

TEC-5

AMAX EXPLORATION, INC.
4704 HARLAN STREET • DENVER, COLORADO 80212

INTER-OFFICE MEMORANDUM

SUBJECT:

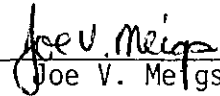
DATE November 5, 1975

TO: H. D. Pilkington

FROM: J. V. Meigs

Enclosed are the temperature depth logs for the following wells:

<u>North Vale</u>	17, 18
Vale	12 through 19
Beulah	4, 9 through 14.



Joe V. Meigs

JVM:d

Encl.

Hole NV-17 Drilled 10/9/75

0-15 _{0-4.6} Brown bouldery (aphanitic non-porphyrific bs/t) soil NV-17 [10]
15-165 _{4.6-50.3} Yellow-brown to lt-gray tuffaceous siltstone, NV-17 [20, 30, 40, 50, 60, 70, 80, 100, 140, 160]

Sampler

	MR/HR	Background
		.0170
10	.020	
20	.018	
30	.0165	
40	.0170	
50	.0175	
60	.0170	
70	.0170	
80	.0170	
100	.0165	
140	.0180	
160	.0170	

Hole NV-18 Drilled 10/9/75

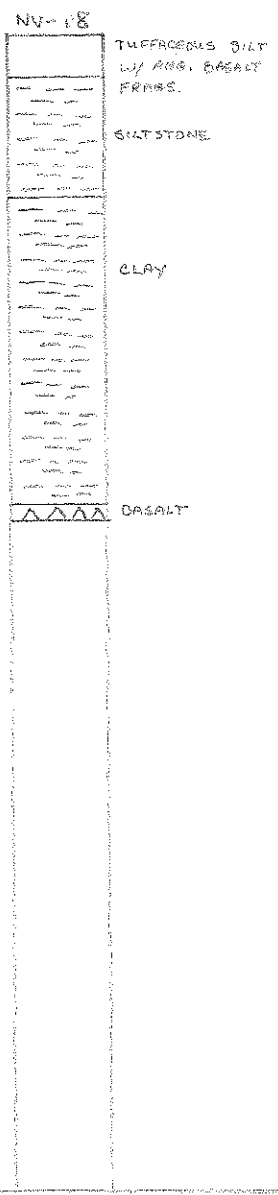
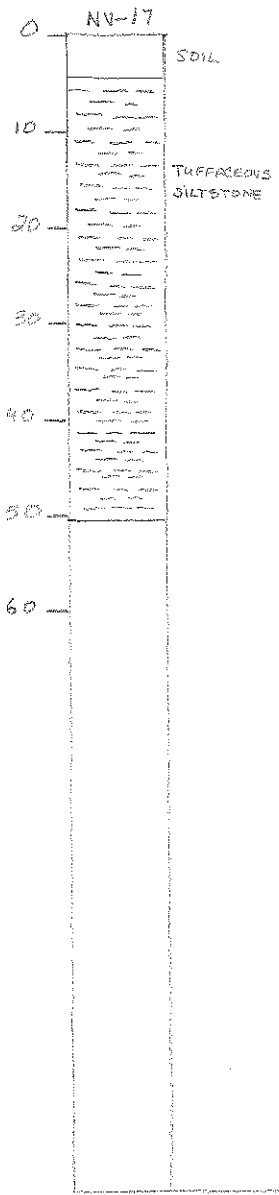
0-15 _{0-4.6} Yellow-brown tuffaceous silt ~15% angular bs/t frags. NV-18 [10]
15-55 _{4.6-16.8} Greenish-gray to yellow brown siltstone, NV-18 [20, 30, 40]
55-160 _{16.8-48.8} Blue-gray clay NV-18 [120, 130, ~~160~~, ~~165~~]
160-165 _{48.8-50.3} Dk-gray aphanitic non-porphyrific bs/t. NV-18 [160, 165]

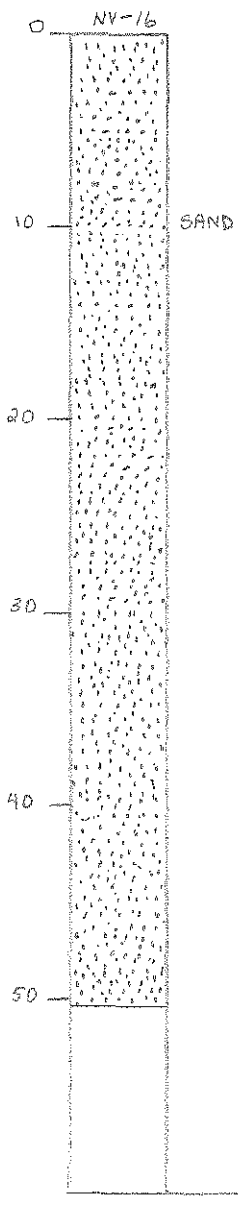
Samples

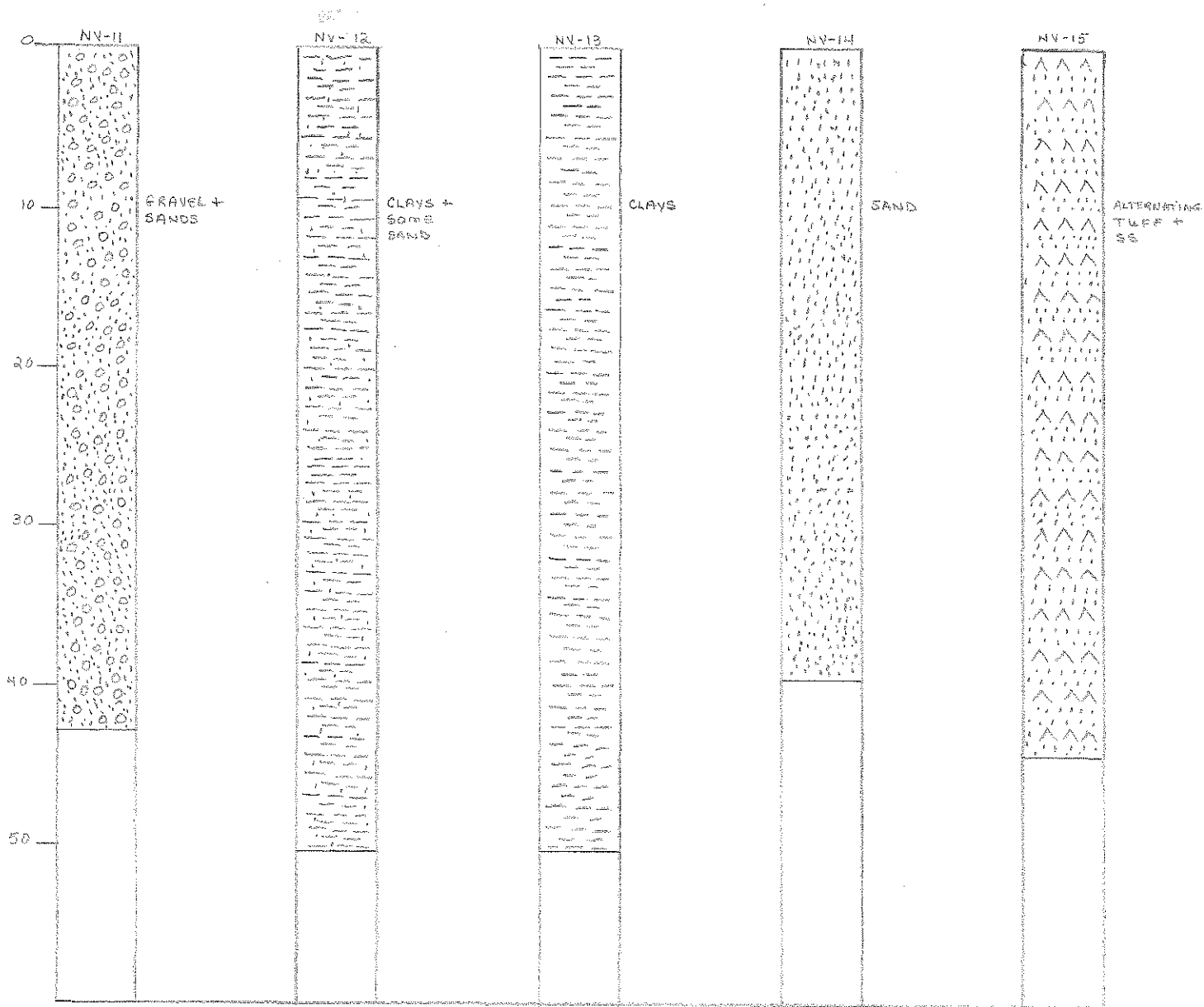
	MR/HR	Background
		.0175
10	.0165	
20	.0155	
30	.0160	
40	.0150	
120	.0160	
130	.0170	
160	.0180	
165	.0175	

