

FINAL FIELD REPORT
BATHYMETRIC/LIMNOGEOLOGY SURVEY
MARCH TO NOVEMBER, 1974
LAKE ERIE NORTH SHORE
(PORT GLASGOW TO POINT PELEE)
PROJECT FILE NUMBER 6600-71-3

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HYDROGRAPHER-IN-CHARGE: F.L. DE GRASSE

PROJECT MANAGER: B. EIDSFORTH

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STAFF ASSIGNMENTS

Canadian Hydrographic Service, M.S.D.

<u>Name</u>	<u>Responsibility</u>	<u>Duration</u>
F.L. DeGrasse	Hydrographer-in-Charge	In field periodically
B. Eidsforth	Sub-Party Chief	March 20 - November 21
R. Solvason	Hydrographer	March 20 - April 5
B. Tinney	Seaman	April 8 - August 15
A. Slingerland	Coxswain	March 20 - April 11
M. Buchanan	Coxswain, BROCK	July 30 - September 16
V. Penny	Coxswain, BROCK	September 3 - November 8
T. Prince	Seaman, BROCK	August 19 - November 21
E. Mott	Coxswain, AGILE	April 16 - July 26
D. Toohy	Seaman, AGILE	April 16 - July 26
D. Ashdown	Coxswain, LE MOYNE	August 21 - September 26
R. McCurdy	Seaman, LE MOYNE	August 21 - September 26
D. Pyatt	Electronic Technician	In field periodically
G. Kavanagh	Electronic Technician	In field periodically
W.W. Smith	Electronic Technician	In field periodically
D. Coons	Electronic Technician	In field periodically
H. Boesch	Electronic Technician	In field periodically
T. Dyas	Electronic Technician	In field periodically

Limnogeology, Inland Waters Branch

Dr. N. Rukavina	Scientist-in-Charge
D. St. Jacques	Project Leader
G. LaHaie	Field Assistant

Point Pelee Project

J. Coakley	Project Leader
G. Duncan	Field Assistant
T. Morton	Field Assistant
K. McMillan	Field Assistant

LIST OF CRAFT AND MAJOR EQUIPMENT

Sounding Craft

Limnogeology & Interlining (bathymetry)

CSS LIMNOS - 147 ft. survey ship

CSL AGILE - 44 foot aluminum hull, equipped with twin Cummins diesels, 110 V generator and gasoline powered winch, Arma-Brown gyro compass and Decca 217 radar, and Atlas Deso 10 echo sounder and Hewlett-Packard printer.

CSL BROCK - 25 foot Bertram equipped with 24 volt power supply, Voyageur radar and Edo 9040 echo sounder.

Point Pelee Project

CSL LE MOYNE - 44 foot steel hull vessel equipped with radar and 24 volt power supply and Arma-Brown gyro compass.

CSL AGILE

Support Equipment

1971 International Travelall (M.S.D.),
1971 International Travelall (I.W.D.) 4 wheel drive,*
1 x 22 ft. office trailer (M.S.D.),
office/laboratory trailer (I.W.D.),
18 ft. Boston Whaler with 65 h.p. outboard motor,
12 ft. aluminum boat with 9.8 h.p. outboard motor.

* - on loan to M.S.D. when required.

Electronic and Optical Equipment

Motorola RPS system with 2 spare transponders,
Motorola Mini-Ranger III system (no spare transponders),
Hewlett-Packard printer,
E.D.A. Printer (non-operational for field season),
Atlas-Deso 10 echo sounder (CSL AGILE),
Edo 9040 echo sounder (CSL BROCK),
Raytheon DE 719 echo sounder (Boston Whaler),
Two Teledyne thermal electric generators,
One set MRA-2 Tellurometers (for field season),
One set CA-1000 Tellurometers (March 20 - April 5),
One set MRA-3 Tellurometers (March 20 - April 5),
Arma-Brown gyro compass,
Kelvin Hughes radar,
Two Motorola P.T. 400 radio transceivers,
One Wild T2 Theodolite.

Miscellaneous

Portable towers (10 foot sections of 16 gauge T.V. tower)

CHRONOLOGY OF EVENTS

- March 20 - April 5 Survey control work completed for positioning systems.
B. Eidsforth and R. Solvason, hydrographers, A.
Slingerland, Coxswain.
- April 5 R. Solvason, hydrographer, rejoined Spring Control Party with
J. Kean as Sub-Party Chief.
- April 8 B. Tinney, seaman, taken on staff.
Office and field equipment delivered to field headquarters
in Blenheim, Ontario.
- April 11 A. Slingerland, coxswain, departed survey party.
- April 12-15 Easter Holidays.
- April 16 R.P.S. calibrated at C.C.I.W. and then delivered to Blenheim.
CSL AGILE left CCIW for survey site.
Water pumped from AGILE.
- April 17-18 R.P.S. Chain I (PILE and BOYS) on the air.
- April 22 Innerspace depth digitizer on AGILE not working.
- April 25 Water pumped from AGILE.
- April 26 AGILE discovered to have cracks in hull. Hauled from water
to await repairs.
- May 2-3 Control work for R.P.S. site SANN completed.
AGILE back in water.
- May 4 Sounding on Chain I completed.
- May 5 Chain II (BOYS and TRAL R.P.S.) on the air.

- May 9 AGILE down - starter motor on port engine.
- May 13 Starter motor reinstalled on AGILE.
- May 14 E.D.A. printer on AGILE non-functional.
D. Pyatt, electronic technician, arrived to make repairs;
printer returned to manufacturer.
- May 15 Innerspace depth digitizer found to work only on one frequency
which is not the correct frequency the sounder is calibrated
for. Digitizer returned to CCIW for modifications.
- May 17 100 ft. R.P.S. tower at Port Alma completed.
- May 18-20 Holiday weekend.
- May 21 Sounding on Chain II (TRAL R.P.S. and BOYS) completed.
- May 22 Chain III (ALMA and SANN R.P.S.) on the air.
Channel B giving sporadic performance. Spare B not giving
any signal. Spare B returned to CCIW for retuning.
- May 23 Retuned transponder B tried at ALMA, signal received.
Leak in cooling system of AGILE discovered.
- May 24 Oil leakage from starboard engine of AGILE.
Crushed washer at oil filter at fault of leak.
Limnogeology Support Group moved to Leamington, Ontario.
- May 25 Control finished for position of Wheatley Water Tank.
- May 29 R.P.S. transponders returned to CCIW for retuning in preparation
for bottom sampling operation with CSS LIMNOS.
- May 31 Control completed for R.P.S. site on Point Pelee water gauge
building.

