

Results of Directional Survey

DD

API number:	30-025-39269				
OGRID:		Operator:	COG OPERATING LLC		
		Property:	GC FEDERAL	#	23

surface	ULSTR:	K	20	T	17S	R	32E
				2030	FSL	1975	FWL

BH Loc	ULSTR:	K	20	T	17S	R	32E
7035	MD	7008.5	TVD	1665	FSL	2306	FWL

Top Perf/OH	ULSTR:	K	20	T	17S	R	32E
5420	MD	5396.5	TVD	1737	FSL	2248	FWL

Bot Perf/OH	ULSTR:	K	20	T	17S	R	32E
6740	MD	6714.2	TVD	1679	FSL	2293	FWL

	MD	N/S	E/W	VD
	5404	-292.20	271.90	5380.5
TOP PERFS/OH	5420	-292.97	272.60	5396.45
	5466	-295.20	274.60	5442.30
	6677	-348.20	314.70	6651.30
BOT PERFS/OH	6740	-350.94	317.58	6714.16
	6769	-352.20	318.90	6743.10

NEXT TO LAST	6863	-356.80	323.20	6836.90
LAST READING	6957	-361.10	327.20	6930.70
TD	7035	-364.67	330.52	7008.53

Surface Location	2030	FS	1975	FW
Projected BHL	1665	FS	2306	FW
Location of				
Top Perfs/OH	1737	FS	2248	FW
Bottom Perfs/OH	1679	FS	2293	FW

SUMMARY of Subsurface Locations

Surface Location	K-20-17S-32E	2030	FS	1975	FW	Vert. Depth
Top Perfs/OH	K-20-17S-32E	1737	FS	2248	FW	5396.45
Bottom Perfs/OH	K-20-17S-32E	1679	FS	2293	FW	6714.16
Projected TD	K-20-17S-32E	1665	FS	2306	FW	7008.53