Ministerie van Verkeer en Waterstaat

Directoraat-Generaal Rijkswaterstaat

Adviesdienst Verkeer en Vervoer

DI: 121959

# VTMIS in Holland

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**Abstract from " Scheepvaart informatie en communcatie systemen".**
**Inventory on vessel traffic management and information systems and transport management information systems.**
**Report: IC-151.054/REP/1 Intercai Nederland B.V.**

Directorate-General for Public Works and Water Management
Directorate-General for Shipping and Maritime Affairs
Directorate-General for Transport

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VTS - Inland

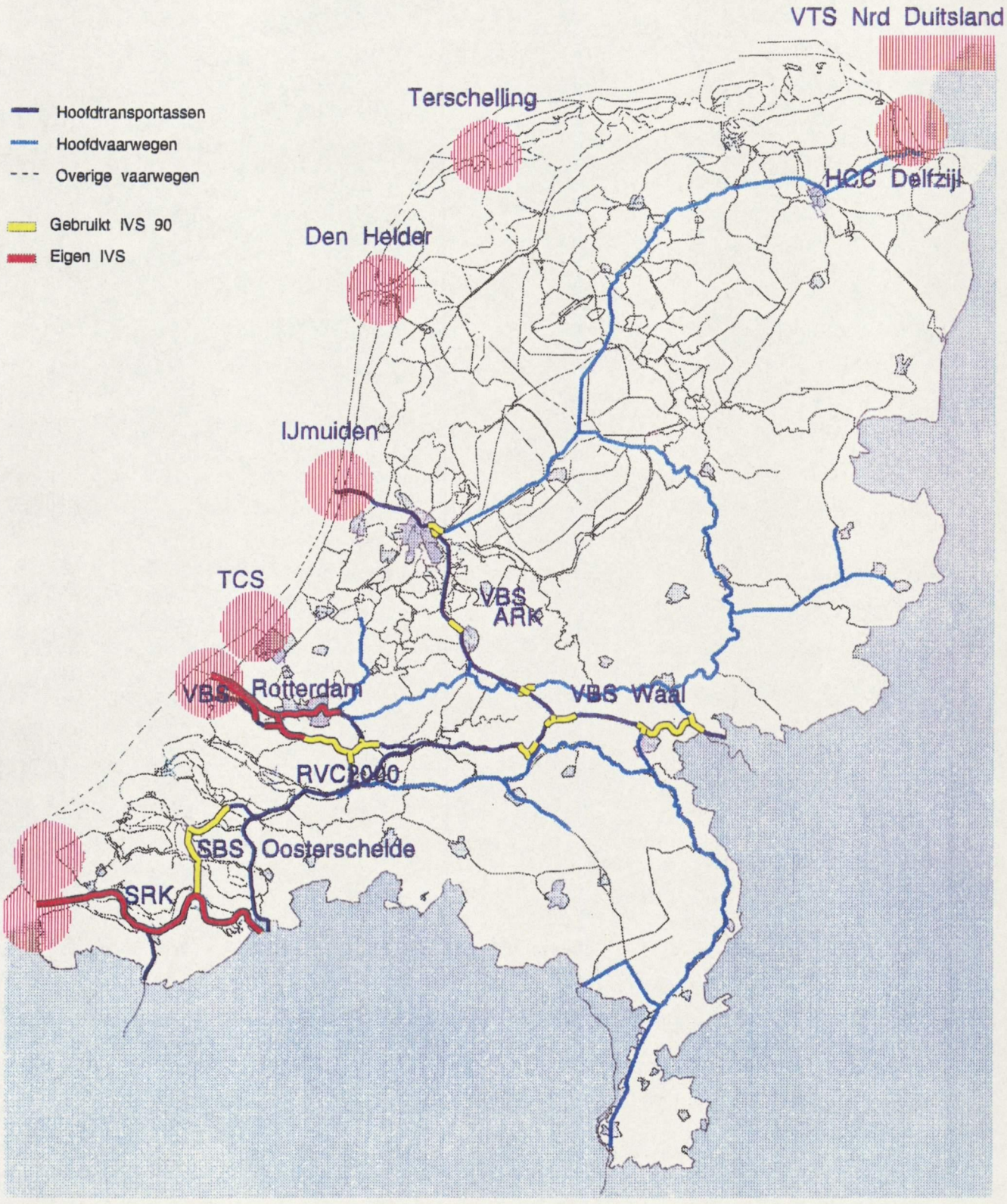


VTS - Maritime



(VTS - related) Vessel Traffic Information Systems

## Verkeersbegeleidende systemen



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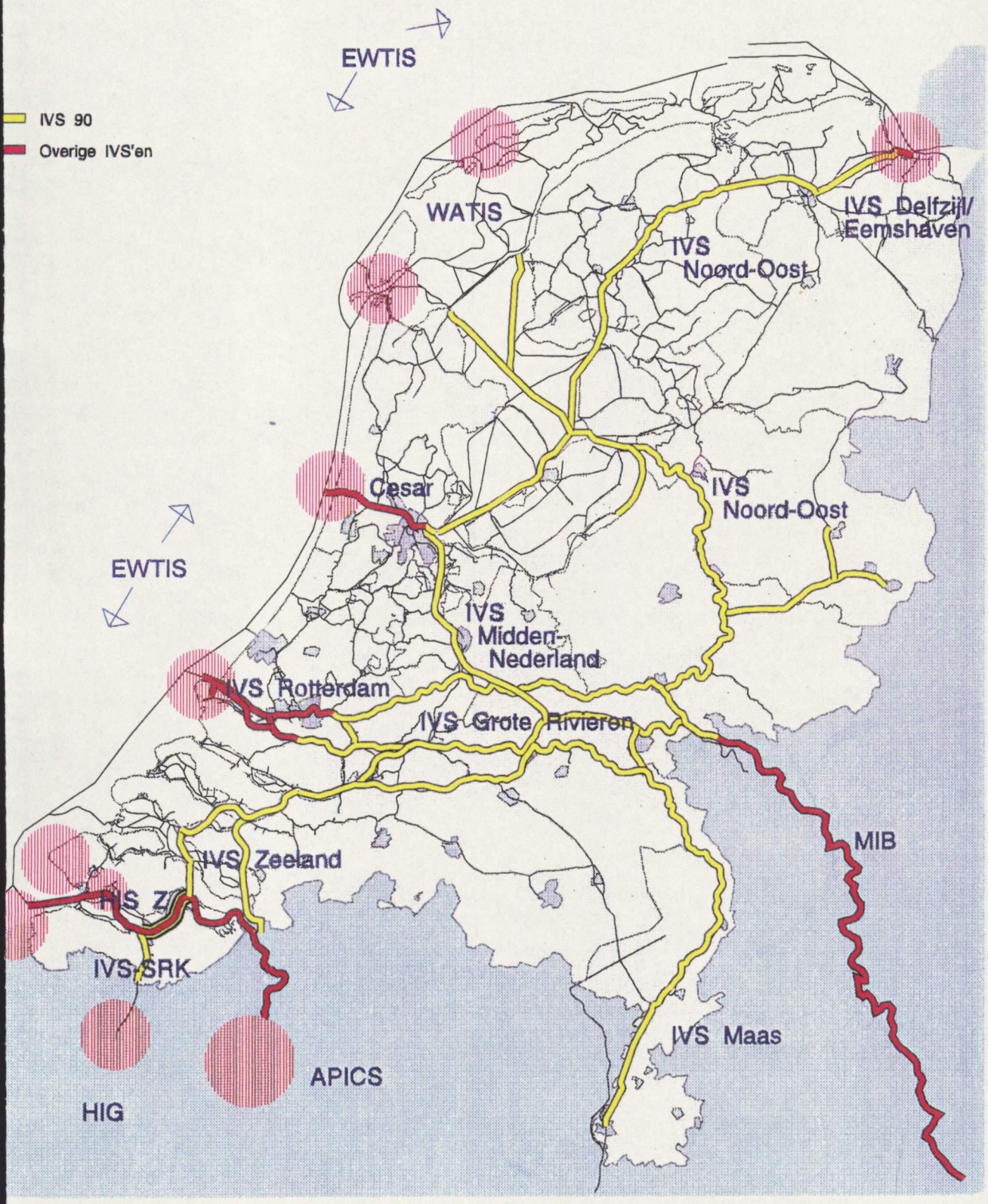

