

OILFIELD RESEARCH LABORATORIES

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

June 10, 1982

Inco Resources, Inc.
8100 Marty, Suite 117
Overland Park, Kansas 66204

Gentlemen:

Enclosed herewith is the report of the analysis of the rotary core taken from the Davis Lease, Well No. 22, located in Franklin County, Kansas and submitted to our laboratory on June 3, 1982.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES

Sanford A. Michel

SAM/dlb

3 c to Overland Park, Kansas
2 c to Hutchinson, Kansas

Oilfield Research Laboratories
GENERAL INFORMATION & SUMMARY

Company Inco Resources, Inc. Lease Davis Well No. 22
 Location 330' FSL & 1275' FWL
 Section 33 Twp. 17S Rge. 21E County Franklin State Kansas

Elevation, Feet
 Name of Sand..... Cattleman
 Top of Core 710.0
 Bottom of Core 715.9
 Top of Sand 710.3
 Bottom of Sand 715.9
 Total Feet of Permeable Sand 5.6
 Total Feet of Floodable Sand 4.6

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
0 - 27	2.6	2.6
101 - 176	3.0	5.6

Average Permeability Millidarcys 86.5
 Average Percent Porosity 21.2
 Average Percent Oil Saturation 54.9
 Average Percent Water Saturation 25.5
 Average Oil Content, Bbls./A. Ft. 892.
 Total Oil Content, Bbls./Acre 4,997.
 Average Percent Oil Recovery by Laboratory Flooding Tests 21.6
 Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft. 297.
 Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre 1,364.
 Total Calculated Oil Recovery, Bbls./Acre.....

See "Calculated Recovery"
 Section

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The core was sampled and the samples sealed in plastic bags by a representative of the client. Air and KCL were used as a drilling fluid. The core was reported to be from a non-virgin area.

FORMATION CORED

The detailed log of the formation cored is as follows:

<u>Depth Interval, Feet</u>	<u>Description</u>
710.0 - 710.3	Gray shale.
710.3 - 714.9	Brown sandstone.
714.9 - 715.9	Brownish black slightly carbonaceous sandstone.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 1,364 barrels of oil per acre was obtained from 4.6 feet of sand. The weighted average percent oil saturation was reduced from 52.9 to 34.6, or represents an average recovery of 18.3 percent. The weighted average effective permeability of the samples is 4.90 millidarcys, while the average initial fluid production pressure is 15.0 pounds per square inch (See Table V).

By observing the data given in Table IV, you will note that of the 6 samples tested, 5 produced water and oil. This indicates that approximately 83 percent of the sand represented by these samples is floodable pay sand.

CALCULATED RECOVERY

It would appear from a study of the core data, that efficient primary and waterflood operations in the vicinity of this well should recover approximately 1,920 barrels of oil per acre. This is an average recovery of 418 barrels per acre foot from 4.6 feet of floodable sand.

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analyzed in this core.

These recovery values were calculated using the following data and assumptions:

Original formation volume factor, estimated	1.05
Reservoir water saturation, percent, estimated	20.0
Average porosity, percent	21.6
Oil saturation after flooding, percent	34.6
Performance factor, percent, estimated	60.0
Net floodable sand, feet	4.6

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Inco Resources, Inc. Lease Davis Well No. 22

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	710.5	22.9	42	29	71	746	175.	1.0	1.0	746	175.00
2	711.7	24.3	60	21	81	1131	158.	1.0	2.0	1131	158.00
3	712.6	17.5	67	30	97	910	20.	1.0	3.0	910	20.00
4	713.5	21.8	46	29	75	778	101.	1.0	4.0	778	101.00
5	714.6	21.2	47	26	73	773	26.	0.6	4.6	464	15.60
6	715.6	19.5	64	18	82	968	15.	1.0	5.6	968	15.00

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company		Inco Resources, Inc.	Lease	Davis	Well No.	
						22
Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.			
710.3 - 715.9	5.6	86.5	484.60			
Depth Interval, Feet	Feet of Core Analyzed	Average Percent Porosity	Average Percent Oil Saturation	Average Percent Water Saturation	Average Oil Content Bbl./A. Ft.	Total Oil Content Bbls./Acre
710.3 - 715.9	5.6	21.2	54.9	25.5	892	4,997

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company		Inco Resources, Inc.		Lease		Davis		Well No.		22	
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.
			%	Bbbls./A. Ft.	%	Bbbls./A. Ft.	% Oil	% Water			
1	710.5	23.0	42	749	9	161	33	51	367	4.95	10
2	711.7	24.1	60	1122	26	486	34	60	522	6.07	10
3	712.6	17.6	67	915	35	478	32	66	508	5.40	15
4	713.5	21.8	46	778	10	169	36	45	445	5.10	15
5	714.6	21.3	47	777	7	116	40	43	104	1.72	25
6	715.6	19.7	63	963	0	0	63	20	0	Imp.	-

Notes: cc—cubic centimeter.