- June 1 Wheatley Range (Private) positioned.
- June 3 R.P.S. calibrated on board CSS LIMNOS at entrance to Hamilton Harbour.
- June 4 CSS LIMNOS arrived at Erieau at 0800 hours. Bottom sampling began on R.P.S. chain (TRAL R.P.S. and PILE) after system calibrated.
- June 5 Bottom sampling completed on (TRAL R.P.S. and PILE) chain. 77 samples taken.
(ALMA and SANN R.P.S.) chain on air at 1830 hours.
- June 6 R.P.S. transponder B giving sporadic performance. Spare transponder picked up at CCIW and installed at ALMA after calibration with LIMNOS.
- June 7 Sampling on (ALMA and SANN R.P.S.) chain completed at 0900 hours. (ALMA and WHEATLEY W.T.) chain on air at 1100 hours.
- June 8 Sampling on (ALMA and WHEATLEY W.T.) chain completed.
- June 9 With aid of LIMNOS, R.P.S. was set up on Pelee I. Lighthouse (abandoned).
(Pelee Island Lt. Ho. and Wheatley W.T.) chain on air at 1500 hours.
- June 10 LIMNOS finished bottom sampling at 2200 hours and returned to CCIW. A total of 366 bottom samples were taken.
- June 12 Officer trailer moved from Erieau to Wheatley.
- June 13-14 Horizontal control stations monumented.
- June 17-22 CSL AGILE return to Limnogeology party delayed by bad weather. Sounding rolls scaled and inked.

- June 25 Chain IV (WHEATLEY W.T. and ALMA) on air.
G. LaHaie, replacing D. St. Jacques, Limnogeology, for one week.
- June 27 T. Dyas, electronic technician, installed Innerspace depth digitizer on AGILE.
- June 28 AGILE down - support bracket for diesel generator broken.
- June 29 - July 1 Dominion Day weekend.
- July 3 R.P.S. transponder on Wheatley W.T. hit by lightning on the holiday weekend. Also damaged was a 24 volt battery charger. Spare transponder put on air.
- July 12 Sounding on Chain IV completed.
- July 13 Chain V (Pelee Passage Lt.Ho. and Wheatley W.T.) on the air.
- July 19 Met with Capt. W. Corkum, Ship Division, with regards to changes in sounding launch CSL BROCK.
- July 22 B. Eidsforth on mid-season break.
B. Tinney left in charge of party.
- July 25 Sounding completed on Chain V.
Limnogeology section of sounding completed.
- July 26 CSL AGILE left project.
- July 30 R.P.S. console from AGILE installed on CSL BROCK. Radar scanner inoperative.
Worn worm gear replaced.
BROCK left by trailer for Leamington with M. Buchanan, coxswain.
- July 31 BROCK launches at Sturgeon Creek. There was trouble getting the engine started, but it corrected itself after solenoid was removed and then reinstalled.

- August 1 Chain VI (Pelee Passage Lt. Ho. and Wheatley W.T.) on the air.
CSL BROCK started interlining on F.S. 3872.
- August 3 - 5 Holiday weekend.
- August 7 Control cable problems on CSL BROCK.
- August 11 CSL AGILE returns for Pt. Pelee Project.
- August 14 Parts for BROCK arrive and are installed.
Launch in water at 1200 hours.
- August 15 R.P.S. chain moved from Pt. Pelee Project.
Set up at Pelee Island Lt. Ho. and Pt. Pelee.
B. Tinney, seaman, returned to University.
- August 19 T. Prince, seaman, joined crew of Lake Erie Party.
BROCK returned to Leamington for repairs to control cables.
- August 20 Gears in leg unit of BROCK found to be badly worn - leg unit
replaced.
Radio-active tracer equipment installed aboard AGILE.
- August 21 CSL BROCK and party moved to Erieau for interlining on F.S. 3799.
CSL LE MOYNE, second launch for Pt. Pelee Project, arrived
at Erieau at 2300 hours.
- August 22 R.P.S. transponders for interlining party blew transistors
because of cross-wires on power cords.
CSL AGILE developed alternator problems.
AGILE down until August 26th.
T. Morton and Ken McMillan, limnogeologists for Pt. Pelee Project,
arrive.
- August 23 CSL BROCK returned to Wheatley to set up Mini-Ranger chain
for Pt. Pelee project.
CSL LE MOYNE arrived at Erieau.

- August 24 G. Kavanagh and H. Boesch, electronic technicians, made repairs to BROCK radar and installed Mini-Ranger and printer on LE MOYNE.
- August 25 Mini-Ranger III Chain (Pelee I. Lt. Ho. and Pt. Pelee) on air.
- August 26 CSL BROCK returned to CCIW with water in cylinders.
- August 28 BROCK returned to Leamington where trombone boat trailer snapped just before boat placed in water.
Stadia started for Wheatley Harbour.
- August 30 Trombone trailer welded and BROCK in water.
- September 1 - 2 Labour Day weekend.
- September 3 Boston Whaler and Raytheon sounder picked up at CCIW for Wheatley Harbour survey.
V. Penny, coxswain, taken on strength.
- September 5 Engine trouble with Boston Whaler.
- September 7 R.P.S. transponder moved from Pt. Pelee to South East Shoal Light.
BROCK engine compartment filled with water in morning - hole in bellows on outdrive unit.
- September 9 Mini-Ranger transponder set up at South East Shoal.
CSL LE MOYNE tried to use "acoustic pebble" - attempt unsuccessful.
AGILE doing radioactive tracing work.
- September 10 D. Pyatt and W.W. Smith, electronic technicians arrived to repair radar and radio on BROCK, and to tune X-band transponders and repair sounder on LE MOYNE.
Outboard on Whaler stalls at slow speed.
Ruptured gasket at fuel pump partial problem.