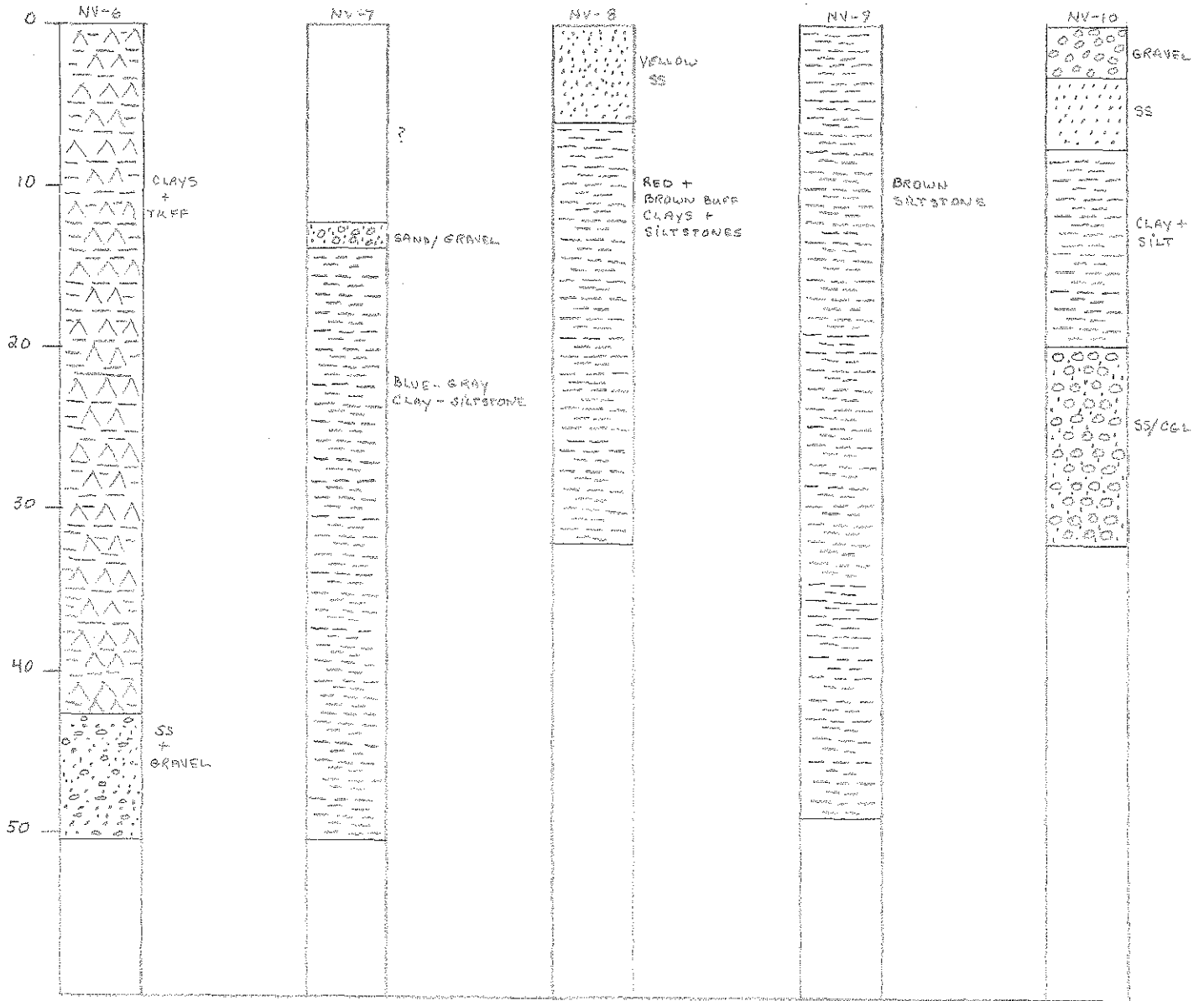
NORTH VALE LITHOLOGY AND DEPTH TO WATER ZONES

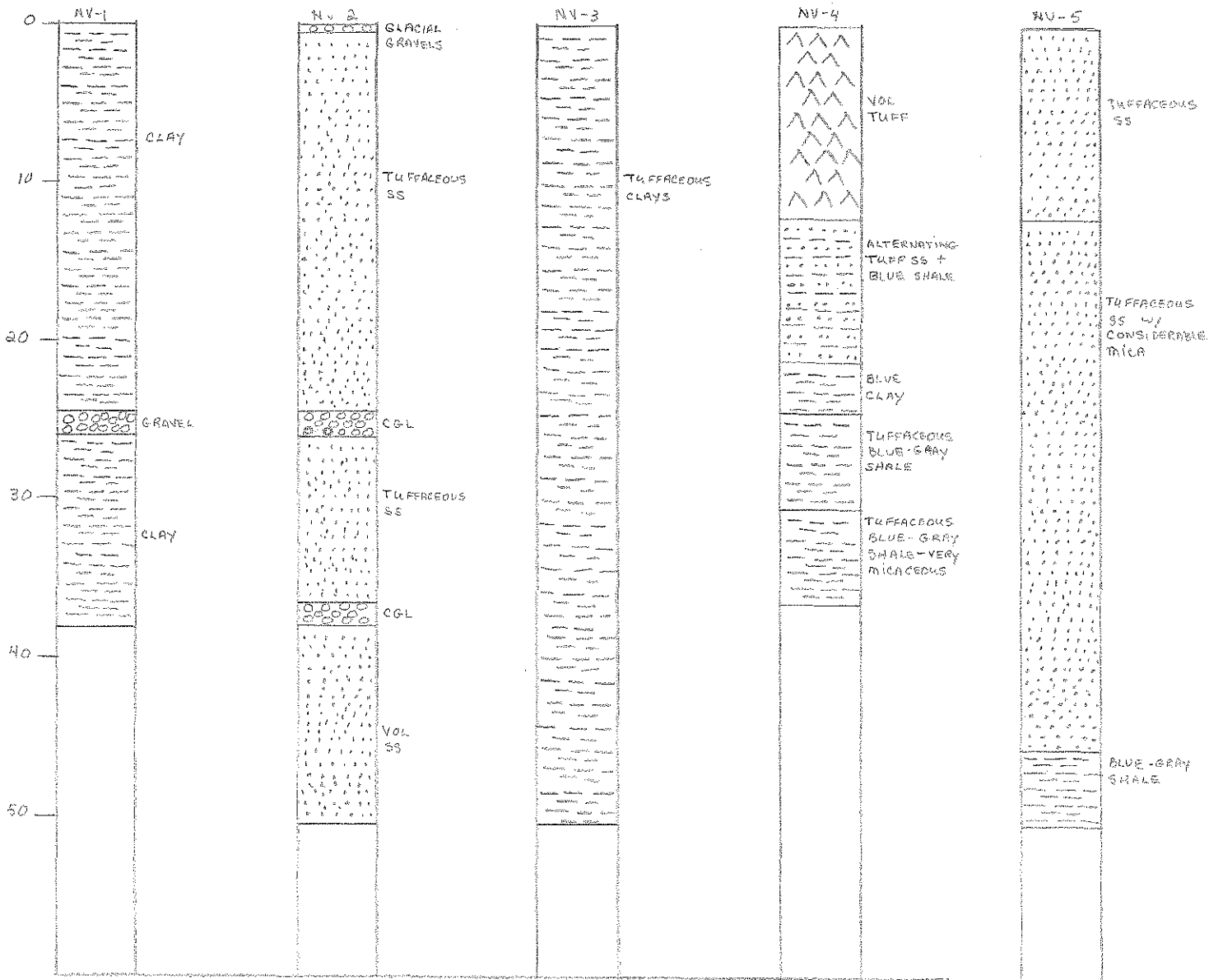
	0-24.4	24.4-25.9	25.9-38.1	
NV-1	0-80 clay,	80-85 gravel,	85-125 clay	120'
NV-2	0-.9 0-3 glacial gravels 1.9-24.4 3-80 volcanic tuffaceous ss 24.4-25.9 80-85 congl. 25.9-36.6 85-120 volcanic tuffaceous ss 36.6-38.1 120-125 congl. 38.1-50.3 125-165 Vol ss			80'
NV-3	0-50.3 0-165 tuffaceous clays			---
NV-4	0-12.2 0-40 volcanic tuff 12.2-21.3 40-70 alternating tuff ss and blue shale 21.3-24.4 70-80 blue clay 24.4-30.5 80-100 tuffaceous blue gray shale 30.5-36.6 100-120 same as above but very micaceous			
NV-5	0-12.2 0-40 tuffaceous ss 12.2-45.7 40-150 same considerable mica 45.7-50.3 150-165 blue gray shale			
NV-6	0-42.7 0-140 clays and tuff 42.7-50.3 140-165 ss and gravel			130'
NV-7	0-12.2 0-40 12.2-13.7 40-45 sand /gravel 13.7-50.3 45-165 blue gray clay - siltstone			40'
NV-8	0-6.1 0-20 yellow sandstone 6.1-32 20-105 red, blown buff clays & siltstones			
NV-9	0-42.8 0-160 brown siltstone			100'
NV-10	0-3.1 0-10 gravel 3.1-7.6 10-25 ss 7.6-17.8 25-65 clay & silt 17.8-32 65-105 ss/cong.			
NV-11	0-42.7 0-140 gravel and sands			
NV-12	0-50.3 0-165 clays and some sand			
NV-13	0-50.3 0-165 clays			
NV-14	0-39.6 0-130 sand			
NV-15	0-44.2 0-145 alternating tuff and sandstones			140'
NV-16	0-50.3 0-165 sand			62'

