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COLO. OIL & GAS CONS. COM.

1860 Lincoln Street, Suite 780, Denver, Colorado 80295 (303) 863-0014

WINTERSHALL OIL & GAS CORPORATION  
HULL #28-32  
SECTION 28, T15S, ~~R24W~~ <sup>42W</sup> <sub>SKNE</sub> ✓  
CHEYENNE COUNTY, COLORADO

LOGGING GEOLOGISTS: Michael Gray -- ANALEX

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RESUME

OPERATOR: Wintershall Oil & Gas Corporation  
WELL NAME & NUMBER: Hull #28-32  
LOCATION: Section 28, T15S, ~~R24W~~ <sup>42W</sup>  
COUNTY: Cheyenne  
STATE: Colorado  
SPUD DATE: October 3, 1985  
COMPLETION DATE (TD): October 15, 1985  
ELEVATIONS: 4005' GL 4014' KB  
TOTAL DEPTH: 5700' DRLR  
CONTRACTOR: Murfin Drilling  
RIG: #23  
TYPE RIG: IDECO H 35 5  
PUMPS: National K-380 5½" x 14"  
GEOLOGIST: John V. Fontana -- GX CONSULTANTS  
ENGINEER: Fred J. Clausen  
TOOL PUSHER: Bill Reiter  
TYPE DRILLING MUD: Gel-Chem  
MUD COMPANY: Davis Mud & Chemicals  
MUD ENGINEER: Bruce Long  
HOLE SIZES: 12¼" to 344'; 7 7'8" to TD  
CASING: 8 5/8" to 335'  
MUD LOGGING BY: Michael Gray -- ANALEX  
TYPE UNIT: 1-man, Total FID Hydrocarbon Analyzer, FID Gas Chromatograph  
DST DEPTHS: #1: 5060' - 5156' (Morrow Formation)  
DST COMPANY: Formation Testers  
CORE INTERVALS: None  
ELECTRIC LOGS BY: Welex  
TYPE LOGS RUN: DIL-SFL-CNL-FDC-BHC-GR (Surface to TD)  
BOTTOM FORMATION: Osage

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SUMMARY AND CONCLUSIONS

Wintershall Oil & Gas Company's Hull #28-32 well was spudded by Murfin Drilling Company's Rig #23 on October 3, 1985. Drilling progressed to a depth of 3600' on October 7, 1985 at which time an Analex mudlogging unit was employed.

A slight hydrocarbon show was encountered in the Toronto Formation, between 4200' and 4220'. White to light brown, microcrystalline to crypto crystalline limestones showed a spotty yellow fluorescence and a fast streaming chlorothene cut. No gas increase was noted in this interval.

A DST was run in the Morrow Formation at the interval 5060' to 5156' (see DST Report #1).

A total depth of 5700' was reached on October 14, 1985 and electric logs were run.

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FORMATION SUMMARY

NOTE: All tops and reported zones of interest are based upon samples and information obtained during the drilling process. Footage and penetration rates were obtained from the driller's geologist.

Wabaunsee Formation3728' (+286')

Drilling in the Wabaunsee Formation was erratic and ranged from 1.5 to 3.5 min/ft. The unit was comprised of white to light gray, firm, limestone, and alternating intervals of dark shales. No significant gas increases or indications of hydrocarbons were observed in the Wabaunsee.

Shawnee Formation3958' (+56')

The Shawnee consisted of light, dolomitic limestones and alternating units of dark gray to black, platy shales. Drilling progressed erratically in the unit, ranging from 1 to 4 min/ft. No indications of hydrocarbons were observed in the Shawnee.

Heebner Formation4170' (-156')

Drilling in the Heebner decreased from about 3 min/ft. down to 4 to 6 min/ft. The unit was comprised of light gray to light brown limes and thin shale intervals. No shows were observed in the Heebner.

Toronto Formation4197' (-183')

The Toronto was comprised of light gray to light brown, very fine to fine crystalline, dolomitic limestones. A slight show was seen in the Toronto samples from 4200' to 4220' (see show report #1). Samples showed a spotty yellow fluorescence and a fast streaming chlorothene cut. No stain, odor, or gas increases were noted.

