

Centennial Oil Field
T43N-R94W
Hot Springs County, Wyoming



Oblique aerial view of Centennial Oil Field development looking north

Executive Summary
With Reference Data

Centennial Oil Field

**T43N-R94W
Hot Springs County, Wyoming**

Executive Summary

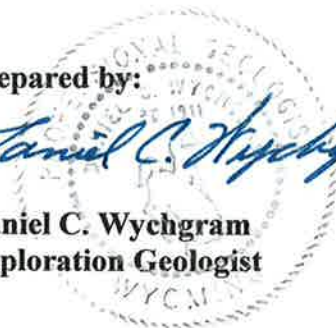


Centennial Energy No. 5-22 on federal lease WYW90509

Prepared by:

Daniel C. Wychgram

**Daniel C. Wychgram
Exploration Geologist**





CENTENNIAL ENERGY

OIL PRODUCTION AND DEVELOPMENT

Some interesting facts about Centennial Oil Field.

1. The first wildcat drilled on the structure in 1917 was well-located but failed to drill the last 10 feet to the pay zone.
2. Our discovery well was completed in early 1992. In October of that year, we decided to give the zone an acid treatment. We had the rod pump inspected and returned it to duty. This same pump has been pumping continuously with no problems for 15 years!
3. The working interest in all 2,358 acres of leases is 100% jointly owned by my father and me. Our initial investors have been rewarded with ORRI in both of our HBP leases but not the adjoining state and federal leases.
4. Total water production is so low that evaporation and soil absorption are normally adequate to prevent any discharge. However, a discharge permit is maintained and would possibly be utilized in a steam or water flood operation.
5. This oil field's infrastructure is exceptional for a recent discovery. We are a 15-minute drive from Thermopolis via scenic East River Road. The 1.5 mile Centennial Road into the oilfield is semi-paved by incorporating tank-bottom waste oil into the road bed. Single-phase electric utility service is built in with the option to upgrade to three-phase service. A newly-constructed, 25' X 50' building provides a shop and secure storage for tools and equipment.
6. Centennial Oil Field has a field-wide Rule 302 spacing exception (10 acres instead of 40 acres) from the WO&GCC. The BLM has granted both BOP and H2S waivers.
7. Oil dehydration is accomplished with only 8 ounces of chemical per day, a free water knock out, and a vertical heater/treater. The heater/treater is supplied with propane but no heat is required except during the coldest months and then only the pilot flame is used.
8. Our expense for contract pumper, chemical and electricity amounts to less than \$1,000 per month.

Please review the enclosed data and contact me with any questions or comments you may have. Thank you for your interest in Centennial Oil Field.

Sincerely,

Daniel C. Wychgram, President

Introduction

Centennial Oil Field produces from the Lucerne Anticline and is located in the prolific Bighorn Basin of Wyoming that has produced over 2.4 billion barrels of oil. The entire oil-producing structure, plus two smaller-sized anticlinal closures, are covered by a lease block of 2,358 acres of state and federal leases. The field has excellent infrastructure which includes an improved road providing access from county-maintained East River Road, utility electric service, and close proximity to the town of Thermopolis. Centennial Oil Field is operated by Centennial Energy which owns 100% of the working interest in all leases.

This field was discovered in 1992 and is the most recent discovery in the region. It is the only local oil field that is not under water flood to restore the Phosphoria reservoir pressure which has been depleted from decades of basin-wide oil and water production. A water or steam flood is the key to high rates of production and maximum recovery of reserves as illustrated by nearby West Warm Springs Field located 2 miles to the southeast. West Warm Springs Field was discovered in 1916 and produced 750,000 barrels of oil on primary production and had declined to only 19 barrels of oil per day (BOPD) by 1972. Cork Petroleum took over the field and started a water flood and infill drilling program in 1976. By 1981 the production rate had increased to over 800 BOPD. Since the start of the water flood, over 3.25 million additional barrels of oil have been produced and the field is still producing about 87 BOPD. Centennial Oil Field is similar to West Warm Springs Field in all respects except that it is about 800 feet deeper to the Phosphoria oil zone and has 3 degree higher oil gravity.

Development Strategy/Revenues

Six wells have been drilled by Centennial Energy. The wells have had initial production rates up to 35 BOPD (80 BOPD initial production for two days from the #3-15) but decline rapidly to about 5 BOPD due to low reservoir pressure. The field is a prime candidate for a 20-acre, 5-spot water or steam flood development. Using the West Warm Springs Field as an analog and the fact that Centennial Field has only recently been placed on production, it is projected that drilling 20 additional oil wells and four water or steam injection wells will result in a rate of production in excess of 1,000 BOPD. Horizontal drilling could multiply this rate.

Recoverable reserves on water flood are calculated at 1.8 MMBO and on a steam flood at 2.9 MMBO. The average historical price received for Centennial's 26 gravity oil is \$35/barrel (recent high price is \$90 /barrel). Therefore, gross revenues are $\$35/\text{BO} \times 1.8 \text{ MMBO} = \$63,000,000$ (\$162MM at \$90/BO) for a water flood and $\$35/\text{BO} \times 2.9 \text{ MMBO} = \$100,000,000$ (\$261MM at \$90/BO) for a steam flood.

Madison Limestone Potential

The Madison Limestone provides significant deeper potential within the closure provided by the Lucerne Anticline. Oil has been produced from the Madison at several fields in the Bighorn Basin including Red Springs Oil Field four miles to the SE. The Madison is often a prolific producer because of fracturing connecting paleo-karst caverns which allows high volumes of fluid to enter the well bore. Several hundred barrels of oil per day have been reported at these fields and comparable rates are possible at Centennial Oil Field. A well drilled to a depth of approximately 3,000 feet would test the oil potential of the Madison.

Proposed Sale of Centennial Oil Field

The sale price is based on an industry formula that sells semi-proven reserves for 25% of current value adjusted for royalties and taxes. Using this formula:

Current value of recoverable reserves on a water flood: \$63MM less royalties and taxes of approximately 33% = \$41MM X 25% = \$10.25MM sales price.

The sale price includes assignment of 2,358 acres of leases, subsurface equipment, surface production facilities, an injection house with triplex pump set up for a water flood and a new 25' X 50' shop and storage building.

References

The following references are provided:

Front Pocket

1. Map montage of Centennial Oil Field featuring the surface geology, cross-section, Phosphoria-level geologic structure and overlay of a portion of the lease position.

