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OCT 29 1979

COLORADO GEOLOGICAL SURVEY

NORTHWEST EXPLORATION

#28 Philadelphia Creek
Sec. ¹⁴~~13~~, T2S, R101W
Rio Blanco County
Colorado

October 22, 1979

Approved by

Gustavson Associates

EXPLORATION

EVALUATION



MAILING ADDRESS
2111 30TH STREET
BOULDER, COLORADO 80301

TELEPHONES
Rocky Mountain & Southwestern Region (303) 443-2209
Mid-Continent & Southeastern Region (901) 522-9410

DATA SHEET

Operator	Twin Arrow Drilling Company
Well	Philadelphia Creek #28
Location	1562' FSL and 1537' FEL
Elevation	6646'
Spud	October 3, 1979
Finish Drilling	October 11, 1979
T.D.	3750'
Hole:	12-1/4" to 127' 6-3/4" to 3750'
Logs	IGL, LNCD - Welex, Rock Springs, Wyoming
Casing	8-5/8" K-55 24 lb. STC 2-7/8" Tubing 6.4 lb.
Rig	Twin Arrow Drilling Company, Rangely, Colorado Rig #6 Cardwell Rig 6000 foot trailer mast
Compressors	1 Quincy 850, 1 Joy 850, Joy Booster, Joy Mist Pump
Tool Pusher	Gale Covington
Drillers	Charles Graham, John Weeks, George Todd, Bill Young
Geologist	Steve Priesmeyer

CHRONOLOGY

<u>Date</u>	<u>Depth 7:00 a.m.</u>	
October 3		Spud
October 4	208'	Drilling
October 5	960'	Drilling
October 6	1662'	Drilling
October 7	2046'	Tripping in hole
October 8	2892'	Tripping out
October 9	3406'	Drilling
October 10	3592'	Drilling
October 11	3750'	Drilling

FORMATION TOPS
(From Electric Logs)

Elevation 6653 K.B.

Mesa Verde	Surface
Mancos	1706'
Mancos "A"	2188'
Mancos "B"	3138'
T.D.	3750'

SUMMARY OF FLARES

<u>Depth</u>	<u>Duration</u>	<u>Length</u>
1145' (connection gas)	5 seconds	8-10' long
1237-1662' (connection gas)	5-15 seconds	5-10' long
1827' (connection gas)	10 seconds	10' long
1827' (after 4 hours down)	30 seconds	5-10' long
2523' (connection gas)	10 seconds	10-15' long
2724' (connection gas)	1 minute	10' long
3208' (connection gas)	5 seconds	10' long
3406' (connection gas)	15 seconds	10' long
3561' (flares after tripping while unloading hole)	5 minutes	10' long
	1.5 minutes	10' long
	30 seconds	5-10' long
	30 seconds	5-10' long
	30 seconds	5-10' long

depth to	SAMPLE DESCRIPTION	date: October 5, 1979 page: 1 of 8
130 140	Well: PHILADELPHIA Creek # 28	
140 150	No. 10000: very poor sample only dust	
150 160	Sandstone light gray, slightly salt + pepper, fine grain, well sorted, subrounded, calcareous, 15%; Sandstone dark gray, pyritic, fine grain, well sorted, sub-rounded 20%; Shale	
	dark gray, slightly fissile, slightly calcareous 5% (silty in some chips)	
160 170	Siltstone light to dark gray, slightly argillaceous, calcareous, slightly sandy 80%;	CARBONACEOUS FRAGS.
	Sandstone light gray as above 10%; Shale as above 10% occasional light	
	brown 'bleb'	
170 180	Sandstone light gray as above, medium-sorted, slightly calcareous, 80%;	
	Siltstone as above, 10%; Shale as above, 10%	
180 190	Sandstone as above, 80%; Siltstone as above, 10%; Shale as	
	above, 10%	
190 200	Sandstone as above, 50%; Shale as above, calcareous content decreasing	
	slightly carbonaceous, 30%; Siltstone as above, calcareous content	
	decreasing	
200 210	Sandstone, as above, pyritic, 100%;	
210 220	Shale, dark gray, slightly fissile, calcareous, carbonaceous material,	
	70%; Sandstone, as above, decrease in pyrite, very fine grained,	
	calcareous, 20%; Siltstone, as above, 10%;	
220 230	Shale, as above, 80%; Siltstone, as above, 15%; Sandstone,	
	as above, 5%;	
230 240	Sandstone, light gray, slightly salt + pepper, fine grained,	
	well rounded, medium sorted, slightly calcareous, 100%;	
240 250	Shale - silty shale, dark gray, slightly fissile, slightly pyritic	
	carbonaceous, 100%;	
250 260	shale - silty shale as above, less carbonaceous material, medium	
	gray, 100%	
260 270	Sandstone, light gray, slightly salt + pepper, fine grained, well-	
	sorted, well rounded, slightly calcareous, 100%;	
270 280	Sandstone as above, 100%	
280 290	shale - silty shale, dark gray, fissile, slightly	
	calcareous, 100%;	

