05

E76-10474
CR-148739

THIRD QUARTERLY PROGRESS REPORT

LANDSAT FOLLOW-ON INVESTIGATION

NO. 21300

A. TITLE OF INVESTIGATION: LANDSAT Survey of Near-Shore Ice Conditions Along the Arctic Coast of Alaska

B. PRINCIPAL INVESTIGATOR: Dr. William J. Stringer

C. PROBLEMS IMPEDING INVESTIGATION: None

D. PROGRESS REPORT:

1. Accomplishments This Reporting Period:

Using LANDSAT band 7 hard copy at 1:500,000 scale, preliminary Beaufort Sea near shore ice maps have been compiled for late winter (Feb.-March) 1973, 1974 and 1975. These maps have been reproduced here at half scale for reporting convenience. Particular care, described in our previous report, has been taken to locate the ice features relative to geographic coordinates and bathymetric 10-fathom contour. The half-scale reproductions of these maps have been reproduced here with annotation discussing the features delineated.

It should be stressed that these maps are not final products, but represent an initial stage of interpretation of each year's ice conditions. For instance, even though large ridge systems can be identified, many others are shown here as boundaries between distinctive ice categories. Analysis of later LANDSAT images during the melt season will determine to a greater extent the complete identification of these and other features.

No attempt was made here to delineate "shore-fast" ice. Indeed, at this season only "contiguous" ice (ice that is contiguous with the shore without interruption) can be identified. However, active lead systems in the vicinity of the near-shore areas can be monitored for ridge-building activities.

By making these late winter maps, the relative age of major features can be established. For instance, a very extensive ridge system had been formed north and west of Cross Island (off Prudhoe Bay) well before March 10, 1974. This ridge system was located near the 10-fathom contour. Presumably it was grounded. Analysis of melt season data should give a clue regarding this hypothesis. Another question to be answered by subsequent analysis is "Did this ridge system create a relatively stable ice shelf to the shoreward?"

Once each season has been analyzed, the original transparent 1:500,000 scale maps will be overlaid to determine the persistence of major ice conditions.

21300

N76-31621
Unclas
00474
G3/43
(E76-10474) LANDSAT SURVEY OF NEAR-SHORE ICE CONDITIONS ALONG THE ARCTIC COAST OF ALASKA Quarterly Progress Report (Alaska Univ., College.) 39 p HC $4.00 CSCL 08L

The three sets of late winter scenes for 1973, 1974, and 1975 are reproduced here at half-scale as Appendix A.

E. INTERACTION WITH OTHER INVESTIGATORS AND AGENCIES:

Discussion with the Habitat Protection Division, Alaska Department of Fish and Game, have continued. There is considerable interest there in the use of LANDSAT data. In particular, the fact that near-shore tidal cracks in shore-fast ice can be detected from LANDSAT data (see Appendix A) may be of great value: There is not a very extensive seal population in the Beaufort Sea region. However, it appears that what seals there are use the thin ice in the tidal cracks as locations for maintaining breathing holes. Furthermore, it appears that the tidal cracks recur in nearly the same location from year to year. If this is true, then based on LANDSAT documentation, the Alaska Department of Fish and Game might choose to use this information when determining performance criteria for off-shore petroleum-related activities in these areas. Please note that these results are tentative and require considerably more careful work. This information was not listed under "Significant Results" for this very reason.

F. PLANS FOR NEXT REPORTING PERIOD:

(1) Compilation of near shore ice maps will continue.

(2) Several 'special events' observed in ice activity will be documented.

(3) The investigations described in Section E will be continued. However, it is very likely that no reportable results will be available until our July reporting date.

G. RECOMMENDATIONS: None.

H. FUNDS EXPENDED: As of December 1, 1975, the total funds expended by this project were $9,738 out of a total of $28,337.

I. DATA USE:

Value of Data Allowed	Value of Data Ordered	Value of Data Received as of 12/31/75
$10,300.00	Standing Order	$2800

J. PUBLICATIONS:

None this reporting period.

K. SIGNIFICANT RESULTS:

See attached sheet.

L. APPENDICES:

Appendix A attached.

THIRD QUARTERLY PROGRESS REPORT

LANDSAT FOLLOW-ON INVESTIGATION

No. 21330

TITLE: LANDSAT Survey of Near-Shore Ice Conditions along the Arctic Coast of Alaska

PRINCIPAL INVESTIGATOR: William J. Stringer

DISCIPLINE: Oceanography

SUBDISCIPLINE: Ice Dynamics

SUMMARY OF SIGNIFICANT RESULTS: On the basis of analysis of late winter 1973, 1974 and 1975, LANDSAT imagery of the Beaufort Sea coast of Alaska, the following conclusions regarding near-shore ice conditions have been made:

A. By March, the seaward limit of contiguous ice is often beyond the 10-fathom contour.

B. During March, shearing can and does take place along a line roughly coincident with the 10-fathom contour.

C. Ice motions during these shearing events are not extremely great - generally on the order of 10 km.

D. Many large (and very likely grounded) ice features have already been formed by late February.

E. Based on a "look ahead" at later LANDSAT imagery, it seems apparent that Beaufort Sea shore-fast ice has already been formed by late February and may well be safe for exploratory activities from this date forward until the melt season.

L. Appendix A

LATE WINTER NEARSHORE BEAUFORT SEA ICE MAPS FOR 1973, 1975 AND 1975

The following sets of ice maps have been prepared from the earliest available Landsat sequence for each year. Major ice features and the shore have been delineated and the 10-fathom contour shown for correlation of depth to major ice features. Each map has been described separately on the page opposite the map. As little inference as possible has been made at this stage. Many features have been designated as "boundaries" which will very likely be identified as pressure and shear ridges after examination of subsequent data. Similarly, "shore-fast" ice has not been delineated but ice contiguous with the shore has been identified. Just which of this "contiguous" ice is "shore-fast" will be determined on the basis of subsequent Landsat scenes.

These maps are reproductions of working products and are, therefore, somewhat complicated. Later maps, based on interpretation of these and later imagery, will be considerably more simple. The original maps are produced at a scale of 1:500,000 and have been reduced here to half-scale for reporting convenience.

The following symbols and definitions have been used:

Symbols and Definitions

R Ridge system, may be either pressure ridge or shear ridge system

L A lead, usually open, but may be too narrow to determine if it is open or not.

P Partially refrozen lead, usually some dark ice with open water.

N Newly refrozen lead or polynya, a lead or polynya composed of dark ice, not yet fractured and milky, or covered by snow, thin enough to allow light to pass through to the water.

O Old refrozen lead, a lead old enough to have either turned milky with cracks or been covered by snow. Thick enough to reflect most of the incident sunlight and thus appear gray to white.

T Tidal cracks, cracks due to tidal action in shallow waters may be indicated by piled ice and/or snow drifts.

H Hummocked ice sea ice piled haphazardly one piece over another to form an uneven surface.

C Stationary ice - ice which is contiguous with the shore.

B Boundary between apparently different ice types.

Y Polynya.

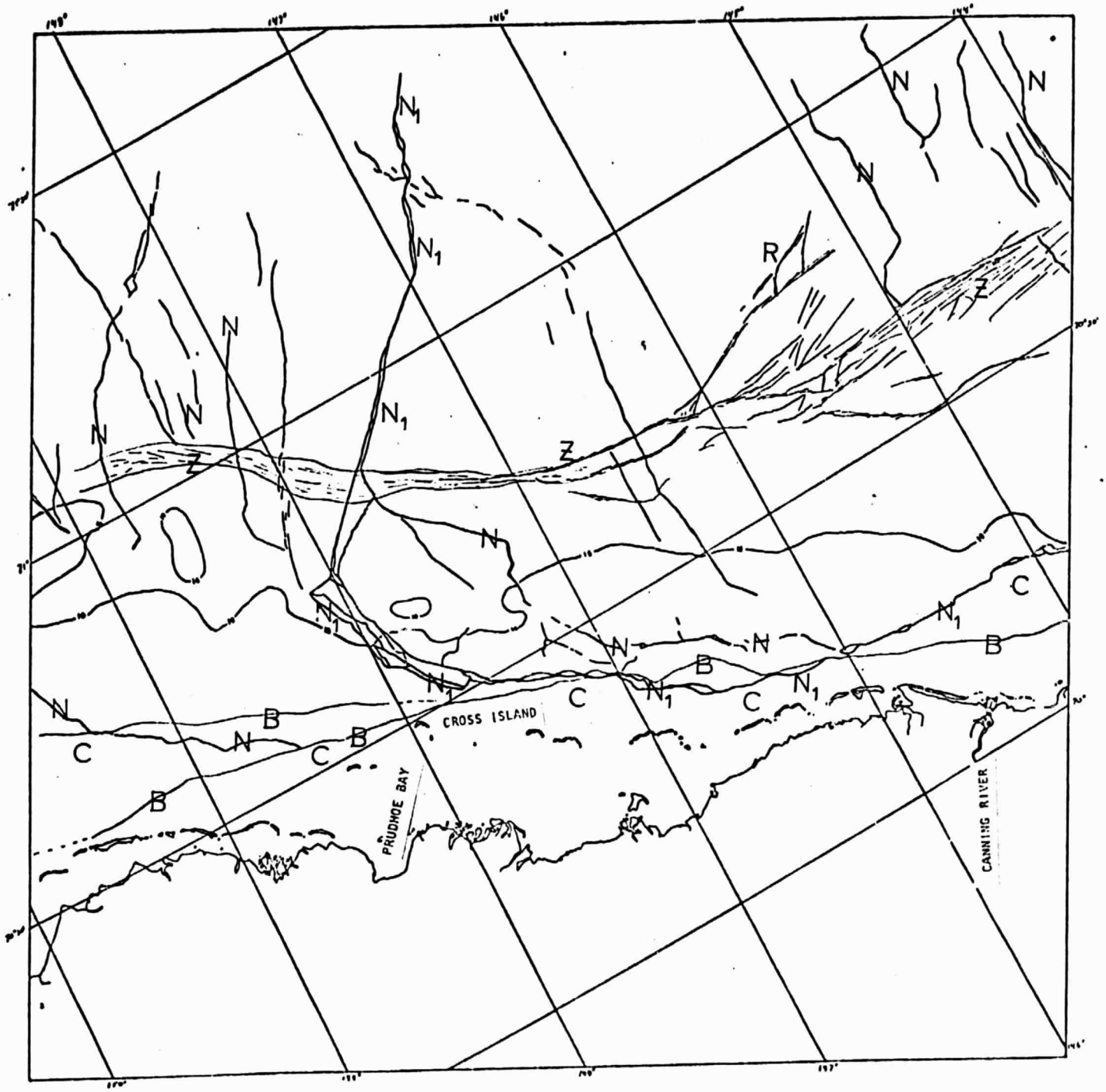
W Open water.