## 1 RVC 2000

### *1.1 General data*

**Source and date of information**: RWS (the Directorate-General for Public Works and Water Management), June 1994

RVC 2000 stands for "Dordrecht Regional Traffic Control Centre around the year 2000".

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Traffic management has existed in the Dordrecht region since 1974. Prior to that date, however, the only assistance that could be provided was by marine VHF radio. In the 1980s, the centre was expanded to become a fully-fledged traffic control centre with radar.

In 1991 the Zuid-Holland department of RWS started preparations for upgrading and renovating the vessel traffic system (VTS) in the Dordrecht region. This was necessary because the system had acquired additional tasks, the control area had been enlarged and the existing facilities had certain shortcomings. The equipment, for example the radar facilities, dated from 1981 and was in need of replacement. The decision to replace the equipment was taken partly because it was known that the maintenance costs of the existing equipment would rise in the next few years and partly because technically outdated equipment was being used in the Dordrecht traffic control centre which was no longer capable in 1994 of providing optimal performance.

The Zuid-Holland department started the project under the name RVC 2000: Dordrecht Regional Traffic Control Centre around the year 2000.

### *1.2. Aim*

The aim of the Dordrecht Regional Traffic Control Centre is to:

- to use active traffic guidance to regulate shipping movements on the waterways around Dordrecht in the interests of safety and efficiency, particularly on the following waterways:
  - Beneden-Merwede from km 972 to the Papendrechtfork;
  - De Noord from the Papendrecht fork to km 978;
  - De Oude Maas from the Papendrecht fork to km 998.2
  - De Dordtse Kil from the Oude Maas fork to km 982.6.
  - the adjoining harbour basins and approaches;
- to provide a fast and efficient response to accidents, in order to protect people and environment; the Dordrecht traffic control centre operates as an incident centre for all shipping accidents and other emergencies in the control area;
- to monitor compliance with the rules on berths in the overnight harbours, for example in the Dordtse Kil;
- to act as a central incident room for emergencies, messages and other reports in the region.

### *1.3. Function*

To provide information to shipping and, in special cases, to give instructions regarding:

- the safe navigation of individual vessels;
- coordination of shipping movements
- regulation of traffic flows to prevent dangerous situations;

The preventive task is carried out specifically in those parts of the control area where there is radar coverage.

The traffic control centre has a "remedial" function throughout the control area; this involves:

- rapid identification of the position and nature of an accident;
- measures to limit the number of ships involved in the accident and mitigate the consequential damage (or the chance of such damage).

*1.4. Operation/organisation*

RWS (the Directorate-General for Public Works and Water Management), Zuid-Holland department

*1.5. Geographical limits*

Beneden-Merwede from km 972 (linking up with the Waal vessel traffic system) to the Oude Maas (linking up with the Rotterdam vessel traffic system). This includes De Noord to km 979 and the Dordtse Kil.

The area covered by the Dordrecht Regional Traffic Centre - i.e. the area where traffic control is active - is divided into two sectors:

1. Heerjansdam sector:
   this covers the Oude Maas from km 979.3 to km 998.2 and the Dordste Kil to km 982.6 and Spui (including the harbour basins) from the fork to km 996.
2. Dordrecht sector:
   this covers De Noord to km. 978, the Beneden-Merwede from km 972 to the Oude Maas-Noord fork, Wantij (Prins Hendrik bridge) including the harbour basins, from the fork to km 979.3 (the transition to Heerjansdam sector).

*1.6. Technical realisation/configuration*

In the primary control area, the Regional Traffic Control Centre receives radar information from eleven radar stations (four of which are still being built) and eight closed-circuit TV stations. The radar system will be expanded in the future to include tracking and labelling of shipping.

The radar information is transmitted by PTT data lines or coaxial cables. The existing microwave transmissions are being replaced by leased PTT data lines as part of the RVC 2000 project.

Communication with ships is possible throughout the entire control area by means of a communication network - integrated with the telephone system - consisting of a number of VHF stations. The primary block channels of the traffic control centre are channel 4 (Heerjamsdam sector) and channel 19 (Dordrecht sector).

As part of the IVS 90 (see chapter IVS90 - the inland traffic information system) function of identifying, tracking and reporting on ships carrying dangerous goods, seagoing ships and push-tow vessels, the traffic control centres have an IVS 90 configuration. The IVS-VHF channel 71 is available for communication (reporting function) connected with the IVS function.

*1.7 Links to other systems*

Operational links to IVS 90, EDI facility IVS 90 and the organisational links to the VTS-Waal and VTS-Rotterdam.

*1.8 Status*

Operational; plans for upgrading/expansion plans have now reached the realisation stage (new VTS operational july 1996).

## 2. SBS Eastern Scheldt

### *2.1 General data*

**Source and date of information:** June 1994

The Eastern Scheldt SBS (or VTS Eastren Scheldt) became fully operational in expanded form in 1992. A traffic control centre of a limited nature had been operational at Wemeldinge since 1989.

The Eastern Scheldt SBS comprises a traffic control centre at Wemeldinge with a permanent staff of 2 Operators, who have at their disposal a wide range of equipment. This equipment consists of a communication network, a radar system and the IVS 90.

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### *2.2 Aim*

The aims of the Eastern Scheldt SBS can be defined as follows:

- to use active traffic guidance to regulate shipping movements in the Eastern Scheldt area in the interests of safety and efficiency, particularly in the central part of the Eastern Scheldt to the east of the Zeeland bridge and in the main fairway between the Krammer locks and the locks at Hansweert;
- to provide a fast and efficient response to accidents, in order to protect the environment throughout the control area (excluding the Western Scheldt and the Ghent-Terneuzen canal) of the Zeeland department of RWS.

