

C & L DIRECTIONAL SERVICES, INC.
ANAHEIM, CA.

MAGNETIC DIRECTIONAL SURVEY
BY ANGLE AVERAGE METHOD

FOR

* ARCO OIL & GAS COMPANY *

JOB NUMBER: 12-1087
WELL NAME: Columbia County, # 31-34
LOCATION: Mist, Oregon
SURVEY DATE: September, 1987
SURVEY ENGINEER: Bob Lovelace
MAGNETIC DECLINATION: 20 Deg. 00 Min. East
VERTICAL SECTION CALCULATED IN A
PROPOSAL DIRECTION OF: N 61 Deg. 55 Min. E

DEPTH MEASURED IN FEET *****

COMMENTS:

THIS DIRECTIONAL SURVEY REPORT IS *****
CORRECT TO THE BEST OF MY KNOWLEDGE *****
AND IS SUPPORTED BY ACTUAL FIELD DATA. ***

Bob Lovelace

COMPANY REPRESENTATIVE *****

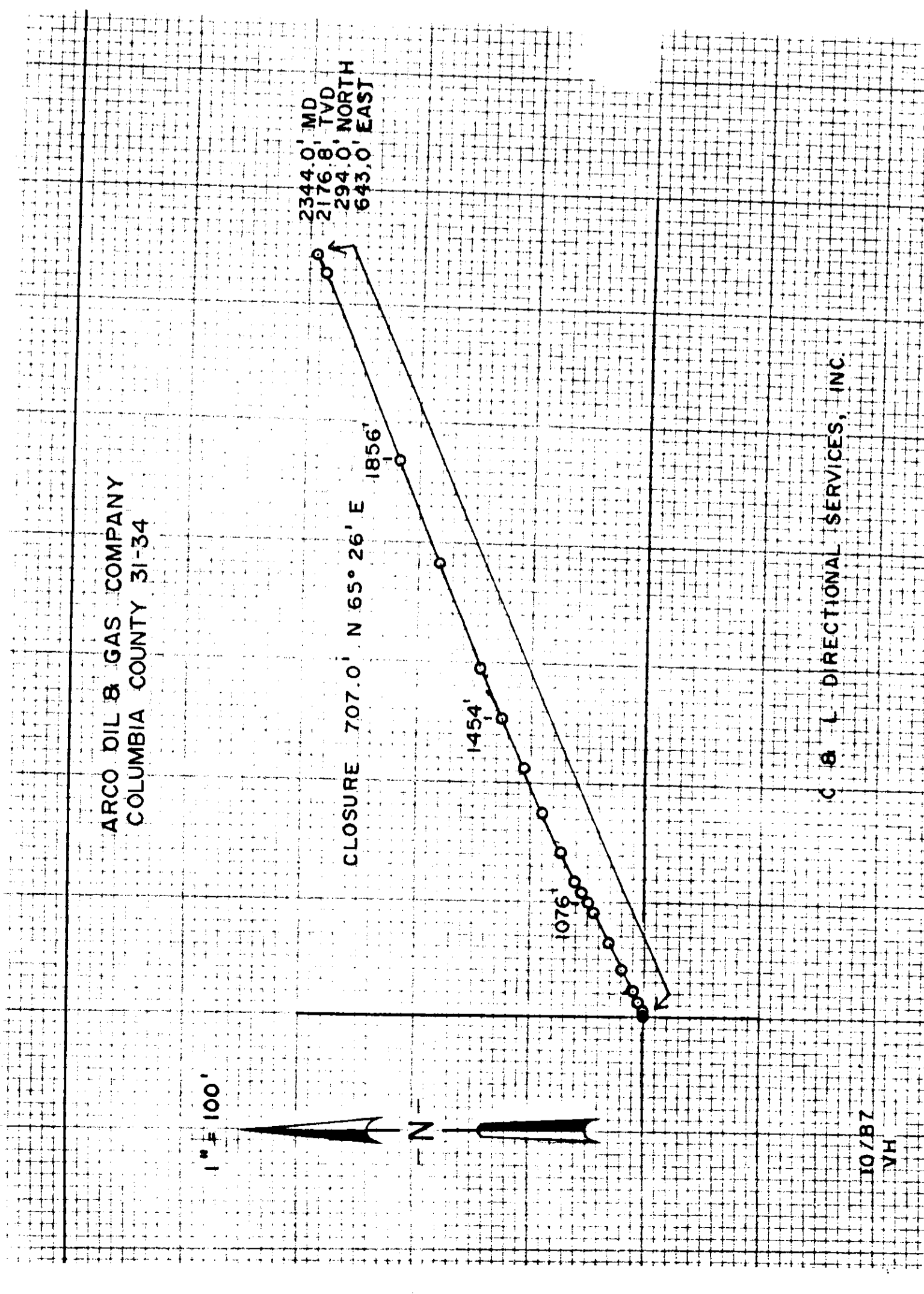
ARCO OIL & GAS COMPANY
COLUMBIA COUNTY 31-34
MIST, OREGON

JOB NUMBER 12-1087
SEPTEMBER, 1987
SECT. BEARING N6155E

ECL. CORR. 20 DEG. 0 MIN. EAST PAGE 1

MEAS. DEPTH	DRIFT ANGLE	DRIFT BEARING	VERTICAL DEPTH	TOTAL SECTION	TOTAL COORDINATES	DUGLEG /100'
500	0000	000 000	500.0	0.0	0.0 N 0.0 E	0.0
530	0045	576 00E	530.0	.1	0.0 S .2 E	2.5
561	0145	N66 00E	561.0	.8	0.0 N .9 E	4.0
625	0415	N70 00E	624.9	4.1	1.3 N 4.0 E	3.9
718	0815	N65 00E	717.4	14.2	5.1 N 13.3 E	4.3
779	1045	N60 00E	777.5	24.2	9.8 N 22.3 E	4.3
873	1500	N62 00E	869.2	45.2	19.9 N 40.6 E	4.5
966	1745	N66 00E	958.4	71.4	31.4 N 64.1 E	3.2
1059	1915	N61 00E	1046.6	100.9	44.6 N 90.5 E	2.3
1090	1930	N59 00E	1075.8	111.2	49.7 N 99.5 E	2.3
1121	2015	N60 00E	1105.0	121.7	55.1 N 108.5 E	2.7
1152	2100	N61 00E	1134.0	132.6	60.5 N 118.0 E	2.7
1227	2300	N63 00E	1203.5	160.7	73.7 N 142.8 E	2.8
1319	2515	N65 00E	1287.5	198.3	90.1 N 176.6 E	2.6
1412	2715	N65 00E	1370.9	239.4	107.5 N 213.9 E	2.2
1506	2915	N64 00E	1453.7	283.8	126.7 N 254.1 E	2.2
1598	2945	N66 00E	1533.8	329.0	145.8 N 295.1 E	1.2
1787	3000	N68 00E	1697.7	422.8	182.6 N 381.8 E	.5
1971	3100	N68 00E	1856.2	515.7	217.6 N 468.4 E	.5
2308	3030	N65 00E	2145.8	687.4	286.3 N 626.4 E	.5
2344	3030	N65 00E	2176.8	705.7	294.0 N 643.0 E	0.0

CLOSURE: 707.0 FEET N 65 DEG. 26 MIN. E
COMPUTED USING THE AVERAGED ANGLE METHOD
SURVEY AT 2344 FT. DEPTH IS PROJECTED.



10/87
VH