



## **Rampion Offshore Wind Farm**



### **ES Section 13 – Marine Archaeology**

**RSK Environmental Ltd**

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**E.ON Climate & Renewables UK Rampion Offshore Wind Limited**

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## 13 MARINE ARCHAEOLOGY

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### 13.1 Introduction

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13.1.1 This section of the Environmental Statement (ES) presents the results of a marine archaeology desk based assessment and geophysical survey analysis undertaken for the proposed Rampion Offshore Wind Farm (the Project). The section assesses the significance of the known marine archaeology resources within the offshore development footprint, cable route corridor and landfall (the Offshore Project), and the archaeological potential of these areas.

13.1.2 The location of the proposed development is shown on Figure 2a.1.

13.1.3 This section is supported by the following technical appendices:

- Appendix 13.1: Archaeological Assessment of Geophysical Data – Rampion Wind Farm Met Mast, Moore Marine Services Ltd, February 2012;
- Appendix 13.2: Marine Archaeological Assessment of Rampion Offshore Wind Farm, Moore Marine Services Ltd, November 2011;
- Appendix 13.3: Marine Archaeological Assessment of Rampion Offshore Wind Farm, Moore Marine Services Ltd, April 2012; and
- Appendix 13.4: Gazetteer of marine heritage assets

13.1.4 The locations of the marine heritage assets are shown on Figure 13.1.

### 13.2 Legislation and Policy Context

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13.2.1 The following summarises the statutory legislation relating to the marine historic environment and relevant to this section:

13.2.2 **Ancient Monuments and Archaeological Areas Act (1979):** It is a criminal offence to carry out any works on or near to a Scheduled Monument without Scheduled Monument Consent. Both terrestrial and maritime sites, including wrecks, may be designated under this Act.

13.2.3 **Protection of Wrecks Act (1973):** It is an offence to carry out certain activities in a defined area surrounding a wreck that has been designated unless a licence for those activities has been obtained from the Government. There are no protected wrecks within the development area.

13.2.4 **Protection of Military Remains Act (1986):** Protects all aircraft that have crashed in military service and enables the Ministry of Defence to designate vessels wrecked while in military service as protected places or controlled sites. There are no protected places or controlled sites within the Study Area.



- 13.2.5 Merchant Shipping Act (1995): All wreck material recovered from UK waters must be declared to the Receiver of Wreck who acts to settle questions of ownership and salvage. 'Wreck' refers to all items of flotsam, jetsam, derelict and lagan found in or on the shores of the sea or any tidal water.
- 13.2.6 The overarching National Policy Statement (NPS) for Energy (EN-1) (July 2011) sets out, in section 5.8, policy in relation to energy developments and the historic environment.
- 13.2.7 Section 5.8.8 instructs that "As part of the ES the applicant should provide a description of the significance of the heritage assets affected by the proposed development and the contribution of their setting to that significance. The level of detail should be proportionate to the importance of the heritage assets and no more than is sufficient to understand the potential impact of the proposal on the significance of the heritage asset.
- 13.2.8 Section 5.8.10 goes on to direct that "The applicant should ensure that the extent of the impact of the proposed development on the significance of any heritage assets affected can be adequately understood from the application and supporting documents."
- 13.2.9 Section 5.8.14 instructs that "There should be a presumption in favour of the conservation of designated heritage assets (this can include protected wrecks)."
- 13.2.10 Section 5.8.15 direct that "Any harmful impact on the significance of a designated heritage asset should be weighed against the public benefit of development".
- 13.2.11 The National Policy Statement for Renewable Energy Infrastructure (EN-3) provides additional policy relating to offshore wind farm impacts and the historic environment (section 2.6.137 – 2.6.146). This additional policy identifies that the generic requirements in relation to the historic environment provided in NPS (EN-1) extend to heritage assets that exist offshore and within intertidal areas.
- 13.2.12 EN-3 directs the decision maker to be satisfied that offshore wind farms and associated infrastructure have been designed sensitively taking into account known heritage assets and their status. The avoidance of heritage assets (section 2.6.145) including archaeological sites and historic wrecks, can be achieved through the implementation of archaeological exclusion zones.
- 13.2.13 EN-3 also identifies that applicants can request that in granting consent the decision maker allows for micro-siting to be undertaken within a specified tolerance. This would allow for changes to be made to the precise location of infrastructure during construction so that account can be taken of the discovery of any unforeseen marine heritage assets, or in the event that previously known marine heritage assets have been wrongly located or where the position of a known marine heritage asset has changed slightly as a result of coastal processes.

13.2.14 Other policy applicable to marine archaeology is set out below:

13.2.15 **National Planning Policy Framework (NPPF):** Outlines government policy on the treatment of the historic environment (including both undesignated and designated sites) within the local planning process.

13.2.16 **West Sussex County Structure Plan adopted on 25 October 2004:** Policies specific to the protection and management of the historic environment are contained in these documents, in line with the advice of NPPF.

#### **Guidance Notes and Standards**

13.2.17 The work reported in this section has been undertaken within the requirements of the Institute for Archaeologists Standards and Guidance documents and Code of Conduct. Relevant guidance has also been referred to where appropriate. This guidance includes:

- Identifying and Protecting Palaeolithic Remains: Archaeological Guidance for Planning Authorities and Developers, English Heritage 1998;
- Environmental Archaeology, English Heritage 2002;
- Military Aircraft Crash Sites: Archaeological guidance on their significance and future management, English Heritage 2002;
- Wind Energy and the Historic Environment, English Heritage 2005;
- Climate Change and the Historic Environment, English Heritage 2007;
- The Code of Practice for Seabed Developers, Joint Nautical Archaeology Policy Committee (JNAPC), 2006;
- Historic Environment Guidance for the Offshore Renewable Energy Sector, Wessex Archaeology Ltd, (2007) (published by Collaborative Offshore Wind Research into the Environment (COWRIE));
- Guidance for Assessment of Cumulative Impacts on the Historic Environment from Offshore Renewable Energy, Oxford Archaeology (2008) (published by COWRIE); and
- Offshore Geotechnical Investigations and Historic Environment Analysis: guidance for the renewable energy sector EMU Ltd (2011) (published by COWRIE).

## Scoping and consultation

13.2.18 Initial consultation on the Project was carried out via the Rampion Offshore wind farm Scoping Document (E.ON/RSK, September 2010) Responses received are presented in the Infrastructure Planning Commission (IPC) Scoping Opinion report (IPC, October 2011).

13.2.19 The information, advice and comments received during the scoping process with regard to marine heritage issues are summarised in Table 13.1.

**Table 13. 1: Scoping and consultation responses**

Date	Consultee	Summary of issues	Sections where addressed
11/10/10	East Sussex County Council	Marine archaeology, sea floor geophysics and geotechnical studies required	Archaeological analysis of geophysics data included in this section.
		Archaeology to cover array, cable corridor and onshore	Heritage assessment addresses the array and cable corridor in this section and the onshore effects in Chapter 25.
		It is recommended that if the IPC ( <i>now PINS</i> ) wish to seek additional information on wrecks, it is advised that the applicant consult Dr Peter Marsden at the Shipwreck & Coastal Heritage Centre in Hastings	The Shipwreck and Coastal Heritage Museum was consulted but no additional data to that provided by the NRHE and UKHO were obtained.
11/10/10	English Heritage	Marine archaeology should not be scoped out	Included in this section
		Archaeology should be considered during the geophysical seabed surveys. Archaeologists should have input to survey planning	Archaeological analysis of geophysics data included in this section.

13.2.20 The scope of the assessment was modified accordingly to take account of the above consultee responses and the opinions of the IPC, the findings of which were reported in a Draft ES and subject to stakeholder consultation.

### Pre-application Consultation

13.2.21 Statutory consultees were sent copies of the Draft ES and other stakeholders were given information on where the document could be downloaded from a web address. Several stakeholders responded to the Section 42 consultation and modifications have been made to this section in respect of the following main comments received:

- Requirement for E.ON to commit to the production of an Archaeological Written Scheme of Investigation (AWSI), the contents of which should include:
  - Commitment and methods for maintaining communications with English Heritage as the project moves into detailed design;
  - Commitment to integrate the results of the geotechnical data (when available) with the geophysical data to allow comment on the palaeochannels present across the site; and
  - Commitment to include archaeological investigation objectives within the design of any future geophysical or geotechnical surveys.
- Better clarity in the use of terminology within the assessment in respect of the AWSI and reporting (Archaeological Exclusion Zones and Archaeological Reporting Protocol);
- Carry out data quality assurance work on the geophysical survey data; and
- Consideration of the information in the Regional Environmental Characterisation (REC) Report (relating to aggregate dredging) to assist in the compilation of the cumulative impacts section.

13.2.22 Comments on the AWSI are addressed in Section 13.6, while those relating to quality assurance have been carried out and are reflected in slight changes to locations for known archaeology in Figure 13.1. Information from the REC has been considered in the baseline review (Section 13.4).

13.2.23 Full details of the consultation process and associated outcomes can be referenced in the Consultation Report (Document 5.1).

### **13.3 Assessment Methodology**

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#### **Study area and scope**

13.3.1 A marine heritage asset study area (MASA) has been used for the collection of baseline data within the proposed wind farm (Project) area. This includes the areas of the wind farm site and export cable, as well as a 2km buffer as illustrated on Figure 13.1. This section relates to offshore effects only. The onshore effects of the Project (i.e. the visual impacts on terrestrial heritage assets) are considered in Section 26 – Landscape and Visual Impacts. The export cable landfall effects are also considered in Section 25 - Archaeology and Cultural Heritage.

## Desk based assessment

13.3.2 The sources consulted as part of the desk-based assessment (DBA) were as follows:

- Records of wrecks and obstructions collated by *SeaZone* from the UK Hydrographical Office records;
- Records from the National Record of the Historic Environment (NRHE), held by English Heritage (EH), of known wrecks, documented losses, and archaeological finds;
- Records of Protected and Controlled Sites under the Protection of Military Remains Act held by the Ministry of Defence (MoD);
- Records of Protected Wrecks held by English Heritage;
- Various secondary sources relating to the palaeo-environment with specific reference made to submerged palaeo-landscapes and coastal change;
- Historic Environment Records maintained by local authorities, in this case West Sussex County Council;
- Archaeological Data Services website for protected and non-protected wreck sites and other maritime sites ([www.ads.ahds.ac.uk](http://www.ads.ahds.ac.uk));
- Maritime and Coastguard Agency website for a list of protected wrecks and designated military remains ([www.mca.gov.uk](http://www.mca.gov.uk));
- MAGIC website for protected wrecks, scheduled monuments and registered battlefields ([www.magic.gov.uk](http://www.magic.gov.uk)); and
- Osiris geophysical survey data (2010).
- South Coast Regional Environmental Characterisation (REC) project report.

## Geophysical Survey Analysis

13.3.3 The aim of the review of the geophysical data collected across the Project area and cable corridor was to analyse the acquired data for the presence of possible archaeological features or anomalies that may be impacted by later construction works. Geophysical survey operations took place from the period 4th May to 19th August 2010 and 15th to 25th September 2011. The survey was undertaken using Osiris Projects dedicated survey vessels, MV Freja, MV Lia and MV Chartwell. High-resolution side-scan sonar, swath multi-beam, single beam bathymetry and magnetometer data were acquired along all survey lines, in order to accurately map the seabed within the wind farm area. Main survey lines were run at 50m centres, with cross lines at 750m centres. The archaeological

assessment reviewed the following techniques: Side scan sonar, marine magnetometer and sub bottom profiler.

- 13.3.4 Dual frequency 100 and 445 kHz (low and high) side scan sonar data were recorded simultaneously during the preliminary survey. The survey provided imagery of the seafloor with all anomalous seafloor features evident in the record. The high frequency data were considered to be of sufficiently high quality to allow for the identification and location of any seafloor anomalies, which may be considered to be of cultural heritage significance.
- 13.3.5 The sub bottom profiler data provided indications as to the stratigraphic sequence of the seafloor. It is useful in the identification of seafloor features such as palaeochannels and palaeolandscapes. The data acquired during this survey were of sufficient quality to allow for the identification of any such features.

### **Gazetteer**

- 13.3.6 The data from the NRHE, UK Hydrographic Office (UKHO) and geophysical contacts has been compared and where data overlap (in terms of wreck name and/ or location) a 'grouped ID' has been allocated. Where the UKHO and NRHE data both record a wreck at the same location or by the same name it is assumed to be the same marine heritage asset. In some cases the geophysical contacts directly correspond to the same location as a recorded wreck, and it has again been assumed that the contact relates to the recorded wreck. It is, however, possible that in some cases more than one wreck lies in close proximity. This has been taken into account when considering appropriate mitigation strategies.
- 13.3.7 The gazetteer is included as Appendix 13.4 of this ES.

### **Identification and Assessment of Impacts**

- 13.3.8 The potential physical impacts of the proposed development have been assessed by comparing the area of seabed required for the development against the location and importance of the known marine heritage assets. The significance of physical impacts is therefore a consideration of the relative importance of the asset in relation to the magnitude of impact of the proposed development. Physical impacts are defined as any physical change to the heritage resource.

#### *Receptor Importance*

- 13.3.9 The relative importance of each receptor has been determined to provide a framework for comparison between different sites. The categories of importance do not reflect a definitive level of importance or value of a site, but a provisional one based on a range of factors, primarily the reliability of the recorded data and secondly the evidential, historical, aesthetic and communal heritage values of the asset. When combined, these factors offer representations of the importance (or

significance) of a given resource and provide an analytical tool that can inform later stages of assessment and the development of appropriate mitigation.

**Table 13.2: Criteria for determining Receptor Importance**

Importance of Receptor	Equivalent To
Very High/ High (International/ National)	Protected Wreck Site
Medium (Regional)	Live wreck site Geophysical anomalies of high potential (e.g. 'wreck') Recorded Wreck not confirmed by survey
Low (Local)	Obstruction/ Dead wreck Geophysical anomalies of low potential (e.g. 'debris')
Negligible	Dead foul/ obstruction, dead wreck Geophysical anomaly of negligible potential (e.g. cable)
Uncertain	Documented losses Geophysical anomalies of uncertain potential

*Magnitude of Impact*

13.3.10 The magnitude of any impact has been assessed according to the scale set out in Table 13.3.

**Table 13.3: Criteria for determining the magnitude of impact**

Magnitude of Change	Description of Change
High	Complete destruction of site or feature; Change to the site or feature resulting in a fundamental change in our ability to understand or appreciate the resource and its historical context or setting.
Medium	Change to the site or feature resulting in an appreciable change in our ability to understand or appreciate the resource and its historical context or setting.
Low	Change to the site or feature resulting in a small change in our ability to understand or appreciate the resource and its historical context or setting.
Negligible	Negligible or no material change to the site or feature; No real change in our ability to understand or appreciate the resource and its historical context or setting.
Uncertain	Sites or features for which there is insufficient information to determine impacts.

*Significance of Impact*

13.3.11 The significance of impact has been assessed by comparing the importance of the heritage asset against the magnitude of the impact. The significance of impact has been quantified according to the criteria summarised in Table 13.4.

**Table 13.4: Criteria for determining the significance of impact**

Magnitude of change	Receptor Importance					
	Very High	High	Medium	Low	Very Low	Uncertain
High	Severe	Major	Moderate	Moderate	Minor	Uncertain
Medium	Major	Major or Moderate	Moderate	Minor	Minor	
Low	Moderate	Moderate or Minor	Minor	Minor or Neutral	Neutral	
Negligible	Minor	Minor or Neutral	Neutral	Neutral	Neutral	
Uncertain	Uncertain					

13.3.12 Factors affecting the significance of impact include:

- The proportion of the site or feature affected;
- The integrity of the site or feature; impacts may be reduced if there is pre-existing damage or disturbance of a site; and
- The nature, potential and heritage value of a site or feature.

13.3.13 Severe and major impacts are considered to be significant in Environmental Impact Assessment terms. In EN-1 and NPPF terminology severe impacts are equivalent to total loss or substantial harm.

13.3.14 Moderate and minor impacts are not significant in EIA terms. In EN-1 and NPPF terminology major and moderate impacts are equivalent to less than substantial harm.

13.3.15 Neutral impacts are not significant in EIA terms and are not considered to cause any harm or loss of significance in EN-1 or NPPF terminology.

### **Definitions, Uncertainty and Technical Difficulties Encountered**

13.3.16 The validity of marine heritage data varies greatly, according to the source of the data. The following definitions are used, relating to the source of data, with a description of the relative reliability of the data:

- **Live Wreck:** This is used in this section to describe a marine heritage asset that has a good provenance, but which is not protected by legislation. These assets have normally been identified by diver survey, confirmed by the geophysical data interpretation or noted as 'live' in the UKHO data. These data are considered to be reliable and these sites are of medium or low importance;



- **Recorded Wreck:** This usually refers to the site of a wreck that has been reported in the past but that has not been resurveyed. This data is considered to be reasonably reliable and to indicate that the site is of uncertain importance;
- **Dead Wreck:** This is used in this section to describe a recorded wreck that recent surveys have failed to identify. Dead wrecks may have dispersed on the seabed, have a poor provenance, or in some cases may have been salvaged. This data is considered to be reasonably reliable and to indicate that the site is of uncertain importance;
- **Documented (or Recorded) Losses:** These are documentary references to the loss of a vessel (or military aircraft) for which an arbitrary grid reference has been provided, as only an approximate position was known at the time of the loss. This data is not reliable and sites are of uncertain importance, as they may relate to a 'live' wreck but could equally relate to a dead wreck or a wreck that has no known or an incorrect provenance or identification; and
- **Obstructions:** This is a general reference to reports of fishermen's fasteners, fouls and obstructions. These are recorded as guides to navigation and listed in Kingfisher Charts Obstruction Book General and charted by the UKHO. They may relate to seabed wreck material, but can also be natural in origin or refer to modern seabed debris or unknown snags on fishermen's nets or lines. 'Live' and 'Dead' in this context is the same as the terminology used to reference wreck sites, above. Obstructions are generally reliably located, but vary from only low to negligible importance as they are rarely distinctly identified as a wreck site (treated as live wrecks).

13.3.17 Obstructions, foul ground and fishermen's fasteners reported in the UKHO data as 'dead' – i.e. those sites that have, on survey, been disproved, have not been included in the gazetteer.

13.3.18 The data reported are generally considered to be reliable, however, the following limitations are noted:

- There may be a lack of dating evidence for assets;
- Buried wrecks could be present within the development area that have not been recorded by NRHE or UKHO data and which were not identified by the geophysical survey;
- The locational information for the known marine heritage assets may not always be reliable, assets on the seabed can be moved slightly by coastal processes; and
- The locational information for the known marine heritage assets may not always be accurate as wreck sites can be dispersed on the seabed.

### *Geophysical Data Quality*

- 13.3.19 The data analysed have been reviewed by an appropriately qualified specialist marine archaeology consultant, and is considered to be of a suitable high quality to allow for the location and preliminary identification off seafloor and sub seafloor features that may be of marine archaeology significance.
- 13.3.20 Marine magnetometry provides a means of detecting for the presence of ferrous materials. A number of factors, such as size of the anomaly and proximity of the seafloor, determine the accuracy of the equipment. The marine magnetometer used during this survey was towed in tandem with the side scan sonar. This ensured that the magnetometer was always in close proximity to the seafloor and was capable of recording the presence of everything but the smallest of ferrous metals.
- 13.3.21 Whilst not commonly used as a reconnaissance tool, the bathymetric data associated with the preliminary survey were reviewed for the presence of seafloor undulations which may be indicative of the presence of potential cultural heritage. The bathymetric data recorded during the survey were of sufficient quality to allow for the recognition of such features.

### *Impact Assessment*

- 13.3.22 The limitations of an impact assessment of the proposed development include:
- The lack of clarity surrounding the extent of some sites which makes it difficult to provide a precise assessment of potential impact; and
  - The possibility that unknown sites will be encountered during construction.
- 13.3.23 The development of mitigation strategies takes these points into consideration.

## **13.4 Environmental Baseline**

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- 13.4.1 The data discussed below includes all marine heritage assets recorded within the MASA (including the 2km buffer). All of the marine heritage assets described below are located on Figure 13.1, and labelled according to the RSK ID, prefixed below. This also relates all of the recorded assets to the gazetteer, Appendix 13.4.

### **Designated Heritage Assets**

#### *Protection of Wrecks Act (PWA) (1973)*

- 13.4.2 There are no protected wrecks within the MASA. The nearest Protected Wreck is the Brighton Marina wreck (RSK IDMA1).

*Protection of Military Remains Act (PMRA) (1986)*

13.4.3 There are no protected military sites within the Area of Search.

**Non-designated Heritage Assets**

*Live wreck sites*

13.4.4 There are 28 live wreck sites within the MASA, these are:

- MA50 Tycho, NRHE wreck and obstruction date and UKHO data;
- MA51 Marie Marguerite, NRHE and UKHO wreck data;
- MA53 Leachs Romance, NRHE and UKHO wreck data;
- MA56 Plagenturm, NRHE and UKHO wreck data and geophysics contact;
- MA57 Wreck (wrongly identified as Ikeda in the NRHE record) NRHE and UKHO wreck data and geophysics contact;
- MA61 City of Waterford, NRHE and UKHO wreck data and geophysics contact;
- MA62 Lulonga, NRHE and UKHO wreck data;
- MA64 Ikeda, NRHE and UKHO wreck data;
- MA65 Quail, NRHE and UKHO wreck data and geophysics contact;
- MA66 Trawler, NRHE and UKHO wreck data and geophysics contact;
- MA68 HMS Keryado, NRHE and UKHO wreck data and geophysics contact;
- MA69 Wreck (wrongly identified as Porthkerry in the NRHE record) NRHE and UKHO wreck data;
- MA70 Porthkerry, NRHE and UKHO wreck data;
- MA72 Remains of a cargo vessel, NRHE and UKHO wreck data and geophysics contact;
- MA74 Stanwold, NRHE and UKHO wreck data and geophysics contact;
- MA75 Remains of a trawler, NRHE and UKHO wreck data and geophysics contact;
- MA76 Remains of a vessel, NRHE and UKHO wreck data;

- MA77 Remains of a vessel, NRHE and UKHO wreck data and geophysics contact;
- MA78 Glenarm Head, NRHE and UKHO wreck data and geophysics contact;
- MA79, Cargo vessel, NRHE and UKHO wreck data and geophysics contact;
- MA81 HMS Minion, NRHE and UKHO wreck data and geophysics contact;
- MA120 Pentrych, UKHO wreck data and geophysics contact;
- MA123 Ingo, UKHO wreck data and geophysics contact;
- MA125 Ny-Eeasteyr, UKHO wreck data and geophysics contact;
- MA143 Geophysical contact described as 'wreck' – no recorded wreck attributed;
- MA154 Geophysical contact described as 'wreck' – no recorded wreck attributed;
- MA155 Geophysical contact, may relate to UKHO wreck data (foul ground); and
- MA156 Geophysical contact, may relate to UKHO wreck data (German aircraft).

#### *Recorded wreck sites*

13.4.5 There are 51 wreck sites within the area of search recorded by the NRHE or UKHO, where no collaborative data exists.

- |                                      |                                |
|--------------------------------------|--------------------------------|
| • MA52 Unknown vessel                | • MA58 Wreck                   |
| • MA71 Possible remains of Bombardon | • MA73 HMS Laforey             |
| • MA80 Remains of a German aircraft  | • MA83 Cargo vessel            |
| • MA84 Vessel                        | • MA85 Wreck                   |
| • MA86 Dalhousie (possibly)          | • MA87 Wreck                   |
| • MA89 Fisher Lass                   | • MA91 Del Rio                 |
| • MA92 Wreck                         | • MA93 Tigger                  |
| • MA94 Pagenturm                     | • MA95 Wreck                   |
| • MA96 Broadhurst                    | • MA97 Silver Spray            |
| • MA98 G-AZWZ German aircraft        | • MA100 Wreck                  |
| • MA101 Wreck                        | • MA102 Wreck                  |
| • MA103 Clan MacMillan               | • MA104 Aristos                |
| • MA105 Icelander                    | • MA106 Zeester (possibly)     |
| • MA108 Glenarm Head                 | • MA109 Gerlen                 |
| • MA110 wreck                        | • MA111 Wreck                  |
| • MA112 Lornaston                    | • MA113 Wreck                  |
| • MA114 Holme Force (possibly)       | • MA115 Wreck                  |
| • MA116 London trader (possibly)     | • MA117 Glendinning (possibly) |

- MA118 Wreck
- MA121 Vasco
- MA124 Wreck
- MA127 Maaslust
- MA129 Girlvine
- MA131 Miown
- MA133 Wreck
- MA157 Aluminium aircraft
- MA119 Sabrina
- MA122 Aircraft
- MA126 Arrogant
- MA128 Fortuna
- MA130 Wreck
- MA132 Wreck
- MA134 Indiana

#### *Dead wreck sites*

13.4.6 There are 5 wrecks where the UKHO notes that survey has failed to locate the wreck:

- MA63 Wreck, UKHO notes nothing found during intensive search;
- MA88 St Anne, UKHO notes nothing found during intensive search within 400m of position;
- MA90 Wreck, UKHO note no obstruction found, deleted;
- MA99 Wreck, UKHO notes nothing found during intensive search within 400m of position; and
- MA107 Wreck, UKHO records nothing found.

#### *Obstructions*

13.4.7 There are 10 records for 'obstructions' that have not been conclusively interpreted as wrecks:

- MA54, NRHE data;
- MA55, NRHE data;
- MA59, NRHE data;
- MA60, NRHE data;
- MA67, NRHE data;
- MA82, NRHE data as obstruction, UKHO record as possible wreck;
- MA155 UKHO record (the geophysical survey of Section 3 identified a side scan sonar contact adjacent to this site which indicates that it is a wreck site);
- MA156, UKHO record;
- MA158, UKHO record; and
- MA159, UKHO record.

### *Documented Losses*

- 13.4.8 There are 48 documented losses recorded by the NRHE at a grid reference within the Project study area, which cannot be reconciled with any of the live wreck sites. These have been included in the baseline, but none have a good provenance and some may not be within the development area.

### *Geophysical Anomalies*

- 13.4.9 Of the geophysical contacts interpreted as potentially relating to marine archaeology, 22 can be reconciled to a 'live' wreck location (some of which include the allocation of multiple contacts to a single recorded wreck). The remainder relate to cables and debris referenced below.
- 13.4.10 Two geophysical contacts recorded as 'wreck' cannot be reconciled with any recorded wreck location, and have been included in the list of 'live' wrecks based on their interpretation.
- 13.4.11 There are 10 geophysical contacts recorded that relate to modern cables: MA 137 – 140, MA 144 – 149.
- 13.4.12 There are 4 geophysical contacts recorded that relate to debris, rather than any specific wreck site: MA135, MA136, MA141 and MA142.
- 13.4.13 There are 4 geophysical contacts that have been identified from a review of the finer scale data collected during a geophysical survey of the meteorological mast area. These have all been interpreted as being geological in origin (MA 150-153).
- 13.4.14 Review of additional geophysical survey data from 2011 identified four wreck sites, and one possible wreck site all of which are referenced above. (MA68, MA101, MA107, MA115 and MA155).
- 13.4.15 Geophysical survey data interpreted by the geophysical contractor Osiris, also attributes contacts to known wreck locations, and these cross references are noted in the gazetteer (Appendix 13.4). Three additional potential wreck locations (MA 157-159) have been added to the gazetteer as a result of the Osiris review because they relate to contacts that could not be attributed to any known wreck location.

### *Areas of Archaeological Potential*

#### Wrecks and Aviation Losses

- 13.4.16 There is the potential for the remains of vessels within the Project area dating from the Mesolithic period (8,500- 4,000 BC) to the modern day. The English Channel was one of the busiest traffic routes in England before the 15th century, and maritime activity continued to expand thereafter, with a dramatic increase from the Post-medieval period. In addition, the area was a focus for military activity during the two World Wars. The high numbers of recorded wrecks,

obstructions and documented losses indicate the potential for future discoveries in the MASA.

- 13.4.17 Given the close proximity of the south coast to the Continent, and the presence of strategic targets such as Southampton, Portsmouth and Dover the study area was a significant focus for both military and commercial aviation activity throughout the 20th century, particularly during the Second World War.

#### Prehistoric Archaeology

- 13.4.18 The current sea bed presents an area which has previously been exposed at times of lower sea level. These former surfaces would have been available for hominids to traverse and exploit leaving similar prehistoric material as found in present-day terrestrial settings. Although often associated with fluvial environments, these sites may have been many miles from the sea at the time they were being exploited by our ancestors
- 13.4.19 The development area was not covered by glacial ice during the Anglian, Wolstonian or Devensian glacial maximums, and therefore the area has the potential to preserve prehistoric remains from the earliest periods of human occupation. From the Late Upper Palaeolithic to the Mesolithic, sea-levels rose, but for much of the period the Project area would have been dry land and habitable. There is potential to discover archaeological material along palaeo-valleys and below and within the palaeo-valley infill sediments, all currently below the present LWM. Artefact assemblages from this period have been found 'in situ' off the coast of the Isle of Wight and could be present within the Project area offshore, near-shore or intertidal areas.
- 13.4.20 By the end of the Mesolithic, the Project area would have been submerged and thus any artefacts and evidence from the Neolithic onwards will be of a maritime nature only.
- 13.4.21 A shallow buried channel feature was identified by geophysics in the northwest of the Project site. The bedrock surface lies at a maximum of 5m below sea level within this feature. There is potential that this feature may contain cultural heritage deposits within the channel infill sediments.

### **13.5 Predicted Impacts**

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#### **The Rochdale Envelope**

- 13.5.1 The known marine archaeological interest in the Project site area, including the cable corridor has been charted, and during the construction, operation and decommissioning phases of the project these features will be avoided as far as possible. It is possible that unknown archaeological features are present in the MASA. Impacts to archaeological features would tend to be as a result of direct effects (they are disturbed on the seabed by anchors, foundation or cable

installation etc). Table 13.5 lists the components of the design of the marine part of the project that could influence the magnitude of impacts.

**Table 13.5: Wind farm design features and their influence on the Rochdale envelope Parameters assessed for impacts on Marine Archaeology**

Design feature	Design options
Wind Farm Site Layouts	Approximately the same total area of seabed will be directly affected whether the turbines are spread to fill the development boundary, or are in a more compressed layout. However, a more spread out distribution will require longer lengths of cable, hence this is the worst-case.
Wind Turbines	Greater number of turbines gives greater chance of affecting archaeology and will result in greater length of cable also creating a greater chance of affecting archaeology.
Foundations	Largest area of seabed affected will be the worst case for archaeology as this gives the greatest chance of affecting unknown archaeology. Introduction of scour protection could have greater effects on archaeology than options requiring no scour-protection
Offshore Substation	
Cables	Greater length of cable creates highest chance of affecting archaeology.
Navigation and Aviation Marking	
Construction and Installation	Dynamically Positioned or vessels with least interaction with seabed will reduce potential for disturbance to archaeology
Operation and Maintenance	
Decommissioning	Assumed as installation.

13.5.2 At this stage of the Project, design of the foundations, cable routes and construction methods are not finalized, and the assessment of impacts needs to consider the worst-case scenario (it should be noted that the MASA is larger than the proposed Rampion Offshore Project site, therefore impacts discussed below relate to a larger area than will actually be affected by the development). The 175 turbine option presents a greater chance of impacting upon unknown archaeology than the 100 turbine option, hence this is considered the worst case for marine archaeology. In addition to requiring more foundations, this option will also result in greater lengths of inter array cables.

### Construction

13.5.3 Impacts to marine heritage assets (which includes both maritime and palaeo-environmental remains) can be direct, and occur during construction as a result of any activity that affects the seabed, including the installation of the export cable, turbine foundations and temporary activities from vessels such as jack-up barges used during construction. Impacts can also be indirect, resulting from processes such as scour or sediment deposition. Both of these processes can be caused by the construction process, and both can change the condition of seabed heritage assets.



- 13.5.4 The overall significance of such impacts could range from negligible to moderate. This range reflects that, for example, a turbine foundation could completely destroy a marine heritage asset of medium – low importance, while a cable alignment could have more localized impact affecting only a small proportion of a marine heritage asset of high – low importance. Predicted impacts do not take mitigation into account; this is described below.

### **Operation**

- 13.5.5 Impacts to archaeology during the operation and maintenance of the proposed wind farm may include the degradation and corrosion of previously buried sites exposed due to changes in local scouring and sedimentation patterns (indirect impacts). The anchoring of maintenance vessels on the seabed may also directly damage archaeological sites. The overall significance of such impacts could range from negligible to moderate. This range reflects that, for example, anchoring a maintenance vessel could affect a large to small proportion of a marine heritage asset of high – low importance.

### **Decommissioning**

- 13.5.6 As with the construction, decommissioning of the offshore wind farm at the end of its life has the potential to impact archaeological deposits, either directly or indirectly. For example, the anchoring or jacking up of vessels used in the decommissioning process may impact wreckage or archaeological layers undisturbed during construction. In addition, further changes in sedimentation or scouring following decommissioning may indirectly impact archaeological deposits. The scale of such impacts would range from negligible to moderate. This range reflects that, as described above, these activities could affect a large to small proportion of a marine heritage asset of high – low importance.

## **13.6 Mitigation Measures**

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- 13.6.1 The primary mitigation for marine heritage asset impacts, during construction, operation and decommissioning, is avoidance using ‘Archaeological Exclusion Zones’ (AEZ). Further archaeological input to future surveys, scoped within an ‘Archaeological Written Scheme of Investigation’, and the implementation of an archaeological reporting protocol are also proposed to mitigate effects on marine heritage assets.
- 13.6.2 All marine archaeological work will be subject to a formal programme of reporting, archiving and, if necessary, publication. This will include the deposition of digital reports with the English Heritage online access to the index of archaeological investigations (OASIS) system.
- 13.6.3 Archaeological mitigation in relation to the foreshore, intertidal zone and onshore elements of the export cable are considered in Section 25 (Archaeology and Cultural Heritage).

### **Archaeological Exclusion Zones (AEZs)**

- 13.6.4 The gazetteer (Appendix 13.4) identifies the proposed scale of buffer for the known marine heritage assets within the development area. This is linked to the type of record, relative reliability of the wreck data, and the importance of the marine heritage asset. The exact number, location, and extent of the AEZs may, however, change as further survey detail becomes available (due to review of future geophysical and geotechnical survey) and in response to specific potential impacts from the proposed development. The approach taken in identifying buffers within the gazetteer is inclusive and precautionary and some may be withdrawn, as well as altered, as further information on both the nature of the marine heritage assets and the layout of the proposed development becomes available.
- 13.6.5 In some cases more than one data source, including the geophysical contacts, have broadly the same location. These have been grouped and allocated a grouped ID, as it is assumed that this is duplicated data relating to one marine heritage asset. However, it is possible that the grouped ID relates to more than one marine heritage asset in which case the exclusion zone is increased to take this into consideration as a precautionary and inclusive approach to mitigation.
- 13.6.6 In accordance with EN-3, flexibility is required to deal with any unforeseen marine heritage assets encountered during construction. A specified tolerance for micro-siting to allow for changes to be made to the precise location of infrastructure during construction will be requested when the final design of the wind farm is discussed and agreed with English Heritage, so that account can be taken of the discovery of any unforeseen marine heritage assets.
- 13.6.7 Archaeological AEZs will be mapped; these maps will be provided to the construction teams. Figure 13.1 provides the location of the known marine heritage assets as currently understood, along with a provisional identification of the buffer for the AEZ for each asset as described by Appendix 13.4, the gazetteer. This information is being used for layout design work.
- 13.6.8 AEZs will be monitored to ensure that they are avoided during all construction activities. AEZs could be added as a result of the further review of pre-construction surveys (referred to below) or when existing AEZs are altered. Temporary AEZs will be used in the event of finds being reported from the seabed during construction. These will be communicated to the construction team by the Nominated Person (see 13.6.16 below).

### **Written Scheme of Investigation**

- 13.6.9 An Archaeological Written Scheme of Investigation (WSI) will be produced by a specialist marine archaeologist, which will confirm the requirement for involvement of specialist marine archaeologists in the planning and implementation of any future offshore geotechnical or geophysical surveys.

- 13.6.10 The WSI will be approved by the Marine Management Organisation following discussions with the English Heritage Marine Archaeology team (and, if relevant, Worthing District Council). The WSI will document a process under which any data relevant to the development of, or changes to, AEZs within the development area will be communicated to English Heritage, and how on-going consultation and communication with English Heritage will be maintained in general.
- 13.6.11 The objectives of future offshore geotechnical and geophysical studies will be agreed between the relevant specialist contractors and consultees, during the planning stages. Any relevant studies will include a quality assurance exercise undertaken by an appropriately qualified specialist to ensure that the data provided is fit for the purpose of archaeological interpretation.
- 13.6.12 The WSI will provide an assessment approach that relates to both maritime archaeology and the marine palaeoenvironmental and geoarchaeological resource.
- 13.6.13 The WSI will be prepared in line with the guidance provided by the following documents:
- Crown Estates and Wessex Archaeology (2010) Model Clauses for Archaeological Written Schemes of Investigation Offshore Renewable Projects (published by Crown Estates London); and
  - Offshore Geotechnical Investigations and Historic Environment Analysis: guidance for the renewable energy sector EMU Ltd (2011) (published by COWRIE).
- 13.6.14 The WSI (in accordance with the above commitments) will specify that:
- Appropriate geophysical and geotechnical surveys undertaken prior to, or during the construction will include the consideration of any archaeological requirements, and any relevant results will be reviewed by an appropriately qualified archaeologist. Should it be appropriate, on-site advice will be sought from an archaeologist during the survey work; and
  - Any further diver/ROV surveys will include the consideration of any archaeological requirements, and any relevant results will be reviewed by an appropriately qualified archaeologist. Should it be appropriate, on-site advice will be sought from an archaeologist during the survey work. If relevant, consideration should be given to assigning an underwater archaeologist, who is qualified in health, safety and environmental (HSE) standards, as a participating diver.

13.6.15 This survey results will be compared against the baseline environment (including the South Coast Regional Environmental Characterisation project transects and geophysical surveys already undertaken). This could result in alteration to AEZs (adding, deleting, extending or contracting) in light of additional information about the resource affected. New marine heritage assets could also come to light, which would require additional AEZs.

### **Archaeological Reporting Protocol**

13.6.16 A Protocol for Reporting Archaeological Discoveries will be produced as a stand-alone document, disseminated to the construction team and adopted during construction to ensure that any remains of archaeological interest identified during construction are properly notified and recorded. Finds will be reported to a Site Champion (or Champions) who will make a Nominated Contact aware that such finds have been made. In this case, the Nominated Contact will be the Project's Consents Manager. The Site Champion (or Champions) will be appointed within the construction team. Finds will be reported to the appropriate authorities and, if necessary, arrangements will be made for the protection or recording of seabed objects. The Protocol will be approved by the Marine Management Organisation following discussions with the English Heritage Marine Archaeology team (and, if relevant, Worthing District Council).

13.6.17 The protocol will be prepared in line with the guidance provided by the following document:

- The Crown Estate and Wessex Archaeology (2010) The Protocol for Archaeological Discoveries: offshore renewables projects (published by Crown Estates London).

13.6.18 Relevant legislation with regard to the treatment of wreck, flotsam, jetsam, military remains, treasure and human remains will be observed at all times.

### **General**

13.6.19 All of the work undertaken to further evaluate or mitigate the effects of the offshore wind farm on marine heritage assets will be subject to suitable and proportionate analysis, reporting, publication and archiving arrangements, in accordance with the Management of Research Projects In the Historic Environment (MoRPHE), English Heritage 2006. This will include submission of reports to the English Heritage online access to the index of archaeological investigations (OASIS) system.

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### 13.7 Significance of Residual Effects

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- 13.7.1 Following the implementation, review and monitoring of the AEZs, all known marine heritage assets will be avoided by the development and there will be no residual effects on marine heritage assets during the construction, operation or decommissioning of the offshore wind farm. A summary of residual impacts is presented in Table 13.6
- 13.7.2 Measures will be taken, as outlined above, to ensure as far as reasonably possible that there will be no residual effects on any unanticipated marine heritage assets that are disturbed during the construction, operation or decommissioning of the wind farm. This assumes that any unanticipated assets are identified and dealt with in full accordance with the Archaeological Protocol and Protocol for Archaeological Discoveries, including appropriate reporting, archiving and publication. There remains however, a slight possibility that previously unknown marine heritage assets will only be identified following impact during construction. In this case, the marine heritage asset will suffer a residual effect. However, the WSI will provide methods (e.g. diver survey) to mitigate these effects and following implementation of mitigation, residual effects will be moderate to neutral, depending on the relative sensitivity of the asset and magnitude of effect.

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### 13.8 Cumulative Impacts

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- 13.8.1 The Rampion project is not expected to produce direct impacts to known marine heritage assets in the MASA assuming that all sites can be avoided in the detailed planning phase. Indirect impacts, such as the creation of scour, which could expose marine heritage assets may have an effect, though this is anticipated to be negligible. The pre-application site (499) for aggregate extraction (see Figure 19.1) is directly adjacent to the Project site, and should aggregate be extracted from 499 in the future, there is a chance of scour from that site which may also reveal marine heritage assets (though it is assumed that all known archaeological features in that area will be avoided). Therefore there is potential for scour from both the Project and aggregate site 499 to produce an additive impact on unknown marine heritage assets in the area (limited to the vicinity around site 499), though this is expected to be negligible given the mitigation measures (Archaeological Written Scheme of Investigation and Protocol for Archaeological Discoveries) which will be imposed during the construction, operation and decommissioning of both projects.
- 13.8.2 Indirect cumulative effects of the offshore wind farm on terrestrial heritage assets are considered in Section 25 - Archaeology and Cultural Heritage of this ES.

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### 13.9 References

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English Heritage (1998) Identifying and Protecting Palaeolithic Remains: Archaeological Guidance for Planning Authorities and Developers.

English Heritage (2002) Environmental Archaeology.

English Heritage (2002) Military Aircraft Crash Sites: Archaeological guidance on their significance and future management.

English Heritage (2005) Wind Energy and the Historic Environment.

English Heritage (2006) Management of Research Projects In the Historic Environment (MoRPHE).

English Heritage (2007) Climate Change and the Historic Environment.

EMU Ltd (2011) Offshore Geotechnical Investigations and Historic Environment Analysis: guidance for the renewable energy sector. Report commissioned by COWRIE.

Joint Nautical Archaeology Policy Committee (JNAPC) (2006) The Code of Practice for Seabed Developers.

Oxford Archaeology commissioned by COWRIE (2008) Guidance for Assessment of Cumulative Impacts on the Historic Environment from Offshore Renewable Energy.

Wessex Archaeology (2007) Historic Environment Guidance for the Offshore Renewable Energy Sector. Report commissioned by the Collaborative Offshore Wind Research into the Environment (COWRIE).

Wessex Archaeology and Crown Estates (2010) Model Clauses for Archaeological Written Schemes of Investigation Offshore Renewable Projects.

Wessex Archaeology and Crown Estates (2010) The Protocol for Archaeological Discoveries: offshore renewables projects.

**Table 13.6: Summary of Residual Effects and Mitigation Measures**

Aspect	Effect	Proposed Mitigation Measures	Sensitivity	Magnitude	Residual Effect
<b>Construction Phase</b>					
<b>Marine Heritage Assets</b>	Construction activities could impact known and potential marine heritage assets including wrecks and palaeo-environmental remains	The adoption of AEZs to avoid all known marine heritage assets and an archaeological protocol to ensure the proper treatment of any items found	Medium/ Low/ Negligible/ Uncertain	Medium/ Low/ Negligible/ Uncertain	None
<b>Operational Phase</b>					
<b>Marine Heritage Assets</b>	Operational activities could impact known and potential marine heritage assets including wrecks and palaeo-environmental remains	The adoption of AEZs to avoid all known marine heritage assets and an archaeological protocol to ensure the proper treatment of any items found	Medium/ Low/ Negligible/ Uncertain	Medium/ Low/ Negligible/ Uncertain	None
<b>Marine Heritage Assets</b>	Operational activities could impact previously unknown marine heritage assets including wrecks and palaeo-environmental remains	Provision of mitigation (such as diver survey) during construction to ensure that any impacted remains are recorded	Medium/ Low/ Negligible/ Uncertain	Medium/ Low/ Negligible/ Uncertain	Moderate - Neutral
<b>Decommissioning Phase</b>					
<b>Marine Heritage Assets</b>	Decommissioning activities could impact known and potential marine heritage assets including wrecks and palaeo-environmental remains	The adoption of AEZs to avoid all known marine heritage assets and an archaeological protocol to ensure the proper treatment of any items found	Medium/ Low/ Negligible/ Uncertain	Medium/ Low/ Negligible/ Uncertain	None



## **Rampion Offshore Wind Farm**



### **ES Section 13 – Marine Archaeology - Appendix 13.1**

**Moore Marine Services Ltd**

**Document 6.3.13i**

**December 2012**

**APFP Regulation 5(2)(a)**

**Revision A**

**E.ON Climate & Renewables UK Rampion Offshore Wind Limited**



**ARCHAEOLOGICAL ASSESSMENT  
OF GEOPHYSICAL DATA  
RAMPION WINDFARM MET MAST  
ON BEHALF OF  
RSK GROUP**



**Moore Marine Services**

**Job Number: M12WS01**

**Author: Eoghan Kieran**

**Date: February 2012**

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## NON TECHNICAL SUMMARY

Moore Marine was commissioned by the RSK Group to carry out an archaeological assessment of high resolution geophysical data acquired in the vicinity of a proposed Met Mast associated with the Rampion Round 3 wind farm site, located 10 miles off Shoreham, West Sussex (Figure 1). The assessment comprised a review of side scan sonar, marine magnetometer and sub bottom profiler data with the aim of identifying the location of any cultural heritage deposits or features which may be contained within the footprint of the proposed met mast development.

The assessment sought to identify and address the location, nature, character, condition and extent of any cultural heritage, which may be affected by both primary and secondary impact resultant from the construction of the met mast. It details the survey methodology, the results of archaeological interpretation of the geophysical data and the identification of the possible impacts of the proposed works.

The data analysis comprised investigation and review of multibeam bathymetric data, side scan sonar, marine magnetometer and sub bottom profiler data.

Bathymetric data, both single beam and multibeam are of limited use for archaeological assessment purposes. None the less, a review of the bathymetric data acquired during the site survey around BH13 was carried out. No potential archaeological features were identified in the bathymetric data.

A total of 112 sonar contacts were identified during the review of the side scan sonar data. This is a larger number than identified by Osiris Projects, however this can be accounted for by the fact that all small scale features were identified and measured in this review where only more large scale features appear to have been identified by Osiris Projects.

Of the 112 identified contacts most were considered to be boulders and boulder clusters. Seven were indistinguishable, most likely boulders and four appeared to be associated with recorded magnetometer contacts. These may indicate the presence of man-made debris or boulders which have a high ferro-magnetic content. All were located outside the immediate development area. The data indicated that there was a boulder cluster

concentration in the southern and southeastern corner of the survey area. The review of the side scan sonar data did not record the presence of any potential cultural heritage deposits in the survey area.

The review of the marine magnetometer data identified six discernible magnetic anomalies on the subject site. Five of the recorded magnetic anomalies appear to be related to side scan sonar targets, none of which were archaeological in nature. A single buried anomaly (MAG1) could potentially represent buried cultural heritage. It will not be possible to discern the nature of this magnetic anomaly without direct visual investigation.

The review of the sub bottom profiler data indicated that a shallow buried channel feature was identified in the northwest of the site. The bedrock surface lies at a maximum of 5m below sea level within this feature. There is potential that this feature may contain cultural heritage deposits within the channel infill sediments.

The results of the archaeological interpretation of geophysical data noted that whilst there were no clearly discernible cultural heritage deposits or features on the subject site, there was potential for the recovery of archaeological material. The two areas of highest archaeological potential were:

1. Unknown magnetic feature recorded as MAG1. This feature may be archaeological.
2. The palaeo-channel noted in the northwestern end of the site. This quaternary feature may contain cultural heritage deposits and any impact of the channel may negatively impact these features.

Should any further investigative works be carried out in these areas, the results should be forwarded to the archaeological contractor for analysis.

## **1 SCOPE OF WORKS**

### **1.1 Introduction**

Moore Marine was commissioned by the RSK Group to carry out an archaeological assessment of high resolution geophysical data acquired in the vicinity of a proposed Met Mast associated with the Rampion Round 3 wind farm site, located 10 miles off Shoreham, West Sussex (Figure 1). The assessment comprised a review of side scan sonar, marine magnetometer and sub bottom profiler data with the aim of identifying the location of any cultural heritage deposits or features which may be contained within the footprint of the proposed met mast development.

The assessment sought to identify and address the location, nature, character, condition and extent of any cultural heritage, which may be affected by both primary and secondary impact resultant from the construction of the met mast. It details the survey methodology, the results of archaeological interpretation of the geophysical data and the identification of the possible impacts of the proposed works.

The objective of the report is to identify whether further enabling works will have the potential to impact on either known or unknown cultural heritage which may be contained within the proposed development zone.

### **1.2 Archaeological Impact Assessment**

The principle aim of assessment is to anticipate and avoid impacts on the archaeological resource. Archaeological assessment may be required as part of the planning process in response to developments which may be located in the vicinity of archaeological monuments

The purpose of the impact assessment is: (i) to ascertain the character, condition and extent of any archaeological areas, features or objects likely to be affected by the proposed works, including any associated temporary works and to ascertain the potential impact of the works on archaeological remains outside the immediate area of the proposed works as these may be vulnerable to impacts arising from consequent changes in hydrology and sediment formation, (ii) to accurately locate these archaeological areas, features and objects and present the findings in map form, (iii) to describe same and discuss their likely provenance, (iv) to ascertain the likely impact of the proposed works on these remains, (v) to recommend appropriate measures for the avoidance of these remains or, where this cannot be achieved, to recommend measures to mitigate the impact of the works and (vi) to incorporate all the above in a report.

## **2. PROJECT DESCRIPTION**

### **2.1 Proposed Development**

The survey of the area surrounding the proposed met mast area was undertaken by Osiris projects between 15<sup>th</sup> and 25<sup>th</sup> September 2011. It was undertaken as an adjunct to their previous and larger site survey carried out from May to August 2010. The 2010 survey covered the landfall cable route (approx. 79 square km); and the northern and shallower part of the site (<50 CD and estimated at approximately 138 square km); Sections 1 & 2 respectively.

The 2011 survey comprised an area within section 3, at a coarser line spacing and covering an area generally shallower than 50m CD, with the addition of a UXO investigation site of the proposed met mast (BH13) located within the northwest corner of section 2. Borehole 13 was located at 687654.38mE, 5618494.45mN (50°41'16.704"N, 0°20'35.856"W). Unless stated otherwise, all co-ordinates quoted in this report are referenced to the WGS84 Datum. Grid co-ordinates are the UTM Projection, Zone 30N, Central Meridian 3°W.

## **3. GEOPHYSICAL SURVEY**

The Geophysical survey was undertaken using Osiris Projects own dedicated survey vessel, MV Chartwell, a 24hr operations vessel, on the 24th September 2011, during daylight hours.

The mobilisation of MV Chartwell began on the 15th September 2011 in Brighton Marina. During the mobilisation phase, navigation checks, gyro, multibeam and USBL calibrations were completed. The mobilisation, calibrations and full wet test was completed by 12:00 BST on the 17th September 2011.

Data acquisition comprised simultaneous recording of Reson 7101 multi-beam echo sounder and Klein 3000 high resolution side scan sonar data, with piggy-backed marine magnetometer and 'Boomer' sub-bottom profiler. The settings of the boomer and multi beam were modified to increase data resolution. The UXO investigation comprised a 200m box area, with 41 main lines spaced at 5m and orientated at 71°/251°, together with 3 cross lines orientated perpendicular to the main lines. The objective of the survey was to locate any potential obstructions (natural or anthropogenic) to the installation of a met mast. The magnetometer was flown as close to the seabed as possible, with flying height controlled generally between 0m and 2m above seabed.

A Fisheries Industry Representative (FIR) was assigned to the project for the duration of the survey to ease any conflict between active fisheries parties and Osiris Projects.

The project was carried out under CDM Regulations 2007, with Osiris Projects appointed Principal Contractor and Designer. The Client was appointed Client and CDM Co-ordinator.

## **4. ARCHAEOLOGICAL ASSESSMENT OF GEOPHYSICAL DATA**

### **4.1. Bathymetry**

Bathymetric data, both single beam and multibeam are of limited use for archaeological assessment purposes. The spot point nature of the techniques does not provide a capability to determine detailed bottom form and shape like those of side scan sonar. In addition single beam and multibeam sonars do not easily provide differentiation between substrate types. Consequently, these techniques do not easily distinguish smaller features and so are only useful in the identification of large structures such as shipwrecks. None the less, a review of the bathymetric data acquired during the site survey around BH13 was carried out. The data was analysed using Hypack 2012 (Hysweep) and Surfer software. It was investigated for the presence of subtle vertical features which may represent cultural heritage deposits. None were identified. The review of the bathymetric data indicated that seabed levels ranged from 18.1m below LAT in the north of the area, to 19.6m below LAT, close to the southern extents of the site.

### **4.2 Side Scan Sonar**

Side scan sonar, marine magnetometer and sub bottom profiler are the geophysical survey techniques best suited to the identification of cultural heritage. Moore Marine used a combination of SonarWiz 5 and Coda data processing software to interrogate side scan sonar data for archaeological signatures.

During interrogation slant range correction is not applied. Applying slant range correction distorts the true sonar trace image and can sometimes lead to incorrect feature measurements. Thus for archaeological assessment purposes, slant range correction is always turned off.

Each survey line is interrogated using the software, any potential cultural heritage is assigned an individual identification number (SSA in this case), measured and described. A scaled snap shot of the feature is also recorded. These are then collated into a feature report which is produced at the end of the exercise.

The side scan sonar survey of the subject area identified that the seabed materials comprised mainly sandy gravel, with poorly defined bed forms. A band of gravelly sand with mega ripples ran northeast - southwest across the southerly portion of the site and there was an area of sandy gravel towards the north eastern extents of the site. A number of trawls scars were evident towards the western portion of the site and these generally ran in a northwest to south easterly direction.

A total of 112 sonar contacts were identified during the review of the side scan sonar data. This is a larger number than identified by Osiris Projects, however this can be accounted for by the fact that all small scale features were identified and measured in this review where only more large scale features appear to have been identified by Osiris Projects.

Of the 112 identified contacts most were considered to be boulders and boulder clusters. Seven were indistinguishable, most likely boulders and four appeared to be associated with recorded magnetometer contacts. These may indicate the presence of man-made debris or boulders which have a high ferro-magnetic content. All were located outside the immediate development area. The data indicated that there was a boulder cluster concentration in the southern and southeastern corner of the survey area. The review of the side scan sonar data did not record the presence of any potential cultural heritage deposits in the survey area.

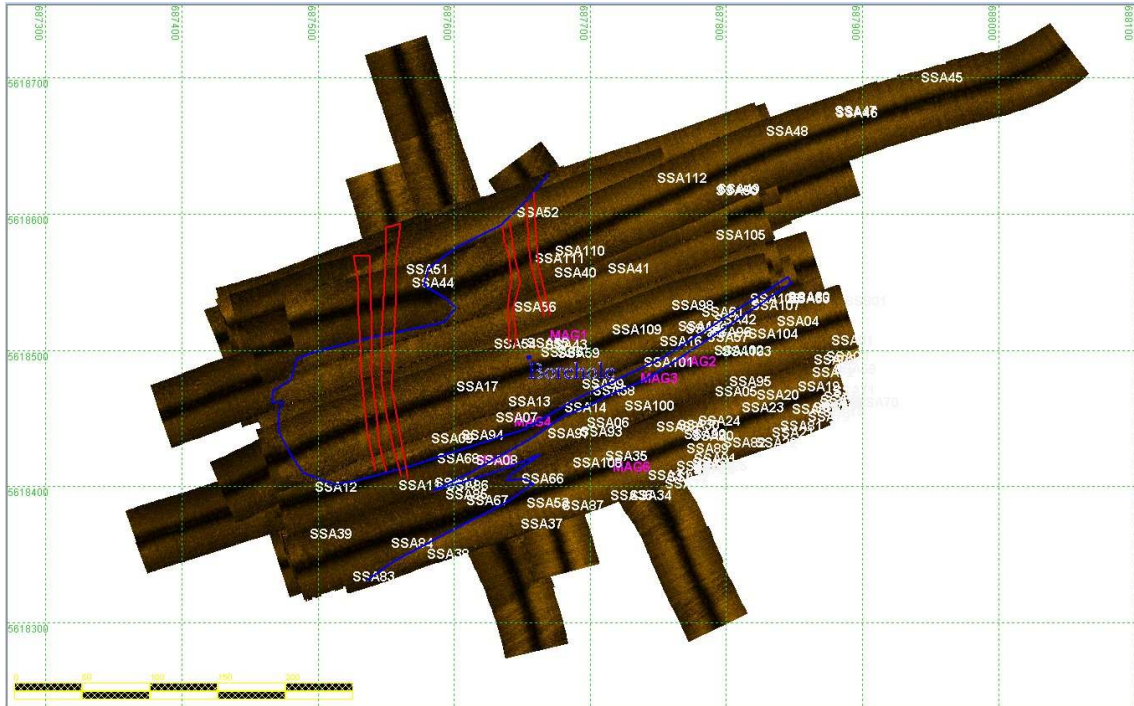


Plate 1. Side Scan Sonar mosaic of site with contacts

Name	Easting	Northing	Description	Height	Length	Shadow
MAG1	687663.8	5618510	Magnetic Anomaly 1	0	0	0
MAG2	687758.7	5618490	Magnetic Anomaly 2	0	0	0
MAG3	687730.6	5618478	Magnetic Anomaly 3	0	0	0
MAG4	687637.3	5618446	Magnetic Anomaly 4	0	0	0
MAG5	687609.8	5618418	Magnetic Anomaly 5	0	0	0
MAG6	687709.5	5618413	Magnetic Anomaly 6	0	0	0
SSA01	687870.6	5618506	boulder	0.164151	0.721508	0.418231
SSA02	687857.5	5618492	boulder	0.125449	1.551269	0.57754
SSA03	687866.6	5618494	boulder	0.100742	0.669807	0.478723
SSA04	687830.6	5618520	boulder	0.227887	0.684913	0.650407
SSA05	687785	5618468	Possible Boulder	0.096614	1.684975	0.450402
SSA06	687690.7	5618445	boulders	0.16713	0.743359	0.47619
SSA07	687623.4	5618449	Indistinguishable	0	0.470389	0



SSA08	687608.7	5618418	Probable Man Made Debris	0.288255	0.744621	0.709677
SSA09	687576.2	5618434	Probable Boulder	0.142289	0.441617	0.473684
SSA10	687578.7	5618401	Boulder	0.227473	0.415341	0.884211
SSA100	687718.2	5618457	Boulder	0.24531	0.978317	0.502793
SSA101	687732.8	5618490	Possible Man Made Debris	0.438701	0.448266	1.724138
SSA102	687784.7	5618499	Boulder	0.315181	0.862567	0.754286
SSA103	687789.8	5618498	Boulder	0.38759	0.693872	0.756447
SSA104	687809.8	5618511	Boulder	0.143708	0.817014	0.409091
SSA105	687786	5618583	Boulder	0.184265	0.553277	0.71579
SSA106	687810.8	5618537	Small Boulder	0.134944	0.280925	0.32107
SSA107	687811.9	5618532	Small Boulder	0.119953	0.488317	0.402685
SSA108	687680.1	5618416	Indistinguishable	0	2.687383	0
SSA109	687708.9	5618514	Hollow	0	2.948398	0
SSA11	687552.5	5618399	Probable Boulder	0.159807	0.476758	0.438642
SSA110	687667.1	5618572	Small Boulder	0.095616	0.372799	0.474576
SSA111	687652.3	5618567	Small Boulder	0.097228	0.508346	0.474576
SSA112	687742.7	5618625	Small Boulder	0.103967	0.552456	0.492537
SSA12	687491	5618398	Indistinguishable	0.125705	0.771752	0.246787
SSA13	687632.6	5618460	Boulder	0.075109	0.527321	0.373057
SSA14	687674.1	5618456	Hollow	0.445514	1.590551	0.601583
SSA15	687758.4	5618517	boulder	0.451505	0.833552	1.546392
SSA16	687744.4	5618506	Possible Man Made Debris	0.145897	1.293513	0.713178
SSA17	687594.6	5618472	Hollow	0	1.783905	0
SSA18	687861.9	5618460	Boulder	0.246308	0.421522	0.416185
SSA19	687845.8	5618472	Boulder	0.155165	0.638881	0.335196
SSA20	687815.9	5618466	Indistinguishable	0.180428	0.450659	0.546917
SSA21	687826.9	5618438	Boulder	0.165914	0.522589	0.482574
SSA22	687814.7	5618431	Boulder	0.066181	0.981316	0.224599
SSA23	687804.7	5618456	Probable Boulder	0.302587	0.675455	0.673797
SSA24	687773.1	5618446	Boulder	0.216099	0.785223	0.571429
SSA25	687777.6	5618414	Boulder	0.363622	0.898015	1.691489
SSA26	687769.3	5618411	Boulder	0.400022	1.603707	1.764706
SSA27	687769.3	5618413	Boulder	0.204569	0.737945	0.802139
SSA28	687768.9	5618416	Boulder	0.267732	1.026309	0.898396
SSA29	687757	5618413	Boulder	0.272865	0.844171	0.806452
SSA30	687757.4	5618444	Probable Boulder	0.158161	0.417868	0.513369
SSA31	687735.8	5618406	Possible Boulder	0.212377	0.846186	0.614555
SSA32	687750	5618406	Boulder	0.272117	0.779123	1.07027
SSA33	687748.6	5618401	Boulder	0.151967	0.84001	0.713514
SSA34	687722.1	5618392	Probable Boulder	0	1.285206	0
SSA35	687703.8	5618421	Possible man made debris	0.206201	0.254854	0.443272
SSA36	687707.5	5618392	Boulder	0.174152	0.451598	0.663158

SSA37	687642.1	5618371	Indistinguishable	0.153459	0.89424	0.574468
SSA38	687573.6	5618349	Indistinguishable	0.146629	1.288465	0.545455
SSA39	687487.7	5618364	Probable Boulder	0	1.21984	0
SSA40	687666.6	5618556	Boulder	0.176341	0.360215	0.468468
SSA41	687706.3	5618559	Probable Boulder	0.14802	0.44002	0.733945
SSA42	687784.7	5618522	Boulder	0.166736	0.369822	0.402235
SSA43	687659.9	5618503	Boulder	0.142012	0.469372	0.436975
SSA44	687562.2	5618549	Probable Boulder	0.103016	0.511295	0.212766
SSA45	687936.1	5618699	Probable Boulder	0.22724	1.510021	0.842105
SSA46	687873.9	5618673	boulder	0.089801	0.29614	0.251748
SSA47	687873.1	5618675	Boulder	0.207741	0.254758	0.671329
SSA48	687822.9	5618660	Boulder	0.136061	0.346149	0.505263
SSA49	687787	5618617	Boulder	0.202882	0.475452	0.431655
SSA50	687786	5618616	Boulder	0.153714	0.687957	0.344086
SSA51	687557.9	5618558	Boulder	0.193101	0.435323	0.321839
SSA52	687639.3	5618600	Possible Boulder	0.242866	0.606461	0.420233
SSA53	687646.6	5618387	Probable Boulder	0.12732	0.763867	0.46332
SSA54	687622.2	5618504	Boulder	0.246201	0.865289	0.470588
SSA55	687646.2	5618505	Boulder	0	0.465803	0
SSA56	687637.4	5618531	Boulder	0.250207	0.454203	0.772727
SSA57	687779.4	5618509	Boulder	0.191971	0.696554	0.506203
SSA58	687695.1	5618469	Boulder	0.135847	1.087568	0.544081
SSA59	687669.2	5618497	Boulder	0.035363	0.477168	0.118519
SSA60	687838.6	5618538	Possible Boulder	0.130466	1.839792	0.452055
SSA61	687775.3	5618527	Boulder	0.404122	0.802199	0.8
SSA62	687763.6	5618515	Boulder	0.323136	1.2557	1.062295
SSA63	687838.5	5618537	Probable Boulder	0.164766	1.378057	0.657534
SSA65	687657	5618497	Indistinguishable	0	4.462639	0
SSA66	687643	5618404	Probable Boulder	0	0.976324	0
SSA67	687602	5618389	Boulder	0	0.757438	0
SSA68	687580.6	5618419	Boulder	0.115975	0.88735	0.381503
SSA69	687872.5	5618485	Boulder	0.251043	0.519647	0.428571
SSA70	687889	5618460	Boulder	0.105915	0.429038	0.520408
SSA71	687872.1	5618469	Boulder	0.195594	0.743192	0.428571
SSA72	687856.2	5618482	Boulder	0.187293	0.611327	0.426396
SSA73	687857.1	5618457	Boulder	0.096291	0.579155	0.334177
SSA74	687864.9	5618465	Boulder	0.242069	0.763045	0.609137
SSA75	687862.3	5618462	Boulder	0.145238	0.4324	0.395939
SSA76	687861.9	5618459	Boulder	0.158929	0.425341	0.517767
SSA77	687863.8	5618457	Boulder	0.1204	0.616352	0.456853
SSA78	687864.3	5618454	Boulder	0.217535	0.799391	1.005076
SSA79	687853.5	5618450	Boulder	0.264435	0.817182	1.272727

SSA80	687841.5	5618455	Boulder	0.270127	0.967638	0.757576
SSA81	687833.3	5618443	Boulder	0.174164	0.90831	0.791878
SSA82	687791.6	5618431	Probable Boulder	0.180876	0.993505	0.75
SSA83	687518.7	5618333	Boulder	0.145699	1.76049	0.663158
SSA84	687546.8	5618357	Boulder	0.242838	1.111552	0.533333
SSA85	687586.8	5618393	Possible Boulder	0.22897	0.985401	0.81
SSA86	687587.6	5618399	Boulder	0	2.118213	0
SSA87	687672	5618385	Possible Boulder	0.303304	2.197864	1.610127
SSA88	687742.1	5618442	Possible Boulder	0.19509	1.127774	0.398977
SSA89	687764.1	5618426	Boulder	0.175481	1.287461	0.55102
SSA90	687767.9	5618435	Boulder	0.309418	0.752869	0.57868
SSA91	687769.6	5618419	Boulder	0.113115	1.296605	0.55102
SSA92	687762.5	5618437	Probable Boulder	0.271259	1.314207	0.367347
SSA93	687685.5	5618439	Boulder	0.180145	0.525562	0.243655
SSA94	687598.7	5618436	Boulder	0.171605	0.909896	0.668354
SSA95	687795.9	5618476	Boulder	0.100417	0.704304	0.417112
SSA96	687781	5618513	Boulder	0.134069	0.82094	0.579088
SSA97	687661.8	5618437	Boulder	0	0.373938	0
SSA98	687753.6	5618532	Small hollow	0	1.608944	0
SSA99	687686.9	5618474	Small Boulder	0.226549	0.475049	0.813559
SSS01	687880.4	5618535	Boulder	0.131456	0.620459	0.359673

Table 1. Table of Side Scan Sonar and Marine Magnetometer contacts

### 4.3 Marine Magnetometer

Review of the marine magnetometer data was carried out using two software programs, Hypack 2012 and Surfer. They identified the location and strength of all magnetic contacts. The review of the data identified six discernible magnetic anomalies on the subject site. Five of the recorded magnetic anomalies appear to be related to side scan sonar targets (see below table). It was not possible to discern if the recorded magnetic and side scan anomalies were man-made debris or simply boulders with a high ferro-magnetic content. Magnetic Anomaly 1 appears to be buried and so its exact nature cannot be defined.

The review of the magnetic data appears to indicate that none of the side scan identified magnetic anomalies were archaeological in nature. The single buried anomaly (MAG1) could potentially represent buried cultural heritage. It will not be possible to discern the nature of this magnetic anomaly without direct visual investigation.

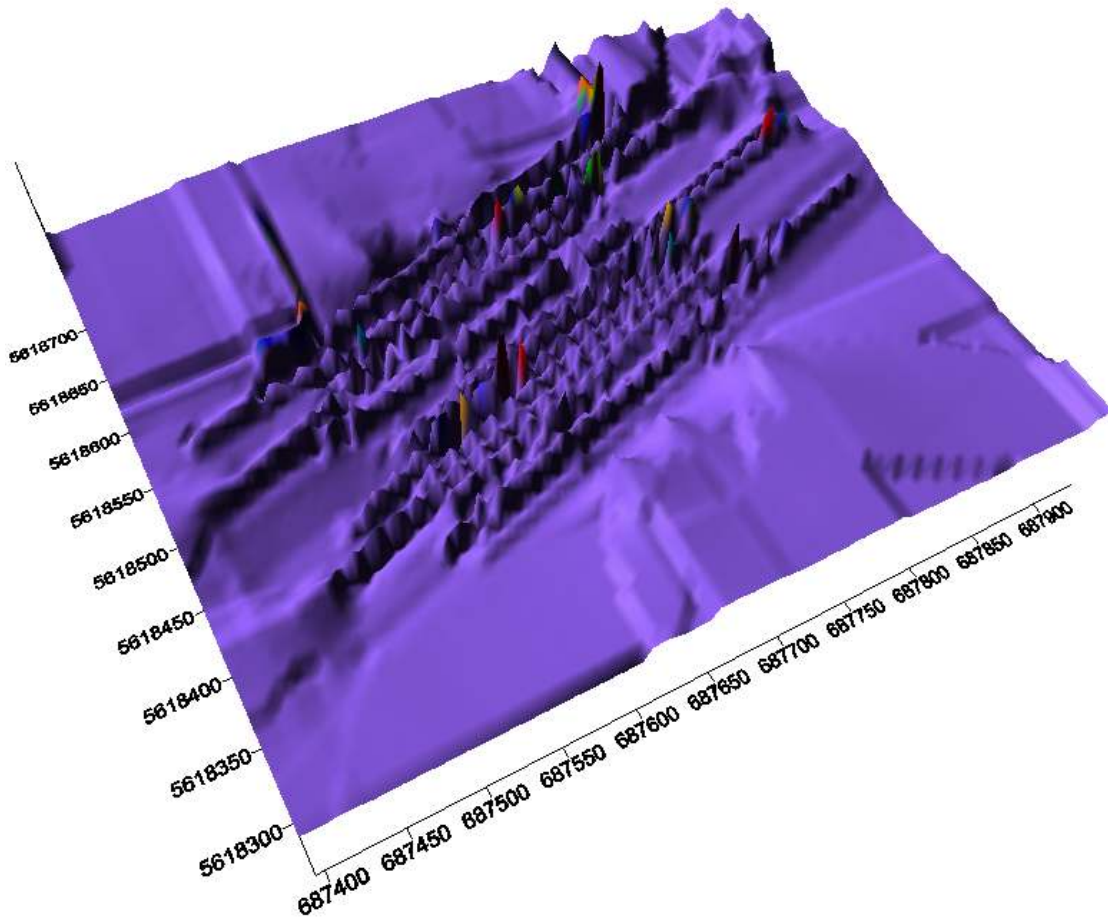


Plate 2. Magnetometer survey results (contacts highlighted in colour)

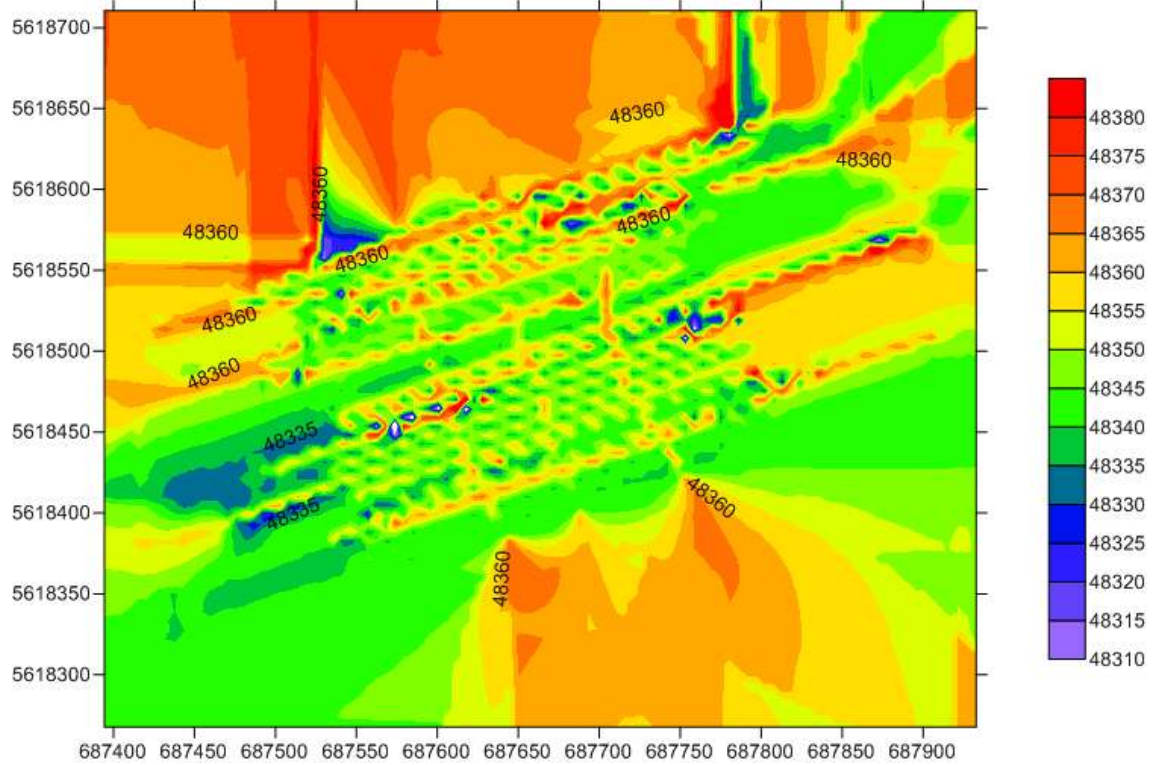


Plate 3. Additional Magnetometer Survey Result

ID	Eastings (m)	Northings (m)	Width (m)	Amplitude (nT)	Type	Associated Sonar Contact
M1	687663.8	5618510	4.78	1.5	Positive Monopole	
M2	687758.6	5618490	12.49	3.3	Positive Monopole	SSA16
M3	687730.5	5618478	10.48	3.9	Positive Monopole	S101
M4	687637.2	5618445	13.03	3.2	Negative Monopole	SSA07
M5	687609.9	5618417	11.82	6.4	Positive Monopole	SSA0 8
M6	687709.3	5618412	6.26	3.7	Positive Monopole	SSA35

Table 2. Table of identified magnetic anomalies

#### 4.4 Sub Bottom Profiler

All sub bottom profiler data was reviewed using Sonarwiz 5 and Coda software. The software allowed for identification of particular stratigraphic horizons which may be indicative of the presence of heritage sensitive materials such as palaeo-landscapes. The sub bottom profiler technique used during this survey was boomer. Boomer data is very coarse in its acquisition and definition of subtle sediment

horizons often found in palaeo-landscapes is often difficult using this technique. Notwithstanding that, the entire boomer data set was reviewed. It indicated that bedrock is covered by a thin veneer (0-2m) of sandy gravels and gravelly sands over the majority of the site.

A shallow buried channel feature was identified in the northwest of the site. The bedrock surface lies at a maximum of 5m below sea level within this feature. There is potential that this feature may contain cultural heritage deposits within the channel infill sediments.

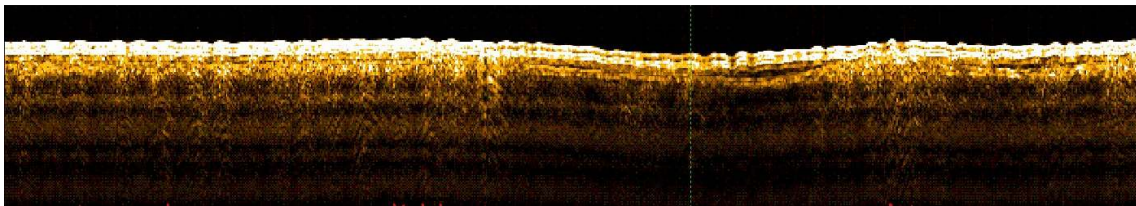


Plate 4. Sub Bottom Profiler trace with palaeo-channel.

## 5. ARCHAEOLOGICAL INTERPRETATION OF GEOPHYSICAL DATA

The results of the archaeological interpretation of geophysical data noted that whilst there were no clearly discernible cultural heritage deposits or features on the subject site, there was potential for the recovery of archaeological material. The two areas of highest archaeological potential were:

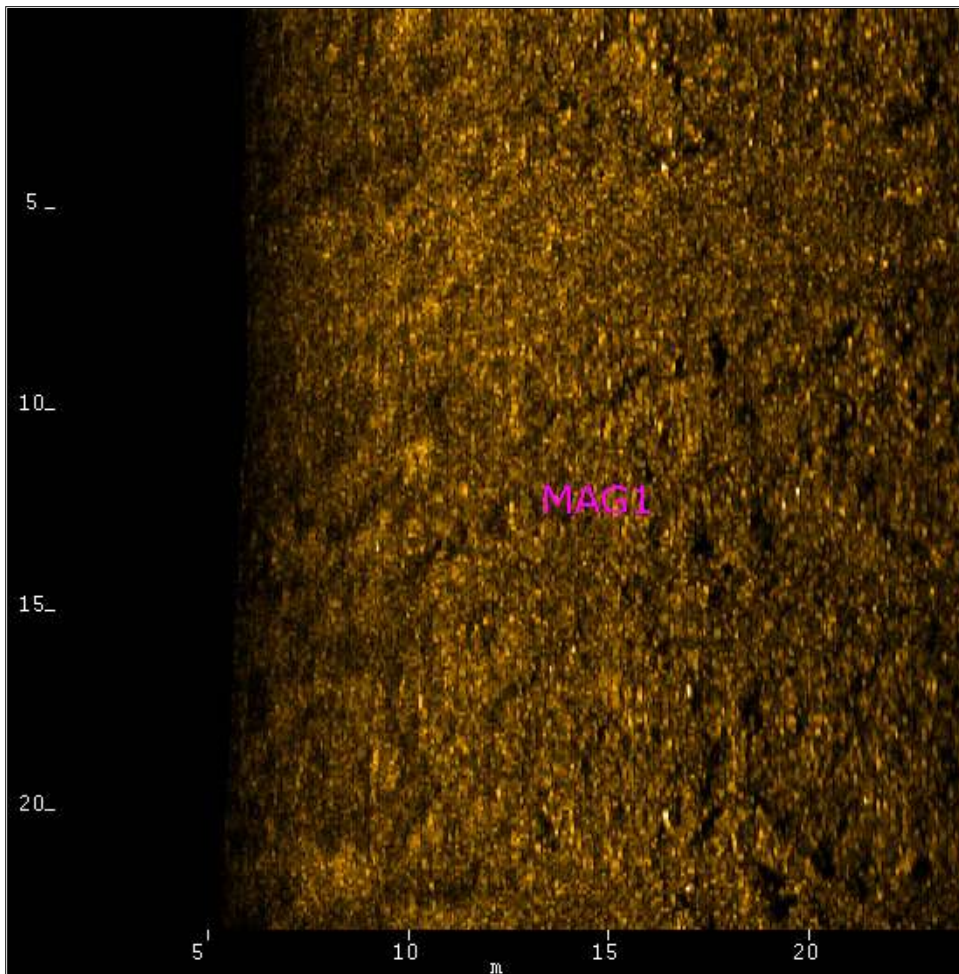
1. Unknown magnetic feature recorded as MAG1. This feature may be archaeological.
2. The palaeo-channel noted in the northwestern end of the site. This quaternary feature may contained cultural heritage deposits and any impact of the channel may negatively impact these features.

Should any further investigative works be carried out in these areas, the results should be forwarded to the archaeological contractor for analysis.



## APPENDIX 1. SIDE SCAN SONAR CONTACTS

MAG1



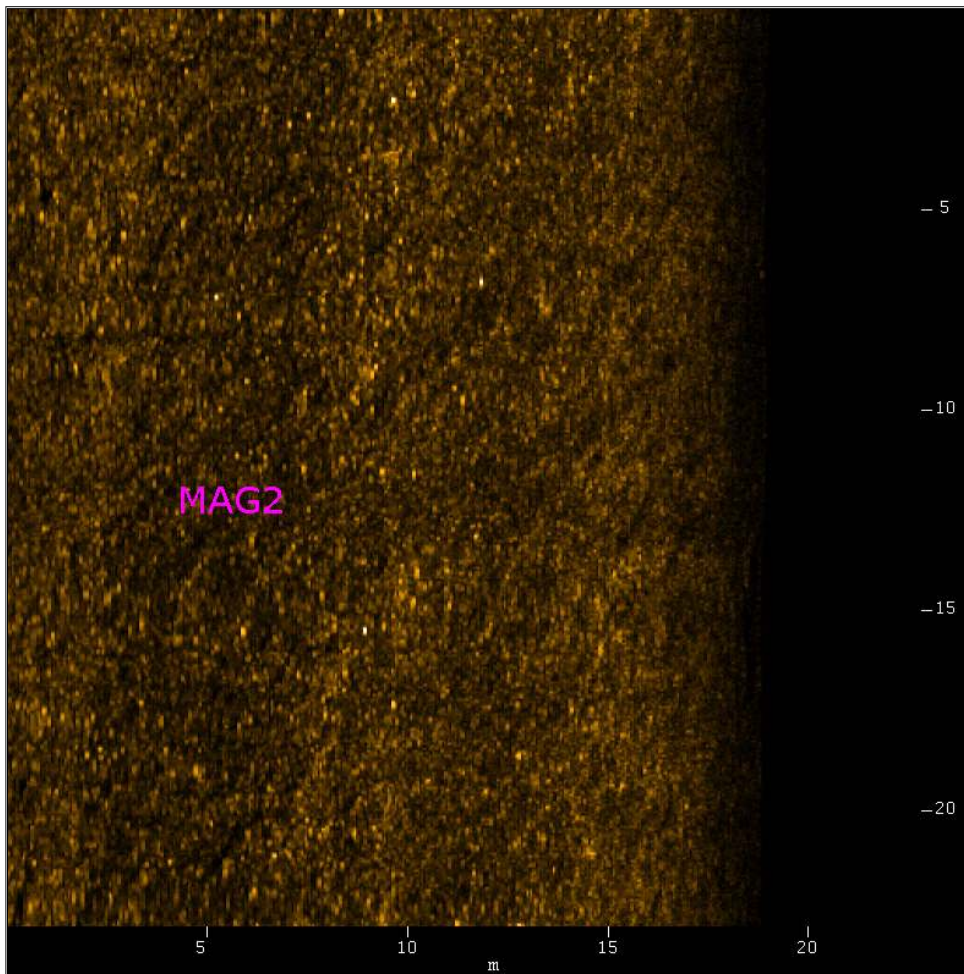
### Contact Info: MAG1

- Sonar Time at Target: 09/24/2011 18:08:02
- Click Position (Lat/Lon Coordinates)  
50.6881103516 -0.3431519866 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687663.81 (Y) 5618510.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924180700.xtf
- Ping Number: 781782
- Range to Target: 12.70 Meters
- Fish Height: 5.85 Meters
- Heading: 65.300 degrees
- Event Number: 0
- Line Name: C11030\_110924180700

### User Entered Info

Target Height: = 0 Meters  
 Target Length: 0 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly: MAG1  
 Avoidance Area:  
 Classification 1: Magnetic Anomaly 1  
 Classification 2:  
 Area:  
 Block:  
 Description: Magnetic Anomaly 1

MAG2



**Contact Info: MAG2**

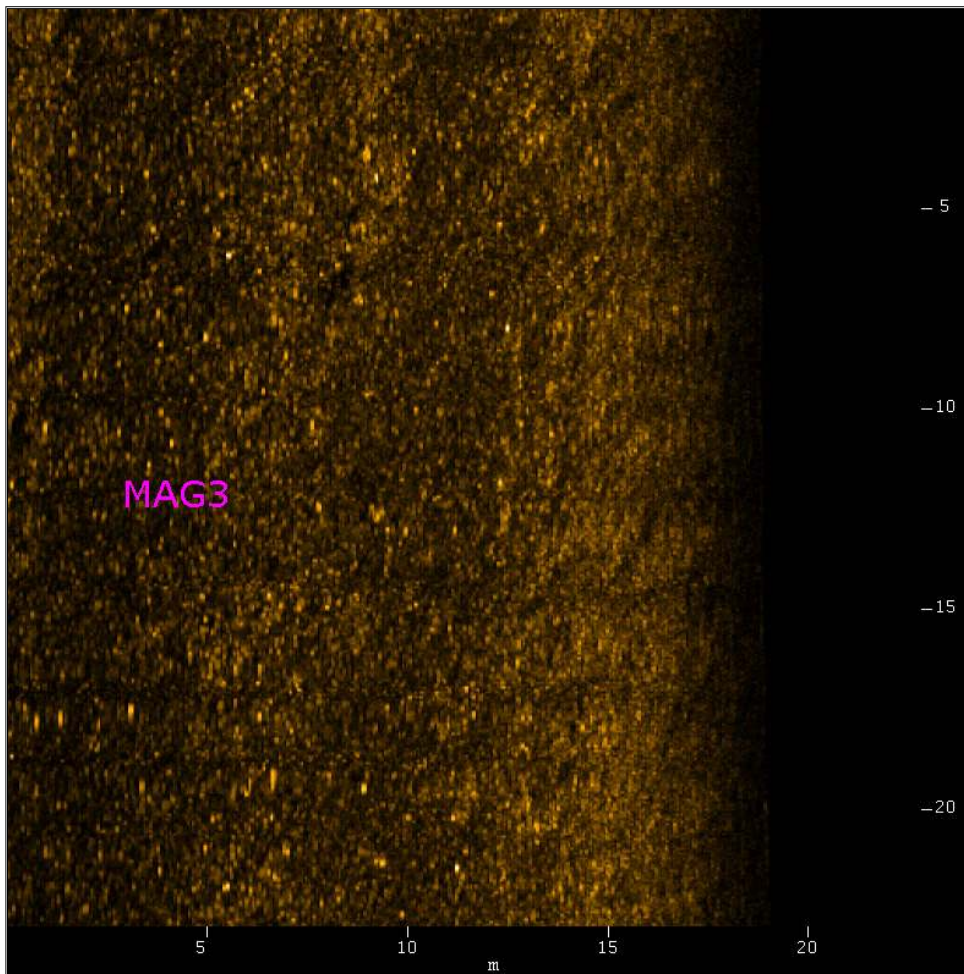
- Sonar Time at Target: 09/24/2011 16:48:32
- Click Position (Lat/Lon Coordinates)  
50.6879005432 -0.3418200016 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687758.69 (Y) 5618490.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924164700.xtf
- Ping Number: 642854
- Range to Target: 20.20 Meters
- Fish Height: 5.14 Meters
- Heading: 274.400 degrees
- Event Number: 0
- Line Name: C11030\_110924164700

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 0 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly: MAG2  
 Avoidance Area:  
 Classification 1: Magnetic Anomaly 2  
 Classification 2:  
 Area:  
 Block:  
 Description: Magnetic Anomaly 2



MAG3



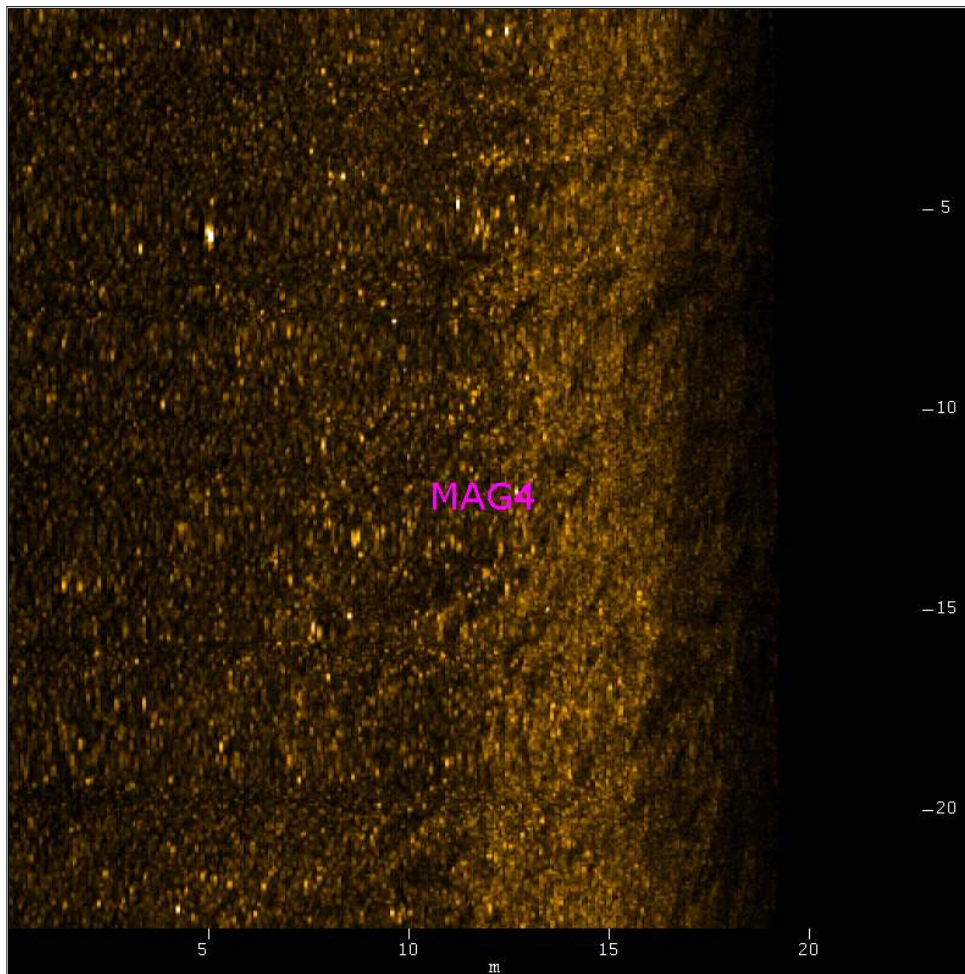
**Contact Info: MAG3**

- Sonar Time at Target: 09/24/2011 16:48:48
- Click Position (Lat/Lon Coordinates)  
50.6878013611 -0.3422240019 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687730.56 (Y) 5618478.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924164700.xtf
- Ping Number: 643333
- Range to Target: 21.56 Meters
- Fish Height: 5.22 Meters
- Heading: 273.300 degrees
- Event Number: 0
- Line Name: C11030\_110924164700

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 0 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly: MAG3  
 Avoidance Area:  
 Classification 1: Magnetic Anomaly 3  
 Classification 2:  
 Area:  
 Block:  
 Description: Magnetic Anomaly 3

## MAG4

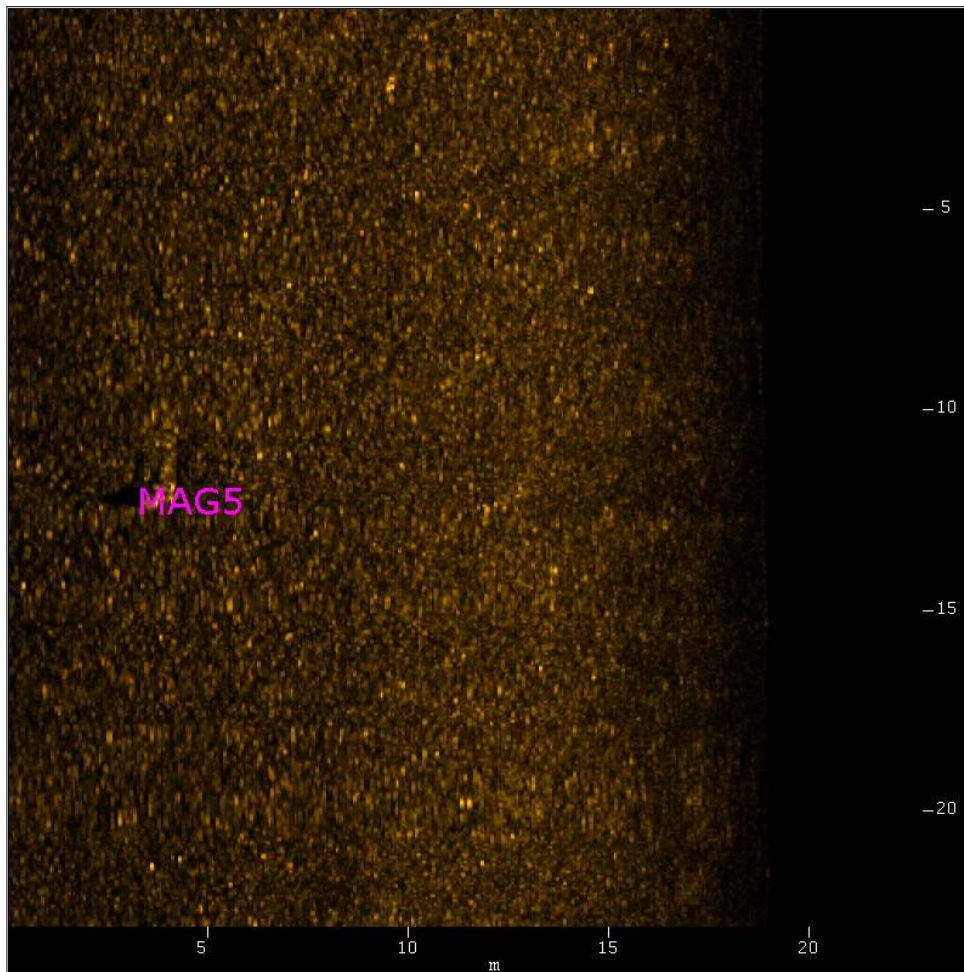
**Contact Info: MAG4**

- Sonar Time at Target: 09/24/2011 16:31:04
- Click Position (Lat/Lon Coordinates)  
50.6875419617 -0.3435600102 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687637.31 (Y) 5618445.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924162900.xtf
- Ping Number: 612326
- Range to Target: 13.92 Meters
- Fish Height: 4.85 Meters
- Heading: 273.800 degrees
- Event Number: 0
- Line Name: C11030\_110924162900

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 0 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly: MAG4  
 Avoidance Area:  
 Classification 1: Magnetic Anomaly 4  
 Classification 2:  
 Area:  
 Block:  
 Description: Magnetic Anomaly 4

## MAG5

**Contact Info: MAG5**

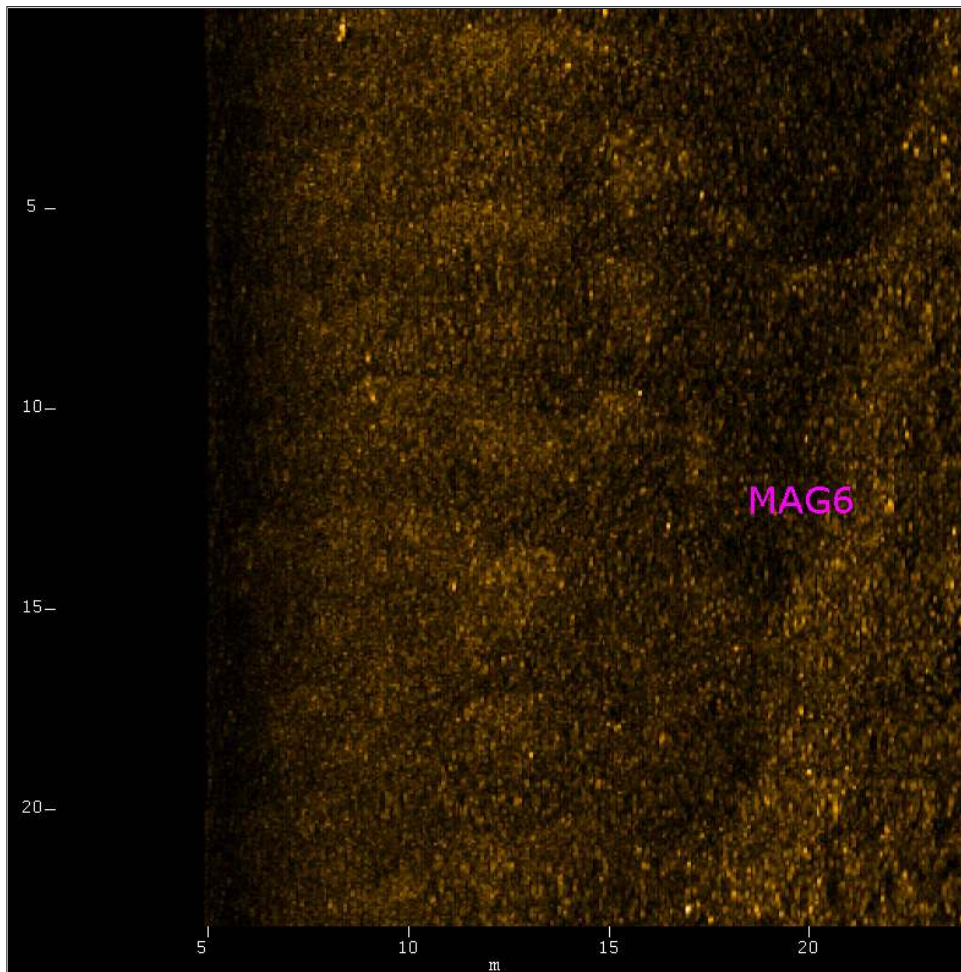
- Sonar Time at Target: 09/24/2011 16:13:53
- Click Position (Lat/Lon Coordinates)  
50.6872978210 -0.3439629972 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687609.81 (Y) 5618417.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924161100.xtf
- Ping Number: 582318
- Range to Target: 21.23 Meters
- Fish Height: 5.16 Meters
- Heading: 276.300 degrees
- Event Number: 0
- Line Name: C11030\_110924161100

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 0 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly: MAG5  
 Avoidance Area:  
 Classification 1: Magnetic Anomaly 5  
 Classification 2:  
 Area:  
 Block:  
 Description: Magnetic Anomaly 5



## MAG6

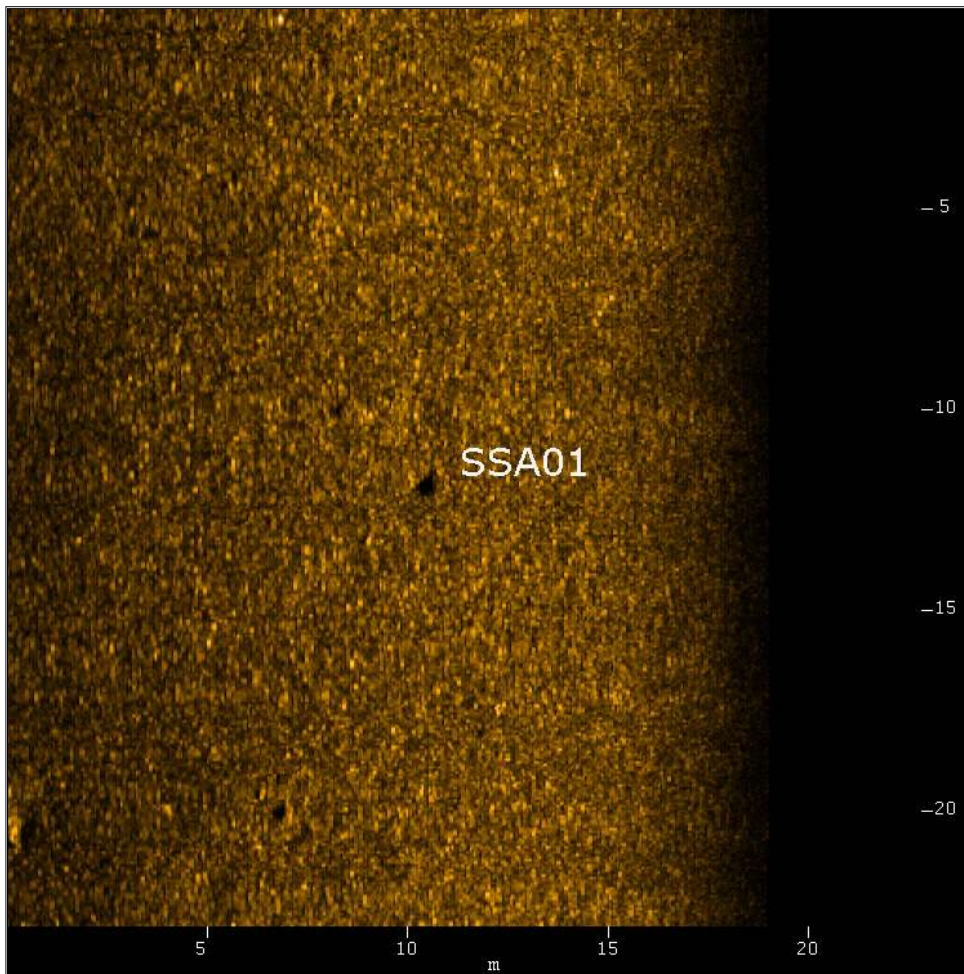
**Contact Info: MAG6**

- Sonar Time at Target: 09/24/2011 11:54:59
- Click Position (Lat/Lon Coordinates)  
50.6872215271 -0.3425559998 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687709.50 (Y) 5618412.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924115300.xtf
- Ping Number: 129864
- Range to Target: 17.95 Meters
- Fish Height: 5.00 Meters
- Heading: 62.000 degrees
- Event Number: 0
- Line Name: C11030\_110924115300

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 0 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly: MAG6  
 Avoidance Area:  
 Classification 1: Magnetic Anomaly 6  
 Classification 2:  
 Area:  
 Block:  
 Description: Magnetic Anomaly 6

SSA01



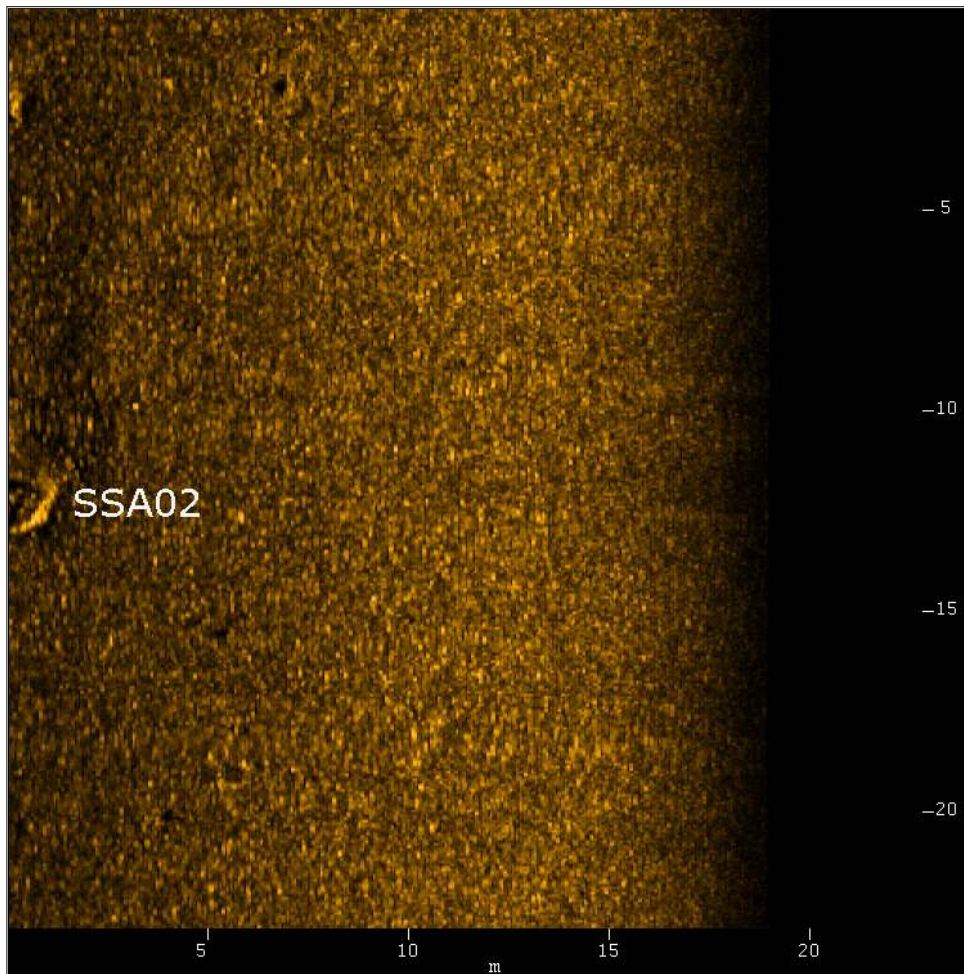
**Contact Info: SSA01**

- Sonar Time at Target: 09/24/2011 15:53:04
- Click Position (Lat/Lon Coordinates)  
50.6880111694 -0.3402290046 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687870.63 (Y) 5618506.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924155300.xtf
- Ping Number: 545921
- Range to Target: -13.19 Meters
- Fish Height: 5.01 Meters
- Heading: 275.100 degrees
- Event Number: 0
- Line Name: C11030\_110924155300

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder

SSA02

**Contact Info: SSA02**

- Sonar Time at Target: 09/24/2011 15:53:14
- Click Position (Lat/Lon Coordinates)  
50.6878814697 -0.3404229879 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687857.50 (Y) 5618491.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924155300.xtf
- Ping Number: 546207
- Range to Target: 22.88 Meters
- Fish Height: 5.09 Meters
- Heading: 274.700 degrees
- Event Number: 0
- Line Name: C11030\_110924155300

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 2 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Large triangular shaped boulder

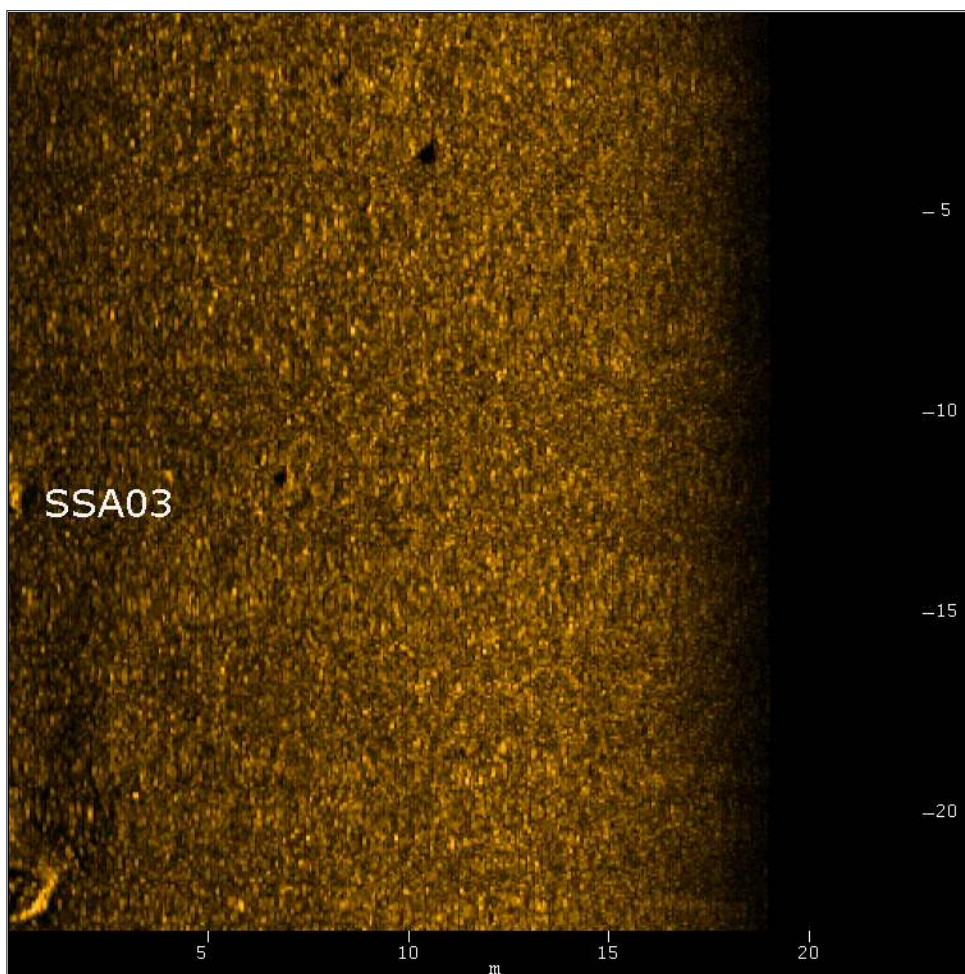
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02/20/2012 09:34:09 PM

targetReportGen2



SSA03



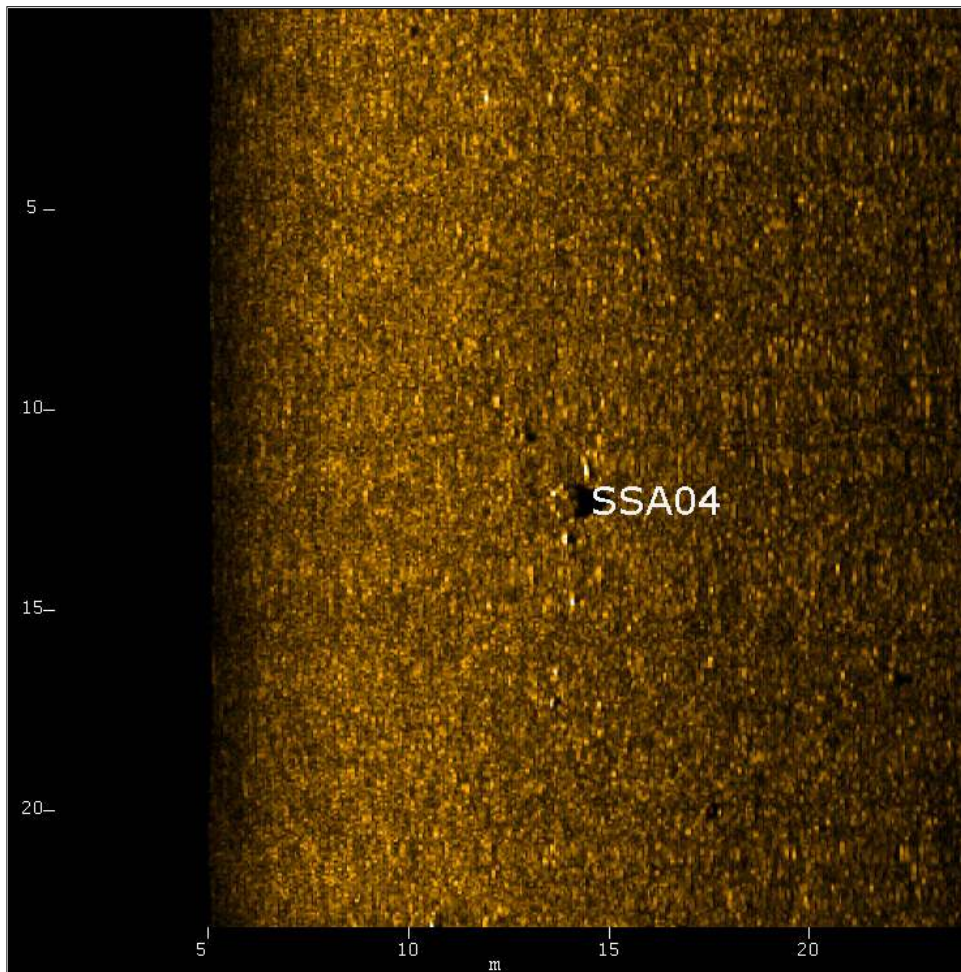
**Contact Info: SSA03**

- Sonar Time at Target: 09/24/2011 15:53:08
- Click Position (Lat/Lon Coordinates)  
50.6879005432 -0.3402920067 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687866.63 (Y) 5618494.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924155300.xtf
- Ping Number: 546055
- Range to Target: 23.58 Meters
- Fish Height: 5.06 Meters
- Heading: 274.900 degrees
- Event Number: 0
- Line Name: C11030\_110924155300

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Small boulder located near larger SSA02

SSA04

**Contact Info: SSA04**

- Sonar Time at Target: 09/24/2011 15:53:23
- Click Position (Lat/Lon Coordinates)  
50.6881446838 -0.3407889903 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687830.56 (Y) 5618520.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924155300.xtf
- Ping Number: 546466
- Range to Target: 14.02 Meters
- Fish Height: 5.14 Meters
- Heading: 276.700 degrees
- Event Number: 0
- Line Name: C11030\_110924155300

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder with a number of smaller stones surrounding

