

Results of Directional Survey

API number:	30-025-39473		
OGRID:		Operator:	COG OPERATING LLC
		Property:	GC FEDERAL # 45

surface	ULSTR:	O	20	T 17S	R 32E
			750	FSL	2115 FEL

BH Loc	ULSTR:	O	20	T 17S	R 32E
			978	FSL	1657 FEL

Top Perf/OH	ULSTR:	O	20	T 17S	R 32E
		5042	916	FSL	1786 FEL

Bot Perf/OH	ULSTR:	O	20	T 17S	R 32E
		6780	969	FSL	1678 FEL

	MD	N/S	E/W	VD
	5016	165.10	326.00	4991.9
TOP PERFS/OH	5042	166.24	328.60	5017.74
	5112	169.30	335.60	5087.30
	6718	217.70	434.20	6689.10
BOT PERFS/OH	6780	219.27	437.20	6751.03
	6813	220.10	438.80	6784.00

NEXT TO LAST	7003	225.10	450.00	6973.60
LAST READING	7086	227.10	455.00	7056.40
TD	7134	228.26	457.89	7104.28

Surface Location	750	FS	2115	FE
Projected BHL	978	FS	1657	FE
Location of				
Top Perfs/OH	916	FS	1786	FE
Bottom Perfs/OH	969	FS	1678	FE

SUMMARY of Subsurface Locations

Surface Location	O-20-17S-32E	750	FS	2115	FE	Vert. Depth
Top Perfs/OH	O-20-17S-32E	916	FS	1786	FE	5017.74
Bottom Perfs/OH	O-20-17S-32E	969	FS	1678	FE	6751.03
Projected TD	O-20-17S-32E	978	FS	1657	FE	7104.28