- September 11 Power winch on AGILE inoperative.
- September 16 M. Buchanan, coxswain, returned to CCIW for reassignment.
- September 18 Outboard motor running on 2 cylinders. Taken to Sturgeon Creek Marina for repairs.
- September 19 Picked up outboard motor from Marina. Informed that repairs were only temporary as the parts were not available. Alternator wire on AGILE burnt out.
- September 20 Outboard motor would not start. Called Capt. W. Corkum for parts and returned motor to Marina.
- September 21 K. McMillan, limnogeologist, reported Mini-Ranger at Pelee I. off the air.
- September 23 Checked Mini-Ranger site at Pelee Island - batteries stolen. Moved Mini-Ranger from Pelee Island to Port Alma. CSL LE MOYNE finished seismic work.
- September 26 CSL LE MOYNE left for Lake St. Clair Project. Pt. Pelee Project completed except for Side Scan Sonar.
- September 30 D. Pyatt, electronic technician, installed Mini-Ranger console on BROCK.
- October 1 Interlining by BROCK on Field Sheet 3872 in morning. Stretchlining on Wharf Plans in afternoon.
- October 2 - 3 W. Stage, Hydraulic Technologist, used BROCK to look for missing waverider, after lake too rough for interlining. BROCK returned after search and Mini-Ranger transponder moved from Port Alma to South East Shoal. Starboard engine seized a bearing in the outdrive unit and BROCK returned to Wheatley on one engine.

- October 7 Outdrive unit could not be removed from BROCK because of seized bearing and was returned to CCIW.
- October 10 CSL BROCK returned from CCIW.
Radar scanner inoperative - worn worm gear.
- October 12 - 14 Thanksgiving Weekend.
- October 15 Radar scanner motor on BROCK changed.
- October 16 Mini-Ranger system set up at Wheatley W.T. and station DITCH for interlining.
- October 18 Interlining using R.P.S. transponder at Wheatley F.R. and Mini-Ranger transponder at station DITCH.
- October 21 T. Morton and K. McMillan, geolimnologists, arrived in Wheatley to prepare for Side Scan Sonar work on South East Shoal.
CSL BROCK set out to interline but starboard engine overheating. Later found out hoses to water pump were not connected when BROCK was last at CCIW for repairs.
- October 22 Solenoid and heat sending unit for thermostat replaced on starboard outdrive unit of BROCK.
Side Scan Sonar equipment installed on AGILE.
- October 23 BROCK interlining on positioning chain of Port Alma and Fama. Side Scan Sonar equipment on AGILE faulty. Technician from Mass. arrived to check the equipment.
- October 25 BROCK examining shoals on positioning chain of Port Alma and DITCH.
- October 26 R.P.S. transponders set up at Pt. Pelee and Pelee Island for Pt. Pelee Project.
Side Scan Sonar equipment repaired.

- October 28 R.P.S. chain moved from Pt. Pelee to South East Shoal.
Side Scan Sonar work completed.
- November 1 BROCK finished shoals on DITCH-ALMA chain.
Paper drive on Edo 9040 sounder ceased operating.
Picked up spare sounder at CCIW.
- November 4 BROCK examining shoals on Wheatley W.T.-Alma chain.
Mr. F.L. DeGrasse, Hydrographer-in-Charge, visited party.
- November 5 Mr. F.L. DeGrasse checked field sheet for possible shoal
examinations and then returned to CCIW.
CSL AGILE left for CCIW.
- November 8 Boston Whaler returned to CCIW.
V. Penny, coxswain, signed off.
CSL BROCK moved to Sturgeon Creek for weekend.
- November 9 - 11 Remembrance Day Holiday observed.
- November 12 R. Robitaille, hydrographer, and G. Duncan, geolimnologist,
returned to Wheatley to do Side Scan work for the Pt. Pelee
Project. Previous records were not satisfactory to
J. Coakley, Project Co-ordinator.
- November 15 R. Robitaille and G. Duncan returned to CCIW after high winds
prevented BROCK from starting work.
- November 19 CSL BROCK transported to CCIW.
- November 21 Office trailer returned to CCIW.
Field season completed.

NARRATIVE

The Lake Erie Limnogeology/Bathymetry Survey was a continuation of the hydrographic survey and support of Dr. N. Rukavina's "Near Shore Limnogeology Program" in the lower lakes. The data supplied and support was in the form of horizontal control, bathymetry, water levels and mobilization and operation of the Motorola R.P.S. positioning system.

The topography and geology of the Lake Erie Near Shore zone was mapped at a scale of 1:50,000. Bathymetry was collected in continuous profile out to the 20 metre contour, run north-south at a one km interval. In the Pt. Pelee area, profiles were collected in the east-west direction. Geological sampling was carried out on a 2 km grid in depths up to 15 metres and on a 4 km grid in depths of 15 to 20 metres.

The water level data was obtained from the Tides and Water Levels Section, CCIW, and by observing water gauges in appropriate areas. Gauges used were located in Erieau and Pt. Pelee.

During the 1974 field season, a change was made from past surveys in collecting limnogeology/bathymetry data. Launch AGILE ran all profiles and collected near shore bottom samples in water less than 7 metres deep. The remainder of the bottom samples were collected by the CSS LIMNOS. With this change in procedure, bottom samples were collected 'round the clock'. This decreased the time required to complete the bottom sampling and allowed more time for the completion of the sounding profiles. Bottom samples were also collected by LIMNOS in weather that would have prevented a launch of the AGILE type from doing so.

During the 1974 field season, horizontal control and mobilization of two positioning chains were required by the limnogeology Point Pelee Project. The object of the project was to obtain information about Point Pelee Shoal. The project, under the co-ordination of J. Coakley, limnogeologist, gathered data from:

- 1) stratigraphic borings,
- 2) current measurements,
- 3) sediment samples,
- 4) shallow seismic profiling,

- 5) side scan survey,
- 6) sediment tracing and transport measurements,
- 7) gravel tracing and time lapse studies of bottom sediment movement,
- 8) diving surveys and direct observation of shoal structures.

The positioning chains used for the Point Pelee Project were:

- a) Motorola R.P.S. on board CSL AGILE,
- b) Motorola Mini-Ranger III on board CSL LE MOYNE.

The 1974 survey began in March with horizontal control being established between Wheatley and Brock Creek, Ontario.