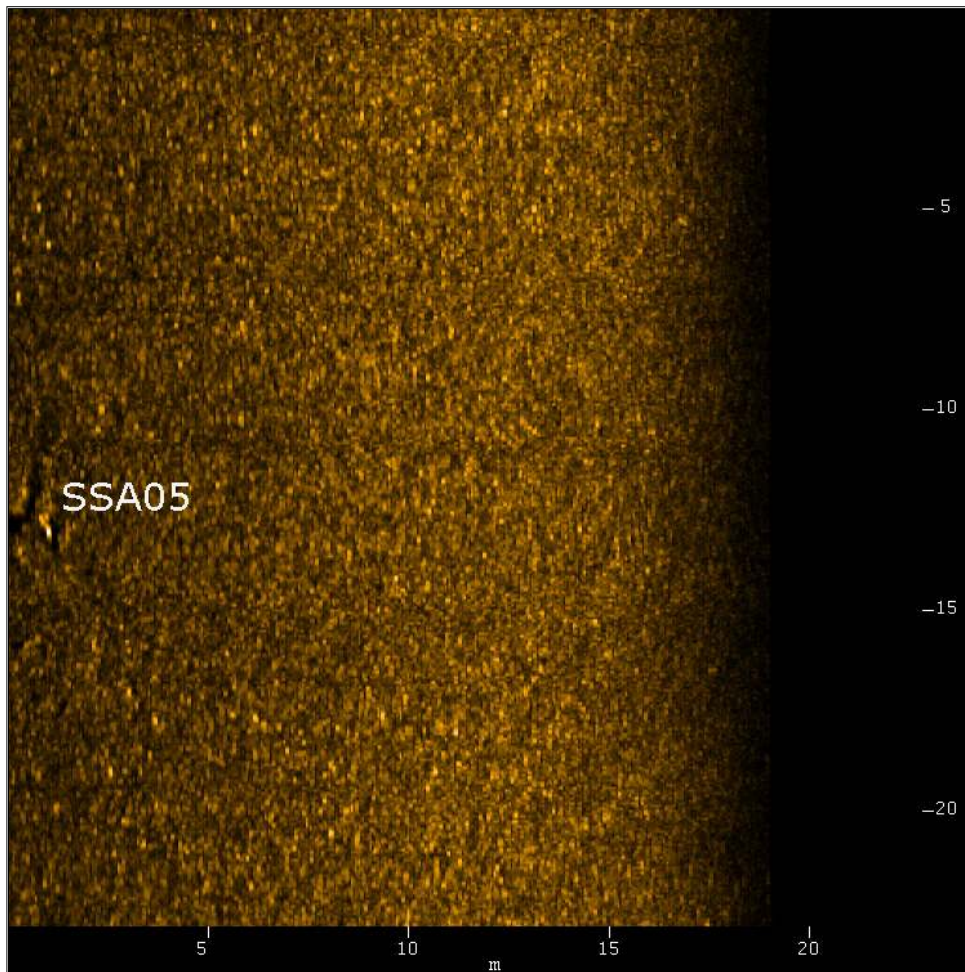
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targetReportGen2



SSA05

**Contact Info: SSA05**

- Sonar Time at Target: 09/24/2011 15:53:54
- Click Position (Lat/Lon Coordinates)  
50.6876945496 -0.3414590061 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687785.00 (Y) 5618468.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924155300.xtf
- Ping Number: 547377
- Range to Target: 23.16 Meters
- Fish Height: 5.06 Meters
- Heading: 276.000 degrees
- Event Number: 0
- Line Name: C11030\_110924155300

**User Entered Info**

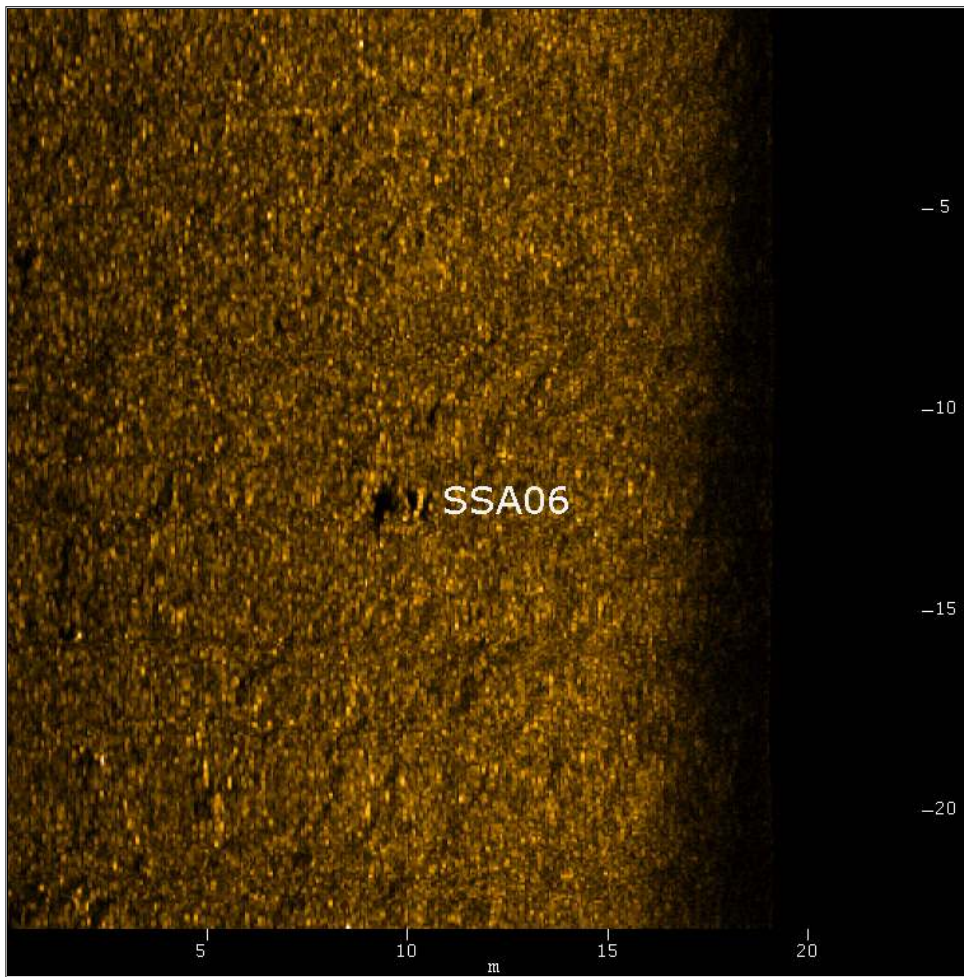
Target Height: = 0 Meters  
 Target Length: 2 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Possible Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Partially buried feature, probably a boulder

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targetReportGen2

SSA06



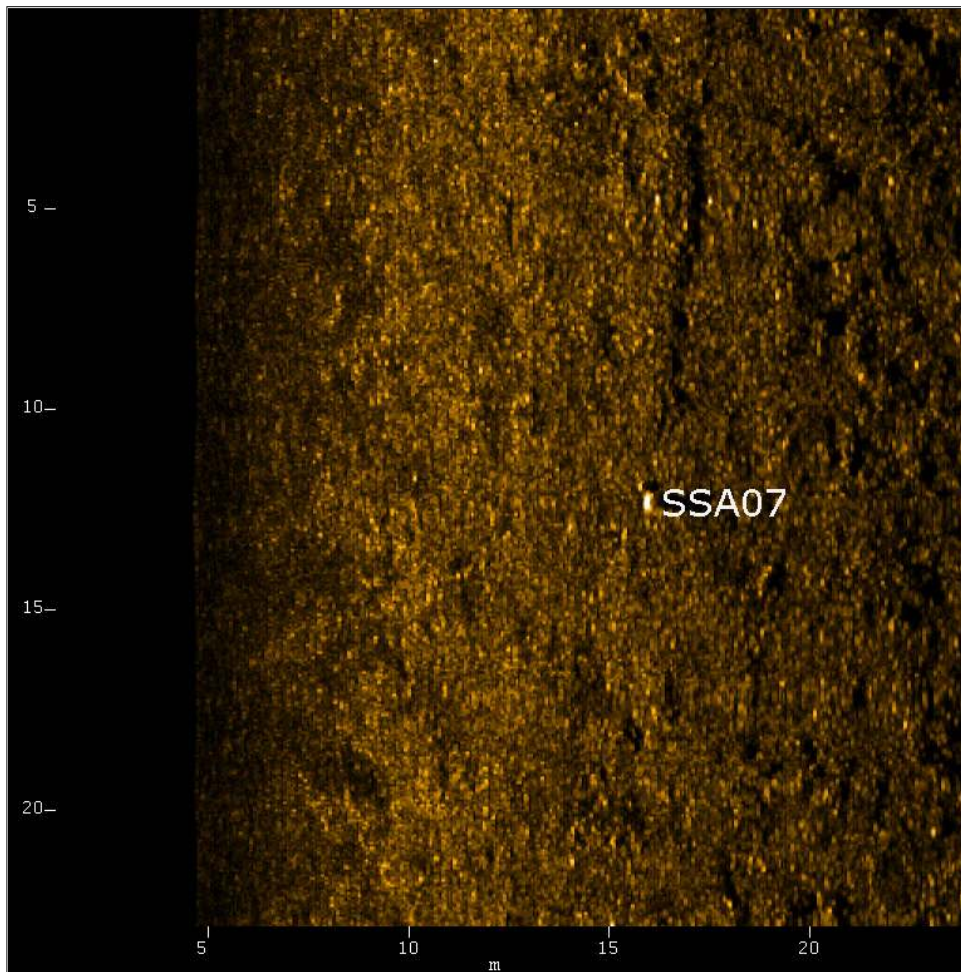
**Contact Info: SSA06**

- Sonar Time at Target: 09/24/2011 15:54:47
- Click Position (Lat/Lon Coordinates)  
50.6875228882 -0.3428040147 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687690.75 (Y) 5618445.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924155300.xtf
- Ping Number: 548921
- Range to Target: 13.59 Meters
- Fish Height: 4.94 Meters
- Heading: 275.900 degrees
- Event Number: 0
- Line Name: C11030\_110924155300

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: boulders  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder

SSA07

**Contact Info: SSA07**

- Sonar Time at Target: 09/24/2011 15:55:21
- Click Position (Lat/Lon Coordinates)  
50.6875762939 -0.3437539935 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687623.44 (Y) 5618449.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924155300.xtf
- Ping Number: 549922
- Range to Target: 15.80 Meters
- Fish Height: 4.74 Meters
- Heading: 275.900 degrees
- Event Number: 0
- Line Name: C11030\_110924155300

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 0 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly: MAG4  
 Avoidance Area:  
 Classification 1: Indistinguishable  
 Classification 2:  
 Area:  
 Block:  
 Description: Small indistinguishable feature, possible boulder,  
 possible fishing pot, possible barrel, has a recorded magnetic  
 signature

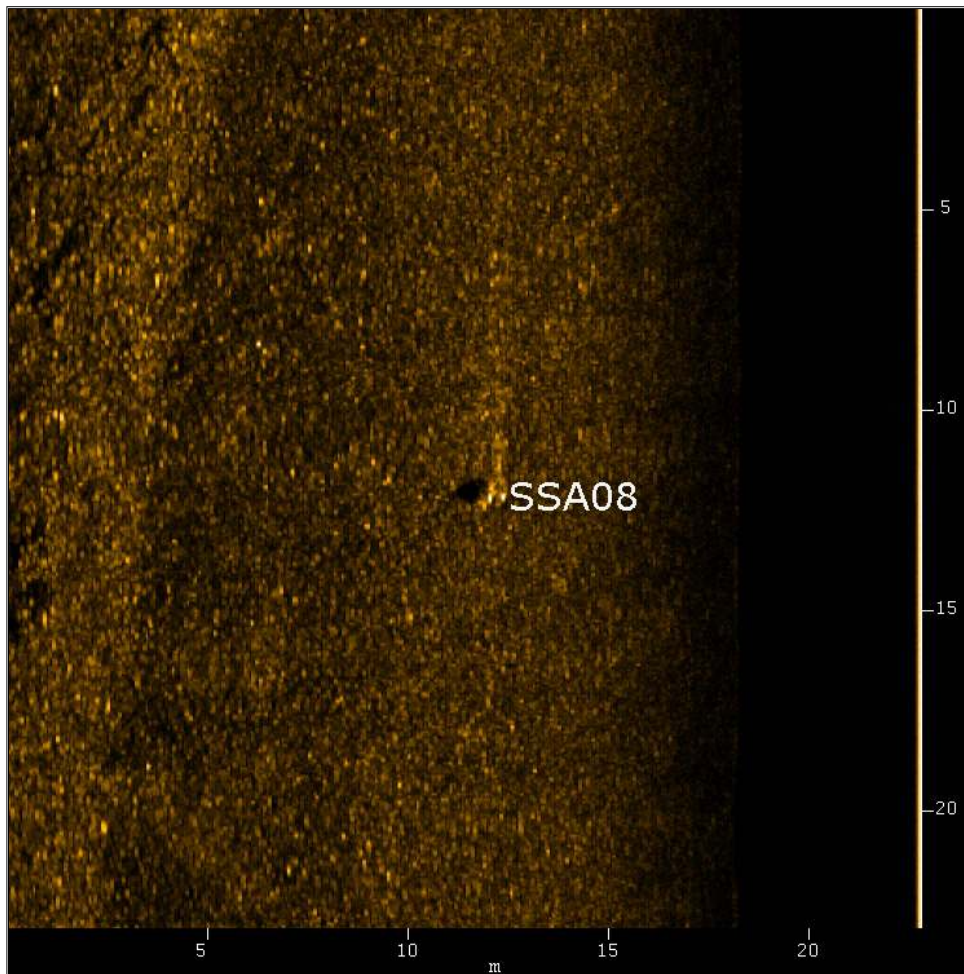
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targetReportGen2



SSA08

**Contact Info: SSA08**

- Sonar Time at Target: 09/24/2011 15:55:34
- Click Position (Lat/Lon Coordinates)  
50.6873016357 -0.3439779878 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687608.69 (Y) 5618418.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924155300.xtf
- Ping Number: 550290
- Range to Target: 10.92 Meters
- Fish Height: 4.72 Meters
- Heading: 274.300 degrees
- Event Number: 0
- Line Name: C11030\_110924155300

**User Entered Info**

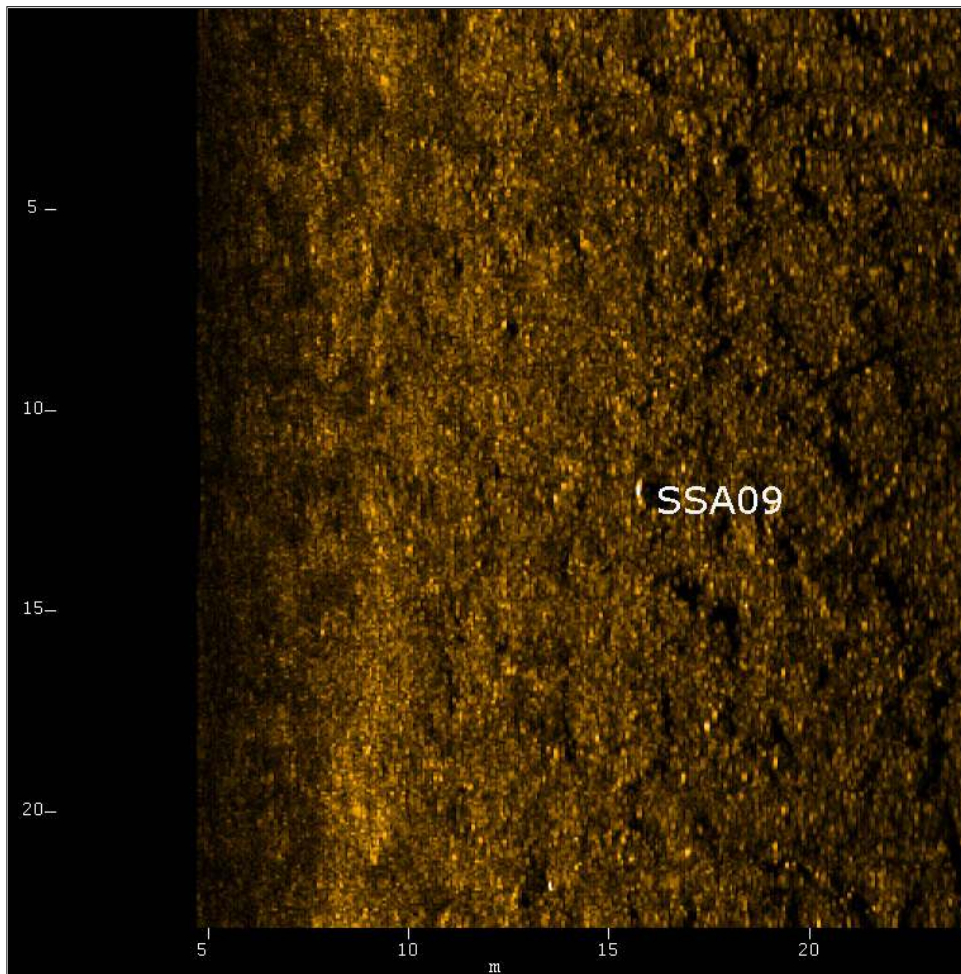
Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly: MAG5  
 Avoidance Area:  
 Classification 1: Probable Man Made Debris  
 Classification 2:  
 Area:  
 Block:  
 Description: Probable Man Made debris associated with  
 Magnetic Anomaly 5

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targetReportGen2

SSA09

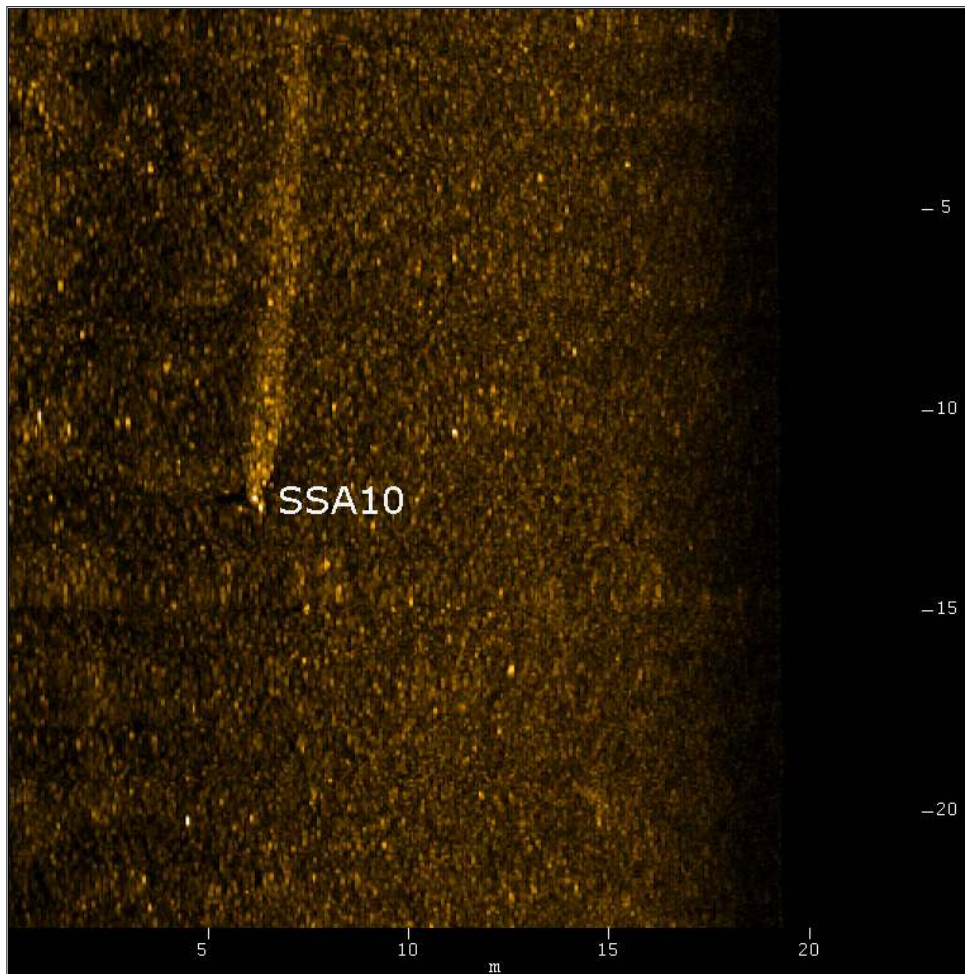
**Contact Info: SSA09**

- Sonar Time at Target: 09/24/2011 15:55:48
- Click Position (Lat/Lon Coordinates)  
50.6874504089 -0.3444299996 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687576.19 (Y) 5618433.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924155300.xtf
- Ping Number: 550704
- Range to Target: 15.66 Meters
- Fish Height: 4.85 Meters
- Heading: 274.400 degrees
- Event Number: 0
- Line Name: C11030\_110924155300

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 0 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Probable Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Probable Boulder

SSA10



**Contact Info: SSA10**

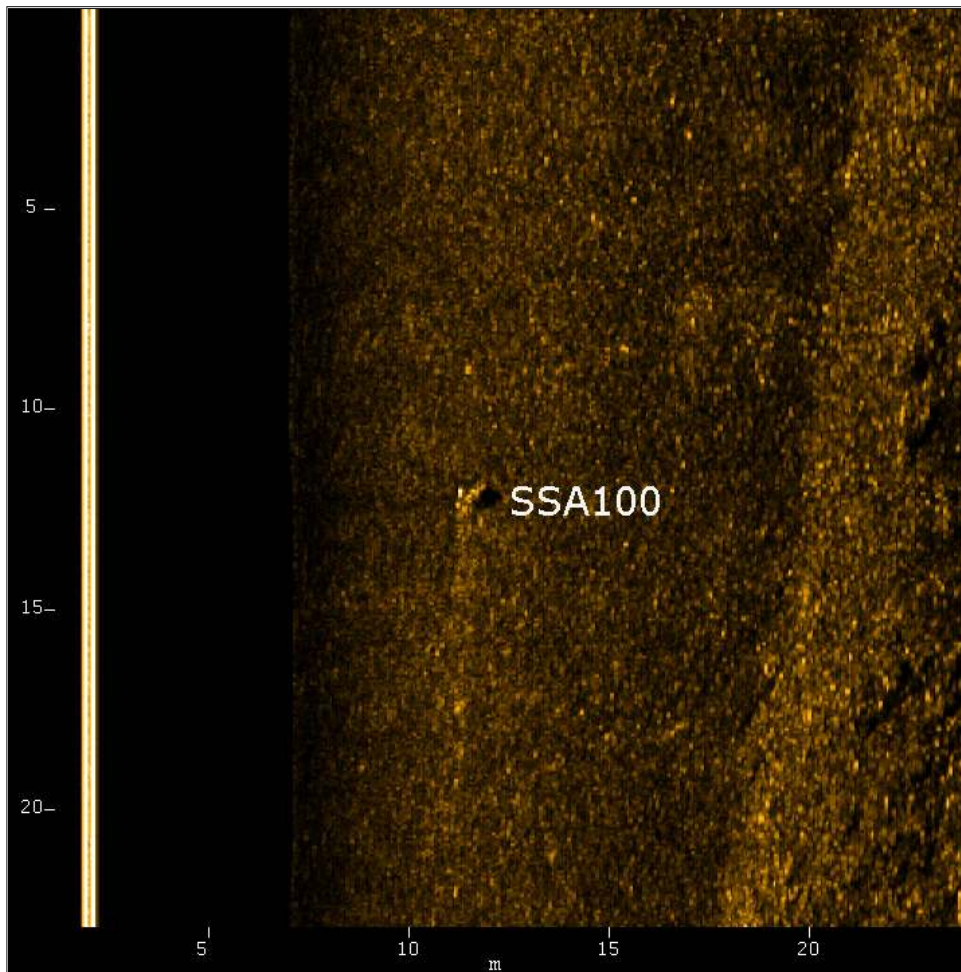
- Sonar Time at Target: 09/24/2011 15:55:52
- Click Position (Lat/Lon Coordinates)  
50.6871566772 -0.3444109857 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687578.75 (Y) 5618401.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924155300.xtf
- Ping Number: 550811
- Range to Target: 17.72 Meters
- Fish Height: 4.79 Meters
- Heading: 274.200 degrees
- Event Number: 0
- Line Name: C11030\_110924155300

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 0 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder with visible scour trail



SSA100

**Contact Info: SSA100**

- Sonar Time at Target: 09/24/2011 12:51:31
- Click Position (Lat/Lon Coordinates)  
50.6876182556 -0.3424099982 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687718.19 (Y) 5618457.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924125000.xtf
- Ping Number: 228644
- Range to Target: 9.94 Meters
- Fish Height: 5.09 Meters
- Heading: 61.100 degrees
- Event Number: 0
- Line Name: C11030\_110924125000

**User Entered Info**

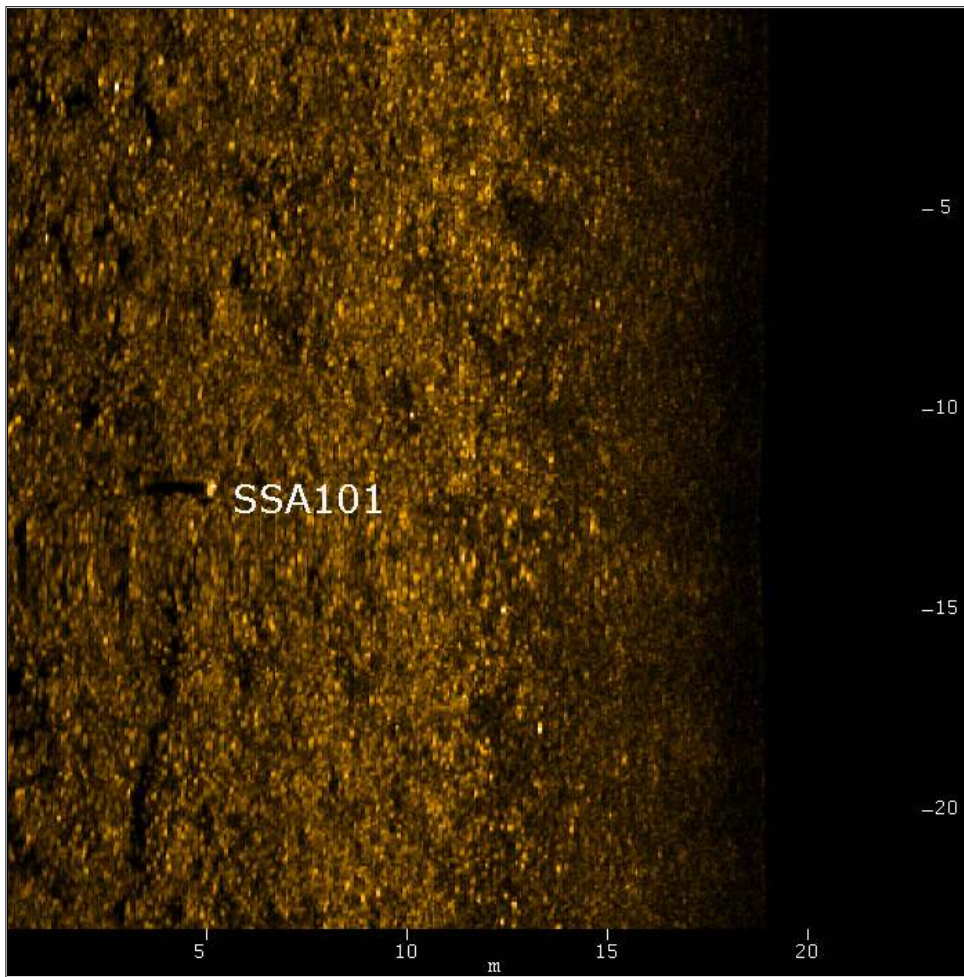
Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder with scour trail

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targetReportGen2

SSA101



**Contact Info: SSA101**

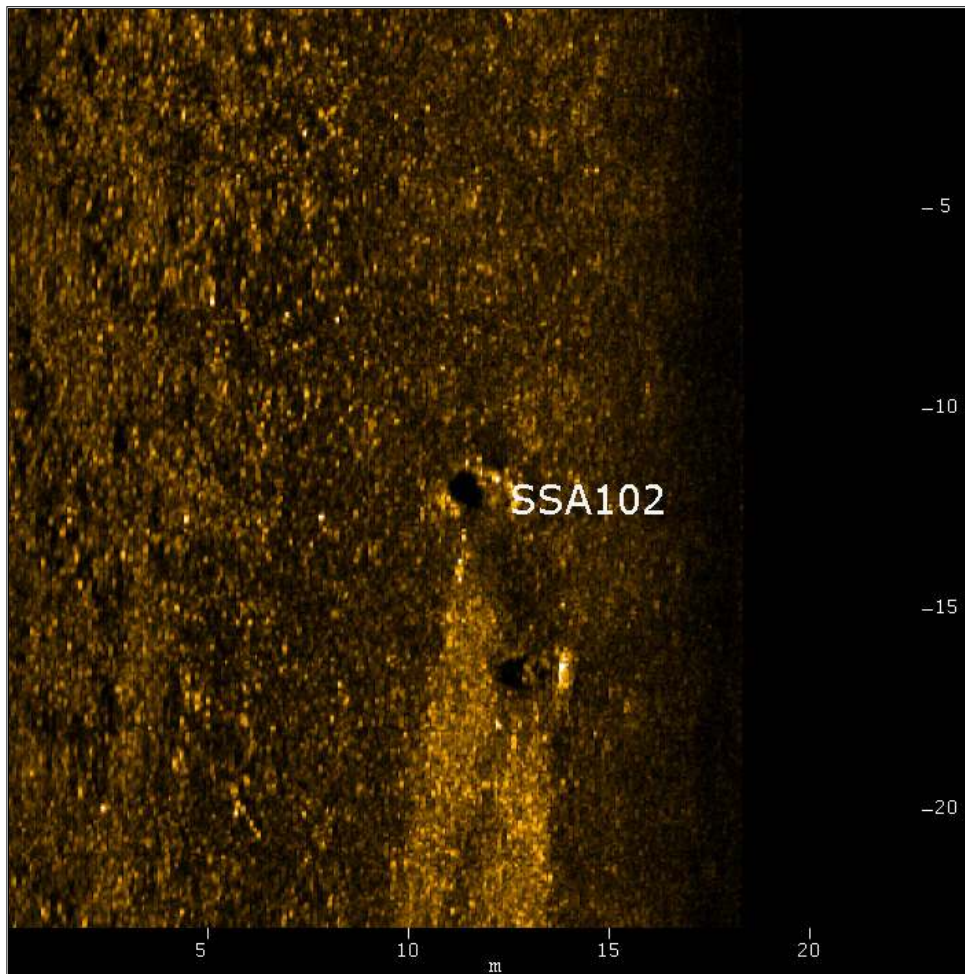
- Sonar Time at Target: 09/24/2011 12:51:42
- Click Position (Lat/Lon Coordinates)  
50.6879081726 -0.3421869874 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687732.75 (Y) 5618490.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924125000.xtf
- Ping Number: 228992
- Range to Target: 18.89 Meters
- Fish Height: 5.25 Meters
- Heading: 64.300 degrees
- Event Number: 0
- Line Name: C11030\_110924125000

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 0 Meters  
 Target Shadow: 2 Meters  
 Target Width: 0 Meters  
 Mag Anomaly: MAG3  
 Avoidance Area:  
 Classification 1: Possible Man Made Debris  
 Classification 2:  
 Area:  
 Block:  
 Description: Possible man made debris associated with  
 magnetic anomaly 3



SSA102

**Contact Info: SSA102**

- Sonar Time at Target: 09/24/2011 12:52:09
- Click Position (Lat/Lon Coordinates)  
50.6879692078 -0.3414480090 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687784.75 (Y) 5618499.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924125000.xtf
- Ping Number: 229761
- Range to Target: 11.39 Meters
- Fish Height: 5.07 Meters
- Heading: 61.100 degrees
- Event Number: 0
- Line Name: C11030\_110924125000

**User Entered Info**

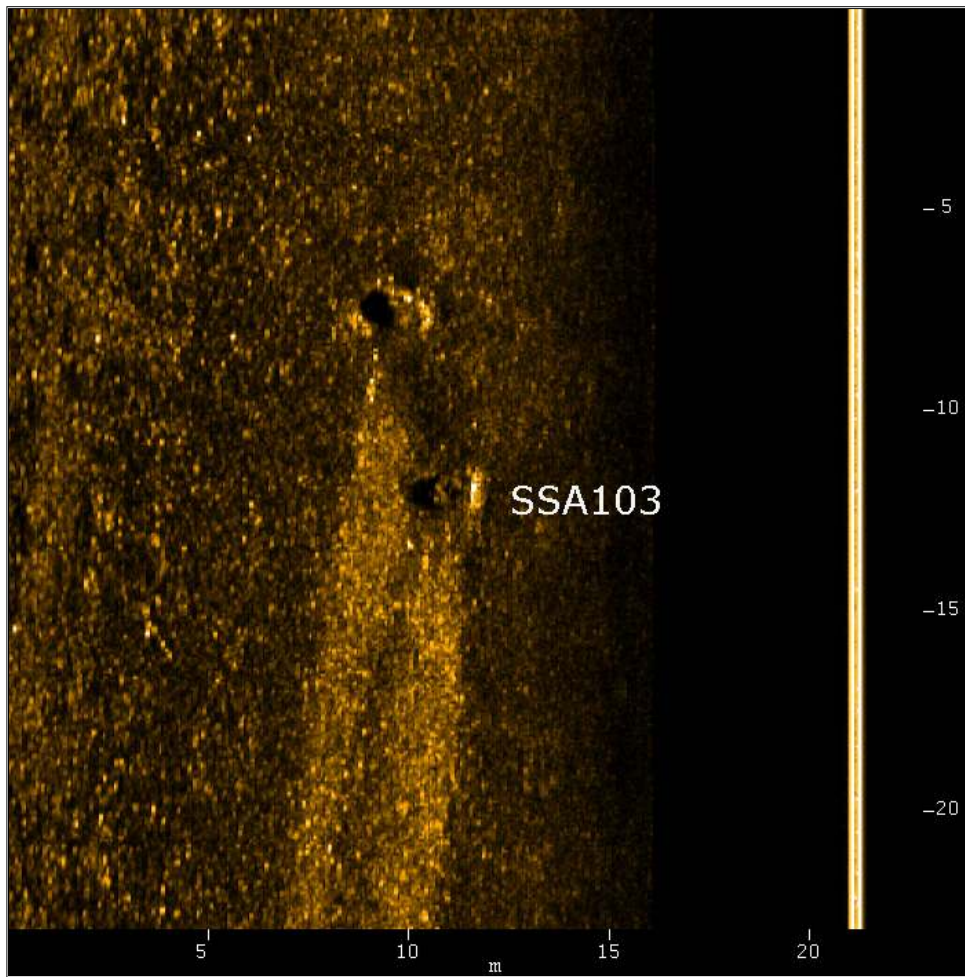
Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 1 Meters  
 Target Width: 1 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder with scour trail

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targetReportGen2

SSA103



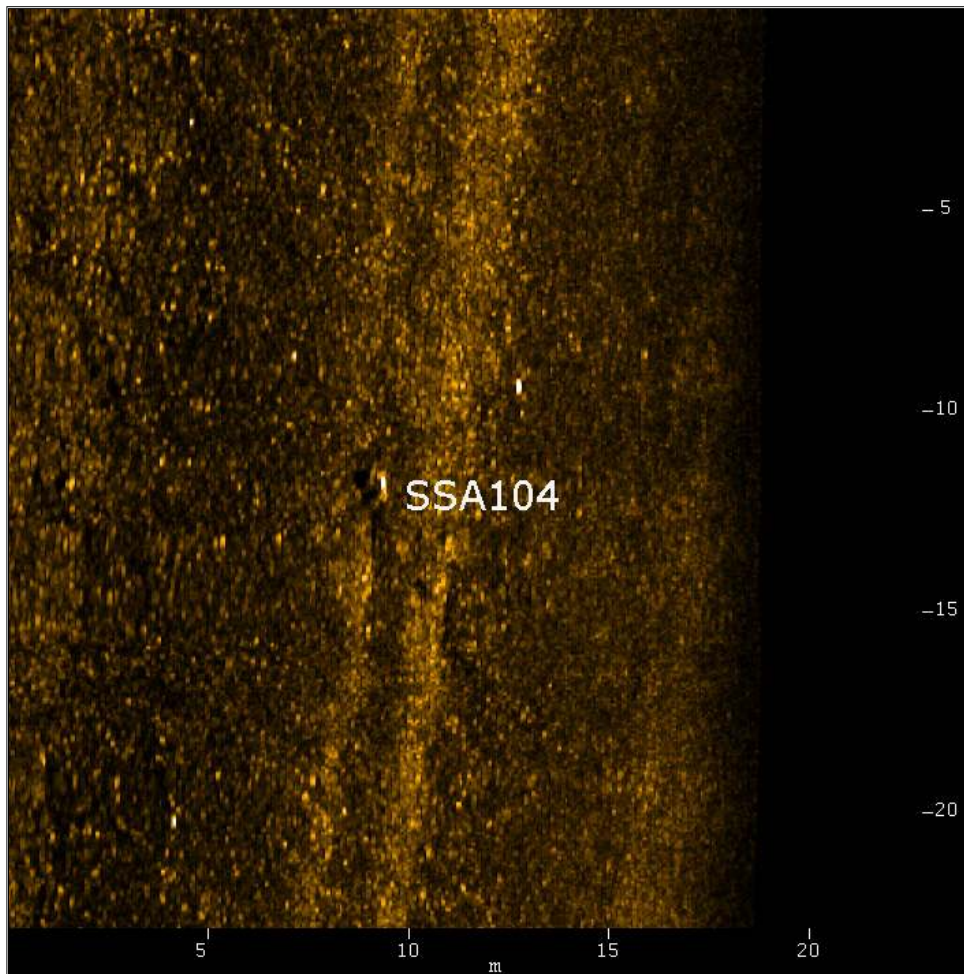
**Contact Info: SSA103**

- Sonar Time at Target: 09/24/2011 12:52:11
- Click Position (Lat/Lon Coordinates)  
50.6879615784 -0.3413760066 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687789.81 (Y) 5618498.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924125000.xtf
- Ping Number: 229827
- Range to Target: 9.19 Meters
- Fish Height: 5.10 Meters
- Heading: 60.700 degrees
- Event Number: 0
- Line Name: C11030\_110924125000

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder adjacent to SSA102

SSA104

**Contact Info: SSA104**

- Sonar Time at Target: 09/24/2011 12:52:23
- Click Position (Lat/Lon Coordinates)  
50.6880722046 -0.3410870135 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687809.81 (Y) 5618511.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924125000.xtf
- Ping Number: 230164
- Range to Target: 14.63 Meters
- Fish Height: 5.28 Meters
- Heading: 60.400 degrees
- Event Number: 0
- Line Name: C11030\_110924125000

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder in scour field of SSA102 SSA103

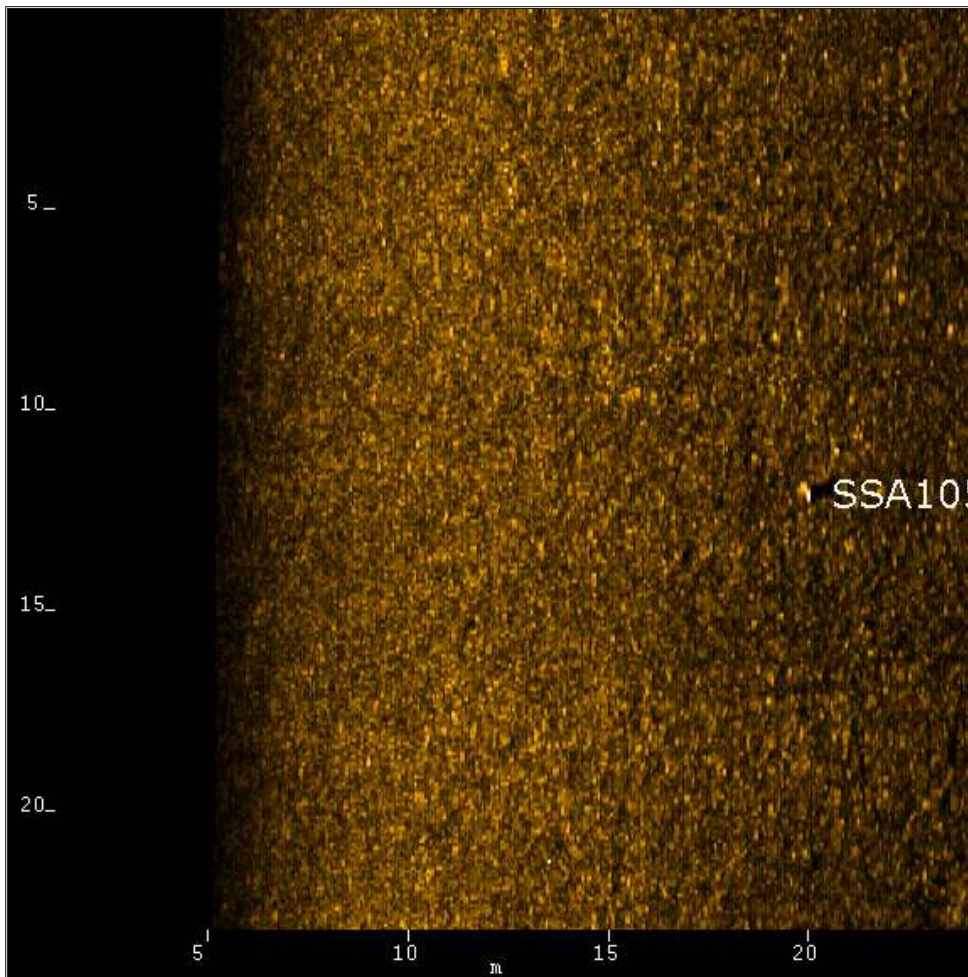
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targetReportGen2



SSA105



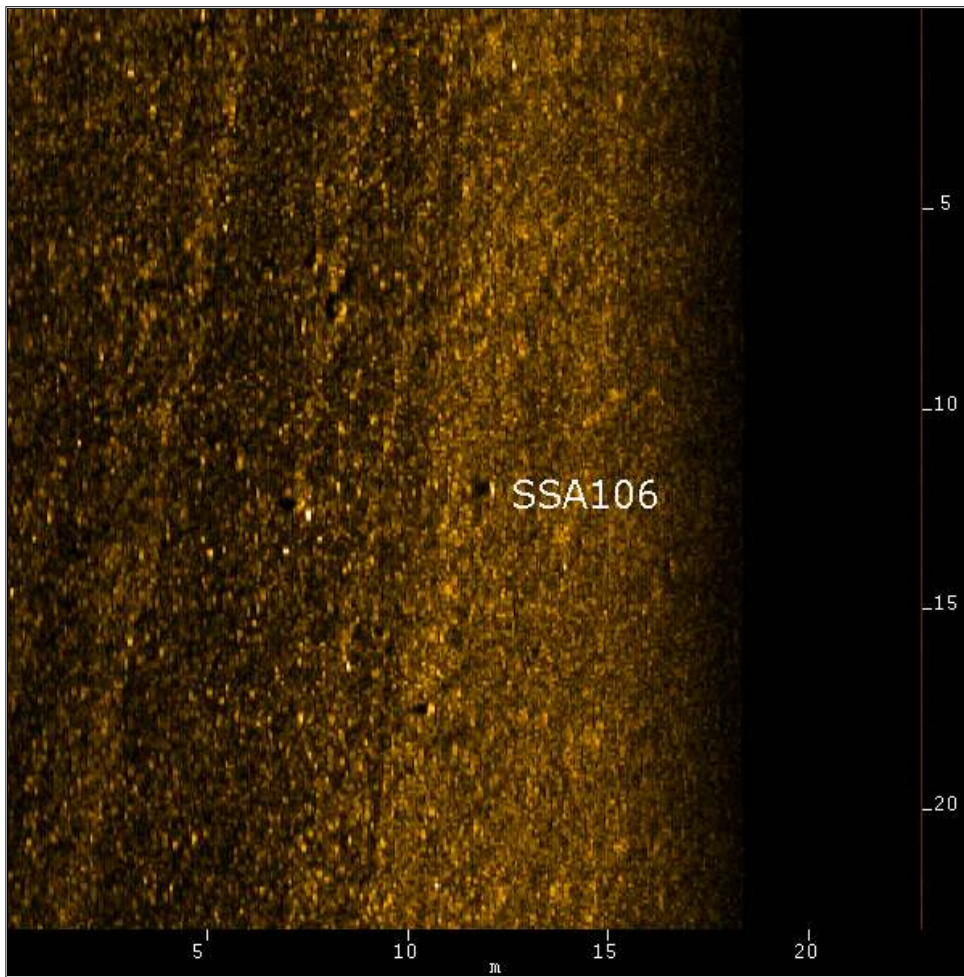
**Contact Info: SSA105**

- Sonar Time at Target: 09/24/2011 16:04:04
- Click Position (Lat/Lon Coordinates)  
50.6887321472 -0.3413870037 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687786.00 (Y) 5618583.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924160200.xtf
- Ping Number: 565138
- Range to Target: 19.92 Meters
- Fish Height: 5.31 Meters
- Heading: 62.400 degrees
- Event Number: 0
- Line Name: C11030\_110924160200

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder

SSA106



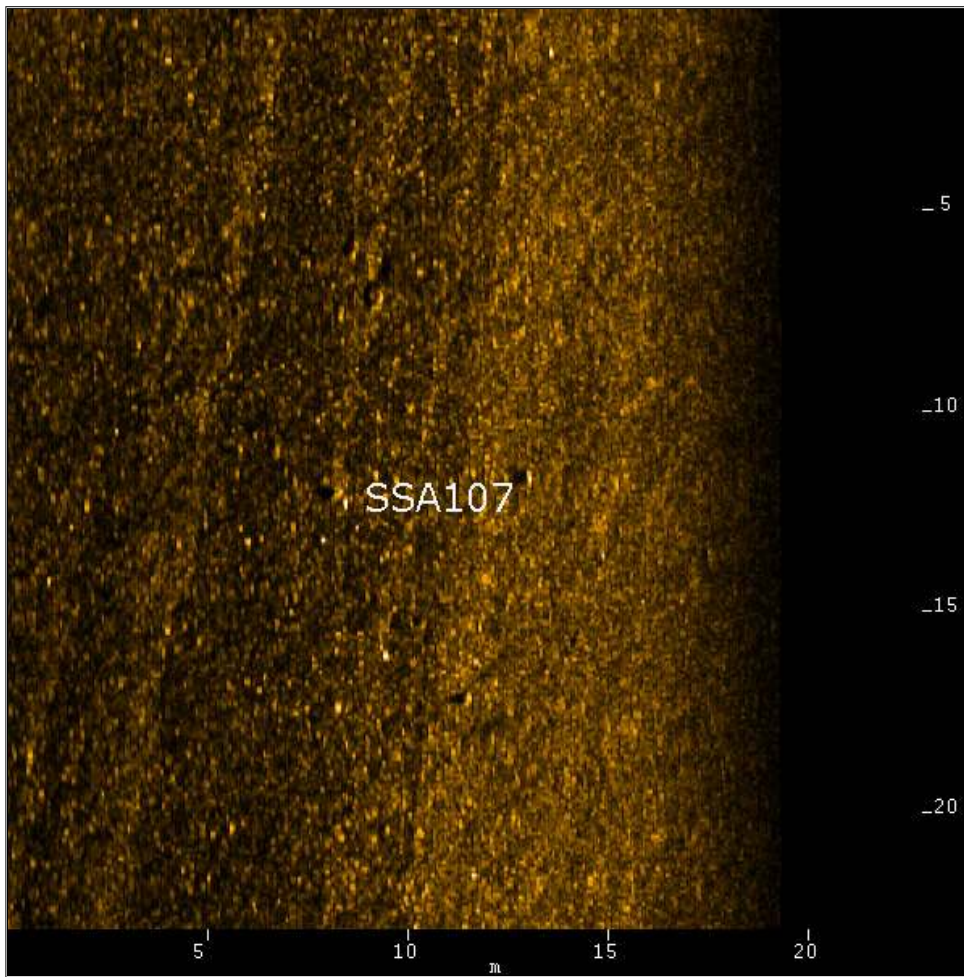
**Contact Info: SSA106**

- Sonar Time at Target: 09/24/2011 11:25:49
- Click Position (Lat/Lon Coordinates)  
50.6883049011 -0.3410600126 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687810.75 (Y) 5618537.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924112500.xtf
- Ping Number: 78882
- Range to Target: 11.06 Meters
- Fish Height: 4.78 Meters
- Heading: 276.700 degrees
- Event Number: 0
- Line Name: C11030\_110924112500

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 0 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Small Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Small boulder

SSA107



**Contact Info: SSA107**

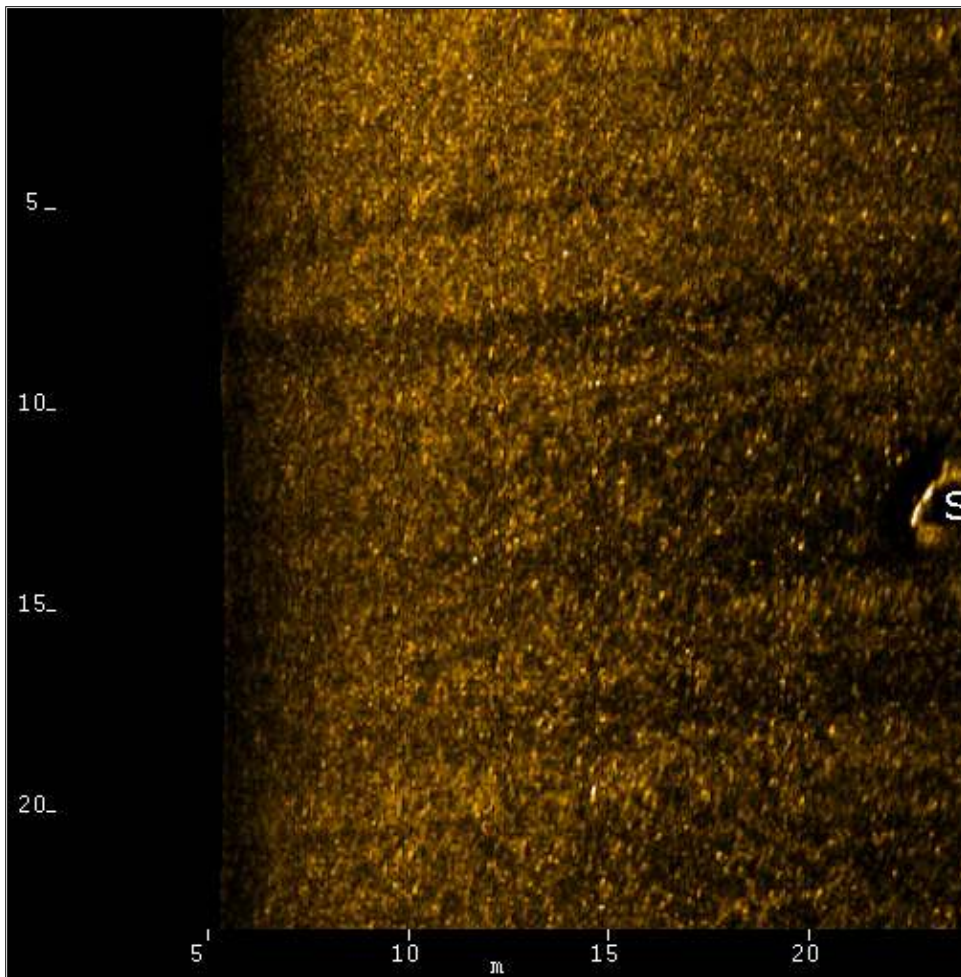
- Sonar Time at Target: 09/24/2011 11:25:49
- Click Position (Lat/Lon Coordinates)  
50.6882591248 -0.3410469890 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687811.88 (Y) 5618532.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS Xtfs\C11030\_110924112500.xtf
- Ping Number: 78886
- Range to Target: 15.66 Meters
- Fish Height: 4.78 Meters
- Heading: 275.400 degrees
- Event Number: 0
- Line Name: C11030\_110924112500

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 0 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Small Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Small Boulder



SSA108

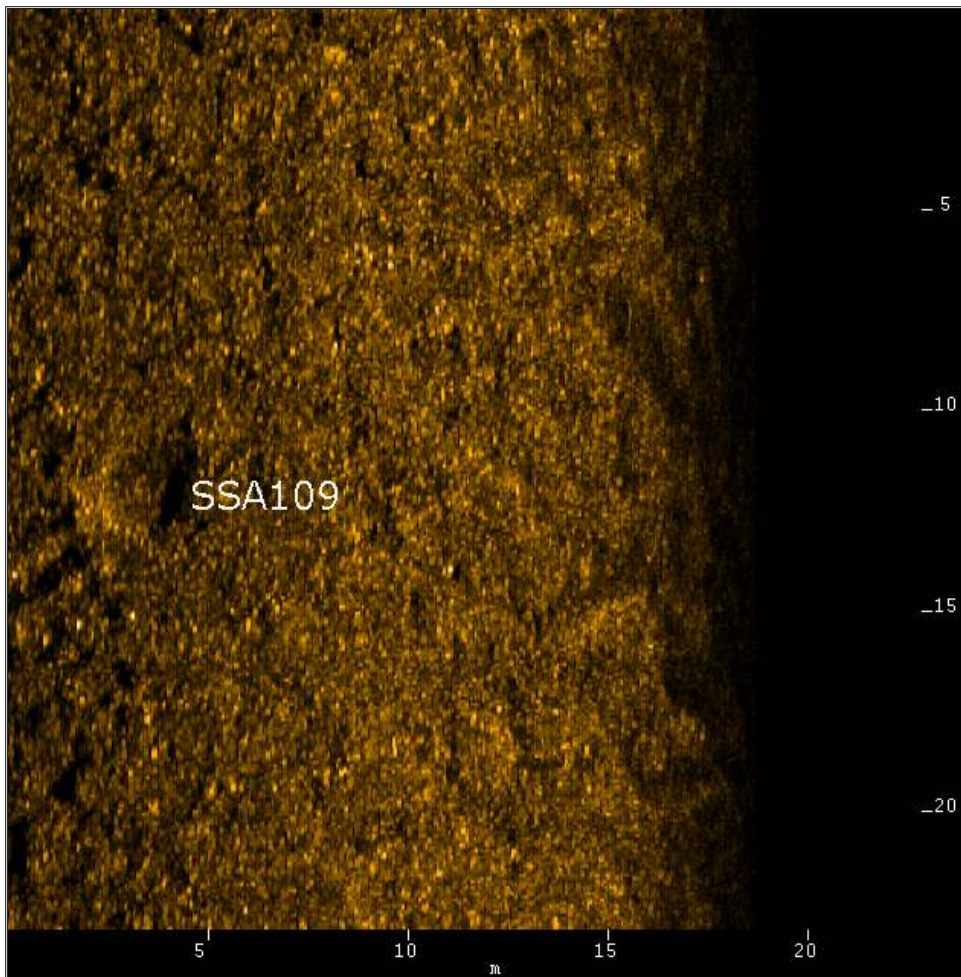
**Contact Info: SSA108**

- Sonar Time at Target: 09/24/2011 17:37:46
- Click Position (Lat/Lon Coordinates)  
50.6872596741 -0.3429690003 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687680.13 (Y) 5618416.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924173700.xtf
- Ping Number: 728890
- Range to Target: 22.78 Meters
- Fish Height: 5.40 Meters
- Heading: 331.600 degrees
- Event Number: 0
- Line Name: C11030\_110924173700

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 3 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Indistinguishable  
 Classification 2:  
 Area:  
 Block:  
 Description: Indistinguishable feature on edge of sonar record

SSA109

**Contact Info: SSA109**

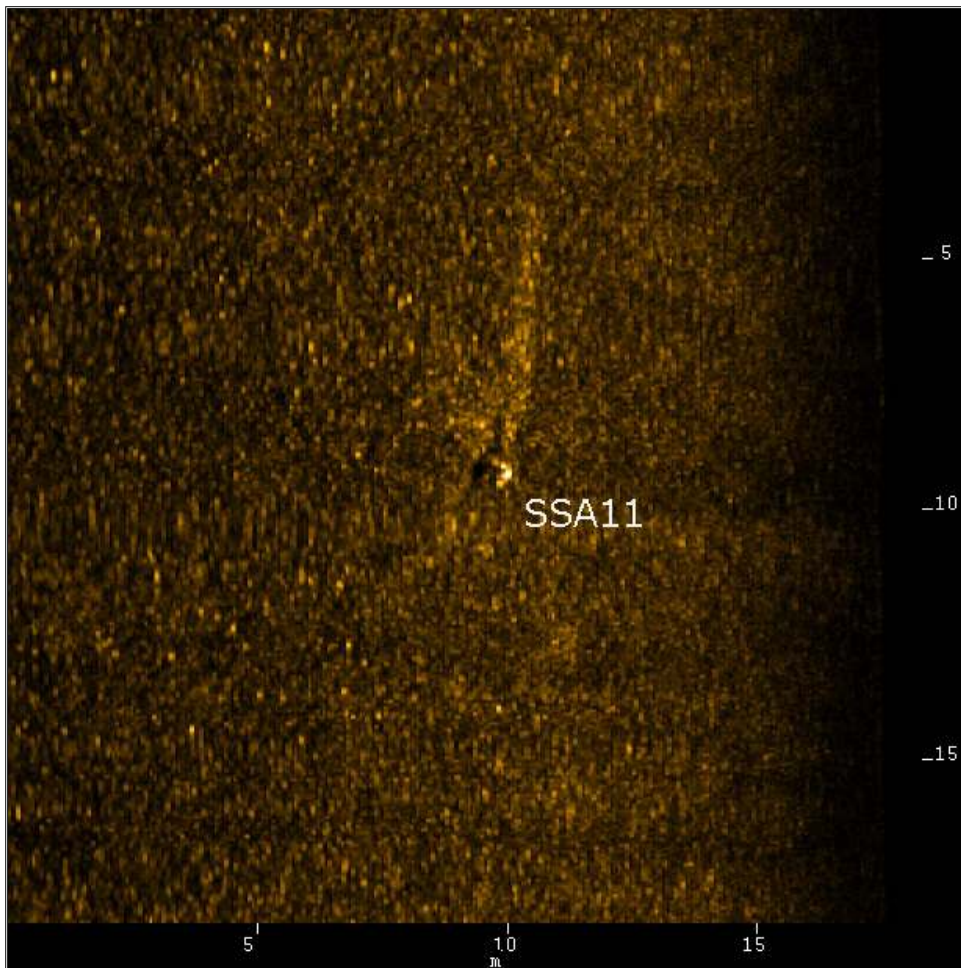
- Sonar Time at Target: 09/24/2011 13:43:37
- Click Position (Lat/Lon Coordinates)  
50.6881332397 -0.3425120115 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687708.94 (Y) 5618514.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924134200.xtf
- Ping Number: 319691
- Range to Target: 20.02 Meters
- Fish Height: 5.44 Meters
- Heading: 61.200 degrees
- Event Number: 0
- Line Name: C11030\_110924134200

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 3 Meters  
 Target Shadow: 0 Meters  
 Target Width: 2 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Hollow  
 Classification 2:  
 Area:  
 Block:  
 Description: Seafloor depression



SSA11



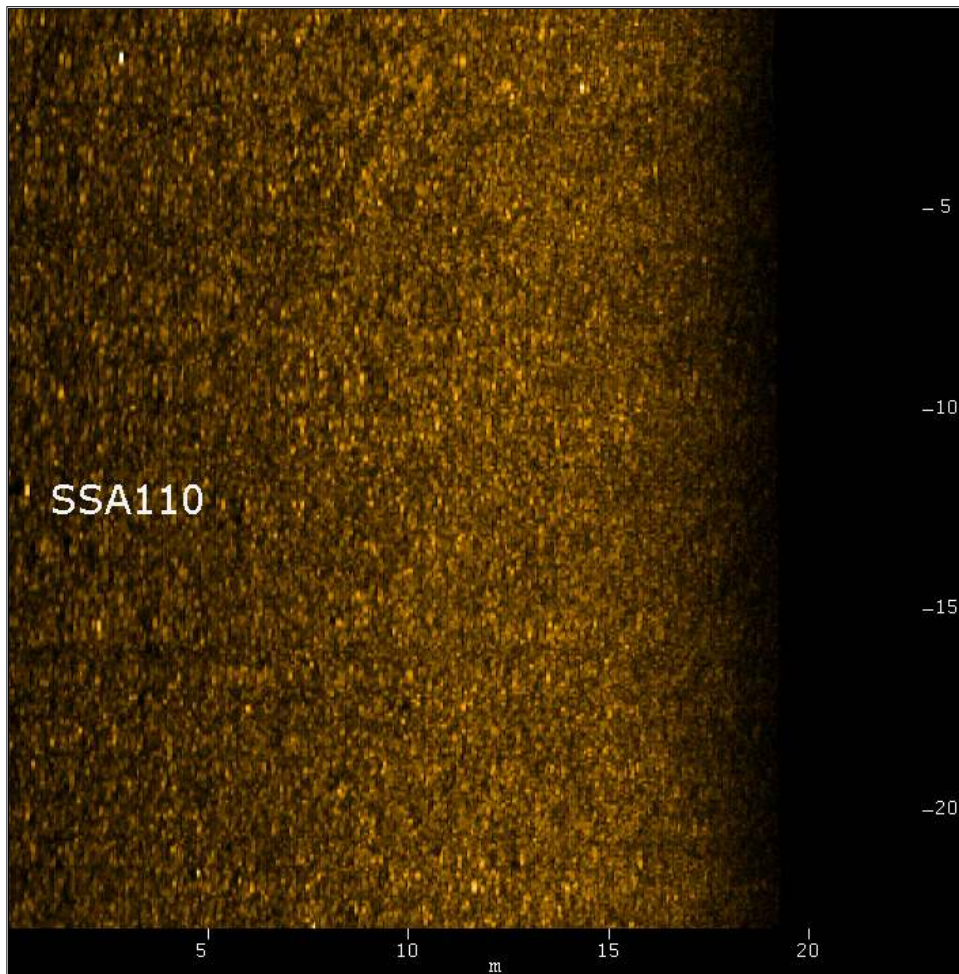
**Contact Info: SSA11**

- Sonar Time at Target: 09/24/2011 15:56:06
- Click Position (Lat/Lon Coordinates)  
50.6871490479 -0.3447830081 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687552.44 (Y) 5618399.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924155300.xtf
- Ping Number: 551227
- Range to Target: 12.19 Meters
- Fish Height: 4.60 Meters
- Heading: 274.200 degrees
- Event Number: 0
- Line Name: C11030\_110924155300

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 0 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Probable Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Probable boulder with scour trail

SSA110



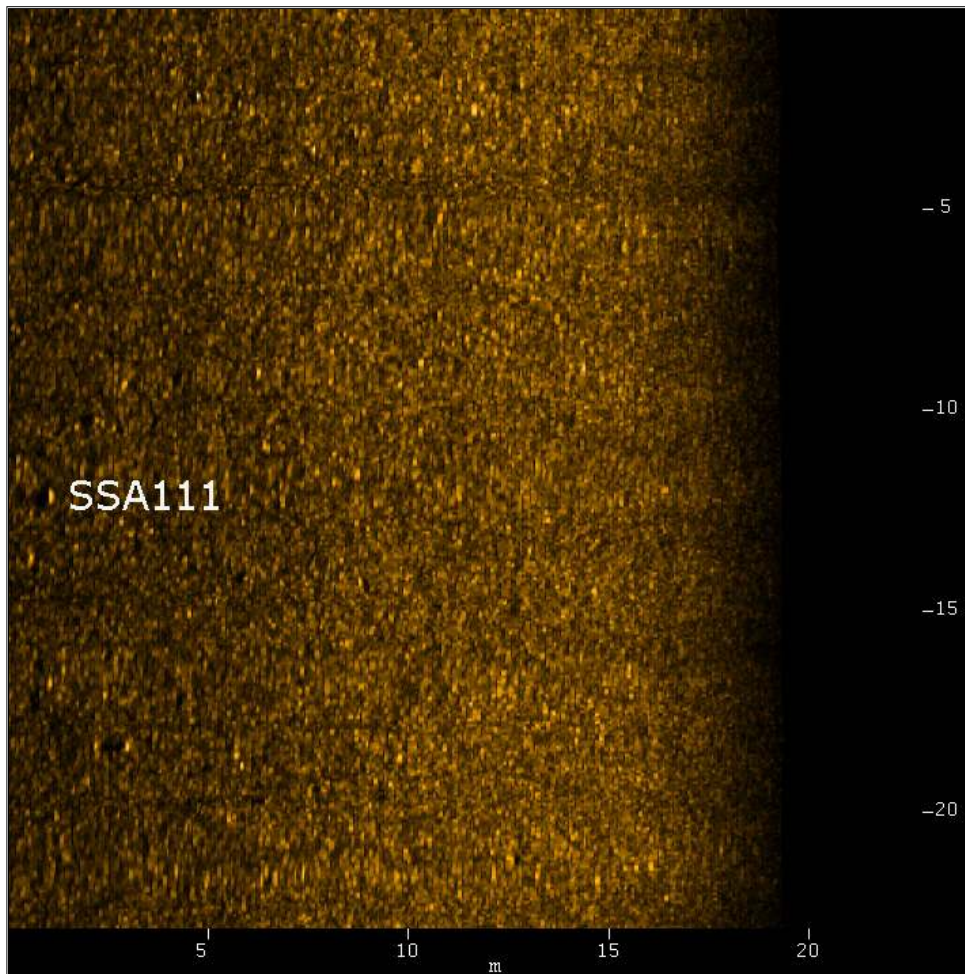
**Contact Info: SSA110**

- Sonar Time at Target: 09/24/2011 18:17:10
- Click Position (Lat/Lon Coordinates)  
50.6886634827 -0.3430739939 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687667.13 (Y) 5618571.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924181600.xtf
- Ping Number: 797740
- Range to Target: 23.44 Meters
- Fish Height: 4.82 Meters
- Heading: 269.100 degrees
- Event Number: 0
- Line Name: C11030\_110924181600

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 0 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Small Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Small Boulder

SSA111

**Contact Info: SSA111**

- Sonar Time at Target: 09/24/2011 18:17:19
- Click Position (Lat/Lon Coordinates)  
50.6886215210 -0.3432860076 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687652.31 (Y) 5618566.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924181600.xtf
- Ping Number: 798025
- Range to Target: 23.02 Meters
- Fish Height: 4.81 Meters
- Heading: 276.700 degrees
- Event Number: 0
- Line Name: C11030\_110924181600

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Small Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Small Boulder

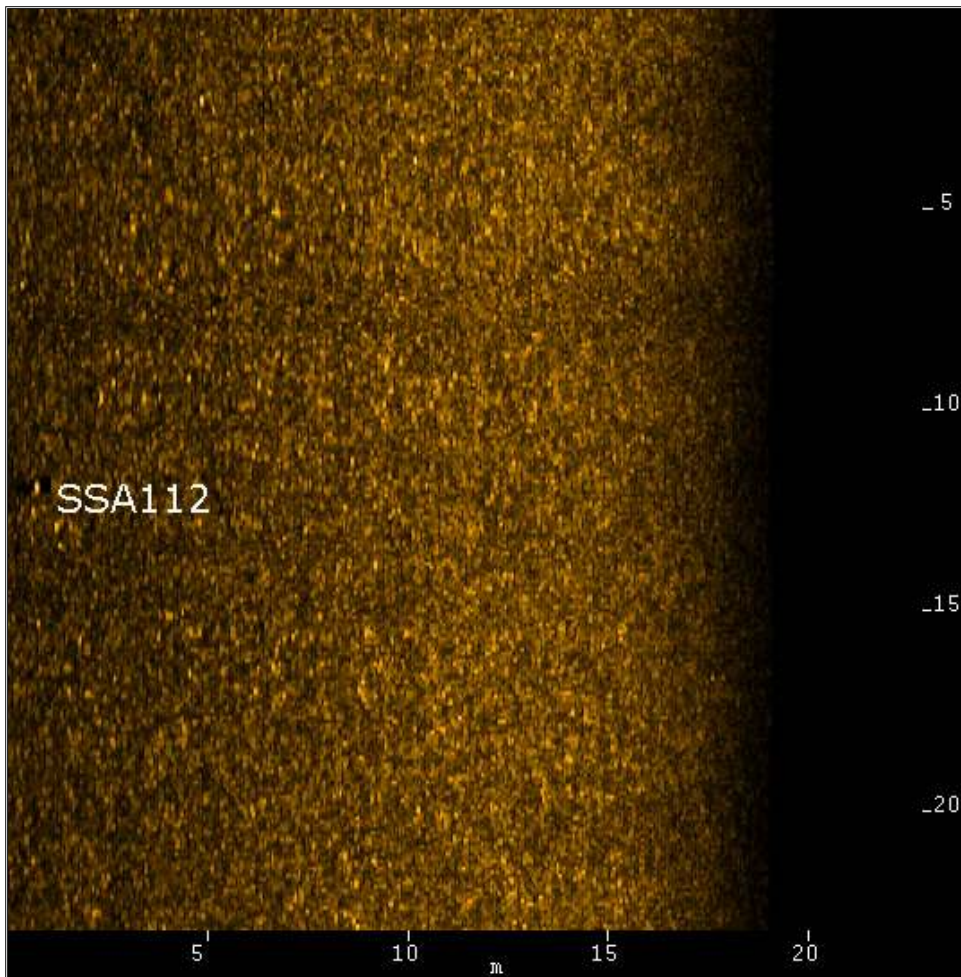
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targetReportGen2



SSA112

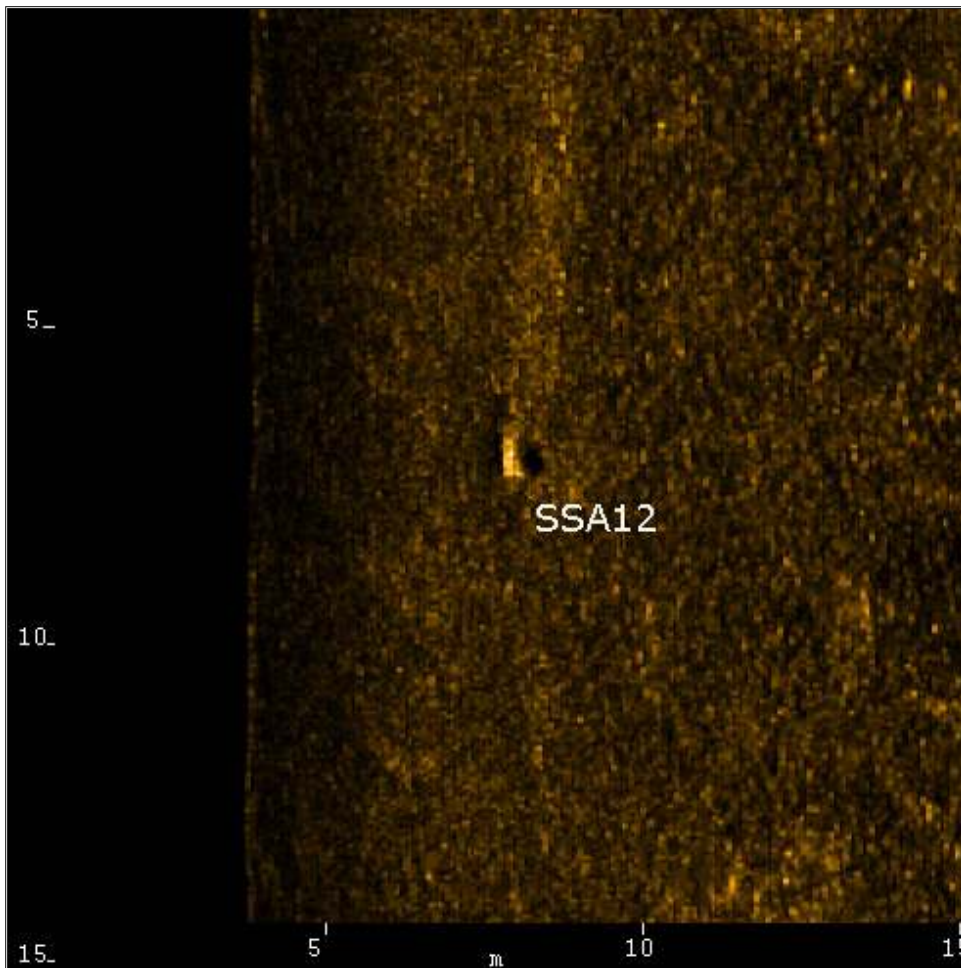
**Contact Info: SSA112**

- Sonar Time at Target: 09/24/2011 16:22:47
- Click Position (Lat/Lon Coordinates)  
50.6891212463 -0.3419780135 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687742.69 (Y) 5618625.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924162000.xtf
- Ping Number: 597846
- Range to Target: 23.34 Meters
- Fish Height: 5.03 Meters
- Heading: 63.300 degrees
- Event Number: 0
- Line Name: C11030\_110924162000

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly: No  
 Avoidance Area:  
 Classification 1: Small Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Small Boulder

SSA12

**Contact Info: SSA12**

- Sonar Time at Target: 09/24/2011 15:56:38
- Click Position (Lat/Lon Coordinates)  
50.6871604919 -0.3456529975 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687491.00 (Y) 5618398.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924155300.xtf
- Ping Number: 552174
- Range to Target: 8.34 Meters
- Fish Height: 4.38 Meters
- Heading: 275.700 degrees
- Event Number: 0
- Line Name: C11030\_110924155300

**User Entered Info**

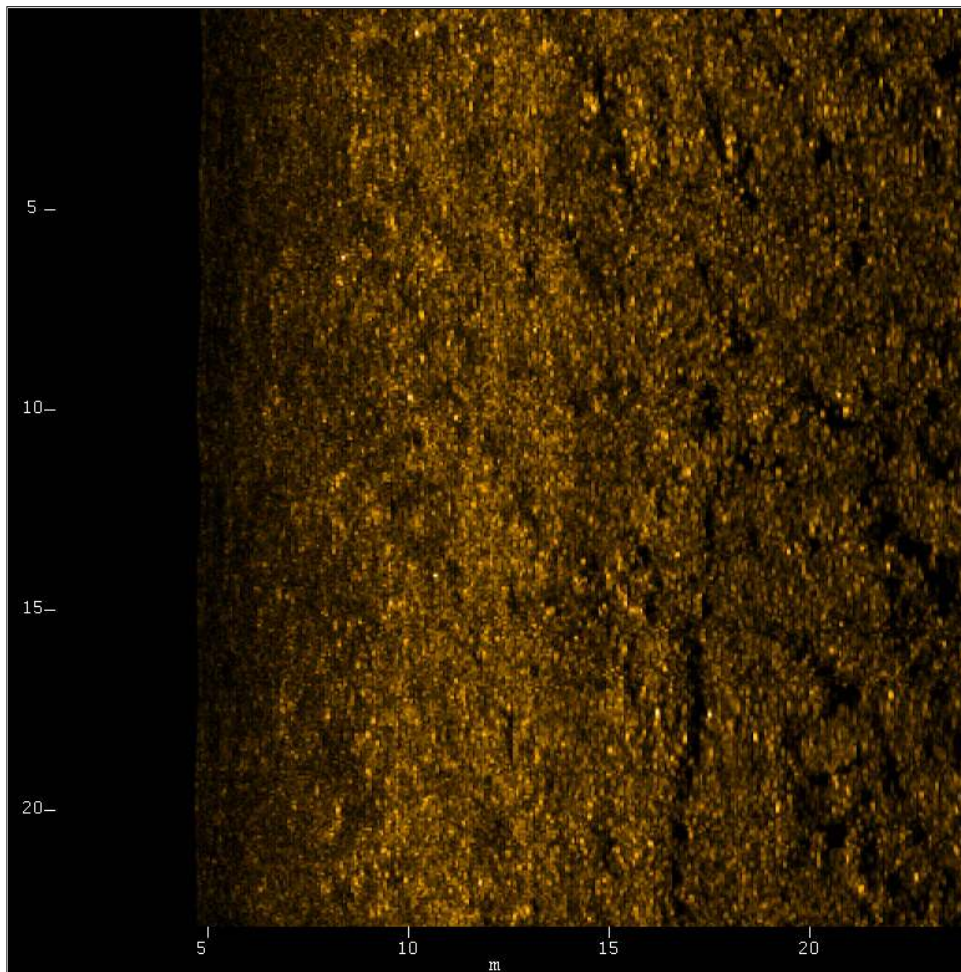
Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Indistinguishable  
 Classification 2:  
 Area:  
 Block:  
 Description: Indistinguishable but most likely a boulder, linear feature, straight sides with small scour on both long sides

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targetReportGen2

## SSA13

**Contact Info: SSA13**

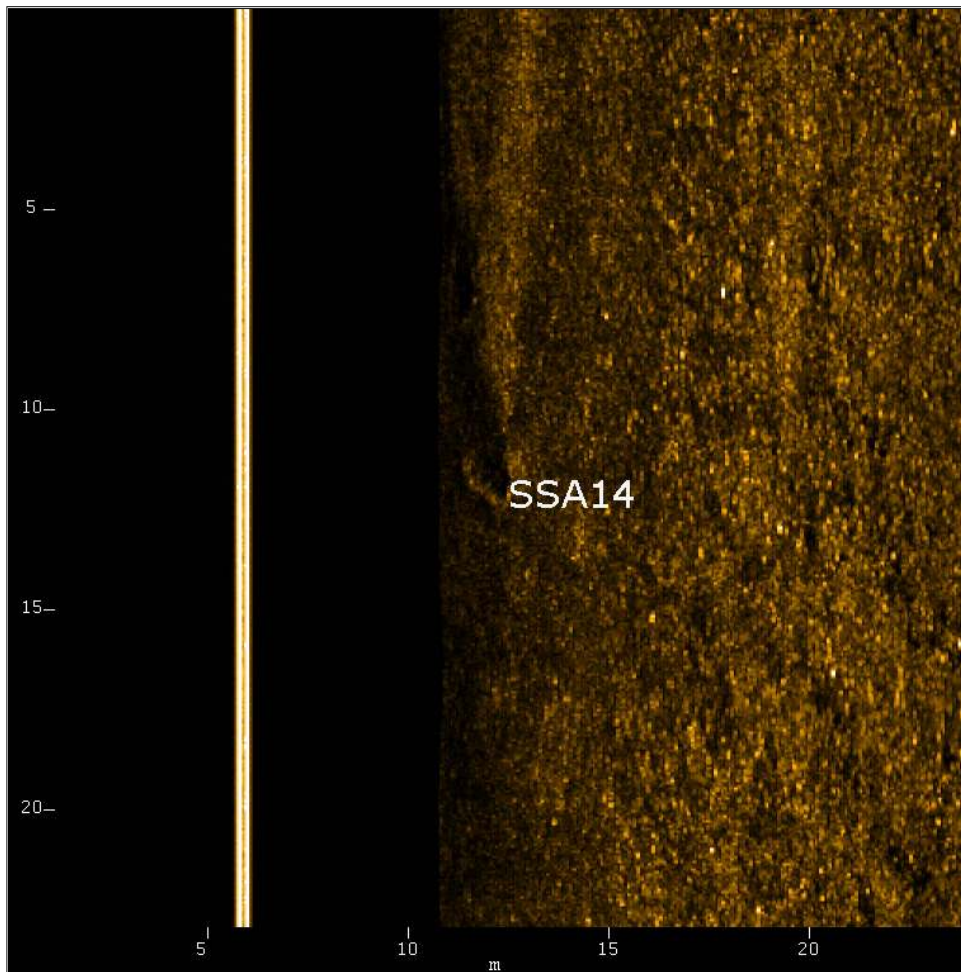
- Sonar Time at Target: 09/24/2011 15:55:14
- Click Position (Lat/Lon Coordinates)  
50.6876754761 -0.3436180055 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687632.63 (Y) 5618460.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924155300.xtf
- Ping Number: 549714
- Range to Target: 23.72 Meters
- Fish Height: 4.85 Meters
- Heading: 272.600 degrees
- Event Number: 0
- Line Name: C11030\_110924155300

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Small Boulder



SSA14

**Contact Info: SSA14**

- Sonar Time at Target: 09/24/2011 15:54:53
- Click Position (Lat/Lon Coordinates)  
50.6876258850 -0.3430339992 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687674.13 (Y) 5618456.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924155300.xtf
- Ping Number: 549104
- Range to Target: 6.09 Meters
- Fish Height: 4.96 Meters
- Heading: 274.300 degrees
- Event Number: 0
- Line Name: C11030\_110924155300

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 2 Meters  
 Target Shadow: 1 Meters  
 Target Width: 1 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Hollow  
 Classification 2:  
 Area:  
 Block:  
 Description: Curvilinear feature with a small hollowed centre.  
 possible anchor scar

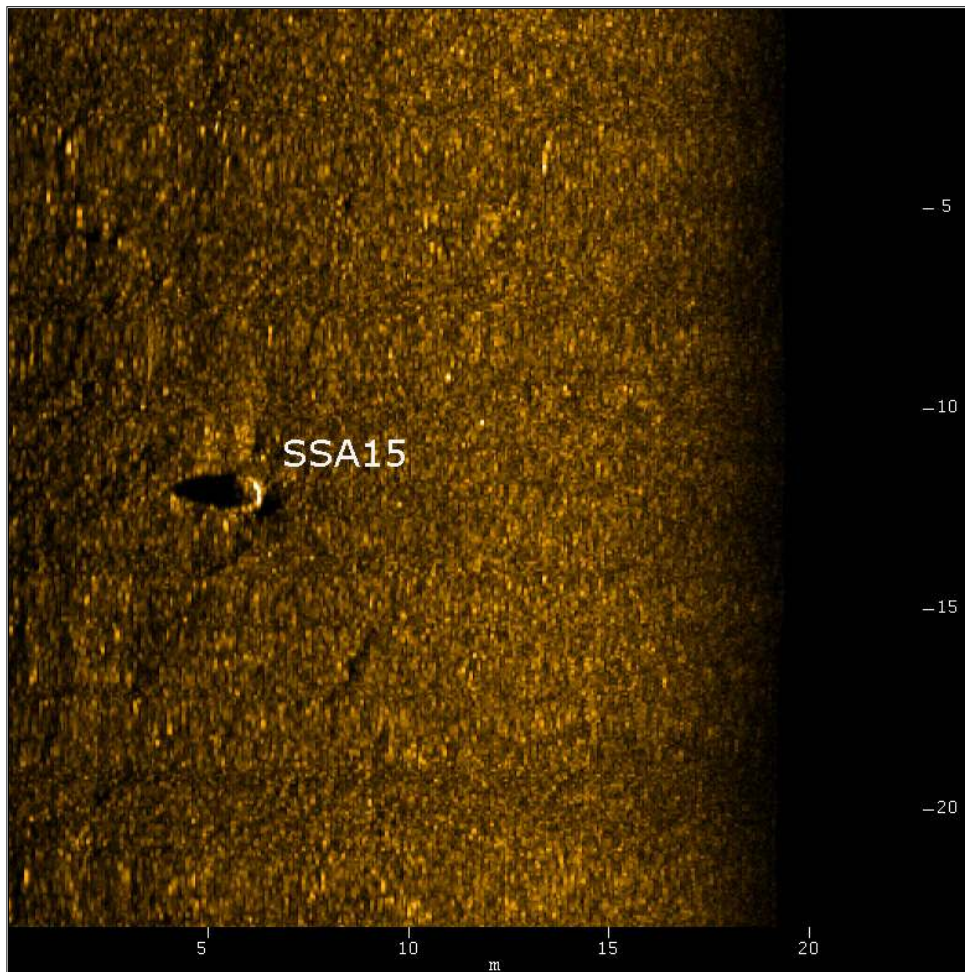
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targetReportGen2



SSA15

**Contact Info: SSA15**

- Sonar Time at Target: 09/24/2011 17:07:34
- Click Position (Lat/Lon Coordinates)  
50.6881408691 -0.3418110013 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687758.44 (Y) 5618517.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924170600.xtf
- Ping Number: 676119
- Range to Target: -17.63 Meters
- Fish Height: 4.70 Meters
- Heading: 270.800 degrees
- Event Number: 0
- Line Name: C11030\_110924170600

**User Entered Info**

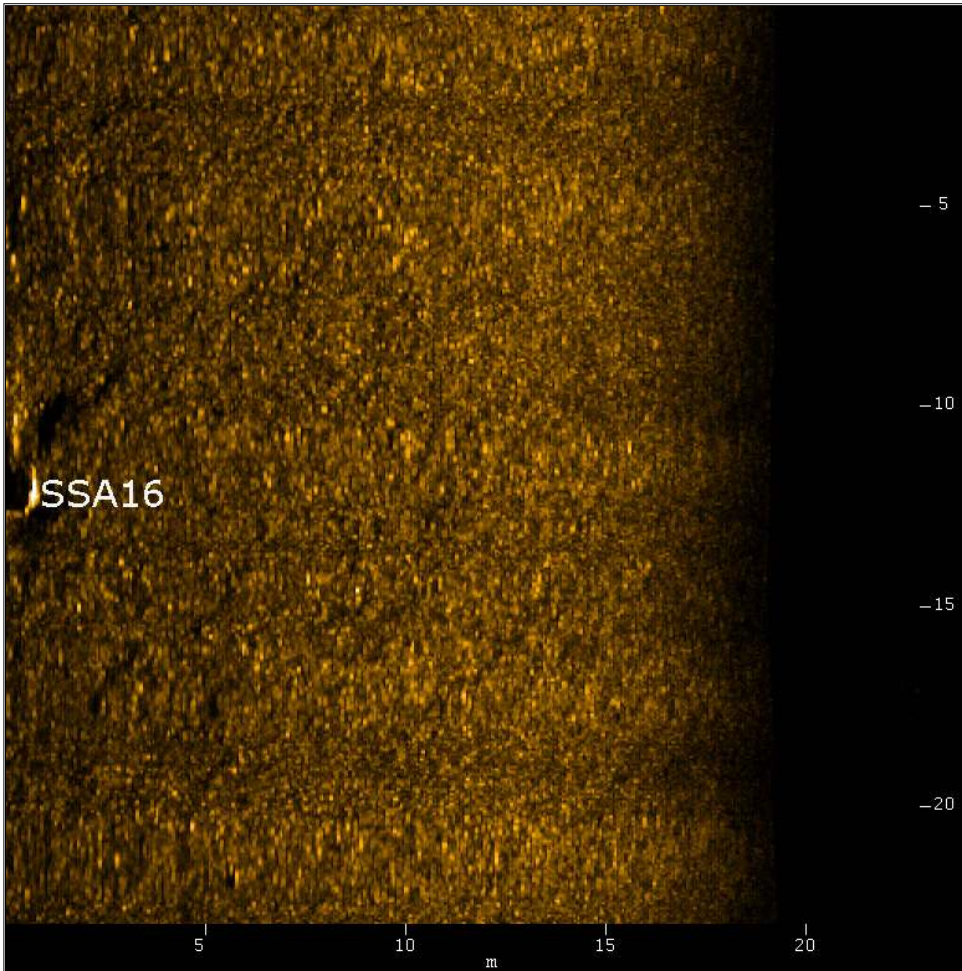
Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 2 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder

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targetReportGen2

SSA16



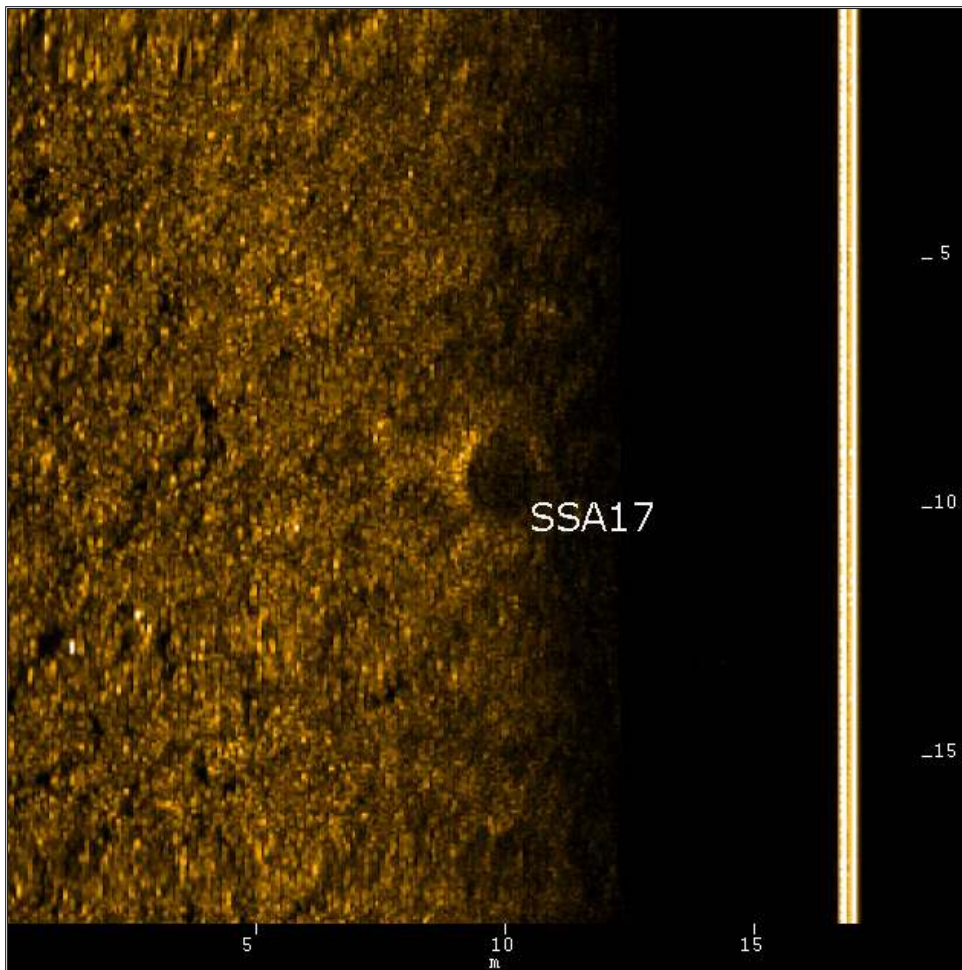
**Contact Info: SSA16**

- Sonar Time at Target: 09/24/2011 17:07:43
- Click Position (Lat/Lon Coordinates)  
50.6880455017 -0.3420149982 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687744.38 (Y) 5618505.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924170600.xtf
- Ping Number: 676388
- Range to Target: 23.58 Meters
- Fish Height: 4.97 Meters
- Heading: 275.600 degrees
- Event Number: 0
- Line Name: C11030\_110924170600

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly: MAG2  
 Avoidance Area:  
 Classification 1: Possible Man Made Debris  
 Classification 2:  
 Area:  
 Block:  
 Description: Possible Man Made debris associated with  
 magnetic anomaly 2

SSA17



**Contact Info: SSA17**

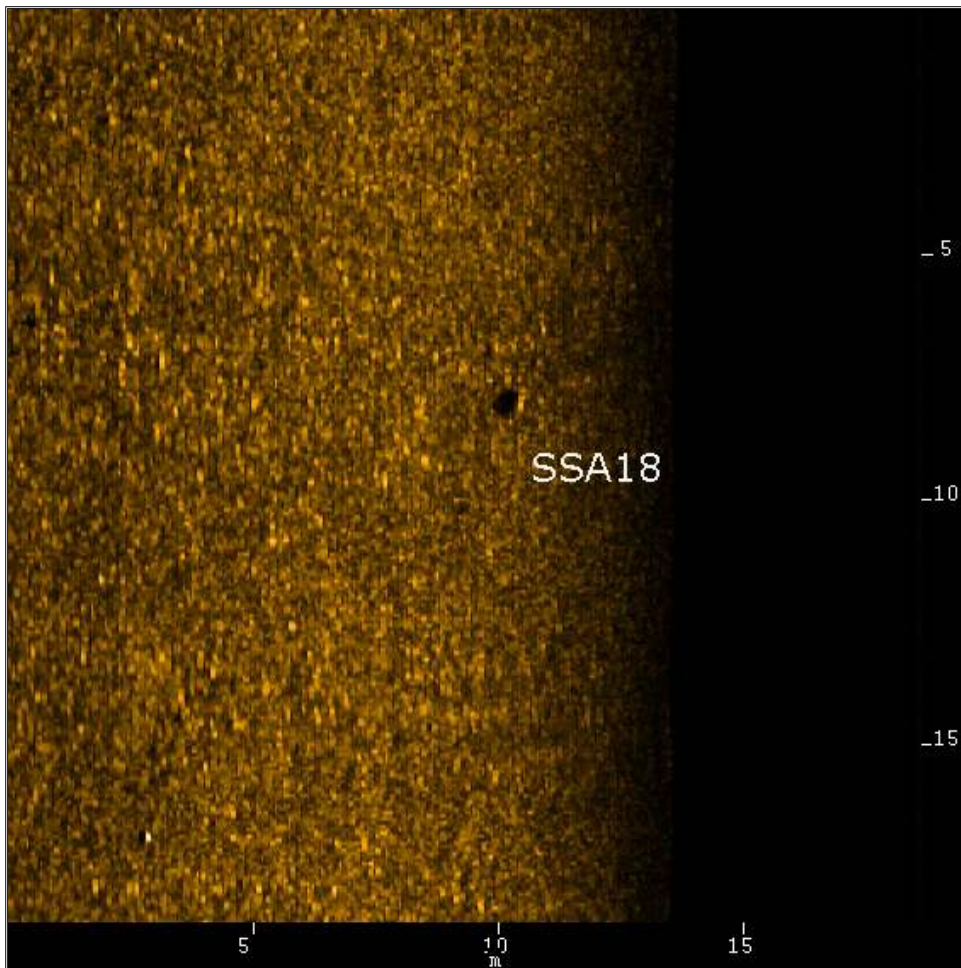
- Sonar Time at Target: 09/24/2011 17:09:08
- Click Position (Lat/Lon Coordinates)  
50.6877861023 -0.3441500068 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687594.63 (Y) 5618471.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924170600.xtf
- Ping Number: 678864
- Range to Target: 6.89 Meters
- Fish Height: 4.72 Meters
- Heading: 277.600 degrees
- Event Number: 0
- Line Name: C11030\_110924170600

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 2 Meters  
 Target Shadow: 0 Meters  
 Target Width: 2 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Hollow  
 Classification 2:  
 Area:  
 Block:  
 Description: Circular hollow with raised edges



SSA18



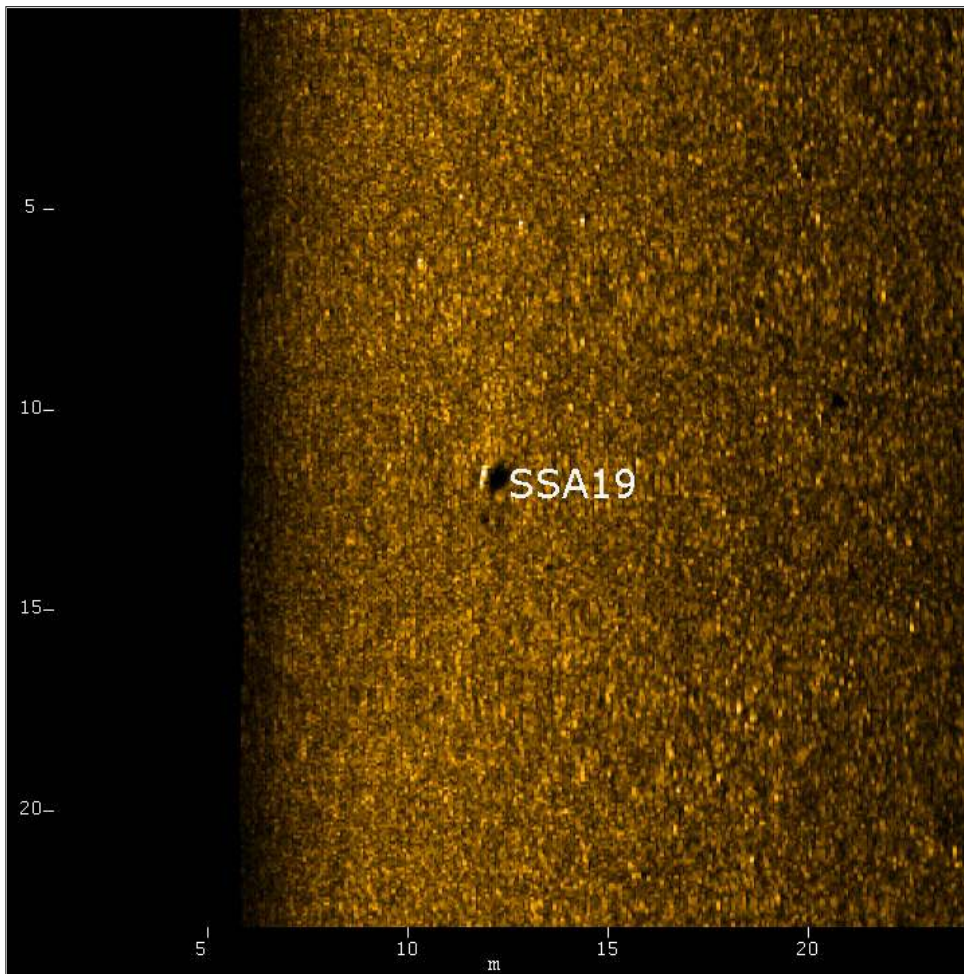
**Contact Info: SSA18**

- Sonar Time at Target: 09/24/2011 14:26:45
- Click Position (Lat/Lon Coordinates)  
50.6875953674 -0.3403759897 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687861.94 (Y) 5618459.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924142600.xtf
- Ping Number: 395069
- Range to Target: 8.72 Meters
- Fish Height: 5.41 Meters
- Heading: 275.300 degrees
- Event Number: 0
- Line Name: C11030\_110924142600

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 0 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder

SSA19



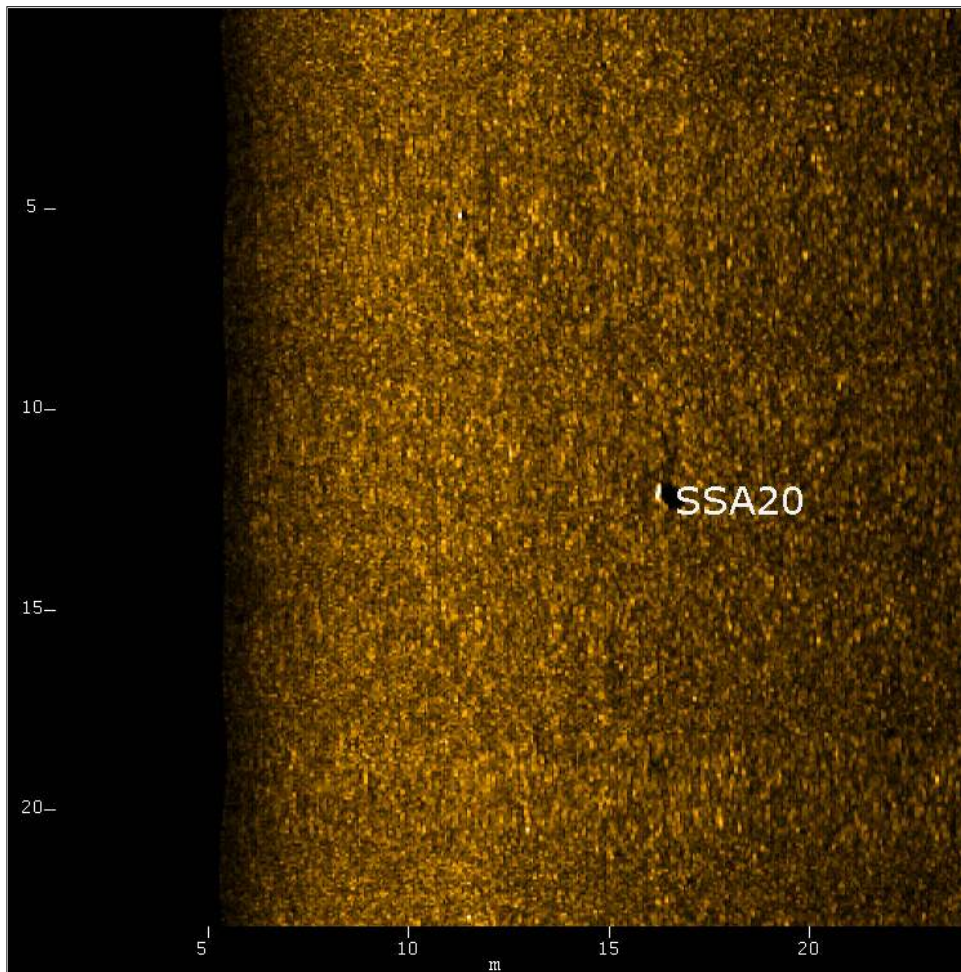
**Contact Info: SSA19**

- Sonar Time at Target: 09/24/2011 14:26:50
- Click Position (Lat/Lon Coordinates)  
50.6877098083 -0.3405979872 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687845.75 (Y) 5618472.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924142600.xtf
- Ping Number: 395230
- Range to Target: 11.48 Meters
- Fish Height: 5.47 Meters
- Heading: 275.100 degrees
- Event Number: 0
- Line Name: C11030\_110924142600

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder

## SSA20

**Contact Info: SSA20**

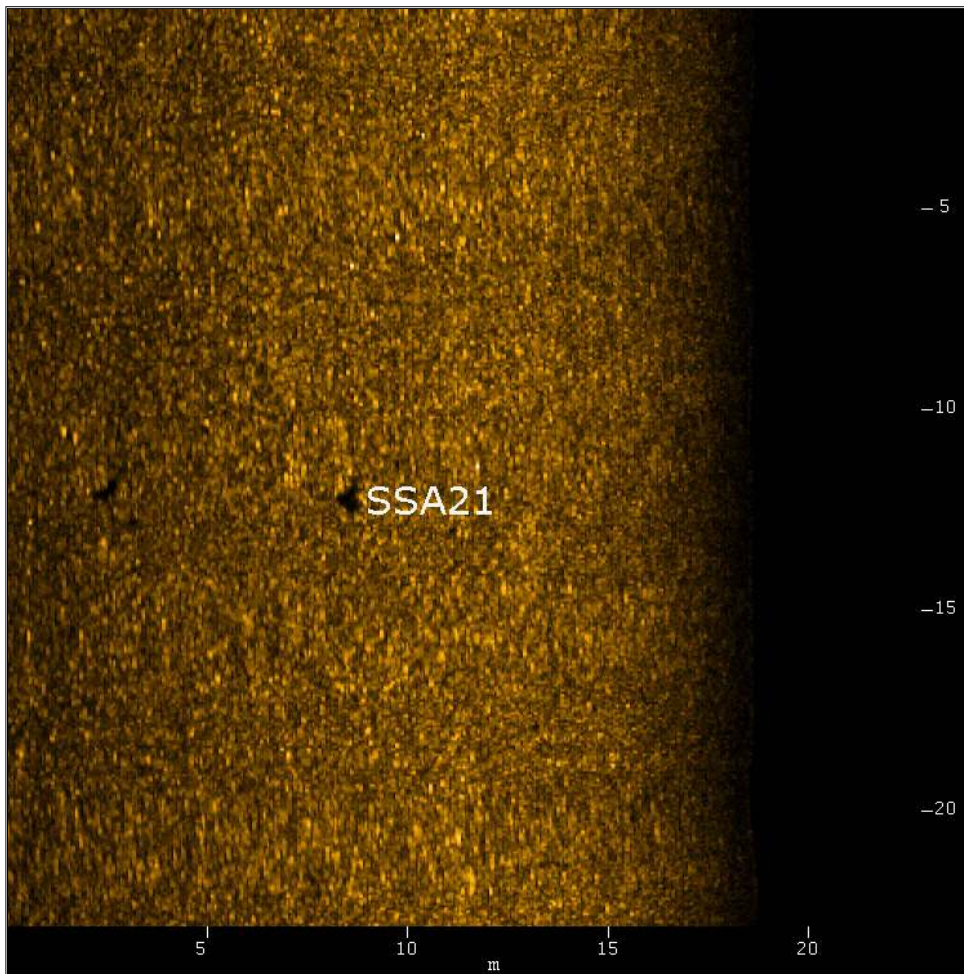
- Sonar Time at Target: 09/24/2011 14:27:06
- Click Position (Lat/Lon Coordinates)  
50.6876640320 -0.3410249949 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687815.88 (Y) 5618466.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924142600.xtf
- Ping Number: 395698
- Range to Target: 16.13 Meters
- Fish Height: 5.50 Meters
- Heading: 277.800 degrees
- Event Number: 0
- Line Name: C11030\_110924142600

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 0 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Indistinguishable  
 Classification 2:  
 Area:  
 Block:  
 Description: Small indistinguishable linear feature, appears to have linear sides, may be fishing pot or boulder



SSA21



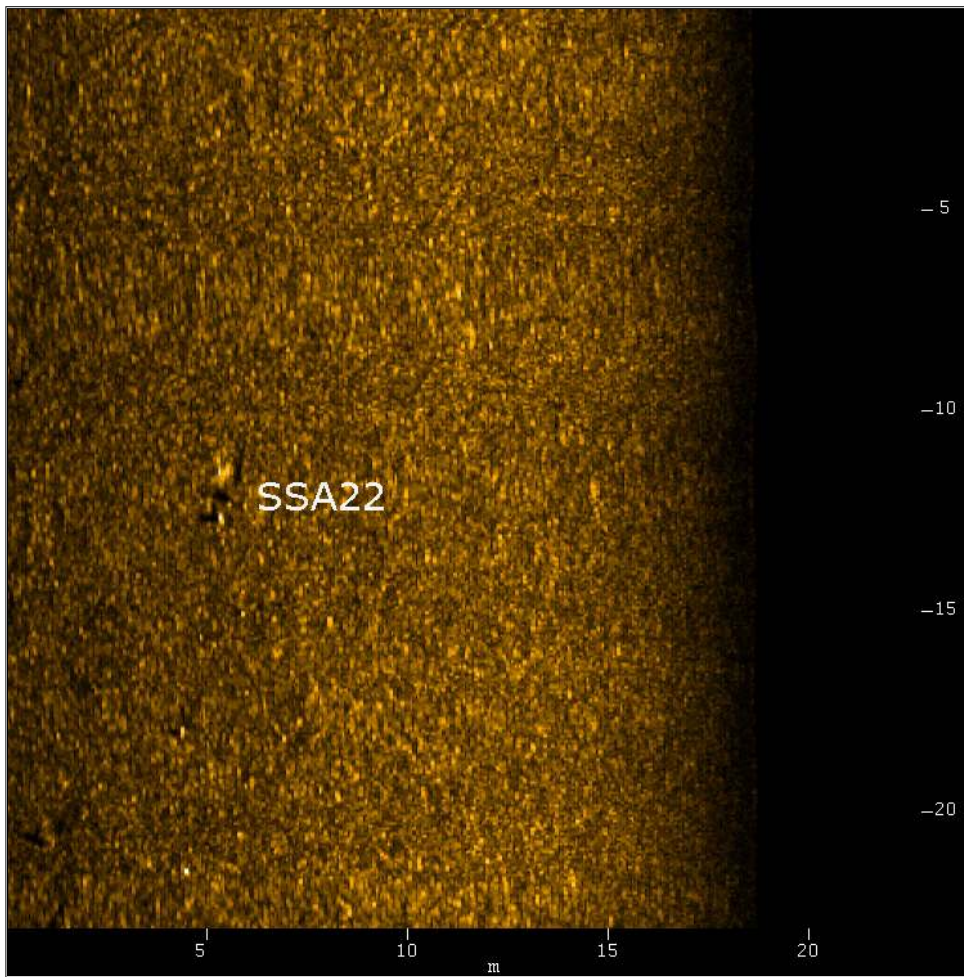
**Contact Info: SSA21**

- Sonar Time at Target: 09/24/2011 14:27:06
- Click Position (Lat/Lon Coordinates)  
50.6874122620 -0.3408820033 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687826.94 (Y) 5618438.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924142600.xtf
- Ping Number: 395686
- Range to Target: 15.52 Meters
- Fish Height: 5.50 Meters
- Heading: 279.000 degrees
- Event Number: 0
- Line Name: C11030\_110924142600

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder

SSA22



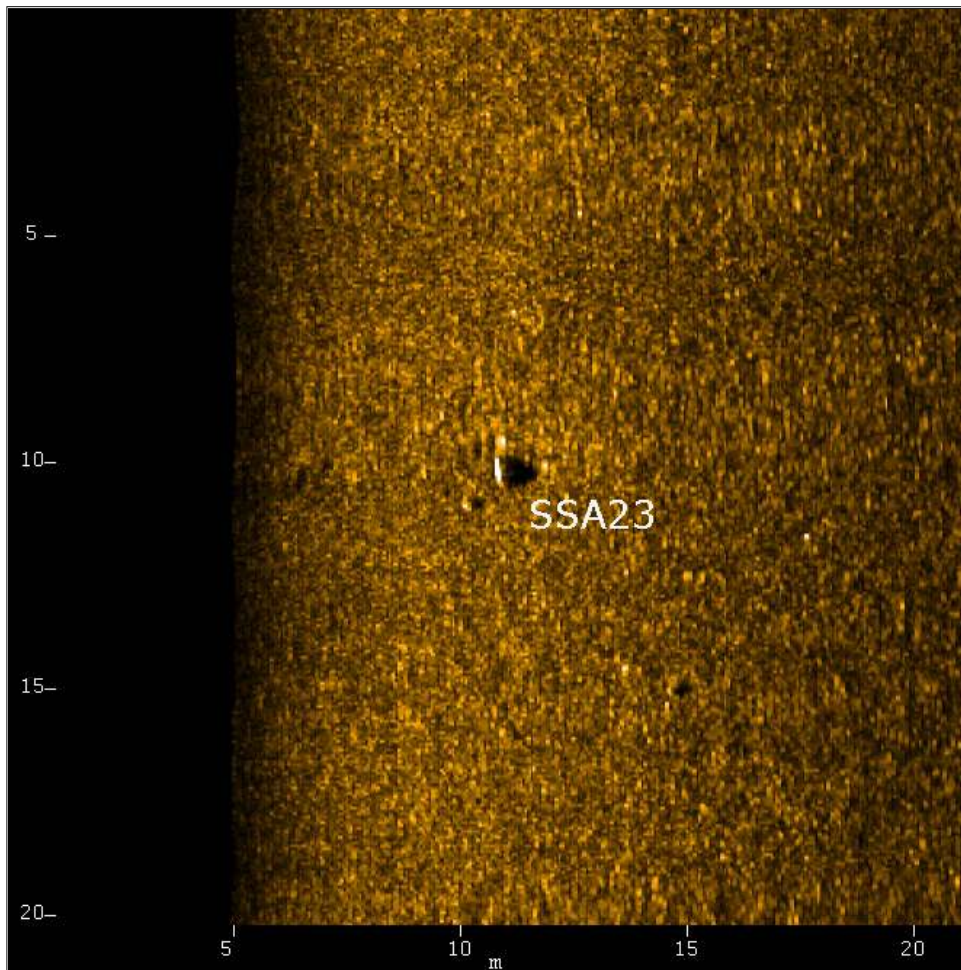
**Contact Info: SSA22**

- Sonar Time at Target: 09/24/2011 14:27:13
- Click Position (Lat/Lon Coordinates)  
50.6873512268 -0.3410589993 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687814.69 (Y) 5618431.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924142600.xtf
- Ping Number: 395897
- Range to Target: 18.23 Meters
- Fish Height: 5.44 Meters
- Heading: 273.900 degrees
- Event Number: 0
- Line Name: C11030\_110924142600

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Probable Boulder

SSA23

**Contact Info: SSA23**

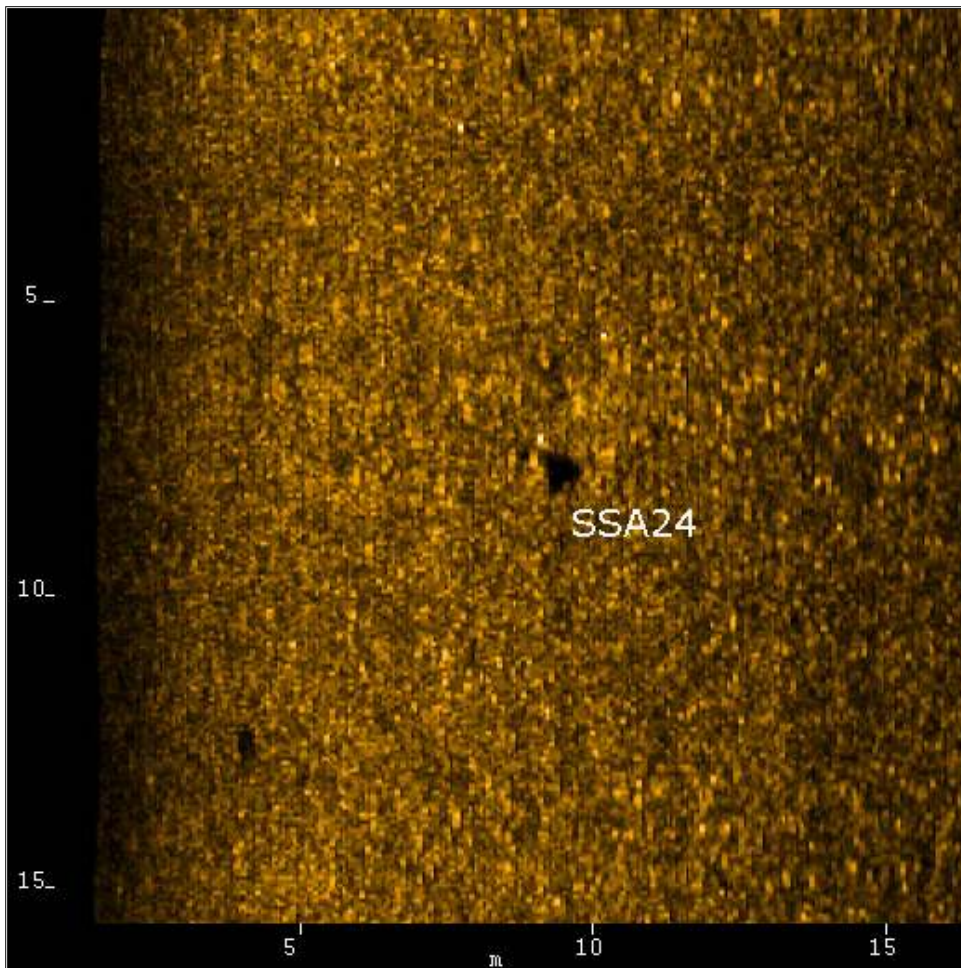
- Sonar Time at Target: 09/24/2011 14:27:14
- Click Position (Lat/Lon Coordinates)  
50.6875801086 -0.3411870003 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687804.75 (Y) 5618456.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924142600.xtf
- Ping Number: 395916
- Range to Target: 11.30 Meters
- Fish Height: 5.38 Meters
- Heading: 275.900 degrees
- Event Number: 0
- Line Name: C11030\_110924142600