  SBS operates as an incident centre for all shipping accidents and other emergencies in the control area of the Zeeland department of RWS; apart from the stretches of water mentioned above, the area includes above all the western part of the Eastern Scheldt, the Veerse Meer, the Scheldt-Rhine canal and the Volkerak.

### *2.3 Function*

To provide information to shipping and, in special cases, to give instructions regarding:
- the safe navigation of individual vessels;
- coordination of shipping movements
- regulation of traffic flows to prevent dangerous situations;

The preventive task is carried out specifically in those parts of the control area where there is radar cover.

The traffic control centre has a "remedial" function throughout the control area; this involves:
- rapid identification of the position and nature of an accident;
- measures to limit the number of ships involved in the accident and mitigate the consequential damage (or the chance of such damage).

The centre also has a supervisory function with respect to the "overnight harbour" in Wemeldinge.

2.4 *Operation/organisation*

Government authorities, RWS (the Directorate-General for Public Works and Water Management), Zeeland department.

2.5 *Target group and use*

Inland shipping and, to a lesser extent, fishing boats and leisure craft. Approximately 48,000 inland vessels pass through the Krammer locks each year. Of them, some 5,500 carry a dangerous cargo. Around 47,000 leisure craft also pass through these locks each year.

2.6 *Geographical limits*

- The primary area covered by the system is the central part of the Eastern Scheldt from the Krammer locks to the locks at Hansweert in the canal through Zuid-Beveland.
- The system also serves a reporting function for the Volkerak, Scheldt-Rhine canal, the western part of the Eastern Scheldt and the Veerse Meer.

2.7 *Technical realisation/configuration*

In the primary control area, the traffic control centre receives radar information from four radar stations and one closed-circuit TV station. The radar system may possibly be expanded in the future to include tracking and labelling of shipping. The radar information is transmitted by PTT data lines.

Communication with shipping is possible throughout the entire control area by means of a communication network consisting of four VHF stations. The primary working channel of the traffic control centre is channel 68.

As part of the IVS 90 function of tracking and reporting on ships carrying dangerous goods, the traffic control centre has an IVS 90 configuration.

The traffic control centre is also connected to Aquabel and a system for obtaining up-to-date information on water levels in the area ("SPC Snelpeilnet").

2.8 *Links to other systems*

Operational links to IVS 90, Aquabel and SPC Snelpeilnet.

2.9 *Status*

Operational.

2.10 *Policy*

The radar system may possibly be extended in the future to include a facility for tracking and labelling shipping.

## 3 Waal VTS

### *3.1 General data*

**Source and date of information**: June 1994

Part of the Waal VTS (vessel traffic system) became operational in the Tiel region (Tiel traffic control centre) in 1984. This was followed in 1989 by traffic control in the Nijmegen region (Nijmegen traffic control centre) and subsequently by traffic control in the Millingen sector close to the border with Germany.

As a designated "principal route", the Waal is of great importance to navigation between Rotterdam and Germany. The Second Transport Structure Plan indicated that priority should be given to solving any problems affecting principal routes.
A 1993 report on the future of the Waal as a principal route identified a number of alternatives policies, with accompanying measures, which would prevent problems arising in the future in the regulation of traffic on the Waal. The primary solution is to improve the infrastructure by means of additional technical facilities on a number of sections of the river, including active traffic control. The period required to complete the Waal vessel traffic system in its final form is approximately 5 years. The active traffic control on the Waal will then cover the section from the German border to past Nijmegen, the existing Vessel traffic system in the Tiel region and the traffic control facility to be completed shortly in the St. Andries bend.

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### *3.2 Aim*

The aims of the Waal vessel traffic system can be defined as follows:

- to use active traffic guidance to regulate shipping movements on the Waal in the interests of safety and efficiency, particularly in the following areas:
  - Millingen/Nijmegen: from the German border (Boven Rijn) to past Weurt (km 890) together with the intersections with the Pannerdens canal and the Maas-Waal canal and the "overnight harbour" in Nijmegen;
  - Tiel (km 908.5-916.5) with the intersection with the Amsterdam-Rhine canal;
  - St. Andries (km 922-929) with the intersection with the St. Andries canal;
- to provide a fast and efficient response to accidents, in order to protect people and the environment throughout the control area; the Tiel and Nijmegen traffic control centres operate as an incident centre for all shipping accidents and other emergencies in the control area from the German border to Gorinchem (km. 952).
- to monitor compliance with the rules on berths in the overnight harbours, for example in Haaften;
- the Niujmegen traffic control centre also acts as a central incident room for emergencies, messages and other reports for the entire department, outside normal office hours.

### *3.3 Function*

To provide information to shipping and, in special cases, to give instructions regarding:

- the safe navigation of individual vessels;
- coordination of shipping movements
- regulation of traffic flows to prevent dangerous situations;

The preventive task is carried out specifically in the parts with radarcoverage.

The traffic control centres have a "remedial" function throughout the control area; this involves:

- rapid identification of the position and nature of an accident;
- measures to limit the number of ships involved in the accident and mitigate the consequential damage (or the chance of such damage).

The centres also have a supervisory function with respect to the (in future 4) overnight harbours.

Traffic control is performed from the Tiel and Nijmegen traffic control centres by a permanent staff of two and three traffic controllers respectively, who have at their disposal a wide range of equipment.

*3.4 Operation/organisation*

Government authorities, RWS (the Directorate-General for Public Works and Water Management), Oost-Nederland department.

*3.6 Geographical limits*

Upper Rhine and Waal - from the German border to km 952 (level with Gorinchem) and connecting with the RVC 2000 management area.

*3.7 Technical realisation/configuration*

In the primary control area, the Nijmegen traffic control centre receives radar information from seven radar stations (of which four will be realisede in 1997) and two closed-circuit TV stations. The radar system will be expanded in the future to include tracking and labelling of shipping.

The radar information is transmitted by PTT data lines or by microwave transmissions (although the latter will be phased out in the near future). Communication with shipping is possible throughout the entire control area by means of a communication network consisting of two VHF stations. The primary working channels of the traffic control centre are 10 and 69.

In the primary control area, the Tiel traffic control centre receives radar information from three radar stations (of which one is under construction). The radar system may possibly be expanded in the future to include tracking and labelling of shipping. The radar information is transmitted by PTT data lines.

Communication with shipping is possible throughout the entire control area by means of a communication network consisting of two VHF stations. The primary working channels of the traffic control centre are 68 and 69

As part of the IVS 90 function of tracking and reporting on ships carrying dangerous goods, seagoing ships and push barges, the traffic control centres have an IVS 90 configuration. The IVS VHF channel 11 is available for communication (reporting) in connection with the IVS function.

The traffic control centres are also connected to Aquabel and the MSW (for obtaining up-to-date information on water levels in the area).

*3.8 Links to other systems*

Operational links to IVS 90, Aquabel and MSW and an organisational link to RVC 2000.

*3.9 Status*

Operational, with a planned expansion. The Nijmegen traffic control centre will be upgraded within 5 years.