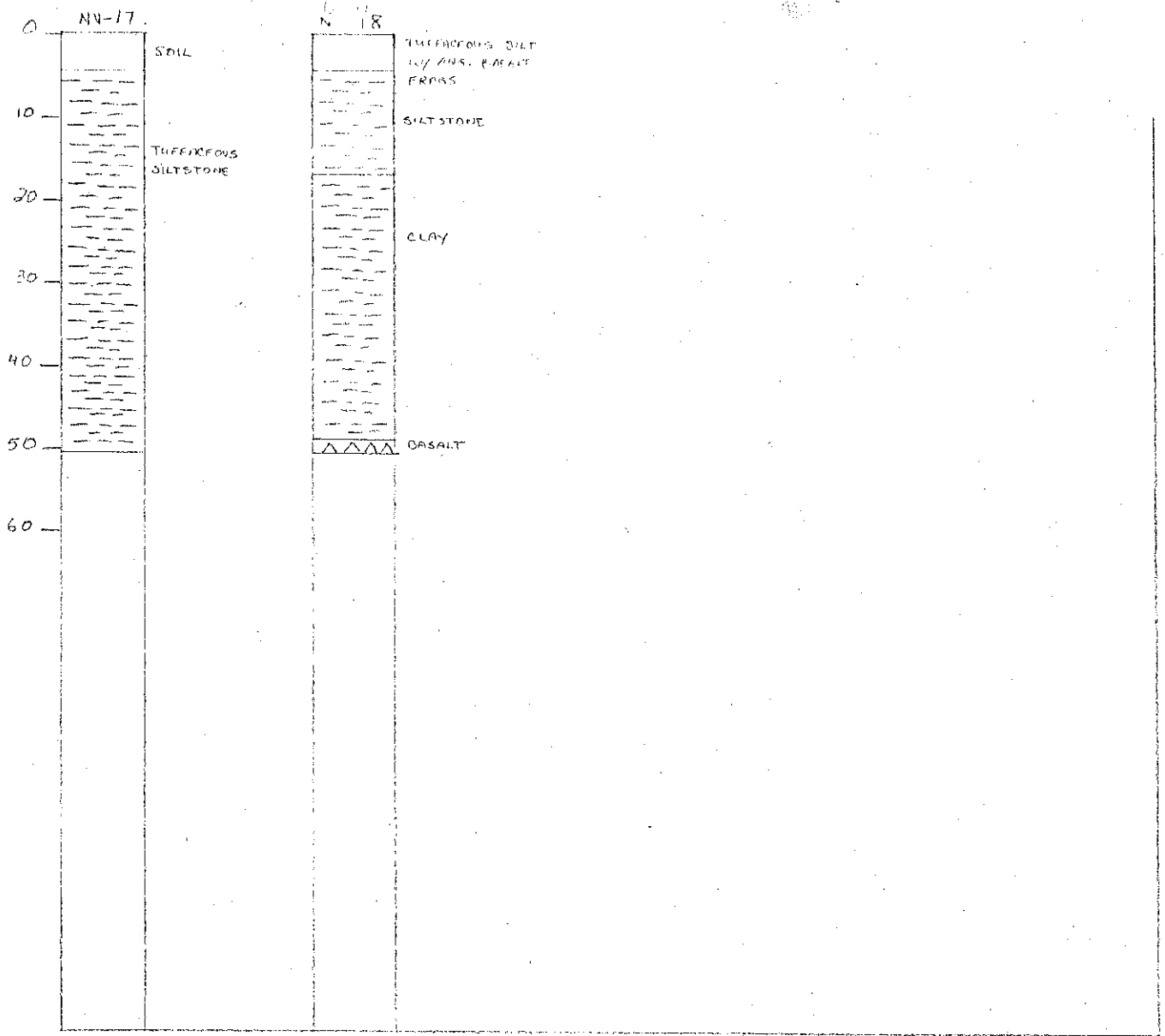












NORTH VALE LITHOLOGY AND DEPTH TO WATER ZONES

NV-1	0-80 clay, 80-85 gravel, 85-125 clay	120'
NV-2	0-3 glacial gravels 3-80 volcanic tuffaceous ss 80-85 congl. 85-120 volcanic tuffaceous ss 120-125 congl. 125-165 Vol ss	80'
NV-3	0-165 tuffaceous clays	---
NV-4	0-40 volcanic tuff 40-70 alternating tuff ss and blue shale 70-80 blue clay 80-100 tuffaceous blue gray shale 100-120 same as above but very micaceous	
NV-5	0-40 tuffaceous ss 40-150 same considerable mica 150-165 blue gray shale	
NV-6	0-140 clays and tuff 140-165 ss and gravel	130'
NV-7	0-40 40-45 sand /gravel 45-165 blue gray clay - siltstone	40'
NV-8	0-20 yellow sandstone 00-105 red, blown buff clays & siltstones	
NV-9	0-160 brown siltstone	100'
NV-10	0-10 gravel 10-25 ss 25-65 clay & silt 65-105 ss/cong.	
NV-11	0-140 gravel and sands	
NV-12	0-165 clays and some sand	
NV-13	0-165 clays	
NV-14	0-130 sand	
NV-15	0-145 alternating tuff and sandstones	140'
NV-16	0-165 sand	62'

TEMPERATURE - DEPTH LOG

Location S side of trail, in saddle Date 17 JAN 77

Map JAMIESON, OR, 15 MIN

Property NORTH VALE - JACKSON STRIP T 17S R 44E sec NE 4, 3

Drill Hole 77-1 Date Drilled 15 JAN 77 Elevation 2400 ft.

Instrument ENVIRO LABS Operator GARDNER

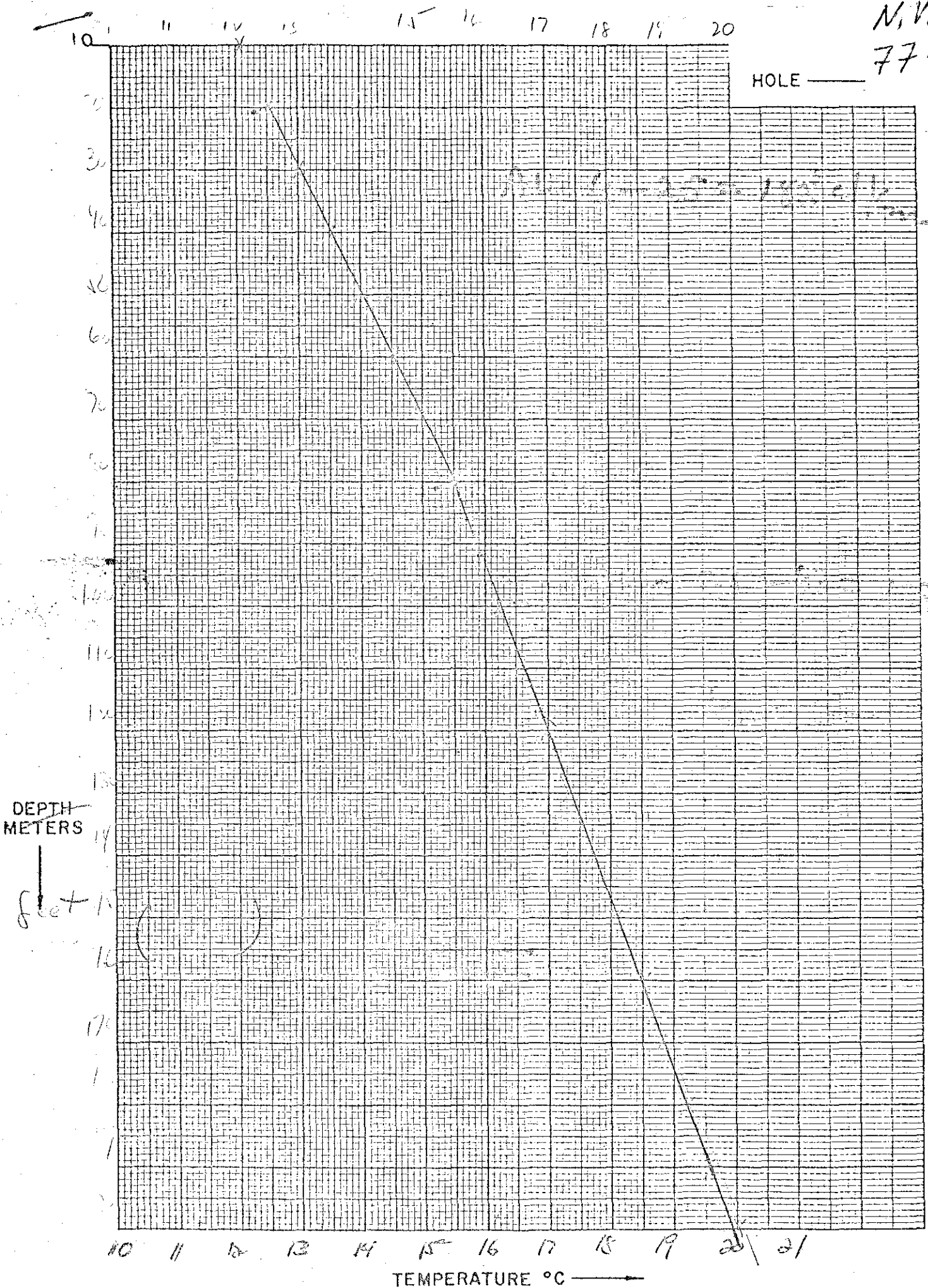
Comments _____

Feet

Depth (meters)	Instr. Reading	Temp. °C	ΔT	Gradient °C/Km Avg.	Comments
10		12.05			HOLE DRY TO T.D.
20		12.52	0.47		
30		13.00	.48		Buff to pinkish tan med. fine grain tuffaceous sandstone.
40		13.53	.43		↓
50		13.94	.41		
60		14.35	.61		
70		14.98	.43		
80		15.51	.53		
90		15.87	.36		Change at -86' to med. gray sticky tuffaceous silt.
100		16.20	.33		claystone - swells + slick.
110		16.53	.35		
120		16.91	.36		
130		17.30	.39		
140		17.70	.40		
150		18.06	.36		
160		18.51	.42		
170		18.81	.30		
180		19.30	.39		
190		19.58	.38	126°C/Km,	
200		20.02	.44	100'-200'; 130°C/Km	
204		20.19	.36/10	0'-200'	

N.V.
77-1

HOLE _____



DEPTH METERS

feet

TEMPERATURE °C

TEMPERATURE - DEPTH LOG

Location N OF FENCE LINE Date 17 JAN 77

Map JAMIESON, OR., 15 MIN

Property NORTHVALE ^{JAMIESON} STRINGER T 16 S R 44 E sec SE 4 33

Drill Hole 77-2 Date Drilled 15 JAN 77 Elevation 2400 ft.

