

LAMONT-DOHERTY GEOLOGICAL OBSERVATORY
of Columbia University
Palisades, New York

SEA FLOOR GEOTHERMAL MEASUREMENTS FROM VEMA CRUISE 25

by

Marcus G. Langseth, Jr.

Isabel Malone

Charles Bookman

May 1972

Technical Report No. 4
CU-4-72
ONR Contract N00014-67-A-0108-0004

and

Technical Report No. 2
CU-2-72
National Science Foundation Grant GP 5356

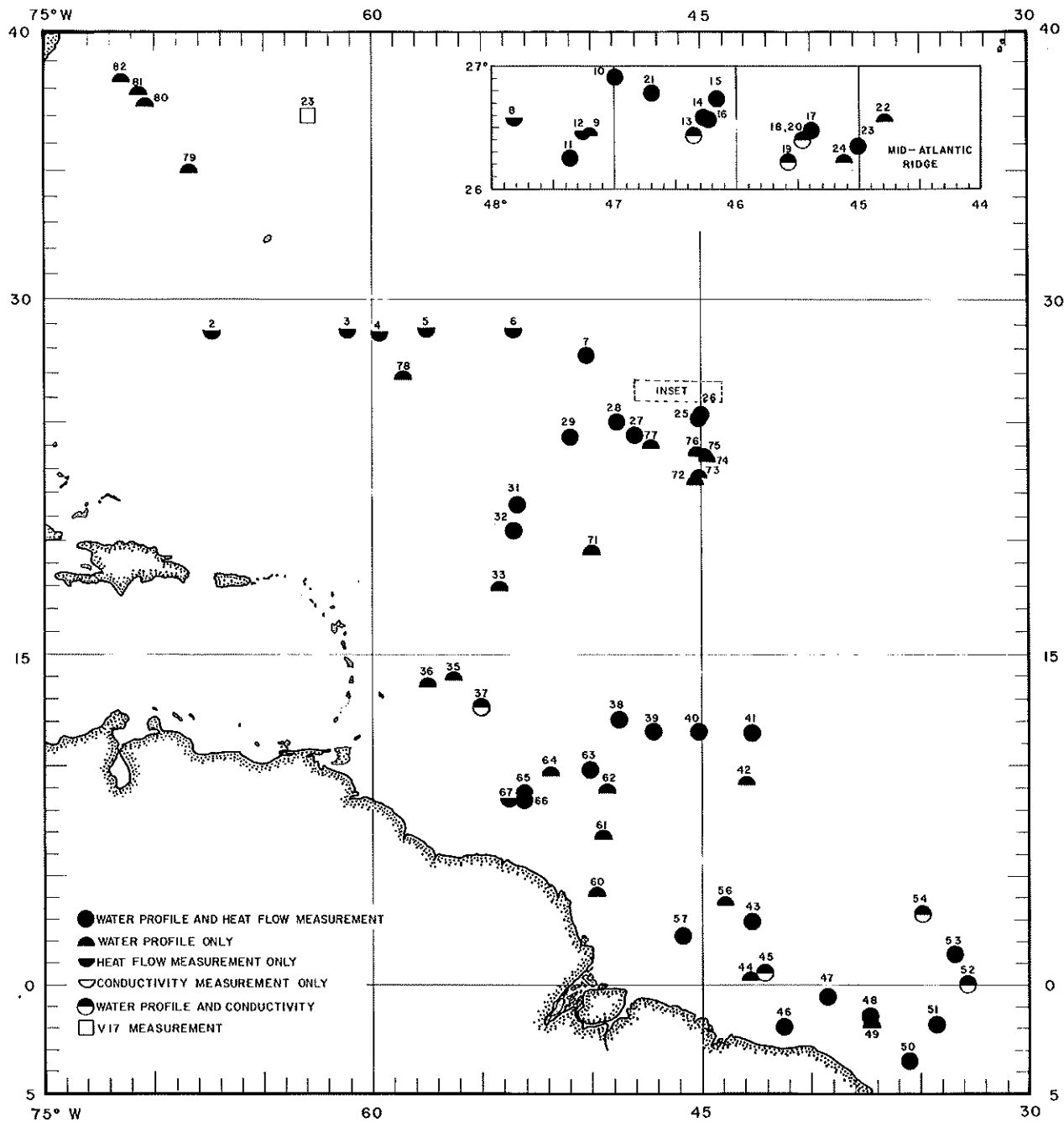
and

Technical Report No. 2
CU-2-72
National Science Foundation Grant GA 1412

Reproduction in whole or in part is permitted for any purpose of
the United States Government. Others must secure the authors'
permission for use of this material.

Distribution of this document is unlimited.





GEO THERMAL MEASUREMENTS, VEMA CRUISE 25

TABLE OF CONTENTS

Introduction	2
Instrument Techniques	2
The Ewing Thermograd	2
Water Temperature Measurements	3
Instrument Depth Measurements	3
Sediment Temperatures	4
Conductivity Measurements	5
Reduction of Thermograd and Conductivity Data	5
Presentation of the Data	6
Listings of Data	15
Plots of Geothermal Data	15
Notes on VEMA 25 Geothermal Data	13
Acknowledgements	16
References	17
Station Data	18 - 159

ILLUSTRATIONS

Frontispiece - Geothermal Stations in the Atlantic Ocean from VEMA
Cruise 25. Numbers above station give thermograd number.

TABLES

Table 1. VEMA Cruise 25 Geothermal Data	8 - 11
Table 2. Evaluation Index	12

APPENDIX

VEMA Cruise 17 Heat Flow Measurement not previously reported. . . i - iv

INTRODUCTION

This report gives results of temperature measurements in the deep-ocean water and sea-floor sediment, and results of conductivity measurements on sediment cores taken with the temperature measurements. These measurements were made on VEMA Cruise 25 that left Miami January 1968 and ended in New York City in April 1968. All measurements were made in the north and equatorial Atlantic Ocean. In the Appendix of this report are two heat flow measurements made on VEMA Cruise 17 that were not previously reported in the literature. The principal objective of the measurements reported here is to determine the geothermal heat flux through the sea floor (see for example, Bullard, 1954). These measurements are also pertinent to studies of deep and near bottom water temperature in the ocean, as well as steady-state and transient thermal processes at the sediment-water interface. We have attempted, in this report, to present the data in a form that is useful to scientists interested in the thermal regime of the deep ocean.

INSTRUMENT TECHNIQUES

For a complete description of the instruments and techniques used to measure temperature and conductivity in the deep sea, see Gerard et al. (1962) and Langseth (1965). A summary of the measurement techniques is given below so that the reader can better assess the data.

The Ewing Thermograd: All of the temperature data reported was measured with the Ewing thermograd. This instrument uses an array of 3 to 5 thermistor probes mounted along a coring tube to measure sediment temperatures, a thermistor probe to measure water temperature, and a pressure

gauge to indicate the depth of the instrument in the water. The temperature and pressure are recorded on 70 mm film as analog traces. The recorder is placed inside of a pressure case that is secured in the weight at the top of the piston corer.

Water Temperature Measurements: Water temperatures are measured during lowering and hoisting of the thermograd with a bead-type thermistor that is mounted in a watertight stainless steel probe. The diameter of the probe is about 1.25 mm and its length is 2.5 cm. The probe has a time constant of about 0.5 sec in flowing water. This probe is mounted on the pressure vessel. During lowering, the water probe points downward so that relatively undisturbed water is continually flowing past it. (Lowering rates vary from 100 to 200 meters/minute.) Upon hoisting, the probe is in the wake of the core weight. (Hoisting rates are usually 50 to 100 meters/minute).

The water temperature trace on the 70 mm film record has a displacement of about 2.5 cm per degree centigrade, and the film record is read with a precision of about 0.1 mm. The water probe is calibrated prior to use at sea in a constant-temperature bath at 5 or 6 points with an absolute accuracy of $\pm 0.05^\circ \text{C}$. The relative accuracy of calibration between temperature points is about $\pm 0.005^\circ \text{C}$.

Instrument Depth Measurements: The depth of the instrument below the sea surface is measured by a pressure gauge. This gauge consists of a cavity exposed to the ambient sea pressure and surrounded by strain-sensitive wires. The linearity of the gauge is about 0.35%. The pressure detected

by the gauge is recorded as a separate trace on the 70 mm film record, which has a sensitivity of 1500 m per centimeter displacement. Thus the resolution of the record is about 15 m. Depths during lowering are found by a linear interpolation between the surface and bottom readings which results in an accuracy of depth measurement of about ± 25 m.

Sediment Temperatures: Temperatures at up to five points below the sediment-water interface are measured by means of thermistor probes mounted along the core tube. The thermistor is in the end of a stainless steel probe 0.317 cm in diameter. This probe is pressure proof and mounted on a steel fin so that it is held about 5 cm from the core tube. The probe itself is secured in a plastic (PVC) collar that provides thermal insulation from the fin. The tip of the probe projects about one inch beyond this collar.

To measure sediment temperatures the corer is lowered to within about a hundred meters of the bottom and held for a few minutes to allow the probes to equilibrate in the nearly isothermal near-bottom water. The corer is then lowered until bottom contact is made. Upon contact, the corer free-falls about 10 ft., penetrating the sediment to depths up to 25 meters. The corer is left undisturbed in the sediment for about 5 minutes, while temperatures are recorded as the probes equilibrate with the sediment. The corer is then extracted from the sediment and hoisted back up to the ship.

The sediment probes are calibrated in the same way as the water probe described earlier. Temperature gradients in the sediment, which are of

prime interest, are determined by taking the difference between measurements in the water near the bottom and in the sediment after equilibration. Thus in determining gradients we depend only on the relative calibration accuracy which is $\pm 0.005^\circ \text{ C}$.

Conductivity Measurements: Measurements of thermal conductivity are made on the sediment core samples aboard the research ship about one hour after the core has been extruded from the core tube. A thin probe is imbedded in the sediment and the temperature measured while the probe is heated at a constant rate. We use a probe about 6 cm in length and 0.8 mm in diameter that contains a 50 Ω heater wire and a thermistor. The probe is inserted into the 2 1/2" sediment sample at an angle of about 45° to the long axis of the core. Six volts is applied to the heater and the temperature rise is recorded on a Varian strip-chart recorder for about two minutes.

Reduction of thermograd and conductivity data: The trace displacements on the 70 mm thermograd film record are measured on a projected image of the film on the surface of a digitizing table. The magnification is about 4 times. The minimum digitizing increment of this table is 0.01". The digitized trace displacements corresponding to water and mud temperatures and instrument depth are entered on computer punch cards, which are converted into temperature versus depth information with an IBM 1130 computer.

The conductivity measurements are reduced by manually reading displacements from the strip chart records. Displacement versus resistance

calibration, made on board ship, and temperature versus resistance calibration of the thermistor are used to convert displacements into temperature. Readings are taken approximately every 10 seconds after the probe heater is turned on. These temperatures are then plotted versus the logarithm of time. The slope of the semi-log plot can be interpreted in terms of conductivity by means of the following relation.

$$K = \frac{Q \cdot \ln(t_2/t_1)}{4\pi (T_2 - T_1)}$$

where:

Q = the heater power per unit length in cal/cm sec

t₂ and t₁ are times after heater turn-on usually 10 and 100 seconds

T₂ and T₁ are temperatures at t₁ and t₂.

PRESENTATION OF THE DATA

Summary Table: The thermal data for each station is given in Table 1.

The depths are given in corrected meters, determined by taking the depth indicated by the Precision Depth Recorder at the time of the core contact and correcting for the velocity of sound in water using Matthews (1939) tables.

The gradient refers to the vertical gradient in the sediment determined from temperature measurements in the sediment. Units are °C/10 m.

The listed conductivity value is the harmonic mean, $N / \sum_{i=1}^N (1/X_i)$

where N is the total number of measurements and X_i's are conductivity values, of all measurements within the interval of gradient measurement. Units are mcal/°C sec cm.

Each conductivity measurement is followed by an "M" or "A" which indicates whether the value is based on measurements (M) or is assumed from nearby stations (A).

Heat flow is the product of the gradient and the conductivity. The units are $\mu\text{cal}/\text{cm}^2\text{sec}$.

The evaluation is a subjective index applied by the authors to indicate our appraisal of the reliability of the temperature and conductivity measurements. The numbers are interpreted in Table 2.

TABLE 1: VEMA 25 GEOTHERMAL DATA

Latitude	Longitude	Depth Meters	Gradient	Conduct.	Heat Flow	Eval.	T' Grad Number	Core Number	Year
28° 42'N	67° 27'W	5123	0.80	1.96	1.59	7	2	3	1968
28° 44'N	61° 03'W	5813	0.64	1.80	1.15	8	3	5	1968
<u>NARES DEEP</u>									
28° 38'N	59° 43'W	5324	0.62	1.82	1.13	10	4	6	1968
28° 43'N	57° 33'W	5902	0.57	2.16	1.23	5	5	7	1968
28° 41'N	53° 41'W	5299	0.81	1.71	1.39	10	6	8	1968
<u>MID-ATLANTIC RIDGE</u>									
27° 40'N	50° 15'W	4774	0.29	2.42	0.70	7	7	9	1968
26° 34'N	47° 49'W	4644	0.21	2.30	0.48	6	8	10	1968
26° 26'N	47° 12'W	4589	-	-	-	3	9	11	1968
26° 55'N	47° 00'W	4390	0.43	2.58	1.12	4	10	12	1968
26° 15'N	47° 22'W	3890	0.68	2.45(A)	1.66	6	11	13	1968
26° 28'N	47° 15'W	4565	0.20	2.49	0.50	4	12	14	1968
26° 26'N	46° 21'W	3349	-	2.33	-	0	13	15	1968
26° 35'N	46° 16'W	3984	0.87	2.46	2.14	7	14	17	1968
26° 44'N	46° 10'W	3607	1.19	2.34	2.78	6	15	18	1968
26° 35'N	46° 15'W	3962	0.92	2.43	2.24	8	16	19	1968
26° 29'N	45° 23'W	3594	1.20	2.24	2.69	5	17	20	1968
26° 24'N	45° 27'W	3618	0.89	2.29	2.04	4	18	21	1968
26° 13'N	45° 35'W	2676	-	2.51	-	3	19	22	1968
26° 24'N	45° 27'W	3506	-	2.42	-	0	20	23	1968
26° 47'N	46° 42'W	4563	-	2.46	-	5(NI)	21	24	1968
26° 33'N	44° 47'W	2479	-	-	-	0	22	25	1968
26° 22'N	45° 01'W	3102	3.77	2.28	8.60	7	23	26	1968

TABLE 1: (Continued) VEMA 25 GEOTHERMAL DATA

Latitude	Longitude	Depth Meters	Gradient	Conduct.	Heat Flow	Eval.	T' Grad Number	Core Number	Year
26° 13'N	45° 07'W	3452	-	-	-		24	27	1968
25° 13'N	45° 02'W	2497	2.86	2.36	6.75	4	25	28	1968
25° 16'N	45° 01'W	2568	1.34	2.43	3.26	5	26	29	1968
24° 29'N	48° 01'W	4101	-	2.43	-	10(NL)	27	30	1968
24° 55'N	48° 54'W	5057	-	2.14	-	10(NL)	28	31	1968
24° 24'N	51° 02'W	5417	1.29	2.04	2.63	8	29	32	1968
<u>NARES DEEP</u>									
21° 30'N	53° 24'W	5612	-	2.18	-	10(NL)	31	34	1968
20° 23'N	53° 36'W	5282	0.86	2.18(A)	1.88	8	32	35	1968
17° 47'N	54° 19'W	4702	-	-	-	0	33	36	1968
<u>CEARA ABYSSAL PLAIN</u>									
13° 53'N	56° 18'W	5042	-	-	-	-	35	*	1968
13° 36'N	57° 28'W	5293	-	-	-	-	36	*	1968
<u>GULIANA BASIN</u>									
12° 39'N	55° 03'W	4631	-	2.04	-		37	39	1968
12° 07'N	48° 53'W	4708	0.61	2.06	1.26	7	38	42	1968
11° 38'N	47° 17'W	4942	0.73	2.04	1.49	9	39	43	1968
11° 30'N	45° 09'W	4037	0.35	2.14	0.70	7	40	44	1968
11° 33'N	42° 38'W	3446	0.87	2.39	2.08	7	41	45	1968
9° 18'N	42° 59'W	4304	-	-	-	7(NL)	42	46	1968
2° 56'N	42° 44'W	4307	0.54	2.04	1.10	6	43	49	1968
0° 12'N	42° 46'W	3749	-	-	-	0	44	50	1968
0° 30'N	42° 08'W	4059	-	-	-	0	45	51	1968

*Water temperature station, no core.

TABLE 1: (Continued) VEMA 25 GEOTHERMAL DATA

Latitude	Longitude	Depth Meters	Gradient	Conduct.	Heat Flow	Eval.	T'Grad Number	Core Number	Year
<u>GUIANA BASIN (Continued)</u>									
1° 53'S	41° 16'W	2769	0.80	2.27	1.82	6	46	52	1968
0° 30'S	39° 18'W	2425	0.52	2.31	1.20	5	47	53	1968
1° 25'S	37° 23'W	3056	0.81	2.38	1.93	7	48	54	1968
1° 54'S	37° 10'W	2014	-	-	-	-	49	55	1968
3° 33'S	35° 32'W	3512	0.58	2.26	1.31	7	50	56	1968
1° 50'S	34° 16'W	4262	0.54	2.28	1.23	7	51	57	1968
0° 01'N	32° 48'W	4580	0.90	2.15	1.94	6	53	58	1968
1° 22'N	33° 28'W	3826	-	2.27	-	0	52	59	1968
3° 17'N	34° 51'W	3749	2.05	2.22	4.55	8	54	60	1968
3° 40'N	43° 56'W	4236	-	-	-	-	56	64	1968
2° 19'N	45° 54'W	3541	0.62	1.91(A)	1.18	4	57	65	1968
4° 07'N	49° 43'W	2926	-	-	-	-	60	68	1968
6° 47'N	49° 36'W	3978	-	-	-	0	61	69	1968
8° 48'N	49° 19'W	4594	-	-	-	0	62	70	1968
9° 51'N	50° 02'W	4865	0.48	2.34(A)	1.12	6	63	71	1968
9° 31'N	51° 59'W	4865	-	-	-	0	64	72	1968
8° 40'N	53° 10'W	4134	-	-	-	-	65	73	1968
8° 34'N	53° 10'W	2736	0.52	2.33(A)	1.21	7	66	75	1968
8° 34'N	53° 40'W	4920	0.55	2.33(A)	1.28	7	67	78	1968
17° 59'N	52° 33'W	4971	-	-	-	0	69	80	1968
<u>RIFT VALLEY</u>									
19° 30'N	50° 00'W	4526	-	-	-	-	71	*	1968
22° 22'N	45° 12'W	3592	-	-	-	-	72	*	1968

*Water temperature station, no core.

TABLE 1: (Continued) VEMA 25 GEOTHERMAL DATA

Latitude	Longitude	Depth Meters	Gradient	Conduct.	Heat Flow	Eval.	T' Grad Number	Core Number	Year
RIFT VALLEY (Continued)									
22° 44'N	45° 01'W	4088	-	-	-	-	73	*	1968
23° 18'N	44° 54'W	3916	-	-	-	-	74	*	1968
23° 29'N	44° 56'W	4097	-	-	-	-	75	*	1968
23° 32'N	45° 07'W	4953	-	-	-	-	76	*	1968
23° 57'N	47° 24'W	3762	-	-	-	-	77	*	1968
26° 46'N	58° 31'W	6019	-	-	-	-	78	*	1968
37° 23'N	70° 15'W	4204	-	-	-	-	79	*	1968
37° 42'N	70° 49'W	3880	-	-	-	-	80	*	1968
38° 17'N	71° 32'W	2917	-	-	-	-	81	*	1968
VEMA 17 (See Appendix)									
60° 44'N	45° 45'W	413	0.57	2.12	1.21		19	193	1961
37° 04'N	62° 57'W	5028	0.46	3.10	1.43		23	211	1961

*Water temperature station, no core.

TABLE 2: DEFINITION OF EVALUATION INDEX

Index	Estimated Error Range	Reliability	Remarks (Typical Diagnostics)
9-10	5-10%	High	Three or more sediment temps.
7-8	10-15%	Good	Only two probes in sediment. Conductivity may be assumed.
5-6	15-50%	Fair	Corer moved in sediment. Apparent shunting of thermistors.
4	>30%	Poor	Only one probe in sediment.
<3	-	Unacceptable	

NOTES ON THE RESULTS OF VEMA 25 GEOTHERMAL MEASUREMENTS:

Stations 4-6 and 31-32 are isolated measurements in the Nares Deep. This area has been well covered by previous measurements and the VEMA 25 results give values very close to the mean of earlier values.

Stations 7-29 are in the neighborhood of the Mid-Atlantic Ridge. Stations 8-26 were taken as part of a detailed survey of the MAR at about 20° N. At many of the stations we experienced great difficulties obtaining sufficient penetration of the cover for reliable measurement. Out of the 18 attempted measurements only 10 were successful. Very high heat flow values, >6, were observed at two locations in the crestal mountains adjacent to the Rift Valley. Heat flow values well above normal were detected to distances of about 160 km from the ridge axis.

Several of the stations show rather large variations in the thermal gradient with depth in the sediment, possibly reflecting a transient thermal disturbance such as slumping or rapid erosion. In particular two stations, V25-27 and V25-28, which are several miles apart, show a reversal of the gradient at depth in the sediment.

About 16 values of heat flow were obtained in the Guiana Basin out of 30 attempted stations. Water temperature profiles were obtained at nearly all thirty locations. Most of the stations indicate that the geothermal heat flux is near the world average in this basin. Some higher than average values were observed near the flanks of the Mid-Atlantic Ridge.

Nearly all of the water temperature profiles show a pronounced layer of cold water at depths greater than 4200 meters corresponding to the deep Antarctic bottom water. Near the continental margin this layer is remarkably thin at its upper boundary sharp.

One station of the series is worth a special note, V23-54. At this station the core was slowly withdrawn after penetration and the withdrawal was slow enough that thermistors remain nearly in equilibrium with the sediment. This allowed a rather detailed temperature profile in the sediment to be obtained.

Stations 71 - 77 are water temperature profiles only. The recorder at these stations had extremely low sensitivity. The resolution of the temperature trace was about 0.1° C. The three remaining stations, 79 - 81, near the continental margin were recorded at normal resolution.

VEMA 17 Measurements:

Only two successful heat-flow stations were obtained. One of these, V17-19, was taken in the Julianehåb Fjord. The water depth was 413 m, a heat flow of 1.21 was measured. The second station was at the foot of the continental margin south of Cabot Straits. The sediment temperatures show a small change in gradient with depth.

Listings of the Data: Individual listings of the temperature and depth data are given for each station. Depths and corresponding in situ and potential temperatures (computed from Wüst, 1961) are given. At some stations malfunction of either the water probe or pressure gauge obviated any measurement, in such cases the listing of water temperatures is omitted.

Sediment conductivity values are listed with the depth of measurement in the sediment.

Plots of Geothermal Data: The listed data for each station is presented graphically on the page adjacent to the listing. A note about the conductivity presentation: each value is printed out at a depth corresponding to the distance from the top of the core to the point of measurement. This usually represents the true depth in the sediment within ± 10 cm.

ACKNOWLEDGEMENTS

This work was supported by the Office of Naval Research under Contract N00014-67-A-0108-0004 and by National Science Foundation Grants GP 5356 and GA 1412.

Chief scientists during the VEMA 25 Cruise were Marcus G. Langseth, Jr., Dennis Hayes, Walter C. Pitman III and Stephen Eittreim. Measurements were made during the cruise by Robert Trier, Ronald Arietta, David Epp and Kevin McDermott. Captains S. Griffin (Miami-Paramaribo) and H. C. Kohler (Paramaribo-New York), as usual made an important contribution to the success of the scientific program of the cruise.

REFERENCES

- Bullard, E. C., The flow of heat through the floor of the Atlantic Ocean, Proc. Roy. Soc. London, A, 222, 408-429, 1954.
- Gerard, R., M. Langseth and M. Ewing, Thermal gradient measurements in the water and bottom sediment of the western Atlantic, J. Geophys. Res. 67, 785-803, 1962.
- Langseth, M., Techniques of measuring heat flow through the ocean floor, Terrestrial Heat Flow, Geophysical Monograph, No. 8, A. G. U. 1965.
- Matthews, D. J., Tables of the velocity of sound in pure water and sea water for use in echo-sounding and sound-ranging, H. D. 282, Hydrographic Department, Admiralty, London, 52 pp., 1939.
- Wüst, G., Tables for rapid computation of potential temperature, Tech. Report CU-9-61-AT(30-1) 1808 Geol., January 1961.

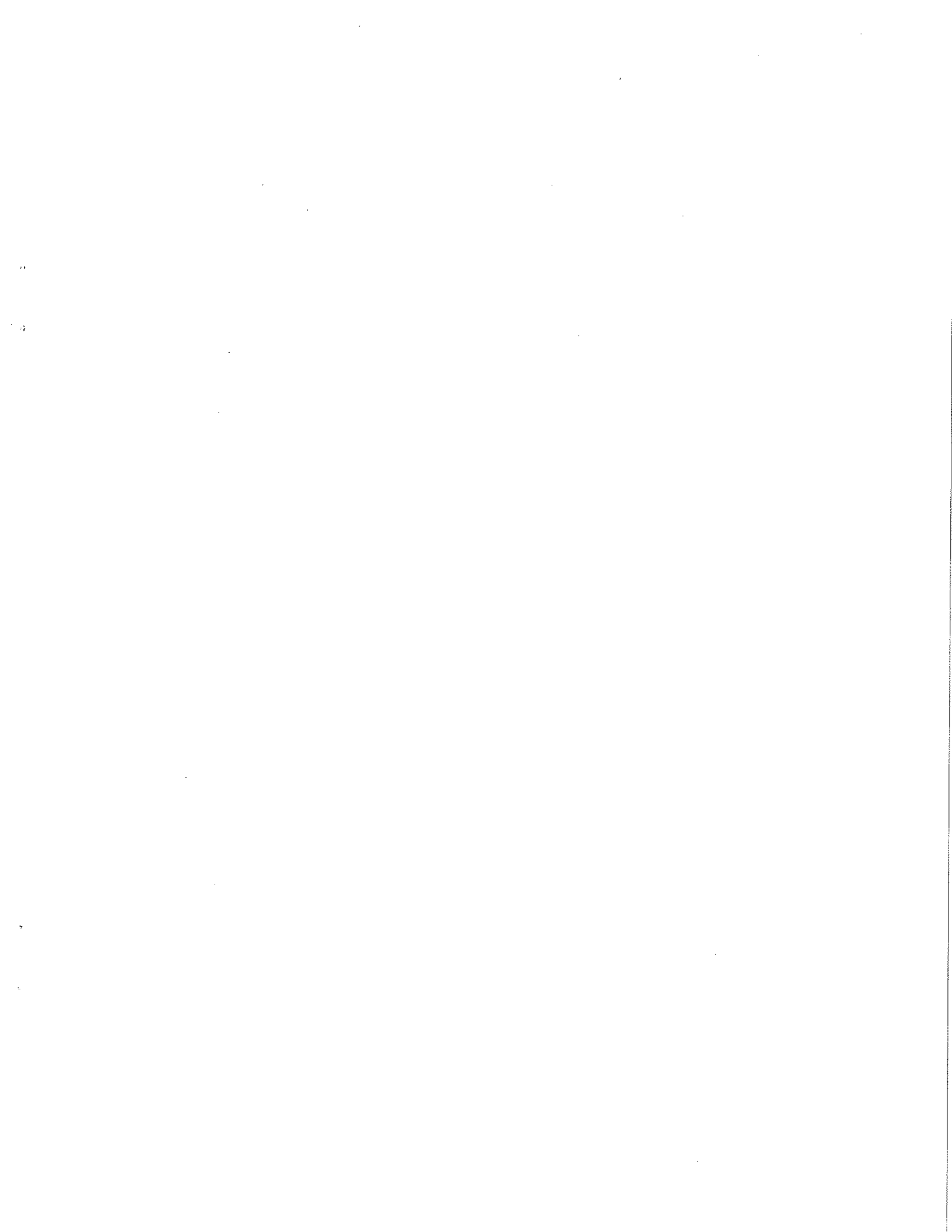
TGRAD STATION V25-002
028 42 N 067 27 W
CRUISE STATION 003

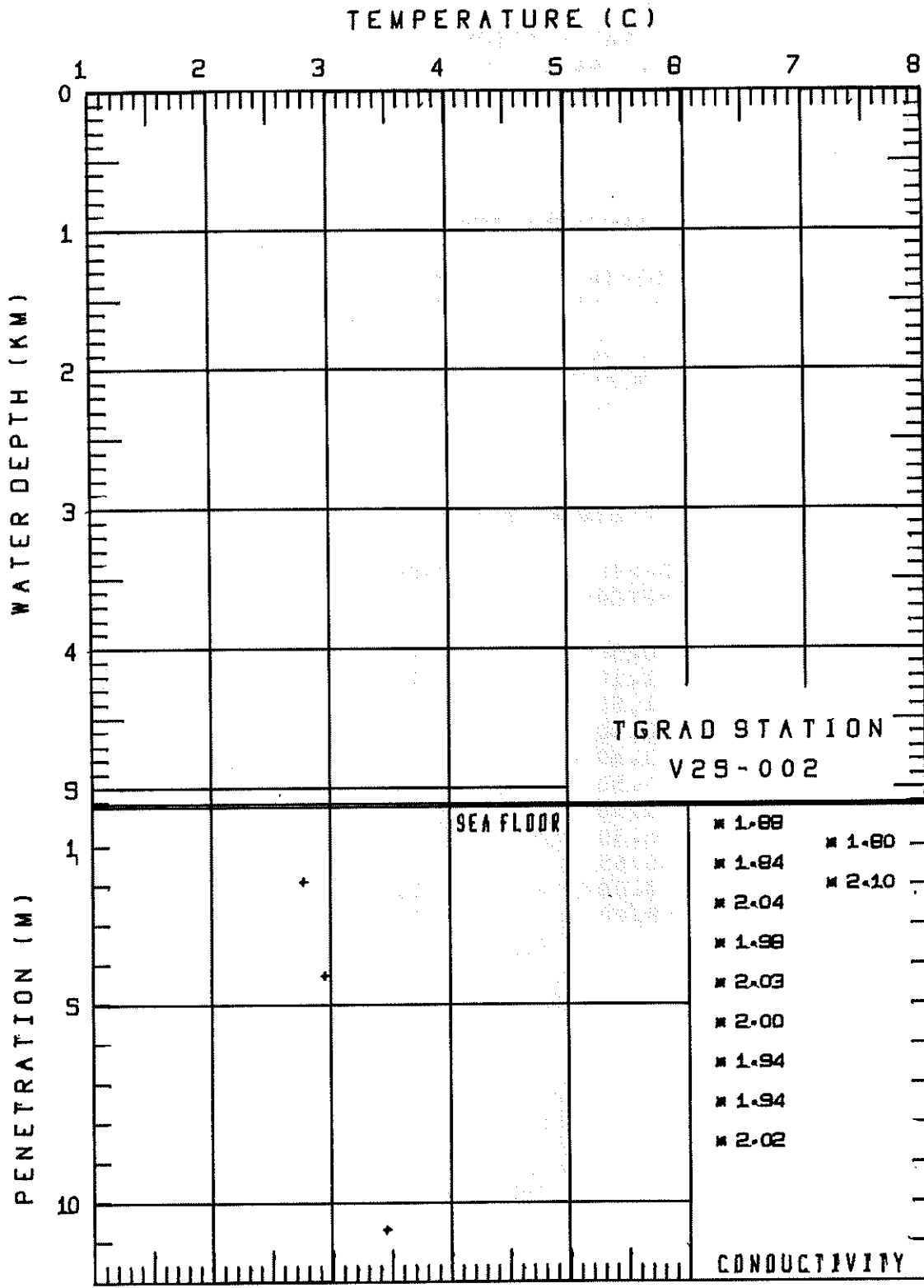
SEDIMENT TEMPERATURES

DEPTH METERS	TEMPERATURE CENTIGRADE
1.90	2.772
4.26	2.947
10.67	3.460

SEDIMENT CONDUCTIVITIES

DEPTH METERS	CONDUCTIVITY CGS
0.50	1.88
1.00	1.80
1.50	1.84
2.00	2.10
2.50	2.04
3.50	1.96
4.50	2.03
5.50	2.00
6.50	1.94
7.50	1.94
8.50	2.02





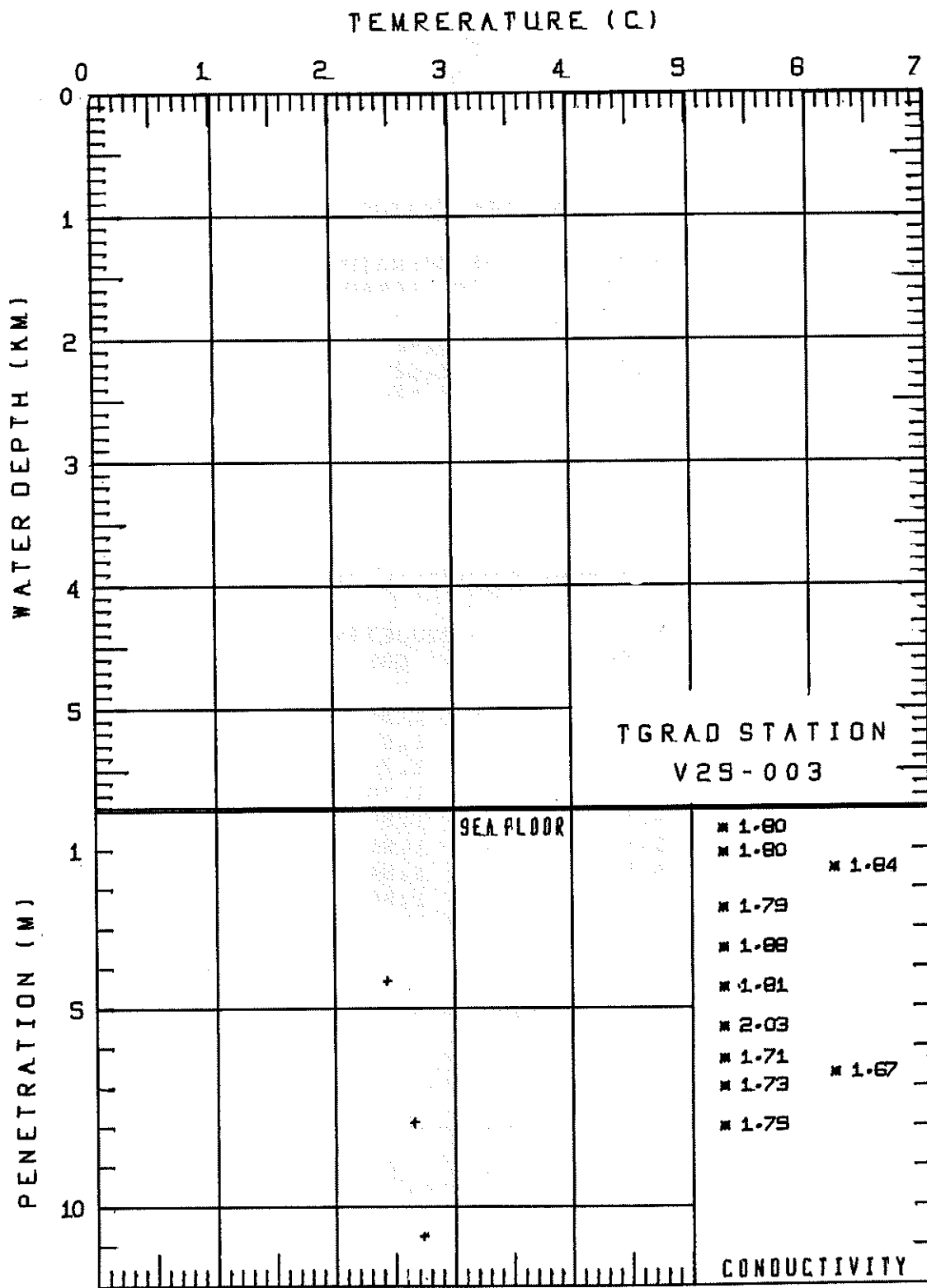
TGRAD STATION V25-003
028 44 N 061 03 W
CRUISE STATION 005

SEDIMENT TEMPERATURES

DEPTH METERS	TEMPERATURE CENTIGRADE
4.29	2.441
7.85	2.663
10.74	2.736

SEDIMENT CONDUCTIVITIES

DEPTH METERS	CONDUCTIVIT CGS
0.50	1.80
1.10	1.80
1.50	1.84
2.50	1.79
3.50	1.88
4.50	1.81
5.50	2.03
6.30	1.71
6.65	1.67
7.00	1.73
8.00	1.75



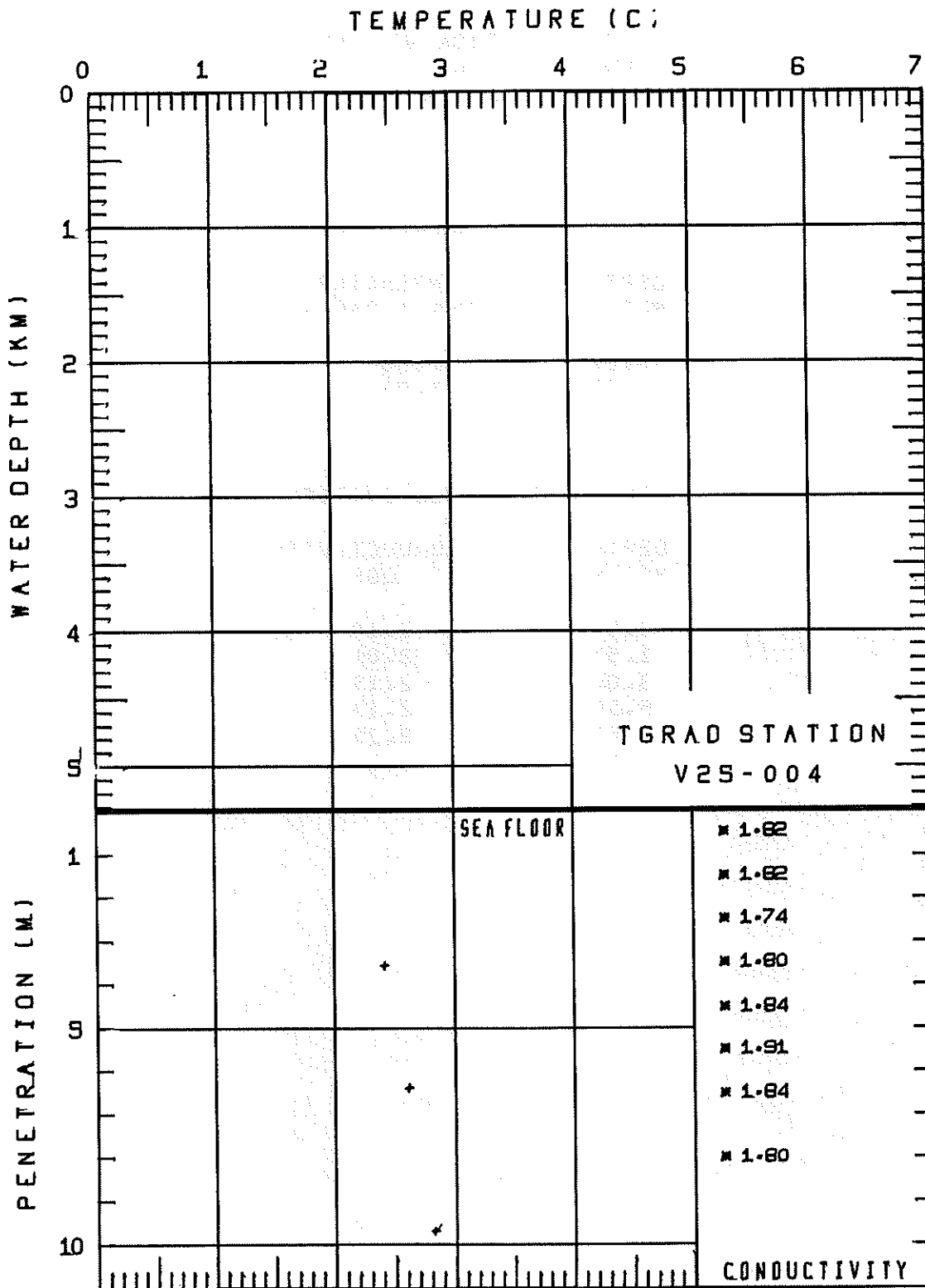
TGRAD STATION V25-004
028 38 N 059 43 W
CRUISE STATION 006

SEDIMENT TEMPERATURES

DEPTH METERS	TEMPERATURE CENTIGRADE
3.56	2.422
6.38	2.624
9.68	2.839

SEDIMENT CONDUCTIVITIES

DEPTH METERS	CONDUCTIVITY CGS
0.50	1.82
1.50	1.82
2.50	1.74
3.50	1.80
4.53	1.84
5.50	1.91
6.50	1.84
8.00	1.80



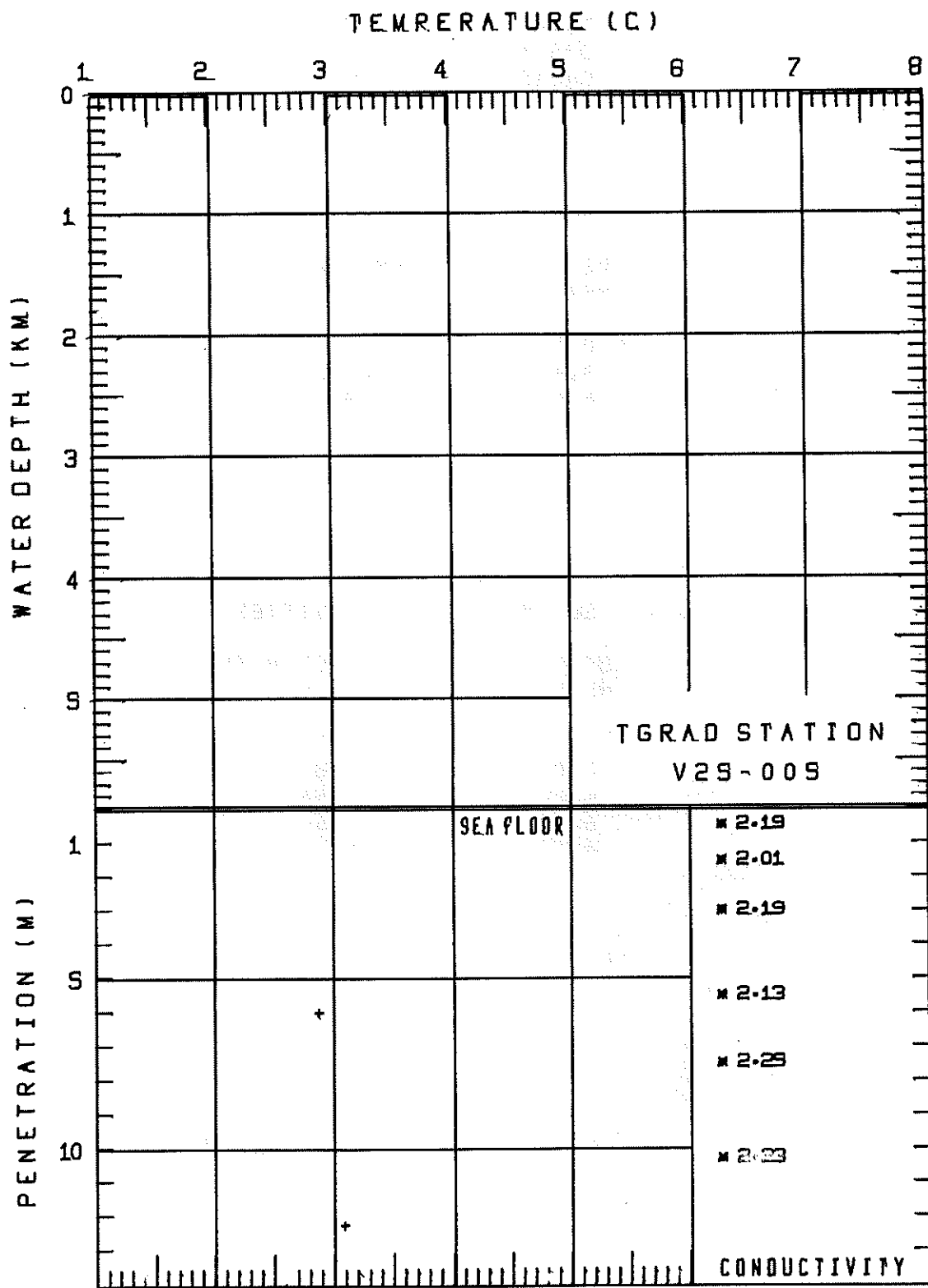
TGRAD STATION V25-005
028 43 N 057 33 W
CRUISE STATION 007

