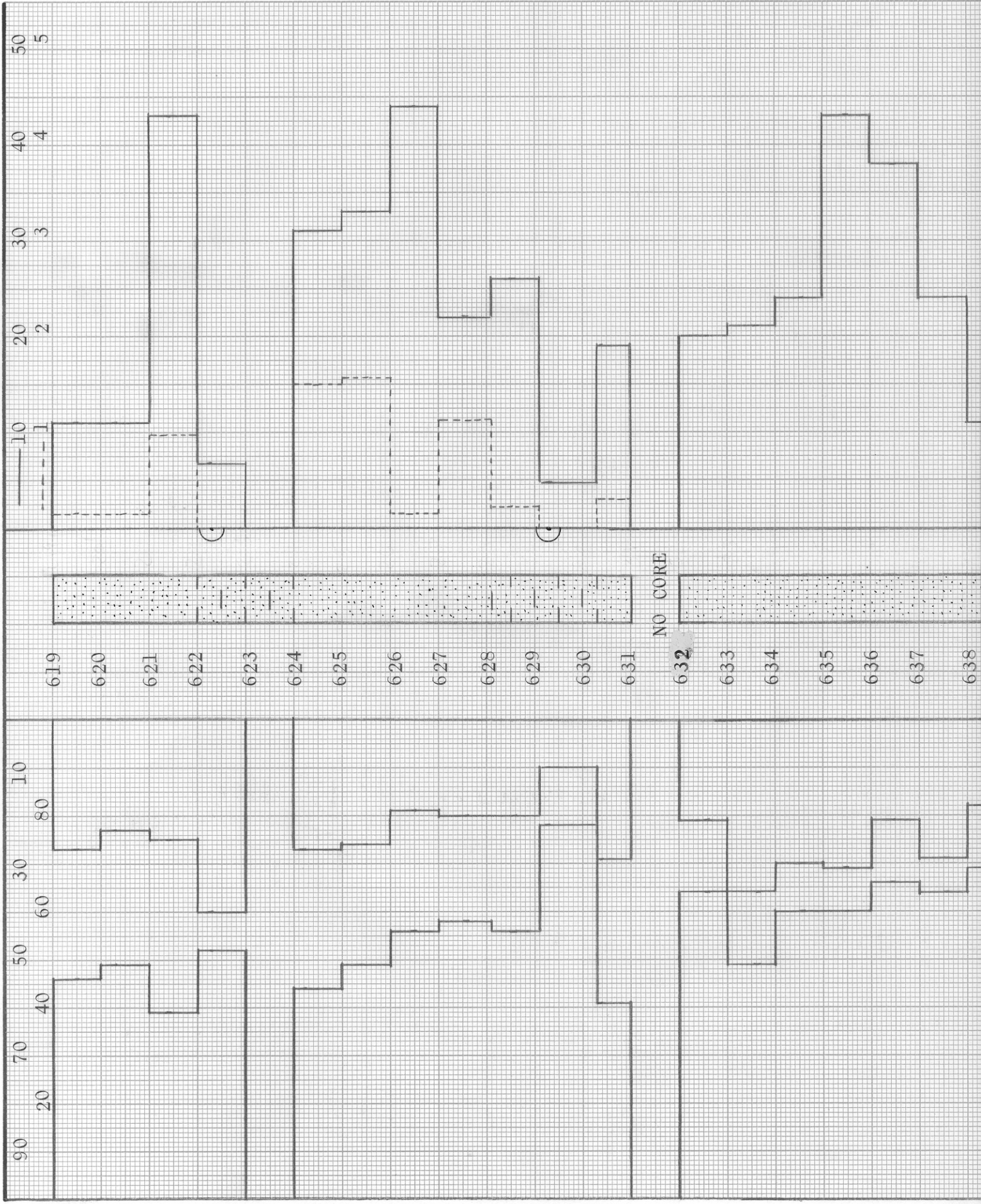
Notes: cc—cubic centimeter.

\*—Volume of water recovered at the time of maximum oil recovery.

