DEPARTMENT of the INTERIOR

HIGH RESOLUTION SEISMIC REFLECTION PROFILES

Collected from Offshore Northern California after the November 8, 1980 Earthquake

By:

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United States Geological Survey

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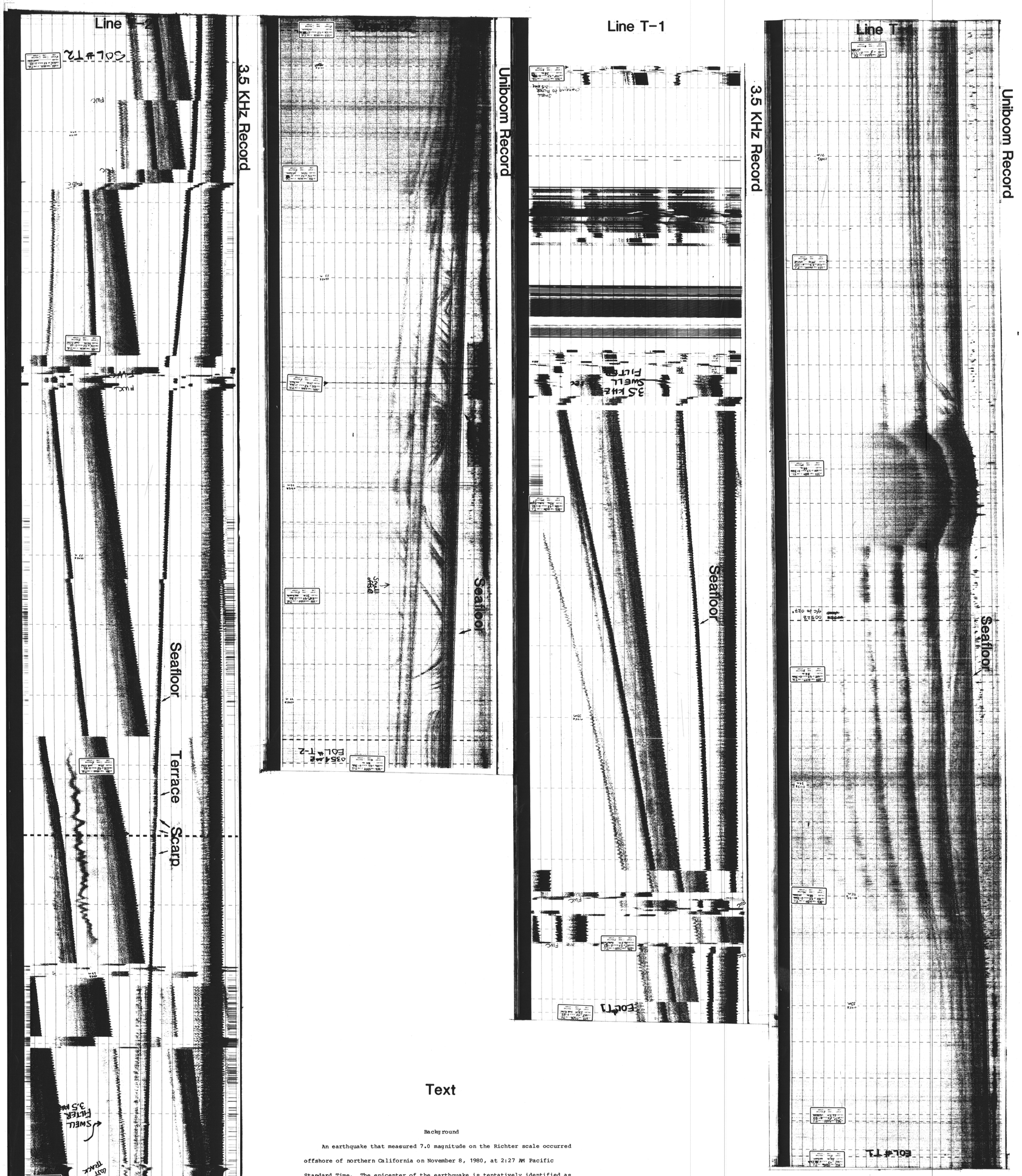
Plate 1 of 3

