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DG XIII

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(European Project On Integrated VTS, Sea Environment and Interactive Data On-line Network)

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Demonstration in Norwegian Site

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European Project On Integrated VTS, Sea Environment and Interactive Data Online Network

Demonstration in Norwegian Site

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1. INTRODUCTION

This report describes the demonstration features and the technical details of the Norwegian demonstration. The background motivation and the overall system in which the demonstrator fits in are described. By integrating the demonstrator with existing and planned systems a more complete solution is achieved.

2. BACKGROUND INFORMATION

During 1991 a report that contained recommendations to comply with a defined risk level applied to transport of dangerous goods in Norwegian coastal waters was submitted to the government. Among the recommendations was to establish VTS’s. Further a cost benefit analysis was made concluding with a factor between 2.5 and 3. This caused the decision to establish the Oslofjord VTS. As a result the Norwegian National Coastal Administration (operating all Norwegian VTS’s the demonstrator included and the pilot service) and the Oil Pollution Agency was co-localised in the new Norwegian Centre for Marine Environment and Safety in Horten.

Since 1993 a Norwegian R&D project has been aiming at integrating information systems within the maritime/marine community. This to allow for existing and new users to gain benefit from having access to and using information kept by other actors. This also influenced on the specification of the new Oslofjord VTS. Integration and interoperability with other projects have been important (e.g. port information, vessel information, fairway information and a pilot allocation system). In certain areas a need for European collaboration was identified, and this fuelled the Norwegian interest in Poseidon.

Figure 1: Centre for Marine Environment and Safety, Horten
It was decided to establish two VTS centres in the Oslofjord, one in Oslo being operated by Oslo Port Authority and the other located in Horten to be operated by the Coastal Administration. An international tender for the new vessel traffic management and information system was announced late 1996, and in March 1997 the contract was awarded to Kongsberg Norcontrol Systems (KNCS). The site acceptance test (SAT) was finalised in November 1998. The pre-operational service started late September 1998 whilst full operation has been from January 1999.

The Poseidon demonstrator is developed to integrate the VTS centres in the Oslofjord with the national maritime information repository at the NCA. The value of the VTS centres is enhanced by adding new functionality and by introducing solutions that illustrates new possibilities that will be important in the future. Some of the features developed in the demonstrator are put into operation as a part of the Oslofjord VTS right away. Other features can be put into operation after some testing and customisation. The testing and the evaluation of the Poseidon demonstrator have given valuable input to the further work towards better and more complete VTMIS solutions.

### 3. PARTICIPANTS AND THEIR RESPONSIBILITIES

All the partners in the Norwegian consortium have worked closely together. All solutions have been discussed and designed taking the views of all partners into account. Due to this the demonstrator is the result of a team-work, but the main responsibility of the miscellaneous activities has of course been divided among the partners.

**The Norwegian National Coastal Administration**

The Norwegian National Coastal Administration operates all VTS centres in Norway, among them those included in the Poseidon demonstrator. They have been the Norwegian site co-ordinator in Poseidon. Main strategic decisions and the development of new working routines have been done by the Coastal Administration, and they have co-ordinated the integration of the Poseidon demonstrator with other ongoing maritime activities. They have participated in the development of the national maritime information repository, and they have also influenced on solutions and content of other parts of the demonstrator, among others the Hazmat implementation and the enhanced VTS functionality.

**Kongsberg Norcontrol Systems (KNCS)**

KNCS is a leading supplier of systems that contribute to safety and efficiency of vessel traffic, among them Vessel Traffic Management & Information Systems (VTMIS). In Poseidon KNCS has been responsible for the enhanced VTS functionality and the dissemination of traffic information to ships and others. They have also been responsible for the VTS-side of the communication with the NCA in the national information repository function, the electronic implementation of the Hazmat information in the VTS, and the VTS-side of the ETIS functionality.

**SINTEF**

SINTEF performs contract research and development for industry and the public sector in the
fields of technology and the natural and social sciences. Institutes representing maritime, environmental and information technology knowledge have been participating in Poseidon. As mentioned above the specification and design of the solutions have been a team-work, but SINTEF has been the main actor and the promoter during this work. With respect to the implementation SINTEF has been responsible for the national information repository, the electronic implementation of the Hazmat directive, and the ETIS functionality.

