

Survey control was maintained by Shoran radio navigation system.

For a detailed discussion of seismic and surveying field techniques, please refer to Appendix A which is the operations report by the field contractor, Western Geophysical Company.

Results of the ER-68 Aquapulse Survey were in general as good or better than 50 pounds or 100 pounds of dynamite used in the previous EP and EO Surveys. Exceptions to this can be found in the dip lines of central Victoria, ER-37, 39, 41 and 43, where rough seas apparently caused a sufficiently high noise level that the relatively low energy Aquapulse source was inferior to parallel lines of 6 fold dynamite source. On these ER lines, there is some flat lying energy below one second which is thought to be coherent noise caused by cable jerk and wave action from rough seas.

2) Magnetic Survey

The Western digital recording boat was equipped with a Varian direct readout magnetometer and marine towing system. The Varian V-4937 Proton Magnetometer uses phase lock circuitry to multiply the proton precision frequency received from the sensor. Selection of a unique time base to solve the proton constant allows field values to be presented on an analog strip-chart recorder. The system response exceeds by two orders of magnitude the steepest field gradients encountered in marine surveys. The V-4937 is intended for shipboard or station use but it is well suited for all general purpose survey work in which fast, accurate counts must be taken in high noise conditions. This instrument has a sensitivity of plus or minus 1 gamma and samples the field every 6 seconds. The orientation free magnetometer consists of a completely encapsulated sensor and 750 feet of tow cable. The tow cable consists of 2 conductors, shielding, and a Type 310 stainless steel strain member with neoprene jacketing. The sensor housing will withstand pressures up to 500 psi.

Of the 1110 miles of ER line coverage, approximately 1010 miles of magnetic coverage was obtained. On line ER-45 the magnetometer was not working at all. The instrument although recording, was malfunctioning on lines ER-37, 41, 43, 46 and 47.

The ER Magnetic Survey results were interpreted in conjunction with the EP Survey on which a V-4937 proton magnetometer was also used. Of the 970 miles of EP line coverage, approximately 780 miles of magnetic data were recorded of which 74 miles are unreliable due to recording unit malfunction. The results of the EP and ER Surveys are presented as a map of Total Magnetic Intensity on plates 10(a, b) with a contour interval of 20 gammas.

B. DIGITAL PROCESSING

1) ER-68 Survey

All digital processing was done by G.S.I. on TIAC computers at St. Leonards N.S.W. under the supervision of Esso geophysicists. Translation was made from IBM format of the field tapes to TIAC format. Four Aquapulse pops were summed into one simulated shot. Then the digital processes of True Amplitude Recovery, Normal Moveout Correction, 12 fold stack, Time Variant Deconvolution, Time Variant Filter, and Digital A.G.C. were applied. Digital processing was done at a four millisecond sample rate and display was onto variable density film negatives from which photographic prints were made for interpretation.

Velocity control was maintained for normal moveout correction by T-delta T analysis of single fold sections and from Automated Velocity Scans taken approximately every ten line miles. The Automated Velocity Scan is a G.S.I. developed technique whereby initially 24 traces of differing spread distances but from two adjacent reflection depth points are gathered. Normal moveout corrections are applied to the gather in twelve millisecond steps from 0 to 1140 milliseconds (at the distant trace) and the 24 traces stacked into one for each moveout change. The stacked