

MARINE MAGNETOMETER DATA IN SOUTHERN DAVIS STRAIT

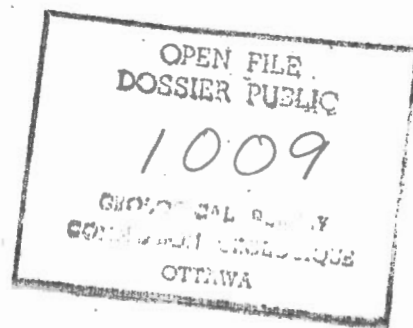
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ATLANTIC GEOSCIENCE CENTRE

GEOLOGICAL SURVEY OF CANADA

DEPT OF ENERGY, MINES AND RESOURCES

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Table of Contents

1. Introduction
2. Area covered and sources of data
3. Data processing
4. Digital file contents and formats
5. Profile plots of the magnetic anomaly
6. Contour maps of the magnetic anomaly
7. Acknowledgements
8. Bibliography

Appendices:

- A. Quantities of data points per cruise and map area
- B. Track plots in each map area
- C. Reductions of contour maps

1. Introduction

Marine magnetometer data collected in southern Davis Strait have been compiled and processed for public distribution in three forms:

1. digital files containing point values of magnetic anomaly and total magnetic field, along with cruise, time, and position description;
2. plots of magnetic anomaly profiles along ships' tracks, at a scale of 1:250,000;
3. preliminary contour maps of magnetic anomaly at a scale of 1:250,000.

2. Area covered and sources of data

Data were collected in a zone extending roughly from Cape Chidley to Cape Dyer, shown in Figure 1. For ease of handling and display, the data set was subdivided into twenty-three areas defined by the Natural Resource Map (NRM) series, and shown in Figure 2. A digital file, a profile plot, and a contour map have been produced for each area.

Total magnetic field data were collected in 1976-77 and 1980-81 during the seven survey cruises listed in Table 1. All cruises were sponsored by agencies operating out of the Bedford Institute of Oceanography: the Atlantic Region of the Canadian Hydrographic Service, and the Atlantic Geoscience Centre of the Geological Survey of Canada.

Proton precession magnetometers were used for all measurements, with sensors towed a minimum of two ship lengths astern. Navigation was performed with a combination of rho-rho Loran-C and satellite navigation. Positioning accuracy is estimated to be 200 metres or better.

3. Data processing

Data were edited to remove spikes and other obvious perturbations such as noise bursts associated with ship's radio transmissions. No corrections were applied for diurnal variations, although some segments of data were deleted where high crossover discrepancies correlated with increased levels of magnetic activity derived from the pertinent EPB Geomagnetic Bulletins.

Magnetic anomaly values were calculated with reference to IGRF 1980 (IAGA, 1981).

4. Digital file contents and formats

All data have been written in 23 files on 9-track magnetic tape, each file corresponding to one NRM area. See Table 2 for an index to files, and Figure 2 for a file index by area.

The original tape produced at AGC and furnished to the EMR Computer Science Centre (588 Booth Street, Ottawa, K1A 0E8) for public distribution is EBCDIC-coded at 1600 bpi. On user request to CSC, the data can be supplied at 800, 1600, or 6250 bpi, at a cost of \$500.

In addition to containing all the point values inside a one-degree (latitude) by two-degree (longitude) map area, each file also includes all the external data points that lie within .5 degree (latitude or longitude) of the map boundary - see Figure 3. External points are included in each map file primarily for use by automatic contouring programs, in order to minimize contour shifts across boundaries of neighbouring charts.

Within any given map file, each data point is written as one record containing the following variables:

1. Time and cruise identification
2. Latitude
3. Longitude
4. Magnetic anomaly
5. Total magnetic field
6. Spare columns (not used)

The record is written using FORMAT (I12, I7, I7, I5, I5, I4). For example:

750182711648 525010 497374 -289539870000

Based on this example, the record variables are defined as follows:

1. Time: a twelve-digit number where the first two digits are year number, the next three are cruise number, followed by a three-digit (Julian) day number and a four-digit time (hour and minute in GMT) e.g. year 1975, cruise number 18, day 271, time 1648.

2. Latitude: in degrees and decimal degrees x 10000, e.g. 52.501 N.
3. Longitude: in degrees and decimal degrees x 10000. West longitudes are positive, e.g. 49.7374 W.
4. Magnetic anomaly: value derived by subtracting the IGRF 1980 reference field, e.g. -289 nanotesla
5. Total magnetic field: the earth's magnetic field, as measured by the magnetometer, e.g. 53987 nanotesla.
6. Spare columns: zero-filled in all records.

5. Profile plots of the magnetic anomaly

These plots display the variations in the anomaly field as a function of position along ships' tracks. The tracks serve as position-dependent abscissae; field strength ordinates are plotted perpendicular to the tracks at a scale of 800 nanotesla per 2.54 cm. Projection is Lambert Conformal at a scale of 1 to 250,000 with standard parallels 50°N and 60°N.

The digital magnetic anomaly values were used to produce these profiles. For any given map area, all points in the corresponding digital file are shown, i.e. internal points plus the external points described in Section 4.

The profile plots submitted to this Open File were produced originally as working drawings for the purpose of assessing the quality and distribution of data. On the original plots, positive magnetic anomalies were drawn in red and negative anomalies in blue. Depending on the process used to produce

copies of these plots, colours may be difficult to tell apart: in the Ozalid process, red is reproduced more strongly than blue.

6. Contour maps of the magnetic anomaly

Contour maps have been drawn for all 23 map areas pertaining to this Open File. Projection is UTM, at a scale of 1 to 250,000.

Contours were generated by the CalComp General-Purpose Contouring Package II (GPCP-II). As our version of GPCP had a limited input capacity, data volumes in each map area were first reduced by a gridded averaging technique: all point values within pre-defined map "cells" were averaged, and the resulting mean values were then assigned to the cell mid-points.

A cell size measuring 2 minutes of latitude by 3 minutes of longitude within a $1^{\circ} \times 2^{\circ}$ block was selected for pre-gridding. To suit input requirements, further gridding was performed by GPCP, using the pre-gridded and averaged values defining the 40×30 matrix of point values

Cell sizes for pre-gridding and GPCP gridding were selected according to data density and requirement for detail. The final choice was made on the basis of whichever combination gave the most "reasonable" contours consistent with the nature and distribution of the data.

Contours matched reasonably well across most map boundaries. Problems with the data, however, resulted in questionable contours within a number of maps: these were attributed largely to short-term variations in the magnetic field for which suitable corrections were unavailable. In the past, ad-hoc adjustments have been applied to the data to improve the quality of contours

(Hunter, Shih, and Macnab, 1982); for this Open File, it was deemed preferable not to attempt similar levelling corrections. Instead, the map areas with faulty contours were highlighted with heavy borders, and cautionary notices printed in the margins. Users may wish to attempt computer or manual contouring of the data in these areas, in which case they should have recourse to the profile plots and the digital files.

7. Acknowledgements

John Woodside contributed to the processing and preparation of the data through helpful comments and suggestions. Wu Mingxian pinpointed contouring problems through a careful analysis of contour maps and profile plots.

8. Bibliography

Hunter, C., Shih, K.G. and Macnab, Ron, 1982

A compilation of marine magnetometer data from the southwest
Labrador Sea: Geological Survey of Canada Open File 850.

International Association of Geomagnetism and Aeronomy (IAGA)

Division 1, Working Group 1, 1981

International Geomagnetic Reference Fields: DGRF 1965, DGRF
1970, DGRF 1975, and IGRF 1980: American Geophysical Union,
Transactions, V. 62, p. 1169.

TABLE 1 - CRUISES

<u>Year</u>	<u>Ship</u>	<u>Cruise Number</u>
1976	MARTIN KARLSEN	76-019
1977	MARTIN KARLSEN	77-016
1980	HUDSON	80-028
1980	BAFFIN	80-031
1980	HUDSON	80-035
1981	DAWSON	81-038
1981	HUDSON	81-045

TABLE 2

Digital Files and Natural Resource Map Areas

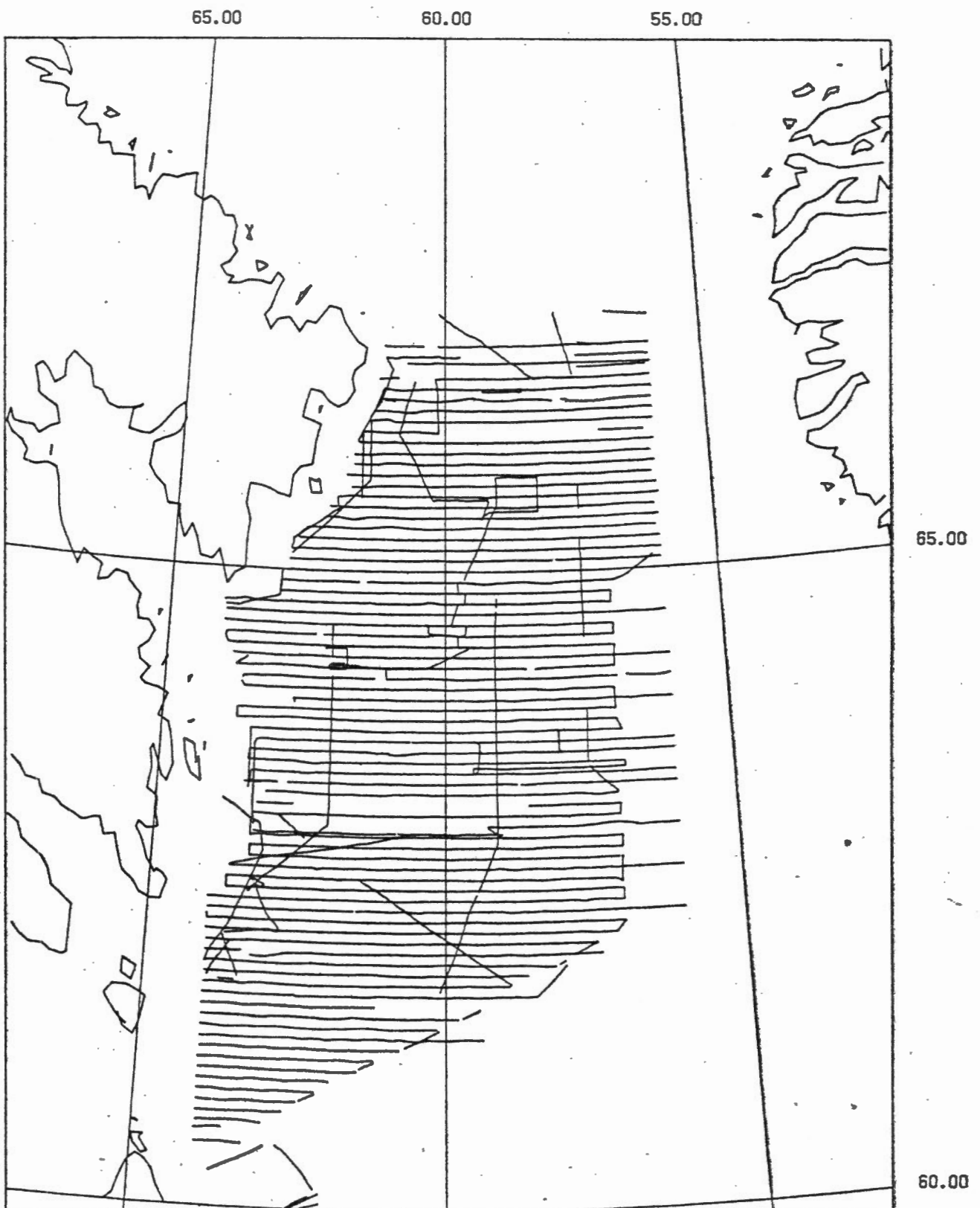
<u>File No.</u>	<u>NRM</u>
1	22226
2	22236
3	22246
4	22256
5	22266
6	22218
7	22228
8	22238
9	22248
10	22258
11	22268
12	22310
13	22320
14	22330
15	22340
16	22350
17	22360
18	22302
19	22312
20	22322
21	22332
22	22342
23	22352

