
MARINE STUDY PROPOSAL

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1- INTRODUCTION:

Marine studies are required in many circumstances especially considering that the maritime environment is not so easy to investigate based on the fact that the condition parameters cannot be calculated unless proper data acquisition is carried out. Besides, despite the fact that elements are visually observable, we have to admit that it is impossible to properly evaluate them unless proper techniques of acquisition are used.

In this document we will make an approach of the techniques appropriated to the different requirements and will provide some details of the methods in use.

2- PURPOSES OF STUDIES:

- 2.1 Establishment of an Oceanographic database
- 2.2 Marine environmental Studies
- 2.3 Harbor studies
- 2.4 Offshore structure installation
- 2.5 Soil investigation
- 2.6 Insurance requirement

3- TYPE OF STUDIES:

3.1 Establishment of an Oceanographic database:

In many circumstances it is imperative to build an oceanographic database in order to define general conditions of:

Wind	: Direction, speed, and Main parameters
Current	: Direction, speed, and Main parameters
Waves	: Direction, speed, and Main parameters
Tide	: Main parameters : High tide, Low tide, definition of the Main Sea Level- (MSL) or (in France) the Lowest See Level (LSL).

Such database is useful at any stage of a future program in order to define the site conditions and consider these effects on this project. It is to be noted that it is generally considered that acquisitions over a period of about 1 Year are required in order to collate proper data and perform an appropriate analysis.

3.2 Marine Environmental Studies:

Generally this type of investigation is conducted prior to the construction of an offshore facility. It can be related to the construction of a new harbor, for instance, and this is the case which does require the analysis of the oceanographic database. In complement of this analysis complementary investigations are required such as definition of sediments transit along the coast.

The information's contained within the Oceanographic database plus the sediments transit evaluation will allow definition of the brake waters size, orientation and structure in order to resist to the general conditions as well as avoiding interference's to the natural conditions of the coast.

3.3 Harbor studies:

The harbor studies require the different parameters acquired during the previous phases which mean the oceanographic data base and the sediments transit. In complement to these data further investigations shall be conducted such as:

- Water depth measurements (Soundings)
- Definition of underwater soil parameters (Geophysics)

Soundings will provide the details of the water depth in the area and consequently the level of dredging to be carried out in view to offer the secure water depth, within the access channel as well as in the port by itself, corresponding to the expected vessels draft. Meanwhile geophysics will provide the details of the underwater soil conditions thus in view to define the structures to be utilized for the harbor construction.

3.4 Offshore structures installation:

In this type of investigation we come back to the basic concept that oceanographic database shall be consulted and further to these parameters further investigation shall be conducted, thus for different types of installation such as:

- Pipeline installation

- Platform installation
- Terminal Installation:
- Many other types

The data required are as follows:

Water depth measurements: As described earlier this Soundings technique consists on the measurement of the water depth using echo sounder.

Seabed morphology: This technique consists on the utilization of a "Side Scan Sonar" in order to obtain a "Such a photograph Image of the seabed", allowing the analysis of the seabed type, the presence of obstacles and/or any particular seabed feature which shall be considered to conduct the project.

Underwater Soil conditions: Geophysics is the solution to obtain soil strata, strength and parameters at the required depth (Penetration) below the seabed. It is important to define soil resistance whilst installing a platform considering that its stability will purely depend upon the soil conditions in this specific location. Nevertheless, and thus in order to obtain correlation and Confirmation of the soil parameters, usually a soil investigation using core sampling is conducted in view to calibrate and confirm the geophysics results.

3.5 Soil investigation:

Soil investigations are generally conducted for specific purposes related to the installation of an offshore structure such as Harbor, Platform, brake water, permanent anchorage buoy, Terminal boys (SBM) etc...

The techniques in use are generally the following:

- Oceanographic data acquisition (oceanographic database)
- Water depth measurement (soundings)
- Geophysics
- Soil sampling (Coring)

3.6 Insurance requirement:

The Insurance Companies require, very often now, a survey to be conducted in the location of a specific project in order to allow them to assess the general conditions of the site and consequently define whether the Insured Contractor has properly evaluated these conditions and the consequential risks. Offshore studies and contracting operations are subject to the quality of the investigations conducted at the time of conditions evaluation. This is the reason why Insurance Companies are refusing to insure a Contractor against the project risks unless they have, themselves, obtain their own evaluation.

4-INVESTIGATION TECHNIQUES:

In the previous sections we have been listing a certain number of techniques utilized for Marine Studies and we are going to enter into the details of such acquisition methods:

4.1 Establishment of an Oceanographic Database:

4.2 Sediments Transit:

4.3 Water depth measurements:

4.4 Sea Bed Morphology:

4.5 Geophysics:

4.6 Soil Investigation:

4.7 Positioning

5- INVESTIGATION METHODS:

Having described the techniques we need, now, to describe the methods which does require specific procedures in order to secure the validity of the acquired data. The survey industry requires specific attention on the data validation and the methods are subject to strict procedures for the utilization of the equipment and especially his calibration

5.1 Establishment of an Oceanographic Database:

5.2 Sediments Transit:

5.3 Water depth measurements:

5.4 Sea Bed Morphology:

5.5 Geophysics:

5.6 Soil Investigation:

5.7 Positioning

6- REMARKS AND CONCLUSION:

We remain at the disposal of any potential Client requesting assistance in establishing proper procedures related to the type of investigations methods in relation to their project.

IOORS is ready to offer consultancy on this type of assistance and to prepare the related procedures including:

- Standard of Industry operating procedures
- List and specifications of equipment to be used
- Calibration procedures
- Specific recommendations
- Analysis of Survey data
- Validity of these data and recommendations
- Further explanations and reports.

So we remain at your service

DO NOT HESITATE TO CONSULT US