

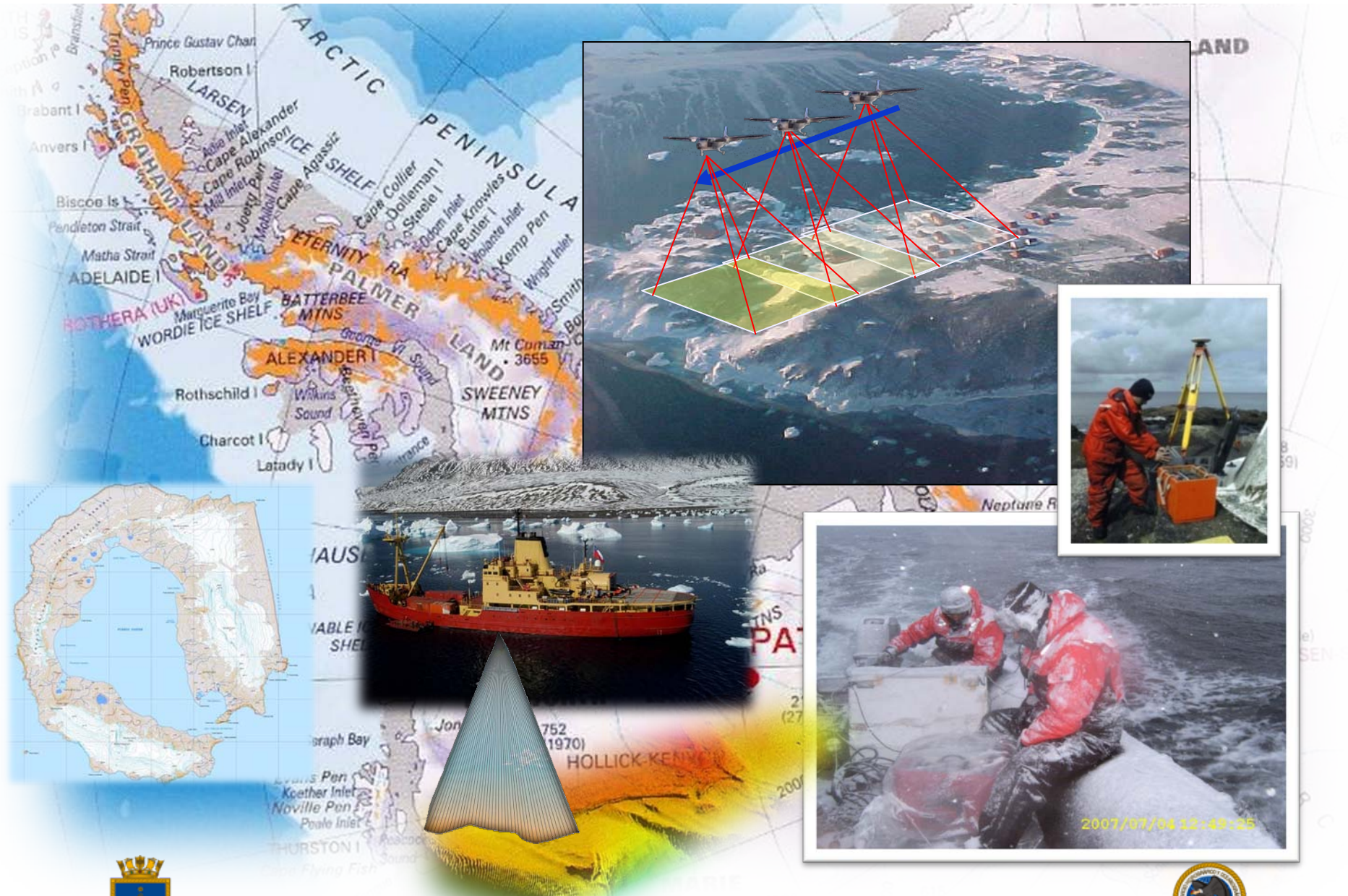


PRACTICAL INITIATIVES TO IMPROVE HYDROGRAPHY AND NAUTICAL CARTOGRAPHY IN ANTARCTICA

SERVICIO HIDROGRÁFICO Y OCEANOGRÁFICO DE LA ARMADA DE CHILE

Siempre queda mucho por hacer...

