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AREA
NV
Church
McCoy
Case Study
P. 2

THE McCOY, NEVADA GEOTHERMAL PROSPECT

An Interim Case History

PART II (Figures)

by Arthur L. Lange

Paper delivered at the Fifieth Annual Meeting of the Society of Exploration Geophysicists, Houston, Texas, 17 November 1980.

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FIGURES

20R. Profiles of P-wave delays and advances and Poisson's ratios along Line C.

21R. Profiles of P-wave delays and advances and Poisson's ratios along Line A.

22L. Map of self-potential response. Negatives are striped; highs stippled.

23R. Refer to Figure 9L.

24R. Self-potential profile, Line B, compared with profile of temperature at 100m and isotherms. Microearthquake epicenters shown as stars.

25R. Self-potential profile, Line A, compared with profile of temperature at 100m and isotherms. Microearthquake epicenters shown as stars.

26R. Self-potential profile, Line C, compared with profile of temperature at 100m and isotherms. Microearthquake epicenters shown as stars.

27L. Resistivity at 5km depth from 1D magnetotelluric inversion (T_e mode). Conductive zones stippled; resistive striped.

28R. Magnetotelluric section (T_e mode, 1D inversion) along Line B compared with available EM section and geology.

29R. MT section (T_e mode, 1D inversion) along Line A compared with available EM data.

30R. MT pseudosections (resistivity vs. period) along Line C.

31R. MT section (T_e mode, 1D inversion) along Line C, compared with geologic section.

32L. Refer to Figure 8L.

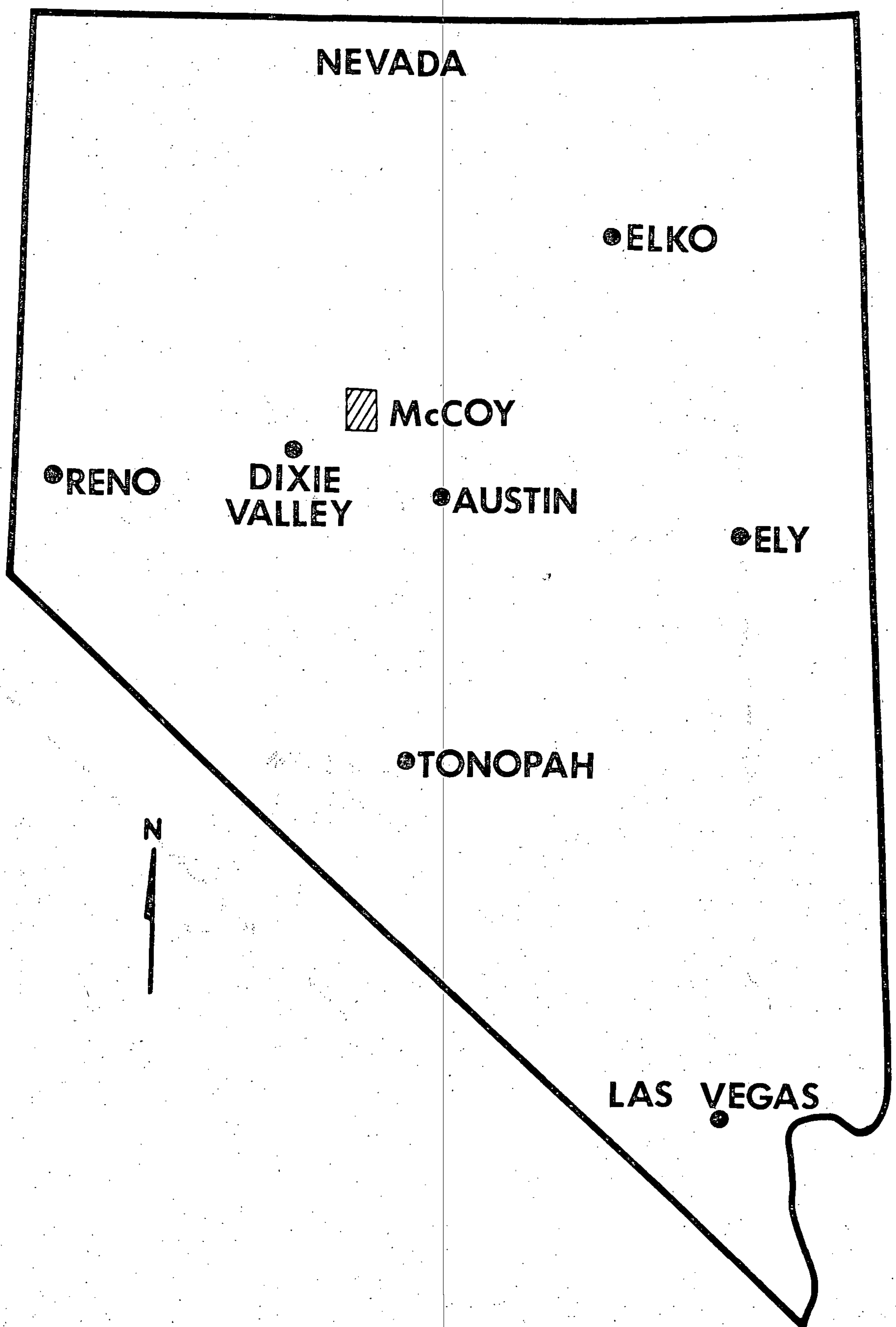
33R. Geologic section along Line C, showing deduced geothermal reservoir feeding conduit of ascending hot water along limb of horst block. Upon encountering the Triassic conglomerate, hot water (probably cooled by cold meteoric water from the surface) drains westward--downdip--to eventually return to the deep system.

PLATES

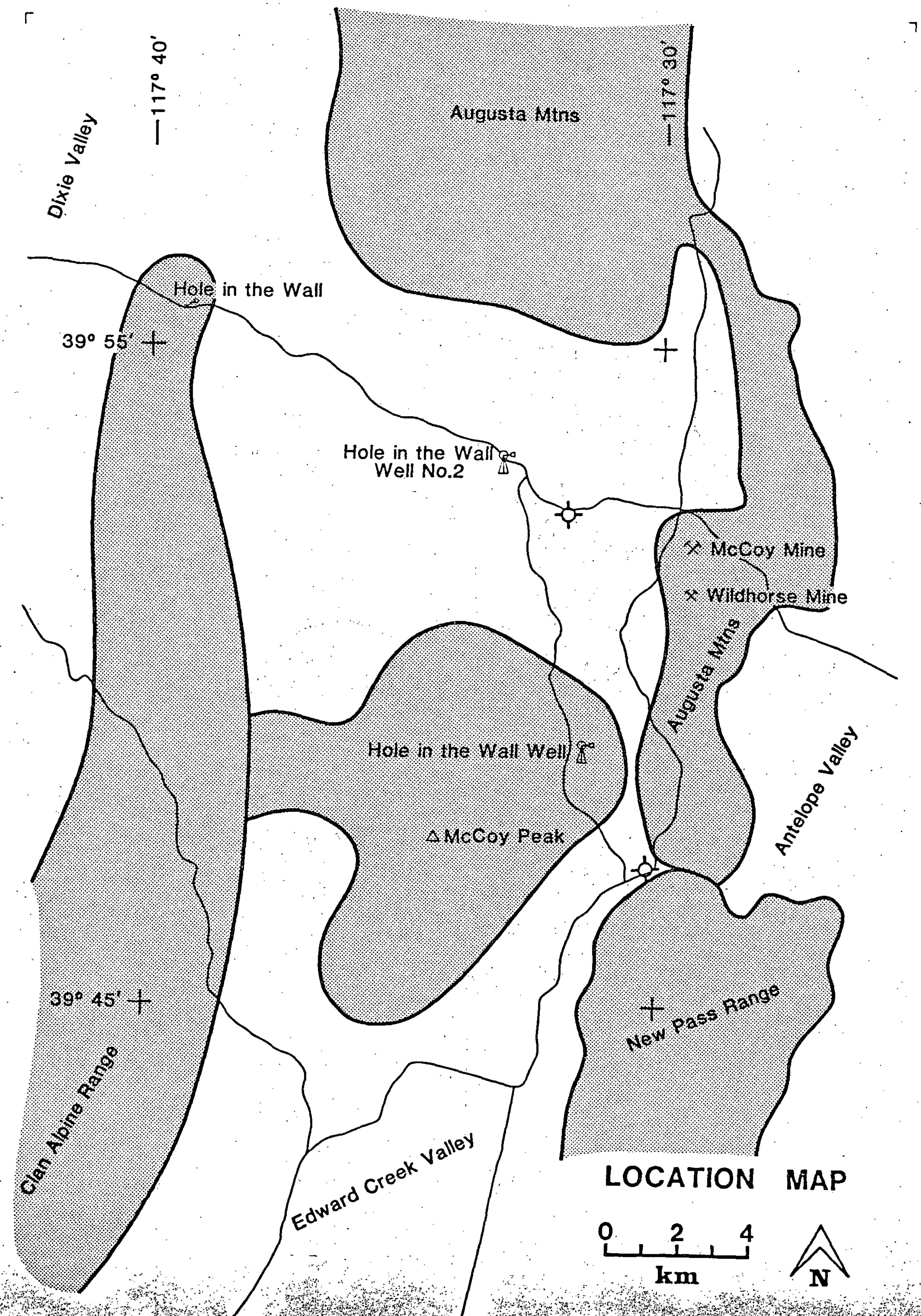
Plate I. Stacked profiles of Line A.

Plate II. Stacked profiles of Line B.

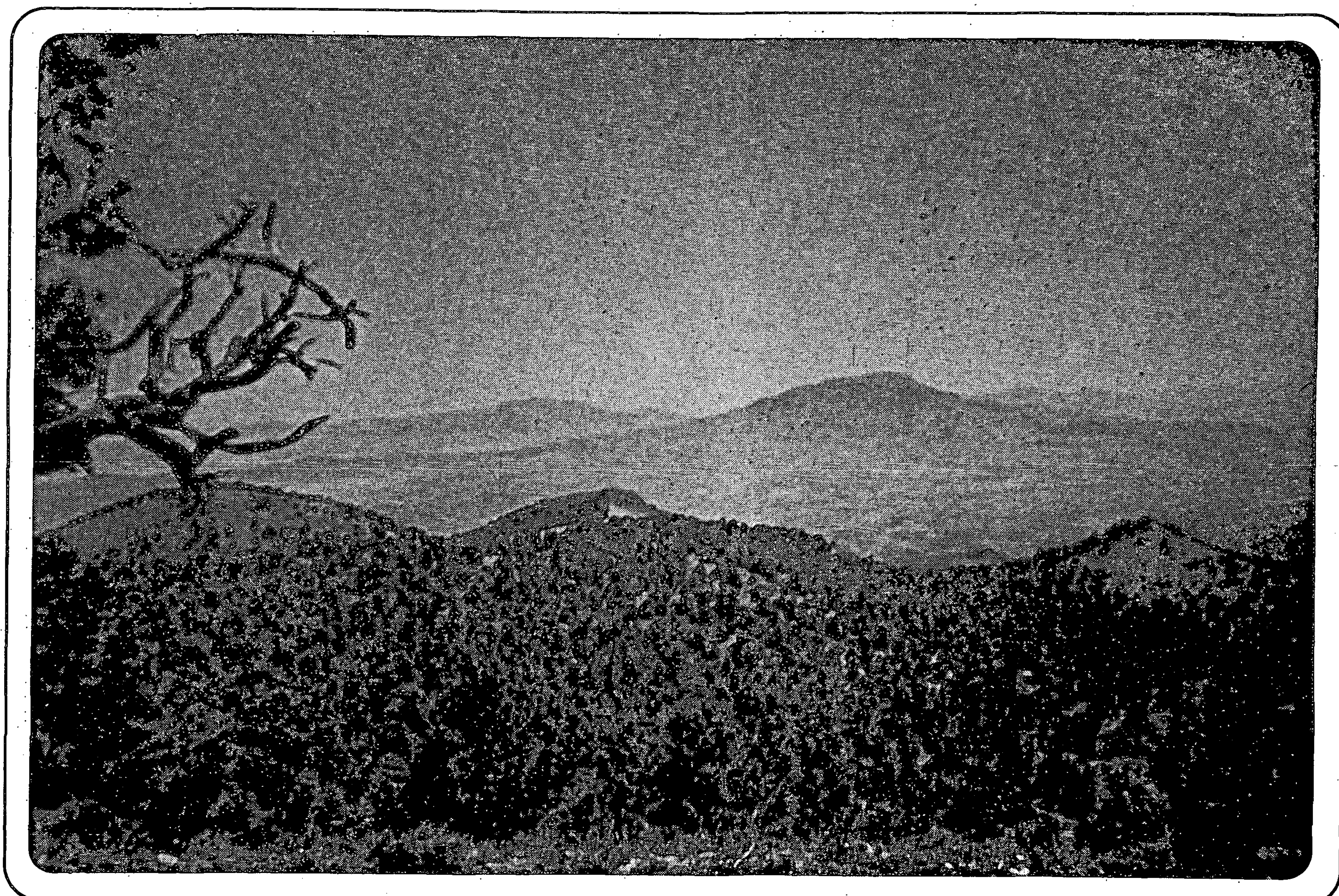
Plate III. Stacked profiles of Line C.