SEDIMENT TEMPERATURES

DEPTH METERS	TEMPERATURE CENTIGRADE
6.02	2.888
12.27	3.089

SEDIMENT CONDUCTIVITIES

DEPTH METERS	CONDUCTIVITY CGS
0.50	2.19
1.53	2.01
3.00	2.19
5.50	2.13
7.50	2.25
10.30	2.23



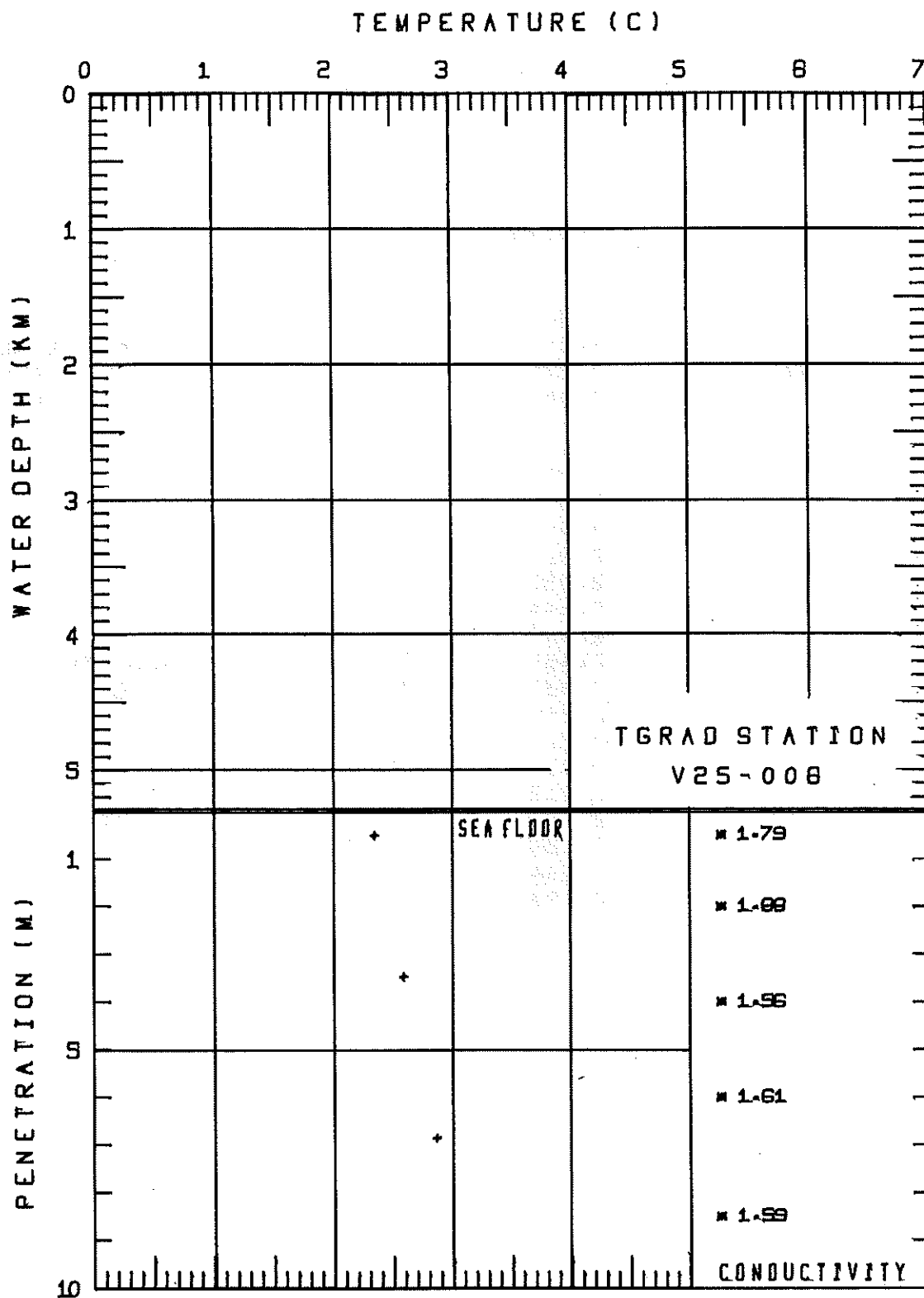
TGRAD STATION V25-006
028 41 N 053 41 W
CRUISE STATION 008

SEDIMENT TEMPERATURES

DEPTH METERS	TEMPERATURE CENTIGRADE
0.51	2.352
3.48	2.592
6.86	2.869

SEDIMENT CONDUCTIVITIES

DEPTH METERS	CONDUCTIVITY CGS
0.50	1.79
2.00	1.88
4.00	1.56
6.00	1.61
8.50	1.59



TGRAD STATION V25-007
 027 40 N 050 15 W
 CRUISE STATION 009

WATER TEMPERATURES

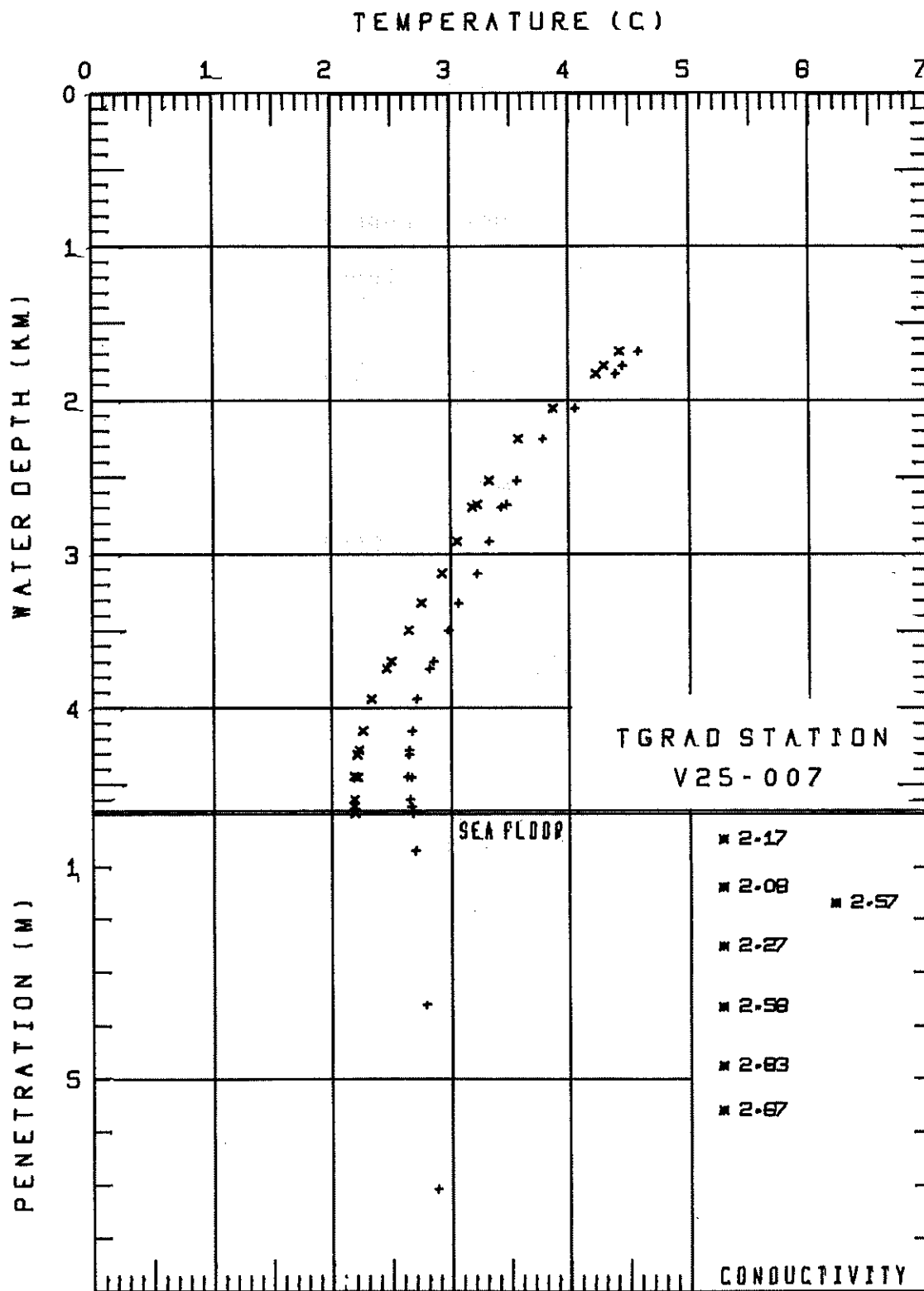
DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
1680	4.579	4.424
1773	4.453	4.290
1824	4.394	4.226
2047	4.054	3.868
2249	3.776	3.571
2517	3.556	3.325
2674	3.474	3.226
2689	3.427	3.178
2913	3.325	3.053
3120	3.223	2.927
3313	3.066	2.752
3487	2.979	2.644
3692	2.854	2.497
3739	2.819	2.459
3938	2.713	2.330
4145	2.670	2.260
4269	2.647	2.221
4300	2.644	2.214
4445	2.664	2.212
4442	2.631	2.181
4589	2.654	2.184
4636	2.663	2.184
4679	2.678	2.193

SEDIMENT TEMPERATURES

DEPTH METERS	TEMPERATURE CENTIGRADE	
0.71	2.696	COOLING
3.60	2.788	COOLING
7.06	2.876	COOLING

SEDIMENT CONDUCTIVITIES

DEPTH METERS	CONDUCTIVITY CGS
0.50	2.17
1.40	2.08
1.70	2.57
2.50	2.27
3.65	2.58
4.75	2.83
5.60	2.67



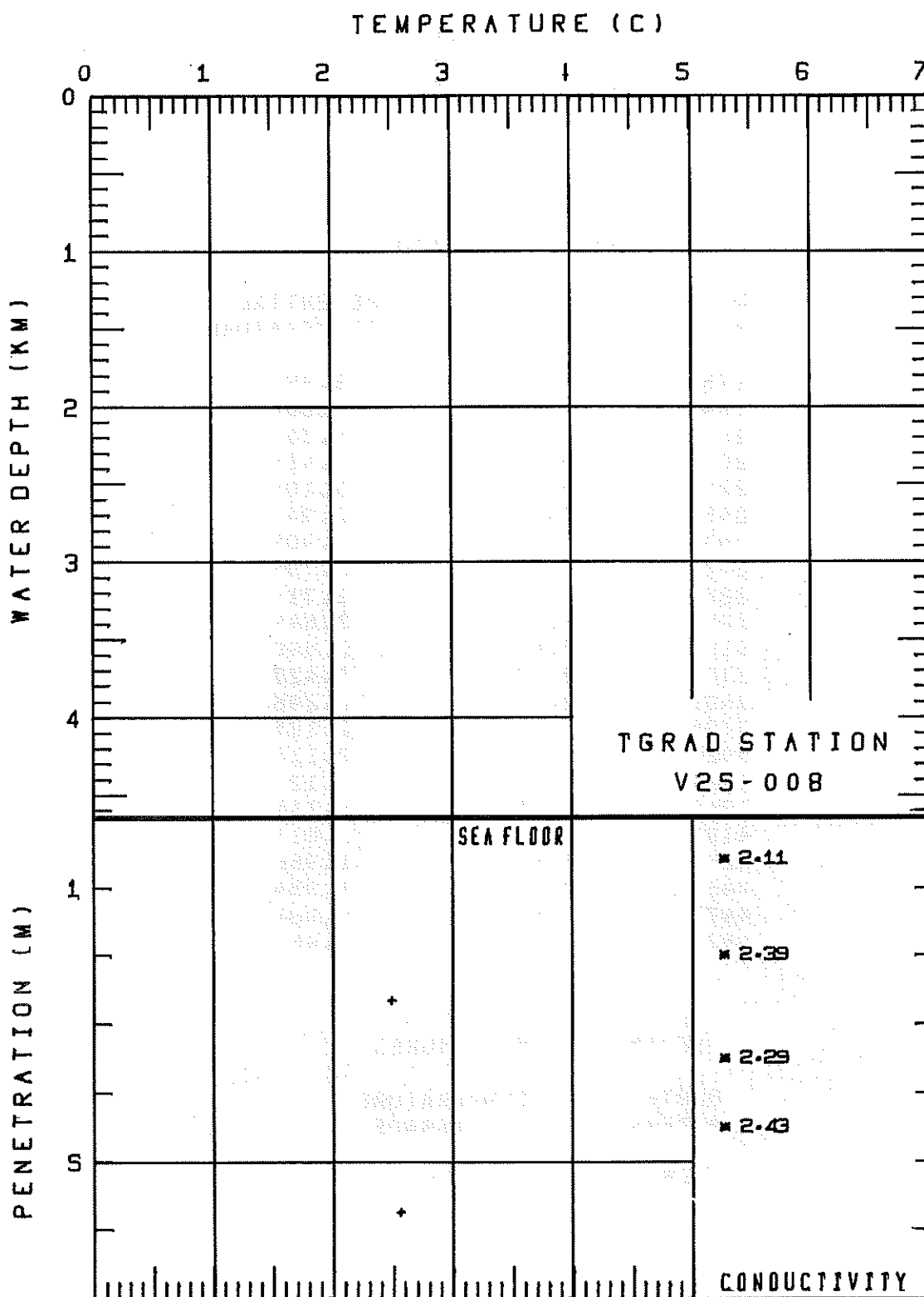
TGRAD STATION V25-008
026 34 N 047 49 W
CRUISE STATION 010

SEDIMENT TEMPERATURES

DEPTH METERS	TEMPERATURE CENTIGRADE
2.65	2.499
5.74	2.565

SEDIMENT CONDUCTIVITIES

DEPTH METERS	CONDUCTIVITY CGS
0.60	2.11
2.00	2.39
3.50	2.29
4.50	2.43



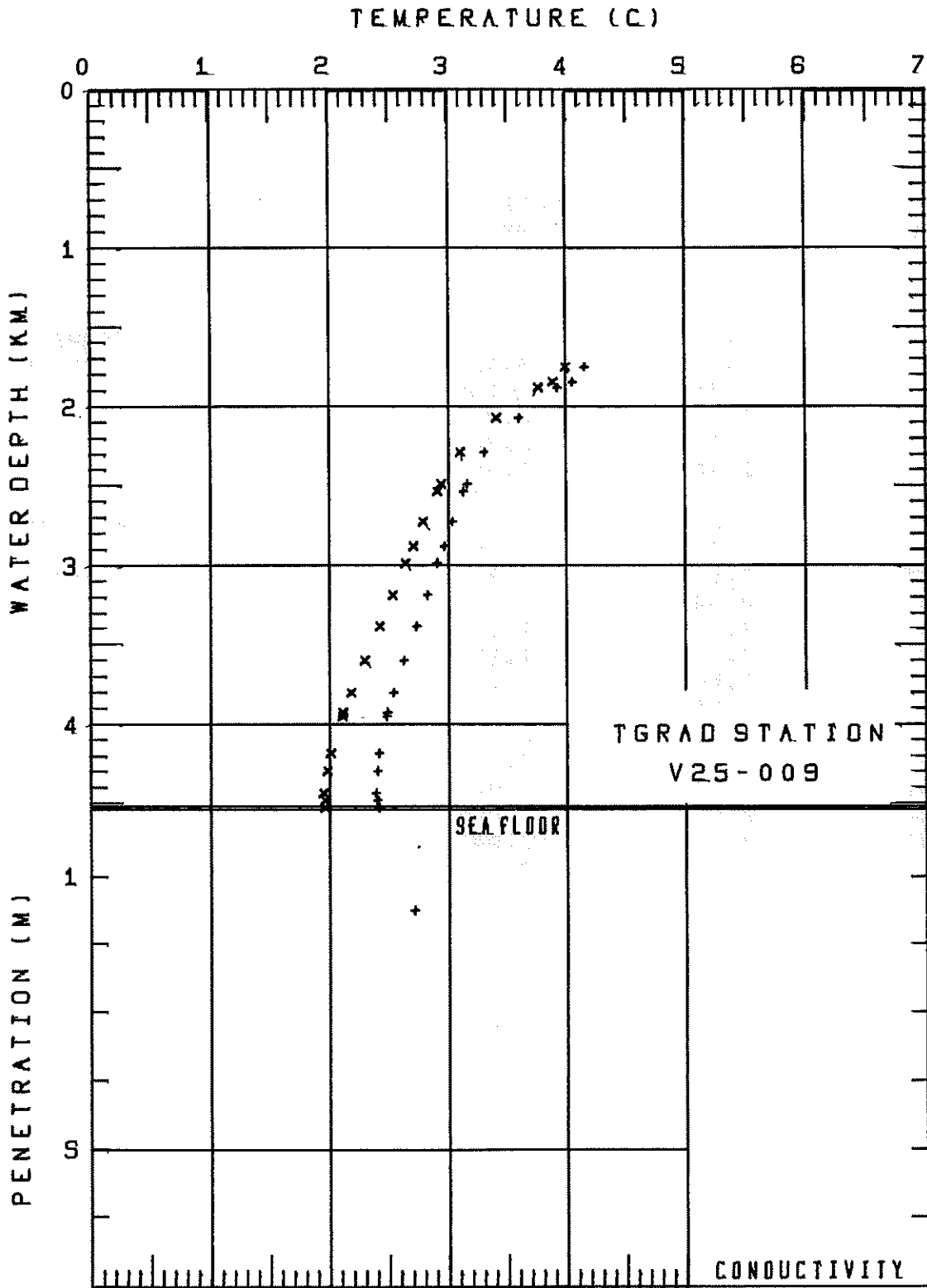
TGRAD STATION V25-009
 026 26 N 047 12 W
 CRUISE STATION 11

WATER TEMPERATURES

DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
1751	4.151	3.994
1843	4.052	3.888
1878	3.927	3.762
2073	3.595	3.414
2288	3.304	3.105
2487	3.161	2.942
2534	3.132	2.909
2724	3.035	2.793
2882	2.973	2.714
2984	2.914	2.644
3189	2.832	2.540
3383	2.739	2.427
3601	2.633	2.296
3798	2.543	2.185
3927	2.490	2.118
3928	2.493	2.120
3949	2.487	2.111
4181	2.416	2.013
4291	2.403	1.986
4432	2.391	1.954
4477	2.405	1.961
4524	2.418	1.967

SEDIMENT TEMPERATURES

DEPTH METERS	TEMPERATURE CENTIGRADE
1.50	2.718



TGRAD STATION V25-010
 026 55 N 047 00 W
 CRUISE STATION 012

WATER TEMPERATURES

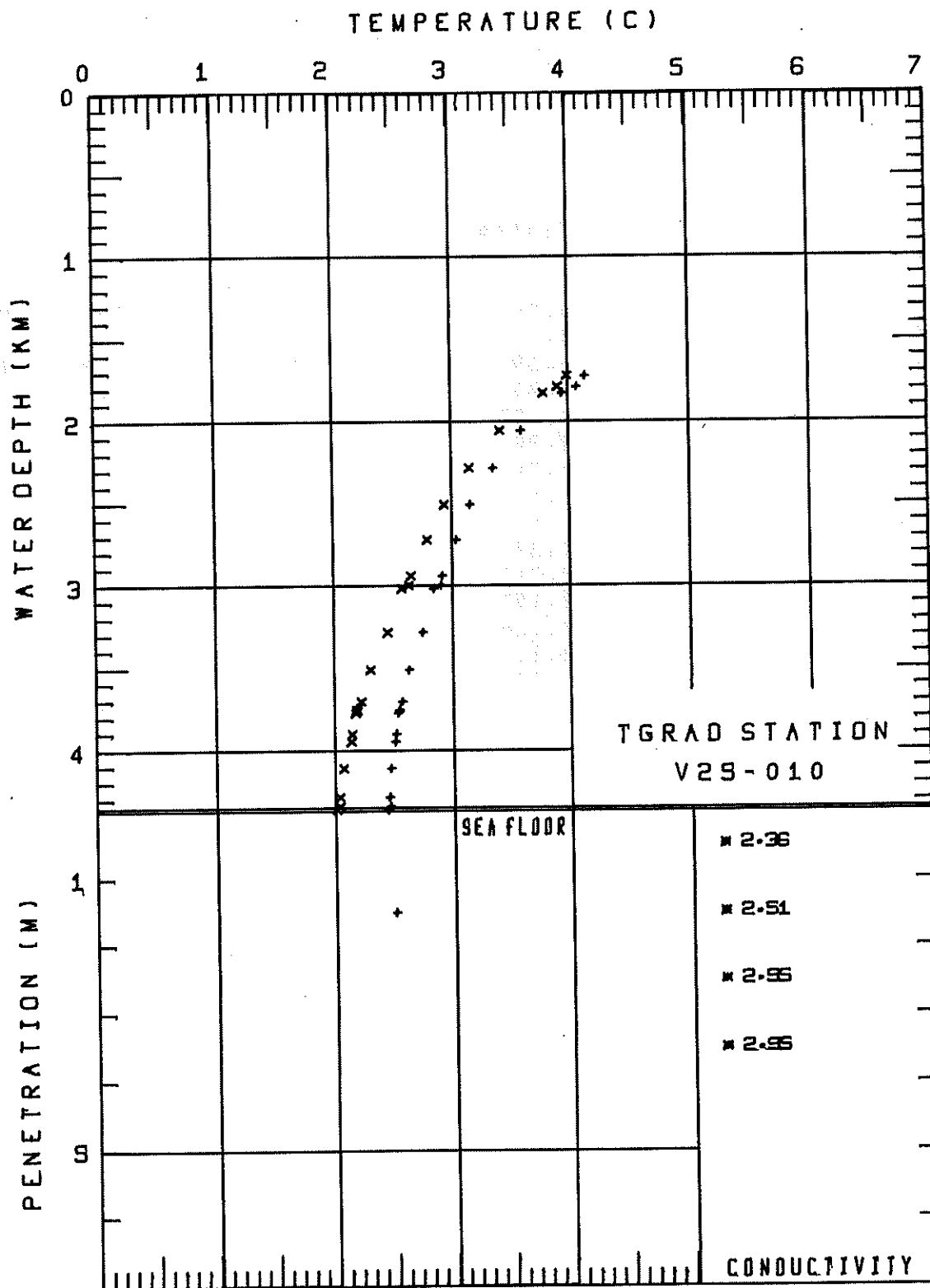
DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
1720	4.144	3.992
1786	4.068	3.909
1828	3.949	3.789
2055	3.600	3.421
2280	3.355	3.155
2504	3.164	2.944
2717	3.042	2.800
2936	2.925	2.660
2992	2.908	2.638
3012	2.848	2.578
3280	2.757	2.456
3508	2.639	2.315
3701	2.578	2.230
3766	2.541	2.187
3759	2.553	2.199
3759	2.548	2.194
3750	2.552	2.198
3900	2.525	2.153
3944	2.519	2.141
4106	2.476	2.080
4279	2.464	2.046
4339	2.470	2.042
4359	2.449	2.020

SEDIMENT TEMPERATURES

DEPTH METERS	TEMPERATURE CENTIGRADE
1.50	2.513

SEDIMENT CONDUCTIVITIES

DEPTH METERS	CONDUCTIVITY CGS
0.50	2.36
1.50	2.51
2.50	2.55
3.50	2.95



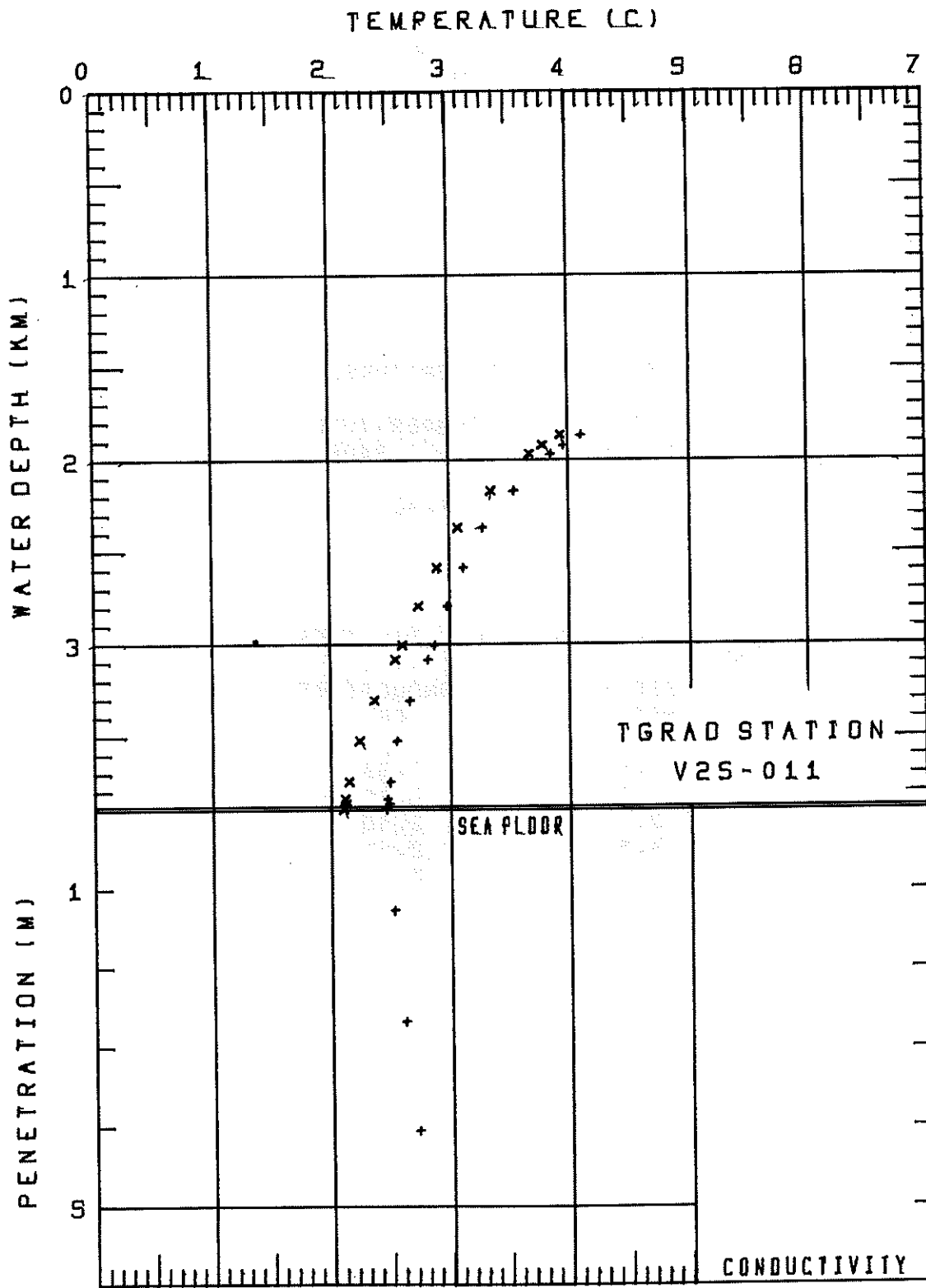
TGRAD STATION V25-011
 026 15 N 047 22 W
 CRUISE STATION 013

WATER TEMPERATURES

DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
1862	4.111	3.942
1920	3.968	3.797
1967	3.868	3.692
2167	3.559	3.368
2367	3.295	3.087
2581	3.132	2.903
2790	2.994	2.745
3001	2.882	2.612
3076	2.826	2.548
3297	2.673	2.374
3520	2.566	2.243
3739	2.502	2.153
3861	2.492	2.126
3833	2.476	2.115
3891	2.474	2.106

SEDIMENT TEMPERATURES

DEPTH METERS	TEMPERATURE CENTIGRADE
1.27	2.534
2.67	2.615
4.04	2.721



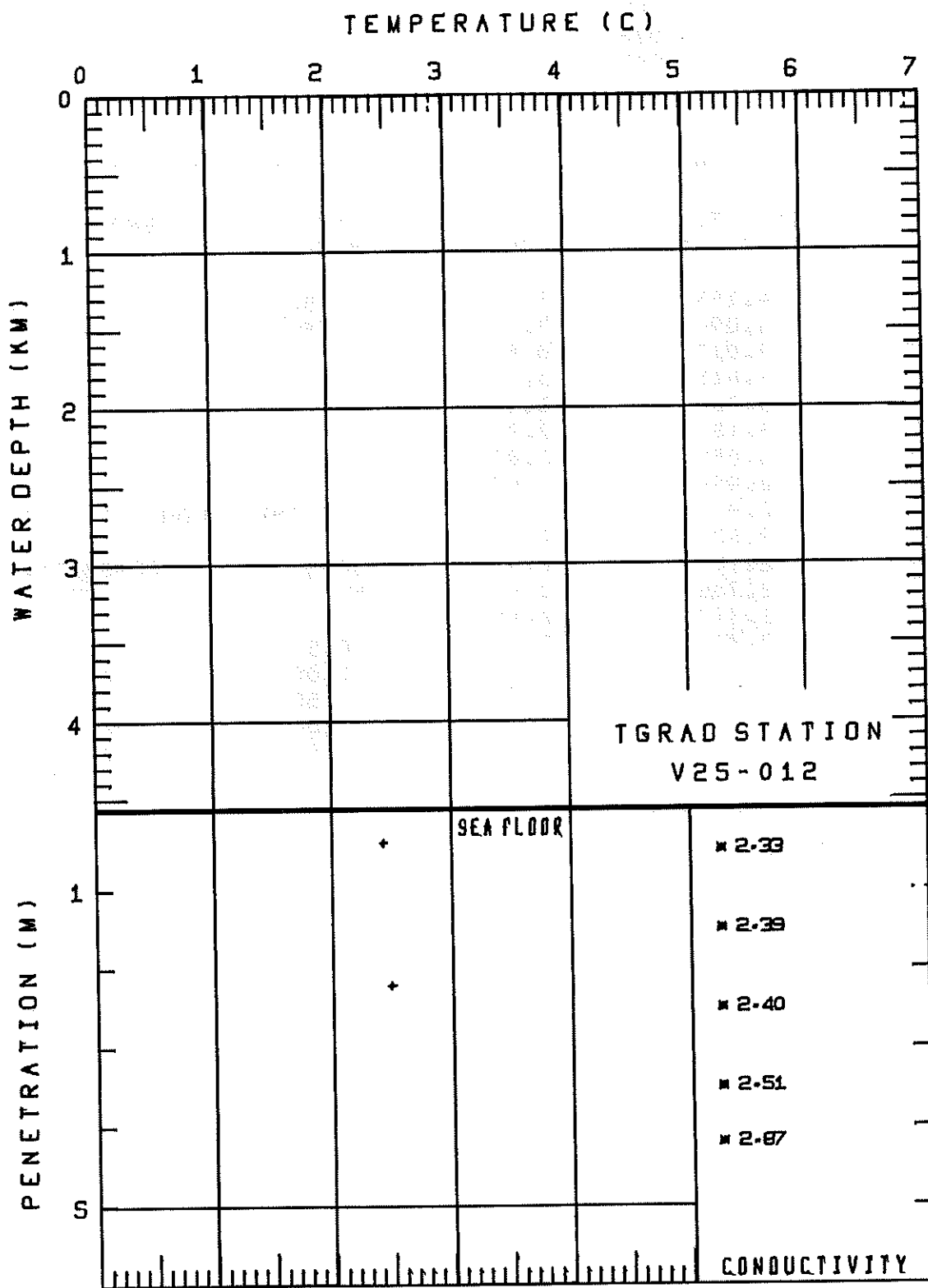
TGRAD STATION V25-012
026 28 N 047 15 W
CRUISE STATION 014

SEDIMENT TEMPERATURES

DEPTH METERS	TEMPERATURE CENTIGRADE
0.41	2.429
2.21	2.489

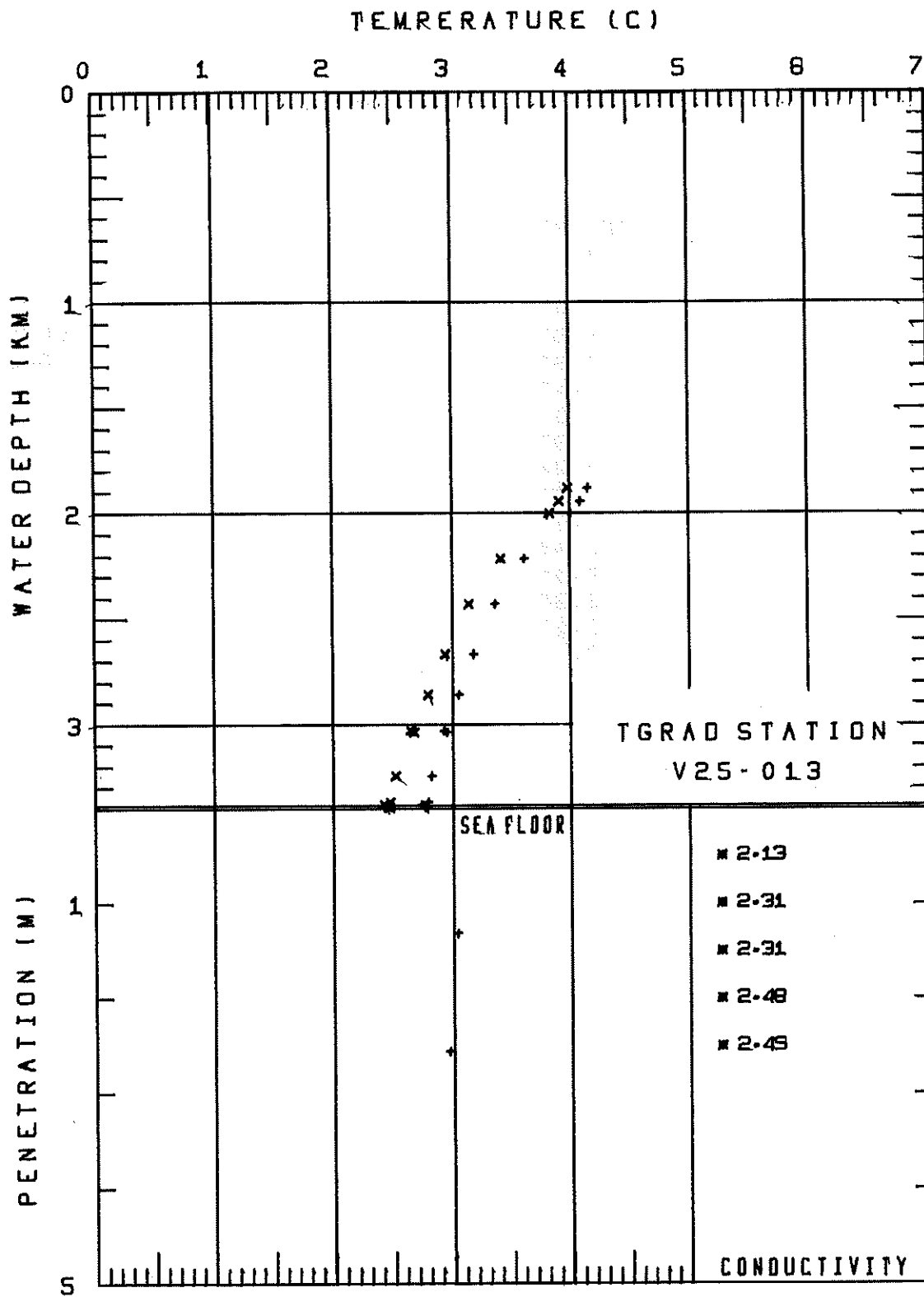
SEDIMENT CONDUCTIVITIES

DEPTH METERS	CONDUCTIVITY CGS
0.50	2.33
1.50	2.39
2.50	2.40
3.50	2.51
4.20	2.87



TGRAD STATION V25-013
 026 26 N 046 21 W
 CRUISE STATION 015

WATER TEMPERATURES			SEDIMENT TEMPERATURES		
DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE	DEPTH METERS	TEMPERATURE CENTIGRADE	
1877	4.153	3.983	1.32	3.039	COOLING
1941	4.090	3.914	2.56	2.962	COOLING
1998	4.012	3.831			
2211	3.615	3.417			
2426	3.362	3.146			
2667	3.185	2.946			
2860	3.059	2.800			
3037	2.956	2.679			
3028	2.928	2.653			
3243	2.822	2.523			
3369	2.789	2.475			
3393	2.788	2.473			
3388	2.770	2.456			
3380	2.737	2.425			
			SEDIMENT CONDUCTIVITIES		
			DEPTH METERS	CONDUCTIVITY CGS	
			0.50	2.13	
			1.00	2.31	
			1.50	2.31	
			2.00	2.48	
			2.50	2.45	



TGRAD STATION V25-014
 026 35 N 046 16 W
 CRUISE STATION 017

WATER TEMPERATURES

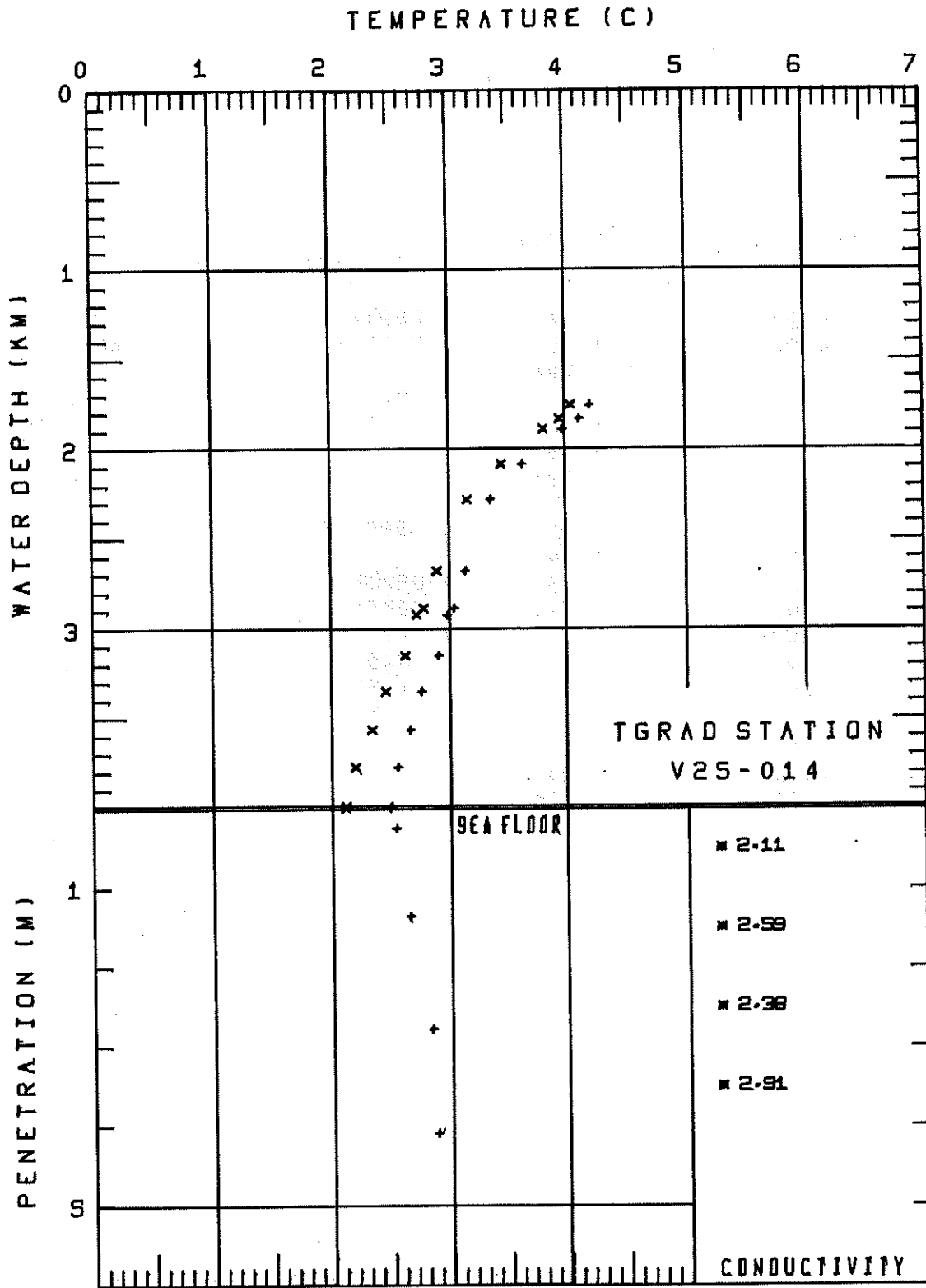
DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
1753	4.208	4.052
1828	4.121	3.957
1886	3.986	3.818
2082	3.639	3.456
2276	3.364	3.164
2678	3.145	2.905
2886	3.050	2.789
2923	2.993	2.729
3148	2.920	2.630
3347	2.773	2.463
3561	2.674	2.342
3770	2.562	2.206
3987	2.503	2.121
3996	2.500	2.118

SEDIMENT TEMPERATURES

DEPTH METERS	TEMPERATURE CENTIGRADE	
0.26	2.547	COOLING
1.36	2.659	COOLING
2.78	2.836	COOLING
4.09	2.877	COOLING

SEDIMENT CONDUCTIVITIES

DEPTH METERS	CONDUCTIVITY CGS
0.50	2.11
1.50	2.59
2.50	2.38
3.50	2.91



TGRAD STATION V25-015
 026 44 N 046 10 W
 CRUISE STATION 018

WATER TEMPERATURES

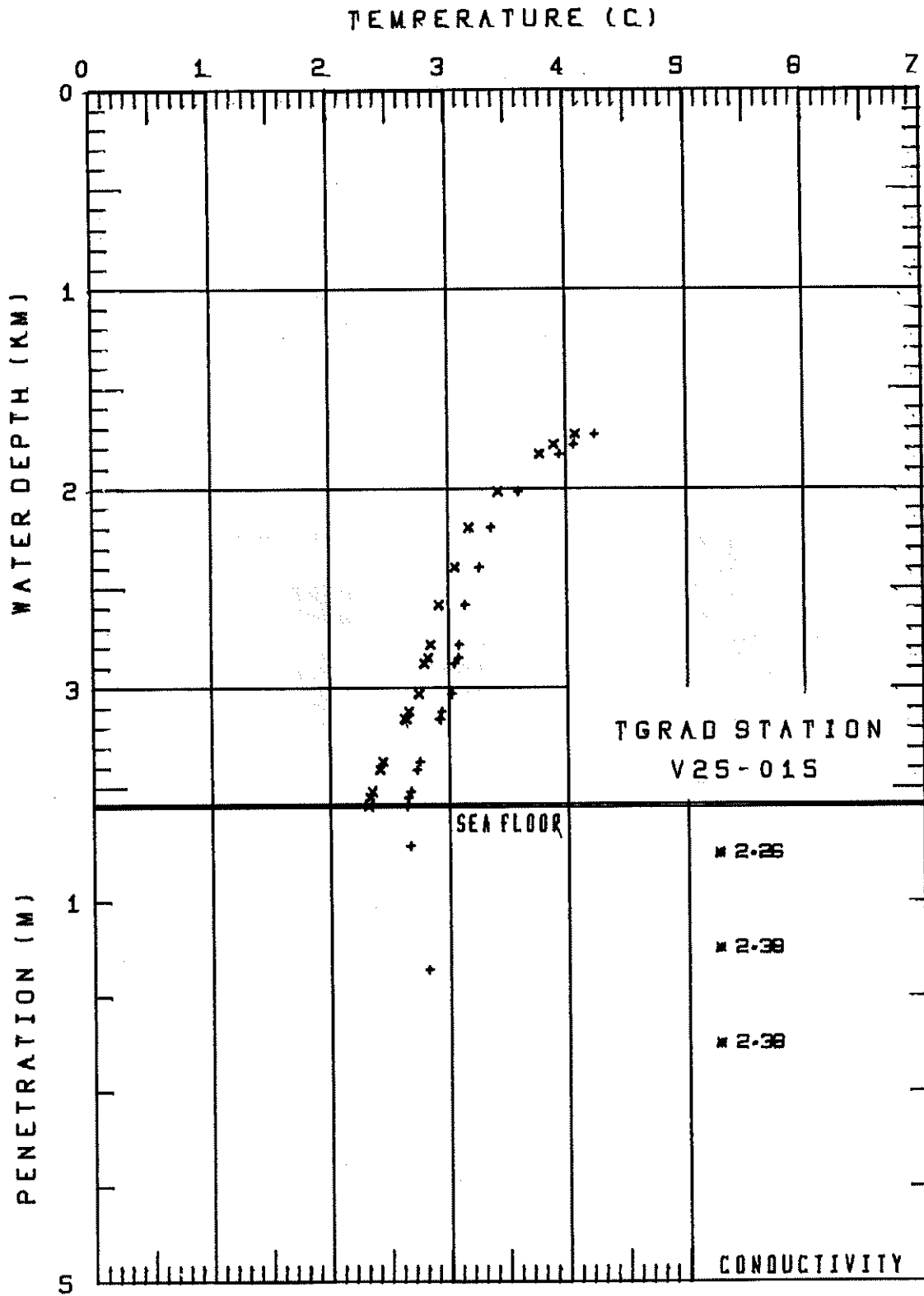
DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
1725	4.236	4.080
1780	4.065	3.907
1826	3.948	3.788
2015	3.606	3.431
2191	3.371	3.181
2391	3.272	3.062
2578	3.154	2.925
2780	3.100	2.850
2845	3.092	2.834
2876	3.056	2.796
3025	3.028	2.751
3115	2.947	2.661
3154	2.934	2.644
3149	2.921	2.631
3366	2.759	2.447
3405	2.730	2.415
3516	2.679	2.352
3546	2.660	2.330
3588	2.652	2.316