THE IMPORTANCE OF THE ROLE OF HYDROGRAPHY IN ANTARCTICA



AVOIDING THE RISK IN ANTARCTIC WATERS



BBC NEWS | Watch One-Minute World News | News services: Your news when you want it

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 then to the icebreaker.

After staying the night at a base, the ship is expected to fly to Chile's mainland.

Gap Adventures said 23 Britons, 10 Americans and 10 Canadians were on board.

The remaining nationalities of the ship's passengers include Danish, Swiss, Belgian, Japanese, Chinese, said the Toronto-based company.

A screenshot of a BBC News article from November 24, 2007. The article is titled "Stricken Antarctic ship evacuated" and reports that more than 150 passengers and crew were rescued from the M/S Explorer after it hit ice off Antarctica. The article includes a sub-headline "More than 150 passengers and crew have been rescued from a stricken tourist ship after it hit ice off Antarctica." and several paragraphs of text. A large image of the ship Explorer on its side in the ice is visible in the background of the article.

Life & Style Entertainment What's On Business Tech Travel



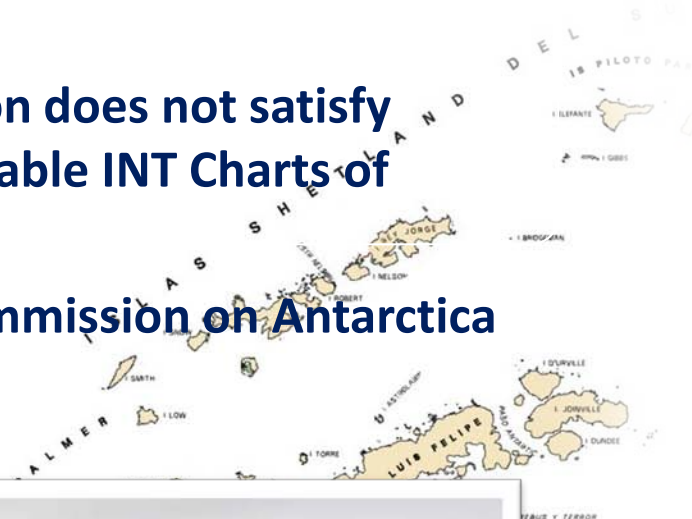
The M/S Explorer cruise ship sinks hours after hitting an iceberg off the coast of the Antarctic.
Photo: Reuters



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 Contribution of the The Hydrographic Commission on Antarctica





SUBMENU

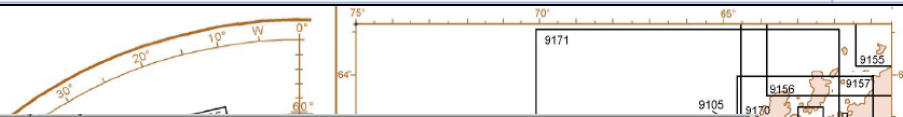
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- ▶ IRCC
- ▶ FC
- ▶ S-23WG
- ▶ SRWG

Past Meetings

8th Meeting - Niterói, Rio de Janeiro, Brazil (6 - 8 October 2008)