1L. Location of the McCoy prospect

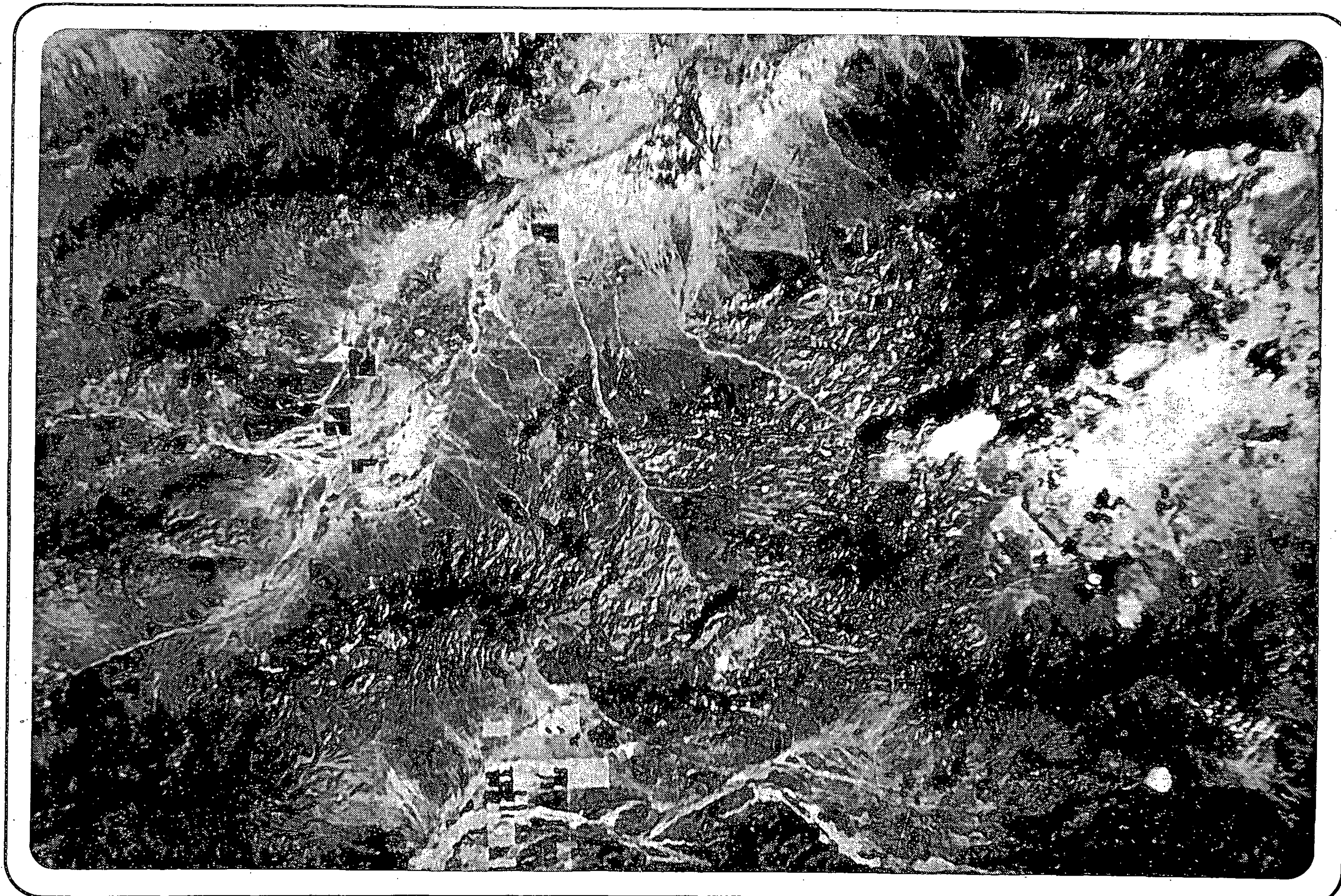


2R. Orientation map, showing principal features of the McCoy prospect

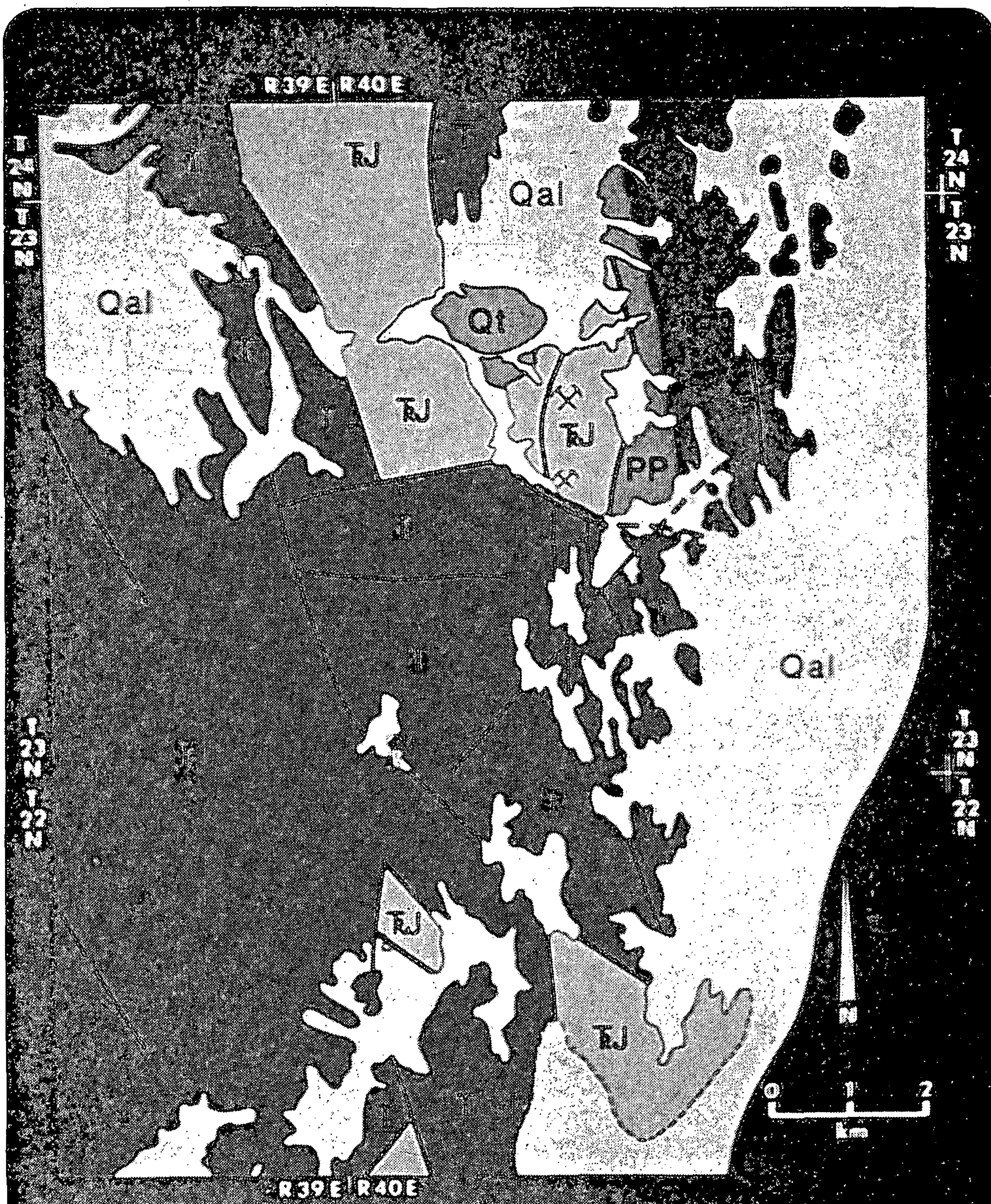


3L. View northward from McCoy Peak

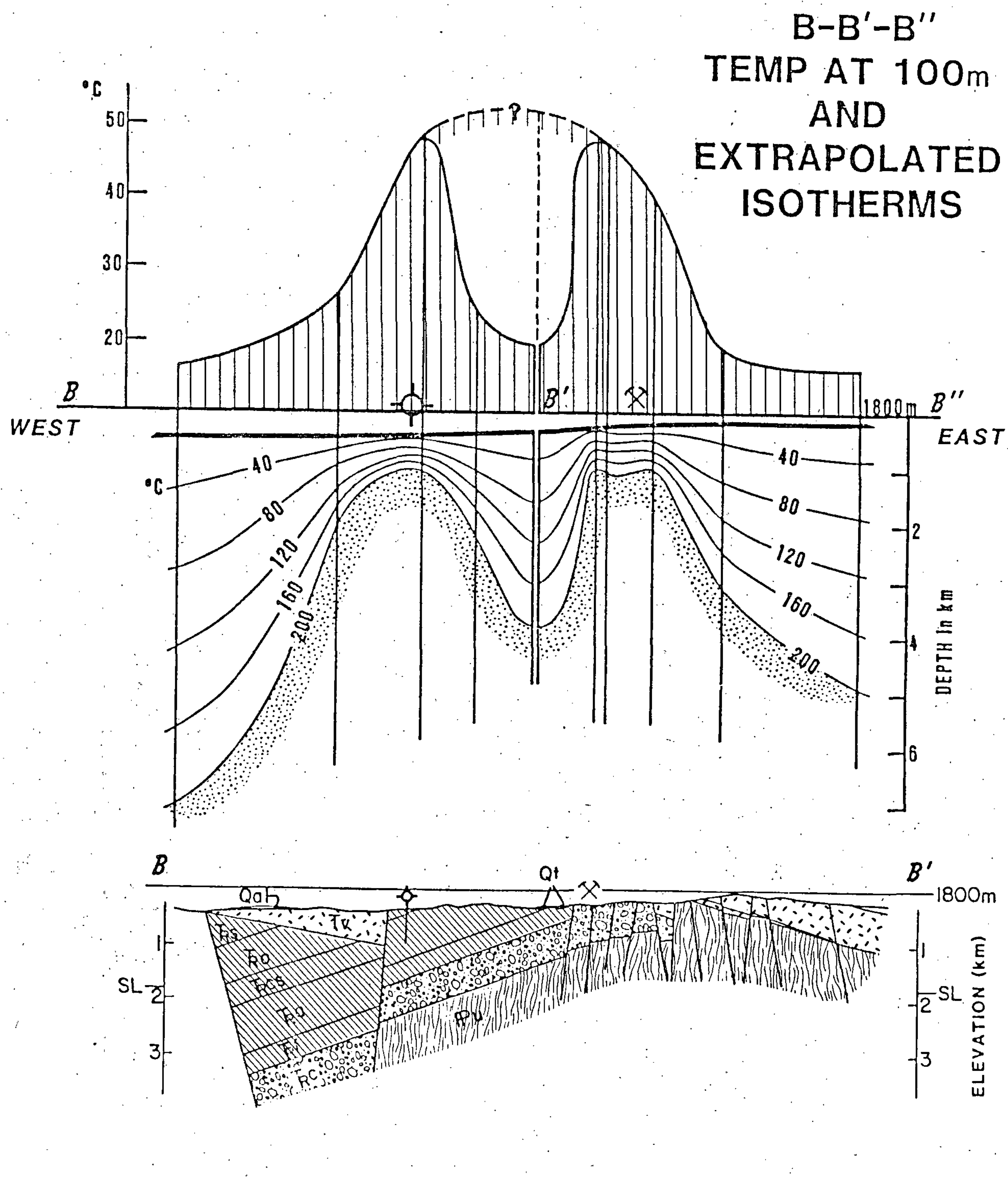
4L. The McCoy mercury mine



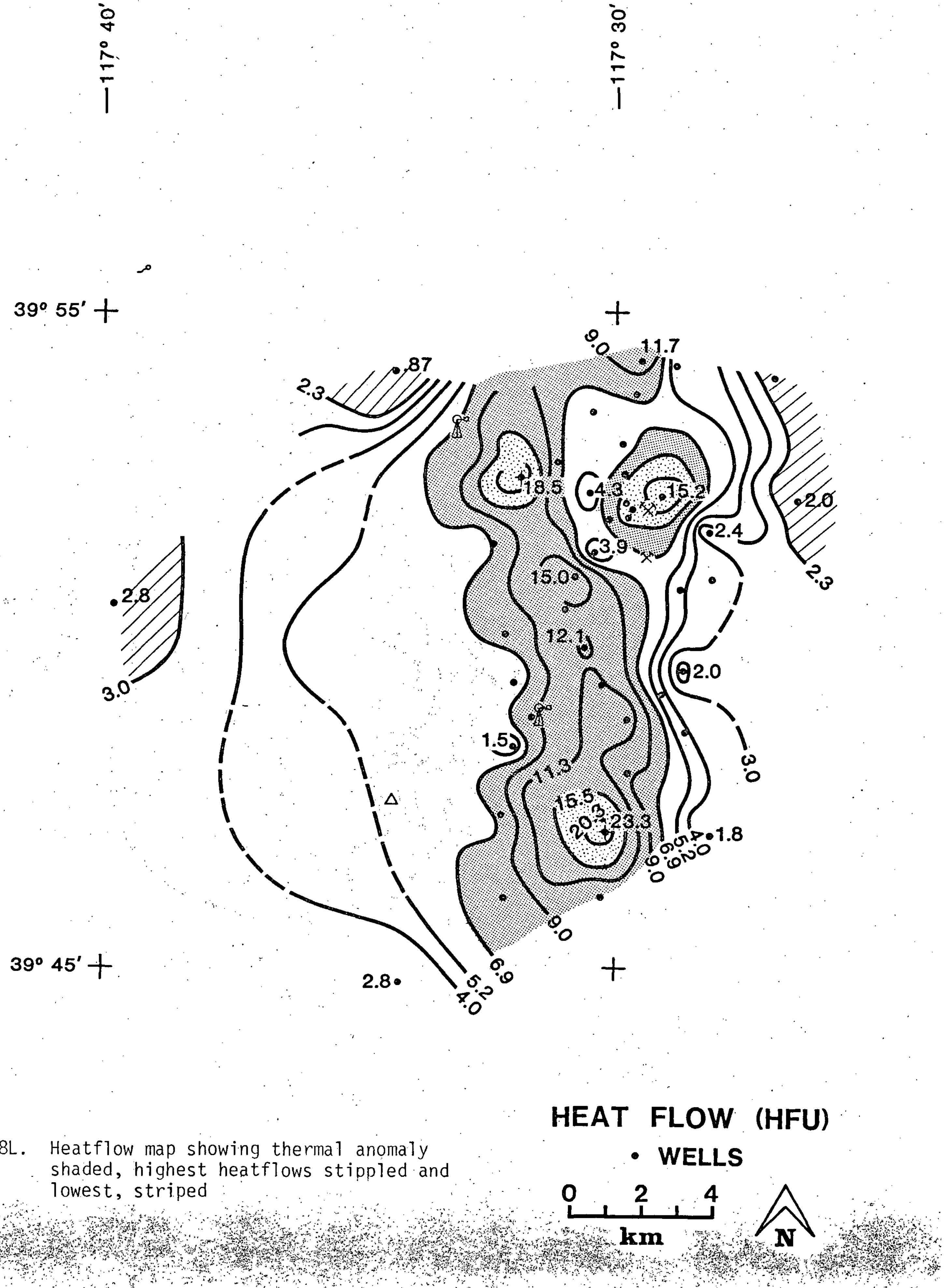
5R. Partial Landsat image showing the ring in center surrounding the McCoy prospect. Hole in the Wall wash drains the ring and empties into Dixie Valley on the west



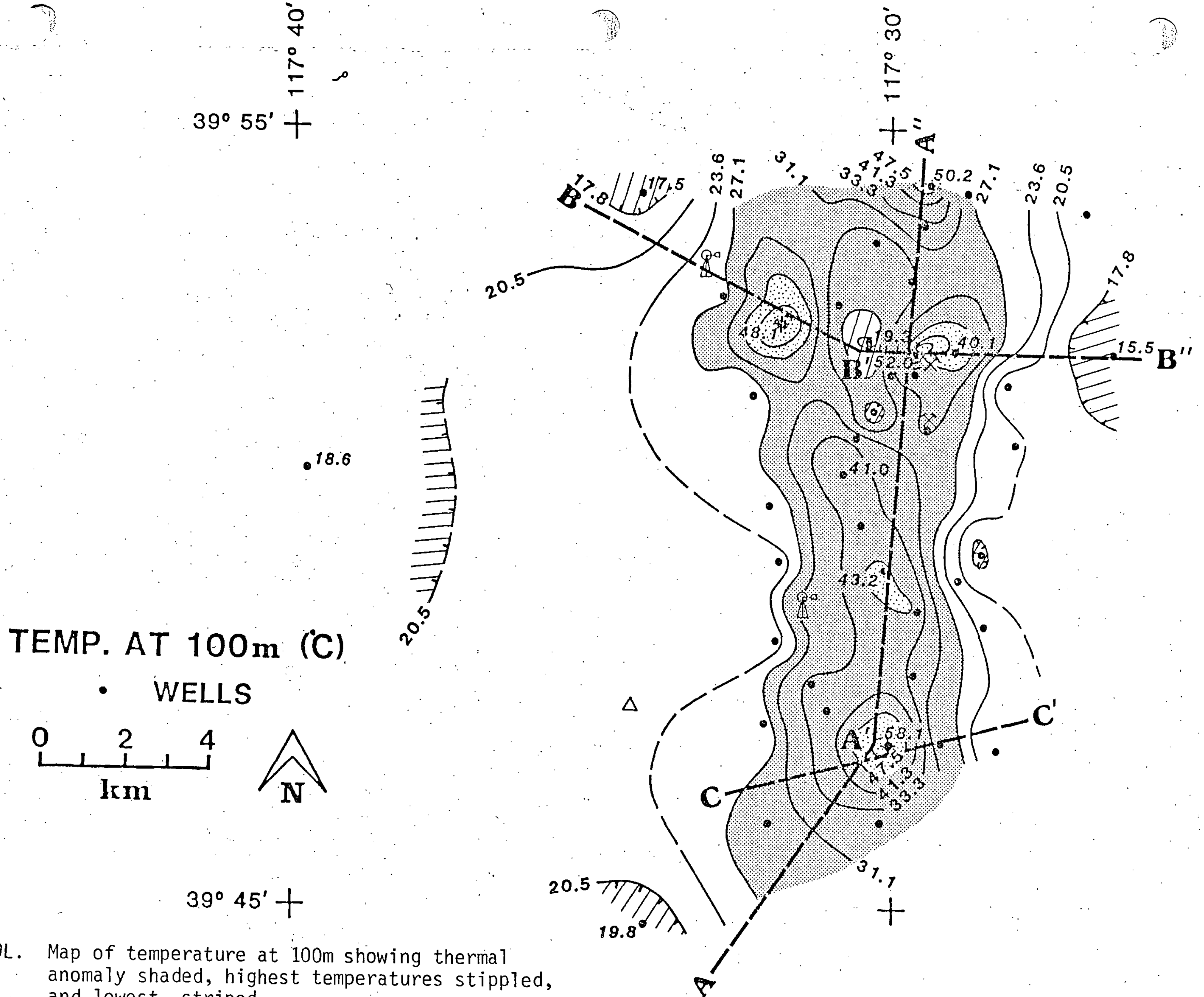
6L
Simplified geologic map, showing locations of McCoy and Wildhorse mines. PP, Permo-Pennsylvanian sediments; TRJ, Triassic-Jurassic conglomerates, carbonates and sandstones; T, Tertiary volcanics; Qal, Quaternary alluvium; Qt, Quaternary hot spring travertines. (after Pilkington, 1979)



