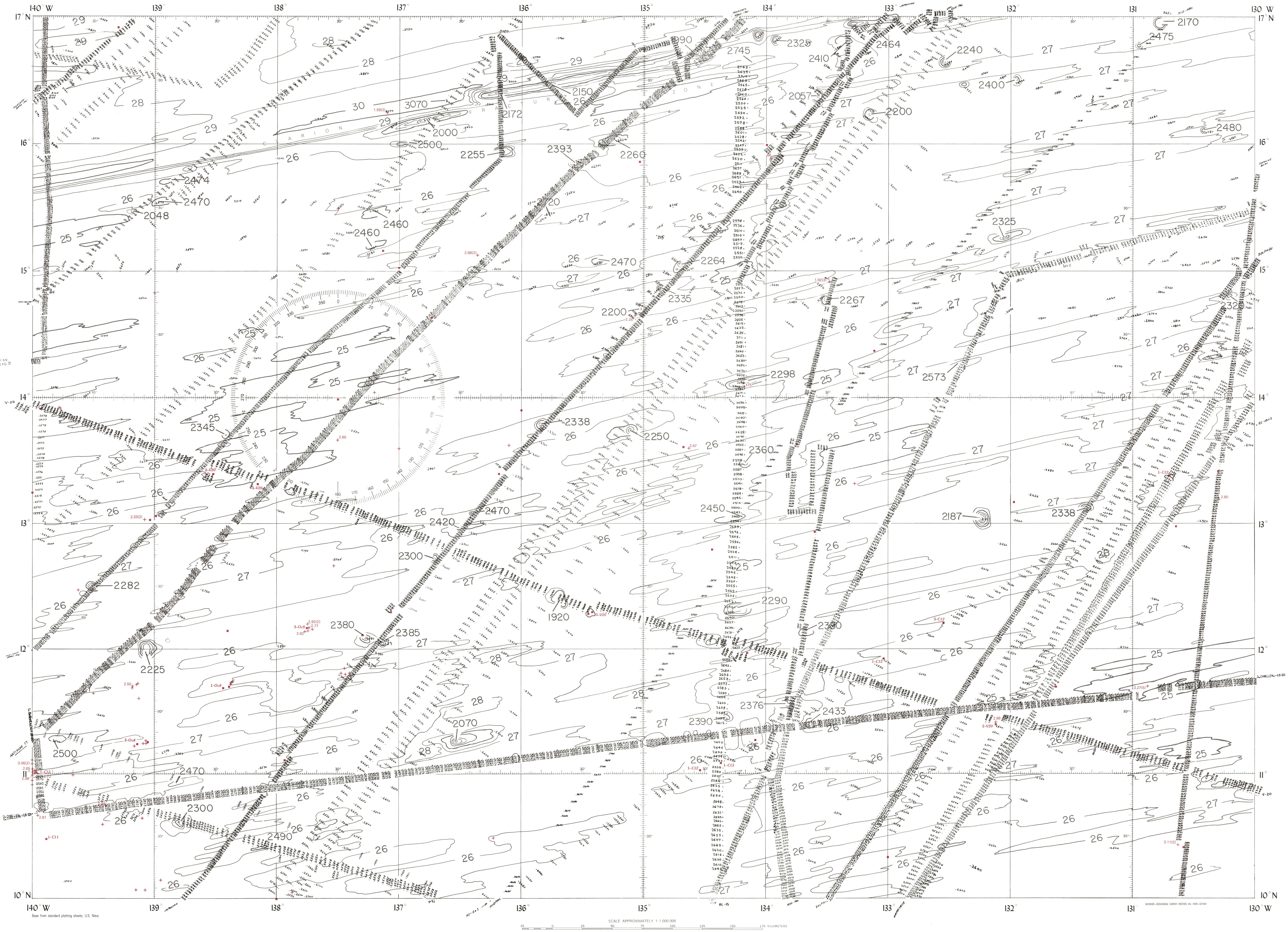
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

PREPARED UNDER GRANTS FROM THE U.S. BUREAU OF MINES FOR THE
OCEAN MINING ADMINISTRATION, DEPARTMENT OF THE INTERIOR

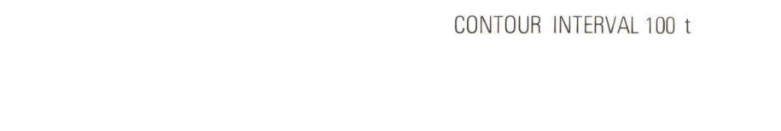
MISCELLANEOUS INVESTIGATIONS SERIES
MAP I–1094–H



Base from standard plotting sheets, U.S. Navy

INTERIOR—GEOLOGICAL SURVEY, RESTON, VA—1978—G77341

SCALE APPROXIMATELY 1:1 000 000



CONTOUR INTERVAL 100 t

Sources

The soundings on this map were principally assembled from compilations made since 1949 by the following organizations.