Z Zone of shear.

LATE WINTER 1973 LANDSAT BEAUFORT SEA

NEAR SHORE ICE MAPS

ORDER OF PRESENTATION IS EAST TO WEST



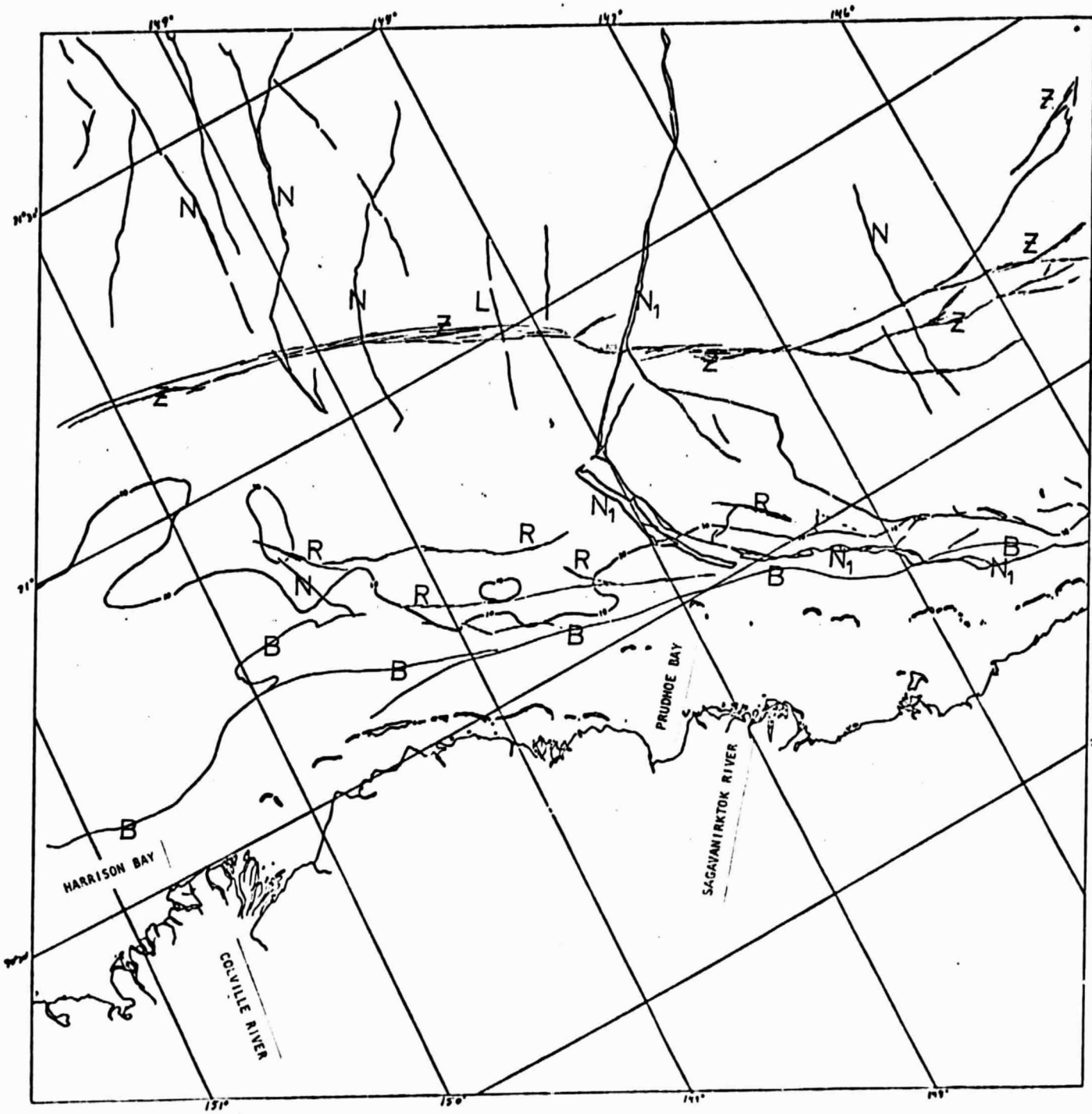
KILOMETERS
10 20 30 40 50
SCALE APPROX 1:1,000,000

BEAUFORT SEA

E-1234-21175-7
14 MARCH 73

SCENE 1234-21175

THIS SCENE CONTAINS MANY REFROZEN LEAD SYSTEMS OF DIFFERING AGES WITH DIFFERING ORIENTATION PATTERNS. TWO OLD SYSTEMS OF INTEREST RAN FROM EAST TO WEST ACROSS THE IMAGE. ONE IS DENOTED BY Z, FOR REFROZEN FRACTURE ZONE. THE OTHER HAS NOT BEEN OUTLINED FOR SAKE OF CLARITY BUT RUNS ROUGHLY ALONG THE 10-FATHOM CONTOUR ACROSS THE IMAGE. THE NORTHERNMOST BOUNDARY, "B", INDICATES THE SHOREWARD EDGE OF THIS ZONE. IN THE RECENT PAST, A LARGE LEAD SYSTEM IN THE SHAPE OF A LARGE LETTER "L" HAS OPENED AND IS NOW NEWLY REFROZEN (INDICATED BY "N_1"). A NUMBER OF OTHER REFROZEN LEADS, N, ARE ASSOCIATED WITH THIS SYSTEM HAVING BEEN FORMED AT THE SAME TIME. THIS LEAD SYSTEM NOW FORMS THE SEAWARD BOUNDARY OF CONTIGUOUS ICE. EXAMINATION OF SUBSEQUENT IMAGERY SHOWS THAT THESE LEADS FREEZE OVER AND NO NEW LEADS ARE FORMED FOR SEVERAL WEEKS. THE LINE, B, GENERALLY DELINE-ATES THE BOUNDARY BETWEEN RELATIVELY SMOOTH ICE (SHOREWARD) AND ROUGHER ICE (SEAWARD).



KILOMETERS

10 20 30 40 50

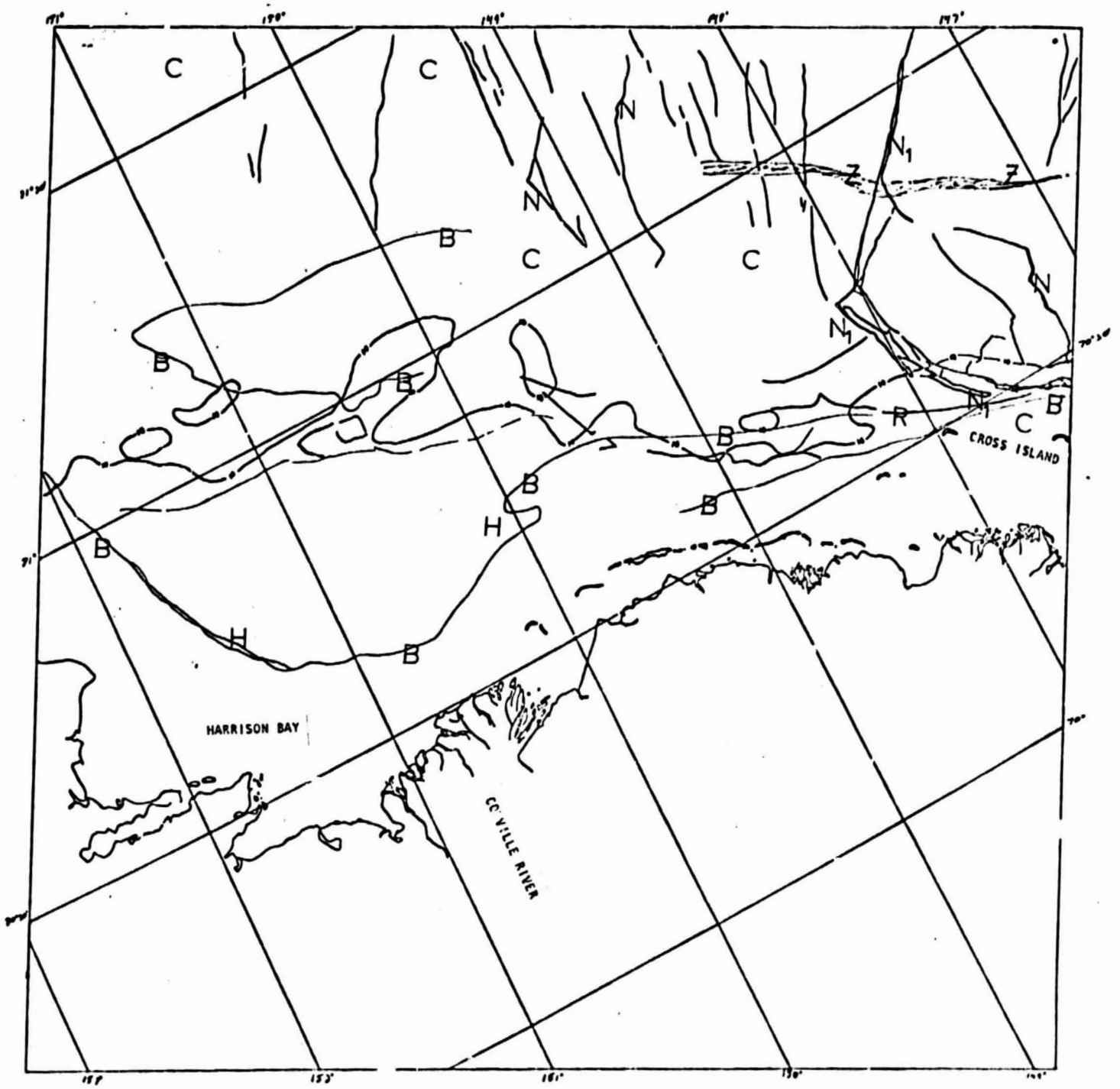
SCALE APPROX 1:1,000,000

BEAUFORT SEA

E-1235-21233-7
15 MARCH 73

SCENE 1235-21233

THIS SCENE CONTAINS MANY REFROZEN LEAD SYSTEMS OF DIFFERING AGES WITH DIFFERING ORIENTATION PATTERNS. TWO OLD SYSTEMS OF INTEREST RAN FROM EAST TO WEST ACROSS THE IMAGE. ONE IS DENOTED BY Z, FOR REFROZEN FRACTURE ZONE. THE OTHER HAS NOT BEEN OUTLINED FOR SAKE OF CLARITY BUT RUNS ROUGHLY ALONG THE 10-FATHOM CONTOUR ACROSS THE IMAGE. THE NORTHERNMOST BOUNDARY, "B", INDICATES THE SHOREWARD EDGE OF THIS ZONE. IN THE RECENT PAST, A LARGE LEAD SYSTEM IN THE SHAPE OF A LARGE LETTER "L" HAS OPENED AND IS NOW NEWLY REFROZEN (INDICATED BY "N_1"). A NUMBER OF OTHER REFROZEN LEADS, N, ARE ASSOCIATED WITH THIS SYSTEM HAVING BEEN FORMED AT THE SAME TIME. THIS LEAD SYSTEM NOW FORMS THE SEAWARD BOUNDARY OF CONTIGUOUS ICE. EXAMINATION OF SUBSEQUENT IMAGERY SHOWS THAT THESE LEADS FREEZE OVER AND NO NEW LEADS ARE FORMED FOR SEVERAL WEEKS. THE LINE, B, GENERALLY DELINEATES THE BOUNDARY BETWEEN RELATIVELY SMOOTH ICE (SHOREWARD) AND ROUGHER ICE (SEAWARD).