Instrument ENVIROLAC Operator GARDNER

Comments _____

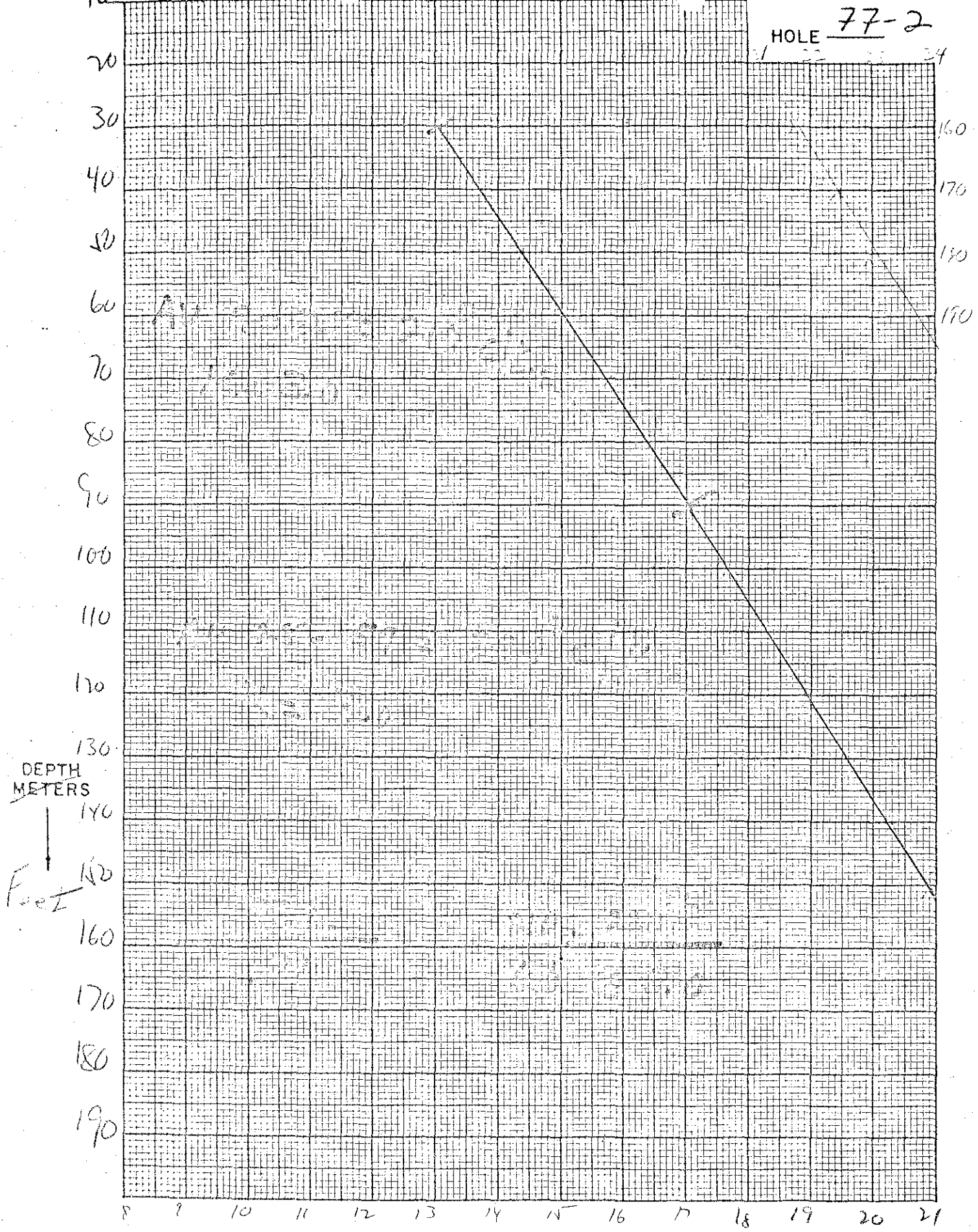
Feet

Depth (meters)	Instr. Reading	Temp. °C	ΔT	Gradient °C/Km Avg.	Comments
10		9.25			
20		12.65	3.40		
30		13.07	.42		
40		13.74	.67		medium gray tuffaceous
50		14.39	.65		silt-claystone ↓
60		15.11	.72		
70		15.77	.66		
80		16.42	.65		>2 gpm water entering
90		17.06	.64		hole
100		17.66	.60		
110		18.40	.74		
120		18.99	.59		increasing water
130		19.64	.65		
140		20.34	.70		
150		20.9	.58		
160		21.71	.79		10.92 .07
170		22.45	.74		6.76
180		22.91	.46		
190		23.89	.98	224°C/km,	
200				90'-190' depth	
				221.8°C/km	
				30'-190' depth	

10 8 9 10 11 12 13 14 15 16 17 18

N.V.

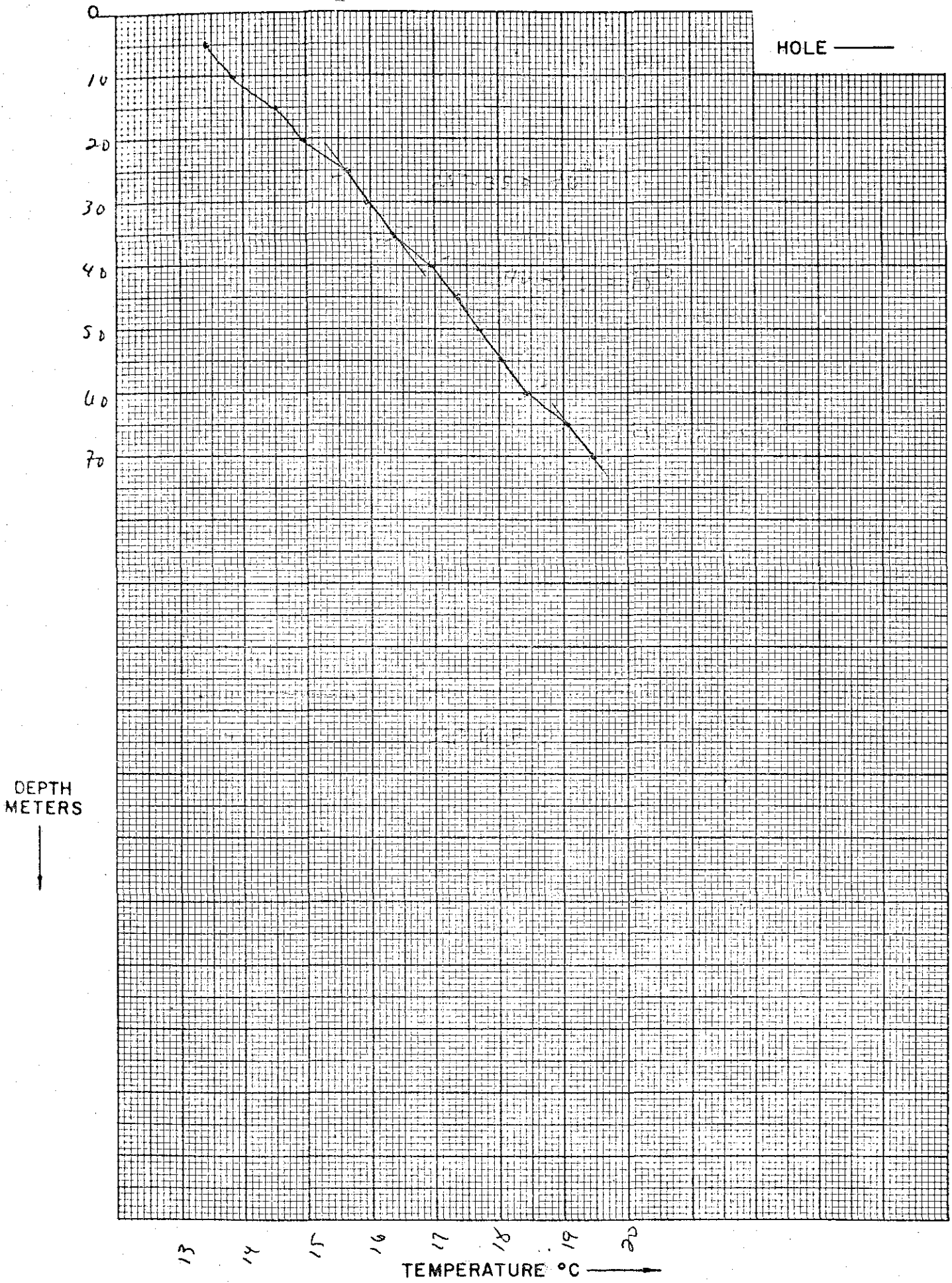
HOLE 77-2



DEPTH METERS

Feet

TEMPERATURE °C



TEMPERATURE - DEPTH LOG

Location 2 Miles NE of Dennis Date _____
 Map Jameison Oregon 15' Quad
 Property North Vale BC-108 T17S R44E sec 5E1/4 NE1/4 11
 Drill Hole 17-44 S11 Date Drilled _____ Elevation _____ ft.
 Instrument _____ Operator DOGAMI
 Comments Water well

Depth (meters)	Instr. Reading	Temp. °C	ΔT	Gradient °C/Km Avg.	Comments
5		15.180			
10		17.080	1.900		
15		19.640	2.560		
20		19.680	.040		
25		19.900	.220	44	
30		20.160	.260	52	
35		20.590	.430	86	
40		21.490	.900	180	
45		22.240	.750	150	
50		22.830	.830	166	
55		23.070	.560	112	
60		23.630	.590	118	
65		24.220	.540	108	
70		24.760	.530	106	
75		25.290	.640	128	
80		25.930	.810	122	
85		26.540	.500	100	
90		27.040	.590	118	
95		27.630	.610	122	
100		28.240	.590	118	
105		28.830	.530	106	
110		29.360	.530	106	
		30.000	.640	128	