4. WORKING ENVIRONMENT

4.1 Venue

The Norwegian demonstrator includes systems and participants at the following locations:
- The Norwegian National Coastal Administration in Oslo will hold the national maritime information repository that is implemented as information systems supporting the access to databases and the interchange of information between actors. The implementation of the Hazmat directive is included.
- Fred Olsen ship agent in Oslo will use a Web-interface towards the information repository that enables registration of vessel, cargo and route information.
- The Norwegian Meteorological Institute will provide weather forecast for the VTS area and meteorological data enabling the simulation of local wave- and current conditions and the oil drift.
- The VTS centre at the Port of Oslo will use the enhanced VTS functionality.
- The VTS centre in Horten will use the enhanced VTS functionality and integrate ETIS functionality into the VTS. Traffic information is disseminated as well.
- Miscellaneous vessels have been carrying AIS transponders.

4.2 Technical environment

The demonstrator is a part of a VTMIS system including services corresponding to VTS, pilotage, distribution of electronic chars, port handling, etc.
The demonstrator represents new functionality and new solutions added to the VTMIS, as illustrated in the simplified "overall system diagram" in the Figure above. Functionality and solutions added by the Poseidon demonstrator are shaded with violet.

The VTMIS is realised by extensive use of standard components (PCs, standard software operating system and network components). Special plug-in boards are developed for pre-processing of radar signals. Information used in the system is collected from sensors, information systems within the mentioned operations and from outside actors and information systems. The VTMIS system is realised by extensive use of standard components (PCs, standard software operating system and network components). Special plug-in boards are developed for pre-processing of radar signals. Information used in the system is collected from sensors, information systems within the mentioned operations and from outside actors and information systems.

**Figure 2 Overall VTMIS system diagram**

The demonstrator represents new functionality and new solutions added to the VTMIS, as illustrated in the simplified "overall system diagram" in the Figure above. Functionality and solutions added by the Poseidon demonstrator are shaded with violet.
providers. The building blocks of the overall system are described below. For the "Poseidon parts" the technical solution is described.

### 4.2.1 Sensors sites

A wide area network (WAN) is used to transfer multiplexed sensor information from site sensor servers to the VTS centre. Vice versa control type information is being sent from the VTS to the site / sensor server as well as the WAN and site server is allowing for remote inspection / -diagnostics.

**Radar**

Radar coverage of vessels in the VTS area is from 9 radar’s positioned from inner Oslo Port and along the coast. In south-east the coverage includes part of Swedish waters (Bohuslän area) whilst coverage in south-west is along the coast approaching the next VTS (Grenland).

The antennas are all of X band type with and without circular polarisation, specially designed for VTS (size 18' and 12'). The transceiver system is designed for stationary use and having performance matching the needs for a VTS.

Processing of radar signals on site includes a PC, software and recently developed plug-in cards (radar interface / -processing) allow for extraction, tracking as well as electronic raw-video to be available.

![Figure 3: Radar site: Halltangen](image)

**CCTV**

Camera is fitted at four of the radar sites also to be used for identification and indication of visibility. In addition cameras are included in positions within Oslo Port for other purposes. Due to limited transmission capacity the camera information is fed to a frame grabber that provides still-pictures every two seconds.

**VHF/DF**

A direction finder is included at one of the south-east radar sites to contribute to identification of vessels approaching the VTS area.

A VHF voice communication system of multi-user type is included in the VTS to serve the needs of the Coastal Administration, The Oslo Port Authority as well as the Oil Pollution Department (localised in same building as the VTS in Horten). The system includes a Voice switch’and transmitter/receivers fitted at two sites to allow for full coverage in the VTS area.

**Met/Hydrography**

These sensors provide real time information on wind speed and direction. A tide metering system is also included. They are located at two of the sites.
AIS
Vessel tracking by the use of the AIS transponders is a part of the Poseidon demonstrator. Two base stations are included and being used for identification and tracking.

The AIS/4S communication includes messages as described in the AIS draft specification from IALA/ITU (ITU_R M.18C/xx). The built in functionality is used as a support for broadcasting radar targets from the VTMIS. The technical specification of the communication is as described for the 4S R3 transponder from GP&C Sweden. The frequency used is 138,05 MHz. This is the frequency being used for trial purposes in the other Nordic Countries.

4.2.2 National maritime information repository

The national maritime information repository is implemented at the Norwegian NCA and covers information about:
- Vessel movements (routes)
- VTS passages
- Pilotage requests
- Dangerous or polluting cargo

The system consists of:
- A set of databases
- Web interfaces
- Information exchange interfaces, e.g. an E-mail interface

The interaction with the information providers, the exchange of information between the actors (information users and providers), and the databases are handed.

