

## TECHNICAL STANDARDS

Miros Met-Ocean systems are designed according to user specifications and are normally in accordance with the following standards:

- **International Standards**
  - Relevant part of WMO recommendations, including WMO No. 8, 49,306, 731 and 842.
- **Norwegian Standards**
  - NORSOK T-CR-001, T-SR-100, I-001 and N-002
  - Norwegian Petroleum Directorate; Regulations relating to environmental data in the petroleum activities.
  - Norwegian Civil Aviation Authorities BSL-D5
- **British Standards**
  - Civil Aviation Authorities CAP 437



## SERVICES

In addition to systems deliveries Miros services includes regular maintenance, ad-hoc support, data validation and consultative work. Our staff ranges from electronic engineers to marine engineers and includes meteorological and oceanographical expertise.

## REFERENCES

Miros is one of the major suppliers of Met - Ocean systems to fixed platforms, semi-sub's and FPSO's operating world wide. Our end-users includes: Statoil, Norsk Hydro, Phillips Petroleum, Saga, Conoco, Shell, Petrobras, Elf, Texaco and Chevron.

### MIROS A/S

MIROS A/S was established in 1984 and is a technology based company with considerable experience from deliveries to the Norwegian Continental Shelf activities. Deliveries for export and to other than offshore customers are increasing. MIROS' main business engagement is for systems supply within the fields of

Meteorology/Oceanography and Security. MIROS has within the Meteorology/Oceanography fields developed market leading sensors and systems for wave monitoring. MIROS has likewise also market-leading systems of own design and development within the fields of Personnel Monitoring and Intelligent Key Cabinet Systems.



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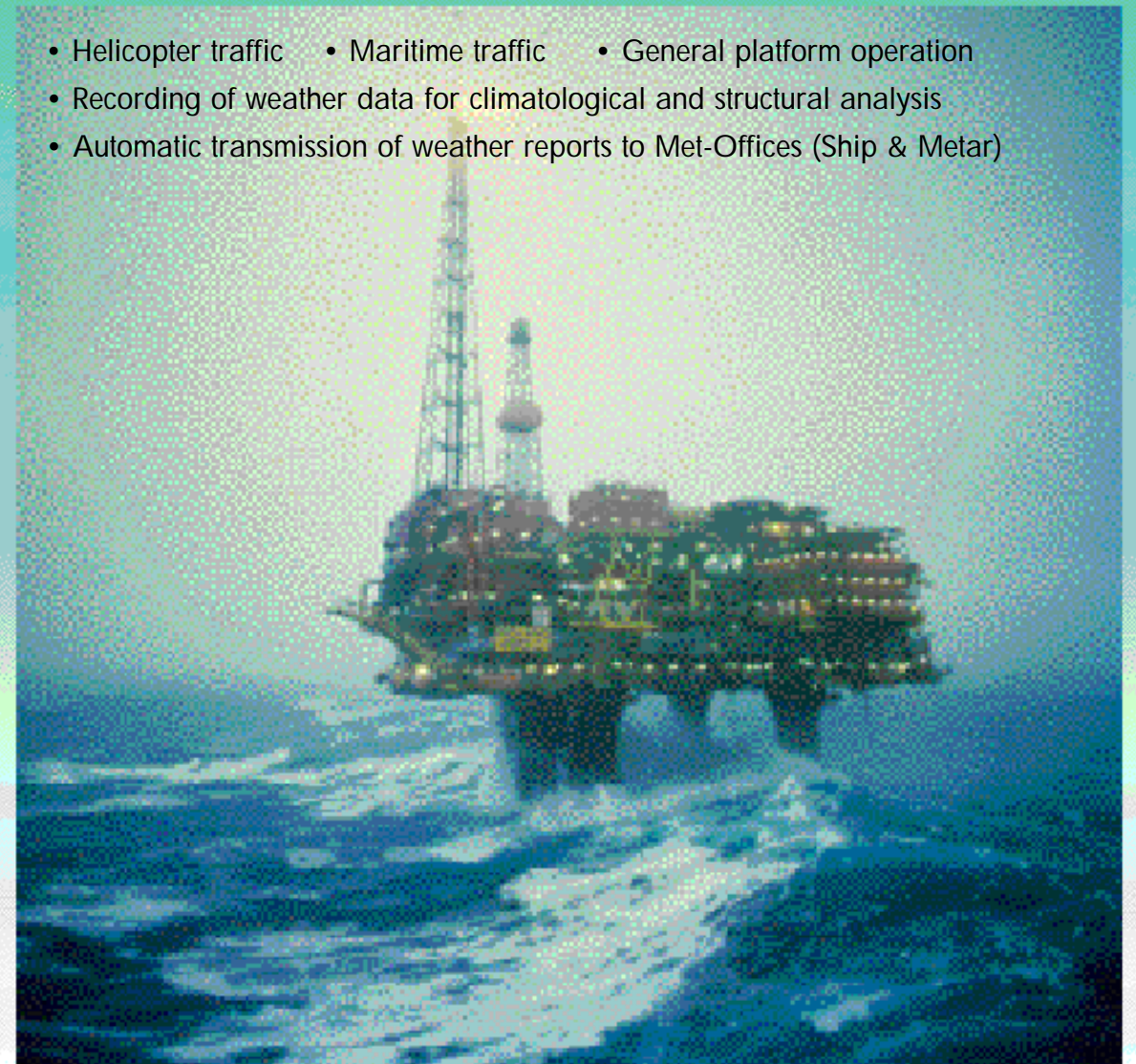
DB/089, Rev.01