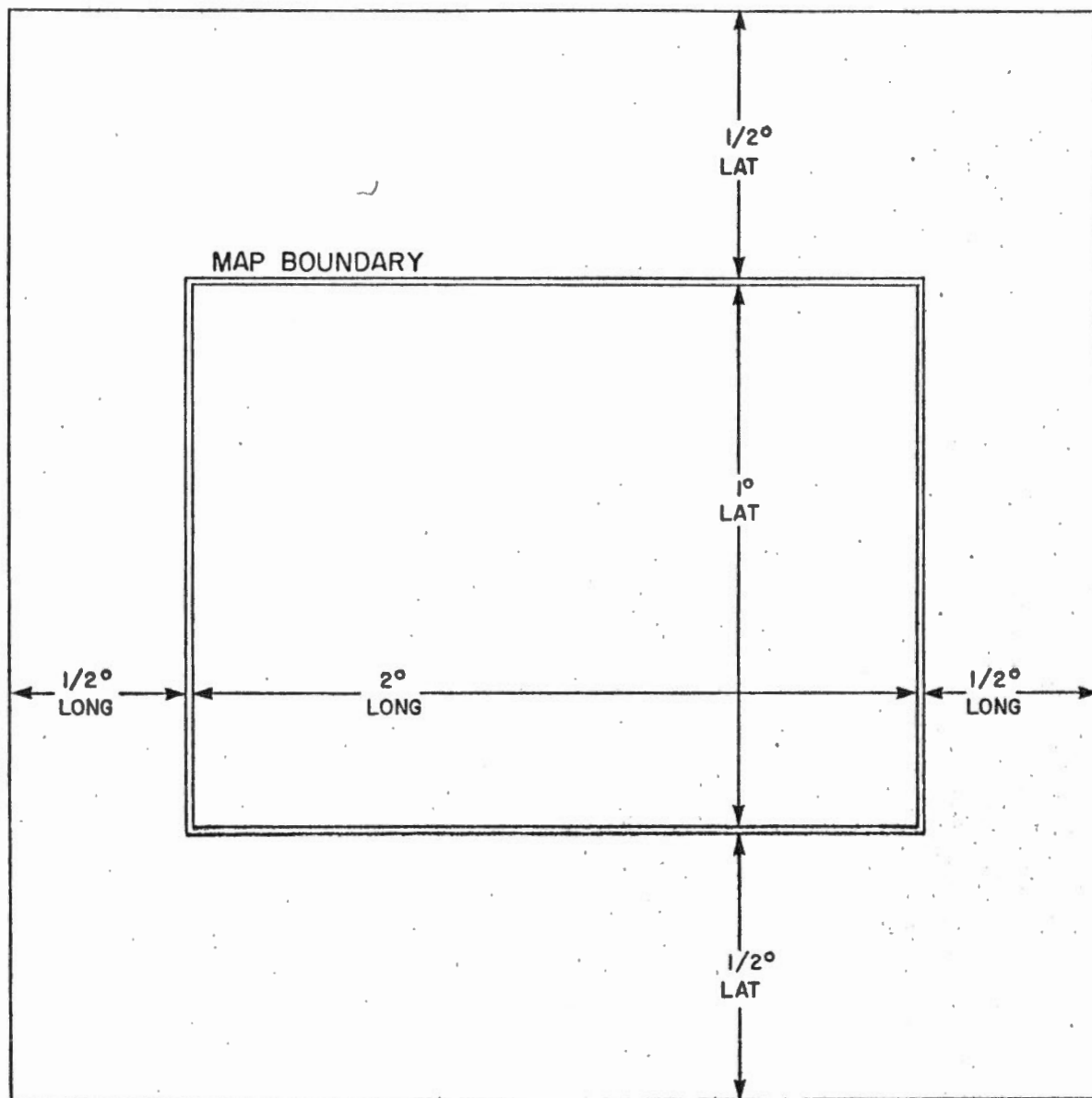
FIGURE CAPTIONS

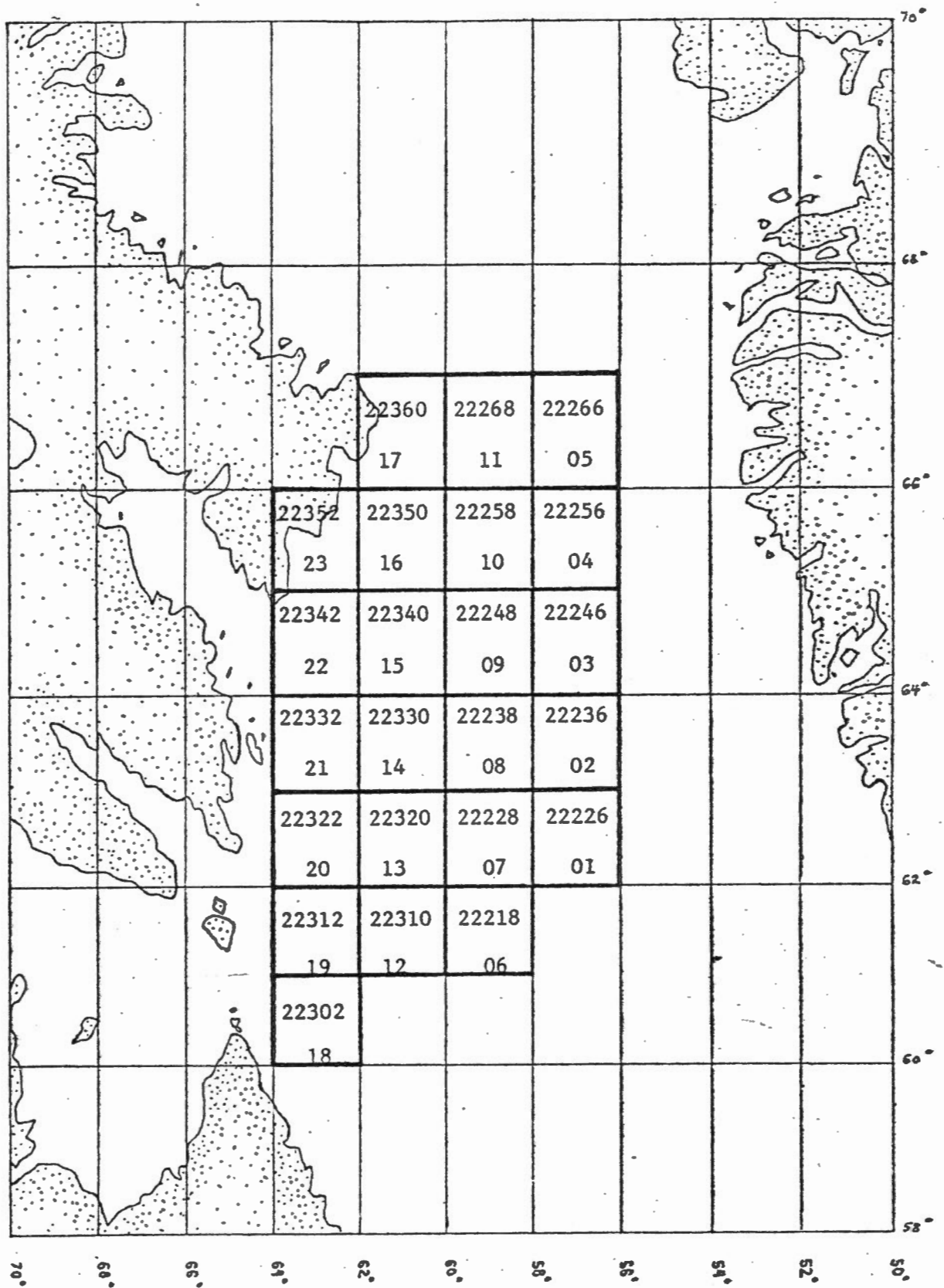
1. Map of Davis Strait, showing ship tracks over which data released in this Open File were collected.
2. Natural Resource Map (NRM) areas described in this Open File Report. Five-digit numbers identify each map area in the NRM numbering scheme. Other numbers describe the order in which the digital map files were written to magnetic tape.
3. NRM map area and external $\frac{1}{2}^{\circ}$ margin. For each map area described in this Open File report, a digital file exists that contains all points within the map area and the external margin.

DAVIS STRAIT

1/5000000 60 70







APPENDIX A

QUANTITIES OF DATA POINTS PER CRUISE AND MAP AREA

FILE NAME	22226		
CRUISE AND STATIONS :	80031	506	
CRUISE AND STATIONS :	81038	3518	
CRUISE AND STATIONS :	81045	2569	
FILE NAME	22236		
CRUISE AND STATIONS :	80031	1711	
CRUISE AND STATIONS :	80035	589	
CRUISE AND STATIONS :	81038	5395	
CRUISE AND STATIONS :	81045	1535	
FILE NAME	22246		
CRUISE AND STATIONS :	80028	60	
CRUISE AND STATIONS :	80031	1205	
CRUISE AND STATIONS :	80035	1540	
CRUISE AND STATIONS :	81038	5660	
FILE NAME	22256		
CRUISE AND STATIONS :	80028	304	
CRUISE AND STATIONS :	80035	1877	
CRUISE AND STATIONS :	81038	5784	
FILE NAME	22266		
CRUISE AND STATIONS :	80028	1654	
CRUISE AND STATIONS :	80035	926	
CRUISE AND STATIONS :	81038	3833	
CRUISE AND STATIONS :	81045	584	
FILE NAME	22218		
CRUISE AND STATIONS :	76019	68	
CRUISE AND STATIONS :	77016	340	
CRUISE AND STATIONS :	80035	222	
CRUISE AND STATIONS :	81038	3458	
CRUISE AND STATIONS :	81045	2096	
FILE NAME	22228		
CRUISE AND STATIONS :	80031	781	
CRUISE AND STATIONS :	80035	499	
CRUISE AND STATIONS :	81038	6781	
CRUISE AND STATIONS :	81045	3562	
FILE NAME	22238		
CRUISE AND STATIONS :	80028	402	
CRUISE AND STATIONS :	80031	2074	
CRUISE AND STATIONS :	80035	1171	
CRUISE AND STATIONS :	81038	7456	
CRUISE AND STATIONS :	81045	1747	
FILE NAME	22248		
CRUISE AND STATIONS :	80028	2117	
CRUISE AND STATIONS :	80031	1293	
CRUISE AND STATIONS :	80035	2052	
CRUISE AND STATIONS :	81038	7043	
FILE NAME	22258		
CRUISE AND STATIONS :	80028	2553	
CRUISE AND STATIONS :	80035	2461	
CRUISE AND STATIONS :	81038	6997	
FILE NAME	22268		
CRUISE AND STATIONS :	80028	2223	
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CRUISE AND STATIONS :	81038	4122	
CRUISE AND STATIONS :	81045	539	
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CRUISE AND STATIONS :	80035	210	
CRUISE AND STATIONS :	81038	5256	
CRUISE AND STATIONS :	81045	2363	
FILE NAME	22320		
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CRUISE AND STATIONS :	81038	6962	
CRUISE AND STATIONS :	81045	2952	

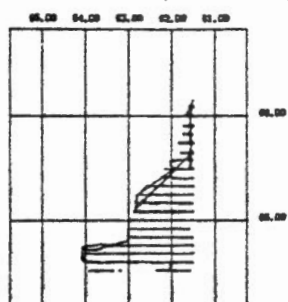
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CRUISE AND STATIONS :	80031	2911	
CRUISE AND STATIONS :	80035	545	
CRUISE AND STATIONS :	81038	6261	
CRUISE AND STATIONS :	81045	1248	
FILE NAME	22340		
CRUISE AND STATIONS :	80028	5499	
CRUISE AND STATIONS :	80031	1274	
CRUISE AND STATIONS :	80035	2304	
CRUISE AND STATIONS :	81038	5222	
FILE NAME	22350		
CRUISE AND STATIONS :	80028	3719	
CRUISE AND STATIONS :	80035	3143	
CRUISE AND STATIONS :	81038	5163	
FILE NAME	22360		
CRUISE AND STATIONS :	80028	2104	
CRUISE AND STATIONS :	80035	1384	
CRUISE AND STATIONS :	81038	3415	
CRUISE AND STATIONS :	81045	256	
FILE NAME	22302		
CRUISE AND STATIONS :	76019	32	
CRUISE AND STATIONS :	77016	2195	
CRUISE AND STATIONS :	80031	1067	
CRUISE AND STATIONS :	80035	129	
CRUISE AND STATIONS :	81038	4443	
CRUISE AND STATIONS :	81045	815	
FILE NAME	22312		
CRUISE AND STATIONS :	80028	1032	
CRUISE AND STATIONS :	80031	1565	
CRUISE AND STATIONS :	81038	7134	
CRUISE AND STATIONS :	81045	2513	
FILE NAME	22322		
CRUISE AND STATIONS :	80028	1785	
CRUISE AND STATIONS :	80031	2434	
CRUISE AND STATIONS :	81038	5836	
CRUISE AND STATIONS :	81045	2554	
FILE NAME	22332		
CRUISE AND STATIONS :	80028	2724	
CRUISE AND STATIONS :	80031	2706	
CRUISE AND STATIONS :	80035	432	
CRUISE AND STATIONS :	81038	4460	
CRUISE AND STATIONS :	81045	856	
FILE NAME	22342		
CRUISE AND STATIONS :	80028	4214	
CRUISE AND STATIONS :	80031	771	
CRUISE AND STATIONS :	80035	1984	
CRUISE AND STATIONS :	81038	3192	
FILE NAME	22352		
CRUISE AND STATIONS :	80028	2322	
CRUISE AND STATIONS :	80035	1852	
CRUISE AND STATIONS :	81038	1283	
TOTAL STATIONS	230866		