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depth to	SAMPLE DESCRIPTION	date: October 5, 1979 page: 2 of 8
580 610	Well: Philadelphia Creek #28 Shale - silty shale, medium gray to buff, slightly fissile, slightly calcareous, carbonaceous, 75%; Sandstone, light gray to buff, slightly salt + pepper, slightly calcareous, very fine grained, well sorted, well rounded, 20%; Coal, 5%;	
610 640	Sandstone as above, very fine to fine grained, 50%; Shale, ^{dark gray} slightly fissile, slightly carbonaceous, 30%; Coal, 20%;	
640 670	Shale as above, more finely fissile, lighter gray, 70%; Sandstone as above, 30%;	
670 700	Shale as above, decrease in carbonaceous content, 80%; Sandstone, as above, "cleaner" with carbonaceous streaks, 20%; trace coal;	
700 730	Shale as above, 85%; Siltstone, buff, slightly fissile, slightly calcareous, 10%; Sandstone, as above, 5%; trace coal;	
730 760	Shale, dark gray, fissile, slightly carbonaceous, silty streaks, 60%; Shale, light brown, fissile, silty streaks, 20%; Sandstone, light gray, fine grained, medium sorting, rounded, slightly salt & pepper, slightly calcareous, 20%;	
760 790	Shale, dark gray, as above, 60%; Shale, light brown, as above, slightly pyritic, 30%; Sandstone, as above, some "cleaner" with carbonaceous streaks, 10%;	
790 820	Shale, dark gray, as above, 80%; Shale, light brown, as above, slightly calcareous, 15%; Sandstone, as above, 5%;	
820 850	Siltstone, dark gray, slightly fissile, slightly carbonaceous, 80%; Sandstone, light gray, fine grained, well rounded, well sorted, slightly salt + pepper, slightly glauconitic, 20%;	
850 880	Shale - silty shale, dark to light gray, slightly fissile, slightly carbonaceous, 80%; Sandstone, as above, 20%;	
880 910	Shale - silty shale, as above, 95%; Sandstone as above, less glauconite, 5%; trace coal;	
910 950	Sample not taken between shifts.	

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depth to	SAMPLE DESCRIPTION	date: October 6, 1979 page: 3 of 8
950 960	Well: Philadelphia Creek #28 Shale - silty shale, light-dark gray, slightly fissile, slightly carbonaceous, 60%; Sandstone, light gray, fine to very fine grained, well sorted, well rounded, slightly glauconitic, slightly salt + pepper, 30%; Siltstone, buff, slightly carbonaceous, 10%;	
960 1010	Sandstone as above, 95%; Shale-silty shale, as above, 5%;	
1010 1040	Siltstone, light to dark gray, shaly, sandy, slightly carbonaceous, 100%;	
1040 1090	Siltstone, dark gray, slightly carbonaceous, pyritic, 60%; Sandstone, light gray, very fine grained, well sorted, well rounded, slightly calcareous, slightly salt + pepper, 35%; Silty shale, buff, slightly calcareous, slightly carbonaceous 5%;	
1090 1120	Shale to silty shale, dark gray, micaceous, pyritic, slightly carbonaceous, 90%; Sandstone, as above, pyritic, 10%;	
1120 1140	Shale to silty shale, as above, less pyritic, 60%; Sandstone as above, 40%;	
1140 1170	Shale to silty shale, as above, 70%; Shale, light gray to buff, slightly calcareous, finely disseminated pyrite, slightly micaceous, 20%; Sandstone, as above, some "cleaner", less pyrite, 10%;	
1170 1200	Shale to silty shale, as above, some light gray, 50%; Sandstone, light gray, very fine to fine grained, well rounded, well sorted, slightly salt + pepper, slightly calcareous, glauconitic, 30%; Shale, light gray to buff, as above, slightly carbonaceous 20%;	
1200 1230	Siltstone, dark gray, slightly carbonaceous, brown "blebs", 70%; Shale, medium gray, slightly fissile, slightly carbonaceous, micaceous, 20%; Sandstone, as above, 10%; trace coal;	
1230 1240	Sandstone, light gray, fine grained, well rounded, well sorted, slightly salt + pepper, glauconitic, slightly calcareous, 80%; Siltstone, as above, shaly, 20%.	

