

Groupe hydrographique et océanographique de  
l'Atlantique

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- Object** : Hydrographic survey in Icelandic waters onboard French Survey Ship *Beautemps-Beaupré* (S201804500 & S201804600) in August 2018.
- Reference** : a) Note verbale n° 2018-1156086 dated 7 March 2018 : Application for hydrographic survey authorization in Icelandic waters ;  
b) License to carry out scientific research Letter nr. : UTN18030058/34.R.431 from 23-04-2018 : Iceland.
- Attachment** : 1 appendix : surveyed area

## 1. TASK.

This report presents the hydrographic activities carried out between the 7th and the 28<sup>th</sup> of August 2018 by « Groupe hydrographique et océanographique de l'Atlantique », part of Shom (French Hydrographic Office), onboard survey ship *Beautemps-Beaupré* in the EEZ of Iceland. Data are linked to two Shom surveys which reference numbers are S201804500 and S201804600.

## 2. REFERENCES.

- **All data in geographical coordinates are referenced to geodetic system ITRF14** epoch @2018.621 that can be assimilated to WGS84 datum with less than 1 meter approximation.
- The vertical reference is **approximately the lowest astronomical tide level (LAT)** with an uncertainty 95% of 2m (Soundings are not corrected from any tide observation).

## 3. HYDROGRAPHIC DATA.

### 3.1 Data acquisition.

The survey was carried out by French survey ship *Beautemps-Beaupré* (A758) equipped with a multibeam echosounder (MBES) Kongsberg EM122 (12kHz) for deep waters (350-5000m) and a Kongsberg EM712 MBES (100kHz) for shallower waters (15-350m). The survey area is given in appendix 1. Survey was sometimes interrupted for meteorological or technical reasons.

### 3.2 Data corrections.

Processing was done using CARIS HIPS&SIPS 9.1

#### 3.2.1 *Sound velocity correction.*

Sound velocity profiles were regularly measured (at least 4 times per day) using Sippican expendable Bathythermograph (XBT).  
Depth values are corrected from sound velocity profile effects.

All the XBT profiles are available in the "HYDROLOGY" folder.

#### 3.2.2 *Position and attitude.*

Positioning and attitude was supplied by an inertial navigation system HYDRINS combined with GNSS system receiving correction from European EGNOS SBAS system.

Accuracy of the ship position is estimated at 3 m at 95%.

Data has been corrected from the lever arms of all the sensors.

#### 3.2.3 *Tide correction.*

EM712 soundings are corrected with a predicted tide. No tide corrections have been applied to EM122 soundings.

#### 3.2.4 *Accuracy and quality*

Soundings are available in Ascii format .glzcp (longitude, latitude, depth, sensor, vessel) in the "BATHYMETRY" folder :

- Soundings from file EEZ\_ICELAND\_EM712\_Transit.glzcp were acquired in transit with EM712 MBES.
- Soundings from file EEZ\_ICELAND\_EM122\_Transit.glzcp were acquired in transit with EM122 MBES.
- Soundings from file EEZ\_ICELAND\_EM122\_order2.glzcp were acquired during a regular IHO order 2 survey with EM712 MBES.

The sounding accuracy for soundings acquired in transit, in meter at 95% is (where D = depth in meter) is :

**Horizontal: 3 m + 0.0135 x D**

**Vertical: 2 m + 0.0055 x D**

Soundings acquired in transit are considered as **unqualified** regarding the standards of the IHO S44 publication. The area covered is qualified as **CATZOC C** regarding the IHO cartographic standards.

The sounding accuracy for soundings acquired during regular IHO order 2 survey, in meter at 95% is (where D = depth in meter) :

**Horizontal: 3 m + 0.0129 x D**

**Vertical: 2 m + 0.0031 x D**

Soundings acquired during regular IHO order 2 survey meet the **order 2 standard** regarding the IHO S44 publication. The area covered is qualified as **CATZOC B** regarding the IHO cartographic standards.

#### 4. IMPACT ON NAVIGATION CHARTS.

A wreck (288m sounding - 150m long) has been reported at position 63° 36.7287' N / 011° 12.3909' W. 3D MBES views and metadata are available in the "WRECK" folder.

17 significant soundings that are not charted have been reported but not necessarily forwarded by a UKHO Notice to mariners :

Latitude	Longitude	Depth (m)
64.4664250N	008.5894689W	978.34
64.6627659N	008.5404165W	1666.96
64.9374846N	008.5958637W	1670.81
65.0294217N	008.6286880W	1496.59
65.6625842N	008.7867342W	811.85
65.7618680N	008.8025652W	813.28
67.7028622N	009.1670139W	1565.90
67.9717010N	009.1820166W	1098.73
68.4678098N	009.2534922W	863.71
68.9726193N	009.3000397W	1026.87
66.7396470N	022.4573500W	76.10
66.6726044N	021.9516272W	83.23 (reported in 5298/2018 Notice to mariners)
64.8940612N	012.3507345W	152.50
66.7537454N	015.7692530W	148.60
66.0151078N	013.3550557W	83.36
64.2300632N	011.3170391W	313.67
65.1086675N	012.5615321W	176.96

#### 5. OCEANOGRAPHIC DATA.

##### 5.1 Current.

During the transit, currents along the water column below the ship were observed by two Vessel Mounted Acoustic Doppler profilers (VM-ADCP) :

- Teledyne-RDI Ocean Surveyor 150kHz (300m range) : broadband, 40 cells of 8m ;
  - Teledyne-RDI Ocean Surveyor 38kHz (900m range) : broadband, 50 cells of 16m.
- VM-ADCP currents are corrected from the vessel speed.

Ascii files are available in the "VM\_ADCP" folder

STA files contain "Short Time average" measurements averaged on a 2min period.

