

Contingency Planning for Marine Pollution Control

of the German Coastal States and the Federal Government



IT-based Support System for Maritime Incident Response

The German coastal areas of the Baltic and North Seas are part of the most frequented shipping routes in the world.

The high density of shipping traffic requires effective preventive measures, especially to protect the environment from hazards associated with this kind of traffic.

There is always a risk of pollution of the sea and beaches with oil and other chemicals due to accidents. For this reason, the Ministries of the Environment of the Coastal States, in cooperation with the Federal Minister for Transport and Digital Infrastructure have developed a common contingency plan for the entire German North Sea and Baltic coasts including estuaries and connected navigable waterways, supporting the onshore response capacity to accidental release of hazardous material, e.g. mineral oil or floating hazardous and noxious substances (HNS).



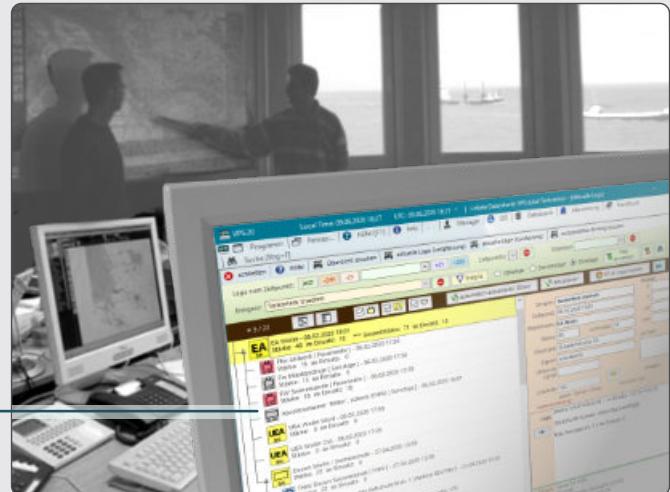
The German Contingency Plan for Marine Pollution Control (VPS) applies to all phases of the disaster management cycle. It is based on comprehensive concepts, best available technologies, training, and not least on the continuous update of all relevant technical data along the approx. 3600 km of the North and Baltic Sea shores.

Since 2000, the VPS.system software has been implementing this plan on the basis of modern information technology. It is examined on an annual basis, and, if required, adapted to the changing organisational and technical conditions.

The creation, the maintenance and the use of VPS.system are part of the German national response strategy which legally mandates the five German coastal states and the Federal Government with shared areas of responsibility.

The plan aims at fulfilling both legal and technical requirements with respect to sustainability of the marine ecosystem and for disaster control in naval haz-mat operations on our shores.

For further information: www.vps-web.de



- Data on organizations, individuals, contact information
- Dispatch procedures for all coastal states and the Central Command for Maritime Emergencies Germany
- Detailed information on the entire German coastline
- Detailed photos of the entire German coastline
- Database of vehicles, equipment, maintenance procedures
- Data on ships and aircrafts
- Data for services from public and private sector
- Response manual and proposed actions
- Geographic Information System (GIS)
- Operational sensitivity maps within GIS
- Situation module, including
 - Log book, operation records
 - Damage accounts with units and resources
 - Situational objects, situation map within GIS
 - Document repository
 - Continuous data storage valid for legal purposes
- Drift modelling
- AIS data of the shipping traffic in near real-time
- Multi-lingual user interfaces



Data and Information

The combating of pollutants released to coastal areas, harbours and the high seas requires an permanent state of readiness of staff and equipment.

In order to react quickly and effectively in the case of an incident, the incident commander in charge must have all important information readily at hand.

Where is response equipment available?

Is this equipment appropriate for this case of emergency?

How much workforce is required to deploy this equipment?

These are some of the questions where quick answers will determine the success of the initial emergency response measures for protection of the marine and coastal environment.