KILOMETERS
10 20 30 40 50

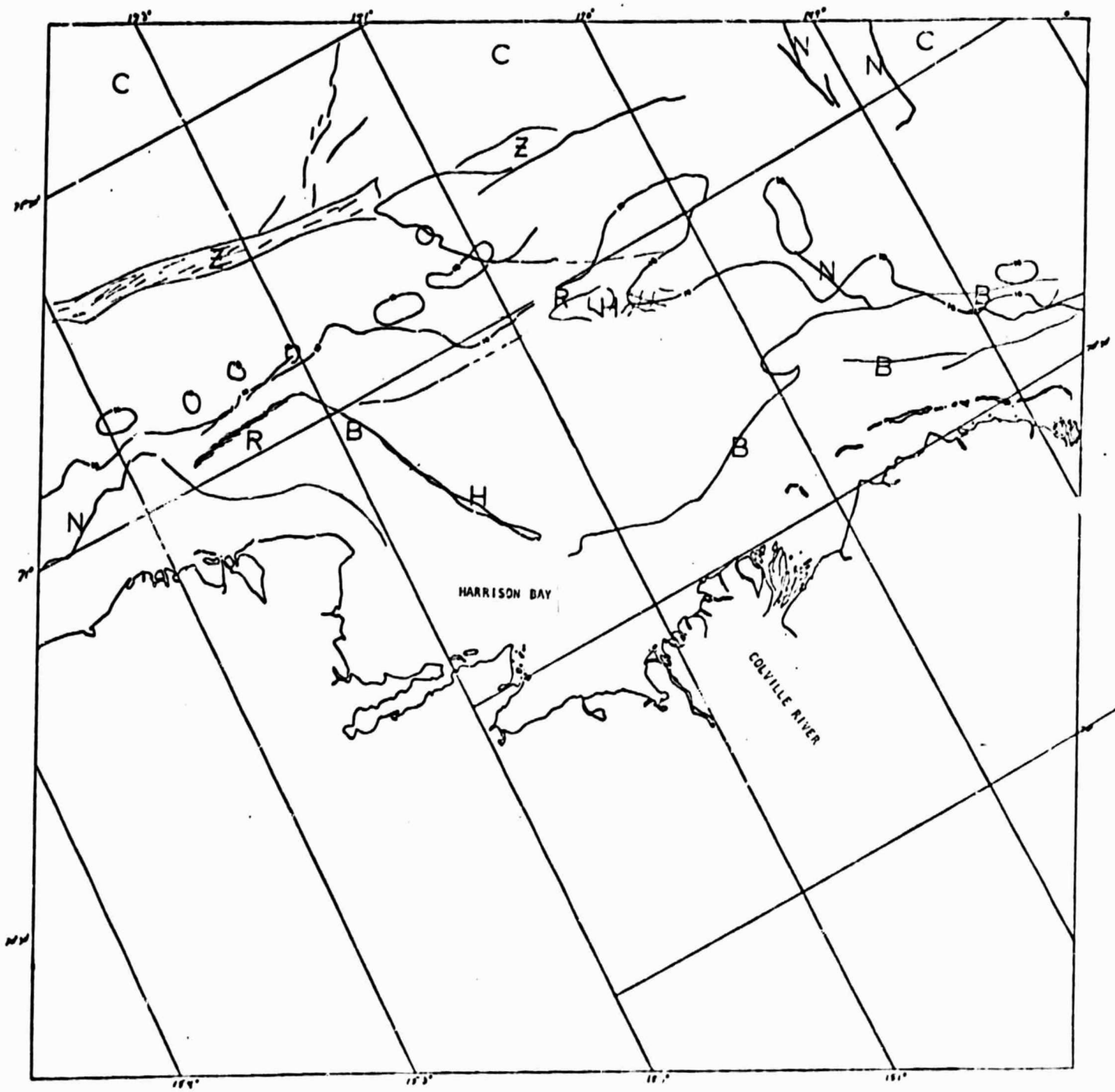
SCALE APPROX 1:1,000,000

BEAUFORT SEA

E-1236-21292-7
16 MARCH 1973

SCENE 1236-21292

MANY OF THE FEATURES ON THIS SCENE WERE DESCRIBED FOR SCENE 1235-21233. THESE FEATURES INCLUDE A LARGE NEWLY-REFREEZING LEAD SYSTEM, N_1, AND ASSOCIATED OTHER LEADS, N. ON THE WESTERN SIDE OF THIS IMAGE CONTIGUOUS ICE EXTENDS SEAWARD BEYOND THE TOP OF THE IMAGE. CLOSER TO SHORE THERE ARE NO NEWLY-REFROZEN LEADS. THE ICE HAS THE APPEARANCE OF HAVING BEEN IN PLACE FOR SOME TIME (3-4 WEEKS). SEVERAL BOUNDARIES CAN BE IDENTIFIED WITHIN THE CONTIGUOUS ICE. EAST OF HARRISON BAY A WELL-DEFINED BOUNDARY BETWEEN RELATIVELY SMOOTH ICE AND ICE CONSISTING OF PANS FROZEN IN PLACE ROUGHLY COINCIDES WITH THE 10-FATHOM CONTOUR ON THE EASTERN EDGE OF THE IMAGE. THIS BOUNDARY COINCIDES WITH THE NEWLY-DEVELOPED LEAD SYSTEM. ON THE WESTERN SIDE OF THE IMAGE THIS WELL-DEFINED BOUNDARY DIPS WELL INTO HARRISON BAY, DEVIATING CONSIDERABLY FROM THE 10-FATHOM CONTOUR. ACTUALLY, MUCH A LESS-DEFINED BOUNDARY EXISTS ACROSS HARRISON BAY ROUGHLY COINCIDING WITH THE 10-FATHOM CONTOUR. THE BOUNDARY THAT DIPS INTO HARRISON BAY APPEARS TO DELINEATE AN EXTENSIVE HUMMOCK FIELD, "H", ON THE WESTERN SIDE OF THE BAY.



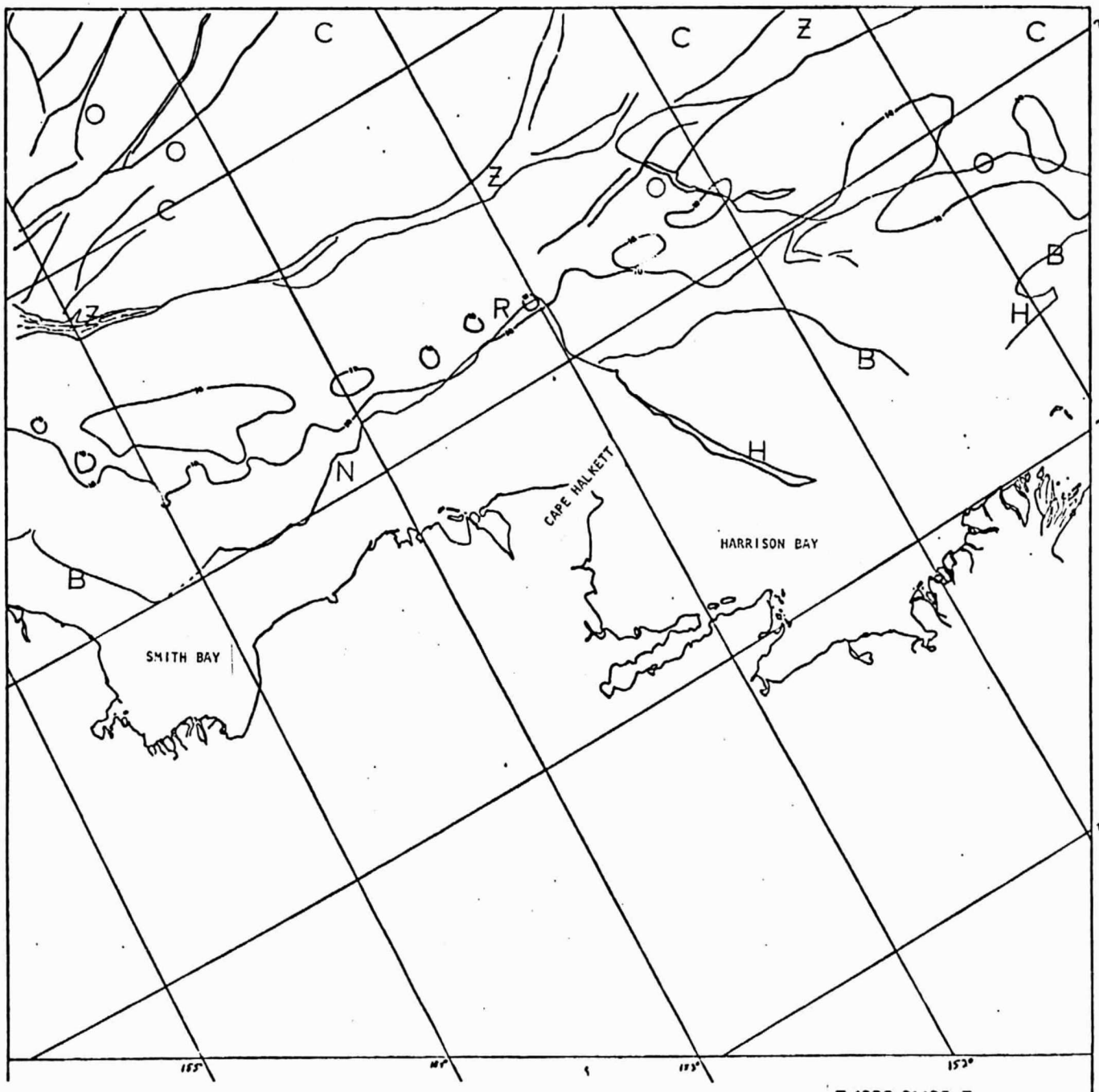
KILOMETERS
10 20 30 40 50
SCALE APPROX 1:1,000,000

