

**Schlumberger**  
**GEOFRAME**  
**PROCESSED**  
**INTERPRETATION**

**Directional**  
**Survey**

With Listing

Using the following logs:  
 PEEX  
 BHC

VA Member of Schlumberger

COMPANY: NORTHWEST NATURAL GAS  
 WELL: OM 22-26-65 RD  
 FIELD: MIST  
 COUNTY: COLUMBIA  
 STATE: OREGON  
 COUNTRY: OREGON  
 Date Logged: 2000/05/21  
 Date Processed: 2000/07/13  
 Well Location: 1744.22 SOUTH, 2512.13 EAST  
 FROM THE NW CORNER OF 26  
 Elevations: KB: 631ft DF: 629ft GL: 621ft  
 API Number: 36-009-00330 Job Number:

FOLD HERE The well name, location and borehole reference data were furnished by the customer.

All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretations made by any of our officers, agents or employees. These interpretations are also subject to Clause 4 of our General Terms and Conditions set out in our Contract Price Schedule.

Field Recording: Location: SACRAMENTO Software Version: 9C1-303 Engineer: M.KHAN

Office Recording: ICS Center: Bakerfield, ICS Baseline: Log Analyst: T.Quinlan

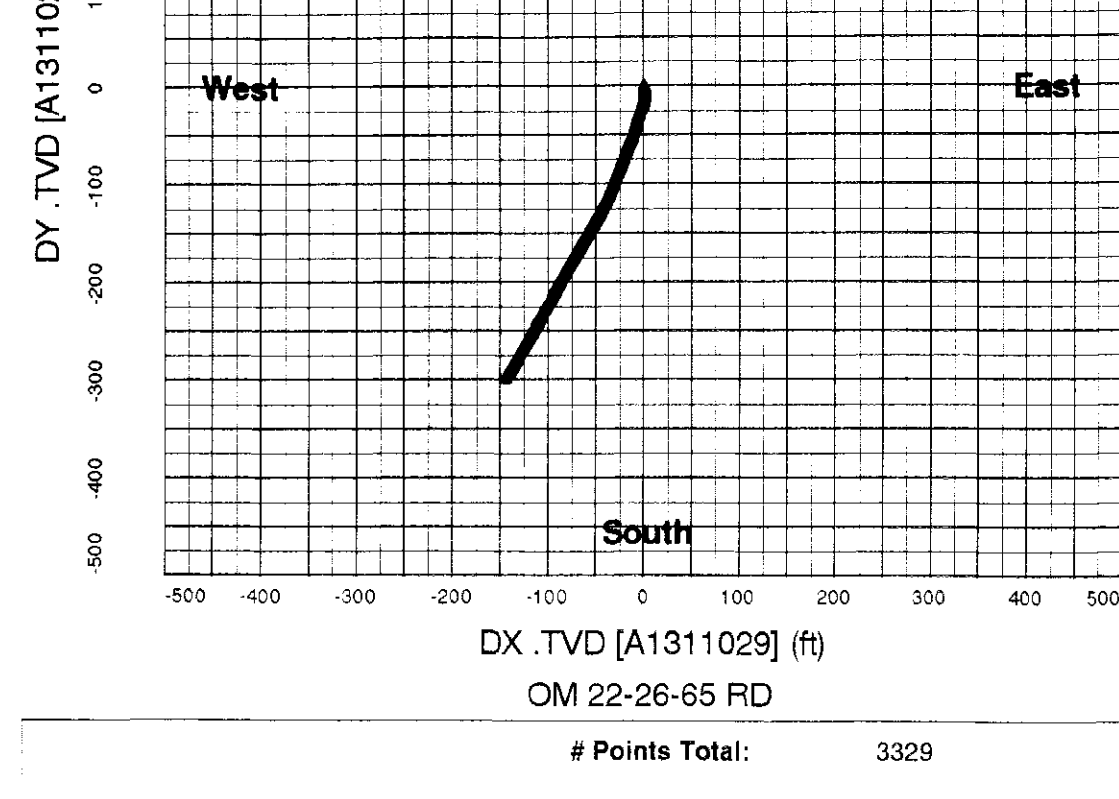
Mud and Borehole Measurements:

Rm @ Measured Temperature: 1.185ohm.m @ 76degF BHT: 86degF Bitsize: 6.25in

Rmf @ Measured Temperature: 1.05ohm.m @ 72degF Type Fluid in Hole: DMA

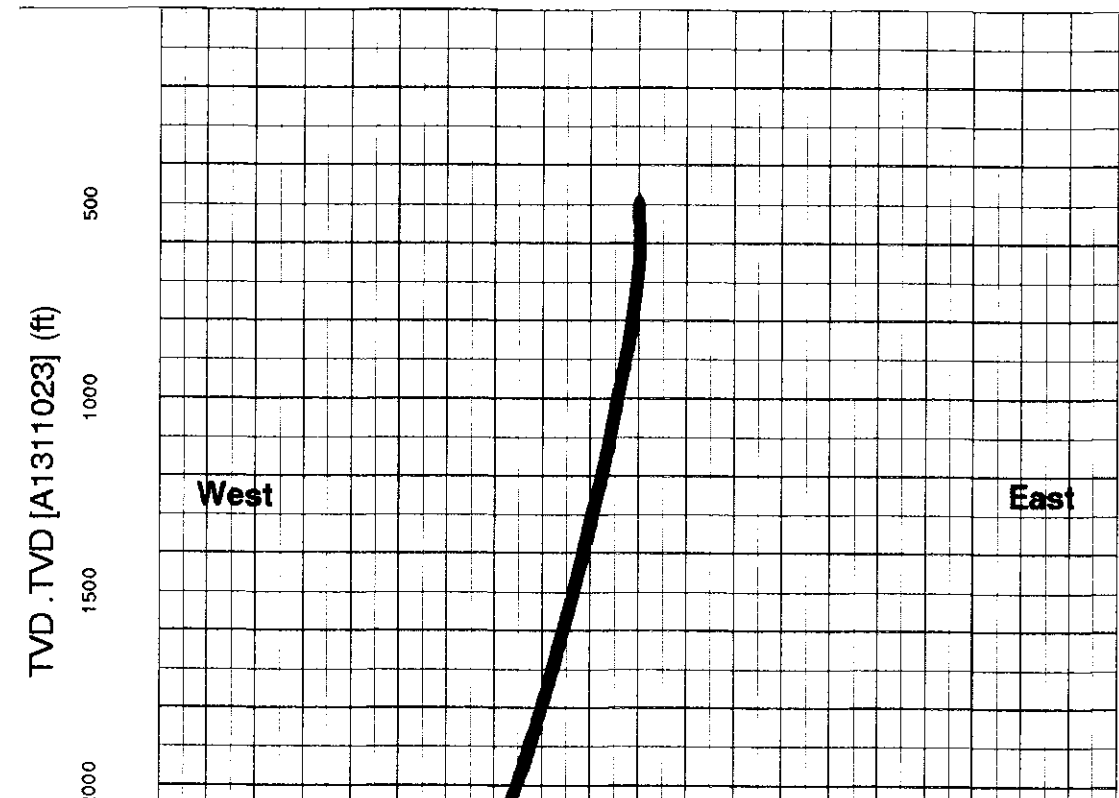
Rmc @ Measured Temperature: 0.93ohm.m @ 76degF Mud Density: 8.9lbm/gal