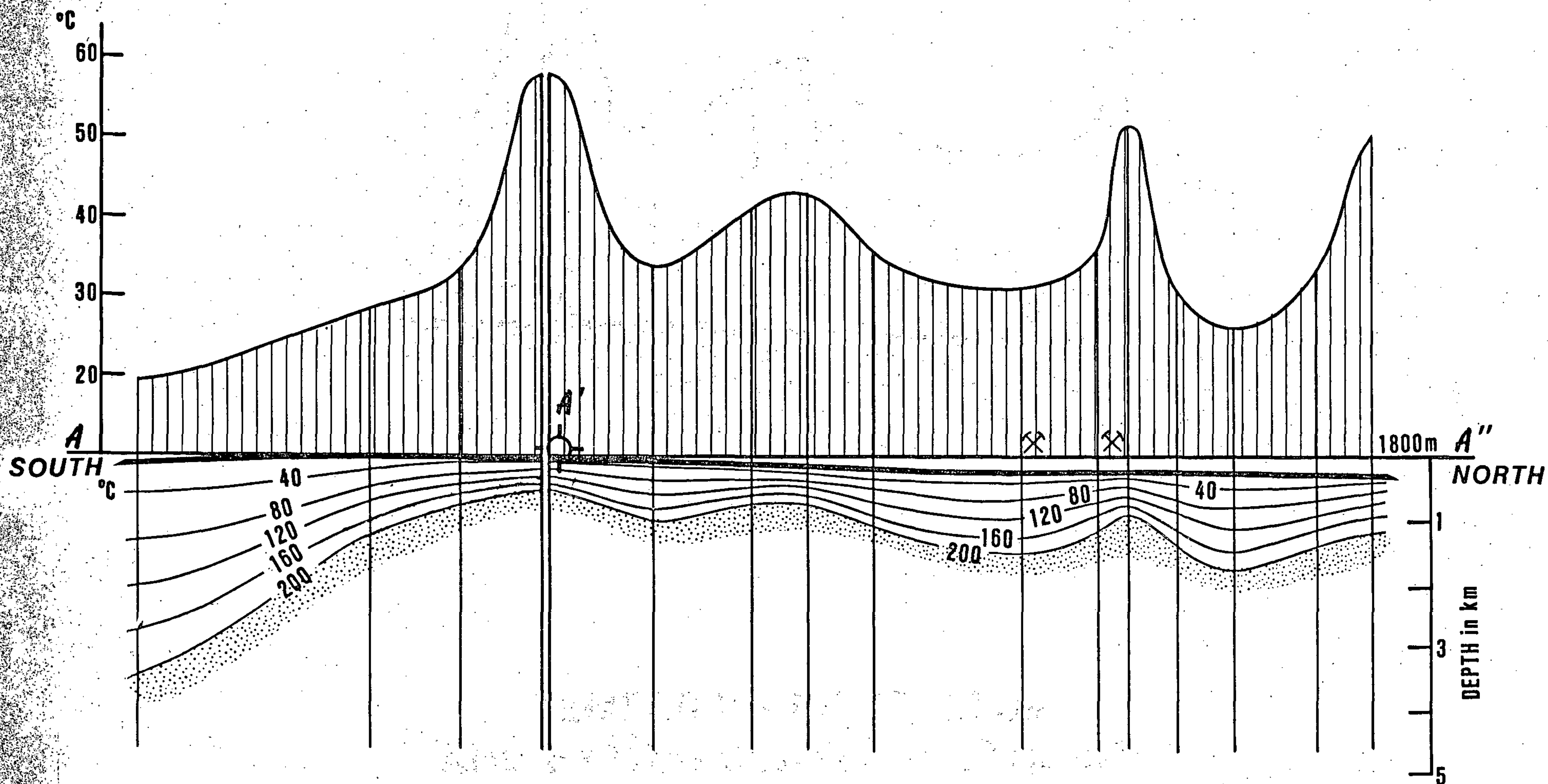
7R. East-west geologic profile through McCoy mine (See Slide 9L), with profile of temperature @ 100m and conductive isotherms



8L. Heatflow map showing thermal anomaly shaded, highest heatflows stippled and lowest, striped

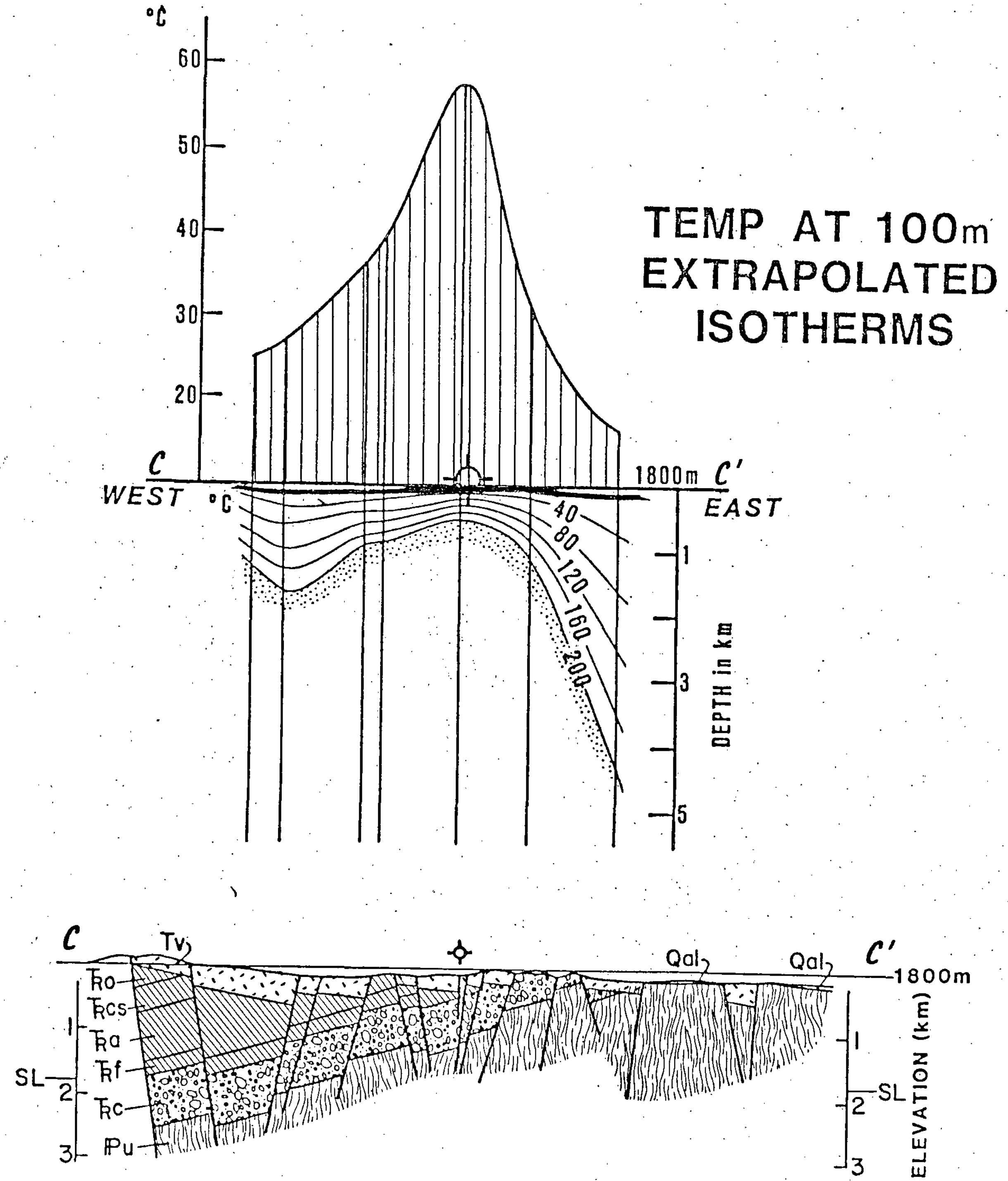


9L. Map of temperature at 100m showing thermal anomaly shaded, highest temperatures stippled, and lowest, striped

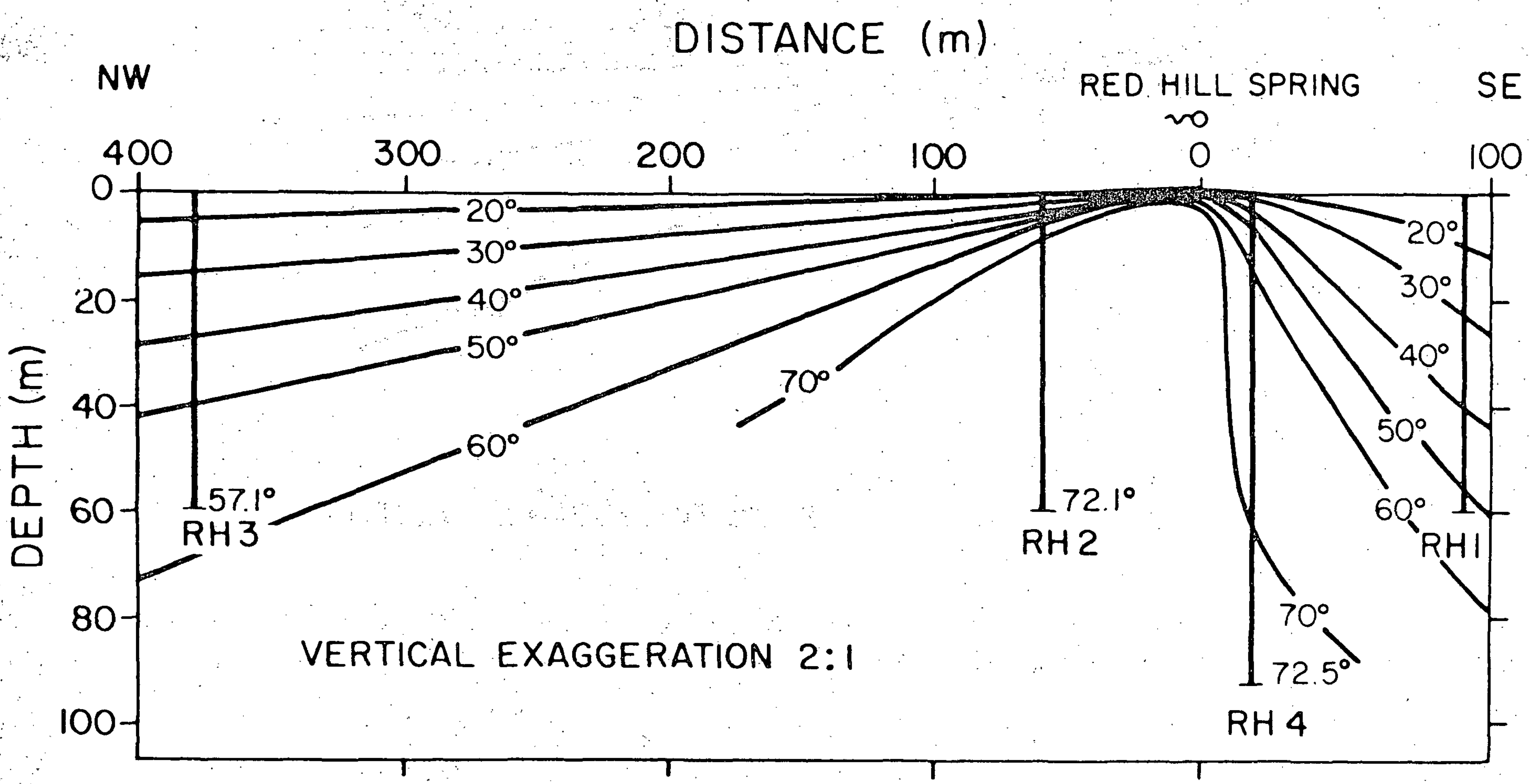


TEMPERATURE AT 100m AND EXTRAPOLATED ISOTHERMS

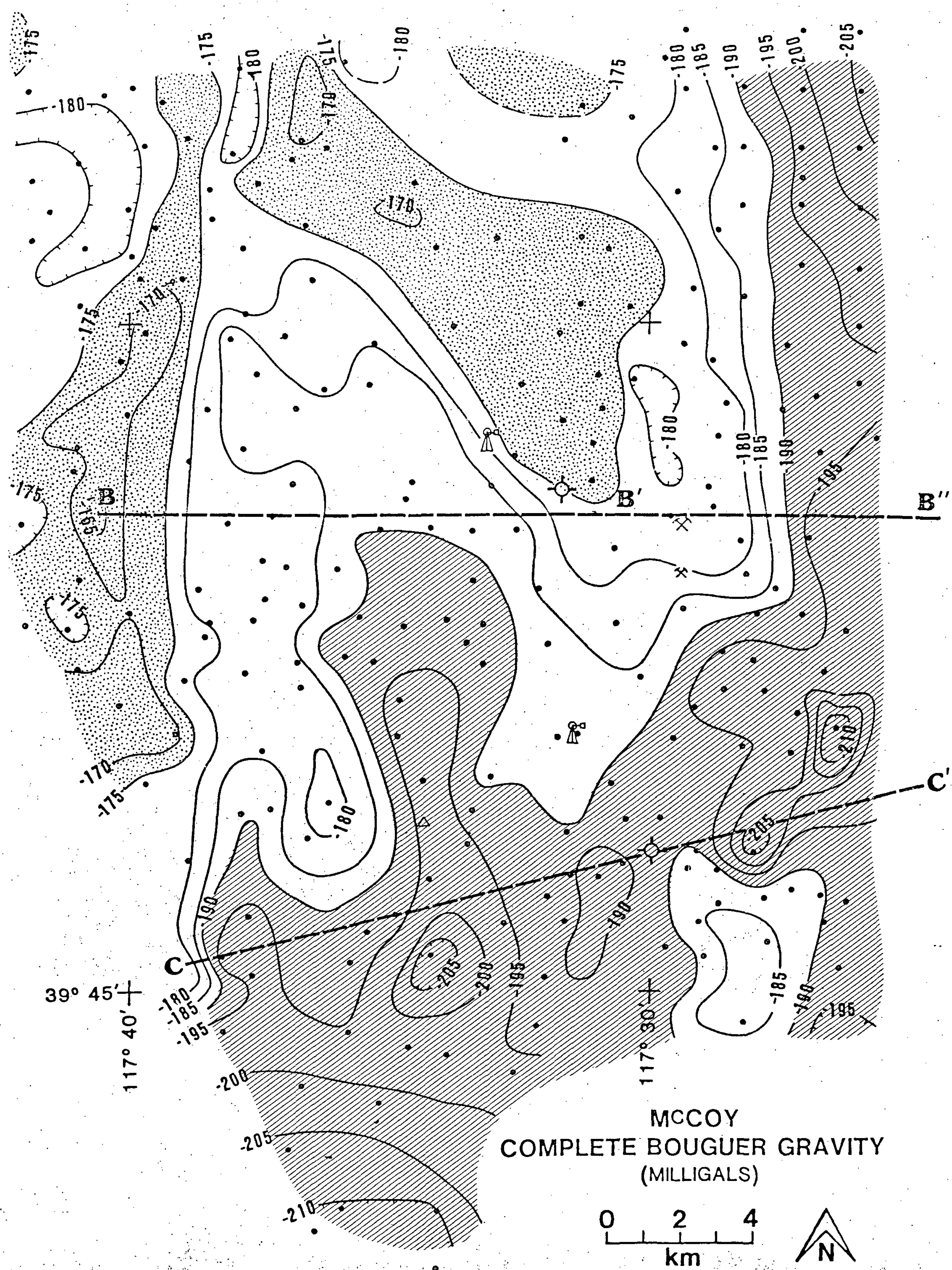
10R. Profile of temperatures and isotherms along Line A (N/S)



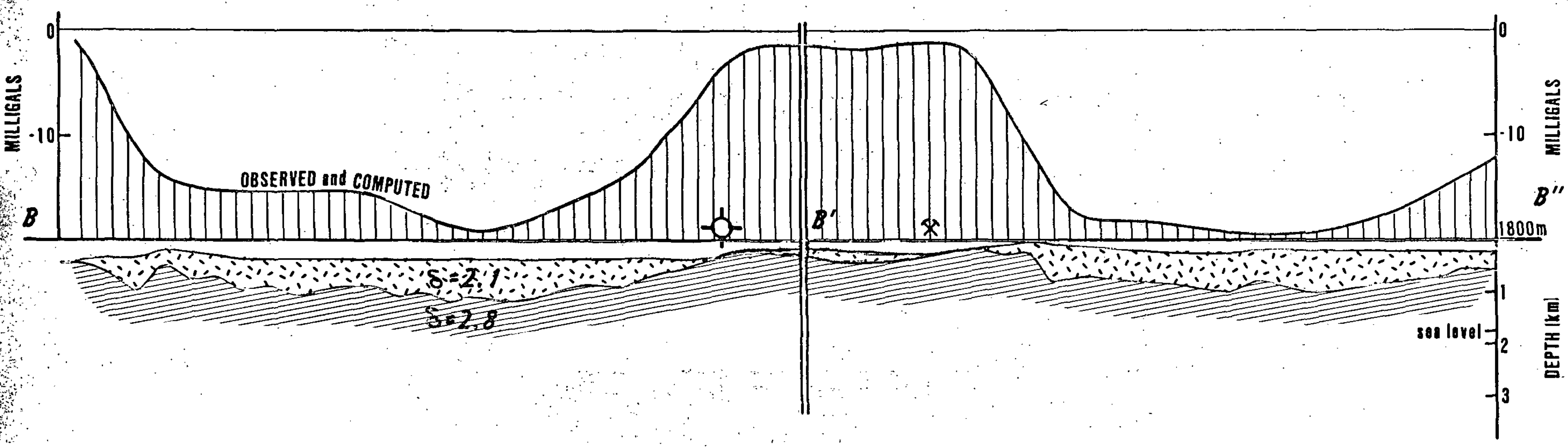
11R. Profile of temperatures and isotherms with geologic section along Line C (E/W) (Geology after Pilkington, 1979)



