SUBSEA SURVEY SOLUTIONS
Subsea technical engineering company
Subsea Survey Solutions LLC is a specialized company to carry out complex offshore and onshore engineering surveys including specific tasks such as tracing, identification, utilization of explosive objects.

**Company goals:**

- Provide high quality data required for design and construction of buildings and facilities
- Minimize risks for our clients who invest in developing offshore construction facilities by evaluating natural and man-caused hazards
- Introduce international state of the art technologies in Russia for marine engineering survey
- Carry out tasks according to Russian and International standards of safety and environmental protection

**Partners:**

We have been successfully cooperating with big companies from overseas that are best known as world leaders in designing specialized survey equipment.

**Software:**

We process and interpret obtained data by use of up-to-date licensed software. Use of licensed software greatly minimizes time required to process surveyed data, allowing us to opt for the most efficient way to resolve the most complicated tasks.

**Accreditation:**

Company accredited as a potential supplier of goods and services for the needs of JSC NK Rosneft.

- RN-Exploration LLC
- RN-Shelf-Arctic LLC
- NK Rosneft JCK
- RN Shelf of Abkhazia LLC
Subsea Survey Solutions LLC carries out the following engineering surveys according to Russian (GOSTs, SNIPs, VSN, etc.) and international standards (ISO, ASTM, BS, NORSOK etc.) depending on Client requirements:

- **Complex geological survey works onshore and offshore**

- **Hydrographic and geophysical surveys of various precision by use of ROVs (sea depths from 0 to 3000m)**

- **Subsea technical operations, such as:**
  - Diving work, to trace and identify explosive objects
  - Tracing, mapping, examination and monitoring of subsea linear and areal sites at depths up to 3000m by use of towed systems **ROV/AUV** (including tracing and identification of explosive objects)
  - Follow up procedures while utilizing explosive objects
  - Recovery of sunk objects

- **Geotechnical works (over 90m in depth of seabed)**

- **Engineering and environmental surveys** of offshore and onshore (obtain reliable quantitative data on the state of environmental components and factors of the physical impact on the environment for further development of project documentation of different stages)

- **Archaeological research in the waters** (search for and identification of objects of cultural heritage (IPOs) on land and sea, the development and coordination of conservation activities IPOs)

- **Search, detection and elimination of explosive devices; removal of residual mine threat in the waters**
COMPETENCY CERTIFICATE for engineering research, which are influence on safety of extremely dangerous and technically complex facilities (except nuclear facilities) issued by non-profit partnership for promotion of engineering and surveying industry «Association of Engineering Survey in Construction»

LICENSE for realization activities in hydrometeorology and related fields, issued by the Federal service for Hydrometeorology and Environmental Monitoring, RF-RosHydromet (subordinated to the Ministry of Natural Resources and Ecology of the Russian Federation)

LICENSE for realization activities related to the treatment of industrial explosive materials, according to the requirements established by 99-FA of 04.05.2011 (Modified from 04.03.2013g.) «About Licensing of individual types of activities»

License for works related to the use of information constituting a state secret.

The company has a valid quality management system corresponding to the ISO 9001-2008; ISO 14001-2004; OHSAS 18001:2007
Subsea Survey Solutions LLC has **Pricewaterhouse Coopers Audit audit report** of independent accounting verification (financial ) statements for 2014-2015 to confirm its credibility.

According to the Audit financial statements fairly present, in all respects, the financial position of the Company's results of its financial and economic activity and cash flows in accordance with the established rules of accounting.
Structure of the documentation is organized on five levels

<table>
<thead>
<tr>
<th>Level</th>
<th>Name of documentation</th>
</tr>
</thead>
</table>
| 1     | • Manual in the area of quality, environmental, occupational safety  
       | • Manual Integrated Management System |
| 2     | • Documented procedures of IMS System (STF) |
| 3     | • Documents (STF), regulating the activities defined in the IMS processes and procedures |
| 4     | • Staffing and organizational structure  
       | • Provisions on structural subdivisions and job descriptions |
| 5     | • Organizational and administrative documents (orders, regulations)  
       | • External part, outgoing documents (letters)  
       | • Internal records management (memoranda, minutes of meetings)  
       | • Planning and accounting records (contracts, plans, schedules, reports, legislation) |
REGULATORY DOCUMENTATION ISM

- QUALITY POLICY
- ENVIRONMENTAL POLICY
- HSE POLICY

ISM management of occupational safety and health, environment and safety during engineering surveying

ISM anti-alcohol and anti-drug policy of the company

ISM regulations on the procedure of the employees with special clothing, special footwear
All employees involved in the execution of projects have appropriate qualification, confirmed higher education diplomas, international insurance policies, international health certificates (Physical Examination report).

Appropriate employees passed training at the Moscow State Academy of Water Transport in «Initial safety training and mentoring (BZHS vessel) in accordance with the International Convention for the Safety of Life at Sea (SOLAS - 74/78)».

All our engineers passed trainings organised by manufacturers of equipment and got personalized certificates.

We pay great attention to educate our specialists, English language relevant course is implemented.

Our employees have life insurance and disability policies, supplementary health insurance, covered both in Russia and abroad.

Lack of specialists layoffs over the past two has been a result of paying competitive wages, individually designed approach to employee motivation, establishing effective team work and a positive corporate culture in the organization.
HYDROGRAPHY SURVEYS

- high-resolution data collection at depths from 0 to 100m using a multibeam echo sounder installed on ships (cell dimensions of the matrix to a digital elevation model 0.2h0.2 m, 1:500 scale maps and less)

- high-resolution data collection at depths from 50 m to 3000m using a multibeam sonar mounted on autonomous underwater vehicle HUGIN (cell dimensions of the matrix to a digital elevation model 0.2h0.2 m, 1:500 scale maps and less)

- standard definition data collection, large-scale and small-scale reconnaissance data collection at depths ranging from 50 to 3000m using a multibeam echo sounder mounted on ships.
• Seafloor side-scan sonar data collection at depths ranging from 5 to 3000m using towed systems / HUGIN AUV

• Subgrade top data collection by use of a profiler at depths ranging from 5 to 3000m using towed systems / HUGIN AUV

• Magnetometer gradiometer data collection at depths ranging from 1 to 1000m
SOIL SAMPLING
depths range 0.2m to 20m of seabed using:

- Gravity
- Piston-corer
- Hydrostatic
- Box-corer

Study of physical and mechanical properties of «in-situ» up to 100m of seabed depth:

- Static ground using bottom frames
- Drilling at water depth up to 3000m
- Field and laboratory determination of soil properties
- Biogeochemical studies of soil properties
ENGINEERING

SUBSEA ENGINEERING WORKS

- **INSPECTION** of underwater extended linear structures using ROV / AUV

- **IDENTIFICATION** of discovered natural and man-made objects seabed (including hazardous)

- **INSPECTION** of areal underwater structures

- **Tracing**, detection and location of cable routes

- **SURVEY** of ice conditions near subsea structures to determine ice thickness

- **ARCHAEOLOGICAL WORKS**

- **SEARCH** of leaks and contamination
Vessels positioning when carrying out work:

- Determining the current position
- Software installation and placement of linear and areal structures in accordance with the design solutions
- Gridding and processing of hydrographic measurements based on GPS and GNSS-receivers

Positioning of drilling platforms
DEVELOPING THE PROGRAMMES of offshore and onshore engineering and environmental surveys.

