

O'BRIEN RESOURCES CORPORATION

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SUBJECT: NOQUEZ PROSPECT TEMPERATURE LOGS

TO: FRANK DELLECHAIE

FROM: GARRY MAURATH AND WILLIAM TEPLow

DATE: APRIL 16, 1982

The following list summarizes pertinent temperature, lithologic and heat flow information on the seven gradient observation holes drilled on the Noquez prospect in April, 1982.

Hole: NZ-1A

date completed: 9:00 A.M., April 13, 1982

date logged: 6:15 A.M., April 15, 1982

Lithology: 0-12' Qal; 12-35' vesicular basalt; 35-50' medium gray, fine grained andesite tuff (minor biotite); 50-60' light reddish brown rhyo-dacitic welded tuff; 60-85' light gray rhyo-dacitic welded tuff with abundant quartz phenocrysts; 85-290' light pink very fine grained, densely welded dacitic tuff with abundant biotite (same as NZ-50); 290-300' well indurated, medium gray, silicified siltstone.

BHT: 20.03°C @ 92m

65-92m $\Delta T = 104^\circ\text{C}/\text{km}$, $k = 5$ TCU, $q = 5.2$ HFU

Hole: NZ-5

date completed: April 4, 1982

date logged: April 14, 1982

lithology: 0-145' mafic volcanic breccia, poorly consolidated

BHT: 15.32°C @ 31.8m

Due to extensive ground water movement, no reliable heat flow measurement could be made.

Hole: NZ-13

date completed: March 30, 1982

date logged: 1:30 P.M., April 12, 1982

lithology: 0-125' Quaternary vesicular olivine basalt, highly fractured.

BHT: 20.05°C @ 34m

28-34m $\Delta T = 173^\circ\text{C}/\text{km}$, $k = 6$ TCU, $q = 10.4$ HFU (?)

The gradient indicates shallow ground water influence

Noquez Prospect Temperature Logs
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April 16, 1982

Nole: NZ-50

date completed: April 2, 1982
date logged: 7:15 A.M., April 14, 1982
lithology: 0-6' Qal; 6-290' Dacitic welded ash flow tuff, pink very dense, non-vesicular, euhedral biotite (1%), quartz (5%), oxidized magnetite - 330-365' - unconsolidated light gray very fine grained ash - floury texture.
BHT: 20.13°C @ 110m
98-110m $\Delta T = 109^{\circ}\text{C}/\text{km}$, $k = 3$ TCU, $q = 3.3$ HFU
46-96m $\Delta T = 59^{\circ}\text{C}/\text{km}$, $k = 5.5$ TCU, $q = 3.2$ HFU
16-42m $\Delta T = 78^{\circ}\text{C}/\text{km}$, $k = 4.5$ TCU, $q = 3.5$ HFU