Columbia University; Department of Geological Sciences—Lamont-Doherty Geological Observatory (initiated in 1949 with the support of the Office of Naval Research); includes principally precision depth soundings by research vessels.

Department of Defense; Defense Mapping Agency Hydrographic Center-US Naval Oceanographic Office (organized on 4″=1° Longitude format in 1949). Includes precision and nonprecision soundings of naval and other vessels and all pre–1950 echo soundings.

University of California; Scripps Institution of Oceanography. (Initiated in 1950 with the support of the Office of Naval Research). Includes principally precision soundings from research vessels.

Contours

Soundings from listed sources were contoured at publication scale using a plate-tectonics working hypothesis and bathymetric trends derived from both magnetic anomalies and fracture-zone lineations. Vessel tracks are indicated by numerical values in tau units and the vessel and voyage number are shown at an extremity of each track. Approximate depths of contours in meters can be determined from the conversion table.

Conversion Table

Echo soundings given in total travel time (surface, to seabed, to surface) and expressed in tau units (1/400 second). Contour interval: 100 t or 1/4 second.

Tau	Meters
200	375
400	746
600	1119
800	1490
1000	1862
1200	2233
1400	2608
1600	2985
1800	3361
2000	3740
2200	4122
2400	4508
2600	4890
2800	5272
3000	5662
3200	6050

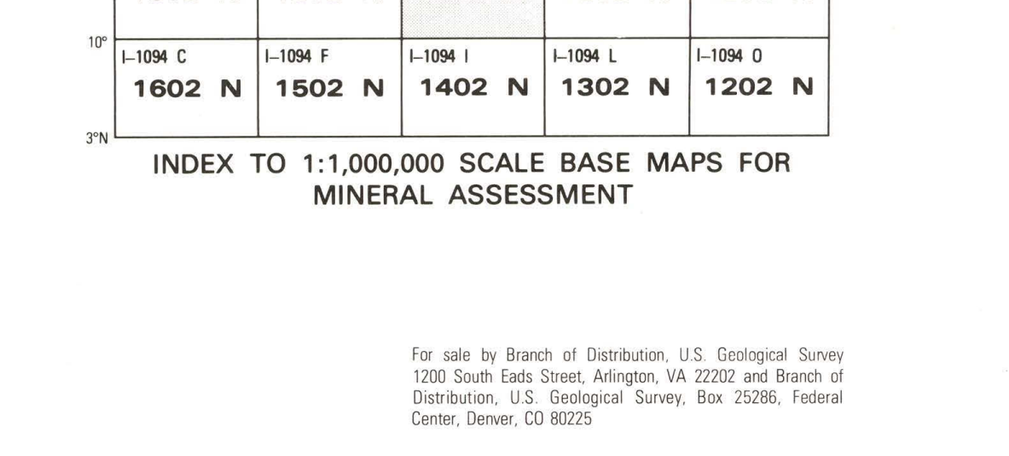
BATHYMETRIC AND NODULE ASSESSMENT MAP, 1403N, NORTHEAST EQUATORIAL PACIFIC OCEAN

Contour data assembled, evaluated, and interpreted by Bruce C. Heezen and Marie Tharp assisted by S. Blythe, R. Bodnar, R. Brunke, D, Jicha, H. Jicha, T. Kaul, M. McClellan, and F. Rosselot, Lamont-Doherty Geological Observatory, Department of Geological Sciences, Columbia University, Palisades, NY 10964

Nodule data from the Scripps Institution of Oceanography Sediment Data Bank, compiled by Jane Z. Frazer and Mary B. Fisk, Scripps Institution of Oceanography, University of California, La Jolla, CA 92093

1978

2.83(2) +	Nodules present and averaged combined copper and nickel content in weight percent. Total number of analyses averaged shown in parentheses
+	Nodules present but no reported analyses
3–V20 ■	Site of photograph showing bottom coverage by ferromanganese nodules, research vessel, and cruise number. Photograph available from Lamont-Doherty Geological Observatory Coverage: 1, 0-25%; 2, 26-50%; 3, 51-75%; and 4, 76-100% Research vessels: M, R/V Moana Wave, University of Hawaii Oc, R/V Oceanographer, National Oceanographic and Atmospheric Agency C, R/V Robert Conrad, Lamont-Doherty Geological Observatory V, R/V Vema, Lamont-Doherty Geological Observatory
■	No nodules reported in samples or in photographs



INDEX TO 1:1,000,000 SCALE BASE MAPS FOR MINERAL ASSESSMENT

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