



Orion inc.

Geophysical / Geological  
Consulting and Services

2103 Orchard Lane  
Lawrence, Kansas 66044  
(913) 841-5366

Lease: Delbert Brunk

Well: Brunk #1 API# 15-087-20,114

Location: 2970' N and 4290' W from SW corner  
c SE, SW, NW Sec. 25, T9S, R19E  
Jefferson County, Kansas

Surface Elevation 1137' ASL (topo), Kelly bushing 1142' ASL (topo)

Date Spudded: October 27, 1984

Date Completed: October 30, 1984

Total Depth: 1791'

Initial Production: Oil and gas in McLouth sandstone

Operator: Jerry Lutz  
Route 131 South  
Reed City, Michigan 49677 616-832-2347

Drilling Company: Caney Valley Drilling  
Box 350  
Caney, Kansas 67333 316-673-9091

Geology: Tom W. Stander  
Orion, Inc.  
2103 Orchard Lane  
Lawrence, Kansas 66044 913-841-5366

Mud Logger: Dave Giuseffl  
N.L. Baroid Logging Service  
P.O. Box 19376  
Oklahoma City, Oklahoma 73144

Engineering: Rex Keith  
Karma, Inc.  
Route 1, Box 76  
Oskaloosa, Kansas 66066 913-863-2294

Drilling Mud: Trotter International  
Box 1462  
Topeka, Kansas 66601 913-862-0702

Logging: Glen Schmeidler  
Great Guns  
Box 8196  
Topeka, Kansas 66608 913-233-0521

Brunk 1

25-9-19E

Surface: Bit size 12 $\frac{1}{4}$ " , set 85 ' of 8 5/8" O.D. 19.5 lb. pipe, use 50 sacks of portland cement, 3% cal., pump by Consolidated Well Service from Ottawa, Kansas, set up time 8 hours

Production: Bit size 6 $\frac{1}{2}$ " O.D. using four drill collars, each drilling joint length 30 feet

Drilling Unit: 1984 Speedstar

Mud Pump: 6 x 10

Drilling Fluids: Surface - 1250 native mud from last well  
1250 - TD control chemical mud, visc. 30-35, wt. 9.0-9.2

Production String: 4 $\frac{1}{2}$ " O.D., 9.5 lb./ft., 4000 lbs. test, 1750 foot bottom shoe, Dewey Oilfield Supply

Logs: Compensated Density, Compensated Neutron, R.A. Guard, Dual Induction, Gamma Ray, Spontaneous Potential, Caliper

Cores: None

Summary

BRUNK #1

c SE, SW, NW Sec. 25 T9S, R19E, Jefferson County, Kansas  
 Surface elevation: 1137' ASL, Kelly bushing 1142' ASL - *Topo*  
 All depths from surface elevation

*surveyed*

*SE. 1124.06  
 KB 1129.06*

Electric Log Picks

<u>Geologic Section</u>	<u>Depth</u> (feet)	<u>Datum</u> (ft. ASL)	<u>Remarks</u>
T. Oread limestone	213	+924	
T. Douglas Group (T. Lawrence Fm.)	271	+866	
T. Stranger Formation	405	+732	
T. Lansing Group (T. Stanton lm.)	527	<del>+610</del> <i>597</i>	
T. Vilas shale	560	+577	
T. Plattsburg limestone	580	+557	
T. Kansas City (T. Bonner Springs)	600	<del>+537</del> <i>524</i>	
T. Wyandotte limestone	624	+513	
T. Lane shale	704	+433	
T. Iola limestone	716	+421	
T. Chanute shale	750	+387	
T. Drum limestone	766	+371	
T. Cherryvale shale	770	+367	
T. Dennis limestone	791	+346	
T. Galesburg shale	816	+321	
T. Swope limestone	820	+317	
T. Ladore shale	846	+291	
T. Hertha limestone	851	+286	
B. Kansas City (B. Hertha/ T. Pleasanton Group)	874	<del>+269</del> <i>f260</i>	
T. Marmaton Gp. (T. Lenapah lm.)	998	+139	
T. Nowata shale	1013	+124	
T. Altamont limestone	1021	+116	
T. Bandera shale	1046	+91	
T. Pawnee limestone	1051	+86	
T. Labette shale	1074	+53	
T. Fort Scott limestone	1082	+55	
T. Cherokee Group	1095	<del>+42</del> <i>+29</i>	
T. Squirrel sandstone			not present
T. Bevier coal bed	1179	-42	
T. Ardmore limestone			not present
T. Croweburg coal bed	1210	-73	
T. Upper Cattleman sandstone	1219	-82	16' water sand, slight gas show,
T. Fleming coal bed	1257	-120	$R_t = 10$ ohms
T. Middle Cattleman ss.			not present
T. Mineral coal bed	1281	-144	
T. Sammon coal bed	1329	-129	
T. Lower Cattleman sandstone	1335	-198	15' water sand, R=8 ohms
T. Upper Bartlesville sandstone	1365	-225	11', slight gas show, R=8 ohms
T. Tebo coal bed	1400	-269	
T. Weir-Pittsburg coal bed	1408	-271	
Middle Bartlesville ss.	1428	-285	3' water sand, R=6 ohms

Summary Continued

<u>Geologic Section</u>	<u>Depth</u>	<u>Datum</u>	<u>Remarks</u>
T. Dry Wood coal bed	1473	-336	
T. Rowe coal bed	1486	-349	
T. Neutral coal bed	1494	-357	
T. Upper McLouth sandstone			not present
T. Middle McLouth sandstone	1550	<del>-413</del> -426	17' shaly ss, tar and gilsonite, R=10-12 ohms
T. Lower McLouth sandstone	1574	-437 -450	31' clean oil and gas ss, good show, odor, cut, live oil, R=40-60
T. Burgess sandstone	1605	<del>-468</del> -481	16' clean oil and gas ss, good show, odor, cut, live oil and gas, fluorescence, but water saturated, R=5-12 ohms
T. Mississippian limestone	1621	<del>-484</del> -497	
T. 40 foot dolomite zone	1648	-511 -524	No show or hydrocarbons, R=5ohms
B. Warsaw (T. Keokuk)	1683	-546 -559	
T. Osage (Burlington/Keokuk)	1742	-605 -618	No show of hydrocarbons, water zone, R=5-14 ohms
T.D.	1792		

Recommendation

Gas shows were seen in the Upper Cherokee sandstones (Upper Cattleman, Upper Bartlesville), but electric logs indicated they were largely water saturated. I recommend that testing of these zones be delayed until after depletion of the Lower McLouth sandstone.

The drilling samples indicated only gilsonite or tar in the shaly Middle McLouth sandstone. Although electric logs may indicate good oil saturation, this zone is likely to produce only tar, if that.

The best zone in the well is the 31 foot thick Lower McLouth sandstone. Samples indicated good oil and gas saturations, good odor and fluorescence, and a clean, highly porous sandstone. This zone should produce both oil and gas. I recommend completing this sandstone zone.

