Environmental Assessment of the Alaskan Continental Shelf

Annual Reports of Principal Investigators for the year ending March 1978

Volume XIII. Data Management

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration

U.S. DEPARTMENT OF INTERIOR
Bureau of Land Management

VOLUME I	RECEPTORS -- MAMMALS
	BIRDS
VOLUME II	RECEPTORS -- BIRDS
VOLUME III	RECEPTORS -- BIRDS
VOLUME IV	RECEPTORS -- FISH, LITTORAL, BENTHOS
VOLUME V	RECEPTORS -- FISH, LITTORAL, BENTHOS
VOLUME VI	RECEPTORS -- MICROBIOLOGY
VOLUME VII	EFFECTS
VOLUME VIII	CONTAMINANT BASELINES
VOLUME IX	TRANSPORT
VOLUME X	TRANSPORT
VOLUME XI	HAZARDS
VOLUME XII	HAZARDS
VOLUME XIII	DATA MANAGEMENT

Environmental Assessment of the Alaskan Continental Shelf

Annual Reports of Principal Investigators for the year ending March 1978

Volume XIII. Data Management

Outer Continental Shelf Environmental Assessment Program
Boulder, Colorado

October 1978

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration

U.S. DEPARTMENT OF INTERIOR
Bureau of Land Management

DISCLAIMER

ACKNOWLEDGMENT

These annual reports were submitted as part of contracts with the Outer Continental Shelf Environmental Assessment Program under major funding from the Bureau of Land Management.

DATA MANAGEMENT

Contents

ANNUAL REPORT

Contract 03-5-022-56
Research Unit #350
Reporting Period 4/1/77-3/31/78
Number of Pages 40

ALASKAN OCS PROGRAM COORDINATION

Donald H. Rosenberg
OCS Coordination Office
University of Alaska

March 31, 1978

I. Summary of Objectives

This project provides for coordination of all NOAA/OCS Task Orders within the University of Alaska. It provides for a coordination and related support staff and services necessary to conduct the scientific program of OCS. This is accomplished by being a focal point for all contract, data management, and logistics coordination.

II. Introduction

Not applicable

III. Current State of Knowledge

Not applicable

IV. Study Area

Not applicable

V. Sources, Methods, Rationale of Data Collection

Not applicable

VI. Results

A. Scientific and Contract Monitoring

During the reporting period this office has exercised monitoring authority over the Task Orders listed in Tables 1a and 1b. As noted on these tables, certain tasks have been completed during the reporting period and final reports have been submitted.

The monitoring effort of this office is limited to the following: the evaluation of the scientific effort relative to the work statements to insure contractual compliance, the coordination of proposal submission, logistic requirements, and data submission. In the last case, Data Management Plans are formulated and submitted through this office, as are the resulting Data Submission Schedules and formated, taped data. All reports are also submitted through this office.

In the past year, the proposals tabulated in Table II were submitted to NOAA for OCS work. Those that were approved are noted.

Contact with the Juneau, Arctic Project Offices and Boulder OCS offices was maintained to insure that progress in the scientific programs pursued by University of Alaska principal investigators is consistent with NOAA/OCS program needs and that any problems that arise are solved in a timely manner.

The staff of this office and their duties relative to OCS are outlined in Table III.

B. Data Management

Data Management Plans were formulated and kept up-to-date by this office as needed.

As new projects came on line, new plans reflecting the work statements of these tasks were created and forwarded for approval to the Contract Data Manager. Three new tasks were treated in this way in the past year; Task Orders #32, #33, and #34.

In order to accommodate changes in existing task orders, revised Data Management Plans have been submitted upon request. Task Order #1 and #15 have been so treated. We need, at this time, to review necessary changes for Task Orders #5, #8, and #12. This is an on-going process.

Formats for submitting data on magnetic tape have been received for all data which will be so submitted. One problem continues to trouble me; this is the continuous need to revise existing formats. When dealing with a large number of formats as this office does, it is easy to miss corrections, especially for a rarely used format. May I request that when a change occurs a completely new format be sent, not just the corrected record type.

C. Data Submissions

During the past year contract 03-5-022-56 investigators have submitted through this office 63 batches of data which were checked for format, keypunched, transferred to tape and submitted to NOAA/OCS. In addition, 11 batches of data are currently being processed and will be submitted shortly. See Table IV for a listing of these data submissions.

We have also furnished, through this office, a keypunching and data transmittal service for investigators as designated by the Project Offices, on a limited basis. We have in the past year processed four large jobs through this service. Three batches of data were on behalf of Mr. Divoky and the keypunching of the Salmon Troll Log Books.

The only data batches due the past year which have not been processed are the outstanding current meter/pressure gauge data for Task Order #19. I have been informed that problems still exist which cause undue delay in the processing of these data. We regret this delay, but with the limited computer expertise at my command, I can do nothing more than prod those processing these data.

D. Travel Coordination

Funds were provided through this Task Order to allow for travel of management, staff and principal investigators under this contract to meetings requested by NOAA/OCS. These funds were used to attend synthesis and coordination meetings as well as meetings requested by the Project Offices between principal investigators and their Trackers.

E. Logistics Coordination

Coordination of logistics requirements in the pursuit of tasks assigned to this contract was carried out through this office in the past year. We attempt to act as a pipeline for changes requested in project instructions as well as in the submission of Chief Scientists Reports and ROSCOP II forms where appropriate.

VII. Discussion

Not applicable

VIII. Conclusions

Not applicable

IX. Needs for Further Study

Not applicable

X. Summary of Fourth Quarter Operations

A. Ship or Laboratory Activities

Not applicable

B. Results

See results section above and Tables.

C. Problems Encountered

The total program, as we see it, is now capable of handling day-to-day problems before they get out of hand. We are happy to continue cooperating in order to keep it that way.

Table Ia

University of Alaska OCS Projects

Contract 03-5-022-56

Task Order	R.U.#	Project Title	Principal Investigator
1	427	Bering Sea Ice-Edge Ecosystem Studies	Vera Alexander R. T. Cooney
2	350	Alaskan OCS Program Coordination	Donald H. Rosenberg
3	290	Grain Size Analysis of Sediment from Alaskan Continental Shelves	Charles M. Hoskin
5	275	Hydrocarbons: Natural Distribution and Dynamics on the Alaskan Outer Continental Shelf	David G. Shaw
6*	99	The Environmental Geology and Geomorphology of the Gulf of Alaska Coastal Plain	P. Jan Cannon
7	278	Microbial Release of Soluable Trace Metals from Oil-Impacted Sediments	Robert J. Barsdate
8	194	Morbidity and Mortality of Marine Mammals	Francis H. Fay
12	162	Natural Distribution of Trace Heavy Metals and Environmental Background in Three Alaskan Shelf Areas	David C. Burrell
13*	156/ 164	Zooplankton and Micronekton Studies in the Bering-Chukchi/Beaufort Seas	Robert T. Cooney
15	5/303/ 281	The Distribution, Abundance, Diversity and Productivity of Benthic Organisms in the Bering Sea	Howard M. Feder
19	289	Mesoscale Currents and Water Masses in the Gulf of Alaska	Thomas C. Royer
21*	284	Food and Feeding Relationship in the Benthic and Demersal Fishes of the Gulf of Alaska and Bering Sea	Ronald L. Smith
23	351	Logistic I R/V Acona	Dolly Dieter
24		Administrative Support NODC/EDS	David M. Hickok
25*	347	Marine Climatology of the Gulf of Alaska and the Bering and Beaufort Seas	James Wise

Contract 03-5-022-56

Task Order	R.U.#	Project Title	Principal Investigator
27	441	Avian Community Ecology at Two Sites on Espenberg Peninsula	P. G. Mickelson
28*	458	Avian Community Ecology of the Akulik - Inglutalik River Delta	G. F. Shields L. J. Peyton
29*	517	The Distribution, Abundance and Diversity of the Epifaunal Benthic Organisms in Two Bays of Kodiak Island	H. M. Feder
30*	502	Trawl Survey of the Benthic Epifauna of the Chukchi Sea and Norton Sound	H. M. Feder
32	537	Nutrient Dynamics and Primary Production in Alaska Beaufort Sea Coastal Waters	J. Brian Matthews D. M. Schell
33	529	Sediment Characteristics, Stability, and Origin of the Barrier Island-Lagoon Complex, North Arctic Alaska	A. S. Naidu
34	530	The Environmental Geology and Geomorphology of the Barrier Island-Lagoon System Along the Beaufort Sea Coastal Plain from Prudhoe Bay to the Coville River	P. Jan Cannon

* Final reports for these projects have been submitted and the Task Order work completed.

TABLE 1b

Contract 03-5-022-55

Task Order	R.U.#	Project Title	Principal Investigator
1	253/ 255	Offshore Permafrost-Drilling, Boundary Conditions, Properties, Processes and Models	T. E. Osterkamp and W. D. Harrison
2	251	Seismic and Volcanic Risk States-Western Gulf of Alaska: Cook Inlet-Kodiak-Semidi Island Region	Hans Pulpan and Jurgen Kienle
3	271	Beaufort Sea Coast Permafrost Studies	James C. Rogers
4*	261/ 262	Beaufort Sea Historical Baseline Ice Study Proposal	William Hunt and Claus Naske
5	258	Morphology of Bering Nearshore Ice Conditions by Means of Satellite and Aerial Remote Sensing	W. J. Stringer
6	265	Development of Hardware and Procedures for <u>in situ</u> Measurement of Creep in Sea Ice	L. H. Shapiro W. M. Sackinger and R. D. Nelson
7	259	Experimental Measurements of Sea Ice Failure Stresses Near Grounded Structures	R. D. Nelson and W. M. Sackinger
8	257	Morphology of Beaufort Nearshore Ice Conditions by Means of Satellite and Aerial Remote Sensing	W. J. Stringer
9	248/ 249	The Relationships of Marine Mammal Distribution, Densities and Activities to Sea Ice Conditions - Bering and Beaufort Seas	J. J. Burns F. H. Fay and L. H. Shapior
10	267	Operation of an Alaskan Facility for Applications of Remote-Sensing Data of Outer Continental Shelf Studies	A. E. Belon
11	250	Mechancis of Origin of Pressure Ridges, Shear Ridges, and Hammock Fields in Landfast Ice	L. H. Shapiro
12	483	Evaluation of Earthquake Activity Around Norton and Kotzebue Sounds	N. N. Biswas L. D. Gedney
13	526	Characterization of the Nearshore Hydrodynamics of an Arctic Barrier Island - Lagoon System	J. B. Matthews

* Work is completed, Final Report has been submitted.

TABLE II

Proposals Submitted to NOAA/OCS for Contract 03-5-022-56
4/1/77 - 3/31/78

Submission Date	Proposal No.	Title	Principal Investigator	Cost Proposal
5/11/77	*77-14	Morbidity and Mortality of Marine Mammals	F. H. Fay	$ 39,563
5/25/77	*77-15	Avian Community Ecology at Two Sites on Espenberg Peninsula in Kotzebue Sound, Alaska	P. G. Mickelson	11,200
6/15/77	*77-16	Alaskan OCS Program Coordination	D. H. Rosenberg	136,827
6/15/77	*77-17	Grain Size Analysis of Sediment From Alaskan Continental Shelves	C. M. Hoskin	17,000
6/15/77	77-18	Circulation and Water Masses in the Gulf of Alaska	T. C. Royer	280,772
6/15/77	77-19	Hydrocarbons: Natural Distribution and Dynamics on the Alaskan Outer Continental Shelf	D. G. Shaw	329,769
6/15/77	77-20	Distribution and Dynamics of Heavy Metals in Alaskan Shelf Environments Subject to Oil Development	D. C. Burrell	219,694
6/15/77	*77-21	R/V Acona and Marine Logistics Support	E. R. Dieter	285,827
6/16/77	*77-22	Marine Climatology of the Gulf of Alaska, the Bering and Beaufort Seas	J. L. Wise	2,200
6/25/66	77-23	Morbidity and Mortality of Marine Mammals	F. H. Fay	65,142
6/27/66	77-24	Administrative Support for OCSEAP/EDS Center	D. M. Hickok	128,832

TABLE II

Proposals Submitted to NOAA/OCS for Contract 03-5-022-56
4/1/77 - 3/31/78

Submission Date	Proposal No.	Title	Principal Investigator	Cost Proposal
6/30/77	*77-25	Sediment Characteristics, Stability, and origin of the Barrier Island - Lagoon Complex, North Arctic, Alaska	A. S. Naidu	$ 69,883
6/30/77	*77-26	The Environmental Geology and Geomorphology of the Barrier Island - Lagoon System Along the Beaufort Sea Coastal Plain from Prudhoe to the Coville River	P. J. Cannon	30,099
7/1/77	77-27	Heavy Metal Contents of Selected Bering Sea Marine Mammals	D. C. Burrell	-0-
7/21/77	78-1	Ice Edge Ecosystem Study	V. Alexander R. T. Cooney	375,988
7/22/77	78-2	Distribution, Abundance, Community Structure and Trophic Relationships of the Nearshore Benthos of Norton Basin, Aleutian Shelf, Kodiak Shelf, Cook Inlet and North East Gulf of Alaska	H. M. Feder	471,098
8/3/77	*78-3	Nutrient Dynamics and Primary Production in Alaskan Beaufort Sea Coastal Waters	D. M. Schell J. B. Matthews	29,202
8/12/77	78-4	Administrative and Technical Support for OCSEAP/EDS Center	D. M. Hickok	124,832
8/23/77	*78-5	Morbidity and Mortality of Marine Mammals	F. H. Fay	110,213
9/13/77	*78-6	Circulation and Water Masses in the Gulf of Alaska	T. C. Royer	255,442
9/9/77	*78-7	Administrative and Technical Support for OCSEAP/EDS Center	D. M. Hickok	100,000

TABLE II

Proposals Submitted to NOAA/OCS for Contract 03-5-022-56
4/1/77 - 3/31/78

Submission Date	Proposal No.	Title	Principal Investigator	Cost Proposal
10/7/77	*78-8	Distribution, Abundance, Community Structure and Trophic Relationships of the Nearshore Benthos of the Kodiak Shelf, Cook Inlet, and North East Gulf of Alaska	H. M. Feder	$395,000
10/17/77	*78-9	Ice-Edge Ecosystem Study: Primary Productivity, Nutrient Cycling and Organic Matter Transfer	V. Alexander R. T. Cooney	175,537
11/7/77	78-11	Investigation of the Cook Inlet Belukha Population and of the Use of Lower Cook Inlet by Other Cetaceans	F. H. Fay	37,224
11/17/77	78-12	Distribution and Dynamics of Heavy Metals in Alaskan Shelf Environments Subject to Oil Development	D. C. Burrell	172,000
11/28/77	78-13	Hydrocarbons: Natural Distribution and Dynamics on the Alaskan Outer Continental Shelf	D. G. Shaw	229,973
12/12/77	78-14	The Effects of Petroleum on Arctic Marine Organisms	D. G. Shaw	74,975
1/10/78	78-15	Hydrocarbons: Natural Distribution and Dynamics on the Alaskan Outer Continental Shelf	D. G. Shaw	228,793
3/2/78	78-16	Morbidity and Mortality of Marine Mammals	F. H. Fay	3,830

* Funded proposals

TABLE III

University of Alaska OCS Project

Management Staff

Position	Percent Effort	Name
Coordinator[1]	Approximately 15%	Donald H. Rosenberg
Data Manager[1]	100%	Raymond S. Hadley
Geophysical Institute Liason[1]	Approximately 30%	William Stringer
Keypunch operator[1]	100%	Monique Schamell
Typist[2]	Approximately 30%	Helen Greschke

Note: 1 Funded directly from project

2 Funded from overhead

TABLE IV

Submitted Data Batches

File I.D.	File Type	Cruise/Field Operation	Submission Date
Task Order 1			
Su001	028	Surveyor 76/3/15 - 76/4/15	9/19/77
Su002	028	Surveyor 76/4/15 - 76/4/26	9/19/77
SuIMS1	029	Surveyor 76/3/15 - 76/4/15	9/19/77
SuIMS2	029	Surveyor 76/4/15 - 76/4/26	9/19/77
005IMS	022	Surveyor 77/3/22 - 77/4/4	3/27/78
006IMS	022	Surveyor 77/4/14 - 77/5/2	3/27/78
004IMS	022	Discoverer 77/5/20 - 77/6/10	3/27/78
RTZ006	024	Surveyor 77/3/15 - 77/4/06	3/27/78
RTZ007	024	Surveyor 77/4/14 - 77/5/03	3/27/78
RTZ008	024	Discoverer 77/5/20 - 77/6/11	3/27/78
PHY004	028	Discoverer 77/05/22 - 77/06/09	3/27/78
PHY005	028	Surveyor 77/03/18 - 77/04/04	3/27/78
PHY006	028	Surveyor 77/04/17 - 77/05/01	3/27/78
Task Order 2			
TMBER 1	061	Discoverer 6/2 - 6/19/75	11/7/77
TMCNS 1	061	Discoverer 9/10 - 9/24/76	11/7/77
TMTWL 2	061	Miller Freeman 3/76 - 6/76	11/7/77

TABLE IV

Submitted Data Batches

File I.D.	File Type	Cruise/Field Operation	Submission Date
TMNEG 1	061	Silas Bent 8/31 - 9/14/75	11/7/77
TMNWG 1	061	Discoverer 10/8 - 10/16/75	11/7/77
TMNEG 2	061	Discoverer 11/2 - 12/2/75	11/7/77
TMLCI 1	061	Moana Wave 3/76 - 4/76	11/7/77
TMBES 1	061	Glacier 8/23 - 9/3/76	11/7/77
TMTWL 3	061	Miller Freeman 8/16 - 10/20/75	11/7/77
TMOCS 1	061	Acona 10/8 - 10/14/74	11/7/77
TMOCS 3	061	Acona 3/12 - 3/29/75	11/7/77
TMTWL 1	061	North Pacific 4/25 - 8/7/75	11/7/77
TMINT 1	061	Intertidal Biota 75/76	11/7/77
TMOCS 2	061	Oceanographer 2/1 - 2/13/75	11/7/77
TMBER 2	061	Discoverer 9/12 - 10/3/75	11/7/77
Task Order 13			
RTZ006	024	Discoverer 8/3 - 8/17/75	8/2/77
555000	023	Chukchi Sea Near Shore 6/24 - 9/10/76	2/10/78
Task Order 15			
818	032	Miller Freeman 8/16 - 10/20/75	7/1/77
808	032	Discoverer 5/15 - 5/19/75	7/1/77

TABLE IV

Submitted Data Batches

File I.D.	File Type	Cruise/Field Operation	Submission Date
Task Order 15			
FN001	032	Discoverer 3/76 - 6/76	11/7/77
Task Order 19			
Su3 IMS	022	Surveyor 9/8/76 - 9/16/76	5/23/77
FN6 IMS	022	Miller Freeman 11/3/76 - 11/19/76	5/23/77
FN7 IMS	022	Miller Freeman 11/10/76 - 11/18/76	5/23/77
FN8 IMS	022	Miller Freeman 11/12/76 - 11/6/76	5/23/77
MW7 IMS	022	Moana Wave 10/24/76 - 11/6/76	5/23/77
MW5 IMS	022	Moana Wave 7/22 - 8/1/77	8/2/77
FN9 IMS	022	Miller Freeman 3/9/77 - 4/2/77	8/2/77
240 IMS	022	Acona 240 4/9/77 - 4/10/77	8/2/77
Su4 IMS	022	Surveyor 9/21 - 10/2/76	1/7/78
CM 0001 - CM 0005	015	Current Meter Station 9c 7/22 - 11/2/76	9/30/77
248 IMS	022	Acona 8/11 - 8/14/77	3/27/78

TABLE IV

Submitted Data Batches

File I.D.	File Type	Cruise/Field Operation	Submission Date
Task Order 20			
000811	032	Silas Bent 8/31 - 9/14/75	5/23/77
00816	032	Discoverer 11/23 - 12/2/75	5/23/77
Task Order 21			
*Flathead Sole	023	Data from (4) cruises	12/9/77
*Rock Sole	023	Data from (1) cruise	12/9/77
*Dover Sole	023	Data from (1) cruise	12/9/77
*Rex Sole	023	Data from (1) cruise	12/9/77
*Arrow Tooth Flounder	023	Data from (1) cruise	12/9/77
*Shortfin Eelpout	023	Data from (2) cruises	12/9/77
*Pollock	023	Data from (5) cruises	12/9/77
*Capelin	023	Data from (1) cruise	12/9/77
*Turbot	023	Data from (1) cruise	12/9/77

* Data were batched according to predator species. A unique file I.D. was used for each cruise.

TABLE IV

Submitted Data Batches

File I.D.	File Type	Cruise/Field Operation	Submission Date
Task Order 28			
GTGOWL	034	1976 Field Season	7/1/77
HKOWLE	034	1977 Field Season	9/19/77 2/10/78
SPIPER	035	1977 Field Season	2/10/78
Task Order 29			
BV001	032	Big Valley 6/17 - 6/23/76	11/1/77
BV002	032	Big Valley 7/18 - 7/28/76	11/1/77
BV003	032	Big Valley 8/19 - 8/29/76	11/1/77
BV004	032	Big Valley 3/3 - 3/18/77	11/1/77
Task Order 30			
FN762	032	Miller Freeman 9/1 - 10/15/76	2/10/78

OCS COORDINATION OFFICE

University of Alaska

ENVIRONMENTAL DATA SUBMISSION SCHEDULE

DATE: March 31, 1978

CONTRACT NUMBER: 03-5-022-56 T/O NUMBER: 1 R.U. NUMBER: 159/164/427

PRINCIPAL INVESTIGATOR: Dr. Vera Alexander and Dr. Ted Cooney

Submission dates are estimated only and will be updated, if necessary, each quarter. Data batches refer to data as identified in the data management plan.

Cruise/Field Operation	Collection Dates		Estimated Submission Dates[1]			
	From	To	Batch 1	2	3	4
Discoverer Leg I #808	5/15/75	5/30/75	submitted	submitted	None	None
Discoverer Leg II #808	6/2/75	6/19/75	submitted	submitted	None	None
Discoverer Leg I #810	8/9/75	8/28/75	submitted	submitted	None	None
Miller Freeman #815	11/10/75	11/26/75	submitted	submitted	None	None
Surveyor Su/001/2	3/76	4/76	submitted	submitted	None	None
Surveyor 1	3/15/77	4/6/77	submitted	keypunched	submitted	submitted
Surveyor 2	4/14/77	5/3/77	submitted	keypunched	submitted	submitted
Discoverer	5/20/77	6/11/77	submitted	keypunched	submitted	submitted
UHIH	4/1/77	4/7/77	6/30/78	None		

Note: [1] Data Management Plan and data Formats have been approved and are considered contractual. An update of data management plan has been submitted for review.

Batch 3 is zooplankton data

Batch 4 is STD data.

OCS COORDINATION OFFICE

University of Alaska

ENVIRONMENTAL DATA SUBMISSION SCHEDULE

DATE: March 31, 1978

CONTRACT NUMBER: 03-5-022-56 T/O NUMBER: 2

PRINCIPAL INVESTIGATOR: Mr. Donald H. Rosenberg

No environmental data are to be taken by this task order as indicated in the Data Management Plan. A schedule of submission is therefore not applicable[1]

NOTE: [1] Data Management Plan has been approved and made contractual.

OCS COORDINATION OFFICE

University of Alaska

ENVIRONMENTAL DATA SUBMISSION SCHEDULE

DATE: March 31, 1978

CONTRACT NUMBER: 03-5-022-56 T/O NUMBER: 3 R.U. NUMBER: 291

PRINCIPAL INVESTIGATOR: Dr. C. M. Hoskin

Submission dates are estimated only and will be updated, if necessary, each quarter. Data batches refer to data as identified in the data management plan.

Cruise/Field Operation	Collection Dates		Estimated Submission Dates[1]		
	From	To	Batch 1		
Discoverer Leg I #808	5/15/75	5/30/75	Submitted		
Discoverer Leg II #808	6/2/75	6/19/75	Submitted		
Miller Freeman	8/16/75	10/20/75	Submitted		

All data for FY '76 have been submitted.
FY '77 data (Received in coordination with R.U. #275 and #162) have been analysed. Data are being keypunched.

Note: [1] Data Management Plan has been approved by M. Pelto; we await approval by the Contract Officer.

OCS COORDINATION OFFICE

University of Alaska

ENVIRONMENTAL DATA SUBMISSION SCHEDULE

DATE: March 31, 1978

CONTRACT NUMBER: 03-5-022-56 T/O NUMBER: 5 R.U. NUMBER: 275/276/294

PRINCIPAL INVESTIGATOR: Dr. D. G. Shaw

Submission dates are estimated only and will be updated, if necessary, each quarter. Data batches refer to data as identified in the data management plan.

Cruise/Field Operation	Collection Dates		Estimated Submission Dates[1]		
	From	To	Batch 1	2	3
Silas Bent Leg I #811	8/31/75	9/14/75	None	submitted	submitted
Discoverer Leg III #810	9/12/75	10/3/75	None	None	submitted
Discoverer Leg IV #812	10/3/75	10/16/75	Submitted	None	submitted
Surveyor #814	10/28/75	11/17/75	None	submitted	None
North Pacific	4/25/75	8/7/75	submitted	None	None
Contract 03-5-022-34	Last	Year	submitted	submitted	submitted
Moana Wave MW 001	2/21/76	3/5/76	None	submitted	submitted
Miller Freeman	5/17/76	6/4/76	submitted	None	None
Glacier	8/18/76	9/3/76	None	submitted	None
Discoverer	9/10/76	9/24/76	None	submitted	submitted
Moana Wave	10/7/76	10/16/76	None	submitted	submitted
Acona	6/25/76	7/2/76	submitted	submitted	submitted
Discoverer	5/20/77	6/11/77	3/31/78	None	None
Acona	6/22/77	6/27/77	3/31/78		
Surveyor	11/03/77	11/17/77	6/30/78	None	None
Acona	11/29/77	12/4/77	6/30/78	None	None

Note: [1] Data Management plan has been approved and made contractual.

OCS COORDINATION OFFICE

University of Alaska

ENVIRONMENTAL DATA SUBMISSION SCHEDULE

DATE: March 31, 1978

CONTRACT NUMBER: 03-5-022-56 T/O NUMBER: 6 R.U. NUMBER: 99

PRINCIPAL INVESTIGATOR: Dr. P. Jan Cannon

No environmental data are to be taken by this task order as indicated in the Data Management Plan. A schedule of submission is therefore not applicable[1].

NOTE: [1] Data Management Plan has been approved by M. Pelto; we await approval by the Contract Officer.

OCS COORDINATION OFFICE

University of Alaska

ENVIRONMENTAL DATA SUBMISSION SCHEDULE

DATE: March 31, 1978

CONTRACT NUMBER: 03-5-022-56 T/O NUMBER: 7 R.U. NUMBER: 178

PRINCIPAL INVESTIGATOR: Dr. Robert J. Barsdate

No environmental data are to be taken by this task order as indicated in the Data Management Plan. A schedule of submission is therefore not applicable[1].

NOTE: [1] Data Management Plan has been approved and made contractural.

OCS COORDINATION OFFICE

University of Alaska

ENVIRONMENTAL DATA SUBMISSION SCHEDULE

DATE: March 31, 1978

CONTRACT NUMBER: 03-5-022-56 T/O NUMBER: 8 R.U. NUMBER: 194

PRINCIPAL INVESTIGATOR: Dr. F. H. Fay

Submission dates are estimated only and will be updated, if necessary, each quarter. Data batches refer to data as identified in the data management plan.

Cruise/Field Operation	Collection Dates		Estimated Submission Dates[1]			
	From	To	Batch 1			
Alaska Peninsula	7/23/75	7/24/75	submitted			
Kotzebue Sound	7/17/75	7/20/75	submitted			
Kotzebue Sound	7/22/75	7/24/75	submitted			
St. Lawrence Is.	8/8/75	8/22/75	submitted			
Alaska Peninsula	Summer 1976		submitted			
Kotzebue Sound	Summer 1976		submitted			
Alaska Peninsula	June 1977		in keypunching			
St. Lawrence Is.	July 1977		in keypunching			

Specimen data will be reported separately in tabular format.

Note: [1] Data Management Plan has been approved by M. Pelto; we await approval by the Contract Officer.

OCS COORDINATION OFFICE

University of Alaska

ENVIRONMENTAL DATA SUBMISSION SCHEDULE

DATE: March 31, 1978

CONTRACT NUMBER: 03-5-022-56 T/O NUMBER: 12 R.U. NUMBER: 162/163/288/293/312

PRINCIPAL INVESTIGATOR: Dr. D. C. Burrell

Submission dates are estimated only and will be updated, if necessary, each quarter. Data batches refer to data as identified in the data management plan.

Cruise/Field Operation	Collection Dates		Estimated Submission Dates[1]			
	From	To	Batch 1	2	3	4
Discoverer Leg II #808	6/2/75	6/19/75	submitted all data			
Silas Bent Leg I #811	8/31/75	9/14/75	submitted all data			
Discoverer Leg IV #812	10/8/75	10/16/75	submitted all data			
Miller Freeman	8/16/75	10/20/75	submitted all data			
Discoverer Leg III #810	9/12/75	10/3/75	submitted all data			
North Pacific	4/25/75	8/7/75	submitted all data			
Intertidal Biota	1975	1976	submitted all data			
Discoverer #816	11/12/75	12/2/75	submitted all data			
Contract 03-5-022-34	Last	Year	submitted all data			
Discoverer	9/10/76	9/24/76	submitted all data			
USCCC Glacier	8/18/76	9/3/76	submitted all data			
Moana Wave	3/76	4/15/76	submitted all data			

Note: [1] Data Management Plan has been approved by M. Pelto, we await approval by the Contract Officer.

Cruise/Field Operation	Collection Dates		Estimated Submission Dates[1]			
	From	To	Batch 5	6	7	8
Acona	7/25/77	7/30/77	9/30/78	None	None	None
Surveyor	11/3/77	11/17/77	6/30/78			6/30/78
Acona	11/20/77	12/4/77	6/30/78			6/30/78

Cruise/Field Operation	Collection Dates		Estimated Submission Dates[1]			
	From	To	Batch 9	10		
Acona	4/6/77	4/14/77	6/30/78			
Acona	7/25/77	7/30/77	9/30/78	none		
Surveyor	11/3/77	11/17/77	6/30/78			
Acona	11/29/77	12/4/77	6/30/78			

OCS COORDINATION OFFICE

University of Alaska

ENVIRONMENTAL DATA SUBMISSION SCHEDULE

DATE: March 31, 1978

CONTRACT NUMBER: 03-5-022-56 T/O NUMBER: 13 R.U. NUMBER: 426

PRINCIPAL INVESTIGATOR: Dr. R. T. Cooney

Submission dates are estimated only and will be updated, if necessary, each quarter. Data batches refer to data as identified in the data management plan.

Cruise/Field Operation	Collection Dates		Estimated Submission Dates[1]		
	From	To	Batch 1		
Discoverer Leg I #808	5/15/75	5/30/75	submitted		
Discoverer Leg II #808	6/2/75	6/19/75	submitted		
Discoverer Leg I #810	8/9/75	8/28/75	submitted		
Miller Freeman #815	11/10/75	11/26/75	submitted		
Contract #03-5-022-34	Last	Year	submitted		
Surveyor 001/2	3/76	4/76	submitted		
Discoverer 002	8/3/76	8/17/76	submitted		
Surveyor	6/28/77	7/4/77	(a)		

Notes: [1] Data Management Plan has been approved and made contractual. Format has been received and approved by all parties.

a. To be submitted in FY '78 as per guidance letter, as part of revised Task Order 1, R.U. 427.

OCS COORDINATION OFFICE

University of Alaska

ENVIRONMENTAL DATA SUBMISSION SCHEDULE

DATE: March 31, 1978

CONTRACT NUMBER: 03-5-022-56 T/O NUMBER: 15 R.U. NUMBER: 5/303

PRINCIPAL INVESTIGATOR: Dr. H. M. Feder

Submission dates are estimated only and will be updated, if necessary, each quarter. Data batches refer to data as identified in the data management plan.

Cruise/Field Operation	Collection Dates		Estimated Submission Dates[1]			
	From	To	Batch 1	2		
Discoverer Leg I #808	5/15/75	5/30/75	submitted	None		
Discoverer Leg II #808	6/2/75	6/19/75	submitted	None		
Miller Freeman	8/16/75	10/20/75	submitted	submitted		
Miller Freeman	3/76	6/76	None (a)	submitted		
Surveyor	11/3/77	11/17/77	None	6/30/78		
Acona	11/29/77	12/4/77	None	6/30/78		

Note: [1] Data Management Plan and Data Format have been approved and are considered contractual.

(a) All additional samples processed were from Discoverer 808, which have been submitted.

OCS COORDINATION OFFICE

University of Alaska

ENVIRONMENTAL DATA SUBMISSION SCHEDULE

DATE: March 31, 1978

CONTRACT NUMBER: 03-5-022-56 T/O NUMBER: 19 R.U. NUMBER: 289

PRINCIPAL INVESTIGATOR: Dr. T. C. Royer

Submission dates are estimated only and will be updated, if necessary, each quarter. Data batches refer to data as identified in the data management plan.

Cruise/Field Operation	Collection Dates		Estimated Submission Dates[1]		
	From	To	Batch 1	2	3
Acona #193	7/1/74	7/9/74	submitted	None	None
Acona #200	10/8/74	10/14/74	submitted	None	None
Acona #202	11/18/74	11/20/74	submitted	None	None
Acona #205	2/12/75	2/14/75	submitted	None	None
Acona #207	3/21/75	3/27/75	submitted	None	None
Acona #212	6/3/75	6/13/75	submitted		
Oceangrapher #805	2/1/75	2/13/75	submitted	None	None
Silas Bent #811	8/31/75	9/28/75	Submitted		
Discoverer #812	10/3/75	10/16/75	(a)		
Surveyor #814	10/28/75	11/17/75	submitted		
Discoverer #816	11/23/75	12/2/75	(b)	None	None
Station 60	7/2/74	8/26/74	None	(c)	None
Station 64	4/28/75	5/20/75	None	(c)	None
Station 9A	-	-	-	Lost	
Station 9B	4/21	6/23/76	-	(c)	(c)
Moana Wave MW 001	2/21/76	3/5/76	submitted		
Moana Wave MW 003/004	4/20/76	5/21/76	submitted		
Moana Wave MW005	7/22/76	80/1/76	submitted		
Surveyor SU 003	9/7/76	9/17/76	submitted		

Cruise/Field Operation	Collection Dates		Estimated Submission Dates[1]			
	From	To	Batch 1	2	3	
Surveyor	9/20/76	10/2/76	submitted			
Miller Freeman	11/1/76	11/19/76	submitted			
Moana Wave	10/7/76	11/16/76	submitted			
Miller Freeman	3/9/77	4/2/77	submitted			
Station 9C	7/22/76	11/2/76	submitted			
Acona 248	8/11/77	8/14/77	submitted			
Discoverer	11/8/77	11/16/77	4/30/78			
Acona 253	11/10/77	11/17/77	3/31/78			
Hinchenbrook	11/10/77	Current	None	Scheduled when retrieved		
Montegue	11/10/77	Current	None	Scheduled when retrieved		
Station 9D	11/3/76	3/29/77	None	(c)	(c)	
Acona	2/15/78	2/24/78	6/30/78			

Note:
1 Data Management Plan and Data Formats have been approved and are considered contractual.
(a) Parent tapes were coded in PODAS format, tapes were submitted to F. Cava as requested.
(b) Data useless due to malfunction of shipboard data logger.
(c) In edit process. Development of computer editing program has held up data.

OCS COORDINATION OFFICE

University of Alaska

ENVIRONMENTAL DATA SUBMISSION SCHEDULE

DATE: March 31, 1978

CONTRACT NUMBER: 03-5-022-56 T/O NUMBER: 20 R.U. NUMBER: 281

PRINCIPAL INVESTIGATOR: Dr. H. M. Feder

Submission dates are estimated only and will be updated, if necessary, each quarter. Data batches refer to data as identified in the data management plan.

Cruise/Field Operation	Collection Dates		Estimated Submission Dates[1]		
	From	To	Batch 1	2	3
Silas Bent Leg I #811	8/31/75	9/14/75	submitted	None	
Discoverer Leg IV #812	10/8/75	10/16/75	submitted[a]	None	
North Pacific	4/25/75	8/7/75	None	submitted	
Discoverer #816	11/23/75	12/2/75	submitted	None	
Contract #03-5-022-34	Last	Year	submitted		
Moana Wave	3/30/76	4/15/76	submitted		
Discoverer 001	3/17/76	3/27/76	in keypunching		
Miller Freeman	10/17/76	10/29/76	(b)	None	in keypunching
Moana Wave	7/21/76	8/1/76	None	None	in keypunching

Note: [1] Data Management Plan and Data Formats have been approved and are considered contractual.

(a) Only samples for Kodiak area were processed and submitted as requested.

(b) Selected samples will be processed to provide seasonal coverage as deemed necessary.

OCS COORDINATION OFFICE

University of Alaska

ENVIRONMENTAL DATA SUBMISSION SCHEDULE

DATE: March 31, 1978

CONTRACT NUMBER: 03-5-022-56 T/O NUMBER: 21 R.U. NUMBER: 284

PRINCIPAL INVESTIGATOR: Dr. R. L. Smith

Submission dates are estimated only and will be updated, if necessary, each quarter. Data batches refer to data as identified in the data management plan.

Cruise/Field Operation	Collection Dates		Estimated Submission Dates[1]			
	From	To	Batch 1			
Rex Sole			submitted			
Flathead Sole			submitted			
Pollock			submitted			
Arrowtooth Flounder			submitted			
Turbot			submitted			
Capelin			submitted			
Eelpout			submitted			
Rock Sole			submitted			
Dover Sole			submitted			

All data for this R.U. have now been submitted.

Note: [1] Data Management Plan has been approved and made contractual.

OCS COORDINATION OFFICE

University of Alaska

ENVIRONMENTAL DATA SUBMISSION SCHEDULE

DATE: March 31, 1978

CONTRACT NUMBER: 03-5-022-56 T/O NUMBER: 23 R.U. NUMBER: 351

PRINCIPAL INVESTIGATOR: Ms. E. R. Dieter

No environmental data are to be taken by this task order as indicated in the Data Management Plan. A schedule of submission is therefore not applicable[1].

NOTE: [1] Data Management Plan has been approved and made contractual.

OCS COORDINATION OFFICE

University of Alaska

ENVIRONMENTAL DATA SUBMISSION SCHEDULE

DATE: March 31, 1978

CONTRACT NUMBER: 03-5-022-56 T/O NUMBER: 24 R.U. NUMBER:

PRINCIPAL INVESTIGATOR: Mr. David M. Hickok

No environmental data are to be taken by this task order as indicated in the Data Management Plan. A schedule of submission is therefore not applicable[1].

NOTE: [1] Data Management Plan has been approved and made contractual.

OCS COORDINATION OFFICE

University of Alaska

ENVIRONMENTAL DATA SUBMISSION SCHEDULE

DATE: March 31, 1978

CONTRACT NUMBER: 03-5-022-56 T/O NUMBER: 25 R.U. NUMBER: 347

PRINCIPAL INVESTIGATOR: Mr. James Wise

No environmental data are to be taken by this task order as indicated in the Data Management Plan. A schedule of submission is therefore not applicable[1].

NOTE: [1] Data Management Plan has been approved and made contractual.

OCS COORDINATION OFFICE

University of Alaska

ENVIRONMENTAL DATA SUBMISSION SCHEDULE

DATE: March 31, 1978

CONTRACT NUMBER: 03-5-022-56 T/O NUMBER: 27 R. U. #441

PRINCIPAL INVESTIGATOR: Dr. P. G. Mickelson

Submission dates are estimated only and will be updated, if necessary, each quarter. Data batches refer to data as identified in the data management plan.

Cruise/Field Operation	Collection Dates		Estimated Submission Dates[1]			
	From	To	Batch 1	2	3	4
1976 Field Season	6/4/76	9/15/76	(a)	(a)	(b)	(b)
1977 Field Season	5/19/77	9/30/77	(a)	(a)	(b)	(b)

	Batch 5	6	7	8
1976 Field Season	(c)	(c)	(c)	(c)
1977 Field Season	(c)	(c)	(c)	(c)

(a) Data awaiting keypunching
(b) Tabular data, to be included in final report
(c) Tabular data, to be included in annual report.

1 Data management plan has been submitted and approved by F. Cava; we await contractual approval.

OCS COORDINATION OFFICE

University of Alaska

ENVIRONMENTAL DATA SUBMISSION SCHEDULE

DATE: March 31, 1978

CONTRACT NUMBER: 03-5-022-56 T/O NUMBER: 28 R.U. NUMBER: 458

PRINCIPAL INVESTIGATOR: Dr. G. F. Shields and Mr. L. J. Peyton

Submission dates are estimated only and will be updated, if necessary, each quarter. Data batches refer to data as identified in the data management plan.

Cruise/Field Operation	Collection Dates		Estimated Submission Dates[1]			
	From	To	Batch 1	2	3	4
1976 Field Season	6/14/76	8/24/76	Submitted	None	(a)	Submitted
1977 Field Season	5/08/77	9/18/77	Submitted	(a)	(a)	Submitted

	Batch 5			
1976 Field Season	(b)			
1977 Field Season	Submitted			

1 Data management plan has been submitted and approved by F. Cava; we await contractual approval.

(a) Data submitted as part of final report.
(b) Data very limited, and not suitable for submission.

OCS COORDINATION OFFICE

University of Alaska

ENVIRONMENTAL DATA SUBMISSION SCHEDULE

DATE: March 31, 1978

CONTRACT NUMBER: 03-5-022-56 T/O NUMBER: 29

PRINCIPAL INVESTIGATOR: Dr. H. M. Feder

Submission dates are estimated only and will be updated, if necessary, each quarter. Data batches refer to data as identified in the data management plan.

Cruise/Field Operation	Collection Dates		Estimated Submission Dates[1]			
	From	To	Batch 1	2	3	4
Big Valley 001	6/17/76	6/23/76	submitted			
Big Valley 002	7/18/76	7/28/76	submitted			
Big Valley 003	8/19/76	8/29/76	submitted			
Big Valley 004	3/3/77	3/18/77	submitted			

All data and the final for this task order have been submitted.

NOTE: [1] Data Management Plan submitted August 16, 1976, we await formal approval by Contracting Officer.

OCS COORDINATION OFFICE

University of Alaska

ENVIRONMENTAL DATA SUBMISSION SCHEDULE

DATE: March 31, 1978

CONTRACT NUMBER: 03-5-022-56 T/O NUMBER: 30 R.U. NUMBER: 502

PRINCIPAL INVESTIGATOR: Dr. H. M. Feder
University of Alaska

Submission dates are estimated only and will be updated, if necessary, each quarter. Data batches refer to data as identified in the data management plan

Cruise/Field Operation	Collection Dates		Estimated Submission Dates[1]		
	From	To	Batch 1		
Miller Freeman	9/1/76	10/15/76	submitted		

All data and the final report for this task order have been submitted.

Note: [1] Data management plan was submitted on 8/30/76, approved by M. Pelto on 9/13/76; we await approval by the contracting officer.

OCS COORDINATION OFFICE

University of Alaska

ENVIRONMENTAL DATA SUBMISSION SCHEDULE

DATE: March 31, 1978

CONTRACT NUMBER: 03-5-022-56 T/O NUMBER: 32 R.U. NUMBER: 537

PRINCIPAL INVESTIGATORS: Dr. D. M. Schell and Dr. J. B. Matthews

Submission dates are estimated only and will be updated, if necessary, each quarter. Data batches refer to data as identified in the data management plan

Cruise/Field Operation	Collection Dates		Estimated Submission Dates[1]		
	From	To	Batch 1		
Dease Sampling Trip 1	3/31/77		6/30/78		
Elson Lagoon Sampling Trip 1	5/23/77		6/30/78		

OCS COORDINATION OFFICE

University of Alaska

ENVIRONMENTAL DATA SUBMISSION SCHEDULE

DATE: March 31, 1978

CONTRACT NUMBER: 03-5-022-56 T/O NUMBER: 33 R.U. NUMBER: 529

PRINCIPAL INVESTIGATOR: Dr. H. S. Naidu

Submission dates are estimated only and will be updated, if necessary, each quarter. Data batches refer to data as identified in the data management plan

Cruise/Field Operation	Collection Dates		Estimated Submission Dates[1]			
	From	To	Batch 1	2	3	4
Archived Samples			6/30/78	9/39/78	6/30/78	8/30/78
Simpson Lagoon	8/77		6/30/78	9/30/78	Submitted	8/30/78
Barrier Islands	8/77		None	9/30/78	None	None
Glacier	8/77	9/6/77	6/30/78	None	6/30/78	8/30/78

1 Data Management Plan has been submitted to the Arctic Project Office. We await approval.

OCS COORDINATION OFFICE

University of Alaska

ENVIRONMENTAL DATA SUBMISSION SCHEDULE

DATE: March 31, 1978

CONTRACT NUMBER: 03-5-022-56 T/O NUMBER: 34 R.U. NUMBER: 530

PRINCIPAL INVESTIGATOR: Dr. P. Jan Cannon

No environmental data are to be taken by this task order as indicated in the Data Management Plan. A schedule of submission is therefore not applicable[1].

1 Data Management Plan has been submitted to the Arctic Project Office. We await approval.

ANNUAL REPORT

Research Units : 362, 363 and 497

Reporting Period: 1 April 1977-31 March 1978

RU362 - Establish and Service a Product Marine Baseline Data Base for the Alaska MEA Program

John J. Audet
Environmental Data Service (NODC)

RU363 - Bibliographic Support to Alaskan Outer Continental Shelf Environmental Assessment Program Principal Investigators

James Stear
Environmental Data Service (ESIC)

RU497 - Alaskan Data Processing Facility-Environmental Data Service

Michael F. Crane
Environmental Data Service (NODC)

31 March 1978

ANNUAL REPORT

1 April 1977 - 31 March 1978

RU362 - Establish and Service a Product Marine Baseline Data Base
for the Alaska MEA Program

John J. Audet
NODC OCSEAP Data Coordinator

31 March 1978

CONTENTS - RU362

DATA PROCESSING

Detailed information pertaining to data sets and data reports received and processed by the Data Centers is included in the March 1978 data tracking system and file type summary (distributed separately) and other summary tables (Appendices A and B) attached to this report. The majority of data received during the past year were biological data sets. A summary of data sets, data reports and ROSCOPs received during the year is as follows:

Table 1. Data, Data Reports and ROSCOPs Received from April 1977 to March 1978

	Total	Apr-Jun 77	Jul-Sep 77	Oct-Dec 77	Jan-Mar 78*
A. Digital Data					
Biological	274	12	25	118	129
Physical	78	9	47	11	11
Chemical	21	0	5	0	16
Geological	2	0	0	2	0
Non-OCSEAP Format+	11	4	3	2	2
	396	25	80	133	158
B. Seismic & Earthquake Data	8	2	2	2	2
C. Data Reports	136	58	39	32	6
D. ROSCOPs	184	49	38	63	34

*Includes digital data, reports and ROSCOPs received through March 15.
+Non-OCSEAP refers to digital data sets received in non-OCSEAP formats and includes surface pressure, microbiological and certain fish specimen data.

Data continue to be received at EDS in various forms, but primarily on magnetic tape. Some punched card data have been received and a significant number of diskettes received through Mike Crane's task (RU497) and directly from investigators. NGSDC also receives analog data as well as digital data from some investigators.

In December, the OCSEAP earthquake data were merged with the NGSDC hypocenter data file.

Five tapes, consisting of digital coastlines for the world's land mass areas, were received at NGSDC from the CIA in August 1977. Copies of these tapes have been forwarded to NODC for application to future geographic plots for BLM and OCSEAP requests and for the data catalog.

A number of modifications and changes in procedures for processing data at NODC have been implemented during the past year. All digital data are now scanned for latitude, longitude, dates and station numbers for input to the inventory system. Data checking programs now operate which check for specific parameter ranges as well as logical structure (proper record types, correct order of the data arranged within stations, etc.). Information concerning any errors found is then forwarded to the Project Offices and to the investigators. Many technical errors are corrected by NODC during processing, often with help from the Anchorage and Seattle Liaison offices, which prevents lengthy delays in completing processing and eliminates large numbers of data sets from being in a 'hold' status.

Although the more comprehensive checking programs often require more time and effort to process each data set, the rate of data processed has increased greatly over the past year compared to the previous year as shown in the following table of data sets processed per quarter:

Table 2. Comparison of Digital Data Processed over the Past Two Years

	Total	Apr-Jun 77	Jul-Sep 77	Oct-Dec 77	Jan-Mar 78
1977-78	434	215	41	81	97*
1976-77	91	10	24	20	37

*Includes data processed through March 15, 1978.

Although, per data set, at least equal resources are required, these totals (for both years) exclude data that have been processed and subsequently replaced by resubmissions of the same data set. Each unique data set is only counted once for processing purposes. Although no exact count is available, the total number of resubmissions has exceeded 100 data sets to date.

Another important development in data processing is the generation of master or archival tapes for all data final processed for each file type. All data are subjected to the most recent version of the data checking program to assure a more consistent check of data parameters. Investigators are notified (along with OCSEAP management), of additional errors found in the data sets. To date, master tapes have been completed for file type 043 (Hydrocarbons), 029 (Primary Productivity) and 015 (Current Meters).

The addition of taxonomic code inventories has recently been implemented and included in data checking and parameter inventory summaries. These lists of codes, with scientific names and common names (where available), will be forwarded to the Project Offices to assist their personnel in reviewing individual investigator data submissions.

All codes used in OCSEAP formats are being digitized using Crane's keyentry facility (RU497). Work is approximately 50 percent completed. This digital listing of codes will be included in Part III of the planned Data Catalog. Access to this file will allow for more convenient and automated translation of the codes as inventories and retrievals are completed.

DATA REQUESTS

A total of 54 requests for data, data products and OCSEAP data reports have been received by the EDS data centers (NODC, NCC, and NGSDC). Requests that were not coordinated through the NODC OCSEAP Data Coordinator are not included in this total. Requests for data formats, products from the Data Tracking System and copies of the Data Catalog and NODC Taxonomic Codes also are excluded. Distribution of these reports are discussed elsewhere.

During the past year, requests have been primarily for OCSEAP data by investigators and OCSEAP Offices (as shown below) in contrast to the previous year when the majority of requests were for archived data.

Table 3. Summary of Data Requests

Requestor	Data Type	Total	Apr-Jun 77	Jul-Sep 77	Oct-Dec 77	Jan-Mar 78
BLM	OCSEAP	5	1	1	3	0
	Archives	0	0	0	0	0
OCSEAP Offices	OCSEAP	16	4	4	2	6
	Archives	1	0	0	1	0
OCSEAP PIs	OCSEAP	16	1	6	7	2
	Archives	5	4	0	1	0
Non-OCSEAP Requestors	OCSEAP	11	1	3	4	3
	Archives	NA	NA	NA	NA	NA
TOTALS		54	11	14	18	11

Some of the more relevant requests for OCSEAP and related data are listed below.

Table 4. Examples of Data Requests - April 77-March 78

Requestor	Description
U. Alaska (Geo. Inst.)	XBT/MBT data for Norton and Chukchi areas
U. Alaska (IMS)	US Coast Guard ocean station data (continuing request)
OCSEAP/BLM	Sample earthquake plot products
Juneau Project Office	Plots of temperature, salinity and density for a selected cruise
SAI (California)	Tape copies of selected OCSEAP data files (file types 029, 032 and 073)
U. Alaska (IMS)	Tape copy of selected STD data files

Requestor	Description
AEIDC	Listing and plots of OCSEAP stations with ichthyoplankton and mesoplankton species within 200 miles of Alaskan coast
U. Alaska (IMS)	Listing and plots of selected stations and file types for Kodiak lease area
U. Alaska (Geo. Inst.)	Annotated plots of bottom temperature data from selected OCSEAP cruises in the Beaufort and Chukchi Seas
BLM (Anchorage)	Listing and plots of OCSEAP data containing selected coral species in Alaskan waters
Juneau Project Office	Inventories and data descriptions for OCSEAP Hazard, Transport, Biological and Chemical data in Lower Cook Inlet
BLM (Anchorage)	Listing and tape copy of monthly inventories of species currently identified in Beaufort Sea by OCSEAP investigators; prey/predator species itemized for available mammal data
INSTAAR	Geophysical data products for Beaufort and Chukchi areas
Juneau Project Office	Listing of available geological data for Lower Cook Inlet
Research Mgmt. Assoc.	Tape copy of 1975-76 intertidal data (RU78) and NODC/Alaska taxonomic code on tape
OCSEAP Program Office	Selected marine bird population estimates for Pribilof and Middleton Islands (request not yet completed)
Alaska Fish and Game	Seasonal marine bird species plots for Lower Cook area (to be completed in March)
OCSEAP Program Office/SAI-Boulder	Products for 'Program Product List' - includes selected plots for physical, chemical, geological, geophysical, and biological data in OCSEAP data files. Products are to be generated for each lease area and for seasonal or monthly presentations where data are adequate. Some products have been completed - others still being developed.

DATA INVENTORIES, CATALOGS AND TRACKING SYSTEM

The first edition of Part I of the Data Catalog was completed and distributed to over 150 individuals (copies are no longer available as the entire supply has been distributed). The first edition included all station locations for digital data received by the Data Centers through April 1977 for biological, physical, chemical, and geological data. Also included were the locations of OCSEAP microbiology data files held by the National Institutes of Health. The second edition, planned for distribution in April 1978, will include all the above plus epicenter data locations received by NGSDC for OCSEAP studies.

Parts II and III of the Data Catalog also are being completed. Part II will consist of an inventory of data sets sorted by lease area and identified by investigator, agency, platform information, and number of stations in each data set. It is planned for distribution with Part I revised.

Part III will describe each file type with a list of parameters and codes and the format layout. An index of parameters by relevant file types will be included. Distribution of Part III is planned for June 1978.

Other inventory activities included the documentation and distribution of instructions for access to the OCSEAP inventory file (DIP). Copies were forwarded to OCSEAP Offices and EDS liaison offices.

Updated versions of the OCSEAP Data Tracking System and the related File Type Summary have been distributed to BLM, OCSEAP and EDS personnel on a quarterly basis. During the past year approximately 1500 new records and over 10,000 updates to existing records were entered in the system.

Lists of late data sets, late ROSCOPs, and other management products derived from the tracking system have been supplied to the Project and Program Offices. A revised phone and address list sorted by RU and investigator name (also from the tracking system) was completed in January 1978 and distributed to OCSEAP data management personnel.

An updated version of the Alaskan Environmental Data Base Directory (EDBD) was completed during the first quarter of the past year. A complete copy, consisting of five volumes, was forwarded to BLM-Anchorage.

FORMAT DEVELOPMENT

A system for format approval was developed during the past year where draft versions of proposed formats and modified formats were completed by NODC or NGSDC using inputs from investigators and OCSEAP management personnel. These drafts were then distributed to OCSEAP management for final review prior to distribution to any investigators. When final approval was received, the Data Centers then distributed copies of the formats with any further modifications included to investigators as designated by the Project Offices.

Since April, 1977, 22 formats were developed or modified (several more than once) and 41 codes generated or modified. Approval for further distribution has been received from the Program Office in February 1978 for 19 formats recommended as acceptable in their present form. Eleven other formats are to be considered subject to further review and two formats indicated as unused by OCSEAP (file types 074 and 075). A summary of the formats and their current dates is included in Appendix C. Distribution of the current version of each format and the related codes to the appropriate investigators will be completed by NODC upon receipt of the lists of investigators from the Project Offices.

A digital form of all codes associated with OCSEAP formats is being completed by Mike Crane's Anchorage office (RU497) for more convenient retrieval and automatic translation and for inclusion in Part III of the Data Catalog planned for distribution in June 1978.

A revised edition of all OCSEAP format cover sheets was completed and distributed to OCSEAP data management personnel in June 1977.

DATA PRODUCT DEVELOPMENT

In addition to requests for specific products, efforts are underway to develop a family of products from the different OCSEAP file types. A status of all product development concerning OCSEAP data was forwarded to the Program Office in May 1977. Further discussions concerning product development were conducted during the OCSEAP data management meeting at Lake Quinault, Washington in June 1977 and during visits of Wayne Fischer and other Program Office personnel to NODC during the year.

The direction that OCSEAP product development will take within EDS has been determined essentially from the 'Data Product Compendium' generated by the Program Office. Time-series displays, vertical and horizontal arrays and contour plots, vector and rotary plots and three-dimensional displays are all being considered as part of this family of products. Progress in some areas depends on the availability of adequate, correct data to test software packages and output presentations. For other areas, products have been developed but must be modified repeatedly to correctly interpret data parameters unique to OCSEAP and other non-standard data types.

A sample 'product brochure' is being assembled by the Data Centers to display examples of each type of OCSEAP product (on page size where possible). Copies of these brochures will be made available to the OCSEAP Offices and EDS Liaison Offices.

Detailed explanations for computing marine bird distribution and relative abundance and presentations of tabular data using file type 033 data were received from U. S. Fish and Wildlife Service personnel. The procedures described are being considered for future applications within NODC for presenting USFWS and other investigator data submitted in the same format.

A series of plots for individual data sets for OCSEAP STD/CTD measurements were generated using the DIP inventory system and the CRT terminal at NODC. Copies of these plots were forwarded to the Project Offices for their information.

TAXONOMIC CODE DEVELOPMENTS

The revised and updated NODC taxonomic code was distributed in March 1977. Requests for additional codes continue to be received and serviced by NODC with Dr. Mueller of the University of Alaska acting as consultant.

Computer programs are now available to match equivalent new codes to the earlier Alaskan codes and to list scientific and common names for each code (where this information is available).

An inventory of unique species for each data set is now incorporated into NODC data checking procedures. Copies will be forwarded to the Project Offices along with a list of data errors, logic errors, and other parameter inventory information.

Several taxonomic code newsletters—the Nomenclature Code News Note—have been distributed during the past year. These newsletters document changes to be made in the new code list, explanations of proper uses of the codes and have included the bibliographic reference list used to construct the hierarchy of the taxonomic file.

Summary of Fourth Quarter (January - March 1978)

Data Base Management Activities

Digital Data Received This Quarter

A total of 168 data sets were received this quarter through March 15 (29 in January, 81 in February and 58 in March). A total of 96 data sets were final processed during the quarter. The file types received are as follows:

021 - Trace Metals	1
022 - STD Data	5
023 - Fish Resource	32
027 - Marine Mammal Sighting	51
032 - Benthic Organisms	2
033 - Marine Bird Sighting	51
034 - Marine Bird Land Census	1
035 - Marine Bird Colony	1
040 - Marine Bird Habitat	7
056 - Lagrangian Drifters	17
	168

Data Reports

Only 6 data reports were received this quarter. A total of 263 reports have been received and entered in the data tracking system to date. The reports received during the quarter included two reports on plankton and one each on fish resources, intertidal studies, marine birds, and physical oceanography.

ROSCOPS

Thirty-four ROSCOPs were received during the quarter (22 in January, 11 in February and 1 in March). ROSCOPs were received from USFWS, PMEL, NMFS, USGS, ADF&G, Univ. Alaska, Univ. Washington, College of the Atlantic and Dames and Moore.

Data Requests

A variety of OCSEAP requests were received this quarter ranging from copies of data reports, taxonomic codes and OCSEAP data formats to computer plots of selected bird species and bottom temperature values for specific areas. The major requests included the following:

. Magnetic tape copy of FY 75-76 intertidal data (RU 78/79) plus NODC/ Alaska taxonomic codes - requested by Research Management Associates.

. Copy of lease area charts plotted at the BLM EIS projection and scale - requested by SAI-Boulder.

. Selected marine bird species distribution plots for Pribilof and Middleton Islands - requested by Program Office (not yet completed).

. Bottom temperature plots for Chukchi and Beaufort Seas - requested by Univ. Alaska - Geophysical Inst. (RU 253). - One of two requests completed

. Seasonal marine bird species plots for Lower Cook plotted on UTM projection - requested by ADF&G (RU 003) - to be completed by end of March.

. Sea surface temperature values for Lower Cook from selected OCSEAP cruises - requested by Juneau Project Office.

. Completion of Lower Cook data inventory evaluation and data summaries - requested by Juneau Project Office.

. Completion of prey/predator list for Beaufort Sea (only mammal predator data available) - requested by BLM-Anchorage.

. Begin Program Product List for 'annual report'. Tasks include plot and summary products for selected physical, chemical and biological data currently in the data base. Products will be generated for each lease area where data are available with highest priority to Kodiak, followed in order by Lower Cook, Beaufort, Norton and NEGOA and the remaining four lease areas. Several shipments have been forwarded to the Program Office including hydrocarbon contour plots, ice movement and Lagrangian drifters. STD and current meter plots will follow shortly with selected biological products to be completed in April. NGSDC is preparing similar plot products for 'Hazards' data, e.g. earthquake epicenter locations, vertical cross-sections of hypocenter data and three-dimensional plots showing frequency and magnitude of earthquakes for Gulf of Alaska lease areas. Other data, such as NOS bathymetric data, will be reviewed as the data become available to NGSDC.

Format Development

Proposed Marine Bird Specimen and Bird Colony formats were reviewed and discussed during a visit of Juneau Project personnel to NODC, a meeting at Pt. Barrow between NODC, the Arctic Project and OCSEAP investigators and a meeting at Boulder between NODC, Program and Project Office personnel and bird colony investigators.

A list of approved formats was distributed by the Program Office initiating action concerning the distribution of up-to-date formats to investigators. Project Offices will provide a list of appropriate investigators and data processors for the NODC distribution of each file type.

FACT sheets were distributed in January and March documenting all format modifications, new codes and code additions. No known modifications are outstanding at this date.

Data Processing

Tapes of all final processed data are being compiled for each file type with all data being subjected to the most current data checking procedures at NODC. In addition to file types 043 (Hydrocarbons) and 029 (Primary Productivity) completed last quarter, file type 015 (Current Meters) has been completed. File type 056 (Lagrangian Current Measurements) is nearing completion. Documentation of any errors or questionable values found during this processing have been distributed to OCSEAP management and to the investigators.

Data Catalogs/Inventories

Work to revise Part I of the data catalog is underway with printing and distribution now planned for April. Preliminary versions of Parts II and III have been completed with distribution planned for April and June respectively.

Part II will consist of a listing of data sets sorted by lease area. Part III will describe each file type with a list of parameters and codes and a format layout included.

NGSDC has forwarded to NODC location information for 072 (Beach Profiles) and 073 (Grain Size Analysis) data for inclusion in the revised Data Catalog.

Meetings

. Beaufort Sea Data Synthesis meeting at Pt. Barrow - discussed data processing and data products with investigators, BLM and NOAA personnel in addition to attending scheduled workshops.

. Visits by Wayne Fischer, Francesca Cava and Marcy Butcher to NODC - concerned various aspects of OCSEAP data management.

. Visit to Program Office/SAI by NODC data products personnel to discuss products needed for 'Program Product List'.

. Visit to Rhode Island University by NODC data processing personnel to discuss with Juneau Project Office and U.R.I. computer staff marine bird processing techniques and other potential areas of assistance that their group might offer.

. Marine Bird Colony Format meeting at Boulder to discuss and review OCSEAP file type 035 and proposed USFWS colony format with OCSEAP management and marine bird colony investigators.

. Meeting between NGSDC personnel and USGS - Menlo Park personnel to discuss flow of data to NGSDC from USGS.

. Discussed disposition of non-digital data with INSTAAR and University of Alaska personnel resulting from OCSEAP and other programs.

PROBLEMS

Data resubmissions continue to create problems within the NODC processing system, especially when the original data have been final processed. It is necessary to purge original inventory and catalog information, recover original and user copies of tapes, change data tracking and other data log information and re-initiate processing of the resubmitted data. In addition to inconvenience, costly time and labor are lost, not only in purging and changing prior records, but in processing efforts that are being duplicated for the same data set.

It is essential that data submissions be verified at the Project level as to their status as final submissions. EDS should not receive preliminary or partial submissions if the Data Centers are expected to maintain the planned data set processing rate. Many data products already generated become suspect when data used in these products are later replaced by other versions of the same data sets.

Telecommunication problems between Alaskan offices and the NODC OCSEAP data base inventory and tracking system continue to exist. Efforts are continuing to improve this situation, especially with respect to Crane's facility in Anchorage.

Limited human resources for responding in a timely manner to urgent data requests and for completing often complex product development efforts continue to exist at NODC. A priority scheme has been established but does not always resolve delays in answering investigator requests when BLM and OCSEAP Office requests also are present in the system and impact on the same data product personnel.

GOALS (Next Quarter)

The major goals for RU362 for the next quarter (April-June, 1978) are as follows:

- Print and distribute a revised Part I and new Part II Data Catalog.
- Complete draft copy of Part III of the Data Catalog.
- Improve the data checking procedures by (1) including ranges of values submitted for all parameters and related statistics for these values such as the mean and standard deviation and (2) including species information with all biological data set inventories.
- Develop a complete 'product brochure' that includes examples of all types of products developed to date with OCSEAP data.
- Complete the initial list of chemical, physical and biological data products designated by SAI and the Program Office for inclusion in the program 'annual report.'
- Improve response time for BLM and other requestors for data inventories and selected data summaries by satisfactorily completing the

communication link between Mike Crane's facility and NODC and by supplying the EDS liaison offices with selected processed data files for potential generation of certain data products. Copies of the archive tapes for file types 043 (Hydrocarbons) and 029 (Primary Productivity) have been forwarded to Crane's office along with a tape copy of the NODC/Alaskan taxonomic code.

- Begin return of originator tapes to originators for data sets final processed.

Appendix A. Data Set Summary by File Type (April 1977-March 1978)

File Type+	Total to Date	Rec'd Past Year	Apr-Jun 77	Jul-Sep 77	Oct-Dec 77	Jan-Mar 78*
013	6	1	-	1	-	-
015	37	6	-	1	5	-
017	15	5	2	2	1	-
021	8	4	-	3	-	1
022	72	29	6	13	5	5
023	158	33	4	4	4	21
024	30	15	3	3	9	-
025	32	18	-	-	18	-
026	33	1	-	-	1	-
027	76	51	-	-	-	51
028	54	3	1	-	2	-
029	151	3	1	-	2	-
030	14	7	-	4	3	-
032	27	14	2	3	7	2
033	96	88	-	4	37	47
034	6	3	1	1	1	-
035	35	31	-	4	26	1
037	8	8	-	-	8	-
040	24	7	-	-	-	7
043	9	2	-	2	-	-
056	81	33	-	27	-	6
057	2	0	-	-	-	-
061	15	15	-	-	-	15
063	1	1	-	1	-	-
072	1	1	-	-	1	-
073	5	1	-	-	1	-
101	9	5	1	4	-	-
non-OCSEAP	25	11	4	3	2	2
TOTALS	1030	396	25	80	133	158

+File Type names listed in Appendix C.

*Total through March 15, 1978.

Appendix B. Data Distribution by Lease Area (April 1977-March 1978)

File Type+	Total to Date	Total this Year*	Lease Area Codes 1	2	3	4	5	6	7	8	9
013	6	1	-	-	1	-	-	-	-	-	-
015	37	6	5	-	-	1	-	-	-	-	-
017	15	5	1	-	-	4	-	2	-	-	-
021	8	4	2	1	3	1	-	1	-	1	-
022	72	29	12	4	14	7	1	7	3	3	2
023	158	33	10	-	12	23	1	23	18	4	17
024	30	15	10	10	2	3	1	2	-	2	-
025	32	18	14	3	6	-	-	-	-	-	-
026	33	1	-	-	-	1	-	1	-	1	-
027	76	51	45	29	29	12	1	13	-	1	1
028	54	3	-	-	-	2	1	2	-	-	-
029	151	3	-	-	-	2	1	2	-	-	-
030	14	7	6	-	7	-	-	-	-	-	-
032	27	14	2	2	7	2	4	2	1	2	1
033	96	88	5	4	10	3	67	3	6	1	23
034	6	3	-	-	-	-	1	-	2	-	2
035	35	31	-	-	-	26	-	-	6	-	6
037	8	8	-	-	7	3	-	-	-	4	-
040	24	7	4	7	7	4	-	7	-	-	-
043	9	2	1	2	2	-	-	-	-	-	-
056	81	33	9	-	-	-	21	3	-	-	-
057	2	0	-	-	-	-	-	-	-	-	-
061	15	15	8	3	2	5	1	5	-	-	1
063	1	1	-	-	-	-	-	-	1	-	1
072	1	1	1	-	-	-	-	-	-	-	-
073	5	1	1	-	-	-	-	-	-	-	-
101	9	5	3	-	-	-	1	-	1	-	-
non-OCSEAP	25	11	6	4	5	3	1	3	1	3	1
TOTALS	1030	396									

+File Type names listed in Appendix C.

*Totals through March 15, 1978.

NOTE: Total data sets for all lease areas will exceed total data sets received because many data sets have stations in more than one lease area.

Lease Area Codes

1 Northeast Gulf of Alaska
2 Lower Cook Inlet
3 Kodiak Shelf
4 St. George Basin
5 Beaufort Sea
6 Bristol Bay
7 Norton Sound
8 Aleutian Shelf
9 Chukchi Sea

Appendix C. OCSEAP Data Formats

File Type	Format Name	Current Date of Format
013	Fish Pathology	5/77
015	Current Meters	2/76
017	Pressure Gauges	7/76
021	Trace Metals	8/77
022	STD/CTD	5/77
023	Fish Resource	5/77
024	Zooplankton	9/76
025	Marine Mammal Specimen	2/77
026	Marine Mammal Sighting II	1/77*
027	Marine Mammal Sighting I	1/77*
028	Phytoplankton	7/76
029	Primary Productivity	7/76
030	Intertidal Data	4/77*
032	Benthic Organisms	11/76
033	Marine Bird Census (Ship/Aircraft)	1/77*
034	Marine Bird Land Census	2/76*
035	Marine Bird Colony	1/77*
036	Marine Bird - Ship Followers	2/76*
037	Feeding Flock	1/77*
038	Migratory Bird Sea Watch	6/77*
040	Marine Bird Habitat	1/77*
043	Hydrocarbon I	11/77
044	Hydrocarbon II	(Draft)*
056	Lagrangian Current Measurements	1/77
057	Herring Spawning	6/77
061	Trace Elements	2/77
063	Marine Invertebrate Pathology	6/77
072	Beach Profiles	3/77
073	Grain Size Analysis	2/77
100	Intertidal/Subtidal	11/77
101	Wind Data	8/76

*Subject to further review.

Appendix D. Major EDS Meetings, Travel and Administrative Activities for RU362 (April 1, 1977-March 31, 1978)

4/77 Wayne Fischer and Doug Wolfe meeting with NODC personnel at NODC to discuss OCSEAP data requests and data product development.

6/77 Pete Topoly visit to Juneau Project Office to discuss improvements in data checking procedures.

6/77 Data Management meeting at Lake Quinault, Washington. Attendees from EDS included Jim Audet, Phil Hadsell, Gary Falk, Mike Crane and Dean Dale from NODC and Rod Combellick from NGSDC.

8/77 Mike Crane and Jim Audet meeting with Project and Program Office personnel in Boulder to discuss data base management tasks and responsibilities. Also met with NGSDC personnel while in Boulder.

9/77 Dean Dale attended OCSEAP Chemistry Meeting in Seattle.

9/77 New BLM-Anchorage personnel (Byron Morris and Gary Hufford) briefed by NODC personnel concerning data processing and operation and access to OCSEAP data base.

9/77 Jim Audet and Chris Noe discussed data processing and data product requirements with Project Office personnel in Juneau and with Mike Crane, BLM personnel and Ray Hadley (U. Alaska) in Anchorage.

9/77 Jim Audet and Chris Noe presented papers on the OCSEAP data base and the ENDEX system at the 28th AAAS Alaska Science Conference. Bruce Grant (NGSDC) also attended the conference.

9/77 Meetings between NODC, SAI and Program Office personnel held at NODC to discuss biostatistics package to be made available to NODC by SAI.

10/77 Rod Combellick moved from NGSDC to the Juneau Project Office to accept a position as Geology Tracker. Rod previously had been detailed since January 1, 1977 to a part-time position with the Program Office in addition to his NGSDC duties.

10/77 Mike McCann met with Program Office personnel in Boulder to discuss the OCSEAP data inventory and the data catalog.

10/77 Bob Stein met with Program Office personnel in Boulder to discuss a heavy hydrocarbon data format for OCSEAP data.

10/77 Mary Hollinger attended the OCSEAP Marine Bird and Mammal meeting in Fairbanks and discussed taxonomic code developments with Dr. Mueller.

11/77 Jim Audet briefed the new Alaska OCS representative, Bob Beauchamp, for the BLM Washington office.

11/77 Herb Bruce and Francesca Cava visited NODC to discuss aspects of data management.

1/78 Jim Audet attended the Beaufort Sea Data Synthesis meeting at Pt. Barrow, Alaska to discuss data processing and data products with BLM and NOAA personnel and OCSEAP investigators and to attend data synthesis workshops.

2/78 Wayne Fischer, Francesca Cava, and Marcy Butcher visited NODC to discuss aspects of data management including format modifications, data tracking and data processing.

2/78 Gary Falk visited the Program Office and SAI in Boulder to discuss specific products needed for the Program Product List.

2/78 Bob Stein visited Rhode Island University to discuss with Hal Petersen and Francesca Cava marine bird data processing techniques.

2/78 NGSDC personnel discussed disposition of non-digital data for OCSEAP and other programs with INSTAAR and University of Alaska personnel (Vigdorchik and Stringer).

2/78 NGSDC personnel met with Tom Chase (USGS-Menlo Park) to discuss the flow of data to NGSDC from USGS.

3/78 Jim Audet and Bob Stein met with Program and Project Office personnel and OCSEAP investigators to discuss the proposed USFWS bird colony format and modifications to file type 035.

3/78 Francesca Cava, Joe Dygas and Jan Arbegast (BLM Anchorage) met with NGSDC personnel and reviewed the work of the Solid Earth Geophysical Division and OCSEAP activities.

3/78 The position at NGSDC left vacant by Rod Combellick's move is in process of being filled with formal announcement scheduled for early April 1978.

ANNUAL REPORT

Environmental Science Information Center (ESIC)

RU363

A summary of the activities of the Environmental Science Information Center in support of OCSEAP for the period April 1, 1977 to March 31, 1978 is as follows:

(a) A total of 264 selective dissemination of information (SDI) searches were completed.

(b) A total of 16 retrospective searches were provided.

(c) The total cost for all services was $4.2K.

ANNUAL REPORT

RU	Contract No.
497	------
370	03-5-022-56

Reporting Period 1 April 1977

31 March 1978

pages 11

OCSEAP ALASKAN DATA PROCESSING FACILITY

Michael L. Crane

Michael L Crane

31 March 1978

INTRODUCTION

The Alaskan Outer Continental Shelf Environmental Assessment Program (OCSEAP) has, from the beginning, committed the program to a rigorous recording and archiving of digital environmental data. To provide the data base services to the OCSEA Program, the Environmental Data Service/NOAA has established a special operating group composed of oceanographers, programmers and managers. The data base functions are controlled by the National Oceanographic Data Center in Washington, D. C., coordinated by John J. Audet, Jr., and local service functions extend to EDS field offices in Anchorage and Seattle. This report covers the functions, activities and history of the EDS Anchorage Office.

The principal functions of the Anchorage Office are to support the data processing effort of the OCSEAP data base, to provide data entry services to investigators, provide support in data management to the project offices, assist investigators with specific ADP problems, and to assist the Alaska BLM/OCS Office in matters concerning the data base. To effect these goals, the University of Alaska has established a data processing office with the AEIDC and placed it under the management of the EDS Alaska Liaison Office. The computer resources are provided by interagency agreements, direct contracts or ADP equipment in the office space. The Anchorage Office is effective because of its proximity to the investigators and management of OCSEAP.

METHODS

To accomplish the goals and functions stated above, the facility has participated in both keyentry (data entry) and data control (data checking) tasks. To supplement the increasing amounts of data required to be keyentered, the Anchorage Office has reduced the backlog of the bird and mammal data. As the backlog was reduced, the emphasis shifted to data control, with a corresponding transfer of function and capability. Deadlines were monitored and additional resources were marshalled to meet commitments. Continued education and training of personnel is required to achieve the goals.

The keyentry task was begun in January 1977, and concentrated on data sets which OCSEAP management had identified as backlogged. As the keyentry progressed, deficiencies in the coding were noticed and corrections were made as the material was digitized. The evolutionary transition to control of the coding replaced the emphasis on speed of production. This process of monitoring the coding continued as the impact of data errors increased the processing time at the OCSEAP data base. The principle value of keyentry in the Anchorage Office was the minimizing of errors before data were digitized. The OCSEA Program gained two beneficial advantages, reduction in deliquent data sets and a reduction in data errors.

The incorporation of data control at the keyentry stage facilitated a smooth transfer to data checking. Because the process of checking was similar to the review of the coding material, the data control task evolved from occasional inspection of a data listing to a rigorous checking of specific data fields for completeness and accuracy.

A preventive approach has been the principle data control process in identifying and minimizing data errors. A significant portion of the checking centered on the adequacy of the coding of data. Before the data forms were keyentered, the operator would review the material and check for logic errors and coding adequacy. Corrections were made before the data were keyentered. The investigator would describe what he intended, his minimum standards and his coding approach. These were monitored as the work progressed and deviations were noted to the investigator. Sometimes, codes were changed after the data were processed. An example is the ice record conversion for file type 033, RU 196. Special listings were developed to isolate potential problems. With the assistance of Dr. Patrick Gould, a taxonomic sort listing dramatically improved the quality and speed in validating the taxonomy of file type 033 data from the U. S. Fish and Wildlife Service. Selected listings by record type helped Dennis McAllister, Alaska Department of Fish and Game, (for RU's 229 and 243). Each record type was listed on a page. Column alignment could be checked effeciently.

The sorting potential is a powerful tool in isolating record type errors. Computer utilities were used in conjunction with sort intrinsics at the Alaska Railroad's Burroughs computer. The data records were reformatted on the IBM 3741/IBM 129 system and cards were generated for the Burroughs computer. The results of the computer sorting were given to the investigator for his use. These services were offered as part of the data checking support to investigators. This approach is very efficient and gives quick results. The keyentry errors were reduced for several investigators by designing new coding forms (example, RU 229/243 marine mammal forms). The data control work begins even before the data are received by OCSEAP.

The review process expanded to additional sorts on other data fields beyond the taxonomic sort and record type listings were made to isolate record type errors. In October 1977, line by line checking on file type 033 data for George Divoky, RU 196, was instituted to insure proper coding and keyentry.

Because the OCSEAP data base was receiving blank tapes or unreadable magnetic tapes, all nine track tapes were sent to Anchorage to validate the readability of the media. Cards were converted to magnetic tape for shipment.

ACHIEVEMENTS

The data processing activities in Anchorage are grouped into two categories--keyentry and data control. The table below summarizes the keyentry activities. Keyentry is defined as the conversion of manuscripts, coding forms or log sheets into machine readable media, such as cards or diskettes.

RU	NAME	FILE TYPE	PROCESSED
083	Hunt	033	3
083	Hunt	035	24
196	Divoky	033	93
229	Pitcher	025	15
243	Calkins	025	13
337	Lensink	033	73
337	Senner	057	1
341	Bartonek	035	12*
341	Bartonek	038	13*
417	Lees	023	6
417	Lees	030	6
418	Hall	027	3

*In hold; may require additional processing.

Under the category of data control, the table below notes the data review activity. Data control is defined as the review of the data for format compliance and consistency and the correction of machine readable media. During calendar year 1977, all data control functions were labor intensive functions. A Wang 2200 VP was delivered in 1978, and programs are being written to check data rigorously by machine.

RU#	NAME	FILE TYPE	REVIEWED
003	Arneson	040	19
005	Feder	032	2
083	Hunt	033	1
083	Hunt	035	26
172	Connors	034	2
196	Divoky	033	77
229	Pitcher	025	14
230	Burns	025	14
231	Burns	026	5
237	Drury	033	4
237	Drury	035	5
243	Calkins	027	1
243	Calkins	025	10
281	Feder	032	2
284	Smith	023	8
289	Royer	022	5
337	Lensink	033	84
337	Lensink	038	3
341	Bartonek	035	1

RU#	NAME	FILE TYPE	REVIEWED
417	Lees	030	6
417	Lees	023	6
426	Cooney	024	2

Because the emphasis is changing, the Anchorage Office has begun a transition to data checking and data processing. New software will be written to determine the adequacy of digital data submitted to the OCSEAP data base. To fulfill this requirement, a Wang 2200 VP was ordered with IBM 3741 diskette compatibility.

The initial function of the Anchorage Office was to reduce the backlog of data to be submitted to OCSEAP. A summary of the keyentry by file type is given below.- The emphasis has been in the disciplines of birds and mammals.

FILE TYPE	KEYENTRY IN ANCHORAGE	*NODC DATA SETS	PER CENT OF TOTAL
023	6	158	4%
025	28	32	88%
027	3	76	4%
030	6	14	43%
033	170	96 +	177%
035	40	35	114%

*Reference: File type summary March 1978.
+Most data sets at URI

Keyentry is only part of the process in digitizing environmental data. The reduction or elimination of errors is another. The Anchorage Office will begin this process by checking the format content and syntax of data submitted to the OCSEAP data base.

Because the data base design incorporates only broad, systematic data checking, the logical place to check digital data in more detail is the Anchorage facility. Being near the management offices and near the investigators gives the Anchorage Office distinct advantages in fulfilling this task.

SYSTEM DESCRIPTION

A review of equipment should define the relationship between function and requirements addressed. Each piece fits a specific niche and the total configuration collectively fulfills the computing resources needed to process digital data within the budget limits established by OCSEAP management.

Wang 2200 VP	Basic interpreter, 3 diskette drives, printer
IBM 3741	Dual diskette, communications, printer
TI 735	Interactive data base querry.

The data processing within the facility uses IBM diskettes as data transmission media. Contracts with Alaska Mutual Savings Bank have been made to convert tapes to diskettes. Through interagency agreements, listings and utility access (sorts, etc.,) are made at the Alaska Railroad or the United States Air Force Base, Elmendorf, from tape media. Bulk listings from tape are faster outside the office, but controlled access listing is faster within the office. Currently, only Fortran or Cobol compilers are available in Anchorage. Check programs have been written by NODC in PL/1 but no compilers are available except the Fairbanks Honeywell computer at the University of Alaska.

A major requirement of data management couples checking with corrections. Check programs will be written in BASIC for the Wang 2200 VP and extensive corrections will be made "off-line" on the IBM 3741. Because the 3741 has a bisynchronous communications feature installed, direct RJE access is potentially available to the NODC computer in Washington, D. C. A "conversational" mode could be developed between Anchorage and the data base for data checking/corrections. Under that mode, data sets could be checked by either facility and corrected by either facility. Typically, errors detected by NODC could be corrected by the Anchorage Office after contacting the investigator.

The TI 735 will be used to querry the inventory files and bibliographic data bases. Current status of the Data Tracking System can be determined by using the TI 735 and TSO commands at the NODC computer.

ASSESSMENT OF DATA MANAGEMENT PROBLEMS

The emergence of resubmissions of digital data have increased at an alarming rate. Not that corrected data sets are unwelcome, but the magnitude of the problem and the impact on the OCSEAP data base has signaled a significant problem. The extra data processing time incurred will result in fewer unique data sets being processed than were estimated in the EDS work statements. Even more serious is the possibility that bad data may be used to produce products from which erroneous conclusions may be drawn. Hopefully, PIs will be encouraged to work with EDS personnel to make sure that only valid data, fully endorsed by the PI will become part of the OCSEAP data base. At the very least, if preliminary data sets are required by the project or program office, EDS should be instructed not to process the data until the verified version is submitted. Error rate analysis has been initiated in the Anchorage Office for data sets controlled since January 1978. Results of this analysis will be presented at the next data management meeting.

Another problem is the ability to routinely satisfy investigator requests for data products. Because the complexity of BLM/OCS data requests have increased significantly and because the Boulder Program Office has begun to develop products from the "Compendium of Data Products," the capacity of the OCSEAP data base to handle new request is heavily taxed. Investigator requests are being handled as rapidly as possible but may slip because of higher priority tasks. The OCSEA Program would therefore benefit if additional capacity to handle data products were installed in Anchorage.

RECOMMENDED SOLUTIONS

Closer contacts between EDS personnel and PIs that show evidence of data processing problems.

Augment and emphasize data control and data product development within the Anchorage Office.

MILESTONES

An annotated history is presented to summarize the important milestones. Since the effective start date was January 1977, a chronology of events begins before the start of the annual report period.

January 1977 — Begin recruiting keyentry/processing personnel.

Start keyentry production in-house.

Monitor keyentry progress.

Accelerate U. S. Fish and Wildlife Service keyentry requested by the Juneau Project Office.

Begin keyentry production at commercial vendors.

April 1977 — Begin review of quality control of commercial firms

Add ADP-assisted control procedures; selected listings, sorted listings and media conversion.

Data management meeting at Lake Quinault.

July 1977 — Submit renewal proposal.

Review mini-computer vendors to reflect renewal guidance.

October 1977	Order placed with Wang for 2200 VP.
	Develop new procedures and new coding forms for selected investigators
January 1978	Modify equipment for telecommunication by installing FTS line.
	Delivery of Wang 2200 VP.
	Test system software and have vendor repair software.
	Complete Divoky data control.
April 1978	Begin software development on Wang.

ANNUAL REPORT

A GEOGRAPHIC BASED INFORMATION MANAGEMENT SYSTEM FOR PERMAFROST IN THE BEAUFORT AND CHUKCHI SEAS.

Michael Vigdorchik

Institute of Arctic and Alpine Research
University of Colorado
Boulder, Colorado 80309

April, 1977-March, 1978

Prepared for:

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
Environmental Research Laboratories
Outer Continental Shelf Environmental ASsessment Program
Research Unit Number: 516
Contract Number: 3-7-022-35127

CONTENT OF ANNUAL REPORT

I. Task Objectives

The Annual Report includes two independent parts corresponding to the two principal objectives of the work.

The first principal objective is to develop a computerized system to aid prediction of the distribution and characteristics of offshore permafrost. Development of this system involves (1) the gathering and study of all the source data about direct and indirect indicators of permafrost in the given area (depth, temperature and salinity of water, topography, bottom deposits, ice conditions, etc.) and (2) the compilation of the derived source maps and, subsequently, construction of candidate area maps for submarine permafrost in the Beaufort and Chukchi seas.

The second objective is to undertake a comprehensive review and analysis of past and current Soviet literature on subsea permafrost and related natural processes. The available materials related to problems of submarine permafrost origin and development were given in the Quarterly Reports in 1977; this annual report gives the short summary of these materials.

II. Summary of Results

First Objective:

Between April 1977 and April 1978, we have compiled the following source and derived maps:

Source Maps

1. Points of observation for sea water temperature and salinity in Beaufort and Chukchi seas.
2. Summer temperature of the sea water at the maximal sampling depth, interval of 0.2°C, Beaufort sea.
3. Summer temperature of the sea water at the maximal sampling depth, interval of 1°C, Beaufort and Chukchi seas.
4. Summer salinity of the sea water at the maximal sampling depth, interval of 1°/00, Beaufort and Chukchi seas.

5. Points of observation for bottom deposits grain size, Chukchi sea.

6. Gravel distribution, bottom deposit grain size map No. 1, Chukchi sea.

7. Gravel - medium sand distribution, bottom deposit grain size map No. 2 Chukchi sea, interval of 5%.

8. Gravel - very fine sand distribution bottom deposit grain size map No. 3 Chukchi sea, interval of 5%.

9. Gravel - coarse silt distribution, bottom deposit grain size map No. 4 Chukchi sea, interval of 5%.

10. Gravel - very fine silt distribution, bottom deposit grain size map No. 5 Chukchi sea, interval of 5%.

11. Clay distribution, bottom deposit grain size map No. 6 Chukchi sea, interval of 5%.

Derived Maps

12. Proximity of the maximal sampling depth to the bottom in %, interval of 10%.

13. Freezing temperature of sea water according to the summer salinity for the Northern Chukchi and Beaufort seas, interval of 0.1%.

14. Sea water supercooling during the summer at the maximum sampling depth for the Northern Chukchi and Beaufort seas, interval of 0.2%.

15. Probability of the sea water seasonal supercooling at the maximal sampling depth for the Northern Chukchi and Beaufort seas, in %.

16. Probability of the sea water seasonally supercooling at the bottom level with the real sampling depth taking into account for Beaufort and Chukchi seas (in progress).

Fifteen of these source and derived maps are included in the Annual Report. The distribution of the observations by months is given in Tables 1 and 2. The division of the 1:1,000,000 scale maps and areas provided by computerized maps are shown in Figure 1.

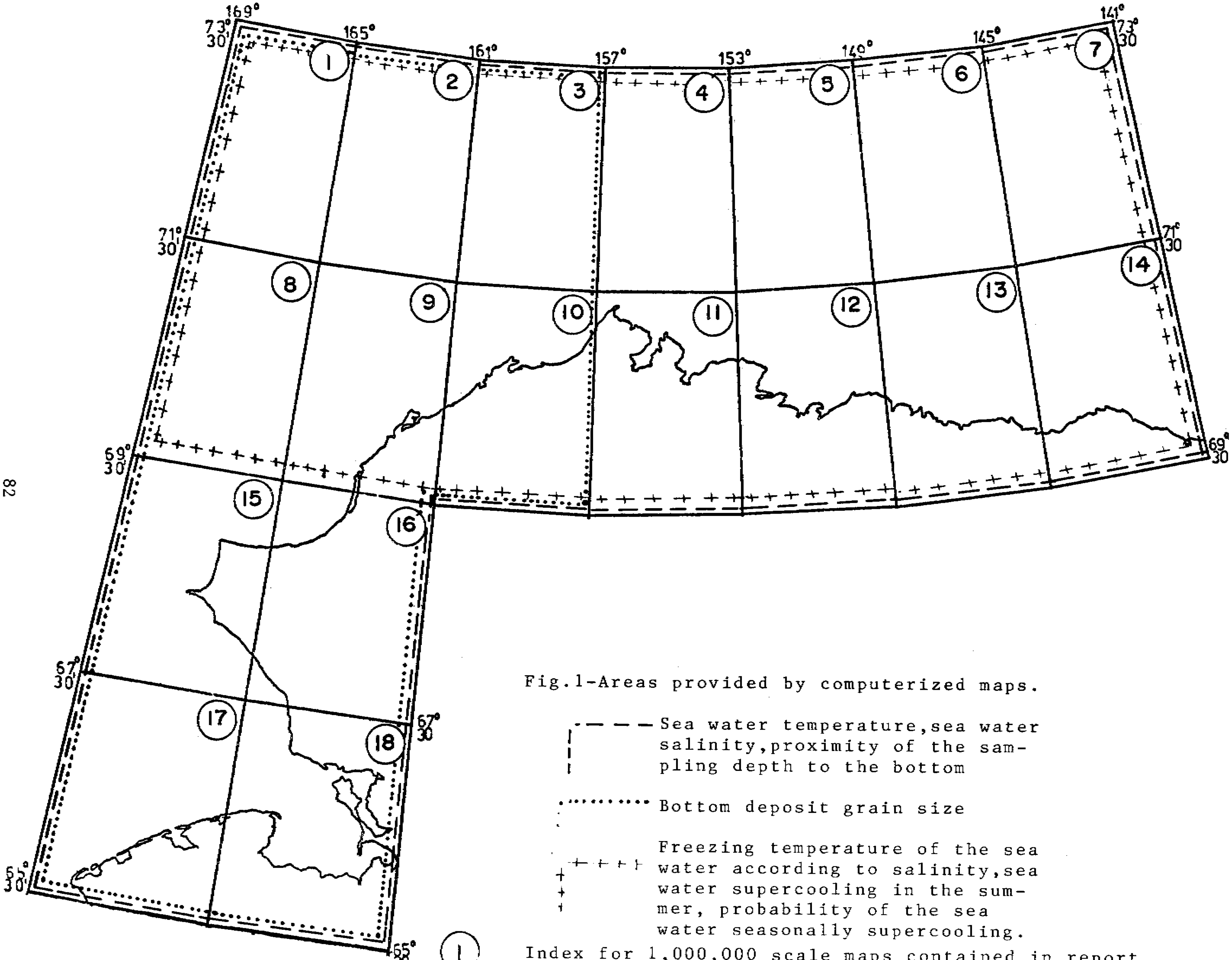


Fig.1-Areas provided by computerized maps.

Sea water temperature, sea water salinity, proximity of the sampling depth to the bottom

Bottom deposit grain size

Freezing temperature of the sea water according to salinity, sea water supercooling in the summer, probability of the sea water seasonally supercooling.

1 Index for 1,000,000 scale maps contained in report

The Interpolation Scheme

A 2-dimension first or second order polinomal interpolation seems to give the best results. The numerical scheme follows. If we wish to calculate the value of some physical or geological feature at points M (Xo, Yo), we first limit our considerations to the domain p' {(Xi, Yi)} , which satisfies the condition:

$$\sqrt{(Xo-Xi)^2 + (Yo-Yi)^2} \leq R$$

In other words, the point M is inside the circle of radius R. Each point (Xi, Yi) has a special weight Pi, which increases when (Xi, Yi) is near (Xo, Yo) and decreases elsewhere. At the point M (Xo, Yo), the value is equal to 1. We take point M as an origin or coordinates. The value of the function in each point inside our domain (1) can be approximated by polinom of 2nd degree or 1st degree.

$$Q_2(X,Y) = C_0 + C_1X + C_2Y + C_3X^2 + C_4XY + C_5Y^2$$

or

$$Q_1(X,Y) = C_0 + C_1X + C_2Y$$

We will now show how to calculate the unknown coefficients C_0, C_1, C_2, C_3, C_4, C_5 in the case of second order polinom. This is done by using the least squares numerical method. To find such coefficients that will give the minimum to the sum

$$S = \sum_{i=1}^{N} Pi\ (C_0 + C_1Xi + C_2Yi + C_3X^2i + C_4XiYi + C_5Yi - \varphi i)^2$$

Where N in number of observations inside the circle of radius R, (Xi, Yi) are coordinates of the given observations and φi are the values of the function (salinity, temperature, depth) at these points. In order to obtain a minimum

Table 1.

Distribution of observations by month - Beaufort Sea

Month	Number	Sampling Depth	Bottom	Temp.	Salinity
1	2	2	1	2	2
2	1	1	1	1	1
3	1	1	1	1	1
4	-	-	-	-	-
5	3	3	-	3	2
6	-	-	-	-	-
7	28	28	18	18	17
8	358	358	351	355	352
9	85	85	81	83	84
10	13	13	13	8	12
11	1	1	1	1	1
12	2	2	2	2	2
TOTALS	491	491	469	472	472

of S we must take the derivatives of this expression with regard to C_0, C_1, C_2, C_3, C_4 and C_5 and obtain six linear equations, which are called normal equations:

$$\frac{ds}{dc_0} = \frac{ds}{dc_1} = \frac{ds}{dc_2} = \frac{ds}{dc_3} = \frac{ds}{dc_4} = \frac{ds}{dc_5} = 0$$

$$C_0\ \Sigma Pi + C_1 \Sigma PiXi + C_2 \Sigma PiYi + C_3 \Sigma PiXi^2 + C_4 \Sigma PiXiYi + C_5 \Sigma PiYi^2 = \Sigma Pi\varphi i$$
$$C_0\ \Sigma PiXi + C_1 \Sigma PiXi^2 + C_2 \Sigma PiXiYi + C_3 \Sigma PiXi^3 + C_4 \Sigma PiXi^2Yi + C_5 \Sigma PiXiYi^2 = \Sigma PiXi\varphi i$$
$$C_0\ \Sigma PiYi + C_1 \Sigma PiXiYi + C_2 \Sigma PiYi^2 + C_3 \Sigma PiXi^2Yi + C_4 \Sigma PiXiYi^2 + C_5 \Sigma PiYi^3 = \Sigma PiXi\varphi i$$
$$C_0\ \Sigma PiXi^2 + C_1 \Sigma PiXi^3 + C_2 \Sigma PiXi^2Yi + C_3 \Sigma PiXi^4 + C_4 \Sigma PiXi^3Yi + C_5 \Sigma PiXi^2Yi^2 = \Sigma PiXi^2\varphi i$$
$$C_0\ \Sigma PiXiYi + C_1 \Sigma PiXi^2Yi + C_2 \Sigma PiXiYi^2 + C_3 \Sigma PiXi^3Yi + C_4 \Sigma PiXi^2Yi^2 + C_5 \Sigma PiXiYi^3 = \Sigma PiXiYi\varphi i$$
$$C_0\ \Sigma PiYi^2 + C_1 \Sigma PiXiYi^2 + C_2 \Sigma Pi\ Yi^3 + C_3 \Sigma PiXi^2Yi^2 + C_4 \Sigma PiXiYi^3 + C_5 \Sigma PiYi^4 = \Sigma PiYi\varphi i$$

Remembering that M (Xo, Yo) is the origin of the coordinates, we have only to find C_0; then φ(Xo, Yo) = C_0. When calculating the value of the needed function at point M, we need only to move to the next point and repeat the above calculations.

The value of Pi is a function of the distance

$$di = \sqrt{(Xi - Xo)^2 + (Yi - Yo)^2}$$

and must equal zero when di = R.

In our calculations we have chosen the expression

$$Pi = \left(\frac{R^2 - di^2}{di^2}\right)^2$$

The radius R was chosen as R = 25 ΔX, however, it is very important to be sure that at least six observations are inside the circle when using a second order interpolation and three observations when using a first order. Generally all calculations were made with second order polinomials. Occasionally, as a test

Table 2.

Distribution of observations by month - Chukchi Sea

Month	Number	Sampling Depth	Bottom	Temp.	Salinity	Grain Size
1	2	2	1	2	2	
2	1	1	1	1	1	
3	1	1	1	1	1	
4	12	12	12	12	12	
5	41	41	3	3	14	
6	28	28	28	28	26	
7	215	215	171	215	206	
8	1957	1957	1913	1957	1947	
9	1230	1213	1196	1228	1227	
10	213	213	213	209	208	
11	26	26	26	18	22	
21	2	2	2	2	2	
TOTAL	3718	3709	3567	3764	3668	1494

we used first order, and usually the results were almost the same. However, second order usually gives the smoothed contours.

Specifics of the Derived Map Compilation

In 1977 and early 1978 the derived maps were compiled for only the "sea water block" of the "Data Management System" (Fig. 2). In our further investigation we will continue the derived and interpretative map compilation for the "Geology," "Sea ice," and other "blocks" of our general system.

Freezing temperature of the sea water according to the real summer salinity (Fij) can be given by Savel'ev (1963)*

$$Fij = 2.6 \cdot 10^{-3} - 5.265 \cdot 10^{-2} S - 2.89 \cdot 10^{-5} S^2 - 3.6 \cdot 10^{-7} S^3 - 1.2 \cdot 10^{-9} S^3.$$

or using Krümmel's formula:

$$Fij = 0.003 - 0.0527S - 0.4 \cdot 10^{-4} S^2 - 0.4 \cdot 10^{-6} S^3.$$

To generate the map of this characteristic, we have used the second equation according to our real summer water salinity (Sij).

Sea Water Supercooling in Summer (Cij)

This map gives the difference between real summer water temperature (Tij) and freezing temperature (Fij).

$$Cij = Tij - Fij$$

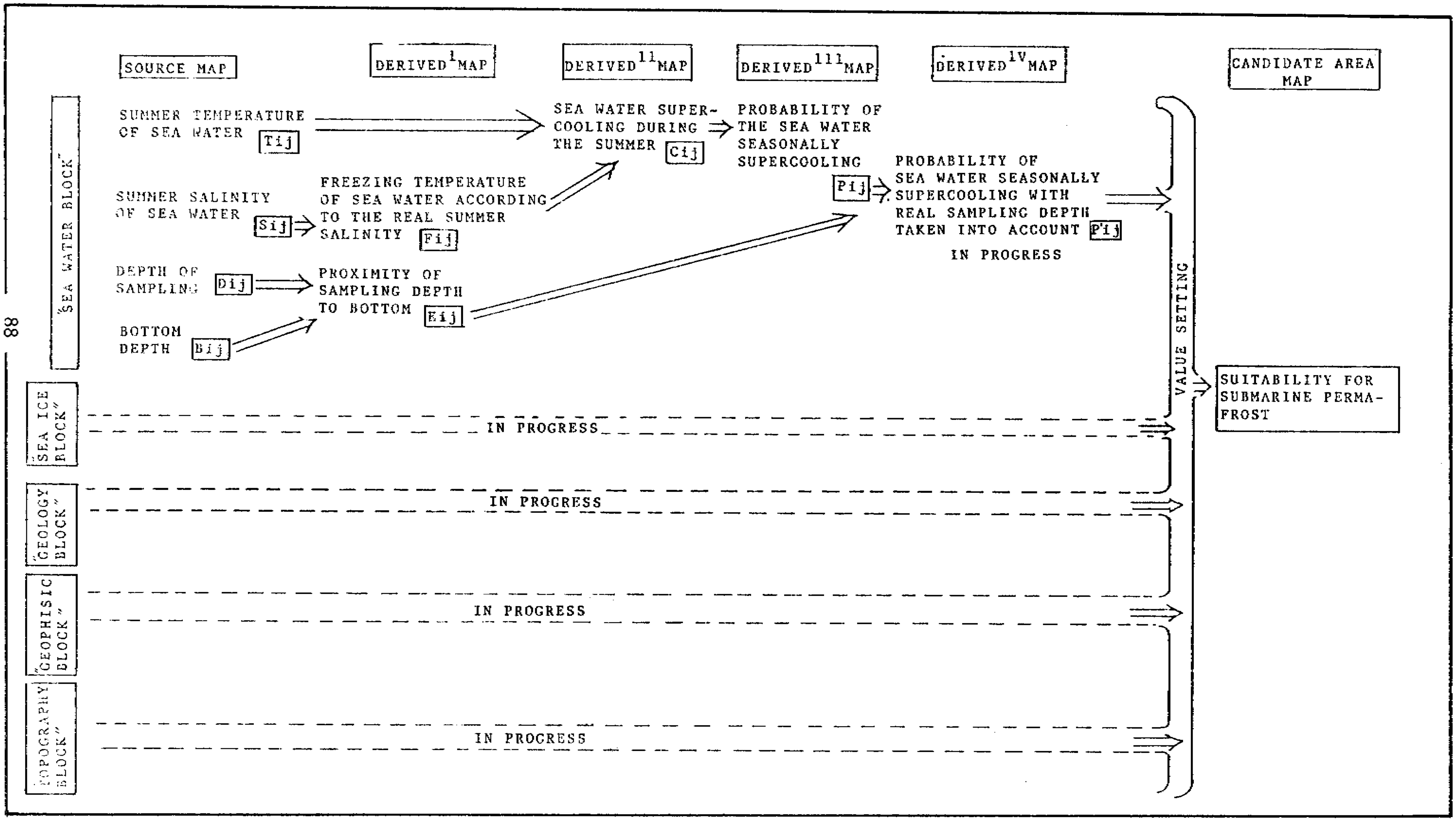
Probability of the Sea Water Seasonal Supercooling

Coachman (1966)** used bathometric observations from more than 300 oceanographic stations in the Arctic Basin to determine the deviations of the water temperature in the upper 50m layer from the freezing temperature for the given salinity (Fig. 3). The results of the calculations for depth levels of 5m and 25m were grouped according to months. They showed that the supercooling

* Savel'ev, B.A. Stroenie, sostav i svoistva ledyanogo pokrova morshikh i presnykh vodoemov (The Structure, Composition, and Properties of Ice Covers of Marine and Fresh Water Bodies). -Moskva, Izadatel'stvo Mosk. Gos. Universiteta. 1963

** L.K. Coachman. "Production of Supercooled Water During Sea Ice Formation" Contribution number 383, Dept. of Oceanography, Univ. of Washington 1966

Fig 2- "Sea water block"of the data management system for submarine permafrost prediction in the Beaufort and Chukchi Seas



of water in the Arctic Ocean is quite well-defined throughout the whole year, and that it is most pronounced from October to April. The greatest supercooling (0.13°) was observed at the end of February at a depth of 60m.

In the Beaufort sea, 0.07° supercooling of the water was recorded during the drift of ice island "T-3" (Coachman, 1966). Coachman also processed bathometric data for a 10m water layer, obtained during the drift of the "Maud" along the land side of the East Siberian Sea from April to June 1924. He established that the greatest supercoolings (close to 0.1°) were recorded at the surface of the sea from October to December, that is, from the time when low air temperatures began to be observed.

In the Soviet Union Chikovskii (1970)*, studying the supercooling of sea water under natural and laboratory conditions, made also the following important conclusions:

1. Under natural conditions, the supercooling of sea water depends directly on the distance between the observations point and the source of the supercooled water (on the open-water stretches and the velocity of the currents dispersing the supercooled water).

2. In the Arctic Ocean, mainly because of the warm Atlantic waters, supercooling is observed primarily in the upper 50m layer and only in exceptional cases at somewhat deeper levels.

3. The supercooling of a water mass located in the watery depths of the sea, the temperature of which is close to the freezing point, can apparently endure for a long time. This is because of the lack of any direct contact with an ice surface or with a bedrock surface, the presence of which would either sharply curtail or completely eliminate the supercooling of the water.

4. Under natural conditions, sea water contains considerably smaller amounts (sic) of different impurities in comparison with fresh water, and thus it would be supercooled to a greater degree. This result is verified by observations in nature.

However, in the calculations and diagrams, a temperature correction for the water pressure is as a rule, not introduced which distorts the results

* S.S. Chikovskii - Studies on ice physics and ice engineering - Arkticheskii i Antrarkticheskii Instit., Trudy, Vol. 300, 1970, p. 132.

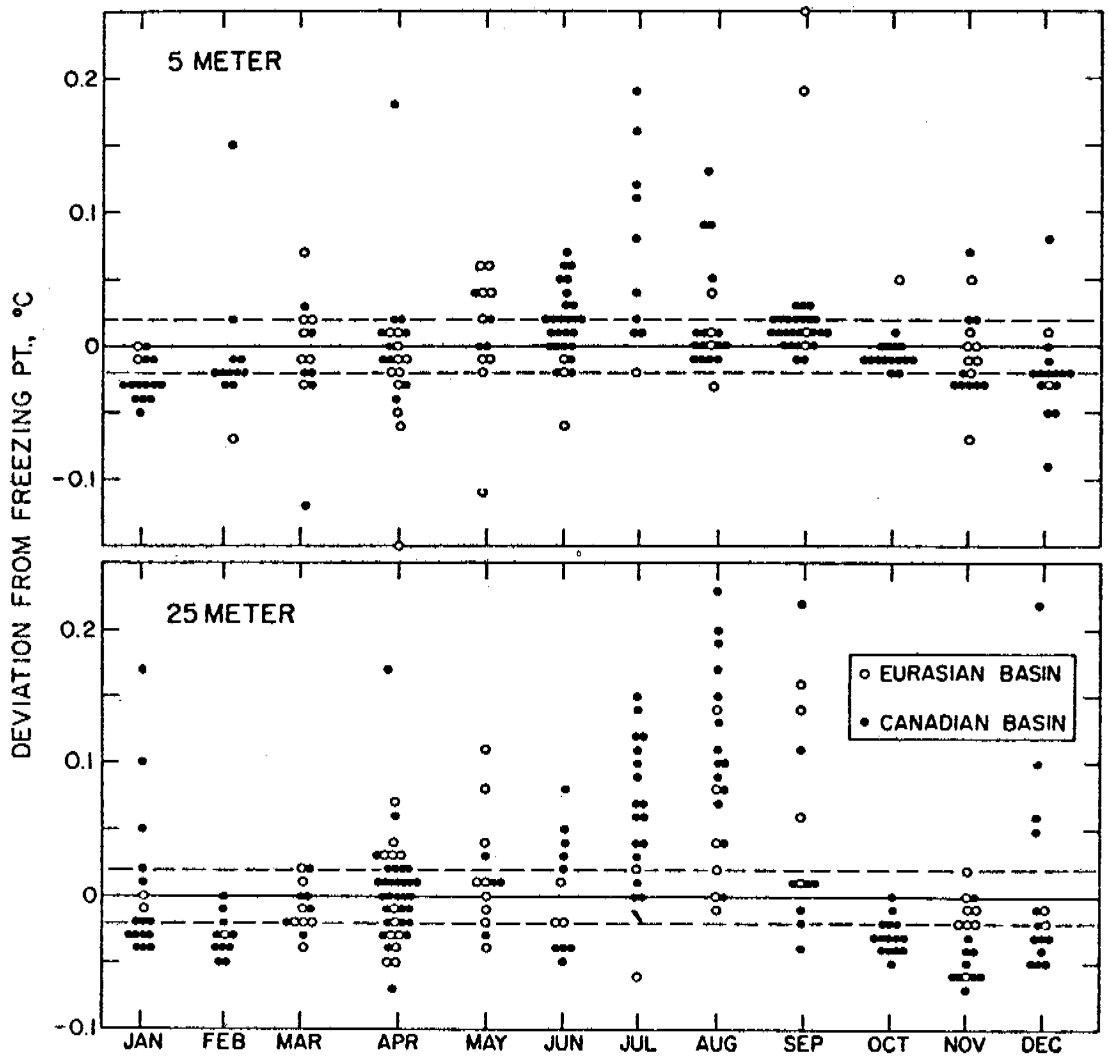


Fig.3-Temperature deviations from the freezing point at 5m and 25m, central Arctic Ocean, grouped by months. See table 1 for data sources. After, L.K.Coachman, 1966.

somewhat. But for the shelf of the shallow Beaufort and Chukchi seas this correction is not of great importance.

According to these data and ideas we have tried to generate the map of the sea water seasonal supercooling probability in the following way.

We first define a rectangular network with N points in WEST/EAST direction and M points in SOUTH/NORTH direction, so:

$i = 1,2 \ldots N$ (horizontal coordinate)

$j = 1,2 \ldots M$ (vertical coordinate)

At each point, we define

Dij - sampling depth

Bij - bottom depth

Tij - temperature at depth Dij

Sij - salinity at depth Dij

Fij - freezing temperature, computed by use of Sij

Cij - supercooling, which is Cij = Tij - Fij

Pij - probability of seasonal supercooling, which is

$$Pij \begin{cases} 100\% \text{ if } Dij \leq 2m \\ 0\% \text{ if } Dij \geq 60m \\ 100\% \text{ if } Cij \leq 0 \\ 0\% \text{ if } Cij \geq 0.2 \\ 100 - \dfrac{100Cij}{0.2} = 100 - 500 \cdot Cij \end{cases}$$

Following Coachman (1966) and Chikovskii (1970), we have found that usually Cij $\leq 0.2^{O}C$ and becomes negative if supercooled. Therefore, we simply perform linear interpolation between maximum positive value of $0.2^{O}C$ and minimum positive value of $0^{O}C$, for if it is negative, then it is already supercooled. We are seeking the conditions favorable for cooling of the bottom floor and bottom deposits. That is why we are interested more in the supercooling conditions at the bottom level, rather than the maximal sampling depth. Usual particles extensive near the bottom increases the possibility of the supercooling. The increase of the sampling depth proximity to the bottom also increases this possibility. Thus, taking this characteristic into account, we may do the following:

$$\text{If } Eij = \frac{Dij}{Bij} \qquad \text{(proximity)},$$

$$\text{then } Pij^{*} = \frac{Pij}{Eij}$$

Work on this map is now in process and will be included in the next report.