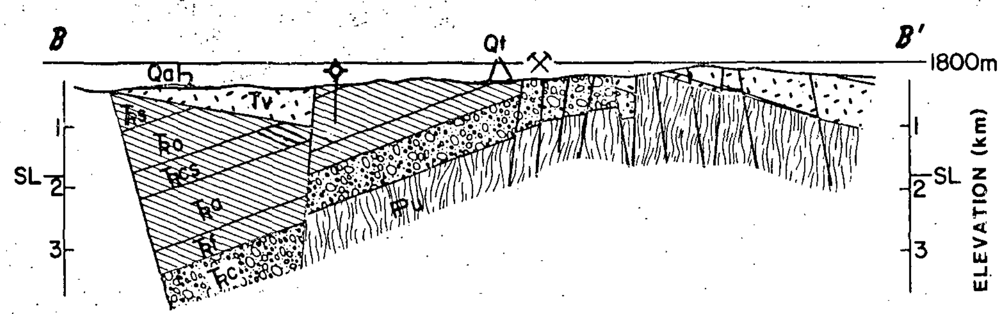
12L. Isothermal section at Red Hill Hot Spring, Utah, from Chapman, Kilty & Mase, 1978. Compare with Line C isotherms



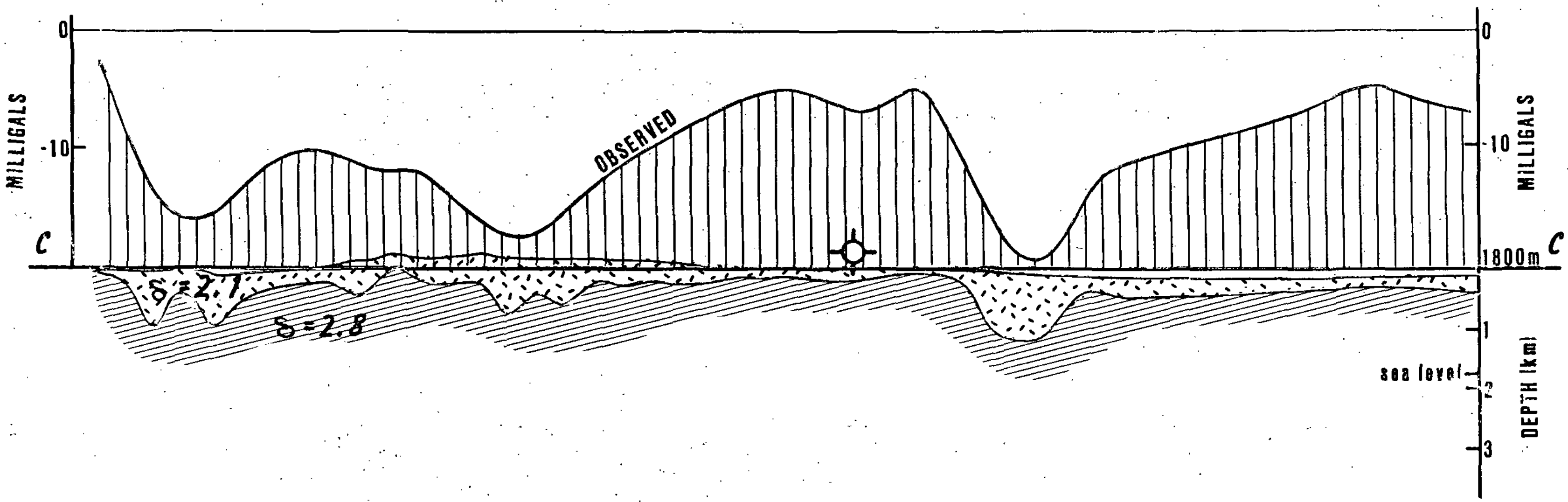
13L. Complete Bouguer gravity map. Highs are stippled; lows, striped



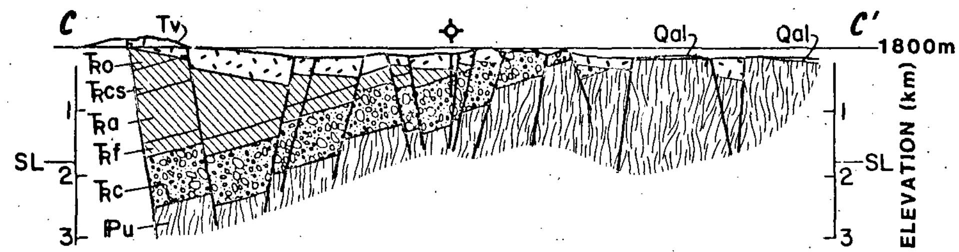
B–B'–B''
RESIDUAL GRAVITY PROFILE (COMPLETE BOUGUER) AND DEPTH ANALYSIS



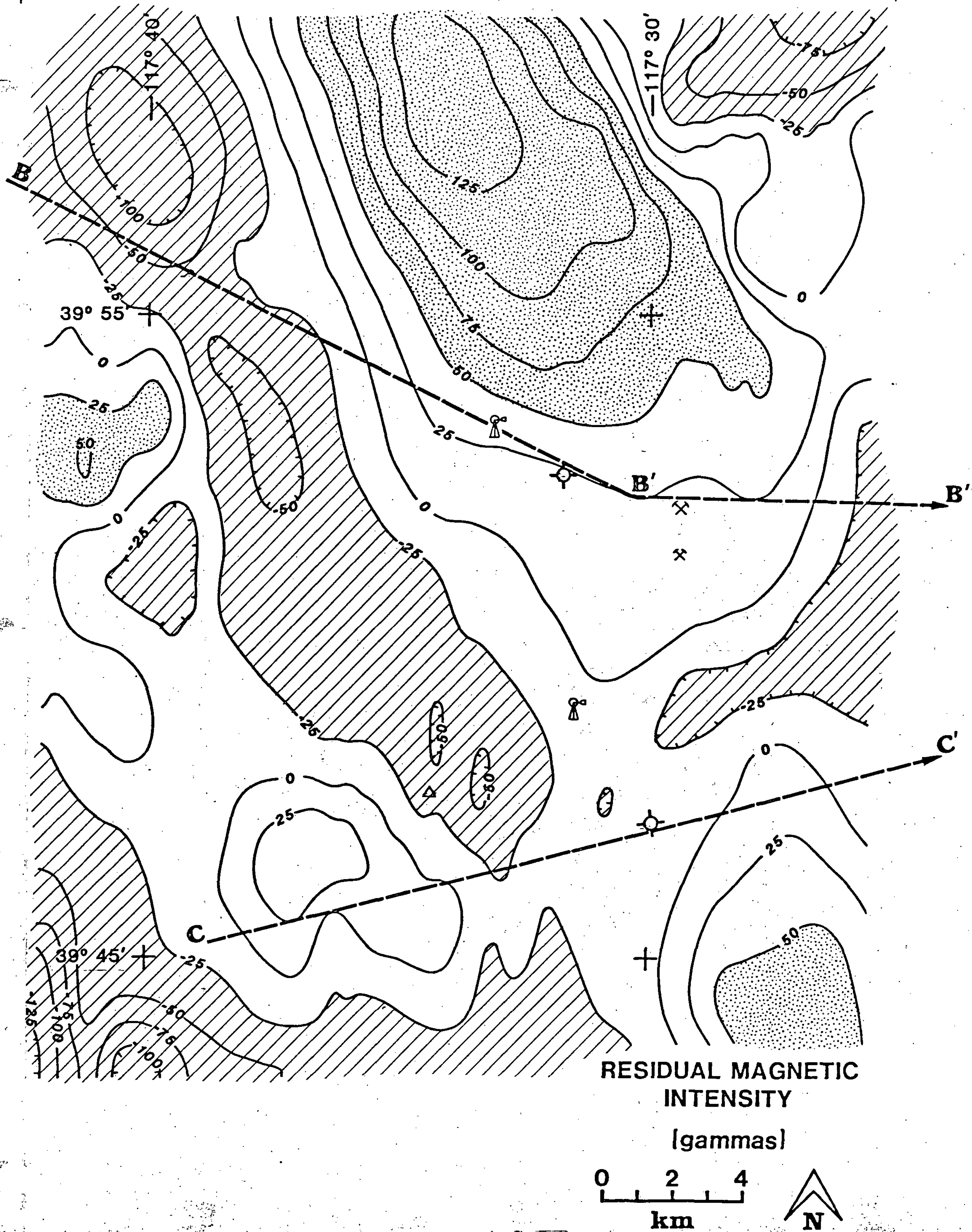
14R. Gravity profile, Line B, with automatic interpretation for densities 2.1 (checked) and 2.8gm/cm^3 (striped)



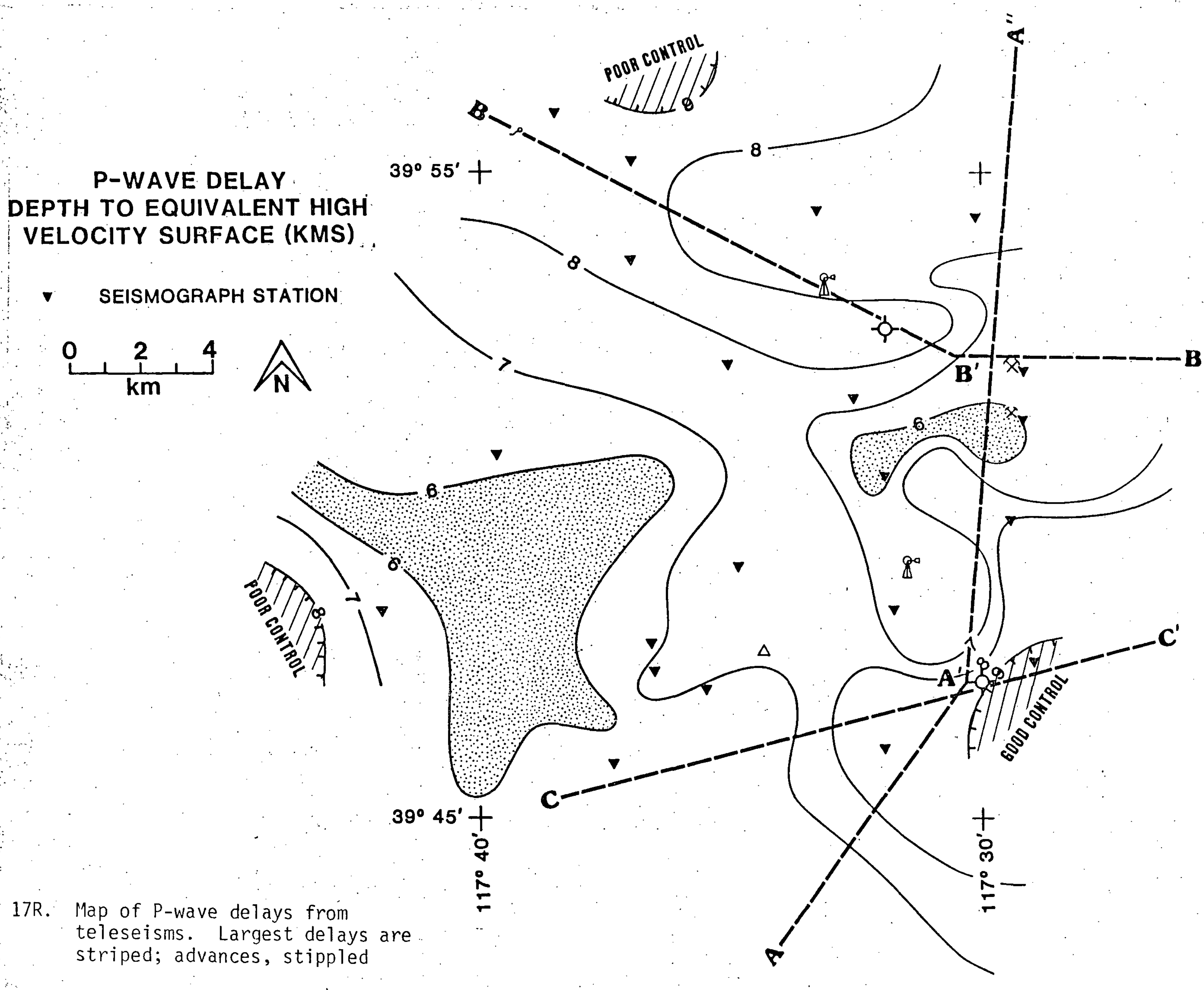
C–C′
RESIDUAL GRAVITY PROFILE (COMPLETE BOUGUER) AND DEPTH ANALYSIS



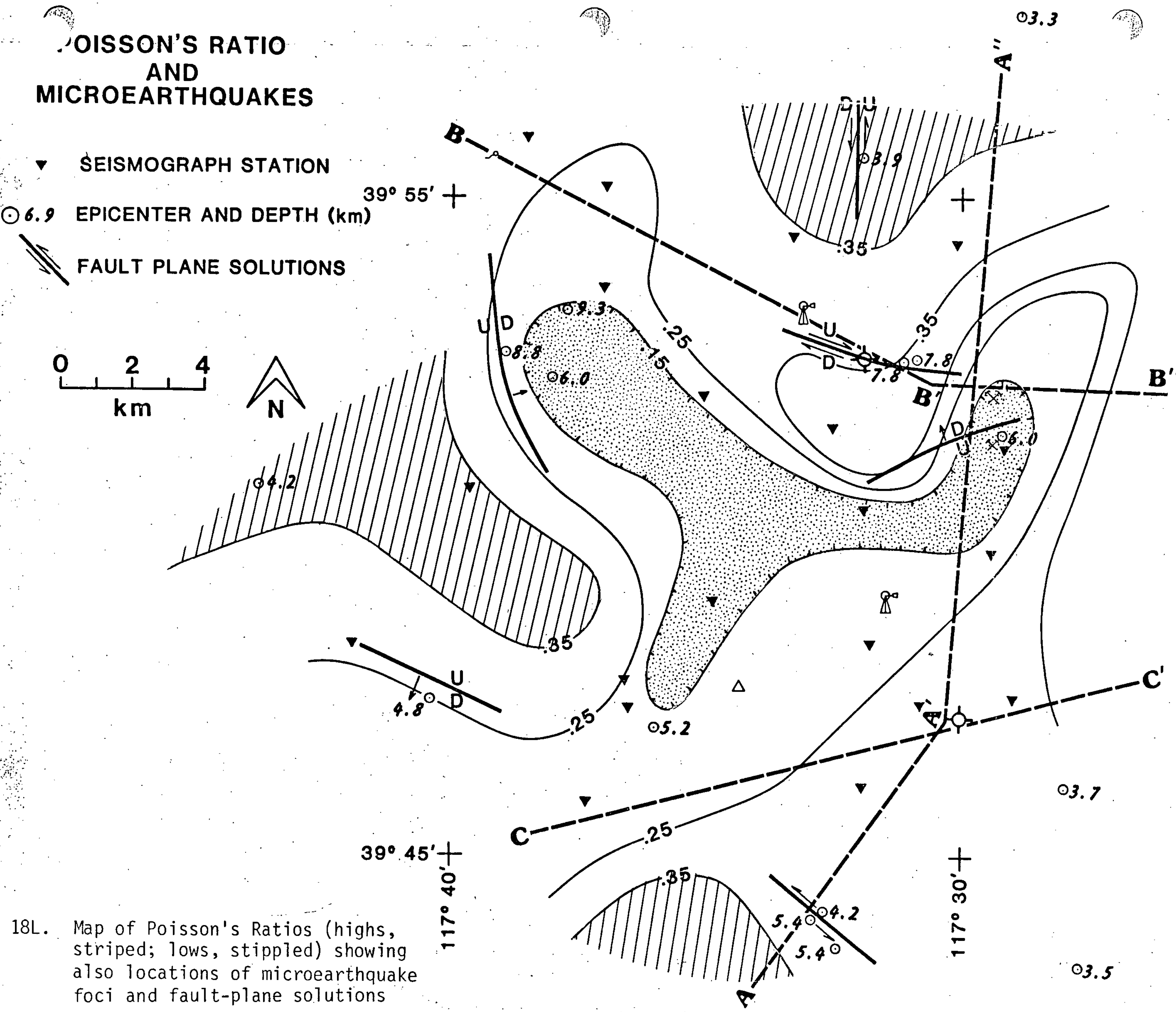
15R. Gravity profile, Line C, with automatic interpretation for densities 2.1 (checked) and 2.8gm/cm^3 (striped)