WEB interfaces
In the demonstrator vessel representatives register the information through a Web interface and the content of the databases can be inspected by the use of Web browsers. Voyage data (containing vessel, cargo, Hazmat and route information) is entered into Web forms, validated and stored in databases. Java scripts are used to realise the interaction with the user.

The Web server is running on a Windows NT server. In the demonstrator a front page server is used. In the running system another server may be adopted. On the user side a Netscape browser version 4.0 or later, or a Microsoft Internet Explorer version 4.0 or later can be used.

Protocols and formats used are according to the TCP/IP, HTTP and HTML standards.

Information exchange
The information exchange from the information repository to the VTS is done by E-mail (Post Office Protocol version 3 - POP3 Internet RFC 1725). The mail server is HP Openmail. The NCA will E-mail an Advance Notification to the VTS to give a notice about arriving vessels. The content of the E-mail will be as follows:
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<td>To</td>
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<td></td>
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The databases are updated from the VTS by direct database (SQL) calls. (The WEB interfaces mentioned above are also used for information exchange.)

The databases
Interface with databases is based on SQL and ODBC. Sybase databases on HP Unix servers are used. The design and the implementation were supported by powerbuilder. The main content of the databases is:
- Fairway information
  Considerable information on fairway-objects is stored in the databases. An integrated SCADA system contains real time status information on lights and lighthouses and makes it possible for the VTS being continuously updated with regard to their information service/notice the mariners.
- Pilot information
  The pilot deployment system is storing information including; requests for pilot (which
shall be placed 24 hours in advance), information being generated through assignment and during the pilotage. Later use for invoicing, statistics and planning purposes is planned. Information from this system is available in the VTMIS and is linked to the actual vessels.

- **Vessel information**
  A new system is implemented as a part of the Poseidon demonstrator. The main source is the register of Lloyds, but vessels not registered in Lloyds may be added. The vessel information (vessel particulars) is used by VTS, ports and others. Information from this central system is used in the vessel database included in the VTMIS.

- **Route information**
  A new system is implemented as a part of the Poseidon demonstrator. The plans and the actual movements of the vessels are registered.

- **HAZMAT information**
  A new system is implemented as a part of the Poseidon demonstrator. A central database is established at the Norwegian National Coastal Administration (NCA), and information on vessels carrying hazardous materials and dangerous is received, stored and distributed to the VTMIS.
  With the ability to report HAZMAT profiles through the Web form interface the HAZMAT directive has been technically implemented. This way of reporting is expected to be convenient for some groups of vessel representatives. For others however, the Web interface does not respond to requirement of reuse of data. For this reason an EDI (EDIFACT) interface is part of the future plans. This is also required to exchange HAZMAT data with other NCA in EU.

4.2.3 **External information providers and users**

**Voyage information**
The vessel representative can enter voyage information through a Web interface as described above.

**Electronic chart information**
Authorised charts information in S57 version 2 is available for most of the VTS areas. The charts are made available from the National Hydrographic Organisation. Services for distribution of electronic charts and supply for information on geographical objects are planned.

**ETIS information**
The ETIS information available on the VTS has two purposes:

a) Routine weather and sea forecast to prevent dangerous situations and as a tool for the VTS operator to perform efficient traffic regulations.

b) Integrated part of the VTMIS system available in case of oil spill combat or SAR operations

The information implemented as part of POSEIDON is:

*Meteorological information:* The Norwegian Meteorological Institute (DNMI) has a forecast service for the new VTS. The forecasts are available from DNMI and the information is used
for local presentation and integration with the VTS. The data from Met and Hydrographic sensors are also integrated.

*Simulated data:* Data from numerical models for local sea conditions and drift of oil spill and drifting objects are available as an integrated part of the weather forecast.

**Allied services**
The NCA generates a list of pilotage requests to the pilotage manager on the basis of requests from the vessel representatives. The pilotage manager will verify the request and confirm or reject it. The vessel representative will be informed by the means of an E-mail, and NCA databases updated.

The pilotage manager accesses the NCA database to handle the pilotage request. He also accesses the pilotage database. This is all done via a program interacting with the databases. The program also generates an E-mail informing the vessel representative if the request is confirmed or rejected.