CHUKCHI SEA
BEAUFORT SEA

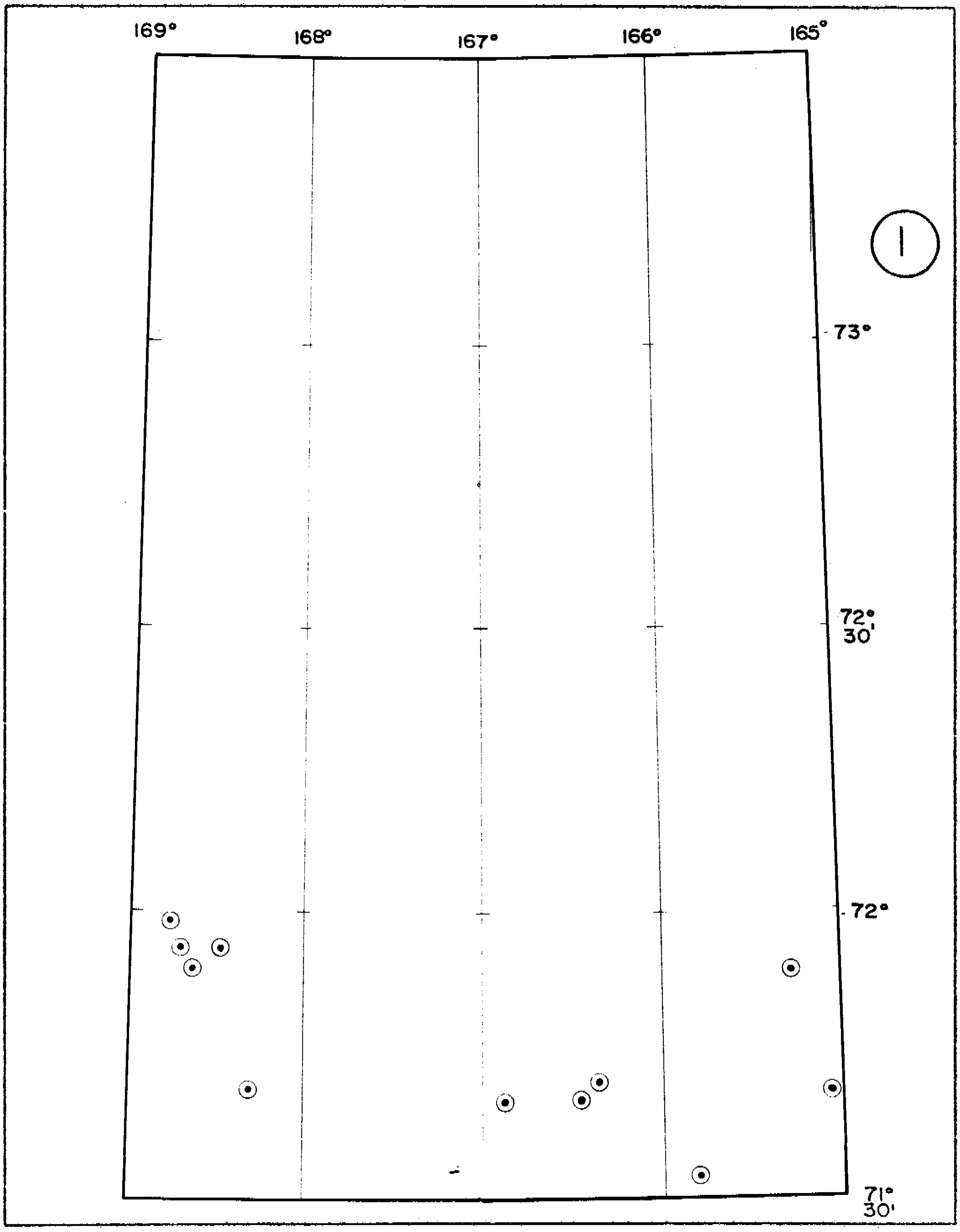
RESEARCH UNIT 516 OCSEAP
NOAA INSTAAR 1978

POINTS OF OBSERVATION FOR SEA WATER SALINITY AND TEMPERATURE

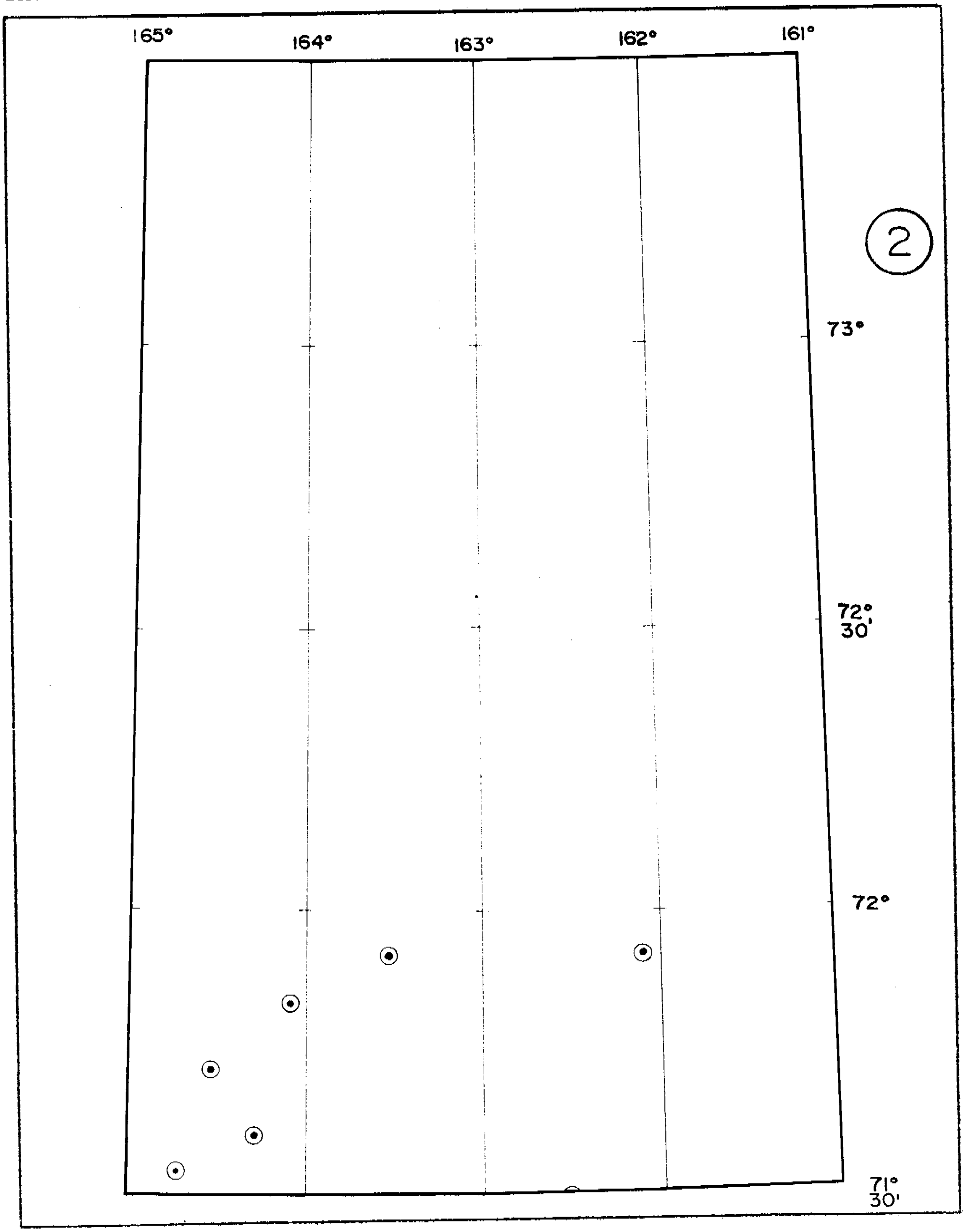
A SOURCE MAP FOR SUBMARINE PERMAFROST PREDICTION

GEOGRAPHIC BASED INFORMATION MANAGEMENT SYSTEM
FOR PERMAFROST IN THE CHUKCHI AND BEAUFORT SEAS

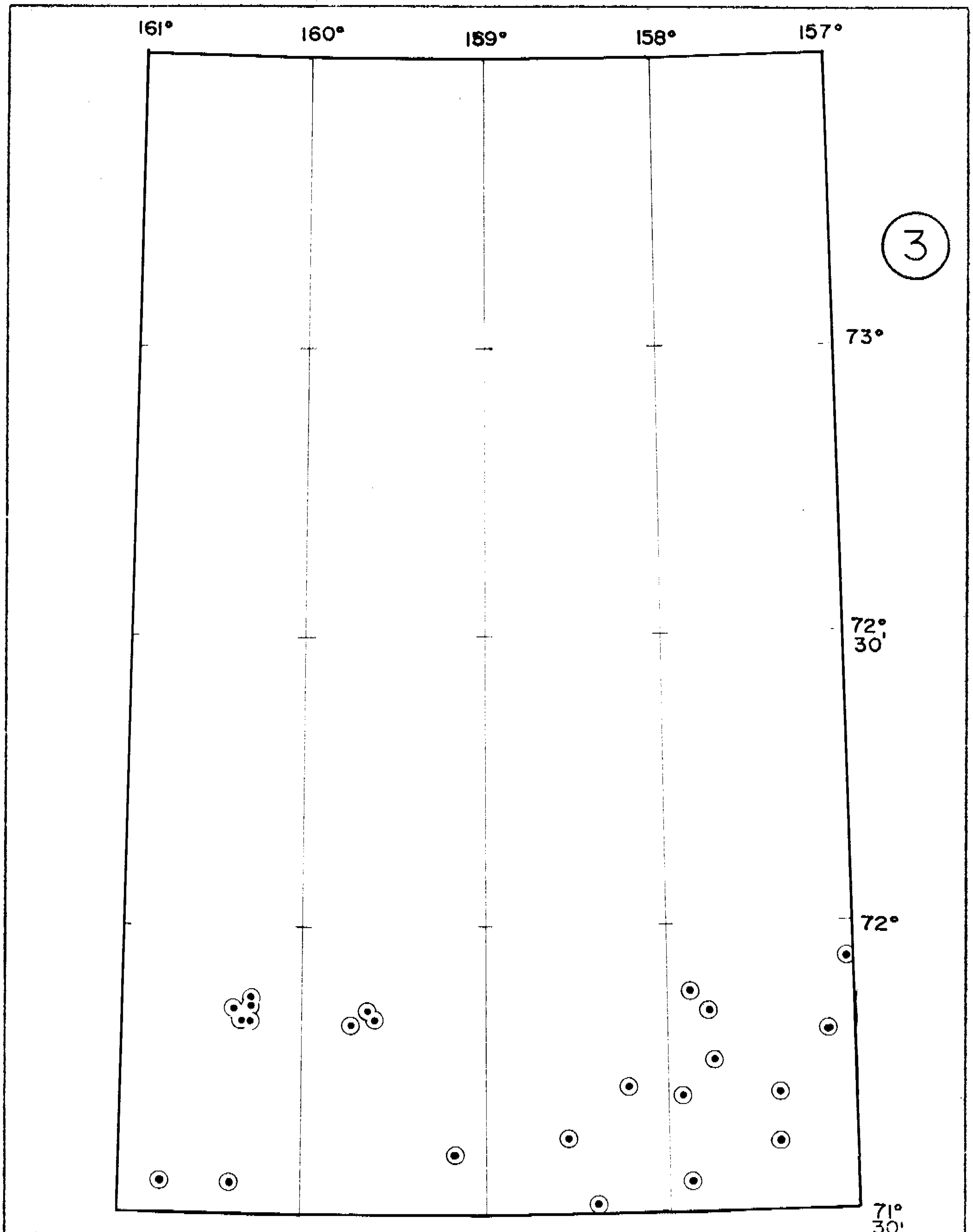
DATA DISTRIBUTION TEMPERATURE & SALINITY



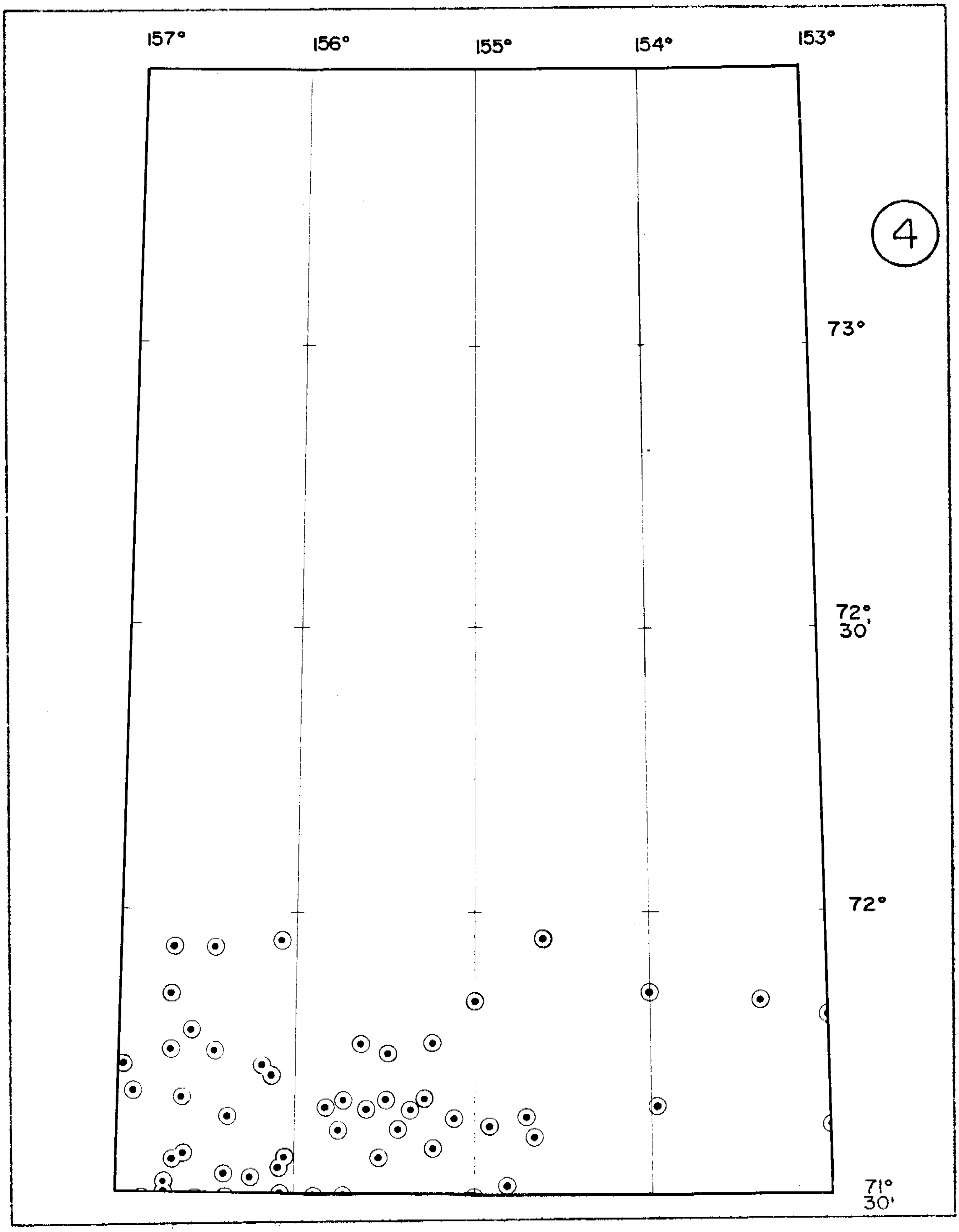
DATA DISTRIBUTION TEMPERATURE & SALINITY



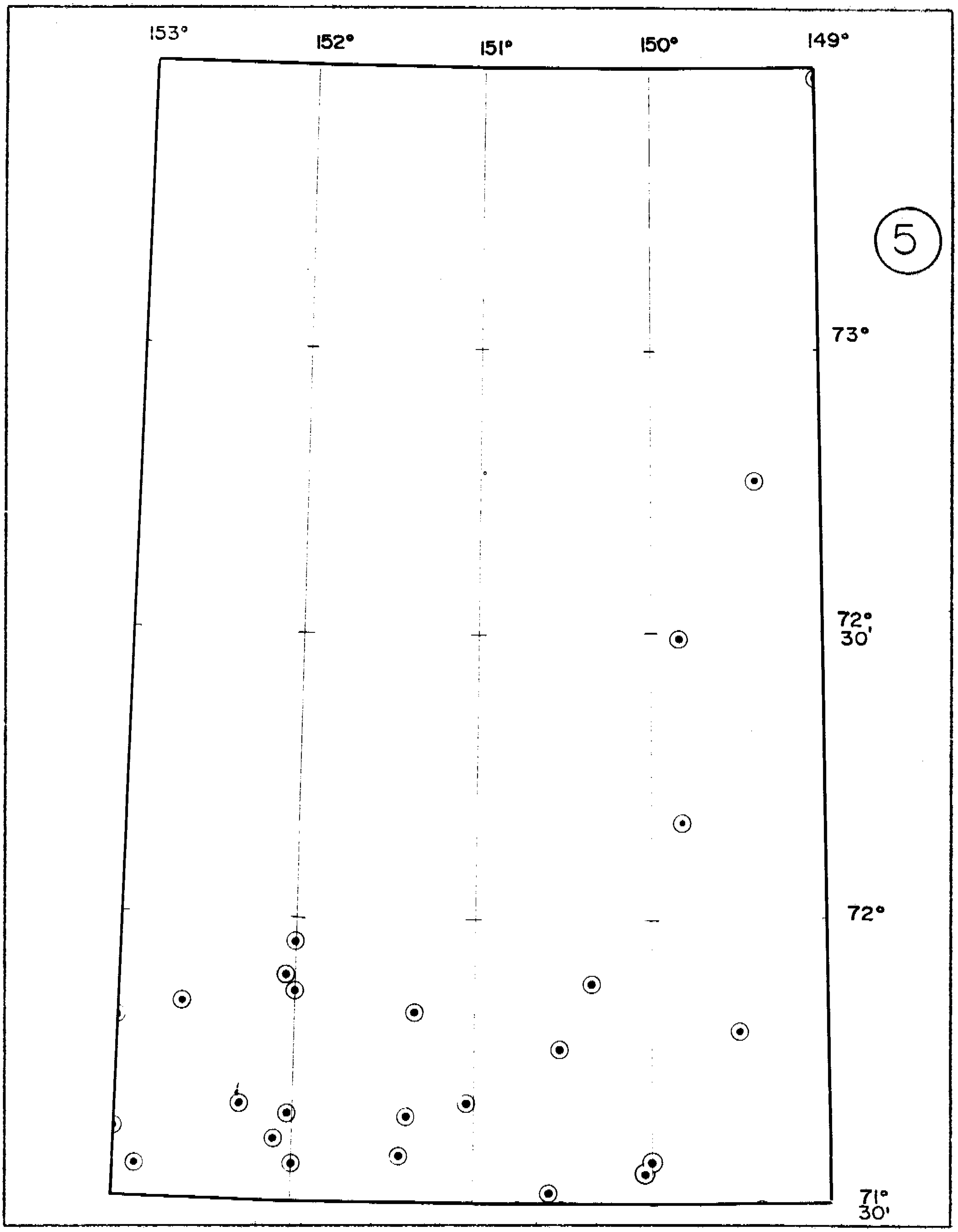
DATA DISTRIBUTION TEMPERATURE & SALINITY



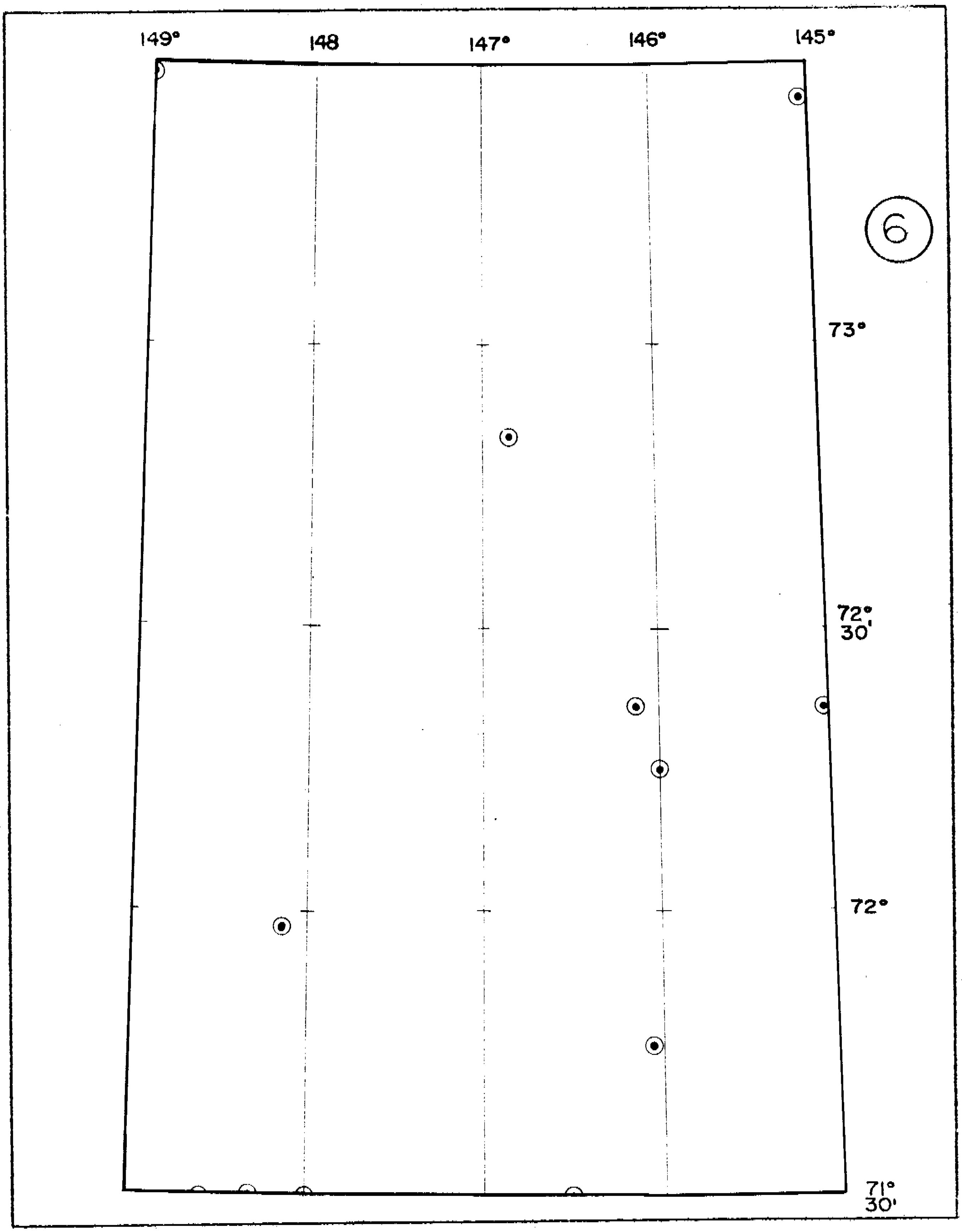
DATA DISTRIBUTION TEMPERATURE & SALINITY



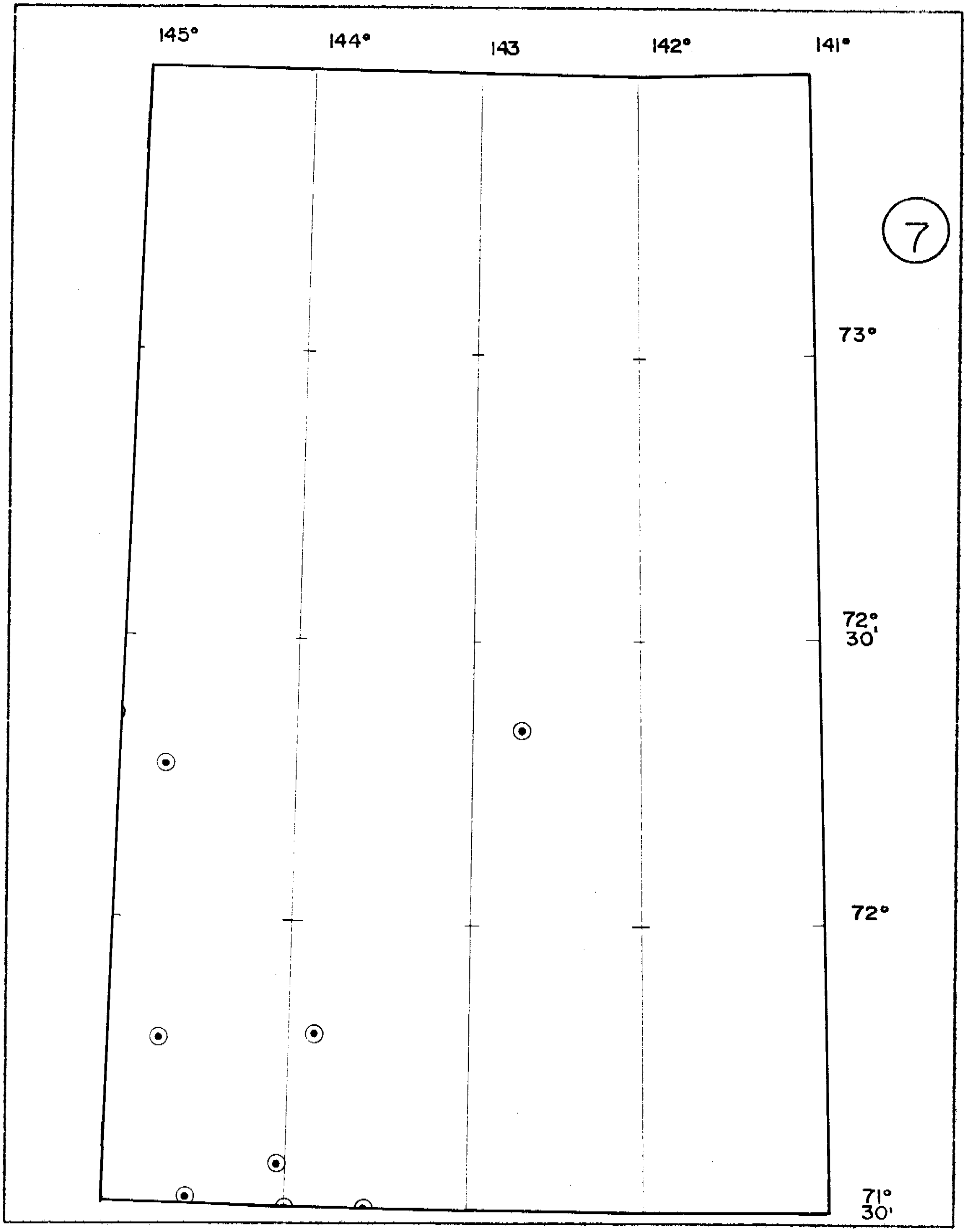
DATA DISTRIBUTION TEMPERATURE & SALINITY



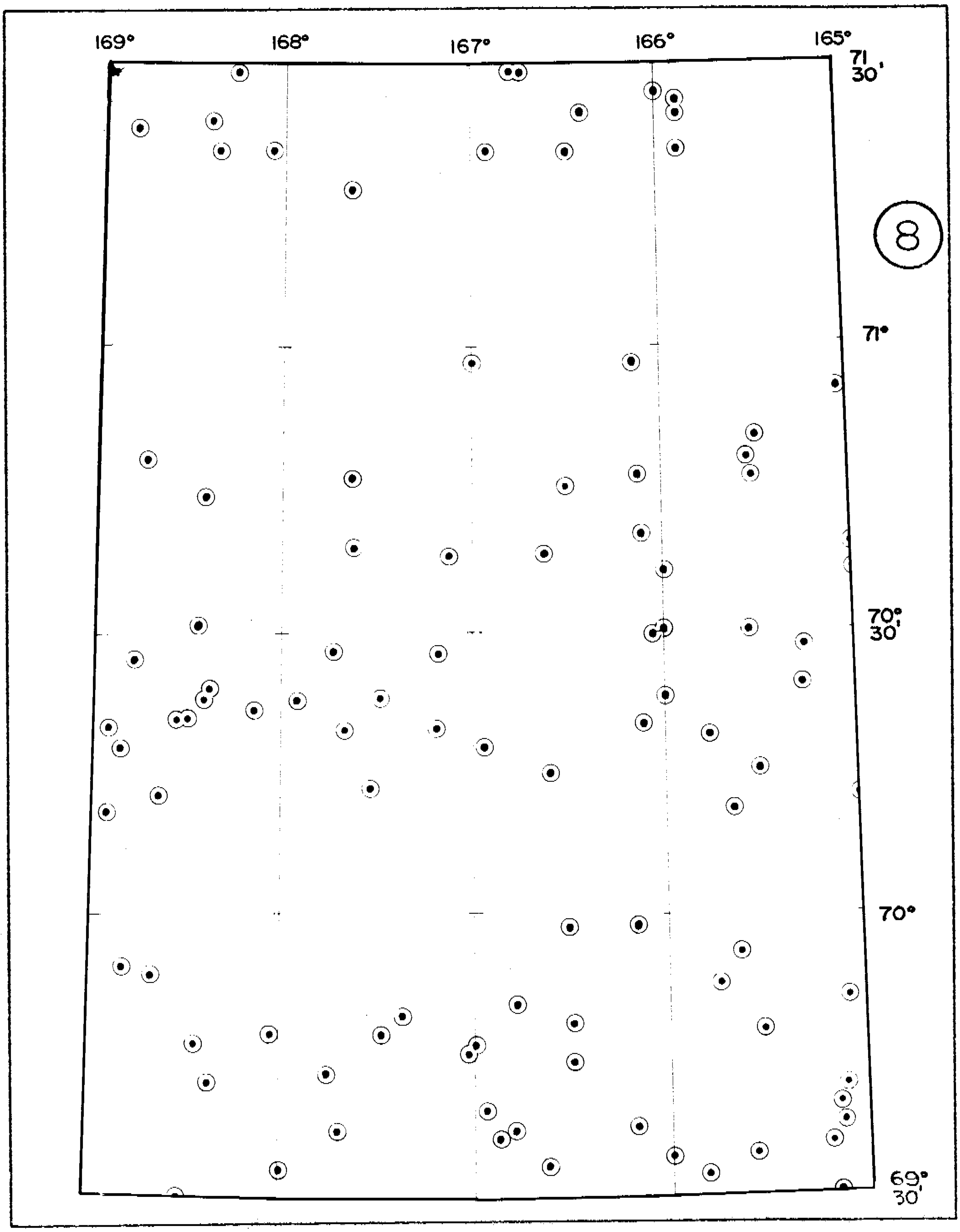
DATA DISTRIBUTION TEMPERATURE & SALINITY



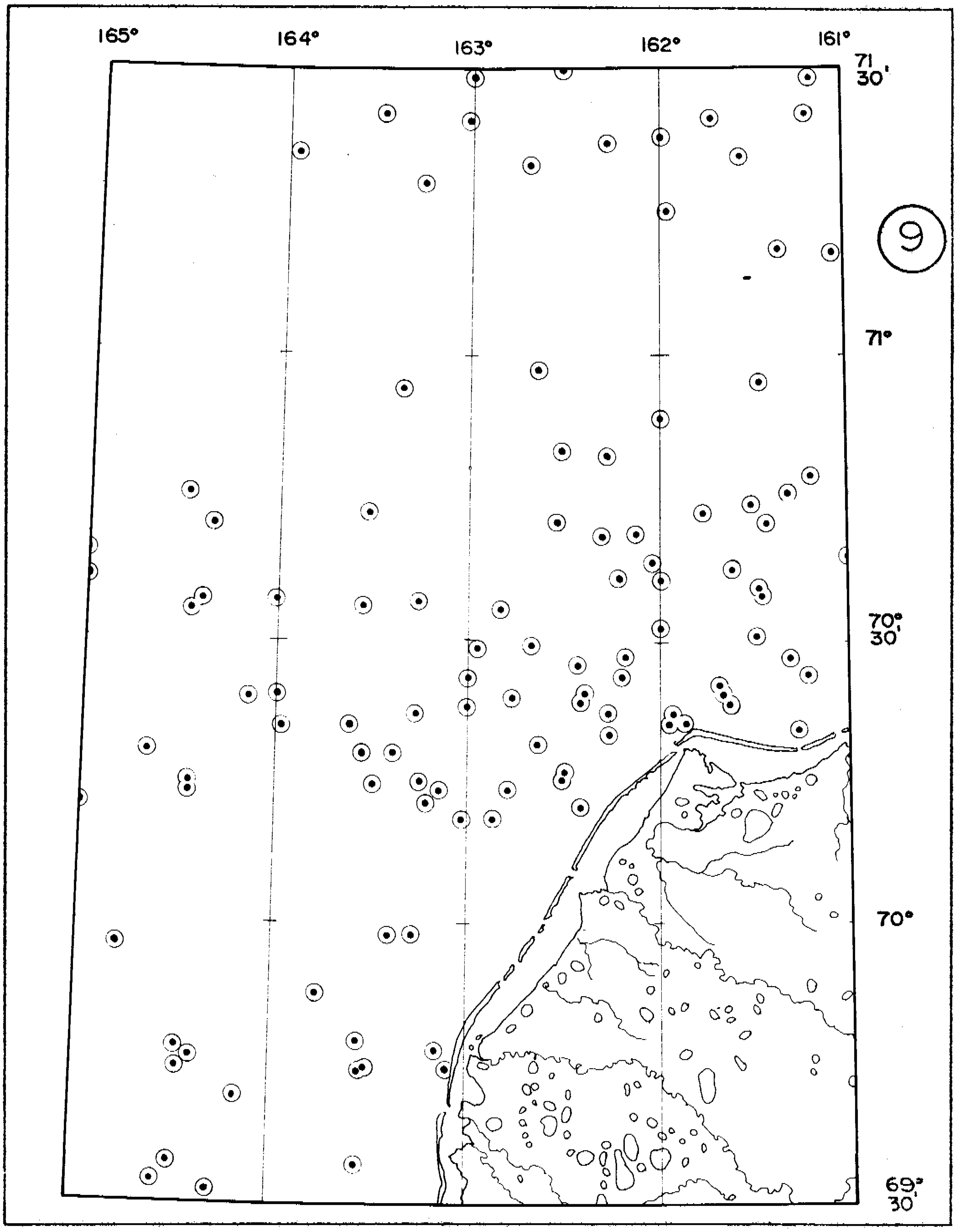
DATA DISTRIBUTION TEMPERATURE & SALINITY



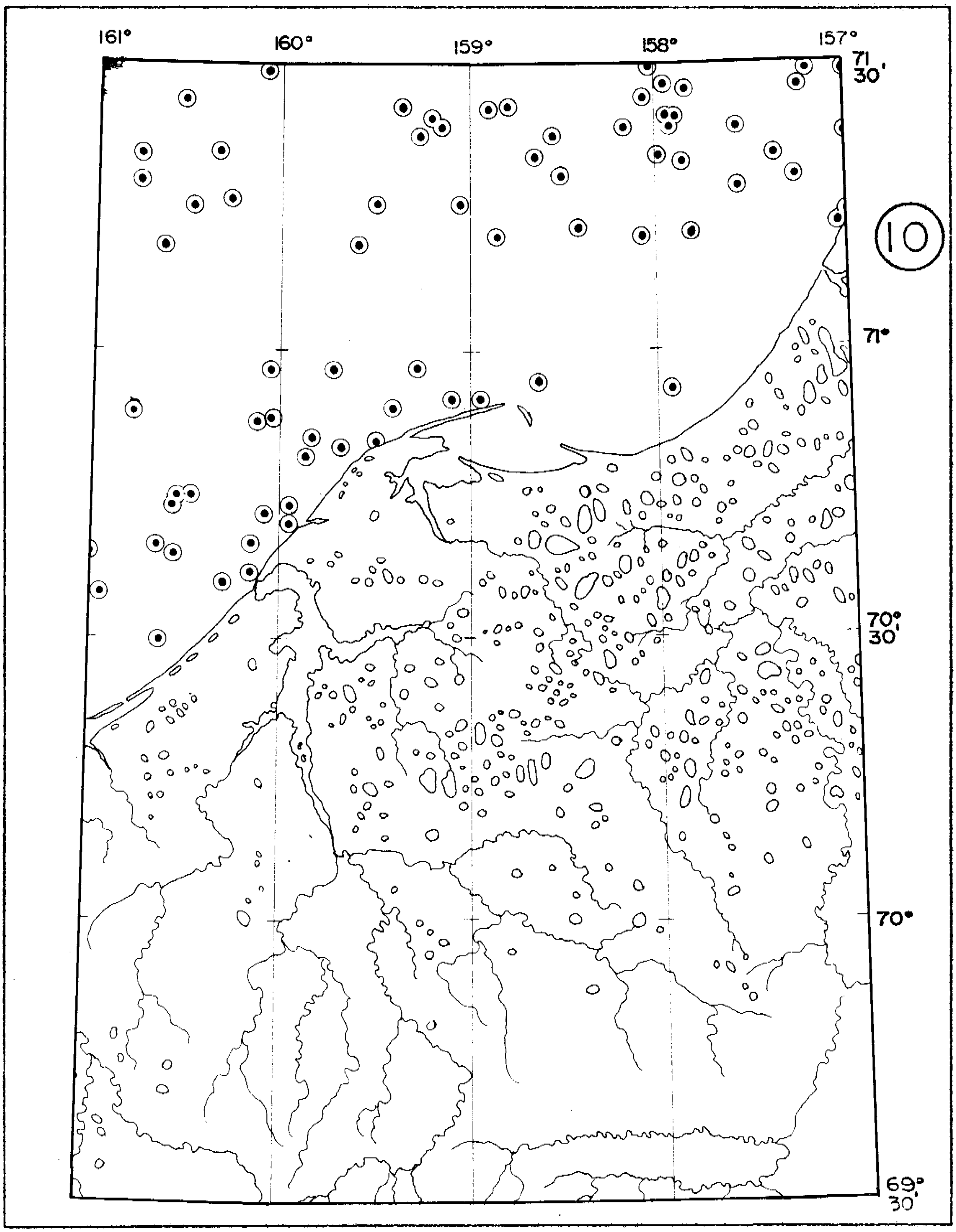
DATA DISTRIBUTION TEMPERATURE & SALINITY



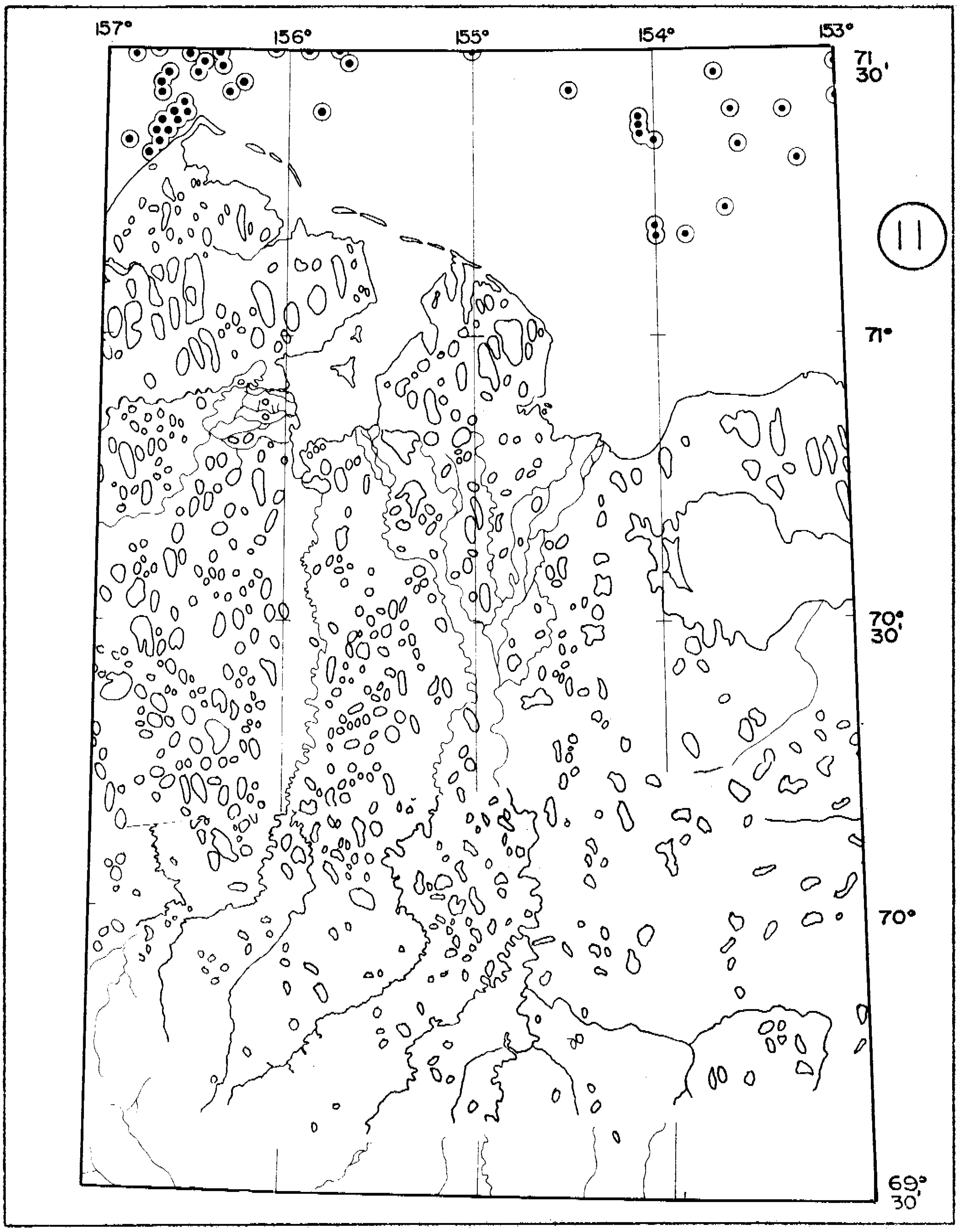
DATA DISTRIBUTION TEMPERATURE & SALINITY



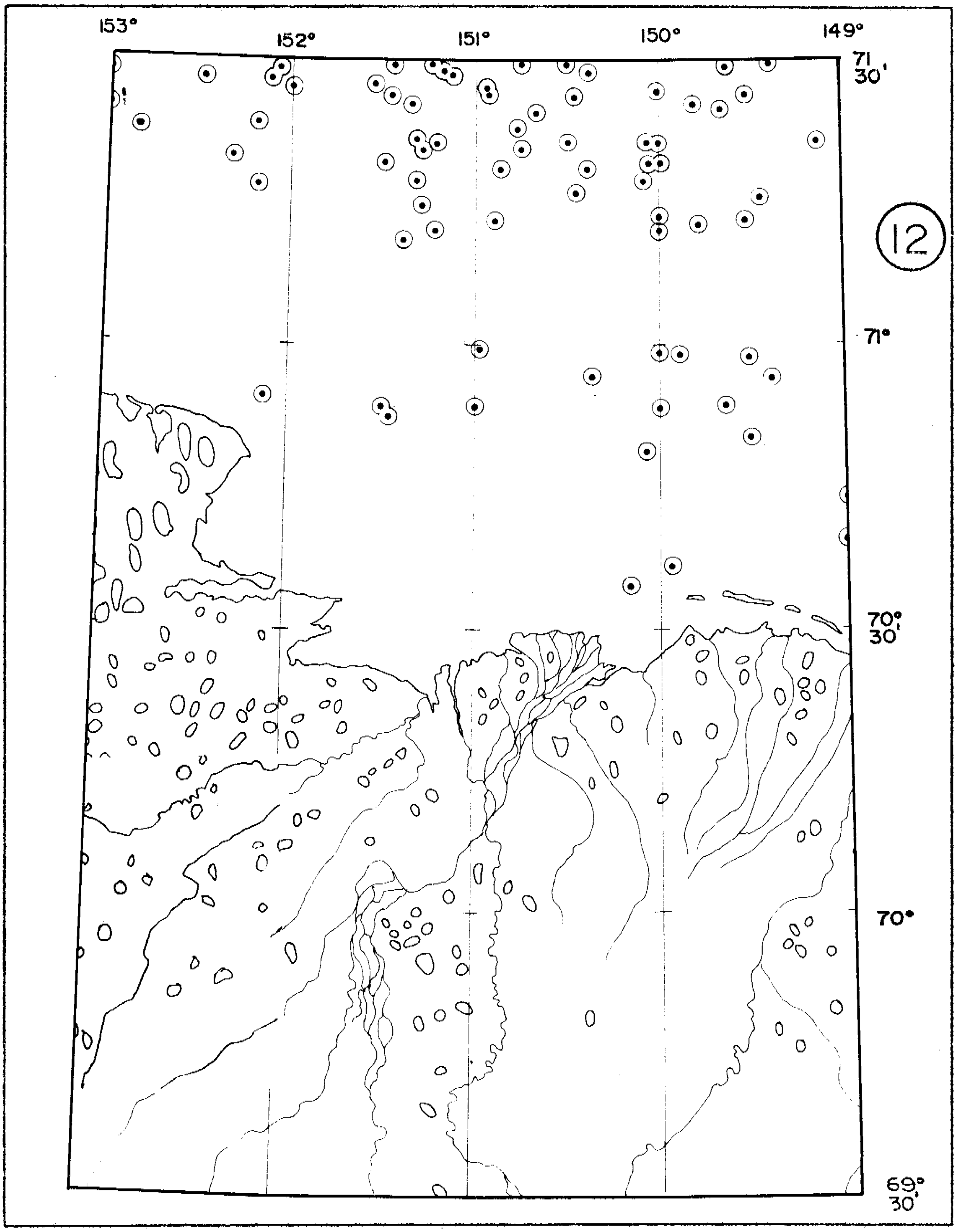
DATA DISTRIBUTION TEMPERATURE & SALINITY



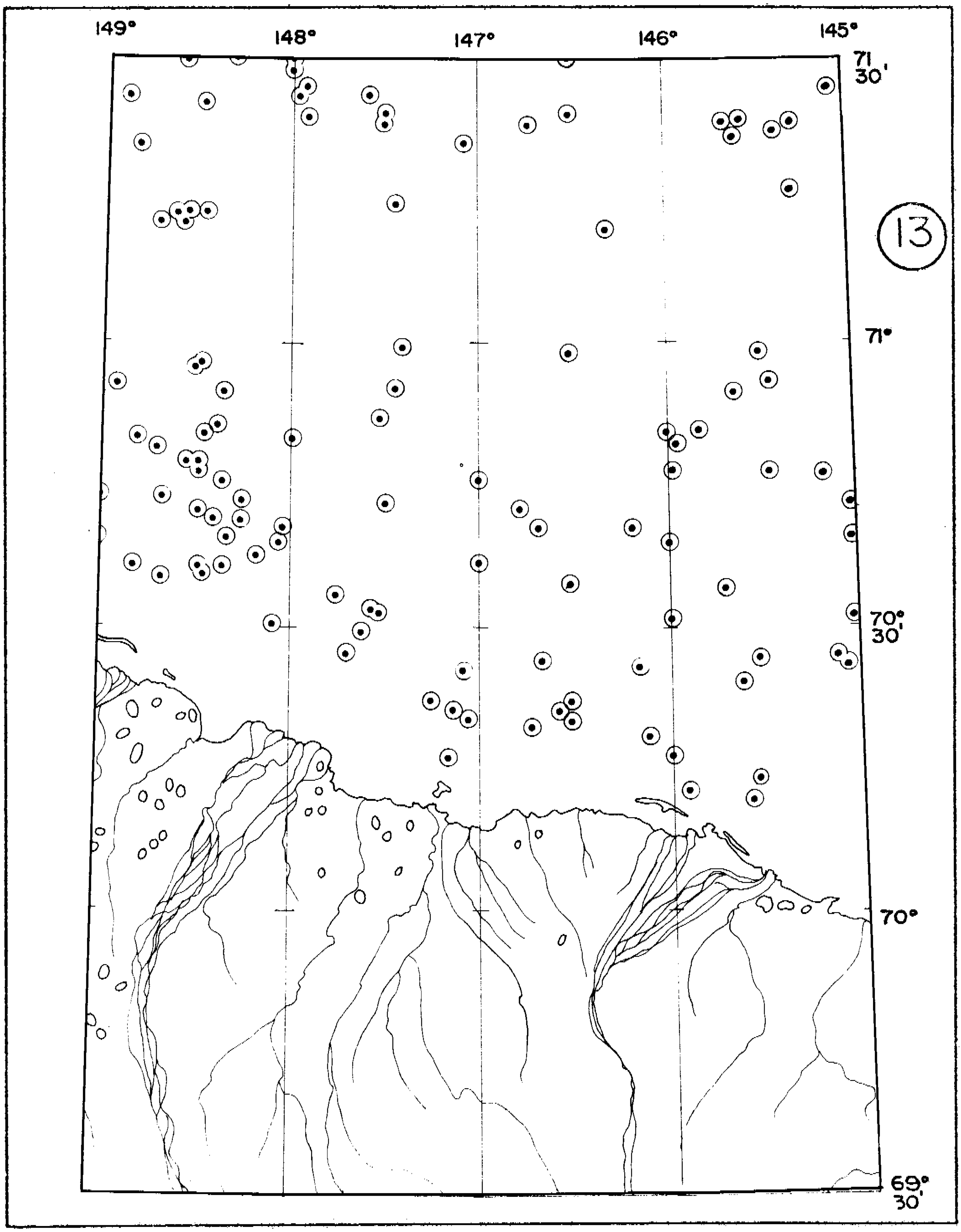
DATA DISTRIBUTION TEMPERATURE & SALINITY



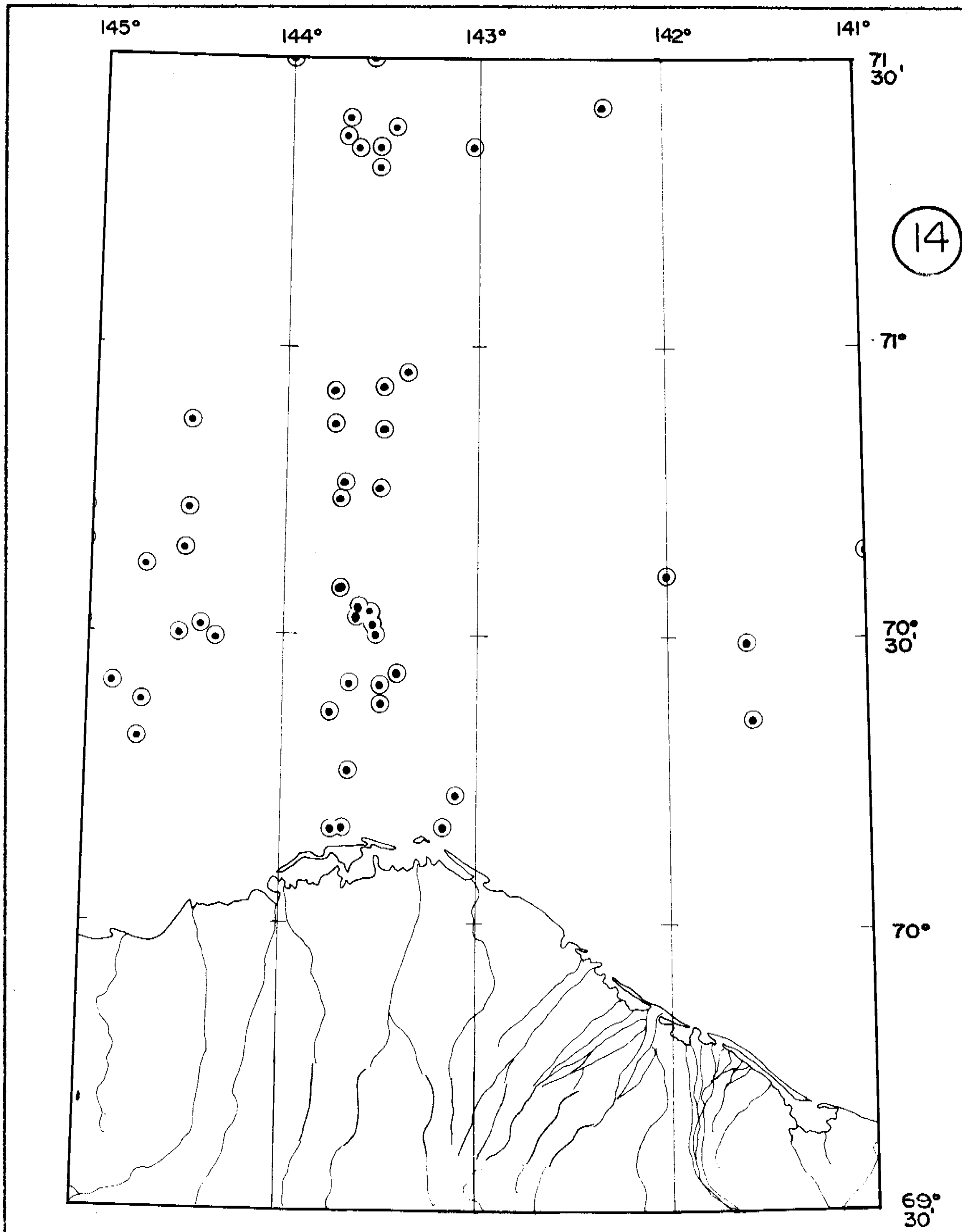
DATA DISTRIBUTION TEMPERATURE & SALINITY



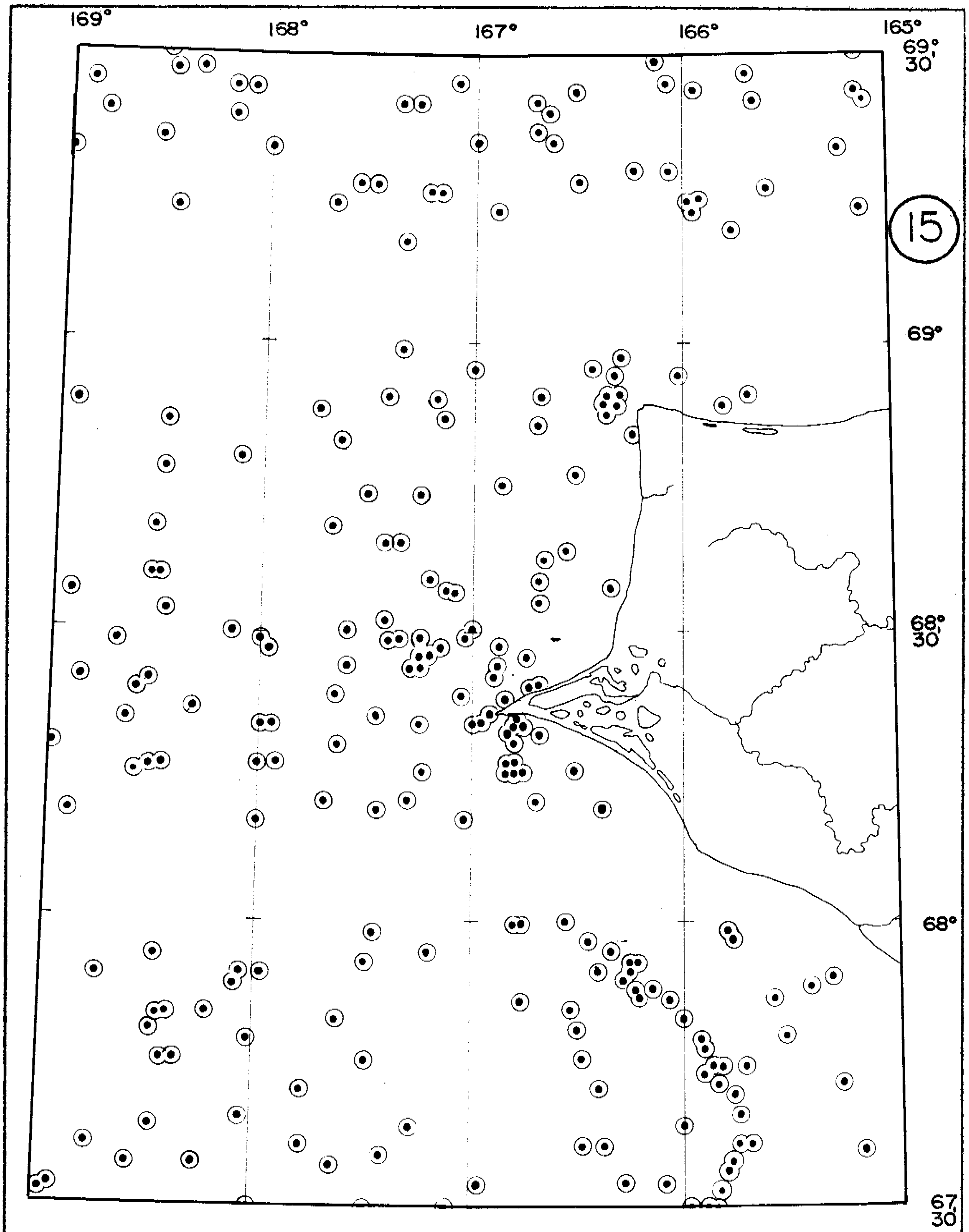
DATA DISTRIBUTION TEMPERATURE & SALINITY



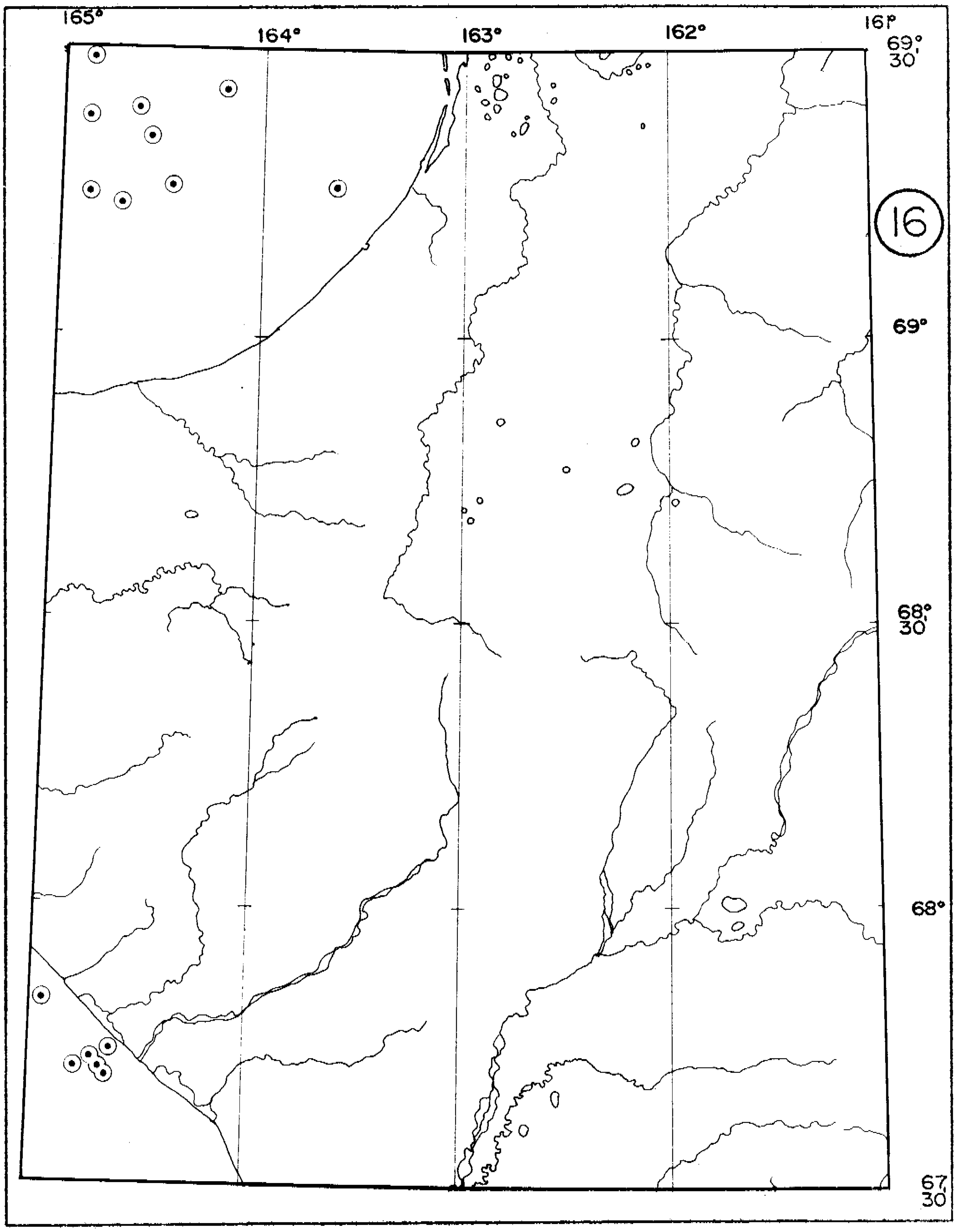
DATA DISTRIBUTION TEMPERATURE & SALINITY



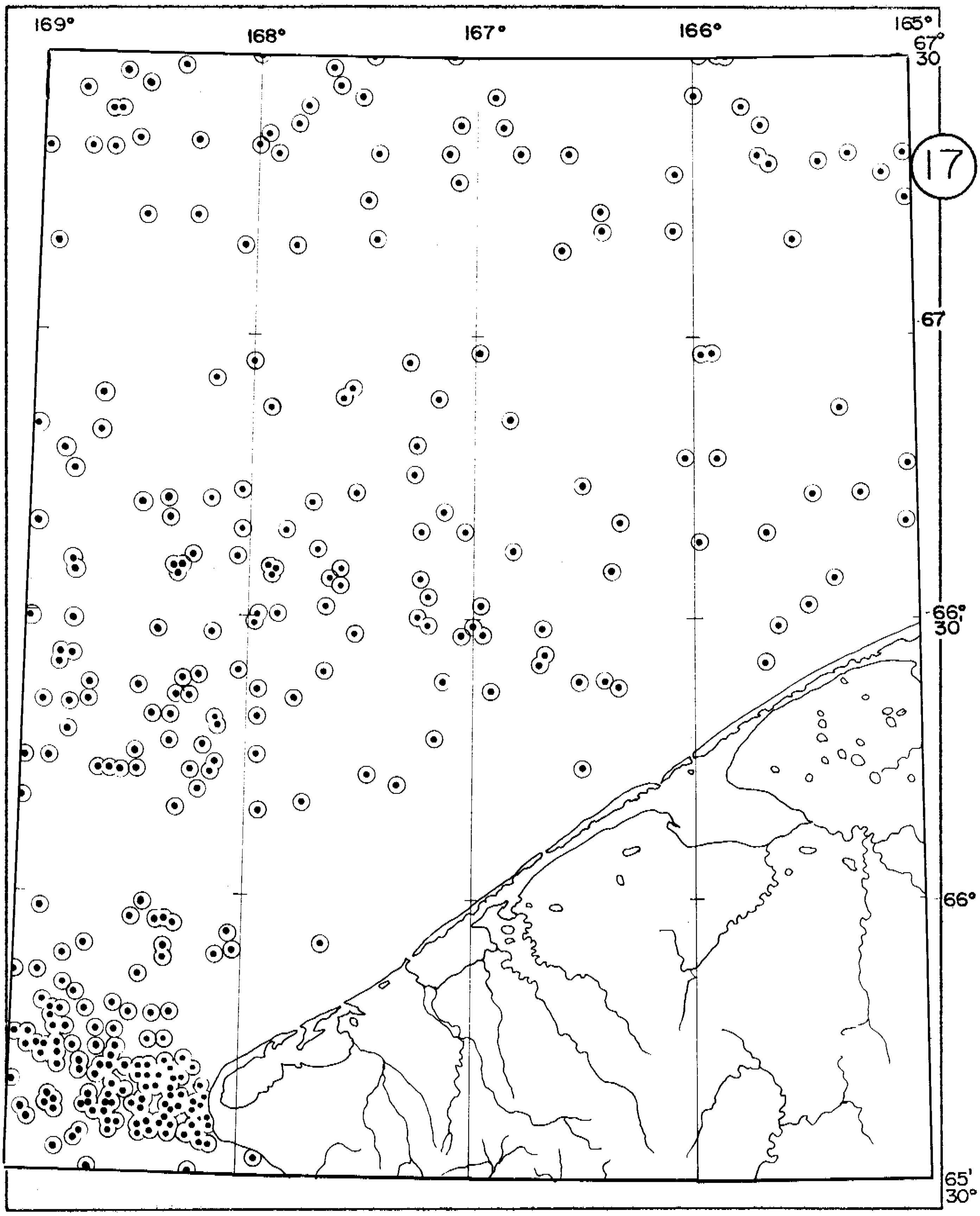
DATA DISTRIBUTION TEMPERATURE & SALINITY



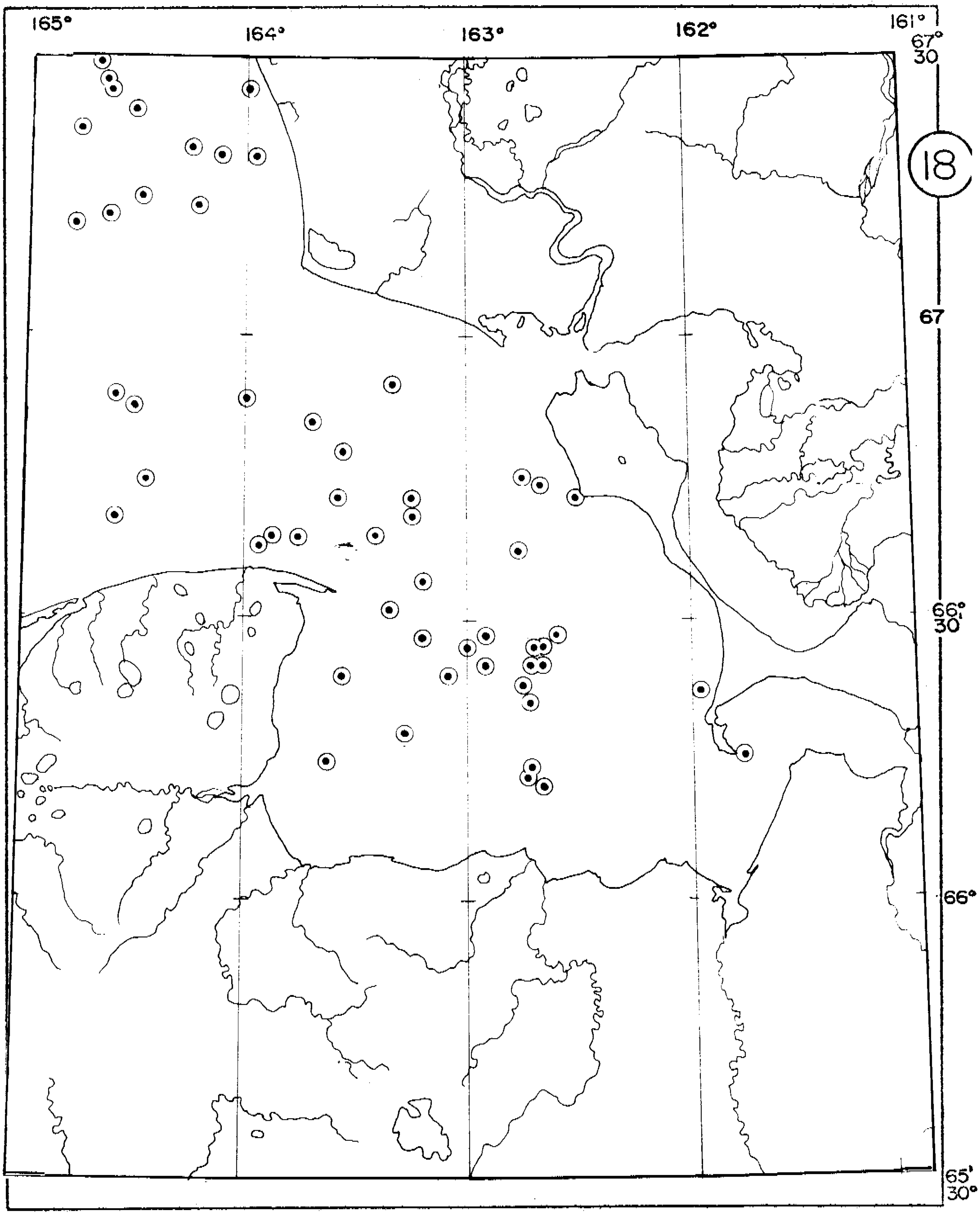
DATA DISTRIBUTION TEMPERATURE & SALINITY



DATA DISTRIBUTION TEMPERATURE & SALINITY



DATA DISTRIBUTION TEMPERATURE & SALINITY



BEAUFORT SEA

RESEARCH UNIT 516 OCSEAP
NOAA INSTAAR 1977

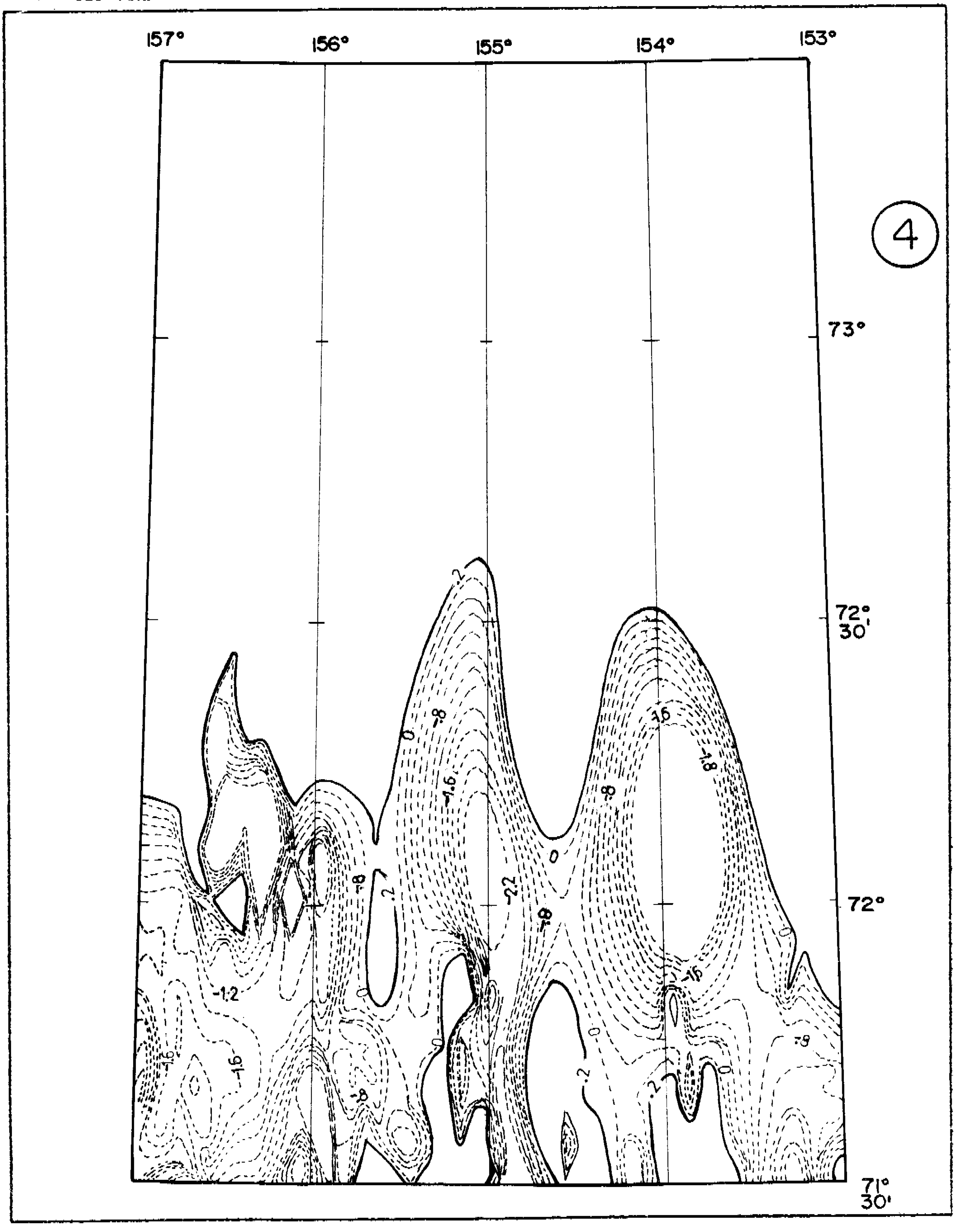
TEMPERATURE OF THE SEA WATER AT THE MAXIMAL SAMPLING DEPTH (SUMMER)

A SOURCE MAP FOR SUBMARINE PERMAFROST PREDICTION

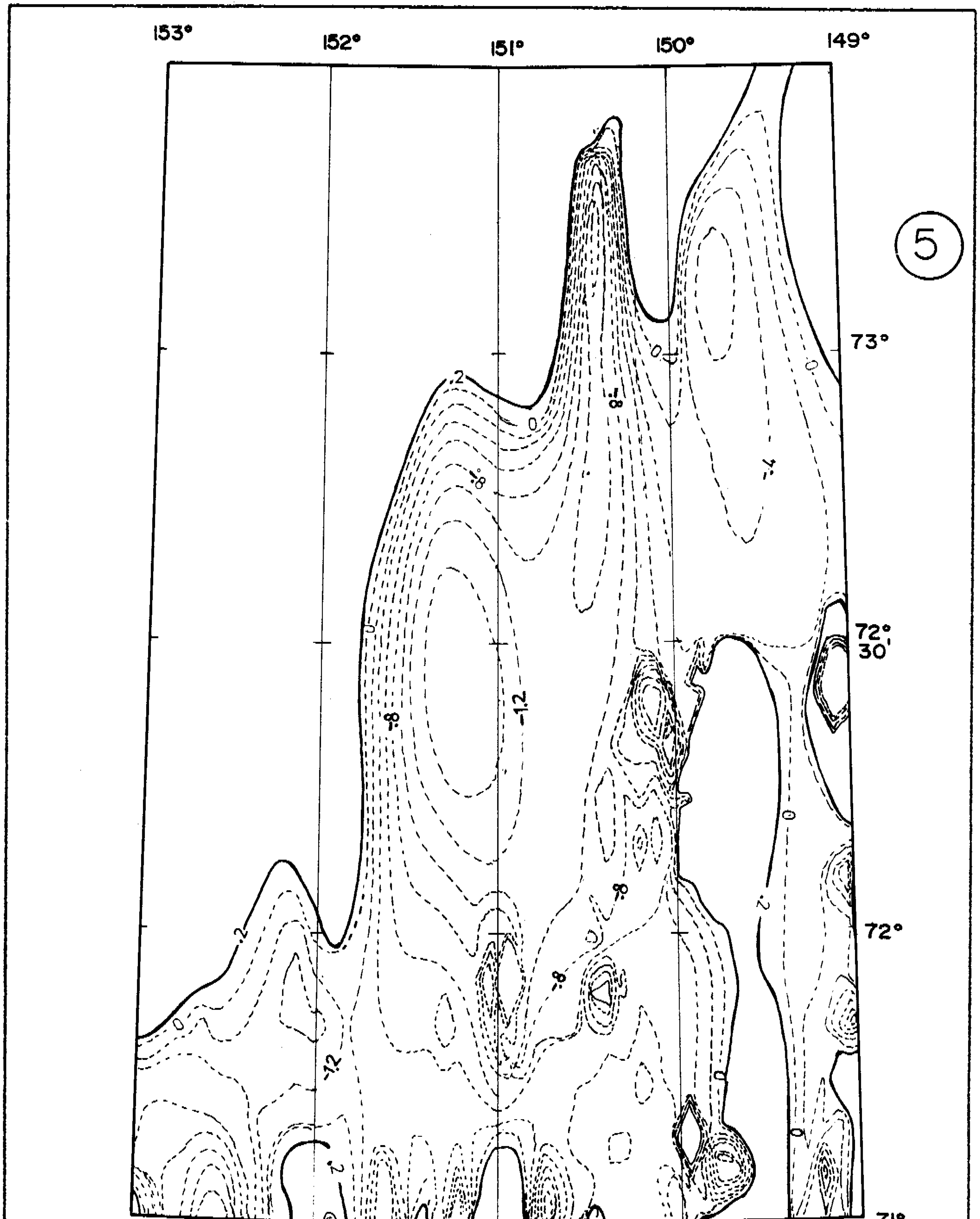
TEMPERATURE— -2.2° TO+0.2°C
INTERVAL OF .0.2°C
SCALE — 1: 1,000.000

GEOGRAPHIC BASED INFORMATION MANAGEMENT SYSTEM
FOR PERMAFROST IN THE CHUKCHI AND BEAUFORT SEAS

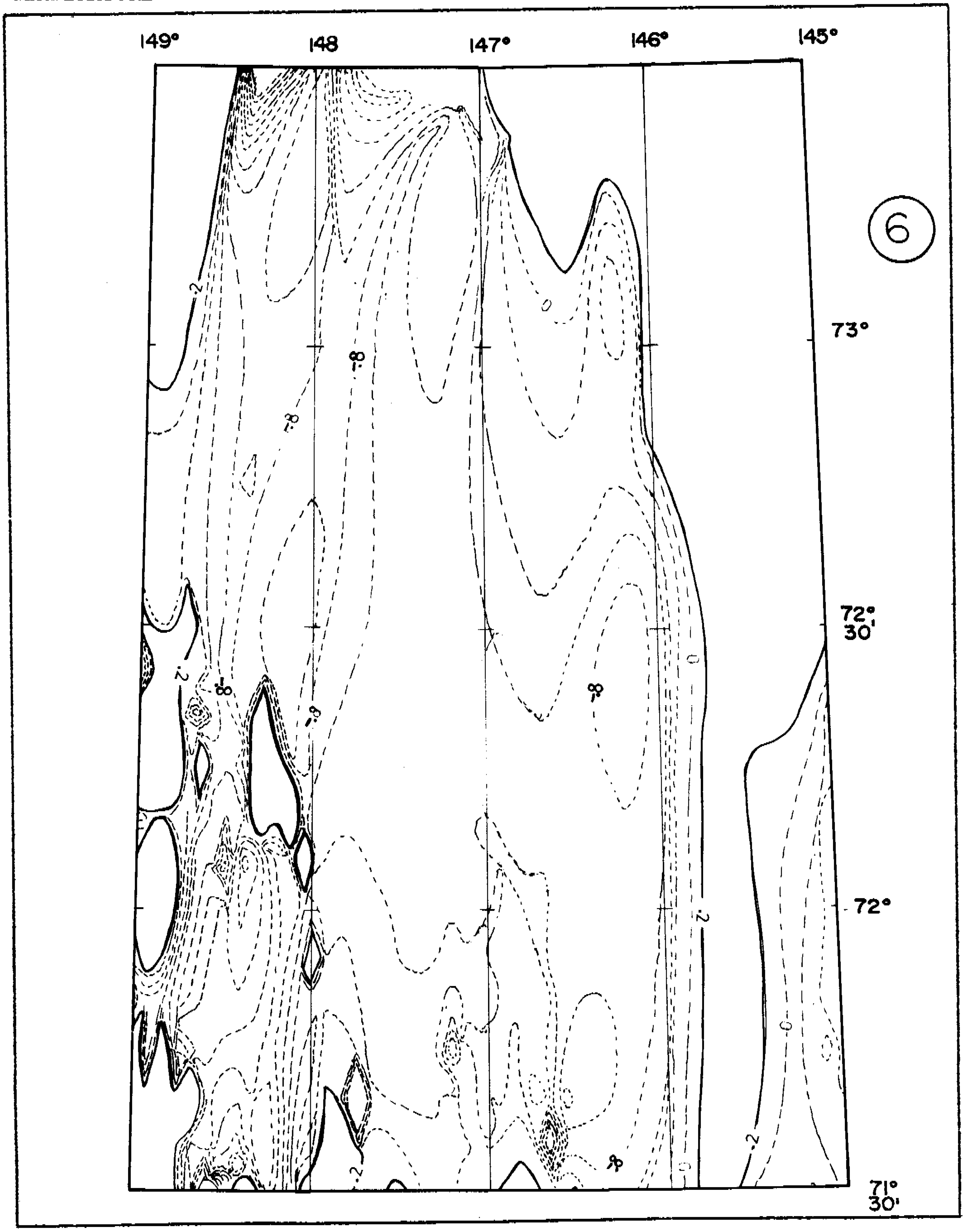
TEMPERATURE



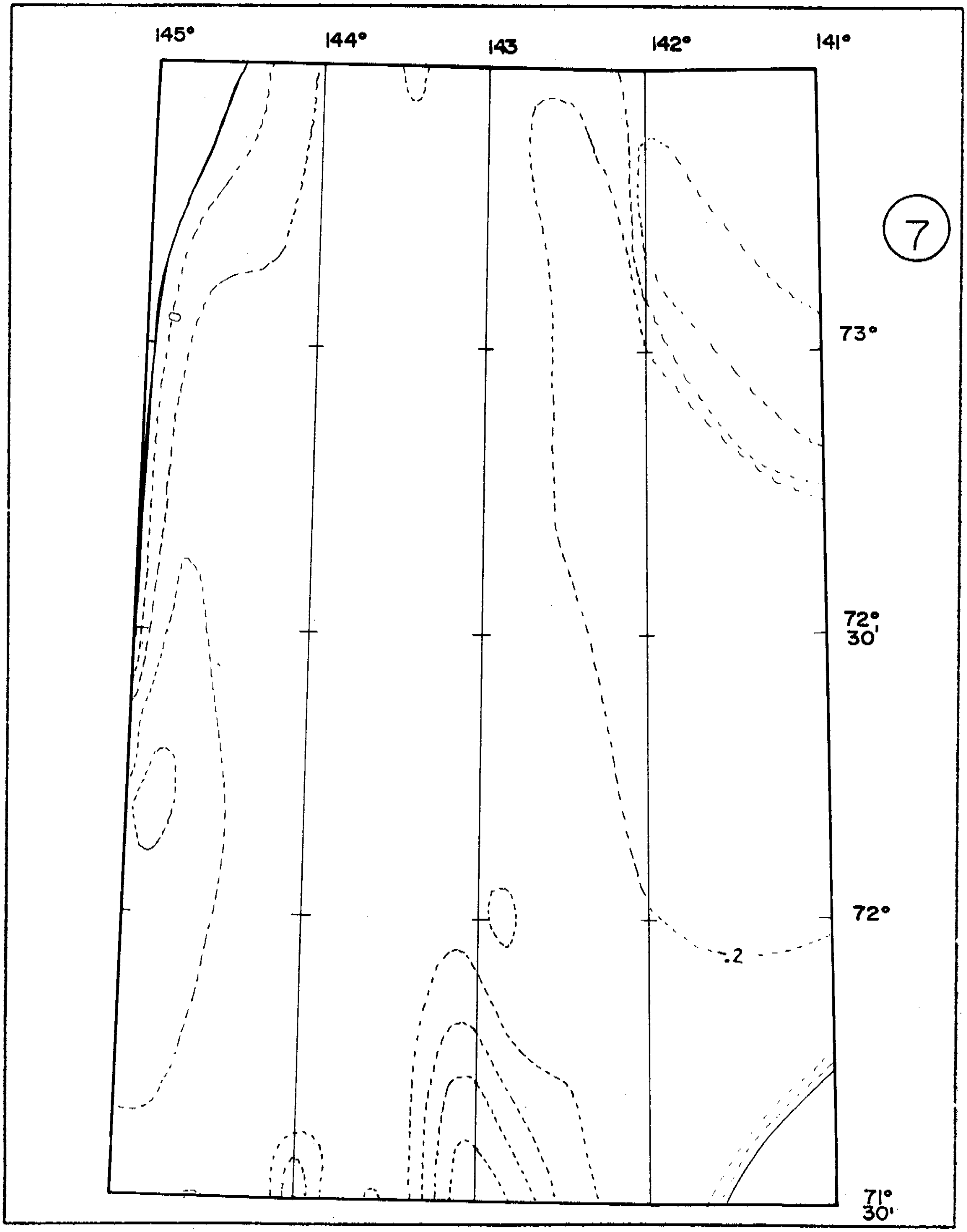
TEMPERATURE

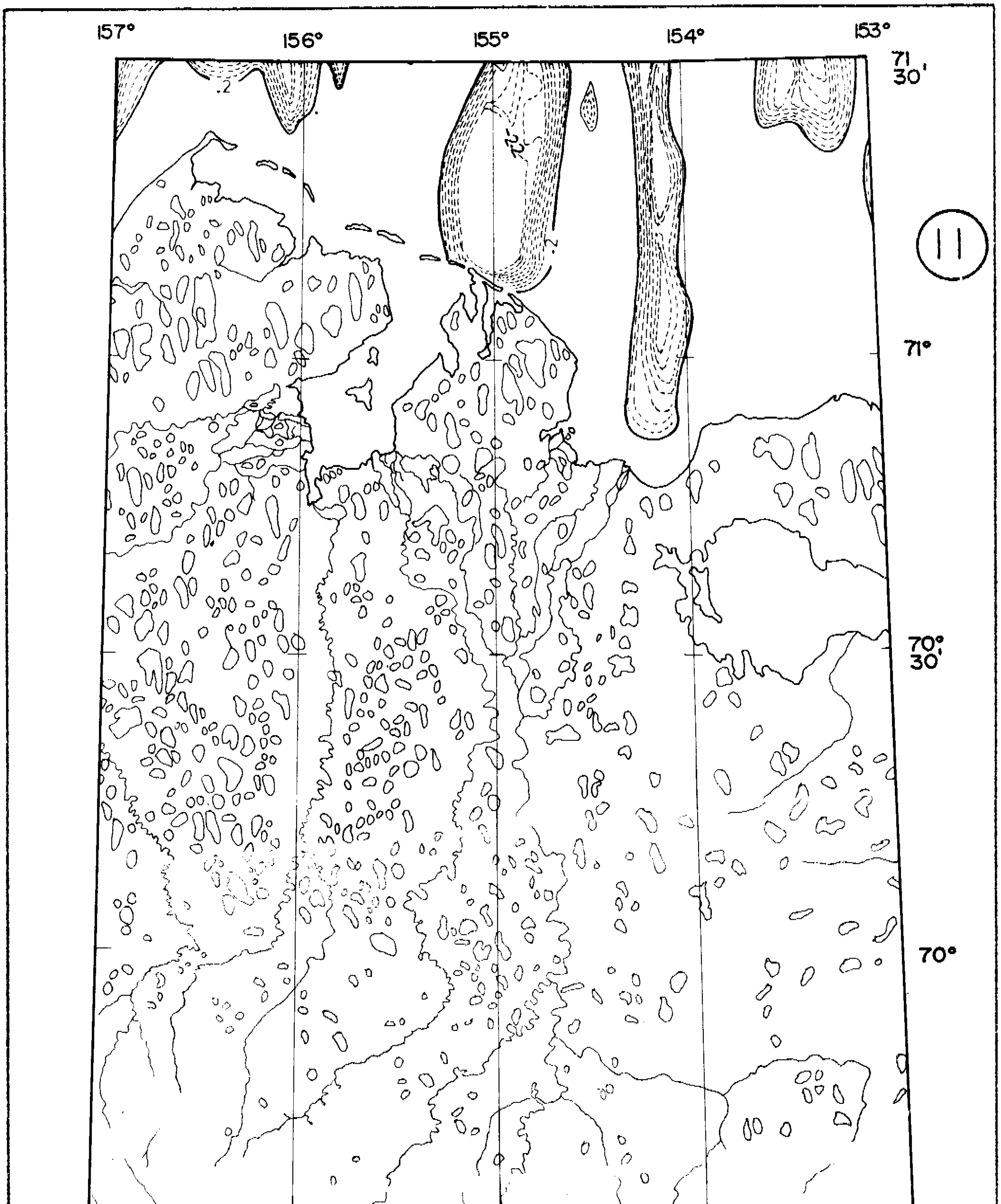


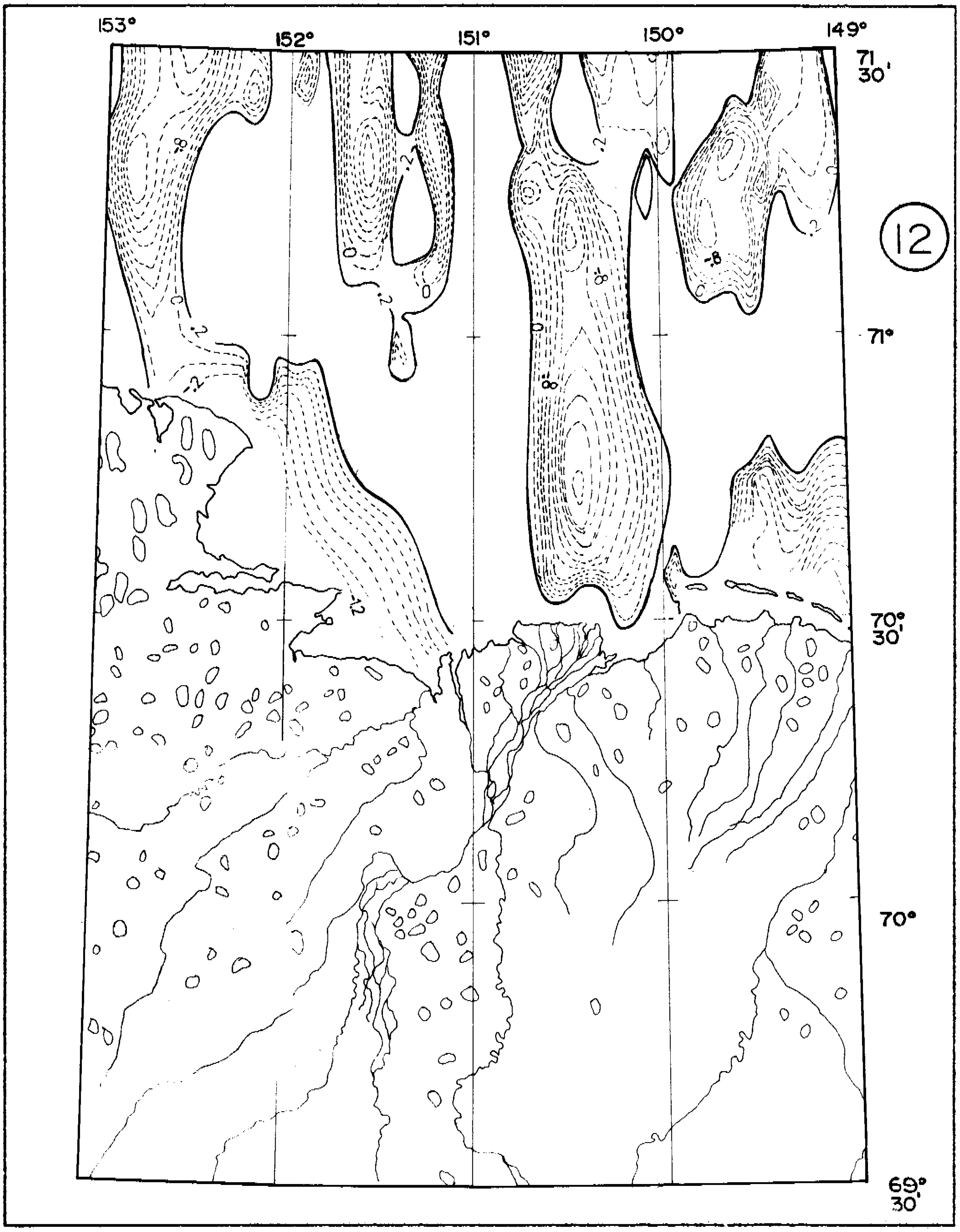
TEMPERATURE

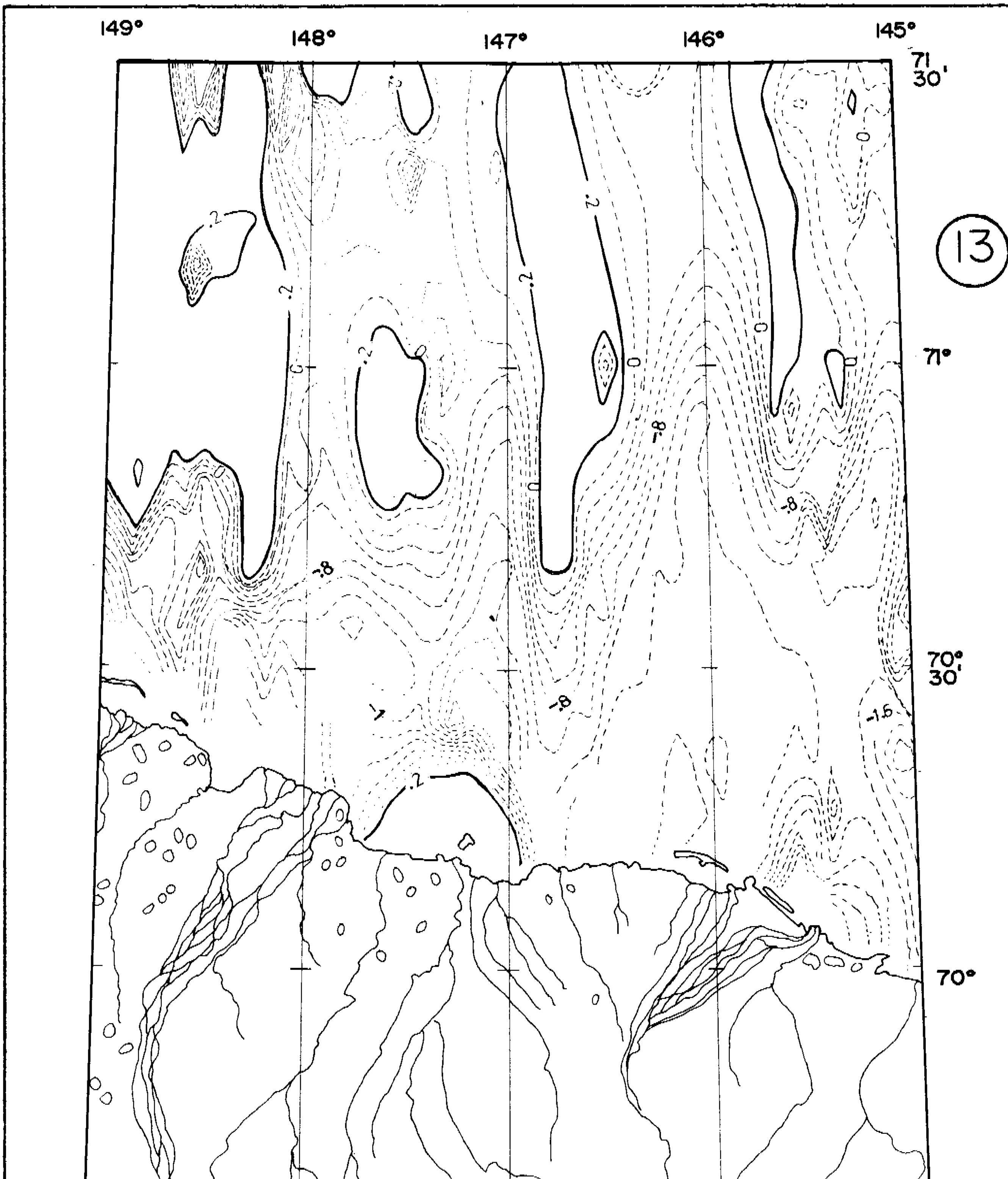


TEMPERATURE

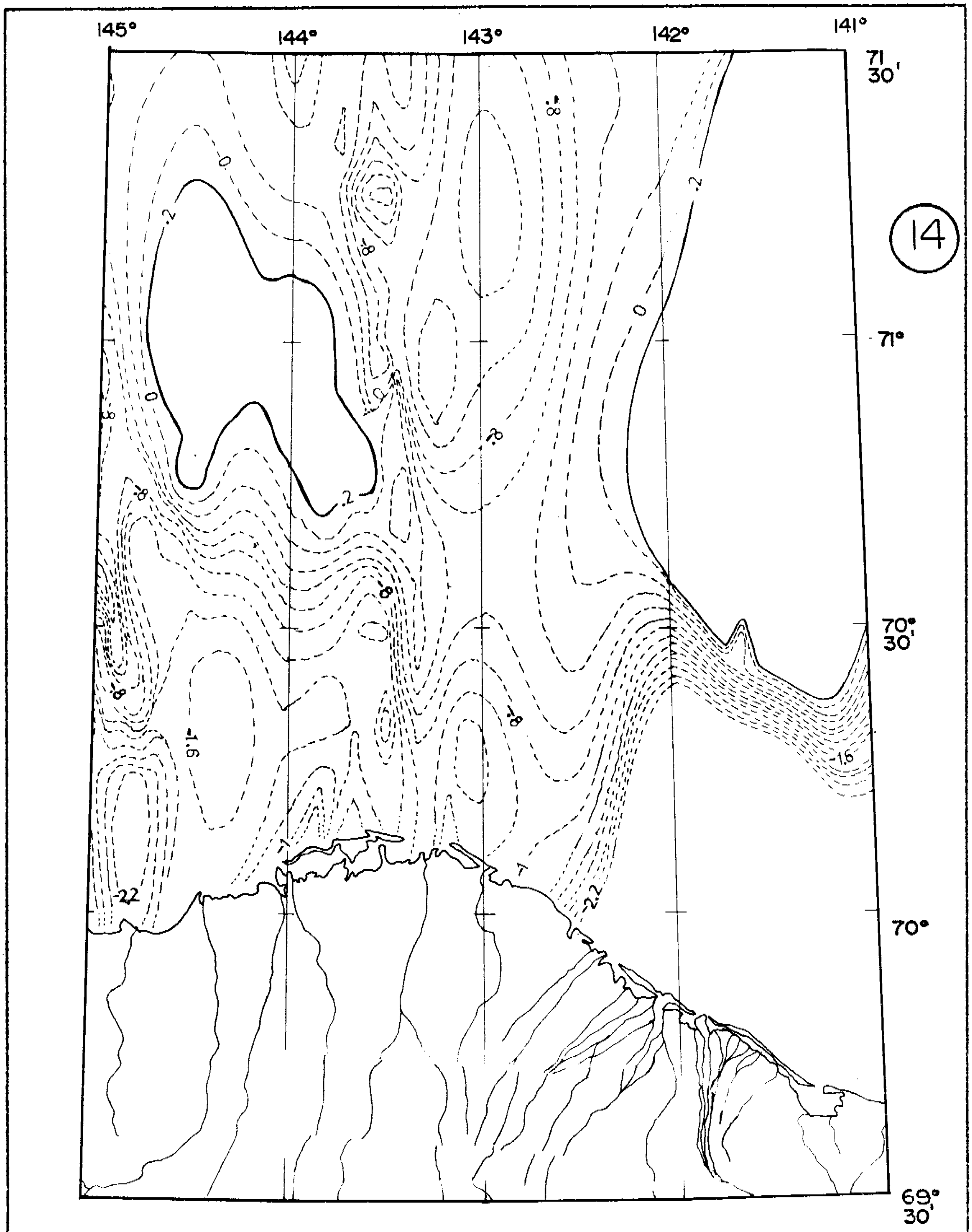



157°
156°
155°
154°
153°
71 30'
71°
70° 30'
70°
69° 30'
.2
11


153°
152°
151°
150°
149°
71 30'
71°
70° 30'
70°
69° 30'
12
-.8
0
-.2
-.2
12
.2
0
-.2
-.8
0
-.8
-.8
.2
-.2


149°
148°
147°
146°
145°
71° 30'
71°
70° 30'
70°
69° 30'
13
.2
0
-.8
-1.6

TEMPERATURE



CHUKCHI SEA
BEAUFORT SEA

RESEARCH UNIT 516 OCSEAP
NOAA INSTAAR 1977

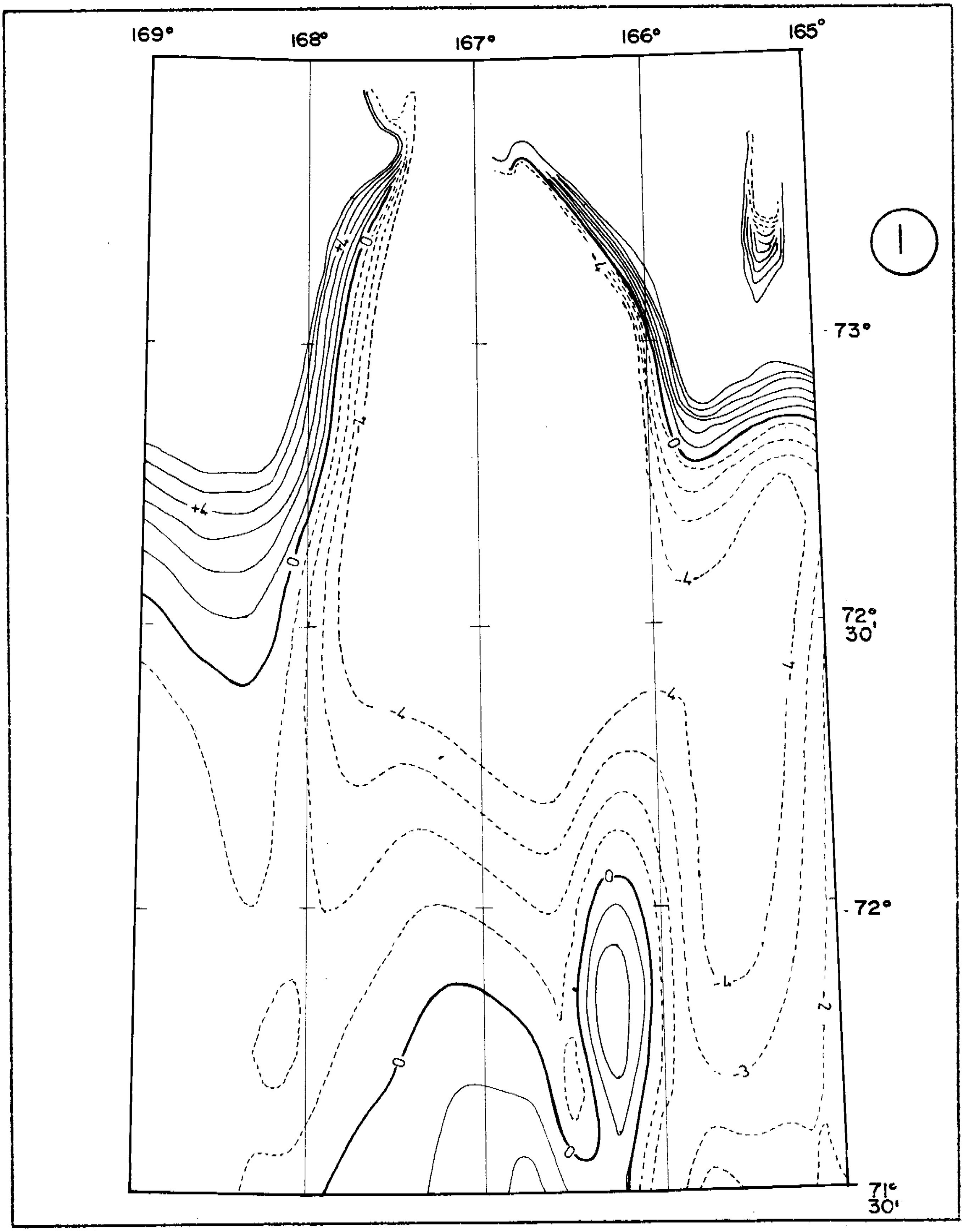
TEMPERATURE OF THE SEA WATER AT THE MAXIMAL SAMPLING DEPTH (SUMMER)

A SOURCE MAP FOR SUBMARINE PERMAFROST PREDICTION

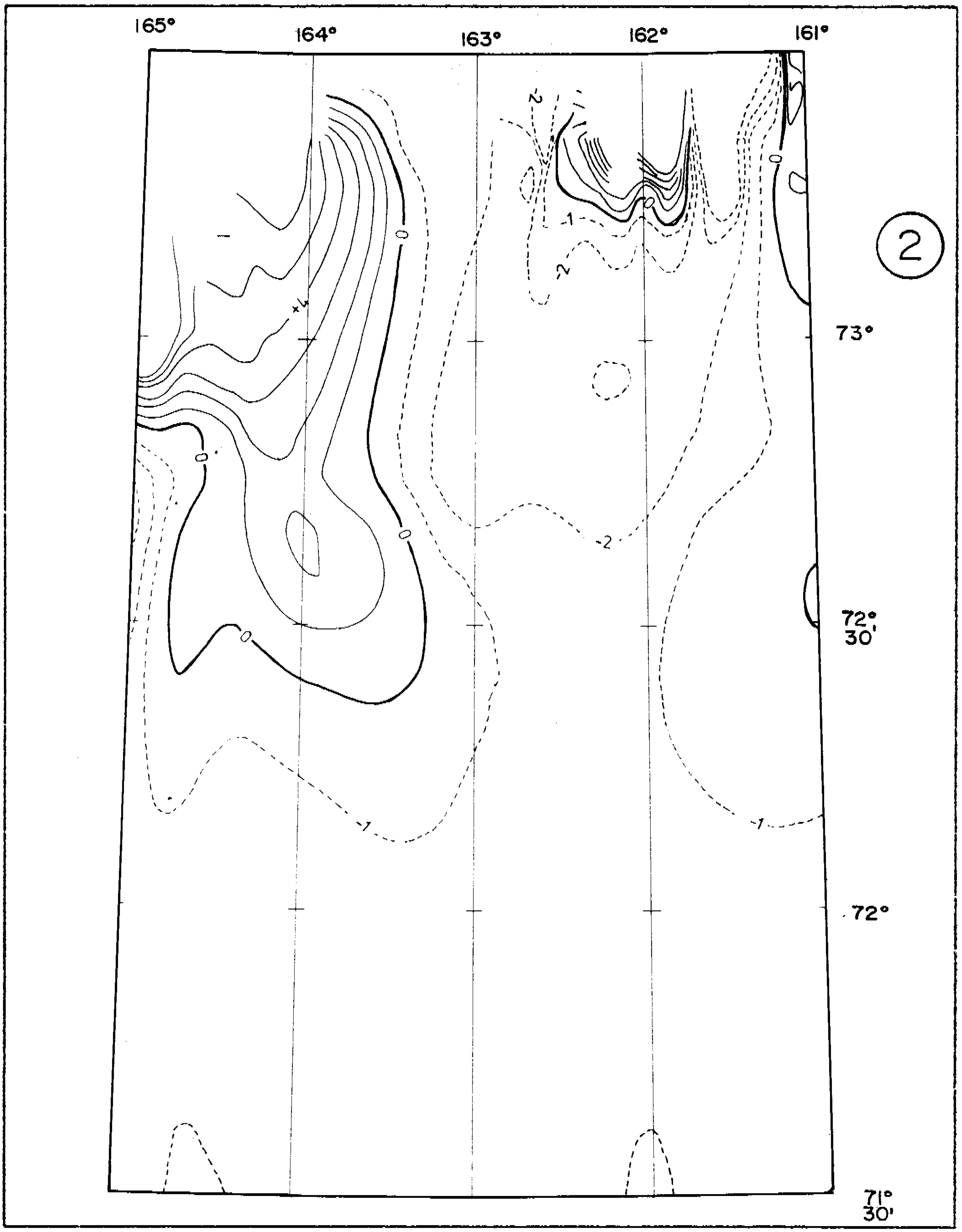
TEMPERATURE — -4° TO +6°C
INTERVAL OF 1°C
SCALE — 1:1,000,000

