

FINAL FIELD SUMMARY
CHESTERFIELD INLET SURVEY
CENTRAL REGION
1973

B.M. WRIGHT
HYDROGRAPHER-IN-CHARGE

PROJECT FILE NO. 6600-73-5

CONTENTS

<i>Staff Assignments</i>	<i>Page 1</i>
<i>List of Equipment</i>	<i>Page 2</i>
<i>Chronology of Events</i>	<i>Page 3</i>
<i>Narrative</i>	<i>Page 5</i>
I) <i>Planning and Preparations</i>	<i>Page 5</i>
II) <i>Operations</i>	<i>Page 6</i>
<i>General</i>	<i>Page 6</i>
<i>Control Work</i>	<i>Page 6</i>
<i>Water Level Gauging</i>	<i>Page 7</i>
<i>Sounding</i>	<i>Page 7</i>
<i>Electronic Equipment</i>	<i>Page 8</i>
<i>Weather</i>	<i>Page 8</i>
<i>Ship Support</i>	<i>Page 8</i>
III) <i>Conclusions and Recommendations</i>	<i>Page 9</i>
<i>Control Work</i>	<i>Page 9</i>
<i>Tidal and Current Measurements</i>	<i>Page 9</i>
<i>Sounding</i>	<i>Page 9</i>
<i>Survey Tactics</i>	<i>Page 10</i>
APPENDIX A: STATISTICS	
APPENDIX B: PROJECT ILLUSTRATIONS	PLATES 1-3
APPENDIX C: PHOTOGRAPHS	PLATE 4

STAFF ASSIGNMENTS

B.M. Wright	Hydrographer-in-Charge	September 6 - October 18
J.F. McCarthy	Hydrographer	September 6 - October 18
R. Langford	Hydrographer	September 6 - October 18
D. Rose	Hydrographer	September 6 - October 18

LIST OF CRAFT AND MAJOR EQUIPMENT

- 1 C.C.G.S. 'N.B. MACLEAN'
- 1 25 ft. freighting barge
- 1 G-2 Bell Helicopter
- 1 Hydrodist Chain MRB201/MRB2
- 2 Raytheon DE 719 Sounders
- 3 Ottboro Pressure Gauges
- 1 Set MRA-3 Tellurometers

PROJECT: 6600-73-5

DURATION: SEPTEMBER 6 - OCTOBER 18, 1973

CHRONOLOGY OF EVENTS

- September 6 Staff and Crew depart CCIW for Churchill.
- September 8 N.B. MACLEAN arrives Churchill.
- September 8-12 Ship holding Churchill awaiting weather and parts.
- September 13 Depart Churchill for Chesterfield Inlet.
- September 14-16 Anchored at Chesterfield.
Gauging and control work.
- September 17 Depart Chesterfield for bunkering at Deception Bay.
- September 21 Return to Chesterfield.
- September 22-24 Tide gauge installations, control work and reconnaissance sounding.
- September 25-29 Hove-to in 50-70 knot northwesterly winds.
- September 29-
October 2 Control work using helicopter and barge work.
- October 3-5 Hove-to in high winds.
- October 6-7 Gauge work, sounding, and control work.
- October 8-9 Hove-to in severe winds.

- October 10 Minor barge and control work.
- October 11 Retrieve tide gauge at Chesterfield Settlement.
Helicopter grounded.
- October 12-14 Fog and high winds obviate launch work.
- October 15 Recover final tide gauge and survey equipment.
Depart for Coral Harbour.
- October 17 Depart Coral Harbour for Burlington.

NARRATIVE

(I) Planning and Preparations

During the first half of 1973, the M.O.T. was sounded on the possibility of using an arctic icebreaker to support a reconnaissance survey in Chesterfield Inlet. This request was eventually realized, and the N.B. MACLEAN was placed at the hydrographic disposal for the period September 15th to October 15th. In order to staff and equip the Chesterfield survey, it was necessary to close down the Thunder Bay survey early and divert these resources to Churchill, Manitoba for embarkation on the MACLEAN.

Planning proceeded on the basis of placing three small launches aboard the MACLEAN. In addition to the launches, the ship's helicopter, a Bell G-2, would be used to provide mobility for the survey.

Horizontal control work, water level gauging, reconnaissance sounding and environmental familiarization were the primary objectives of the survey.