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Probable Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Small linear target, surrounded by two large stones. Probable boulder however there appears to be a linear side to the feature



SSA24



**Contact Info: SSA24**

- Sonar Time at Target: 09/24/2011 14:27:31
- Click Position (Lat/Lon Coordinates)  
50.6875038147 -0.3416390121 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687773.06 (Y) 5618446.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924142600.xtf
- Ping Number: 396427
- Range to Target: 12.61 Meters
- Fish Height: 4.98 Meters
- Heading: 278.300 degrees
- Event Number: 0
- Line Name: C11030\_110924142600

**User Entered Info**

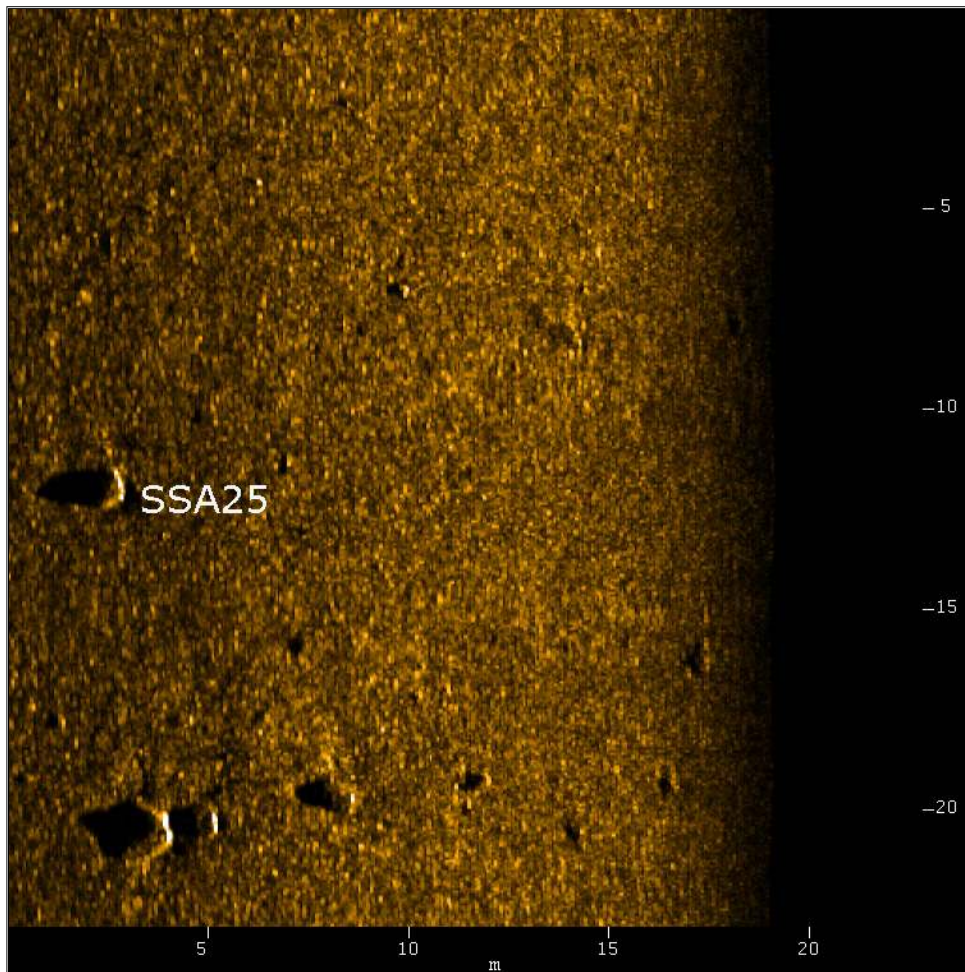
Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder

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SSA25

**Contact Info: SSA25**

- Sonar Time at Target: 09/24/2011 14:27:36
- Click Position (Lat/Lon Coordinates)  
50.6872062683 -0.3415920138 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687777.63 (Y) 5618413.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924142600.xtf
- Ping Number: 396557
- Range to Target: 21.19 Meters
- Fish Height: 4.92 Meters
- Heading: 277.400 degrees
- Event Number: 0
- Line Name: C11030\_110924142600

**User Entered Info**

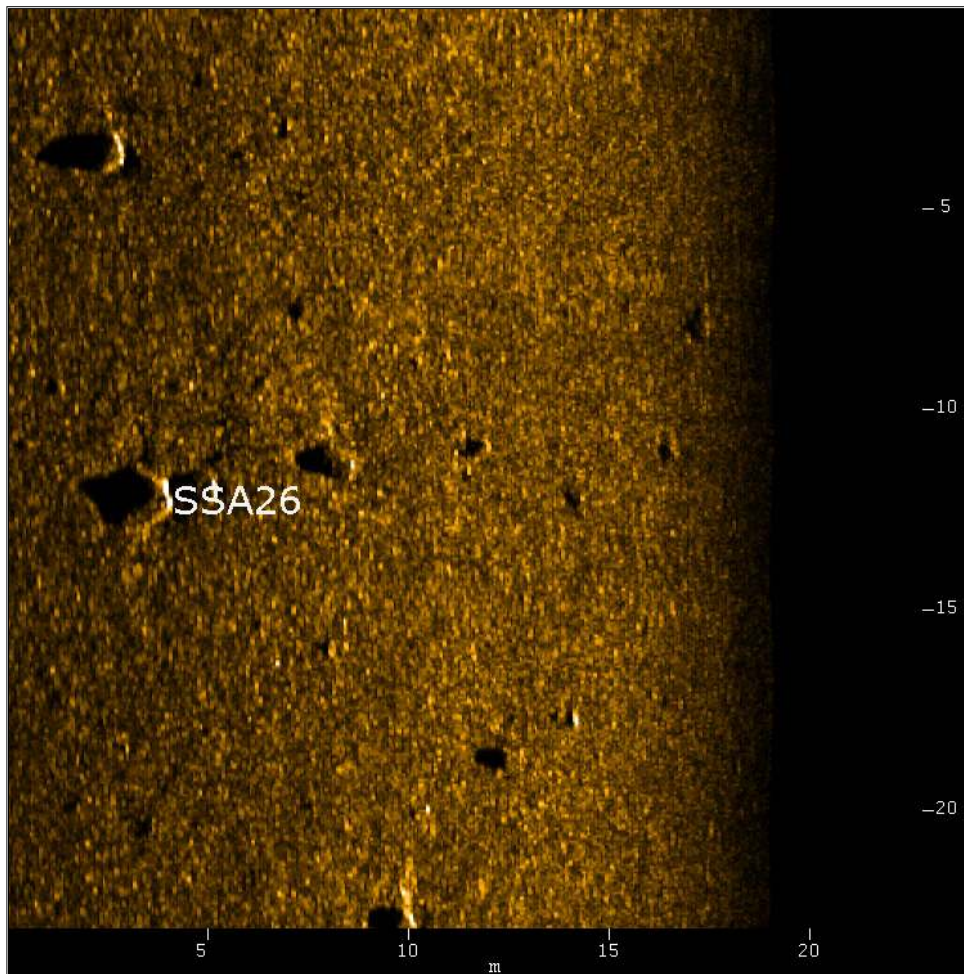
Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 2 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder surrounded by others

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targetReportGen2

SSA26

**Contact Info: SSA26**

- Sonar Time at Target: 09/24/2011 14:27:40
- Click Position (Lat/Lon Coordinates)  
50.6871871948 -0.3417110145 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687769.25 (Y) 5618411.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924142600.xtf
- Ping Number: 396688
- Range to Target: 20.34 Meters
- Fish Height: 5.01 Meters
- Heading: 276.400 degrees
- Event Number: 0
- Line Name: C11030\_110924142600

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 2 Meters  
 Target Shadow: 2 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder surrounded by others

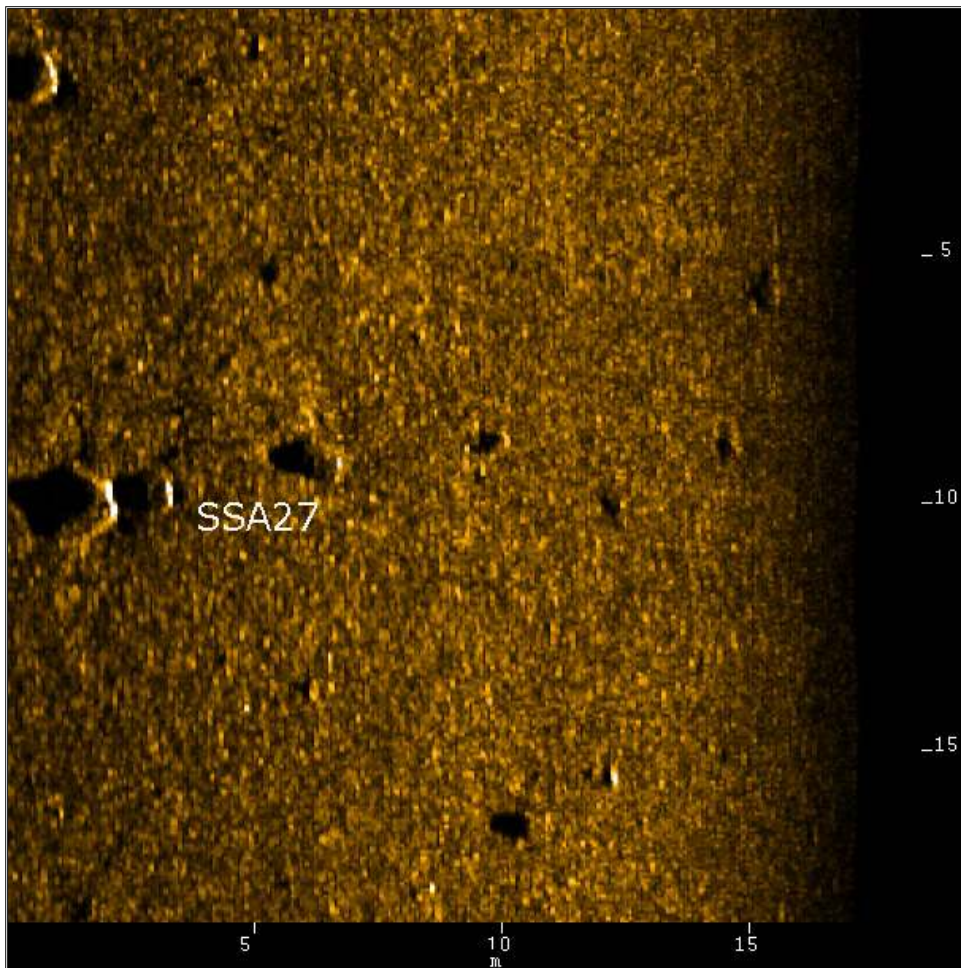
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targetReportGen2



SSA27



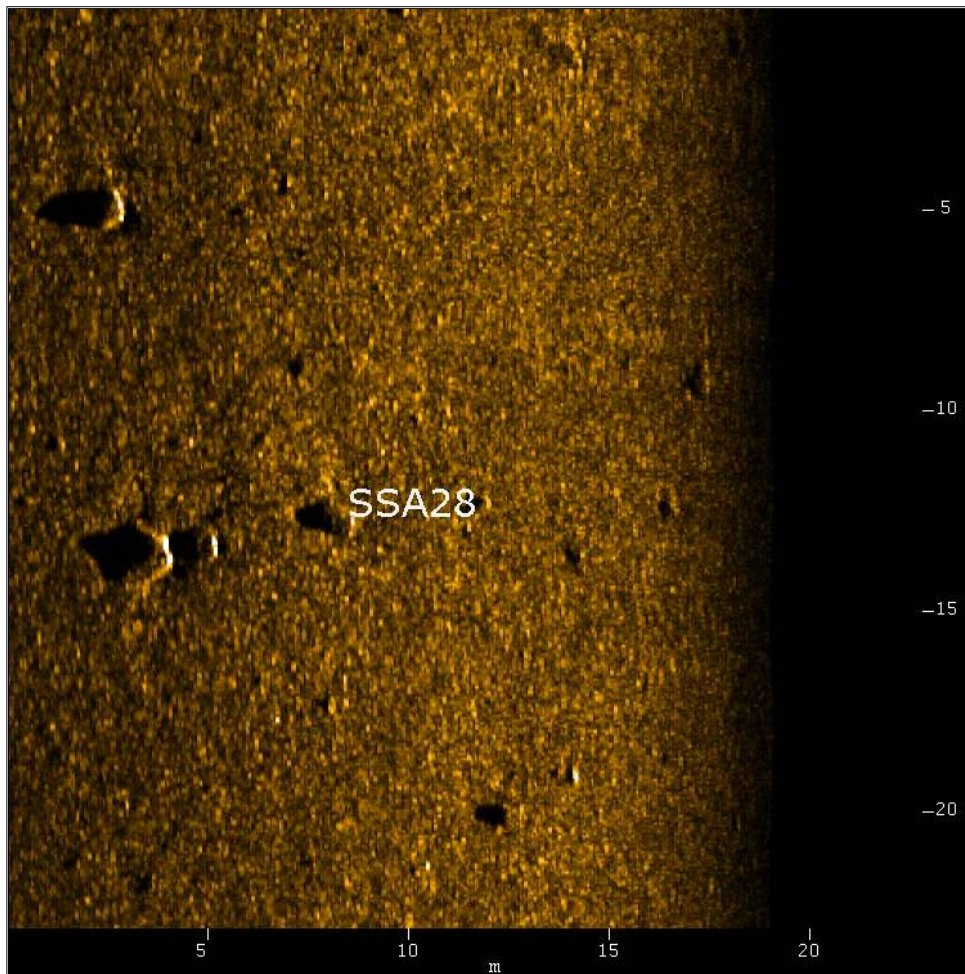
**Contact Info: SSA27**

- Sonar Time at Target: 09/24/2011 14:27:40
- Click Position (Lat/Lon Coordinates)  
50.6872024536 -0.3417100012 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687769.31 (Y) 5618413.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924142600.xtf
- Ping Number: 396678
- Range to Target: 18.80 Meters
- Fish Height: 5.00 Meters
- Heading: 276.100 degrees
- Event Number: 0
- Line Name: C11030\_110924142600

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder surrounded by others

SSA28

**Contact Info: SSA28**

- Sonar Time at Target: 09/24/2011 14:27:39
- Click Position (Lat/Lon Coordinates)  
50.6872291565 -0.3417139947 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687768.88 (Y) 5618416.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924142600.xtf
- Ping Number: 396667
- Range to Target: 15.98 Meters
- Fish Height: 5.03 Meters
- Heading: 279.300 degrees
- Event Number: 0
- Line Name: C11030\_110924142600

**User Entered Info**

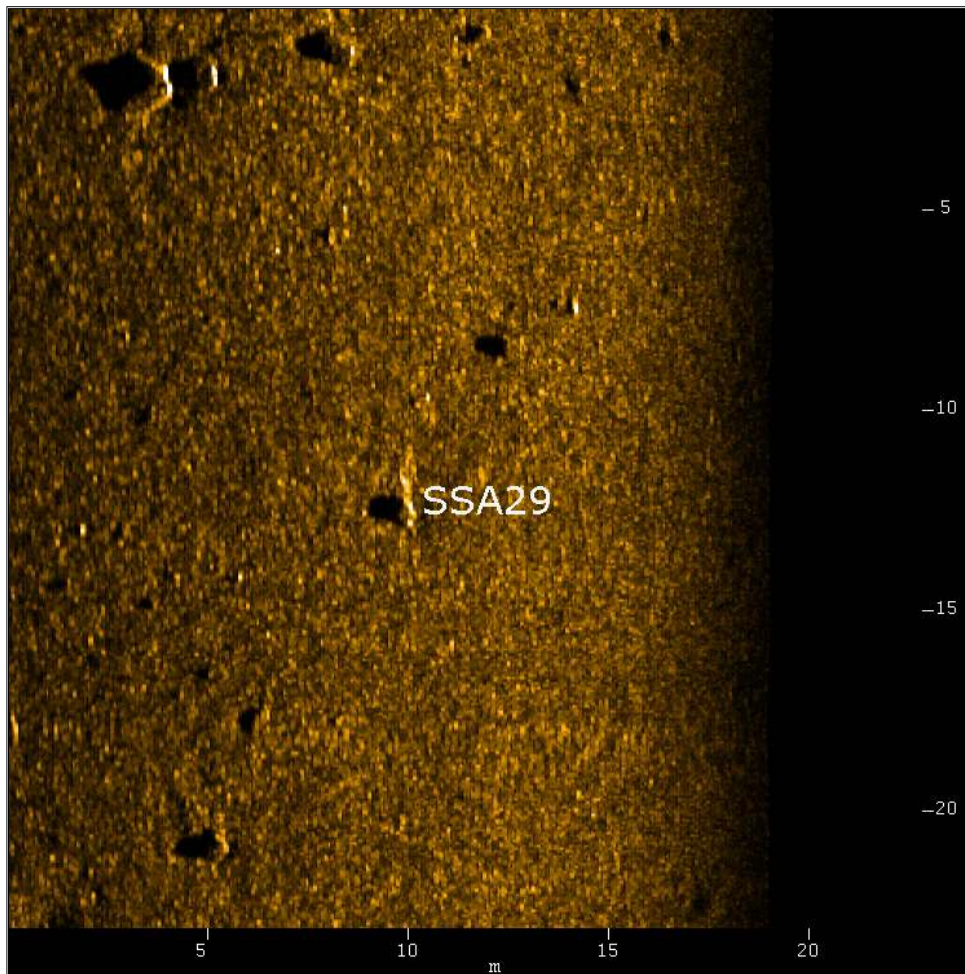
Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder surrounded by others

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targetReportGen2

SSA29

**Contact Info: SSA29**

- Sonar Time at Target: 09/24/2011 14:27:46
- Click Position (Lat/Lon Coordinates)  
50.6872138977 -0.3418839872 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687756.94 (Y) 5618413.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924142600.xtf
- Ping Number: 396848
- Range to Target: 14.16 Meters
- Fish Height: 5.06 Meters
- Heading: 274.300 degrees
- Event Number: 0
- Line Name: C11030\_110924142600

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder surrounded by others

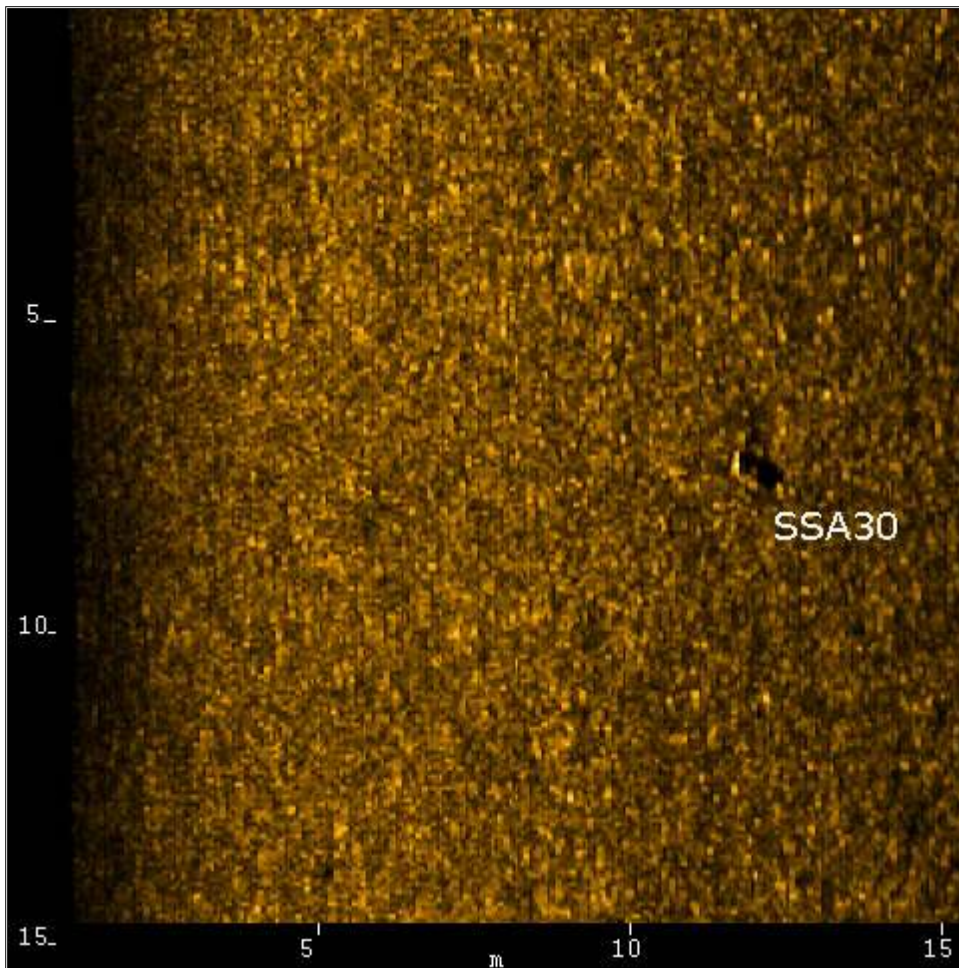
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targetReportGen2



## SSA30

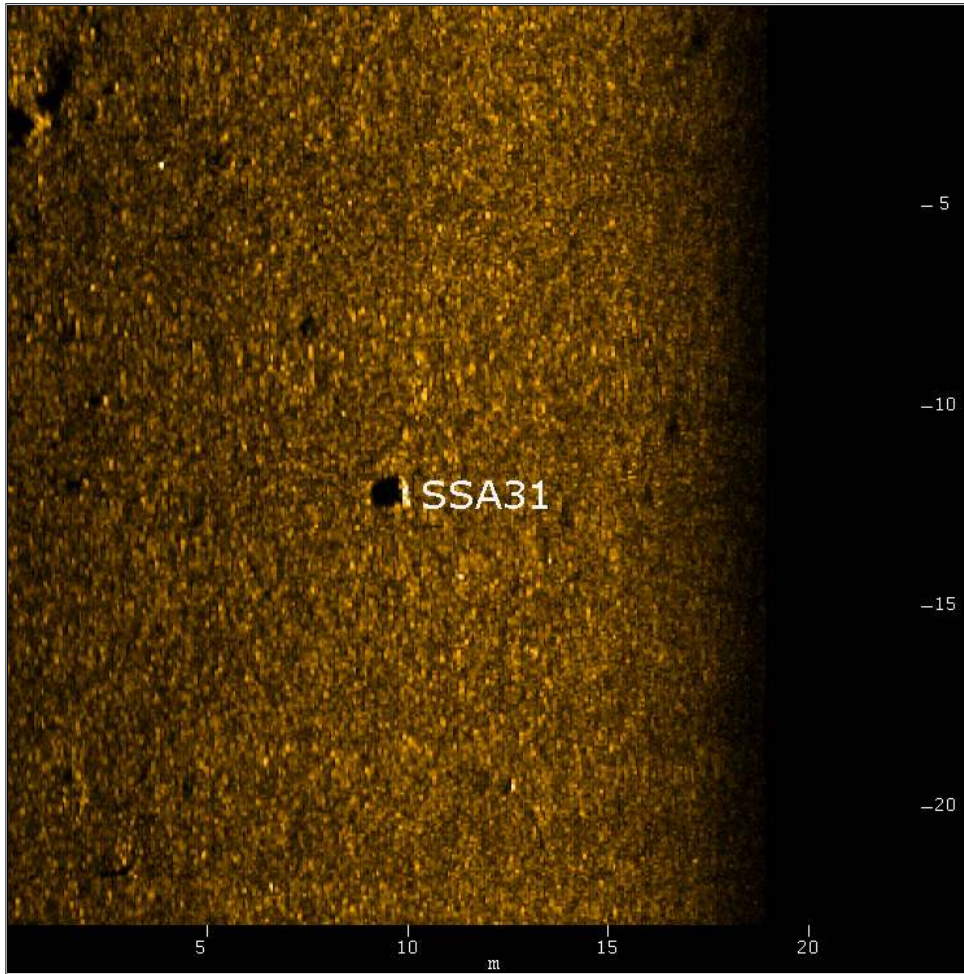
**Contact Info: SSA30**

- Sonar Time at Target: 09/24/2011 14:27:40
- Click Position (Lat/Lon Coordinates)  
50.6874847412 -0.3418630064 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687757.38 (Y) 5618443.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924142600.xtf
- Ping Number: 396674
- Range to Target: 15.75 Meters
- Fish Height: 5.01 Meters
- Heading: 277.200 degrees
- Event Number: 0
- Line Name: C11030\_110924142600

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 0 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Probable Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Probable small boulder

SSA31



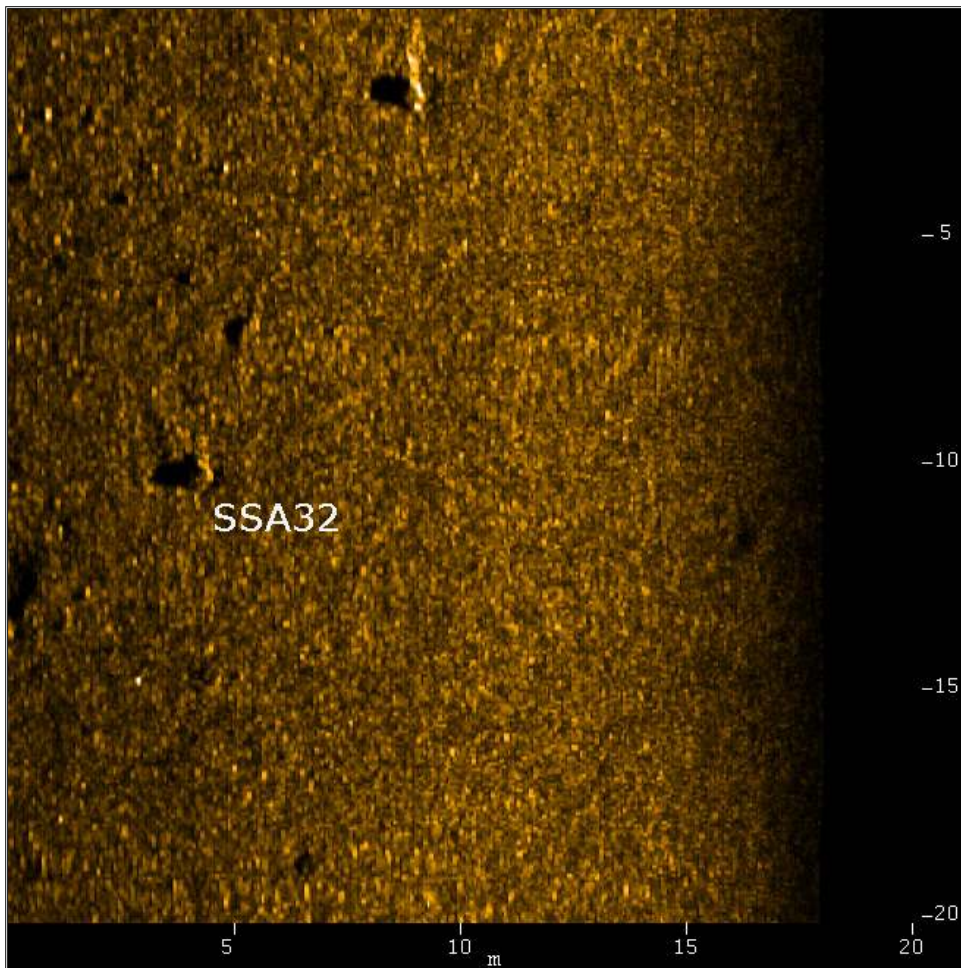
**Contact Info: SSA31**

- Sonar Time at Target: 09/24/2011 14:27:57
- Click Position (Lat/Lon Coordinates)  
50.6871566772 -0.3421869874 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687735.81 (Y) 5618406.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924142600.xtf
- Ping Number: 397180
- Range to Target: 14.16 Meters
- Fish Height: 5.10 Meters
- Heading: 279.100 degrees
- Event Number: 0
- Line Name: C11030\_110924142600

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Possible Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Possible boulder but the feature appears to be linear in nature

SSA32



**Contact Info: SSA32**

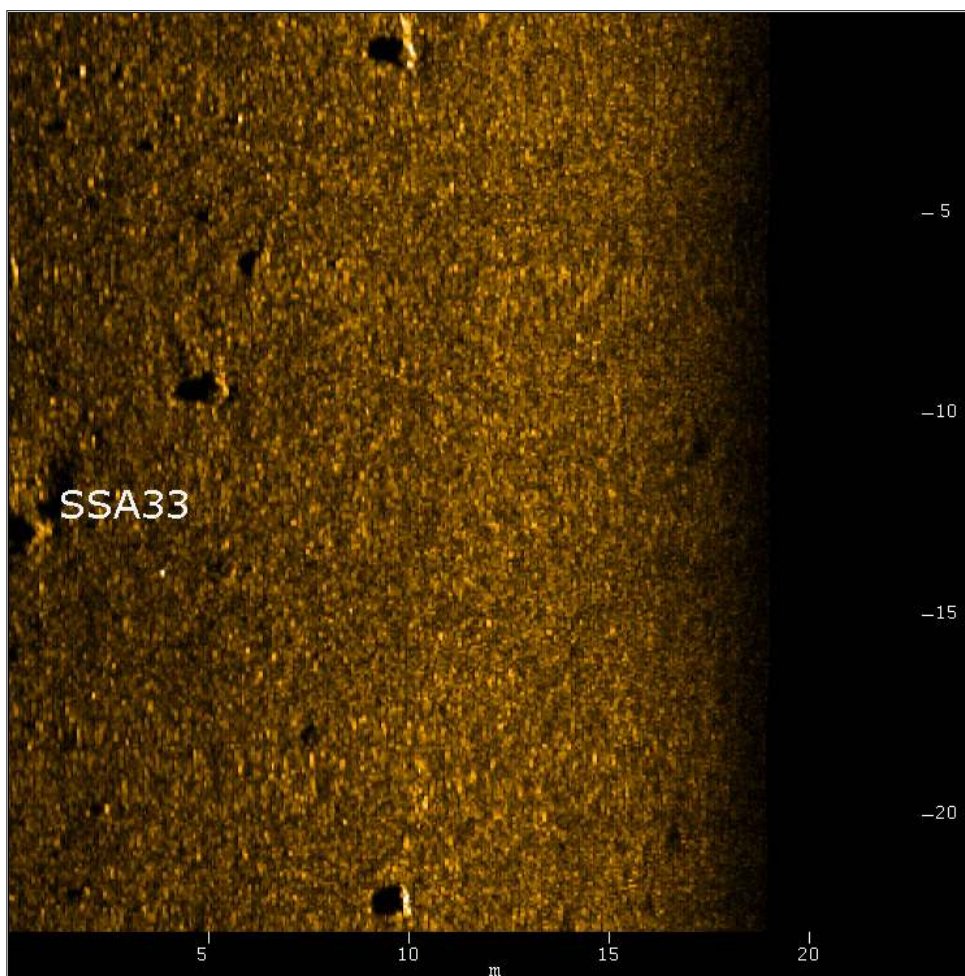
- Sonar Time at Target: 09/24/2011 14:27:50
- Click Position (Lat/Lon Coordinates)  
50.6871452332 -0.3419860005 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687750.06 (Y) 5618405.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924142600.xtf
- Ping Number: 396983
- Range to Target: 18.98 Meters
- Fish Height: 5.10 Meters
- Heading: 275.600 degrees
- Event Number: 0
- Line Name: C11030\_110924142600

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder surrounded by others



SSA33



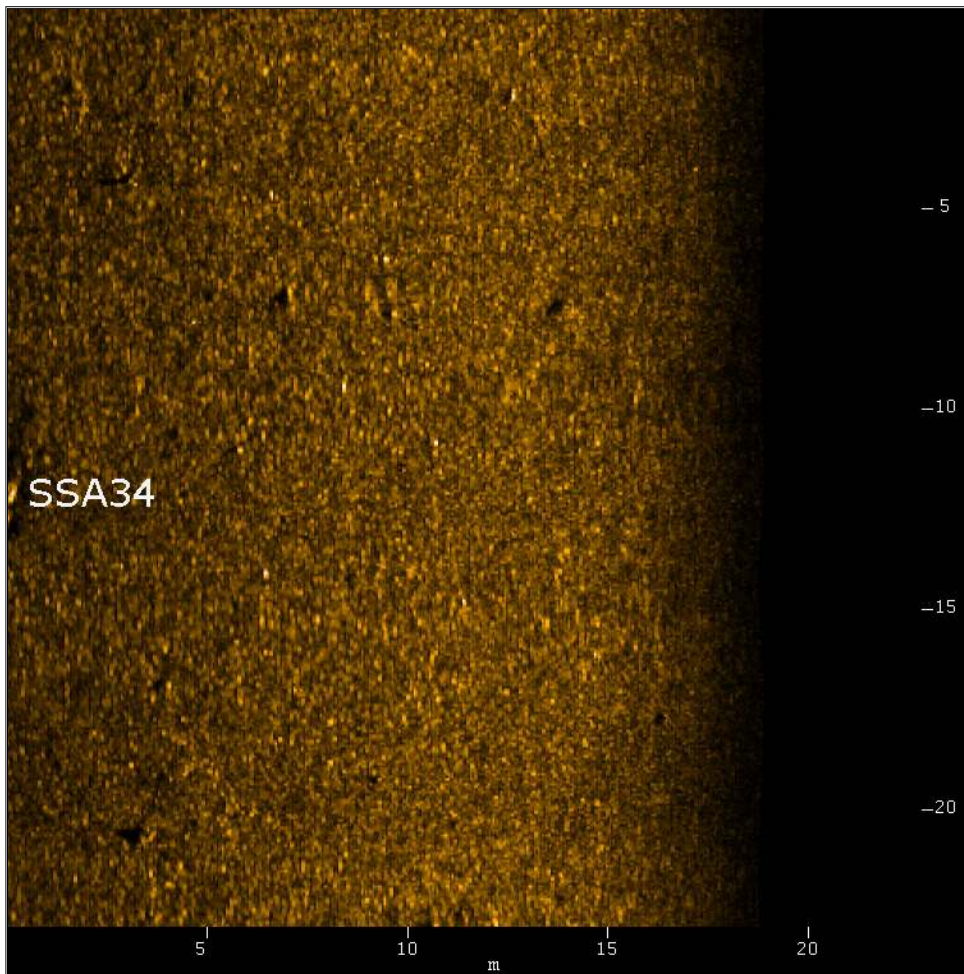
**Contact Info: SSA33**

- Sonar Time at Target: 09/24/2011 14:27:52
- Click Position (Lat/Lon Coordinates)  
50.6870994568 -0.3420090079 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687748.63 (Y) 5618400.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924142600.xtf
- Ping Number: 397026
- Range to Target: 23.20 Meters
- Fish Height: 5.09 Meters
- Heading: 272.700 degrees
- Event Number: 0
- Line Name: C11030\_110924142600

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder surrounded by others

SSA34



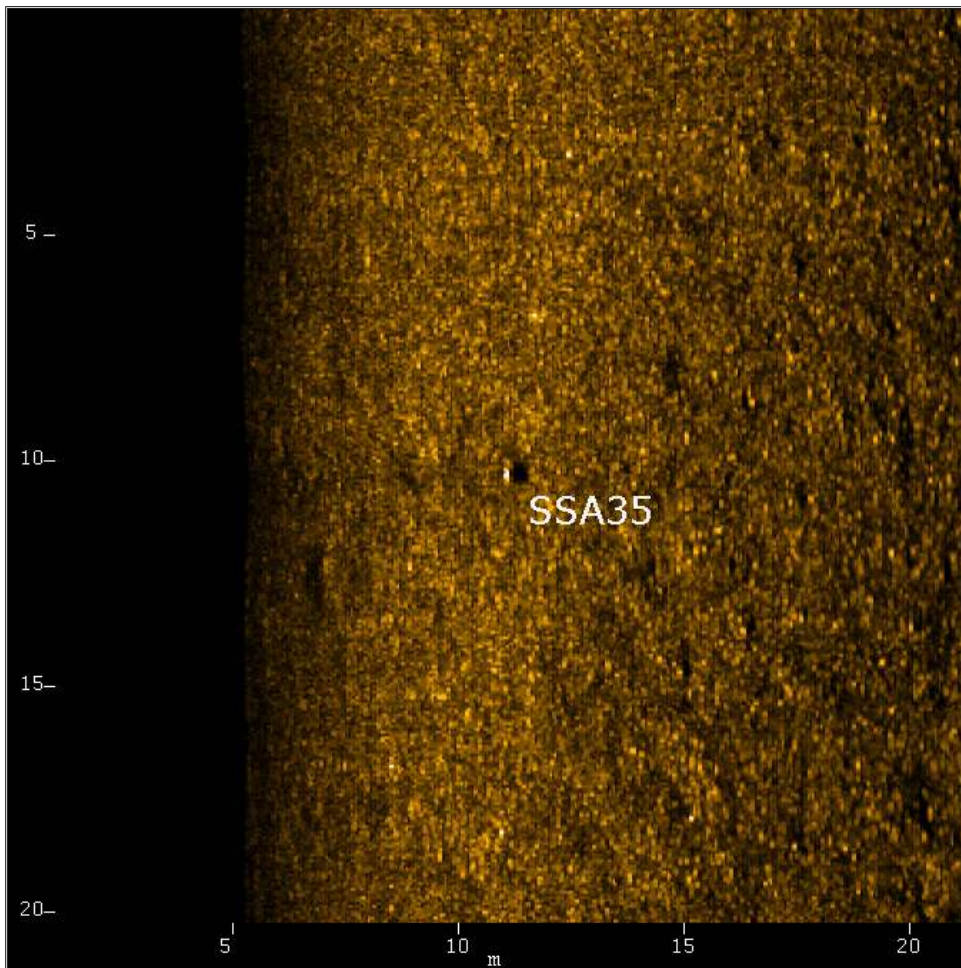
**Contact Info: SSA34**

- Sonar Time at Target: 09/24/2011 14:28:06
- Click Position (Lat/Lon Coordinates)  
50.6870307922 -0.3423869908 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687722.13 (Y) 5618392.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924142600.xtf
- Ping Number: 397448
- Range to Target: 23.95 Meters
- Fish Height: 5.13 Meters
- Heading: 280.300 degrees
- Event Number: 0
- Line Name: C11030\_110924142600

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Probable Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Probable Boulder

SSA35



**Contact Info: SSA35**

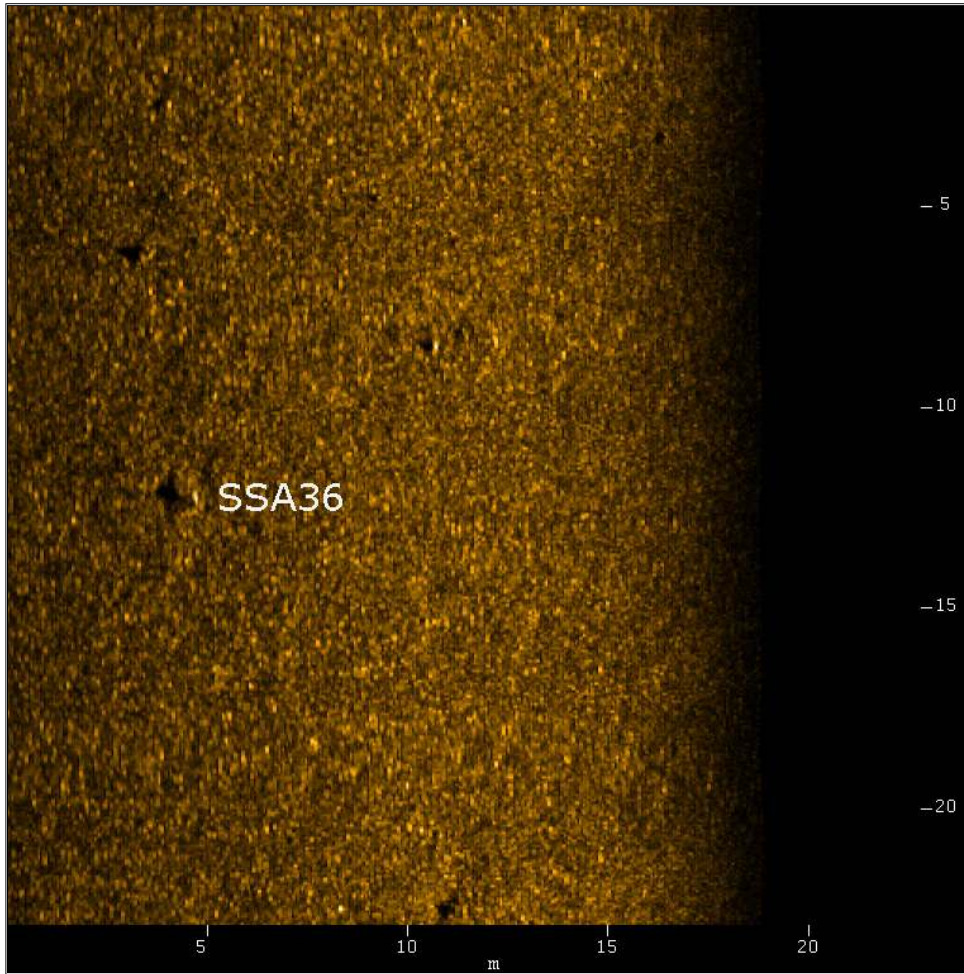
- Sonar Time at Target: 09/24/2011 14:28:11
- Click Position (Lat/Lon Coordinates)  
50.6872940063 -0.3426310122 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687703.88 (Y) 5618420.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924142600.xtf
- Ping Number: 397591
- Range to Target: 10.92 Meters
- Fish Height: 5.29 Meters
- Heading: 276.600 degrees
- Event Number: 0
- Line Name: C11030\_110924142600

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 0 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly: MAG6  
 Avoidance Area:  
 Classification 1: Possible man made debris  
 Classification 2:  
 Area:  
 Block:  
 Description: Possible man made debris associated with  
 magnetic anomaly 6



SSA36



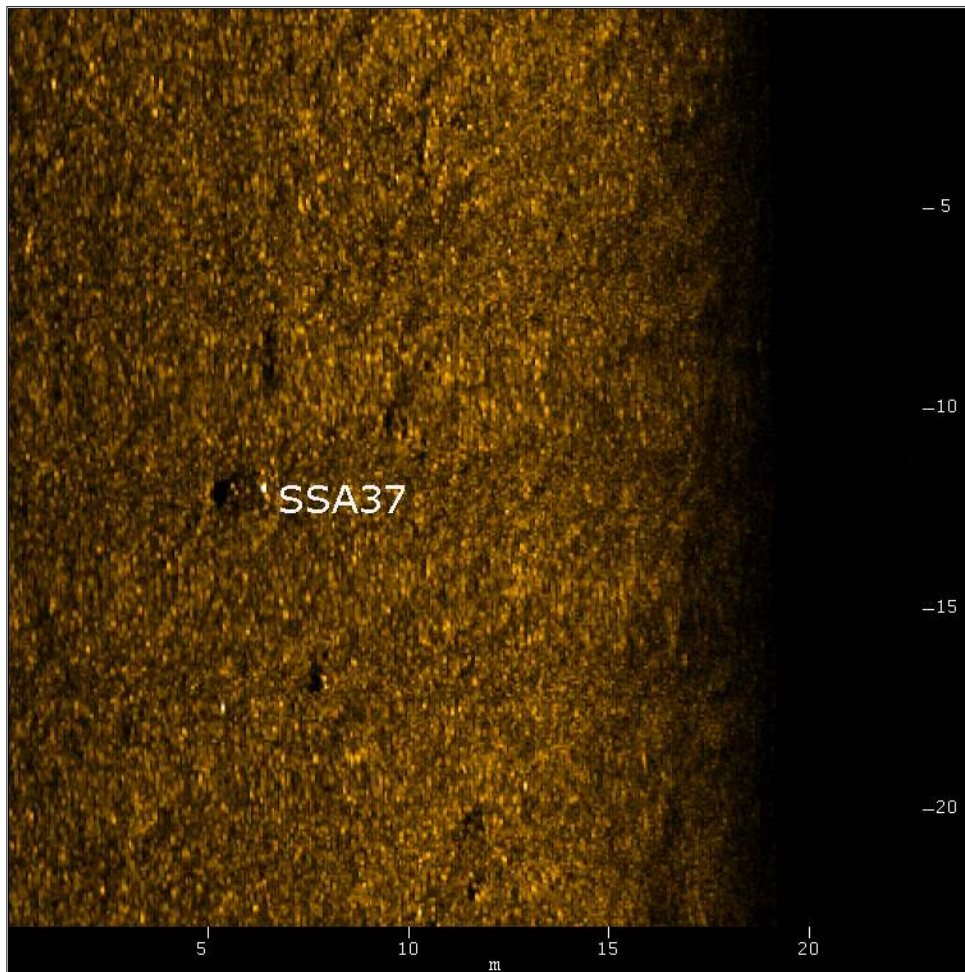
**Contact Info: SSA36**

- Sonar Time at Target: 09/24/2011 14:28:14
- Click Position (Lat/Lon Coordinates)  
50.6870384216 -0.3425939977 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687707.56 (Y) 5618392.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924142600.xtf
- Ping Number: 397678
- Range to Target: 19.22 Meters
- Fish Height: 5.22 Meters
- Heading: 275.900 degrees
- Event Number: 0
- Line Name: C11030\_110924142600

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 0 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Probable small boulder

SSA37

**Contact Info: SSA37**

- Sonar Time at Target: 09/24/2011 14:28:51
- Click Position (Lat/Lon Coordinates)  
50.6868667603 -0.3435299993 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687642.06 (Y) 5618371.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924142600.xtf
- Ping Number: 398758
- Range to Target: 17.72 Meters
- Fish Height: 4.89 Meters
- Heading: 279.100 degrees
- Event Number: 0
- Line Name: C11030\_110924142600

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 1 Meters  
 Target Width: 1 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Indistinguishable  
 Classification 2:  
 Area:  
 Block:  
 Description: Indistinguishable circular feature with low shadow.  
 Most likely a boulder

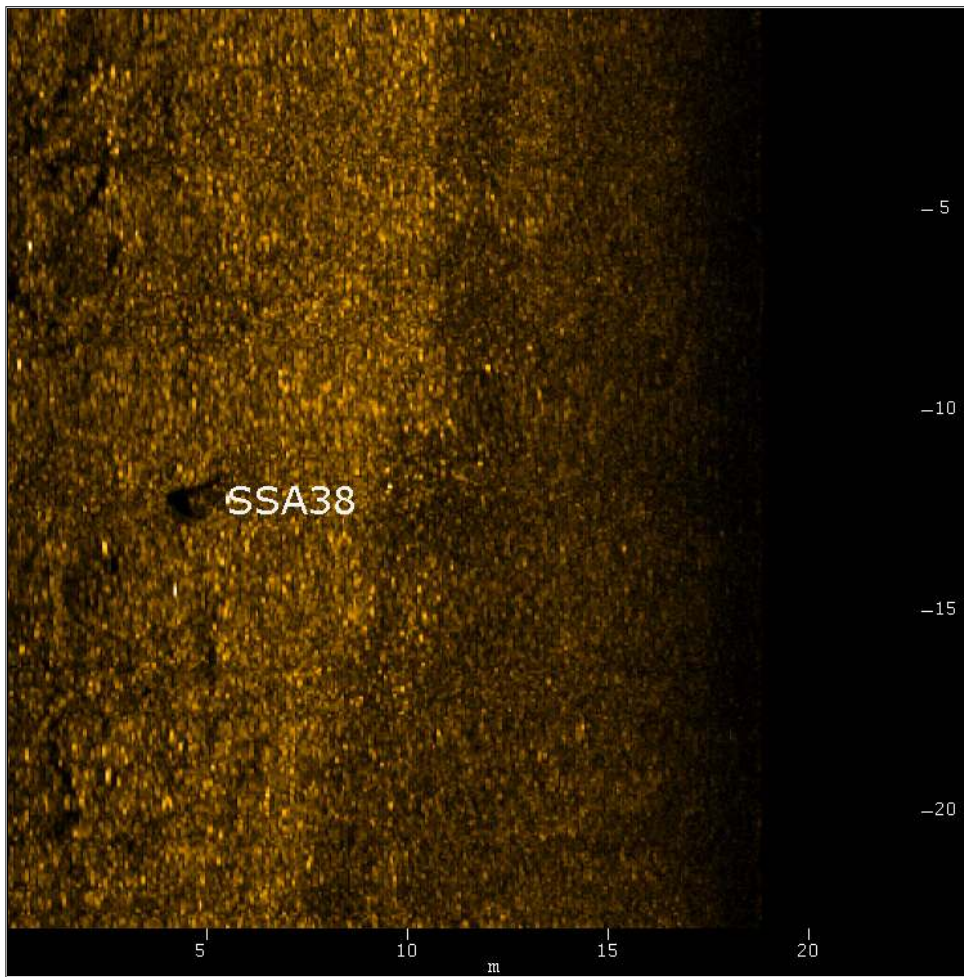
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targetReportGen2



SSA38



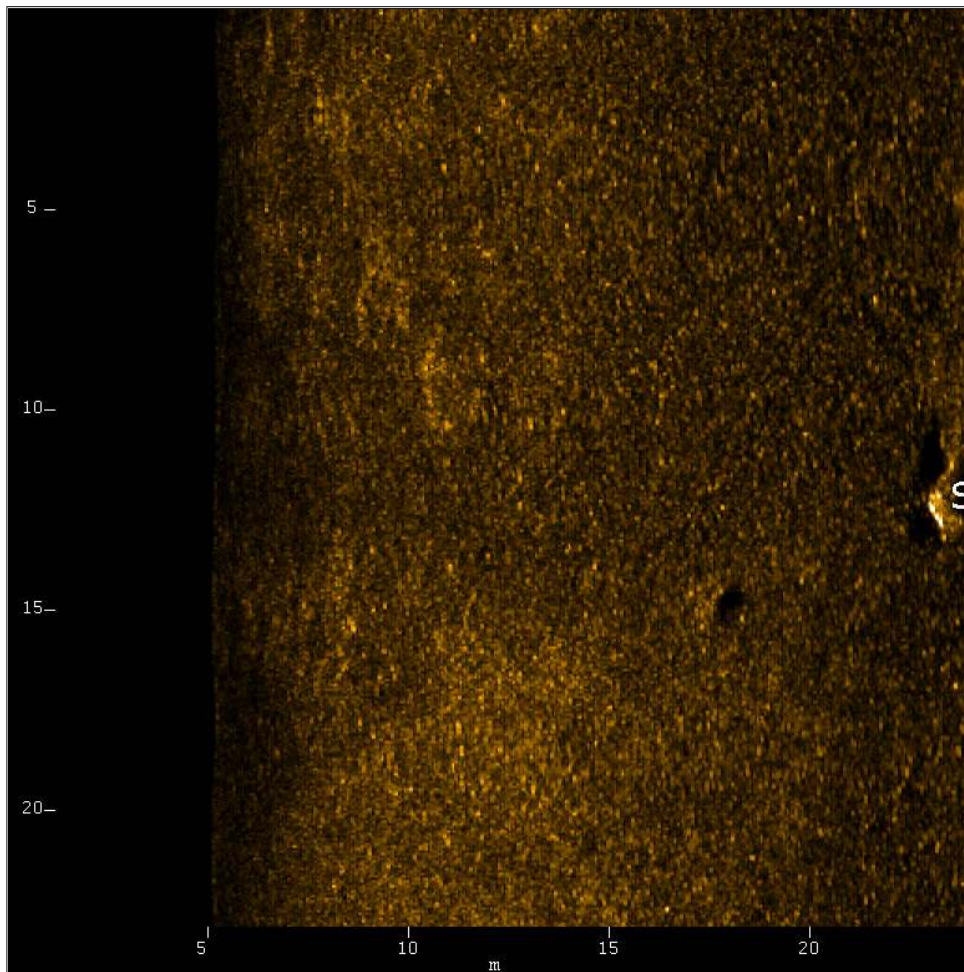
**Contact Info: SSA38**

- Sonar Time at Target: 09/24/2011 14:29:30
- Click Position (Lat/Lon Coordinates)  
50.6866912842 -0.3445099890 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687573.63 (Y) 5618349.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924142600.xtf
- Ping Number: 399877
- Range to Target: 18.98 Meters
- Fish Height: 5.25 Meters
- Heading: 280.400 degrees
- Event Number: 0
- Line Name: C11030\_110924142600

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 1 Meters  
 Target Width: 1 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Indistinguishable  
 Classification 2:  
 Area:  
 Block:  
 Description: Small feature, probable boulder

SSA39

**Contact Info: SSA39**

- Sonar Time at Target: 09/24/2011 14:30:11
- Click Position (Lat/Lon Coordinates)  
50.6868515015 -0.3457179964 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687487.63 (Y) 5618363.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924142600.xtf
- Ping Number: 401097
- Range to Target: 23.02 Meters
- Fish Height: 5.22 Meters
- Heading: 278.200 degrees
- Event Number: 0
- Line Name: C11030\_110924142600

**User Entered Info**

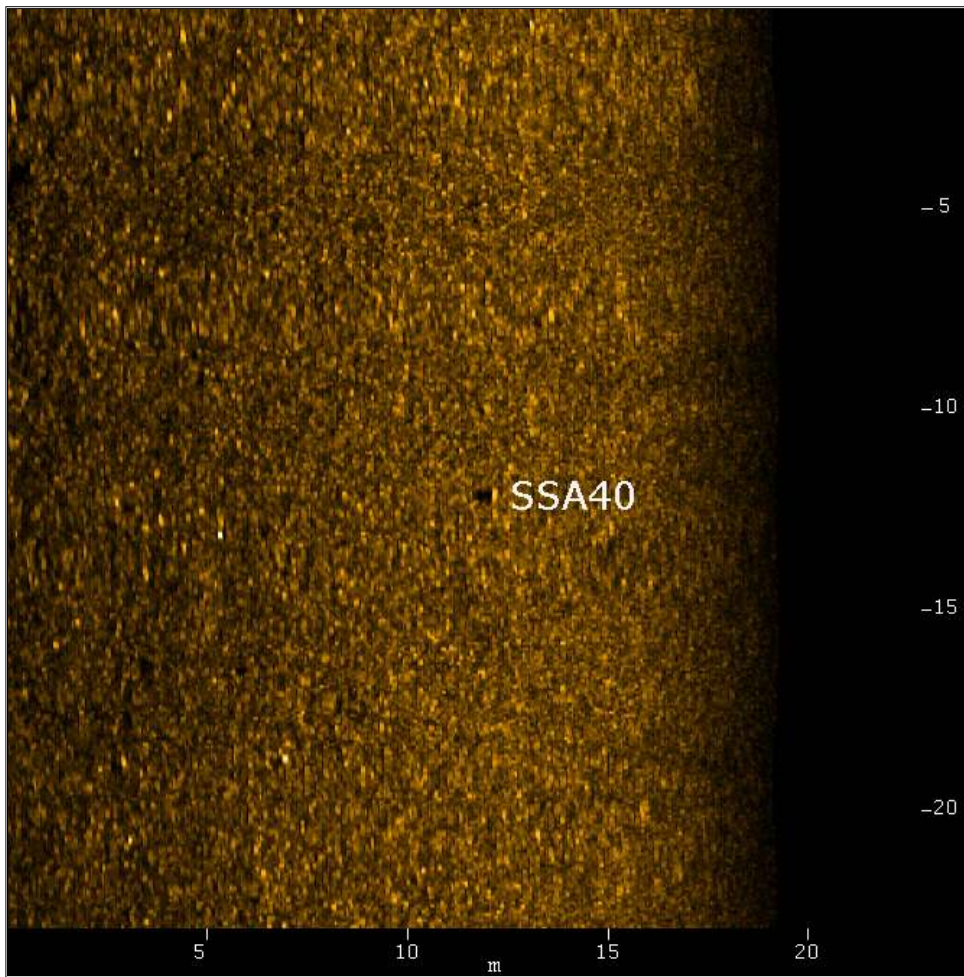
Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Probable Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Probable Boulder

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targetReportGen2

SSA40



**Contact Info: SSA40**

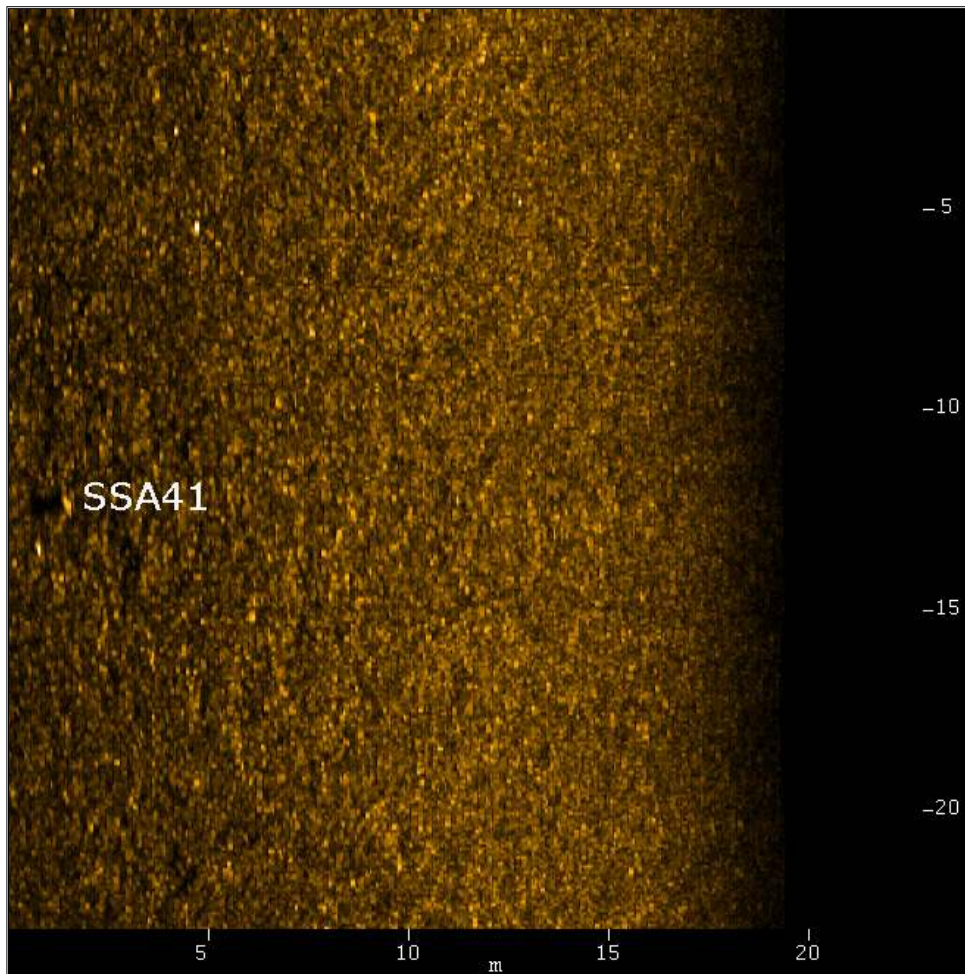
- Sonar Time at Target: 09/24/2011 13:17:44
- Click Position (Lat/Lon Coordinates)  
50.6885185242 -0.3430899978 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687666.56 (Y) 5618555.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924131600.xtf
- Ping Number: 274476
- Range to Target: 11.72 Meters
- Fish Height: 4.59 Meters
- Heading: 274.800 degrees
- Event Number: 0
- Line Name: C11030\_110924131600

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 0 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Probable Boulder



SSA41

**Contact Info: SSA41**

- Sonar Time at Target: 09/24/2011 13:17:26
- Click Position (Lat/Lon Coordinates)  
50.6885337830 -0.3425270021 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687706.25 (Y) 5618559.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924131600.xtf
- Ping Number: 273951
- Range to Target: 22.69 Meters
- Fish Height: 4.72 Meters
- Heading: 276.000 degrees
- Event Number: 0
- Line Name: C11030\_110924131600

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 0 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Probable Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Probable Boulder

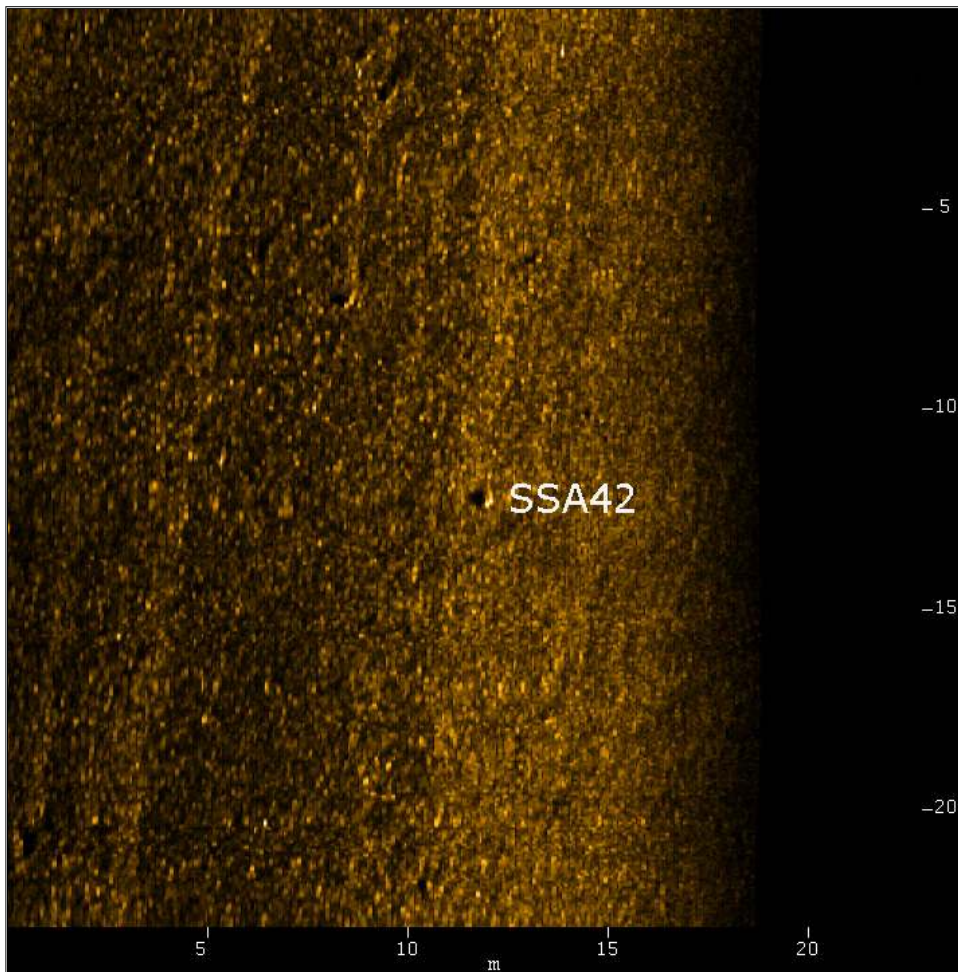
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targetReportGen2



SSA42



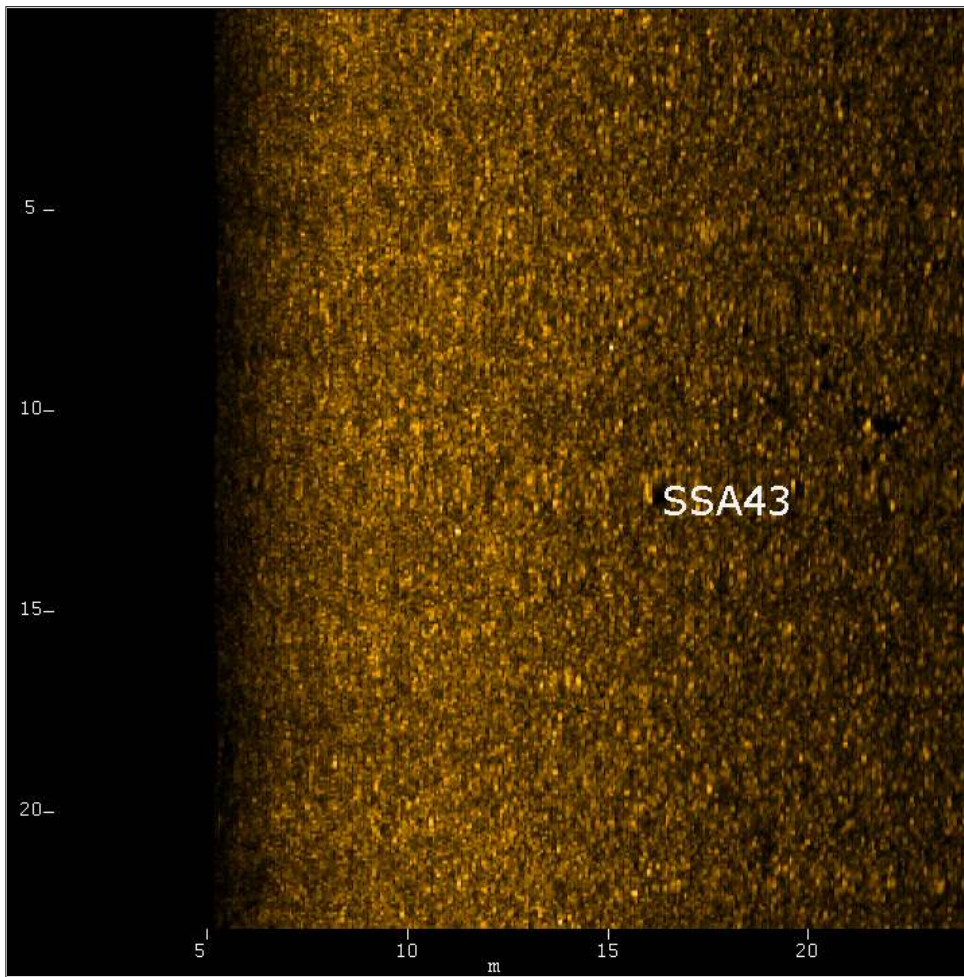
**Contact Info: SSA42**

- Sonar Time at Target: 09/24/2011 18:34:09
- Click Position (Lat/Lon Coordinates)  
50.6881752014 -0.3414370120 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687784.69 (Y) 5618521.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924183400.xtf
- Ping Number: 827420
- Range to Target: 11.77 Meters
- Fish Height: 5.04 Meters
- Heading: 274.100 degrees
- Event Number: 0
- Line Name: C11030\_110924183400

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 0 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder

SSA43



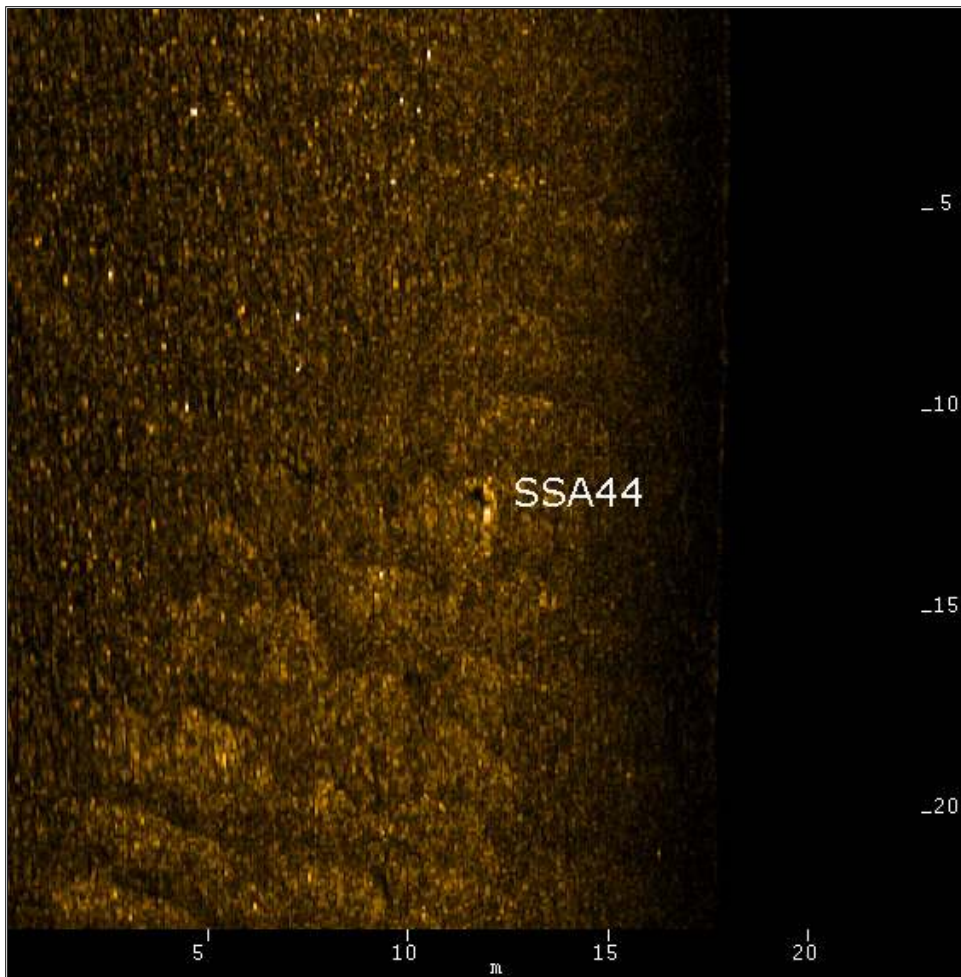
**Contact Info: SSA43**

- Sonar Time at Target: 09/24/2011 18:35:13
- Click Position (Lat/Lon Coordinates)  
50.6880493164 -0.3432109952 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687659.88 (Y) 5618503.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924183400.xtf
- Ping Number: 829301
- Range to Target: 15.80 Meters
- Fish Height: 5.28 Meters
- Heading: 270.300 degrees
- Event Number: 0
- Line Name: C11030\_110924183400

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 0 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder

SSA44

**Contact Info: SSA44**

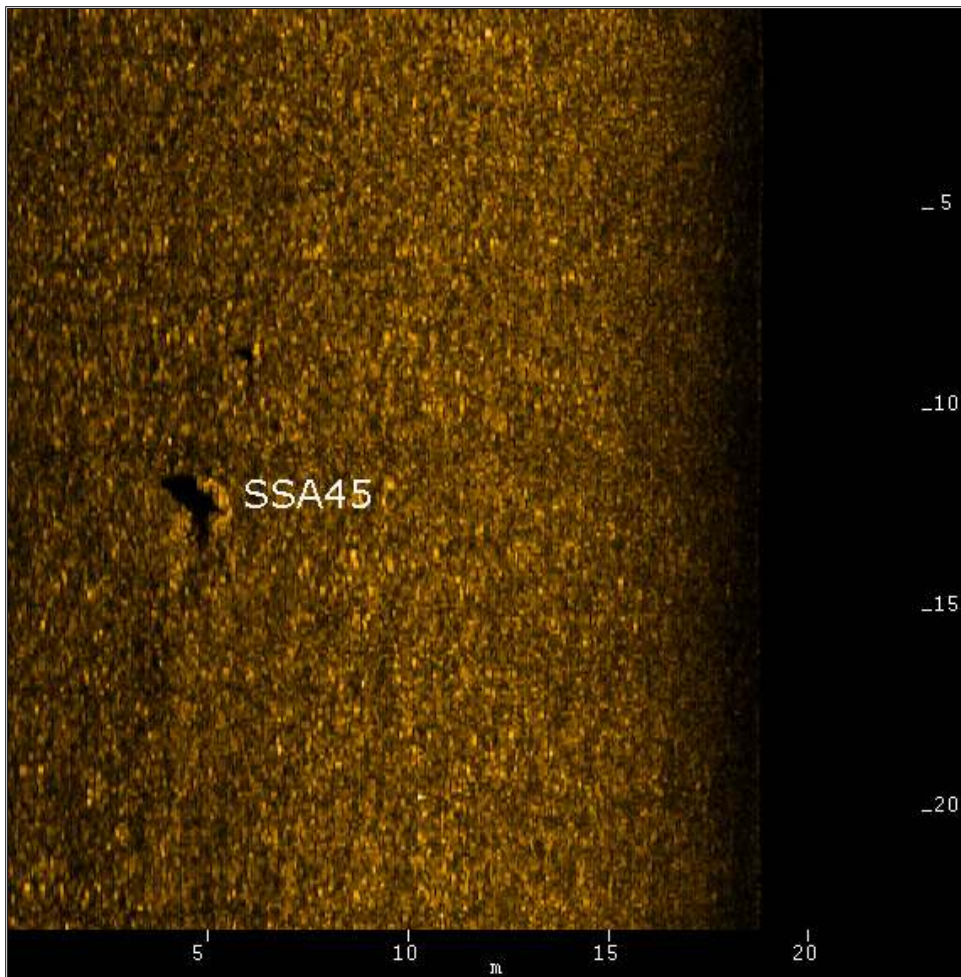
- Sonar Time at Target: 09/24/2011 18:42:24
- Click Position (Lat/Lon Coordinates)  
50.6884880066 -0.3445700109 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687562.19 (Y) 5618548.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924184200.xtf
- Ping Number: 841838
- Range to Target: 11.48 Meters
- Fish Height: 5.66 Meters
- Heading: 73.500 degrees
- Event Number: 0
- Line Name: C11030\_110924184200

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Probable Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Probable Boulder



SSA45



**Contact Info: SSA45**

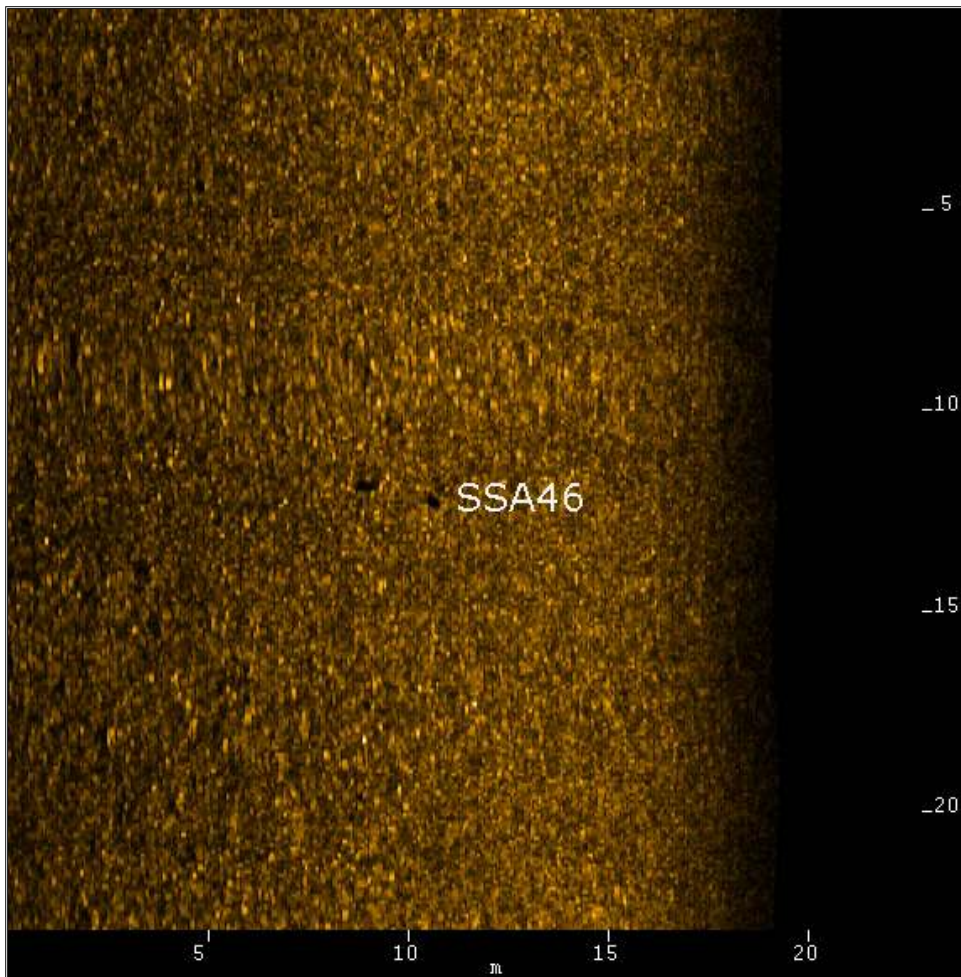
- Sonar Time at Target: 09/24/2011 18:45:07
- Click Position (Lat/Lon Coordinates)  
50.6897163391 -0.3392060101 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687936.06 (Y) 5618699.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS
- Xtfs\C11030\_110924184200.xtf
- Ping Number: 846599
- Range to Target: 18.70 Meters
- Fish Height: 5.27 Meters
- Heading: 63.500 degrees
- Event Number: 0
- Line Name: C11030\_110924184200

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 2 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Probable Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Probable Boulder



SSA46

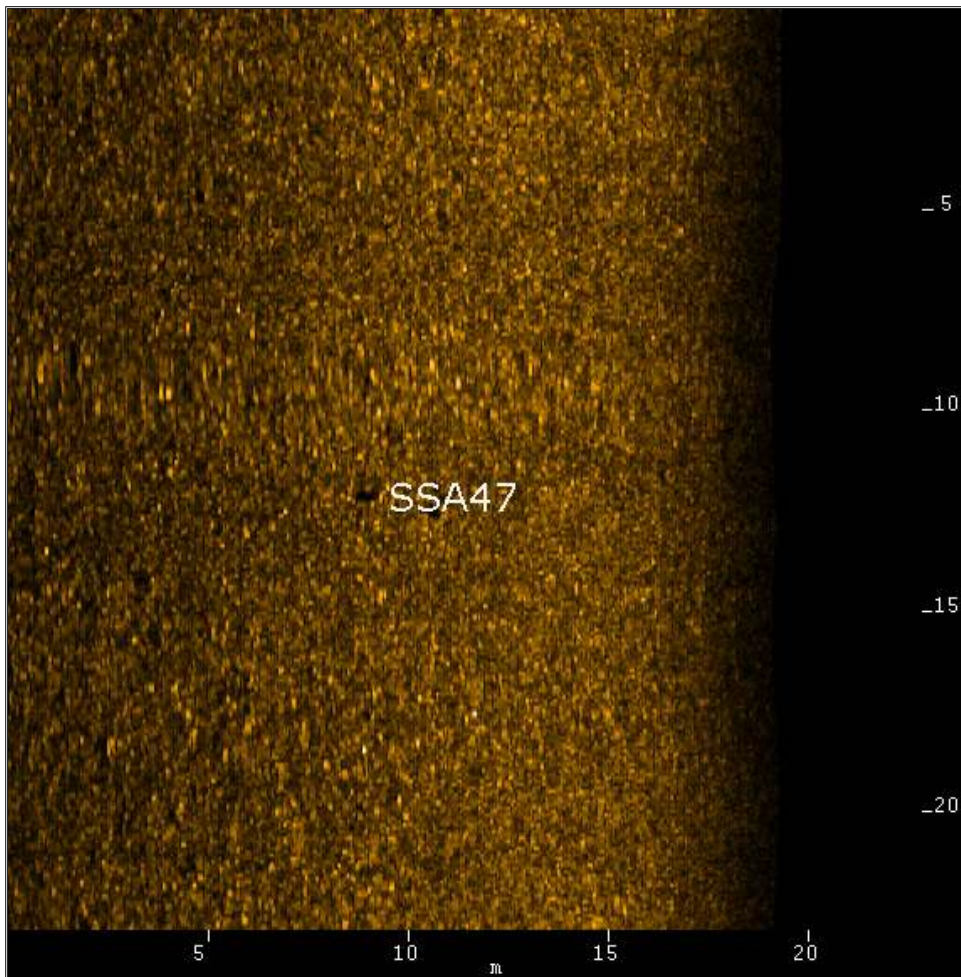
**Contact Info: SSA46**

- Sonar Time at Target: 09/24/2011 18:44:40
- Click Position (Lat/Lon Coordinates)  
50.6895065308 -0.3400979936 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687873.94 (Y) 5618673.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924184200.xtf
- Ping Number: 845807
- Range to Target: 13.41 Meters
- Fish Height: 4.87 Meters
- Heading: 58.600 degrees
- Event Number: 0
- Line Name: C11030\_110924184200

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 0 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder with another directly adjacent

SSA47



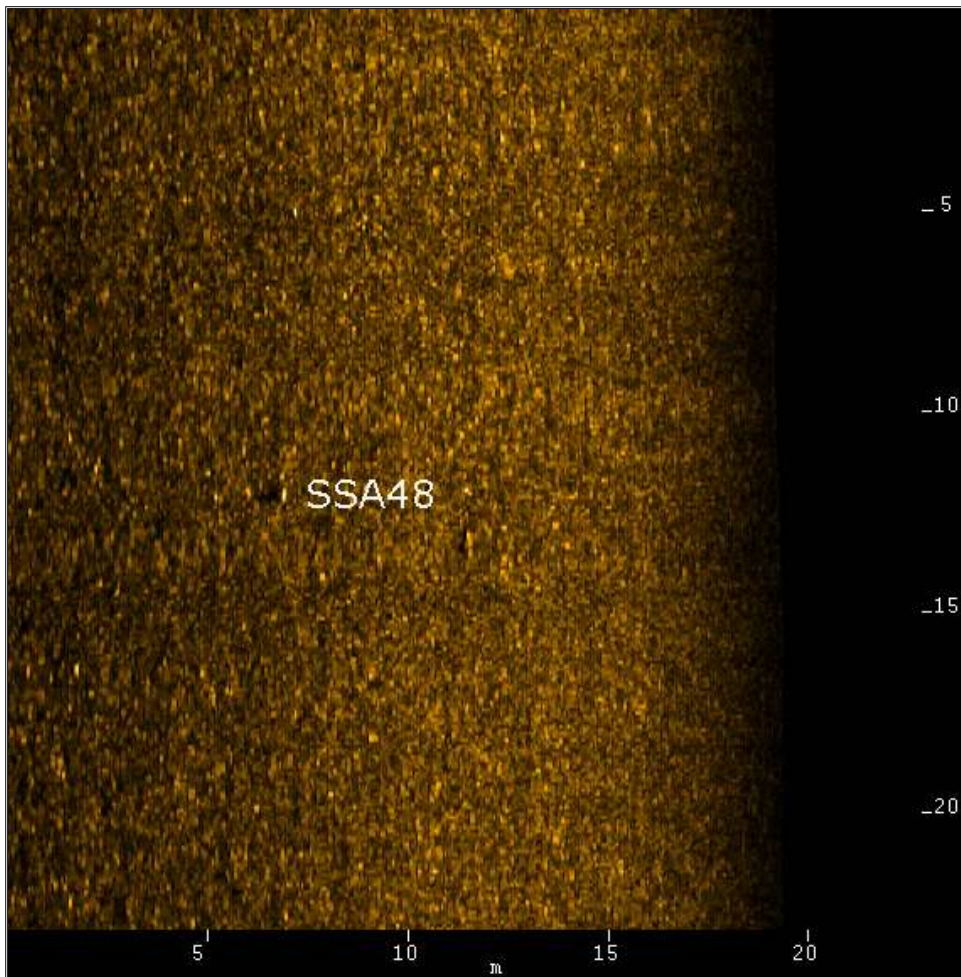
**Contact Info: SSA47**

- Sonar Time at Target: 09/24/2011 18:44:40
- Click Position (Lat/Lon Coordinates)  
50.6895217896 -0.3401080072 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687873.13 (Y) 5618674.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS Xtf\VC11030\_110924184200.xtf
- Ping Number: 845804
- Range to Target: 15.09 Meters
- Fish Height: 4.88 Meters
- Heading: 58.200 degrees
- Event Number: 0
- Line Name: C11030\_110924184200

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 0 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder adjacent to SSA46

SSA48



**Contact Info: SSA48**

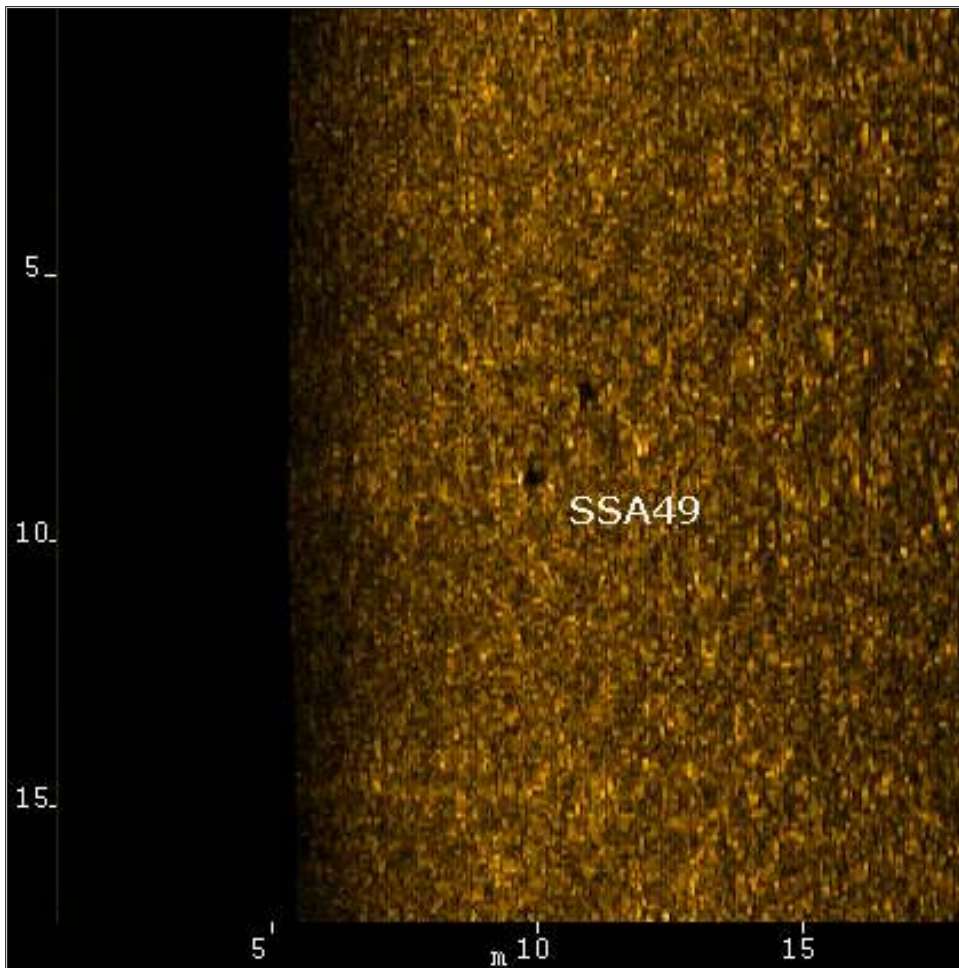
- Sonar Time at Target: 09/24/2011 18:44:19
- Click Position (Lat/Lon Coordinates)  
50.6894035339 -0.3408269882 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687822.88 (Y) 5618660.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS Xtfs\C11030\_110924184200.xtf
- Ping Number: 845187
- Range to Target: 17.16 Meters
- Fish Height: 4.76 Meters
- Heading: 57.600 degrees
- Event Number: 0
- Line Name: C11030\_110924184200

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 0 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder



SSA49

**Contact Info: SSA49**

- Sonar Time at Target: 09/24/2011 18:43:59
- Click Position (Lat/Lon Coordinates)  
50.6890335083 -0.3413549960 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687787.06 (Y) 5618617.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924184200.xtf
- Ping Number: 844615
- Range to Target: 9.41 Meters
- Fish Height: 4.63 Meters
- Heading: 59.800 degrees
- Event Number: 0
- Line Name: C11030\_110924184200

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 0 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder

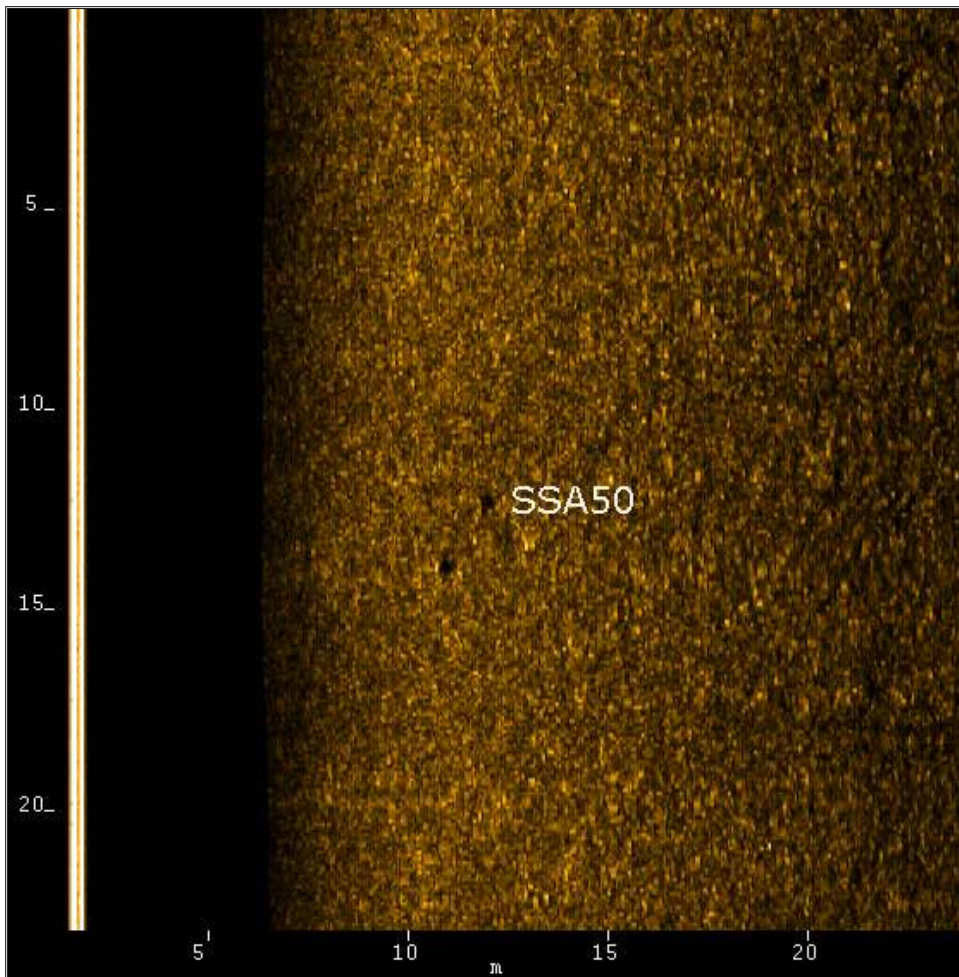
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SSA50

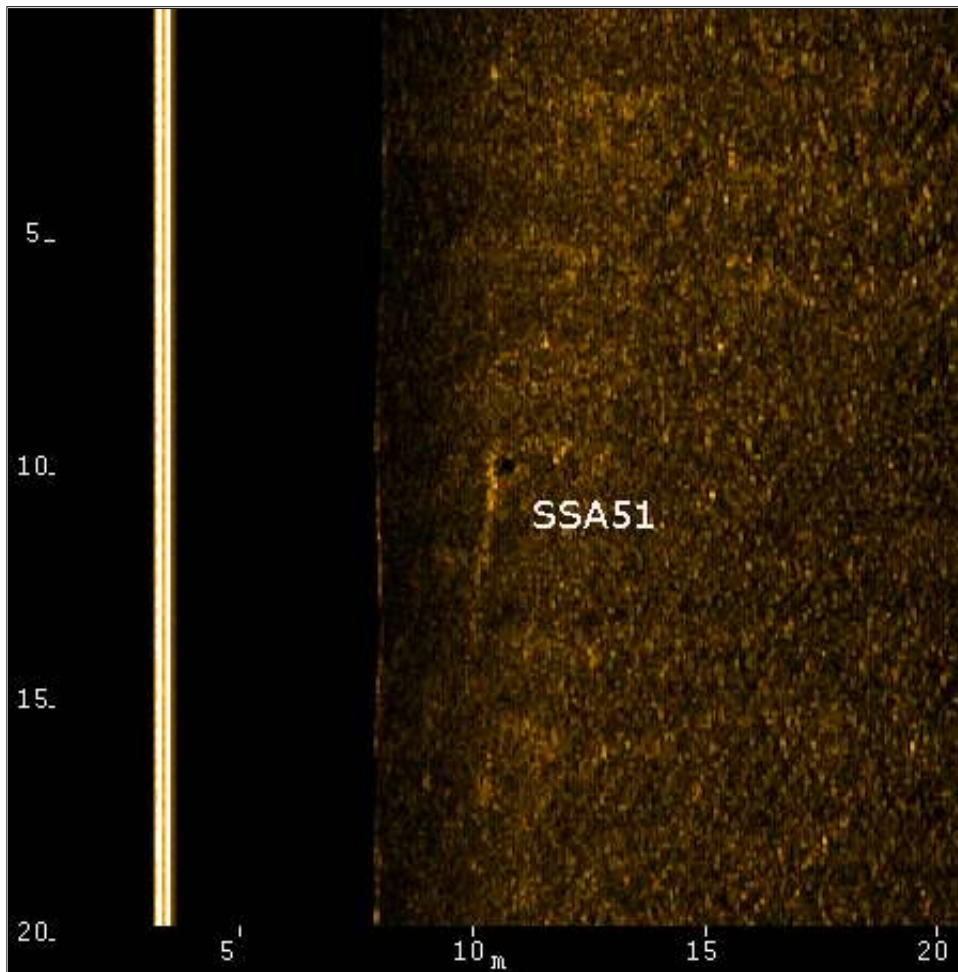
**Contact Info: SSA50**

- Sonar Time at Target: 09/24/2011 18:43:58
- Click Position (Lat/Lon Coordinates)  
50.6890220642 -0.3413699865 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687786.00 (Y) 5618616.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS
- Xtfs\C11030\_110924184200.xtf
- Ping Number: 844596
- Range to Target: 10.22 Meters
- Fish Height: 4.72 Meters
- Heading: 62.600 degrees
- Event Number: 0
- Line Name: C11030\_110924184200

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder adjacent to SSA49

SSA51

**Contact Info: SSA51**

- Sonar Time at Target: 09/24/2011 17:16:56
- Click Position (Lat/Lon Coordinates)  
50.6885757446 -0.3446260095 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687557.88 (Y) 5618558.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924171600.xtf
- Ping Number: 692481
- Range to Target: 7.36 Meters
- Fish Height: 4.61 Meters
- Heading: 63.700 degrees
- Event Number: 0
- Line Name: C11030\_110924171600

**User Entered Info**

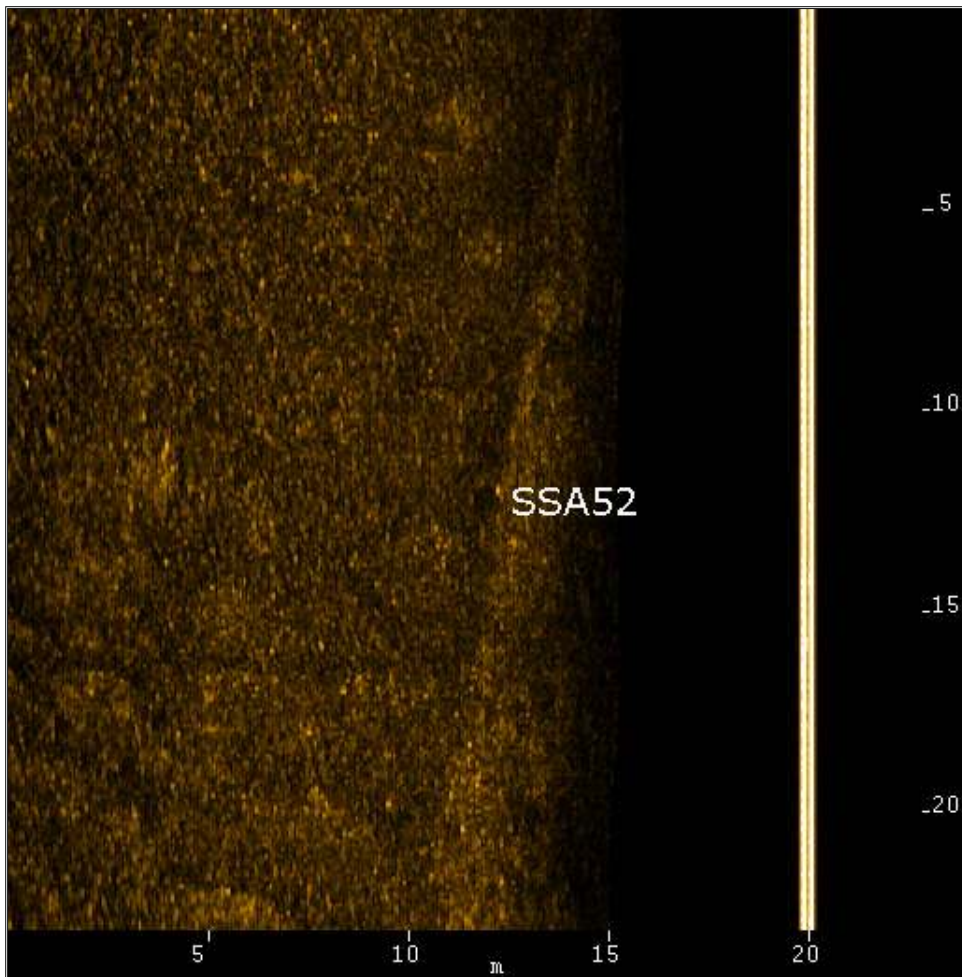
Target Height: = 0 Meters  
 Target Length: 0 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder with scour trail

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targetReportGen2

SSA52



**Contact Info: SSA52**

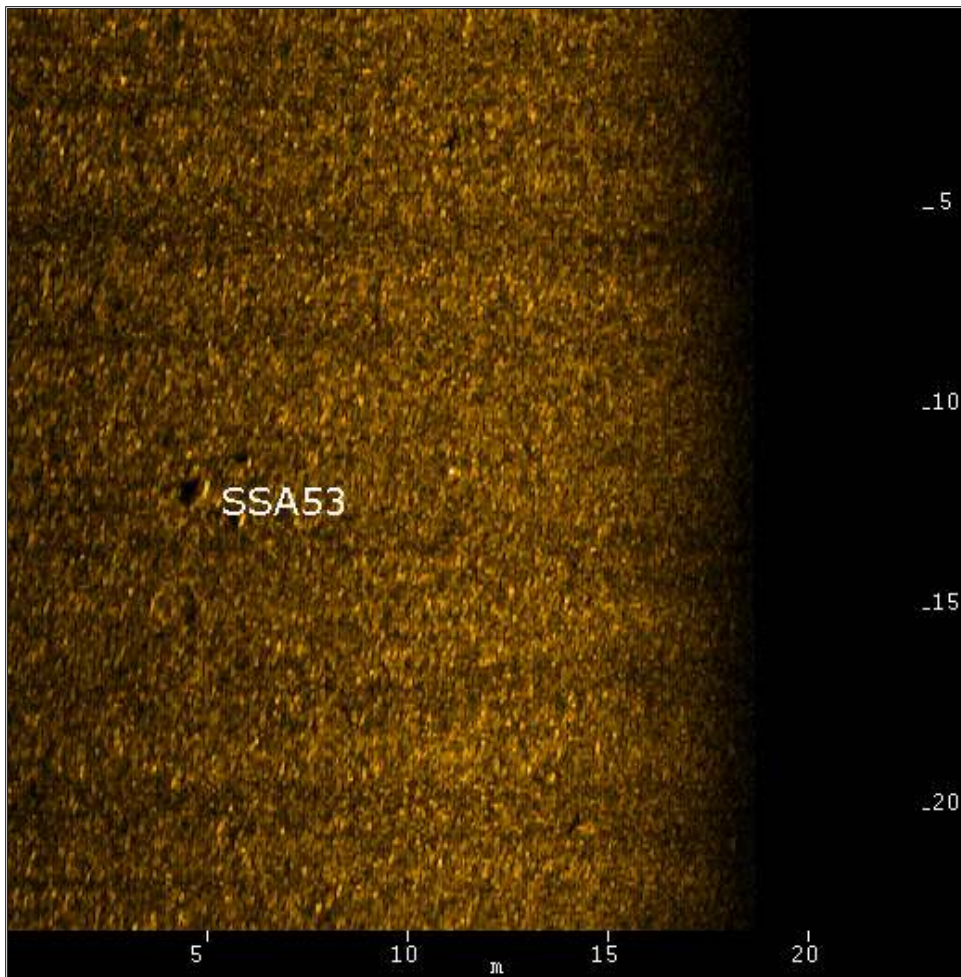
- Sonar Time at Target: 09/24/2011 17:17:30
- Click Position (Lat/Lon Coordinates)  
50.6889305115 -0.3434529901 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687639.25 (Y) 5618600.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS
- Xtfs\C11030\_110924171600.xtf
- Ping Number: 693475
- Range to Target: 8.02 Meters
- Fish Height: 4.88 Meters
- Heading: 64.000 degrees
- Event Number: 0
- Line Name: C11030\_110924171600

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Possible Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Possibel Boulder



SSA53

**Contact Info: SSA53**

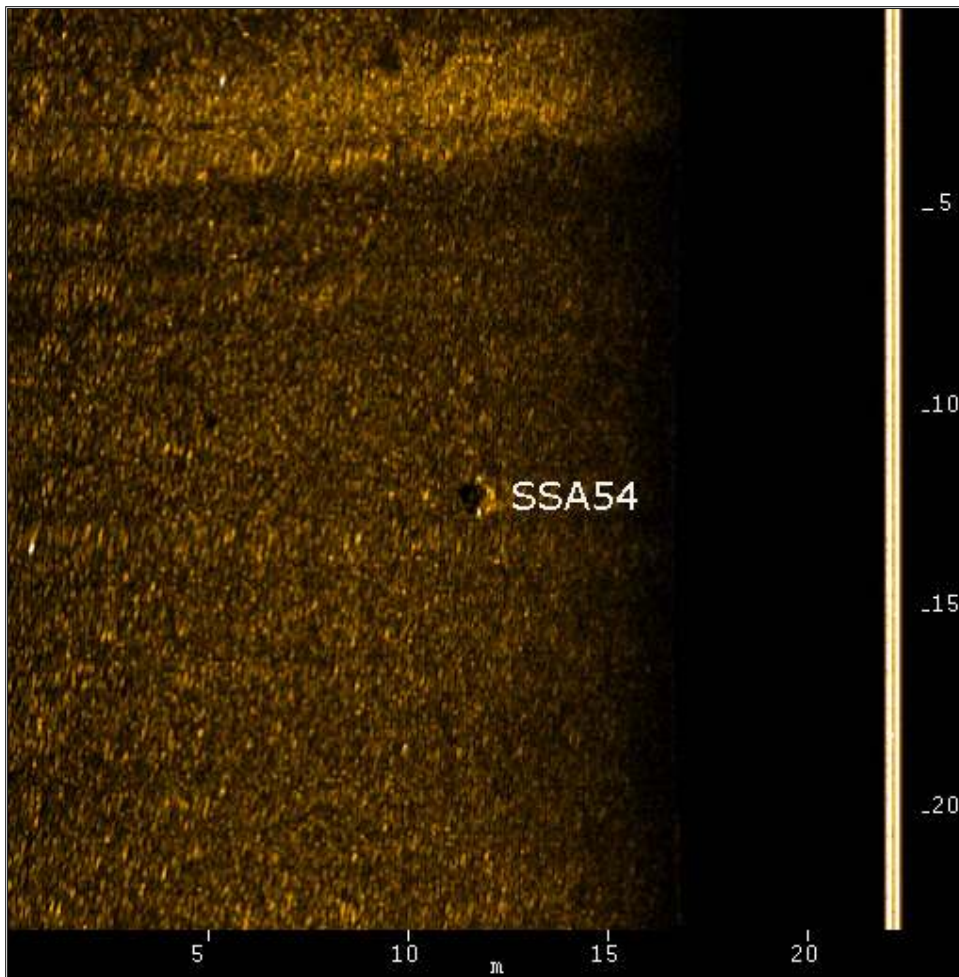
- Sonar Time at Target: 09/24/2011 17:37:39
- Click Position (Lat/Lon Coordinates)  
50.6870079041 -0.3434590101 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687646.56 (Y) 5618386.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924173700.xtf
- Ping Number: 728691
- Range to Target: 19.22 Meters
- Fish Height: 5.41 Meters
- Heading: 340.300 degrees
- Event Number: 0
- Line Name: C11030\_110924173700

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Probable Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Probable boulder associated with adjacent  
 boulder cluster



SSA54

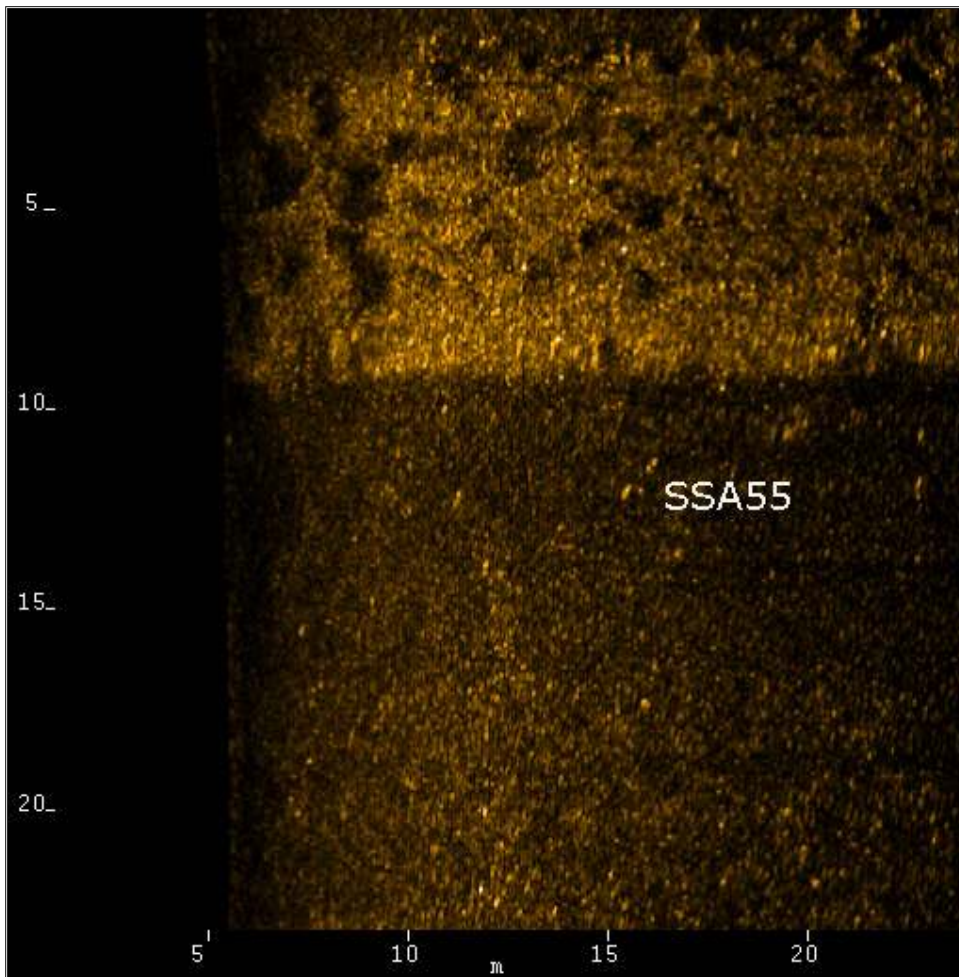
**Contact Info: SSA54**

- Sonar Time at Target: 09/24/2011 17:38:22
- Click Position (Lat/Lon Coordinates)  
50.6880683899 -0.3437440097 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687622.19 (Y) 5618504.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924173700.xtf
- Ping Number: 729952
- Range to Target: 10.13 Meters
- Fish Height: 5.54 Meters
- Heading: 332.500 degrees
- Event Number: 0
- Line Name: C11030\_110924173700

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder

SSA55

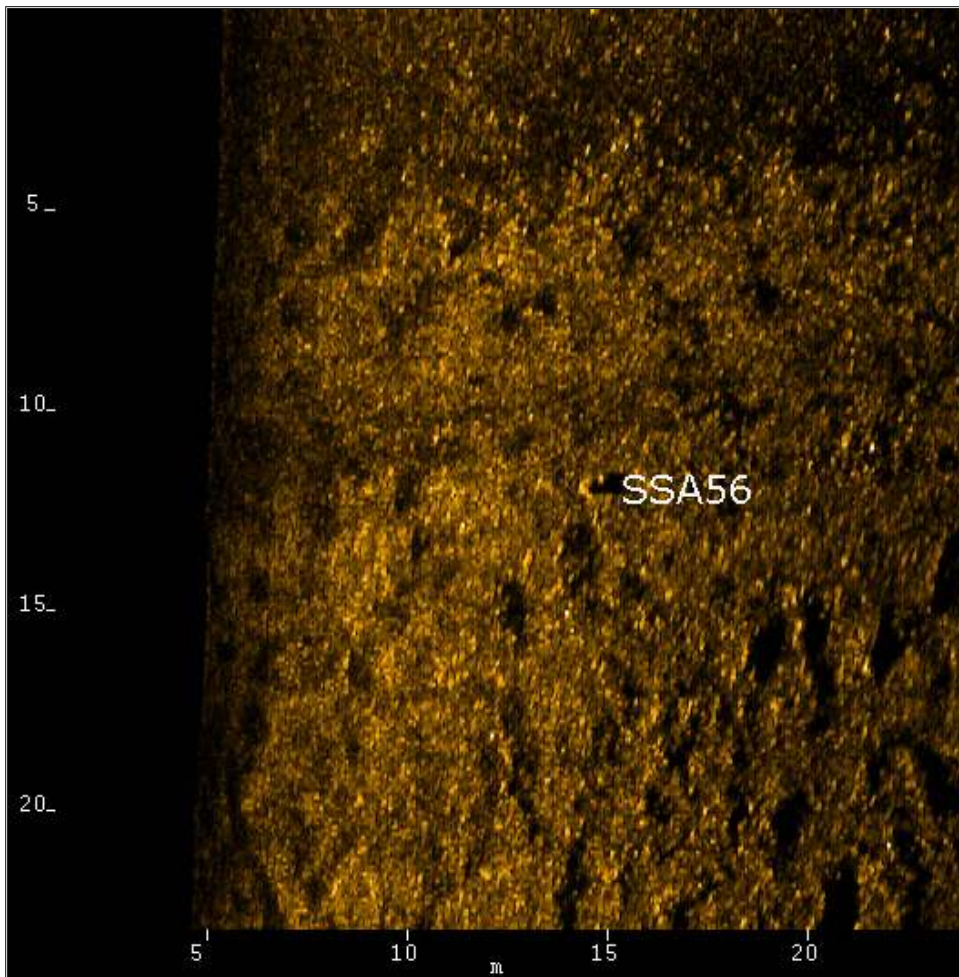
**Contact Info: SSA55**

- Sonar Time at Target: 09/24/2011 17:38:20
- Click Position (Lat/Lon Coordinates)  
50.6880645752 -0.3434039950 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687646.19 (Y) 5618504.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924173700.xtf
- Ping Number: 729891
- Range to Target: 15.80 Meters
- Fish Height: 5.41 Meters
- Heading: 335.900 degrees
- Event Number: 0
- Line Name: C11030\_110924173700

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 0 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder

SSA56

**Contact Info: SSA56**

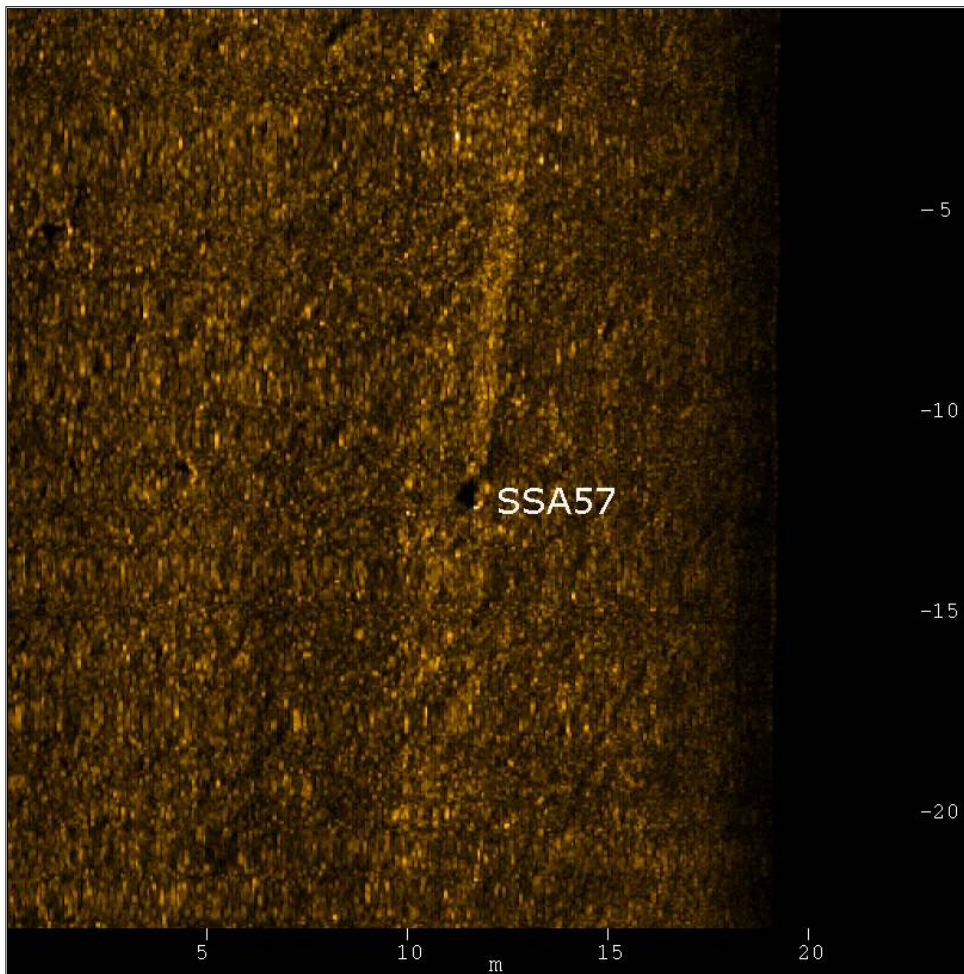
- Sonar Time at Target: 09/24/2011 17:38:30
- Click Position (Lat/Lon Coordinates)  
50.6883049011 -0.3435159922 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687637.38 (Y) 5618530.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924173700.xtf
- Ping Number: 730177
- Range to Target: 14.72 Meters
- Fish Height: 5.02 Meters
- Heading: 335.400 degrees
- Event Number: 0
- Line Name: C11030\_110924173700

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 0 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder



SSA57



**Contact Info: SSA57**

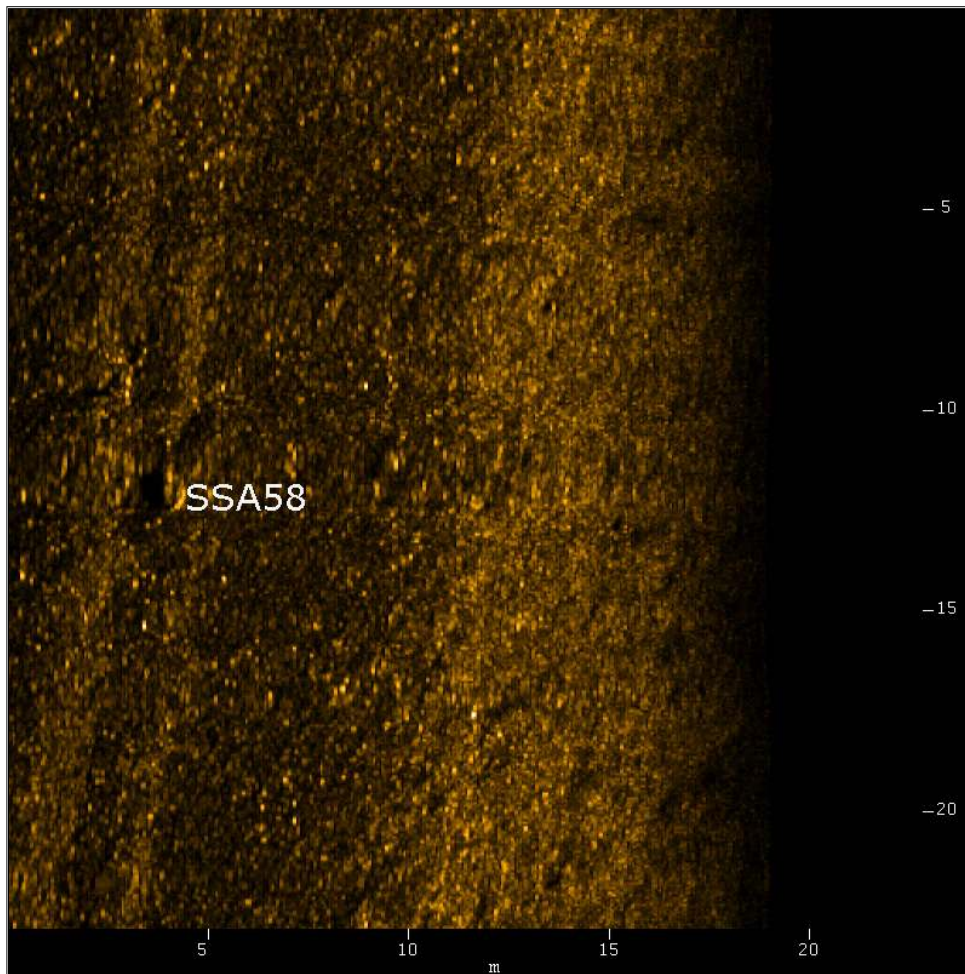
- Sonar Time at Target: 09/24/2011 16:48:17
- Click Position (Lat/Lon Coordinates)  
50.6880607605 -0.3415189981 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687779.38 (Y) 5618508.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924164700.xtf
- Ping Number: 642421
- Range to Target: 12.23 Meters
- Fish Height: 4.83 Meters
- Heading: 274.200 degrees
- Event Number: 0
- Line Name: C11030\_110924164700

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder with scour trail



SSA58

**Contact Info: SSA58**

- Sonar Time at Target: 09/24/2011 16:49:09
- Click Position (Lat/Lon Coordinates)  
50.6877326965 -0.3427309990 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687695.06 (Y) 5618469.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924164700.xtf
- Ping Number: 643928
- Range to Target: 20.02 Meters
- Fish Height: 5.13 Meters
- Heading: 272.000 degrees
- Event Number: 0
- Line Name: C11030\_110924164700

**User Entered Info**

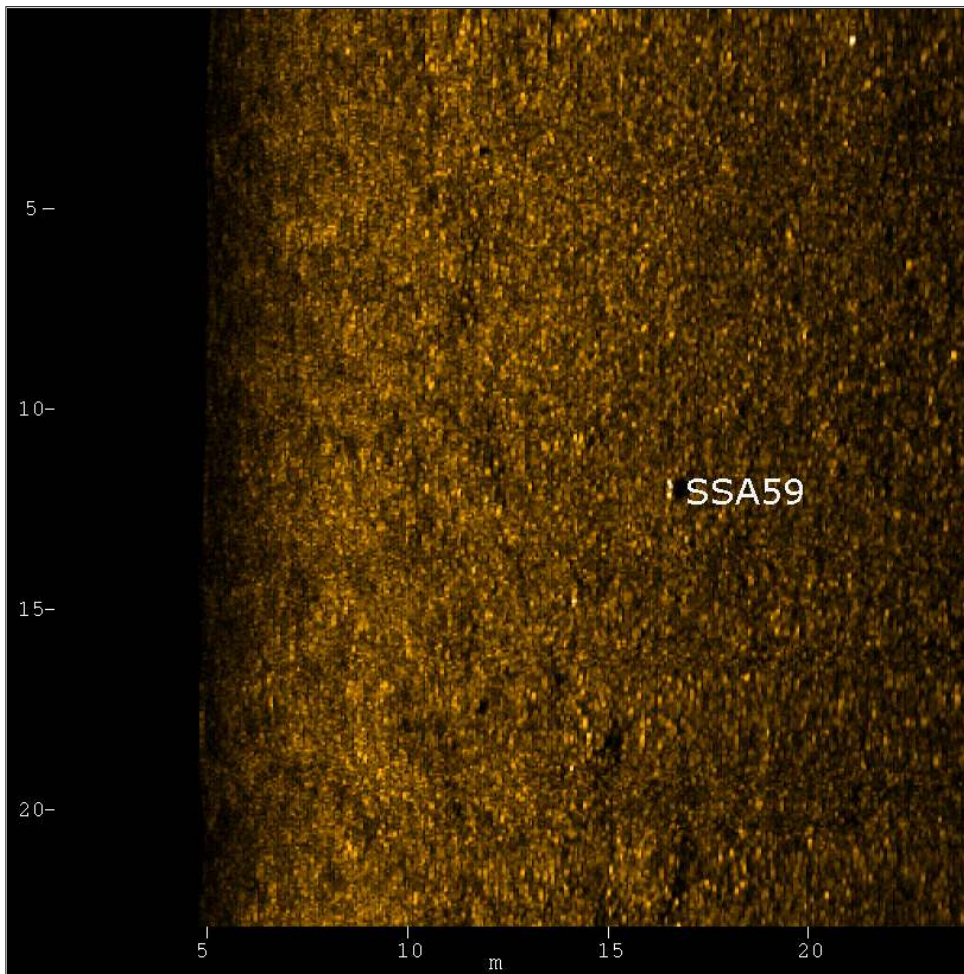
Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder with scour trail

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SSA59



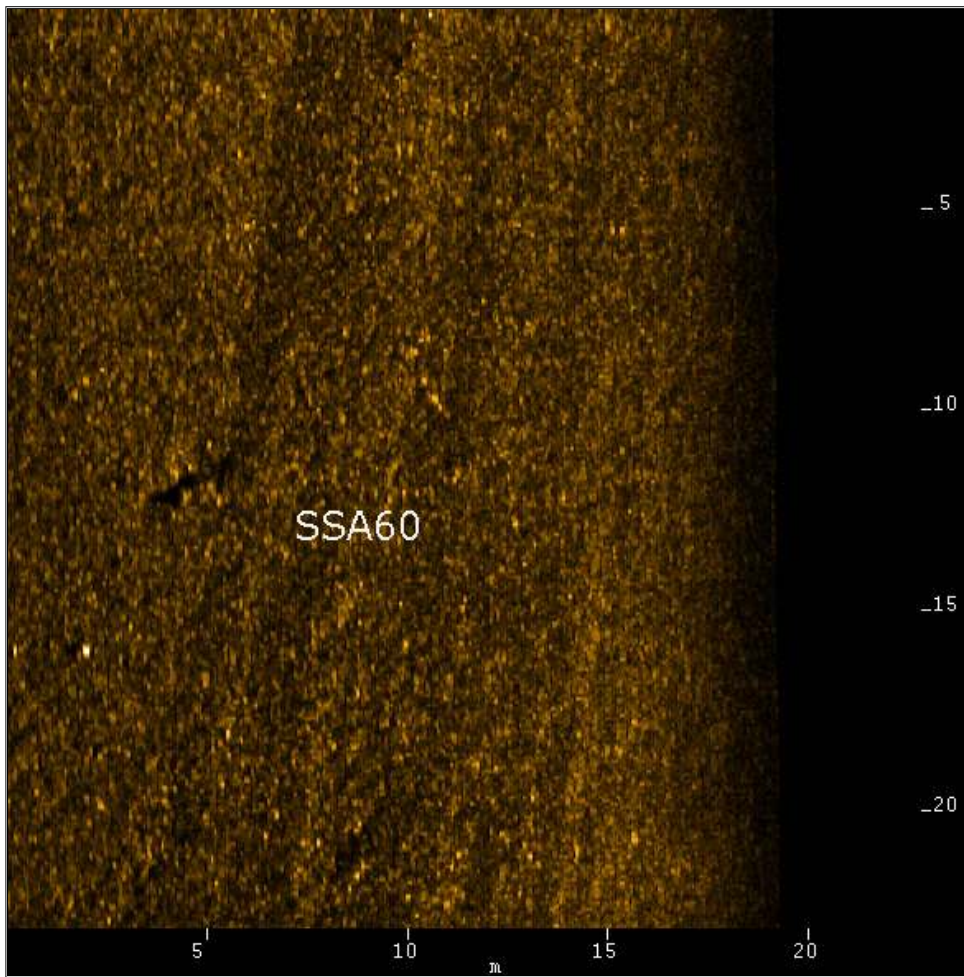
**Contact Info: SSA59**

- Sonar Time at Target: 09/24/2011 16:49:18
- Click Position (Lat/Lon Coordinates)  
50.6879920959 -0.3430820107 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687669.25 (Y) 5618497.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924164700.xtf
- Ping Number: 644187
- Range to Target: 16.45 Meters
- Fish Height: 4.94 Meters
- Heading: 278.800 degrees
- Event Number: 0
- Line Name: C11030\_110924164700

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 0 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder

SSA60



**Contact Info: SSA60**

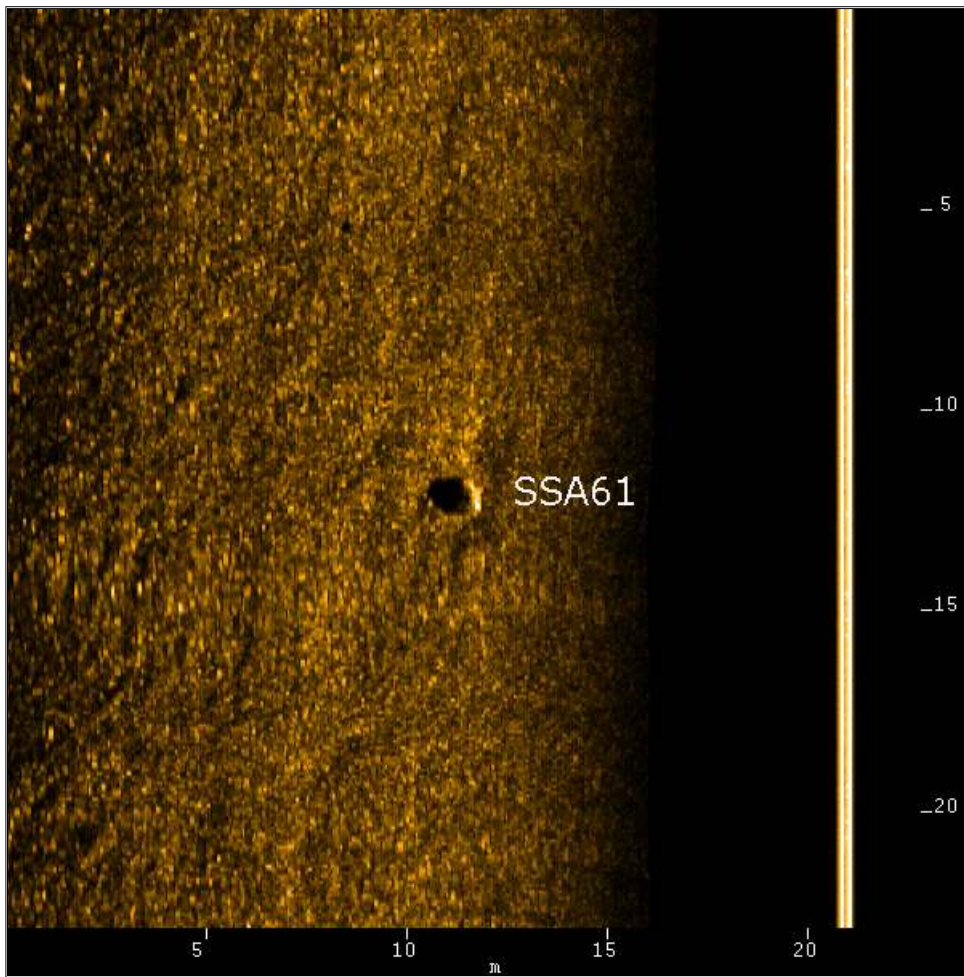
- Sonar Time at Target: 09/24/2011 11:25:37
- Click Position (Lat/Lon Coordinates)  
50.6883087158 -0.3406659961 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687838.56 (Y) 5618538.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924112500.xtf
- Ping Number: 78554
- Range to Target: -17.42 Meters
- Fish Height: 4.90 Meters
- Heading: 279.300 degrees
- Event Number: 0
- Line Name: C11030\_110924112500

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 2 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Possible Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Possibel Boulder, has a scour trail but has angled side



SSA61



**Contact Info: SSA61**

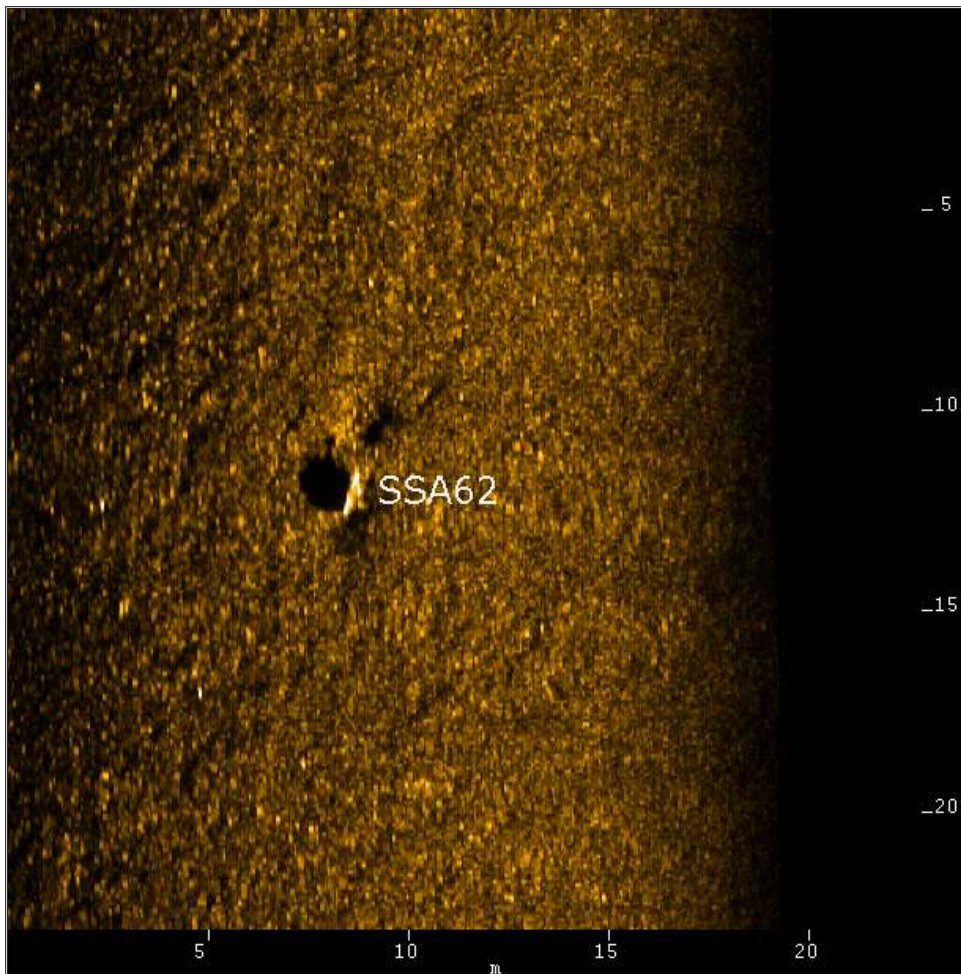
- Sonar Time at Target: 09/24/2011 11:26:05
- Click Position (Lat/Lon Coordinates)  
50.6882286072 -0.3415670097 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687775.31 (Y) 5618527.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924112500.xtf
- Ping Number: 79347
- Range to Target: 8.95 Meters
- Fish Height: 4.93 Meters
- Heading: 278.000 degrees
- Event Number: 0
- Line Name: C11030\_110924112500

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder with well defined shadow



SSA62

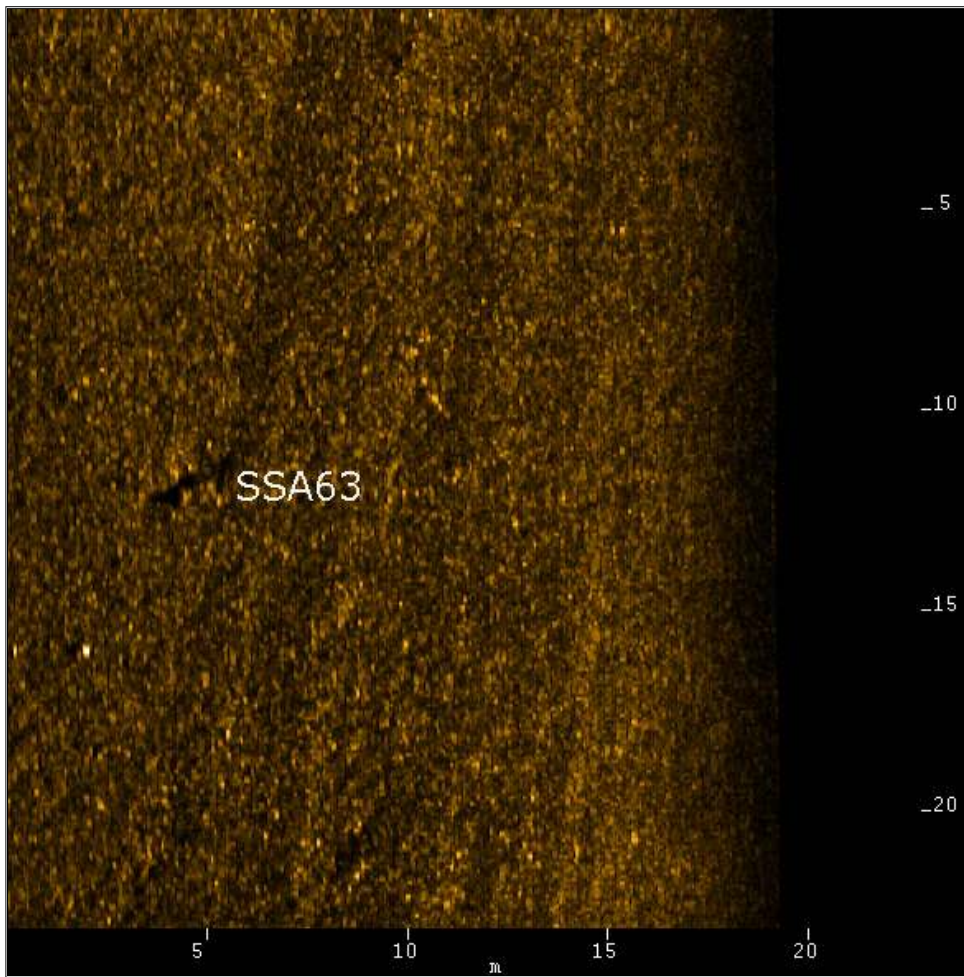
**Contact Info: SSA62**

- Sonar Time at Target: 09/24/2011 11:26:12
- Click Position (Lat/Lon Coordinates)  
50.6881179810 -0.3417389989 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687763.56 (Y) 5618514.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924112500.xtf
- Ping Number: 79549
- Range to Target: 15.38 Meters
- Fish Height: 5.00 Meters
- Heading: 278.800 degrees
- Event Number: 0
- Line Name: C11030\_110924112500

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder with rounded profile

SSA63



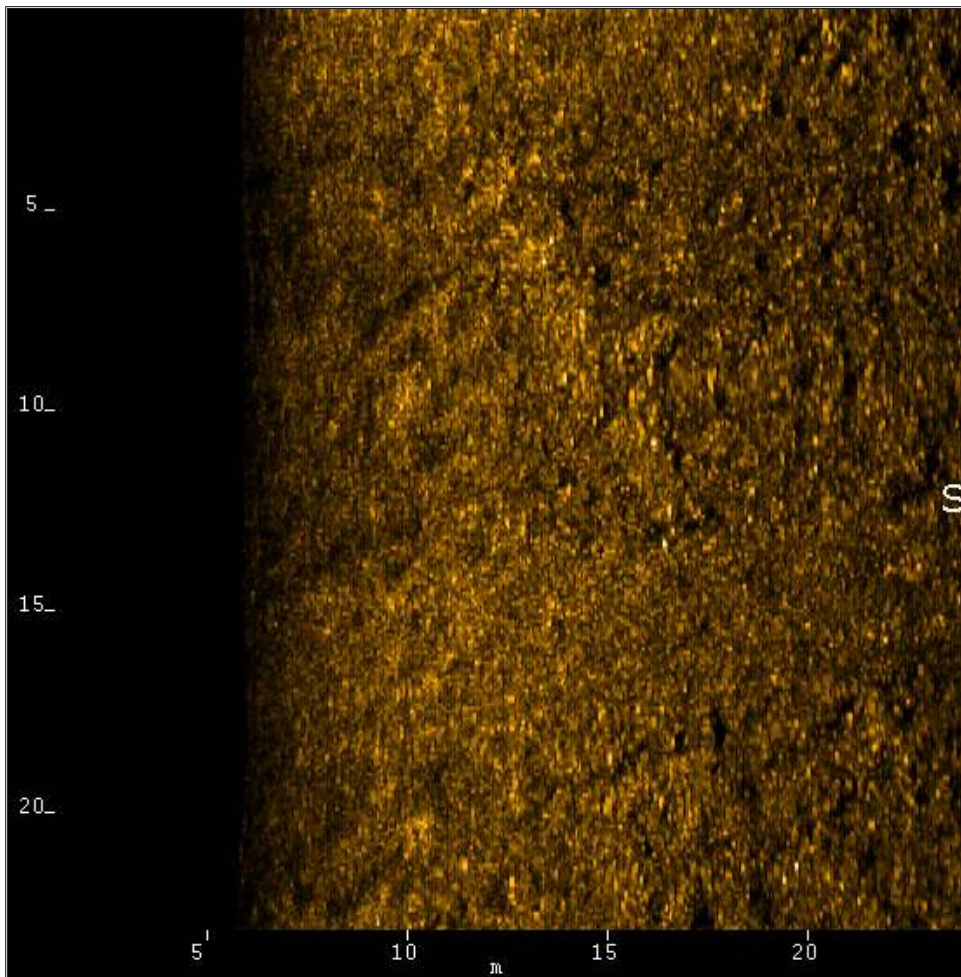
**Contact Info: SSA63**

- Sonar Time at Target: 09/24/2011 11:25:37
- Click Position (Lat/Lon Coordinates)  
50.6882934570 -0.3406679928 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687838.50 (Y) 5618537.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924112500.xtf
- Ping Number: 78554
- Range to Target: 18.89 Meters
- Fish Height: 4.90 Meters
- Heading: 279.300 degrees
- Event Number: 0
- Line Name: C11030\_110924112500

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Probable Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Probable Boulder

## SSA65

**Contact Info: SSA65**

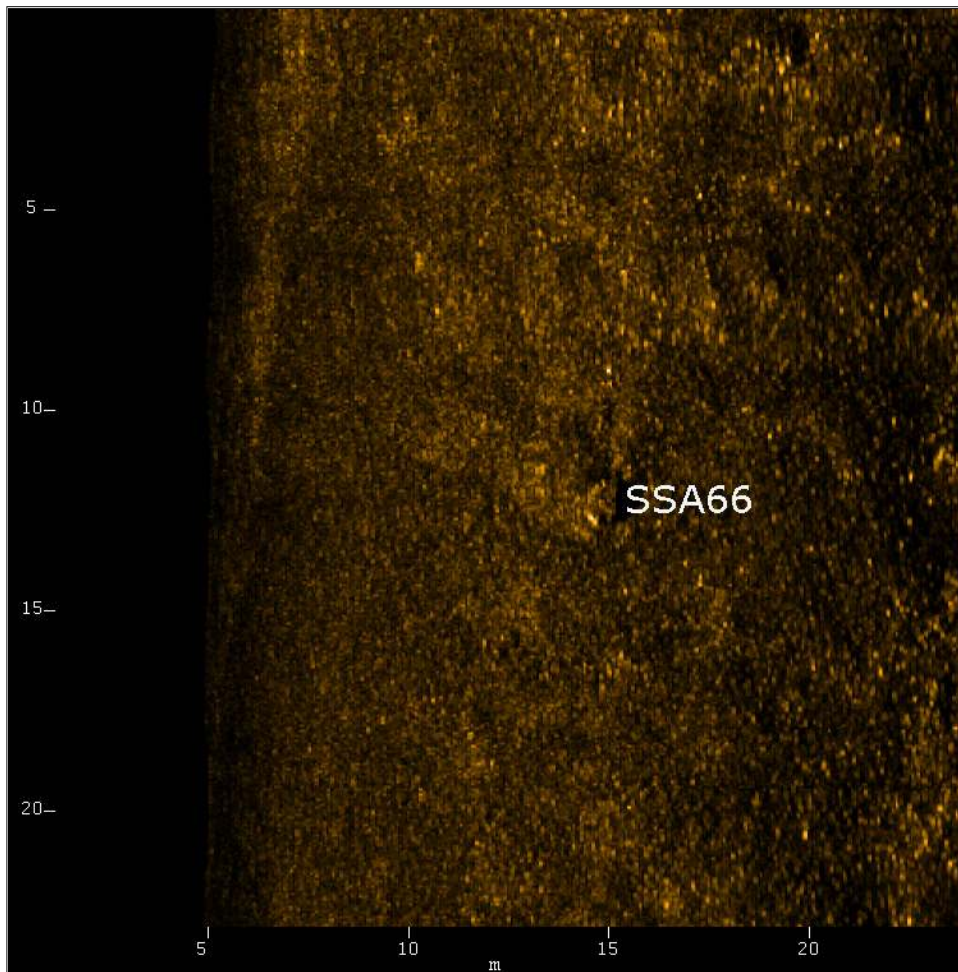
- Sonar Time at Target: 09/24/2011 18:07:58
- Click Position (Lat/Lon Coordinates)  
50.6879997253 -0.3432539999 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687657.00 (Y) 5618497.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924180700.xtf
- Ping Number: 781674
- Range to Target: 22.73 Meters
- Fish Height: 5.97 Meters
- Heading: 66.600 degrees
- Event Number: 0
- Line Name: C11030\_110924180700

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 4 Meters  
 Target Shadow: 0 Meters  
 Target Width: 2 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Indistinguishable  
 Classification 2:  
 Area:  
 Block:  
 Description: Indistinguishable, Possible small boulder with scour trail. No metallic signature



SSA66

**Contact Info: SSA66**

- Sonar Time at Target: 09/24/2011 14:28:45
- Click Position (Lat/Lon Coordinates)  
50.6871643066 -0.3435010016 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687643.00 (Y) 5618404.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924142600.xtf
- Ping Number: 398582
- Range to Target: 14.86 Meters
- Fish Height: 5.10 Meters
- Heading: 274.500 degrees
- Event Number: 0
- Line Name: C11030\_110924142600

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 0 Meters  
 Target Width: 1 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Probable Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Probable Boulder

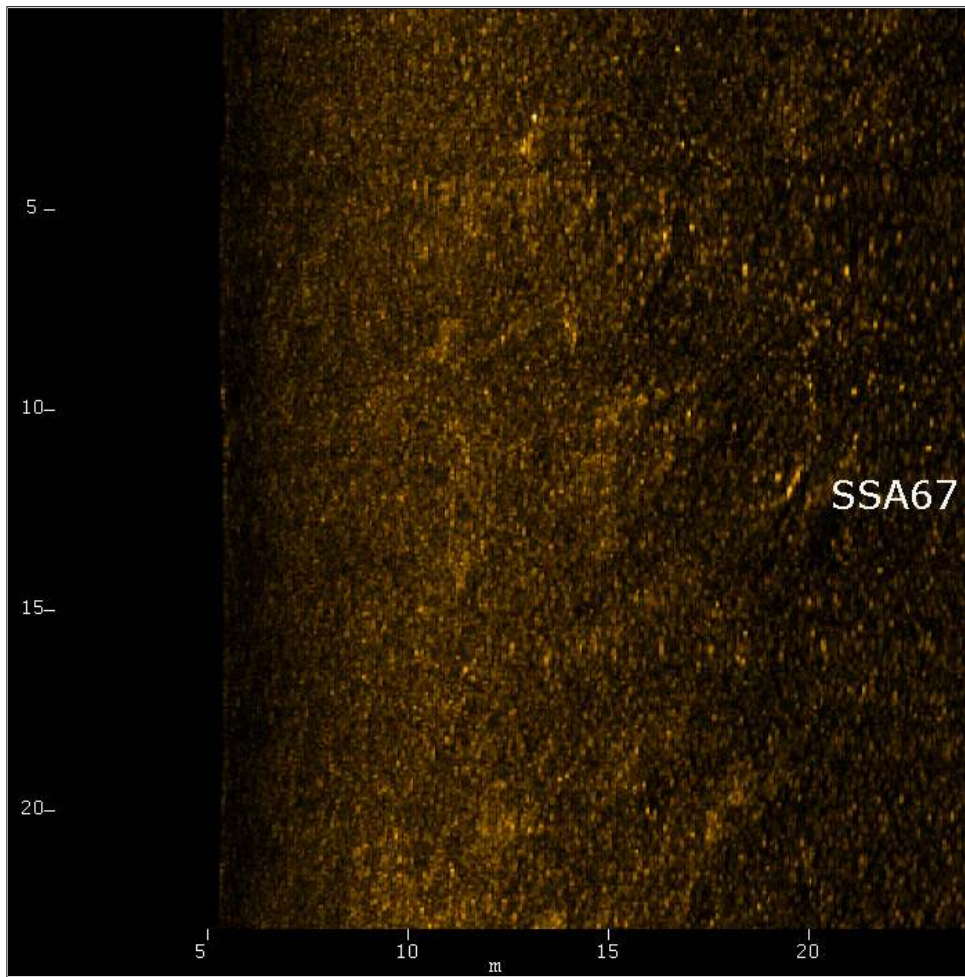
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SSA67



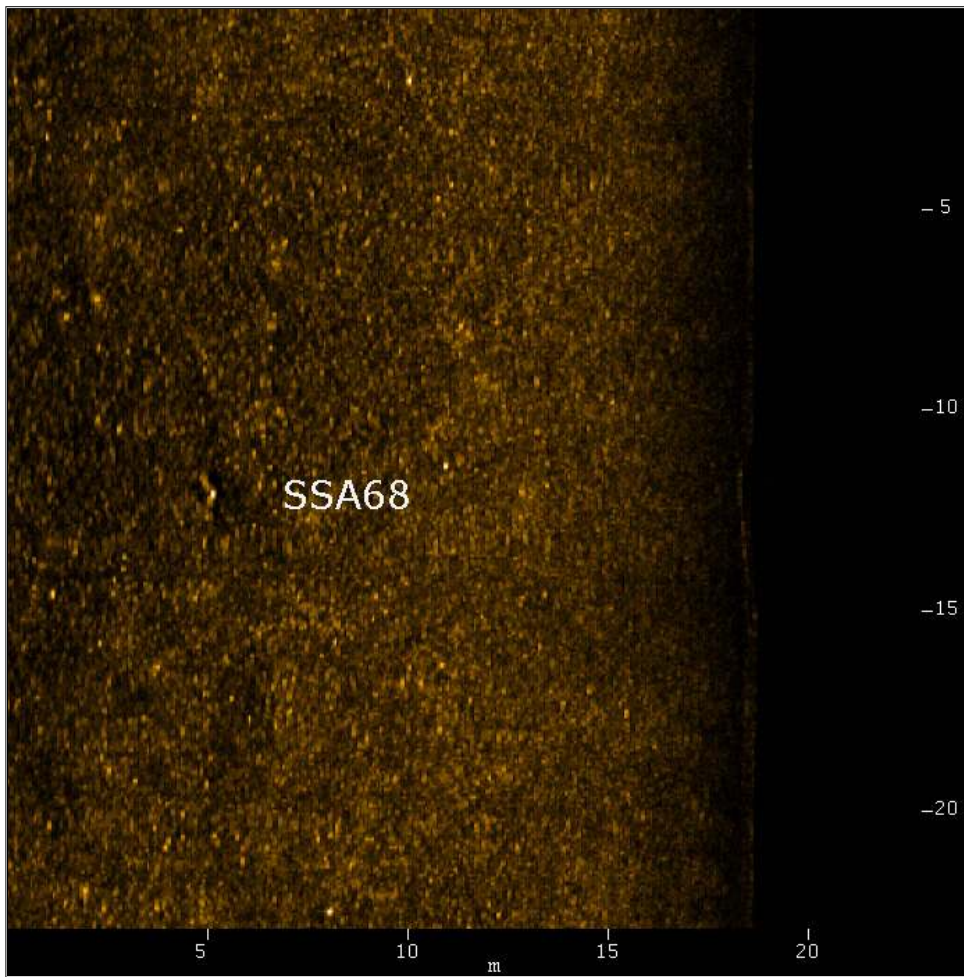
**Contact Info: SSA67**

- Sonar Time at Target: 09/24/2011 12:09:53
- Click Position (Lat/Lon Coordinates)  
50.6870384216 -0.3440879881 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687602.00 (Y) 5618388.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924120900.xtf
- Ping Number: 155894
- Range to Target: 19.97 Meters
- Fish Height: 5.44 Meters
- Heading: 57.900 degrees
- Event Number: 0
- Line Name: C11030\_110924120900

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 0 Meters  
 Target Width: 1 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder

SSA68

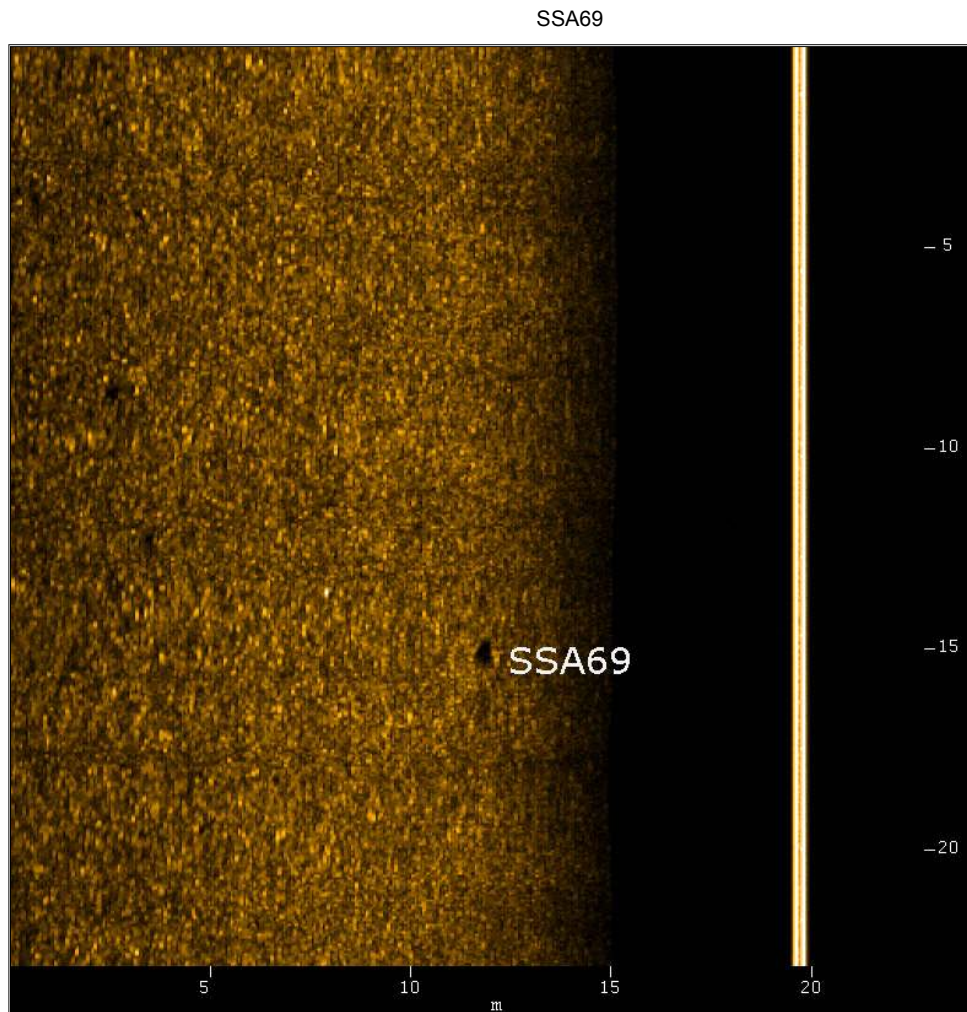


**Contact Info: SSA68**

- Sonar Time at Target: 09/24/2011 12:09:48
- Click Position (Lat/Lon Coordinates)  
50.6873168945 -0.3443750143 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687580.63 (Y) 5618419.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924120900.xtf
- Ping Number: 155759
- Range to Target: 17.63 Meters
- Fish Height: 5.47 Meters
- Heading: 57.300 degrees
- Event Number: 0
- Line Name: C11030\_110924120900

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder

**Contact Info: SSA69**

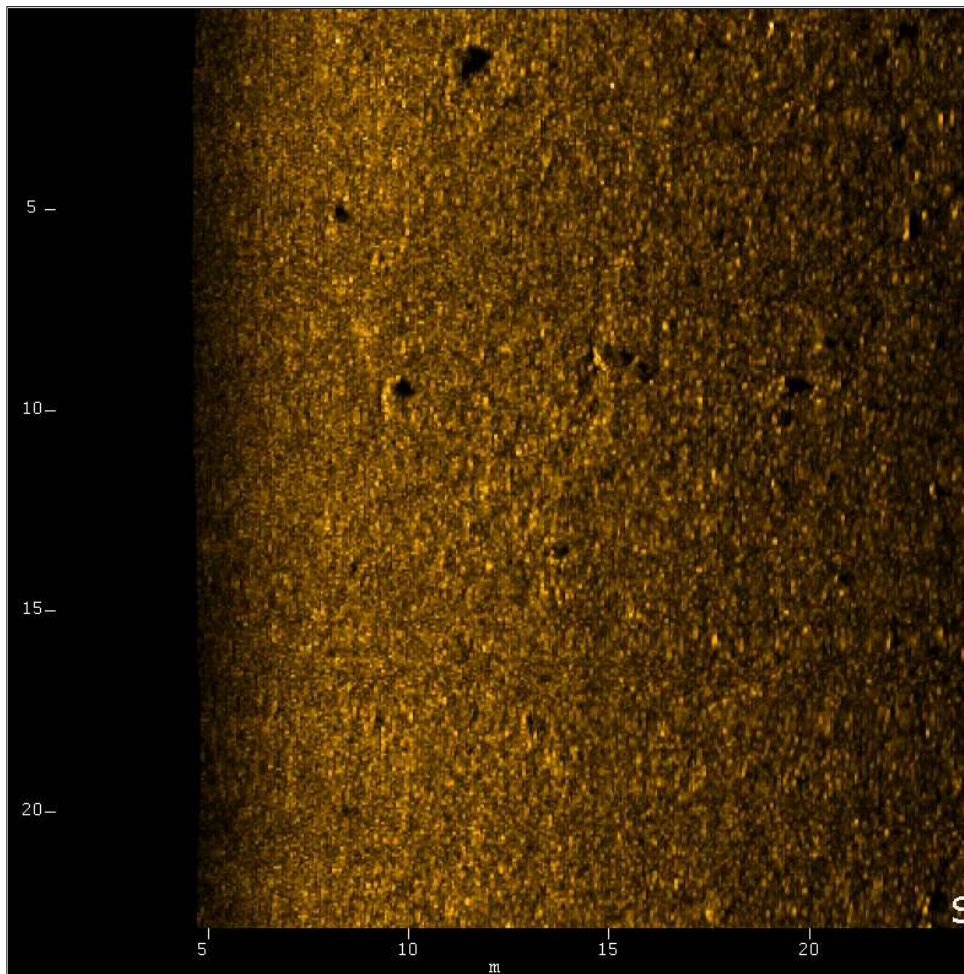
- Sonar Time at Target: 09/24/2011 11:40:41
- Click Position (Lat/Lon Coordinates)  
50.6878166199 -0.3402140141 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687872.44 (Y) 5618484.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924113700.xtf
- Ping Number: 104867
- Range to Target: 7.73 Meters
- Fish Height: 4.78 Meters
- Heading: 60.700 degrees
- Event Number: 0
- Line Name: C11030\_110924113700

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder associated with nearby boulder field



## SSA70

**Contact Info: SSA70**

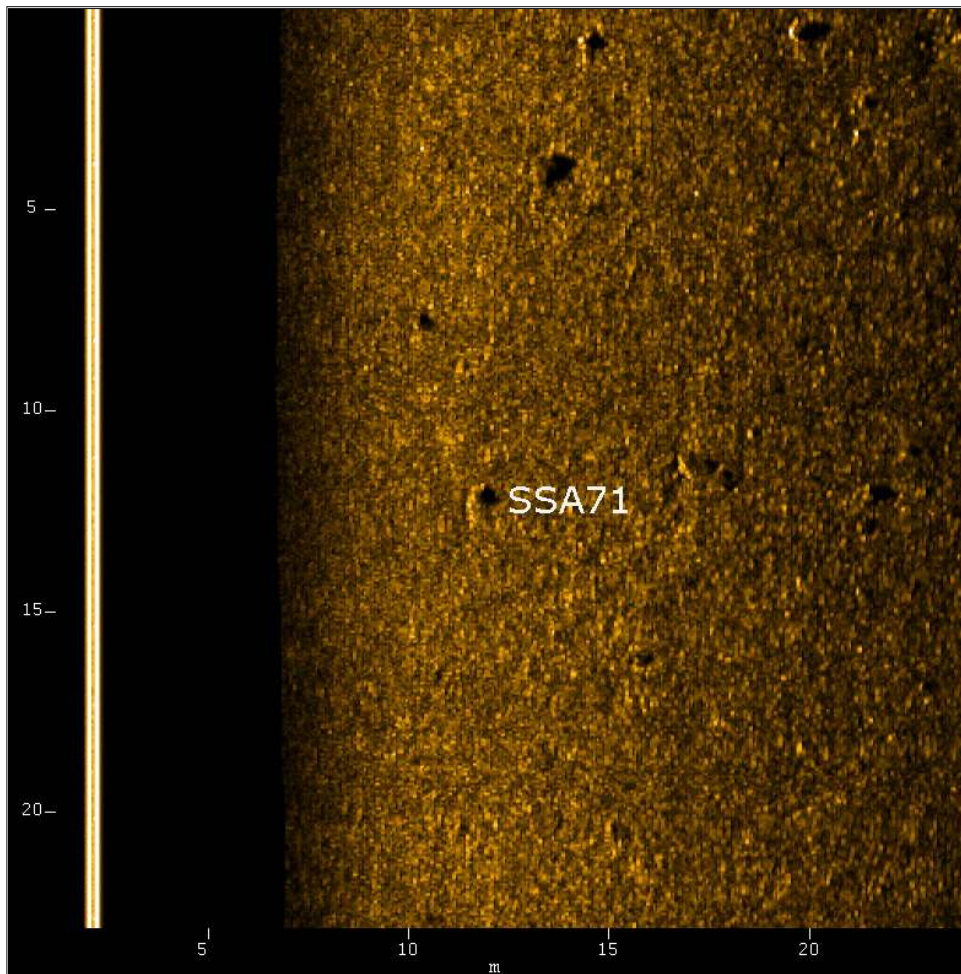
- Sonar Time at Target: 09/24/2011 11:40:45
- Click Position (Lat/Lon Coordinates)  
50.6875915527 -0.3399940133 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687888.94 (Y) 5618460.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924113700.xtf
- Ping Number: 104984
- Range to Target: 23.02 Meters
- Fish Height: 4.79 Meters
- Heading: 59.400 degrees
- Event Number: 0
- Line Name: C11030\_110924113700

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 0 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder associated with nearby boulder field



SSA71

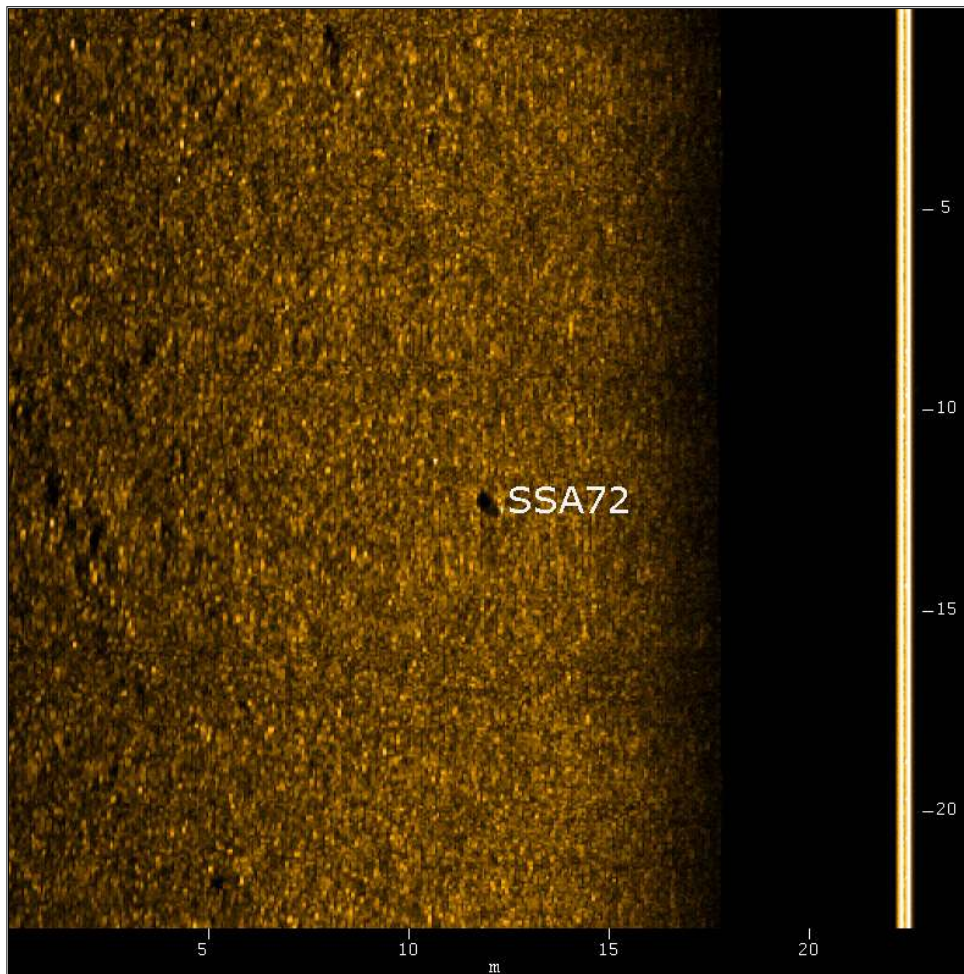
**Contact Info: SSA71**

- Sonar Time at Target: 09/24/2011 11:40:38
- Click Position (Lat/Lon Coordinates)  
50.6876716614 -0.3402279913 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687872.06 (Y) 5618469.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924113700.xtf
- Ping Number: 104773
- Range to Target: 9.84 Meters
- Fish Height: 4.69 Meters
- Heading: 62.200 degrees
- Event Number: 0
- Line Name: C11030\_110924113700

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder associated with nearby boulder field

SSA72

**Contact Info: SSA72**

- Sonar Time at Target: 09/24/2011 11:40:32
- Click Position (Lat/Lon Coordinates)  
50.6877975464 -0.3404459953 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687856.19 (Y) 5618482.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924113700.xtf
- Ping Number: 104601
- Range to Target: 10.41 Meters
- Fish Height: 4.76 Meters
- Heading: 60.300 degrees
- Event Number: 0
- Line Name: C11030\_110924113700

**User Entered Info**

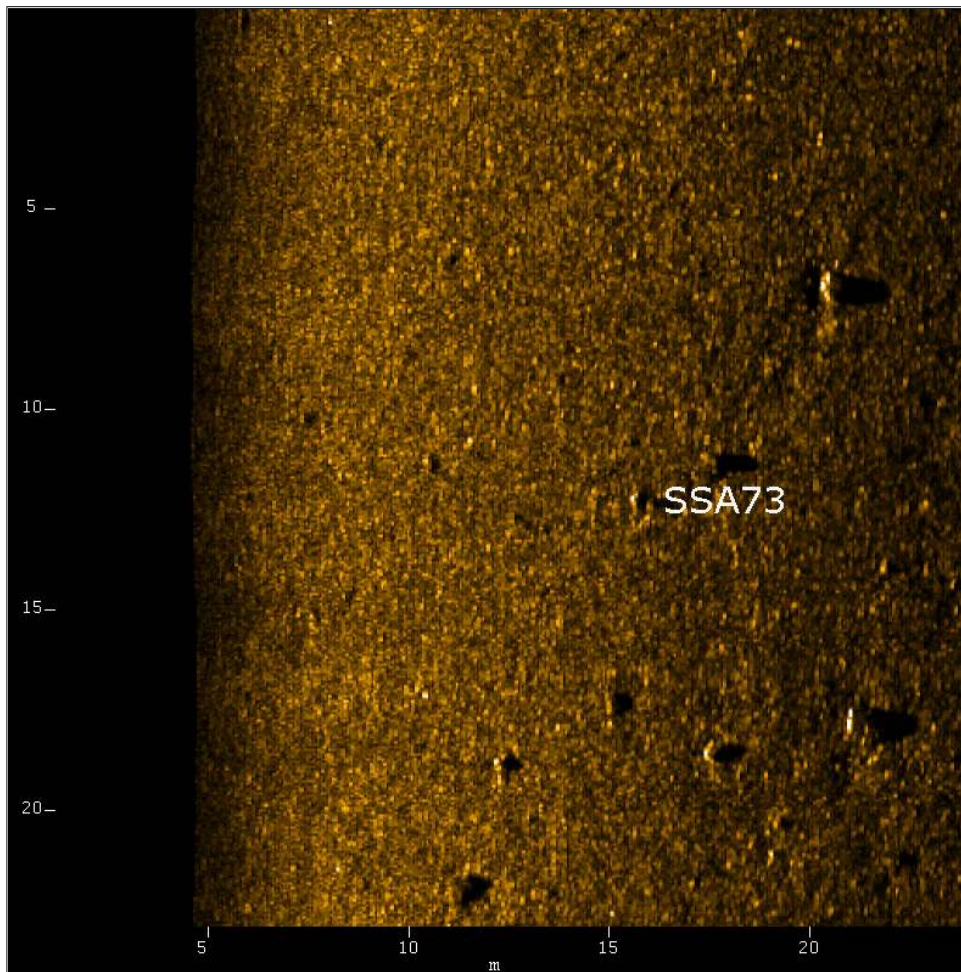
Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder associated with nearby boulder field

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SSA73

**Contact Info: SSA73**

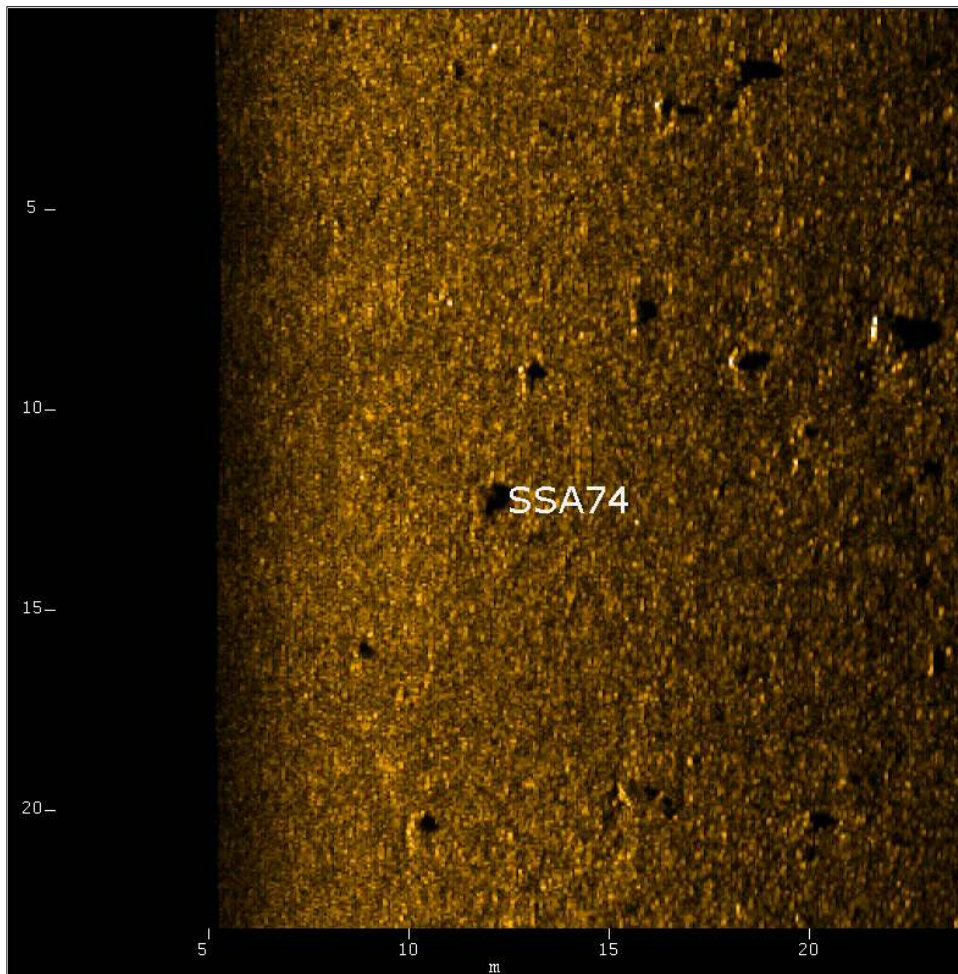
- Sonar Time at Target: 09/24/2011 11:40:27
- Click Position (Lat/Lon Coordinates)  
50.6875686646 -0.3404459953 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687857.06 (Y) 5618456.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924113700.xtf
- Ping Number: 104478
- Range to Target: 15.84 Meters
- Fish Height: 4.66 Meters
- Heading: 61.200 degrees
- Event Number: 0
- Line Name: C11030\_110924113700

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder associated with nearby boulder field



SSA74

**Contact Info: SSA74**

- Sonar Time at Target: 09/24/2011 11:40:33
- Click Position (Lat/Lon Coordinates)  
50.6876373291 -0.3403309882 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687864.94 (Y) 5618464.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924113700.xtf
- Ping Number: 104639
- Range to Target: 11.34 Meters
- Fish Height: 4.75 Meters
- Heading: 59.900 degrees
- Event Number: 0
- Line Name: C11030\_110924113700

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder associated with nearby boulder field

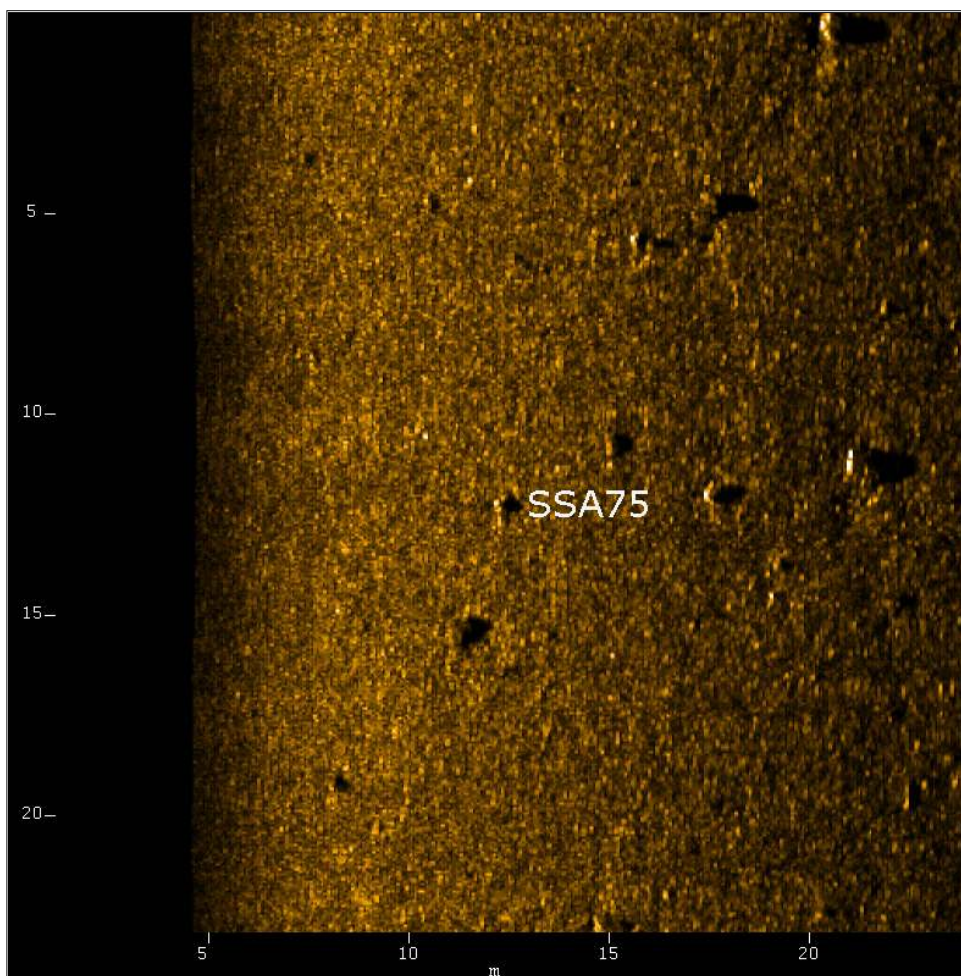
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targetReportGen2



SSA75

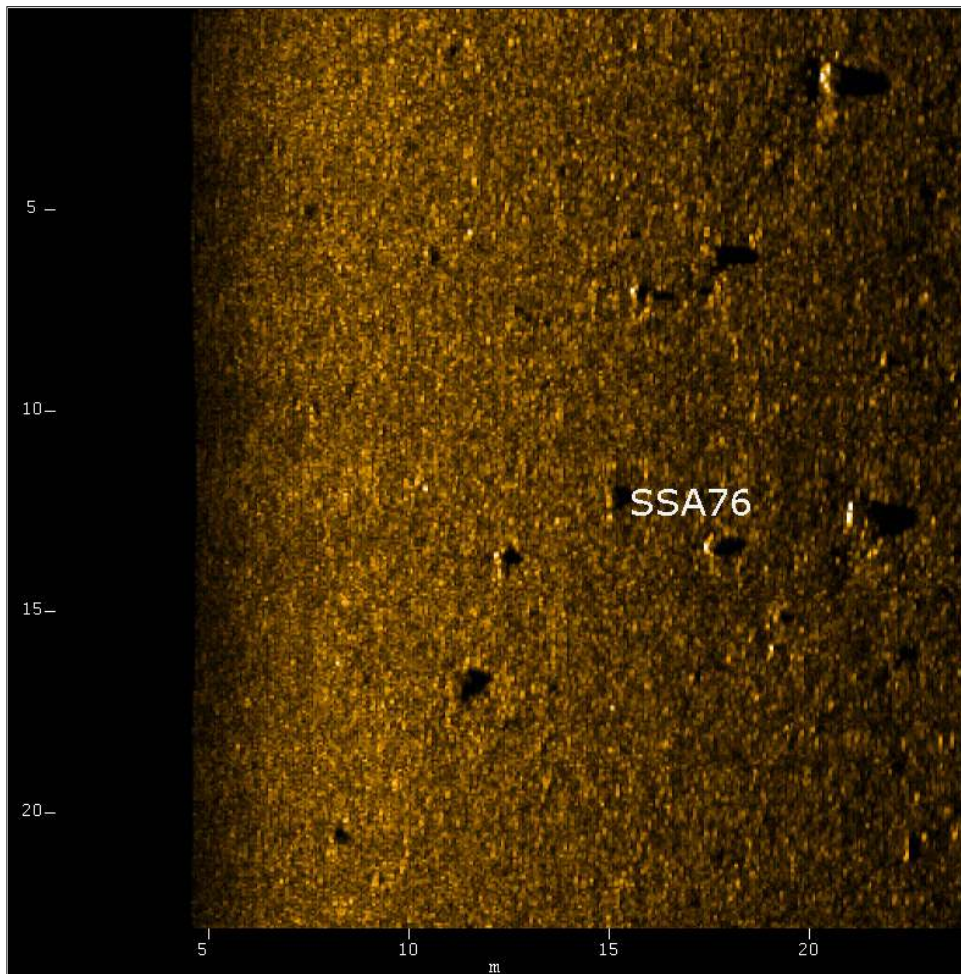
**Contact Info: SSA75**

- Sonar Time at Target: 09/24/2011 11:40:31
- Click Position (Lat/Lon Coordinates)  
50.6876182556 -0.3403699994 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687862.25 (Y) 5618462.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924113700.xtf
- Ping Number: 104586
- Range to Target: 12.47 Meters
- Fish Height: 4.72 Meters
- Heading: 61.000 degrees
- Event Number: 0
- Line Name: C11030\_110924113700

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 0 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder associated with nearby boulder field

SSA76

**Contact Info: SSA76**

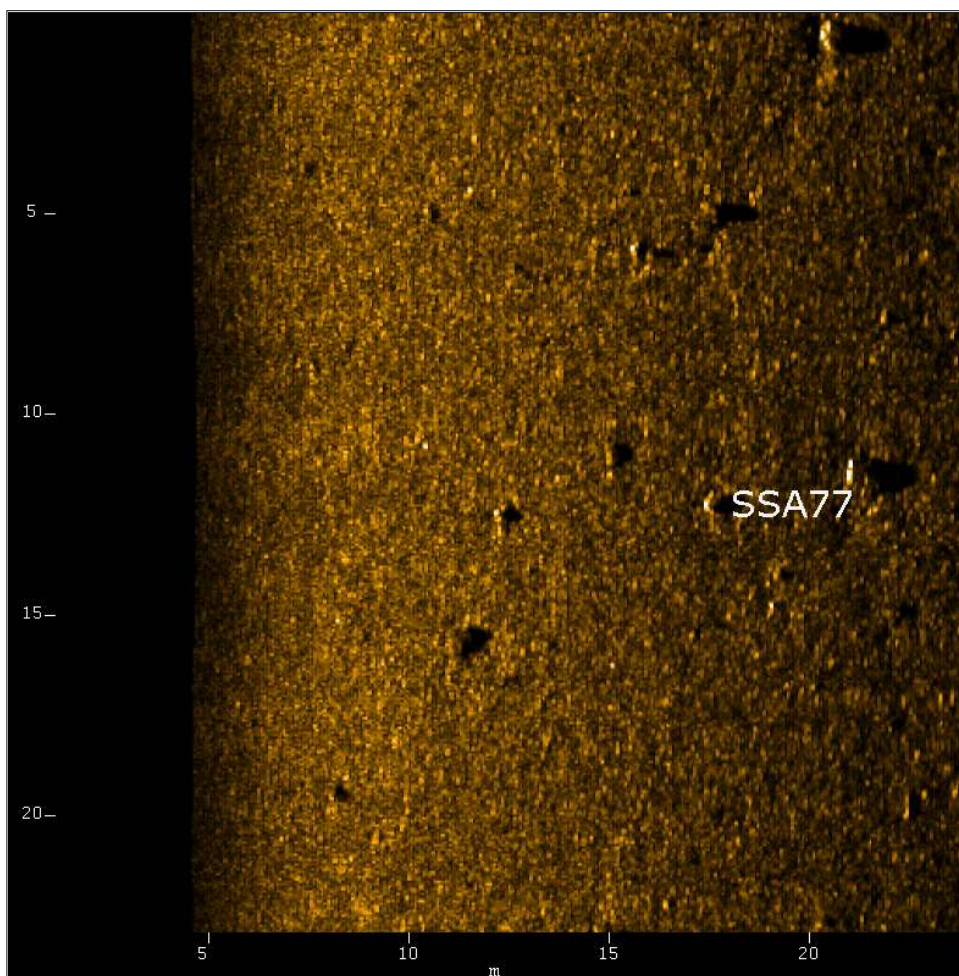
- Sonar Time at Target: 09/24/2011 11:40:30
- Click Position (Lat/Lon Coordinates)  
50.6875915527 -0.3403770030 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687861.88 (Y) 5618459.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924113700.xtf
- Ping Number: 104564
- Range to Target: 15.00 Meters
- Fish Height: 4.76 Meters
- Heading: 59.800 degrees
- Event Number: 0
- Line Name: C11030\_110924113700

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 0 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder associated with nearby boulder field



SSA77



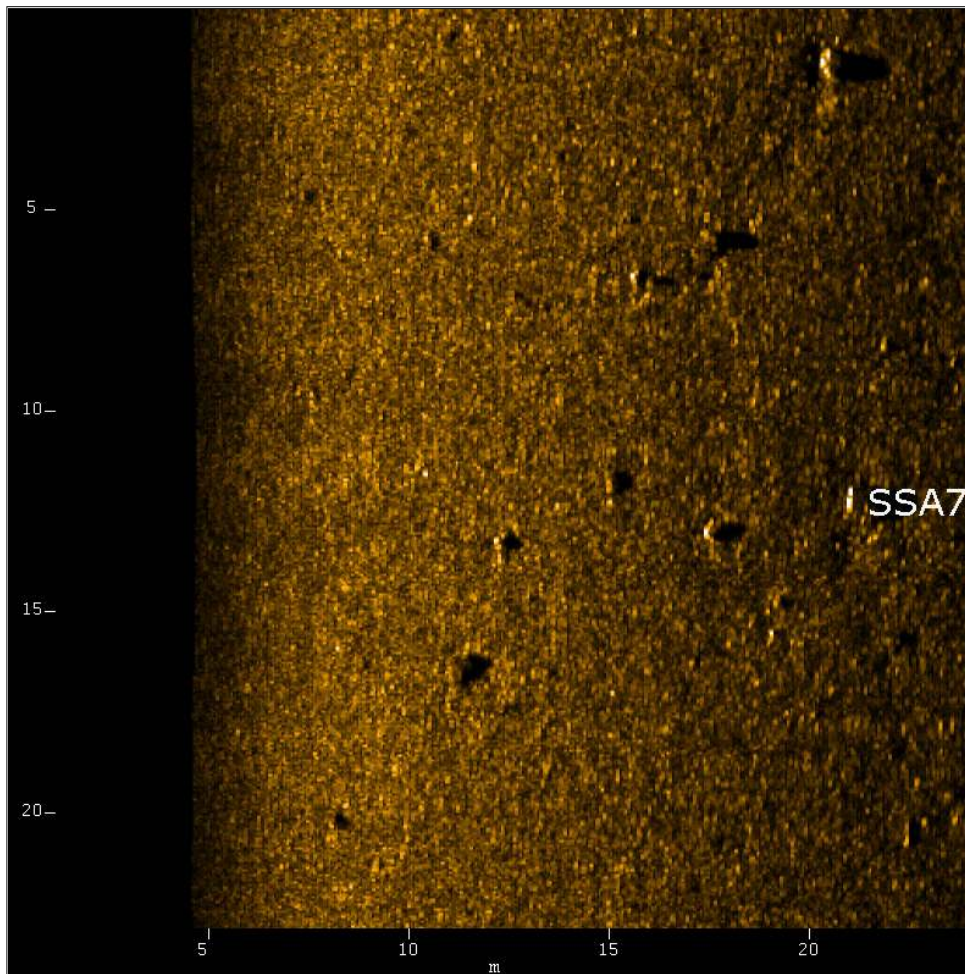
**Contact Info: SSA77**

- Sonar Time at Target: 09/24/2011 11:40:31
- Click Position (Lat/Lon Coordinates)  
50.6875686646 -0.3403509855 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687863.81 (Y) 5618457.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS Xtfs\C11030\_110924113700.xtf
- Ping Number: 104582
- Range to Target: 17.53 Meters
- Fish Height: 4.74 Meters
- Heading: 61.500 degrees
- Event Number: 0
- Line Name: C11030\_110924113700

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder associated with nearby boulder field

SSA78

**Contact Info: SSA78**

- Sonar Time at Target: 09/24/2011 11:40:31
- Click Position (Lat/Lon Coordinates)  
50.6875381470 -0.3403460085 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687864.25 (Y) 5618453.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924113700.xtf
- Ping Number: 104570
- Range to Target: 20.95 Meters
- Fish Height: 4.75 Meters
- Heading: 60.100 degrees
- Event Number: 0
- Line Name: C11030\_110924113700

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder associated with nearby boulder field

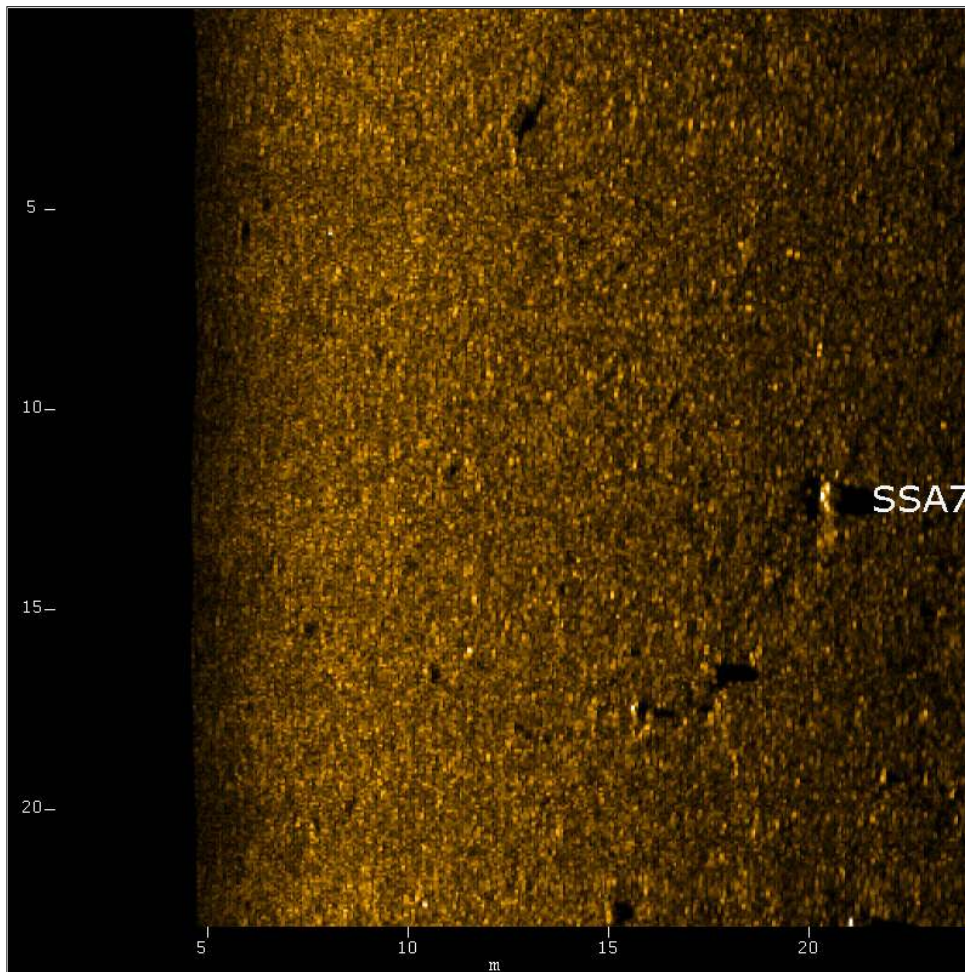
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targetReportGen2



SSA79

**Contact Info: SSA79**

- Sonar Time at Target: 09/24/2011 11:40:24
- Click Position (Lat/Lon Coordinates)  
50.6875076294 -0.3404999971 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687853.50 (Y) 5618450.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924113700.xtf
- Ping Number: 104391
- Range to Target: 21.05 Meters
- Fish Height: 4.64 Meters
- Heading: 57.800 degrees
- Event Number: 0
- Line Name: C11030\_110924113700

**User Entered Info**

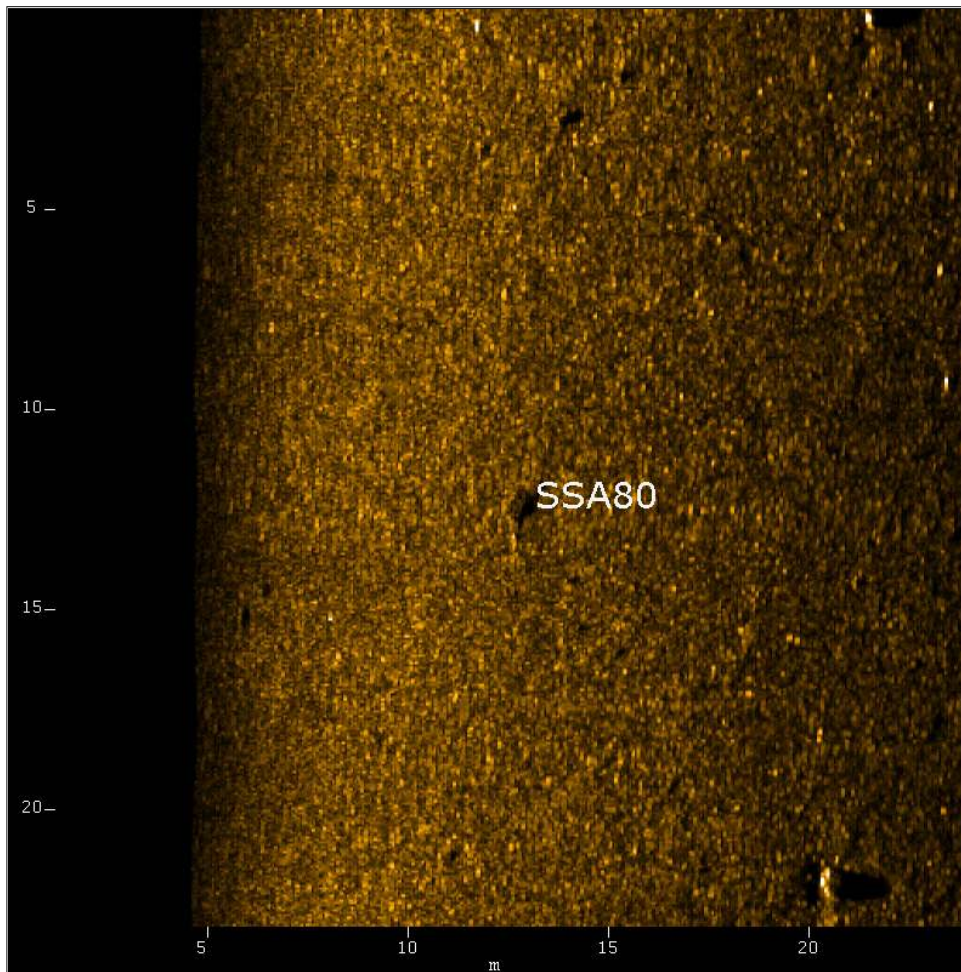
Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder associated with nearby boulder field

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targetReportGen2

SSA80

**Contact Info: SSA80**

- Sonar Time at Target: 09/24/2011 11:40:19
- Click Position (Lat/Lon Coordinates)  
50.6875610352 -0.3406670094 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687841.50 (Y) 5618455.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924113700.xtf
- Ping Number: 104231
- Range to Target: 12.66 Meters
- Fish Height: 4.78 Meters
- Heading: 61.200 degrees
- Event Number: 0
- Line Name: C11030\_110924113700

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder associated with nearby boulder field

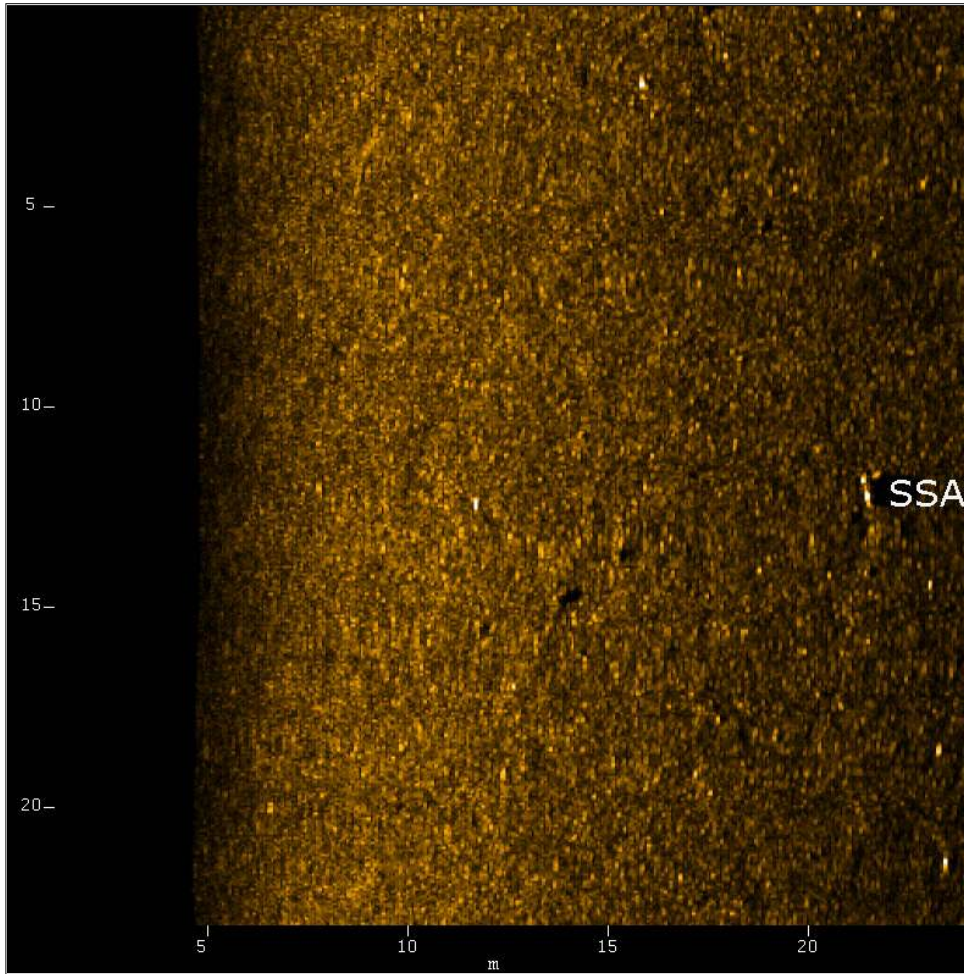
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targetReportGen2



SSA81



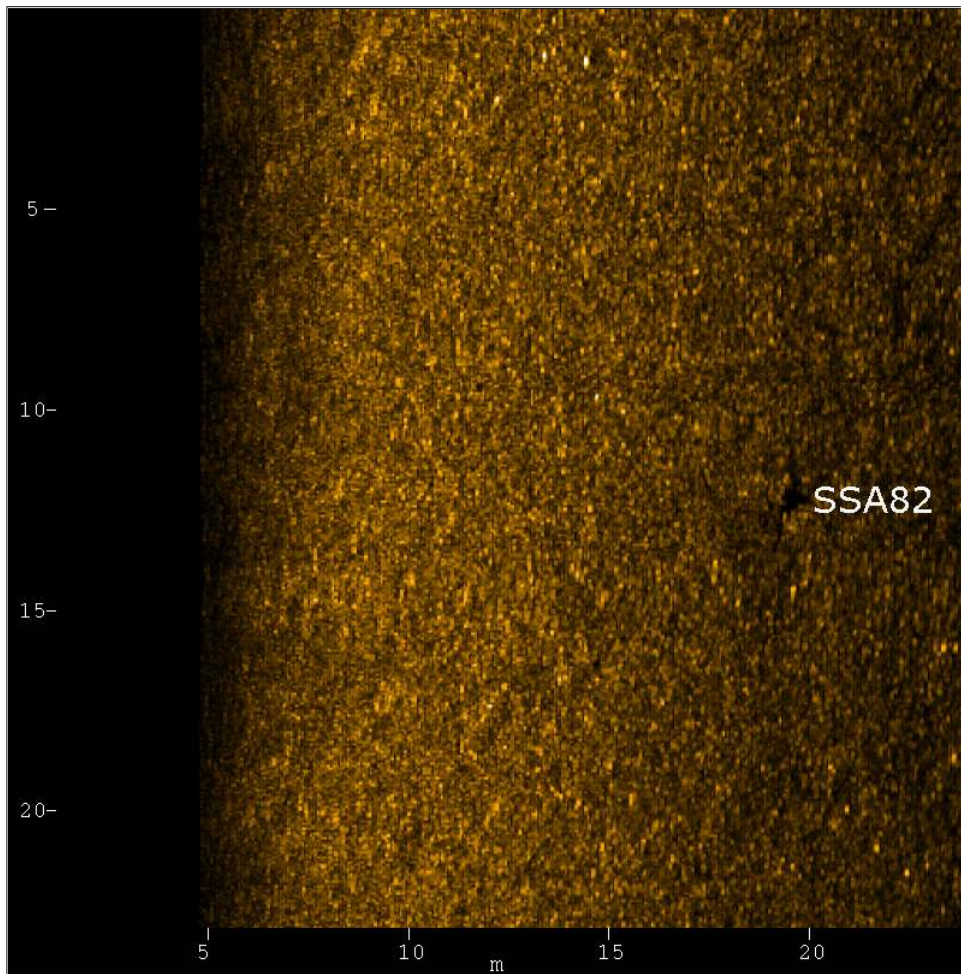
**Contact Info: SSA81**

- Sonar Time at Target: 09/24/2011 11:40:12
- Click Position (Lat/Lon Coordinates)  
50.6874504089 -0.3407900035 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687833.31 (Y) 5618443.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924113700.xtf
- Ping Number: 104033
- Range to Target: 21.52 Meters
- Fish Height: 4.91 Meters
- Heading: 59.900 degrees
- Event Number: 0
- Line Name: C11030\_110924113700

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder associated with nearby boulder field

SSA82

**Contact Info: SSA82**

- Sonar Time at Target: 09/24/2011 11:39:48
- Click Position (Lat/Lon Coordinates)  
50.6873588562 -0.3413859904 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687791.56 (Y) 5618430.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924113700.xtf
- Ping Number: 103316
- Range to Target: 19.59 Meters
- Fish Height: 4.91 Meters
- Heading: 57.600 degrees
- Event Number: 0
- Line Name: C11030\_110924113700

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Probable Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Probable Boulder

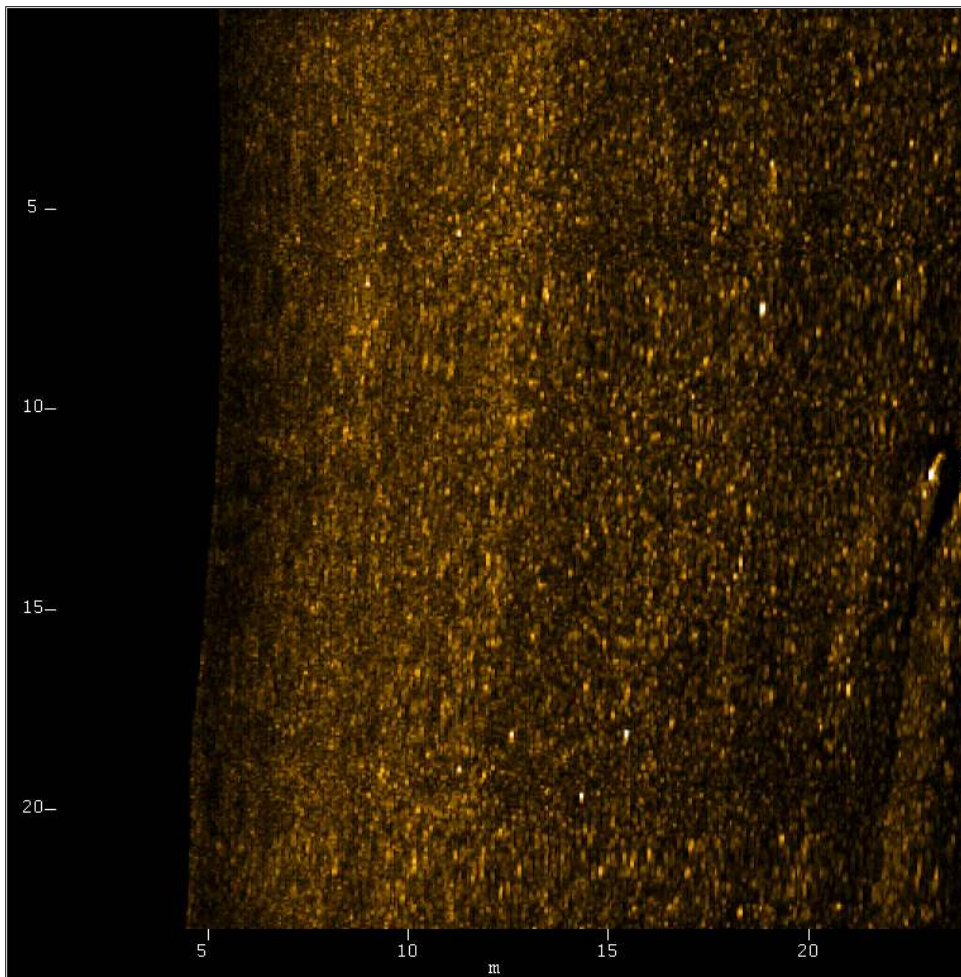
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targetReportGen2



## SSA83

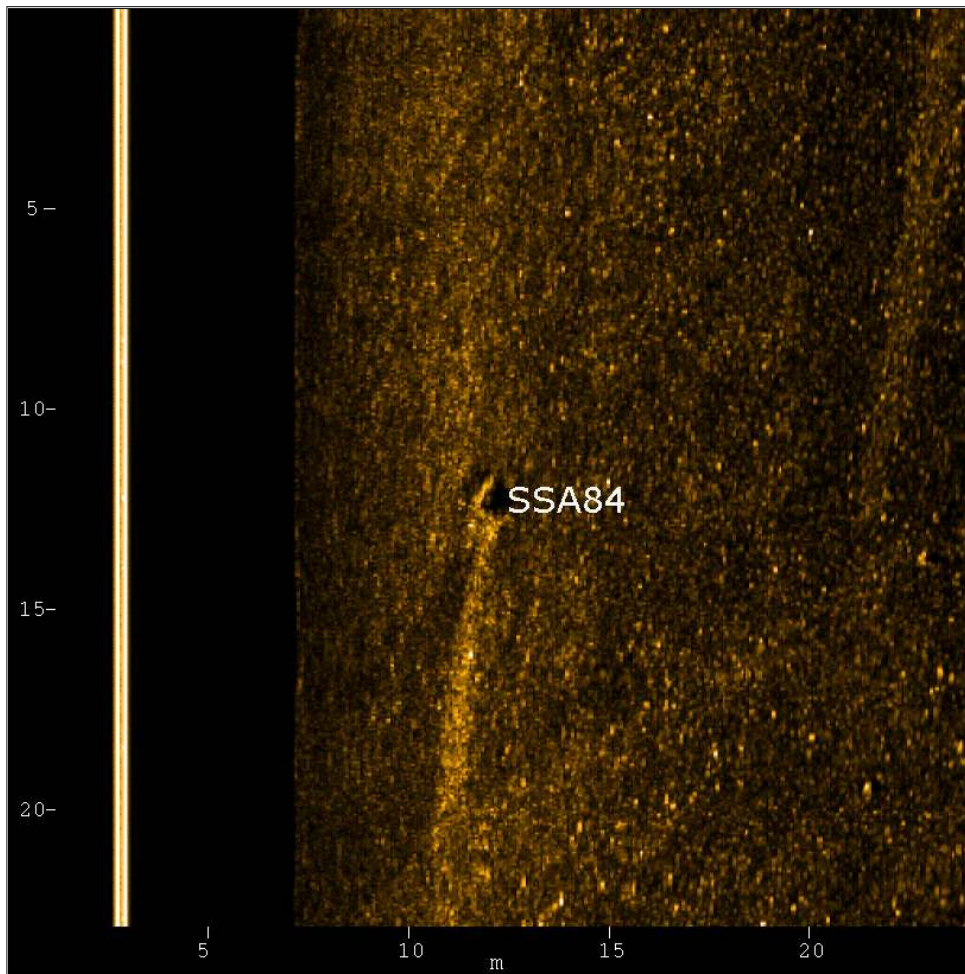
**Contact Info: SSA83**

- Sonar Time at Target: 09/24/2011 11:37:03
- Click Position (Lat/Lon Coordinates)  
50.6865615845 -0.3452939987 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687518.69 (Y) 5618332.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924113700.xtf
- Ping Number: 98534
- Range to Target: 23.30 Meters
- Fish Height: 5.26 Meters
- Heading: 58.400 degrees
- Event Number: 0
- Line Name: C11030\_110924113700

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 2 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder with scour trail

SSA84



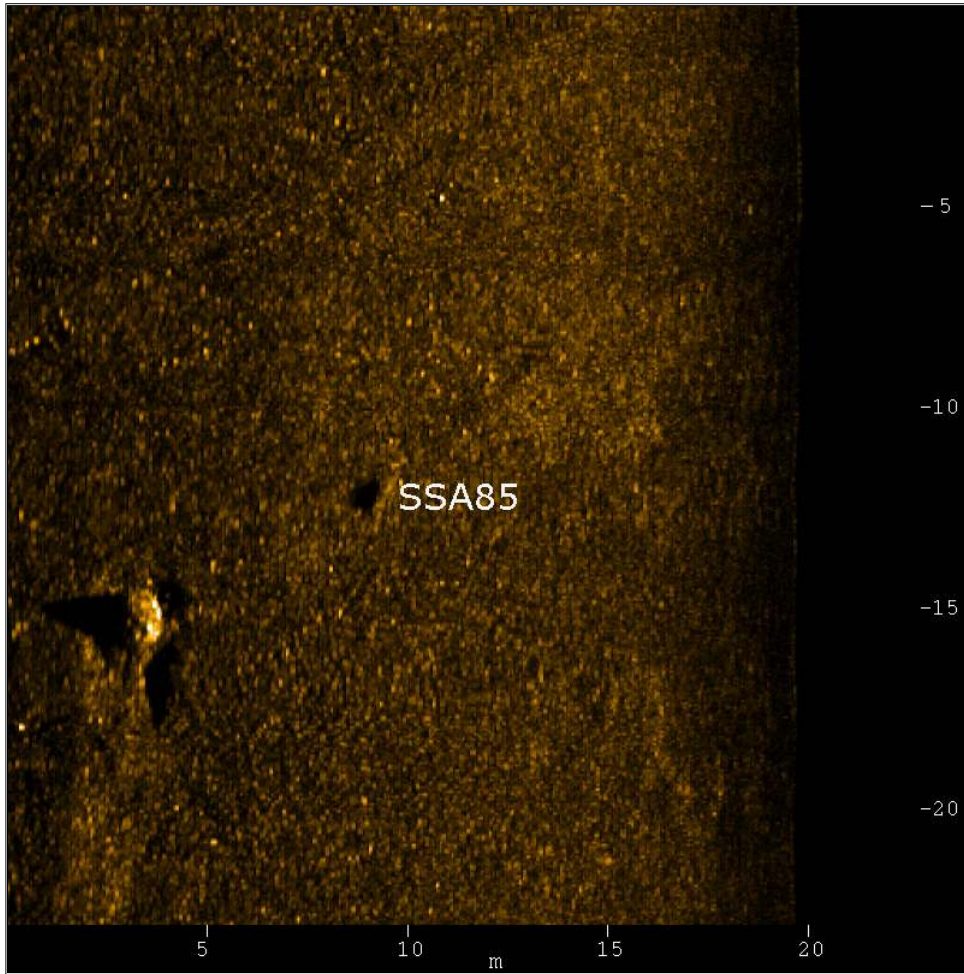
**Contact Info: SSA84**

- Sonar Time at Target: 09/24/2011 11:37:22
- Click Position (Lat/Lon Coordinates)  
50.6867752075 -0.3448849916 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687546.75 (Y) 5618357.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924113700.xtf
- Ping Number: 99089
- Range to Target: 9.14 Meters
- Fish Height: 4.40 Meters
- Heading: 61.100 degrees
- Event Number: 0
- Line Name: C11030\_110924113700

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder with Scour Trail

SSA85



**Contact Info: SSA85**

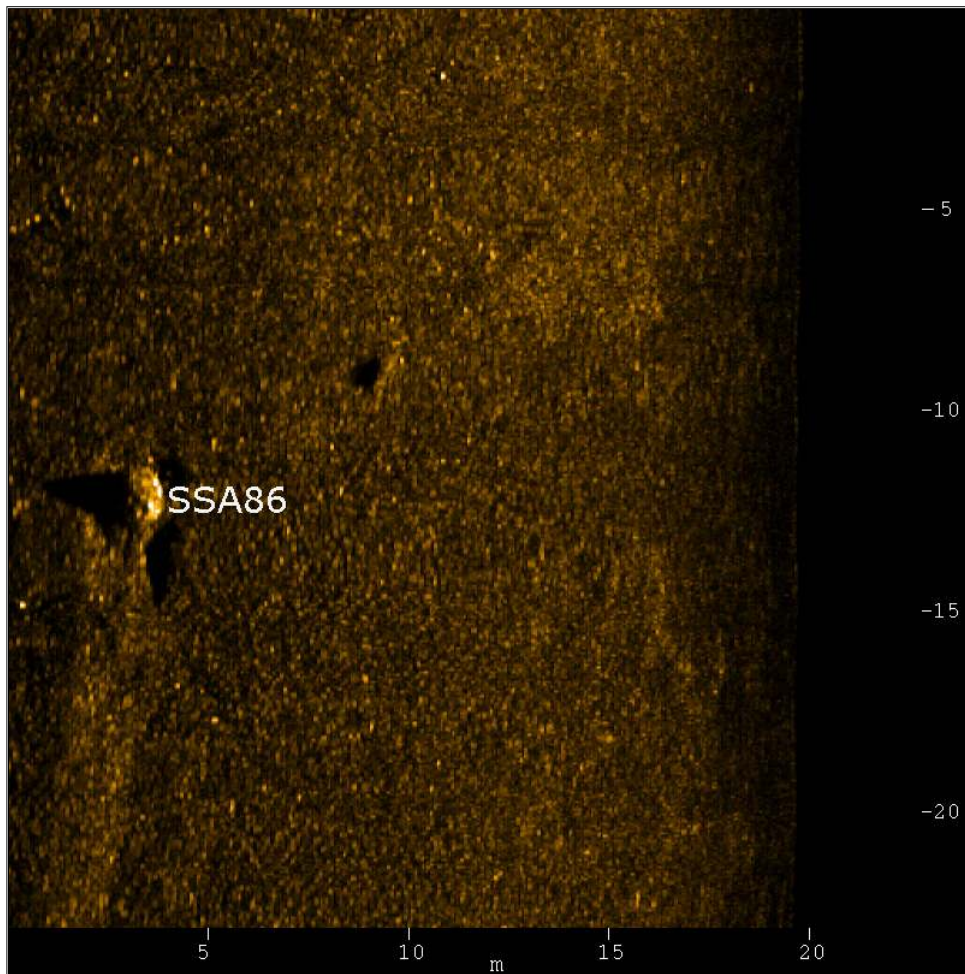
- Sonar Time at Target: 09/24/2011 11:37:51
- Click Position (Lat/Lon Coordinates)  
50.6870803833 -0.3443009853 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687586.75 (Y) 5618392.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924113700.xtf
- Ping Number: 99911
- Range to Target: 14.67 Meters
- Fish Height: 4.38 Meters
- Heading: 63.300 degrees
- Event Number: 0
- Line Name: C11030\_110924113700

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Possible Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Possible Boulder



SSA86

**Contact Info: SSA86**

- Sonar Time at Target: 09/24/2011 11:37:52
- Click Position (Lat/Lon Coordinates)  
50.6871376038 -0.3442859948 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687587.63 (Y) 5618399.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924113700.xtf
- Ping Number: 99963
- Range to Target: 20.48 Meters
- Fish Height: 4.38 Meters
- Heading: 62.600 degrees
- Event Number: 0
- Line Name: C11030\_110924113700

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 2 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder with scour trail

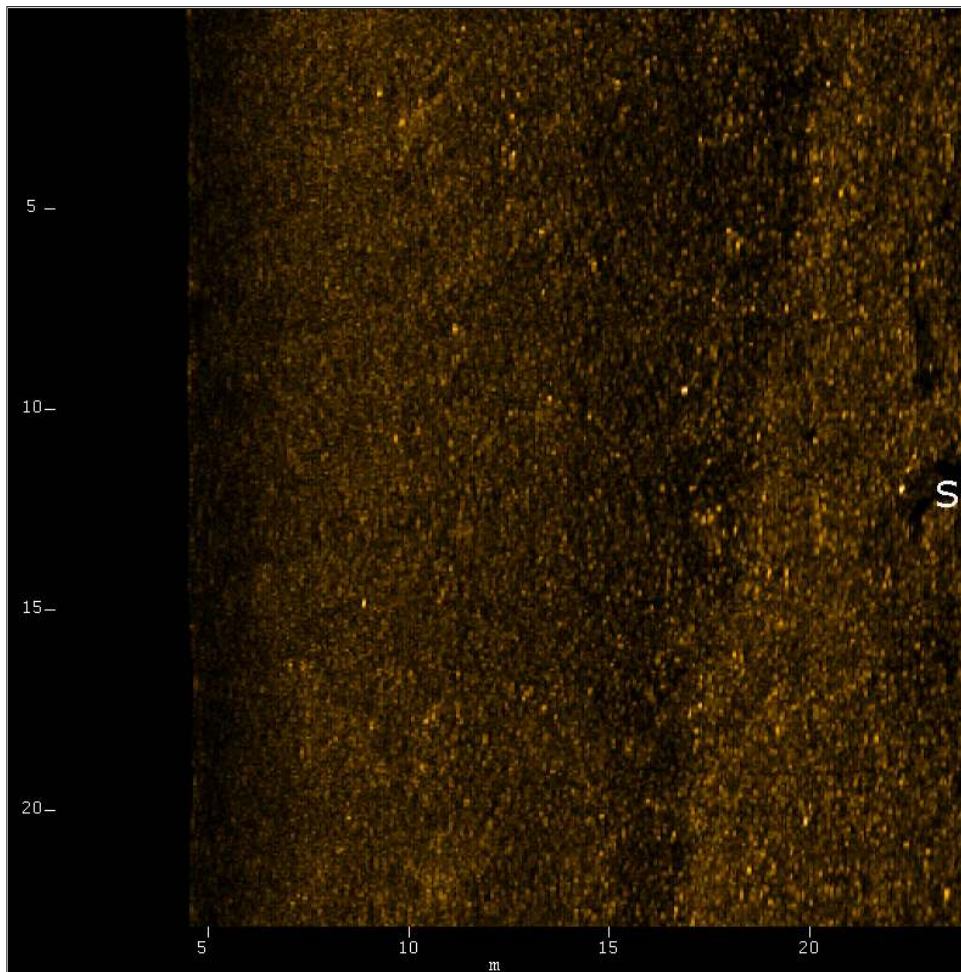
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targetReportGen2



SSA87

**Contact Info: SSA87**

- Sonar Time at Target: 09/24/2011 11:38:35
- Click Position (Lat/Lon Coordinates)  
50.6869812012 -0.3431000113 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687672.00 (Y) 5618384.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924113700.xtf
- Ping Number: 101201
- Range to Target: 22.64 Meters
- Fish Height: 4.57 Meters
- Heading: 59.900 degrees
- Event Number: 0
- Line Name: C11030\_110924113700

**User Entered Info**

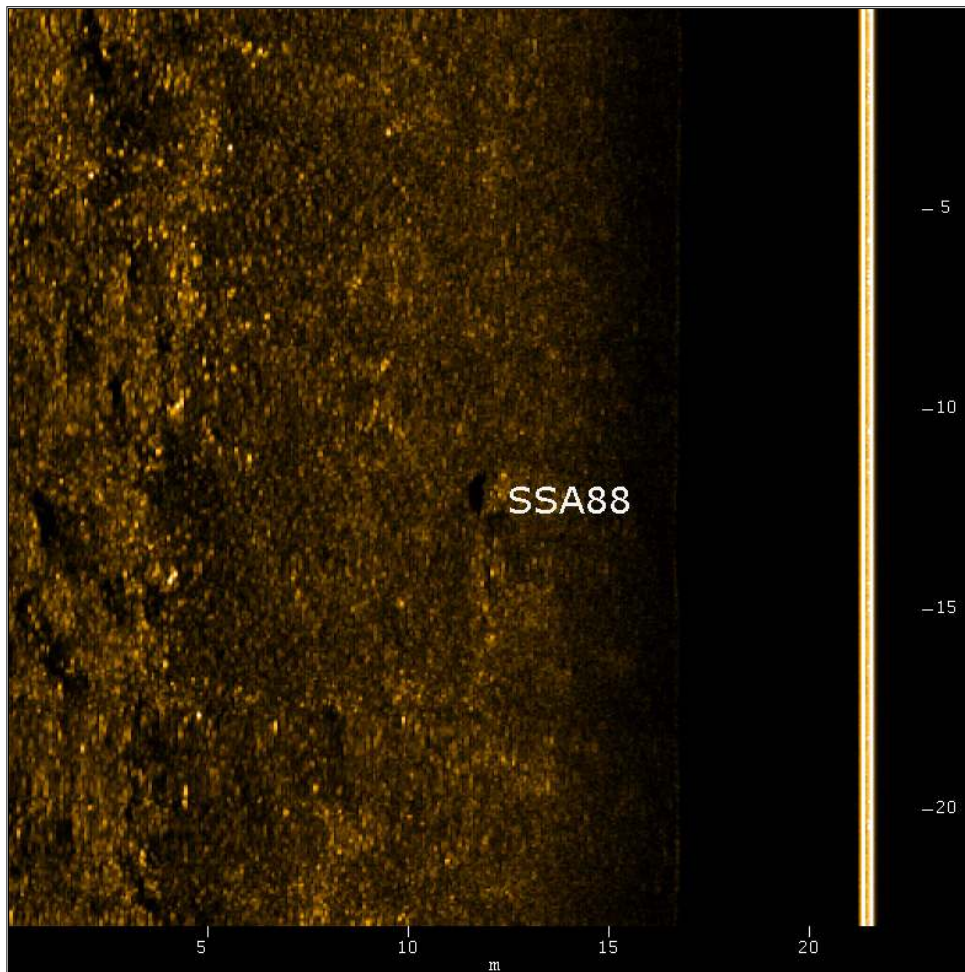
Target Height: = 0 Meters  
 Target Length: 2 Meters  
 Target Shadow: 2 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Possible Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Possible Boulder

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targetReportGen2

SSA88

**Contact Info: SSA88**

- Sonar Time at Target: 09/24/2011 11:39:23
- Click Position (Lat/Lon Coordinates)  
50.6874732971 -0.3420790136 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687742.13 (Y) 5618442.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924113700.xtf
- Ping Number: 102611
- Range to Target: 9.47 Meters
- Fish Height: 4.83 Meters
- Heading: 60.100 degrees
- Event Number: 0
- Line Name: C11030\_110924113700

**User Entered Info**

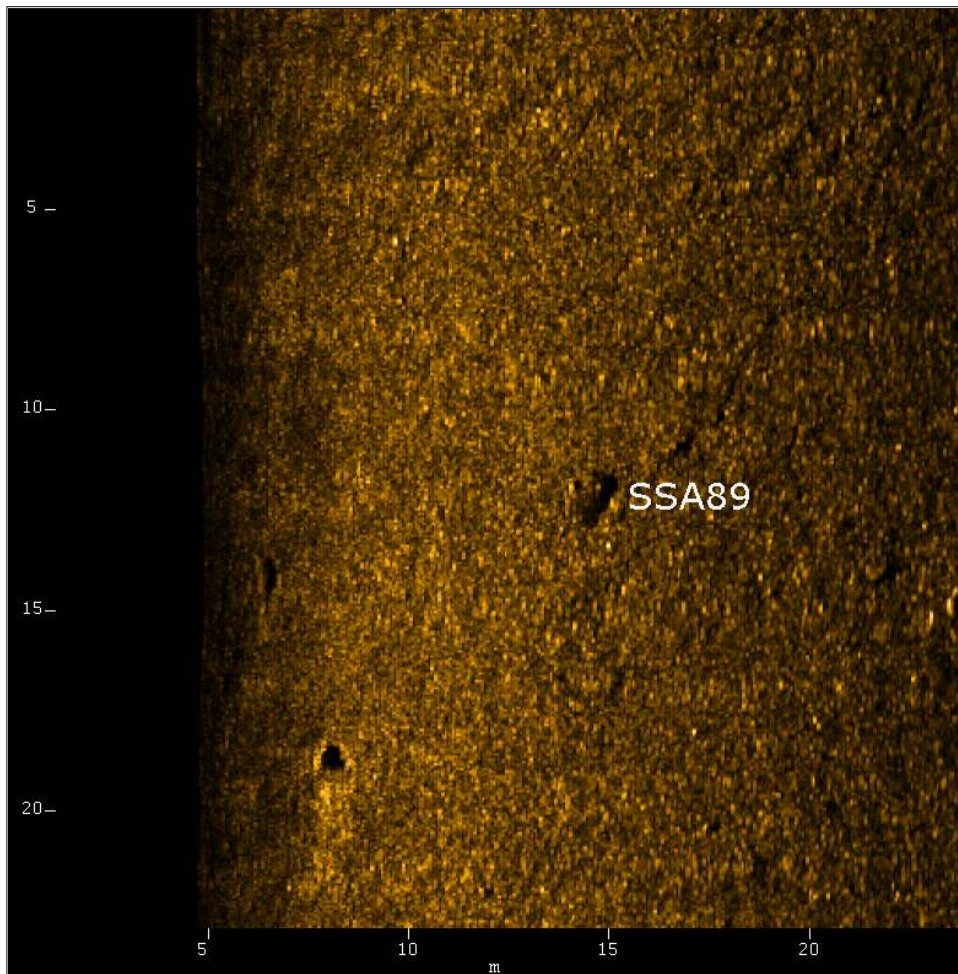
Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Possible Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Possible Boulder

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targetReportGen2

SSA89

**Contact Info: SSA89**

- Sonar Time at Target: 09/24/2011 11:39:32
- Click Position (Lat/Lon Coordinates)  
50.6873283386 -0.3417769969 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687764.06 (Y) 5618426.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924113700.xtf
- Ping Number: 102860
- Range to Target: 14.95 Meters
- Fish Height: 4.94 Meters
- Heading: 59.800 degrees
- Event Number: 0
- Line Name: C11030\_110924113700

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Probable Boulder

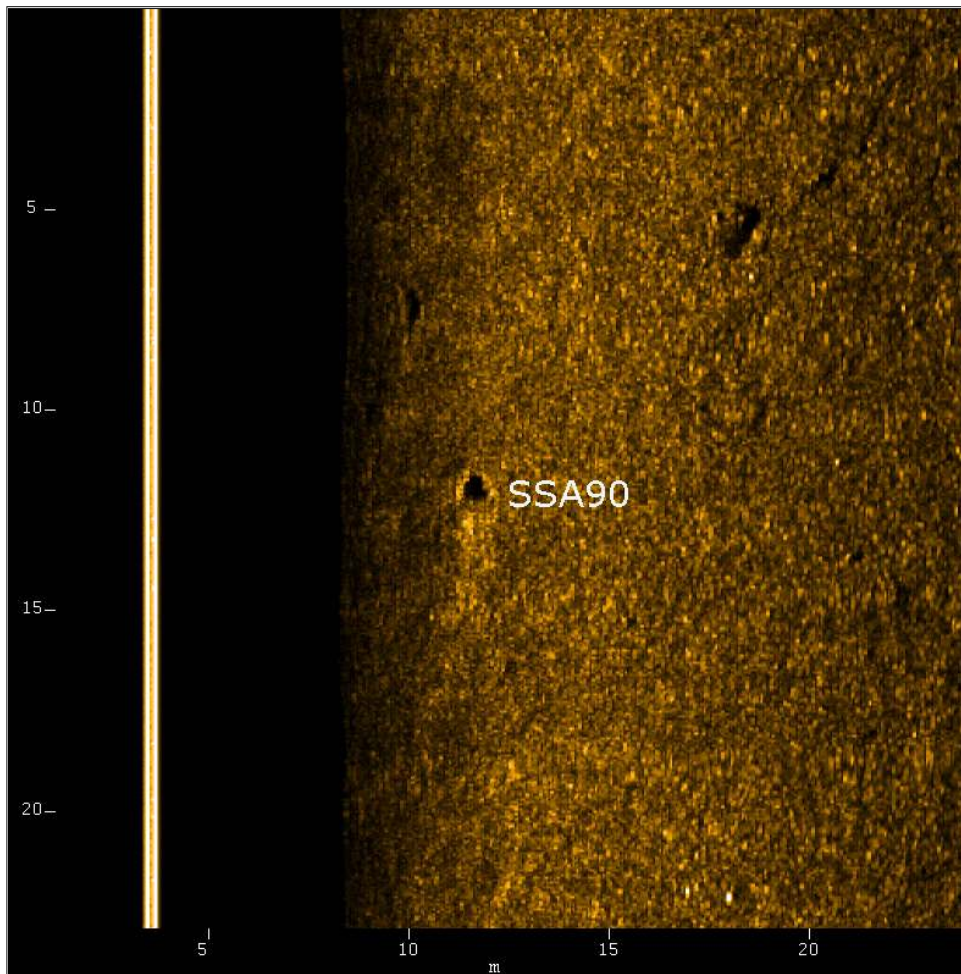
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targetReportGen2