GEOGRAPHIC BASED INFORMATION MANAGEMENT SYSTEM FOR PERMAFROST IN THE CHUKCHI AND BEAUFORT SEAS

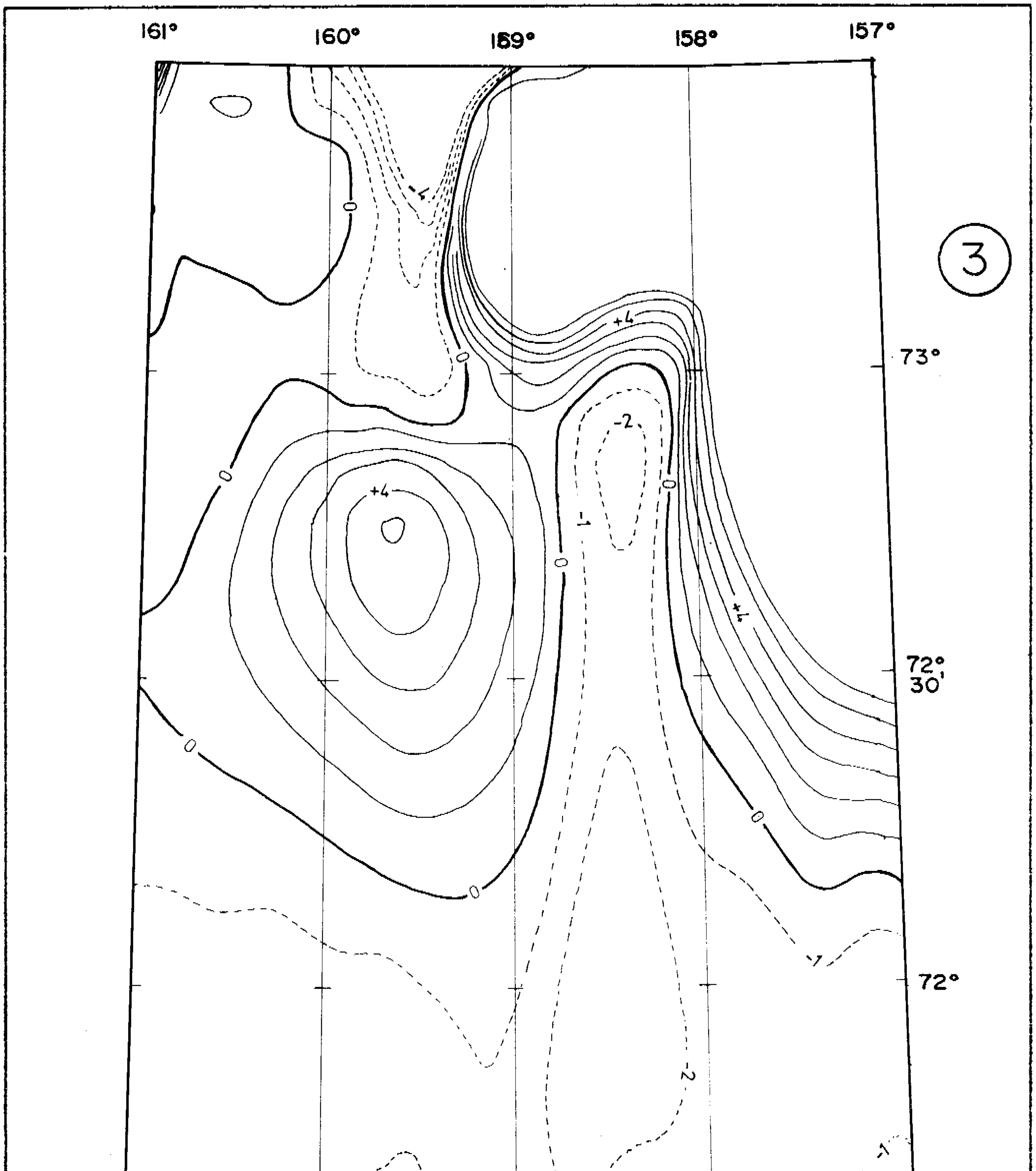
TEMPERATURE



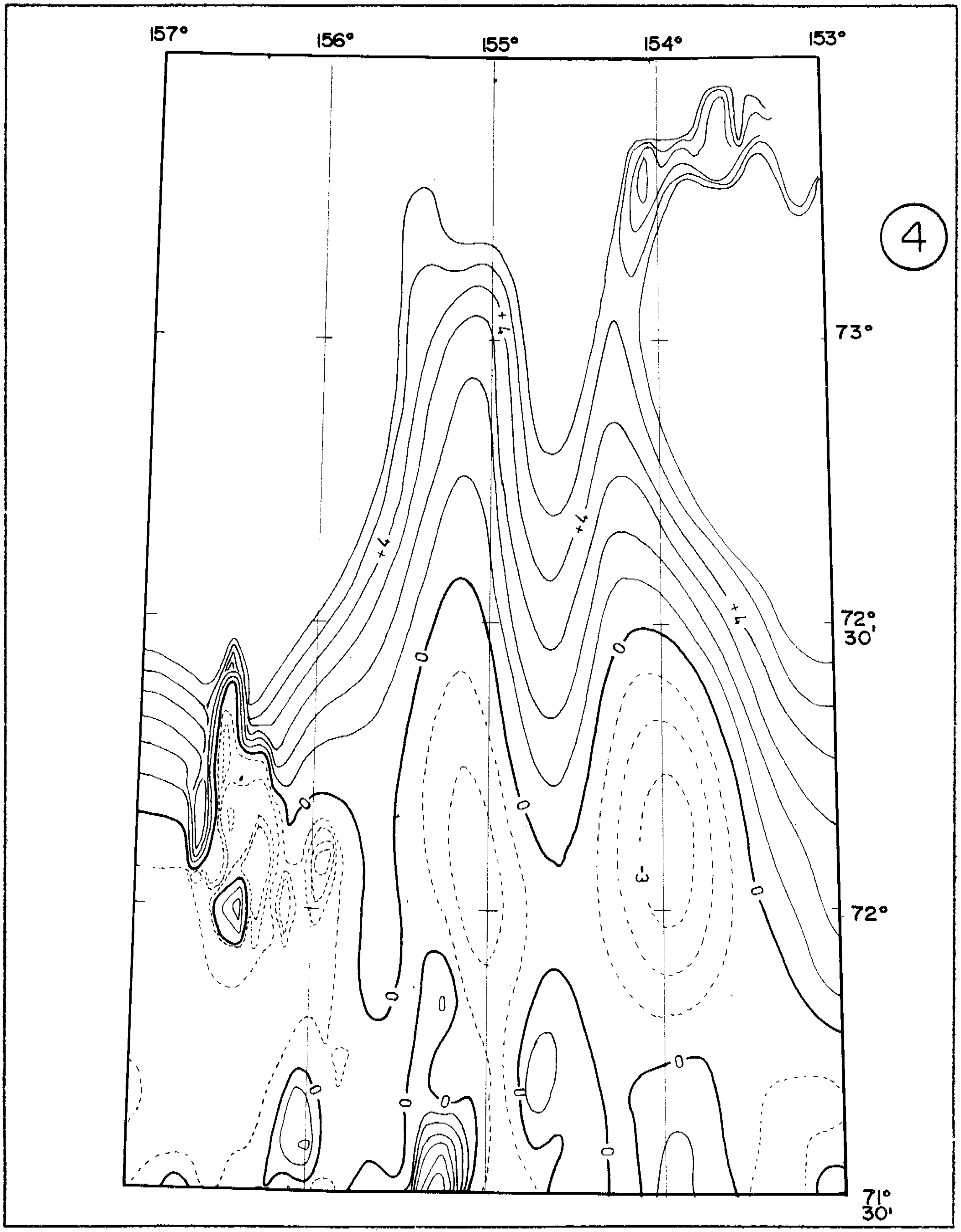
TEMPERATURE



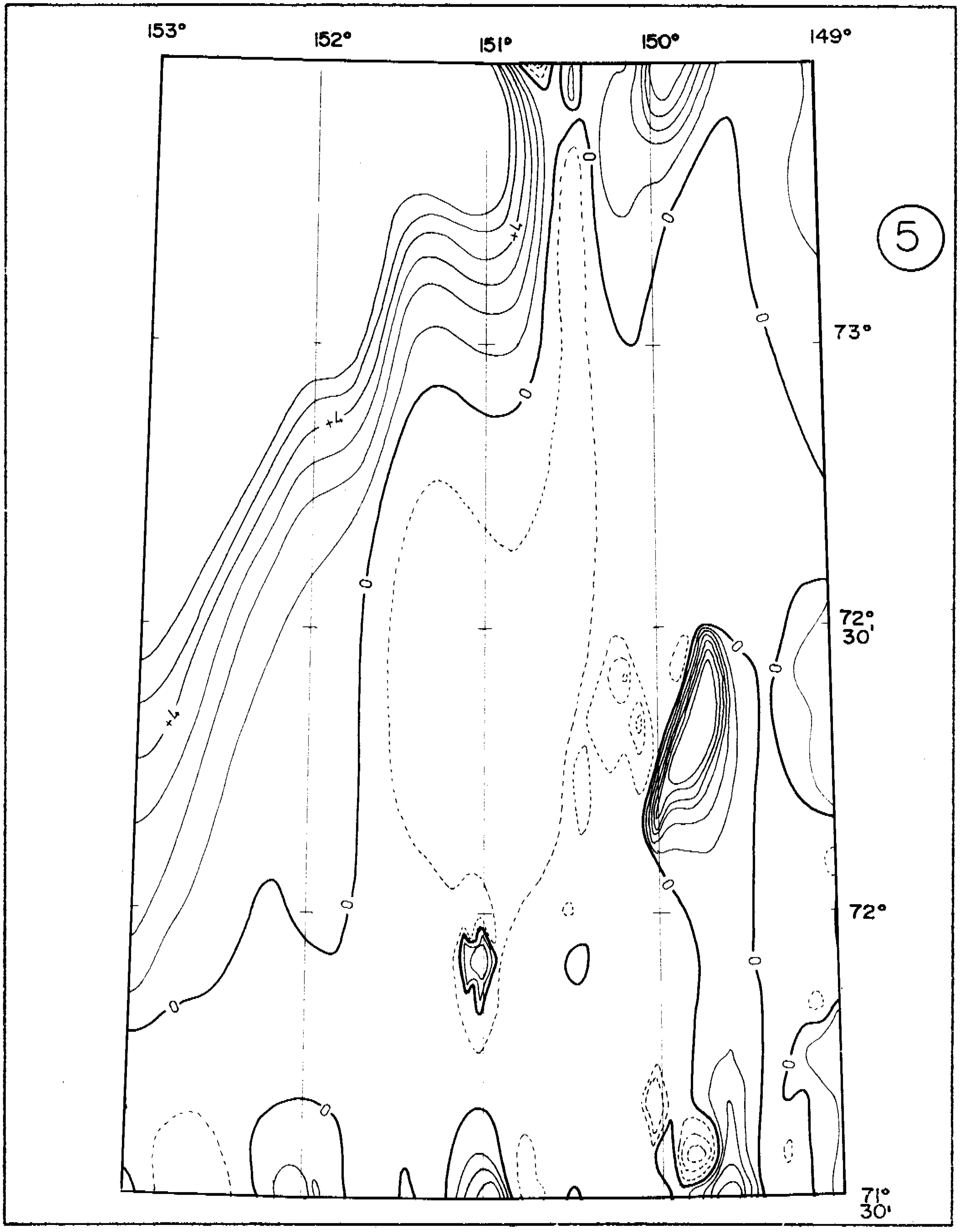
TEMPERATURE



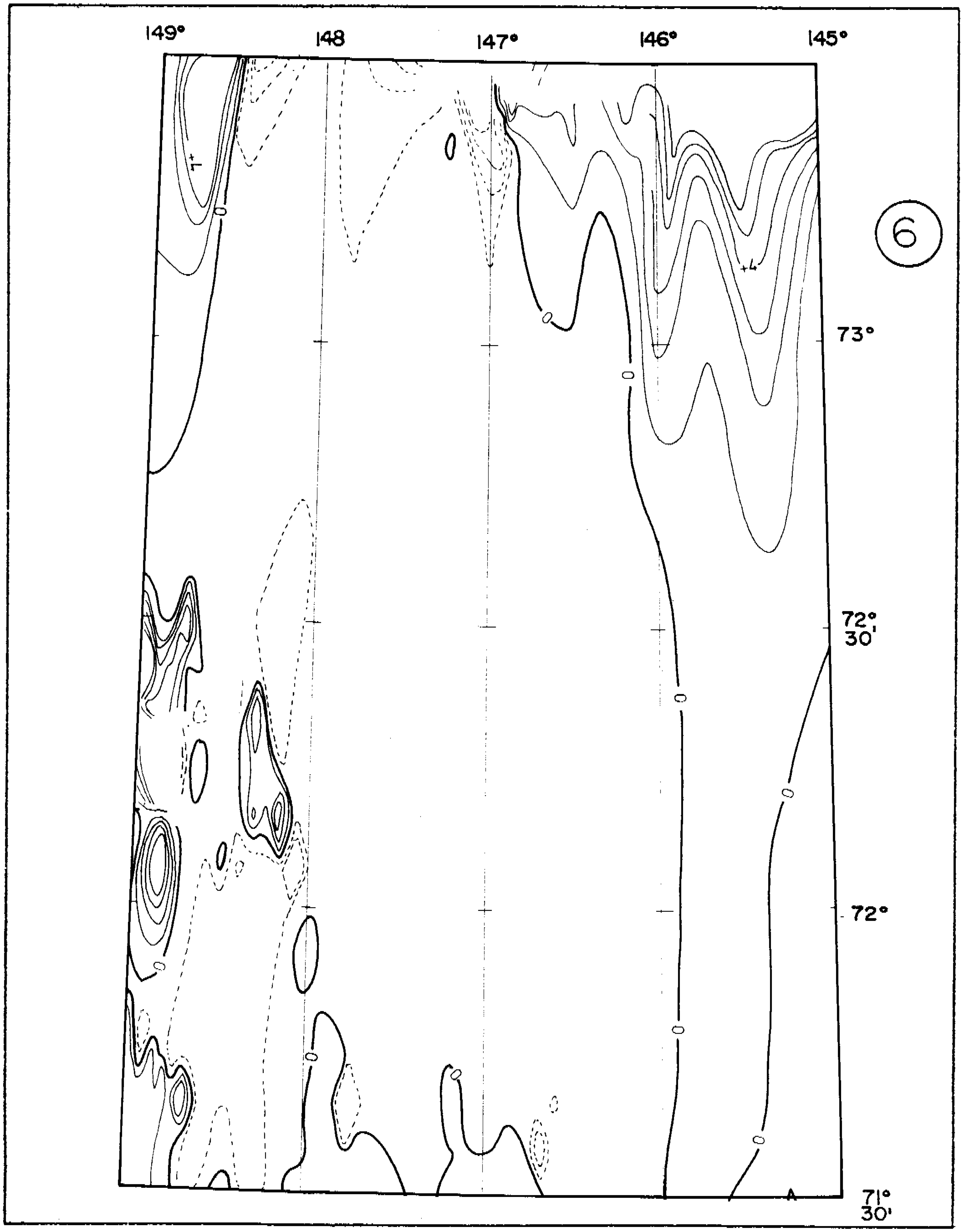
TEMPERATURE



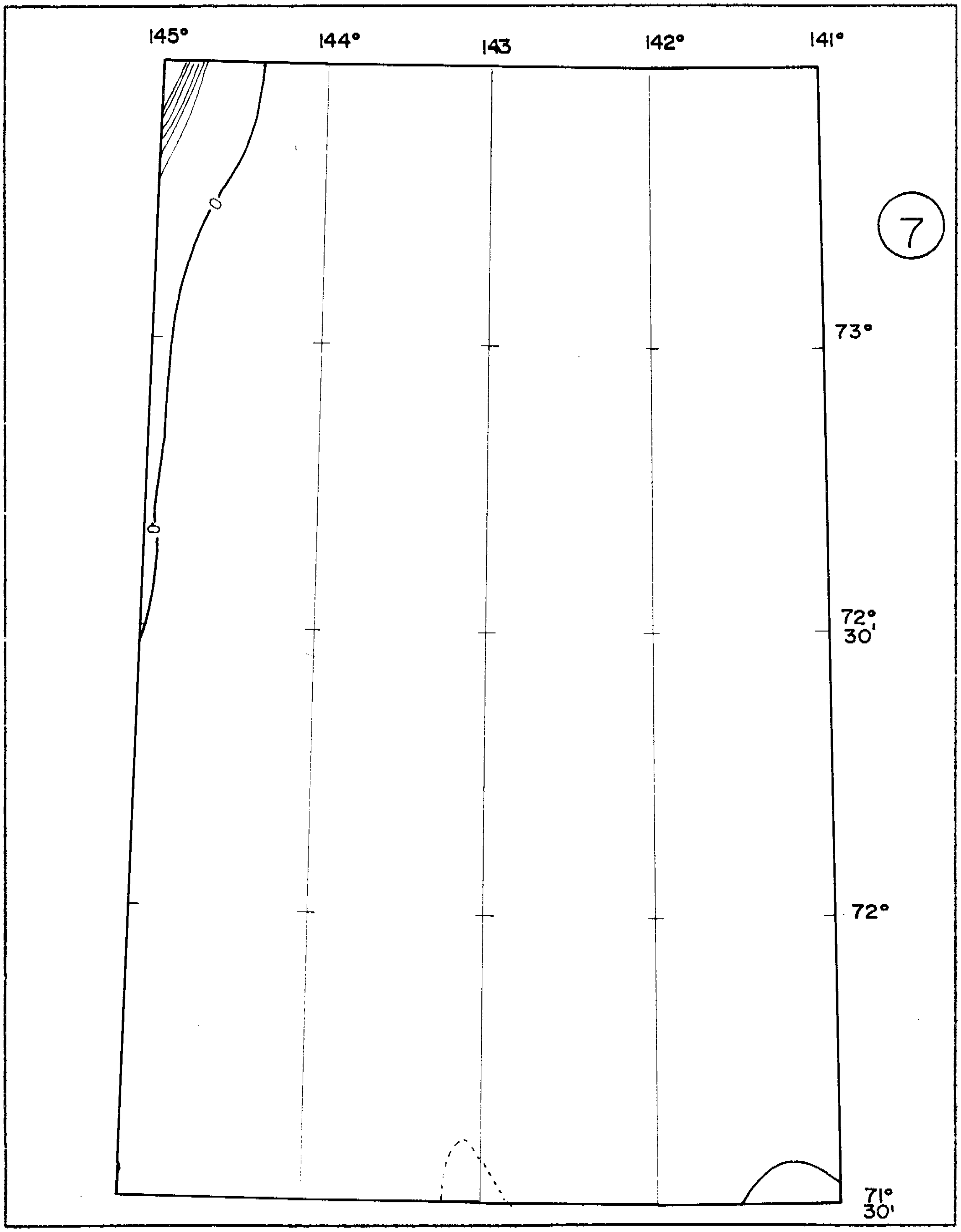
TEMPERATURE



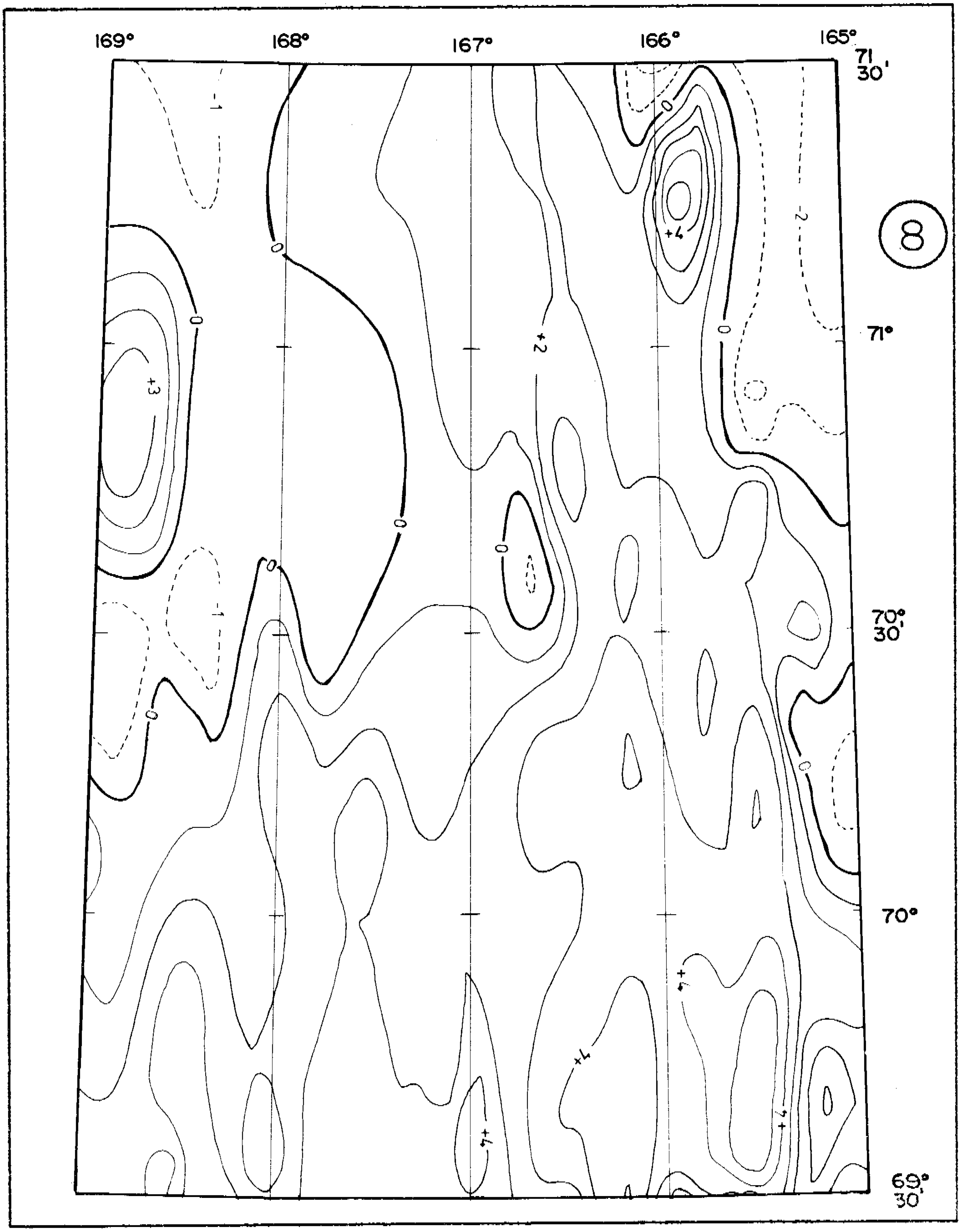
TEMPERATURE

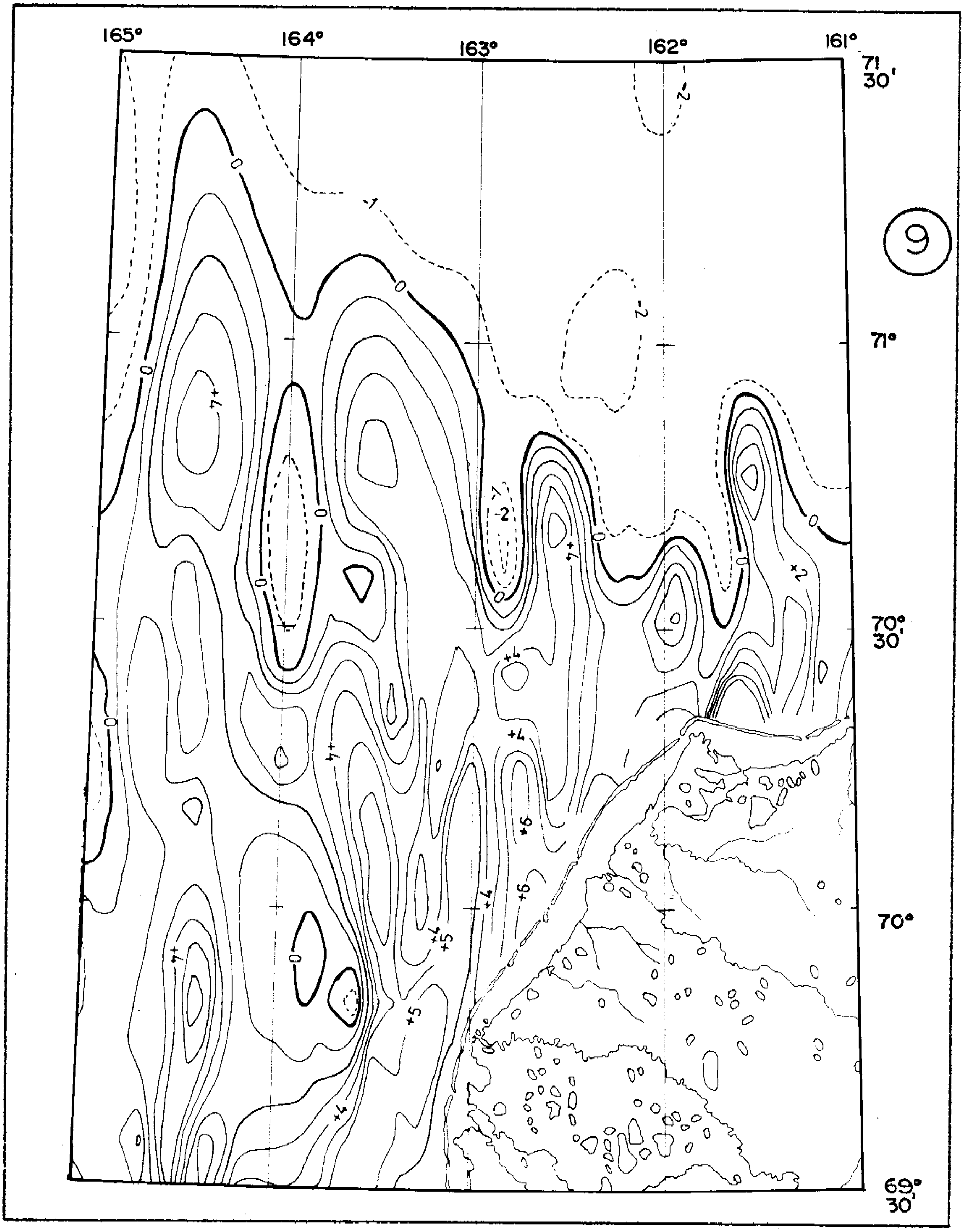


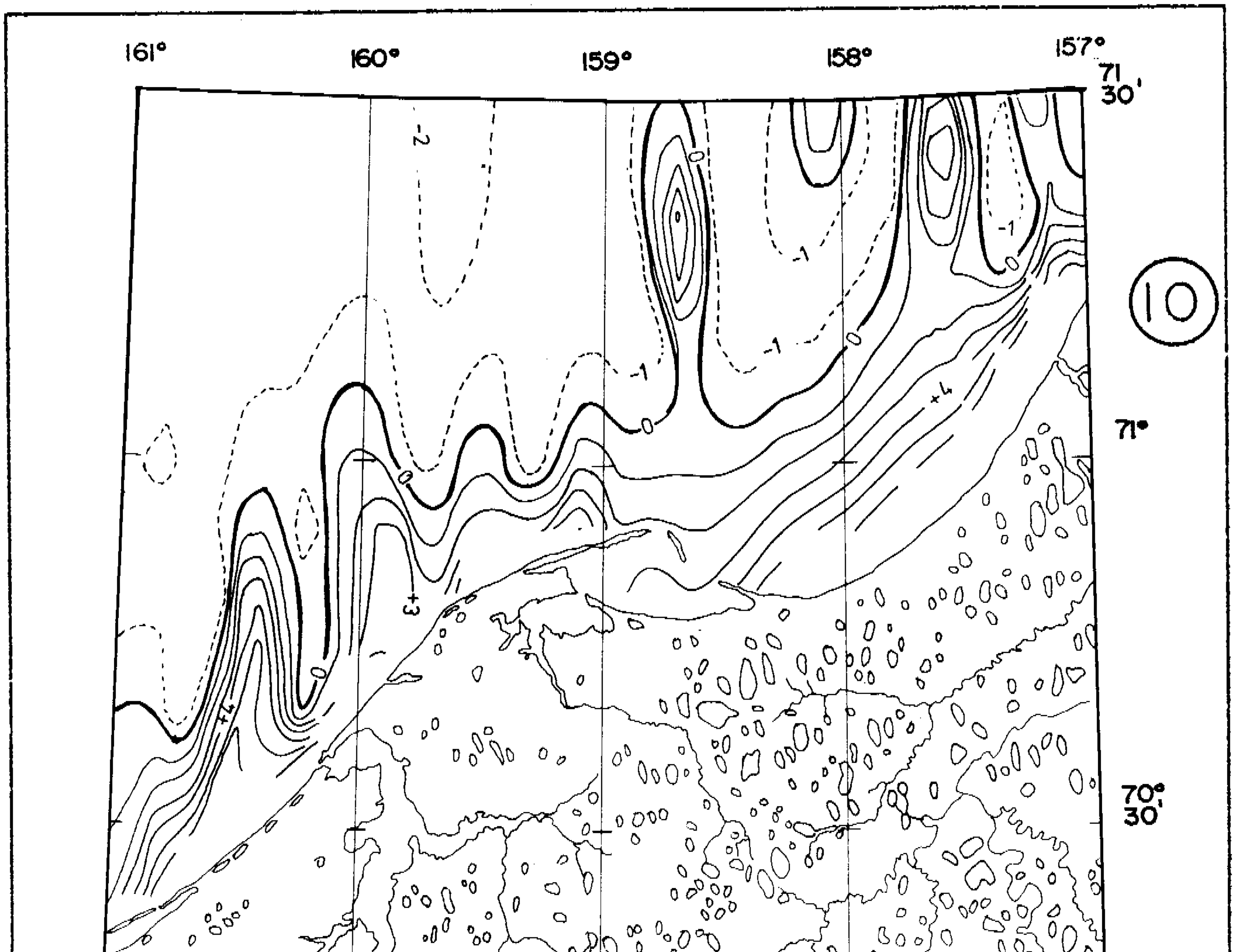
TEMPERATURE

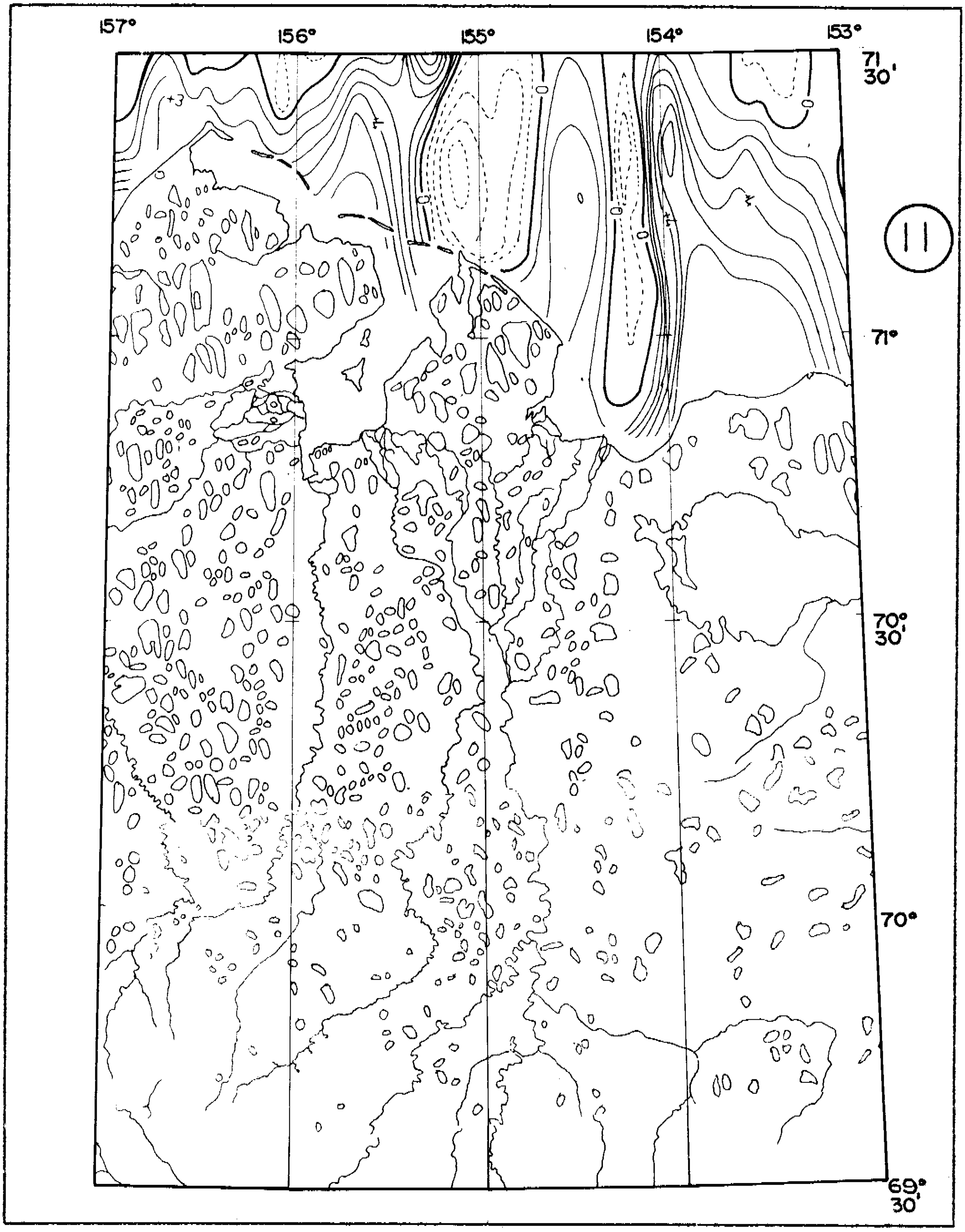


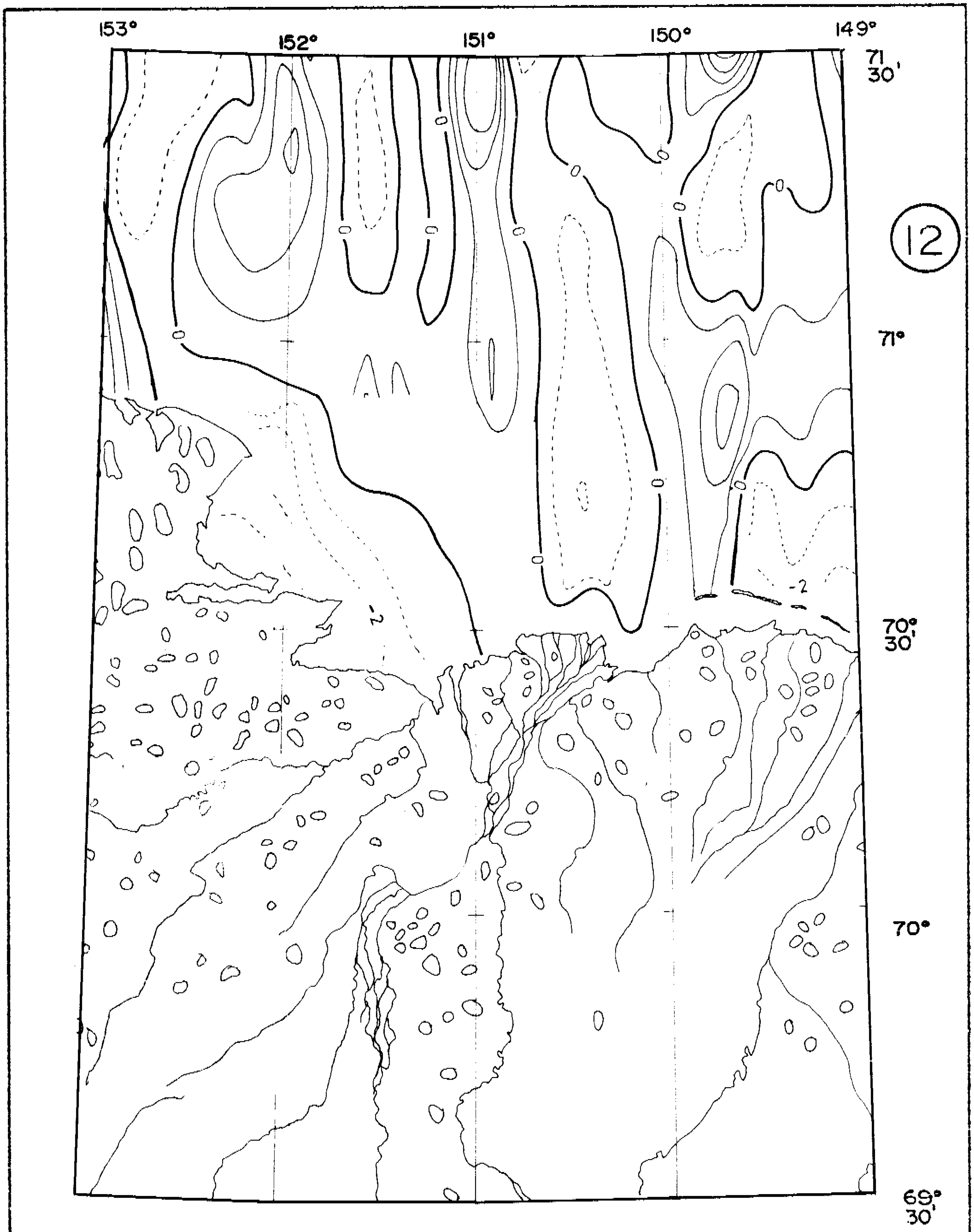
TEMPERATURE



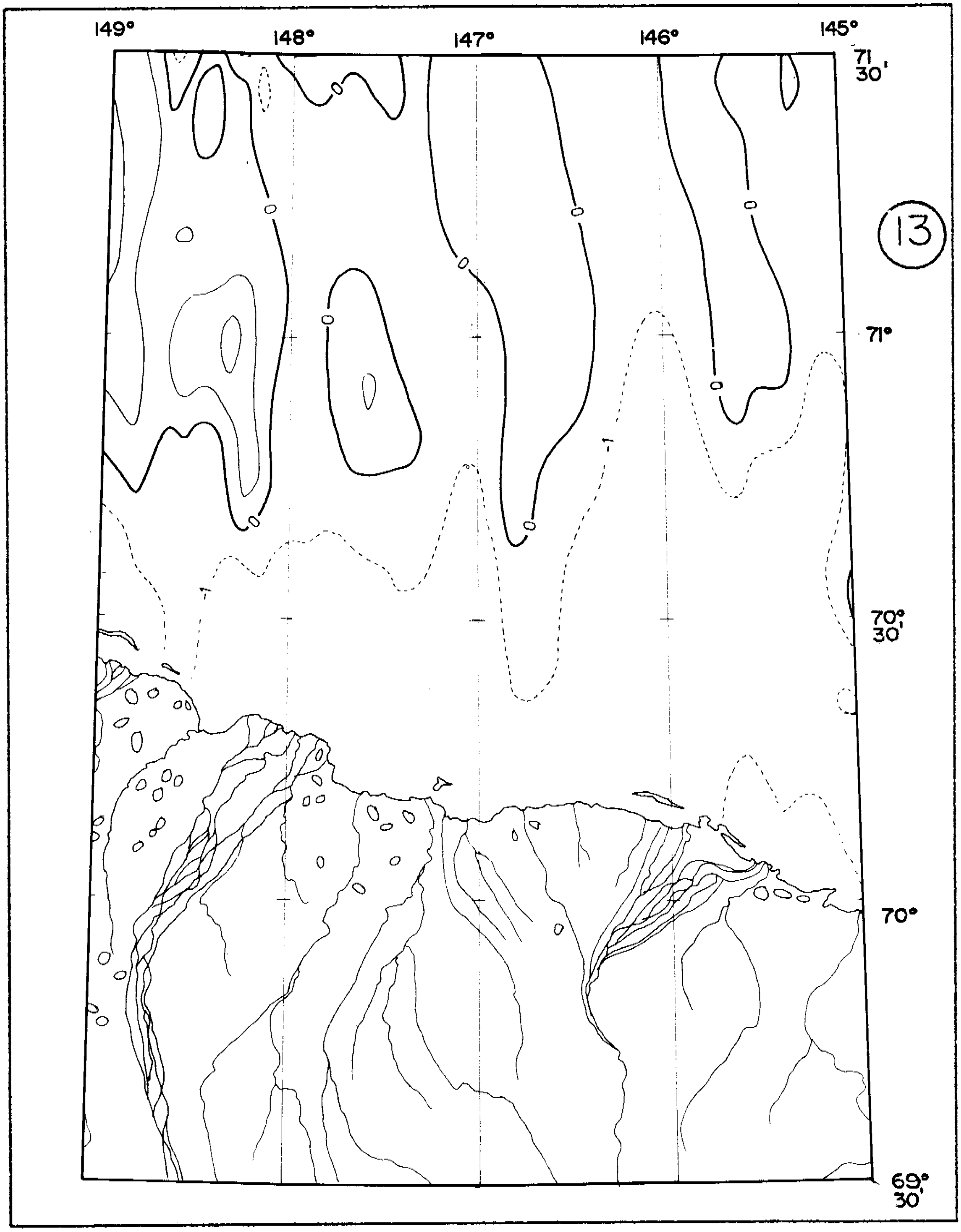

165°
164°
163°
162°
161°
71° 30'
71°
70° 30'
70°
69° 30'
9
0
-1
-2
+4
+2
+5
+6


161°
160°
159°
158°
157°
71 30'
71°
70° 30'
70°
69° 30'
10
-2
-1
-1
-1
-1
0
0
0
0
0
+3
+4
+4

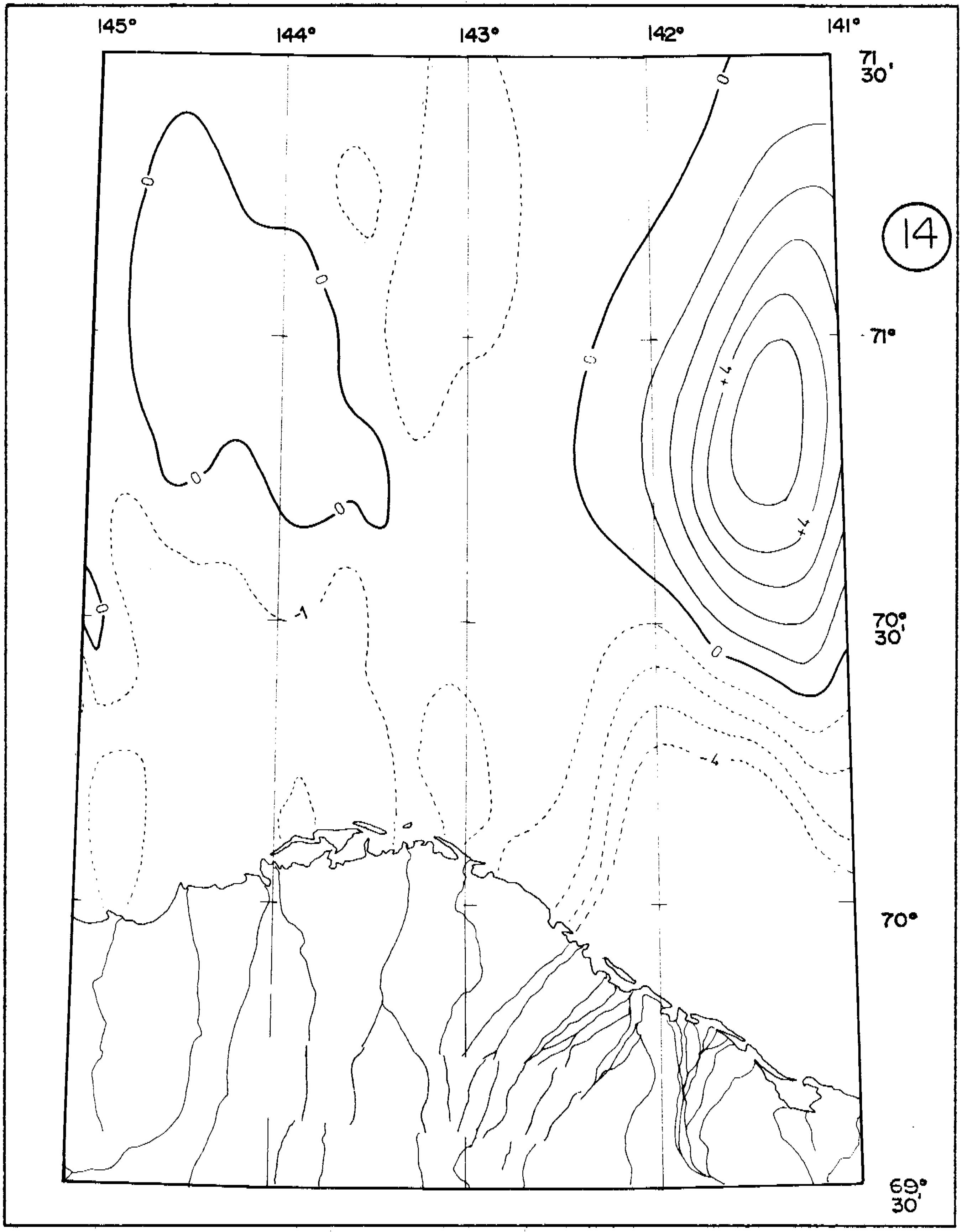

157°
156°
155°
154°
153°
71° 30'
71°
70° 30'
70°
69° 30'
+3
0
11


153°
152°
151°
150°
149°
71° 30'
71°
70° 30'
70°
69° 30'
12
0
-2

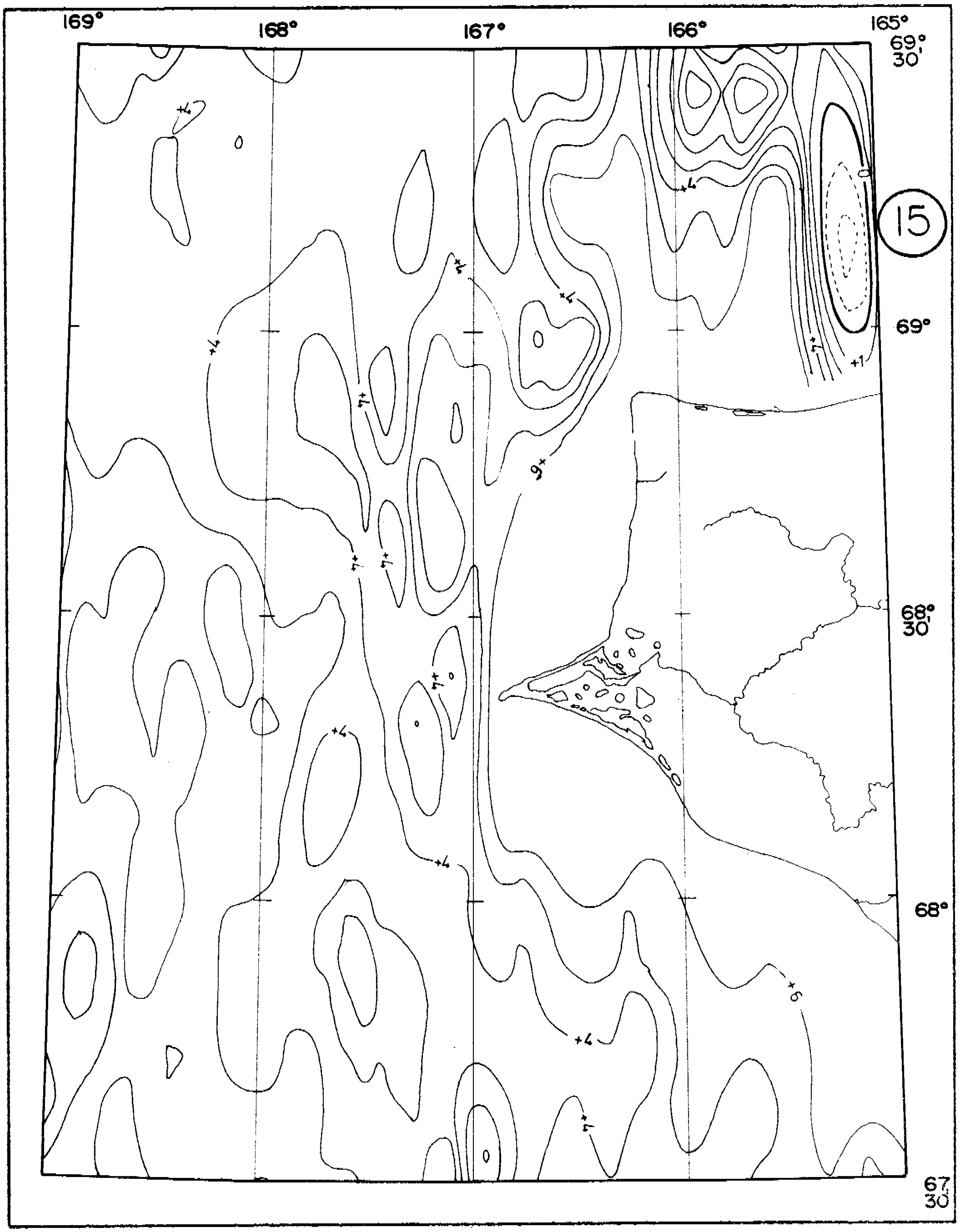
TEMPERATURE



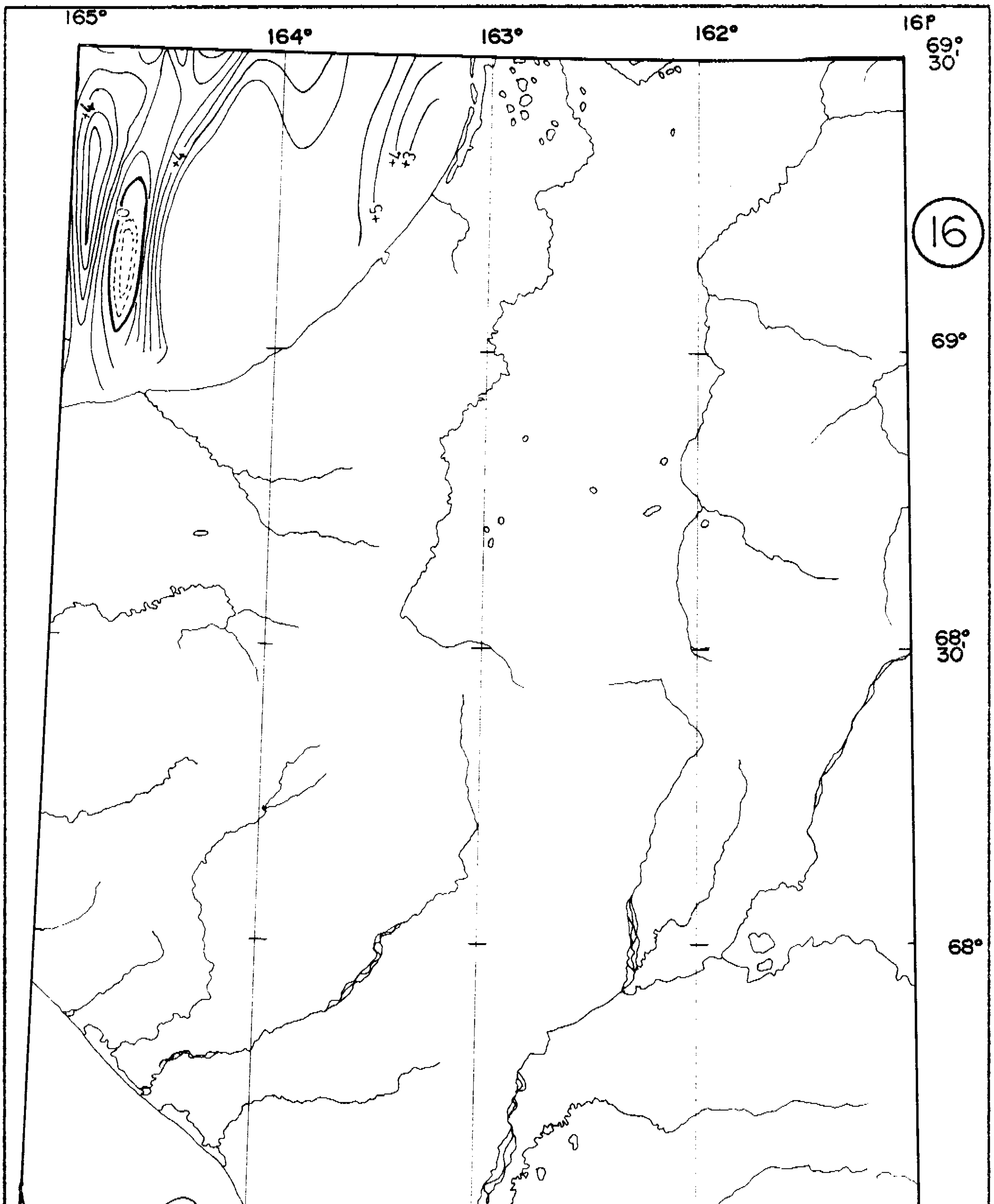
TEMPERATURE



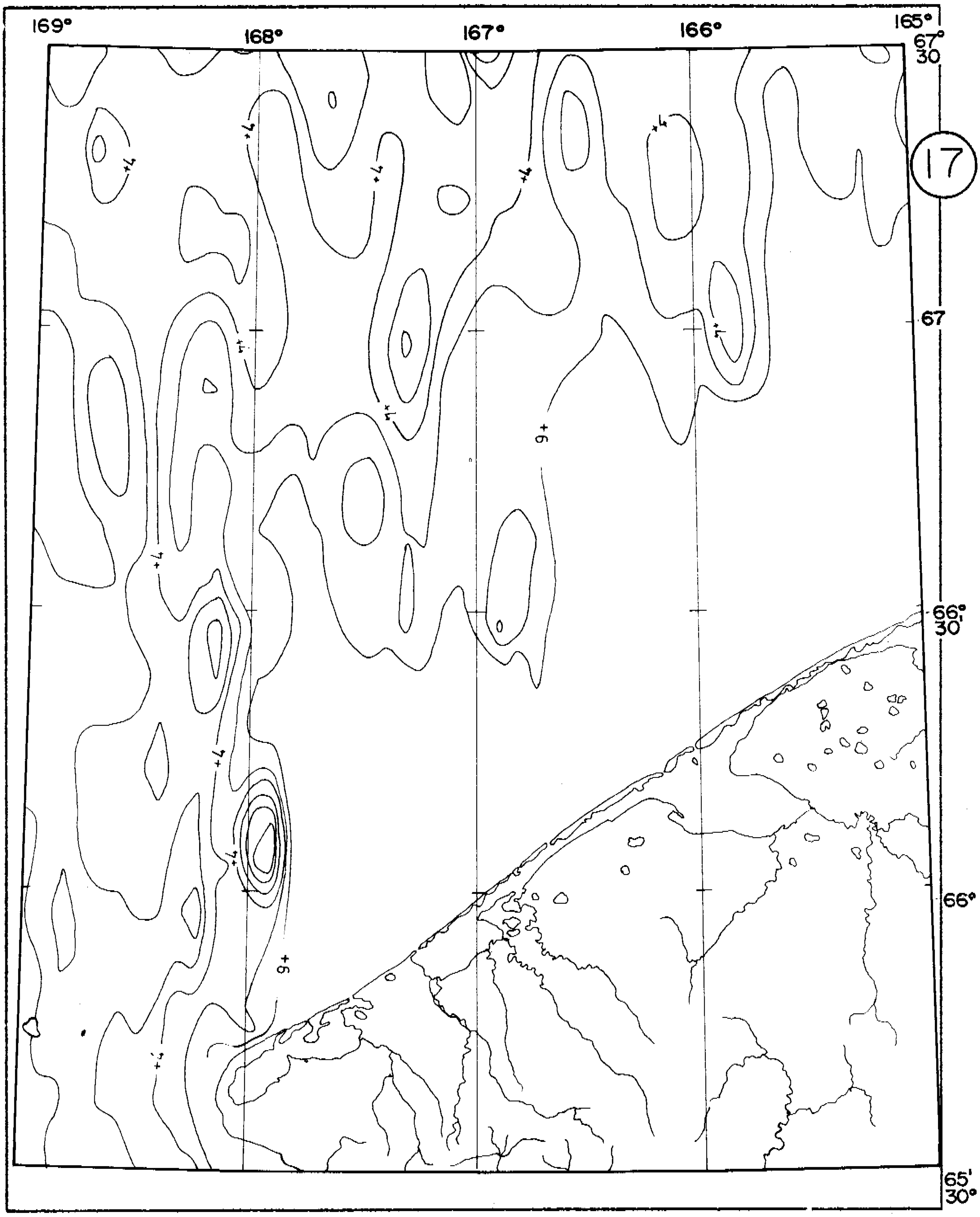
TEMPERATURE



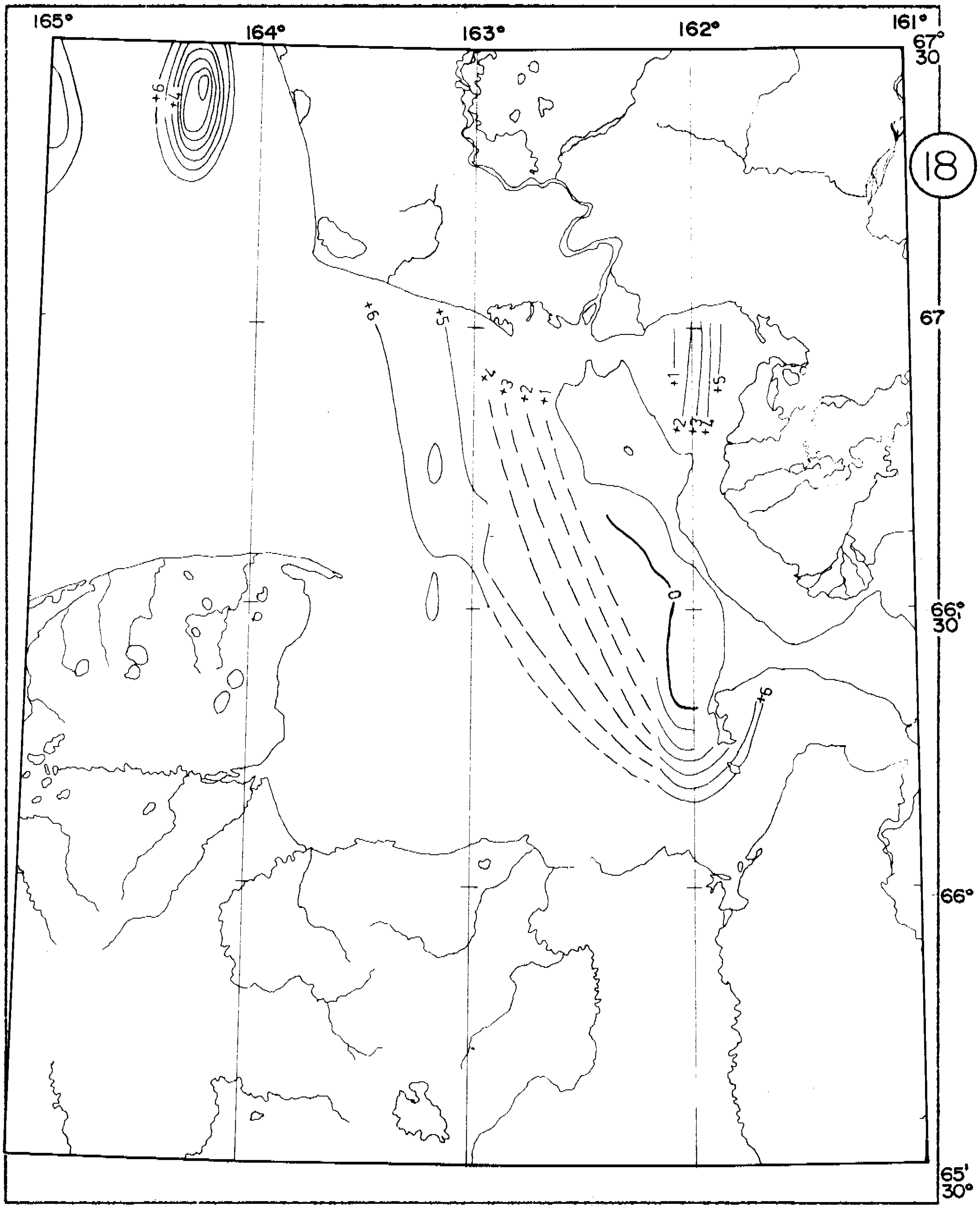
TEMPERATURE



TEMPERATURE



TEMPERATURE



CHUKCHI SEA
BEAUFORT SEA

RESEARCH UNIT 516 OCSEAP
NOAA INSTAAR 1977

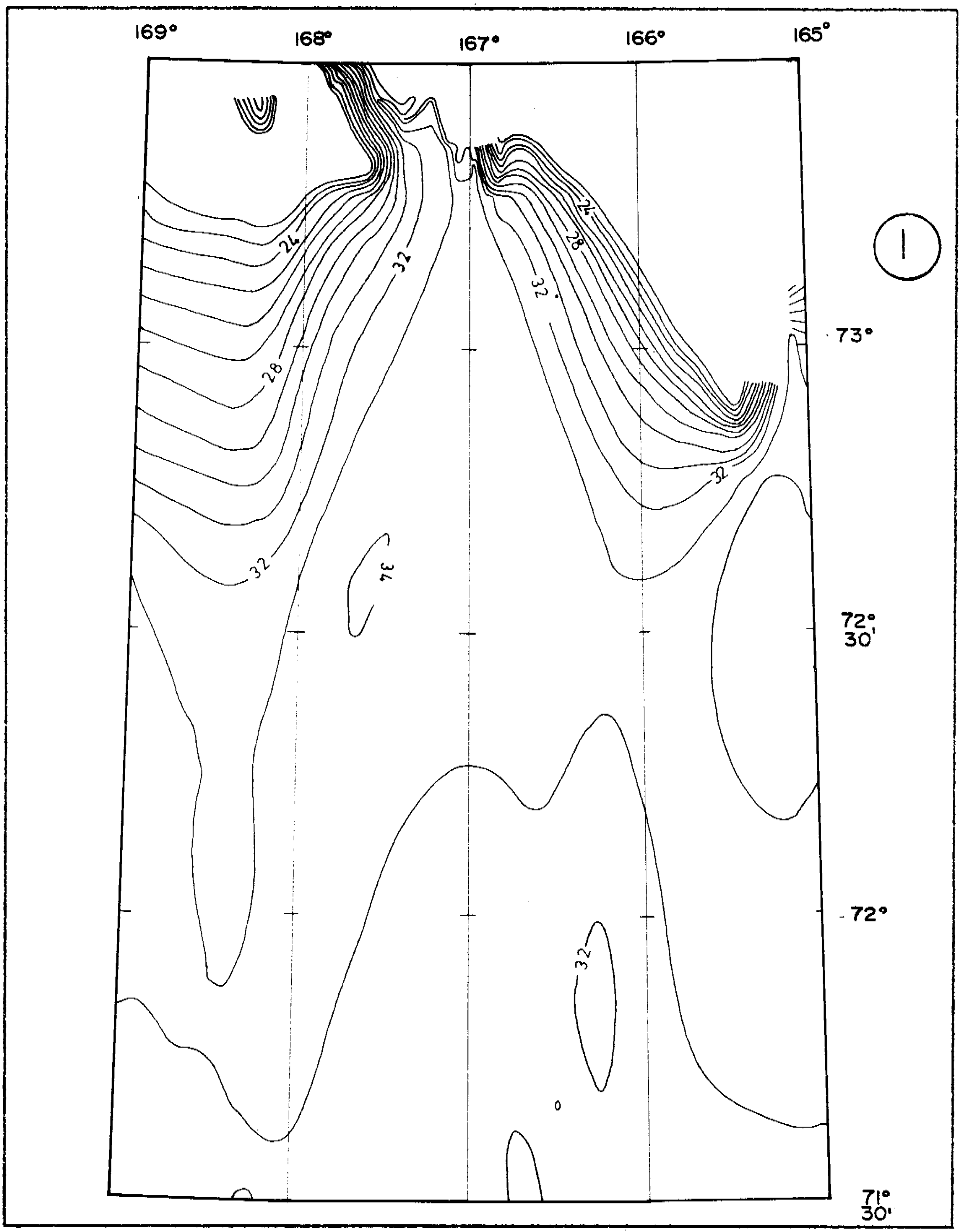
SALINITY OF THE SEA WATER AT THE MAXIMAL SAMPLING DEPTH (SUMMER)

A SOURCE MAP FOR SUBMARINE PERMAFROST PREDICTION

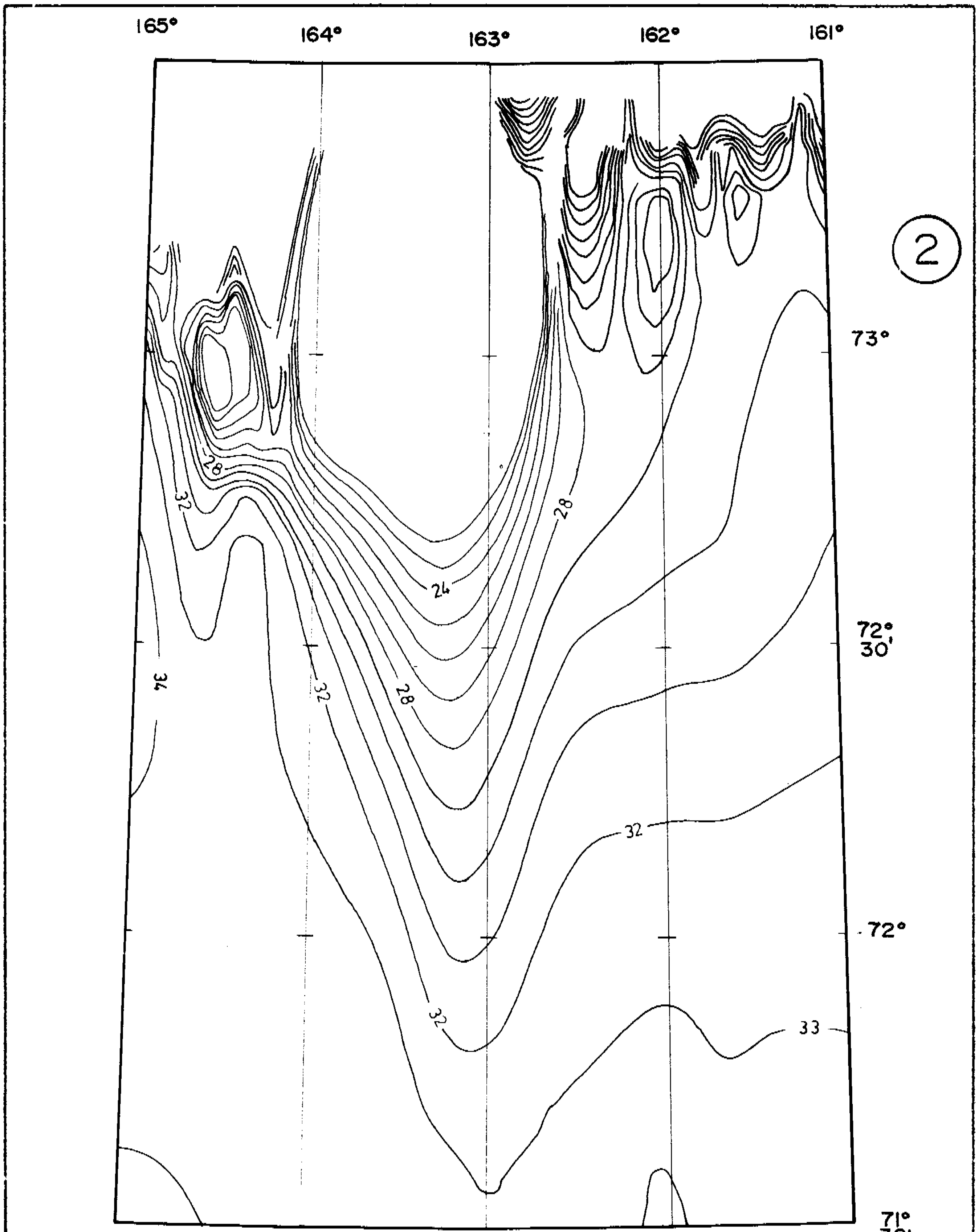
SALINITY — 22 TO 36‰
INTERVAL OF 1‰
SCALE — 1:1,000,000

GEOGRAPHIC BASED INFORMATION MANAGEMENT SYSTEM FOR PERMAFROST IN THE CHUKCHI AND BEAUFORT SEAS

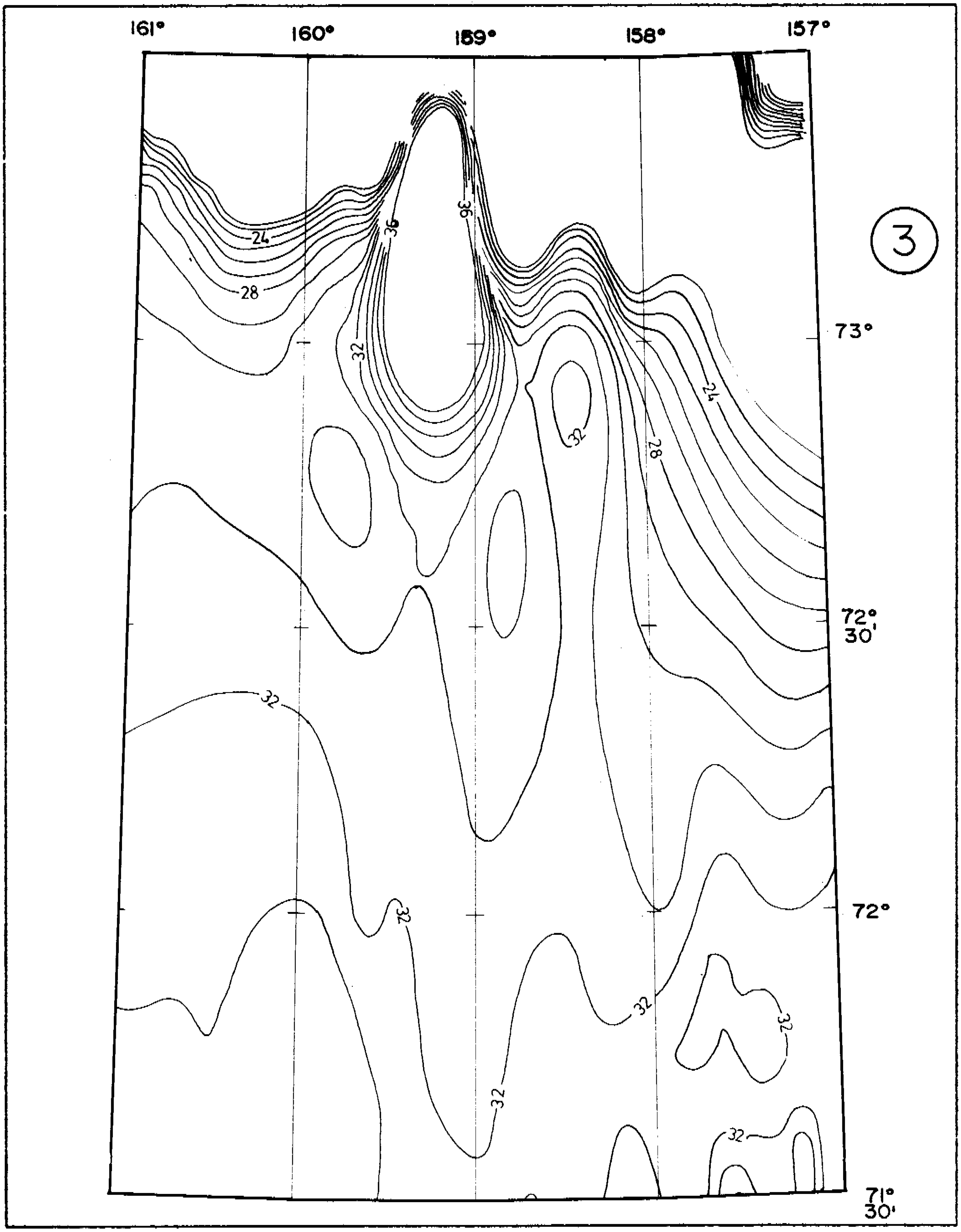
SALINITY



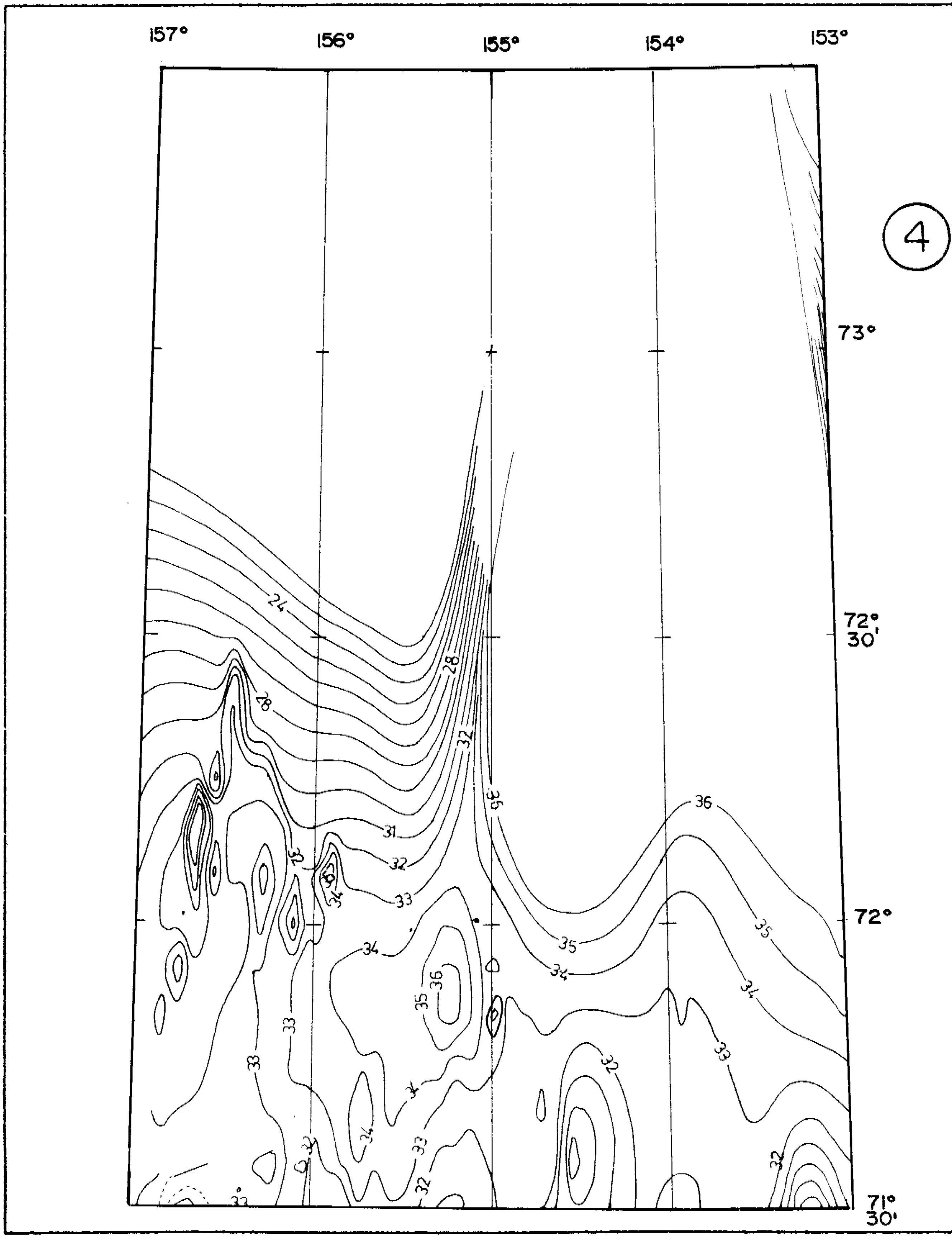
SALINITY



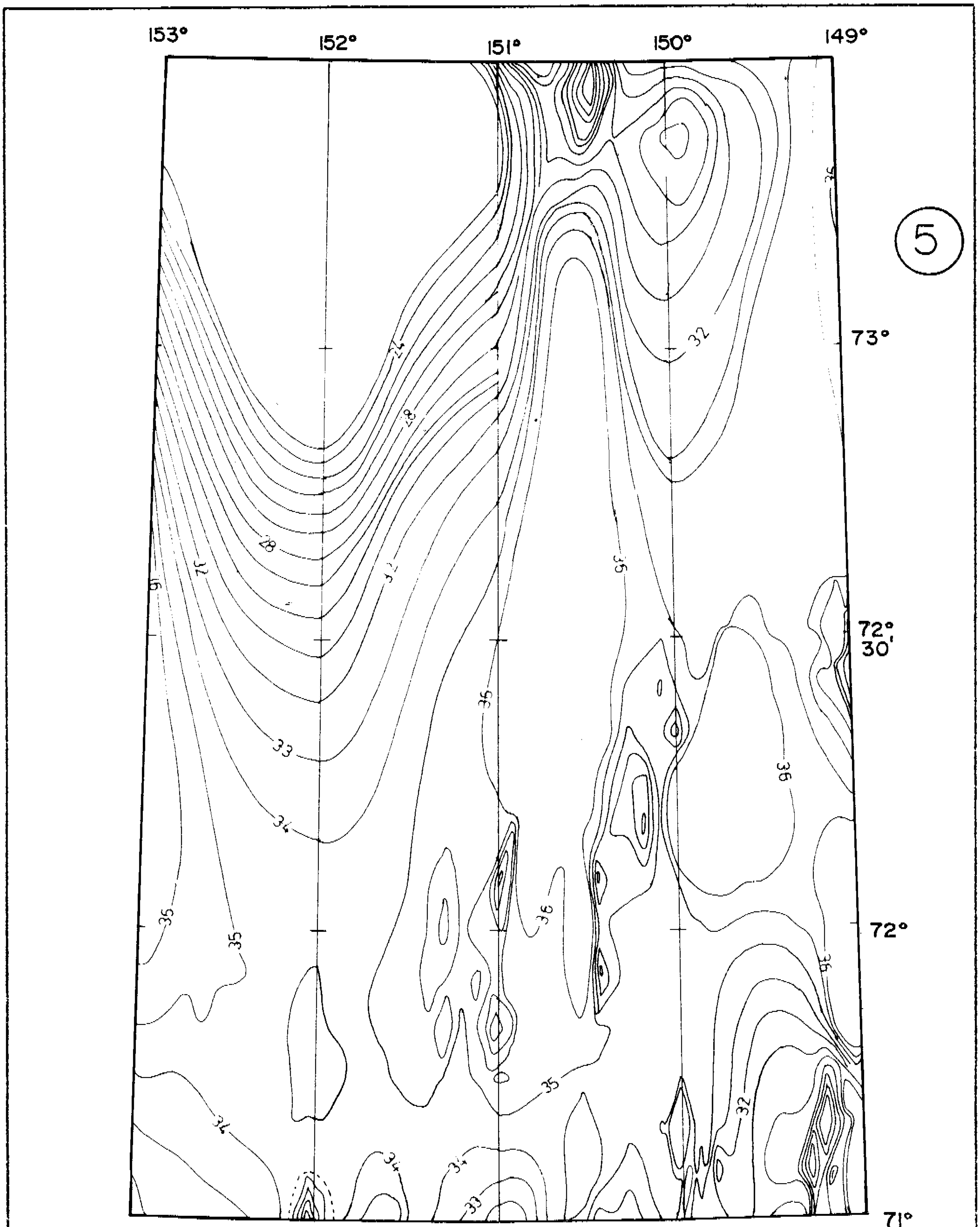
SALINITY


161°
160°
159°
158°
157°
3
73°
72° 30'
72°
71° 30'
24
28
36
36
32
24
32
28
32
32
32
32
32
32

SALINITY

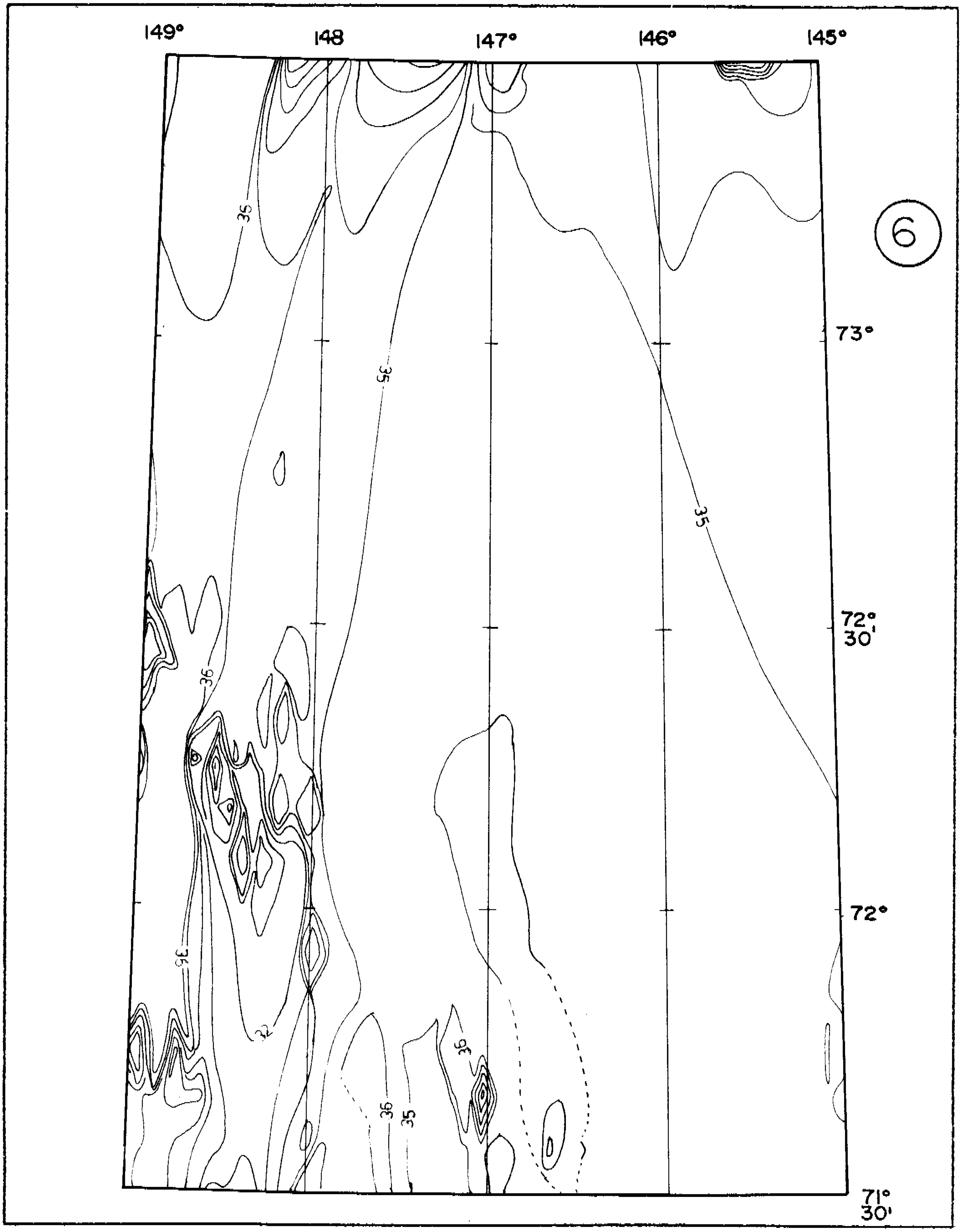

157°
156°
155°
154°
153°
4
73°
72° 30'
72°
71° 30'
24
28
28
32
31
32
33
34
35
36
36
35
34
35
34
33
32
34
36
35
33
33
33
34
34
33
32
32
32
33

SALINITY

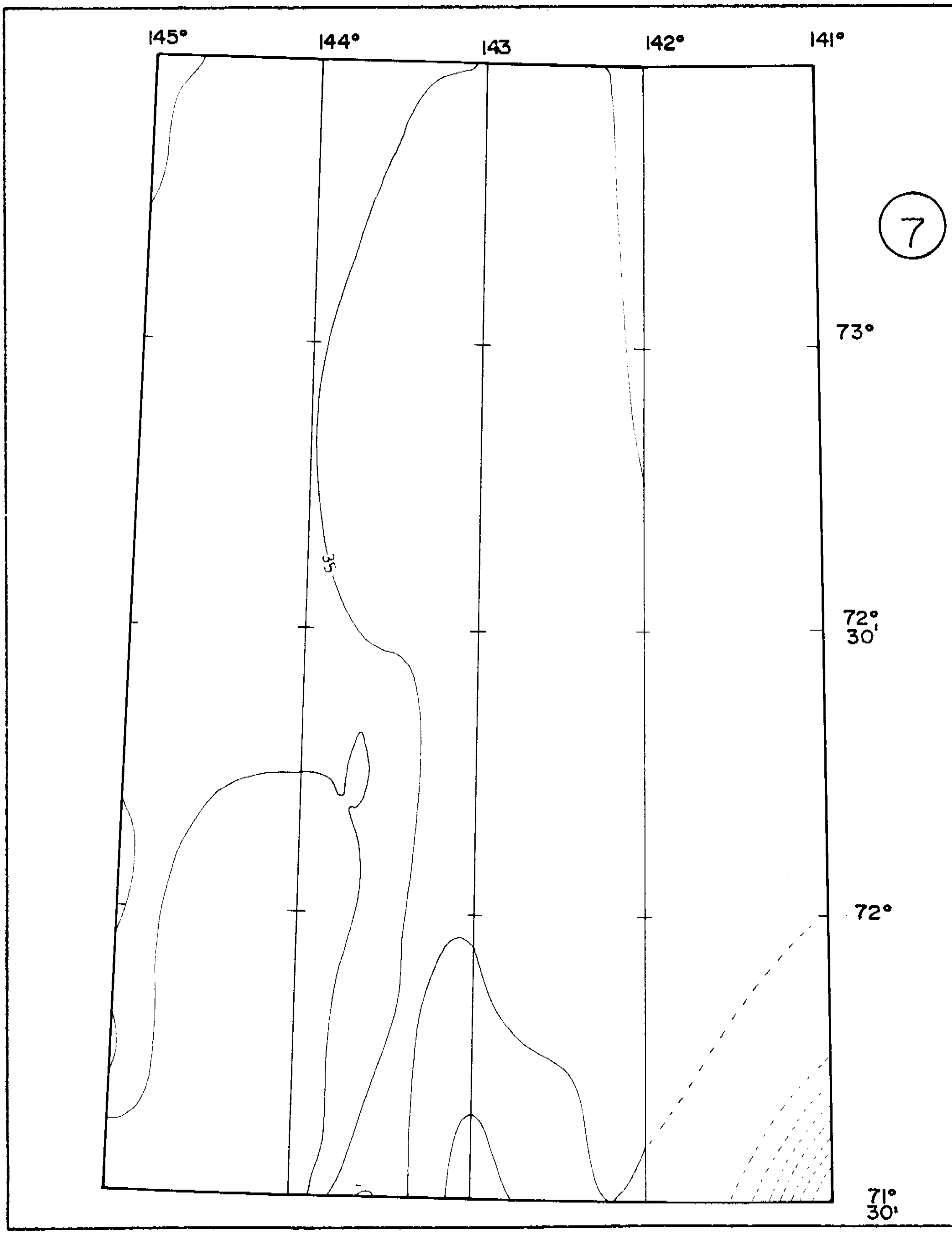


153°
152°
151°
150°
149°
5
73°
72° 30'
72°
71° 30'
24
28
28
32
32
33
34
35
35
35
35
36
36
36
35
34
34
34
33
32

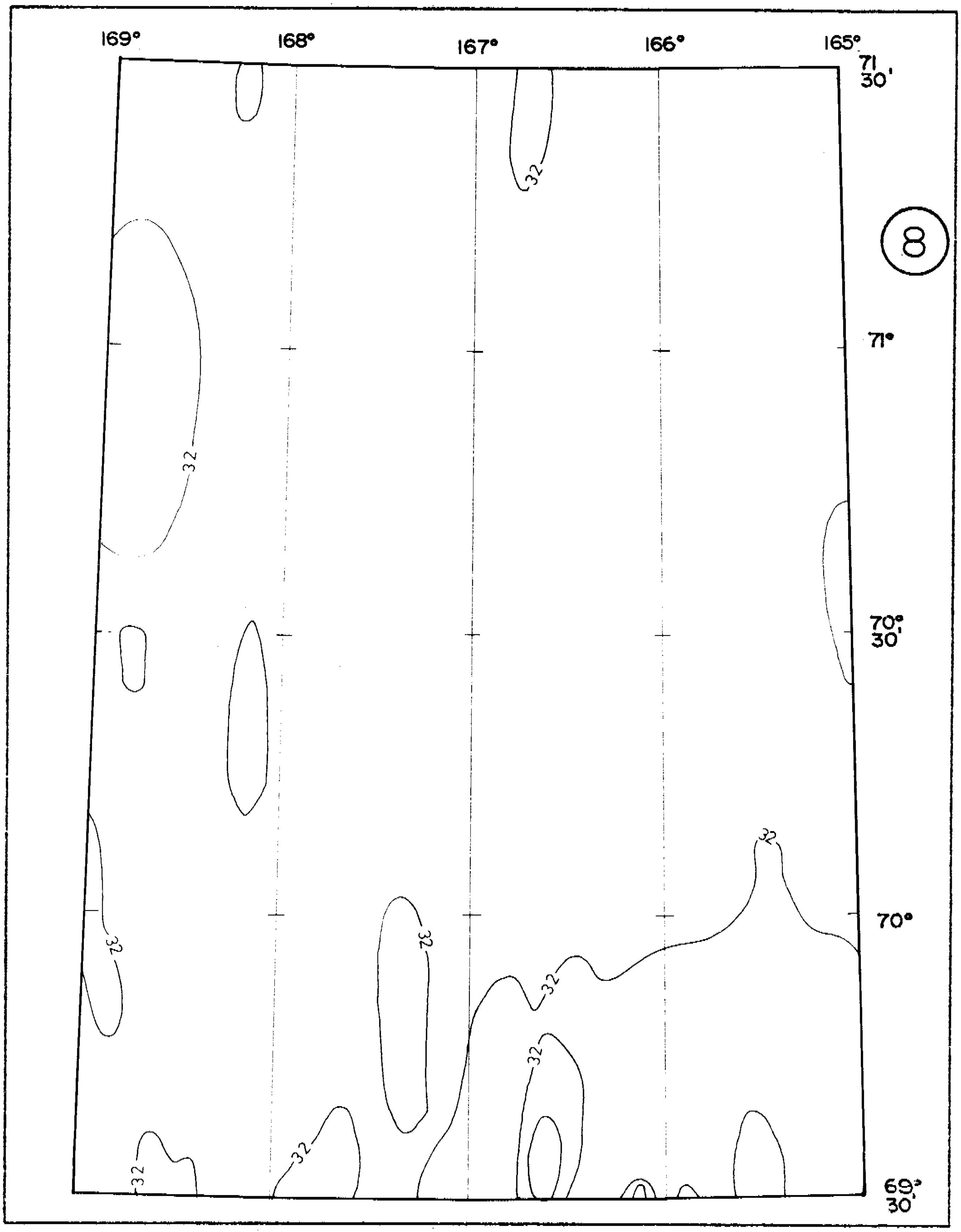
SALINITY



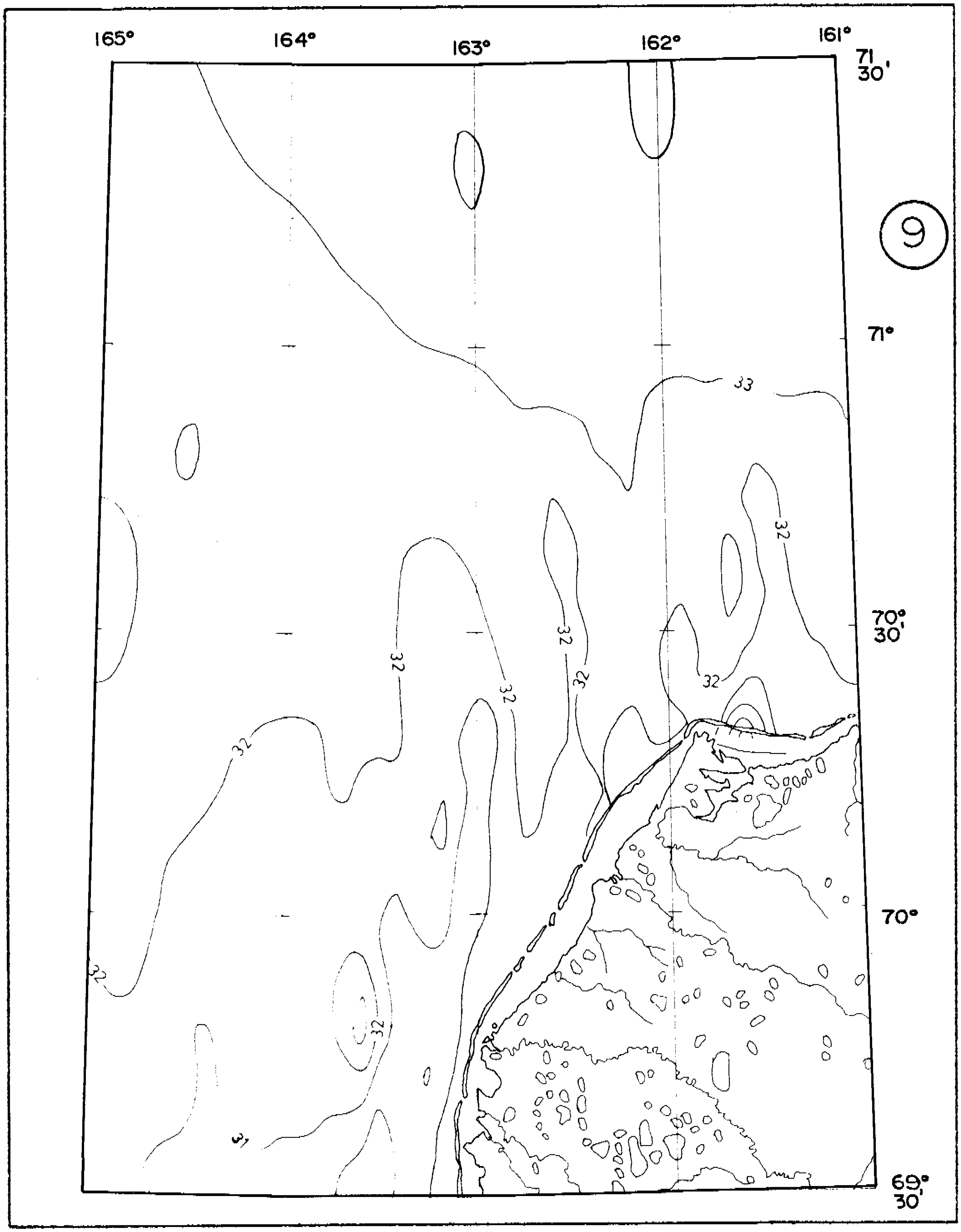
SALINITY

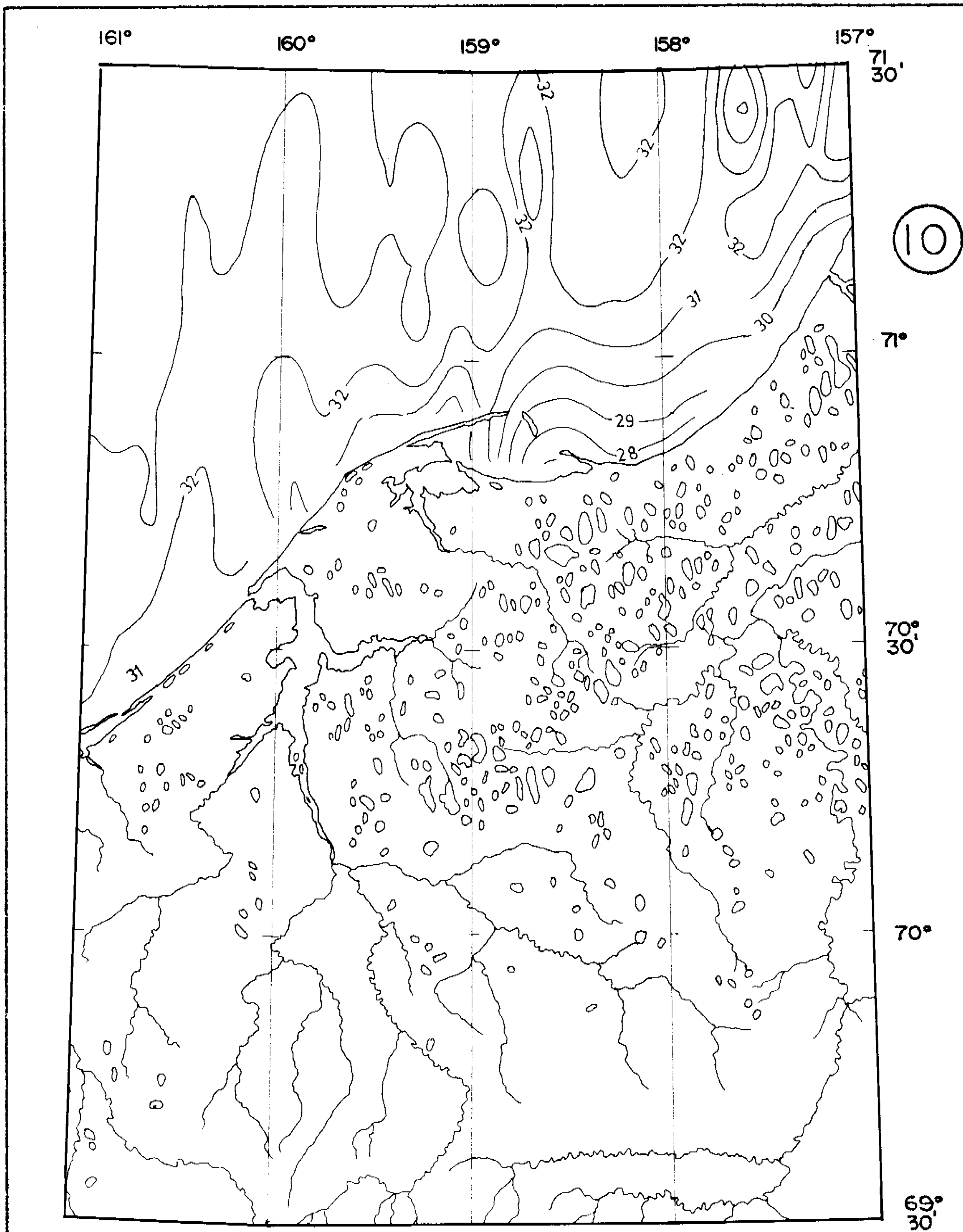


SALINITY

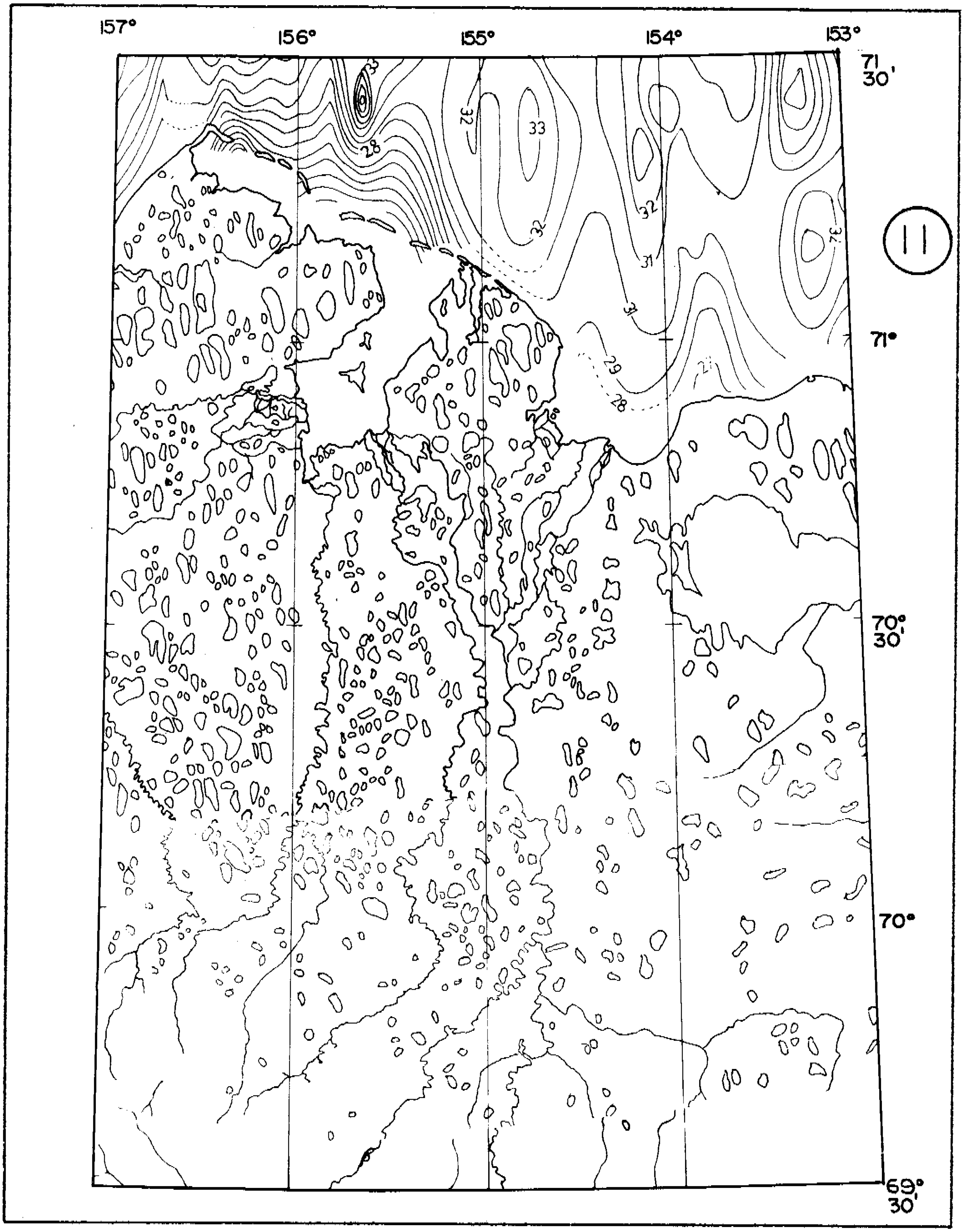

169°
168°
167°
166°
165°
71 30'
71°
70° 30'
70°
69° 30'
8
32
32
32
32
32
32
32
32
32

SALINITY

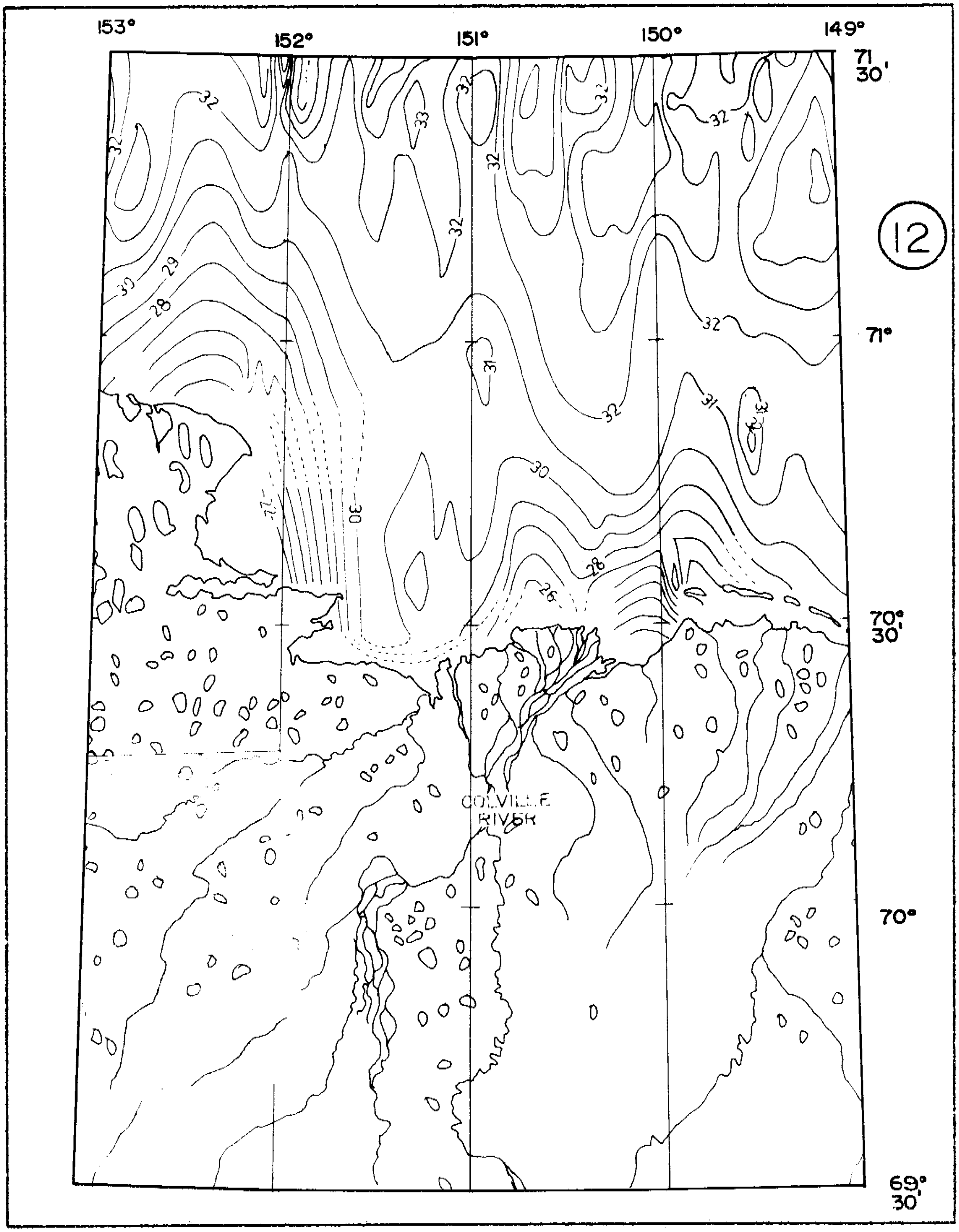

165°
164°
163°
162°
161°
71 30'
9
71°
33
32
32
32
32
32
32
32
70° 30'
70°
32
32
31
69° 30'


161°
160°
159°
158°
157°
71 30'
71°
70° 30'
70°
69° 30'
10
32
31
30
29
28

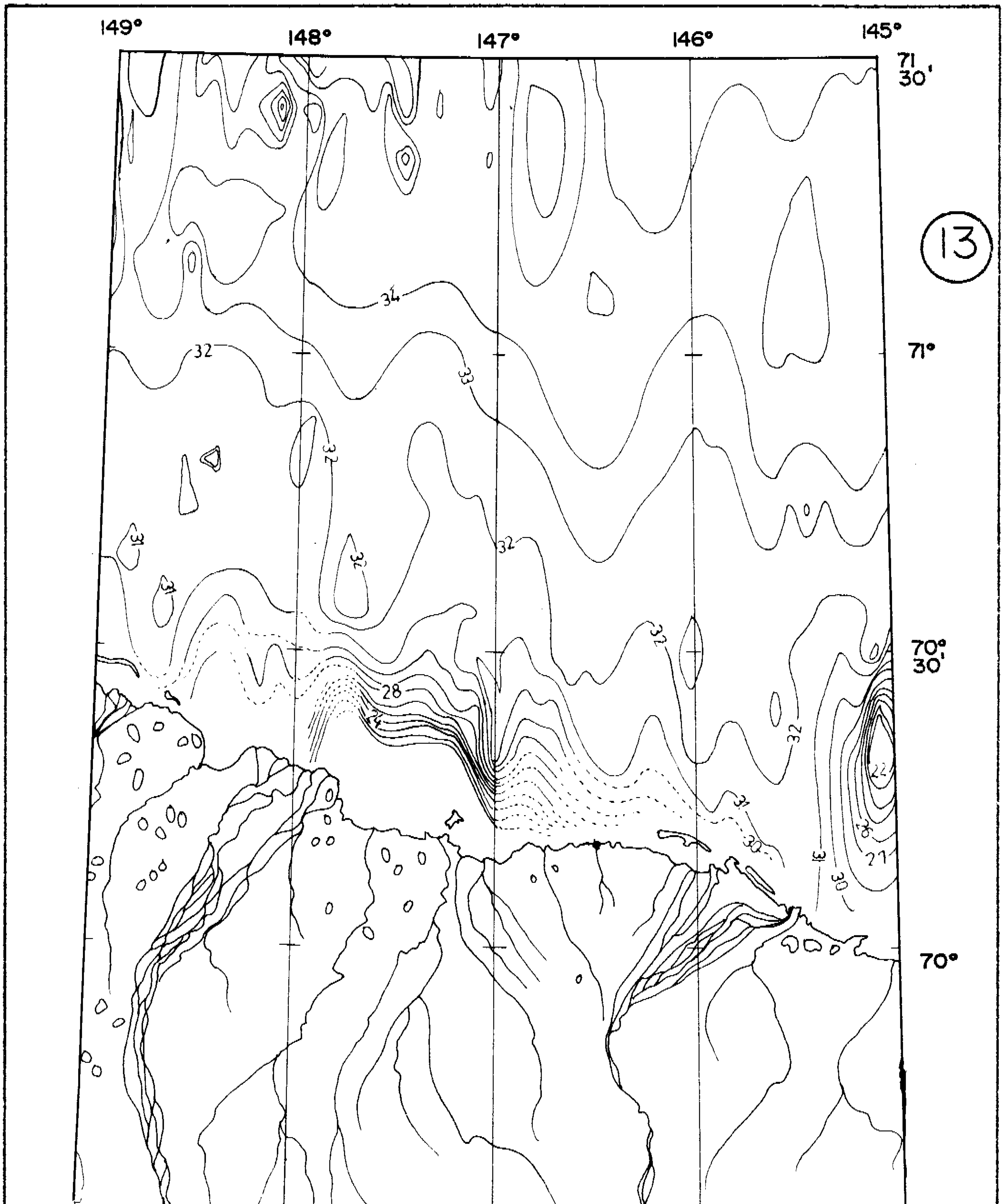
SALINITY



SALINITY

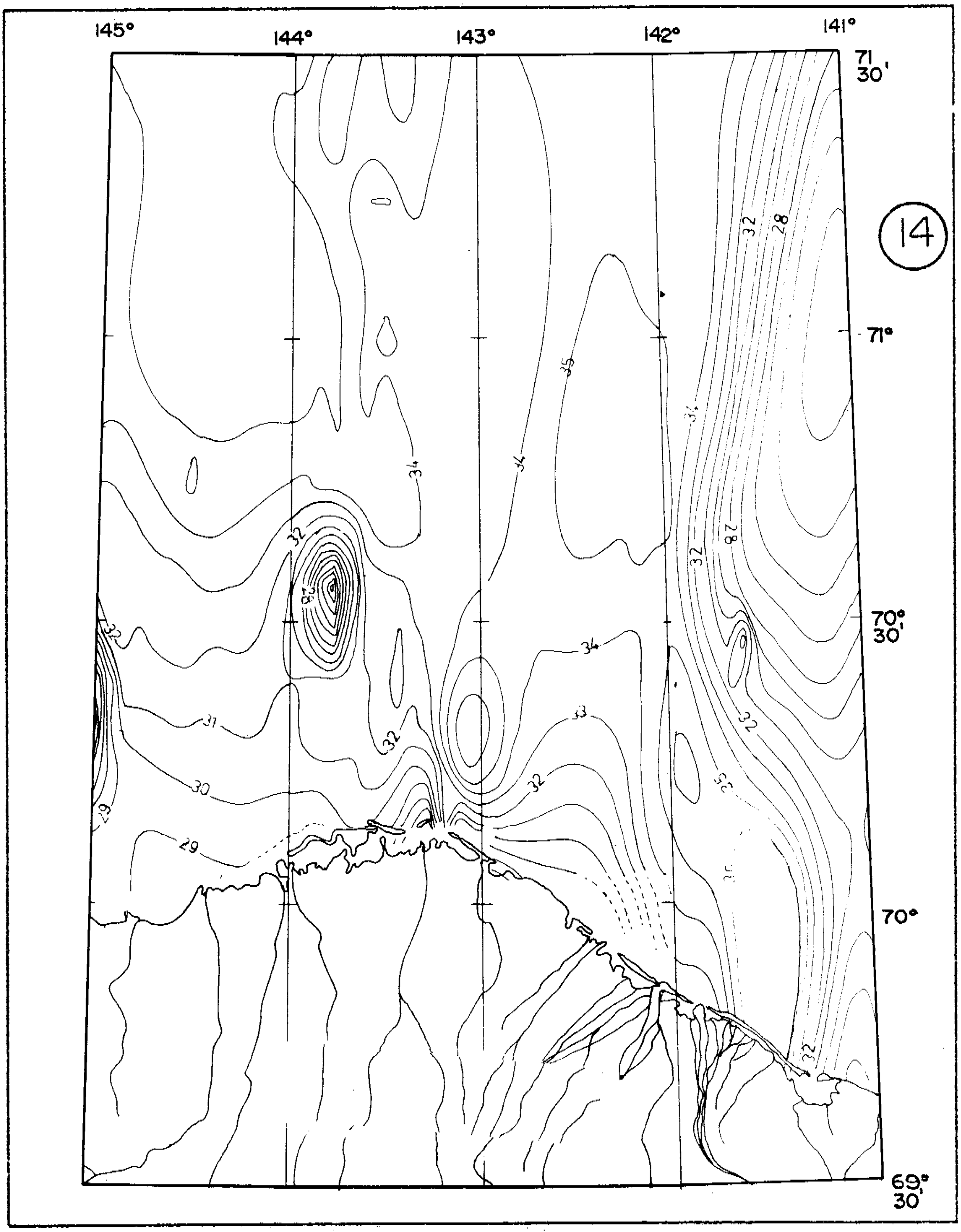

153°
152°
151°
150°
149°
71 30'
12
71°
70° 30'
70°
69° 30'
32
33
31
30
29
28
27
26
COLVILLE RIVER

SALINITY

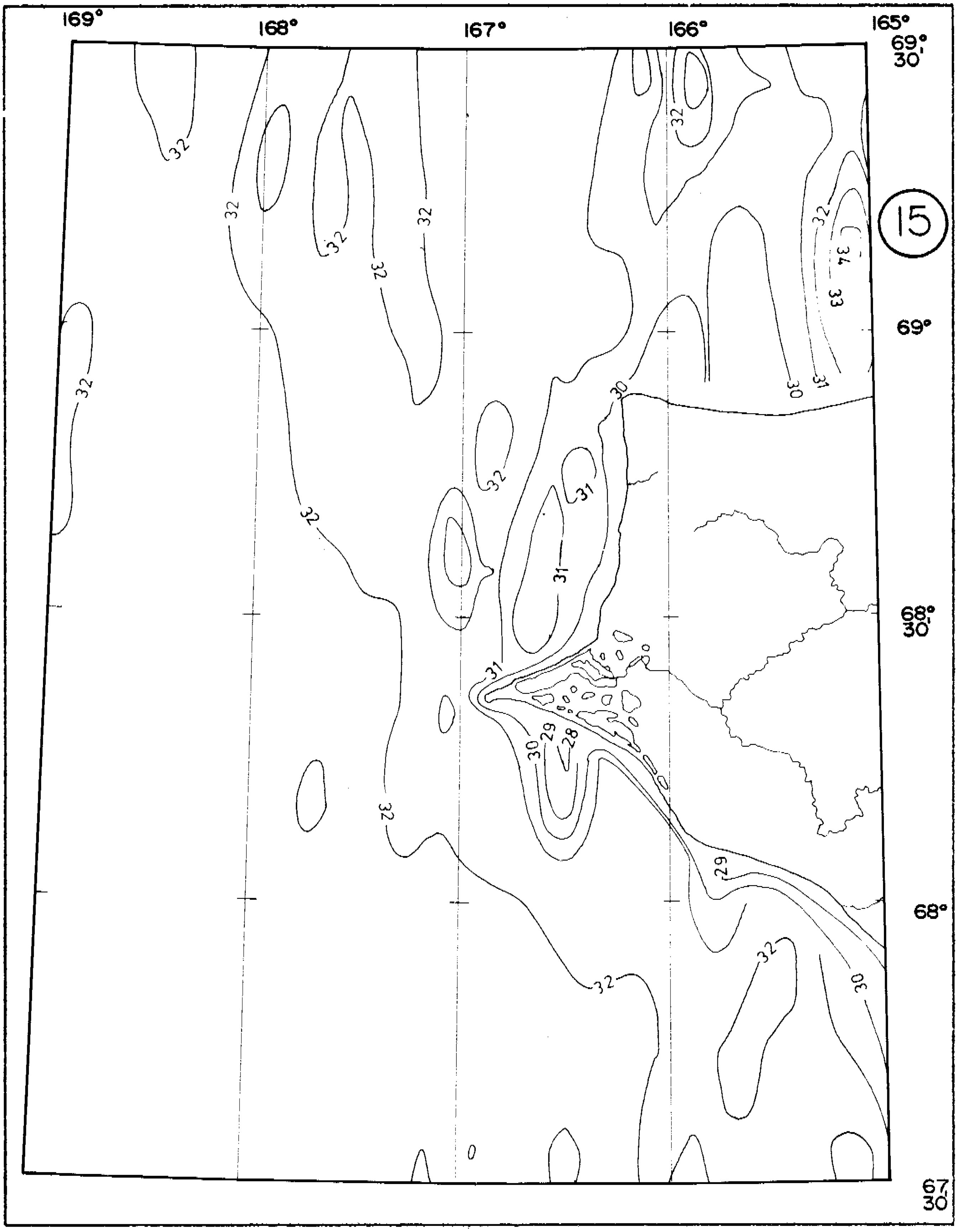


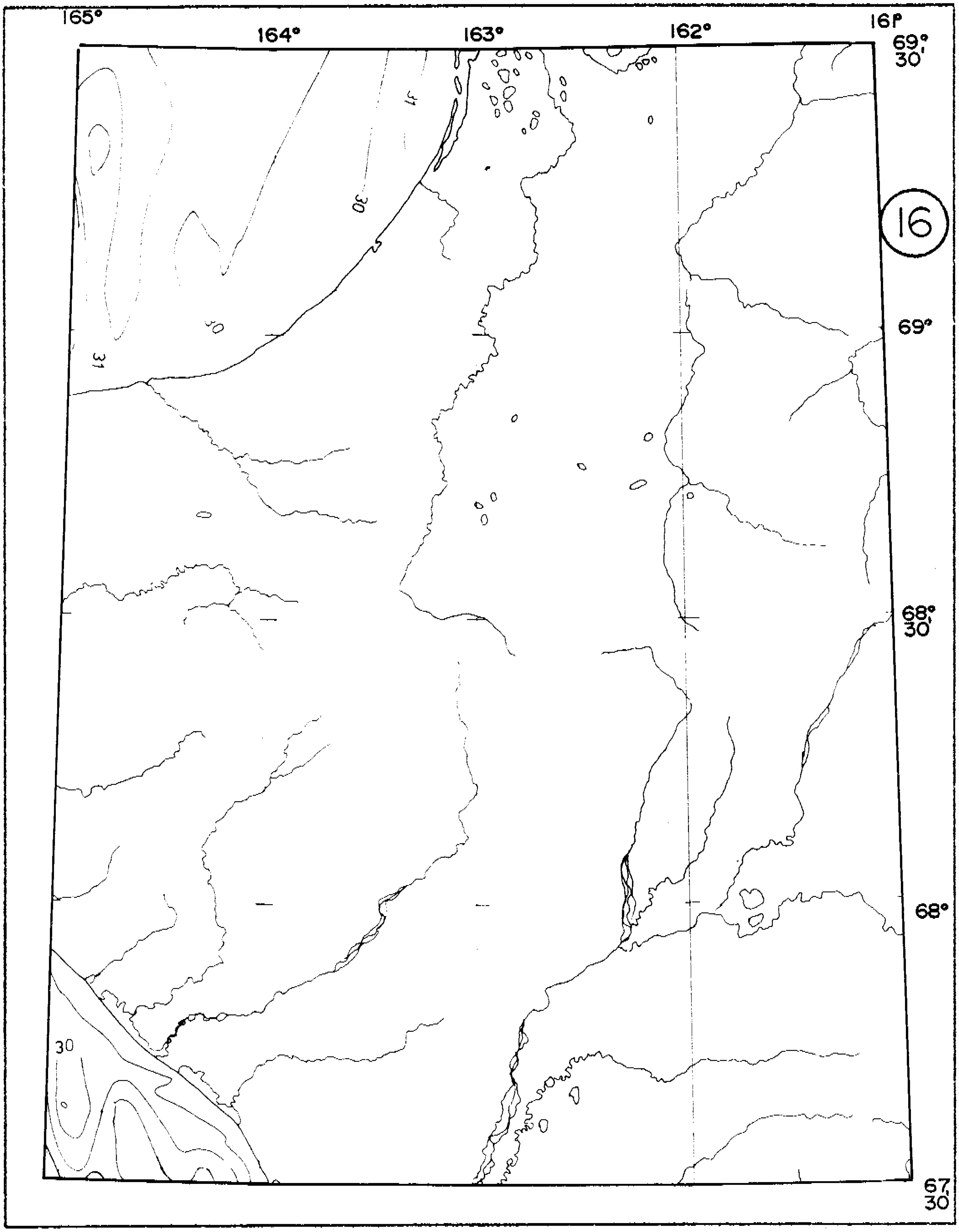
149°
148°
147°
146°
145°
71
30'
13
71°
70°
30'
70°
69°
30'
34
32
33
32
32
31
31
32
32
28
32
22
31
30
31
30
27
0

SALINITY

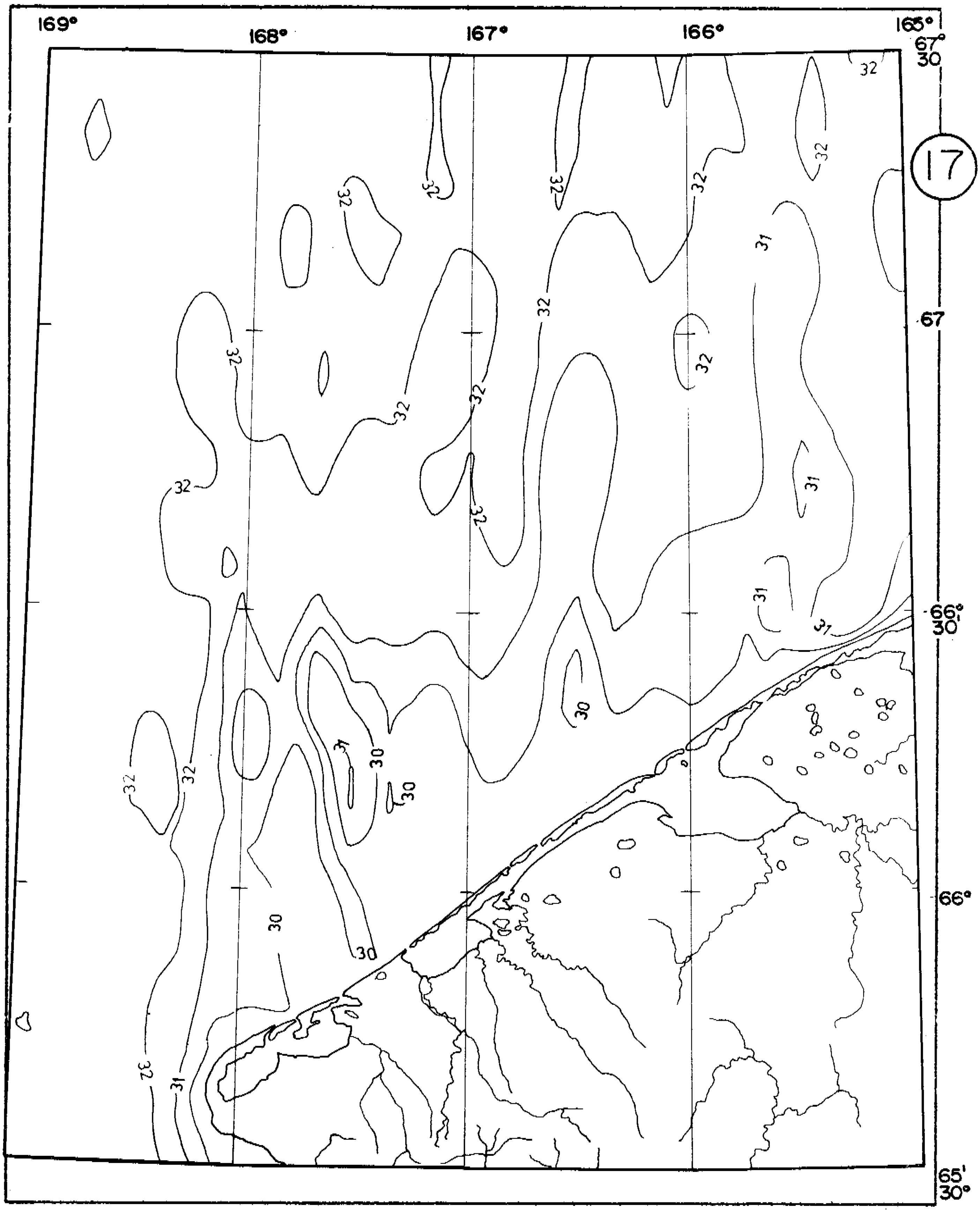

145°
144°
143°
142°
141°
71 30'
71°
70° 30'
70°
69° 30'
14
32
28
35
34
34
34
32
28
32
28
32
34
33
31
32
32
30
29
29
32
32

