

Results of Directional Survey

DD

API number:	30-025-39481			
OGRID:		Operator:	COG OPERATING LLC	
		Property:	JC FEDERAL	# 51

surface	ULSTR:	K	22	T 17S	R 32E
				1375 FSL	2023 FWL

BH Loc	ULSTR:	K	22	T 17S	R 32E
7130	MD	7097.5	TVD	1719 FSL	2284 FWL

Top Perf/OH	ULSTR:	K	22	T 17S	R 32E
5514	MD	5481.6	TVD	1706 FSL	2264 FWL

Bot Perf/OH	ULSTR:	K	22	T 17S	R 32E
6950	MD	6917.5	TVD	1717 FSL	2282 FWL

	MD	N/S	E/W	VD
	5473	329.90	240.50	5440.6
TOP PERFS/OH	5514	330.64	241.46	5481.56
	5567	331.60	242.70	5534.50
	5850	333.90	246.30	5817.50
BOT PERFS/OH	6950	342.36	258.99	6917.50
	5876	334.10	246.60	5843.50

NEXT TO LAST	5850	333.90	246.30	5817.50
LAST READING	5876	334.10	246.60	5843.50
TD	7130	343.75	261.07	7097.50

Surface Location	1375	FS	2023	FW
Projected BHL	1719	FS	2284	FW
Location of				
Top Perfs/OH	1706	FS	2264	FW
Bottom Perfs/OH	1717	FS	2282	FW

SUMMARY of Subsurface Locations

Surface Location	K-22-17S-32E	1375	FS	2023	FW	Vert. Depth
Top Perfs/OH	K-22-17S-32E	1706	FS	2264	FW	5481.56
Bottom Perfs/OH	K-22-17S-32E	1717	FS	2282	FW	6917.50
Projected TD	K-22-17S-32E	1719	FS	2284	FW	7097.50