SSA90

**Contact Info: SSA90**

- Sonar Time at Target: 09/24/2011 11:39:36
- Click Position (Lat/Lon Coordinates)  
50.6874046326 -0.3417190015 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687767.88 (Y) 5618435.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924113700.xtf
- Ping Number: 102969
- Range to Target: 8.39 Meters
- Fish Height: 4.80 Meters
- Heading: 59.100 degrees
- Event Number: 0
- Line Name: C11030\_110924113700

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder

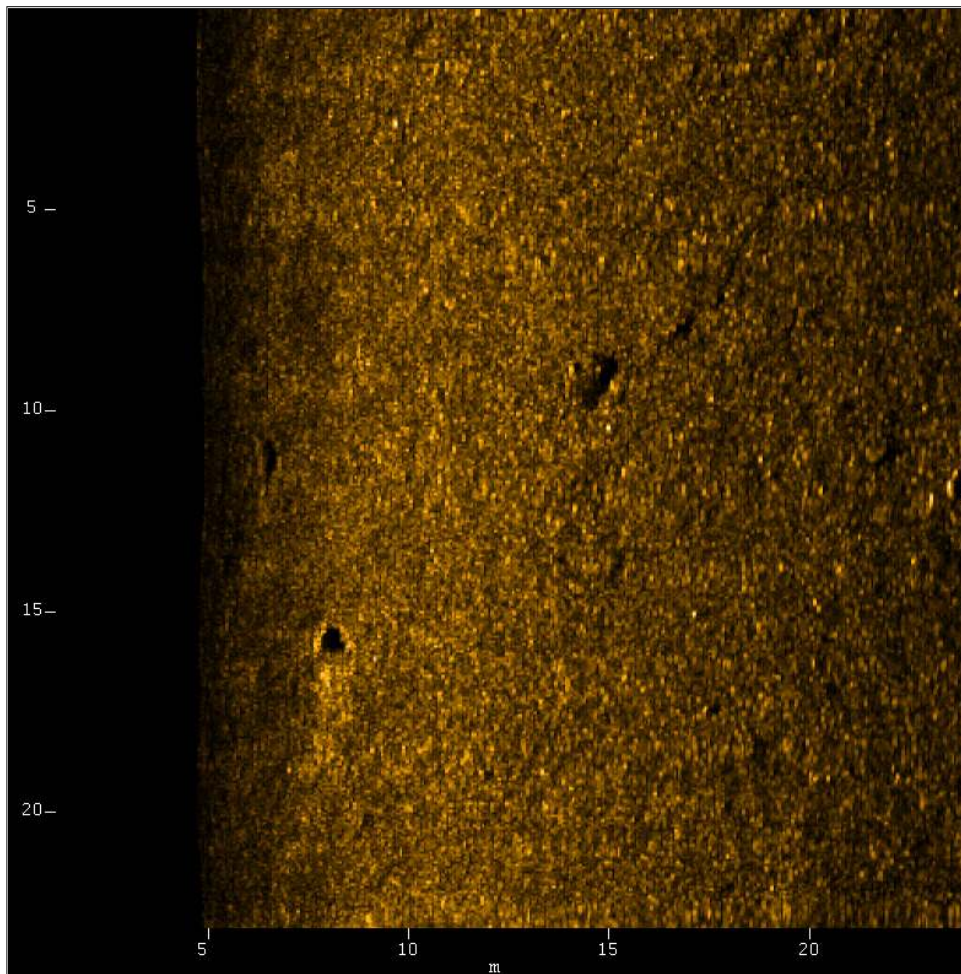
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targetReportGen2



SSA91

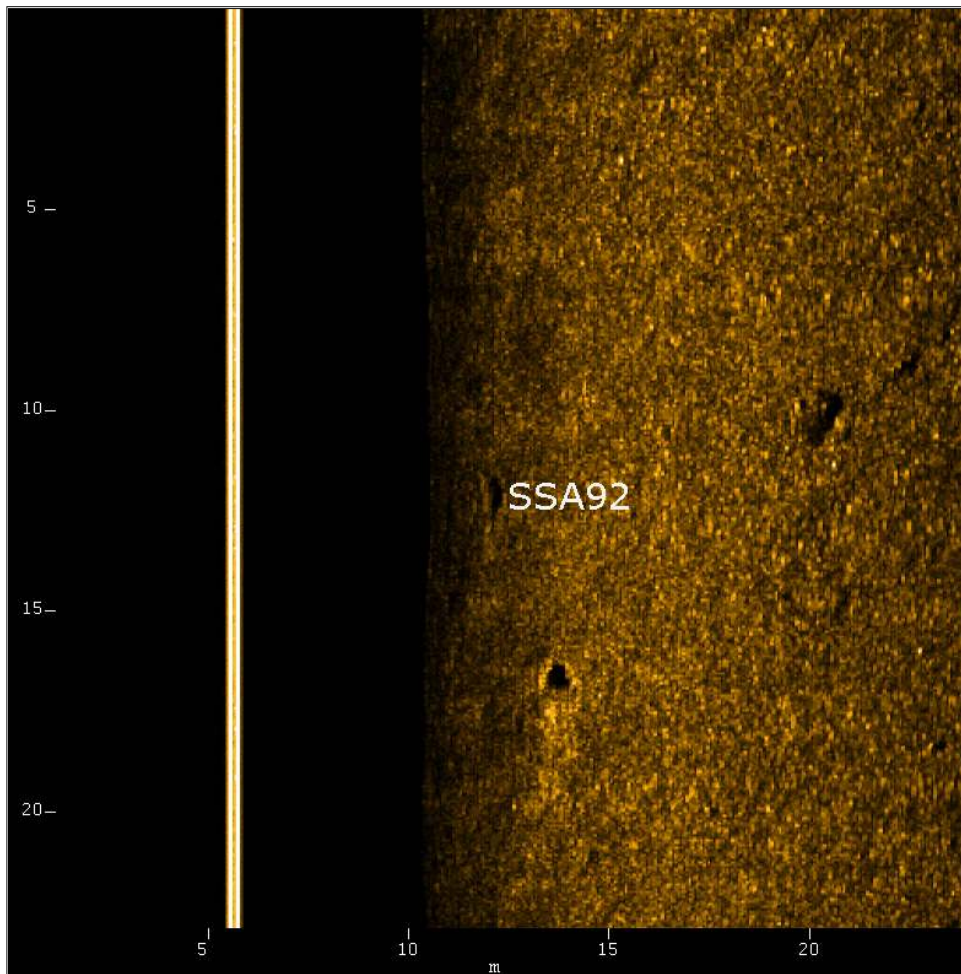
**Contact Info: SSA91**

- Sonar Time at Target: 09/24/2011 11:39:34
- Click Position (Lat/Lon Coordinates)  
50.6872596741 -0.3417020142 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687769.63 (Y) 5618419.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924113700.xtf
- Ping Number: 102908
- Range to Target: 23.39 Meters
- Fish Height: 4.91 Meters
- Heading: 61.500 degrees
- Event Number: 0
- Line Name: C11030\_110924113700

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder

SSA92

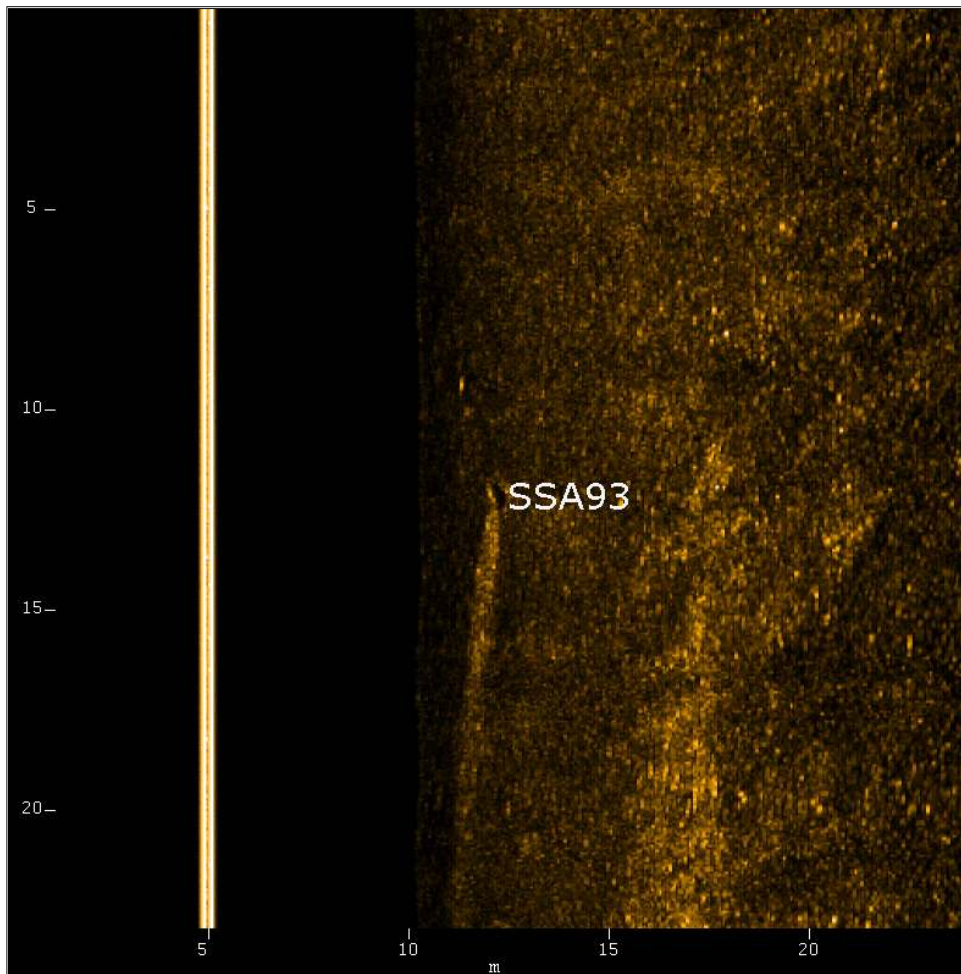
**Contact Info: SSA92**

- Sonar Time at Target: 09/24/2011 11:39:33
- Click Position (Lat/Lon Coordinates)  
50.6874198914 -0.3417930007 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687762.56 (Y) 5618436.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924113700.xtf
- Ping Number: 102893
- Range to Target: 6.33 Meters
- Fish Height: 4.94 Meters
- Heading: 62.800 degrees
- Event Number: 0
- Line Name: C11030\_110924113700

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Probable Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Probable Boulder

SSA93

**Contact Info: SSA93**

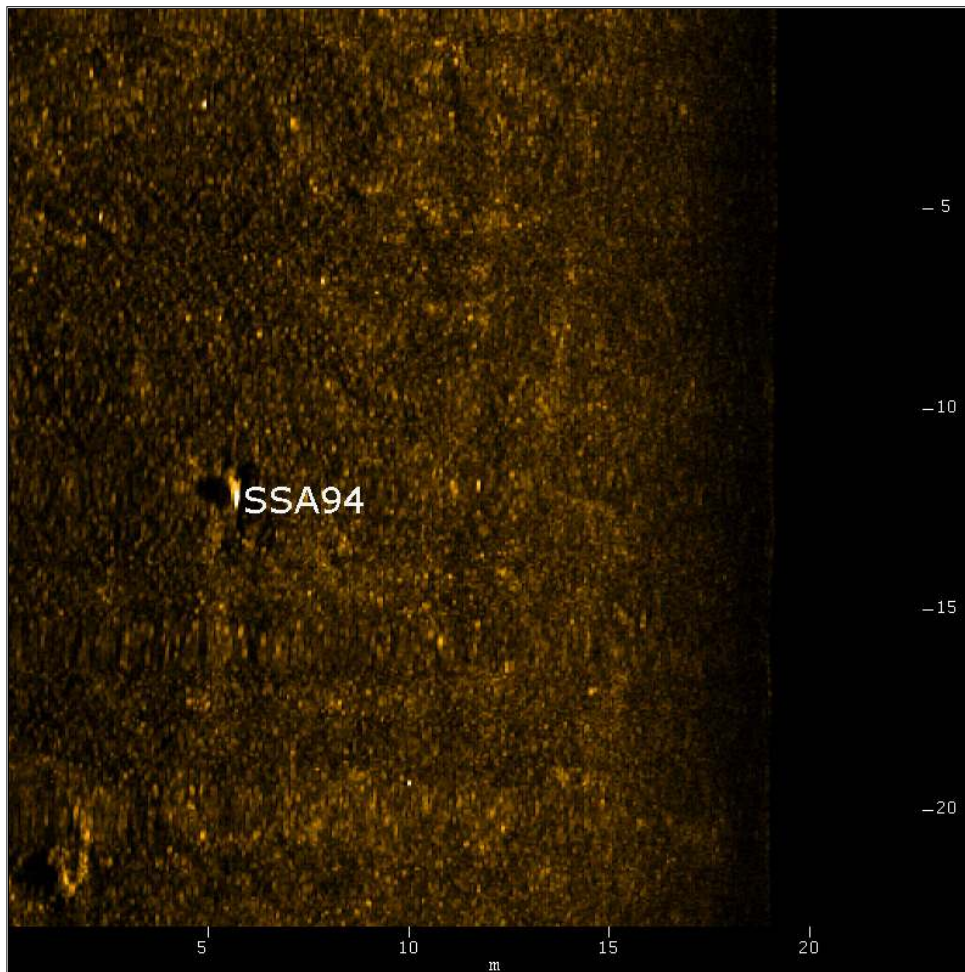
- Sonar Time at Target: 09/24/2011 12:33:15
- Click Position (Lat/Lon Coordinates)  
50.6874618530 -0.3428820074 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687685.44 (Y) 5618438.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924123100.xtf
- Ping Number: 196745
- Range to Target: 6.98 Meters
- Fish Height: 5.34 Meters
- Heading: 60.400 degrees
- Event Number: 0
- Line Name: C11030\_110924123100

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder with scour trail



SSA94

**Contact Info: SSA94**

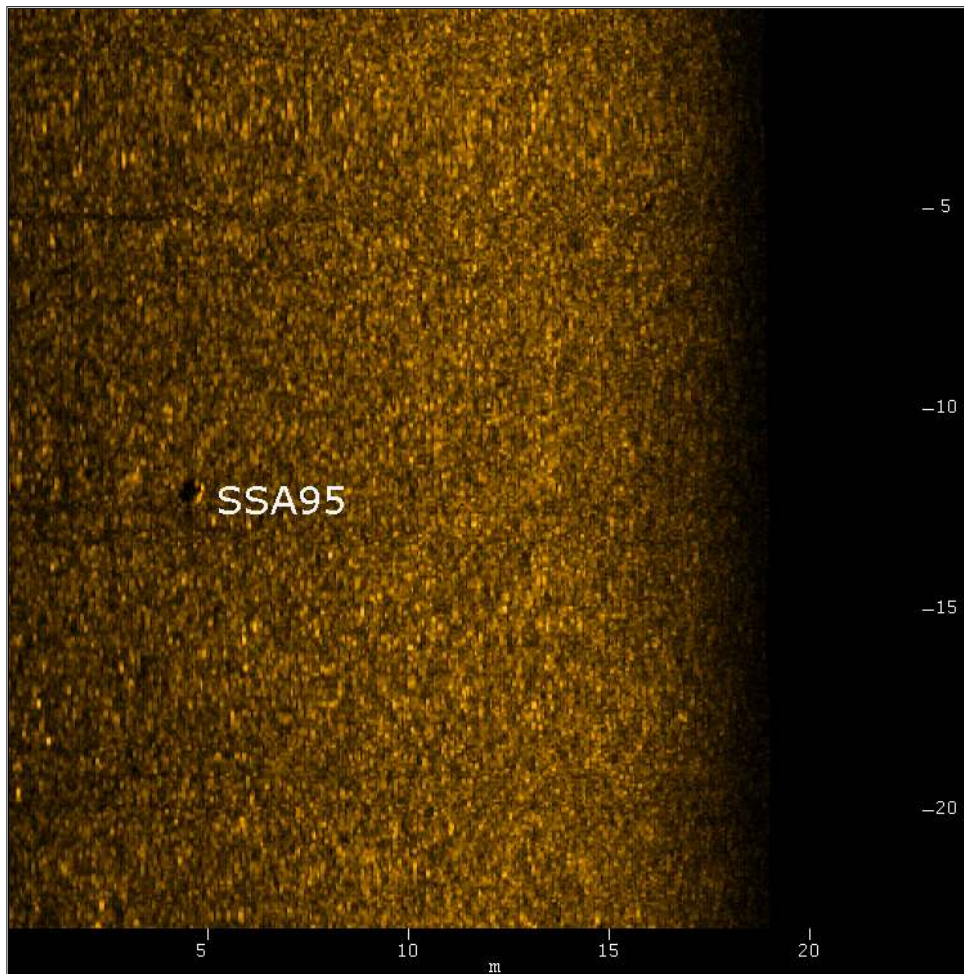
- Sonar Time at Target: 09/24/2011 12:32:28
- Click Position (Lat/Lon Coordinates)  
50.6874694824 -0.3441100121 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687598.69 (Y) 5618436.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924123100.xtf
- Ping Number: 195377
- Range to Target: 18.56 Meters
- Fish Height: 4.94 Meters
- Heading: 60.500 degrees
- Event Number: 0
- Line Name: C11030\_110924123100

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder



SSA95

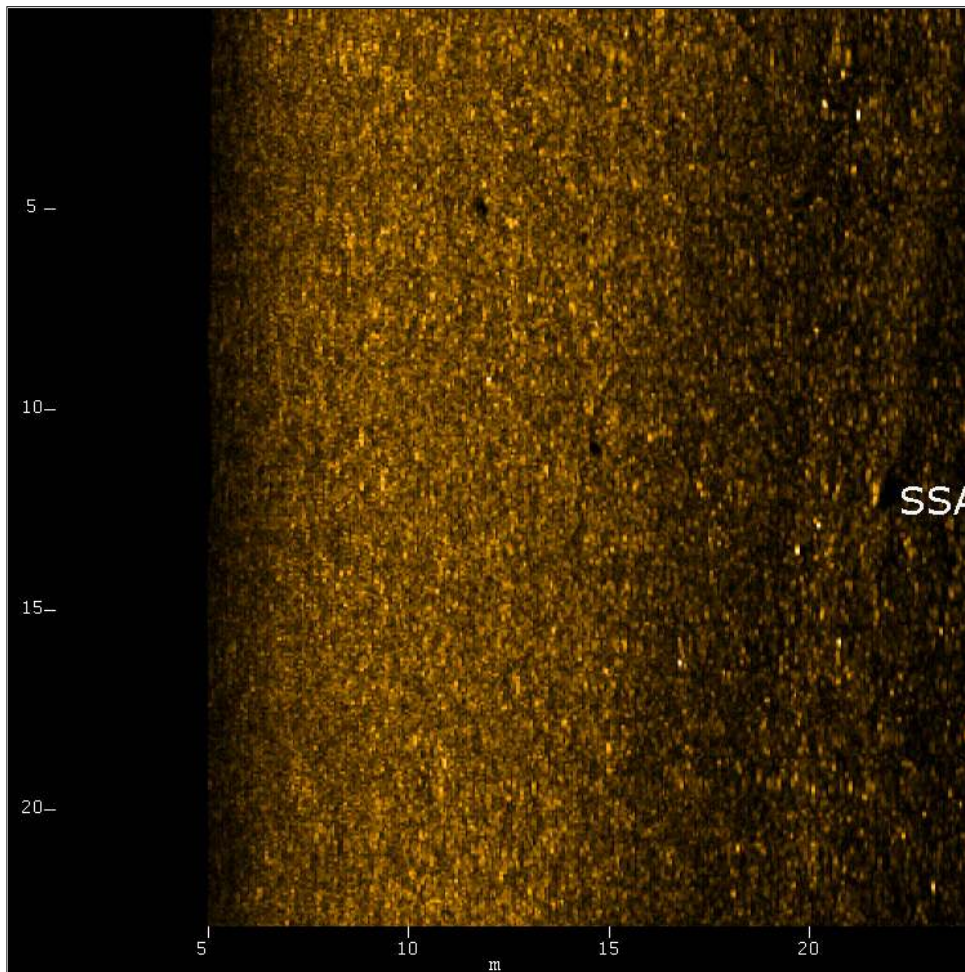
**Contact Info: SSA95**

- Sonar Time at Target: 09/24/2011 15:53:47
- Click Position (Lat/Lon Coordinates)  
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- Click Position (Projected Coordinates)  
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- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924155300.xtf
- Ping Number: 547185
- Range to Target: 19.27 Meters
- Fish Height: 5.13 Meters
- Heading: 277.100 degrees
- Event Number: 0
- Line Name: C11030\_110924155300

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder

SSA96

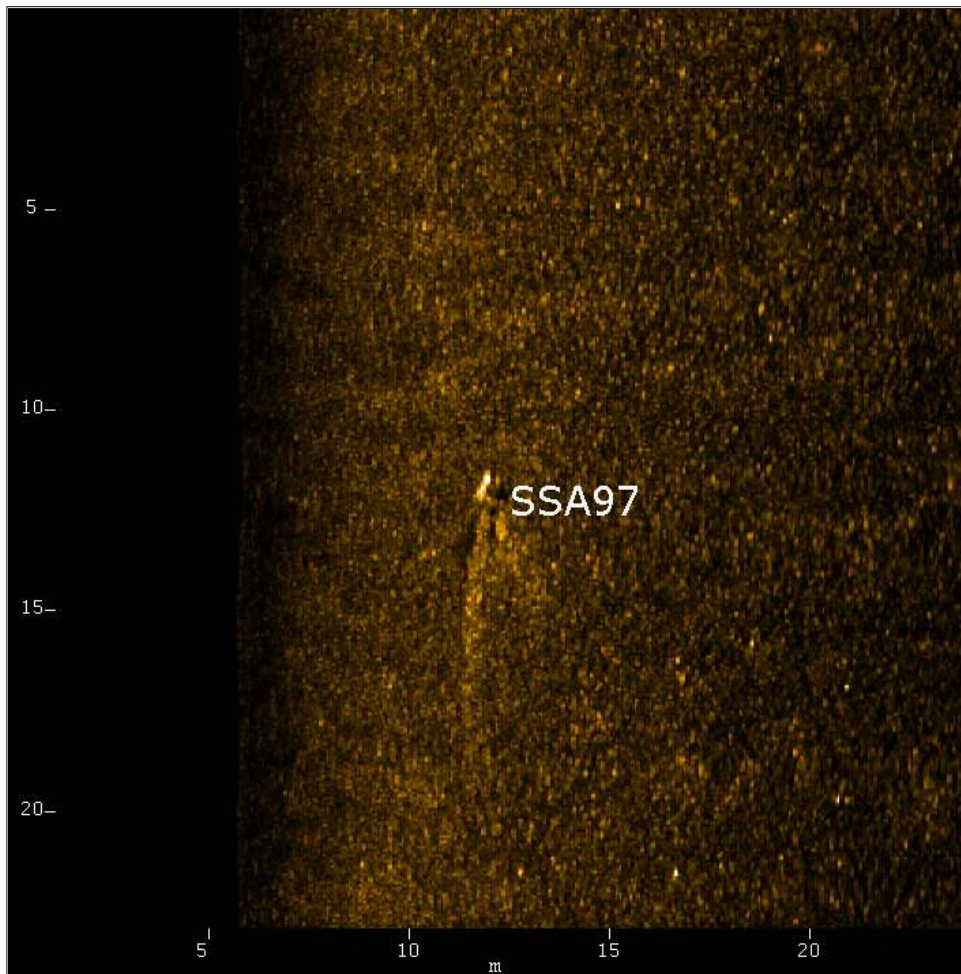
**Contact Info: SSA96**

- Sonar Time at Target: 09/24/2011 15:53:49
- Click Position (Lat/Lon Coordinates)  
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- Click Position (Projected Coordinates)  
(X) 687781.00 (Y) 5618512.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924155300.xtf
- Ping Number: 547247
- Range to Target: 21.70 Meters
- Fish Height: 5.16 Meters
- Heading: 275.200 degrees
- Event Number: 0
- Line Name: C11030\_110924155300

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder

SSA97

**Contact Info: SSA97**

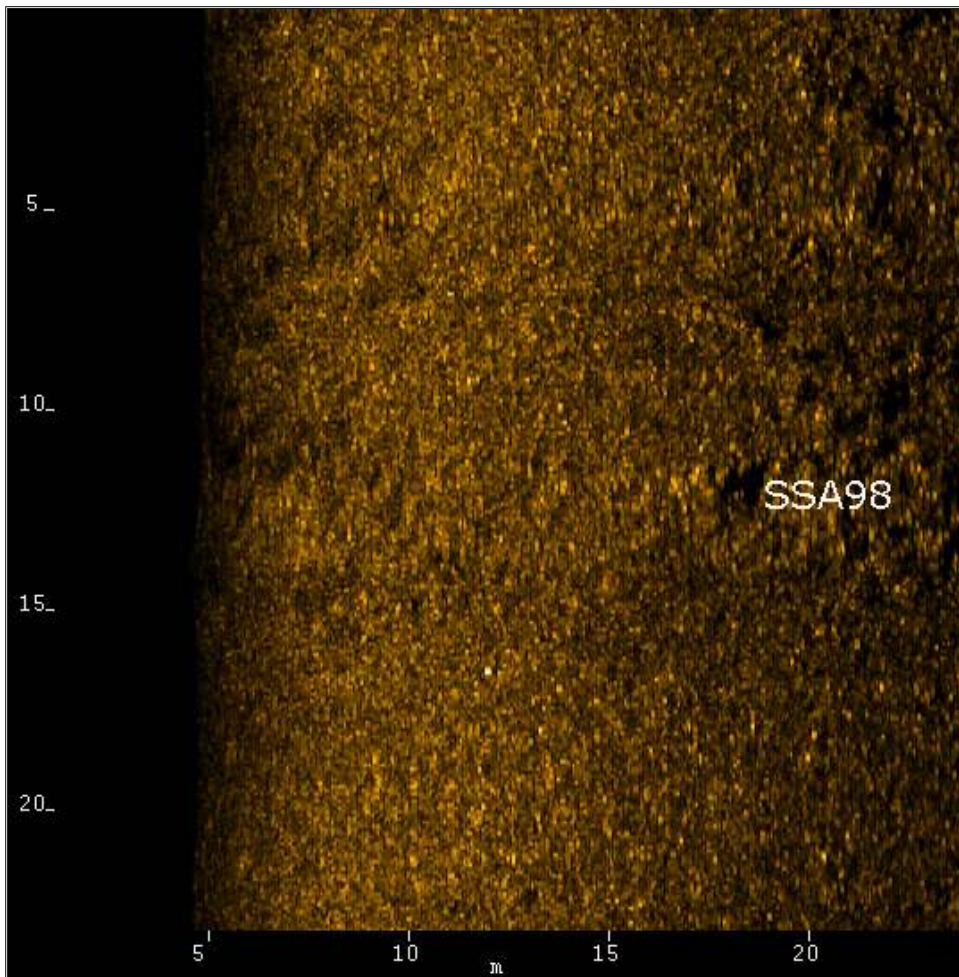
- Sonar Time at Target: 09/24/2011 12:51:00
- Click Position (Lat/Lon Coordinates)  
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- Click Position (Projected Coordinates)  
(X) 687661.81 (Y) 5618437.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924125000.xtf
- Ping Number: 227761
- Range to Target: 11.16 Meters
- Fish Height: 5.10 Meters
- Heading: 60.500 degrees
- Event Number: 0
- Line Name: C11030\_110924125000

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 0 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder with scour trail



SSA98

**Contact Info: SSA98**

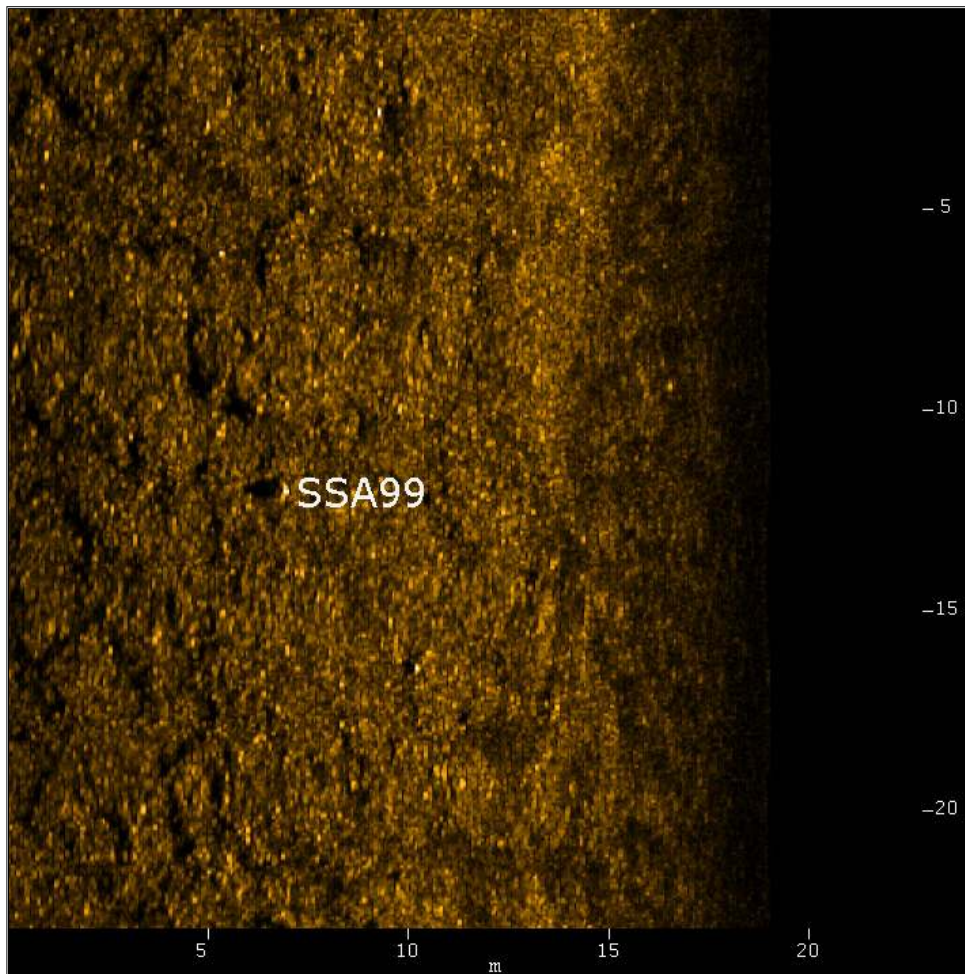
- Sonar Time at Target: 09/24/2011 18:08:37
- Click Position (Lat/Lon Coordinates)  
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- Click Position (Projected Coordinates)  
(X) 687753.56 (Y) 5618531.50
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924180700.xtf
- Ping Number: 782807
- Range to Target: 18.28 Meters
- Fish Height: 4.88 Meters
- Heading: 66.000 degrees
- Event Number: 0
- Line Name: C11030\_110924180700

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 2 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Small hollow  
 Classification 2:  
 Area:  
 Block:  
 Description: Small hollow in area of undulating rippled seafloor



SSA99

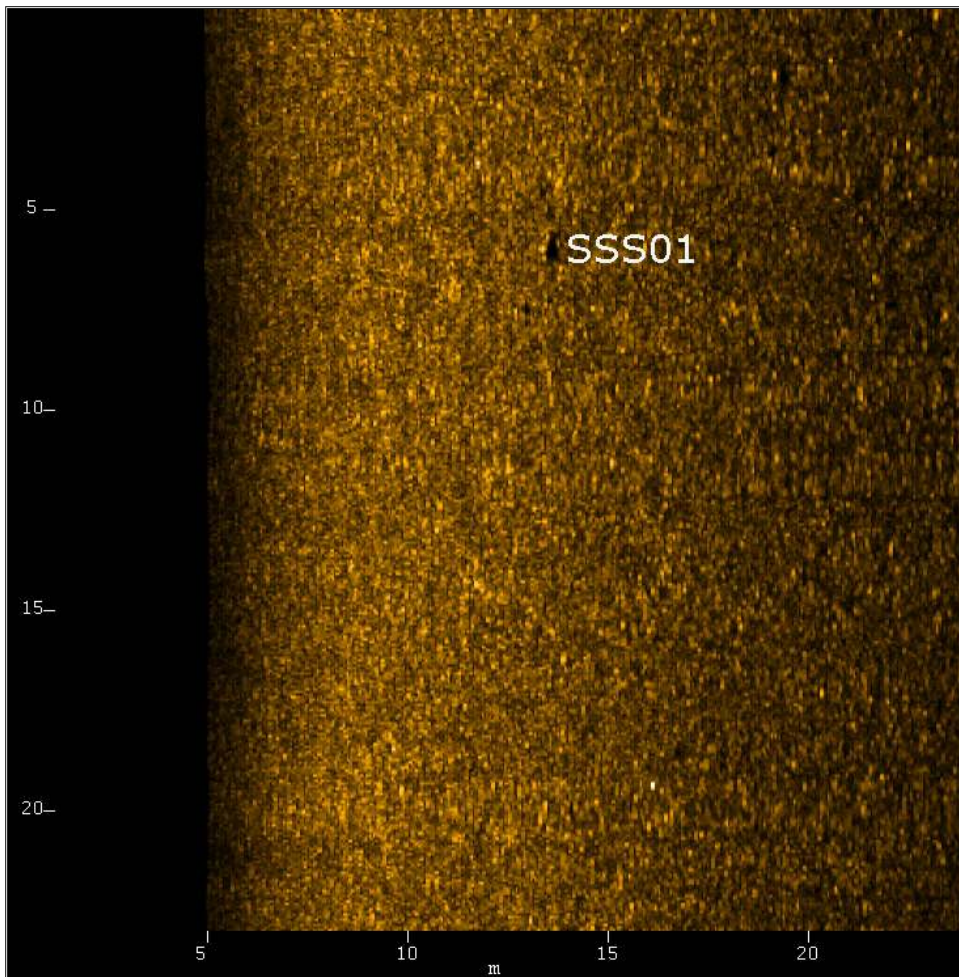
**Contact Info: SSA99**

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- Click Position (Projected Coordinates)  
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- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924125000.xtf
- Ping Number: 228273
- Range to Target: 17.30 Meters
- Fish Height: 5.04 Meters
- Heading: 60.300 degrees
- Event Number: 0
- Line Name: C11030\_110924125000

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 0 Meters  
 Target Shadow: 1 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Small Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Small Boulder

SSS01

**Contact Info: SSS01**

- Sonar Time at Target: 09/24/2011 15:52:55
- Click Position (Lat/Lon Coordinates)  
50.6882667542 -0.3400759995 (WGS84)
- Click Position (Projected Coordinates)  
(X) 687880.44 (Y) 5618535.00
- Map Proj: UTM84-30N
- Acoustic Source File: G:\SSS  
Xtfs\C11030\_110924155300.xtf
- Ping Number: 545661
- Range to Target: 13.41 Meters
- Fish Height: 5.03 Meters
- Heading: 279.500 degrees
- Event Number: 0
- Line Name: C11030\_110924155300

**User Entered Info**

Target Height: = 0 Meters  
 Target Length: 1 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly:  
 Avoidance Area:  
 Classification 1: Boulder  
 Classification 2:  
 Area:  
 Block:  
 Description: Boulder

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## **Rampion Offshore Wind Farm**



### **ES Section 13 – Marine Archaeology - Appendix 13.2**

**Moore Marine Services Ltd**

**Document 6.3.13ii**

**December 2012**

**APFP Regulation 5(2)(a)**

**Revision A**

**E.ON Climate & Renewables UK Rampion Offshore Wind Limited**



**MARINE ARCHAEOLOGICAL ASSESSMENT  
OF  
RAMPION OFFSHORE WINDFARM  
FOR  
RSK GROUP  
ON BEHALF OF  
E-ON POWER**



**Moore Marine**

**Job Number: M11WS01**

**Authors: Eoghan Kieran**

**Date: November 2011**

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## ABBREVIATIONS

BC	Box core	ppm	parts per million
CAD	Computer Aided Design	psi	Pounds per square inch
CM	Central Meridian	QC	Quality Control
CPT	Cone Penetrometer Test	RTK	Real Time Kinematic
CSF	Coordinated System File	ROV	Remotely Operated Vehicle
CRP	Common Reference Point	RTCM	Radio Technical Commission for Maritime Services
DGPS	Differential Global Positioning System	S	Seconds
DP	Dynamic Positioning	SBES	Single Beam Echo Sounder
DTM	Digital Terrain Model	SBP	Sub-Bottom Profiler
EBS	Environmental Baseline Survey	SEG-Y	Seismic Data Format
ED50	European Datum 1950	SOLAS	Safety of Life at Sea
FLO	Fisheries Liaison Officer	SOW	Scope of Work
FM	Frequency Modulation	SRB	Sulphate Reducing Bacteria
GeoTIF	Geographically Referenced TIF	SSS	Side-Scan Sonar
GPS	Global Positioning System	SVP	Sound Velocity Profiler
GS	Grab Sample	TIF(F)	Tag Image File (Format)
HAT	Highest Astronomical Tide	TPU	Topside Processing Unit
HSA	Health and Safety Authority	TM	Transverse Mercator
HSE	Health and Safety Executive	UHF	Ultra-High Frequency
HV	High Voltage	UKOOA	United Kingdom Offshore Operators Association
IP	Intersection Point	USBL	Ultra Short Base Line
kHz	Kilohertz	UTC	Coordinated Universal Time
km	Kilometre	UTM	Universal Transverse Mercator
KP	Kilometre Point	UXO	Unexploded Ordnance
LAT	Lowest Astronomical Tide	VC	Vibro-Core
m	Metre	WD	Water Depth
Mag	Magnetometer	WE	Work Element
MBES	Multi-beam Echo Sounder	WGS	World Geodetic System
MM	Marine Magnetometer	XTF	Extended Triton Format
MMO	Marine Mammal Observer	XYZ	Three Primary Spatial Dimensions
MRS	Marine Route Survey		
MSL	Mean Sea Level		
m/s	Metres per second		
nT	Nano Tesla		
PGC	Piston Gravity Core		



## EXECUTIVE SUMMARY

Moore Marine Services Ltd. was commissioned by RSK Group on behalf of Providence Resources PLC to carry out a programme of archaeological assessment and interpretation of geophysical data acquired during a site survey of the proposed Rampion Windfarm, located approx. 10 miles off Shoreham, W Sussex.

The aim of the programme of archaeological assessment was to consider the archaeological and historical background of the project and to analyse the acquired data for the presence of possible archaeological features or anomalies which may be impacted by later construction works.

Geophysical survey operations took place from the period 4th May to 19th August 2010. The survey was undertaken using Osiris Projects dedicated survey vessels, MV Freja and MV Lia. High-resolution side scan sonar, swath multi-beam, single beam bathymetry and magnetometer data were acquired along all survey lines, in order to accurately map the seabed within the wind farm area. Main survey lines were run at 50m centres, with cross lines at 750m centres. A total of 4,860 design line kilometres were acquired.

The desktop historical and archaeological assessment of the subject site indicated that the area of the assessment and its surrounding vicinity was one of considerable archaeological and historical significance. There had been continued human habitation of the region since the Palaeolithic Period, with visible archaeological evidence of the development and significance of the area through successive periods and cultures until present day. In addition the desktop historical assessment highlighted how there were a large number of National Monuments and UK Hydrographic Office recorded wrecks in the general area.

The archaeological assessment reviewed the following techniques: Side scan sonar, marine magnetometer and sub bottom profiler. There were 29 features of note on the side scan sonar survey data. 20 of these were of high archaeological significance and 9 were of moderate archaeological significance. On the magnetometer data, there were 15 recorded high magnetic contacts. All these were reflected in the side scan sonar record. The sub bottom profiler data recorded the presence of a number of palaeo-channels. None of these were deemed to be of archaeological significance.

## 1 SCOPE OF WORKS

### 1.1 Introduction

Moore Marine Services Ltd. was commissioned by RSK Group on behalf of Providence Resources PLC to carry out a programme of archaeological assessment and interpretation of geophysical data acquired during a site survey of the proposed Rampion Windfarm, located approx. 10 miles off Shoreham, W Sussex.

The aim of the programme of archaeological assessment was to consider the archaeological and historical background of the project and to analyse the acquired data for the presence of possible archaeological features or anomalies which may be impacted by later construction works.

The Osiris Projects was commissioned by E.ON Climate and Renewables UK Southern Array Ltd to undertake a detailed geophysical survey of the proposed offshore wind farm site. The object of their survey was primarily to inform turbine foundation and cable route engineering design. Equipment used included multi-beam echo sounders, side scan sonar, sub bottom profiler and marine magnetometer.

### 1.2 Archaeological Assessment and Data Review

The programme of archaeological assessment and real time data review was specifically designed to produce a number of results. These were:

1. To establish the archaeological and historical context to the survey area.
2. To review the acquired data for signatures which may be indicative of the presence of archaeological material and features at the survey area.
3. Where archaeological material is recorded, to inform survey strategy and resolution in order to optimise feature identification and provide sufficient data to positively identify the exact nature, extent and form of the feature.
4. To provide an indication of the potential for the project to impact archaeological materials and features.
5. To provide suggested mitigatory measures to ensure the survival of any identified archaeological features or deposits.

## 2 PROPOSED DEVELOPMENT

### 2.1 Location of the Proposed Survey Area

The proposed offshore wind farm site was located approx. 10 miles off Shoreham, W Sussex.

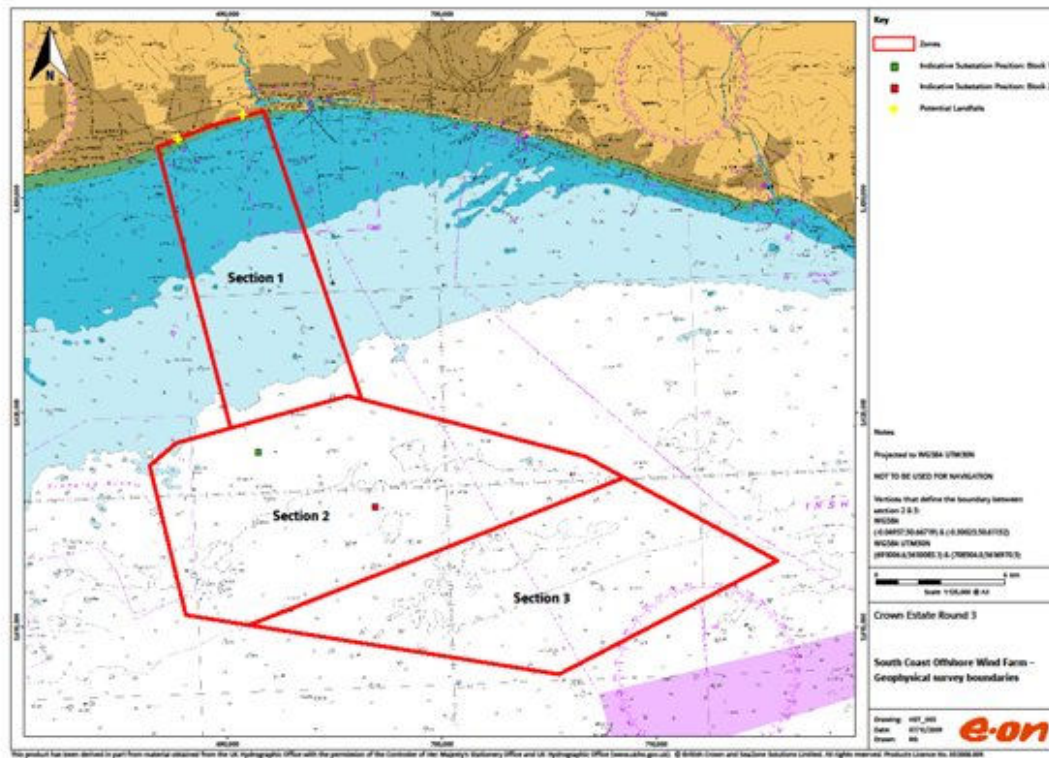


Figure 1. Survey area

## 3 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

### 3.1 Archaeological and Historical Background

The Palaeolithic or early Stone Age period began in Britain between 800,000 and 1 million years ago and lasted until the end of the last ice age, around 12,000 years ago. For much of that time, Britain was an arctic region of glaciers or tundra. During warmer interglacial periods successive waves of humans occupied the region. Very few sites of habitation are known, one notable exception being near the village of Boxgrove, just outside Chichester in West Sussex, which is one of the earliest. Many of the Palaeolithic tools found in England, have not been found in situ but in river terrace gravels where they were deposited by the waters from rivers and melting glaciers. There are 123 Palaeolithic find spots in West Sussex alone, most are hand axes and flakes.

The coastline and landscape of what would become modern Britain began to emerge at the end of the last Ice Age around 10,000 years ago. At this time the North Sea, Irish Sea and the English Channel were all dry land which connected both Ireland and England to continental Europe. Melting ice and rising sea levels would slowly inundate these lower regions and Britain finally became an Island approximately 8000 years ago. The Land Bridge once occupied and traversed by Palaeolithic and Mesolithic Peoples was gone for good.

In recent years there has been an upsurge of interest in the archaeological potential of submerged landscapes as noted by Fulford et al (1997). This in part was due to an audit of the English coastline in 1997 which recorded coastal prehistoric peat deposits that were seen to follow ancient river systems extending offshore. Rich sources of Mesolithic material were found submerged in the Solent area off the Isle of Wight and the large number of finds found in Essex (Flemming 2004; Fulford et al 1997: 108; Momber 2004). More areas have been discovered since then, off the Humber being an example. Furthermore, there are confirmed examples of prehistoric sites in the intertidal zones from the Neolithic period at Wootton Quarr on the Isle of White and Langstone Harbour an inlet of the English Channel in Hampshire stressing the historic character of these submerged landscapes. Fleming (2002) also identified a series of hotspots for palaeo-landscape including fossilised river valleys, cliff coasts, estuaries, wetlands, mudflats and peat deposits. In addition numerous archaeological remains have been recovered offshore through processes such as fishing and aggregates dredging, indicating the presence of further landscapes. An example of this is the wonderfully worked bones dating to the Mesolithic trawled up by fishermen around the Dogger Bank and Brown Bank areas off the east coast and a number of Palaeolithic hand-axes were recovered from aggregate dredging area off Great Yarmouth.

The maritime history of the English Channel is one of fishing, habitation, migration, trade, the spread of new technologies, war, piracy, invasion and defence. Being so closely bordered by water meant boat-building and seafaring became a way of life for the ancient Britons. The Channel has been used for navigation since prehistoric times and it is believed that log boats (canoes made from hollowed out tree trunks) and hide boats were probably very common, and used during early periods as ferries, fishing boats, trading or war vessels (Friel 2003: 22; McGrail 2001).

During the Neolithic period sometime around 4000BC people took up agriculture as a way of life, and stopped being nomadic hunter-gatherers. Ideas and technology of farming, and perhaps some of the first livestock, crossed the Channel and arrived in England. Stable communities of farmers cleared land for their crops and domesticated animals and they built great monuments such as causewayed enclosures, communal graves and hillforts. Those communities that settled along the southern coast of



Britain would have enjoyed access to large amounts of flint due to the large number of flint mines in Hampshire and West Sussex. The archaeological record around these mines testifies to a large number of flint tools being manufactured and from about 4300 BC to about 3400 BC the mining of flint for use locally and also for wider trade was a major activity in Neolithic Sussex. These successful communities built monuments such as the Causewayed Enclosures at Combe Hill in Eastborn and Whitehawk Camp in Brighton. Neolithic log boats have been found in England such as the two Iron Age log found in peat beside the River Witham at Fiskerton near Lincoln and the remains of large Iron Age log boats have been found in Poole Harbour.

By 2500BC, the Channel was transporting a new wave of people from continental Europe. They brought not only patriarchal society but also the technology of metal smiting. Vessels attributable to the Bronze Age are the earliest craft thus far discovered which would have been capable of sea voyages. Vessels such as the Ferriby and Brigg (both in the Humber region), and another found in Dover, were relatively substantial vessels (McGrail 2001). In 2009, another Bronze Age vessel was found off England's south-western coast. This trading vessel was carrying an extremely valuable cargo of tin and hundreds of copper ingots from the Continent when it sank off the coast of Devon around the year 900BC. These craft and exotic artefacts found in Bronze Age burials testify to the increase in overseas trade across the English Channel. Bronze Age settlements occur right across the southern coast of Brittan as they do in Brighton, Shore-by-Sea and Worthing.

Beginning around 800BC, the Iron Age saw the gradual introduction of iron smiting technology and iron artefacts did not become widespread until after 500-400 BC. Trading and exchange contacts, between Britain and mainland Europe that had developed in the Bronze Age continued throughout the Iron Age. Swords were imported, copied and often improved upon by the natives. Wonderful art forms and techniques were copied from Europe and perfected back in Brittan. Iron Age Brittan was trading with northern Europe across the North Sea as well as with Mediterranean culture across the English Channel. Farming techniques improved and the introduction of the iron-tipped ploughshare made the cultivation of heavy clay soils possible. Iron Age field systems such as those at Shoreham-by-Sea in West Sussex were introducing new varieties of crops and these facts were likely catalysts to population growth.

Near Worthing the Iron Age hill-fort Cissbury Ring was built in 300BC as a symbol of power and a refuge in times of threat. It is one of many that are being built in Brittan during this time. Towards the end of the second century BC, Roman influence began to extend into the Western Mediterranean and Southern France which led to growing contact between Britain and the Roman world. Initially this contact was confined to the trading of limited quantities of Roman luxury goods such as wine, probably exchanged for slaves, minerals and grain. The Iron Age in Brittan would end with the Roman invasion.

The Roman route into England was made easier because of existing trade routes and supporters within England including Cogidumnus, the Belgic ruler, who was an ally of Rome long before the invasion. Initially it had not been to Rome's benefit to invade England as it was thought the British paid more in customs and duties than they would in taxes under Roman occupation (Strabo Geography). However by 40AD the political situation in England was unstable as the various tribes were battling for power.

The Romans moved in in 43AD, and the south of England which was already familiar with Roman ways quickly accepted the Roman way of life, the town of Niviomagus Reginorum (Chichester) was built taking advantage of a good location on Stane Street. There was also a palace built at Fishbourne, south of Chichester and an amphitheatre was built in Chichester around 85AD. Sussex is littered with Roman roads, the remains of Roman villas and other buildings suggesting that Sussex prospered under the Romans. The Roman reign lasted until early in the 5th century when the entire Roman Empire was threatened and troops were withdrawn, but Britain was already suffering from raids by the Saxons. The Saxon Shore was a military command of the late Roman Empire, consisting of a series of fortifications on both sides of the English Channel. It was established in the late 3rd century to try to curb the raid by the Germanic tribes. Roman sea power and trade in north-west Europe had kept Brittan linked to the imperial realms of the continent. Both collapsed in the early fifth century, catastrophes that must have done as much, if not more, to cut Britain off from the failing empire as the official withdrawal of the Roman Legions (Friel 2003).

Britons were in disarray, politically and economically following the loss of the Romans and they may well have welcomed in certain parts an organised and well-ordered invader to fill the vacuum. Few Roman settlements have survived to become modern towns and villages as the period following the Roman withdrawal was very unruly and many people left the Roman towns or their villas and returned to more secure places such as the Iron Age forts.

By the 7th century the way of life began to change as the open field system of farming was introduced. Now families had to co-operate with each other to get the best out of the arrangement and so they began living close to each other and villages began to develop. As many of the Sussex villages developed around this time their names have Saxon origins. Sussex itself means 'suth seaxe' – South Saxon's.

After apparent sharp decline in maritime trade during the early post-Roman period, commercial trading activity with continental Europe was stimulated again from the late 6th century, and the 8th and 9th centuries saw the greatest resurgence of European trade since the fall of the Roman Empire. Most of this trade relied on water transport and, as a consequence, urban settlements were revitalised along rivers and near to the coast, changing the character of the landscape/seascape (Clarke 1985).

Alfred was the king of the southern Anglo Saxon kingdom of Wessex (Sussex and the south east of England) and was given the epithet 'the Great' following his defence of the kingdom against the Danish Vikings. A number of forts in Sussex were important to Alfred's defence including Hastings, Lewes, Burpham, Chichester and Heorepeburan (possibly Pevensey). The locals of Chichester defended their town using the Roman walls killing many Vikings and putting the rest to flight.

With the Vikings defeated some security was restored for the next few years but the Vikings began their raids again damaging if not destroying villages along the Sussex coastline. Many stone built churches date from this period – built after the Vikings burnt down the wooden churches that existed before.

Between the 8th and 11th centuries, Scandinavian influence spread widely across Europe and beyond, disrupting earlier trade patterns and patrons but creating new ones. This was achieved often through previously unparalleled feats of navigation and endurance, facilitated by their longship design: open, clinker-built vessels which could be propelled both by oars and sail. Modifications of the hull shape and the addition of a sail meant that by the 9th century the Viking ship was capable of sailing long distances on the high seas and was not limited to coasting (Binns 1985). The Viking ships, both the Longship and the merchant ship or 'Knórr', could equally well handle ocean voyages across the Atlantic. Neither needed a harbour, but could land on beaches or river banks anywhere. This period of Scandinavian expansion and influence is known as the Viking Age, with huge social, political and economic impacts in England. The material role of their ships in their success was mirrored in their spiritual role in Viking mythology where they often figure as the final transport and resting place in heroes' funerary rites, a role finding expression in the occasional discoveries of Viking Age boat burials.

The Norman conquest of 1066 reorientated England towards continental Western Europe and away from Scandinavian influence. Over the course of the next century as the Anglo-Norman Empire grew it opened up important new trading areas for England, including the wine growing region of Gascony (Friel 2003). Both sides of the channel were under Norman control and they faced little external naval threats. Following the conquest, large numbers of Anglo-Saxons, including groups of nobles, fled the country. The Normans were master castle builders and set about building. After 1066, England witnessed a massive castle building programme on the orders of William the Conqueror. First, motte and bailey castles were built. Once William had firmly established his rule in England, he built huge stone keep castles. By the time of Edward I, concentric castles were being built. They quickly established themselves along the southern coast of England to secure the English Channel and pushed northwards.

### **The Normans in Sussex**

Lewes Castle in east Sussex was built circa 1000. Remains of flint built castle, begun circa 1100, extended in the 12th and 14th centuries, recently modified. The castle is approached from the South by an early 14th century barbican which is followed by the Early Norman gatehouse which contains herring-bone coursing. There is some contemporary walling to its right and left, also, and more substantial curtain walling east of the Castle Gate House. On the West mound stands a shell-keep, again early Norman though strengthened by two 13th century turrets.

Steyning is a small town located north of Shoreham-by-Sea in West Sussex. It is located at the north end of the River Adur. It was founded during the Saxon period but was also a Norman town and port. Steyning was a port on the Adur until it became un-navigable, probably in the C12th. It was a settlement by Cnut's reign, and a mint from ca.1023 until the early Norman period.

St Margrets Church in Hoe. Round towered church with nave and South porch. There is some Norman work in the church, and the porch is 15th century.

### **Normans in Hampshire**

Barton Copse is a roughly square enclosure defined by a bank and ditch, which may be the site of a motte and bailey. It is probably of mid 12th century date.

Basing House is a Medieval motte and bailey castle with keep, possibly 12th century in date, converted to a fortified house after 1531, and with 17th century defences. After 1531, the site was redeveloped as a fortified house with the construction of the Old House. This was constructed of brick in English Bond with an entrance via a bridge spanning the ditch between the motte and bailey. The New House was also constructed about the same time outside and to the north east of the castle. It comprised a series of rectangular buildings arranged around a central courtyard. Both buildings survive as ruins. In the Civil War, the defences around the bailey were extensively remodelled. The site was stormed by Cromwell in 1645. Excavations have also identified a possible Saxon settlement and recovered Mesolithic and Bronze Age flint, and Iron Age and Roman pottery.

Although ships and boats made from wooden planks have a better survival rate than log or hide boats, few early medieval examples have been found in England. Important examples of early plank-built vessels include the Dover Bronze Age boat dated to c. 1300 BC. It was found in freshwater sediments with associated peat layers about 30m from the course of the modern River Dour. A long sequence of channel-narrowing puts the original context of the Bronze Age boat in a riverside location, with direct access to the sea. This indicates some use of the area as a refuge or landing place for that period (for further details see Clark 2004). Other plank-built Bronze Age boats include those found in the Humber such as Brigg and Ferriby. One of the most famous examples of an early medieval boat is the Sutton Hoo



ship, the ghost traces of which were discovered in an Anglo-Saxon burial mound near Woodbridge (Suffolk) (Friel 2003: 24). Other medieval ships include the Magor Pill and Newport ships from Wales but English examples are rare.

The Cinque Ports were developed in 1155 to maintain ships ready for the Crown to use if needed. The towns were New Romney, Hythe, Dover and Sandwich in Kent and Hastings in Sussex along with Rye and Winchelsea. A number of other towns were also connected to the Cinque Ports including Pevensey. Over time the coast changed as sections were silted up and others were washed away – in 1250 Winchelsea, which was an important trading port, was being submerged and lost to the sea so Edward I ordered a new town to be built to replace it. The new town was built with a tidal harbour on the river Brede and the original town of Winchelsea was lost completely to the sea in 1287. The new Winchelsea remained an important trade until the mid 14th century when it suffered from French and Spanish raids and was badly hit by the Black Death. However the silting of the river and harbour reduced it from a busy port town to the small inland village that it is today.

The location of shipbuilding sites seems to have been rather haphazard in England's medieval landscape. The sites themselves were rudimentary, although ships were being built in simple docks from at least the 1330s (Friel 2003). Accounts from between the late 13th and early 15th centuries state that shipbuilding was still based on clinker construction (Friel 2003; McGrail 1998; 2001). Changes in European shipping during the 15th century were influenced by the skeleton-built Portuguese caravels. Skeleton construction involved nailing hull planks to a pre-erected skeleton of strong frames; the planks did not overlap, but were laid against each other, giving the hull a smooth exterior (Friel 2003; McGrail 1998, 2001). Other 15th century shipping changes included the introduction of two- and three-masted ships and a decline in the number of large ships. The latter may have been due to changes in the demand for goods being transported. Merchant ships of more than 100 tons were uncommon in England until the late 16th century, when they were constructed for long-distance bulk trade and war (Friel 2003; McGrail 1998, 2001).

The 16th Century saw the Thames and surrounding region grow to become the shipbuilding capital of the country. In 1559 there were 520 shipwrights employed in the royal yard in the Thames and at Portsmouth (Friel 2003).

Shoreham shipbuilders were said to be famed for the neatness and good sailing qualities of their craft, using timber which was cheap because it was floated down the river from the Weald. In 1720 there were many shipwrights, both naval and merchant, 12 years later, when naval shipbuilding was seen as past, there were said to have been up to 15 merchant ships, of 100-500 tons, on the stocks at a time. In 1766 it was said that shipbuilding was the chief object and support of most of the inhabitants. Some

warships were built, and in 1782 there were still two shipyards. By the 1780s some of the shipwrights were evidently based at Kingston and after that period there seems to have been a decline in the industry.

Nevertheless, shipwrights were recorded at Shoreham in the first decade of the 19th century and in 1814 the firm of Edwards and Balley was building ships. J. B. Balley (d. 1863) was in business as a shipbuilder by 1838 and launched many vessels of over 500 tons. From 1838 to 1871 the firm of May & Thwaites at the Kingston shipyard was building vessels of up to 500 tons, and in the 1840s smaller craft and yachts were built, Shoreham and Southwick each having at least one boat builder in 1845. The increase in New Shoreham's population in the 1850s was attributed in part to the extension of the local industry, which in 1849 employed over 100 people and was noted for the speed of its ships.

The English shipping industry underwent a particularly rapid development following the Seven Years War against France (1756-63), and the rate of English naval construction rapidly increased (see Parry 1971: 113-129). Before that war, French warships were considered to be better designed and faster than the English ships (see Lavery 1983; Parry 1971: 119). Subsequently, the English shipping industry promptly flourished since they based their ship designs on those of the French, the English becoming a maritime power from the end of the 18th century onwards. By contrast, after the declaration of the Seven Years War, the French shipping industry remained steady, and after some time, declined. The rapid development of the shipping industry and trade in the middle decades of the 18th century was linked to increased competition among the expanding European powers as well as processes such as capitalism and colonialism (see Davis 1962; Dellino-Musgrave 2006; Staniforth 2003). The English shipping industry underwent a particularly rapid development following the Seven Years War against France (1756-63), and the rate of English naval construction rapidly increased (see Parry 1971: 113-129). Before that war, French warships were considered to be better designed and faster than the English ships (see Lavery 1983; Parry 1971: 119). Subsequently, the English shipping industry promptly flourished since they based their ship designs on those of the French, the English becoming a maritime power from the end of the 18th century onwards. By contrast, after the declaration of the Seven Years War, the French shipping industry remained steady, and after some time, declined.

During the mid 19th century, technological and economic progress gained momentum with England as a world leader in the development of steam-powered ships and railways, and later the internal combustion engine and electrical power generation. England became one of the leading industrial powers of the 19th century, due in no small part to the strength of its shipping industry (Hedges 1989, 5). During this period, steamships gradually replaced sailing ships for commercial shipping. Many new demands on rapid freight transport were made which could be more easily met by steam-powered

vessels, especially from the 1840s when iron hulls and the screw propeller were introduced (Hobsbawm 1999; Pearsall 1985). In the 1900s, the internal combustion engine and gas turbine replaced the steam engine in most ship applications. Trans-oceanic travel, transatlantic and transpacific, was a particularly important application, with steam powered ocean liners replacing sailing ships, culminating in the 'Superliners' such as those of the White Star Line, including the unfortunate RMS Titanic.

### 3.2 National Monuments Record

The National Monuments Record (NMR) has recorded a number of vessels as having foundered in the vicinity of the proposed development. Whilst the review of the geophysical data did not identify any of these shipwrecks, a number of unidentified shipwrecks were identified and these may be an NMR recorded wrecks. A full list of NMR monuments in the survey area is contained in Appendix 3.

### 3.3 UK Hydrographic Office

The UK Hydrographic Office records list over 70,000 wrecks and obstructions, of which over 20,000 are named wrecks. The Data is stored centrally and can be accessed upon request. A search of the UK Hydrographic Office recorded that there were 51 recorded wrecks or obstructions in the vicinity of the subject site. Of these, 13 were positively identified during the review of the geophysical data, with an additional three wrecks remaining unidentified. A complete list of the UK Hydrographic Office records for the area is contained in Appendix 4.

Wreck	UK HO Wreck No	Easting	Northing
Unnamed Trawler	20017	702158mE	5614268mN
Unnamed Wreck, coal barge	19975	692602mE	5610780mN
Pagenturm Wreck	20001	696816mE	5612837mN
Glenarm Head Wreck	20012	698571mE	5613983mN
HMS Minion, L Class Destroyer	20014	695620mE	5613922mN
Unnamed Wreck ,	19991	689724mE	5611778mN

Steam ship, ballast cargo			
City of Waterford	20056	704093mE	5617768mN
Unknown Freighter Wreck	19996	689064mE	5612131mN
Quail Wreck	20000	690308mE	5612630mN
Stanwold Wreck	19998	688447mE	5612547mN
Ingo Wreck	19998	695102mE	5618514mN
Unknown Trawler Wreck	20059	688562mE	5617453mN
Ikeda/City of London	20080	694935mE	5620736mN

Table 1. Table of identified UKHO wrecks.



## 4 GEOPHYSICAL SURVEY

### 4.1 Survey Objectives

The main objectives of the geophysical survey were as follows:

- To provide an accurate bathymetric chart of the site regions and cable routes region.
- To chart natural seabed features and any obstructions, manmade objects, debris or wrecks.
- To produce isopachyte charts to show sediment thickness of the upper, loose, and any mobile material, and of any other significant reflector levels which might impact on the engineering design to 50m below seabed. For Section 1 this depth is 10m below seabed.
- To locate any structural complexities or geohazards within the shallow geological succession such as faulting, accumulations of shallow gas, buried channels etc to 50m. For Section 1 this depth is 10m below seabed.
- Locate and identify sites of near surface soft materials pertinent to jack up operations.
- To provide a detailed geological interpretation to show facies variations and structural feature changes via appropriate maps and sections.
- To produce a comprehensive factual report describing methods and events within the survey.
- To produce a comprehensive interpretative report on the survey results obtained to assist design of the offshore foundations / structures and cable burial.
- To correlate magnetic anomalies and sonar contacts to identify items that may require further physical surveys; for example UXO, wrecks, MMO, etc.
- During survey period, to identify items/areas of “Specific Areas of Interest & Archaeology” and inform the Employer as required

### 4.2 Survey Vessels

MV Lia and MV Freja were utilised for the duration of the survey works. The vessels mobilised in Shoreham Port between the 5th and 11th of May, with the mobilisation and calibrations being delayed due to unfavourable weather conditions. Fieldwork commenced on the 12th May 2010, initially with both vessels operating within Section 2 and based out of Shoreham Port. However, due to restricted vessel access issues, Lia relocated to Brighton Marina on the 13th May and Freja on the 21st May, where they remained for the duration of the works. Freja demobilised from site on the 14th August, following a period of stand down between the 4th and the 11th August. Lia demobilised from site on the 19th August, following completion of the sparker trials.

### 4.3 Survey Control

#### 4.3.1 *Horizontal Control*

Primary positioning was provided by either a CNAV 3050 (Lia) or 2050 (Freja) DGPS system. The C-NAV system is utilised across many industries, including marine construction, dredging and marine survey contractors. The C-NAV 3050 system consist of a 66 channel, multi-constellation, multi-frequency receiver whilst the 2050 system consists of a 10 channel single constellation receiver. Both systems utilise correction data from either the General Lighthouse Authority (GLA) Medium Frequency (MF) radio transmission via external modem or Satellite Based Augmentation System (European Geostationary Navigation Overlay System (EGNOS)) via internal receiver

For this survey the SBAS EGNOS differential correction service was utilised providing a typical positional accuracy of <1 metre at 95% confidence levels.

Secondary positioning (Freja and Lia) was provided by a Leica GX 1230 Smartnet RTK GPS System. The Leica GX1230 GPS is a 12 channel receiver capable of static and on-the-fly Real Time Kinematic (RTK) ambiguity resolution on satellite carriers L1 and L2. When using the Smartnet service, horizontal and vertical accuracies of 10mm +1 part per million (ppm) and 20mm +1 ppm are achievable with reinitialisation times following complete loss of lock at less than 60 seconds.

Tertiary positioning was provided by a Hemisphere Crescent VS100 GPS Compass. The VS100 system delivers sub-metre dGPS positioning accuracy when using decoded correction data. The VS100 sensor is capable of receiving differentially corrected data from land-based General Lighthouse Authority (GLA) and from Space the Based Augmentation System (SBAS) European GPS Navigation Overlay System (EGNOS).

For this survey the General Lighthouse Authority (GLA) differential correction service was utilised providing a typical positional accuracy of <1 metre at 95% confidence levels. The system also provides accurate heading data between 0.3° to 0.1° RMS at baseline lengths between 0.5m and 2m and this data was used for secondary vessel orientation.

Primary vessel heading was provided by a TSS Meridian Surveyor Gyrocompass. The Meridian is covered by IMO, Wheelmark and HSC certification.

Subsea towfish tracking was provided by an Ultra-Short Baseline (USBL) system. Subsea positioning of the side scan sonar towfish and magnetometer towfish was provided by a Sonardyne Scout USBL system. The Scout is interfaced to the navigation software to enable real time tracking of subsea targets relative to the vessel frame.

A dedicated navigation computer was utilised to integrate all of the onboard sensors and to provide a single reference timeframe for all the onboard data acquisition systems taken from the incoming GPS data. In order to allow the navigation computer to display the specified project co-ordinates in real time, the incoming positional data, which is received as a WGS84 (GPS datum) Lat/Long co-ordinate, is projected into the UTM Zone 30 North coordinates. No datum transformation was required for this project.

#### 4.3.2 Vertical Control

The vertical component of the Leica Smartnet RTK solution was used for the reduction of the bathymetric data to Lowest Astronomical Tide (LAT). The GPS height solution was recorded at 1Hz, reduced to the measured waterline level and smoothed using a sixth order polynomial and consequently sampled into a 30-second period to remove the short term effects of vessel heave and squat.

All high accuracy GPS surveying within the UK is conducted using the European Terrestrial Reference System 1989 (ETRS89). WGS84 was designed for navigational purposes, where the required accuracy is one metre or lower. A number of high accuracy equivalents of WGS84, known as the International Terrestrial Reference System (ITRS) have been created since 1989 (ITRS89).

The data was subsequently Quality Control checked (QC) against the Proudman Oceanographic Laboratory (POL) National Tidal and Sea Level Facility (NTSLF) tide gauge located at Newhaven (50° 49.914'N 0° 3.42'E).

#### 4.4 Survey Operations

The survey was undertaken using Osiris Projects dedicated survey vessels, MV Freja and MV Lia, during the period 4th May to 19th August 2010.

High-resolution side scan sonar, swath multi-beam, single beam bathymetry and magnetometer data were acquired along all survey lines, in order to accurately map the seabed within the wind farm area. Main survey lines were run at 50m centres, with cross lines at 750m centres. A total of 4,860 design line kilometres were acquired.

Mobilisation of both vessels began on the 4th of May in Shoreham-by-Sea harbour, West Sussex. During the mobilisation phase navigation checks, gyro and USBL calibrations were completed. Both vessels initially operated from Shoreham-by-Sea harbour; however, due to restricted access, they were subsequently relocated to Brighton Marina to reduce transit times. The vessels were based in Brighton Marina for the duration of the works, with typical transit times to site of approximately 45 minutes. Data acquisition began on 12th May 2010, with both boats commencing acquisition in Section 2.

Initially, 'boomer' sub-bottom profiler data was acquired on half of the cross lines (orientated north-south), in an attempt to provide a coarse reconnaissance survey of the geology, in order to decide which particular sub bottom profiler system was best suited to the geological conditions at the site. Several areas of acoustic blanking were discovered within channel features, most likely the result of organic gas deposits rather than coarse infill material. It was determined that, due to the nature of these channel infill materials, the 'sparker' system would not achieve additional penetration and would have resulted in lower sub-bottom resolution across the site. The Client therefore decided to continue to acquire boomer data on all survey lines, with an option to obtain some trial 'sparker' data, upon completion of the survey. Following the coarse grid data acquisition, both boats began running prime line data acquisition (orientated north east-south west) within Section 2, with Freja starting from the northern section boundary moving southwards. Lia commenced acquisition from a mid-section line moving southwards.

On the 8th June 2010, following the completion of the first fisheries scouting survey, Freja began acquisition within Section 1, focussing on the prime lines (orientated south east – north west). A Fisheries Industry Representative (FIR) was assigned to the project at this time, to ease any conflict between active fisheries parties and Osiris Projects, and remained on the project for the duration of the works. Freja continued to acquire data within Section 1, ensuring that operations were carried out with minimal impact to fisheries activities. Several subsequent fisheries scouting surveys were completed by Brown and May, identifying and plotting any visible surface equipment. The survey of Section 1 passed without any conflict between parties, however Freja's sensors became entangled on two occasions. Freja continued to survey within Section 1 up to the 14th August 2010 and was subsequently demobilised from site. During this period, Lia continued to survey within sections 1 and 2, until all data acquisition was completed.

The GeoResources 'GeoSpark' system was mobilised to site on the 15th August 2010, in an attempt to achieve deeper penetration within the infill channel materials. A total of 25km of trial data was acquired on the 18th August 2010, following a period of adverse weather and Lia demobilised from site on the 19th August 2010.



#### 4.5 Survey Equipment

The following equipment was used during the survey:

<b>Item #</b>	<b>Equipment Utilised</b>	<b>MV Freja</b>	<b>MV Lia</b>
1	LEICA GX1230 Smartnet RTK	✓	✓
2	C-NAV 3050G dGPS		✓
3	C-NAV 2050R dGPS	✓	
4	TSS Meridian Gyro Compass	✓	✓
5	HEMISPHERE Crescent VS100 GPS Compass	✓	✓
6	QPS QINSy Navigation Software	✓	✓
7	GEOACOUSTICS Geoswath Swathe Bathymetry Echo Sounder	✓	✓
8	TSS DMS3-05 Motion Reference Unit (SN 39924)		✓
9	TSS DMS2-05 Motion Reference Unit (SN 4305 – 04/05/2010 to 11/06/2010)	✓	
10	TSS DMS2-05 Motion Reference Unit (SN 31161 – 12/06/2010 to 03/08/10)	✓	
11	VALEPORT Mini SV (SN 19307)	✓	
12	VALEPORT Mini SV (SN 23582)		✓
13	VALEPORT Monitor SVP (SN 23727)	✓	
14	VALEPORT Monitor SVP (SN 23728)		✓
15	SIMRAD EA400 Single Beam Echo Sounder		✓
16	KNUDSEN 320M Single Beam Echo Sounder	✓	
17	SONARDYNE Scout USBL System	✓	✓
18	SONARDYNE WSM Transponder	✓	✓
19	GEOMETRICS G882 Marine Magnetometer	✓	✓
20	GEOACOUSTICS SS941 Side Scan Sonar	✓	✓
21	AAE CSP 300/1000/500/1200D	✓	✓
22	AAE 200 Boomer Plate (Catamaran Mounted)	✓	✓
23	AAE 8 Element Hydrophone Streamer	✓	✓
24	CODA DA2000 Digital Acquisition System	✓	✓

Table 2. Table of equipment used

*The three systems most relevant to the archaeological assessment were the sub bottom profiler, side scan sonar and marine magnetometer.*

#### 4.5.1 Sub Bottom profiler

A combination of boomer and sparker systems were used for sub bottom profiling on the site.

The Boomer Sub-Profiling System that was used during this survey comprised of a CSP (300/500/1000/1200D) Portable Seismic Energy Source, an Applied Acoustics AA200 Boomer Plate, a CAT200 Catamaran and Applied Acoustics AAE 8 Element Hydrophone Streamer.

Data was acquired and processed through the Coda DA2000 Digital Data Acquisition System, for later post-processing and archiving.

An average velocity of  $1700 \text{ ms}^{-1}$  was used for all sub-bottom interpretation.

Boomer Settings Summary:

<b>System Power</b>	100 and 200 Joules
<b>Sweep Time</b>	200 ms
<b>Hydrophone</b>	AAE 8-element (365mm element spacing)
<b>Trigger Rate</b>	250 (100J) 333 (200J) Hz
<b>Layback from Towpoint</b>	20 m
<b>Recording Media</b>	CODA DA2000 (COD Format)

Table 3. Table of Boomer Settings

During the sparker trials, a Geo-Resources 'GeoSpark' Sparker Sub-bottom Profiling System was mobilised to site and utilised to attempt to provide greater depth penetration through the infill channels.

The system consists of four individually powered banks of submerged electrodes, each containing 50 sparker tips, mounted on a depth-adjustable, surface-towed catamaran. The catamaran is towed behind the vessel using a reinforced coaxial cable, whilst a towed hydrophone relays the reflected signals back to the processing unit on board the vessel.

The acoustic returns are detected by a 24 element hydrophone, which was towed parallel to the source catamaran astern of the vessel. This configuration was used in an attempt to minimise the direct source-receiver signal.

Raw data were recorded directly to the CODA DA2000 digital data acquisition systems, for later post-processing and archiving.

<b>System Power</b>	200 Joules
<b>Sweep Time</b>	250 mS
<b>Hydrophone</b>	Geo-Sense Mini Streamer
<b>Trigger Rate</b>	3 Hz
<b>Layback from Towpoint</b>	30 m
<b>Recording Media</b>	CODA DA2000 (COD Format)

Table 4. Table of Sparker Settings

#### 4.5.2 *Geoacoustics Side Scan Sonar*

A GeoAcoustics SS941 Side Scan Sonar System, together with a 159D dual frequency tow fish, was utilised for this aspect of the works. The GeoAcoustics Side Scan Sonar System offers a selectable frequency operation (110 or 410 kHz) enabling both long range, low-resolution scanning and short range, high-resolution investigations.

The system comprises SS941 transceiver and 159D towfish which houses a SS942 multiplexer and two 196D dual frequency transducers. Data is acquired, and processed through CODA GeoSurvey DA2000. The DA2000 system accepts input data from the SS941 system, together with data from the navigation computer, providing simultaneous yet independent display, processing and interpretation facilities.

The system was operated in high frequency at a maximum range scale of 80m per channel throughout the survey.

The side scan fish was positioned using a USBL system. A secondary manual layback system was also recorded which consisted of indicators positioned at regular intervals along the length of the Sidescan cable.

#### 4.5.3 *Marine Magnetometer*

A Geometrics G882 Caesium Vapour Marine Magnetometer was utilised to obtain magnetic data throughout the survey. The system incorporates a towed 'fish', which houses a total magnetic field sensor and CM221 Larmor counter. The unit provides absolute readings of total magnetic field, with a resolution of 0.004nT/Hz RMS.

The fish was towed at a known distance 50-120m (depending on water depth) from the survey vessel, and buoyed off at as necessary in the shallow water to prevent the towfish grounding on the seabed.

The position of the towfish was by USBL. All data acquired was logged to the navigation computer via an RS232 link and combined with positional data for later retrieval and post-processing.

#### 4.5.4 *Echo Sounder/Multibeam Echo Sounder*

The GeoAcoustics GeoSwath, high-frequency (250 kHz) interferometric swathe bathymetry system was the multibeam system used. It is specifically designed for shallow water (<100m) and under optimum conditions, enables bathymetry coverage of 300m swath width approximately 10 times water depth. However general achievable swathe widths of usable data are between 4 to 8 times, dependent on acoustic conditions. The system provides a cross track resolution of 1.5cm. The along track resolution is dependent upon vessel speed and the 'ping' length of the system and a typical along track resolution of <20cm can be achieved at a vessel speed of 2ms<sup>-1</sup> (~4 knots with 150m swath width).

The system comprises of a high spec Windows XP Central Processing Unit (CPU) running GeoSwath Plus software. The software is standalone and sensors providing position, heading, motion and sound velocity are all interfaced to the CPU.

The multibeam system was calibrated as per the manufacturer's recommendations to resolve the errors in system latency and misalignment between the transducers and peripheral equipment.

A Simrad EA400 Dual Frequency Hydrographic echo sounder was utilised, in order to provide a quality check on the absolute values obtained from the swathe bathymetry system on Lia.

Accurate single beam data can be invaluable in resolving any fixed offset and reduction issues that may occur during processing of the multi-beam data.

The echo sounder was operated in dual frequency mode, with both the 30 kHz and 200 kHz transducers working continuously. The unit produces a continuous digital output, enabling both data channels to be logged to disk at a rate of up to 10 Hz. The unit also records digital image files which can be post printed as hard copy if required. The general measurement precision of the instrument is reported to be  $\pm 0.12\%$  of full scale.

A Knudsen 320M Dual Frequency Hydrographic Echosounder was utilised in order to provide a quality check on the absolute values obtained from the swathe bathymetry system on Freja.

The single beam echo sounders were calibrated at the start and end of the survey, using the standard 'bar-check' method to ensure that values for transducer draft and acoustic velocity are correctly applied to the data.



## 5 ARCHAEOLOGICAL ASSESSMENT OF GEOPHYSICAL DATA

The programme of geophysical survey recorded a total of 4,860 design line kilometres comprising almost 1,000 side scan sonar line files

The first stage of the archaeological review of the geophysical data is analysis of the previously acquired geophysical data, namely; side scan sonar, magnetometer and sub bottom profiler data. Moore Marine Services has developed a methodology for post acquisition analysis of geophysical data which involves review of individual raw geophysical data through a number of processes. The data is reviewed in its own individual context and also in reference to the results of other techniques. The resulting information relating to the individual techniques can be cross referenced and displayed both in text and in graphic form.

- For side scan sonar data, all data is reviewed using both SonarWaz Map 5 and Coda software.
- For sub bottom profiler data, all data is also reviewed using both SonarWaz Map 5 and Coda software.
- For magnetometer data, all data is reviewed using Hypack 2010 and Surfer 8 software

### 5.1 Side Scan Sonar

Review of the side scan sonar data concluded that the seabed within the survey area appeared to be characterised by coarse sediments, ranging from clays to coarse gravels, with sandy ribbon ripple sediments and boulders.

There were 29 features of note in the survey area. 20 of these are of high archaeological significance and 9 are of moderate archaeological significance. The below table details the contact descriptions, its archaeological significance and suggested mitigation measures. The prefix RMP SSS applies to all Rampion Windfarms Side Scan Sonar contacts. A full description of all contacts are contained in Appendix 2.

Contact Number	Description	Easting	Northing	Archaeological Significance	Proposed Mitigation
RMP SSS 1	Unknown Wreck (1)	686522.2	5615377	High	Avoid
RMP SS 2	Unknown Debris (1)	688613.5	5617450	Moderate	Avoid
RMP SSS 3	Seafloor Scar	696338.4	5620372	Moderate	Avoid
RMP SSS 4	Ikeda/City of London (Wreck No. 20080)	694837.8	5620699	High	Avoid
RMP SSS 5	Unknown Debris (2)	693107.5	5626435	Moderate	Avoid

RMP SSS 6	Unknown Wreck (2)	693176.7	5622636	High	Avoid
RMP SSS 7	Unknown Debris (3)	692942.9	5623529	Moderate	Avoid
RMP SSS 8	Unknown Wreck (3)	693162.5	5622655	High	Avoid
RMP SSS 9	Pipeline (1)	688090.9	5632538	High	Avoid
RMP SSS 10	Unknown Debris (4)	691581.7	5611265	Moderate	Avoid
RMP SSS 11	Unknown Debris (5)	690844.3	5618387	Moderate	Avoid
RMP SSS 12	Trawler Wreck (Wreck No. 20059)	688512.1	5617422	High	Avoid
RMP SSS 13	Cable (1)	687701.5	5632565	Moderate	Avoid
RMP SSS 14	City of Waterford (Wreck No. 20056)	704116.3	5617766	High	Avoid
RMP SSS 15	Unknown Wreck (4)	689659.7	5611766	High	Avoid
RMP SSS 16	Steam Ship Wreck (Wreck No. 19991)	689749.5	5611770	High	Avoid
RMP SSS 17	HMS Minion (Wreck No. 20014)	695553.1	5613903	High	Avoid
RMP SSS 18	Unknown Wreck (5)	689637.4	5611750	High	Avoid
RMP SSS 19	Glenarm Head (Wreck No. 20012)	698516.1	5613990	High	Avoid
RMP SSS 20	Unknown Wreck (6)	689437.3	5610487	High	Avoid
RMP SSS 21	Cable (2)	695342.1	5616914	Moderate	Avoid
RMP SSS 22	Un Named Trawler (Wreck No. 20017)	702157.6	5614285	High	Avoid
RMP SSS 23	Coal Barge (Wreck No. 19975)	692534.5	5610734	High	Avoid
RMP SSS 24	Stanwold Wreck (Wreck No. 19998)	688446.3	5612544	High	Avoid
RMP SSS 25	Un Named Wreck (19996)	689062.3	5612133	High	Avoid
RMP SSS 26	Quail Wreck (Wreck No. 20000)	690449.5	5612682	High	Avoid
RMP SSS 27	Pagentum Wreck (Wreck No. 20001)	696853.4	5612973	High	Avoid
RMP SSS 28	Pipeline (2)	687732.8	5632517	Moderate	Avoid
RMP SSS 29	Ingo Wreck (Wreck No. 19998)	686522.2	5615377	High	Avoid

Table 5. Table of Side Scan Sonar Contacts

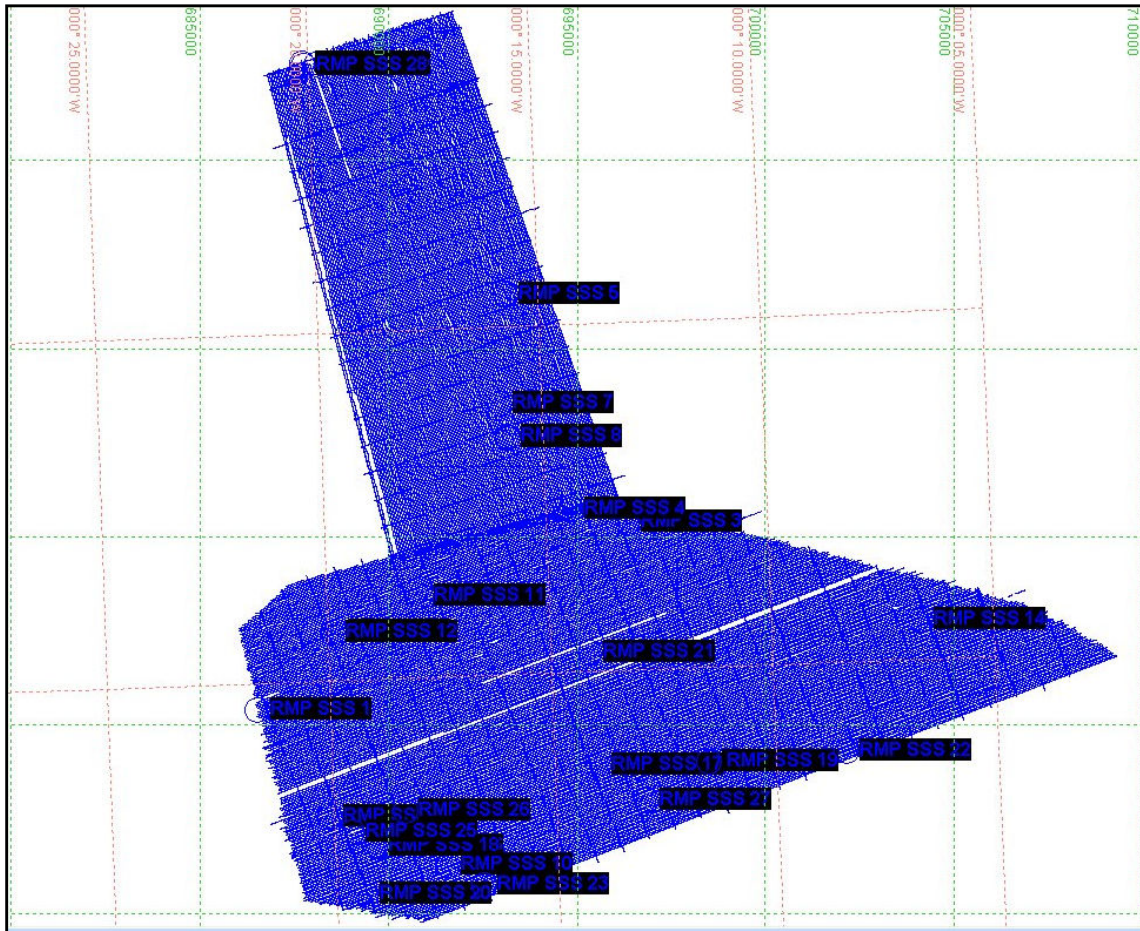


Figure 2. Side Scan Sonar Contacts

## 5.2 Marine Magnetometer

The marine magnetometer recorded 16 isolated ferrous contacts. These isolated contacts generally represented archaeological heritage with a large majority of the contacts recorded by the side scan sonar also recorded by the magnetometer. A number of the smaller side scan sonar contacts were not recorded by the magnetometer. This can be explained by the small size and low magnetic signature of the features and also the high magnetic signature of the background geology. A table detailing the results of the marine magnetometer survey is contained below. The prefix RMP Mag applies to all Rampion Windfarms Magnetometer contacts. It details the magnetic signature, its location and cross reference to the side scan sonar survey.

Contact Number	Description	Easting	Northing	SSS Reference	SSS
RMP Mag 1	High Magnetic Signature	687732.8	5632517	RMP SSS 28	Pipeline/Cable
RMP Mag 2	High Magnetic Signature	693162.5	5622655	RMP SSS 8	Wreck
RMP Mag 3	High Magnetic Signature	694837.8	5620699	RMP SSS 4	Ikeda/City of London
RMP Mag 4	High Magnetic Signature	704116.3	5617766	RMP SSS 14	City of Waterford
RMP Mag 5	High Magnetic Signature	702157.6	5614285	RMP SSS 22	Un Named Trawler
RMP Mag 6	High Magnetic Signature	698516.1	5613990	RMP SSS 19	Glenarm Wreck
RMP Mag 7	High Magnetic Signature	695342.1	5616914	RMP SSS 21	Cable/Pipeline
RMP Mag 8	High Magnetic Signature	695553.1	5613903	RMP SSS 17	HMS Minion
RMP Mag 9	High Magnetic Signature	692534.5	5610734	RMP SSS 23	Coal Barge Wreck
RMP Mag 10	High Magnetic Signature	690449.5	5612682	RMP SSS 26	Quail Wreck
RMP Mag 11	High Magnetic Signature	689637.4	5611750	RMP SSS 18	Unknown Wreck
RMP Mag 12	High Magnetic Signature	689062.3	5612133	RMP SSS 25	Unknown Wreck
RMP Mag 13	High Magnetic Signature	688446.3	5612544	RMP SSS 24	Stanwold Wreck
RMP Mag 14	High Magnetic Signature	688512.1	5617422	RMP SSS 12	Trawler Wreck
RMP Mag 15	High Magnetic Signature	686522.2	5615377	RMP SSS 29	Ingo Wreck

Table 6. Table of Magnetometer Contacts



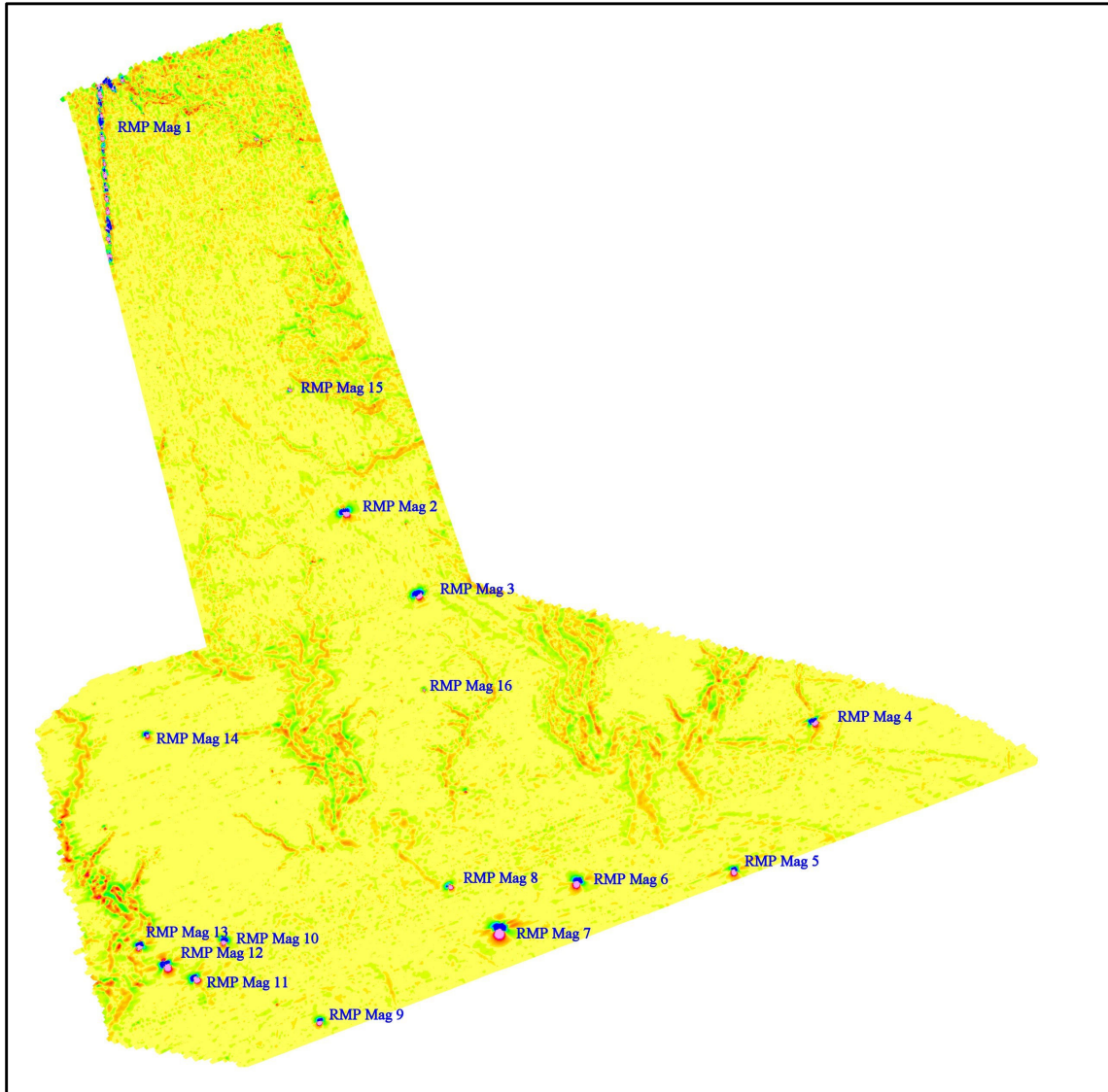


Figure 3. Rampion Magnetometer Contacts

### 5.3 Sub Bottom Profiler

Review of the Sub Bottom Profiler data concluded that whilst there were a number of shallow horizons, none were considered to be of archaeological significance. There was no apparent submerged archaeological heritage noted in these areas.

## 6 SUMMARY AND CONCLUSION

### 6.1 Summary

The desktop historical and archaeological assessment of the subject site indicated that there has been the site of continued human habitation since the Palaeolithic Period, with 123 Palaeolithic find spots in West Sussex alone. Most of these finds comprise mainly of hand axes and flakes. During the Neolithic period, around 4000BC, those communities that settled along the southern coast of Britain enjoyed access to large amounts of flint due to the large number of flint mines in Hampshire and West Sussex. The archaeological record around these mines testifies to a large number of flint tools being manufactured and from about 4300 BC to about 3400 BC the mining of flint for use locally and also for wider trade was a major activity in Neolithic Sussex. The discovery in 2009 of a Bronze Age vessel off the coast of Devon gave an insight into contemporary maritime activities. It was carrying an extremely valuable cargo of tin and hundreds of copper ingots from the Continent when it sank around the year 900BC. These craft and exotic artefacts found in Bronze Age burials testify to the increase in overseas trade across the English Channel. The arrival of the Iron Age saw increased trading and exchange contacts, between Britain and mainland Europe. The later Roman route into England was made easier because of these existing trade routes.

After an apparent sharp decline in maritime trade during the early post-Roman period, commercial trading activity with continental Europe was stimulated again from the late 6th century. The 8th and 9th centuries saw the greatest resurgence of European trade since the fall of the Roman Empire. Most of this trade relied on water transport and as a consequence urban settlements were revitalised along rivers and near to the coast, changing the character of the landscape/seascape. Between the 8th and 11th centuries, the distinctly maritime orientated Scandinavian influence spread widely across Europe and beyond, disrupting earlier trade patterns and patrons but creating new ones. The Norman conquest of 1066 reorientated England towards continental Western Europe and away from Scandinavian influence. It opened up important new trading areas for England, including the wine growing region of Gascony.

Throughout the medieval period, the location of shipbuilding sites seems to have been rather haphazard in England's landscape. The sites themselves were rudimentary, although ships were being built in simple docks from at least the 1330s. The 16th Century saw the Thames and surrounding region grow to become the shipbuilding capital of the country. In 1559 there were 520 shipwrights employed in the royal yard in the Thames and at Portsmouth. In later years, the English shipping industry underwent a particularly rapid development following the Seven Years War against France (1756-63), and the rate of English naval construction rapidly increased. During the mid 19th century, technological and economic

progress gained momentum with England as a world leader in the development of steam-powered ships and railways, and later the internal combustion engine and electrical power generation. England became one of the leading industrial powers of the 19th century, due in no small part to the strength of its shipping industry.

The geophysical survey of the site in question was undertaken using Osiris Projects dedicated survey vessels, MV Freja and MV Lia, during the period 4th May to 19th August 2010.

High-resolution side scan sonar, swath multi-beam, single beam bathymetry and magnetometer data were acquired along all survey lines, in order to accurately map the seabed within the wind farm area. Main survey lines were run at 50m centres, with cross lines at 750m centres. A total of 4,860 design line kilometres were acquired.

The archaeological assessment reviewed the following techniques: Side scan sonar, marine magnetometer and sub bottom profiler. There were 29 features of note on the side scan sonar survey data. 20 of these were of high archaeological significance and 9 were of moderate archaeological significance. On the magnetometer data, there were 15 recorded high magnetic contacts. All these were reflected in the side scan sonar record. The sub bottom profiler data recorded the presence of a number of palaeo-channels. None of these were deemed to be of archaeological significance.

## 6.2 Conclusion

The programme of desktop assessment concluded that the proposed site was of considerable archaeological significance with a number of known shipwrecks in the immediate area. Consequently it was deemed that the likelihood of there being archaeological material on the site was high.

The programme of geophysical data review noted that the data quality was generally good. It recorded the presence of 29 side scan sonar targets and 15 magnetometer targets. All the magnetometer targets cross referenced with known side scan sonar targets.

Consideration should be given to the establishment of exclusion – no construction zones surrounding the identified sites. The nature and extent of these exclusion zones should be developed in conjunction all relevant legislative, commercial and local parties.