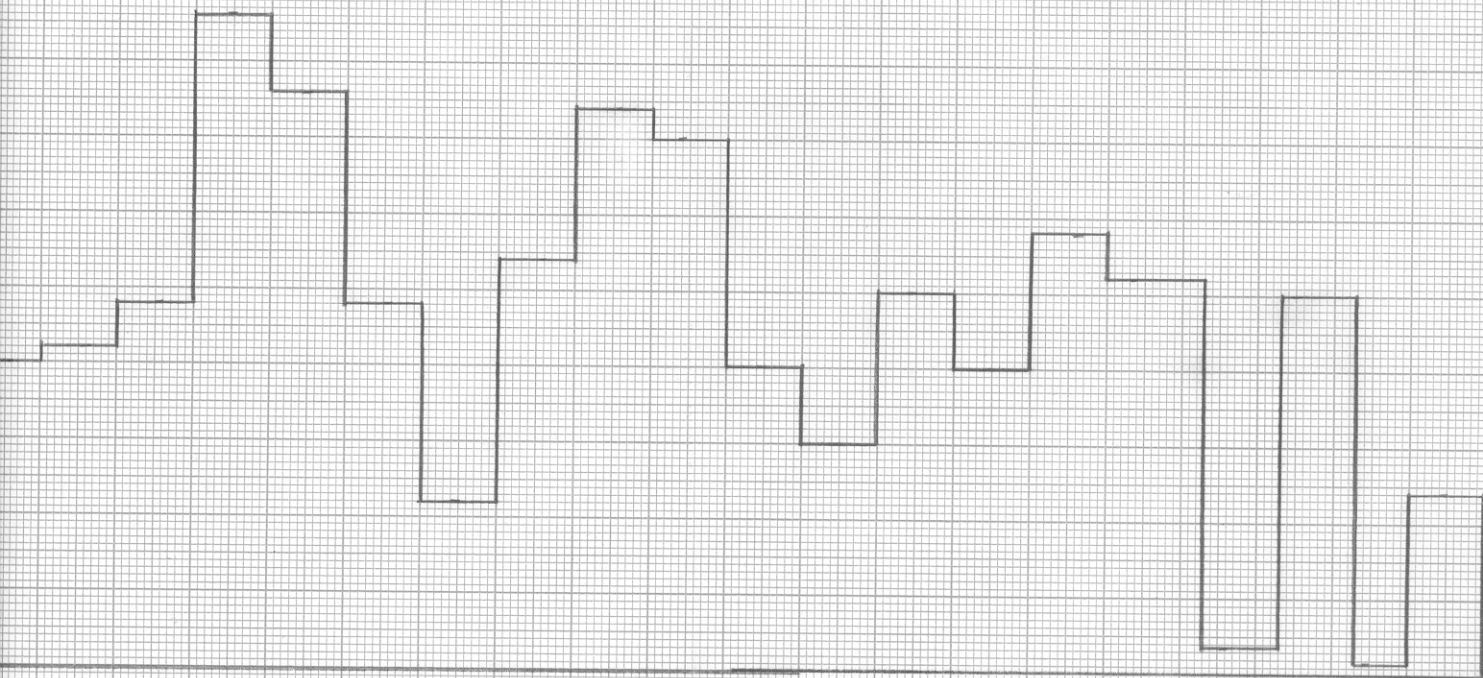
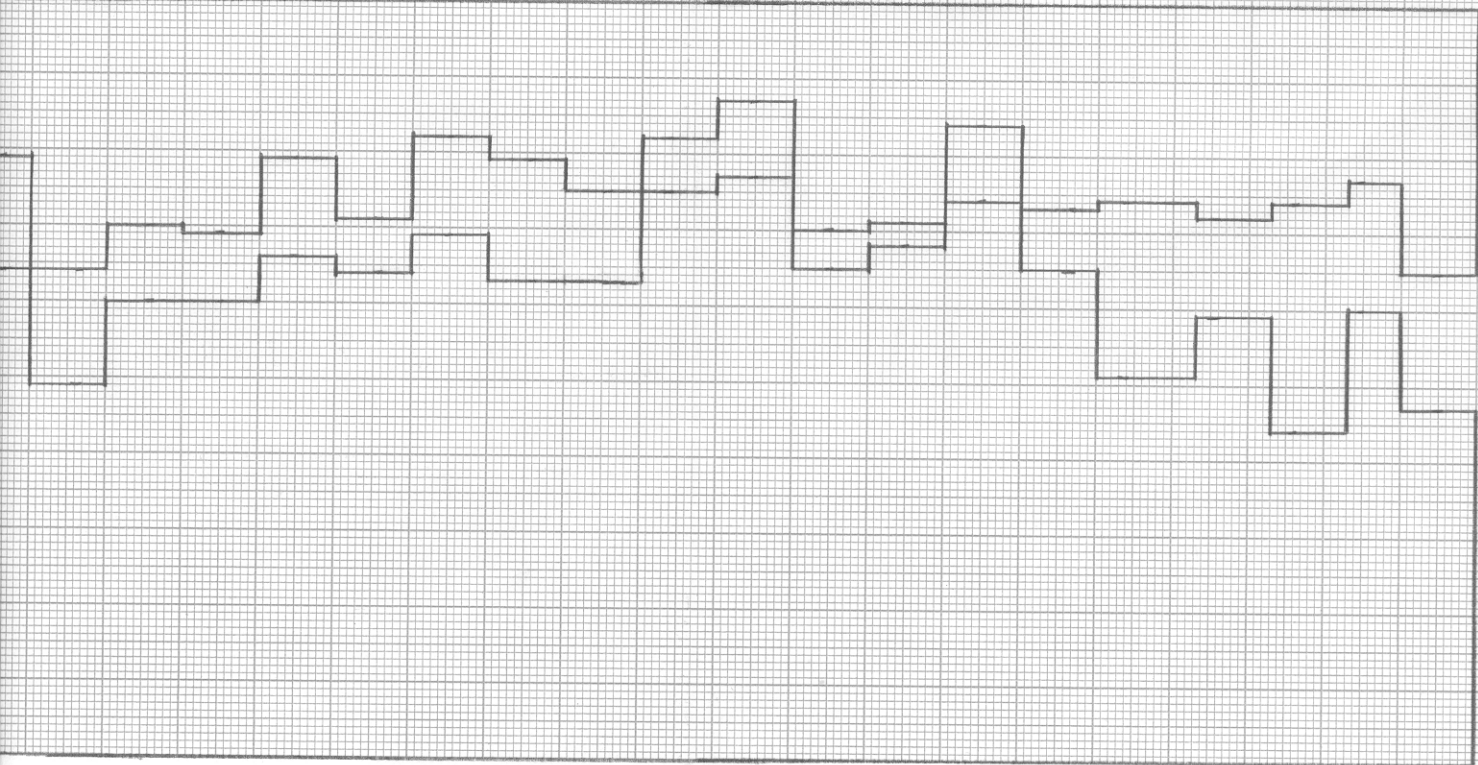
\*\*—Determined by passing water through sample which still contains residual oil.

