



TACTICAL COLLABORATION MANAGEMENT SYSTEM



aptomar
SAFETY AT YOUR FINGERTIPS

AIRBORNE

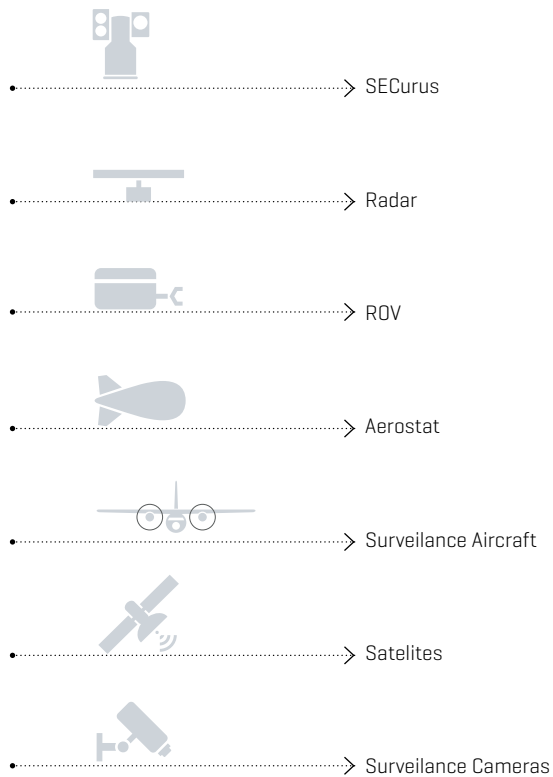
TCMS



OFFSHORE

NEAR SHORE

ONSHORE



TACTICAL COLLABORATION MANAGEMENT SYSTEM



Aptomar TCMS [Tactical Collaboration Management System] is a data integration platform that enables different sets of maritime data to be combined, shared, and displayed in a map based environment. Sensors such as Cameras, Radar and AIS can be combined and displayed in real-time, as layers on a maritime chart. Additionally, a TCMS network is capable of recording and sharing any geographic based data such as points, tracks and areas.

The different sensors and data are available to view and control via dedicated TCMS Workstations. All data in the system can be viewed via TCMS Web Access, which allows easy access to the system in a view only mode via any web browser.



TCMS Workstations are part of an Operations Room or Emergency Response Room. Sensors can be mounted on vessels, platforms, aircraft or on the shore.

Aptomar TCMS provides the Common Operating Picture. Be it Oil Spill Response, Search & Rescue or Maritime Surveillance, TCMS gives all participants in the operation the same clear geo referenced presentation of all available information.

TCMS enables skilled experts to take part in any operation from any location, be it in the Operations Room, or elsewhere. Irrespective of the location, experts can have available all sensor data presented to them in real-time, including live video. Additional information in the form of GIS points, tracks and areas can be shared from assets in the field, or overlaid from data bases.

Live daylight and IR video can be viewed from Aptomar SECurus equipped vessels and platforms. Operators can select which video they view from which vessel or platform.

All data is displayed in the map environment creating a simple, yet effective, Common Operating Picture.





In Oil industry TCMS allows for a fast and efficient response to unintended oil spills, the Common Operating Picture enables management from a remote location.



In a coast guard setting TMCS allows expert decision makers and observers to remain ashore while closely following vessel interdiction or fishery protection.



All sectors can use TCMS to coordinate and monitor Search & Rescue, firefighting and emergency towing operations.

The Common Operating Picture is the shared information from a situation that allows all involved to make correct decisions based on all available information, regardless of their location. Common Operating Picture is provided by the identical display of combined data from a number of sensors in a number of different locations. By updating the data in real time decision makers can be in any location and yet have the most pertinent information available to assist in decision making. The Common Operating Picture enables a group wide situational awareness.