BEAUFORT SEA

E-1237-21350-7
17 MARCH 1973

SCENE 1237-21350

THIS SCENE CONTAINS MANY FEATURES DESCRIBED FOR SCENE 1236-21292. THOSE FEATURES ARE CHIEFLY THE BOUNDARIES AND NEWLY-REFROZEN LEADS ON THE EASTERN SIDE OF THE IMAGE. RUNNING DIAGONALLY ACROSS THE WESTERN SIDE OF THIS IMAGE IN AN ALMOST TRUE EAST-WEST DIRECTION IS A ZONE, "Z", OF REFROZEN FRACTURED PANS. THIS ACTIVITY IS ESTIMATED TO HAVE CEASED THREE TO FOUR WEEKS PREVIOUSLY. OTHER FEATURES ON THIS SCENE INCLUDE A BOUNDARY, WHICH, AFTER DIPPING INTO HARRISON BAY CONTINUES NORTHWESTWARD TOWARD THE 10-FATHOM CONTOUR UNTIL IT EXECUTES AN ABRUPT 90° TURN AND PROCEEDS DUE WEST-WARD PARALLEL TO THIS CONTOUR. THIS SEGMENT OF THE BOUNDARY DELINEATES A DIVISION BETWEEN RELATIVELY SMOOTH ICE SHOREWARD AND REFROZEN PAN FRAGMENTS SEAWARD. THIS EAST-WEST PORTION OF THE BOUNDARY APPEARS TO CONTAIN EXTEN-SIVE RIDGES. FURTHER TO THE WEST BUT ALONG THIS SAME GENERAL ALIGNMENT A SOMEWHAT RECENTLY REFROZEN LEAD, "N", HAS BEEN DELINEATED. IT IS INTERESTING TO NOTE THAT THIS LEAD WAS LOCATED WELL SHOREWARD OF THE 10-FATHOM CONTOUR. ALL ICE ON THIS SCENE IS CONSIDERED TO BE CONTIGUOUS ICE. NO "SHEAR ZONE" EXISTS WITHIN THIS DISTANCE TO THE BEAUFORT COAST.



KILOMETERS
10 20 30 40 50

SCALE APPROX 1:1,000,000

E-1238-21405-7
18 MARCH 1973

BEAUFORT SEA

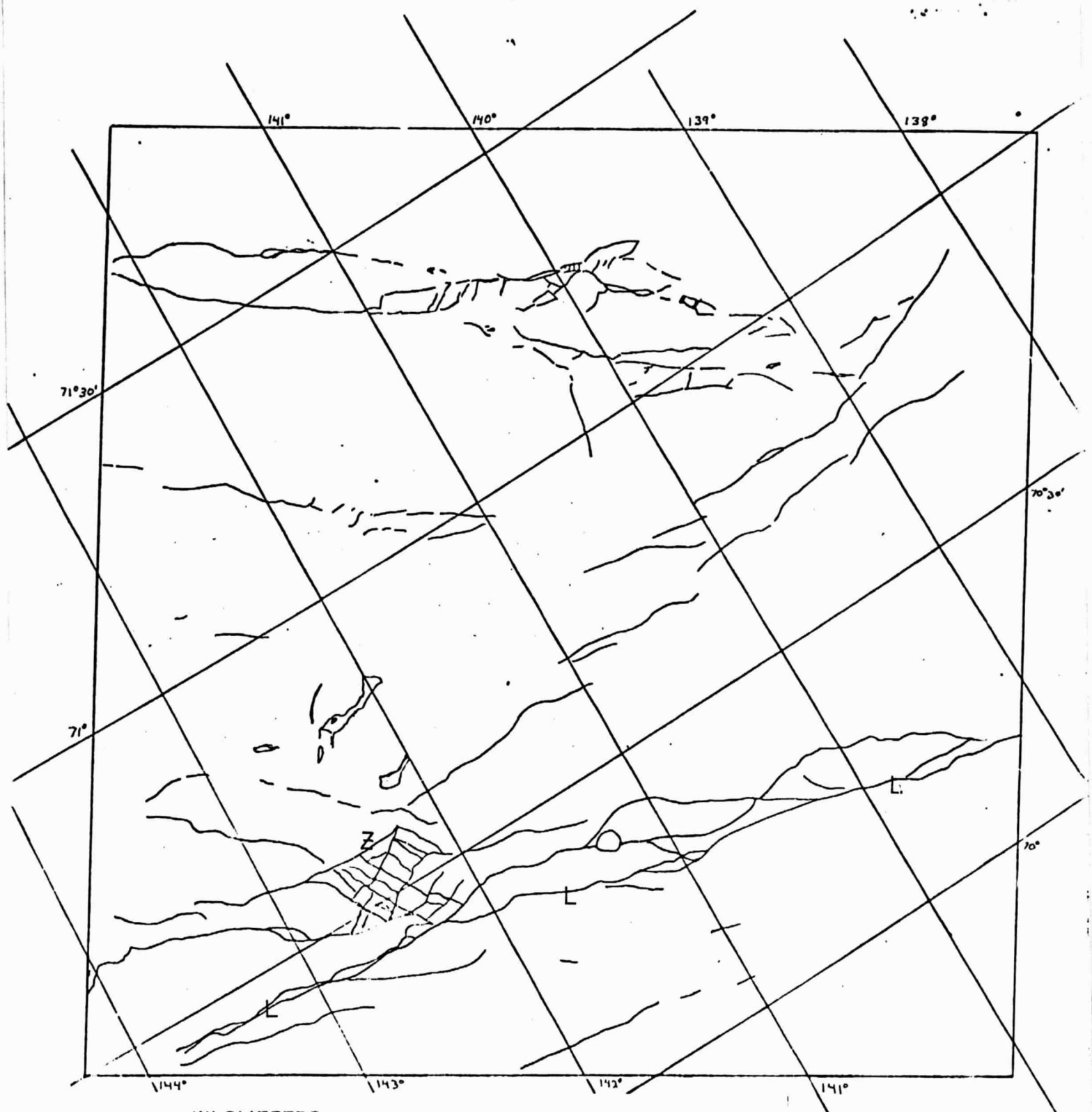
SCENE 1238-21405

THE FEATURES ON THE EASTERN PORTION OF THIS IMAGE ARE DESCRIBED FOR SCENE 1237-21350. IN THE NORTHWESTERN PORTION OF THE IMAGE IS A SYSTEM OF REFROZEN LEADS TENDING IN A PATTERN SLIGHTLY NORTH OF EAST. THIS PATTERN IS OFTEN GENERATED IN THIS AREA BY ICE FRACTURING IN THE CHUKCHI SEA WITH THE FRACTURE PATTERN CONTINUING INTO THE BEAUFORT SEA PAST PT. BARROW. JUST SOUTH OF THIS PATTERN IS AN EXTENSIVE EAST-WEST REFROZEN FRACTURE ZONE, "Z". IT COULD WELL BE THAT THIS FRACTURE ZONE WAS THE SHOREWARD BOUNDARY OF THE PREVIOUS FRACTURE PATTERN.

LATE WINTER 1974 LANDSAT BEAUFORT SEA

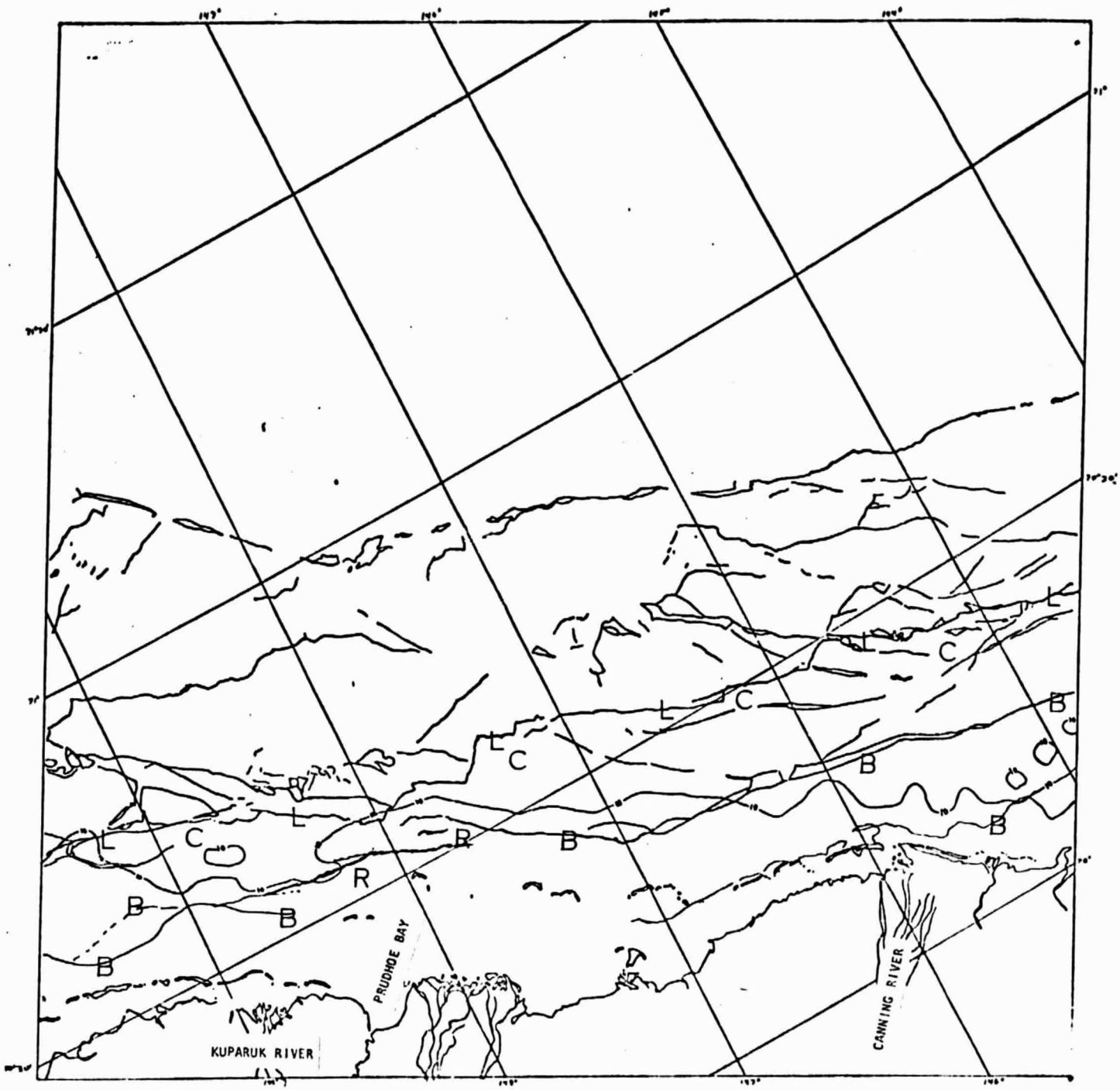
NEAR SHORE ICE MAPS

ORDER OF PRESENTATION IS EAST TO WEST


141°
140°
139°
138°
71°30'
71°
70°30'
70°
144°
143°
142°
141°
KILOMETERS
10 20 30 40 50
SCALE APPROX 1:1,000,000
BEAUFORT SEA

SCENE 1590-20493

THIS SCENE IS LOCATED SOME DISTANCE SEAWARD OF THE BEAUFORT COASTLINE. WHILE IT IS NOT POSSIBLE TO DETERMINE WITH CERTAINTY, IT APPEARS THAT THE LEAD LABELED IN THE SOUTHERN PORTION OF THE IMAGE WAS THE SEAWARD BOUNDARY OF CONTIGUOUS ICE. SEVERAL FRACTURE PATTERNS RESULTING FROM SHEARING MOTIONS HAVE BEEN TRACED ON THIS MAP.