SEDIMENT TEMPERATURES

DEPTH METERS	TEMPERATURE CENTIGRADE	
0.42	2.673	COOLING
1.72	2.826	COOLING

SEDIMENT CONDUCTIVITIES

DEPTH METERS	CONDUCTIVITY CGS
0.50	2.26
1.50	2.38
2.50	2.38



TGRAD STATION V25-016
 026 35 N 046 15 W
 CRUISE STATION 019

WATER TEMPERATURES

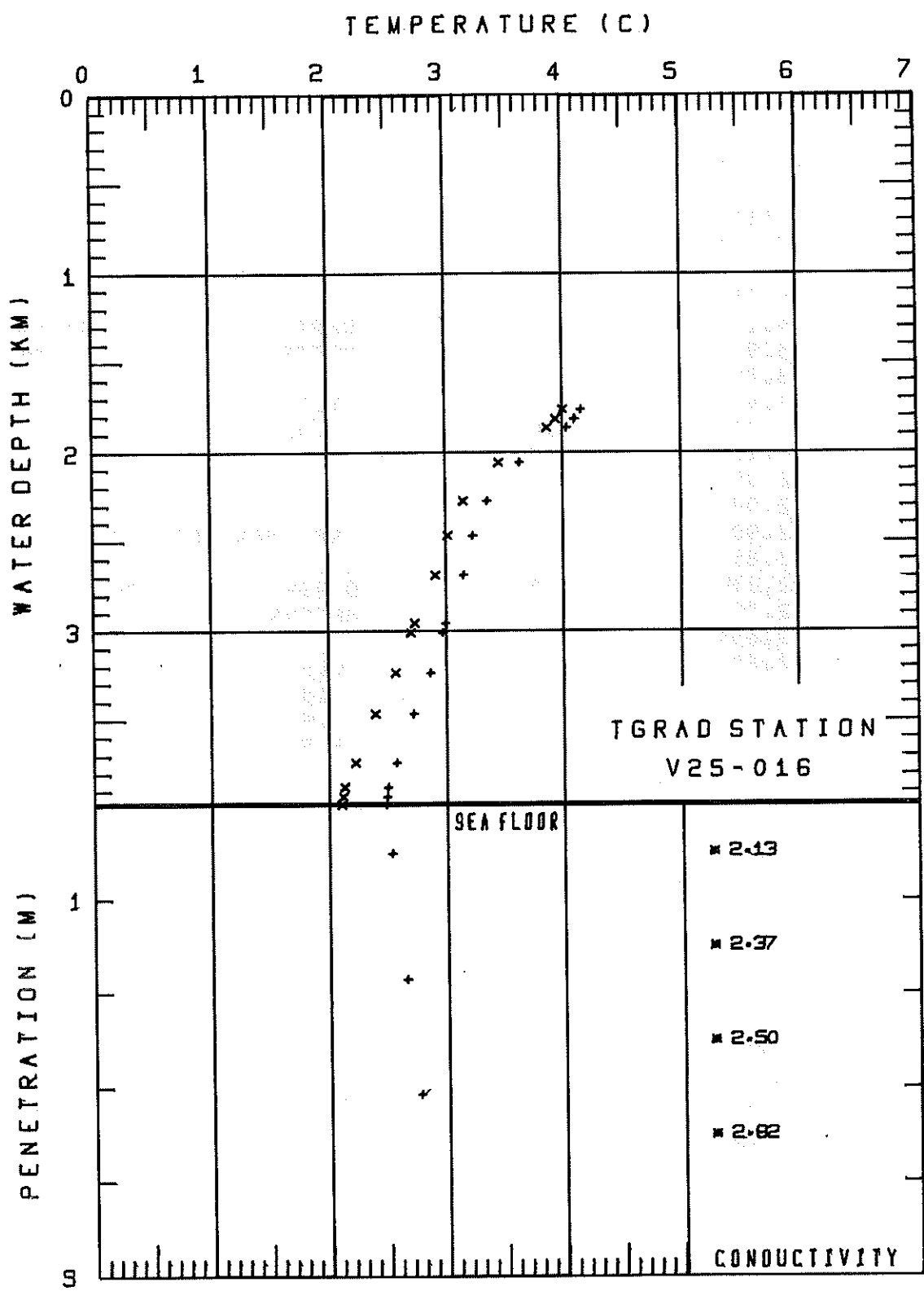
DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
1761	4.158	4.001
1811	4.104	3.941
1860	4.040	3.875
2054	3.637	3.456
2269	3.358	3.159
2464	3.240	3.022
2686	3.160	2.920
2953	3.005	2.736
3008	2.980	2.705
3233	2.868	2.571
3461	2.721	2.400
3737	2.579	2.227
3873	2.500	2.133
3923	2.488	2.115
3969	2.486	2.107

SEDIMENT TEMPERATURES

DEPTH METERS	TEMPERATURE CENTIGRADE
0.52	2.530
1.85	2.651
3.07	2.765

SEDIMENT CONDUCTIVITIES

DEPTH METERS	CONDUCTIVITY CGS
0.50	2.13
1.50	2.37
2.50	2.50
3.50	2.82



TGRAD STATION V25-017
 026 29 N 045 23 W
 CRUISE STATION 020

WATER TEMPERATURES

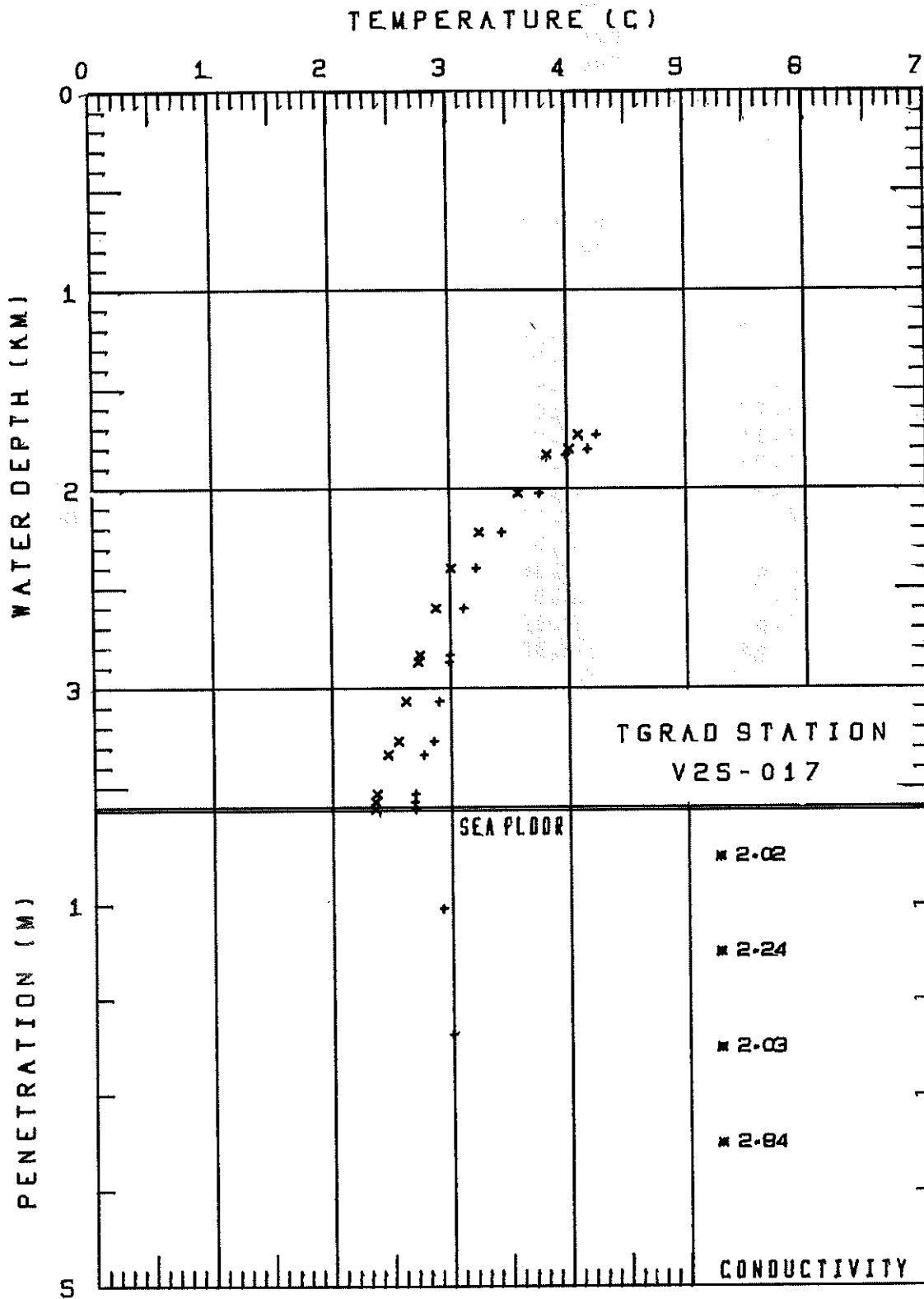
DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
1725	4.252	4.097
1797	4.177	4.015
1828	3.994	3.832
2019	3.763	3.584
2215	3.447	3.253
2395	3.221	3.013
2595	3.115	2.885
2830	2.999	2.744
2869	2.992	2.733
3065	2.904	2.625
3263	2.857	2.555
3332	2.770	2.463
3527	2.700	2.370
3570	2.694	2.359
3605	2.697	2.357

SEDIMENT TEMPERATURES

DEPTH METERS	TEMPERATURE CENTIGRADE
1.04	2.922
2.36	2.999

SEDIMENT CONDUCTIVITIES

DEPTH METERS	CONDUCTIVITY CGS
0.50	2.02
1.50	2.24
2.50	2.03
3.50	2.84



TGRAD STATION V25-018
 026 24 N 045 27 W
 CRUISE STATION 021

WATER TEMPERATURES

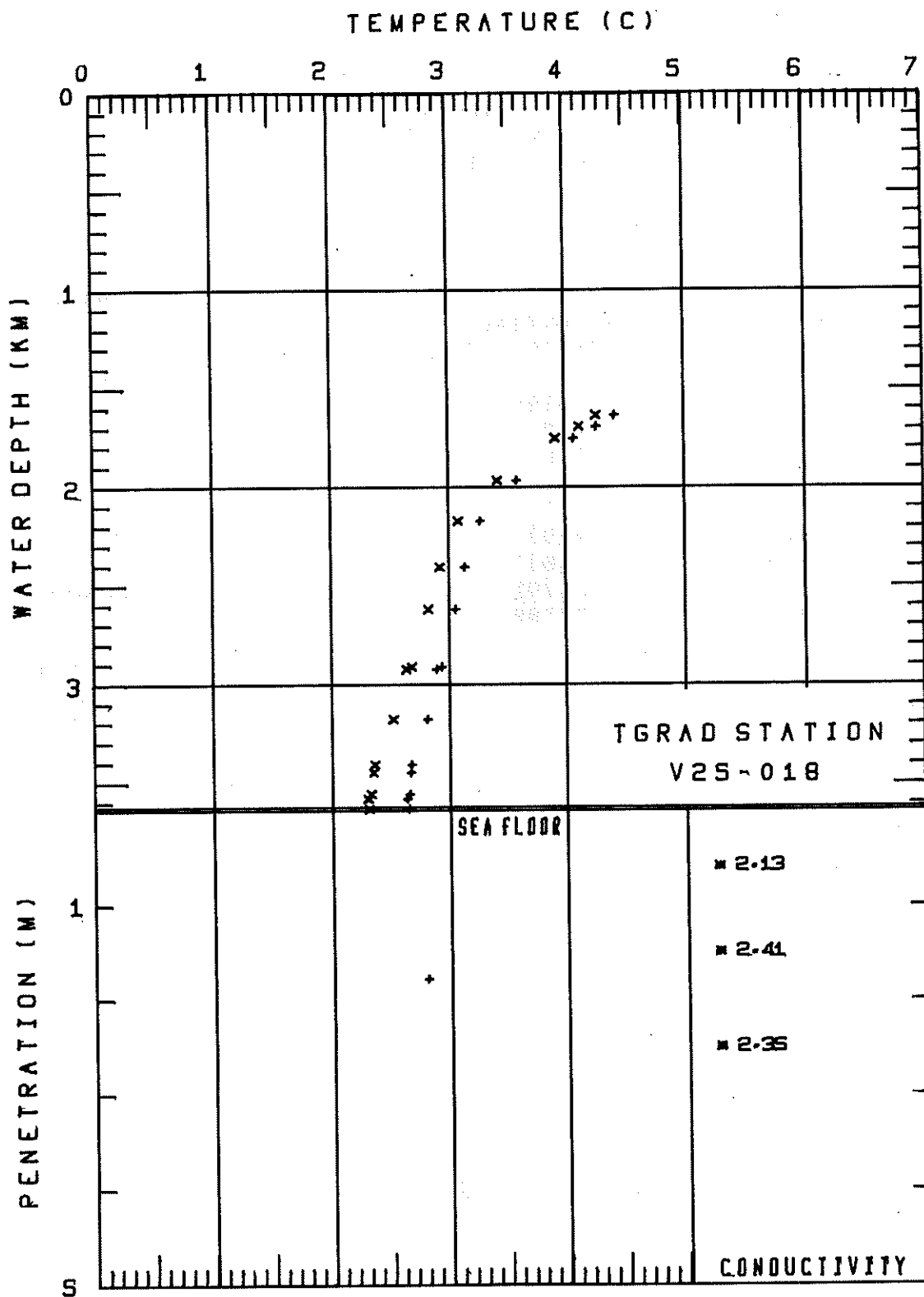
DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
1634	4.421	4.273
1691	4.272	4.121
1749	4.078	3.923
1965	3.592	3.422
2171	3.276	3.091
2404	3.144	2.934
2617	3.061	2.830
2909	2.944	2.684
2922	2.898	2.637
3173	2.817	2.527
3404	2.678	2.365
3446	2.673	2.355
3552	2.659	2.329
3579	2.637	2.303
3630	2.648	2.309

SEDIMENT TEMPERATURES

DEPTH METERS	TEMPERATURE CENTIGRADE
1.78	2.806

SEDIMENT CONDUCTIVITIES

DEPTH METERS	CONDUCTIVITY CGS
0.60	2.13
1.50	2.41
2.50	2.35



TGRAD STATION V25-019
 026 13 N 045 35 W
 CRUISE STATION 022

WATER TEMPERATURES

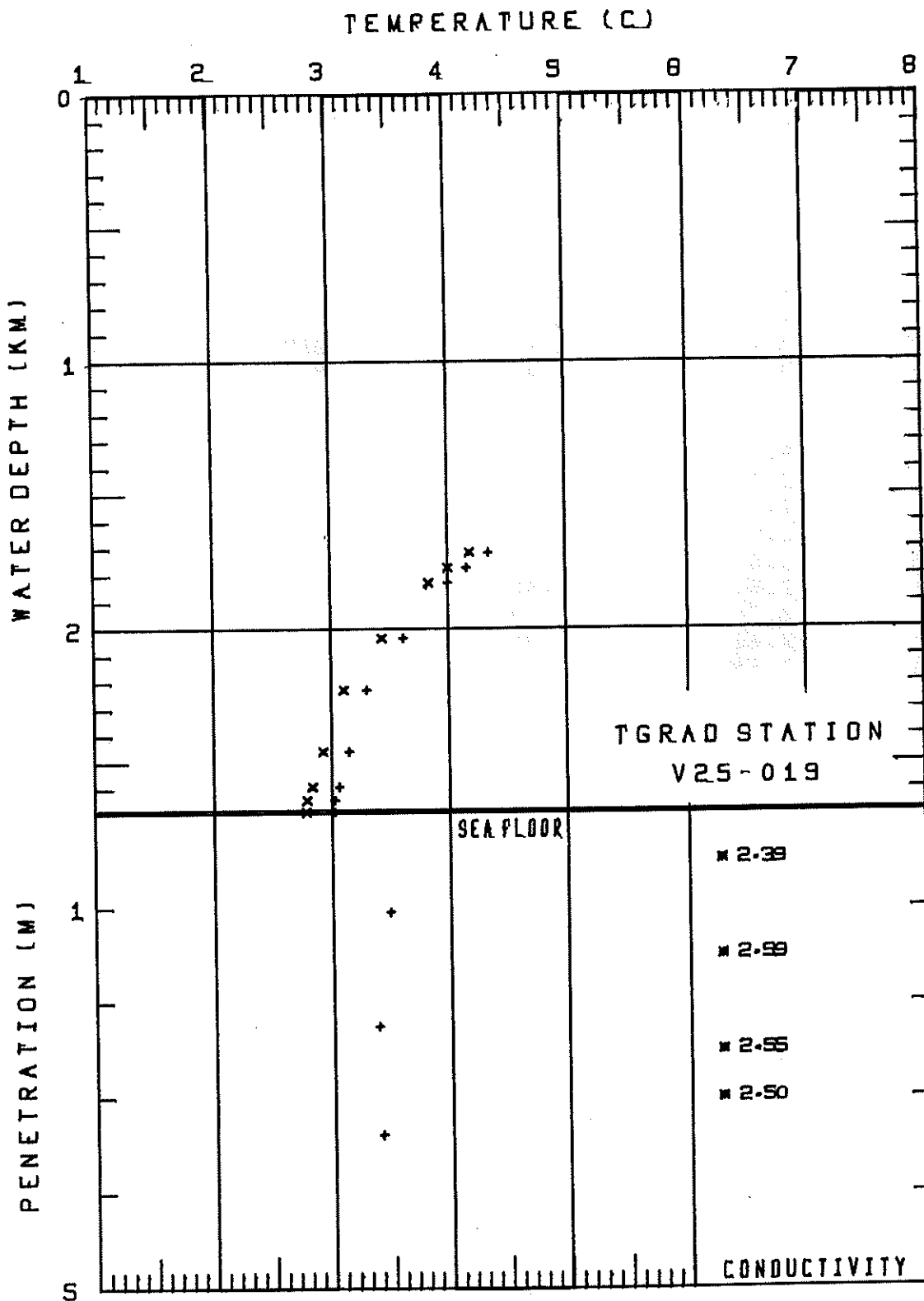
DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
1714	4.349	4.194
1771	4.165	4.007
1828	4.003	3.841
2033	3.618	3.440
2226	3.305	3.113
2455	3.150	2.934
2586	3.065	2.837
2636	3.023	2.791
2682	3.025	2.788

SEDIMENT TEMPERATURES

DEPTH METERS	TEMPERATURE CENTIGRADE
1.05	3.482
2.25	3.375
3.38	3.404

SEDIMENT CONDUCTIVITIES

DEPTH METERS	CONDUCTIVITY CGS
0.50	2.39
1.50	2.59
2.50	2.55
3.00	2.50



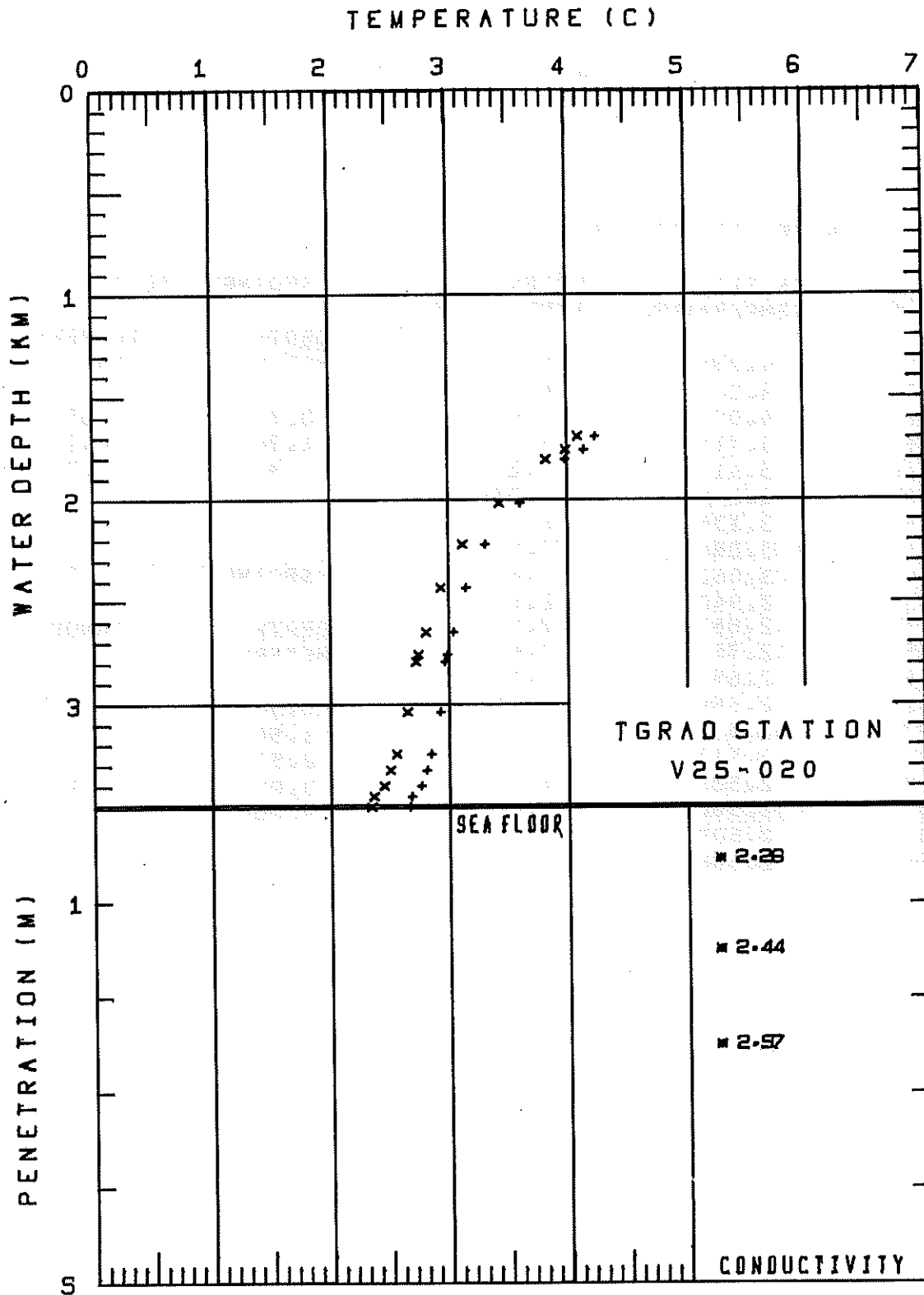
TGRAD STATION V25-020
 026 24 N 045 27 W
 CRUISE STATION 023

WATER TEMPERATURES

DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
1691	4.240	4.089
1757	4.145	3.988
1802	3.981	3.822
2016	3.607	3.431
2220	3.313	3.121
2430	3.148	2.937
2646	3.043	2.809
2755	2.993	2.747
2791	2.973	2.724
3037	2.929	2.653
3239	2.855	2.555
3320	2.815	2.506
3397	2.765	2.450
3446	2.685	2.367
3498	2.668	2.343

SEDIMENT CONDUCTIVITIES

DEPTH METERS	CONDUCTIVITY CGS
0.55	2.26
1.50	2.44
2.50	2.57



TGRAD STATION V25-021
 026 47.1 N 046 41.7 W
 CRUISE STATION 024

WATER TEMPERATURES

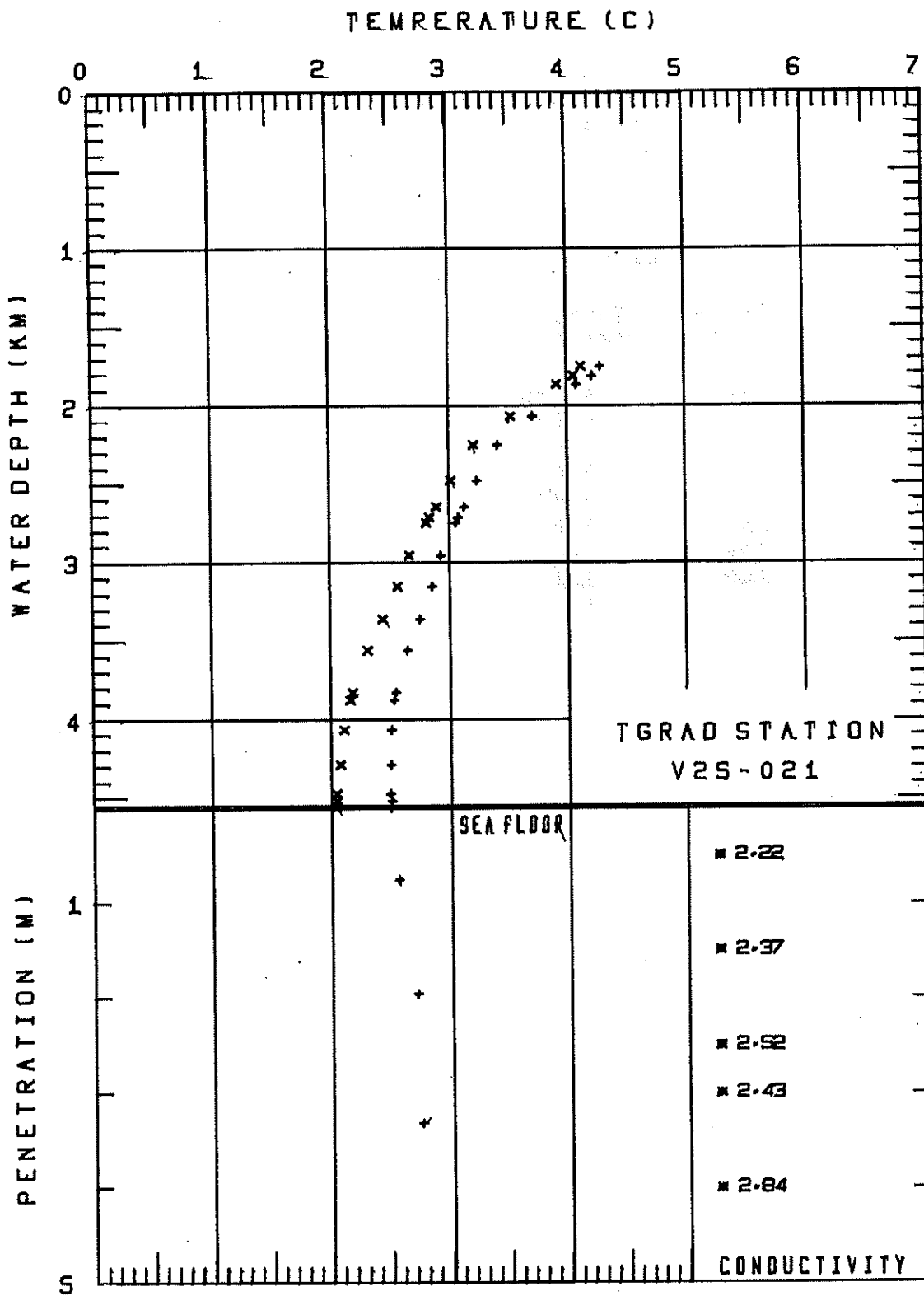
DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
1746	4.288	4.131
1808	4.225	4.061
1866	4.094	3.927
2068	3.716	3.532
2248	3.417	3.220
2480	3.244	3.026
2646	3.138	2.902
2710	3.086	2.844
2747	3.062	2.816
2956	2.940	2.673
3153	2.861	2.572
3357	2.757	2.447
3557	2.651	2.319
3823	2.554	2.192
3876	2.538	2.170
4062	2.513	2.120
4285	2.502	2.081
4472	2.500	2.052
4521	2.509	2.054
4560	2.506	2.046

SEDIMENT TEMPERATURES

DEPTH METERS	TEMPERATURE CENTIGRADE
0.76	2.561
1.96	2.717
3.32	2.750

SEDIMENT CONDUCTIVITIES

DEPTH METERS	CONDUCTIVITY CGS
0.50	2.22
1.50	2.37
2.50	2.52
3.00	2.43
4.00	2.84

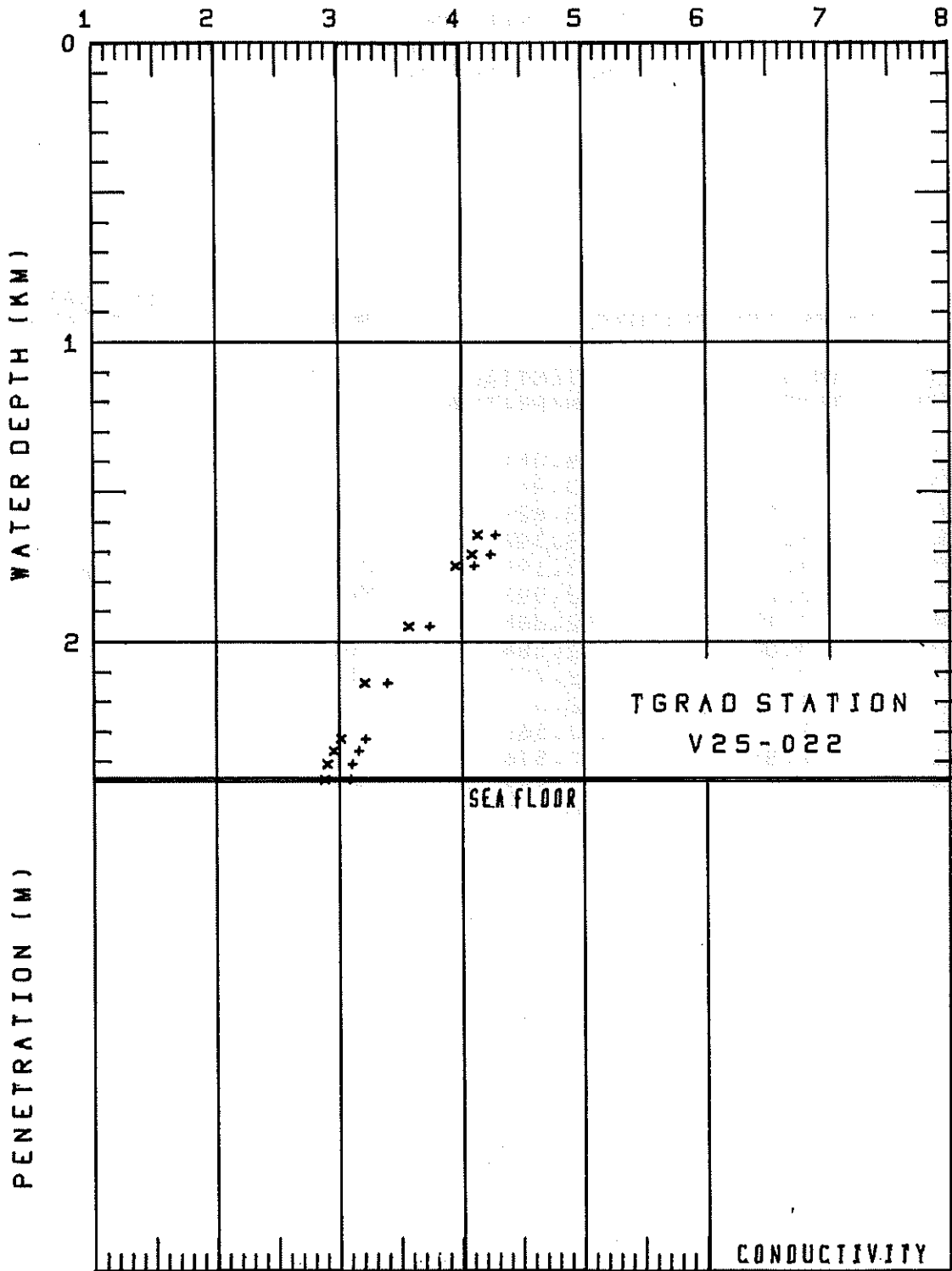


TGRAD STATION V25-022
026 33 N 044 47 W
CRUISE STATION 025

WATER TEMPERATURES

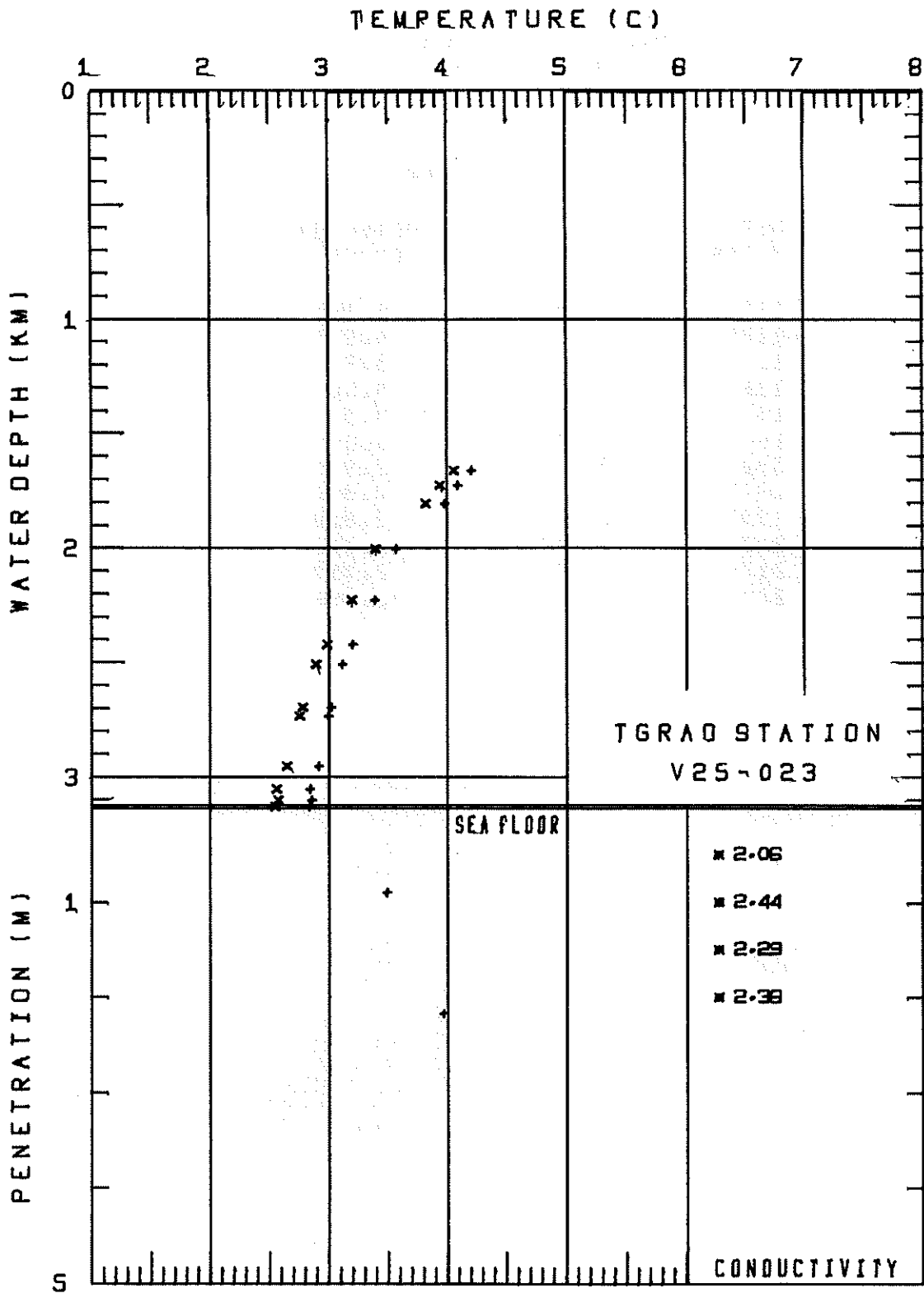
DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
1641	4.283	4.137
1708	4.243	4.089
1746	4.113	3.959
1948	3.743	3.572
2137	3.398	3.213
2322	3.218	3.016
2363	3.165	2.960
2406	3.114	2.907
2459	3.100	2.887

TEMPERATURE (C)



TGRAD STATION V25-023
 026 22 N 045 01 W
 CRUISE STATION 026

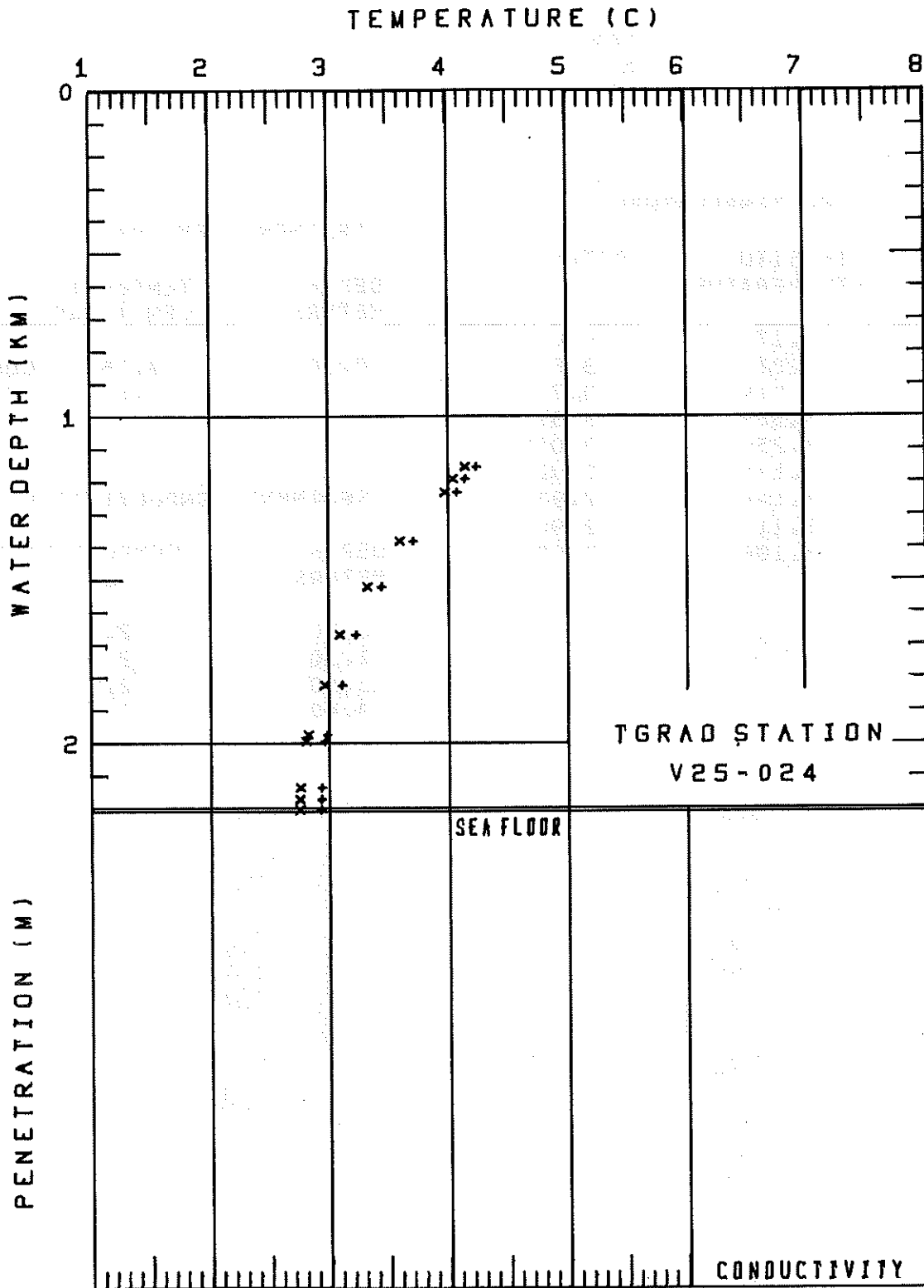
WATER TEMPERATURES			SEDIMENT TEMPERATURES	
DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE	DEPTH METERS	TEMPERATURE CENTIGRADE
			0.90	3.494
			2.17	3.973
1659	4.210	4.061		
1723	4.097	3.944		
1803	3.983	3.824		
2001	3.572	3.398		
2223	3.392	3.198		
2419	3.205	2.993		
2506	3.115	2.895		
2693	3.022	2.784		
2731	2.997	2.755		
2951	2.915	2.650		
3051	2.842	2.566		
3100	2.858	2.576		
3129	2.838	2.553		
			SEDIMENT CONDUCTIVITIES	
			DEPTH METERS	CONDUCTIVITY CGS
			0.50	2.06
			1.00	2.44
			1.50	2.29
			2.00	2.36



TGRAD STATION V25-024
026 13 N 045 07 W
CRUISE STATION 027

WATER TEMPERATURES

DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
1153	4.244	4.148
1189	4.148	4.049
1232	4.086	3.984
1381	3.716	3.604
1520	3.450	3.329
1667	3.230	3.095
1821	3.119	2.973
1973	2.993	2.832
1993	2.973	2.810
2134	2.942	2.767
2173	2.936	2.757
2204	2.938	2.756



TGRAD STATION V25-025
 025 13 N 045 02 W
 CRUISE STATION 028

WATER TEMPERATURES

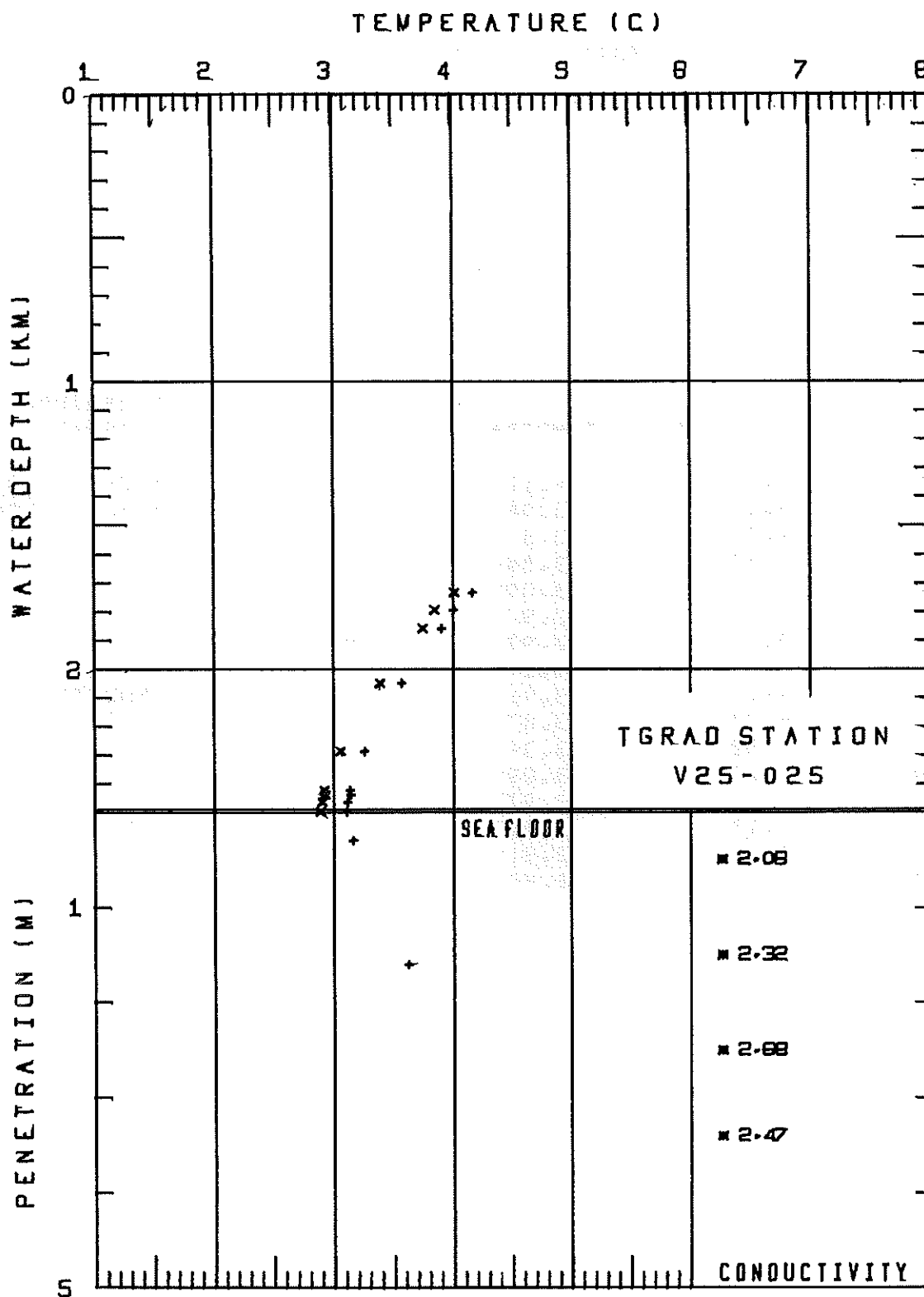
DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
1730	4.174	4.020
1794	4.010	3.852
1855	3.914	3.751
2046	3.569	3.390
2284	3.256	3.059
2418	3.135	2.925
2434	3.144	2.931
2459	3.119	2.905
2493	3.108	2.890