Hole: NZ-14

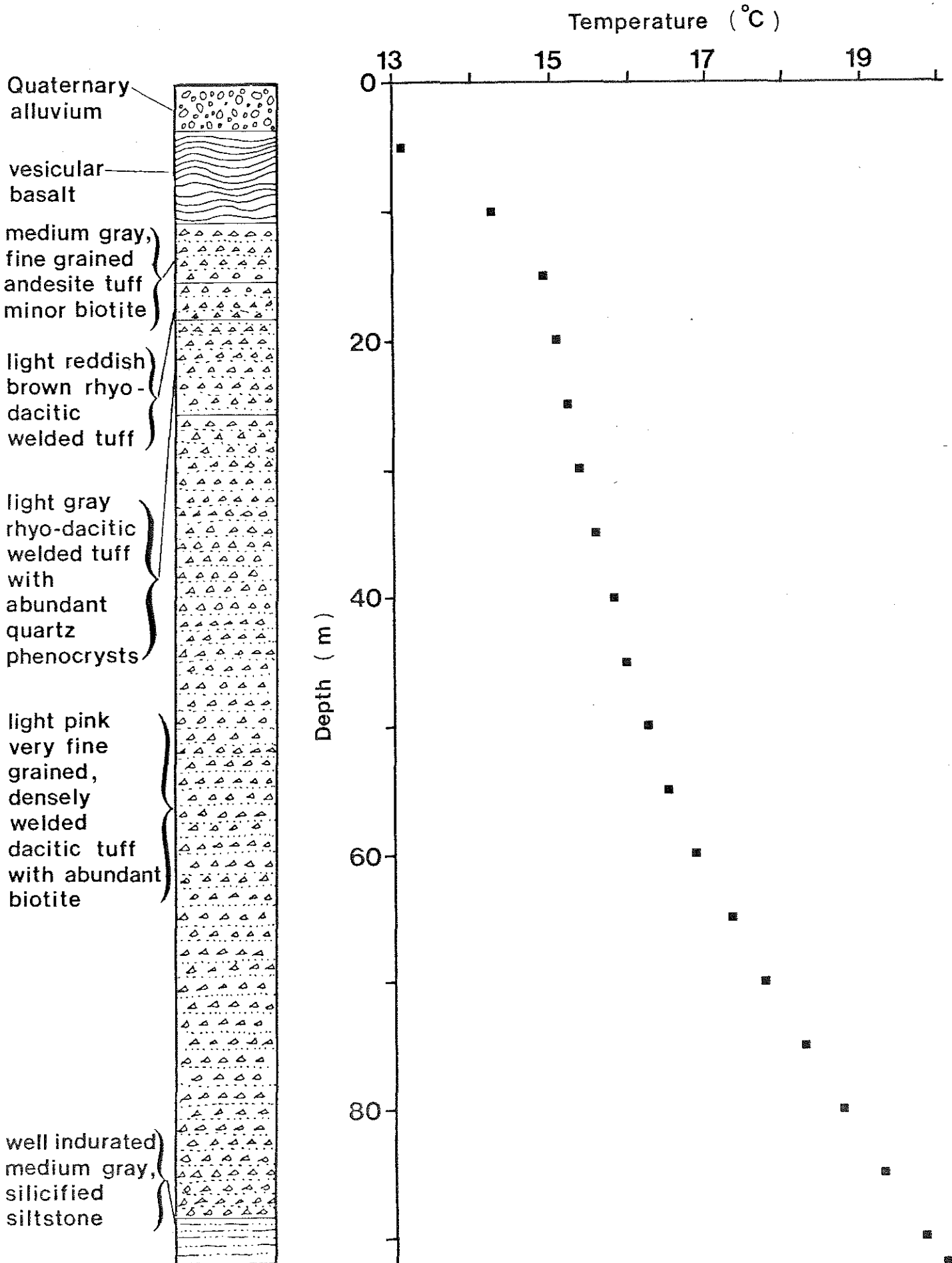
date completed: April 5, 1982
date logged: 11:30 A.M., April 13, 1982
lithology: 0-65' unconsolidated basaltic airfall lithic tuff (30% basalt frag., 70% silt and clay), 125-130' low density ash bed; 130 - 160' same as 65-125'; 160-185' non-vesicular olivine basalt (dry); 185-205' unconsolidated airfall lithic basaltic tuff (30% clay); 205-230' non-vesicular olivine basalt; 230-285' unconsolidated lithic tuff; 285-305' non-vesicular olivine basalt.
BHT: 20.12°C @ 90m
76-90m $\Delta T = 107^{\circ}\text{C}/\text{km}$, $k = 2.0$ TCU, $q = 2.1$ HFU
44-76m $\Delta T = 79^{\circ}\text{C}/\text{km}$, $k = 2.9$ TCU, $q = 2.3$ HFU

Hole: NZ-6

date completed: April 3, 1982
date logged: 9:15 A.M., April 14, 1982
lithology: 0-65' decomposed dacite tuff; 65-125' large dacite shards (2-3cm), may be fault zone, dense non-vesicular quartz biotite dacite; 125-250' dacite, pink, may be welded ash flow tuff as in NZ-50; 185-225' fault zone.
BHT: 22.40°C @ 63m
fault zone 60-63m $T = 67^{\circ}\text{C}/\text{km}$; $k = ?$ $q = ?$
20-54m $\Delta T = 137^{\circ}\text{C}/\text{km}$, $k = 3$ TCU, $q = 4.1$ HFU