APPENDIX B

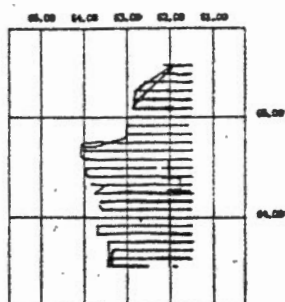
TRACK PLOTS IN EACH MAP AREA

Number of children	1960 (%)	1970 (%)
0	~1.0	~1.0
1	~12.0	~14.0
2	~38.0	~42.0
3	~32.0	~28.0
4	~12.0	~8.0
5	~3.0	~2.0

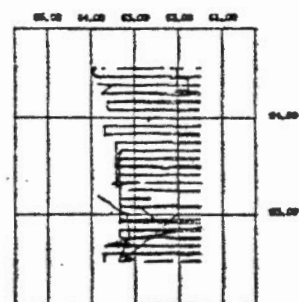
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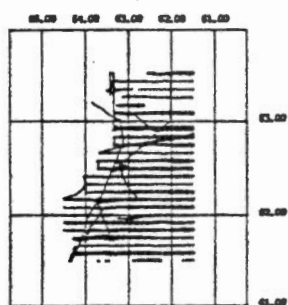
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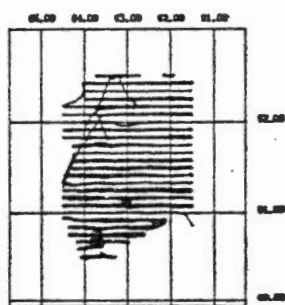
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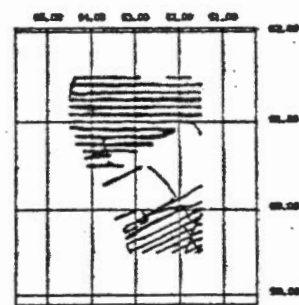
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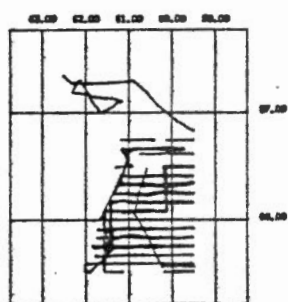
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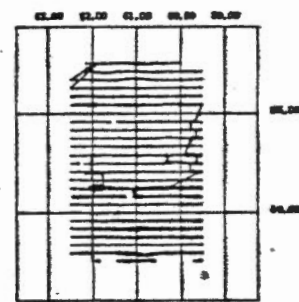
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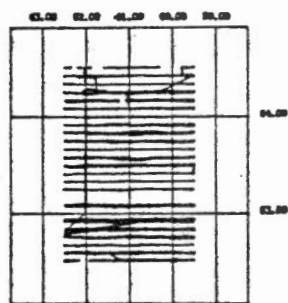
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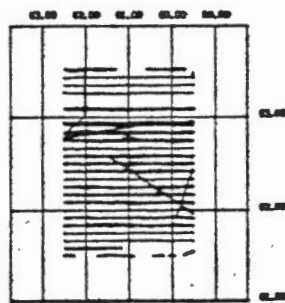
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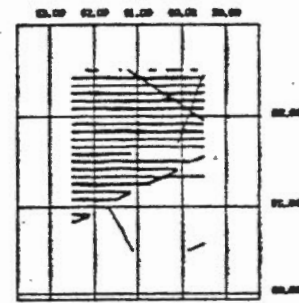
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22320



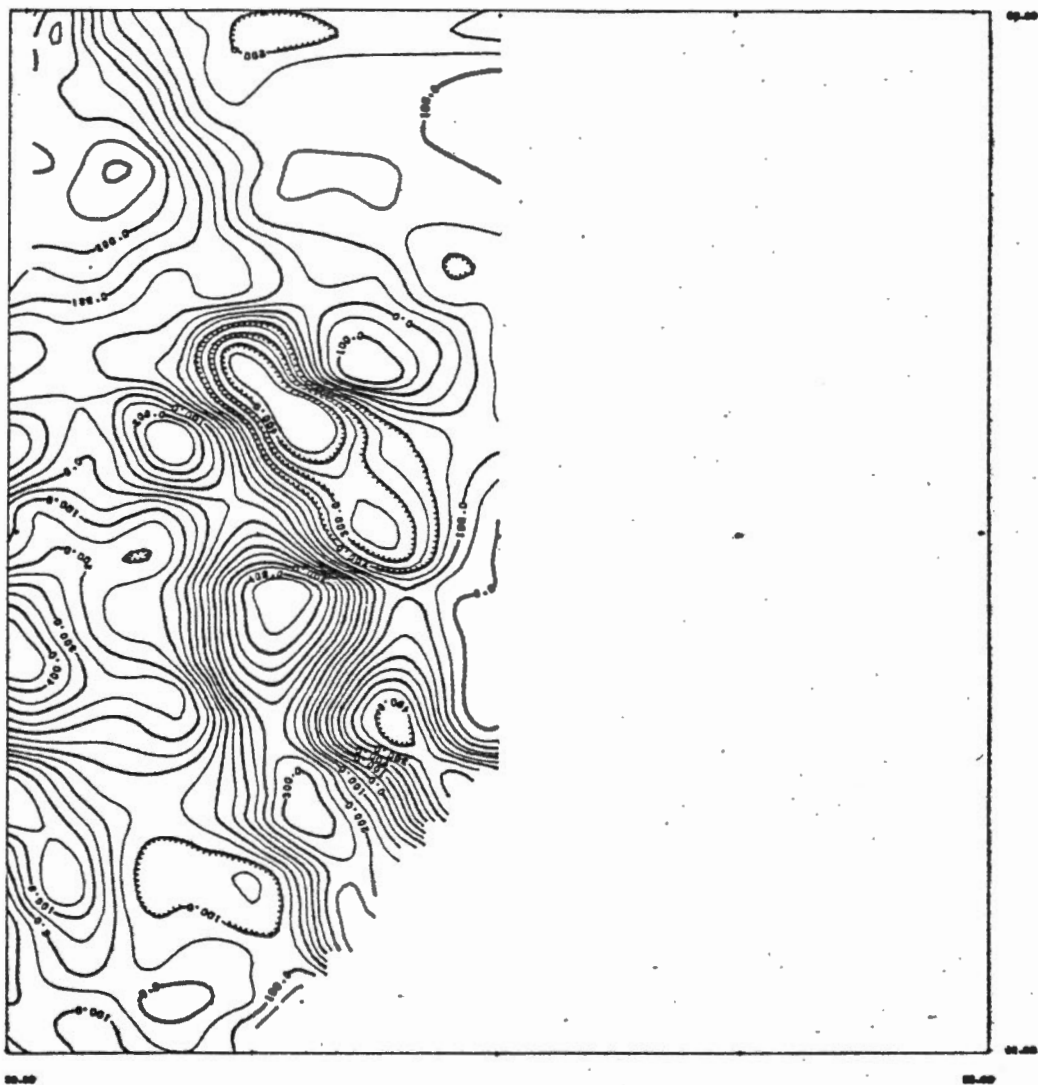
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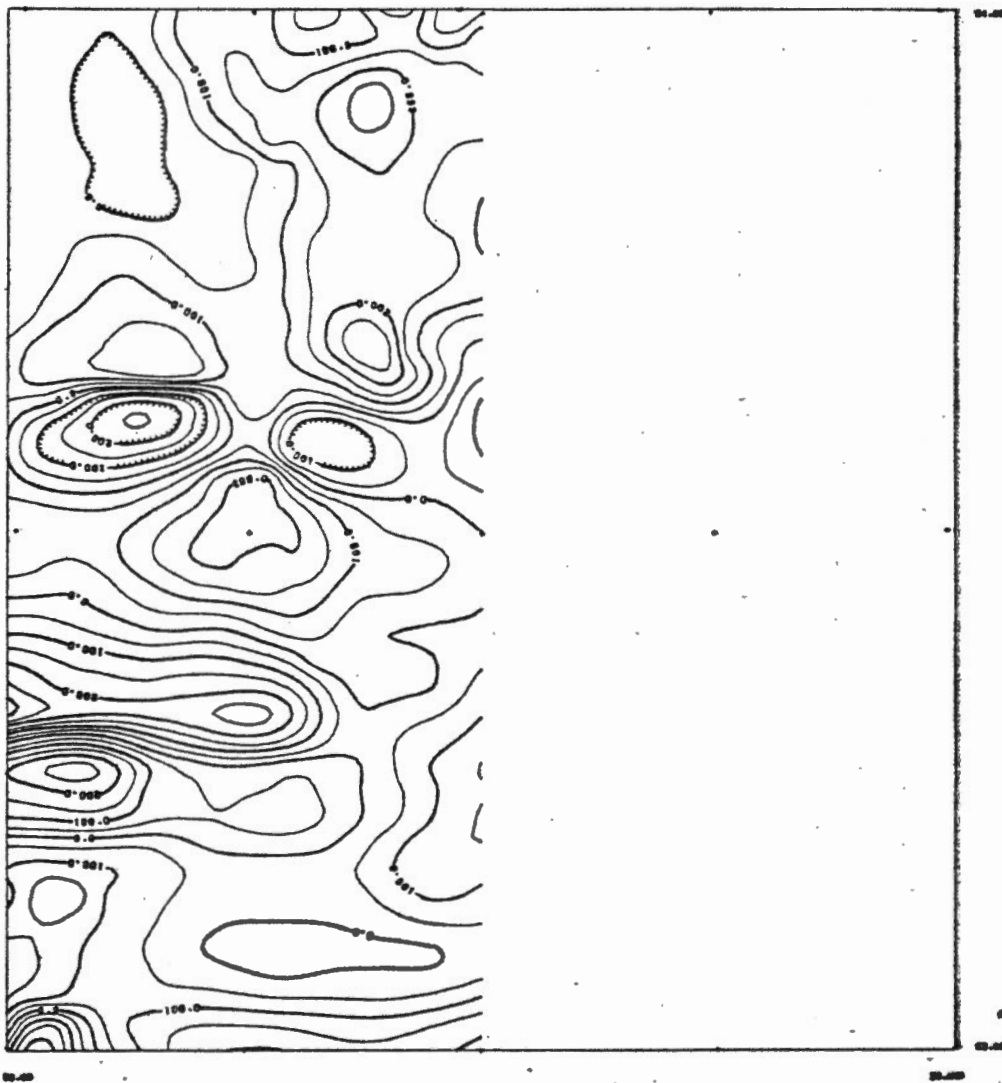
APPENDIX C

