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34-21-24W  
KMM

CORE LABORATORIES, INC.  
Petroleum Reservoir Engineering  
DALLAS, TEXAS

November 17, 1972

REPLY TO  
6 N. W. 42ND ST.  
OKLAHOMA CITY, OKLA.  
73118

Oasis Petroleum, Inc.  
800 Sutton Place  
Wichita, Kansas 67202

Attn: Mr. E. G. McNeil

Subject: Core Analysis Data  
Deutsch No. 6 (becomes Bindley WF Unit  
Bindley Field #206  
Hodgeman County, Kansas in 2007)  
CLI File No. CP-1-7689

Gentlemen:

Diamond core samples from the Deutsch No. 6 Well in the Mississippian formation were taken between 4639 and 4697 feet. The recovered formation was preserved at the well-site and shipped to the Oklahoma City Laboratory where the accompanying Core-Gamma Surface Log was recorded and the measured physical properties presented on pages one and two were determined.

Well developed Mississippian dolomite between 4649 and 4679 feet indicates oil productivity.

Average core analysis data along with calculated stock-tank oil in place data maybe found on the Core Summary page of this report.

We appreciate this opportunity to be of service and remain ready to serve your needs in formation or reservoir analysis.

Very truly yours,

CORE LABORATORIES, INC.

*Dale E. Boyle*

Dale E. Boyle  
Oklahoma City Laboratory Manager

DEB:es

6 cc - Addressee

34-21-24W

Bindley WF Unit 206

## CORE ANALYSIS RESULTS

Company OASIS PETROLEUM, INC. Formation MISSISSIPPIAN File CP-1-7689  
 Well DEUTSCH NO. 6 Core Type DIAMOND Date Report 11-3-72  
 Field BINDLEY Drilling Fluid WATER BASE MUD Analysts BOYLE  
 County HODGEMAN State KANSAS Elev. 2440' GL Location C SW SW SEC. 34-21S-24W

### Lithological Abbreviations

SAND-SD SHALE-SH LIME-LM	DOLOMITE-DOL CHERT-CH GYPSUM-GYP	ANHYDRITE-ANHY CONGLOMERATE-CONG FOSSILIFEROUS-FOSS	SANDY-SBY SHALY-SHY LIMY-LMY	FINE-FN MEDIUM-MED COARSE-CSE	CRYSTALLINE-XLN GRAIN-GRN GRANULAR-GRNL	BROWN-BRN GRAY-GY VUGGY-VGY	FRACTURED-FRAC LAMINATION-LAM STYLOLITIC-STY	SLIGHTLY-SL/ VERY-V/ WITH-W/
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SAMPLE NUMBER	DEPTH FEET	PERMEABILITY MILLIDARCY		POROSITY PER CENT	RESIDUAL SATURATION PER CENT PORE		SAMPLE DESCRIPTION AND REMARKS
		PERM. MAX.	PERM. 90°		OIL	TOTAL WATER	
<b>WHOLE-CORE ANALYSIS</b>							
1	4639-40	0.4	0.1	3.8	0.0	91.9	Dol, sl/shy, pyritic
2	40-41	0.6	0.3	5.0	0.0	88.9	Dol, sl/shy, vert frac
3	41-42	0.6	0.1	5.5	0.0	90.5	Dol, sl/shy
4	42-43	0.3	0.2	6.2	2.4	88.1	Dol, sl/shy
5	43-44		<0.1*	7.7	11.4	71.4	Dol, shy
6	44-45	0.2	0.1	7.8	13.8	62.1	Dol, sl/vuggy
7	45-46	0.3	0.1	6.2	5.9	79.4	Dol, sl/shy
8	46-47	<0.1	<0.1	4.7	6.3	72.9	Dol, sl/vuggy
9	47-48		<0.1*	6.7	5.3	68.4	Dol, sl/shy
10	48-49		0.5*	10.1	5.0	72.5	Dol, sl/vuggy
11	49-50	0.1	0.1	9.0	19.5	64.5	Dol, sl/vuggy
12	50-51	3.3	3.3	11.7	18.5	50.8	Dol, vuggy
13	51-52	18	14	10.9	22.0	50.0	Dol, vuggy
14	52-53	110	34	14.7	28.4	45.4	Dol, vuggy, vert frac, pyritic
15	53-54	228	216	27.5	33.2	45.1	Dol, vuggy
16	54-55	1397	241	29.8	30.6	48.5	Dol, vuggy, vert frac
17	55-56	147	146	26.9	31.0	45.9	Dol, vuggy
18	56-57	105	105	21.4	29.5	44.7	Dol, vuggy
19	57-58	42	40	19.6	40.8	30.9	Dol, vuggy
20	58-59	36	32	20.0	40.3	29.1	Dol, vuggy
21	59-60	299	106	19.4	35.2	36.3	Dol, vuggy, vert frac
22	60-61	21	20	20.3	25.2	52.4	Dol, vuggy
23	61-62	87	69	23.5	28.7	50.8	Dol, vuggy
24	62-63		69 *	26.2	30.0	41.9	Dol, vuggy
25	63-64		53 *	22.1	35.0	37.1	Dol, vuggy
26	64-65		70 *	20.3	26.6	43.2	Dol, vuggy
27	65-66	100	21	20.2	19.4	55.2	Dol, vuggy, vert frac
28	66-67	19	0.4	11.0	9.1	75.8	Dol, sl/vuggy, vert frac
29	67-68	8.3	5.3	16.1	17.6	62.0	Dol, sl/vuggy
30	68-69	22	17	21.2	16.8	62.1	Dol, vuggy
31	69-70	14	13	24.5	23.8	49.3	Dol, vuggy
32	70-71	14	6.7	14.8	13.7	74.3	Dol, sl/vuggy
33	71-72		11 *	18.8	19.8	56.1	Dol, vuggy
	72-73						Lost core
34	73-74	35	34	18.2	20.2	57.4	Dol, vuggy
35	74-75	2.9	2.6	13.1	13.1	73.3	Dol, sl/vuggy
36	75-76	2.1	2.1	14.3	17.8	66.1	Dol, vuggy
37	76-77	2.8	2.8	11.1	13.1	72.2	Dol, sl/vuggy
38	77-78	0.9	0.9	9.1	17.2	66.2	Dol, sl/vuggy
39	4678-79	2.2	2.1	20.0	12.7	76.5	Dol, sl/vuggy