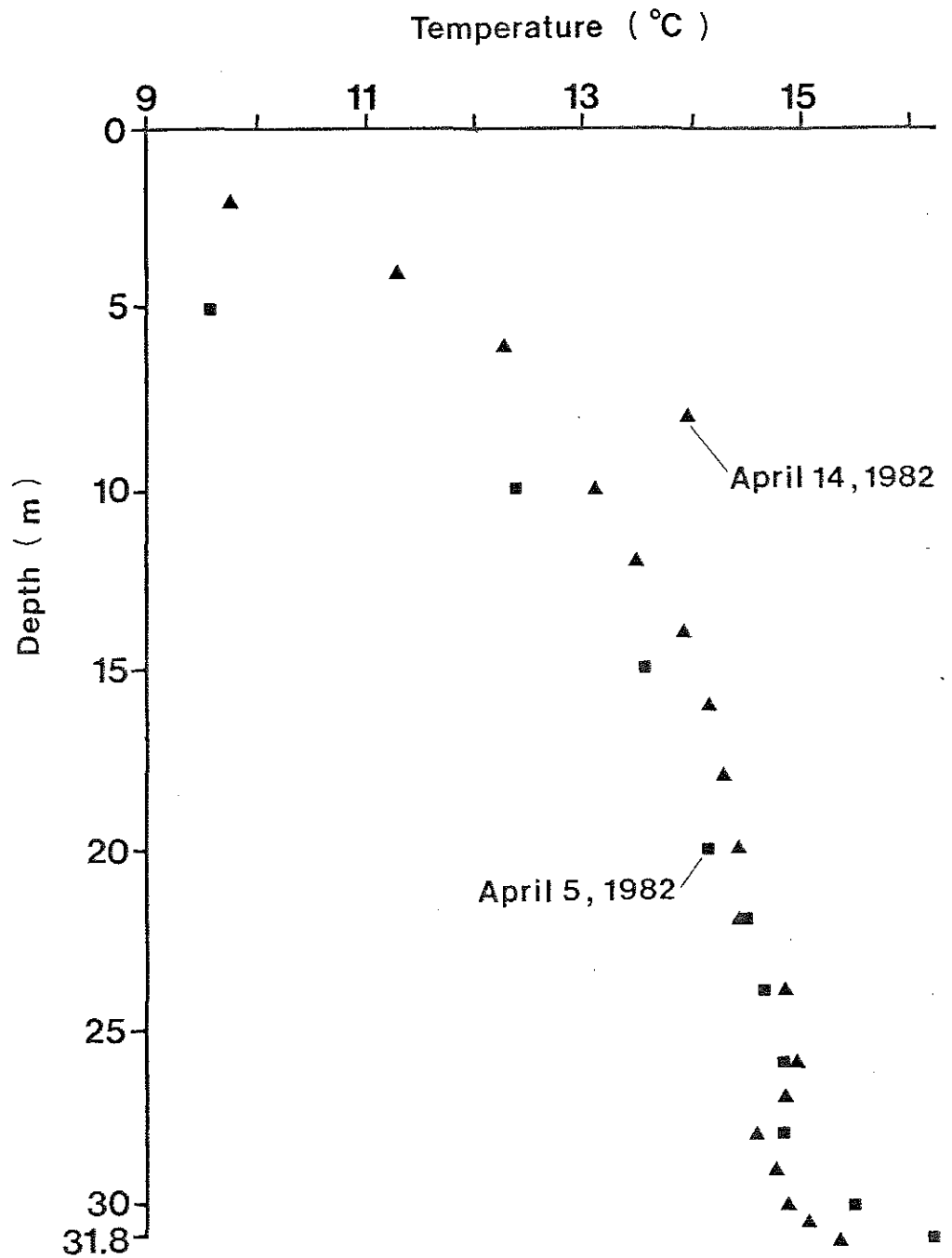
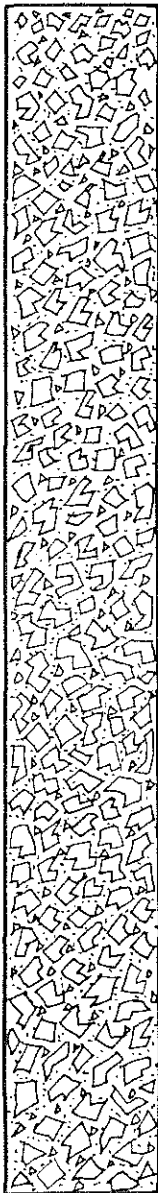
Hole: NZ-8

date completed: April 5, 1982
date logged: 3:30 P.M., April 12, 1982
lithology: 0-25' Qal; 25-305' dark gray laminated shale alternating with occasional buff shale, graptolitic.
BHT: 17.11°C @ 90m
50-90m $\Delta T = 45^{\circ}\text{C}/\text{km}$, $k = 4$ TCU, $q = 1.8$ HFU
25-50m $\Delta T = 50^{\circ}\text{C}/\text{km}$, $k = 3.8$ TCU, $q = 1.9$ HFU