SALINITY

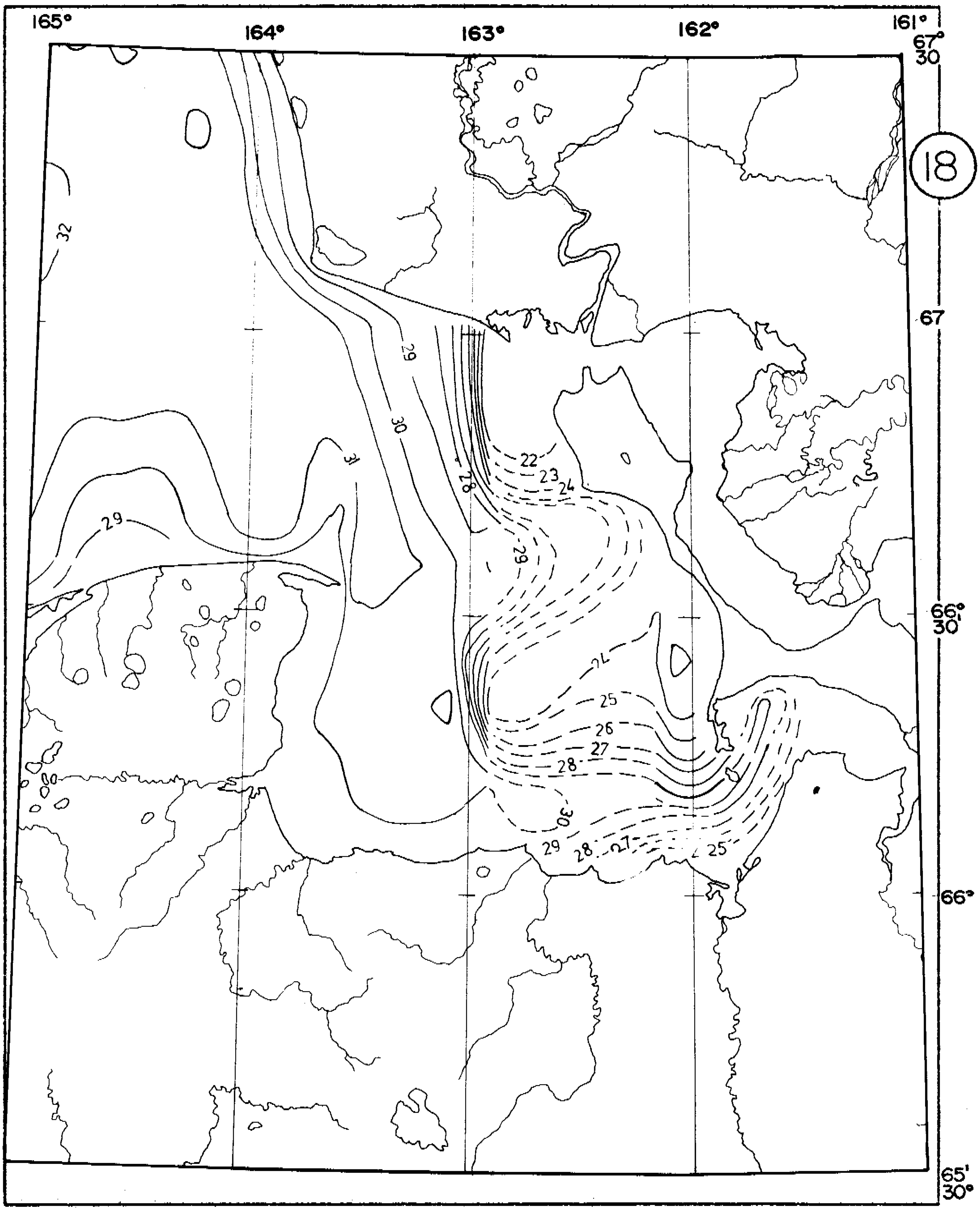



165°
164°
163°
162°
161°
69°
30'
16
69°
68°
30'
68°
67
30'
31
30
30
31
30

SALINITY



169°
168°
167°
166°
165°
67° 30
17
67
66° 30'
66°
65' 30°
32
32
32
32
32
31
32
32
32
32
32
31
32
32
31
31
30
31
30
30
32
32
30
30
32
31


165°
164°
163°
162°
161°
67° 30
18
67
66° 30'
66°
65' 30°
32
29
30
31
29
28
22
23
24
29
25
26
27
28
30
29
28
27
25

CHUKCHI SEA

RESEARCH UNIT 516 OCSEAP
NOAA INSTAAR 1978

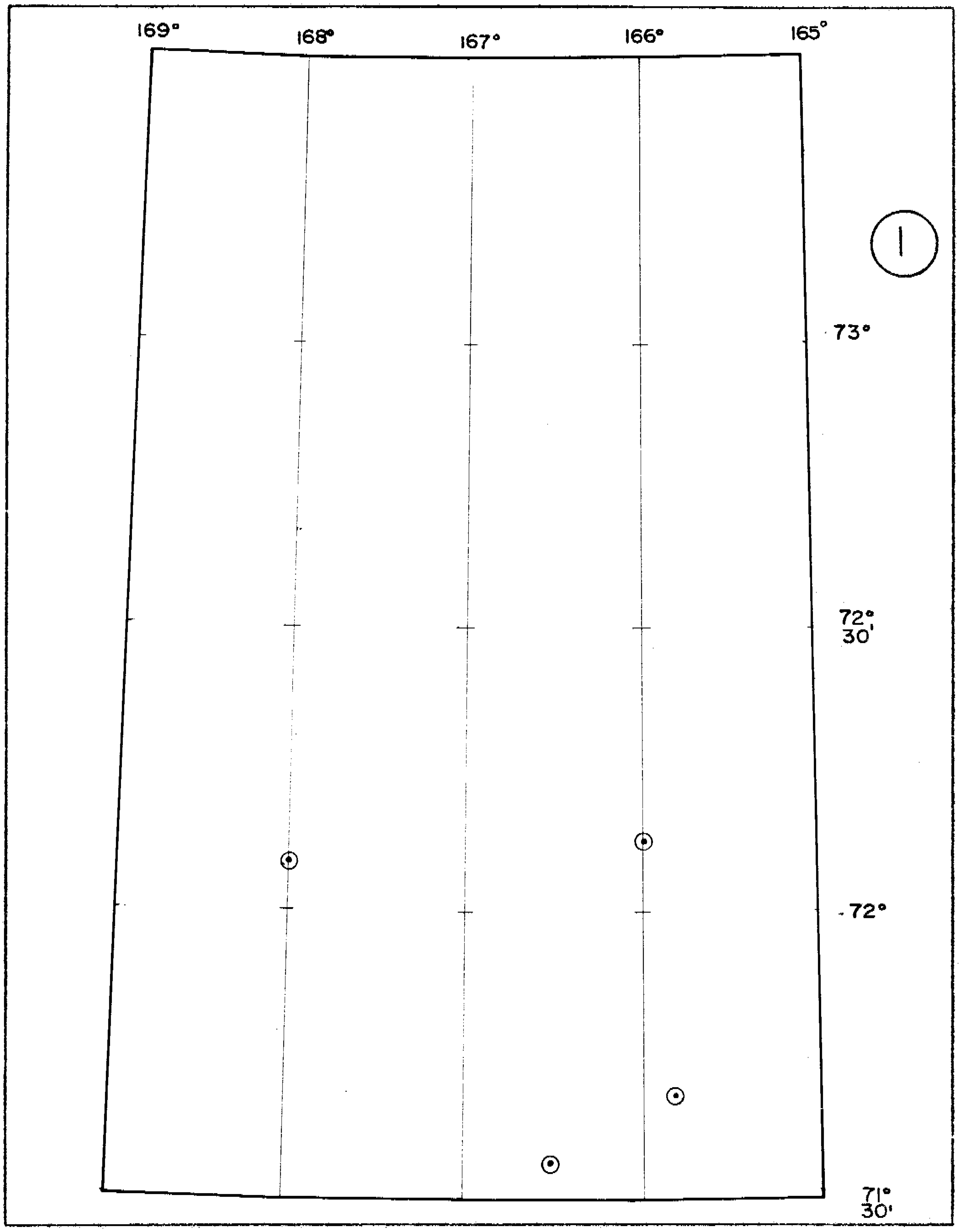
POINTS OF OBSERVATION FOR BOTTOM DEPOSITS GRAIN SIZE

A SOURCE MAP FOR SUBMARINE PERMAFROST PREDICTION

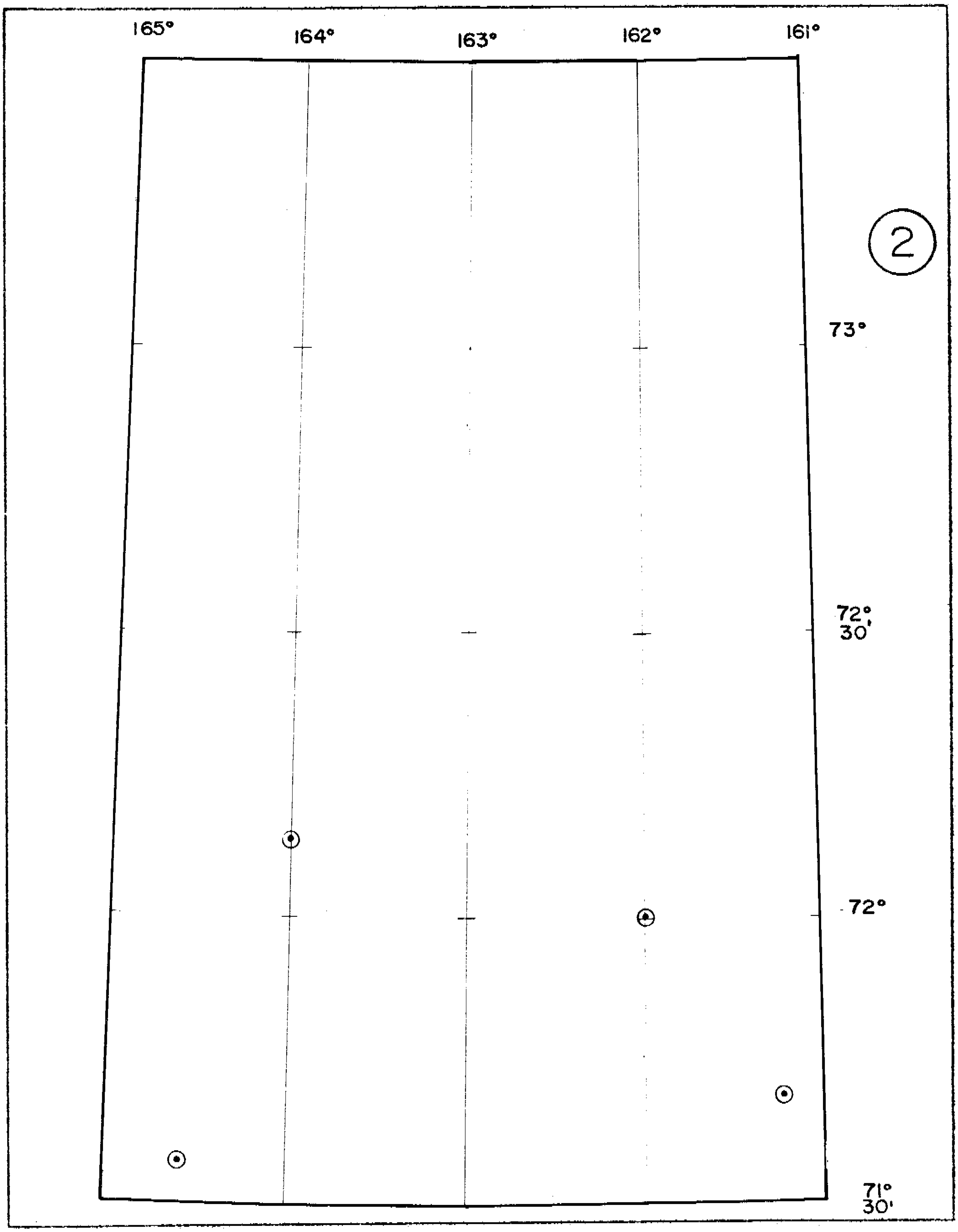
SCALE — 1:1,000,000

GEOGRAPHIC BASED INFORMATION MANAGEMENT SYSTEM FOR PERMAFROST IN THE CHUKCHI AND BEAUFORT SEAS

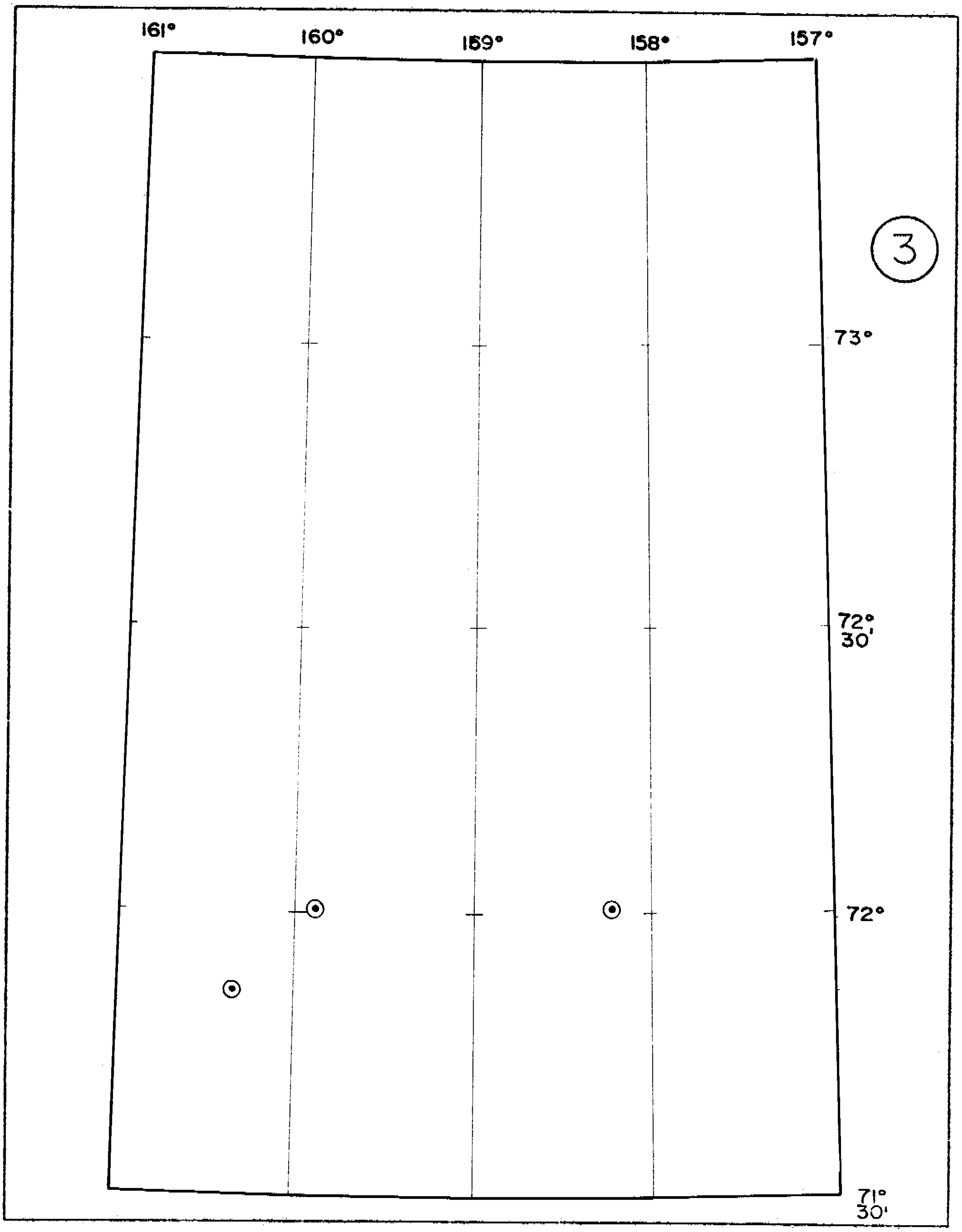
DATA DISTRIBUTION--GRAIN SIZE



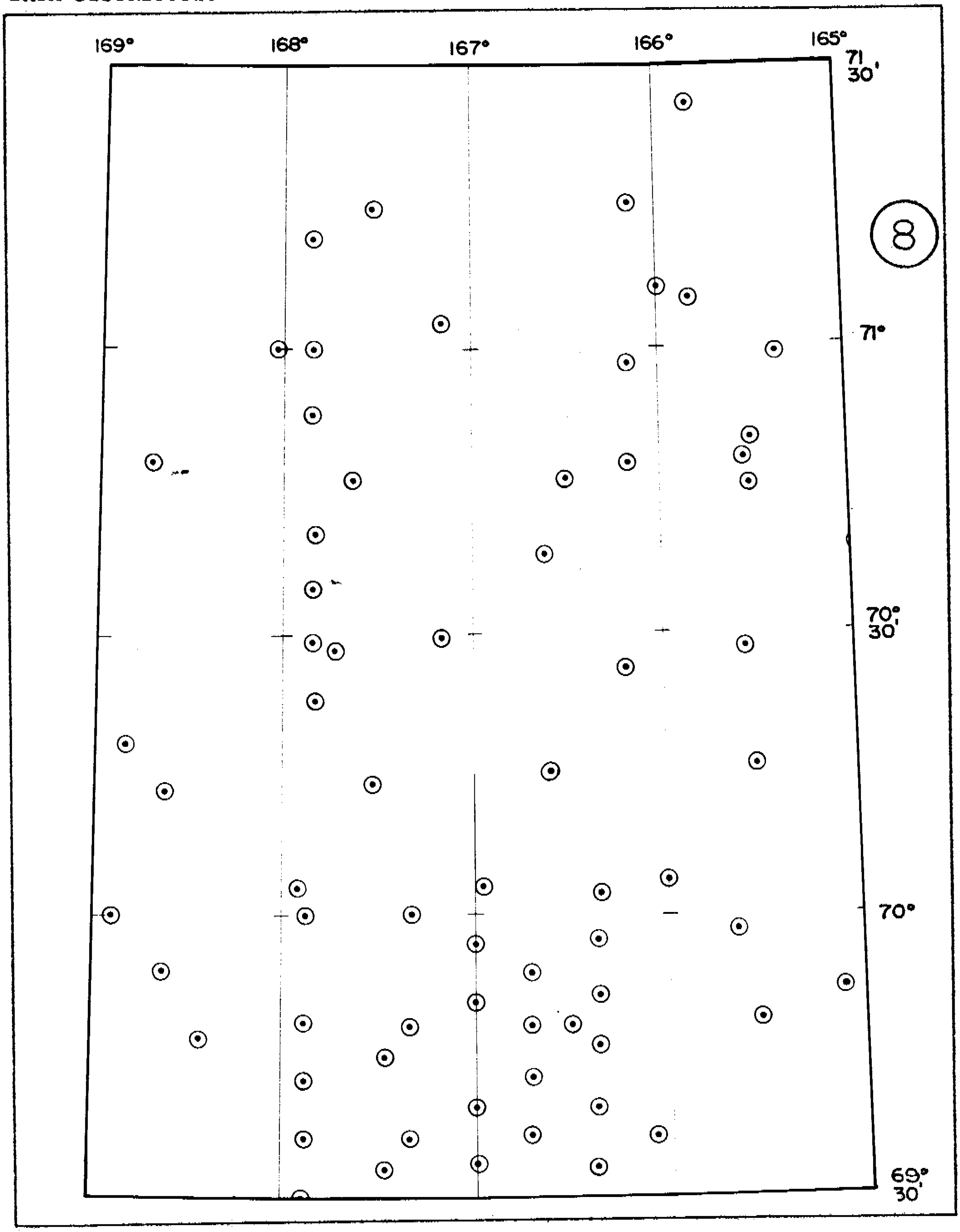
DATA DISTRIBUTION--GRAIN SIZE



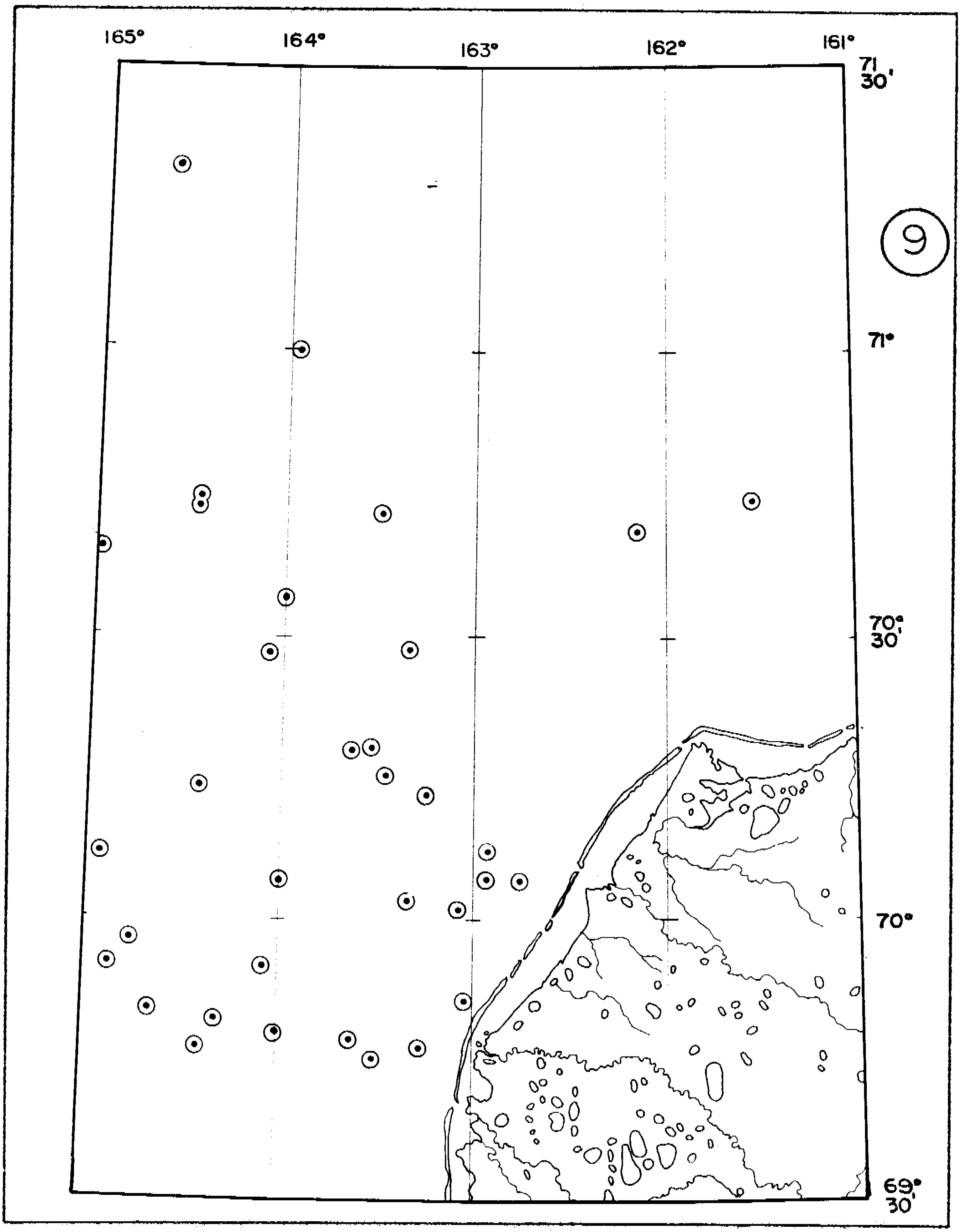
DATA DISTRIBUTION--GRAIN SIZE



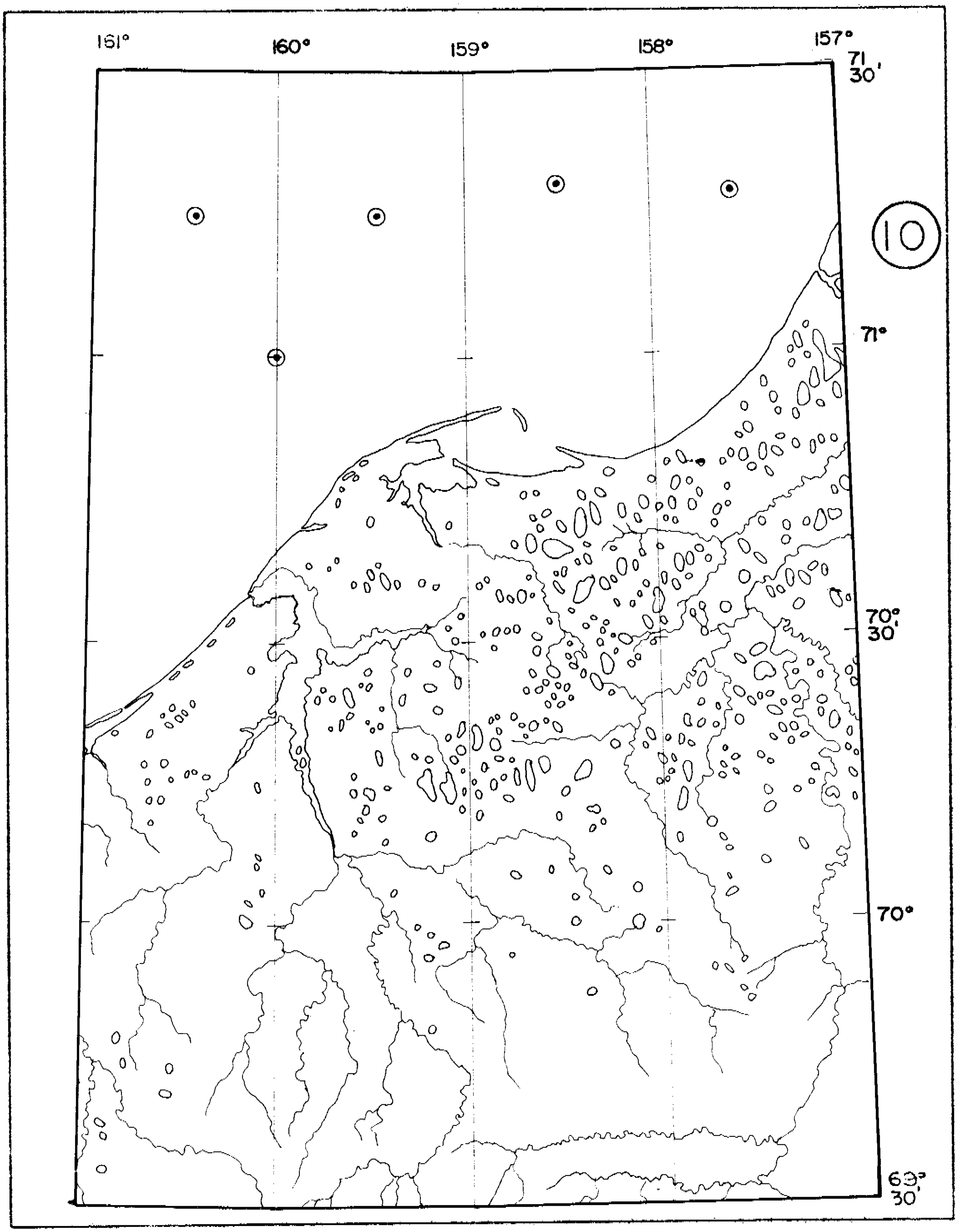
DATA DISTRIBUTION--GRAIN SIZE



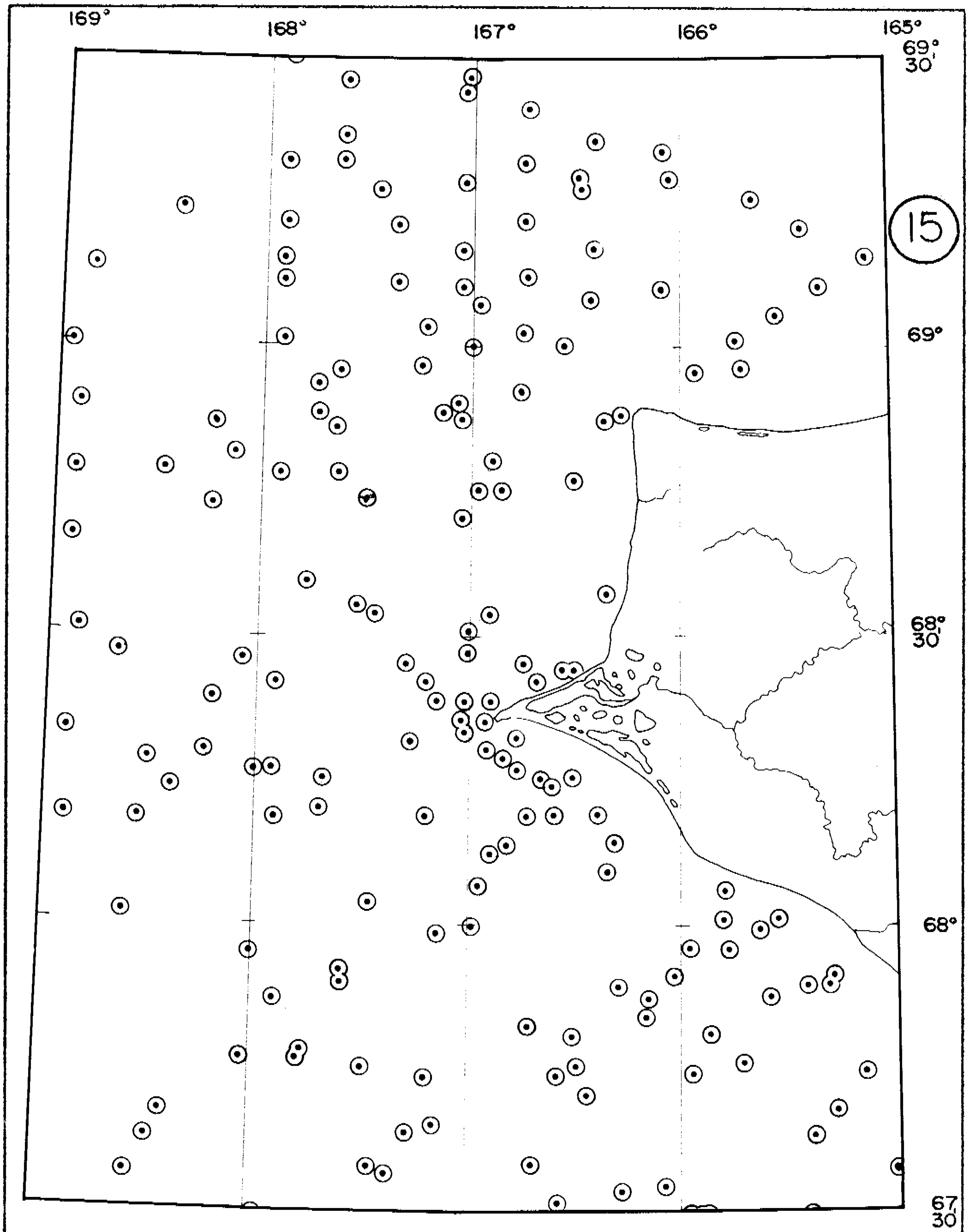
DATA DISTRIBUTION--GRAIN SIZE



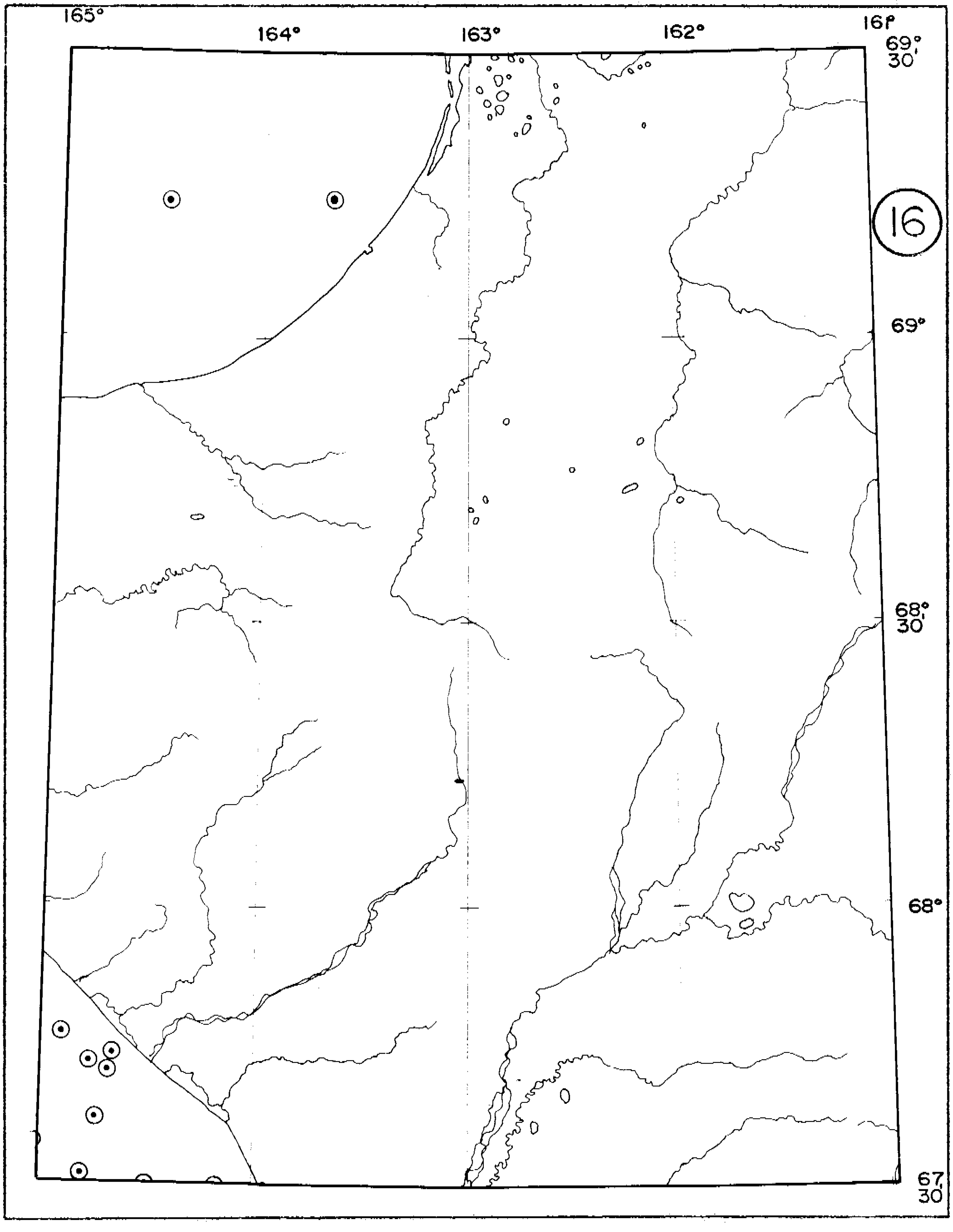
DATA DISTRIBUTION--GRAIN SIZE



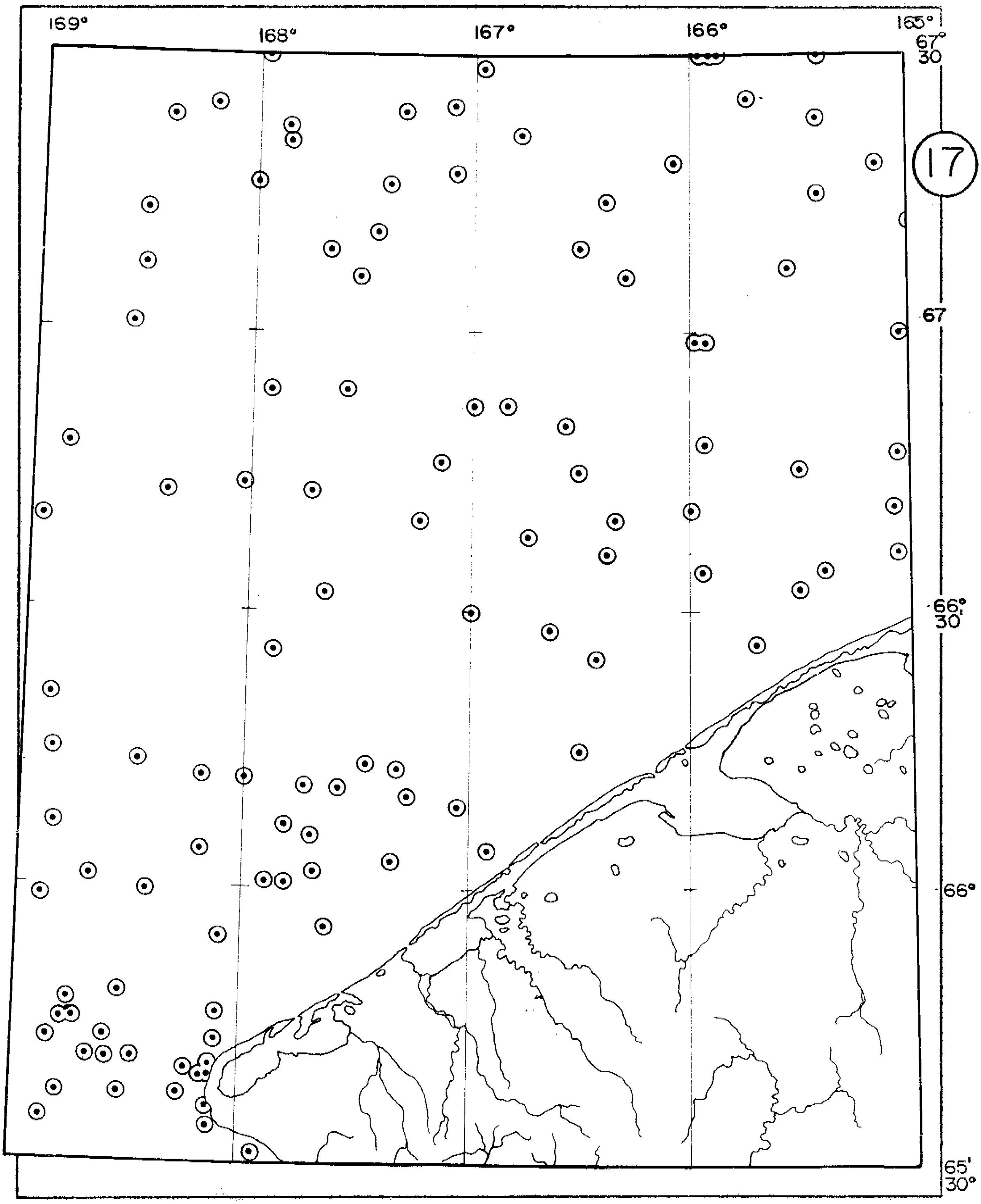
DATA DISTRIBUTION--GRAIN SIZE



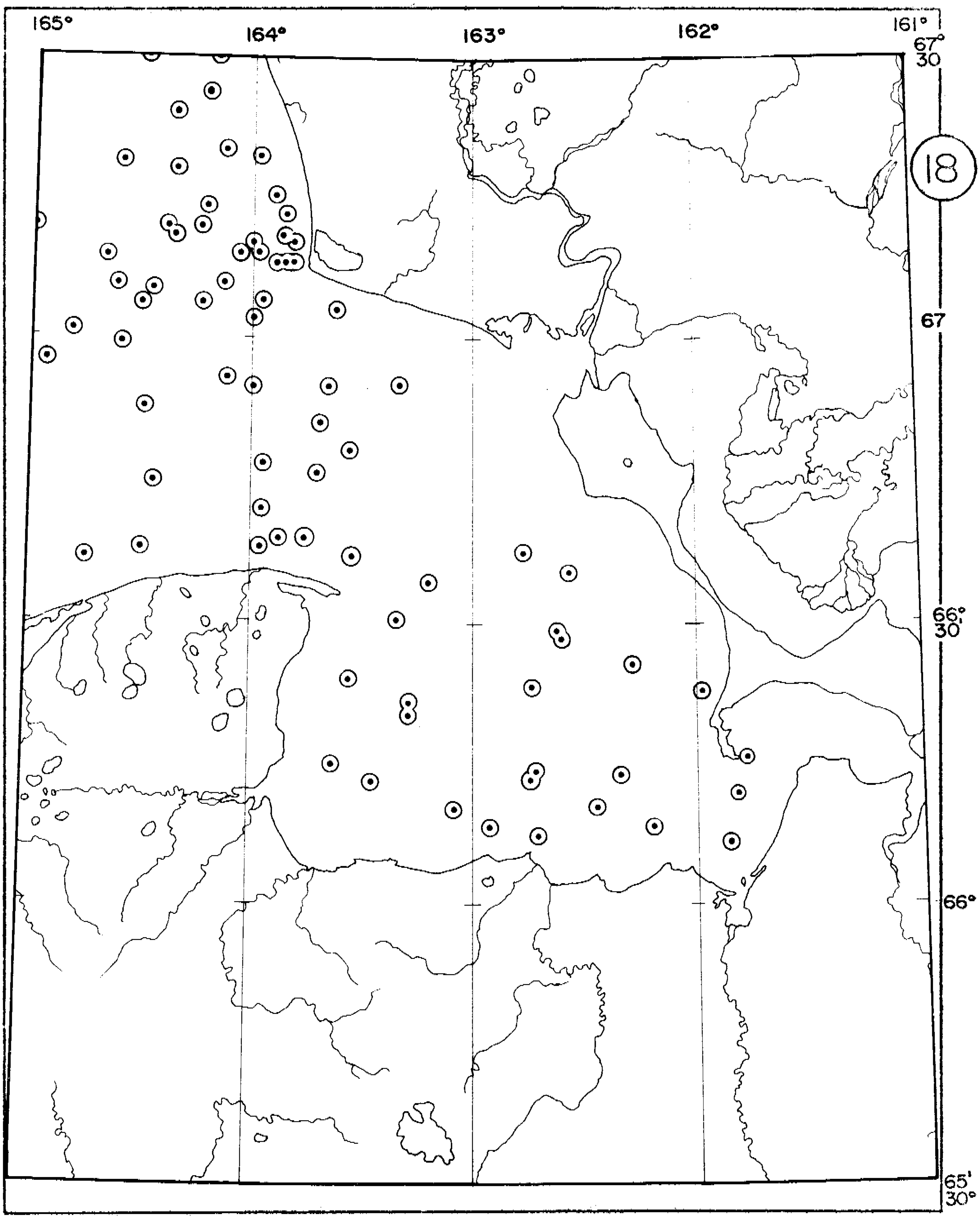
DATA DISTRIBUTION--GRAIN SIZE



DATA DISTRIBUTION--GRAIN SIZE



DATA DISTRIBUTION--GRAIN SIZE



CHUKCHI SEA

RESEARCH UNIT 516 OCSEAP
NOAA INSTAAR 1978

GRAVEL DISTRIBUTION

BOTTOM DEPOSIT GRAIN SIZE MAP NO. 1

A SOURCE MAP FOR SUBMARINE PERMAFROST PREDICTION

DISTRIBUTION IN %

INTERVAL OF 5 %

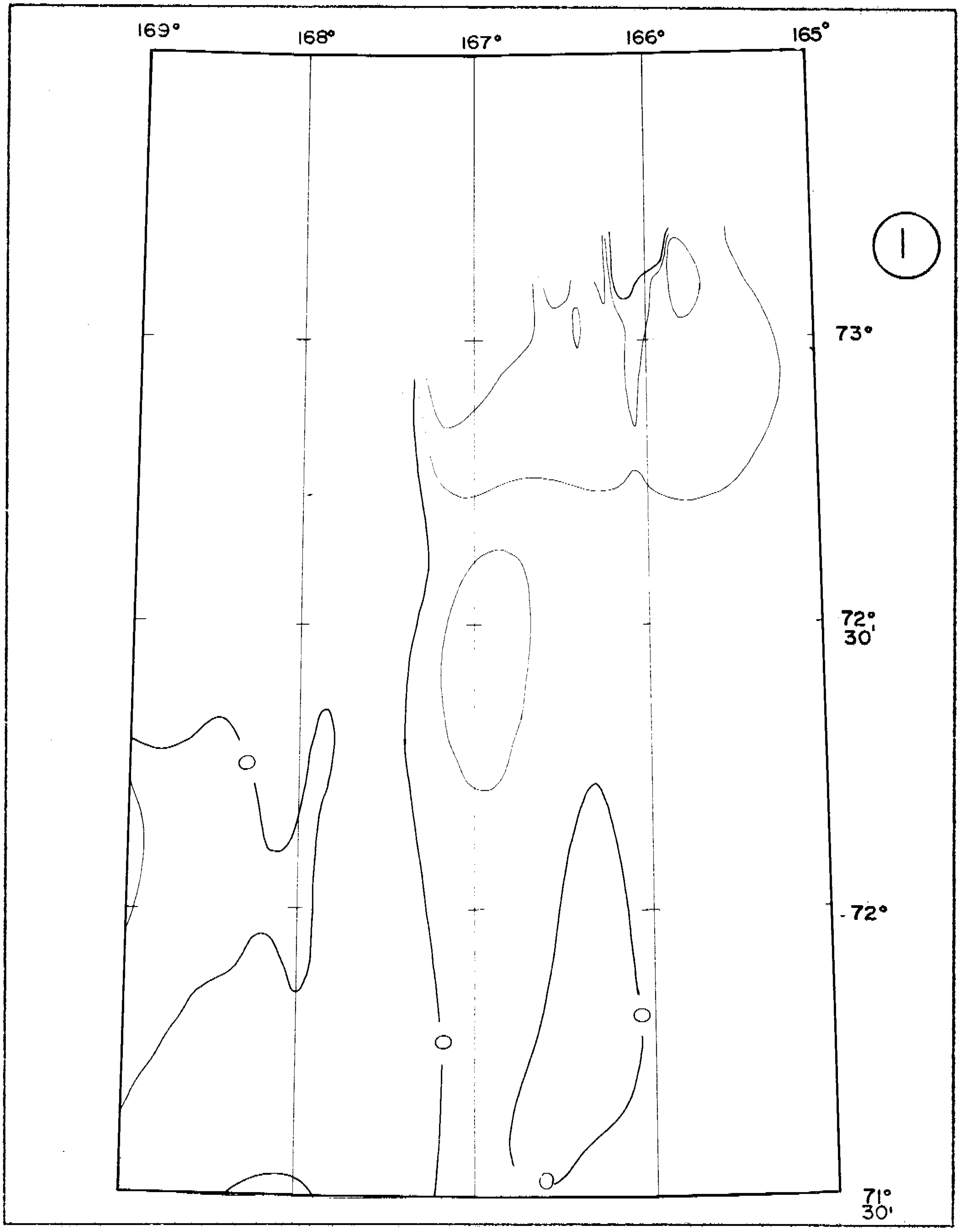
SCALE — 1:1,000,000

GEOGRAPHIC BASED INFORMATION MANAGEMENT SYSTEM FOR PERMAFROST IN THE CHUKCHI AND BEAUFORT SEAS

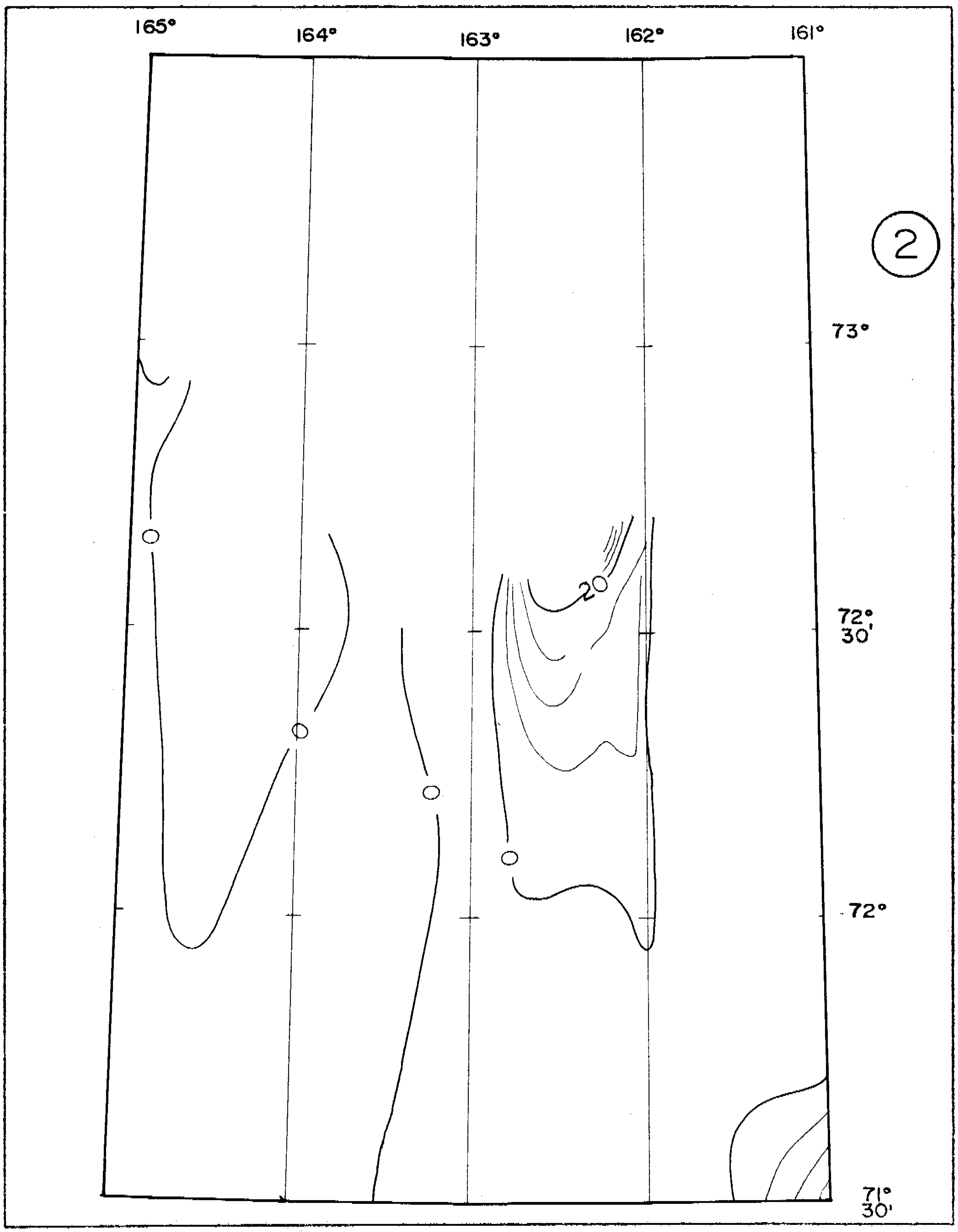
GRAIN SIZE SCALES FOR SEDIMENTS SHOWN ON THIS MAP

MILLIMETERS	MICRONS	PHI (O)	WENTWORTH SIZE CLASS
4096—1024	—	-12 to -10	BOULDER
256	—	-8	COBBLE
64-16	—	-6 to -4	PEBBLE
4—2.38	—	-2 to -1.25	GRANULE

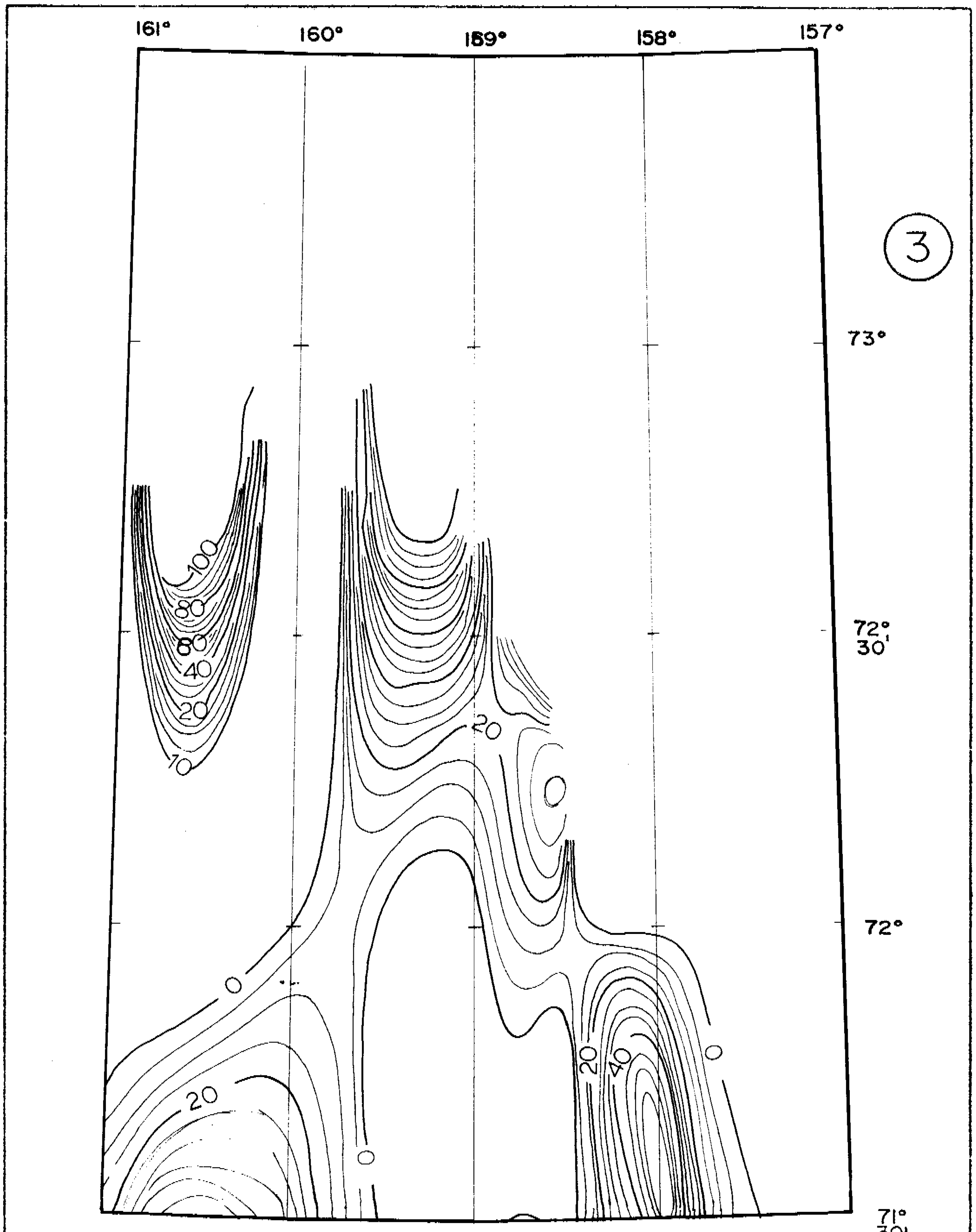
GRAIN SIZE GROUP 1



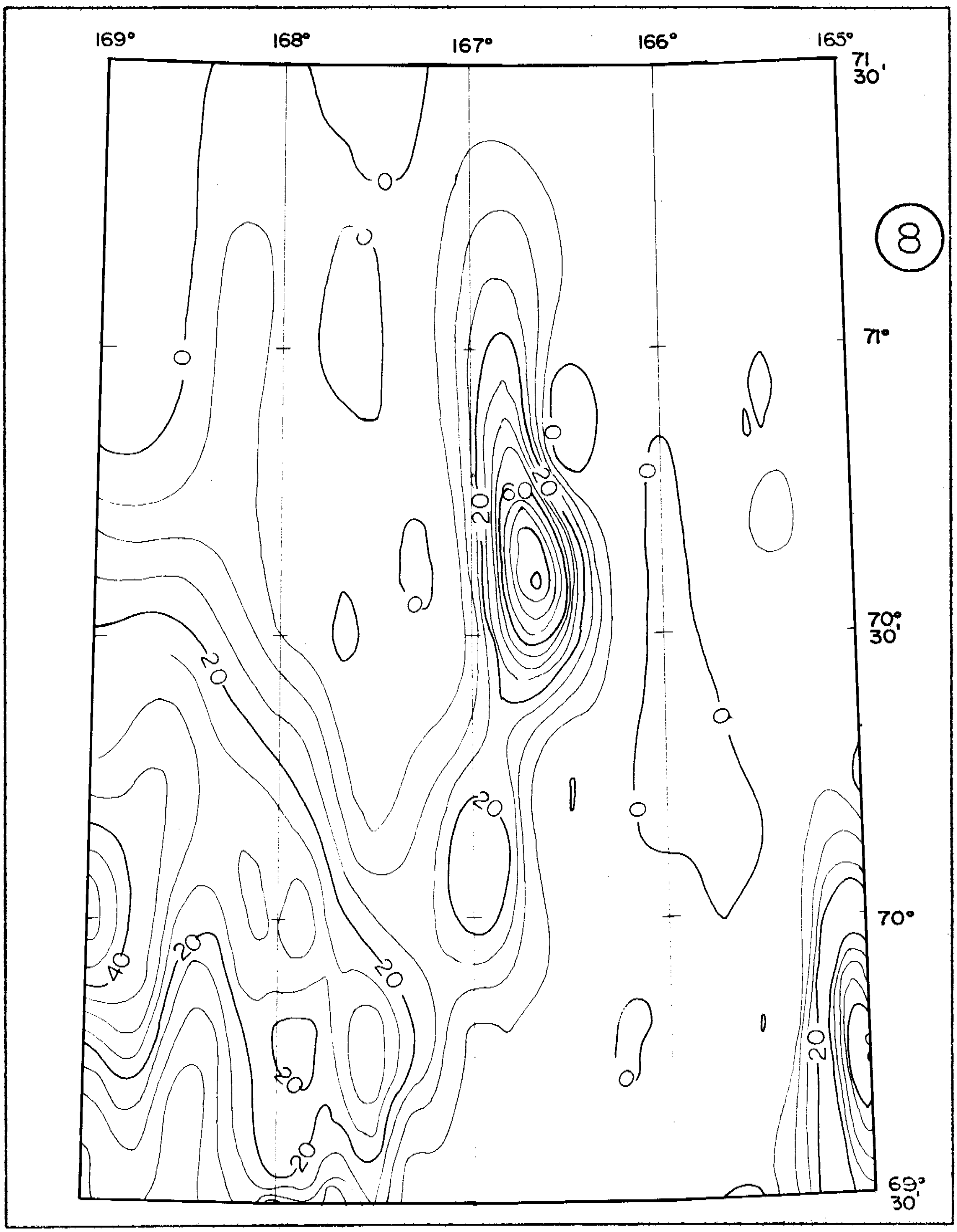
GRAIN SIZE GROUP 1



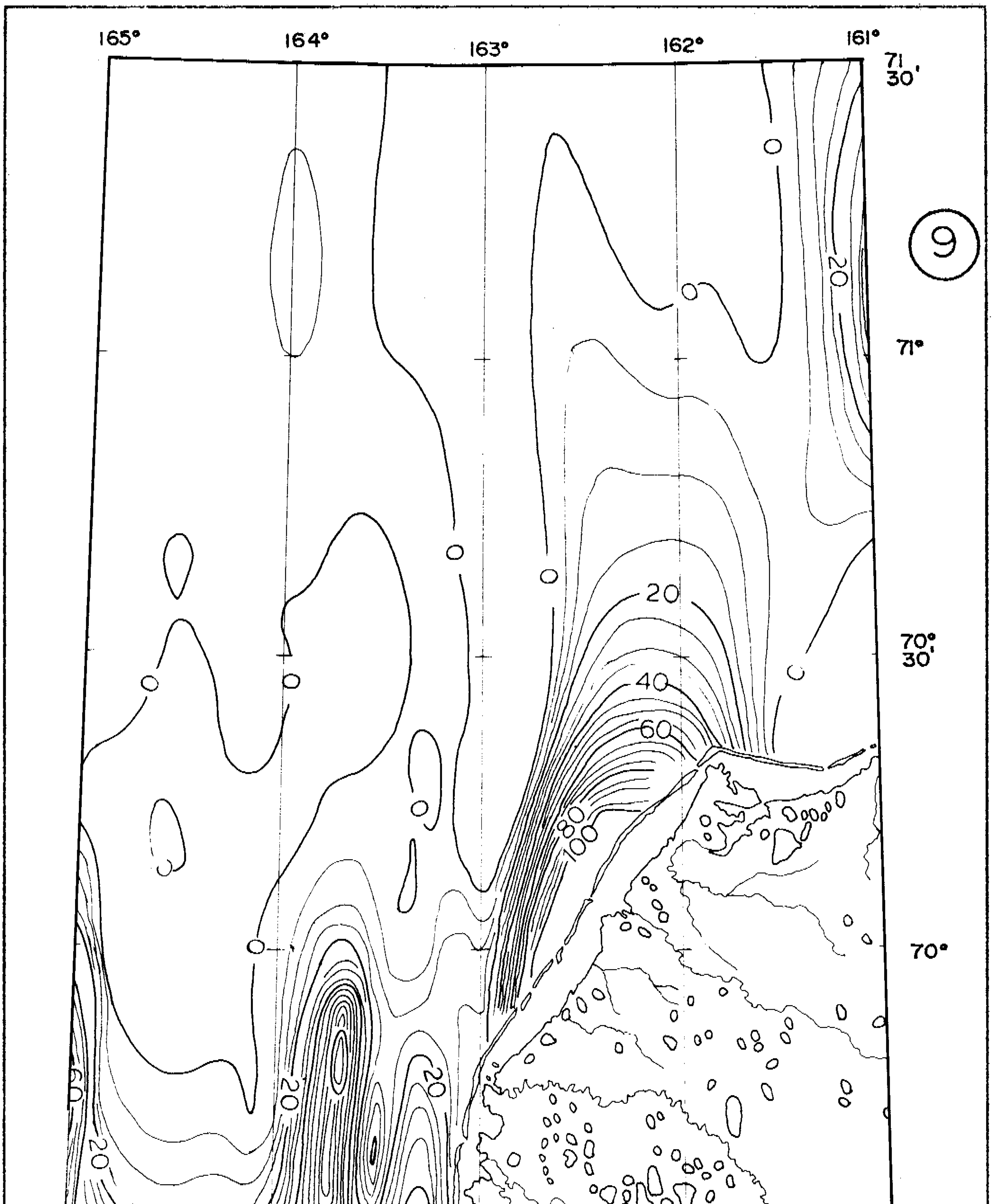
GRAIN SIZE GROUP 1



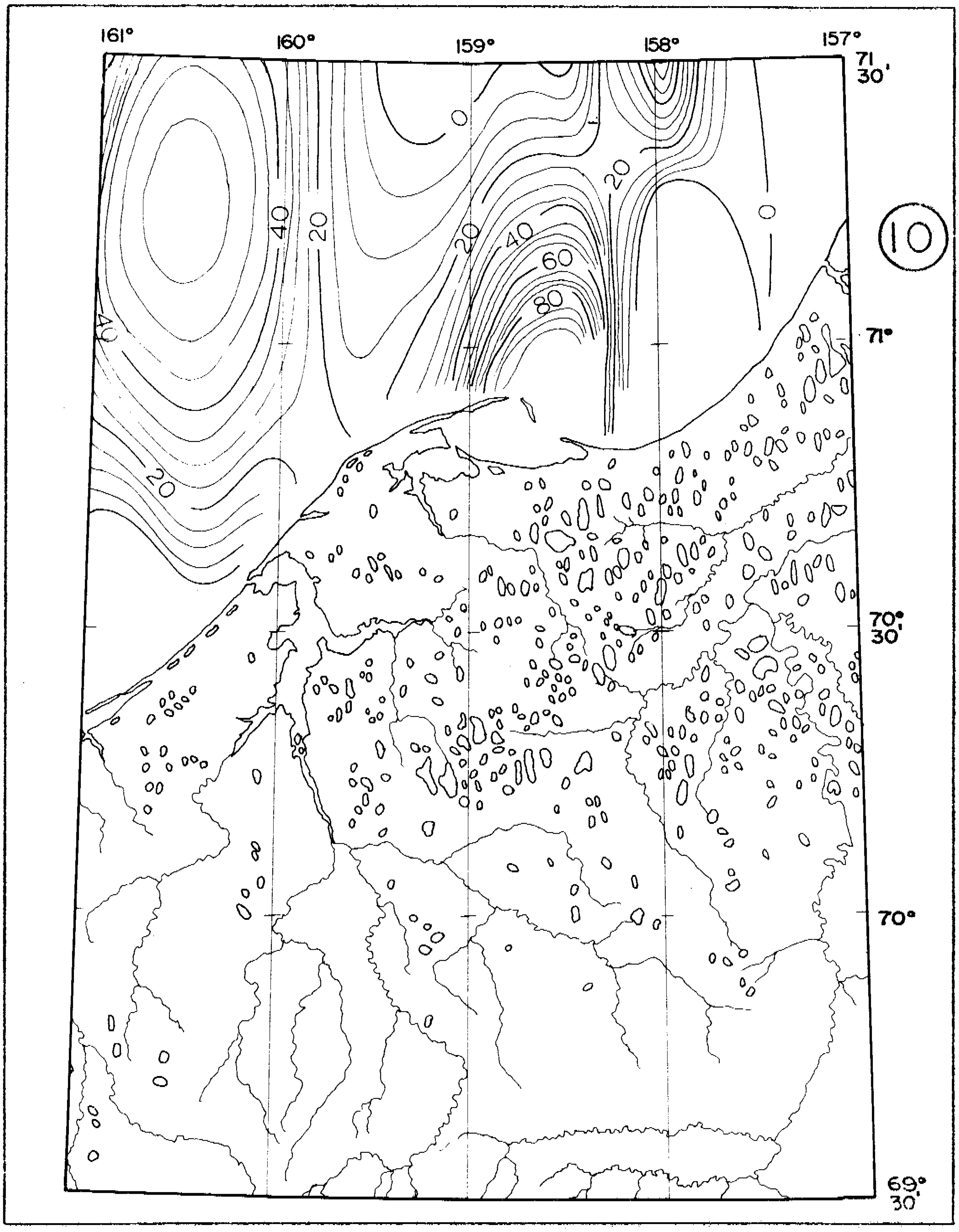
GRAIN SIZE GROUP 1



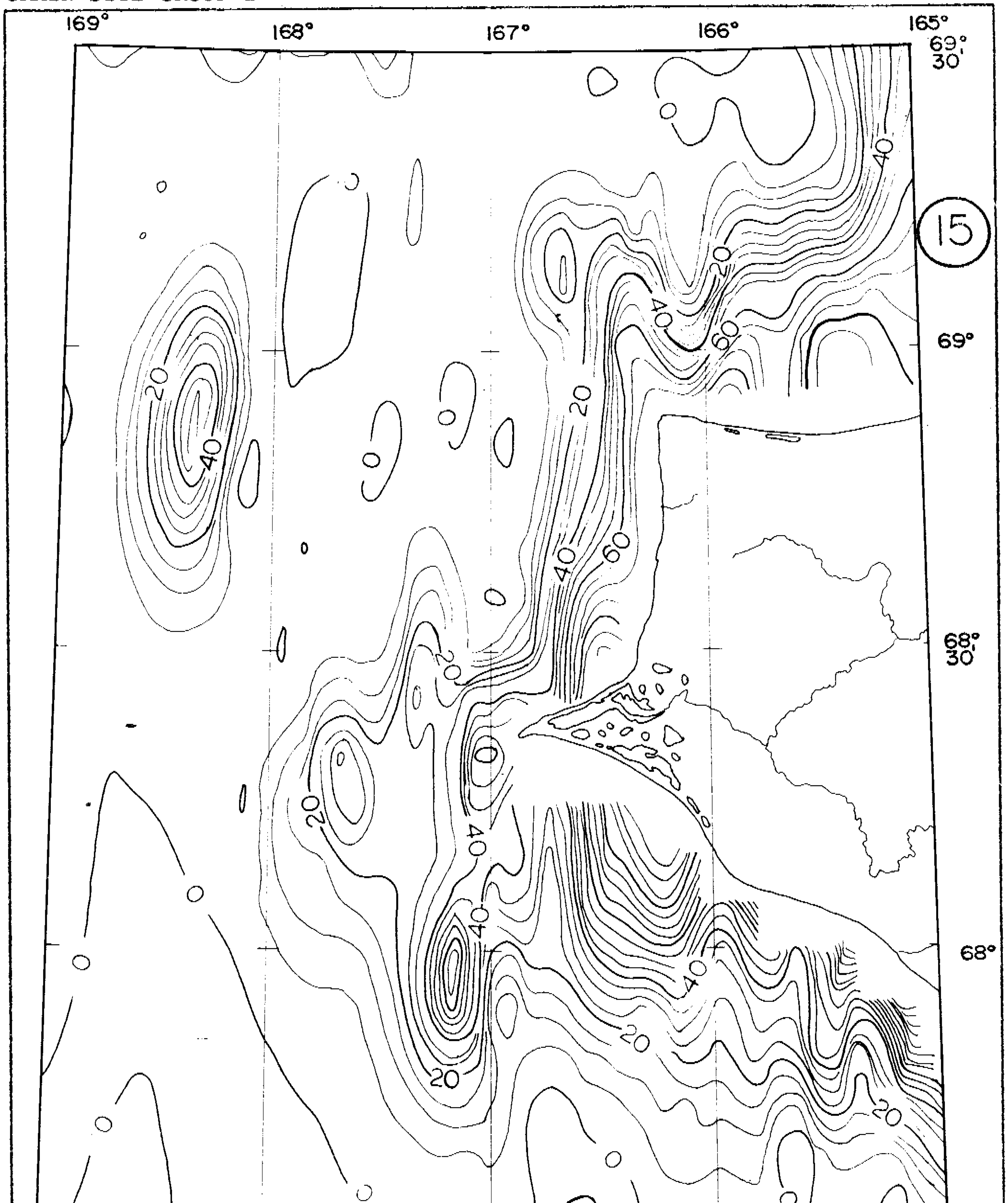
GRAIN SIZE GROUP 1



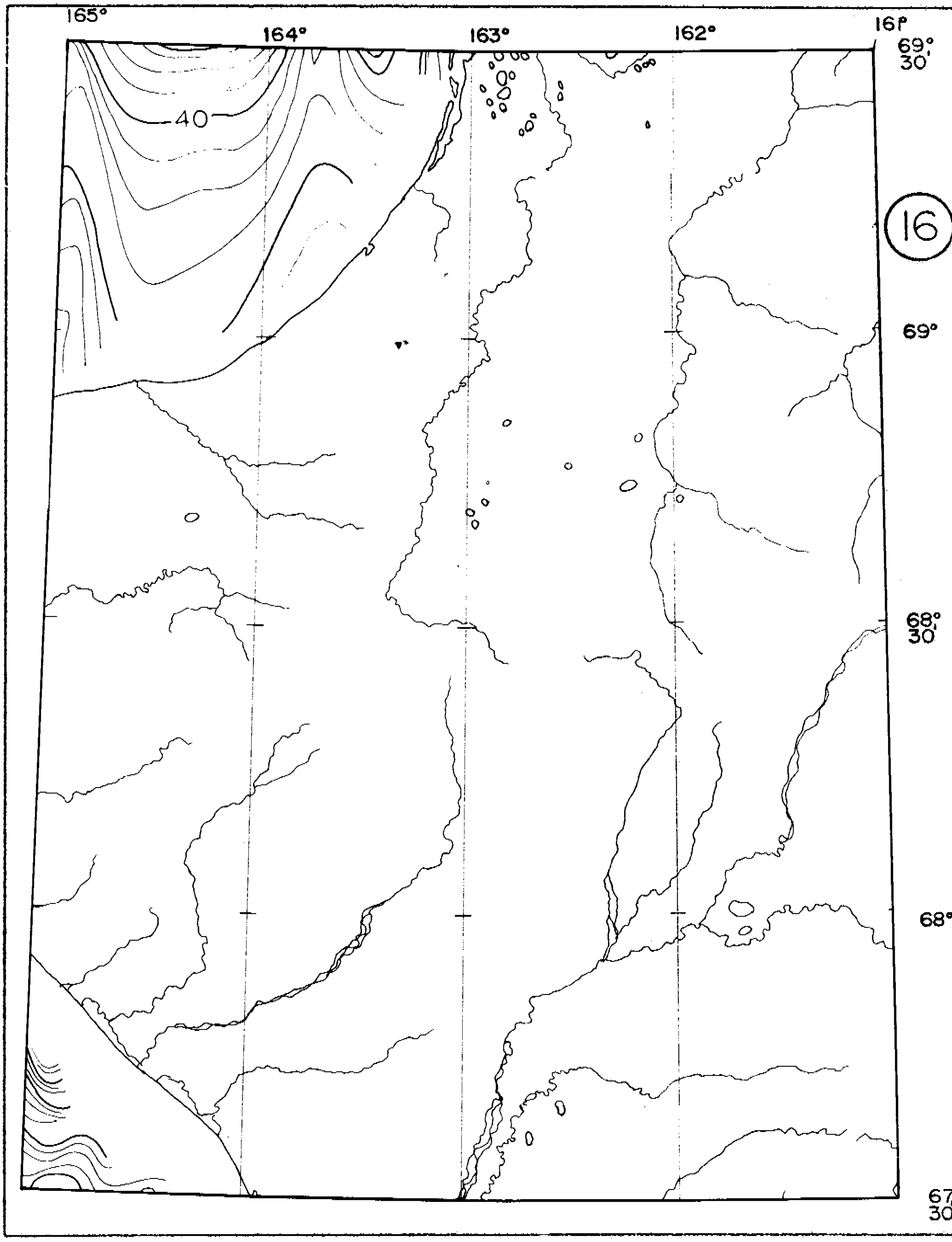
GRAIN SIZE GROUP 1



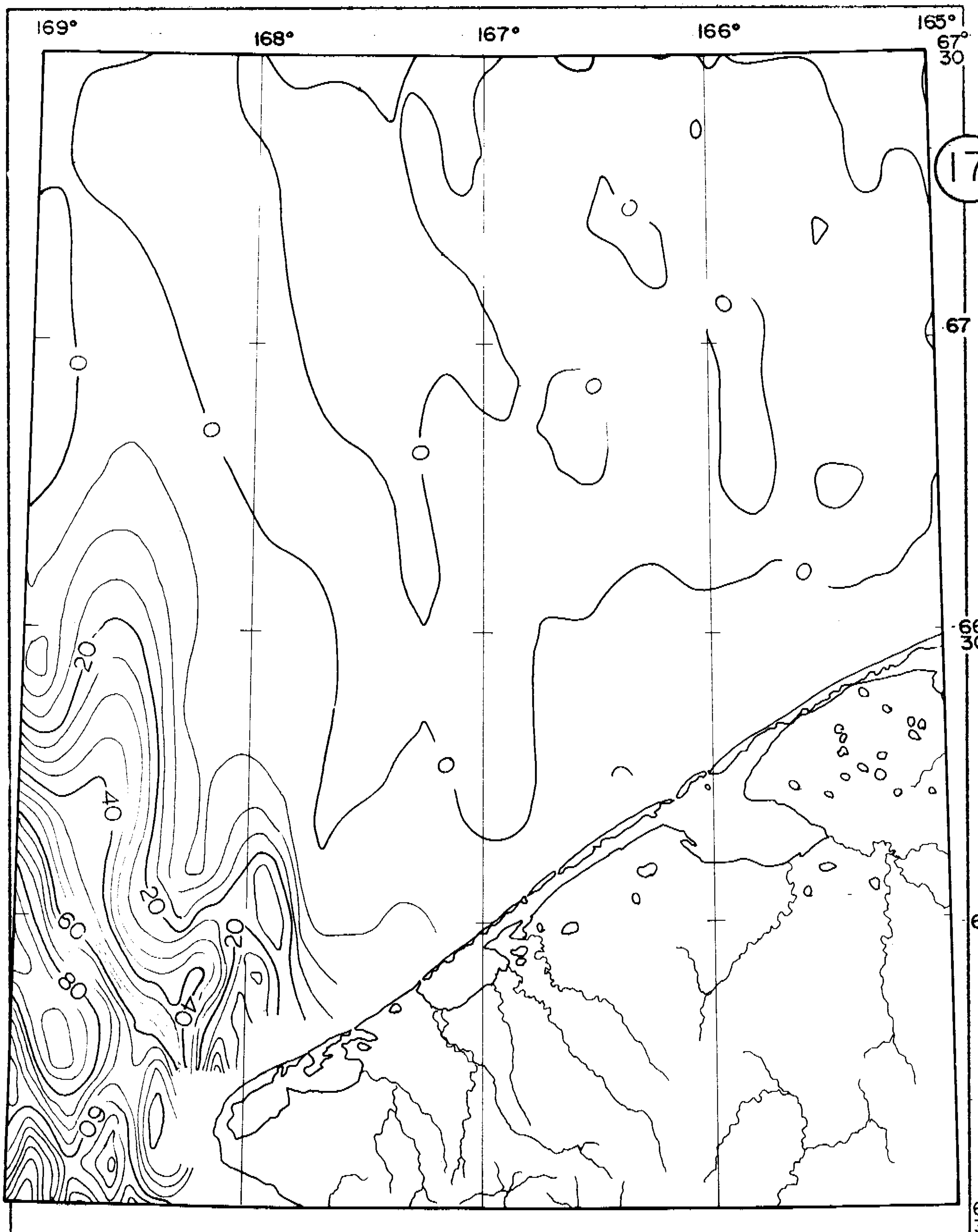
GRAIN SIZE GROUP 1



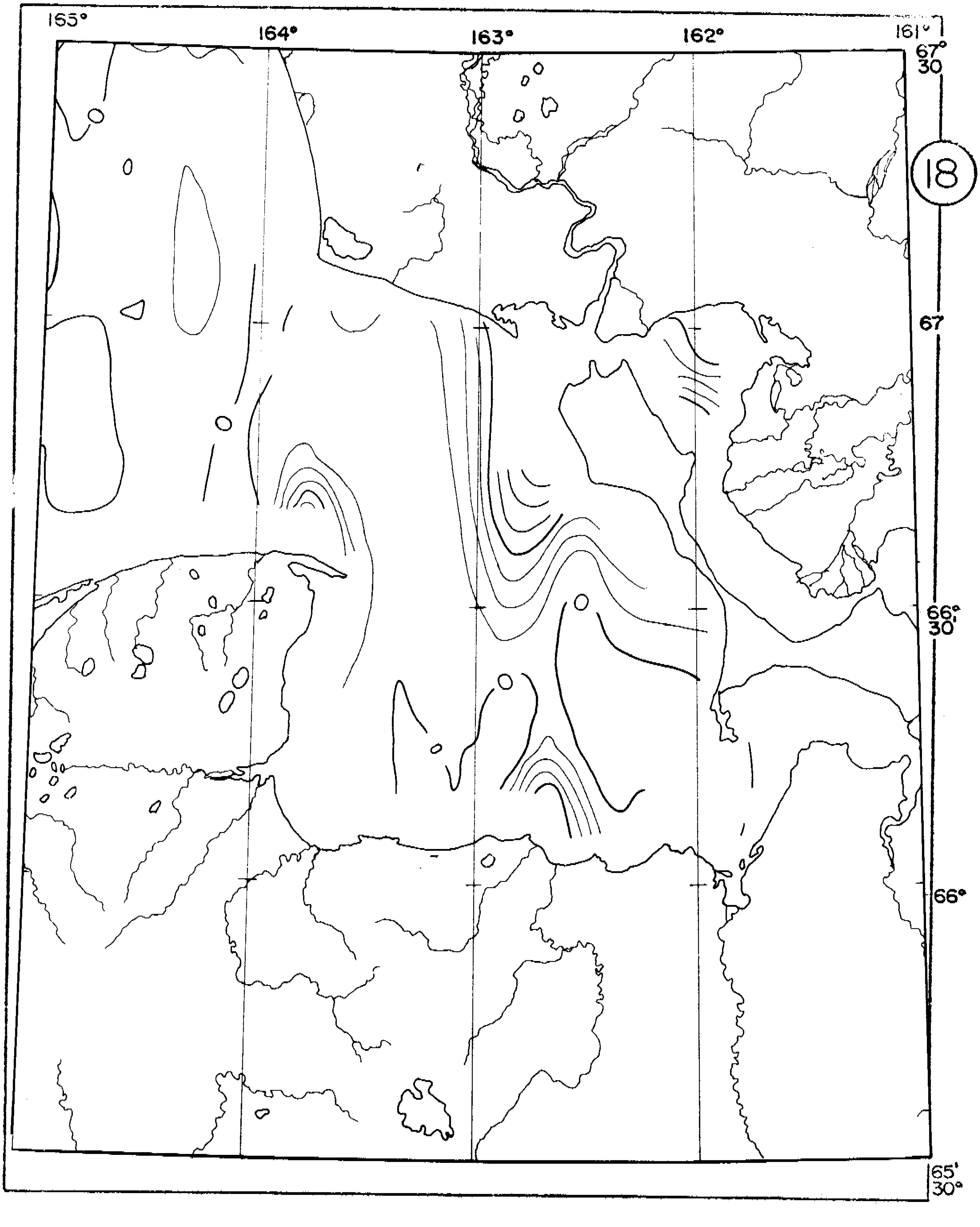
GRAIN SIZE GROUP 1



GRAIN SIZE GROUP 1



GRAIN SIZE GROUP 1



CHUKCHI SEA

RESEARCH UNIT 516 OCSEAP
NOAA INSTAAR 1978

GRAVEL—MEDIUM SAND DISTRIBUTION
BOTTOM DEPOSIT GRAIN SIZE MAP NO. 2

A SOURCE MAP FOR SUBMARINE PERMAFROST PREDICTION

DISTRIBUTION IN %

INTERVAL OF 5 %

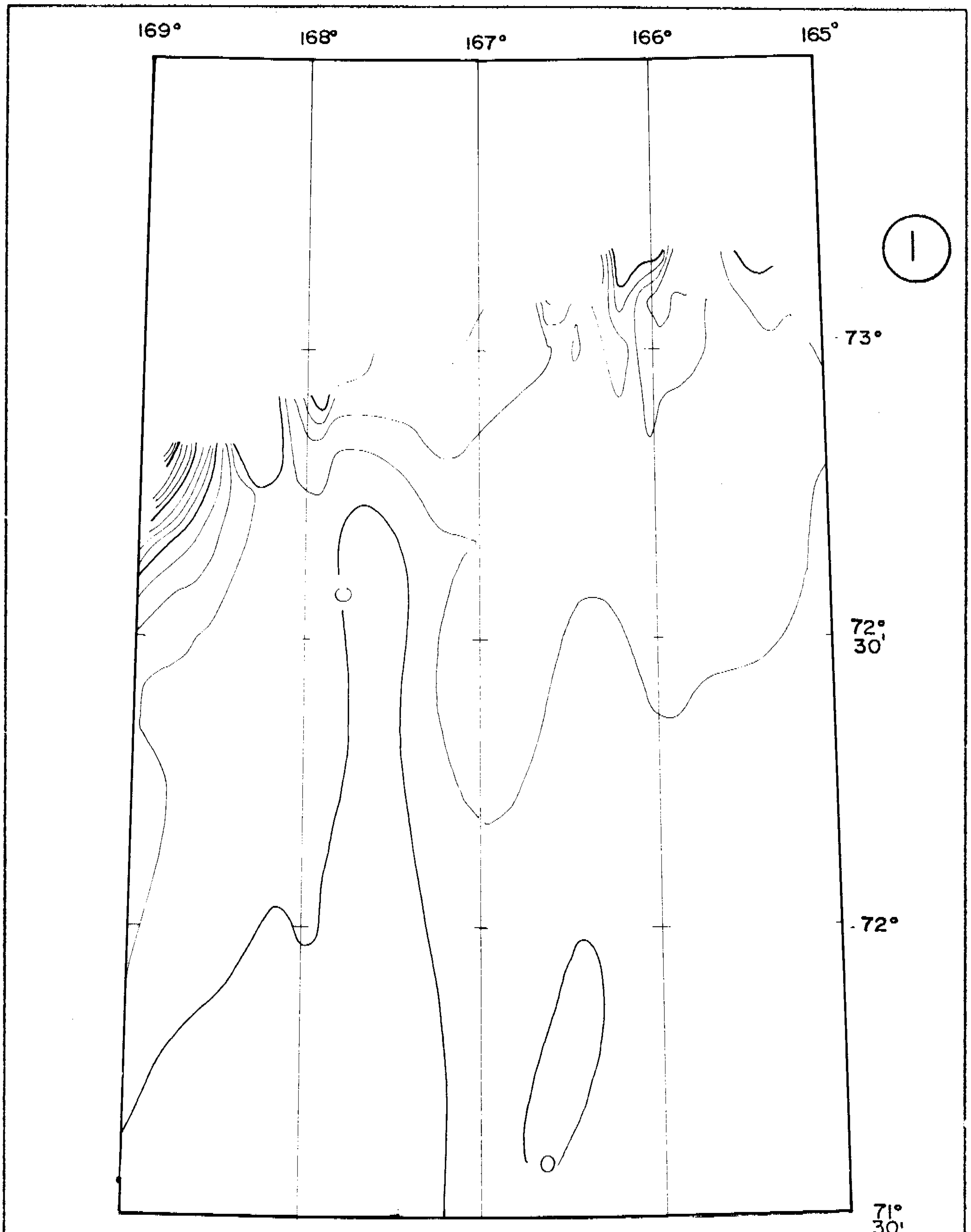
SCALE — 1:1,000,000

GEOGRAPHIC BASED INFORMATION MANAGEMENT SYSTEM FOR PERMAFROST IN THE CHUKCHI AND BEAUFORT SEAS

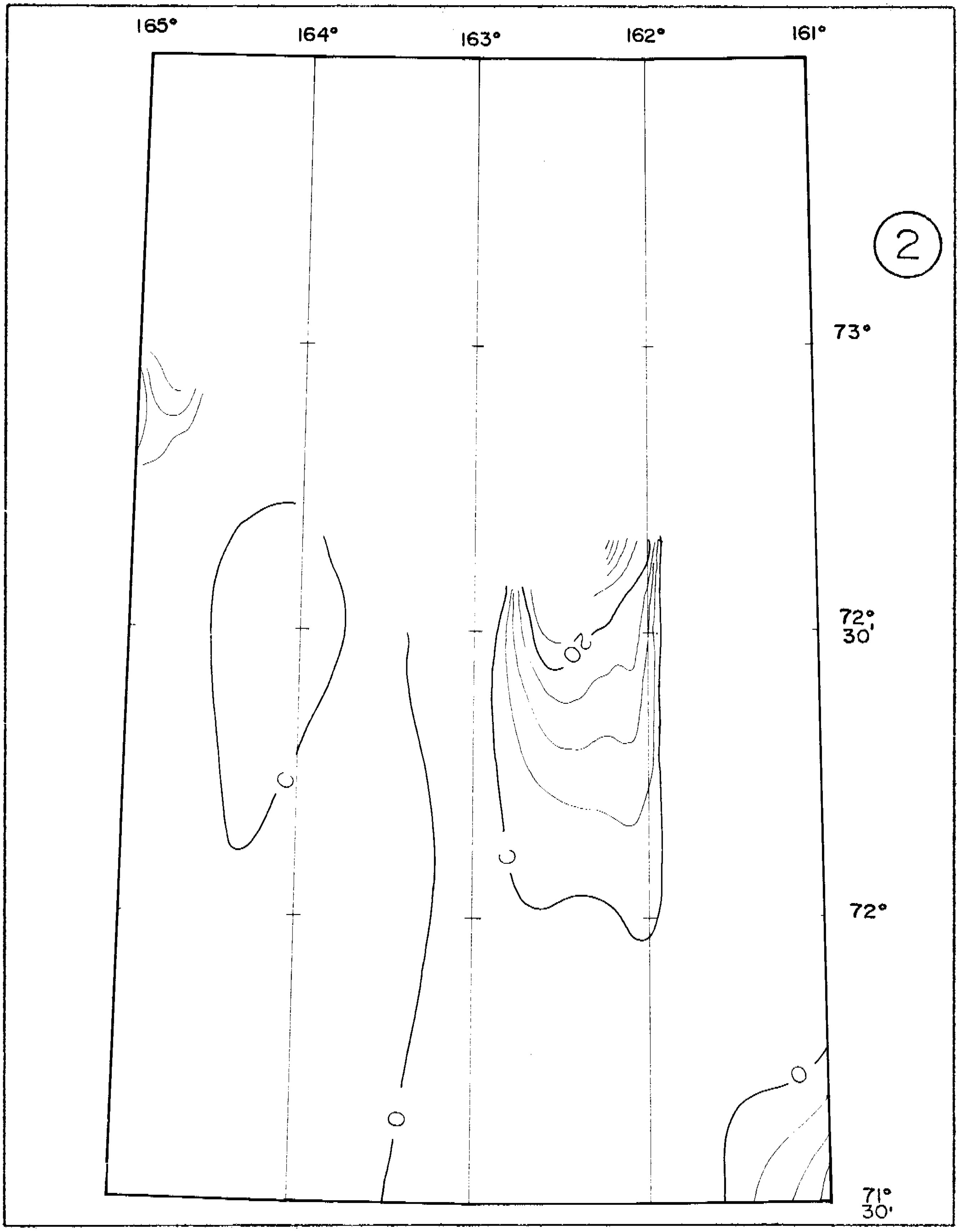
GRAIN SIZE SCALES FOR SEDIMENTS SHOWN ON THIS MAP

MILLIMETERS	MICRONS	PHI(O)	WENTWORTH SIZE CLASS
4096—1024	—	-12 to -10	BOULDER
256	—	-8	COBBLE
64—16	—	-6 to -4	PEBBLE
4—2.38	—	-2 to -1.25	GRANULE
2—1.19	—	-1 to -0.25	VERY COARSE SAND
1—0.59	—	0 to 0.25	COARSE SAND
0.50—0.30	500—300	1 to 1.75	MEDIUM SAND

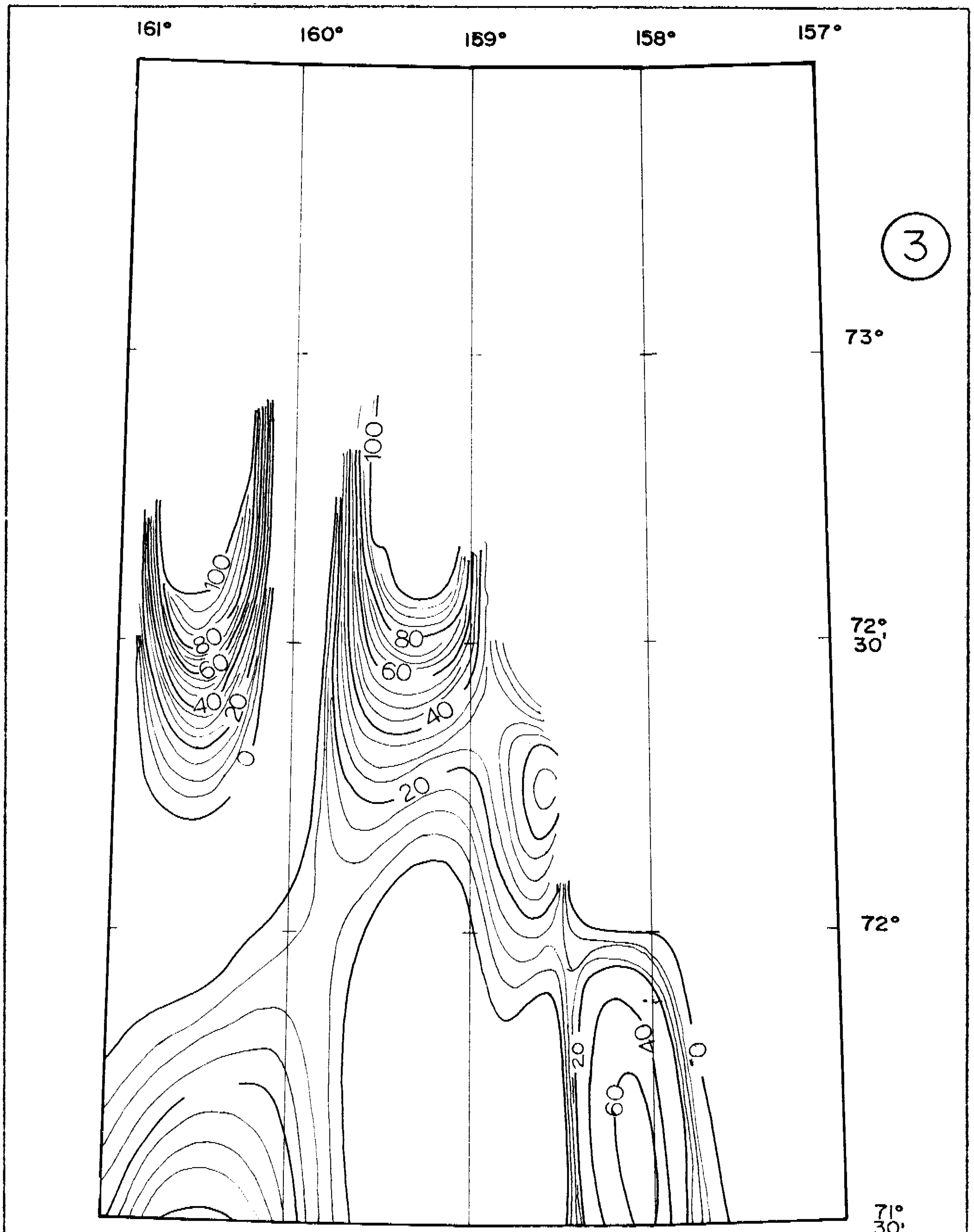
GRAIN SIZE GROUP 2



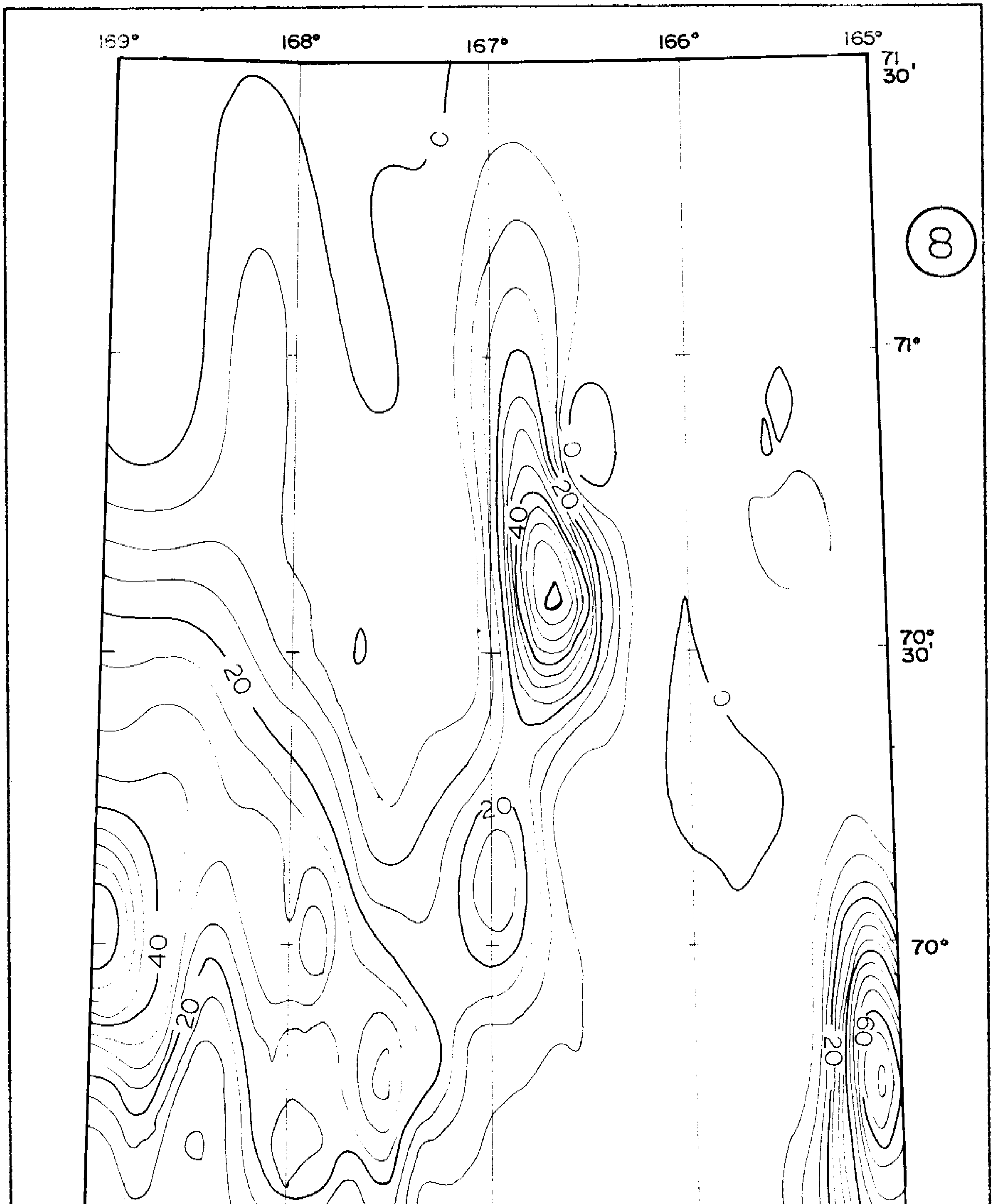
GRAIN SIZE GROUP 2



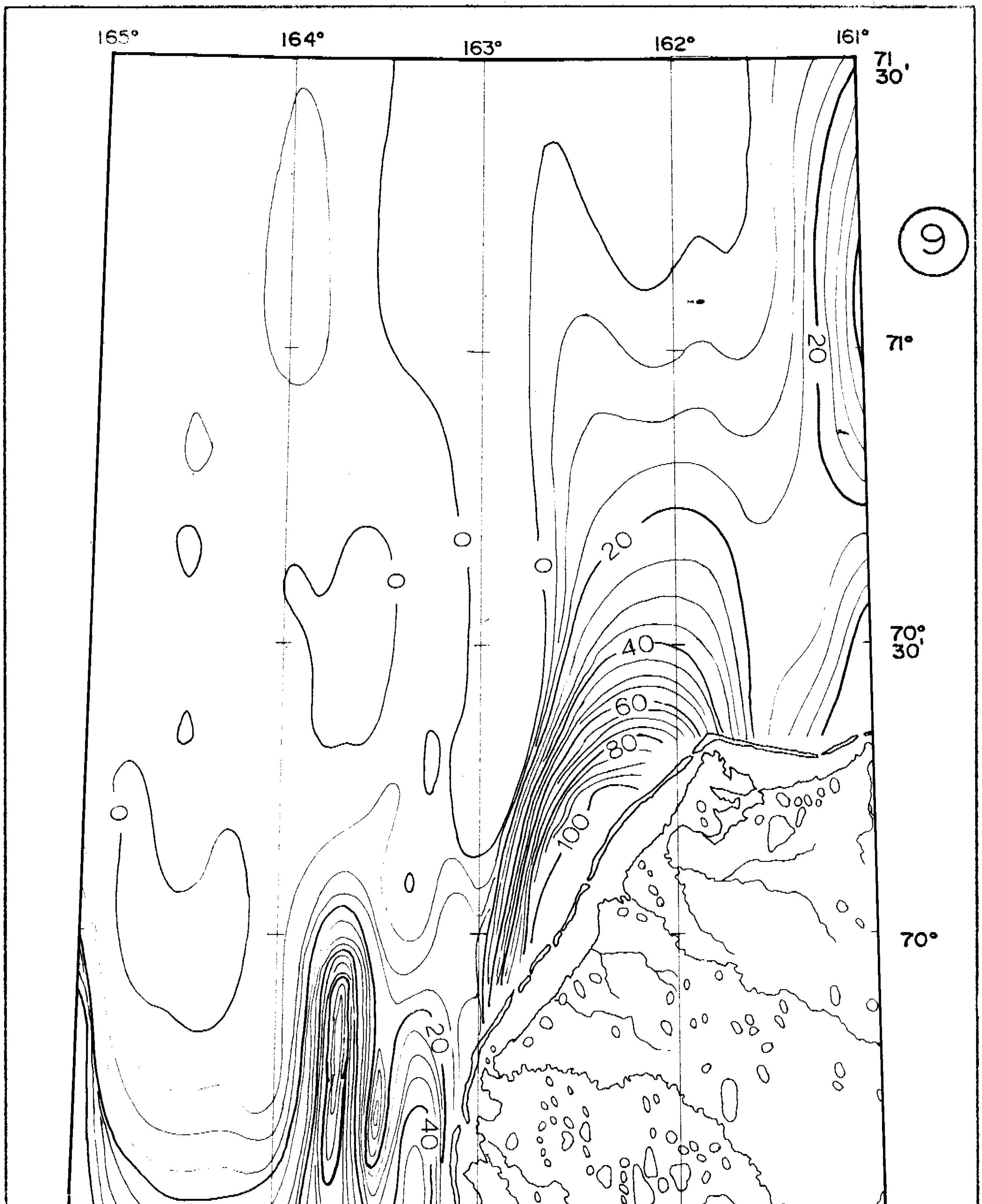
GRAIN SIZE GROUP 2



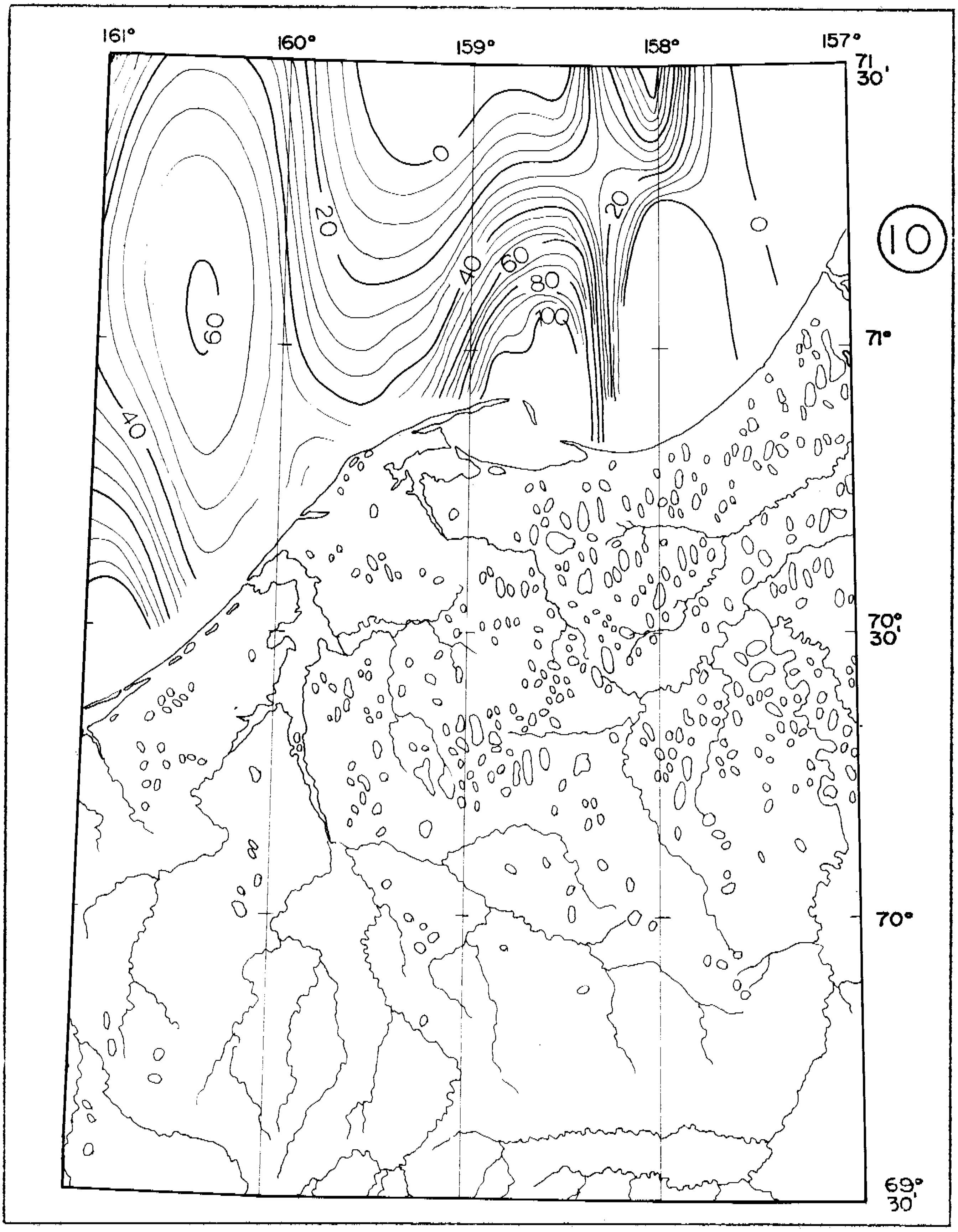
GRAIN SIZE GROUP 2



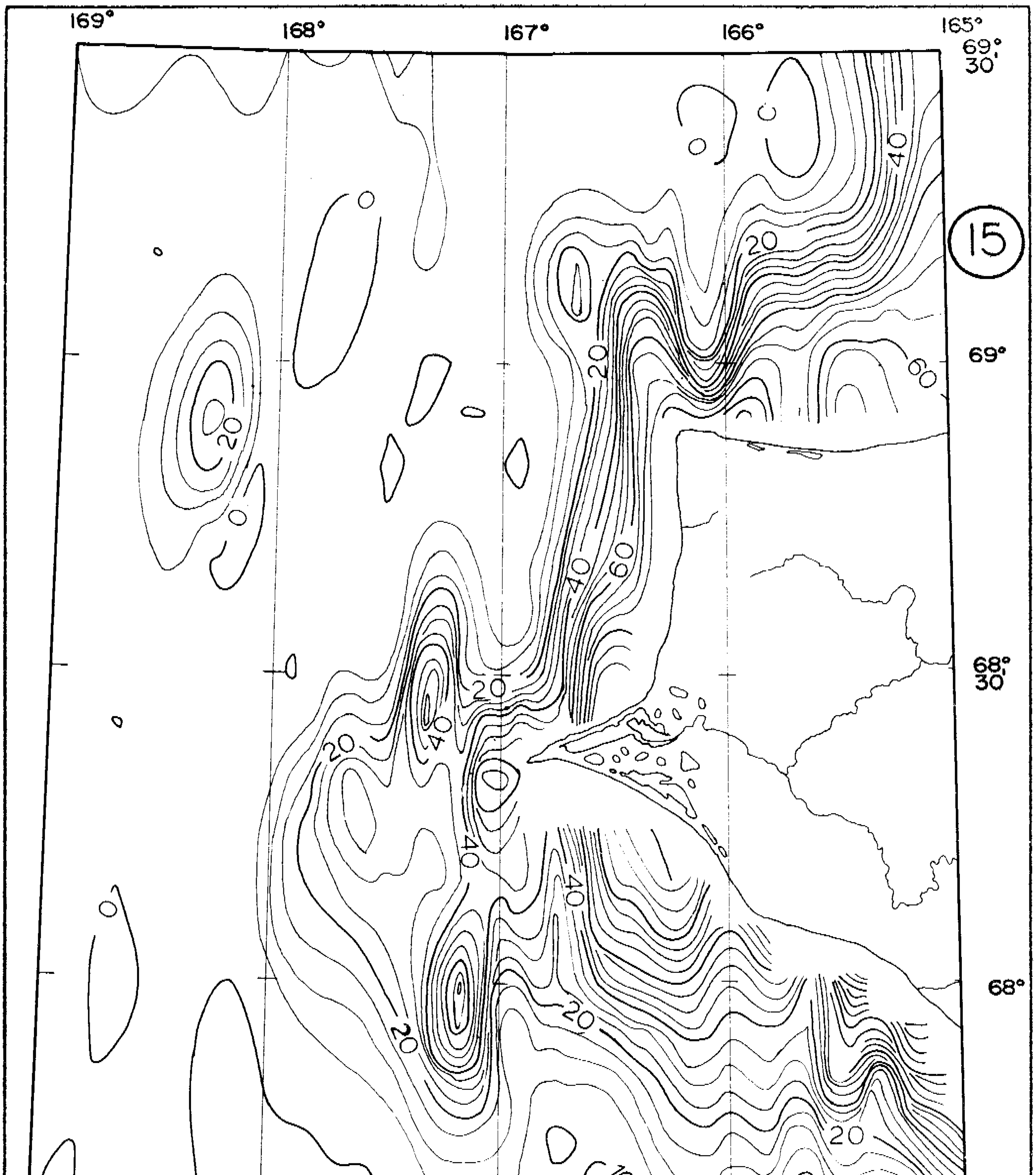
GRAIN SIZE GROUP 2



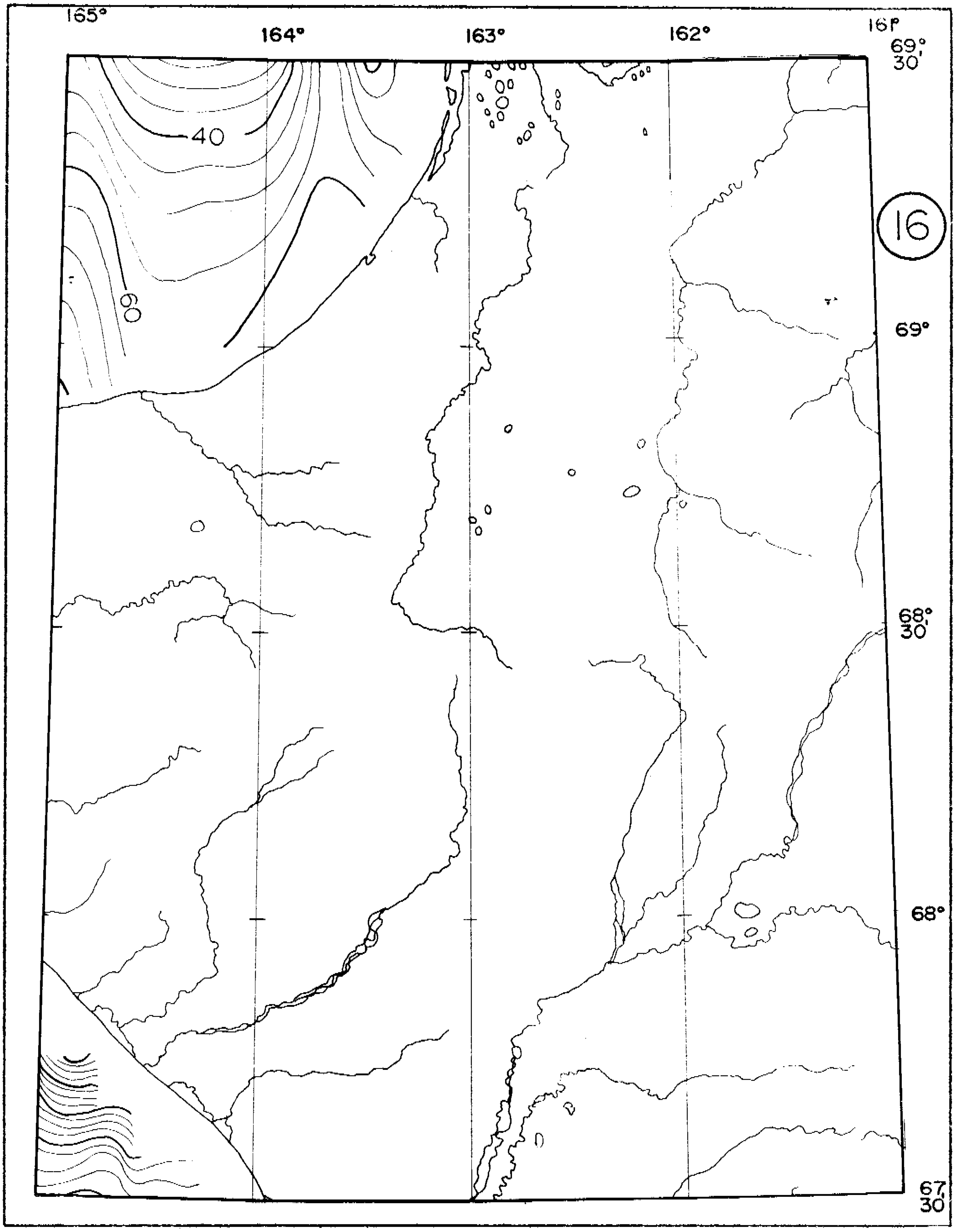
GRAIN SIZE GROUP 2



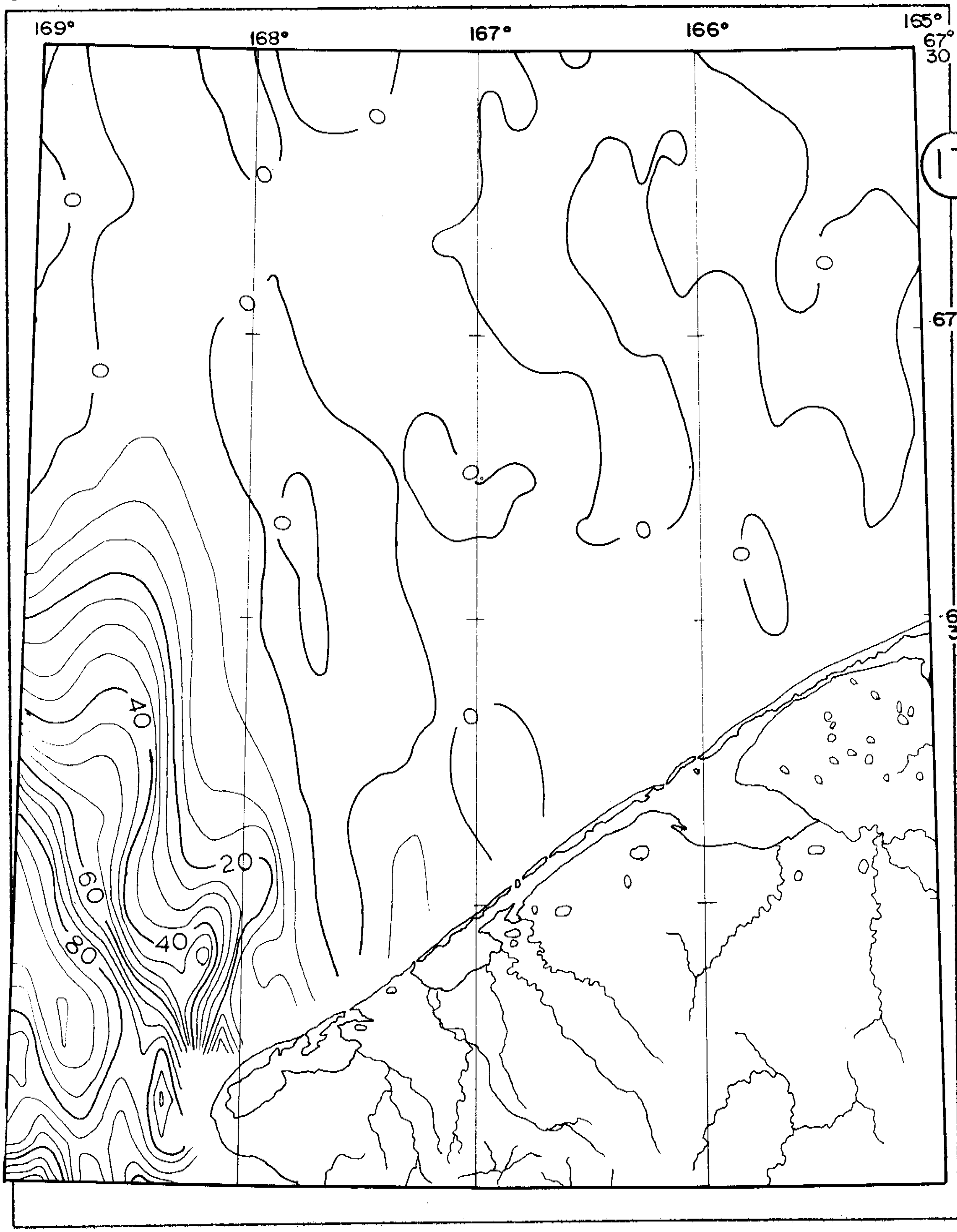
GRAIN SIZE GROUP 2



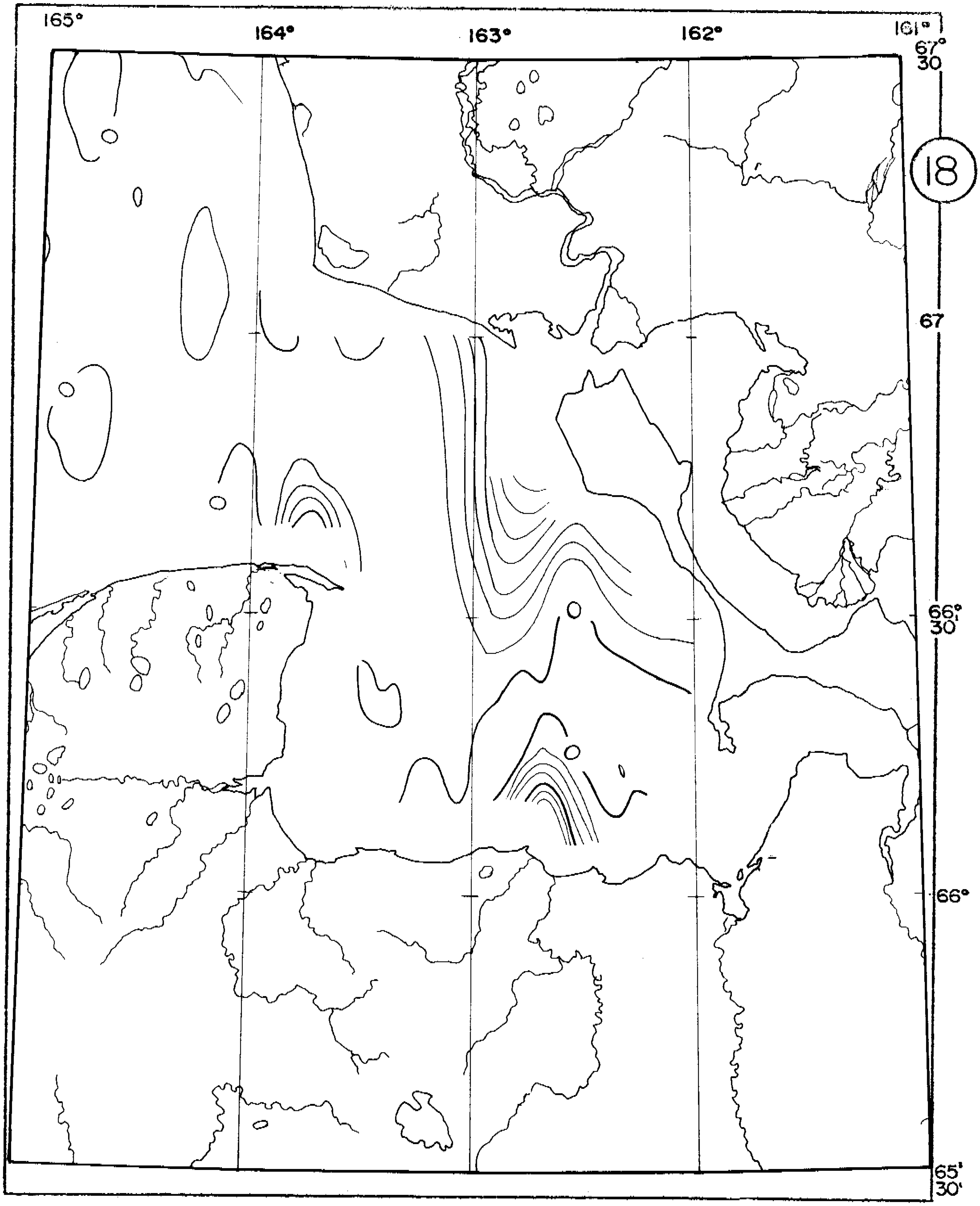
GRAIN SIZE GROUP 2



GRAIN SIZE GROUP 2



GRAIN SIZE GROUP 2



CHUKCHI SEA

GRAVEL — VERY FINE SAND DISTRIBUTION
BOTTOM DEPOSIT GRAIN SIZE MAP NO. 3
A SOURCE MAP FOR SUBMARINE PERMAFROST PREDICTION