Remarks:  
 1069545



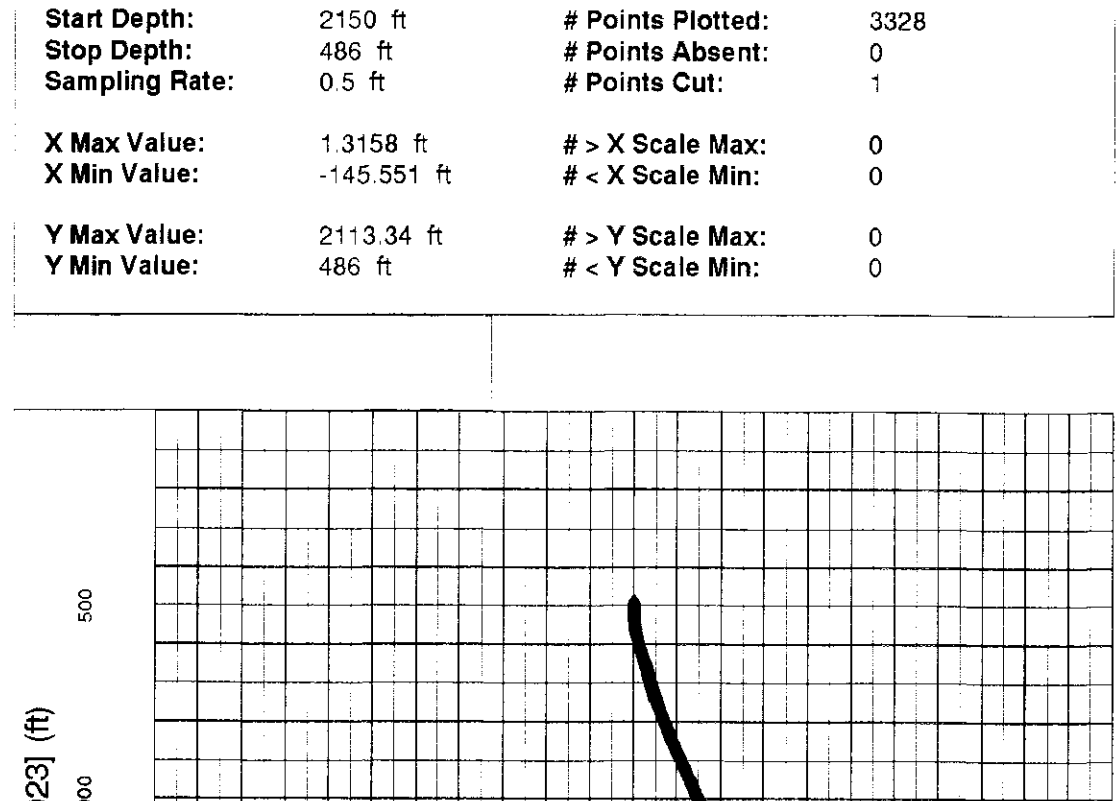
OM 22-26-65 RD

# Points Total:	3329
Start Depth:	2150 ft
Stop Depth:	486 ft
Sampling Rate:	0.5 ft
# Points Plotted:	3328
# Points Absent:	0
# Points Cut:	1
X Max Value:	1.3158 ft
X Min Value:	-145.551 ft
# > X Scale Max:	0
# < X Scale Min:	0
Y Max Value:	0.0254915 ft
Y Min Value:	-298.628 ft
# > Y Scale Max:	0
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Northwest Natural Gas  
 OM 22-26-65 RD  
 Mist  
 Columbia Oregon  
 Logged 21-MAY-2000