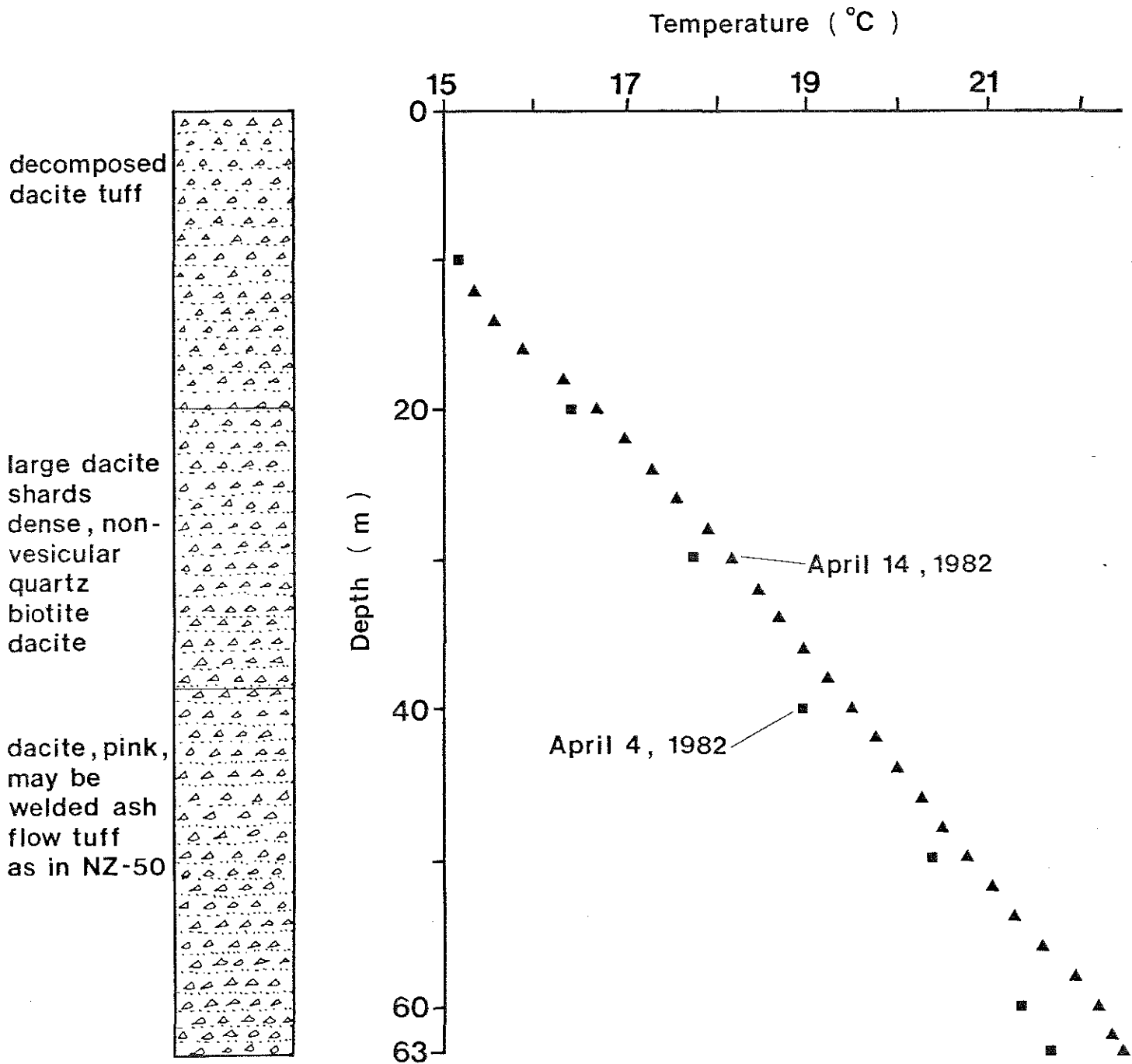


Lithologic Log and Thermal Gradient Curve Hole NZ-1A
 Noquez Prospect, Mineral County, Nevada.
 65 - 92 m $\Delta T = 104 \text{ }^\circ\text{C}/\text{km}$, $k = 5 \text{ TCU}$, $q = 5.2 \text{ HFU}$