Following Report Text

2. Economics basis and calculations.
3. Lease schedule.

Rear Pocket

4. Severance Tax Work Sheet for 2007 (provides oil price, volumes produced and sold and royalty information).
5. Wash, Renee, 1981, Renovations unleash West Warm Springs potential: Western Oil Reporter, March, 1981, pp. 106-1111.
6. Wychgram, Daniel C., 1989, West Warm Springs: Wyoming Geological Association, Symposium on Wyoming Oil and Gas Fields, Bighorn and Wind River Basins, p. 529.
7. Discovery Well Crude Oil Analysis Report, #1-16
8. Discovery Well Logs, #1-16
9. Core Analysis and Completion Report, #1-15 (renamed the #3-15)

Centennial Oil Field
Phosphoria Reservoir Economics

Reserves

The following reserves calculations are based on all available well data. In order to provide realistic numbers, the reservoir parameters are an average of all wells from which that specific parameter is available.

Oil Reserves Calculation

(L = log data; C = core data; N/A = not available)

	<u>#1-16</u>	<u>#2-16</u>	<u>#3-15</u>	<u>H&J</u>	<u>McAlester</u>	<u>Value</u>
Oil zone net						
Thickness (h)	14' (L*)	14' (L*)	N/A **	20 (L+C)	21' (C)	17.25'
Average reservoir						
Porosity (Ø)	16% (L)	16% (L)	23% (C)	N/A	18.5% (C)	16.8%
Oil Saturation (So)	63% (L)	63% (L)	70% (est.)	67 % (C max.)	61.6% (C max.)	65%

Assumptions:

- 1) Area of production (A) is 250 acres based on a projection of the oil column found in the McAlester Fuel well. The actual limit of oil-saturated reservoir has not been established and may include more than 250 acres. Please see map.
- 2) The reservoir recovery factor (R) is 50% with a waterflood as demonstrated by the upper Phosphoria-producing West Warm Springs Field two miles to the SE. This fully developed field has produced 3.75 MMBO out of total oil in place of about 7.5 MMBO.
- 3) A reservoir recovery factor (R) of 80% with a steam flood.

Total Oil in Place:

BO (in place) = $V Ah Ø So$ where V (volume constant) = 7758 bbls/ac. Ft.
BO (ip) = $(7758) (250) (17.25') (.168) (.65) = 3,653,436$ BO

Total Recoverable Oil:

BO (recoverable/waterflood) = BO (ip) x R = $3,653,436 \times .50 = 1.8$ MMBO
BO (recoverable/wellsite) = $1,826,718 \text{ BO} \div 19 \text{ wells} = 96,000+$ BO/well
BO (recoverable/steamflood) = BO (ip) x R = $3,653,436 \times .80 = 2.9$ MMBO

* Thickness of interval is 21' but upper 7' at this location is tight cap rock.

** Only 11' of zone penetrated, total thickness unknown.

Centennial Oil Field Oil & Gas Lease Schedule

All leases are located in T43N - R94W, 6th P.M.
Hot Springs County, Wyoming

Lease # (Lessor)	Expiration Date	Legal Description	Acres	Lease Net Revenue Interest	x	C.E. Owned Working Interest	=	Centennial Energy Undivided Net Interest
88-00100 (State)	HBP	Sec. 16: Lots 1, 2, 3, 4, E/2W/2, SE/4	478.84	76.173%	x	100%	=	76.173%
07-00094 (State)	2/2012	Sec. 16: NE/4	160.00	83.333%	x	100%	=	83.333%
WYW90509 (Federal)	HBP	Sec. 15: NW/4, SW/4SW/4 Sec. 21: NE/4NE/4 Sec. 22: SW/4NE/4, NW/4, E/2SW/4, N/2SE/4 Sec. 23: N/2SW/4 Sec. 25: NW/4SW/4 Sec. 26: NE/4SE/4 Sec. 27: S/2N/2, NW/4SW/4 Sec. 28: E/2	1280.00	77.000%	x	100%	=	77.000%
WYW159702 (Federal)	2/2014	Sec. 15: N/2SW/4, SE/4SW/4, S/2SE/4 Sec. 22: N/2NE/4, SE/4NE/4, S/2SE/4 Sec. 23: SE/4SW/4	440.00	87.500%	x	100%	=	87.500%
Gross Acres			2358.84					

HBP - Held By Production



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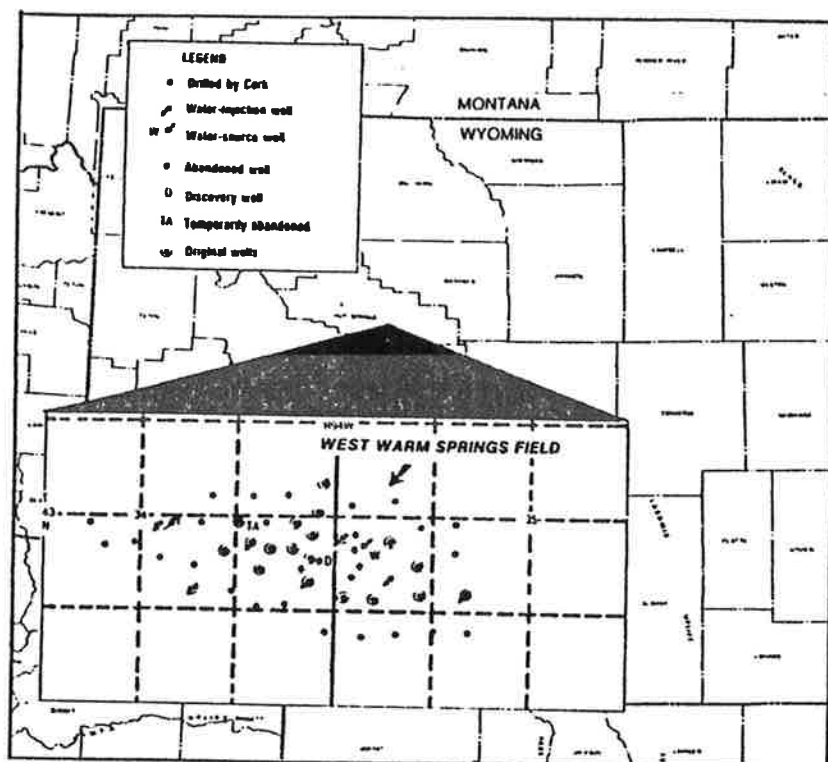
• Certified Petroleum Geologist •