The ORGANIZATION AND EXECUTION of fieldwork on land and water areas, including studies of:

- Physicochemical properties and chemical pollution of environmental components with the involvement of certified chemical-analytical laboratories
- Physical impacts and radiation environment
- Flora and fauna
- Landscapes and geological hazards and hydrological phenomenon
- Sanitation and epidemiological, biomedical, social and economic environment
- PREPARATION of FORECAST of possible changes of the environmental components, recommendations for minimizing potential impacts and proposals for environmental monitoring

DEVELOPING of cartographic material, databases and geographic information systems (GIS)

Maintenance of the developed documentation in state monitoring authorities
SURVEY AND the explosive device REMOVAL (UXO) during the Second world war is to ensure the safety of construction and prevention of emergency situations of technogenic character on the basis of the Federal law "On protection of population and territories from emergency situations of natural and technogenic character" of December 21, 1994 № 68-FZ on the Russian territory, and in accordance with national legal requirements when performing work on the territory of other states.

AREA INSPECTION for the presence of explosive devices is the subject of continuous searching, followed by elimination (destruction) of EO or its transfer to demining group of the Ministry of defence or EMERCOM.

The use of modern instruments can detect metal objects at depths from the ground surface to 6 meters with the accuracy of determining the depth of the detected object to 0.3 meters.

Upon completion of work, the company formed a package of documents confirming the lack of GPS in the inspected area.
The development of the "plan of implementation of complex of works on the explosive device removal " and its coordination with the directorates, divisions and services of the fleets, the head 24 CRI;

ANALYSIS and data processing of geophysical works and coordination with the hydrographic service of the navy. 

DEVELOPMENT and approval of Technical specifications for all stages of works on removal of residual mine threat;

The AGREEMENT with the hydrographic service of the navy (naval base) turnaround time;

PARTICIPATION in carrying out of works on removal of residual mine threat in the waters;

The SUBMISSION of deliverables to the navy headquarters for examination.
ENGINEERING SURVEYS
ARCHAEOLOGICAL RESEARCH IN THE WATERS

- Visual inspection of the potential cultural heritage objects using a remotely operated underwater vehicle (ROV), equipped with a camera for underwater surveys
- Geophysical surveys to obtain primary data (multibeam echosounder surveys, bottom profiler, sidescan sonar);
- Development of measures for the conservation of cultural heritage objects and coordination with Federal and territorial authorities for the protection of cultural heritage objects;
- The attraction to the works of representatives of the relevant archaeological organizations and institutions
- Analysis and data processing of geophysical surveys to determine the presence of cultural heritage objects
Prior research and theoretical evaluation of archival data and databases of cultural heritage (materials from funds)

Field archaeological investigation of the ground section (surfovanie)

Assessment of the current state of the identified archaeological objects, the definition of tangible and intangible cultural heritage, as well as objects of special importance

Development of measures for the conservation of cultural heritage objects and coordination with Federal and territorial environmental protection authorities; evaluation of the cost of the events
We provide a full cycle of survey data processing, charting and reporting

- **Seabed (MBES) survey data processing.** Digital Elevation Model creation
- **Sub-bottom profiling data** evaluation and interpretation
- **Side Scan Sonar data evaluation.** Mosaic and targets mapping.
- **Magnetic data processing.** Targets mapping
- **Processing of field and laboratory data.** Geotechnical unit determination
- **CPT data interpretation**
- **Preparation** of final reports
Formation of project implementation options:
• drafting proposals for a list of participants
• assigning tasks and scope of work
• providing baseline data

Planning milestones:
• drawing up proposals to optimize work schedules in order to reduce time and costs

Query and obtaining permits and approvals for works in the relevant state structures

Solution of transport and other logistical problems, including complex geographic and climatic conditions

The organization performing research

Maintenance and management research

Organization of material processing

 Provision of outputs to Client

Implementation of the protection materials in the Federal Autonomous Institution «General Directorate of State Examination» (FAA «GlavGosExpertiza Russia»), together with representatives of the Customer/Investor
### 2011 – 2012:

**SOUTH STREAM GAS PIPELINE** *(The Black Sea)*
- AUV Survey (14 000 km)
- Cable lines and identify sonar targets
- Geotechnical survey. Observation using CPT+ROV

**SHTOKMAN GAS FIELD** *(The Barents Sea)*
- Geotechnical survey (CPT)

### 2013 - 2014:

**TUAPSE BASIN AREA** *(The Black Sea)*
- AUV survey
- Geotechnical survey (20 m sampling with GPC)

**SOUTH STREAM GAS PIPELINE** *(onshore part Anapa)*
- UXO survey

**SOUTH STREAM GAS PIPELINE** *(onshore part Varna)*
- UXO survey

**THE BLACK SEA BASIN AREA** *(The Black Sea)*
- AUV Survey
2014 - 2015:

**SOUTH STREAM GAS PIPELINE (The Black Sea)**
- Geotechnical sampling with 6 m Piston Core and standard Box Core
- ROV survey:
  - UXO survey and inspection
  - UXO relocation
  - Cable cutting
- Geotechnical investigation on Russian Slope (Boreholes drilling) - ongoing

**KIRINSKOYE GAS CONDENSATE FIELD INVESTIGATIONS, YUZHNOKIRINSKOYE GAS CONDENSATE FIELD INVESTIGATIONS (The Okhotsk Sea)**
- Geotechnical survey - CPT

**CONSTRUCTION OF THE TRANSPORT CROSSING ACROSS THE KERCH STRAIT (The Black and Azov Sea)**
- Geotechnical surveys (Boreholes drilling)

**KAMENNOMYSSKOYE-SEA GAS FIELD CONSTRUCTION (The Kara Sea)**
Complex engineering survey, design of basic technical solution and project documentation for modernization of Port Yamburg
- Ecological survey
- Geotechnical surveys (Boreholes drilling)

**ONSHORE SURVEY, Vyksa (Russia, Nizhny Novgorod)**
- UXO survey

**Exploration well №3 of the LENINGRADSKOE GAS CONDENSATE FIELD (The Kara Sea)**
- Data processing and interpretation of geological and geophysical surveys
ACCREDITATION
PREQUALIFICATION

POSITIVE COVERED

[Logos of various companies]
GRATITUDE LETTERS
GRATITUDE LETTER
Rosneft / Exxon Mobil / GeologInginiring

SUBSEA SURVEY SOLUTIONS
Stannikuzheko ske, 42/1
Moscow

To Whom It May Concern,

Between the months of April and August 2013 I have been employed as the Client Representative for seabed surveys within the Russian sector of the Black Sea, working for joint ventures between Rosneft/ExxonMobil and Rosneft/ENI respectively. The client company on both occasions contracted Subsea Survey Solutions to mobilize, operate and maintain a Kongsberg Hugin 1000 Autonomous Underwater Vehicle (AUV), which was used for acquiring multibeam bathymetry, sidescan sonar and sub-bottom profiler data.