The Forty Foot zone and the Osage (Burlington/Keokuk) in the Mississippian limestone was water saturated. Do not test this zone for hydrocarbons.

*Tom W. Stander*

---

Tom W. Stander  
Geologist/Geophysicist  
President, Orion, Inc.

Brunk #1  
Jefferson County, Kansas

API# 15-087-20,114

Drillers' Lithology

<u>Depth</u>	<u>Thickness</u>	<u>Lithology</u>	<u>Depth</u>	<u>Thickness</u>	<u>Lithology</u>
0-18	18	Clay	847-853	6	Shale
18-22	4	Sand	853-864	11	Limestone
22-41	19	Clay	864-982	118	Shale
41-56	15	Sand	982-984	2	Limestone
56-78	22	Shale	984-1003	19	Shale
78-89	11	Limestone	1003-1008	5	Limestone
89-122	33	Shale	1008-1046	38	Shale
122-124	2	Limestone	1046-1049	3	Limestone
125-215	91	Shale	1049-1070	21	Shale
215-272	57	Limestone	1070-1073	3	Limestone
272-531	259	Shale	1073-1186	13	Shale
531-565	34	Limestone	1186-1189	3	Limestone
565-585	20	Shale	1189-1193	4	Shale
585-603	18	Limestone	1193-1200	7	Limestone
603-627	24	Shale	1200-1433	233	Shale, sandy
627-644	17	Limestone	1433-1440	7	Sand
644-673	29	Shale	1440-1493	50	Shale, sandy
673-692	19	Limestone	1493-1504	11	Sand
692-702	10	Shale	1504-1507	3	Limestone
702-728	26	Limestone	1507-1530	23	Shale, sandy
728-746	18	Shale	1530-1540	10	Sand
746-815	69	Limestone	1540-1547	7	Limestone
815-821	6	Shale	1547-1561	14	Sand, odor
821-842	21	Limestone	1561-1573	12	Shale, sandy
842-845	1	Shale	1573-1624	54	Sand, odor
845-847	3	Limestone	1624-1791	167	Limestone, Mississippian T.D. October 30, 1984 2:00 AM

Geologist's Sample Descriptions 1210' - T.D. at 1791'

<u>Depth</u>	<u>Thickness</u>	<u>Lithology and Remarks</u>
1210-1240	30	80% Shale, gray; 20% limestone, white
1240-1270	30	50% Shale, gray; 40% limestone, white, crystalline, obsidian, shaly sand, pyrite
1270-1300	30	30% Shale; 40% limestone; 30% sandstone, medium to fine grained, shaly
1300-1310	10	50% Shale, green and gray; 25% limestone, clear and tan, crystalline; 25% sandstone, shaly, gilsonite
1310-1320	10	Shale, limestone, and sandstone, same as above
1320-1330	10	Shale, sandy, gray, green; limestone, tan and white; some sandstone
1330-1340	10	Shale, gray, sandy
1340-1350	10	50% Shale, sandy, gray; 50% sandstone, clear to green, angular, medium grained, tar or gilsonite stain

Brunk #1  
Jefferson County, Kansas

API# 15-087-20,114

<u>Depth</u>	<u>Thickness</u>	<u>Lithology and Remarks</u>
1350-1360	10	40% Sandstone, shaly; 40% shale, black, gray; 20% limestone, white to tan, crystalline
1360-1370	10	60% Shale, gray, black; 20% sandstone, shaly, limey; 20% limestone, white, fossiliferous, black coal
1370-1380	10	40% Sandstone, angular, clear, medium grained, low porosity, no show, gilsonite; shale, gray, green, yellow, pyrite
1380-1390	10	60% Shale, gray, red, brown, purple; 20% sandstone, white, good porosity, tar; 20% limestone, tan to clear, coal, pyrite
1390-1400	10	40% Sandstone, same as above, some brown stain; 50% shale, black, gray; 10% limestone, white, tan
1400-1410	10	60% Shale, sandy, gray, green, black; 40% sandstone, shaly, some brown stain, no fluorescence
1410-1420	10	80% Shale, sandy, gray, black; 10% limestone, tan; 10% sandstone, shaly
1420-1430	10	60% Shale, gray, green, black, coal; 35% sandstone, clear, angular, coarse grained, good porosity, no stain, some tar, pyrite
1430-1440	10	50% Sandstone, shaly, same as above; 50% shale, gray, green, coal
1440-1450	10	90% Sandstone, large quartz grains, rounded to angular, clear; 10% shale, gray, black
1450-1460	10	80% Sandstone, same as above, some gilsonite, some fine grained; 20% shale, gray and black
1460-1470	10	40% Sandstone, coarse grained; 40% Sandstone, fine grained, shaly; shale, black, gray, sandy
1470-1480	10	50% Shale, gray, sandy; 50% sandstone, coarse and fine grained, no fluorescence
1480-1490	10	80% Shale, gray, black; 20% sandstone, fine grained, clear, some gilsonite stained
1490-1500	10	60% Shale, gray and black; 30% sandstone, shaly, gilsonite, very fine grained, some tar; 10% limestone, white
1500-1510	10	60% Sandstone, very coarse grained, angular to sub-rounded, some fine grained; 40% shale, gray; pyrite, gas kick at 1500-1504; 45 units; 1506-1508; 15 units
1510-1520	10	40% Sandstone, coarse grained, quartz grained; 40% sandstone, fine grained, shaly, no fluorescence; gas kick at 1516-1518; 17 units; 20% shale, black, coal
1520-1530	10	40% Shale, gray; 40% sandstone, clear, coarse grained; 10% limestone, tan; 10% coal, pyrite; gas kick 1525-1527 15 units
1530-1540	10	50% Sandstone, coarse grained, quartz; 50% shale, black, gray, some fine grained sand; gas kick at 1530-1532; 40 units; 1536-1538; 45 units
1546	15 min. circ.	50% Shale, black and gray; 30% sandstone, fine grained; gas kick at 1540-1542; 40 units