## 4 Amsterdam-Rhine Canal VTS

### *4.1 General data*

**Source and date of information:**

- DVK, May 1992
- AVV, Mr C. Willems, June 1994

Contact:
RWS (Directorate-General for Public Works and Water Management), Utrecht department
Mr K. Fijn 030 6079498
Nieuwegein

RWS (Directorate-General for Public Works and Water Management), Noord-Holland department
Mr E. IJmker 02555 19117
Amsterdam

The system was initiated by the Ministry of Transport, Public Works and Water Management. The idea of establishing a dynamic traffic control system on the Amsterdam-Rhine Canal (ARC) was mainly prompted by the presence of a number of navigational black spots on the canal which could cause dangerous situations as the volume of shipping increased. It was considered necessary to help passing vessels in the interests of "safe and efficient navigation".

In view of the status of the ARC (a main inland waterway route), the increasing volume of traffic using the canal, and the trend towards larger vessels, greater attention will have to be paid to:
- a number of accident-spots on the canal;
- the transport of goods that are dangerous to man and the environment.

In the case of the ARC, dangerous cargoes are carried very close to densely populated areas (Amsterdam, Maarssen and Utrecht).

The Schellingwoude traffic control centre (operational in 1996) will be situated at the new Oranje lock. A second traffic control centre, at Wijk bij Duurstede, is to be upgraded and the renovated centre will become operational after Schellingwoude. The existing traffic control centre at Wijk bij Duurstede was the first of its kind in the Netherlands and dates from the mid-1950s. The instruments required for the VTS will become operational in stages.

### *4.2 Aim*

The aims of the ARC VTS can be defined as follows:
- to use active traffic guidance to regulate shipping movements on the Amsterdam-Rhine canal in the interests of safety and efficiency at a number of primary black spots, namely:
  - the immediate vicinity of the Oranje locks (on the Binnen-IJ and Buiten-IJ) and the northern section of the Amsterdam-Rhine Canal;
  - the central section of the Amsterdam-Rhine canal near to Maarssen and the Demka bend;
  - the intersection of the Lek and the Amsterdam-Rhine canal.
- to provide a fast and efficient response to accidents, in order to protect the environment throughout the primary control area and the other parts of the Amsterdam-Rhine canal between Amsterdam and Tiel.

### *4.3 Function*

To achieve the above aim in an adequate manner by the deployment of staff and equipment (see Technical realisation). The system has the following individual functions in this connection:
- the monitoring of shipping and where necessary the provision of information/advice or

even mandatory instructions to vessels;
- special attention for places in the fairway where there is an increased likelihood of an accident - the black spots - or where there is dense development along the banks;
- extra priority to be given to "target group vessels".

*4.4 Operation/organisation*

RWS (the Directorate-General for Public Works and Water Management), Utrecht and Noord-Holland departments.

*4.5 Geographical limits*

- the entire Amsterdam-Rhine canal from Amsterdam to Tiel
- Binnen IJ as far as the Kompa buoy
- Buiten IJ as far as the Blauwe Hoofd
- the Lek from approx. 6 km upstream and 3 km downstream of the intersection with the ARC
- all harbour approaches and junctions with other waterways in the area concerned.

*4.6 Technical realisation/configuration*

In the primary control area (the Oranje locks area and the northern section of the ARC) the Schellingwoude traffic control centre will receive radar information generated by four radar stations and two closed-circuit TV stations. The radar system will make it possible to track and label vessels. The radar information is transmitted by PTT data lines.

Communication is possible throughout the entire control area by means of a communication network consisting of one VHF station. The primary working channel of the traffic control centre is channel 74.

In the primary control area the Wijk Bij Duurstede traffic control centre will receive radar information generated by six radar stations and one closed-circuit TV station. Like the Schellingwoude centre, the radar system will be able to track and label vessels. The radar information is transmitted by PTT data lines.

Communication with shipping is possible throughout the entire control area by means of a communication network consisting of two VHF stations. The primary working channels of the traffic control centre are channel 68 and 74.

As part of the IVS 90 function of tracking and reporting on ships carrying dangerous goods, seagoing ships and push barges, the traffic control centre has an IVS 90 configuration. For the purpose of the IVS function, the IVS-VHF channel 60 is available for communication (reporting function) throughout the control area.

*4.7 Links to other systems*

The ARC VTS is linked to the IVS 90. The traffic control centres are also linked to Aquabel. In future there will be a link with de Amsterdam VTS.

*4.8 Status*

Currently under construction. Will be ready at the end of 1996.

## 5 Rotterdam VTS

### 5.1 *General data*

**Source and date of information**:

- "De Ingenieur, no. 4, 1993;
- "Kennissystemen", no. 11, 1992;
- Presentation by the Rotterdam Municipal Port Authority (symposium entitled "Telecommunication in the transport sector: is the Netherlands on the right track?"), Delft May 1994;
- Interview with Rotterdam Municipal Port Authority, June 1994.

Rotterdam vessel traffic system (VTS) consists of a combination of a radar scanning system and an information processing system (IVS). The information processing system is a reporting and tracking system for seagoing shipping and a reporting system for inland vessels.

The Rotterdam vessel traffic system fulfils the requirements of the International Maritime Organisation, which are laid down in the "requirements for a vessel traffic system" (VTS).

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### 5.2 *Aims*

The aims of Rotterdam VTS can be defined as follows:

- to regulate shipping movements in and around the port of Rotterdam (from 60 km off the coast to 40 km inland) in the interests of safety and efficiency;
- to provide a fast and efficient response to accidents, in order to protect people and the environment throughout the control area;
- to reduce the need for locks and traffic control centres to request information on vessels;
- to gather data on shipping for statistical purposes and for policy analyses.

### 5.3 *Function*

The aim of the Rotterdam vessel traffic system (VTS) is to promote efficient use of the approach to the port and of the port itself and the locks by gathering, storing and disseminating relevant information. The functions of the VTS are to:

- regulate shipping;
- provide navigational assistance;
- gather and process data;
- provide information.

The **Harbour Coordination Centre** (HCC), where the central traffic control centre is located, is responsible for the planning and coordination of shipping movements. It maintains contact with a great many different authorities and firms, including the pilotage services, the tugboat exchange, the weights and measures inspectorate, stevedores, patrol vessels, river police, customs and excise, etc.

In addition, the operational traffic control is performed by three main traffic control centres and

two support centres.

The Rotterdam VTS has its own information processing system (IVS). This provides for the electronic storage, processing and provision of all data which the staff of the Municipal Port Authority and other public and private sector bodies use to regulate shipping movements in the interests of safety and efficiency.

The IVS is linked to a number of internal and external systems:

- Link to the radar system of the VTS for the purpose of automatic tracking and labelling. This link serves a double purpose. First of all, information on shipping movements is made available. As a result, the radar system can show on the radar screen the abbreviated name, course and speed, length and destination of ships that are under way, as well as the type of vessel (seagoing, inland, fairway or IMO) and a proportionately sized ship's symbol. Second, the radar system plots the position of shipping for the benefit of the IVS. In this way, the IVS can calculate the time needed for a ship's passage in order to produce surveys of the expected shipping in each sector or region.

- Link to the Sea News System (SNS) of the Municipal Port Authority:
  The SNS provides an up-to-date survey of berths, which is accessible to the public.