**Traffic information**
Traffic information is provided to vessels and to the public by the enhanced VTS functionality. To alternatives are supported:
- Vessels carrying 4S/AIS transponders can receive the broadcasted traffic image by the means of the AIS transponder (see description of AIS above).
- A Web solution is provided. The traffic image at the VTS WEB Server can be accessed.
  Internet solutions can be used over GSM, fixed wired lines, etc.

**4.2.4 Intranet**
Communication with the information repository located at the Norwegian National Coastal Administration is facilitated through an intranet implemented throughout the entire organisation. The intranet is a TCP/IP protocol network. It is connected to the Internet through a firewall. Parts of the master databases in the intranet will be replicated to a server on the internet side of the firewall permitting various actors to interact with the databases.

The intranet is realised as local area networks (LAN) with a capacity of 10 and 100 Mbit and wide area networks (WANs). The WANs towards the sensor sites have the capacity of n x 64Kbit. The WANs between the information repository at the Coastal Administration in Oslo and the VTS’s have the capacity of 2Mbit.

**4.2.5 VTMS system**
The information from sensors and the other information systems mentioned is processed and made available for the operators at the VTS centres. Server and client applications are developed for Windows NT using Microsoft Developer Studio (Visual C++) and extensive use of Microsoft Foundation Classes (MFC) has been used.
Electronic chart/GIS
The electronic chart generated from S 57 is the basis and the inherent information is grouped in different layers. The operator might choose to activate or deactivate the layers according to the situated needs.

In addition to S 57 information other geographical information is also added. The radar information including track-information and electronic raw-video from several radars is overlaid the chart. Information on the targets is made available by point and click. Sensor fusion is included to allow for fusion of track information (on same target) coming from two or more radar, or raiders and the AIS system.

VTS database
Two of the three workstation monitors are used for display of geographical information whilst the third is used for displaying VTS database information. This database contains information generated by VTS sensors as well as the other information systems mentioned.

Recording
The system includes digital recording of radar-, track information (incl. AIS) and voice communication.

4.2.6 Enhanced VTS functionality
The development is based on the VTMIS system described above. Server and client applications are developed for Windows NT using Microsoft Developer Studio (Visual C++) and extensive use of Microsoft Foundation Classes (MFC) has been used.

Hazmat status
The VTMIS system is notified about the Hazmat status of the arriving vessels in the advance notification received from the NCA. The status is stored in the VTS database and made visible to the system operator whenever necessary.

Voyage data established in advance
The advance notification makes it possible for the VTMIS to prepare for the arrival of the vessel. The voyage data is stored and list defining expected vessels are made. On arrival of vessels all necessary data is established and the system operator do not have to spend time on asking for them. Vessels carrying AIS transponders can be identified automatically and checked against the expected arrival list.

Presentation of ETIS information
The ETIS information is an integrated part of the VTS information system. It is available for the VTS operator as an overlay on the traffic image.

Interaction with the NCA
The national maritime information repository is informed whenever a vessel arrives to or departures from the VTS area. Changes in voyage plans are received from the NCA as updated of the arrival notification.
Handover
Handover between adjacent VTS centres is supported.

4.2.7 VTS Web server

A Web server is included in the new VTMIS to allow for traffic information being made available for other maritime actors as well as for the public.

4.2.8 Port information system

Port of Oslo has an existing port-information system from which information on arrivals/departures might be accessed.

Figure 4: View of the VTS station

4.3 Functionality of the demonstrator

The new features developed in Poseidon are chosen to fit in as operational functions in the new Oslofjord VTS. In addition integration and interoperability with existing and planned functions developed in other projects have been important to ensure the usefulness.
4.3.1 A national information repository

The Norwegian National Coastal Administration is the national competent authority (NCA) responsible for VTS's in Norway. The NCA is extended with a national information repository holding information about vessels, vessel movements, pilotage, cargo, fairways, Hazmat status and dangerous substances.

The databases holding the information get their input by repetitive updates (e.g. based on Lloyds) and by interactions with other actors like vessel representative and VTS's. Information will automatically be distributed to VTS's, pilots, customs, ports and others according to their needs, and the actors may also request necessary information whenever it is required. (Only the interaction with the ship representative and the VTS's included in the Poseidon demonstrator.)