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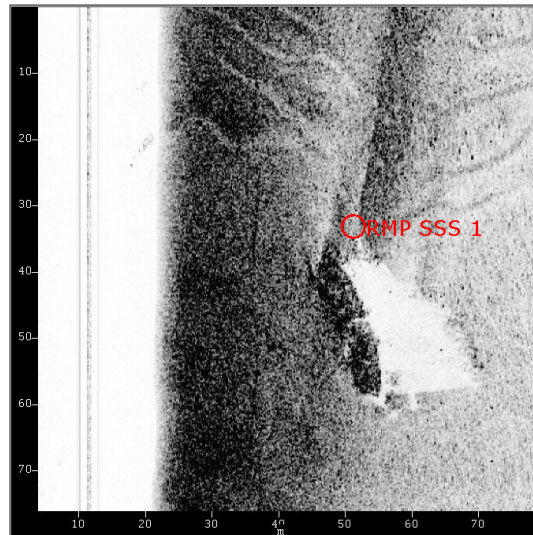
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## APPENDIX 2 SIDE SCAN SONAR CONTACTS

## RMP SSS 1

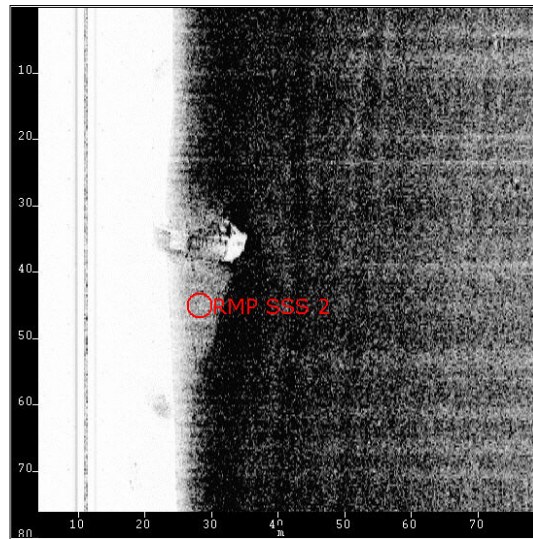
**Contact Info: RMP SSS 1**

- Sonar Time at Target: 06/02/2010 15:48:39
- Click Position (Lat/Lon Coordinates)  
50.6603355408 -0.3608759940 (WGS84)  
50.6603355408 17.3057171727 (Local)
- Click Position (Projected Coordinates)  
(X) 686522.19 (Y) 5615377.00
- Map Proj: UTM84-30N
- Acoustic Source File: E:\C10011\_Southern Array\Cod Files\All files Freja\020610.141333.cod
- Ping Number: 671149
- Range to Target: 39.57 Meters
- Fish Height: 9.70 Meters
- Heading: 258.900 degrees
- Event Number: 33763
- Line Name: 020610.141333

**User Entered Info**

Target Height: = 2 Meters  
 Target Length: 24 Meters  
 Target Shadow: 11 Meters  
 Target Width: 4 Meters  
 Mag Anomaly: No  
 Avoidance Area: Yes  
 Classification 1: Wreck  
 Classification 2:  
 Area:  
 Block:  
 Description: Unknown Wreck

## RMP SSS 2



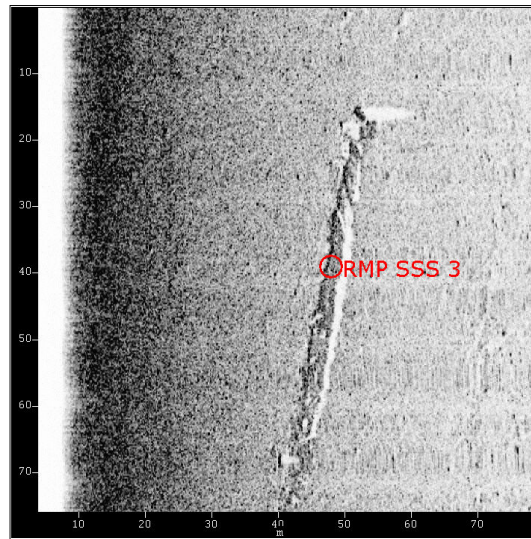
### Contact Info: RMP SSS 2

- Sonar Time at Target: 05/17/2010 12:11:31
- Click Position (Lat/Lon Coordinates)
  - 50.6782760620 -0.3302640021 (WGS84)
  - 50.6782760620 17.3363291646 (Local)
- Click Position (Projected Coordinates)
  - (X) 688613.44 (Y) 5617449.50
- Map Proj: UTM84-30N
- Acoustic Source File: E:\C10011\_Southern Array\Cod Files\All files Freja\170510.105659.cod
- Ping Number: 868079
- Range to Target: 17.02 Meters
- Fish Height: 12.25 Meters
- Heading: 64.100 degrees
- Event Number: 9618
- Line Name: 170510.105659

### User Entered Info

Target Height: = 0 Meters  
 Target Length: 10 Meters  
 Target Shadow: 0 Meters  
 Target Width: 6 Meters  
 Mag Anomaly: No  
 Avoidance Area: Yes  
 Classification 1: debris  
 Classification 2:  
 Area:  
 Block:  
 Description: Unknown Debris

## RMP SSS 3



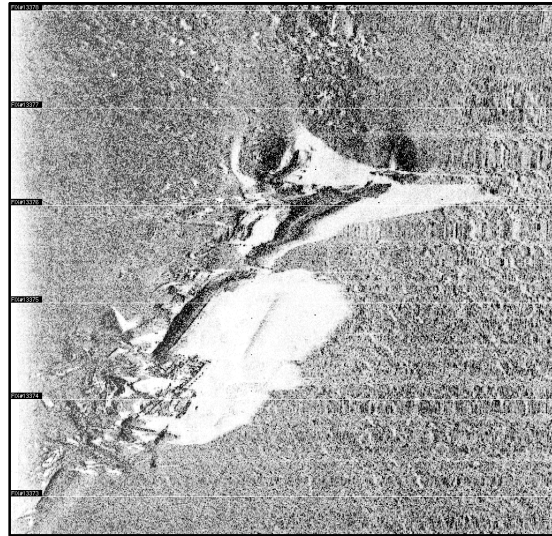
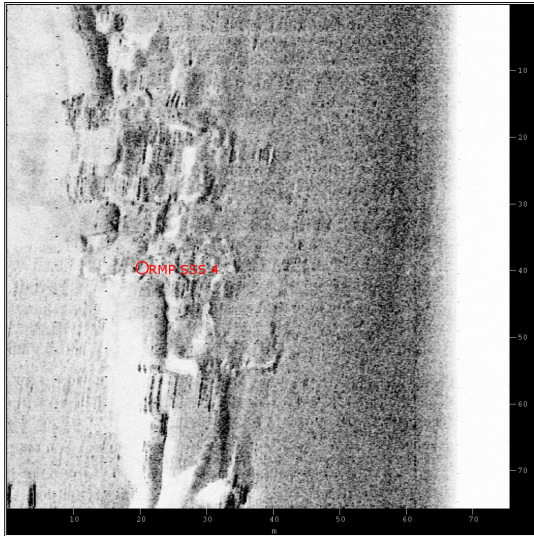
### Contact Info: RMP SSS 3

- Sonar Time at Target: 05/17/2010 14:49:46
- Click Position (Lat/Lon Coordinates)  
50.7019729614 -0.2195039988 (WGS84)  
50.7019729614 17.4470891679 (Local)
- Click Position (Projected Coordinates)  
(X) 696338.38 (Y) 5620372.00
- Map Proj: UTM84-30N
- Acoustic Source File: E:\C10011\_Southern Array\Cod Files\All files Freja\170510.131258.cod
- Ping Number: 901136
- Range to Target: 47.78 Meters
- Fish Height: 7.40 Meters
- Heading: 72.600 degrees
- Event Number: 9980
- Line Name: 170510.131258

### User Entered Info

Target Height: = 0 Meters  
 Target Length: 61 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly: No  
 Avoidance Area: Yes  
 Classification 1: Scar  
 Classification 2:  
 Area:  
 Block:  
 Description: 62m long seafloor scar

## RMP SSS 4



### Contact Info: RMP SSS 4

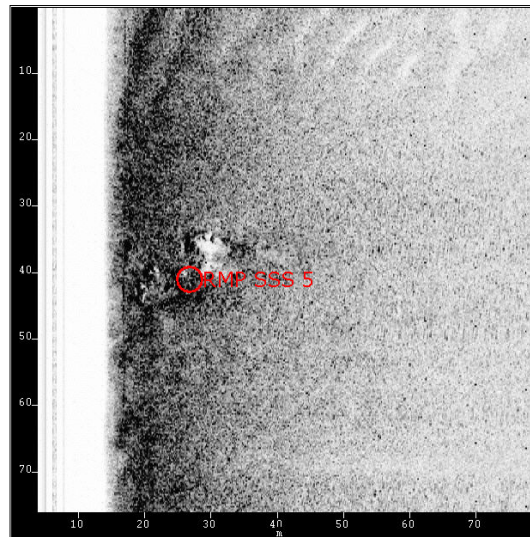
- Sonar Time at Target: 05/19/2010 13:34:07
- Click Position (Lat/Lon Coordinates)  
50.7054138184 -0.2405550033 (WGS84)  
50.7054138184 17.4260381634 (Local)
- Click Position (Projected Coordinates)  
(X) 694837.81 (Y) 5620699.00
- Map Proj: UTM84-30N
- Acoustic Source File: E:\C10011\_Southern Array\Cod Files\All files Freja\190510.122653.cod
- Ping Number: 1217739
- Range to Target: -59.17 Meters
- Fish Height: 11.75 Meters
- Heading: 248.100 degrees
- Event Number: 13451
- Line Name: 190510.122653

### User Entered Info

Target Height: = 0 Meters  
 Target Length: 81 Meters  
 Target Shadow: 0 Meters  
 Target Width: 20 Meters  
 Mag Anomaly: Yes  
 Avoidance Area: Yes  
 Classification 1: Wreck  
 Classification 2:  
 Area:  
 Block:  
 Description: Ikeda/City of London (Wreck No. 20080)



## RMP SSS 5



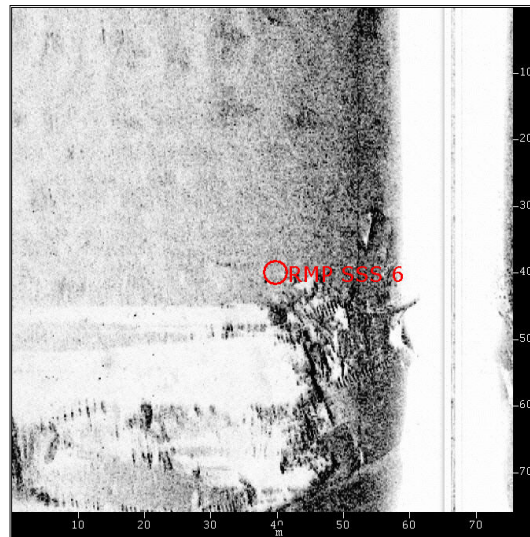
### Contact Info: RMP SSS 5

- Sonar Time at Target: 06/09/2010 16:28:55
- Click Position (Lat/Lon Coordinates)
  - 50.7575149536 -0.2620269954 (WGS84)
  - 50.7575149536 17.4045661712 (Local)
- Click Position (Projected Coordinates)
  - (X) 693107.56 (Y) 5626435.00
- Map Proj: UTM84-30N
- Acoustic Source File: E:\C10011\_Southern Array\Cod Files\All files Freja\090610.144714.cod
- Ping Number: 1958298
- Range to Target: 20.28 Meters
- Fish Height: 7.33 Meters
- Heading: 335.500 degrees
- Event Number: 45606
- Line Name: 090610.144714

### User Entered Info

Target Height: = 0 Meters  
 Target Length: 15 Meters  
 Target Shadow: 0 Meters  
 Target Width: 8 Meters  
 Mag Anomaly: No  
 Avoidance Area: Yes  
 Classification 1: debris  
 Classification 2:  
 Area:  
 Block:  
 Description:

## RMP SSS 6



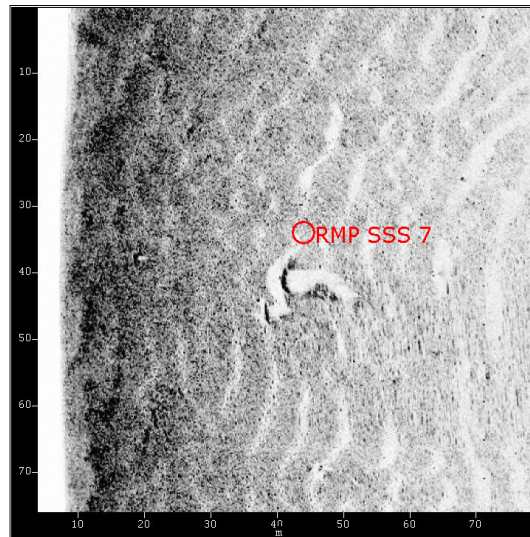
### Contact Info: RMP SSS 6

- Sonar Time at Target: 06/20/2010 11:35:48
- Click Position (Lat/Lon Coordinates)  
50.7233657837 -0.2630389929 (WGS84)  
50.7233657837 17.4035541738 (Local)
- Click Position (Projected Coordinates)  
(X) 693176.69 (Y) 5622635.50
- Map Proj: UTM84-30N
- Acoustic Source File: E:\C10011\_Southern Array\Cod Files\All files Freja\200610.101558.cod
- Ping Number: 2671889
- Range to Target: 26.86 Meters
- Fish Height: 7.42 Meters
- Heading: 357.400 degrees
- Event Number: 53713
- Line Name: 200610.101558

### User Entered Info

Target Height: = 0 Meters  
 Target Length: 82 Meters  
 Target Shadow: 0 Meters  
 Target Width: 31 Meters  
 Mag Anomaly: No  
 Avoidance Area: Yes  
 Classification 1: Wreck  
 Classification 2:  
 Area:  
 Block:  
 Description: Unknown Wreck

## RMP SSS 7



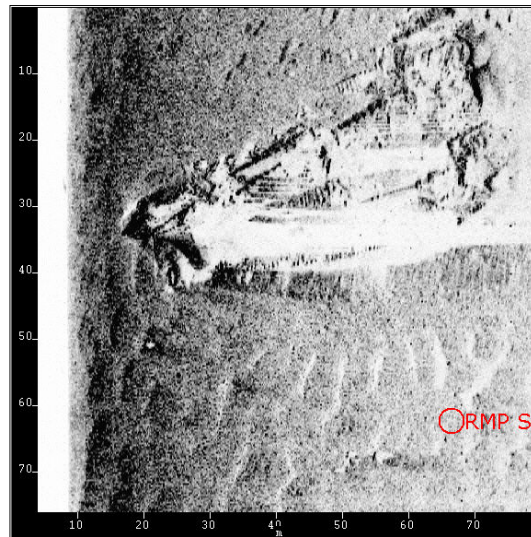
### Contact Info: RMP SSS 7

- Sonar Time at Target: 06/20/2010 11:43:15
- Click Position (Lat/Lon Coordinates)  
50.7314720154 -0.2658799887 (WGS84)  
50.7314720154 17.4007131780 (Local)
- Click Position (Projected Coordinates)  
(X) 692942.88 (Y) 5623529.50
- Map Proj: UTM84-30N
- Acoustic Source File: E:\C10011\_Southern Array\Cod  
Files\All files Freja\200610.101558.cod
- Ping Number: 2675956
- Range to Target: 43.19 Meters
- Fish Height: 6.21 Meters
- Heading: 0.400 degrees
- Event Number: 53758
- Line Name: 200610.101558

### User Entered Info

Target Height: = 0 Meters  
 Target Length: 10 Meters  
 Target Shadow: 0 Meters  
 Target Width: 13 Meters  
 Mag Anomaly: No  
 Avoidance Area: Yes  
 Classification 1: debris  
 Classification 2:  
 Area:  
 Block:  
 Description: Anomalous shaped debris

## RMP SSS 8



### Contact Info: RMP SSS 8

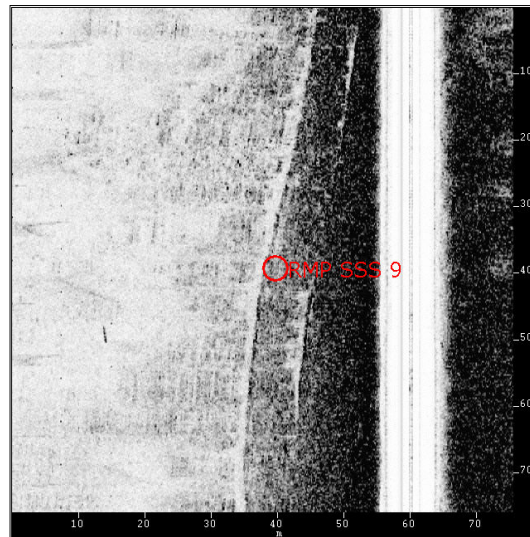
- Sonar Time at Target: 06/20/2010 14:07:00
- Click Position (Lat/Lon Coordinates)
  - 50.7235488892 -0.2632299960 (WGS84)
  - 50.7235488892 17.4033631707 (Local)
- Click Position (Projected Coordinates)
  - (X) 693162.44 (Y) 5622655.50
- Map Proj: UTM84-30N
- Acoustic Source File: E:\C10011\_Southern Array\Cod Files\All files Freja\200610.125043.cod
- Ping Number: 2745601
- Range to Target: 66.26 Meters
- Fish Height: 8.05 Meters
- Heading: 344.700 degrees
- Event Number: 54515
- Line Name: 200610.125043

### User Entered Info

Target Height: = 0 Meters  
 Target Length: 68 Meters  
 Target Shadow: 0 Meters  
 Target Width: 29 Meters  
 Mag Anomaly: Yes  
 Avoidance Area: Yes  
 Classification 1: Wreck  
 Classification 2:  
 Area:  
 Block:  
 Description: Unknown Wreck



## RMP SSS 9



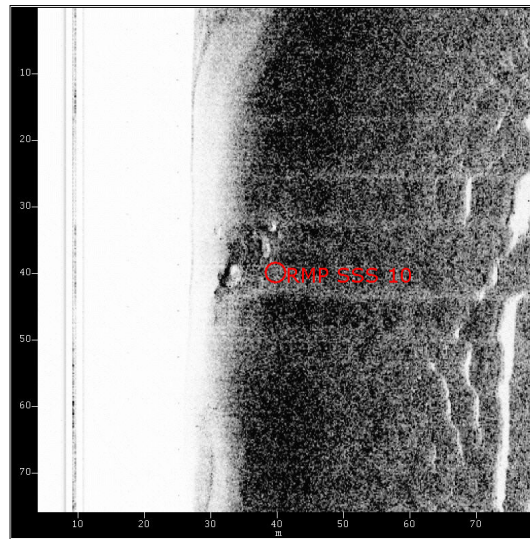
### Contact Info: RMP SSS 9

- Sonar Time at Target: 07/09/2010 10:25:21
- Click Position (Lat/Lon Coordinates)  
50.8139915466 -0.3299489915 (WGS84)  
50.8139915466 17.3366441751 (Local)
- Click Position (Projected Coordinates)  
(X) 688090.88 (Y) 5632538.00
- Map Proj: UTM84-30N
- Acoustic Source File: E:\C10011\_Southern Array\Cod Files\All files Freja\090710.092344.cod
- Ping Number: 3430465
- Range to Target: 20.49 Meters
- Fish Height: 2.93 Meters
- Heading: 155.600 degrees
- Event Number: 91877
- Line Name: 090710.092344

### User Entered Info

Target Height: = 0 Meters  
 Target Length: 0 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly: No  
 Avoidance Area: Yes  
 Classification 1:  
 Classification 2:  
 Area:  
 Block:  
 Description: Pipeline/Cable

## RMP SSS 10



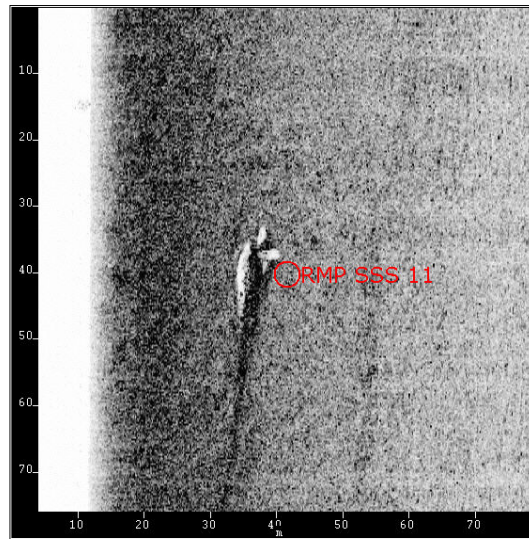
### Contact Info: RMP SSS 10

- Sonar Time at Target: 05/22/2010 13:24:58
- Click Position (Lat/Lon Coordinates)  
50.6217498779 -0.2914980054 (WGS84)  
50.6217498779 17.3750951613 (Local)
- Click Position (Projected Coordinates)  
(X) 691581.75 (Y) 5611264.50
- Map Proj: UTM84-30N
- Acoustic Source File: E:\C10011\_Southern Array\Cod Files\All files Freja\220510.121341.cod
- Ping Number: 102536
- Range to Target: 30.27 Meters
- Fish Height: 17.71 Meters
- Heading: 345.900 degrees
- Event Number: 19381
- Line Name: 220510.121341

### User Entered Info

Target Height: = 0 Meters  
 Target Length: 13 Meters  
 Target Shadow: 0 Meters  
 Target Width: 10 Meters  
 Mag Anomaly: No  
 Avoidance Area: Yes  
 Classification 1: debris  
 Classification 2:  
 Area:  
 Block:  
 Description: Debris

## RMP SSS 11



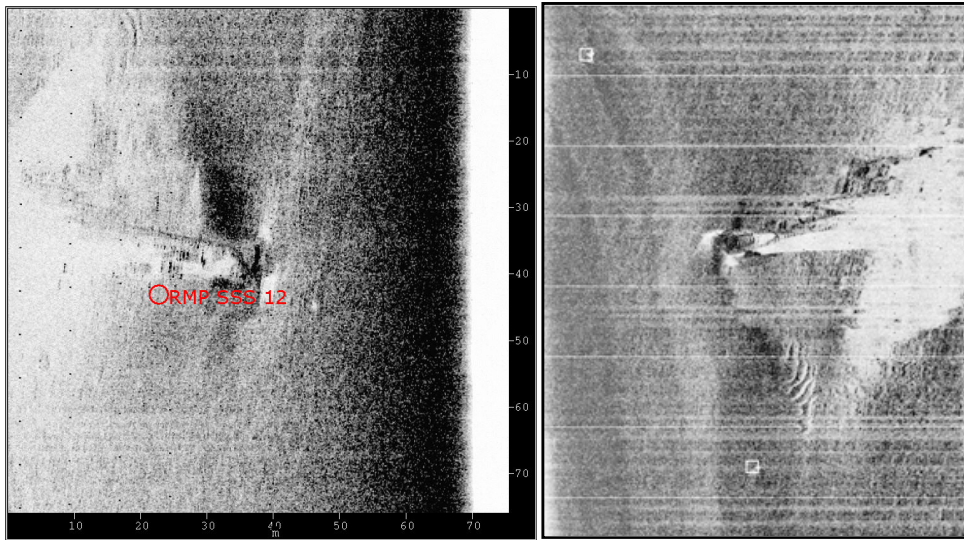
### Contact Info: RMP SSS 11

- Sonar Time at Target: 05/24/2010 16:23:28
- Click Position (Lat/Lon Coordinates)  
50.6859664917 -0.2982409894 (WGS84)  
50.6859664917 17.3683521772 (Local)
- Click Position (Projected Coordinates)  
(X) 690844.31 (Y) 5618386.50
- Map Proj: UTM84-30N
- Acoustic Source File: E:\C10011\_Southern Array\Cod Files\All files Freja\240510.145059.cod
- Ping Number: 665791
- Range to Target: 41.45 Meters
- Fish Height: 11.54 Meters
- Heading: 75.000 degrees
- Event Number: 25553
- Line Name: 240510.145059

### User Entered Info

Target Height: = 1 Meters  
 Target Length: 15 Meters  
 Target Shadow: 3 Meters  
 Target Width: 3 Meters  
 Mag Anomaly: No  
 Avoidance Area: Yes  
 Classification 1: Unknown  
 Classification 2:  
 Area:  
 Block:  
 Description: Debris

## RMP SSS 12



### Contact Info: RMP SSS 12

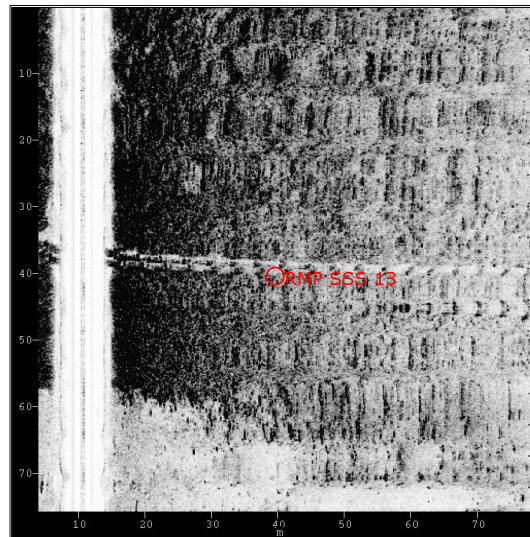
- Sonar Time at Target: 05/27/2010 09:53:40
- Click Position (Lat/Lon Coordinates)  
50.6780662537 -0.3317120075 (WGS84)  
50.6780662537 17.3348811591 (Local)
- Click Position (Projected Coordinates)  
(X) 688512.06 (Y) 5617422.50
- Map Proj: UTM84-30N
- Acoustic Source File: E:\C10011\_Southern Array\Cod Files\All files Freja\270510.072146.cod
- Ping Number: 738099
- Range to Target: -55.80 Meters
- Fish Height: 8.54 Meters
- Heading: 251.300 degrees
- Event Number: 550
- Line Name: 270510.072146

### User Entered Info

Target Height: = 0 Meters  
 Target Length: 32 Meters  
 Target Shadow: 0 Meters  
 Target Width: 6 Meters  
 Mag Anomaly: Yes  
 Avoidance Area: Yes  
 Classification 1: Wreck  
 Classification 2:  
 Area:  
 Block:  
 Description: Trawler Wreck (Wreck No 20059)



## RMP SSS 13



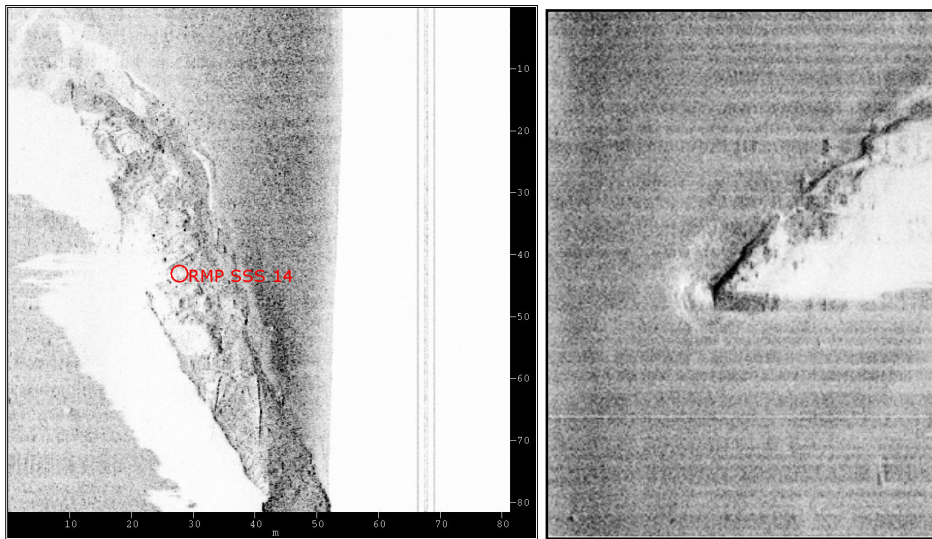
### Contact Info: RMP SSS 13

- Sonar Time at Target: 07/27/2010 12:30:42
- Click Position (Lat/Lon Coordinates)
  - 50.8143539429 -0.3354560137 (WGS84)
  - 50.8143539429 17.3311371530 (Local)
- Click Position (Projected Coordinates)
  - (X) 687701.50 (Y) 5632565.00
- Map Proj: UTM84-30N
- Acoustic Source File: E:\C10011\_Southern Array\Cod Files\All files Freja\270710.112015.cod
- Ping Number: 3571258
- Range to Target: 29.03 Meters
- Fish Height: 1.09 Meters
- Heading: 64.400 degrees
- Event Number: 106130
- Line Name: 270710.112015

### User Entered Info

Target Height: = 0 Meters  
 Target Length: 0 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly: No  
 Avoidance Area: Yes  
 Classification 1: Cable  
 Classification 2:  
 Area:  
 Block:  
 Description: Cable

## RMP SSS 14



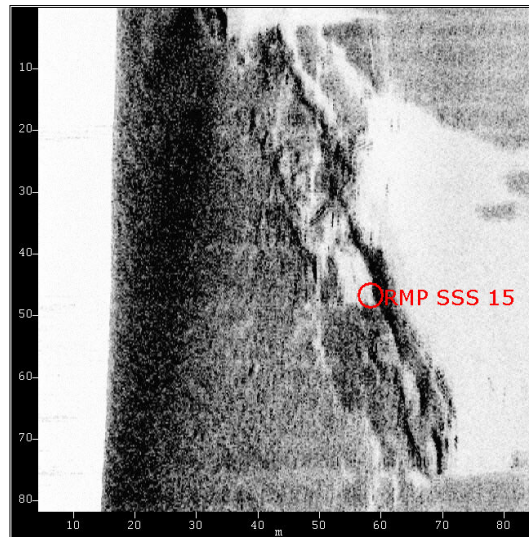
### Contact Info: RMP SSS 14

- Sonar Time at Target: 05/13/2010 15:10:23
- Click Position (Lat/Lon Coordinates)  
50.6758842468 -0.1109400019 (WGS84)  
50.6758842468 17.5556531648 (Local)
- Click Position (Projected Coordinates)  
(X) 704116.31 (Y) 5617765.50
- Map Proj: UTM84-30N
- Acoustic Source File: E:\C10011\_Southern Array\Cod Files\All Files Lia\130510.135958.cod
- Ping Number: 328684
- Range to Target: -40.03 Meters
- Fish Height: 14.76 Meters
- Heading: 75.700 degrees
- Event Number: 4009
- Line Name: 130510.135958

### User Entered Info

Target Height: = 9 Meters  
 Target Length: 85 Meters  
 Target Shadow: 15 Meters  
 Target Width: 13 Meters  
 Mag Anomaly: Yes  
 Avoidance Area: Yes  
 Classification 1: Wreck  
 Classification 2:  
 Area:  
 Block:  
 Description: City of Waterford (Wreck No 20056)

## RMP SSS 15



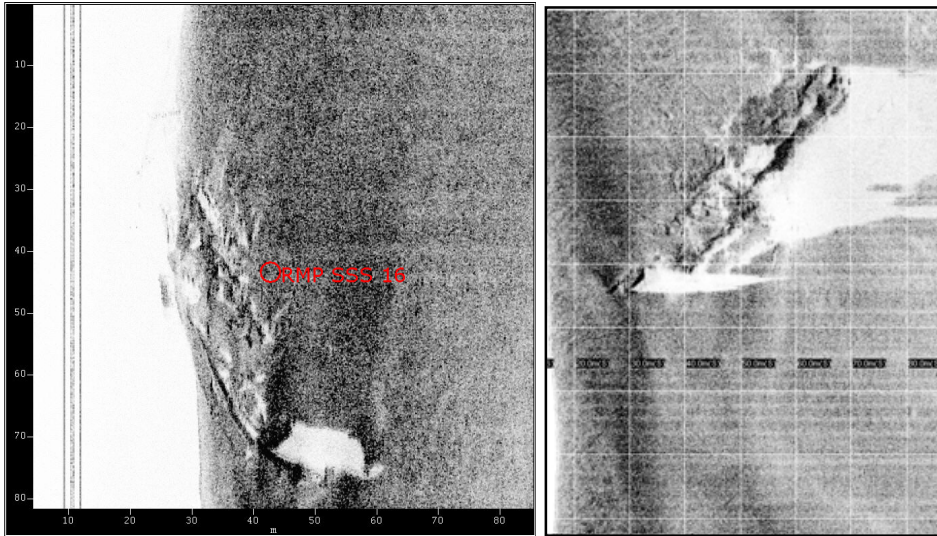
### Contact Info: RMP SSS 15

- Sonar Time at Target: 05/15/2010 14:07:47
- Click Position (Lat/Lon Coordinates)  
50.6268806458 -0.3183830082 (WGS84)  
50.6268806458 17.3482101584 (Local)
- Click Position (Projected Coordinates)  
(X) 689659.69 (Y) 5611766.00
- Map Proj: UTM84-30N
- Acoustic Source File: E:\C10011\_Southern Array\Cod  
Files\All Files Lia\150510.130532.cod
- Ping Number: 788302
- Range to Target: 56.45 Meters
- Fish Height: 14.46 Meters
- Heading: 253.100 degrees
- Event Number: 9457
- Line Name: 150510.130532

### User Entered Info

Target Height: = 0 Meters  
 Target Length: 83 Meters  
 Target Shadow: 0 Meters  
 Target Width: 17 Meters  
 Mag Anomaly: No  
 Avoidance Area: Yes  
 Classification 1: Wreck  
 Classification 2:  
 Area:  
 Block:  
 Description: Unknown Wreck

## RMP SSS 16



### Contact Info: RMP SSS 16

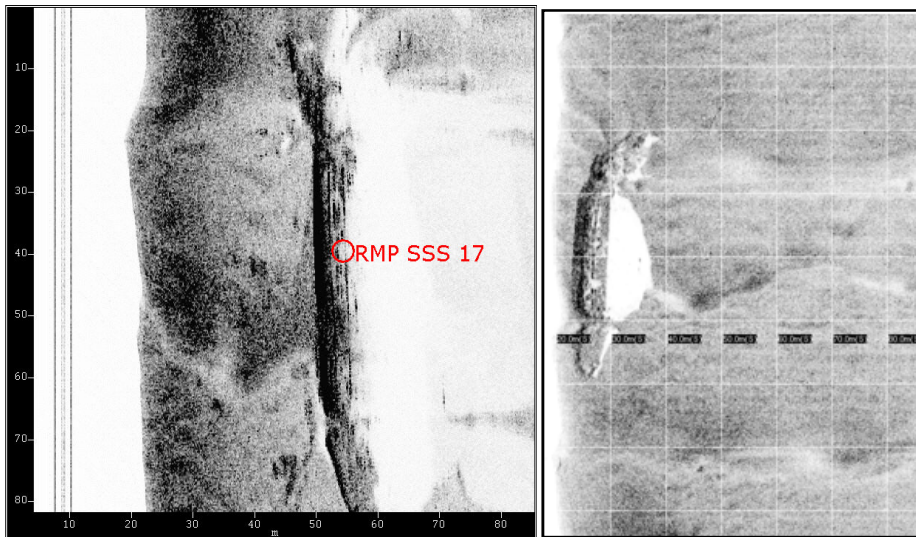
- Sonar Time at Target: 05/17/2010 08:43:51
- Click Position (Lat/Lon Coordinates)  
50.6268844604 -0.3171130121 (WGS84)  
50.6268844604 17.3494801546 (Local)
- Click Position (Projected Coordinates)  
(X) 689749.44 (Y) 5611769.50
- Map Proj: UTM84-30N
- Acoustic Source File: E:\C10011\_Southern Array\Cod  
Files\All Files Lia\170510.072339.cod
- Ping Number: 877367
- Range to Target: 32.06 Meters
- Fish Height: 18.28 Meters
- Heading: 69.200 degrees
- Event Number: 10517
- Line Name: 170510.072339

### User Entered Info

Target Height: = 0 Meters  
 Target Length: 54 Meters  
 Target Shadow: 0 Meters  
 Target Width: 18 Meters  
 Mag Anomaly: No  
 Avoidance Area: Yes  
 Classification 1: Wreck  
 Classification 2:  
 Area:  
 Block:  
 Description: Steam Ship Wreck, (Wreck No. 19991)



## RMP SSS 17



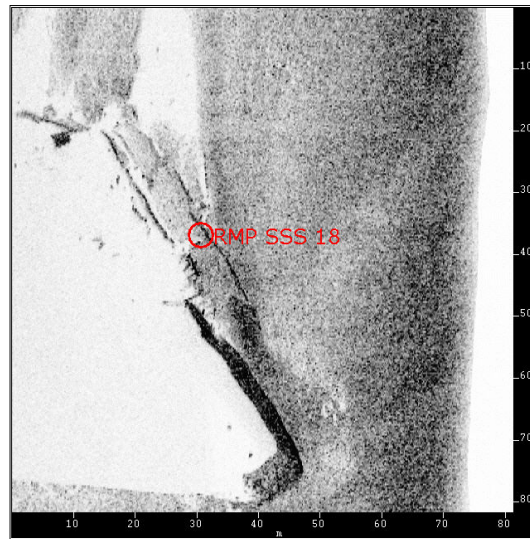
### Contact Info: RMP SSS 17

- Sonar Time at Target: 05/18/2010 08:47:08
- Click Position (Lat/Lon Coordinates)  
50.6441307068 -0.2340299934 (WGS84)  
50.6441307068 17.4325631733 (Local)
- Click Position (Projected Coordinates)  
(X) 695553.06 (Y) 5613903.50
- Map Proj: UTM84-30N
- Acoustic Source File: E:\C10011\_Southern Array\Cod  
Files\All Files Lia\180510.072228.cod
- Ping Number: 1054008
- Range to Target: 45.35 Meters
- Fish Height: 12.50 Meters
- Heading: 253.600 degrees
- Event Number: 12617
- Line Name: 180510.072228

### User Entered Info

Target Height: = 5 Meters  
 Target Length: 82 Meters  
 Target Shadow: 28 Meters  
 Target Width: 8 Meters  
 Mag Anomaly: Yes  
 Avoidance Area: Yes  
 Classification 1: Wreck  
 Classification 2:  
 Area:  
 Block:  
 Description: HMS Minion (Wreck No. 20014)

## RMP SSS 18



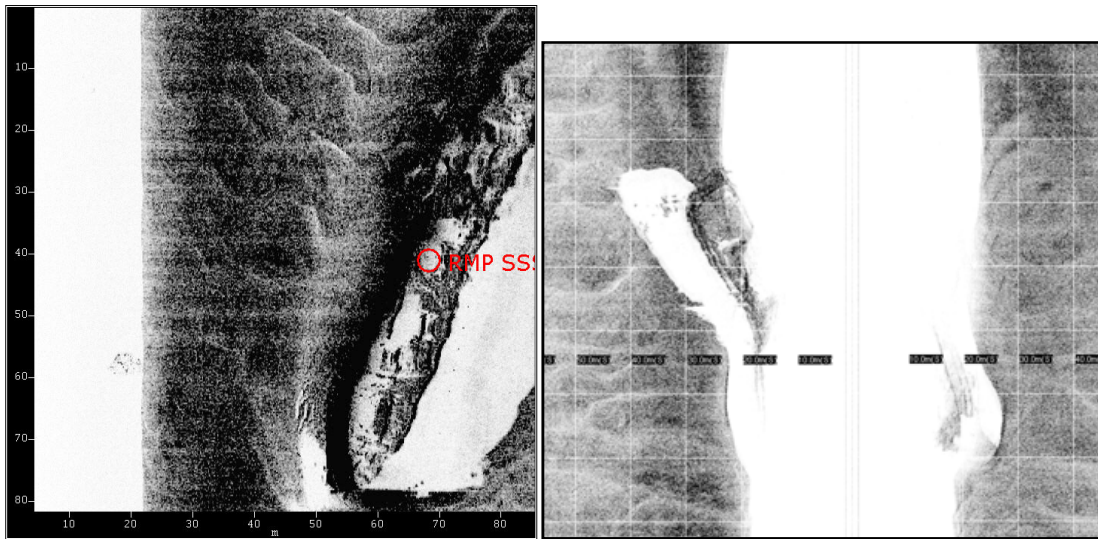
### Contact Info: RMP SSS 18

- Sonar Time at Target: 05/18/2010 15:41:34
- Click Position (Lat/Lon Coordinates)  
50.6267433167 -0.3187049925 (WGS84)  
50.6267433167 17.3478881741 (Local)
- Click Position (Projected Coordinates)  
(X) 689637.44 (Y) 5611750.00
- Map Proj: UTM84-30N
- Acoustic Source File: E:\C10011\_Southern Array\Cod Files\All Files Lia\180510.142807.cod
- Ping Number: 1254870
- Range to Target: -54.35 Meters
- Fish Height: 9.54 Meters
- Heading: 249.500 degrees
- Event Number: 15006
- Line Name: 180510.142807

### User Entered Info

Target Height: = 12 Meters  
 Target Length: 79 Meters  
 Target Shadow: 31 Meters  
 Target Width: 10 Meters  
 Mag Anomaly: Yes  
 Avoidance Area: Yes  
 Classification 1: Wreck  
 Classification 2:  
 Area:  
 Block:  
 Description: Unknown Wreck

## RMP SSS 19



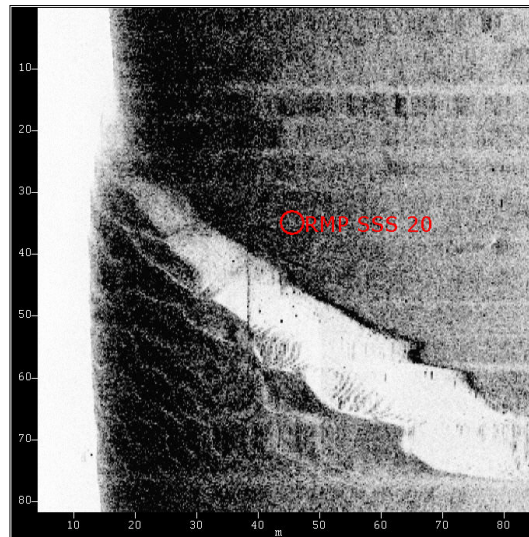
### Contact Info: RMP SSS 19

- Sonar Time at Target: 06/02/2010 15:19:27
- Click Position (Lat/Lon Coordinates)  
50.6439056396 -0.1921270043 (WGS84)  
50.6439056396 17.4744661624 (Local)
- Click Position (Projected Coordinates)  
(X) 698516.13 (Y) 5613989.50
- Map Proj: UTM84-30N
- Acoustic Source File: E:\C10011\_Southern Array\Cod  
Files\All Files Lia\020610.123430.cod
- Ping Number: 3226300
- Range to Target: 68.11 Meters
- Fish Height: 21.58 Meters
- Heading: 249.900 degrees
- Event Number: 38812
- Line Name: 020610.123430

### User Entered Info

Target Height: = 4 Meters  
 Target Length: 74 Meters  
 Target Shadow: 17 Meters  
 Target Width: 10 Meters  
 Mag Anomaly: Yes  
 Avoidance Area: Yes  
 Classification 1: Wreck  
 Classification 2:  
 Area:  
 Block:  
 Description: Glenarm Head (Wreck No. 20012)

## RMP SSS 20



### Contact Info: RMP SSS 20

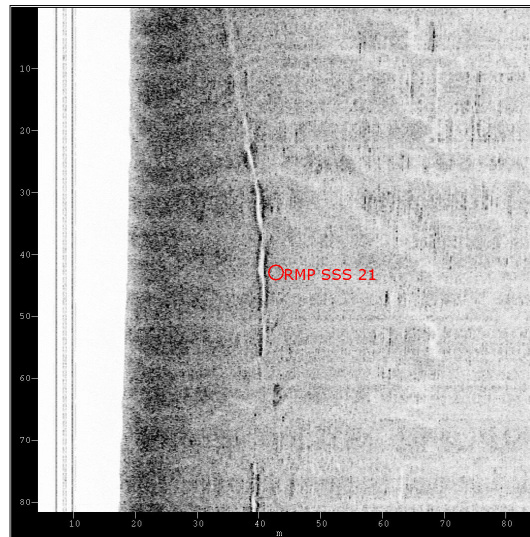
- Sonar Time at Target: 06/02/2010 16:44:03
- Click Position (Lat/Lon Coordinates)  
50.6154632568 -0.3221769929 (WGS84)  
50.6154632568 17.3444161738 (Local)
- Click Position (Projected Coordinates)  
(X) 689437.25 (Y) 5610487.50
- Map Proj: UTM84-30N
- Acoustic Source File: E:\C10011\_Southern Array\Cod  
Files\All Files Lia\020610.141957.cod
- Ping Number: 3268955
- Range to Target: 45.37 Meters
- Fish Height: 12.30 Meters
- Heading: 253.600 degrees
- Event Number: 39320
- Line Name: 020610.141957

### User Entered Info

Target Height: = 0 Meters  
 Target Length: 84 Meters  
 Target Shadow: 0 Meters  
 Target Width: 14 Meters  
 Mag Anomaly: No  
 Avoidance Area: Yes  
 Classification 1: Wreck  
 Classification 2:  
 Area:  
 Block:  
 Description: Unknown Wreck



## RMP SSS 21



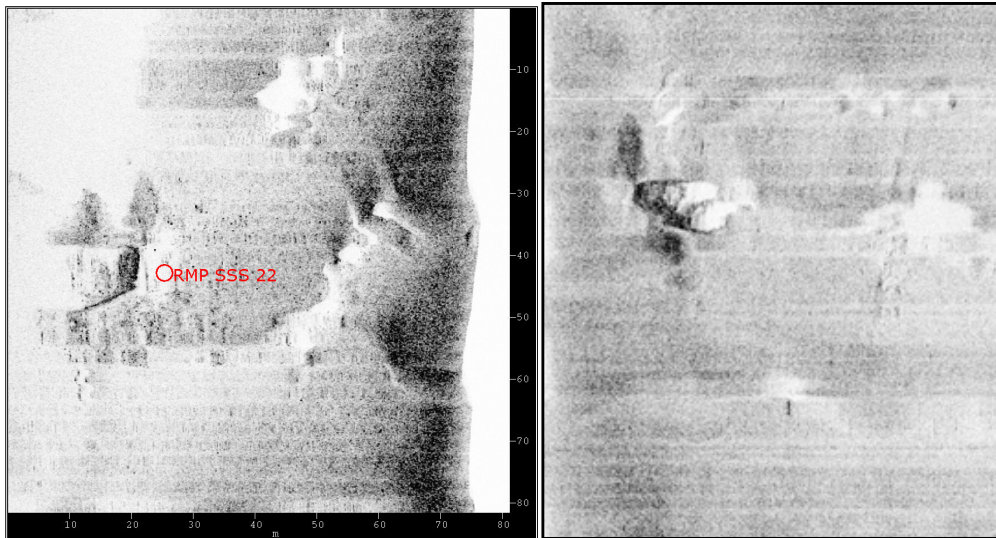
### Contact Info: RMP SSS 21

- Sonar Time at Target: 06/18/2010 13:51:52
- Click Position (Lat/Lon Coordinates)
  - 50.6712493896 -0.2354220003 (WGS84)
  - 50.6712493896 17.4311711664 (Local)
- Click Position (Projected Coordinates)
  - (X) 695342.06 (Y) 5616914.50
- Map Proj: UTM84-30N
- Acoustic Source File: E:\C10011\_Southern Array\Cod Files\All Files Lia\180610.113308.cod
- Ping Number: 5002275
- Range to Target: 34.23 Meters
- Fish Height: 10.07 Meters
- Heading: 249.000 degrees
- Event Number: 62726
- Line Name: 180610.113308

### User Entered Info

Target Height: = 0 Meters  
 Target Length: 85 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly: Yes  
 Avoidance Area: Yes  
 Classification 1: cable  
 Classification 2:  
 Area:  
 Block:  
 Description: Cable

## RMP SSS 22



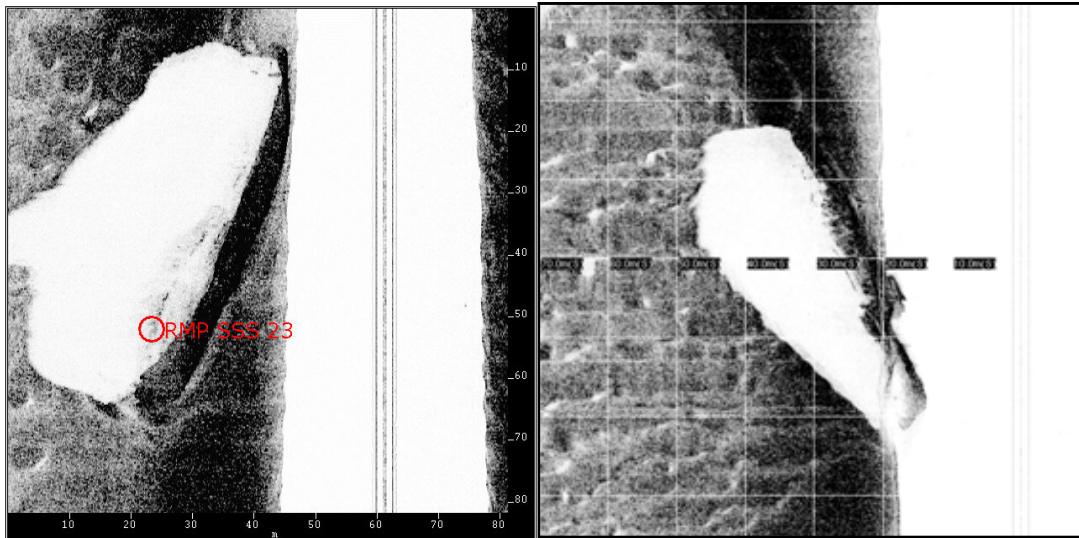
### Contact Info: RMP SSS 22

- Sonar Time at Target: 06/22/2010 17:01:27
- Click Position (Lat/Lon Coordinates)  
50.6453056335 -0.1405279934 (WGS84)  
50.6453056335 17.5260651732 (Local)
- Click Position (Projected Coordinates)  
(X) 702157.56 (Y) 5614284.50
- Map Proj: UTM84-30N
- Acoustic Source File: E:\C10011\_Southern Array\Cod Files\All Files Lia\220610.143030.cod
- Ping Number: 5874379
- Range to Target: 60.12 Meters
- Fish Height: 9.41 Meters
- Heading: 253.200 degrees
- Event Number: 72994
- Line Name: 220610.143030

### User Entered Info

Target Height: = 0 Meters  
 Target Length: 19 Meters  
 Target Shadow: 0 Meters  
 Target Width: 10 Meters  
 Mag Anomaly: Yes  
 Avoidance Area: Yes  
 Classification 1: Wreck  
 Classification 2:  
 Area:  
 Block:  
 Description: Unnamed Trawler (Wreck No 20017)

## RMP SSS 23



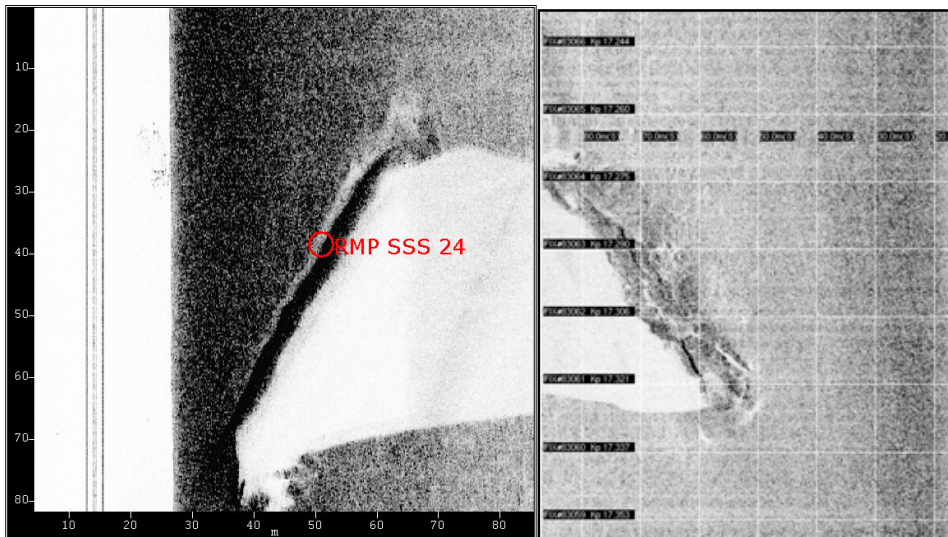
### Contact Info: RMP SSS 23

- Sonar Time at Target: 06/23/2010 13:49:09
- Click Position (Lat/Lon Coordinates)  
50.6166725159 -0.2783200145 (WGS84)  
50.6166725159 17.3882731522 (Local)
- Click Position (Projected Coordinates)  
(X) 692534.44 (Y) 5610734.50
- Map Proj: UTM84-30N
- Acoustic Source File: E:\C10011\_Southern Array\Cod  
Files\All Files Lia\230610.122829.cod
- Ping Number: 6076209
- Range to Target: -37.93 Meters
- Fish Height: 15.85 Meters
- Heading: 251.900 degrees
- Event Number: 74886
- Line Name: 230610.122829

### User Entered Info

Target Height: = 58 Meters  
 Target Length: 63 Meters  
 Target Shadow: 30 Meters  
 Target Width: 9 Meters  
 Mag Anomaly: Yes  
 Avoidance Area: Yes  
 Classification 1: Wreck  
 Classification 2:  
 Area:  
 Block:  
 Description: Coal Barge (Wreck No 19975)

## RMP SSS 24



### Contact Info: RMP SSS 24

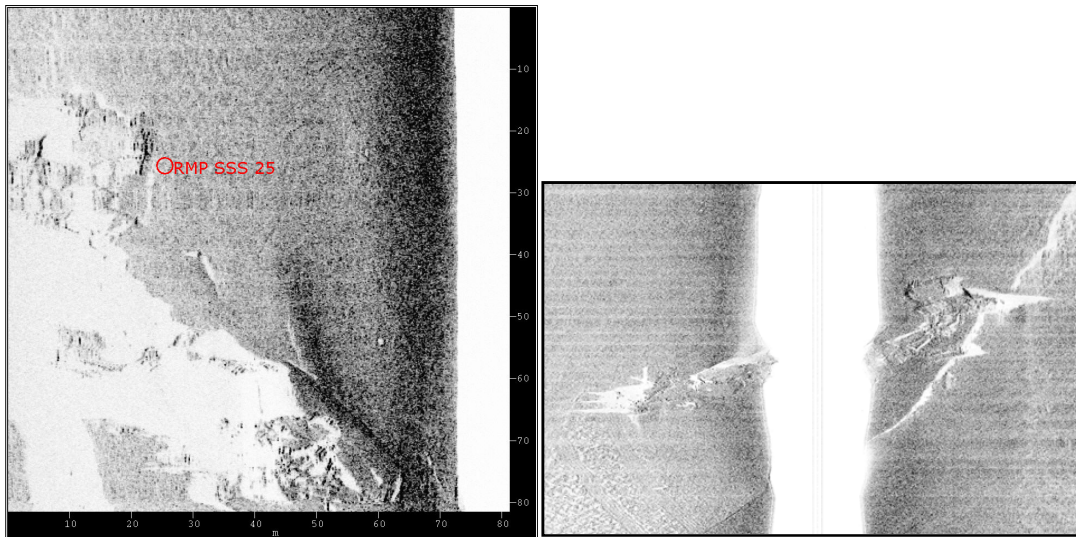
- Sonar Time at Target: 06/27/2010 09:02:02
- Click Position (Lat/Lon Coordinates)  
50.6342582703 -0.3351239860 (WGS84)  
50.6342582703 17.3314691807 (Local)
- Click Position (Projected Coordinates)  
(X) 688446.31 (Y) 5612543.50
- Map Proj: UTM84-30N
- Acoustic Source File: E:\C10011\_Southern Array\Cod Files\All Files Lia\270610.075253.cod
- Ping Number: 6839832
- Range to Target: 36.71 Meters
- Fish Height: 0.23 Meters
- Heading: 70.700 degrees
- Event Number: 83959
- Line Name: 270610.075253

### User Entered Info

Target Height: = 0 Meters  
 Target Length: 61 Meters  
 Target Shadow: 43 Meters  
 Target Width: 4 Meters  
 Mag Anomaly: Yes  
 Avoidance Area: Yes  
 Classification 1: Wreck  
 Classification 2:  
 Area:  
 Block:  
 Description: Stanwold Wreck (Wreck 19998)



## RMP SSS 25



### Contact Info: RMP SSS 25

- Sonar Time at Target: 07/01/2010 16:33:30
- Click Position (Lat/Lon Coordinates)  
50.6303672791 -0.3266319931 (WGS84)  
50.6303672791 17.3399611736 (Local)
- Click Position (Projected Coordinates)  
(X) 689062.38 (Y) 5612133.00
- Map Proj: UTM84-30N
- Acoustic Source File: E:\C10011\_Southern Array\Cod Files\All Files Lia\010710.151403.cod
- Ping Number: 7965016
- Range to Target: -60.10 Meters
- Fish Height: 12.59 Meters
- Heading: 68.600 degrees
- Event Number: 97325
- Line Name: 010710.151403

### User Entered Info

Target Height: = 3 Meters  
 Target Length: 98 Meters  
 Target Shadow: 10 Meters  
 Target Width: 28 Meters  
 Mag Anomaly: Yes  
 Avoidance Area: Yes  
 Classification 1: Wreck  
 Classification 2:  
 Area:  
 Block:  
 Description: Unknown Wreck (Wreck No. 19996)

## RMP SSS 26



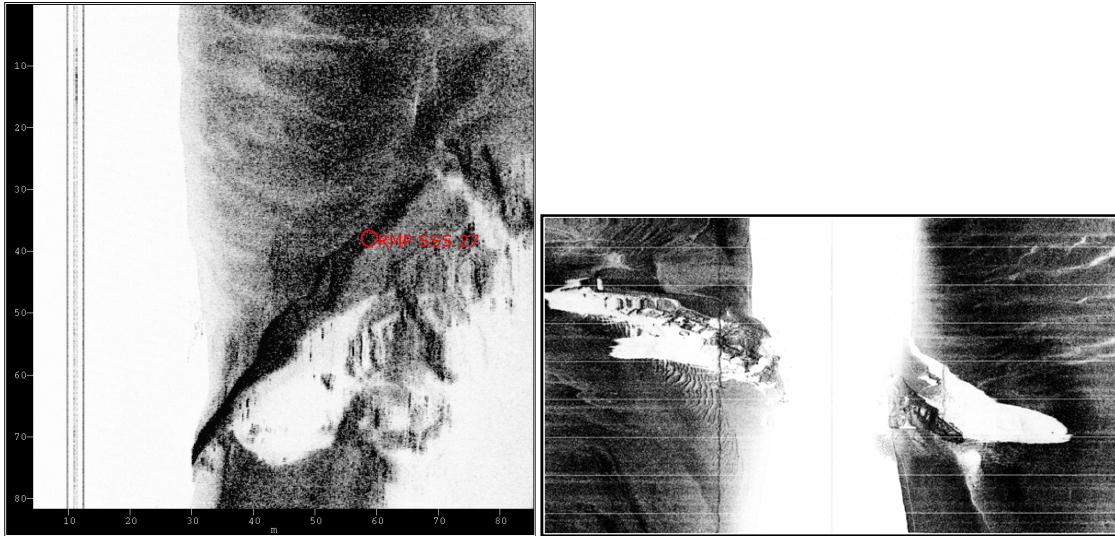
### Contact Info: RMP SSS 26

- Sonar Time at Target: 07/01/2010 16:50:42
- Click Position (Lat/Lon Coordinates)  
50.6348495483 -0.3067589998 (WGS84)  
50.6348495483 17.3598341668 (Local)
- Click Position (Projected Coordinates)  
(X) 690449.50 (Y) 5612682.00
- Map Proj: UTM84-30N
- Acoustic Source File: E:\C10011\_Southern Array\Cod Files\All Files Lia\010710.151403.cod
- Ping Number: 7973693
- Range to Target: -81.52 Meters
- Fish Height: 18.98 Meters
- Heading: 68.000 degrees
- Event Number: 97428
- Line Name: 010710.151403

### User Entered Info

Target Height: = 0 Meters  
 Target Length: 68 Meters  
 Target Shadow: 0 Meters  
 Target Width: 8 Meters  
 Mag Anomaly: Yes  
 Avoidance Area: Yes  
 Classification 1: Wreck  
 Classification 2:  
 Area:  
 Block:  
 Description: Quail Wreck (Wreck No. 20000)

## RMP SSS 27



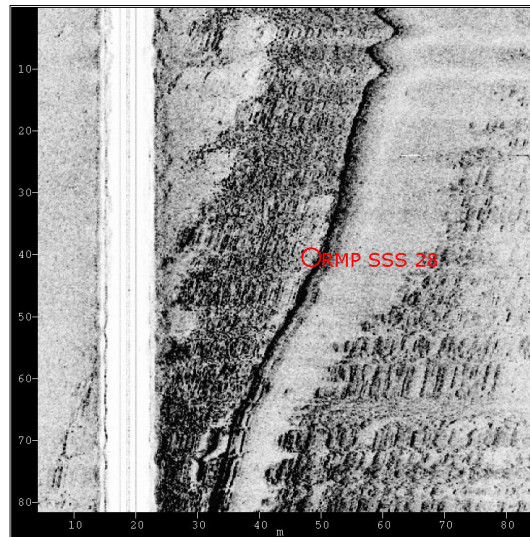
### Contact Info: RMP SSS 27

- Sonar Time at Target: 07/09/2010 14:39:39
- Click Position (Lat/Lon Coordinates)  
50.6353416443 -0.2161549926 (WGS84)  
50.6353416443 17.4504381741 (Local)
- Click Position (Projected Coordinates)  
(X) 696853.38 (Y) 5612973.50
- Map Proj: UTM84-30N
- Acoustic Source File: E:\C10011\_Southern Array\Cod Files\All Files Lia\090710.131519.cod
- Ping Number: 8894146
- Range to Target: 47.58 Meters
- Fish Height: 19.83 Meters
- Heading: 73.900 degrees
- Event Number: 108355
- Line Name: 090710.131519

### User Entered Info

Target Height: = 0 Meters  
 Target Length: 67 Meters  
 Target Shadow: 0 Meters  
 Target Width: 17 Meters  
 Mag Anomaly: No  
 Avoidance Area: Yes  
 Classification 1: Wreck  
 Classification 2:  
 Area:  
 Block:  
 Description: Pagenturm Wreck (Wreck No. 20001)

## RMP SSS 28



### Contact Info: RMP SSS 28

- Sonar Time at Target: 08/13/2010 15:47:11
- Click Position (Lat/Lon Coordinates)  
50.8139152527 -0.3350369930 (WGS84)  
50.8139152527 17.3315561736 (Local)
- Click Position (Projected Coordinates)  
(X) 687732.75 (Y) 5632517.00
- Map Proj: UTM84-30N
- Acoustic Source File: E:\C10011\_Southern Array\Cod Files\All Files Lia\130810.144622.cod
- Ping Number: 12062590
- Range to Target: 29.59 Meters
- Fish Height: 4.37 Meters
- Heading: 158.700 degrees
- Event Number: 147409
- Line Name: 130810.144622

### User Entered Info

Target Height: = 0 Meters  
 Target Length: 0 Meters  
 Target Shadow: 0 Meters  
 Target Width: 0 Meters  
 Mag Anomaly: Yes  
 Avoidance Area: Yes  
 Classification 1: Pipeline/Cable  
 Classification 2:  
 Area:  
 Block:  
 Description: Pipeline/Cable



## APPENDIX 3 NATIONAL MONUMENTS RECORD

The following data has been acquired from the National Monuments Record. It details historic monuments and shipwrecks in the development zone. The data provides a description of the monument, its classification, location and also reference material to the site.

Shoreham on Sea has a considerable amount of terrestrial Monuments. These are outside the landfall of the project and so have not been included in this text.

### **VICTORIA**

#### **DESCRIPTION**

1891 wreck of English dandy which stranded 4 miles east of Littlehampton while on a fishing and return trip out of Shoreham-by-Sea. Constructed of wood in 1875, she was a sailing vessel.

#### **DETAIL**

MONUMENT NUMBER: 903179

COUNTY: WEST SUSSEX

NMR NUMBER: TV 09 NE 2

DISTRICT: ARUN

LAST UPDATED: 2007 PARISH: N/A

AREA: 4 MILES EAST OF LITTLEHAMPTON

STREET: N/A

MARITIME LOCATION: KINGSTON ROCKS WEST SUSSEX

LOCATION: TV 0926 9940

#### **MORE INFORMATION & SOURCES**

Stranded and lost in wind conditions SW force 6. (2)(3)

Stated in (3) to have been in ballast, but it is not known whether the vessel was outward- or homeward-bound.

Built: 1875 (2)(3)

Owner: Parsons, Shoreham (2)(3)

Master: C Peacock (2)(3)

Crew: 4 (2)(3)

Date of Loss Qualifier: Actual date of loss

#### **SOURCE TEXT**

(1) United Kingdom shipwreck index [pre publication typescript]

(2) Parliamentary papers

1892, Board of Trade Casualty Returns, Appendix C, Table 1 Page(s)133

(3) Richard and Bridget Larn 1995 Shipwreck index of the British Isles, volume 2 : Hampshire, Isle of Wight, Sussex, Kent (Mainland), Kent (Downs), Goodwin Sands, Thames Section 3, Sussex (BC)

#### **MONUMENT TYPES**

POST MEDIEVAL DANDY 1875

POST MEDIEVAL WATERCRAFT 1875

POST MEDIEVAL DANDY 1891

POST MEDIEVAL FISHING VESSEL 1891

POST MEDIEVAL WRECK 1891

#### **LE LIBERTI**

##### **DESCRIPTION**

1772 wreck of craft which capsized at sea on her passage from Gdansk to Dundalk, and was found as a wreck, to be beached west of Shoreham-by-Sea. Constructed of wood, she was a sailing vessel.

##### **DETAIL**

MONUMENT NUMBER: 902617

COUNTY: WEST SUSSEX

NMR NUMBER: TQ 20 SW 8

DISTRICT: ADUR

LAST UPDATED: 2006 PARISH: N/A

AREA: WEST OF SHOREHAM-BY-SEA

STREET: N/A

MARITIME LOCATION: SHOREHAM BY SEA WEST SUSSEX

LOCATION: TQ 2209 0340

##### **MORE INFORMATION & SOURCES**

'A wreck is taken up in the Channel, the bottom upwards, brought on shore to the westward of Shoreham harbour; by her papers she is called LE LIBERTI, Beloneierle Pieters, bound from Dantzick to Dundalk.' (2)

Master: Beloneierle Pieters (2)

Date of Loss Qualifier: Reporting date of loss

##### **SOURCE TEXT**

(1) United Kingdom shipwreck index [pre publication typescript]

(2) Lloyd's 1969 Lloyd's list

13-OCT-1772, No.3816

(3) Richard and Bridget Larn 1995 Shipwreck index of the British Isles, volume 2 : Hampshire, Isle of Wight, Sussex, Kent (Mainland), Kent (Downs), Goodwin Sands, Thames  
Section 3, Sussex (BC)

## **MONUMENT TYPES**

POST MEDIEVAL CRAFT 1772

POST MEDIEVAL WRECK 1772

## **S N HANSEN**

### **DESCRIPTION**

1915 wreck of Norwegian brig which grounded in the harbour at Shoreham-by-Sea on her arrival from Sundsvall and/or Fredrikstad with timber. She was recovered but condemned and broken up in the harbour. Built in 1873 of wood, she was a sailing vessel.

### **DETAIL**

MONUMENT NUMBER: 903583

COUNTY: WEST SUSSEX

NMR NUMBER: TQ 20 SW 38

DISTRICT: ADUR

LAST UPDATED: 2007 PARISH: N/A

AREA: SHOREHAM-BY-SEA HARBOUR

STREET: N/A

MARITIME LOCATION: SHOREHAM BY SEA WEST SUSSEX

LOCATION: TQ 2209 0340

### **MORE INFORMATION & SOURCES**

Departure stated as Sundsvall.

Stranded at Shoreham carrying a cargo of firewood. Was subsequently refloated, condemned and sold for scrap at Shoreham, where she was broken up in the harbour. (3)

Delivered as S N HANSEN for O Knudsen m.fl., Lillesand, passing through several owners until she was bought in 1910 by her final owner.

Dimensions 115 x 28 x 15 feet, 317 tons gross, 297 tons net.

Stranded while sailing in to Shoreham on her arrival from Fredrikstad with timber. Condemned as a loss.

(4)

Built: 1873 (3)(4)

Builder: O and P Knudsen (3)(4)

Where Built: Lillesand (3)(4)

Master: G Noess (3)

Crew: 8 (3)

Owner: Acties. S N Hansen (3); S N Hansen (J J Naess), Sandefjord (4)

Date of Loss Qualifier: Actual date of loss

Additional sources cited in Shipwreck Index of the British Isles:

LR.1914-5 No.10(S)(Sail); LCR.1915 p12(g)

#### **SOURCE TEXT**

(1) United Kingdom shipwreck index [pre publication typescript]

(2) Parliamentary papers

1920, Board of Trade Casualty Returns, Part II 40 Page(s)53

(3) Richard and Bridget Larn 1995 Shipwreck index of the British Isles, volume 2 : Hampshire, Isle of Wight, Sussex, Kent (Mainland), Kent (Downs), Goodwin Sands, Thames

Section 3, Sussex (BC)

(4) World Wide Web page

<http://www.skipet.no/1915.pdf> accessed and translated from the Norwegian on 10-AUG-2007

#### **MONUMENT TYPES**

POST MEDIEVAL BRIG 1873

POST MEDIEVAL CARGO VESSEL 1873

POST MEDIEVAL WATERCRAFT 1873

EARLY 20TH CENTURY BRIG 1915

EARLY 20TH CENTURY CARGO VESSEL 1915

EARLY 20TH CENTURY WRECK 1915

#### **MONUMENT NO. 1447735**

#### **DESCRIPTION**

1400 wreck of French cargo vessel which stranded at Shoreham-by-Sea "by bad piloting" on her passage from La Rochelle to Flanders. Laden with wine and other goods, she was a wooden sailing vessel.



**DETAIL**

MONUMENT NUMBER: 1447735  
COUNTY: WEST SUSSEX  
NMR NUMBER: TQ 20 SW 85  
DISTRICT: ADUR  
LAST UPDATED: 2007 PARISH: N/A  
AREA: SHOREHAM BY SEA  
STREET: N/A  
MARITIME LOCATION: SHOREHAM BY SEA WEST SUSSEX  
LOCATION: TQ 2209 0340

**MORE INFORMATION & SOURCES**

1400, a ship of Brittany, lost at Shoreham. Wrecked by bad piloting on the part of the master John Cadew on the coast of "Shorham", en route from La Rochelle to Flanders. The crew and some of the cargo [66 tuns of Rochelle wine] were saved. (1)

The ship was freighted with 66 tuns of La Rochelle wine at La Rochelle for a voyage to Flanders. This was done by Robert Vanderhawe, merchant of Nieuport in Flanders. The ship was wrecked on the coast of Shoreham by bad piloting and default of the master, John Cadew of Le Conquet in Brittany, and other mariners on board. All those on the ship escaped alive, but 33 tuns of the wine, and other goods and equipment of Vanderhawe were taken by local men. The wine went to Shoreham, where Thomas Chamberlain arrested it to the use of the lady of Norfolk, lady of Shoreham. Order to hold inquest dated 8 November 1400, inquest held at Shoreham on 17 November 1400. (2)

Master: John Cadew (1)(2), of Le Conquet (2)

Owner: of cargo, Robert Vanderhawe, Nieuport (2)

Date of Loss Qualifier: Reporting date of loss

Additional sources cited in source (2):

Calendar of Inquisitions Miscellaneous, 1399-1422, No.172

**SOURCE TEXT**

(1) Medieval shipwreck index

Indexed under "Sussex"

(2) National Maritime Museum Medieval Wreck Index

Index card, headed "Shoreham, Sussex, c.1400"

**MONUMENT TYPES**

MEDIEVAL CARGO VESSEL 1400

MEDIEVAL WRECK 1400

**CAMS DELIGHT****DESCRIPTION**

SLOOP, 1767

**DETAIL**

MONUMENT NUMBER: 1047841

COUNTY: WEST SUSSEX

NMR NUMBER: TQ 20 SW 46

DISTRICT: ADUR

LAST UPDATED: N/A PARISH: N/A

AREA: ON THE EAST POINT OF SHOREHAM HARBOUR

STREET: N/A

MARITIME LOCATION: SHOREHAM BY SEA WEST SUSSEX

LOCATION: TQ 2209 0340

**MORE INFORMATION & SOURCES**

'...having in foggy weather passed the Isle of Wight, and endeavoured to put into Shoreham, was, on the 27th past, forced on shore on the east point of Shoreham harbour, where she remained in great danger of being entirely lost.' (1)

Master: Henry Morns

Date of Loss Qualifier: A

**SOURCE TEXT**

(1) Felix Farley's Bristol Journal

12-DEC-1767 Page(s)N/a

**MONUMENT TYPES**

POST MEDIEVAL CARGO VESSEL 1767

POST MEDIEVAL SLOOP 1767

POST MEDIEVAL WRECK 1767

**SARAH****DESCRIPTION**

1746 wreck of English cargo vessel which stranded on the coast of Sussex en route from London to Weymouth with barrel staves; a wooden sailing vessel.

**DETAIL**

MONUMENT NUMBER: 1093150

COUNTY: WEST SUSSEX

NMR NUMBER: TQ 20 SW 74

DISTRICT: ADUR

LAST UPDATED: 2005 PARISH: N/A

AREA: ON THE COAST OF SUSSEX

STREET: N/A

MARITIME LOCATION: SHOREHAM BY SEA WEST SUSSEX

LOCATION: TQ 2209 0340

**MORE INFORMATION & SOURCES**

'The SARAH of Bideford, Hartnell, bound from London to Weymouth with pipe staves was lost on Sunday the 13th inst. on the coast of Sussex.' (1)

NB: The named location of Shoreham-by-Sea has been selected as representing the approximate mid-point of the coastline of the county of Sussex as a whole, formerly not divided between East and West Sussex.

Master: Hartnell (1)

Date of Loss Qualifier: Actual date of loss

**SOURCE TEXT**

(1) Sherborne Mercury

28-APR-1746 Page(s)2

**MONUMENT TYPES**

POST MEDIEVAL CARGO VESSEL 1746

POST MEDIEVAL WRECK 1746

**MONUMENT NO. 1509871****DESCRIPTION**

A heavily-eroded natural concretion, overlying a naturally-fissured sandstone bed, which has often been confused as a maritime archaeological site circa 1 mile off Shoreham-by-Sea. The feature was originally thought to be man-made, of masonry construction, based on the analysis of a sample of material taken from the feature around the time of its discovery (circa 1950). Further conjecture suggested that the feature represented the site of `axaparteı, an area comprising four crenellated walls as recorded on a 1622 Map of Shoreham. In an attempt to ascertain whether the feature was of archaeological importance it was surveyed in 2008 and was found to be a maritime conglomerate rock feature.

**DETAIL**

MONUMENT NUMBER: 1509871  
COUNTY: WEST SUSSEX  
NMR NUMBER: TQ 20 SW 98  
DISTRICT: ADUR  
LAST UPDATED: 2009 PARISH: N/A  
AREA: OFF SHOREHAM BY SEA  
STREET: N/A  
MARITIME LOCATION: OFFSHORE SHOREHAM BY SEA WEST SUSSEX  
LOCATION: TQ 21494 02515

**MONUMENT TYPES**

UNCERTAIN NATURAL FEATURE

**MONUMENT NO. 1450609****DESCRIPTION**

1257 wreck of French cargo vessel which was wrecked near Shoreham-by-Sea, on her passage from Bordeaux. Laden with wine, she was a wooden sailing vessel.

**DETAIL**

MONUMENT NUMBER: 1450609 COUNTY: WEST SUSSEX  
NMR NUMBER: TQ 20 SW 91 DISTRICT: ADUR  
LAST UPDATED: 2007 PARISH: N/A  
AREA: NEAR SHOREHAM BY SEA  
STREET: N/A  
MARITIME LOCATION: SHOREHAM BY SEA WEST SUSSEX  
LOCATION: TQ 2209 0340

**MORE INFORMATION & SOURCES**



'1257. Nov. 30. Westminster. Commission to John de Gatesden to enquire with the sheriff of Sussex touching a ship of Segwin Barbe and Ellis Barbe his brother, citizens of Bordeaux, laden with 116 tuns of wine, which suffered shipwreck near Shorham, so that the mariners as well as the wine came to port, and the said wines were seized by the neighbours and people of the country as wreck of sea, which ought not to be, because the captains (rectores) of the ship and others in her came safely to land, and find into whose hands the said wines have come; and make restitution thereof wherever they are found.' (1)

Owner: of cargo, Segwin and Ellis Barbe, Bordeaux (1)

Date of Loss Qualifier: Reporting date of loss

#### **SOURCE TEXT**

(1) Calendar of Patent Rolls

Henry III, 1241-58, membrane 16d, accessed via <http://www.uiowa.edu/~acadtech/patentrolls/> on 17-JAN-2007 IV Page(s)658

#### **MONUMENT TYPES**

MEDIEVAL CARGO VESSEL 1257

MEDIEVAL WRECK 1257

#### **MONUMENT NO. 1448483**

#### **DESCRIPTION**

1376 wreck of cargo vessel which stranded near Shoreham-by-Sea on her passage from Southampton to Calais with wool (one of three vessels lost under these circumstances). Constructed of wood, she was a sailing vessel.

#### **DETAIL**

MONUMENT NUMBER: 1448483

COUNTY: WEST SUSSEX

NMR NUMBER: TQ 20 SW 90

DISTRICT: ADUR

PARISH: N/A

AREA: NEAR SHOREHAM BY SEA

STREET: N/A

MARITIME LOCATION: SHOREHAM BY SEA WEST SUSSEX

LOCATION: TQ 2209 0340

**MORE INFORMATION & SOURCES**

The third of three wrecks in these circumstances:

'1376. Nov. 22. Westminster. Commission to Robert Bealknap, Peter de Brewes, Roger de Assheburnham, Nicholas de Wilcombe, Richard Halle and John Hyde, to find by inquisition in the county of Sussex the truth touching a petition of the king's merchants of London setting forth that, whereas they freighted certain ships in the port of Southampton with wools for the staple of Calais, and whereas three of the ships on the voyage were driven by the violence of the sea to the coast of Shoreham and there broken, (divers of the mariners of each ship escaping to land alive and great part of the wool being cast ashore and salved), the same has been carried away and unjustly detained from them by men of those parts, the king will aid them over the restitution of the wool to them; and if it prove that the wool should not belong to the king or others as wreck of sea, to have it restored to the said merchants, after reasonable satisfaction made to those who salved it.' (1)

Crew Lost: possibly some ["divers mariners" from each ship escaping alive] (1)

Owner: of cargo, merchants of London (1)

Date of Loss Qualifier: Reporting date of loss

**SOURCE TEXT**

(1) Calendar of Patent Rolls

Edward III, 1374-77, membrane 14d XVI Page(s)413

**MONUMENT TYPES**

MEDIEVAL CARGO VESSEL 1376

MEDIEVAL WRECK 1376

**MONUMENT NO. 1448482****DESCRIPTION**

1376 wreck of cargo vessel which stranded near Shoreham-by-Sea on her passage from Southampton to Calais with wool (one of three vessels lost under these circumstances). Constructed of wood, she was a sailing vessel.

**DETAIL**

MONUMENT NUMBER: 1448482

COUNTY: WEST SUSSEX

NMR NUMBER: TQ 20 SW 89

DISTRICT: ADUR

LAST UPDATED: 2006 PARISH: N/A

AREA: NEAR SHOREHAM BY SEA

STREET: N/A

MARITIME LOCATION: SHOREHAM BY SEA WEST SUSSEX

LOCATION: TQ 2209 0340

### **MORE INFORMATION & SOURCES**

The second of three wrecks in these circumstances:

'1376. Nov. 22. Westminster. Commission to Robert Bealknap, Peter de Brewes, Roger de Assheburnham, Nicholas de Wilcombe, Richard Halle and John Hyde, to find by inquisition in the county of Sussex the truth touching a petition of the king's merchants of London setting forth that, whereas they freighted certain ships in the port of Suthampton with wools for the staple of Calais, and whereas three of the ships on the voyage were driven by the violence of the sea to the coast of Shorham and there broken, (divers of the mariners of each ship escaping to land alive and great part of the wool being cast ashore and salved), the same has been carried away and unjustly detained from them by men of those parts, the king will aid them over the restitution of the woo to them; and if it prove that the wool should not belong to the king or others as wreck of sea, to have it restored to the said merchants, after reasonable satisfaction made to those who salved it.' (1)

Crew Lost: possibly some ["divers mariners" from each ship escaping alive] (1)

Owner: of cargo, merchants of London (1)

Date of Loss Qualifier: Reporting date of loss

### **SOURCE TEXT**

(1) Calendar of Patent Rolls

Edward III, 1374-77, membrane 14d XVI Page(s)413

### **MONUMENT TYPES**

MEDIEVAL CARGO VESSEL 1376

MEDIEVAL WRECK 1376

### **MONUMENT NO. 1448472**

#### **DESCRIPTION**

1376 wreck of cargo vessel which stranded near Shoreham-by-Sea on her passage from Southampton to Calais with wool (one of three vessels lost under these circumstances). Constructed of wood, she was a sailing vessel.

#### **DETAIL**

COUNTY: WEST SUSSEX  
NMR NUMBER: TQ 20 SW 88  
DISTRICT: ADUR  
LAST UPDATED: 2006 PARISH: N/A  
AREA: NEAR SHOREHAM BY SEA  
STREET: N/A  
MARITIME LOCATION: SHOREHAM BY SEA WEST SUSSEX  
LOCATION: TQ 2209 0340

### **MORE INFORMATION & SOURCES**

The first of three wrecks in these circumstances:

'1376. Nov. 22. Westminster. Commission to Robert Bealknap, Peter de Brewes, Roger de Assheburnham, Nicholas de Wilcombe, Richard Halle and John Hyde, to find by inquisition in the county of Sussex the truth touching a petition of the king's merchants of London setting forth that, whereas they freighted certain ships in the port of Suthampton with wools for the staple of Calais, and whereas three of the ships on the voyage were driven by the violence of the sea to the coast of Shorham and there broken, (divers of the mariners of each ship escaping to land alive and great part of the wool being cast ashore and salved), the same has been carried away and unjustly detained from them by men of those parts, the king will aid them over the restitution of the woo to them; and if it prove that the wool should not belong to the king or others as wreck of sea, to have it restored to the said merchants, after reasonable satisfaction made to those who salved it.' (1)

Crew Lost: possibly some ["divers mariners" from each ship escaping alive] (1)

Owner: of cargo, merchants of London (1)

Date of Loss Qualifier: Reporting date of loss

### **SOURCE TEXT**

(1) Calendar of Patent Rolls

Edward III, 1374-77, membrane 14d XVI Page(s)413

### **MONUMENT TYPES**

MEDIEVAL CARGO VESSEL 1376

MEDIEVAL WRECK 1376

### **ST. MARY**

#### **DESCRIPTION**



1311 wreck of Spanish cargo vessel which stranded near Alderton on her passage from Hondarribia, laden with wine, cloth, linen, wheat, bran, spices, armour, gold, silver and jewellery. Constructed of wood, she was a sailing vessel.

**DETAIL**

COUNTY: WEST SUSSEX  
NMR NUMBER: TQ 20 SW 71  
DISTRICT: ADUR  
LAST UPDATED: 2006 PARISH: N/A  
AREA: NEAR ALDERTON  
STREET: N/A  
MARITIME LOCATION: SHOREHAM BY SEA WEST SUSSEX  
LOCATION: TQ 2209 0340

**MORE INFORMATION & SOURCES**

"1311. April 26. Berwick-on-Tweed. The like [commission of oyer and terminer] to John de Abernoun and Walter de Geddynges on complaint by Arnald de Bearriz [Biarritz?], master of the ship ST MARY of Fomarabie, and John de Sancto Egidio and their fellows, merchants of the town of Pampiloigne in Navarre, the freighters of a ship which was driven ashore by a gale at Alderton near Shorham, Co. Sussex, from which they escaped alive to the land, touching the persons who, as wreck of sea, stripped the ship of its gear and carried away the wine, cloth, linen, wheat, bran, spices and other wares, the armour, robes, couches, chests, gold, silver money, precious stones, gold rings and other jewels found on board her.

'(Inserted at a later date.) Commission associating John de Batesford with John de Abernoun in the place of Walter de Geddynges, 30 October." (1)

NB: "Fomarabie" is identified as Hondarribia in Spain, also known as Fuenterrabia in Spanish, Fontarabie in French, and close to Pamplona in Navarra, and Biarritz, the place-name suggested by the name of the master. The nationality of the ship is therefore given as Spanish, and a version of the name of the vessel in the modern Spanish language is suggested for retrievability, viz., SANTA MARIA.

Master: Arnald de Bearrix (1)

Owner: John de Sancto Egidio and others, merchants of Pamplona (1)

Date of Loss Qualifier: Reporting date of loss

**SOURCE TEXT**

(1) Calendar of Patent Rolls

Edward II, 1307-13, 26-APR-1311, membrane 15d I Page(s)367-8

**MONUMENT TYPES**

MEDIEVAL CARGO VESSEL 1311

MEDIEVAL WRECK 1311

**VELINDRA****DESCRIPTION**

1894 wreck of English barge which was burnt following an explosion of her cargo at Thames Haven, on her departure for Shoreham-by-Sea with naphtha; a wooden sailing vessel built in 1889.

**DETAIL**

MONUMENT NUMBER: 896866

COUNTY: ESSEX

NMR NUMBER: TQ 78 SE 58

DISTRICT: CASTLE POINT

LAST UPDATED: 2003 PARISH: N/A

AREA: THAMES HAVEN

STREET: N/A

MARITIME LOCATION: HOLE HAVEN RIVER THAMES

LOCATION: TQ 7666 8176

**MORE INFORMATION & SOURCES**

Vessel caught fire following an explosion of her cargo, in wind conditions NW force 5. (1)(2)

Built: 1889 (1)(2)

Master: Peck (1)(2)

Crew: 3 (1)(2)

Passengers: 2 (1)(2)

Passengers Lost: 1 (1)(2)

Owner: T W Howard, London (1)(2)

Date of Loss Qualifier: A

Additional sources cited in United Kingdom Shipwreck Index:

BOT.Wk.Rtn.1894 Appx.C Table 1 p156

**SOURCE TEXT**

(1) United Kingdom shipwreck index [pre publication typescript]

(2) Richard and Bridget Larn 1995 Shipwreck index of the British Isles, volume 2 : Hampshire, Isle of Wight, Sussex, Kent (Mainland), Kent (Downs), Goodwin Sands, Thames  
Section 7, Thames (BG)

**MONUMENT TYPES**

POST MEDIEVAL BARGE 1894

POST MEDIEVAL CARGO VESSEL 1894

POST MEDIEVAL WRECK 1894

## APPENDIX 4 UK HYDROGRAPHIC OFFICE RECORDS

Wreck Number	Easting	Northing
20180	560935.8	97126.87
20274	559109.7	95277.46
20092	559647.6	93965.99
20179	558286	93679.73
20080	558013.8	91937.47
20187	558986.9	87701.49
20059	564522.4	89078.17
20056	549107.8	88337.79
20175	561707.7	88031.54
20038	561510.3	87504.3
20185	565409	87127.2
20174	562101.1	86441.33
20017	551236.4	85096.19
20014	551965.7	84994.91
20012	554853.5	85031.27
58306	549164.3	84697.39
20162	543626.8	84542.58
19998	565030.3	84179.31
20000	563249.4	84251.46
20001	556770.4	84023.86
20005	552794.7	83535.48
20238	563657.1	83770.86
20173	547318.3	83254.37
19996	564622.9	83708.39
19995	543938.4	82815.52
19991	563903.5	83437.31
19989	560895.6	83123.37
20172	546689.1	82558.03
20171	564244.3	82613.39
19977	543938.8	81769.71
19975	561012.2	82205.23
19961	554902.8	80012.71
19944	549594.4	78590.21
20063	547868.3	88832.96
20053	552492.3	88125.68
20050	555320.7	87843.57
20046	544844.7	87357.6
20045	563814.9	87850.44



20044	555561.8	87665.28
20043	550616	87520.56
20029	555311.4	86174.25
20025	550708.2	85668.8
20021	544789.6	85130.9
20018	556218.5	85366.72
19983	551583.3	82602.75
58365	561060.8	82546.11
19978	551601.1	81985.75
58367	549406.1	81056.72
19962	546348.2	79982.11
58368	550278.8	79383.05
58369	550473.5	78771.12

**Latitude = 50 45'.050 N Longitude = 000 16'.900 W [OGB] Square Number = 136 State = LIVE**

Wreck Number 20180 Classification = Unclassified  
 Symbol WK 11.7 Largest Scale Chart = 1652  
 Charting Comments

Old Number 013605045  
 Category Dangerous wreck

WGS84 Position Latitude = 50 45'.085 N Longitude = 000 16'.992 W  
 WGS84 Origin 3-D Cartesian Shift (BW)  
 Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method Electronic Distance Measuring System  
 Position Quality Surveyed  
 Position Accuracy  
 Area at Largest Scale No

Depth 11.7 metres  
 Drying Height  
 Height  
 General Depth 13 metres  
 Vertical Datum Lowest astronomical tide  
 Depth Method Found by echo-sounder  
 Depth Quality Least depth known  
 Depth Accuracy  
 Conspic Visual NO Conspic Radar NO  
 Historic NO Military NO Existence Doubtful NO  
 Non Sub Contact NO

Last Amended 06/03/2000  
 Position Last Amended  
 Position Last Latitude = Longitude =

Name  
 Type  
 Flag  
 Dimensions Length = Beam = Draught =  
 Tonnage  
 Cargo  
 Date Sunk

Sonar Dimensions Length = 27.3 metres Width = 3.6 metres Shadow Height = 1.0 metres  
 Orientation 081/261

Magnetic Anomaly  
 Debris Field  
 Scour Depth = 0.0 metres Length = Orientation =

Markers  
 General Comments ALMOST COMPLETELY BURIED

Circumstances of Loss

#### Surveying Details

\*\*H1965/76 5.12.80 WK EXAM'D 10.2.80 IN 504503N, 001654W [OGB] USING TRISPONDER. DECCA USED. LEAST E/S DEPTH 11.7 IN GEN DEPTH 13 MTRS. NO SCOUR. HYDROSEARCH LENGTH 27.3MTRS, BEAM 3.6MTRS, HT 1MTR. ALMOST COMPLETELY BURIED, LYING 081/261 DEGS. (HMS BULLDOG HI 37A/77). CHART AS WK 11.7MTRS. R/P.

\*\*H1310/82/18 12.7.82 SEARCHED FOR ON 28.3.82, USING E/S. NOT FOUND. NOW POSSIBLY COVERED COMPLETELY. (D M DILLINGHAM, 5.7.82). NCA.

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

**Latitude = 50 44'.075 N Longitude = 000 15'.298 W [OGB] Square Number = 136 State = LIVE**

Wreck Number 20274 Classification = Unclassified  
 Symbol WK SW 14.2 Largest Scale Chart = 1652  
 Charting Comments

Old Number 013606074  
 Category Dangerous wreck

WGS84 Position Latitude = 50 44'.110 N Longitude = 000 15'.390 W  
 WGS84 Origin Original  
 Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method Differential Global Positioning System  
 Position Quality Surveyed  
 Position Accuracy 13.0  
 Area at Largest Scale No  
 Depth 14.2 metres  
 Drying Height

## Height

General Depth 17 metres  
 Vertical Datum Lowest astronomical tide  
 Depth Method Swept by wire-drag  
 Depth Quality Least depth known  
 Depth Accuracy  
 Conspic Visual NO Conspic Radar NO  
 Historic NO Military NO Existence Doubtful NO  
 Non Sub Contact NO

Last Amended 24/11/1999

Position Last Amended 24/11/1999

Position Last Latitude = 50 44'.083 N Longitude = 000 15'.300 W

Name ARROGANT

Type YACHT

Flag

Dimensions Length = 27.4 metres Beam = Draught =

Tonnage

Cargo

Date Sunk

Sonar Dimensions Length = 30.0 metres Width = 10.0 metres Shadow Height = 2.0 metres

Orientation 000/180

Magnetic Anomaly

Debris Field NIL

Scour Depth = 0.0 metres Length = Orientation =

Markers

General Comments

Circumstances of Loss

Surveying Details

\*\*HH232/680/05 8.9.95 WK, 3MTRS HIGH IN GENERAL DEPTH 17MTRS, IN 504403N, 001518.5W. (P HOLLYWOOD, 6.9.95). CHART AS USC 13MTRS. - NM 3282/95.

\*\*11.9.96 VESSEL IS A YACHT, NAMED 'ARROGANT'. (I JOHNSTONE, TELECON 11.9.96).

\*\*HH090/752/01 22.9.97 EXAM'D 11.9.97 IN 504406.6N, 001523.4W [WGD] USING DGPS. SWEEP CLEAR 14.2, FOUL 14.4MTRS. LEAST E/S DEPTH 14.4 IN GEN DEPTH 17MTRS. NO SCOUR. DCS3 HT 2MTRS. LENGTH 30MTRS, WIDTH 10MTRS. LIES 000/180 DEGS. IN ONE PIECE WITH NO EVIDENCE OF SCATTERED DEBRIS. NO SCOUR BUT DEPOSITION EXTENDS 100MTRS TOWARDS 080 DEGS. (NP 1016, HI 752). BR STD.

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

**Latitude = 50 43'.367 N Longitude = 000 15'.717 W [OGB] Square Number = 136 State = LIVE**

Wreck Number 20092 Classification = Unclassified

Symbol WK SW 9.1 Largest Scale Chart = 1652

Charting Comments

Old Number 013604065

Category Dangerous wreck

WGS84 Position Latitude = 50 43'.402 N Longitude = 000 15'.809 W  
 WGS84 Origin 3-D Cartesian Shift (BW)  
 Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method Electronic Distance Measuring System  
 Position Quality Surveyed  
 Position Accuracy 25.0  
 Area at Largest Scale No  
 Depth 9.1 metres  
 Drying Height  
 Height  
 General Depth 19 metres  
 Vertical Datum Lowest astronomical tide  
 Depth Method Swept by wire-drag  
 Depth Quality Least depth known  
 Depth Accuracy  
 Conspic Visual NO Conspic Radar NO  
 Historic NO Military NO Existence Doubtful NO  
 Non Sub Contact NO

Last Amended 08/03/2000  
 Position Last Amended 08/03/2000  
 Position Last Latitude = 50 43'.367 N Longitude = 000 15'.723 W

Name PENTYRCH  
 Type SS  
 Flag BRITISH  
 Dimensions Length = 103.3 metres Beam = 14.0 metres Draught = 7.6 metres  
 Tonnage 3312 Gross  
 Cargo COAL  
 Date Sunk 18/04/1918

Sonar Dimensions Length = 111.4 metres Width = 21.4 metres Shadow Height = 9.9 metres  
 Orientation 099/279

Magnetic Anomaly  
 Debris Field  
 Scour Depth = Length = Orientation =

Markers  
 General Comments VERY BROKEN UP

Circumstances of Loss  
 \*\*TORPEDOED & SUNK BY GERMAN SUBMARINE UB 40. (WW1SL & DER KRIEG ZUR SEE).

Surveying Details  
 \*\*H2283/18 1.5.18 WK 2.75FMS IN APPROX 504300N, 001600W. (ADMIRALTY). - NM 550/18.  
 \*\*19.4.18 WK IN POSN 5M WNW OF BRIGHTON LTV. (IDSA MASTER, DOCKET M19770, BMVS & UB TEL MOVE). NCA.  
 \*\*H5267/21 25.8.21 WK NOT LOCATED. (TH EX 3116/21). DELETED. - NM 1547/21.



\*\*H2699/76 18.7.78 LOCATED 23.6.75 IN 504322N, 001543.4W USING HIFIX [2 LOP]. SONAR HT 5.3MTRS IN GEN DEPTH 18.9MTRS. (HMS FAWN, HI 41/75). CHART AS WK 12.5MTRS IN REVISED POSN. NE 1652 & NE 2450.

\*\*H1309/79 21.9.79 LIES E/W. BROKEN IN 2 PLACES. APPEARS TO HAVE BEEN BLOWN. 10FT HIGH MAX, IN SAND & SILT. WINCH ON E SECTION. UPSIDE DOWN. (J SALSURY, SEAFORD, 7.8.79). NCA.

\*\*H1270/79 29.2.80 REPD TO HAVE LEAST E/S DEPTH OF 9.9MTRS. TO BE WIRE SWEEPED. (HMS BULLDOG, SIG DTD 25.2.80). - NM 597(P)/80.

\*\*H1270/79 16.4.80 DRIFT SWEEP - CLEAR AT 9.1, FOUL AT 9.4MTRS. LEAST E/S DEPTH 9.4MTRS. (HMS BULLDOG, TELECON 15.4.80). TH INFORMED. AMENDED TO SW 9.1MTRS. - NM 929/80.

\*\*H1310/80 15.10.80 WK IN 504303N, 001434W USING DECCA. LEAST E/S DEPTH 44FT IN GEN DEPTH 72FT. (J SALSURY, 4.9.80). NCA YET. AWAIT HMS BULLDOG SURVEY RESULTS.

\*\*25.8.76 UPRIGHT WITH HIGHEST PTS AT BOW & STERN. HEADING ESE. LEAST DEPTH 40FT IN GEN DEPTH 60FT. THOUGHT POSSIBLY TO BE THE 'VASCO' [SEE WK [20078] IN 504220N, 000059W]. (D PECKHAM, TELECON, 25.8.76). NCA.

\*\*H1965/76 2.12.80 EXAM'D 13.5.80 IN 504322N, 001543W [OGB] USING TRISPONDER. DECCA USED. SWEEP CLEAR AT 9.1, FOUL AT 9.4MTRS. LEAST E/S DEPTH 9.3 IN GEN DEPTH 19MTRS. NO SCOUR. HYDROSEARCH, LENGTH 111.4MTRS, BEAM 21.4MTRS, HT 9.9MTRS. LYING 099/279 DEGS. VERY BROKEN UP. SHOALEST AT W END. (HMS BULLDOG, HI 37A/77). NFA.

H1310/83/41 22.6.84 WK IN 504316N, 001542W [OGB] USING DECCA. (VULCAN DIVING SERVICES, 19.6.84). NCA.

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

**Latitude = 50 43'.200 N Longitude = 000 14'.467 W [OGB] Square Number = 136 State = LIVE**

Wreck Number 20179 Classification = Unclassified  
 Symbol WK 16.0 Largest Scale Chart = 1652  
 Charting Comments

Old Number 013605033  
 Category Dangerous wreck

WGS84 Position Latitude = 50 43'.235 N Longitude = 000 14'.559 W  
 WGS84 Origin 3-D Cartesian Shift (BW)  
 Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method Electronic Distance Measuring System

Position Quality Surveyed

Position Accuracy 25.0

Area at Largest Scale No

Depth 16.0 metres

Drying Height

Height

General Depth 19 metres

Vertical Datum Lowest astronomical tide

Depth Method Found by echo-sounder

Depth Quality Least depth known

Depth Accuracy

Conspic Visual NO Conspic Radar NO

Historic NO Military NO Existence Doubtful NO

Non Sub Contact NO

Last Amended 08/03/2000

## Position Last Amended

Position Last      Latitude =              Longitude =

Name              MAASLUST

Type              MV

Flag              BRITISH

Dimensions      Length = 13.4 metres Beam = 4.0 metres Draught =

Tonnage              17 Net

Cargo

Date Sunk

Sonar Dimensions      Length = 32.9 metres Width =              Shadow Height = 3.0 metres

Orientation      135/315

## Magnetic Anomaly

Debris Field      2 OFFLYING PIECES OF WKGE TO THE E

Scour              Depth = 0.0 metres Length =              Orientation =

## Markers

General Comments      INTACT,BUT WITHOUT SUPERSTRUCTURE,HALF SUNK IN SILT

Circumstances of Loss

## Surveying Details

H1965/76 5.12.80 WK EXAM'D 25.2.80 IN 504312N, 001428W [OGB] USING TRISPONDER. DECCA USED. LEAST E/S DEPTH 16.4 IN GEN DEPTH 19MTRS. NO SCOUR. HYDROSEARCH, LENGTH 32.9MTRS, HT 3MTRS. LYING NW/SE, WITH 2 OFFLYING PIECES OF WKGE TO THE E. MAST USED FOR HEIGHTING. (HMS BULLDOG HI 37A/77). CHART AS WK 16.0MTRS. R/P.

\*\*H1310/82/18 9.7.82 DIVED ON 28.3.82. SMALL MOTORISED BARGE OR TUG, APPROX 60FT LONG. NO SUPERSTRUCTURE. LIES UPRIGHT. BRASS ENGINE CONTROL RECOVERED, MARKED TELEFLEX, WHICH SUGGESTS A RECENT LOSS, ALTHOUGH WK APPEARS QUITE OLD. (D M DILLINGHAM, 5.7.82). NCA.

\*\*H1310/83/4 19.1.83 IDENTIFIED BY BELL AS THE 'MAASLUST', A STEEL BARGE-SHAPED VESSEL. LIES INTACT, BUT WITHOUT SUPERSTRUCTURE, HALF SUNK IN THE SILT. COVERED FOREDECK STANDS ABOUT 2MTRS ABOVE SEABED. (T W BENNETTO, 4.1.83). NCA.

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

**Latitude = 50 42'.300 N Longitude = 000 14'.283 W [OGB] Square Number = 136 State = LIVE**

Wreck Number      20080

Classification      = Unclassified

Symbol              WK 16.5

Largest Scale Chart = 1652

Charting Comments

Old Number              013603929

Category              Dangerous wreck

WGS84 Position      Latitude = 50 42'.336 N Longitude = 000 14'.376 W

WGS84 Origin      3-D Cartesian Shift (BW)

Horizontal Datum      OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method      Electronic Distance Measuring System

Position Quality      Surveyed

Position Accuracy      25.0

Area at Largest Scale No

Depth              16.5 metres

## Drying Height

## Height

General Depth 23 metres

Vertical Datum Lowest astronomical tide

Depth Method Found by echo-sounder

Depth Quality Least depth known

## Depth Accuracy

Conspic Visual NO Conspic Radar NO

Historic NO Military NO Existence Doubtful NO

Non Sub Contact NO

Last Amended 09/03/2000

## Position Last Amended

Position Last Latitude = Longitude =

Name IKEDA (POSSIBLY)

Type SS

Flag BRITISH

Dimensions Length = 125.0 metres Beam = 16.2 metres Draught = 11.3 metres

Tonnage 6311 Gross

Cargo BALLAST

Date Sunk 21/03/1918

Sonar Dimensions Length = 123.6 metres Width = 22.6 metres Shadow Height = 6.2 metres

Orientation 080/260

## Magnetic Anomaly

## Debris Field

Scour Depth = 0.0 metres Length = Orientation =

## Markers

## General Comments

## Circumstances of Loss

\*\*TORPEDOED & SUNK BY GERMAN SUBMARINE UB40, WHILST EN-ROUTE LONDON TO GALVESTON.  
(DER KRIEG ZUR SEE).

## Surveying Details

\*\*H3538/18 2.7.18 WK IN 504214N, 001422W WITH G BUOY 60YDS S. (ADMIRALTY). CHART AS WK  
[OLD SYMBOL]. - NM 801/18.

\*\*H5542/21 7.9.21 CLEAR DEPTH OF 50FT AT LWST OVER WRECK, SUNK APPROX 7.75M TO SW OF  
BRIGHTON IN 504220N, 001420W. BUOY WITHDRAWN. (TH EX3566/21). AMEND TO WK 8FMS 0FT &  
DELETE BUOY. - NM 1579/21.

\*\*H632/31 10.2.31 NOW CHARTED AS WK 8FMS 2FT. SQ. DATE.

\*\*H7789/35 3.12.35 LOCATED IN 504218N, 001415W. DRIFT SWEEP CLEAR AT 52FT. (HMS FLINDERS,  
15.11.35). AMEND TO REVISED POSN. - NM 2138/35.

\*\*H3273/53 3.6.53 NOW CHARTED AS WK 8FMS 4FT. NC 2450.

\*\*H1245/70 10.12.70 WRECK DIVED ON BY BRIGHTON BSAC DURING 1970 REPD TO BE WELL BROKEN  
UP & ALMOST UNRECOGNISABLE. STATED BY LOCAL LIFEBOAT MEN AT SHOREHAM TO BE THE 'CITY OF  
WATERFORD' BUT IS THOUGHT TO BE UNTRUE AS SHE WAS SUNK 14.4.49 & THIS WK WAS FIRST  
LOCATED IN 1921 BY TH. (R P WATTS, 8.12.70).

\*\*23.7.71 NOW CHARTED AS SW 15.2MTRS. NC 1652.

\*\*28.1.74 NOW CHARTED AS SW 14.6MTRS [LAT]. NC 1652.

\*\*H3823/78 21.8.79 SMALL COASTER, PROBABLY LESS THAN 1000GRT. LYING ON ONE SIDE, 10FT HIGH. (E GILES, 16.8.79). NCA.

\*\*H1965/76 1.12.80 EXAM'D 9.2.80 IN 504218N, 001417W [OGB] USING TRISPONDER. DECCA USED. LEAST E/S DEPTH 17 IN GEN DEPTH 23MTRS. NO SCOUR. HYDROSEARCH LENGTH 123.6MTRS, BEAM 22.6MTRS, HT 6.2MTRS. LYING 080/260DEGS, BOWS E. (HMS BULLDOG, HI 37A/77). CHART AS WK 16.5MTRS IN REVISED POSN. [POSSIBILITY OF 2 WRECKS IN THIS VICINITY].

\*\*H1310/82/18 9.7.82 POSN DIVED ON 2.4.82. NOT LARGE ENOUGH TO BE THE 'IKEDA'. ONLY FOUND A MOSTLY UPSIDE DOWN SECTION OF A SMALL WK, WITH WKGE TO THE SIDES. (D M DILLINGHAM, 5.7.82).

\*\*H1310/86/10 3.4.86 WK LOCATED USING DECCA. THOUGHT POSSIBLY TO BE WK OF 'CITY OF LONDON'. (SOUTHERN MARINE SERVICES, WK NO 155). NCA. [NO RECORD OF OF THIS WK HELD IN WKS].

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

**Latitude = 50 40'.967 N Longitude = 000 14'.467 W [OGB] Square Number = 136 State = LIVE**

Wreck Number 20187 Classification = Unclassified  
Symbol WK 21.0 Largest Scale Chart = 1652  
Charting Comments

Old Number 013605112  
Category Dangerous wreck

WGS84 Position Latitude = 50 41'.002 N Longitude = 000 14'.559 W  
WGS84 Origin 3-D Cartesian Shift (BW)  
Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method DECCA navigator  
Position Quality Precisely known  
Position Accuracy  
Area at Largest Scale No

Depth 21.0 metres  
Drying Height  
Height  
General Depth 26 metres  
Vertical Datum Lowest astronomical tide  
Depth Method Found by diver  
Depth Quality Least depth known  
Depth Accuracy  
Conspic Visual NO Conspic Radar NO  
Historic NO Military NO Existence Doubtful NO  
Non Sub Contact NO

Last Amended 07/12/1983  
Position Last Amended 07/12/1983  
Position Last Latitude = 50 40'.000 N Longitude = 000 15'.000 W

Name INGO  
Type STEEL FV  
Flag BRITISH  
Dimensions Length = 14.9 metres Beam = 4.3 metres Draught = 1.2 metres

## Tonnage

## Cargo

Date Sunk 13/12/1980

Sonar Dimensions Length = Width = Shadow Height =  
Orientation

## Magnetic Anomaly

## Debris Field

Scour Depth = Length = Orientation =

## Markers

General Comments UPRIGHT &amp; INTACT

## Circumstances of Loss

\*\*REPORTED AS DRIFTING AWASH ON BEING ABANDONED IN WATERLOGGED CONDITION BY CREW. (LL, 15.12.80).

## Surveying Details

\*\*H4121/76 23.12.80 ABANDONED IN WATERLOGGED CONDITION 10 MILES S OF SHOREHAM. POSSIBLY NOW SUNK. ESTIMATED HEIGHT 35FT KEEL TO TRUCK. (SHOREHAM CG MRSC SIG DTD 13.12.80). NCA YET. POSN TOO VAGUE TO CHART.

\*\*H1310/83/41 24.11.83 LOCATED IN 504058N, 001428W [OGB] USING DECCA. STANDS 5MTRS HIGH [MAXIMUM] IN GEN DEPTH 26MTRS. STILL INTACT AND COVERED BY A TRAWL. (P A VAN DER BOON, 29.10.83). CHART AS WK 21.0MTRS. R/P.

\*\*H1310/86/29 14.11.86 DIVED ON 16.9.84. LIES ACROSS TIDE WITH SCOUR 1MTR DEEP. STILL INTACT AND UPRIGHT BUT MAST HAS COLLAPSED ACROSS WK, AS HAS THE WHEELHOUSE. TRAWL NET CAUGHT AROUND STERN. STANDS ABT 3MTRS HIGH BY E/S. (T W BENNETTO, 28.10.86). NCA.

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

**Latitude = 50 40'.697 N Longitude = 000 19'.838 W [WGD] Square Number = 136 State = LIVE**

Wreck Number 20059 Classification = Unclassified

Symbol WK SW 18.0 Largest Scale Chart = 1652

Charting Comments

Old Number 013603681

Category Dangerous wreck

WGS84 Position Latitude = 50 40'.697 N Longitude = 000 19'.838 W

WGS84 Origin Original

Horizontal Datum WGD WGS (1984)

Position Method Differential Global Positioning System

Position Quality Surveyed

Position Accuracy 7.0

Area at Largest Scale No

Depth 18.0 metres

Drying Height

Height

General Depth 22 metres

Vertical Datum Lowest astronomical tide



Depth Method Swept by wire-drag  
 Depth Quality Least depth known  
 Depth Accuracy  
 Conspic Visual NO Conspic Radar NO  
 Historic NO Military NO Existence Doubtful NO  
 Non Sub Contact NO

Last Amended 14/11/2002  
 Position Last Amended 14/11/2002  
 Position Last Latitude = 50 40'.650 N Longitude = 000 19'.733 W

Name

Type TRAWLER

Flag

Dimensions Length = Beam = Draught =

Tonnage

Cargo

Date Sunk

Sonar Dimensions Length = 42.1 metres Width = 17.5 metres Shadow Height = 4.4 metres  
 Orientation 000/180

Magnetic Anomaly Strong

Debris Field

Scour Depth = 0.0 metres Length = Orientation =

Markers

General Comments INTACT

Circumstances of Loss

Surveying Details

\*\*H4121/76 14.1.77 WK LOCATED 5.9.76 IN 504039N, 001944W [OGB] USING HIFIX [2 LOP]. LEAST E/S DEPTH 18.8MTRS IN GEN DEPTH 24MTRS. LENGTH 55MTRS. ORIENTATION N/S. (HMS FOX, HI 52/76). CHART AS WK 18.8MTRS. - NM 492/77.

\*\*H1285/77/214 9.6.77 DIVED 30.5.77. SMALL WK, ABOUT 75-100FT LONG. BOWS NW, STERN SE, LYING ON STBD SIDE AT ABOUT 45DEGS. APPEARS TO BE A VERY OLD TRAWLER. IRON PROP 6-8FT DIAMETER. LARGE WINCH AFT OF MIDSHIPS. SMALL AMOUNT OF SUPERSTRUCTURE AFT OF WINCH. (D DILLINGHAM, 31.5.77).

\*\*H1965/76 4.12.80 EXAM'D 25.2.80 IN 504039N, 001944W [OGB] USING TRISPONDER. SWEEP CLEAR AT 17.6, FOUL AT 18.2MTRS. LEAST E/S DEPTH 18.1MTRS IN GEN DEPTH 23MTRS. NO SCOUR. HYDROSEARCH LENGTH 42.1MTRS, BEAM 17.5MTRS, HT 4.4MTRS. LYING 145/325DEGS. (HMS BULLDOG, HI 37A/77). AMEND TO SW 17.6MTRS. - NM 2795/80.

\*\*H1310/83/4 19.1.83 CONFIRMED AS A TRAWLER ABOUT 120FT LONG. NOW LIES COMPLETELY ON STBD SIDE WITH DECK VERTICAL. SHE IS SILTED UP TO MID-BEAM, HALF THE FUNNEL BEING EXPOSED. (T W BENNETTO, 4.1.83).

\*\*H1310/83/41 22.6.84 WK IS VERY OPEN IN MANY PLACES - THE PLATES CORRODED AWAY LEAVING ONLY RIBS. POSSIBLE TO DIVE INTO FOR'D HOLDS AND BACK TO ENGINE ROOM, WHICH CAN ALSO BE ENTERED OFF THE FUNNEL. PORTHOLES HAVE BEEN RECOVERED BUT GIVE NO CLUE AS TO IDENTITY. (VULCAN DIVING SERVICES, 19.6.84).

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

\*\*HH091/002/01 14.11.02 EXAM'D 6.8.02 IN 5040.697N, 0019.838W [WGD] USING DGPS. SWEEP CLEAR 18.0, FOUL 18.3MTRS. LEAST E/S DEPTH 18.6 IN GEN DEPTH 22MTRS. NO SCOUR. LIES 000/180 DEGS. STRONG MAGNETIC ANOMALY. (NP 1016, HI 1002). BR STD.

**Latitude = 50 40'.517 N Longitude = 000 06'.600 W [OGB] Square Number = 136 State = LIVE**

Wreck Number 20056 Classification = Unclassified  
 Symbol WK SW 14.6 Largest Scale Chart = 1652  
 Charting Comments

Old Number 013603644  
 Category Dangerous wreck

WGS84 Position Latitude = 50 40'.553 N Longitude = 000 06'.693 W  
 WGS84 Origin 3-D Cartesian Shift (BW)  
 Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method Electronic Distance Measuring System

Position Quality Surveyed

Position Accuracy 25.0

Area at Largest Scale No

Depth 14.6 metres

Drying Height

Height

General Depth 28 metres

Vertical Datum Lowest astronomical tide

Depth Method Swept by wire-drag

Depth Quality Least depth known

Depth Accuracy

Conspic Visual NO Conspic Radar NO

Historic NO Military NO Existence Doubtful NO

Non Sub Contact NO

Last Amended 13/03/2000

Position Last Amended 13/03/2000

Position Last Latitude = 50 40'.500 N Longitude = 000 06'.633 W

Name CITY OF WATERFORD

Type SS

Flag BRITISH

Dimensions Length = 82.3 metres Beam = 11.0 metres Draught = 4.9 metres

Tonnage 1334 Gross

Cargo 1000 TONS GENERAL

Date Sunk 14/04/1949

Sonar Dimensions Length = 96.5 metres Width = 14.4 metres Shadow Height = 10.6 metres

Orientation 102/282

Magnetic Anomaly

Debris Field

Scour Depth = 0.0 metres Length = Orientation =

Markers

General Comments APPEARS UPRIGHT, MIDSHIPS COLLASPED

Circumstances of Loss

\*\*IN COLLISION WITH GREEK VESSEL 'MARPEA' IN FOG APPROX 12M OFF BEACHY HEAD. SINGLE SCREW VESSEL, BUILT 1921, WAS ON PASSAGE ANTWERP TO CORK. (LLOYDS, TELECON, 9.9.75).  
\*\*BUILT BY CALDON SHIP & ENGINEERING, DUNDEE, WITH 3 CYLINDER TRIPLE EXPANSION ENGINE OF 196HP & 2 BOILERS. EX- SKERRIES II. PURCHASED IN 1946 BY PALGRAVE, MURPHY & CO, DUBLIN AND RENAMED CITY OF WATERFORD. VESSEL SANK QUICKLY FOLLOWING COLLISION WITH 'MARPEA'. CREW RESCUED. (K MCDONALD, DIVER MAGAZINE FEB'04)

#### Surveying Details

\*\*H2411/49 11.11.59 SANK 21M E OF OWERS LTV. NOT LOCATED BY TH. (TH, 18.5.49).  
\*\*H1287/75 9.9.75 & H2318/75 21.11.75 WK LOCATED BY DIVERS, FROM INFORMATION SUPPLIED BY FISHERMAN, IN 504020.5N, 000639.5W [OGB] USING DECCA. VESSEL IS UPRIGHT, HEADING WEST. A SINGLE SCREW STEAMSHIP WITH FOUR LARGE HOLDS - TWO EITHER SIDE OF BRIDGE. NO CARGO SEEN. HULL INTACT AND TWO DERRICKS STANDING UP TO WITHIN 10MTRS OF THE SURFACE AT LOW WATER. WHEELHOUSE INTACT. (R P WATTS, SUB-AQUA DIVER, BRIGHTON, LTRS DTD 11.8.75 & 1.9.75). [THIS MAY BE THE 'CITY OF WATERFORD' SUNK 14.4.49 IN 503900N,000750W]. RNW INFORMED AND NAVEAM 288/75 ISSUED. HMS FAWN [WITHIN SURVEY AREA] INFORMED. CHART AS USC 10MTRS. - NM 2431/75.  
\*\*H2318/74 26.9.75 REPLY FROM HMS FAWN - WRECK NOT LOCATED ON SONAR SEARCH OF AREA, NOT INVESTIGATED FURTHER DUE TO POOR WEATHER CONDITIONS. SUGGEST WIRE SWEEP. (HMS FAWN, SIG DTD 26.9.75).  
\*\*H2318/74 20.11.75 WRECK LOCATED IN 504025N, 000655W [OGB] USING DECCA. LEAST E/S DEPTH 16.5MTRS. NOT INVESTIGATED FURTHER DUE TO POOR WEATHER CONDITIONS. (HMS FAWN, SIG DTD 6.10.75). CHART AS WK 16.5MTRS [9FMS OFT] IN REVISED POSN. - NM 2431/75. RNW INFORMED - NAVEAM 311/75 ISSUED.  
\*\*H3051/75 22.4.76 LOCATED IN 504031N, 000639W [OGB], CONFIRMED BY SHORE ANGLES. CHAIN SWEEP - FOUL AT 50FT, CLEAR AT 48FT [LAT] IN GEN DEPTHS 92 TO 95FT. WK APPEARS UPRIGHT, HEADING E/W. SONAR SEARCH 2 SQ. MILES AROUND POSN FAILED TO LOCATE FURTHER OBSTN. (TH HN & TELEX DTD 29/12/75). AMEND TO SW 14.6MTRS [8.0FMS] IN REVISED POSN. - NM 851/76.  
\*\*H3051/75 12.5.76 REPORTED LOCATED & IDENTIFIED BY LOCAL DIVER IN 504030N, 000638W [OGB] USING HIFIX. NO OTHER OBSTNS WITHIN HALF MILE RADIUS. (SOISS, SIG DTD 11.5.76). NCA. AWAIT FULL REPORT.  
\*\*H4121/76 24.8.76 WK IN 504030N, 000637W [OGB] USING HIFIX [2 LOP]. DECCA USED. DCS3 INVESTIGATION & DISPROVING SEARCH CARRIED OUT APPROX HALF MILE RADIUS AROUND POSNS 504025N, 000655W & 503900N 000750W. LOCAL DIVER AND FISHERMAN BOTH CONFIRM WK IS THE 'CITY OF WATERFORD' & THAT THIS IS THE ONLY WRECK IN THE NEAR VICINITY. ACCEPT THE THV SWEEP [14.6MTRS - SEE SOISS SIG DTD 11.5.76]. LEAST E/S DEPTH 18.7MTRS IN GEN DEPTH 27-28MTRS [BUMPY]. SCOUR 30MTRS. WK SITS UPRIGHT SOME 9.3MTRS HIGH, LYING E/W. SURVEYED 6.5.76. (HMS ECHO, REPORT FOR HI 41/76). NCA.  
\*\*H1309/79 24.9.79 LIES ON EVEN KEEL, SLIGHT LIST TO PORT. BOWS TO W. SUPERSTRUCTURE PARTLY COLLAPSED. PROP SALVED. MUCH FISHING TACKLE. (J SALSURY, 7.8.79).  
\*\*H1965/76 1.12.80 EXAM'D 26.2.80 IN 504031N, 000636W [OGB] USING TRISPONDER. DECCA USED. LEAST E/S DEPTH 20.9 IN GEN DEPTH 28MTRS. NO SCOUR. HYDROSEARCH LENGTH 96.5MTRS, BEAM 14.4MTRS, HT 10.6MTRS. APPEARS UPRIGHT, LYING 102/282DEGS, WITH BOWS W. SUPERSTRUCTURE AMIDSHIPS, HATCHES FOR'D & AFT. SCOUR EXTENDS W. (HMS BULLDOG, HI 37A/77). RETAIN SWEEP DEPTH IN REVISED POSN. BR STD.

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

\*\*25.2.05 LIES IN 36MTRS AT HW. BOW INTACT, BOTH ANCHORS IN PLACE. ROTATING CRANE BASES IN PLACE EITHER SIDE OF DECK AFT OF FORWARD HOLD. 2ND HOLD COLLAPSED ALMOST TO SEABED LEVEL, WITH A FEW RIBS STANDING. PORT BOILER BURIED IN DEBRIS, STARBOARD BOILER BROKEN OPEN BY LARGE ADMIRALTY PATTERN ANCHOR WHICH IS OF AN OLDER DESIGN THAN THE WK, POSSIBLY DUMPED BY FV WHICH HAD TRAWLED IT UP. TRIPLE EXPANSION ENGINE STANDS INTACT.

SAND BUILT UP ALONG PORT SIDE TOWARDS STERN AND FISHING NET ALSO SNAGGED. STERN INTACT & UPRIGHT. PROPELLER SALVAGED AND RUDDER MISSING. LARGE WINCH ON STERN. PHOTOS & DIAGRAM. (DIVER MAGAZINE FEB'05).

**Latitude = 50 40'.133 N Longitude = 000 17'.317 W [OGB] Square Number = 136 State = LIVE**

Wreck Number 20175 Classification = Unclassified  
 Symbol OB 25.0 Largest Scale Chart = 1652  
 Charting Comments

Old Number 013604983  
 Category Undefined

WGS84 Position Latitude = 50 40'.169 N Longitude = 000 17'.409 W  
 WGS84 Origin 3-D Cartesian Shift (BW)  
 Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method Electronic Distance Measuring System

Position Quality Surveyed

Position Accuracy 25.0

Area at Largest Scale No

Depth 25.0 metres

Drying Height

Height

General Depth 27 metres

Vertical Datum Lowest astronomical tide

Depth Method Found by echo-sounder

Depth Quality Least depth known

Depth Accuracy

Conspic Visual NO Conspic Radar NO

Historic NO Military NO Existence Doubtful NO

Non Sub Contact NO

Last Amended 13/03/2000

Position Last Amended

Position Last Latitude = Longitude =

Name

Type OBSTRUCTION

Flag

Dimensions Length = Beam = Draught =

Tonnage

Cargo

Date Sunk

Sonar Dimensions Length = Width = Shadow Height =

Orientation

Magnetic Anomaly

Debris Field

Scour Depth = 0.0 metres Length = Orientation =

Markers

## General Comments

## Circumstances of Loss

## Surveying Details

\*\*H1965/76 4.12.80 VERY SMALL CONTACT EXAM'D 2.5.80 IN 504008N, 001719W [OGB] USING TRISPONDER. DECCA USED. LEAST E/S DEPTH 25.4 IN GEN DEPTH 27MTRS. NO SCOUR. PROPOSE CLASSIFY AS OBSTN. (HMS BULLDOG, HI 37A/77). CHART AS OB 25.0MTRS. R/P.

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

**Latitude = 50 39'.817 N Longitude = 000 17'.050 W [OGB] Square Number = 136 State = LIVE**

Wreck Number 20038 Classification = Unclassified  
 Symbol WK 25.5 Largest Scale Chart = 1652  
 Charting Comments

Old Number 013603450  
 Category Dangerous wreck

WGS84 Position Latitude = 50 39'.852 N Longitude = 000 17'.142 W  
 WGS84 Origin 3-D Cartesian Shift (BW)  
 Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method Electronic Distance Measuring System

Position Quality Surveyed

Position Accuracy 25.0

Area at Largest Scale No

Depth 25.5 metres

Drying Height

Height

General Depth 28 metres

Vertical Datum Lowest astronomical tide

Depth Method Found by echo-sounder

Depth Quality Least depth known

Depth Accuracy

Conspic Visual NO Conspic Radar NO

Historic NO Military NO Existence Doubtful NO

Non Sub Contact NO

Last Amended 14/03/2000

Position Last Amended

Position Last Latitude = Longitude =

Name LULONGA (POSSIBLY)

Type SS

Flag BRITISH

Dimensions Length = 59.4 metres Beam = 9.9 metres Draught = 3.5 metres

Tonnage 821 Gross

Cargo BALLAST

Date Sunk 26/07/1940

Sonar Dimensions Length = 38.0 metres Width = 5.0 metres Shadow Height = 1.8 metres



Orientation 065/245

Magnetic Anomaly

Debris Field

Scour Depth = 0.0 metres Length = Orientation =

Markers

General Comments

Circumstances of Loss

\*\*EX-BRABO, EX-KNOTTINGLY. BUILT IN 1907 BY J CROWN & SONS LTD, SUNDERLAND. OWNED AT TIME OF LOSS BY HOOK SS CO LTD. TWO BOILERS, TRIPLE EXPANSION ENGINE OF 99 NHP, SINGLE SHAFT. PASSAGE GOOLE FOR SHOREHAM-BY-SEA. TORPEDOED BY E-BOAT. 1 MAN LOST. (SIBI, WW2SL & LL WW2).

Surveying Details

\*\*H01001/40 SUNK 10MILES S OF SHOREHAM. (MERCHANT AND FISHING VESSELS LISTS OF LOSSES, 26.7.40).

\*\*H01001/40 9.1.41 REPD POSN 503945N, 001115W. (ADMIRALTY). NCA.

\*\*7.8.53 NOW CHARTED AS NDW PA IN 503945N, 001115W ON NC F6841.

\*\*23.7.71 NOW CHARTED AS USC PA 18MTRS. (TONNAGE KNOWN). NC 1652.

\*\*H1965/76 1.12.80 NOTHING FOUND DURING INTENSIVE SEARCH, WITHIN 400MTRS OF 503945N, 001115W. WK LOCATED IN 503949N, 001703W [OGB] USING TRISPONDER & EXAM'D 12.2.80. LEAST E/S DEPTH 26.4 IN GEN DEPTH 27.5MTRS. NO SCOUR. HYDROSEARCH LENGTH 38MTRS, BEAM 5MTRS, HT 1.8MTRS. LYING, ALMOST ENTIRELY COVERED BY SAND, 065/245DEGS. (HMS BULLDOG, HI 37A/77). CHART AS WK 25.5MTRS IN REVISED POSN. BR STD.

**Latitude = 50 39'.583 N Longitude = 000 20'.433 W [OGB] Square Number = 136 State = LIVE**

Wreck Number 20185 Classification = Unclassified

Symbol F Largest Scale Chart = 1652

Charting Comments

Old Number 013605094

Category Foul ground

WGS84 Position Latitude = 50 39'.619 N Longitude = 000 20'.525 W

WGS84 Origin 3-D Cartesian Shift (BW)

Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method Electronic Distance Measuring System

Position Quality Surveyed

Position Accuracy 25.0

Area at Largest Scale No

Depth

Drying Height

Height

General Depth 28 metres

Vertical Datum Lowest astronomical tide

Depth Method

Depth Quality Depth unknown

Depth Accuracy

Conspic Visual NO Conspic Radar NO

Historic NO Military NO Existence Doubtful NO

Non Sub Contact NO

Last Amended 14/11/2002

Position Last Amended

Position Last Latitude = Longitude =

Name

Type

Flag

Dimensions Length = Beam = Draught =

Tonnage

Cargo

Date Sunk

Sonar Dimensions Length = Width = Shadow Height =

Orientation

Magnetic Anomaly

Debris Field

Scour Depth = 0.0 metres Length = Orientation =

Markers

General Comments

Circumstances of Loss

Surveying Details

\*\*H1965/76 4.12.80 TWO LONG GIRDERS, OR OTHER WRECKAGE ON SEABED, EXAM'D 1.12.79 IN 503935N, 002026W [OGB] USING TRISPONDER [2 LOP]. LEAST E/S DEPTH 24.4 IN GEN DEPTH 29MTRS. NO SCOUR. POOR E/S TRACE. HYDROSEARCH LENGTH 44.4MTRS, HT 0.6MTRS. (HMS BULLDOG HI 37A/77). CHART AS WK 24.0MTRS. BR STD.

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

\*\*HH091/002/01 14.11.02 NOT LOCATED, DISPROVED. (NP 1016, HI 1002). AMEND TO FOUL. BR STD.