KILOMETERS

10 20 30 40 50

SCALE APPROX 1:1,000,000

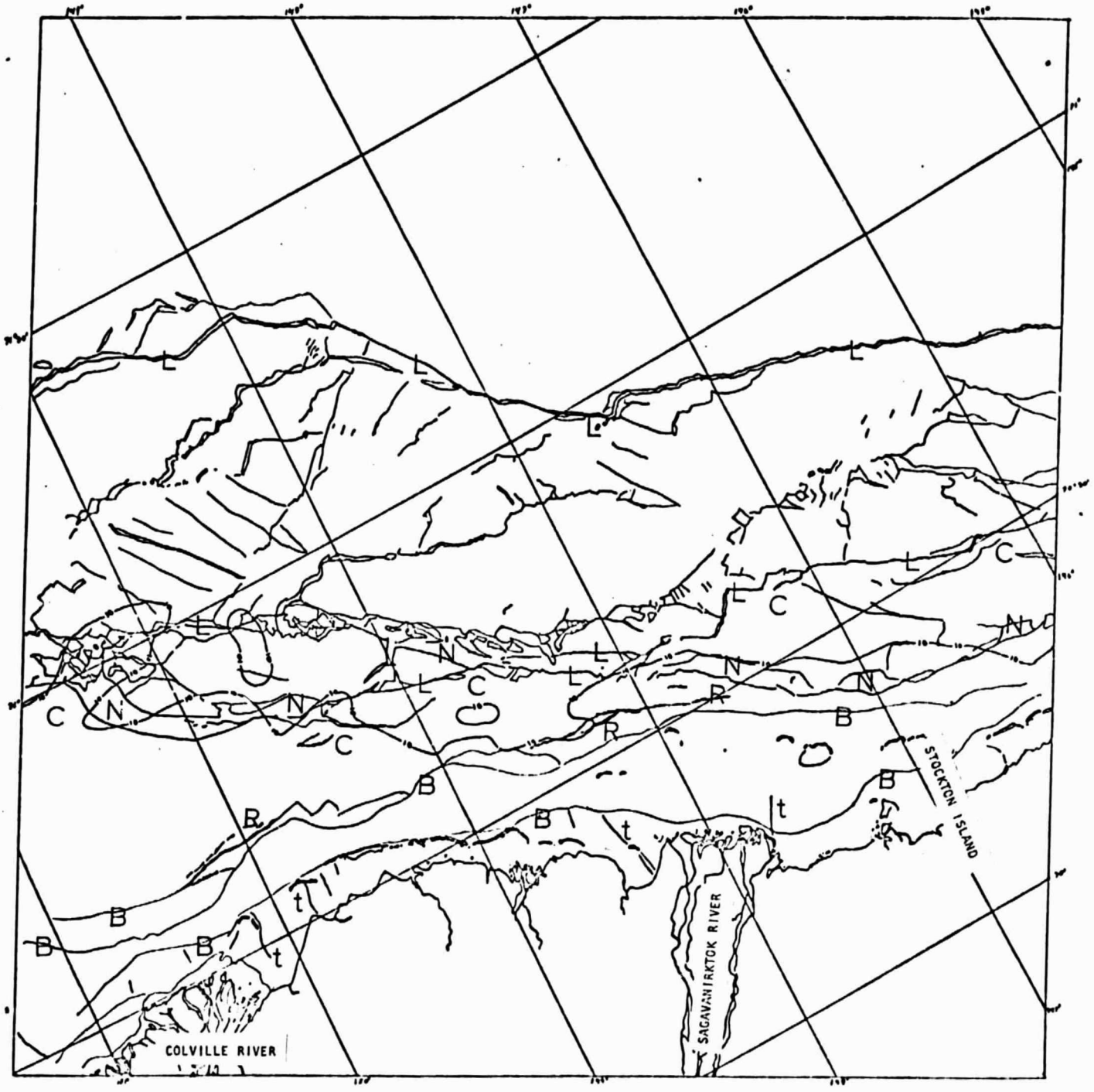
BEAUFORT SEA

E-1594-21122-7

9 MARCH 74

SCENE 1594-21122

UNTIL VERY RECENTLY ALL ICE IN THIS IMAGE HAD BEEN CONTIGUOUS. ALMOST EVERY FEATURE INDICATED IS A REFROZEN LEAD OR POLYNYA. IN THE VERY RECENT PAST A NARROW LEAD (INDICATED BY "L") HAS OPENED CREATING A NEW BOUNDARY OF CONTIGUOUS ICE (SEAWARD EDGE INDICATED BY "C".) THE REFROZEN LEADS SHOREWARD OF THIS BOUNDARY SHOW CLEARLY THAT WITHIN THE RECENT PAST THE SEAWARD BOUNDARY OF CONTIGUOUS ICE HAD BEEN MUCH CLOSER TO THE SHORE. THE BOUNDARY MARKED "B" DELINEATES THIS RECENT ICE EDGE (ON THE EASTERN PORTION OF THE IMAGE.) A VERY LARGE RIDGE SYSTEM HAS BEEN IDENTIFIED NORTH AND WEST OF CROSS ISLAND CONSIDERABLY SHOREWARD OF THE PRESENT ICE EDGE. THIS RIDGE SYSTEM IS LARGELY WITHIN THE 10-FATHOM CONTOUR AND IS VERY LIKELY GROUNDED. ON THE WEST SIDE OF THE IMAGE SEVERAL FOSSIL EDGES OF ICE HAVE BEEN IDENTIFIED AND MARKED "F". THERE MAY WELL BE RIDGE SYSTEMS ALONG THESE EDGES.



KILOMETERS

10 20 30 40 50

SCALE APPROX 1:1,000,000

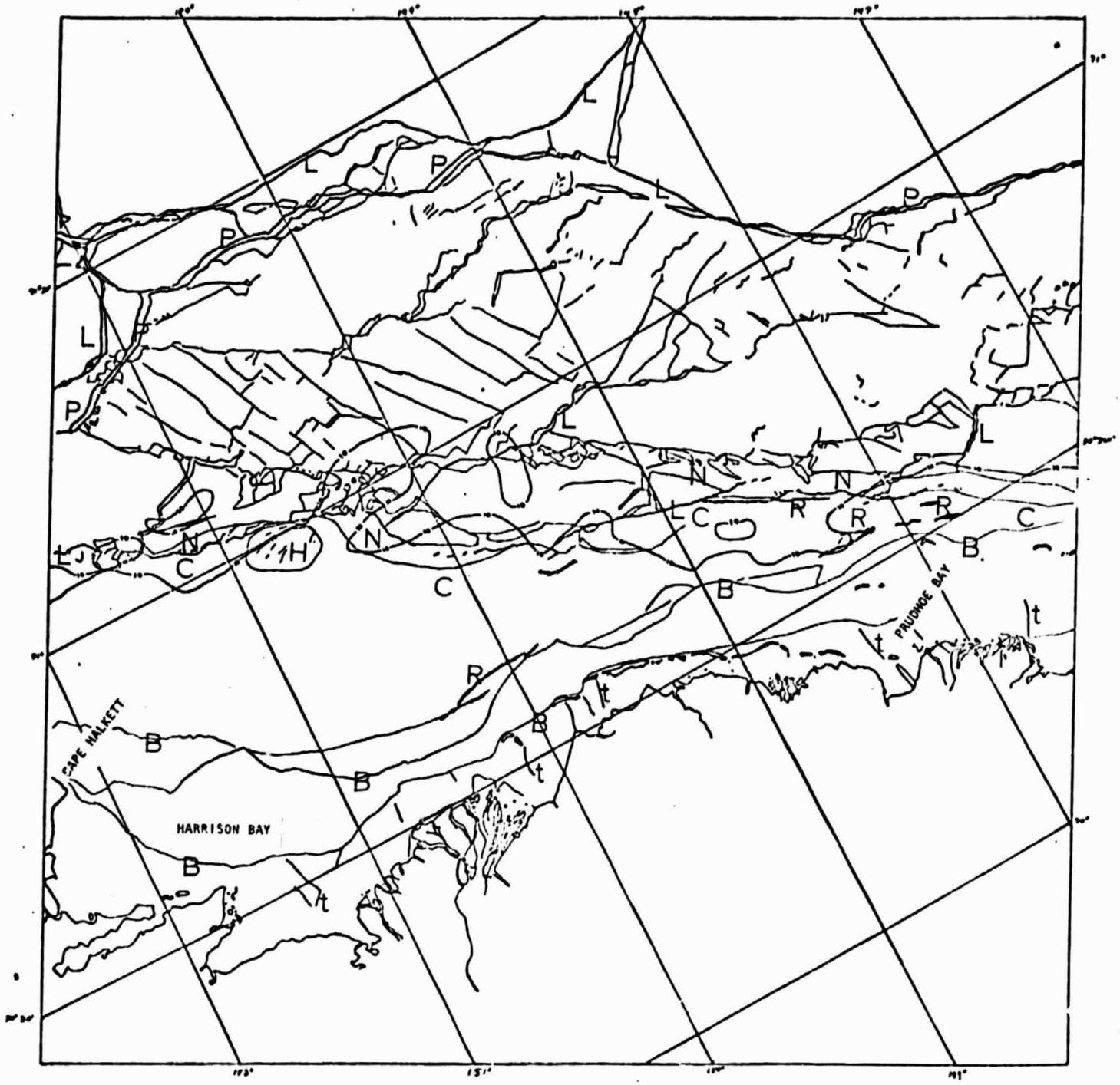
BEAUFORT SEA

E-1595-21180-7

10 MARCH 1974

SCENE 1595-21180

NEW LEADS, MARKED "L" ARE ROUGHLY ALIGNED WITH RECENTLY REFROZEN LEADS, "N", INDICATING RECURRING ICE ACTIVITY. THE LEAD SYSTEM SHOWN RUNNING EAST-WEST ACROSS THE CENTRAL PORTION OF THE IMAGE CURRENTLY FORMS THE SEAWARD BOUNDARY OF CONTIGUOUS ICE. WITHIN THE RECENT PAST, A LARGE NEAR-SHORE LEAD SYSTEM HAS CLOSED FORMING SEVERAL POLYNYAS WHICH HAVE REFROZEN (MARKED "N"). NOTE THAT THIS LINE OF NEWLY-FROZEN POLYNYAS NEARLY COINCIDE WITH THE 10-FATHOM CONTOUR. INSHORE OF THIS LINE OF FROZEN POLYNYAS TWO DISTINCT BOUNDARY SYSTEMS HAVE BEEN DRAWN. IT IS VERY LIKELY THAT THERE ARE FOSSIL ICE EDGES AND ARE THE LOCATION OF RIDGE SYSTEMS. TWO AREAS OF EXTENSIVE RIDGING HAVE BEEN IDENTIFIED WHICH CAN BE IDENTIFIED WITH THESE BOUNDARY SYSTEMS. VERY CLOSE TO SHORE SEVERAL LINEAR FEATURES TENATIVELY IDENTIFIED AS TIDAL CRACKS HAVE BEEN DESIGNATED BY "T".