mafic
volcanic
breccia,
poorly
consolidated



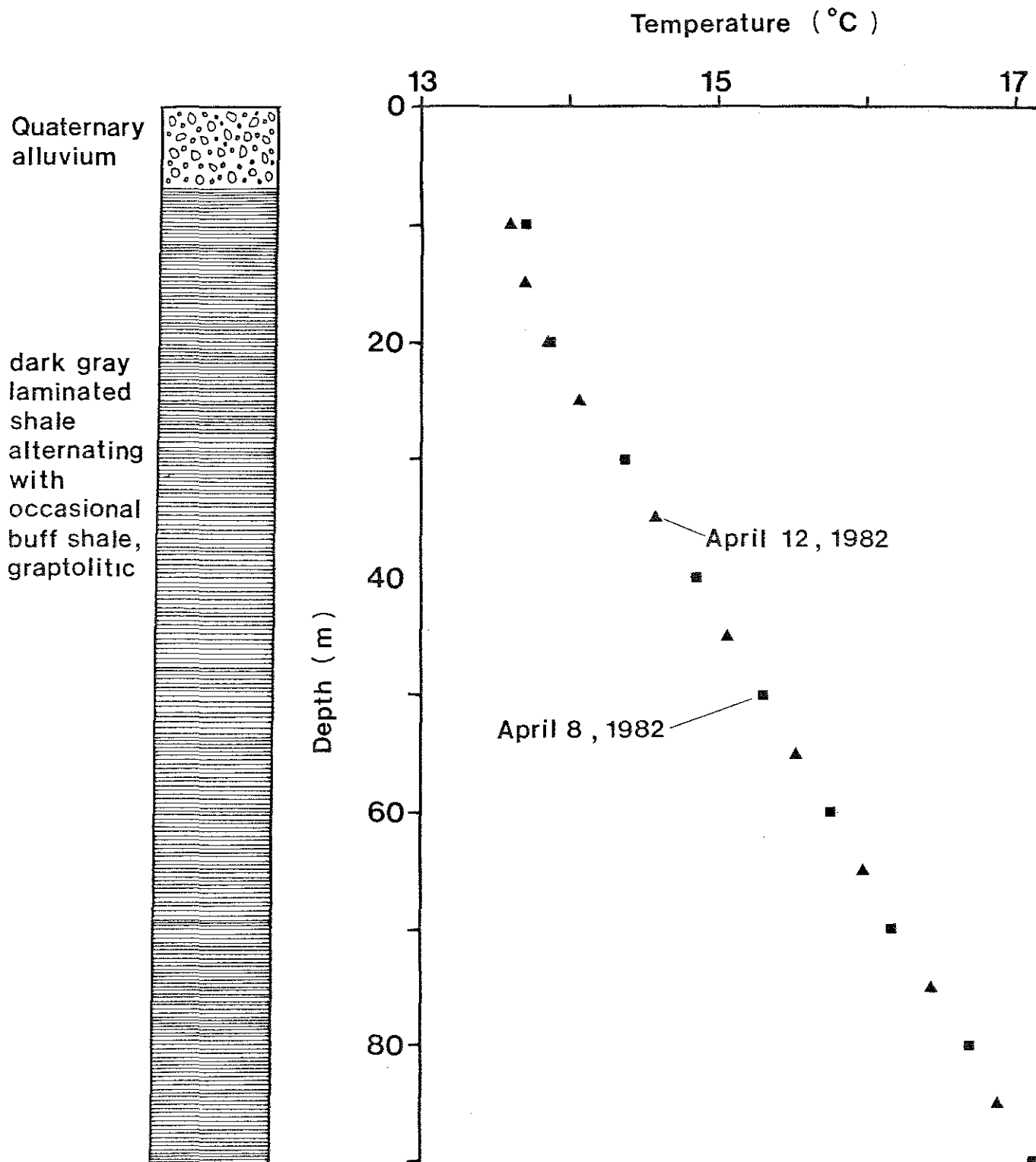
Lithologic Log and Thermal Gradient Curve Hole NZ-5
Noquez Prospect. Mineral County, Nevada.



Lithologic Log and Thermal Gradient Curve Hole NZ-6
 Noquez Prospect. Mineral County, Nevada.