The collection of limnogeological data began on April 16th with the arrival of Mr. D. St. Jacques, limnogeologist, in Eriean. Bottom samples were collected by CSS LIMNOS from June 4th to 10th. The limnogeology profiles were completed by July 25th.

The Point Pelee Project began on August 15th and was completed by October 28th. While the Point Pelee Project was in progress, Wheatley Harbour was charted at a scale of 1:1,000 and interlining and shoal examination began on the Point Pelee to Port Crewe field sheet. This field sheet was completed on November 8th and all survey equipment was returned to CCIW.

EQUIPMENT PERFORMANCE

CSL AGILE

This 44 foot aluminum launch was used to good advantage by the Limnogeology section. The power winch and large aft section made it ideal for bottom sampling. The large cabin space had ample room for the Motorola R.P.S. console coupled with the Hewlitt-Packard printer and Innerspace depth digitizer and Atlas Deso 10 echo sounder.

The maximum speed of 10-12 knots was a 50% improvement over the 'M-58' landing barge used in previous years. Light winds did not affect the AGILE's performance or echograms as they did those of 'M-58' barge.

The primary problem with the AGILE was that it departed CCIW early in the season with a crack in the aft section of the hull. The crack, although reported in 1973, was not repaired until after the launch arrived at the survey site; eight days were lost due to unserviceability.

Engine vibration caused several minor problems with the launch electrical cables at the alternators; consequently, they had a tendency to break. A sturdier type of connection should be utilized to alleviate this problem.

Vibration in the engine compartment also caused joints in the cooling system to leak. The hydraulic steering assembly also lost pressure due to 'working loose' of several bolts on the assembly.

Vibration of the engines caused the other small problems - joints in the cooling system and the hydraulic steering assembly worked loose.

CSL BROCK

With the removal of the metal instrument racks and the installation of a U-shaped table similar to that in the 'Hydro' series of Bertrams, this 25 foot launch became a comfortable sounding launch.

The problems associated with the launch were as follows:

- 1) A bad contact on the solenoid switch for the port engine prevented it from starting,
- 2) Control cables for the port engine would not shift engine to reverse. New cables were installed and problem rectified,
- 3) Port engine would not shift into reverse. Worn gears in the leg unit were the problem. Trying to remove the lower unit, it was discovered that the nylon bushing on the outdrive had melted, preventing the lower unit from being removed to complete the task and the launch was sent to Burlington for repairs,
- 4) A blown head gasket.

Atlas Deso 10 (Metric Sounder)

This sounder gave trouble-free performance during the survey. The outboard transducer pod used in the 1973 survey was modified and mounted to the hull of the CSL AGILE.

The sounder was calibrated twice daily by means of a standard bar check to a depth of 20 metres.

Motorola PRT 400 Portable Radio

These radios worked reasonably well and coupled with the Comco 608 VHF-FM radio on the CSL AGILE gave the range required for ship to shore communications.

Thermo-Electric Generators

On the initial set up by D. Pyatt, electronic technician, it was discovered that the thermo-electric generators were missing isolation diodes. These diodes were required to prevent the batteries from driving current back into the generator thus draining the batteries of their full charge. After this fault was corrected, operation was trouble-free for the remainder of the summer.

Gyro Compass (Arma-Brown)

Trouble-free for length of survey.

E.D.A. Printer

Printer was in-operative for length of survey. It would not activate the fix mark. It remained with the manufacturer undergoing repairs.

Hewlett-Packard Printer, Model 5050B

The printer operated trouble free; the clock still tends to run slow, but this was not considered a problem.

AGILE Radar - Decca 217

The radar gave acceptable performance.

Vehicle

The International Travelall assigned to the party gave acceptable performance. Besides the regular maintenance, the truck received: 1) repairs to a leaky radiator; 2) gas filter; 3) front-end alignment; 4) new exhaust system.

Towers to Accommodate Positioning Transponders

Sixteen gauge conventional T.V. tower was again acquired and used with good results during the survey season. This tower is light, easily guyed, reusable and inexpensive (\$16.00 per section). A 100 ft. tower, guyed every 20 feet, was constructed and proved very stable - this is the maximum recommended height.

These towers have been guyed in the past by 1/8" stainless steel aircraft cable. This cable, however, is expensive (\$300 per 1000 ft.) and hard to obtain on short notice. A substitute cable (1/8" stainless steel) was tried but this proved to be hard to manage (kinks easily) and also stretches when tension is applied. This cable was unfit for reuse on other towers. I would recommend that the aircraft cable be used exclusively and that an ample supply be on hand before the start of a survey year.

POSITIONING SYSTEM PERFORMANCE

The R.P.S. system worked extremely well during the year. The only problem occurred with a 'B' transponder - a signal could not be received by the survey launch. The transponder was returned to CCIW where the frequency was lowered 2 megahertz. After that, the system was without problems.

The Mini-Ranger III system also had problems with a transponder - no signal was obtained from a Code 1 transponder. This unit was exchanged with CCIW and no other problems were encountered.

Both systems were calibrated daily by comparison with computed distances from slaves to wharf control points.

Tellurometers

Three types of Tellurometers were used on the survey during the year.

The CA-1000 was a light, easy instrument to use. The only problem occurred with the Master unit which would not switch to the 'D' pattern in the course of operation. The unit was sent to the manufacturer for repairs.

Two sets of MRA-2's were used. The first set would not register any crystal current on remote; the modulation check showed 40 for A, B, C, & D on the switched meter and it was impossible to obtain a circle with either instrument as Master.

The second set of MRA-2's used registered over 100 for the battery with no indication of crystal current, voice or circle. This set was returned to CCIW for repairs.

One set of MRA-3's was used during the field season. These were trouble-free.

I would recommend that all the MRA-2's be retired and either CA-1000's or MRA-3's ordered to replace them. Much time would be saved with the newer instruments.