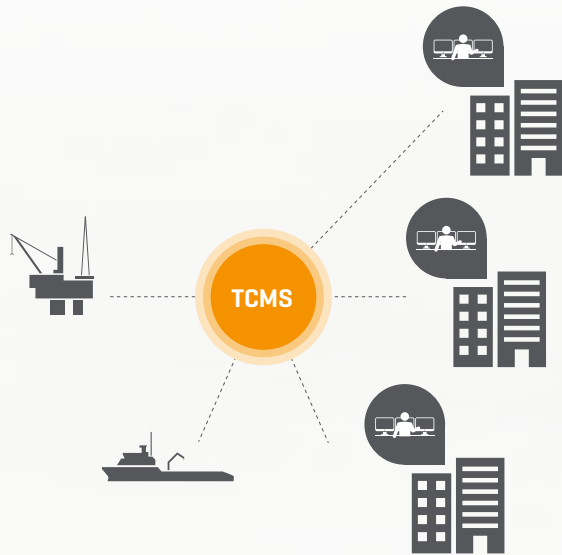
TCMS enables the viewing of live Daylight and IR video streams from Aptomar SECurus equipped vessels and aircraft. Bringing the captain's view right into the Operations Room gives decision makers situational overview from a remote location.

TCMS provides an off the shelf solution to providing the Common Operating Picture. Scalable and flexible organisations of any size can gain situational advantage via Common Operating Picture quickly and easily.



TCMS

Distributed Common Operating Picture



INDEPENDENT OF LOCATION

Emergency incidents can happen at any time. By making information available independent of location, key decision makers can make decisions using the best available information regardless of where they are throughout the incident. Additionally, as an incident develops it may be deemed necessary to collaborate with additional resources or agencies outside of one's own organisation. By making information available independent of location additional resources can easily be given access to the Common Operating Picture.

TCMS uses a proprietary internet based data sharing network protocol. This means any Operations Room or Emergency Response Room can be TCMS enabled. Additionally, remote personnel, external organisations and agencies can be included in the Common Operating Picture quickly and easily via TCMS WebAccess. TCMS is perfect for enabling efficient cross agency collaboration.



Aptomar TCMS is scalable from a single location, single Workstation to a multi-location, multi Workstation network. Aptomar can provide a complete solution from supplying computer hardware and display equipment through to hosting the TCMS Server at a secure location.

TCMS Workstation software is installed on Touchscreen Operation Room workstations. Additionally, individual laptops or tablet computers can be set up to be full TCMS Workstations, that just need an internet connection to be functional. This enables operators in the field to have access to all available data and input data to the network.

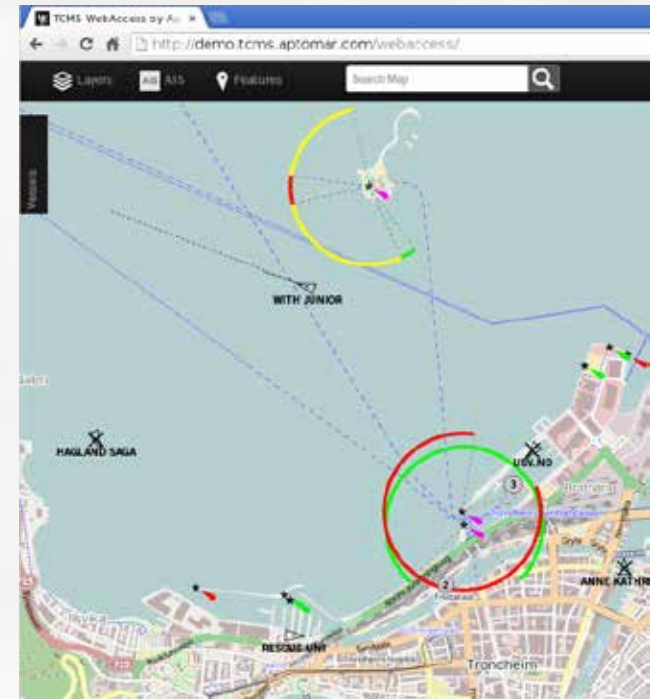
Key decision makers can always have a TCMS Workstation with them to be prepared for any situation. Shore survey teams can enter data on location of beached oil that is instantly viewable on all TCMS Workstations in the network.



TCMS WEBACCESS

All geo referenced data is available via a secure web server. TCMS WebAccess is a view only display of TCMS data, including live streaming of Daylight and IR Video from SECurus equipped vessels.