DISTRIBUTION IN %
INTERVAL OF 5%
SCALE — 1:1,000,000

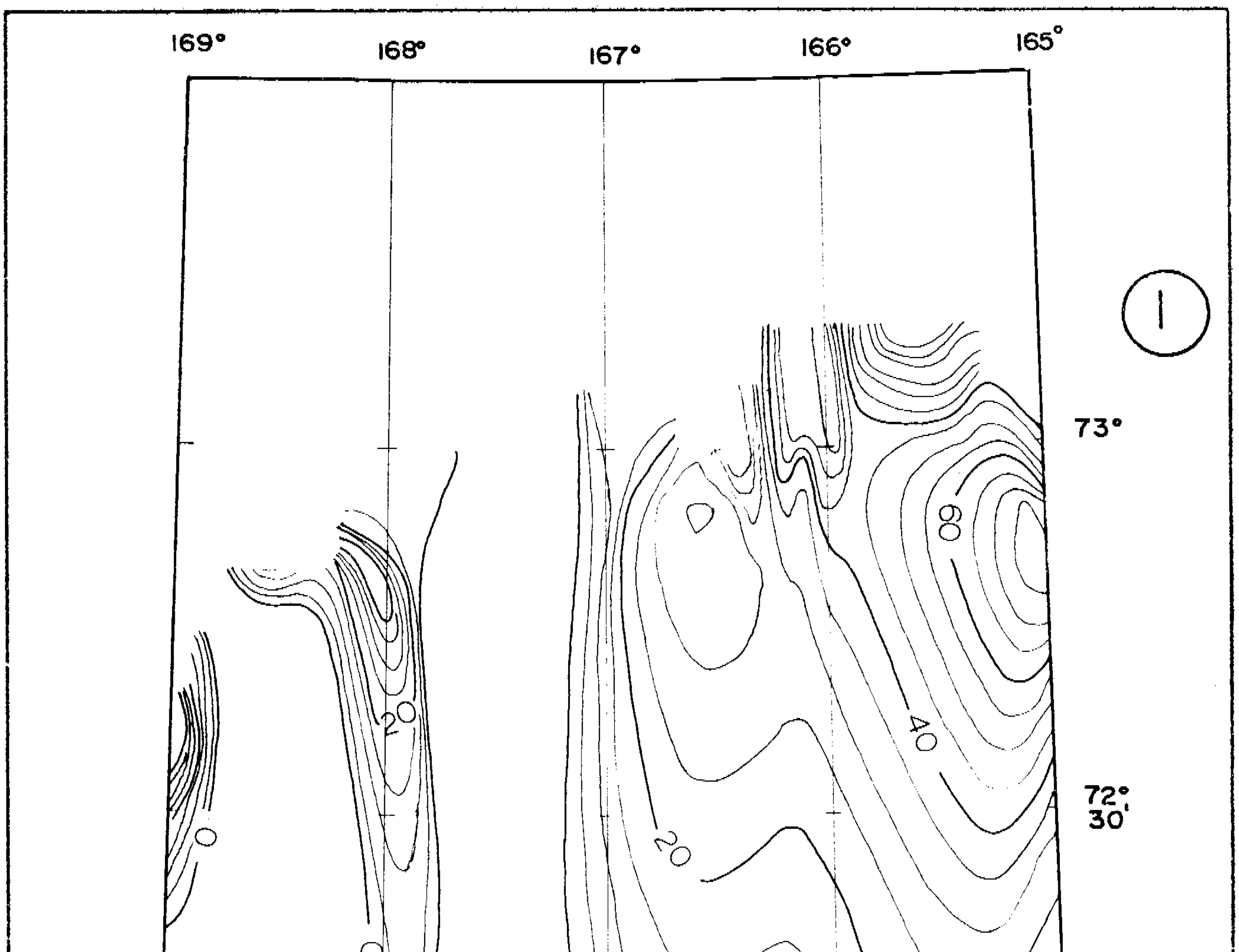
RESEARCH UNIT 516 OCSEAP
NOAA INSTAAR 1978

GEOGRAPHIC BASED INFORMATION MANAGEMENT SYSTEM
FOR PERMAFROST IN THE CHUKCHI AND BEAUFORT SEAS

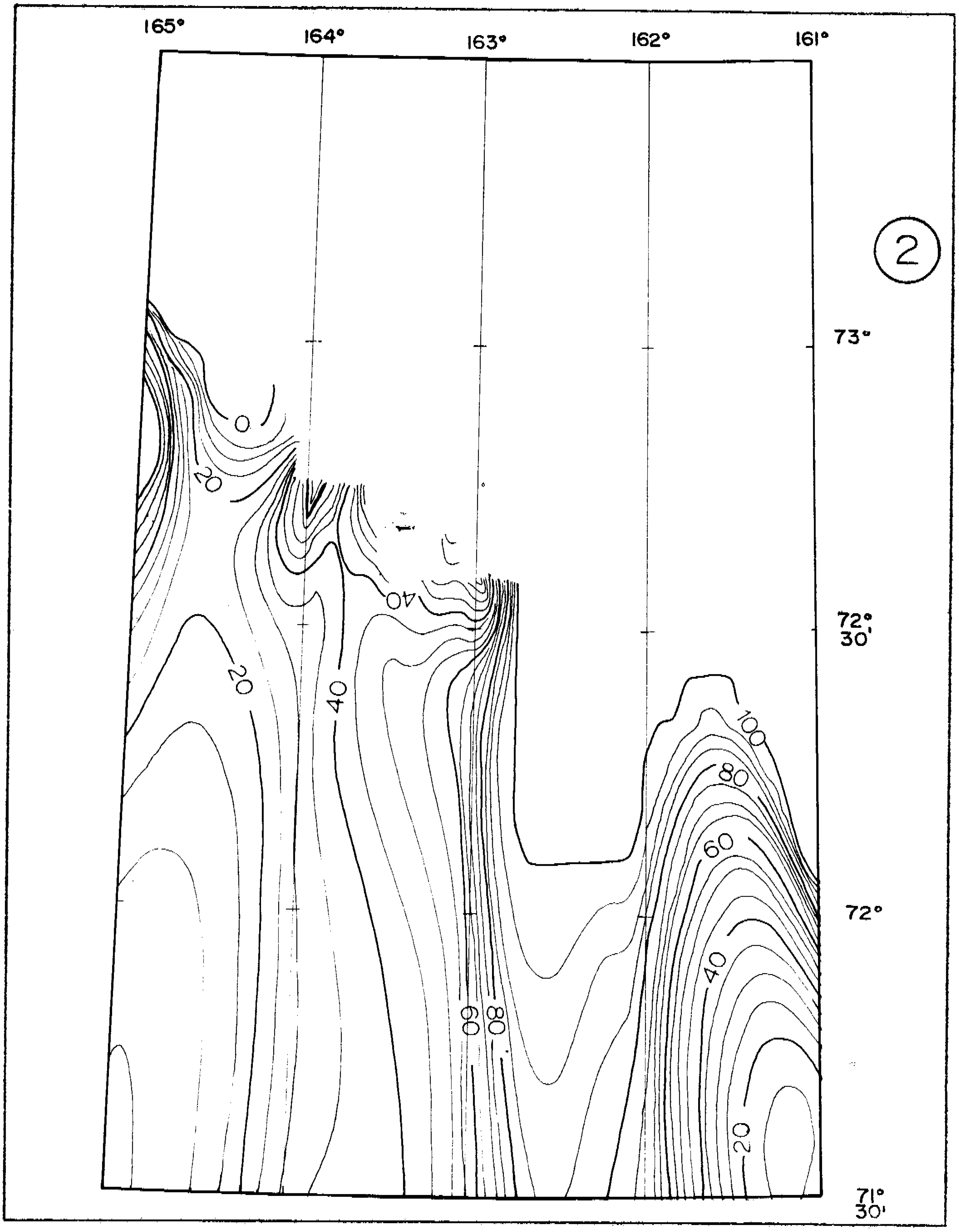
GRAIN SIZE SCALES FOR SEDIMENTS SHOWN ON THIS MAP

MILLIMETERS	MICRONS	PHI (O)	WENTWORTH SIZE CLASS
4096—1024	—	-12 to -10	BOULDER
256	—	-8	COBBLE
64—16	—	-6 to -4	PEBBLE
4—2.38	—	-2 to -1.25	GRANULE
2—1.19	—	-1 to -0.25	VERY COARSE SAND
1-0.59	—	0 to 0.25	COARSE SAND
0.50—0.30	500—300	1 to 1.75	MEDIUM SAND
0.25—0.149	250—149	2 to 2.75	FINE SAND
0.125—0.074	125—74	3 to 3.75	VERY FINE SAND

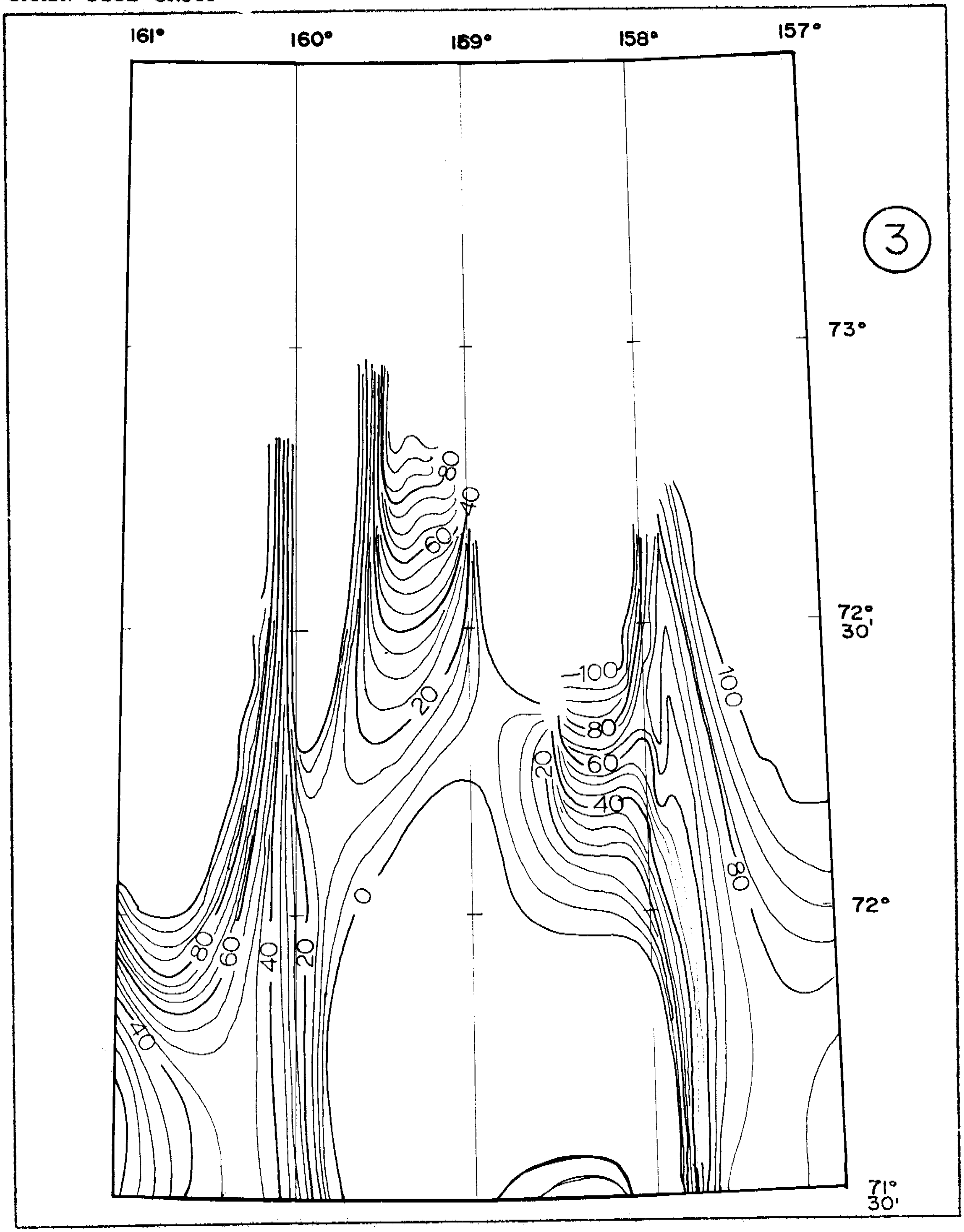
GRAIN SIZE GROUP 3



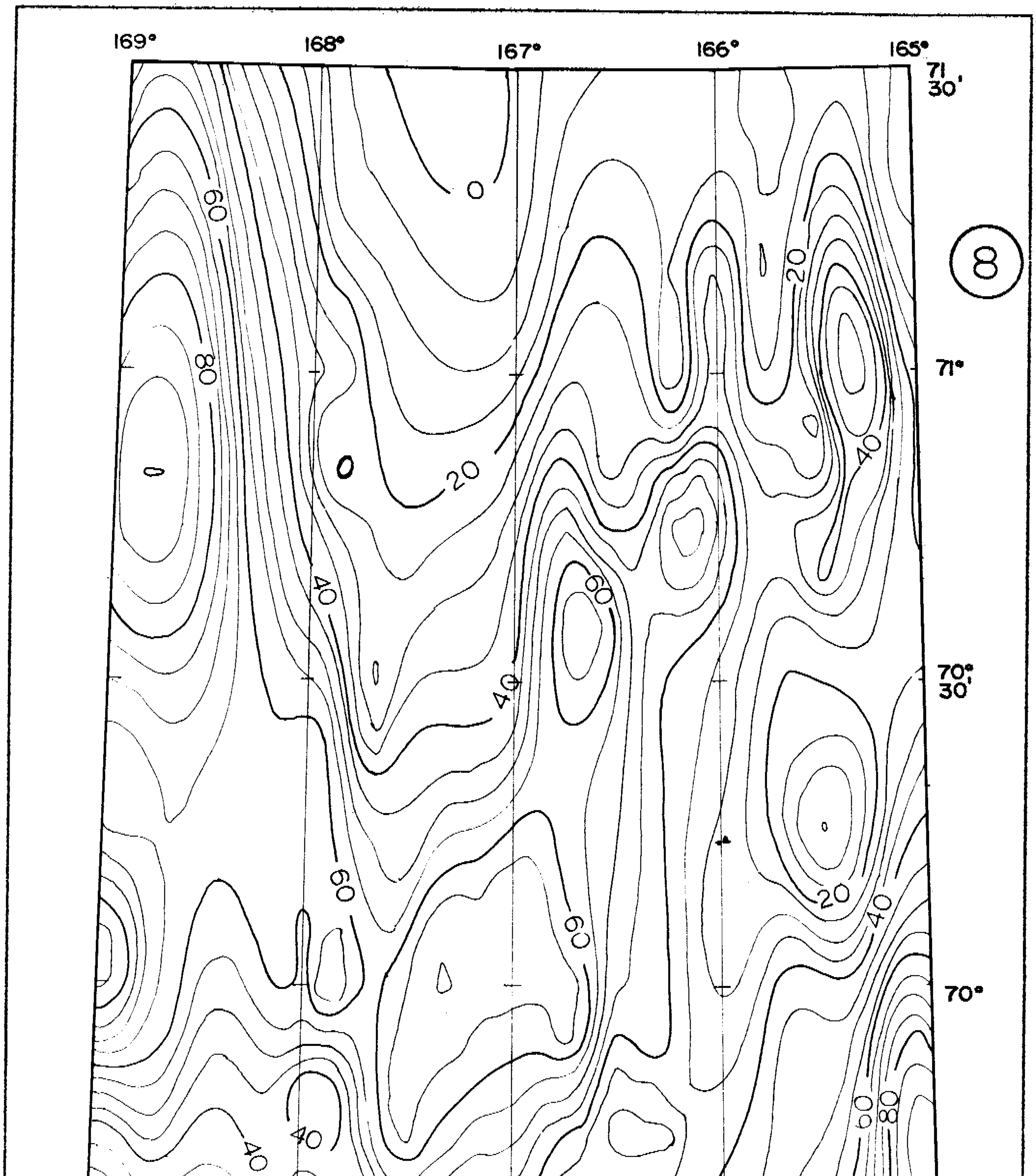
GRAIN SIZE GROUP 3



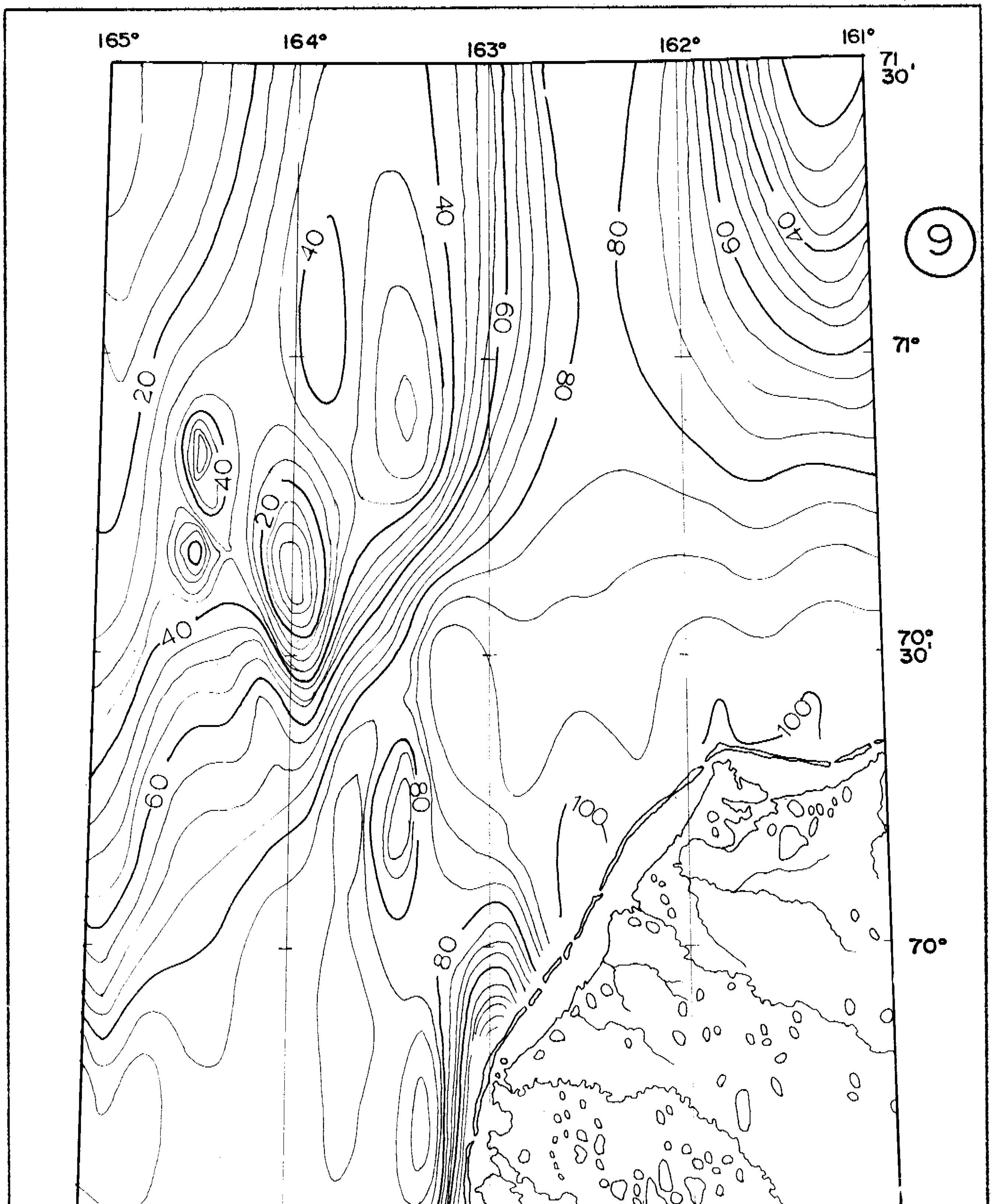
GRAIN SIZE GROUP 3



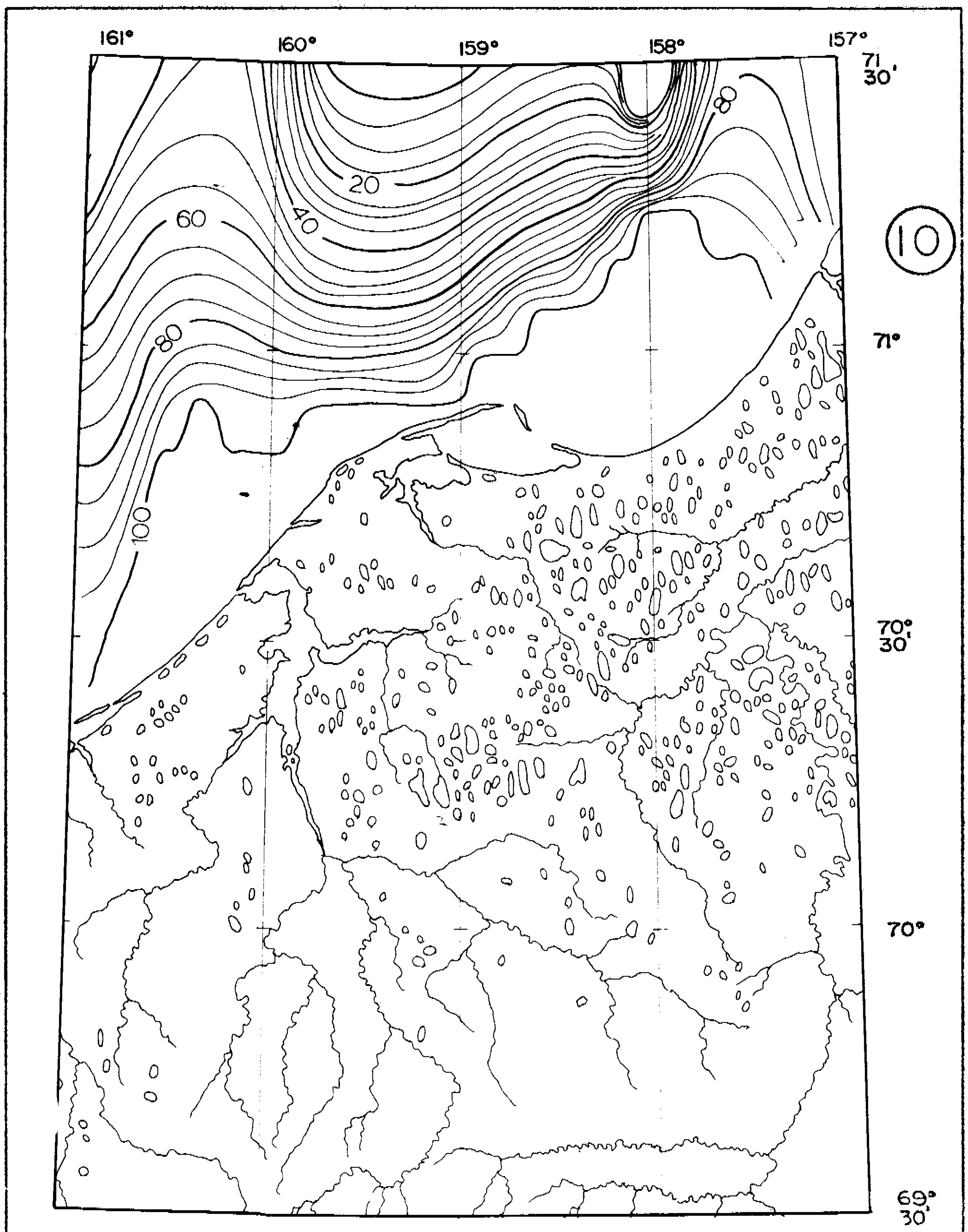
GRAIN SIZE GROUP 3



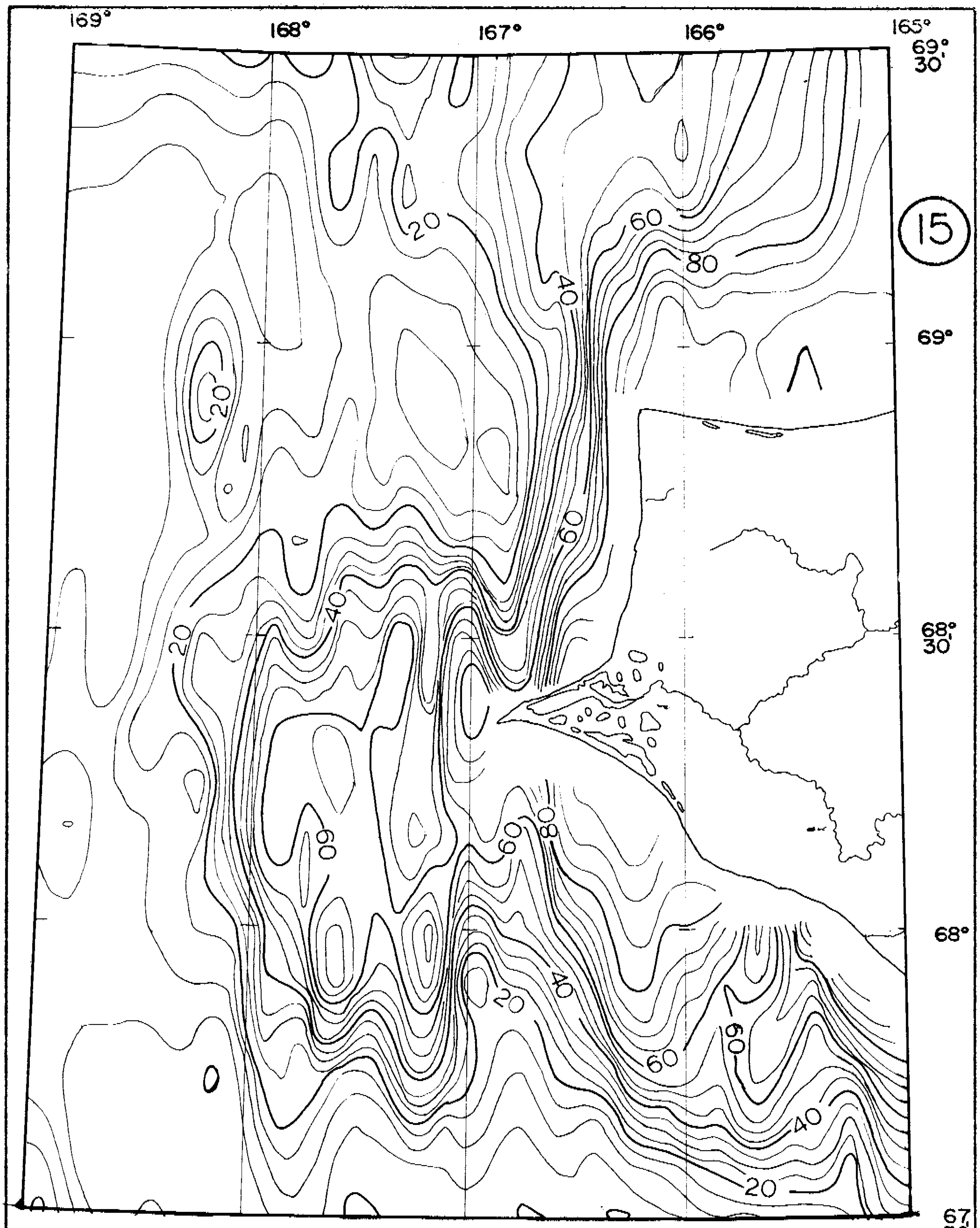
GRAIN SIZE GROUP 3



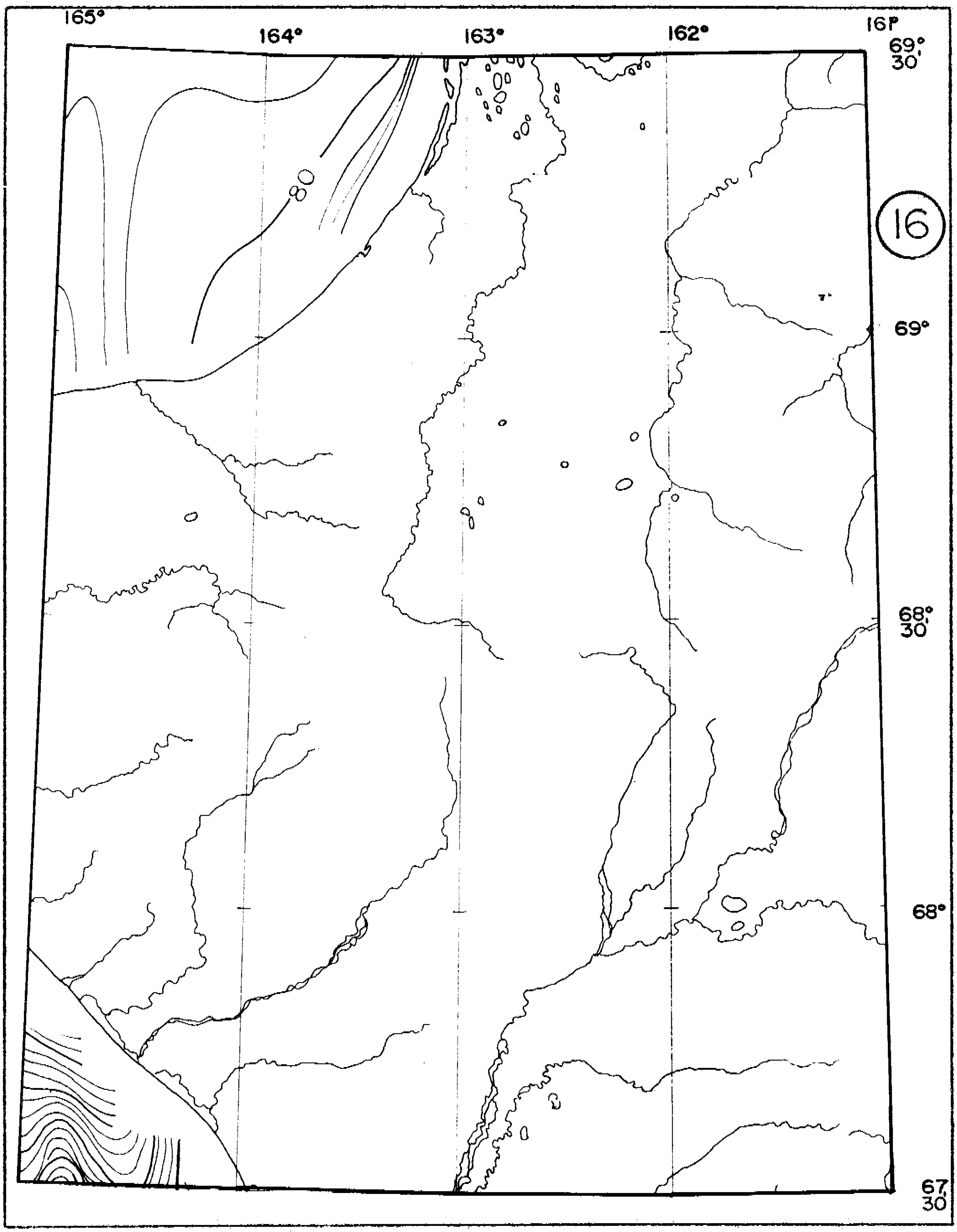
GRAIN SIZE GROUP 3



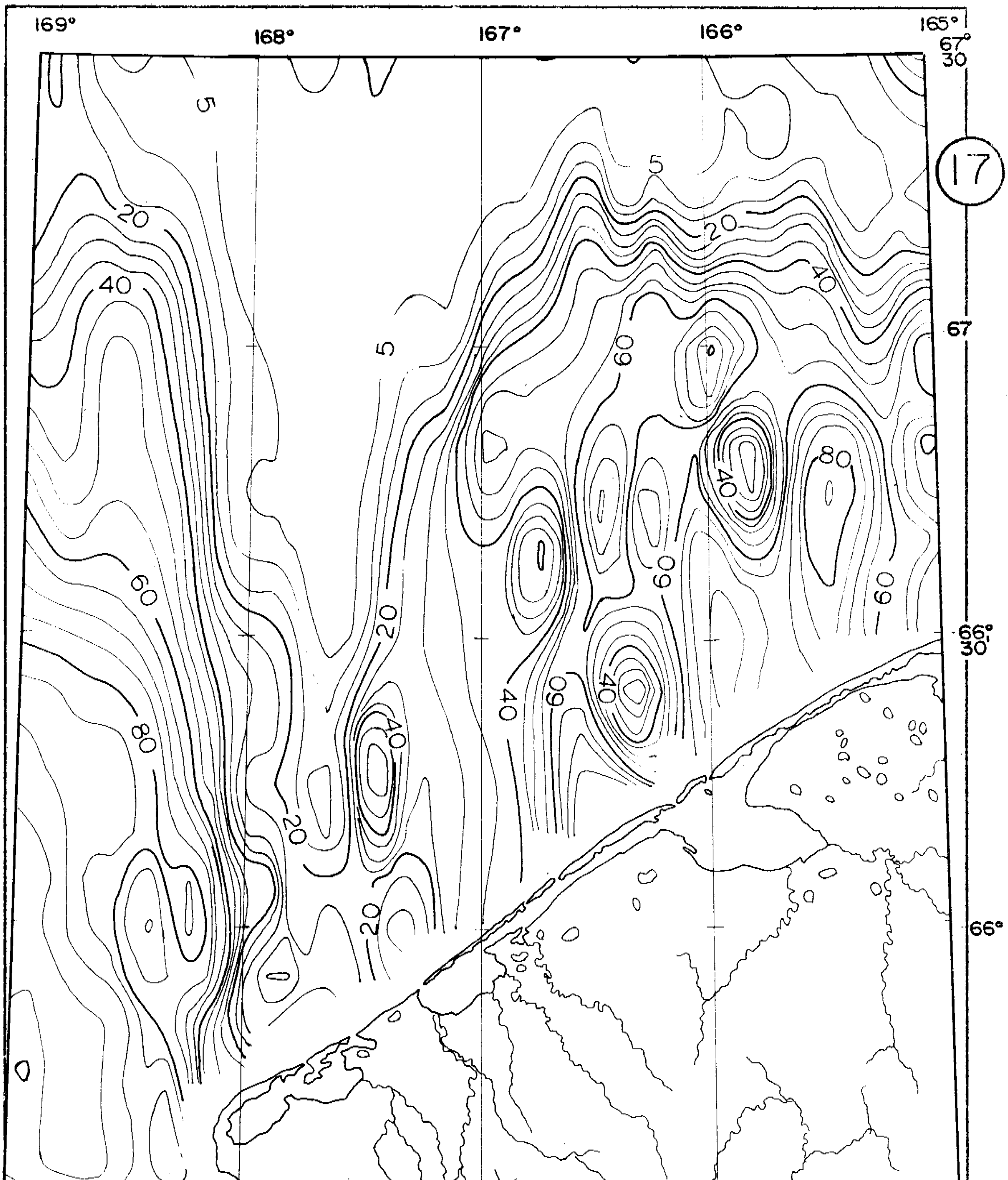
GRAIN SIZE GROUP 3



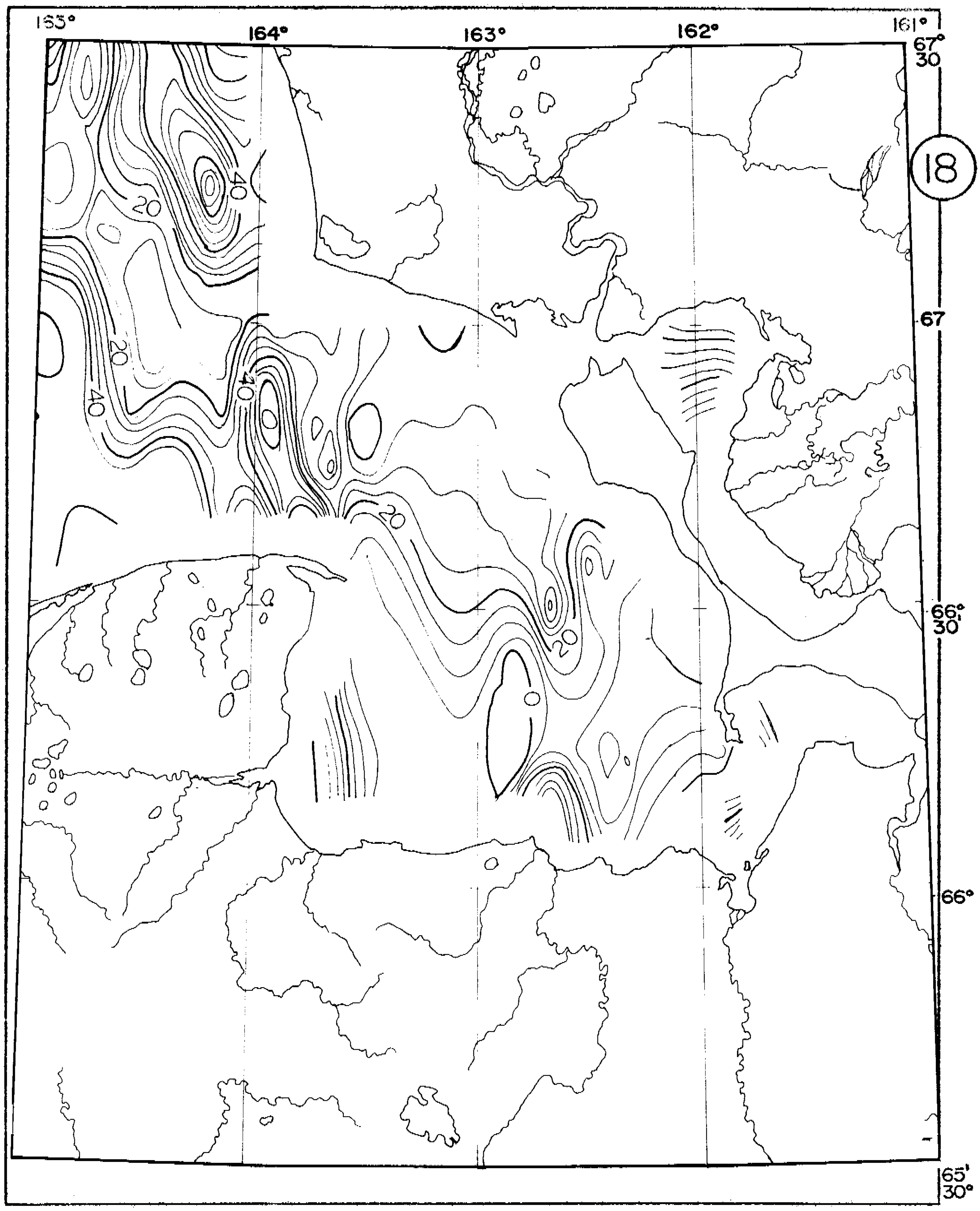
GRAIN SIZE GROUP 3



GRAIN SIZE GROUP 3



GRAIN SIZE GROUP 3



CHUKCHI SEA

RESEARCH UNIT 516 OCSEAP
NOAA INSTAAR 1978

GRAVEL — COARSE SILT DISTRIBUTION
BOTTOM DEPOSIT GRAIN SIZE MAP NO. 4

A SOURCE MAP FOR SUBMARINE PERMAFROST PREDICTION

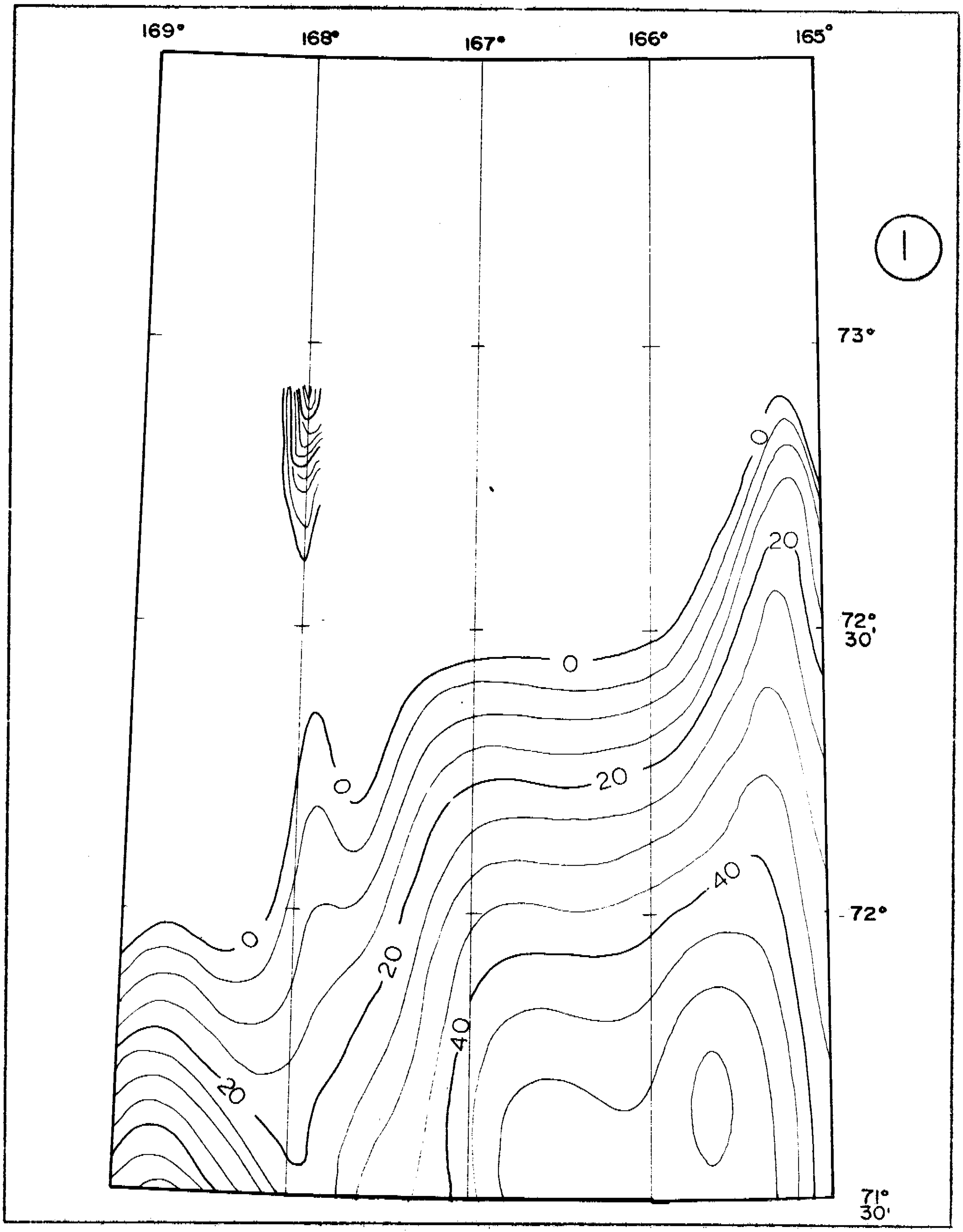
DISTRIBUTION IN %
INTERVAL OF 5 %
SCALE — 1:1,000,000

GEOGRAPHIC BASED INFORMATION MANAGEMENT SYSTEM
FOR PERMAFROST IN THE CHUKCHI AND BEAUFORT SEAS

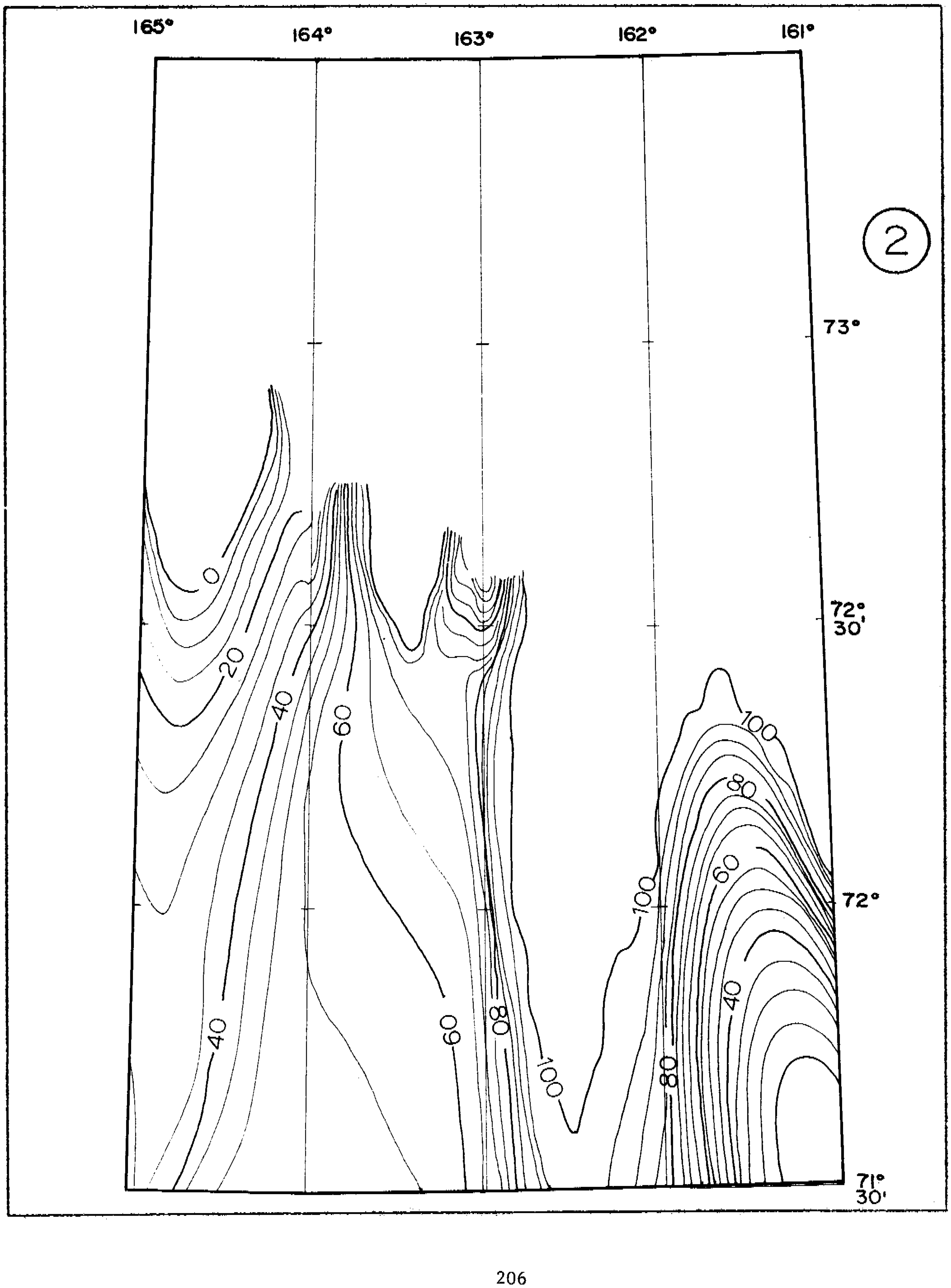
GRAIN SIZE SCALES FOR SEDIMENTS SHOWN ON THIS MAP

MILLIMETERS	MICRONS	PHI (ϕ)	WENTWORTH SIZE CLASS
4096—1024	—	-12 to -10	BOULDER
256	—	-8	COBBLE
64—16	—	-6 to -4	PEBBLE
4—2.38	—	-2 to -1.25	GRANULE
2-1.19	—	-1 to -0.25	VERY COARSE SAND
1—0.59	—	0 to 0.25	COARSE SAND
0.50—0.30	500—300	1 to 1.75	MEDIUM SAND
0.25—0.149	250—149	2 to 2.75	FINE SAND
0.125—0.074	125—74	3 to 3.75	VERY FINE SAND
0.0625—0.037	62.5—37	4 to 4.75	COARSE SILT

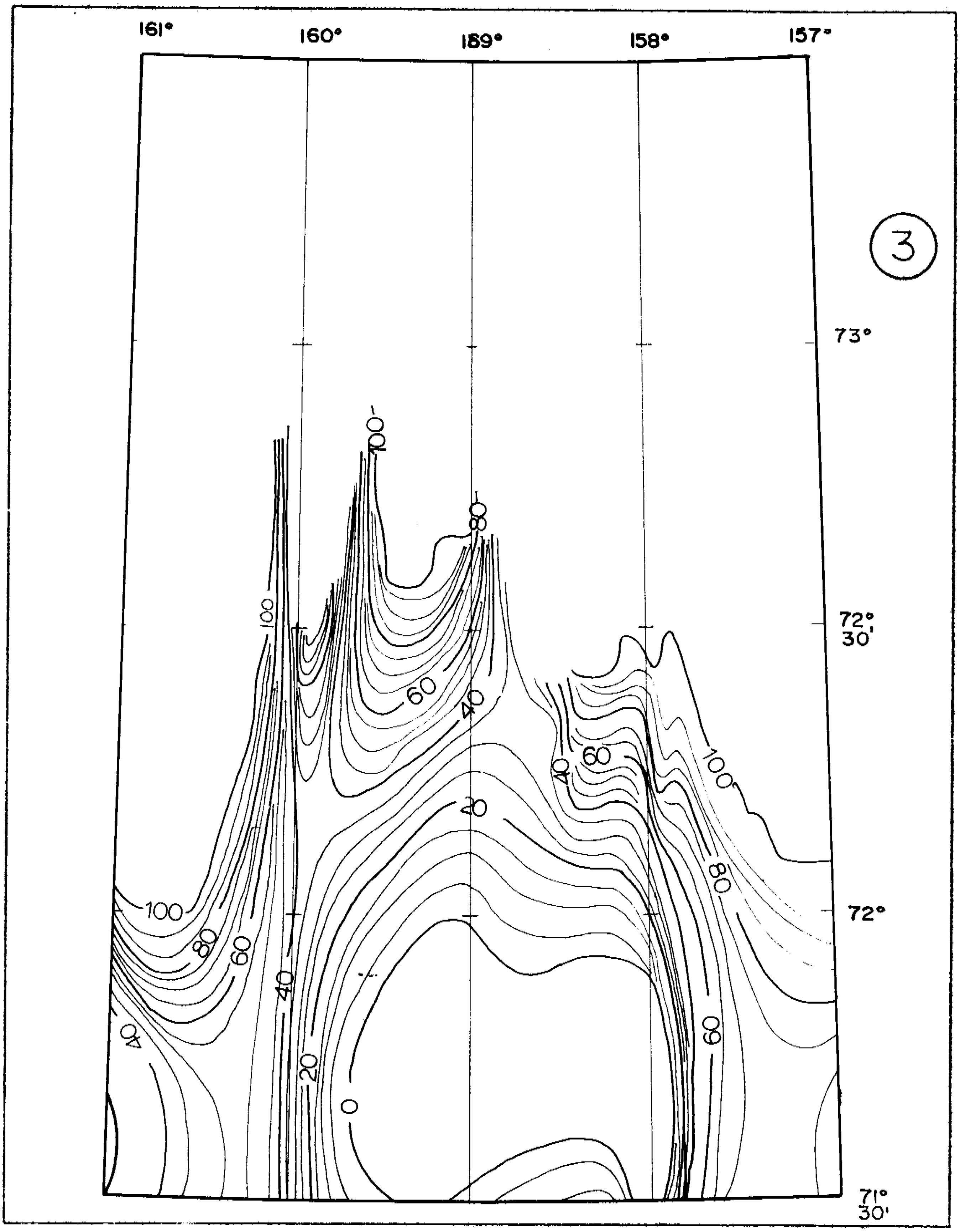
GRAIN SIZE GROUP 4



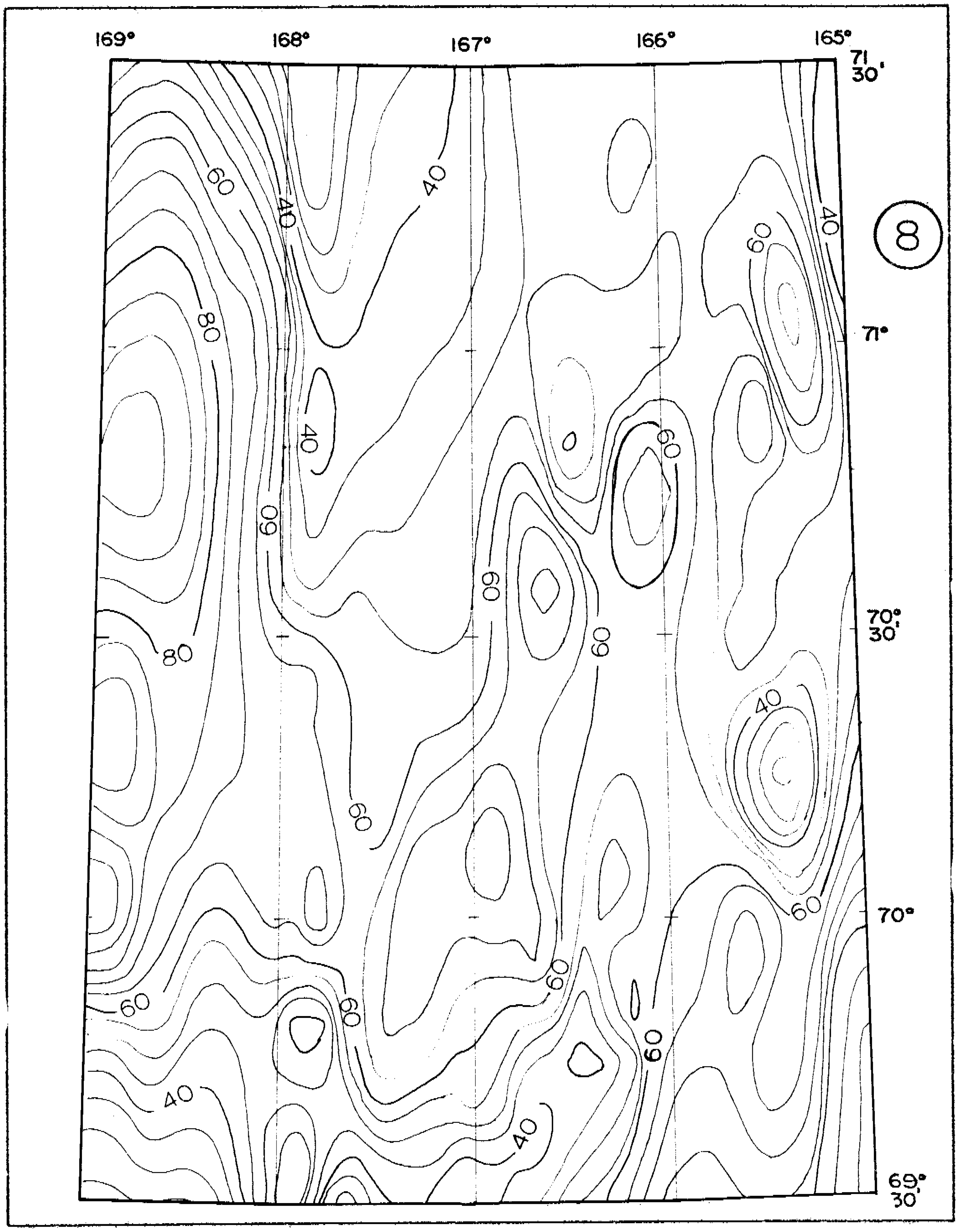
GRAIN SIZE GROUP 4



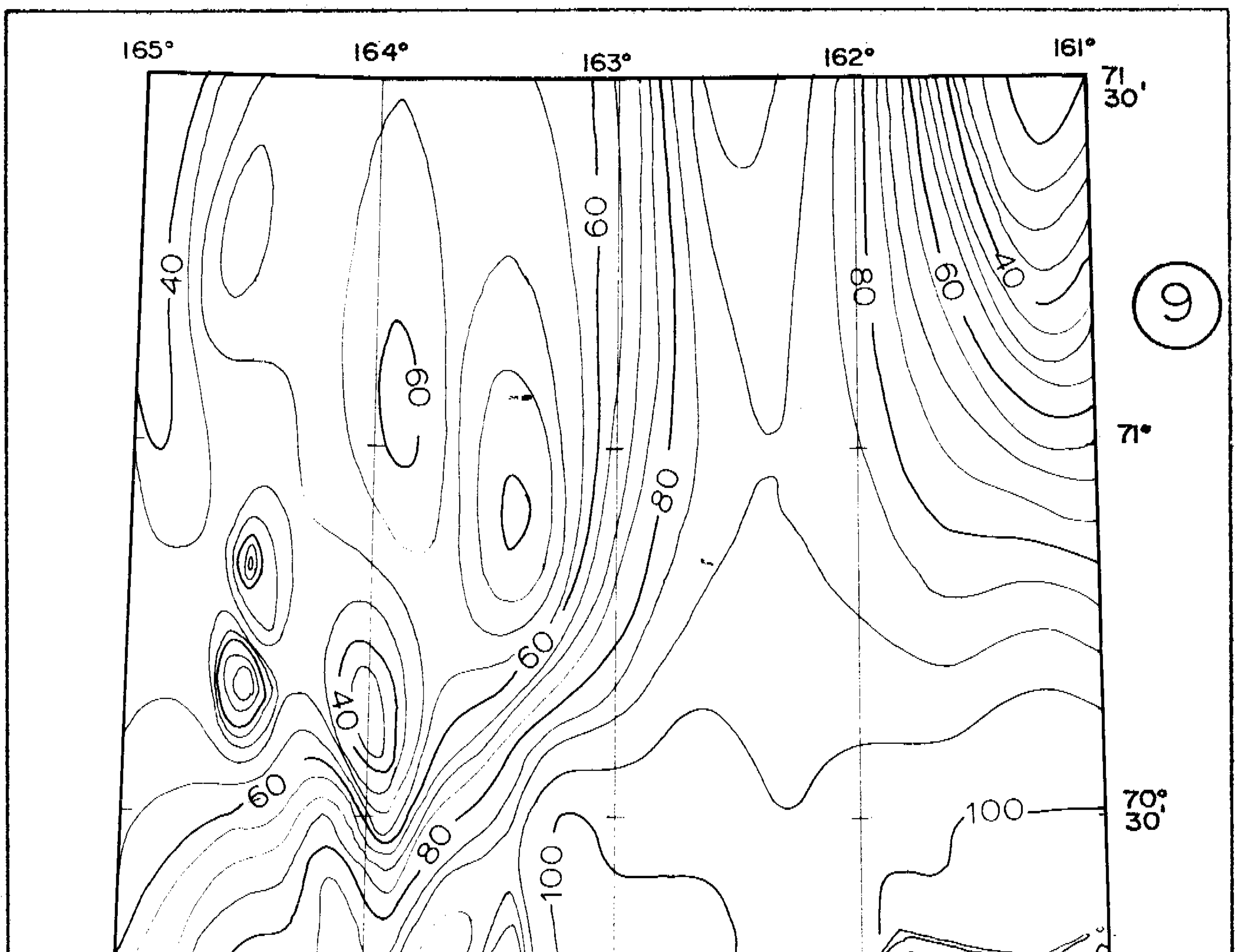
GRAIN SIZE GROUP 4



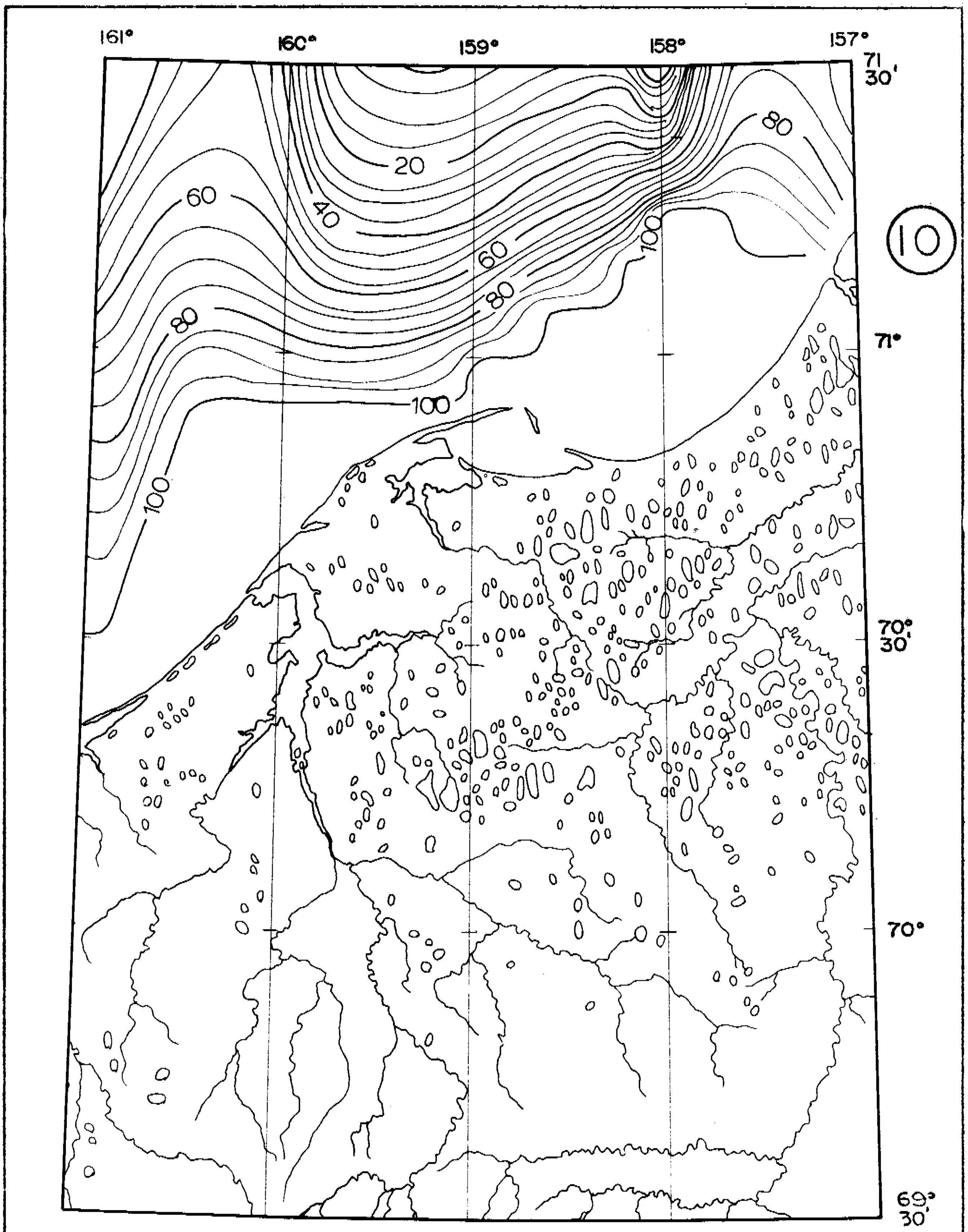
GRAIN SIZE GROUP 4



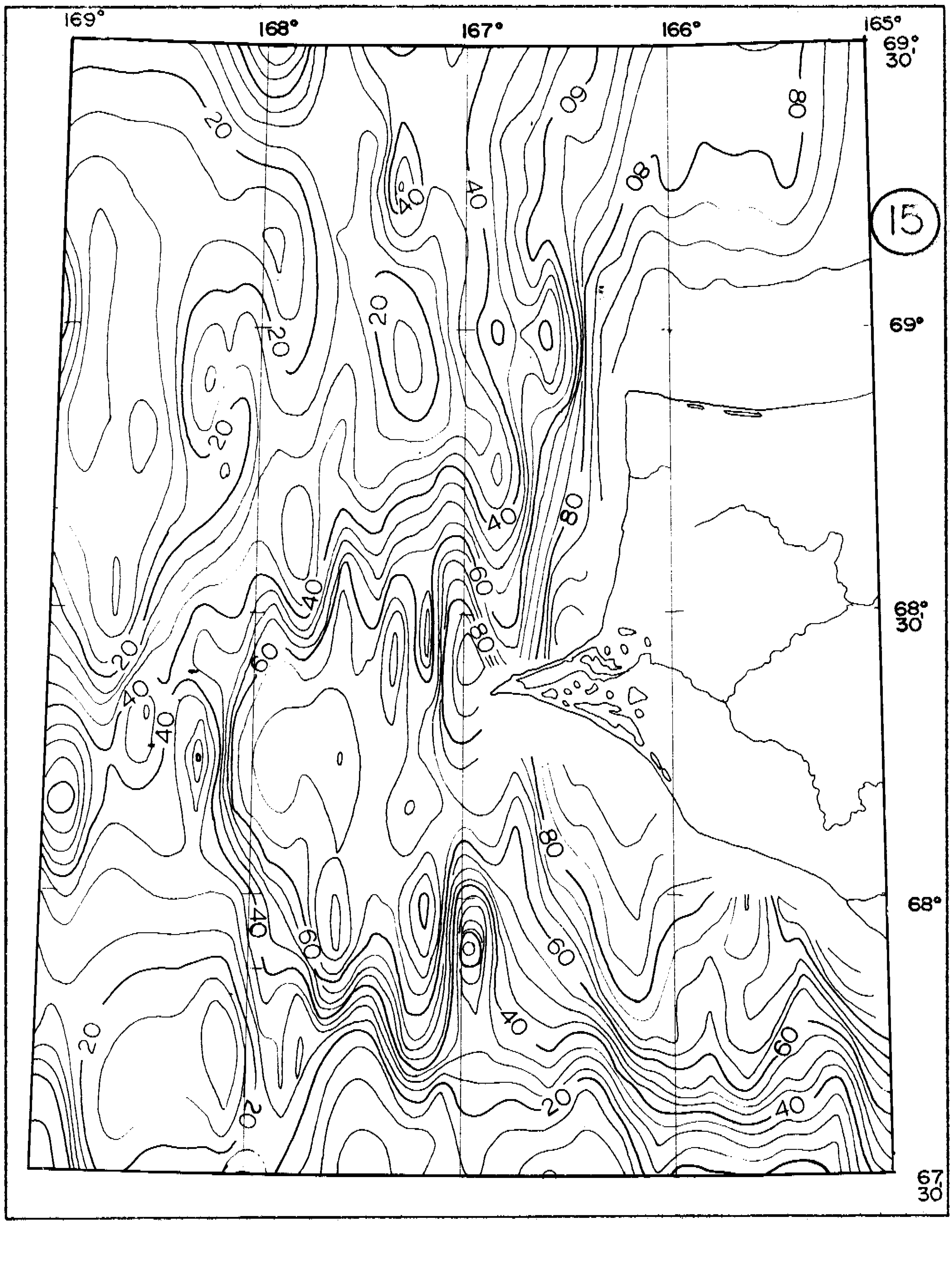
GRAIN SIZE GROUP 4



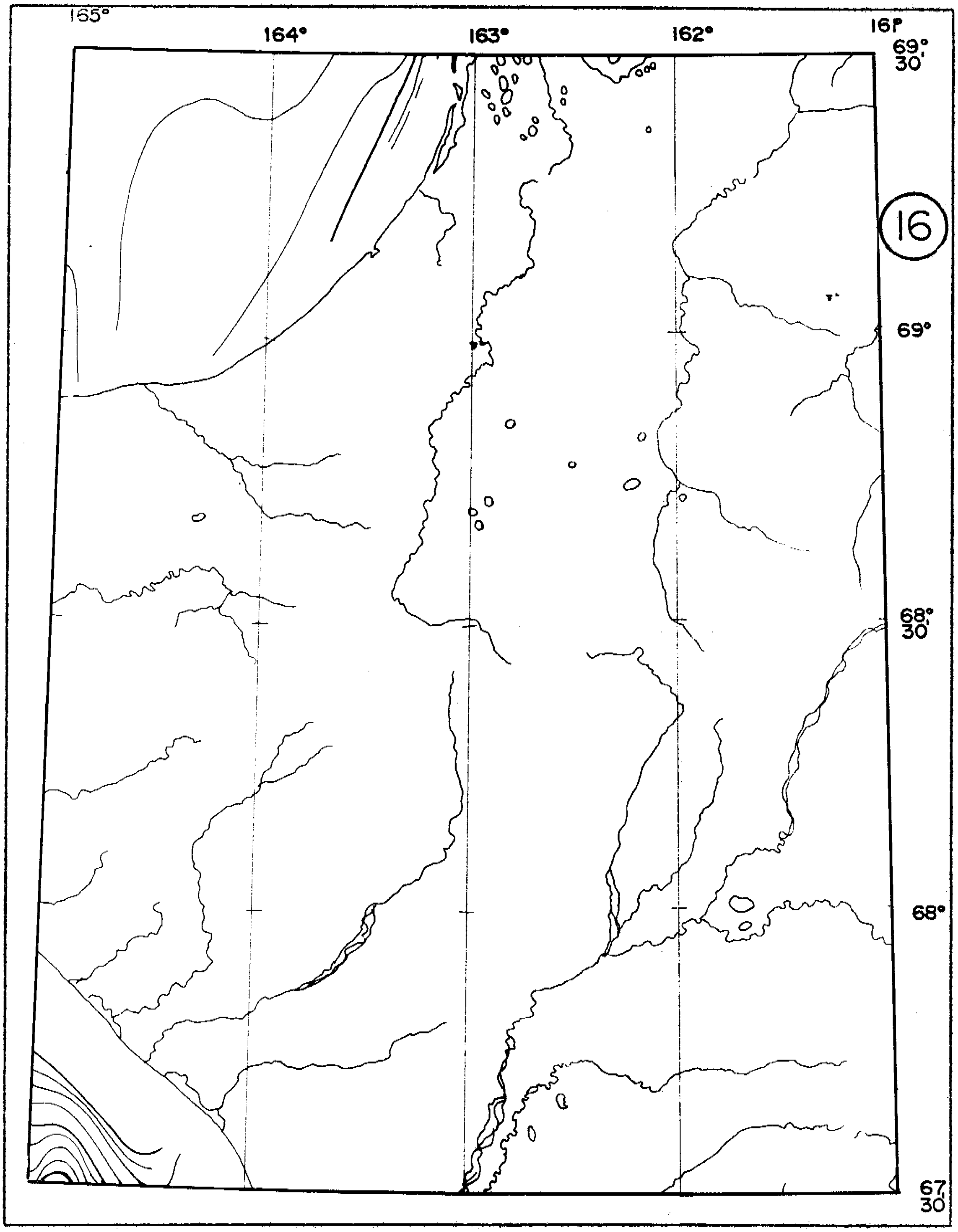
GRAIN SIZE GROUP 4



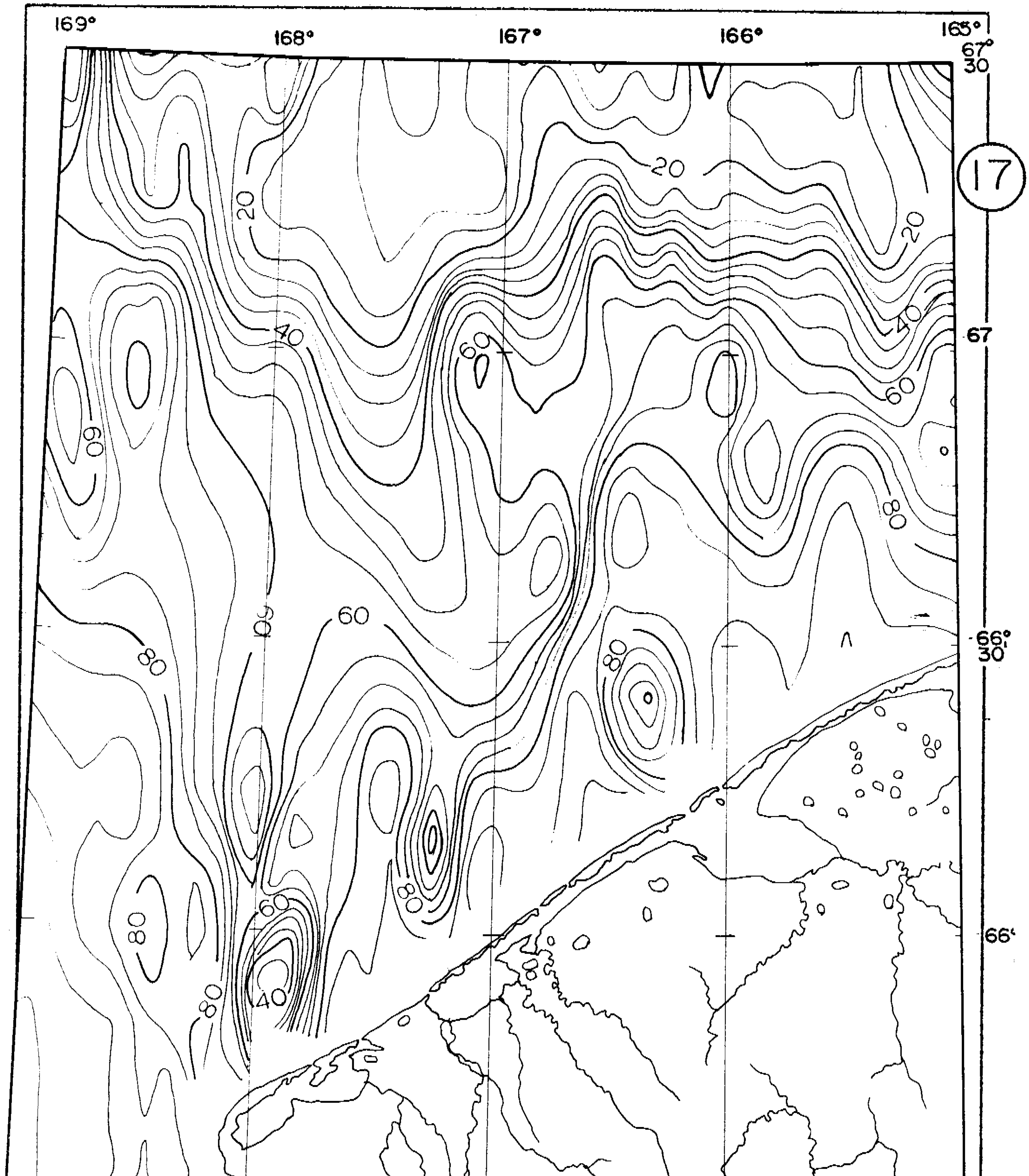
GRAIN SIZE GROUP 4



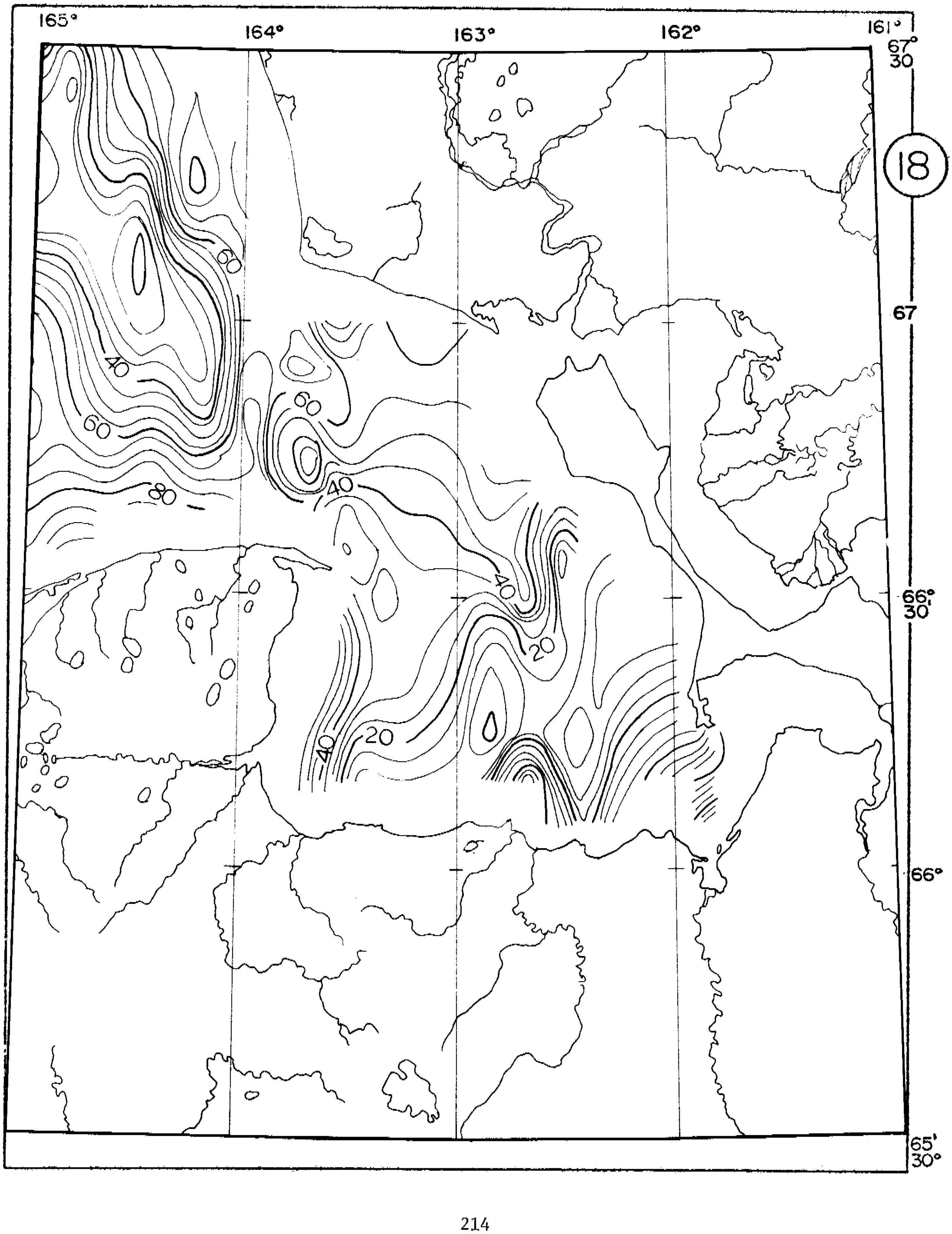
GRAIN SIZE GROUP 4



GRAIN SIZE GROUP 4



GRAIN SIZE GROUP 4



CHUKCHI SEA

RESEARCH UNIT 516 OCSEAP
NOAA INSTAAR 1978

GRAVEL — VERY FINE SILT DISTRIBUTION
BOTTOM DEPOSIT GRAIN SIZE MAP NO. 5

A SOURCE MAP FOR SUBMARINE PERMAFROST PREDICTION

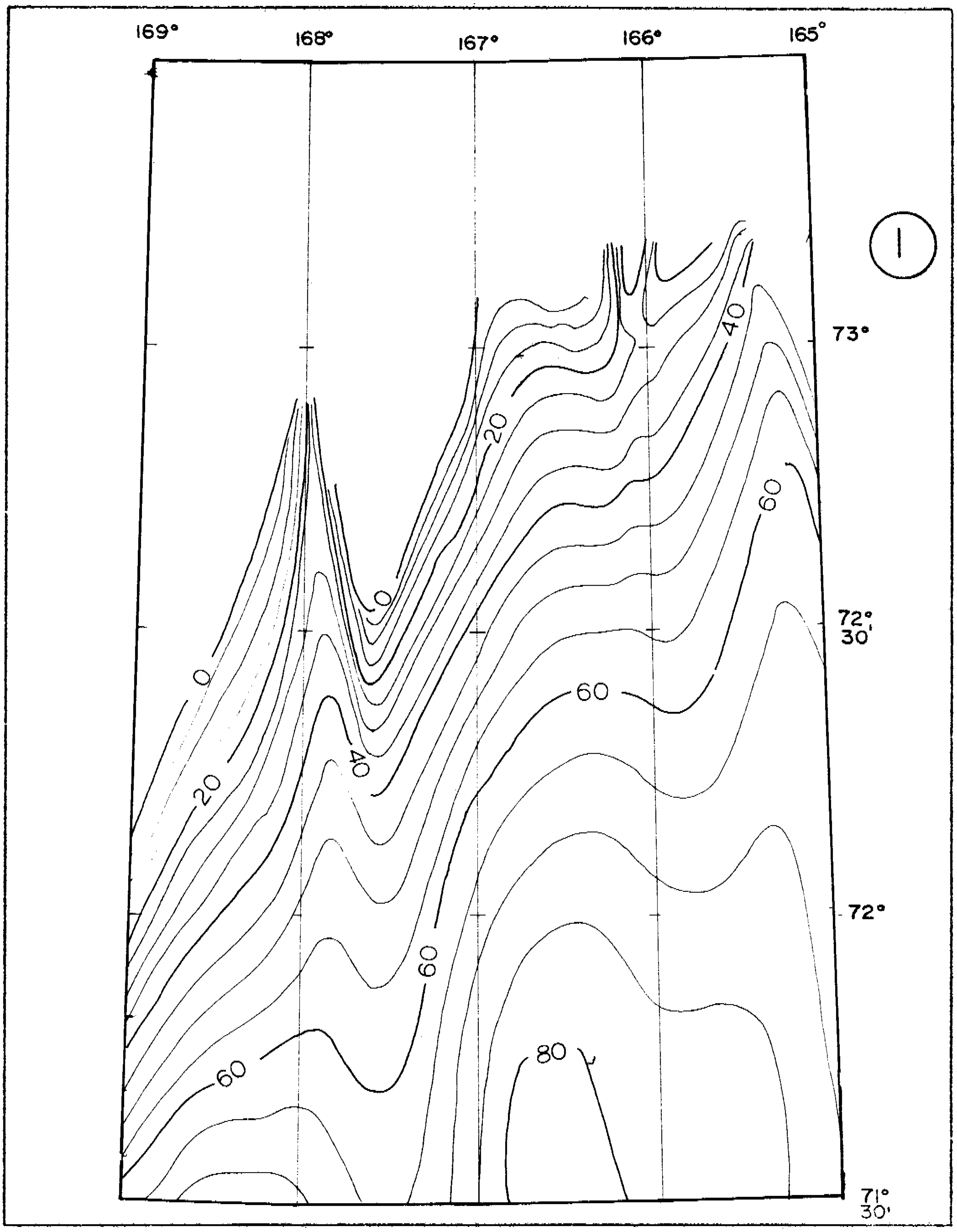
DISTRIBUTION IN %
INTERVAL OF 5 %
SCALE — 1:1,000,000

GEOGRAPHIC BASED INFORMATION MANAGEMENT SYSTEM
FOR PERMAFROST IN THE CHUKCHI AND BEAUFORT SEAS

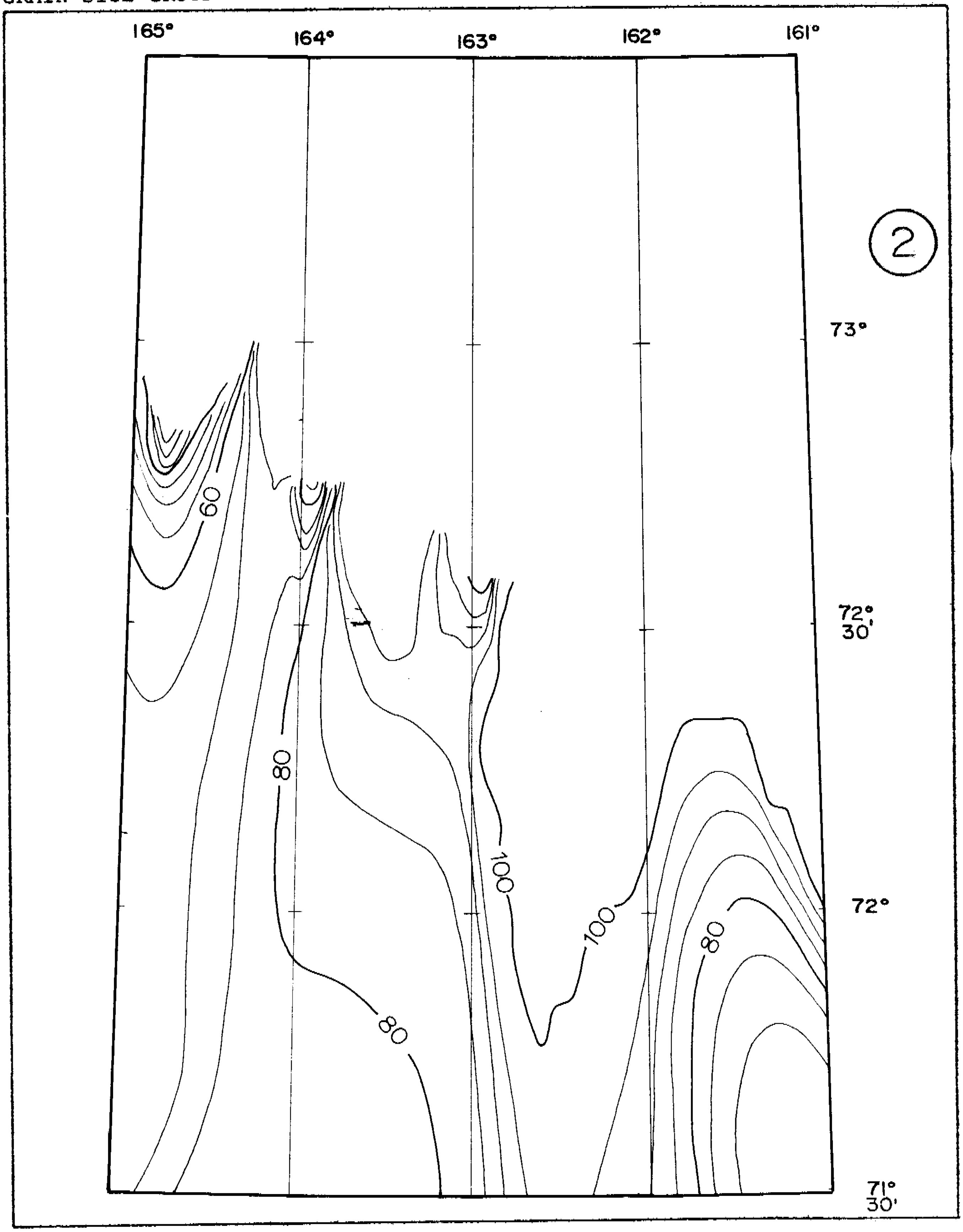
GRAIN SIZE SCALES FOR SEDIMENTS SHOWN ON THIS MAP

MILLIMETERS	MICRONS	PHI(ϕ)	WENTWORTH SIZE CLASS
4096 - 1024	—	-12 to -10	BOULDER
256	—	-8	COBBLE
64 - 16	—	-6 to -4	PEBBLE
4 - 2.38	—	-2 to -1.25	GRANULE
2 - 1.19	—	-1 to -0.25	VERY COARSE SAND
1 - 0.59	—	0 to 0.25	COARSE SAND
0.50 — 0.30	500 - 300	1 to 1.75	MEDIUM SAND
0.25 — 0.149	250 - 149	2 to 2.75	FINE SAND
0.125 — 0.074	125 - 74	3 to 3.75	VERY FINE SAND
0.0625 — 0.037	62.5 - 37	4 to 4.75	COARSE SILT
0.031 — 0.0156	31 - 15.6	5 to 6	MEDIUM SILT
0.0078	7.8	7	FINE — VERY FINE SILT