After several months of working with Alexander Gunasev, Arina Karpova and Alexey Litkey, the personnel from Subsea Survey Solutions, I am pleased to endorse the competence and professionalism of this team. They provided first class service and proved to be very knowledgeable on all aspects of the survey from acquisition, processing and reporting perspectives. The surveys operated in water depths of >2000m and the swift turnaround at the end of each dive contributed to a very efficient and productive survey onboard both the RV Heather Sea and the RV Academic Golubin.

Alessandro Gunasev was also the Party Chief during the Heather Sea operations and I found him to be a very pleasant character, hard working and professional. I was particularly grateful for his excellent command of English as my Russian language skills are non-existent.

Thanks to the hard work and combined experience of the Subsea Survey Solutions team the projects were completed on schedule and with no out-time incidents or accidents. I can recommend them for similar projects and trust they will be a useful addition to projects in the future.

Yours Faithfully,

Andy Davidson
Client Representative/Geophysicist

SUBSEA SURVEY SOLUTIONS
Stannikuzheko slee, 42/1
Moscow
LETTERS OF APPRECIATION
South Stream Transport B.V. / Pacific Engineering Co
WORK Reference list

WORK EXPERIENCE 2011-2015
Engineering company Subsea Survey Solutions LLC carries out engineering surveys according to Russian and international standards depending on Client requirements.

**FULL-CYCLE ENGINEERING SURVEYS:**

- Complex geological surveys onshore and offshore
- Hydrographic and geophysical surveys by use of Towed/AUV/ROV systems
- Geotechnical surveys up to 80m depth of seabed surface

**Subsea technical operations:**
- Tracing and identifying explosive objects (UXO)
- Tracing, mapping and monitoring of subsea linear and area sites at depth up to 3000m
- Follow up procedures while utilizing UXO objects
- Recovery of sunk objects
2011 – 2013:

- South Stream Project
- Shtokman Field Project
- Tuapse Through Project
- Western Black Sea Basin

ONGOING:

South Stream Transport B.V.
- Tracing and elimination of explosive objects (UXO)

South Stream Transport B.V.
- Geotechnical investigation at Anapa marine slope (*Drilling surveys*)
- Geotechnical surveys (*PGC, BC*)
### BLACK SEA AREA

**client:** Peter Gaz LLC / **project:** South Stream

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>total running, km</td>
<td>&gt; 14 000</td>
</tr>
<tr>
<td>water depth, m</td>
<td>150 – 2200</td>
</tr>
<tr>
<td>survey area, km²</td>
<td>&gt; 10 000</td>
</tr>
</tbody>
</table>

**survey period:** 05.09.2011 – 16.03.2012

- **The Azov Sea**
- **The Kerch Strait**
- **The Bosphorus Strait**
- **The Black Sea**

**TURKEY**

**BULGARIA**

**RUSSIA**

**AUV SURVEY**
VESSLE & EQUIPMENT

research vessel: GSP Prince / AUV KONGSBERG HUGIN 1000
EQUIPMENT SPECIFICATION
AUV KONGSBERG HUGIN 1000 FOR 3000m

Key specification

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value 1</th>
<th>Unit 1</th>
<th>Value 2</th>
<th>Unit 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight, kg</td>
<td>850</td>
<td>Length, m</td>
<td>5.436</td>
<td></td>
</tr>
<tr>
<td>Operation speed, kn</td>
<td>4</td>
<td>Diameter, mm</td>
<td>750</td>
<td></td>
</tr>
<tr>
<td>Maximal speed, kn</td>
<td>6</td>
<td>Autonomy, h</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>Maximal immersion depth, m</td>
<td>3000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Payload:

- Side scan sonar and subbottom profiler **Edgetech 2200-M**
- Multibeam echosounder **Kongsberg EM2040**
- Inertial navigation system **Honeywell HG9900**
- CTD RDI Citadel
- FSI Micro-CTD
- DVL RDI Workhorse **Navigator-300**
- Pressure sensor **Digiquartz 8CB**
- Altimeters **Mesotech 1007**
- 2 transponders **Kongsberg MST 339**
EXAMPLE OF SURVEY DATA

HYDROGRAPHY SURVEYS
BLACK SEA AREA

client: Peter Gaz LLC / project: South Stream


- water depth, m: 100 – 2200
- ROV dives: 135
- Discovered targets: 163

CABLE CROSSING SURVEY
VESSSEL & EQUIPMENT
research vessel: AKADEMIK GOLYTSIN
ROV: SUBFIGHTER 15K, INNOVATUM

ROV Key specification

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>LWH 162 x 90 x 96 cm</th>
<th>Weight in air</th>
<th>550 kg approx.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frame</td>
<td>Anodized aluminum</td>
<td>Payload</td>
<td>120 kg approx.</td>
</tr>
<tr>
<td>Housings</td>
<td>3 x 1 ata.</td>
<td>Max depth</td>
<td>700 m.</td>
</tr>
<tr>
<td>Buoyancy</td>
<td>Solid cell structure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power input</td>
<td>TBA 230 / 400 / 440 / 690 VAC 3 phase 15 kW</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thrusters</td>
<td>7 thrusters, Horizontal 5 x 2000W, Vertical 2 x 2000 W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speed approx</td>
<td>Horizontal 3.5 knot, Vertical 1.9 knot</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pan / Tilt</td>
<td>Pan 45 degrees</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Camera interfaces</td>
<td>4 off 2-3 x simultaneous video channels</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Camera 1</td>
<td>standard Low light color camera PAL 540 TV lines 0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Camera 2</td>
<td>option Low light black and white PAL 570 TV lines 0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Light interfaces</td>
<td>6 off total 1500 W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lights</td>
<td>standard 2 x ROS Q-LED III 3500lux (500 W halogen equivalent)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
EXAMPLE OF SURVEY DATA
BLACK SEA AREA
client: Peter Gaz LLC / project: South Stream

survey period 06.11.2012 – 16.12.12

---

number of CPT locations

water depth, m 80 – 100 m

penetration depth 10 m

---

CTP+ROV SURVEY
### VESSEL & EQUIPMENT

research vessel: **AKADEMIK GOLYTSIN**  
CPT: **ROSON 75/100kN**, ROV: **SUBFIGHTER 15K**