**Latitude = 50 39'.233 N Longitude = 000 17'.517 W [OGB] Square Number = 136 State = LIVE**

Wreck Number 20174 Classification = Unclassified

Symbol OB 28.5 Largest Scale Chart = 1652

Charting Comments

Old Number 013604971

Category Undefined

WGS84 Position Latitude = 50 39'.269 N Longitude = 000 17'.609 W

WGS84 Origin 3-D Cartesian Shift (BW)

Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method Electronic Distance Measuring System

Position Quality Surveyed

Position Accuracy 25.0

Area at Largest Scale No

Depth 28.5 metres

Drying Height  
 Height  
 General Depth 30 metres  
 Vertical Datum Lowest astronomical tide  
 Depth Method Found by echo-sounder  
 Depth Quality Least depth known  
 Depth Accuracy  
 Conspic Visual NO Conspic Radar NO  
 Historic NO Military NO Existence Doubtful NO  
 Non Sub Contact NO

Last Amended 15/03/2000  
 Position Last Amended  
 Position Last Latitude = Longitude =

Name  
 Type AIRCRAFT  
 Flag ?GERMAN  
 Dimensions Length = Beam = Draught =  
 Tonnage  
 Cargo  
 Date Sunk  
 Sonar Dimensions Length = Width = Shadow Height = 2.0 metres  
 Orientation

Magnetic Anomaly  
 Debris Field  
 Scour Depth = 1.0 metres Length = Orientation =

Markers  
 General Comments

Circumstances of Loss  
 \*\*PRESUMABLY A WW2 LOSS.

Surveying Details  
 \*\*H1965/76 4.12.80 SMALL UNDEFINED CONTACT EXAM'D 2.5.80 IN 503914N, 001731W [OGB] USING TRISPONDER. DECCA USED. LEAST E/S DEPTH 28.5 IN GEN DEPTH 30MTRS. NO SCOUR. HYDROSEARCH HT 1MTR. POSSIBLY A BURIED WK. (HMS BULLDOG, HI 37A/77). CHART AS OB 28.5MTRS. R/P.  
 \*\*HH100/351/04 12.11.91 DIVED ON. REMAINS OF AN ALUMINIUM AIRCRAFT. BROKEN UP AND ALMOST BURIED. SINGLE V-12 ENGINE. PANEL INSTRUMENT WITH GERMAN WRITING. STANDS 2MTRS HIGH. SCOUR 1MTR DEEP. (T W BENNETTO, 2.11.91). NCA.

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

**Latitude = 50 38'.683 N Longitude = 000 08'.267 W [OGB] Square Number = 136 State = LIVE**

Wreck Number 20017 Classification = Unclassified  
 Symbol WK 38.0 Largest Scale Chart = 1652  
 Charting Comments

Old Number 013603231

Category Non-dangerous wreck

WGS84 Position Latitude = 50 38'.719 N Longitude = 000 08'.360 W  
 WGS84 Origin 3-D Cartesian Shift (BW)  
 Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method Electronic Distance Measuring System

Position Quality Surveyed

Position Accuracy 25.0

Area at Largest Scale No

Depth 38.0 metres

Drying Height

Height

General Depth 45 metres

Vertical Datum Lowest astronomical tide

Depth Method Found by echo-sounder

Depth Quality Least depth known

Depth Accuracy

Conspic Visual NO Conspic Radar NO

Historic NO Military NO Existence Doubtful NO

Non Sub Contact NO

Last Amended 15/03/2000

Position Last Amended

Position Last Latitude = Longitude =

Name

Type TRAWLER

Flag

Dimensions Length = Beam = Draught =

Tonnage

Cargo

Date Sunk

Sonar Dimensions Length = 30.4 metres Width = 12.2 metres Shadow Height = 6.6 metres

Orientation 010/190

Magnetic Anomaly

Debris Field

Scour Depth = 0.0 metres Length = Orientation =

Markers

General Comments UPRIGHT

Circumstances of Loss

Surveying Details

\*\*30.12.74 LARGE WK REPD IN 503848N, 000830W [OGB] USING DECCA. (E GILES, 1974).

\*\*H1965/76 9.7.79 DCS3 CONTACT, CLASSIFIED WK, LOCATED IN 503841N, 000818W [OGB]. LIES NE/SW. LENGTH 50MTRS. NOT EXAM'D. (HMS BULLDOG, HI 37A/77). CHART AS NDW. R/P.

\*\*H1965/76 11.12.79 EXAM'D 17.10.79 IN 503841.8N, 000811.5W [OGB] USING TRISPONDER [2 LOP]. DECCA USED. LEAST E/S DEPTH 41.4 IN GEN DEPTHS 43-50MTRS. SCOUR 1.5MTRS DEEP. DCS3 HT

5.5MTRS, LENGTH 35MTRS, BEAM 8.5MTRS. LYING N/S. SMALL WK WITH BROKEN BACK. (HMS BULLDOG, HI 37A/77). AMEND TO WK 41MTRS IN 503842N, 000812W. R/P.

\*\*H1965/76 28.11.80 EXAM'D 24.2.80 IN 503841N, 000816W [OGB] USING TRISPONDER. LEAST E/S DEPTH 42 IN GEN DEPTH 45MTRS. NO SCOUR. HYDROSEARCH LENGTH 30.4MTRS, BEAM 12.2MTRS, HT 6.6MTRS. UPRIGHT, LYING IN SANDWAVES, 010/190DEGS, BOWS S. NO MASTS, 1 LARGE, OR 2 SMALL HOLDS FOR'D OF SUPERSTRUCTURE. (HMS BULLDOG, HI 37A/77). AMEND TO WK 38MTRS IN REVISED POSN. R/P.

\*\*4.11.91 DIVED ON. WK OF 30MTRS LONG TRAWLER. LIES UPRIGHT ON A BANK WITH STERN IN 48MTRS AND BOW IN 35MTRS. AN ELECTRICAL SIGNAL LAMP RECOVERED FROM WK INDICATING THAT IT IS PROBABLY WW2 VICTIM. (N BLAKE, TELECON).

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

**Latitude = 50 38'.617 N Longitude = 000 13'.883 W [OGB] Square Number = 136 State = LIVE**

Wreck Number 20014 Classification = Unclassified  
 Symbol WK 35.0 Largest Scale Chart = 1652  
 Charting Comments

Old Number 013603188  
 Category Non-dangerous wreck

WGS84 Position Latitude = 50 38'.653 N Longitude = 000 13'.976 W  
 WGS84 Origin 3-D Cartesian Shift (BW)  
 Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method Electronic Distance Measuring System  
 Position Quality Surveyed  
 Position Accuracy 25.0

Area at Largest Scale No  
 Depth 35.0 metres

Drying Height  
 Height

General Depth 43 metres  
 Vertical Datum Lowest astronomical tide  
 Depth Method Swept by vertical acoustic system  
 Depth Quality Least depth known

Depth Accuracy  
 Conspic Visual NO Conspic Radar NO  
 Historic NO Military NO Existence Doubtful NO  
 Non Sub Contact NO

Last Amended 15/03/2000  
 Position Last Amended  
 Position Last Latitude = Longitude =

Name HMS MINION  
 Type DESTROYER  
 Flag BRITISH  
 Dimensions Length = 84.1 metres Beam = 8.2 metres Draught = 3.0 metres  
 Tonnage 1042 Displacement  
 Cargo  
 Date Sunk ??/??/1921



Sonar Dimensions Length = 89.0 metres Width = 10.0 metres Shadow Height = 7.8 metres  
Orientation 072/252

#### Magnetic Anomaly

#### Debris Field

Scour Depth = 0.0 metres Length = Orientation =

#### Markers

General Comments BROKEN ACROOS AMIDSHIPS

#### Circumstances of Loss

\*\*SOLD FOR BREAKING IN GERMANY BUT SANK EN ROUTE. (THE NAUTICAL MAGAZINE, VOL.246, NO.6, PP.401/402).

#### Surveying Details

\*\*30.12.74 FF/WK REPD IN 503845N, 001348W USING DECCA. (E GILES, 1974).

\*\*H1965/76 9.7.79 DCS3 CONTACT, CLASSIFIED WK, LOCATED IN 503838N, 001347W [OGB]. LYING NE/SW, 100MTRS LONG. NOT EXAM'D. (HMS BULLDOG HI 37A/77). WK LOCATED 7.6.75 IN 503834N, 001352W [OGB] USING HIFIX [2 LOP]. LEAST E/S DEPTH 30.6 IN GEN DEPTH 43.6MTRS. DCS3 HT 9.6MTRS. SCOUR LYING NE/SW. (HMS FAWN, HI 41/75). ACCEPT HMS FAWN'S DEPTH IN HMS BULLDOG'S POSN. CHART AS WK 30MTRS IN 503838N, 001347W [OGB]. R/P.

\*\*H3823/78 21.8.79 WK LOCATED USING DECCA. NOT DIVED ON YET. (E GILES, 16.8.79).

\*\*H1965/76 11.12.79 EXAM'D 16/17.10.79 IN 503837N, 001353W [OGB] USING TRISPONDER [2 LOP]. DECCA USED. LEAST E/S DEPTH 37.9 IN GEN DEPTH 45MTRS. SCOUR 0.5MTRS DEEP. DCS3 HT 6.6MTRS, LENGTH 92MTRS, BEAM 14.5MTRS. LYING 090/270DEGS. LARGE INTACT WK WHICH APPEARS TO BE ON ITS SIDE. (HMS BULLDOG, HI 37A/77). AMEND TO WK 37MTRS IN REVISED POSN. R/P.

\*\*H1965/76 28.11.80 EXAM'D 17.2.80 IN 503837N, 001354W [OGB] USING TRISPONDER. LEAST DEPTH 36 IN GEN DEPTH 43MTRS. NO SCOUR. HYDROSEARCH LENGTH 89MTRS, BEAM 10MTRS, HT 7.8MTRS. LARGE WK, WITH CONSPIC FUNNEL ON CENTRAL SUPERSTRUCTURE. (HMS BULLDOG HI 37A/77). AMEND TO WK 35MTRS. R/P.

\*\*H1310/83/4 19.1.82 DIVED ON AND FOUND TO BE WK OF WW1 TORPEDO BOAT DESTROYER, SIMILAR TO 'L CLASS'. HULL IS INTACT & LYING ON EVEN KEEL. BEAM ABT 30FT WIDE. BRIDGE COLLAPSED ONTO FOREDECK. NO SIGNS OF FUNNELS, BUT 3 HOLES WHERE THEY USED TO BE. 2 TORPEDO TUBES FARTHER AFT. (T W BENNETTO, 4.1.83). NCA.

\*\*H1310/84/32 7.9.84 AFTER FURTHER DIVES IN 1984, CAN CONFIRM AS A BRITISH DESTROYER, BRIDGE TELEGRAPH MADE BY CHADBURNS, LIVERPOOL; AND TALLIES FOR 'WARD ROOM' & 'DEPTH CHARGE TELEGRAPH' HAVE BEEN LIFTED. STERN OF VESSEL HAS BEEN BLOWN OFF (T W BENNETTO, 4.9.84). [COULD POSSIBLY BE HMS LAFOREY - SEE [21090] IN 505530N, 012730E]. NCA.

\*\*H1310/86/10 3.4.86 EXAM'D 1983. KNOWN LOCALLY AS THE 'NORTH WESTER'. (SOUTHERN MARINE SERVICES, WK NO 047). NCA.

\*\*H1310/29/86 25.11.86 DIVED AGAIN 11.9.85. HOLES PREVIOUSLY THOUGHT TO BE WHERE FUNNELS HAD STOOD NOW THOUGHT TO BE EITHER FOR GUN MOUNTINGS OR TORPEDO TUBES. NO GUNS HAVE BEEN FOUND. (T W BENNETTO). NCA.

\*\*H1310/88/30 29.6.88 WK IS BROKEN ACROSS AMIDSHIPS. GUNS HAVE BEEN REMOVED AND BRIDGE HAS COLLAPSED. LEAST DEPTH AT LW - 42MTRS IN GEN DEPTH 46MTRS. STERN ALMOST BURIED BY SANDWAVE. APPEARS TO MATCH 'L CLASS' DESTROYER AND, IF SO, CAN ONLY BE HMS LAFOREY. NO CONCLUSIVE EVIDENCE YET. (P A VAN DER BOON). NCA.

\*\*15.1.92 SHIP BUILDERS PLATE RECOVERED INDICATING THAT THIS IS REMAINS OF HMS MINION. (THE NAUTICAL MAGAZINE, VOL 246, NO 6). NCA.

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

**Latitude = 50 38'.583 N Longitude = 000 11'.333 W [OGB] Square Number = 136 State = LIVE**

Wreck Number 20012 Classification = Unclassified  
 Symbol WK 36.0 Largest Scale Chart = 1652  
 Charting Comments

Old Number 013603164  
 Category Non-dangerous wreck

WGS84 Position Latitude = 50 38'.619 N Longitude = 000 11'.426 W  
 WGS84 Origin 3-D Cartesian Shift (BW)  
 Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method Electronic Distance Measuring System

Position Quality Surveyed

Position Accuracy 13.0

Area at Largest Scale No

Depth 36.0 metres

Drying Height

Height

General Depth 46 metres

Vertical Datum Lowest astronomical tide

Depth Method Found by echo-sounder

Depth Quality Least depth known

Depth Accuracy

Conspic Visual NO Conspic Radar NO

Historic NO Military NO Existence Doubtful NO

Non Sub Contact NO

Last Amended 18/06/2007

Position Last Amended

Position Last Latitude = Longitude =

Name GLENARM HEAD (POSSIBLY)

Type SS

Flag BRITISH

Dimensions Length = 109.7 metres Beam = 14.0 metres Draught = 6.1 metres

Tonnage 3908 Gross

Cargo AMMUNITION

Date Sunk 04/01/1918

Sonar Dimensions Length = 90.0 metres Width = 22.0 metres Shadow Height = 7.6 metres

Orientation 045/225

Magnetic Anomaly

Debris Field

Scour Depth = 4.0 metres Length = Orientation =

Markers

General Comments INTACT & UPRIGHT

Circumstances of Loss

\*\*TORPEDOED AND SUNK 4.1.18 5M SW BY S FROM BRIGHTON LTV WHILST EN ROUTE FROM SOUTHAMPTON TO BOULOGNE. (WW1SL & LL WW1).

\*\*TORPEDOED AND SUNK BY GERMAN SUBMARINE UB-30 ON 5.1.18. (DER KRIEG ZUR SEE).

#### Surveying Details

\*\*SUNK 5 MILES SW BY S FROM BRIGHTON LTV. (WW1SL).

\*\*H1965/76 9.7.79 DCS3 CONTACT, CLASSIFIED WK, LOCATED IN 503835N, 001120W [OGB]. LYING N/S, LENGTH 100MTRS. NOT EXAM'D. (HMS BULLDOG, HI 37A/77). WK LOCATED 24.6.75 IN 503838N, 001122W [OGB] USING HIFIX [2 LOP]. LEAST E/S DEPTH 44MTRS. DCS3 HT 7.8MTRS. (HMS FAWN, HI 41/75). CHART AS WK 36MTRS IN HMS BULLDOG'S POSN.

\*\*H1965/76 11.12.79 EXAM'D 17.10.79 IN 503836.7N, 001122.3W [OGB] USING TRISPONDER. LEAST E/S DEPTH 36.9 IN GEN DEPTH 46MTRS. SCOUR 4MTRS DEEP. DCS3 HT 7.6MTRS, LENGTH 90MTRS, BEAM 22MTRS. LYING 060/240DEGS. LARGE WK. (HMS BULLDOG, HI 37A/79). NCA.

\*\*H1965/76 27.11.80 EXAM'D 24.10.80 IN 503838N, 001121W [OGB]. REPD AS UPRIGHT, NO SIGN OF MASTS 4 HOLDS - 2 EITHER SIDE OF 'MIDSHIPS' SUPERSTRUCTURE. LYING WITH BOWS SW. (HMS BULLDOG, HI 37A/77). NCA.

\*\*H1310/84/32 6.9.84 DIVED ON IN 1984. INTACT & UPRIGHT. ABT 90MTRS LONG. LYING WITH BOWS SW. 2 HOLDS FOR'D & AFT OF CENTRAL SUPERSTRUCTURE, WHICH HAS COLLAPSED. GUN MOUNT ON STERN, BUT NO GUN. BOXES OF LIVE READY-USE AMMUNITION BELOW MOUNTING. PART OF BINNACLE GIVING MAKERS NAME LIFTED. (T W BENNETTO, 4.9.84). NCA.

\*\*H1310/86/10 3.4.86 EXAM'D JUN '85. KNOWN LOCALLY AS THE 'NORTH EASTER'. (SOUTHERN MARINE SERVICES, WK NO 045).

\*\*H1310/88/30 28.6.88 WK OF 'PORTHKERRY' [PREVIOUSLY THOUGHT TO BE THIS WK] HAS BEEN POSITIVELY IDENTIFIED BY BELL IN 503746N, 001846W [SEE 20238]. THIS WK IS LARGE AND MUST HAVE BEEN ARMED. BRASS AMMUNITION ROUNDS HAVE BEEN FOUND, INCLUDING ONE WHICH HAD BEEN EXPENDED, MARKED '18 PDR. 1916'. GUN NOT FOUND. A DIVER WAS LOST WHEN DIVING THIS WK IN 1986 AND WAS NEVER FOUND. (P A VAN DER BOON).

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

**Latitude = 50 38'.500 N Longitude = 000 06'.500 W [OGB] Square Number = 136 State = LIVE**

Wreck Number 58306 Classification = Unclassified  
 Symbol F Largest Scale Chart = 1652  
 Charting Comments  
 Old Number  
 Category Foul ground

WGS84 Position Latitude = 50 38'.536 N Longitude = 000 06'.593 W  
 WGS84 Origin 3-D Cartesian Shift (BW)  
 Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method DECCA navigator  
 Position Quality Precisely known  
 Position Accuracy  
 Area at Largest Scale No

Depth  
 Drying Height  
 Height  
 General Depth 51 metres  
 Vertical Datum Lowest astronomical tide  
 Depth Method  
 Depth Quality Depth unknown

Depth Accuracy  
 Conspic Visual NO Conspic Radar NO  
 Historic NO Military NO Existence Doubtful NO  
 Non Sub Contact NO

Last Amended 20/03/2000  
 Position Last Amended  
 Position Last Latitude = Longitude =

Name  
 Type FISHERMENS FASTENER  
 Flag  
 Dimensions Length = Beam = Draught =  
 Tonnage  
 Cargo  
 Date Sunk

Sonar Dimensions Length = Width = Shadow Height =  
 Orientation

Magnetic Anomaly  
 Debris Field  
 Scour Depth = Length = Orientation =

Markers  
 General Comments

Circumstances of Loss

Surveying Details  
 \*\*30.12.74 FF REPD IN 503830N, 000630W [OGB] USING DECCA. (E GILES, 1974).

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

**Latitude = 50 38'.500 N Longitude = 000 01'.800 W [OGB] Square Number = 136 State = LIVE**

Wreck Number 20162 Classification = Unclassified  
 Symbol WK 29.0 Largest Scale Chart = 1652  
 Charting Comments

Old Number 013604843  
 Category Non-dangerous wreck

WGS84 Position Latitude = 50 38'.536 N Longitude = 000 01'.893 W  
 WGS84 Origin 3-D Cartesian Shift (BW)  
 Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method Electronic Distance Measuring System  
 Position Quality Surveyed  
 Position Accuracy 13.0  
 Area at Largest Scale No  
 Depth 29.0 metres  
 Drying Height

## Height

General Depth 34 metres  
 Vertical Datum Lowest astronomical tide  
 Depth Method Found by echo-sounder  
 Depth Quality Least depth known  
 Depth Accuracy  
 Conspic Visual NO Conspic Radar NO  
 Historic NO Military NO Existence Doubtful NO  
 Non Sub Contact NO

Last Amended 22/11/1999

Position Last Amended

Position Last Latitude = Longitude =

## Name

Type

Flag

Dimensions Length = Beam = Draught =

Tonnage

Cargo

Date Sunk

Sonar Dimensions Length = 147.0 metres Width = 7.0 metres Shadow Height = 4.4 metres

Orientation 090/270

## Magnetic Anomaly

Debris Field

Scour Depth = 0.0 metres Length = Orientation =

## Markers

General Comments

## Circumstances of Loss

## Surveying Details

\*\*H1965/76 28.11.80 EXAM'D 24.4.80 IN 503830N, 000148W [OGB] USING TRISPONDER. LEAST E/S DEPTH 29.6 IN GEN DEPTH 33.5MTRS. NO SCOUR. HYDROSEARCH - LENGTH 147 MTRS, BEAM 7MTRS, HT 4.4MTRS. LYING, ACROSS SAND WAVES, 090/270 DEGS. W END SOLID, E END BROKEN UP. POSSIBLY SECTION OF BOOM. (HMS BULLDOG HI 37A/77). PROBABLY BOMBARDON OR PONTOON SECTIONS LOST WHEN BEING TOWED TO MULBERRY HARBOUR SITES DURING WWII. INS AS WK 29MTRS. BR STD.

**Latitude = 50 38'.036 N Longitude = 000 20'.125 W [WGD] Square Number = 136 State = LIVE**

Wreck Number 19998 Classification = Unclassified

Symbol WK SW 26.0 Largest Scale Chart = 1652

Charting Comments

Old Number 013603012

Category Dangerous wreck

WGS84 Position Latitude = 50 38'.036 N Longitude = 000 20'.125 W

WGS84 Origin Original

Horizontal Datum WGD WGS (1984)



Position Method Differential Global Positioning System  
 Position Quality Surveyed  
 Position Accuracy 7.0  
 Area at Largest Scale No  
 Depth 26.0 metres  
 Drying Height  
 Height  
 General Depth 34 metres  
 Vertical Datum Lowest astronomical tide  
 Depth Method Swept by wire-drag  
 Depth Quality Least depth known  
 Depth Accuracy  
 Conspic Visual NO Conspic Radar NO  
 Historic NO Military NO Existence Doubtful NO  
 Non Sub Contact NO

Last Amended 14/11/2002  
 Position Last Amended 14/11/2002  
 Position Last Latitude = 50 38'.000 N Longitude = 000 20'.033 W

Name STANWOLD  
 Type SS  
 Flag BRITISH  
 Dimensions Length = 64.0 metres Beam = 10.1 metres Draught = 4.3 metres  
 Tonnage 1020 Gross  
 Cargo COAL  
 Date Sunk 27/02/1941

Sonar Dimensions Length = 80.0 metres Width = 40.0 metres Shadow Height = 6.0 metres  
 Orientation 040/220

Magnetic Anomaly Moderate  
 Debris Field  
 Scour Depth = 0.0 metres Length = Orientation =  
 Markers  
 General Comments NEARLY UPSIDE DOWN

#### Circumstances of Loss

**\*\*EX-EASINGWOLD '29, EX-ALFRED KREGLINGER, EX-PERVYSE. BUILT IN 1909 BY OSBOURNE, GRAHAM & CO, SUNDERLAND. OWNED AT TIME OF LOSS BY STANHOPE SS CO LTD. TWO BOILERS, TRIPLE EXPANSION ENGINE OF 106HP, SINGLE SHAFT. PASSAGE SOUTHEND FOR COWES IN CONVOY. CARGO COAL. WAS SEEN TO HAVE LIST TO PORT AND LATER REPORTED TO BE STEERING BADLY. LAST SIGHTED 4.20AM 27.2.41 LISTING TO STARBOARD. NOTHING MORE HEARD, BUT BODIES OF SOME OF CREW WERE LATER WASHED UP IN PEVENSEY BAY.**

#### Surveying Details

**\*\*H1283/75 2.5.75 WK LOCATED IN 503800N, 002005W [OGB] USING DECCA. HULL UPRIGHT & INTACT. IDENTIFIED AS 'EASINGWOLD' FROM BELL. (D M DILLINGHAM, 25.4.75). CHART AS USC 15MTRS [8FMS]. - NM 1031/75.**

**\*\*H4121/76 14.1.77 WRECK LOCATED 6.9.76 IN 503800N, 002002W [OGB] USING HI-FIX [2 LOP]. LEAST E/S DEPTH 25.8MTRS IN GEN DEPTH 34MTRS. SCOUR DEPTH 1MTR. SEABED, SAND WAVES & RIPPLES. DCS3 HEIGHT 7.8 & 10.2MTRS, LENGTH 80MTRS. ORIENTATION SW/NE. HIGHEST POINT AT SW END. LOCATED 6.9.76. (HMS FOX, HI 52/76). CHART AS WK 24MTRS IN REVISED POSN. NC 2450.**

\*\*H1309/76 2.8.77 LARGE FREIGHTER LAYING ON ITS SIDE IN 503806N, 002002W [OGB] USING DECCA. BOWS SW, APPROX 2-3000 TONS. LEAST DEPTH OVER WK 120FT. NO OBSTRUCTION ABOVE 90FT. (D W PECKHAM, SALVAGE CONTRACTOR, 21.11.76).

\*\*H1965/76 6.7.79 WK LOCATED IN 503759N, 002003W [OGB]. DCS3 LENGTH APPROX 80MTRS. NOT EXAMINED. (HMS BULLDOG, HI 37A/77). NCA.

\*\*H1965/76 11.12.79 EXAM'D 17.10.79 IN 503800.4N, 002002.4W [OGB] USING TRISPONDER [2 LOP]. LEAST E/S DEPTH 26.6 IN GEN DEPTH 35MTRS. NO SCOUR. DCS3 HT 9MTRS, LENGTH 77MTRS, BEAM 13.6MTRS. LYING 020/200DEGS APPARENTLY ON ITS SIDE OR UPSIDE DOWN. (HMS BULLDOG, HI 37A/77). NCA.

\*\*H1965/76 27.11.80 EXAM'D USING HYDROSEARCH ON 23.4.80 IN 503757N, 002004W [OGB] USING TRISPONDER. NO OTHER DIFFERENCES. (HMS BULLDOG, HI 37A/77). NCA.

\*\*H1310/81/30 16.11.81 REPD TO BE LYING ON ITS PORT BEAM END AND ALMOST TURNED OVER. HULL INTACT. IRON PROPELLER STILL IN POSN. (T W BENNETTO, 10.11.81).

\*\*H1310/83/29 20.6.83 LIES UPSIDE DOWN. (M SNELLING, SOUTHERN MARINE SERVICES, 14.6.83).

\*\*H1310/83/41 22.6.84 THOUGH NEARLY UPSIDE DOWN IT IS POSSIBLE TO DIVE INSIDE WK UNDER OVERHANG OF THE HULL, WHICH IS FAIRLY INTACT. PILES OF COAL ON SEABED NEARBY. (VULCAN DIVING SERVICES, 19.6.84).

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

\*\*HH091/002/01 14.11.02 EXAM'D 21.8.02 IN 5038.036N, 0020.125W [WGD] USING DGPS. SWEPT CLEAR 26.3, FOUL 26.6MTRS. LEAST E/S DEPTH 26.9 IN GEN DEPTH 34MTRS. NO SCOUR. LENGTH 80MTRS, WIDTH 40MTRS. DCS3 HT 6MTRS LIES 040/220 DEGS. MODERATE MAGNETIC ANOMALY. LARGE, WELL DEFINED WK. (NP 1016, HI 1002). AMEND TO SW 26MTRS. BR STD.

**Latitude = 50 38'.033 N Longitude = 000 18'.433 W [OGB] Square Number = 136 State = LIVE**

Wreck Number 20000 Classification = Unclassified  
 Symbol WK 29.5 Largest Scale Chart = 1652  
 Charting Comments

Old Number 013603036  
 Category Non-dangerous wreck

WGS84 Position Latitude = 50 38'.069 N Longitude = 000 18'.525 W  
 WGS84 Origin 3-D Cartesian Shift (BW)  
 Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method Electronic Distance Measuring System

Position Quality Surveyed

Position Accuracy 25.0

Area at Largest Scale No

Depth 29.5 metres

Drying Height

Height

General Depth 36 metres

Vertical Datum Lowest astronomical tide

Depth Method Swept by vertical acoustic system

Depth Quality Least depth known

Depth Accuracy

Conspic Visual NO Conspic Radar NO

Historic NO Military NO Existence Doubtful NO

Non Sub Contact NO

Last Amended 20/03/2000  
 Position Last Amended  
 Position Last Latitude = Longitude =

Name QUAIL  
 Type SS  
 Flag BRITISH  
 Dimensions Length = 68.3 metres Beam = 8.5 metres Draught = 5.2 metres  
 Tonnage 924 Gross  
 Cargo WOOL  
 Date Sunk 27/08/1886

Sonar Dimensions Length = 79.8 metres Width = 9.1 metres Shadow Height = 6.5 metres  
 Orientation 080/260

Magnetic Anomaly  
 Debris Field  
 Scour Depth = 0.0 metres Length = Orientation =

Markers  
 General Comments SMALL FWD PART ON SIDE, AFTER PART UPRIGHT

Circumstances of Loss  
 \*\*SANK FOLLOWING A COLLISION WITH FRENCH SS 'SAN MARTIN'.

#### Surveying Details

\*\*H1965/76 6.7.79 DCS3 CONTACT, CLASSIFIED WK, LOCATED IN 503802N, 001821W [OGB]. LENGTH APPROX 70MTRS. NOT EXAMINED. (HMS BULLDOG, HI 37A/77). WK LOCATED 25.6.75 IN 503804N, 001819W [OGB] USING HIFIX [2 LOP]. ESTIMATED SONAR HT 11MTRS IN GEN DEPTH 32MTRS. (HMS FAWN, HI 41/75). CHART AS WK 21MTRS IN HMS BULLDOG'S POSN. - NM 1725/79.  
 \*\*21.6.79 VERY OLD STEAMSHIP. TRIPLE EXPANSION ENGINE. LARGE COUNTER STERN. SITTING UPRIGHT WITH NO MASTS OR UPPER WORKS. ORIENTATION NE/SW, BOWS SW. NO SCOUR. AT LEAST 95FT CLEAR OVER WK. (D PECKHAM, BRIGHTON, TELECON). NCA.  
 \*\*H1965/79 11.12.79 EXAM'D 16.10.79 IN 503802.5N, 001821.5W [OGB] USING TRISPONDER [2 LOP]. LEAST E/S DEPTH 32.6 IN GEN DEPTHS 30-43MTRS. NO SCOUR. DCS3 HT 5.4MTRS, LENGTH 60MTRS, BEAM 20MTRS. LYING 030/210DEGS. LARGE INTACT WK, PARTIALLY BURIED IN SAND, BUT GIVING STRONG SONAR RETURN. (HMS BULLDOG, HI 37A/77). AMEND TO WK 32MTRS. BR STD.  
 \*\*H1965/76 4.12.80 EXAM'D 3.5.80 IN 503802N, 001826W [OGB] USING TRISPONDER. LEAST E/S DEPTH 29.6 IN GEN DEPTH 36MTRS. NO SCOUR. HYDROSEARCH LENGTH 79.8MTRS, BEAM 9.1MTRS, HT 6.5MTRS. ALMOST INTACT, BUT WITH POSSIBLE DAMAGE AT BOWS, LYING 080/260DEGS, BOWS W. (HMS BULLDOG, HI 37A/77). AMEND TO WK 29.5MTRS IN REVISED POSN. BR STD.  
 \*\*H1310/81/30 16.11.81 DIVED ON IN 40MTRS AT LW NEAPS. NUMEROUS WOODEN DEADEYES AND A SOUNDING LEAD FOUND. (T W BENNETTO, 10.11.81).  
 \*\*H1310/29/86 25.11.86 DIVED EXTENSIVELY IN 1985. POSITIVELY IDENTIFIED AS THE 'QUAIL' - BELL RECOVERED. FO'C'SLE HAS BEEN CUT OFF ABOUT 12MTRS FROM STEM AND IS LYING ON PORT SIDE ABOUT 10MTRS FROM REMAINDER OF WK. REMAINDER OF HULL IS INTACT AND ON EVEN KEEL IN GEN DEPTH 42MTRS. (T W BENNETTO, 28.10.86).

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

**Latitude = 50 38'.017 N Longitude = 000 12'.933 W [OGB] Square Number = 136 State = LIVE**

Wreck Number 20001 Classification = Unclassified

Symbol WK 23.0 Largest Scale Chart = 1652

Charting Comments

Old Number 013603048

Category Dangerous wreck

WGS84 Position Latitude = 50 38'.053 N Longitude = 000 13'.026 W

WGS84 Origin 3-D Cartesian Shift (BW)

Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method Electronic Distance Measuring System

Position Quality Surveyed

Position Accuracy 25.0

Area at Largest Scale No

Depth 23.0 metres

Drying Height

Height

General Depth 44 metres

Vertical Datum Lowest astronomical tide

Depth Method Found by echo-sounder

Depth Quality Least depth known

Depth Accuracy

Conspic Visual NO Conspic Radar NO

Historic NO Military NO Existence Doubtful NO

Non Sub Contact NO

Last Amended 17/03/2000

Position Last Amended

Position Last Latitude = Longitude =

Name PAGENTURM

Type SS

Flag BRITISH

Dimensions Length = 122.2 metres Beam = 15.8 metres Draught = 8.5 metres

Tonnage 5000 Gross

Cargo MILITARY STORES

Date Sunk 16/05/1917

Sonar Dimensions Length = 110.5 metres Width = 25.3 metres Shadow Height = 20.5 metres

Orientation 015/195

Magnetic Anomaly

Debris Field

Scour Depth = 5.0 metres Length = Orientation =

Markers

General Comments

Circumstances of Loss

\*\*EX GERMAN, REQUISITIONED & ARMED FOR DEFENSIVE PURPOSES BY ADMIRALTY. TORPEDOED BY GERMAN UB-40 16M W OF BEACHY HEAD.

\*\*TORPEDOED BY GERMAN SUBMARINE 16M W OF BEACHY HEAD WHILST EN ROUTE FROM LONDON TO BARRY. (LL WW1).

## Surveying Details

\*\*H1283/75 & H3051/75 1.5.75 WK LOCATED IN 503801N, 001302W [OGB] USING DECCA. LYING NE/SW & STANDS APPROX 65FT [20MTRS] HIGH. SUSPECT THAT THIS IS WK OF 'MOLDAVIA'. (D M DILLINGHAM, SUBSERVS, 25.4.75). [SEE WK [19852] IN 502308N, 002843W]. CHART AS WK 22MTRS [12FMS]. - NM 1031/75.

\*\*29.9.75 THIS IS A LARGE CARGO VESSEL, APPROX 5-6000 TONS. CERTAINLY NOT THE WK OF 'MOLDAVIA'. (LONDON BSAC, TELECON, 29.9.75 - WK RECENTLY DIVED UPON). NCA.

\*\*H2326/75 11.8.75 WK FIXED IN 503801.8N, 001257.3W [OGB] USING DECCA. (E GILES). NCA.

\*\*H1965/76 9.7.79 LOCATED IN 503801N, 001251W [OGB]. LENGTH FROM DCS3 APPROX 60MTRS. (HMS BULLDOG, HI 37A/77). AMEND TO REVISED POSN. R/P.

\*\*H1965/76 11.12.79 EXAM'D 17.10.79 IN 503804N, 001256W [OGB] USING TRISPOUNDER [2 LOP]. LEAST E/S DEPTH 31.2 IN GEN DEPTH 52MTRS. NO SCOUR. DCS3 HT 16MTRS, LENGTH 136MTRS, BEAM 24MTRS. LYING N/S. (HMS BULLDOG, HI 37A/77). AMEND TO WK 31MTRS IN REVISED POSN. R/P.

\*\*H1965/76 27.11.80 EXAM'D 4.5.80 IN 503801N, 001256W [OGB] USING TRISPOUNDER. LEAST E/S DEPTH 30.5 IN GEN DEPTH 44MTRS. SCOUR, RUNNING WHOLE LENGTH OF WK, 5MTRS DEEP. HYDROSEARCH LENGTH 110.5MTRS, BEAM 25.3MTRS, HT 20.5MTRS. LYING ON ITS SIDE. SUPERSTRUCTURE & POOP DECKS REMAIN. LYING 015/195DEGS. (HMS BULLDOG, HI 37A/77). AMEND TO WK 23MTRS IN REVISED POSN. R/P.

\*\*H1310/81/30 21.9.82 POSITIVELY IDENTIFIED AS 'PAGENTURM' BY A PLATE. LIES ON STBD BEAM, DECK ALMOST VERTICAL, BOWS NORTH. DEEP SCOUR ON W SIDE. MANY NETS & FISHING LINES. (T W BENETTO, 17.9.82). NCA.

\*\*H1310/83/29 20.6.83 LIES BOWS N WITH UP TO 10MTRS DEEP SCOUR ON E SIDE. THREE GUNS, PROBABLY 4INCH CALIBRE, FITTED ON DECK AFT & ON PORT & STBD QUARTERS. WK HAS TRANSVERSE FRACTURE APPROX AMIDSHIPS. (M SNELLING, SOUTHERN MARINE SERVICES, 14.6.83). NCA.

\*\*H1310/86/10 3.4.86 EXAM'D JUN '85. (SOUTHERN MARINE SERVICES, WK NO 040). NCA.

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

**Latitude = 50 37'.817 N Longitude = 000 09'.550 W [OGB] Square Number = 136 State = LIVE**

Wreck Number 20005 Classification = Unclassified  
 Symbol WK 46.0 Largest Scale Chart = 1652  
 Charting Comments

Old Number 013603097  
 Category Non-dangerous wreck

WGS84 Position Latitude = 50 37'.853 N Longitude = 000 09'.643 W  
 WGS84 Origin 3-D Cartesian Shift (BW)  
 Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method Electronic Distance Measuring System  
 Position Quality Surveyed  
 Position Accuracy 25.0  
 Area at Largest Scale No  
 Depth 46.0 metres  
 Drying Height  
 Height  
 General Depth 50 metres  
 Vertical Datum Lowest astronomical tide  
 Depth Method Swept by vertical acoustic system  
 Depth Quality Least depth known



Depth Accuracy  
 Conspic Visual NO Conspic Radar NO  
 Historic NO Military NO Existence Doubtful NO  
 Non Sub Contact NO

Last Amended 20/03/2000  
 Position Last Amended  
 Position Last Latitude = Longitude =

Name GERLEN (POSSIBLY)  
 Type M.V  
 Flag WEST GERMAN  
 Dimensions Length = 38.7 metres Beam = 7.0 metres Draught = 2.4 metres  
 Tonnage 299 Gross  
 Cargo  
 Date Sunk 19/07/1972

Sonar Dimensions Length = 38.6 metres Width = 6.2 metres Shadow Height = 3.7 metres  
 Orientation 135/315

Magnetic Anomaly  
 Debris Field  
 Scour Depth = 1.5 metres Length = Orientation =

Markers  
 General Comments

Circumstances of Loss  
 \*\*SANK FOLLOWING COLLISION WITH CYPRIOT MV 'GOTLAND' WHILST EN-ROUTE PAR TO UTERSEN.  
 (LLOYDS 209).

Surveying Details  
 \*\*H3950/70 21.7.72 WK IN 503818N, 000642W. (LLOYDS 209). CHART AS USC PA 15MTRS [8FMS]. - NM  
 1487/72. NAVEAM 295/72 ISSUED.  
 \*\*30.12.74 WRECK REPD IN 503809N, 000654W USING DECCA. (E GILES, 1974). NCA.  
 \*\*H1965/76 27.11.80 NOTHING FOUND IN CHARTED POSN. SANDWAVE AREA. WK EXAM'D 15.5.80 IN  
 503749N, 000933W [OGB] USING TRISPONDER. LEAST E/S DEPTH 47.2 IN GEN DEPTH 50MTRS. SCOUR  
 1.5MTRS DEEP. HYDROSEARCH LENGTH 38.6MTRS, BEAM 6.2MTRS, HT 3.7MTRS. LYING NW/SE, BOWS  
 NW, IN AREA OF SANDWAVES. (HMS BULLDOG, HI 37A/77). AMEND TO WK 46MTRS IN REVISED POSN.  
 R/P.  
 \*\*H1310/86/10 3.4.86 EXAM'D IN 1983. (SOUTHERN MARINE SERVICES, WK NO 037).

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

**Latitude = 50 37'.767 N Longitude = 000 18'.767 W [OGB] Square Number = 136 State = LIVE**

Wreck Number 20238 Classification = Unclassified  
 Symbol WK USC 35.0 Largest Scale Chart = 1652  
 Charting Comments

Old Number 013605677  
 Category Non-dangerous wreck

WGS84 Position Latitude = 50 37'.803 N Longitude = 000 18'.858 W  
 WGS84 Origin 3-D Cartesian Shift (BW)  
 Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method DECCA navigator  
 Position Quality Precisely known  
 Position Accuracy  
 Area at Largest Scale No

Depth 35.0 metres  
 Drying Height  
 Height  
 General Depth 45 metres  
 Vertical Datum Lowest astronomical tide  
 Depth Method  
 Depth Quality Least depth unknown, safe clearance at value shown  
 Depth Accuracy  
 Conspic Visual NO Conspic Radar NO  
 Historic NO Military NO Existence Doubtful NO  
 Non Sub Contact NO

Last Amended 28/06/1988  
 Position Last Amended  
 Position Last Latitude = Longitude =

Name PORTHKERRY  
 Type SS  
 Flag BRITISH  
 Dimensions Length = 85.3 metres Beam = 12.2 metres Draught = 5.5 metres  
 Tonnage 1920 Gross  
 Cargo COAL  
 Date Sunk 20/05/1917

Sonar Dimensions Length = Width = Shadow Height = 8.0 metres  
 Orientation

Magnetic Anomaly  
 Debris Field  
 Scour Depth = Length = Orientation =

Markers  
 General Comments ON PORT SIDE, HT BY DIVER

Circumstances of Loss  
 \*\*BUILT IN 1911 BY J CROWN & SONS LTD, SUNDERLAND. OWNED AT TIME OF LOSS BY PORTHCAWL SS CO LTD. TWO BOILERS, TRIPLE EXPANSION ENGINE OF 220 NHP, SINGLE SHAFT. PASSAGE PORTLAND FOR SHEERNESS. TORPEDOED BY UB-40 WHILE PICKING UP THE CREW OF SS TYCHO, WHOSE BOATS WERE ALONGSIDE. 7 MEN LOST, PLUS 15 FROM TYCHO. (SIBI).

Surveying Details  
 \*\*H1310/88/30 28.6.88 WK LOCATED IN 503746N, 001846W [OGB] USING DECCA. LIES ON SIDE IN 45-50MTRS AND STANDS ABOUT 8MTRS HIGH. BELL RECOVERED WHICH IDENTIFIES WK AS THE 'PORTHKERRY'. (P A VAN DER BOON). CHART AS USC 35MTRS. NE 1652.

\*\*HH100/351/09 16.5.95 NOT LOCATED USING DGPS AND E/S. (SOUTHERN MARINE SERVICES). NCA.

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

**Latitude = 50 37'.750 N Longitude = 000 04'.900 W [OGB] Square Number = 136 State = LIVE**

Wreck Number 20173 Classification = Unclassified  
 Symbol WK 27.5 Largest Scale Chart = 1652  
 Charting Comments

Old Number 013604958  
 Category Dangerous wreck

WGS84 Position Latitude = 50 37'.786 N Longitude = 000 04'.993 W  
 WGS84 Origin 3-D Cartesian Shift (BW)  
 Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method Electronic Distance Measuring System

Position Quality Surveyed

Position Accuracy 25.0

Area at Largest Scale No

Depth 27.5 metres

Drying Height

Height

General Depth 34 metres

Vertical Datum Lowest astronomical tide

Depth Method Swept by vertical acoustic system

Depth Quality Least depth known

Depth Accuracy

Conspic Visual NO Conspic Radar NO

Historic NO Military NO Existence Doubtful NO

Non Sub Contact NO

Last Amended 20/03/2000

Position Last Amended

Position Last Latitude = Longitude =

Name HMS KERYADO (PROBABLY)

Type HM TRAWLER

Flag BRITISH

Dimensions Length = 39.6 metres Beam = 7.6 metres Draught =

Tonnage 252 Gross

Cargo

Date Sunk 06/03/1941

Sonar Dimensions Length = 40.5 metres Width = 6.9 metres Shadow Height = 6.8 metres

Orientation 050/230

Magnetic Anomaly

Debris Field

Scour Depth = 0.0 metres Length = Orientation =

Markers

General Comments IN TWO PARTS IN AREA OF SANDWAVES. BOW NE

## Circumstances of Loss

\*\*EX-FRENCH MINESWEEPER. REQUISITIONED 5.7.40. MINED 6.3.41.

\*\*MINED 6.3.41 8M S OF NEWHAVEN WHILST EN ROUTE FROM DOVER & PORTSMOUTH TO SWANSEA. (LL WW2).

## Surveying Details

\*\*H423/41 18.3.41 SUNK IN 503930N, 000748E. (MINESWEEPING DIV, ADMIRALTY, 12.3.41).

\*\*6.3.41 SANK ABOUT 160 DEG, 8 MILES FROM NEWHAVEN. (C-IN-C PORTSMOUTH, 6.3.41).

\*\*15.3.45 SONAR CONTACT IN 503754N, 000418W. LENGTH 220FT, HT 15FT. OIL AND WRECKAGE. (ESCORT GROUP 6).

\*\*H1965/76 4.12.80 WK EXAM'D 3.5.80 IN 503745N, 000454W [OGB] USING TRISPONDER. LEAST E/S DEPTH 31.3 IN GEN DEPTH 34.5MTRS. NO SCOUR. HYDROSEARCH LENGTH 40.5MTRS, BEAM 6.9MTRS. IN TWO PARTS, LYING 050/230 DEGS, BOWS NE. HT OF STERN SECTION 6.8MTRS. IN AREA OF SANDWAVES ABOUT 1.5MTRS HIGH. (HMS BULLDOG, HI 37A/77). CHART AS WK 27.5MTRS. BR STD.

\*\*4.11.91 DIVED ON. WK OF ARMED TRAWLER LYING UPRIGHT WITH BOW AND STERN INTACT. PORT SIDE AMIDSHIPS COLLAPSED TO SEABED. LENGTH 130FT, BEAM 25FT. GUNSIGHT, MARKED 1918, RECOVERED FROM 12 PDR GUN. THOUGHT PROBABLY TO BE THE 'KERYADO'. (N BLAKE, TELECON).

\*\*HH100/351/04 13.11.91 INTACT WK OF APPARENTLY AN ADMIRALTY PATROL VESSEL, MINESWEEPER OR CONVERTED TRAWLER WITH 4 INCH GUN ON BOW. 45MTRS LONG. LIES ON EVEN KEEL BUT COLLAPSED TO SEABED ON PORT SIDE. POSSIBLY SWEEP GEAR ON SEABED. DEPTH TO DECK 36MTRS AT LW. COULD BE THE KERYADO. PART GUNSIGHT DATED 1918 RECOVERED. (T W BENNETTO, 2.11.91).

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

**Latitude = 50 37'.717 N Longitude = 000 19'.583 W [OGB] Square Number = 136 State = LIVE**

Wreck Number 19996 Classification = Unclassified  
 Symbol WK 21.5 Largest Scale Chart = 1652  
 Charting Comments

Old Number 013602998  
 Category Dangerous wreck

WGS84 Position Latitude = 50 37'.753 N Longitude = 000 19'.675 W  
 WGS84 Origin 3-D Cartesian Shift (BW)  
 Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method Electronic Distance Measuring System

Position Quality Surveyed

Position Accuracy 25.0

Area at Largest Scale No

Depth 21.5 metres

Drying Height

Height

General Depth 30 metres

Vertical Datum Lowest astronomical tide

Depth Method Swept by vertical acoustic system

Depth Quality Least depth known

Depth Accuracy

Conspic Visual NO Conspic Radar NO

Historic NO Military NO Existence Doubtful NO

Non Sub Contact NO

Last Amended 20/03/2000

Position Last Amended

Position Last Latitude = Longitude =

Name

Type FREIGHTER

Flag

Dimensions Length = Beam = Draught =

Tonnage

Cargo

Date Sunk

Sonar Dimensions Length = 113.0 metres Width = 23.9 metres Shadow Height = 8.0 metres

Orientation 115/295

Magnetic Anomaly

Debris Field

Scour Depth = 0.0 metres Length = Orientation =

Markers

General Comments VERY BROKEN UP & DISPERSED

Circumstances of Loss

Surveying Details

\*\*H1283/75 2.5.75 WK LOCATED IN 503748N, 001935W [OGB] USING DECCA. APPROX 260FT LONG, LYING NW/SE. IDENTIFIED AS CARGO VESSEL. (D M DILLINGHAM, SUBSERVS, 25.4.75). CHART AS USC 15MTRS. - NM 1031/75.

\*\*H4121/76 20.1.77 OUTSIDE AREA OF HI BUT PROBABLY CONTACT [DEF. WK] OBTAINED BETWEEN LINES 4 CABLES SE OF ABOVE POSN. (HMS FOX, HI 52/76). NCA.

\*\*H1309/76 2.8.77 WRECK OF UNKNOWN FREIGHTER IN 503754N, 001930W [OGB] USING DECCA. BROKEN UP. NO SCOUR. MAX HEIGHT 35FT IN MIN DEPTH 120FT. (D W PECKHAM, SALVAGE CONTRACTOR, 21.11.76). CHART AS WK 26MTRS IN REVISED POSN. NC 2450.

\*\*H1965/76 6.7.79 DCS3 CONTACT, CLASSIFIED WK, LOCATED IN 503747N, 001934W. SECOND CONTACT, CLASSIFIED GOOD, POSSIBLE WK, LOCATED IN 503744N, 001922W - POSSIBLY TWO PARTS OF SAME WK. (HMS BULLDOG, HI 37A/77). AMEND POSN TO 503747N, 001934W [OGB]. BR STD.

\*\*8.7.79 REPD THAT DEPTH CHARGES, STILL ARMED, LIE IN VICINITY OF THIS WK. (D PECKHAM, SHOREHAM). NCA.

\*\*H1965/79 11.12.79 EXAM'D 17.10.79 IN 503746N, 001931W [OGB] USING TRISPONDER [2 LOP]. LEAST E/S DEPTH 23.3 IN GEN DEPTH 30MTRS. SCOUR 2MTRS DEEP. DCS3 HT 6.3MTRS, LENGTH 72.7MTRS, BEAM 11.5MTRS. LYING 130/310DEGS. LARGE WK, WELL BROKEN UP & IN TWO MAIN PARTS. (HMS BULLDOG, HI 37A/77). AMEND TO WK 23.3MTRS IN REVISED POSN. - NM 30/80.

\*\*H1965/76 27.11.80 EXAM'D 23.4.80 IN 503743N, 001935W [OGB] USING TRISPONDER. LEAST E/S DEPTH 23.6 IN GEN DEPTH 29.5MTRS. NO SCOUR. HYDROSEARCH LENGTH 113MTRS, BEAM 23.9MTRS, HT 8MTRS. VERY BROKEN UP & DISPERSED. IN AREA OF SANDWAVES, LYING 115/295DEGS, BOWS SE. (HMS BULLDOG, HI 37A/77). [AS POSN DIFFERS FROM EARLIER REPORT IN 1979, AS DO DIMENSIONS AND DESCRIPTION, THERE IS POSSIBILITY OF TWO WRECKS IN OR NEAR THIS POSN]. AMEND TO WK 21.5MTRS IN REVISED POSN. - NM 2795/80.

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

**Latitude = 50 37'.608 N Longitude = 000 02'.108 W [OGB] Square Number = 136 State = LIVE**



Wreck Number 19995 Classification = Unclassified  
 Symbol NDW Largest Scale Chart = 1652  
 Charting Comments

Old Number 013602986  
 Category Non-dangerous wreck

WGS84 Position Latitude = 50 37'.645 N Longitude = 000 02'.202 W  
 WGS84 Origin 3-D Cartesian Shift (BW)  
 Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method DECCA navigator  
 Position Quality Precisely known  
 Position Accuracy  
 Area at Largest Scale No

Depth  
 Drying Height  
 Height  
 General Depth 52 metres  
 Vertical Datum Lowest astronomical tide  
 Depth Method  
 Depth Quality Depth unknown  
 Depth Accuracy  
 Conspic Visual NO Conspic Radar NO  
 Historic NO Military NO Existence Doubtful NO  
 Non Sub Contact NO

Last Amended 11/11/1998  
 Position Last Amended 22/06/1992  
 Position Last Latitude = 50 37'.600 N Longitude = 000 02'.117 W  
 Name  
 Type  
 Flag  
 Dimensions Length = Beam = Draught =  
 Tonnage  
 Cargo  
 Date Sunk

Sonar Dimensions Length = Width = Shadow Height =  
 Orientation

Magnetic Anomaly  
 Debris Field  
 Scour Depth = Length = Orientation =

Markers  
 General Comments

Circumstances of Loss

Surveying Details

\*\*H121/45 23.4.45 GOOD SONAR CONTACT IN 503742N, 000306W. (PORTSMOUTH LIST, 22.3.45).  
 \*\*23.7.71 NOW CHARTED AS USC 18MTRS. (AUTHORITY NOT STATED). NC 1652.  
 \*\*H1965/76 27.11.80 NOTHING FOUND. AREA OF SANDWAVES. (HMS BULLDOG, HI 37A/77). DELETE.  
 BR STD.  
 \*\*HH100/351/05 22.6.92 WK IN 503736.5N, 000206.5W [OGB] USING DECCA. (C MARTIN, 13.4.92).  
 \*\*11.11.98 AMENDED TO NDW AS FIX QUALITY WAS DECCA. BR STD.

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

**Latitude = 50 37'.583 N Longitude = 000 18'.967 W [OGB] Square Number = 136 State = LIVE**

Wreck Number 19991 Classification = Unclassified  
 Symbol WK SW 23.7 Largest Scale Chart = 1652  
 Charting Comments

Old Number 013602937  
 Category Dangerous wreck

WGS84 Position Latitude = 50 37'.619 N Longitude = 000 19'.058 W  
 WGS84 Origin 3-D Cartesian Shift (BW)  
 Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method Electronic Distance Measuring System  
 Position Quality Surveyed  
 Position Accuracy 25.0  
 Area at Largest Scale No  
 Depth 23.7 metres  
 Drying Height  
 Height  
 General Depth 37 metres  
 Vertical Datum Lowest astronomical tide  
 Depth Method Swept by wire-drag  
 Depth Quality Least depth known  
 Depth Accuracy  
 Conspic Visual NO Conspic Radar NO  
 Historic NO Military NO Existence Doubtful NO  
 Non Sub Contact NO

Last Amended 20/03/2000  
 Position Last Amended  
 Position Last Latitude = Longitude =

Name  
 Type SS  
 Flag  
 Dimensions Length = Beam = Draught =  
 Tonnage 2000 Gross  
 Cargo BALLAST  
 Date Sunk  
 Sonar Dimensions Length = 89.7 metres Width = 9.9 metres Shadow Height = 9.5 metres  
 Orientation 102/282

Magnetic Anomaly

## Debris Field

Scour                      Depth = 3.0 metres      Length =                      Orientation =

## Markers

General Comments      ON PORT SIDE, BOWS W, BROKEN DOWN MIDSHIPS, TONNAGE BY DIVER  
Circumstances of Loss

## Surveying Details

\*\*H1309/76 27.9.77 WK IN 503739N, 001857W [OGB] USING DECCA. FREIGHTER, UNKNOWN STEAMSHIP, BROKEN UP IN A GEN DEPTH OF 130FT WITH A MAXIMUM HEIGHT OF 30FT. LIES IN DEEP HOLE, GROUND VARIES IN VICINITY VERY QUICKLY. (D W PECKHAM, SALVAGE CONTRACTOR, 21.11.76). CHART AS WK 30MTRS. BR STD.

\*\*H1965/76 6.7.79 DCS3 CONTACT, CLASSIFIED WK, LOCATED IN 503734N, 001856W [OGB]. NOT EXAM'D. (HMS BULLDOG, HI 37A/77). NCA.

\*\*H1965/76 11.12.79 EXAM'D 18.10.79 IN 503735N, 001858W [OGB] USING TRISPONDER [2 LOP]. LEAST E/S DEPTH 27.9MTRS IN GEN DEPTH 36-45MTRS. SCOUR 1MTR DEEP. DCS3 HT 8.2MTRS, LENGTH 95MTRS, BEAM 15.6MTRS. LYING E/W. BROKEN IN AT LEAST TWO PARTS, WHICH LIE CLOSE TOGETHER WITH HIGH POINTS AT EACH END OF THE WK. (HMS BULLDOG HI 37A/77). AMEND TO WK 27.5MTRS IN REVISED POSN. BR STD.

\*\*H1965/76 29.5.80 LEAST DEPTH FOUND SO FAR BY HYDROSEARCH VERTICAL MODE-15.4MTRS. (HMS BULLDOG, SIG DTD 4.5.80). NOT YET SWEEPED. MAST OUT OF VERTICAL, SHOWED CLEARLY ON SONAR STANDING UP ABOUT 20MTRS. (HMS BULLDOG, TELECON, 29.5.80). AMENDED TO WK 15.4MTRS. - NM 1264/80.

\*\*H1965/76 18.6.80 CHAIN & BAR SWEEPED BY THV 'STELLA'. CLEAR AT 27.2, FOUL AT 28MTRS [LAT]. UNABLE TO LOCATE SUSPECTED MAST. (TH, TELEX 13.6.80). NCA YET.

\*\*H1965/76 4.12.80 DRIFT SWEEPED 24.10.80. CLEAR AT 23.7MTRS. NOT FOULED. LEAST E/S DEPTH 26.6 IN GEN DEPTH 37MTRS. HYDROSEARCH LENGTH 89.7MTRS, BEAM 9.9MTRS, HT 9.5MTRS. LYING 102/282DEGS, BOWS E, ON STEEP SLOPE, WITH 3MTR DEEP SCOUR TO NE & WITH LARGE SANDWAVE WITH LEAST DEPTH 24.8MTRS CLOSE BY. MAST SEEN LYING HORIZONTALLY ACROSS WK. (HMS BULLDOG, HI 37A/77). AMEND TO SW 23.7MTRS. BR STD.

\*\*H1310/83/41 22.6.84 DIVED ON TWICE - ONLY COVERING FOR'D SECTION ALONG TO BROKEN MID-SECTION. BOW INTACT LYING ON PORT SIDE. LARGE STEAM ENGINE. PORTHOLE RECOVERED BUT GIVES NO CLUE TO IDENTITY. WK LIES IN STEEP-SIDED VALLEY. (VULCAN DIVING SERVICES, 19.6.84). NCA.

\*\*H1310/86/10 3.4.86 EXAM'D IN 1982. (SOUTHERN MARINE SERVICES, WK NO 031). NCA.

\*\*H1310/88/30 28.6.88 WK IN 503730N, 001902W [OGB] USING DECCA. DIVED ON IN 1986 TO RECOVER TRAWLERS NETS. LIES ON PORT SIDE ON S SIDE OF SLOPE WITH BOW WSW. LEAST DEPTH AT LW APPROX WAS ABOUT 34MTRS. BROKEN AMIDSHIPS. BOWS INTACT AND HOLD CAN BE ENTERED - NO CARGO. ENGINE UPRIGHT. IRON PROPELLER. APPROX 200FT LONG AND ABOUT 2000 TONS. NO CLUE AS TO ITS IDENTITY. (P A VAN DER BOON). NCA.

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

**Latitude = 50 37'.500 N Longitude = 000 16'.500 W [OGB] Square Number = 136 State = LIVE**

Wreck Number      19989                      Classification      = Unclassified  
Symbol                                      Largest Scale Chart = 1652  
Charting Comments

Old Number      013602901  
Category      Undefined

WGS84 Position      Latitude = 50 37'.536 N Longitude = 000 16'.592 W

WGS84 Origin 3-D Cartesian Shift (BW)  
 Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method  
 Position Quality  
 Position Accuracy  
 Area at Largest Scale No

Depth  
 Drying Height  
 Height  
 General Depth 43 metres  
 Vertical Datum Lowest astronomical tide  
 Depth Method  
 Depth Quality Depth unknown  
 Depth Accuracy  
 Conspic Visual NO Conspic Radar NO  
 Historic NO Military NO Existence Doubtful NO  
 Non Sub Contact YES

Last Amended 17/04/2000  
 Position Last Amended 17/04/2000  
 Position Last Latitude = 50 37'.500 N Longitude = 000 16'.500 W

Name  
 Type NON-SUB CONTACT  
 Flag  
 Dimensions Length = Beam = Draught =  
 Tonnage  
 Cargo  
 Date Sunk

Sonar Dimensions Length = Width = Shadow Height =  
 Orientation

Magnetic Anomaly  
 Debris Field  
 Scour Depth = Length = Orientation =

Markers  
 General Comments

Circumstances of Loss

Surveying Details  
 \*\*H(W)0202/50 10.6.55 NSC, POSSIBLE WK, ON REEF IN 503730N, 001630W [OGB]. STRONG ECHO  
 EXTENT 15DEGS. (HMS SAINTES).

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

**Latitude = 50 37'.383 N Longitude = 000 04'.350 W [OGB] Square Number = 136 State = LIVE**

Wreck Number 20172 Classification = Unclassified  
 Symbol WK 49.0 Largest Scale Chart = 1652

## Charting Comments

Old Number 013604946  
 Category Non-dangerous wreck  
  
 WGS84 Position Latitude = 50 37'.420 N Longitude = 000 04'.443 W  
 WGS84 Origin 3-D Cartesian Shift (BW)  
 Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)  
  
 Position Method Electronic Distance Measuring System  
 Position Quality Surveyed  
 Position Accuracy 25.0  
 Area at Largest Scale No  
 Depth 49.0 metres  
 Drying Height  
 Height  
 General Depth 54 metres  
 Vertical Datum Lowest astronomical tide  
 Depth Method Swept by vertical acoustic system  
 Depth Quality Least depth known  
 Depth Accuracy  
 Conspic Visual NO Conspic Radar NO  
 Historic NO Military NO Existence Doubtful NO  
 Non Sub Contact NO

Last Amended 20/03/2000  
 Position Last Amended  
 Position Last Latitude = Longitude =

Name  
 Type  
 Flag  
 Dimensions Length = Beam = Draught =  
 Tonnage  
 Cargo  
 Date Sunk

Sonar Dimensions Length = 26.9 metres Width = 8.7 metres Shadow Height = 5.2 metres  
 Orientation 060/240

Magnetic Anomaly  
 Debris Field  
 Scour Depth = 0.0 metres Length = Orientation =

Markers  
 General Comments REASONABLY INTACT

## Circumstances of Loss

## Surveying Details

\*\*H1965/76 4.12.80 EXAM'D 3.5.80 IN 503723N, 000421W [OGB] USING TRISPONDER. LEAST E/S DEPTH 49 IN GEN DEPTH 54.5MTRS. NO SCOUR. HYDROSEARCH LENGTH 26.9MTRS, BEAM 8.7MTRS, HT



5.2MTRS. LYING 060/240DEGS, IN HEAVY SANDWAVE AREA. REASONABLY INTACT. (HMS BULLDOG, HI 37A/77). CHART AS WK 49MTRS. BR STD.

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

**Latitude = 50 37'.133 N Longitude = 000 19'.233 W [OGB] Square Number = 136 State = LIVE**

Wreck Number 20171 Classification = Unclassified  
 Symbol F Largest Scale Chart = 1652  
 Charting Comments

Old Number 013604934  
 Category Foul ground

WGS84 Position Latitude = 50 37'.169 N Longitude = 000 19'.325 W  
 WGS84 Origin 3-D Cartesian Shift (BW)  
 Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method Electronic Distance Measuring System

Position Quality Surveyed

Position Accuracy 25.0

Area at Largest Scale No

Depth

Drying Height

Height

General Depth 45 metres

Vertical Datum Lowest astronomical tide

Depth Method

Depth Quality Depth unknown

Depth Accuracy

Conspic Visual NO Conspic Radar NO

Historic NO Military NO Existence Doubtful NO

Non Sub Contact NO

Last Amended 21/03/2000

Position Last Amended

Position Last Latitude = Longitude =

Name

Type

Flag

Dimensions Length = Beam = Draught =

Tonnage

Cargo

Date Sunk

Sonar Dimensions Length = 90.0 metres Width = 14.0 metres Shadow Height =

Orientation

Magnetic Anomaly

Debris Field

Scour Depth = Length = Orientation =

## Markers

General Comments LINEAR CONTACT, ?INVERTED, BURIED WK, NOT SEEN ON E/S  
Circumstances of Loss

## Surveying Details

\*\*H1965/76 4.12.80 LONG THIN SONAR CONTACT EXAM'D 17.5.80 IN 503708N, 001914W [OGB] USING TRISPONDER. NOT FOUND BY E/S. GEN DEPTH 45MTRS. HYDROSEARCH LENGTH 90MTRS, BEAM 14MTRS. POSSIBLY UPSIDE DOWN BURIED WK. (HMS BULLDOG, HI 37A/77). CHART AS FOUL. BR STD.

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

**Latitude = 50 37'.000 N Longitude = 000 02'.000 W [OGB] Square Number = 136 State = LIVE**

Wreck Number 19977 Classification = Unclassified  
Symbol Largest Scale Chart = 1652  
Charting Comments

Old Number 013602755  
Category Undefined

WGS84 Position Latitude = 50 37'.036 N Longitude = 000 02'.093 W  
WGS84 Origin 3-D Cartesian Shift (BW)  
Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method  
Position Quality  
Position Accuracy  
Area at Largest Scale No

Depth  
Drying Height  
Height  
General Depth 51 metres  
Vertical Datum Lowest astronomical tide  
Depth Method  
Depth Quality Depth unknown  
Depth Accuracy  
Conspic Visual NO Conspic Radar NO  
Historic NO Military NO Existence Doubtful NO  
Non Sub Contact YES

Last Amended 17/04/2000  
Position Last Amended 17/04/2000  
Position Last Latitude = 50 37'.000 N Longitude = 000 02'.000 W  
Name  
Type NON-SUB CONTACT  
Flag  
Dimensions Length = Beam = Draught =  
Tonnage  
Cargo  
Date Sunk

Sonar Dimensions Length = Width = Shadow Height =

## Orientation

## Magnetic Anomaly

## Debris Field

Scour            Depth =            Length =            Orientation =

## Markers

## General Comments

## Circumstances of Loss

## Surveying Details

H095/39 NSC REPD IN 503700N, 000200W [OGB] ON 15.1.41. (C-IN-C WESTERN APPROACHES, APPENDIX A).

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

**Latitude = 50 36'.967 N Longitude = 000 16'.483 W [OGB] Square Number = 136 State = LIVE**

Wreck Number      19975                      Classification      = Unclassified

Symbol            WK 40.0                      Largest Scale Chart = 1652

## Charting Comments

Old Number        013602731

Category            Non-dangerous wreck

WGS84 Position    Latitude = 50 37'.003 N Longitude = 000 16'.575 W

WGS84 Origin      3-D Cartesian Shift (BW)

Horizontal Datum    OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method    Electronic Distance Measuring System

Position Quality    Surveyed

Position Accuracy    25.0

Area at Largest Scale No

Depth              40.0 metres

## Drying Height

## Height

General Depth      52 metres

Vertical Datum      Lowest astronomical tide

Depth Method        Found by side scan sonar

Depth Quality        Least depth known

## Depth Accuracy

Conspic Visual      NO                      Conspic Radar      NO

Historic            NO                      Military NO            Existence Doubtful NO

Non Sub Contact    NO

Last Amended        02/11/2004

## Position Last Amended

Position Last        Latitude =            Longitude =

## Name

Type                SS

## Flag

Dimensions      Length =              Beam =              Draught =  
 Tonnage  
 Cargo            ?COAL  
 Date Sunk

Sonar Dimensions    Length = 69.6 metres    Width = 21.7 metres    Shadow Height = 10.3 metres  
 Orientation          042/222

Magnetic Anomaly

Debris Field

Scour              Depth = 4.0 metres    Length =              Orientation =

Markers

General Comments    ON PORT BEAM WITH DECKS VERTICAL, BOWS SW

Circumstances of Loss

Surveying Details

\*\*H1965/76 6.7.79 2 DCS3 CONTACTS, CLASSIFIED GOOD - POSSIBLE WK, LOCATED IN 503702N, 001626W [OGB]. LENGTH APPROX 40MTRS. NOT EXAMINED. (HMS BULLDOG, HI 37A/77). CHART AS NDW. BR STD.

\*\*H1965/76 11.12.79 EXAM'D 16.10.79 IN 503658N, 001629W [OGB] USING TRISPONDER [2 LOP]. LEAST E/S DEPTH 43 IN GEN DEPTH 50.5MTRS. SCOUR 4MTRS DEEP. DCS3 HT 9.7MTRS, LENGTH 60MTRS, BEAM 15MTRS. LYING NE/SW. INTACT WK. (HMS BULLDOG, HI 37A/77). CHART AS WK 40MTRS IN REVISED POSN. BR STD.

\*\*H1965/76 4.12.80 EXAM'D AGAIN 22.2.80 IN 503658N, 001634W [OGB], OTHERWISE DETAILS SIMILAR. HYDROSEARCH LENGTH 69.6MTRS, BEAM 21.7MTRS, HT 10.3MTRS. (HMS BULLDOG, HI 37A/77). NCA.

\*\*H1310/84/32 6.9.84 LOCATED BY E/S. LEAST DEPTH 43 IN GEN DEPTH 50MTRS. NOT DIVED ON. (T W BENNETTO, 4.9.84). NCA.

\*\*H1310/29/86 24.11.86 DIVED 8.9.85. LIES ON PORT SIDE WITH DECK VERTICAL AND BOWS SW. STANDS 12MTRS HIGH. LARGE COAL MOUND AMIDSHIPS - SPILLED OUT FROM BUNKER/HOLD. DEGAUSSING WIRE COIL RUNNING AROUND GUNWHALE INDICATES THAT THIS IS A WW II WK. (T W BENNETTO, 28.10.86).

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

**Latitude = 50 35'.883 N Longitude = 000 11'.250 W [OGB] Square Number = 136 State = LIVE**

Wreck Number      19961                      Classification    = Unclassified

Symbol              WK 46.0                      Largest Scale Chart = 1652

Charting Comments

Old Number          013602573

Category              Non-dangerous wreck

WGS84 Position      Latitude = 50 35'.920 N    Longitude = 000 11'.342 W

WGS84 Origin        3-D Cartesian Shift (BW)

Horizontal Datum    OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method     Electronic Distance Measuring System

Position Quality     Surveyed

Position Accuracy    25.0

Area at Largest Scale No  
 Depth 46.0 metres  
 Drying Height  
 Height  
 General Depth 57 metres  
 Vertical Datum Lowest astronomical tide  
 Depth Method Found by echo-sounder  
 Depth Quality Least depth known  
 Depth Accuracy  
 Conspic Visual NO Conspic Radar NO  
 Historic NO Military NO Existence Doubtful NO  
 Non Sub Contact NO

Last Amended 21/03/2000  
 Position Last Amended  
 Position Last Latitude = Longitude =

Name  
 Type  
 Flag  
 Dimensions Length = Beam = Draught =  
 Tonnage  
 Cargo  
 Date Sunk

Sonar Dimensions Length = 50.0 metres Width = 11.4 metres Shadow Height = 11.0 metres  
 Orientation 045/225

Magnetic Anomaly  
 Debris Field  
 Scour Depth = 4.0 metres Length = Orientation =

Markers  
 General Comments IN TWO PARTS AT RIGHT ANGLES, QUOTED LENGTH IS TOTAL  
 Circumstances of Loss

Surveying Details  
 \*\*30.12.74 LARGE WK REPD IN 503612N, 001030W [OGB] USING DECCA. (E GILES, 1974).  
 \*\*H1965/76 6.7.79 DCS3 CONTACT, CLASSIFIED WK, LOCATED IN 503552N, 001117W [OGB]. LENGTH 45MTRS. LYING NE/SW. NOT EXAMINED. (HMS BULLDOG, HI 37A/77). CHART AS NDW. BR STD.  
 \*\*H1965/76 11.12.79 EXAM'D 17.10.79 IN 503553N, 001115W [OGB] USING TRISPONDER [2 LOP]. LEAST E/S DEPTH 49 IN GEN DEPTH 57MTRS. SCOUR 4MTRS DEEP. DCS3 HT 11MTRS. WK IS BROKEN IN TWO, & APPARENTLY LYING AT 90DEGS TO EACH OTHER. SMALLER PART HT 11MTRS, LENGTH 12MTRS, BEAM 11.4MTRS, LYING 140/320DEGS. LARGER PART HT 6.6MTRS, LENGTH 38MTRS, LYING 050/230DEGS. (HMS BULLDOG, HI 37A/77). CHART AS WK 46MTRS IN REVISED POSN. BR STD.  
 \*\*H1965/76 27.11.80 EXAM'D AGAIN 24.2.80. NO GREAT DIFFERENCE FROM PREVIOUS REPORT. (HMS BULLDOG, HI 37A/77). NCA.  
 \*\*H1310/86 2.4.86 EXAM'D IN 1983. (SOUTHERN MARINE SERVICES). NCA.

**Latitude = 50 35'.200 N Longitude = 000 06'.717 W [OGB] Square Number = 136 State = LIVE**

Wreck Number 19944 Classification = Unclassified  
 Symbol WK 58.0 Largest Scale Chart = 1652



## Charting Comments

Old Number 013602354

Category Non-dangerous wreck

WGS84 Position Latitude = 50 35'.236 N Longitude = 000 06'.810 W

WGS84 Origin 3-D Cartesian Shift (BW)

Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method Electronic Distance Measuring System

Position Quality Surveyed

Position Accuracy 25.0

Area at Largest Scale No

Depth 58.0 metres

Drying Height

Height

General Depth 61 metres

Vertical Datum Lowest astronomical tide

Depth Method Swept by vertical acoustic system

Depth Quality Least depth known

Depth Accuracy

Conspic Visual NO Conspic Radar NO

Historic NO Military NO Existence Doubtful NO

Non Sub Contact NO

Last Amended 22/03/2000

Position Last Amended

Position Last Latitude = Longitude =

Name

Type

Flag

Dimensions Length = Beam = Draught =

Tonnage

Cargo

Date Sunk

Sonar Dimensions Length = 15.6 metres Width = 2.7 metres Shadow Height = 1.4 metres

Orientation 000/180

Magnetic Anomaly

Debris Field

Scour Depth = 1.0 metres Length = Orientation =

Markers

General Comments

Circumstances of Loss

Surveying Details

\*\*H3135/44 19.9.44 WK IN 503500N, 000748W. (PORTSMOUTH NAVIGATIONAL ORDERS NO.306).

\*\*H1965/76 26.11.80 EXAM'D 15.5.80 IN 503512N, 000643W [OGB] USING TRISPONDER. SMALL METALLIC CONTACT WITH NO SHAPE AND DIFFICULT TO MEASURE. LEAST E/S DEPTH 58.9 IN GEN

DEPTH 61MTRS. DEPTH OF SCOUR 1MTR. HYDROSEARCH LENGTH 15.6MTRS, BEAM 2.7MTRS, HT 1.4MTRS. LYING N/S. (HMS BULLDOG, HI 37A/77). CHART AS WK 58MTRS. BR STD.  
 \*\*H1310/86/28 10.11.86 SMALL WK, STANDING 3MTRS HIGH. (C MARTIN, 18.10.81). NCA.  
 \*\*H2350/85 17.2.87 LOCATED 28.7.86 & POSN CONFIRMED. NFS. (NP 1008, HI 317B).

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

**Latitude = 50 40'.750 N Longitude = 000 05'.500 W [OGB] Square Number = 136 State = DEAD**

Wreck Number 20063 Classification = Unclassified  
 Symbol Largest Scale Chart = 1652  
 Charting Comments POSN FOR FILING ONLY

Old Number 013603735  
 Category Undefined

WGS84 Position Latitude = 50 40'.786 N Longitude = 000 05'.593 W  
 WGS84 Origin 3-D Cartesian Shift (BW)  
 Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method DECCA navigator  
 Position Quality Unreliable  
 Position Accuracy  
 Area at Largest Scale No

Depth  
 Drying Height  
 Height  
 General Depth 26 metres  
 Vertical Datum Lowest astronomical tide  
 Depth Method  
 Depth Quality Depth unknown  
 Depth Accuracy  
 Conspic Visual NO Conspic Radar NO  
 Historic NO Military NO Existence Doubtful NO  
 Non Sub Contact NO

Last Amended 16/07/2007  
 Position Last Amended  
 Position Last Latitude = Longitude =

Name  
 Type  
 Flag  
 Dimensions Length = Beam = Draught =  
 Tonnage  
 Cargo  
 Date Sunk

Sonar Dimensions Length = Width = Shadow Height =  
 Orientation

Magnetic Anomaly

Debris Field  
Scour            Depth =            Length =            Orientation =

Markers  
General Comments

Circumstances of Loss

Surveying Details

\*\*H1283/75 30.4.75 WK LOCATED IN 504045N, 000530W [OGB] BY DIVERS FROM BRIGHTON BSAC. APPROX 200-300FT IN LENGTH AND APPROX 2,500TONS. (R P WATTS, 25.4.75). FOR FILING ONLY.

\*\*H1965/76 2.12.80 NOTHING FOUND DURING INTENSIVE SEARCH WITHIN 400MTRS OF POSN. (HMS BULLDOG, HI 37A/77). AMENDED TO DEAD.

**Latitude = 50 40'.333 N Longitude = 000 09'.500 W [OGB] Square Number = 136            State = DEAD**

Wreck Number    20053                            Classification    = Unclassified  
Symbol            F                                    Largest Scale Chart = 1652  
Charting Comments

Old Number        013603619  
Category            Foul ground

WGS84 Position    Latitude = 50 40'.369 N    Longitude = 000 09'.593 W  
WGS84 Origin        3-D Cartesian Shift (BW)  
Horizontal Datum    OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method    DECCA navigator  
Position Quality    Precisely known  
Position Accuracy  
Area at Largest Scale No

Depth  
Drying Height  
Height  
General Depth      30 metres  
Vertical Datum      Lowest astronomical tide  
Depth Method  
Depth Quality        Depth unknown  
Depth Accuracy  
Conspic Visual      NO                            Conspic Radar      NO  
Historic              NO                            Military      NO            Existence Doubtful    NO  
Non Sub Contact    NO

Last Amended        10/04/2000  
Position Last Amended 10/04/2000  
Position Last        Latitude = 50 40'.333 N    Longitude = 000 09'.500 W

Name  
Type                FISHERMENS FASTENER  
Flag  
Dimensions        Length =            Beam =            Draught =  
Tonnage  
Cargo

## Date Sunk

Sonar Dimensions    Length =                  Width =                  Shadow Height =  
Orientation

## Magnetic Anomaly

## Debris Field

Scour                  Depth =                  Length =                  Orientation =

## Markers

## General Comments

## Circumstances of Loss

## Surveying Details

\*\*30.12.75 FF IN 504020N, 000930W [OGB] USING DECCA. (E GILES, 1974).

\*\*H1965/76 2.12.80 NOTHING FOUND IN REPD POSN IN AREA OF SANDWAVES. (HMS BULLDOG, HI 37A/77). AMENDED TO DEAD.

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

**Latitude = 50 40'.100 N Longitude = 000 11'.800 W [OGB] Square Number = 136                  State = DEAD**

Wreck Number    20050                          Classification    = Unclassified  
Symbol            WK USC 18.0                  Largest Scale Chart = 1652  
Charting Comments    SEE ALSO WK [20001]

Old Number        013603589  
Category            Undefined

WGS84 Position    Latitude = 50 40'.136 N    Longitude = 000 11'.893 W  
WGS84 Origin       3-D Cartesian Shift (BW)  
Horizontal Datum    OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

## Position Method

## Position Quality

## Position Accuracy

## Area at Largest Scale No

Depth              18.0 metres

## Drying Height

## Height

General Depth     28 metres

Vertical Datum    Lowest astronomical tide

## Depth Method

Depth Quality     Least depth unknown, safe clearance at value shown

## Depth Accuracy

Conspic Visual    NO                          Conspic Radar    NO

Historic            NO                          Military    NO                  Existence Doubtful    NO

Non Sub Contact    NO

Last Amended     10/04/2000

## Position Last Amended

Position Last      Latitude =      Longitude =

Name            PAGENTURM  
 Type            SS  
 Flag            BRITISH  
 Dimensions      Length = 122.2 metres    Beam = 15.8 metres    Draught = 8.5 metres  
 Tonnage        5000 Gross  
 Cargo  
 Date Sunk       16/05/1917

Sonar Dimensions    Length =            Width =            Shadow Height =  
 Orientation

Magnetic Anomaly

Debris Field

Scour            Depth =            Length =            Orientation =

Markers

General Comments

Circumstances of Loss

\*\*EX GERMAN, REQUISITIONED & ARMED FOR DEFENSIVE PURPOSES BY ADMIRALTY. TORPEDOED BY GERMAN UB-40 16M W OF BEACHY HEAD.

\*\*TORPEDOED BY GERMAN SUBMARINE 16M W OF BEACHY HEAD WHILST EN ROUTE FROM LONDON TO BARRY. (LL WW1).

Surveying Details

\*\*H7476/17 18.1.18 SUNK IN 504008N, 001150W. (AUTHORITY NOT STATED). CHART AS WK [OLD SYMBOL]. - NM 95/18.

\*\*H6391/19 POSN AMENDED TO 504006N, 001148W. (AUTHORITY NOT STATED).

\*\*H1656/24 5.3.24 NOW CHARTED AS DW. (AUTHORITY NOT STATED). BR STD.

\*\*H7789/35 3.12.35 NOT LOCATED, BUT AREA 1M SQUARE AROUND 504006N, 001148W SWEEPED CLEAR TO A DEPTH OF 10FMS BY OROPESA. TRACING HELD. (HMS FLINDERS, 15.11.35). AMENDED TO NDW. - NM.

\*\*23.7.71 NOW CHARTED AS USC 18.0MTRS. (TONNAGE KNOWN). NC 1652.

\*\*30.12.74 FF REPD IN 504024N, 001148W [OGB] USING DECCA. (E GILES, 1974). NCA.

\*\*H1310/80 15.10.80 SEARCHED FOR BUT NOT FOUND. (J SALSURY, 4.9.80). NCA.

\*\*H1965/76 1.12.80 NOTHING FOUND DURING INTENSIVE SEARCH WITHIN 400MTRS OF CHARTED POSN, OR DURING AREA SEARCH WITHIN 1.5M. (HMS BULLDOG, HI 37A/77). DELETED. AMENDED TO DEAD. R/P.

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

**Latitude = 50 40'.000 N Longitude = 000 20'.900 W [OGB] Square Number = 136 State = DEAD**

Wreck Number      20046                      Classification    = Unclassified  
 Symbol                                      Largest Scale Chart = 1652  
 Charting Comments    POSN FOR FILING ONLY

Old Number        013603541

Category            Undefined

WGS84 Position      Latitude = 50 40'.036 N    Longitude = 000 20'.992 W



WGS84 Origin 3-D Cartesian Shift (BW)  
 Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method  
 Position Quality Unreliable  
 Position Accuracy  
 Area at Largest Scale No

Depth  
 Drying Height  
 Height  
 General Depth 24 metres  
 Vertical Datum Lowest astronomical tide  
 Depth Method  
 Depth Quality Depth unknown  
 Depth Accuracy  
 Conspic Visual NO Conspic Radar NO  
 Historic NO Military NO Existence Doubtful NO  
 Non Sub Contact NO

Last Amended 14/11/2002  
 Position Last Amended 03/01/2001  
 Position Last Latitude = 50 40'.000 N Longitude = 000 20'.900 W

Name  
 Type  
 Flag  
 Dimensions Length = Beam = Draught =  
 Tonnage  
 Cargo  
 Date Sunk

Sonar Dimensions Length = Width = Shadow Height =  
 Orientation

Magnetic Anomaly  
 Debris Field  
 Scour Depth = Length = Orientation =

Markers  
 General Comments

Circumstances of Loss

Surveying Details  
 \*\*H2351/17 16.4.17 WK WITH 2 MASTS VISIBLE IN 504000N, 002100W. (ADMIRALTY). CHART AS WK [OLD SYMBOL] (2 MASTS VISIBLE). - FNM 223/17. [LATER BY NM 101/18].  
 \*\*H3211/17 24.1.18 WK IN 504000N, 002100W TO BE DISPERSED. TWO MASTS VISIBLE. (AUTHORITY NOT STATED).  
 \*\*H1656/24 5.3.24 WK SYMBOL AMENDED TO DW. (AUTHORITY NOT STATED). SQ. DATE.  
 \*\*H632/31 10.2.31 NOW CHARTED AS DW PA.  
 \*\*H7789/35 SWEEPED TO 10FMS BY OROPESA. POSN 504000N, 002100W. (HMS FLINDERS, 15.11.35). AMEND TO NDWPA. - NM 2138/35.  
 \*\*23.7.71 NOW CHARTED AS USCPA 18.0MTRS. NC 1652.

\*\*H3958/73 15.8.73 NOT FOUND DURING TRANSIT SONAR AND E/S SURVEY. ON EDGE OF THE SURVEY. (KELVIN HUGHES SURVEY K6719/3). NCA.

\*\*H4121/76 19.1.77 NOT FOUND DURING SONAR SEARCH. (HMS FOX, HI 52/76). DELETE. - NM 492/77.

\*\*2.8.82 THOUGHT TO HAVE BEEN LOCATED BY SUB-AQUA DIVERS. MORE DETAILS TO FOLLOW. (MR SALSBURY, TELECON 2.8.82). RETAIN POSN FOR FILING ONLY.

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

\*\*HH091/002/01 14.11.02 NOT LOCATED, DISPROVED. SURROUNDING SEABED IS FLAT WITH NO EVIDENCE OF SCOURING OR WRECKAGE. (NP 1016, HI 1002). AMENDED DEAD. NCA.

**Latitude = 50 40'.000 N Longitude = 000 19'.100 W [UND] Square Number = 136 State = DEAD**

Wreck Number 20045 Classification = Unclassified  
 Symbol WK USC PA 18.0 Largest Scale Chart = 1652  
 Charting Comments

Old Number 013603528  
 Category Undefined

WGS84 Position Latitude = 50 40'.000 N Longitude = 000 19'.100 W  
 WGS84 Origin Undefined  
 Horizontal Datum UND UNDETERMINED

Position Method  
 Position Quality Approximate  
 Position Accuracy  
 Area at Largest Scale No

Depth 18.0 metres  
 Drying Height  
 Height  
 General Depth 25 metres  
 Vertical Datum Lowest astronomical tide  
 Depth Method  
 Depth Quality Least depth unknown, safe clearance at value shown  
 Depth Accuracy  
 Conspic Visual NO Conspic Radar NO  
 Historic NO Military NO Existence Doubtful NO  
 Non Sub Contact NO

Last Amended 10/04/2000  
 Position Last Amended  
 Position Last Latitude = Longitude =

Name IKEDA  
 Type STEEL  
 Flag BRITISH  
 Dimensions Length = 125.0 metres Beam = 16.2 metres Draught = 11.3 metres  
 Tonnage 6311 Gross  
 Cargo BALLAST  
 Date Sunk 21/03/1918

Sonar Dimensions Length = Width = Shadow Height =

## Orientation

## Magnetic Anomaly

## Debris Field

Scour            Depth =            Length =            Orientation =

## Markers

## General Comments

## Circumstances of Loss

\*\*TORPEDOED & SUNK BY GERMAN SUBMARINE UB40, WHILST EN-ROUTE LONDON TO GALVESTON. (DER KRIEG ZUR SEE).

## Surveying Details

\*\*H1717/18 & H2425/18 25.3.18 SUNK 7M W [MAG] OF BRIGHTON LTV IN ABOUT 15FMS. (CUSTOM HOUSE, NEWHAVEN, RECORDER OF WRECKS). GIVES APPROX POSN 504000N, 001906W.

\*\*25.3.18 SUNK 7M W [MAG] OF BRIGHTON LTV. NO DANGER TO SURFACE NAVIGATION. (AUTHORITY NOT STATED).

\*\*1.4.18 SUNK 3M NW OF BRIGHTON LTV. REPD BY HMT JOHN FELTON. (AP PORTSMOUTH, DOCKET M08180).

\*\*1.4.18 SUNK 8M OFF BRIGHTON LTV. (SNO NEWHAVEN, DOCKET M08180).

\*\*H6391/19 CHART AS WK [OLD SYMBOL] PA IN 504000N, 001906W. (AUTHORITY NOT STATED).

\*\*H1656/24 5.3.24 NOW CHARTED AS DW. (AUTHORITY NOT STATED). BR STD.

\*\*H632/31 10.2.31 NOW CHARTED AS DW PA. (AUTHORITY NOT STATED). NE 2451.

\*\*H7789/35 3.12.35 NOT FOUND. CHARTED POSN SWEEP CLEAR TO 10FMS. (HMS FLINDERS,15.11.35). AMEND TO NDW PA. BR STD.

\*\*23.7.71 NOW CHARTED AS USC PA 18.0MTRS. (TONNAGE KNOWN). NC 1652.

\*\*H4121/76 19.1.77 WRECK NOT FOUND DURING AREA SONAR SEARCH. MAY BE THE NEW WK [20059] LOCATED IN 504039N,001944W, BUT DIMENSIONS DO NOT AGREE. (HMS FOX, HI 52/76). DELETE. - NM 492/77.

\*\*H1965/76 2.12.80 NOTHING FOUND AROUND 504000N, 001906W IN FEATURELESS AREA. (HMS BULLDOG, HI 37A/77). AMENDED TO DEAD. [SEE WK [20080] IN 504218N, 001417W].

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

**Latitude = 50 40'.000 N Longitude = 000 12'.000 W [OGB] Square Number = 136 State = DEAD**

Wreck Number      20044                      Classification      = Unclassified

Symbol                              Largest Scale Chart = 1652

Charting Comments      POSN FOR FILING ONLY

Old Number            013603516

Category                Undefined

WGS84 Position      Latitude = 50 40'.036 N      Longitude = 000 12'.093 W

WGS84 Origin        3-D Cartesian Shift (BW)

Horizontal Datum    OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

## Position Method

Position Quality      Unreliable

Position Accuracy

Area at Largest Scale No

## Depth

Drying Height  
 Height  
 General Depth 30 metres  
 Vertical Datum Lowest astronomical tide  
 Depth Method  
 Depth Quality Depth unknown  
 Depth Accuracy  
 Conspic Visual NO Conspic Radar NO  
 Historic NO Military NO Existence Doubtful NO  
 Non Sub Contact NO

Last Amended 19/06/2007  
 Position Last Amended  
 Position Last Latitude = Longitude =

Name ST ANNE  
 Type SS  
 Flag FRENCH  
 Dimensions Length = Beam = Draught =  
 Tonnage 2247 Gross  
 Cargo  
 Date Sunk 07/04/1924

Sonar Dimensions Length = Width = Shadow Height =  
 Orientation

Magnetic Anomaly  
 Debris Field  
 Scour Depth = Length = Orientation =

Markers  
 General Comments

Circumstances of Loss

Surveying Details  
 \*\*H2617/24 SANK IN APPROX 504000N, 001200W. SEARCHED FOR BUT NOT LOCATED. (TH, 14.4.24).  
 NCA. POSN FOR FILING ONLY.  
 \*\*H1965/76 1.12.80 NOTHING FOUND DURING INTENSIVE SEARCH WITHIN 400MTRS OF POSN. (HMS  
 BULLDOG, HI 37A/77). DELETE. NCA.

**Latitude = 50 40'.000 N Longitude = 000 07'.800 W [OGB] Square Number = 136 State = DEAD**

Wreck Number 20043 Classification = Unclassified  
 Symbol F Largest Scale Chart = 1652  
 Charting Comments

Old Number 013603504  
 Category Foul ground

WGS84 Position Latitude = 50 40'.036 N Longitude = 000 07'.893 W  
 WGS84 Origin 3-D Cartesian Shift (BW)  
 Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method DECCA navigator  
 Position Quality Precisely known  
 Position Accuracy  
 Area at Largest Scale No

Depth  
 Drying Height  
 Height  
 General Depth 50 metres  
 Vertical Datum Lowest astronomical tide  
 Depth Method  
 Depth Quality Depth unknown  
 Depth Accuracy  
 Conspic Visual NO Conspic Radar NO  
 Historic NO Military NO Existence Doubtful NO  
 Non Sub Contact NO

Last Amended 10/04/2000  
 Position Last Amended 10/04/2000  
 Position Last Latitude = 50 40'.000 N Longitude = 000 07'.800 W

Name  
 Type FISHERMENS FASTENER  
 Flag  
 Dimensions Length = Beam = Draught =  
 Tonnage  
 Cargo  
 Date Sunk

Sonar Dimensions Length = Width = Shadow Height =  
 Orientation

Magnetic Anomaly  
 Debris Field  
 Scour Depth = Length = Orientation =

Markers  
 General Comments

Circumstances of Loss

Surveying Details  
 \*\*30.12.74 FF IN 504000N, 000748W [OGB] USING DECCA. (E GILES, 1974).  
 \*\*H1965/76 1.12.80 NOTHING FOUND IN AREA OF SANDWAVES. (HMS BULLDOG, HI 37A/77).  
 AMENDED TO DEAD.

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

**Latitude = 50 39'.200 N Longitude = 000 11'.750 W [OGB] Square Number = 136 State = DEAD**

Wreck Number 20029 Classification = Unclassified  
 Symbol F Largest Scale Chart = 1652  
 Charting Comments



Old Number 013603358  
 Category Foul ground

WGS84 Position Latitude = 50 39'.236 N Longitude = 000 11'.843 W  
 WGS84 Origin 3-D Cartesian Shift (BW)  
 Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method DECCA navigator  
 Position Quality Precisely known  
 Position Accuracy  
 Area at Largest Scale No

Depth  
 Drying Height  
 Height  
 General Depth 50 metres  
 Vertical Datum Lowest astronomical tide  
 Depth Method  
 Depth Quality Depth unknown  
 Depth Accuracy  
 Conspic Visual NO Conspic Radar NO  
 Historic NO Military NO Existence Doubtful NO  
 Non Sub Contact NO

Last Amended 19/06/2007  
 Position Last Amended  
 Position Last Latitude = Longitude =

Name  
 Type FISHERMENS FASTENER  
 Flag  
 Dimensions Length = Beam = Draught =  
 Tonnage  
 Cargo  
 Date Sunk

Sonar Dimensions Length = Width = Shadow Height =  
 Orientation

Magnetic Anomaly  
 Debris Field  
 Scour Depth = Length = Orientation =

Markers  
 General Comments

Circumstances of Loss

Surveying Details  
 \*\*30.12.74 FF IN 503912N, 001145W [OGB] USING DECCA. (E GILES, 1974). NCA.  
 \*\*H1965/76 28.11.80 NOTHING FOUND DURING INTENSIVE SEARCH WITHIN 400MTRS OF POSN. (HMS BULLDOG, HI 37A/77). DELETE. NCA.

**Latitude = 50 39'.000 N Longitude = 000 07'.833 W [OGB] Square Number = 136 State = DEAD**

Wreck Number 20025 Classification = Unclassified  
 Symbol WK 43.0 Largest Scale Chart = 1652  
 Charting Comments SEE ALSO WK [20056]

Old Number 013603310  
 Category Non-dangerous wreck

WGS84 Position Latitude = 50 39'.036 N Longitude = 000 07'.926 W  
 WGS84 Origin 3-D Cartesian Shift (BW)  
 Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method  
 Position Quality Precisely known  
 Position Accuracy  
 Area at Largest Scale No

Depth 43.0 metres  
 Drying Height  
 Height  
 General Depth 47 metres  
 Vertical Datum Lowest astronomical tide  
 Depth Method Found by echo-sounder  
 Depth Quality Least depth known  
 Depth Accuracy  
 Conspic Visual NO Conspic Radar NO  
 Historic NO Military NO Existence Doubtful NO  
 Non Sub Contact NO

Last Amended 11/04/2000  
 Position Last Amended  
 Position Last Latitude = Longitude =

Name  
 Type  
 Flag  
 Dimensions Length = Beam = Draught =  
 Tonnage  
 Cargo  
 Date Sunk

Sonar Dimensions Length = Width = Shadow Height =  
 Orientation

Magnetic Anomaly  
 Debris Field  
 Scour Depth = Length = Orientation =

Markers  
 General Comments

## Circumstances of Loss

## Surveying Details

\*\*H2411/49 26.4.49 REPD TO HAVE SUNK IN 503900N, 000750W [OGB], 21M E OF OWERS LTV. (DOCG, NEWHAVEN, 14.4.49). CHART AS NDW. BR STD.

\*\*H2411/49 SEARCH CARRIED OUT IN 503900N, 000750W. NO RUN OBSERVED BUT E/S GAVE LEAST DEPTH OF 145FT OVER AN INDICATED DEPTH OF 156FT. ON CHART IT IS PRESUMED THAT THIS DEPTH OF 11FT IS WK LYING ON ITS SIDE. (TH, 18.5.49). [SEE ALSO WK [20056], 'CITY OF WATERFORD', IN 504030N, 000636W].

\*\*23.7.71 NOW CHARTED AS WK 44MTRS. NC 1652.

\*\*7.4.72 NOW CHARTED AS WK 43MTRS [LAT]. NC 1652.

\*\*30.12.74 FF IN 503900N, 000750W [OGB] USING DECCA. (E GILES, 1974). NCA.

\*-H1965/76 9.12.80 NOTHING FOUND DURING INTENSIVE SEARCH WITHIN 400MTRS OF POSN. (HMS BULLDOG, HI 37A/77). DELETED. AMENDED TO DEAD. R/S.

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

**Latitude = 50 38'.800 N Longitude = 000 02'.800 W [OGB] Square Number = 136 State = DEAD**

Wreck Number 20021 Classification = Unclassified  
 Symbol Largest Scale Chart = 1652  
 Charting Comments POSN FOR FILING ONLY

Old Number 013603279  
 Category Undefined

WGS84 Position Latitude = 50 38'.836 N Longitude = 000 02'.893 W  
 WGS84 Origin 3-D Cartesian Shift (BW)  
 Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method  
 Position Quality Unreliable  
 Position Accuracy  
 Area at Largest Scale No

Depth  
 Drying Height  
 Height  
 General Depth 48 metres  
 Vertical Datum Lowest astronomical tide  
 Depth Method  
 Depth Quality Depth unknown  
 Depth Accuracy  
 Conspic Visual NO Conspic Radar NO  
 Historic NO Military NO Existence Doubtful NO  
 Non Sub Contact NO

Last Amended 16/07/2007  
 Position Last Amended 11/04/2000  
 Position Last Latitude = 50 38'.800 N Longitude = 000 02'.800 W

Name LEACHS ROMANCE  
 Type FISHING VESSEL

Flag BRITISH  
 Dimensions Length = Beam = Draught =  
 Tonnage 44 Gross  
 Cargo  
 Date Sunk 29/07/1940

Sonar Dimensions Length = Width = Shadow Height =  
 Orientation

Magnetic Anomaly

Debris Field

Scour Depth = Length = Orientation =

Markers

General Comments

Circumstances of Loss

\*\*MINED 10.5M DUE S OF KEMP TOWN. 4 LIVES LOST. (LL WW1 & WW1SL).

Surveying Details

\*\*SUNK 50DEGS, 38.8M, 0DEGS 02.8M 10.5M S OF KEMP TOWN. (WKS OFFICERS RECORD CARDS)

\*\*H01001/40 POSN 10.5M S OF KEMP TOWN. (TD LIST DW 6353/41 P34).

\*\*H01001/40 REPORTED 10.5M S OF KEMP TOWN. (MSL 29.7.40). POSN 503848N, 000248W FOR FILING ONLY.

\*\*H1965/76 28.11.80 NOTHING FOUND DURING INTENSIVE SEARCH WITHIN 400MTRS OF POSN. (HMS BULLDOG, HI 37A/77). AMENDED TO DEAD. NCA.

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

**Latitude = 50 38'.750 N Longitude = 000 12'.500 W [OGB] Square Number = 136 State = DEAD**

Wreck Number 20018 Classification = Unclassified

Symbol F Largest Scale Chart = 1652

Charting Comments

Old Number 013603243

Category Foul ground

WGS84 Position Latitude = 50 38'.786 N Longitude = 000 12'.592 W

WGS84 Origin 3-D Cartesian Shift (BW)

Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method DECCA navigator

Position Quality Precisely known

Position Accuracy

Area at Largest Scale No

Depth

Drying Height

Height

General Depth 50 metres

Vertical Datum Lowest astronomical tide

Depth Method

Depth Quality Depth unknown  
 Depth Accuracy  
 Conspic Visual NO Conspic Radar NO  
 Historic NO Military NO Existence Doubtful NO  
 Non Sub Contact NO

Last Amended 16/07/2007  
 Position Last Amended  
 Position Last Latitude = Longitude =

Name  
 Type FISHERMENS FASTENER  
 Flag  
 Dimensions Length = Beam = Draught =  
 Tonnage  
 Cargo  
 Date Sunk

Sonar Dimensions Length = Width = Shadow Height =  
 Orientation

Magnetic Anomaly  
 Debris Field  
 Scour Depth = Length = Orientation =

Markers  
 General Comments

Circumstances of Loss

Surveying Details

\*\*30.12.74 FF IN 503845N, 001230W [OGB] USING DECCA. (E GILES, 1974). NCA.

\*\*H1289/76/351 26.10.76 A WK THAT IS ONLY A SMALL CARGO VESSEL OF APPROX 36TONS. MR R TODD HAS PURCHASED THIS VESSEL AND KNOWS THE NAME. (R D SOTHERN, EAST MOLESEY, SURREY, 18.10.76). NCA.

\*\*H1965/76 27.11.80 NOTHING FOUND IN INTENSIVE SEARCH USING HYDROSEARCH WITH 400MTRS OF THIS POSN. (HMS BULLDOG, HI 37A/77). AMEND DEAD. NCA.

**Latitude = 50 37'.333 N Longitude = 000 08'.500 W [OGB] Square Number = 136 State = DEAD**

Wreck Number 19983 Classification = Unclassified  
 Symbol WK USC PA 18.0 Largest Scale Chart = 1652  
 Charting Comments

Old Number 013602834  
 Category Dangerous wreck

WGS84 Position Latitude = 50 37'.369 N Longitude = 000 08'.593 W  
 WGS84 Origin 3-D Cartesian Shift (BW)  
 Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method  
 Position Quality Approximate



## Position Accuracy

Area at Largest Scale No

Depth 18.0 metres

Drying Height

Height

General Depth 45 metres

Vertical Datum Lowest astronomical tide

Depth Method

Depth Quality Least depth unknown, safe clearance at value shown

Depth Accuracy

Conspic Visual NO Conspic Radar NO

Historic NO Military NO Existence Doubtful NO

Non Sub Contact NO

Last Amended 19/06/2007

Position Last Amended

Position Last Latitude = Longitude =

Name TYCHO

Type SS

Flag BRITISH

Dimensions Length = 102.1 metres Beam = 14.3 metres Draught = 7.0 metres

Tonnage 3216 Gross

Cargo GENERAL

Date Sunk 20/05/1917

Sonar Dimensions Length = Width = Shadow Height =

Orientation

## Magnetic Anomaly

Debris Field

Scour Depth = Length = Orientation =

## Markers

General Comments

## Circumstances of Loss

\*\*BUILT IN 1904 BY EARLE'S SHIPBUILDING & ENGINEERING CO. OWNED AT THE TIME OF LOSS BY ELLERMAN'S WILSON LINE. TRIPLE EXPANSION ENGINE, SINGLE SHAFT. PASSAGE FALMOUTH FOR HULL. TORPEDOED BY UB-40. 15 MEN LOST. (DODS & SIBI).

## Surveying Details

\*\*WRECK IN POSN 16M W 0.5 S FROM BEACHY HEAD. (WW1SL).

\*\*23.7.71 NOW CHARTED AS USC PA 18MTRS IN 503720N, 000830W [OGB]. (AUTHORITY NOT STATED). NC1652.

\*\*H1965/76 9.7.79 DCS3 CONTACT, CLASSIFIED GOOD, POSSIBLE WK, LOCATED IN 503758N, 000821W [OGB]. NOT EXAM'D. (HMS BULLDOG, HI 37A/77). AMEND TO USC 35MTRS IN REVISED POSN. R/P.

\*\*H1965/76 14.12.79 CONTACT IN 503758N, 000821W EXAM'D AND CONFIRMED AS BOTTOM RETURN. (HMS BULLDOG, HI 37A/77). ALSO NOTHING LOCATED IN ORIGINAL CHARTED POSN. DELETE. BR STD.

**Latitude = 50 37'.150 N Longitude = 000 16'.533 W [OGB] Square Number = 136 State = DEAD**

Wreck Number 58365 Classification = Unclassified

Symbol WK Largest Scale Chart = 1652  
 Charting Comments  
 Old Number  
 Category Undefined

WGS84 Position Latitude = 50 37'.186 N Longitude = 000 16'.625 W  
 WGS84 Origin 3-D Cartesian Shift (BW)  
 Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method  
 Position Quality Unreliable  
 Position Accuracy  
 Area at Largest Scale No

Depth  
 Drying Height  
 Height  
 General Depth 50 metres  
 Vertical Datum Lowest astronomical tide  
 Depth Method  
 Depth Quality Depth unknown  
 Depth Accuracy  
 Conspic Visual NO Conspic Radar NO  
 Historic NO Military NO Existence Doubtful NO  
 Non Sub Contact NO

Last Amended 11/04/2000  
 Position Last Amended  
 Position Last Latitude = Longitude =

Name  
 Type  
 Flag  
 Dimensions Length = Beam = Draught =  
 Tonnage  
 Cargo  
 Date Sunk

Sonar Dimensions Length = Width = Shadow Height =  
 Orientation

Magnetic Anomaly  
 Debris Field  
 Scour Depth = Length = Orientation =

Markers  
 General Comments

Circumstances of Loss

Surveying Details  
 \*\*H1965/76 6.7.79 DCS3 CONTACT, CLASSIFIED GOOD POSSIBLE WRECK, LOCATED IN 503709N,  
 001632W [OGB]. NOT EXAMINED. (HMS BULLDOG, HI 37A/77). NCA YET. POSN FOR FILING ONLY.

\*\*H1965/76 14.12.79 POSITION EXAMINED AND FOUND TO BE BOTTOM CONTACT. (HMS BULLDOG, HI 37A/77). AMENDED TO DEAD.

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

**Latitude = 50 37'.000 N Longitude = 000 08'.500 W [OGB] Square Number = 136 State = DEAD**

Wreck Number 19978 Classification = Unclassified  
 Symbol WK USC PA 25.0 Largest Scale Chart = 1652  
 Charting Comments

Old Number 013602767  
 Category Dangerous wreck

WGS84 Position Latitude = 50 37'.036 N Longitude = 000 08'.593 W  
 WGS84 Origin 3-D Cartesian Shift (BW)  
 Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method  
 Position Quality Approximate  
 Position Accuracy  
 Area at Largest Scale No

Depth 25.0 metres  
 Drying Height  
 Height  
 General Depth 40 metres  
 Vertical Datum Lowest astronomical tide  
 Depth Method  
 Depth Quality Least depth unknown, safe clearance at value shown  
 Depth Accuracy  
 Conspic Visual NO Conspic Radar NO  
 Historic NO Military NO Existence Doubtful NO  
 Non Sub Contact NO

Last Amended 16/12/1980  
 Position Last Amended  
 Position Last Latitude = Longitude =

Name PORTHKERRY  
 Type STEAMSHIP  
 Flag BRITISH  
 Dimensions Length = 85.3 metres Beam = 12.2 metres Draught = 5.5 metres  
 Tonnage 1920 Gross  
 Cargo  
 Date Sunk 20/05/1917

Sonar Dimensions Length = Width = Shadow Height =  
 Orientation

Magnetic Anomaly  
 Debris Field  
 Scour Depth = Length = Orientation =

## Markers

## General Comments

## Circumstances of Loss

\*\*VESSEL, BUILT 1911 BY J CROWN & SONS AND OWNED AT THE TIME OF LOSS BY PORTHCAWL STEAMSHIP CO., WAS TORPEDOED AND SUNK BY GERMAN SUBMARINE 16M W BY S OF BEACHY HEAD. CAPTAIN & 6 CREW KILLED. (DODS).

## Surveying Details

\*\*SUNK 16M W BY S FROM BEACHY HEAD IN APPROX 503700N, 000830W. (WW1SL).  
 \*\*H2537/28 18.8.18 WRECK NOT CHARTED.  
 \*\*23.7.71 NOW CHARTED AS USC PA 18 MTRS. (AUTHORITY NOT STATED). NC 1652.  
 \*\*4.4.78 AMENDED TO USC PA 25.0MTRS. (AUTHORITY NOT STATED).  
 \*\*H1965/76 27.11.80 NOTHING FOUND IN AN AREA OF SANDWAVES. (HMS BULLDOG, HI 37A/77). DELETED. AMENDED TO DEAD. R/P.

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

**Latitude = 50 36'.533 N Longitude = 000 06'.617 W [OGB] Square Number = 136 State = DEAD**

Wreck Number 58367 Classification = Unclassified  
 Symbol F Largest Scale Chart = 1652  
 Charting Comments  
 Old Number  
 Category Foul ground

WGS84 Position Latitude = 50 36'.569 N Longitude = 000 06'.710 W  
 WGS84 Origin 3-D Cartesian Shift (BW)  
 Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method DECCA navigator  
 Position Quality Precisely known  
 Position Accuracy  
 Area at Largest Scale No

## Depth

Drying Height  
 Height  
 General Depth 56 metres  
 Vertical Datum Lowest astronomical tide  
 Depth Method  
 Depth Quality Depth unknown  
 Depth Accuracy  
 Conspic Visual NO Conspic Radar NO  
 Historic NO Military NO Existence Doubtful NO  
 Non Sub Contact NO

Last Amended 12/04/2000  
 Position Last Amended  
 Position Last Latitude = Longitude =

## Name

Type FISHERMENS FASTENER  
Flag  
Dimensions Length = Beam = Draught =  
Tonnage  
Cargo  
Date Sunk

Sonar Dimensions Length = Width = Shadow Height =  
Orientation

Magnetic Anomaly  
Debris Field  
Scour Depth = Length = Orientation =

Markers  
General Comments

Circumstances of Loss

Surveying Details  
\*\*H2979/74 11.5.76 FF IN 503632N, 000637W [OGB] USING DECCA. (E GILES, 1976). NCA.  
\*\*H1965/76 27.11.80 NOTHING FOUND. (HMS BULLDOG, HI 37A/77). AMENDED TO DEAD.

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE  
**Latitude = 50 36'.000 N Longitude = 000 04'.000 W [OGB] Square Number = 136 State = DEAD**

Wreck Number 19962 Classification = Unclassified  
Symbol Largest Scale Chart = 1652  
Charting Comments

Old Number 013602585  
Category Undefined

WGS84 Position Latitude = 50 36'.036 N Longitude = 000 04'.093 W  
WGS84 Origin 3-D Cartesian Shift (BW)  
Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method  
Position Quality  
Position Accuracy  
Area at Largest Scale No

Depth  
Drying Height  
Height  
General Depth 50 metres  
Vertical Datum Lowest astronomical tide  
Depth Method  
Depth Quality Depth unknown  
Depth Accuracy

Conspic Visual NO Conspic Radar NO  
Historic NO Military NO Existence Doubtful NO  
Non Sub Contact YES



Last Amended 18/04/2000  
 Position Last Amended 18/04/2000  
 Position Last Latitude = 50 36'.000 N Longitude = 000 04'.000 W  
 Name  
 Type NON-SUB CONTACT  
 Flag  
 Dimensions Length = Beam = Draught =  
 Tonnage  
 Cargo  
 Date Sunk

Sonar Dimensions Length = Width = Shadow Height =  
 Orientation

Magnetic Anomaly  
 Debris Field  
 Scour Depth = Length = Orientation =

Markers  
 General Comments

Circumstances of Loss

#### Surveying Details

\*\*H03135/44 NSC REPD IN 503600N, 000400W [OGB] ON 24.8.44. (PORTSMOUTH LIST NAV ORDERS 51).

\*\*H2330/84 24.7.85 NOTHING FOUND DURING INTENSIVE SEARCH EXCEPT AN 8MTR HIGH ROCK RIDGE WITH SHEER FACE. DISPROVED. (HMS BULLDOG, HI 240A). AMENDED TO DEAD.

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

**Latitude = 50 35'.617 N Longitude = 000 07'.317 W [OGB] Square Number = 136 State = DEAD**

Wreck Number 58368 Classification = Unclassified  
 Symbol F Largest Scale Chart = 1652  
 Charting Comments  
 Old Number  
 Category Foul ground

WGS84 Position Latitude = 50 35'.653 N Longitude = 000 07'.409 W  
 WGS84 Origin 3-D Cartesian Shift (BW)  
 Horizontal Datum OGB ORDANCE SURVEY OF GREAT BRITAIN (1936)

Position Method DECCA navigator  
 Position Quality Precisely known  
 Position Accuracy  
 Area at Largest Scale No

Depth  
 Drying Height  
 Height  
 General Depth 56 metres

Vertical Datum Lowest astronomical tide  
 Depth Method  
 Depth Quality Depth unknown  
 Depth Accuracy  
 Conspic Visual NO Conspic Radar NO  
 Historic NO Military NO Existence Doubtful NO  
 Non Sub Contact NO

Last Amended 11/04/2000  
 Position Last Amended  
 Position Last Latitude = Longitude =

Name  
 Type FISHERMENS FASTENER  
 Flag  
 Dimensions Length = Beam = Draught =  
 Tonnage  
 Cargo  
 Date Sunk

Sonar Dimensions Length = Width = Shadow Height =  
 Orientation

Magnetic Anomaly  
 Debris Field  
 Scour Depth = Length = Orientation =

Markers  
 General Comments

Circumstances of Loss

Surveying Details

\*\*H2979/74 11.5.76 FF IN 503537N, 000719W [OGB] USING DECCA. (E GILES, 13.4.76). NCA.