CONTROL STATIONS USED AS R.P.S. SLAVE SITES

Name	Elevation	Height of Tower	Northing	Easting
PILE		9.1 m		
BOYS		9.1 m	4 699 928.21	442 433.78
TRAL (RPS)	9.8 m	18.3 m	4 691 224.44	432 146.23
SANN (RPS)	23.1 m	24.4 m	4 677 440.80	409 328.90
ALMA	23 m	30 m	4 669 850.10	396 521.88
FARM	22.5 m	3 m	4 673 089.62	402 339.91
DIYC	22.5 m	3 m	4 665 093.70	386 649.30
HOUS	22.5 m	3 m	4 663 216.60	383 950.40
WHWT	54.6 m	54.6 m		
WHEAT	2.5 m	6.9 m	4 657 373.71	378 938.61
HUTT	2 m	9.1 m	4 640 631.41	374 849.01
P.P. LT.	23 m	3 m	4 634 374.21	368 578.93
P.I. LT.	10 m	3 m	4 632 195.08	363 884.16
S.E. LT.	21	3 m	4 631 309.60	378 509.85

P.P. LT. - Pelee Passage Light

P.I. LT. - Pelee Island Light (abandoned)

S.E. LT. - South East Shoal Light

R.P.S. CHAIN SET UPS AND DURATION OF TIME USED

Chain I	PILE/BOYS	Sept. 10, 12/1973, May 4/1974
II	BOYS/TRAL (RPS)	May 5 -21
III	SANN (RPS)/ALMA	May 24 -- 27
IV	WHWT/ALMA	June 25 - July 12; Oct. 1-3; Nov. 4-6
V	WHWT/P.P.LT.	July 16 - August 15
VI	WHWT/S.E.LT.	October 10 - 11
VII	S.E.LT./DITC	October 16
VIII	WHEAT/DICT	October 18
IX	ALMA/FARM	October 23
X	DITC/ALMA	October 25 - November 1
XI	WHWT/DITC	November 7
XII	WHWT/S.E.LT.	November 7

Point Pelee Project

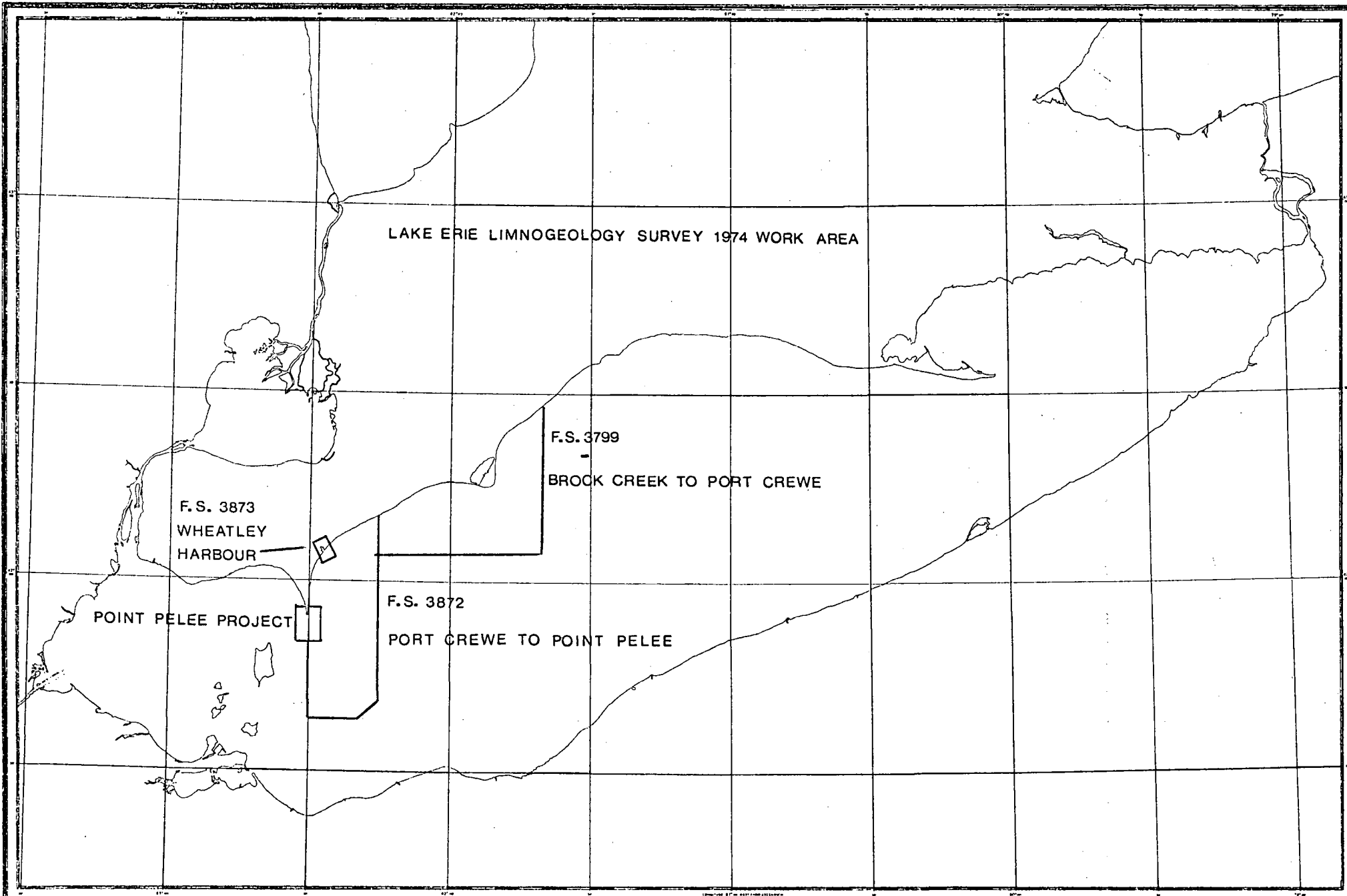
Chain I	P.I.LT./HUTT	August 15 - September 6 (R.P.S.)
I(a)	P.I.LT./HUTT	August 25 - September 8 (Mini-Ranger)
II	S.E.LT./P.I.LT.	September 7 - 25 (R.P.S.)
II(a)	S.E.LT./P.E.LT.	September 9 - 23 (Mini-Ranger)
III	ALMA/S.E.LT.	September 23 - 25 (Mini-Ranger)

RECOMMENDATIONS

1. All sounding should be done by C.H.S. personnel using a Bertram type launch. Equipment required would include a printer, gyro compass and suitable sounder to give sub-surface penetration.
2. All sounding, including interlining and shoal examinations should be completed on a field sheet before the next field sheet is started.
3. Limnogeology should continue sampling and associated work to limnogeological specifications.
4. A Boston Whaler with 60 h.p. outboard should be provided for the party.

