

COLLECTION OF ENVIRONMENTAL DATA ON THE NORWEGIAN CONTINENTAL SHELF

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This paper will give a presentation of the requirements and experience with the collection of environmental data on the Norwegian continental shelf. The paper will describe the organisation of the data collection program as it is today and as it was earlier. Further the paper will describe the requirements concerning data collection of meteorological, oceanographical, earthquake and biological data.

Collection of data for studies of environmental impacts on animals, fish or vegetation is not covered by the NPD regulation, such requirements are covered by the Norwegian State Pollution Control (SFT).

PURPOSE

The purpose of the regulations is to obtain :

a) background data of the environmental conditions to be used for planning of activities, and for design of the installations. (Such data are needed before an activity starts up.)

- Conservative design data are needed before a rig is charged to do a drilling operation in an area where no activity, or almost no activity, has ever before been performed.

- Data are needed before a field development is designed, to get an optimal and cost effective field development. This is also important with respect to pipelines where extensive investigations have to be performed.

b) continuous collection of environmental data (in real time) to be used in the day to day activities on the platform.

Examples of situations where such data are needed are :

- Weather sensitive well operations,
- helicopter traffic,
- crane operations
- connection or disconnection of shuttle tankers to loading buoys
- removal of flotels or vessels which is located close to the platform.
- marine growth for control of the loading situation

- the semisubmersible platforms have to be transformed from the operational condition to survival condition when the waves exceed a certain level

Such data are also needed for accidental situations as

- man over board. Which direction is he floating if the accident happens during the night ?
- oil spill, in what direction and speed will the oil pollution move in the sea ?

c) data to be used for weather-forecasting. The data measured are the basis for the meteorological offices to perform accurate weather-forecasting offshore. In Norway eight platform locations are sending observations to the meteorological office every three hours. The platform locations are evenly distributed along the Norwegian coast to get a good network. Most of them are fixed production platforms except for three of them which are mobile drilling units. These are the three platforms, who most frequently are doing drilling operations in the northern parts of Norway where no production have started yet. The data also give input to the weather forecast for onshore Norway. The oil industry has to rely on weather-forecasting in connection with:

- weather sensitive well operations
- towing of mobile drilling units
- installations of fixed offshore units
- on the Ekofisk field operational limitations exist related to wave heights for several platforms. When the wave height is expected to exceed a certain value the production is closed down and the the platforms are demanned.
- on the Draugen platform a reduction of the water level inside the column must be performed when the wave heights exceed a certain level.

and for accidental situations as :

- will a vessel who is drifting collide with a platform in the storm
- when will the pollution be washed ashore

ORGANISATION

The first regulations concerning collection of environmental data were issued in 1978. The regulations assigned the responsibility to initiate data collection to the Norwegian authorities (NPD). Further it was the operators responsibility to purchase, install and maintain necessary equipment. NPD performed in the beginning a strong follow up activity with several offshore visits every year. It was NPD's responsibility to control and report the data and further to perform statistical analysis. NPD organised this work by subcontracting a company (The Otter-group). The organisation was based on a wish to have a strong public control of the data collection. The data should be available not only to the operators, but also to the meteorological office and research institutions. The major disadvantage by this organisation,

was that the operators got very little involved in the process, they were only operating the instruments on request from NPD. The expenditures for NPD was paid by the operator.

After the introduction of the internal control principle to the offshore business, the data collection program was reorganised. A pilot project was performed in the mid 1980-ies and the operators were assigned the responsibility for the existing measurement programs. The operators should be responsible for data collection, maintenance, data control and the data reporting. This set up was a success and improvements in data quality was achieved. By the new regulations in 1989 this way of organising the projects was made mandatory.

The operators are now responsible for evaluation of the need for data, the purchasing of instruments, installation, maintenance, data control and reporting. But not to forget, even if the routine responsibility is assigned the operators, NPD have still the right to require data collection where data is needed to get a better national network of stations or when there is need for continuous data collection for an individual platform. The Meteorological office also do annual inspections offshore on behalf of NPD to calibrate the instruments and to instruct the observers and the maintenance personnel. In addition the operators land organisation is visited every three or four years by NPD through an audit.

No offshore earthquake collection programs have so far been required by NPD. At the moment there is a reasonable good data coverage from several onshore networks. As long as these stations are maintained NPD do not foresee any need to require offshore measurements. The largest onshore network in Norway is actually paid by a joint venture project initiated by the oil companies. A main purpose of this project is to avoid requirements to be made for offshore measurements. Measurements offshore is shown to be more expensive than shore based measurements.

DATA COLLECTION

Most of the data which are collected are instrumental data. Some data are also based on observations such as clouds and visibility. Personnel who performs such observations are required to have a one week training seminar at the meteorological office. The personnel who do the observations are usually the radio operator on the platform. For one installation the observations are also performed on a standby vessel. Several persons on each platform must then have this training to maintain a 24 hourly service.

NPD give guidance with respect to measurement to be performed. Examples of such guidance are given below:

- the range of the measurement, as waves between 0 and 30m
- the accuracy of the instruments
- the resolution of the instruments
- sampling frequency and how often the measurements should be performed

The instruments and equipment have to be maintained regularly. It should be maintained according to the requirements from the manufacturer, but not less than twice a year. The

maintenance is for all platforms included in their computer based maintenance programs, issuing work orders for the offshore personnel on a regular basis. The performed maintenance is then reported back into the computer system, giving a good record of performed work.

If new instruments are purchased or if instruments have been moved to an other location, information should be sent to the meteorological office.

DATA CONTROL AND REPORTING

Two sets of data are reported from the platforms. Firstly the data which are sent to the Meteorological office every three hours. Such data are sent by radio, telex, computer link or telefax depending on which is most appropriate for the operator. No control of the data is usually performed offshore except for the radio operators own evaluation. If he suspect the quality of the data to be poor, he will give a warning or delete that data from his report. A daily quality control will be performed by the forecasters at the Meteorological office, when comparing the data with other stations and model results. A possibility to have a direct contact between the observer and the meteorological office is available.

In addition instrumental data are stored on a magnetic tape or on an other computer medium. Once a month the data are send onshore for control. A combined visual control of the data time series and an automatic control of non physical data are performed through a computer program.

After control of the data, a data control report is issued. Every year a comprehensive report is made. The yearly report will contain :

- information about the data coverage
- statistical data
- extrapolated extreme values, as 100 year wave hights

After the data have been controlled, they are sent to the Meteorological Office together with the data control reports. The data and the reports are then **public** data, and can be used by anyone as researchers and other oil companies. The same principle of public data have been followed as long as data collection have been required in Norway.