Lansing Formation4228' (-214')

The Lansing consisted of limestones which ranged from white to light brown and gray white in color. They were hard, cryptocrystalline to fine crystalline, often oolitic, and fossiliferous. Drilling progressed at about 4 min/ft. and decreased significantly in porous zones. Samples were circulated up and examined from two intervals which showed drilling breaks in the Lansing. These were 4224' to 4238' and 4516' to 4525'. No indications of hydrocarbons were observed in these intervals.

Marmaton Formation4630' (-616')

The Marmaton drilled at a fairly constant 4 min/ft. The unit consisted primarily of white to light gray, firm, microcrystalline to finely crystalline, partially argillaceous, occasionally oolitic and fossiliferous, sometimes dolomitic limestone. Samples from a porous zone, indicated by a drilling break at 4672', were circulated up and examined. No evidence of hydrocarbons were seen in these samples.

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Cherokee Formation4758' (-744')

The Cherokee Formation drilled at a fairly constant rate of 4.5 min/ft. Samples consisted of dense, cryptocrystalline, hard, dolomitic, limestones interbedded with dark gray to black carbonaceous shales. Gas increases from a background of about 7 units to 35 to 55 units were noted. These gas increases are from carbonaceous shales in the Cherokee.

Atoka Formation4922' (-908')

Drilling in the Atoka Formation progressed at a rate of about 4 min/ft. The upper portion of the unit consisted of dark gray to black, pyritic, partly carbonaceous shales. These shales were interbedded with thin limestone units. The lower portion of the Atoka consisted of limestones. These limestones were white to light gray and brown in color, moderately firm, somewhat pyritic, and cherty. No significant gas increases or other indications of hydrocarbons were observed in the Atoka.

Morrow Formation5060' (-1052')

The Morrow consisted predominantly of black, platy, pyritic, somewhat calcareous, carbonaceous shales. Sandstone was encountered in the lower portion of the Morrow. A DST was run on the interval from 5060' to 5156' (see DST report #1). Sands in the lower Morrow were green to gray-green in color, moderately well cemented, well consolidated, angular to subangular, and very fine sand to silt in grain size. No indications of hydrocarbons were observed in the samples.

Keyes5138' (-1124')

The Keyes consisted of light to dark colored, hard, cryptocrystalline to microcrystalline limestones which drilled from 3 to 5 min/ft. Some sandy intervals were encountered in the Keyes. Those consisted of clear to light gray, well cemented, fine to coarse grained, moderately sorted glauconitic sands. No gas increases or indications of hydrocarbons were observed in the Keyes.

Ste. Genevieve Formation5186' (-1172')

The Ste. Genevieve limestones were light to brown to mottled gray in color, hard, microcrystalline to coarsely crystalline, fossiliferous, oolitic, and occasionally sucrosic. These limestones drilled from 2.5 to 4.5 min/ft. No indications of hydrocarbons were seen in the unit.

St. Louis5256' (-1240')

The St. Louis drilled at a constant rate of about 5 min/ft. The formation was comprised of white to light brown, hard cryptocrystalline to finely crystalline, occasionally very oolitic, somewhat fossiliferous limestones. The lower portion of the St. Louis became increasingly cherty and was slightly more dolomitic than the upper portion. No significant gas increases or sample shows were encountered in the St. Louis.

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Warsaw Formation

5528' (-1514')

The Warsaw consisted of tan to buff and cream-colored, hard, cryptocrystalline to microcrystalline, dolomitic, cherty limestones. Drilling rate in the Warsaw was fairly erratic, varying from 2.5 to 6.5 min/ft. No significant increases in gas readings or indications of hydrocarbons were observed in the Warsaw.

Osage

5584' (-1570')

The Osage consisted of buff to light brown and mottled gray brown, hard microcrystalline to finely crystalline, dolomitic and somewhat cherty limestone. Drilling progressed at about 5.5 to 6 min/ft. No gas increases or hydrocarbon shows were observed in the Osage.