References

Centennial Oil Field
2007
Severance Tax Worksheet

	Month	Price	State (J.M.)		Fed. (Hans H.)		Fed. (Hans H.)		Fed. (Hans H.)		Total (Gross) Sales				Royalty Sales				Net Sales				Date	Tank	Adj. Gravity
			#1-16 Prod.	days	#3-15 Prod.	days	#4-22 Prod.	days	#5-22 Prod.	days	State		Fed.		State		Fed. 2.9%		State		Fed.				
											BO	\$	BO	\$	BO	\$	BO	\$	BO	\$	BO	\$			
(power outage)	January		93	31	0	0	99	31	95	31	93	3,534	294	11,158	16	589	37	1,395	77	2,945	257	9,763			
	February		84	28	112	28	90	28	60	20	84	3,720	108	4,764	14	620	14	596	70	3,100	95	4,169			
	March		84	28	112	28	90	28	72	28	84	3,936	334	15,650	14	656	42	1,956	70	3,280	292	13,694			
	April		93	30	120	30	96	30	81	30	93	4,100	491	21,638	16	683	61	2,705	77	3,417	430	18,933			
	May		93	31	117	31	93	31	80	31	93	4,402	324	15,342	16	734	41	1,918	77	3,668	283	13,424			
	June		87	30	114	30	90	30	75	30	0	0	0	0	0	0	0	0	0	0	0	0			
	Total		534	178	575	147	558	178	463	170	447	19,692	1,551	68,552	76	3,282	195	8,570	371	16,410	1,357	59,983			
	July		93	31	111	31	93	31	80	31	93	4,925	380	20,115	16	821	48	2,514	77	4,104	332	17,601			
	August		93	31	110	31	84	30	72	30	93	5,027	383	20,681	16	838	48	2,585	77	4,189	335	18,096			
	September		75	27	99	30	84	30	72	30	75	4,088	171	9,296	13	681	21	1,162	62	3,407	150	8,134			
	October		70	25	96	31	83	31	71	31	70	3,957	403	22,764	12	660	50	2,846	58	3,297	353	19,919			
	November		68	30	96	30	77	30	68	30	68	4,620	178	12,109	11	770	22	1,514	57	3,850	156	10,595	\$67.95 / BO		
December		87	31	96	31	83	31	16	7	87	4,508	154	7,990	15	751	19	999	72	3,757	135	6,991	\$51.81 / BO			
Total		486	175	608	184	504	183	379	159	486	27,125	1,669	92,955	83	4,521	208	11,620	403	22,604	1,461	81,336				
Total for Year		1,020	353	1,183	331	1,062	361	842	329	933	46,817	3,220	161,507	159	7,803	403	20,190	774	39,014	2,818	141,319				

Original and new wells



The 14 wells existing on West Warm Springs field, when purchased by Agnew-Sullivan, have been supplemented by several development, injection and water supply wells drilled by Cork Petroleum.

Renovations unleash West Warm Springs potential

In 1971, when Thomas Sullivan and Jerry Agnew bought the West Warm Springs field four miles east of Thermopolis, Wyo., they had a hunch there were larger reserves than production at that time, (about 19 bo/d) indicated. They were right—after a few renovations production is now 850 bo/d. They also made some other interesting discoveries: none of the field's 14 wells, drilled in the early 1900s, had ever been stimulated; surface pipe was the only casing set in any of the holes; and the two brothers-in-law ran across one well that wasn't even on the map.

"The original 14 wells which existed on the land when we bought it were really little more than holes in the ground," said Sullivan, a partner in Agnew-Sullivan Enterprises Inc., which owns the field. "But in a way, that was the beauty of the field. Nobody had tampered with it, so it was just a matter of cleaning out and running pipe, and we had holes that were like new. And because the holes hadn't been cased beforehand, the oldest casing in the field is four years old. So we aren't bothered with a bunch of old casing to patch, repair or pull."

Sullivan, who is also president of Cork Petroleum Inc., operating com-

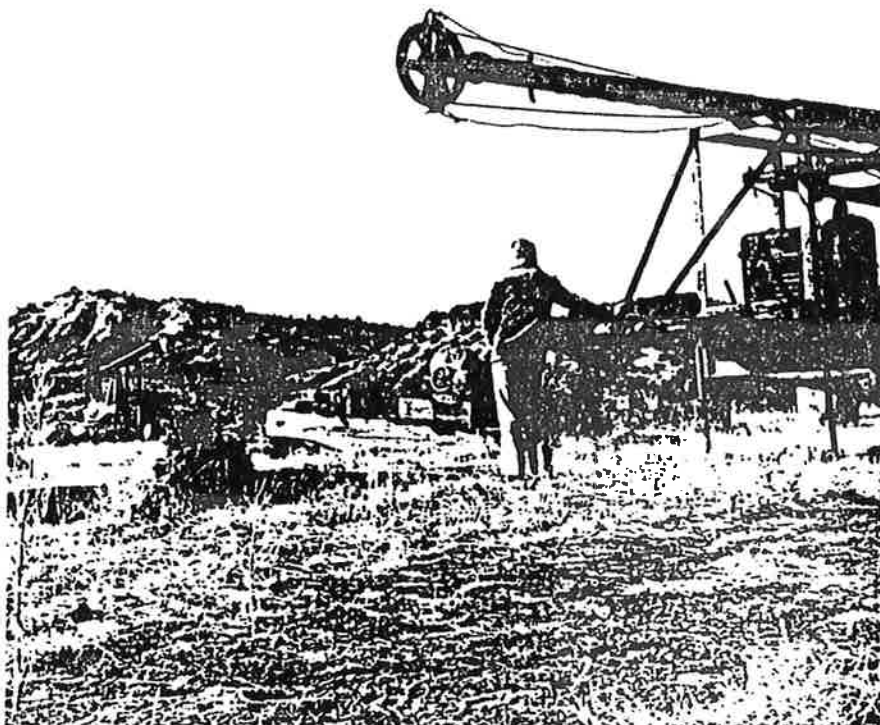
pany for West Warm Springs field, and Agnew, the other partner in Agnew-Sullivan and vice-president of Cork Petroleum, purchased the field in 1971 but didn't start their "workover program" until 1976 when the price of crude oil began to rise. In the past four years, they have rejuvenated 12 of the original 14 wells, increasing production by as much as 100 bo/d per well.

There also were a few holes on the 250-acre field that had to be plugged, Sullivan recalled. These holes were a result of drilling done on the basis of "surface high," a method of siting wells used by "old-timers," as Sullivan called the first oilfield operators. "They believed that if there was a hill on the surface, it was correlative to the structure of the producing formation so there must be a hill down there, too. This isn't necessarily true".