SEDIMENT TEMPERATURES

DEPTH METERS	TEMPERATURE CENTIGRADE	
0.30	3.163	COOLING
1.60	3.627	COOLING

SEDIMENT CONDUCTIVITIES

DEPTH METERS	CONDUCTIVITY CGS
0.50	2.06
1.50	2.32
2.50	2.68
3.40	2.47



TGRAD STATION V25-026
 025 16 N 045 01 W
 CRUISE STATION 029

WATER TEMPERATURES

DEPTH	IN SITU	POTENTIAL
-------	---------	-----------

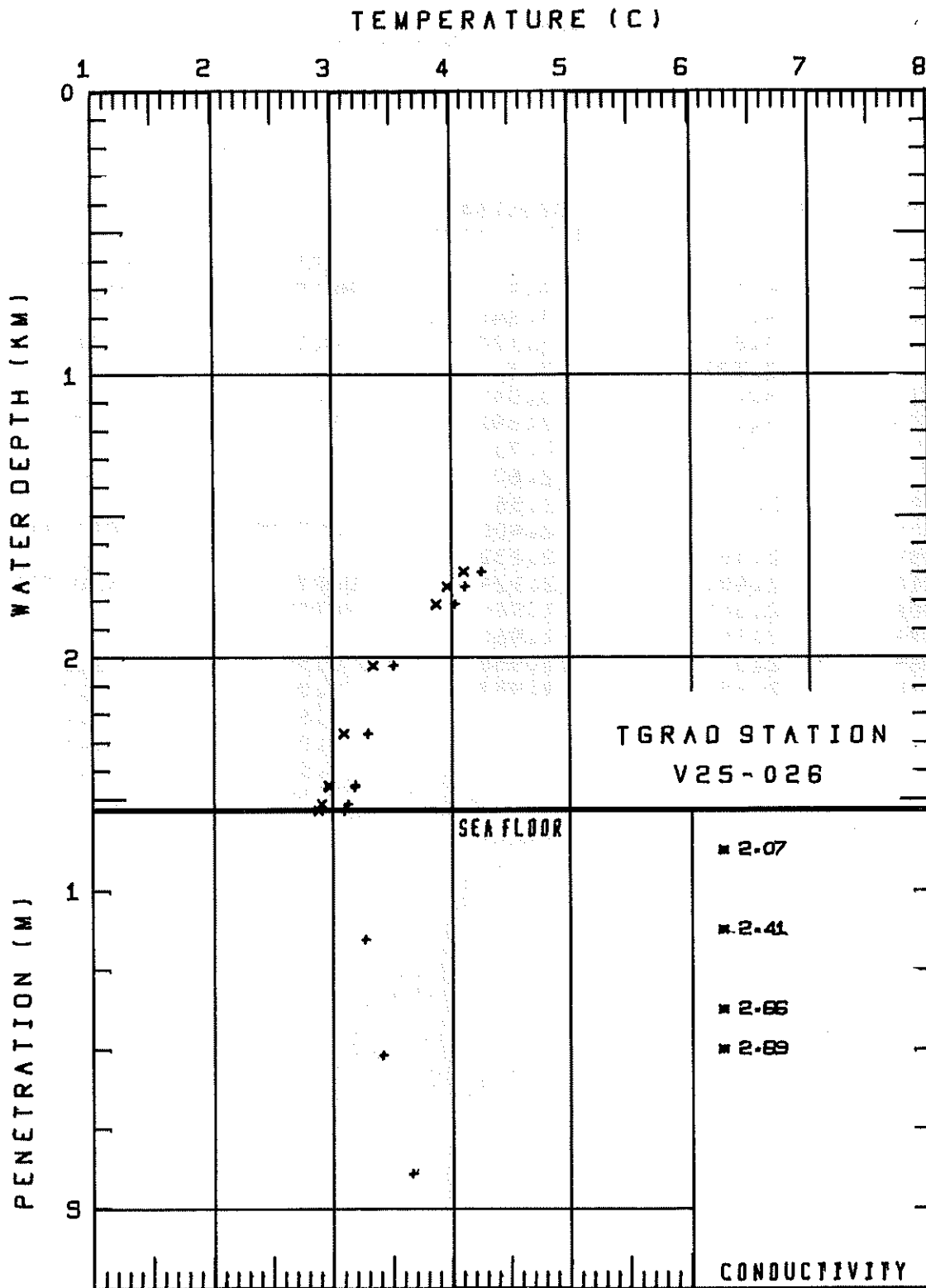
METERS	TEMPERATURE	TEMPERATURE
1694	4.262	4.111
1749	4.125	3.969
1810	4.038	3.876
2028	3.520	3.344
2268	3.296	3.098
2457	3.188	2.973
2451	3.188	2.973
1694	4.262	4.111
1749	4.125	3.969
1810	4.038	3.876
2028	3.520	3.344
2268	3.296	3.098
2457	3.188	2.973
2451	3.188	2.973
2515	3.134	2.914
2538	3.105	2.883

SEDIMENT TEMPERATURES

DEPTH METERS	TEMPERATURE CENTIGRADE	
1.62	3.280	COOLING
3.07	3.424	COOLING
4.56	3.672	COOLING

SEDIMENT CONDUCTIVITIES

DEPTH METERS	CONDUCTIVITY CGS
0.50	2.07
1.50	2.41
2.50	2.66
3.00	2.69



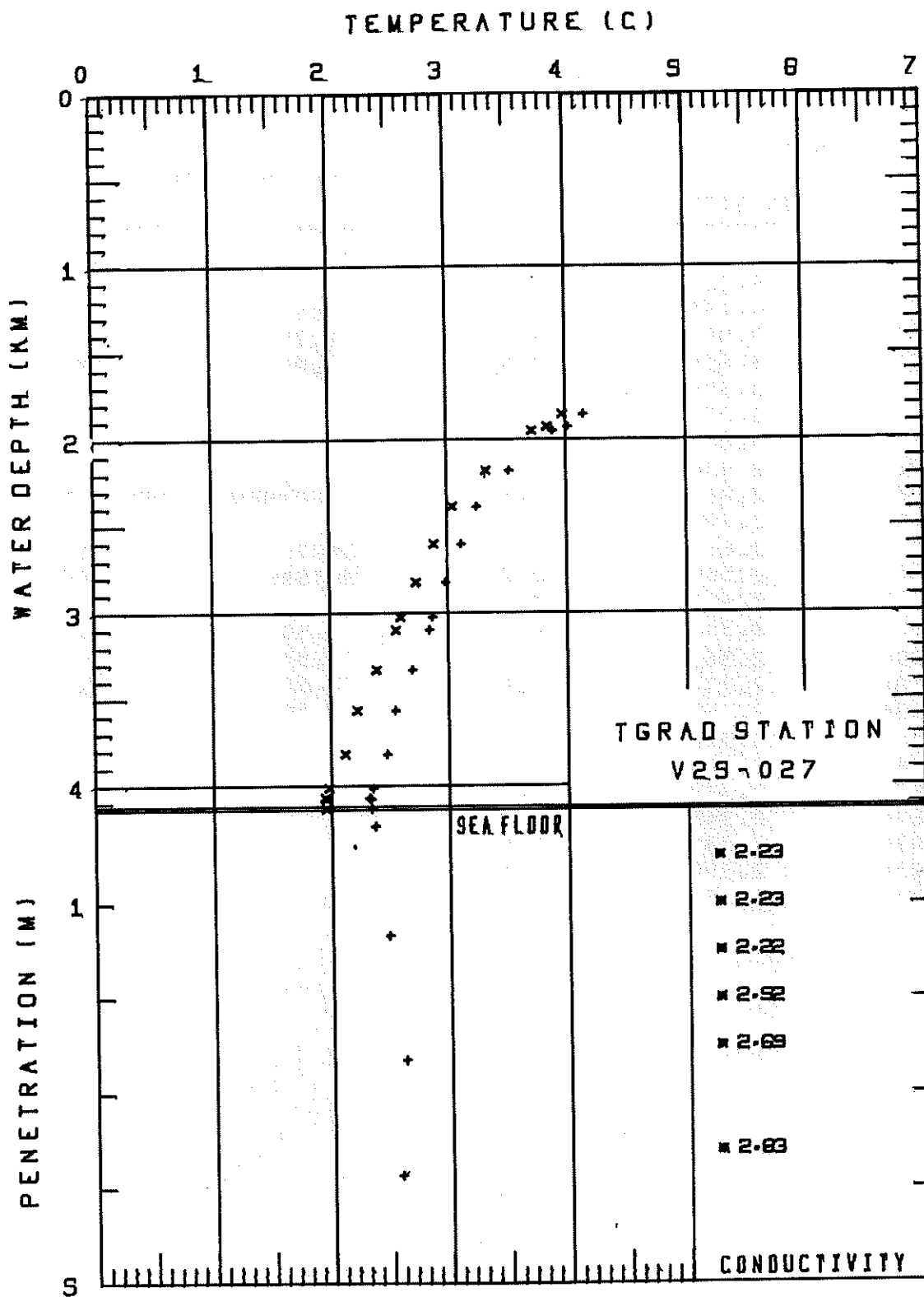
TGRAD STATION V25-027
 024 29 N 048 01 W
 CRUISE STATION 035

WATER TEMPERATURES

DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
1854	4.142	3.974
1925	4.020	3.848
1948	3.894	3.720
2180	3.532	3.341
2384	3.259	3.049
2601	3.122	2.892
2822	2.990	2.737
3023	2.875	2.602
3097	2.848	2.567
3326	2.704	2.400
3559	2.560	2.232
3810	2.481	2.124
4008	2.365	1.986
4073	2.348	1.960
4065	2.335	1.950
4128	2.350	1.957

SEDIMENT TEMPERATURES	
DEPTH METERS	TEMPERATURE CENTIGRADE
0.18	2.380
1.33	2.492
2.64	2.622
3.86	2.578

SEDIMENT CONDUCTIVITIES	
DEPTH METERS	CONDUCTIVITY CGS
0.50	2.23
1.00	2.23
1.50	2.22
2.00	2.52
2.50	2.69
3.60	2.83



TGRAD STATION V25-028
 024 55 N 048 54 W
 CRUISE STATION 036

WATER TEMPERATURES

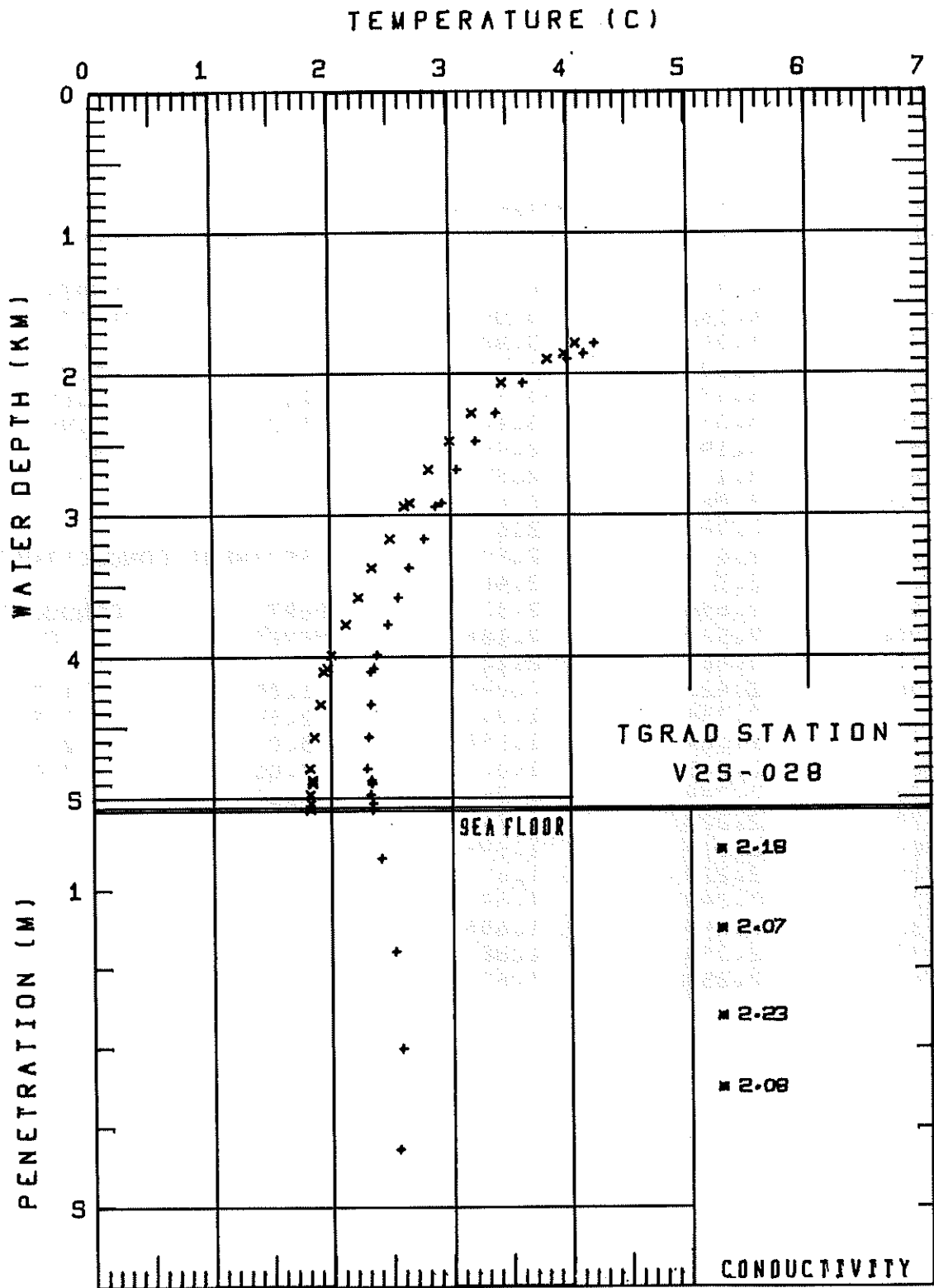
DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
1779	4.225	4.064
1849	4.135	3.969
1892	3.997	3.829
2062	3.626	3.446
2276	3.394	3.194
2473	3.224	3.006
2676	3.067	2.829
2912	2.936	2.674
2934	2.885	2.622
3165	2.793	2.506
3372	2.663	2.354
3577	2.569	2.238
3773	2.487	2.134
3987	2.392	2.014
4080	2.367	1.977
4104	2.337	1.947
4336	2.341	1.920
4567	2.318	1.865
4787	2.308	1.825
4871	2.339	1.842
4896	2.343	1.844
4976	2.335	1.822
5038	2.350	1.829
5081	2.354	1.825

SEDIMENT TEMPERATURES

DEPTH METERS	TEMPERATURE CENTIGRADE
0.61	2.416
1.78	2.533
3.00	2.586
4.27	2.549

SEDIMENT CONDUCTIVITIES

DEPTH METERS	CONDUCTIVITY CGS
0.50	2.18
1.50	2.07
2.60	2.23
3.50	2.08



TGRAD STATION V25-029
 024 24 N 051 02 W
 CRUISE STATION 037

WATER TEMPERATURES

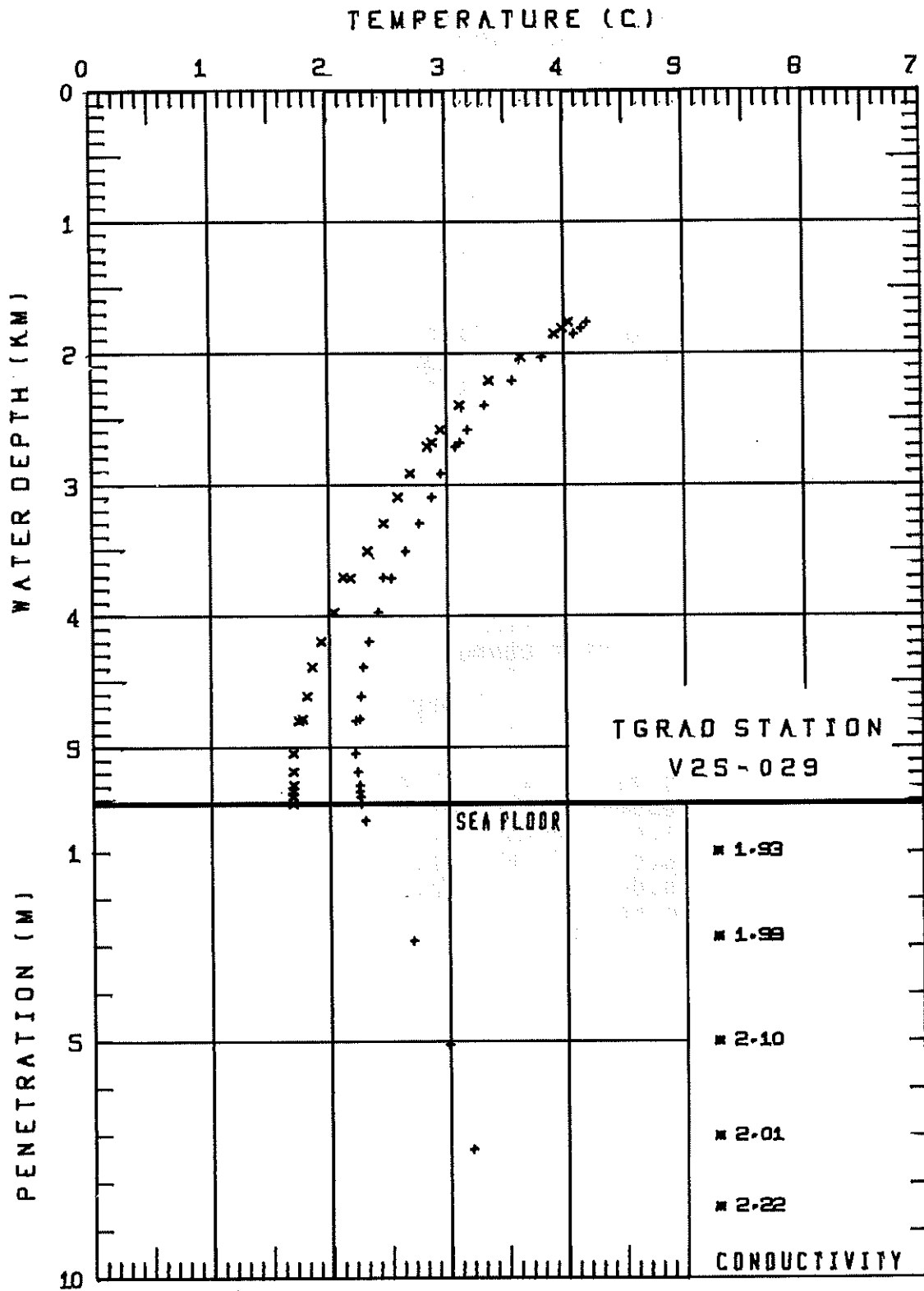
DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
1763	4.206	4.048
1811	4.160	3.997
1852	4.095	3.929
2026	3.828	3.646
2207	3.573	3.377
2395	3.336	3.125
2578	3.190	2.960
2675	3.122	2.884
2706	3.082	2.842
2914	2.960	2.697
3094	2.875	2.593
3293	2.771	2.468
3505	2.654	2.329
3706	2.532	2.186
3705	2.467	2.125
3966	2.421	2.046
4189	2.338	1.937
4385	2.284	1.858
4605	2.265	1.811
4781	2.249	1.769
4794	2.220	1.740
5040	2.210	1.694
5180	2.229	1.693
5285	2.246	1.694
5330	2.244	1.686
5375	2.253	1.687
5427	2.259	1.684

SEDIMENT TEMPERATURES

DEPTH METERS	TEMPERATURE CENTIGRADE
0.35	2.295
2.89	2.690
5.08	2.993
7.29	3.191

SEDIMENT CONDUCTIVITIES

DEPTH METERS	CONDUCTIVITY CGS
1.00	1.93
2.80	1.99
5.00	2.10
7.00	2.01
8.50	2.22



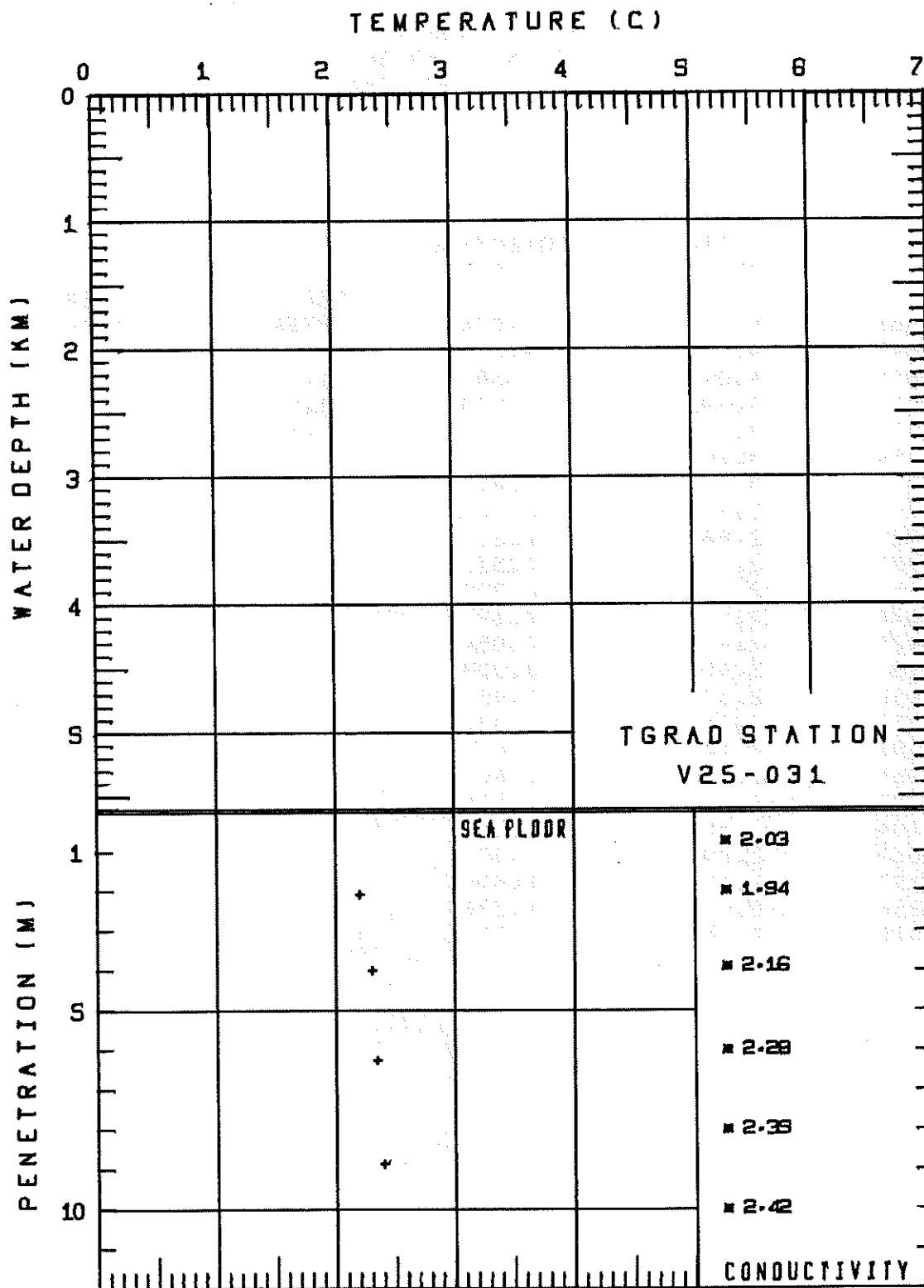
TGRAD STATION V25-031
021 30 N 053 24 W
CRUISE STATION 039

SEDIMENT TEMPERATURES

DEPTH METERS	TEMPERATURE CENTIGRADE
2.08	2.213
4.00	2.310
6.26	2.354
8.86	2.407

SEDIMENT CONDUCTIVITIES

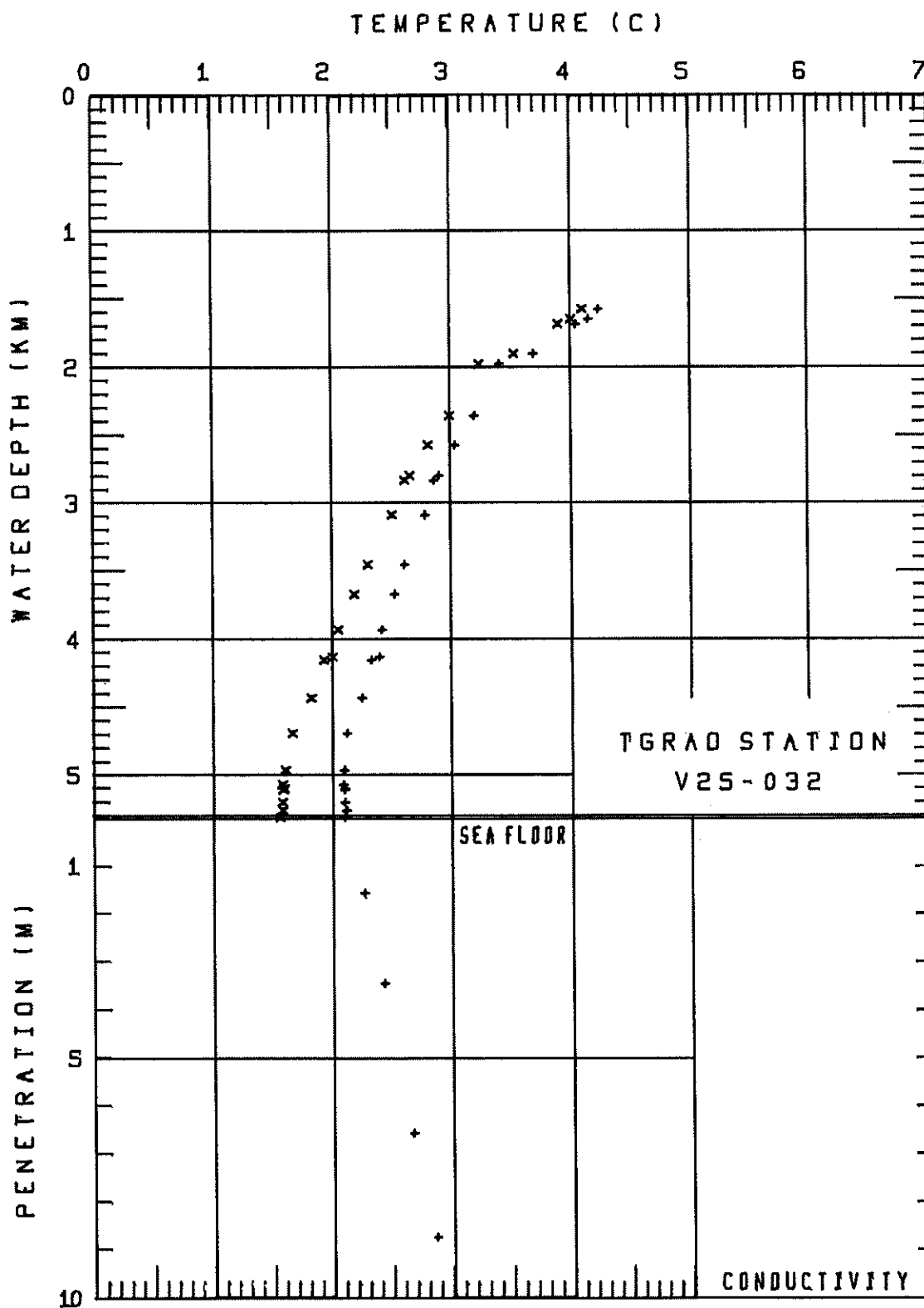
DEPTH METERS	CONDUCTIVITY CGS
0.75	2.03
2.00	1.94
3.90	2.16
6.00	2.28
8.00	2.35
10.00	2.42



TGRAD STATION V25-032
 020 23 N 053 36 W
 CRUISE STATION 042

WATER TEMPERATURES

DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE	DEPTH METERS	TEMPERATURE CENTIGRADE
1568	4.234	4.096		
1645	4.148	4.003		
1684	4.045	3.897	1.57	2.262
1899	3.692	3.528	3.45	2.430
1977	3.414	3.246	6.56	2.670
2354	3.201	2.997	8.73	2.867
2573	3.045	2.819		
2797	2.913	2.665		
2829	2.865	2.615		
3083	2.790	2.513		
3451	2.619	2.302		
3670	2.533	2.191		
3929	2.425	2.054		
4131	2.400	2.003		
4152	2.329	1.933		
4430	2.253	1.822		
4691	2.125	1.664		
4964	2.100	1.602		
5099	2.107	1.589		
5104	2.106	1.588		
5069	2.091	1.578		
5197	2.107	1.575		
5256	2.118	1.576		
5310	2.105	1.556		



78

TGRAD STATION V25-033
 017 49 N 054 19 W
 CRUISE STATION 043

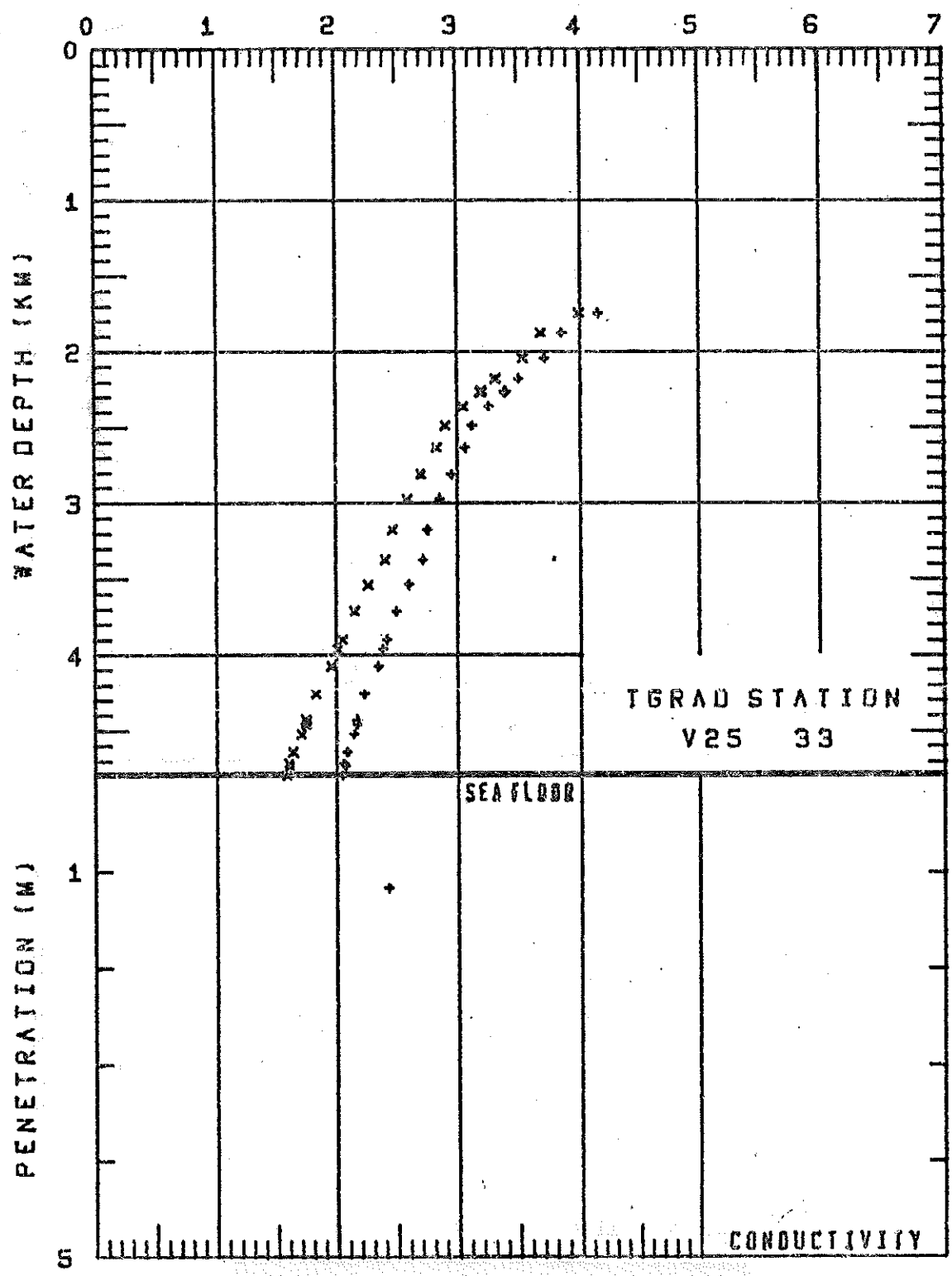
WATER TEMPERATURES

DEPTH METERS	IN-SITU TEMPERATURE	POTENTIAL TEMPERATURE
1739	4.149	3.994
1871	3.851	3.687
2036	3.720	3.540
2177	3.506	3.315
2269	3.389	3.190
2254	3.398	3.200
2256	3.394	3.196
2259	3.389	3.191
2358	3.256	3.049
2487	3.125	2.907
2628	3.062	2.830
2803	2.955	2.705
2966	2.859	2.593
3170	2.759	2.471
3365	2.719	2.409
3534	2.601	2.275
3706	2.506	2.159
3895	2.423	2.058
3957	2.394	2.020
4067	2.352	1.966
4250	2.238	1.832
4451	2.180	1.750
4427	2.177	1.750
4423	2.177	1.750
4515	2.151	1.713
4636	2.092	1.640
4722	2.076	1.614
4710	2.066	1.607
4788	2.054	1.584

SEDIMENT TEMPERATURES

DEPTH METERS	TEMPERATURE CENTIGRADE
1.17	2.434

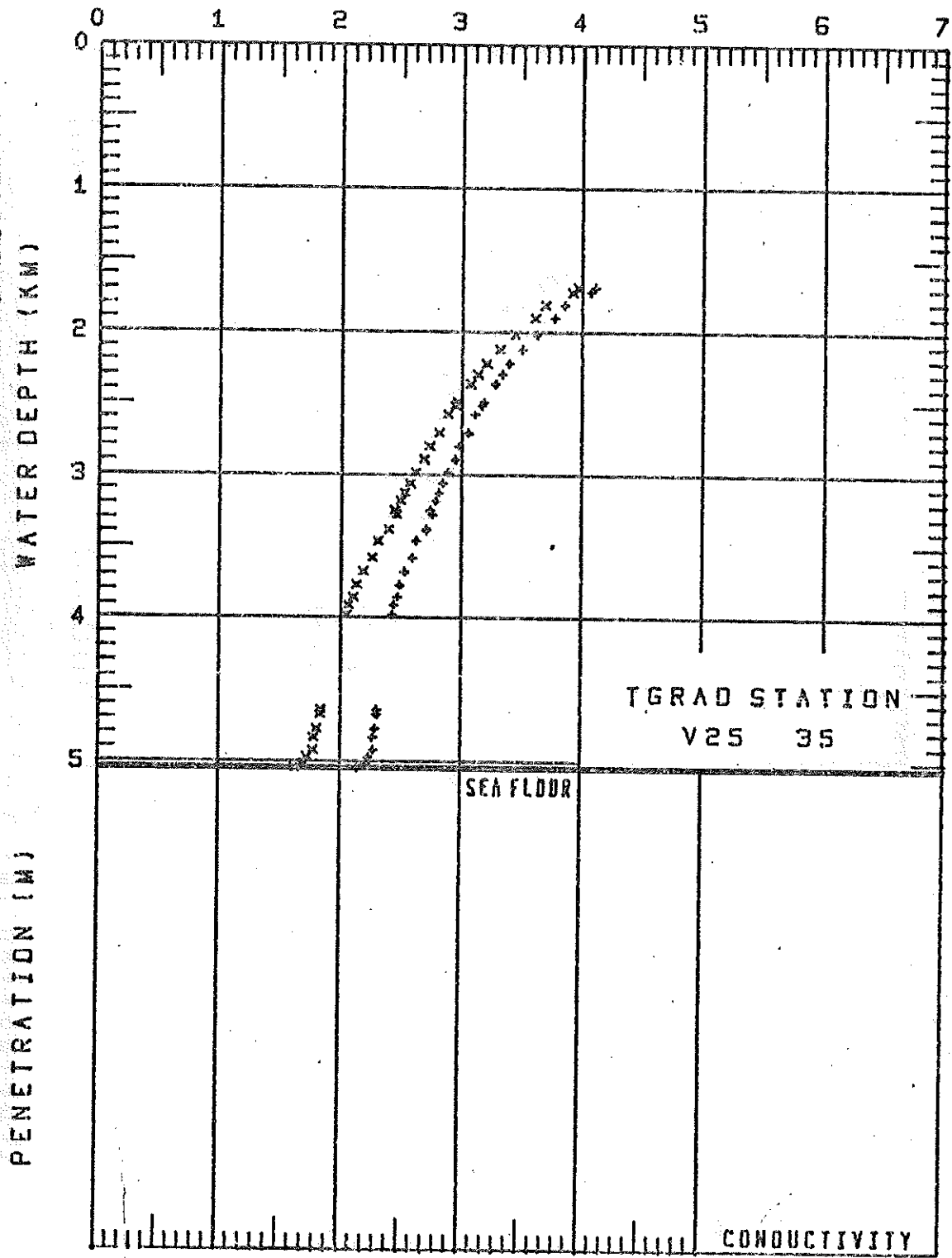
TEMPERATURE (C)



WATER TEMPERATURES

DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
1689	4.119	3.970
1719	4.075	3.924
1812	3.855	3.697
1900	3.776	3.609
2018	3.624	3.447
2120	3.502	3.317
2218	3.400	3.206
2295	3.335	3.134
2360	3.278	3.072
2489	3.186	2.967
2512	3.167	2.946
2576	3.111	2.884
2702	3.052	2.812
2796	2.980	2.730
2890	2.941	2.683
2975	2.884	2.617
3053	2.846	2.571
3122	2.809	2.526
3180	2.783	2.494
3245	2.738	2.442
3272	2.758	2.460
3379	2.705	2.394
3459	2.624	2.305
3578	2.589	2.257
3674	2.526	2.184
3768	2.483	2.131
3851	2.469	2.106
3909	2.435	2.066
3975	2.427	2.049
4637	2.297	1.836
4668	2.299	1.834
4768	2.283	1.805
4831	2.266	1.779
4916	2.269	1.769
4970	2.232	1.727
5015	2.211	1.700
5028	2.185	1.674
5046	2.137	1.625

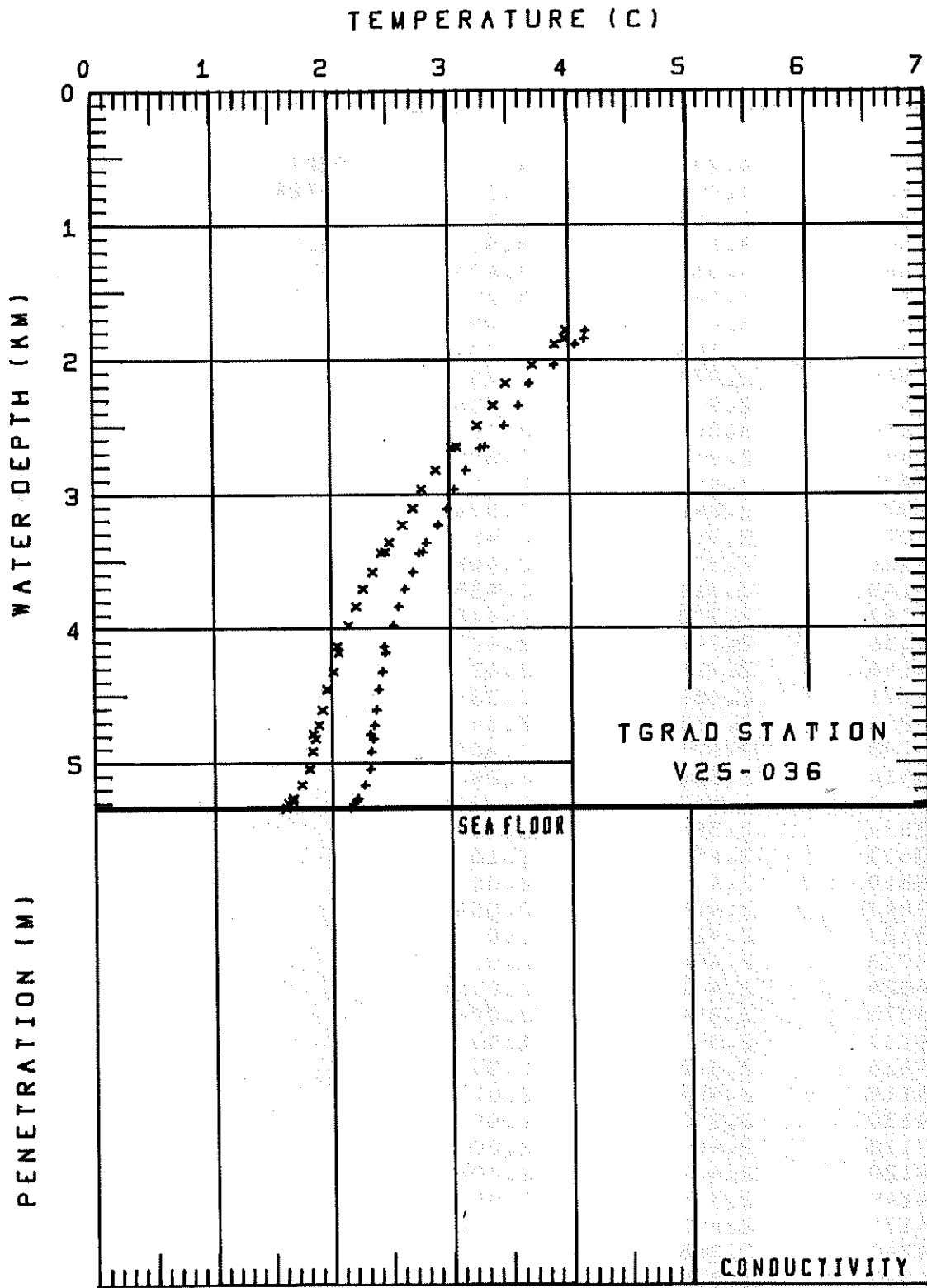
TEMPERATURE (C)



TGRAD STATION V25-036
013 36 N 057 28 W
CRUISE STATION 047

WATER TEMPERATURES

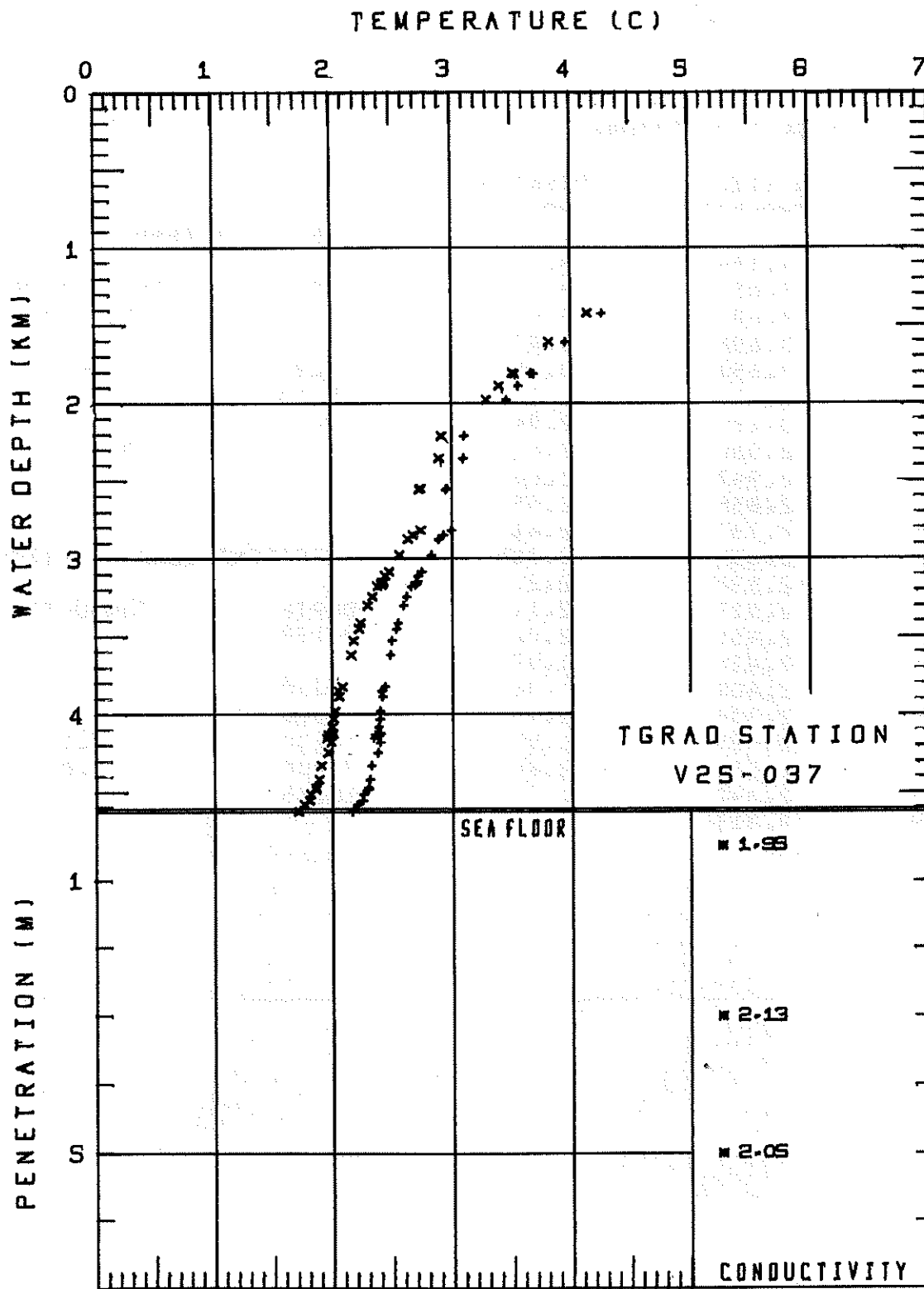
DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
1781	4.139	3.980
1842	4.131	3.966
1885	4.055	3.887
2038	3.880	3.697
2171	3.668	3.475
2338	3.584	3.372
2487	3.464	3.239
2647	3.302	3.061
2652	3.263	3.022
2818	3.147	2.890
2963	3.045	2.775
3104	2.983	2.697
3228	2.909	2.611
3360	2.809	2.496
3428	2.784	2.464
3435	2.753	2.434
3578	2.697	2.361
3703	2.630	2.280
3832	2.580	2.217
3972	2.529	2.150
4130	2.451	2.052
4172	2.467	2.062
4319	2.438	2.015
4450	2.403	1.963
4600	2.381	1.921
4716	2.368	1.891
4814	2.356	1.868
4780	2.329	1.845
4911	2.337	1.835
5037	2.330	1.811
5159	2.282	1.746
5258	2.221	1.674
5278	2.214	1.664
5296	2.185	1.634
5329	2.167	1.612



