



**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 (limited 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 fixed sources were contoured at publication scale using a plane-table working hypothesis and bathymetric trends derived from both magnetic anomalies and fracture-scar lineations. Vessel tracks are indicated by numerical values in ten 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 ten units (1 ten = one second).

Meters	Ten Units
200	375
300	546
400	717
500	888
600	1059
700	1230
800	1401
900	1572
1000	1743
1100	1914
1200	2085
1300	2256
1400	2427
1500	2598
1600	2769
1700	2940
1800	3111
1900	3282
2000	3453
2100	3624
2200	3795
2300	3966
2400	4137
2500	4308
2600	4479
2700	4650
2800	4821
2900	4992
3000	5163
3100	5334
3200	5505
3300	5676
3400	5847
3500	6018
3600	6189
3700	6360
3800	6531
3900	6702
4000	6873
4100	7044
4200	7215
4300	7386
4400	7557
4500	7728
4600	7899
4700	8070
4800	8241
4900	8412
5000	8583
5100	8754
5200	8925
5300	9096
5400	9267
5500	9438
5600	9609
5700	9780
5800	9951
5900	10122
6000	10293
6100	10464
6200	10635
6300	10806
6400	10977
6500	11148
6600	11319
6700	11490
6800	11661
6900	11832
7000	12003
7100	12174
7200	12345
7300	12516
7400	12687
7500	12858
7600	13029
7700	13200
7800	13371
7900	13542
8000	13713
8100	13884
8200	14055
8300	14226
8400	14397
8500	14568
8600	14739
8700	14910
8800	15081
8900	15252
9000	15423
9100	15594
9200	15765
9300	15936
9400	16107
9500	16278
9600	16449
9700	16620
9800	16791
9900	16962
10000	17133

**BATHYMETRIC AND NODULE ASSESSMENT MAP, 1402N, 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. Rosedot, 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

2.26(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.  
4-4718 \* Size 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%.  
Flowchart: M, R.V. Moana Waia, University of Hawaii; O, R.V. Oceanographer, National Oceanographic and Atmospheric Administration; C, R.V. Robert Conrad, Lamont-Doherty Geological Observatory; V, R.V. Verna, Lamont-Doherty Geological Observatory.  
\* No nodules reported in sample or in photographs.

140° W	139° W	138° W	137° W	136° W	135° W	134° W	133° W	132° W	131° W	130° W
1404 N	1404 N	1404 N	1404 N	1404 N	1404 N	1404 N	1404 N	1404 N	1404 N	1404 N
1403 N	1403 N	1403 N	1403 N	1403 N	1403 N	1403 N	1403 N	1403 N	1403 N	1403 N
1402 N	1402 N	1402 N	1402 N	1402 N	1402 N	1402 N	1402 N	1402 N	1402 N	1402 N

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