- 7th
- 6th
- 5th



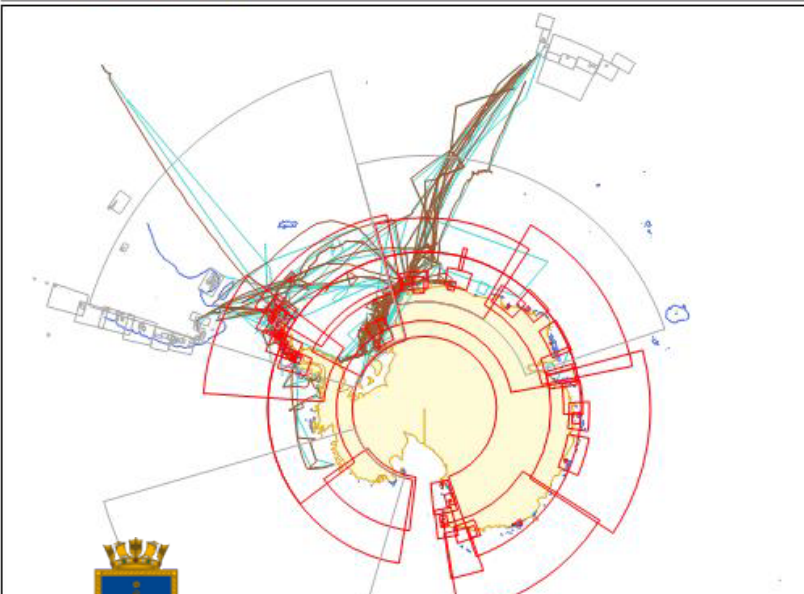
Documents

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INT Charts View

Hydrographic Committee on Antarctica Catalogue

Antarctic - INT Charts, ENC's and Surveys



Find

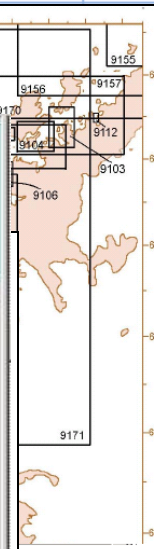
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Within: ADMIN_NAME

Go

- Layers**
- ENC_June2007
 - INTCharts
 - Australia AHO
 - Germany - AWI
 - Data Provided by MS
 - 200m Depth Contour
 - Antarctic Continent
- Apply

Legend



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Status of the International Antarctic Charts (Until Dec 2009)

	Total	%
INT Antarctic	100	100
Published	67	67
Pending	33	33

	Total	Year
Planned to be Produced	14	2010 - 2015
Not yet considered in planning	19	/



The Problem

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

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



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 Associated 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.





IHO Collection and Rendering of Hydrographic Data Form

(To be used by Ships of Opportunity-SOO in Antarctica)

DEVELOPMENT OF THE FORM

Expressed by Captains about the need for up-to-date and modern nautical charts.

HCA developed the Form "Collection and Rendering of Hydrographic Data".

Approved the recommendations and welcomed the procedure.

Suggested that "Specifications and Guidelines for conducting hydrographic surveys using SOO in Antarctica" be developed.

Review and update the existing guidelines to conduct hydrographic surveys using SOO.

HCA 2004

HCA 2005

2005

HCA 2008

HCA 2009



ANNEX "A"
FORM FOR RENDERING HYDROGRAPHIC DATA

To be returned to: Chairman of IHO HCA Survey Programme WGS, 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:			Draughtmetres
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 Sea surface Under keel

.....Metres per second

Yes No

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

.....Metres

No

stics? checked: Y or Remarks

Remarks

ption and remarks

Close-up 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

Maritime)
City (AMSA)

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 acquisition as follows:

- Name of Vessel
- Type and Model of GPS Navigation System (Datum must be WGS-84)

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Antarctic Region.

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Director, Hydrographic and Oceanographic Service of

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IHO Collection and Rendering of Hydrographic Data Form
(To be used by Ships of Opportunity-SOO³ in Antarctica)

DEVELOPMENT OF THE FORM PROCEDURE FOLLOWED

1. To analyze the problem and then, looking for the solution.
2. To give a close examination to the document submitted by USA at the HCA 8.
3. To compare the document submitted by USA with the Marine Geophysical Data Exchange Format.