<u>Depth</u>	<u>Thickness</u>	<u>Lithology and Remarks</u>
1546	20 min. circ.	30% Sandstone, fine grained, some gas bubbles, some brown oil stain, some gilsonite
1540-1550	10	80% Shale, black, sandy, gas bubbles, thin laminated sand/shale; 20% sandstone, medium grained, white
1550-1560	10	50% Shale, gray and black, sandy; 50% sandstone, green, green and clear, fine grained, low porosity, fine no fluorescence, some coarse quartz grains
1560-1570	10	Sandstone, gray, shaly, fine grained, rounded, well sorted, tar or gilsonite stained, some brown oil stain, 80% of tar-sand very light blue fluorescence, some coarse grained quartz; gas kick at 1558-1566; 30 units
1570-1580	10	Sandstone, oil and gas, 50% of sand is tar-filled, fine grained, shaly; 50% of sand coarse grained, quartz, live oil stained, good show of oil and gas, medium porosity, angular, well sorted, very light blue fluorescence; gas kick at 1570-1607; 30-55 units
1580-1590	10	Sandstone, oil and gas, medium grained, quartz, sub rounded, well to medium sorted, brown oil stained, good live oil show, good cut of oil, good gas bubbles, oil bleed on pit, some tar in samples, good odor in samples, gas bubbles in wet samples after 4 hours, very good zone and show
1590-1600	10	Sandstone, oil and gas, same as above, good show of gas and oil, good zone, possible water sand near bottom
1600-1610	10	Sandstone, oil, same as above, more water sand(?), some gilsonite, 15% shale, sandy, black
1610-1620	10	Sandstone, same as above, good coarse to medium quartz, oil stain and live oil; 30% shale, some gilsonite
1620-1630	10	Sandstone, same as above, oil shows, live oil
1630-1640	10	20% Sandstone, some tar/gilsonite, oil stained; 40% shale, green, gray; 15% chert; 25% limestone, Top Mississippian 1624' (-487')
1640-1650	10	Limestone, chert, sandstone, same as above
1650-1660	10	80% Limestone, tan; 10% chert; 10% shale, gray
1660-1670	10	80% Limestone, tan; 10% chert; 10% shale, gray
1671	10 min. circ.	80% Limestone; chert; shale, gray
1674	circ.	Limestone, white-tan; chert; shale, gray
1670-1680	10	Limestone; chert; shale, gray
1680-1690	10	Limestone; chert; shale, gray
1690-1700	10	Limestone, white; chert; shale
1700-1710	10	Limestone; chert; shale
1710-1720	10	Limestone, white, tan, crystalline; chert; shale, gray
1720-1730	10	Limestone, white, crystalline
1730-1740	10	Limestone, same as above
1740-1750	10	Limestone, crystalline, white to tan, some coarse crystals, brown stain, low porosity, tight, tar
1750-1760	10	Limestone, tan, crystalline
1753	15 min. circ.	Limestone, chert, Top Osage (Bk) 1746 (-609), no show, no porosity in limestone
1753	25 min. circ.	Limestone and chert, no show, same as above

Brunk #1  
Jefferson County, Kansas

API# 15-087-20,114

<u>Depth</u>	<u>Thickness</u>	<u>Lithology and Remarks</u>
1760-1791	31	Limestone and chert, no oil or gas shows, same as above
1791	20 min. circ.	Limestone and chert, no oil or gas shows

T.D. at 1791' October 30, 1984

# N Baroid Petroleum Services

WELL BRONF. NO. 1  
 COMPANY JERRY LITE  
 LOCATION JEFFERSON CO., KS.

## LEGEND

TCI TRIP CHLORIDES  
 NB NEW BIT  
 NCB NEW CORE BIT  
 DST DR L. STEW TEST  
 TG TRIP GAS  
 SAND  
 SHALE  
 LIMESTONE  
 DOLOMITE

NR NO RETURNS  
 EL ELECTRIC LOG  
 CO CIRCULATE OUT RETURNS  
 LKF CHECK FOR FLOW

**BAROID LOGGING SYSTEMS**

**MUD LOG**

DRILLING RATE		VISUAL PHOSPHOR	DEPTH	GAS LOG - HYDROCARBONS IN MUD (M=1000)						REMARKS
FEET PER IR	MIN PER FT			C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	iC <sub>4</sub>	nC <sub>4</sub>		
25	2.5		10	20	5	25	25	25		
8 1/2" DRUM TO 85' DRILLING WITH BIT NO 3 STC 33, RR, C 1/2" III AT 1005' BEGIN LOGGING 10-29-84			1005'	CARBIDE TEST AT TRAP AT 1005' CARBIDE DROP AT 1014' - 8 MINUTES TOTAL RETURN GAS DETECTOR MST - 2% = 60 UNITS CHROMATOGRAPHICAL CALIBRATION AT N. 250. C <sub>1</sub> 18, C <sub>2</sub> 21.5, C <sub>3</sub> 20, C <sub>4</sub> 15, nC <sub>4</sub> 135						SLTS - LT GY, BLKY, MIC, V ARGIL, CAL, SFT LS - LT TN, FXL, DNS, BRIT SH - LT GY, DK GY, BLKY, SL SLTY IP, MIC IP, CARB IP, CAL, SFT, TR PYR
30' SAMPLES			1020'	CARBIDE DROP AT 1296' - 11 MINUTES TOTAL RETURN						LS - LT TN, BRNGY, DNS IP, FXL, FOS IP, BRIT-FRM SS - GY WH, VFG, SBAND, MIC, PYR, WCMTD, CAL, FRI
100' SAMPLES WOB 25 RPM 70 PP 400			1030'	W 9.0 V 32						SS - GY WH, VFG, SBAND, MIC, SL ARG, WCMTD IP, CAL, FRI SH - GY, DK GY, BLKY, MIC, PYR, CARB IP, CAL, SFT, TR FOS

**Baroid**  
Petroleum Services

WELL BRUNK 501  
COMPANY GERRITZ  
LOCATION JEFFERSON CO. ARK

**LEGEND**

TC TRIP CHLORIDES  
NB NEW BIT  
NCB NEW CORE BIT  
DST DRILL STEM TEST  
TG TRIP GAS  
SAND  
SHALE  
LIMESTONE  
DOLOMITE

NR NO RETURNS  
EL ELECTRIC LOG  
CO CIRCULATE OUT RETURNS  
CKF CHECK FOR FLOW

**BAROID**  
**LOGGING**  
**SYSTEMS**  
**MUD**  
**LOG**

DRILLING RATE		LITHOLOGY	DEPTH	GAS LOG - HYDROCARBONS IN MUD (M=1000)					REMARKS
FT PER MIN	MIN PER FT			C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	C <sub>5+</sub>	
1.25	2.5		0M	10	5	25	25	25	
			UNITS 25	50					
									COAL - BLK, VIT, SFT
									SS - GY WH, VF-FGR, SBANG, MIC, WCMTD, IP, TR GIL, GD POR, CAL, FRI
									LS - GY, LT GY TN, FXL, DNS IP, SHLY IP, BRIT - FRM
									SH - LT GY, DK GY, BLKY, SLTY IP, MIC, CARB IP, CAL, SFT
									SS - GY WH, FGR, SBANG, MIC, SL ARG, GD POR, MCMTD, CAL, CARB, FRI, NCSOF
									LS - LT TNE-MXL, FDS, SKEL IP, DNS IP, FRM - BRIT
									SH - GY, DK GY, BLKY, CARB IP, MIC, SLTY IP, CAL, SFT
									SLTS - LT GY, BLKY, ARGIL, CAL, MIC, SFT
									SS - CLR, F-CGR, ANG, PSRTD, P-MCMTD, CAL, MANY FREE GRNS, FRI, NCSOF
									SS - GY WH, FGR, SBANG, PSRTD IP, MCMTD, CAL, GD POR, GIL, NSCOF
							WI 9.1	VT 38	SLTS - LT GY, BLKY, ARGIL, MIC, FRI - SFT, CAL
									CARBIDE TEST AT TRAP