(Two other relics of the old-timers, a pulling unit and central power unit which came with the package when Agnew-Sullivan purchased West Warm Springs, were donated to the Hot Springs County museum.)

The addition of 26 development wells drilled by Agnew-Sullivan brings the current well count of West Warm Springs to 35 oil-producing wells, 7 water injection wells and 2 water

by Renee Wash

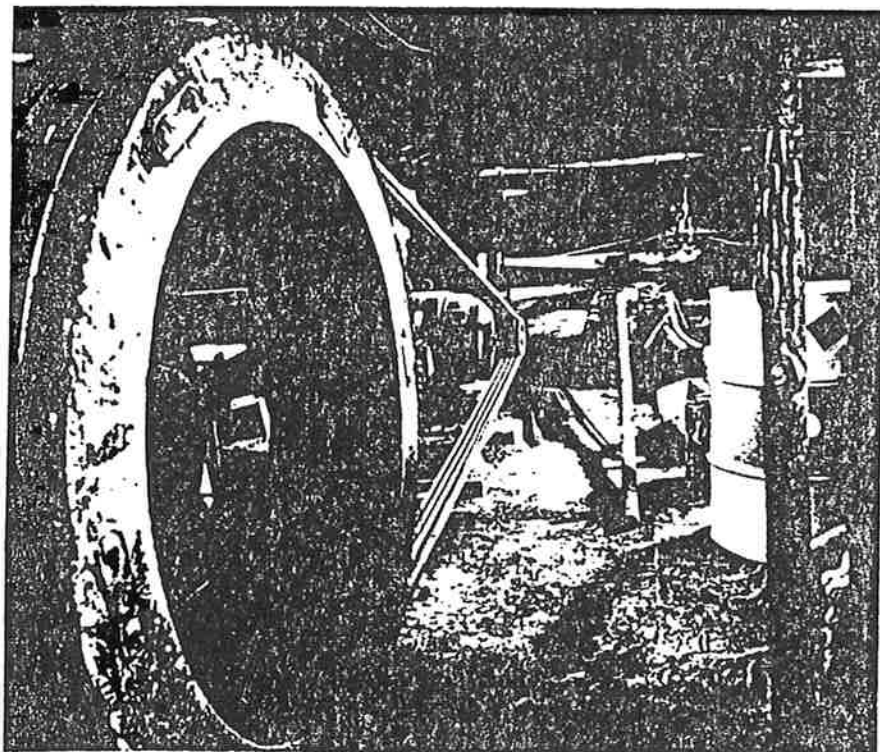


Thomas Sullivan, one of the partners in Agnew-Sullivan Enterprises, looks over the field he and his brother-in-law brought from 19 bo/d to 850 bo/d.

supply wells. The owners have also installed three tank batteries to handle produced fluid.

Sullivan gained his first experience in the Phosphoria formation (pay zone for the existing Warm Springs wells)

as chairman of the Working Interest Owners & Engineering Committee in the Hamilton Dome field, northwest of West Warm Springs. He began speculating on the Agnew-Sullivan field's potential in 1972 when the



Some of the old equipment, like this central power unit, that came with the package when Agnew-Sullivan purchased West Warm Springs has been donated to the Hot Springs County museum.

Phosphoria was unitized in Hamilton Dome.

And as he watched production in the latter field go from 200 bo/d to 3,000

"Nothing can compare to the thrill of that first production jump."

bo/d over a period of only six months, he had a feeling he and his brother-in-law were on to something, Sullivan related.

"We realized we were taking a gamble, but we had a good clue that the field was capable of significant production because it didn't have a high water to oil ratio. And the fact that the Phosphoria at Hamilton Dome did flood was encouraging," Sullivan admitted.

"Considering the low water saturation in what little fluid West Warm Springs was making at the time, we figured if we injected water and created an imbalance of pressure, something had to move."

Since the two men began reworking the field, production has increased steadily although not as quickly as did Hamilton Dome's. But, Sullivan explained, recovery from West Warm Springs has been carefully controlled so as not to bruise or damage the reservoir by either pumping oil out or injecting water too fast.

Wells have been drilled on a seven-acre spacing pattern, putting them about 500 ft apart. "There are two schools of thought on what the distance between wells should be," Sullivan commented. "One is that if you drill fewer wells farther apart, the production rate won't be as high but the reserves will last longer. That makes sense because someday we might be looking at \$60 per bbl oil prices."

"On the other hand," he continued, "I believe that sweep efficiency and recovery on a waterflood will be greater with closer spacing. Most oil fields were overspaced due to lower oil prices. Now with increased oil prices, you'll see more infill drilling."

Sullivan says he is satisfied that seven-acre spacing is allowing ample recovery in West Warm Springs without severely draining the reservoir. He also is confident that injection isn't taking place too fast. "We're pounding fluid on every well, which means that we don't have any fluid over the pump." This indicates the injection program isn't bruising the reservoir, he said.

In fact, he and Agnew are considering more infill drilling in the future, Sullivan revealed. "I guess you always wonder if you're getting all the oil you can from each well."

This doubt caused a decision in 1979

to perform acid fracs on three of the older wells. Two of the jobs were successful, but one Sullivan described as "a bad deal." High injection pressure on the producing formation and a too large concentration of sand in the fracturing gel caused a lack of injection rate and the sand to screen and fall to the bottom of the hole.

"We temporarily lost that hole, but after all, two out of three's not bad," Sullivan quipped.

Of the two successful fracs, the biggest production jump occurred on Well 12. The well was making 40 bo/d before fracturing and climbed to 140 bo/d after the operation. It's now producing about 60-70 bo/d, Sullivan said.

"But even a 100 bbl increase like that can't compare to the thrill of that very first production jump when you first start reworking a field," Sullivan remembered. "The first time the production curve went up 40 bbl in one day, we knew we were going to make it. Now, seeing it rise from 810 bo/d to 850 is gratifying, but it isn't anywhere near the thrill of that first 40 b/d increase."

Sullivan and Agnew are planning another acid frac in the spring, on the unmapped well they discovered after they acquired the field.

Even though the frac jobs cost more that Agnew-Sullivan originally paid for West Warm Springs (a price Sullivan declined to reveal), "the jobs' results are well worth it," he commented.

Two more development wells are to be drilled this year also to test a zone located about 20 ft below the Upper Phosphoria pay zone. These new wells will be drilled to a total depth of about 1,000 ft, 100 ft deeper than existing holes.

Like the others, these deeper wells will be drilled with a cable tool rig, Sullivan said. "Since there hasn't been any formation pressure to deal with when we've gone into the formation in the past, we think using a cable tool rig is a good policy."