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depth to	SAMPLE DESCRIPTION	date: October 6, 1979
	Well: Philadelphia Creek #28	page: 4 of 8
1260 1290	Shale, dark gray, silty, slightly fissle, slightly carbonaceous, 40%; Sandstone, as above, 40%; Siltstone, dark gray, slightly carbonaceous, sandy, 10%; Shale, buff, carbonaceous, pyritic, slightly fissle, 10%;	
1290 1320	Sandstone, as above, slightly less glauconitic, 40%; Shale to silty shale, medium to dark gray, slightly fissle, micaceous, slightly carbonaceous, 40%; Siltstone, as above, 20%;	
1320 1350	Shale, as above, medium gray, 50%; Sandstone, as above, 30%; Siltstone, as above, 20%;	
1350 1380	Shale to silty shale, dark gray, slightly fissle, slightly carbonaceous, 60%; Shale, medium gray, slightly fissle, micaceous, slightly carbonaceous, 30%; Shale, buff, slightly fissle, micaceous, carbonaceous, 10%;	
1380 1430	No sample	
1430 1450	Shale, medium to dark gray, fissle, silty, pyritic, slightly calcareous, 95%; Sandstone, light gray, fine grained, well rounded, very highly pyritic, 5%;	
1450 1480	Sandstone, sample consists of unconsolidated sand, fine grained, well rounded, well sorted, pyritic, glauconitic, ^{calcareous} 100%;	
1480 1510	Sandstone as above, less pyrite, 100%;	
1510 1540	Sandstone, very fine grained, well rounded, well sorted, very highly pyritic, 90%; Siltstone, dark gray, very highly pyritic, 10%;	
1540 1570	Sandstone, sample consists of unconsolidated sand, very friable, very fine grained, well rounded, well sorted, ^{calcareous} 95%; Shale, medium gray, slightly fissle, 5%;	
1570 1600	Sandstone as above, slightly carbonaceous, 97%; Shale as above, 3%;	
1600 1630	Sandstone as above, 50%; Shale as above, pyritic, 50%;	
1630 1660	Shale, dark gray, fissle, carbonaceous, micaceous, slightly calcareous, 80%; Sandstone, as above, 20%;	

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depth to	SAMPLE DESCRIPTION	date: October 7, 1979 page: 5 of 8
1660 1704	No sample	
1704 1734	Shale, as above, silty, 70%; Sandstone, as above, 30%	
1734 1745	Sandstone, light gray, fine grained, well rounded, well sorted, calcareous, 100%;	
1765 1795	Sandstone, light gray, very fine grained, well rounded, well sorted, glauconitic, 90%; Shale, dark gray, fissile, slightly carbonaceous, 10%;	
1795 1825	Shale, dark gray, fissile, slightly micaceous, slightly calcareous, silty, 90%; Sandstone as above, subrounded, 10%;	
1825 1850	Shale, dark gray, coarsely fissile, silty, 100%;	
1850 1880	Shale as above, pyritic, 100%;	
1880 1910	Shale as above, silty, 95%; Siltstone, medium gray, slightly carbonaceous, 5%;	
1910 1940	Shale as above, 100%;	
1940 1970	same as above	
1970 2000	same as above	
2000 2046	same as above	
2046 2076	Shale, as above, less silty, less pyrite, 100%;	
2076 2106	same as above, 100%;	
2106 2136	Shale as above, silty, pyritic, 70%; Sandstone, light gray, very fine grained, subrounded, well sorted, calcareous, argillaceous, pyritic, 30%;	
2136 2170	Shale, medium gray, silty, carbonaceous, calcareous, coarsely fissile, 50%; Sandstone, light gray, as above, less pyrite, fine carbonaceous laminae, 50%;	
2170 2200	Siltstone, light gray, sandy, slightly calcareous, carbonaceous, glauconitic, 80%; Shale, as above, pyritic, 20%;	
2200 2230	Shale, as above, interbedded with siltstone, 75%; Siltstone as above, interbedded with shale, 25%;	