These analyses, opinions or interpretations are based on observations and materials supplied by the client to whom, and for whose exclusive and confidential use, this report is made. The interpretations or opinions expressed represent the best judgment of Core Laboratories, Inc. (all errors and omissions excepted); but Core Laboratories, Inc. and its officers and employees, assume no responsibility and make no warranty or representations, as to the productivity, proper operations, or profitability of any oil, gas or other mineral well or sand in connection with which such report is used or relied upon.

CORE LABORATORIES, INC.  
Petroleum Reservoir Engineering  
DALLAS, TEXAS

File CP-1-7689 Page No. 2

Well DEUTSCH NO. 6

### CORE ANALYSIS RESULTS

SAMPLE NUMBER	DEPTH FEET	PERMEABILITY MILLIDARCS		POROSITY PER CENT	RESIDUAL SATURATION PER CENT PORE		SAMPLE DESCRIPTION AND REMARKS
		MAX.	90°		OIL	TOTAL WATER	
40	4679-80	0.6	0.4	16.5	2.5	89.4	Dol, sl/vuggy
41	80-81	0.1	<0.1	14.0	1.2	91.4	Dol, sl/vuggy
42	81-82	0.1	0.1	12.5	1.0	88.0	Dol, sl/vuggy
43	82-83	27	0.1	14.4	20.7	56.4	Dol, vuggy, vert frac
44	83-84	32	3.7	15.2	15.5	65.4	Dol, vuggy, vert frac
45	84-85	6.8	6.4	16.1	19.6	58.1	Dol, vuggy
46	85-86	0.8	0.7	16.3	19.1	72.7	Dol, sl/vuggy
47	86-87	0.9	0.8	8.3	2.6	83.3	Dol, sl/vuggy
48	87-88	<0.1	<0.1	8.1	2.2	84.4	Dol, sl/shy
49	88-89	0.8	0.1	9.0	18.5	72.2	Dol, sl/shy
50	89-90	0.2	0.1	14.1	0.0	92.3	Dol, chalky
51	90-91	1.3	1.3	17.0	2.5	86.7	Dol, sl/vuggy
52	91-92	<0.1	<0.1	14.2	0.0	93.1	Dol
53	92-93	0.1	0.1	14.6	1.7	91.9	Dol, sl/vuggy
54	93-94	0.5	0.5	16.1	1.7	86.4	Dol, sl/vuggy
55	94-95	0.6	0.5	14.3	1.9	89.4	Dol, sl/vuggy
56	95-96	0.1	<0.1	10.8	1.5	91.5	Dol, sl/vuggy
57	4696-97	0.1	<0.1	10.3	Tr	91.0	Dol, sl/shy

\* DENOTES PLUG PERMEABILITY

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## CORE LABORATORIES, INC.