TGRAD STATION V25-037
 012 39.3 N 055 02.6 W
 CRUISE STATION 048

WATER TEMPERATURES

DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE	DEPTH METERS	CONDUCTIVITY CGS
1417	4.273	4.151		
1600	3.964	3.828		
1808	3.688	3.533		
1803	3.672	3.519	0.50	1.95
1882	3.565	3.403	3.00	2.13
1978	3.464	3.296	5.00	2.05
2209	3.108	2.921		
2349	3.104	2.901		
2546	2.973	2.752		
2554	2.960	2.738		
2816	3.006	2.753		
2846	2.940	2.686		
2872	2.897	2.641		
2972	2.841	2.574		
3079	2.758	2.481		
3108	2.727	2.448		
3149	2.719	2.435		
3162	2.703	2.418		
3156	2.710	2.427		
3146	2.710	2.427		
3171	2.668	2.383		
3238	2.633	2.342		
3298	2.601	2.303		
3410	2.556	2.246		
3443	2.547	2.233		
3524	2.506	2.183		
3613	2.494	2.161		
3819	2.447	2.089		
3847	2.418	2.059		
3883	2.427	2.061		
3973	2.404	2.028		
4024	2.401	2.019		
4075	2.394	2.006		
4133	2.387	1.990		
4126	2.368	1.973		
4119	2.405	2.010		
4130	2.390	1.994		
4118	2.400	2.005		
4120	2.401	2.006		
4149	2.354	1.957		
4175	2.402	2.000		
4242	2.385	1.974		
4323	2.330	1.911		
4416	2.319	1.888		
4469	2.302	1.865		
4476	2.306	1.868		
4508	2.263	1.821		
4549	2.256	1.809		
4576	2.211	1.763		
4621	2.170	1.717		



TGRAD STATION V25-038
 012 07 N 048 53 W
 CRUISE STATION 051

WATER TEMPERATURES

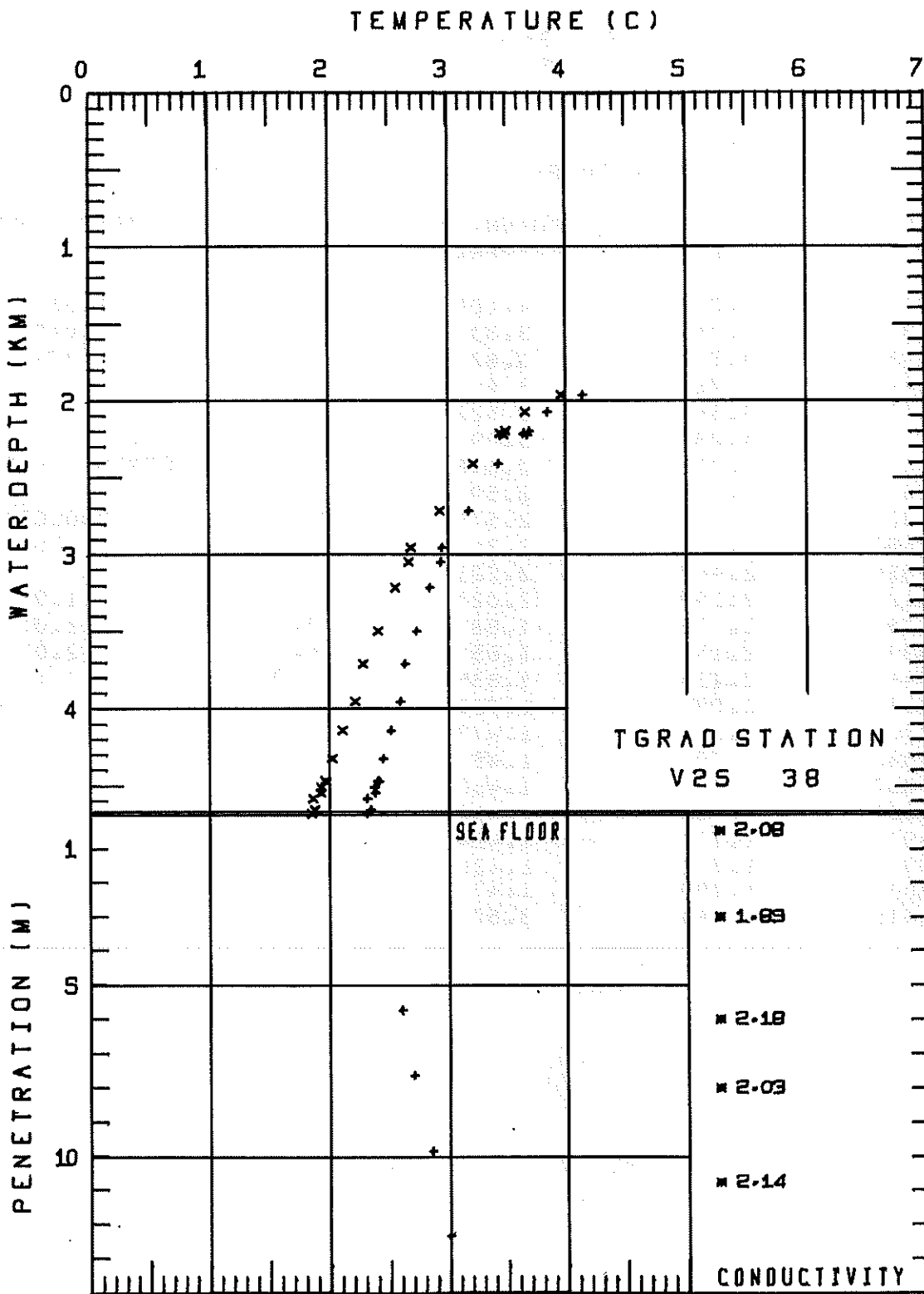
DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
1963	4.144	3.964
2072	3.855	3.667
2221	3.685	3.486
2195	3.696	3.499
2208	3.651	3.453
2407	3.440	3.224
2713	3.184	2.940
2955	2.960	2.691
3046	2.947	2.668
3211	2.855	2.559
3495	2.737	2.411
3705	2.635	2.285
3950	2.598	2.217
4141	2.517	2.114
4323	2.451	2.027
4474	2.418	1.974
4468	2.407	1.963
4509	2.378	1.930
4545	2.385	1.933
4581	2.321	1.865
4653	2.342	1.877
4679	2.317	1.848

SEDIMENT TEMPERATURES

DEPTH METERS	TEMPERATURE CENTIGRADE
5.71	2.602
7.63	2.701
9.84	2.855
12.33	3.003

SEDIMENT CONDUCTIVITIES

DEPTH METERS	CONDUCTIVITY CGS
0.50	2.08
3.00	1.89
6.00	2.18
8.00	2.03
10.75	2.14



TGRAD STATION V25-039
 011 38.8 N 047 17.3 W
 CRUISE STATION 052

WATER TEMPERATURES

DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
1183	4.207	4.108
1351	3.944	3.832
1450	3.742	3.622
1446	3.788	3.667
1515	3.647	3.522
1765	3.237	3.093
2055	3.016	2.848
2302	2.783	2.593
2324	2.770	2.579
2657	2.585	2.361
2884	2.467	2.221
3122	2.290	2.022
3340	2.175	1.885
3397	2.151	1.855
3440	2.135	1.835
3532	2.030	1.723
3762	1.802	1.477
3842	1.790	1.454
3867	1.799	1.460
3861	1.788	1.448
3930	1.770	1.424
3979	1.772	1.420
4034	1.790	1.431
1416	3.743	3.627

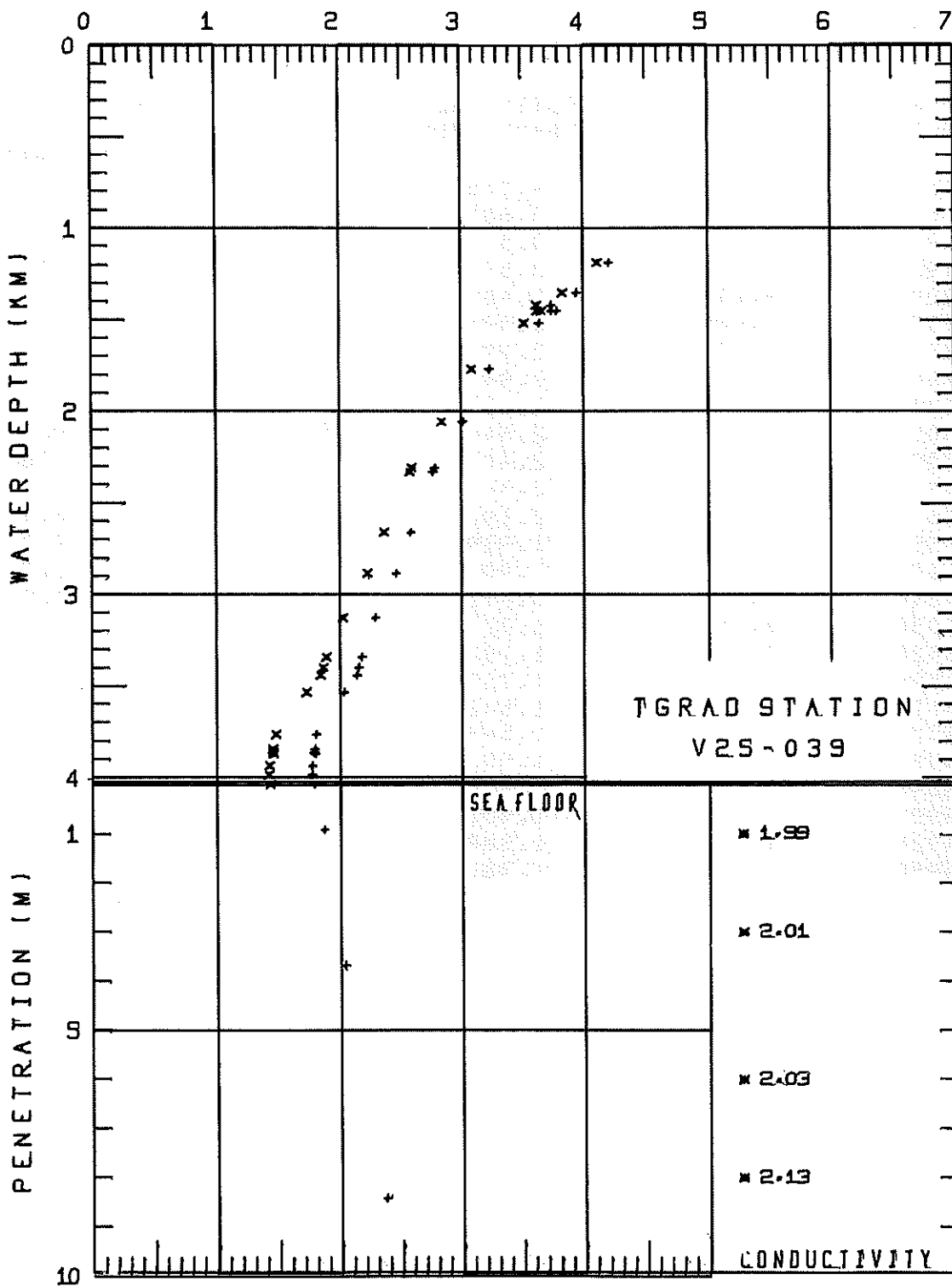
SEDIMENT TEMPERATURES

DEPTH METERS	TEMPERATURE CENTIGRADE
0.92	1.868
3.68	2.040
8.42	2.374

SEDIMENT CONDUCTIVITIES

DEPTH METERS	CONDUCTIVITY CGS
1.00	1.99
3.00	2.01
6.00	2.03
8.00	2.13

TEMPERATURE (C)



TGRAD STATION V25-040
 011 30 N 045° 09'W
 CRUISE STATION 053

WATER TEMPERATURES

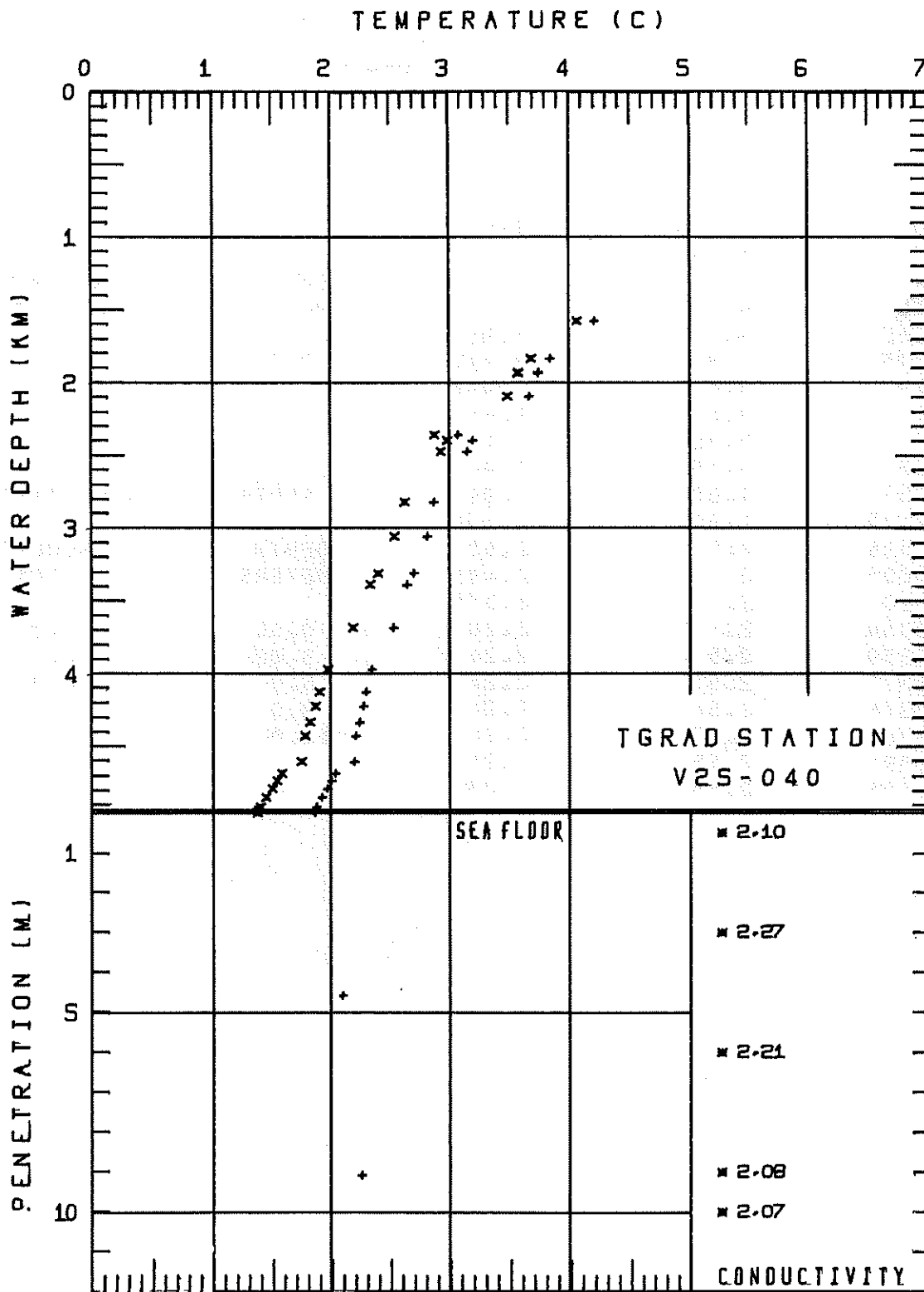
DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
1575	4.204	4.066
1832	3.846	3.685
1926	3.747	3.579
1928	3.745	3.576
2090	3.674	3.489
2355	3.084	2.881
2391	3.203	2.994
2467	3.157	2.940
2817	2.878	2.630
3052	2.822	2.546
3303	2.709	2.407
3382	2.651	2.341
3678	2.535	2.192
3966	2.351	1.979
4120	2.299	1.907
4218	2.276	1.872
4330	2.242	1.825
4420	2.209	1.782
4598	2.200	1.750
4678	2.036	1.582
4728	2.004	1.543
4787	1.969	1.502
4848	1.925	1.453
4909	1.881	1.401
4928	1.869	1.388
4950	1.865	1.381

SEDIMENT TEMPERATURES

DEPTH METERS	TEMPERATURE CENTIGRADE
4.57	2.098
9.07	2.256

SEDIMENT CONDUCTIVITIES

DEPTH METERS	CONDUCTIVITY CGS
0.50	2.10
3.00	2.27
6.00	2.21
9.00	2.08
10.00	2.07



TGRAD STATION V25-041
 011 33. N 042 38 W
 CRUISE STATION 054

WATER TEMPERATURES

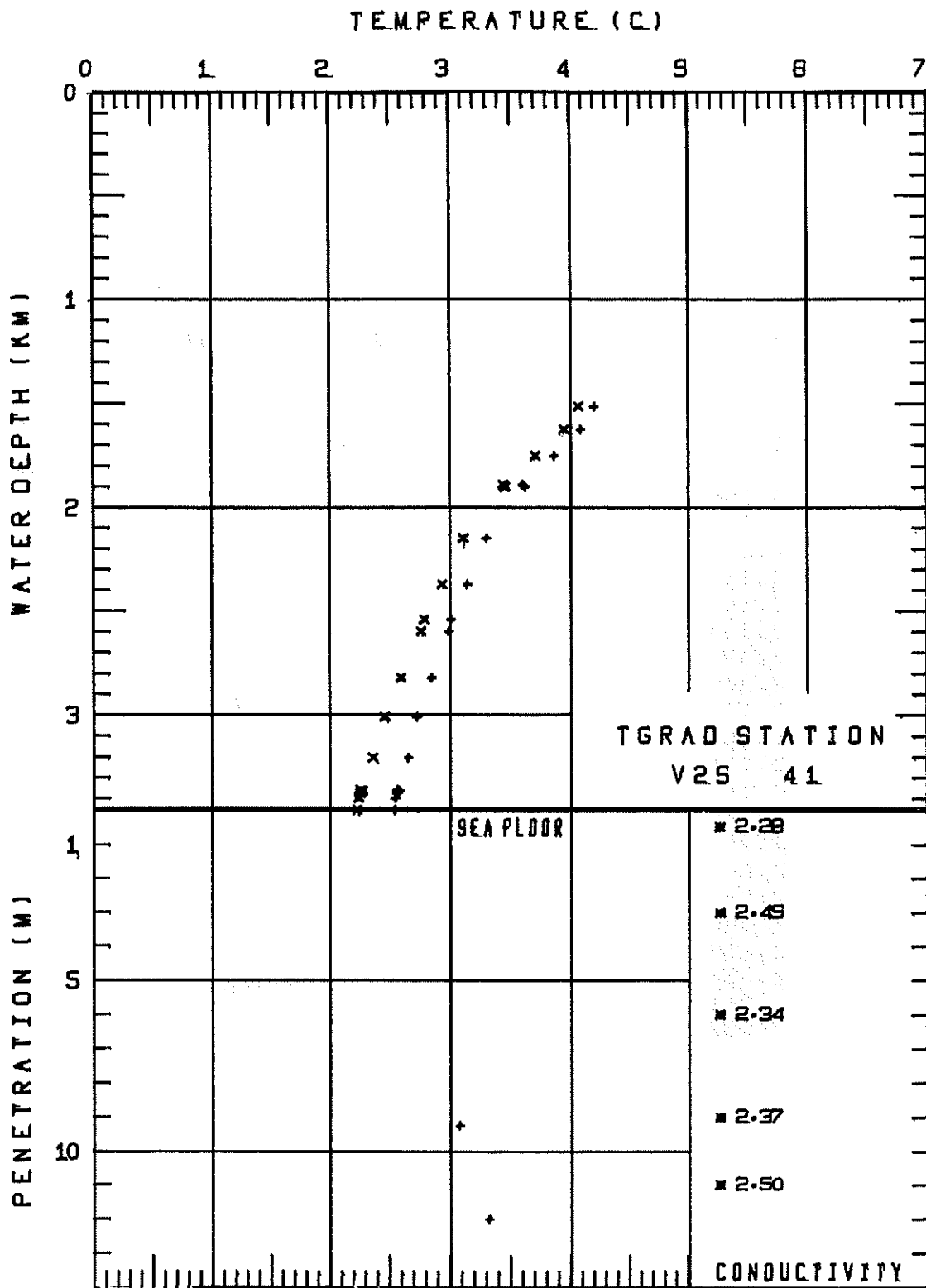
DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
1513	4.203	4.071
1624	4.093	3.951
1751	3.861	3.710
1900	3.622	3.460
1890	3.607	3.446
2146	3.304	3.120
2369	3.150	2.944
2537	3.020	2.799
2595	2.995	2.769
2816	2.855	2.606
3005	2.740	2.473
3201	2.663	2.375
3364	2.589	2.283
3359	2.572	2.267
3372	2.572	2.266
3376	2.569	2.263
3360	2.571	2.265
3399	2.558	2.249
3455	2.552	2.237

SEDIMENT TEMPERATURES

DEPTH METERS	TEMPERATURE CENTIGRADE
9.23	3.092
12.00	3.332

SEDIMENT CONDUCTIVITIES

DEPTH METERS	CONDUCTIVITY CGS
0.50	2.28
3.00	2.45
6.00	2.34
9.00	2.37
11.00	2.50



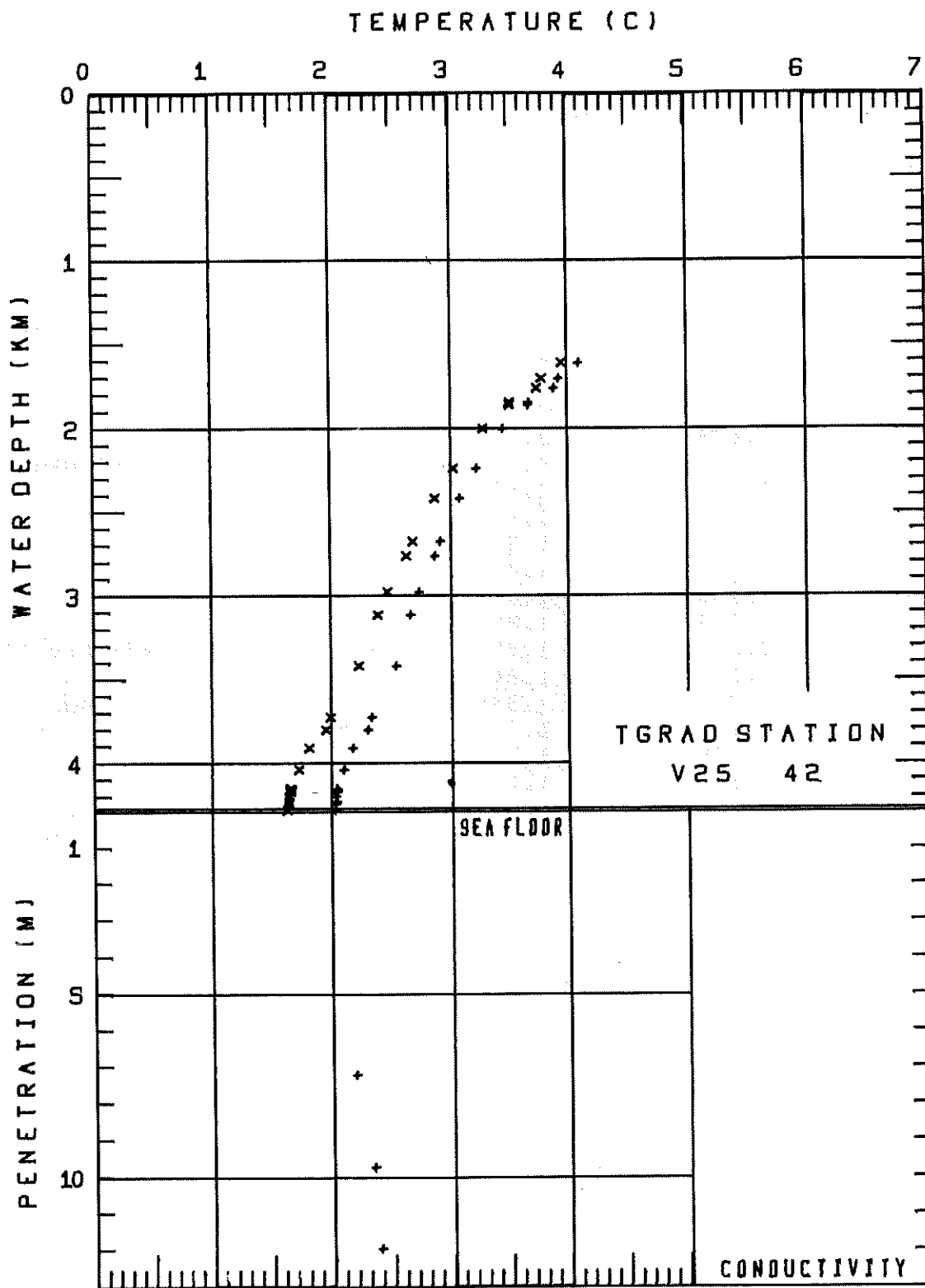
TGRAD STATION V25-042
 009 18'N 042° 59'W
 CRUISE STATION 55A

WATER TEMPERATURES

DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
1605	4.100	3.960
1700	3.929	3.782
1760	3.894	3.742
1845	3.671	3.513
1860	3.673	3.513
2004	3.453	3.282
2239	3.223	3.032
2420	3.085	2.875
2679	2.918	2.684
2761	2.874	2.631
2978	2.738	2.474
3113	2.667	2.389
3421	2.543	2.232
3725	2.338	1.996
3799	2.304	1.956
3909	2.177	1.819
4038	2.106	1.733
4161	2.053	1.667
4171	2.047	1.661
4150	2.048	1.664
4172	2.043	1.655
4168	2.049	1.663
4154	2.042	1.657
4163	2.046	1.661
4197	2.039	1.650
4241	2.039	1.642
4226	2.041	1.648
4280	2.032	1.630

SEDIMENT TEMPERATURES

DEPTH METERS	TEMPERATURE CENTIGRADE	
7.22	2.190	COOLING
9.72	2.337	COOLING
11.97	2.394	COOLING



TGRAD STATION V25-043
 002 56.1 N 042 44.3 W
 CRUISE STATION 058

WATER TEMPERATURES

DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
1603	4.174	4.033
1791	3.815	3.660
1932	3.582	3.416
2157	3.220	3.038
2495	2.970	2.756
2735	2.870	2.631
3001	2.700	2.434
3061	2.678	2.407
3291	2.560	2.264
3580	2.453	2.125
3765	2.342	1.996
3942	2.263	1.897
4064	2.239	1.858
4103	2.230	1.845
4115	2.239	1.852
4110	2.240	1.852
4092	2.225	1.841
4125	2.223	1.835
4147	2.146	1.757
4199	1.588	1.217
4228	1.500	1.128
4281	1.286	0.918

SEDIMENT TEMPERATURES

DEPTH	TEMPERATURE
-------	-------------

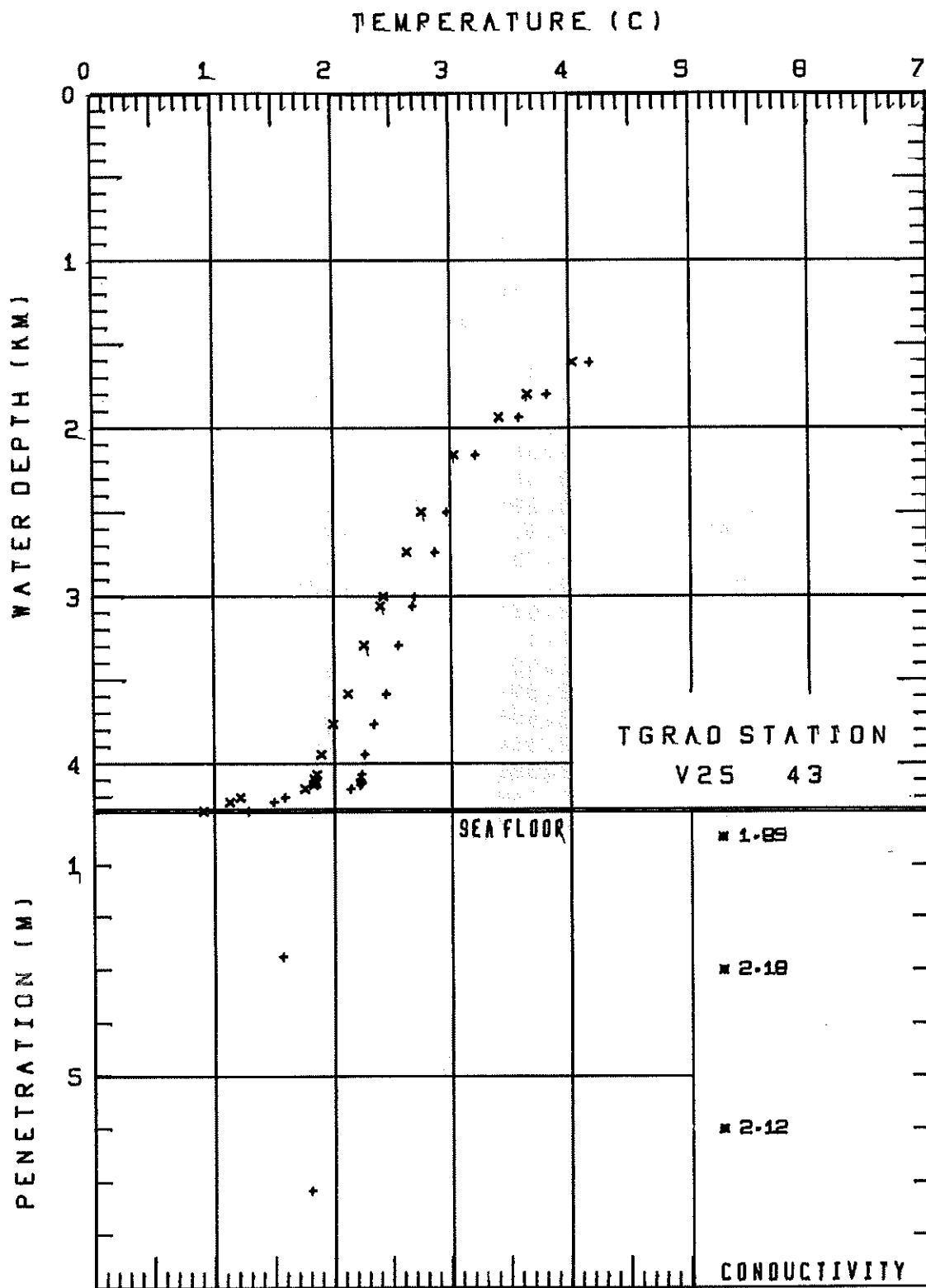
METERS	CENTIGRADE
--------	------------

2.75	1.575
7.15	1.813

SEDIMENT CONDUCTIVITIES

DEPTH METERS	CONDUCTIVITY CGS
-----------------	---------------------

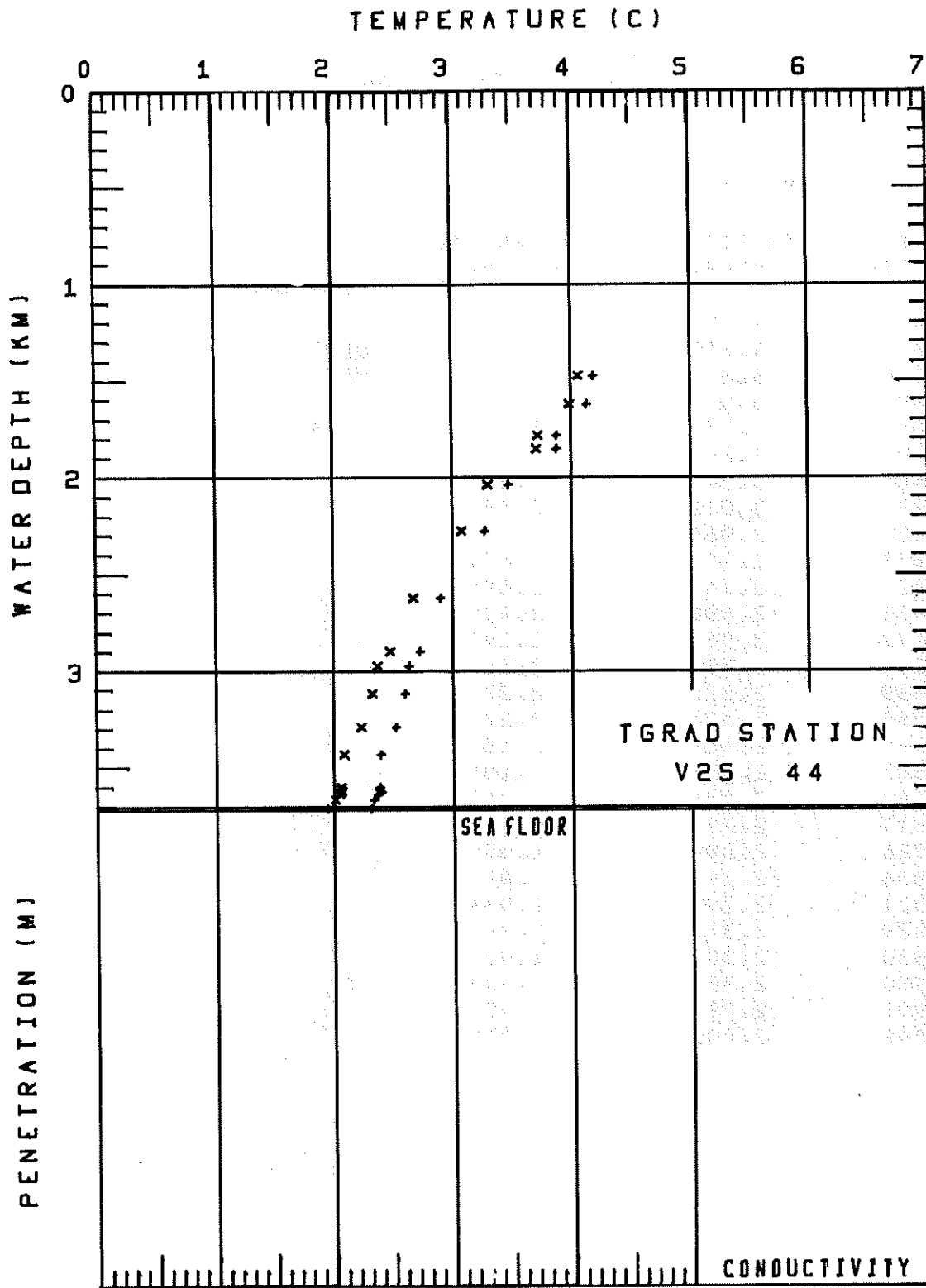
0.50	1.85
3.00	2.18
6.00	2.12



TGRAD STATION V25-044
000 12 N 042 46 W
CRUISE STATION 059

WATER TEMPERATURES

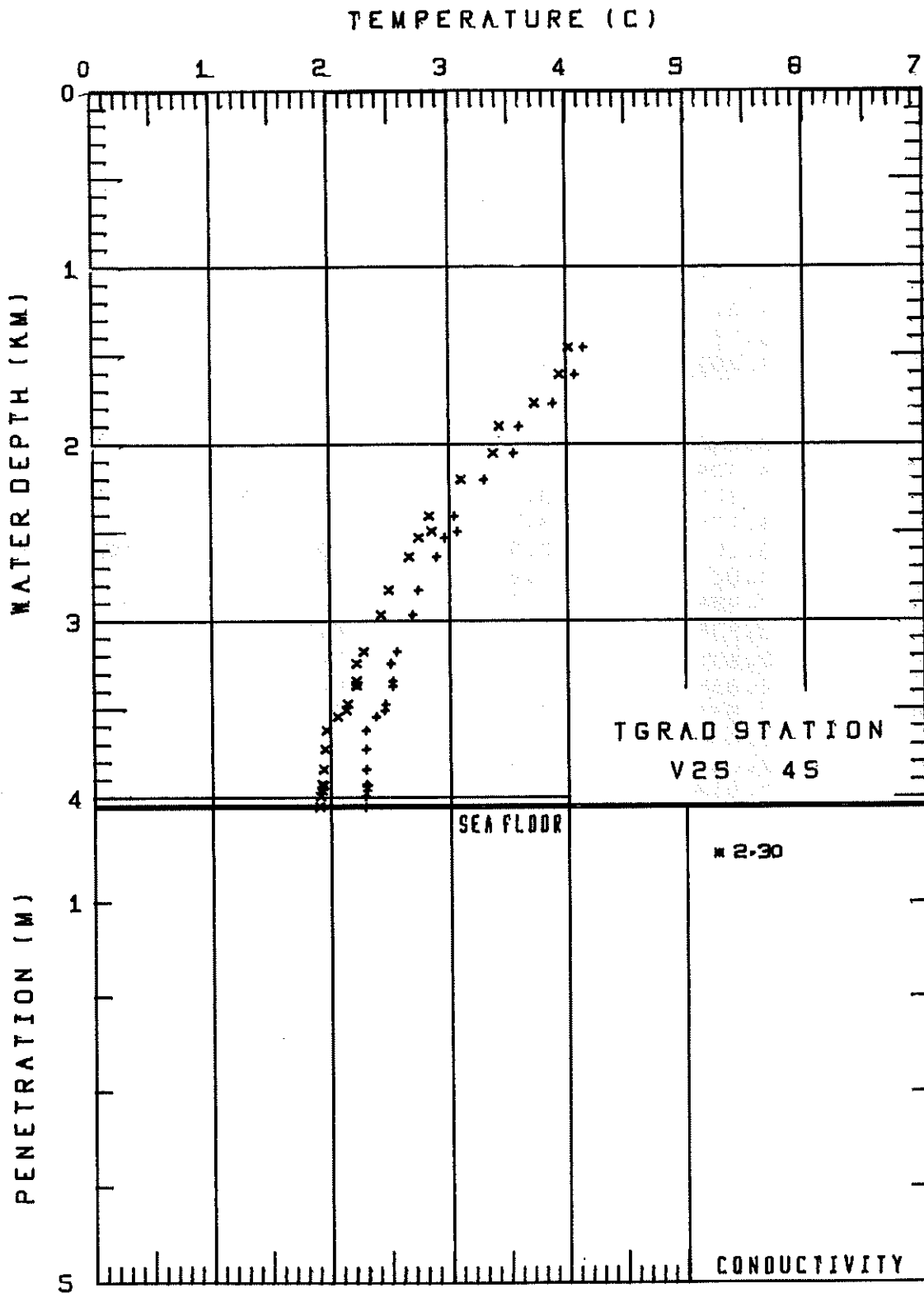
DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
1470	4.191	4.064
1618	4.135	3.993
1782	3.887	3.731
1851	3.881	3.719
2034	3.486	3.310
2275	3.288	3.089
2623	2.911	2.684
2895	2.739	2.486
2970	2.641	2.381
3116	2.611	2.335
3290	2.530	2.236
3429	2.401	2.094
3598	2.391	2.063
3622	2.405	2.073
3605	2.384	2.055
3633	2.381	2.048
3663	2.348	2.013
3708	2.319	1.980



TGRAD STATION V25-045
 000 30 N 042 08 W
 CRUISE STATION 060

WATER TEMPERATURES

DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE	SEDIMENT CONDUCTIVITIES	
			DEPTH METERS	CONDUCTIVITY CGS
1452	4.152	4.027		
1605	4.080	3.941		
1770	3.887	3.732		
1899	3.596	3.434		
2050	3.554	3.376	0.50	2.30
2201	3.297	3.107		
2408	3.045	2.837		
2493	3.072	2.855		
2529	2.967	2.749		
2637	2.901	2.671		
2824	2.743	2.496		
2963	2.696	2.434		
3172	2.565	2.283		
3236	2.509	2.221		
3339	2.522	2.223		
3364	2.526	2.221		
3469	2.467	2.151		
3505	2.456	2.138		
3542	2.382	2.062		
3617	2.299	1.973		
3726	2.299	1.959		
3836	2.298	1.944		
3921	2.298	1.934		
3929	2.315	1.947		
3930	2.302	1.936		
3960	2.303	1.933		
3991	2.295	1.921		
4048	2.291	1.910		



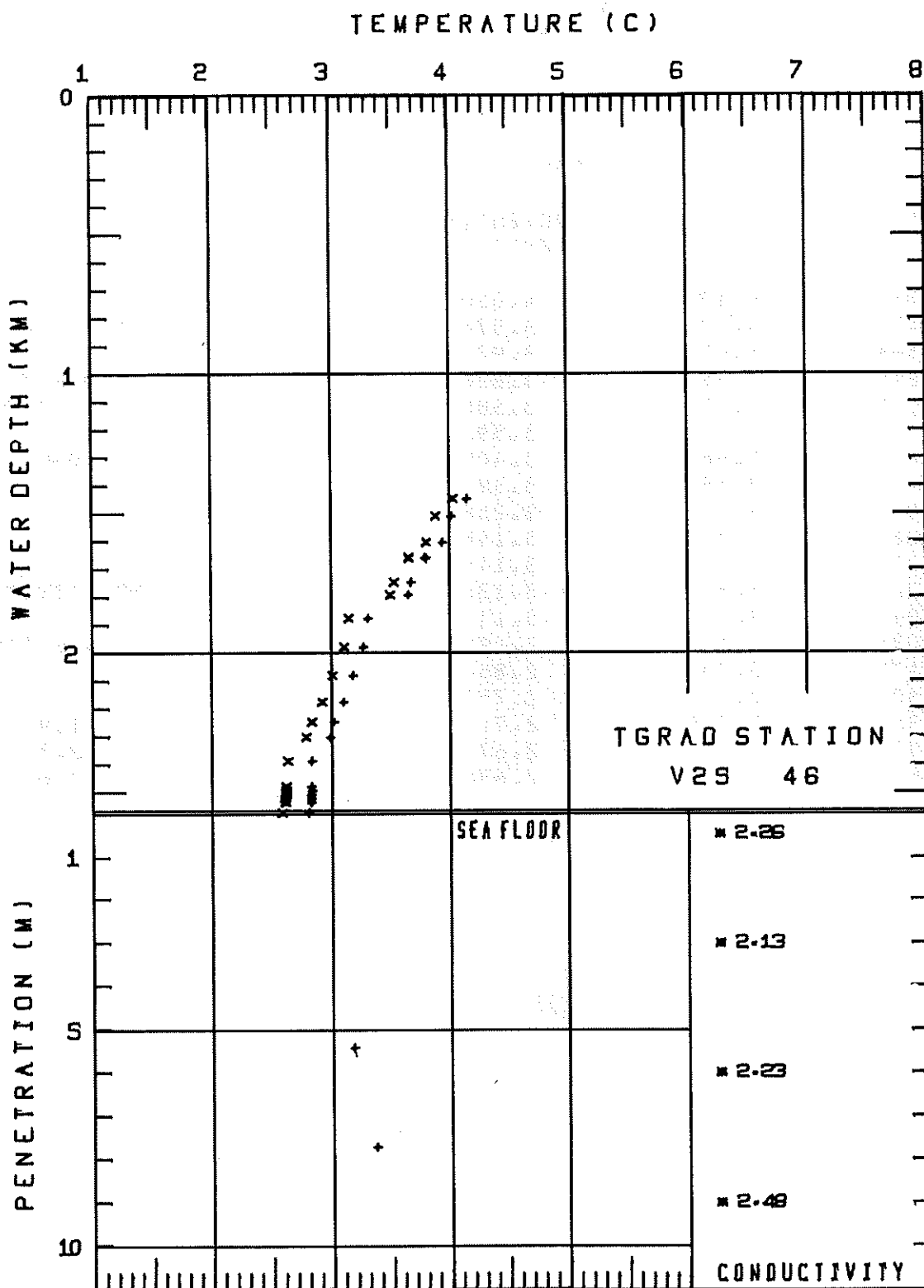
TGRAD STATION V25-046
 001° 53'S 041 16 W
 CRUISE STATION 061

WATER TEMPERATURES

DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE	SEDIMENT TEMPERATURES	
			DEPTH METERS	TEMPERATURE CENTIGRADE
1444	4.159	4.035		
1507	4.022	3.894		
1601	3.950	3.813		
1660	3.802	3.659	5.40	3.177
1657	3.798	3.657	7.70	3.361
1746	3.677	3.528		
1791	3.648	3.495		
1873	3.309	3.153		
1976	3.275	3.109		
2081	3.186	3.012		
2173	3.105	2.921		
2245	3.027	2.838		
2301	2.988	2.795		
2386	2.838	2.638		
2476	2.835	2.625	0.50	2.26
2492	2.835	2.624	3.00	2.13
2505	2.835	2.621	6.00	2.23
2518	2.832	2.618	9.00	2.48
2533	2.831	2.615		
2571	2.812	2.593		