- Web based interface to the TCMS database, including electronic charts, AIS objects and streaming of live IR, DV and ROV video
- Created to give access to decision data, or a general overview, for personnel not situated in TCMS equipped Operation Rooms.
- Accessible through standard internet browser on tablet pc's and smart phones.
- Ideal for temporary interagency/inter-organisation sharing

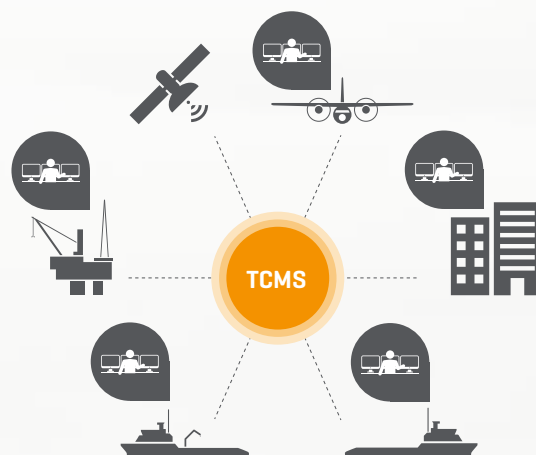


TCMS is made up of different system nodes. Each node is either a sensor, or group of sensors, with a local work station, or networked workstations that display information from all sensors in the network. At the heart of every TCMS network is the dedicated TCMS Server. The TCMS Server communicates with all the nodes and combines the available data. All network connections are via a secure connection, and all connections are inbound to the TCMS Server. It is the TCMS Server that allows, and controls the sharing network. This gives the highest level of security and control over network connecting to the controlling TCMS Operations Room.

The Live video streams are transported using the fastest data connection available. Standard ship satellite data systems are able to be used due to the sophisticated compression and time synchronisation employed by TCMS.

TCMS

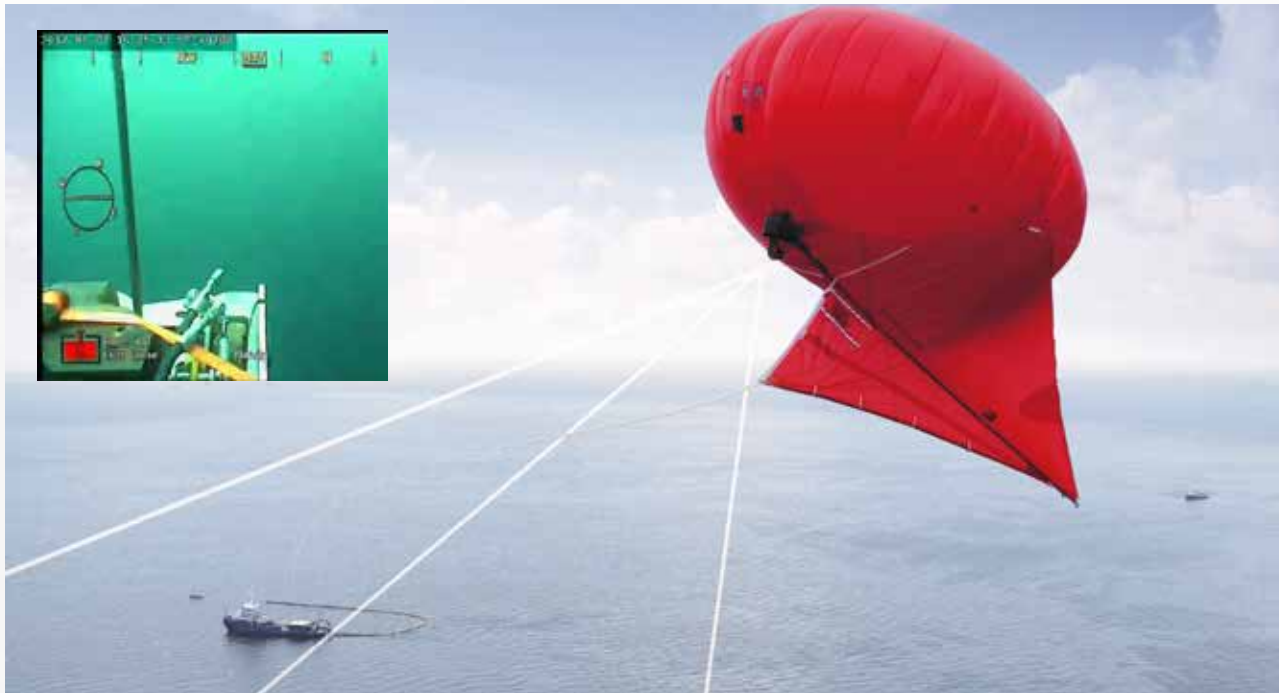
Common Operating Picture



TCMS Workstations run Aptomar's unique software, usually featuring a touch interface.

