Practical initiatives to improve hydrography and nautical cartography in Antarctica with the support of IAATO.

1. “The Final Objective”??? To avoid risks.
2. “The Problem”???

   !! WHAT to DO??? and HOW???

3. “Ships of Opportunity”.
4. IAATO Ships collecting data.

   + With a Hydro-Team onboard.

   + On its own.
5. Conclusions and Recommendations.

AVOIDING THE RISK IN ANTARCTIC WATERS

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Last Updated: Saturday, 24 November 2007, 00:44 GMT

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Stricken Antarctic ship evacuated

More than 150 passengers and crew have been rescued from a stricken tourist ship after it hit ice off Antarctica.

The M/S Explorer is now lying on its side close to the South Shetland Islands, in the Antarctic Ocean.

Gap Adventures, which owns the ship, said 91 passengers, nine guides and 54 crew members were safely evacuated to lifeboats and ther

After staying the night at a bas expected to fly to Chile's mainla

Gap Adventures said 23 Britons, Americans and 10 Canadians we

The remaining nationalities of th Danish, Swiss, Belgian, Japanes Chinese, said the Toronto-base

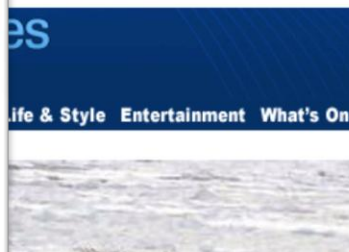
BBC News | Enlarged Image - Windows Internet Explorer proporcionado por Windows uE

http://news.bbc.co.uk/2/shared/spl/hi/pop_ups/07/americas_enl_1195852937/html/1.stm

BBC NEWS

The M/S Explorer cruise ship sinks hours after hitting an iceberg off the coast of the Antarctic.
Photo: *Reuters*

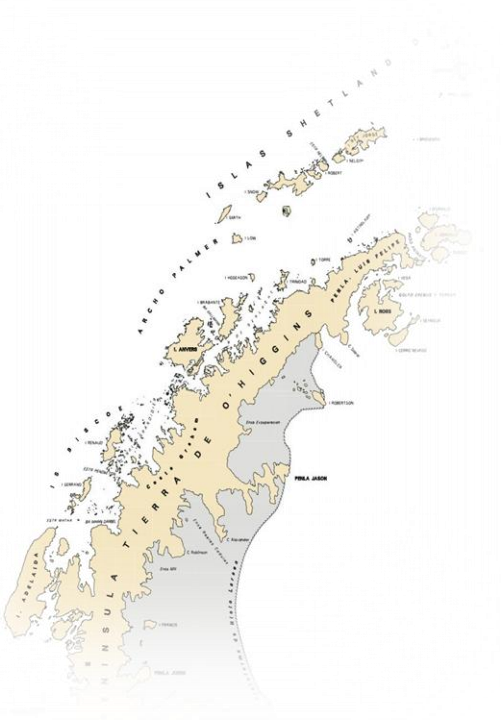
Cruise ship sinks off Antarctica



The Problem

The rate of the hydrographic data collection does not satisfy the expectations of availability of new reliable INT Charts of Antarctic waters.

The problem is not chart planning it is lack of hydrographic information.



The HCA at work with international partners such as IAATO

Looking for the solution using Ships of Opportunity (S.O.O.)

They are vessels conducting other missions in Antarctic waters that being fitted with standard modern navigational equipment could collect hydrographic data, mainly bathymetry of great utility to update or complement current nautical charts.

Cons Asociated to S.O.O.

- Some Captains are concerned that their watch keepers are not concentrating on their navigational tasks when collecting the data.

- Scientific data collection might clash with hydrographic data collection. Different settings and parameters for each?

- Some troubles getting marine surveyors away from their normal duties to do what essentially private work.

Pros Asociated to S.O.O.

- Extra data gathering potential by Captains of vessels that are experienced and are aware of the inherent dangers the area contains.

- Antarctic INT Charts can be updated for the good of everybody.

- With IHB guidance data can be collected to strict guidelines and thus negating the possibility of unusable rendered data.

- Using HCA/IHO survey plans considering the support of IAATO it will be possible to get the bathymetric data of the high priority areas.

Modes of Operation Associated to S.O.O.

- **IAATO Ships to embark a Hydro Team.**
  advance coordination/conditions
- **IAATO Ships' Crew could be trained for data gathering. (Port call and HO support)**

This will increase the potential speed of data gathering, provided that ships' equipment is used or portable "brought in" survey equipment in available.

As coordination is key for success, better start with second option.

IHO COLLECTION AND RENDERING OF HYDROGRAPHIC DATA FORM

It was conceived 2004/2009 by the Hydrographic Commission on Antarctica, using views, comments and observations from Navies, scientific community and IAATO Captains.