SEDIMENT CONDUCTIVITIES

DEPTH METERS	CONDUCTIVITY CGS
0.50	2.26
3.00	2.13
6.00	2.23
9.00	2.48



TGRAD STATION V25-047
 000 39.5 S 39 39.3 W
 CRUISE STATION 062

WATER TEMPERATURES

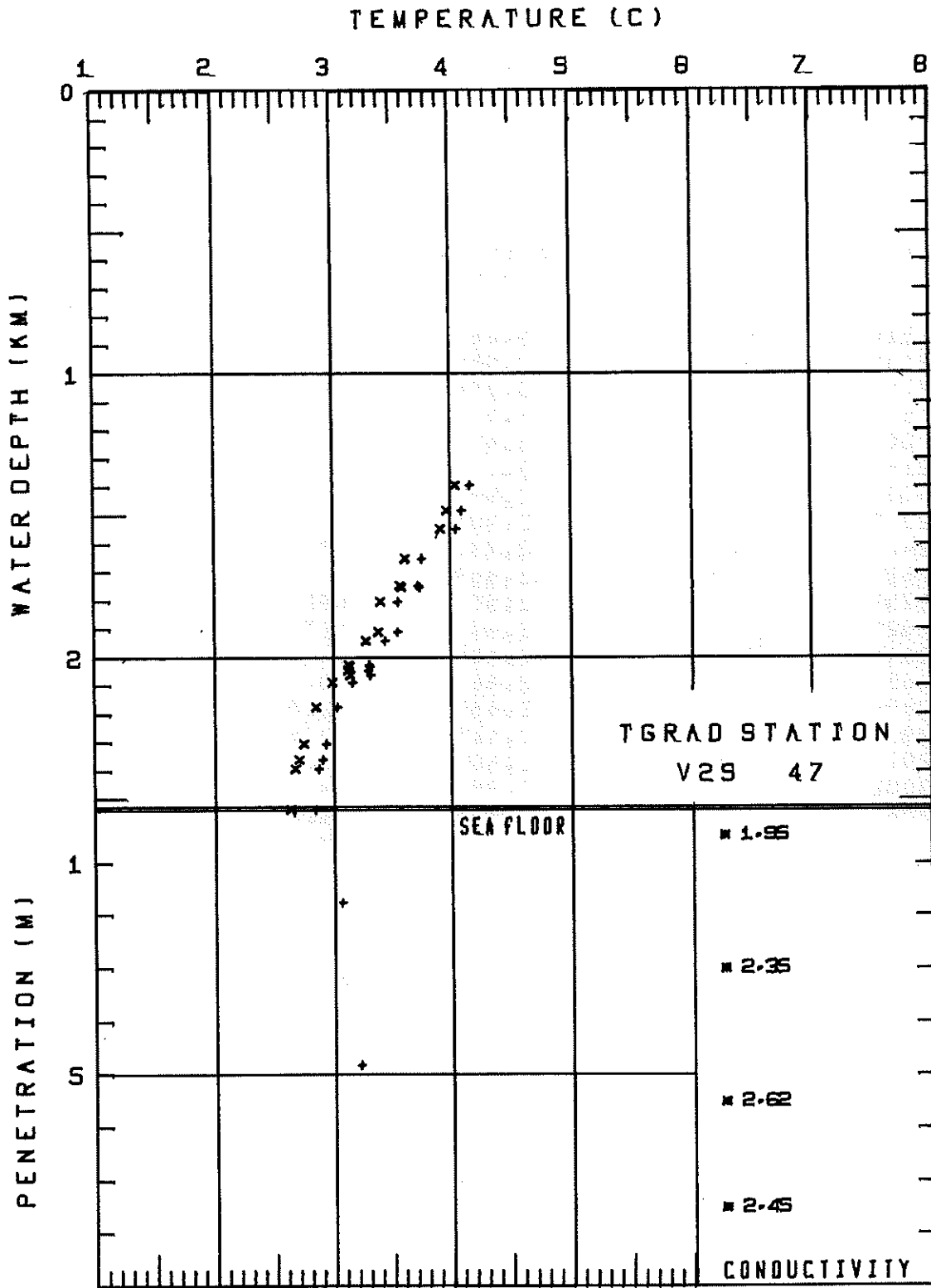
DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
1389	4.170	4.050
1479	4.104	3.976
1544	4.056	3.923
1649	3.765	3.626
1745	3.730	3.580
1751	3.743	3.592
1801	3.560	3.408
1907	3.555	3.391
1938	3.453	3.288
2061	3.323	3.148
2030	3.316	3.144
2024	3.309	3.138
2043	3.303	3.131
2085	3.171	2.995
2173	3.038	2.856
2303	2.942	2.750
2360	2.910	2.711
2390	2.877	2.675
2533	2.855	2.638

SEDIMENT TEMPERATURES

DEPTH METERS	TEMPERATURE CENTIGRADE
1.75	3.068
4.82	3.226

SEDIMENT CONDUCTIVITIES

DEPTH METERS	CONDUCTIVITY CGS
0.50	1.95
3.00	2.35
5.50	2.62
7.50	2.45



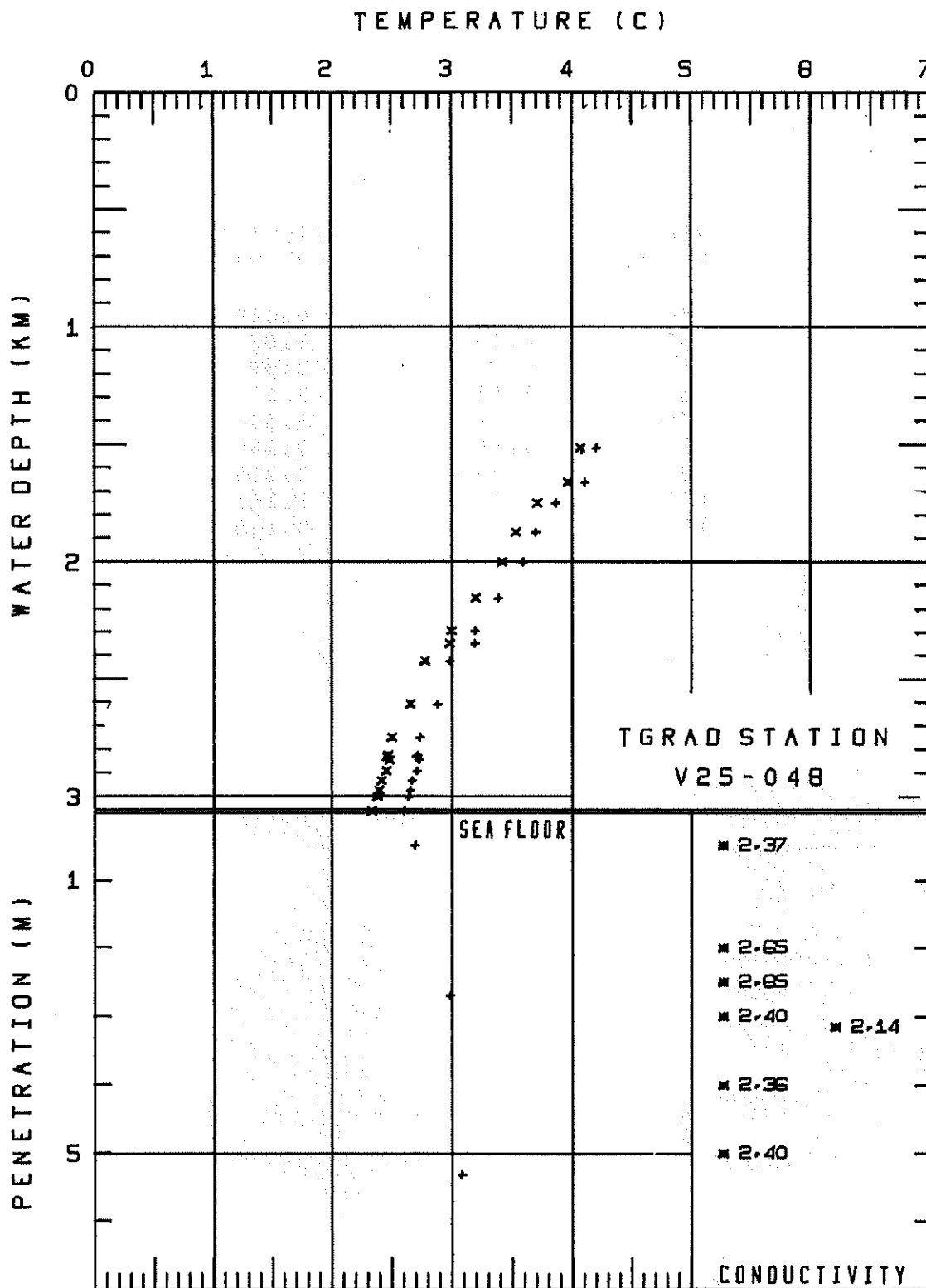
TGRAD STATION V25-048
 001 13.5 S 036 26.2 W
 CRUISE STATION 063

WATER TEMPERATURES

DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE	DEPTH METERS	TEMPERATURE CENTIGRADE
1516	4.198	4.066		
1659	4.101	3.955		
1750	3.857	3.706	0.50	2.696
1876	3.694	3.532	2.70	2.994
2001	3.591	3.416	5.32	3.085
2154	3.382	3.197		
2294	3.193	2.995		
2349	3.190	2.986		
2424	2.984	2.777		
2605	2.884	2.659		
2751	2.739	2.501		
2825	2.718	2.473		
2845	2.732	2.484		
2832	2.711	2.464	0.50	2.37
2894	2.710	2.457	2.00	2.65
2934	2.672	2.415	2.50	2.65
2973	2.660	2.400	3.00	2.40
3002	2.647	2.383	3.15	2.14
3063	2.606	2.336	4.00	2.36
			5.00	2.40

SEDIMENT CONDUCTIVITIES

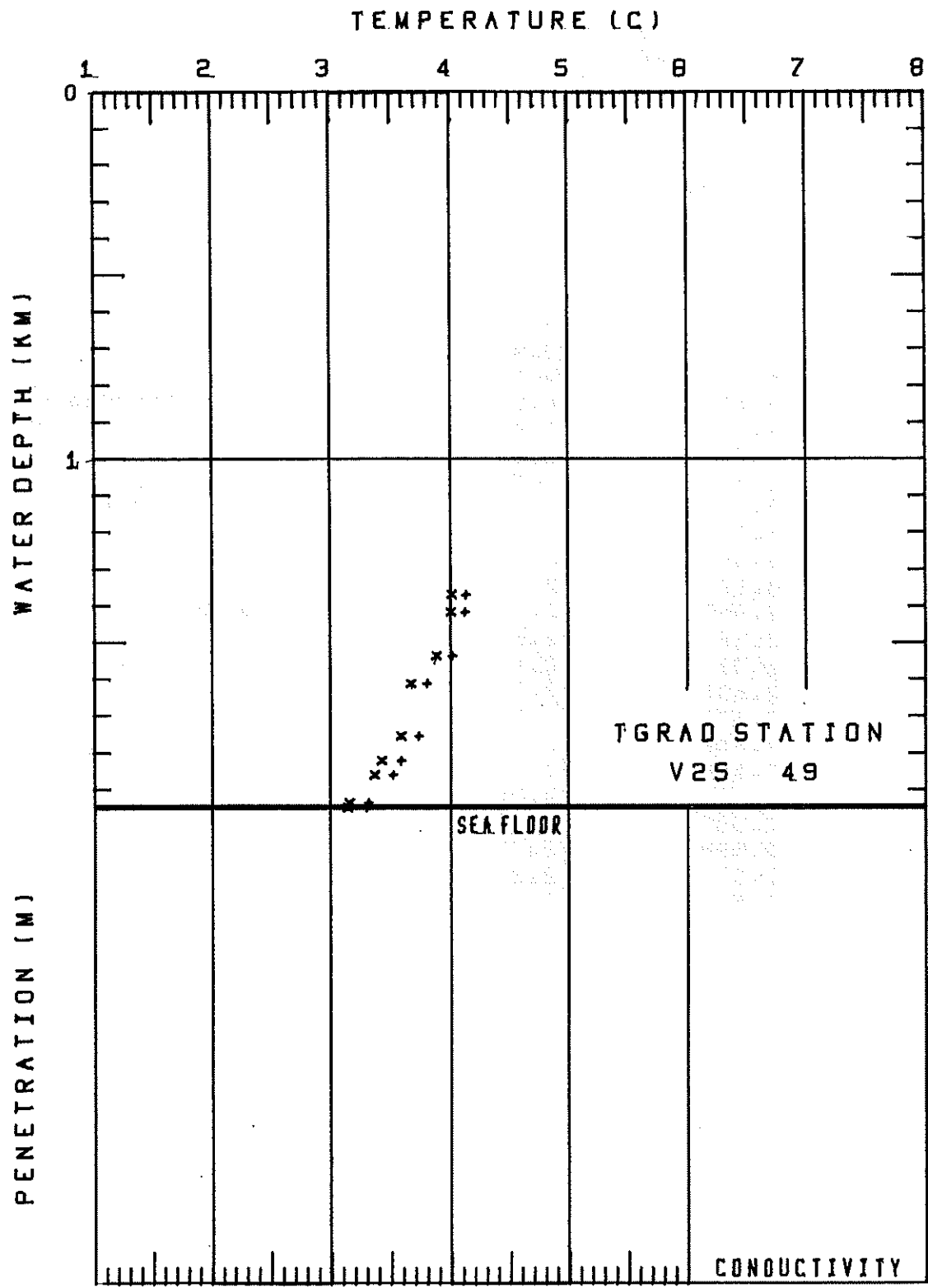
DEPTH METERS	CONDUCTIVITY CGS
0.50	2.37
2.00	2.65
2.50	2.65
3.00	2.40
3.15	2.14
4.00	2.36
5.00	2.40



TGRAD STATION V25-049
001 44.1 S 037 14.6 W
CRUISE STATION 064

WATER TEMPERATURES

DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
1367	4.135	4.019
1416	4.132	4.012
1534	4.022	3.891
1611	3.815	3.677
1754	3.747	3.598
1821	3.595	3.440
1860	3.533	3.375
1934	3.323	3.161
1948	3.311	3.148



TGRAD STATION V25-050
 003 41.4 S 035 39 W
 CRUISE STATION 065

WATER TEMPERATURES

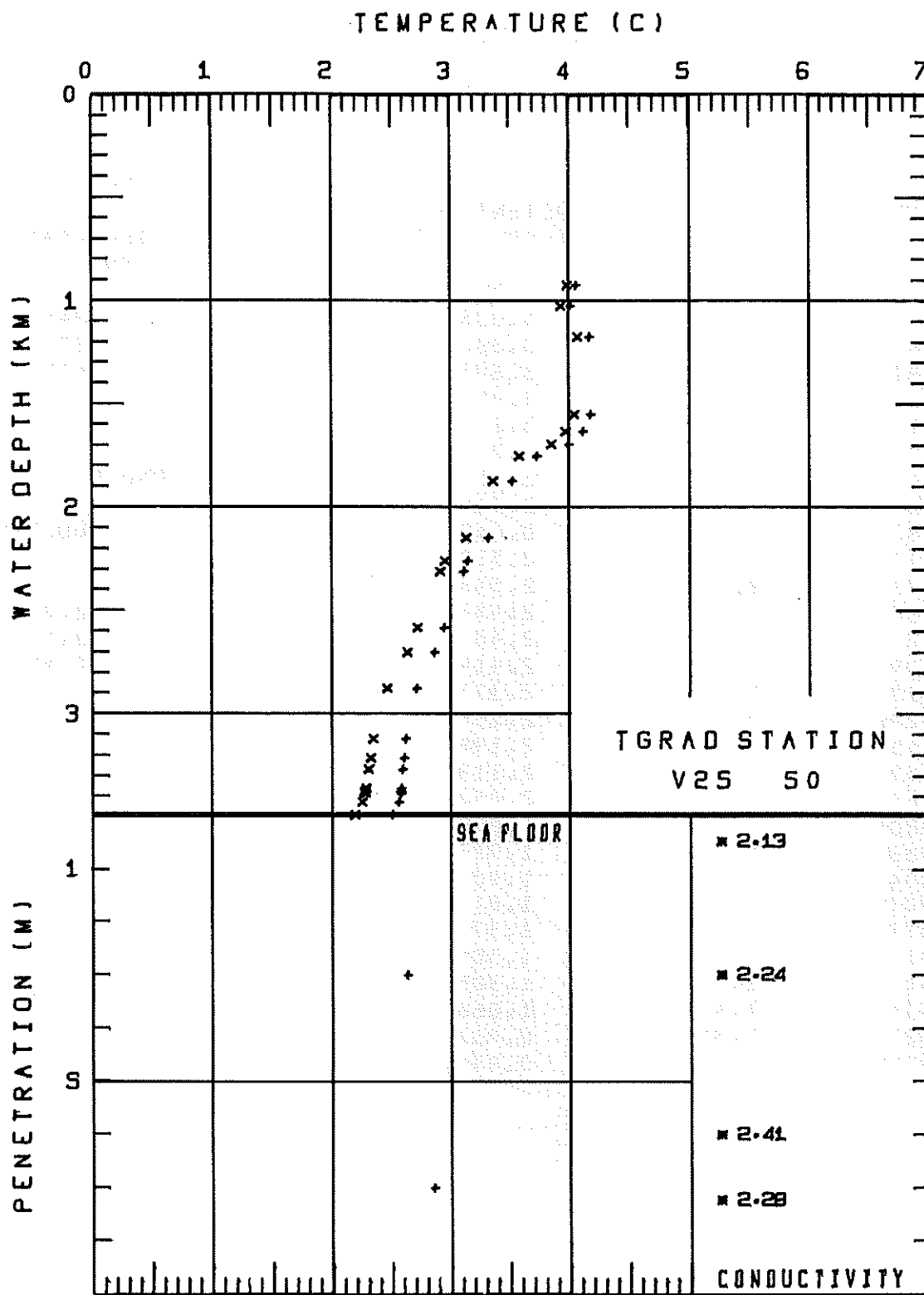
DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
921	4.064	3.992
1024	4.019	3.936
1173	4.175	4.078
1548	4.188	4.053
1632	4.122	3.980
1692	4.003	3.855
1751	3.739	3.589
1872	3.529	3.369
2148	3.332	3.147
2258	3.157	2.964
2310	3.125	2.927
2580	2.957	2.733
2702	2.881	2.644
2877	2.723	2.470
3118	2.631	2.352
3211	2.620	2.332
3267	2.606	2.311
3361	2.594	2.289
3384	2.591	2.282
3375	2.587	2.280
3379	2.588	2.280
3425	2.573	2.260
3488	2.515	2.197

SEDIMENT TEMPERATURES

DEPTH METERS	TEMPERATURE CENTIGRADE
3.00	2.644
7.00	2.875

SEDIMENT CONDUCTIVITIES

DEPTH METERS	CONDUCTIVITY CGS
0.50	2.13
3.00	2.24
6.00	2.41
7.23	2.28



TGRAD STATION V25-051
 001 57.6 S 034 20.3 W
 CRUISE STATION 066

WATER TEMPERATURES

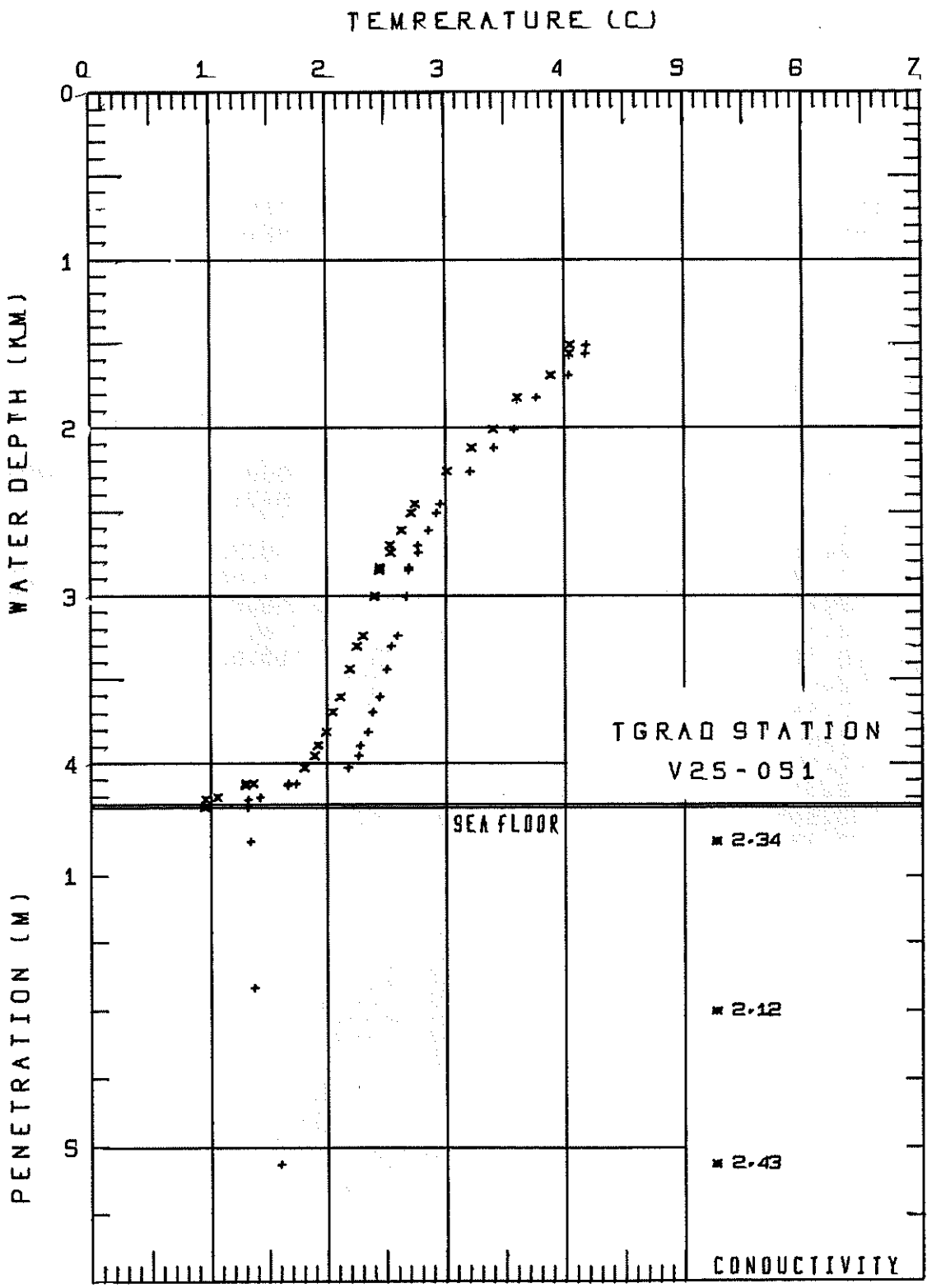
DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
1503	4.175	4.045
1556	4.172	4.038
1684	4.029	3.882
1816	3.763	3.605
2002	3.579	3.407
2113	3.409	3.227
2256	3.214	3.019
2447	2.960	2.751
2499	2.933	2.717
2606	2.865	2.640
2693	2.770	2.539
2736	2.780	2.543
2826	2.697	2.453
2840	2.699	2.453
2996	2.678	2.414
3234	2.604	2.313
3296	2.554	2.258
3432	2.509	2.198
3597	2.449	2.119
3688	2.390	2.052
3808	2.352	2.000
3888	2.286	1.927
3948	2.269	1.901
4018	2.187	1.813
4112	1.740	1.372
4120	1.671	1.305
4112	1.670	1.305
4192	1.431	1.066
4210	1.323	0.962
4255	1.323	0.956

SEDIMENT TEMPERATURES

DEPTH METERS	TEMPERATURE CENTIGRADE
0.50	1.348
2.65	1.378
5.25	1.605

SEDIMENT CONDUCTIVITIES

DEPTH METERS	CONDUCTIVITY CGS
0.50	2.34
3.00	2.12
5.25	2.43



TGRAD STATION V25-052
 000 16.0 N 032 57.9 W
 CRUISE STATION 067

WATER TEMPERATURES

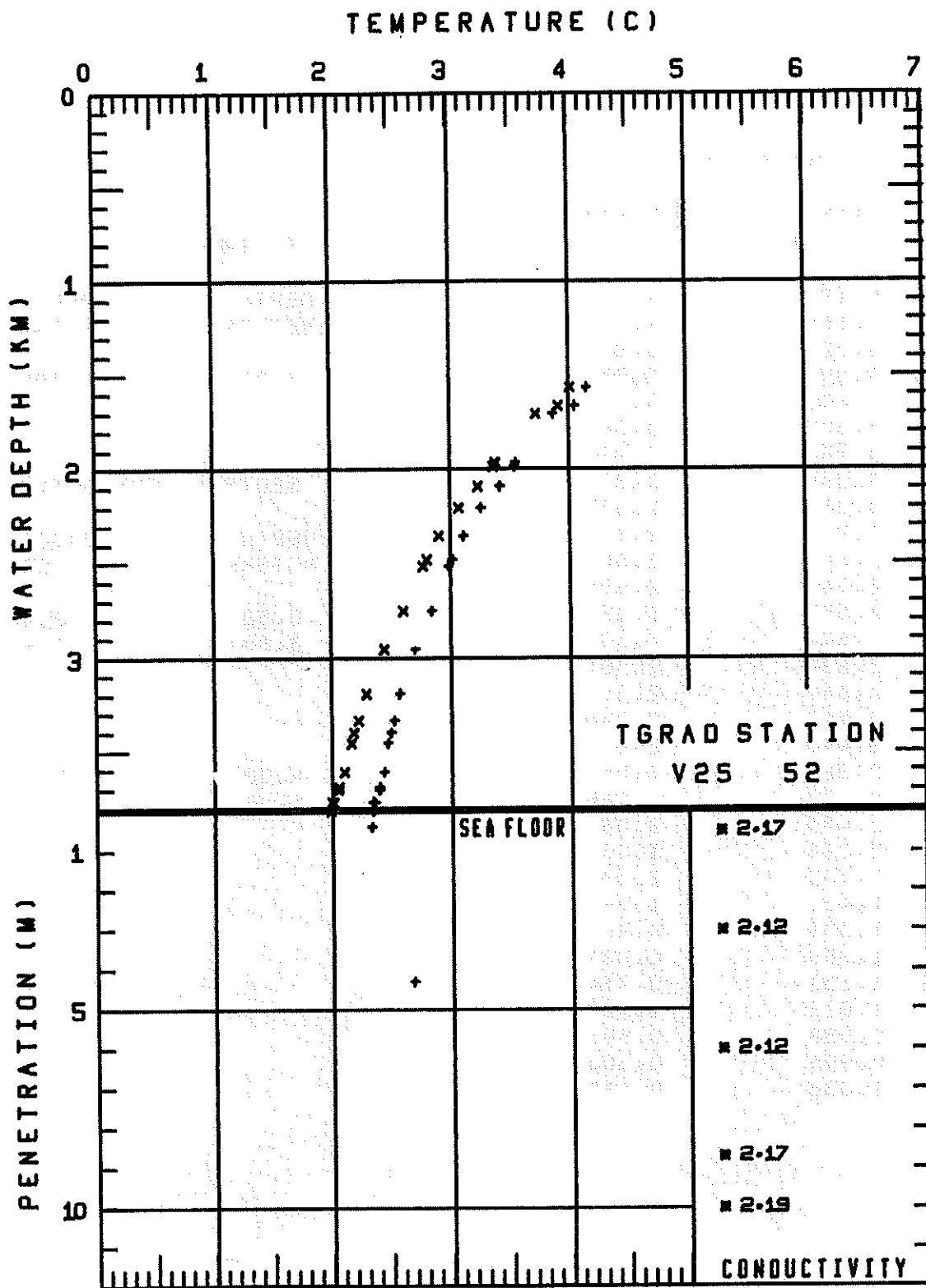
DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
1563	4.151	4.013
1661	4.054	3.909
1703	3.862	3.716
1959	3.545	3.375
1983	3.536	3.365
2087	3.415	3.236
2202	3.266	3.078
2350	3.117	2.914
2478	3.027	2.813
2512	2.994	2.776
2746	2.852	2.612
2953	2.713	2.454
3190	2.579	2.296
3331	2.530	2.230
3394	2.501	2.194
3450	2.480	2.168
3604	2.442	2.112
3683	2.403	2.065
3699	2.401	2.060
3767	2.363	2.015
3762	2.355	2.007
3810	2.352	2.000

SEDIMENT TEMPERATURES

DEPTH METERS	TEMPERATURE CENTIGRADE
0.39	2.335
4.29	2.684

SEDIMENT CONDUCTIVITIES

DEPTH METERS	CONDUCTIVITY CGS
0.50	2.17
3.00	2.12
6.00	2.12
8.70	2.17
10.00	2.19



TGRAD STATION V25-053
 001 17.6 N 033 23.3 W
 CRUISE STATION 068

WATER TEMPERATURES

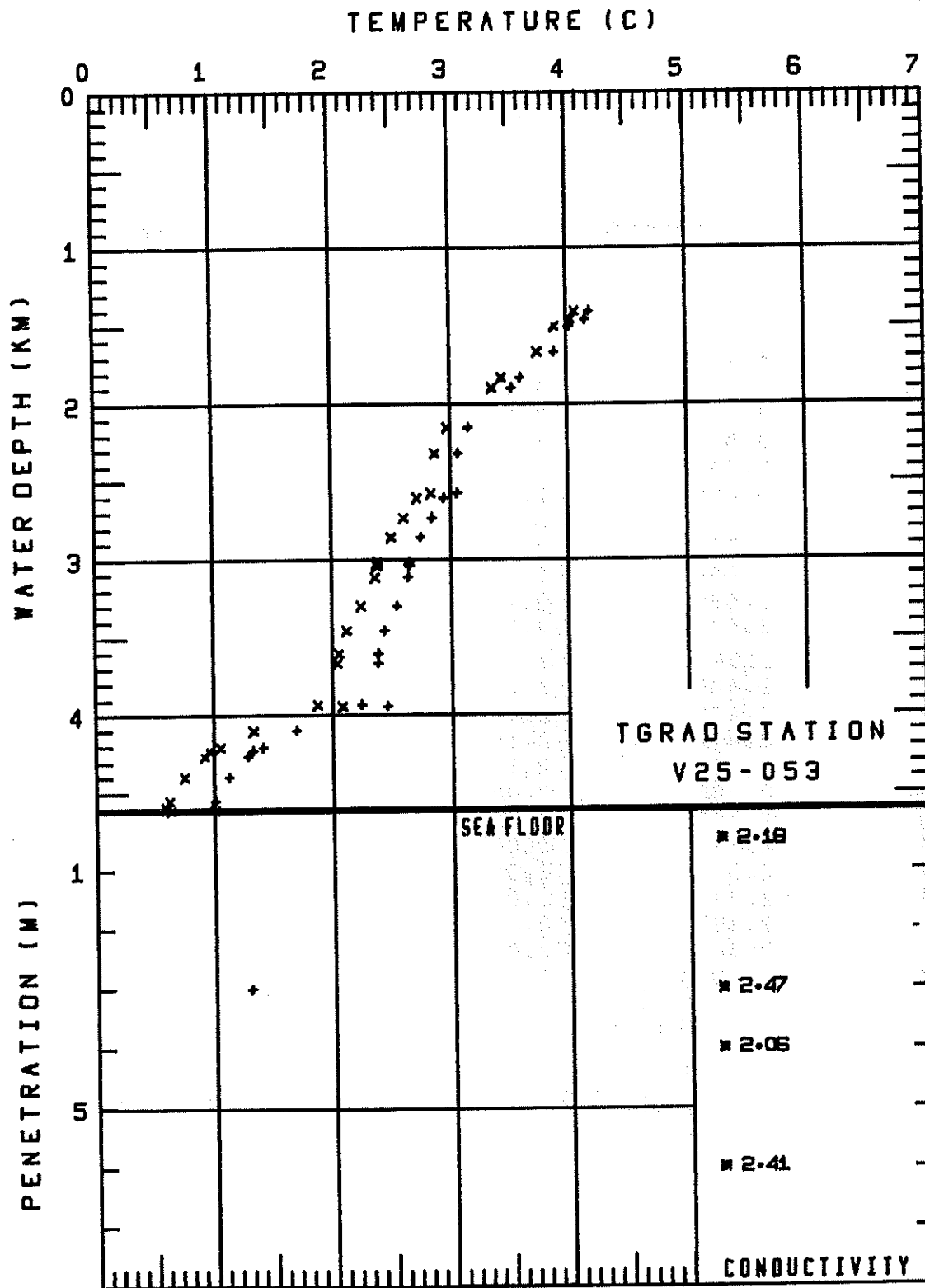
DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
1408	4.190	4.069
1462	4.164	4.038
1506	4.026	3.896
1671	3.895	3.752
1835	3.602	3.446
1898	3.529	3.368
2156	3.160	2.977
2319	3.069	2.871
2578	3.063	2.837
2605	2.941	2.716
2734	2.846	2.607
2860	2.747	2.496
3015	2.651	2.385
3029	2.644	2.375
3044	2.651	2.381
3113	2.640	2.363
3296	2.542	2.246
3458	2.440	2.127
3604	2.388	2.059
3665	2.382	2.046
3943	2.455	2.081
3932	2.244	1.880
4099	1.700	1.336
4202	1.421	1.055
4224	1.331	0.967
4259	1.289	0.923
4392	1.131	0.754
4547	1.012	0.622
4593	0.988	0.593
4593	0.995	0.600
4609	1.038	0.639

SEDIMENT TEMPERATURES

DEPTH METERS	TEMPERATURE CENTIGRADE
3.00	1.305

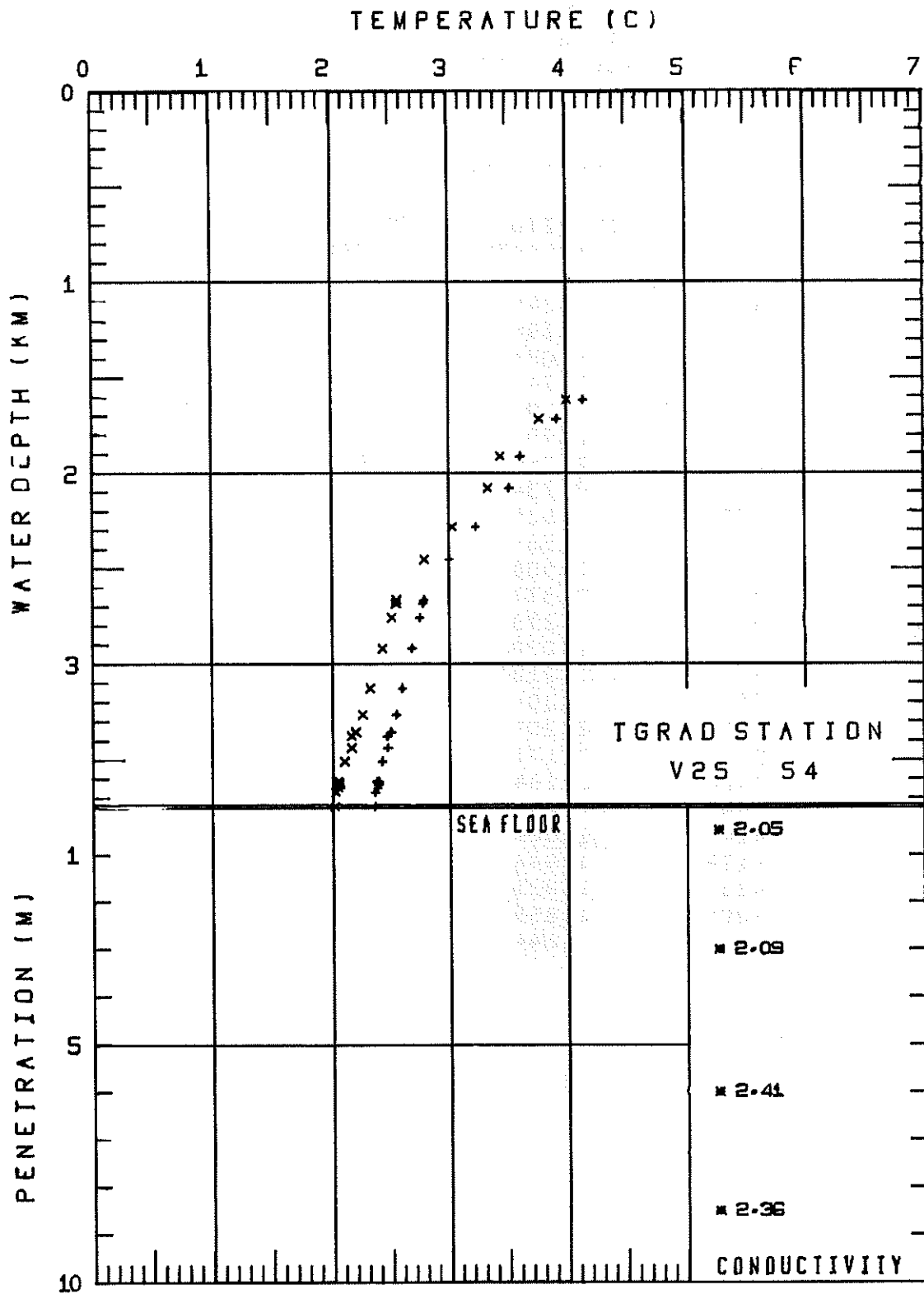
SEDIMENT CONDUCTIVITIES

DEPTH METERS	CONDUCTIVITY CGS
0.50	2.18
3.00	2.47
4.00	2.06
6.00	2.41



TGRAD STATION V25-054
 003 17 N 034 51.0 W
 CRUISE STATION 069

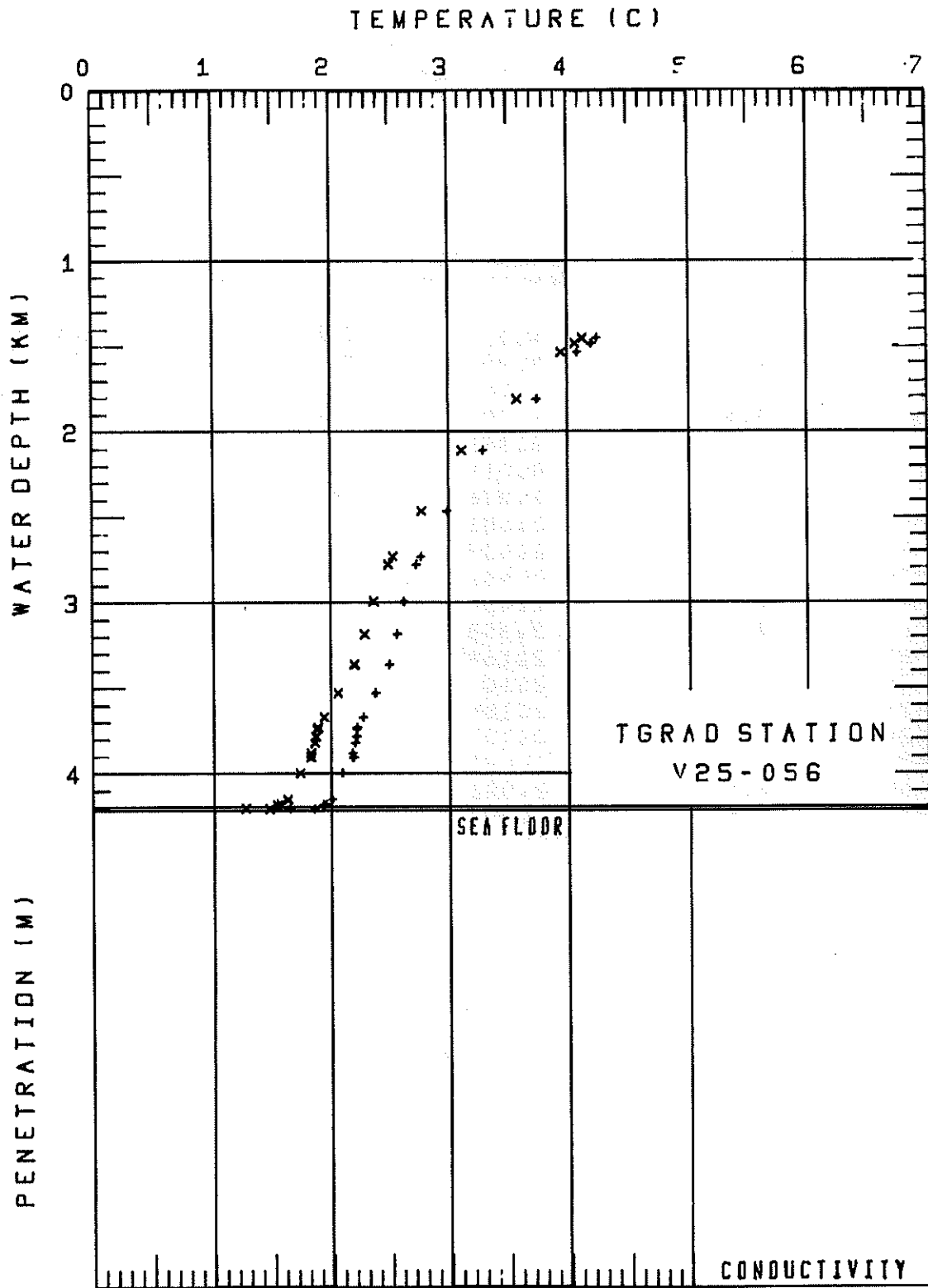
WATER TEMPERATURES			SEDIMENT CONDUCTIVITIES	
DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE	DEPTH METERS	CONDUCTIVITY CGS
1612	4.144	4.003	0.50	2.05
1712	3.917	3.769	3.00	2.09
1911	3.611	3.447	6.00	2.41
2076	3.517	3.337	8.50	2.36
2279	3.230	3.034		
2448	3.005	2.795		
2661	2.783	2.554		
2678	2.776	2.546		
2754	2.750	2.512		
2916	2.686	2.431		
3123	2.599	2.322		
3262	2.546	2.255		
3351	2.499	2.197		
3374	2.471	2.167		
3437	2.473	2.161		
3506	2.424	2.106		
3610	2.380	2.050		
3625	2.389	2.059		
3620	2.397	2.067		
3613	2.394	2.065		
3610	2.396	2.066		
3643	2.387	2.053		
3668	2.364	2.029		
3743	2.367	2.021		



TGRAD STATION V25-056
003 40.0 N 043 56 W
CRUISE STATION 073

WATER TEMPERATURES

DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
1449	4.246	4.121
1482	4.196	4.066
1534	4.083	3.951
1810	3.742	3.585
2109	3.296	3.115
2463	2.992	2.780
2730	2.769	2.532
2775	2.734	2.494
2992	2.625	2.362
3181	2.567	2.285
3357	2.500	2.198
3527	2.377	2.059
3668	2.273	1.940
3727	2.220	1.882
3738	2.218	1.880
3818	2.204	1.855
3781	2.209	1.865
3878	2.177	1.822
3900	2.184	1.825
3995	2.094	1.729
4147	2.006	1.622
4178	1.948	1.565
4183	1.921	1.538
4205	1.855	1.470
4200	1.644	1.270



TGRAD STATION V25-057
 002 19 N 045 54 W
 CRUISE STATION 074

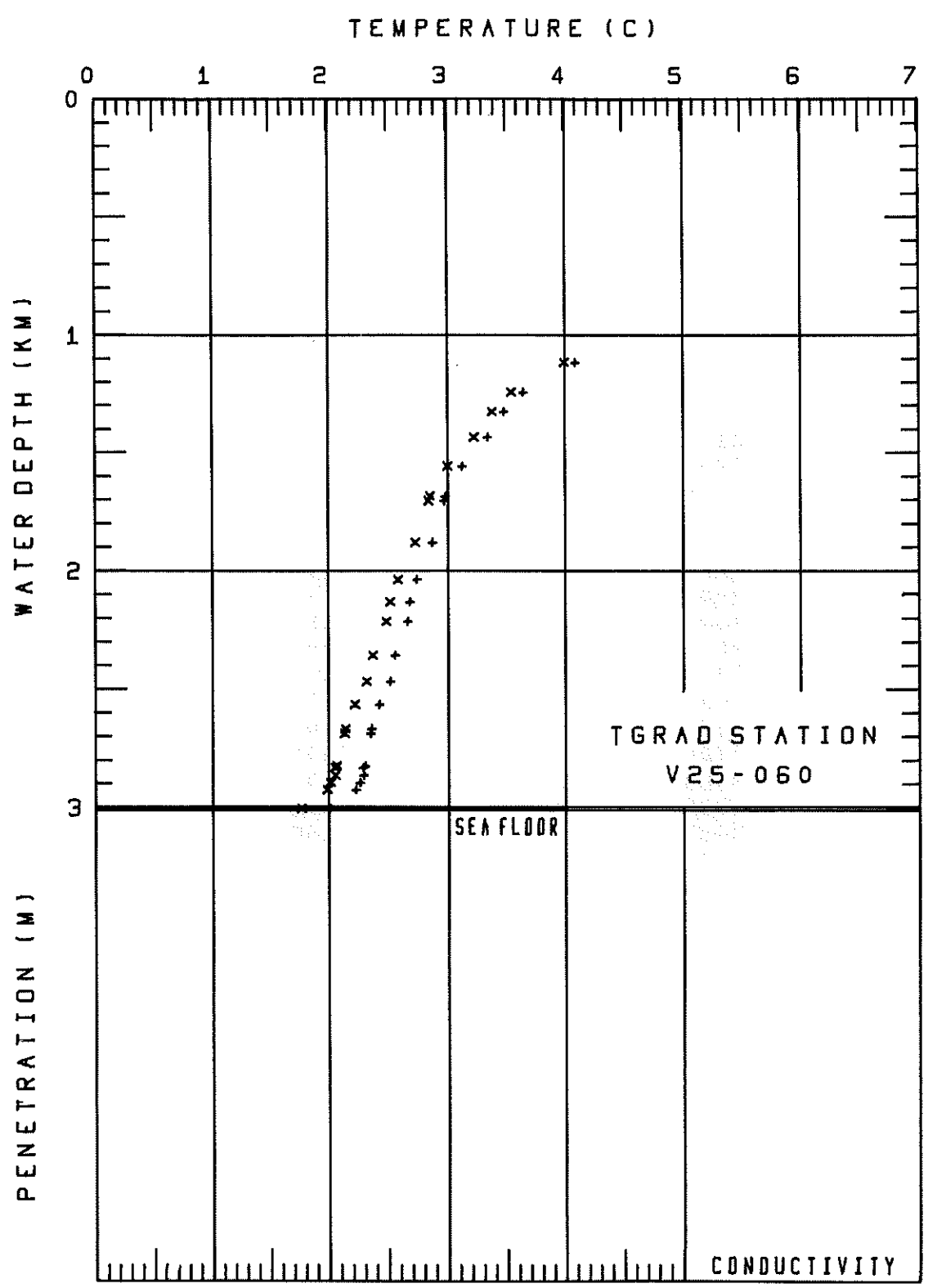
WATER TEMPERATURES

DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE	SEDIMENT TEMPERATURES	
			DEPTH METERS	TEMPERATURE CENTIGRADE
1681	4.172	4.023		
1752	4.106	3.950		
1866	3.925	3.760		
1921	3.874	3.704	4.70	2.697
2037	3.520	3.343		
2265	3.210	3.014		
2372	3.080	2.876		
2545	2.901	2.681		
2798	2.732	2.489		
2870	2.712	2.462		
2940	2.712	2.454		
3067	2.630	2.358		
3388	2.473	2.168		
3455	2.413	2.101		
3428	2.414	2.106		
3428	2.415	2.107		
3428	2.404	2.098		
3460	2.402	2.092		
3511	2.411	2.093		