DEPTH	TVD DEPTH	DY	DX	AZIM	DEVI
ft	ft	ft	ft	deg	deg
490.00	490.000	-0.00015	0.02445	81.95889	0.39874
520.00	519.99164	-0.31179	0.23052	153.55502	1.89444
550.00	549.94165	-1.93828	0.89511	164.90720	4.84070
580.00	579.77502	-5.03856	1.31366	179.09900	6.84255
610.00	609.52502	-8.90543	1.07276	184.82272	7.56939
640.00	639.25836	-12.83833	0.55697	194.53125	7.68801
670.00	668.98334	-16.69925	-0.76213	199.51170	7.82089
700.00	698.70831	-20.52204	-2.19403	199.00169	7.72388
730.00	728.41669	-24.45692	-3.43161	198.50339	8.76786
760.00	757.99164	-29.22185	-5.04139	198.41615	10.37574
790.00	787.45001	-34.62511	-6.81167	197.56250	11.04099
820.00	816.88336	-40.13679	-8.52842	197.29214	11.11228
850.00	846.30835	-45.71493	-10.29759	197.76939	11.81665
880.00	875.61664	-51.65736	-12.70276	203.06476	12.48916
910.00	904.94833	-57.62611	-15.21937	202.66902	12.43166
940.00	934.21667	-63.52537	-17.70038	202.42941	12.24384
970.00	963.53333	-69.39651	-20.12861	202.39662	12.16762
1000.00	992.86664	-75.22116	-22.49226	201.81264	11.98069
1030.00	1022.21667	-81.00230	-24.76599	201.48210	11.89481
1060.00	1051.58337	-86.73981	-27.01885	201.82480	11.68791
1090.00	1080.96667	-92.35551	-29.27721	201.84958	11.60483
1120.00	1110.35833	-97.92748	-31.55291	202.71396	11.43532
1150.00	1139.69165	-103.62709	-34.13019	205.43634	12.46575
1180.00	1169.000	-109.40925	-36.90293	206.13240	12.23067
1210.00	1198.34167	-115.00878	-39.69663	206.71310	11.85659
1240.00	1227.71667	-120.41270	-42.47473	207.52122	11.55919
1270.00	1257.12500	-125.64790	-45.24464	207.99335	11.28307
1300.00	1286.56665	-130.72617	-47.95177	208.16032	10.92039
1330.00	1316.04833	-135.63269	-50.63487	209.35451	12.97242
1360.00	1345.53333	-140.43605	-53.35288	209.94182	10.61699
1390.00	1375.00830	-145.24261	-56.18307	210.59148	10.78166
1420.00	1404.47498	-150.08594	-59.06432	210.88704	10.91373
1450.00	1433.92505	-154.98558	-61.99589	210.88762	11.05931
1480.00	1463.35828	-159.96577	-64.97320	210.82268	11.26590
1510.00	1492.76672	-165.05032	-68.005	210.77486	11.48036
1540.00	1522.15833	-170.22478	-71.07619	209.91284	15.16948
1570.00	1551.52502	-175.51317	-74.20737	210.65628	11.91231
1600.00	1580.86670	-180.89160	-77.39796	210.61255	12.14365
1630.00	1610.18335	-186.38121	-80.64265	210.49327	12.40234
1660.00	1639.46667	-191.96710	-83.94680	210.56270	12.50370
1690.00	1668.75000	-197.59477	-87.27599	210.56354	12.63475
1720.00	1698.00830	-203.28786	-90.62580	210.22379	12.83130
1750.00	1727.25000	-209.11874	-93.94615	209.35451	15.16948
1780.00	1756.46667	-215.05789	-97.27576	209.17555	13.26615
1810.00	1785.64172	-221.15930	-100.67986	209.07005	13.65536
1840.00	1814.77502	-227.42282	-104.15751	209.10353	13.99450
1870.00	1843.86670	-233.82645	-107.72231	209.09084	14.29540
1900.00	1872.91663	-240.37706	-111.37202	208.98534	14.57641
1930.00	1901.93335	-247.05331	-115.05033	208.83350	14.80783
1960.00	1930.90833	-253.85786	-118.80201	208.91284	15.16948
1990.00	1959.84167	-260.79834	-122.63988	208.91948	15.47059
2020.00	1988.72498	-267.87292	-126.55846	209.03008	15.78872
2050.00	2017.55835	-275.09470	-130.62314	209.47615	16.13719
2080.00	2046.34998	-282.37842	-134.87891	210.88864	16.47963
2110.00	2075.10010	-289.69086	-139.34248	211.87596	16.74455
2140.00	2103.79175	-297.11835	-143.98575	211.89928	17.15141

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