WELL BRUNK NO. 1  
COMPANY JERRY LUTZ  
LOCATION JEFFERSON CO, MS

**LEGEND**

TCI TRIP CHANGES  
NR NO RETURNS  
NB NEW BIT  
EL ELECTRIC LOG  
NCB NEW CORE BIT  
CO CIRCULATE OUT RETURNS  
DST DRILL STEM TEST  
CKF CHECK FOR FLOW  
TG TRIP GAS



**BAROID**  
**LOGGING**  
**SYSTEMS**

**MUD**  
LOG

DRILLING RATE			LITHOLOGICAL	DEPTH	GAS LOG - HYDROCARBONS IN MUD (M-1000)					REMARKS
<input type="checkbox"/> FT PER HR <input checked="" type="checkbox"/> MIN PER FT 1.25    2.5    3.75					LOG	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	
				%	UNITS					
				10	20	5	25	25	25	
				CG 40				W 92		LS - BEIGE, LT TN, TN, VF-FXL, SL SUC IP, VUGGY POR IP, FRI-BRIT, DOLIP
				CG 25				V 36		LS - BEIGE, LT TN, TN, VF-FXL, SUC IP, DOLIP, FOS IP, CHTY, FRM-BRIT
				CG 30						LS - LTTN-TN, FXL, FOS IP, SUC IP, VUGGY POR IP, DOL IP, CHTY, FRM-BRIT
				CG						LS - LTTN-TN, VF-FXL, VSUC, VUGGY POR, DOL, FRM
10-30-84										
RTD 1791										

# DRILLERS LOG

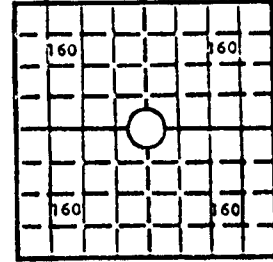
S. 25 T. 9 R. 19 <sup>E</sup><sub>W</sub>

API No. 15 - 087-20,114  
County Number

Loc. SE $\frac{1}{4}$  SW $\frac{1}{4}$  NW $\frac{1}{4}$

County Jefferson

640 Acres  
N



Locate well correctly

Elev.: Gr. \_\_\_\_\_

DF \_\_\_\_\_ KB \_\_\_\_\_

Operator <b>Jerry Lutz</b>	
Address <b>Route U.S. 131, South Reed City, Michigan 49677</b>	
Well No. <b>1</b>	Lease Name <b>Brunk</b>
Footage Location feet from (N) (S) line _____ feet from (E) (W) line _____	
Principal Contractor <b>Caney Valley Drilling Company</b>	Geologist <b>Tom Stander</b>
Spud Date <b>10-27-84</b>	Total Depth <b>1791'</b>
Date Completed <b>10-30-84</b>	P.B.T.D. _____
Oil Purchaser _____	

## CASING RECORD

Report of all strings set—surface, intermediate, production, etc.

Purpose of string	Size hole drilled	Size casing set (in O.D.)	Weight lbs/ft.	Setting depth	Type cement	Sacks	Type and percent additives
SURFACE	12 $\frac{1}{4}$ "	8-5/8"		85'	OWC	50	3% cal.
PRODUCTION	6 $\frac{1}{2}$ "	4 $\frac{1}{2}$ "		1650'	OWC - Consolidated		

## WELL LOG

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.

Formation	Top	Btm.	Formation	Top	Btm.	Formation	Top	Btm.
Clay	0	18	Shale	842	845	Sand, odor	1547	1561
Sand	18	22	Lime	845	847	Sandy shale	1561	1573
Clay	22	41	Shale	847	853	Sand, odor	1573	1624
Sand	41	56	Lime	853	864	Miss. lime	1624	1791 TD
Shale	56	78	Shale	864	982			
Lime	78	89	Lime	982	984			
Shale	89	122	Shale	984	1003			
Lime	122	124	Lime	1003	1008			
Shale	124	215	Shale	1008	1046			
Lime	215	272	Lime	1046	1049			
Shale	272	531	Shale	1049	1070			
Lime	531	565	Lime	1070	1073			
Shale	565	585	Shale	1073	1186			
Lime	585	603	Lime	1186	1189			
Shale	603	627	Shale	1189	1193			
Lime	627	644	Lime	1193	1200			
Shale	644	673	Sandy shale	1200	1433			
Lime	673	692	Sand	1433	1440			
Shale	692	702	Sandy shale	1440	1493			
Lime	702	728	Sand	1493	1504			
Shale	728	746	Lime	1504	1507			
Lime	746	815	Sandy shale	1507	1530			
Shale	815	821	Sand	1530	1540			
Lime	821	842	Lime	1540	1547			

STATE OF KANSAS - CORPORATION COMMISSION  
MULTIPOINT BACK PRESSURE TEST

FORM CG-1

TEST:  Initial  Annual  Special TEST DATE: Nov. 29, 1984

COMPANY: Prv Lutz LEASE: BRUNK WELL NO.: ONE

COUNTY: McPherson LOCATION: c SE, SW, NW SECTION: 25 TWP: 9S RANG: 19E ACRES: 80

RESERVOIR: same PIPELINE CONNECTION: Northwest Central (/Williams Bros.)

PLUG BACK TOTAL DEPTH: N?A PACKER SET AT: N?A

DATE: 30, 1984

PIPE SIZE: 1 1/2 inch WT. 9.5 lbs ID. 1792 SET AT 1586 TO 1590

TYPE FLUID PRODUCTION: oil only - came on natural

RESERVOIR TEMPERATURE: 60° BAR PRESS - 14.4 Psia

API GRAVITY OF LIQUID: N?A

TYPE METER COIN: 2 inch Prover

OBSERVED DATA

DURATION OF SHUT-IN      HR.

RATE No.	ORIFICE SIZE In.	METER (PROVER) PRESSURE psig	DISP. (h <sub>w</sub> ) (h <sub>d</sub> )	FLOWING TEMP t	WELL-HEAD TEMP t	CASING WELLHEAD PRESS.		TUBING WELLHEAD PRESS.		DURATION HOURS	LIQUID PROD. Bbls.
						psig	(P <sub>w</sub> )(P <sub>i</sub> )(P <sub>c</sub> ) psia	psig	(P <sub>w</sub> )(P <sub>i</sub> )(P <sub>c</sub> ) psia		
SHUT IN						501.5	515.9				
1	3/8	480.3		60	60	489.2	503.6			1 1/4	none
2	1/2	460.3		60	60	468.2	482.6			1 1/4	none
3	5/8	433.3		60	60	436.1	450.5			1 1/4	none
4	3/4	401.2		60	60	403.5	417.9			1 1/4	none
5	7/8	363.2		60	60	365.0	379.4			1 1/4	none