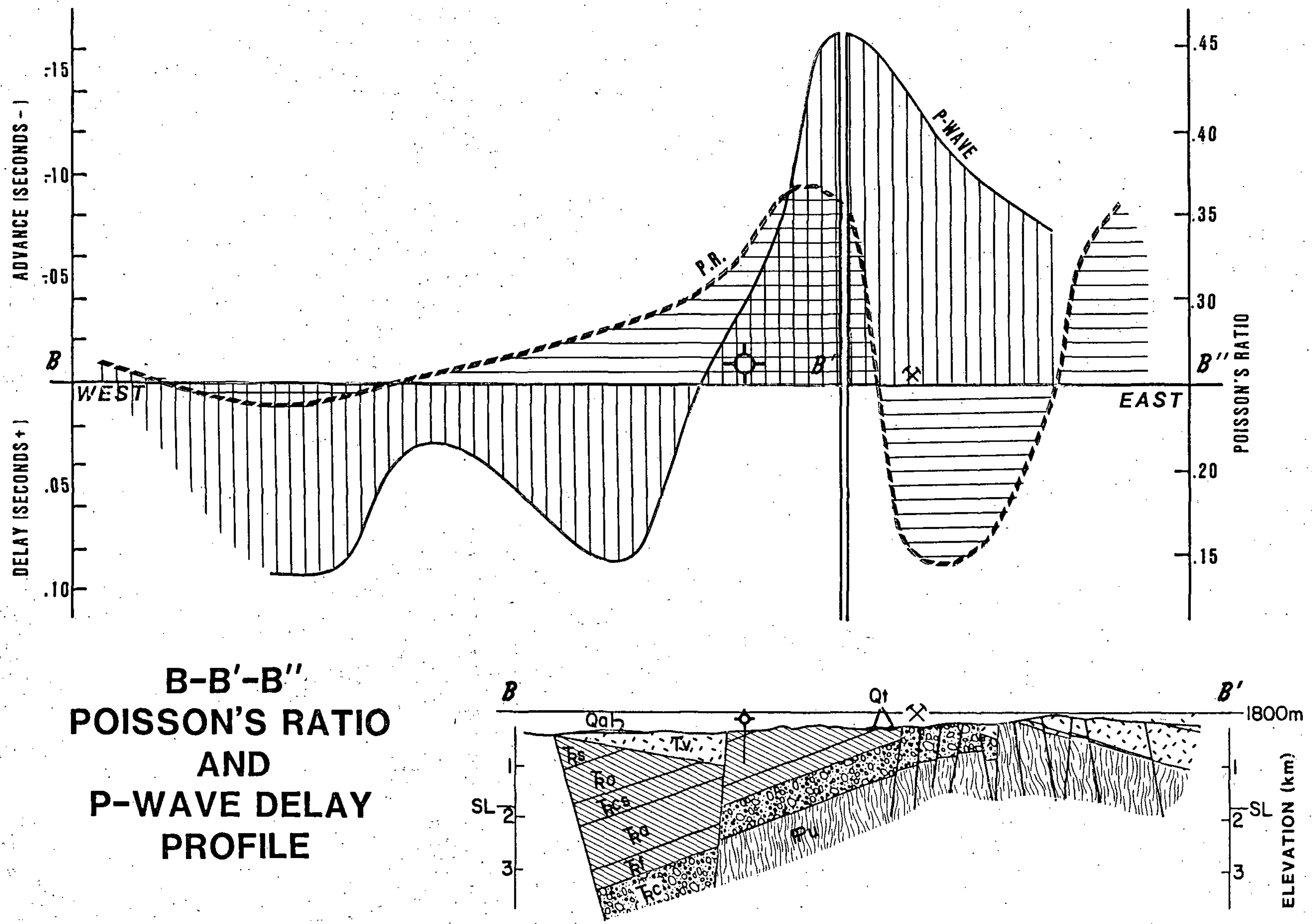
16L. Residual aeromagnetic map. Highs are stippled; lows, striped



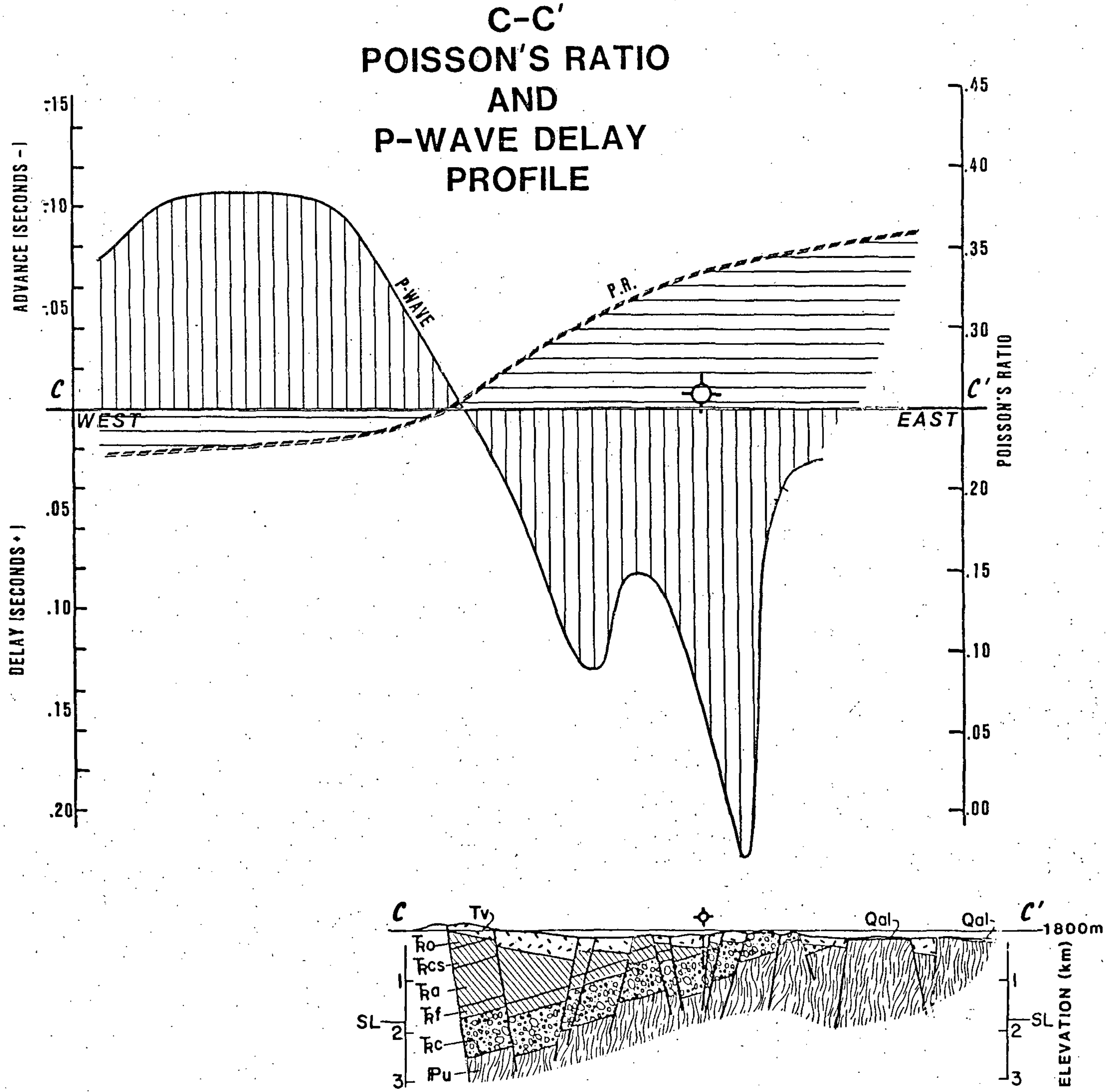
17R. Map of P-wave delays from teleseisms. Largest delays are striped; advances, stippled



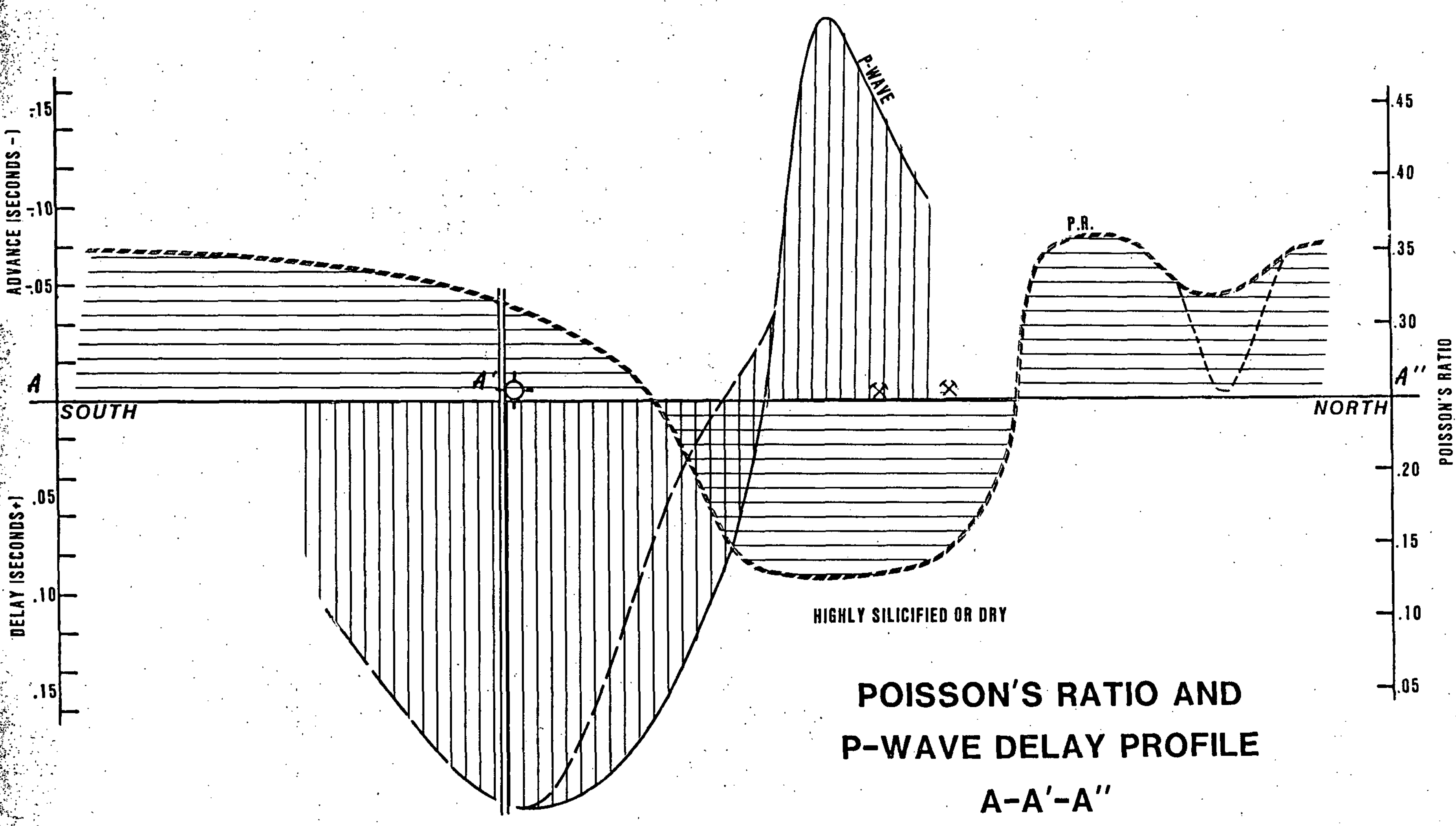
18L. Map of Poisson's Ratios (highs, striped; lows, stippled) showing also locations of microearthquake foci and fault-plane solutions



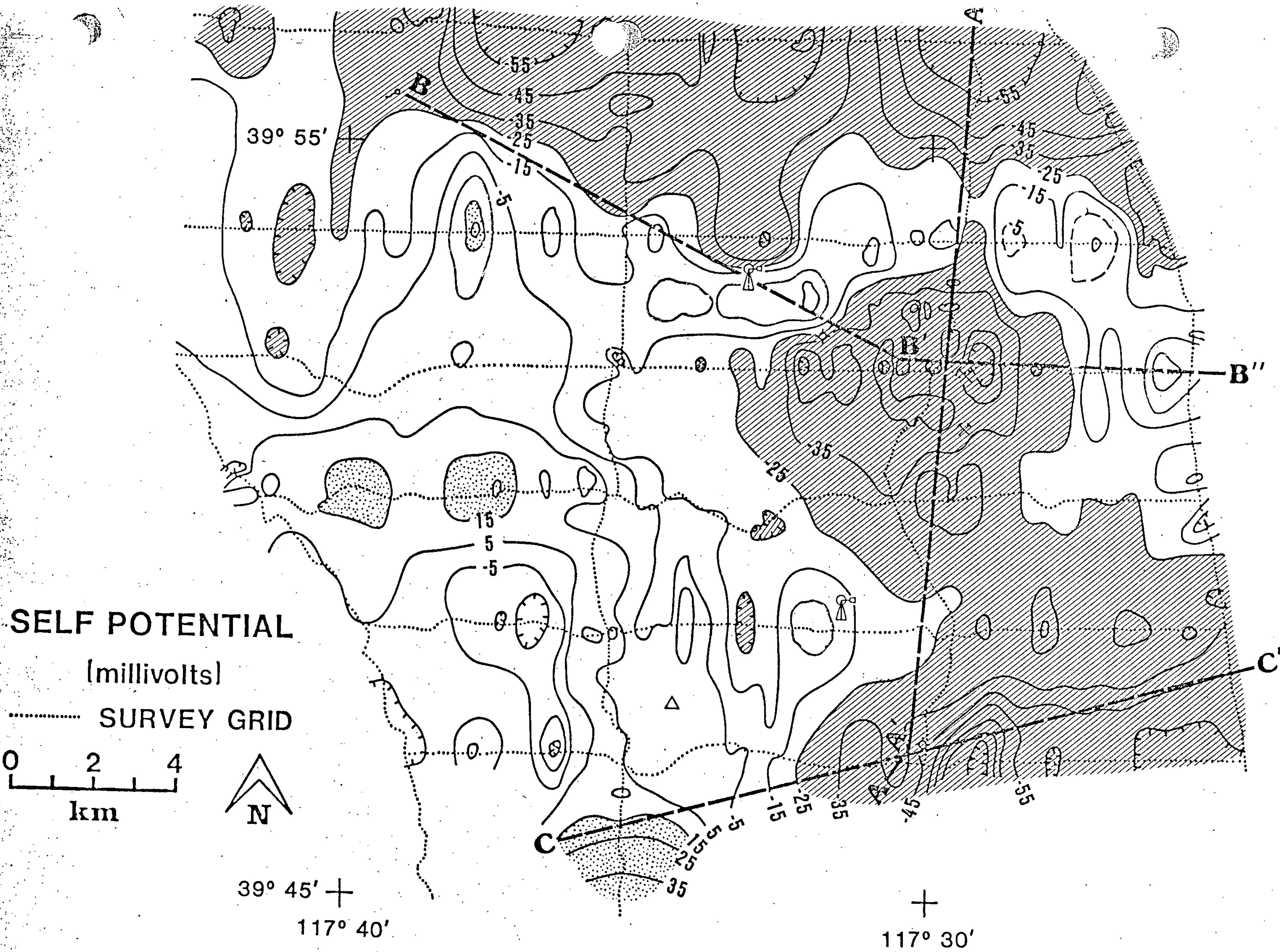
19R. Profiles of P-wave delays and advances and Poisson's Ratios along Line B



