

Challenging wind and waves

Linking hydrodynamic research to the maritime industry

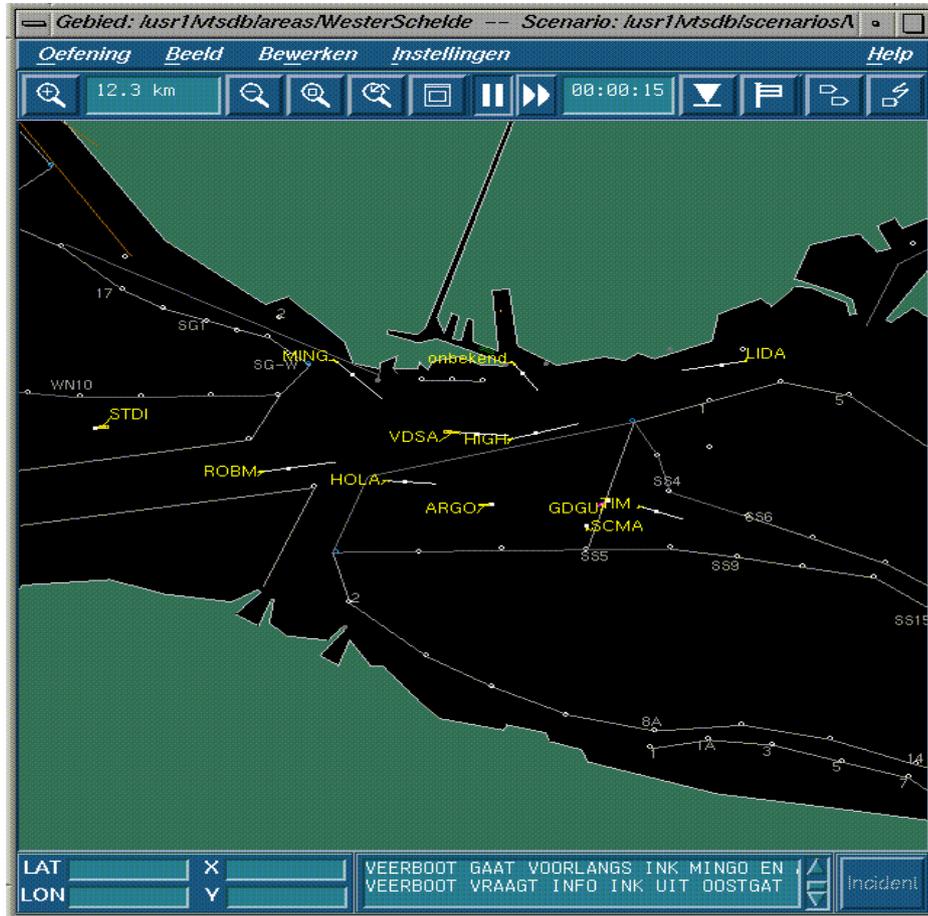
Capability Statement VTS Simulator MSCN

Version 9.3, July 2006



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CONTENTS		Page
1	INTRODUCTION.....	3
2	OVERVIEW OF THE SIMULATOR SYSTEM	4
3	INSTRUCTOR STATION	5
4	TRAINEE SEGMENT	6
5	IPS (Information Processing System)	7
6	PREPARATION STATION	8
7	HIGH-LEVEL MODELLING	9
8	DEBRIEFING STATION.....	10
9	TRAINING AND TRAINING AREA SET-UP.....	11
10	FUTURE DEVELOPMENTS	12

1 INTRODUCTION

The VTS (Vessel Traffic Services) simulator of MARIN's Nautical Centre, MSCN was built in 1998 and upgraded in 2003 and again in 2006. The simulator is used for training sessions for all Dutch (inland and sea) VTS operators as well as Dutch pilots. The simulator fully complies with and even exceeds the international standards set by IALA and is certified by the Dutch Ministry of Transport.

In order to allow for a realistic training environment, geographical maps and environmental data may be entered into the training database. A comprehensive list of possible ships allows instructors to use ships that often sail in a particular region. Training sessions are based on prepared scenarios which are fully interactive. The radar and communication equipment is similar to the equipment the trainee will encounter in reality.

Below a brief summarisation of the simulator features and its capabilities.