---

#### CPT Key specification

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name for the system</td>
<td>ROSON system 75/100kN</td>
</tr>
<tr>
<td>Manufacturing date</td>
<td>April 2012</td>
</tr>
<tr>
<td>Seabed frame dimensions L x W x H, m</td>
<td>2,5 x 2,5 x 2,3</td>
</tr>
<tr>
<td>Weigh in air for seabed frame, N</td>
<td>52000</td>
</tr>
<tr>
<td>Weight in water for seabed frame, N</td>
<td>45330</td>
</tr>
<tr>
<td>Dimensions of the lifting frame L x W x H, m</td>
<td>1,2 x 1,2 x 0,58</td>
</tr>
<tr>
<td>Weight of the lifting frame in air, N</td>
<td>5000</td>
</tr>
<tr>
<td>Weight of the lifting frame in water, N</td>
<td>4350</td>
</tr>
<tr>
<td>Dimensions of the self tension winch</td>
<td>2,1 x 2,1 x H 2,1 m</td>
</tr>
<tr>
<td>Drive unit wheels diameter, mm</td>
<td>700</td>
</tr>
<tr>
<td>Penetration speed, cm/s</td>
<td>2,4 @ 60 Hz</td>
</tr>
<tr>
<td>Penetration force</td>
<td>75 kN – nominal / 100 kN – max</td>
</tr>
<tr>
<td>No more than 90% of the weight of the rig in water</td>
<td></td>
</tr>
<tr>
<td>Maximum water depth, m</td>
<td>1500</td>
</tr>
<tr>
<td>Drive unit electrical motors</td>
<td>Brevini - 1,5 kW / 380-420V, 50/60 Hz</td>
</tr>
<tr>
<td></td>
<td>750 / 900 rev/min</td>
</tr>
<tr>
<td>Drive unit gear box reduction ratio</td>
<td>1232</td>
</tr>
<tr>
<td>Max torque of the self tension winch, Nm</td>
<td>4990 (short term up to 150%)</td>
</tr>
<tr>
<td>Max pulling force at first layer, N</td>
<td>9800</td>
</tr>
<tr>
<td>Max pulling force at 11th layer, N</td>
<td>8294</td>
</tr>
<tr>
<td>Nominal force at self tension mode</td>
<td>3924N (400kg)</td>
</tr>
<tr>
<td>Electrical supply</td>
<td>3 x 440V @ 60 Hz</td>
</tr>
<tr>
<td>Electrical motor</td>
<td>Brevini - 15kW / 1465 rev / min</td>
</tr>
</tbody>
</table>
EXAMPLE OF SURVEY DATA
BLACK SEA AREA

clients: Peter Gaz LLC / Rosneft Exploration
project: TUAPSE THROUGH

survey period 28.04.2013 – 30.05.13

- total running, km \( \approx 1530 \)
- water depth, m \( 1800 – 2100 \)
- Survey area, km \( > 170 \)
VESSLE & EQUIPMENT
research vessel: HEATHER SEA
AUV KONGSBERG HUGIN 1000 for 3000m
EXAMPLE OF SURVEY DATA
survey period 31.05.2013 – 26.06.13
geotechnical location 59
water depth, m 1800 – 2100
**VESSEL & EQUIPMENT**

research vessel: HEATHER SEA / GPC PGC-20

---

**Key specifications**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outer diameter</td>
<td>177,8 mm</td>
</tr>
<tr>
<td>Inner diameter</td>
<td>142,8 mm</td>
</tr>
<tr>
<td>Sample diameter when using plastic insert</td>
<td>110,0 mm</td>
</tr>
<tr>
<td>Length of the sampler</td>
<td>from 3,0 m to 24,0 m with increment 3,0 m</td>
</tr>
<tr>
<td>Overall length of the corer- length sampler</td>
<td>+3,0 m</td>
</tr>
<tr>
<td>Lower valve type</td>
<td>six sectors</td>
</tr>
<tr>
<td>Head corer weight</td>
<td>770 kg</td>
</tr>
<tr>
<td>One meter weight of core sampler</td>
<td>70 kg</td>
</tr>
<tr>
<td>Maximal ballast weight</td>
<td>960 kg</td>
</tr>
</tbody>
</table>
EXAMPLE OF SURVEY DATA
BLACK SEA AREA

clients: Morgeoservice LLC / Rosneft Exploration
project: WESTERN BLACK SEA BASIN

survey period **18.07.2013 – 08.08.13**

total running, km ≈ 720
water depth, m 1800 – 2100
Survey area, km ≈ 82
VESSEL & EQUIPMENT
research vessel: AKADEMIK GOLYTSIN
AUV KONGSBERG HUGIN 1000 for 3000m
# EQUIPMENT

## AUV HUGIN 1000 for 3000m

### Key specification

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>850 kg</td>
</tr>
<tr>
<td>Length, m</td>
<td>5.436</td>
</tr>
<tr>
<td>Operation speed, kn</td>
<td>4</td>
</tr>
<tr>
<td>Diameter, mm</td>
<td>750</td>
</tr>
<tr>
<td>Maximal speed, kn</td>
<td>6</td>
</tr>
<tr>
<td>Autonomy, h</td>
<td>24</td>
</tr>
<tr>
<td>Maximal immersion depth, m</td>
<td>3000</td>
</tr>
</tbody>
</table>

### Payload:

- Side scan sonar and subbottom profiler **Edgetech 2200-M**
- Multibeam echosounder **Kongsberg EM2040**
- Inertial navigation system **Honeywell HG9900**
- CTD RDI Citadel
- FSI Micro-CTD
- DVL RDI Workhorse **Navigator-300**
- Pressure sensor **Digiquartz 8CB**
- Altimeters **Mesotech 1007**
- 2 transponders **Kongsberg MST 339**

cpt locations

ON CONSTRUCTION SITES (88 CPT):
- 68 CPT (15 m depth)
- 20 CPT (10 m depth)
- TOTAL – 1220 m

ON THE ROUTE (95 CPT):
- 95 CPT (depth up to 5 m)
- TOTAL – 475 m

water depth, m 120 M – 350 m

BARENC SEA AREA
clients: Peter Gaz LLC / Gazprom Dobicha Shelf
project: SHTOKMAN FIELD

GEOTECHNICAL SURVEY
VESEL & EQUIPMENT
research vessel: **ISKATEL** / CPT: ROSON 75/100kN

<table>
<thead>
<tr>
<th>CPT Key specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name for the system</td>
</tr>
<tr>
<td>Manufacturing date</td>
</tr>
<tr>
<td>Seabed frame dimensions L x W x H, m</td>
</tr>
<tr>
<td>Weigh in air for seabed frame, N</td>
</tr>
<tr>
<td>Weight in water for seabed frame, N</td>
</tr>
<tr>
<td>Dimensions of the lifting frame L x W x H, m</td>
</tr>
<tr>
<td>Weight of the lifting frame in air, N</td>
</tr>
<tr>
<td>Weight of the lifting frame in water, N</td>
</tr>
<tr>
<td>Dimensions of the self tension winch</td>
</tr>
<tr>
<td>Drive unit wheels diameter, mm</td>
</tr>
<tr>
<td>Penetration speed, cm/s</td>
</tr>
<tr>
<td>Penetration force</td>
</tr>
<tr>
<td>Maximum water depth, m</td>
</tr>
<tr>
<td>Drive unit electrical motors</td>
</tr>
<tr>
<td>Dirve unit gear box reduction ratio</td>
</tr>
<tr>
<td>Max torque of the self tension winch, Nm</td>
</tr>
<tr>
<td>Max pulling force at first layer, N</td>
</tr>
<tr>
<td>Max pulling force at 11th layer, N</td>
</tr>
<tr>
<td>Nominal force at self tension mode</td>
</tr>
<tr>
<td>Electrical supply</td>
</tr>
<tr>
<td>Electrical motor</td>
</tr>
</tbody>
</table>
## Результаты статического зондирования