TEMPERATURE - DEPTH LOG

Location _____ Date _____

Map _____

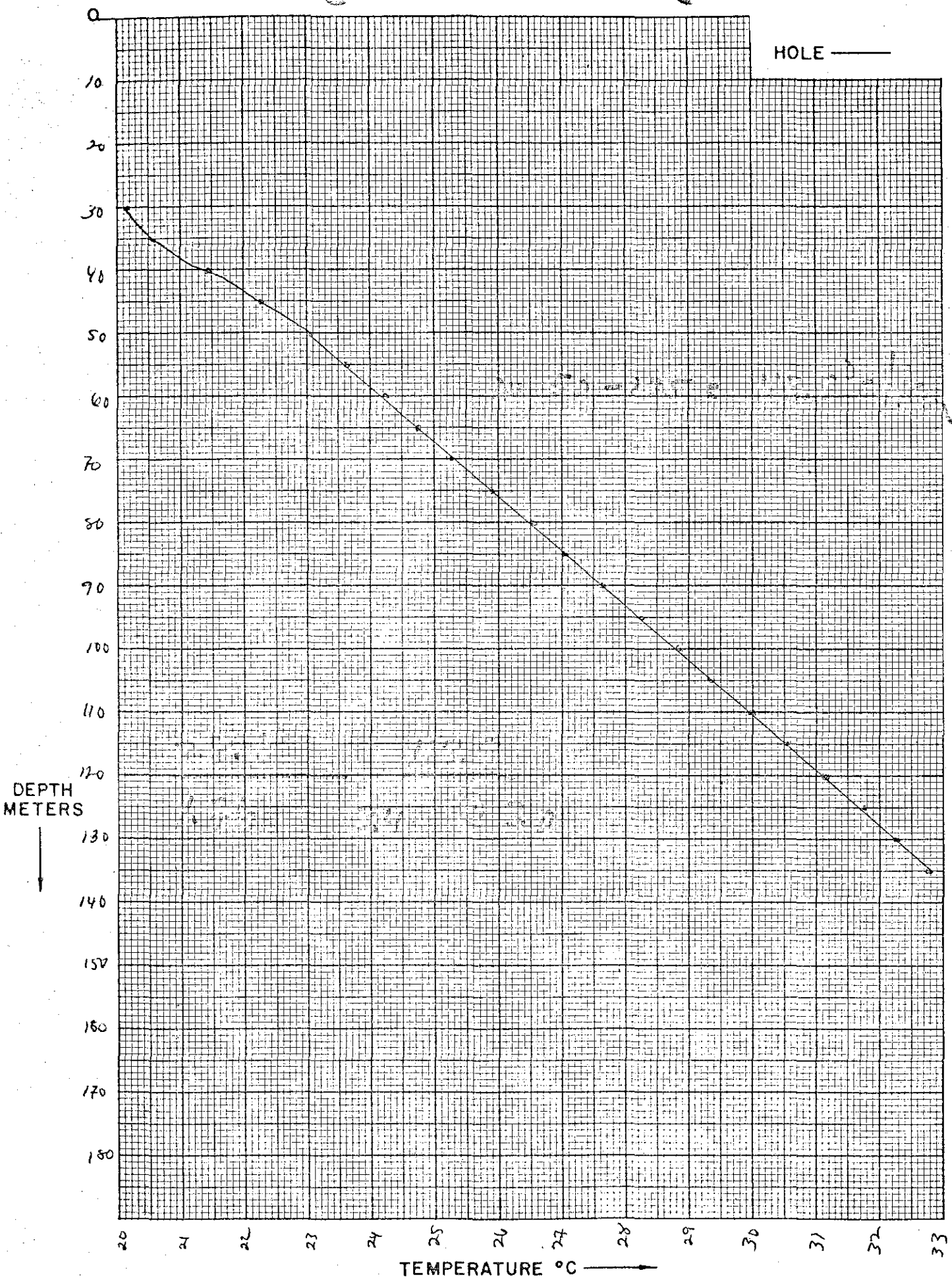
Property _____ T _____ R _____ sec _____

Drill Hole _____ Date Drilled _____ Elevation _____ ft.

Instrument _____ Operator _____

Comments Hole 370 meters deep

Depth (meters)	Instr. Reading	Temp. °C	ΔT	Gradient °C/Km Avg.	Comments
115		30.520	.520	104	
120		31.170	.650	130	
125		31.750	.580	116	
130		32.270	.520	104	
135		32.750	.480	96	
140		33.410	.660	132	
145		33.970	.560	112	
150		34.590	.620	124	
155		35.160	.570	114	
160		35.750	.590	118	
165		36.320	.570	114	
170		36.890	.570	114	
175		37.480	.590	118	
180		37.920	.440	88	
185		37.920	.590	118	
190		38.510	.560	112	
195		39.070	.560	112	
200		39.600	.530	106	
205		40.070	.470	94	
210		40.610	.540	108	
215		41.080	.470	94	
220		41.520	.440	88	
225		41.950	.430	86	



TEMPERATURE - DEPTH LOG

Location 1 Mile North of Jameison Date Oct 4, 1972

Map Jameison, Oregon 15' Quad

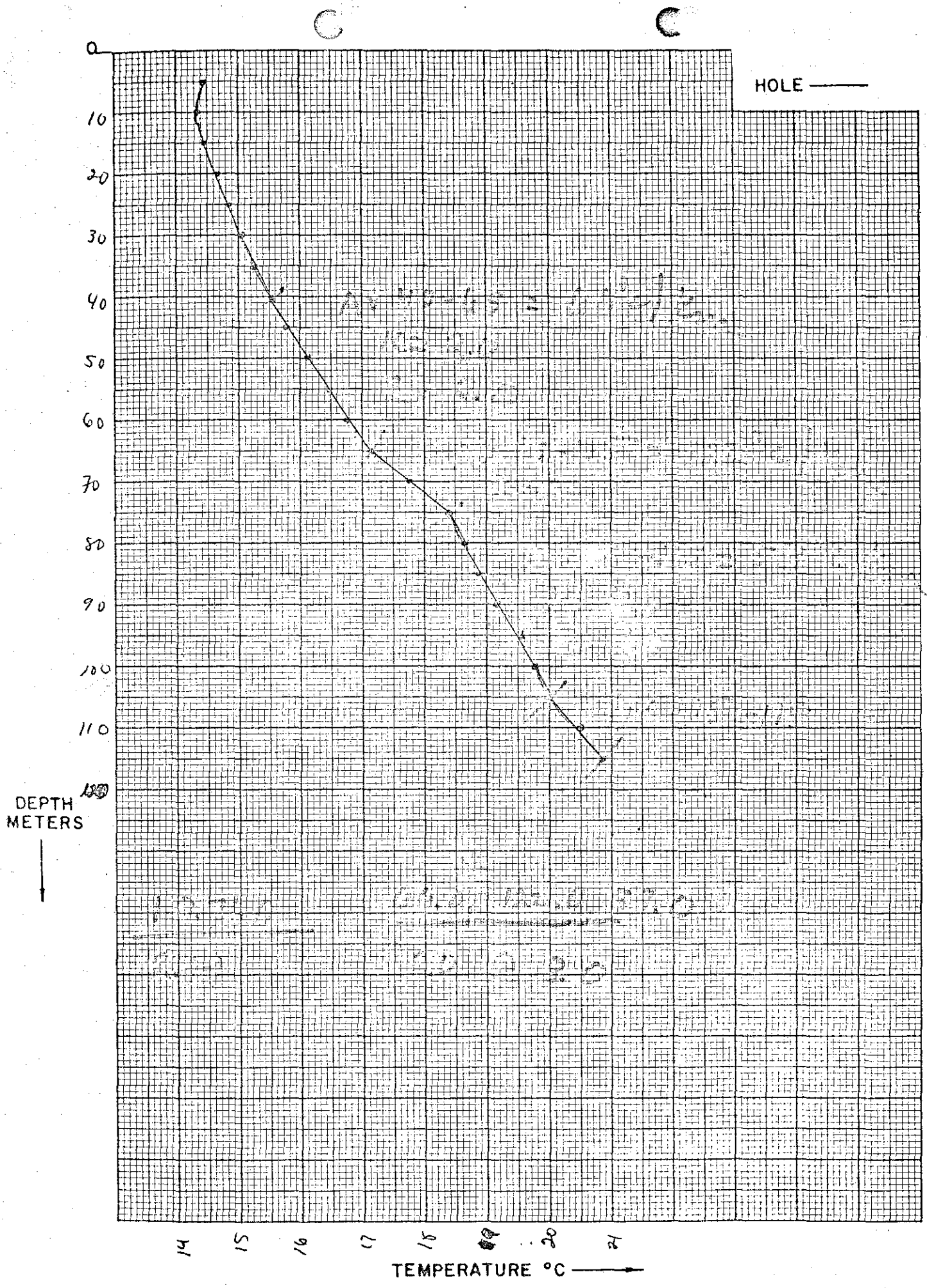
Property North Vale T 16S R 43E sec 10

Drill Hole 8C-109 16-43 510 Date Drilled _____ Elevation _____ ft.