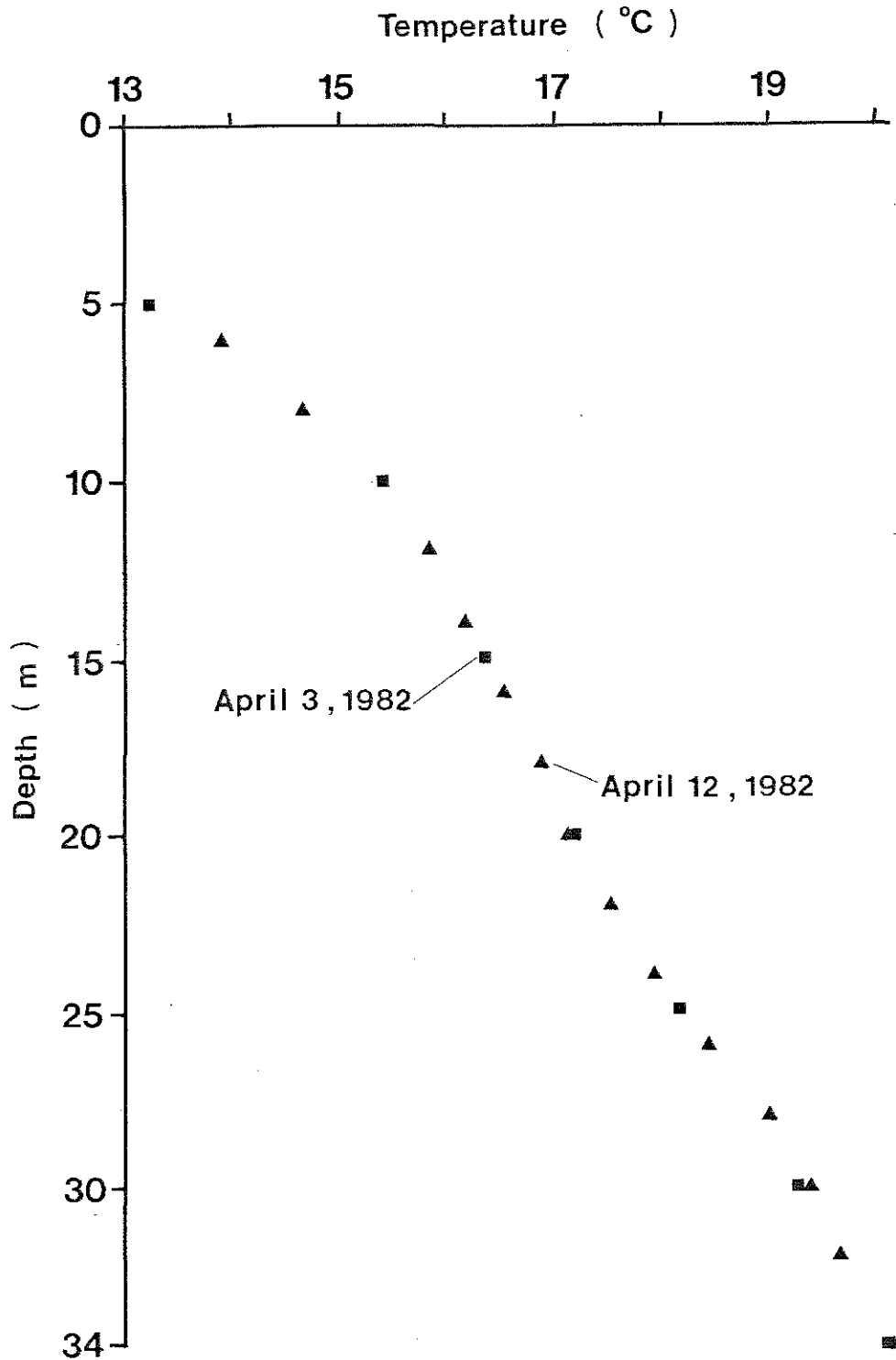
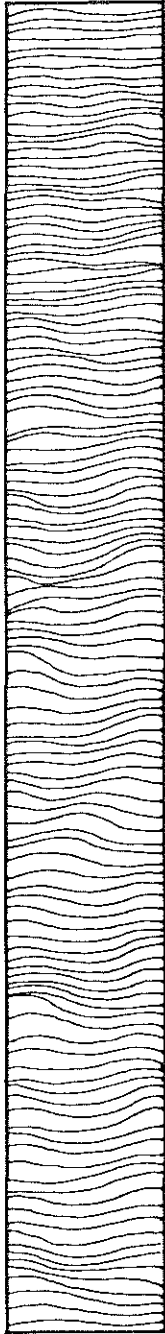
fault zone 60-63m $\Delta T = 67$ °C/km, $k = ?$, $q = ?$