"Besides," he added, "we're not in any hurry."

Sullivan expresses this same laid-back attitude when disclosing that he has no intentions of buying or restoring any other fields. In fact, Agnew-Sullivan recently sold half its working interest in West Warm Springs to Amcana Oil Corp., based in Tulsa, Okla.

"I'm very happy where I am," Sullivan claims. "My appetite is not so great that I have to go out and seek new areas to conquer. If we can maximize production in West Warm Springs, I'll be a very happy person."

Sullivan is practically assured of being happy because the field's production rate is still climbing. ☐

Daniel C. Wychgram
Independent
Thermopolis, Wyoming
February, 1989

DISCOVERY WELL

Name: Shaffer Oil (Freudenthal), 1 Gov't
Location: E NE SE 34-43N-94W
Date of Completion: April, 1916
Initial Potential: Unknown, Phosphoria - Permian
Total Depth: 970 Phosphoria
Elevation: 5050 + Gr
Casing: Surface only
Perforations: 960-970 open hole
Treatment: Unknown
Pressures: Unknown

GENERAL FIELD DATA

Regional Setting: Southern Bighorn Basin
Other Formations with Shows: Crow Mountain
 "4th Curtis" - Triassic, Tensleep - Pennsylvanian,
 Madison - Mississippian
Exploration Method Leading to Discovery:
 Surface mapping
Trap Type: Structural, anticline
Surface Formations: Chugwater - Triassic
Oldest Formation Penetrated: Madison
Well: Hennepin Crude Corp. 26 Bower - Gray,
 CW 1/2 NWSW 35-43N-94W
Spacing Order: Vacate Rule 302
Logging Practice: Past; DL, GRNL, Recent; DILL,
 CNDL
Completion Practice: Past; drill to top Phosphoria,
 set casing, complete open hole, Recent; run casing
 through, perforate, acidize w/1000 gal 15% HCl
Productive Area: 210 acres
Number of Producing Wells: 46
Number of Abandoned producers: 4
Number of Dry Holes: 0
Number of Shut-in Wells: 13 temporarily
 abandoned
Number of Disposal Wells: 0
Number Pressure Maintenance Injection Wells: 7
Market for Production: Texaco, Inc.
Major Operators: Cork Petroleum

RESERVOIR DATA

Formation: Phosphoria - Permian
Lithology: Dolomite, sucrosic, "granular"
Discovery Date: April, 1916
Porosity: 23% average (operator)
Permeability: 70 md average, Core (operator)
Average Pay Thickness: 30 feet
Oil Column: 160 feet
Oil/Water Contact: +4040 feet
Gas Oil Ratio: TSTM
Initial Pressure: 400 + psi (operator)
Present Pressure: Unknown; artificially maintained
 by waterflood

WARM SPRINGS, WEST

T43N R94W
Hot Springs County, Wyoming
Phosphoria

Drive Mechanism: Past; Limited water drive,
 Present; water flood
Rw and/or Salinity: .80 @ 68° F. ? (operator)
Bottom hole Temperature: 80° F.
Character of oil or gas: Present: Gravity - 24° API;
 Viscosity - 30 cp; Sulfur - 3%; Color - black; Past:
 Gravity - 23.1° API; Viscosity - 165 sec @ 100° F;
 Pour point - < 5° F; Sulfur - 3.06%; Specific gravity
 - 0.915; Nitrogen - 0.27%
Continuity of Reservoir: Continuous
Cumulative Production: 2,700,000 BO, 11,213,800
 BW?, 1/1/89
Primary Recovery STBO or MCF/AC FT: 500,000
 BO
Secondary: 3,000,000 BO
Estimated Ultimate Recovery: 3,500,000 BO
Decline Curve: Appendix; includes Warm Springs,
 East

DISCUSSION

Warm Springs Field represents two separate anticlines on a major east-west trending structure on the south flank of the Bighorn Basin. Geologic and engineering field data are separated for both, the east and west closures.

A waterflood project in West Warm Springs was initiated in 1976 using warm water from the Darwin Sandstone to flood the first porosity zone. Presently, 160,000 BWPM is being injected and 11,475 BO and 110,925 BWPM are being produced. A lower second porosity interval has a homogeneous reservoir character with good secondary recovery potential. The Madison may also have some merit.

REFERENCES

- Biggs, Paul and R. H. Espach, 1960, Warm Springs: Petroleum and Natural Gas Fields in Wyoming, Bureau of Mines Bull. 582, p. 274-275.
 Cork Petroleum, 1989, Structure and production data, West Warm Springs.
 Wyoming Geological Association, 1957, Warm Springs: Symposium, Wyoming Oil and Gas Fields, p. 468-469.

REFER TO POCKET FOR MAP



CORE LABORATORIES

CRUDE OIL ANALYSIS REPORT

DATE: 03-06-92

LAB NO. : 920421-1

ANALYZED BY : AF

COMPANY : CENEX REFINERY
WELL NO.: 1-16 SWABBED OIL
FIELD : JOCELYN MARIE
COUNTY : HOT SPRINGS
STATE : WY

LOCATION : NESESE
SEC16 TWN 43N R94W
DEPTH :
DATE SAMPLED: 03/03/92
SAMPLE TIME:

GENERAL CHARACTERISTICS

Spec. Gravity @ 60/60 F. . 0.8987
API Gravity @ 60 deg. F. . 25.95
Saybolt Visc. @ 70 F, Sec. 168
Saybolt Visc. @ 100 F, Sec 111
BS&W, % by volume. . . . 3
Pour Point, Deg. F 0
Total Sulfur, % by weight. 2.56

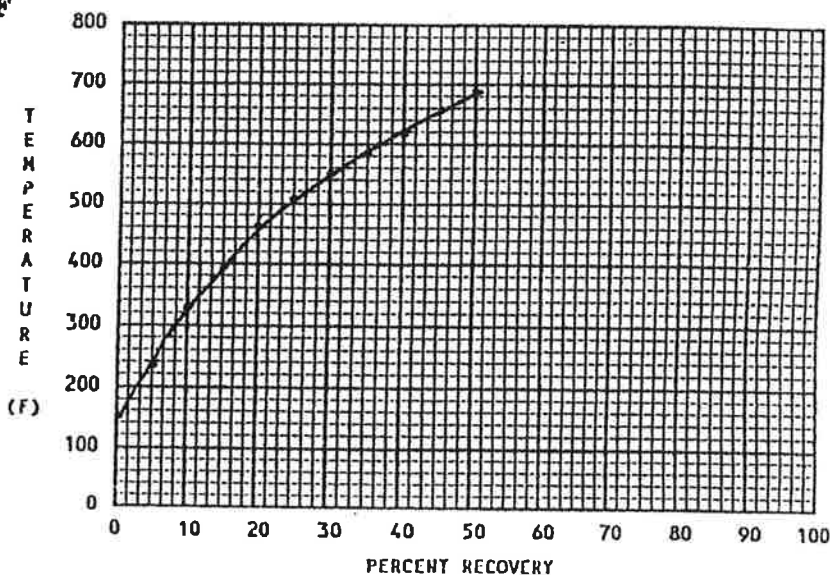
Paraffins, % by wt. . . . N. REQ.
Asphaltenes, % by wt. . . . N. REQ.
Naphtha Fraction, % by vol. N. REQ.
Org. Cl, ppm in Naphtha . . N. REQ.