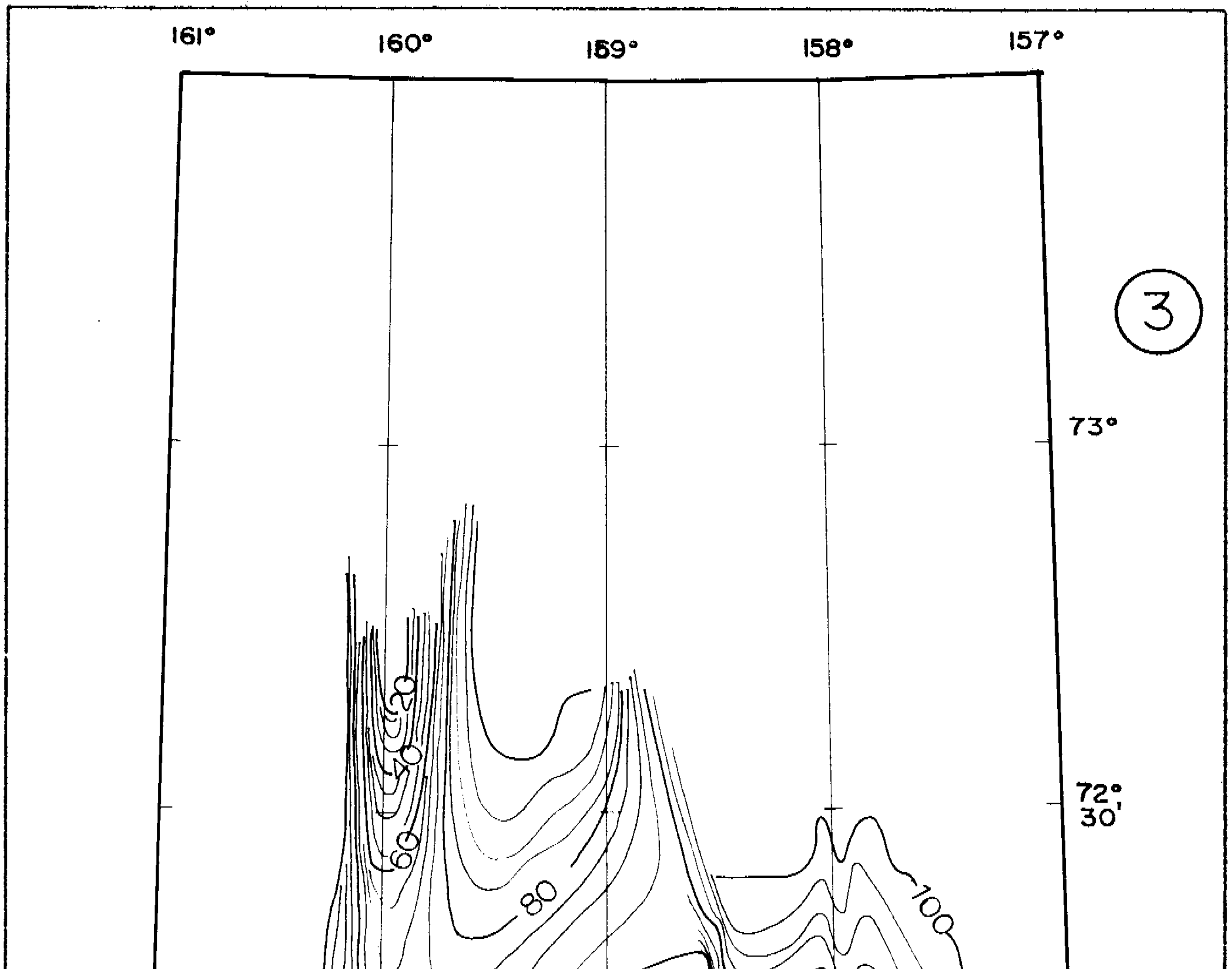
GRAIN SIZE GROUP 5



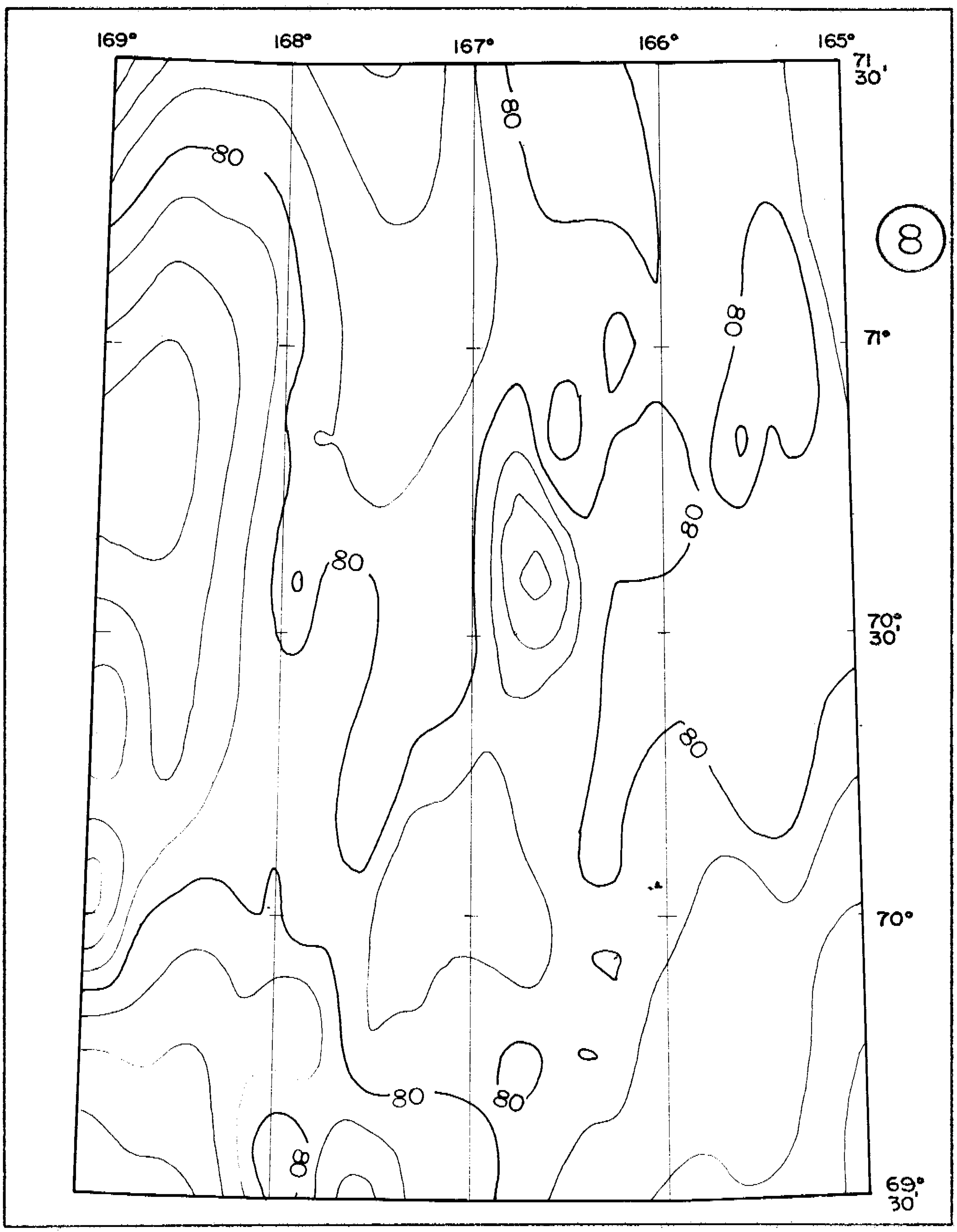
GRAIN SIZE GROUP 5



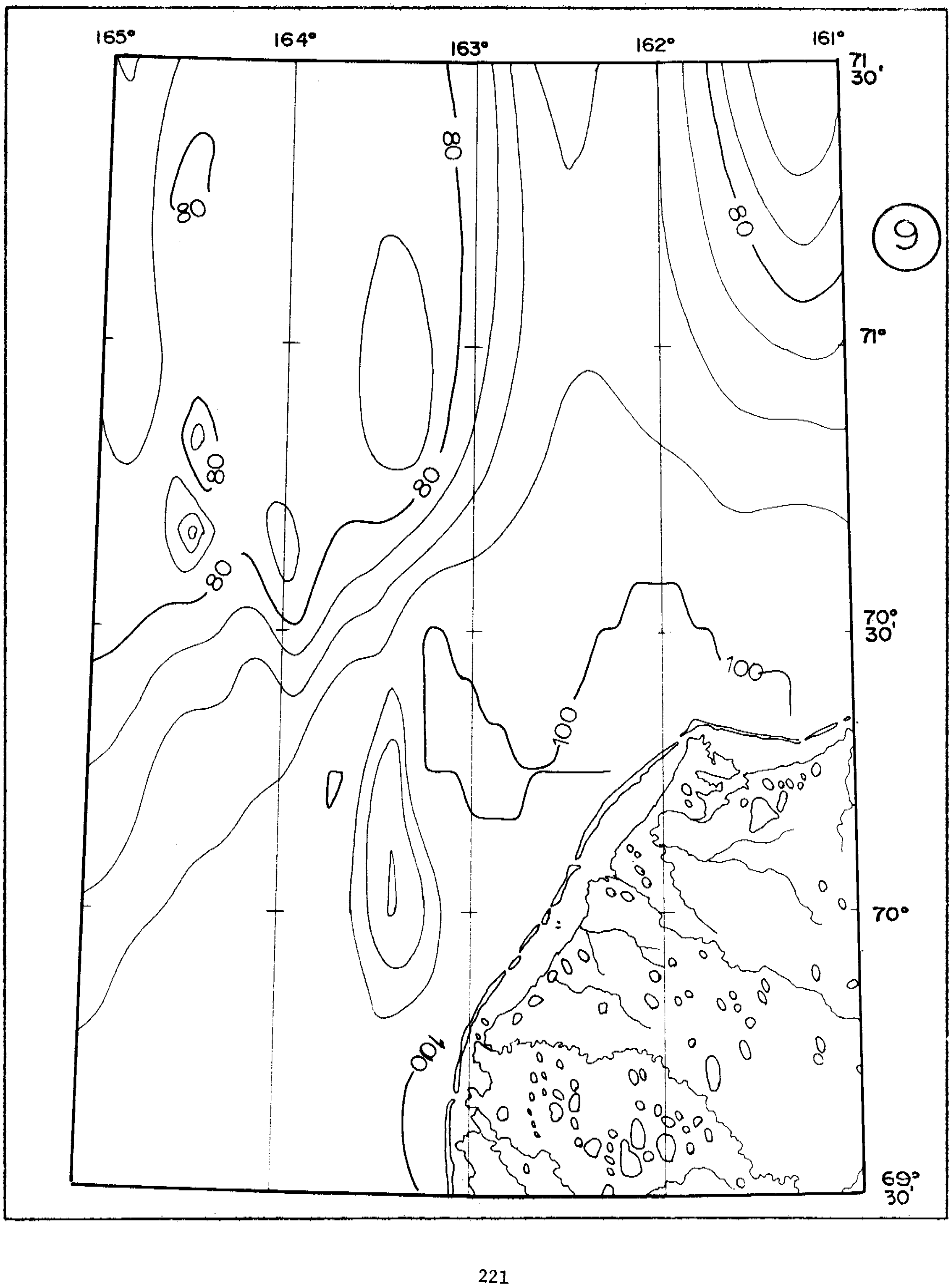
GRAIN SIZE GROUP 5



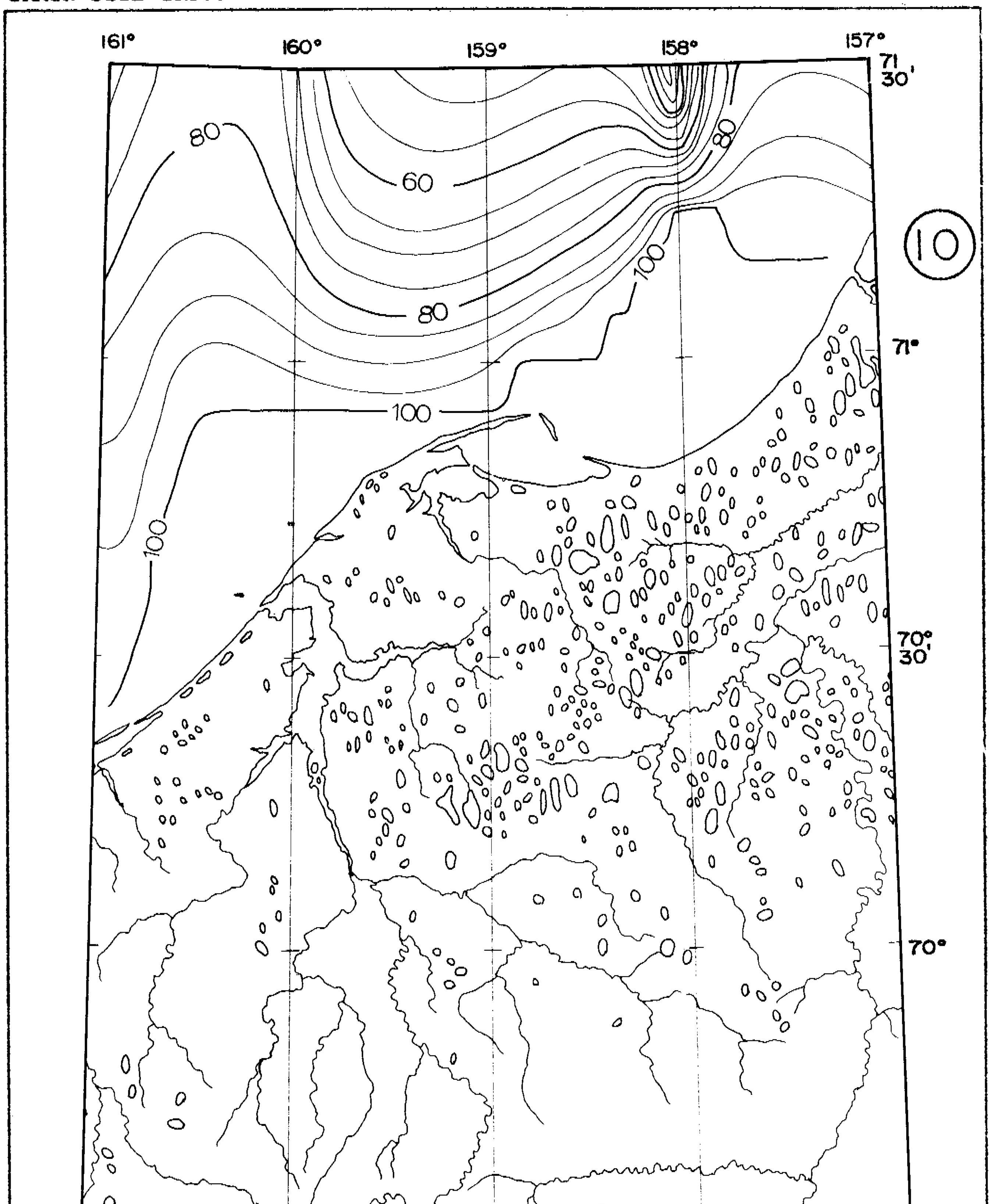
GRAIN SIZE GROUP 5



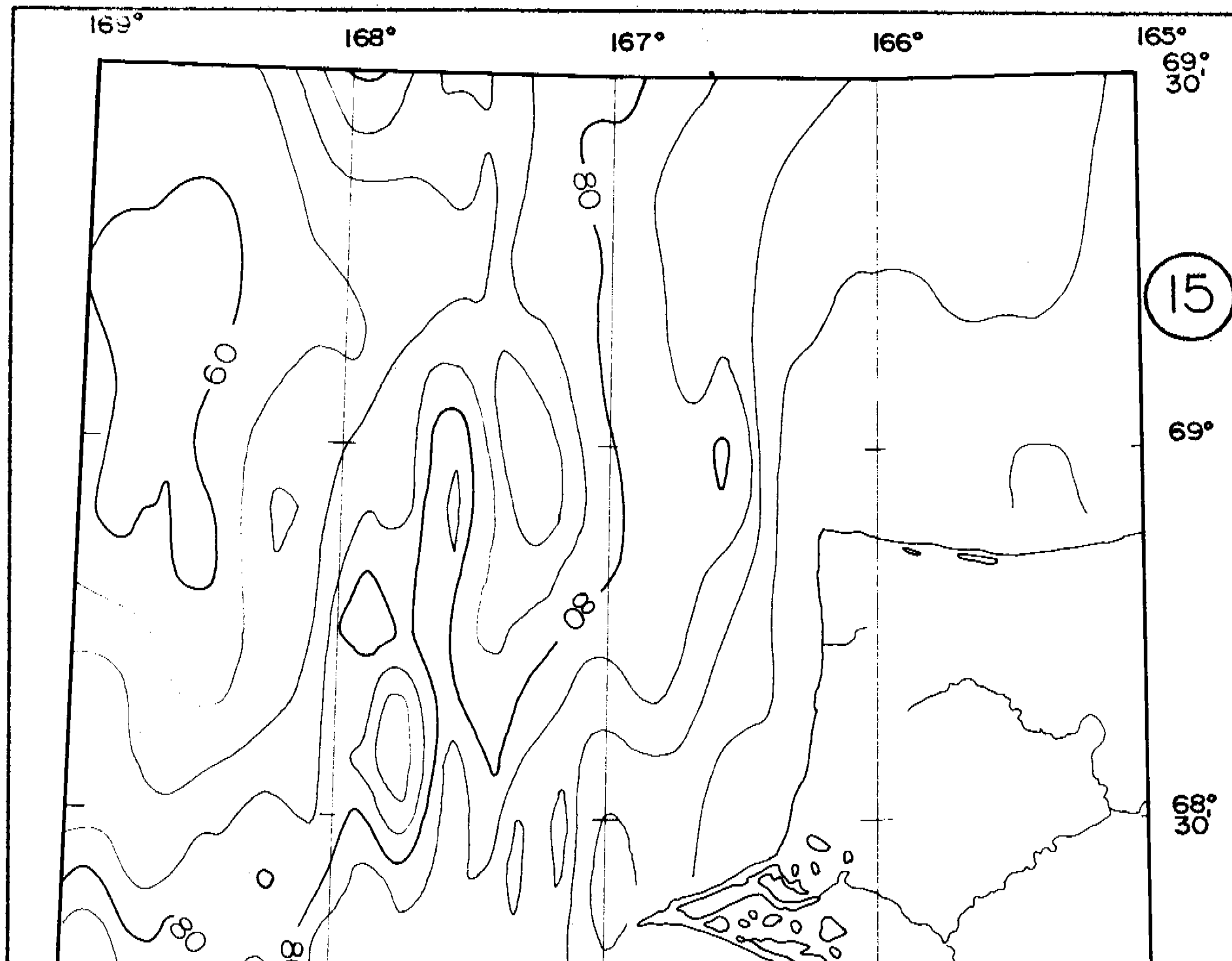
GRAIN SIZE GROUP 5



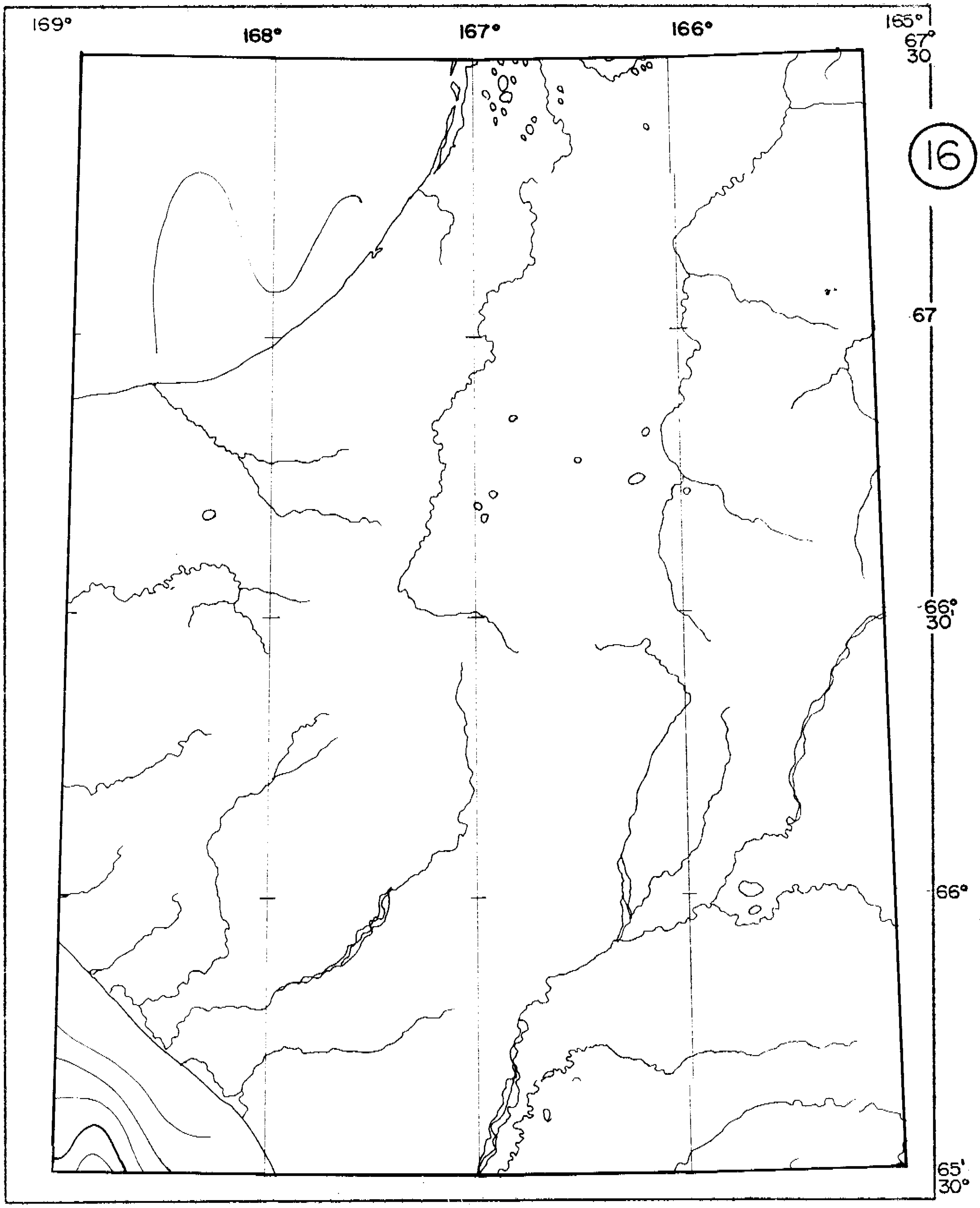
GRAIN SIZE GROUP 5



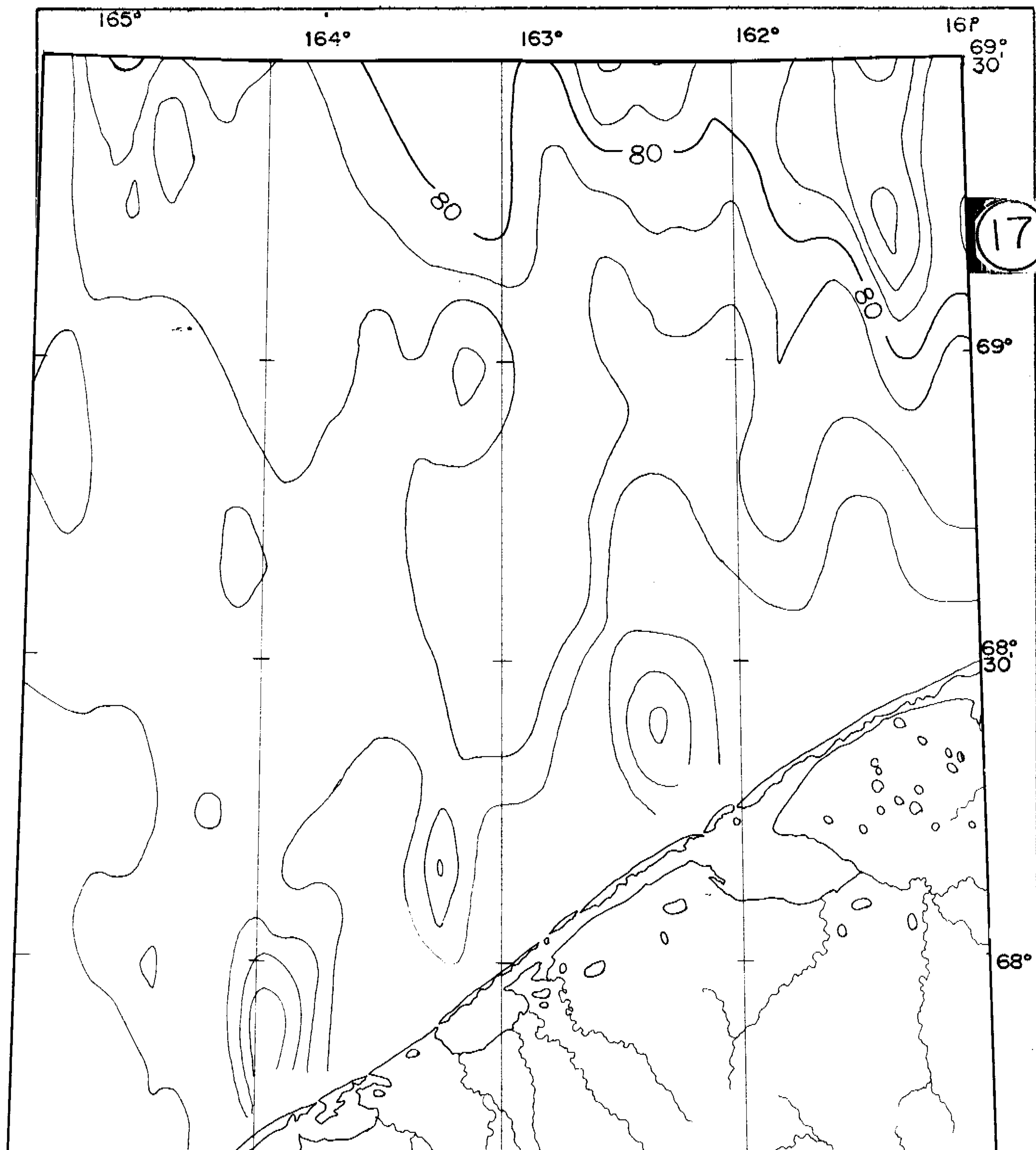
GRAIN SIZE GROUP 5



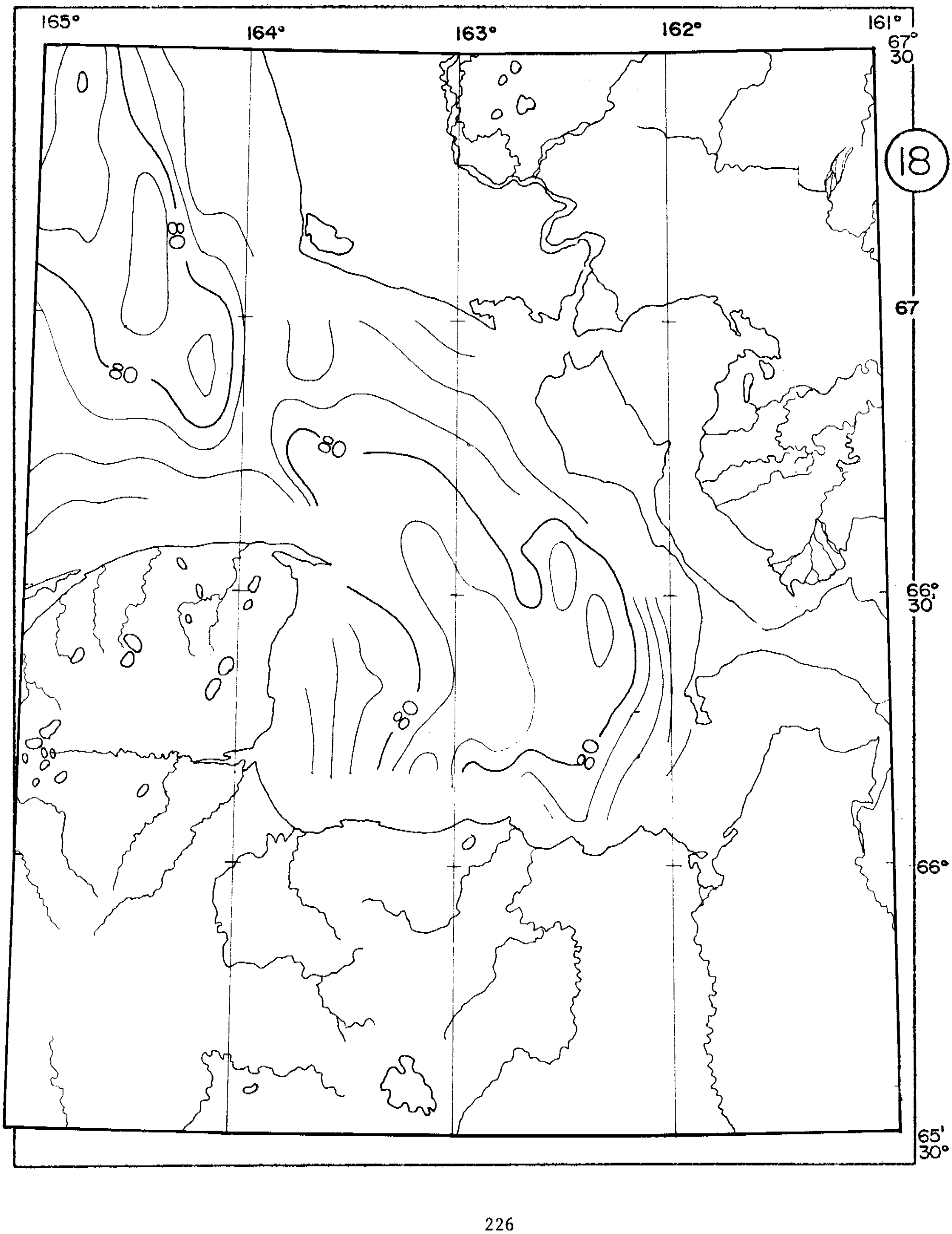
GRAIN SIZE GROUP 5



GRAIN SIZE GROUP 5



GRAIN SIZE GROUP 5



CHUKCHI SEA

RESEARCH UNIT 516 OCSEAP
NOAA INSTAAR 1978

CLAY DISTRIBUTION

BOTTOM DEPOSIT GRAIN SIZE MAP NO. 6

A SOURCE MAP FOR SUBMARINE PERMAFROST PREDICTION

DISTRIBUTION IN %

INTERVAL OF 5 %

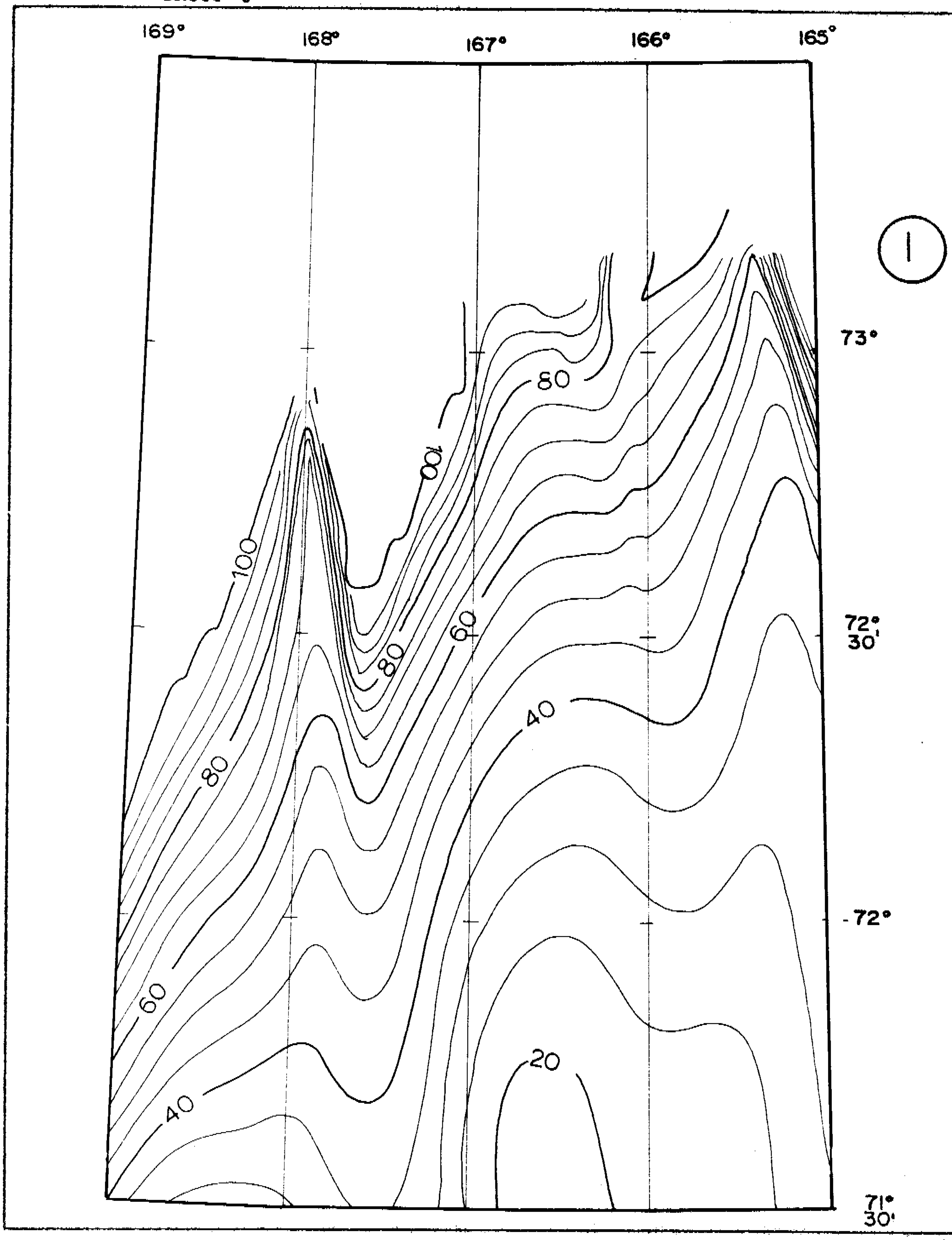
SCALE — 1:1,000,000

GEOGRAPHIC BASED INFORMATION MANAGEMENT SYSTEM FOR PERMAFROST IN THE CHUKCHI AND BEAUFORT SEAS

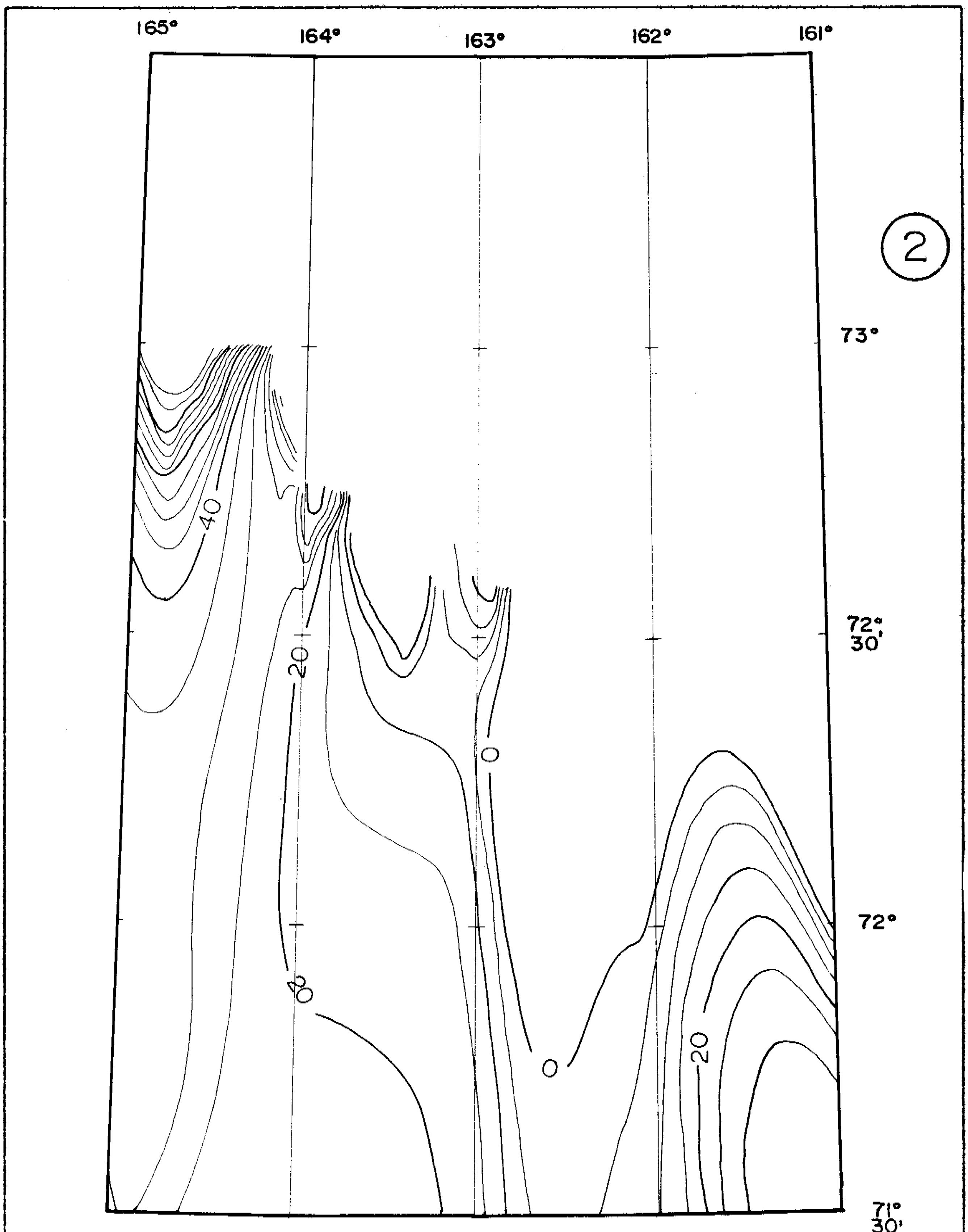
GRAIN SIZE SCALES FOR SEDIMENTS SHOWN ON THIS MAP

MILLIMETERS	MICRONS	PHI O	WENTWORTH SIZE CLASS
0.031–0.00006	31–0.06	5 to 14	CLAY

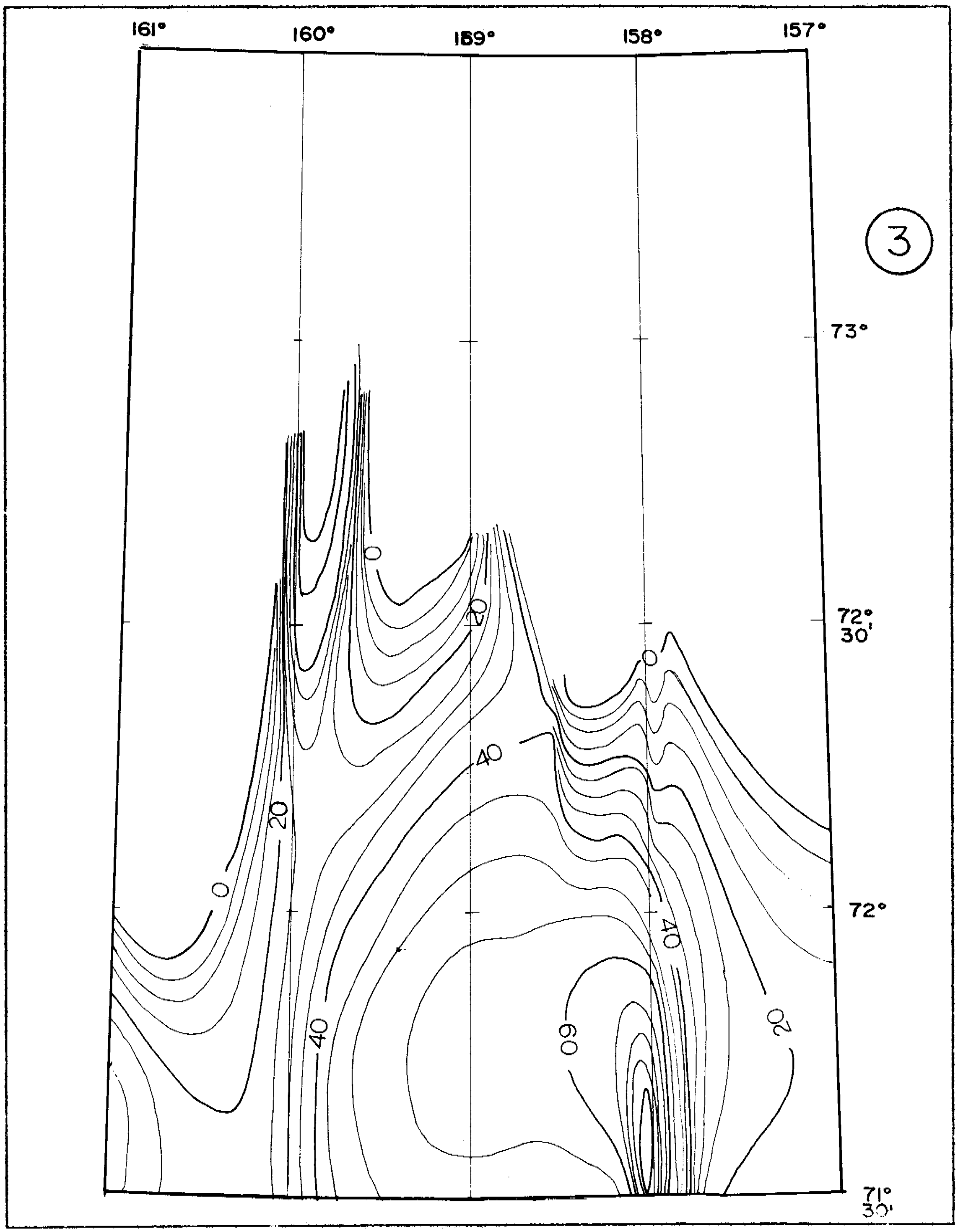
GRAIN SIZE GROUP 6



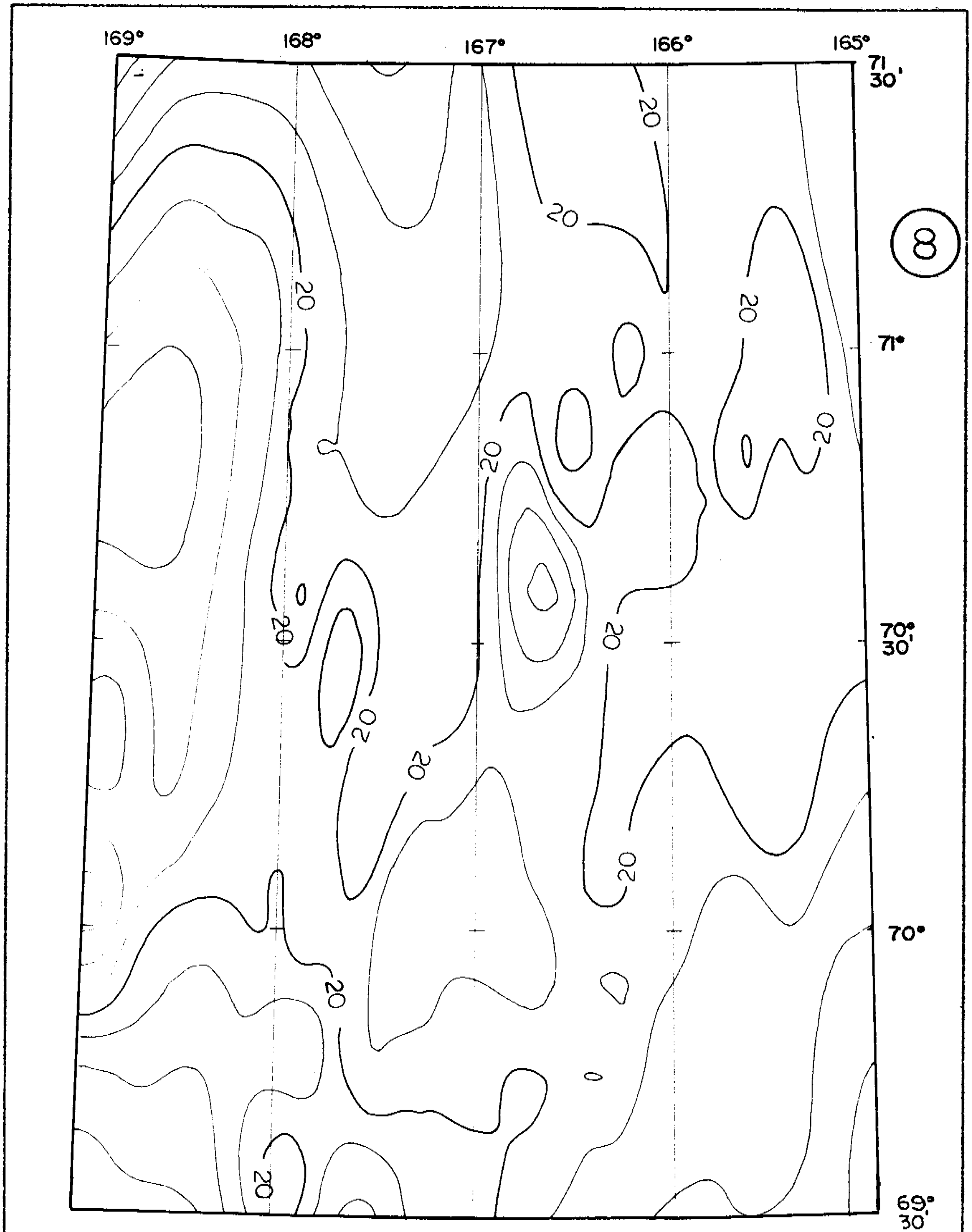
GRAIN SIZE GROUP 6



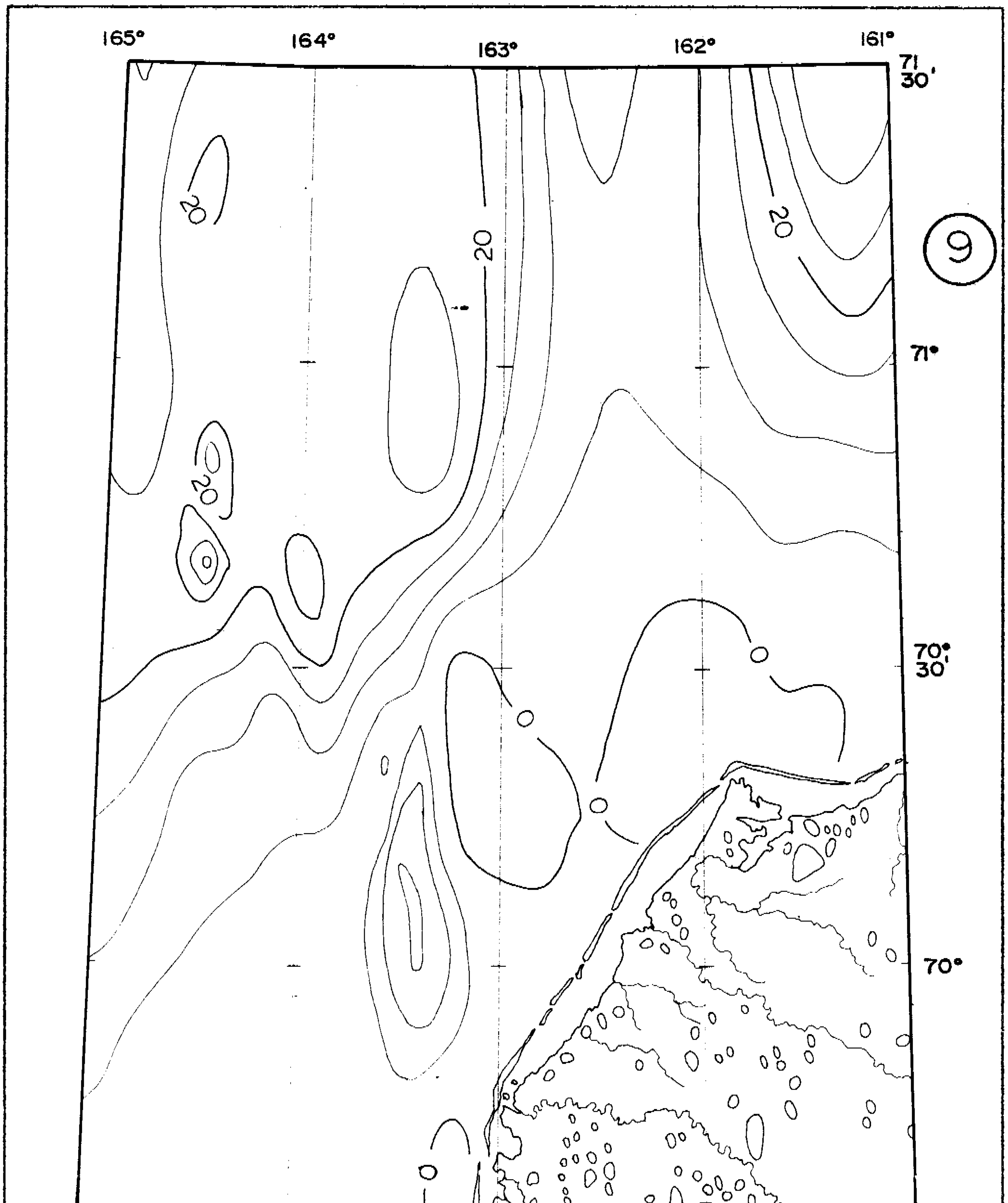
GRAIN SIZE GROUP 6



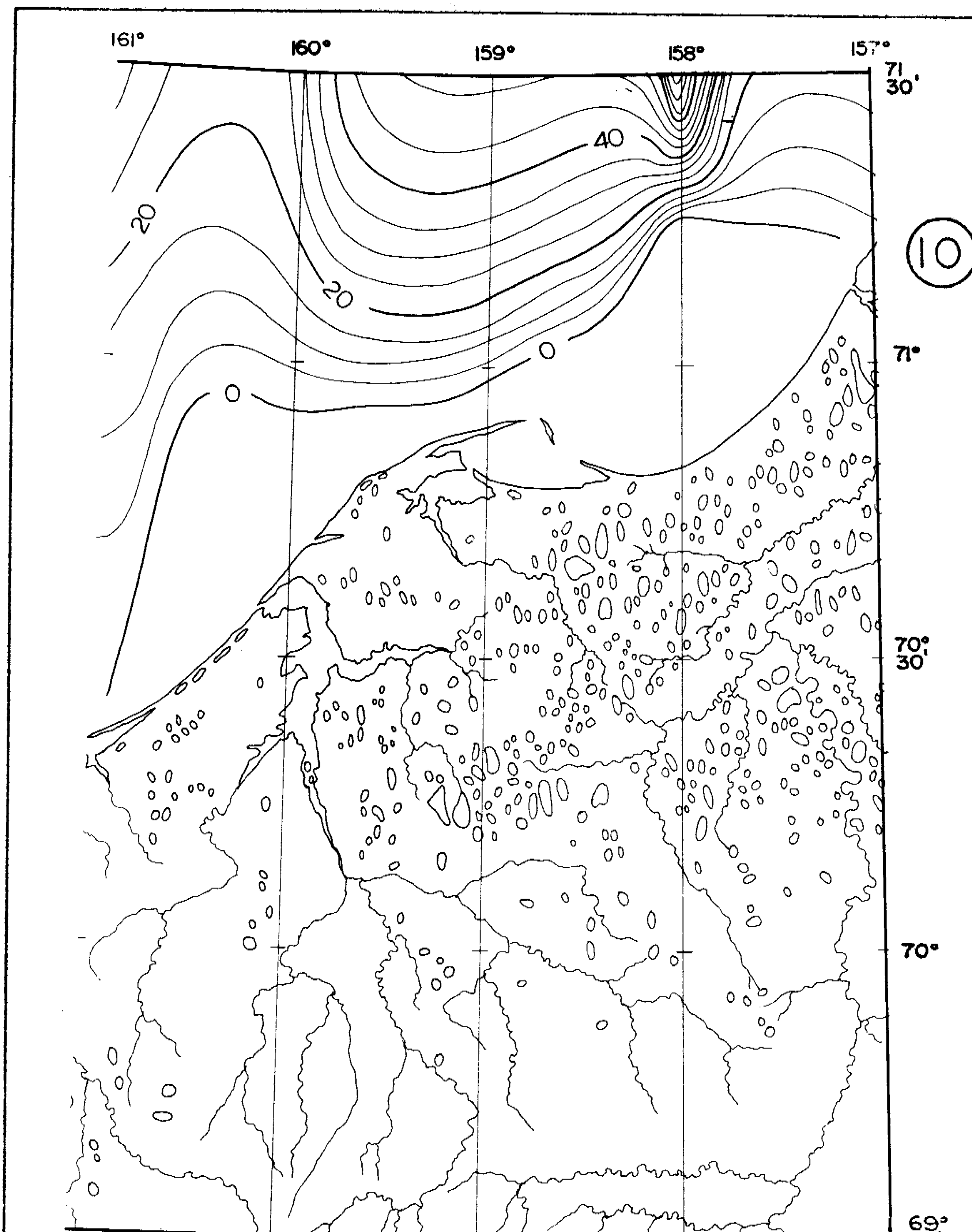
GRAIN SIZE GROUP 6



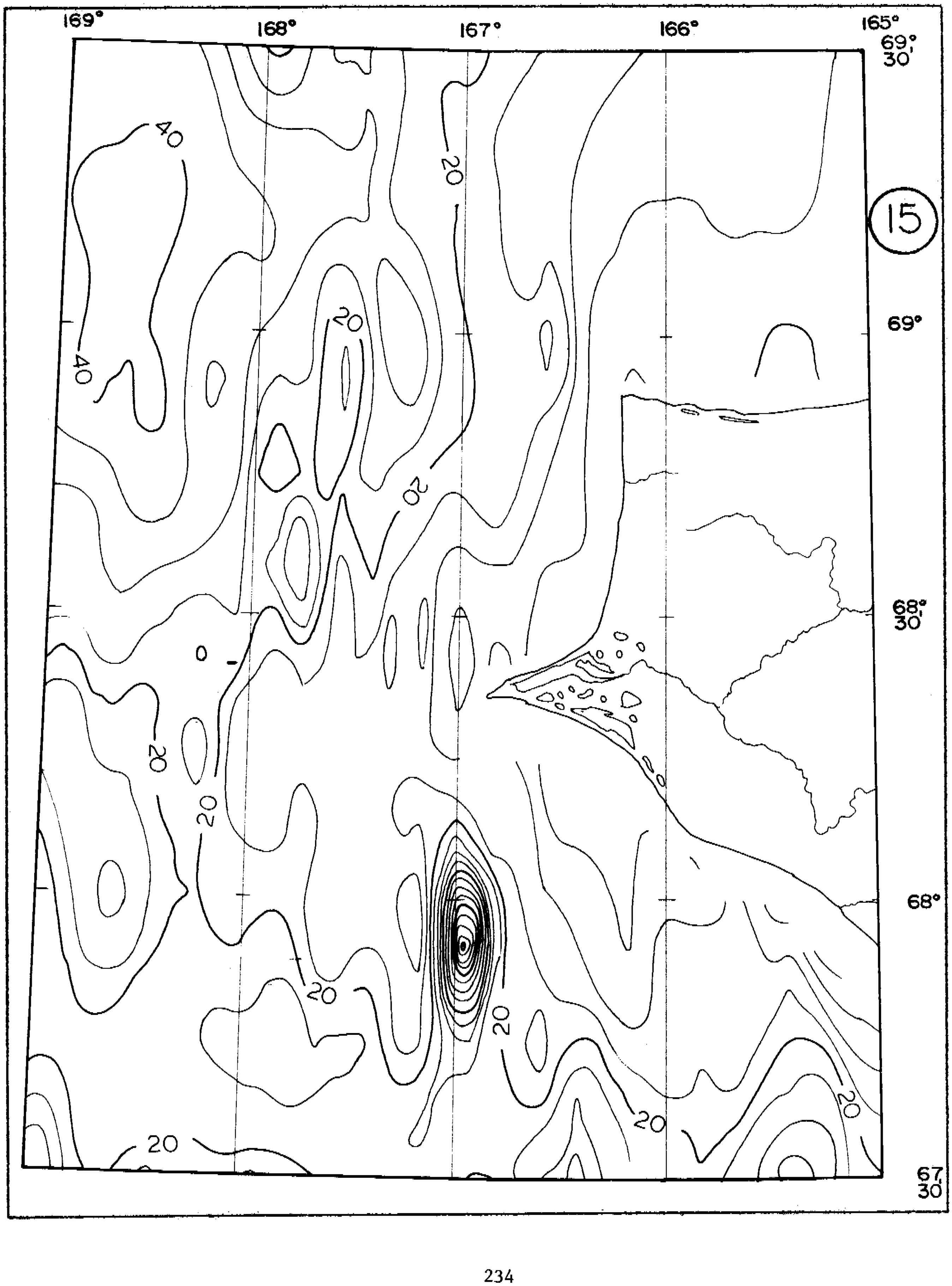
GRAIN SIZE GROUP 6



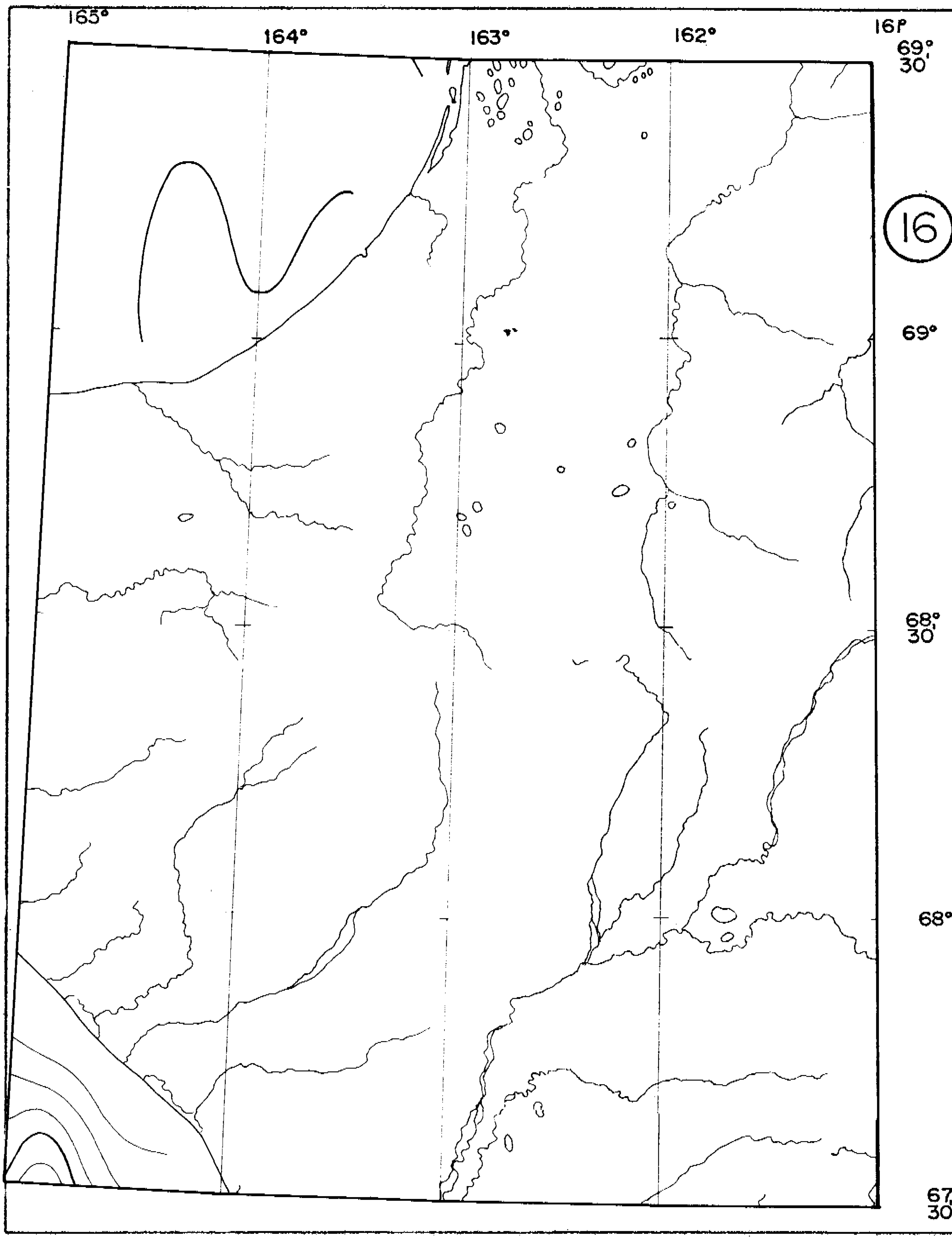
GRAIN SIZE GROUP 6



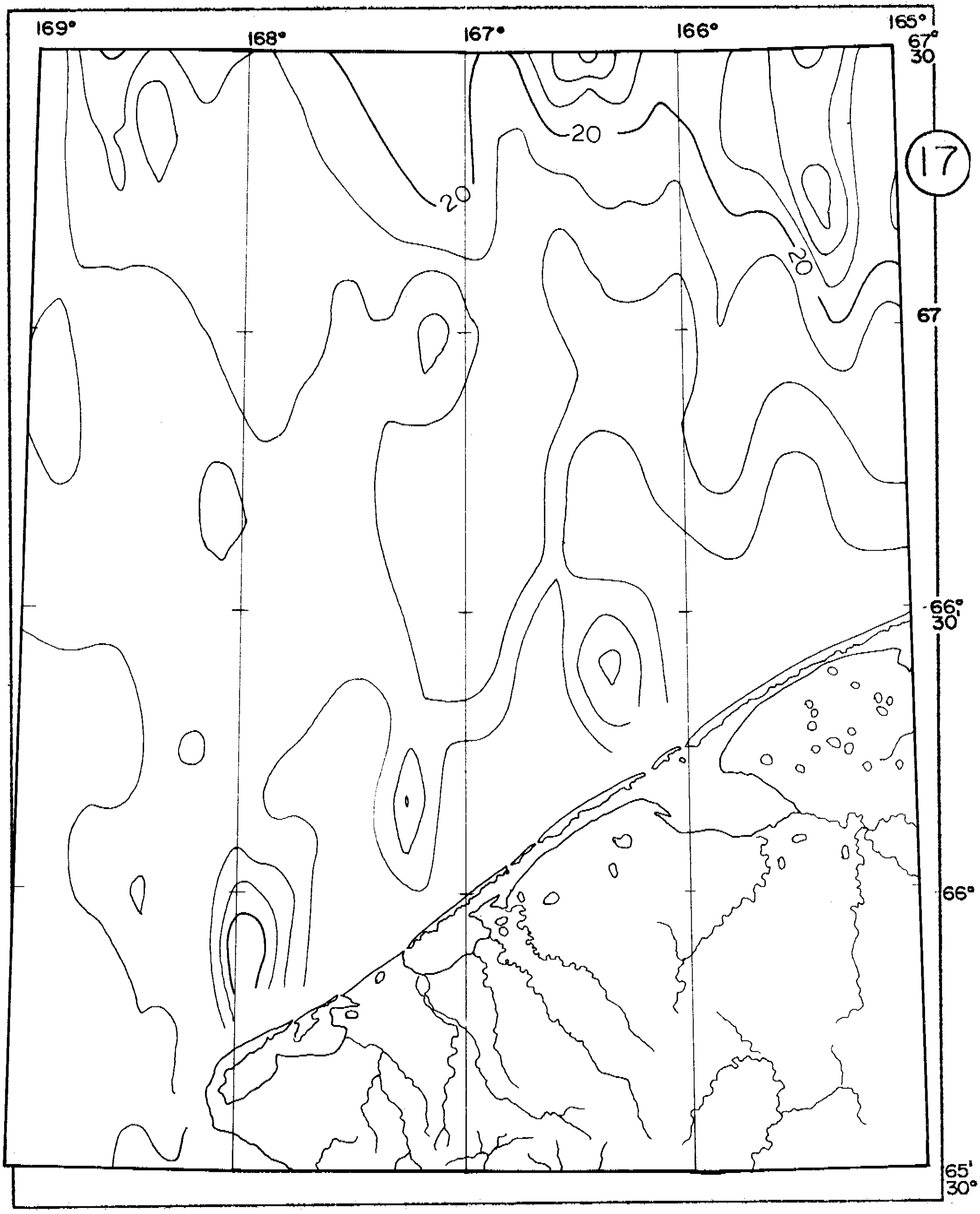
GRAIN SIZE GROUP 6



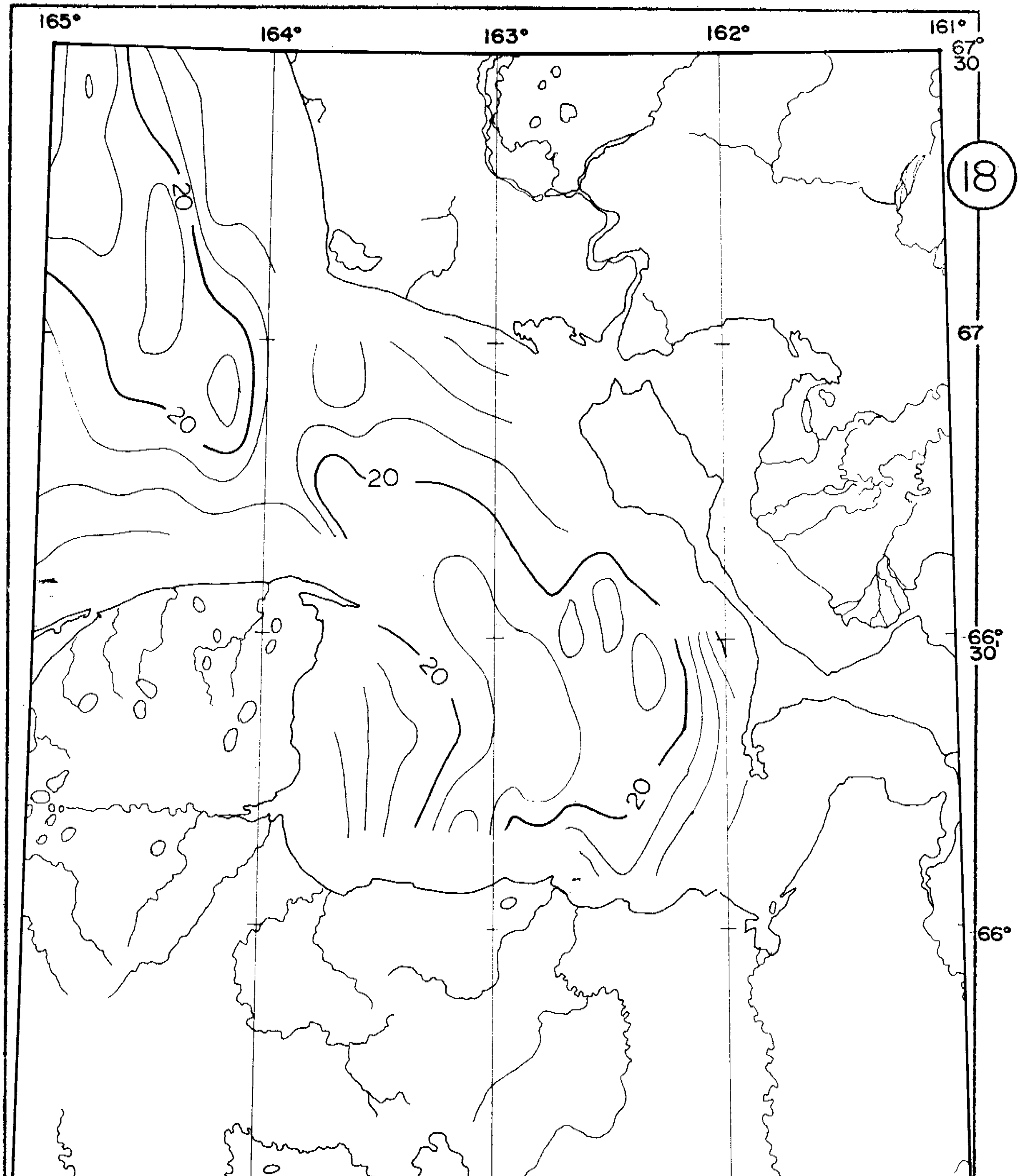
GRAIN SIZE GROUP 6



GRAIN SIZE GROUP 6



GRAIN SIZE GROUP 6



CHUKCHI SEA
BEAUFORT SEA

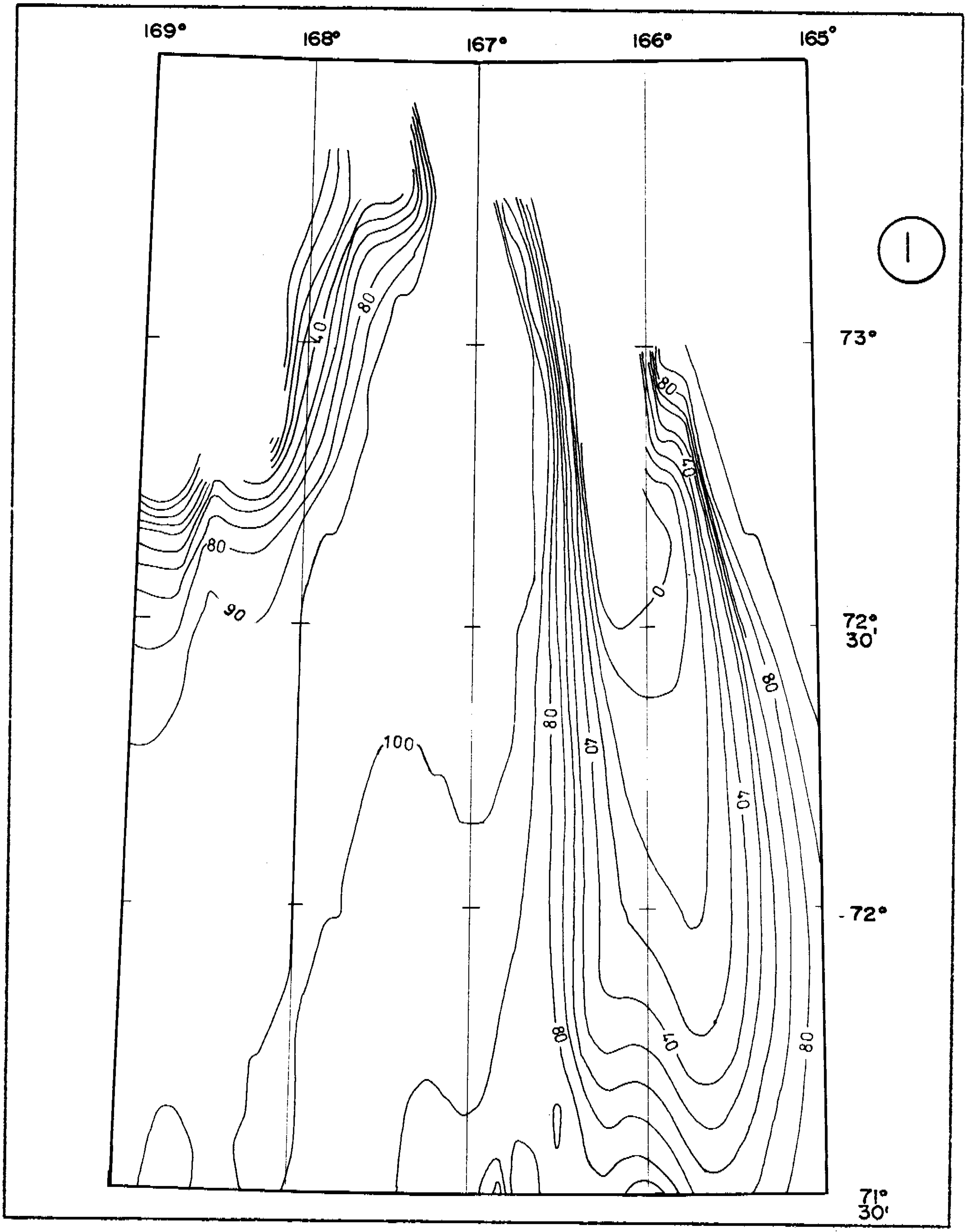
RESEARCH UNIT 516 OCSEAP
NOAA INSTAAR 1977

PROXIMITY OF THE MAXIMAL SAMPLING DEPTH TO THE BOTTOM IN %

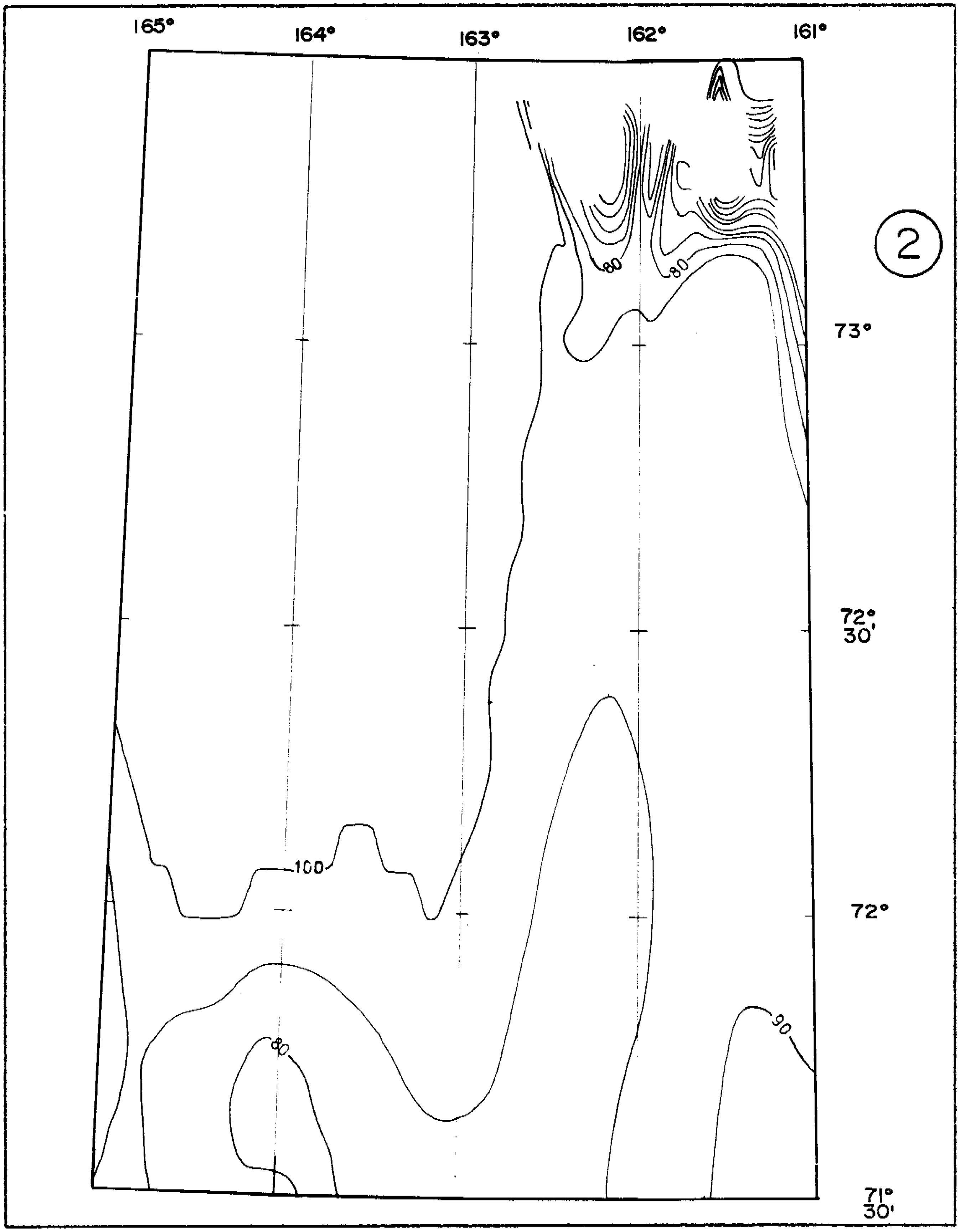
A SOURCE MAP FOR SUBMARINE PERMAFROST PREDICTION

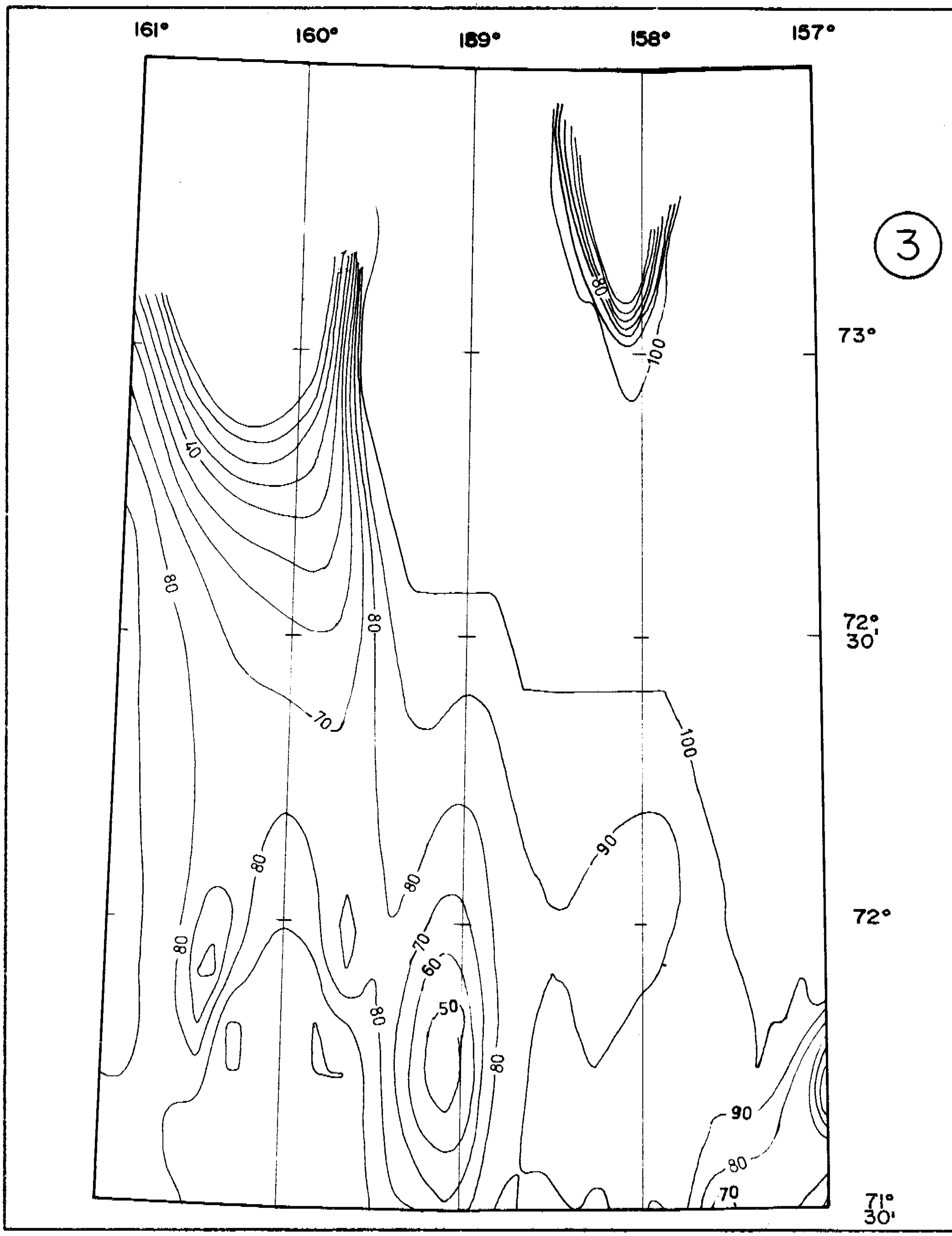
0 TO 100 % (SAMPLING DEPTH = BOTTOM IS 100%)
INTERVAL OF 10 %
SCALE — 1: 1,000,000
GEOGRAPHIC BASED INFORMATION MANAGEMENT SYSTEM FOR PERMAFROST IN THE CHUKCHI AND BEAUFORT SEAS

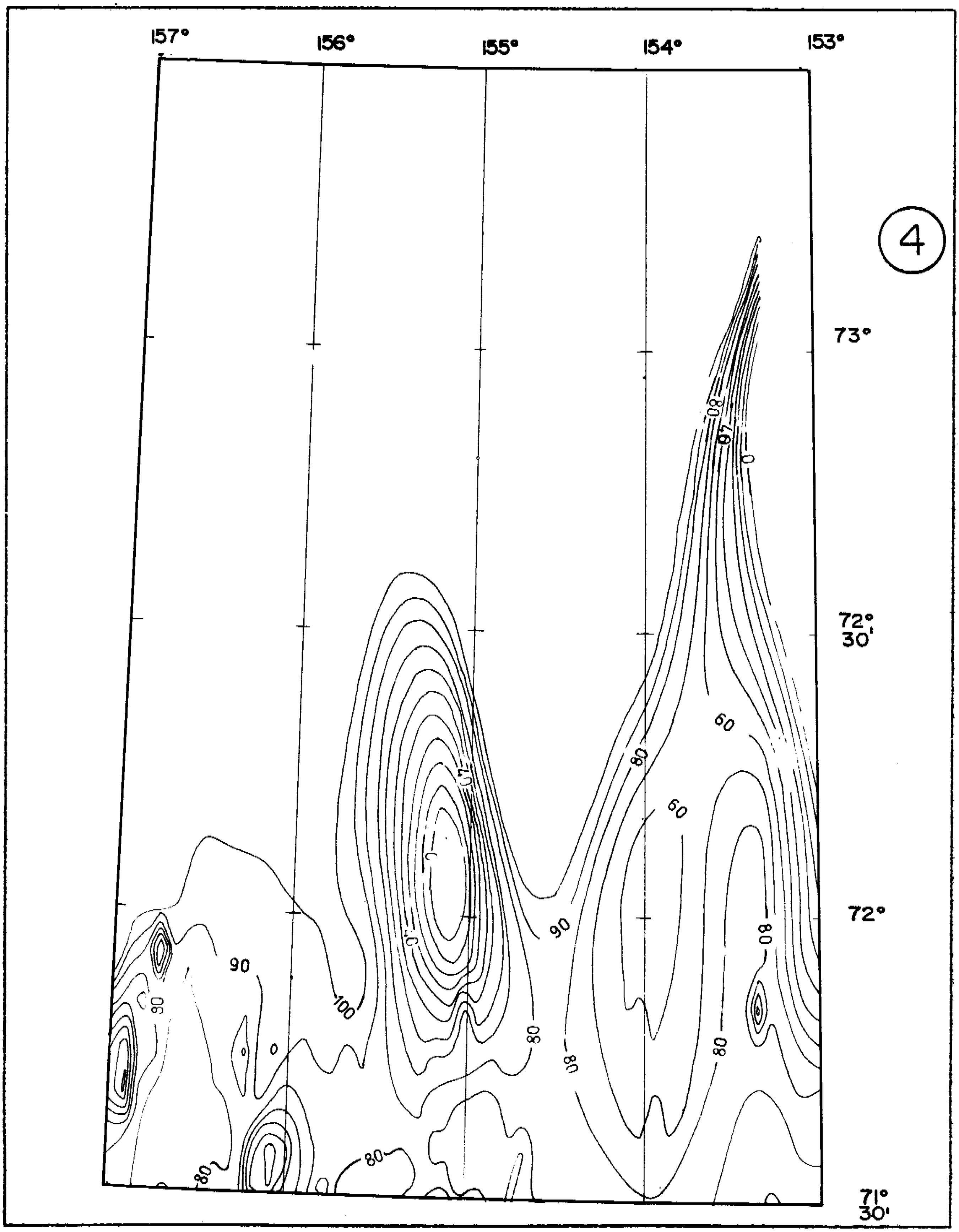
PROXIMITY



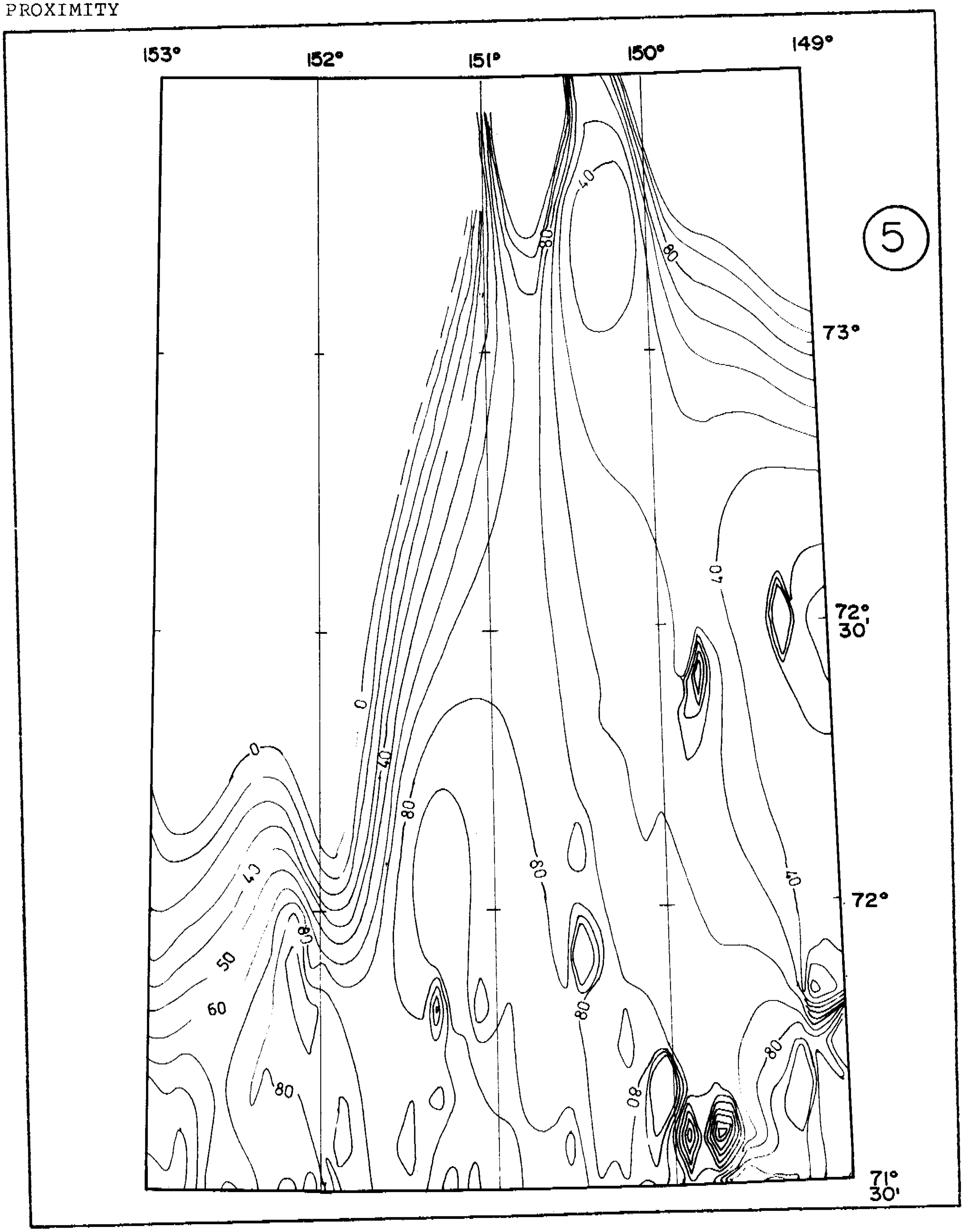
169°
168°
167°
166°
165°
73°
72° 30'
72°
71° 30'
40
80
80
90
100
80
40
80
40
80
40
80
40
80
0
1


165°
164°
163°
162°
161°
2
80
80
73°
72°
30'
100
72°
80
90
71°
30'

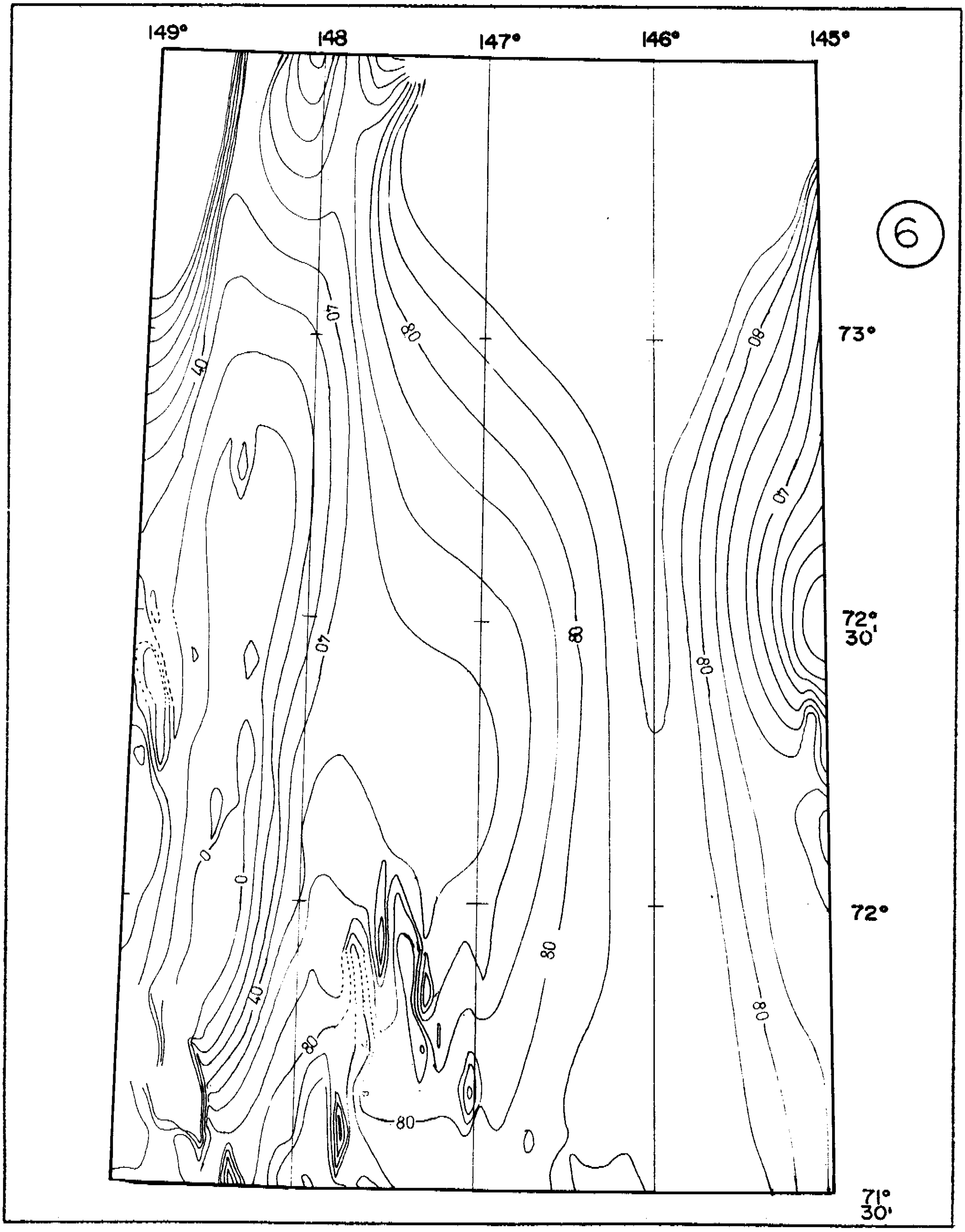

161°
160°
159°
158°
157°
3
73°
72° 30'
72°
71° 30'
40
80
70
80
100
100
90
80
80
80
80
70
60
50
80
80
90
80
70

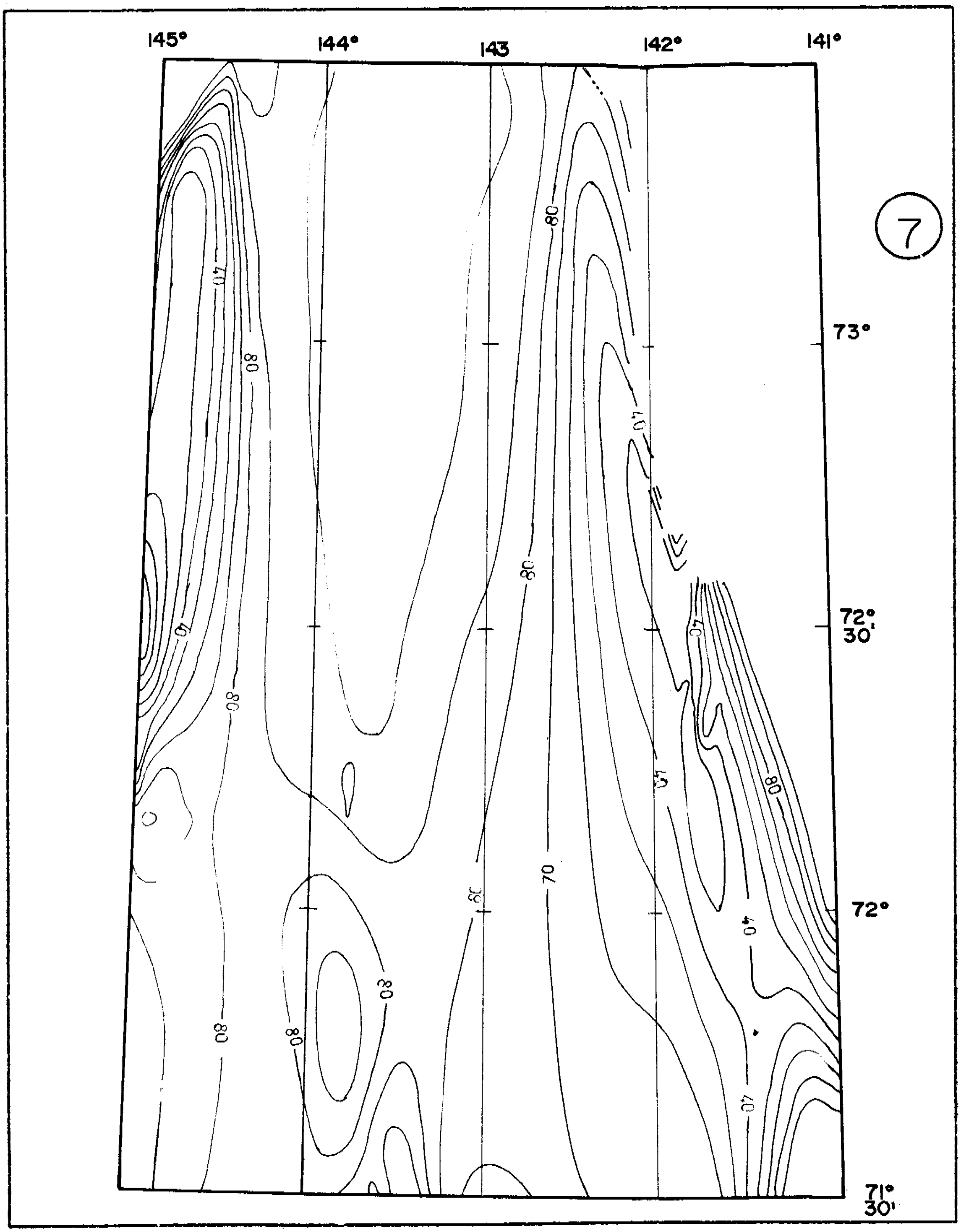

157°
156°
155°
154°
153°
4
73°
72° 30'
72°
71° 30'
90
100
90
80
60
60
80
80
80
80
80

PROXIMITY

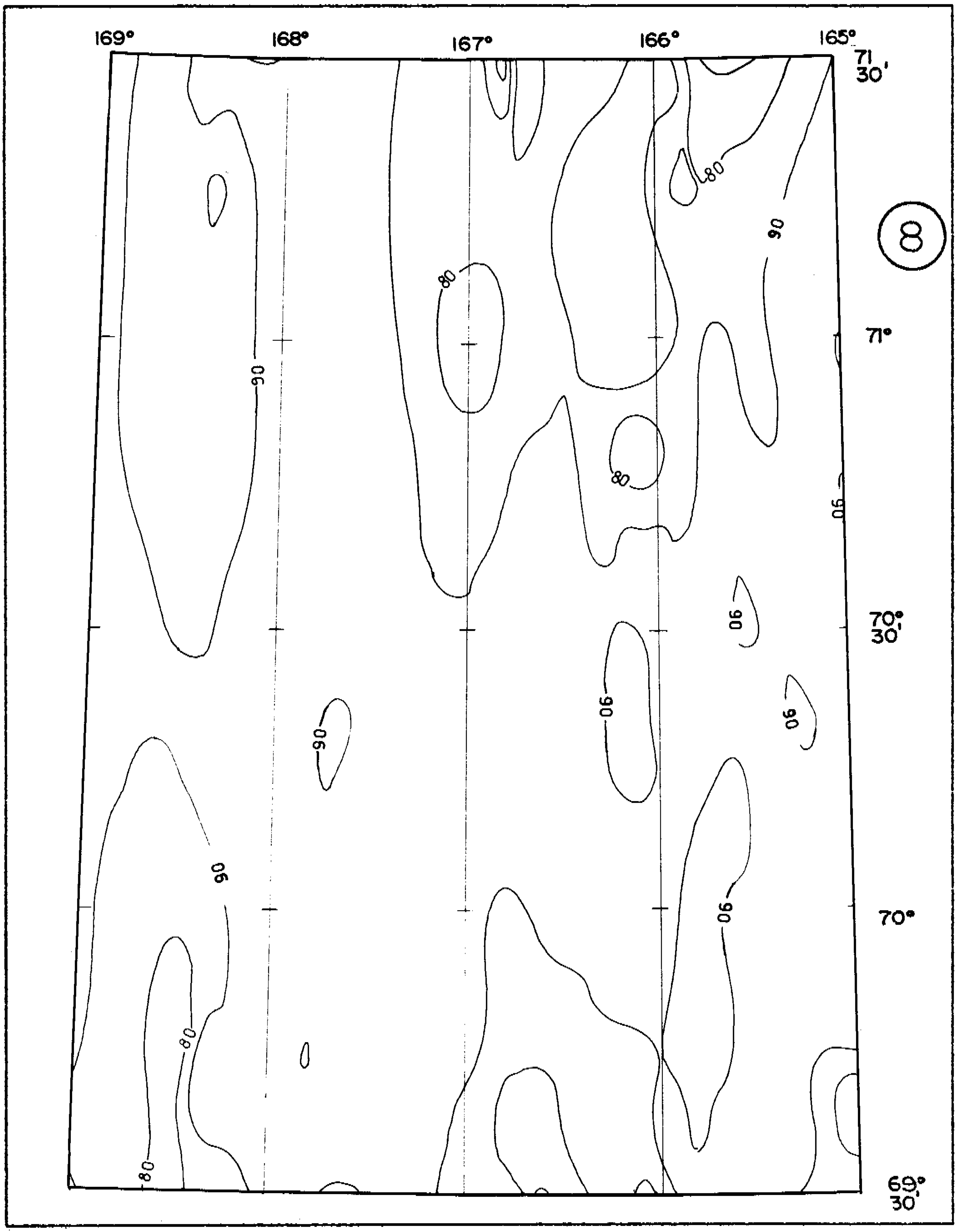


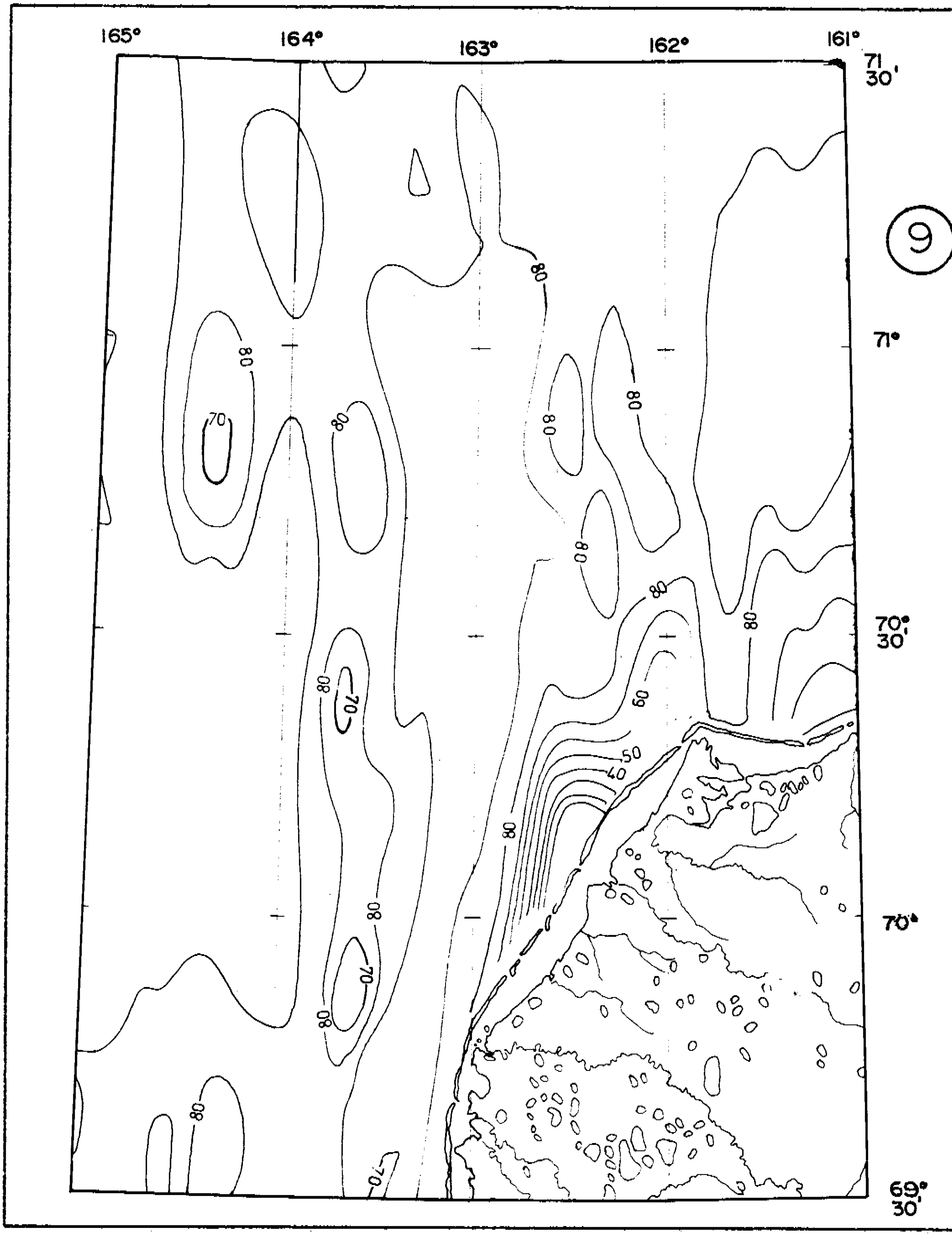
PROXIMITY



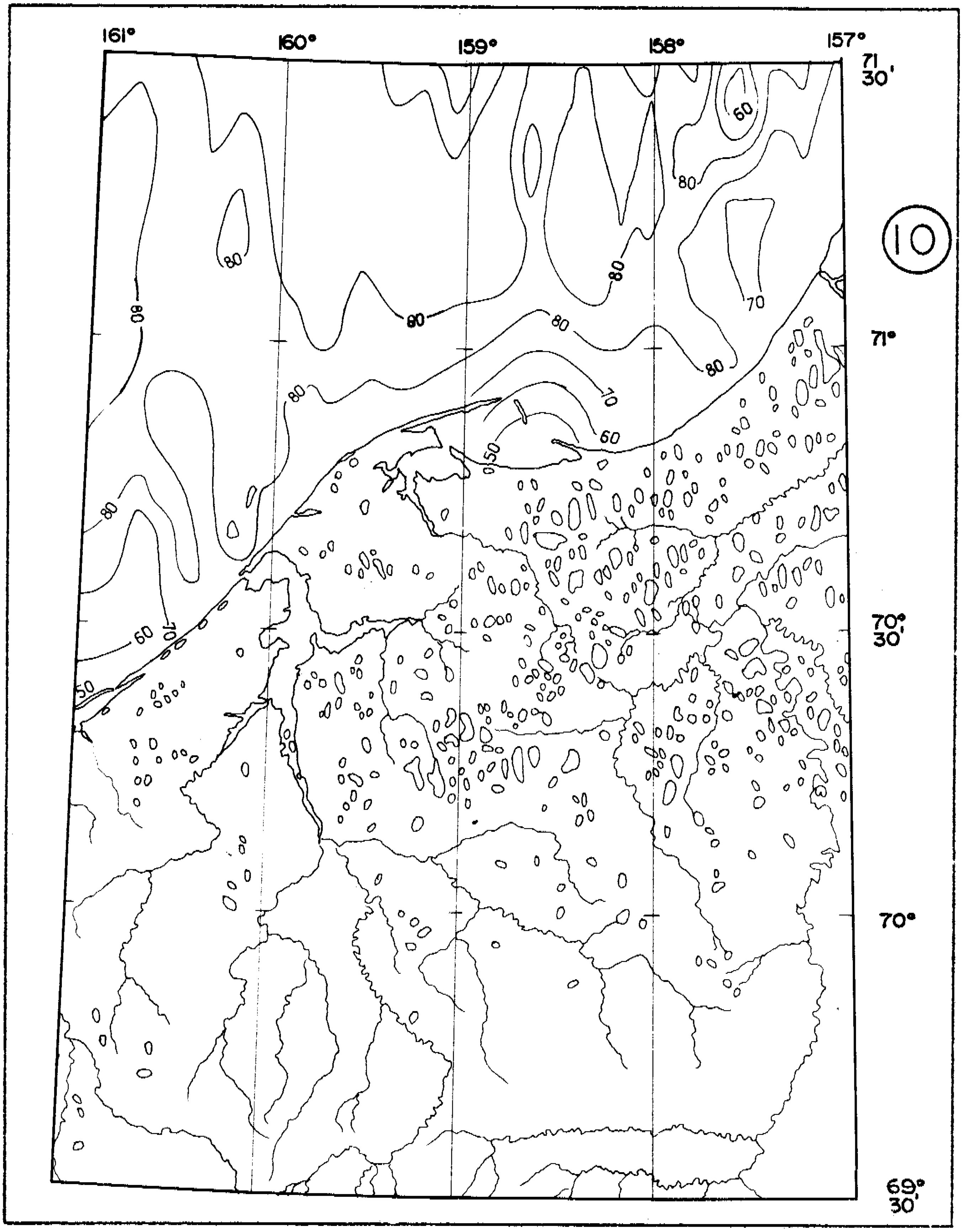

145°
144°
143
142°
141°
7
73°
72° 30'
72°
71° 30'
80
40
70

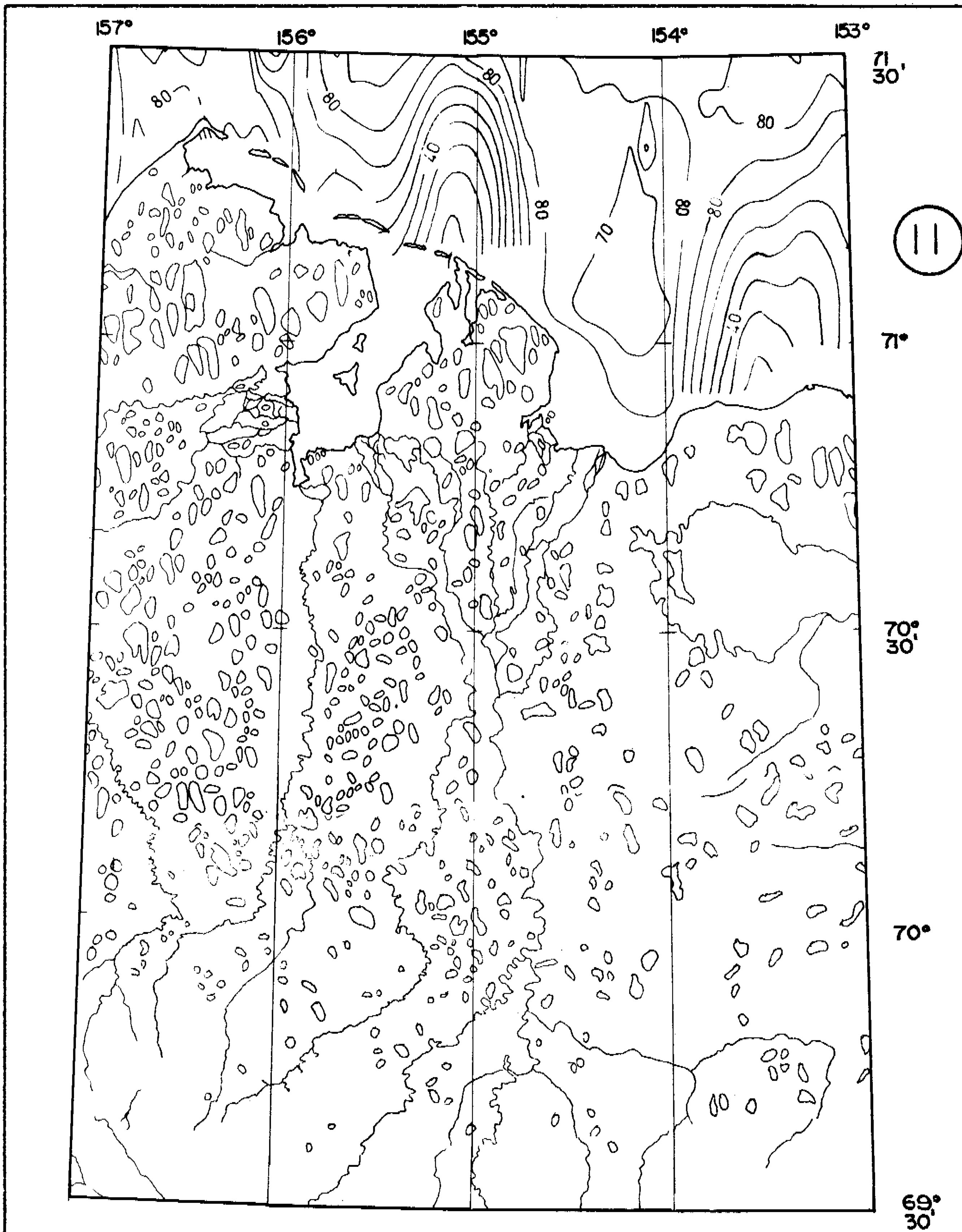
PROXIMITY

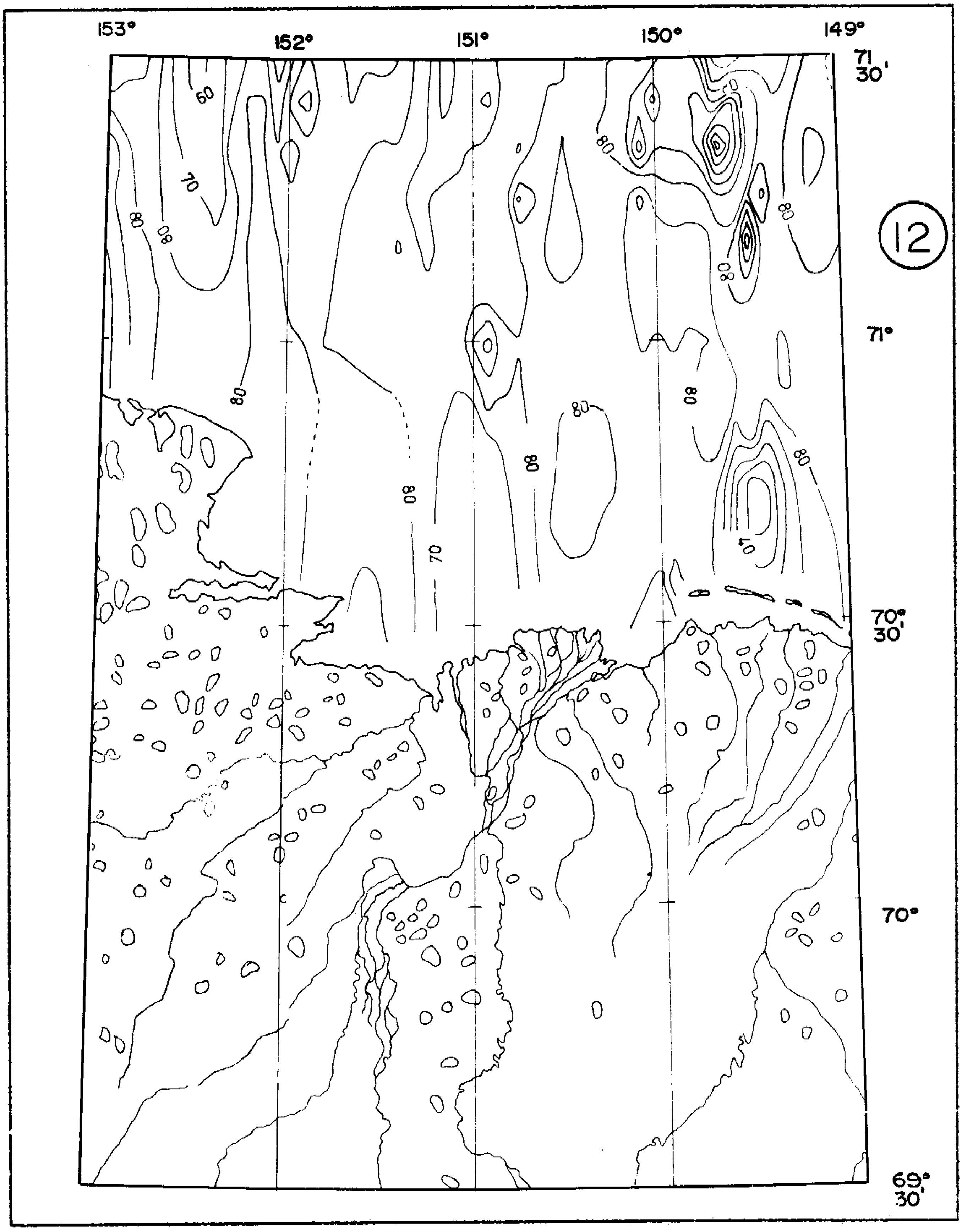



165°
164°
163°
162°
161°
71 30'
9
71°
70° 30'
70°
69° 30'
80
70
60
50
40

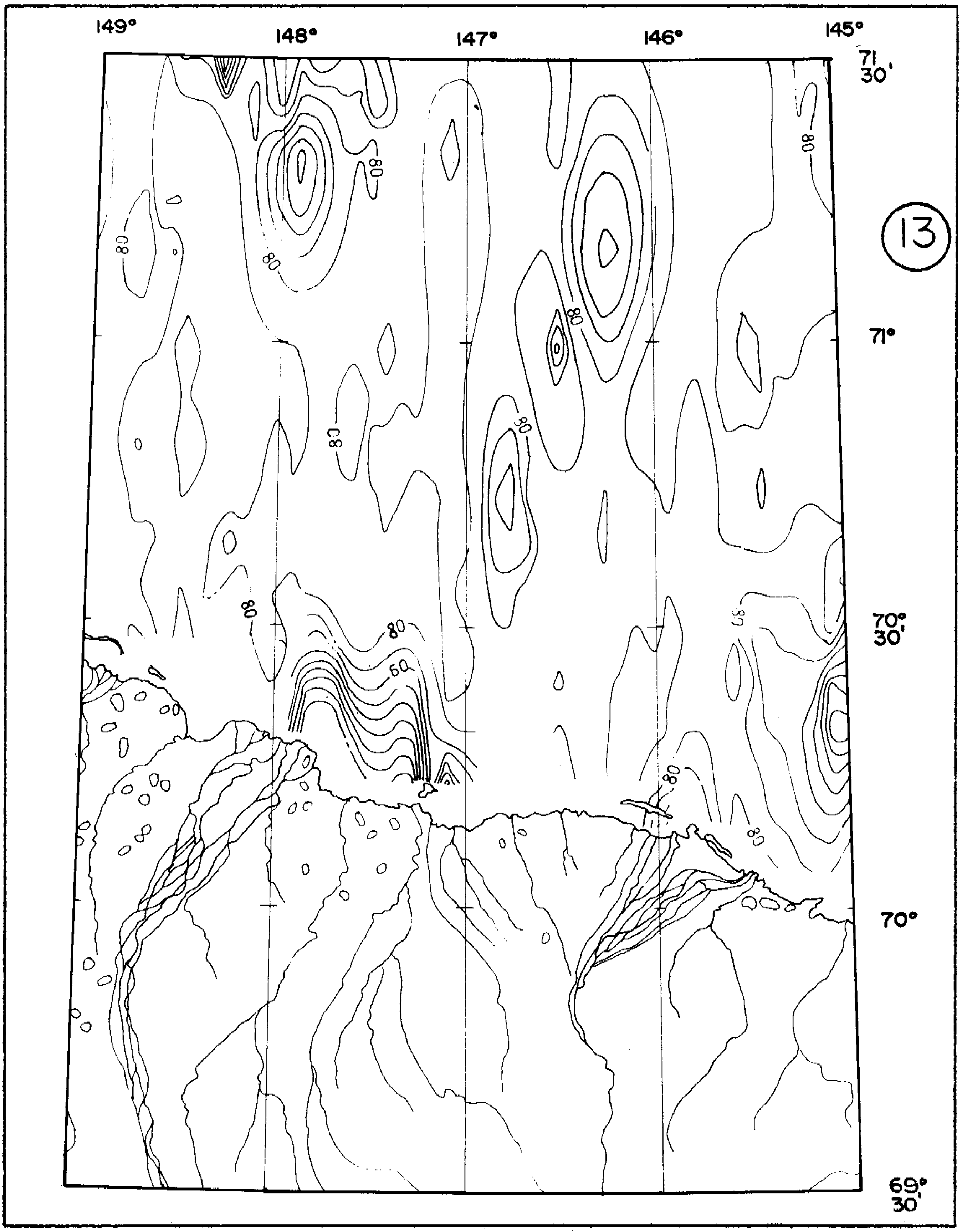
PROXIMITY

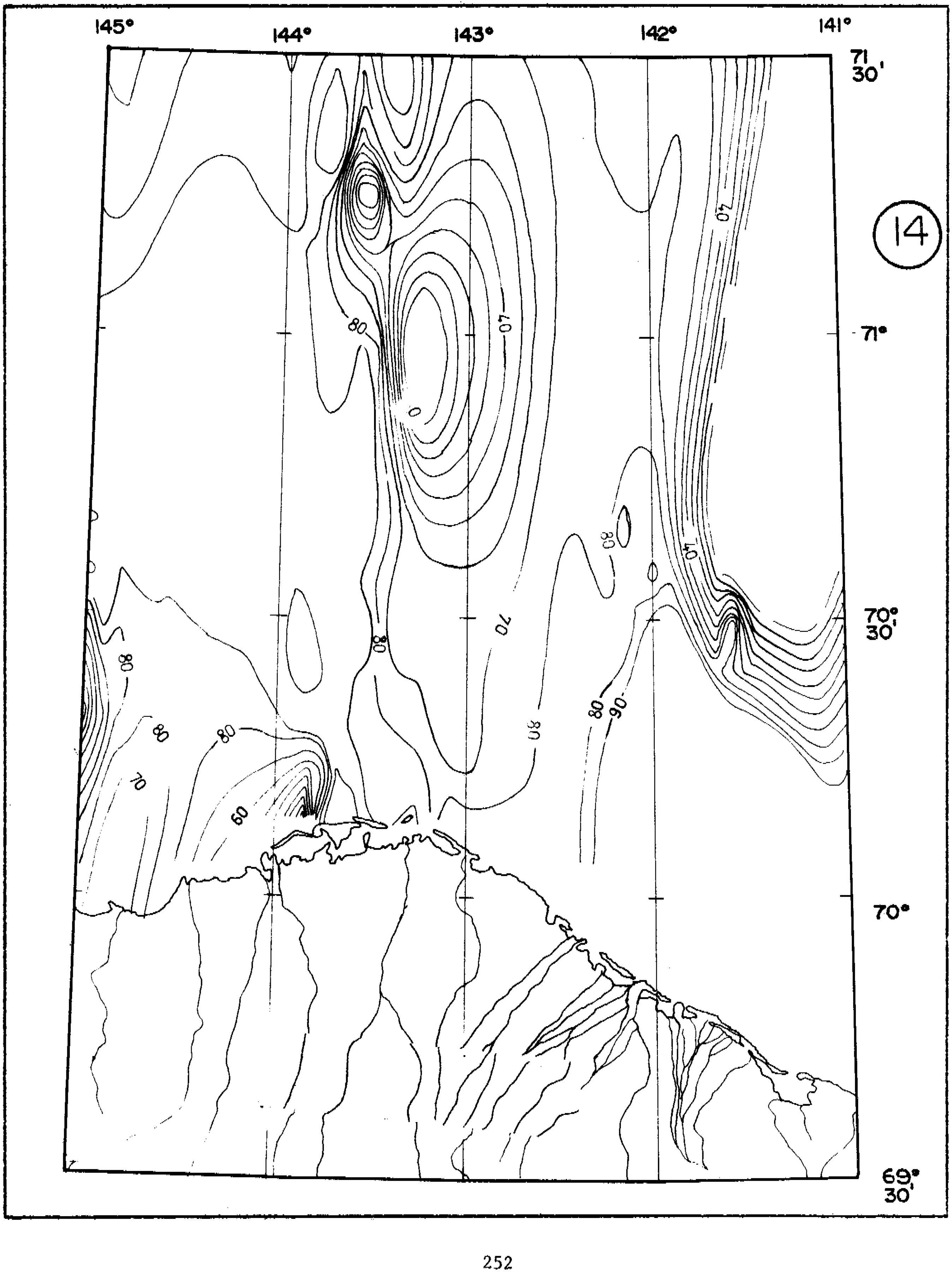

161°
160°
159°
158°
157°
71 30'
71°
70° 30'
70°
69° 30'
10
80
80
80
80
80
80
80
80
80
80
70
70
70
60
60
60
50
50

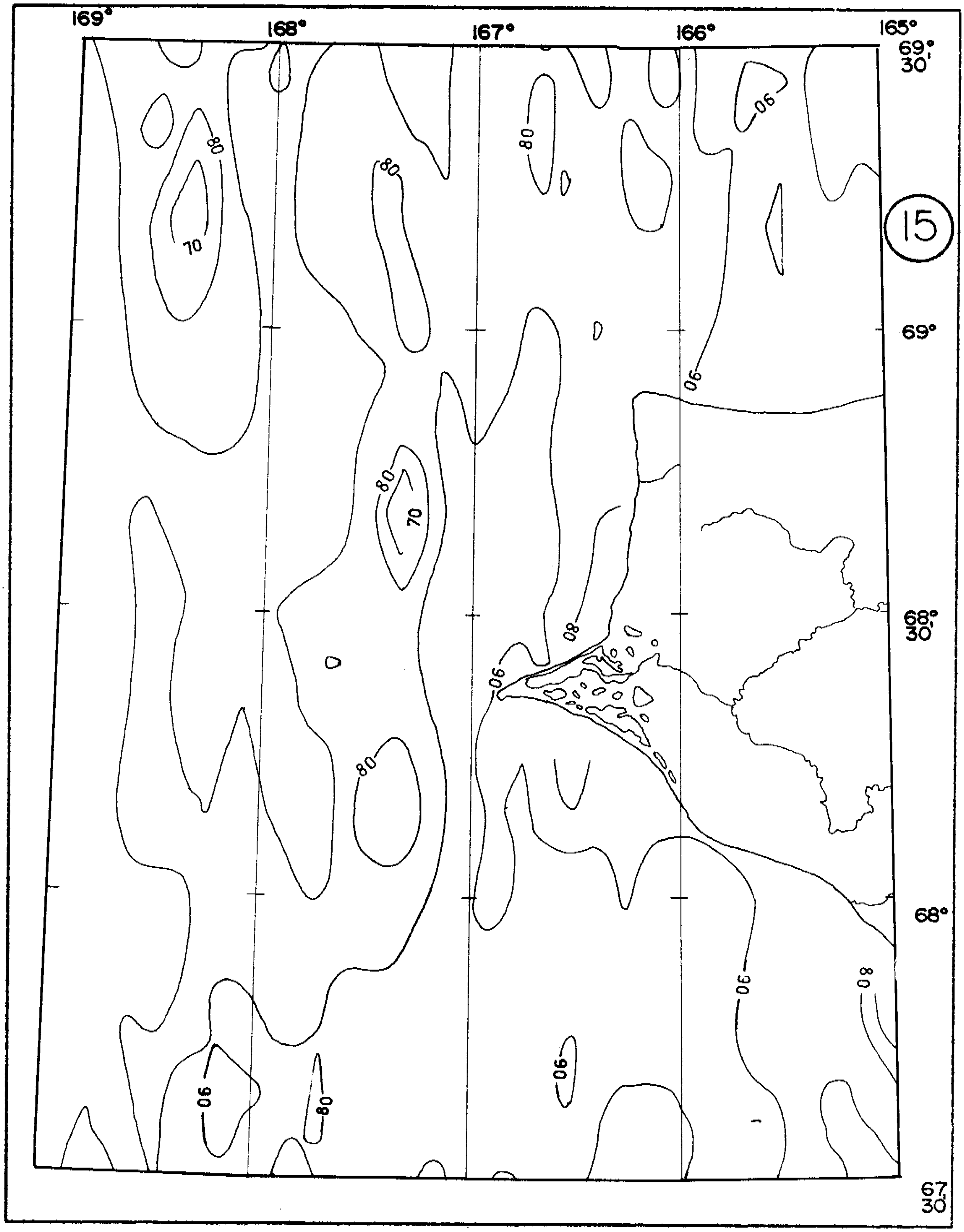

157°
156°
155°
154°
153°
71
30'
71°
70°
30'
70°
69°
30'
11
80
80
80
80
40
80
70
80
80
40



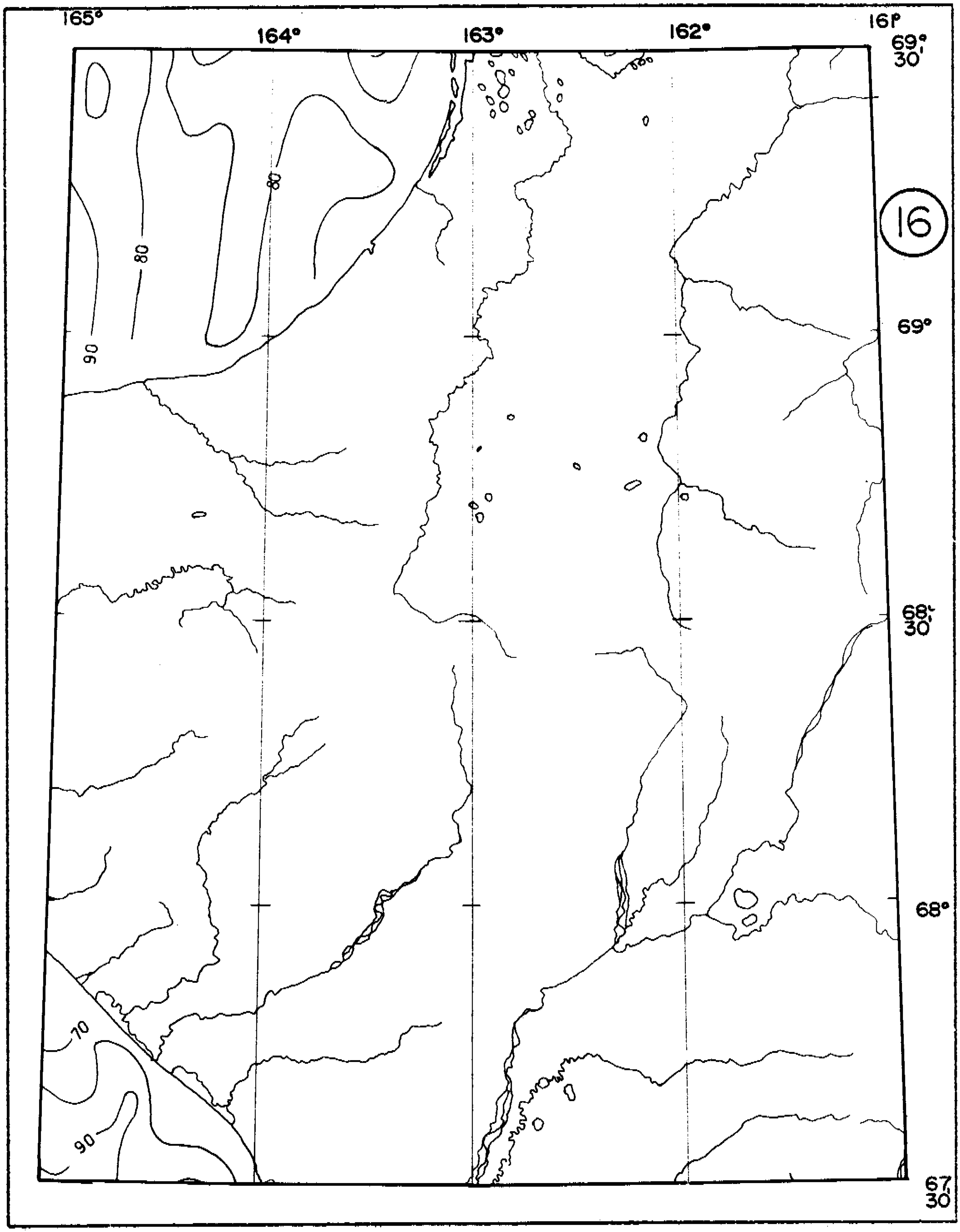
153°
152°
151°
150°
149°
71° 30'
71°
70° 30'
70°
69° 30'
12
60
70
80

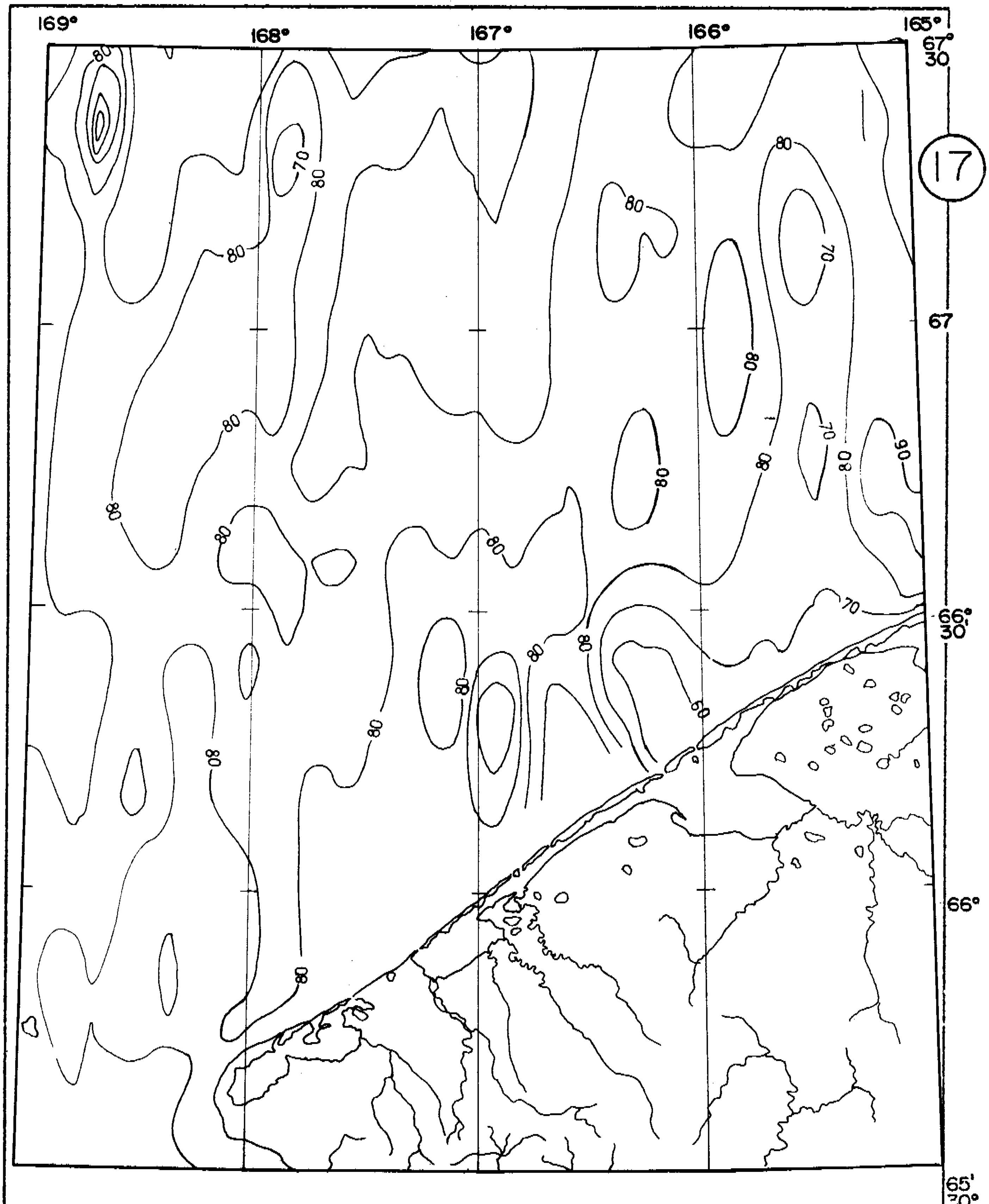

149°
148°
147°
146°
145°
71 30'
71°
70° 30'
70°
69° 30'
13
80
60

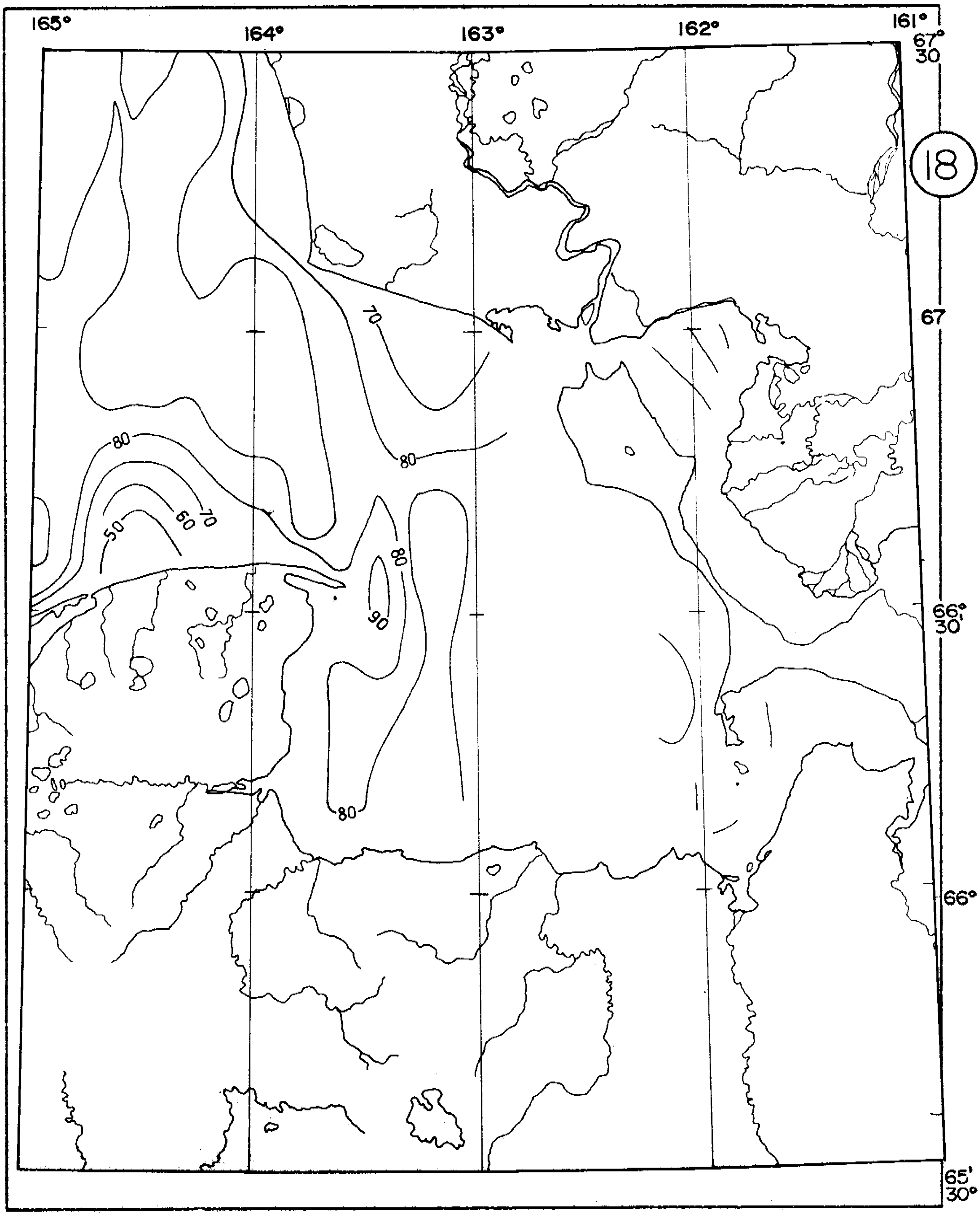

145°
144°
143°
142°
141°
71 30'
71°
70° 30'
70°
69° 30'
14
80
70
60
90
40


169°
168°
167°
166°
165°
69° 30'
69°
68° 30'
68°
67 30
15
80
70
80
80
90
90
80
70
80
90
80
90
80
90
90
80