REDUCTIONS OF CONTOUR MAPS

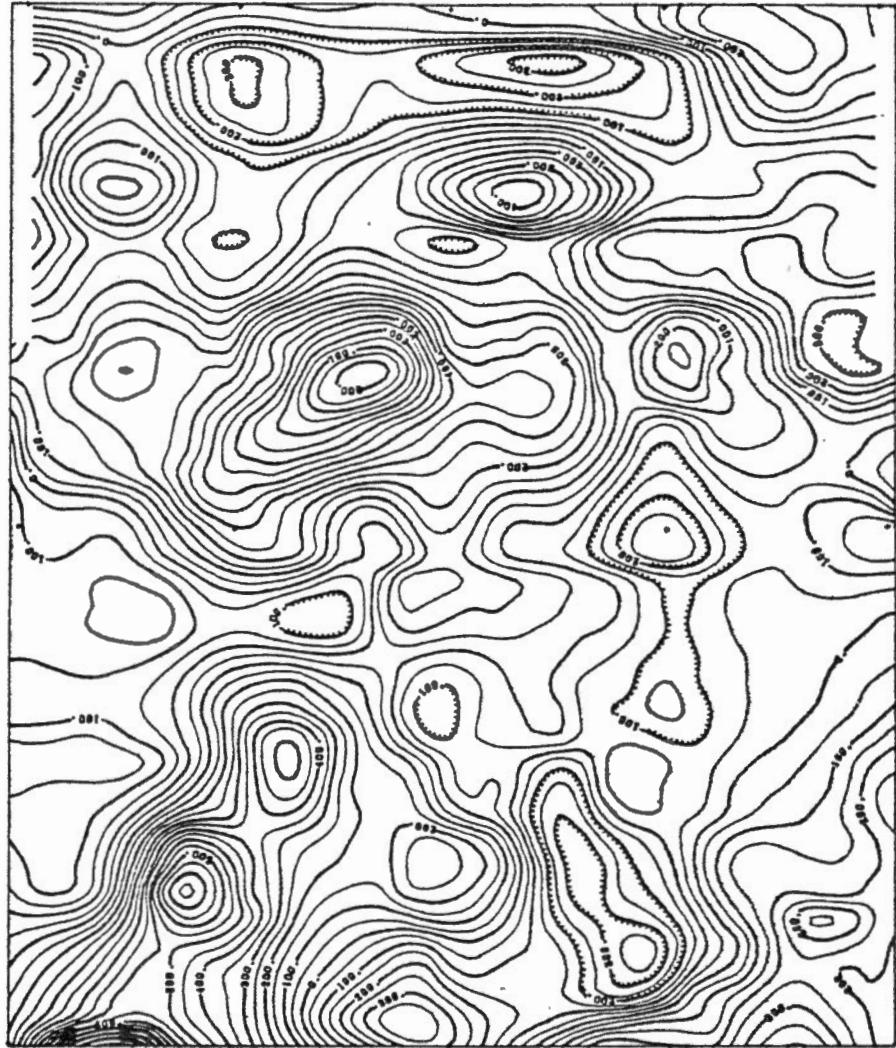
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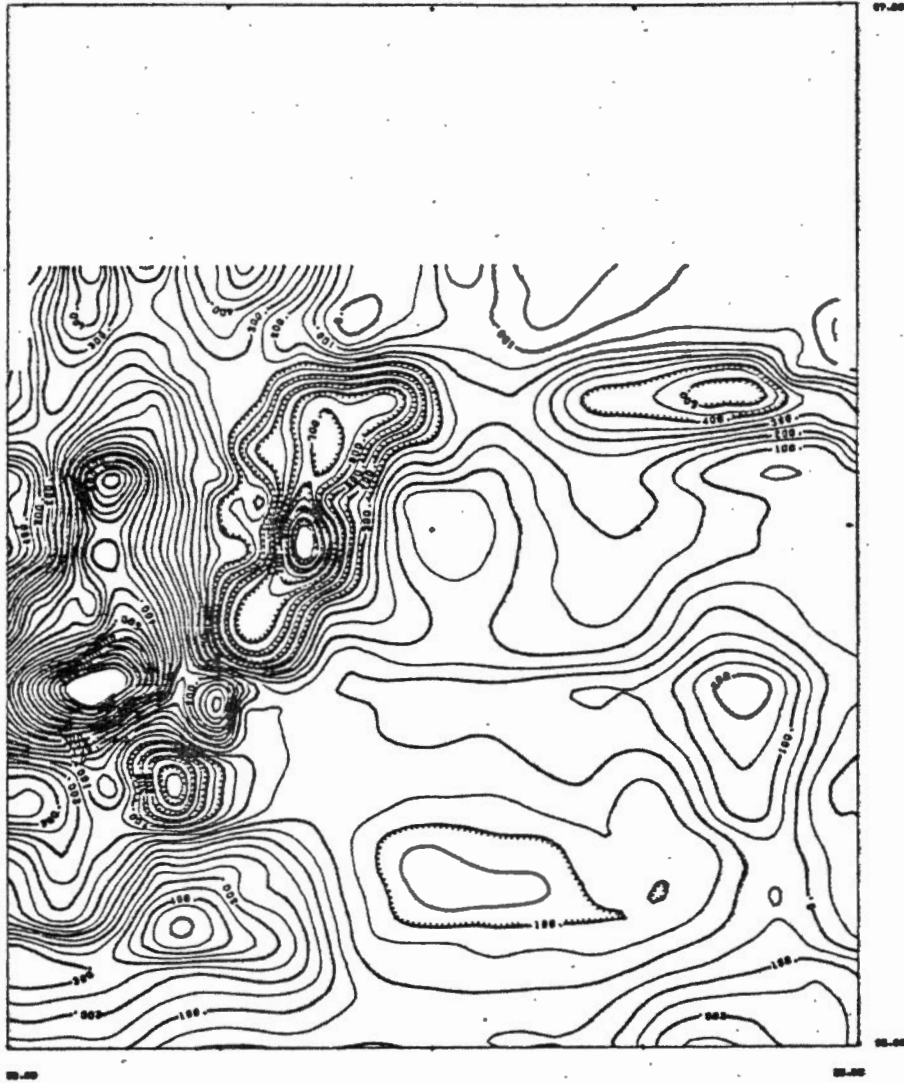
M-A-22236



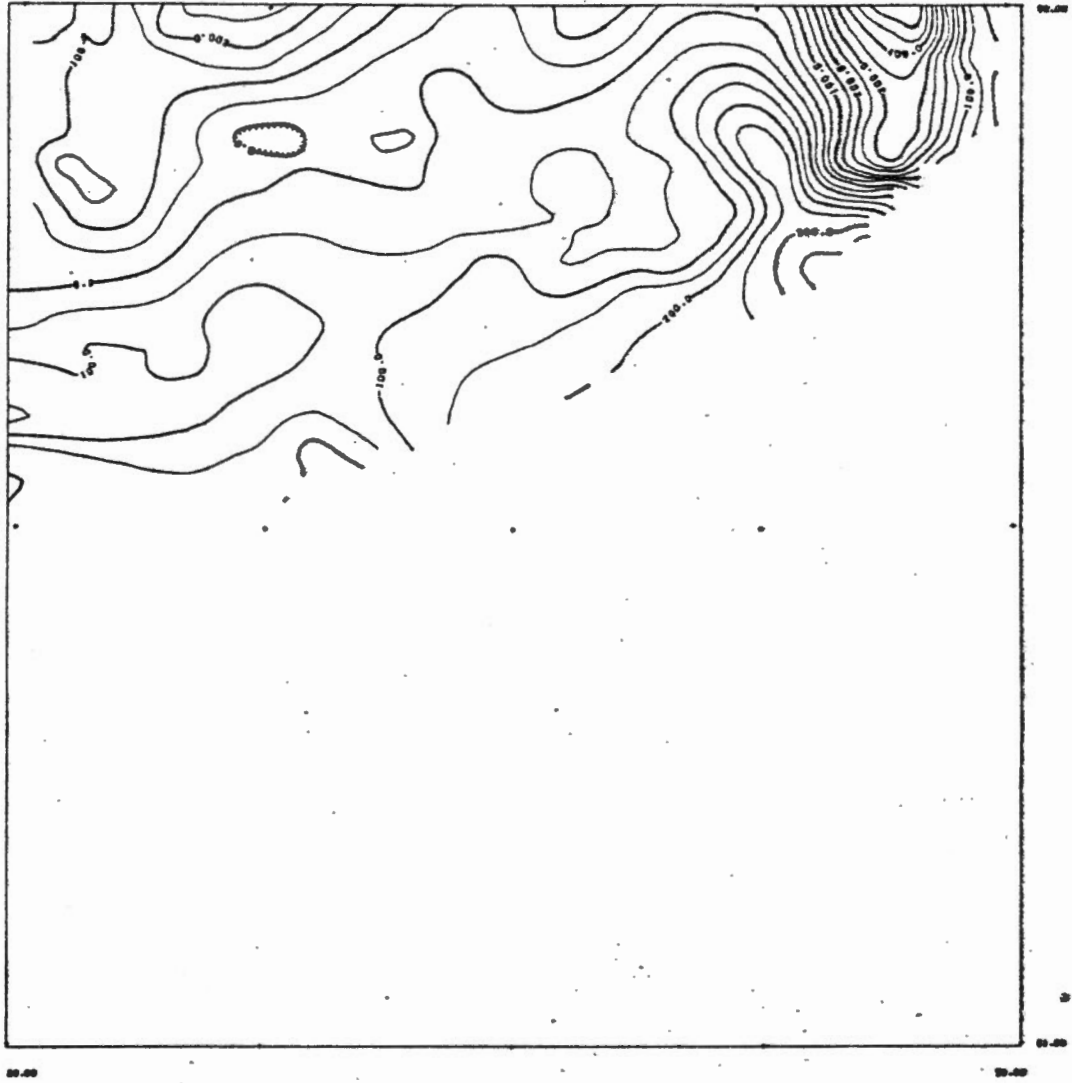
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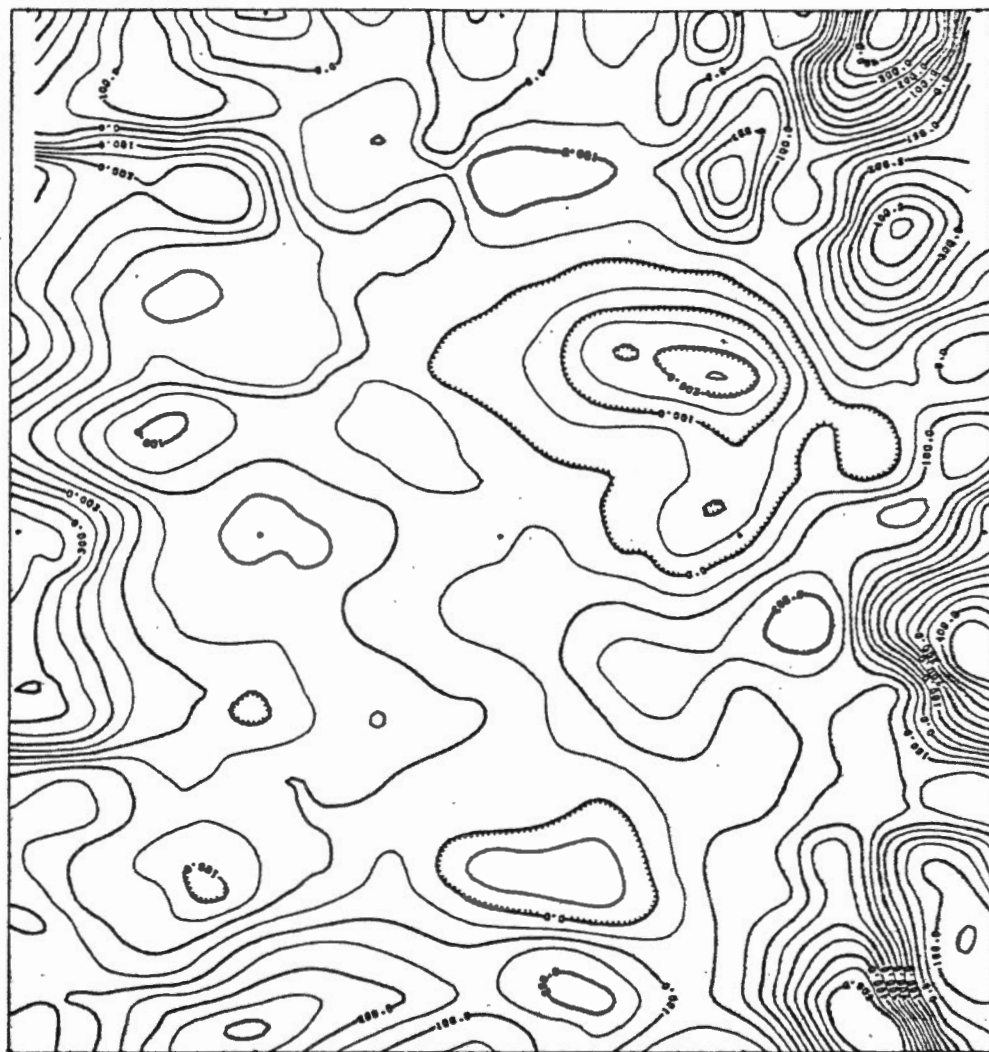
M.A.22266



M.A.22218



M.A.22228



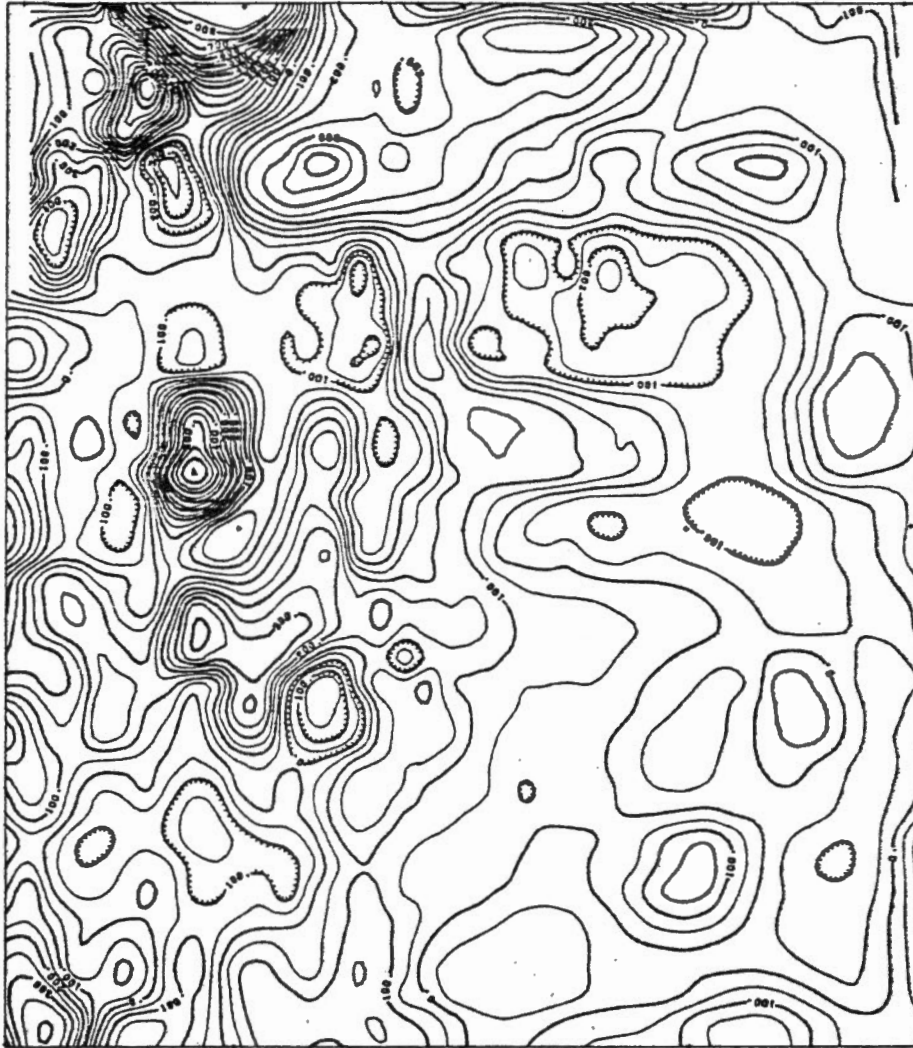
This is a detailed contour map of the study area. The map shows various topographic features, including peaks, valleys, and ridges. Contour lines are labeled with elevation values such as 100.0, 150.0, 200.0, and 250.0. The map is oriented with North at the top. The study area is bounded by a rectangular frame. The map is a black and white line drawing.