REMARKS:

ENGLER DISTILLATION

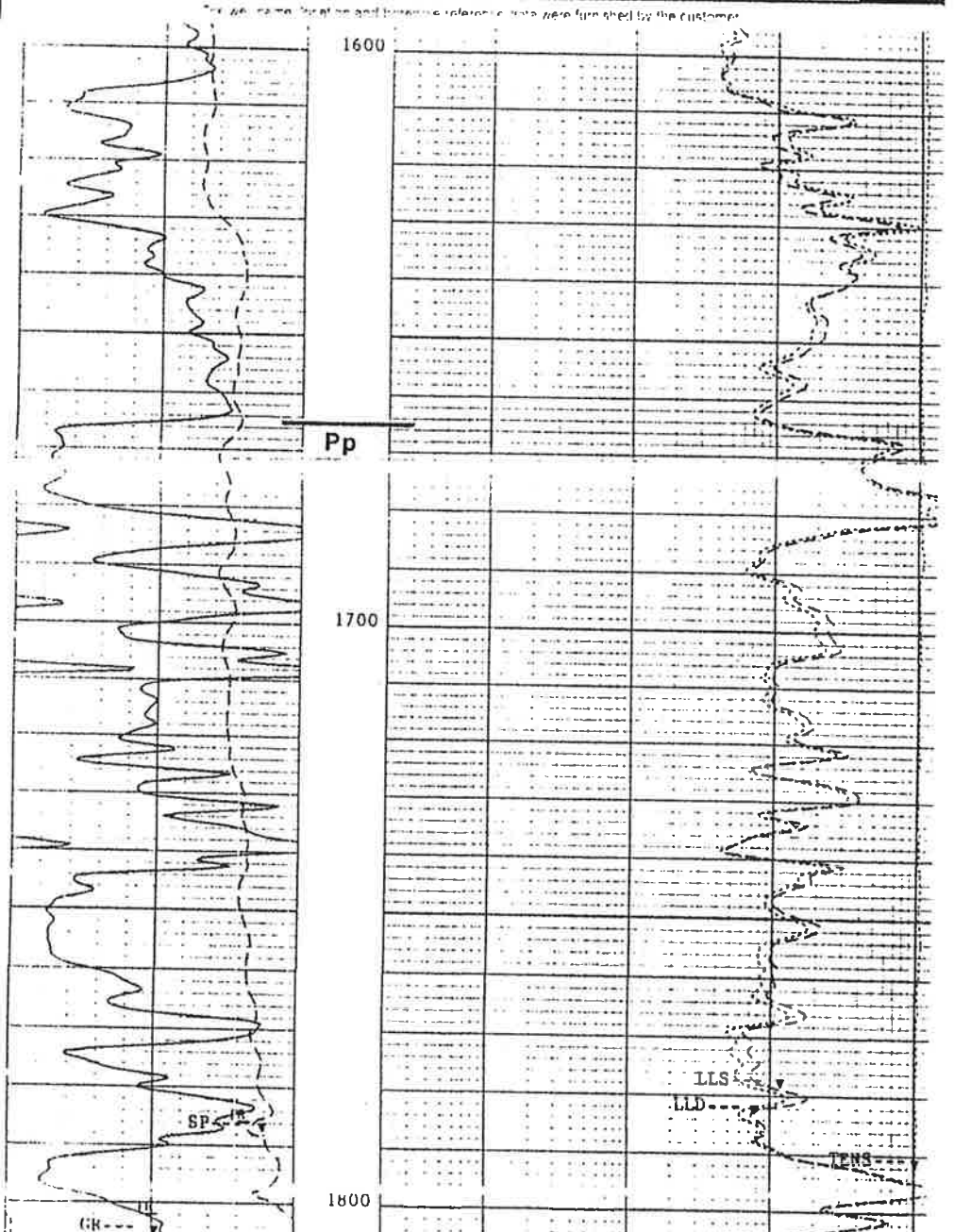
DISTILLATION GRAPH

RECOVERY	TEMP, F
IBP	150
5 %	239
10 %	330
15 %	394
20 %	461
25 %	512
30 %	550
35 %	585
40 %	620
45 %	660
50 %	691
55%	
60 %	
65 %	
70 %	
75 %	
80 %	
85 %	
90 %	
95 %	
END PT, DEG. F.	720
RECOVERY AT END PT, % .	55



RECOVERY, %	65	300 E.P. GASOLINE, %	12.0
RESIDUE, %	34	392 E.P. GASOLINE, %	14.5
LOSS, %	1	500 E.P. DISTILLATE, %	10.0

COMPANY		DANIEL C. WYCHGRAM	
WELL		JOCELYN MARIE NO. 1-16	
FIELD		WILDCAT	
COUNTY		HOT SPRINGS	
STATE		WYOMING	
LOCATION		463FEL & 102FSL NE 4SE 4E 4	
API SERIAL NO.		16	
SECT.		TWP.	
RANGE		43N	
Elev.		54W	
Permanent Datum		GROUND LEVEL	
Log Measured From		GROUND LEVEL	
Drilling Measured From		GROUND LEVEL	
Date		28-JAN-1982	
Run No.		ONE	
Depth Driller		1830.0 F	
Depth Logger (Schl)		1837.0 F	
Btm. Log Interval		1834.0 F	
Top Log Interval		0.0 F	
Casing Driller		9.5 B-32 @ 94.0 F	
Casing Logger		95.0 F	
Bit Size		7.7 B" (41)	
Type Fluid in Hole		GEL WATER	
Dens.		9.20 LB/G	
pH		Fld. Loss	
Source of Sample		FLOWLINE	
Run @ Meas. Temp.		2.219 C-MM (41) 59.0 DEGF	
Run @ Meas. Temp.		2.470 C-MM (41) 58.0 DEGF	
Run @ Meas. Temp.		2.530 C-MM (41) 58.0 DEGF	
Source: Hml. Fhmc		MEAS	
Run @ BHT		1.465 C-MM (41) 31.0 DEGF	
Circulation Ended		13.5 JAN 29 1982	
Logger on Bottom		SEE LOG	
Max Rec. Temp.		54.0 DEGF	
Fluid Location		54.0 DEGF	
Recorded By		D.C. WYCHGRAM	
Well No.		1-16	