(II) Operations

General

The N.B. MACLEAN arrived in Churchill on September 8th and loading of survey equipment began immediately. Due to the national rail strike, the launch equipment, loaded at Thunder Bay, failed to arrive, and in view of an indefinite delivery date, it was decided to forego our own launches, and utilize the standard ship barge.

The ship arrived in Chesterfield Inlet on September 14th, and we immediately commenced control work and gauging. Three days later the ship departed for bunkering at Deception Bay. On September 22nd, the vessel arrived back in Chesterfield, and the control work and gauging program continued.

High winds prevailed for much of the time but with the barge and the helicopter it was possible to forge ahead slowly. Temperatures hovered around the freezing mark, but did not hinder the operations. During the 30 days on location at Chesterfield Inlet, we were able to extend horizontal control 30 miles along the Inlet, establish two tide gauges and four bench marks, resolve a geodesy query at Chesferfield Settlement, and undertake both reconnaissance and controlled sounding.

Control Work (see Plate #1)

Sufficient geodetic points were recovered south of Chesterfield Settlement, to afford extending high order control westward along the Inlet. Using the ship's helicopter, it was possible to establish ten primary control points which will be used as R.P.S. transmitter sites in 1974. Concurrent

to extending control along the inlet, a 150 ft. radio beacon tower was positioned and a discrepancy between a C.H.S. and G.S.C. value for a point was resolved.

Water Level Gauging (see Plate #2)

Two tide gauges were installed; one at Chesterfield Settlement, and the other fifteen miles along the Inlet. Both gauges gave incomplete information due to recording mechanism failures. The gauge at Chesterfield Settlement was continually plagued with capillary tubing leaks and thus provided intermittent results. The other gauge had a 2% time error which had to be corrected on estimations derived from comparisons.

Sounding (see Plate #3)

Without a standard sounding launch it was necessary to utilize the small cargo barge carried by the ship. Accordingly, a Raytheon DE719 transducer was welded to the barge and it was modified to accept Hydrodist equipment.

A reconnaissance track was made 15 miles into the Inlet, and revealed a potential for depths in excess of 40 metres. Controlled sounding, using the MRB-201 Hydrodist was undertaken on the unsurveyed waters of the Inlet on Chart 5430.

Electronic Equipment

All of the basic surveying and communication equipment performed satisfactory.

The MRB-201 Hydrodist unit operated satisfactory, although we never used it beyond an 8000 metre range.

Weather

Inclement conditions prevailed for most of the period September 15th to October 15th; providing strong winds mixed with fog and rain conditions. The temperatures never went below freezing, and often moderated in the high fifties. Calm, warm conditions would endure for two or three days, and then be followed by an equal period of winds in the 50 knot range.

Ship Support (see Plate #4)

The C.C.G.S. N.B. MACLEAN provided food, accommodation, barge, helicopter and personnel support to the survey. Generally, the ship was anchored either at the Chesterfield Settlement or along the Inlet at the edge of Chart 5430 soundings.

During high winds it was necessary to weigh anchor and ride out the storm while underway.

(III) Conclusions and Recommendations

Control Work

In order to facilitate future R.P.S. range-range or Hydrodist range-bearing systems, it will be necessary to continue extending horizontal control westward along the inlet. This can best be achieved using a Jet Ranger Helicopter from either a shore or ship base.

Tidal and Current Measurements

The tidal range of the inlet appears to increment as one proceeds westerly, before entering a general dampening decline. Thus proper gauging will be important to insure accurate reductions for sounding values. Currents in the Inlet are very pronounced, estimated up to 7 knots at spring tides. It is therefore important that a metering program be undertaken. Unattended gauges would be the most efficient for this area. This program could be expedited using either launch or helicopter.

Sounding

Range-range or range-bearing systems can be used effectively in the Inlet. For the initial twenty miles, where one is exposed to heavy swells from Hudson Bay, it will be necessary to operate launches in excess of 30 feet.

A corridor approximately 2 miles wide should be undertaken, with supplemental access corridors to sheltered areas providing good anchorage.

Survey Tactics

The survey should be undertaken from both ship and shore bases. The shore based unit would be primarily concerned with gauging, control work, transmitter site maintenance, and logistic support. The ship would engage in sounding and oceanographic programs. Both offshore and inshore work would be undertaken.

