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Lighthouse

JOURNAL OF THE CANADIAN HYDROGRAPHIC ASSOCIATION

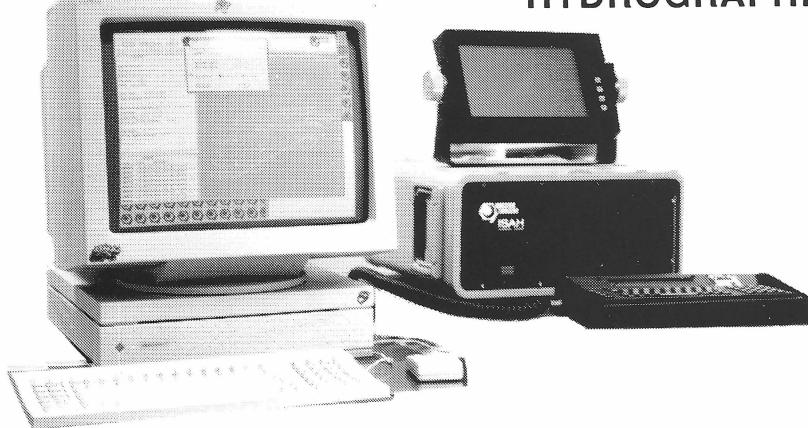
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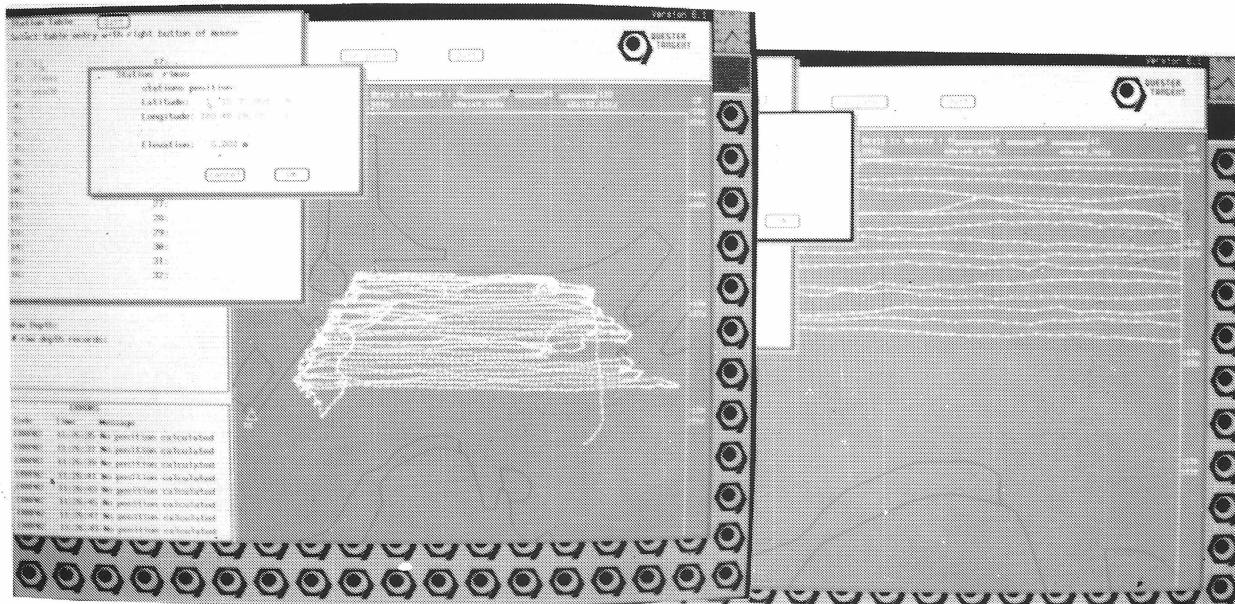


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Back issues of Lighthouse, Editions 24 through 43 are available at a price of \$10 per copy. Please write to the Editor.

Les éditions 24 à 43 de la revue Lighthouse sont disponibles au coût de 10\$ par copie en écrivant au rédacteur en chef.

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Views expressed in articles appearing in this publication are those of the authors and not necessarily those of the Canadian Hydrographic Association.

Les opinions exprimées dans les articles de cette revue ne sont pas nécessairement celles de l'Association canadienne d'hydrographie.

Closing dates for articles / Date de tombée des articles

Spring Issue	March 1 / 1er mars	Édition du printemps
Fall Issue	October 1 / 1er octobre	Édition de l'automne

Letters to the Editor / Lettres au rédacteur en chef

Real-Time Differential GPS

Dear Sir:

I enjoyed reading Peter Kielland and Dave Neufeldts' lucid article on differential GPS in Lighthouse of Fall 1990 very much (*Real-Time Differential GPS: The Ultimate Positioning System for Hydrographic Surveys*). I would like to add three points of my own:

1. In addition to improved economy of operation (perhaps the most telling argument these days), GPS has a consistently high accuracy. The CHS proved this for the hydrographer's environment in a 15 knot survey launch off Halifax in 1986 [1], getting 5 metre agreement with two of our prime existing systems, MiniRanger and Polarfix. The difference from land-based positioning systems is that this accuracy is constant throughout the survey area. Given good operating procedures, we don't have to worry about weak fixes anymore.
2. Not only does GPS give high accuracy but, so long as the receiver has redundant channels and all the necessary information is recorded, GPS accuracy can be proved. This was sometimes possible with earlier systems, given a fair amount of work; with GPS, proof of accuracy is easy and reliable.

3. This combination of high accuracy plus "accuracy insurance" means that GPS far outclasses all but the laser positioning systems used in harbours. Some people have predicted that in the long run any surveys not done by GPS (or its satellite successors) will be looked on as suspect, in preparing charts for mariners who are equipped with DGPS. So, I believe we have no time to spare; with redundant satellite coverage available most of the day, we should be using DGPS for surveying now, twinned with a conventional positioning system for the first year while any operational hitches are worked out. Of course this is not the end of GPS development; that will go on for many years, with feedback from operational experience. But I suggest we cannot afford to wait a few more years before using GPS in the field.

R.M. Eaton

Reference

1. Lachapelle, G., W. Falkenberg, J. Hagglund, D. Kinlyside, M. Casey, P. Kielland and H. Boudreau, "Shipborne GPS Kinematic Positioning for Hydrographic Applications", *Navigation*, vol. 35, No. 1, pp. 73-88, Washington D.C., 1988.

Application for Membership / Formule d'adhésion

I hereby make application for membership in the Canadian Hydrographic Association
and if accepted agree to abide by the constitution and by-laws of the association.

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Message from the National President / Mot du Président national

Information distribution has always been a very important fundamental process within the CHA.

At the Branch level the continuing support of seminars, workshops, newsletters and our journal Lighthouse demonstrates the vivacity of CHA members.

For we (CHA members) realize that the diversity of the speciality areas with the broad discipline of Hydrography requires continual information exchange. It takes no extrapolation of our professional work experience to say that hydrography historically has been an active participant in the "burgeoning new field of geomatics."

Not content to keep all this "neat technical stuff" to ourselves, the CHA has supported information distribution (training) through CIDA funded programs to the Caribbean and Malaysia. These programs have been successful and provide a direct avenue to promote the Canadian hydrography community, both people and products, on the international scene.

To ensure that our sister Canadian surveys and mapping

associations are abreast of our activities the CHA has a representative on the Canadian Institute of Surveying and Mapping (CISM) Council.

To promote Canadian activities and monitor interests of the international hydrographic community a recommendation for a delegate appointment to the International Federation of Surveyors (FIG) Commission IV (Hydrography) is made by the CHA via CISM.

It is apparent that the CHA is indeed very active in the forums of information distribution about our broad discipline. As with many messages though, there is usually some kind of "kicker". Well here it is; I would like to ask you to consider two things:

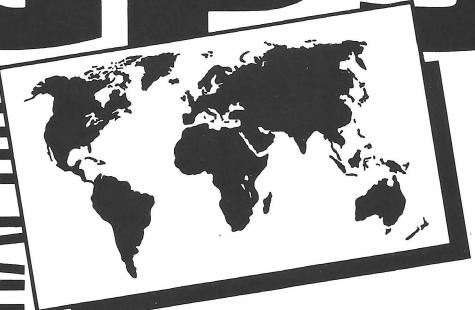
- 1. the next time you attend a Branch seminar, read a newsletter or Lighthouse article say thanks to the author, speaker or organizer of that article or activity; and*
- 2. instead of spending the coming long Canadian winter in front of the fireplace - "Catch the Wave" become the person to whom others will say Thanks...*

Dave



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Lighthouse Abstracts / Résumés pour Lighthouse

A Landlubber at Sea

by
W. Covey

Bill Covey recalls his role in the cruise when the CSS BAFFIN sailed to Monaco in 1967, Canada's Centennial Year and the year of an International Hydrographic Bureau Conference.

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Un marin d'eau douce sur la mer

par
W. Covey

Bill Covey se souvient de son rôle pendant la traversée du NSC BAFFIN vers Monaco pour une conférence du Bureau hydrographique international en 1967, année du centenaire du Canada.

Page 7

The Influence of MACDIF on International Digital Geomatic Exchange Standards

by
C. D. O'Brien and T. V. Evangelatos

The Canadian Hydrographic Service in cooperation with other federal and provincial government agencies has been researching and developing the Map And Chart Data Interchange Format (MACDIF) for several years in an effort to shape the development of international standards. The problem of interchanging geographical information is under active study in many organizations internationally. Different "standards" or approaches are evolving which address various aspects of the problem of interchanging data between agencies. The MACDIF development has addressed aspects of telecommunications, efficient data coding, and dynamic update which were not addressed in other interchange formats. The work on MACDIF has provided Canada with a channel to influence the development of international standards.

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L'influence de MACDIF sur les normes internationales d'échanges géomatiques numériques

par
C. D. O'Brien et T. V. Evangelatos

Le Service hydrographique du Canada, en coopération avec d'autres agences gouvernementales fédérales et provinciales, a recherché et développé le "Map and Chart Data Interchange Format" (MACDIF) durant plusieurs années afin d'établir des critères de développement de normes internationales. Le problème de l'interchangeabilité de l'information géographique est étudié activement dans plusieurs organisations internationales. Différentes "normes" et approches sont développées touchant des aspects variés du problème de l'interchangeabilité des données entre les agences. Le développement de MACDIF a abordé les aspects des télécommunications, du codage efficace des données et de la mise à jour dynamique lesquels n'étaient pas considérés dans les autres formats d'interchangeabilité. Le travail sur MACDIF a fourni au Canada un moyen d'influencer le développement des normes internationales.

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First World War Remembered in Lake Superior (near Marathon, Ontario)

by
D. H. Gray

The origin of geographic names on CHS chart 2306 (Peninsula Harbour and Port Munro) is examined. Fourteen of the twenty-five place names on this chart are derived from World War I events of 1914.

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La Première Guerre mondiale remémorée au lac Supérieur (près de Marathon, Ontario)

par
D. H. Gray

L'origine de la noms géographiques de la carte marine 2306 (Peninsula Harbour and Port Munro) est examinée. Quatorze des vingt-cinq noms des endroits sur cette carte proviennent d'événements de la Première Guerre mondiale de 1914

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Lighthouse Abstracts / Résumés pour Lighthouse

A Canadian View of the Development of Malaysian Hydrographic Capability Over the Last Decade

by

T. D. W. McCulloch

The history of Canadian-Malaysian cooperation in hydrographic training from 1983 to 1991 is related in this article. Much of the training was provided with financial support from the Canadian International Development Agency and has involved all Malaysian hydrographic organizations: military; private sector; academia; and civilian agencies.

The future organization of Malaysian hydrographic training and Malaysia's future role in southeast asian hydrography is also discussed.

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Une vue canadienne du développement des capacités hydrographiques malaisiennes durant la dernière décennie

par

T. D. W. McCulloch

Cet article relate l'histoire de la coopération canado-malaisienne sur la formation hydrographique de 1983 à 1991. Une grande partie de cette formation était fournie avec le support financier de l'Agence canadienne de développement international, le reste venant de toutes les organisations hydrographiques malaisiennes (militaire, secteur privé, académique et agences civiles).

On discute aussi de l'organisation future de la formation hydrographique malaisienne et du futur rôle hydrographique de la Malaisie dans le sud-est asiatique.

Page 19

Role of Hydrography in Marine Investigations and Litigation

by

R. Ekblom

The role which hydrography can play in the investigation of marine accidents is discussed. The hydrographer can be of vital importance in a marine accident investigation with his knowledge and appreciation of: the representative nature and accuracy of the charted depth; the composition of the seabed material; the position of charted features as opposed to reported vessel positions during an incident; the effect of tides and tidal streams on navigation; the accuracy of various harbour dredging methods; the charts in the incident area; and the various survey methods that may have been used.

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Le rôle de l'hydrographie dans les litiges et enquêtes maritimes

par

R. Ekblom

Le rôle que peut jouer l'hydrographie dans l'investigation des accidents maritimes y est discuté. L'hydrographe peut être d'une importance vitale dans l'enquête des accidents maritimes de par ses connaissances et son appréciation de la représentation et la précision des profondeurs cartographiées, la nature du fond marin, la position des entités montrées versus la position rapportée du bateau lors de l'accident, l'effet des marées et des courants sur la navigation, la précision de méthodes de dragage variées des ports, les cartes couvrant la zone de l'accident et les différentes méthodes de levés pouvant avoir été utilisées.

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James Cook Monument - Newfoundland

by

L. M. Cumming

This photo article on the Captain James Cook monument at Corner Brook, Newfoundland, commemorates his hydrographic survey of the Newfoundland coast from 1762 to 1769.

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Le monument de James Cook - Terre-Neuve

par

L. M. Cumming

Cet article photo sur le monument du capitaine James Cook à Corner Brook, Terre-Neuve, commémore son levé hydrographique de la côte terre-neuvienne de 1762 à 1769.

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A Landlubber at Sea

by

Bill Covey

Introduction

One morning last April I was dozing in bed, at home in Middleton, Nova Scotia, just after the radio alarm had wakened me. In that hazy nowhere between sleep and being aware of what is going on in the world for another day, the newscaster suddenly grabbed my attention when she said, "And this from the Bedford Institute of Oceanography. Canadian Survey Ships BAFFIN and DAWSON are being decommissioned". I left the hazy nowhere instantly, digging my dozing wife in the ribs and blurting, "Did you hear that?" which of course she hadn't. She vociferously expressed her displeasure at my having jolted her back to life so unceremoniously and promptly went back to sleep.

Not me! I hopped out of bed, dressed and went to the front door for the morning newspaper. Sure enough, on the back page of the fourth section there was the story confirming what had so rudely awakened me. BAFFIN and DAWSON were both being decommissioned.

You may well wonder why a former Canadian Hydrographic Service (CHS) Headquarters chap, who has been retired for seventeen years, could get so excited before my breakfast about that bit of news, particularly since I had never been a hydrographer but had spent my 26 years with the Service in Ottawa on the cartographic side of the business. Well, not quite 26 years at a desk in Ottawa as I had once enjoyed the good fortune of spending a most interesting five weeks aboard BAFFIN. I think the event warrants a fit of nostalgia on my part as it was indeed rare in those days for a landlubber from Headquarters to be sent to sea. The dozens of hardened hydrographers who have gone to sea aboard BAFFIN during the 36 years of her commission may wonder what could possibly be extraordinary about one of the old girl's voyages. Bear with me and perhaps I can add a bit more to the history of the CHS and its capital ship.

A Landlubber at Sea

The International Hydrographic Bureau's 1967 Conference was held in Monaco in mid-April of that year. As part of the 'Visiting Ship' program, the Canadian Hydrographic Service had been invited to send BAFFIN to Monaco during the Conference. 1967 was Canada's Centennial Year and it was a good idea to display BAFFIN and a bit of Canada to the international hydrographic community.

In my position as Technical Information Officer I spent the greater part of my time arranging the production of displays and exhibits for the Service. Norman Gray, the Dominion Hydrographer, asked me to produce a display that could be used aboard BAFFIN to acquaint the Conference delegates with Canada's latest developments in hydrographic, cartographic and tidal techniques. He also asked me if I would be willing to travel aboard BAFFIN to Monaco, to be responsible

for the display and to assist with public relations. It took me all of five seconds to make a decision of that magnitude and reply, "Yes, sir!"

It took about two months to design the exhibit and have the Canadian Government Exhibition Commission produce it. Before I knew it, I was standing dockside at the Bedford Institute three days before the sailing date watching eight large crates being hoisted aboard and tied down securely in the hangar.

BAFFIN's accommodation was filled to capacity for the voyage. The ship was to be worked both ways, so two parallels of latitude were assigned to be surveyed for the GEneral Bathymetric Chart of the Oceans (GEBCO) project. Two professors and three graduate students from Dalhousie University's School of Oceanography were aboard to take deep-water samples and to give the students a taste of life at sea. Russ Melanson, the Regional Hydrographer from CHS Atlantic Region at the Bedford Institute of Oceanography (BIO), was in charge of the voyage. Phil Corkum and Don Snodgrass from BIO and Wilfred Lacroix, the Regional Hydrographer from the Pacific Region, were the hydrographers. Don Snodgrass was a recently-graduated engineer from Calgary whom the CHS had hired two weeks previously and this voyage was to be his introduction to life at sea.

I asked the Photo Section at BIO if I could borrow a decent camera for use during the voyage and they astounded me by loaning me their new, never-before-used Hasselblad, a magnificent \$2,000 camera. A similar model was the choice of the Apollo astronauts when photographing earth from outer space. I was told in no uncertain terms that if I dropped the camera overboard I was to go with it! Incidentally, the Apollo chaps used a Hasselblad to take still pictures on each moon landing and left one of those beautiful cameras behind each time to avoid bringing a possibly-contaminated piece of equipment back to Earth. Such a waste!

Two days before sailing we realized there was not anyone in the party who could speak French capably enough to cope with the publicity material we were taking for radio and television use in Monaco. Bilingual training in the Public Service was then about two years from going on-stream. Rene Pilote, a most personable as well as bilingual hydrographer was very quickly and not at all reluctantly dragooned into becoming the fifth hydrographer. Corkum was to be the Data Processor, Snodgrass, Lacroix and Pilote were assigned the watchkeeping duties in the Plotting Room and I volunteered to be the fourth watchkeeper rather than having to sit out the voyage doing nothing.

On Wednesday, April 5, a Foundation Maritime tug nudged BAFFIN away from the pier at 9 am. and we were off to



The Ship's Officers and Hydrographic Staff aboard CSS BAFFIN'S 1967 cruise to Monaco.

Front row, L to R, seated: ?, ?, ?, Captain Paul Brick, First Officer Jack Viau, ?, the Ship's Doctor, ?,
Second row, L to R, standing: Bill Covey, ?, ?, a Dalhousie professor, Don Snodgrass, ?, Phil Corkum, ?,
Harry Holdsworth, ?, Rene Pilote, Russ Melanson, a Dalhousie professor, ?, ?, Wilf Lacroix.

(The author, who was also the photographer, apologizes profusely for committing the unforgivable sin of neglecting to write down the names of the people in the picture.)

Monaco, stopping first at the Imperial Oil pier at Dartmouth where the fuel tanks were topped off. On Friday morning we were just east of Georges Bank beginning our survey run when we were hit by what was described in the Ship's Log as a "fresh gale". By 10 am. we were hove to facing a 50-knot wind with 20-foot waves and BAFFIN, with her smooth bottom, was in her well-known roll mode. The brimmed-full fuel tanks prohibited the transfer of fuel between the flume tanks to help dampen the roll. To me, an Upper-Canadian land-lubber, the "ride", for lack of a better word, had become no less than awesome!

I didn't see anyone who was not seasick. During one of my many visits to the Hydrographers' washroom I encountered Captain Paul Brick who, after offering up his all, loudly proclaimed about the "Damned spoiled food in that damned galley that poisons me every time I go to sea!". One of the Oceanography professors, who must have been a born survivor, had very astutely determined that the closest point to the centre of gravity aboard BAFFIN was the centre toilet stall in the Hydrographers' washroom so he took possession of it throughout the gale with a blanket, pillow and book.

This was my fifth ocean crossing but the first in which I had to sleep wedged in a bunk with life jackets. But not until I had secured my errant suitcase which was slamming back and forth across the cabin. We were forbidden to go out on deck as the ship was rolling so heavily that the fuel was slopping out of the vent pipes and the spray had distributed oil over the entire outside of the ship. The smell of Bunker C permeated the ship and didn't help our "mal de mer" one bit. That night, what sleep we could manage was suddenly shattered during one particularly vigorous roll when a cupboard door in the pantry across the hall from our cabins flew open and crockery cascaded out onto the floor, smashing to smithereens with a

cataclysmic crash. A waiter, whose heart was not really in his work, swept up the shards in the morning.

Of course all storms at sea blow themselves out and by 8 pm. we had slowly resumed our eastward course. By 5 am. the next morning we had resumed full speed, the magnetometer had been streamed and we were in business, although the Ship's Log laconically stated "rolling heavily", a most magnificent understatement. None of the staff was feeling up to scratch by any means, but I had to admire the fortitude of Russ Melanson during breakfast that morning. I was 'palefacedly' pushing a spoon around in a bowl of cereal while Russ calmly ordered a plate of boiled cod, saying, "One must always have something inside one's stomach at times like this". I am sure it was sound advice but he could have fooled me! The unfortunate waiter who brought the steaming plate to the table placed it in front of Russ and then bolted from the room with his hand clapped over his mouth.

Don Snodgrass was the most unhappy member of the staff. The past 24 hours had helped him to irrevocably decide the sea was no place for a lad from Calgary. He told Russ that morning he would complete the voyage but would resign when we returned to Canada. Don no doubt made a wise decision as he never adapted to even the slightest motion of the ship during the voyage. He kept his assigned watches but he was not a happy camper.

That afternoon I obtained some on-the-job training in the plotting room and then took the midnight to 4 am. watch. The equipment had to be monitored for about five minutes in every twenty-minute period so I was able to ease my restless insides by lying on the leather couch that was athwartships in the room, bracing a foot on the Flexowriter stand that was bolted to the floor.

BAFFIN was still rolling heavily and working in the Plotting Room on the top deck was like taking a carnival ride. About 2 am, in one brief and careless moment of relaxed inattention, my foot lost its hold on the Flexowriter stand. Instantly a most vigorous roll shot me off the end of the couch and I slid across the deck, slamming feet-first into the wall under a table. Before I could grab anything the reverse roll skidded me back to the other wall head-first into a large government-issue metal wastepaper basket. After clambering back aboard the couch, I must admit I wondered why on earth I was sliding from wall to wall when I could have been safely home in bed in Ottawa. I could not even afford the luxury of a temper tantrum alone in the middle of the night in BAFFIN'S Plotting Room when everyone else was asleep. Temper tantrums require an audience. All I could do was chuckle to myself, go on a personal Red Alert and brace my foot more securely on the stand. The lump on my head and the large bruise on my backside disappeared in time.

The next day the weather turned warm and balmy and the sea subsided. Except Don Snodgrass, we all discovered we had appetites and began to enjoy the voyage. The crew turned to and began scrubbing the oil off the ship. I had brought a copy of the layout of the new Canadian flag which had been introduced two years earlier and the Second Mate and I laid out the official red maple leaf inside a large white circle on the helicopter pad and a seaman painted it a bright red.

What does one do on a long voyage to avoid boredom, particularly when working only four hours in every eight? I have always been an indefatigable reader and I had brought along James Michener's new book "The Source", an enormously long but interesting tome which was a best-seller at the time. I had gotten well into the book when an unusual coincidence occurred one warm morning as I was enjoying the sun on deck just before we turned south off the coast of Portugal.