- IVS - MIS link:
  The Management Information System (MIS) of the Municipality of Rotterdam is linked to the IVS. The MIS supplies the Municipality with statistical information and is itself supplied with shipping information by the IVS.

- IVS link to the Rotterdam Hydrological/Meteorological Systems

The HCC includes the Transport of Dangerous Goods Department. The HCC is the recipient of the information that constitutes the input for the dangerous-goods expert system. This system generates advice on environmental regulations and whether or not it is necessary for a vessel to have a pilot on board. It assists the operational staff in deciding whether or not to grant a licence/consent.

## 5.4 *Operation/organisation*

The Rotterdam VTS was established by the municipal authority of Rotterdam in cooperation with the Ministry of Transport, Public Works and Water Management. The VTS is operated by Rotterdam Port Authority. Many different parties, both on the water and ashore, are involved in the operation of the system, namely:

- the Harbour Coordination Centre (HCC)
- the traffic control centres
- port authority vessels[1]
- Dirkzwager Maassluis
- Rotterdam-Rijnmond pilotage corporation
- Towage services
- Weights and Measures Inspectorate
- River police
- Customs and Excise

## 5.5 *Geographical limits*

The control area is divided into three regions. The Hook of Holland region comprises the sea and

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[1] The first three organisations are part of the Rotterdam Port Authority.

roads, Europoort and part of the Nieuwe Waterweg. The Botlek region covers the Botlek area plus part of the Oude Maas and the Hartel Canal. The City region takes in the remaining area up to some kilometres upstream from the Van Brienenoord bridge. In addition to the fairways in the control area, the geographical limits of the Rotterdam VTS also naturally include the adjoining harbours in this area.

*5.6 Technical realisation/configuration*

Each of the areas referred to above has its own traffic control centre (TCC), namely Hook of Holland TCC, Botlek TCC, Hartel TCC, City TCC, Harbour Coordination Centre and Maasboulevard TCC. The system also has two ancillary centres (Hartel and Maasboulevard) which are mainly concerned with the regulation of shipping on the inland waterways. The HCC covers all three areas.

The system uses radar (26 stations), closed-circuit TV cameras (9 stations), measuring stations (3) and various VHF stations (marine VHF radio and radio telephone) and hydrological/meteorological sensors which are located at points along the Nieuwe Waterweg, the Nieuwe Maas and the Oude Maas and in the port of Rotterdam. The various signals (radar, TV, audio) are transmitted from one station to the other by means of microwave transmissions, PTT Telecom leased data lines, subscriber lines and coaxial transmission cables.

All communications are recorded on 33 and 44 channel recorders. The HCC also uses fax, telex and data line links (120 computer-to-computer hook-ups and terminal links).

Much importance is attached to communication (telephone, marine VHF radio, radio telephone). Marine VHF radio is used for communication with shipping, each sector having its own VHF channel. At the places where shipping has to switch from one channel to another, signs have been erected showing the channel to be used. Each traffic control centre also uses channel 13 for conveying administrative information, for example reporting ETDs. The HCC uses the marine VHF radio channels 11 (communications concerning safety in the port of Rotterdam) and 14 (reports of proposed discharges of waste substances at the port collection facilities).

The radio telephone is used for service communications between HCC or the traffic control centres and patrol boats. A distinction is made between radio telephone networks that cover the port and those that cover the region as a whole. The Dangerous Goods Department of the Municipal Port Authority has a separate radio telephone channel (6), and there is also a separate radio telephone channel for use by the emergency services (8).

*5.7 Links to other systems*

The Rotterdam VTS is in Holland linked to:

- the Dordrecht Regional Traffic Centre.
- Shipping Intelligence System;
- Water Depth Management System;
- Rijnmond Hydrometric Centre.

*5.8 Status*

Operational; "mid-life-conversion" within a few years.

## 6 Scheldt Radar Chain VTS

### 6.1 *General data*

**Source and date of information**:

- Scheldt Radar Chain Newsletter, 1991
- Vessel Traffic Services, River Scheldt and approaches, H.A. Dijkhuizen and J.R. van Willigenburg; 7th international VTS Symposium, Vancouver, Canada, June 1992;
- Remote-control pilotage in the Scheldt estuary, the Scheldt radar chain, R.A. v.d. Voort, 1992;
- RWS Information, Zeeland department, June 1994.

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The VTS along the Western Scheldt, known by the name Scheldt Radar (officially VTS SM - Scheldt and its approaches), is organised in accordance with the IMO guidelines.

### 6.2 *Aim*

The aim of the SR VTS is to ensure:
- the smooth flow of shipping;
- efficient lockage;
- efficient use of the various organisations that provide services to shipping;
- safe navigation;
- safety in the waterways;
- in the event of accidents, the safe passage of other shipping;

and to mitigate the impact of accidents on:
- the relevant vessels/people on board these vessels;
- the infrastructure, the environment and the local population.

### 6.3 *Function*

The main function of the SR is the provision of information:
- on ETAs to ships and pilots;
- on hydrology/meteorology;
- on the use of anchorages;
- to ships dependent on tides;
- on lockage;
- to assist ships carrying dangerous cargo.

The function of the SR-IVS is to gather, evaluate and distribute data that can assist the traffic control process.

### 6.4 *Operation/organisation*

Dutch and Belgian authorities.

*6.5 Geographical limits*

The River Scheldt from 40 km off the coast to the west of Vlissingen (Steenbank) and Zeebrugge (Wandelaar) into the port of Antwerp (Kruisschans).

Also the Ghent-Terneuzen canal (but no radar) and the junctions leading to the Scheldt and adjoining harbour basins/approaches.

*6.6 Technical realisation/configuration*

The Scheldt radar chain consists of 5 traffic control centres with the HCC in Vlissingen and an amount of 18 radar sensors, which together cover an area from the North Sea to the centre of Antwerp (a distance of approx. 130 km).

The electronic equipment consists of the following parts:

- radar systems with target tracking and labelling;
- an information processing system which stores the administrative data on the ship and its journeys. The IVS is linked to the radar system and is able to generate the ETA of a detected ship at various points along the route. The ETA is calculated on the basis of the speed, chosen route, current and effect of the tide. There is also a link to the hydrology/meteorology centre in Zeeland;
- a communication system: this provides the voice and data communication between the ships, VTS operators and traffic control centres and communication between them and third parties (use is made for this purpose of marine VHF radio, telephone, telex, fax and a large number of leased telephone lines).
- radar screens and control consoles;
- closed-circuit TV system.

*6.7 Links to other systems*

- by virtue of bilateral agreements, there is a link to APICS through Datanet-1;
- there is as yet no electronic link between SRC-IVS and IVS 90 (Hansweert and Terneuzen locks);
- link to the HIG system of the Ghent harbour authority is planned for the end of 1994;
- link to the Pilot Information System of the Belgian authorities and the Dutch pilotage service; these receive filtered information from the IVS free of charge;
- link to the hydrological/meteorological centre in Zeeland.

*6.8 Status*

Operational.

In 1994 there was an experiment to incorporate an Automatic Reporting and Information System (ARIS) in the SR VTS. This automatic identification system guarantees correct identification and relieves the burden on the communication channels.

