

GENERAL SPECIFICATION

SURVEYS

GS EP GEO 508

Marine Glider Operation

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1. Scope

This General Technical Specification covers marine operation using autonomous underwater GLIDER technology.

A GLIDER operation at an offshore location consists of collecting subsea data in order to characterize the local environment for a project or to monitor environmental parameters during offshore activities.

GLIDER is remotely supervised and controlled by satellite from an onshore based piloting station. Collected data can be downloaded and acquisition strategy can be updated by satellite when the GLIDER is at surface.

The duration of the data acquisition, the number of parameters measured and the equipment used depend on the objectives of the operation, which should be described in the Particular Technical Specification.

This General Specification describes the general requirements related to marine (excluding vessel requirement) and onshore activities and tasks related to data acquisition, processing analysis and reporting during a GLIDER operation.

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 addendums, is the latest revision published at the effective date of this document.

Reference	Title
ISO 19901 (All parts)	Petroleum and natural gas industries - Specific requirements for offshore structures (2015) – All parts
ISO 9001	Quality management systems – Requirements (2015)
IOGP Report 447	HSE guidelines for metocean surveys including Arctic areas (Oct. 2011)

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Reference	Title
GS EP GEO 201	Offshore Geophysical Site Investigation
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

3. General conditions

The general conditions of offshore GLIDER operation are specified hereunder. English is the required language for any documentation and correspondence.

3.1 Definitions and references

Following definitions here below shall apply for general and particular specifications of a marine GLIDER operation:

ACQUISITION MANAGEMENT: means onshore work performed during the GLIDER SURVEY related to PILOTING and ACQUISITION STRATEGY update as well as data processing and analysis requested.

ACQUISITION STRATEGY: means the number of GLIDERS, VEHICLE and PAYLOAD configurations as well as GLIDER SURVEY paths and scenarii defined in order to collect ocean data to comply with GLIDER WORK objectives.

Company: TOTAL E&P and/or its affiliates

Contractor: GLIDER Service Provider

DEPLOYMENT: means operation including related logistics for GLIDERGLIDER launch at sea in order to start or resume the GLIDER SURVEY occurring at the beginning of the WORK and after each RECONDITIONING.

EMERGENCY RECOVERY: means any unplanned RECOVERY due to but not limited to GLIDER WORK requirement, environment constraints or VEHICLE failure.

GLIDER: means the mobile platform forming part of the SURVEY EQUIPMENT and constituted of the VEHICLE and the PAYLOAD sections.

GLIDER SURVEY: means part of the GLIDER WORK which constitutes the operational survey of the GLIDER targeting data acquisition at sea.

GLIDER WORK: means the SERVICE related to the GLIDER operation including SITE OPERATIONS and onshore ACQUISITION MANAGEMENT work necessary for, or incidental to, the execution of the GLIDER SURVEY.

GRID SURVEY: means a GLIDER SURVEY path generally composed of a series of TRANSECTS to survey the area of interest.

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LANDSTATION: means the onshore facility hosting GLIDER piloting, where satellite communications from GLIDER are received.

PAYLOAD: means the part of the GLIDER dedicated to sensors and data acquisition.

PAYLOAD DATA: means collected data by all sensors integrated into the GLIDER.

PILOTING: means all operations related to GLIDER remote supervision and control performed from an onshore LANDSTATION.

PRELIMINARY OFFSHORE SITE TESTING: means activities and dedicated logistics related to tests at sea at SITE location before final DEPLOYMENT.

PROFILE: means a set of data per scientific measurement along the water column (values/depth). It can be from surface to bottom or from bottom to surface (i.e. temperature profile, salinity profile...) Depending on scientific PAYLOAD configuration, there can be up to 2 profiles per scientific measurement per YO (descending and ascending).

RECONDITIONING: means all operations required to recharge or replace the energy pack, to maintain the GLIDERS and download VEHICLE and PAYLOAD DATA files.

RECOVERY: means operation including related logistics for GLIDER retrieval from water at the end of the WORK or for further RECONDITIONING.

SEGMENT: means the underwater navigation done between 2 surfacing. It can contain one or several YOs.

SITE OPERATIONS: means activities and dedicated logistics related to marine DEPLOYMENT and RECOVERIES in addition to RECONDITIONING.

SURFACE PATH: means WAYPOINTS to be reached by the GLIDER defining the path of the GLIDER SURVEY.

SURVEY AREA: means the area demarcating the location of the GLIDER SURVEY.

SPACING: means the average distance between the TRANSECTS of a GRID SURVEY.

SUPPORT BASE: means the onshore or offshore plant on SITE dedicated to GLIDER preparation, RECONDITIONING and repair. SUPPORT BASE shall be frequently used as logistical base for transport and operations planning.

SUPPORT VESSEL: means the marine vehicle (boat, ship, zodiac...) to be used for DEPLOYMENT, RECOVERY and EMERGENCY RECOVERY of the GLIDER.

TRANSECT: means the set of PROFILES between 2 WAYPOINTS.

VEHICLE: means the part of the GLIDER dedicated to navigation, communication and support for the PAYLOAD sections.

VEHICLE DATA: means collected data by the GLIDER which logs self-navigation recording and events.

WAYPOINT: means the surface position to reach defined by latitude and longitude values.

YO: means the action of the GLIDER to autonomously dive and go back close to surface.

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3.2 Safety procedures and quality assurance

3.2.1 Health, safety and environment (HSE)

Complementary to specific HSE requirements disseminated in the present General Specification, additional HSE documentation shall be given to Company post award of Contract.

As a minimum, this will likely include:

- Project Safety Plan (Appendix E of the [IOGP Report 447](#) refers)
- Emergency Response Plan (Appendix F of the [IOGP Report 447](#) refers)
- A Job Hazard/Safety Analysis (JHA/JSA) associated with the different types of operation should accompany these plans.

3.2.2 Quality assurance

The documentation supplied by the Contractor shall allow the quality of the proposed GLIDER Works and services to be assessed by the Company as described in [ISO 9001](#). The curriculum vitae of all key personnel involved shall be supplied by the Contractor, together with a functional organisation chart.

Complementary to specific quality assurance requirements above, Contractor shall answer all requirements for quality assurance listed in [ISO 19001](#).

For each phase of the GLIDER Works, the Contractor shall establish a quality assurance and quality control procedure.

3.3 Survey work

A marine GLIDER operation shall include, but not necessarily be limited to the following services:

- MOBILIZATION of all equipment and human resources
- Data acquisition at sea
- Piloting of the underwater GLIDER and data remote downloading from an onshore LANDSTATION
- Reporting during survey of operational and scientific data
- DEMOBILIZATION of equipment and human resources
- Quality control, processing and analysis of recorded data.
- Final reporting.

Depending of the context Company or Contractor will provide a vessel with marine crew for the transportation of the SURVEY EQUIPMENT from the port of embarkation to the SITE, for the deployment of the SURVEY EQUIPMENT and the recovery thereof, for the transportation of the SURVEY EQUIPMENT back to the port of embarkation and for Service Visits.