OPERATOR WINTERSHALL OIL & GAS SEC 28 TWP 15 S 42 W  
 WELL HULL 28-32 JOB# 85655 CHEYENNE CO., COLORADO

**analex**  
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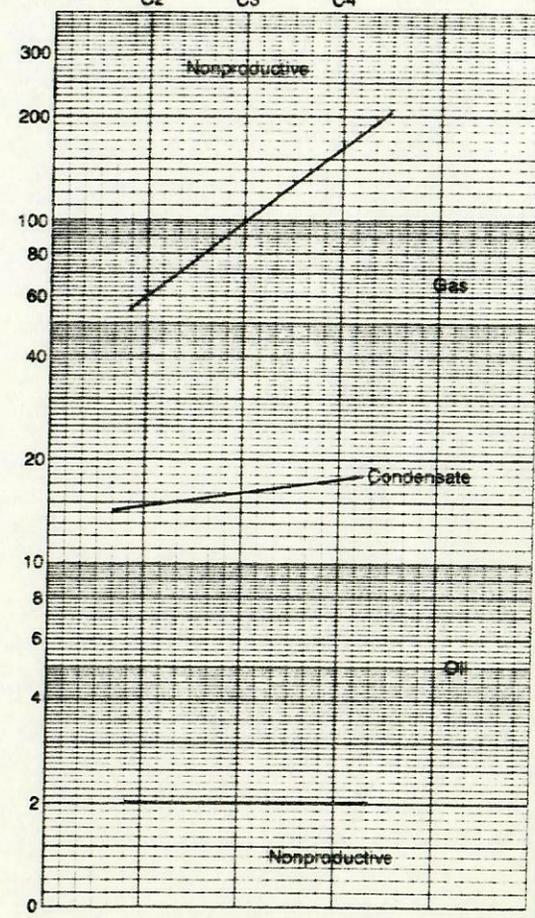
SHOW REPORT# 1 Formation TORONTO Time 4:40 AM  
 Date 10/9/85

RATIO PLOT:  $\frac{C1}{C2}$   $\frac{C1}{C3}$   $\frac{C1}{C4}$

Depth Interval from 4230 to 4244 with      liberated      produced gas

Gross Ft      Net Ft     

G F P	DEPTH	MIN/FT	TOTAL GAS		GAS CHROMATOGRAPHY %				SHOW GAS MINUS BACKGROUND			
			UNITS	% M E	C1	C2	C3	Σ C4	$\frac{C1}{C2}$	$\frac{C1}{C3}$	$\frac{C1}{C4}$	
	BACKGROUND	4.5	1	.01	.002							
	4232	1.5	1	.01	.002							
	4234	1.8	1	.01	.002							
	4236	1.5	1	.01	.002							
	4238	1.7	1	.01	.002							
	4240	2	1	.01	.002							
	4244	1.75	1	.01	.002							
	4244	1.75	1	.01	.002							
	BACKGROUND	3.75	1	.01	.002							



GAS RATIO EVALUATION:      oil      gas      cond      tite      wet

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LITHOLOGY TYPE: SS      SH      SLTST      LS      DOL      Other       
 %: ( ) ( ) ( ) ( 100 ) ( ) ( )

Color crn-buff Grain/Xtal Size f-c gran Shape      Sorting      Cmt & Mtx      Acc ool & fos

POROSITY: n p m f g      intgran      intxn      moldic      frac      vuggy      other     

STAIN: Color dk brn      even X spotted      pinpoint      bleeding % in total cuttings 5

FLUORESCENCE: Color brn yel      even X spotted      pinpoint % in total cuttings      % mnrl     

CHLOROTHENE CUT: Color a vis Development      Residual fat brn rag

ODOR: n sl gd

CUT FLUORESCENCE: Color brn yeluh Development fat strung Residual yel rag

WETTABILITY TEST: + -

MUD PROPERTIES: Wt 9.2 FV 44 Fil 18.2 %Oil      Cl 23000 ph 9 WOB 35 RPM 60/70 SPM 68

REMARKS: NO GAS SHOW Bit Type W F 52 Hrs 70 Footage 2400

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