APPENDIX A
- STATISTICS -

FIELD REPORT STATISTICS: - MONTHLY PROJECT: FINAL FIELD

YEAR 1975 FROM SEPT. 10 TO OCTOBER 15

Establishment	CHESTERFIELD INLET			
H.I.C.	B.M. WRIGHT			

Project Name	Project Number	Project Number	Project Number	Project Number
CHESTERFIELD INLET	6600-75			
	-5			

Resources:					TO
Number of Hydrographers *					4/176
Number of Scientists *					NIL
Number of Electronic Technicians *					NIL
No. of Student Assistants and Casuals *					NIL
No. of Support Personnel (Ship's Crew, Etc.) *					2/60
Total Personnel *					6/180
Number of Ships					1
Number of Launches					NIL
Number of Land Vehicles					NIL
Number (and type) of Aircraft BELL G-2					1
Number of Minor Support staff					NIE
Other (specify)					
25 FT. BARGE					1

Should provide two figures separated by a slash. The first figure being the average number on strength and the second being the man days.
 e.g. number of Hydrographers: 5/180 (an average of 5 hydrographers spent 180 man days on the project).

FIELD REPORT STATISTICS: - MONTHLY ... PROJECT ... FINAL FIELD ...

YEAR 1973 FROM SEPT. 10 TO OCT. 15

Establishment	Project Number	Project Number	Project Number	Project Number
CHESTERFIELD INLET	6600-73			
H.I.C. B.M. WRIGHT	-5			
<u>Time:</u>				
Total operational days.	44			
Days actual field work.	14			
Days lost (weather)	15			
Days lost (Sat. Sun. Holidays)	0			
Days lost (Equipment failure)	0			
Days lost in Transit	10			
Days lost in port for Supplies, Bunker, etc.	5			
Days lost, other causes	0			
Total Man days in period (staff)	176			
Total Man days worked (staff)	56			
Man days:- (staff)				
(a) Sounding	6			
(b) Shoal Examinations	NIL			
(c) Wharf surveys	NIL			
(d) Oceanography	NIL			
(e) Geophysics	NIL			
(f) Tides & water levels	9			
(g) Collecting bottom samples	NIL			
(h) Horizontal Control	20			
(i) Shorelining & Low Watering	NIL			
(j) Data processing & office admin.	17			
(k) Sailing directions	2			
(l) Place Names	NIL			
(m) Current observations	NIL			
(n) Photo-Ident.	2			
(o) Others (specify)	0			

YEAR

1973

FROM

SEPT. 10

TO

OCT. 15

Establishment	CHESTERFIELD INLET	Project Number	Project Number	Project Number	Project Number	To
H.I.C.	B.M. WRIGHT	6600-73				
		-5				
<u>Sounding (Linear Nautical Miles/KM):</u>						
Ship Sounding		NIL				
Launch Sounding		43				
Other (specify)		0				
Total sounding		43				
Reconnaissance (Track) sounding		30				
Area sounded (N.M. ²) (Km ²)		10 SQ.M.				
<u>Shoals Examined:</u>						
Shoal Examinations (Ship)		NIL				
Shoal Examinations (Launch)		NIL				
Shoal Examinations (Sweep)		NIL				
Shoal Examinations (other) specify		NIL				
Shoal Examinations (Total)						
<u>Navigational Aids:</u>						
Shore Aids Positioned (including ranges)		2				
Floating Aids Positioned		NIL				
Navigational Ranges Sounded		NIL				
Navigational Ranges Drifted		NIL				
Sector Ranges Positioned		NIL				
Navigational Aids Established		2				