One of the graduate students was an avid bird watcher and was outfitted with a most impressive array of photographic equipment as is the habit of the majority of dedicated bird watchers. He was busy setting up his camera with an enormous telephoto lens and he called me in great excitement to show me a colourful small bird clinging in exhaustion to a wire stay. He had identified it as a Hoopoe, a bird common to the Mediterranean area which had obviously been blown miles off course during the spring migration. The night before I had been reading the chapter entitled "The Psalm Of The Hoopoe Bird" in Michener's book. It related events that had occurred thousands of years before the birth of Christ and here was the Hoopoe bird of the story. I felt some excitement but nothing compared to the raptures experienced by the lad with the camera. After using a roll of film, he discovered the bird had died while clinging to its perch, so he put it in a plastic bag and took the find of his bird-watching life below to the freezer so he could mount it when he returned to Halifax.

One afternoon I had the good fortune to be on watch when we sailed across the Mid-Atlantic Ridge. I don't think I'll ever forget the sound of the echoes from the sounder resounding down through the hills and canyons while the shapes developed on the sounder graph. BAFFIN was comparable to an aircraft flying some 3,000 feet over the peaks of a 15,000-foot mountain range. I had plenty of interested company on that watch as it was a fascinating spectacle. I would not have

traded jobs with anyone anywhere at that point.

Work stopped for two days while the Oceanography students gathered their deep-water samples. By Saturday evening we had completed our survey line and had turned south along the coast of Portugal. The next morning after breakfast a group of us, armed with binoculars, gawked at the host of ships we were encountering. We were in the main north-south commercial shipping lane. Oddly enough, on almost every ship we peered at we saw people with binoculars examining BAFFIN. I imagine a ship of BAFFIN'S configuration, bristling with antennae and sporting a helicopter pad was a peculiarity among the freighters and tankers we were watching.

After a good look at Gibraltar as we passed through the Strait on a sunny, calm, balmy afternoon, we smoothly sailed across the Mediterranean and entered Monaco's tiny harbour at 5:30 pm. on Wednesday, April 19 (see Photo 2). We slipped alongside the Quai des États-Unis into a space just vacated by a French naval vessel which lay directly below the International Hydrographic Bureau Headquarters. We soon cleared Customs and were free to go ashore. Russ Melanson vacated his Hydrographer-In-Charge suite so that Norman Gray, the Dominion Hydrographer, could move aboard and entertain Conference delegates for the next five days.

My one thought was to go ashore during our stay for a French gustatory treat, but after the Chief Steward displayed the menus for our stay in Monaco, I changed my mind. Norman Gray, in his own inimitable fashion, entertained delegates each noon with a sumptuous repast which was definitely not to be missed. I have forgotten the name of the pastry chef and baker who was well into his seventies and had been coerced into coming out of retirement for the voyage. He had been a chef on CHS surveys for many years and was famous for his delicacies. He outdid himself at Monaco.

What does one do the first night ashore in Monaco? Phil Corkum, Wilf Lacroix, Don Snodgrass and I took a short train ride to Nice where we sat at a table in a delightful sidewalk bistro, watched Nice go by and enjoyed French beer. Wilf, always notorious for his stubborn nature, refused to listen to our warnings to avoid the local water and ice cubes for a day or two and chose to drink cocktails. That night he came down with a monumental case of Napoleon's Revenge which prostrated him for two days and caused him to miss some excellent meals.

Rene Pilote's brother, a Quebec surgeon who was holidaying in France, was at the quay to meet Rene. The two soon disappeared and we learned the next day they had gone directly to the Casino where Rene proceeded to play Baccarat. He must have known something about the game as he soon found his original \$10 wager had increased to a pile of chips in front of him worth \$2,000, quite a sum of money in 1967. He had the good sense to cash them in before they disappeared.

The two brothers hired a taxi outside the casino and we didn't see Rene again until the next morning. He and Captain Brick spent the day at the Monaco radio and television studios recording interviews. Then Rene left, leaving his telephone number in case he was needed. He wasn't and that was the last we saw of him until Sunday evening when he returned aboard BAFFIN after seeing his brother off on the Paris train.



Photo 2: CSS BAFFIN entering Monaco Harbour

An enterprising local photographer took this picture from the cliff on the Palace grounds. He later sold many copies to the BAFFIN folks.

He brought a case of fine French wines for the Hydrographers' dining room for the return voyage. In spite of our incessant probing he said nothing about where they had been or what they had done, except that they had spent all the money and had enjoyed a wonderful time without leaving Monaco. In reality, it had cost them only ten dollars.

On Thursday we set up the exhibit in the hangar and the staff readied the helicopter pad for a reception of Conference delegates on Friday evening. It was a first class affair held on a balmy spring evening under a starry sky. On Saturday many of the delegates toured BAFFIN and had another look at the exhibits.

During our stay the Monégasques were most hospitable. The Principality had given the BAFFIN folk full use of their magnificent outdoor pool and everyone seemed to have a fine time. It was unfortunate that we had missed the Monaco Grand Prix by only two weeks as the Quai des Etats-Unis, where we were moored, formed part of the course. Each evening found many of us in a bar frequented by visiting mariners which was atop the high cliff by the quay. Visitors were asked to hang a photograph of their ship in the bar and our host contributed a round of drinks for the BAFFIN folks when I gave him a colour photograph of BAFFIN that was part of a press kit. Surely it

couldn't still be hanging there!

We set Sunday afternoon aside for a Public Open House. Captain Brick, his officers and the crew organized it and carried it off very well indeed. The drawing power of anything Canadian in Europe has never ceased to amaze me. "Canada" seems to be a magic word, conjuring up a vision of a land with plenty of everything; space, wealth, water, fresh air and a good life. When the three-hour Open House began at 2 pm. nearly a thousand people were waiting on the quay and they kept arriving all afternoon. I had brought a thousand Canada lapel pins and Centennial booklets for the Open House and they soon disappeared.

On Sunday the Conference sponsored a bus tour of the region and invited the Hydrographic folk from BAFFIN, so we missed the Open House. However, as part of the all-day tour to enjoy the sights of the French Riviera, we were wined and dined at a fine five-course lunch at a chateau and I finally got to enjoy a good French meal.

Monday morning we packed the exhibit in its crates and BAFFIN was secured for sea. However, the gangway watch had experienced some anxious moments that week while we were alongside the quay. The mid-Sixties was the peak of the



CSS BAFFIN alongside the Quai des États-Unis Monaco, April, 1967.

The BP signs are at Le Coin de Tabac, a sharp corner in Le Grand Prix de Monaco which had been held just previous to BAFFIN'S visit. The quay is part of the racetrack. (photo by Bill Covey)

Hippie era and the quay was constantly busy, particularly at night, with young folks looking for a free ride back to North America. The gangway watch had been kept fully manned and alert all week as Captain Brick made 'no bones' about not wanting to find stowaways aboard when we were back at sea. He told me he would be held personally liable for a \$1,000 fine if one was found. On Monday afternoon before sailing BAFFIN was searched throughout to ensure there weren't any stowaways aboard.

However, we returned with one more member of the crew than we had started with. On Monday morning a young chap at the gangway politely asked to see the Captain. He was Claude Daoust from Quebec City, a young chap wandering through Europe whose possessions were his knapsack, passport and five francs. He was hungry, broke and wanted desperately to go home. He asked Captain Brick if he could work his passage back to Canada and Paul signed him on as an unpaid member of the crew. Claude was delighted with his good fortune and happily scrubbed and painted his way back to Nova Scotia, putting on about ten pounds at the mess table in the process.

At 4:15 in the afternoon we quietly slipped out of Monaco Harbour. That night out on the Mediterranean BAFFIN spoke to HMS HECATE, the British survey ship that was taking our place at the quay. On the return voyage across the warm Atlantic we surveyed another GEBCO parallel which took us close to the Azores, stopping twice for deep-water samples and enjoying Rene's gift of wine each evening at dinner. The dinners were great as there was a considerable amount of good food and delicacies that hadn't been consumed in Monaco. I doubt that any party aboard BAFFIN has dined so sumptuously before or since. The sea was smooth; the weather was sunny and warm. It was a pleasure to realize we hadn't seen a rain cloud since we rode out the gale off George's Bank a month earlier.

But the North Atlantic had to have the final word as it usually does. Two days before we arrived in Halifax Harbour, and not far from George's Bank, we encountered another gale, not quite as nasty as the other, but enough to damage two whalers on the foredeck and to remind Don Snodgrass, in case he had forgotten, that this was not the career he wanted to pursue.

When we tied up at the BIO pier and cleared Customs, one of the first to go ashore was Claude Daoust. At the head of the gangway he was met by a delegation of the crew who completely surprised him by presenting him with enough money for his bus fare to Quebec City. It was a very touching gesture but one indicative of the people who made up BAFFIN's crew. I thought it brought the cruise to a close in a warm fashion. For me, the landlubber from Ottawa, it had been a delightful adventure and I hope it had been the same for everyone else.

We had to except Don Snodgrass from this happy group as he promptly resigned as he had promised. He was a personable chap and a capable engineer whom the Service was unfortunate to lose. Perhaps he found his niche on the stable platform of the Alberta oil patch. The three undergraduate students survived their first taste of sea-time in fine fashion. I wonder where they are today?

I was aboard BAFFIN one other time before I retired from the CHS. I was touring the Maritimes on a chart dealer inspection trip in 1972 and arrived in Halifax early one evening to find every hotel and motel fully booked because of a large convention. I drove to the BIO pier, walked up BAFFIN's gangway and was cheerfully given bed and breakfast.

I hope someone will write a fitting obituary to BAFFIN, possibly one of the hydrographers who sailed on her to the Canadian Arctic, where she was designed to operate; someone who spent the major part of a career aboard her. My time aboard was brief, a mere five weeks out of her 36 years, but it was a memorable part of my time in the Canadian Hydrographic Service.

I shall miss seeing BAFFIN alongside the BIO pier when I drive across the Murray MacKay Bridge on my way to Halifax and one of my grandchildren says, for about the tenth time, "Gee, Grampy, you went across the ocean on THAT little thing?" To which I shall reply, for about the tenth time, "Yes, my boy, and I'll tell you all about it on the way home to Middleton". One of the advantages of grand-parenthood is being able to bore the young folk with the same tale told many times. It keeps them quiet in the car.

About the Author

Bill Covey retired in 1974 as the Technical Information Officer at Canadian Hydrographic Service Headquarters in Ottawa. He now lives in Middleton, Nova Scotia with his wife Bette (also ex-CHS). They enjoy a good life in the beautiful Annapolis Valley near three of their six grandchildren. He apportions his spare time between singing in two community choral groups with Bette, woodworking, photography, writing, and producing and acting in live theatre. He has nothing but good things to say about the richness and fullness of the retired life.

This is the third in, what has become, a series of nostalgic articles on the CHS [see LIGHTHOUSE Editions 41 and 42]. Bill would like to express his gratitude to Ed Lischenski at the Bedford Institute for his help in unearthing the photographs in this article and also to thank the Ship's Division at BIO for supplying copies of BAFFIN's log of the cruise.

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The Influence of MACDIF on International Digital Geomatic Exchange Standards

by

C. Douglas O'Brien and Timothy V. Evangelatos

Introduction

The need to interchange digital data between different mapping agencies has been a problem under study by a number of different groups throughout various countries in the world. In the past, the barrier has been the significant incompatibility between the computing systems and data structures used in the various agencies that wish to exchange data. Progress toward file formatting and telecommunications standards has reduced the dependency on specific hardware systems, but incompatibilities between the data structures and coding of geomatic data remain. There are a number of efforts under way, primarily in North America and Europe, to establish standards for the communication of survey, mapping, and hydrographic chart data. Most of these developments are proceeding almost independently of one another. Although there is a fair degree of overlap in these efforts, the ultimate goal in each instance seems to be somewhat different.

Some of the developments relating to geomatic data interchange are concerned with exchange between cartographic agencies, whereas others are more concerned with the gathering or distribution of the data to the public or industrial end user. There are special needs which must be accommodated in communicating hydrographic charting data to a ship for use in an automatic "Electronic Chart" system or in supporting military digital terrain models. A different level of detail is required in communicating data between agencies than in distributing a more finished digital product to end users.

Review of Standards Developments

The two principal agencies developing international standards for digital mapping and charting are the International Hydrographic Organization (IHO) and the Digital Geographic Interchange Working Group (DGIWG). The IHO Committee on the Exchange of Digital Data (CEDD) is narrowly focused on the need to interchange navigational charts between hydrographic agencies and eventually to vessels in the support of Electronic Navigational Charts. This work is important and will have a major effect; however, it can not set a general world standard for geomatics because of its narrower hydrographic scope. The IHO CEDD has stated that the base upon which it is building standards is the work on Spatial Data Transfer Specification (SDTS) from the U.S. concerning direct interchange between agencies and on the Map And Chart Data Interchange Format (MACDIF) from Canada with respect to accommodating telecommunications principles for various navigational and charting applications.

The DGIWG is an international committee currently consisting of NATO nations, which is endeavouring to develop a comprehensive suite of standards covering vector, raster and matrix data. The mandate of the committee is to develop public domain international standards of general applicability.

The work of the committee will eventually feed into the International Standards Organization (ISO) process to produce formal, widely accepted, world standards. The DGIWG standards have three forms. These cover archival and bulk interchange, relational databases and telecommunications. The forms of archival and bulk interchange were developed first and were initially intended to be used with magnetic tape. The relational database form is from the work done on the Digital Chart of the World (DCW) by the U.S., Canada, Australia and the U.K. The telecommunications form is derived directly from the MACDIF work done in Canada.

In the U.S., there has been a number of developments toward standardized geographical interchange formats. Several of the major Geographical Information System (GIS) suppliers support their own proprietary industrial interchange standards. This is useful in communicating information between facilities using the same manufacturer's equipment. However, it is difficult to communicate between different manufacturer's systems and sometimes even between older and newer versions of the same equipment.

The U.S. Office of Budget Management dictated to U.S. government agencies a requirement to reduce the duplication of effort resulting from supporting so many incompatible GIS systems and facility-specific interchange formats. This has resulted in a flurry of activity in the U.S. toward developing a government geographical interchange standard. After several years of discussion, several approaches have developed. An initial short term approach, the Federal Geographic Exchange Standard (FGEF), was developed and abandoned. A second development was made after extensive academic, industrial and public debate through the American Council on Surveys and Mapping (ACSM). This format is known as the SDTS and is being processed toward becoming a U.S. Government Federal Information Processing Standard (FIPS). This will make the capability to support this format a requirement for the purchase of any GIS equipment for the U.S. Government. In addition, the U.S. has also been very active in international standards activities contributing heavily through the Defense Mapping Agency to the DGIWG Digital Geographic Exchange Standard (DIGEST) development and through the National Ocean Service to the IHO DX 87 and DX 90 standards.

The SDTS is a very general approach to geographic data interchange, in that it defines the envelope for data exchange without defining details such as the particular data model for a set of data. This is useful for exchanging data sets between agencies which have intrinsically different internal data representations. However, a more defined data model is required to establish commonality. Therefore, a U.S. federal profile of SDTS is being defined which specifies additional aspects of the data model. It is also possible within SDTS to create a DIGEST data model, effectively encoding DIGEST data in an

SDTS envelope.

Several other countries are also developing interchange formats which meet their own needs. Many of these countries are actively participating in international standards development. In Europe, there is a strong movement toward adopting the internationally developed DIGEST as national standards. In particular France, Belgium, the Netherlands, and Denmark are in the standards adoption phase in their national standards bodies. The U.K. is debating replacing its older National Transfer Format with DIGEST, and Australia is studying the use of SDTS as their national standard.

In Canada, there have been several different efforts toward developing geomatic interchange standards. The first of these has been the development of the "National Standards for the Exchange of Digital Topographic Data" by the Canadian Council on Surveying and Mapping (CCSM) in 1984. This specification addressed the immediate need of exchanging data between various provincial and federal agencies. However, it was magnetic tape oriented and somewhat limited in scope. For example, it provided no special provision for hydrography. The CCSM approach was revised in 1986 to accommodate a more rigorous data model. This was updated and renamed in 1989 the Canadian Council On Geomatics Exchange Format (CCOGEF).

A second Canadian development of a geographical interchange standard has been the development of the Map Data Interchange Format (MDIF)/MACDIF specification. MDIF/MACDIF was developed by the Ontario Ministry of Natural Resources (OMNR), the Canadian Hydrographic Service (CHS), the Department of National Defence (DND) and several other federal departments as a telecommunications-based interchange format. This work is also being carried out in cooperation with the U.S. Department of Commerce, the U.S. Defense Department and several international agencies such as the IHO and DGIWG where results of this work are being reviewed. The scope and purpose of this development is quite different from the CCSM approach.

The MDIF/MACDIF development is actually two parallel but independent projects which cooperatively produced the same initial technical specification. In the MDIF project, the OMNR is addressing the gathering and future dissemination of mapping information within the province of Ontario. The MACDIF project, being administered by the CHS and DND, has placed a greater emphasis on compatibility with international developments and certain special requirements such as the handling of symbolized maps and the telecommunications of updates. Both projects began in parallel; however, the different emphasis has resulted in somewhat different recommendations. The results of both developments could be brought together into a single document extracting what was learned in the various areas of research but, this would be of little use since both documents serve as input to further national and international standards developments where consolidation will occur.

In addition, other Canadian provincial agencies have developed specifications for data interchange. In particular, British Columbia has developed a format as part of its Government Land Information Data Exchange.

The Canadian General Standards Board (CGSB) committee

on geomatics is studying the formation of a Canadian national geomatic interchange standard. The Canadian Council On Geomatics Interchange Format, and MDIF/MACDIF developments together with American and international developments are being reviewed. Canada should not develop a standard independently from the rest of the world, and must eventually follow international standards. The CGSB work will provide a transition path from the mix of formats in current use to eventual standards.

The Effect of MACDIF on Geomatic Standards Development

When work began on the MDIF/MACDIF standard in 1985, almost all of the previous developments of interchange formats had been concerned with communicating data as record-oriented files of various degrees of flexibility on magnetic tape. The MDIF/MACDIF format was designed as a telecommunications-oriented standard based on the the developing standards for Open Systems Interconnection. This means that the MDIF/MACDIF format is compatible with the developing international telecommunications networks.

Due to the decreasing cost of communications services over the past number of years, it has become less costly to communicate an entire topographic map across Canada over a packet switched telecommunications network than to store it on a magnetic tape and interchange that tape by courier. However, it is not expected that a telecommunications format will be used extensively for the bulk interchange of geomatic data. Rather, the principal use of telecommunications will be with the communications of updates and overlays to previously distributed maps.

MACDIF is a "data stream" rather than record or data base oriented format. It is based on the ISO standards 8824 and 8825. The two major advantages of the format are its flexibility and data storage efficiency. In order to achieve data efficiency, coordinate data is stored as normalized binary fractions, a highly compact method of storing coordinate data. A tag structure for identifying data elements allows for a large number of options without imposing any overheads. In experiments, MACDIF data files have been shown to be one third to one eighth the size of equivalent files in other formats.

The flexibility of MACDIF comes from the fact that it permits different feature tables, attribute tables or other types of information to be incorporated into the format. The MACDIF development has made important contributions to geographic data interchange by proposing the separation of the data content from the interchange carrier. This introduces a concept called the Geographic Document Architecture that is similar to the Office Document Architecture developed in the ISO to interchange office documents between dissimilar office systems.

The effect of MACDIF on geomatic standards development has been the introduction of the concept of content separation from the carrier (exchange mechanism). As a direct result, the DIGEST standard has been revised incorporating three independent encapsulation and coding structures to handle telecommunications, relational database applications and archival and bulk data exchange. MACDIF has also served to broaden the approach taken in the IHO exchange standards development.

The MACDIF developments have also contributed significantly to the multi-national DCW project, where the underlying data syntax of the component text, numeric and coordinate elements was derived from MACDIF structures. The software tool-box developed as part of the MACDIF project has been utilized in the testing of the DIGEST standard with respect to the conversion of the DIGEST relational form as used in DCW into the DIGEST telecommunications form.

Conclusions

The adoption of a universal standard for geographical information exchange is still some time off. The different developments of formats which have occurred in various organizations, jurisdictions and countries have all addressed different parts of the overall problem. More universal standards are evolving internationally based on the current array of overlapping national standards.

For Canada, these current international developments are very important. Canada should not adopt standards of its own without considering these external forces, because we will, in the future, be required to exchange data internationally through equipment produced by both domestic and foreign manufacturers.

The MACDIF development has been seriously considered in international forums and the important components of the specification have been adopted as parts of these universal standards. One cannot participate in standards development internationally without actively participating. MACDIF has been the vehicle through which Canada has influenced development of the eventual universal standards. Further emphasis on specific structures such as updating and the relationship between the various representations of data require further work. The Canadian experience in these areas can be contributed internationally because of the background work done on MACDIF.

References to the Standards Used in this Paper

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CEDD: "IHO Transfer Standard for Digital Hydrographic Data - SP57", International Hydrographic Bureau, Monaco, August 1991.

DCW: Environmental Systems Research Institute, Inc., "Digital Chart of the World, Final Military Standard - Vector product Format", Defense Mapping Agency, Redlands, California, June 1991.

DIGEST: Digital Geographic Information Working Group, "Digital Geographic Information Exchange System Version 1.0", Canadian General Standards Board, Ottawa, May 1991.

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About the Authors

Doug O'Brien is an engineer and principal of IDON Corporation. At IDON, Doug pioneered the use of OSI telecommunications standards for the exchange of spatial objects in the MACDIF Project, and is still actively involved with international standards development.

Timothy V. Evangelatos is an engineer with the Headquarters branch of the Canadian Hydrographic Service. He is active in the development of both national and international spatial data standards.

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First World War Remembered in Lake Superior (near Marathon, Ontario)

by

David H. Gray

How many times have you picked up a map or chart and recognized a theme for most of the geographic names? I did recently and I would hazard to guess that it does not happen too often. The names usually come from many sources.

Canadian Hydrographic Service chart 2306 is entitled "Peninsula Harbour and Port Munro" but would be more readily recognized as the harbour chart for Marathon, Ontario. The chart was surveyed by H.D. Parizeau in 1914 and first printed in 1916. In preparing the chart for publication, Mr. Parizeau would have hand-drawn a fair sheet copy of the intended chart. Thus, he would have added the geographical names that he wanted. A draughtsman would then have made the reproduction negative of the chart from this fair sheet copy. The original cartography is still very much in evidence although the chart was updated by new editions in 1927, 1947, and 1957.

What first caught my eye were the names of three small islands in Port Munro; namely, **Glasgow Island**, **Good Hope Island**, and **Monmouth Island**. Being a bit of a naval history buff, I recognized the names as British cruisers at the Battle of Coronel (Chile) on November 1, 1914. A German squadron, including the heavy cruisers *Scharnhorst* and *Gneisenau* (11,600 tons each), commanded by Admiral Maximilian Graf von Spee (1861 - 1914) met up with a British cruiser squadron. Commanded by Rear Admiral Sir Christopher Cradock, it was attempting to blockade the Germans from gaining access to the coaling port at Coronel. The British ships, in the afterglow of sunset, were caught by the excellent gunnery of the German ships, lying in darkness to the east. HMS *Glasgow*, a 4,800 ton light cruiser, was badly damaged in the battle, but managed to escape; HMS *Monmouth*, a 9,800 ton cruiser, and HMS *Good Hope*, a 14,100 ton heavy cruiser, were sunk. Admiral Cradock was killed in the action. **Cradock Cove**, between Glasgow Island and Good Hope Island, although misspelled, was probably named after him. Two other features, **Craddock Creek** and **Craddock Lake**, not compiled on chart 2306, take their names from the cove.