RATE OF FLOW CALCULATIONS

RATE NO.	COEFFICIENT (F <sub>d</sub> )(F <sub>p</sub> ) Mcfd	METER (PROVER) PRESSURE psia	EXTENSION $\sqrt{P_m z h_w}$	GRAVITY FACTOR F <sub>g</sub>	FLOWING TEMP FACTOR F <sub>t</sub>	DEVIATION FACTOR F <sub>pv</sub>	RATE OF FLOW Q Mcfd	GOR	Q <sub>m</sub>
1	2.439	494.7		1.314	1.00	1.039	1647		
2	4.388	474.7		1.314	1.00	1.037	2838		
3	6.638	447.7		1.314	1.00	1.035	4042		
4	9.694	415.6		1.314	1.00	1.033	5469		
5	13.33	374.6		1.314	1.00	1.029	6752		

PRESSURE CALCULATIONS

RATE NO.	P <sub>i</sub> psia	P <sub>c</sub> psia	P <sub>w</sub> psia	(P <sub>c</sub> ) <sup>2</sup> THOUSANDS	(P <sub>w</sub> ) <sup>2</sup> THOUSANDS	PLOTGING POINTS		100 $\left[ \frac{P_w - P_c}{P_c - P_a} \right]$
						(P <sub>c</sub> ) <sup>2</sup> - (P <sub>w</sub> ) <sup>2</sup> THOUSANDS	Q Mcfd	
1	503.6	515.9	503.0	266.2	253.9	12.3	1647	97.5
2	482.6	515.9	483.4	266.2	233.7	32.5	2838	93.4
3	450.5	515.9	452.7	266.2	204.9	61.3	4042	87.0
4	417.9	515.9	434.3	266.2	188.6	77.6	5469	80.5
5	379.4	515.9	396.2	266.2	157.0	109.2	6752	72.3

INDICATED WELLHEAD OPEN FLOW 12,887

Mcfd @ 14.65 psia

"n" = 0.72

The undersigned authority, on behalf of the Company, states that he is duly authorized to make the above report and that he has knowledge of the facts stated therein, and that said report is true and correct.

Executed this the 7<sup>th</sup> day of Dec., 1984.

Witness (if any)

*[Signature]*  
For Company  
*[Signature]*  
Checked by

STATE OF KANSAS - CORPORATION COMMISSION  
 ONE POINT STABILIZED OPEN FLOW OR DELIVERABILITY TEST

FORM NO. 2  
 8-7-58

TEST:  Deliverability  Open Flow TEST DATE: Nov. 29, 1984

COMPANY: Jerry Lutz LEASE: Brunk WELL NO.: one

OWNER: Jefferson LOCATION: C SE, SW, NW SECTION: 25 TWP: 9S RANG: 19E ACRES: 80

RESERVOIR: Same PIPELINE CONNECTION: Northwest Central (Williams Bros.)

COMPLETION DATE: 11-30-1984 PLUG BACK TOTAL DEPTH: N/A PACKER SET AT: N/A

PIPE SIZE: 1 1/2 inch WT: 9.5 lbs. SET AT: 1792 PERF.: 1586 TO: 1590

PIPE SIZE: none at time of test WT: I.D. SET AT: PERF.: TO:

TYPE COMPLETION (Describe): Pref only - came on natural TYPE FLUID PRODUCTION: None

PRODUCING THRU: casing RESERVOIR TEMPERATURE: 60° BAR. PRESS - P<sub>a</sub>: 14.4 Psia

DENSITY GRAVITY - G<sub>g</sub>: 570 % CARBON DIOXIDE: Unknown % NITROGEN: Unknown API GRAVITY OF LIQUID: N/A

VERTICAL DEPTH (H): TYPE METER CONN.: 2 inch Prover (METER RUN)(PROVER) SIZE

SHUT-IN PRESSURE: SHUT IN 515.9 psi 11-29-84 @ 8AM (AM)(PM) TAKEN 19 AT (AM)(PM)

FLOW TEST: STARTED Nov 29 19 84 AT 8:20 (AM)(PM) TAKEN 19 AT (AM)(PM)

OBSERVED DATA

DURATION OF SHUT-IN: \_\_\_\_\_ HR.

SHUT-IN OR LOW	ORIFICE SIZE In.	(METER) (PROVER) PRESSURE psig	DIFF. In. (h <sub>w</sub> )(h <sub>d</sub> )	FLOWING TEMP. t	WELL-HEAD TEMP. t	CASINO WELLHEAD PRESS		TUBING WELLHEAD PRESS		DURATION HOURS	LIQUID PROD. Bbls.
						psig	(P <sub>w</sub> )(P <sub>i</sub> )(P <sub>c</sub> ) psia	psig	(P <sub>w</sub> )(P <sub>i</sub> )(P <sub>c</sub> ) psia		
SHUT-IN						515.9	530.3				
FLOW				60	60	469.6	484.0				

RATE OF FLOW CALCULATIONS

EFFICIENT (F <sub>p</sub> )(F <sub>d</sub> ) Mcfd	(METER) (PROVER) PRESSURE psia	EXTENSION $\sqrt{P_m h_w}$	GRAVITY FACTOR F <sub>g</sub>	FLOWING TEMP. FACTOR F <sub>t</sub>	DEVIATION FACTOR F <sub>pv</sub>	RATE OF FLOW R Mcfd	GOR	G <sub>m</sub>
.388	484.0		1.314	1.00	1.042	2908		

(OPEN FLOW) (DELIVERABILITY) CALCULATIONS

$P_w^2 - (P_c)^2 = 281.2$   $P_w^2 - (P_c)^2 = 234.3$   $P_d = 80$  %  $(P_c = 14.4) + 14.4 = 427.1$   $(P_w)^2 = 0.207$   $(P_d)^2 = 182.4$

$\frac{P_w^2 - (P_c)^2}{P_c^2 - P_w^2}$	$\frac{P_w^2 - (P_c)^2}{P_c^2 - P_w^2}$	$\frac{P_w^2 - (P_c)^2}{P_c^2 - P_w^2}$	LOSS [ ]	"	"	ANTILOG	OPEN FLOW DELIVERABILITY EQUALS R = ANTILOG Mcfd
1.0	47.0	5.979	.7766	.72	.5592	3.624	10,538
8.8	47.0	2.102	.3227	.72	.2323	1.707	4,965