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depth:	SAMPLE DESCRIPTION	date: October 7, 1979
10	Well: Philadelphia Creek #2A	page: 6 of 8
2230 2260	Shale, dark gray, coarsely fissile, slightly micaceous, slightly calcareous, silty, 90%; Siltstone, light gray, slightly calcareous, argillaceous, 10%;	
2260 2290	Shale as above, 95%; Siltstone as above, sandy, 5%;	
2290 2320	Shale as above, 95%; Siltstone, dark gray, slightly calcareous, slightly carbonaceous, 5%;	
2320 2350	Shale as above, 80%; Sandstone, medium gray, fine to medium grained, subrounded, well sorted, slightly calcareous, friable, argillaceous, glauconitic, 20%;	
2350 2380	Shale as above, 95%; Sandstone as above, 5%;	
2380 2410	Shale as above, 100%;	
2410 2440	Same as above	
2440 2470	Same as above, silty	
2470 2500	Same as above	
2500 2530	Same as above	
2530 2560	Shale as above, 90%; Siltstone, dark gray, micaceous, shaly, 10%;	
2560 2590	Shale as above, 70%; Siltstone, as above, 30%;	
2590 2620	Shale as above, 95%; Siltstone as above, 5%;	
2620 2650	Shale as above 90%; Siltstone as above, 8%; Shale, blue-gray, coarsely fissile, pyritic, 2%;	
2650 2680	Shale as above, 90%; Siltstone as above, 10%;	
2680 2710	Shale as above, 70%; Siltstone as above, 30%; trace sand	
2710 2740	Same as above	
2740 2770	Shale as above, 50%; Sandstone, light gray, slightly salt + pepper, very fine grained, subrounded, well sorted, slightly calcareous, glauconitic, 30%; Siltstone as above, 20%;	
2770 2800	Same as above	
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depth to	SAMPLE DESCRIPTION	date: October 9, 1979 page: 7 of 8
2800 2830	Well: Philadelphia Creek #28 Shale, dark gray, coarsely fissile, slightly calcareous, pyritic, silty, 60%; Siltstone, dark gray, slightly calcareous, pyritic, slightly micaceous, sandy, argillaceous, 25%; Sandstone, light gray, slightly salt + pepper, very fine grained, subrounded, well sorted, slightly calcareous, glauconitic, 15%;	
2830 2860	Shale as above, brown "blebs", 95%; Siltstone, as above, 5%;	
2860 2890	Shale as above, calcite as possible fracture filling, 70%; Siltstone, as above, 20%; Sandstone as above, 10%; Shale faint yellow fluor.	
2890 2920	Shale as above, no "free calcite", 50%; Siltstone as above, 40%; Sandstone as above, silty, contains quartz as fracture filling, 10%;	
2920 2970	Shale as above, 60%; Siltstone as above, 35%; Sandstone as above, 5%; Shale faint yellow fluorescence	
2970 3000	Shale as above, 80%; Siltstone as above, 17%; Shale, blue-gray, pyritic, silty, 3%; Shale faint yellow fluorescence	
3000 3030	same as above	
3030 3060	Shale ^{dark gray} as above, 75%; Siltstone as above, 15%; Sandstone, light gray, very fine grained, subrounded, well sorted, slightly calcareous, slightly salt + pepper, glauconitic, 7%; Shale, blue-gray as above, 3%;	
3060 3090	Shale as above, 85%; Siltstone as above, some light gray, 15%;	
3090 3120	Shale as above, 85%; Siltstone as above, 10%; Sandstone as above, 3%; Shale, light brown, ^{fissile} calcareous, 2%; faint yellow fluor.	
3120 3150	Shale as above, more silt, 80%; Siltstone as above, 15%; Sandstone, very fine grained, as above, 5%;	
3150 3180	Shale as above, 60%; Sandstone as above, fine to medium grained, 40%; Sandstone faint yellow fluorescence;	
3180 3210	Shale as above, 70%; Siltstone as above, 15%; Sandstone as above, 15%; faint yellow fluorescence	

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