<table>
<thead>
<tr>
<th>№ договора</th>
<th>146/12 от 10.07.2012 г.</th>
<th>Название проекта:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>«Комплексное освоение Штокмановского газоконденсатного месторождения. 2 и 3 фазы»</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Сабси Сергей Сергеевич</th>
</tr>
</thead>
<tbody>
<tr>
<td>Судно: Искатель</td>
</tr>
<tr>
<td>Заказчик: Питер Газ</td>
</tr>
<tr>
<td>Расположение: Баренцево море</td>
</tr>
<tr>
<td>Комментарий: Полная обработка данных</td>
</tr>
</tbody>
</table>

### Графики статического зондирования

- Cone End Resistance ($q_c$) (MPa)
- Поровое давление ($p_r$) (MPa)
- Относительное сопротивление ($R_r$) (%)
- Сопротивление сдвигу (MPa)
- Относительная плотность (%)
<table>
<thead>
<tr>
<th>Survey Limits</th>
<th>Length (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Russian Sector</td>
<td>1114</td>
</tr>
<tr>
<td>Turkey / Bulgarian Sector (Cross-Border)</td>
<td>1700</td>
</tr>
<tr>
<td>Bulgarian Sector</td>
<td>523</td>
</tr>
</tbody>
</table>

**ROV Survey / UXO and Inspection Tasks**

**Black Sea Area**

Client: South Stream Transport BV

Ongoing Project: South Stream

Survey Limits:
- Russian Sector: 1114 km
- Turkey / Bulgarian Sector (Cross-Border): 1700 km
- Bulgarian Sector: 523 km

Date: 05.09.2011 – 16.03.2012
### ROV Key specification

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>290 x 170 x 190 cm</td>
</tr>
<tr>
<td>HPU Motor HP</td>
<td>150-hp</td>
</tr>
<tr>
<td>Aux. Output</td>
<td>40-hp</td>
</tr>
<tr>
<td>Weight in air</td>
<td>3700 kg</td>
</tr>
<tr>
<td>Payload</td>
<td>250 kgf</td>
</tr>
<tr>
<td>Max depth</td>
<td>4000 msw</td>
</tr>
<tr>
<td>Instrument Power</td>
<td>6kVA</td>
</tr>
<tr>
<td>DTS Nodes, standard</td>
<td>(3) 16-channels</td>
</tr>
<tr>
<td>Thrusters</td>
<td>(7) SA380</td>
</tr>
<tr>
<td>Pan /Tilt</td>
<td>(2) Electric, standard</td>
</tr>
</tbody>
</table>
BLACK SEA AREA / client: South Stream Transport B.V.
ONGOING PROJECT: South Stream
GEOTECHNICAL INVESTIGATION ON RUSSIAN SLOPE

Total number of boreholes 23 brh

12 boreholes for engineering scope of service,
BH DEPTH – 10M BML

11 boreholes for geohazard scope of service,
BH DEPTH RANGES FROM 20 TO 100M BML

Total running meters 627 r/m

Water depth, m 120 - 830

Boreholes depth, m 30 - 100 (base)
10 – 30 (the minimum allowed)

Survey area TERRITORIAL WATERS OF THE RUSSIAN FEDERATION
VESSEL & EQUIPMENT

Research vessel: **ISKATEL / ROV Drill 3 Seabed Drilling System**

**HEAVY DUTY WORK CLASS ROV**

---

**ROV Key specification**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>3,4 x 1,9 x 1,8 м</td>
</tr>
<tr>
<td>HPU Motor HP</td>
<td>125-hp 3,4м x 1,9м x 1,8м</td>
</tr>
<tr>
<td>Maw speed</td>
<td>3,5 kn</td>
</tr>
<tr>
<td>Max depth</td>
<td>2000 msw</td>
</tr>
<tr>
<td>Weight in Air</td>
<td>3,560 кг</td>
</tr>
</tbody>
</table>
Geotechnical drilling, sampling and in-situ testing in water up to 3000msw deep and to a nominal ground penetration of 80 m;

Wireline down hole technique of tooling;

Storage rack for 88 storage position, 48 on drilling side, 40 on sampling side. Each of 2m length;

Foundation: 4 hydraulic jacks with 3 meters stroke to manage up to 18 degrees slope;

Do not need time for additional engineering
Stable landing at the soft seabed soils
Available at the market/do not need additional mobilization
SURVEY AREA TERRITORIAL WATERS AND EEZ OF THE RUSSIAN FEDERATION

total number of geotechnical sample

22 samples (12 pgc, 10 bc)

GEOTECHNICAL SURVEYS (PGC, BC)
### BOX CORE specification

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>50x50x120 sm</td>
</tr>
<tr>
<td>Weight</td>
<td>1000 kg</td>
</tr>
<tr>
<td>Lower Rate</td>
<td>0.5-1.0 m/sec</td>
</tr>
<tr>
<td>Recovery Rate</td>
<td>0.1-0.2 m/sec</td>
</tr>
<tr>
<td>Operation Depths</td>
<td>100 m – full ocean depth</td>
</tr>
</tbody>
</table>
Following the results of UXO survey conducted by Subsea Survey Solutions at late 2014 several targets were observed within the pipe lay corridor of lines 1 and 2 of the South Stream pipeline.

Several more target appeared at the proximity to the lines. They were identified as rocket propelled bombs by Subsea Survey Solution specialists. It was later approved by Navy warfare.
VESSEL & EQUIPMENT
Support vessel: Iskatel
ROV Shilling HD, vessel A-Frame and Winch
Relocation procedures were developed for each object by Subsea Survey Solutions specialists. Relocation procedures included relocation method, relocation route and special detail survey methods for safety moving and disposal of each object.

Each of four targets was successfully relocated.
UTILIZATION OF EXPLOSIVE OBJECTS
TRACING and IDENTIFICATION

INSPECTION AND CLEANING of the territory, waters, areas off the explosive objects to ensure building safety and the prevention of man-caused emergencies.

AREA TEST for explosive items is carried out by a continuous search.

USE of modern instruments enables to detect metal objects at up to 6 meters from the ground surface.

ACCURACY in determining the depth of the detected object is up to 0.3 meters.