APPENDIX A

- LAKE ERIE LIMNOGEOLOGY SURVEY 1974 WORK AREA -



LAKE ERIE LIMNOGEOLOGY SURVEY 1974 WORK AREA

F.S. 3799

BROCK CREEK TO PORT CREWE

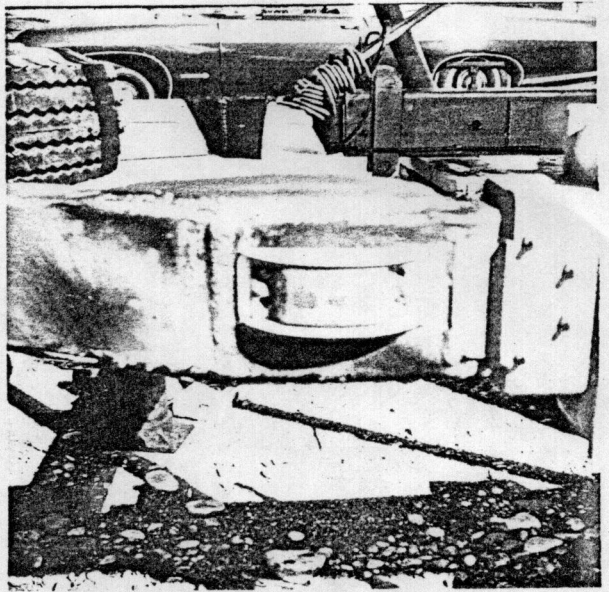
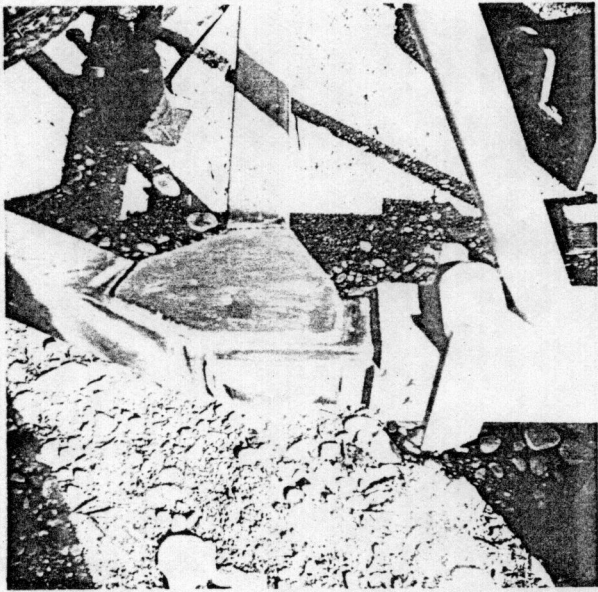
F.S. 3873
WHEATLEY
HARBOUR