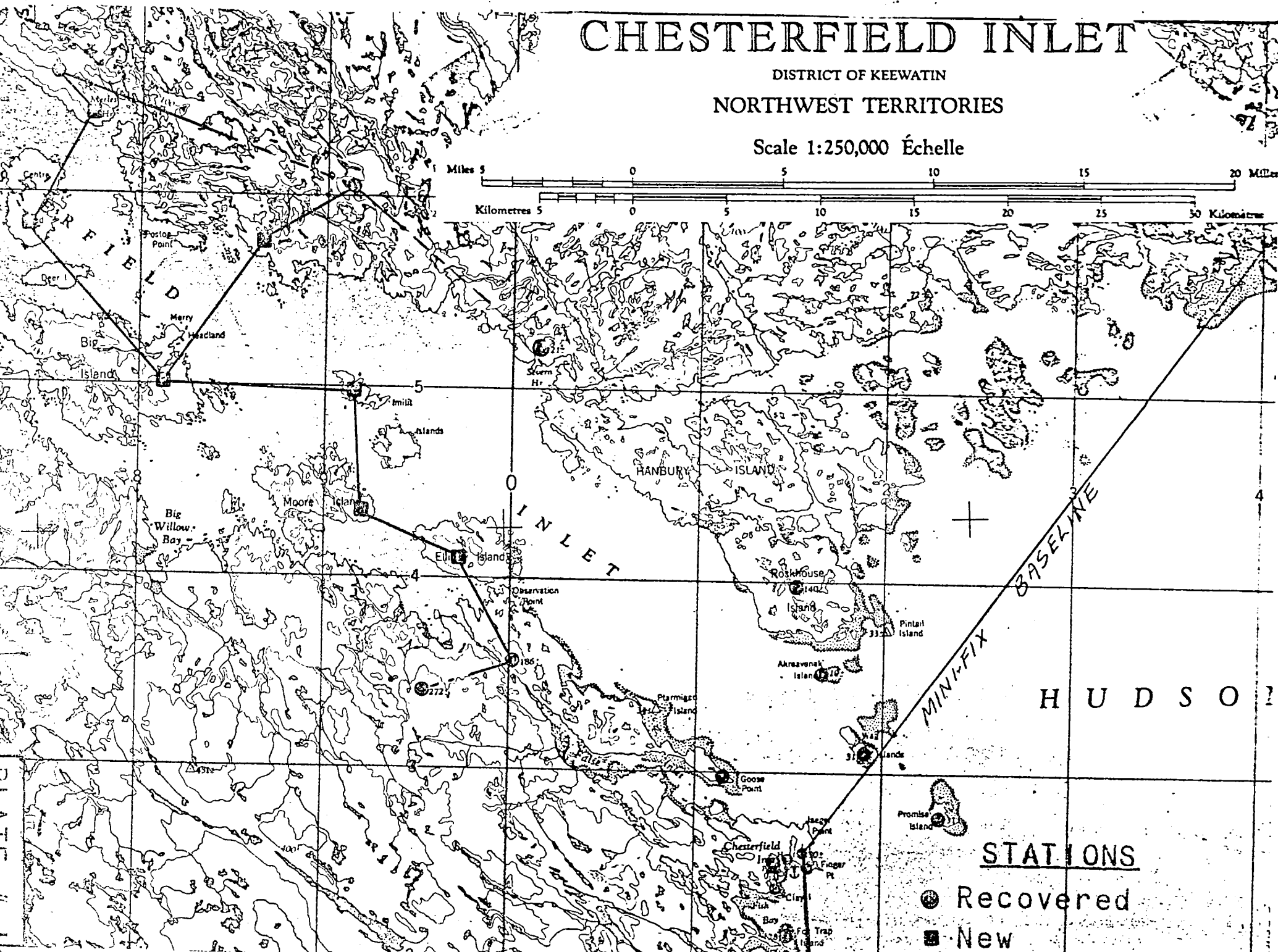
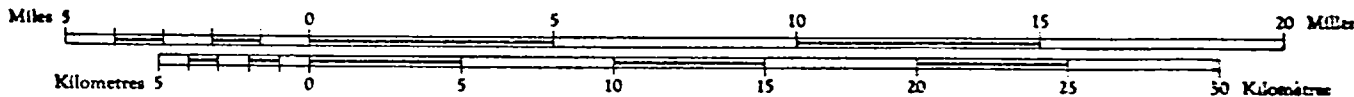
APPENDIX B