- TCMS Workstations are located in Operation rooms or Emergency Response rooms.
- TCMS Workstations can be displayed on large wall mounted displays or projectors.
- Sensor data such as video and radar are fed into the TCMS network via an Aptomar SECurus system installed on a vessel, platform or aircraft.
- SECurus Systems can also share data such as GIS referenced points, tracks or areas.
- TCMS Web Access enables anyone with a standard browser to view TCMS data from any location with internet access
- All TCMS network information and sensor data is shared using secure data protocols.





NETWORK EFFECT

Once a TCMS Server has been established any sensor data that can be geo referenced can be added to the system.

- Video from SECurus Systems
- Video from Aerial Platforms
- Video from fixed location cameras
- Video from ROVs
- Video from Aerostats
- Points, routes and tracks from SECurus Systems
- GIS data from customer database
- ARPA and AIS targets from SECurus Systems
- ARPA and AIS targets from shore based VTS networks
- AIS from Drift Bouys and other sources
- Radar images produced by vessel radar processors
- Geo tagged satellite images



In several jurisdictions, permission to operate drilling and production activities is given on the understanding that there is no unintended oil spill. Clean to Operate is the name given to the situation when there is a high level of confidence that there is no unintended oil spill, and operations can continue. As of today, no single sensor can provide effective detection of oil on water in any light and weather conditions. Clean to Operate therefore is determined by the regular and scheduled use of a network of sensors and detectors, and the documenting of the results. If no oil is detected at given time intervals the operation is said to be Clean to Operate.

Aptomar is the leader in providing Clean to Operate systems. Clean to Operate is a component of Tactical Oil Spill Management. Aptomar provides sensors, networking equipment, consultancy on work practices and training and exercises.

Aptomar also supplies a Clean to Operate/Oil Spill Monitoring service as a complete turnkey solution.

TCMS provides the shore based component of a Clean to Operate system.

- In field sensors are used to detect any unintended oil spills.
- Use of multiple sensors mitigates for the weaknesses of any single sensor.
- A regularly updated Common Operating Picture shows consistent no detection of oil from sensors.
- Recording and documentation of Clean to Operate situation maintained within TCMS
- Documenting period can be set for any time, for instance 30 mins or hourly.
- Unintended oil spills will be detected within the documenting period.
- When oil spill is detected, Common Operating Picture is already established
- Effective response can start immediately, no need to wait for aerial observation.

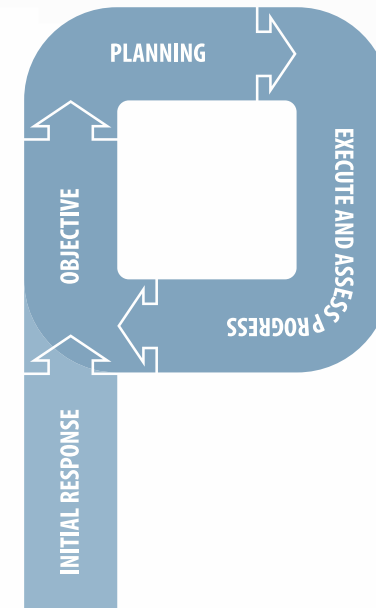


TCMS TRAINING

No emergency response plan can be effective without those involved in the plan being thoroughly trained in the plan, and equipment to be used. Aptomar provides regular new user, and refresher training for TCMS users. Aptomar TCMS training encompasses the theory and best practice of oil spill combatting, as well as the features and use of TCMS to provide the most effective response.