TGRAD STATION V25-060
004 07'N 049 43 W
CRUISE STATION 077

WATER TEMPERATURES

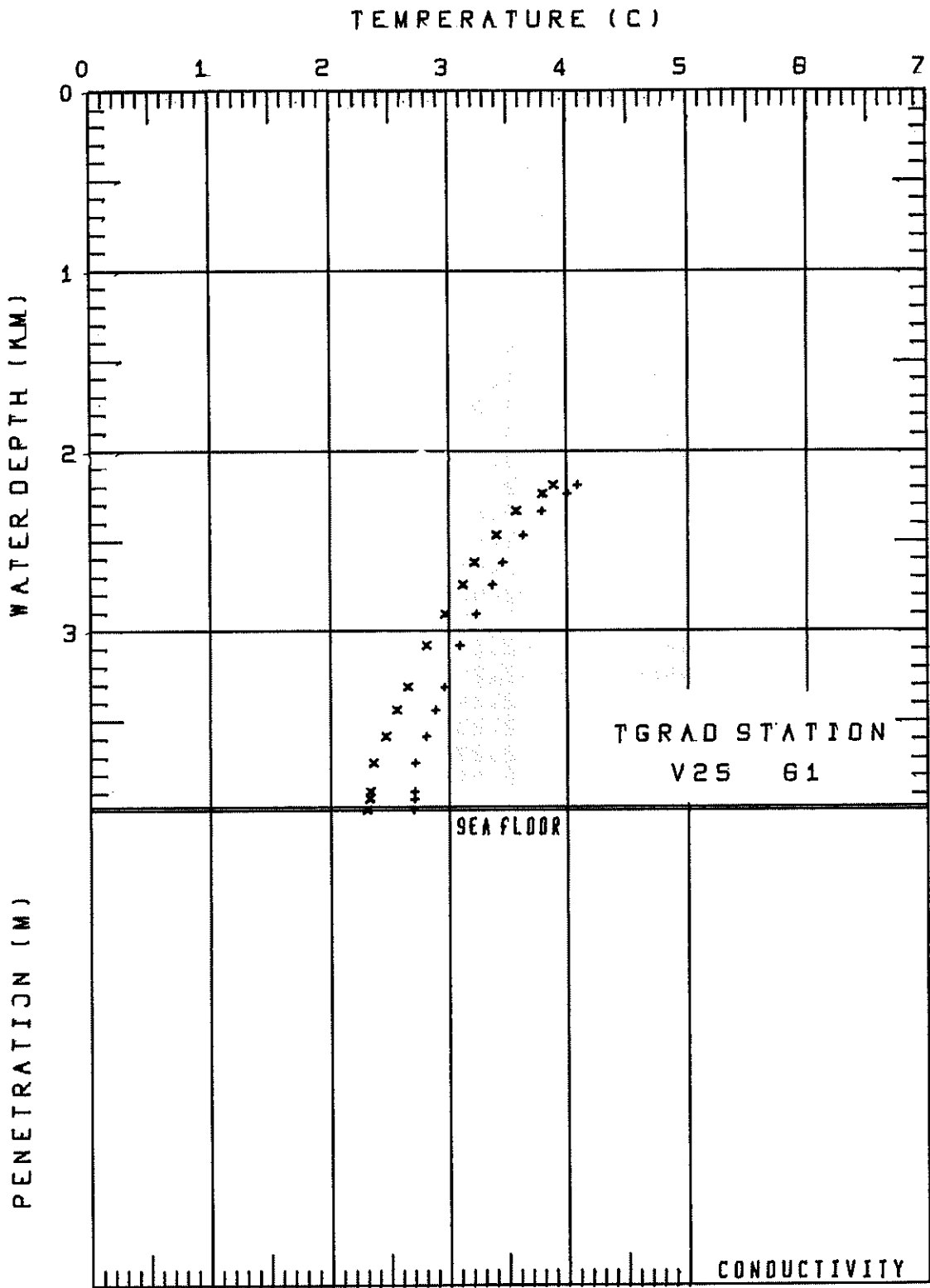
DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
1114	4.095	4.005
1242	3.651	3.553
1324	3.487	3.382
1432	3.344	3.231
1557	3.132	3.012
1683	2.993	2.861
1703	2.981	2.848
1879	2.887	2.737
2035	2.753	2.592
2129	2.691	2.521
2215	2.671	2.493
2356	2.567	2.376
2467	2.525	2.323
2562	2.431	2.223
2666	2.367	2.147
2687	2.361	2.139
2823	2.309	2.074
2830	2.295	2.059
2865	2.296	2.056
2893	2.263	2.020
2926	2.233	1.990
3004	2.016	1.769



TGRAD STATION V25-061
006 46.7 N 049° 36'W
CRUISE STATION 078

WATER TEMPERATURES

DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
2181	4.092	3.888
2230	4.005	3.797
2326	3.791	3.578
2461	3.640	3.414
2614	3.466	3.224
2739	3.381	3.127
2900	3.237	2.968
3074	3.098	2.813
2035	2.981	2.815
3304	2.961	2.651
3432	2.884	2.560
3578	2.802	2.463
3724	2.713	2.358
3883	2.705	2.330
3925	2.706	2.325
3985	2.697	2.308
2687	2.734	2.503



TGRAD STATION V25-062
008 48 N 049 19.4 W
CRUISE STATION 079

WATER TEMPERATURES

DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
1854	4.133	3.967
2159	3.784	3.589
2411	3.494	3.276
2658	3.238	2.999
2827	3.098	2.842
2828	3.087	2.831
2820	3.025	2.771
2987	2.983	2.711
3265	2.821	2.519
3490	2.674	2.350
3867	2.480	2.114
3925	2.425	2.054
4313	2.255	1.839
4500	2.227	1.789
4484	2.240	1.802
4470	2.240	1.805
4507	2.230	1.789
4518	2.237	1.796
4576	2.242	1.792

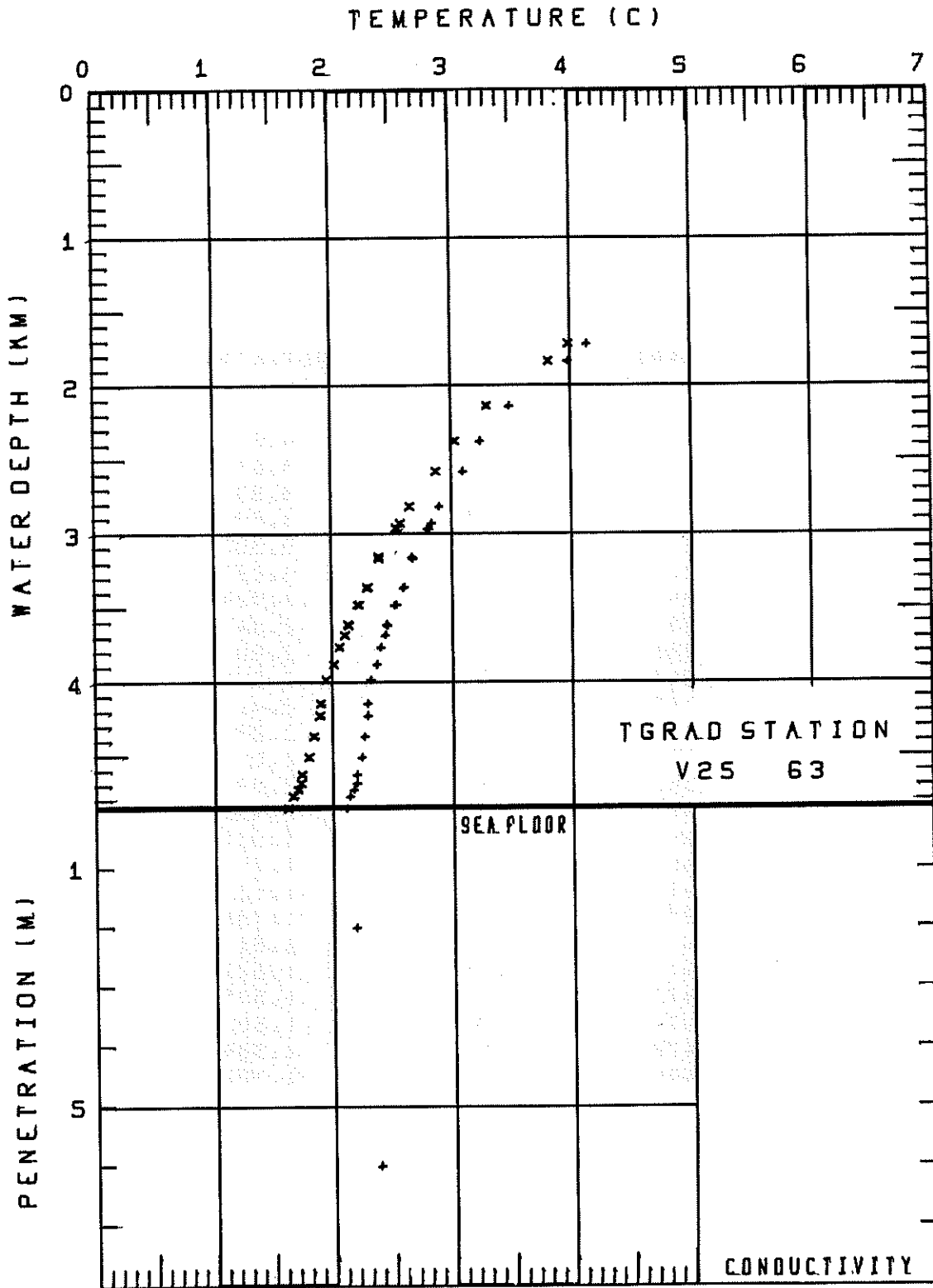
TGRAD STATION V25-063
 009 51 N 50° 02'W
 CRUISE STATION 080

WATER TEMPERATURES

DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL/ TEMPERATURE
1715	4.135	3.983
1831	3.979	3.816
2134	3.492	3.305
2373	3.243	3.035
2574	3.105	2.878
2813	2.907	2.657
2927	2.836	2.575
2961	2.818	2.554
3161	2.683	2.398
3362	2.605	2.300
3474	2.547	2.230
3617	2.474	2.141
2955	2.809	2.546
3150	2.679	2.396
3358	2.612	2.306
3475	2.532	2.216
3610	2.467	2.135
3682	2.450	2.111
3758	2.410	2.062
3879	2.377	2.015
3979	2.326	1.953
4142	2.296	1.902
4226	2.300	1.895
4366	2.270	1.848
4504	2.242	1.802
4624	2.203	1.746
4684	2.201	1.737
4726	2.180	1.713
4765	2.146	1.674
4848	2.118	1.634

SEDIMENT TEMPERATURES

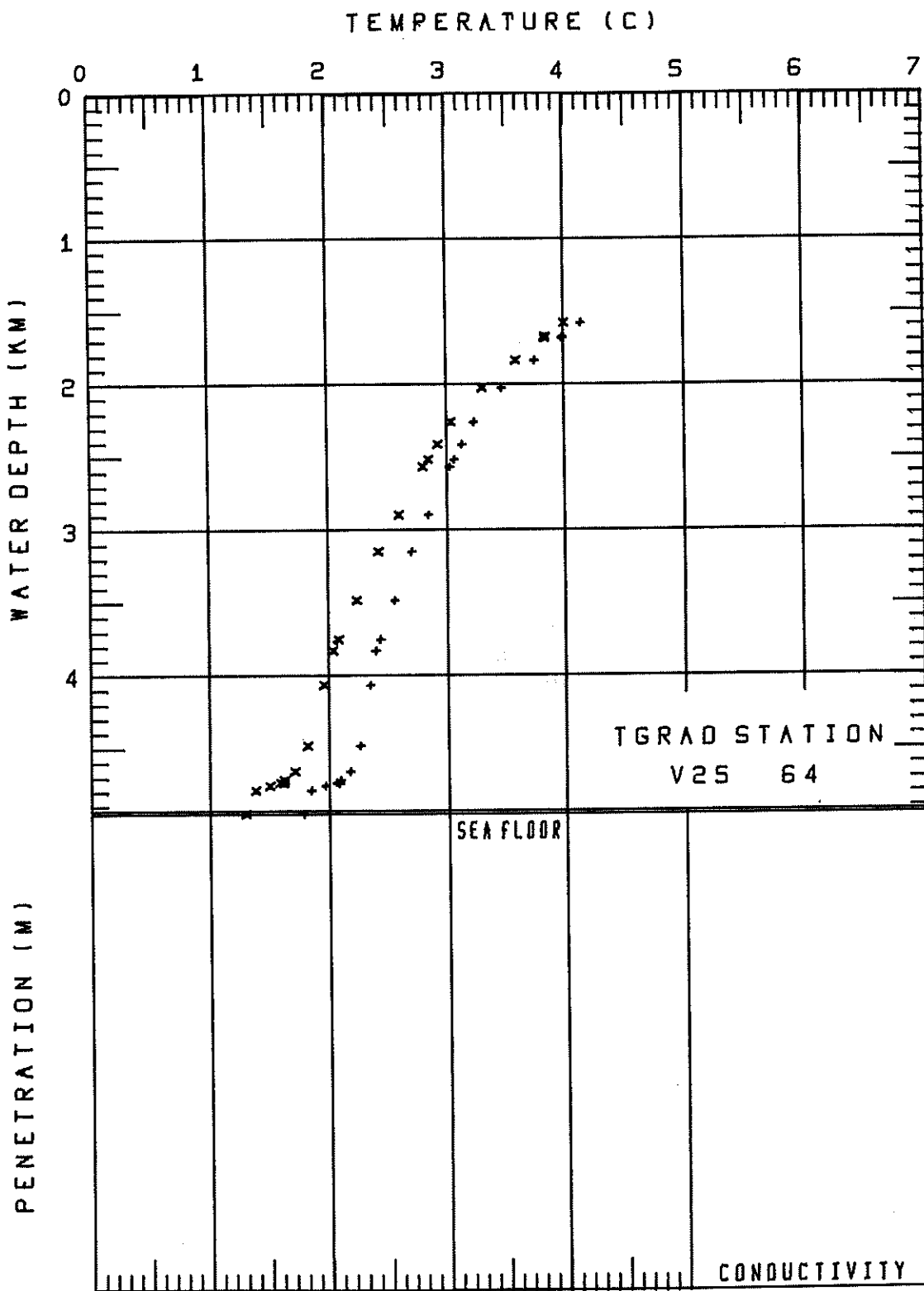
DEPTH METERS	TEMPERATURE CENTIGRADE
2.00	2.194
6.00	2.385



TGRAD STATION V25-064
009 31 N 051 59 W
CRUISE STATION 081

WATER TEMPERATURES

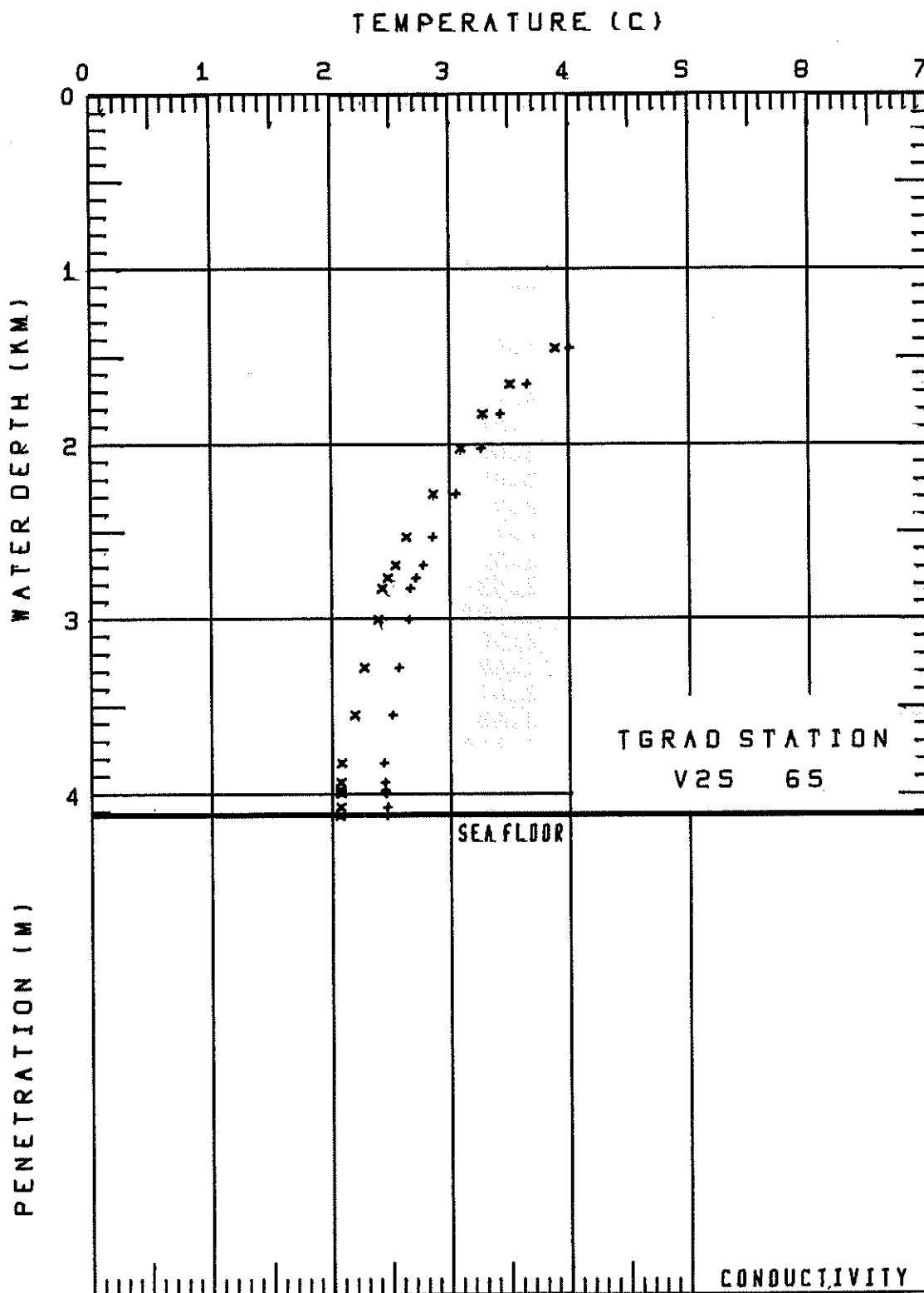
DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
1570	4.135	4.000
1663	3.982	3.838
1673	3.986	3.839
1827	3.750	3.593
2016	3.474	3.302
2252	3.232	3.039
2405	3.134	2.927
2507	3.063	2.845
2560	3.025	2.800
2887	2.848	2.592
3139	2.699	2.417
3477	2.553	2.236
3744	2.430	2.082
3823	2.394	2.036
4057	2.342	1.957
4472	2.257	1.821
4648	2.171	1.714
4712	2.088	1.627
3758	2.072	1.736
4732	2.081	1.617
4712	2.088	1.627
4726	2.058	1.595
4748	1.966	1.505
4780	1.845	1.384
4942	1.782	1.302



TGRAD STATION V25-065
008 40 N 053 10 W
CRUISE STATION 082

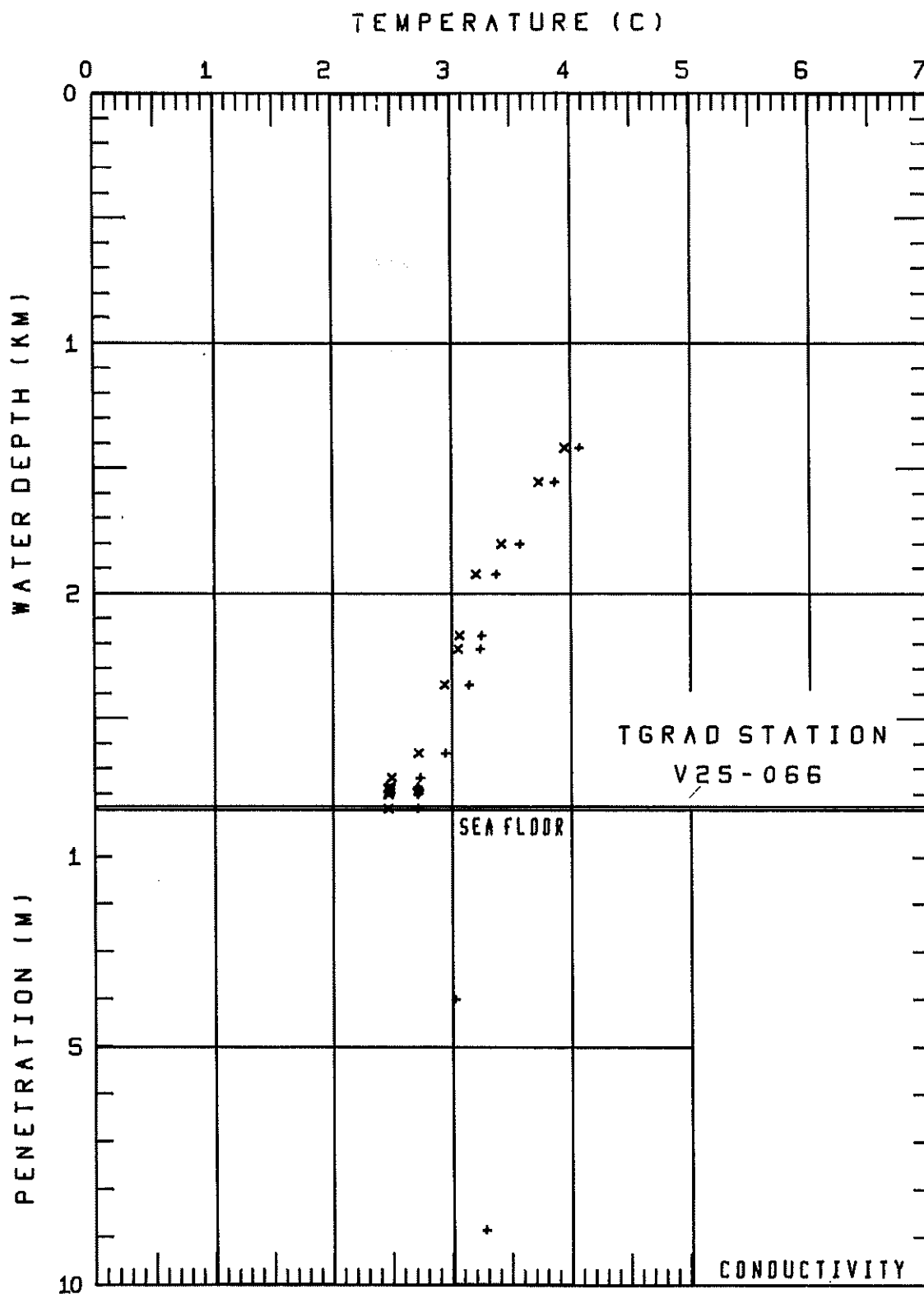
WATER TEMPERATURES

DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
1445	4.006	3.884
1653	3.644	3.506
1823	3.427	3.276
2017	3.263	3.094
2282	3.050	2.856
2526	2.850	2.634
2690	2.769	2.536
2762	2.711	2.473
2822	2.667	2.423
2999	2.654	2.390
3275	2.565	2.271
3542	2.514	2.190
3818	2.435	2.079
3926	2.443	2.072
3976	2.447	2.069
3987	2.442	2.063
3994	2.457	2.076
4070	2.461	2.071
4120	2.466	2.067



TGRAD STATION V25-066
008 34 N 053 09.9 W
CRUISE STATION 084

WATER TEMPERATURES			SEDIMENT TEMPERATURES	
DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE	DEPTH METERS	TEMPERATURE CENTIGRADE
1417	4.080	3.960		
1553	3.868	3.737		
1800	3.578	3.425		
1920	3.375	3.213		
2167	3.255	3.069	4.00	3.033
2219	3.246	3.055	8.85	3.283
2363	3.151	2.946		
2634	2.953	2.723		
2736	2.736	2.500		
2801	2.717	2.474		
2795	2.721	2.480		
2770	2.720	2.481		
2779	2.723	2.482		
2776	2.711	2.471		
2786	2.724	2.483		
2858	2.719	2.469		



TGRAD STATION V25-067
008 33.5 N 053 40 W
CRUISE STATION 087

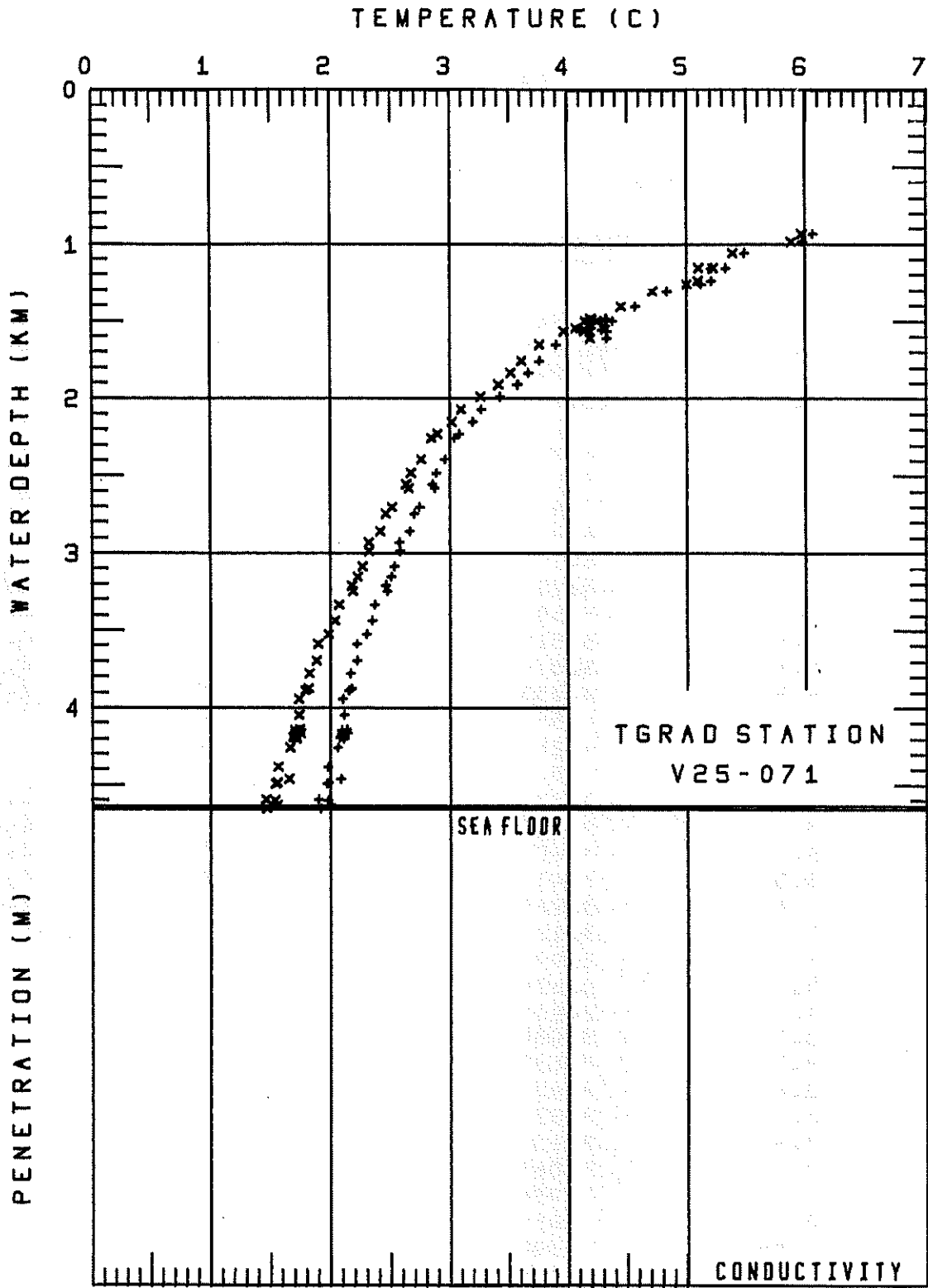
SEDIMENT TEMPERATURES

DEPTH METERS	TEMPERATURE CENTIGRADE
0.20	1.799
3.65	1.987
6.75	2.174

TGRAD STATION V25-071
 019 30 N 050 00 W
 CRUISE STATION 090

WATER TEMPERATURES

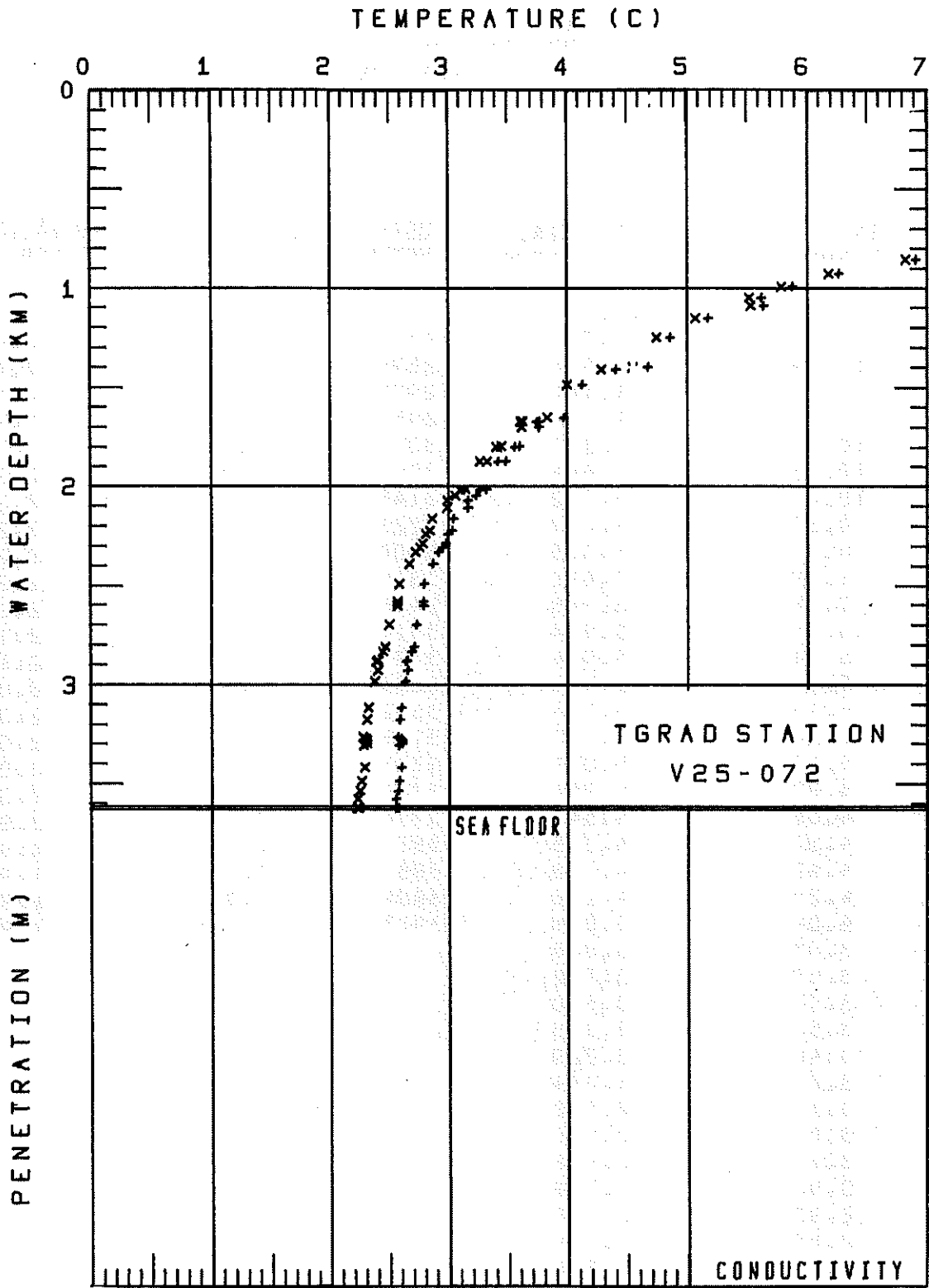
DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE	DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
494	11.697	11.625	3148	2.502	2.225
546	11.277	11.200	3244	2.473	2.186
590	11.131	11.048	3204	2.457	2.175
634	10.364	10.281	3332	2.364	2.069
690	10.191	10.100	3433	2.346	2.040
692	9.585	9.499	3523	2.300	1.984
695	9.041	8.958	3584	2.217	1.897
768	8.285	8.198	3692	2.217	1.884
849	7.056	6.968	3772	2.164	1.823
927	6.061	5.972	3869	2.168	1.815
980	5.980	5.887	3882	2.148	1.793
1054	5.490	5.392	3938	2.096	1.737
1153	5.331	5.224	4039	2.108	1.736
1231	5.212	5.098	4134	2.132	1.746
1152	5.211	5.106	4197	2.111	1.717
1254	5.121	5.006	4165	2.092	1.703
1300	4.835	4.718	4184	2.079	1.688
1399	4.573	4.448	4174	2.105	1.714
1493	4.380	4.248	4141	2.092	1.706
1557	4.329	4.191	4159	2.139	1.750
1603	4.332	4.189	4179	2.100	1.710
1551	4.288	4.151	4254	2.060	1.661
1525	4.315	4.180	4379	1.980	1.568
1491	4.283	4.151	4480	1.986	1.561
1482	4.331	4.201	4590	1.901	1.464
1475	4.324	4.196	4592	1.979	1.538
1536	4.206	4.072	4455	2.084	1.657
1559	4.108	3.973	4624	2.003	1.556
1648	3.907	3.766	4645	1.918	1.473
1749	3.764	3.614	4483	1.970	1.546
1825	3.672	3.516			
1903	3.579	3.415			
1905	3.579	3.415			
1983	3.431	3.263			
2066	3.269	3.095			
2148	3.200	3.019			
2225	3.087	2.900			
2253	3.035	2.845			
2389	2.960	2.756			
2479	2.881	2.670			
2575	2.875	2.652			
2550	2.848	2.631			
2701	2.745	2.513			
2743	2.696	2.460			
2853	2.659	2.411			
2927	2.572	2.318			
2985	2.579	2.318			
3082	2.533	2.263			



TGRAD STATION V25-072
 022 21.6N 045 11.8 W
 CRUISE STATION 091

WATER TEMPERATURES

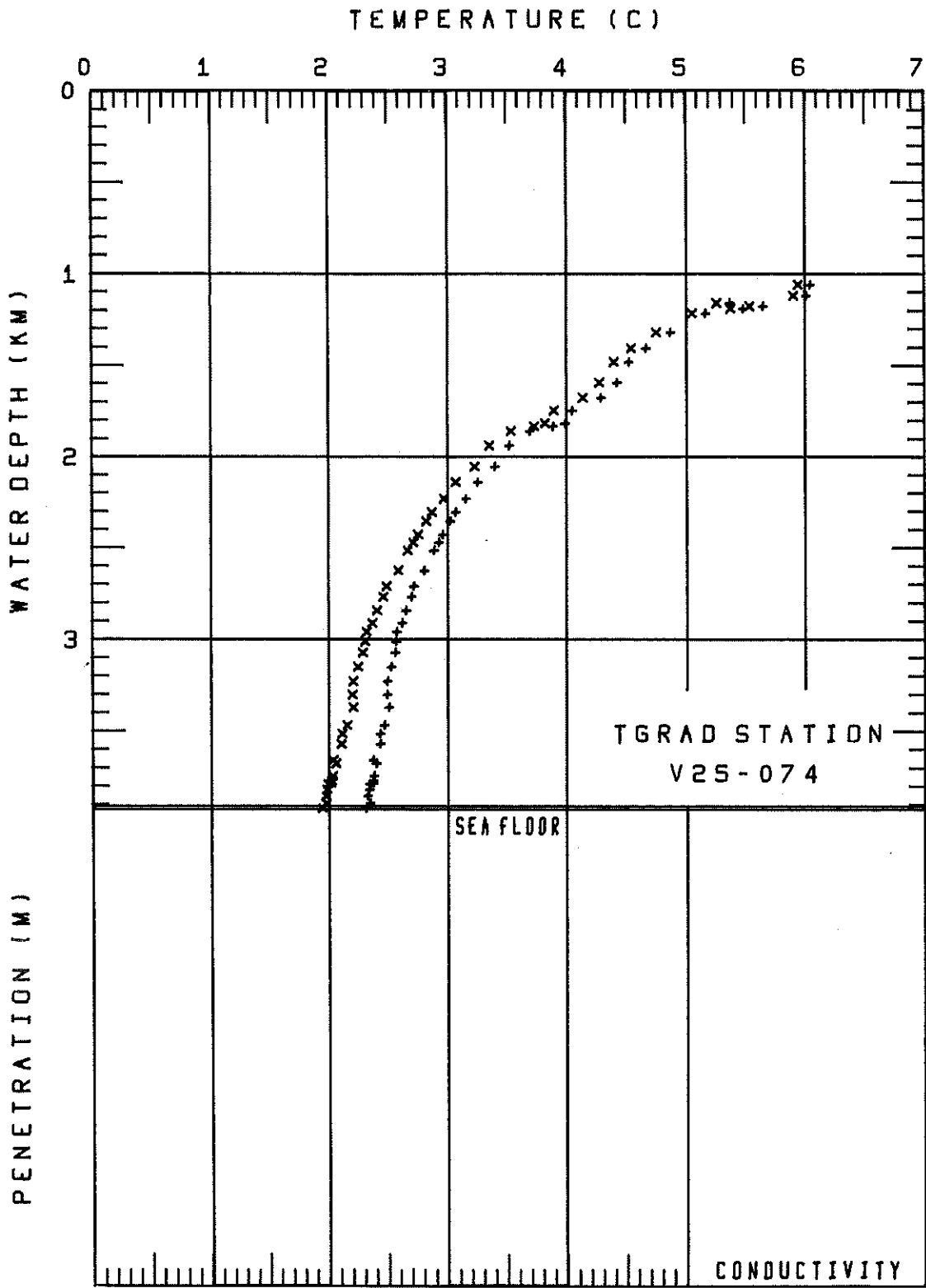
DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE	DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
460	11.930	11.861	2388	2.876	2.675
489	11.606	11.534	2488	2.804	2.593
591	11.328	11.245	2578	2.799	2.579
610	10.163	10.085	2596	2.797	2.575
724	9.288	9.201	2694	2.736	2.505
789	8.375	8.285	2806	2.717	2.473
814	7.638	7.550	2834	2.698	2.453
837	7.522	7.432	2874	2.659	2.409
854	6.913	6.824	2878	2.650	2.400
926	6.267	6.177	2926	2.665	2.409
990	5.880	5.785	2982	2.645	2.383
1084	5.635	5.533	3111	2.611	2.335
1044	5.618	5.519	3175	2.598	2.315
1150	5.179	5.074	3260	2.580	2.288
1248	4.865	4.753	3301	2.591	2.292
1397	4.678	4.552	3268	2.602	2.308
1406	4.413	4.289	3294	2.617	2.318
1484	4.132	4.005	3278	2.615	2.319
1650	3.979	3.835	3413	2.608	2.296
1699	3.770	3.626	3484	2.592	2.270
1667	3.750	3.609	3532	2.585	2.257
1797	3.563	3.411	3571	2.566	2.236
1871	3.427	3.269	3620	2.565	2.229
2017	3.270	3.101	3618	2.585	2.249
2066	3.170	2.996			
2158	3.053	2.874			
2238	3.003	2.815			
2319	3.282	3.080			
1669	3.771	3.630			
1793	3.605	3.451			
1872	3.490	3.332			
2011	3.323	3.153			
2043	3.236	3.063			
2102	3.173	2.996			
2222	3.039	2.854			
2283	2.982	2.790			
2304	2.956	2.763			
2330	2.927	2.730			



TGRAD STATION V25-074
 023 18.0 N 044 053.8 W
 CRUISE STATION 095

WATER TEMPERATURES

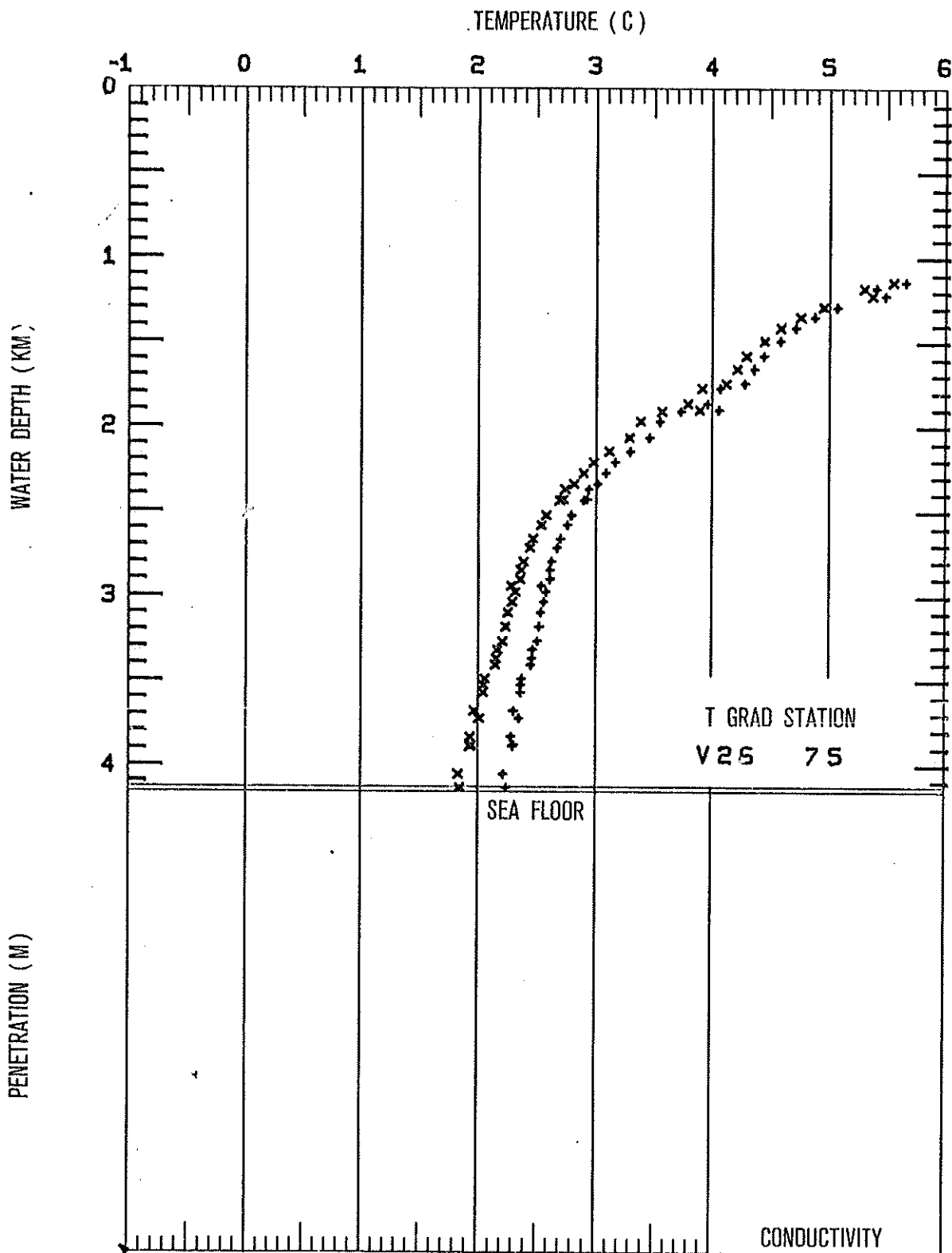
DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE	DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
502	11.923	11.849			
548	11.863	11.783	2763	2.701	2.462
591	11.642	11.556	2836	2.657	2.411
616	11.247	11.162	2905	2.624	2.371
611	11.222	11.137	2955	2.579	2.322
650	10.885	10.797	3007	2.574	2.311
662	10.738	10.648	3069	2.561	2.291
726	10.076	9.982	3145	2.529	2.252
786	9.375	9.277	3223	2.497	2.212
850	8.472	8.375	3300	2.495	2.201
915	7.590	7.490	3369	2.513	2.210
968	7.066	6.965	3465	2.473	2.159
1056	6.047	5.944	3511	2.440	2.120
1120	6.014	5.904	3570	2.437	2.111
1177	5.652	5.539	3655	2.381	2.046
1189	5.487	5.375	3672	2.402	2.065
1159	5.369	5.262	3745	2.385	2.039
1214	5.171	5.059	3783	2.377	2.027
1317	4.876	4.756	3784	2.350	2.000
1405	4.668	4.542	3770	2.378	2.029
1478	4.527	4.395	3819	2.343	1.990
1593	4.421	4.278	3851	2.332	1.976
1675	4.288	4.138	3889	2.351	1.987
1746	4.049	3.895	3917	2.318	1.953
1814	3.988	3.828			
1833	3.894	3.732			
1858	3.700	3.540			
1936	3.521	3.355			
2056	3.404	3.229			
2138	3.256	3.074			
2228	3.160	2.970			
2302	3.068	2.872			
2350	3.027	2.828			
2423	2.966	2.758			
2468	2.929	2.718			
2510	2.889	2.674			
2619	2.813	2.588			
2706	2.725	2.493			