The naval story does not end there. The Royal Navy, enraged by the loss of its cruiser squadron, took the rash step of weakening the Grand Fleet protecting the British Isles from the German High Sea Fleet. Two battle-cruisers, HMS *Invincible* and HMS *Inflexible*, and two more cruisers commanded by Admiral Sturdee, were secretly despatched to the Falkland Islands in the hope that they, and HMS *Glasgow*, would meet up with the German squadron and sink or otherwise neutralize them. The seas would then be safe for British shipping. As fortune would have it, the German squadron, now five cruisers, arrived off the important naval depot at the Falkland Islands as the British battle-cruisers were coaling up after finishing their dash down the Atlantic Ocean the day before. Completing their coaling, the British ships gave chase. Their superior speed and gun size sealed the fate of

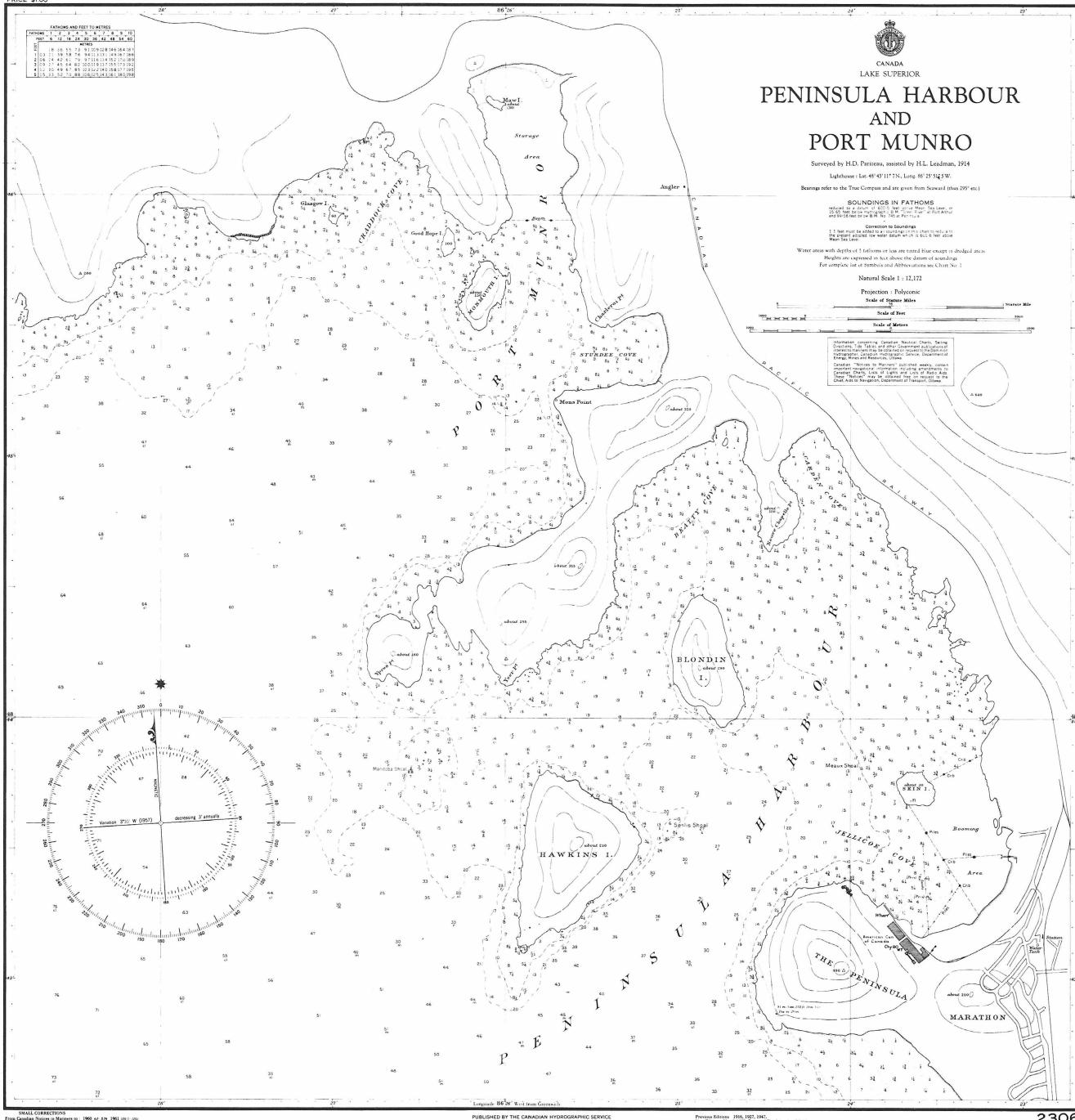
the German squadron in the ensuing Battle of the Falkland Islands, on December 8, 1914 from which only one German cruiser escaped - the *Dresden*. The battle-cruiser commander, Sturdee, is remembered by the place name **Sturdee Cove**. In 1916, he commanded the Fourth Division of Battleships of the Grand Fleet at Jutland and at that time was titled Vice Admiral Sir Frederick Doveton Sturdee.

The naval theme continues on the chart. **Jellicoe Cove** is named after Admiral Sir John R. Jellicoe (1859 - 1935), the meticulous, mathematical Commander-in-Chief of the Grand Fleet, 1914-16. Later, he became Admiral of the Fleet and was created First Earl Jellicoe, Viscount Jellicoe of Scapa. The second most prestigious sea-command position in the Royal Navy in 1914, Commander of the Battlecruiser Squadron of the Grand Fleet, was held by the swashbuckling Vice Admiral Sir David Beatty (1871 - 1936). He had risen quickly through the ranks, because of deeds of derring-do, to become the youngest admiral in the Royal Navy since Nelson. He held the position until 1916 when he was promoted to the rank of Commander-in-Chief of the Grand Fleet. After the war, Beatty became Admiral of the Fleet and was created First Earl Beatty, Viscount Borodale of Wexford, Baron Beatty of the North Sea and of Brooksby. He is remembered by **Beatty Cove**.

Other features on the chart produce a second, but related, theme in that they are named after battles and places in the news in the opening phases of the war in France and Belgium. There is **Yser Point**, named after the Yser (or Ijzer) River in Belgium where the German advance towards the English Channel was stopped in October 1914 at the Battle of Yser. There is **Senlis Shoal**, named after Senlis, about 32 miles northeast of Paris, which was overrun by the Germans on September 2, 1914 and whose mayor and six other civilian hostages were shot by the Germans. There is **Ypres Point**, after the Belgian town which became the site of several battles during the First World War and the burial ground of four-fifths of the original British Expeditionary Force. **Charleroi Point** is named after the town of Charleroi, Belgium, which was the site of the first battle of the First World War on August 22, 1914. **Mons Point** is named after the town of Mons, Belgium, which was the site of the first battle between the British and German armies. **Neuve Chapelle Point** is named after Neuve Chapelle, France, which was in the midst of the fighting during the whole of the First World War. **Meaux Shoal** is named after Meaux, France, (about 25 miles east of Paris).

It is unusual that such a high ratio as 14 of 25 named features on one chart (2306 - PENINSULA HARBOUR AND PORT MUNRO) should have been given names by Parizeau that come from the naval and military news events of 1914 and to have kept those names over the decades.

PRICE \$1.00



2306

Reduced version of CHS Chart 2306 (1957), showing features in Lake Superior, near Marathon Ontario

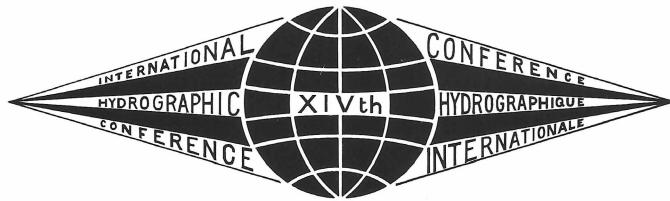
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INTERNATIONAL HYDROGRAPHIC
ORGANIZATION

ORGANISATION HYDROGRAPHIQUE
INTERNATIONALE



MONACO, 4-15 May 1992

A Symposium and Exhibition of Equipment of interest to all those involved in the collection, manipulation and display of hydrographic and navigational information will be held in Monaco, 11 to 15 May 1992, during the XIVth International Hydrographic Conference.

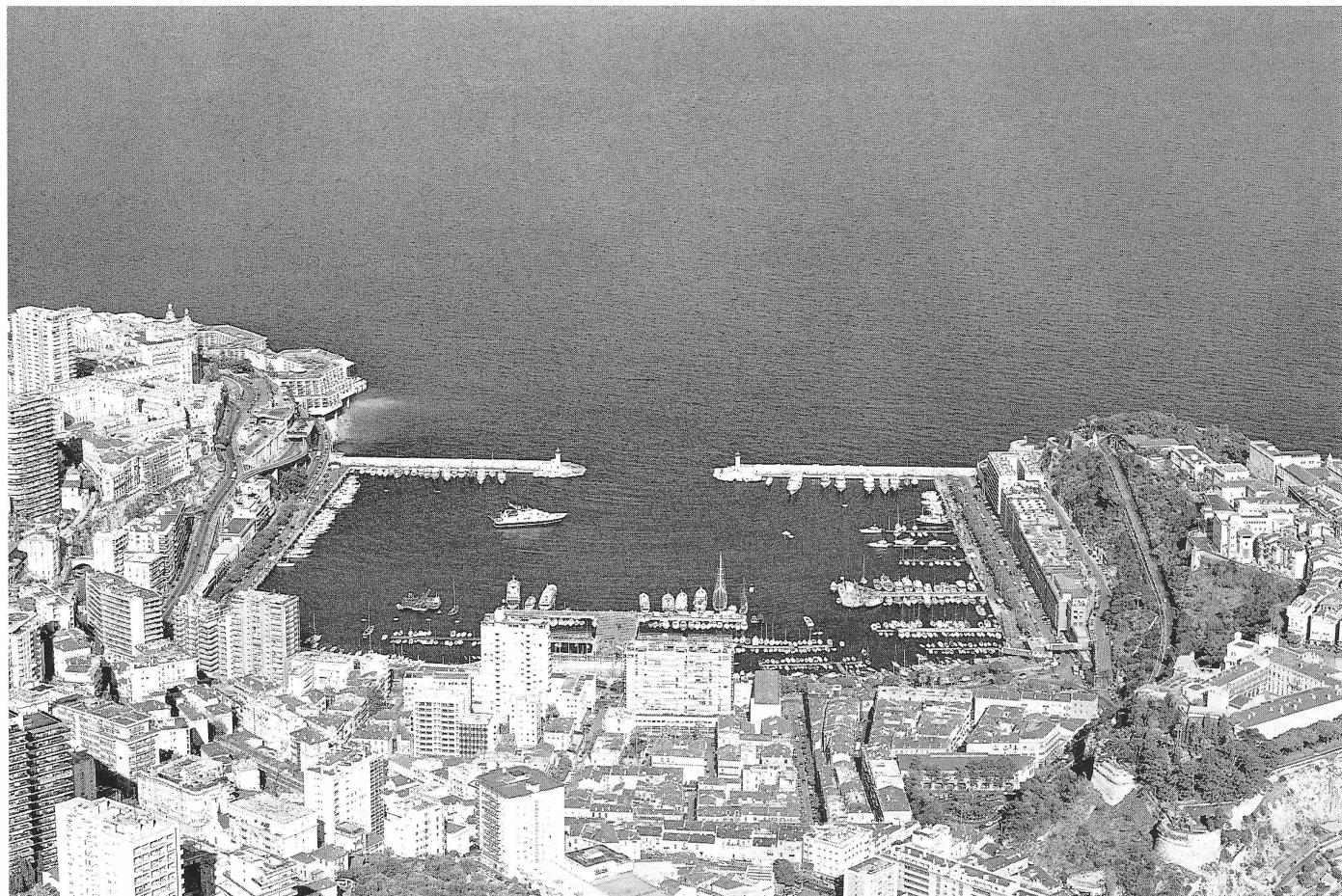
The theme of the Symposium, on 11 and 12 May, will be :

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A Canadian View of the Development of Malaysian Hydrographic Capability over the Last Decade

by

T. D. W. McCulloch

Introduction

For a Canadian to write a paper on Malaysian capability in hydrographic surveying may seem a bit presumptuous. However, the author's connections with Malaysia do go back a number of years; largely related to hydrographic concerns, particularly technical training. This paper reflects only the personal viewpoint of the author but also contains several thoughts that might well be pursued to Malaysian advantage.

The author first visited the coasts of Malaya, as it was then known, in his seafaring days (a long time ago). But the hydrographic connection was made in 1974. A visit was made to the Royal Malaysian Navy (RMN) Hydrographic Directorate in Kuala Lumpur, and thence to the "K.D. Perantau" alongside at the RMN base at Woodlands on Singapore Island, where I first met Captain Goh Siew Chong. Visits were made at the same time to the Department of Survey and Mapping Malaysia (DSMM) in Kuala Lumpur and to the Institute of Surveyors Malaysia (ISM). At the time the author noted in his report that the RMN Hydrographic Directorate and the DSMM were manned by enthusiastic and knowledgeable staff, an opinion that has met the test of time. In 1974, a hydrographic presence in the Malaysian private sector scarcely existed; today it is a fact of life.

The Canadian / Malaysian Connection

In 1979 the Canadian Hydrographic Service (CHS) and the Canadian Hydrographic Association (CHA) jointly hosted the very first International Hydrographic Technical Conference in Ottawa. Arrangements had been made through the Canadian International Development Agency (CIDA) to ensure that there was a goodly representation of hydrographic surveyors, and surveyors that wished they were hydrographers, from developing coastal states. Captain Goh was the Malaysian participant in the Conference and contributed much to its success. It was there that the first seeds of future Canadian/Malaysian cooperation were planted.

By 1981 the author had become Chairman of Commission Four (the Hydrographic Commission) of the International Federation of Surveyors (FIG) and took the opportunity, with the assistance of CIDA, to invite a number of surveyors from developing coastal states to Canada for a hydrographic workshop to be followed by participation in the FIG Congress in Montreux, Switzerland. Among those who took part in the workshop and congress was Captain Goh of the RMN.

By this time Captain Goh and the author had established a rapport and many were the discussions that developed on possible Canada/Malaysia/ co-operation, with an emphasis on training as it was of paramount importance. Several visits to Malaysia by the author over this period cemented also a relationship with the ISM and the DSMM that has continued to the present day. In 1983 a submission was made to CIDA

through the Canadian Institute of Surveying (CIS - now the Canadian Institute of Surveying and Mapping CISM) for a Malaysia Hydrographic Surveying Training Project. But bureaucracies are the same the world over, and it was not until late 1984 that a project was approved for the years 1985, 1986 and 1987. The ISM was the Malaysian focal point for the endeavour.

Malaysian Hydrographic Requirements (mid 1980's)

Malaysian hydrographic needs of the mid 1980's were determined after consultation with the ISM, RMN and the DSMM. The following sub-projects were agreed upon:

In Canada:

- Delineation of Maritime Boundaries training for a Malaysian at the University of Toronto (CIDA funded);
- Tidal Studies training for a Malaysian at CHS offices in Ottawa, Dartmouth, etc. (CIDA funded);
- Hydro-One (Category B equivalent) for 3 Malaysians at CHS offices in Ottawa, Burlington and Victoria (CIDA funded); and
- Carto-One for 3 Malaysians at CHS offices in Ottawa, Burlington and Victoria (RMN funded).

In Malaysia:

- Canadian Tidal Expert to advise the RMN;
- Canadian Marine Cartographic Expert to advise the RMN;
- Canadian Hydrographic Surveying Expert to conduct and co-ordinate a Hydro-One course (Category B equivalent) in concert with the ISM (8 participants); and
- Canadian Delineation of Maritime Boundaries Expert to advise Malaysian Agencies.

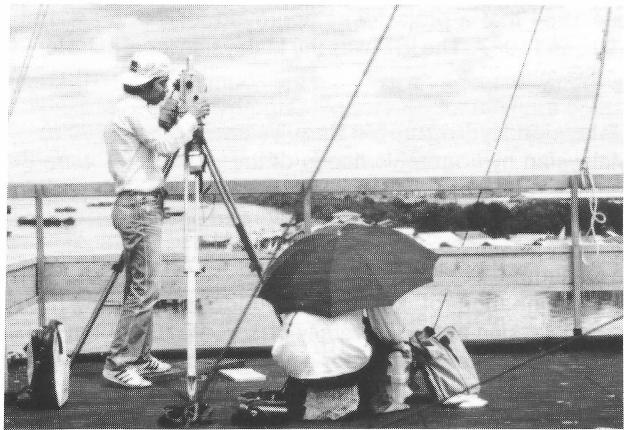
All of the foregoing sub-projects went well, although as



Malaysia, 1987: CHA (CIS)/ISM Hydro-One Course

Left to right: Hans Gray, Wan, Lai, Ong, Zulkurnain, Koh, Rawjeet, Syed - (missing - Jamilah). This photo was taken at the RMN Marine Department in Port Klang.

expected, there were useful critiques and suggestions after completion on how each segment might be improved. The Hydro-One Course presented in Malaysia, in particular, was examined closely. All participants appeared to have gained much from the course, but it required a very large effort on the part of the Canadian instructor/coordinator and his Malaysian counterparts to deliver the end product to the students. Constant re-scheduling of lectures due to the unexpected absence of key lecturers and some lectures not as well prepared as they might have been, added to the headaches. Nevertheless, local managerial ingenuity and a pragmatic flexible instructor/coordinator delivered as anticipated. The commitment of the Marine Department and the ISM is particularly to be remarked upon.



1987 Malaysia Hydro-One Course
Shorelining in Port Klang.

Malaysian Hydrographic Requirements (1988-1991)

In late 1988, CIDA approved a second phase of Hydrographic Training Assistance for Malaysia to be administered by the CHA in consultation with the ISM. This second phase contained the following elements, amended to the present to meet changing needs:

In Canada:

- Basic Marine Cartographic training for Malaysians at CHS offices in Ottawa, Burlington and Victoria (CIDA funded);
- Delineation of Maritime Boundaries training for Malaysians at the University of Toronto (CIDA funded);
- Oceanographic Studies for a Malaysian with CHS/Marine Environmental Data Service (MEDS) in Ottawa and Victoria (CIDA funded); and
- Study of the CHS Cartographic Data Management System by a Malaysian in Ottawa and Burlington (CIDA funded).

In Malaysia:

- a Canadian Tidal Expert to advise the DSMM (CIDA funded);
- a Canadian Hydrographic Surveying Expert to conduct and coordinate a Hydro-One Course (Category B equivalent) at the University Technology Malaysia (Universiti Teknologi Malaysia - UTM) in Johor Baharu in concert with the UTM and ISM (CIDA funded); and
- a Canadian Hydrographic Surveying Expert to conduct and coordinate a Hydro-Two Course (CIDA funded).

The proposed sub-projects have been implemented already

or are in the final planning stages. The Hydro-One course at UTM was quite successful, a most gratifying occurrence which was due largely to the dedication of the two CHA instructors and the efforts of the Dean of the Faculty of Surveying at UTM. Other sub-projects have met their objectives, and need little additional comment. UTM was a good location for the Hydro One course in some ways, but proved to be not so good in other ways. Having everyone and practically everything in one locality is good, with excellent support being provided in administration, computer access and basic surveying equipment. Additionally, advantage was taken of UTM-based lecturers in survey sciences. The Dean was an outstanding example with his lectures on the Law of the Sea and implications with regard to Malaysia. However, there were several minor factors that must be mentioned: the isolation of the University itself; an inadequate support-cost budget; poor technical repair and maintenance facilities; some unprepared lecturers from outside the university (notably in subjects such as seamanship, navigation, and projections); and finally, the interaction between the ISM and UTM, as required by the project, proved difficult.

If similar courses are to be scheduled in the future, and there should be, then the following suggestions are relevant:

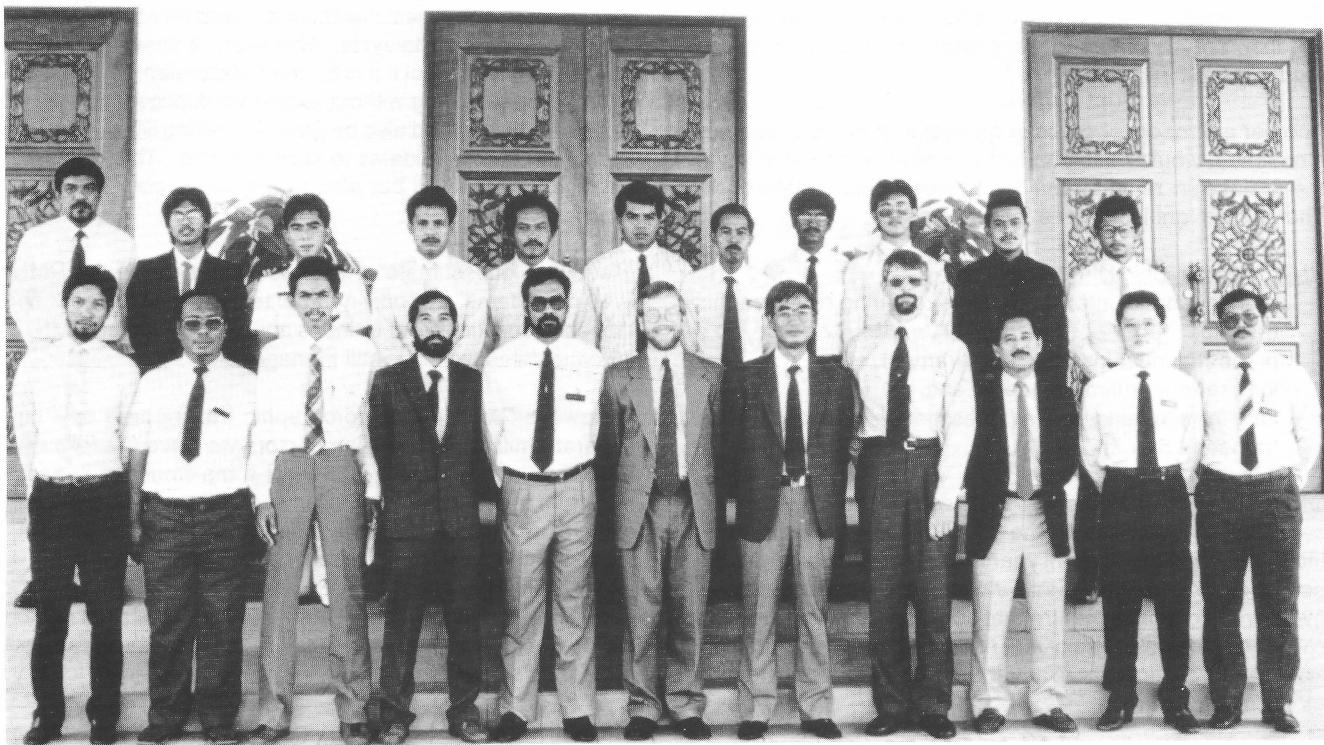
- minimum entry standards, involving formal training in land surveying to the diploma level or better, or full-time employment in hydrography for a minimum of three years;
- responsibilities should be clearly delineated before course commencement. Designate the overall authority responsible for running the course. Determine in writing who will be responsible for what type of support; and
- in advertising the course be careful to use the appropriate terminology to avoid later misunderstanding.