KILOMETERS

10 20 30 40 50

SCALE APPROX 1:1,000,000

BEAUFORT SEA

E-1596-21234-7

11 MARCH 1974

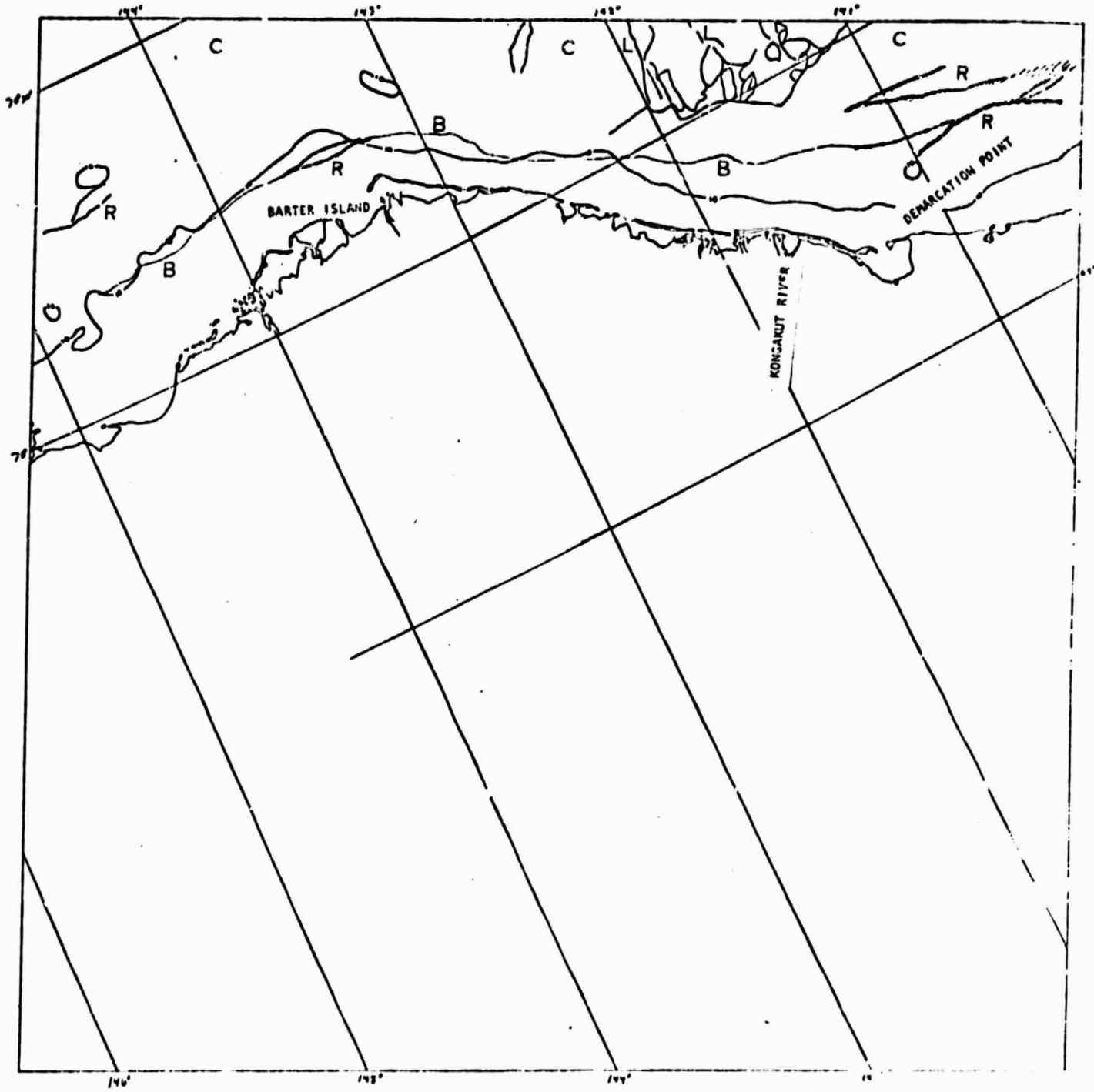
SCENE 1596-21234

THE LEAD SYSTEM RUNNING ACROSS THE TOP OF THE IMAGE IS NOW PARTLY FROZEN AND INDICATED BY "P". NEW LEADS, "L", HAVE APPEARED, SOME OF WHICH FORM A SYSTEM NEARLY COINCIDENT WITH THE 10-FATHOM CONTOUR. OVER MOST OF THE SCENE THIS NEW LEAD SYSTEM RUNS WITHIN THE FROZEN POLYNYAS, "N", RESULTING FROM AN EARLIER LEAD SYSTEM. A LARGE HUMMOCK FIELD, "H", HAS BEEN IDENT-IFIED ON THE WESTERN PORTION OF THE IMAGE. THIS HUMMOCK FIELD CAN BE CORRELATED WITH SHOALS IN THAT AREA. FARTHER SHOREWARD OF THE 10-FATHOM CONTOUR, TWO BOUNDARY SYSTEMS HAVE BEEN IDENTIFIED WHICH ARE PROBABLY FOSSIL ICE EDGES. THESE BOUNDARY SYSTEMS INCLUDE THE RATHER EXTENSIVE AREAS OF RIDGING INDICATED BY "R". IN THE NEAR SHORE AREAS LINEAR FEATURES RUNNING ROUGHLY PERPENDICULAR TO THE COAST HAVE BEEN IDENTIFIED AS TIDAL OR TENSION CRACKS, "T".

LATE WINTER 1975 LANDSAT BEAUFORT SEA

NEAR SHORE ICE MAPS

ORDER OF PRESENTATION IS EAST TO WEST



KILOMETERS

10 20 30 40 50

SCALE APPROX 1:1,000,000

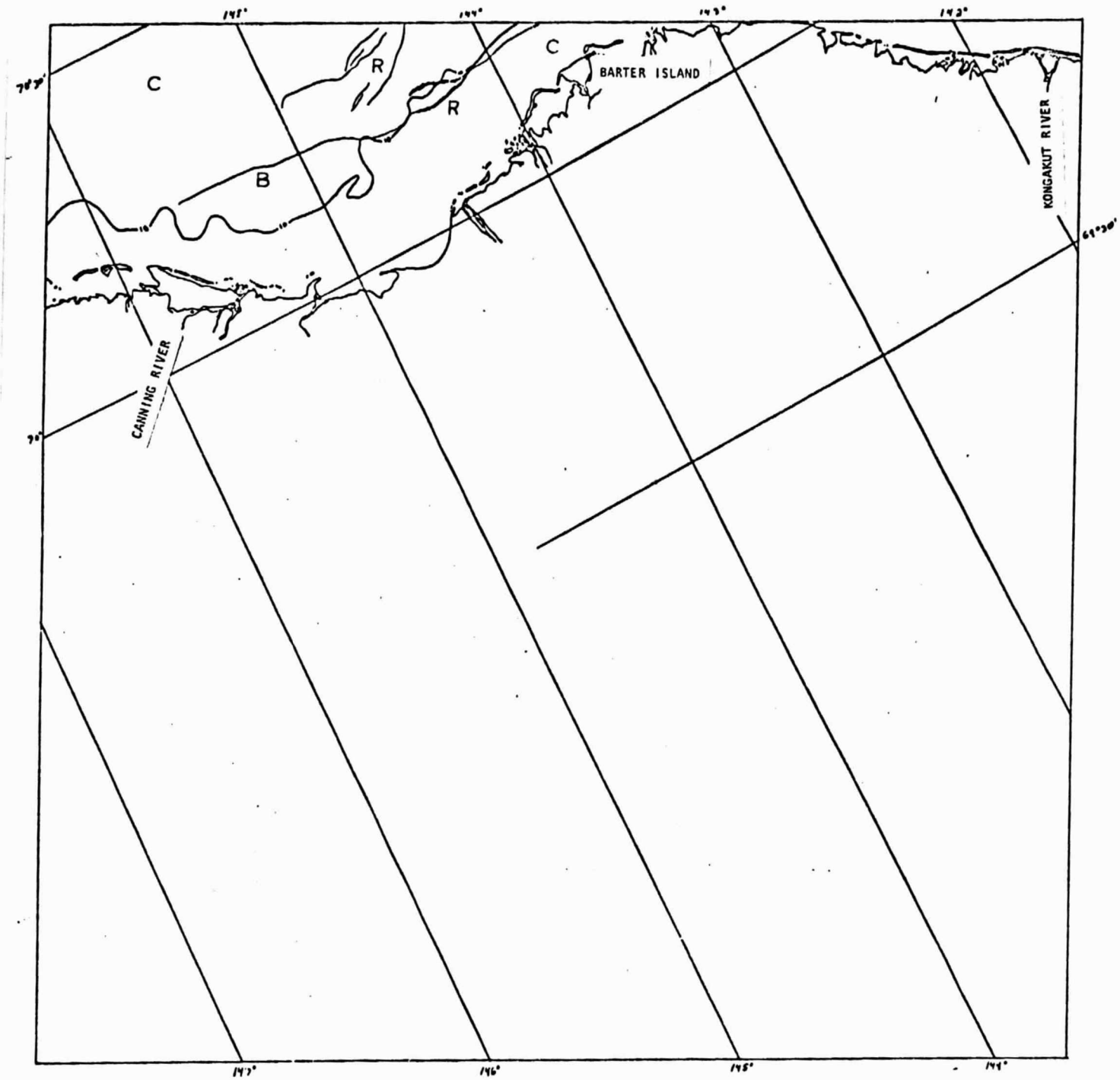
BEAUFORT SEA

E-1950-203/5-7

28 FEB 1978

SCENE 1950-20375

ATTENTION IS DRAWN TO THE BOUNDARY SHOWN RUNNING NEARLY COINCIDENTLY WITH THE 10-FATHOM CONTOUR IN THE WESTERN HALF OF THIS IMAGE AND SOMEWHAT SEAWARD OF THAT CONTOUR ON THE EASTERN SIDE OF THE IMAGE. CONTIGUOUS ICE EXISTS ON BOTH SIDES OF THIS BOUNDARY. (THE ONLY NON-CONTIGUOUS ICE IS LOCATED IN THE FRACTURE ZONE INDICATED IN THE NORTHERN CENTER PORTION OF THE SCENE.) HOWEVER, THE ICE SHOREWARD OF THIS BOUNDARY SHOWS VERY LITTLE STRUCTURE WHILE THE SEAWARD ICE APPEARS TO CONTAIN A MATRIX OF PANS FROZEN INTO PLACE. IT IS POSSIBLE THAT RIDGES OCCUR CONTINUOUSLY ALONG THIS BOUNDARY BUT RIDGE STRUCTURE CAN ONLY BE CLEARLY DETECTED WHERE INDICATED BY "R".