!!!!! BUT CAN BE IMPROVED, IF NECESSARY!!!

ANNEX "A"
FORM FOR RENDERING HYDROGRAPHIC DATA

To be returned to: Chairman of IHO HCA Survey Programme WG, Mr. Andrew C. WILLETT, Chart Branch 9 – Antarctica, United Kingdom Hydrographic Office, Taunton, Somerset TA1 2DN, UK - andy.willett@ukho.gov.uk - Fax: +44 (0)1823 284077

ANTARCTIC VESSELS

General Area:	Antarctic Peninsula		South Georgia		South Shetlands		
	South Orkneys		Other - please state				
Location:							
Vessel Name:					Draught	.....metres	
Captain:			Date				
Data format:	Chart/Chart cutting		Plotting sheet		Tracing		
	UKHO collector		Floppy disc/CD rom		Photographs		
	Other - please state						
See Note 1							
Position fixing:	GPS		Visual/radar		Other – please state		
	Model of receiver						
	Datum setting ie.WGS84						
	Remarks: eg. Plotting errors between GPS and chart (note 2.3)						
See Note 2	Calibration date:						
Echo sounder:	Make		Name/type				

Scale setting: | Depths recorded from: | Sea surface | | Under keel | |

.....Metres per second

Yes | No

Z offset = Above (-) or Below(+) from GPS receiver

.....Metres

No

Close-up | Remarks

Remarks

7966 CAPE TOWN
SOUTH AFRICA
Ph: +27 21 787 2408
Fax: +27 21 787 2228

4. Name, Model and frequency in KHz of Depth sounder used for measuring water depths.
5. Port of Departure/date of departure
6. Port of Arrival/date of arrival
Water depth data should include data as follows:
Year, month, day, hour, minute, latitude, longitude and bathymetric depth (preferably in units of meters).
The preferred exchange format for data submission is MGD77. Information about MGD77 can

ANNEX "B"

GUIDANCE DOCUMENT
FOR
COLLECTION OF HYDROGRAPHIC DATA
BY
SHIPS OF OPPORTUNITY
OPERATING IN THE SOUTHERN OCEAN/ANTARCTIC REGION

Purpose: This document is to describe how Ships of Opportunity, e.g., cruise ships, scientific vessels and commercial vessels on transit, might best provide water depth information for use by scientists and nautical charting authorities.

Background: Official government Hydrographic Offices that conduct systematic hydrographic surveys to International Hydrographic Organization standards for use in compiling nautical charts for support of safe ship navigation, exercise great care in collection of data. They conduct sonar investigations of the entire chart area and for waters less than 200-meters water depth install tide gauges around the survey area to record actual water levels for the time of survey and often conduct side scan surveys to identify wrecks and obstructions that might lie within critical navigation areas.

Hydrographic Offices do not want to imply that areas are safe for navigation by building charts with less than IHO quality data, however, data collection by ships operating in waters deeper than 200 meters, where real-time tide correction is not an issue, or for the reporting of significant hazards in areas where no significant data exist, is an important factor in maritime safety. These data from Ships of Opportunity are of interest to nautical chart compilers. Little data exists for the Southern Ocean/Antarctic region and acquisition of water depth data by Ships of Opportunity is needed in that the resources to conduct IHO quality systematic surveys are extremely limited.

Observations Needed by Ships of Opportunity: Legacy track-line data typically was collected by recording dead reckoning or LORAN positions for water depth observations on perhaps a 15-minute interval; this was a manual task for the ship navigator. With the advent of digital chart navigation systems, integrated with digital depth recorders and GPS positioning, observations by Ships of Opportunity can be automated through integration of a large hard drive and a DVD recorder to collect/disseminate important Ship of Opportunity information at a very marginal added cost. With an internet connection, the data can be submitted electronically.

What Should be Collected and in What Format?:
Each data set needs to include "header information" to identify the vessel and systems used for data acquisition as follows:
1. Name of Vessel
2. Name and Model of GPS Navigation System (Datum must be WGS-84)
3. Draft of ship (Draft at beginning of cruise and end of cruise, nearest to depth transducer location, if possible)

Conclusions and Recommendations

- It is a fact that the Antarctic is still largely under charted and any support to improve the situation is welcome.
- We invite IAATO to continue and reinforce the close relationship with IHO/HCA.
- We invite IAATO to liaise directly or through the HCA, with HOs that could provide training to the crew on the procedure to gather and render hydro data to INT Chart producer nations.
- Whenever the condition allows it, we invite IAATO to consider embarking a Hydro-Team. Timely coordination is envisaged.

- IAATO's views are always welcome..... THANKS FOR YOUR ATTENTION