- PROJECT ILLUSTRATIONS -

CHESTERFIELD INLET

DISTRICT OF KEEWATIN
NORTHWEST TERRITORIES

Scale 1:250,000 Échelle



STATIONS

● Recovered

■ New

CHESTERFIELD INLET

DISTRICT OF KEEWATIN
NORTHWEST TERRITORIES

Scale 1:250,000 Échelle

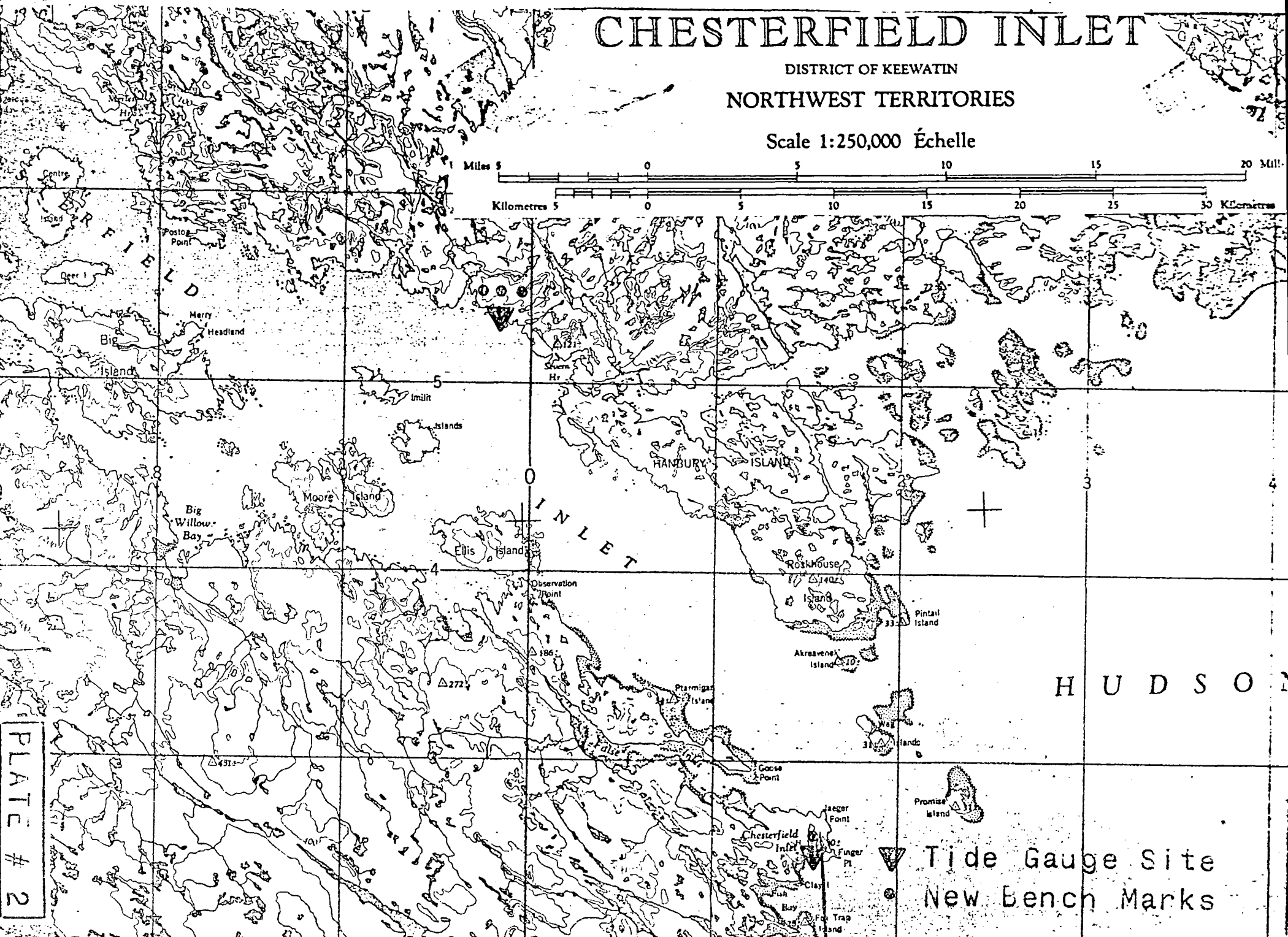
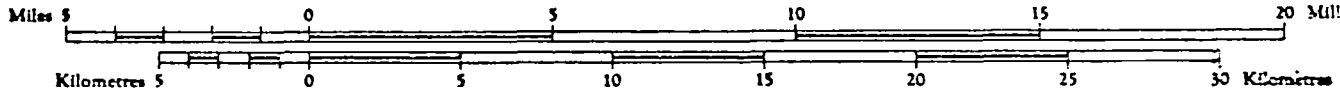