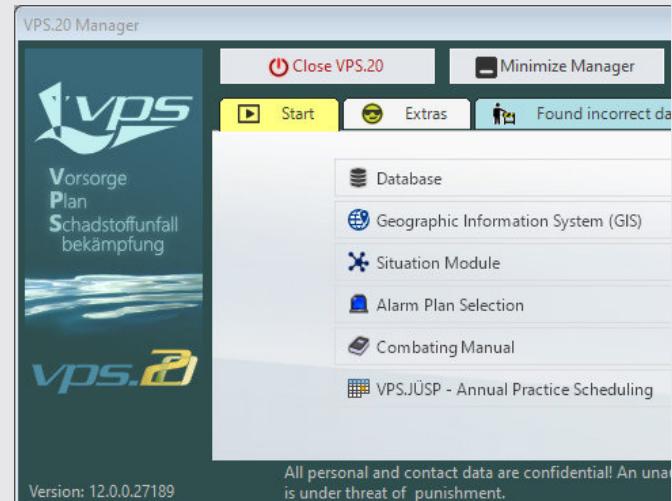
One function of the German Contingency Plan for Marine Pollution Control (VPS) is to collect, store and disseminate such information that is necessary or complementary to the prevention of and in the course of pollution incidents.

The following types of data are available:

Alphanumeric data

To describe a wide range of coastal zone characteristics, response equipment, protected areas, alarm plans, etc.

Access to these data is possible through the easy-to-use VPS.system software.



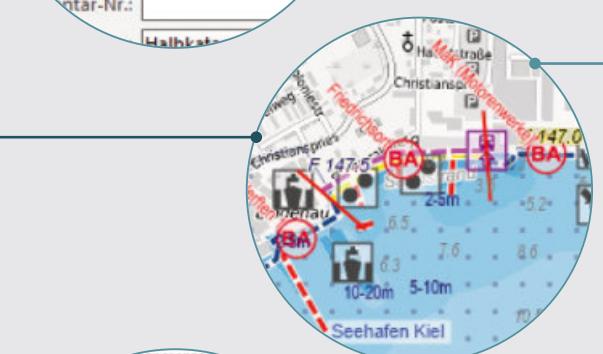
Geodata

Adopted maps and sea-charts, othophotos, as well as geodata containing relevant information with regard to the shoreline, the landuse in coastal areas and the coastal infrastructure. The geodata are made accessible to the user by means of a GIS module embedded in the VPS.system.



Text, photos and graphics

form the basis of the response manual. The manual contains the response know-how, which must be well-structured and available immediately when required. The text data, together with the graphics and photos, are stored as an 'electronic book' that is an independent module of VPS.system.



Photo/Image data

result from the extensive photographic documentation of the coast. Overlapping aerial images of the coasts are taken from the direction of the sea and from distinctive coastal sections or objects.

The digital photos with geo-reference are stored in VPS.system to link them functionally to both the content of the database and the GIS.



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Geographic Information System

provides the user with a wide spectrum of geodata contained in the system.

For example, thematic maps can be combined with stations of the chainage of coast sections, classes of embankments or links to respective local authorities. In addition layers are provided depicting restricted areas, e.g. nature conservation or Natura2000, ecological sensitivity, coastal landmarks and beach access routes. They can be activated individually according to the situation-related relevance.

To represent the specific technical symbolism, a VPS-specific set of symbols and icons was created. The manifold possibilities of modern presentation techniques are employed for the visualisation of the complex geo-information.

The screenshot shows the VPS20 GIS software interface. On the left is a map of the Rügen-Rügenström area with several blue circles indicating coastal sections. A yellow circle highlights a specific section labeled 'Stralsund Rügendifferm'. To the right of the map is a 'Photo View' window showing an aerial photograph of a coastal industrial area with a bridge and buildings. The 'List of Combating Sections' panel shows the selected section 'Stralsund Rügendifferm' from km 443.1 to km 443.3. The 'Coastal Section' panel provides details like 'Main Coast Type: Stahlspundwand' and 'Height over middle tide: 2 m'. Below these are tabs for 'Water levels', 'In Stream Section', and 'Photos of Combating Section', which displays a photo of a ship at sea with descriptive text.

Furthermore the links of datasets within the database are of central importance: With 'ClickInfo', the GIS offers the answer to the question "What's that?"

By clicking on an object, a separate window displays related datasets.

From the database it is possible to find the answer to the question "Where is it?" in a geo-referenced dataset (e.g. an equipment store or a coastal section) by using the button of the user interface. This occurs through a program-generated switching to the GIS and a zoom to the object in question.