Note 1

Observations: Proposed amendments to the existing text of the Sailing Directions and/or Antarctic Pilot are always welcome. Comments or remarks that the mariner thinks would improve charting coverage or the Sailing Directions is always appreciated by the IHO. Examples of these include transit notes and tracings or chart cuttings delineating areas of kelp. Constructive comments on chart coverage or the lack of it are useful for the future planning of charts and surveying.

Note 2

4. Visual fixes: To ensure the greatest accuracy, a fix defined by compass bearings or ranges, should consist if possible of more than two observations. These observations should be taken as nearly as possible simultaneously, carefully recorded at the time and listed in the report with any corrections that have been applied to them.
5. GPS positions: The report should state which datum was set on the receiver outputting positions, (e.g. WGS84 Datum) and/or whether any shifts quoted on the chart have been applied.
6. Observed differences: Mariners are requested to report observed differences between positions referred to chart system and those from GPS, referenced to WGS84 Datum.

Note 3

9. The speed of sound in sea water in meters per second equivalent to the stylus speed.
10. Whether soundings have been corrected from *Echo-sounding correction tables*.
11. Zero Scale Setting. That is whether depths are recorded from the sea surface or from under the keel.
12. Where the displacement of the transducers from the position of the GPS receiver or other instrument used to fix is appreciable, the amount of this displacement and whether allowance has been made for it should be reported.

Note 4

If an echo trace is rendered it should be marked as follows:

7. A line drawn across it each time a fix is taken, and at regular intervals.
8. The times of each fix and alteration of course inserted, and times of interval marks at not more than 15 minute intervals.
9. The position of each fix and other recorded events inserted where possible, unless a GPS printout or separate list of times and corresponding positions is enclosed with the report.
10. The recorded depths of all peak soundings inserted.
11. The limits of the phase or scale change in which the set is running marked, noting particularly when a change is made.
12. Name of ship, date, zone time used and scale reading of the shoaling edge of the transmission line should be marked on the trace. (diagram 8.14.in NP100)

Note 5

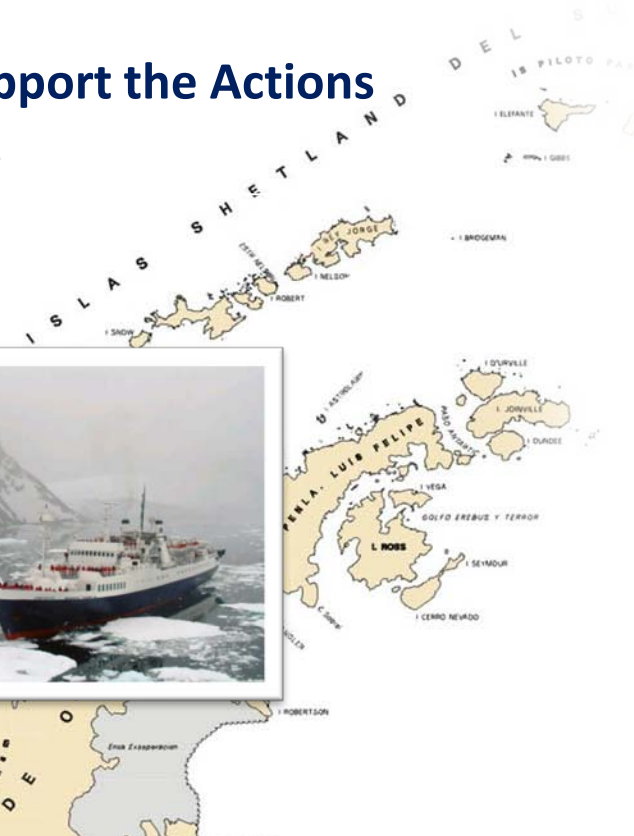
Photographs should be obtained whenever possible and where such view would help the mariner. An imperfect photograph, correctly annotated, can often be used to produce a view of considerable help to the mariner.

The various types of views and examples are given the following names:

5. Panoramic. A composite view made up from a series of overlapping photographs. This type of view is intended to show the offshore aspect including hinterland.
6. Pilots. A single or composite view from the approach to a harbour or narrow channel including



Coordination Procedures and Measures to Support the Actions of the Couple COMNAP- IHO.

