

United States  
Department of the Interior  
Geological Survey

MULTICHANNEL SEISMIC-REFLECTION PROFILES COLLECTED  
IN 1979, BETWEEN LATITUDES 34° 15' AND 36° 30' NORTH,  
OFF THE CALIFORNIA COAST FROM PT. CONCEPTION TO POINT SUR

by

D. S. MCCULLOCH, D. M. MANN, R. SLITER AND P. H. MCCLELLAN

U.S. Geological Survey  
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During the fall of 1979 the U.S. Geological Survey (USGS) collected approximately 680 km of 24-channel seismic-reflection data across the continental margin in the eastern Pacific Ocean off of the California coast north of Point Conception (Plate 1). The data were collected on the USGS Research Vessel S. P. Lee (cruise identifier L5-79-NC) using a sound source of five airguns totalling 1,326 cubic inches at a manifold pressure of approximately 1900 psi. The recording system consisted of a 24-group streamer, 2400 meters long, and a GUS (Global Universal Science) model 4200 digital recording instrument. Records were sampled in the field at a 2-millisecond rate and later processed at a 4-millisecond rate. Navigational control for the survey was by satellite fixes augmented by Loran C (Rho-Rho) and doppler-sonar bottom-track navigation. Detailed navigation data were not recorded digitally at sea, so shot locations were later reconstructed from the seismic system operator's log. Plate 1 is a track-line chart showing shotpoint navigation.

The seismic reflection records vary in length from 8 to 12 seconds depending on water depth and geologic structure. The data have been edited, NMO-corrected, stacked, deconvolved, and filtered, and finally graphically displayed by an electrostatic plotter (Table 1). Processing was carried out at the USGS Marine Geology Seismic Processing Center in Menlo Park, California.

The data are available in three formats:

1. Electrostatically plotted profiles which were deconvolved and filtered after stacking. Copies of the profiles may be purchased through:

National Geophysical Data Center  
National Oceanic and Atmospheric Administration  
Boulder, Colorado 80302

2. Digital magnetic stack tapes. Copies of the stack tapes and a description of the tape format can be obtained at the requester's expense by contacting:

Data Curator  
Branch of Pacific Marine Geology  
U.S. Geological Survey, MS 999  
345 Middlefield Road  
Menlo Park, California 94025

3. Digital magnetic demultiplexed tapes. Copies of the demultiplexed tapes and a description of the tape format can be obtained at the requester's expense by contacting the USGS at the above address.

## RECORDING PARAMETERS

DATE RECORDED: 11/79

SOURCE : BOLT AIR GUNS  
 AIR GUNS IN ARRAY: 5  
 NET VOLUME: 1326 CU. IN.  
 MANIFOLD PRESSURE: 2000 PSI  
 GUN DEPTH: 8.5 M  
 SHOT SPACING: 50 M

STREAMER: SE1 MULTIDYNE. CHARGE COUPLED

GEOMETRY:

CENTER FAR TRACE      CENTER NEAR TRACE      SOURCE      SHIP  
 <----->      <----->      <----->      <----->  
 2560 M      260 M      38 M

GROUP INTERVAL: 100 M  
 AVERAGE DEPTH: 14 M  
 GROUP LENGTH: 100 M  
 PHONES/GROUP: 60  
 DEPTH CONTROLLERS: SE1 VARIABLE WING BIPOD

RECORDING: GUS HDRR 4200. BINARY GAIN  
 SAMPLE INTERVAL: 2 MS  
 RECORD LENGTH: 8 S  
 GUS RECORDING FILTER: 5-110 HZ  
 NUMBER OF CHANNELS: 24

NAVIGATION: MARCONI INTEGRATED SYSTEM  
 SHOT ON: DISTANCE  
 PRIMARY NAVIGATION: SATELLITE. LORAN C (RHO-RHO)  
 DIRECTION RECORDED: NW

## PROCESSING SEQUENCE

DATE PROCESSED: 3/80

1 DEMULTIPLEX  
 DESAMPLE: 4 MS  
 GAIN RECOVERY:  
 REFORMAT: PHOENIX I

2 TRACE SHOT EDIT

3 STATIC CORRECTIONS  
 RECORDING STATICS: 169 MS  
 DATUM: SEA LEVEL

4 CDP SORT

5 VELOCITY ANALYSIS  
 WINDOW LENGTH: 100 MS  
 WINDOW INTERVAL: 4 MS  
 BAND PASS FILTER: 3-6-40-50 HZ  
 VELOCITY RANGE: 1400-4000 M/S

6 NMO CORRECTION

7 24-FOLD STACK: NORMALIZED WEIGHTING

8 BANDPASS FILTER: HANNING  
 FILTER POINTS: 101  
 TIME WINDOW: 0.0-12.0 S  
 FREQUENCY: 5-10-35-45 HZ

9 PREDICTIVE DECONVOLUTION  
 DESIGN WINDOW: 2000 MS  
 OPERATOR: 200 MS  
 GAP: 32 MS

10 AGC WINDOW: 500 MS

## PLOT PARAMETERS

MODE: VARIABLE AREA/WIGGLE TRACE

HORIZONTAL SCALE: 20 TR/IN

VERTICAL SCALE: 1.25 IN/S

CLIP: 1.75 TRACE WIDTHS

GAIN: 1.0 (SCALAR)

Table 1. Recording parameters, processing sequence and plot parameters for stacked multichannel seismic-reflection data collected on USGS cruise L5-79-NC.