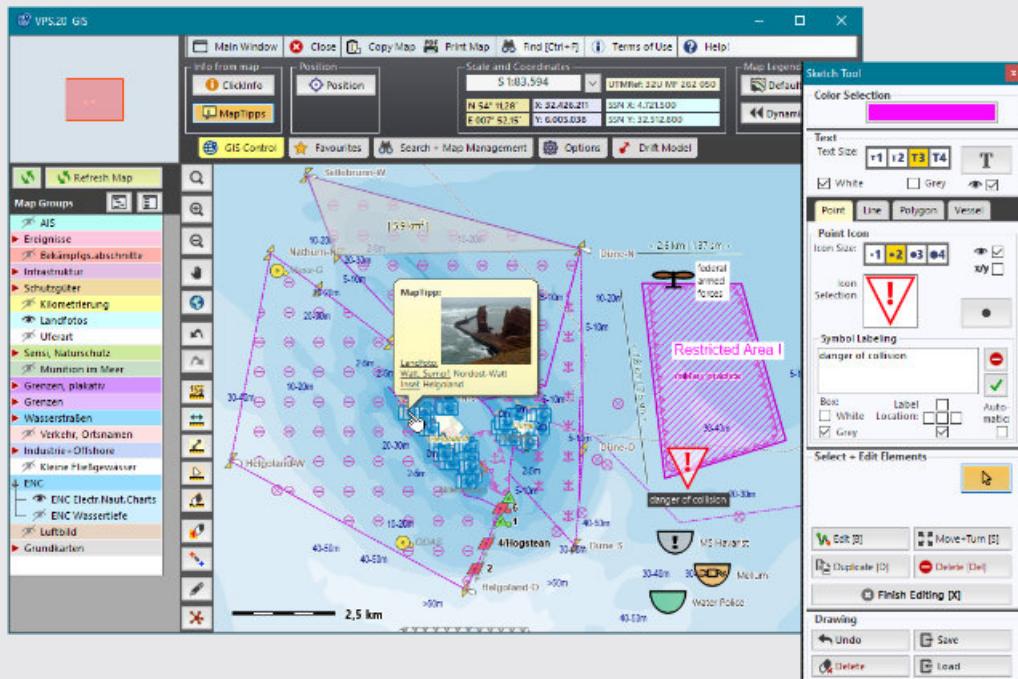
The screenshot shows the VPS20 GIS software interface. On the left is a map of Cuxhaven with a red circle highlighting a specific location. To the right is a 'Equipment Depots and Moorage' window. The 'Overview of Depots' tab shows a list of depots with columns for 'Depot', 'Type', and 'zu Körperschaft'. One depot, 'Cuxhaven (THW Groden)', is highlighted in yellow. The 'Main Data' tab shows details for this depot, including 'Name: Cuxhaven (THW Groden)', 'Location: 27472 Cuxhaven', 'Address: Humphry Davy Str. 39', 'ZIP / POB: D-27480 Cuxhaven', and 'Belongs to corporation: THW - Stade'. The 'Equipment overview of this depot' tab shows a table of equipment with columns for 'Device Type', 'Model', 'Amount', and 'Ship Name'. Items listed include 'Hochdruckreiniger' (1), 'Hochdruckreiniger' (1), 'Hubstapler' (1), and 'Hägglandsanhänger' (1).

In addition, the 'MapTips' are available for quick information about map contents, which are displayed in the form of speech bubbles.

Almost any distance or area dimension of individual shape can be measured. VPS allows to add multi-coloured drawings and texts to illustrate situation maps or operations orders via the map interface.

If required, VPS is able to indicate the current position, elevation and speed over ground of the VPS.system to support the use in mobile command posts or during aerial assessments.

Together with the map, these elements can be printed as true to scale maps or transferred to common image file formats for more options.



This example shows the Electronic Nautical Charts (ENC) in the nearshore area of Heligoland. Additionally, the drawing tools of the GIS are activated. They were used to mark the restricted area on the right-hand side, and various symbols were inserted in the bottom right-hand corner to map the situation.