4.3.2 Electronic implementation of the Hazmat directive

With respect to the Hazmat directive many issues have to be considered. Information about the dangerous cargoes must be provided by the ship representative or others, the Hazmat information must be stored, it must be accessible, it must be distributed to actors who need the information, and the Hazmat status must follow the vessel on its route. A European exchange of electronic Hazmat information is not yet implemented (standards have been missing), but a national implementation is established in the demonstrator. The migration to upcoming European standards is taken into account. In the future the NCA will interface Europe on behalf of all Norwegian actors.

The main elements of the demonstrator are as follows:

- The NCA holds electronic information about dangerous substances. This database is used both as a work of reference and as a part of a decision support system helping the ship representative or others to identify and specify what kind of dangerous cargo a vessel is transporting.
- The ship representative uses a Web based interface to send an arrival message to the NCA. Hazmat information is included. The application supports the registration of the required information.
- On reception of the Hazmat information the NCA stores the information in the information repository and distributes the Hazmat status of it further to all the VTS's on the vessel's route.
- The Hazmat status is a part of the information about the vessel taken into account by the VTS system. The operator will be informed about the Hazmat status whenever it is necessary.

4.3.3 Enhanced VTS functionality

The Oslofjord VTS is a new system holding a lot of new and enhanced functionality:
- The VTS system is interacting with the information repository at the NCA
- The information flow to and from the NCA has a central role:
  - Vessel, voyage and cargo (Hazmat information included) information is received from the NCA and the arrival of the vessel is prepared in advance.
• Current position, updated estimated time of arrival, etc is passed to the NCA
• The operator is notified about vessels carrying dangerous goods
• Generic mechanisms enabling the integration of ETIS information into the traffic image
• The VTS will also interact with the adjacent VTS

4.3.4 ETIS functionality integrated in the VTS

Current VTS systems do not provide ETIS (Environmental and Traffic Information for Safety) information. In the solution ETIS information is generated from weather forecast and numerical simulations of local weather and sea conditions. The result is used as input to the VTS system. In the VTS system a geographical presentation of the ETIS information is overlaid the traffic image.

The following was demonstrated:
• Sea current and local wave overlaid the traffic image
  The forecasts for wind and waves are made available by a connection to the Norwegian Meteorological Institute. The forecasts are combined with pre-calculated local situations.

![Figure 5: Sea current](image1)
![Figure 6: Waves](image2)

• Oil spill and drift information overlaid the traffic image. The simulation of drifting/spreading oil-spill is based on the local current in the area. It can be used to assist the VTS operator in Search and Rescue operations and oil spill combat in the VTS area. This function is developed and used in co-operation with the Norwegian Pollution Control Authority and the Norwegian Meteorological Institute.
4.3.5 Dissemination of traffic information to ships and others

Up till today traffic images is only observed by the VTS operator. A distribution of traffic images to other users than the VTS operator may reduce both the workload on the VTS operator (e.g. due to less voice communication with vessels) and the number of misunderstandings and wrong decisions. The traffic image will consist of targets being tracked by radar or transponder (information being fusion).

The alternatives for distribution of the traffic image to other users than the VTS operator are:

- Broadcasting traffic image to 4S/AIS transponders for presentation on a PC with an ENC system:
  The new Oslofjord VTS will have two AIS/4S base stations included. This allows for transponder information automatically being included and integrated with information derived from radar and information systems. The 4S-transponder system can be used to broadcast the traffic image to vessels carrying the 4S transponder. The broadcasted traffic image will be received and presented on an ENC/ECDIS type display on board a vessel.

- Publishing traffic image on the Web such that it can be viewed on a PC with a Web client:
  Internet technology is used to make the traffic image generated from radar end AIS information available by Web technology. On short terms the function may provide useful information to users on shore, e.g. pilots waiting for a vessel. On longer terms internet solutions may also be used on board vessels.
5. **DEMONSTRATION DESCRIPTION AND DEVELOPMENT**

5.1 **Description of the Demonstration**

To illustrate the benefits of the new features described above three scenarios was demonstrated. Participants in the demonstration (sites, authorities, etc.) and the locations involved are presented below. The information and data used and exchanged are also described and the dataflows are illustrated in Figure 8 included in the text.

For more details about the technical solutions see the description of the technical environment above.