99-45

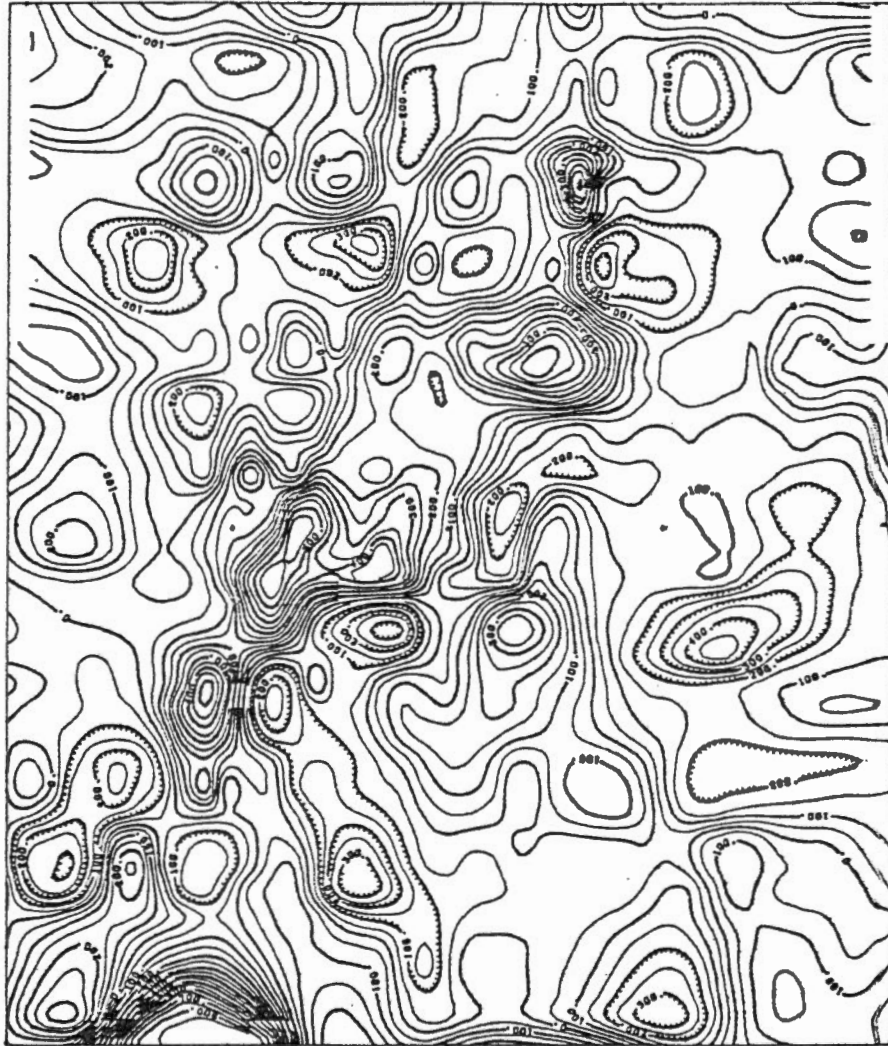
22

20.00

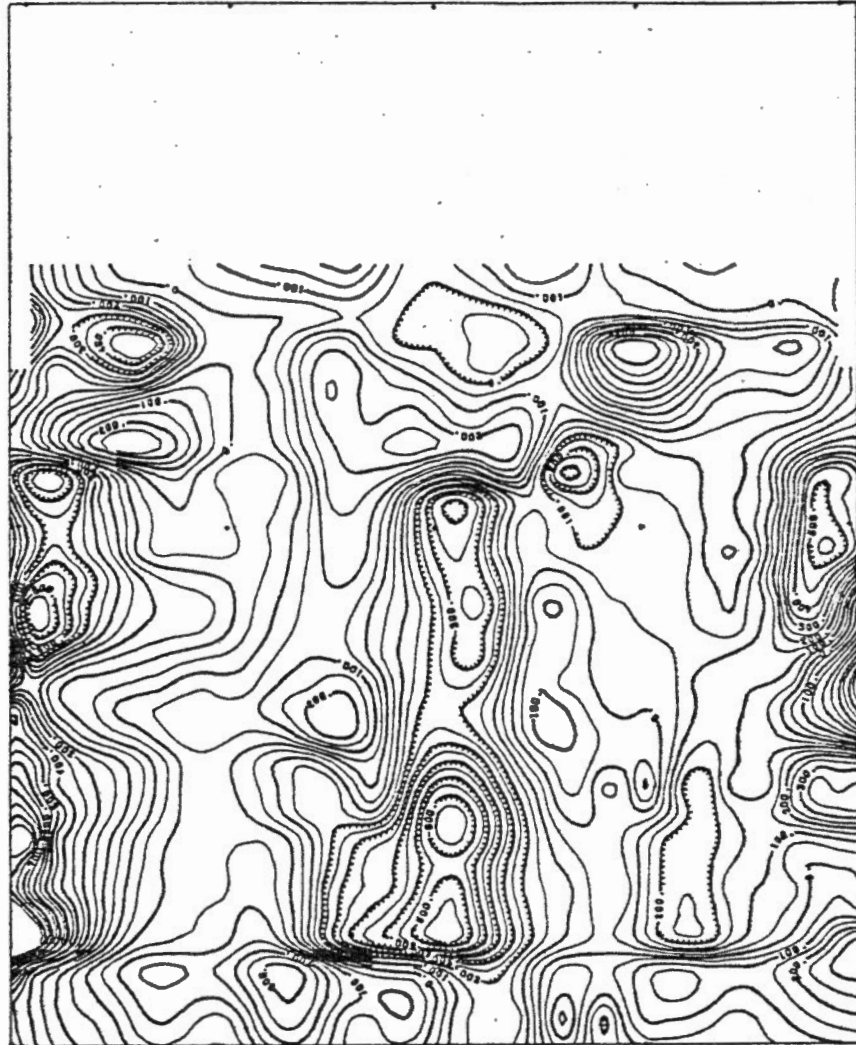
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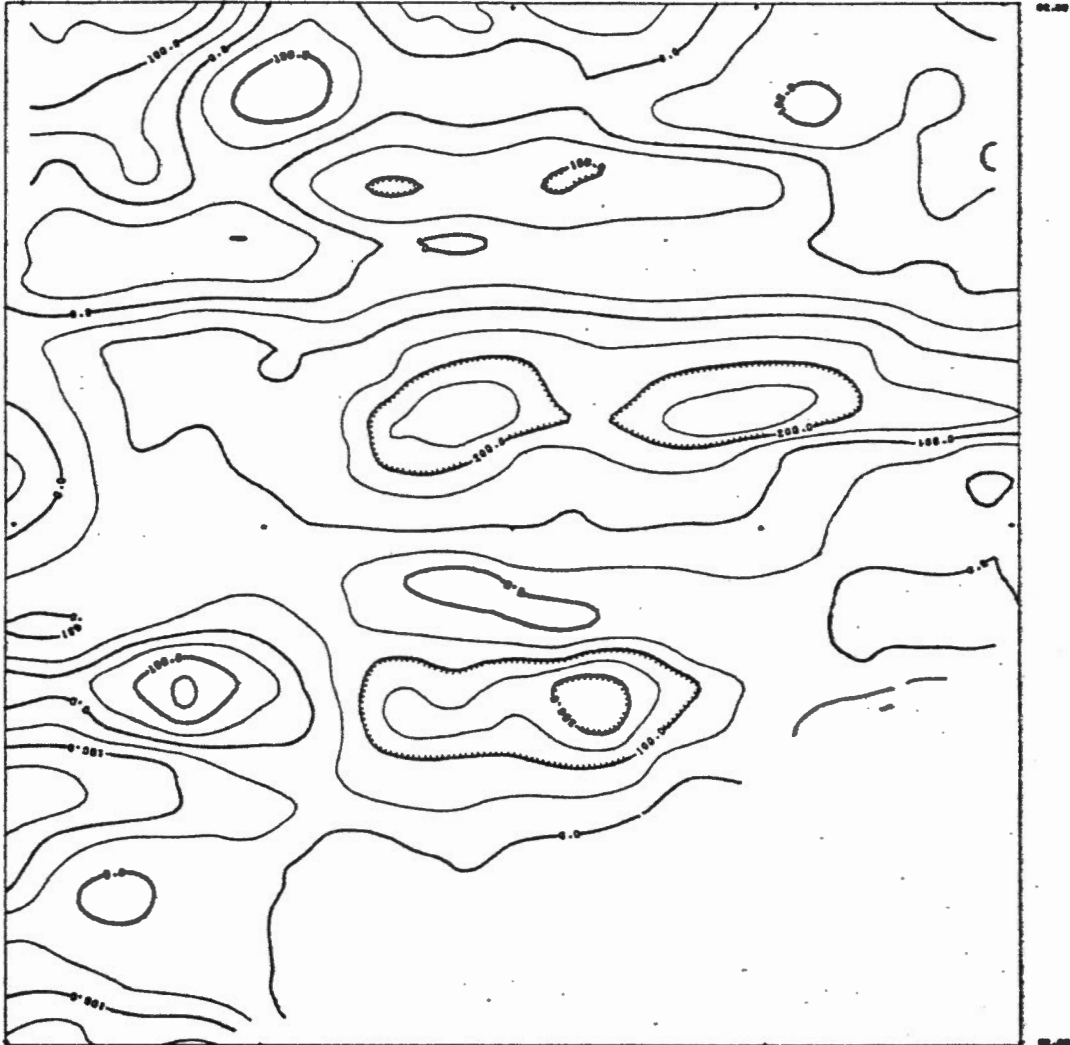
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M.A.22258