F.S. 3872

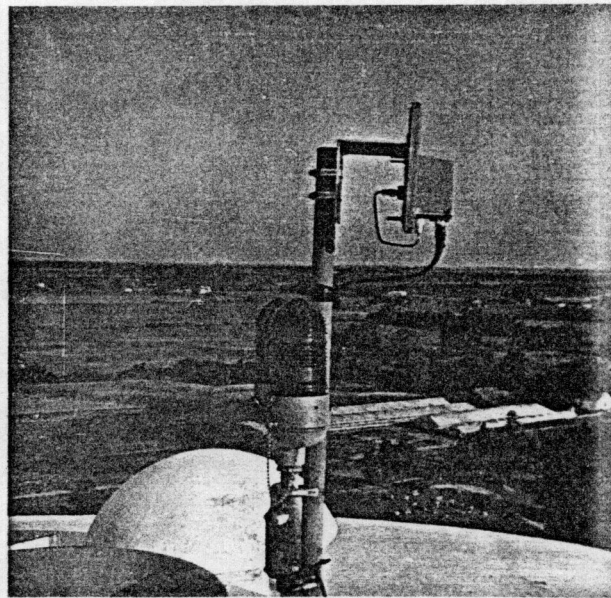
PORT CREWE TO POINT PEELE

POINT PEELE PROJECT

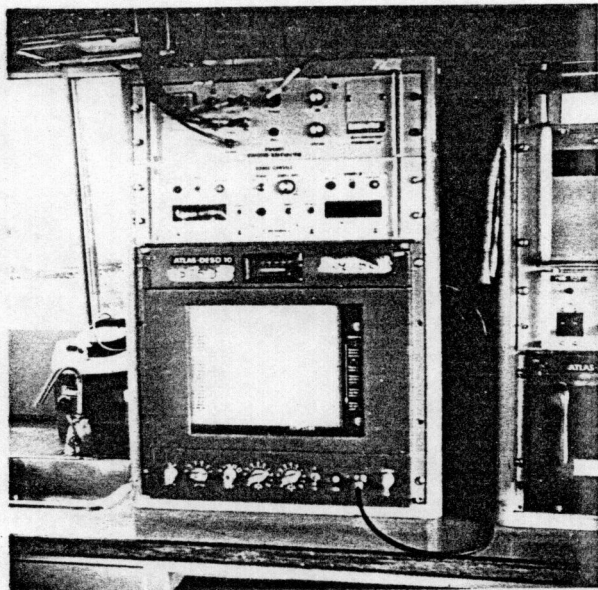
APPENDIX B
- PHOTOGRAPHS -



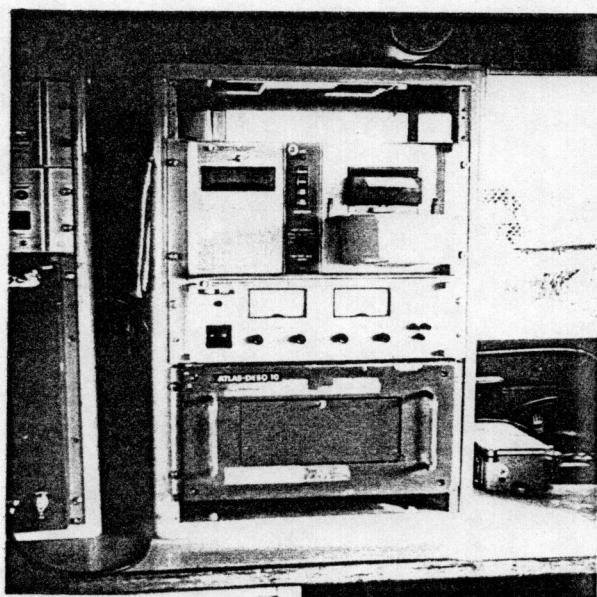
Repairs made to Trombone boat trailer



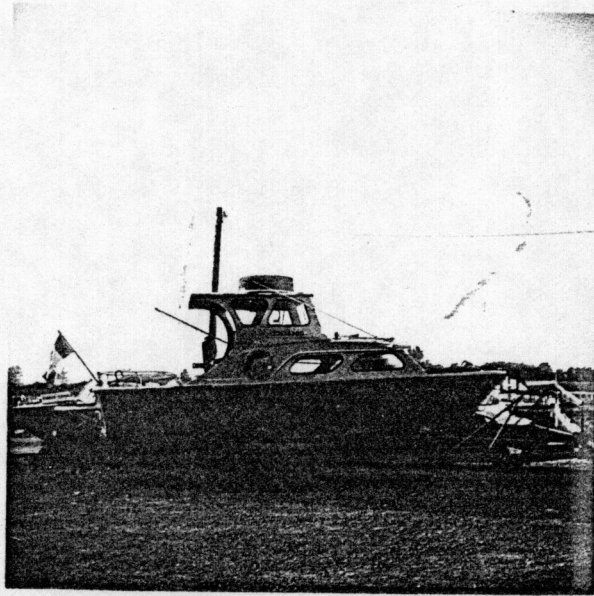
Motorola R.P.S. transponder on Wheatley Water Tank



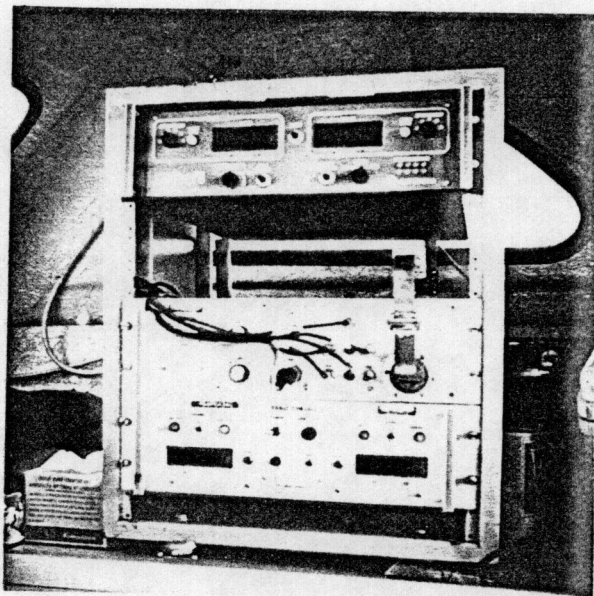
*Atlas Deso 10 Sounder and Motorola R.P.S. Console
on CSL AGILE*



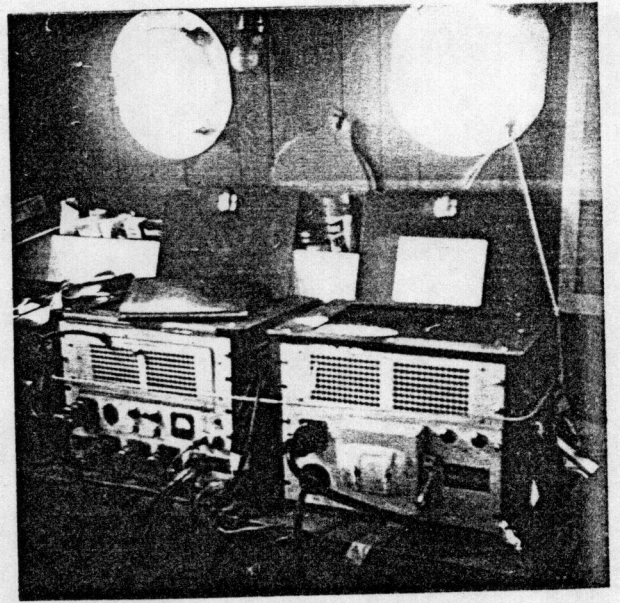
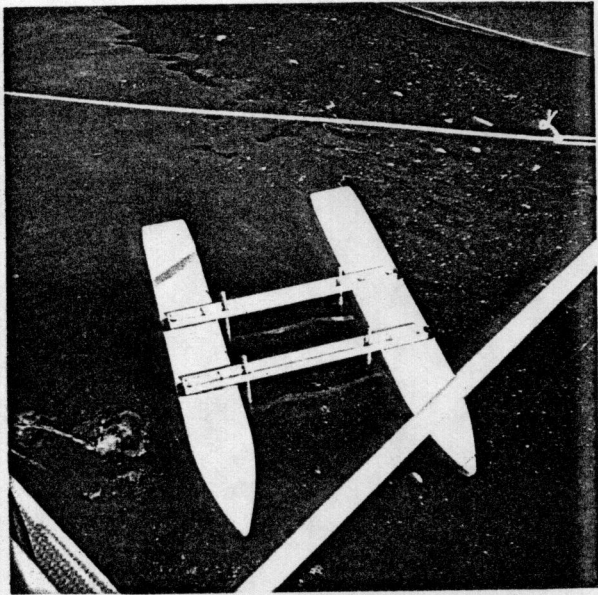
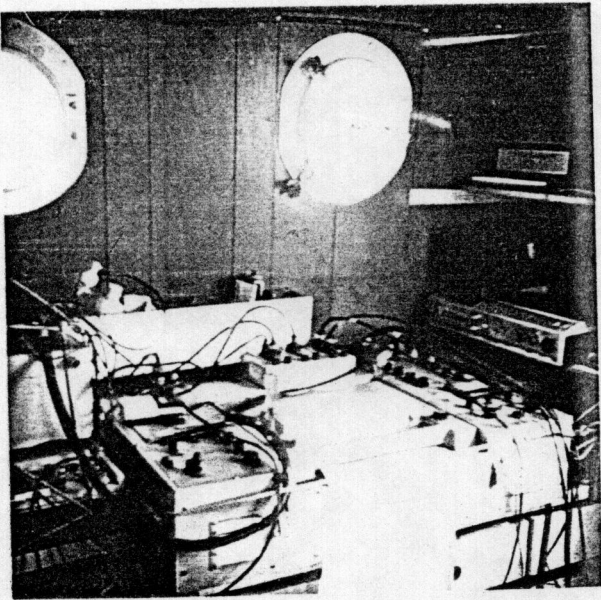
Hewlett-Packard Printer on CSL AGILE



