

Results of Directional Survey

30-025-37085

**COG OPERATING LLC
JADE VIPER 33 FEDERAL COM # 1-Y**

	MD	N/S	E/W	VD
	7900	78.10	72.84	7898.45
TOP PERFS/OH	7933	78.09	72.53	7931.45
	8000	78.06	71.89	7998.44
	7900	78.10	72.84	7898.45
BOT PERFS/OH	7982	78.07	72.06	7980.44
	8000	78.06	71.89	7998.44

NEXT TO LAST	13333	-254.58	-46.16	13313.6
LAST READING	13380	-255.46	-46.90	13360.58
TD	13750	-262.39	-52.73	13730.42

Surface Location	495	FN	1600	FE
Projected BHL	757	FN	1653	FE
Location of				
Top Perfs/OH	417	FN	1527	FE
Bottom Perfs/OH	417	FN	1528	FE

SUMMARY of Subsurface Locations

Surface Location	B-33-19S-33E	495	FN	1600	FE	Vert. Depth
Top Perfs/OH	B-33-19S-33E	417	FN	1527	FE	7931.45
Bottom Perfs/OH	B-33-19S-33E	417	FN	1528	FE	7980.44
Projected TD	B-33-19S-33E	757	FN	1653	FE	13730.42