UPON completion of work final report is issuing, with certain confirmation on absence of explosive objects on the checked area.
UTILIZATION OF EXPLOSIVE OBJECTS
TRACING and IDENTIFICATION

PROJECTS:
• GCS Izobilny-Nevinnomissk pipeline / 2012
• Anapa Landfall area under the South Stream gas pipeline project / 2013
• Varna Landfall area under the South Stream gas pipeline project / 2013
• Reconstruction of gas compressor stations of the North Caucasus-Center on the site Privolnoe-Mozdok. GCS Mozdok, GCS Izobilnyi / 2014.
**GENERAL INFORMATION**

- **Port of registration:** Murmansk
- **Calling signal:** V3RG
- **IMO №:** 826328
- **01.02.1984, Norway, Simek A/S, Sigbjornlversen, Flekkefjord**
- **Deck area size:** 614, 9 м² (43 m x 14,3 m)
- **Fence height on deck:** 2.6 м
- **Engines:** 3 x 1265 kW = 3795 kW (5160 BHP)
- **Dynamic positioning system:** NAVIS DP2
TECHNICAL EQUIPMENT

COMPLEX ENGINEERING SURVEYS
GOS-1 JACK UP
PLATFORM WITH DRILLING

JACK UP 24 m WATER DEPTH UP / 120 m DEPTH OF DRILLING with the drilling HDR-5 KIT MACHINE ON THE DECK and equipment to provide work for the drilling rig; drilling geotechnical boreholes in shallow waters with conditional depth study of soils up to 100 m equipped for geotechnical sampling and testing in shallow waters up to 100 m below mudline

---

**24 m WATER DEPTH UP / 120 m DEPTH OF DRILLING**

<table>
<thead>
<tr>
<th>Place of build:</th>
<th>Flag: Russia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primorsko-Ahtarsk, 2012</td>
<td>Board number: FB 4488</td>
</tr>
<tr>
<td>Class: GIMS</td>
<td>Port of registry: Novorossiysk</td>
</tr>
</tbody>
</table>

**MAIN CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>16,09 / 11,96 / 2,4 m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freeboard</td>
<td>2,40 m</td>
</tr>
<tr>
<td>Height from base</td>
<td>29,80 m</td>
</tr>
<tr>
<td>Depth setting</td>
<td>20 m</td>
</tr>
<tr>
<td>Capacity NT</td>
<td>79,2 t</td>
</tr>
<tr>
<td>Speed</td>
<td>towed</td>
</tr>
<tr>
<td>Autonomy</td>
<td>Up to 10 days</td>
</tr>
<tr>
<td>Overall rate of fuel supplies / water</td>
<td>5000 / 2000 kg</td>
</tr>
<tr>
<td>Diesel generator</td>
<td>AD-50/M (50 kWt)</td>
</tr>
<tr>
<td>Expedition (watch)</td>
<td>6 people</td>
</tr>
<tr>
<td>Area of the working deck</td>
<td>12,50 m × 6,00 m</td>
</tr>
<tr>
<td>Load on the working deck</td>
<td>up to 14 ton</td>
</tr>
<tr>
<td>Water Depth</td>
<td>up to 24 m</td>
</tr>
</tbody>
</table>

**ACCESSORIES**

<table>
<thead>
<tr>
<th>Drilling Rig</th>
<th>HDR-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anchor windlass with anchor Hall 200 kg</td>
<td>LET-200 4 p.</td>
</tr>
<tr>
<td>Lifting device with columns</td>
<td>30 m (4 p.)</td>
</tr>
<tr>
<td></td>
<td>RESON Seabat 7125 ROV2</td>
</tr>
<tr>
<td>--------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Depth range</td>
<td>0-450 m</td>
</tr>
<tr>
<td>Frequency range</td>
<td>200 kHz / 400 kHz</td>
</tr>
<tr>
<td>Number of beams</td>
<td>512 max</td>
</tr>
<tr>
<td>Maximum sampling frequency</td>
<td>50 Hz</td>
</tr>
<tr>
<td>Maximum angle</td>
<td>165</td>
</tr>
<tr>
<td>Depth resolution</td>
<td>6 cm</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### GNSS-receivers
**C-NAV 3050 и C-NAV 2050R**
- **Positioning accuracy**: 0.1 m
- **Accuracy of height**: 0.5 m
- **Speed accuracy**: 0.1 m/s

### GNSS-compass и pitching sensors
**Seatex Seapath 330+**
- **Accuracy of board and pitching measurement**: 0.02°
- **Measurement of vertical heaving accuracy**: 5 cm / 5%
- **Measurement of course accuracy**: 0.01°

### Gyro Inert Navigation System - Ixsea Hydrins
- **Accuracy of pitch and roll measurement**: 0.02°
- **Heading accuracy**: 0.01 x sec f

### Hydroacoustic system of subsea positioning
**Kongsberg HiPAP 501**
- **Coverage**: 3000 m
- **Distance measurement accuracy**: ≤ 0.2 m
- **Angle accuracy**: ≤ 0.18°
- **Absolute positioning accuracy**: 0.3%
- **Beam width**: ± 7.5°
GEOPHYSICAL SPREAD

BENTHOS C3D

Towed deep water system
Model: TTV 298 TowVehicle
Dimensions: 72/109/209 cm
Weight 168 kg air / kg water 100
Working depth up to 500 m
Power supply 270 VDC, 300 W
Side-Scan Sonar with bathymetric option
Chirp Sub-Bottom Profiler

Equipment payload:
Side-scan sonar
radiation frequency - 200 kHz
swath width on each side - 25-300 m

Profilograth (Chirp)
Capacity 4 kW
Bandwidth 1 - 10 kHz (selectable) / center frequencies 1.5, 2.5, 3.5, 5.0 kHz
Beam width of 45 °

Sensor temperature, salinity, conductivity NXIC CTD
Conductivity:
Range: 0-9.0 S / m,
Accuracy: ± 0.0002 S / m
Temperature:
Range: 32 ... -2 ° C.
Accuracy: ± 0.002 ° C,
Pressure:
Accuracy: ± 0.02% range

Sensor dynamic movements Radian
Dynamic accuracy of roll (roll): 0.5 °,
Dynamic accuracy of pitching (pitch): 0.5 °,
Course accuracy: 0.5 °
AUTONOMOUS VEHICLE AUV
Deep water system to 3000 m
• Weight: 850 kg
• Operating speed: 4 knots
• Maximum Speed: 6 knots
• Max. Depth: 3000 m
• 750 mm diameter
• Length of 5,436 m
• Autonomy 24 hours

SBP
EDGETECH DW-106
• Frequency: 6.1 kHz
• Emitter height / diameter: 35/27 cm
• Emitter weight in air / water: 32/15 kg

SIDE SCAN SONAR EDGETECH
• Frequencies: 105/410 kHz
• Inclination angle of 10° to 20°
• Range min / max at 105 kHz: 50/700 m
• Range min / max at 410 kHz 25/300 m
• Resolution on 105 kHz: 6.25
• Resolution on 410 kHz: 1.9

MULTIBEAM KONGSBERGMARITIME EM 2040
• Frequency: 200 kHz
• The maximum pulse frequency: 10 Hz
• Number of beams: 111
• Width of the beams along the motion 1.5°
• Beam width emitter 150°
• Stabilization roll ± 15°
• Resolution depth: 1 cm
• Pulse length of 200 ms, 600 ms
ROV AND INSPECTION SPREAD