- The goal of the TCMS certification course;
- To ensure an understanding of the complete Tactical Oil Spill Management system
- To ensure an understanding of Common Operating Picture (COP), and how to create
- To ensure an understanding of the TCMS system's functionality & possibilities
- To ensure an understanding of how to use TCMS functionality for maximum efficiency
- Essential operational knowledge for operators/end

users in onshore oil spill response management. Training courses are arranged at Aptomar facilities, but can also be conducted at customer locations.



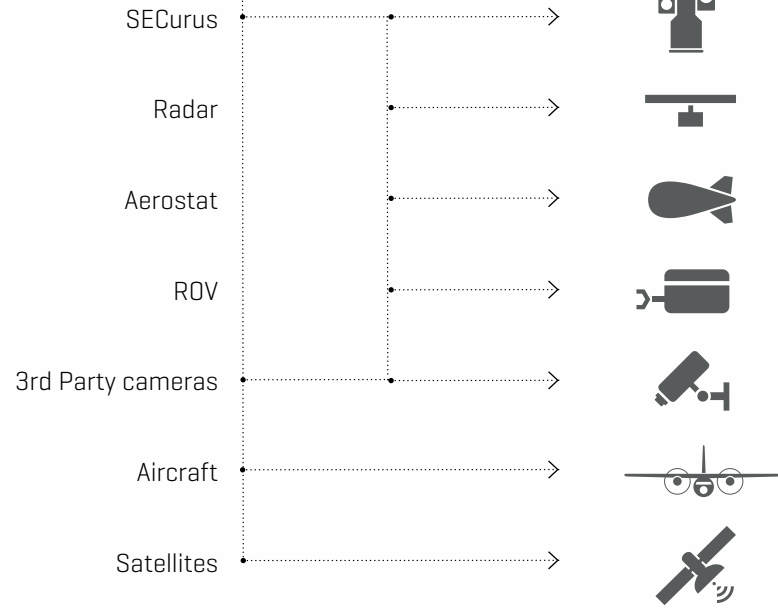
Aptomar's sensors and networking technology create one the most comprehensive and accessible maritime domain awareness systems available. SECurus and TCMS are designed around work processes to create the ultimate tools for oil spill detection and spill response management. They are also widely deployed to provide situational awareness and decision support tools for Search & Rescue, Emergency Towing and Fire Fighting. In addition they are ideal for Maritime Surveillance missions such as Fishing Area Enforcement, Boarder Patrol, Smuggling Interdiction and Anti Piracy.

TCMS is the backbone of the system that enables the network to create the Common Operating Picture. It is built around a dedicated TCMS Server, and provides live video streaming from vessels and aircraft to Workstations in Operations/Response Rooms, as well as remotely.

This brochure is about TCMS. Please see www.aptomar.com to find out about other components in the network, and to contact Aptomar for more information.