5.1.1 **National co-ordination of vessel information and implementation of Hazmat**

Before the vessel enters Norwegian waters or leaves the port of Oslo the ship representative in the Fred Olsen company uses a Web interface to send an arrival message to the NCA (the Norwegian National Coastal Administration) (dataflow number 1 in the Figure 9). The arrival message holds information about the vessel, its route, pilotage requirements and its cargo (Hazmat information included). The user must be registered as a customer. The application supports the registration of the required information so that the registration requires minimal effort. He/she will be guided through a set of steps to do the necessary reporting to the NCA:

- The vessel must be identified. The user can use a central vessel database to identify the vessel. If the vessel is registered in the database no more data is required, if not the user will have to enter the minimum amount of information on the vessel.
- With reference to the vessel the vessel representative can create and edit voyages. The main data is port and time of departure and arrival.
- If the vessel will sail through a VTS area during a voyage, the user will connect a VTS passage to the voyage. The main data is arrival direction and time to the VTS area. This will trigger the NCA – VTS interaction (see details in the Technical Environment section).

![Figure 9 Dataflow in the scenario](image-url)
If the vessel will need pilot on board during the voyage, the user will connect a pilotage request to the voyage. The main data is place and time of start and end of the pilotage. This will trigger the interaction with the pilotage manager.

If the vessel will carry dangerous or polluting cargo during the voyage, the user will connect a HAZMAT profile to the voyage. In this process he will be assisted by the IMDG database to make sure that the identification of an item is correct.

On reception of the arrival message the NCA will enter data about the voyage into the information repository and send an advance notification (holding vessel identification, cargo description including Hazmat status and route description) to all the VTS's on the ship's route (dataflow number 2 in the Figure 9).

On reception of the advance notification the Horten VTS can prepare for the arrival of the vessel, that is to establish or update data about the vessel and to update the list of expected arrivals. When the ship arrives to the VTS area the data about it is already present in the VTS system. During the tracking the operator is informed about the Hazmat status. Information about current position is passed to the NCA when the vessels arrives to or departures from the VTS area (dataflow number 3 in the Figure 9).

Some time before the ship crosses the boarder between adjacent VTS's (the Horten VTS and the VTS of the Port of Oslo) a handover message is sent from the first to the second VTS (dataflow number 4 in the Figure 9). The second VTS has already been notified by a message from the NCA about the arrival and is prepared (dataflow number 2 in the Figure 9).

5.1.2 Use of ETIS information overlaid the traffic image for safe and efficient traffic management and contingency operations

The ETIS scenario demonstrates how weather and sea forecast are used at the VTS as an information for safe and efficient traffic management and the role of the VTS in case of an oil spill within the VTS area. The actual case used in the evaluation.

The scenario is that M/T “BAD LUCK” grounded at 09:00 near Hollenderbåen in outer Oslofjord pos. N 59 degrees 09,50 minutes. E 10 degrees 37,85 minutes. Sea Chart no.3
The cargo is 141 000 tons of ARABIAN HEAVY CRUDE. Several tankers are torn open and approximately 5000 tons of oil has leaked out.
The vessel is stuck to the ground.
Weather: S-S-E moderate wind. Fog, low visibility. Current towards north approximately 1.5 knots, local wave height approximately 1.0 m. Low tide at 10:00.

The actions taken are:
- Routines for handling incoming message.
- Gather additional information about ship, cargo, weather situation, contingency situation etc.
- Planning of oil spill action, traffic regulations, simulation of oil drift.

The following functions was tested:
- Functions that will generate ETIS data:
- Graphical presentation of meteorological and sea data.
- Graphical presentation of oil spill information.
• Functions that are the basis for the graphical presentations:
  • Access to numerical simulation of weather and sea conditions.
  • Access to results from simulation of drifting oil spill and objects.

The scenario contained the following elements:

Present forecast for weather and sea data for the VTS area
Present data from the met. sensors in the area.
Demonstrate how the weather and sea data are used by the VTS operator as a service to operations going on in the VTS area.
Present data for local conditions of waves and currents for exposed areas of importance for the traffic safety.
Demonstrate how an oil spill in the area is taken into account by the VTS operator and how the VTS can be part of contingency operation in the VTS area.

5.1.3 Broadcasting of the traffic image

The following functions was demonstrated:
  • Broadcast of integrated transponder and radar data from VTMIS to ship via AIS channel
  • Transmission of traffic information from VTMIS to ship or others by Web technology

Scenario description:

1. The VTMIS system contains information from radar and AIS (transponder) located on some of the vessels trafficking the VTS area.
2. The integrated information from radar and AIS from which the traffic image is generated and converted to AIS format and broadcasted via AIS channel.
3. AIS vessels received the information and the traffic image is displayed onboard the vessel on an ENC.
4. Traffic information is made available though a Web interface