TGRAD STATION V25-075
 023 29.4 N 044 56.0 W
 CRUISE STATION 096

WATER TEMPERATURES

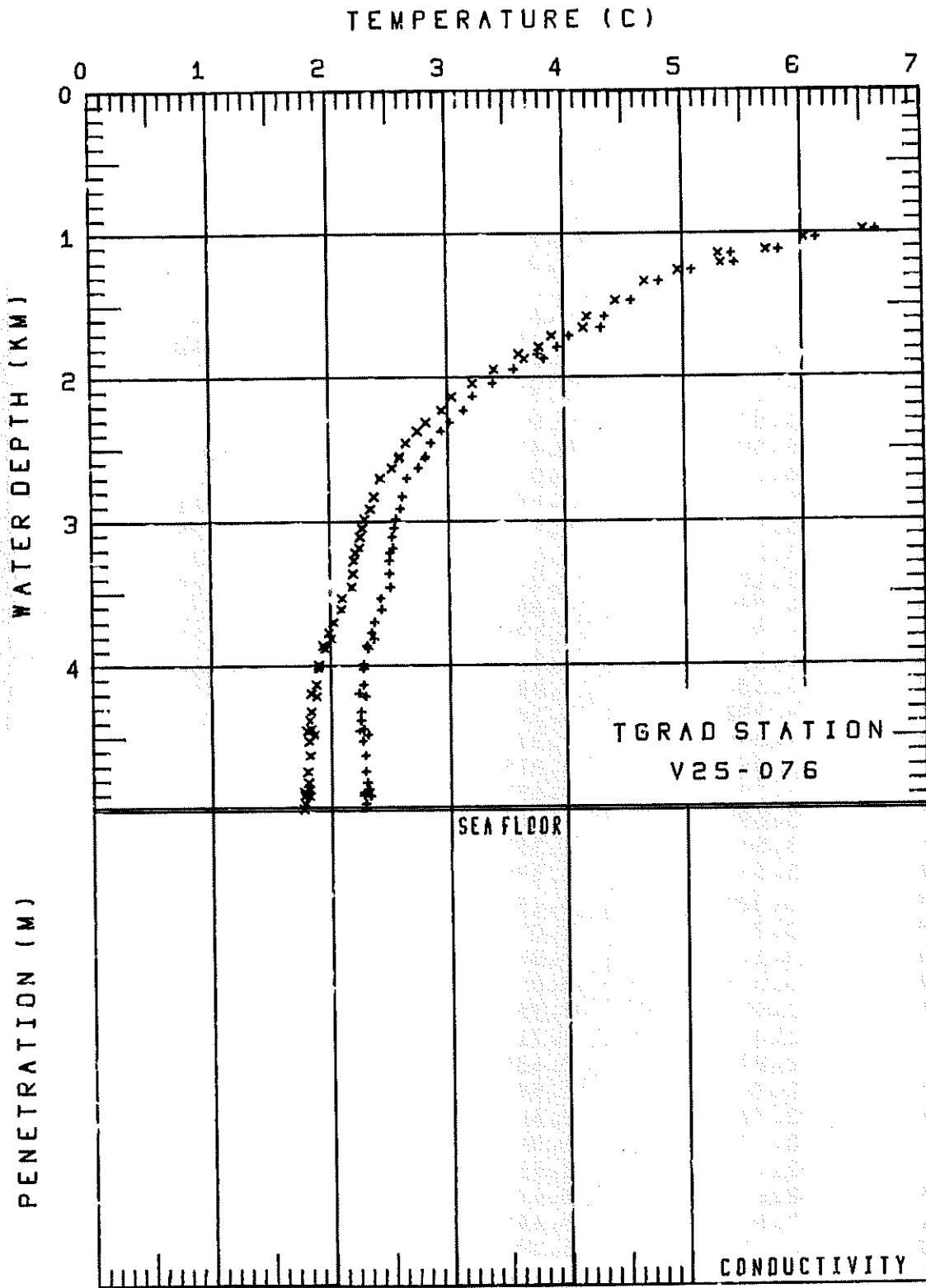
DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE			
552	11.729	11.649	2273	3.072	2.880
633	11.514	11.424	2334	2.996	2.797
668	10.861	10.769	2367	2.925	2.724
715	10.351	10.257	2426	2.908	2.703
740	10.033	9.938	2432	2.882	2.677
784	9.211	9.115	2518	2.776	2.563
850	8.343	8.245	2578	2.742	2.523
907	7.663	7.563	2663	2.681	2.454
966	7.087	6.986	2711	2.655	2.424
1026	6.516	6.413	2796	2.612	2.372
1077	6.418	6.310	2845	2.598	2.354
1111	6.069	5.960	2900	2.595	2.343
1138	5.638	5.530	2938	2.527	2.275
1173	5.387	5.278	2975	2.565	2.306
1220	5.467	5.352	3034	2.545	2.280
1283	5.047	4.929	2513	0.005	0.005
1346	4.858	4.736	3098	2.517	2.246
1408	4.698	4.571	3179	2.501	2.221
1488	4.565	4.431	3266	2.490	2.200
1575	4.422	4.280	3316	2.451	2.155
1652	4.347	4.198	3369	2.442	2.141
1739	4.262	4.105	3406	2.440	2.135
1769	4.054	3.898	3488	2.359	2.046
1897	4.045	3.875	3525	2.348	2.032
1858	3.944	3.780	3571	2.355	2.032
1906	3.720	3.554	3677	2.293	1.959
1964	3.530	3.361	3723	2.339	1.997
2062	3.447	3.269	3830	2.273	1.921
2141	3.279	3.096	3879	2.289	1.930
2205	3.151	2.964	3888	2.283	1.924
			4052	2.201	1.823
			4130	2.229	1.839



TGRAD STATION V25-076
 023 31.7 N 045 0.7 W
 CRUISE STATION 098

WATER TEMPERATURES

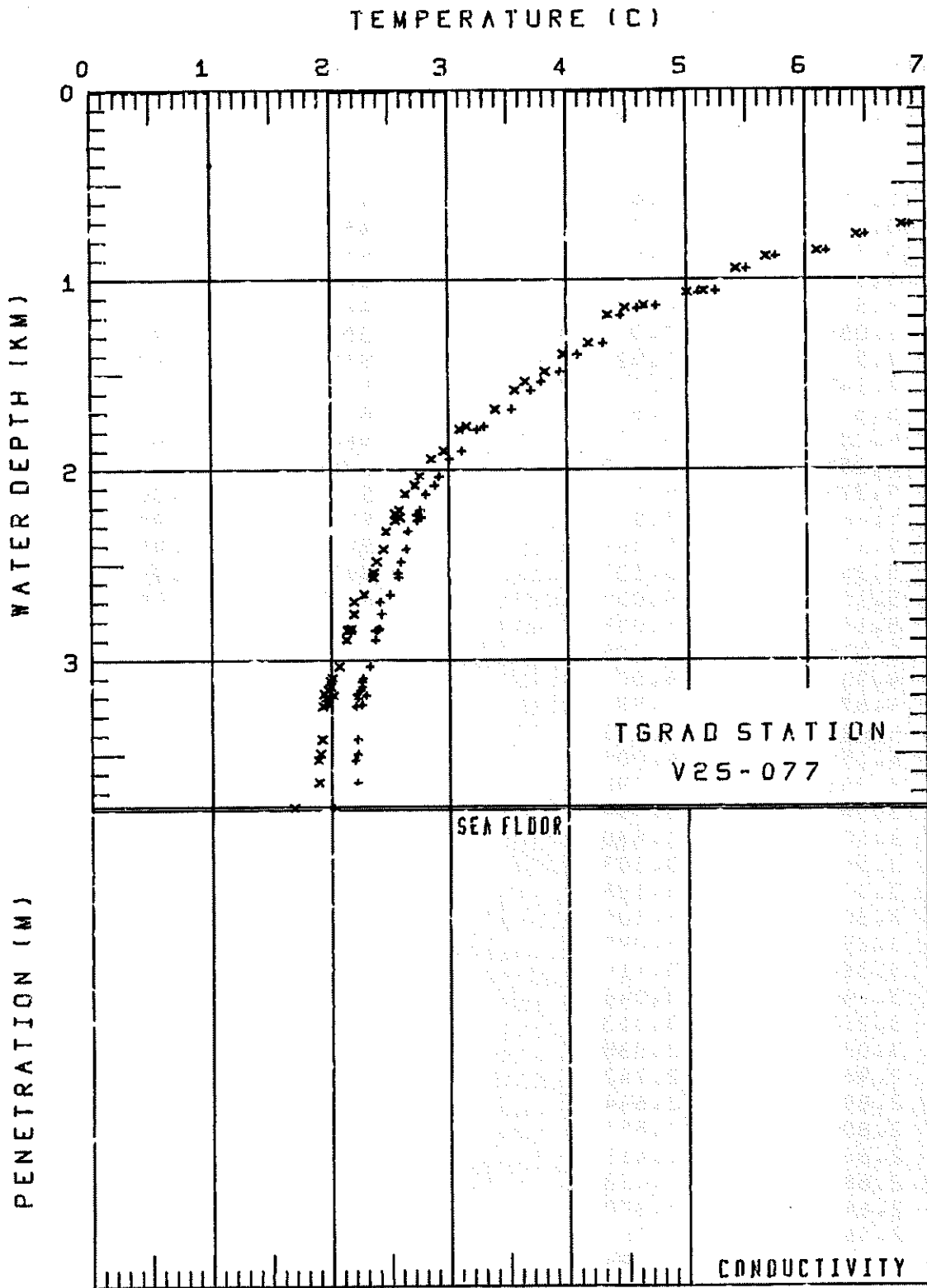
DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE	DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
461	12.101	12.033			
504	11.703	11.630	3859	2.303	1.947
532	11.438	11.364	3883	2.316	1.956
563	11.196	11.117	3991	2.276	1.902
603	10.919	10.836	4021	2.280	1.904
592	10.634	10.555	4129	2.276	1.885
716	8.996	8.912	4194	2.237	1.838
779	8.259	8.170	4213	2.290	1.888
887	7.380	7.285	4317	2.250	1.835
975	6.621	6.522	4381	2.250	1.825
1035	6.130	6.028	4441	2.269	1.836
1114	5.817	5.710	4450	2.240	1.808
1138	5.417	5.311	4524	2.263	1.819
1205	5.443	5.330	4627	2.282	1.822
1253	5.085	4.970	4733	2.282	1.808
1333	4.810	4.690	4811	2.296	1.809
1464	4.574	4.442	4859	2.309	1.815
1578	4.348	4.207	4877	2.275	1.780
1657	4.319	4.171	4906	2.322	1.821
1710	4.054	3.903	4902	2.275	1.776
1786	3.953	3.796	4864	2.305	1.812
1873	3.835	3.671	4955	2.283	1.777
1836	3.783	3.624	4996	2.286	1.775
1945	3.578	3.409	4480	2.302	1.862
2039	3.398	3.223			
2130	3.226	3.046			
2228	3.147	2.959			
2310	3.021	2.825			
2373	2.950	2.750			
2456	2.862	2.654			
2550	2.816	2.599			
2558	2.812	2.594			
2623	2.756	2.532			
2697	2.658	2.429			
2823	2.619	2.376			
2910	2.598	2.345			
2979	2.559	2.300			
3044	2.546	2.280			
3105	2.527	2.255			
3213	2.502	2.217			
3179	2.533	2.251			
3270	2.500	2.207			
3360	2.500	2.197			
3453	2.501	2.187			
3532	2.427	2.105			
3606	2.429	2.099			
3697	2.374	2.033			
3769	2.342	1.994			
3812	2.362	2.008			



TGRAD STATION V25-077
 023 57.2 N 047 23.5 W
 CRUISE STATION 103

WATER TEMPERATURES

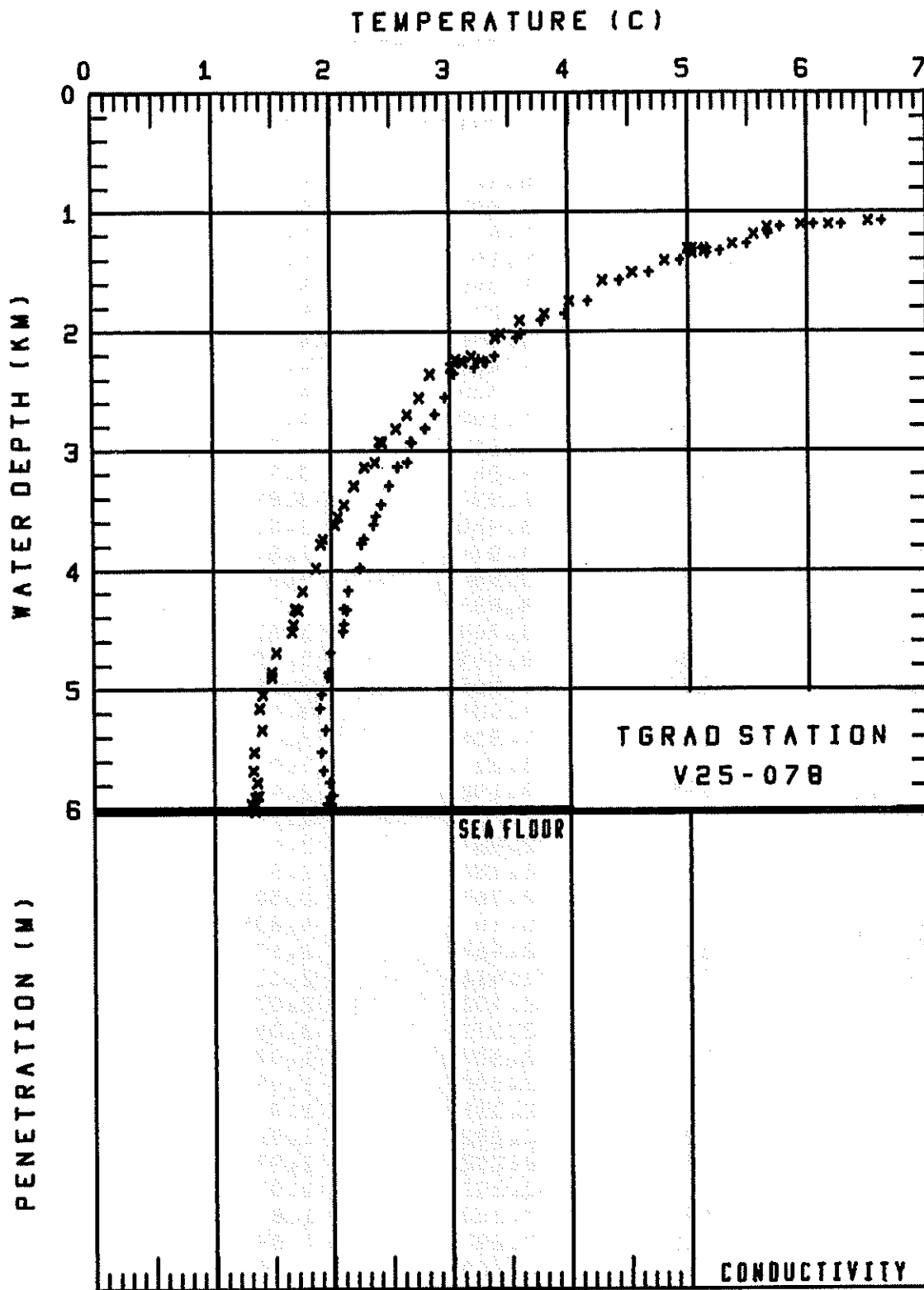
DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE	DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
			2691	2.420	2.197
428	12.017	11.953	2758	2.428	2.197
435	11.124	11.063	2840	2.377	2.138
474	10.722	10.659	2836	2.390	2.151
556	9.688	9.621	2833	2.414	2.175
582	9.319	9.250	2837	2.401	2.163
551	8.637	8.575	2890	2.376	2.132
674	7.651	7.580	3032	2.329	2.071
709	6.872	6.802	3094	2.273	2.009
765	6.505	6.431	3138	2.265	1.996
848	6.180	6.099	3197	2.231	1.957
878	5.752	5.670	3178	2.216	1.944
941	5.503	5.417	3155	2.250	1.979
1058	5.250	5.153	3111	2.263	1.996
1065	5.106	5.012	3185	2.296	2.021
1134	4.750	4.651	3239	2.210	1.930
1147	4.593	4.494	3416	2.225	1.925
1184	4.449	4.347	3492	2.223	1.914
1536	4.602	4.463	3524	2.206	1.894
1329	4.302	4.187	3232	2.262	1.982
1391	4.090	3.973	3644	2.226	1.898
1481	3.946	3.819			
1530	3.782	3.653			
1577	3.696	3.563			
1945	3.535	3.368			
1678	3.535	3.396			
1769	3.303	3.159			
1783	3.243	3.098			
1898	3.117	2.961			
1938	3.014	2.857			
2030	2.923	2.758			
2077	2.887	2.717			
2122	2.811	2.639			
2208	2.767	2.587			
2246	2.773	2.589			
2227	2.730	2.549			
2264	2.739	2.554			
2319	2.659	2.470			
2412	2.647	2.448			
2482	2.598	2.394			
2559	2.575	2.363			
2541	2.572	2.362			
2652	2.505	2.283			



TGRAD STATION V25-078
 026 46 N 058 31 W
 CRUISE STATION 111

WATER TEMPERATURES

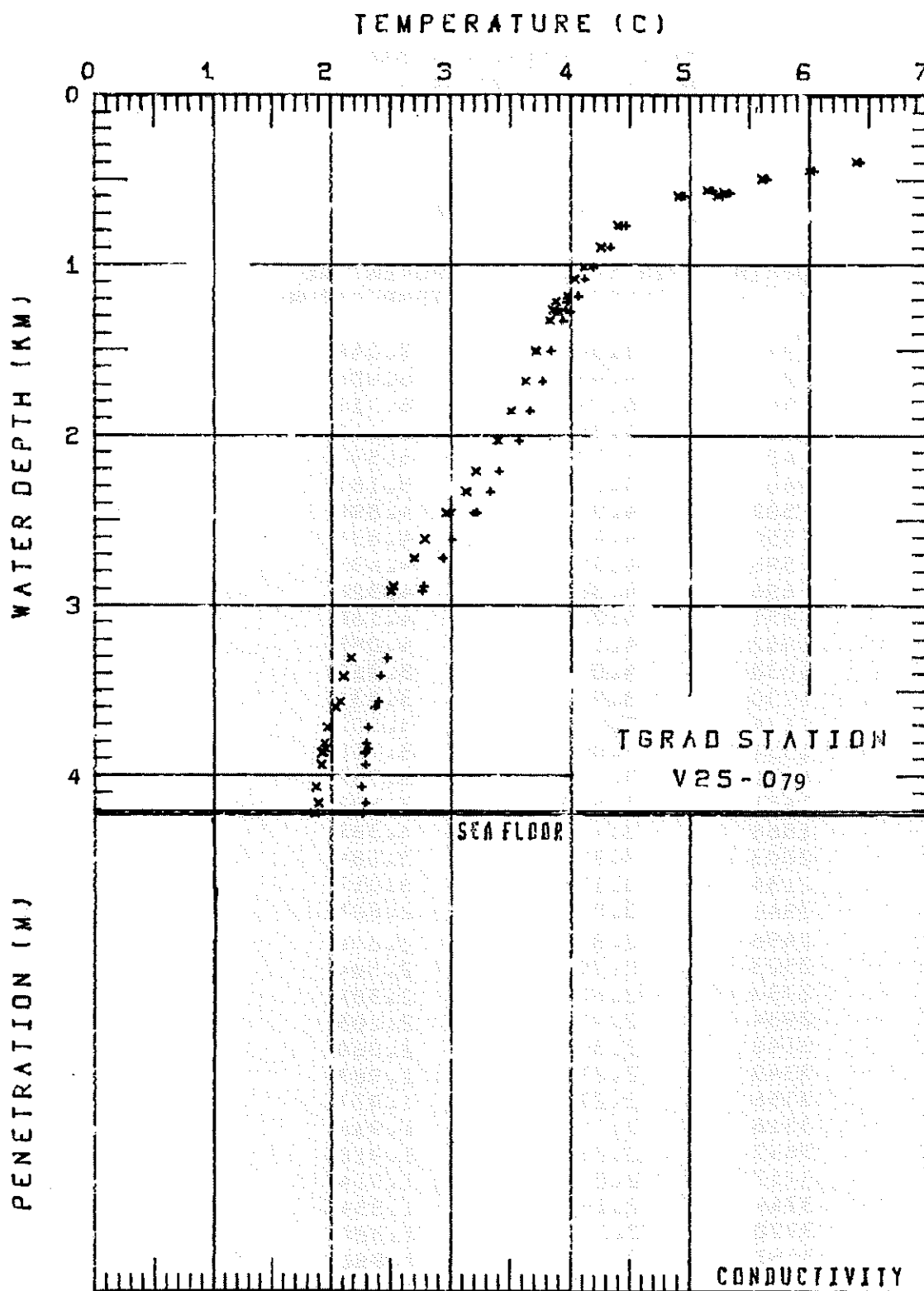
DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE			
745	11.593	11.486	4458	2.105	1.677
800	10.889	10.780	4517	2.098	1.663
828	10.528	10.417	4692	1.989	1.535
855	9.961	9.851	4863	1.971	1.494
937	8.538	8.429	4896	1.973	1.490
982	8.034	7.923	5046	1.910	1.410
1025	7.533	7.421	5159	1.898	1.381
1074	7.142	7.027	5340	1.947	1.402
1075	6.623	6.512	5531	1.911	1.339
1105	6.286	6.175	5680	1.924	1.329
1107	6.052	5.943	5786	1.980	1.365
1124	5.773	5.665	5898	2.006	1.372
1184	5.668	5.554	5910	1.980	1.348
1265	5.490	5.369	5966	1.956	1.315
1323	5.262	5.137	5973	1.990	1.346
1347	5.158	5.033	6024	1.996	1.345
1306	5.155	5.034			
1308	5.116	4.995			
1403	4.934	4.805			
1505	4.670	4.533			
1574	4.424	4.283			
1745	4.158	4.003			
1856	3.963	3.798			
1906	3.762	3.594			
2024	3.607	3.430			
2056	3.562	3.383			
2207	3.378	3.186			
2256	3.302	3.105			
2248	3.295	3.099			
2257	3.310	3.114			
2236	3.242	3.048			
2301	3.212	3.013			
2353	3.039	2.838			
2560	2.963	2.742			
2699	2.881	2.644			
2819	2.800	2.553			
2928	2.668	2.413			
2932	2.685	2.428			
3096	2.646	2.370			
3143	2.562	2.284			
3296	2.493	2.198			
3456	2.422	2.111			
3552	2.380	2.058			
3621	2.361	2.030			
3740	2.276	1.934			
3784	2.256	1.910			
3981	2.242	1.871			
4174	2.147	1.756			
4322	2.105	1.694			
4335	2.128	1.716			



TGRAD STATION V25-079
037 23 N 070 15 W
CRUISE STATION 118

WATER TEMPERATURES

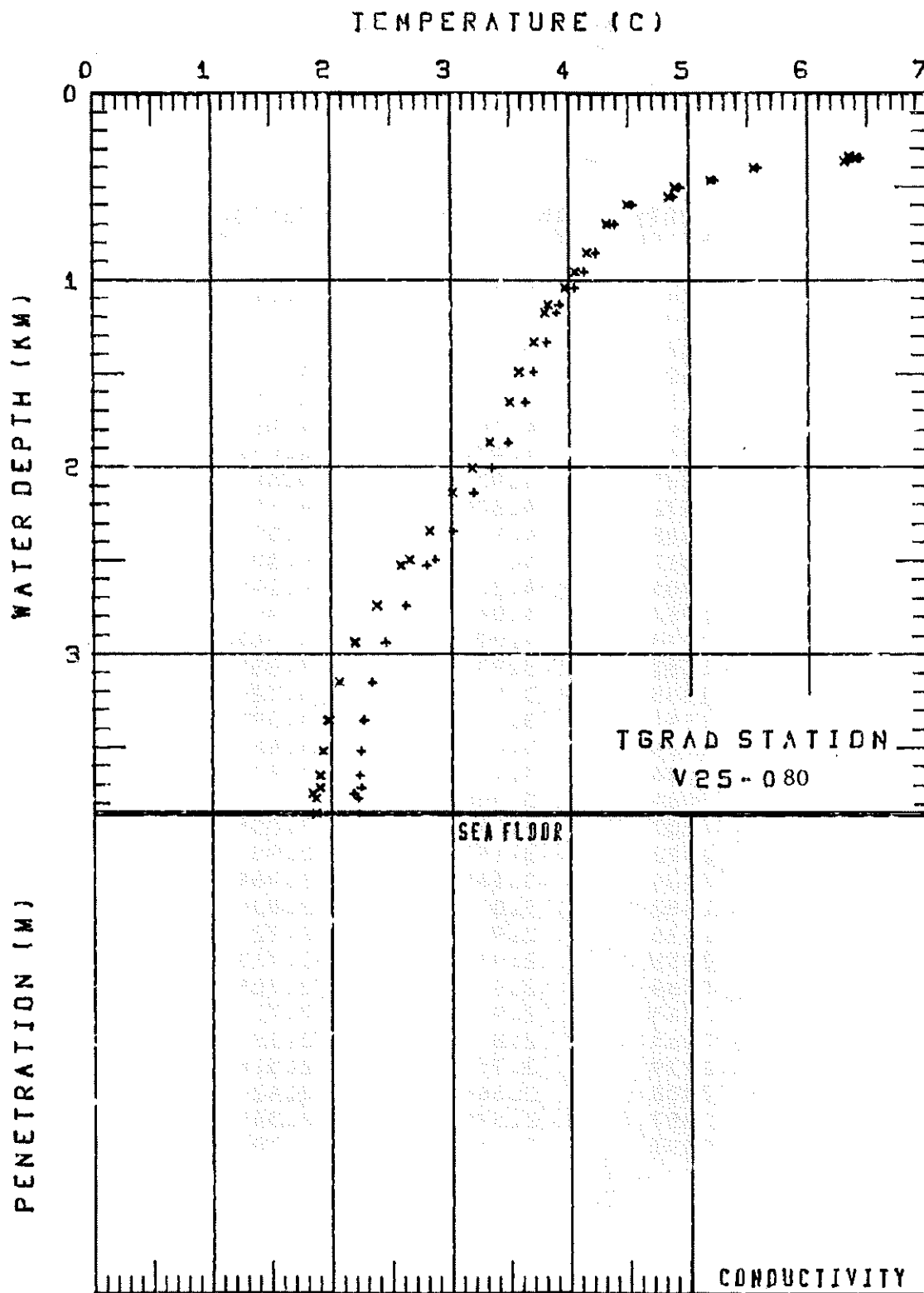
DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
389	6.427	6.392
442	6.039	6.000
486	5.645	5.604
559	5.190	5.144
570	5.340	5.291
593	5.271	5.221
591	4.956	4.908
763	4.461	4.401
892	4.328	4.256
1006	4.192	4.111
1077	4.119	4.031
1175	4.067	3.970
1269	3.997	3.892
1259	3.960	3.855
1207	3.974	3.875
1321	3.936	3.828
1501	3.835	3.710
1677	3.769	3.625
1849	3.665	3.506
2023	3.568	3.392
2207	3.403	3.210
2324	3.335	3.131
2453	3.217	3.001
2452	3.190	2.974
2604	3.013	2.784
2719	2.937	2.698
2882	2.780	2.527
2913	2.763	2.506
3086	5.184	4.838
3304	2.468	2.173
3414	2.416	2.111
3560	2.401	2.076
3593	2.372	2.046
3711	2.309	1.970
3807	2.300	1.950
3841	2.315	1.959
3860	2.282	1.925
3859	2.292	1.936
3930	2.292	1.927
4062	2.260	1.878
4159	2.292	1.897
4218	2.269	1.865



TGRAD STATION V25-080
037 42 N 070 49 W
CRUISE STATION 119

WATER TEMPERATURES

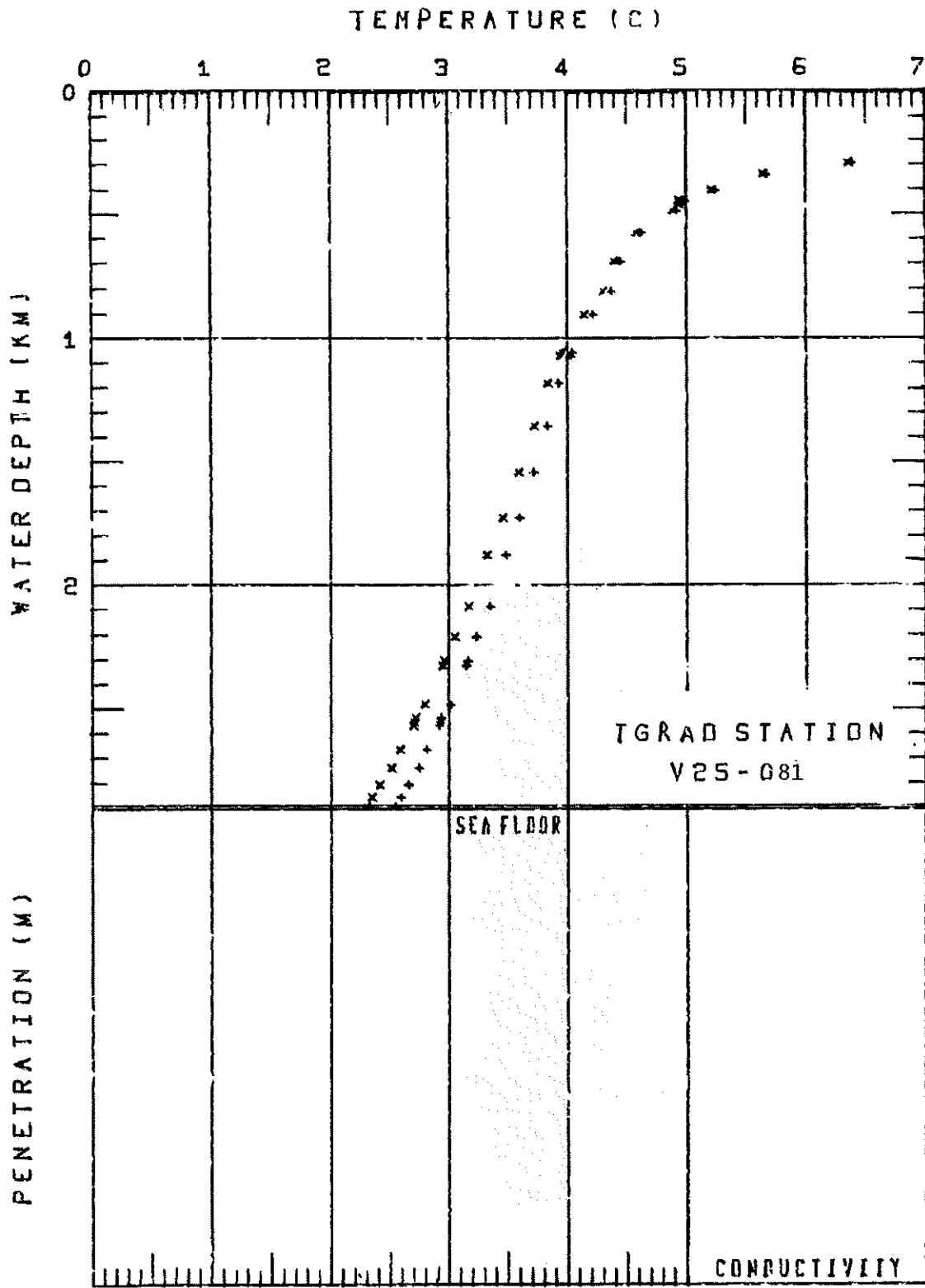
DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
341	7.081	7.048
347	6.437	6.406
363	6.345	6.313
338	6.380	6.349
400	5.585	5.552
462	5.225	5.187
502	4.930	4.890
550	4.880	4.836
596	4.540	4.493
696	4.382	4.328
851	4.229	4.160
952	4.134	4.059
1038	4.053	3.969
1130	3.924	3.834
1174	3.896	3.802
1331	3.817	3.710
1491	3.705	3.582
1651	3.640	3.502
1868	3.490	3.332
2003	3.352	3.184
2134	3.198	3.017
2341	3.025	2.825
2496	2.871	2.658
2523	2.797	2.584
2738	2.622	2.389
2934	2.456	2.205
3148	2.342	2.069
3349	2.276	1.983
3356	2.271	1.977
3516	2.251	1.938
3647	2.238	1.910
3712	2.251	1.914
3744	2.192	1.854
3770	2.223	1.880
3851	2.233	1.880



TGRAD STATION V25-081
038 17 N 071 32 W
CRUISE STATION 120

WATER TEMPERATURES

DEPTH METERS	IN SITU TEMPERATURE	POTENTIAL TEMPERATURE
248	7.233	7.210
290	6.382	6.357
338	5.671	5.644
404	5.252	5.220
459	4.972	4.935
445	4.989	4.954
445	4.974	4.938
487	4.927	4.888
572	4.628	4.583
688	4.453	4.397
812	4.371	4.306
905	4.218	4.145
1057	4.042	3.957
1073	4.028	3.942
1181	3.931	3.835
1355	3.837	3.726
1541	3.727	3.599
1724	3.606	3.461
1876	3.493	3.334
2084	3.356	3.178
2207	3.244	3.055
2322	3.157	2.957
2304	3.168	2.969
2482	3.021	2.806
2535	2.943	2.724
2555	2.934	2.713
2569	2.927	2.705
2543	2.937	2.717
2665	2.819	2.588
2739	2.753	2.516
2808	2.664	2.421
2857	2.595	2.349
2897	2.550	2.302





APPENDIX

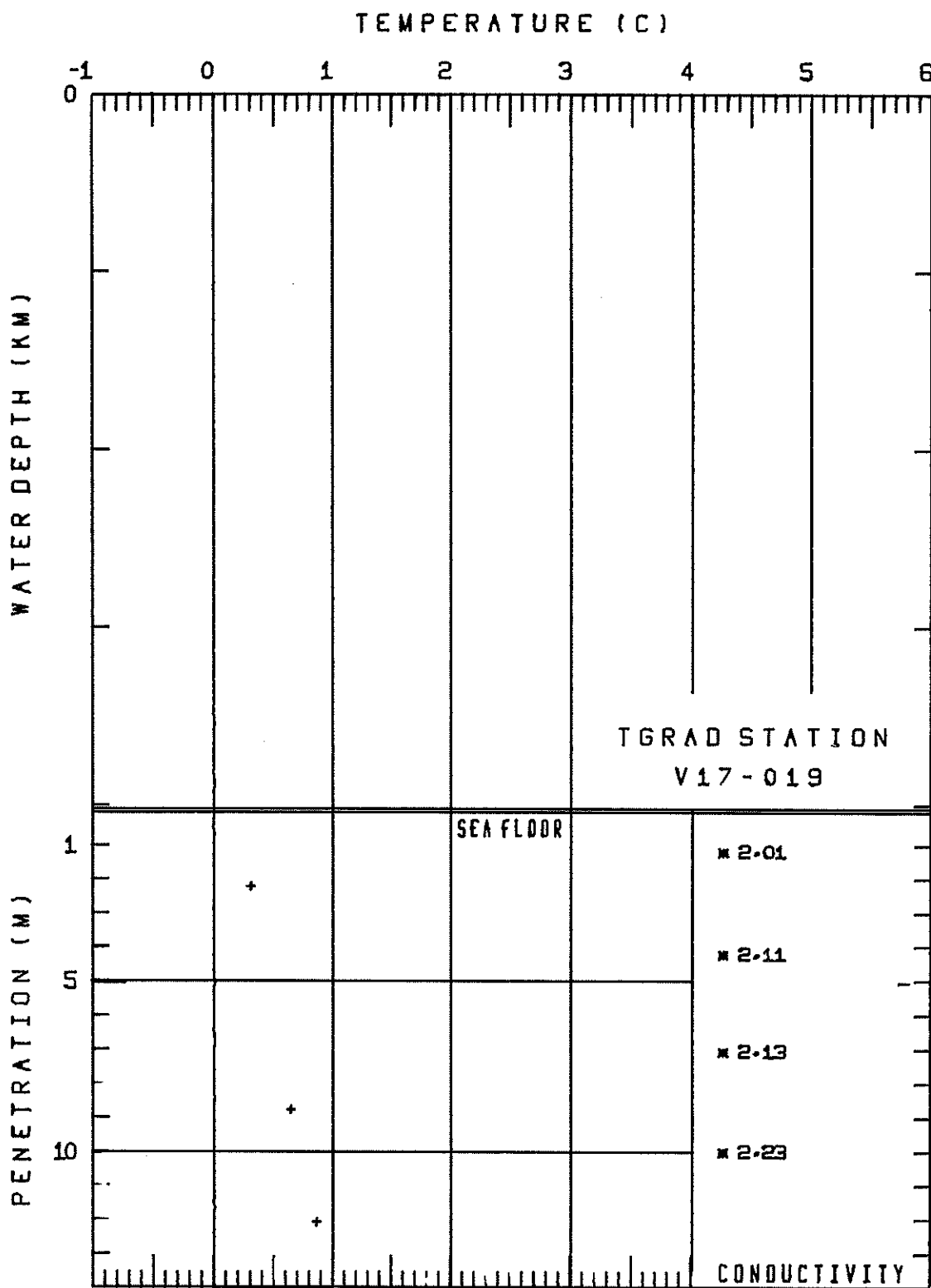
TGRAD STATION VI7-019
060 44.2 N 045 45.4 W
CORE STATION 193

SEDIMENT TEMPERATURES

DEPTH	TEMPERATURE
METERS	CENTIGRADE
<u>2.21</u>	<u>0.314</u>
<u>8.77</u>	<u>0.655</u>
<u>12.07</u>	<u>0.875</u>

SEDIMENT CONDUCTIVITIES

DEPTH	CONDUCTIVITY
METERS	CGS
1.22	2.01
4.23	2.11
7.08	2.13
10.00	2.23



TGRAD STATION V17-023

037 04 N 062 57 W
CORE STATION 211

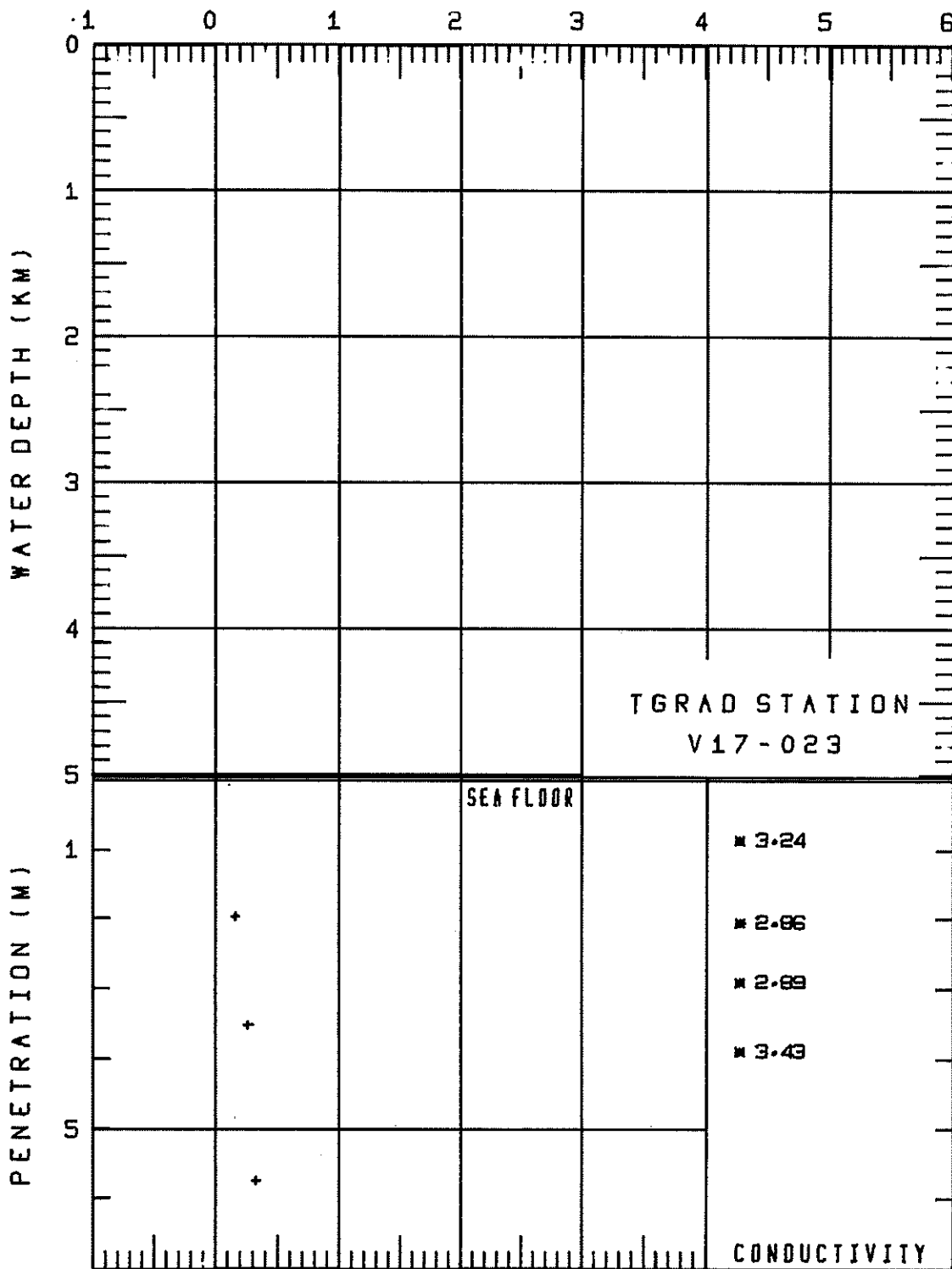
SEDIMENT TEMPERATURES

DEPTH	TEMPERATURE
METERS	CENTIGRADE
1.96	0.165
<u>3.51</u>	<u>0.265</u>
5.74	0.335

SEDIMENT CONDUCTIVITIES

DEPTH	CONDUCTIVITY
METERS	CGS
0.87	<u>3.24</u>
2.05	2.86
2.90	2.89
3.90	3.43

TEMPERATURE (C)



DOCUMENT CONTROL DATA - R & D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1. ORIGINATING ACTIVITY (Corporate author) Lamont-Doherty Geological Observatory Palisades, New York 10964		2a. REPORT SECURITY CLASSIFICATION Unclassified	
		2b. GROUP	
3. REPORT TITLE Sea Floor Geothermal Measurements from Vema Cruise 25			
4. DESCRIPTIVE NOTES (Type of report and inclusive dates) Technical Report - January 1968 to April 1968			
5. AUTHOR(S) (First name, middle initial, last name) Marcus G. Langseth, Jr. Isabel E. Malone Charles A. Bookman			
6. REPORT DATE March 1972	7a. TOTAL NO. OF PAGES 159 & 4 (Appendix)	7b. NO. OF REFS 5	
8a. CONTRACT OR GRANT NO. ONR Contract N00014-67-A-0108-0004	9a. ORIGINATOR'S REPORT NUMBER(S) Technical Report No. 4, CU-4-72		
b. PROJECT NO. Task Order No. NR 083-142			
c. NSF Grant GP 5356	9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report) Technical Report No. 2, CU-2-72 Technical Report No. 2, CU-2-72		
d. NSF Grant GA 1412			
10. DISTRIBUTION STATEMENT Distribution of this document is unlimited.			
11. SUPPLEMENTARY NOTES		12. SPONSORING MILITARY ACTIVITY Department of the Navy Office of Naval Research Arlington, Virginia 22217 Code 480	
13. ABSTRACT This report presents geothermal data representing 75 stations in the Atlantic Ocean. This material includes deep water and sediment temperatures as well as conductivity measurements from sediment cores.			

14. KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
Ocean floor heat flow Bottom water temperature Sediment conductivity						

MANDATORY DISTRIBUTION LIST
FOR UNCLASSIFIED TECHNICAL REPORTS, REPRINTS, & FINAL REPORTS
PUBLISHED BY OCEANOGRAPHIC CONTRACTORS
OF THE OCEAN SCIENCE AND TECHNOLOGY DIVISION
OF THE OFFICE OF NAVAL RESEARCH
(REVISED SEPTEMBER 1970)

Department of Defense

1 Director of Defense Research and
Engineering
Office of the Secretary of Defense
Washington, D. C. 20301
ATTN: Office, Assistant Director
(Research)

Navy

Office of Naval Research
Department of the Navy
Washington, D. C. 20360
2 ATTN: Ocean Science & Technology
Div (Code 480)
1 ATTN: Naval Applications & Analysis
Div (Code 460)
1 ATTN: Earth Sciences
Div (Code 410)

1 Cognizant ONR Branch Office

1 ONR Res. Rep.

Director
Naval Research Laboratory
Washington, D. C. 20390
6 ATTN: Library, Code 2029 (ONRL)
6 ATTN: Library, Code 2000

Commander
Naval Oceanographic Office
Washington, D. C. 20390
1 ATTN: Code 1640 (Library)
1 ATTN: Code 70

1 Department of the Navy
Office of Naval Research
Arlington, Virginia 22217
Code 480

Other Government Agencies

20 Defense Documentation Center
Cameron Station
Alexandria, Virginia 22314

1 Director
National Oceanographic Data Center
Building 160
Navy Yard
Washington, D. C. 20390