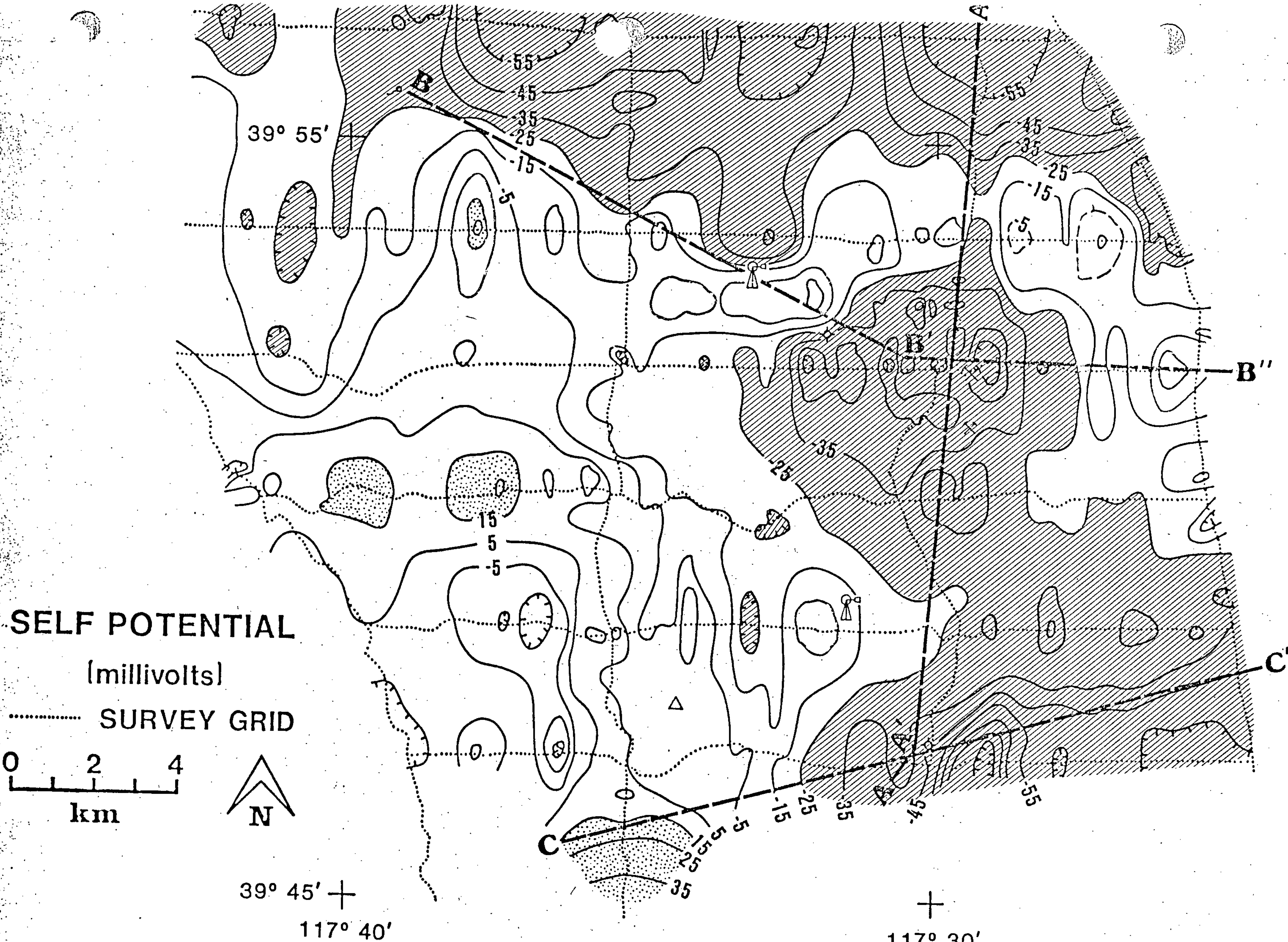
20R. Profiles of P-wave delays and advances and Poisson's Ratios along Line C



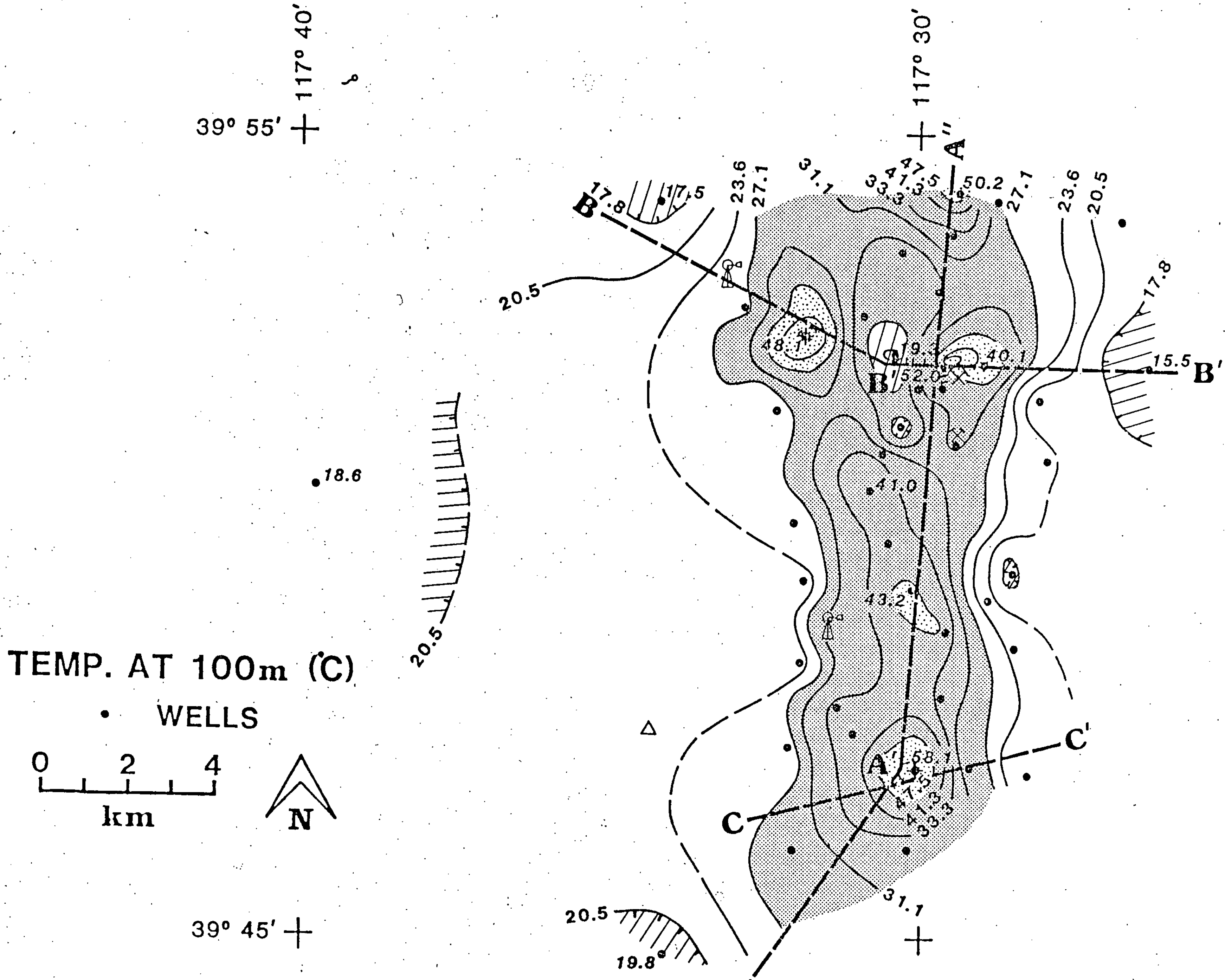
21R. Profiles of P-wave delays and advances and Poisson's Ratios along Line A



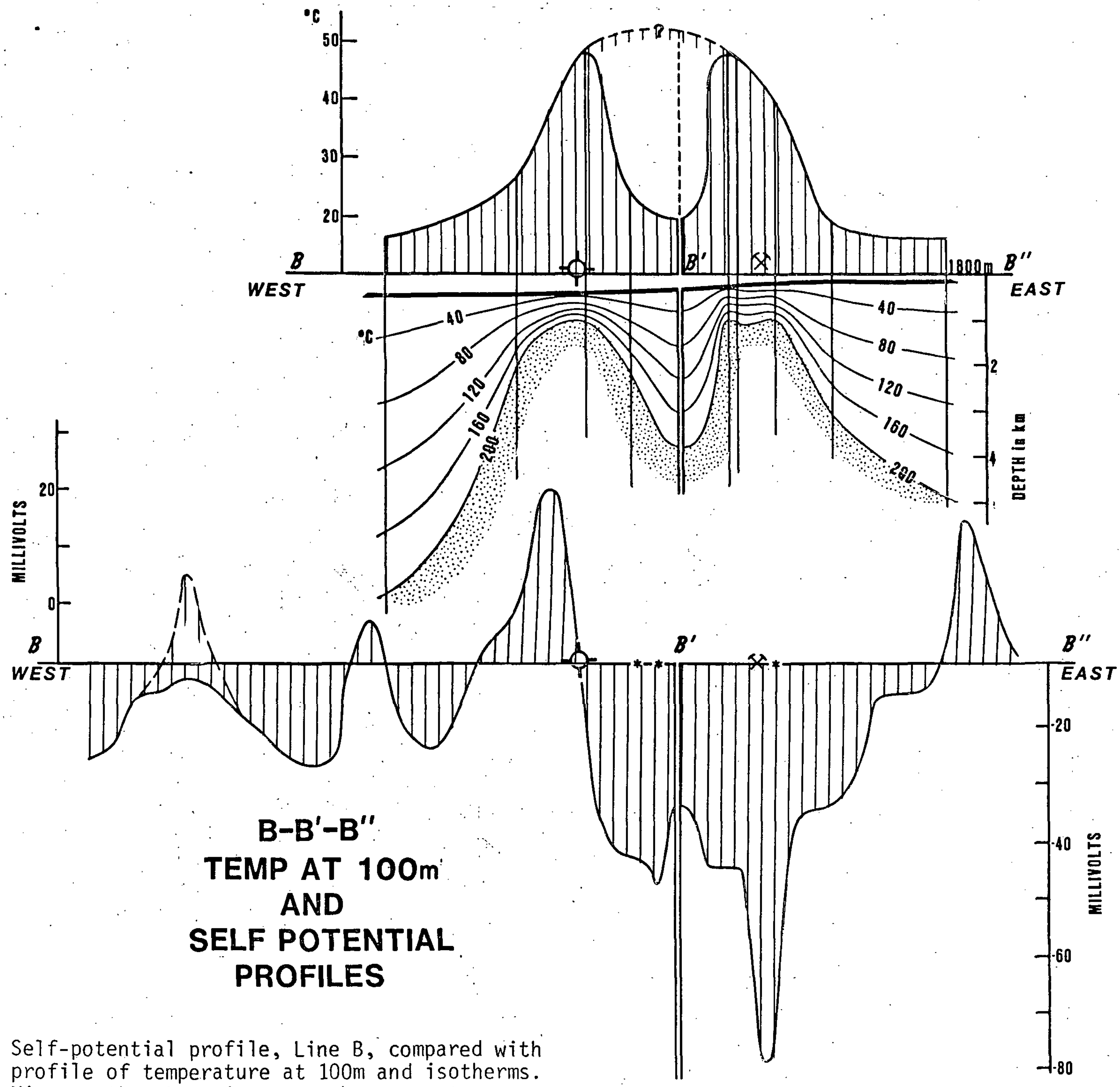
22L. Map of self-potential response. Negatives are striped; highs stippled



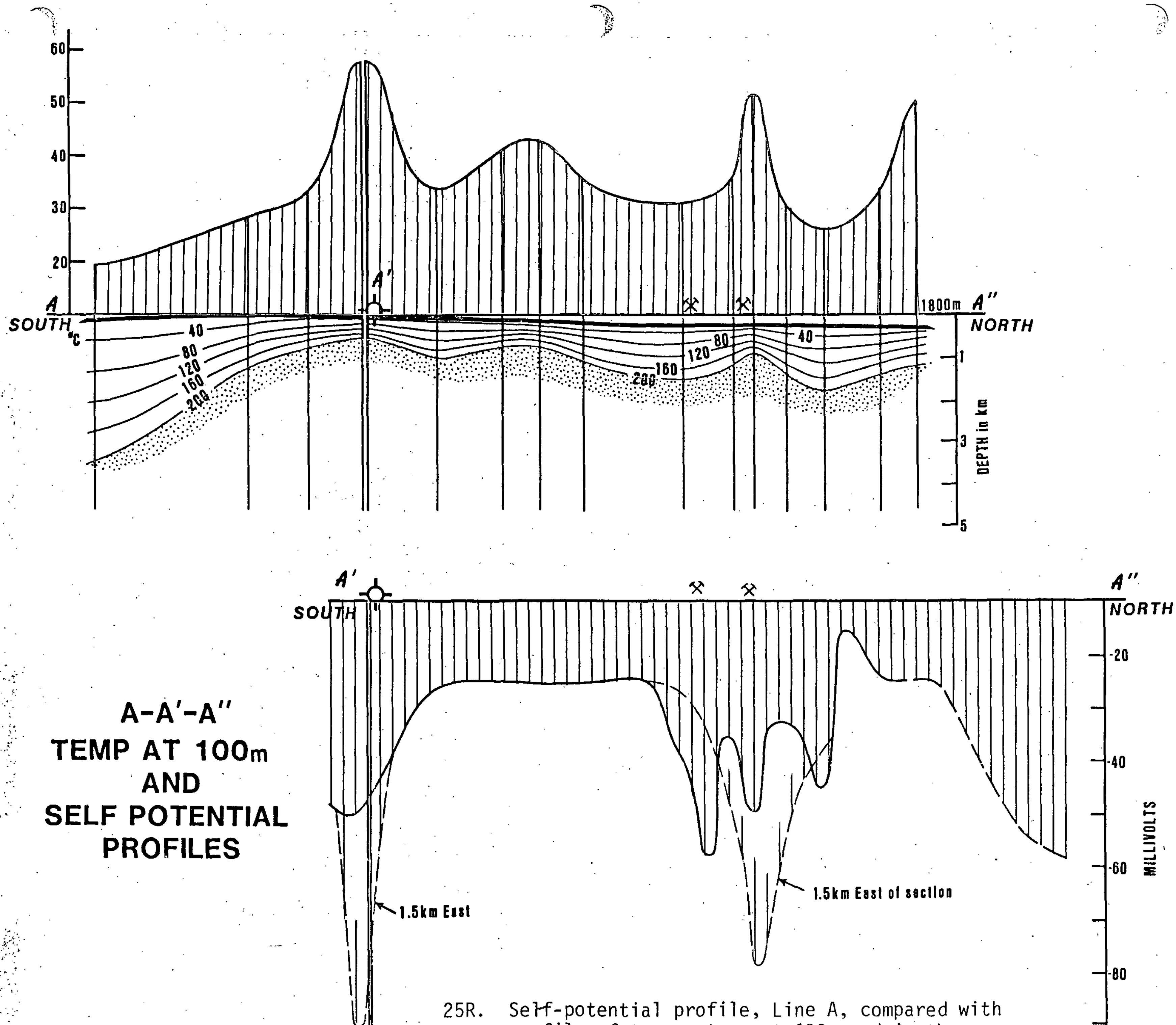
22L. Map of self-potential response. Negatives are striped; highs stippled



23R. Refer to Figure 9L

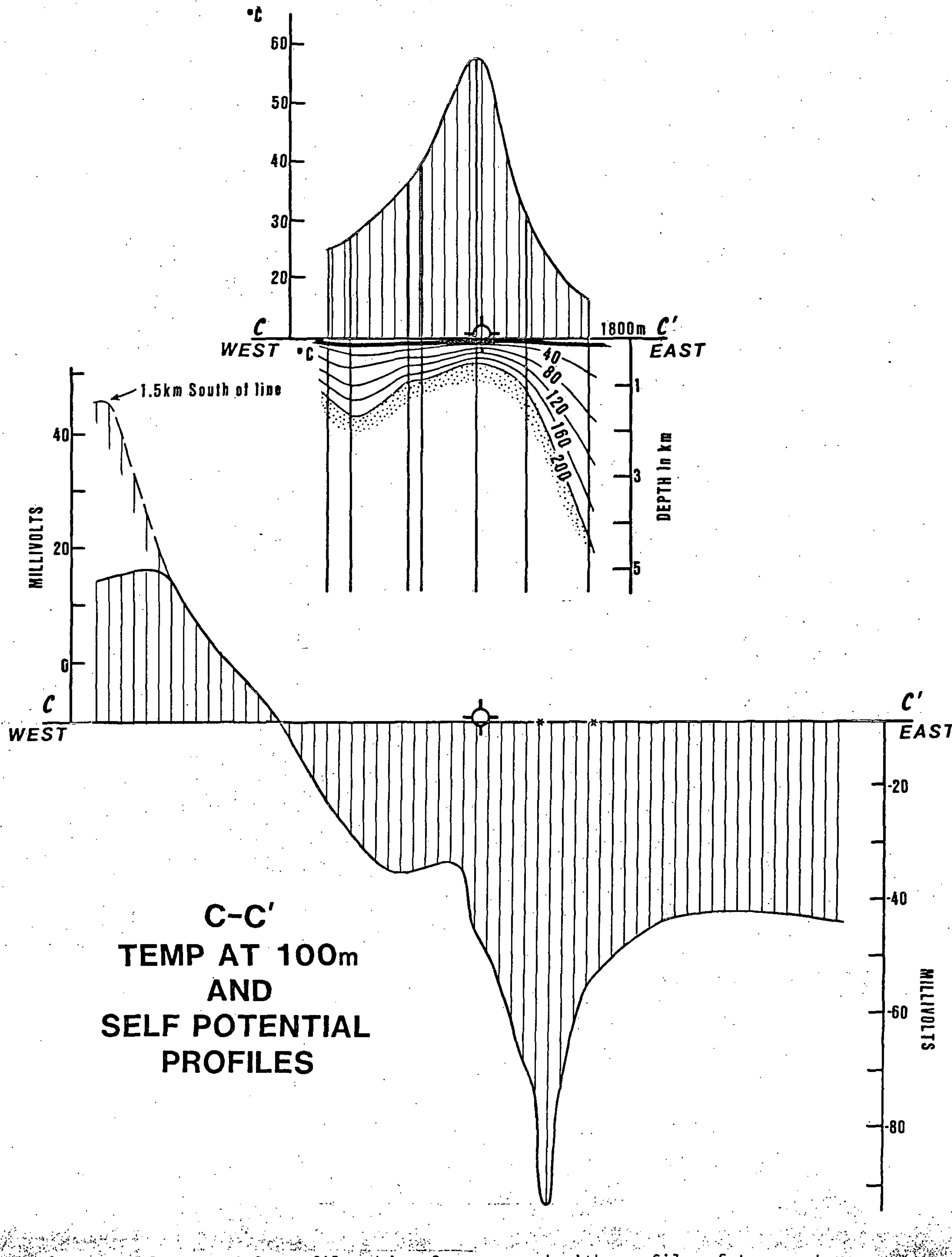


24R. Self-potential profile, Line B, compared with profile of temperature at 100m and isotherms. Microearthquake epicenters shown as stars