KILOMETERS

10 20 30 40 50

SCALE APPROX 1:1,000,000

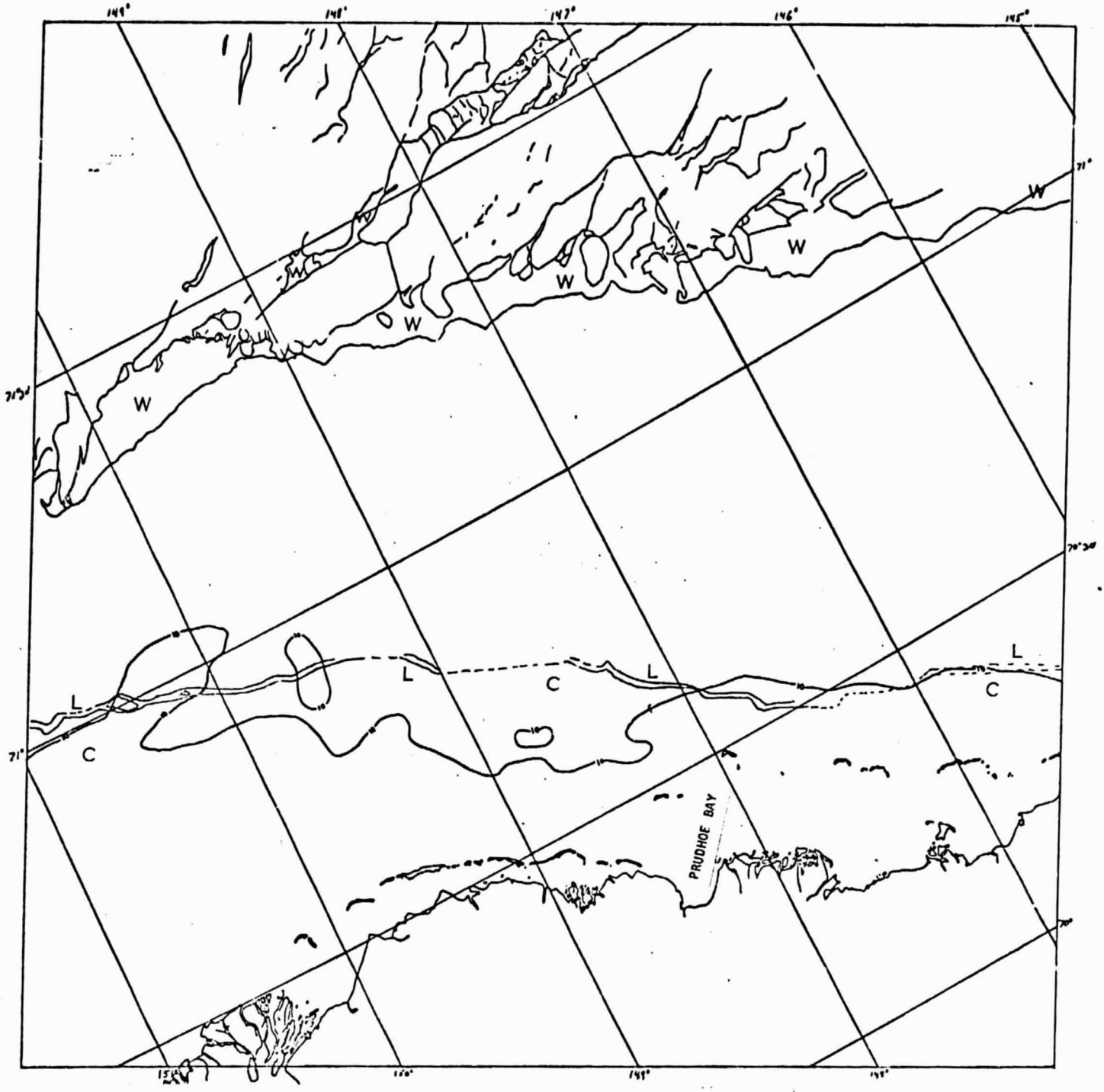
BEAUFORT SEA

E-1951-20433-7

1 MARCH 1975

SCENE 1951-20433

ATTENTION IS DRAWN TO THE BOUNDARY SHOWN NEARLY COINCIDENTLY WITH THE 10-FATHOM CONTOUR. AT ONE LOCATION A SEGMENT OF THIS BOUNDARY HAS BEEN IDENTIFIED AS A RIDGE SYSTEM. IT IS ENTIRELY POSSIBLE THAT THIS ENTIRE BOUNDARY IS A RIDGE. SEAWARD OF THE BOUNDARY MANY LINEAR FEATURES CAN BE SEEN WHICH HAVE BEEN IDENTIFIED AS RIDGE SYSTEMS. ALSO, MANY FROZEN IN-PLACE PANS CAN BE IDENTIFIED SEAWARD OF THE BOUNDARY WHILE SHOREWARD, FEW, IF ANY, FEATURES CAN BE IDENTIFIED. HOWEVER, ALL ICE ON THIS IMAGE IS CONTIGUOUS.



KILOMETERS

10 20 30 40 50

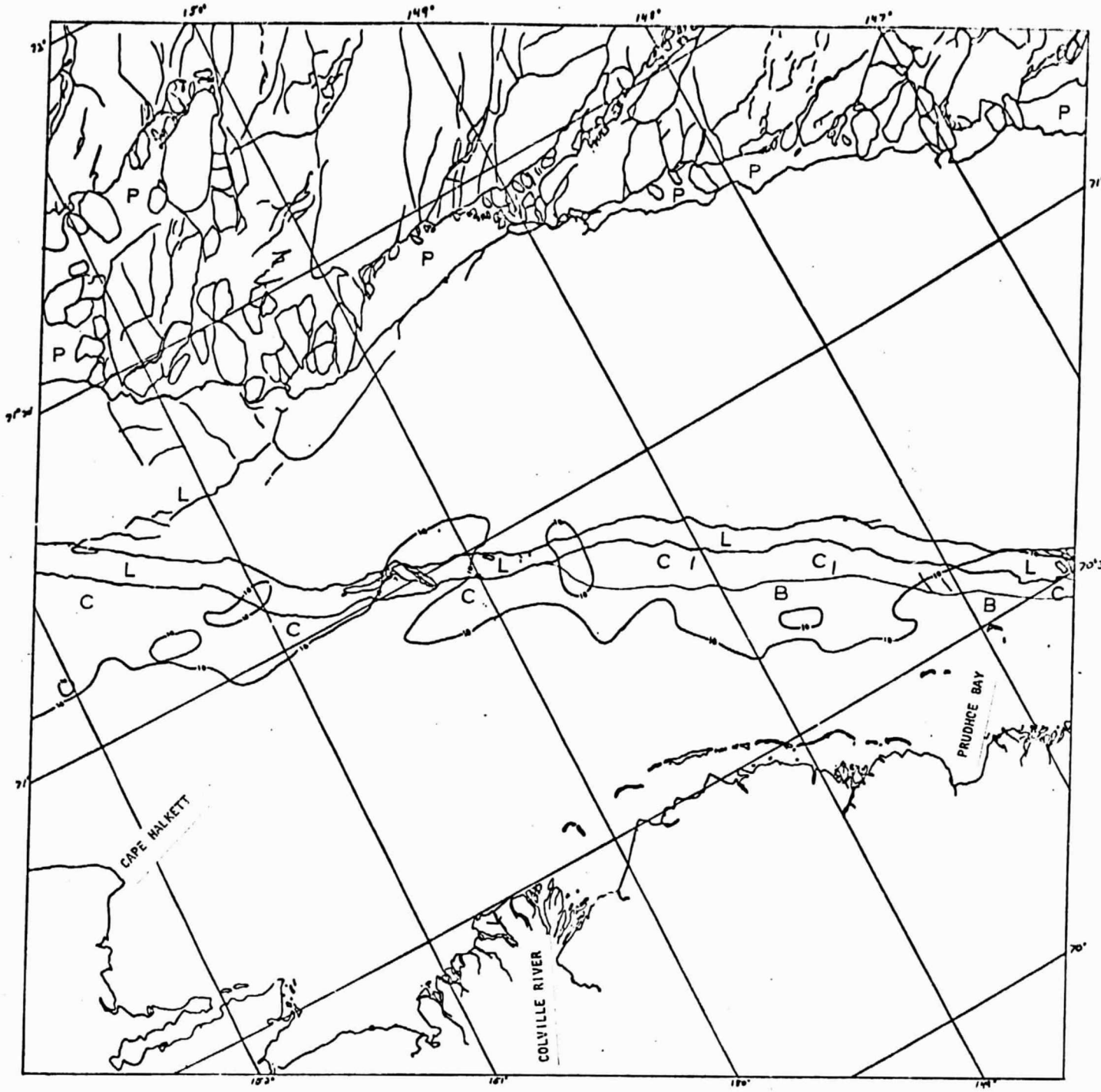
SCALE APPROX 1:1,000,000

BEAUFORT SEA

E-1955-21055-7.
5 MARCH 1975

SCENE 1955-21055

ICE DETAILS ARE PARTLY OBSCURED BY THIN CLOUDS. THE OPEN WATER AND LEADS INDICATED ARE APPARENTLY RECENT, HAVING OCCURRED WITHIN THE PAST THREE DAYS. IT IS INTERESTING TO NOTE THAT THE SHOREWARD LEAD NEARLY COINCIDES WITH THE 10-FATHOM CONTOUR.