WATER SAT., PERCENT → ← OIL SAT., PERCENT

— PERMEABILITY, IN MILLIDARCYS  
--- EFFECTIVE PERMEABILITY TO WATER, IN MILLIDARCYS



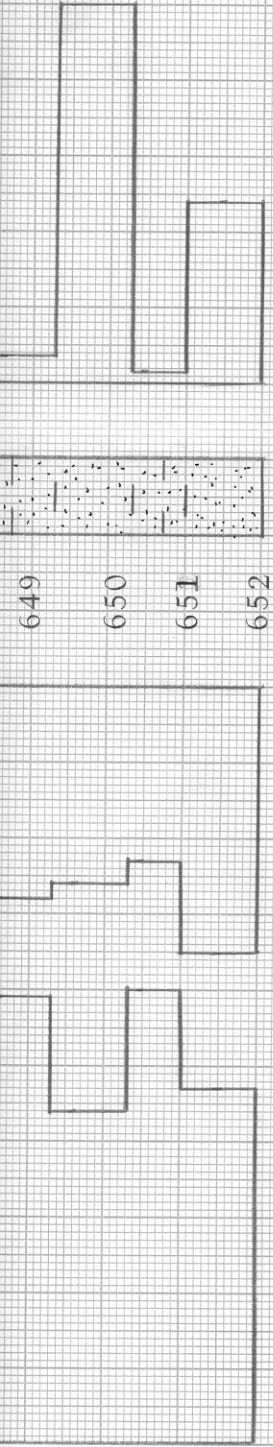
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KEY:



SHALY SANDSTONE



KEY:



SANDSTONE

SHALY SANDSTONE

IMPERMEABLE TO WATER

# HASTERT OIL COMPANY

SETTER LEASE

ANDERSON COUNTY, KANSAS

WELL NO. 1

| DEPTH INTERVAL,<br>FEET | FEET OF CORE<br>ANALYZED | AVERAGE<br>POROSITY<br>PERCENT | AVG. OIL<br>SATURATION<br>PERCENT | AVG. WATER<br>SATURATION<br>PERCENT | AVERAGE<br>PERMEABILITY,<br>MILLIDARCS | CALCULATED<br>OIL RECOVERY<br>BBLs. / ACRE |
|-------------------------|--------------------------|--------------------------------|-----------------------------------|-------------------------------------|----------------------------------------|--------------------------------------------|
| 619.0 - 652.0           | 31.0                     | 19.5                           | 24.7                              | 58.6                                | 22.9                                   | -                                          |

OILFIELD RESEARCH LABORATORIES  
 CHANUTE, KANSAS  
 AUGUST, 1981

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