

OILFIELD RESEARCH LABORATORIES

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

January 27, 1981

Tech-American (Kansas), Inc.
P. O. Box 467
Moran, Kansas 66755

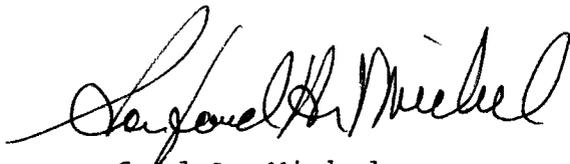
Gentlemen:

Enclosed herewith is the report of the analysis of the rotary core taken from the Tophan Lease, Well No. 16, located in Wilson County, Kansas and submitted to our laboratory on December 12, 1980.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES



Sanford A. Michel

SAM/kas

5 c to Moran, Kansas

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GENERAL INFORMATION & SUMMARY

Company Tech-American (Kansas), Inc. Lease Tophan Well No. 16

Location NE - NW - SE

Section 22 Twp. 28S Rge. 15E County Wilson State Kansas

Elevation, Feet - - - - -

Name of Sand - - - - - Bartlesville

Top of Core - - - - - 1015.0

Bottom of Core - - - - - 1029.6

Top of Sand - - - - - 1019.4

Bottom of Sand - - - - - (Tested) 1026.7

Total Feet of Permeable Sand - - - - - 3.6

Total Feet of Floodable Sand - - - - - 0.0

| Distribution of Permeable Sand: Permeability Range Millidarcys | Feet | Cum. Ft. |
|--|------|----------|
| 0 - 3 | 2.5 | 2.5 |
| 12 & Above | 1.1 | 3.6 |

Average Permeability Millidarcys - - - - - 4.6

Average Percent Porosity - - - - - 13.9

Average Percent Oil Saturation - - - - - 43.1

Average Percent Water Saturation - - - - - 33.9

Average Oil Content, Bbls./A. Ft. - - - - - 472.

Total Oil Content, Bbls./Acre - - - - - 3,447.

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 - - - - - 0.

-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.

Since the core 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, Feet</u> | <u>Description</u> |
|---------------------------------|---|
| 1015.0 - 1019.4 | Gray sandy shale. |
| 1019.4 - 1022.9 | Grayish brown shaly sandstone. |
| 1022.9 - 1024.0 | Brown sandstone. |
| 1024.0 - 1026.7 | Light brown and gray laminated sandstone and shale. |
| 1026.7 - 1029.6 | Gray laminated sandstone and shale. |

RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Tech-American (Kansas), Inc. Lease Tophan Well No. 16

| 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 | 1019.6 | 16.3 | 51 | 28 | 79 | 645 | Imp. | 1.0 | 1.0 | 645 | 0.00 |
| 2 | 1020.5 | 14.7 | 45 | 27 | 72 | 513 | 2.5 | 1.0 | 2.0 | 513 | 2.50 |
| 3 | 1021.5 | 15.8 | 45 | 26 | 71 | 552 | 0.42 | 0.5 | 2.5 | 276 | 0.21 |
| 4 | 1022.4 | 11.9 | 40 | 42 | 82 | 369 | 0.78 | 1.0 | 3.5 | 369 | 0.78 |
| 5 | 1023.5 | 14.0 | 53 | 25 | 78 | 576 | 12. | 1.1 | 4.6 | 634 | 13.20 |
| 6 | 1024.4 | 14.4 | 46 | 28 | 74 | 514 | Imp. | 1.0 | 5.6 | 514 | 0.00 |
| 7 | 1025.4 | 13.3 | 29 | 42 | 71 | 299 | Imp. | 1.0 | 6.6 | 299 | 0.00 |
| 8 | 1026.5 | 11.0 | 33 | 57 | 90 | 282 | Imp. | 0.7 | 7.3 | 197 | 0.00 |

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

| Company | Lease | Tophan | Well No. |
|------------------------------|-------------------------|--------------------------|---|
| Tech-American (Kansas), Inc. | | | |
| | Depth Interval, Feet | Feet of Core Analyzed | Average Permeability, Millidarcys |
| | 1019.4 - 1026.7 | 3.6 | 4.6 |
| | | | Permeability Capacity Ft. x Md. |
| | | | 16.69 |
| | Depth Interval, Feet | Feet of Core Analyzed | Average Percent Water Saturation |
| | 1019.4 - 1026.7 | 7.3 | 43.1 |
| | | | Average Oil Content Bbl./A. Ft. |
| | | | 33.9 |
| | | | Total Oil Content Bbls./Acre |
| | | | 472 |
| | | | 3,447 |

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Well No. 16

Lease Tophan

Tech-American (Kansas), Inc.

Company

| 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 | 1019.6 | 15.8 | 52 | 637 | 0 | 0 | 52 | 30 | 637 | 0 | Imp. | - |
| 2 | 1020.5 | 15.1 | 44 | 515 | 0 | 0 | 44 | 30 | 515 | 0 | Imp. | - |
| 3 | 1021.5 | 15.7 | 45 | 548 | 0 | 0 | 45 | 28 | 548 | 0 | Imp. | - |
| 4 | 1022.4 | 12.0 | 40 | 372 | 0 | 0 | 40 | 44 | 372 | 0 | Imp. | - |
| 5 | 1023.5 | 14.4 | 52 | 581 | 0 | 0 | 52 | 28 | 581 | 24 | 0.86 | 35 |
| 6 | 1024.4 | 14.5 | 46 | 517 | 0 | 0 | 46 | 29 | 517 | 0 | Imp. | - |
| 7 | 1025.4 | 13.3 | 29 | 299 | 0 | 0 | 29 | 42 | 299 | 0 | Imp. | - |
| 8 | 1026.5 | 11.1 | 33 | 284 | 0 | 0 | 33 | 59 | 284 | 0 | Imp. | - |