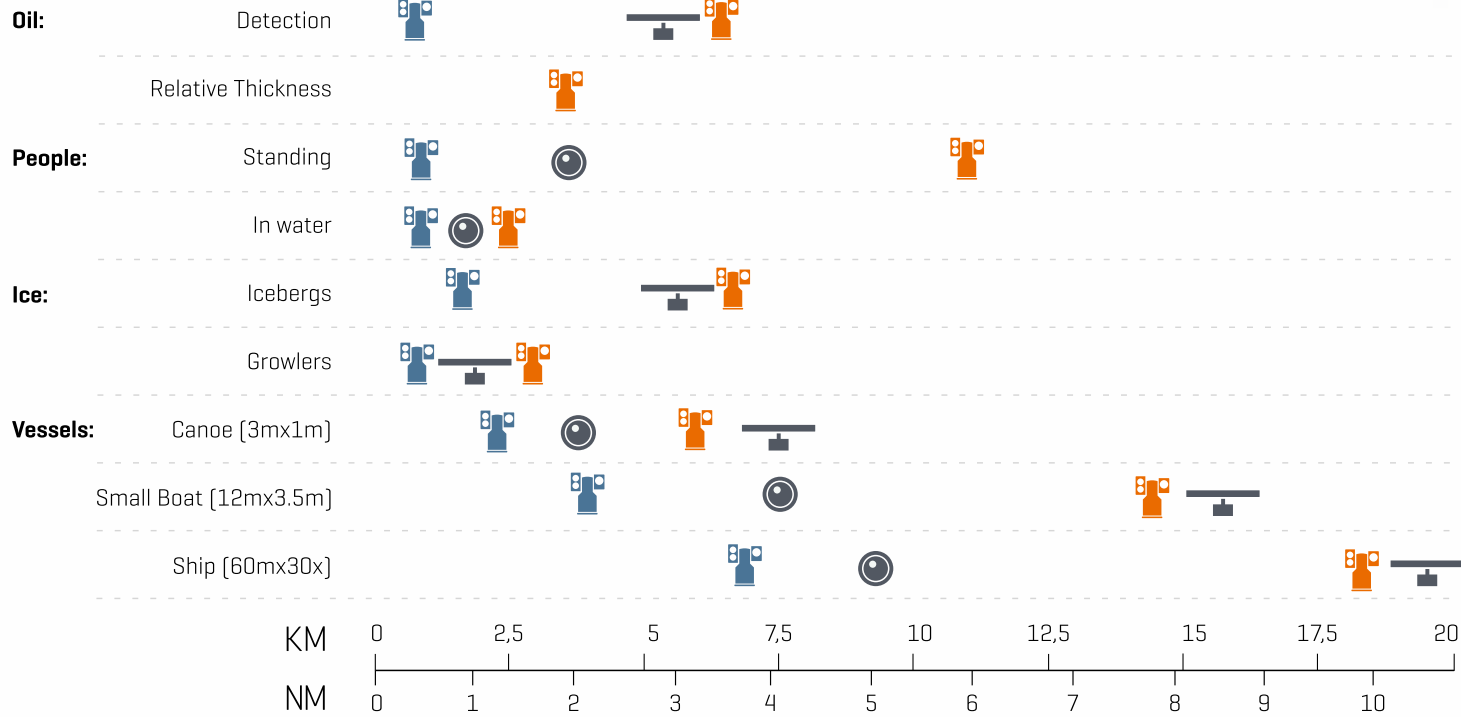


Sensor/componet connects to e.g.
TCMS







RANGE CHART

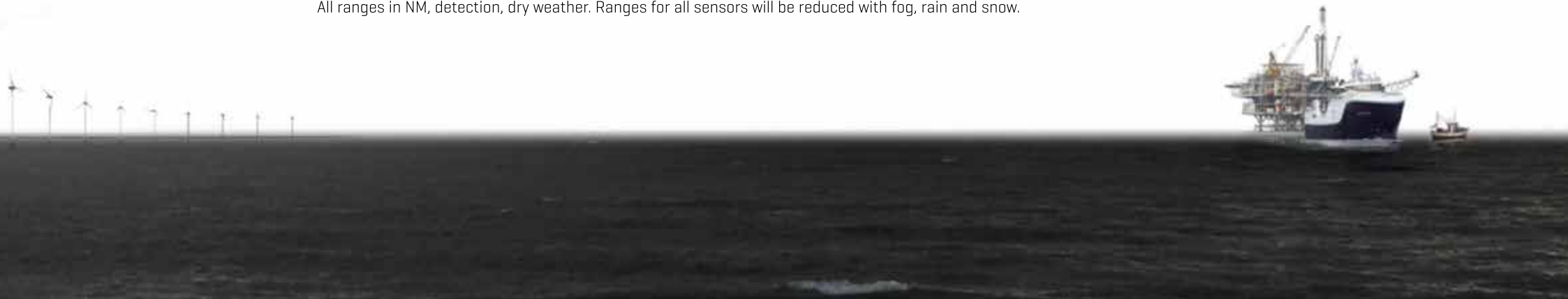
SUBJECT



KEY

-  HD Daylight Camera
-  Passive IR
-  Active IR
-  Radar

All ranges in NM, detection, dry weather. Ranges for all sensors will be reduced with fog, rain and snow.



RADAR
APTOMAR.COM

MAIN OFFICE NORWAY

Stiklestadveien 3
N-7041 Trondheim, Norway
Tel: +47 40 00 34 03
E-mail: sales@aptomar.com

USA OFFICE / HOUSTON

E-mail: usa@aptomar.com

APTOMAR DO BRASIL

E-mail: brasil@aptomar.com



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