OPEN FLOW 10,538 Mcfd @ 14.65 psia DELIVERABILITY 4,965 Mcfd @ 14.65 psia

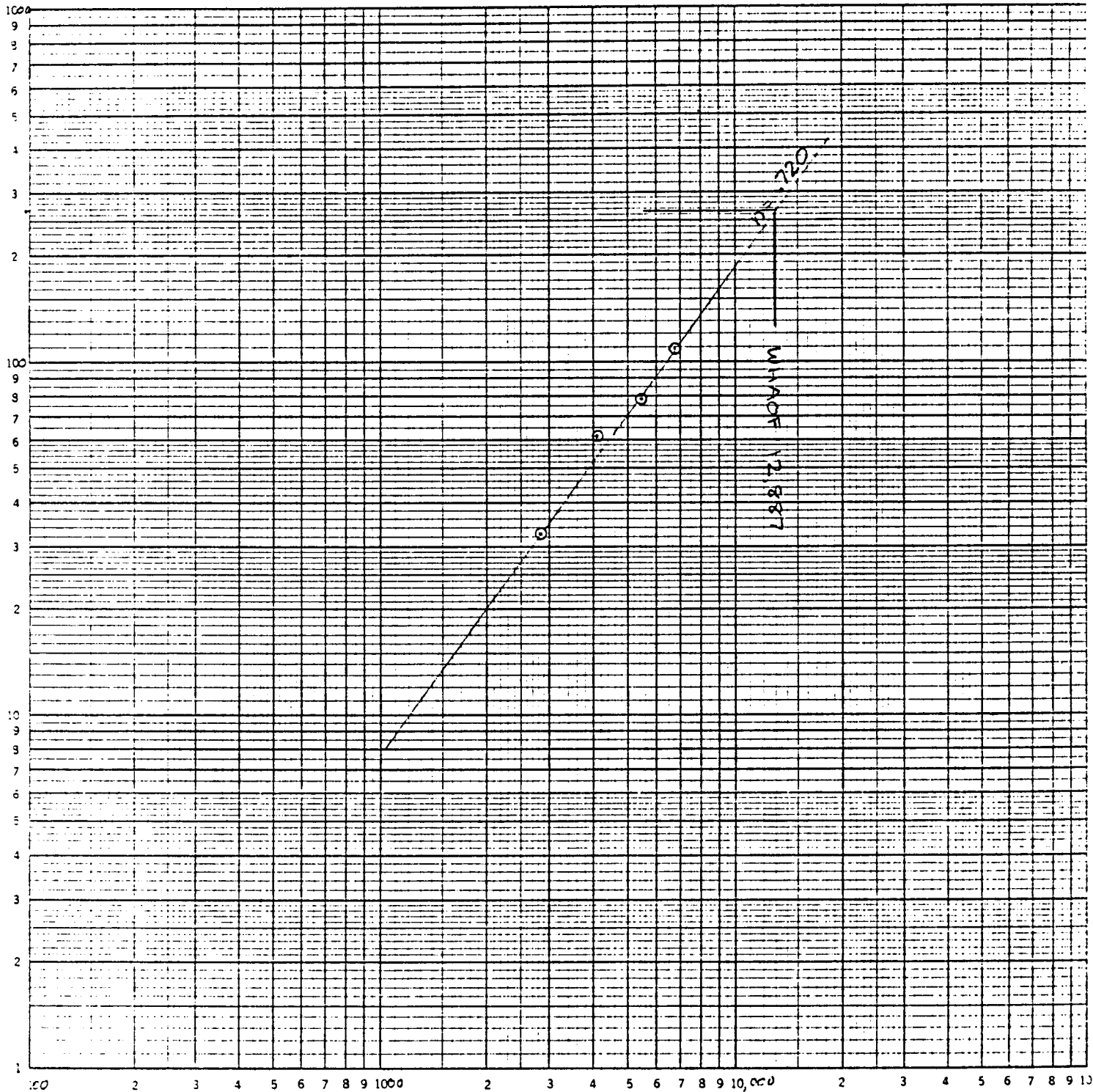
The undersigned authority, on behalf of the Company, states that he is duly authorized to make the above report and that he has knowledge of the facts stated therein, and that said report is true and correct.

Executed this the 7th day of Dec, 1984

*[Signature]*  
 For Company  
*[Signature]*  
 Checked by

Witness (if any)

For Commission



$$C = \frac{2838}{(32.5)^{.72}}$$

$$= 231.4$$

$$\text{MAOP} = 231.4 (0.59^2 - 14.4)^{.72}$$

$$= 12887 \text{ MCF/D}$$

$$Q_2 = 10,500$$

$$\log = 4.021$$

$$Q_1 = 2,000$$

$$\log = 3.301$$

$$n = .720$$



Summary

BRUNK #1

c SE, SW, NW Sec. 25, T9S, R19E, Jefferson County, Kansas  
 Surface elevation: 1137' ASL, Kelly bushing 1142' ASL  
 All depths from surface elevation

Electric Log Picks

<u>Geologic Section</u>	<u>Depth</u> (feet)	<u>Datum</u> (ft. ASL)	<u>Remarks</u>
T. Oread limestone	213	+924	
T. Douglas Group (T. Lawrence Fm.)	271	+866	
T. Stranger Formation	405	+732	
T. Lansing Group (T. Stanton lm.)	527	+610	
T. Vilas shale	560	+577	
T. Plattsburg limestone	580	+557	
T. Kansas City (T. Bonner Springs)	600	+537	
T. Wyandotte limestone	624	+513	
T. Lane shale	704	+433	
T. Iola limestone	716	+421	
T. Chanute shale	750	+387	
T. Drum limestone	766	+371	
T. Cherryvale shale	770	+367	
T. Dennis limestone	791	+346	
T. Galesburg shale	816	+321	
T. Swope limestone	820	+317	
T. Ladore shale	846	+291	
T. Hertha limestone	851	+286	
B. Kansas City (B. Hertha/ T. Pleasanton Group)	874	+263	
T. Marmaton Gp. (T. Lenapah lm.)	998	+139	
T. Nowata shale	1013	+124	
T. Altamont limestone	1021	+116	
T. Bandera shale	1046	+91	
T. Pawnee limestone	1051	+86	
T. Labette shale	1074	+63	
T. Fort Scott limestone	1082	+55	
T. Cherokee Group	1095	+42	
T. Squirrel sandstone			not present
T. Bevier coal bed	1179	-42	
T. Ardmore limestone			not present
T. Croweburg coal bed	1210	-73	
T. Upper Cattleman sandstone	1219	-82	16' water sand, slight gas show,
T. Fleming coal bed	1257	-120	$R_t = 10$ ohms
T. Middle Cattleman ss.			not present
T. Mineral coal bed	1281	-144	
T. Sammon coal bed	1329	-129	
T. Lower Cattleman sandstone	1335	-198	15' water sand, R=8 ohms
T. Upper Bartlesville sandstone	1365	-225	11', slight gas show, R=8 ohms
T. Tebo coal bed	1400	-269	
T. Weir-Pittsburg coal bed	1408	-271	
Middle Bartlesville ss.	1428	-285	3' water sand, R=6 ohms

Summary Continued BRUNK #1

Geologic Section	Depth	Datum	Remarks
T. Dry Wood coal bed	1473	-336	
T. Rowe coal bed	1486	-349	
T. Neutral coal bed	1494	-357	
T. Upper McLouth sandstone			not present
T. Middle McLouth sandstone	1550	-413	17' shaly ss, tar and gilsonite, R=10-12 ohms
T. Lower McLouth sandstone	1574	-437	31' clean oil and gas ss, good show, odor, cut, live oil, R=40-6
T. Burgess sandstone	1605	-468	16' clean oil and gas ss, good show, odor, cut, live oil and gas, fluorescence, but water saturated, R=5-12 ohms
T. Mississippian limestone	1621	-484	
T. 40 foot dolomite zone	1648	-511	No show or hydrocarbons, R=5ohms
B. Warsaw (T. Keokuk)	1683	-546	
T. Osage (Burlington/Keokuk)	1742	-605	No show of hydrocarbons, water zone, R=5-14 ohms
T.D.	1792		

WELL LOG

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.