Project Summary (1985-1987 and 1988-1991)

The results of such efforts are:

- nineteen Malaysians have been trained to International Hydrographic Organization (IHO)/FIG Category B equivalent standards in Malaysia;
- three Malaysians have been trained to IHO/FIG Category B equivalent standards in Canada;
- six Malaysians have been trained to CHS Carto-One standards in Canada (with three more in hand);
- four Malaysians have been trained in Delineation of Maritime Boundaries in Canada;
- one Malaysian has been trained in Oceanographic Studies in Canada;
- one Malaysian has been trained in Tidal Studies in Canada;
- one Malaysian will be trained in the CHS Cartographic Data Management System;
- three Canadian experts provided Hydro-One training in Malaysia;
- two Canadian experts provided Tidal Studies training and advice in Malaysia; and
- one Canadian expert provided Marine Cartographic training and advice in Malaysia.

What are the Malaysians doing with their training? Successful Hydro-One candidates are now employed as follows:



Malaysia, 1990 - Hydro-One course at the University Technology Malaysia (UTM), Johor Bahru.

Front Row: UTM staff and representatives of the various sponsoring bodies.

Back Row: Students

Private Sector	8 (only four are employing their hydrographic knowledge at present but the others can be deployed as necessary)	be trained in the CHS Cartographic Data Management System in Canada is now heading the Cartographic Section of the RMN Hydrographic Directorate.
Port Authority	2 (knowledge being put to good use)	
Marine Department	4 (knowledge being put to good use)	
RMN (Hydrography)	2 (knowledge being put to good use)	
UTM	2 (hydrographic knowledge will be deployed on future courses)	
DSMM	4 (one student went on to take IHO/FIG Category B at Plymouth, UK, but generally students seem to be retained in non-hydrographic positions)	Malaysia - Hydrography and the Nineties It appears therefore that the hydrographic training provided to date has been worthwhile, with perhaps a question as to whether some participants in the private sector and perhaps in the DSMM are properly employed. That thought inevitably leads to the next question: what are Malaysia's long-term hydrographic training needs?
Successful Carto-One students (6) are all now employed in Cartography in the RMN. The four successful candidates on the Delineation of Maritime Boundaries course are deployed as follows:		The CHA has been engaged in the transfer of technical information, technology and technique with Malaysia. The transfer, with limited funding, has been aimed at assistance: to the military to serve marine transportation safety requirements; to the private sector to serve in the exploration and exploitation of hydrocarbons and in the protection of the environment; to the Port Authorities and Marine Department to continue to provide safe harbours and their approaches; to the DSMM to conduct mean sea level studies and for the delineation of maritime boundaries; and last but not least, the provision of a small nucleus of trained instructors in hydrography at UTM.
DSMM	3 (advisors to senior staff on international boundary matters)	Additionally, other developed countries have provided hydrographic assistance to Malaysia, a matter that more knowledgeable individuals than I can attest to. A very good question might be - is there overlap or 'underlap' in Malaysian training needs? If there is overlap or 'underlap' Malaysia
RMN (Hydrography)	1 (advisor to senior staff on international boundary matters)	
The Malaysian who was trained in Tidal Studies in Canada is now employed in the Mean Sea Levels Section of the DSMM. The Malaysian who was trained in Oceanographic Studies in Canada is now heading the new Oceanographic Section of the RMN Hydrographic Directorate. The Malaysian who will		

might well consider consultations with the developed coastal states already providing assistance in order to achieve a better focused approach to hydrographic needs. One way to start would be to request the IHO/FIG Technical Assistance Coordinating Committee (TACC) to take a look at the Malaysian situation and recommend ways and means of meeting the requirements.

Another approach, perhaps in parallel with those previously mentioned, would be to conduct a complete market study of the Malaysian requirement for hydrographic competence. The study might look at the following areas:

RMN Hydrographic Directorate

- present annual intake of officers requiring hydrographic training;
- present annual loss due to retirement, etc;
- long term recruitment needs; and
- long term training needs ('guesstimate' annual intake of trainees - 5 to 7).

Officers of the RMN Hydrographic Directorate have traditionally been trained overseas, in the UK, Australia, New Zealand, India, and Canada in recent years. Much of that training could be carried out in Malaysia in a well-manned and equipped hydrographic training centre that could serve both naval and civilian candidates. The centre could also move fairly rapidly from basic training to more advanced and specialized training as necessary.

Other Marine Agencies

- long term training needs ('guesstimate' annual intake of trainees - 1 to 2).

DSMM:

- long term training needs ('guesstimate' annual intake of trainees - 1 to 2).

Academia (UTM etc.):

- long term training needs ('guesstimate' annual intake of trainees - 1 to 2).

Private Sector:

The private sector is the most difficult to assess. As clearly as the author can determine there are at least five survey companies in Malaysia seriously engaged in hydrographic surveying and directly related to ocean science studies. Most of the work is directed to the support of the exploration and exploitation of hydrocarbons in the Gulf of Thailand and off Sarawak. A secondary task, but of growing importance, is in conducting studies of environmental problems where much knowledge of tidal currents, weather and coastal erosion patterns is required in addition to the knowledge required to carry out detailed hydrographic surveys of drilling or production platforms. These include precise positioning and sub-bottom profiling or pipeline, or pipeline route, surveys.

These companies fluctuate in manpower strength according to their success in obtaining contracts from the oil companies and other related agencies. As a result, some of their needs are urgent and therefore experienced non-Malaysians are hired short-term to meet the demands of a contract. However, the long-term training requirement is ongoing and experienced Malaysians will have to fill these key positions sooner than later.

- long term training needs ('guesstimate' annual intake of trainees - 2 to 3).

It would therefore appear that there is a need for a Hydrographic Training Centre in Malaysia. However, it should be a joint military/civilian school if it is to meet Malaysian demands for hydrographic training without extensive duplication of effort. Consideration should also be given to inviting Singapore and Brunei to send candidates to such a centre. This would not only lead to goodwill but also to enhanced cooperation on hydrographic matters.

The lowest 'guesstimate' of trainees annually (including RMN) is 10 candidates, a goodly number to handle each year. The highest 'guesstimate' of trainees annually (including RMN) is 16 candidates, which is still manageable.

If, however, Malaysian hydrographic training was split into separate military and civilian sectors we have the following annual trainee numbers: for RMN a maximum of 7, and a minimum of 5; and for the civilian sector a maximum of 9 and a minimum of 5 trainees. A hydrographic training course with these numbers would be barely justifiable.

If the RMN ran its own separate course it would probably be at Port Klang leaving the civilian requirement to be taken care of through UTM or at another, as yet undetermined, locality.

The author believes a two-pronged approach to the problem is essential. A Market Study should be a high priority and a questionnaire should be designed for all recipient organizations (military, civilian agency, academia and the private sector) and should contain the following elements:

- 1) The number of fully trained (advanced) hydrographic surveyors in organization.
- 2) The number of staff requiring basic hydrographic training each year.
- 3) The number of staff holding basic hydrographic training qualifications.
- 4) Is your organization expanding, contracting or static?
- 5) Do you see a larger role for the private sector in nautical charting, mapping of Exclusive Economic Zone (EEZ)?
- 6) Can Malaysia meet its own training needs without assistance?
- 7) If not, what specific assistance would you be seeking?

The second prong of the attack is to request of the IHO/FIG TACC, an outsider's look at the Malaysian Hydrographic Sector in consultation with Malaysian authorities, which should be productive.

Much speculation and 'guesstimates' do not make a policy, but perhaps these 'ramblings' will stimulate informed discussion and lead to satisfactory conclusions.

ASEAN & Hydrography

A number of years ago, at the 2nd SouthEast Asia Surveying Congress, held in Hong Kong, the author presented a paper on "The Surveying Challenge Faced by SouthEast Asian Nations in their Oceanic Exclusive Economic Zones". The paper outlined the 1983 Hydrographic Surveying and Charting Coverage of the member states of ASEAN, the existing capability, an assessment of needs and discussed a number

of options that might be considered in tackling the task of mapping each member state's EEZ.

The first obvious option is regional cooperation, along the lines of the four-nation project to survey the Malacca and Singapore Straits, where three members of ASEAN were assisted by Japan.

The ASEAN EEZ is still a challenge in 1991, and regional cooperation is still a reasonable approach. The extent of the total ASEAN EEZ is of the order of 8,100,000 square kilometres, broken down as follows:

Malaysia	475,600 sq km
Brunei	5,000+ sq km
Singapore	300 sq km
Philippines	1,890,700 sq km
Thailand	324,700 sq km
Indonesia	5,400,600 sq km

This is a very large area to thoroughly map, and national resources are limited. A review of hydrographic resources available in each nation in 1990 showed some improvement from 1983:

- Malaysia is down one survey vessel but is rapidly building up a cartographic capability;
- Brunei continues to have most of its hydrographic surveys provided by the private sector;
- Singapore has gone high-tech with an Integrated Survey and Hydrographic Information System (INSHIS);
- the Philippines has acquired electronic equipment and is rehabilitating its old ships;
- Thailand seems to be having budget and manning problems;
- Indonesia has acquired three new vessels and a considerable amount of new equipment.

Perhaps a combination of regional cooperation and assistance from Japan would be the best approach. Japan already provides various training courses and detaches experts to developing countries in the region as required. Japan has drawn up an INT (international) charting scheme for much of the region and will be producing charts based on existing data very shortly. The author notes that the IHO East Asia Hydrographic Commission (EAHC) recently formed a working group to consider the need for possible ways to finance and undertake joint hydrographic surveys and charting of shipping routes in the South China Sea (a hopeful sign). It is also noted that the new chairman of EAHC is Captain Rasip of Malaysia, another indication of a bright future for regional cooperation.

Canada and the Malaysia Hydrographic Centre

The idea of a Malaysia Hydrographic Centre to serve all Malaysian interests has been around for some time. Canada, through CIDA and the CHA, has been involved in the spasmodic discussions that have characterized the proposal since 1986.

A draft proposal was agreed to between CHA, ISM and UTM in 1987 and was informally presented to CIDA in 1988 for a reaction. The CIDA response was positive in that it was agreed that such a project had merit but could not be funded until 1990 at the earliest, and in any case would require high

prioritization from the Government of Malaysia. A submission to CIDA from the Office of Economic Management and the Ministry of Education was considered essential.

It was also noted that: the discussions of the present market for hydrographic surveying in Malaysian waters would have to be explored; an expansion in training was required to meet the national need; and that reference should be made to the long-term goal of making the Hydrographic Centre a magnet that would attract student surveyors from other ASEAN states.

The location of the proposed Hydrographic Centre would probably be at UTM, or perhaps Port Klang. UTM probably has the edge at the moment, as that facility has already successfully run a Hydro-One course (Category B equivalent - 1990).

UTM now proposes that the Hydrographic Centre establish a one-year post graduate Hydrographic Course. If approved by CIDA and the Government of Malaysia, the course could commence in 1992. Once again, if the project is approved by CIDA, an organization from Canada (CHA, CISM or perhaps a Canadian University such as UNB or Calgary) would be charged with management, in close consultation with UTM, the RMN Hydrographic Directorate, ISM, the Marine Department and the DSMM.

The facility would be fully fitted out with "state of the art" equipment and vessels.

The Suggested Canadian Contribution:

- 1.) Management of project;
- 2.) Key instructors in Malaysia;
- 3.) "State of the Art" equipment; and
- 4.) Specialist training in Canada for Malaysian instructors.

The Suggested Malaysian Contribution:

- 1.) Training, classrooms, libraries;
- 2.) Accommodation for visiting Canadians;
- 3.) Operation of suitable vessels;
- 4.) Wharfage and repair facilities;
- 5.) Technical maintenance for equipment and vessels; and
- 6.) Student accommodation and maintenance.

Budget Estimate (over a five year period - 1992 to 1996)

Canada	\$ 3.0 M (Can.)
Malaysia	\$ 5.0 M (Can.)
Total	\$ 8.0 M (Can.)

The project is a good one and it should receive bureaucratic and political support. The ball is still in Malaysia's end of the court and has been for the past three years.

Conclusions

The past several years have been an enjoyable period for the author of interaction with many Malaysians. These have been most productive years and both Malaysia and Canada have gained from the experience. It is hoped that the relationship will continue to prosper.

The years would not have been fruitful without the sustained effort of surveyors like Khoo Boo Khean and, of course, Abdul Majid bin Mohammed. On the purely hydrographic side, Captain Goh and Captain Rasip must also be commended. The author must also comment on the belief and dedication

of Dean Baharom of UTM, and the work of Hans Gray and Philip Rapatz, which went way beyond normal commitment and involvement. Thanks to you all.

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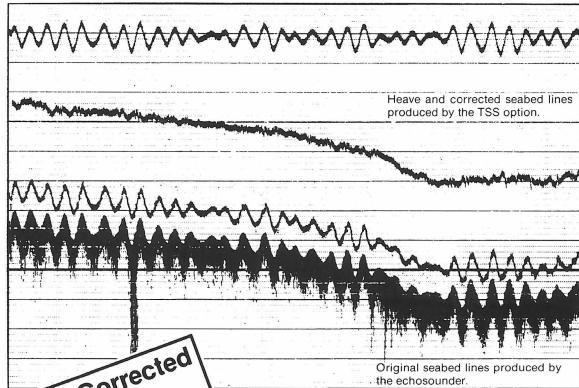
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Role of Hydrography in Marine Investigations and Litigation

by
Robin Ekblom

The OLD HYDROGRAPHERS, those at the beginning, were largely a number of amateur eccentrics, displaying a strange interest in matters which were not in the popular domain. The nostalgia of even earlier days was expressed by an old leadsman of the author's acquaintance ('leadsman' was the post in which he was first employed at the turn of the century) who spoke of the days of 'when surveyors was gentlemen.' The author was fortunate enough to join the profession over 30 years ago when instrumentation other than a sextant or lead line was just making an appearance. It is too easy in the modern world to be divorced from the simple reality of the work in which one is engaged, a thesis which applies to so many professions, from flying an aircraft to cooking a frozen meal.

The purpose here is to demonstrate the role which hydrography (and port hydrography in particular) can play in the investigation of marine accidents. Why hydrography? Most technical people can read a chart. This applies to seamen, yachtsmen, civil engineers and others who might have a need to do so, but what do they see? The obvious thing is depth, buoys, wrecks and all sorts, but is it really as simple as that?

Depth

Take a single sounding on a British Admiralty chart. How representative is it of the ground around it? It may be worth considering the manner in which the sounding may have been selected. In the area of an established port, surveys which will be available to the Admiralty will probably be at a large scale and contain hundreds of soundings. The task of the cartographer is to select a reasonable number of soundings which will in the first instance provide a basis for navigating. This means that in the waters where ships transit and anchor, the least (shallowest) soundings will normally be shown.

It follows that very little space can be given to describing the detailed shape of the seabed; therefore quite large depressions can lie between the soundings, and on sloping ground one has to assume from the data that the transition from one depth to another is linear. Where less water is found as a result of further surveys by (say) the port authority, no correction is issued unless it is of considerable significance. It can be seen that an Admiralty chart should be read with proper caution, using it as a guide to further investigation rather than placing full reliance on its data and what may lie between the soundings. This is not meant as a criticism of Admiralty charts which have the respect of us all, but it does demonstrate that a careful judgement has to be made at some point as to the true value of a sounding or of whatever data a chart may hold.

Going back to our sounding again, there are a number of other aspects which have to be considered; for instance, how accurate might it have been in the first place? Older surveys were based on the hit-and-miss lead line, and while great efforts are being put into updating the charts, there are still great tracts of coastline and of some ports where pre-1930 surveys are still the basis for their production.

But even echo-sounders do not provide total coverage of the

ground, nothing like it in fact. A rough guide to echo-sounder coverage is that it insonifies a band of ground whose width is about one-third of the depth of water. This should be seen in the context of a large-scale survey of a main shipping channel, where the water is of the order of 12m deep and survey lines have been run at 20m spacing. Figure 1 shows that a band of ground 16m wide lies between the survey lines, a space in which quite large objects may exist.

The likelihood of finding an obstruction is therefore only something like 20 percent in such a scenario. The likelihood of there being an obstruction in the first place will depend on the geological nature of the seabed, the time elapsed since the previous survey and the operational parameters of the survey. In a rock-strewn area, normal echo-sounding methods are simply not good enough if one is to be sure that the whole area is clear, the port of Harwich being a prime example, lying as it does along the line of a terminal moraine from the last Ice Age.

Post-dredging surveys must also be given special attention, especially where capital dredging (i.e., new ground) has taken place. In one case for which the author was an expert witness, capital dredging had exposed a rock which had been embedded in the seabed till that time. Neither the dredger nor the subsequent surveys (at lines set at 20m intervals) discovered the rock. That privilege was left to a 41,000-gt vessel which was written off as a result (but more of this case later). Even the type of dredger used has a bearing on such matters, but this will also be covered later.

There are other methods of finding the least sounding, all with their advantages and disadvantages, and it is in making a proper assessment of the method used that a hydrographer is able to suggest whether the port has exercised reasonable care in carrying out or specifying the survey.

Chart datums are another area of interest. It is not always realized that two soundings of the same numerical value are in fact lying at different levels. A sounding of 10.0m off Southend lies 0.45m higher than the same sounding off Woolwich. Occasionally older charts have to be brought into the investigations, and there we have the old imperial chart datums based on a less reliable shore datum. Making an accurate comparison between those and a modern chart does require a certain expertise.

Seabed configuration

The seabed material present has a very real influence on the sounding recorded. Where there is fluid mud, an investigator should need to know what level within the fluid mud was chosen as the representative depth, although this may be impossible to establish. Some ports record a level at which the mud has reached a certain density, research having shown that vessels manoeuvring are not affected unduly by the mud which is less dense.

Other ports simply record the very top of the mud, while others in the past have recorded only the firm bed beneath. Perhaps

Picture 'A'
Echo Sounder Coverage.

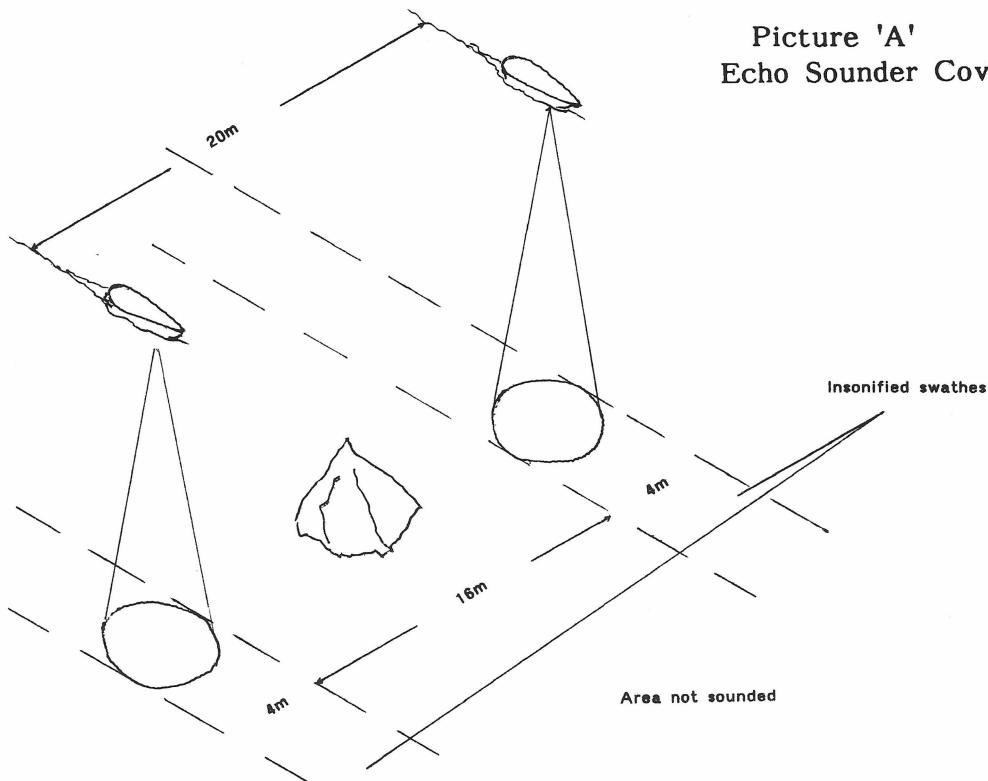


Figure 1: Echo Sounder Coverage

surprisingly the operational frequency of the echo-sounder used for the survey has a profound effect on the apparent depth. Where the ground is steep to, or close to structures such as jetties or wrecks, the various parameters of the echo-sounder used may make a considerable difference to the apparent depth. It may well be that only a lead line is suitable in some situations.

The general configuration of the seabed and the materials of which it is formed can at times give some indication of the probable siltation patterns in the area when combined with the set of tide and vessel traffic patterns. It is also in the author's experience that it is possible to get it very wrong, even if very expensive and complex modelling is used.

Position

The matter of position falls into two main parts: those of soundings, buoys and wrecks published on the chart, and those given by the vessel at various times throughout an incident. A hydrographer, because of his surveying background and training, will frequently have a fresh approach to a question of position, yet at the same time have an appreciation of the maritime aspects of the situation.

On older charts the position of many items shown will be far less reliable than those of modern charts, perhaps by several cables. Changes in projection can produce other problems. Quite large wrecks can actually travel along the seabed over several months, and this is not an old seaman's tale (or an old hydrographer's either). While GPS has brought a much higher degree of accuracy in position, it has also seemingly complicated it in some ways. What action should be taken in an investigation as a result of the type of statement now seen on Admiralty charts: 'Positions obtained from satellite navigation systems are normally referred to WGS 72 Datum.

Such positions should be moved ... etc'?

The buoy positions on Admiralty and some port authority charts are largely the 'assigned' positions. That is to say, the positions in which they are supposed to be. Not all buoys are laid exactly on position, and in some cases (in a dredged channel, for example) ten metres can be significant. Some ports choose to mark the channel by placing their buoys at the edge of the deep-water of the channel; others place them up on the higher ground at the side, but it is not always clear from any given chart which policy is followed.

In the ideal situation the ebb, flood and mean position of each buoy as measured during the course of the survey should be given. This not only shows where the buoy will be at various states of tide, but will check the scope of its movement and give a good indication of the set of the current past it.

Tides

Tides and tidal streams often take on a highly significant role in marine investigations. Predicted levels and times may well form the starting point for discussion, but it is the recorded levels which must finally be the source of such data. At a point several miles distant from a recording tide gauge there are several factors which must be taken into account when translating that data to the site of the incident under investigation. There is probably a considerable distance in time, too. How relative is tidal level and stream data measured today to an incident which occurred two or more years ago? Changes do occur in ports over the years which may affect the tidal pattern sufficiently to warrant a certain caution in accepting today's data.

Tidal stream investigations through an area are very difficult to place exactly, and the relationship between one stream

track and another both in terms of space and time is not a clear one. In a recent case regarding a collision on the River Thames, the author was able to show that a number of assumptions made by one side in respect of the evidence of tidal streams was simply not sustainable in certain ways. In another case (in the Far East) the position fixes taken by a ship's master as the anchor went down and the ship settled were shown to be clearly in error when analysed in terms of tide.

The assessment of tides as part of a passage exercise is an essential area of the hydrographer's work. It is not only a case if working with the simple tidal data at hand but also assessing the possibility of unusual tide conditions caused by meteorological or other effects.

Dredging

There are two basic types of dredging: capital dredging, where a channel or berth is being deepened by removing undisturbed ground; and maintenance dredging, which merely removes silt which has been deposited since the previous dredging programme in order to maintain depths. Much greater care has to be taken with the surveys which are made after capital dredging has taken place because one never knows what may be embedded in the old ground, be it wrecks, rocks or old structures, but in maintenance dredging the material can only be what might be carried on the local tidal stream. There are exceptions, of course, especially in a berth which may have handled cargoes, items of which were lost over the side and never found after sinking in the mud.