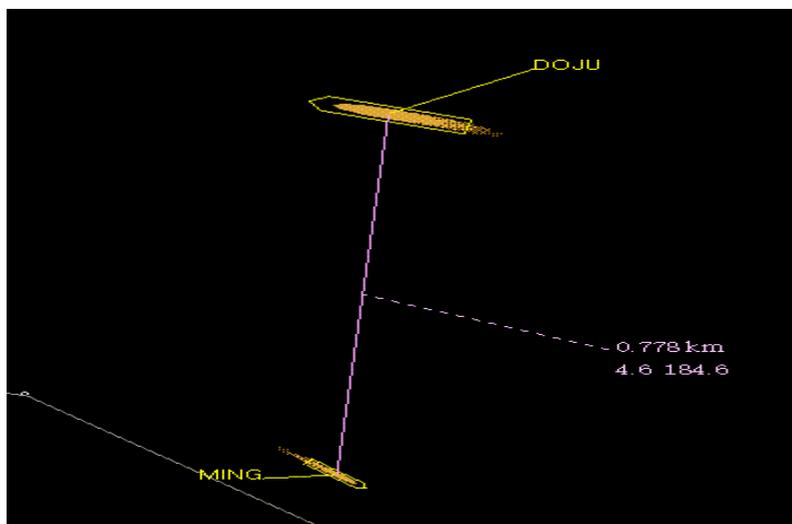


Figure 1 Manoeuvring at close quarters

NOTE: Other simulators at MSCN such as the Full Mission Bridge Simulators and the Fast-Time Simulation Program SHIPMA are described in separate brochures. These brochures are available on request.

2 OVERVIEW OF THE SIMULATOR SYSTEM

The MSCN VTS simulator is designed to train personnel in handling shore-based ship radio communication services as well as using radar and communication equipment by means of a computer simulation system. The simulator consists of five stations for the instructors/ship-operators, five stations for trainees, one debriefing station and one separate run preparation station. The Instructor stations can, when not in use, also be used as preparation stations. The stations for instructor/ ship-operators and trainees are equipped with radar and communication equipment required to fulfil the training objectives.

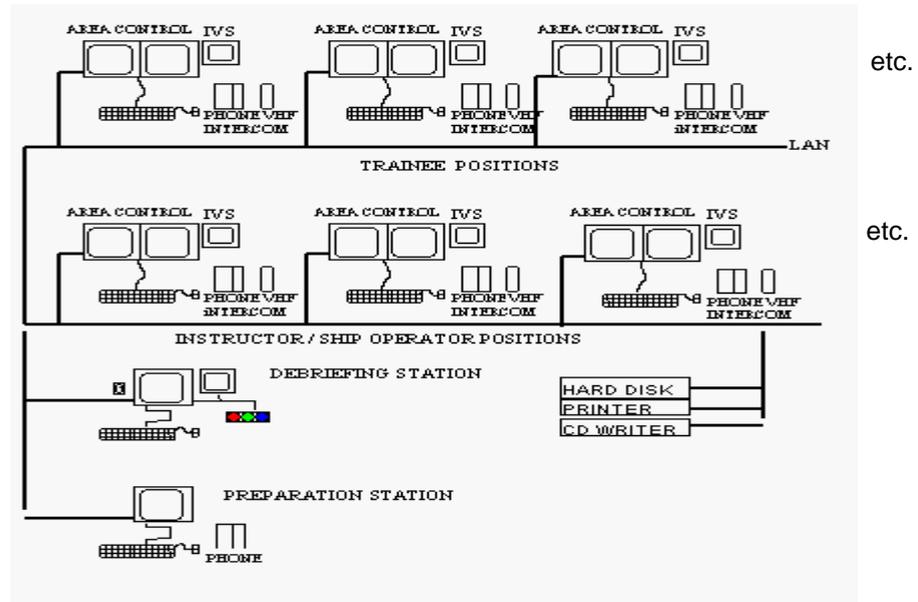


Figure 2 System overview

3 INSTRUCTOR STATION

From his position the instructor can direct / redirect all ships that play a role in a particular scenario. Because the scenarios are not fixed, the instructor is able to interact with a trainee. The instructor's position is equipped with a copy of the two radar screens from the trainee's position. The radar is equipped with an AIS receiver and is also able to display either the unmanipulated radar image or the synthetic radar image. Through these two screens, the instructor can oversee the same simulation exercise area as the trainee, including the trainee's actions. The VTS instructor, however, has the possibility to change certain settings, e.g. the instructor is able to change the target labelling or can simulate a sudden deletion of a target when it enters a blind radar sector.

The means of communication of the instructor position are similar to the trainee's position, VHF Radio, intercom and telephone. The instructor, however, has the ability to simulate various types of radio disturbances.

The instructor and trainee positions are also equipped with a third screen being the IPS screen. This IPS (Information Processing System) will be discussed in chapter 5.