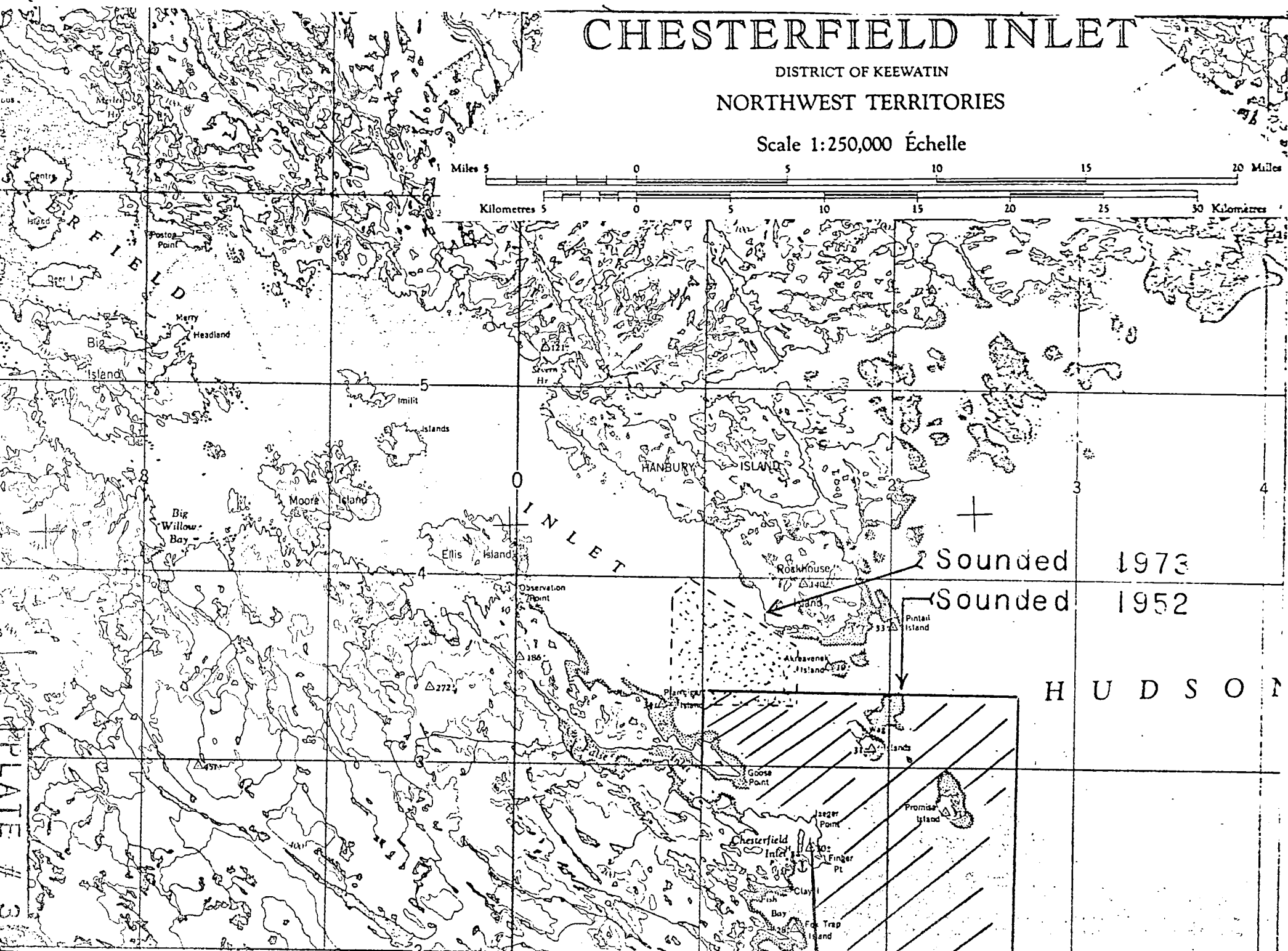
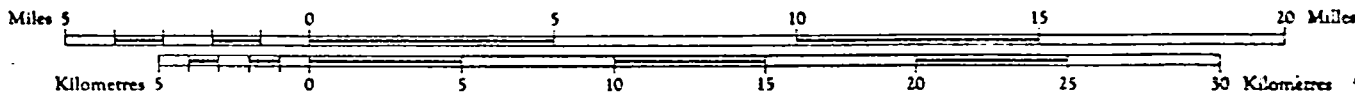
PLATE # 2