PROXIMITY




169°
168°
167°
166°
165°
67° 30
67
66° 30'
66°
65' 30°
17
80
70
90



165°
164°
163°
162°
161°
67° 30
18
67
66° 30'
66°
65' 30°
70
80
80
50
60
70
80
90
80

BEAUFORT SEA
NORTH CHUKCHI SEA

RESEARCH UNIT 516 OCSEAP
NOAA INSTAAR 1978

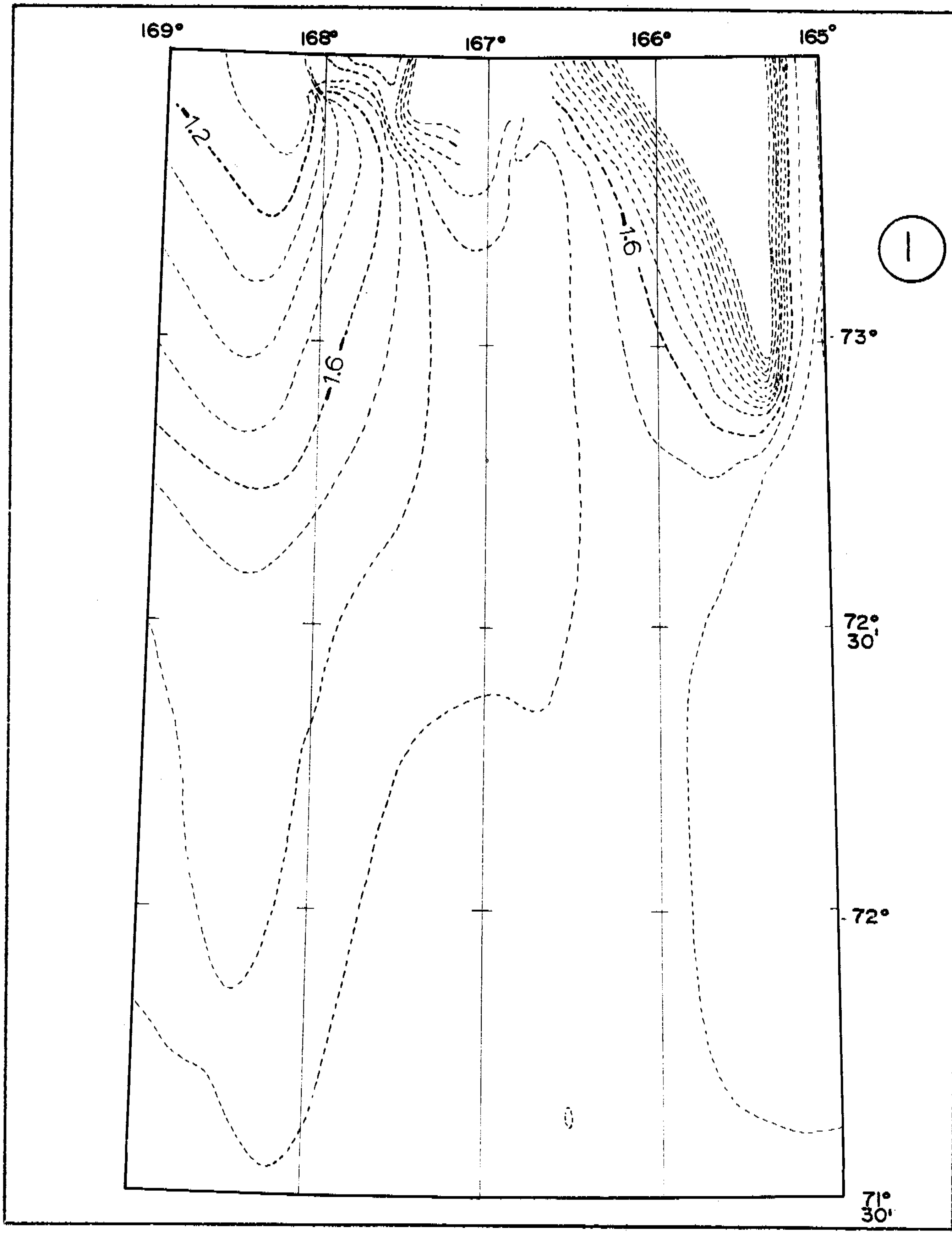
FREEZING TEMPERATURE OF THE SEA WATER ACCORDING TO THE SUMMER SALINITY

A DERIVED MAP FOR SUBMARINE PERMAFROST PREDICTION

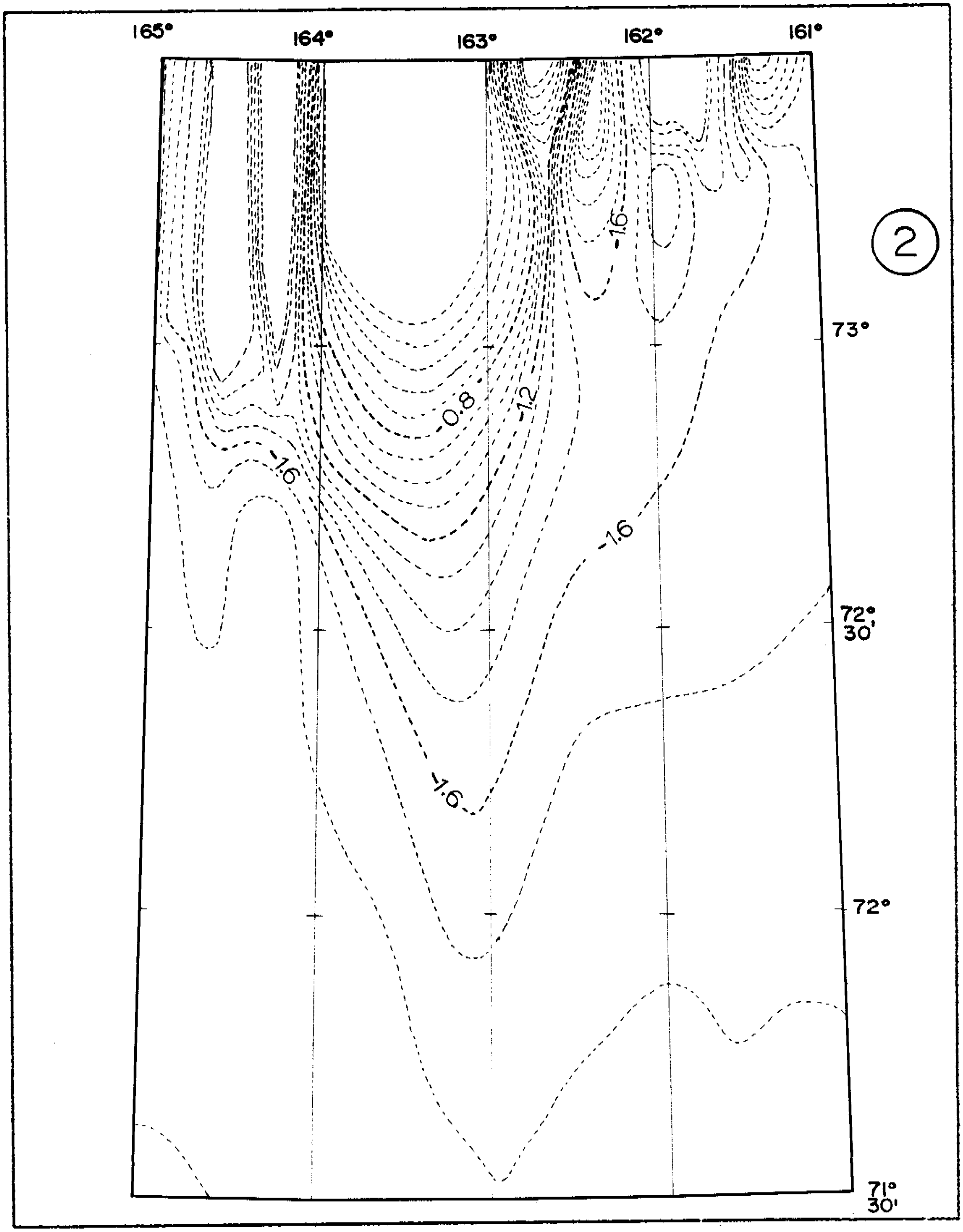
TEMPERATURE — -3.0° TO 0°C
INTERVAL OF 0.1°C

SCALE — 1:1,000,000

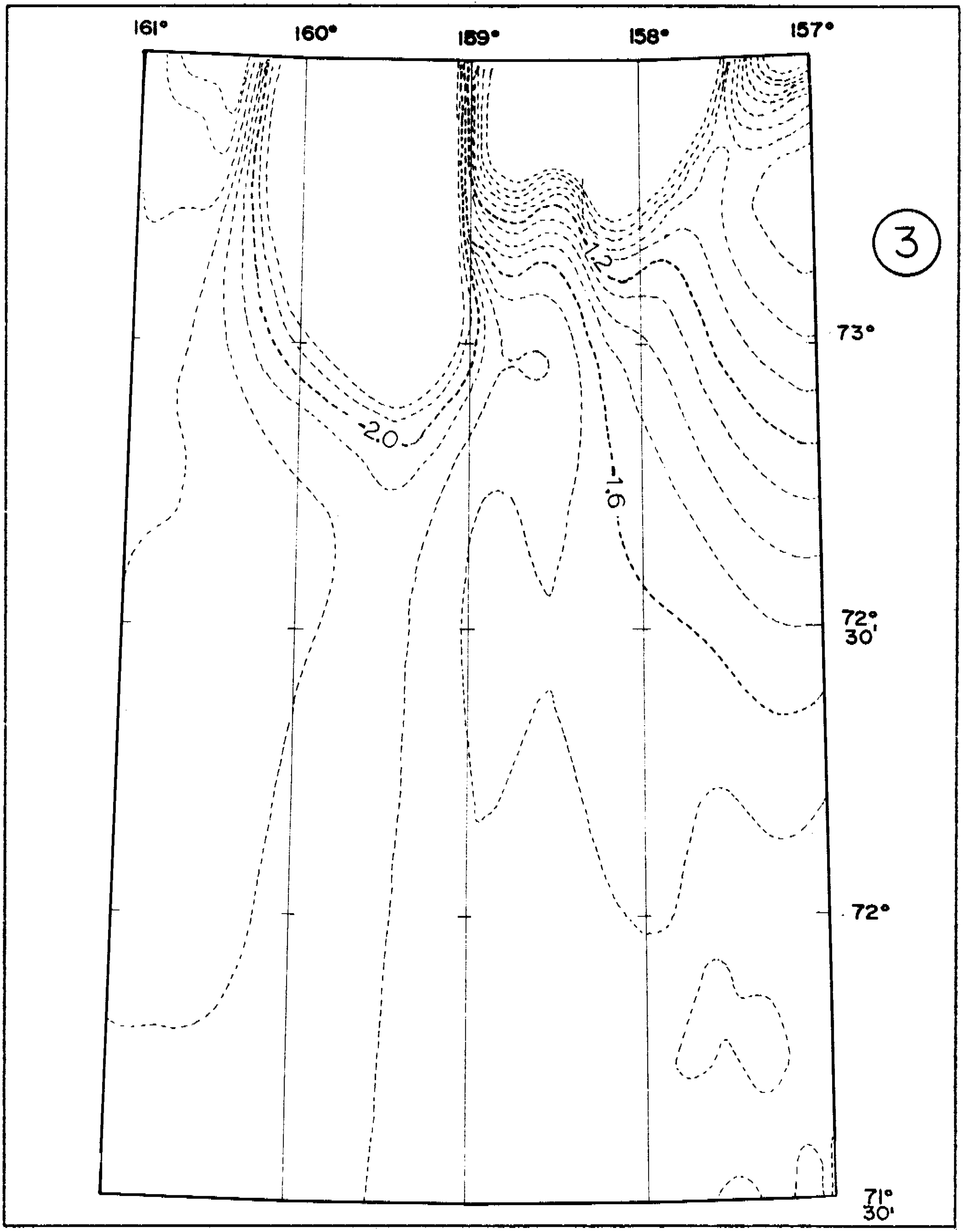
GEOGRAPHIC BASED INFORMATION MANAGEMENT SYSTEM FOR PERMAFROST IN THE CHUKCHI AND BEAUFORT SEAS


169°
168°
167°
166°
165°
1.2
1.6
1.6
1
73°
72°
30'
72°
71°
30'

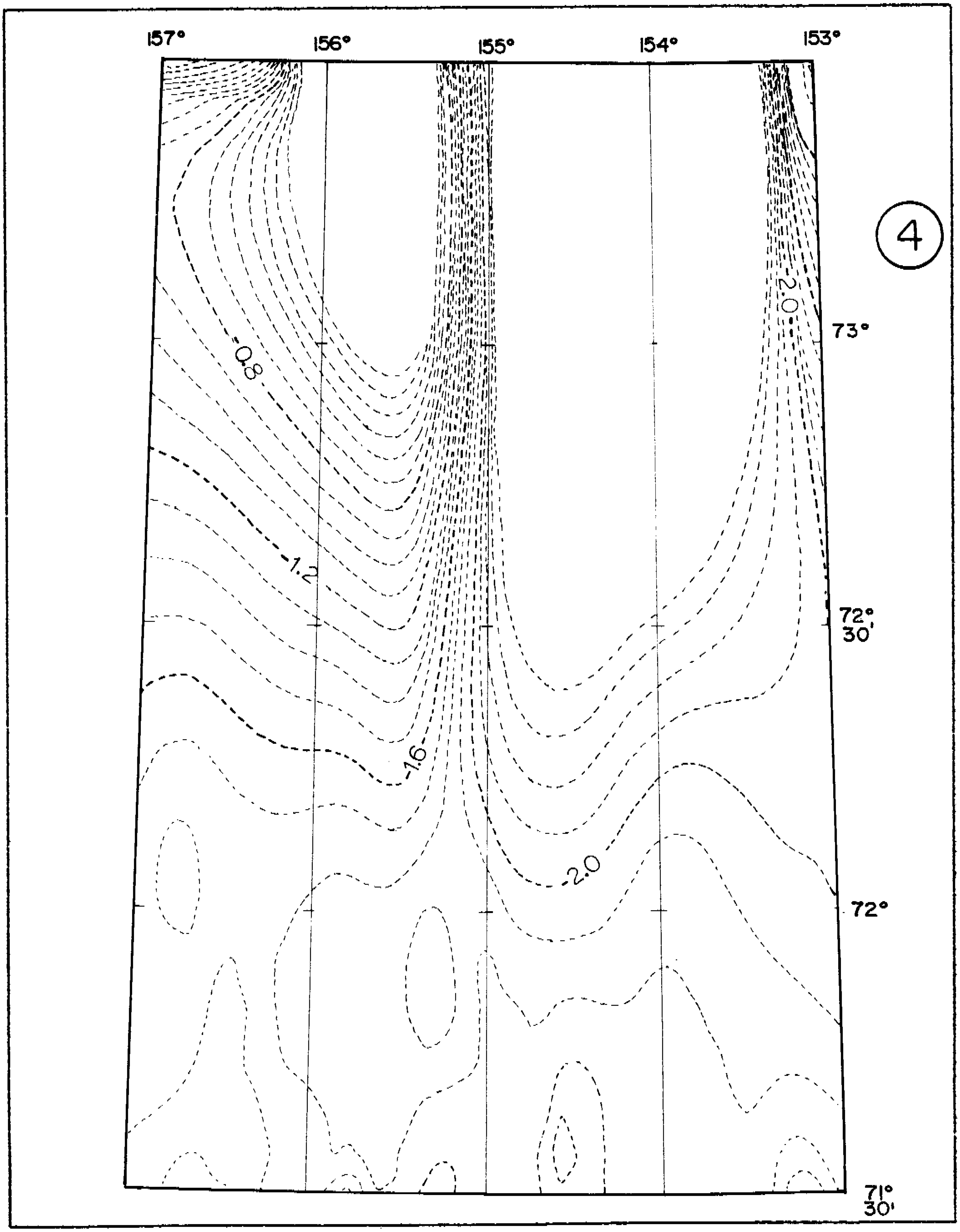
FREEZING TEMPERATURE



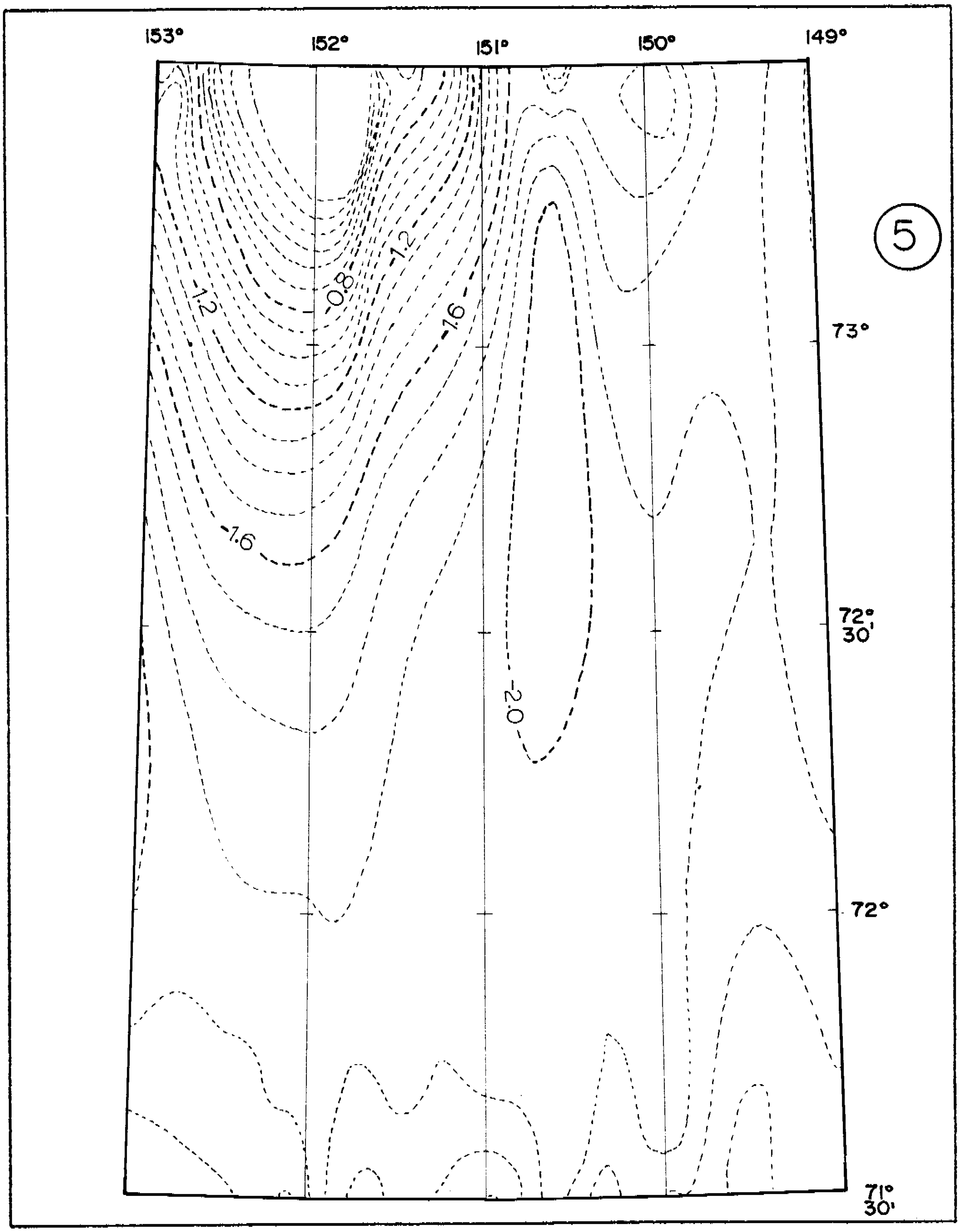
FREEZING TEMPERATURE



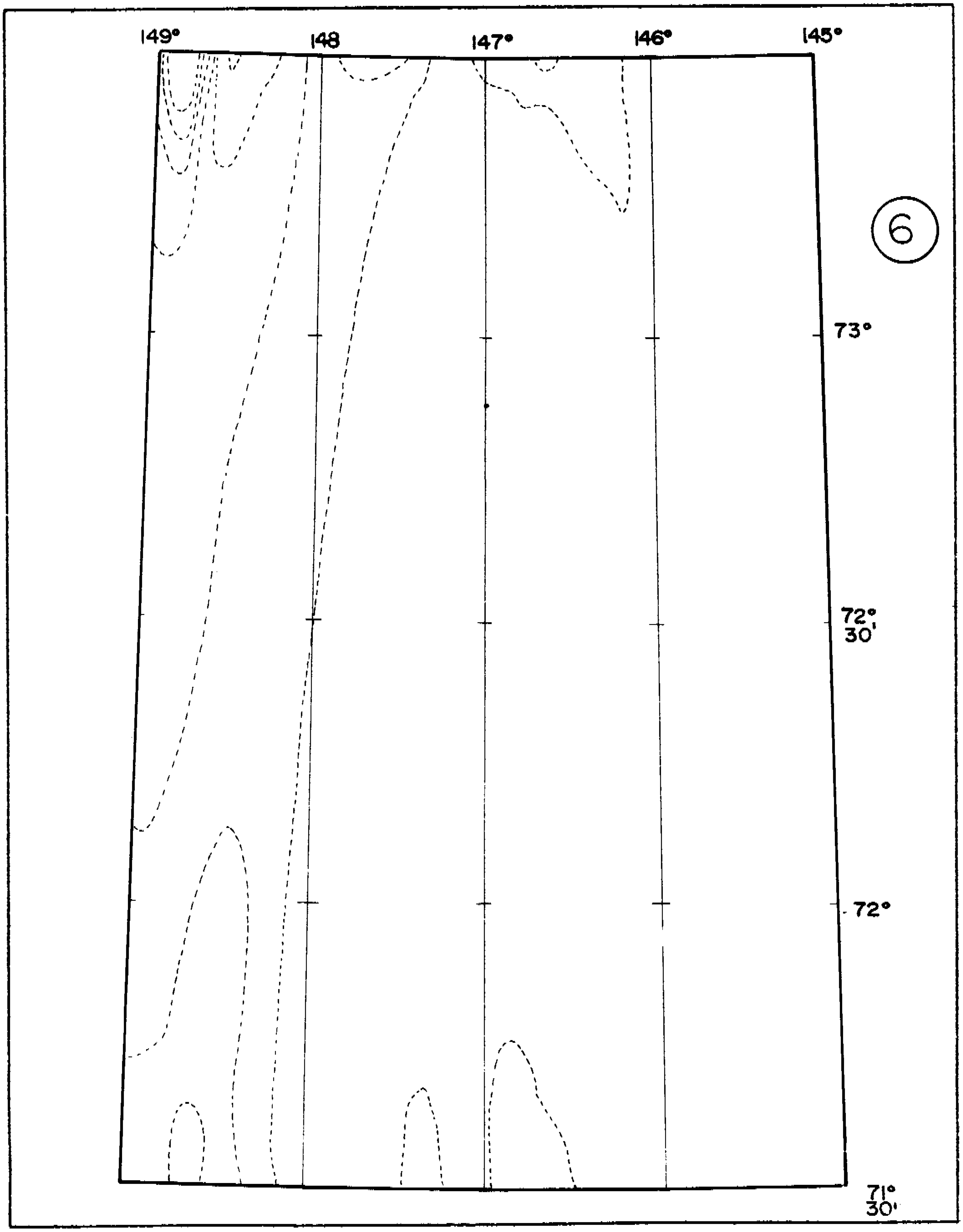
FREEZING TEMPERATURE



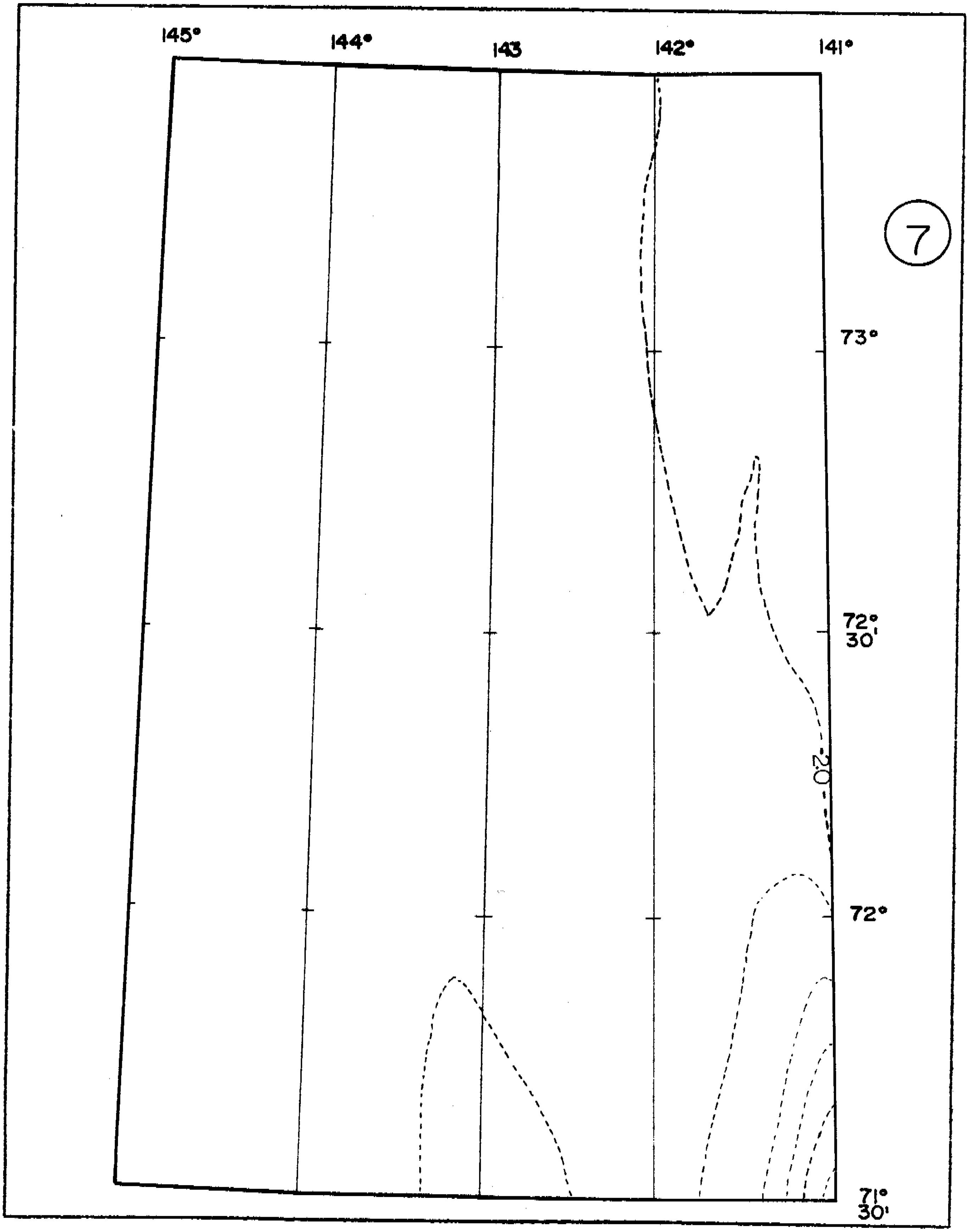
FREEZING TEMPERATURE



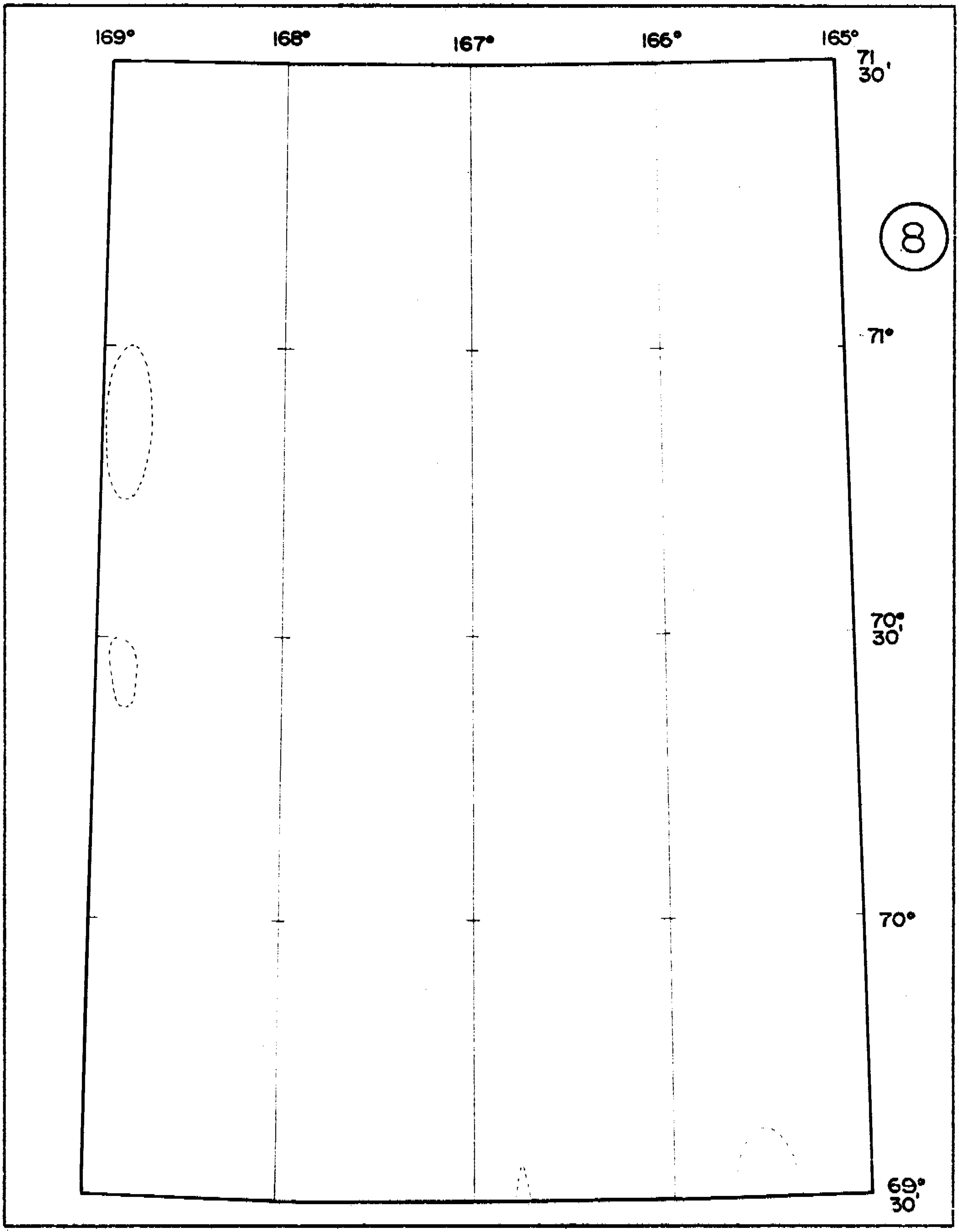
FREEZING TEMPERATURE

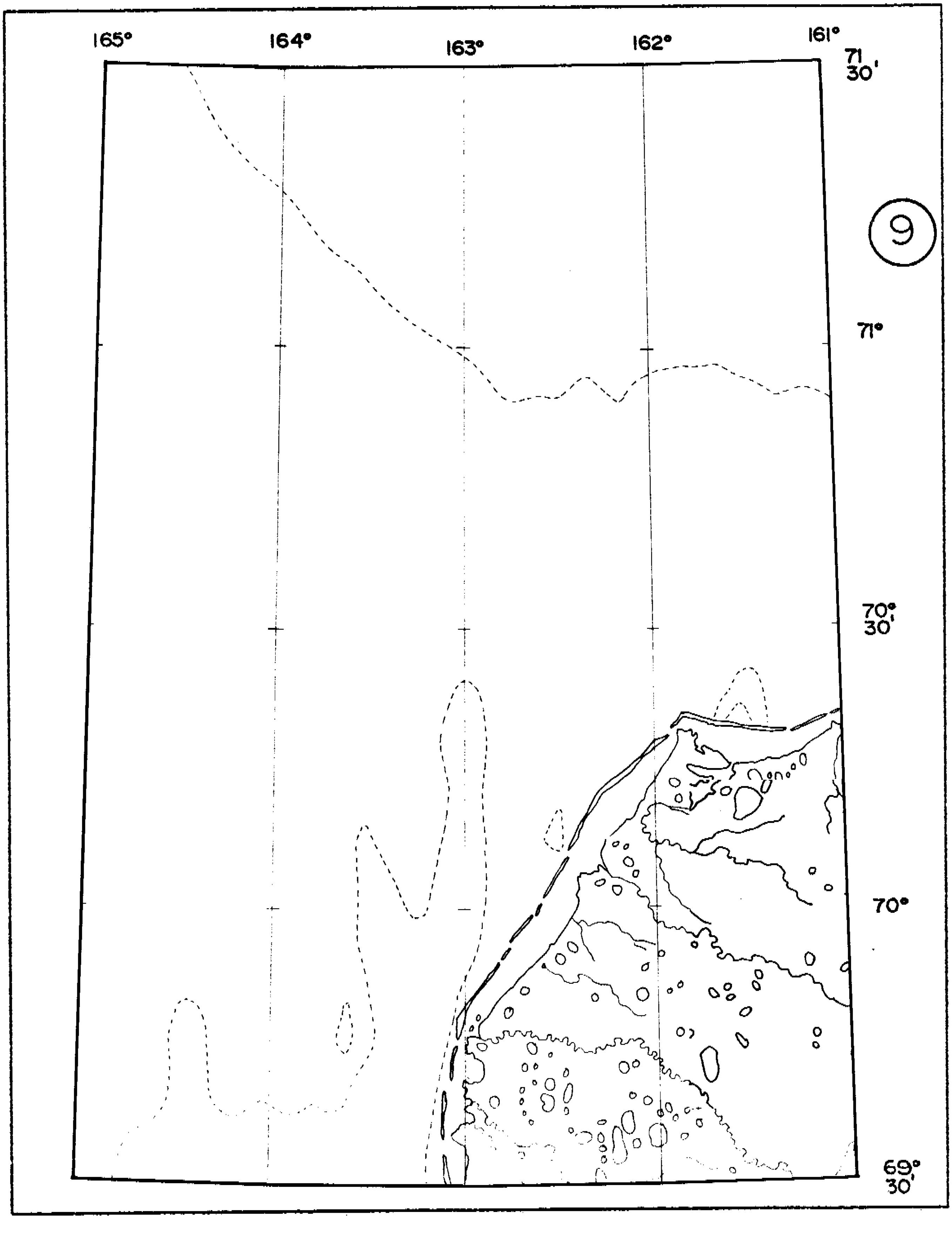


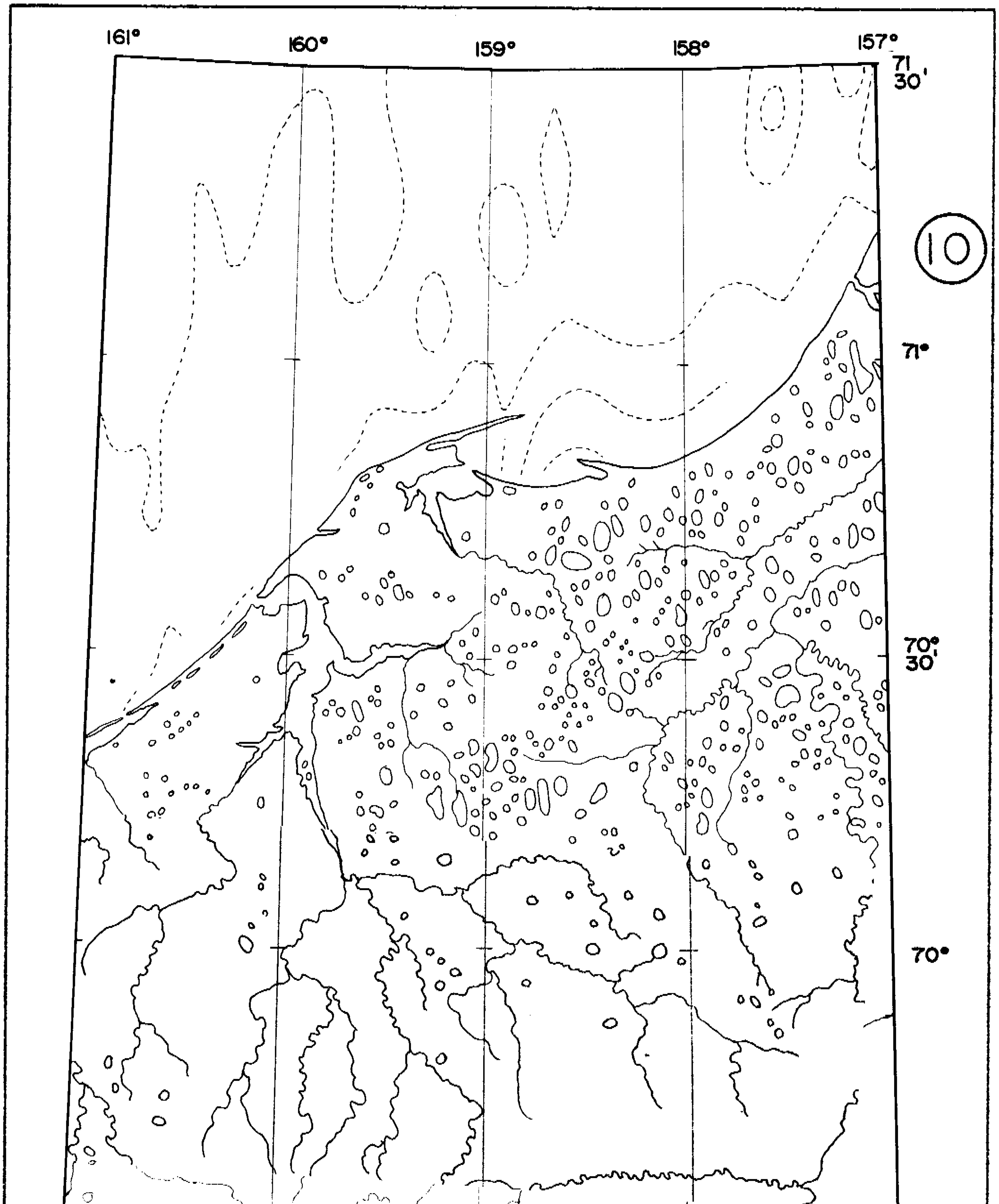
FREEZING TEMPERATURE



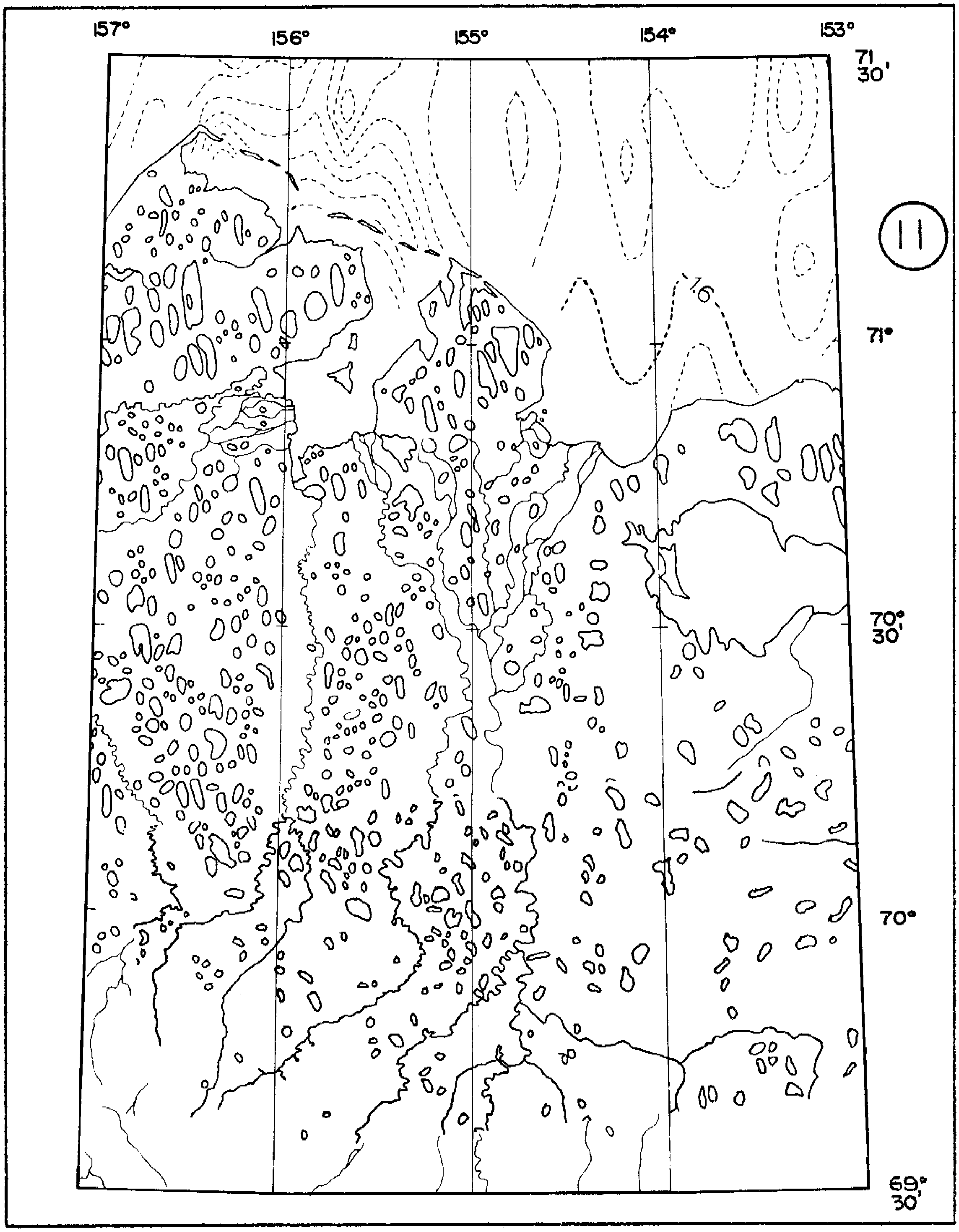
FREEZING TEMPERATURE



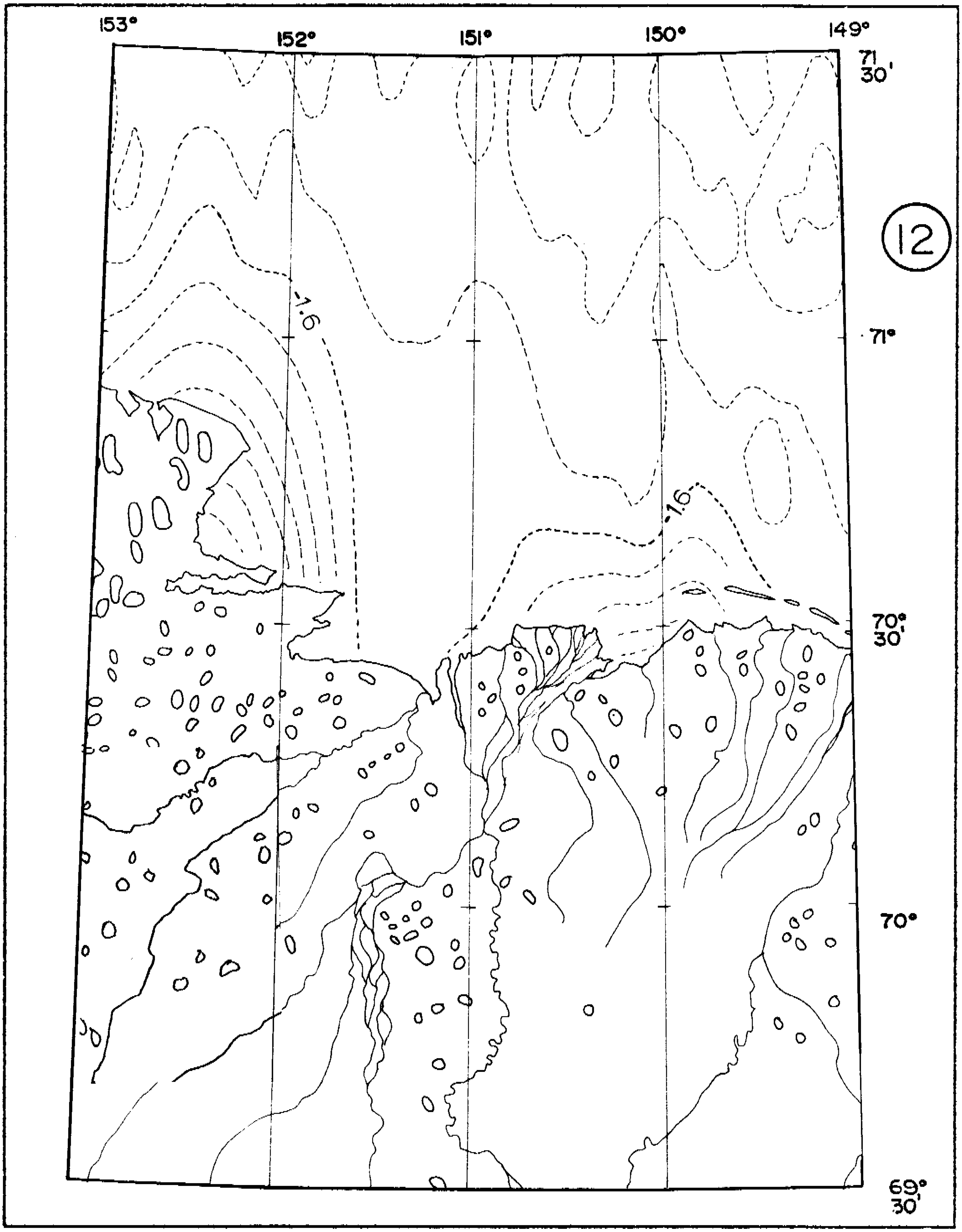

165°
164°
163°
162°
161°
71 30'
9
71°
70° 30'
70°
69° 30'


161°
160°
159°
158°
157°
71 30'
10
71°
70° 30'
70°
69° 30'

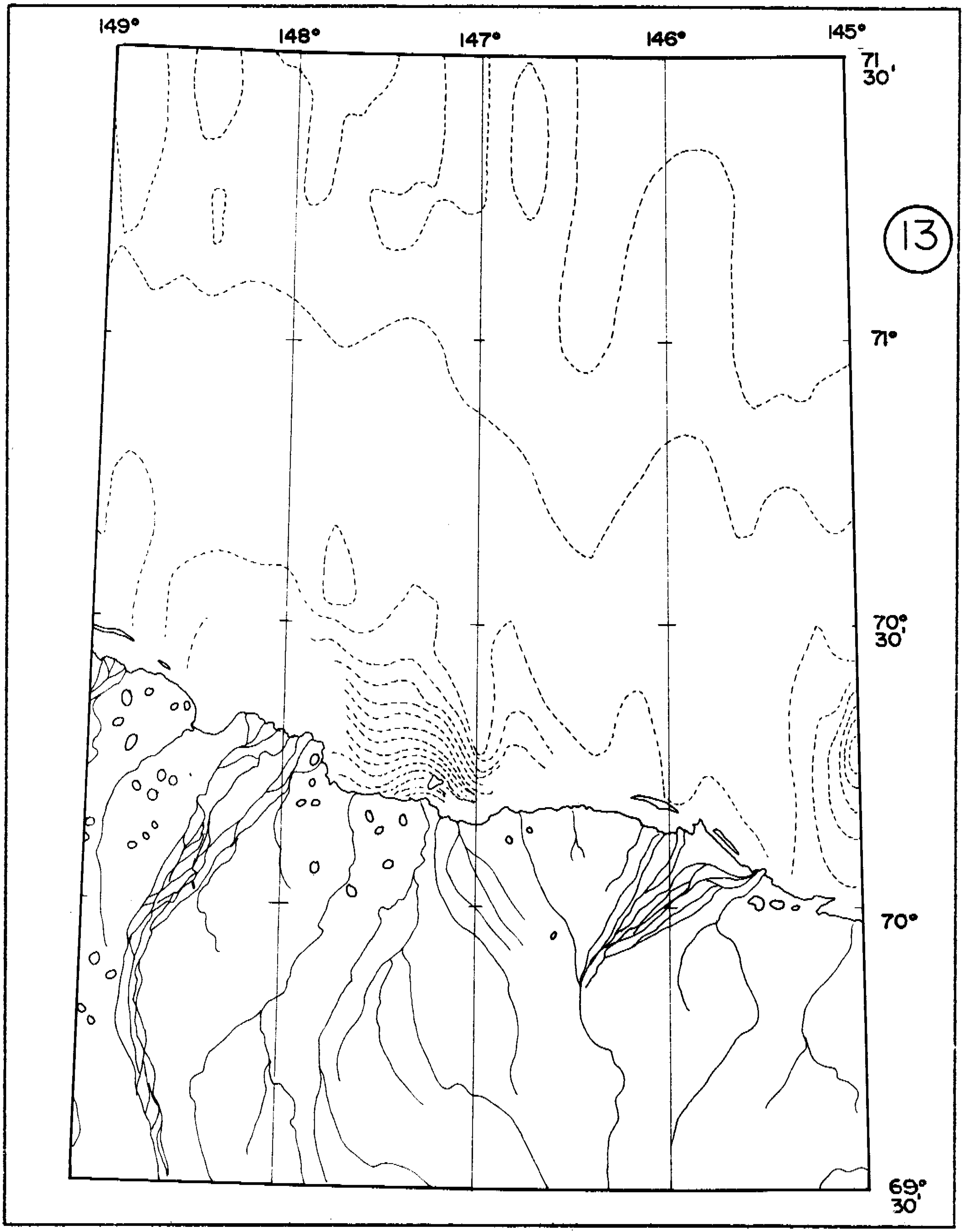
FREEZING TEMPERATURE



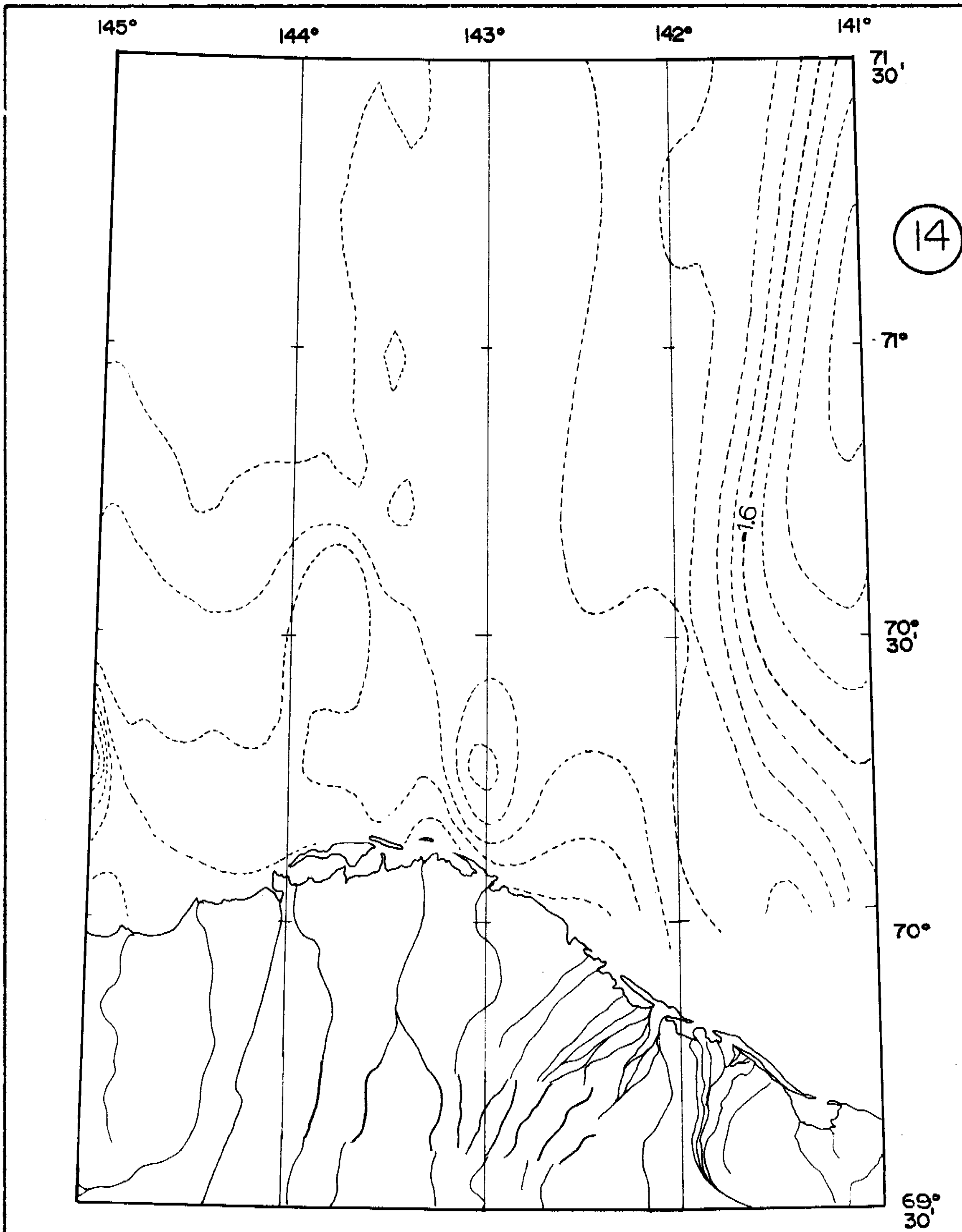
FREEZING TEMPERATURE



FREEZING TEMPERATURE



FREEZING TEMPERATURE



BEAUFORT SEA
NORTH CHUKCHI SEA

RESEARCH UNIT 516 OCSEAP
NOAA INSTAAR 1978

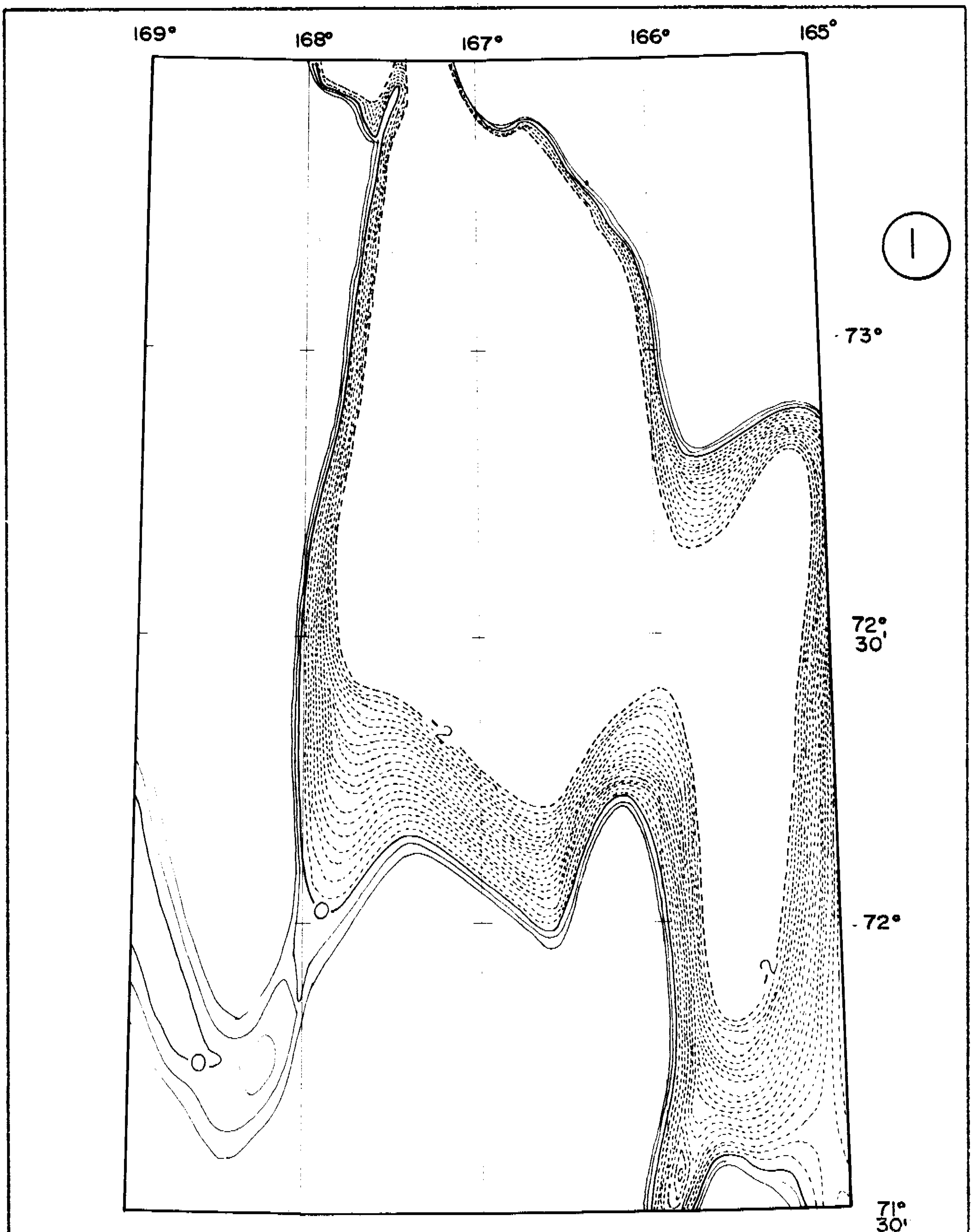
SEA WATER SUPERCOOLING DURING THE SUMMER AT THE MAXIMAL SAMPLING DEPTH

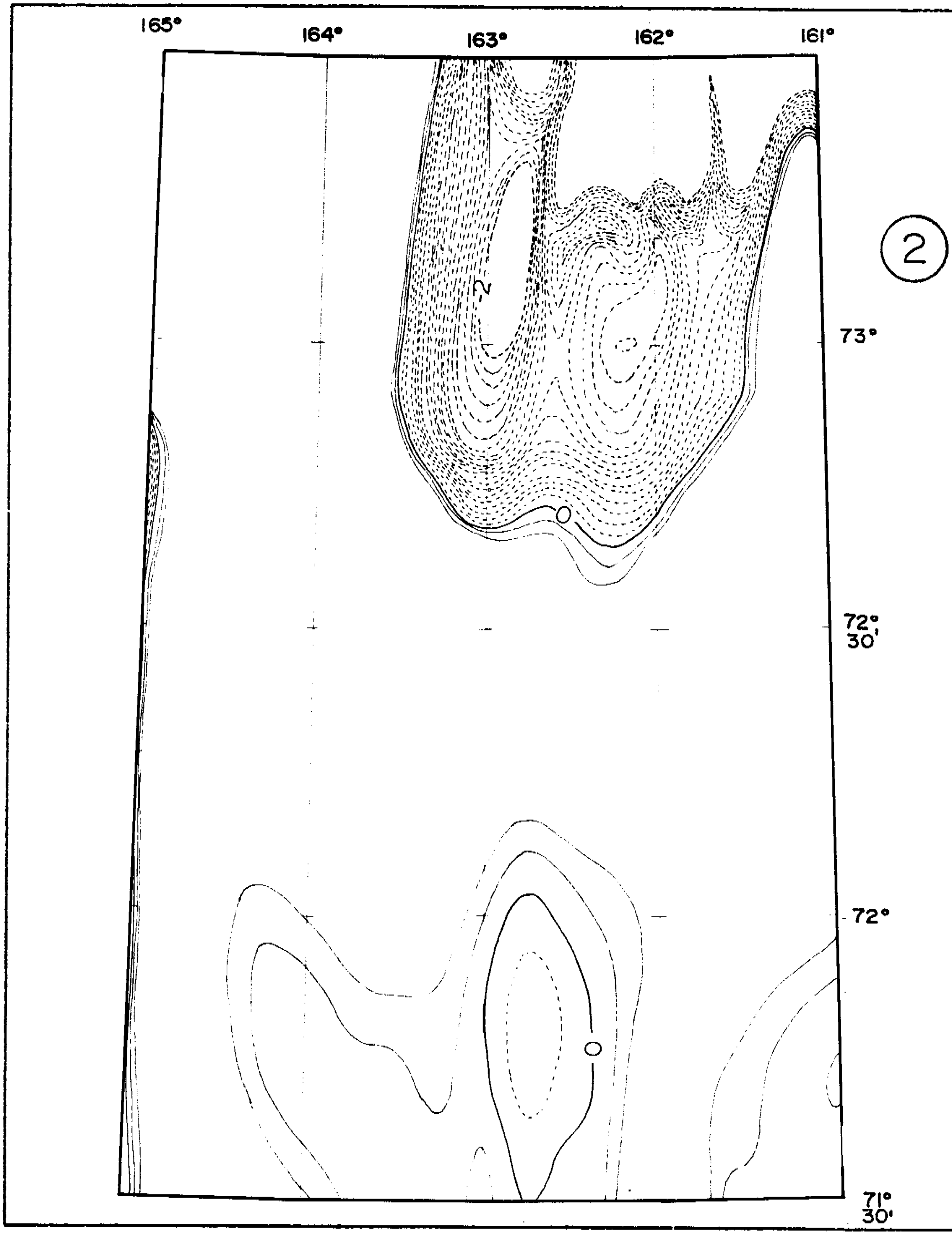
A DERIVED MAP FOR SUBMARINE PERMAFROST PREDICTION

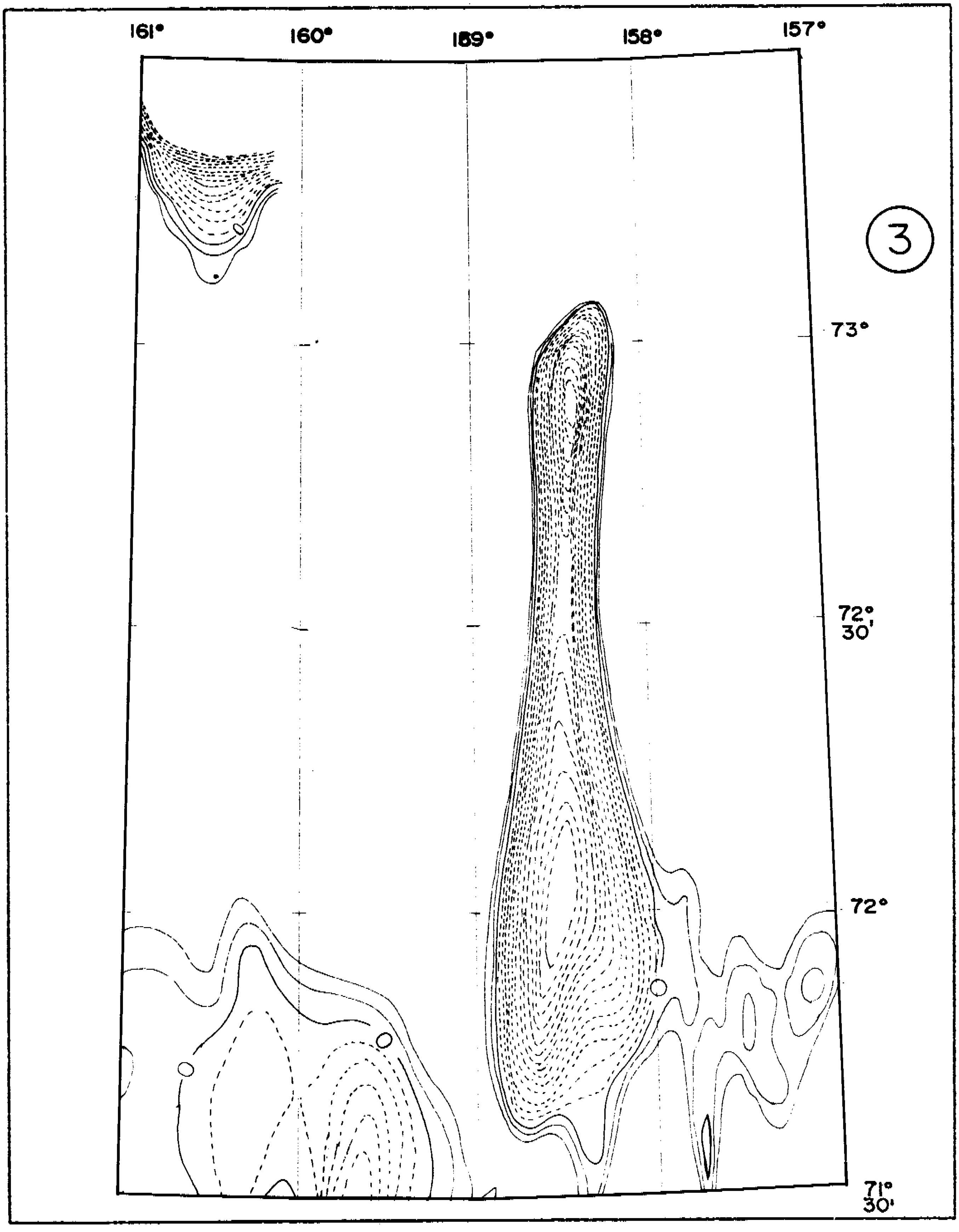
TEMPERATURE — -2.0° TO +0.2°C
INTERVAL OF 0.1°C

SCALE — 1:1,000,000

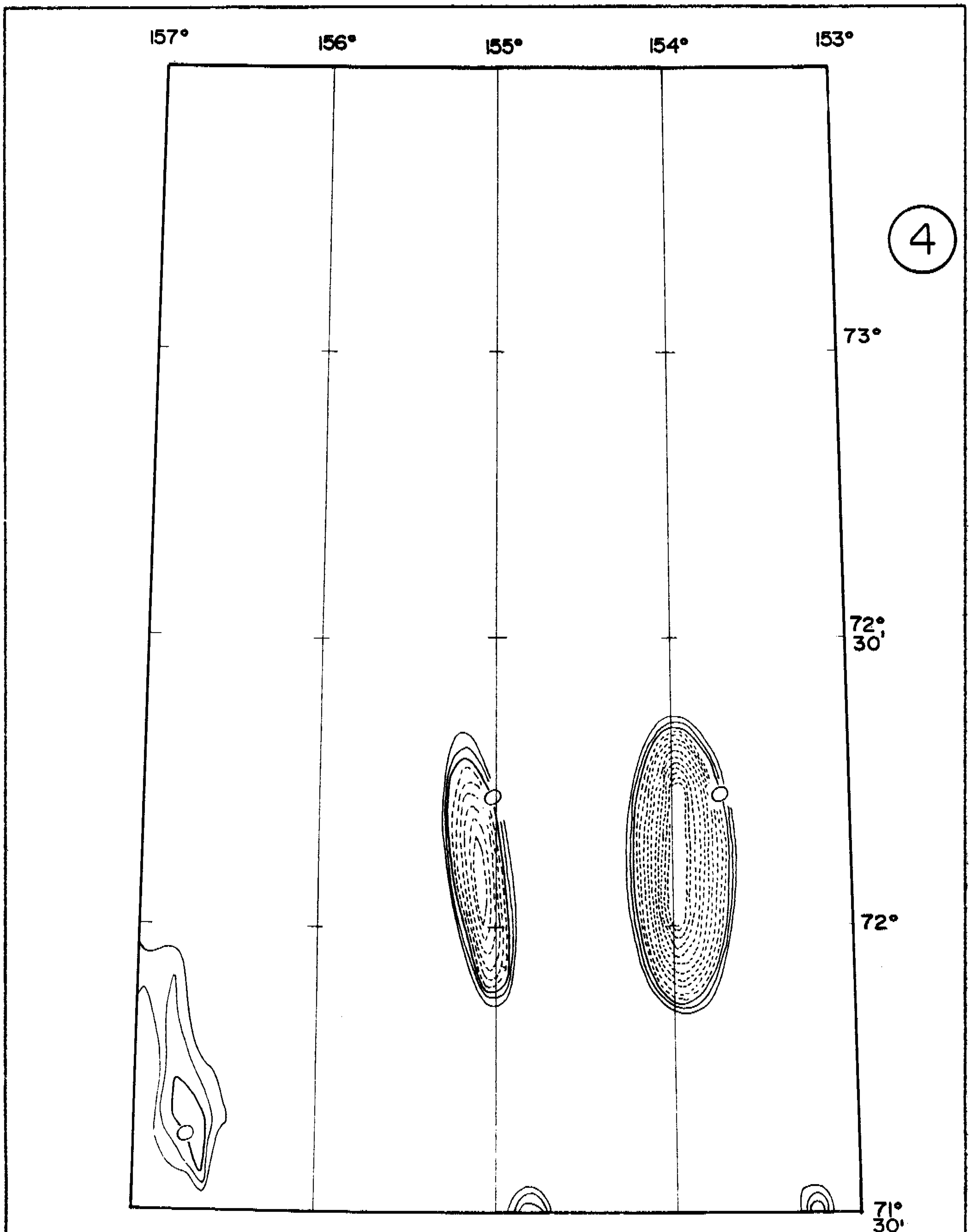
GEOGRAPHIC BASED INFORMATION MANAGEMENT SYSTEM FOR PERMAFROST IN THE CHUKCHI AND BEAUFORT SEAS

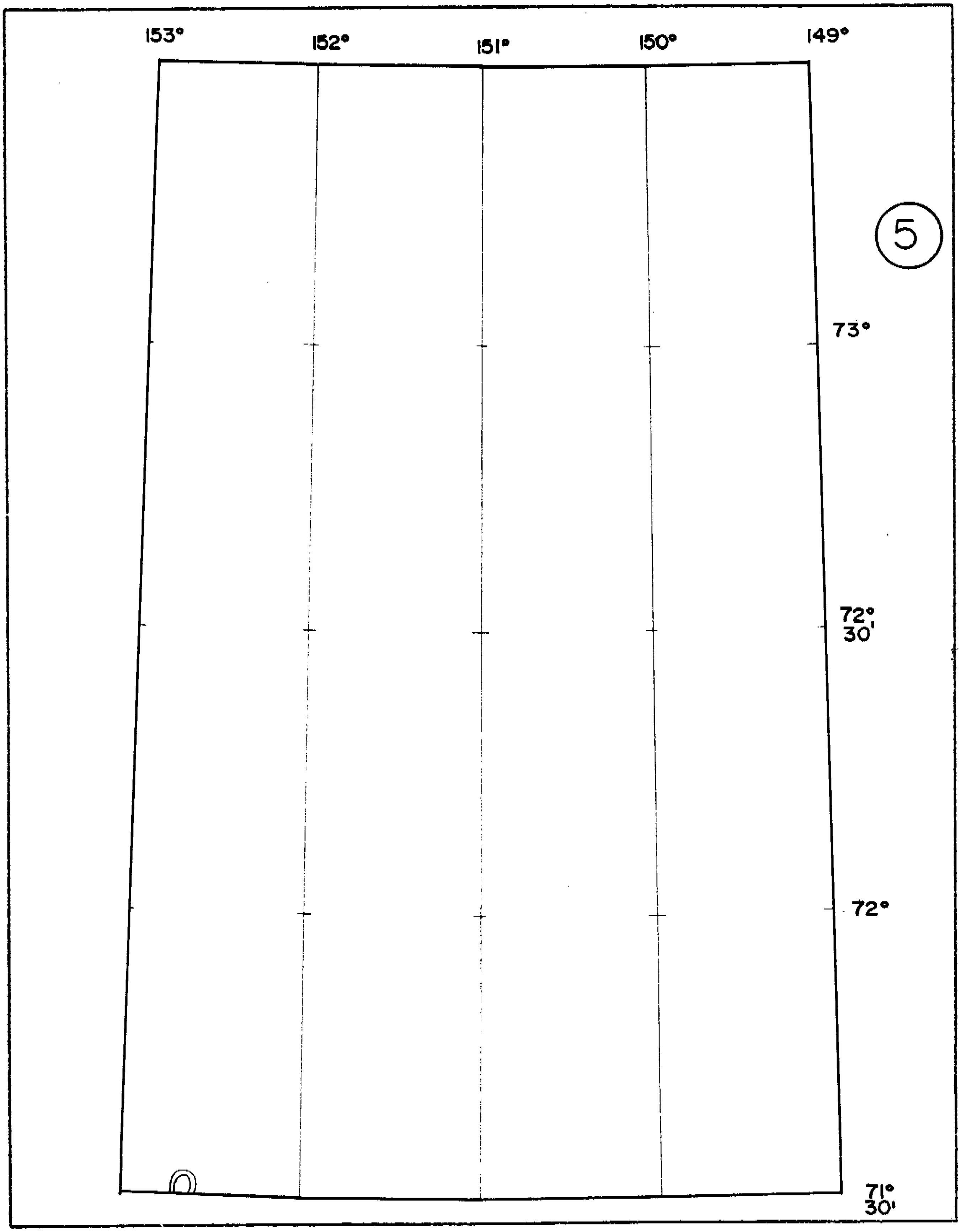

169°
168°
167°
166°
165°
1
73°
72° 30'
72°
71° 30'
-2
-2
0
0


165°
164°
163°
162°
161°
2
-2
73°
0
72° 30'
72°
0
71° 30'

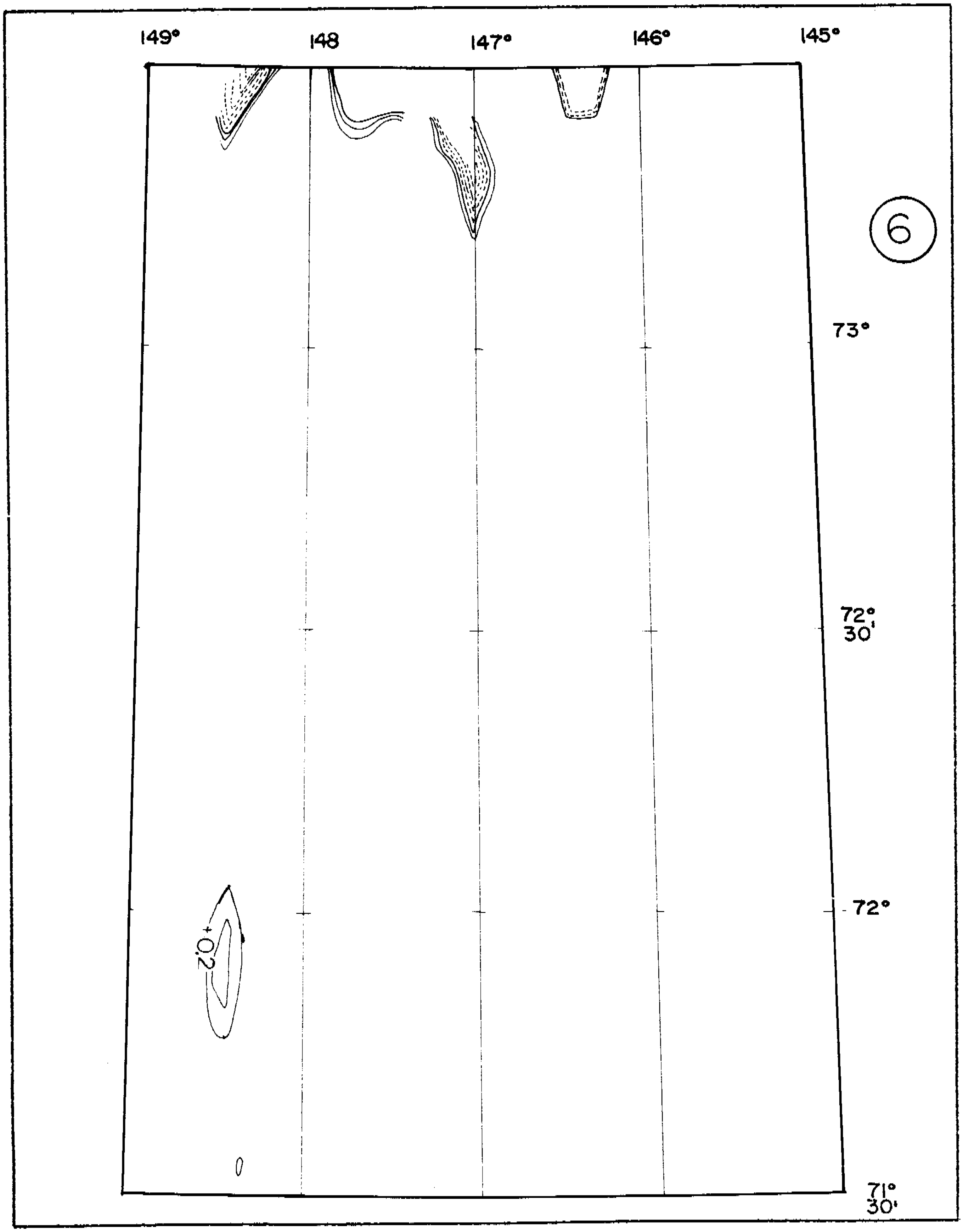


161°
160°
159°
158°
157°
3
73°
72° 30'
72°
71° 30'

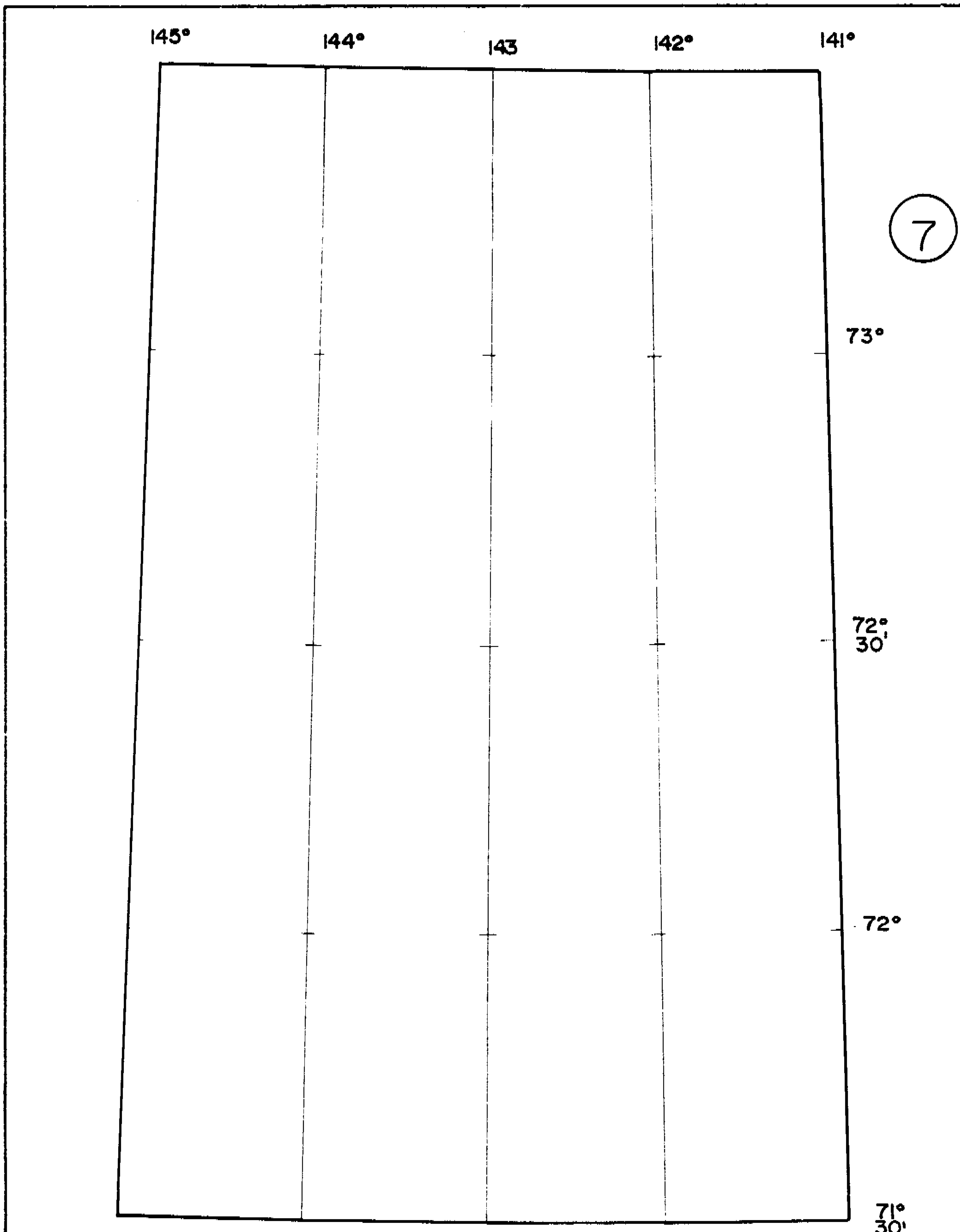

157°
156°
155°
154°
153°
4
73°
72° 30'
72°
71° 30'

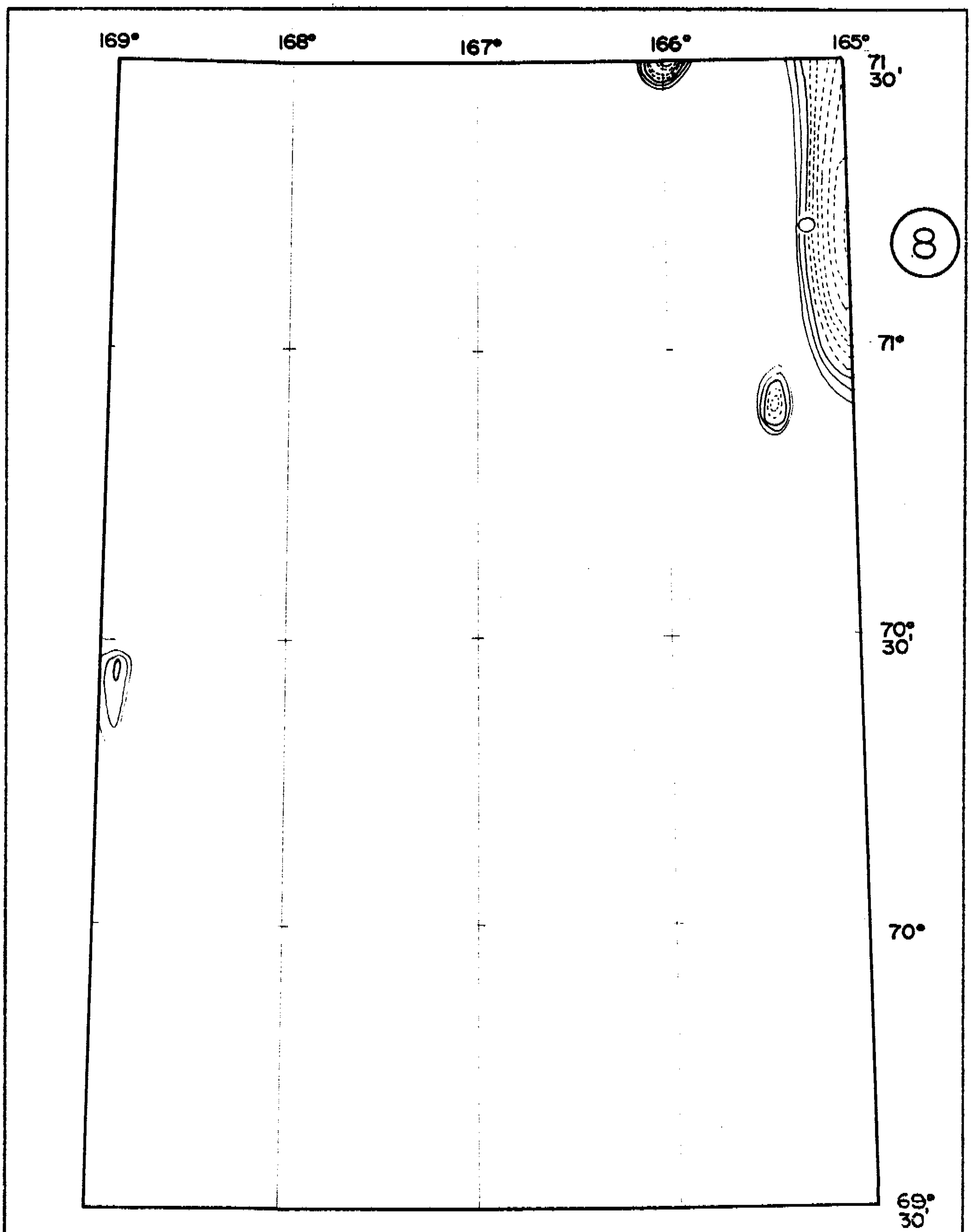

153°
152°
151°
150°
149°
5
73°
72° 30'
72°
71° 30'

SUMMER SUPERCOOLING

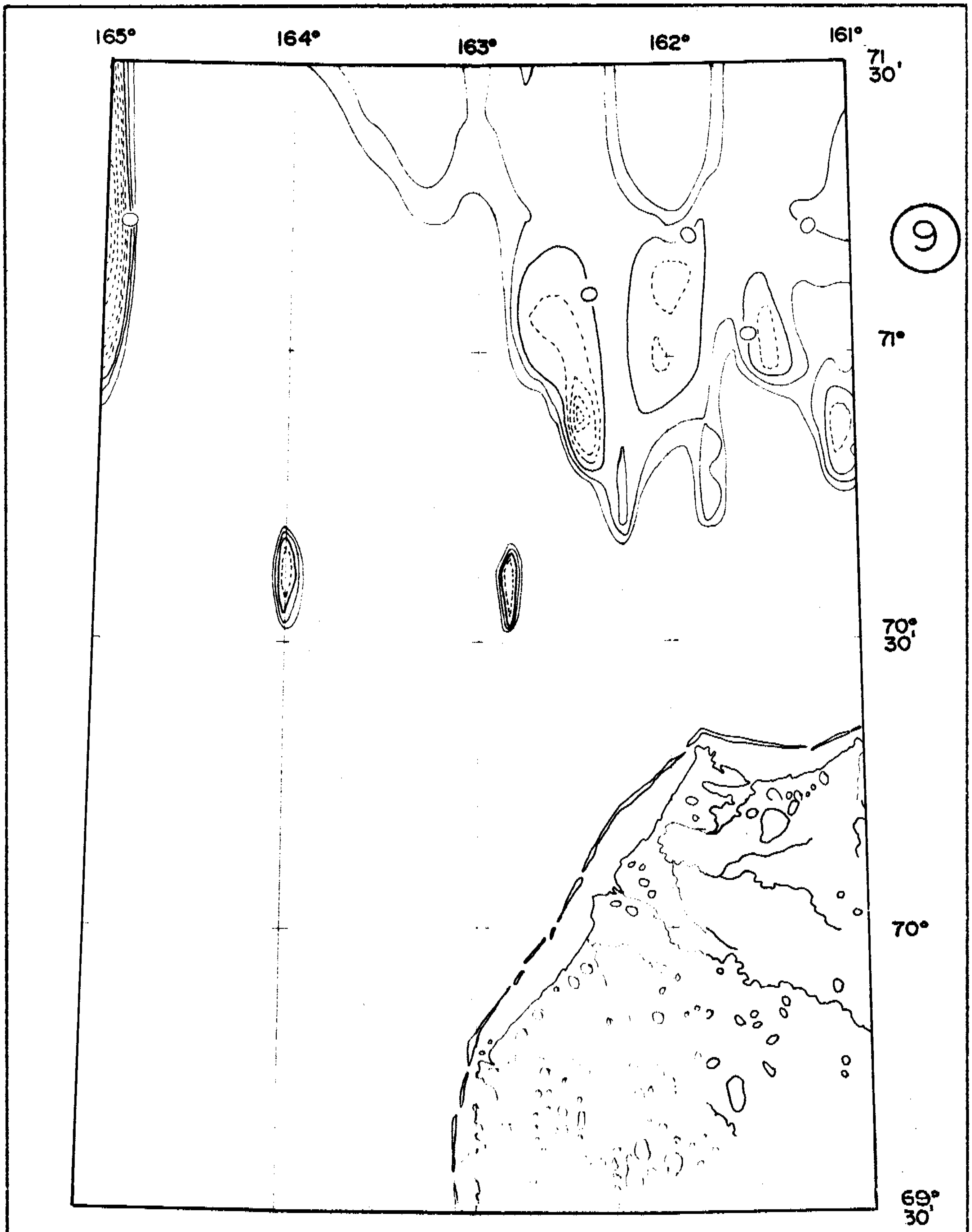


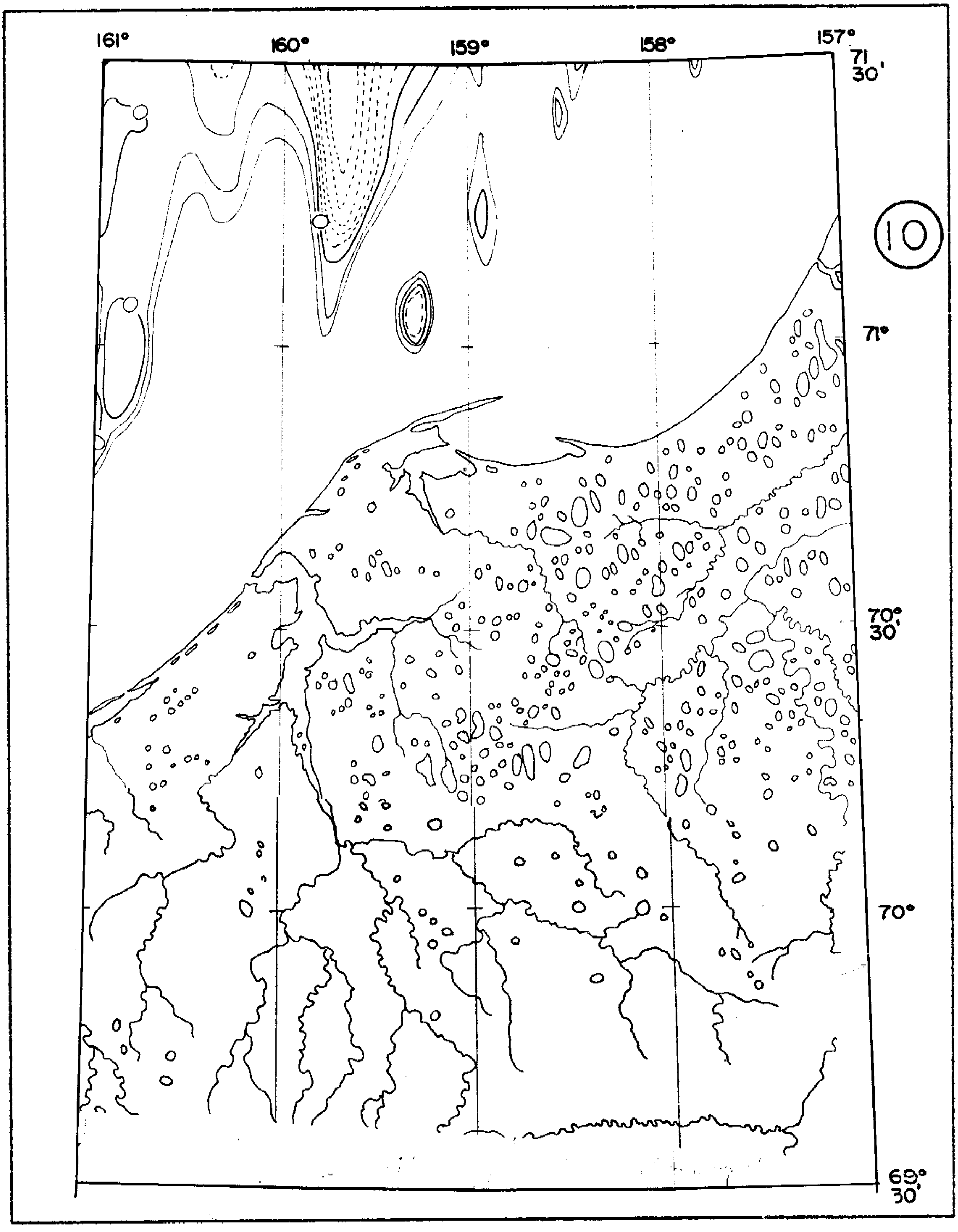
SUMMER SUPERCOOLING

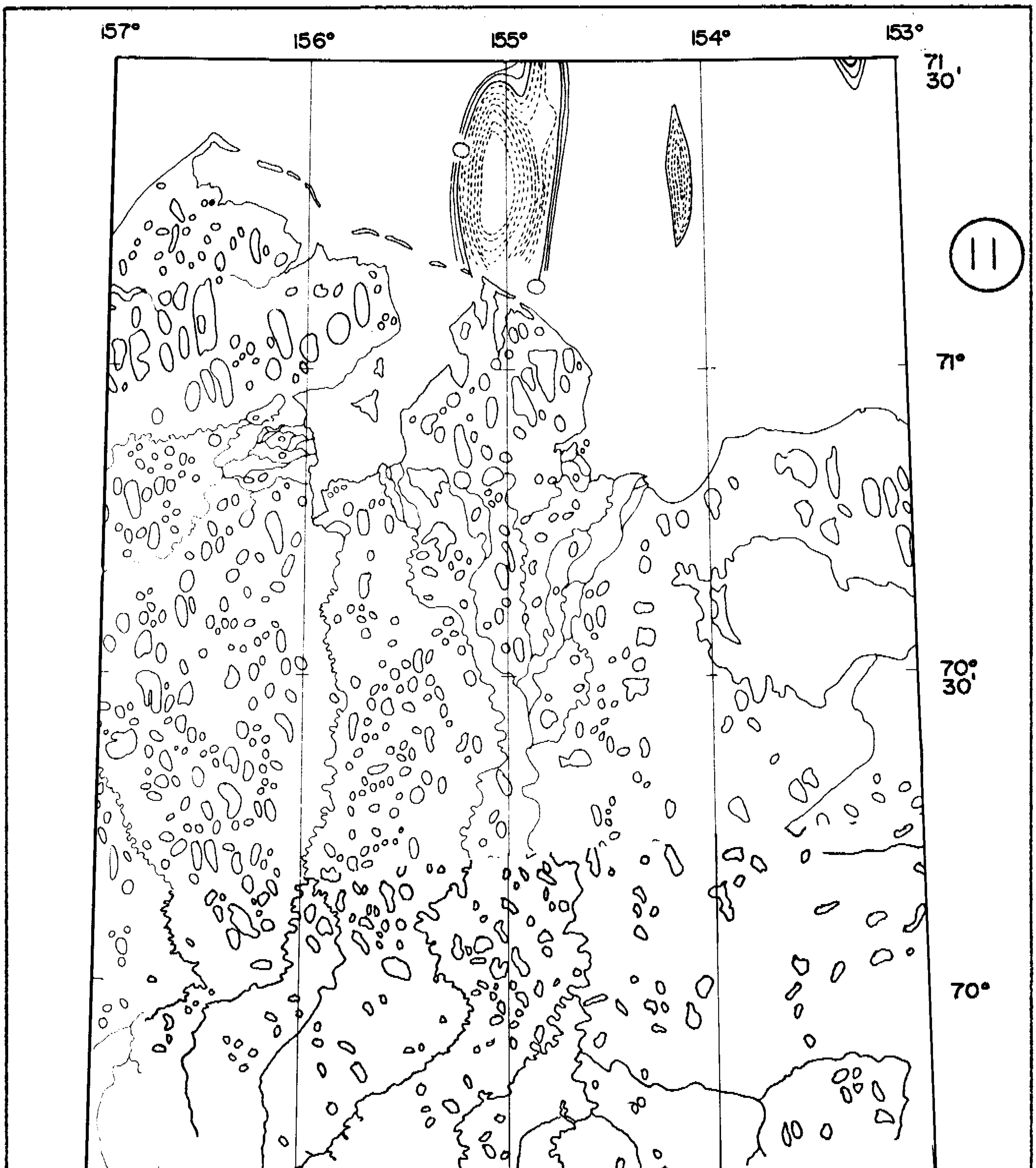


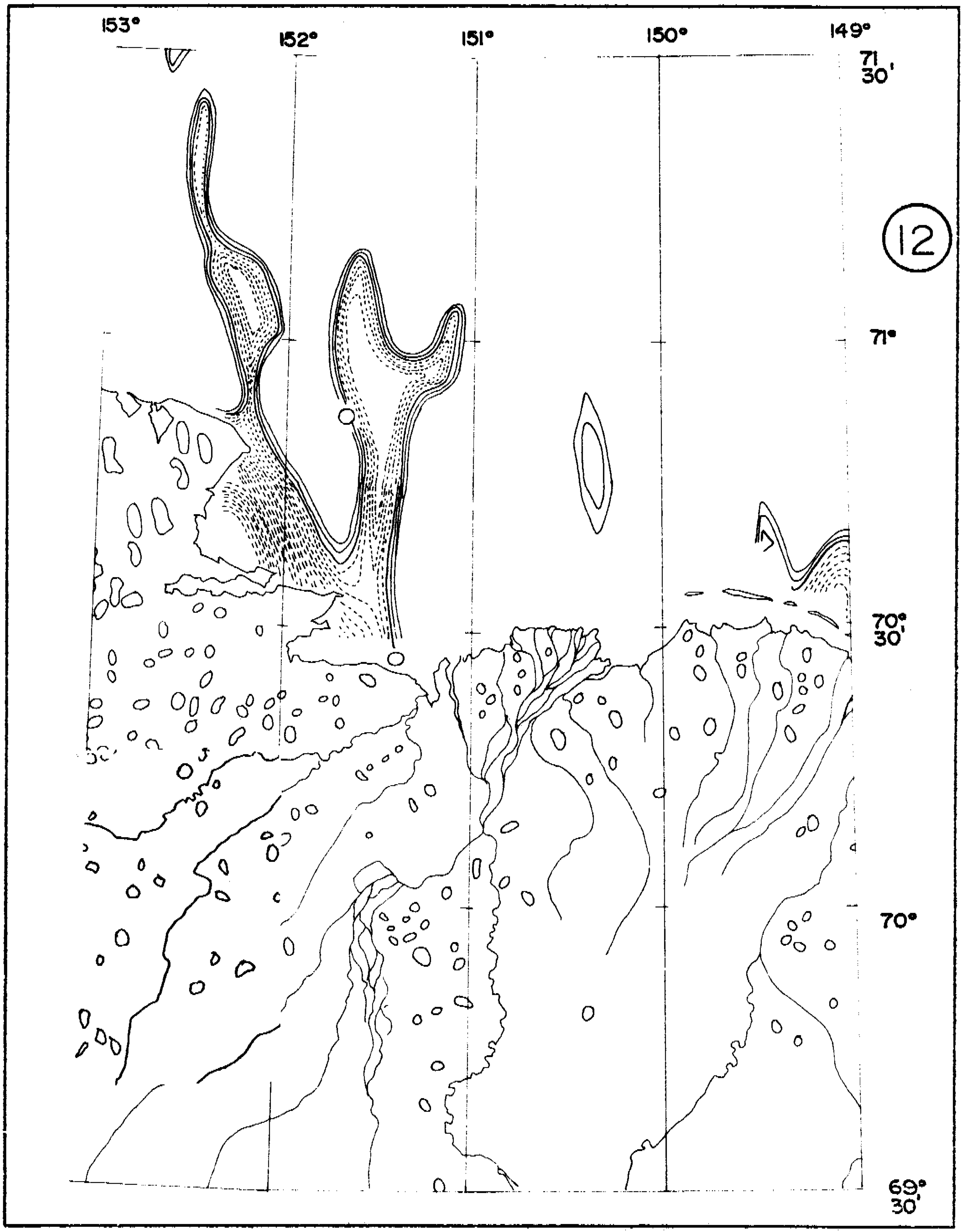


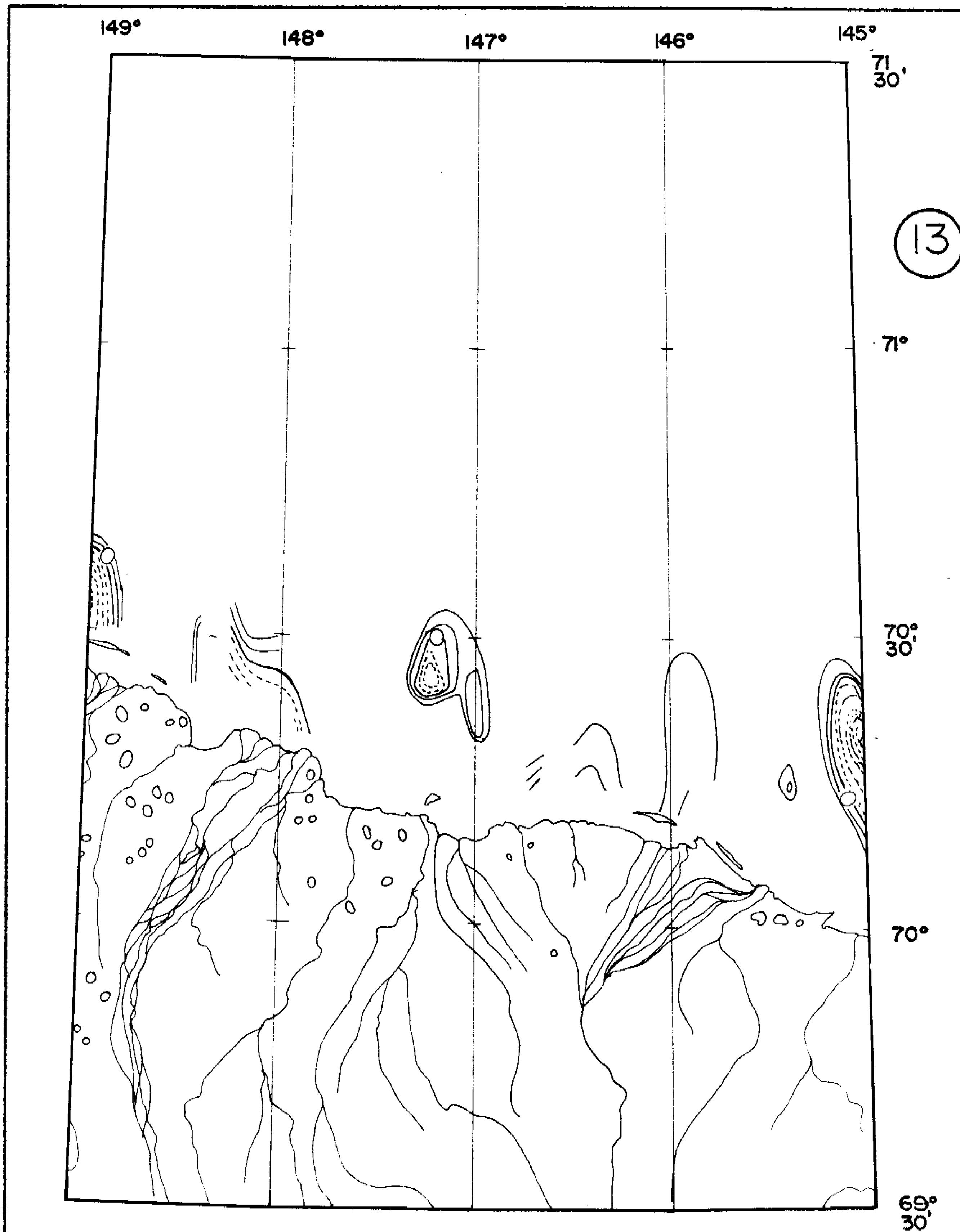
169°
168°
167°
166°
165°
71 30'
71°
70° 30'
70°
69° 30'
8

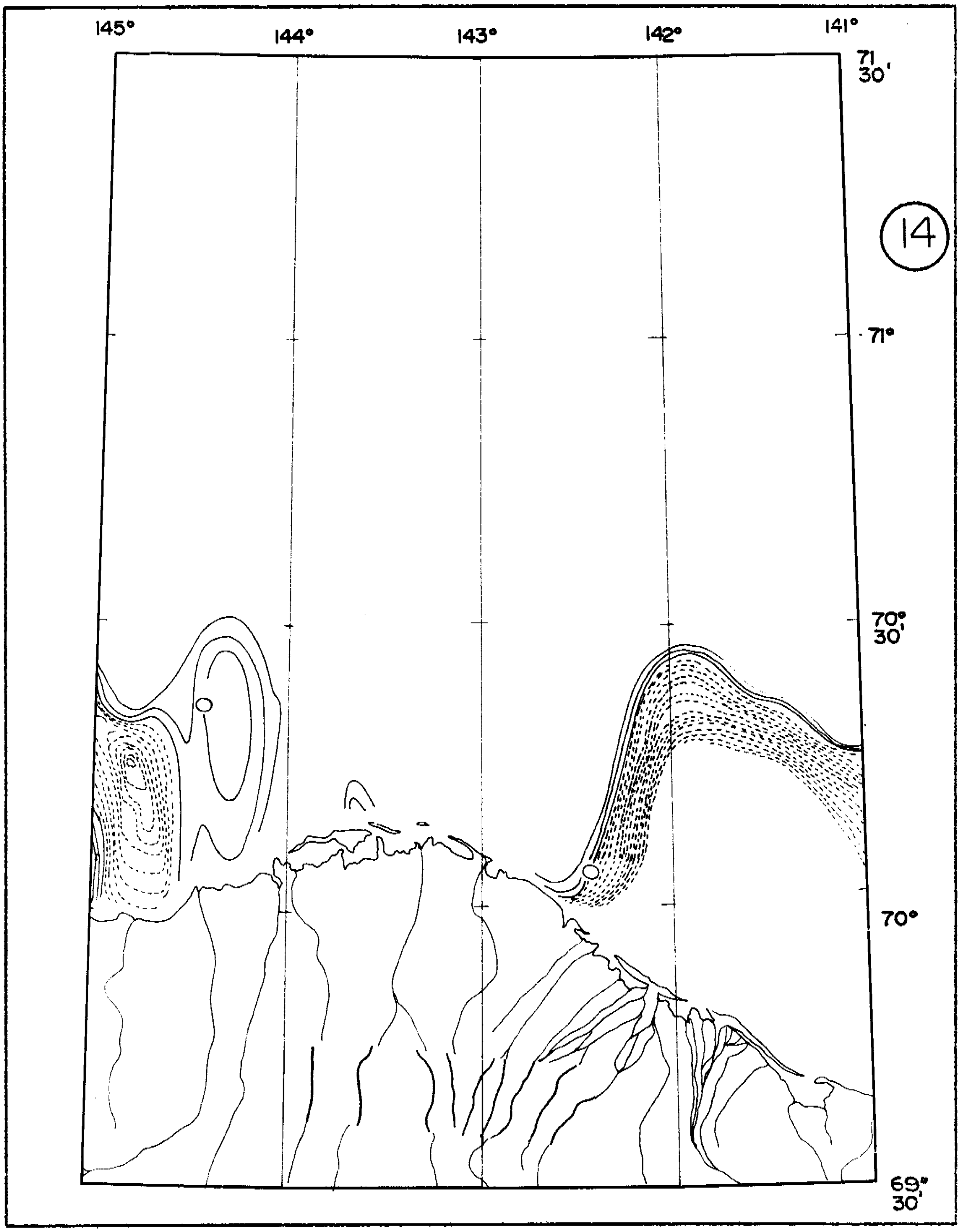

165°
164°
163°
162°
161°
71 30'
9
71°
70° 30'
70°
69° 30'


161°
160°
159°
158°
157°
71 30'
10
71°
70° 30'
70°
69° 30'


157°
156°
155°
154°
153°
71° 30'
71°
70° 30'
70°
69° 30'
11


153°
152°
151°
150°
149°
71 30'
71°
70° 30'
70°
69° 30'
12


149°
148°
147°
146°
145°
71 30'
13
71°
70° 30'
70°
69° 30'


145°
144°
143°
142°
141°
71 30'
14
71°
70° 30'
70°
69° 30'