Petroleum Reservoir Engineering

DALLAS, TEXAS

Page 3 of 3 File CP-1-7689

Well DEUTSCH NO. 6

## CORE SUMMARY AND CALCULATED RECOVERABLE OIL

FORMATION NAME AND DEPTH INTERVAL: Mississippian - 4649 to 4679 feet

FEET OF CORE RECOVERED FROM ABOVE INTERVAL	30	AVERAGE TOTAL WATER SATURATION: PER CENT OF PORE SPACE	53.9
FEET OF CORE INCLUDED IN AVERAGES	29	AVERAGE CONNATE WATER SATURATION: PER CENT OF PORE SPACE	38
AVERAGE PERMEABILITY: MILLIDARCYs Max. 90°	101 46	OIL GRAVITY: °API	
PRODUCTIVE CAPACITY: MILLIDARCY-FEET	2,929	ORIGINAL SOLUTION GAS-OIL RATIO: CUBIC FEET PER BARREL	
AVERAGE POROSITY: PER CENT	18.5	ORIGINAL FORMATION VOLUME FACTOR: BARRELS SATURATED OIL PER BARREL STOCK-TANK OIL	1.03
AVERAGE RESIDUAL OIL SATURATION: PER CENT OF PORE SPACE	23.8	CALCULATED ORIGINAL STOCK-TANK OIL IN PLACE: BARRELS PER ACRE-FOOT	864

Calculated maximum solution gas drive recovery is            barrels per acre-foot, assuming production could be continued until reservoir pressure declined to zero psig. Calculated maximum water drive recovery is            barrels per acre-foot, assuming full maintenance of original reservoir pressure, 100% areal and vertical coverage, and continuation of production to 100% water cut. (Please refer to footnotes for further discussion of recovery estimates.)

FORMATION NAME AND DEPTH INTERVAL:

FEET OF CORE RECOVERED FROM ABOVE INTERVAL		AVERAGE TOTAL WATER SATURATION: PER CENT OF PORE SPACE	
FEET OF CORE INCLUDED IN AVERAGES		AVERAGE CONNATE WATER SATURATION: PER CENT OF PORE SPACE	
AVERAGE PERMEABILITY: MILLIDARCYs		OIL GRAVITY: °API	
PRODUCTIVE CAPACITY: MILLIDARCY-FEET		ORIGINAL SOLUTION GAS-OIL RATIO: CUBIC FEET PER BARREL	
AVERAGE POROSITY: PER CENT		ORIGINAL FORMATION VOLUME FACTOR: BARRELS SATURATED OIL PER BARREL STOCK-TANK OIL	
AVERAGE RESIDUAL OIL SATURATION: PER CENT OF PORE SPACE		CALCULATED ORIGINAL STOCK-TANK OIL IN PLACE: BARRELS PER ACRE-FOOT	

Calculated maximum solution gas drive recovery is            barrels per acre-foot, assuming production could be continued until reservoir pressure declined to zero psig. Calculated maximum water drive recovery is            barrels per acre-foot, assuming full maintenance of original reservoir pressure, 100% areal and vertical coverage, and continuation of production to 100% water cut. (Please refer to footnotes for further discussion of recovery estimates.)

(c) Calculated    (e) Estimated    (m) Measured    (\*) Refer to attached letter.

*These recovery estimates represent theoretical maximum values for solution gas and water drive. They assume that production is started at original reservoir pressure; i.e., no account is taken of production to date or of prior drainage to other areas. The effects of factors tending to reduce actual ultimate recovery, such as economic limits on oil production rates, gas-oil ratios, or water-oil ratios, have not been taken into account. Neither have factors been considered which may result in actual recovery intermediate between solution gas and complete water drive recoveries, such as gas cap expansion, gravity drainage, or partial water drive. Detailed predictions of ultimate oil recovery to specific abandonment conditions may be made in an engineering study in which consideration is given to overall reservoir characteristics and economic factors.*

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Petroleum Reservoir Engineering

COMPANY OASIS PETROLEUM, INC. FIELD BINDLEY FILE CP-1-7689  
 WELL DEUTSCH NO. 6 COUNTY HODGEMAN DATE 11-6-72  
 LOCATION C SW SW SEC. 34-21S-24W STATE KANSAS ELEV. 2440' GL

# CORE-GAMMA CORRELATION

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VERTICAL SCALE: 5" = 100'

## CORE-GAMMA SURFACE LOG (PATENT APPLIED FOR)

GAMMA RAY  
RADIATION INCREASE →

## COREGRAPH

TOTAL WATER ———  
PERCENT TOTAL WATER  
80 60 40 20 0

PERMEABILITY ———  
MILLIDARCYs  
100 50 10 5 1

POROSITY ———  
PERCENT  
20 10

OIL SATURATION ———  
PERCENT PORE SPACE  
0 20 40 60 80