Formation	Top	Btm.	Formation	Top	Btm.	Formation	Top	Btm.
Clay	0	18	Shale	842	845	Sand, odor	1547	1561
Sand	18	22	Lime	845	847	Sandy shale	1561	1573
Clay	22	41	Shale	847	853	Sand, odor	1573	1624
Sand	41	56	Lime	853	864	Miss. lime	1624	1791
Shale	56	78	Shale	864	982			
Lime	78	89	Lime	982	984			
Shale	89	122	Shale	984	1003			
Lime	122	124	Lime	1003	1008			
Shale	124	215	Shale	1008	1046			
Lime	215	272	Lime	1046	1049			
Shale	272	531	Shale	1049	1070			
Lime	531	565	Lime	1070	1073			
Shale	565	585	Shale	1073	1186			
Lime	585	603	Lime	1186	1189			
Shale	603	627	Shale	1189	1193			
Lime	627	644	Lime	1193	1200			
Shale	644	673	Sandy shale	1200	1433			
Lime	673	692	Sand	1433	1440			
Shale	692	702	Sandy shale	1440	1493			
Lime	702	728	Sand	1493	1504			
Shale	728	746	Lime	1504	1507			
Lime	746	815	Sandy shale	1507	1530			
Shale	815	821	Sand	1530	1540			
Lime	821	842	Lime	1540	1547			

# MIDWEST SURVEYS COMPUTER WELL LOG WUKKSHEE I

WELL NAME Brunk #1 DRILLING FLUIDS NATIVE WATER & MUD  CHEMICAL MUD  AIR

LOCATION SE 34NW sec 25 T. 9 R. 19 SURFACE TEMP. 55 F° R<sub>sh</sub> 6 Ohm/meters

COUNTY Jefferson STATE KS TEMP GRADIENT 1.0 F°/100ft NEUTRON POROSITY OF SHALE .25

LEASE NAME Brunk R<sub>mf</sub> 2.4 Ohm/m at 66 F° GAMMA RAY Open hole  Cased

API No. 150087-29114

DATE LOGGED Oct 30 89

LEASE OPERATOR Jerry Lutz

LOGGING Co. Great Gun

FORMATION CONSTANTS

FORM. No. 1 a SS m 2.15 n 2 I.R.W. 90 G.Ray Clean 90 G.Ray Shale 90 REMARKS L. McLoath

DATA INFORMATION

FILE NAME BULK TAPE No.

INPUT DATA FORMATION NAME	FORM. No.	ZONE No.	DEPTH		GAMMA RAY	NEUTRON POR.	DENSITY POR.	RESISTIVITY		FLUIDS	PRIMARY		RESIDUAL		MOVEABLE		BULK VOLUME		MNCF/ACRE GAS
			FTIN.	MAX.				DEEP	SHALLOW		WATER	OIL	S <sub>w</sub>	S <sub>g</sub>	S <sub>wk</sub>	S <sub>ok</sub>	WATER	OIL	
L. McLoath	1	1	74	76	37	21.5	2.34	25	25	16									
		2	76	78	20	19	2.28	55	45	13									
		3	78	80	15	17	2.29	60	45	12.5									
		4	80	82	19	18	2.26	65	48	12.5									
		5	82	84	13	18.5	2.26	85	65	13									
		6	84	86	13	19.5	2.24	99	65	14									
		7	86	88	14	19	2.22	75	60	13									
		8	88	90	10	18.5	2.21	67	55	12.5									
		9	90	92	19	19	2.23	70	55	12.5									
		10	92	94	15	19.5	2.25	75	55	14									

FORMATION SUM. FORMATION NAME	FORM. No.	TOTAL THICK.	POROSITY	SHALE VOLUME	PRIMARY SATURATION		RESIDUAL SATURATION		MOVEABLE		AVG BULK VOLUME		TOTAL ZONE VOLUME	
					WATER	OIL	WATER	OIL	GAS	GAS	WATER	OIL	WATER	OIL

REMARKS

LOG ANALYST \_\_\_\_\_ DATE \_\_\_\_\_

NOTE — For use with an HP-B5 and program "Reserve Oil and Gas Analysis" by TOM W STANDER, ORION INC.

P1. L. McLoath

RR LIMCL Brunk Bruls-1A

# MIDWEST SURVEYS COMPUTER WELL LOG WORKSHEET

NAME \_\_\_\_\_ WELL CONSTANTS DRILLING FLUIDS NATIVE WATER & MUD  CHEMICAL MUD  AIR   
 LOCATION \_\_\_\_\_ Sec. \_\_\_\_\_ T. \_\_\_\_\_ R. \_\_\_\_\_  
 COUNTY \_\_\_\_\_ STATE \_\_\_\_\_ SURFACE TEMP. \_\_\_\_\_ F° R<sub>sh</sub> \_\_\_\_\_ Ohm/meters  
 LEASE NAME \_\_\_\_\_ FORM. Log \_\_\_\_\_ TEMP GRADIENT \_\_\_\_\_ F°/100ft NEUTRON POROSITY of SHALE \_\_\_\_\_  
 API No. \_\_\_\_\_ R<sub>mf</sub> \_\_\_\_\_ ohm/m. at \_\_\_\_\_ F° GAMMA RAY Openhole  Cased

FORMATION CONSTANTS  
 No. \_\_\_\_\_ a \_\_\_\_\_ m \_\_\_\_\_ n \_\_\_\_\_ T.R.w. \_\_\_\_\_ R<sub>w</sub> \_\_\_\_\_ G Ray Clean \_\_\_\_\_ G Ray Shale \_\_\_\_\_ REMARKS \_\_\_\_\_  
 DATE LOGGED \_\_\_\_\_  
 LEASE OPERATOR \_\_\_\_\_  
 LOGGING Co. \_\_\_\_\_  
 DATA INFORMATION \_\_\_\_\_  
 FILE NAME \_\_\_\_\_ TAPE No. \_\_\_\_\_

INPUT DATA FORMATION NAME	FORM. No.	ZONE No.	DEPTH		GAMMA RAY	NEUTRON POR.	RESISTIVITY		FLUIDS	PRIMARY			RESIDUAL		MOVEABLE		BULK VOLUME		REMARKS
			min.	max.			SHALLOW	DEEP		S <sub>w</sub>	S <sub>o</sub>	S <sub>g</sub>	S <sub>wr</sub>	S <sub>ox</sub>	OIL SAT.	WATER	OIL	MMCF/ACRE GAS	
	1	11	1594	1896	12	15	225	47	50										
		12	96	198	11	13	223	54	46										
		13	598	1600	11	12.5	226	47	39										
		14	1600	1602	11	13	228	35	28										
		15	02	04	14	12.5	224	34	23										
		16	04	06	12	14	228	46	18										
		17	08	08	<del>15</del>														
		18	08	10															
		19	10	12															
		20	12	14															

FORMATION SLIM. FORMATION NAME	FORM. No.	TOTAL THICK.	POROSITY	SHALE VOLUME	PRIMARY SATURATION		RESIDUAL SATURATION		MOVEABLE		AVG BULK VOLUME		TOTAL ZONE VOLUME							
					WATER	OIL	WATER	OIL	WATER	GAS	WATER	GAS	cu ft per zone	bbbls acre	WATER	OIL	MMCF/ACRE GAS	MMCF/ACRE OIL		

REMARKS \_\_\_\_\_ LOG ANALYST \_\_\_\_\_ DATE \_\_\_\_\_  
 0254-00 *L. McClain*

NOTE — For use with an HP-85 and program "Reserve Oil and Gas Analysis" by TOM W STANDER, ORION INC.