The type of dredger used will affect the likelihood of a survey showing up obstructions left behind by the dredger. A well-handled bucket dredger will produce a very clean bed of accurate depth (but does have many other problems with regard to mooring and the obstruction of shipping thereby). A trailer suction dredger will have its trailing head channelled around an obstruction where it is lying in clay even though the dredger itself has maintained a course which passes over the obstruction. Grab dredgers have to be handled with particular dedication if they are to leave no high patches. And so on.

Each type of dredger (and there are ten or more such types) has its own characteristics and the manner in which the dredger is controlled and in which the post-dredging surveys are carried out are quite critical. Every care should be made to ensure that the post-dredging surveys tell a full story, and it is the author's experience that this is not always so.

Charts

One of the problems facing many investigators and solicitors is the number of charts which are relevant to the case but which are a 'hotch-potch' of scales, datums, projections, feet and metres. Frequently they have been folded or otherwise abused, so causing local distortions of scale. Some may be only photocopies of the original, perhaps with no obvious scale at all. Some may be very large and difficult to handle. A hydrographer is able to bring such a group of charts to some

semblance of order, perhaps by having them redrawn at all the one scale, using transparent drawing materials and coloured inks which permit easy comparison of one chart with another by overlays. They can be controlled by a convenient registration system which allows them to be aligned easily.

Where the information on some of the charts is too densely packed, the hydrographer is able to identify the essential soundings and other data which should be picked out, so leaving an uncluttered overlay. In the case of the ship which has struck a rock in a dredged channel (mentioned earlier), there were at least eight charts which were required to be brought together in this way, so enabling a ready appreciation of the data and a great saving in court time as a result.

Duty of care

Every port has a duty of care towards the shipping which enters its waters. This can take many forms as far as hydrography is concerned.

Are its hydrographic surveys conducted at reasonable intervals? The factors which affect the decision in this area are several such as the degree of underkeel clearance of ships using the port, the nature of the sea bed and the likelihood of change. Clearly, a port which has 50 metres of water over a clean seabed as part of its approach channel does not require frequent surveys, but in a port such as London where there is less water to begin with and every chance of siltation in certain areas, the frequency of surveys is high.

Are a port's surveys carried out in a proper manner? There are many short cuts in hydrography as in any other profession, be it by opening the space between lines of sounding, using less reliable tidal data, using unsuitable instrumentation and so on. A number of ports in the experience of the author are laying themselves wide open to question should they be subject to investigation or litigation.

Is the data from the hydrographer's charts being, fully disseminated throughout the port to pilots, wharfingers and all those who need to know for the proper execution of their work? Are proper charts being produced and sent out in good time or are the results of surveys being given simply by way of conversation? Incredible though it may seem, this is the way it is done in some ports, including the port where the rock was left behind. In that case it appears that no such surveys were made available to pilots for over two years after dredging was completed, even though the dredged channel did not coincide with the buoyed channel.

It can be seen that the role of a hydrographer is not simply one of knowing how deep the water is. His position within the context of port operations gives him a broad appreciation of many of the other technical activities such as dredging and salvage, pilotage and civil engineering. From this viewpoint he is able to balance the aspects of many of the various activities which have an influence on an investigation or the process of litigation.

About the Author

Robin Ekblom is based in the U.K. with the firm of Robin Ekblom and Associates, Hydrographic Consultants. He is a Fellow of the Royal Institution of Chartered Surveyors (FRICS), a Member of the Royal Institute of Navigation (MRIN) and a Companion of the Nautical Institute. He previously spent 32 years with the Port of London Authority. This article is printed with permission from SEAWAYS, The Journal of the Nautical Institute, November 1990. For further information contact:

Mr. Robin Ekblom, FRICS, MRIN

*10 Tycehurst Hill
Loughton, Essex, U.K. IG10 1BU*

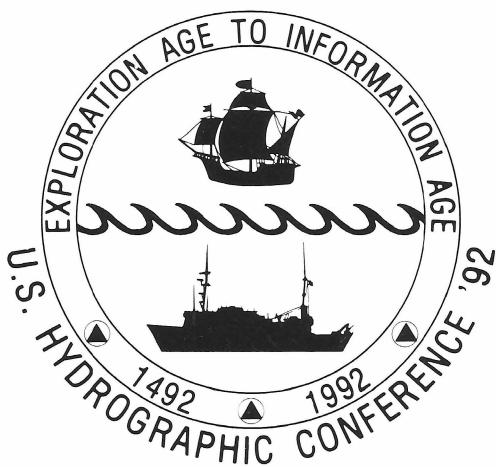
Plan to Attend

The Fifth Biennial National Ocean Service
International Hydrographic Conference

U.S. HYDROGRAPHIC CONFERENCE '92

February 25-28, 1992

Omni Inner Harbor Hotel, Baltimore, Maryland, U.S.A.



FOR FURTHER INFORMATION, CALL:

CDR George Jamerson, NOAA

Tel: 301-443-8536 Fax: 301-443-8459

or WRITE: **U.S. HYDROGRAPHIC CONFERENCE '92**,
P.O. BOX 732, ROCKVILLE, MARYLAND 20848-0732, U.S.A.



National Ocean
Service



The Hydrographic Society
of America



INTERNATIONAL FEDERATION
OF SURVEYORS



James Cook Monument - Newfoundland

by
L. M. Cumming



A monument to Captain James Cook at Crow Hill, Corner Brook commemorates his charting of the Newfoundland coastline. This was the first large-scale hydrographic survey to use precise triangulation.



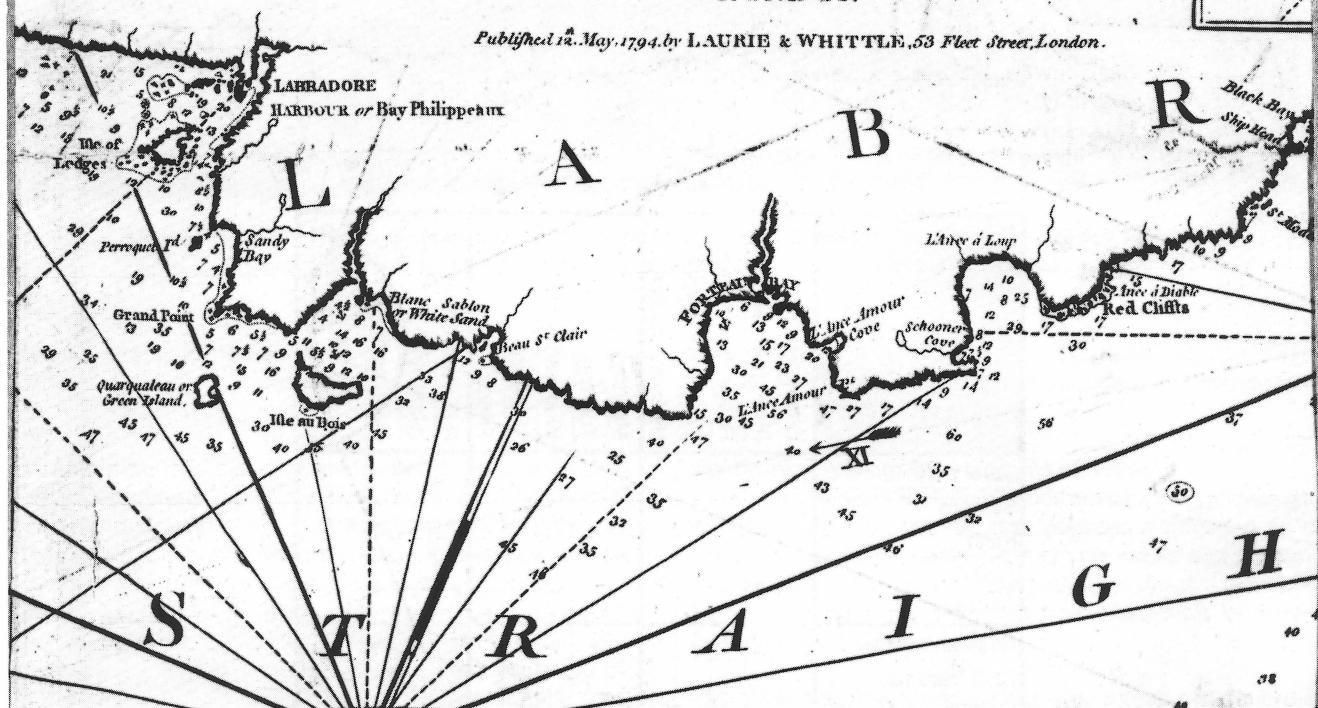
Details of Captain Cook's chart of the Bay of Islands and Bonne Bay coast in western Newfoundland.

This chart was one of the displays in a special exhibit shown at Greenwich, U. K. in 1990. (Details of this exhibit, including descriptions of artifacts and charts from both eastern and western Canada are given in an illustrated guidebook available from the National Maritime Museum, Greenwich.)

A CHART
 OF THE
STRAIGHTS of BELLI SLE
 WITH PART OF THE COAST OF
NEWFOUNDLAND and LABRADOR
 FROM ACTUAL SURVEYS
 PUBLISHED BY PERMISSION
 of the Right Honourable the
LORDS COMMISSIONERS of the ADMIRALTY
 and Taken in 1766, by JAMES COOK,
 afterwards CAP^{TN} COOK, the Celebrated Circumnavigator,
 and by
MICHAEL LANE in 1769

LONDON

Published 1st May, 1794, by LAURIE & WHITTEL, 58 Fleet Street, London.



The northern Strait of Belle Isle coastline at the Quebec/Newfoundland border.

James Cook's survey of the entire Newfoundland coast from 1762 to 1769 separated him from his family for much of his career. Some outliers of Bradore sandstone, on an otherwise flat Precambrian Shield, may have prompted thoughts of distant families for Cook and his crew, as shown on this 1766 chart (*our Ladies Bubbles*).

After his death, on St. Valentine's Day in 1779, his body was identified by scars on his right arm. These wounds were received 15 years earlier when a gunpowder horn exploded in his hand near, what is now, L'Anse aux Meadows National Park in the Strait of Belle Isle region.

About The Author

Dr. L. M. (Bud) Cumming retired after 35 years as a Research Geologist with the Geological Survey of Canada; much of it spent in the Canadian Maritime Provinces. His interest in the Maritimes however, went far beyond geology to also include the history and settlement of the region.

Lighthouse Puzzler / Casse-tête du Lighthouse

by
Beth Weller

Carol and four of her CHA associates are giving special seminars next week. Each seminar will be on a different day (Monday to Friday), each in a different locale (one is being held at the Maritime Museum of the Atlantic), and each is on a different subject, one being Hydrography of the Future.

Can you work out the week's schedule with each lecturer's subject and venue?

The clues:

1. The Geomatics Seminar is on Monday but not on the CSS Parizeau.
2. George has a short work week so his seminar is not on Friday.
3. Bernard's seminar is earlier in the week than the one at l'Institut Maritime du Québec.
4. Frank, who would much rather have been giving the seminar in Calgary at the Rose and Crown, lectures the day before the Photogrammetry Seminar and the day after the seminar on Desk Top Publishing.
5. The Photogrammetry Seminar is held the day before the seminar at the Chimo Hotel.
6. The Range Positioning Seminar (not held on the Parizeau nor at l'Institut Maritime) is given two days after Keith's seminar but not on Friday.

Monday:	speaks on	at
Tuesday:	speaks on	at
Wednesday:	speaks on	at
Thursday:	speaks on	at
Friday:	speaks on	at

	Geomatics	Photogrammetry	Range Positioning	Desk Top Publishing	Hydrography Future	Monday	Tuesday	Wednesday	Thursday	Friday	Rose and Crown	CSS Parizeau	Maritime Museum	Chimo Hotel	l'Institut Maritime
Carol															
Bernard															
Keith															
Frank															
George															
Rose and Crown															
CSS Parizeau															
Maritime Museum															
Chimo Hotel															
l'Institut Maritime															
Monday															
Tuesday															
Wednesday															
Thursday															
Friday															

Solution to Spring Puzzler

Dave and	Sheila	did	Range Light	by	Launch
Larry and	Barry	did	Marina	by	Truck
Bruce and	Tom	did	Stadia	by	Foot
Jim and	George	did	 Rocks Awash	by	Helicopter

Coming Events / Événements à venir

U.S. Hydrographic Conference '92

The fifth biennial National Ocean Service International Hydrographic Conference will be held February 25 to 28, 1992 at the Omni Inner Harbor Hotel in Baltimore, Maryland. It is hosted by the National Ocean Service (of the National Oceanic and Atmospheric Administration - NOAA), The Hydrographic Society of America and the International Federation of Surveyors (FIG).

The theme for this conference is "*Exploration Age to Information Age*" which signifies the transition from the accomplishments of Christopher Columbus during the Exploration Age to the latest technological advances in navigation and hydrography in the Information Age.

There will also be an Electronic Chart Workshop on Friday, February 28, 1992 (the last day of the conference). Separate registrations are available for both the conference and workshop.

For further information, contact:

Commander George W. Jamerson, NOAA
U.S. Hydrographic Conference '92
P.O. Box 732
Rockville, Maryland
20848-0732
Telephone: 301-443-8536
Fax: 301-443-8459

(see advertisement on page 28)

ECDIS '92 Conference and Exposition

This conference, dedicated solely to the subject of Electronic Chart Display and Information Systems (ECDIS), is scheduled for February 28 to 29, 1992 at the Omni Inner Harbor Hotel in Baltimore, Maryland. In cooperation with the International Hydrographic Bureau and NOAA's National Ocean Service, Coast and Geodetic Survey, this conference will serve to inform the hydrographic industry about new technology, standards, regulations, and the future of ECDIS.

The conference will begin immediately following the Electronic Chart Workshop at the **U.S. Hydrographic Conference** (see announcement above).

For further information on ECDIS '92, please contact:

Mr. Jay Thompson
(301) 874-2668
or write
ECDIS '92
P.O. Box 265
Buckeystown, Maryland
USA 21717

(see advertisement for the U.S. Hydrographic Conference '92 on page 28)

Canadian Conference on GIS

The Fourth International Conference on Geographic Information Systems (GIS) will be held at the Ottawa Congress Centre, Ottawa, Canada, from March 23 to 26, 1992. This conference is organized by the Surveys, Mapping and Remote Sensing Sector, Energy Mines and Resources Canada in cooperation with the Canadian Institute of Surveying and Mapping and the Inter-Agency Committee on Geomatics.

The technical programme will look at GIS management issues, technology issues, applications and case studies, and education and training.

For further information, contact:

Mr. Lou Aubrey,
Director, The Canadian Conference on GIS
615 Booth St., Room 403
Ottawa, Ontario,
Canada K1A 0E9
Telephone: (613) 995-0266
FAX: (613) 995-6001

XIV International Hydrographic Conference

The XIV International Hydrographic Conference will be held in Monaco from May 4 to 15, 1992.

For further information, contact:

The International Hydrographic Bureau
7, Avenue Président J. F. Kennedy
B.P. Box 445
MC 98011 Monaco Cedex
Telephone: 33 9350 6587
Fax: 33 9325 2003
Telex: 479164 MC_INHORG

(see the advertisement on page 18)

Seventh International Symposium on Vessel Traffic Services "VTS '92"

VTS '92 will be held at the Hyatt Regency Hotel in Vancouver, B.C. Canada, from June 8 to 12, 1992. The Canadian Coast Guard is organizing the symposium under the direction of an International Organizing Committee representing major maritime organizations.

The theme for the symposium is "*Vessel Traffic Services in the Global Environment*". The goal is to further the understanding and development of VTS by exchanging ideas and sharing experiences. The program should appeal to anyone with an interest in VTS operations, training, development or equipment.

For further information contact:

Richard S. Bryant, Secretary,
7th International Symposium on Vessel Traffic Services,
Canadian Coast Guard,
Box 220 - 800 Burrard Street,
Vancouver, B.C.,
Canada V6Z 2J8

XVII Congress of the International Society for Photogrammetry and Remote Sensing (ISPRS)
The ISPRS Congress will be held in Washington, D.C. from August 2 to 14, 1992. This quadrennial event is hosted by the American Society of Photogrammetry and Remote Sensing for the first time in forty years.

The XVII ISPRS Congress will showcase the latest science and technology for monitoring, analyzing, and understanding the world we live in.

(see the advertisement on page 36)

HYDRO '92

The Eighth Biennial International Symposium of the Hydrographic Society will be held November 30 to December 3, 1992, in Copenhagen, Denmark.

The HYDRO '92 Symposium will have a variety of papers on subjects related to hydrographic surveys for offshore operations, seabed exploration and navigation. Abstracts for papers are required by February 1, 1992.

For further information, contact:

International Conference Services
P.O. Box 41
Strandvejen 171
DK-2900 Hellerup, Copenhagen, Denmark
Telephone: +45 + 3161 2195
Telefax: +45 + 3161 2068

The 1992 Canadian Institute of Surveying and Mapping (CISM) 85th Annual Meeting

The CISM 85th Annual Meeting will be held in Whitehorse, Yukon from June 23 to 26, 1992. The theme of this meeting will be *"Surveying and Mapping the New Age"*.

The conference will be preceded by two days of seminars on June 21 and 22, hosted by the Association of Canada Lands Surveyors (ACLS). These will be followed by the ACLS Annual Meeting, CISM icebreaker and midnight sun golf tournament on June 23. Other entertainment highlights include an 1898 Klondike theme casino night and a salmon barbecue with a 1940's style Big Band.

For further information, contact:

Miss Debra Ryan, Conference Coordinator, CISM 92
P.O. Box 3937
Whitehorse, Yukon
Canada Y1A 5M6
Telephone: (403) 668-6039 Fax: (403) 668-3421

1993 Canadian Hydrographic Conference and 86th CISM Annual General Meeting

The combined Canadian Hydrographic Conference and the CISM 86th Annual Meeting will be jointly sponsored by the Canadian Hydrographic Service and the CISM. The conference will be held at the Royal York Hotel in Toronto, Ontario from June 8 to 11, 1993.

For further information, contact:

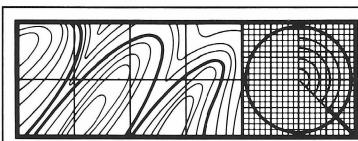
Mr. Earl Brown, Conference Co-Chairman
Canadian Hydrographic Service
P.O. Box 5050
867 Lakeshore Road
Burlington, Ontario
Canada L7R 4A6
Telephone: (416) 336-4811 Fax: (416) 336-8916

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FAX: (416) 639-0934

Hydrographic, Geophysical and Environmental
Surveys and Consulting Services

Sustaining Members / Membres de soutien

In 1987 the CHA defined a new form of membership to allow companies, closely linked with the hydrographic field, to become more involved with the activities of the CHA and to maintain closer contact with users of their products. Through Lighthouse these Sustaining Members are also able to reach a world-wide audience of people involved with hydrographic work. The benefits of Sustaining Membership include:

- a certificate suitable for framing;
- three copies of each issue of Lighthouse;
- copies of the local Branch newsletters;
- invitation to participate in CHA seminars;
- an annual listing in Lighthouse;
- an annual 250 word description in Lighthouse; and
- discounted advertising rates in Lighthouse.

The annual dues for Sustaining Membership in the CHA has been set at \$150.00 (Canadian).

The names of each of the Sustaining Members are listed below.

Aanderaa Instruments Ltd.

560 Alpha Street,
Victoria, British Columbia,
V8Z 1B2
contact: Gail Gabel

EG&G Marine Instruments

P.O. Box 498,
1140 Route 28A,
Cataumet, Ma,
USA 02534
contact: Paul Igo

Garde Côtière canadienne

104 rue Dalhousie, Suite 311,
Québec, Québec,
G1K 4B8
contact: Claude Duval

Institut Maritime du Québec

53 St-Germain Ouest,
Rimouski, Québec,
G5L 4B4
contact: Claude Jean

Krupp Atlas Elektronik

1075 Central Avenue,
Clark, New Jersey,
USA 07066
contact: Karl Wm. Kieninger

Quester Tangent Corporation

9865 West Saanich Road,
Sidney, British Columbia
V8L 3S3
contact: John Watt

Racal Positioning Systems Ltd.

118 Burlington Rd.,
New Malden, Surrey
United Kingdom
KT3 4NR
contact: Paul Deslandes

SURNAV Corporation

89 Auriga Drive,
Nepean, Ontario,
K2E 7V2
Contact: Harold Tolton

Terra Surveys Ltd.

1962 Mills Road,
Sidney, British Columbia,
V8L 3S1
contact: Rick Quinn

Sustaining members of CHA are offered space in Lighthouse each year for a 250-word description of their services. The information passed to us by Racal-Decca was so interesting; however, we felt we would offer it to our readers as is, though it is somewhat longer than 250 words.

RACAL Positioning Systems Ltd. - A Position in History

(by Paul Deslandes)

Racal-Decca's history of providing precise positioning systems and services goes back to the days of World War II when the Decca Navigator system was first used to guide Royal Navy mine sweepers off the Normandy beaches on "D" Day, June 6, 1944.

Applying the principles of hyperbolic positioning, first patented in Germany during the First World War to locate the position of enemy guns by using an array of microphones, Decca Navigator was the forerunner of several generations of

more refined systems. These led to HYPER-FIX, today's answer to precise navigation and track guidance for mine sweepers and hunters in areas from North America to the Arabian Gulf.

Positioning requirements, not only for mine sweeping but also for hydrography, dredging and offshore exploration, have lead to the development of a whole array of systems that provide the required performance under a wide variety of conditions.

Whilst the much vaunted GPS, and more particularly differential GPS, now promises to provide users with previously untold accuracy, there remain a number of requirements where terrestrial systems are still able to give even better performance or because the user wants total control over his system.

Racal first introduced Micro-Fix during the early 1980's and achieved a number of "firsts" which soon established it as the preferred industry standard for short-range precise positioning. The application of a number of technical innovations also earned the company a "Queen's Award to Industry" in 1988.

As well as being accurate to better than 1 metre, Micro-Fix has

features that significantly reduce the "through life cost" of the system. Micro-Fix continuously calibrates itself, removing any requirement for routine recalibration on a known test range, and because it employs all solid state electronics it does not drift or age and need routine maintenance.

Packed with many other features such as unlimited user Passive mode and an integral data link to relay differential GPS data, the system recently proved itself in the demanding hands of the Canadian hydrographic community.

Whilst it is well known that hydrographers take excellent care of the equipment entrusted to them, accidents do happen as was found during a recent demonstration at the Canada Centre for Inland Waters (home of the Canadian Hydrographic Service, Central and Arctic Region) in Hamilton Harbour, and I do mean IN the harbour, where one of Racal's less well known claims for Micro-Fix was proved to be true. One of the shore stations mounted on a tripod and located on the jetty was found bobbing around in the water having been blown in by a particularly strong gust of wind. Fortunately the battery cable remained attached at both ends and moored the unit until rescued. A quick wipe over and a check to ensure that the unit had not leaked and the station was back on the air giving its customary superb performance.

Announcement



*International Society for
Photogrammetry and Remote Sensing*

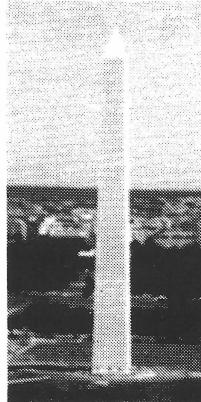
Congress XVII

August 2-14, 1992
Convention Center
Washington, D.C.