# MET - OCEAN SYSTEMS

for measurements and data recording is designed to provide information to support the following operations:

- Helicopter traffic
- Maritime traffic
- General platform operation
- Recording of weather data for climatological and structural analysis
- Automatic transmission of weather reports to Met-Offices (Ship & Metar)



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## SYSTEM OVERVIEW

The Miros Met-Ocean (Meteorological and Oceanographical) system consists of sensors, central equipment and display equipment and uses computer LAN for distribution of Met-Ocean data.

## CENTRAL EQUIPMENT

The central equipment is normally installed in a 19" rack and includes:

- Termination rails
- Sensor interfaces
- Alarm relays
- System computer
- Air pressure sensor



## SOFTWARE

Modular software with integral user interface running under Windows NT. All measurement and configuration data is retained in a database on a convenient form for further processing, display and distribution. All display software are Windows 98 and Windows NT compatible.

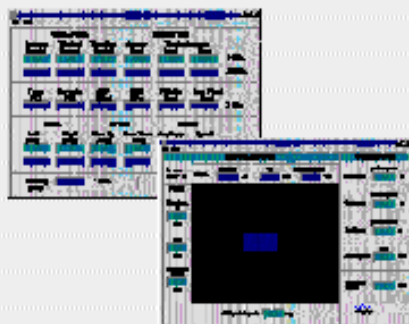
### MirPres/W

General and highly configurable application enabling presentation of real time and historical data. MirPres/W may be individually configured by each user or for groups of users.



### MirPres/H

Specially designed to support helicopter operations.



### MirPres/M

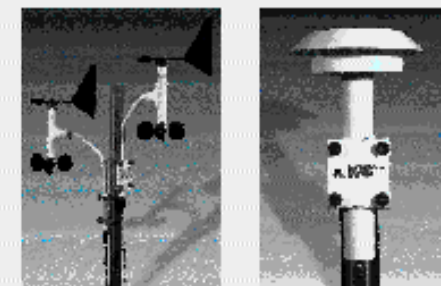
Application for presentation of vessel motion data.

## MET-OCEAN SENSOR RANGE

The Met-Ocean system may be delivered with a variety of sensors covering most measurements, and interface additional sensors as required. Some sensors are available in Ex certified versions. Where required true directions are calculated for wind, wave and current measurements based on gyrocompass input

### METEOROLOGICAL SENSORS

- Wind speed and direction sensor
- Air pressure sensor
- Met-shelter with air temperature and humidity sensors
- Cloud height sensor
- Visibility & present weather sensor



### OCEANOGRAPHICAL SENSORS

- Directional wave and surface current radars
- Altimeter for air gap and wave measurements
- Wave buoys
- Various current and sub-sea sensors
- Sea temperature sensor



### MISCELLANEOUS

- Vessel motion sensors

## EXTERNAL INTERFACES

A wide range of interfaces to different sensors, control systems etc. are available. E.g. NMEA-0183, Modbus, Shipcode, Metar and various other formats.