The yellow speech bubble contains data and an image of Heligoland Island displayed by the Map-Tip function.

Along the edges of the marked restricted area distance measurements were made, and north of Heligoland the surface area of a triangular sector was measured.

Display and use of AIS data

The knowledge of ship movements in the area of operation is of particular interest for safe planning, effective execution and reasonable monitoring of many pollution response measures. The Federal Waterway and Shipping Administration therefore makes available selected ship data via VPS.

In the GIS, position, direction of travel, navigation status, type and name of the vessel, reporting time and the possible transport of dangerous goods in MARPOL categories are displayed.



The example shows the marine traffic in the area of the Brunsbüttel lock, the mouth of the Kiel Canal into the Elbe River.

According to the legend displayed on the right the current status of visible ships is indicated according to AIS data. Vessel names are highlighted, if dangerous goods are on board.

Each ship has a course line showing the course of the past hour.

By means of the MapTip function the extended AIS data of each vessel are shown in a speech bubble, if cursors hovers onto it.

The ClickInfo function provides a complete dataset view for the clicked vessel.

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The screenshot shows the 'Overview of AIS Data' window with a table of ships and a detailed view of the vessel 'TUEMMLER' on the right. A yellow arrow points from the vessel's name in the table to its detailed information page on the fleetmon.com website.

Vessel	CallSign	IMO-Nr.	MMSI-Nr.	To Harbour	Gefahrgut-kategorie
TRAVEMUENDE	DD9172	21151350	TRAVEMUENDE>PRF	-	
TRAVETAL	5BCT2	9471991	210974000	ESCHO-PLS2	-
TRAVETAN	DNIK	5126512	211262590	KIEL	-
TRICA	PHIV	9307384	244912000	LUEBECK	X
TRIKORA	HE7483	269057493	HARBURG	-	
TRINKA	XPC4930	219015623	CRUIISING	-	
TRISTAO DA CUNHA	LXTJ	9623493	233618000	ELE RIVER DREDGING	-
TRITON	DBHK	0123025	211249300	HUSUM	-
TRITON	DCWV	211745390	-	-	
TS60	DMCP	211807560	SEATRIALS WOLGAST	-	
TUENMMLER	DK6159	211517920	SURVEYING	-	
TUGEFLIA	9HA2292	9505065	248264000	USNYC> DEBRV	-
TULANE	9HA2293	9505089	248265000	DE BRV	-
TUNDRALAND	SKHZ	9343273	266247000	FIVAA	X
UASC AL KHOR	DS054	9710220	636016993	DEBRV	X
URENA VON BREMEN	DFDT	211238510	BREMERHAVEN	-	
UCKLER	DBDU	211223230	-	-	
UELENSPIEGEL	ORMZ	9247467	205146000	CUXHAVEN	-
UK155 WILLLEM JACOB	FIPM	9019420	246161000	URK	-
UK227 ORANIE NASSAU	FGOI	9067608	246155000	EDMSHAVEN	-
UK382 JANGSIEN	FEZW	9102629	243999000	HARLINGEN	-

Additionally, the AIS data are presented in tabular form. Here, it is possible to use the full-text search or the filter options of the table.

With the button each vessel can be quickly found in the GIS.

The provider of the website fleetmon.com has installed an interface for VPS.system by which VPS can directly access the ship database of this website.

For this reason, by means of pressing the button ship information that is not contained in the VPS database can be acquired.

Web Map Services

Web Map Services (WMS) are network-based map services that are distributed via the Internet or the Intranet.

VPS.GIS can use such WMS to get access to any geodata of interest regarding the current task. The map administration menu of VPS.GIS provides the functions to integrate additional WMS.

As default, VPS.GIS offers access to some basic and topographic map services and a variety of WMS providing special geodata of great value.

The screenshot shows the VPS.GIS interface with a map of Hamburg and the surrounding region. On the left, there is a sidebar with 'Map Groups' and 'Map Layers'. Several layers are selected, including 'WSP - Bereiche', 'Zuständigkeit, Grenzen', 'Kommunalgrenzen', 'Geltungsbereich HKV', 'Wasserstraßen', 'Bundeswasserstraßen', 'Verkehr, Ortsnamen', 'Industrie-Offshore', 'Kleine Fließgewässer', 'ENC', 'Luftbild', 'Grundkarten', 'Flächenutzung', 'Seebegriffsnamen', 'WebAtlasDE [Internet]', and 'TopPlus color [Internet]'. A yellow arrow points from the 'TopPlus' layer in the sidebar to the 'TopPlus' layer in the legend on the right.