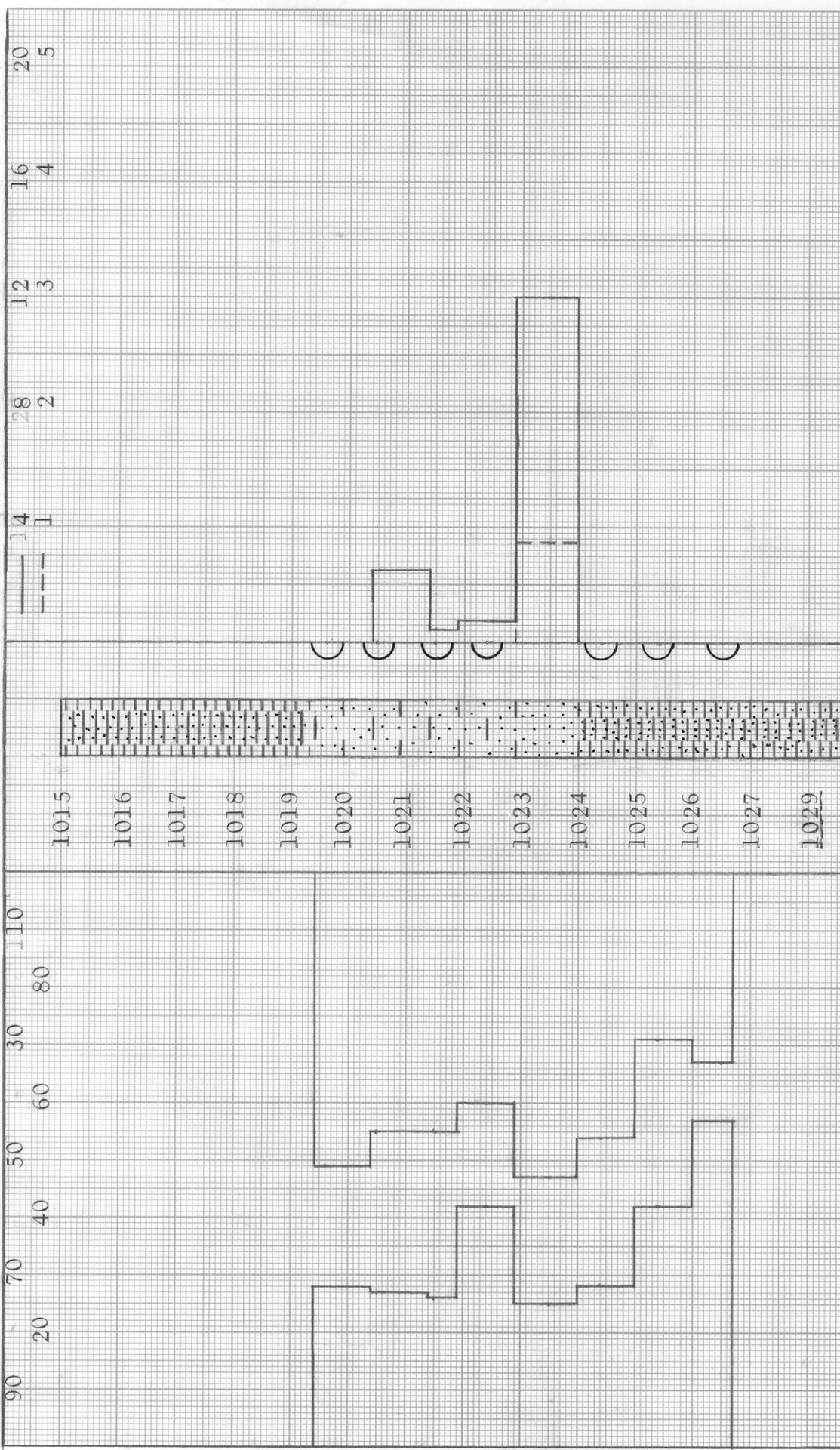
Notes: cc—cubic centimeter.

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

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

PERMEABILITY, IN MILLIDARCS
 EFFECTIVE PERMEABILITY, TO WATER,
 IN MILLIDARCS

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



KEY:

- IMPERMEABLE TO WATER
- ▨ SANDY SHALE
- ▨ SANDSTONE
- ▨ SHALY SANDSTONE
- ▨ LAMINATED SANDSTONE & SHALE

TECH-AMERICAN (KANSAS) INC.

TOPHAN LEASE

WILSON COUNTY, KANSAS

WELL NO. 16

| DEPTH INTERVAL, FEET | FEET OF CORE ANALYZED | AVERAGE POROSITY PERCENT | AVG. OIL SATURATION PERCENT | AVG. WATER SATURATION PERCENT | AVERAGE PERMEABILITY MILLIDARCYS | CALCULATED OIL RECOVERY BBLs./ACRE |
|-------------------------|--------------------------|--------------------------------|-----------------------------------|-------------------------------------|--|--|
|-------------------------|--------------------------|--------------------------------|-----------------------------------|-------------------------------------|--|--|

| | | | | | | |
|-----------------|-----|------|------|------|-----|-------|
| 1019.4 - 1026.7 | 7.3 | 13.9 | 43.1 | 33.9 | 4.6 | - - - |
|-----------------|-----|------|------|------|-----|-------|

(PRIMARY &
WATERFLOODING)

OILFIELD RESEARCH LABORATORIES
 CHANUTE, KANSAS
 JANUARY, 1981

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