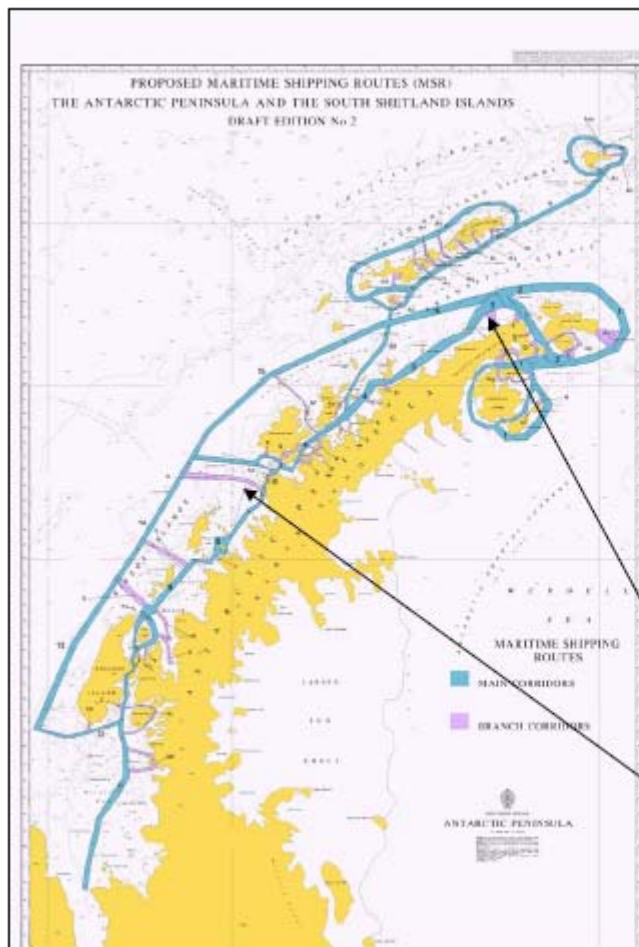


As with all surveying activities in Antarctica, it is imperative to have a coordinated approach.

To ensure there is no duplication of effort and to ensure that the most urgent priorities are considered first.



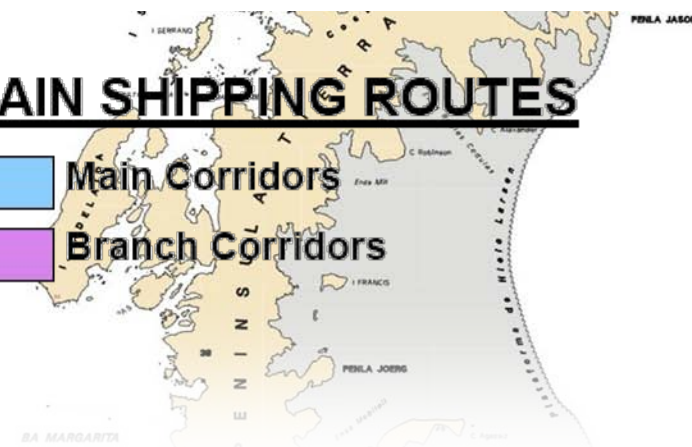
Coordination Procedures and Measures to Support the Actions of the Couple COMNAP- IHO.



Considering that government vessels are working in areas of their current national interest. The Maritime Shipping Routes (MSR) could be a useful graphic tool for planning.

MAIN SHIPPING ROUTES

-  Main Corridors
-  Branch Corridors



Conclusions and Recommendations



- It is a fact that the Antarctic is still largely under charted and any offers of help to further improve our charting is priceless.
- We appreciate that government spending is controlled for such activities, but to improve the safety of navigation and reduce risk is always going to be looked favorably upon.
- We should continue with the relationship IHO(HCA) COMNAP, working closely in order to achieve this dream.





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