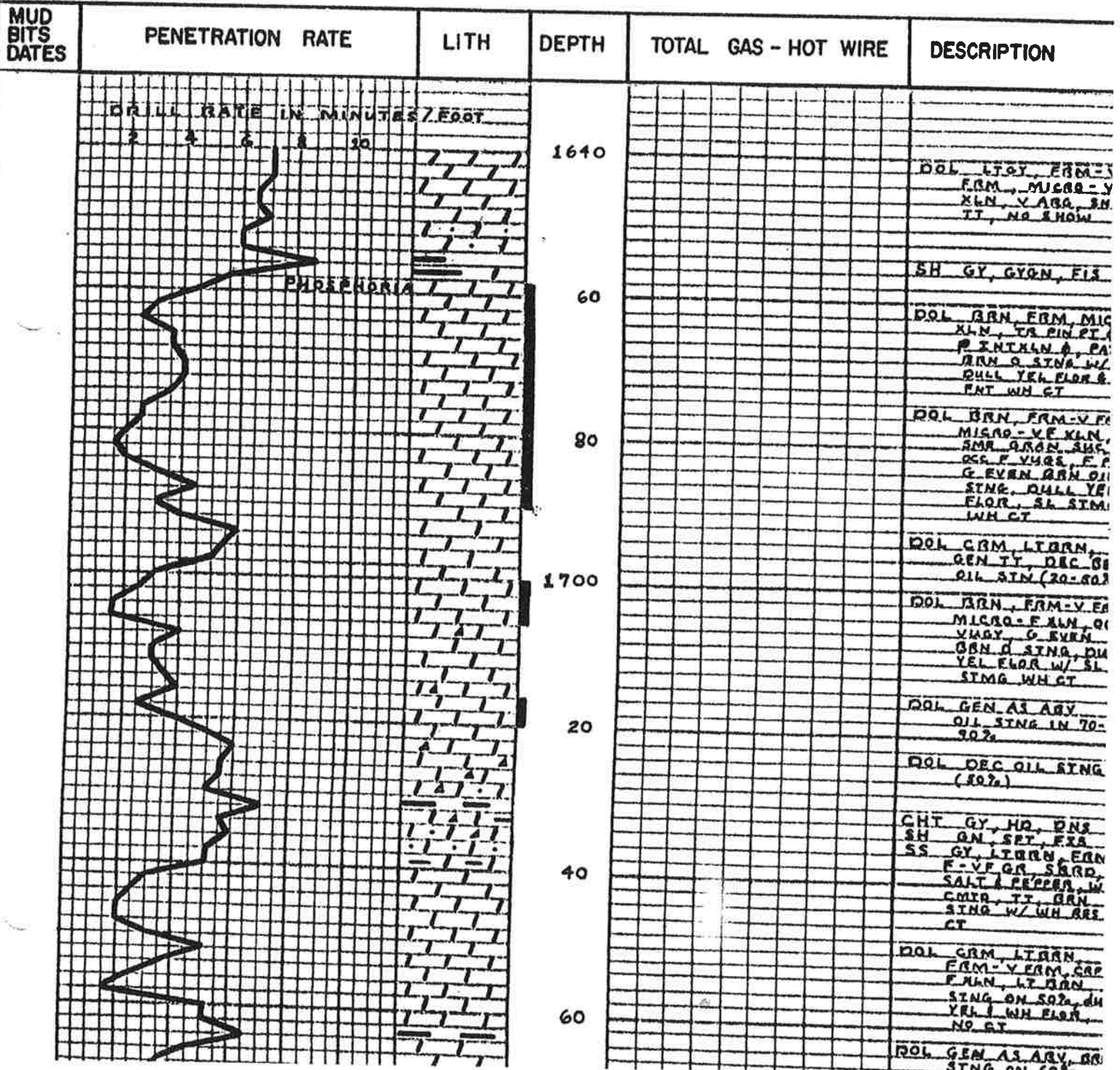


PETROLEUM GEOLOGISTS

2000 COLORADO STATE BANK BLDG.
1600 BROADWAY
DENVER, COLORADO 80202

COMPANY DANIEL C. WYCHGRAM
WELL JOCELYN MARIE #1-16
LOCATION NESESE SEC 16 T 43N R 94W
COUNTY HOT SPRINGS STATE WYOMING
SPUD DATE JAN. 1992 DATES LOGGED _____
GROUND ELEV 4553' KB _____
CASING - SURFACE 9 5/8" @ 94' INTERMEDIATE _____
HOLE SIZE 7 7/8" TD 1837' STATUS PRODUCER

LOGGED BY _____
JACK SEARLE
CONTRACTOR _____
DST NONE
CORE _____



CORE LABORATORIES

Company : Centennial Energy
 Well : 1-15 Hans Harry
 Location : SW SW Sec 15 T43N R94W
 Co,State : Hot Springs, Wyoming

Field : Centennial Oil
 Formation : Phosphoria
 Coring Fluid : Air Mist
 Elevation : 4599 GR

File No.: 57122-7926
 Date : 16-Dec-1994
 API No. : 49-017-20947
 Analysts: DF SS

C O R E A N A L Y S I S R E S U L T S

SAMPLE NUMBER	DEPTH ft	PERMEABILITY (HORIZONTAL) Kair md	POROSITY (HELIUM) %	SATURATION		GRAIN DENSITY gm/cc	DESCRIPTION
				(PORE VOLUME) OIL %	WATER %		
Core No. 1 1632.0-1637.0 Cut 5.0' Rec. 3.0'							
1	1632.0- 33.0	15.3	25.1	31.1	27.2	2.82	Dol 1t brn suc
2	1633.0- 34.0	25.0	20.3	28.1	21.1	2.80	Dol 1t brn suc vug
3	1634.0- 35.0		23.6	22.8	16.0		Dol 1t brn suc
No Plug for #3, Fluid porosity is reported							
Top 6" of core had many fractures,at approx 60 degrees							

(October 1990)

**UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT**

SUBMIT IN DUPLIC.