KILOMETERS

10 20 30 40 50

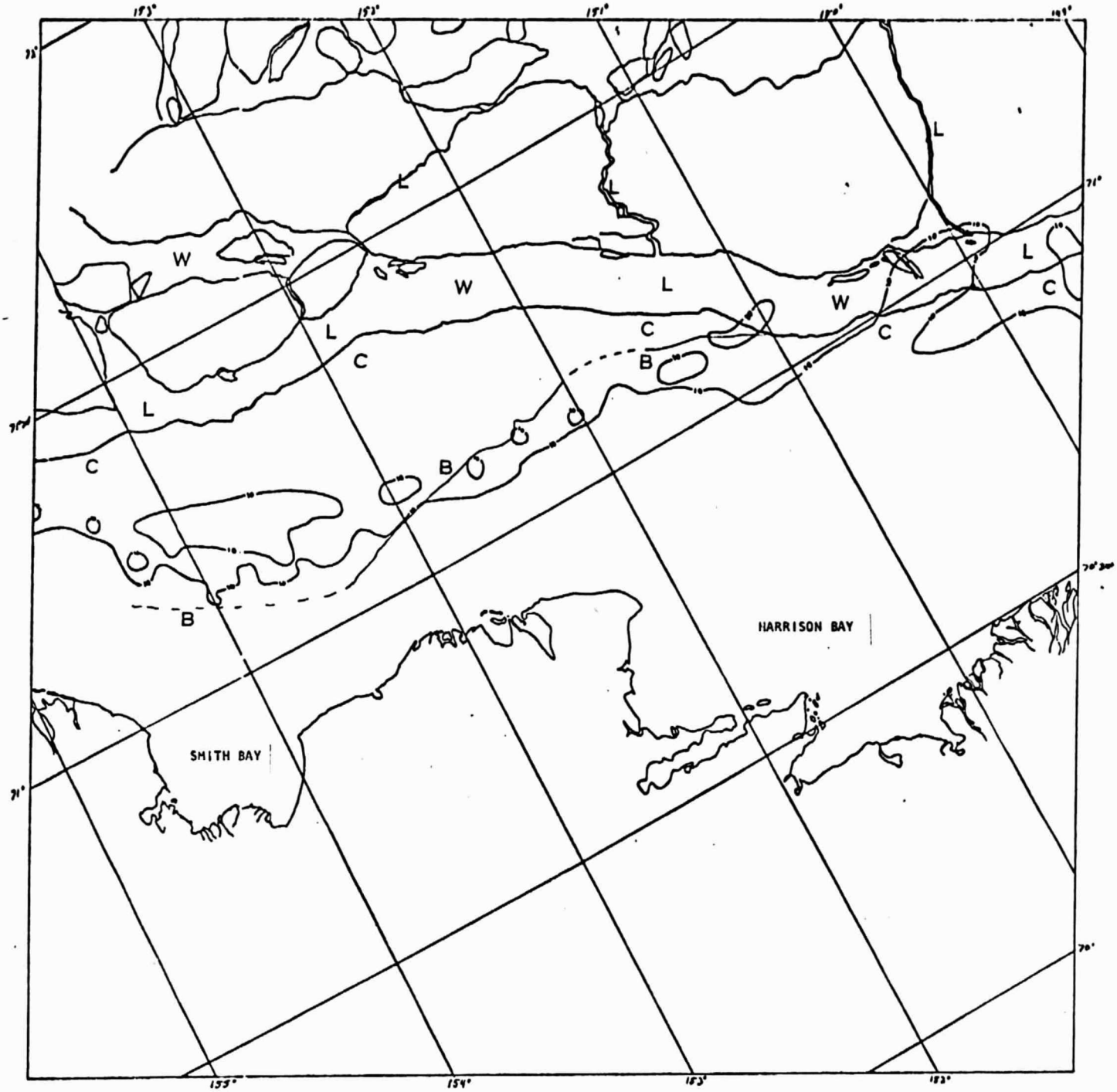
SCALE APPROX 1:1,000,000

BEAUFORT SEA

E-1956-21113-7
6 MARCH 1975

SCENE 1956-21113

IT IS APPARENT THAT THE BOUNDARY OF CONTIGUOUS ICE HAS RECENTLY MOVED SHOREWARD WITH THE CREATION OF THE NEW LEAD RUNNING ROUGHLY COINCIDENTLY WITH THE 10-FATHOM CONTOUR. SOME ICE FEATURES CAN BE SEEN SHOREWARD OF THIS NEW LEAD BUT NO CLEAN BOUNDARY EXISTS - AS WAS NOTED TO THE EAST FOR THIS LANDSAT CYCLE - SEPARATING FEATURELESS ICE FROM ICE CONTAINING OBVIOUS FEATURES.



KILOMETERS

10 20 30 40 50

SCALE APPROX 1:1,000,000

BEAUFORT SEA

E-1958-21230-7
8 MARCH 1975

SCENE 1958-21230

SOME NEW ICE IS APPARENT ON THE LARGE, NEWLY-OPENED FLAW LEAD DEFINING THE SEAWARD LIMIT OF CONTIGUOUS ICE. THE BOUNDARY INDICATED SEPARATES FEATURELESS ICE (SHOREWARD) FROM ICE CONSISTING OF MANY PANS FROZEN INTO PLACE. AGAIN IT SHOULD BE NOTED THAT THIS BOUNDARY ROUGHLY FOLLOWS THE 10-FATHOM CONTOUR. HOWEVER, IF THERE WERE TO BE ANY REAL SIGNIFICANCE TO THIS CORRELATION, THE DEVIATION FROM THIS CORRELATION IN THE VICINITY OF THE LARGE SHOAL ON THE WESTERN SIDE OF THIS IMAGE WOULD REQUIRE AN EXPLANATION.

KILOMETERS
10 20 30 40 50

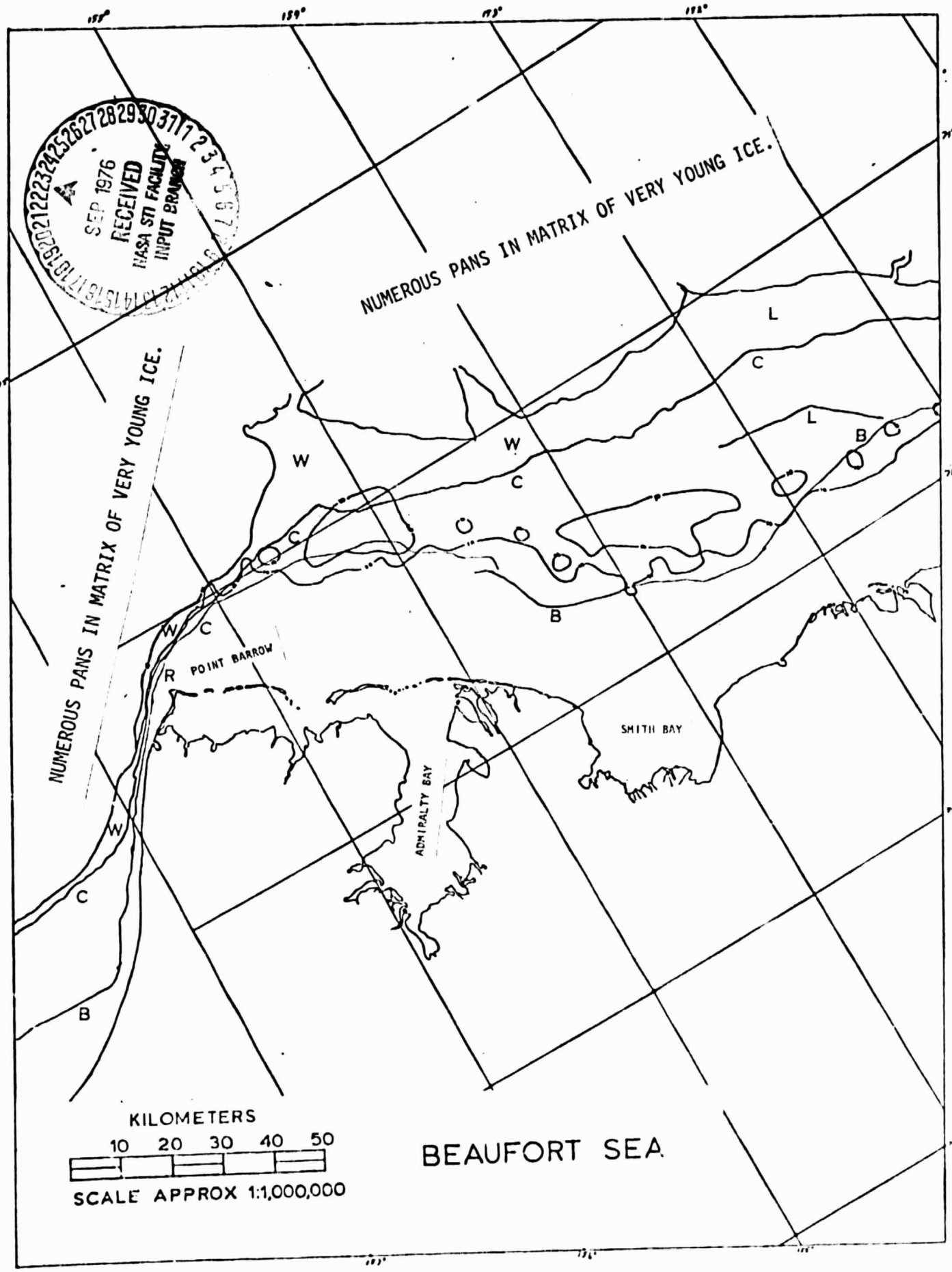
SCALE APPROX 1:1,000,000

BEAUFORT SEA

E-1909-21284-7
9 MARCH 1975

SCENE 1959-21284

ALTHOUGH SOME NEW ICE IS APPARENT ON THE LARGE FLAW LEAD, IT IS NOT FORMING VERY QUICKLY. (THE LEAD HAS PROBABLY BEEN OPEN SINCE MARCH 5.) THE BOUNDARY SHOWN WITHIN THE CONTIGUOUS ICE SEPARATES FEATURELESS ICE (INSHORE) FROM THE CONSISTING OF PANS FROZEN INTO PLACE (OFFSHORE). AGAIN THIS BOUNDARY ROUGHLY COINCIDES WITH THE 10-FATHOM CONTOUR.



E-1960-21342-7
10 MARCH 1975