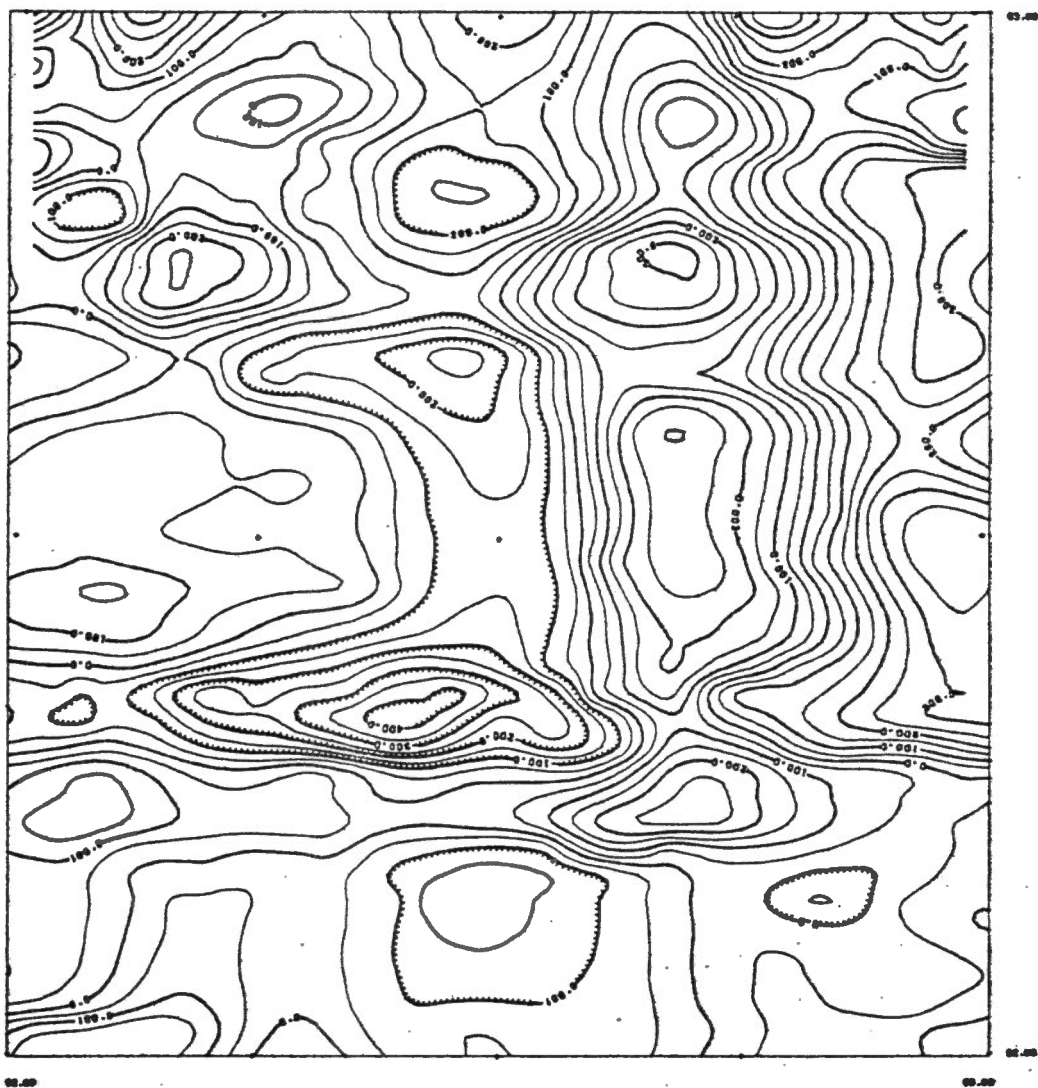
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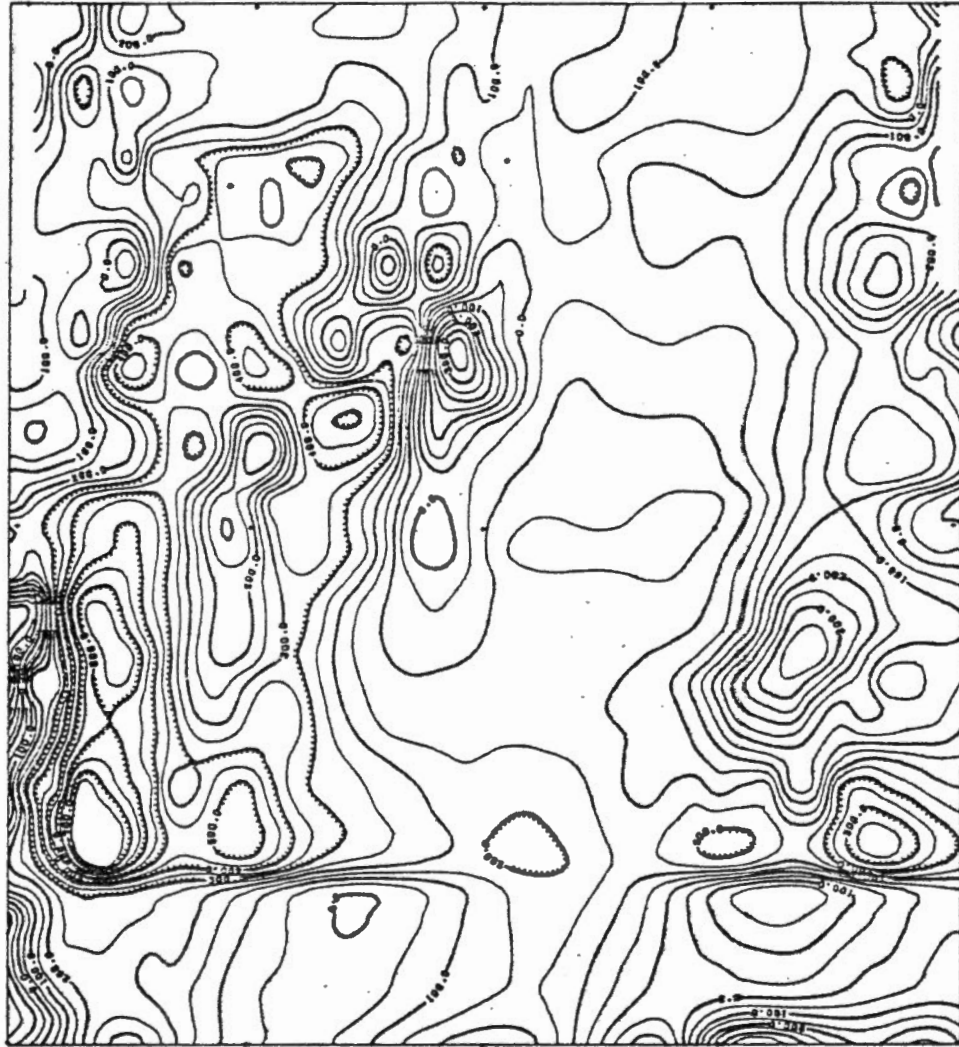
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00.00

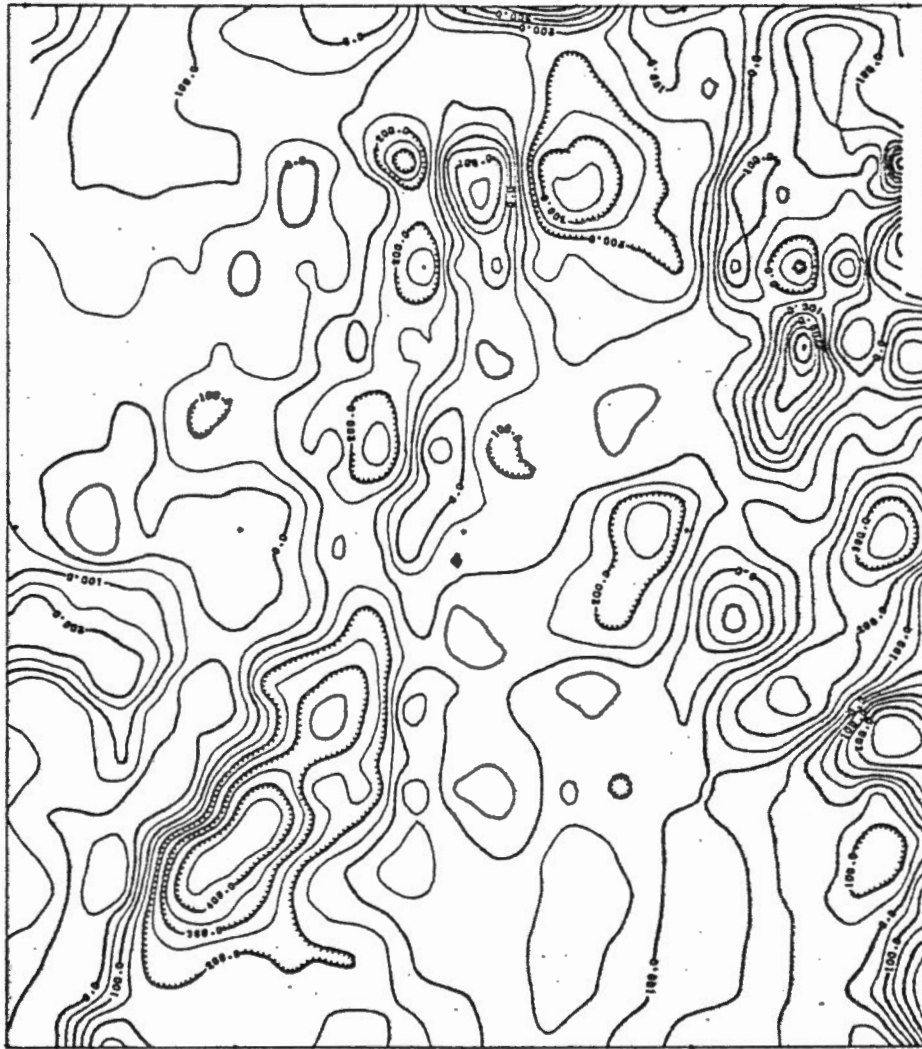
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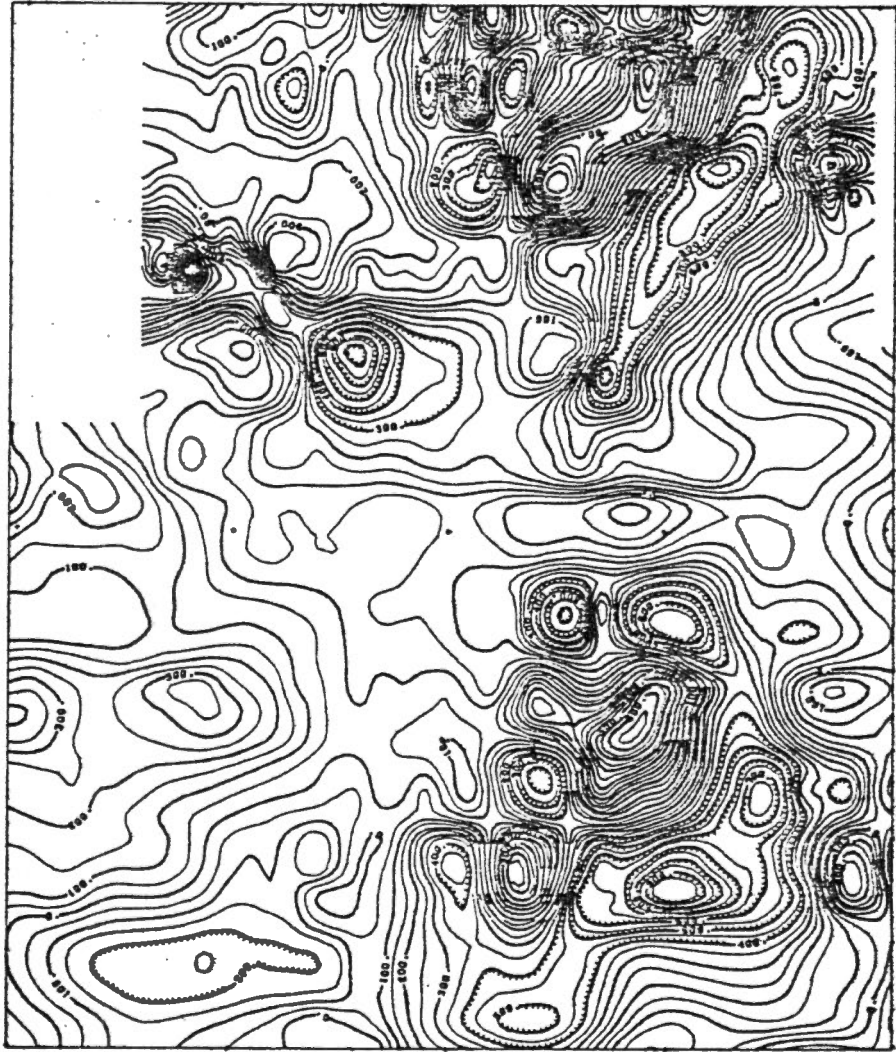
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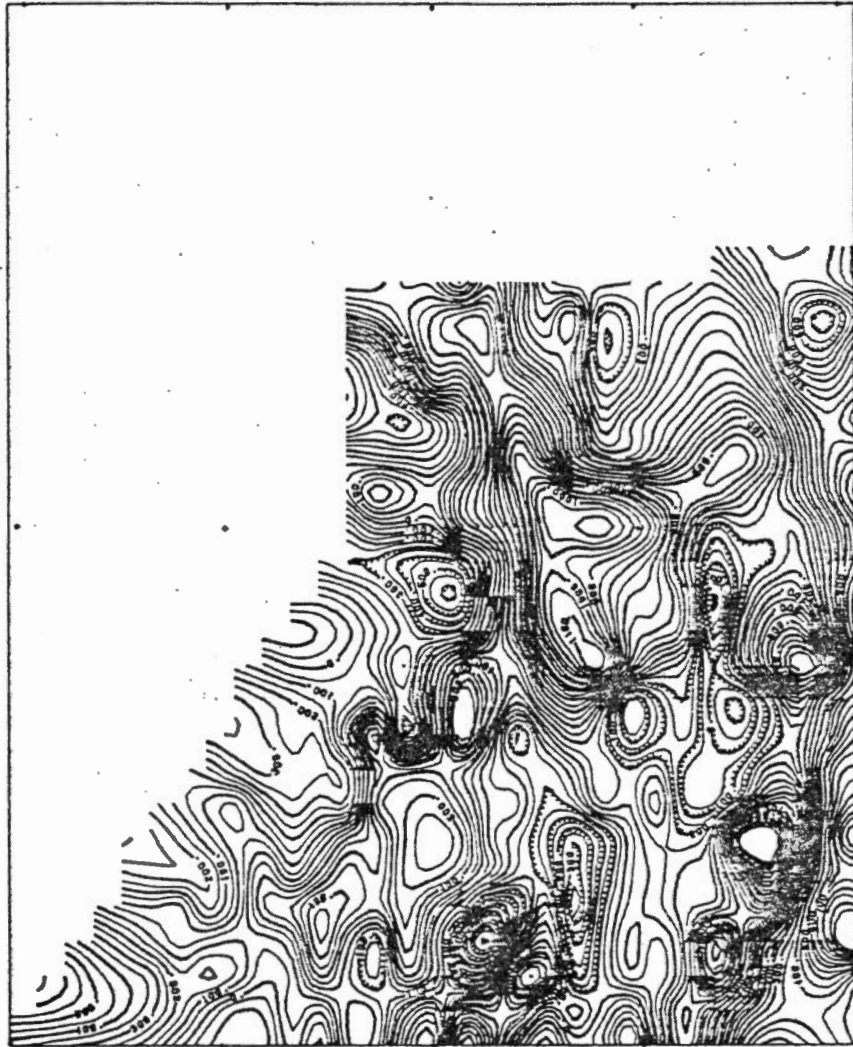
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M.R.22350