LTA files contain "Long Time average" measurements averaged on a 10min period.

## 5.2 Hydrology.

During the transit, several hydrology measurements were made :

- Water temperature profiles from Sippican expendable Bathythermographs (XBT) ;
- Water temperature and salinity (conductivity) from Sippican expendable CTD (XCTD) ;
- Water temperature and salinity (conductivity) profiles from Teledyne Marine RapidCast system ;
- Surface water temperature and salinity (conductivity) from SBE21 SeaCAT Thermosalinograph (TSG) settled under the keel of the ship, around 2m under the surface.

Ascii files are available in the "HYDROLOGY" folder.

## 5.3 Sedimentology.

During the transit, data was collected from the Sub-bottom profiler Kongsberg SBP27 (2-9kHz). Data is available in standard Seg-Y format files readable by the free software Kogeo for example. Seg-Y files are available in the "SEDIMENTOLOGY/SBP27" folder. Voir si besoin de la LOC.

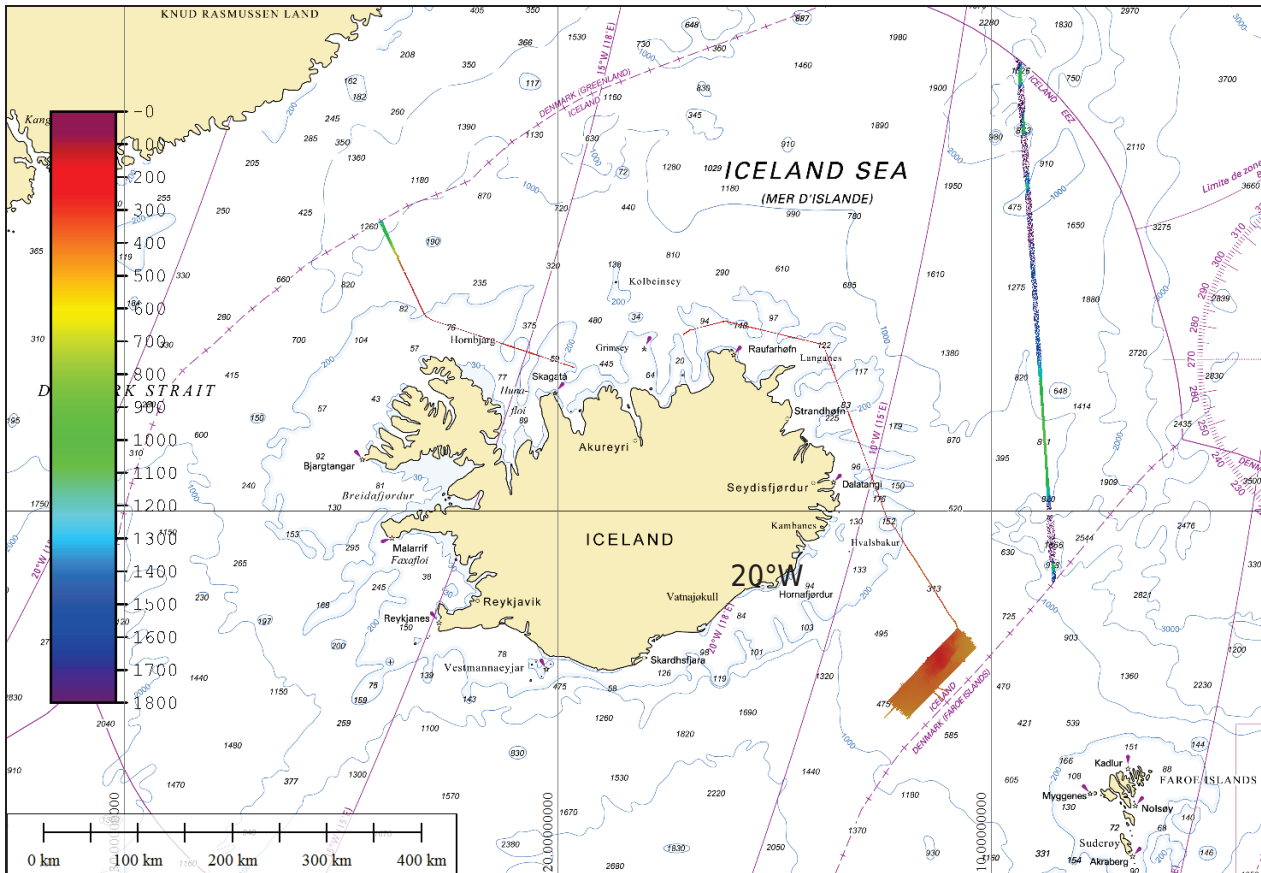
For the regular IHO order 2 survey, MBES backscattering was acquired. A GeoTiff file (UTM29N) with 25m resolution is available in the "SEDIMENTOLOGY/MBES\_BACKSCATTER" folder

## 6. DATA PROVIDED.

- The present report in pdf format
- "BATHYMETRY" folder :
  - Soundings in ASCII files ;
  - A picture of the survey in GeoTiff format (World Mercator projection).
- "HYDROLOGY" folder :
  - Sippican, RapidCast and Thermosalinograph measurements in ASCII file.
- "SEDIMENTOLOGY" folder :
  - Sub bottom profiler SBP27 files in Seg-Y format ;
  - MBES backscatter in GeoTiff format.
- "VM-ADCP" folder :
  - Current measurements from VM-ADCP 38kHz and 150kHz in Ascii file.
- "WRECK" folder :
  - Pictures and position of wreck in pdf and ASCII files.

Chief scientist Pierre-Yves Dupuy  
Director of groupe hydrographique et océanographique de l'Atlantique

## APPENDIX: SURVEYED AREA



*Bathymetric data acquired during the survey (background : FR6727 chart)*