**Paper Presentations
International Exhibition**

**Technical Tours
Social Events**

Concurrent Meetings:
**ASPRS/ACSM
IGC/IUSM**



For Information Contact:

XVII ISPRS
Congress Secretariat
P.O. Box 7147
Reston, VA 22091
USA

Telefax: (703) 648-5585
Telex: 160443 UGSS UT
Telephone: (703) 648-5110

News from Industry / Nouvelles de l'industrie

Canadian Hydrographic Service (CHS)

CHS Pacific Region

Tides and Currents

This past summer saw a successful field survey in Dixon Entrance and Hecate Strait on the Parizeau installing eleven current meter moorings and seven near-shore pressure recorders.

Personnel were also involved with the monitoring and tracking of the oil spill which resulted from the sinking of the fishing vessel "*TENYO MARU*" off the entrance to Juan de Fuca Strait.

Ernie Sargent travelled to the Arctic on two separate occasions. The first trip, assisted by Dave English, involved servicing tide gauges at 2 sites. The second trip, assisted by Dennis Sinnott, involved 2 hydrographic surveys in the Coppermine area and servicing tide gauges at 3 sites.

Alard Ages has retired after 37 years of service at CHS. He started out as a field hydrographer in 1955 on the W.J. Stewart in Hecate Strait. He attended UBC in the sixties and graduated with a Masters of Applied Science specializing in Fluid Dynamics, at which time he changed to the Tidal Section. His main focus for the last 20 years has been Numerical Models of the Fraser River and Campbell River and Oil Spills. In his leisure time you will find Al skiing or even rowing to work, since he is back on 1/3 time.

Chart Production

Since the start of the fiscal year 8 New Charts have been published for the following locations:

- Arrow Lakes (4)
- Northern B.C. Coast (2)
- Vancouver Harbour (1)
- West Coast Vancouver Island (1)

There has been 15 New Editions covering the following areas:

- Western Arctic (4)
- MacKenzie River (10)
- Northern Coast (1)

There has also been 13 Reprints and 16 Overprints.

All of the cartographic staff have opted for the DD/EG conversion and will be undertaking further training in Hydrography (Theory and Practical), Seamanship and Navigation courses over the next 18 months.

Dave Prince has been on assignment to Hydrography since March working with the R.B. Young field party. He has yet to get his sea legs, maybe more exposure to the west coast is needed?

Now that Ray Chapeskie has moved to Ottawa, Dave Jackson is on assignment to Quality Control.

Through a CHA/CIDA project there are 3 Malaysians from the Malaysian Navy on an 8 week cartographic training course in this region, Lt. RMN Sahari Bin Abdul Aziz, AB SVR Mustafa Bin Mikhtar and LR SVR Sooganathan s/o Rajamani. Their training will cover the basic manual drafting and some exposure to digital format.

Field Surveys

B.M. Lusk's field party consisting of Alex Raymond 2-IC, Frank Coldham, Pete Milner, George Schlagintweit, Mike Ward and Ron Woolley, carried out surveys from March of this year to October. The Esquimalt Harbour survey produced 5 field sheets and the Fraser River survey produced 8 field sheets. As is the tradition in this region, all surveys were automated and all field sheets were presented for final checking at the end of the projects.

George Eaton HIC of the Pender, assisted by Ken Halcro 2-IC, Doug Popejoy, Knut Lyngberg, Janet Lawson, and new recruit James Wilcox, left Pat Bay on April 22nd for the Queens Sound and Kildidt Sound area. They returned on October 18th after a full 6 month field season in high spirits even though the names on the cabin doors might need some explaining eg.. "THE POUND" and "KEN-NINE".

Kal Czotter HIC of the R.B. Young, assisted by Rob Hare, Dave Thornhill, Dave Prince, Doug Cartwright worked in various areas around Vancouver Island, Lasqueti Island, Nelson Narrows in Rivers Inlet, Port Alberni, Barkley Sound, Marktosis and Nootka Sound. Aside from rescuing sheep from rock ledges, everything went well.

On Revisory Surveys were Vern Crowley and Carol Nowak. The season started at the beginning of May on the Sunshine Coast, covering 5 charts and hydrographic survey of Egmont. The month of July saw the commencement of a survey of Porlier Pass and returning again in September and October to complete over 180 shoal exams. The month of August was spent doing revisory of 10 charts covering the areas from Campbell River to Port Hardy.

Mike Woods spent 3 months in Jamaica teaching the basic Hydrography course. This was a CIDA/CHA project with Willie Rapatz, as manager of this project. There were 9 students representing the countries of Jamaica, Trinidad, Barbados, Guyana, and Tobago. Although Mike spent 3 months down near the equator, he did not appear to have spent much time in the sun.

Pete Milner was on rotational assignment this summer performing extensive tests of a sweep system. In July, the Krupp-Atlas FANSWEEP shallow water multi-beam sonar system was obtained under contract for evaluation. Its four weeks at IOS were spent in the installation onboard the launch, WIND, calibration of the system, demonstrations for interested parties and a variety of tests to determine accuracy and suitability for CHS requirements.

CHS Central and Arctic Region

The planned activities for 1992/1993 are as follows:

Chart Production Division

New Chart Program: All Central and Arctic Region new charts are produced using Computer-Assisted techniques. In 1992/1993, the Chart Production Division will produce nine New Charts:

Chart	Area/Title	Scale
1435	St. Lawrence River	25000
1434	St. Lawrence River	25000
2212	Wiarton	8000
2213	Owen Sound	8000
2214	Meaford	3000
2215	Collingwood	12000
5506	Southeast Hudson Bay	250000
5720	Hudson Bay - Chisasibi	30000
6247	Playgreen Lake	75000

New Edition Program: In 1992/1993 the Chart Production Division will complete 1 new edition:

Chart	Area/Title	Scale
2202	Port Severn to Parry Sound	200000

Training: A major effort to prepare Chart Production personnel for the DD to EG conversion, will take place in 1992. In order to gain the required experience, many cartographers will have field and office assignments with the Field Surveys Division. This will have a major impact on Chart Production Division projects.

Field Surveys Division

Arctic Survey (winter): A TIBS/spot-sounding survey will take place in Pelly Bay to collect data for tanker and supply vessel routes. The survey camp will be located at the hamlet of Pelly Bay. The field season will stretch from the middle of March to the first week of May, 1992.

Arctic Survey (summer): A ship survey is also planned in Pelly Bay to establish a shipping corridor to the hamlet of Pelly Bay. The collected data will also provide ground-truthing for the 1992 winter TIBS survey. The survey will begin in July and continue until the end of August.

Hudson Bay Survey: In 1992 a survey of Churchill Harbour and approaches will be shore-based in Churchill. The survey will take place in July and August.

Lake Huron Survey: The 1992 Lake Huron survey is a continuation of the program started in 1991, to collect bathymetry to supplement LARSEN data on the north end of the Bruce Peninsula. The survey will begin in May and continue until the middle of September.

Southern Georgian Bay Survey: The 1992 Georgian Bay survey will continue the project started in 1991, and will collect data between Beausoleil Island and Christian Island, and in Nottawasaga Bay. The survey will commence in early May and continue until the middle of September.

Nottawasaga Bay: Hydrographers assigned to the Hudson Bay survey will also be involved in the offshore survey of Nottawasaga Bay. The survey period will be May, June and September.

Revisory Survey: The Revisory survey will resolve chart queries on scheduled new editions, and complete large-scale surveys of selected harbours on the Great Lakes. The survey will begin in May and continue until the middle of September.

LORAN-C Calibration: A calibration of selected Lake Winnipeg charts will take place in 1992.

Sailing Directions: Sailing Directions data will be collected in the Rideau Waterway and the Ottawa River. New Editions of Great Lakes Volume 2 and the Lake Ontario Small Craft Guide will be printed.

General: Al Koudys, Jon Biggar and George Fenn were the successful candidates in the EN-SUR 2 competition.

Development Division

Arctic Sounder: With the successful completion of the arctic sounder development, Knudsen Engineering Ltd. were successful in obtaining an IRAP grant to investigate some technical issues relating to the conversion of the arctic sounder to a digital profiling sounder.

Through-Ice Bathymetry System (TIBS): The program will consist of the following activities: implement the System into the production field survey of Pelly Bay; integrate a digital receiver to improve the processing of the raw EM signals and eventually provide a real-time depth display; investigate new methods of system calibration; and upgrade the hardware and software. CHS can expect to benefit from the work of its industrial partner with their other clients.

Radar Sounder: In August of 1990, an impulse radar system owned by the US Corps. of Engineers was tested in the St. Lawrence River near Cornwall, where it was able to collect reliable depth data through thick weed growth in shallow water. Work will be initiated to put together a system for field use.

ISAH Implementation: The software modifications scheduled for January 1992 delivery will be tested and debugged. Operator and technician training will take place in February 1992. Additional launch tests will be required in the early spring before the systems go to the field.

Integrated Range/Bearing System: This project will develop, test and implement an integrated system for conducting range/bearing surveys that will resolve the problems associated with the present method used in Central and Arctic Region.

Field Processing: This project includes software enhancements and maintenance of our existing processing software. The Division will continue to maintain this software and correct bugs that were reported during the previous field season.

Generalization: This project consists of a contract with Universal Systems Ltd. to develop generalization routines for use with digital chart/source data. In 1991/1992, the project is focusing on developing CARIS software to identify overlap of point symbols and displace the appropriate symbol, to expand the size of closed loops and to displace lines that run too close together. The work will include the capability to convert areas to point symbols and develop a selection hierarchy for

the displacement or elimination of chart features.

Recreational Electronic Chart (REC) Study: Fiscal year 1992/1993 will be the second year of a two year study of the needs and issues relating to the use of CHS data on RECs and the development of procedures for the provision of the data. To date, a report of how well the existing commercial systems comply with the RTCM standards for Class 3 ECDIS has been prepared. Next year, CHS's role, options and responsibilities in providing hydrographic data to these manufacturers will be examined. Evolving techniques and technology in this sector of the ECDIS market will be reviewed.

Tidal Instrumentation: This is an ongoing project to support tidal activities in all regions by providing equipment repair and maintenance for hardware that was developed by this group in the past such as TATS and the DEUs.

Computer Operations: The Division will continue to provide plotting services to the Branch; to operate and maintain a MicroVax/Macintosh computer network; and to advise and assist users.

Data Management: This year, the Division became more involved in the data base activities of CHS. In addition to acquiring and learning to use CASE tools, user needs in three functional areas were investigated: field surveys, chart production, and data validation. In fiscal year 1992/1993, the Division will begin application development in these functional areas.

Tides, Currents and Water Levels Division

In 1992/1993, the Division will: continue to manage and operate the 36 stations in the Permanent Water Level Network (2 northern stations by CHS and 34 stations on Great Lakes under a MOU with DOE,WRB); operate and maintain the real-time data loggers and voice announcing gauges in the Network; acquire additional data loggers so that digital data will be logged in all stations; become more involved in the acquisition of water level data from the Network to ensure data accuracy and quality control; and continue a program of upgrading the electrical service in the stations.

The Division will also implement the IGLD (1985) update in the Permanent Water Level Network, determine the correction to bench mark elevations at temporary gauging sites, then modify the bench mark data base and gauge history files.

General

Central and Arctic Region has two new Hydrographers; Peter Wills is currently assigned to Chart Production and Andrew Leyzack is currently assigned to Field Surveys.

Three term Hydrographers have also started work with Central and Arctic Region. Jennifer Thiel is currently assigned to Development; and Michael Johnston and Paola Travaglini are currently assigned to Chart Production.

CHS - Atlantic

TMS-1000 Tide Gauge

The TMS-1000 is the latest offering in water level measurement technology from Socomar Inc., of Quebec City. Ten TMS-1000 tide gauges have recently been delivered to the Canadian Hydrographic Service (Atlantic). Three systems are configured as Permanent Water Level Network gauges

using three independent transducer groups recording time, water column, salinity, water temperature, and atmospheric pressure. Seven systems are configured as portable units logging simply time and water level using a single inexpensive diaphragm sensor.

The TMS-1000 is a general purpose data logger for environmental sensors. It will accept input from many different sensors whether analog, impulse counter or switch closure. The design is intended for harsh environments. Communication with the gauge is through telephone, laptop computer, RF radio, or satellite. The data can be accessed and the gauge reprogrammed remotely. The design philosophy is for open architecture, standardizing with industry as much as possible. Expansion slots are provided. Software is written in C.

The gauge can operate on shore power, internal or external batteries. External batteries are capable of operation over several months. An on-board lithium battery protects the memory under all circumstances. The gauge can store over 200 days of data logged at 15 minute intervals. Optional memory expansion slots are provided. Accuracy targets are in the centimeter range for the permanent gauges and three centimeters for the portable gauges.

Extensive rigorous testing of hardware and software is currently underway to monitor all aspects of gauge operation with particular emphasis on reliability, accuracy and operational convenience.

Checking Out the ECDIS Standards (by Mike Eaton)

If ECDIS has not caught on quite as quickly as some people expected, one reason may be that the international standards from IMO (that will in turn lead to national regulations sanctioning ECDIS) will not be ratified until 1993. Meanwhile practical experience is badly needed to confirm that the provisional regulations are reasonable, and several Hydrographic Offices are setting up sea tests to check this out, taking advantage of the improving GPS coverage for positioning. In 1990, Norway put one of their DISC electronic charts on the Seatrans ship "Nornews Express", testing an extensive H.O. database along the intricate Norwegian coastline; the captain reported how ECDIS made him feel that the situation was well under control in some nasty passages during bad weather. Early in 1991 the Netherlands took the Canadian ECMAN system (with interfaces by a Dutch company) to sea on their survey ship "Buyskes" off Den Helder and Europoort, with a special test group of mariners. The EC was located next to the radar, and on one difficult entry to the Den Helder naval base in dense fog, the Captain found himself glancing from radar to chart display for confirmation. This autumn the German testbed from SUSAN (simulator group at the Hamburg sea school), with data from BSH (the German H.O.), was installed on the Harwich-Hamburg ferry, and quickly converted a captain who was not initially enthused to become an interested participant.

On a much less elevated (but not necessarily less important) level, the University of New Brunswick collaborated with the Canadian Hydrographic Service in a test of four small-boat electronic charts, thus beginning the process of checking that these "non-equivalent" electronic charts carry adequate chart information and display it safely. The USA will probably be next up with simulator and operational tests of ECDIS within the next two years. Then Canada should be back in the

"Heavies" shortly afterwards, by which time we hope commercial systems to international standards will also be getting to sea and feeding back practical experience.

Canadian Ocean Mapping System

(by Gerard Costello - Project Manager COMS)

DFO's Canadian Ocean Mapping System (COMS) made significant progress during 1991. The goal of this joint industry/government/university initiative is to enhance the ocean mapping capabilities in the private sector using state of the art technology. This is being achieved through a technology transfer of DFO's remotely operated vehicle DOLPHIN to industry where Simrad's EM100 multibeam sonar was installed and a ship board Launch and Recovery system was developed. DFO are working closely with the UNB Ocean Mapping Group and USL in developing new software for managing the data sets collected by such an ocean mapping system.

The integration of the new EM100 sonar in DOLPHIN was successfully completed by ISE Research and Simrad Mesotech in May 1991. This DOLPHIN/EM100 is now operational. The EM100 electronics were repackaged to fit in DOLPHIN and new Dataradio Asynchronous Packet radios were installed for data telemetry and vehicle control between DOLPHIN and the mother ship. A new gyrocompass and motion sensors were also installed. DOLPHIN/EM100 is now at the Geo-Resources shore base in Long Pond, NFLD for sea trials.

Brooke Ocean Technology have designed and fabricated the DOLPHIN Launch and Recovery system. Their recovery concept involves attaching a bow line to DOLPHIN while underway at five knots; streaming the vehicle; attaching a single point lifting hook; hoisting using a motion compensated crane into a custom designed "snubber"; and then up over the side of the ship onto the deck. The crane can lift the 8000 lb. DOLPHIN at a distance of 30 ft. under dynamic conditions. The Launch and Recovery system is now being installed on the CCGS SIR WILFRED GRENFELL in preparation for sea trials in January 1992.

The UNB Ocean Mapping Group and Universal Systems Ltd. have developed a new data processing system for large bathymetric data sets (such as EM100). Its fundamental concept is data cleaning: to detect and correct errors while retaining valid shoal peaks to produce an "error free" data set. It employs a combination of automatic algorithms, interactive and visualization tools with CARIS presentation and plotting graphics. It requires a UNIX operating system with X-Windows and Motif. Version 1 is now completed and is undergoing field testing in November 1991 during the MATTHEW/DOLPHIN sea trials.

Geo-Resources Inc. have established a DOLPHIN shore base in Long Pond, NFLD. to conduct ongoing sea trials of the complete system. All three DOLPHIN's are now at the shore base including the EM100/DOLPHIN. Geo-Resources used DOLPHIN to carry out oceanographic research (wave breaking study) for DFO scientists in June, 1991. DOLPHIN was equipped with several sensors including sidescan sonar and video cameras to collect data. This project was very successful and demonstrated applications for DOLPHIN other than hydrography. New applications for DOLPHIN technology, such as fisheries acoustics are also being explored. A com-

plete Differential GPS, including a HF link has been established at the shore base and is now operational on DOLPHIN. DOLPHIN/EM100 hydrographic operations including navigation are being refined on an ongoing basis. Seatrials using the DOLPHIN/EM100 in conjunction with the CSS MATTHEW EM100 took place in November, 1991 at the bathymetric test site in Conception Bay, NFLD. In January, 1992, Geo-Resources and Brooke Ocean Technology will complete the final offshore sea trials of the complete system before this Phase 1 of the project is completed in March, 1992.

Andrews Hydrographics Ltd.

Andrews Hydrographics approach to satellite positioning is outlined in a new brochure published by the company. The brochure, entitled ON-TARGET, covers GPS field trials both on land and offshore, the creation of local systems for correction signals, and case histories on platform stability tests, navigation network control and photogrammetric mapping.

ON-TARGET also describes seismic and hydrographic operations including a complicated 3D walkway seismic borehole survey and the positioning of subsea power cables across Long Island Sound. For a free copy, please contact Andrews Hydrographics Ltd, Unit 15, Grove Park, Waltham Road, White Waltham, Maidenhead, Berks SL6 3LN.

Geophysics GPR International Inc.

Geophysics GPR International announces the opening of a new office in Rexdale for its operation in Ontario, Canada. Founded in 1974, Geophysics International Inc. is a large consulting geophysical engineering firm in Eastern Canada that has now expanded into Ontario. Mr. Milan Stitum, geophysicist, vice-president, will be responsible for the Ontario region office. The company has some one hundred employees, most of them engineers, geologists, geophysicists, computer and environment scientists, specialized technicians, working in multidisciplinary teams.

The company's past experience in geophysics for civil work covers such projects as the James Bay dam site investigation, tunnel investigation, marine work, bathymetry and seismic. The company is also very active in mining and petroleum and gas exploration. Geophysics GPR's state-of-the-art technology enables it to locate ore deposits with a degree of accuracy that ensures profitable, safer exploitation. Geophysics GPR's expertise in mining exploration gives it an edge in the rapidly expanding market of exploration for water tables, a resource that will soon be as precious as oil in some countries.

Geophysics GPR's expertise has spread to environmental applications, in particular ground water investigation and remediation planning in the event of water table contamination by pollutants. The firm has had some tremendous success in its applications to geotechnical problems. Site evaluations can be applied to the construction of dams, buildings, bridges, highways, channels and harbours.

The firm's geophysical expertise is recognized worldwide. Geophysics GPR has taken part in location, blasting and excavation work for thousands of large scale projects in major cities across Canada, as well as Tunisia, Guatemala, India and Nepal. It has also been involved in the harbour develop-

ment in Mauritania, the building of a nuclear power plant in South Korea and is presently involved in the training of highly specialized personnel and technology-transfer in Zimbabwe.

The Hydrographic Society

The Hydrographic Society has published a folded poster-size guide to all aspects of hydrographic surveying affecting chart production, environmental monitoring, coastal protection and offshore exploration. Illustrated in full colour and of interest to those wishing to pursue a career in the profession as well as others, it describes in detail the diversity of tasks and working environments confronting the modern hydrographic surveyor.

Postage-free copies of the brochure are available from any of the Society's national branches or direct from its international headquarters at Polytechnic of East London, Longbridge Road, Dagenham, Essex RM8 2AS, UK.

The Hydrographic Society of America announces the availability of "IHO SP-57:IHO Transfer Standard for Digital Hydrographic Data (DX190). This is the culmination of two years of effort by the IHO Committee on Exchange of Digital Data. SP-57 was designed to facilitate the transfer of digital data between dissimilar computer systems.

SP-57 utilizes a fully self-describing format scheme to transfer meta-data (headers, catalogs, dictionaries) and geographic feature data for ECDIS, nautical charts and hydrographic surveys. SP-57 is comprised of three parts an IHO object catalog, a File Content and Format Specification and Digitizing Conventions. It is provided in a loose-leaf manual and on several floppy disks (3.5"-720k). Copies are available from The Hydrographic Society, P.O. Box 732, Rockville Maryland 20848-0732.

International Association of Lighthouse Authorities

The latest edition of the International Association of Lighthouse Authorities (IALA) List of Publications is now available. The list is available by writing: The IALA Secretariat, 20ter, rue Schnapper, 78100 St. Germaine en Laye, France.

Une cinquantaine d'élèves de l'Institut maritime du Québec - Réalisent un premier stage en mer

Au cours des mois de mai et juin, une cinquantaine d'élèves ayant terminé leur 1^{re} année d'études en navigation et en génie mécanique de marine à l'Institut maritime du Québec, ont entrepris un stage en mer d'une durée minimum de deux mois. Ce stage leur permettra de mettre en pratique les connaissances acquises jusqu'à maintenant et de se familiariser avec leur futur milieu de travail.

Les programmes d'études Navigation et Génie mécanique de marine offerts à l'Institut maritime du Québec sont du type coopératif. Au cours de leurs études, les élèves réalisent trois stages en mer, d'une durée totale de douze mois, sur différents types de navire. Ceci leur permet, à la fin de leurs études, de se présenter aux examens du ministère des Transports du Canada pour l'obtention d'un premier brevet d'officier de marine marchande.

Actuellement, l'Institut maritime du Québec possède des ententes avec une vingtaine de compagnies de transport

maritime dont plusieurs ont des navires au long cours. En tout temps, des cadets et des cadettes de l'Institut sillonnent les mers du monde confirmant le caractère international de l'enseignement qu'ils reçoivent. En janvier dernier, une trentaine d'élèves, ayant complété leur 2^e année d'études, entreprenaient des stages en mer pour une durée minimum de huit mois. Ils seront de retour à l'Institut en janvier 1992.

Par ailleurs, grâce à des ententes avec la Garde côtière canadienne, l'Office franco-qubécois pour la jeunesse, la Direction générale de France Télécom et des armateurs, les élèves inscrits en radiocommunication et électronique maritime ont aussi la possibilité de réaliser des stages au cours de leurs études.

Que ce soit en navigation, génie mécanique de marine ou radiocommunication et électronique maritime, ces stages ajoutent à la qualité de la formation offerte à l'Institut et préparent bien au marché du travail.

Klein Associates Inc.

A new technique for sea floor mapping, utilizing the simultaneous dual frequency of the Klein Model 595 Digital Sonar, has been announced by Klein Associates of Salem, New Hampshire, USA. The new technique provides the sonar user with the capability to simultaneously display on the same sonar record both, completely corrected sea floor maps and uncorrected sonar data. This capability permits the operator to observe objects and features in their true corrective size and aspect, while retaining the ability to examine those targets and features in the undistorted, uncorrected Side Scan Sonar data.