This map view is completely based on WebMapServices:

- 'TopPlus' of the German Federal Agency for Cartography and Geodesy as basic map
- 'Bundeswasserstraßen Binnen' of the German Federal Waterways and Shipping Administration (WSV).

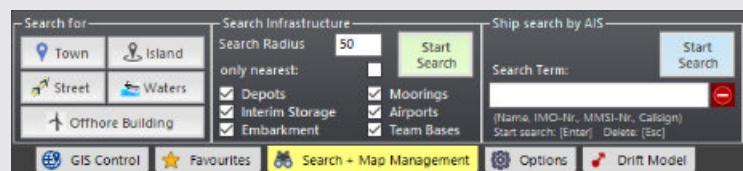
Search functions in the GIS

VPS.GIS offers search functions for elements of the basic map (municipalities, streets, bodies of water, islands), for objects of the infrastructure of hazardous materials response units and sea rescue (depots, interim storage facilities, landing and leaving places, airports) and for vessels based on current AIS data .

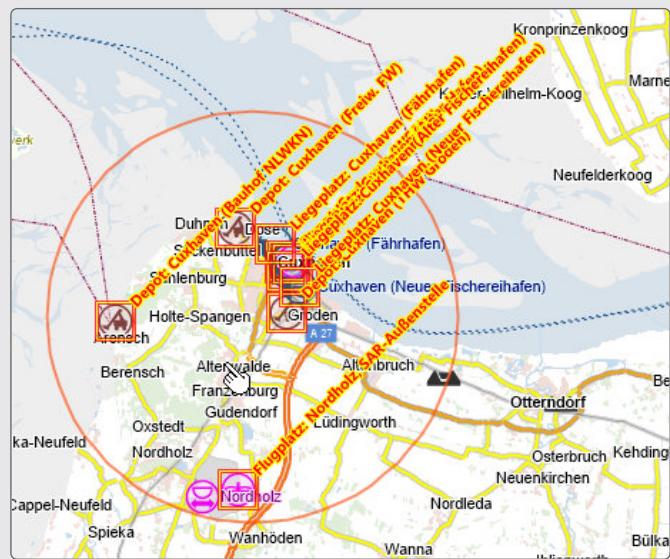
The search for the infrastructure is carried out starting from a point on the map, and for a certain radius.

So, starting on the place of an accident, by means of a targeted search the infrastructure available in the surroundings can be determined.

The objects found, and also the perimeter of the search are indicated on the map of the GIS.