BEAUFORT SEA
NORTH CHUKCHI SEA

RESEARCH UNIT 516 OCSEAP
NOAA INSTAAR 1978

PROBABILITY OF THE SEA WATER SEASONALLY SUPERCOOLING AT THE MAXIMAL SAMPLING DEPTH

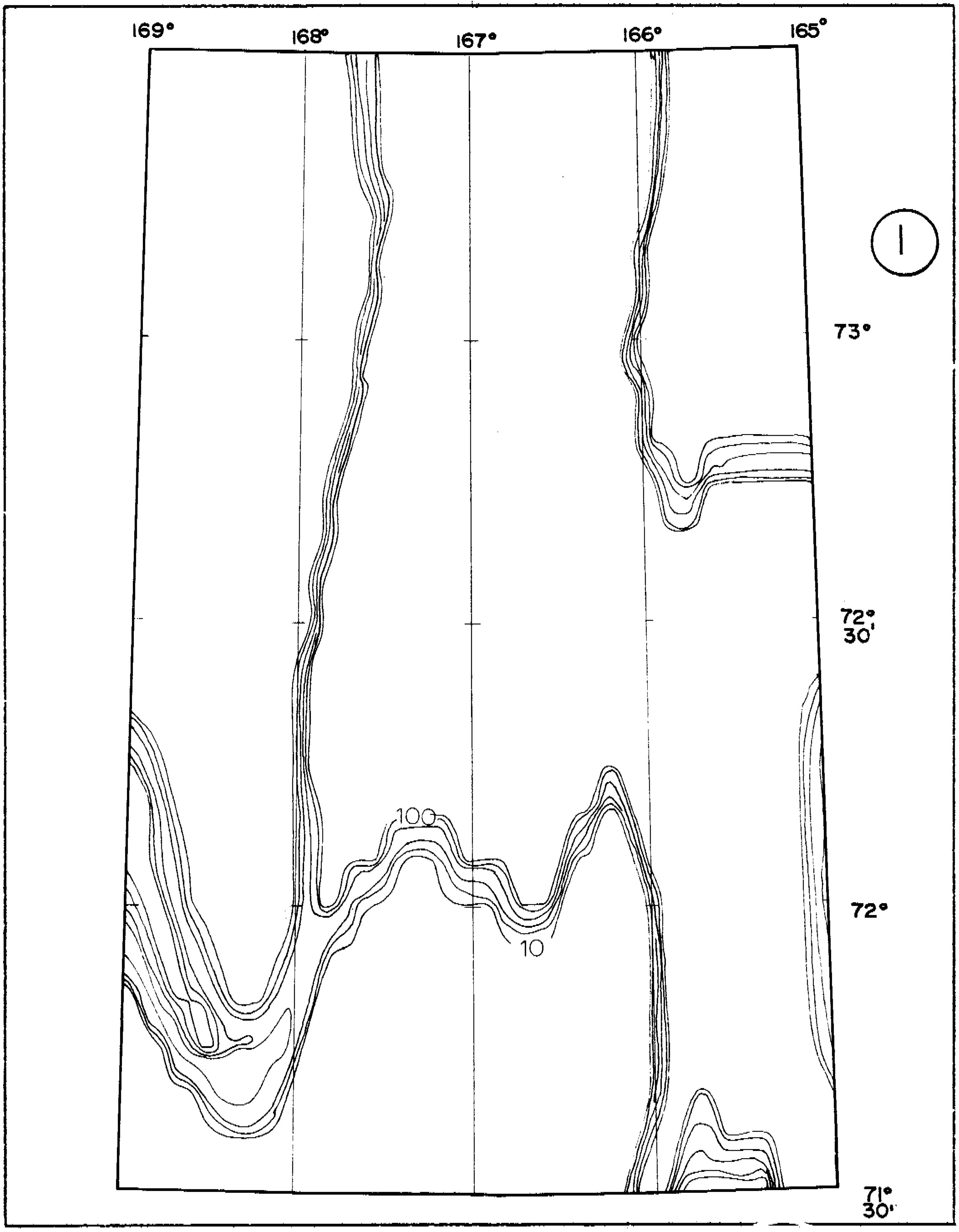
A DERIVED MAP FOR SUBMARINE PERMAFROST PREDICTION

PROBABILITY IN %

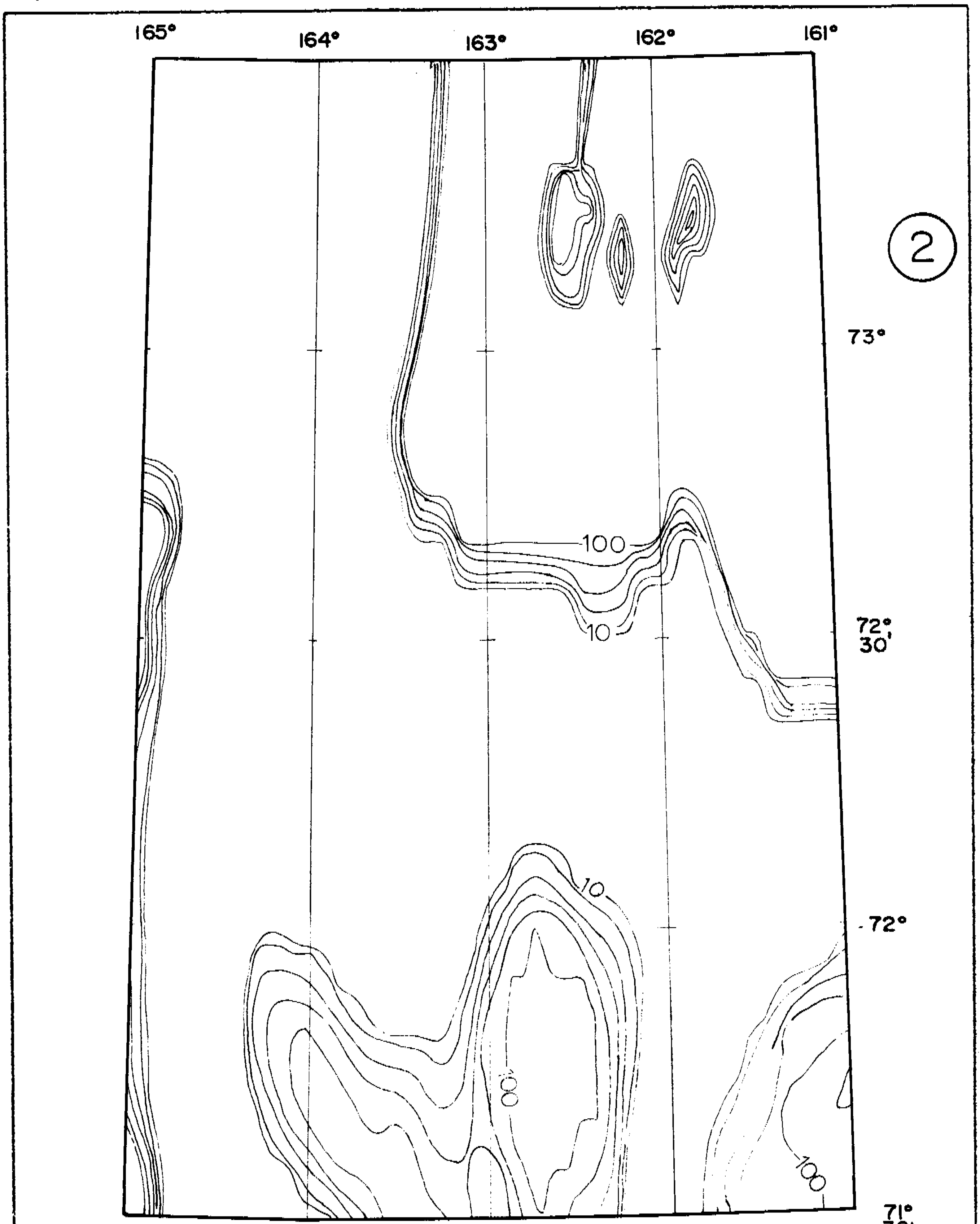
SCALE — 1:1,000,000

GEOGRAPHIC BASED INFORMATION MANAGEMENT SYSTEM FOR PERMAFROST IN THE CHUKCHI AND BEAUFORT SEAS

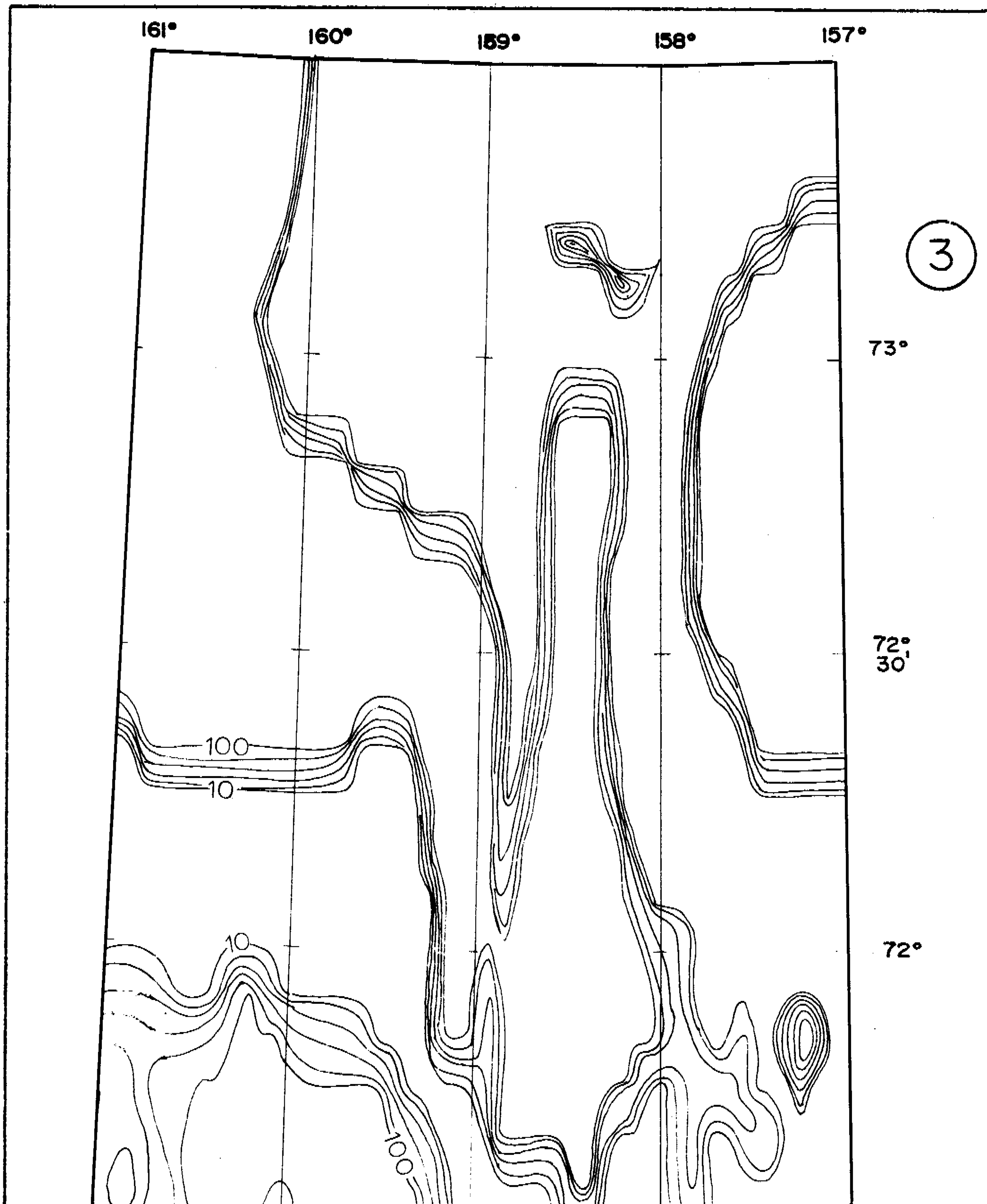
PROBABILITY OF SUPERCOOLING



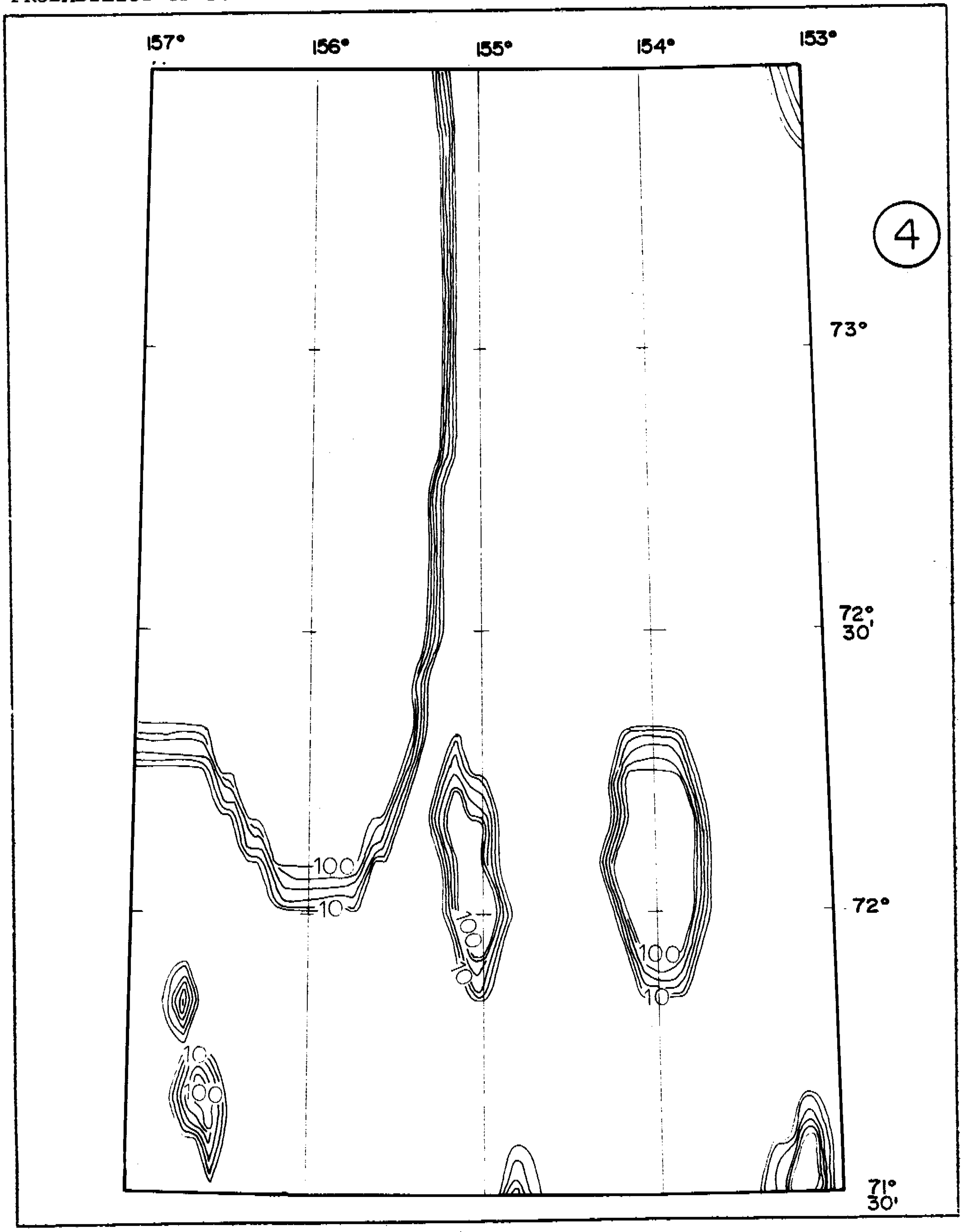
PROBABILITY OF SUPERCOOLING



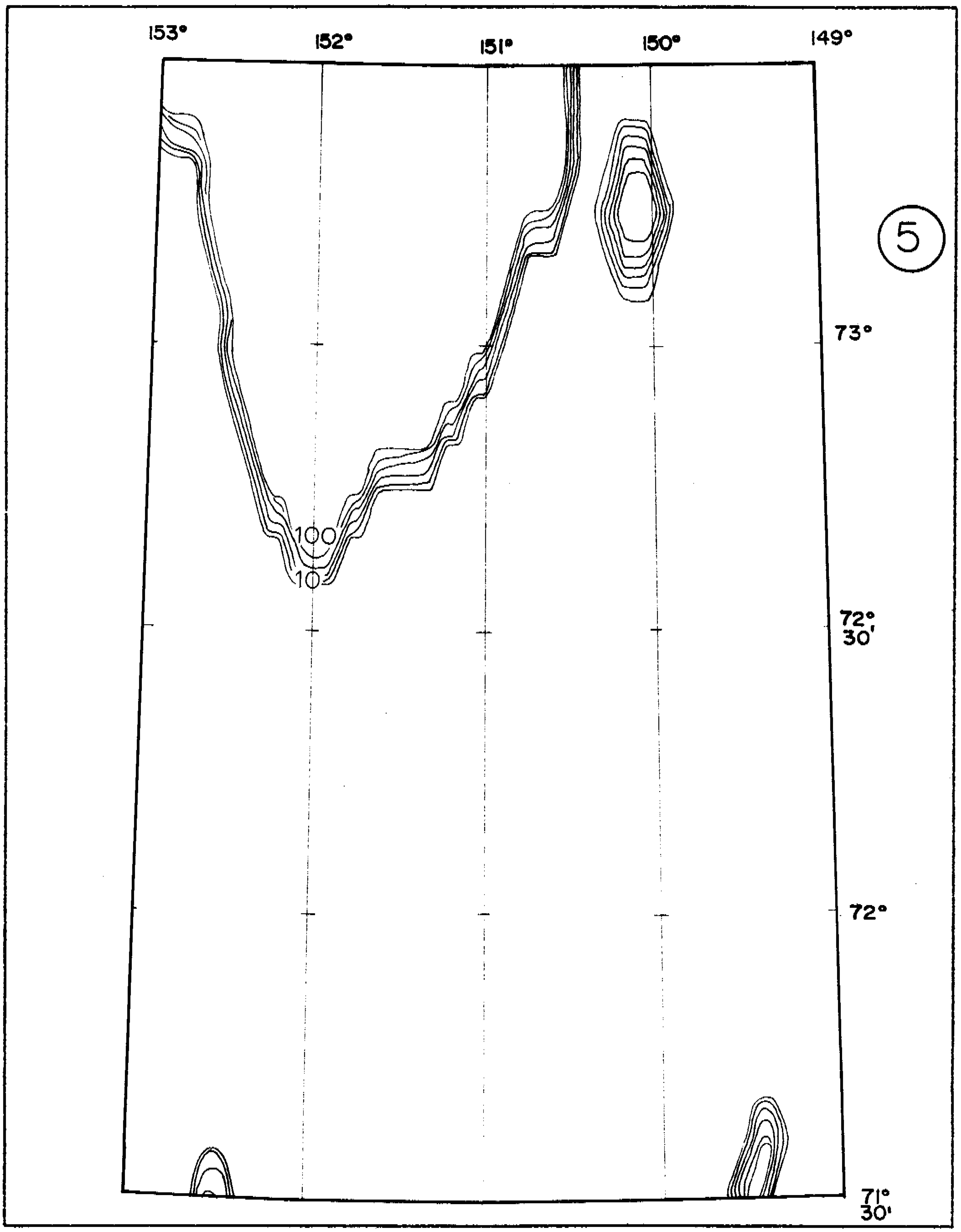
PROBABILITY OF SUPERCOOLING



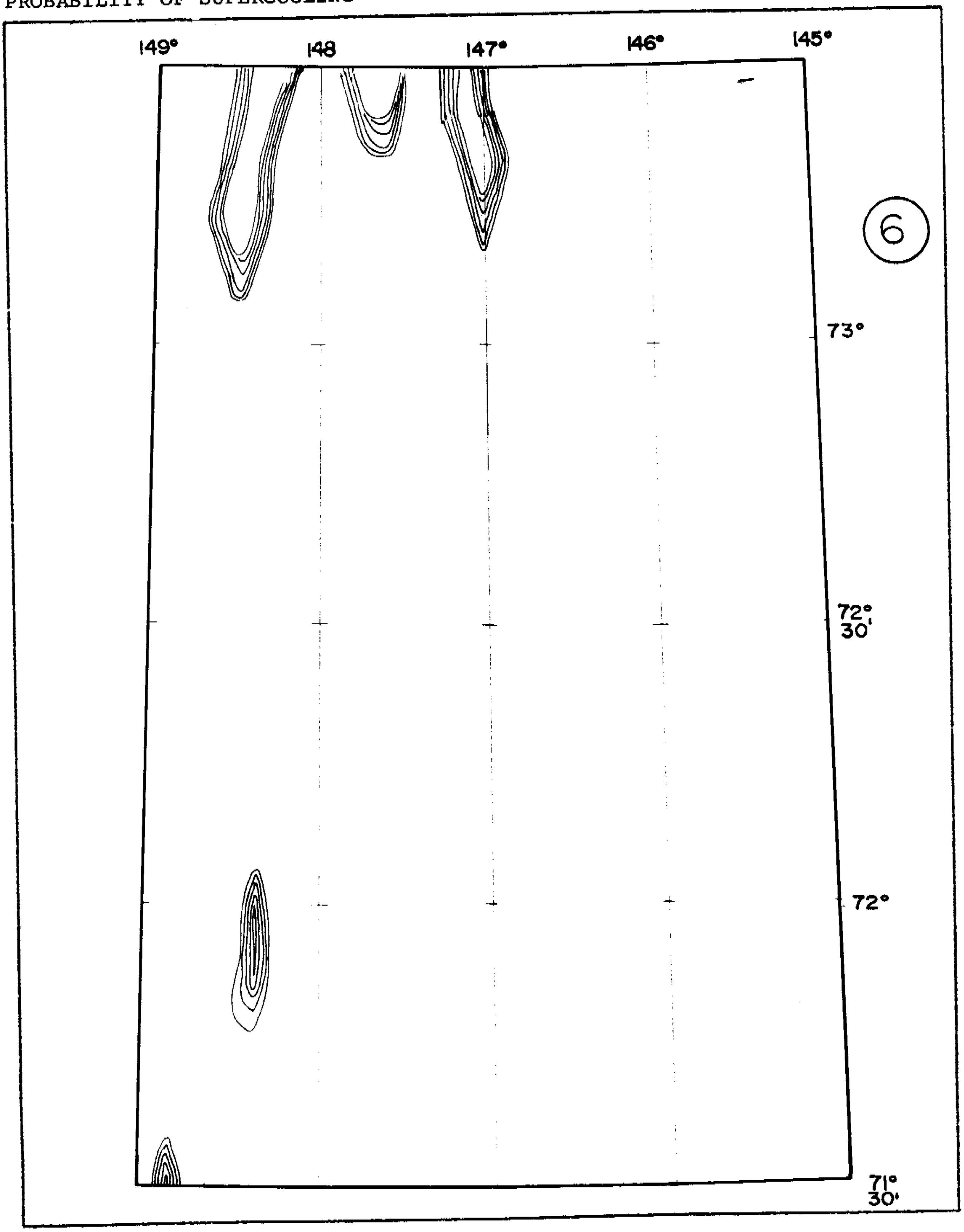
PROBABILITY OF SUPERCOOLING



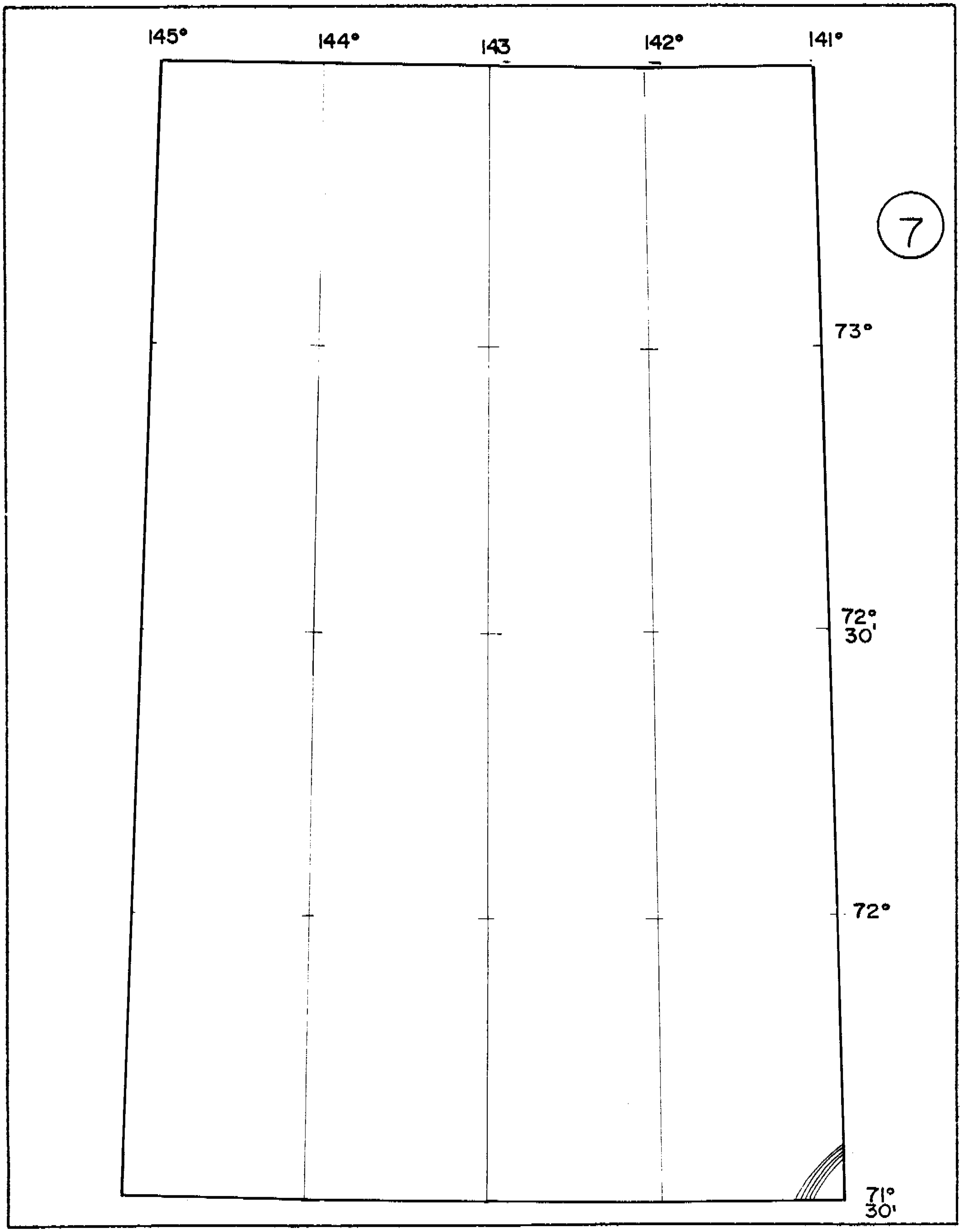
PROBABILITY OF SUPERCOOLING



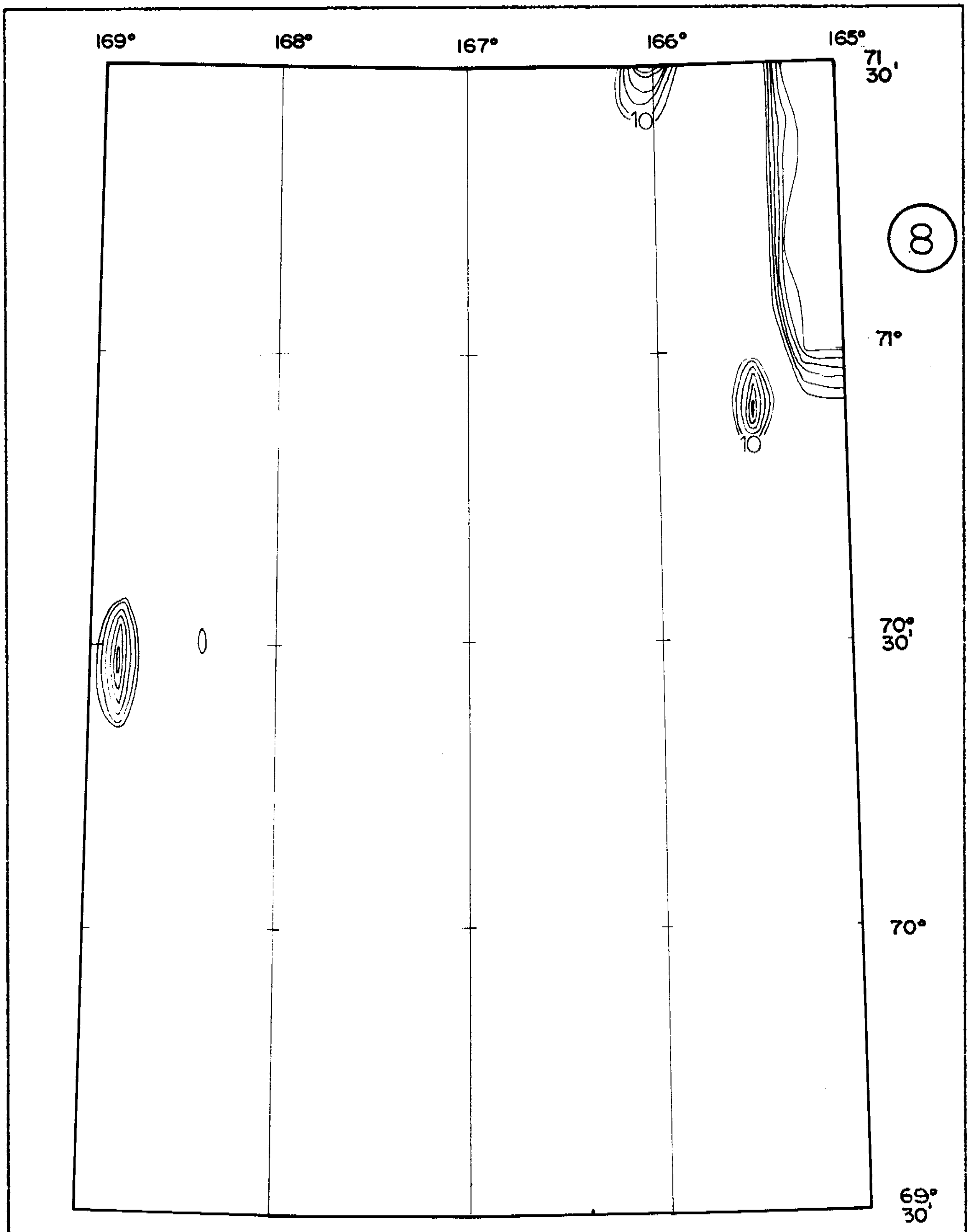
PROBABILITY OF SUPERCOOLING



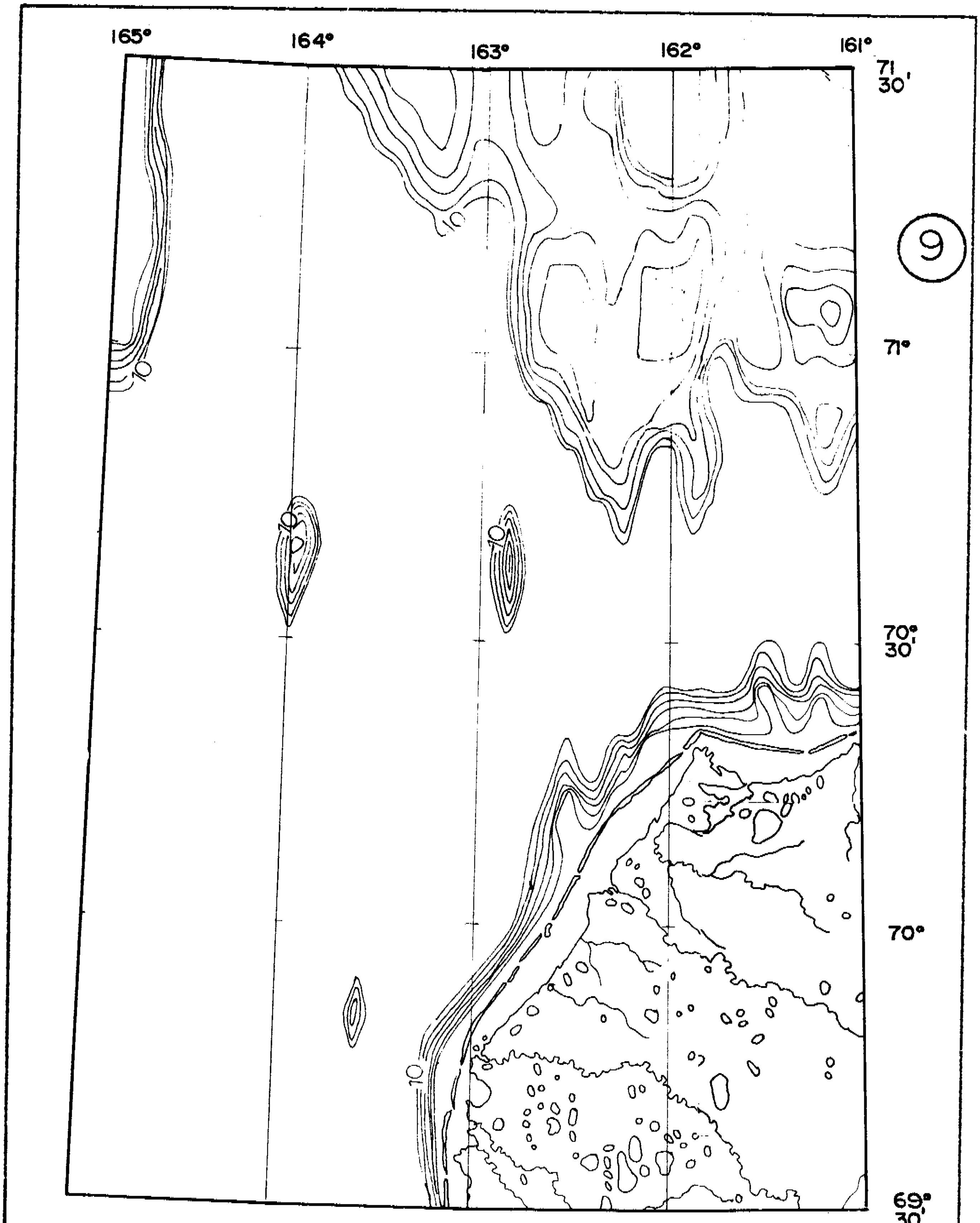
PROBABILITY OF SUPERCOOLING

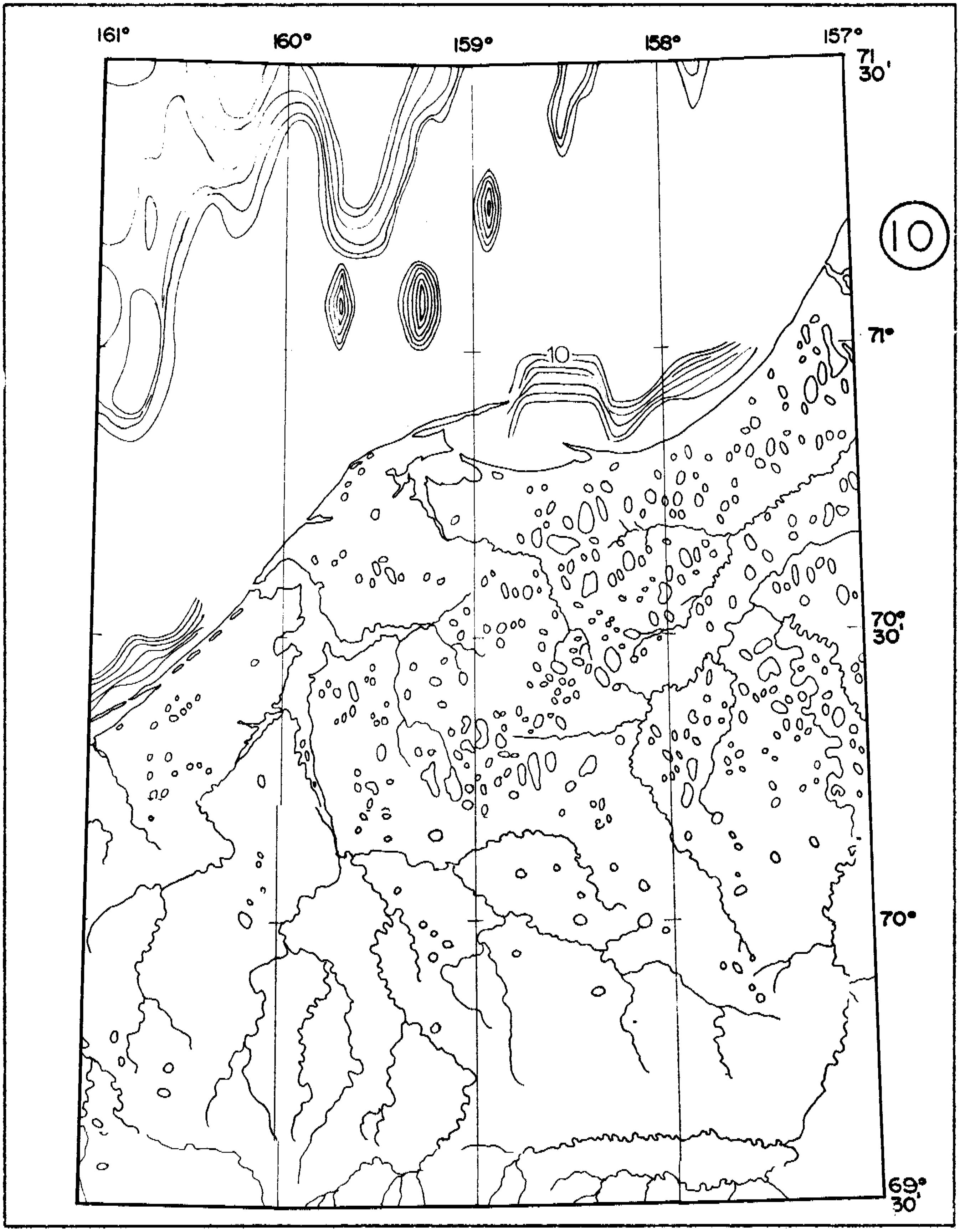


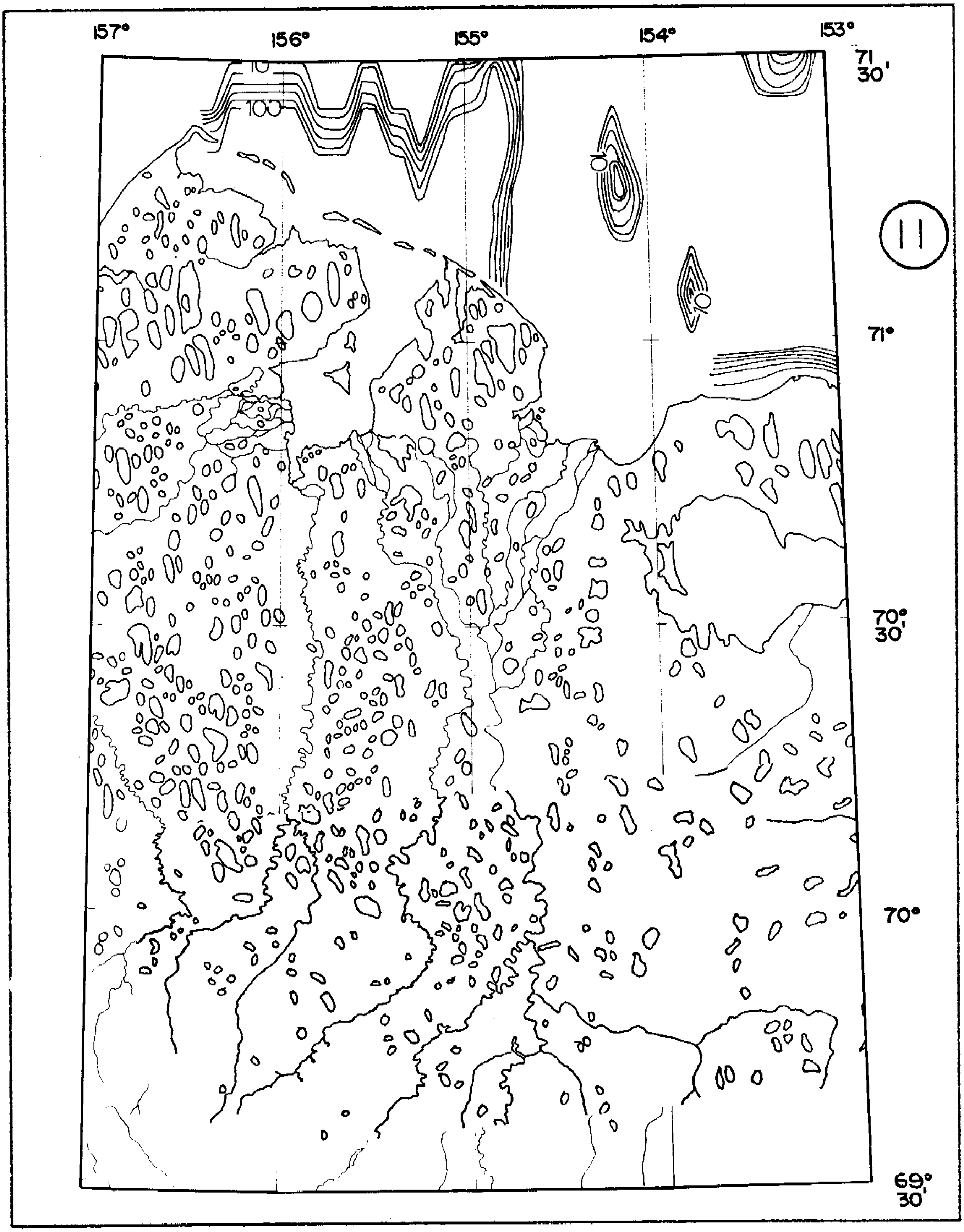
PROBABILITY OF SUPERCOOLING



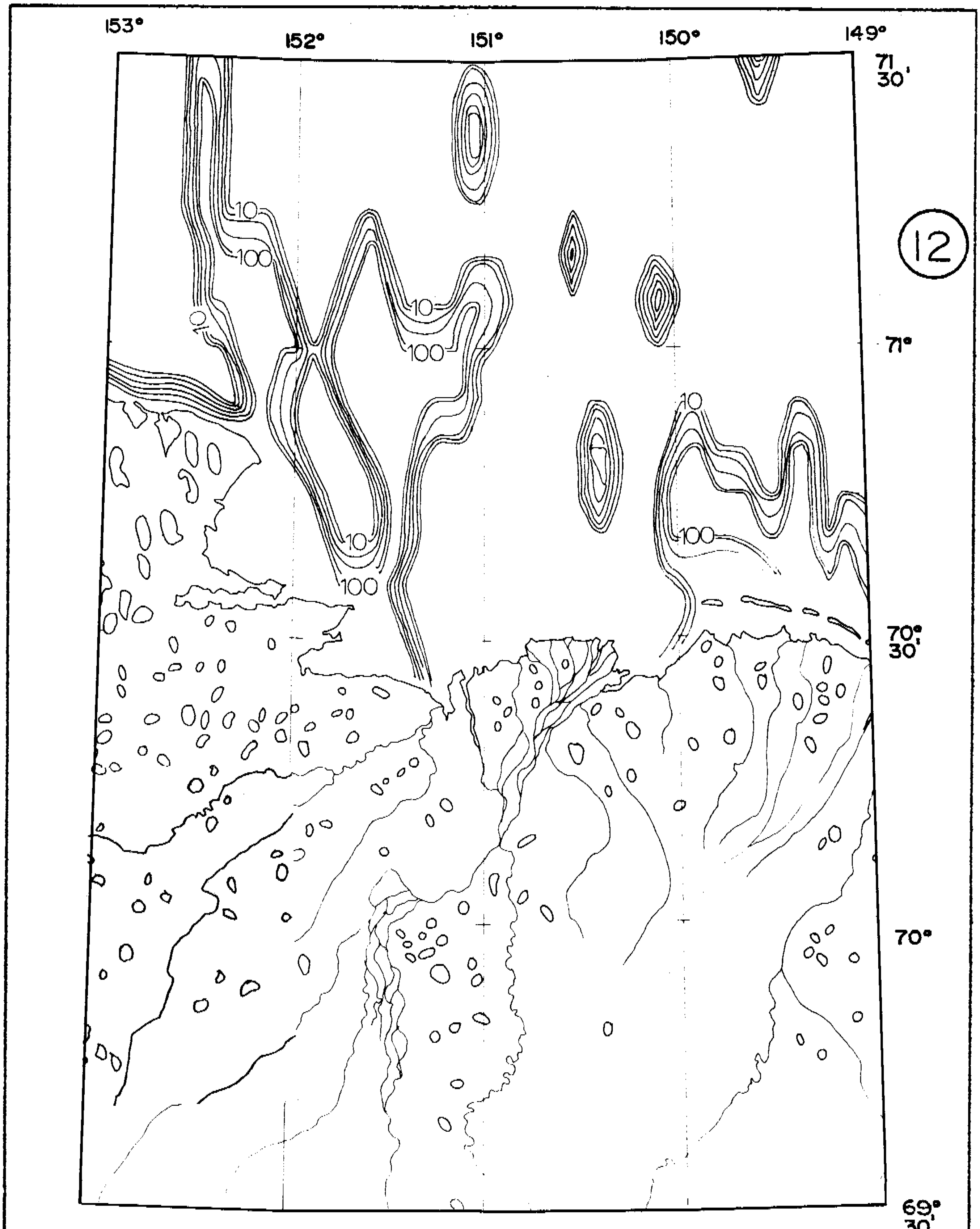
PROBABILITY OF SUPERCOOLING



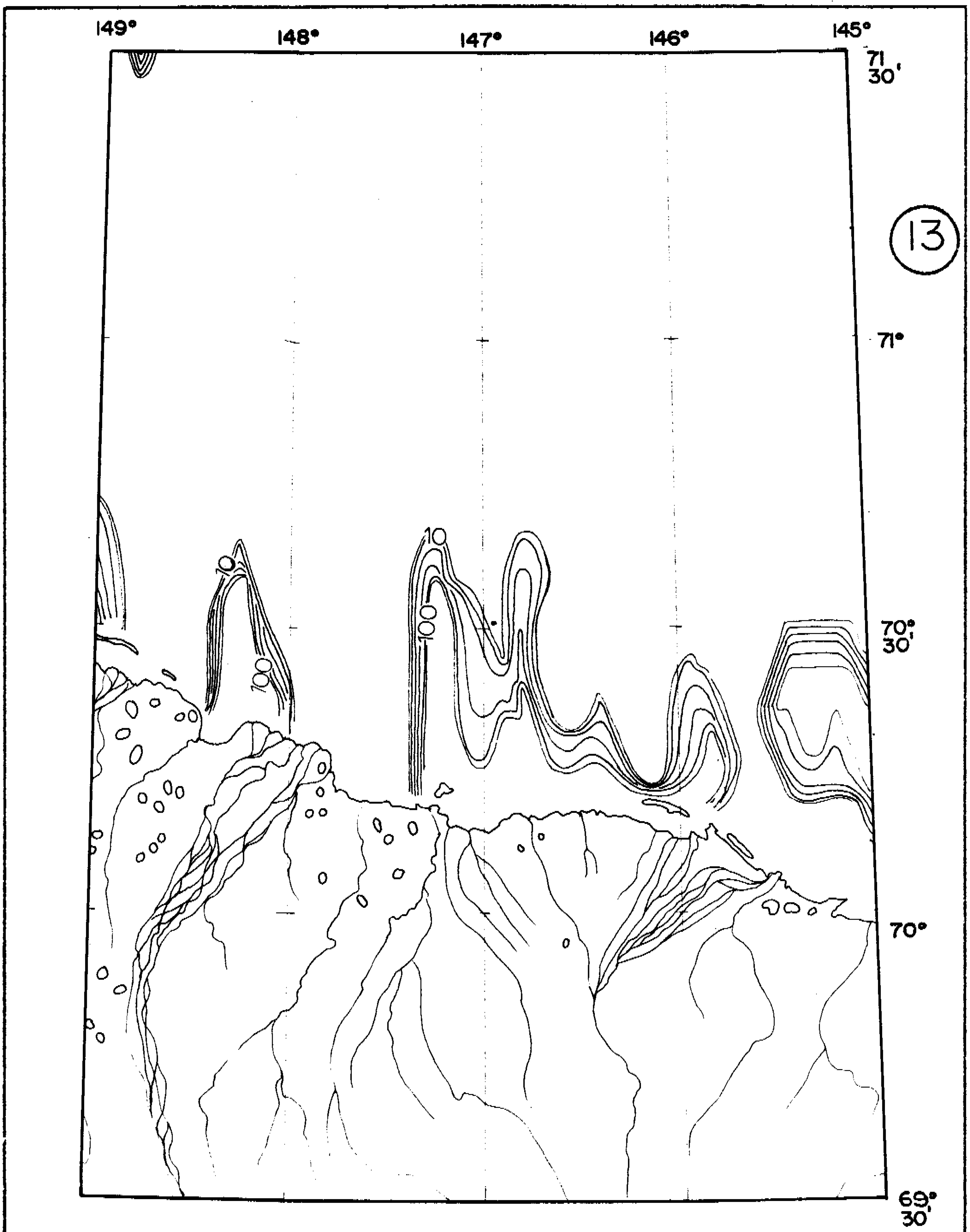

161°
160°
159°
158°
157°
71 30'
10
71°
70° 30'
70°
69° 30'
10


157°
156°
155°
154°
153°
71
30'
71°
70°
30'
70°
69°
30'
10
100
11

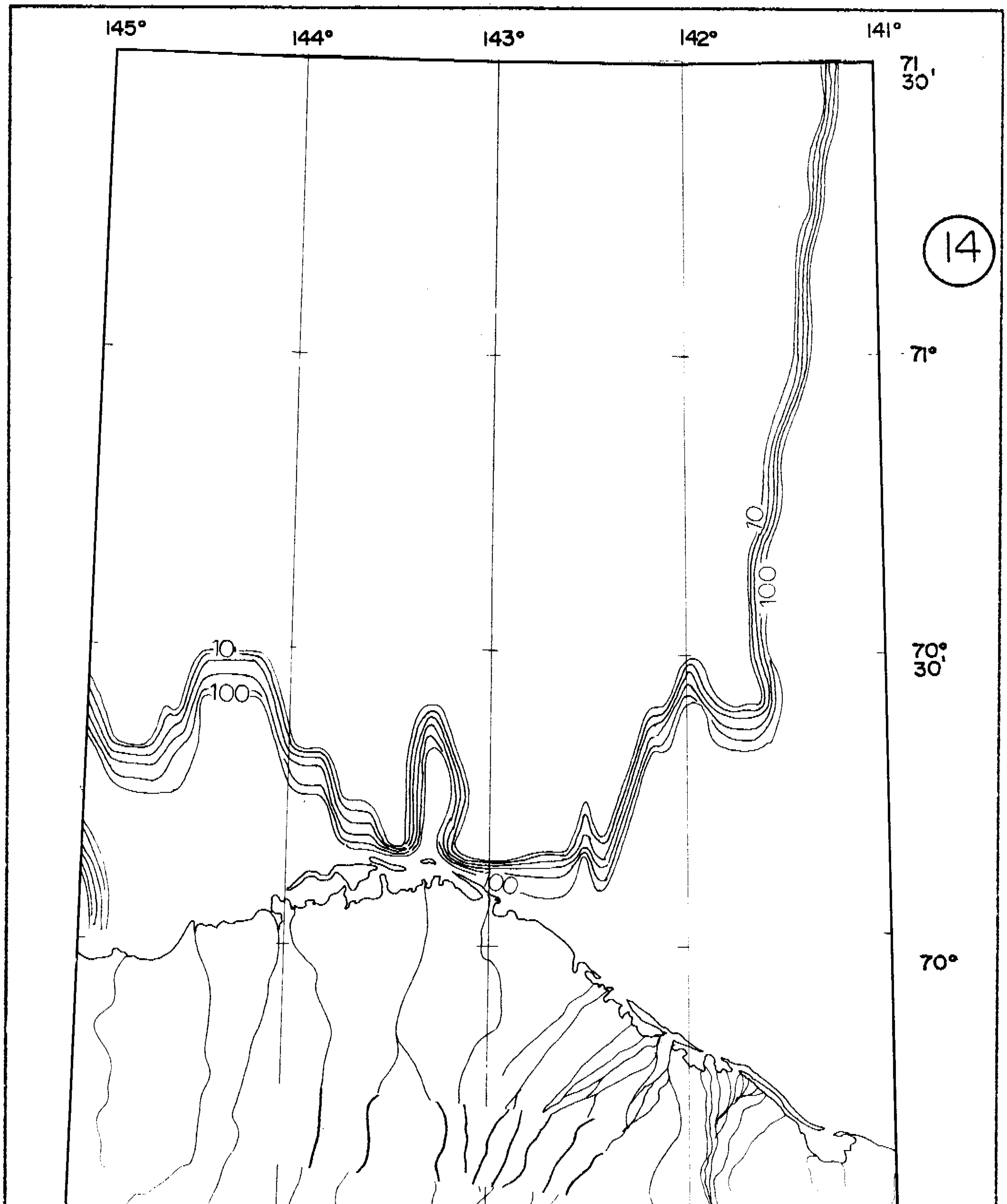
PROBABILITY OF SUPERCOOLING



PROBABILITY OF SUPERCOOLING



PROBABILITY OF SUPERCOOLING



VI. A Short Summary of the Materials on Arctic Submarine Permafrost on the Eurasiatic Shelf

According to the time-table of the project, the first part of the data on submarine permafrost of the Arctic Shelf of Eurasia has already been described. This part included the data on submarine permafrost regional distribution, composition and structure, history of development, paelogeographical conditions (changing of the sea level, regressions and transgressions, Pleistocene and recent tectonics, paleoclimatic data), and, in part, the data on geological, geomorphological, and hydrological environments (some thermal characteristics of the sea water).

These materials are described in the Quarterly Report for April-June (1977: 37-83), in the Quarterly Report for July-September (1977: 3-93), in the Quarterly Report for October-December (1977: 75-95), and includes also 15 tables and 79 figures.

The formation history of the cryogenic series in the territory of the USSR, including the series transformed by sea water and lying subaqually, was described recently by Fotiev (1976)* (Fig.4 (80)). This scientist distinguished four stages in the natural evolution of the Northern Euroasia (after A.A. Velitchko, 1973)**. According to his opinion, in the central, northern, and northeastern regions of the Asian part of the USSR, the average negative annual temperature of the air, which caused the formation of cryogenic series, occurred in the end of the first stage (about 0,7 x 10^6 yr. BP). The second stage (700,000 to 30,000 yr. BP) was marked by a freezing of rocks in the European part as well, but here and in the south of the Asian part of the country, the epochs of the perennial freezing were repeatedly followed by the epochs of melting. During the third stage (30,000 to 9,000 yr. BP) a homogenous

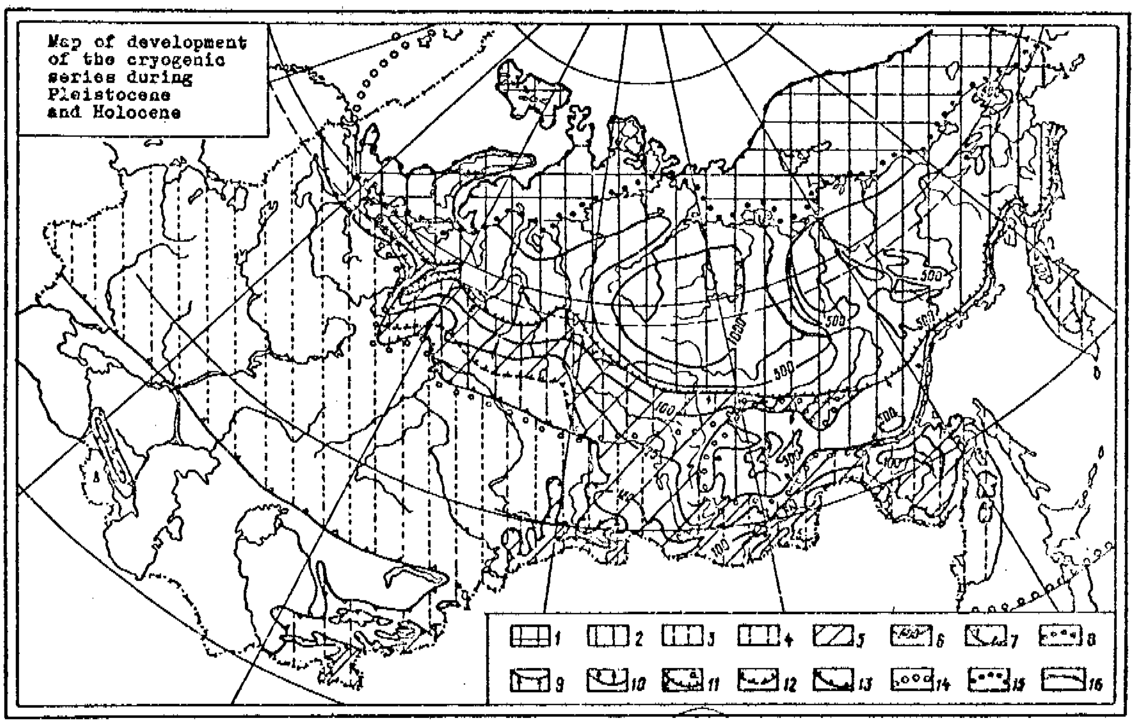
*S.M. Fotiev "Formation history of the cryogenic series in the territory of the USSR" International Geography, 1976, Geomorphology and Paleogeography, Moskva, 1976.

**A.A. Velichko " Prirodny process Pleistocena" Na uka Moskva, 1973.(Natural Process of the Pleistocene) sharp continental climate developed there over the Northern Hemisphere. According to Fotiev (1976), it was in the epoch of the chief climatic minimum of Pleistocene that the severest geocryological environment formed up there on the huge territory of Euroasia. Rocks on the entire territory cool down to the lowest negative temperatures. The cryogenic area reaches its maximum expanding not only because of perennial freezing of the rocks in the low latitudes, but in the high latitudes as well, where the huge area of the land had emerged from the sea level due to a sea regression. S.M. Fotiev thinks that during the fourth stage, because of a less severe and less continental climate with increased precipitation, the cryogenic series began to degrade and this degradation reached its maximum about 4,500 yr. BP. Along the northern margin of the cryogenic area, due to the sea transgression, the sea waters began to change the cryogenic series formed in the subaerial conditions. Both on land and on sea the natural complexes changed more essentially in the European sector of Euroasia affected by the Atlantic. To the north the melted rocks became thinner down to complete disappearance. In the northern and north-eastern regions the temperature at that time increased only within the negative values.

A new stage of perennial freezing began during the Late Holocene. The southern boundary of the cryogenic area within the limits of the platform again moved to the south: in the European part of the USSR to 150-200km, in its Asian part - to over 1000km.

Taking into account the history of the perennial freezing of rocks and considering also the warm epochs of Holocene, S.M. Fotiev distinguishes two geocryological zones, namely, the northern and the southern ones, and identifies them within the recent area of cryogenic region. Their boundary

Fig 4(80) After S.M.Fotiev,1976



1 - 4 The area of distribution of the cryogenic series of Pleistocene age. 1 - transformed by sea waters and lying subaqually; 2 - not degraded from the surface during Holocene; 3 - degraded from the surface during Holocene (the roof is at the depth of 80 - 300 m); 4 - completely degraded during Holocene.

5 - the distribution area of the cryogenic series of the Upper Holocene age.

6 - the thickness isolines of the cryogenic series.

Boundaries: 7 - the cryogenic regions during Pleistocene climatic minimum (after A.A.Velichko), 8 - areas of completely degraded cryogenic series during Holocene; areas of the cryogenic series which did not degraded from the surface. 9 - latitudinal and zonal heat exchange peculiarities; 10 - altitudinal and zonal heat exchange peculiarities; 11 - between the Northern (a) and Southern (b) geocryological zones;

12 - the distribution area of the Upper Holocene cryogenic series in the West Siberian and Pechorian Basins (after Baulin V.V. and Oberman N.G.)

13 - the area of the recent cryogenic series (after Baranov I.Ya. Baulin V.V.; Fotiev S.M.).

14 - the area of marine ices during Upper Pleistocene (after Velichko A.A.).

15 - the land area during Upper Pleistocene (after Nikolaev N.N.)

16 - the land boundary during Upper Pleistocene

coincides with the line that distinguishes the limits of the cryogenic series of Pleistocene from those of Late Holocene. This boundary passes between the territories with essentially different parameters of the cryogenic series. In the Northern zone the cryogenic series has been existing continuously during scores and hundred thousands of years. Here it is world-wide distributed and is very thick (from 150 to 1500m and even more). It has low temperature (from -2 to -16^{O}C). In the southern zone (except the relicts) the cryogenic series has been continuously existed during some thousand years. Its distribution is of very interrupted and island nature. Its thickness is rather small (from 10 to 100m, very seldom more), its rock temperature is rather high (from 0 to -2^{O}C). On the S.M. Fotiev "map of development of the cryogenic series during Pleistocene and Holocene" (Fig. 80) the series transformed by sea waters and lying subaqually, extend all over the Euroasiatic part of the Arctic shelf about 400-600km to the north from the present Arctic ocean shoreline. The area of the submarine cryogenic series under the ocean according to Fotiev's evaluation is much more than after Baranov (1960).

We see that S.M. Fotiev defines the third stage (30 - 9,000 yr. BP) as a time "when the huge area of the land has merged from the sea level due to a sea regression". The materials given in our two quarterly reports (July-September and September-December, 1977) show also that paleogeographical conditions of the shelf during the last glaciation time (25-10,000 years BP) were favorable for submarine permafrost development. However, during the maximal (Illinoian) glaciation epoch (about 250,000 yr. BP) the conditions of the shelf developed another way possibly because of the cold marine transgression in the Arctic ocean, induced by its isolation from the World ocean.

to be continued

V. List of Figures

VI. List of Tables

Annual Report

Contract Number: 03-7-022-35139
Research Unit Number: 527
Reporting Period: 3/1/77 - 3/31/78

OCSEAP Data Processing Services

Harold Petersen, Jr.
Pastore Laboratory
University of Rhode Island
Kingston, Rhode Island
02881

1 April 1978

BACKGROUND

The OCSEA Program includes a variety of investigations leading to the acquisition of data by several techniques including the simple pencil and paper, discrete sample collection, automated readouts such as strip chart recordings, and photographic records. In all cases, an ensuing task is the conversion of data from one or more of these media to a medium and format acceptable to the Program, and submission of the data to a project office (PO) for ultimate archival in national archival centers. After the data have reached final acceptance, they can be used in the generation of many products.

The format used for data sent to the archiving centers reflects the collective opinion of both the scientists in the field and the data processing community. Several formats have been developed to cover the data types which make up the Program. In general, data of a given type, that is data which are to be coded in a given format, are collected by more than one research unit (RU). All data of a given type are to be treated in common, independent of RU, for purposes of product generation and other use, hence a common interpretation of each data field is a cornerstone of the Program. Two situations have arisen, however, which make it difficult to approach the use of certain types of data in this manner.

The first is concerned with the fact that that not all RU's have access to those types of data processing facilities which are necessary to encode data according to Program specifications. Data submitted in the resulting "hybrid" formats are not directly usable in the general approach, and must either be considered in a unique fashion or converted to the more acceptable format prior to use.

The second situation arises out of the dynamic nature of the Program itself. While the characteristics of a given format may be agreed upon at project initiation, experience gained from its use during field operations often results in the need to modify the format. Such changes are often minor, but at times can be so major as to result in reassessment of the experiment itself, with consequent adoption of a new format.

As a result of these situations, there developed the need for data processing assistance at the PO level. This report summarizes the services of this type provided by RU 527 to the Juneau Project Office (JPO) during the past year, and also indicates those activities which were carried out during the most recent quarter.

OBJECTIVES

This RU has provided data processing services to JPO since March 1977. The type of data requiring special attention during this time period is File Type 033 - Ship and Aircraft Census (Marine Birds). This is one of seven bird data file types, and has been collected by

Dr. Calvin Lensink, U.S. Fish and Wildlife Service (FWS), Dr. George Hunt, University of California at Irvine, Dr. Juan Guzman, University of Calgary Department of Biology, and Dr. John Wiens, Oregon State University Department of Zoology.

From 1975 through 1977, approximately 105 field operations were carried out during which data of this type were collected. Two formats were used for its submission to JPO. One of these was the hybrid format described above. It originated with FWS, and is referred to as the FWS format in this report. The other format is that approved by the Program, and since data of this type are to be archived at the National Oceanic Data Center, it is called the NODC format. Both formats contain number data fields and code data fields. In many instances, RU's have extended the contents of code groups to accommodate additional findings, or established other data fields to accommodate previously uncollected data. In addition to extensions of these types, some data fields have not been interpreted in a universally accepted fashion, leading to multiply defined data fields. Lastly, several field entries have been found to contain data of unreasonable magnitude or codes which were not part of either approved or extended code groups.

The objective of this project has been to quality control and convert all File Type 033 data into NODC format. This objective encompasses several operations, including the relocation of data fields, truncation of units, conversion of units, validation of codes, and range and relational checking of number fields.

Procedures have been established which allow for these operations to be carried out, and are described in the enclosed "OCSEAP Data Validation Procedures for File Type 033, Release 3; March 31, 1978." These procedures involve the participation of the appropriate principal investigator (PI) or his designate who receives the indicated listings and resolves error citations. Also, those codes or number field extentions or alternate interpretations made by RU's are brought to the attention of Program representatives for possible adoption. In this way, the data are validated and format compliance is assured in a manner which results in a uniform product while at the same time providing for format enhancements considered to be of value to the Program.

SUMMARY OF RESULTS FOR THE YEAR

Data sets received during the first few months of the year were used to establish the range and type of validation procedures which were necessary. Such procedures were in place by the second quarter, and have been continually refined based on experience gained from processing additional data. Improvements were made in the approach and in the types and appearance of the validation products CODEPULL and LOGLIST. A product developed during the second and third quarter presents a report summarizing the status of each data set being processed. A copy of this report, FOSREPT, is enclosed and shows the status of all data received during the past year. A primary activity during both the third and fourth quarters was the generation of the validation products for all data received, transmittal of these products to the appropriate PI's, and editing of the data sets when the products were returned. Also during this time, resolution of many code groups and some data field extensions was made, resulting in a much more extensive set of Program-approved codes. During the fourth quarter, in addition to validation product generation and data editing, procedures were implemented for the last step in the validation procedure, that of conversion of data in FWS format to NODC format.

FOURTH QUARTER RESULTS

A more detailed accounting of activities pursued during the fourth quarter includes the following:

1. Receipt of New Data and Generation of Validation Products

Two tapes containing data from six field operations were received from FWS (RU 337) during the quarter. Data for field operations FW7028, FW7031, FW7036, and FW7045 were coded in NODC format on the first tape. The record length was 83, and all data were contained in a single file. Field operation FW7036, containing a total of 2,274 records, was recorded in two parts. The first part, containing 806 records, preceded data from the other three field operations, and the remaining 1,368 records followed. The two parts were combined before standard procedures were begun. Validation products CODEPULL and LOGLIST were generated and sent to the RU, and the files edited upon receipt of corrections. The data were then recorded on two tapes, one of which was sent to the RU, the other to NODC. Data Definition Forms (DDF's) were received for these operations, and included with the tape to NODC.

The second tape contained data for one field operation, FW6086, and was coded in FWS format. This operation contained data for more than 1000 stations. Only the first three bytes of the five byte station field were used by the RU for the actual station number, the remaining two bytes being used to encode the type of transect on which the station was taken. In order to accommodate data for stations beyond 999, the file ID field was incremented. Thus, although the data apply to one operation, it has been coded as two, with file ID's FW6086 and FW6186. A DDF has been received for FW6086, but not for FW6186. Validation products have been generated, transmitted to, and received from the RU. Data for FW6086 have been edited and are now ready for conversion to NODC format. Data for FW6186 require more editing, and new copies of validation products have been returned to RU 337.

2. Editing of Other Data Sets

Several other data sets coded in FWS format have been edited during this quarter, and are now ready for conversion to NODC format. These include FW5004, FW5009, FW5013, FW5014, FW5018, FW5023, FW5024, FW5026, FW5027, FW5035, and FW6066. In addition, the following data sets, also in FWS format, are in the final editing stage: FW5011, FW5021, FW5033, FW6008, FW6027, FW6050, FW6051, FW6064, FW6074, FW6083, FW6089, and FW6094. Finally, data sets from RU 108, which are in NODC format, await resolution of format exceptions cited in item 6 below. These data sets are W05220, W05221, W05310, W05311, W05325, W06211, W06221, W16140, W16150, W16161, W26140, and W36070.

3. Update of Data Validation Procedures for File Type 033

Several new programs or procedure modifications have been made for File Type 033 data. These include:

ZEROFIL - This is a new program for NODC-formatted data which fills the sequence number and station number fields with leading zeros, and also checks these fields for trailing blanks. The changes are made to assist NODC in archival activities. They are carried out by the CONVERSION program when FWS-formatted data are converted into NODC format, but since data received in NODC format undergo no conversion, a separate step is needed.

LOGLIST - The start latitude and longitude fields have been checked for whole degree ranges in the past. These have been modified such that degree, minute, tenths of minute or second, and hemisphere fields are now range-checked for both start and end latitude and longitude.

The barometric pressure trend field is now checked for an entry of +, -, 0, or blank.

The file type field is now checked for an entry of 033. The file ID is now listed on LOGLIST output. Also, the file ID of all subsequent records must match that on the first record.

The conversion of swell height from feet (FWS format) to meters (NODC format) is now made by multiplying the value in feet by 3.048 and then rounding to the nearest tenth of a meter.

During the establishment of field relocations and translations, a tentative assignment was made for the conversion of wave height in FWS format to sea state code in NODC format. This assignment has now been verified.

A policy was established through discussion with Program personnel in which final validation products as well as a tape of data in NODC format are to be sent to the contributing RU when a tape of the data is sent to NODC. This will provide the RU an opportunity to make a final review of the data and notify the archiving center should any problems arise. A time limit of one month was set for this notification period.

4. Conversion Procedure

During this quarter, the conversion routines listed in Figure 5 of the "OCSEAP Data Validation Procedures for File Type 033" have been implemented. The procedure has been run on data sets for field operations FW5030 and FW5032. Output has been sent to RU 337 for verification purposes. When returned and any required modifications made, the data sets which have received final editing and are ready for conversion will be processed and delivered to NODC and RU 337 as described in item 3 above.

5. Completed Data Sets

Validation steps have been completed and data sent to the RU and NODC for a total of eight field operations during this quarter, all of which were originally coded in NODC format. They include the four operations mentioned in item 1 above plus FW7034, FW7035, FW7042, and FW7046. The last four data sets received final editing during the last quarter, and were mailed during this quarter. While the changes to LOGLIST referenced in item 3 were made after these data were delivered, other checks referenced in item 3 were made on this data.

6. Data from RU 108

Two extensions to the NODC format have been made by this RU, and still await resolution. The first of these involves the use of the entry 999 in the Distance to Birds field, card type 5, columns 45-47 and in the Light Level field, card type 2, columns 65-67. This entry has been used to signify a number greater than that which could be encoded in the three digit field, and not a numeric value of 999. When used in this manner, it becomes a code in a field which is interpreted as a numeric, and would be mistakenly assumed to be an actual reading. It has been suggested, but not yet approved at the Program level, that the former field entry be converted to blanks and a 7 (bird on horizon) code be placed in the Outside Zone field, column 83 of card type 5, when data of this type are encountered. Also suggested was that a comment card (card type 4) be generated for each case in which the latter field, Light Level, was exceeded, with concurrent replacement of 999 in this field with blanks.

The second extension occurs with the Weather Code field, card type 2, columns 55-56, and again with the Light Level field. Each of these fields has been extended by the use of the letters A - G to describe the effect of these parameters on the observers ability to identify birds. It has been suggested that these data be converted to comment cards and these field entries be converted to blanks.

OCSEAP DATA VALIDATION PROCEDURES
For File Type 033
(Release 3; March 31, 1978)

In order to provide data validation for the File Type 033 data from the OCSEAP Project, four areas need consideration. These include card type validation, data range and relational parameter checking, and format, code, or unit conversion. Since this is a multi-card type file, the card type designation must first be verified (an incorrect value would lead to the improper interpretation of remaining fields on that card), along with the occurrence and sequencing of card types. Second, codes used in each code field (ex. - a two digit weather code) must be compared against all valid codes for that field for verification. Next, range checks must be carried out on all appropriate fields (ex. - sea surface temperature should be between certain upper and lower limits), and relational checks on interrelated fields (ex. - wet bulb temperature readings should be less than or equal to corresponding dry bulb temperature readings). Lastly, if the data are not coded in NODC format, the necessary format changes must be carried out.

Card type designation and sequencing, and valid code field contents are checked in a program called CODEPULL. First the card type is verified. This must be between one and five, and certain other fields are also checked for further verification (ex. - a type five card must have a taxonomic code and a sequence number). Extra cards and missing cards are detected with the sequencing routine. This checks that the cards are in order, that each station has a unique one card followed by a unique two card, and that there are no duplicated or skipped sequence numbers. Then the appropriate code tables are called, and each code of each code field is compared with the appropriate table containing all valid codes for that field.

The output from CODEPULL is a listing of the file in order by station number. Any errors detected are flagged with a brief descriptive message, including a record count for ease in correcting, and, in the case of a bad code, a string of asterisks under the field. Following the file listing is a summary of all the codes used for each code field and their definitions. For a bad code, the record in which it appeared replaces the definition. Figure 1 is a list of the code groups checked and Figure 2 is a portion of a CODEPULL listing.

Data range and relational checking are done in a program called LOGLIST. This verifies the data coded as raw numbers, rather than as codes. The contents of the data fields are first checked for numerics, signs, and leading zeros and then compared to upper and lower limits appropriate to each field. In some cases the value of one field is dependent on the value of another field and these relational checks are also made.

Figure 1
File Type 033 Code Groups Validated

Code Field	FWS Columns	NODC Columns
Card Type 1		
Platform Type	67-68	69
Ship Activity	70	71
Sampling Technique	69	70
Collection Code	-	72
Zone Scheme	-	73
Angle of View	-	74
Observation Conditions	-	75
Speed Type	60	-
O.B.S. Region	28-30	-
Observer Location	74	-
Card Type 2		
Wind Direction	-	45-46
Swell Direction	-	50-51
Sea State	-	49
Weather	16-17	55-56
Cloud Type	-	57
Cloud Amount	-	58
Water Color	-	59
Visibility	18	61
Sun Direction	-	62
Glare Intensity	61	63
Glare Area	62	64
Moon Phase	-	68
Tide Height	-	69
Debris	-	80
Observation Conditions	19	-
Turbidity	-	63
Card Type 3		
Ice Cover	16,23,35	16,22
Ice Pattern/Description	17, 24	32
Ice Type	18, 25	17, 23
Ice Form	19,26,34	18, 24
Ice Relief	20, 27	19, 25
Ice Thickness	21, 28	20, 26
Ice Melting Stage	22, 29	21, 27
Open Water Type	30	28
Ice Direction	31, 36	29, 33
Distance	32,37,40	30, 34
Lead/Polyna Width	33, 39	31
Ship in Lead/Polyna Location	38	-
Collection Code	41,42,43	35,36,37
Mammal Trace	44, 45	38, 39
Pond Size	-	49
Card Type 5		
Age Class	50	32
Sex	51	33
Color Phase	52	34
Plumage	53	35
Molt	54	36

Code Field	FWS Columns	NODC Columns
Card Type 5 (cont.)		
Counting m	-	42
Reliability	-	43
Distance Measurement Type	-	44
Association Type	55-56	50
Behavior	46-47	56-57
Special Marks	62	58
Bird Condition	63	59
Food Source Association	-	60
Debris	74	71
Oil	-	72
Habitat	-	76, 77
Substrate Type	-	81
Cover Code	-	82
Outside Zone	-	83
Text Flag	77	-

Figure 2

Sample CODEPULL Listing

CODEPULL consists of two major sections.

Figure 2A is a page from the first section showing how the file is listed. It is sorted by Station, Card Type and Sequence Number and has dotted lines dividing the Stations. The errors flagged are "Bad Card Type" because the Card Type 4 has no sequence number; "Bad Sequence Number" because the sequence number field is not numeric; and "Bad Code" because the code entered is invalid.

Figure 2B is a portion of the second section. This first gives a summary of the number of each type of record found in the file, then a list of the codes used and appropriate definitions. For an invalid code the definition is replaced by the record number in which it appeared. This can be seen for the Weather Code on Card Type 2.

Figure 2A

```
                                        ***** CODEPULL *****

                                        FOR CRUISE FW7032


                       THE MARMAP INFORMATICN SYSTEM        OCSEAP - GULF OF ALASKA PROJECT


        *** CODEPULL - CRUISE FW7032


-----------------------------------------------------------------------------------------------------------------
                       033FW70321 1073595250N1492600W7705232105                  10+09 1119  6      4       30
                       033FW70322 1073 260                               2      03
RECORD #    3
TYPE 4 #    1  BAD CARD TYPE -->
                       033FW70324 1073 WAY UP BACK SIDE. SEE FIELD NOTES.

RECORD #    4
TYPE 4 #    2  BAD SEQUENCE# -->
                       033FW70324 1073 KIWH ALL 3 VERY GREY BACKS ONE FEMALE WITH NCTCH IN DORSAL HALF
                       033FW70325 1073  91290106              1                                     001  0
                       033FW70325 1073  9128020301            1                                     002  0
                       033FW70325 1073  9129010502            2                                     003  2
                       033FW70325 1073  9218021601       1    1         001                         004  0
                       033FW70325 1073  9218021601       2    4         001                         005  0
-----------------------------------------------------------------------------------------------------------------
                       033FW70321 1173595130N1492615W7705232115                  10+09 1120  6      4       30
RECORD #   11
TYPE 2 #    2  BAD CODE -->   033FW70322 1173 256    + 81                2       03
                                                                                 **
                       033FW70325 1173  9129011302            2     10          20                  001  0
                       033FW70325 1173  9128020301            1                 20                  002  0
                       033FW70325 1173  9129010301            4     10          20                  003  0
                       033FW70325 1173  91290106              2     10          20                  004  0
-----------------------------------------------------------------------------------------------------------------
                       033FW70321 1273595000N1492730W7705232125                  10+09 1118  6      4       30
                       033FW70322 1273 256    + 84                       2      03
                       033FW70325 1273  9128020103            1     09          20                  001  0
                       033FW70325 1273  9129010301            8     09          20                  002  0
                       033FW70325 1273  9127070301            3                 20                  003  0
                       033FW70325 1273  9109030201            2                 61                  004  0
                       033FW70325 1273  91290106              2                 20                  005  0
-----------------------------------------------------------------------------------------------------------------
                       033FW70321 1373594800N1492715W7705232135                  10+09 1118  6      3       30
RECORD #   24
TYPE 2 #    4  BAD CODE -->   033FW70322 1373 265                        3       03
                                                                                 **
                       033FW70325 1373  9128020103            4     09          20                  001  0
                       033FW70325 1373  9129011401            2     09          20                  002  0
                       033FW70325 1373  9129011302            2                 03                  003  0
                       033FW70325 1373  91290103              3     10          20                  004  0
                       033FW70325 1373  9129010601            2                 03                  005  0
-----------------------------------------------------------------------------------------------------------------
                       033FW70321 1473594600N1492715W7705232145                  10+09 1118  6      3       30
                       033FW70322 1473 220                               3      03
                       033FW70325 1473  9129011401            1                 20                  001  0
                       033FW70325 1473  9128020301            1                 20                  002  0
                       033FW70325 1473  912901                5                 20                  003  0
                       033FW70325 1473  9128020103            1                 20                  004  0
                       033FW70325 1473  91290103              2                 20                  005  0
-----------------------------------------------------------------------------------------------------------------
                       033FW70321 1573594430N1492715W7705232155                  10+09 1118  6      3       30
                       033FW70322 1573  91    + 78                       3      03
                       033FW70325 1573  9129011401            5     09          20                  001  0
                       033FW70325 1573  9129011401            9                 01                  002  0
                       033FW70325 1573  9218022001            1                                     003  2
                       033FW70325 1573  9128020103            1                 20                  004  0
                       033FW70325 1573  9129011302            2     09          20                  005  0
```

Figure 2B

```
***** SUMMARY *****

 FOR CRUISE FW7032

2219 TOTAL RECORDS

 277 TYPE 1 RECORDS
 277 TYPE 2 RECORDS
   0 TYPE 3 RECORDS
   6 TYPE 4 RECORDS
1659 TYPE 5 RECORDS

   0 RECORDS WITH AN
     INVALID TYPE
```

```
RECORD TYPE     1


CODE FIELD: PLATFORM TYPE - NODC(1:69)

          CODES                COMMENT
            BLANK                 -

CODE FIELD: SAMPLING TECHNIQUE - NODC(1:70) - FWS(1:69)

          CODES                COMMENT
            BLANK                 -

CODE FIELD: SHIP ACTIVITY - NODC(1:71)

          CODES                COMMENT
            BLANK                 -

CODE FIELD: COLLECTION CODE (PHOTOS TAKEN) - NODC(1:72)

          CODES                COMMENT
            BLANK                 -

CODE FIELD: ZONE SCHEME (TRANSECT WIDTH) - NODC(1:73)

          CODES                COMMENT
            BLANK                 -

CODE FIELD: ANGLE OF VIEW - NODC(1:74)

          CODES                COMMENT
            BLANK                 -

CODE FIELD: OBSERVATION CONDITIONS - NODC(1:75)

          CODES                COMMENT
            4            AVERAGE
            3            POOR
            2            MARGINAL
            7            EXCELLENT
            6            GOOD
            5            FINE
            BLANK
```

Figure 2B (cont.)

RECORD TYPE 2

CODE FIELD: WIND & SWELL DIRECTION - NODC(2:45-46)(2:50-51)

CODES	COMMENT
BLANK	-
31	305-314 DEG.
14	135-144 DEG.

CODE FIELD: SEA STATE - NODC(2:49)

CODES	COMMENT
2	SMOOTH-WAVELET
3	SLIGHT
4	MODERATE
1	CALM-RIPPLED
0	CALM-GLASSY
BLANK	-

CODE FIELD: WIND & SWELL DIRECTION - NODC(2:45-46)(2:50-51)

CODES	COMMENT
BLANK	-

CODE FIELD: WEATHER - NODC(2:55-56) - FWS(2:16-17)

CODES	COMMENT
03	CLOUDS GENERALLY FORMING OR DEVELOPING
0	*** 000011 000024 000045 000051 000690 000721
68	RAIN OR DRIZZLE AND SNOW, SLIGHT
00	CLOUD DEVELOPMENT NOT OBSERVED OR NOT OBSERVABLE
71	CONTINUOUS FALL OF SNOW FLAKES, SLIGHT
61	RAIN, NOT FREEZING, CONTINUOUS, SLIGHT
41	FOG OR ICE FOG IN PATCHES
43	FOG OR ICE FOG, SKY INVISIBLE, THINNING DURING LAST HOUR

CODE FIELD: CLOUD TYPE - NODC(2:57)

CODES	COMMENT
BLANK	-
3	ALTOCUMULUS

CODE FIELD: CLOUD AMOUNT - NODC(2:58)

CODES	COMMENT
BLANK	-

CODE FIELD: WATER COLOR - NODC(2:59)

CODES	COMMENT
BLANK	-

CODE FIELD: VISIBILITY - NODC(2:61) - FWS(2:18)

CODES	COMMENT
BLANK	-

CODE FIELD: COMPASS DIRECTION (SUN) - NODC(2:62)

CODES	COMMENT
BLANK	-

CODE FIELD: GLARE INTENSITY - NODC(2:63) - FWS(2:61)

CODES	COMMENT
BLANK	-

CODE FIELD: GLARE AREA - NODC(2:64) - FWS(2:62)

CODES	COMMENT
BLANK	-

LOGLIST prints a columnular listing for each card type. The columns are identified by a three character field code defined prior to the data listing. The record number is listed on the left and any errors detected are flagged in the diagnostics section on the right. A totally blank field is indicated by a row of dots and imbedded blanks by an asterisk. Figure 3 is a list of the limit and relational checks made and Figure 4 is a portion of a LOGLIST listing.

These outputs are sent to the Principal Investigator for correcting. He checks the diagnostic messages and the data and marks any necessary corrections directly on the listing. These are returned to us and the updates made to the file with an interactive program called EDITLOG. Then CODEPULL and LOGLIST are rerun for final verification.

Finally the data is converted to NODC format (if it was coded in another format) and submitted to NODC. Format conversion is done with a program called CONVPROG. Many different operations are carried out at this point. For example, data fields are moved from one place to another on a given card, or onto a different card; units are converted and rounded or truncated, or converted to codes; and codes are converted to those equivalent codes acceptable to NODC. Figure 5 is a list of the conversion routines carried out.

All of these programs form part of the MARMAP Information System. Their operation is directed by a Master System Table (MST). The MST has an entry for each field of each card type in a file. This contains all the information needed for processing, including field code, data type, position, upper limit, lower limit, relational checking and conversion routines. The programs therefore are data independent and readily adaptable to any file type.

Figure 3

Limits and Relational Checks

Note: Entries apply to both FWS and NODC unless otherwise noted.

All Card Types

File Type must be 033.
File ID of all subsequent records must match that of first record.

Card Type 1

FWS start and end latitude between 40 and 70 degrees, 0-599 tenths of minutes.
FWS start and end longitude between 120 and 180 degrees, 0-599 tenths of minutes, and hemisphere = W.
NODC start and end latitude between 40 and 70 degrees, 0-59 minutes, 0-59 seconds, and hemisphere = N.
NODC start and end longitude between 120 and 180 degrees, 0-59 minutes, 0-59 seconds, and hemisphere = W.
Date: Day between 1 and 31, month between 1 and 12.
Time: Hour between 0 and 23, minutes between 1 and 59.
Elapsed Time should be between 0 and 30 minutes.
FWS Heading between 0 and 359 degrees. (NODC between 00 and 35).
FWS Speed between 0 and 15 knots when platform type is ship.
FWS Speed greater than 5 knots when transect type is 71.

Card Type 2

FWS Wind Direction between 0 and 360 degrees. (NODC uses a code).
Wind Speed between 0 and 50 knots.
Swell Height between 0 and 25 feet.
Sea Surface Temperature between -2°C and +10°C.
Wet and Dry Bulb Temperature between -10°C and +70°C.
Wet Bulb Temperature should be less than or equal to Dry Bulb Temperature.
Temperatures are also checked for signs, numerics, and leading zeros.
Barometric Trend should not be coded when Barometric Pressure is blank.
Barometric trend must be +, -, ƀ, or ϕ.
Salinity between 20°/oo and 34°/oo.
Thermocline Depth between 0 and 100 meters.

Card Type 3

Excess Sediment, Ice Algae, or Other Features fields should be blank. (FWS only).

Card Type 5

Taxonomic Code between 88 and 92.
FWS Direction of Flight between 1 and 12 o'clock.
NODC Direction of Flight between 0 and 35 degrees.
FWS Begin Zone should be less than End Zone.
FWS Begin Zone and End Zone between 0 and 30 when Transect Type is 71 or 78 (unless BZN is coded 97-99).
FWS Begin Zone and End Zone between 0 and 60 when Transect Type is 70 or 77 (unless BZN is coded 97-99).
Number of Individuals must be numeric.

Figure 4

<u>Sample LOGLIST Listing</u>

LOGLIST lists the data for each card type individually. Fields in each record are then keyed by acronym codes.

Figure 4A shows the header page and the list of acronym definitions.

Figure 4B is a page from the data listing of Card Type 1. Blank data fields are depicted by a series of dots as in the LTD and LNG fields while leading or imbedded blanks appear as asterisks as in the SPD and HGT fields. The diagnostics are flagged with the messages at the right. Here the HED field is out of range because it should be between 0 and 35 degrees.

Figure 4A

***** LOGLIST *****

FOR CRUISE FW7C32

CALL FILE ********

CARD TYPE 1

THE MARMAP INFORMATION SYSTEM   OCSEAP - GULF OF ALASKA PROJECT

*** LOGLIST - CRUISE FW7032 - CALL FILE ******** - CARD TYPE 1

ACRONYM DEFINITIONS

STA	STATION
LAT	START LATITUDE
LON	START LONGITUDE
DEG	DEGREES (SUBFIELD OF LON)
DAT	DATE - YYMMDD
DAY	DAY (SUBFIELD OF DAT)
MON	MONTH (SUBFIELD OF DAT)
TIM	TIME - HHMM
HOR	HOUR (SUBFIELD OF TIM)
MIN	MINUTES (SUBFIELD OF TIM)
LTD	END LATITUDE
LNG	END LONGITUDE
ELT	ELAPSED TIME
TZS	TIME ZONE SIGN
TZN	TIME ZONE NUMBER
SPD	SPEED MADE GOOD
HED	COURSE MADE GOOD
HGT	HEIGHT OF OBS. EYES (ABOVE SEA)
PLT	PLATFORM TYPE
SMP	SAMPLING TECHNIQUE
ACT	SHIP ACTIVITY
PHO	PHOTOS TAKEN
TRW	TRANSECT WIDTH
ANG	ANGLE OF VIEW
OBC	OBSERVATION CONDITIONS
DIS	DISTANCE MADE GOOD

ACRONYM DEFINITIONS

WTP	WATCH TYPE
TRN	TRANSECT WIDTH

SPECIAL CHARACTERS

-	INDICATES A CODE FIELD
*	INDICATES A BLANK CHARACTER IN A FIELD
.	INDICATES A TOTALLY BLANK FIELD
/	FIELD IS LISTED IN THE DIAGNOSTICS IF NON-BLANK (DATA WOULD OTHERWISE NOT FIT ON ONE LINE)

Figure 4A (cont.)

Figure 4B

*** LOGLIST - CRUISE FW7032 - CALL FILE ******** - CARD TYPE 1

	STA	LAT	LON	DAT	TIM	LTO	LNG	ELT	TZS	TZN	SPD	HED	HGT	PLT	SMP	ACT	PHO	TRW	ANG	OBC	DIS	WTP	TRN	DIAGNOSTICS
52	*7279	555358N	1523630W	770528	1950	....	....	10	+	09	**9	36	**8	.	.	.	.	.	.	6	....	.	*30	* HED FIELD OUTSIDE *
53	*7379	555408N	1523518W	770528	2000	....	....	10	+	09	**9	36	**8	.	.	.	.	.	.	6	....	.	*30	* HED FIELD OUTSIDE *
54	*7478	565537N	1523458W	770528	2010	....	....	10	+	09	**9	36	**8	.	.	.	.	.	.	7	....	.	*30	* HED FIELD OUTSIDE *
55	*7578	565712N	1523446W	770528	2020	....	....	10	+	09	**9	35	**8	.	.	.	.	.	.	7	....	.	*30	
56	*7679	565650N	1523508W	770528	2030	....	....	10	+	09	**9	35	**8	.	.	.	.	.	.	7	....	.	*30	
57	*7779	570022N	1523530W	770528	2040	....	....	10	+	09	**9	35	**8	.	.	.	.	.	.	7	....	.	*30	
58	*7878	570155N	1523554W	770528	2050	....	....	10	+	09	**9	33	**8	.	.	.	.	.	.	7	....	.	*30	
59	*7978	570308N	1523712W	770528	2100	....	....	10	+	09	**9	33	**8	.	.	.	.	.	.	7	....	.	*30	
60	*8079	570418N	1523823W	770528	2110	....	....	10	+	09	**9	33	**8	.	.	.	.	.	.	4	....	.	*30	
61	*8178	570548N	1523948W	770528	2120	....	....	10	+	09	**9	33	**8	.	.	.	.	.	.	4	....	.	*30	
62	*8279	570706N	1524106W	770528	2130	....	....	10	+	09	**9	33	**8	.	.	.	.	.	.	4	....	.	*30	
63	*8378	570830N	1524236W	770528	2140	....	....	10	+	09	**9	33	**8	.	.	.	.	.	.	4	....	.	*30	
64	*8479	571000N	1524044W	770528	2150	....	....	10	+	09	**9	33	**8	.	.	.	.	.	.	5	....	.	*30	
65	*8578	571116N	1524524W	770528	2200	....	....	10	+	09	**9	33	**8	.	.	.	.	.	.	5	....	.	*30	
66	*8678	571242N	1524648W	770528	2210	....	....	10	+	09	**9	33	**8	.	.	.	.	.	.	5	....	.	*30	
67	*8777	571707N	1525048W	770529	0400	....	....	20	+	09	**0	..	**4	.	.	.	.	.	.	7	....	.	*60	
68	*8873	571448N	1525027W	770529	1737	....	....	10	+	09	*10	18	**4	.	.	.	.	.	.	5	....	.	*30	
69	*8973	571310N	1525025W	770529	1747	....	....	10	+	09	*10	18	**4	.	.	.	.	.	.	5	....	.	*30	
70	*9073	571124N	1525028W	770529	1757	....	....	10	+	09	*10	18	**4	.	.	.	.	.	.	5	....	.	*30	
71	*9179	570942N	1525030W	770529	1807	....	....	10	+	09	*10	19	**4	.	.	.	.	.	.	5	....	.	*30	
72	*9278	570757N	1525100W	770529	1817	....	....	10	+	09	*10	19	**4	.	.	.	.	.	.	5	....	.	*30	
73	*9378	570612N	1525200W	770529	1827	....	....	10	+	09	*10	19	**4	.	.	.	.	.	.	5	....	.	*30	
74	*9479	570315N	1525250W	770529	1837	....	....	10	+	09	*10	19	**4	.	.	.	.	.	.	5	....	.	*30	
75	*9578	570255N	1525326W	770529	1847	....	....	10	+	09	*10	19	...	.	.	.	.	.	.	5	....	.	*30	
76	*9678	570114N	1525345W	770529	1857	....	....	10	+	09	*10	19	**4	.	.	.	.	.	.	5	....	.	*30	
77	*9779	565925N	1525345W	770529	1907	....	....	10	+	09	*10	18	**4	.	.	.	.	.	.	5	....	.	*30	

Figure 5

Conversion Routines

Field	FWS Cols	NODC Cols	Special Processing
Card Type 1			
File Type	1-3	1-3	-
File ID	4-9	4-9	-
Station Number	10-14	11-15	-
Record Type	15	10	-
Start Latitude	16-20	16-22	Degrees, minutes, and tenths converted to degress, minutes, and seconds. Hemisphere "N" is added.
Start Longitude	21-27	23-30	Degrees, minutes, and tenths converted to degrees, minutes, and seconds.
O.B.S. Region	28-30	-	No NODC counterpart
Date	31-34	31-36	Add year and convert from day, month for YYMMDD.
Time	35-38	37-40	-
End Latitude	39-43	41-47	Same as above
End Longitude	44-50	48-55	Same as above
Elapsed Time	51-52	56-57	-
Time Zone Sign	53	58	-
Time Zone Number	54-55	59-60	-
Speed	56-59	61-65	Round tenths of knots to whole knots.
(Blank)	60	-	-
Course Heading	61-63	64-65	Round whole degrees into tens of degrees.
Height of Eyes	64-66	66-68	Convert feet to meters (multiply by 0.3048, then round).
Platform Type	67-68	69	Convert from FWS to NODC code.
Sampling Technique	69	70	-
Ship Activity	70	71	Convert from FWS to NODC code.
O.B.S. Number	72-73	-	No NODC counterpart
O.B.S. Location	74	-	No NODC counterpart
Observation Conditions	-	75	Move from Col. 19 on FWS card Type 2.
Distance	-	76-79	No FWS counterpart
Watch Type	-	80	No FWS counterpart
Transect Width	-	83	No FWS counterpart
(Blank)	75-80	-	-
Card Type 2			
File Type	1-3	1-3	-
File ID	4-9	4-9	-
Station Number	10-14	11-15	-
Record Type	15	10	-
Weather	16-17	55-56	-
Cloud Type	-	57	No FWS counterpart
Cloud Amount	-	58	No FWS counterpart
Water Color	-	59-60	No FWS counterpart
Visibility	18	61	-
Observation Conditions	19	-	Move to Col. 75 on Card Type 1 for NODC.

Figure 5 (continued)

Field	FWS Cols.	NODC Cols	Special Processing
Card Type 2 (cont.)			
Wind Direction	20-22	45-46	Convert FWS degrees to NODC code (divide by 10, truncate, and add 1).
Wind Speed	23-24	47-48	-
Wave Height/Sea State	25-26	49	Convert from feet to NODC code.
Swell Direction	-	50-51	No FWS counterpart
Swell Height	27-28	52-54	Convert feet to tenths of meters (multiply by 3.048, then round).
Sea Surface Temp.	29-32	23-26	Move sign adjacent to first significant digit (embedded zeros or blanks removed).
XBT Temp.	33-36	-	No NODC counterpart
Wet Bulb Temp.	37-40	34-37	Same as Sea Surface Temp. above.
Dry Bulb Temp.	41-44	30-33	Same as Sea Surface Temp. above.
Relative Humidity	-	38-39	No NODC counterpart
Barometric Pressure	45-49	40-43	Truncate left digit.
Barometric Trend	50	44	-
Bottom Depth	51-54	16-19	Convert fathoms to meters (multiply by 1.829, then round).
Surface Salinity	55-57	27-29	-
Thermocline Depth	58-60	20-22	-
Sun Direction	-	62	No FWS counterpart
Glare Intensity	61	63	-
Glare Area	62	64	-
Turbidity Code	63	-	No NODC counterpart
Light Level	-	65-67	No FWS counterpart.
Moon Phase	-	68	No FWS counterpart.
Tide Height	-	69	No FWS counterpart.
Tide Rise/Fall	-	70	No FWS counterpart.
Distance to Shore	-	71-74	No FWS counterpart.
Distance to Shelf	-	75-77	No FWS counterpart.
SECCHI Depth	-	78-79	No FWS counterpart.
Debris Code	-	80	No FWS counterpart.
(Blank)	64-80	81-83	
Card Type 3			
File Type	1-3	1-3	-
File ID	4-9	4-9	-
Station Number	10-14	11-15	-
Record Type	15	10	-
Ice in Transect:			
Cover	16	16	-
Pattern	17	-	No NODC counterpart.
Type	18	17	-
Form	19	18	-
Relief	20	19	-
Thick	21	20	-
Melt	22	21	-
Ice Outside Transect:			
Cover	23	22	-
Pattern	24	-	No NODC counterpart.
Type	25	23	-
Form	26	24	-

Figure 5 (continued)

Field	FWS Cols	NODC Cols	Special Processing
Card Type 3 (cont.)			
Relief	27	25	-
Thickl	28	26	-
Melt	29	27	-
Open Water:			
Type	30	28	-
Direction	31	29	-
Distance	32	30	-
Lead/Polyna Widith	33	31	-
Visible Ice:			
Form	34	-	No NODC counterpart.
Cover	35	-	No NODC counterpart.
Description	-	32	No FWS counterpart.
Direction	36	33	Code groups not convertible.
Distance	37	34	Code groups not convertible.
Ship in Lead/Polyna:			
Location	38	-	No NODC counterpart.
Width	39	-	No NODC counterpart.
Distance	40	-	No NODC counterpart.
Miscellaneous:			
Arctic Code	41	35	Convert FWS to NODC code.
Excess Sediment	42	36	Code groups not convertible.
Ice Algae Layer	43	37	Code groups not convertible.
Mammal Trace	44	38	-
Other Features	45	39	Code groups not convertible.
Ice not coverable	46	-	No NODC counterpart.
(Blanks)	-	40-46	No FWS counterpart.
Water/Land Percent	-	47-48	No FWS counterpart.
Pond Size	-	49	No FWS counterpart.
(Blanks)	47-80	50-83	
Card Type 4			
File Type	1-3	1-3	-
File ID	4-9	4-9	-
Station Number	10-14	11-15	-
Record Type	15	10	-
Text	16-77	16-77	-
Sequence No.	78-80	78-80	-
(Blanks)	-	81-83	
Card Type 5			
File Type	1-3	1-3	-
File ID	4-9	4-9	-
Station Number	10-14	11-15	-
Record Type	15	10	-
Species Name	16-19	-	No NODC counterpart
Taxonomic Code	20-29	18-27	Blank out trailing zero doublets
Sub Species	30-31	28-29	-
Species Group	32-33	30-31	-
No. of Individuals	34-38	37-41	
Counting Method	-	42	No FWS counterpart
Reliability	-	43	No FWS counterpart
Distance Measurement Type	-	44	No FWS counterpart
Distance to birds	-	45-47	No FWS counterpart

Figure 5 (continued)

Field	FWS Cols	NODC Cols	Special Processing
Card Type 5 (cont.)			
Begin/Outside Zone	39-40	83	When coded 97-99 then convert to NODC Outside Zone Code,else ignore
End Zone	41-42	-	No NODC counterpart
Time into Transect	43-45	16-17	Round from minutes and tenths to whole minutes
Behavior	46-47	56-57	-
Flight Direction	48-49	48-49	Convert from clock position relative to the vessel to compass direction in tens of degrees (multiply by 30 and add rounded heading from card type 1).
Age	50	32	-
Sex	51	33	-
Color	52	34	-
Plumage	53	35	-
Molt	54	36	-
Association Type	55-56	50	Convert FWS code to NODC code.
Multi-species Link	57-59	51-53	-
No. os Species	60-61	54-55	-
Special Marks	62	58	-
Bird Condition	63	59	-
Food Source	-	60	No FWS counterpart.
Tax Code for Food	64-73	61-70	Same as Tax Code above.
Debris	74	71	-
Oil	-	72	No FWS counterpart
Distance from Breeding Colony	-	73-75	No FWS counterpart
Habitat	-	76-77	No FWS counterpart
O.B.S. Observer No.	75-76	-	No NODC counterpart
Text Flag Code	77	-	No NODC counterpart
Sequence Number	78-80	78-80	-
Substrate	-	81	No FWS counterpart
Cover	-	82	No FWS counterpart

The following fields will have either leading zeros or leading blanks inserted as necessary.

Leading Zeros	Leading Blanks
Station Number	Speed
Start Latitude	Height of Eyes
Start Longitude	Wind Speed
End Latitude	Sea Surface Temp
End Longitude	Wet Bulb Temp
Date	Dry Bulb Temp
Time	Bottom Depth
Course Heading	No. of Individuals
Multi-Species Link	Transect width
Flight Direction	
Sequence Number	

*** FIELD OPERATION STATUS REPORT ***

AS OF 03/29/78

THE MARMAP INFORMATION SYSTEM   OCSEAP - GULF OF ALASKA PROJECT

COLUMN HEADING DEFINITIONS:

TAPE NUMBER - IDENTIFYING NUMBER ASSIGNED TO THE TAPE AS IT IS RECEIVED BY RU 527.

RESEARCH UNIT - RESEARCH UNIT NUMBER OF THE PRINCIPAL INVESTIGATOR.

DATE RECEIVED - DATE THE TAPE WAS RECEIVED BY RU 527.

FILE FORMAT - FORMAT IN WHICH THE DATA ON THE TAPE HAVE BEEN CODED.

CRUISE NAME - NAME ASSIGNED TO THE FIELD OPERATION BY THE PRINCIPAL INVESTIGATOR. "FW" CRUISES FROM DR. CALVIN LENSINK; "UCI" CRUISES FROM DR. GEORGE HUNT; "W" CRUISES FROM DR. JOHN WIENS; "UC" CRUISES FROM DR. JUAN GUZMAN.

330

CODEPULL MAILED - DATE THE OUTPUT FROM THE QUALITY CONTROL PROGRAM "CODEPULL" WAS MAILED TO THE PRINCIPAL INVESTIGATOR FOR CORRECTIONS.

LOGLIST MAILED - DATE THE OUTPUT FROM THE QUALITY CONTROL PROGRAM "LOGLIST" WAS MAILED TO THE PRINCIPAL INVESTIGATOR FOR CORRECTIONS.

CODEPULL RETURNED - DATE THE CORRECTED OUTPUT FROM "CODEPULL" WAS RECEIVED BY RU 527.

LOGLIST RETURNED - DATE THE CORRECTED OUTPUT FROM "LOGLIST" WAS RECEIVED BY RU 527.

EDITLOG COMPLETE - DATE THE CORRECTIONS WERE MADE TO THE CRUISE AT RU 527, THROUGH THE USE OF AN INTERACTIVE PROGRAM "EDITLOG".

FINAL CHECK - DATE THE CRUISE WAS READY FOR CONVERSION TO NODC FORMAT. OCCASIONALLY ADDITIONAL PROBLEMS ARISE WHEN "CODEPULL" AND "LOGLIST" ARE RERUN AFTER EDITING. IF THESE CANNOT BE RESOLVED OVER THE TELEPHONE THE LISTINGS ARE SENT BACK TO THE PI FOR FURTHER CORRECTIONS. THIS FIELD IS NOT FILLED IN UNTIL ALL CORRECTIONS HAVE BEEN MADE.

CONVERT TO NODC - DATE THE CRUISE WAS CONVERTED FROM FWS FORMAT TO NODC FORMAT. AN "NA" (NOT APPLICABLE) IS ENTERED HERE FOR CRUISES RECEIVED IN NODC FORMAT.

MAIL TO NODC - DATE THE CRUISE IN FINAL FORM WAS SUBMITTED TO NODC.

ENDNOTES - REFERENCE NUMBER TO ADDITIONAL COMMENTS FOLLOWING THE TABLE.

*** FIELD OPERATION STATUS REPORT ***

AS OF 03/29/78

THE MARMAP INFORMATION SYSTEM   OCSEAP - GULF OF ALASKA PROJECT

TAPE NUMBER	RESEARCH UNIT	DATE RECEIVED	FILE FORMAT	CRUISE NAME	CODEPULL MAILED	LOGLIST MAILED	CODEPULL RETURNED	LOGLIST RETURNED	EDITLOG COMPLETE	FINAL CHECK	CONVERT TO NODC	MAIL TO NODC	END NOTES
ALASKA1	337	03/12/77	FWS	FW5004	07/12/77	08/16/77	08/29/77	10/06/77	11/20/77	02/15/78			1A
ALASKA2	337	03/12/77	FWS	FW5009	07/12/77	08/16/77	10/06/77	10/06/77	11/28/77	01/30/78			1A
				FW5013	07/12/77	08/16/77	08/29/77	10/06/77	11/30/77	01/26/78			1A
				FW5018	07/12/77	08/16/77	08/29/77	10/06/77	12/06/77	02/01/78			1A
				FW5023	07/12/77	08/16/77	08/29/77	10/06/77	12/06/77	02/14/78			1A
				FW5024	07/12/77	08/16/77	08/29/77	10/06/77	11/30/77	02/15/78			1A
				FW5030	07/12/77	08/16/77	08/29/77	10/06/77	12/01/77	12/05/77	02/28/78		6
				FW5032	07/12/77	08/16/77	08/29/77	10/06/77	12/01/77	12/05/77	02/28/78		6
ALASKA3	337	05/27/77	FWS	FW5008	07/14/77	08/16/77	09/06/77	09/06/77	12/09/77	12/09/77			
				FW5016	07/14/77	08/16/77	09/06/77	09/06/77	12/12/77				1A
				FW5021	07/14/77	08/16/77	09/06/77	09/06/77	12/19/77				1B
				FW5026	07/14/77	08/16/77	09/06/77	09/06/77	01/31/78	02/01/78			
				FW5027	07/14/77	08/16/77	09/06/77	09/06/77	02/03/78	02/06/78			
				FW5033	07/14/77	08/16/77	09/06/77	09/06/77	01/30/78				1B
				FW5035	07/14/77	08/16/77	09/06/77	09/06/77	01/30/78	02/01/78			
				FW6008	12/12/77	12/12/77	01/10/78	01/10/78	02/06/78				1B
				FW6027	07/14/77	08/16/77	09/06/77	09/06/77	03/20/78				
				FW6050	07/14/77	08/16/77	09/06/77	09/06/77	03/22/78				
				FW6051	07/14/77	08/16/77	09/06/77	09/06/77					
				FW6074	07/14/77	08/16/77	09/06/77	09/06/77	03/02/78				1B
				FW6083	07/14/77	08/16/77	09/06/77	09/06/77	03/13/78				1B
ALASKA4	337	06/24/77	FWS	FW5011	08/16/77	08/16/77	11/01/77	11/01/77	03/20/78				
				FW5012	08/16/77	08/16/77	11/01/77	11/01/77					
				FW5020	08/16/77	08/16/77	11/01/77	11/01/77					
				FW5031	08/16/77	08/16/77	11/01/77	11/01/77					
				FW5034	08/16/77	08/16/77	11/01/77	11/01/77					
				FW6015	08/16/77	08/16/77	11/01/77	11/01/77					
				FW6018	08/16/77	08/16/77	11/01/77	11/01/77					
				FW6019	08/16/77	08/16/77	11/01/77	11/01/77					
				FW6067	08/16/77	08/16/77	11/01/77	11/01/77					
				FW6068	08/16/77	08/16/77	11/01/77	11/01/77					
				FW6088	09/29/77	09/29/77	10/20/77	10/20/77					
				FW6089	08/16/77	08/16/77	11/01/77	11/01/77	02/28/78				1B
				FW6094	08/16/77	08/16/77	11/01/77	11/01/77	03/01/78				
ALASKA5	337	07/01/77	FWS	FW5015	09/29/77	09/29/77	10/20/77	10/20/77					

*** FIELD OPERATION STATUS REPORT ***

AS OF 03/29/78

THE MARMAP INFORMATION SYSTEM OCSEAP - GULF OF ALASKA PROJECT

TAPE NUMBER	RESEARCH UNIT	DATE RECEIVED	FILE FORMAT	CRUISE NAME	CODEPULL MAILED	LOGLIST MAILED	CODEPULL RETURNED	LOGLIST RETURNED	EDITLOG COMPLETE	FINAL CHECK	CONVERT TO NODC	MAIL TO NODC	END NOTES
ALASKA5	337	07/01/77	FWS	FW5025	09/29/77	09/29/77	10/20/77	10/20/77					
				FW6001	09/29/77	09/29/77	10/20/77	10/20/77					
				FW6002	09/29/77	09/29/77	10/20/77	10/20/77					
				FW6007	09/29/77	09/29/77	10/20/77	10/20/77					
				FW6009	09/29/77	09/29/77	10/20/77	10/20/77					
				FW6021	10/28/77	10/28/77	11/30/77	11/30/77					
				FW6026	09/29/77	09/29/77	10/20/77	10/20/77					
				FW6029	09/29/77	09/29/77	10/20/77	10/20/77					
				FW6057	09/29/77	09/29/77	10/20/77	10/20/77					
				FW6064	09/29/77	09/29/77	10/20/77	10/20/77	02/20/78				1B
				FW6066	09/29/77	09/29/77	10/20/77	10/20/77	02/22/78	02/24/78			
				FW6070	09/29/77	09/29/77	10/20/77	10/20/77					
				FW6095	09/29/77	09/29/77	10/20/77	10/20/77					
ALASKA6	337	07/07/77	FWS	FW5014	10/21/77	10/21/77	11/14/77	11/14/77	02/17/78	02/22/78			
				FW5022	10/21/77	10/21/77	11/14/77	11/14/77					
				FW5029	10/21/77	10/21/77	11/14/77	11/14/77					
				FW5036	10/21/77	10/21/77	11/14/77	11/14/77					
				FW5037	10/21/77	10/21/77	11/14/77	11/14/77					
				FW6004	10/21/77	10/21/77	11/14/77	11/14/77					
				FW6005	10/21/77	10/21/77	11/14/77	11/14/77					
				FW6010	10/21/77	10/21/77	11/14/77	11/14/77					
				FW6011	10/21/77	10/21/77	11/14/77	11/14/77					
				FW6012	10/21/77	10/21/77	11/14/77	11/14/77					
				FW6016	10/21/77	10/21/77	11/14/77	11/14/77					
				FW6028	10/21/77	10/21/77	11/14/77	11/14/77					
				FW6052	10/21/77	10/21/77	11/14/77	11/14/77					
				FW6077	10/21/77	10/21/77	11/14/77	11/14/77					
				FW6078	10/21/77	10/21/77	11/14/77	11/14/77					
				FW6084	10/21/77	10/21/77	11/14/77	11/14/77					
				FW6085	10/21/77	10/21/77	11/14/77	11/14/77					
				FW6092	10/21/77	10/21/77	11/14/77	11/14/77					
				FW7026	10/21/77	10/21/77	11/14/77	11/14/77					
				FW7027	10/21/77	10/21/77	11/14/77	11/14/77					
ALASKA7	083	07/07/77	FWS	UCI501	10/07/77	10/07/77							
				UCI601	10/07/77	10/07/77							
ALASKA8	337	07/28/77	FWS	FW5038	10/28/77	10/28/77	11/30/77	11/30/77					
				FW6013	10/28/77	10/28/77	11/30/77	11/30/77					
				FW6025	10/28/77	10/28/77	11/30/77	11/30/77					

*** FIELD OPERATION STATUS REPORT ***

AS OF 03/29/78

THE MARMAP INFORMATION SYSTEM OCSEAP - GULF OF ALASKA PROJECT

TAPE NUMBER	RESEARCH UNIT	DATE RECEIVED	FILE FORMAT	CRUISE NAME	CODEPULL MAILED	LOGLIST MAILED	CODEPULL RETURNED	LOGLIST RETURNED	EDITLOG COMPLETE	FINAL CHECK	CONVERT TO NODC	MAIL TO NODC	END NOTES
ALASKA8	337	07/28/77	FWS	FW6082	10/28/77	10/28/77	11/30/77	11/30/77					
				FW6087	10/28/77	10/28/77	11/30/77	11/30/77					
ALASKA9	337	08/03/77	FWS	FW5003	10/28/77	10/28/77	11/30/77	11/30/77					2
				FW5006	10/28/77	10/28/77	11/30/77	11/30/77					
				FW5010	10/28/77	10/28/77	11/30/77	11/30/77					
				FW6006	10/28/77	10/28/77	11/30/77	11/30/77					
				FW6014	10/28/77	10/28/77	11/30/77	11/30/77					
ALASKA10	337	09/06/77	NODC	FW7032	10/07/77	10/07/77	11/03/77	11/03/77	11/22/77	11/30/77	/NA/	12/12/77	
				FW7033	10/07/77	10/07/77	11/03/77	11/03/77	11/22/77	11/30/77	/NA/	12/12/77	
ALASKA11	337	11/16/77	NODC	FW7034	11/30/77	11/30/77	01/04/78	01/04/78	01/09/78	01/10/78	/NA/	02/28/78	
				FW7035	11/30/77	11/30/77	01/04/78	01/04/78	01/06/78	01/17/78	/NA/	02/28/78	
				FW7042	11/30/77	11/30/77	01/04/78	01/04/78	01/09/78	01/16/78	/NA/	02/28/78	
				FW7046	11/30/77	11/30/77	01/04/78	01/04/78	01/09/78	01/16/78	/NA/	02/28/78	
ALASKA12	337	01/10/78	NODC	FW7028	01/18/78	01/18/78	01/30/78	01/30/78	01/31/78	02/01/78	/NA/	02/28/78	
				FW7031	01/18/78	01/18/78	01/30/78	01/30/78	02/01/78	02/02/78	/NA/	02/28/78	
				FW7036	01/18/78	01/18/78	01/30/78	01/30/78	01/31/78	02/01/78	/NA/	02/28/78	
				FW7045	01/18/78	01/18/78	01/30/78	01/30/78	02/01/78	02/01/78	/NA/	02/28/78	
ALASKA13	337	01/10/78	FWS	FW6086	01/18/78	01/18/78	01/30/78	01/30/78	02/17/78				1B
				FW6186	01/18/78	01/18/78	01/30/78	01/30/78	02/17/78	02/17/78			5
OREGON1	108	05/25/77	NODC	W05220	10/26/77	10/26/77	01/03/78	01/03/78	02/03/78		/NA/		
				W05221	10/26/77	10/26/77	01/03/78	01/03/78	02/16/78		/NA/		
				W05310	10/26/77	10/26/77	01/03/78	01/03/78	02/03/78		/NA/		
				W05311	10/26/77	10/26/77	01/03/78	01/03/78	02/03/78		/NA/		
				W05325	10/26/77	10/26/77	01/03/78	01/03/78	02/03/78		/NA/		
				W06211	10/26/77	10/26/77	01/03/78	01/03/78	02/03/78		/NA/		3
				W06221	10/26/77	10/26/77	01/03/78	01/03/78	02/17/78		/NA/		3
				W16140	10/26/77	10/26/77	01/03/78	01/03/78	03/27/78		/NA/		
				W16150	10/26/77	10/26/77	01/03/78	01/03/78	03/27/78		/NA/		
				W16161	10/26/77	10/26/77	01/03/78	01/03/78	03/27/78		/NA/		3
				W26140	10/26/77	10/26/77	01/03/78	01/03/78	03/27/78		/NA/		
				W36070	10/26/77	10/26/77	01/03/78	01/03/78	03/27/78		/NA/		

*** FIELD OPERATION STATUS REPORT ***

AS OF 03/29/78

THE MARMAP INFORMATION SYSTEM OCSEAP - GULF OF ALASKA PROJECT

TAPE NUMBER	RESEARCH UNIT	DATE RECEIVED	FILE FORMAT	CRUISE NAME	CODEPULL MAILED	LOGLIST MAILED	CODEPULL RETURNED	LOGLIST RETURNED	EDITLOG COMPLETE	FINAL CHECK	CONVERT TO NODC	MAIL TO NODC	END NOTES
CANADA1	239	08/01/77	FWS	010C75	10/07/77	10/07/77							4

ENDNOTES:

1. A. LOGLIST AND CODEPULL SENT BACK TO PI FOR ADDITIONAL CORRECTIONS (12/12/77), RETURNED TO RU 527 (01/10/78).
   B. LOGLIST AND CODEPULL SENT BACK TO PI FOR ADDITIONAL CORRECTIONS (03/16/78).

2. TAPE WAS UNREADABLE, SENT BACK TO PI TO BE RE-GENERATED (08/31/77), RETURNED TO RU 527 (10/21/77).

3. UNAUTHORIZED LIGHT LEVEL AND WEATHER CODES USED BY PI, THESE WILL NOT BE INCLUDED IN SUBMISSION TO NODC.

4. TAPE RETURNED TO PI BECAUSE SEVEN OF THE EIGHT EXPECTED CRUISES COULD NOT BE FOUND (01/03/78).

5. CRUISE FW6186 IS A CONTINUATION OF CRUISE FW6086 BECAUSE FW6086 NEEDED MORE THAN 999 STATIONS.

6. ONE OF FIRST CRUISES CONVERTED (02/28/78). FWS AND NODC FORMATS SENT TO PI FOR REVIEW.

*** FIELD OPERATION STATUS REPORT ***

AS OF 03/29/78

THE MARMAP INFORMATION SYSTEM   OCSEAP - GULF OF ALASKA PROJECT

SUMMARY:

TOTAL CRUISES RECEIVED BY RU 527	105
CODEPULLS MAILED TO INVESTIGATOR	105
LOGLISTS MAILED TO INVESTIGATOR	105
CODEPULLS RETURNED TO RU 527	102
LOGLISTS RETURNED TO RU 527	102
TOTAL CRUISES EDITED AT RU 527	50
CRUISES CONVERTED TO NODC	2
CRUISES MAILED TO NODC	10

335 ☆ U. S. GOVERNMENT PRINTING OFFICE 1979 - 677-072/1226 Reg. 8