A study is made incorparating ATIS in the SR-tracking system. ATIS is an identification signal which is transmitted automatically at the end of a marine VHF radio conversation and is unique to every vessel. The position of the relevant vessel is plotted on the basis of the RDF and a link can be made between the identification data and the ship (ship's echo in the roads). A connection can then be made ashore with the shipping data base, thereby enabling the data base and the radar to interact.

## 7 Eemsmond Port Coordination Centre

### *7.1 General data*

**Source and date of information:**

- HCC information brochure, dated after September 1992;
- DGSM (Directorate-General for Shipping and Maritime Affairs) Rijswijk, June 1994;
- RWS, Noord department, June 1994;
- Interview HCC, 27 June 1994

Contact:

Delfzijl/Eemshaven Port Authority, (Havendienst)
Mr R.K. Mast, harbour master
Mr J. Stokroos, assistant harbour master
Handelskade West 10
P.O. Box 20004
9930 PA DELFZIJL
Tel. +31 (0)5960-40400

### *7.2 Aim*

One of the main functions of the Delfzijl/Eemshaven Port Authority is to regulate shipping movements in and around the ports of Delfzijl and Eemshaven in the interests of safety and efficiency. To achieve this, an advanced vessel traffic system (VTS) and a corresponding information processing system (IVS) were introduced on 30 September 1992. Both systems are installed in the Eemsmond Harbour Coordination Centre (HCC), which is located at Handelskade West 10 in Delfzijl.

### *7.3 Function*

The functions of the VTS are:

- planning and coordination of the shipping movements in the control area;
- provision of information (e.g. hydrological/meteorological data and also navigational data, if necessary with information on position) to shipping in the control area;
- if necessary, the issuing of binding instructions to shipping in the control area.

The functions of the IVS are:

- gathering and dissemination of basic data for the VTS, the port costs and the provision of the various facilities;
- provision of reliable information to internal and external parties;
- compilation of statistics (goods and shipping);
- production of strategic management information.

### *7.4 Operation/organisation*

The VTS and IVS are operated by the HCC. The planning and coordination of shipping are carried out jointly by the traffic departments of the Delfzijl/Eemshaven Port Authority and DGSM in the HCC.

### *7.5 Geographical limits*

The area covered by the VTS is the entire Eemsmond, the harbours in Delfzijl (including the Zeehaven canal) and the approach channels.

*7.6 Technical realisation/configuration*

The VTS uses a network consisting of three radar stations, which are fitted with tracking systems. The data from these stations is transmitted to the central computer systems in the HCC.

The HCC has a closed-circuit TV network for additional information.

The communication system comprises marine VHF radio, radio telephone and telephone lines.

*7.7 Links to other systems*

The combined VTS/IVS operated by Eemsmond HCC is not at present linked to other systems. However, there is a direct line of communication with the German Eems radar chain, which is located in the "Revierzentrale Emden".

*7.8 Status*

Operational.

## 8 Scheveningen Traffic Centre (STC)

### *8.1 General data*

**Source and date of information:** Traffic Centre dated 23 May 1994.

Scheveningen vessel traffic system

Contact:

Municipality of The Hague, Urban Management Department
Harbour Authority Department
Mr G. Wong
Scheveningen Traffic Centre
Tel. +31 (0)70-3527701

### *8.2 Aim*

To regulate transport in the port of Scheveningen in the interests of safety and efficiency and to ensure that vessels which do not put into the port of Scheveningen pass quickly and safely through the Scheveningen radar sector.

### *8.3 Function*

Tracking and communicating with the shipping referred to above. A pilot is not required for ships entering the port of Scheveningen. Vessels wishing to enter the port should report to the STC two hours before they arrive at the Scheveningen approach buoy. The STC then checks whether there is sufficient draught in the harbour and passes on this information and information about shipping in the vicinity of the vessel.

### *8.4 Geographical limits*

Scheveningen radar sector.

### *8.5 Technical realisation/configuration*

Single radar for plotting positions and marine VHF radio (VHF channel 14) for communicating with shipping.

### *8.6 Status*

Operational

## 9 IVS 90

### *9.1 General data*

**Source and date of information:**

- Brochure of the Ministry of Transport, Public Works and Water Management entitled "IVS 90: Navigation Information Systems". The date of publication is not mentioned.

Contact:

RWS (Directorate-General for Public Works and Water Management)
Traffic and Transport Advisory Group
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Boompjes 200
P.O. Box 1031
3000 BA ROTTERDAM
Tel. +31 (0)10-4026653

### *9.2 Aim:*

The aim of IVS 90 is:

- to regulate shipping movements on the main Dutch waterways in the interests of safety and efficiency;
- to provide a fast and efficient response to accidents, in order to protect people and the environment;
- to reduce the need for locks and traffic control centres to request information on vessels;
- to gather data on shipping for statistical purposes and for policy analyses;
- to perfect the control of shipping in locks.

Reports are obligatory in the case of target group vessels, i.e. vessels longer than 140 metres and broader than 15 metres, passenger vessels, seagoing vessels and special transports.

### *9.3 Function*

The function of IVS 90 is to gather data on ships and cargoes in the IVS 90 area. Since the introduction of IVS 90, a ship need report only once, namely when it enters the IVS 90 area. Afterwards, the information is passed along with the vessel.

The IVS 90 is a reporting and tracking system and is part of and supports various vessel traffic systems, namely:

- in the Dordrecht region: Waal (Tiel-Nijmegen) vessel traffic system, RVC 20000, with the Dordrecht traffic control centre;
- on the Eastern Scheldt, with the Wemeldinge traffic control centre;
- from 1995 onwards: on the Amsterdam-Rhine canal, with the traffic control centres at Wijk bij Duurstede and Schellingwoude.

IVS 90 is the successor to IVS Zeeland and the Major Rivers Reporting and Tracking System (MVS) and covers a larger area (i.e. all main waterways in the Netherlands).

### *9.4 Operation/organisation*

RWS (Directorate-General for Public Works and Water Management).

*9.5 Target group and use*

All shipping within the control area, with the exception of leisure craft. On the Rotterdam-Germany route, the notification/system is limited to the target group vessels.

*9.6 Geographical limits*

The main fairways in the Netherlands.

*9.7 Technical realisation/configuration*

The system (IVS 90) consists of 5 interconnected regional IVS systems, namely: IVS Major Rivers, IVS Zeeland, IVS Central Netherlands, IVS North East and IVS Maas.

Once the data have been gathered (they are supplied by marine VHF radio, car phone, fax or EDI) in the area covered by IVS 90, they are automatically made available to the following traffic control centres/locks within IVS 90. The ETAs for the next point in the passage are generated automatically (on the basis of estimated specifications).

*9.8 Links to other systems*

IVS 90 is at present not linked to other systems. IVS 90 is used at Traffic cetres as a part of VTS's.

*9.9 Status*

IVS 90 has been fully operational since April 1994.