**ROV SUB- FIGHTER 15K**

- Dimensions: 192/82/92 cm
- Weight in air: 530 kg
- Payload weight: 20 kg
- Maximum depth: 3,000 m
- Speed:
  - Horizontal 3.5 knots
  - Vertical 1.9 node
  - Lags 1.2 node

**Equipment payload:**
- 5P Manipulator
- Shears for cutting cables (steel wire up to 19 mm diameter)
- Pipetracker TSS440
CPT RIG CONE RESISTANCE

- **Recording parameters** sleeve friction and pore pressure
- Calibrating the cones on the second class of accuracy standard ISO 22476-1
- Full push force:
  - 75 KN - nominal
  - 100 KN - the maximum

- **Dimensions**: 2,5 x 2,5 x 2,3 m
- Weight of the bottom frame: 57 kN
- Adoption rate in the ground: 2.0 cm/c
- Working depth up to 1500 m
- Depth of penetration of up to 40 m
DEEP WATER DRILLING

• Deep and to a nominal ground penetration to 90 м, geotechnical drilling, sampling and in-situ testing in water up to 200 м, storage rack for 73 мм
• Working depth to 4000 м
• Do not need time for additional engineering
INNOVATUM SMARTSEARCH

Underwater survey system providing highly detailed magnetic mapping both in marine and land environments

Teledyne TSS 440

Industry standard subsea Pipe & cable detection
- Multi-purpose drilling unit **GBU-5** with a hydraulic floating swivel head
- Drilling machines
- Tachymeter **LEICA** (2 p.)
- Receiver **Trimble** R7
- Wireline **LM-5** (2 p.)
- Receivers **C-NAV** (2012)
- Receiver **Trimble SPS 461** (2012)
- Cable and pipe locating set
- Receiver **Trimble SPS 461** (model B-H-UHF)
- Receiver **C-NAV** (model 3050 GNSS with 1PPS/Event Market) with an antenna amplifier L1L2
- Litvinov’s field laboratory
✓ **ZIL-131**

5 truck: 3 with a box van, 2sides trucks

✓ **GAZ 6611** with a box van (1 p.)

✓ Tracked towing vehicle **ATS-59G** with a wireline (20 tons)

✓ Cars for implementation at the track
HSE Management System
ENGINEERING COMPANY
QUALITY MANAGEMENT SYSTEM

Quality Management System

CORPORATE STANDARDS

POLICY FOR OCCUPATIONAL HEALTH AND SAFETY
COMPANY ALCOHOL AND DRUGS POLICY
INSTRUCTION FOR OCCUPATIONAL SAFETY AND HEALTH DURING SURVEY
ENGINEERING SURVEY PROCEDURE
REGULATION FOR PREVENTION OF EMERGENCY SITUATIONS
MANUAL OF SAFETY, HEALTH AND ENVIRONMENTAL MANAGEMENT SYSTEM (SHIMS)
RISK ASSESSMENT

HAZARD SEVERITY IS AS FOLLOWS:

1. **Negligible** Slight injury or health implications with no absence from work. Little or no loss of function / production with no damage to equipment or the environment.
2. **Slight** Minor injury requiring first aid treatment or headache, nausea, dizziness, mild rashes. Damage to equipment requiring minor remedial repair, loss of production or impact on the environment.
3. **Moderate** Event leading to a lost time incident or persistent dermatitis, acne or asthma. Localised damage to equipment requiring extensive repair, significant loss of function / production or moderate pollution incurring some restitution costs.
4. **High** Involving a single death or severe injury, poisoning, sensitisation or dangerous infection. Damage to equipment resulting in production shutdown and significant production loss. Severe pollution with short-term localized implications incurring significant restitution costs.
5. **Very High** Multiple deaths, lung diseases, permanent debility or fatality. Major pollution with long-term implication and very high restitution costs.

### Hazard Severity Table

<table>
<thead>
<tr>
<th>Hazard Severity</th>
<th>1 - Negligible</th>
<th>2 - Slight</th>
<th>3 - Moderate</th>
<th>4 - High</th>
<th>5 - Very High</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - Very Unlikely</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2 - Unlikely</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>3 - Possible</td>
<td>3</td>
<td>6</td>
<td>9</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>4 - Likely</td>
<td>4</td>
<td>8</td>
<td>12</td>
<td>16</td>
<td>20</td>
</tr>
<tr>
<td>5 - Very Likely</td>
<td>5</td>
<td>10</td>
<td>15</td>
<td>20</td>
<td>25</td>
</tr>
</tbody>
</table>

### Likelihood of Occurrence

<table>
<thead>
<tr>
<th>Likelihood of Occurrence</th>
<th>1 - Very Unlikely</th>
<th>2 - Unlikely</th>
<th>3 - Possible</th>
<th>4 - Likely</th>
<th>5 - Very Likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>6</td>
<td>9</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>8</td>
<td>12</td>
<td>16</td>
<td>20</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>10</td>
<td>15</td>
<td>20</td>
<td>25</td>
</tr>
</tbody>
</table>

### Task Guidelines

- **2-6**: May be acceptable; however, review task to see if risk can be reduced further.
- **7-14**: Task should only proceed with appropriate management authorisation after consultation with specialist personnel and assessment team. Where possible, the task should be redefined to take account of hazards involved or the risk should be reduced further prior to task commencement.
- **15-25**: **TASK MUST NOT PROCEED**. It should be redefined or further control measures put in place to reduce risk. The controls should be re-assessed for adequacy prior to task commencement.
## EXAMPLE OF VESSEL’S DRILLS AND TRAINING PLAN

### ПЛАН ПРОВЕДЕНИЯ ТРЕВОГ И ТРЕНИРОВОК МСФ 2-09-1 ISM

**Drills and training planning МСФ 2-09-1 ISM**

<table>
<thead>
<tr>
<th>SHIPS NAME: ИСКАТЕЛЬ</th>
<th>YEAR: 2014</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Name of training</th>
<th>Period</th>
<th>January</th>
<th>February</th>
<th>March</th>
<th>April</th>
<th>May</th>
<th>June</th>
<th>July</th>
<th>August</th>
<th>September</th>
<th>October</th>
<th>November</th>
<th>December</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abandon Ship</td>
<td>1/1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fire</td>
<td>1/1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rescue boat Launching</td>
<td>1/1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life raft drill</td>
<td>1/3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Man Overboard</td>
<td>1/3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Search and Rescue</td>
<td>1/3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rescue from enclosed spaces</td>
<td>1/3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emergency Steering</td>
<td>1/3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serious Injury (Casualty)</td>
<td>1/3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collision</td>
<td>1/6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stranding Grounding</td>
<td>1/6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Damage Flooding</td>
<td>1/3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oil Spill (Pollution)</td>
<td>1/3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Helicopter Operations</td>
<td>1/6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Security drill</td>
<td>1/3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Training Ship-Shore</td>
<td>1/12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Captain has right to deviate from planning, following required intervals*
EXAMPLE OF VESSEL’S FIRE-EXTINGUISHING MEANS
EXAMPLE of EMERGENCY RESPONSE PLAN