20-54m $\Delta T = 137$ °C/km, $k = 3$ TCU, $q = 4.1$ HFU

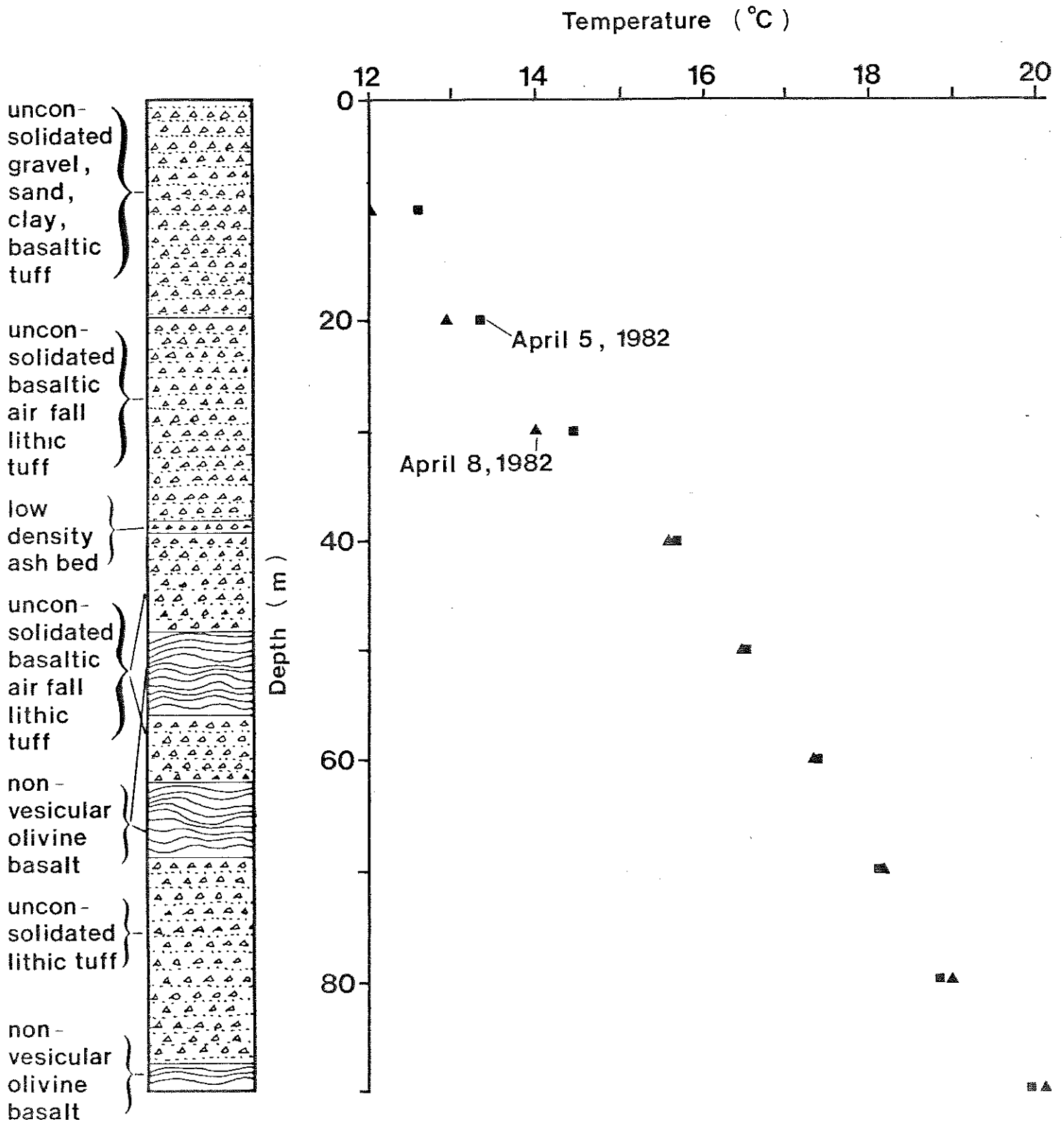


Lithologic Log and Thermal Gradient Curve Hole NZ-8
 Noquez Prospect, Mineral County, Nevada.
 50-90 m $\Delta T = 45$ °C/km, $k = 4$ TCU, $q = 1.8$ HFU
 25-50 m $\Delta T = 50$ °C/km, $k = 3.8$ TCU, $q = 1.9$ HFU