*9.10 Policy*

Current developments with regard to IVS 90 are listed below:

- link to the German system on the Rhine (MIB) will be completed on 1 January 1995 (link through EDI);
- consultations with Ghent on a link are now at an advanced stage (also through EDI);
- consultations (RWS, Zeeland department) are being held regarding a link with Vlissingen (Flushing) Port Authority (and later with ZIS);
- consultations (incl. a transfer of knowledge and exchange of information) are being held by AVV with Hungary on the definition, coordination and establishment of an IVS in Hungary;
- in addition, consultations are being held within the EC on the international coordination/realisation of an international IVS system. The countries involved are the Netherlands (AVV), Belgium (the Flemish and Walloon areas), Germany and France.

Also under discussion is the idea of linking IVS 90 in the future to a number of systems designed for maritime navigation, for example the Rotterdam vessel traffic system - IVS, CESAR (marine and inland navigation), WATIS (also maritime and inland navigation), SRC-IVS and Delfzijl IVS, as well as the Dordrecht EDI facility.

## 10 WATIS

### *10.1 General data*

**Source and date of information:**

- WATIS brochure, undated
- RWS, North department, Mr Pfeifer, June 1994
- AVV, Mr C. Willems

Contact:
Ministry of Transport, Public Works and Water Management
Directorate-General for Shipping and Maritime Affairs
Mr P.M. Pfeifer
P.O. Box 5817
2280 HV RIJSWIJK
Tel. +31 (0)70-3955555

The initiator of the system is the Ministry of Transport, Public Works and Water Management (DGSM and RWS), North Netherlands department.

WATIS is part of the Den Helder VTS and the Terschelling VTS and is intended to provide clear information about shipping in the northern coastal waters. N.B. Although a North VTS is mentioned in the VERBIS report, it does not in fact exist!

### *10.2 Aim*

To use data on shipping movements (i.e. commercial shipping) to obtain systematic information about the presence of vessels and hence the cargo carried in the Waddenzee in the interests of safe and efficient navigation. This is sometimes referred to as the traffic image.

### *10.3 Function*

WATIS supports Vessel Traffic Service (VTS) operators in their operational duties, i.e.

- decisions on whether or not to admit vessels;
- traffic management in the VTS areas;
- action in the event of emergencies;
- provision of information to shipping;
- checking compliance with the obligation to carry a pilot.

WATIS also compiles statistics on shipping movements in the Waddenzee for policy purposes.

The WATIS data base contains the following data, which forms the basis for a wide range of functions:

- ships (name, type of fish, dimensions, country, category);
- contacts (name, address, telephone, fax);
- ships' journeys (origin, destination, route, cargo, draught, pilot);
- dangerous goods (over 6,000 goods as standard);
- beacons (name, position, colour, shape);
- anchorages/harbours (harbour basins, harbours, anchorages, berths);
- hydrological/meteorological data (water levels, sunrise/sunset, wave height);
- nautical particulars (incidents, particulars of beacons).

The information may be supplied to various organisations.

Vessels report at the approaches to the Waddenzee. The traffic controller implements a restrictive policy on admissions to the Waddenzee.

*10.4 Operation/organisation*

DGSM, RSW North Netherlands, Royal Netherlands Navy in Den Helder.

*10.5 Target group and use*

The end users of WATIS are the Brandaris traffic control centre, RWS on Terschelling and the Harbour Coordination Centre (Royal Navy)/traffic control centre (DGSM) in Den Helder.

*10.6 Geographical limits*

Eemsmond, Den Helder approaches, Terschelling approaches, Schiermonnikoog approaches, Waddenzee area.

*10.7 Technical realisation/configuration*

WATIS is part of two VTS areas (Den Helder and Terschelling, including the Waddenzee) and an information processing system in Leeuwarden.

Information can be provided to third parties by means of an automatic fax facility and the bulletin board system (coastguard centre, customs and excise, harbour authorities and trade and industry).

The information from a ship passing through the relevant control area need be given only once. Afterwards, the information is passed on with the vessel.

The following aids are used in connection with the system:
- radar
- VHF
- an information processing system.

*10.8 Links to other systems*

WATIS is linked to the Den Helder radar system. There are also plans to link WATIS to the Terschelling radar system and to the IVS 90. The latter would be on the basis of a Protect message (for notification of dangerous goods and other information).

*10.9 Status*

WATIS should have been operational on 1 May 1994. Owing to a few technical problems, the system will not become operational (provisionally) until July 1994, but this will exclude the Waddenzee. The reporting system (which operates under Windows) was not yet available in the Waddenzee on 1 July 1994. The planned date on which WATIS will become operational in the Waddenzee sector is 1 January 1995.

## 11 CESAR

### *11.1 General data*

CESAR is the Dutch acronym for Central System for Control and Registration of Shipping. The system is intended for the registration, storage and processing of information on shipping in the ports of the control area (Amsterdam and North Sea Canal) and for communication between businesses in the port and the authorities responsible for the control area.

CESAR integrates three earlier systems used in the control area, namely:

- the Navigation Information System (SIS) of the Amsterdam Port Authority (i.e. the Amsterdam registration system for moored shipping, which deals among other things with berths);
- IVS (information processing system) 90;
- a number of functions of AVERIJ (IJmuiden Traffic Service Equipment), the vessel traffic system for access to the Amsterdam-North Sea Canal area (ANZK).

The original ICIM[2] reports, which were completed in mid-1993 and were commissioned by Central Nautical Management (CNB) of the ANZK, still referred to the future integrated system as IVS 90+. This name was changed to CESAR in early 1994.

**Source and date of information**

IVS 90+ functional design, ICIM, September 1993
AVV information dated 6 June 1994
Transport Newspaper, 12 July 1994

Contact:

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### *11.2 Aim*

The aim of CESAR is to provide an integrated system for the registration and control of both maritime and inland shipping throughout the control area, in other words from outside the locks in IJmuiden up to and including the Oranje locks in Amsterdam.

The function of CESAR is to:

- register the arrival and departure of seagoing vessels;
- assist in decisions on the admission of seagoing vessels;
- assist in the planning and management of berths;
- track both seagoing and inland vessels in the control area.

The main priority is to regulate shipping movements throughout the control area in the interests of safety and efficiency.

Background information

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[2] Informatica Centrum voor Infrastructuur en Milieu B.V.

The Amsterdam Port Authority is currently introducing a vessel traffic system (VTS) in the Amsterdam region. A control centre has been established for this purpose in the harbour master's office, from which traffic in the control area can be tracked and controlled. A VHF communication system is already in operation, and preparations have almost been completed for the use of radar at black spots in the area. The radar system is expected to be operational within three years. Only then will there be a fully-fledged vessel traffic system, i.e. preventive and remedial rather than just remedial and semi-preventive (owing to the limited information about the traffic situation).

*** IJmuiden VTS**

The IJmuiden vessel traffic system (VTS) is operational from 35 miles off the coast (with radar cover to around 15 miles) as far as North Sea Canal kilometre 11.2. The traffic control centre is situated at IJmuiden and has two radar stations (offshore and inland). These are due to be fitted with a fully-fledged tracking system to the west of the locks within a year. The communication system consists of block channel 11 inland and block channels 9 and 12 offshore. Once CESAR has been introduced it will replace AVERIJ in this area.