(See other instructions on reverse side)

Expires: December 31, 1990

WELL COMPLETION OR RECOMPLETION REPORT AND LOG *

1a. TYPE OF WELL: OIL WELL <input checked="" type="checkbox"/> GAS WELL <input type="checkbox"/> DRY <input type="checkbox"/> Other _____										5. LEASE DESIGNATION AND SERIAL NO. WYW90509	
b. TYPE OF COMPLETION: NEW WELL <input checked="" type="checkbox"/> WORK OVER <input type="checkbox"/> DEEP-EN <input type="checkbox"/> PLUG BACK <input type="checkbox"/> DIFF. REMV. <input type="checkbox"/> Other _____										6. IF INDIAN, ALLOTTEE OR TRIBE NAME 	
2. NAME OF OPERATOR Centennial Energy										7. UNIT AGREEMENT NAME 	
3. ADDRESS AND TELEPHONE NO. (307) 864-3811 or P.O. Box 469, Thermopolis, WY 82443-0469 (307) 687-1612										8. FARM OR LEASE NAME, WELL NO. #1-15 Hans Harry	
4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)* At surface SW/4SW/4SW/4; 232' FSL & 195' FWL At top prod. interval reported below same At total depth same										9. API WELL NO. 49-017-20947	
14. PERMIT NO. 49-017-20947 DATE ISSUED 10/10/94										10. FIELD AND POOL, OR WILDCAT Centennial, Phosphoria	
15. DATE SPUDDED 11/27/94 16. DATE T.D. REACHED 12/11/94 17. DATE COMPL. (Ready to prod.) 1/30/95										11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA Sec. 15, T43N - R94W	
18. ELEVATIONS (DP, RKB, RT, GR, ETC.)* 4599' GR										12. COUNTY OR PARISH Hot Springs 13. STATE WY	
20. TOTAL DEPTH, MD & TVD 1637' TD 21. PLUG, BACK T.D., MD & TVD 22. IF MULTIPLE COMPL., HOW MANY* 23. INTERVALS DRILLED BY 0-1637'										19. ELEV. CASINGHEAD 4600'	
24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)* 1626-1637', Phosphoria, upper porosity										25. WAS DIRECTIONAL SURVEY MADE No	
26. TYPE ELECTRIC AND OTHER LOGS RUN Gamma Ray Correlation and Collar Locator										27. WAS WELL CORED Yes	
28. CASING RECORD (Report all strings set in well)											
CASING SIZE/GRADE		WEIGHT, LB./FT.		DEPTH SET (MD)		HOLE SIZE		TOP OF CEMENT, CEMENTING RECORD		AMOUNT PULLED	
9-5/8"		36		83.16'		12-1/4"		cemented to surface, 67 sks		0	
7"		23		1628		8-3/4"		cemented to surface, 195 sks		0	
29. LINER RECORD											
SIZE		TOP (MD)		BOTTOM (MD)		SACKS CEMENT*		SCREEN (MD)			
30. TUBING RECORD											
SIZE		DEPTH SET (MD)		PACKER SET (MD)							
2-7/8"		1635.5'									
EUE											
31. PERFORATION RECORD (Interval, size and number) 1626-1636' w/ 4 shots/ft 40 perforations						32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.					
DEPTH INTERVAL (MD)						AMOUNT AND KIND OF MATERIAL USED					
1626-1635'						Chemfrac					
1626-1637'						450 gals. 15% HCl					
33.* PRODUCTION											
DATE FIRST PRODUCTION		PRODUCTION METHOD (Flowing, gas lift, pumping—size and type of pump)						WELL STATUS (Producing or shut-in)			
2/09/95		pumping, 1-1/2" insert rod pump						producing			
DATE OF TEST		HOURS TESTED		CHOKE SIZE		PROD'N. FOR TEST PERIOD		OIL—BBL.		GAS—MCF.	
2/11-12/95		24		N/A		→		35		trace	
FLOW, TUBING PRESS.		CASING PRESSURE		CALCULATED 24-HOUR RATE		OIL—BBL.		GAS—MCF.		WATER—BBL.	
N/A		N/A		→		35		trace		trace	
										OIL GRAVITY-API (CORR.)	
										26.30	
34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.) Vented, may be used for fuel if sufficient.										TEST WITNESSED BY D.C. Wychgram	
35. LIST OF ATTACHMENTS Gamma Ray/CCL Log, Core Description											
36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records											
SIGNED <u>Daniel C. Wychgram</u>						TITLE <u>President</u>			DATE <u>Feb 15, 1995</u>		

*(See Instructions and Spaces for Additional Data on Reverse Side)

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

37. SUMMARY OF POROUS ZONES: (Show all important zones of porosity and contents thereof, cored intervals; and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures, and recoveries):

38. GEOLOGIC MARKERS

FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.	NAME	TOP ELEVATION	
					MEAS. DEPTH	TRUE ELEVATION
Crow Mtn. Ss.	740'	770'	Sandstone, water	Soil, brown	surface	+4599' GR
Curtis Ss.	1016'	1036'	Sandstone, water	Morrison Fm.	27'	erosional top
Phosphoria				Sundance Fm.	55'	4544'
Porosity	1626'	1637'	Dolomitic limestone, swabbed oil	Gypsum Springs	390'	4209'
				Chugwater Fm.	507'	4092'
				Crow Mtn Ss.	740'	3859'
				Alcova Ls.	770'	3829'
				Curtis Ss.	1016'	3583'
				Dinwoody Fm.	1565'	3034'
				Phosphoria Fm.	1619'	2980'
				Phosphoria		
				porosity	1626'	2973'
Static Fluid Level			874' of oil in casing x.389 psi/ft. for 26° API oil 340 psi reservoir pressure			

Well Parameters For Centennial Oil Field Wells

	<u>#1-16</u>	<u>#3-15</u>	<u>#4-22</u>	<u>#5-22</u>
<u>Casing:</u>	5.5	7"	4.5"	5.5"
<u>Tubing</u>	2.375EUE	2.875 EUE	2.375"EUE	2.875"EUE
<u>Pump Inlet</u>	1655'	1635'	1633'	1713'
<u>Top Perf</u>	1666'	1626'	1624'OH	1698'
<u>Surface Elev.</u>	4553'	4599'	4622'	4656'
<u>Fluid Level(pumping)</u>				
<u>03/02/01(depth)</u>		1599'	1595'	1700'
<u>03/02/01(elev.)</u>		+3000'	+3027'	+2956'