Instrument _____ Operator DOGAMI

Comments water well

Depth (meters)	Instr. Reading	Temp. °C	ΔT	Gradient °C/Km Avg.	Comments
5		14.490			
10		14.340			
15		14.430	.090	18	
20		14.630	.200	40	
25		14.830	.200	40	
30		15.050	.220	44	
35		15.280	.230	46	
40		15.510	.230	46	
45		15.790	.280	56	
50		16.110	.320	64	
55		16.460	.350	70	
60		16.760	.300	60	
65		17.160	.400	80	
70		17.760	.600	120	
75		18.380	.620	124	
80		18.630	.250	50	
85		18.880	.250	50	
90		19.120	.240	48	
95		19.580	.460	92	
100		19.760	.180	36	
105		19.970	.210	42	
110		20.500	.530	116	



TEMPERATURE - DEPTH LOG

Location 2 miles East of Jamieson Date _____

Map Jamieson Oregon 15' Quad

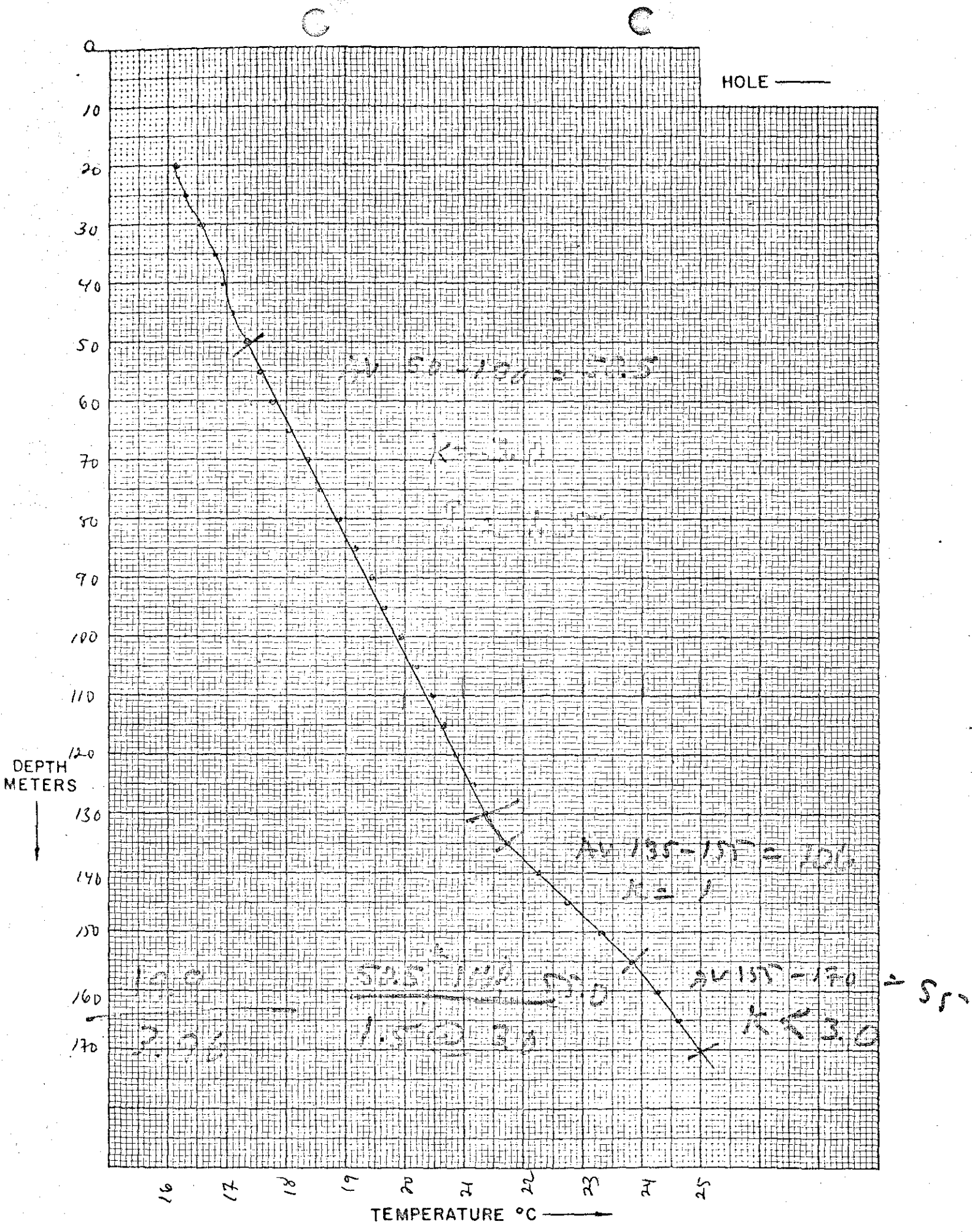
Property North Vale T 16 S R 43 E sec NE 1/4 SE 1/4 13

Drill Hole BC-110 16-43 S13 Date Drilled _____ Elevation _____ ft.

Instrument _____ Operator DOGAMT

Comments Water Well

Depth (meters)	Instr. Reading	Temp. °C	ΔT	Gradient		Comments
				°C/Km	Avg.	
5		12.900				
10		13.970	1.070			
15		15.130	1.160			
20		16.130	1.000			
25		16.300	.170	34		
30		16.550	.250	50		
35		16.800	.250	50		
40		16.930	.130	26		
45		17.110	.180	36		
50		17.300	.190	38		
55		17.540	.240	48		
60		17.770	.230	46		
65		17.910	.240	48		
70		18.010	.350	70		
75		18.360	.230	46		
80		18.590	.290	58		
85		18.880	.270	54		
90		19.150	.280	56		
95		19.430	.220	44		
100		19.650	.280	56		
105		20.210	.280	56		



TEMPERATURE - DEPTH LOG

Location Jamieson Date _____

Map Jamieson, Oregon 15' Quad

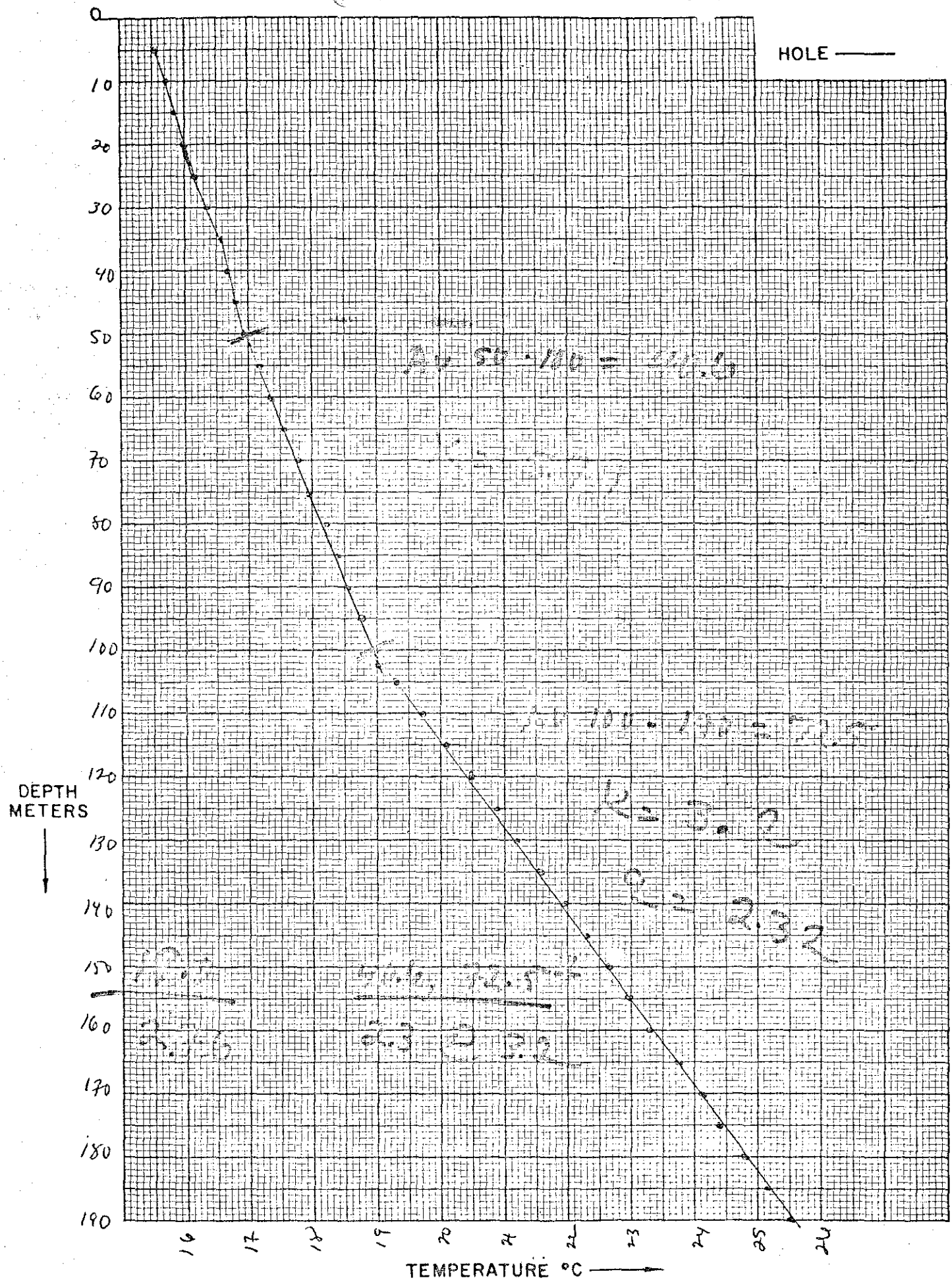
Property North Vale T 16 S R 43 E sec 15

Drill Hole BC-111 16-43 515 Date Drilled _____ Elevation _____ ft.