C.S.L. BROCK



*Motorola R.P.S. and Mini-Ranger III Systems
Aboard the C.S.L. BROCK*



*Seismic Equipment used for
Point Pelee Project
aboard CSL LE MOYNE*

APPENDIX C

- STATISTICS -

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

YEAR 1974 FROM MARCH TO NOVEMBER

Establishment LAKE ERIE SURVEY

H.I.C. F.L. DE GRASSE

6600-71-3

SUB-PARTY CHIEF: B. EIDSFORTH

	Project Number	Project Number	Project Number	Project Number
Project Name <u>Limnogeology</u>				
Project Name <u>Limnogeology Support</u>				
Project Name _____				
Project Name <u>Point Pelee</u>				

Resources:

Number of Hydrographers *	---	1/211	---	TOT.
Number of Scientists *	1/82	---	3/31	
Number of Electronic Technicians *	1/6	2/4	1/2	
No. of Student Assistants and Casuals *	---	---	---	
No. of Support Personnel (Ship's Crew, Etc.) *	2/72	2/235	4/24	
Total Personnel *	3/77	3/223	7/27	
Number of Ships	1			
Number of Launches	1	1	2	
Number of Land Vehicles	1	1	2	
Number (and type) of Aircraft	—	—	—	
Number of Minor Support staff	—	—	—	
Other (specify)	—	—	—	

* 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: 5/100 (an average of 5 Hydrographers spent 100

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

YEAR 1974 FROM MARCH TO NOVEMBER

Establishment	Project Number	Project Number	Project Number	Project Number	To
LAKE ERIE SURVEY	6600-71-3				
H.I.C. F.L. DE GRASSE (B. EIDSFORTH)					
<u>Time:</u>					
Total operational days.	113	202		39	
Days actual field work.	41	154		35	
Days lost (weather)	22 1/2	4 1/2		24	
Days lost (Sat. Sun. Holidays)	18	43 1/2		16	
Days lost (Equipment failure)	15	—		11 1/4	
Days lost in Transit	12	7		6	
Days lost in port for Supplies, Bunker, etc.					
Days lost, other causes AGILE COMPLETED PROJECT	9	—		2	
Total Man days in period (staff)	228	512		271	
Total Man days worked (staff)	232	392 1/2		216	
Man days:- (staff)					
(a) Sounding	55 1/2	19 1/2		—	
(b) Shoal Examinations	—	15		—	
(c) Wharf surveys	—	46		—	
(d) Oceanography	—	4		52	
(e) Geophysics	—	—		—	
(f) Tides & water levels	—	—		—	
(g) Collecting bottom samples	26			27 3/4	
(h) Horizontal Control	—	146 1/4		—	
(i) Shorelining & Low Watering	—	—		—	
(j) Data processing & office admin.	55 1/2	97 1/4		57	
(k) Sailing directions	—	—		—	
(l) Place Names	—	—		—	
(m) Current observations	—	—		—	
(n) Photo-Ident.	—	—		—	
(o) Others (specify) IN TRANSIT	22	3		—	
MAINTENANCE	19	58		6 1/4	
ASSISTING LIMNO. SUPPORT (STANDBY)	29	8		9	

FIELD REPORT STATISTICS:- MONTHLY ... PROJECT ... FINAL FIELD #8.

YEAR 1974 FROM MARCH TO NOVEMBER

Establishment	Project	Project	Project	Project	To
H.I.C.	Number	Number	Number	Number	
LAKE ERIE SURVEY	6600-71-3				
F.L. DE GRASSE (B. EIDSFORTH)					
<u>Sounding (Linear Nautical Miles/KM):</u>					
Ship Sounding	—	—		—	
Launch Sounding	1830	681		—	
Other (specify)	—	—		—	
Total sounding	1830	681		—	
Reconnaissance (Track) sounding	—	—		—	
Area sounded (N.M ²) (Km ²)	1830	681		—	
<u>Shoals Examined:</u>					
Shoal Examinations (Ship)	—	—		—	
Shoal Examinations (Launch)	—	67		—	
Shoal Examinations (Sweep)	—	—		—	
Shoal Examinations (other) specify	—	—		—	
Shoal Examinations (Total)	—	67		—	
<u>Navigational Aids:</u>					
Shore Aids Positioned (including ranges)	—	4		—	
Floating Aids Positioned	—	—		—	
Navigational Ranges Sounded	—	—		—	
Navigational Ranges Drifted	—	—		—	
Sector Ranges Positioned	—	—		—	
Navigational Aids Established	—	—		—	

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

YEAR 1974 FROM MARCH TO NOVEMBER

Establishment LAKE ERIE SURVEY H.I.C. F.L. DE GRASSE (B. EIDSFORTH)	Project Number	Project Number	Project Number	Project Number
	6600-71-3			
<u>Tide and Current Data:</u>				
Recording gauges established				
Recording gauges recovered		2		
Staff gauges established				
Bench Marks Recovered		2		
Bench Marks Established				
Bench Marks Levelled				
Distance Levelled (N.M.) (KM)				
No. of Current Meters Set Out				
No. of Current Meters recovered				3
No. of hours of Current Measurements (Other than with Moored Meters)				
<u>Oceanography:</u>				
No. of Oceanographic stations				
Gravity Profiles-survey (N.M.) (KM)				
Gravity Profiles-track, (N.M.) (KM)				
Magnetic Profile-survey (N.M.) (KM)				
Magnetic Profile-track, (N.M.) (KM)				
Seismic Profile-survey (N.M.) (KM)				144
Seismic Profile-track (N.M.) (KM)				5
Number of Water Samples				