*** Amsterdam VTS**

The vessel traffic system of Amsterdam Port Authority starts at North Sea Canal kilometre 11.2. The Amsterdam vessel traffic system that is now being prepared will use the radiophone network that is currently operational (block channel 14 and IVS channel 4). Channel reallocation is at presentl under consideration.

At the time of writing (June 1994), CESAR is still being constructed and forms part of the Amsterdam VTS.

Plans have now been formulated for the (phased) introduction of radar with tracking and labelling.

**Central Nautical Management**

The Amsterdam Port Authority, DGSM (the Directorate-General for Shipping and Maritime Affairs of the Ministry of Transport, Public Works and Water Management), the IJmond (IJ estuary) region and RWS (the Directorate-General for Public Works and Water Management) in the IJmond region have now been merged for operational purposes to form the CNB (Central Nautical Management). The manager is the Amsterdam Port Authority and the contact is Mr K. Mewe, Amsterdam.

*11.3 Function*

CESAR will supplement IVS 90 by providing processes and functions to support the route planning of seagoing ships and a link with SIS for the transmission of data on ships, cargoes and routes. In addition, policy information is supplied to DGSM and statistical information to RWS.

In brief, CESAR will provide the following data in keeping with the aims specified in three initiatives. The data are listed below in relation to the relevant initiative:

From IVS 90:

- tracking of ship movements (to know approximate position of vessels);
- support for the operator of both sea-locks and the inland waterway locks (lock planning);
- support in monitoring observance of the regulations governing the transport of goods (display of signs, exemptions from transport prohibitions and route prohibitions);
- registration and storage of data on ships, cargoes and routes for the benefit of the CBS, RWS and DGSM policy.

For the SIS:

- information about the progress of ship's voyages.

The VERBIS report (January 1992) recommended that the system be expanded in order to provide:

- support in planning the route of seagoing ships in the control area.

- reliable data for policy - and adjustments to policy - on traffic control; the registration of problems (such as obstructions to navigation) and the logging of applications for and agreements with support services (the pilotage service, tugboats etc.) play an important role here.

*11.4 Operation/organisation*

Central Nautical Management (CNB). The bodies that participate in the CNB are the Amsterdam Port Authority, RWS and DGSM. The function of the CNB is to regulate navigation to and from the ports on the North Sea Canal and to ensure efficient and effective control of traffic flows.

*11.6 Geographical limits*

Amsterdam-North Sea Canal area.

*11.7 Technical realisation/configuration*

Since CESAR is still in the development stage little can be said at present about its final technical configuration, except that it will be compatible with the SIS, IVS 90 and AVERIJ systems. Access to the system at the offices of the organisations connected to CESAR will be obtained through a PC operating under WINDOWS. The nautical integration of the entire North Sea Canal area has necessitated the development of a new registration and communication system. CMG, an IT firm, has been commissioned to carry out this development.

Amsterdam Port Authority will be responsible for ensuring that commercially sensitive information in the system is adequately protected. It follows that port businesses that are connected to the system will have access only to the information for which they have authorisation. They may call up this information from an electronic bulletin board.

*11.8 Links to other systems*

SIS, IVS 90, AVERIJ and, in the future, Amsterdam VTS (vessel traffic system).[3]

*11.9 Status*

Implementation phase.

*11.10 Policy*

Amsterdam VTS (once completed) and CESAR will be linked in the future to the Amsterdam-Rhine Canal vessel traffic system, known as ARC.

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[3] It is important to note that there are now plans to equip the CESAR control area with shore radar for the purpose of tracking and labelling ships. Implementation of these plans will result in what is already known as the Amsterdam VTS.

## 12 IVS 90 EDI facility

### *12.1 General data*

**Source and date of information**: AVV, June 1994

The project started as the "Dordrecht EDI pilot". The pilot stage was completed in 1993. After evaluation, it was decided to continue using EDI for the registration of dangerous goods. During the pilot period, the forerunner of the IVS 90 system - the Major Rivers Reporting and Tracking System (MVS) - was still operational. The provision of the EDI facility therefore meant that the EDI application used during the pilot stage had to be adapted to the IVS 90 system. This adaptation was completed in late 1993.

During the same period, the TDB reporting system used during the pilot project and the Protect IFTDGN reporting system used by shipping were examined to determine to what extent they overlapped and whether could be merged. The merger of the two reporting systems and modification of the Protect IFTDGN reporting system was completed in April 1994. This was followed in the second half of 1994 by the incorporation of the new Protect IFTDGN reporting system in IVS 90.

Contact:

RWS (Directorate-General for Public Works and Water Management)
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Mrs L. Kuiters
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Tel. +31 (0)10-4026653
Fax +31 (0)10-4148115

### *12.2 Aim:*

More efficient reporting of dangerous goods to IVS 90. Safety to be improved by ensuring that reports are complete and reducing the scope for error.

### *12.3 Function:*

Supervision of goods transport: compliance with statutory obligation to report the transport of dangerous goods.

Content:
Information about dangerous cargoes on board inland vessels and route information.

### *12.4 Operation/organisation*

The initiator and manager of the Dordrecht EDI facility is the Traffic and Transport Advisory Service of RWS.

### *12.5 Target group and use*

Inland vessels:
shipping on all major waterways in the Netherlands where IVS 90 is operational.

Communication partners:
Inland vessels with Dordrecht traffic control centre (dangerous goods).

Target group:
Seagoing and coastal ships on the inland waterways.

*12.6 Geographical limits*

Control area where IVS 90 is operational, i.e. all main fairways in the Netherlands.

*12.7 Technical realisation/configuration*

Protocol: EDIFACT
Standard: EDI
System: open to everyone who fulfils certain conditions.
Communication infrastructure: Memocom (X.400), Tradeserver

EDI software is supplied by Walvis (EDI tool) and Udiport (EDI use). The project staff have also developed their own software. The present reporting system uses the reporting structure developed by the UTC Foundation (on the basis of EDIFACT), namely the TDN reporting system and the Response reporting system.

The Protect.version 4 reporting system will be introduced in mid-1994 (UB-IFTDGN); see also Protect.

*12.8 Links to other systems*

IVS 90, the EDI application of IVS 90, has been available since 1993. The modified version of the EDI application as a result of the new Protect-IFTDGN reporting system will be ready in the second half of 1994.

MIB, Reporting system on the German section of the River Rhine. The plan is that MIB too should be able to offer the EDI function to shipping in the course of 1995. Use will also be made in this connection of the Protect IFTDGN reporting system.

Protect IFTDGN reporting system:
This reporting system has been modified since April 1994 and is likewise now suitable for reporting the transport of dangerous goods on inland waterways.

IVS 90 (the project software will modified at a later stage to be compatible with IVS).

Reports of dangerous goods carried by shipping to be made through the Rotterdam Port Authority.

*12.9 Status*

Operational.

*12.10 Policy*

- Modification of the software in connection with the transition to the Protect reporting system.
- Increase in the number of participants. Also encourage the use of the Protect system internationally for reporting dangerous goods to other government authorities.