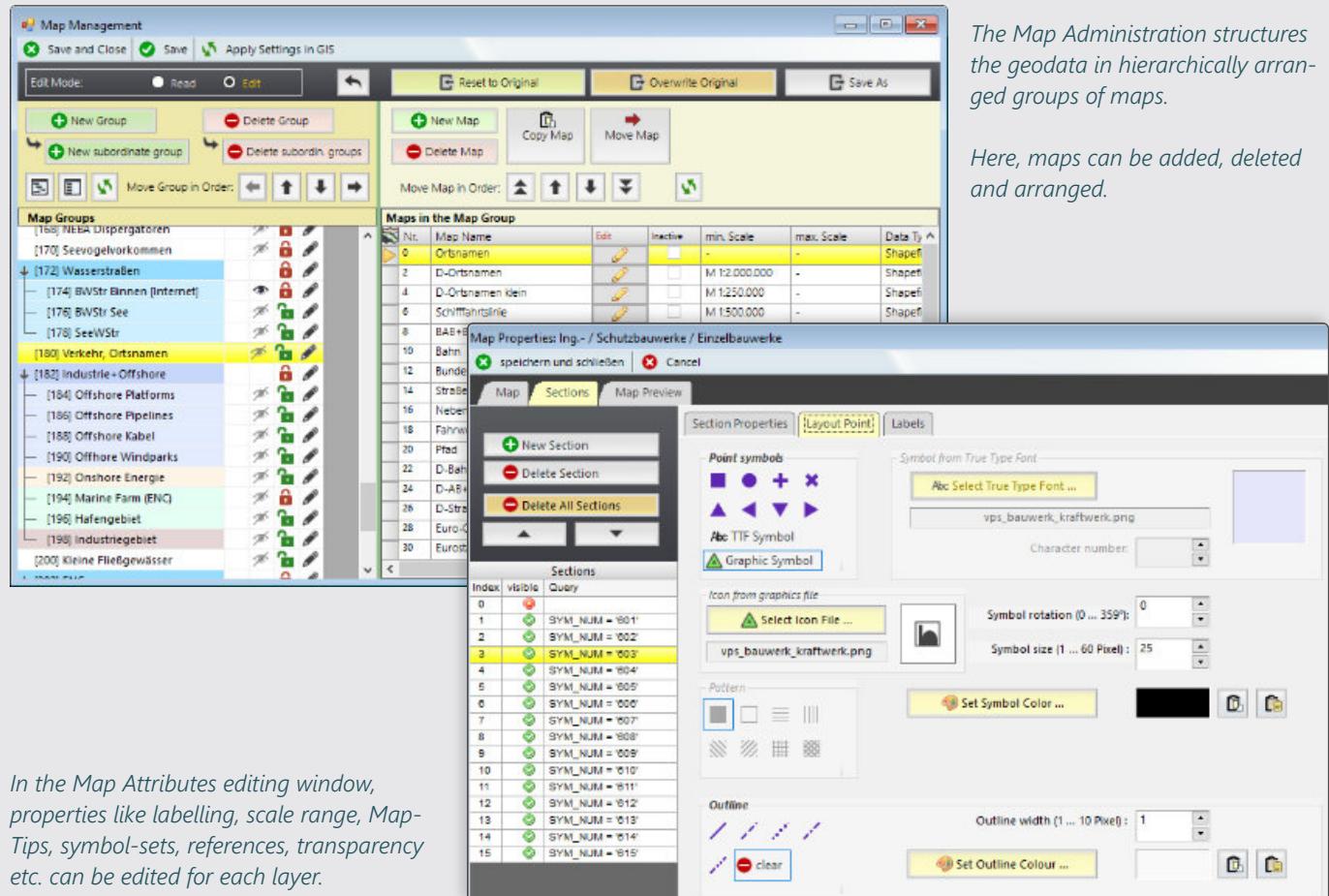
Results of a search for depots, moorings and airfields in a radius of 10km around Cuxhaven.



Map administration in GIS

By means of the map administration each user can determine which maps in which layout is shown by VPS.system in the GIS. With this function, VPS.system becomes a flexible mapping system.

The map administration comprises all vector data, raster data and WebMapServices to be used in the GIS. It is up to the user to integrate own geodata from his or her computer or from a network, and to use it in VPS.GIS.



In the Map Attributes editing window, properties like labelling, scale range, Map-Tips, symbol-sets, references, transparency etc. can be edited for each layer.

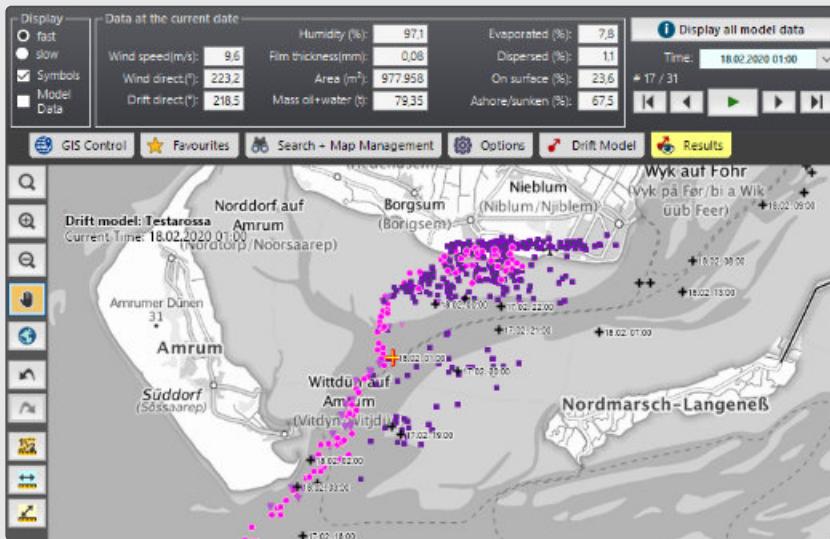
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Operative components in VPS.system