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

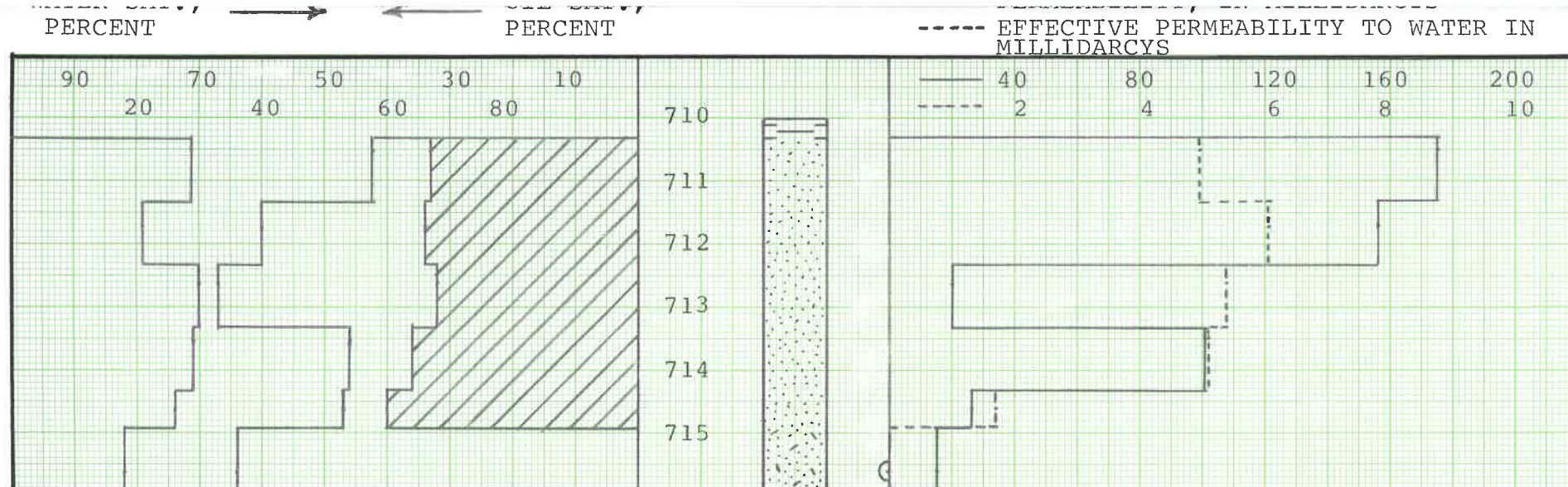
**—Determined by passing water through sample which still contains residual oil.

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SUMMARY OF LABORATORY FLOODING TESTS

TABLE V

Company	Inco Resources, Inc.	Lease	Davis	Well No.	22
Depth Interval, Feet	710.3 - 715.9				
Feet of Core Analyzed	4.6				
Average Percent Porosity	21.6				
Average Percent Original Oil Saturation	52.9				
Average Percent Oil Recovery	18.3				
Average Percent Residual Oil Saturation	34.6				
Average Percent Residual Water Saturation	53.9				
Average Percent Total Residual Fluid Saturation	88.5				
Average Original Oil Content, Bbls./A. Ft.	877.				
Average Oil Recovery, Bbls./A. Ft.	297.				
Average Residual Oil Content, Bbls./A. Ft.	580.				
Total Original Oil Content, Bbls./Acre	4,031.				
Total Oil Recovery, Bbls./Acre	1,364.				
Total Residual Oil Content, Bbls./Acre	2,667.				
Average Effective Permeability, Millidarcys	4.90				
Average Initial Fluid Production Pressure, p.s.i.	15.0				

NOTE: Only those samples which recovered oil were used in calculating the above averages.



KEY:

 SANDSTONE

CARBONACEOUS SANDSTONE

 SHALE FLOODPOT RESIDUAL OIL SATURATION

○ IMPERMEABLE TO WATER

INCO RESOURCES, INC.

DAVIS LEASE

WELL NO. 22

FRANKLIN COUNTY, KANSAS

DEPTH INTERVAL, FEET	FEET OF CORE ANALYZED	AVERAGE PERCENT POROSITY	AVG. OIL SATURATION PERCENT	AVG. WATER SATURATION PERCENT	AVERAGE PERMEABILITY, MILLIDARCS	CALCULATED OIL RECOVERY BBLS./ACRE
710.3 - 715.9	5.6	21.2	54.9	25.5	86.5	1,920 (PRIMARY AND WATERFLOODING)

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CHANUTE, KANSAS
JUNE, 1982. BL