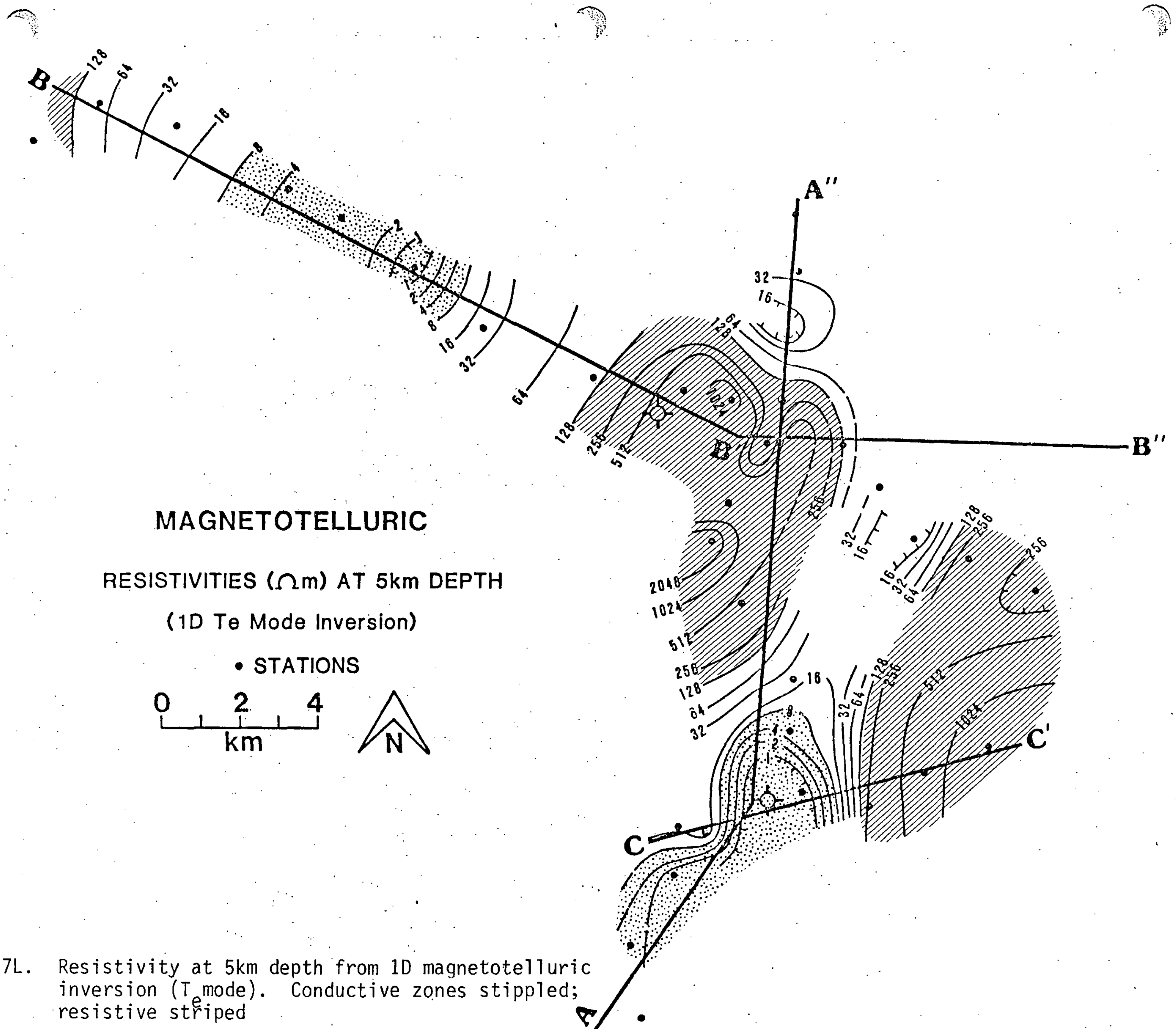


A-A'-A''
TEMP AT 100m
AND
SELF POTENTIAL
PROFILES

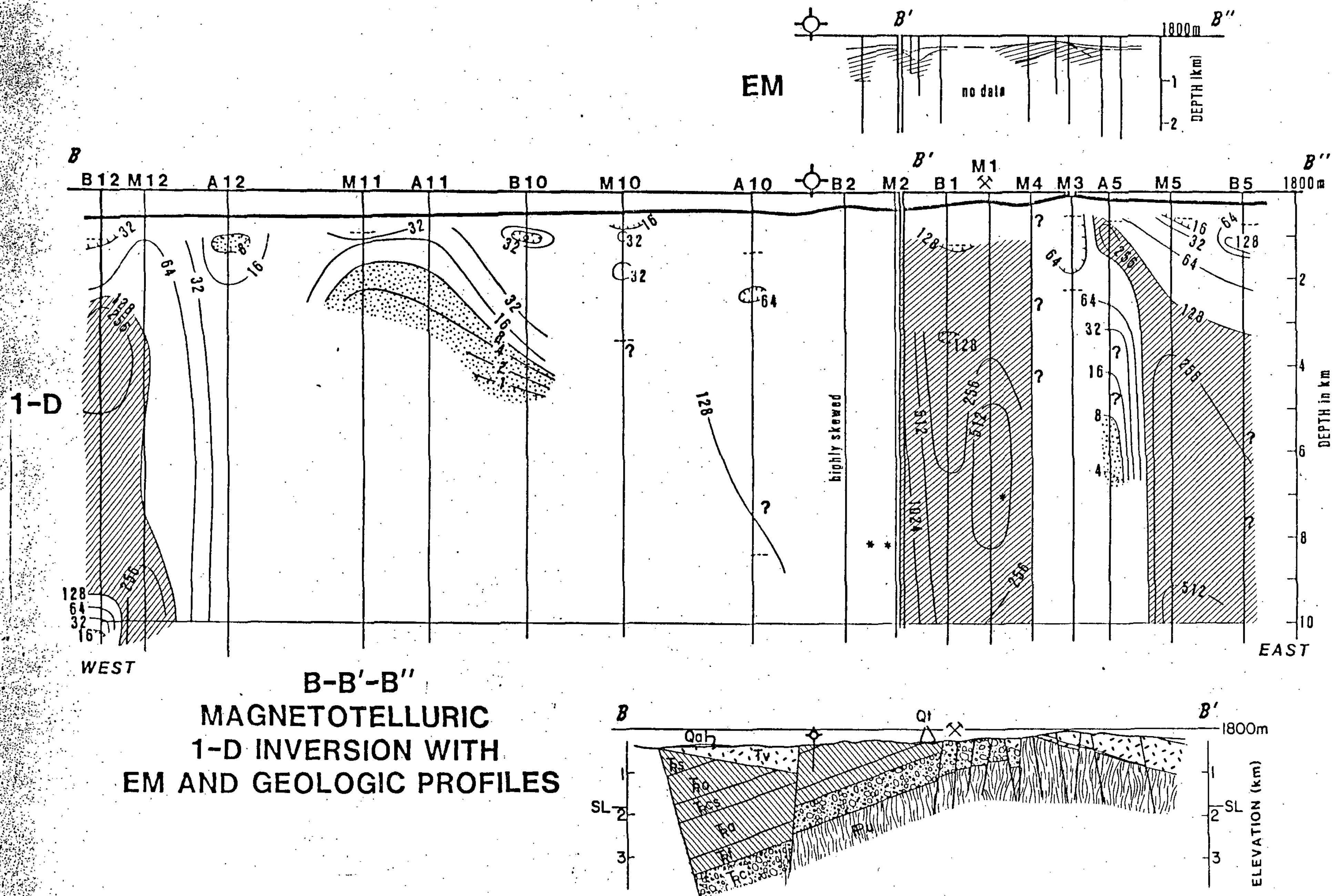
25R. Self-potential profile, Line A, compared with profile of temperature at 100m and isotherms. Microearthquake epicenters shown as stars



26R. Self-potential profile, Line C, compared with profile of temperature at 100m and isotherms. Microearthquake epicenters shown as stars

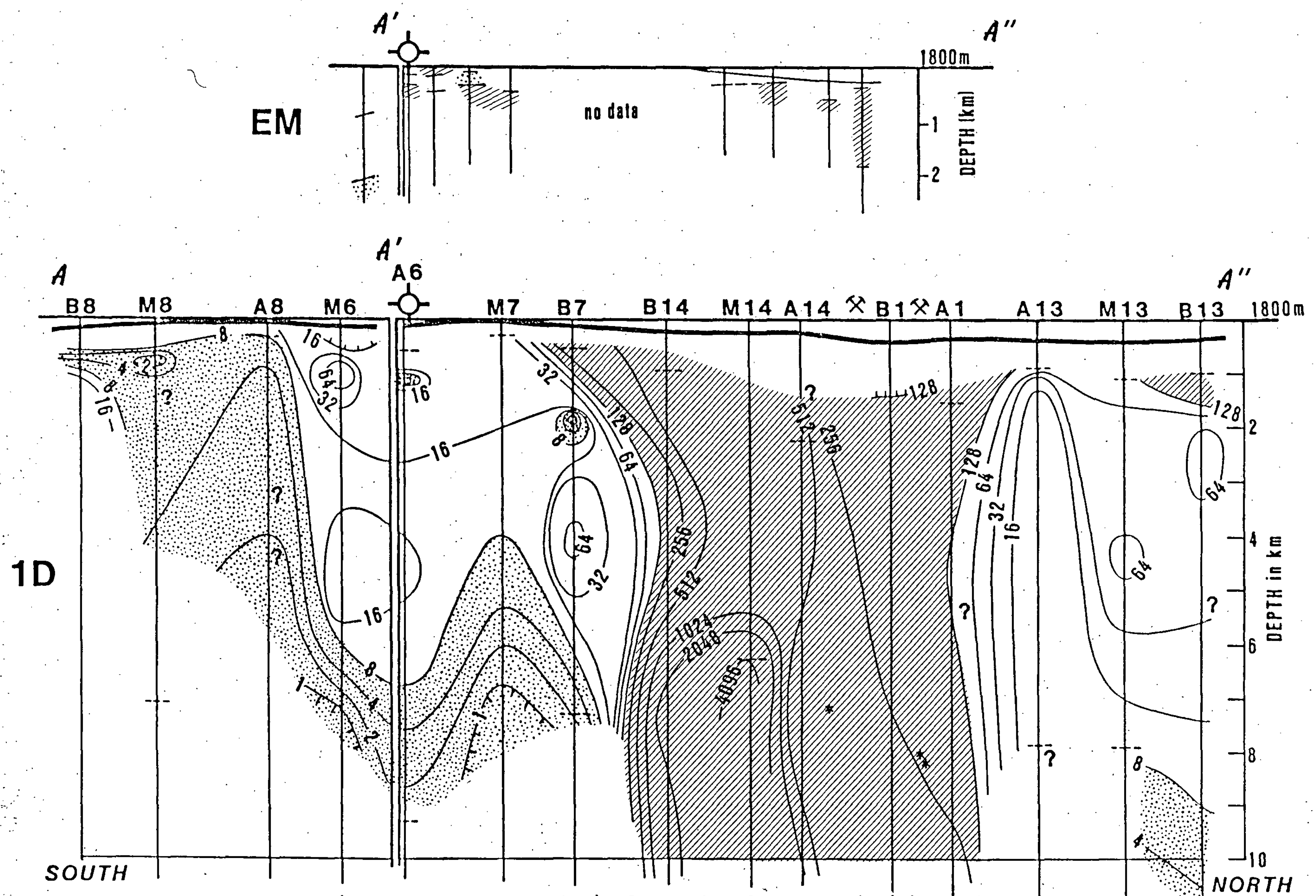


27L. Resistivity at 5km depth from 1D magnetotelluric inversion (T_e mode). Conductive zones stippled; resistive striped

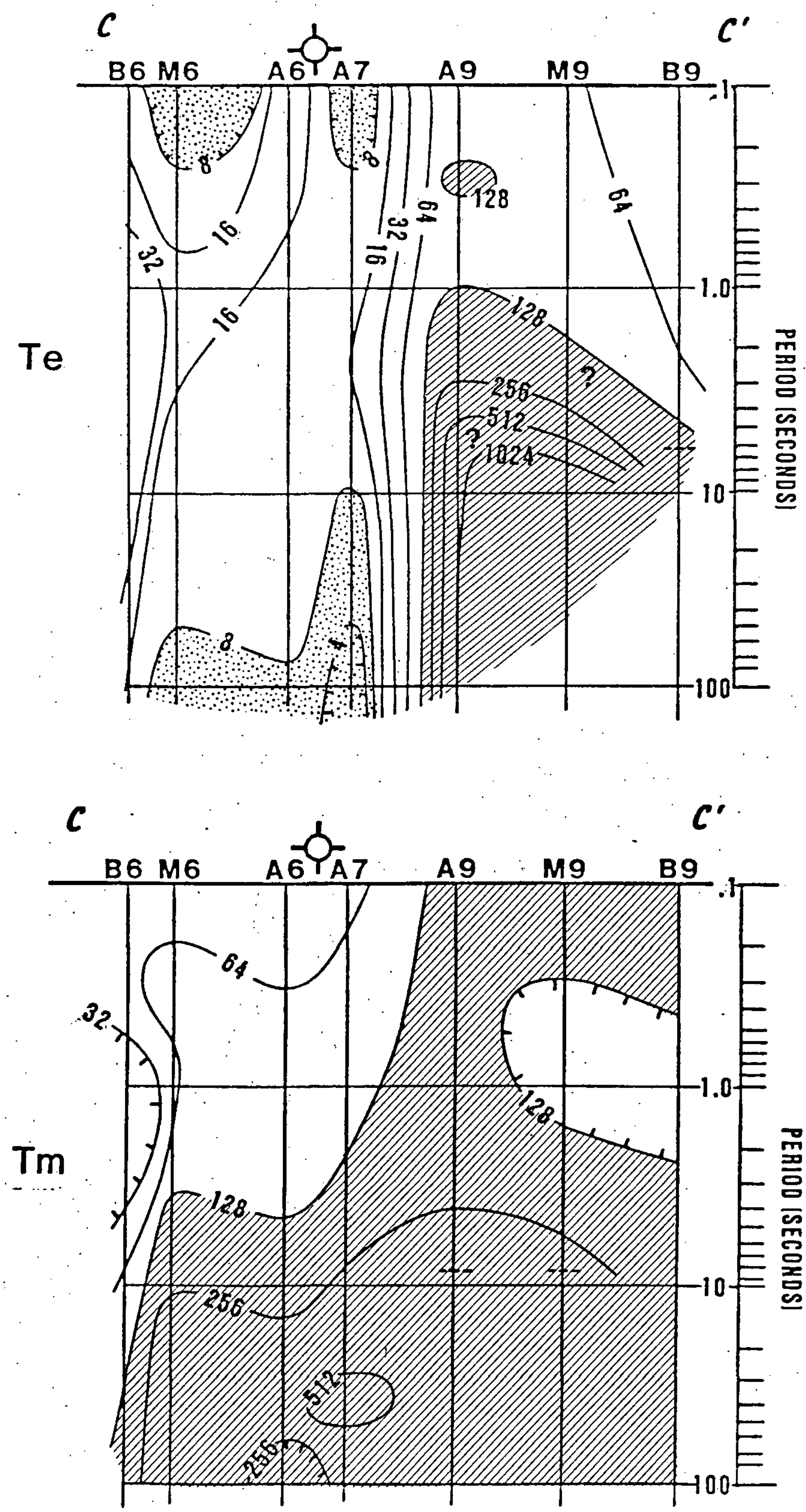


28R. Magnetotelluric section (T_e mode, 1D inversion) along Line B compared with available EM section and geology