M.A.22360



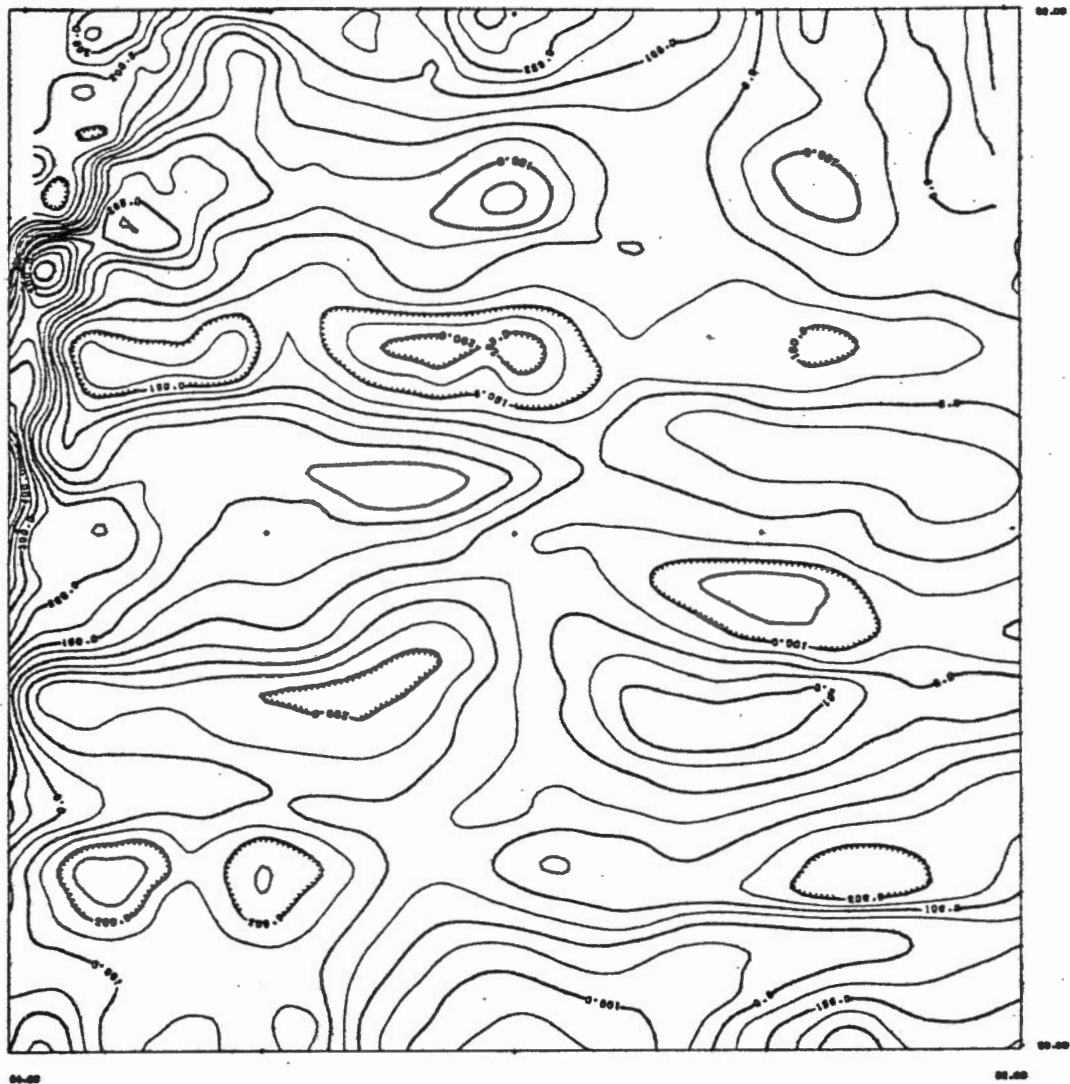
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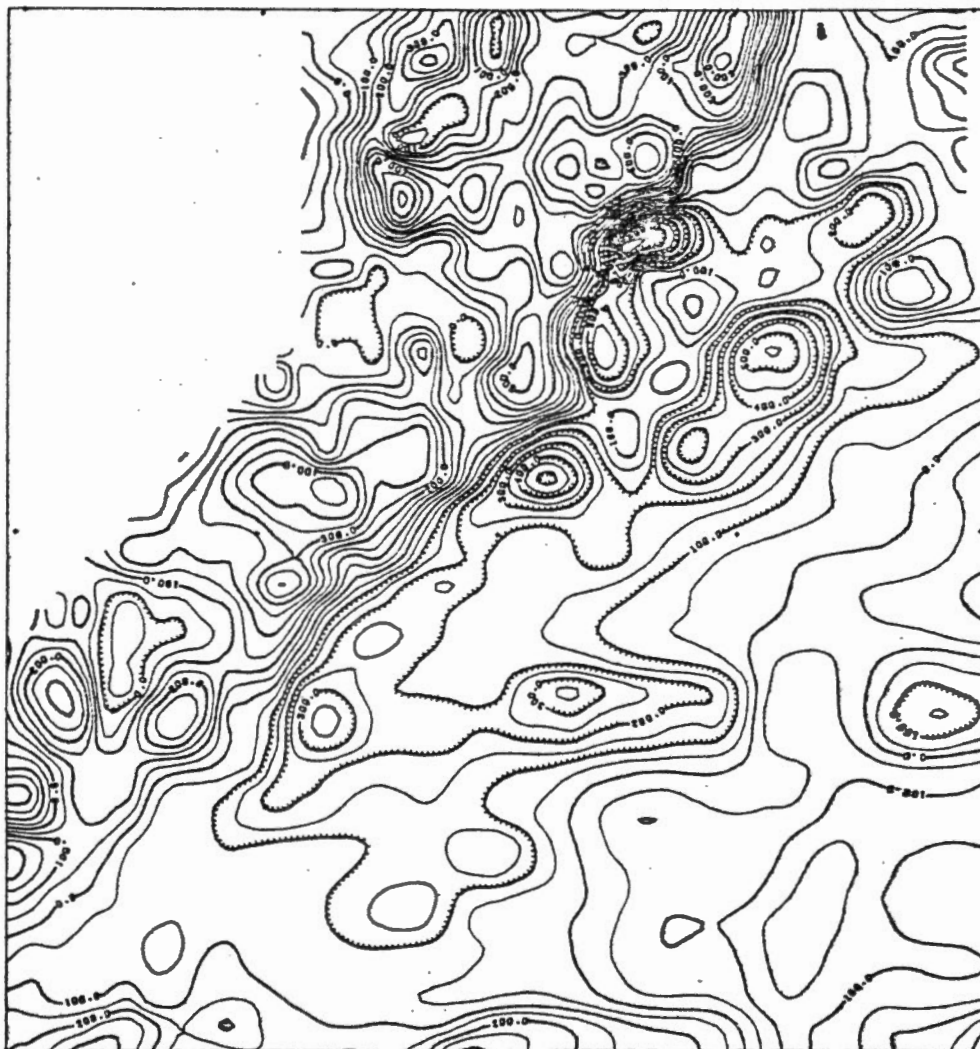
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A topographic map of the study area, showing contour lines and elevation points. The map is oriented with North at the top. The contour lines indicate varying elevations, with labels such as 100.0, 101.0, 102.0, 103.0, 104.0, 105.0, 106.0, 107.0, 108.0, 109.0, 110.0, 111.0, 112.0, 113.0, 114.0, 115.0, 116.0, 117.0, 118.0, 119.0, 120.0, 121.0, 122.0, 123.0, 124.0, 125.0, 126.0, 127.0, 128.0, 129.0, 130.0, 131.0, 132.0, 133.0, 134.0, 135.0, 136.0, 137.0, 138.0, 139.0, 140.0, 141.0, 142.0, 143.0, 144.0, 145.0, 146.0, 147.0, 148.0, 149.0, 150.0, 151.0, 152.0, 153.0, 154.0, 155.0, 156.0, 157.0, 158.0, 159.0, 160.0, 161.0, 162.0, 163.0, 164.0, 165.0, 166.0, 167.0, 168.0, 169.0, 170.0, 171.0, 172.0, 173.0, 174.0, 175.0, 176.0, 177.0, 178.0, 179.0, 180.0, 181.0, 182.0, 183.0, 184.0, 185.0, 186.0, 187.0, 188.0, 189.0, 190.0, 191.0, 192.0, 193.0, 194.0, 195.0, 196.0, 197.0, 198.0, 199.0, 200.0, 201.0, 202.0, 203.0, 204.0, 205.0, 206.0, 207.0, 208.0, 209.0, 210.0, 211.0, 212.0, 213.0, 214.0, 215.0, 216.0, 217.0, 218.0, 219.0, 220.0, 221.0, 222.0, 223.0, 224.0, 225.0, 226.0, 227.0, 228.0, 229.0, 230.0, 231.0, 232.0, 233.0, 234.0, 235.0, 236.0, 237.0, 238.0, 239.0, 240.0, 241.0, 242.0, 243.0, 244.0, 245.0, 246.0, 247.0, 248.0, 249.0, 250.0, 251.0, 252.0, 253.0, 254.0, 255.0, 256.0, 257.0, 258.0, 259.0, 260.0, 261.0, 262.0, 263.0, 264.0, 265.0, 266.0, 267.0, 268.0, 269.0, 270.0, 271.0, 272.0, 273.0, 274.0, 275.0, 276.0, 277.0, 278.0, 279.0, 280.0, 281.0, 282.0, 283.0, 284.0, 285.0, 286.0, 287.0, 288.0, 289.0, 290.0, 291.0, 292.0, 293.0, 294.0, 295.0, 296.0, 297.0, 298.0, 299.0, 300.0, 301.0, 302.0, 303.0, 304.0, 305.0, 306.0, 307.0, 308.0, 309.0, 310.0, 311.0, 312.0, 313.0, 314.0, 315.0, 316.0, 317.0, 318.0, 319.0, 320.0, 321.0, 322.0, 323.0, 324.0, 325.0, 326.0, 327.0, 328.0, 329.0, 330.0, 331.0, 332.0, 333.0, 334.0, 335.0, 336.0, 337.0, 338.0, 339.0, 340.0, 341.0, 342.0, 343.0, 344.0, 345.0, 346.0, 347.0, 348.0, 349.0, 350.0, 351.0, 352.0, 353.0, 354.0, 355.0, 356.0, 357.0, 358.0, 359.0, 360.0, 361.0, 362.0, 363.0, 364.0, 365.0, 366.0, 367.0, 368.0, 369.0, 370.0, 371.0, 372.0, 373.0, 374.0, 375.0, 376.0, 377.0, 378.0, 379.0, 380.0, 381.0, 382.0, 383.0, 384.0, 385.0, 386.0, 387.0, 388.0, 389.0, 390.0, 391.0, 392.0, 393.0, 394.0, 395.0, 396.0, 397.0, 398.0, 399.0, 400.0, 401.0, 402.0, 403.0, 404.0, 405.0, 406.0, 407.0, 408.0, 409.0, 410.0, 411.0, 412.0, 413.0, 414.0, 415.0, 416.0, 417.0, 418.0, 419.0, 420.0, 421.0, 422.0, 423.0, 424.0, 425.0, 426.0, 427.0, 428.0, 429.0, 430.0, 431.0, 432.0, 433.0, 434.0, 435.0, 436.0, 437.0, 438.0, 439.0, 440.0, 441.0, 442.0, 443.0, 444.0, 445.0, 446.0, 447.0, 448.0, 449.0, 450.0, 451.0, 452.0, 453.0, 454.0, 455.0, 456.0, 457.0, 458.0, 459.0, 460.0, 461.0, 462.0, 463.0, 464.0, 465.0, 466.0, 467.0, 468.0, 469.0, 470.0, 471.0, 472.0, 473.0, 474.0, 475.0, 476.0, 477.0, 478.0, 479.0, 480.0, 481.0, 482.0, 483.0, 484.0, 485.0, 486.0, 487.0, 488.0, 489.0, 490.0, 491.0, 492.0, 493.0, 494.0, 495.0, 496.0, 497.0, 498.0, 499.0, 500.0, 501.0, 502.0, 503.0, 504.0, 505.0, 506.0, 507.0, 508.0, 509.0, 510.0, 511.0, 512.0, 513.0, 514.0, 515.0, 516.0, 517.0, 518.0, 519.0, 520.0, 521.0, 522.0, 523.0, 524.0, 525.0, 526.0, 527.0, 528.0, 529.0, 530.0, 531.0, 532.0, 533.0, 534.0, 535.0, 536.0, 537.0, 538.0, 539.0, 540.0, 541.0, 542.0, 543.0, 544.0, 545.0, 546.0, 547.0, 548.0, 549.0, 550.0, 551.0, 552.0, 553.0, 554.0, 555.0, 556.0, 557.0, 558.0, 559.0, 560.0, 561.0, 562.0, 563.0, 564.0, 565.0, 566.0, 567.0, 568.0, 569.0, 570.0, 571.0, 572.0, 573.0, 574.0, 575.0, 576.0, 577.0, 578.0, 579.0, 580.0, 581.0, 582.0, 583.0, 584.0, 585.0, 586.0, 587.0, 588.0, 589.0, 590.0, 591.0, 592.0, 593.0, 594.0, 595.0, 596.0, 597.0, 598.0, 599.0, 600.0, 601.0, 602.0, 603.0, 604.0, 605.0, 606.0, 607.0, 608.0, 609.0, 610.0, 611.0, 612.0, 613.0, 614.0, 615.0, 616.0, 617.0, 618.0, 619.0, 620.0, 621.0, 622.0, 623.0, 624.0, 625.0, 626.0, 627.0, 628.0, 629.0, 630.0, 631.0, 632.0, 633.0, 634.0, 635.0, 636.0, 637.0, 638.0, 639.0, 640.0, 641.0, 642.0, 643.0, 644.0, 645.0, 646.0, 647.0, 648.0, 649.0, 650.0, 651.0, 652.0, 653.0, 654.0, 655.0, 656.0, 657.0, 658.0, 659.0, 660.0, 661.0, 662.0, 663.0, 664.0, 665.0, 666.0, 667.0, 668.0, 669.0, 670.0, 671.0, 672.0, 673.0, 674.0, 675.0, 676.0