The simultaneous dual display capability will be standard in new Klein Model 595 Combined Side Scan Sonar Transceiver and Graphic Display Units. A retrofit kit will be available for current operators of 595 Sonars, in accordance with Klein's policy of making new developments downward retrofittable to older units.

The simultaneous dual display operational mode is under full control of the operator through the front panel menu control system. When using a single frequency towfish, the control system allows the operator, to select either dual mapped, dual unmapped or simultaneous dual channel mapped and unmapped Side Scan Sonar display modes. When operating with a simultaneous dual frequency towfish, it gives the operator the choice of displaying mapped or unmapped single frequency data in either mapped or unmapped modes, or both mapped or unmapped data in 100, 500 or simultaneous 100/500 kHz format.

Laser Plot Inc.

Laser Plot announces the integration of GPS technology to their ChartNav 20/20-INS, NS, DW and CW Electronic Chart Navigation Systems. The ChartNav 20/20 systems now offer the option of an internal GPS receiver that supplies data on geographic position to ChartNav. The ChartNav system then displays a highly accurate vessel position on a full-colour image of an actual nautical chart published by a hydrographic agency. These charts are stored on SEA-Ds, each holding up to 80 nautical charts.

The geographic position information is updated continuously, which allows the ChartNav to track the vessel's progress from origin to destination on the chart image. The vessel track may be saved permanently on the ChartNav for later use and analysis. The internal GPS configuration eliminates the requirement to purchase, install and integrate a separate GPS receiver on the vessel.

Also new from Laser Plot is "TouchNav", the addition of touch screen technology to the ChartNav 20/20-NS, INS, CW and DW Electronic Chart Navigation Systems. With this technology, the external keypad functions are displayed on the sides of the monitor. Touching the screen activates these functions. The ChartNav softkeys, or menu choices, are activated by touching the menu key on the screen.

Plotting a route becomes simple and fast, a touch on the screen and the cursor instantly moves to that location. Touching the "Waypoint" menu sets and confirms that location as a waypoint. Additional waypoints to complete the route can be added easily and quickly.

Navitronic

Navitronic announces the release of their new Hydrographic Echo Sounder, the NAVISOUND 2000. This sounder is based on a concept quite different from what so far has been on the market. It has two channels which can operate on either 30-33 kHz or 200-210 kHz, ensuring that it can be adopted to any transducer within a wide frequency range, and ensuring that it is always possible to choose the right frequency whether a high resolution in shallow water or a penetration in deep waters is required.

As an additional feature the frequency can be chosen by the operator, and with two channels installed it is in this way possible to operate either with 2x33 kHz, 2x200 kHz or with 1x33 kHz and 1x200 kHz. The NAVISOUND 2000 can operate on DC voltages as well as AC voltages, and therefore it can be used for all types of vessels, from the largest ocean going ship to the small rubber boat.

The sounder has a built-in thermal recorder but it also has a digital display, and several interfacing possibilities such as GP-IB(IEEE 488), RS-232C and RS-422.

With NAVISOUND 2000 as part of an automated survey system it is not necessary to have one's eyes at two different places at the same time as it is fully controllable from the computer. The greatest advantage of this new sounder however may be its ease of operation; you can learn to use it in less than half an hour, even though the operator may never have seen a sounder before or is used to another type.

All functions except the most basic ones such as range and mode, are operated from one single rotary button and a corresponding digital display. The operator simply turns the button until the wanted function is displayed, an ENTER is pressed and the values can then be set by turning the button.

National Ocean Service (NOS)

Charting and Geodetic Services, headed by Rear Admiral J. Austin Yeager has returned to its former name; "The Coast and Geodetic Survey".

The National Geodetic Survey Division announces an improved datum transformation package. CORPSCON (Version 2.1) allows users to convert coordinate values between the North American Datum of 1927 (NAD27) and the North American Datum of 1983 (NAD83), when those values are expressed in either state plane coordinates or latitude and longitude. CORPSCON was designed by the U.S. Army Corps of Engineers Topographic Laboratory, and uses three existing National Geodetic Survey Division programs (GPPCGP, NADCON and SPC83) to complete the conversions and transformation. The user may specify NAD83 state plane coordinate values in metres, the U.S. Survey Foot, or the International Foot. CORPSCON allows conversions to the original (1986) NAD83 values, rather than to the new high accuracy network values.

Simrad Mesotech Systems Limited

Simrad Mesotech Systems Ltd. of Vancouver, British Columbia, Canada announces a new high performance side scan sonar. The MS 992 is a simultaneous dual frequency sonar with two wire telemetry, available with a range of transducers. These include a long range system at 120kHz and a high resolution system useful to well over 150m range.

In addition, a variety of towfish configurations are offered including an extremely rugged stainless steel model, a neutrally buoyant fish for shallow water operations or compact modular components for ROV use. The two wire telemetry makes the modular system ideal for ROV or sled mounting. Attitude sensing and responder are optional.

The compact surface processor measures only 5 1/4 inches high by 13 inches wide. High resolution colour video is standard. Hard copy paper and digital audio recording system interfaces are available.

A unique feature of the side scan processor is that it can be configured to operate Simrad Mesotech's fast scanning sonar heads. This has tremendous advantages in terms of equipment commonality and substantial cost savings, as opposed to two independent systems.

SURNAV Corporation

SURNAV Corporation announces they have relocated to: 89 Auriga Drive, Nepean, Ontario, K2E 7Z2.

SURNAV announces a new product from Trimble Navigation, the 4000SE Land Surveyor GPS Survey System. The 4000SE is a modular, compact and lightweight (6lbs) GPS survey system. For static surveys, just plug on the small microstrip antenna, slip two lightweight battery packs into the tripod mount and survey for seven hours. There are no cables to connect. The receiver has a built-in antenna height measurement system and is waterproof for all weather operation.

The 4000SE Land Surveyor is configured for one person surveys, whether it is "walk about" kinematic for topographic work, or the new "leap frog" pseudo-static surveying for control or boundary work.

The 4000SE Land Surveyor system is available in two configurations; the static system with tripod option and the kinematic system with tripod rover options.

Canadian Hydrographic Association / Association canadienne d'hydrographie

The Canadian Hydrographic Association (CHA) is a non-profit, scientific and technical group of about 500 members with the objectives of:

- advancing the development of hydrography, cartography and associated activities in Canada
- furthering the knowledge and professional development of its members
- enhancing and demonstrating the public needs for hydrography
- assisting in the development of hydrographic sciences in the developing countries

It is the only national hydrographic organization in Canada. It embraces the disciplines of:

- hydrographic surveying
- marine cartography
- marine geodesy
- offshore exploration
- tidal and tidal current studies

The Canadian Hydrographic Association is formally affiliated with the Canadian Institute of Surveying and Mapping. It is informally associated with the Hydrographic Society.

What the CHA Can Do For You

- advance your knowledge of hydrography and cartography and associated disciplines and keep you abreast of the latest development in these disciplines
- enable you to develop and maintain contacts with others involved with hydrography, nationally and internationally

These benefits are provided through the publication of LIGHTHOUSE (one of only three journals in the world devoted exclusively to hydrography), through the sponsorship of seminars, colloquiums, training programs, national conferences and branch and national meetings.

Lighthouse

The journal of the Canadian Hydrographic Association, LIGHTHOUSE, is published twice yearly and distributed free to its members. Timely scientific, technical and non-technical papers and articles appear in the journal with authors from national and international academia, industry and government. Present circulation of LIGHTHOUSE is approximately 800.

Membership

Membership is open to all hydrographers, those working in associated disciplines, and those interested in hydrography and cartography.

Branch & Regional Activities

The Canadian Hydrographic Association has eight (8) branches located across Canada. The national headquarters is located in Ottawa.

For further information write to:

National President
Canadian Hydrographic Association
P.O. Box 5378, Station F
Ottawa, Ontario
Canada
K2C 3J1

L'Association canadienne d'hydrographie (ACH) est un organisme sans but lucratif réunissant un groupe scientifique et technique de plus de 500 membres ayant des objectifs communs, comme:

- faire progresser le développement de l'hydrographie, de la cartographie et de leurs sphères d'activités au Canada
- permettre les échanges d'idées et le développement professionnel de ses membres
- rehausser et démontrer l'importance de l'hydrographie auprès de public
- assister au développement des sciences de l'hydrographie dans les pays en voie de développement

Au Canada, l'Association est la seule organisation hydrographique qui embrasse les disciplines suivantes:

- levé hydrographique
- cartographie marine
- géodésie marine
- exploration extra-côtier
- étude des marées et courants

L'Association canadienne d'hydrographie est affiliée à l'Association canadienne des sciences géodésiques et cartographiques, et non officiellement liée à la Société de l'hydrographie.

Ce qu'elle peut faire pour vous

L'ACH vous offre des avantages tels que:

- parfaire vos connaissances de l'hydrographie, de la cartographies et des disciplines connexes, tout en vous tenant au courant des nouvelles techniques et des derniers développements réalisés dans ces domaines
- établir et maintenir des contacts avec ceux qui oeuvrent en hydrographie, au niveau national et international.

Ces avantages sont transmis par l'entremise de LIGHTHOUSE (une des trois revues au monde traitant exclusivement d'hydrographie) et par la tenue de séminaires, de colloques, de programmes de formation et d'assemblées régionales et nationales.

Lighthouse

La revue de l'Association canadienne d'hydrographie, LIGHTHOUSE, est publiée deux fois l'an et distribuée gratuitement aux membres. Des articles scientifiques, techniques et non techniques, provenant du milieu de l'industrie ou du gouvernement autant national qu'international, apparaissent dans cette revue. Le tirage actuel de la revue est d'environ 800 copies.

Comment devenir membre

Le statut de membre est offert aux hydrographes et à tout ceux oeuvrant ou ayant un intérêt dans des disciplines associées à hydrographie ou à la cartographie.

Sections et activités régionales

L'Association canadienne d'hydrographie possède huit (8) sections à travers le Canada. L'administration centrale se trouve à Ottawa.

Pour plus d'informations, s'adresser au:

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 2306 West 21st Ave.
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Minutes (condensed) of the 1991 Canadian Hydrographic Association Annual Directors' Meeting

Rimouski, Québec April 14 - 15, 1991

Present:

Dave Pugh	National President
Bernard Labrecque	Vice-President, Section du Québec
Richard Sanfaçon	Past Vice-President, Section du Québec
Sheila Acheson	Vice-President, Ottawa Branch
Sean Hinds	Vice-President, Central Branch
Frank Colton	Vice-President, Prairie Schooner Branch
George Pugach	Vice-President, Capt. Vancouver Branch
Carol Nowak	Vice-President, Pacific Branch

The National President called the meeting to order at 2100, Sunday, April 14.

Agenda Items

1. Minutes of the 1990 Annual Directors' Meeting

Moved to amend the agenda as presented to add "Receive the minutes of the 1990 National Executive minute and to review the Action Items". Acheson/Nowak/carried .

Action Items

Item 9: CIDA Project Reports

The Canadian International Development Agency (CIDA) provided a very favourable opinion of CHA / CIDA projects.

Item 11: Lighthouse Debt to the University of Toronto

Dave Pugh briefed the meeting on his actions on this matter. Those present at the meeting agreed that in view of the fact the University had not replied to the proposal for payment (made to them by Barry Lusk) and had cashed our cheque that the CHA should regard this debt as fully discharged.

Item 12: Lighthouse Debt to the Branches

As this item was originally requested by Atlantic Branch, and they were unable to attend this meeting, it was agreed to carry it over until there could be direct input from Atlantic Branch.

Item 16: Stationery

Artwork showing the new national logo has been provided to all Branches.

Item 17: CHA Pins

CHA pins have been produced and distributed to each Branch. Branches are reminded to submit payment for the pins to the National Treasurer. *Action: Branches*

Item 19: CISM Grant

Until recently the CHA received a \$500 grant each year from CISM for Lighthouse; in return the CHA provided CISM with 25 copies of each edition of Lighthouse. In recent years this grant has not been offered or sought after but the CHA continues to provide the 25 copies of Lighthouse, which CISM distributes to each of its directors. A suggestion was made to send CISM three copies of each edition; one for the office, one

for the editor of the CISM Journal and one for the CISM president.

After discussion it was decided that the number of copies to be given to CISM will be decided by the National President, based on the cost versus the need to keep CISM informed on developments in hydrography. *Action: Pugh*

Item 20: Translation / Publication of By-laws

The Québec Branch has provided a translation of the official By-laws of the Corporation. CHA National will print a 'tumble' bilingual format of the by-laws (as per Central Branch's sample) which will be sent to the Branches for distribution to the membership.

Action: Pugh

Item 22: Workshops / Conferences

It is proposed that the CHA run either a workshop in alternate years to, or a workshop in conjunction with, the Canadian Hydrographic Conference.

The next Canadian Hydrographic Conference will be in Toronto, June 1993. This will be a joint CHS/CISM conference. Sean Hinds will seek the approval of his Branch to prepare a proposal for a half-day workshop there. *Action: Hinds*

Item 23: CHA / Hydrographic Society Relationship

See Agenda Item 12 CHA / Hydrographic Society Relations.

Item 24: Honorary membership for Mr. George Macdonald.
Because George could not be present at this year's annual general meeting, Sean Hinds will present the prepared certificate and gift to George at the next Central Branch meeting.

Item 25: Other Business

Central Branch received written authorization from the President to hold their 1990 Branch Annual General Meeting (AGM) on Nov. 30, 1990.

Moved that the minutes of the 1990 Annual Directors' Meeting be accepted as presented. Hinds/Nowak/carried .

2. Auditor's Report on the 1990 National Account

Notes on the statement:

- the Department of Fisheries and Oceans (DFO) grant of \$7000 was received Jan. 1991.
- dues: Capt. Vancouver submitted their 1990 dues at this meeting. Atlantic Branch notified the President that they will be submitting their 1990 dues soon but because they are in a transition period they will not be collecting any 1991 dues. They will however, retain their existing bank accounts.
- Travel expenses: The costs for Vice-Presidents' travel have been quite modest since employers and Branches

have paid for most of the travel. The President's travel expenses include the cost of a new CHA display.

Moved to accept the 1990 financial statement as presented. Hinds/Pugach/carried .

There were two suggestions made for future consideration :

- that if the National accumulates sufficient resources, we consider funding participation by a developing country at a Canadian Hydrographic Workshop / Conference.
- that Lighthouse fund any future purchase of Lighthouse Pins (awarded to first-time writers of articles in Lighthouse).

3. GST

Dave Pugh briefed the meeting on the GST seminar he attended. Because we have an annual income of less than \$30K we are not required to register with Revenue Canada. However we will register if we are not required to file a GST return. Dave Pugh will investigate.

Action: Pugh

4. Lighthouse Report

A verbal report was presented by Dave Pugh on behalf of Bruce Richards (Editor of Lighthouse). The 1990 editions (#41, #42) were distributed on schedule. The Spring 1991 edition is due in May. The artwork for this edition was produced 'outhouse'.

The two-page monitor purchased by Lighthouse last year has been of great assistance to the editor. As per the discussion at last year's Director's meeting, Lighthouse is seeking approval to buy a MAC SE/30 at an estimated cost of \$4800, and eliminate the editor's reliance on his employer's equipment. This also will provide an entire system if the production of Lighthouse were to move outside of the CHS.

5. Lighthouse Financial Statement

Notes on the statement:

- Lighthouse paid the 1990 Lighthouse Awards as a convenience.
- Since Atlantic Branch is not collecting any dues this year, existing members may subscribe individually.

Motion to accept the 1990 Lighthouse Financial Statement as presented. Nowak/Pugach/carried.

6. Lighthouse Proposed Budget for 1991

Notes on the budget :

- MAC SE/30 purchase - Lighthouse will pay the \$800 which is above the price of \$4000, as discussed in 1990.
- Cash reserve - Lighthouse strives to keep a cash reserve of \$7000, the cost of producing one edition.
- Lighthouse is seeking a \$2000 per year operating grant from the CHA national in lieu of the \$5 per member presently guaranteed. This will provide a more definite income.

After some discussion there was a motion that for the 1991 fiscal year only, the CHA National will provide a fixed operating grant of \$2000 to Lighthouse, in lieu of the grant of \$5 per member. Pugach/Hinds/carried.

Motion to adjourn the meeting at 2305, to reconvene at 1600, Monday April 15. Pugach/Hinds/carried.

Meeting Reconvened on Mon. April 15, at 1600.

Present:

Dave Pugh	National President
Bernard Labrecque	Vice-President, Section du Québec
Sheila Acheson	Vice-President, Ottawa Branch
Sean Hinds	Vice-President, Central Branch
Frank Colton	Vice-President, Prairie Schooner Branch
George Pugach	Vice-President, Capt. Vancouver Branch
Carol Nowak	Vice-President, Pacific Branch

7. Lighthouse Debt

As this item was raised by Atlantic Branch and they were not present at this meeting, it was agreed to hold the item over until Atlantic Branch could be present.

8. CIDA Update

Jamaica Project

Willy Rapatz is now the project consultant and is taking over the training coordination. Mike Woods will be in Jamaica as an instructor on a three month contract from July to Sept. 1991. The survey launch from the CHS Central and Arctic Region was shipped to Jamaica at the expense of the project. The project ends in Oct. 1991.

The reports for this project have been produced on a quarterly basis, as initially scheduled, except for the fall, 1990 because the final report was due at the end of December. However, since the project was extended until Oct. 1991, quarterly reports have resumed.

The possibility of extending this project was raised. George Pugach felt that such projects are a good idea, but that any planning should include documented commitments from the host country. Sean Hinds felt that we have laid a good foundation but that if we proceed we should have a plan. Carol Nowak felt that in spite of the difficulties, we have had some successes in Jamaica and we should concentrate on the positive points. However, the CIDA funds used to extend the project came from a 'one-shot' pot, so we cannot access it again.

Malaysia

Warren Forrester has returned from a 5 month contract to provide expertise on tides. Lt. Cdr. Fairoz, who is heading up a new Malaysian oceanographic institute visited Ottawa for 3 weeks and Pacific Region for two weeks.

The Malaysian Chief of Cartography, Commander Hamdan bin Othman (Royal Malaysian Navy) will be visiting Central and Arctic region for 6 weeks, beginning April 22. In the fall three Malaysians will be on a 12 week cartographic training exercise in Pacific Region.

There will be a six-week level two hydrography course in Malaysia for students from government, military and private sector. CIDA will pay for the airfare, accommodation and incidentals for instructors, but no salary. Dave Pugh is organizing this course and is trying to involve and promote the Canadian hydrographic industry. Tom McCulloch has requested that a CHS staff member participate in giving the course for the full six weeks.

The Malaysian training project concludes at the end of 1991.

The Board of Directors wishes to recognize and express our appreciation to Mr. McCulloch for his continuing efforts on these programs and to Mr. Barry Lusk for his continuing efforts in overseeing the CIDA projects on behalf of the CHA.

9. Program for Export Market Development (PEMD)

Under this program, operated by External Affairs, the CHA was able to obtain a grant to defray some expenses for two members of the Philippine Hydrographic Service to attend the Rimouski Conference. The remaining expenses were absorbed by Terra Surveys a sustaining member of the CHA. The two participants came to Canada for 12 days and visited government and private sector establishments in addition to attending the conference.

This program can be used to pay to bring people to Canada or to fund participation at events such as trade shows, etc. abroad. Because the CHA is a non profit organization it is eligible for grants rather than loans so we may be able to promote the growth of the hydrographic industry in Canada. Under the program we are eligible to make two applications per year for a maximum of \$125 K per request.

The directors agreed in principle to support the program, provided that:

- we obtain the necessary liability insurance;
- we deal only with CHA sustaining members in good standing;
- any application submitted to the CHA by such a member undergo a critical review and approval by the Board of Directors;
- the CHA restrict its activities under the program to strictly hydrographic applications; and
- any applicant to the CHA must agree to pay any costs not covered by the program since the CHA will incur no additional costs.

10. 1992 Workshops

No Branch volunteered to hold a 1992 workshop; Sean Hinds will approach Central Branch re: holding a half-day workshop in conjunction with the 1993 CHS / CISM in Toronto.

Action: *Hinds*

11. Exchange of Proceedings

The CHA has been approached by the U.S. Branch of the Hydrographic Society regarding a reciprocal agreement on discount bulk sales of conference proceedings which the purchaser can resell at a profit. Dave Pugh will identify the existing stock and determine how many can be exchanged under such an agreement. Some copies of past issues may be distributed free to colleges and universities. Action: *Pugh*

12. Working Groups

After discussing possible guidelines for working groups and CISM's Guidelines for Working Groups, the meeting decided that it was not necessary to formulate any guidelines. This position can be reviewed when a proposal to create a working group is submitted.

12a. CHA / Hydrographic Society Relations

The CHA has been approached to join the International Union for Surveys and Mapping (IUSM) through our membership in The Hydrographic Society. To link with the IUSM through The Hydrographic Society would cost \$2-\$3 per CHA member, in return for which there would be an exchange of journals between the CHA and IUSM and a reduced rate for IUSM

publications for CHA members. The Hydrographic Society feels that such a link would strengthen the voice of hydrography within the IUSM.

At the present time the CHA is linked with the IUSM through its membership in CISM, at no additional cost to CHA members.

The Directors felt that since the focus of the CHA is national, not international, we should maintain our existing relationship with IUSM via CISM and that we retain our existing exchange of journals, etc. with The Hydrographic Society.

13. Membership Lists

Sharon Thompson in Pacific Region of CHS has volunteered to create a master membership list so Branches are reminded to send their lists to her as soon as possible. Also, when mailing cheques etc. to Dave Pugh, Branches are requested to specify what the cheques are for, and for membership fee cheques to include the numbers of members covered.

Action: *Branches*

14. Distribution of Address Lists

The meeting agreed that CHA membership lists will definitely not be sold and will not be passed on, except for major relevant conferences, at the discretion of the National President. Action: *Pugh*

15. Special Membership Policy

As voted on at the 1990 Directors' meeting Dave Pugh has prepared a special honorary membership certificate for Mr. George Macdonald in recognition of his contribution to the CHA.

It was agreed that no formal policy on appointing honorary memberships be adopted and any future nominations are subject to approval by the Directors.

16. Historical Hydrographic Launch Project

The original proposal for this project and request for partial funding was made at Central Branch's 1990 AGM. It was agreed at the meeting that there was insufficient information available from the project team on which to base a decision for funding.

17. National Budget

Dave Pugh presented the 1991 proposed CHA budget. Each item was reviewed:

- credits are based on conservative membership figures
- although not included in the budget, the CHA will again be requesting a grant from the CHS
- debits were altered to reflect decisions taken at this meeting
- Lighthouse awards to be paid from the Lighthouse budget
- no agreement to fund the historic launch program
- Lighthouse required only \$4000 to complete the acquisition of their computer system.
- moved to accept the proposed budget as amended Hinds/Nowak/carried .

18. Other Business

- i) To shorten the AGM, Branch reports will be tabled and only highlights will be mentioned at the meeting.
- ii) Central Branch advises that they will be ordering CHA hats, jackets and ties.