# MIDWEST SURVEYS COMPUTER WELL LOG WORKSHEET

NAME B Hunt #1 WELL CONSTANTS DRILLING FLUIDS NATIVE WATER & MUD  CHEMICAL MUD  AIR   
 LOCATION SE Swath Sec. 25 T. 9 R. 19 SURFACE TEMP. 55 F° R<sub>sh</sub> 10 Ohm/meters  
 COUNTY Jefferson STATE KS TEMP GRADIENT 1.0 F/100ft NEUTRON POROSITY OF SHALE .25  
 LEASE NAME B Hunt R<sub>mi</sub> 2.4 ohm/m. at 66 F° GAMMA RAY Open hole  Cased   
 API No. 15-087-29114 FORMATION CONSTANTS R  $\mu_m = 2.68$   $\mu_g = 60$   
 DATE LOGGED Oct 29 84  
 LEASE OPERATOR Tenney Lutz  
 LOGGING Co. Great Course  
 DATA INFORMATION  
 FILE NAME BRUK18 TAPE No.

INPUT DATA FORMATION NAME	FORM. No	ZONE No	DEPTH		GAMMA RAY	NEUTRON POR.	DENSITY POR.	RESISTIVITY DEEP	RESISTIVITY SHALLOW	FLUIDS		PRIMARY		RESIDUAL		MOVEABLE OIL SAT.	BULK VOLUME		REMARKS
			ft/in.	ft/m.						SW	SG	SW	SG	SW	SG		WATER	OIL	
<u>Burgess</u>	<u>1</u>	<u>1</u>	<u>16.4</u>	<u>0.6</u>	<u>12</u>	<u>14</u>	<u>2.28</u>	<u>46</u>	<u>18</u>	<u>n</u>	<u>R<sub>w</sub></u>	<u>T.R.W</u>	<u>G.Ray</u>	<u>Clean</u>	<u>G Ray</u>	<u>Shale</u>	<u>90</u>		<u>Burgess</u>
	<u>2</u>	<u>2</u>	<u>0.6</u>	<u>0.8</u>	<u>15</u>	<u>16.5</u>	<u>2.29</u>	<u>45</u>	<u>12</u>	<u>n</u>	<u>R<sub>w</sub></u>	<u>T.R.W</u>	<u>G.Ray</u>	<u>Clean</u>	<u>G Ray</u>	<u>Shale</u>	<u>90</u>		
	<u>3</u>	<u>3</u>	<u>0.8</u>	<u>1.0</u>	<u>17</u>	<u>18</u>	<u>2.27</u>	<u>41</u>	<u>10</u>	<u>n</u>	<u>R<sub>w</sub></u>	<u>T.R.W</u>	<u>G.Ray</u>	<u>Clean</u>	<u>G Ray</u>	<u>Shale</u>	<u>90</u>		
	<u>4</u>	<u>4</u>	<u>1.0</u>	<u>1.2</u>	<u>14</u>	<u>18.5</u>	<u>2.27</u>	<u>28</u>	<u>8</u>	<u>n</u>	<u>R<sub>w</sub></u>	<u>T.R.W</u>	<u>G.Ray</u>	<u>Clean</u>	<u>G Ray</u>	<u>Shale</u>	<u>90</u>		
	<u>5</u>	<u>5</u>	<u>1.2</u>	<u>1.4</u>	<u>11</u>	<u>16.5</u>	<u>2.26</u>	<u>22</u>	<u>6.5</u>	<u>n</u>	<u>R<sub>w</sub></u>	<u>T.R.W</u>	<u>G.Ray</u>	<u>Clean</u>	<u>G Ray</u>	<u>Shale</u>	<u>90</u>		
	<u>6</u>	<u>6</u>	<u>1.4</u>	<u>1.6</u>	<u>12</u>	<u>17</u>	<u>2.26</u>	<u>22</u>	<u>6</u>	<u>n</u>	<u>R<sub>w</sub></u>	<u>T.R.W</u>	<u>G.Ray</u>	<u>Clean</u>	<u>G Ray</u>	<u>Shale</u>	<u>90</u>		
	<u>7</u>	<u>7</u>	<u>1.6</u>	<u>1.8</u>	<u>19</u>	<u>17</u>	<u>2.28</u>	<u>18</u>	<u>5.2</u>	<u>n</u>	<u>R<sub>w</sub></u>	<u>T.R.W</u>	<u>G.Ray</u>	<u>Clean</u>	<u>G Ray</u>	<u>Shale</u>	<u>90</u>		
	<u>8</u>	<u>8</u>	<u>1.8</u>	<u>2.0</u>	<u>14</u>	<u>16.5</u>	<u>2.33</u>	<u>19</u>	<u>6</u>	<u>n</u>	<u>R<sub>w</sub></u>	<u>T.R.W</u>	<u>G.Ray</u>	<u>Clean</u>	<u>G Ray</u>	<u>Shale</u>	<u>90</u>		
	<u>9</u>	<u>9</u>	<u>2.0</u>	<u>2.2</u>	<u>22</u>	<u>13</u>	<u>2.45</u>	<u>18</u>	<u>8</u>	<u>n</u>	<u>R<sub>w</sub></u>	<u>T.R.W</u>	<u>G.Ray</u>	<u>Clean</u>	<u>G Ray</u>	<u>Shale</u>	<u>90</u>		

FORMATION SUM. FORMATION NAME	FORM. No	TOTAL THICK.	POROSITY		SHALE VOLUME	PRIMARY SATURATION		RESIDUAL SATURATION		MOVEABLE		AVG BULK VOLUME		TOTAL ZONE VOLUME	
			WATER	OIL		WATER	OIL	WATER	OIL	WATER	OIL	WATER	OIL	WATER	OIL

REMARKS \_\_\_\_\_ LOG ANALYST \_\_\_\_\_ DATE \_\_\_\_\_  
 NOTE — For use with an HP-85 and program "Reserve Oil and Gas Analysis" by TOM W STANDER, ORION INC  
 P.1 Burgess