Instrument _____ Operator DOGAMI

Comments Water Well TD 230 m

Depth (meters)	Instr. Reading	Temp. °C	ΔT	Gradient °C/Km Avg.	Comments
5		15.590			
10		15.700	.110	22	
15		15.860	.160	32	
20		16.000	.140	28	
25		16.150	.150	30	
30		16.370	.220	44	
35		16.580	.210	42	
40		16.640	.060	12	
45		16.810	.170	34	
50		16.940	.130	26	
55		17.130	.190	38	
60		17.360	.230	46	
65		17.580	.220	44	
70		17.800	.220	44	
75		17.800	.180	36	
80		17.980	.180	36	
85		18.210	.230	46	
90		18.410	.200	40	
95		18.590	.180	36	
100		18.770	.180	36	
105		18.970	.200	40	
110		19.300	.330	66	
115		19.710	.410	82	



TEMPERATURE - DEPTH LOG

Location 2 miles SE of Jamieson Date _____

Map Jamieson Oregon 15' Quad

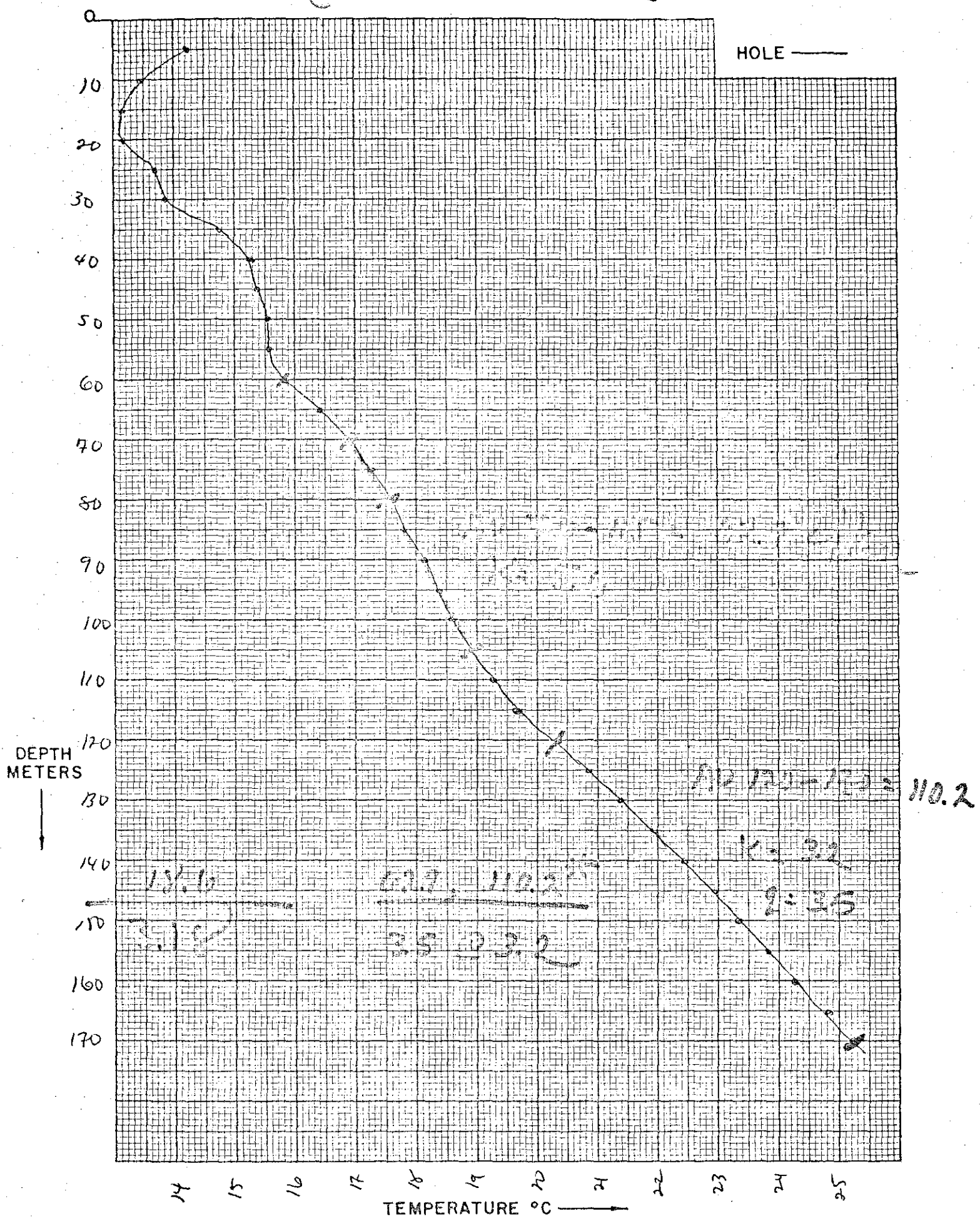
Property North Vale T 16S R 43E sec SE 1/4 SE 1/4 23

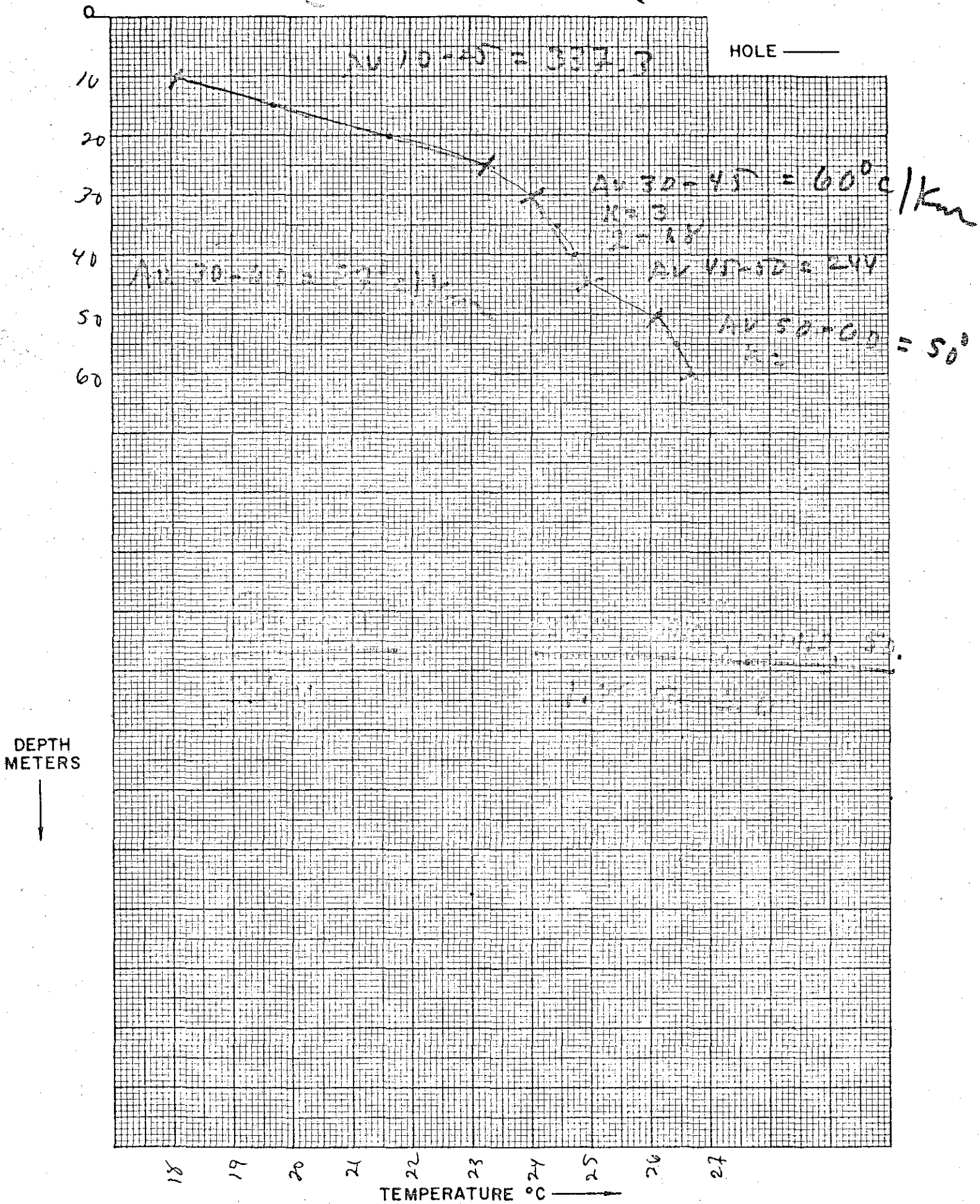
Drill Hole BC-112 16-43-523 Date Drilled _____ Elevation _____ ft.

Instrument _____ Operator DOGAMT

Comments Water well

Depth (meters)	Instr. Reading	Temp. °C	ΔT	Gradient °C/Km Avg.	Comments
5		14.230			
10		13.490	<u>-.740</u>		
15		13.160	<u>-.330</u>		
20		13.170	<u>.010</u>		
25		13.700	<u>.530</u>	<u>106</u>	
30		13.880	<u>.180</u>	<u>36</u>	
35		14.760	<u>.880</u>	<u>176</u>	
40		15.260	<u>.500</u>	<u>100</u>	
45		15.380	<u>.120</u>	<u>24</u>	
50		15.510	<u>.130</u>	<u>26</u>	
55		15.580	<u>.070</u>	<u>14</u>	
60		15.810	<u>.230</u>	<u>46</u>	
65		16.410	<u>.600</u>	<u>120</u>	
70		16.910	<u>.500</u>	<u>100</u>	
75		17.240	<u>.330</u>	<u>66</u>	
80		17.610	<u>.370</u>	<u>74</u>	
85		17.820	<u>.210</u>	<u>42</u>	
90		18.160	<u>.340</u>	<u>68</u>	
95		18.370	<u>.230</u>	<u>46</u>	
100		18.600	<u>.210</u>	<u>42</u>	
105		18.900	<u>.300</u>	<u>60</u>	