EMERGENCY SITUATION

Any person

Team Leader

Shift Leader

Client South Stream Transport B.V.
Survey Manager: Emanuele Bartolini
Direct +31 20 262 47 86
Mobile +31 6 38 76 44 45
emanuele.bartolini@south-stream-transport.com
HSSE Coordinator:
Ian Sharpe
Direct +31 20 262 46 18
ian.sharpe@south-stream-transport.com
Contracts Administrator: Shanna Bercy
Direct +31 20 262 45 37
Mobile +31 6 38 76 45 66
shanna.bercy@south-stream-transport.com

Subsea Survey Solutions LLC
General Director: Vasily Zagunsky
Direct +7(495)740-16-48
zagunsky.vasily@subseasurveys.ru
Deputy Chief Engineer / Project Manager: Dmitry Savin
Direct +7(495)740-16-48 (ext. 111)
savin.dmitry@subseasurveys.ru
HSSE Officer
Igor Matiko
Direct +7(495)740-43-21 (ext. 214)
matiko.i@globalmd.ru

Marine rescue coordination center MRCC
NOVOROSSIYSK
phone +7(8617) 60-22-86,
+7(8617) 64-41-76
+7 (8617) 676 417
c-mail: nuasptn@mail.ru

Ministry of Emergency Situations (Krasnodar region)
phone +7 (861) 268-64-40

Pirogov’s Medicine Center
TUAPSE
phone +7 (8616) 771 314
LIFE SAVING EQUIPMENT
**HSO-CARD SYSTEM**

---

### Hazard/Safety Observation Card

**A Completed by Observer**

- **Date:**
- **Time:**
- **Observer’s Name:**
- **Location/Area:**
  - Hazardous act or condition
  - Positive Action
  - Suggestion
  - Description:

---

**B Completed by Supervisor**

- **Date:**
- **Time:**
- **Supervisor’s Name:**
- **Has the hazard been eliminated?**
  - YES □
  - NO □
- **Action Required**
  - Responsibility
  - Time Frame

---

**C Completed by Vessel Master/Offshore Manager**

- **Date:**
- **Time:**
- **Name:**
- **Hazard Observation Card Closed Out?**
  - YES □
  - NO □
- **Additional Comments (or add actions):**

---

**D Completed by Vessel Master/Offshore Manager**

- **Date:**
- **Time:**
- **HSE Advisor’s Name:**
- **HAZOB:**
  - 1. Entered into Hazard Register □
  - 2. Actions Reviewed & Assigned □
  - 3. Subclassification Assigned □
  - 4. Closed out & filed □
- **Ensure all actions have been completed prior to closing out and filing HAZOB.**

---

**Understanding and Implementing HSO-CARD System**

The HSO-CARD System is a critical component of ensuring workplace safety and compliance. It involves the systematic observation and reporting of hazards within a workplace to facilitate risk assessment and management. Here’s a breakdown of how the system works:

**A. Data Collection**

- **Observer:** Collects data on workplace hazards. This includes identifying the hazard, its location, and any actions taken to address it.
- **Date and Time:** Recorded to ensure the observation is timely.
- **Observer’s Name:** Identification of the person who made the observation to maintain accountability.

**B. Supervisor’s Action Plan**

- **Supervisor:** Reviews the data collected by the observer. This includes determining if the hazard has been eliminated and assigning responsibility for any follow-up actions.
- **Action Required:** Determines the nature of any actions needed, such as further investigation or immediate corrective measures.

**C. Manager’s Review**

- **Manager:** Reviews the supervisor’s findings and the implemented actions. This step ensures that the hazard is properly addressed and that necessary actions are being taken.
- **Date and Time:** Recorded to maintain a timeline of events.
- **Hazard Observation Card Closed Out:** Indicates whether the hazard has been resolved.

**D. HSE Advisor’s Approval**

- **HSE Advisor:** Confirms that all actions have been completed and ensures that the hazard is no longer present. This is a final step in the process, ensuring compliance with safety standards.
- **Date and Time:** Recorded for documentation purposes.
- **HAZOB Compliance:** Ensures that all necessary actions are completed prior to closing out the hazard.

The HSO-CARD System is a proactive approach to identifying and managing workplace hazards, ensuring a safer environment for all employees. It is a cornerstone of effective workplace safety management.
EXAMPLE OF HSSE PLAN

ООО «Сабси Сергея Склюновс»

「УТВЕРЖДАЮ»
Генеральный директор
ООО «Сабси Сергей Склюновс»
A.A. Архипов

(20) 04 2015

ПЛАН

обесцения охраны труда, безопасности и охраны окружающей среды (ОТБОС) при проведении инженерных изысканий

Генеральный директор
K.S. Пахомова

Заместитель генерального директора по ОПБООС
П.Н. Ермаков

Начальник отдела систем менеджмента
С.Ю. Ляхов

Москва
2015

Subsea Survey Solutions LLC

「APPROVED»
General Director
Subsea Survey Solutions LLC
A.A. Arkhipov

(20) 04 2015

PLAN

occupational safety and health, safety and environment (HSE-management) during engineering surveying

Chief Engineer
K.S. Pukhomova

Deputy General Director on HSE-management
P.N. Ermakov

Head of Department Systems Management
S.Y. Ivanov

Moscow
2015
NORMATIVE LEGAL ACTS GOVERNING IEM AND IEK

- Law № 7-FZ
  On the protection of the environment

- Russian Federation Government Resolution № 87 from 16.02.08
  On the composition of design documentation and requirements to their content

- SP 11-102-97 engineering and environmental studies for the construction

TYPES OF MONITORING

- MONITORING OF MARINE WATERS
- MONITORING OF SEDIMENT
- MONITORING OF BIOTA
- AIR MONITORING
- PHYSICAL IMPACTS MONITORING
- MONITORING OF EMERGENCIES
<table>
<thead>
<tr>
<th>Short name of the enterprise, in accordance with the constituent documents</th>
<th>ООО «Сабси Сервей Солюшенс» LLC Subsea Survey Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Director General</td>
<td>Alexander Arkhipov</td>
</tr>
<tr>
<td>Legal address</td>
<td>Russia, 117630, Moscow Starokaluzhskoe Shosse, 62, b. 1</td>
</tr>
<tr>
<td>Actual address <em>(postal address)</em></td>
<td></td>
</tr>
<tr>
<td>Phone / fax</td>
<td>+7 (495) 740-16-48</td>
</tr>
</tbody>
</table>
| E-mail | info@subseasurveys.ru  
www.subseasurveys.ru |
| VAT ID number | 7728788220 / 772801001 |

**BANK DETAILS**

<table>
<thead>
<tr>
<th>Full name of the bank</th>
<th>LLC CB «INVESTSOTS BANK»</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current account</td>
<td>40702810200000002979</td>
</tr>
<tr>
<td>Correspondent account</td>
<td>30101810200000000483</td>
</tr>
<tr>
<td>BIC</td>
<td>044583483</td>
</tr>
</tbody>
</table>
Thank you for your attention!