

GENERAL SPECIFICATION

SURVEYS

GS EP GEO 207

ROV Seabed Survey

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1. Scope

The purpose of this General Specification is to define survey ROV operational and specific sensor requirements during ROV seabed survey work.

This General Specification details the minimum survey sensor specification requirements applicable to various type of ROV seabed survey including but not limited to:

- High definition geophysical seabed survey
- Visual seabed survey
- Magnetic seabed survey
- High definition pipeline / umbilical survey.

The use of equipment and components that are field proven is strongly recommended. However use of equipment not field proven shall be submitted to qualification program early in the project and approved by Company.

It is the Contractor's responsibility to provide a safe, economic and technically fit for purpose ROV spread and payload.

2. Reference documents

The reference documents listed below form an integral part of this General Specification.

External Documents

Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and supplements, is the latest revision published at the effective date of this document.

Reference	Title
Not applicable	

Total General Specifications

Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and supplements, is the latest revision published in the applicable yearly collection.

Reference	Title
GS EP GEO 201	Offshore Geophysical Site Investigation
GS EP GEO 202	ROV Survey Work for the Installation and/or the Inspection of Offshore Structures and Flowlines
GS EP GEO 203	Geophysical survey for offshore pipeline inspection
GS EP GEO 401	GIS requirements for engineering site surveys and studies
GS EP GEO 402	GIS Requirements for Field Development Project
GS EP GEO 501	Meteorological and Oceanographic Survey

Reference	Title
GS EP GEO 505	Monitoring of Metocean Conditions for Offshore Units
GS EP POS 001	Offshore surface positioning works
GS EP POS 002	Subsea positioning works
GS EP POS 004	The use of Differential Global Navigation Satellite System
GS EP SPS 027	WOROV spread minimum requirements

3. Abbreviations

CTD	Conductivity, Temperature, Density
DCC	Distance Cross Course
DHSS	Dual Head Scanning Sonar
DTM	Digital Terrain Model
DVL	Doppler Velocity Log
GIS	Geographical Information System
HD	High definition
INS	Inertial Navigation System
LARS	Launch And Recovery System
LBL	Long Base Line
MBES	Multi Beam Echo Sounder
MRU	Motion Reference Unit
OAS	Obstacle Avoidance Sonar
RAID	Redundant Array of Independent/Inexpensive Disks
SBP	Sub Bottom Profiler
SIT	Silicon Intensifier Target
SSS	Side Scan Sonar
SV	Sound Velocity
TMS	Tether Management System
USBL	Ultra Short Base Line
WOROV	Work Class Remotely operated Vehicle

4. General survey ROV operational requirements

The Contractor shall supply an ROV system (including LARS, control cabin etc.) compatible with Company General Specification **GS EP SPS 027** for WOROV spread minimum requirements.

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System power and payload capability shall comply with the intended high definition seabed survey operations.

ROV system shall be capable of being deployed and operating in weather and sea conditions characteristic of the survey area, for operation to the maximum expected water depth in the survey area. In addition, the ROV shall be capable of operating (navigating along a pre-set course, depth and altitude) in seabed cross currents of up to 1~1.5 knots with full survey payload.

The umbilical capacity and Fibre Optics multiplexer system shall be sufficient to supply all the required power and transmit all necessary signals to control the ROV and transmit sensor signals/data flow without any mutual interference.

The ROV system shall able to operate the following basic equipment:

- USBL responder system and transponder, and/or LBL ROV navigation system
- DVL
- Subsea Fibre Optic Gyro (or equivalent) and MRU
- INS to improve navigation accuracy and stability in conjunction with the vessel USBL
- CTD / direct reading SV
- High resolution altimeter and depth sensor (digi-quartz crystal pressure sensor) and pressure compensation system
- Single or dual head MBES system
- DHSS system
- Dual frequency SSS and SBP transducers
- Pipe tracker
- High resolution collision OAS with a range of 1 to 300 m
- Suitable lighting system
- Inspection class ROV video system, comprising colour video, SIT and stills cameras
- Continuous online display and digital recording of colour video, centre and boom cameras for pipeline inspection survey
- Video overlay of positional data
- High capacity LARS with TMS deployed ROV system.

4.1 Survey pay load

The DVL shall be installed and calibrated as per manufacturer instructions and/or Company approved Contractor survey procedures to determine alignment error and drift/scaling factors.

The ROV shall have the ability to navigate with auto heading and auto depth keeping facility. The ROV shall be able to operate in two different operational modes for specific applications, as follows:

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4.1.1 High Level mode survey

- SSS imagery
- MBES bathymetry
- SBP profiling.

The ROV shall be operated at a height above seabed and speed that allows the bathymetric data sounding criteria to be fulfilled, without compromise of the SSS requirement for high frequency operation (350/500 kHz operation).

4.1.2 Low Level mode survey

- OAS
- Video survey
- Pipetracker
- SBP profiling.

The ROV shall be operated at a height above seabed and speed that allows for optimum operation of Pipetracker in conjunction with camera view of the seabed.

The OAS shall be operated at a sector coverage to ensure full seabed coverage relative to the planned line spacing. The image shall be recorded for subsequent review and an appropriate video overlay recorded, to include client name, project, date, time, position, DCC.

Continuous recording of cameras (forward looking colour and SIT) shall be performed to industry standards of commentary, video overlay and recording.

The Pipetracker shall be installed according to manufacturer instructions and operated as per industry standard procedures. Background compensation shall be performed every hour for the first 3 hours and at three hour intervals thereafter. The Pipetracker display shall be continuously recorded with appropriate video overlay.