Cruise: L14-80

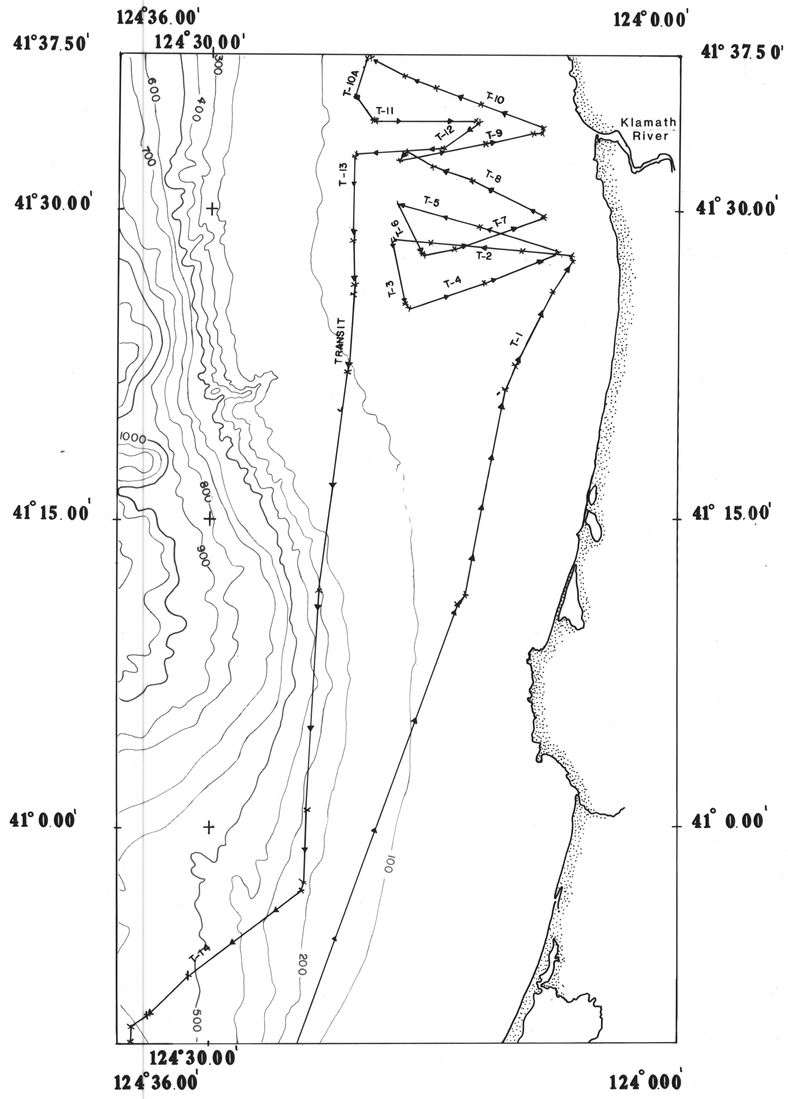
Data Type: Uniboom
3.5 kHz

These profiles were processed from 35mm by
CONTRAPTION



Location Map

Trackline Map



Text

Background

An earthquake that measured 7.0 magnitude on the Richter scale occurred offshore of northern California on November 8, 1980, at 2:27 AM Pacific Standard Time. The epicenter of the earthquake is tentatively identified as about 35 km west of Trinidat (see location map). Following the earthquake, several commercial fishermen reported changes in the seafloor off the mouth of the Klamath River. A brief survey of the area was made on December 17, 1980, aboard the U.S.G.S. research vessel S.P. LEE. The results of that investigation are available in a report titled "Seafloor failures caused by the Nov. 8, 1980, Earthquake off northern California", by Field and others, U.S.G.S. Open-File Report No. 81-__. The seismic records presented here are provided to supplement that report.

EQUIPMENT AND PROCEDURES

General: Tracklines were initially oriented to locate the reported scarp zone and subsequently to delineate its trend and continuity. Speed of the vessel through the water varied between 4.2 kts and 5.9 kts; the average speed throughout the course of the survey was 4.9 kts. The horizontal scales shown with these data are based on this average speed and therefore are only approximate.

Navigation: Vessel location was continuously plotted using LORAN-C and satellite navigation, with an estimated accuracy of one kilometer. Corrections to the navigation data were made underway using radar where appropriate.

High-Resolution Seismic Reflection Data: Two seismic sources, an EG&G Uniboom and a 3.5 kHz transducer, were employed. Records obtained from both systems were printed on Raytheon LSR-1811 recorders. The Uniboom system employs four hull-mounted plates that operate at a combined power output of about 1200 Joules. The return signal was received on two 20-element Del Norte hydrophones and passed through Kronhite filters to eliminate frequencies less than 200 Hertz and greater that 1800 Hertz. The source was fired and data printed at one half second intervals. The depth scale given for both Uniboom and 3.5 kHz records is based on an assumed velocity of sound of 1464 m/sec in seawater. The 3.5 kHz transducers (12 for source and receiving) are also hull-mounted (approximately six m below the water line). Seismic signals from the 3.5 kHz transducer were emitted and received at one quarter second intervals. The incoming signal from the 3.5 kHz system was printed directly on an analogue recorder (see lines T-6 through T-9 and T-10A). The 3.5 kHz signal was simultaneously passed through a swell filter to elimate signal variations due to ship motion and was printed on a slave recorder (lines T-1 through T-5; T-10 through T-13). Note: because these latter records were produced on a slave recorder, the top line is not necessarily time zero (the water surface) and they cannot be used to obtain water depths.