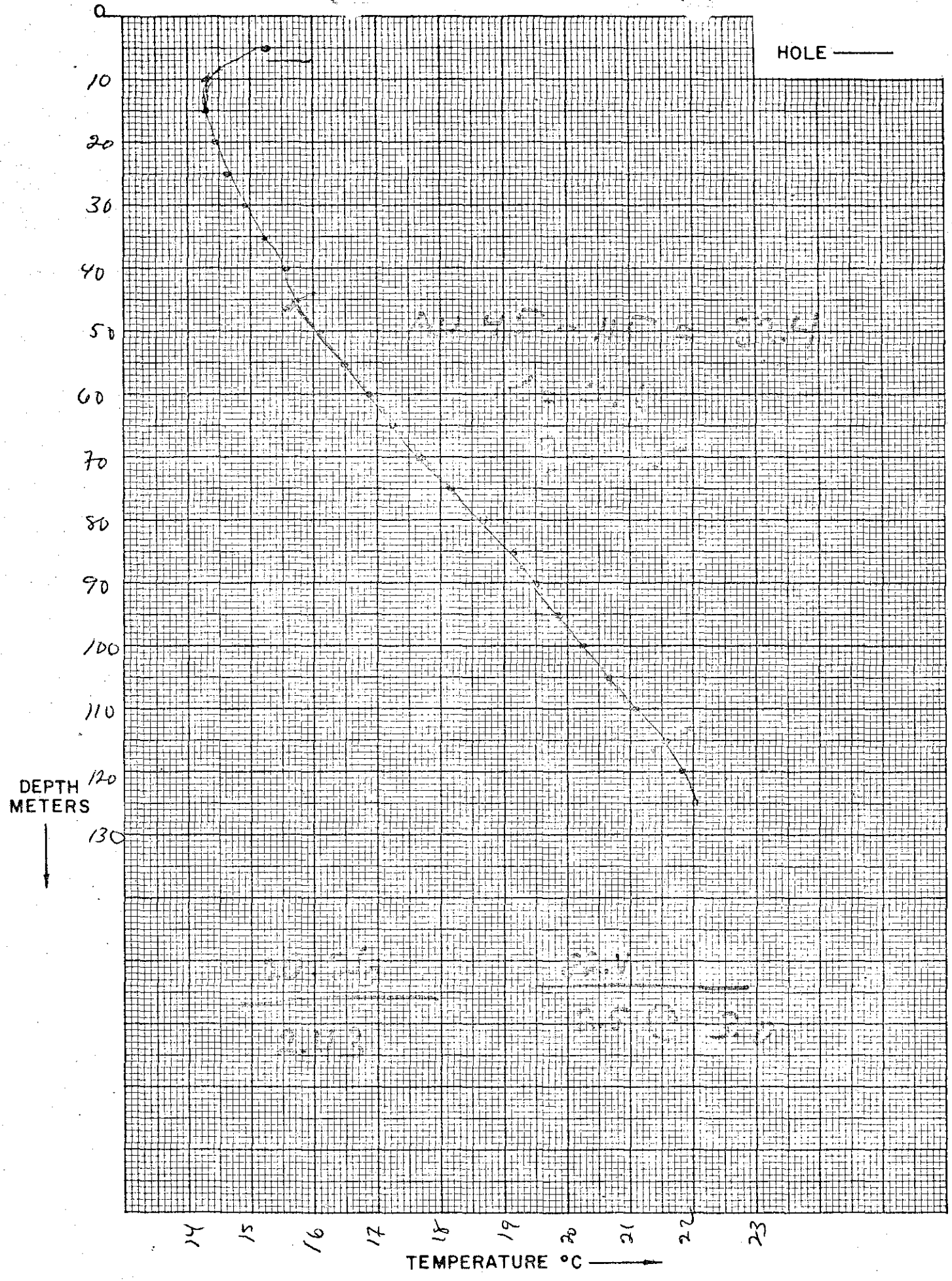




TEMPERATURE - DEPTH LOG

Location 3 Miles ENE of Alkali Flats Date _____Map Jamieson Oregon 15' QuadProperty North Yale T 17 S R 45 E sec NE 1/4 SE 1/4 2Drill Hole BC-118
VN-75-3 Date Drilled _____ Elevation _____ ft.Instrument _____ Operator DOGAMIComments Gradient hole

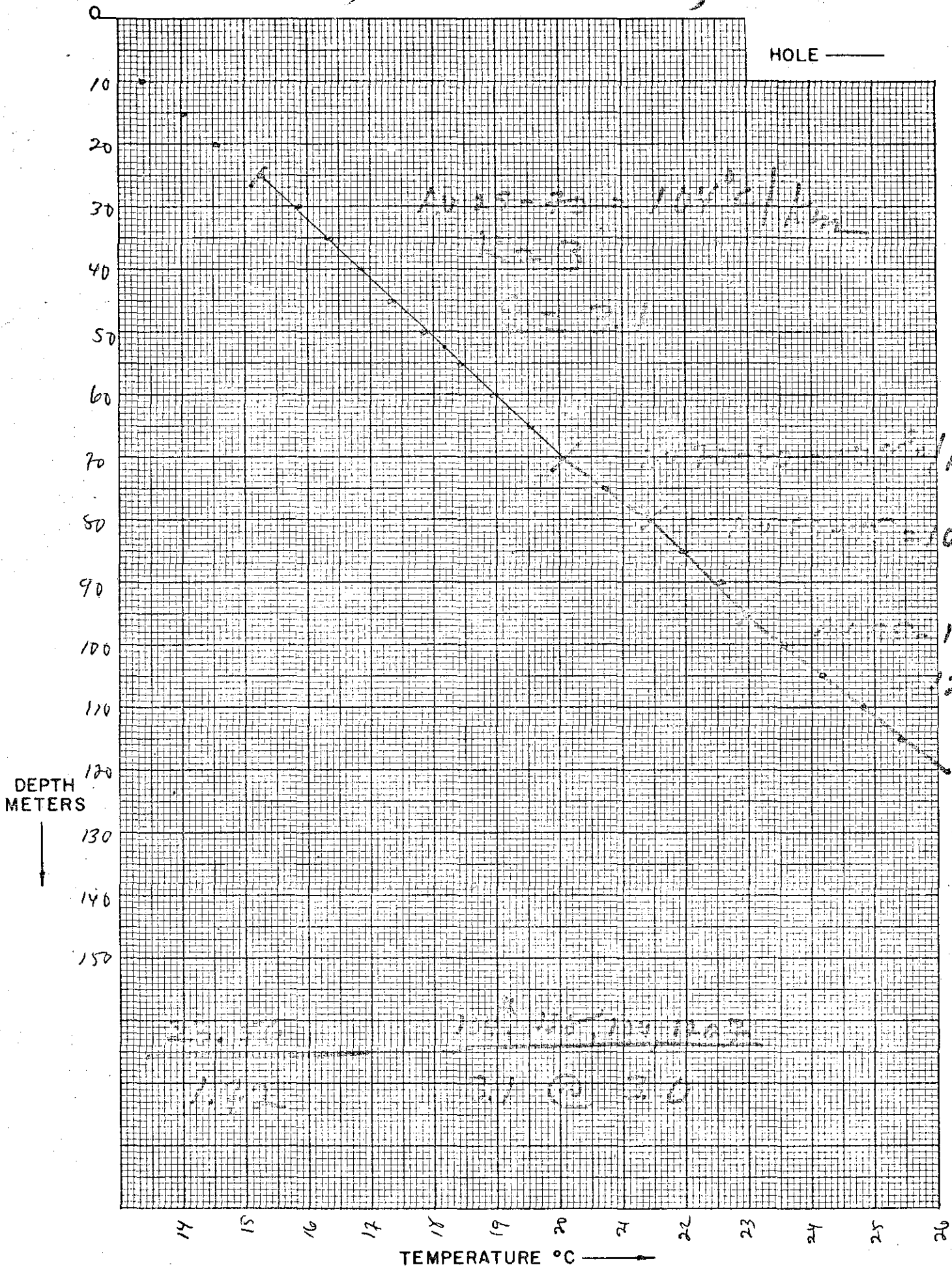
Depth (meters)	Instr. Reading	Temp. °C	ΔT	Gradient °C/Km Avg.	Comments
5		16.25			
10		14.30			
15		14.30	.00	0	
20		14.46	.16	32	
25		14.67	.21	42	
30		14.91	.24	48	
35		15.21	.30	60	
40		15.54	.33	66	
45		15.79	.25	50	
50		16.11	.32	64	
55		16.50	.39	78	
60		16.86	.36	72	
65		17.28	.42	84	
70		17.69	.41	82	
75		18.16	.47	94	
80		18.70	.54	108	
85		19.14	.44	88	
90		19.49	.35	70	
95		19.84	35	70	
100		20.20	.42	84	
105		20.67	.41	82	
			.42	84	



TEMPERATURE - DEPTH LOG

Location 5 1/2 Miles North Malheur Butte Date _____
 Map Moore's Hollow, Oregon 15' Quad
 Property North Vale T 17S R 46E sec NE 1/4 SW 1/4 16
 Drill Hole BC-119 VN-75-4 Date Drilled _____ Elevation _____ ft.
 Instrument _____ Operator DOGAMI
 Comments Gradient Note

Depth (meters)	Instr. Reading	Temp. °C	ΔT	Gradient °C/Km Avg.	Comments
5		12.32			
10		13.35	1.03	206	
15		14.06	.71	142	
20		14.53	.47	94	
25		15.27	.74	148	
30		15.82	.55	110	
35		16.34	.52	104	
40		16.82	.48	96	
45		17.34	.52	104	
50		17.86	.52	104	
55		18.41	.55	110	
60		18.96	.55	110	
65		19.51	.55	110	
70		20.05	.54	108	
75		20.72	.67	134	
80		21.43	.71	142	
85		21.99	.56	112	
90		22.56	.57	114	
95		22.99	.43	86	
100		23.56	.57	114	
105		24.12	.56	112	
			.69	138	



TEMPERATURE - DEPTH LOG

Location Jacobsen Gulch Date _____

Map Moures Hollow Oregon 15' Quad

Property North Vale T 17S R 46E sec NW 1/4 NE 1/4 13

Drill Hole BC-120 VN-75-5 Date Drilled _____ Elevation _____ ft.

Instrument _____ Operator DOGAMT

Comments _____

Depth (meters)	Instr. Reading	Temp. °C	ΔT	Gradient °C/Km Avg.	Comments
10		13.76			
15		14.09	.33	66	
20		14.44	.35	70	
25		14.73	.29	58	
30		15.06	.33	66	
35		15.39	.33	66	
40		15.73	.34	68	
45		16.07	.34	68	
50		16.41	.34	68	
55		16.77	.36	72	
60		17.13	.36	72	
65		17.50	.37	74	
70		17.86	.36	72	
75		18.23	.37	74	
80		18.60	.37	74	
85		19.01	.41	82	
90		19.38	.37	74	
95		19.84	.46	92	
100		20.12	.28	56	
105		20.55	.43	86	
110		20.95	.40	80	
			.38	76	