Tide Gauge Site
New Bench Marks

CHESTERFIELD INLET

DISTRICT OF KEEWATIN
NORTHWEST TERRITORIES

Scale 1:250,000 Échelle



Sounded 1973

Sounded 1952

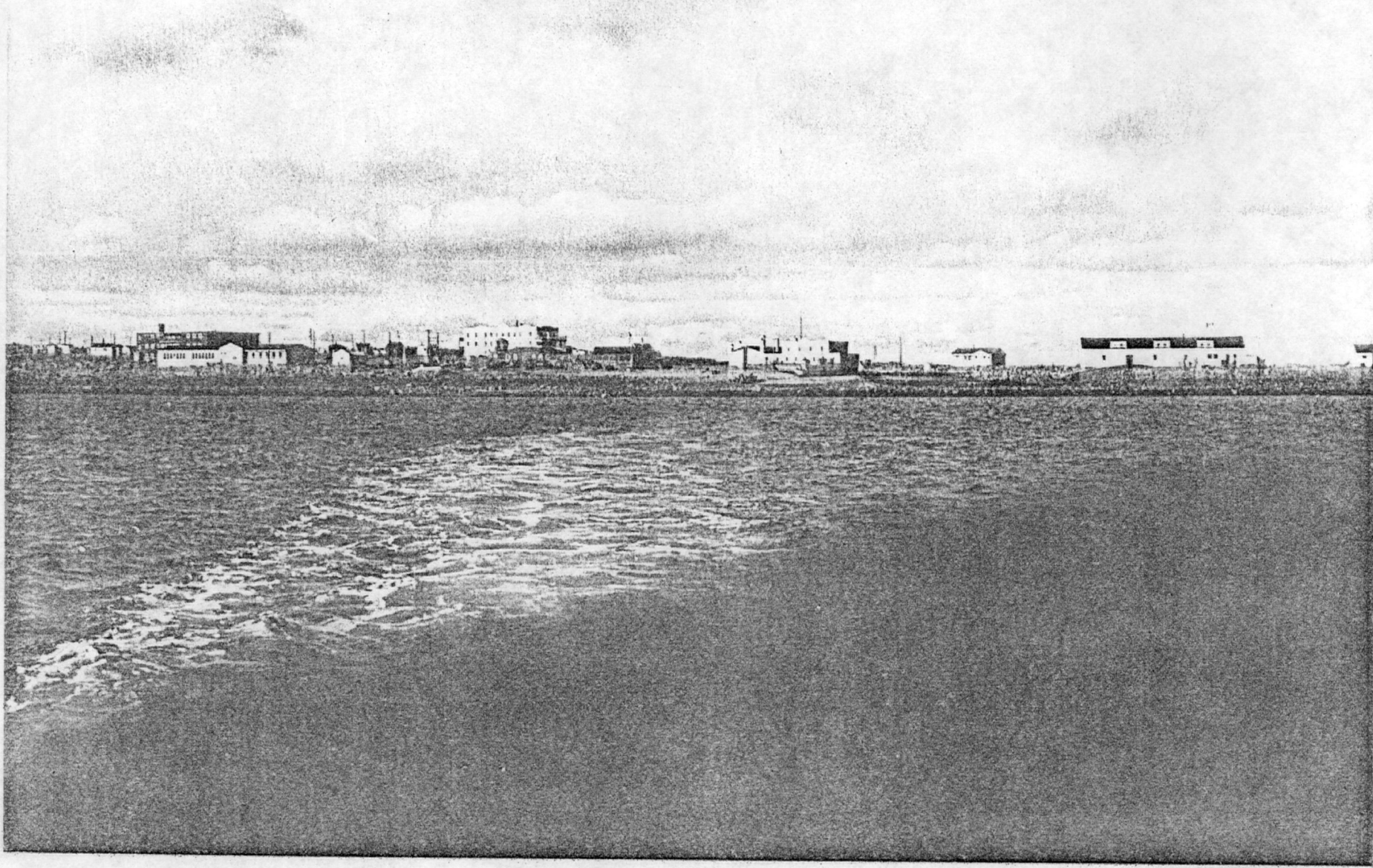
H U D S O N

APPENDIX C
- PHOTOGRAPHS -

BELL G-2 A HELICOPTER



CHESTERFIELD SETTLEMENT



U.C.C.S. N.B. MACLEAN