<p>iii) The position of National Secretary will be filled by Rick Mehlman, Ottawa Branch. Ray Chapeskie remains the National Treasurer.</p> <p>iv) Central Branch raised the issue of removing the subscription rate for Lighthouse, to be replaced only by a membership. This will greatly reduce the bookkeeping work they do on behalf of Lighthouse. However, after discussion it was agreed that for financial and other reasons the CHA will retain the option of subscription only fees.</p>	<p>v) Ottawa Branch has been offered a 'corporate' rate at a small hotel chain. The Directors agreed that acceptance of such offers should be decided at the Branch level.</p> <p>vi) Frank Colton extended an invitation to all CHA members to attend the Prairie Schooner reception to be held May 8, 1630 to 2100, at the Calgary Chamber of Congress on the occasion of the CISM Conference.</p> <p>At 1835 a motion was made to adjourn the meeting. Nowak/Pugach/carried</p>
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Minutes (condensed) of the 1991 Canadian Hydrographic Association Annual General Meeting

Rimouski, Québec
April 17, 1991

Dave Pugh, CHA National President, called the meeting to order at 1710. He welcomed everyone to the 1991 Annual General Meeting (AGM). Dave expressed his gratitude to the Conference Organizing Committee for arrangements made to accommodate this meeting. It should also be noted that the ten minute delay in calling the meeting to order was to allow any individuals attending the numerous technical demonstrations a chance to arrive.

A motion was made to accept the agenda. Nowak/Labrecque/carried.

Agenda Items

1. Directors Reports

The Branches presented their Branch reports to the National President. Reports absent: Atlantic Branch, Newfoundland Branch. The National President thanked the Directors in attendance for their reports.

2. Minutes of the 1990 Annual General Meeting (AGM)

The Minutes of the 1990 AGM held on May 24, 1990 at the Chateau Laurier Hotel in Ottawa had been distributed earlier to the Branches and were also available at this meeting. A motion to accept the Minutes as presented was moved. Labrecque/Colton/carried.

Action Items

Item 6: Professional Auditor

The National President reported that a professional audit is not a requirement of the CHA By-laws and that CIDA is satisfied with our present accounting procedures.

3. 1990 CHA Financial Statement

A motion was made for acceptance of the 1990 CHA financial statement. Nowak/Labrecque/carried.

4. 1991 Financial Auditors

A motion was made to accept the appointment of Sheila Acheson and Rick Mehlman as auditors for the year 1991. Pugh/Nowak/carried.

5. 1992 National Dues

A motion was made to retain the 1992 National Dues at \$15.00 (Canadian) Pugh/Nowak/carried.

In discussion Carol Nowak pointed out that according to Section 8-a of the CHA By-laws a vote is only required if a change is being made to the fee structure.

6. Other Business

- i) The 1991 National Budget was presented and accepted. Labrecque/Colton/carried.
- ii) The National President made a formal presentation of an Honorary Membership to Mr. George Macdonald in the form of a stylized CHA certificate and presented a gift of a book on the Lakes of Muskoka. As Mr. Macdonald was unable to be in attendance, Sean Hinds, Vice-President of Central Branch, accepted. (see *Lighthouse Edition #43*, page 47)

7. Lighthouse Awards

The National President announced the 1990 Lighthouse Awards; for best non-technical article - "A Cartographic Tale a Half-Century Old" by Mr. W. Covey (Edition #41) and for best technical article "Marine GPS Using Code and Carrier in a Multipath Environment" by Mr. G. Lachapelle, Mr. W. Falkenberg, Mr. D. Neufeldt and Mr. P. Kielland (Edition #41)

The meeting was adjourned at 1730. Doucet/Pugach/carried

CHA News / Nouvelles de l'ACH

International Members

Membership in the Canadian Hydrographic Association is not limited to Canadian residents but is available to anyone who is interested in maintaining a link with hydrography in Canada. People who live or work in other countries or who are not conveniently located to existing CHA Branches may become International Members with the same rights and privileges as other members.

As authorized under the CHA by-laws, Central Branch administers the International membership. Under this arrangement we endeavour to ensure that all International Members receive the same level of service. International Members may, however, request the Branch of their choice.

The cost of International Membership per year is \$30.00 (Canadian) or the equivalent in Sterling or U.S. currency. This includes a personal Membership Certificate suitable for framing along with annual update seals, and as well as two editions of Lighthouse annually.

Each International Member also receives the Central Branch NewsLetter. This helps our far-flung members keep in touch between issues of our journal and also offers a forum for members to share views and concerns.

Commander Larry Robbins of the Royal New Zealand Navy (RNZN) is a foreign correspondent for the Central Branch NewsLetter and Lighthouse. Commander Robbins has recently returned to New Zealand from assignment in the UK and would like to continue to pass on news of International Members. Please drop snippets of news to him at this new address:

Larry Robbins
1 Varlene Terrace,
Forrest Hill,
Auckland 1310,
New Zealand

We would like to welcome our new International Members:

Peter Barr - Barrmarine, Halifax, Nova Scotia;

Geom. Giuseppe Biscontin - hydrographer/surveyor with Civil Engineering, Venice, Italy;

Fook Seng Kok - hydrographer from Kuala Lumpur, Malaysia; and

Austin Kovacs - a Research Civil Engineer with the US Army Cold Regions Research and Engineering Laboratory of Hanover, New Hampshire.

News of note:

Larry Robbins is hosting a CHA social at the Second Australasian Hydrographic Symposium in Sydney, December 9-12, 1991. Central Branch and National are sponsoring this event. All CHA Members and guests are welcome. Larry will have copies of Lighthouse and our brochure on hand.

Lt. Cdr. A.R.M. Al shehri has returned to Saudi Arabia after spending a year in Taiwan.

Section du Québec

Le 3 avril, la Section a inauguré officiellement son magasin de cartes et publications marines. Cela s'est fait après la conférence présentée par monsieur Léo Larrivée, portant sur les projections cartographiques, entre autre la projection Larrivée. L'évènement fût couvert par le journal local et une entrevue radiophonique fût réalisée quelques jours plus tard.

Au cours de l'été, nous avons ajouté à notre magasin la vente de cartes topographiques afin de compléter la gamme des produits offerts.

Lors de la Conférence hydrographique du Canada, tenue du 15 au 19 avril, notre Section, via son kiosque, représentait l'Association. Ce fût très positif car plusieurs personnes se sont arrêtées et ont posé des questions au sujet de celles-ci et de leurs buts.

La Section a participé, encore une fois cette année, à l'Expo-Nature de Rimouski du 25 au 28 avril. Avec la vente de cartes marines sur les lieux, nous avons pu rejoindre un plus grand nombre de personnes et y faire la promotion de l'Association.

Au cours de l'été Dany Verreault, étudiant engagé sous le programme DÉFI91, s'est joint à Martin Massé, agent administratif engagé sous le programme PDE, pour promouvoir notre magasin et réaliser un sondage auprès du public sur le niveau de connaissance de l'existence de notre Section. Grâce à leur bon travail, nous avons pu obtenir une juste idée de la perception du public. Nous pouvons maintenant orienter nos efforts sur les points faibles tout en conservant les points forts. Avec la clôture de ces derniers programmes, ces deux employés ont dû nous quitter à la fin d'août.

Sylvain Gagné, graphiste engagé sous le programme PAIE, travaille depuis le début octobre à la confection d'un journal de bord que la Section fera paraître pour la prochaine saison de navigation. On y retrouvera une panoplie de renseignements utiles pour les navigateurs dont l'accent sera mis sur la sécurité en général. Un agent de marketing sera engagé pour faire la recherche des publicitaires potentiels et la présentation du journal à ceux-ci. Ce nouveau produit permettra à la Section d'être présente dans tous les bateaux et ce sera un autre moyen de mise en valeur pour l'Association.

Ottawa Branch

Dave Pugh has just returned from a seven week assignment at the University Technology Malaysia in Johor Baru, where he gave a course on hydrographic surveying. This course was part of the CHA-CIDA Malaysia Project.

Ross Douglas has completed his term as President of the Canadian Institute of Surveying and Mapping; he now serves on its Board of Directors as Past-President.

The Branch held its long awaited membership drive and bottle draw. This year's winners were; Mark Weber (new member), and Ilona Hilbert-Mullen and Tom Cassidy (renewing members).

Congratulations to Leah and Mike Donnelly on the birth of their son, Sean Michael Patrick on St. Patrick's Day.

Once again this year Ilona Hilbert-Mullen organized the successful CHA "Pre-Canada Day Picnic". Without Ilona's efforts there would be no picnic.

Roger Landriault presented two lunch time video seminars, one was "Explorers of the Holy Land" which discussed the 19th century European mapping programs in the region and the second video, "Jerusalem Discovery (Secrets of Jerusalem)" introduced us to some of the archaeological projects in this famous city.

Dave Gray presented an entertaining and informative seminar, "Battle Royale", on his personal observations as a member of the Canadian delegation at the recent Canada-France St-Pierre and Miquelon boundary case in New York City.

Two long time members of Ottawa Branch retired from the CHS in 1991. Clay Fulford was A/Chief, Quality Control when he retired after over 35 years of service. Bill Gould retired after 20 years as the Systems Maintenance Officer in the Cartographic Development Unit. We wish them every happiness and hope that they will still keep in touch.

We are fortunate to have two very active CHA members join us from other Branches. Ray Chapeskie, the National Treasurer has transferred to Ottawa from Sidney, B.C., to assume the position of Chief, Quality Control, with the CHS and Boyd Thorson has joined us from Burlington. Boyd is now the Chief, Chart Maintenance & Distribution, with the CHS.

It is with regret that we mention the death of Harvey Blandford this past year. Harvey was the CHS Director of Nautical Publications when he retired in the early 1980's and in spite of his very active participation in the Federal Superannuates Association he still found time to maintain his contact with the CHA.

Central Branch

Central Branch has had a successful and eventful year. As of press time elections for the 1992 executive are underway. A sincere thanks to the 1991 executive for their effort in making this year an exciting one, and to Larry Robbins (RNZN) our International Correspondent.

The membership committee reports our 1991 membership at 39 In-house Members, 36 Out-house Members and three Sustaining Members. New Central Branch members are:

Andrew Leyzack - a new hydrographer with the Canadian Hydrographic Service (CHS) in Burlington, transferred from International to Central Branch.

George Fitzner - project engineer with Braun Consulting Engineers, Guelph.

Rodney Rielly - a Mapping Technician with the Government of Ontario.

Jennifer Thiel - a new hydrographer with the CHS in Burlington and a graduate of Survey Science at Erindale College, University of Toronto.

Paola Travaglini - a new hydrographer with the CHS in Burlington and a graduate of Survey Science at Erindale College, University of Toronto.

EG&G Marine Instruments of Massachusetts, USA is a new Sustaining Member.

Wedding Bells: Jennifer Thiel is engaged to marry Kent Campbell on September 5, 1992, in Mississauga. Kent is in his fourth year of Survey Science at Erindale College, University of Toronto. Congratulations!!!

Congratulations to Mike Bennett on the completion of his Canada Lands Surveyors Commission.

At our meeting on May 16, 1991 Central Branch decided to support the registration desk at the 1993 CHS/CISM Conference being held at the Royal York in Toronto.

Also at the October 16 meeting, the Ad Hoc committee looking into the building of a 1783 survey launch replica, presented their recommendations and the ad hoc committee having fulfilled its' mandate, was disbanded. The 1992 executive will now establish a working committee to organize the building of the historic survey launch for the 1993 Conference.

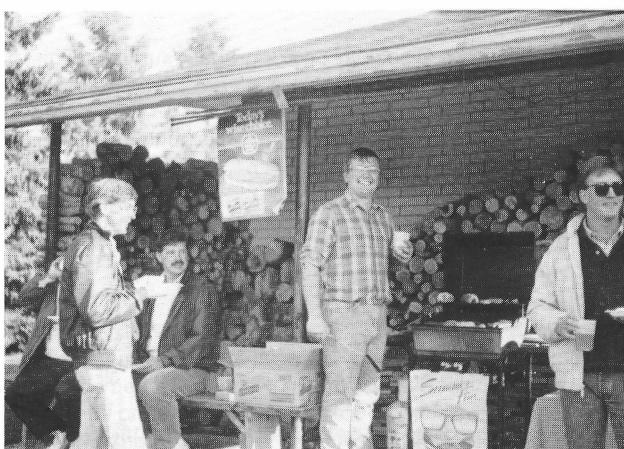
Central Branch was sponsoring a Maritime Boundary Seminar at Erindale College in November with the Association of Ontario Land Surveyors but unfortunately the seminar was cancelled due to insufficient enrolment.

This years winner of the Gerry Wade Essay Award is Peter Knight, a Masters Student at Erindale College, University of Toronto who wrote on "Land Settlements and Aboriginal Self-government". Peter is studying in the field of water boundaries and aspects of surveying relating to Native Lands.

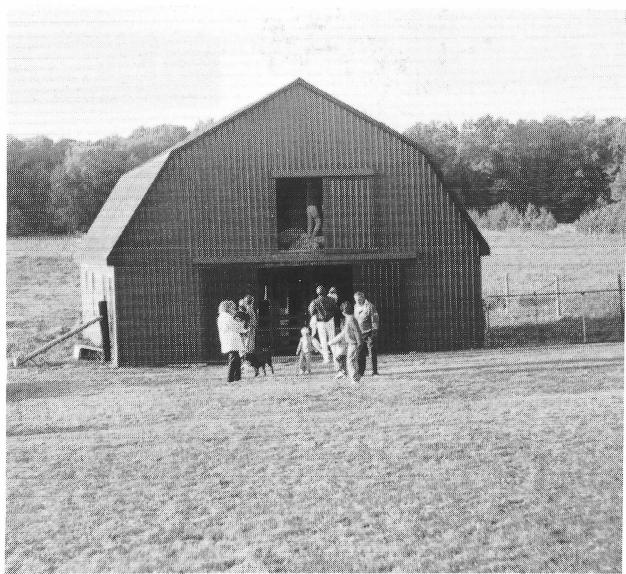
Also at the October 16 meeting, Peter Englebert, a Marine Archaeologist with the Ontario Ministry of Culture, presented a slide show covering past and present projects on the Great Lakes. We wish to thank our guest speakers and home hosts of our 1991 evening meetings.

By September 13 many CHS members had returned from field assignments after another safe and successful field season.

Our 5th Annual Central Branch Barbecue was hosted by Bruce and JoAnne Richards on September 21st. The barbecue was a great success and a genuine family affair with more than a dozen youngsters in attendance. Our thanks to sponsor Maple Leaf Foods (formerly Canada Packers) for their support.



Central Branch Barbecue: Ray Treciokas (hidden), Keith Weaver, Al Koudys, Bruce Richards, Andrew Leyzack



Central Branch Barbecue: Barns always seem to act as a magnet to the kids! (and a few adults too!)



Central Branch Barbecue: Helen Fuchs-Trapp (hidden), Anna Power, Brian Trapp, Mathew Hinds, Brad Tinney

The Central Branch Annual General Meeting and dinner will be held December 5, 1991 at the Mimico Cruising Club. Our National President, Dave Pugh will speak on his trip to Malaysia and the 1992 Branch Executive will be introduced.

An upcoming event is the 21st Annual H₂O Bonspiel being held at the Grimsby Curling Club, February 16, 1992. If you would like to play or enter a team please contact Brian Power at (416) 336-4847.

Captain Vancouver Branch

Southern British Columbia was hit by one of the worst summers on record, promptly followed by one of the best autumns on record.

Our meeting during the summer was one of a technical nature with K. T. Cheang of CANSEL Survey Equipment demonstrating the Trimble Navigation hand-held G.P.S. receiver, "TRANSPAK".

We had a social meeting in October where we talked about our favourite subject . . . how to increase membership.

Our AGM is scheduled for December 11, 1991.

One of our members, Hugh Fraser is travelling to South Africa for a month over the Christmas holidays.

V. P. George Pugach attended the Oceans '91 conference in Honolulu, Hawaii October 1 - 3. He reports that the range of topics was very diverse, but that the general theme was "Ocean Technologies & Opportunities In The Pacific For The 90's".

Persons interested in having a copy of the program are invited to contact George at (604) 732 - 1219. He has a copy of all papers presented and has offered to distribute them upon request.

After the conference, George spent a week on Maui, windsurfing of course on Maalea Bay where he found flat water and 25 knot winds!

Pacific Branch

Congratulations to Rob Hare who has graduated from the University of Calgary with a Bachelor of Science, in Engineering Surveying (with distinction). As well as graduating with top marks in surveying from U. of C. he also received a medal from the Engineering Institute of Canada and a Gold Medal from the Association of Professional Engineers, Geologists and Geophysicists of Alberta.

Congratulations to Ken Halcro and George Schlagintweit who have recently received their Canada Land Surveyor Commissions.

Congratulations also to Ken Holman and Ron Bell who after attending a seminar in Scarborough, Ontario have received an Ontario Land Surveyor, Certificate of Registration, in Hydrography.

There were three golf tournaments this past year, organized by Ardene Philp. Royal Oak, Prospect Lake and Arbutus Ridge. At the 21st Annual at Prospect Lake, Cathy Sargent won a special prize for the wildest shot when she broke a window on her brand new van. Al Douglas and Mike Foreman had the lowest score of 36. Sue Hinds has returned after a few years' absence to reclaim her crown of "Duffer".

Willie and Marg Rapatz played host and guide to Mike Bolton, Barb Danbrook, Ken Holman, and Carol Oakfield on their trip to Europe. The travelling sixsome visited the countries of Germany, Liechtenstein, Italy, Hungary, Switzerland and of course, Austria.

Art Lyon of CHS Cartography purchased a trampoline for his kids and felt he deserved a gift for himself, so he bought a hottub. The party date is to be announced later.

Doug Popejoy is going to have to brush up his cooking skills, since his wife Verna has returned to UVIC to complete her nursing degree.

Bill Hinds of Institute Electronics is expected to return to work in December.

Curling is underway again this year with two teams in the men's league; Halcro, Larkin, G. Richardson and D. Richardson and Bolton, Huggett, Rapatz and D. Richardson. In the mixed league we have the Bolton rink of Danbrook, Halcro and Nowak. There are also the rinks of Rapatz and Larkin.



Lighthouse

Journal of the Canadian Hydrographic Association
Revue de l'Association canadienne d'hydrographie

LIGHTHOUSE originally began as an internal newsletter of the Canadian Hydrographers' Association (CHA) in the winter of 1969. It was conceived as a means of stimulating discussion between the branches of CHA. Over the years, **LIGHTHOUSE** has become Canada's national hydrographic journal. It still remains faithful to

the original goal of providing a mix of technical, historical and social information of interest to those associated with hydrography in Canada. But its circulation has expanded to include over 1,000 individuals, companies and hydrographic organizations in Canada and around the world!

1991 Advertising Rates

POSITIONING

The acceptance and positioning of advertising material is under the sole jurisdiction of the publisher. However, requests for a specified position will be considered if the position premium of \$25 has been included in the insertion order.

MECHANICAL REQUIREMENTS

Advertising material must be supplied by the closing dates as camera-ready copy or film negatives (Colour ads must be film negatives). Copy preparation, including colour, bleed and photos will be charged at the printer's cost plus 10%. Proofs should be furnished with all ads.

Single-page inserts will be charged at a full page body rate. Material must be supplied by the client. Page size must conform to the single page insert trim size (below).

PUBLICATION SIZE

(Width x Length)

Publication Trim Size: 8.5" x 11.0"
Live Copy Area: 7" x 10"
Bleed Size: 8.75" x 11.25"
Single Page Insert Trim Size: 8.25" x 10.75"

Standard Ad Sizes:

Full Page:	7" x 10"
1/2 Page:	6.875" x 4.75"
or:	3.375" x 9.75"

CLOSING DATES

LIGHTHOUSE is published twice yearly in Spring and Fall. The closing dates are **March 15th** and **October 15th** respectively.

PRINTING

Offset screened at 133 lines per inch.

RATES

All rates are quoted in Canadian Funds. Sustaining members receive a 10% discount.

	B & W	Colour
Outside Back Cover	NA	Spot* Four \$1025
Inside Cover	\$300	\$400 \$825
Body, Full Page	\$275	\$375 \$675
Half Page	\$200	\$300 \$675
Single-page Insert	\$275	\$375 \$675
Professional Card	\$125	\$225 NA

*Spot Colour (Orange, Red or Blue)

RATE PROTECTION

Advertisers will be protected at their contract rates for the term of their contracts up to one year. Cancellations are not accepted after closing date.

All advertising material should be directed to:

Mr. K. Weaver
Advertising Manager, **LIGHTHOUSE**
867 Lakeshore Road
Burlington, Ontario
CANADA L7R 4A6

Telephone: (416) 336-4538
Fax: (416) 336-4819



Lighthouse

Revue de l'Association canadienne d'hydrographie
Journal of the Canadian Hydrographic Association

Originalement à l'hiver 1969, **LIGHTHOUSE** était le journal de l'Association canadienne des hydrographes (ACH). Il représentait un moyen pour stimuler les discussions entre les Sections de l'ACH. De par les années, **LIGHTHOUSE** est devenue la revue hydrographique nationale du Canada. Elle reste fidèle à

son but original de fournir une source d'information technique, historique et sociale à ceux qui s'intéressent à l'hydrographie au Canada. Son tirage a augmenté pour inclure au-delà de 1000 membres, compagnies et organisations hydrographiques au Canada et dans le monde entier.

Tarifs publicitaires 1991

EMPLACEMENTS

L'approbation et l'emplacement de l'annonce sont à la discrétion de l'éditeur. Cependant, toute demande d'emplacement spécifique sera considérée si une prime de 25 \$ est ajoutée à la demande de parution.

EXIGENCES MÉCANIQUES

L'annonce publicitaire doit être un prêt à photographier ou sur film négatif (les couleurs supplémentaires doivent être sur film négatif) et être fournie aux dates de tombée. La préparation de copie couleur, à fond perdu et de photos sera chargée au tarif de l'imprimeur plus 10 %. Les épreuves devraient être fournies avec tous les suppléments.

Les insertions d'une page seront chargées au tarif d'une pleine page. Le matériel devra être fourni par le client.

DIMENSIONS DE LA PUBLICITÉ

	(Hauteur)	(Largeur)
Dimension de la revue:	8.5"	x 11.0"
Encart libre:	7.0"	x 10.0"
Publicité à fond perdu:	8.75"	x 11.25"
Insertion d'une page:	8.25"	x 10.75"

Grandeur standards des suppléments:

Pleine page:	7.0"	x 10.0"
Demie-page:	6.875"	x 4.75"
ou:	3.375"	x 9.75"

DATE DE TOMBÉE

LIGHTHOUSE est publiée deux fois par année, au printemps et à l'automne. Les dates de tombée sont le **15 mars** et le **15 octobre** respectivement.

IMPRESSION

Internégatif tramé à 133 lignes au pouce.

TARIFS

Tous les tarifs sont en devises canadiennes. Les membres de soutien ont droit à un rabais de 10 %.

	N & B	Couleur
	Une*	Quatre
Couverture arrière	SO	SO 1025
Couverture intérieure	300	400 825
Pleine page	275	375 675
Demie-page	200	300 675
Insertion d'une page	275	375 675
Carte d'affaire	125	225 SO

*Une couleur (Orange, rouge ou bleu)

Les tarifs sont assurés aux termes des contrats publicitaires jusqu'à concurrence d'un an. Les annulations ne sont pas acceptées après la date de tombée.

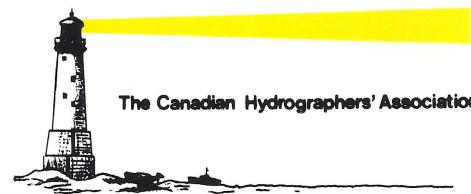
Tout le matériel publicitaire doit être acheminé à:

Monsieur K. Weaver
Directeur de la publicité
LIGHTHOUSE
867 Lakeshore Road
Burlington, Ontario
CANADA L7R 4A6
Téléphone: (416) 336-4538
Télécopieur: (416) 336-4819

1966 - 1991

Canadian Hydrographic Association

25th Anniversary



The Canadian Hydrographers' Association