\*\*H1965/76 26.11.80 NOTHING FOUND IN AREA OF SAND RIPPLES. (HMS BULLDOG, HI 37A/77).

AMENDED TO DEAD.

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

**Latitude = 50 35'.283 N Longitude = 000 07'.467 W [OGB] Square Number = 136 State = DEAD**

Wreck Number 58369 Classification = Unclassified  
 Symbol F Largest Scale Chart = 1652  
 Charting Comments  
 Old Number  
 Category Foul ground

WGS84 Position Latitude = 50 35'.320 N Longitude = 000 07'.559 W  
 WGS84 Origin 3-D Cartesian Shift (BW)  
 Horizontal Datum OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)

Position Method DECCA navigator  
 Position Quality Precisely known

## Position Accuracy

Area at Largest Scale No

## Depth

Drying Height

Height

General Depth 56 metres

Vertical Datum Lowest astronomical tide

Depth Method

Depth Quality Depth unknown

Depth Accuracy

Conspic Visual NO Conspic Radar NO

Historic NO Military NO Existence Doubtful NO

Non Sub Contact NO

Last Amended 11/04/2000

Position Last Amended

Position Last Latitude = Longitude =

## Name

Type FISHERMENS FASTENER

Flag

Dimensions Length = Beam = Draught =

Tonnage

Cargo

Date Sunk

Sonar Dimensions Length = Width = Shadow Height =

Orientation

## Magnetic Anomaly

Debris Field

Scour Depth = Length = Orientation =

## Markers

General Comments

## Circumstances of Loss

## Surveying Details

\*\*H2979/74 11.5.76 FF IN 503517N, 000728W [OGB] USING DECCA. (E GILES, 13.4.76). NCA.

\*\*H1965/76 26.11.80 NOTHING FOUND IN AREA OF SAND RIPPLES. (HMS BULLDOG, HI 37A/77).

AMENDED TO DEAD.

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE





## **Rampion Offshore Wind Farm**



### **ES Section 13 – Marine Archaeology**

#### **Figure 13.1**

**RSK Environmental Ltd**

**Document 6.2.13**

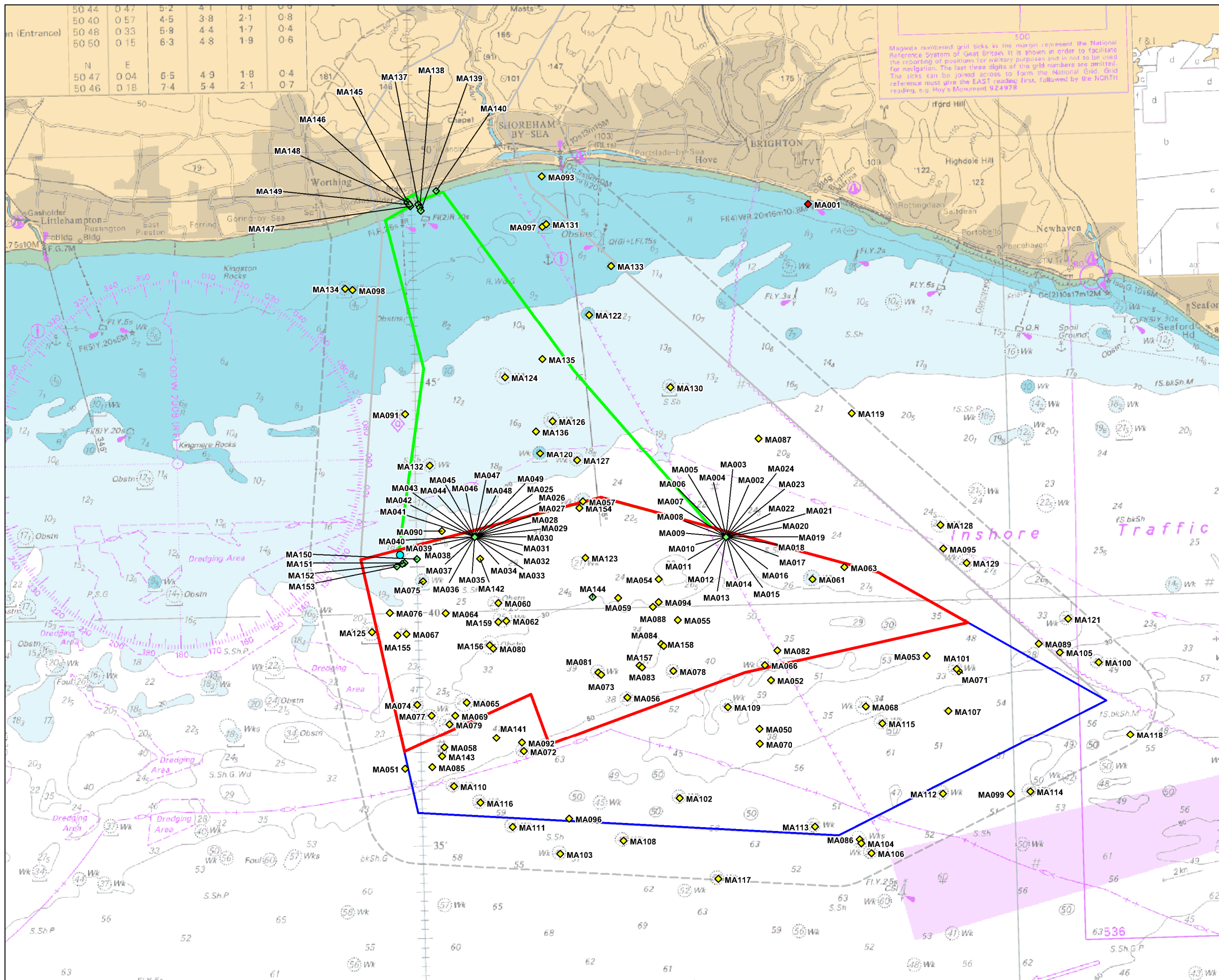
**December 2012**

**APFP Regulation 5(2)(a)**

**Revision A**

**E.ON Climate & Renewables UK Rampion Offshore Wind Limited**





- Legend**
- The Crown Estate Zone 6
  - Rampion Offshore Wind Farm Site
  - Offshore Cable Corridor
  - Met Mast
  - Marine Heritage Archaeological Area of Search
  - Marine Heritage Archaeological Area of Search - 2km buffer
  - ◆ Protected Wreck
  - ◆ Known and potential wrecks to be allocated an exclusion zone
  - ◆ Marine heritage assets with no exclusion zone



Rev	Date	Description	Drm	Chk	App
06	23.11.12	legend terminology	NH	HK	DW
05	29.10.12	Updated gaz	NH	HK	DW
04	11.06.12	Exclusions/turbs	NH	HK	DW
03	18.03.12	Fig No, legend, bdy	NH	HK	DW

**Rampion Wind Farm**

**Title:**  
Figure 13.1: Marine archaeology constraints within the wind farm area

Scale = 1:150,000 @ A3

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Not to be used for Navigation.



## **Rampion Offshore Wind Farm**



### **ES Section 13 – Marine Archaeology - Appendix 13.3**

**Moore Marine Services Ltd**

**Document 6.3.13iii**

**December 2012**

**APFP Regulation 5(2)(a)**

**Revision A**

**E.ON Climate & Renewables UK Rampion Offshore Wind Limited**

**MARINE ARCHAEOLOGICAL ASSESSMENT**

**OF**

**RAMPION OFFSHORE WINDFARM**

**FOR**

**RSK GROUP**

**ON BEHALF OF**

**E-ON POWER**



**Moore Marine**

**Job Number: M12WS01**

**Authors: Eoghan Kieran**

**Date: April 2012**

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## ABBREVIATIONS

BC	Box core	ppm	parts per million
CAD	Computer Aided Design	psi	Pounds per square inch
CM	Central Meridian	QC	Quality Control
CPT	Cone Penetrometer Test	RTK	Real Time Kinematic
CSF	Coordinated System File	ROV	Remotely Operated Vehicle
CRP	Common Reference Point	RTCM	Radio Technical Commission for Maritime Services
DGPS	Differential Global Positioning System	S	Seconds
DP	Dynamic Positioning	SBES	Single Beam Echo Sounder
DTM	Digital Terrain Model	SBP	Sub-Bottom Profiler
EBS	Environmental Baseline Survey	SEG-Y	Seismic Data Format
ED50	European Datum 1950	SOLAS	Safety of Life at Sea
FLO	Fisheries Liaison Officer	SOW	Scope of Work
FM	Frequency Modulation	SRB	Sulphate Reducing Bacteria
GeoTIF	Geographically Referenced TIF	SSS	Side-Scan Sonar
GPS	Global Positioning System	SVP	Sound Velocity Profiler
GS	Grab Sample	TIF(F)	Tag Image File (Format)
HAT	Highest Astronomical Tide	TPU	Topside Processing Unit
HSA	Health and Safety Authority	TM	Transverse Mercator
HSE	Health and Safety Executive	UHF	Ultra-High Frequency
HV	High Voltage	UKOOA	United Kingdom Offshore Operators Association
IP	Intersection Point	USBL	Ultra Short Base Line
kHz	Kilohertz	UTC	Coordinated Universal Time
km	Kilometre	UTM	Universal Transverse Mercator
KP	Kilometre Point	UXO	Unexploded Ordnance
LAT	Lowest Astronomical Tide	VC	Vibro-Core
m	Metre	WD	Water Depth
Mag	Magnetometer	WE	Work Element
MBES	Multi-beam Echo Sounder	WGS	World Geodetic System
MM	Marine Magnetometer	XTF	Extended Triton Format
MMO	Marine Mammal Observer	XYZ	Three Primary Spatial Dimensions
MRS	Marine Route Survey		
MSL	Mean Sea Level		
m/s	Metres per second		
nT	Nano Tesla		
PGC	Piston Gravity Core		



## EXECUTIVE SUMMARY

Moore Marine Services Ltd. was commissioned by RSK Group on behalf of E.On Climate & Renewables to carry out a programme of archaeological assessment and interpretation of geophysical data acquired during a site survey of the proposed Rampion Windfarm, off Shoreham, W Sussex.

The aim of the programme of archaeological assessment was to consider the archaeological and historical background of the project and to analyse the acquired data for the presence of possible archaeological features or anomalies which may be impacted by later construction works.

Geophysical survey operations took place from the 15<sup>th</sup> to 25<sup>th</sup> September 2011. The survey was undertaken using Osiris Projects dedicated survey vessel, MV Chartwell. High-resolution side scan sonar, swath multi-beam, single beam bathymetry and magnetometer data were acquired along all survey lines, in order to accurately map the seabed within the wind farm area.

The archaeological assessment comprised a combination of desktop assessment of the area followed by a review of third party acquired geophysical data. The review of the third party data reviewed the following techniques:

- Side scan sonar,
- Marine magnetometer and
- Sub bottom profiler.

There were 37 features of note on the side scan sonar survey data. 12 of these were images of known wrecks and, with one addition unidentifiable linear feature (RMP SSS 13, 16, 17, 23-32, see Appendix 3). These features are deemed to be of high archaeological significance. The remainder are deemed to be most likely of natural origin and consequently should be classed as of low archaeological significance.

The magnetometer data recorded 82 significant magnetic contacts. The position of five of the magnetic contacts corresponded with those of known wreck sites.

The sub bottom profiler data recorded that substrate thickness was larger in this area and that the palaeochannels noted in the previous sections were largely absent.

The programme of desktop assessment concluded that the proposed site was of considerable archaeological and historical significance, with evidence of continued human habitation of the region since the Palaeolithic Period. Although, given its distance from land, it is unlikely that prehistoric communities exploited this area to a large extent. Notwithstanding this there is potential that evidence of palaeolandscapes and associated cultures could be discovered in this area.

Admiralty data indicates that there are nine recorded shipwrecks in the immediate area. Only five of these wrecks were identified during the survey. The remainder may be still present in the area or may be at another position, outside the survey area. Consequently it must be considered that the likelihood of development works impacting archaeological deposits would be moderate to high.

The programme of geophysical data review noted that the data quality was generally good. It recorded the presence of 37 side scan sonar targets and 82 magnetometer targets, five of which were seen to be recorded shipwrecks.

It has been subsequently concluded that:

- Consideration should be given to the establishment of exclusion – no construction zones surrounding the identified sites, namely those of the recorded shipwrecks. The nature and extent of these exclusion zones should be developed in conjunction all relevant legislative, commercial and local parties.
- Consideration should also be give to the provision of a programme of archaeological observation of construction works in areas deemed to be of high archaeological potential such as the areas in the vicinity of the known and recorded wreck locations.

# 1 SCOPE OF WORKS

## 1.1 Introduction

Moore Marine Services Ltd. was commissioned by RSK Group on behalf of E.On Climate & Renewables to carry out a programme of archaeological assessment and interpretation of geophysical data acquired during a site survey of the proposed Rampion Windfarm, off Shoreham, W Sussex.

The aim of the programme of archaeological assessment was to consider the archaeological and historical background of the project and to analyse the acquired data for the presence of possible archaeological features or anomalies which may be impacted by later construction works.

The Osiris Projects was commissioned by E.ON Climate and Renewables UK Southern Array Ltd to undertake a detailed geophysical survey of the proposed offshore wind farm site. The object of their survey was primarily to inform turbine foundation and cable route engineering design. Equipment used included multi-beam echo sounders, side scan sonar, sub bottom profiler and marine magnetometer.

## 1.2 Archaeological Assessment and Data Review

The programme of archaeological assessment and real time data review was specifically designed to produce a number of results. These were:

1. To establish the archaeological and historical context to the survey area.
2. To review the acquired data for signatures which may be indicative of the presence of archaeological material and features at the survey area.
3. Where archaeological material is recorded, to inform survey strategy and resolution in order to optimise feature identification and provide sufficient data to positively identify the exact nature, extent and form of the feature.
4. To provide an indication of the potential for the project to impact archaeological materials and features.
5. To provide suggested mitigatory measures to ensure the survival of any identified archaeological features or deposits.

## 2 PROPOSED DEVELOPMENT

### 2.1 Location of the Proposed Survey Area

The proposed offshore wind farm site was located approx. 10 miles off Shoreham, W Sussex.

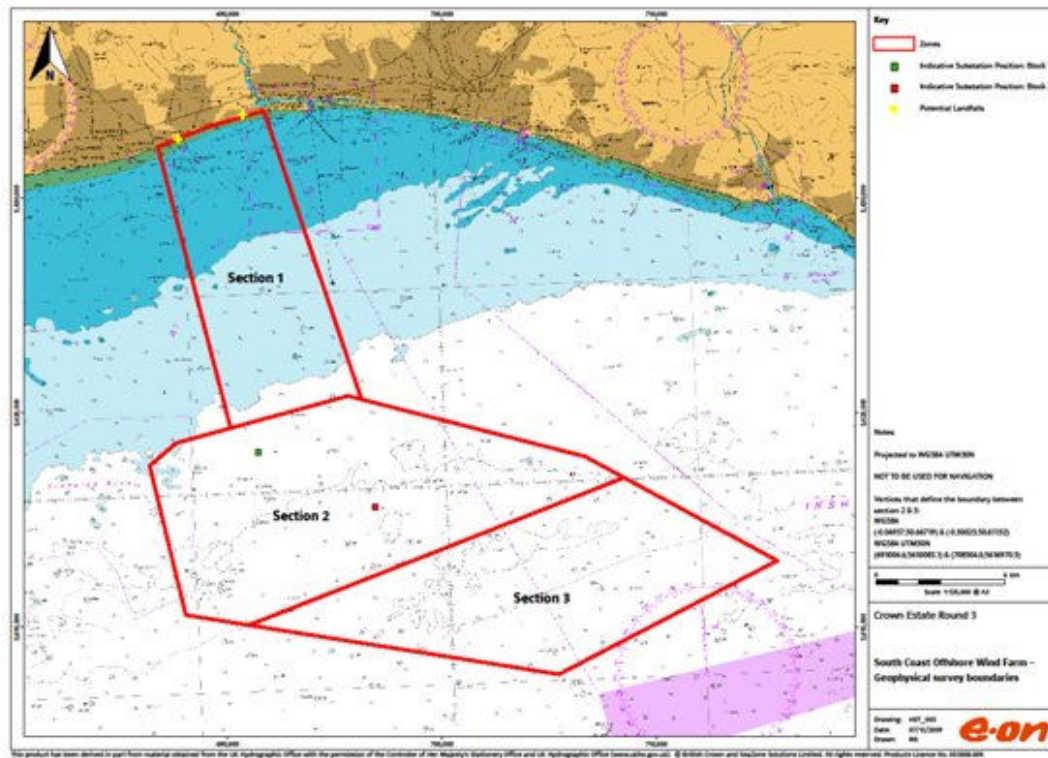


Figure 1. Section 3, survey area

## 3 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

### 3.1 UK Hydrographic Office

The UK Hydrographic Office records list over 70,000 wrecks and obstructions, of which over 20,000 are named wrecks. The Data is stored centrally and can be accessed upon request. A search of the UK Hydrographic Office recorded that there were 9 recorded wrecks or obstructions in the vicinity of the subject site (See Appendix 4). Of these, five were positively identified during the review of the geophysical data, with an additional four wrecks remaining unidentified.

## 4 GEOPHYSICAL SURVEY

### 4.1 Survey Objectives

The main objectives of the geophysical survey were as follows:

- To provide an accurate bathymetric chart of the site regions and cable routes region.
- To chart natural seabed features and any obstructions, manmade objects, debris or wrecks.
- To produce isopachyte charts to show sediment thickness of the upper, loose, and any mobile material, and of any other significant reflector levels which might impact on the engineering design to 50m below seabed.
- Locate and identify sites of near surface soft materials pertinent to jack up operations.
- To provide a detailed geological interpretation to show facies variations and structural feature changes via appropriate maps and sections.
- To produce a comprehensive factual report describing methods and events within the survey.
- To produce a comprehensive interpretative report on the survey results obtained to assist design of the offshore foundations / structures and cable burial.
- To correlate magnetic anomalies and sonar contacts to identify items that may require further physical surveys; for example UXO, wrecks, MMO, etc.
- During survey period, to identify items/areas of "Specific Areas of Interest & Archaeology" and inform the Employer as required

### 4.2 Survey Vessel

The mobilisation of MV Chartwell began on the 15th September 2011 in Brighton Marina. During the mobilisation phase, navigation checks, gyro, multibeam and USBL calibrations were completed. The mobilisation, calibrations and full wet test was completed by 12:00 BST on the 17th September 2011. A period of unfavourable weather immediately followed the mobilisation, with the vessel finally departing Brighton for site on the 22nd September. Survey operations were completed by the 25th September, with no further weather delays incurred.

### 4.3 Survey Control

#### 4.3.1 *Horizontal Control*

Primary positioning was provided by a CNAV 2050 dGPS System. The C-NAV system is utilised across many industries, including marine construction, dredging and marine survey contractors. The C-NAV 2050 System consists of a 10 channel single constellation receiver. The system utilises correction data from either the General Lighthouse Authority (GLA) Medium Frequency (MF) radio transmission via external modem or Satellite Based Augmentation System (European Geostationary Navigation Overlay System (EGNOS)) via internal receiver

For this survey the SBAS EGNOS Differential Correction Service was utilised providing a typical positional accuracy of 1 metre at 95% confidence levels.

Secondary positioning was provided by an Applanix POS MV 320 Inertial Navigation System (INS). Primary attitude and orientation data was also derived from the system. The POS MV 320 currently provides the highest level of performance of any motion reference system, and provides positioning, orientation and attitude data to remove the effects of vessel dynamics, even during periods of poor GPS signal and total outages. The system comprises of 3 main components:

- 1) Inertial Measurement Unit (IMU) containing high quality accelerometers and gyros, installed as close as possible to the vessel's axis of rotation and gravity.
- 2) Processing Control System (PCS) containing the GPS cards and main system interface.
- 3) 2 x Dual Frequency Trimble GPS receivers, mounted perpendicular to the vessel centreline.

The system can receive any standard external Radio Technical Commission for Maritime Services (RTCM) GPS (RTCM 1, 9, 18, 19 CMR and CMR+) correction, to further improve the absolute accuracy of the system. Typical positional accuracies for dGPS are 0.5m to 2m and 0.02m to 0.10m in RTK mode. By applying a tightly coupled solution of blended GPS and Inertial Measurement Unit (IMU) data, it is possible to achieve accuracies of 0.02° to 0.01° for vessel roll and pitch (dGPS and RTK), and robust heading of 0.02° to 0.01° at 2m and 4m baselines, respectively. The real-time heave accuracy is quoted as 5cm or 5% (whichever is greatest), for a period of 20 seconds or less. Heave artefacts can be further reduced by applying the Applanix Trueheave data quoted as 2cm or 2% (whichever is greatest) during post processing.

After system installation, the sensor offsets needed by the POS MV 320 were measured using land survey techniques. The measured offsets were entered into the system and afterwards, the vessel was sailed in a series of figure of 8's with raw data being collected. The raw data was post processed using Applanix POSpac MMS and used to verify the measured offsets.

Tertiary positioning was provided by a Hemisphere Crescent VS100 GPS Compass. The VS100 system delivers sub-metre dGPS positioning accuracy, when using decoded correction data. The VS100 sensor is capable of receiving differentially corrected data from land-based General Lighthouse Authority (GLA) and also from the Space Based Augmentation System (SBAS) European GPS Navigation Overlay System (EGNOS).

For this survey, the SBAS EGNOS Differential Correction Service was utilised, providing a typical positional accuracy of 1 m at 95% confidence levels. The receiver was calibrated against an Ordnance Survey Passive Station control point coordinate, prior to survey operations, to verify the geodetic parameters and system performance.

The system also provides accurate heading data between 0.3° to 0.1° RMS, at baseline lengths between 0.5m and 2m and this data was used for tertiary vessel orientation. Secondary heading was provided by a SG Brown Gyro Compass corrected for latitude and speed.

Due to the complexity and physical characteristics of the POS MV system, it was not possible to remove the components and verify the solution against a position of known coordinate. Therefore a positional calibration was carried out with the tertiary system to confirm the project geodetic parameters. A further calibration was carried out once all receivers had been re-mobilised to the vessel, to compare the resultant computation of the same vessel offset.

Subsea towfish tracking was provided by an Ultra-Short Baseline (USBL) system. A USBL system calculates the position of a subsea target by measuring the range and bearing from a vessel mounted transceiver to a small acoustic transponder fitted to the target. For this survey, subsea positioning of the side scan sonar towfish and magnetometer towfish was provided by a Sonardyne Scout USBL system. The Scout system comprises four components – control software, a command and interface unit, an acoustic transceiver and a transponder which is attached to the towfish.

The system calculates the range and bearing from a vessel mounted transceiver to the small acoustic transponder located on the towed sensor. The Scout USBL transceiver provides a hemispherical pattern of acoustic coverage at  $\pm 90^\circ$  below transceiver enabling tracking of up to 10 targets from far below through to near surface, making it ideal for shallow water surveys. The system transmits a signal at a known frequency (between 35 and 55 kHz), which is received by the subsea transponder. The transponder then waits for a predefined period before emitting a return echo. The return echo crosses the hemispherical transceiver array which enables the calculation of range and bearing to target.

The transceiver contains an integrated motion sensor to automatically compensate for the dynamic motion of the vessel. Using the internal compensation sensor, an accuracy of  $\pm 2.75\%$  of slant range can be achieved; however, this accuracy can be improved to  $\pm 0.50\%$ , when using higher grade external gyro



and motion sensors, in this case derived from the TSS Meridian Gyro and TSS DMS (located at the swathe head). The system was calibrated prior to survey operations by undertaking a standard 'box-in' calibration routine and processed with the Sonardyne Casius calibration routine.

To improve system accuracy and towfish tracking capabilities, individual Sonardyne Wideband Supersub Mini (WSM) digital wideband transponders was fitted to the side scan sonar towfish and magnetometer towfish. The WSM is an omni-directional USBL transponder which is depth rated to 1000m and has a depth sensor fitted to aid positional accuracy.

The WSM utilises wide bandwidth digital signal processing techniques, whereas traditional beacons utilise tone burst techniques which Osiris Projects have proven are poorly suited to 'noisy' coastal environments as the signal is prone to acoustic interference.

Navigation and attitude data is interfaced to the system with all lever arms being corrected within the Scout software. The Scout is interfaced to the navigation software to enable real time tracking of subsea targets relative to the vessel frame.

A dedicated navigation computer was utilised to integrate all of the onboard sensors and to provide a single reference timeframe for all the onboard data acquisition systems taken from the incoming GPS data. In order to allow the navigation computer to display the specified project co-ordinates in real time, the incoming positional data, which is received as a WGS84 (GPS datum) Lat/Long co-ordinate, is projected into the UTM Zone 30 North coordinates.

Subsea towfish tracking was provided by an Ultra-Short Baseline (USBL) system. Subsea positioning of the side scan sonar towfish and magnetometer towfish was provided by a Sonardyne Scout USBL system. The Scout is interfaced to the navigation software to enable real time tracking of subsea targets relative to the vessel frame.

#### 4.3.2 *Vertical Control*

The raw data (GPS and IMU) of the POS MV was recorded in real time. In post processing, the Primary GPS data (1Hz) was merged with either freely available UK Ordnance Survey Active Base station data (RINEX), or freely available Precise Ephemeris data, to derive the ellipsoidal antenna height accurate to 10cm (1sigma) or better. The GPS height solution was exported at 1Hz, reduced to the measured waterline level, smoothed using a non-linear filter to remove the short term effects of vessel heave and squat and then down-sampled to 10 minutes and applied as tide in post processing of the bathymetry data.

The geoid separation value between the ETRS89 (WGS84) spheroid height and Lowest Astronomical Tide was defined as 41.60 metres at the Rampion offshore wind farm. This was derived from the United Kingdom Hydrographic Office Vertical Offshore Reference Frames (UKHO VORF) project information for the Rampion Offshore Wind Farm site.

The UKHO VORF was developed between 2005 and 2008 between University College London (UCL), the Proudman Oceanographic Laboratory (POL) and the Danish National Space Centre (DNSS) to derive a definitive vertical reference model for the UK shelf seas.

The project was born out of the need to standardise using high accuracy GPS data for site specific real-time tidal reduction and to link the 700+ definitions of Chart Datum that exist around the coast of Great Britain and Ireland.

Using geodetic calculation software, the geoid separation value between WGS84 and OD(N) at each shore based gauge can be computed. By applying the published OD(N) to LAT offset (Admiralty Tide Tables Volume 1 (NP201-10)) the geoid separation between WGS84 and LAT can be established. These computed geoid separations onshore agree well with the VORF information.

#### 4.4 Survey Operations

The survey was undertaken using Osiris Projects dedicated survey vessel, MV Chartwell from 15<sup>th</sup> to 25<sup>th</sup> September 2011.

The mobilisation of MV Chartwell began on the 15th September 2011 in Brighton Marina. During the mobilisation phase, navigation checks, gyro, multibeam and USBL calibrations were completed. The mobilisation, calibrations and full wet test was completed by 12:00 BST on the 17th September 2011. A period of unfavourable weather immediately followed the mobilisation, with the vessel finally departing Brighton for site on the 22nd September. Survey operations were completed by the 25th September, with no further weather delays incurred. The UXO investigation of location BH13 was completed successfully on the 24th September, during daylight hours.

Data acquisition comprised simultaneous recording of Reson 7101 multibeam echo sounder, Klein 3000 high resolution side scan sonar data, with piggy backed marine magnetometer and 'Boomer' sub bottom profiler. The line spacing for the extension survey was set at 150m for main lines (26 total), with cross lines at 1500m. The total line kilometres for this phase of the works was approximately 290 km. Main line orientation was set as per project C10011 at 71°/251° to coincide with predominant tidal current flow. A total of 7 cross lines were acquired perpendicular to the main line orientation at 1500m spacing. This ensured that the cross line data could be tied into the original survey results where cross lines were acquired at 750m line spacing.

The UXO investigation comprised a 200m box area, with 41 main lines spaced at 5m and orientated at 71°/251°, and 3 cross lines orientated perpendicular to the main lines. The objective of the survey was to locate any potential obstructions (natural or anthropogenic). The same equipment spread was utilised, with changes made to the settings of the boomer and multibeam to increase data resolution. The magnetometer was flown as close to the bed as possible, with flying height controlled generally between 0m and 2m above seabed.

A Fisheries Industry Representative (FIR) was assigned to the project for the duration of the survey to ease any conflict between active fisheries parties and Osiris Projects.

The project was carried out under CDM Regulations 2007, with Osiris Projects appointed Principal Contractor and Designer. The Client was appointed Client and CDM Co-ordinator.

#### 4.5 Survey Equipment

The following equipment was used during the survey:

<b>Item #</b>	<b>Equipment Utilised</b>	<b>MV Chartwell</b>
1	AAE Multi Element Hydrophone	✓
2	APPLANIX POS MV 320 v4 RTK	✓
3	APPLIED ACOUSTICS AA200 Boomer Sub-Bottom Profiling System	✓
4	APPLIED ACOUSTICS CSP1000 and CSP 1200 Seismic Power Source	✓
5	C NAV 2050 dGPS	✓
6	CODA TECHNOLOGIES DA2000 Digital Data Acquisition System	✓
7	GEOMETRICS G882 Caesium Vapour Magnetometer	✓
8	HEMISPHERE Crescent VS100 dGPS Compass	✓
9	KLEIN 3000 Digital Dual Frequency Side Scan Sonar System	✓
10	QPS QINSy Navigation Software	✓
11	RESON SEABAT 7101 Single Head Multi-Beam Echo Sounder	✓
12	RESON Sound Velocity Profiler (SVP) 15	✓
13	RESON Sound Velocity Probe SV70	✓
14	T COUNT Cable Counter	✓
15	SG BROWN Gyro Compass	✓

Table 1. Table of equipment used

*The three systems most relevant to the archaeological assessment were the sub bottom profiler, side scan sonar and marine magnetometer.*

##### 4.5.1 Sub Bottom profiler

The Applied Acoustics 'Boomer' sub-bottom profiling system comprised of an AA200 boomer plate, a CAT200 catamaran, a CSP1000 portable seismic energy source and an AAE 20/8 element hydrophone streamer.

Short duration, high-power electrical pulses, generated by the shipboard CSP1000 power supply, are discharged to the electrical coil. The resultant magnetic field explosively repels the metal plate, generating a broadband acoustic pressure pulse in the water column. The frequency of this pulse is in the range 10 kHz to 500Hz, with the majority of the energy being directed vertically downwards at a maximum output of 300 joules per pulse.

Data was acquired and processed through the Coda DA2000 digital data acquisition system, for later post-processing and archiving.

The accuracy of any sub-bottom profiling survey depends upon the correct choice of acoustic velocity for the travel path of the seismic wave. After an initial appraisal of the collected data, velocity assignments are made which, from experience and published information<sup>1</sup> are thought to be typical for the interpreted sediments present. Using these velocities, comparisons between depths to reflectors and any known depths to geological interfaces are made. The average seismic velocity of the travel paths may then be altered, to ensure good correlation between seismic reflectors and geological events.

The Boomer Sub-Profiling System that was used during this survey comprised of a CSP (300/500/1000/1200D) Portable Seismic Energy Source, an Applied Acoustics AA200 Boomer Plate, a CAT200 Catamaran and Applied Acoustics AAE 8 Element Hydrophone Streamer.

Data was acquired and processed through the Coda DA2000 Digital Data Acquisition System, for later post-processing and archiving.

An average velocity of 1700 ms<sup>-1</sup> was used for all sub-bottom interpretation.

Boomer Settings Summary:

<b>System Power</b>	100 and 200 Joules
<b>Sweep Time</b>	200 ms
<b>Hydrophone</b>	AAE 8-element (365mm element spacing)
<b>Trigger Rate</b>	350 Hz
<b>Layback from Towpoint</b>	20 m
<b>Recording Media</b>	CODA DA2000 (COD Format)

Table 2. Table of Boomer Settings

#### 4.5.2 Side Scan Sonar

A digital Klein 3000 simultaneous dual frequency (100 kHz and 455 kHz) side scan sonar system was utilised for this aspect of the works. The Klein 3000 system is based on new transducer designs, along with specifically developed, high-resolution circuitry and multi-beam focused sonar technologies, which provide outstanding imaging and high-range performance.

The system comprises a transceiver processor unit (TPU), a workstation running Klein 'SonarPro' software and a towfish. The towfish is fully instrumented with depth, heading, roll and pitch sensors and

can be fully integrated with magnetometer and USBL beacons. The 'SonarPro' software is a custom developed modular package combining ease of use with advanced sonar features.

Short, high frequency, high intensity sound bursts are beamed (perpendicular to the direction of travel) from transducers, which are mounted either side of the fish. This results in echoes, returned from points on the seabed up to 600 metres abeam of each transducer at 125 kHz, or 150 metres at 445 kHz. Once detected by sensors within the transducers these echoes are relayed to the transceiver unit, via the tow cable, and the signals are processed, line by line, to produce a sonar image. Harder or denser materials reflect more energy than softer seabed types, resulting in images of differing reflectivity or contrast. This enables post processed classification of differing seabed sediment types, including rock outcrops and isolated contacts/targets.

The system was operated in high frequency and at a maximum range scale of 150m per channel throughout the survey area.

Prior to survey operations the system was 'rub tested' to ensure correct transducer installation

The side scan fish cable is fed through a T-Count system, which is marketed as a reliable and accurate system for measuring the length of cable passing over a sheave block. A radio link is then used to display the count on a computer or hand held receiver.

The data was logged in Klein's 'SonarPro' software for 'real time' visualisation and target picking/measuring. The system accepts digital data from the side scan over a network connection, together with data from the navigation computer, providing real time geo-referencing of the records. The software also allows for detailed target tagging, management and investigation in real time, using image capture functions and accurate measurement and identification tools.

#### 4.5.3 *Marine Magnetometer*

A Geometrics G882 Caesium Vapour Marine Magnetometer was utilised to obtain magnetic data throughout the survey. The system incorporates a towed 'fish', which houses a total magnetic field sensor and CM221 Larmor counter. The unit provides absolute readings of total magnetic field, with a resolution of 0.004nT/Hz RMS.

The fish was towed at a known distance 50-120m (depending on water depth) from the survey vessel, and buoyed off at as necessary in the shallow water to prevent the towfish grounding on the seabed. The position of the towfish was by USBL. All data acquired was logged to the navigation computer via an RS232 link and combined with positional data for later retrieval and post-processing.



#### 4.5.4 *Echo Sounder/Multibeam Echo Sounder*

A Geometrics G882 Caesium Vapour Marine Magnetometer was utilised to obtain magnetic data throughout the survey. The system incorporates a towed 'fish', which houses a total magnetic field sensor and CM221 Larmor counter. The unit provides absolute readings of total magnetic field, with a resolution of 0.004nT/Hz RMS.

The magnetometer is used to detect variations in the total magnetic field of the underlying seafloor and sub-seabed geology on the basis of anomalies in the Earth's magnetic field. Increased magnetisation is caused by the presence of ferrous iron on, or below, the seafloor. Materials high in ferrous or ferric compounds may include wreck debris, pipelines, unexploded ordnance, sites of archaeological interest or volcanic rocks. For the purposes of this survey, the magnetometer was utilised to identify ferrous items that may require further physical investigation.

The fish was towed 'piggy backed' to the Klein 3000 tow fish at a fixed layback of 10m. The position of the tow fish was by USBL. All data acquired was logged to the navigation computer via an RS232 link and combined with positional data for later retrieval and post-processing.

The data was processed using Geosoft Oasis Montaj UX-Detect software. During processing, the data is initially de-spiked to remove erroneous values. The long wavelength signal caused by diurnal variations and geological conditions is removed using a non-linear filter (typical sample width 100 samples, with an amplitude tolerance of 0.0001nT). Subtracting the non-linear filter approximation from the original signal results in a normalised data set, highlighting any short wavelength anomalies. The data was gridded using a minimum curvature technique to create the magnetic anomaly image. Individual anomalies were picked manually from each individual profile based on amplitude and dipole characteristic and compared against the gridded image to ensure that multiple picks and any picks associated with geological channel features were removed. The typical tolerance for anomaly picking was set at 2nT; however anomalies over 0.5nT were picked where they displayed a clear dipolar morphology.

For the UXO survey, all anomalies over 0.5nT in amplitude were picked, where they displayed a clear dipolar or monopolar morphology.

## 5 ARCHAEOLOGICAL ASSESSMENT OF GEOPHYSICAL DATA

The first stage of the archaeological review of the geophysical data is analysis of the previously acquired geophysical data, namely; side scan sonar, magnetometer and sub bottom profiler data. Moore Marine Services has developed a methodology for post acquisition analysis of geophysical data which involves review of individual raw geophysical data through a number of processes. The data is reviewed in its own individual context and also in reference to the results of other techniques. The resulting information relating to the individual techniques can be cross referenced and displayed both in text and in graphic form.

- For side scan sonar data, all data is reviewed using both SonarWiz Map 5 and Coda software.
- For sub bottom profiler data, all data is also reviewed using both SonarWiz Map 5 and Coda software.
- For magnetometer data, all data is reviewed using Hypack 2012 and Surfer 8 software

### 5.1 Side Scan Sonar

Review of the side scan sonar data concluded that the seabed within the survey area appeared to be characterised by granular sediments. These deposits are interpreted as ranging from fine to coarse grained gravelly sands to coarser grained sandy gravels, with occasional cobbles and boulders.

The seabed across the extreme northerly part of Section 3 comprises mainly gravelly sands, which exhibit low amplitude sand/gravel waves and associated megaripple bed forms. These features are asymmetrical in profile and are orientated between N – S and NNW - SSE, with heights between 2.5m and 5.5m and average wavelengths between 250m and 350m.

The seabed across the central part of the Section 3 area within the broad trough feature mentioned above comprises mainly sandy gravels, with occasional boulders. This part of the site is characterised by a large number of trawl scars, which traverse the area, mainly from E – W.

To the S of the broad expanse of sandy gravels, the seabed sediments become less coarse grained across the long SSW-NNE orientated ridge feature mentioned above. The ridge feature also exhibits large sand/gravel waves, which are orientated from approximately NW-SE to NE-SW, with their respective orientations often changing along the length of the sand/gravel wave itself. They are asymmetrical in profile, with the steeper sides (up to 14°) facing the NE or ENE. In addition to the low amplitude sand/gravel waves, the whole of the Section 3 area is characterised by the presence of megaripple bed forms. These are orientated between N-S and NNW-SSE and present a variety of wavelengths across the site, ranging from approximately 4m to over 40m.

According to the Admiralty wreck listings, 9 wrecks are believed to be present within the Section 3 area. However, only 5 of these wrecks were identified. Four (19995, 20162, 20172 and 20173) were positively identified on the side scan sonar record and additional one (58306) was recorded by the magnetometer. Whilst the side scan sonar did not record the confirmed presence of Wreck 58306. It did record the presence of apparent trawl marks adjacent to the wreck site. Confirmation as to whether the sonar image represented actual trawl marks or possible wreckage was not possible. Consequently, it must be considered that these marks may also represent vessel remains.

No physical debris or localised magnetic anomalies were identified at any of the other wreck locations (Admiralty Nos. 19978, 19983, 20017 and 20021).

A total of only 37 sonar targets, including the above wrecks, were recorded within the Section 3 area. Several of these were boulders with a minimum dimension of 1.0m (or greater). A large number of boulder were also present in this area

Eastings	Northings	Comment	Associated Sonar	Associated Magnetic
702088	5611160	'Porthkenny' – Wreck no 19978		
702064	5611777	'Tycho' – Wreck no 19983		
709576	5612585	Unknown – wreck no 19995	RMP SSS 24	RMP MAG 47
702242	5614289	Unknown trawler – wreck no 20017		
708674	5614759	'Leaches Romance' – wreck no 20021		
709874	5614250	Unknown – wreck no 20162	RMP SSS 25 – 32	RMP MAG 51
706952	5612063	Unknown – wreck no 20172	RMP SSS 16/17	RMP MAG 27
706277	5612715	HMS Keryado – wreck no 20173	RMP SSS 13	RMP MAG 23
704337	5614031	Fishermans Fastener – wreck no W58306		RMP MAG 82

Table 3. Table of Known Wrecks and Side Scan Sonar Contacts



#### 5.1.1 Wreck No. 20162

Admiralty Wreck no. 20162, a former World War 2 pontoon can be clearly seen on the sonar record. The pontoon is approximately 5.0m wide and is broken into a number of pieces, which exhibit little relief above the surrounding seabed. No development should be undertaken in the vicinity of this feature.

#### 5.1.2 Wreck No. 20172

Admiralty wreck no 20172 can be clearly seen on the sonar record. It measures approximately 18.1m long and 7.1m in width. It stands 4.9m above the surrounding rippled sandy seabed. No development should be undertaken in the vicinity of this feature.

#### 5.1.3 Wreck No. 20173

Admiralty wreck no 20173 can be also clearly seen on the sonar record. This wreck measures approximately 39.6m long and 8.1m wide and stands 2.6m above the surrounding sandy rippled seafloor. No development should be undertaken in the vicinity of this feature.

#### 5.1.4 Wreck No. 1995

The remains of Admiralty wreck 19995 were noted approximately 265m to the S of the southern boundary of the Section 3 area. There does however appear however, sonar target S24 appears to be an area of debris (see figure 7, below), with an associated magnetic anomaly (M47). These features are located approximately 520m S of the as-given position of wreck 19995.

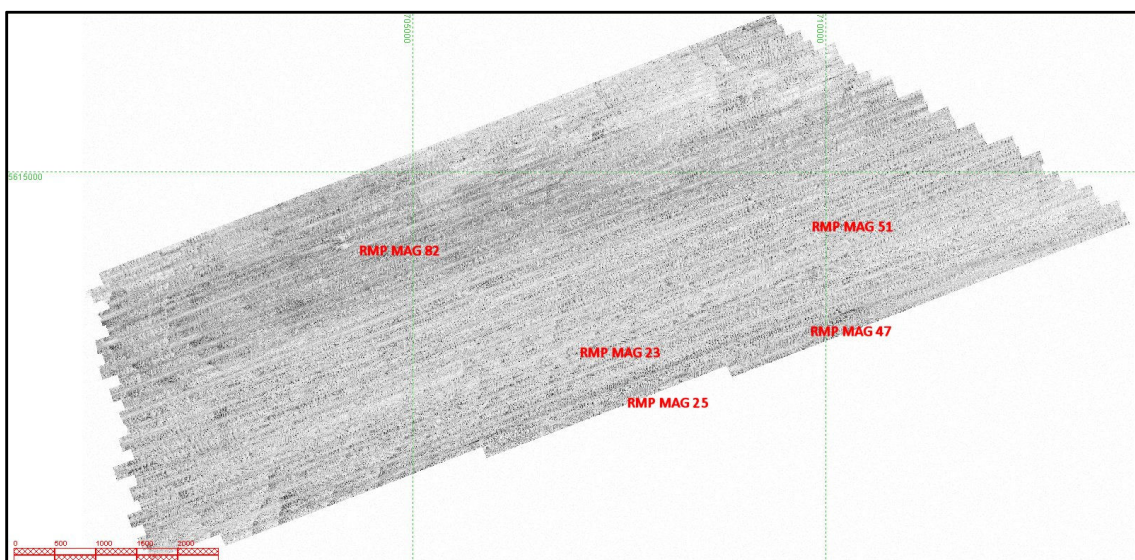


Figure 2. Side Scan Sonar mosaic with anomaly identifications

## 5.2 Marine Magnetometer

The marine magnetometer recorded 82 isolated ferrous contacts. These isolated contacts generally represented non archaeological materials. Five recorded shipwrecks were noted during the survey these were Admiralty Wreck No. 58306, 20173, 20172, 20162 and 19995. No development should be undertaken in the vicinity of these features

A table detailing the results of the marine magnetometer survey is contained in Appendix 2. The prefix RMP MAG applies to all Rampion Windfarm Magnetometer (Section 3) contacts. It details the magnetic signature, its location and cross reference to the side scan sonar survey.

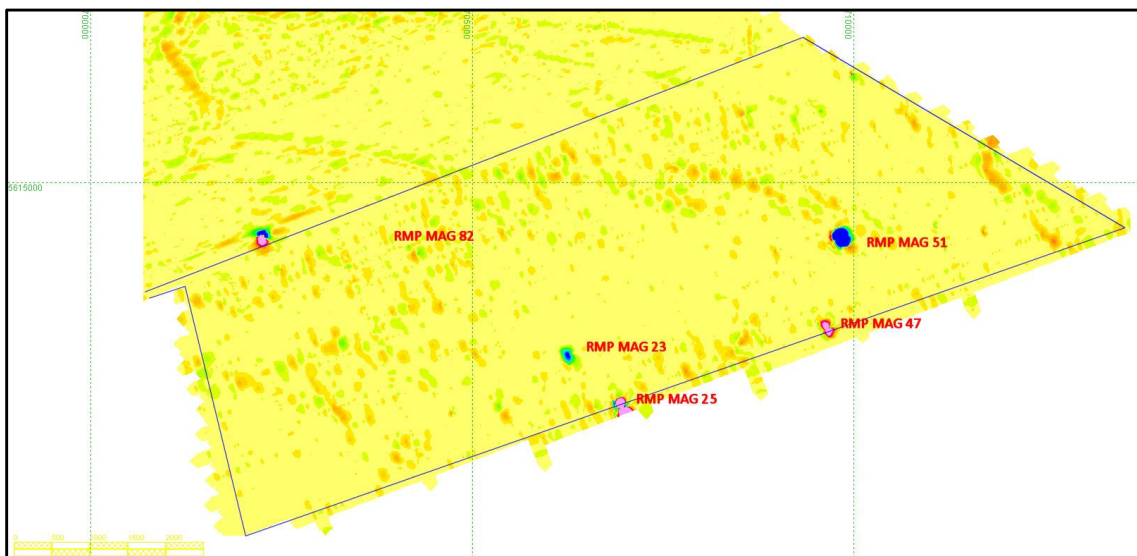


Figure 3. Rampion Section 3, Magnetometer Contacts

## 5.3 Sub Bottom Profiler

Review of the Sub Bottom Profiler data concluded that sediment thicknesses in Section 3 ranged from approximately 4.0m, in the NE, to over 30.0m in the southern part of Section 3. The deep palaeo-channel features noted in Sections 1 and 2 are not evident in Section 3. Much of the variation in sediment thicknesses is due to the shapes of the large banks of coarse sediments. There was no apparent submerged archaeological heritage noted in this area.



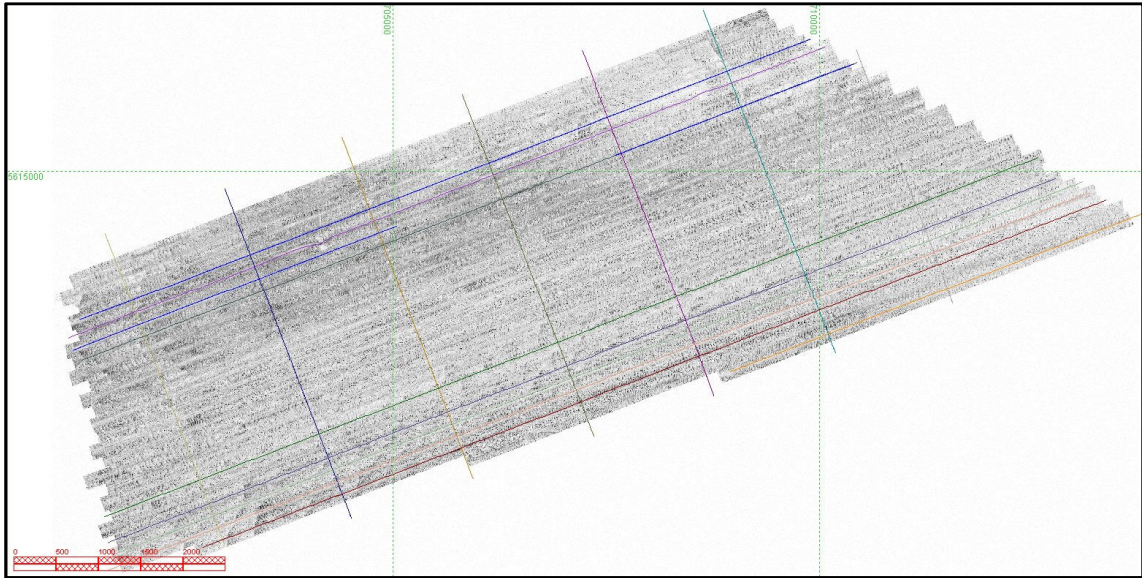


Figure 4. Sub Bottom Profiler lines overlaid on Side Scan Sonar Mosaic

## 6 SUMMARY AND CONCLUSION

### 6.1 Summary

The desktop historical and archaeological assessment of the subject site indicated that there has been the site of continued human habitation since the Palaeolithic Period, with 123 Palaeolithic find spots in West Sussex alone. Most of these finds comprise mainly of hand axes and flakes. During the Neolithic period, around 4000BC, those communities that settled along the southern coast of Britain enjoyed access to large amounts of flint due to the large number of flint mines in Hampshire and West Sussex. The archaeological record around these mines testifies to a large number of flint tools being manufactured and from about 4300 BC to about 3400 BC the mining of flint for use locally and also for wider trade was a major activity in Neolithic Sussex. The discovery in 2009 of a Bronze Age vessel off the coast of Devon gave an insight into contemporary maritime activities. It was carrying an extremely valuable cargo of tin and hundreds of copper ingots from the Continent when it sank around the year 900BC. These craft and exotic artefacts found in Bronze Age burials testify to the increase in overseas trade across the English Channel. The arrival of the Iron Age saw increased trading and exchange contacts, between Britain and mainland Europe. The later Roman route into England was made easier because of these existing trade routes.

After an apparent sharp decline in maritime trade during the early post-Roman period, commercial trading activity with continental Europe was stimulated again from the late 6th century. The 8th and 9th centuries saw the greatest resurgence of European trade since the fall of the Roman Empire. Most of this trade relied on water transport and as a consequence urban settlements were revitalised along rivers and near to the coast, changing the character of the landscape/seascape. Between the 8th and 11th centuries, the distinctly maritime orientated Scandinavian influence spread widely across Europe and beyond, disrupting earlier trade patterns and patrons but creating new ones. The Norman conquest of 1066 reorientated England towards continental Western Europe and away from Scandinavian influence. It opened up important new trading areas for England, including the wine growing region of Gascony.

Throughout the medieval period, the location of shipbuilding sites seems to have been rather haphazard in England's landscape. The sites themselves were rudimentary, although ships were being built in simple docks from at least the 1330s. The 16th Century saw the Thames and surrounding region grow to become the shipbuilding capital of the country. In 1559 there were 520 shipwrights employed in the royal yard in the Thames and at Portsmouth. In later years, the English shipping industry underwent a particularly rapid development following the Seven Years War against France (1756-63), and the rate of English naval construction rapidly increased. During the mid 19th century, technological and economic

progress gained momentum with England as a world leader in the development of steam-powered ships and railways, and later the internal combustion engine and electrical power generation. England became one of the leading industrial powers of the 19th century, due in no small part to the strength of its shipping industry.

The geophysical survey of the site in question was undertaken using Osiris Projects dedicated survey vessel MV Chartwell, from 15<sup>th</sup> to 25<sup>th</sup> September 2011.

High-resolution side scan sonar, swath multi-beam, single beam bathymetry and magnetometer data were acquired along all survey lines, in order to accurately map the seabed within the wind farm area. Main survey lines were run at 50m centres, with cross lines at 750m centres. A total of 4,860 design line kilometres were acquired.

The archaeological assessment reviewed the following techniques: Side scan sonar, marine magnetometer and sub bottom profiler. It concluded that:

- There were 37 features of note on the side scan sonar survey data. 12 of these were images of 4 known wrecks, with one additional unidentifiable linear feature (RMP SSS 13, 16, 17, 23-32, see Appendix 3). These features are deemed to be of high archaeological significance. The remainder are deemed to be most likely of natural origin and consequently should be classed as of low archaeological significance.
- There were 82 recorded magnetometer contacts. The position of five of the magnetic contacts correspond with those of known wreck sites.
- The sub bottom profiler data recorded that substrate thickness was larger in this area and that the palaeochannels noted in the previous sections were largely absent.

## 6.2 Conclusion

The programme of desktop assessment concluded that the proposed site was of considerable archaeological and historical significance. Although it is unlikely that evidence of palaeolandscapes and associated cultures would be found in this area, Admiralty Data indicates that there are nine recorded shipwrecks in the immediate area. Only five of these wrecks were identified during the survey. The remainder may be still present in the area or may be at another position, outside the survey area. Consequently it must be considered that the likelihood of development works impacting archaeology is moderate to high.

The programme of geophysical data review noted that the data quality was generally good. It recorded the presence of 37 side scan sonar targets and 82 magnetometer targets, five of which were seen to be recorded shipwrecks.

Consideration should be given to the establishment of exclusion – no construction zones surrounding the identified sites, namely those of the recorded shipwrecks. The nature and extent of these exclusion zones should be developed in conjunction all relevant legislative, commercial and local parties. Consideration should also be give to the provision of a programme of archaeological observation of construction works in areas deemed to be of high archaeological potential such as the areas in the vicinity of the known and recorded wreck locations.

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## APPENDIX 2 MAGNETOMETER ANOMALY LIST

Contact Number	Easting	Northing	Width	Amplitude	Type	SSS Reference
RMP MAG 01	701700.1	5613727.4	27.4	2.9	Positive Monopole	
RMP MAG 02	702128.1	5610996.9	35.8	2.0	Positive Monopole	
RMP MAG 03	702486.2	5613865.0	27.6	9.7	Positive Monopole	
RMP MAG 04	702601.7	5611707.4	52.3	4.0	Positive Monopole	
RMP MAG 05	702973.3	5610673.3	20.3	2.5	Dipole	
RMP MAG 06	703367.8	5612594.1	29.7	1.9	Positive Monopole	
RMP MAG 07	703399.7	5612607.0	33.1	1.8	Dipole	
RMP MAG 08	703739.6	5610969.0	35.2	7.0	Positive Monopole	
RMP MAG 09	703822.6	5613099.8	42.9	3.3	Positive Monopole	
RMP MAG 10	704003.0	5611716.7	42.1	2.9	Asymmetric Dipole	
RMP MAG 11	704119.2	5614160.8	11.7	7.6	Positive Monopole	
RMP MAG 12	704167.9	5613384.3	34.6	7.7	Positive Monopole	
RMP MAG 13	704283.4	5611345.9	51.3	2.3	Positive Monopole	
RMP MAG 14	704363.3	5614586.3	40.1	6.6	Dipole	
RMP MAG 15	704535.2	5612238.2	22.4	2.9	Negative Monopole	



RMP MAG 16	704591.7	5613395.0	87.4	6.7	Dipole	
RMP MAG 17	704728.0	5611995.4	69.6	27.4	Dipole	
RMP MAG 18	705343.2	5612067.9	91.7	5.7	Negative Monopole	
RMP MAG 19	705526.4	5615033.3	38.5	4.8	Positive Monopole	
RMP MAG 20	705881.4	5611957.4	42.0	1.3	Dipole	
RMP MAG 21	706091.9	5612039.0	50.7	1.3	Dipole	
RMP MAG 22	706212.0	5615298.6	48.8	5.9	Negative Monopole	
RMP MAG 23	706262.9	5612700.8	201.9	45.9	Negative Monopole	S13
RMP MAG 24	706319.7	5615338.6	54.7	7.4	Positive Monopole	
RMP MAG 25	706453.9	5612177.2	42.8	3.0	Positive Monopole	
RMP MAG 26	706796.4	5612789.6	40.3	1.9	Dipole	
RMP MAG 27	706969.8	5612059.1	192.6	1550.8	Asymmetric Dipole	
RMP MAG 24	706319.7	5615338.6	54.7	7.4	Positive Monopole	
RMP MAG 25	706453.9	5612177.2	42.8	3.0	Positive Monopole	S16/S17
RMP MAG 28	706984.8	5612861.5	34.8	1.4	Dipole	
RMP MAG 29	707332.4	5613641.9	32.2	3.2	Negative Monopole	
RMP MAG 30	707394.4	5615885.7	42.1	5.9	Dipole	
RMP MAG 31	708239.6	5616077.2	29.5	5.0	Positive Monopole	

RMP MAG 32	708603.5	5613651.3	42.1	9.2	Dipole	
RMP MAG 33	708664.8	5612861.6	22.2	2.8	Positive Monopole	
RMP MAG 34	708790.0	5615160.6	22.6	3.5	Dipole	
RMP MAG 35	708853.4	5613259.0	49.5	2.3	Positive Monopole	
RMP MAG 36	708953.9	5613455.5	41.9	6.0	Dipole	
RMP MAG 37	708966.9	5614101.1	70.8	6.4	Positive Monopole	
RMP MAG 38	709078.6	5613834.7	19.9	2.1	Positive Monopole	
RMP MAG 39	709134.6	5616101.7	5.1	2.6	Positive Monopole	
RMP MAG 40	709216.2	5613721.3	27.2	5.0	Positive Monopole	
RMP MAG 41	709326.2	5613763.9	26.7	1.2	Dipole	
RMP MAG 42	709420.8	5613799.1	18.4	2.5	Positive Monopole	
RMP MAG 43	709526.3	5614505.5	25.0	1.7	Negative Monopole	
RMP MAG 44	709550.1	5615937.0	11.2	6.7	Positive Monopole	
RMP MAG 45	709561.1	5615941.1	21.1	24.3	Negative Monopole	
RMP MAG 46	709618.9	5614267.8	16.6	1.1	Dipole	
RMP MAG 47	709647.8	5613088.7	118.8	239.0	Positive Monopole	S24
RMP MAG 48	709744.7	5613949.0	16.4	1.1	Negative Monopole	

RMP MAG 49	709800.8	5616033.6	26.9	1.6	Dipole	
RMP MAG 50	709805.5	5616358.4	24.5	6.9	Positive Monopole	
RMP MAG 51	709820.4	5614267.1	275.1	660.1	Complex Negative Monopole	S25-S32
RMP MAG 52	709948.1	5616413.7	13.1	2.0	Positive Monopole	
RMP MAG 53	709973.9	5616424.1	10.8	329.1	Dipole	
RMP MAG 54	710048.0	5614040.2	18.3	1.5	Positive Monopole	
RMP MAG 55	710068.7	5616136.1	18.5	4.7	Dipole	
RMP MAG 56	710268.3	5615727.5	39.6	4.7	Positive Monopole	
RMP MAG 57	710421.1	5614021.7	26.0	1.3	Positive Monopole	
RMP MAG 58	710496.1	5614526.8	27.0	5.5	Positive Monopole	
RMP MAG 59	710524.1	5614537.3	23.4	2.3	Negative Monopole	
RMP MAG 60	710685.1	5615888.0	46.5	6.5	Positive Monopole	
RMP MAG 61	710762.5	5614314.9	18.3	1.5	Positive Monopole	
RMP MAG 62	710898.9	5613720.3	22.0	2.3	Positive Monopole	
RMP MAG 63	710974.7	5613749.5	48.1	3.8	Dipole	
RMP MAG 64	711054.3	5614427.2	38.9	15.2	Dipole	
RMP MAG 65	711182.0	5614152.6	30.4	13.2	Asymmetric	

					Dipole	
RMP MAG 66	711220.5	5614168.4	25.7	2.2	Asymmetric Dipole	
RMP MAG 67	711233.3	5614173.8	14.5	1.7	Negative Monopole	
RMP MAG 68	711343.4	5615506.0	42.6	2.4	Positive Monopole	
RMP MAG 69	711420.0	5613919.1	29.1	3.1	Dipole	
RMP MAG 70	711487.2	5614271.8	26.4	1.9	Positive Monopole	
RMP MAG 71	711691.4	5614349.9	28.9	13.6	Positive Monopole	
RMP MAG 72	711707.8	5614356.3	32.9	19.6	Asymmetric Dipole	
RMP MAG 73	711797.0	5614877.1	25.4	4.1	Positive Monopole	
RMP MAG 74	711853.6	5615377.7	48.7	6.5	Negative Monopole	
RMP MAG 75	711856.7	5614735.7	25.1	2.2	Negative Monopole	
RMP MAG 76	711963.3	5614454.4	43.9	9.1	Asymmetric Dipole	
RMP MAG 77	712173.9	5614209.8	30.5	3.3	Dipole	
RMP MAG 78	712635.0	5614711.3	30.5	2.7	Negative Monopole	
RMP MAG 79	712743.8	5614430.6	30.4	11.9	Complex Dipole	
RMP MAG 80	712863.1	5614638.3	32.6	4.3	Dipole	
RMP MAG 81	712964.8	5614677.0	23.3	1.5	Negative	

					Monopole	
RMP MAG 82	704260.8	5614066.0	167.3	11.1	Dipole	Wreck W58306

### APPENDIX 3 SIDE SCAN SONAR ANOMALIES

Contact Number	Easting (m)	Northing (m)	Length (m)	Width (m)	Height (m)	Description	Mag No.
RMP SSS 1	701796.4	5610810.2	4.7	1.4	0.5	Probable Boulder	
RMP SSS 2	701998.3	5610922.0	0.0	0.0	0.0	Small Boulder	
RMP SSS 3	702325.4	5613406.3	0.0	0.0	0.0	Small Boulder	
RMP SSS 4	702887.9	5612948.4	3.3	3.3	0.8	Probable Boulder	
RMP SSS 5	703979.4	5613593.4	7.4	3.8	0.6	Probable Boulder	
RMP SSS 6	704246.3	5611198.1	0.0	0.0	0.0	Small Boulder	
RMP SSS 7	704419.0	5612275.5	0.0	0.0	0.0	Small Boulder	
RMP SSS 8	704695.9	5611874.2	0.0	0.0	0.0	Small Boulder	
RMP SSS 9	705416.2	5612013.7	36.3	0.0	0.0	Possible area of debris or boulders	
RMP SSS 10	705457.2	5612317.7	2.6	1.6	0.4	Probable Boulder	
RMP SSS 11	705977.3	5611762.5	3.8	1.6	0.4	Probable Boulder	
RMP SSS 12	706190.6	5614433.8	0.0	0.0	0.0	Small Boulder	
RMP SSS 13	706270.7	5612707.5	39.6	8.1	2.6	Admiralty Wreck no: 20173	
RMP SSS 14	706336.8	5611764.7	3.8	1.1	0.5	Probable Boulder	
RMP SSS 15	706586.9	5612741.4	18.7	12.4	0.0	Possible debris or cluster of boulders	
RMP SSS 16	706963.7	5612056.9	18.1	7.1	4.9	Admiralty Wreck no: 20172	
RMP SSS 17	707021.6	5612061.9	3.3	3.4	0.9	Admiralty Wreck no: 20172	
RMP SSS 18	707511.5	5614077.6	4.7	1.1	0.3	Debris	

RMP 19	SSS	707816.9	5615158.3	0.0	0.0	0.0	Small Boulder	RMP 23	MAG
RMP 20	SSS	708759.5	5612843.2	0.0	0.0	0.0	Small Boulder		
RMP 21	SSS	708868.6	5612987.9	3.6	1.9	0.4	Probable Boulder		
RMP 22	SSS	708869.3	5612989.1	6.9	1.4	0.8	Probable Boulder	RMP 27	MAG
RMP 23	SSS	708895.7	5613018.7	7.7	0.0	0.0	Linear Target		
RMP 24	SSS	709649.9	5613108.3	12.9	11.1	0.0	Area of debris, wreck no: 19995	RMP 47	MAG
RMP 25-32	SSS	709798.5	5614247.2	18.1	0.0	0.0	Admiralty Wreck no: 20162	RMP 51	MAG
RMP 33	SSS	710117.1	5616458.1	0.0	0.0	0.0	Small Boulder		
RMP 34	SSS	710750.1	5613295.3	0.0	0.0	0.0	Small Boulder		
RMP 35	SSS	711016.8	5614761.6	0.0	0.0	0.0	Small Boulder		
RMP 36	SSS	711971.9	5614101.1	0.0	0.0	0.0	Small Boulder		
RMP 37	SSS	712806.7	5614763.7	0.0	0.0	0.0	Small Boulder		

## APPENDIX 4 UKHO WRECK LISTING FOR THE SUBJECT SITE

Eastings (m)	Northings (m)	Description	Sonar Contact	Magnetic Contact
702088	5611160	'Porthkenny' – Wreck no 19978		
702064	5611777	'Tycho' – Wreck no 19983		
709576	5612585	Unknown – wreck no 19995	S24?	M47?
702242	5614289	Unknown trawler – wreck no 20017		
708674	5614759	'Leaches Romance' – wreck no 20021		



709874	5614250	Unknown – wreck no 20162	S25 – S32	M51
706952	5612063	Unknown – wreck no 20172	S16/S17	M27
706277	5612715	HMS Keryado – wreck no 20173	S13	M23
704337	5614031	Fishermans Fastener – wreck no W58306		M82



## **Rampion Offshore Wind Farm**



### **ES Section 13 – Marine Archaeology - Appendix 13.4**

**RSK Environment Ltd**

**Document 6.3.13iv**

**December 2012**

**APFP Regulation 5(2)(a)**

**Revision A**

**E.ON Climate & Renewables UK Rampion Offshore Wind Limited**

## ***Appendix 13.4: Marine Heritage Gazetteer***

Grouped ID	RSK ID	Other ID	Type	Name	Description	UTM 30		Importance	AEZ
						Easting	Northing		
MA1	PW 1	1000047	Protected Wreck	BRIGHTON MARINA	Remains of wreck of craft thought to be of 16th century date, from the nature of the cannon recovered in association with the site, which appears to have stranded in the vicinity of what is now Brighton Marina. Constructed of wood, she was a sailing vessel. The site is designated under the Protection of Wrecks Act 1973, it is the closest Protected Wreck to the MASA at 6.8km distant (4.8km from the 2km buffer around the MASA).	703612	5632765	High	Required
MA2	NMR 1	903417	Documented Loss	JOHN EVANS	WELSH SCHOONER, 1896	700622	5619389	Uncertain	None
MA3	NMR 2	903117	Documented Loss	PHOEBE	BRITISH YACHT, 1886	700622	5619389	Uncertain	None
MA4	NMR 3	1200756	Documented Loss		1775 wreck of British sloop which foundered off Brighton en route from Newcastle-upon-Tyne to Shoreham-by-Sea with coal; a wooden sailing vessel	700622	5619389	Uncertain	None
MA5	NMR 4	902845	Documented Loss	MARY ANN	ENGLISH SNOW, 1842	700622	5619389	Uncertain	None
MA6	NMR 5	1401726	Documented Loss		1814 wreck of cutter, probably English, which foundered off Brighton during a storm, with her cargo of porter; a wooden sailing vessel	700622	5619389	Uncertain	None
MA7	NMR 6	902594	Documented Loss	ST GEORGE	BRITISH CRAFT, 1758	700622	5619389	Uncertain	None
MA8	NMR 7	1347183	Documented Loss	MAIDA	ENGLISH CRAFT, 1820	700622	5619389	Uncertain	None
MA9	NMR 8	1174895	Documented Loss	SAINTE ANNE	FRENCH CARGO VESSEL, 1924	700622	5619389	Uncertain	None
MA10	NMR 9	903108	Documented Loss	VILLAGE BLACKSMITH	BRITISH FISHING VESSEL, 1884	700622	5619389	Uncertain	None
MA11	NMR 10	1322751	Documented Loss	BEAUFIGHTER MK IF R2068	BRITISH FIGHTER, 1940	700622	5619389	Uncertain	None
MA12	NMR 11	1402787	Documented Loss	HEINKEL HE111H-3 (6915) 6N+HL	1941 wreck of a German Heinkel He111 which was shot down and crashed off Hove. It was part of Squadron 3/KGr100.	700622	5619389	Uncertain	None
MA13	NMR 12	1033733	Documented Loss	ALDBOROUGH	1696 wreck of English ketch which caught fire and exploded off Brighton, the remains presumably being left to founder. Constructed of wood, she was a sailing vessel.	700622	5619389	Uncertain	None
MA14	NMR 13	1345392	Documented Loss	SEVERN	ENGLISH CRAFT, 1817	700622	5619389	Uncertain	None
MA15	NMR 15	1322757	Documented Loss	BEAUFIGHTER MK IF R2135	BRITISH FIGHTER, 1941	700622	5619389	Uncertain	None
MA16	NMR 16	902865	Documented Loss	BOM FIN	PORTUGUESE BRIG, 1852	700622	5619389	Uncertain	None
MA17	NMR 17	1176136	Documented Loss	HMS JASPER	BRITISH PACKET, 1854	700622	5619389	Uncertain	None
MA18	NMR 18	1237956	Documented Loss	NELLIE	BRITISH LUGGER, 1892	700622	5619389	Uncertain	None
MA19	NMR 19	903137	Documented Loss	ADOLPHE LOUISE	FRENCH CUTTER, 1888	700622	5619389	Uncertain	None
MA20	NMR 20	1390080	Documented Loss	HURRYS	1788 wreck of English craft which foundered 7 leagues west of Beachy Head following a collision on her passage to La Rochelle; a wooden sailing vessel	700622	5619389	Uncertain	None
MA21	NMR 21	903121	Documented Loss	WISDOM	ENGLISH CUTTER, 1886	700622	5619389	Uncertain	None
MA22	NMR 22	1166942	Documented Loss	JUPITER	ENGLISH CARGO VESSEL, 1917	700622	5619389	Uncertain	None
MA23	NMR 23	1237382	Documented Loss	MARY ANN	BRITISH LUGGER, 1885	700622	5619389	Uncertain	None
MA24	NMR 24	1342494	Documented Loss		FRENCH CARGO VESSEL, 1811	700622	5619389	Uncertain	None
MA25	NMR 25	1235861	Documented Loss		CRAFT, 1786	690620	5619254	Uncertain	None
MA26	NMR 26	1354232	Documented Loss	HURRICANE MK IIA Z2700	BRITISH FIGHTER, 1941	690620	5619254	Uncertain	None
MA27	NMR 27	1356475	Documented Loss	TYPHOON MK IB JP597	BRITISH FIGHTER, 1943	690620	5619254	Uncertain	None
MA28	NMR 28	1176149	Documented Loss	STAR	ENGLISH SMACK, 1859	690620	5619254	Uncertain	None
MA29	NMR 29	1522618	Documented Loss	FULHAM VII	1946 wreck of an English cargo coaster which collided with another vessel en route from Barry to London with a cargo of coal and foundered approximately 9 miles SW of Beachy Head light in 1946. Built of steel in 1942, she was a steam-powered vessel. Her	690620	5619254	Uncertain	None
MA30	NMR 30	903477	Documented Loss		ENGLISH BARGE, 1905	690620	5619254	Uncertain	None
MA31	NMR 31	1355354	Documented Loss	SAMUEL	1725 wreck of craft which foundered off Shoreham-by-Sea, following an explosion after catching fire. En route from the Downs to Virginia, she was a wooden sailing vessel.	690620	5619254	Uncertain	None
MA32	NMR 32	1352834	Documented Loss	BEAUFIGHTER MK IF V8266	BRITISH NIGHTFIGHTER, 1943	690620	5619254	Uncertain	None
MA33	NMR 33	1234558	Documented Loss	HMS SALTASH	1746 wreck of British brig sloop or sloop of war, apparently snow-rigged, which capsized and foundered about 3 leagues off Beachy Head while in pursuit of a privateer Constructed of wood, she was a sailing vessel.	690620	5619254	Uncertain	None
MA34	NMR 34	1451042	Documented Loss		1371 wreck of Flemish cargo vessel which foundered off Shoreham-by-Sea after being deliberately scuttled in an act of piracy, in which all her crew and passengers were killed. Laden with goods, she was a wooden sailing vessel, which belonged to the port	690620	5619254	Uncertain	None
MA35	NMR 35	903386	Documented Loss	BESSIE WATERS	ENGLISH SMACK, 1894	690620	5619254	Uncertain	None
MA36	NMR 36	1342826	Documented Loss	STIRLING MK III BF455	BRITISH BOMBER, 1943	690620	5619254	Uncertain	None
MA37	NMR 37	1236745	Documented Loss	ELISA	FRENCH SCHOONER, 1877	690620	5619254	Uncertain	None

Grouped ID	RSK ID	Other ID	Type	Name	Description	UTM 30		Importance	AEZ	
						Easting	Northing			
MA38	NMR 38	903503	Documented Loss	ELIZABETH PRICHARD	WELSH SCHOONER, 1908	690620	5619254	Uncertain	None	
MA39	NMR 39	902909	Documented Loss	ANN	ENGLISH SCHOONER, 1866	690620	5619254	Uncertain	None	
MA40	NMR 40	1390724	Documented Loss	GULL	1925 wreck of a Swedish schooner which foundered off Beachy Head following a collision. This wooden sailing vessel, built in 1920, was en route from Fowey to Stockholm with china clay.	690620	5619254	Uncertain	None	
MA41	NMR 41	1165068	Documented Loss	JOHN	ENGLISH BRIG, 1849	690620	5619254	Uncertain	None	
MA42	NMR 42	1176758	Documented Loss	SPEEDWELL	BRITISH CRAFT, 1797	690620	5619254	Uncertain	None	
MA43	NMR 43	1175932	Documented Loss	EMMA	ENGLISH SNOW, 1841	690620	5619254	Uncertain	None	
MA44	NMR 44	1175951	Documented Loss	REGINA	ENGLISH SNOW, 1841	690620	5619254	Uncertain	None	
MA45	NMR 45	1175971	Documented Loss	NAPOLEON	ENGLISH BRIG, 1841	690620	5619254	Uncertain	None	
MA46	NMR 46	903164	Documented Loss	OLIVE LEAF	BRITISH LUGGER, 1890	690620	5619254	Uncertain	None	
MA47	NMR 47	1402757	Documented Loss	HEINKEL HE111P (2604) 1G+HM	1941 wreck of a German Heinkel He111 which was shot down and crashed off Shoreham. It was part of Squadron 4/KG27.	690620	5619254	Uncertain	None	
MA48	NMR 48	1435017	Documented Loss	TRYAL	1726 wreck of craft which foundered off the coast of Sussex, en route from Jamaica to Amsterdam. Constructed of wood, she was a sailing vesse	690620	5619254	Uncertain	None	
MA49	NMR 49	903404	Documented Loss	PIONEER	ENGLISH KETCH, 1895	690620	5619254	Uncertain	None	
MA50	NMR 50	911877	Live Wreck	TYCHO	Possible Remains Of English Cargo Vessel, 1917				Required	
	NMR 86	904314								
	NMR 82	1027961			Unidentified seabed obstruction reported by fishermen. Possibly indicative of wreckage or a submerged feature.					
	SZ 71	UKHO-WO-19983			Circumstances Of Loss: Built In 1904 By Earle's Shipbuilding & Engineering Co. Owned At The Time Of Loss By Ellerman's Wilson Line. Passage Falmouth For Hull. Torpedoed By Ub-40. 15 Men Lost.					
					Site surveyed during Sept 2011 geophysics and no evidence for wreck identified	702064	5611778	Medium	Required	
MA51	NMR 51	911744	Live Wreck	MARIE MARGUERITE	Possible Remains Of Cargo Vessel, 1924					
	SZ 45	UKHO-WO-19973			Circumstances Of Loss: Ex-Martha Therese, Ex-Terneholmens Verft, Arendal. Owned At Time Of Loss By Skibs A/S Martha Therese. Auxiliary 4 Clyinder Oil Engine. Passage Portsmouth For Larvik. Sunk Following Collision.	687967	5609985	Medium	Required	
MA52	NMR 53	974939	Recorded Wreck	BRIGHTON LIGHT VESSEL						
	NMR 54	974940		UNKNOWN VESSEL	ENGLISH LIGHT VESSEL, 1917-1918	702489	5613712	Medium	Required	
MA53	NMR 55	911885	Live Wreck	LEACHS ROMANCE	POSSIBLE REMAINS OF A FISHING VESSEL, 1940					
	SZ 11	UKHO-WO-20021			CIRCUMSTANCES OF LOSS: MINED 10.5M DUE S OF KEMP TOWN. 4 LIVES LOST. Sept 11 geophysics, no contact	708673	5614759	Medium	Required	
MA54	NMR 56	904306	Obstruction		Unidentified seabed obstruction reported by fishermen. Possibly indicative of wreckage or a submerged feature	697964	5617661	Uncertain	Required	
	NMR 57	1027953			Unidentified seabed obstruction reported by fishermen. Possibly indicative of wreckage or a submerged feature					
MA55	NMR 58	904307	Obstruction		Unidentified seabed obstruction reported by fishermen. Possibly indicative of wreckage or a submerged feature					
	NMR 59	1027955			Unidentified seabed obstruction reported by fishermen. Possibly indicative of wreckage or a submerged feature	698752	5616053	Uncertain	Required	
MA56	NMR 60	911879	Live Wreck	PAGENTURM	Remains of 1917 wreck of English cargo vessel, located approximately 18.5 miles SW of Beachy Head or 11.5 miles SSE of Shoreham-by-Sea, and identified by her makers' plates. The PAGENTURM foundered after being torpedoed en route from Sheerness for Barry					
	SZ 54	540-1275862073-16633			Circumstances Of Loss: Ex German, Requisitioned & Armed For Defensive Purposes By Admiralty. Torpedoed By German Ub-40 16m W Of Beachy Head.					
	GC 53	108355			for description see geophysics report site reference RMP SSS27 & Geophysics contact at this location in Osiris data	696782	5612946	Medium	Required	
MA57	NMR 62/ 63	904302/ 1027940	Live Wreck	IKEDA (POSSIBLY)	Unidentified seabed obstruction reported by fishermen. Possibly indicative of wreckage or a submerged feature.					
	NMR 64	911978			Remains of wreck first located in 1918 and thought to be a coaster, which appears to have capsized and foundered 7.75 miles SW of Brighton. Originally thought to have been the IKEDA, this is now not thought to be the case.					
	SZ 72	20080/ 540--732214954-			CIRCUMSTANCES OF LOSS: TORPEDOED & SUNK BY GERMAN SUBMARINE UB40, WHILST EN-ROUTE LONDON TO GALVESTON	694904	5620721			
	GC 4, 6, 8, 9, 10, 11	9980, 13451			for description see geophysics report site reference RMP SSS3 & 4					
	NMR 65	911174			REMAINS OF VESSEL	689527	5610856	Medium	Required	
MA58	NMR 66	1027924	Obstruction		Unidentified seabed obstruction reported by fishermen. Possibly indicative of wreckage or a submerged feature	696363	5616891	Uncertain	Required	
MA60	NMR 67	911207	Obstruction		REMAINS OF UNIDENTIFIED FEATURE. Could relate to geophysical contact within vicinity	691585	5616630	Uncertain	Required	
MA60	NMR 68	1522662	Obstruction		Remains of the 1949 Scottish cargo steamer which foundered almost 8 miles South of the Brighton Marine breakwater after a collision with the Greek cargo ship MARPESSA. She was en route from Antwerp to Cork with 1,000 tons of unspecified cargo.					
	SZ 68	UKHO-WO-20056			Circumstances Of Loss: In Collision With Greek Vessel 'Marpesa' In Fog Approx 12m Off Beachy Head. Single Screw Vessel, Built 1921, Was On Passage Antwerp To Cork.					

Grouped ID	RSK ID	Other ID	Type	Name	Description	UTM 30		Importance	AEZ
						Easting	Northing		
MA61	GC 27, 46, 47	4009	Live Wreck	CITY OF WATERFORD	for description see geophysics report site reference RMP SSS14 & Geophysics contact at this location in Osiris data	704087	5617753	Medium	Required
	NMR 69	911767			POSSIBLE REMAINS OF BRITISH CARGO VESSEL, 1940				
MA62	SZ 60	UKHO-WO-20038	Live Wreck	LULONGA	CIRCUMSTANCES OF LOSS: EX-BRABO, EX-KNOTTINGLY. BUILT IN 1907 BY J CROWN & SONS LTD, SUNDERLAND. OWNED AT TIME OF LOSS BY HOOK SS CO LTD. PASSAGE GOOLE FOR SHOREHAM-BY-SEA. TORPEDOED	691918	5615921	Medium	Required
	NMR 14	1390991			1940 wreck of an English cargo vessel which foundered nearly 10 miles south south west of Shoreham-by-Sea after being torpedoed. This steel steam vessel, built in 1907, was en route from Goole to Shoreham-by-Sea.				
MA63	NMR 70	911490	Dead Wreck		REMAINS OF VESSEL			Uncertain	Required
	SZ 4	UKHO-WO-20063			SURVEYING DETAILS:NOTHING FOUND DURING INTENSIVE SEARCH	705351	5618245		
MA64	NMR 71	911777	Live Wreck	IKEDA	1918 wreck of English cargo vessel which foundered 7 miles west of Brighton Lightvessel after being torpedoed en route from London to Galveston in ballast. Built of steel, she was a screw-driven steamer.			Medium	Required
	NMR 72	1027945			Unidentified seabed obstruction reported by fishermen. Possibly indicative of wreckage or a submerged feature				
MA65	SZ 6	UKHO-WO-20045	Live Wreck	QUAIL	CIRCUMSTANCES OF LOSS: TORPEDOED & SUNK BY GERMAN SUBMARINE UB40, WHILST EN-ROUTE LONDON TO GALVESTON. (DER KRIEG ZUR SEE). SUNK 7M W [MAG] OF BRIGHTON LTV IN ABOUT 15FMS.	689503	5616190	Medium	Required
	NMR 73	911753			REMAINS OF IRISH CARGO VESSEL, 1880				
MA66	SZ 36	20000	Live Wreck	REMAINS OF TRAWLER	CIRCUMSTANCES OF LOSS: SANK FOLLOWING A COLLISION WITH FRENCH SS 'SAN MARTIN'.	690382	5612655	Medium	Required
	GC 45, 48, 50	97428			for description see geophysics report site reference RMP SSS26				
MA67	NMR 74	911480	Obstruction		REMAINS OF TRAWLER			Medium	Required
	SZ 24	20017			Large Wreck Reported 503848N, 000830W [OGB] LIES NE/SW. LENGTH 50MTRS. NOT EXAM'D.	702248	5614307		
MA68	GC 39	72994	Live Wreck	HMS KERYADO	for description see geophysics report site reference RMP SSS22, referenced in Sept 11 geophysics, no contact			Uncertain	Required
	NMR 75	911202			REMAINS OF UNIDENTIFIED FEATURE	687950	5615344		
MA69	NMR 76	911878	Live Wreck	Wrongly identified wreck (id'd as Porthkerry)	POSSIBLE REMAINS OF TRAWLER, 1941			Medium	Required
	SZ 50	20173			CIRCUMSTANCES OF LOSS: EX-FRENCH MINESWEEPER. REQUISITIONED 5.7.40. MINED 6.3.41.SUNK IN 503930N, 000748E. Admiralty wreck no 20173. Can be clearly seen on the sonar record (Sept 11 geophysics). This wreck measures approximately 39.6m long and 8.1m wide and stands 2.6m above the surrounding sandy rippled seafloor.	706277	5612716		
MA70	NMR 77	911751	Live Wreck		REMAINS OF WELSH CARGO VESSEL, 1917			Medium	Required
	SZ 33	20238			CIRCUMSTANCES OF LOSS: BUILT IN 1911 BY J CROWN & SONS LTD, SUNDERLAND. OWNED AT TIME OF LOSS BY PORTHCAWL SS CO LTD. TWO BOILERS, TRIPLE EXPANSION ENGINE OF 220 NHP, SINGLE SHAFT. TORPEDOED BY UB-40	689935	5612128		
MA71	NMR 61/ 78	904315/ 1027962	Live Wreck	PORKHERRY	Unidentified seabed obstruction reported by fishermen. Possibly indicative of wreckage or a submerged feature.			Medium	Required
	SZ 73	UKHO-WO-19978			CIRCUMSTANCES OF LOSS: VESSEL, BUILT 1911 BY J CROWN & SONS AND OWNED AT THE TIME OF LOSS BY PORTHCAWL STEAMSHIP CO., WAS TORPEDOED AND SUNK BY GERMAN SUBMARINE 16M W BY S OF BEACHY HEAD. CAPTAIN & 6 CREW KILLED.	702088	5611161		
MA72	NMR 79	911477	Recorded Wreck		Site surveyed during Sept 2011 geophysics and no evidence for wreck identified	702088	5611161	Medium	Required
MA73	NMR 81	911171	Live Wreck	REMAINS OF CARGO VESSEL	POSSIBLE REMAINS OF BOMBARDON	709973	5614172	Medium	Required
	SZ 39	19975			SURVEYING DETAILS:POSSIBLE WK, LOCATED IN 503702N, 001626W [OGB]. LENGTH APPROX 40MTRS. NOT EXAMINED	692680	5610744		
MA74	GC 35, 40, 54	31916/ 74886/ 111829	Live Wreck		for description see geophysics report site reference RMP SSS23			Medium	Required
MA75	NMR 83	1164471	Recorded Wreck	HMS LAFOREY	POSSIBLE REMAINS OF BRITISH DESTROYER, 1917	695735	5613841	Medium	Required
	NMR 84	911752			Remains of 1941 wreck of English cargo vessel which capsized and foundered 10 miles south of Worthing, en route from the Tyne via Southend-on-Sea to Cowes. Laden with coal, she was a steel-built, screw-driven steamer, and was armed and travelling in conv				
MA76	SZ 52	UKHO-WO-19998	Live Wreck	STANWOLD	CIRCUMSTANCES OF LOSS: EX-EASINGWOLD '29, EX-ALFRED KREGLINGER, EX-PERVYSE. BUILT IN 1909 BY OSBOURNE, GRAHAM & CO, SUNDERLAND OWNED AT TIME OF LOSS BY STANHOPE SS CO LTD.	688422	5612540	Medium	Required
	GC 41, 42, 43, 52	82933/ 83062/ 83959/ 106738			for description see geophysics report site reference RMP SSS24. Geophysics contact at this location in Osiris data				
MA77	NMR 85	911208	Live Wreck	REMAINS OF TRAWLER	REMAINS OF TRAWLER			Medium	Required
	SZ 59	UKHO-WO-20059			SURVEYING DETAILS: WK LOCATED 5.9.76 IN 504039N, 001944W (UKHO notes nothing found during intensive search but location corresponds with geophysical contact).	688579	5617454		
MA78	GC 3, 24	9618, 550	Live Wreck	POSSIBLE REMAINS OF VESSEL	for description see geophysics report site reference RMP SSS2/ 12			Medium	Required
	NMR 87	911205			POSSIBLE REMAINS OF VESSEL				
MA79	SZ 5	UKHO-WO-20046	Live Wreck	POSSIBLE REMAINS OF VESSEL	SURVEYING DETAILS: 2 MASTS VISIBLE IN 504000N, 002100W. (ADMIRALTY). DISPERSED, TWO MASTS VISIBLE.	687273	5616175	Medium	Required
	NMR 88	911181			REMAINS OF VESSEL				



Grouped ID	RSK ID	Other ID	Type	Name	Description	UTM 30		Importance	AEZ
						Easting	Northing		
MA77	SZ 49	UKHO-WO-19996	Live Wreck	REMAINS OF VESSEL	SURVEYING DETAILS:WK LOCATED IN 503748N, 001935W APPROX 260FT LONG, LYING NW/SE. IDENTIFIED AS CARGO VESSEL.	688995	5612117	Medium	Required
	GC 44, 49, 51	97325/ 101282/ 103546			for description see geophysics report site reference RMP SSS25				
MA78	NMR 52	1482696	Live Wreck	GLENARM HEAD	1918 wreck of Northern Irish cargo vessel which foundered 5 miles SSW of the Brighton Light Vessel, after being torpedoed en route from Southampton to Boulogne with ammunition. Constructed of steel in 1897, she was a steam-driven vessel. Three sites are			Medium	Required
	NMR 89	911884			Possible remains of 1918 wreck of Northern Irish cargo vessel, located approximately 10.25 miles SSW of Brighton. If the GLENARM HEAD, she was a steamer, built of steel, which foundered after being torpedoed en route from Southampton for Boulogne with am				
	SZ 30	UKHO-WO-20012/ 540-503219487-16635			CIRCUMSTANCES OF LOSS: TORPEDOED AND SUNK 4.1.18 5M SW BY S FROM BRIGHTON LTV WHILST EN ROUTE FROM SOUTHAMPTON TO BOULOGNE.	698600	5614025		
	GC 36	38812			for description see geophysics report site reference RMP SSS19				
MA79	NMR 90	911177	Live Wreck	REMAINS OF A CARGO VESSEL	REMAINS OF A CARGO VESSEL			Medium	Required
	SZ 53	19991			CIRCUMSTANCES OF LOSS:WK IN 503739N, 001857W UNKNOWN STEAMSHIP, BROKEN UP IN A GEN DEPTH OF 130FT WITH A MAXIMUM HEIGHT OF 30FT LIES IN DEEP HOLE	689711	5611780		
	GC 22	20305							
	GC 29	9457			for description see geophysics report site reference RMP SSS15, 16, 18				
	GC 30	10517							
	GC 32	15006							
	GC 33	15278							
MA80	NMR 91	911198	Recorded Wreck		REMAINS OF A GERMAN AIRCRAFT, 1939-1945	691408	5614820	Medium	
MA81	NMR 92	911756	Live Wreck	HMS MINION	Remains of 1921 wreck of British destroyer, located approximately 14 miles south of Shoreham-by-Sea, and positively identified by her name plate. She foundered in this position while under tow to Germany to be broken up, after being sold out of service.			Medium	Required
	SZ 29	UKHO-WO-20014			CIRCUMSTANCES OF LOSS: SOLD FOR BREAKING IN GERMANY BUT SANK EN ROUTE.	695621	5613921		
	GC 28, 31, 34	9165			for description see geophysics report site reference RMP SSS17 & Osiris geophysical contact				
MA82	NMR 80	1027959	Obstruction		Unidentified seabed obstruction reported by fishermen. Possibly indicative of wreckage or a submerged feature			Uncertain	Required
	NMR 93	904312			Unidentified seabed obstruction reported by fishermen. Possibly indicative of wreckage or a submerged feature				
	SZ 47	UKHO-WO-20025			SURVEYING DETAILS:NO RUN OBSERVED BUT E/S GAVE LEAST DEPTH OF 145FT	702730	5614897		
MA83	NMR 94	911481	Recorded Wreck		POSSIBLE REMAINS OF CARGO VESSEL	697350	5614144	Medium	Required
MA84	NMR 95	911482	Recorded Wreck		POSSIBLE REMAINS OF A VESSEL	698202	5615012	Medium	Required
MA85	SZ 1	UKHO-WO-58366	Recorded Wreck		POSITION EXAMINED AND FOUND TO BE BOTTOM CONTACT	689046	5610055	Medium	Required
MA86	SZ 2	UKHO-WO-20218/ 540-350966491-16653	Recorded Wreck	DALHOUSIE (POSSIBLY)	Circumstances Of Loss:Wooden Ship 'Dalhousie' Was Built In 1848 And Was Owned At The Time Of Loss By J Allan. Foundered During Gale And Sunk Approx 16m Wsw Of Beachy Head Light. Was On Passage To Sydney, Australia. 59 Lives Lost, Only 1 Survivor.	706111	5607421	Medium	Required
MA87	SZ 3	UKHO-WO-20100	Recorded Wreck		SURVEYING DETAILS:OBSOLETE WK SYMBOL IN 504400N, 000800W, MINIMUM RADIUS OF HALF A MILE FROM CHARTED	701792	5623396	Medium	Required
MA88	SZ 7	UKHO-WO-20044	Dead Wreck	ST ANNE	SURVEYING DETAILS: SANK IN APPROX 504000N, 001200W. SEARCHED FOR BUT NOT LOCATED.	697753	5616561	Uncertain	Required
MA89	SZ 8	UKHO-WO-20412	Recorded Wreck	FISHER LASS	CIRCUMSTANCES OF LOSS: SANK AFTER COLLISION WITH MV 'MINI LANCE' 8M S BY W FROM NEWHAVEN. (LLOYDS 204/254). 8M S BY W FROM NEWHAVEN.	713135	5615309	Medium	Required
MA90	SZ 9	UKHO-WO-20074	Dead Wreck		SURVEYING DETAILS: NO OBSTN FOUND.	689307	5619460	Uncertain	Required
MA91	SZ 10	UKHO-WO-20161	Recorded Wreck	DEL RIO	SURVEYING DETAILS:SUNK IN APPROX 504430N, 002030W [OGB]. THOUGHT TO BE NO HAZARD TO NAVIGATION. SUNK IN POSN 165DEGS(T), 4.3M FROM WORTHING PIER.	687693	5624167	Medium	Required
MA92	SZ 12	UKHO-WO-58365	Recorded Wreck		SURVEYING DETAILS:CONTACT, CLASSIFIED GOOD POSSIBLE WRECK, LOCATED IN 503709N, 001632W [OGB]. NOT EXAMINED. (HMS BULLDOG, HI 37A/77). POSITION EXAMINED AND FOUND TO BE BOTTOM CON	692609	5611082	Medium	Required
MA93	SZ 13	UKHO-WO-20156	Recorded Wreck	TIGGER	SURVEYING DETAILS:YACHT 'TIGGER' TAKEN IN TOW BY SHOREHAM LIFEBOAT BUT SANK APPROX 0.5M WSW OF SHOREHAM HARBOUR ENTRANCE, MARKED BY YELLOW CAN BUOY.	692989	5633730	Medium	Required

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						Easting	Northing		
MA94	SZ 14	UKHO-WO-20050	Recorded Wreck		See also 20001 - possible alternative location for the Pagenturm, but this is location was amended to dead wreck	697981	5616755	Uncertain	Required
MA95	SZ 15	UKHO-WO-20070	Recorded Wreck		SURVEYING DETAILS: PROBABLE WK ABOUT 20MTRS LONG. LOCATED ONLY IN ONE DIRECTION, NO CONTACT IN OPPOSITE DIRECTION.NOT FULLY INVESTIGATED	709240	5619071	Medium	Required
MA96	SZ 16	UKHO-WO-19951/ UKHO-WO-19959/ 540-470336340-16619	Recorded Wreck	BROADHURST (PROBABLY)	CIRCUMSTANCES OF LOSS: STEEL HULL. ONE BOILER, TRIPLE EXPANSION ENGINE, SINGLE SHAFT. PASSAGE SEAHAM FOR SHOREHAM-BY-SEA. TORPEDOED BY E-BOAT 14M S BY W OF SHOREHAM. 4 MEN LOST.	694530	5608092	Medium	Required
MA97	SZ 17	UKHO-WO-20152	Recorded Wreck	SILVER SPRAY	SURVEYING DETAILS: CHART AS DW WITH G CAN BUOY CLOSE SE. - NM 796/53.in**H4291/57 16.8.57 NOT FOUND BY E/S SEARCH AND REPORTED TO HAVE BROKEN UP	693044	5631722	Medium	Required
MA98	SZ 18	UKHO-WO-20144	Recorded Wreck	G-AZWZ	CIRCUMSTANCES OF LOSS:ON FLIGHT FROM SHOREHAM AIRPORT TO BEMBRIDGE, HIT A BIRD CAUSING BLADE VIBRATION & DITCHED IN SEA NEAR WORTHING PIER BEFORE SINKING. SINKING POSN GIVEN AS 504700N, 002200W [OGB].	685516	5629098	Medium	Required
MA99	SZ 19	UKHO-WO-19958	Dead Wreck		SURVEYING DETAILS: NOTHING FOUND DURING INTENSIVE SEARCH WITHIN 400M	712099	5609314	Uncertain	Required
MA100	SZ 20	UKHO-WO-20638/ 540-1795761976-16647	Recorded Wreck		SURVEYING DETAILS: NO SCOUR. HYDROSEARCH LENGTH 29MTRS, BEAM 10MTRS, HT 2.7MTRS. LYING N/S. VERY SMALL IN AREA OF SANDWAVES.	715523	5614603	Medium	Required
MA101	SZ 21	UKHO-WO-20162/ 540-1814417631-16640	Recorded Wreck	WWII Pontoon	SURVEYING DETAILS: NO SCOUR. HYDROSEARCH - LENGTH 147 MTRS, BEAM 7MTRS, HT 4.4MTRS. LYING, ACROSS SAND WAVES, 090/270 DEGS. Could be clearly seen in 2011 geophysics data (RMPSSS25-32 and RMP MAG51)	709874	5614251	Medium	Required
MA102	SZ 22	UKHO-WO-19961/ 540-211084949-16621	Recorded Wreck		SURVEYING DETAILS: CLASSIFIED WK, LOCATED IN 503552N, 001117W [OGB]. LENGTH 45MTRS. LYING NE/SW. NOT EXAMINED.	698926	5608968	Medium	Required
MA103	SZ 23	UKHO-WO-20168/ 540-696622401-16617	Recorded Wreck	CLAN MACMILLAN	CIRCUMSTANCES OF LOSS: PASSAGE CHITTAGONG FOR THE CLYDE VIA LONDON. TORPEDOED BY GERMAN SUBMARINE 5M SW OF NEWHAVEN. BUIL 1901 BY A MACMILLAN & SON LTD, DUMBARTON, WITH 3 CYLINDER TRIPLE EXPANSION ENGINE, SINGLE SHAFT.	694195	5606688	Medium	Required
MA104	SZ 25	UKHO-WO-19940/ 540-1194198224-16627	Recorded Wreck	ARISTOS	CIRCUMSTANCES OF LOSS: VESSEL, BUILT IN 1939 BY WM. HAMILTON & CO. LTD. AND OWNED AT THE TIME OF LOSS BY ARGO (HELLAS) SHIPPING CO SPECIAL S.A., SANK FOLLOWING COLLISION, IN THICK FOG, WITH NORWEGIAN MV 'LINDE' WHILE ON PASSAGE PIRAEUS TO ANTWERP.	706176	5607269	Medium	Required
MA105	SZ 26	UKHO-WO-20644	Recorded Wreck	ICELANDER	SURVEYING DETAILS:SANK IN 503848N, 000142E. YELLOW IN COLOUR, OUTBOARD MOTOR, GRP CONSTRUCTION. (SHOREHAM MRSC, 21.5.81). SMALL CRAFT	713974	5614974	Medium	Required
MA106	SZ 27	UKHO-WO-19942/ 540-1292929953-16628	Recorded Wreck	ZEESTER (POSSIBLY)	CIRCUMSTANCES OF LOSS: REPORTED ABANDONED AND SUNK.	706585	5606883	Medium	Required
MA107	SZ 28	UKHO-WO-19995/ 540-547475508-16652	Dead Wreck		SURVEYING DETAILS:GOOD SONAR CONTACT IN 503742N, 000306W. NOTHING FOUND. AREA OF SANDWAVES. Sept 11 Geophysical Survey concludes that sonar target S24 appears to be an area of debris, with an associated magnetic anomaly (M47). These features are located approximately 520m S of the as-given position of wreck 19995.	709576	5612584	Uncertain	Required
MA108	SZ 31	UKHO-WO-20169/ 540-49790184-16618	Recorded Wreck	GLENARM HEAD (POSSIBLY)	CIRCUMSTANCES OF LOSS: BUILT IN 1897 BY WORKMAN CLARKE. OWNED AT TIME OF LOSS BY G HEYN & SONS LTD, (HEAD LINE), TRIPLE EXPANSION ENGINE, SINGLE SHAFT. PASSAGE SOUTHAMPTON FOR BOULOGNE. TORPEDOED BY UB-30 AND SANK IN FIVE MINUTES. 2 MEN LOST.	696707	5607246	Medium	Required
MA109	SZ 32	UKHO-WO-20005/ 540-1218884118-16634	Recorded Wreck	GERLEN (POSSIBLY)	CIRCUMSTANCES OF LOSS: SANK FOLLOWING COLLISION WITH CYPRIOT MV 'GOTLAND' WHILST EN-ROUTE PAR TO UTERSEN.	700792	5612626	Medium	Required

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						Easting	Northing		
MA110	SZ 34	UKHO-WO-19970/ 540-2061081878-16602	Recorded Wreck		SURVEYING DETAILS:WK LOCATED IN 503616N, 001844W [OGB]. LENGTH APPROX 85MTRS, ORIENTATION NE/SW.	689920	5609314	Medium	Required
MA111	SZ 35	UKHO-WO-20170/ 540-431745509-16604	Recorded Wreck		SURVEYING DETAILS: NO SCOUR. HYDROSEARCH LENGTH 26.3MTRS, BEAM 13.7MTRS, HT 10.6MTRS. LYING ON SAND & GRAVEL,	692279	5607730	Medium	Required
MA112	SZ 37	UKHO-WO-19953/ 540-356744977-16630	Recorded Wreck	LORNASTON (POSSIBLY)	CIRCUMSTANCES OF LOSS: TORPEDOED AND SUNK BY GERMAN SUBMARINE U 275. WAS ON PASSAGE BLYTH FOR CASABLANCA.	709403	5609284	Medium	Required
MA113	SZ 38	UKHO-WO-19944/ 540-803616089-16626	Recorded Wreck		SURVEYING DETAILS: SMALL METALLIC CONTACT WITH NO SHAPE AND DIFFICULT TO MEASURE.	704320	5607908	Medium	Required
MA114	SZ 40	UKHO-WO-20378/ 540-386638147-16631	Recorded Wreck	HOLME FORCE (POSSIBLY)	CIRCUMSTANCES OF LOSS: VESSEL, BUILT IN 1930 BY GOOLE S B & R CO. AND OWNED AT THE TIME OF LOSS BY WEST COAST SHIPPING CO., WAS TORPEDOED AND SUNK BY GERMAN E-BOAT 8M OFF NEWHAVEN WHEN ON PASSAGE TYNE FOR DEVONPORT. 6 LIVES LOST.	712882	5609424	Medium	Required
MA115	SZ 41	UKHO-WO-20172/ 540-1947318509-16639	Recorded Wreck		SURVEYING DETAILS: NO SCOUR. HYDROSEARCH LENGTH 26.9MTRS, BEAM 8.7MTRS, HT 5.2MTRS. LYING 060/240DEGS, IN HEAVY SANDWAVE AREA. Wreck can be clearly seen on the sonar record. It measures approximately 18.1m long and 7.1m in width. It stands 4.9m above the surrounding rippled sandy seabed. (RMPSSS16/17 & RMPMAG 27)	706952	5612062	Medium	Required
MA116	SZ 42	UKHO-WO-19972/ 540-858808933-16603	Recorded Wreck	LONDON TRADER (POSSIBLY)	CIRCUMSTANCES OF LOSS: STEEL HULL. ONE BOILER, TRIPLE EXPANSION ENGINE, SINGLE SHAFT. PASSAGE THE TYNE FOR SHOREHAM-BY-SEA. TORPEDOED & SUNK BY E-BOAT. 1 MAN LOST.	690986	5608673	Medium	Required
MA117	SZ 43	UKHO-WO-19938/ 540-961890095-16620	Recorded Wreck	GLENDINNING (POSSIBLY)	CIRCUMSTANCES OF LOSS: PASSAGE ARROMANCES, NORMADY FOR LONDON. TORPEDOED BY U 953.	700503	5605781	Medium	Required
MA118	SZ 44	UKHO-WO-20391	Recorded Wreck		SURVEYING DETAILS: WK IN 503700N, 000400E.NOTHING FOUND DURING INTENSIVE SEARCH	716821	5611750	Medium	Required
MA119	SZ 46	UKHO-WO-20101	Recorded Wreck	SABRINA	CIRCUMSTANCES OF LOSS: YACHT SANK WHILST IN TOW, 4.75 MILES SOUTH OF KEMP TOWN, BRIGHTON.	705460	5624466	Medium	Required
MA120	SZ 48	UKHO-WO-20092	Live Wreck	PENTYRCH	CIRCUMSTANCES OF LOSS: TORPEDOED & SUNK BY GERMAN SUBMARINE UB 40.WK IN POSN 5M WNW OF BRIGHTON LTV	693146	5622635	Medium	Required
	GC 12, 14, 15, 16	53713/ 54313			for description see geophysics report site reference RMP SSS6 & 8				
					<b>NB GC 12 and 15 are described as two wrecks by the geophysics report, one or both could relate to Pentrych, the exclusion zone includes both contacts</b>				
MA121	SZ 51	UKHO-WO-20422/ 540-2120319323-16648	Recorded Wreck	VASCO	CIRCUMSTANCES OF LOSS: VESSEL, BUILT IN 1895 BY FURNESS, WITHY & CO. AND OWNED AT THE TIME OF LOSS BY T WILSON, SONS & CO., STRUCK A MINE AND SUNK 10M W BY S OF BEACHY HEAD WHILE ON PASSAGE HULL TO NAPLES. 17 LIVES LOST INCLUDING THE CAPTAIN.	714273	5616315	Medium	Required
MA122	SZ 55	UKHO-WO-20138/ 540-655644745-16664	Recorded Wreck		SURVEYING DETAILS: A FOUR ENGINE BOMBER, UPSIDE DOWN WITH ALL HER ENGINES, TWO VERY LARGE WHEELS & ONE WING, LOCATED IN 504624N, 001436W [OGB]. LEAST DEPTH OVER WK 5FMS 1FT, HEIGHT ABOVE SEABED IS 8FT.	694957	5628238	Medium	Required
MA123	SZ 56	UKHO-WO-20187/ 540-769648393-16637	Live Wreck	INGO	CIRCUMSTANCES OF LOSS: REPORTED AS DRIFTING AWASH ON BEING ABANDONED IN WATERLOGGED CONDITION BY CREW. 10 MILES S OF SHOREHAM. Geophysics contact in Osiris data at this location	695031	5618480	Medium	Required
					<b>See geophysics report RMP SSS 29: NB incorrect wreck reference in appendix, ref 19998 in error, INGO is UKHO wreck 20187</b>				

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MA124	SZ 57	UKHO-WO-20180/ 540-1360425704-16661	Recorded Wreck		SURVEYING DETAILS: WK EXAM'D 10.2.80 IN 504503N, 001654W. ALMOST COMPLETELY BURIED	691639	5625702	Medium	Required
MA125	SZ 58	UKHO-WO-20186/ 540-1834437963-16599	Live Wreck	NY-EEASTEYR	CIRCUMSTANCES OF LOSS: EX-HOLSTEIN. BUILT OF WOOD IN 1970 IN GERMANY. OWNED AT TIME OF LOSS BY MANCO LTD, RAMSAY, IOM. OIL ENGINE, SINGLE SHAFT. PASSAGE YARMOUTH FOR RAMSAY. REPORTED TAKING WATER AND LATER SANK.	686574	5615400	Medium	Required
	GC 1	32456			Possible small wreck. 20m long, 4m wide				
	GC 2	33763		Unknown wreck	for description see geophysics report site reference RMP SSS1				
MA126	SZ 61	UKHO-WO-20274/ 540--881973776-16663	Recorded Wreck	ARROGANT	SURVEYING DETAILS:WK, 3MTRS HIGH IN GENERAL DEPTH 17MTRS, IN 504403N, 001518.5W. VESSEL IS A YACHT, NAMED 'ARROGANT'.	693590	5623965	Medium	Required
MA127	SZ 62	UKHO-WO-20179/ 540-559523794-16662	Recorded Wreck	MAASLUST	SURVEYING DETAILS: WK . NO SCOUR. HYDROSEARCH. LENGTH 32.9MTRS, HT 3MTRS. LYING NW/SE, WITH 2 OFFLYING PIECES	694627	5622380	Medium	Required
MA128	SZ 63	UKHO-WO-20176/ 540-2117859308-16643	Recorded Wreck	FORTUNA	CIRCUMSTANCES OF LOSS: VESSEL, BUILT IN 1913 BY KONINKLIJKE NEDERLANDSCHE STOOMBOT MAATS., STRUCK A MINE LAID BY GERMAN SUBMARINE UC-16 AND SANK 9M SW OF BEACHY HEAD. WAS BOUND ROTTERDAM TO CARDIFF.	709092	5620034	Medium	Required
MA129	SZ 64	UKHO-WO-20042/ 540-126868173-16642	Recorded Wreck	GIRLVINE (POSSIBLY)	CIRCUMSTANCES OF LOSS: FISHING VESSEL DAMAGED & DRIFTING AWASH. PRESUMED LATER SANK.; 11 MILES W BY S APPROX OF BEACHY HEAD.	710194	5618500	Medium	Required
MA130	SZ 65	UKHO-WO-20120/ 540-327884654-16665	Recorded Wreck		SURVEYING DETAILS:WK OF STEAM TRAWLER LOCATED IN 504446N, 001114W [OGB]. LCOMPLETE EXCEPT FOR MAST, FUNNEL & WHEELHOUSE.	698242	5625392	Medium	Required
MA131	SZ 66	UKHO-WO-20154/ 540--2097900379-15396	Recorded Wreck	MIOWN	CIRCUMSTANCES OF LOSS: FOUNDERED ON REEF APPROX 1.5 MILES FROM ENTRANCE TO SHOREHAM IN SE GALE. MARKED BY G WK BUOY & WK MARKING VESSEL.	693197	5631821	Medium	Required
MA132	SZ 67	UKHO-WO-20178/ 540-1665896990-16659	Recorded Wreck		SURVEYING DETAILS: HYDROSEARCH, LENGTH 56.4MTRS, BEAM 8.6MTRS, HT 1.9MTRS. WELL BROKEN UP.	688769	5622073	Medium	Required
MA133	SZ 69	540-1183961188-15424	Recorded Wreck			695806	5630197	Medium	Required
MA134	SZ 70	UKHO-WO-20146/ 540--1841769897-16658	Recorded Wreck	INDIANA	CIRCUMSTANCES OF LOSS: BUILT IN 1899 BY R DIXON & CO, MIDDLESBROUGH. OWNED AT TIME OF LOSS BY BAILEY & LEEHAM, HULL. PASSAGE BURIANA, VIA VENICE, FOR LONDON.	685231	5629147	Medium	Required
MA135	GC 7	45606	contact event	Debris	for description see geophysics report site reference RMP SSS5	693119	5626442	Low	Required
MA136	GC 13	53758	contact event	Debris	for description see geophysics report site reference RMP SSS7	692943	5623529	Low	Required
MA137	GC 17	91877	contact event	Pipeline	for description see geophysics report site reference RMP SSS9	688091	5632538	Negligible	None
MA138	GC 18	91883	contact event	Pipeline		688153	5632406	Negligible	None
MA139	GC 19	92346	contact event	Pipeline		688193	5632291	Negligible	None
MA140	GC 20	94565	contact event	Pipeline		688789	5633095	Negligible	None
MA141	GC 21	19381	contact event	Debris	for description see geophysics report site reference RMP SSS10	691582	5611265	Low	Required
MA142	GC 23	25553	contact event	Debris	for description see geophysics report site reference RMP SSS11	690844	5618387	Low	Required
MA143	GC 37		Live Wreck	Wreck	for description see geophysics report site reference RMP SSS20	689442	5610497	Medium	Required
MA144	GC 38	62726	contact event	Cable	for description see geophysics report site reference RMP SSS21	695342	5616914	Negligible	None
MA145	GC 25	106130	contact event	Pipeline/ cable	for description see geophysics report site reference RMP SSS13	687702	5632565	Negligible	None

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MA146	GC 26	108251	contact event	Pipeline/ cable		687669	5632599	Negligible	None
MA147	GC 55	144227	contact event	Pipeline/ cable		687770	5632454	Negligible	None
MA148	GC 56	147334	contact event	Pipeline/ cable		687660	5632616	Negligible	None
MA149	GC 57	147409	contact event	Pipeline/ cable	for description see geophysics report site reference RMP SSS28	687738	5632521	Negligible	None
<b>MA150-153 Geophysical contacts interpreted as geology</b>								Negligible	None
MA154	GC [met mast data]		Live Wreck	Wreck	Very well isonified wreck. Measuring 84m in length, 7m in width and almost 2m in height. The bow and stern of this vessel appear to have been damaged although the central hold appears to remain intact. The site is close to the wreck identified (possibly incorrectly) as IKEDA [ref. MA057]	694767	5620458	Medium	Required
MA155	GC	UKHO 20185	Live Wreck	Foul ground	UKHO records foul ground at Latitude = 50 39'.583 N Longitude = 000 20'.433 W; geophysical contact at this location may be associated (wrongly attributed by Osiris to MA67)	687592	5615293	Uncertain	Required
MA156	GC	UKHO 20174	Live Wreck	German aircraft	PRESUMABLY A WW2 LOSS recorded by UKHO at Latitude = 50 39'.233 N Longitude = 000 17'.517 W, may be associated with geophysical contact (wrongly attributed by Osiris to MA80)	691273	5614939	Uncertain	Required
MA157	GC		contact event	Unknown	Osiris contact, may relate to wreck site.	697252	5614223	Uncertain	Required
MA158	GC		contact event	Unknown	Osiris contact, may relate to wreck site.	698102	5615090	Uncertain	Required
MA159	GC		contact event	Unknown	Osiris contact, may relate to wreck site.	691599	5615874	Uncertain	Required