

----- Survey Program -----

Date: 9/21/1994 Time: 13:54:48 PAGE: 1
 Filename: "238R-ST.SRV" Description: "AMOCO PRODUCTION COMPANY SIDETRACK"
 Target Coordinates: 100.0 N 100.0 W Target TVD: 7250.000
 Using Minimum Curvature Method.

S #	MEASURED DEPTH (feet)	DRIFT ANGLE (deg)	DRIFT DIRECTION (deg)	COURSE LENGTH (feet)	TRUE VERTICAL DEPTH (feet)	VERTICAL SECTION (feet)	RECTANGULAR COORDINATES (feet)	DOGLEG -SEVERITY DG/100FT
1	5857.0	0.00	360.000	5857.0	5857.0	0.0	0.0 N	0.0 E 0.00
2	5932.0	3.50	338.600	75.0	5932.0	2.1	2.1 N	0.8 W 4.67
3	6025.0	4.50	333.600	93.0	6024.7	8.2	8.0 N	3.5 W 1.14
4	6151.0	4.50	314.600	126.0	6150.3	17.8	15.9 N	9.2 W 1.18
5	6305.0	3.75	275.600	154.0	6304.0	27.7	20.7 N	18.5 W 1.84
6	6398.0	3.00	250.600	93.0	6396.8	31.1	20.2 N	23.8 W 1.76
7	6544.0	4.25	264.600	146.0	6542.5	36.2	18.4 N	32.8 W 1.04
8	6607.0	5.75	291.600	63.0	6605.3	40.6	19.3 N	38.1 W 4.37
9	6731.0	8.75	307.600	124.0	6728.3	55.7	27.4 N	51.4 W 2.89
10	7020.0	5.75	311.600	289.0	7015.0	91.9	50.4 N	79.6 W 1.05
11	7210.0	5.00	309.600	190.0	7204.1	109.7	62.0 N	93.1 W 0.41
12	7258.0	5.00	309.600	48.0	7251.9	113.8	64.7 N	96.3 W 0.00

--- Final Closure Direction: 303.876
 --- Final Closure Distance: 116.014 feet

AMOCO PRODUCTION COMPANY
 SAN JUAN 28-7 UNIT #238R
 API NUMBER: 3003925336

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 DIST. 3

NOTE: Survey Pt. #1 is not an actual survey. It is a projection of the vertical well at the sidetrack point.

Survey Pt. #12 is a projection of the wellbore at TD.

Survey Pts. 2-11 are actual surveys.

The above surveys and calculations were performed by Bighorn Directional, Inc. on the behalf of Amoco Production Company on the San Juan 28-7 Unit #238R in Rio Arriba County, New Mexico.

Curtis J. Mac Intyre
 Curtis J. Mac Intyre, President
 Bighorn Directional, Inc.

DATE 9/21/94
 9/21/94
 NOTARY

Coral M. Lewis
 Notary
 MY COMMISSION EXPIRES:
 July 31, 1996