Figure 3 Instructor's position

4 TRAINEE SEGMENT

The trainee has the same screens and communication equipment available as the instructor but does not have the ability to access the exercise settings. It is possible to train five trainees at the same time, using different scenarios.

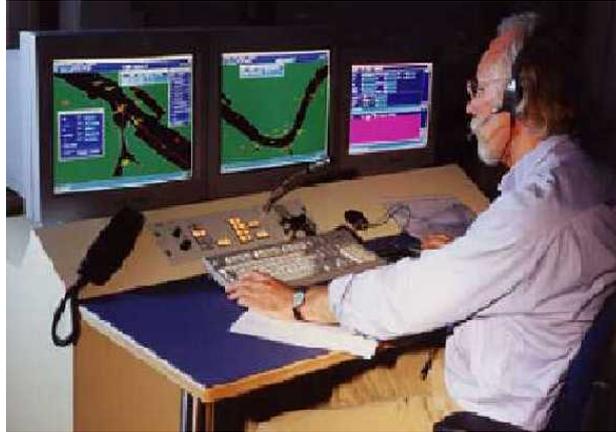


Figure 4 Trainee position with radar and IPS screens

5 IPS (INFORMATION PROCESSING SYSTEM)

Both instructor and trainee have a third screen which is generally used as the IPS screen. The IPS screen displays all relevant information, like ETA/ETD, draft, pilot on board and dangerous cargo. The instructor can change the displayed information during the simulation run and also trigger failures in the IPS system. This third screen can also be used as a third radar screen.

6 PREPARATION STATION

The preparation station is used to prepare exercises. The layout and access rights are identical to the instructor's position. An extra feature is the scenario editor enabling to add or edit text, which automatically runs simultaneously with the exercise at the bottom of the instructors screen. This text is used as a guide for the instructor during the simulator run.



Figure 5 Exercise preparation - Westerschelde, Flushing VTS area

7 HIGH-LEVEL MODELLING

To enhance the level of realism with regard to the mathematical ship models of this VTS simulator, data of MARIN's ships towing tank models have been used. Radar target appearances are made with great care in order to reach the highest level of realism.

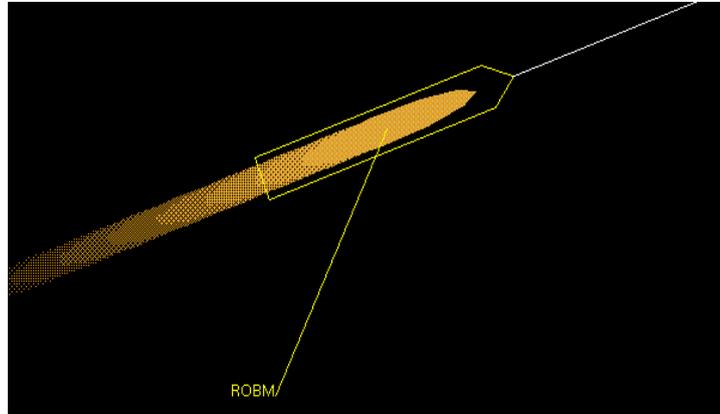


Figure 6 Synthetic radar appearance of a target with label and afterglow.

8 DEBRIEFING STATION

Each run can be debriefed by using a powerful debriefing tool. The instructor is able to “open” each specific run of a trainee with the help of a file browser. During a debriefing session each run can be re-played at normal speed or one can jump to a certain moment in time, including sound which is also logged. The debriefing sessions are held in a classroom equipped with a “beamer” enabling all trainees to learn from each other’s actions.

9 TRAINING AND TRAINING AREA SET-UP

During a course where VTS simulations are combined with theory lessons, a total of 20 trainees can be trained simultaneously.

The simulator has a flexible and modular set-up. Therefore, it is possible to change the VTS stations into basic shore-based VTS stations but also into the most sophisticated stations. MARIN's in-house software designers can easily implement any training area within a short time frame. As a result of this particular modular simulator set-up and all in-house know-how a training can be fully adapted to the client's wishes.

On request the simulator training can be extended with other modules such as Laws and Regulations, Maritime English, Nautical Knowledge and Management Information System Training. VTS trainings always comply at least with the requirements as laid down by IALA. During every training, though, strong emphasis will be laid on communication procedures as this is the essence for every VTS operator.

10 FUTURE DEVELOPMENTS

MARIN has an on-going Research and Development programme which implements improvements from lessons learnt, and which exploits the rapidly changing simulation technology base and the developments in the field to bring increased functionality and increased fidelity to the simulated environment. For example, AIS has been integrated in the VTS simulator since 2005.