Quaternary
vesicular
olivine
basalt,
highly
fractured

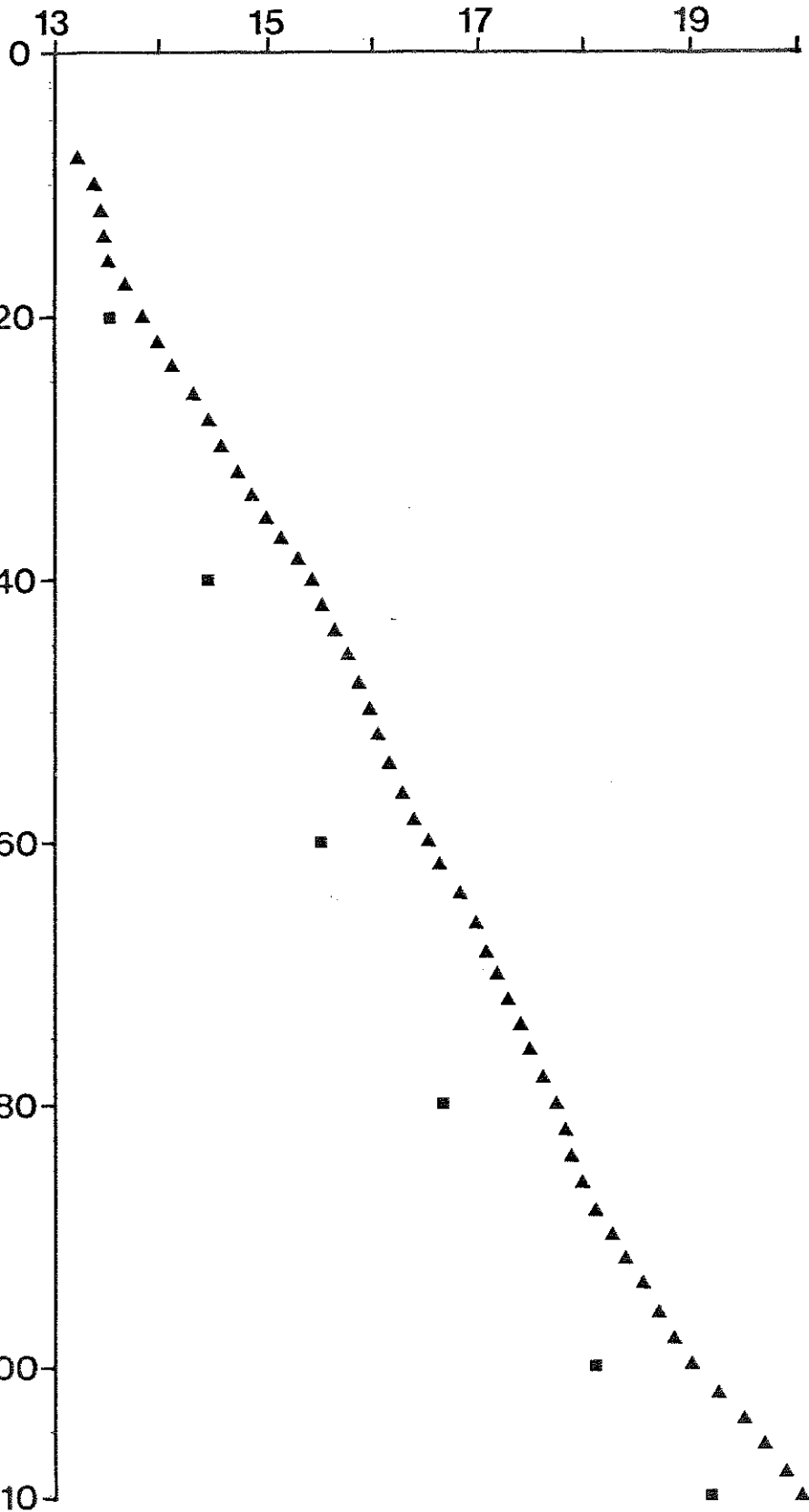


Lithologic Log and Thermal Gradient Curve Hole NZ-13
Noquez Prospect. Mineral County, Nevada.
28-34 m $\Delta T = 173$ °C/km, $k = 6$, $q = 10.4$ HFU



Lithologic Log and Thermal Gradient Curve Hole NZ-14
 Noquez Prospect, Mineral County, Nevada.
 76 - 90m $\Delta T = 107$ °C/km, $k = 2.0$ TCU, $q = 2.1$ HFU
 44 - 76m $\Delta T = 79$ °C/km, $k = 2.0$ TCU, $q = 2.3$ HFU

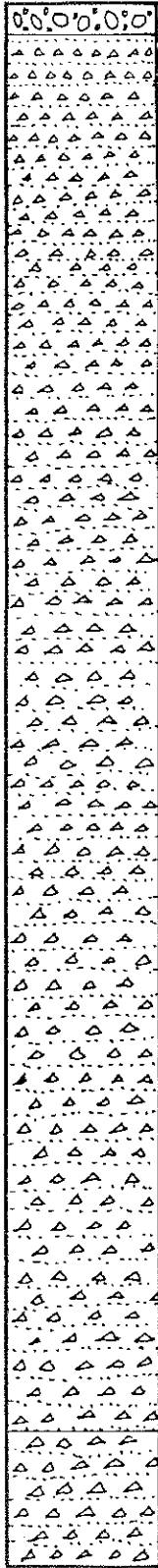
Temperature (°C)



Quaternary alluvium

dacitic welded ash flow tuff, pink very dense, non-vesicular, euhedral biotite 1% quartz 5% oxidized magnetite

unconsolidated light gray very fine grained ash-floury texture



Lithologic Log and Thermal Gradient Curve Hole NZ-50
Noquez Prospect. Mineral County, Nevada.
98 - 110m $\Delta T = 109$ °C/km, $k = 3$ TCU, 3.3 HFU
46 - 96m $\Delta T = 59$ °C/km, $k = 5.5$ TCU, 3.2 HFU
16 - 42m $\Delta T = 78$ °C/km, $k = 4.5$ TCU, 3.5 HFU