M.A.22312



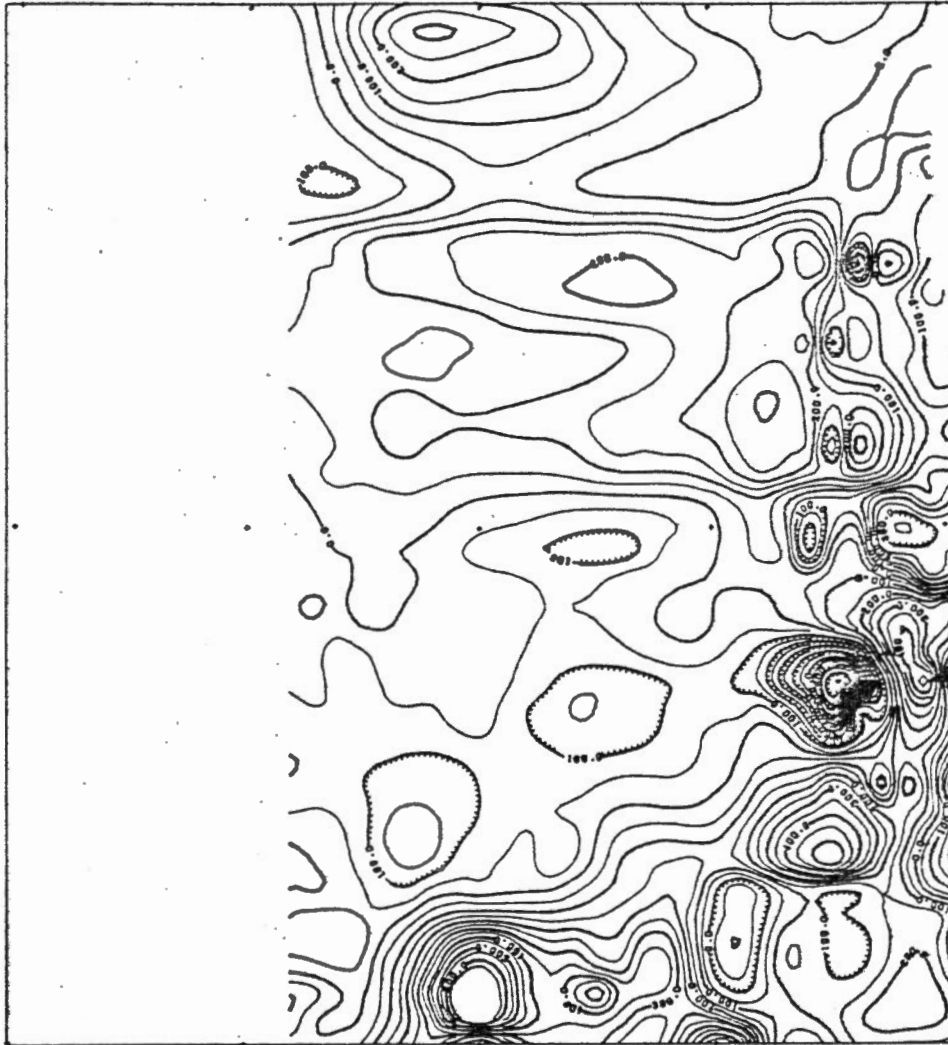
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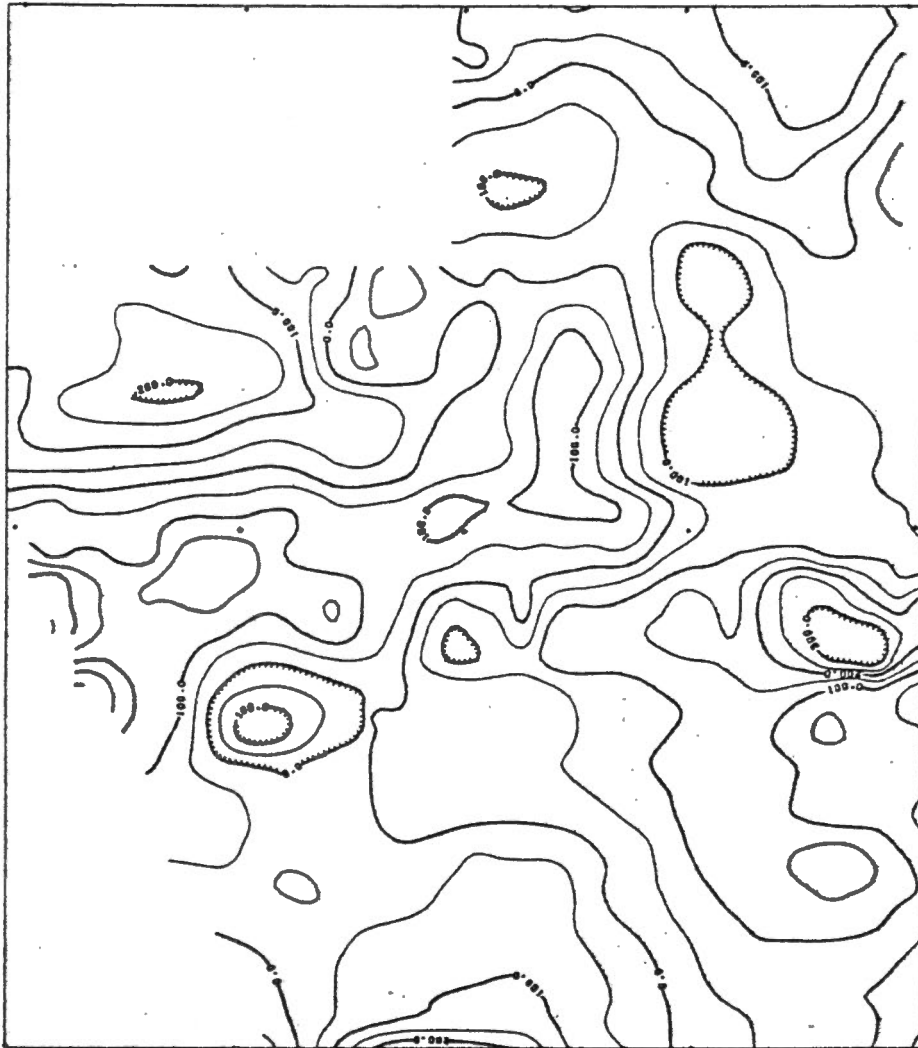
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AUTHOR(S): G. VILKS

cc → Skip's.

TITLE. Report of Cruise 83033

ABSTRACT: (no more than 50 words)

The Grand Banks and Hibernia site was surveyed with 40 cores and grab samples, 10500 frames of BRUTIV camera, 523^{km} of air gun 600 km of Hunter Deep Tow and 513 km of side scan surveys. A near surface seismic refraction experiment helped to define the Quaternary - Tertiary unconformity.

INTENDED JOURNAL/CONFERENCE: (include conference dates, sponsor and location)

GSC PROJECTS:

CLASS OF PUBLICATION (check one)

<input type="checkbox"/> Map(s)	<input type="checkbox"/> Abstract	<input type="checkbox"/> Internal Report
<input type="checkbox"/> Audio-visual	<input type="checkbox"/> Open File	<input checked="" type="checkbox"/> Cruise or Field Report
<input type="checkbox"/> Data	<input type="checkbox"/> Published paper	

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<input type="checkbox"/> 1b	-Departmental publication, limited review
<input type="checkbox"/> 2	-Externally refereed journal or symposium paper
<input type="checkbox"/> 3	-Unrefereed publication
<input checked="" type="checkbox"/> 4	-Internal report including Open File

REVIEWERS:

Names:

J. Syvitski

H. Josenhans

Initial/date

Initial/date

1. MS first critically read:

JMS 10/84

HJ 10/19/84

2. Data collection and analysis acceptable;
interpretations rational and defensible:

JMS 11/84

HJ 11/5/84

4. Interpretations and conclusions: agree/in part/disagree

agree/in part/disagree

5. Recommended for publication:

JMS 11/84

SUBDIVISION HEAD:

[Signature]

DIRECTOR:

M. [Signature]

DATE:

6.11.84

DATE:

5 Nov 84

AUTHOR(S): BLASCO, S.M

TITLE: SUBSEA PERMAFROST: FIELD MAPPING AND NUMERICAL/PHYSICAL MODELLING OF ITS DISTRIBUTION IN THE CANADIAN BEAUFORT SEA

ABSTRACT: (no more than 50 words)

SUBSEA PERMAFROST IS SPATIALLY DISCONTINUOUS AT SHALLOW DEPTHS AND MAY HAVE A SIMILAR DISTRIBUTION WITH DEPTH TO ITS BASE NEAR 600m. THROUGH NUMERICAL MODELLING (RATRACING) AND PHYSICAL SCALE MODELLING (IN A LARGE WATER-FILLED TANK), KNOWN AND ASSUMED DISTRIBUTIONS ARE BEING SEISMICALLY SYNTHESIZED AND COMPARED WITH FIELD DATA.

INTENDED JOURNAL/CONFERENCE: (include conference dates, sponsor and location)

US NATIONAL ACADEMY OF SCIENCES NRC WORKSHOP ON PERMAFROST GEOPHYSICS

GSC PROJECTS: 700092

CLASS OF PUBLICATION (check one)

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<input type="checkbox"/> Audio-visual	<input type="checkbox"/> Open File	<input type="checkbox"/> Cruise or Field Report
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<input checked="" type="checkbox"/> 3	-Unrefereed publication
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REVIEWERS:

Names:

G. FADER

Initial/date

Initial/date

1. MS first critically read:

2. Data collection and analysis acceptable;

interpretations rational and defensible:

4. Interpretations and conclusions:

agree/in part/disagree

agree/in part/disagree

5. Recommended for publication:

SUBDIVISION HEAD:

DIRECTOR:

DATE:

9.xi.84

DATE:

14 Nov 84