MAGNETOTELLURIC 1-D INVERSION WITH EM PROFILE A-A′-A″

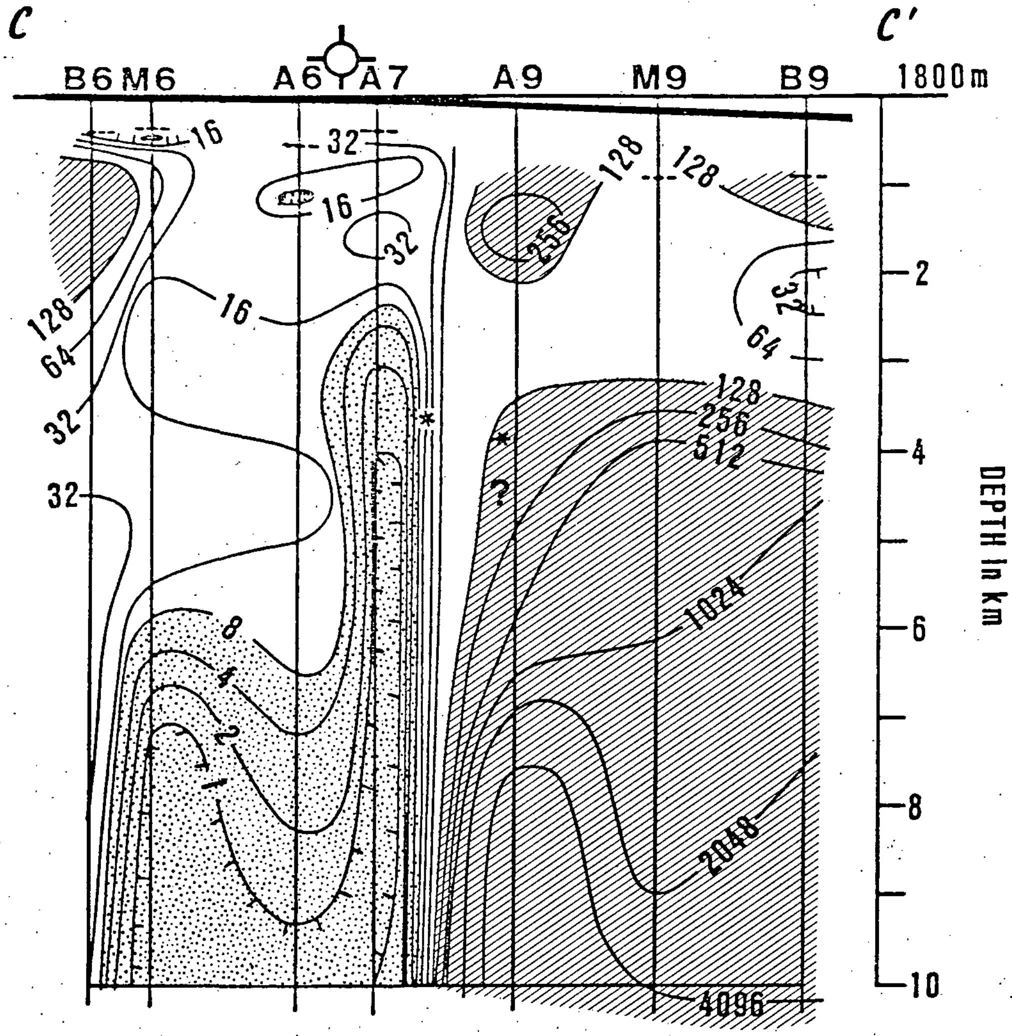


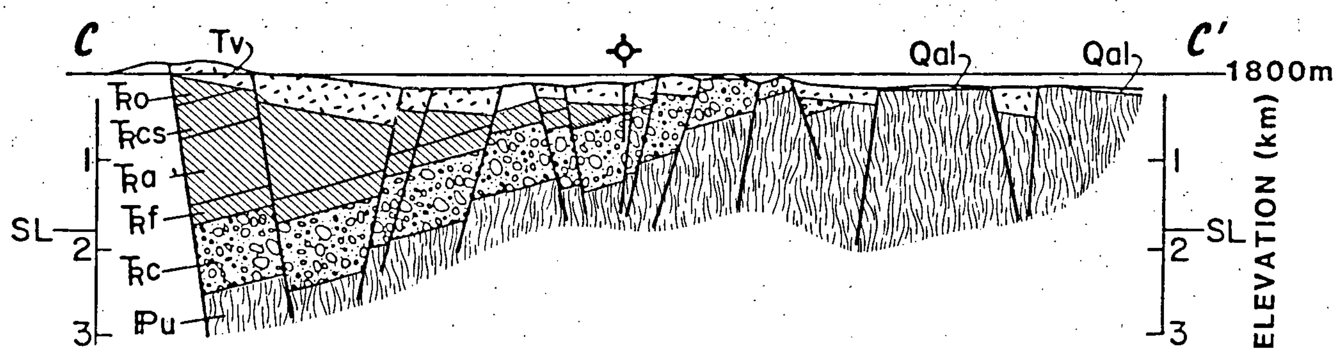
29R. MT section (T_e mode, 1D inversion) along Line A compared with available EM data



C–C'
MAGNETOTELLURIC PSEUDOSECTION

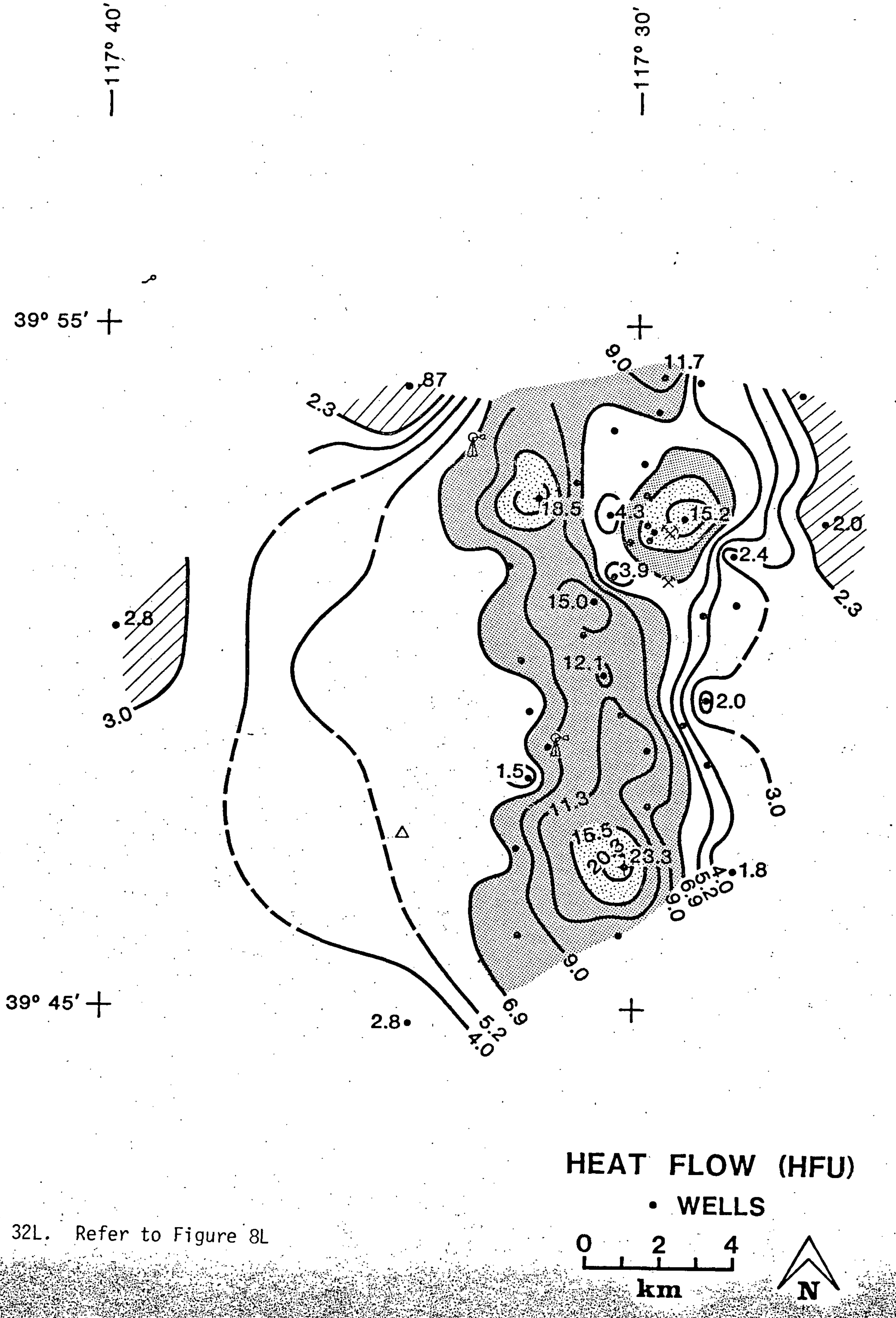
30R. MT pseudosections (resistivity vs. period) along Line C



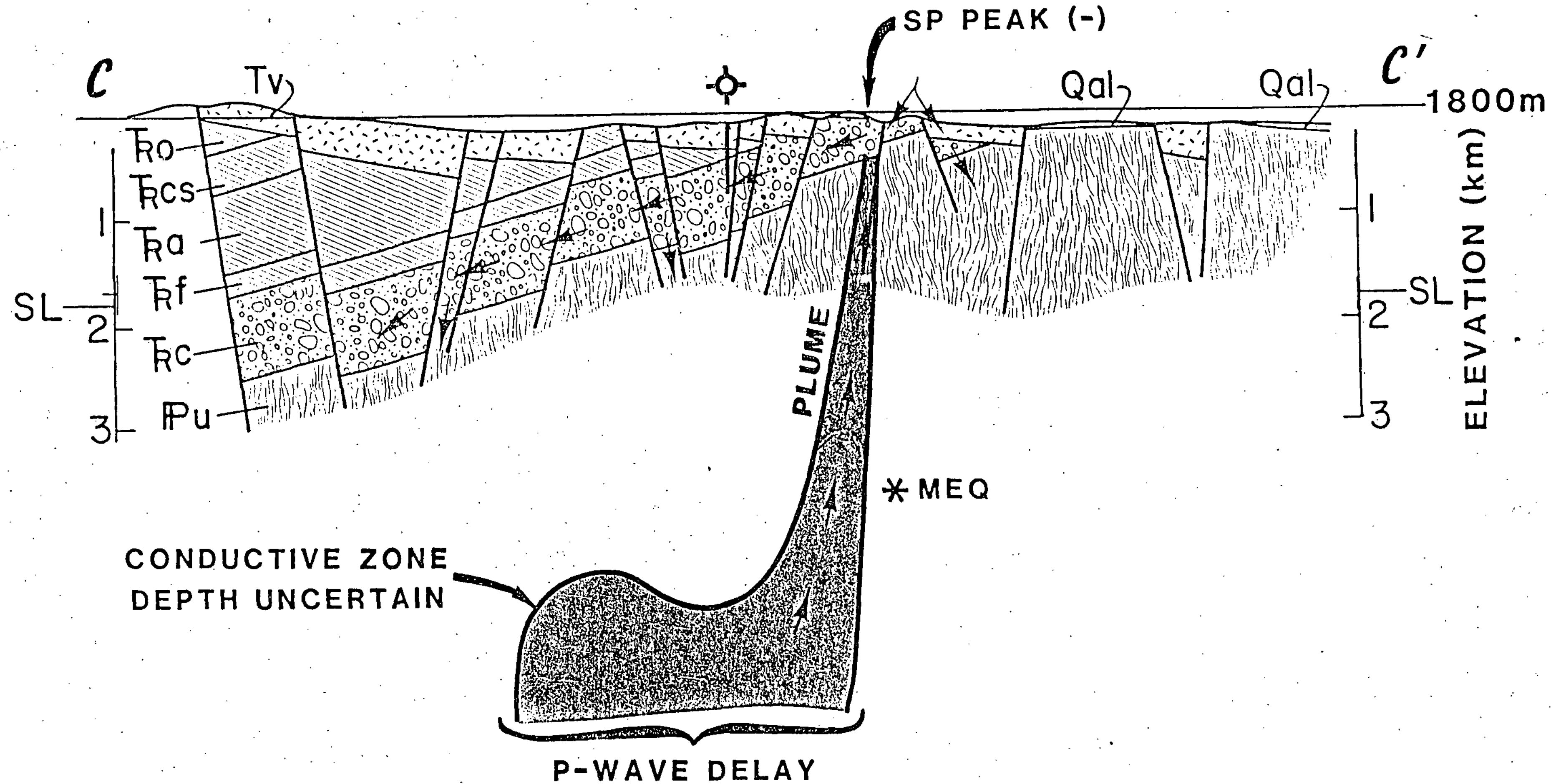


C–C′
MAGNETOTELLURIC 1-D INVERSION WITH GEOLOGIC PROFILE

31R. MT section (T_e mode, 1D inversion) along Line C, compared with geologic section



32L. Refer to Figure 8L



33R. Geologic section along Line C, showing deduced geothermal reservoir feeding conduit of ascending hot water along limb of horst block. Upon encountering the Triassic conglomerate, hot water (probably cooled by cold meteoric water from the surface) drains westward--downdip-- to eventually return to the deep system.

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PART III (Plates)

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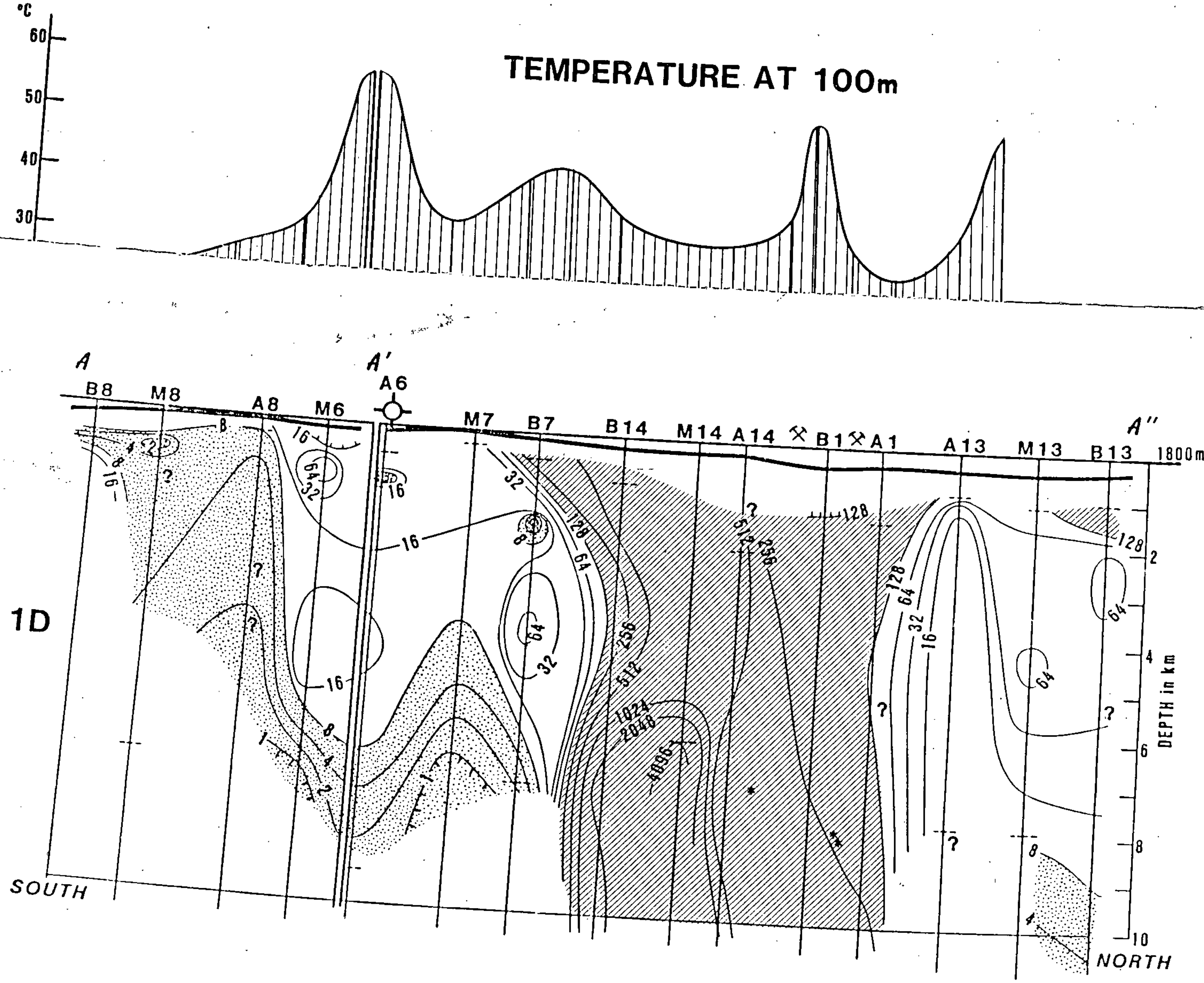

MAGNETOTELLURIC

PLATE I