VPS.System provides a set of tools to meet the wide range of requirements within the incident response structure. The upper window shows results of the Drift Model and the lower frame contains the logbook of the Situation Module.



The basis of the **Situation Module** in VPS.system are the logbooks or operation records (ETB) as well as the situation log constantly kept semi-automatically. The ETB records all activities and communications carried out in routine service or on mission.

The objects kept in the situation log (damage accounts and situation objects such as vessels, aircraft, units, etc.) are provided with current coordinates using GIS.

This results in geo-referenced logs of objects and datasets, which, with the tools of VPS.system, offer complementary assessment and evaluation options:

The **Drift Model** uses the 'Simplified Drift Model' of the German Federal Maritime and Hydrographic Agency implemented in VPS. The control of VPS presents modelled results in a convenient way to support comprehensive decision-making during the operations process. For the area of the German Bight, quick estimations of drift courses of floating pollutants and other flotsam are possible.

In addition to the integrated drift model, VPS.system can also import the results of the HELCOM model 'Seatrack Web' via file interface, display them in VPS.GIS to provide the user with a collated situation map containing all helpful information available in VPS.system.

A drifting oil spill is represented as a light violet particle cloud, particles on the sea bottom or on land are symbolized as dark rectangles. With the player, the simulation can be displayed in time steps forward and backward, or specific point in time can be selected. Above the map, the calculated chemical-physical parameters of the oil spill according to the time of the simulation are displayed.

- Display of the current situation either as a table or as a map in GIS,
- Reconstruction of the current situation at any time in the past at the push of a button,
- Graphical representation of changes in the GIS during any period of time,
- Creation of reports on measures and resource referring to any point in time based on damage accounts,
- Output of simplified situation reports as a document,
- Real-time information of all connected users about the current situation; decentralized and mobile data acquisition.

The logbook allows to keep record of communications, observations and important events in the course of the operation, the incident response team or a control centre has handled.

The screenshot shows the 'Event Log' module of the Situation Module. It includes a navigation bar with links like 'Event Archive View', 'Event Log View', 'Routine Log View', 'Common Log View', 'Current Situation', 'Situation Objects View', 'Damage Accounts View', 'Damage Accounts Compact Mode', 'Units and Mat. Resources of Events', 'Activity logs of the Units and Material Resources', 'Damage Accounts Activity Protocols', 'Event Areas', 'Situation Log View', and 'Data Editing Event Archive and Logs ...'. The main area displays an event log entry for 'Nr.69180 Kollision PETER PAN / SÜDWIND' on 10.04.2019 at 10:37. The entry details include contact person 'Herr Baumann' via 'Telefon', medium 'ELO', and comments about the collision and rescue operations.

Event Log for: [Nr.69180] Kollision PETER PAN / SÜDWIND / Start: 27.02.2019 / End: event has not yet ended. / Exercise							
Ser.No.	Date / Time	Contact by	With Corporation	With Person	Comment	Entry	
40	10.04.2019 10:50	Telefon	ELO	Herr Baumann		Anforderung EA 1 für Olraufnahme vor Hafen Husum und Südermoor: Ödin/Lüttermoor 2 Fäster-Boote mit Lamor-Skimmer des THW/HK geplanter Einsatz: 10KM 65 bis 75 Packen dichtflüssig, Durchm. ca. 50 cm	
39	10.04.2019 10:57	Telefon	ELO	Herr Baumann	10.04.2019	Bitte dafür sorgen, dass die Küste in den UEA 1.1 bis 1.3 abgesperrt werden.	
38	10.04.2019 09:55	e-Mail	ELO			Bekämpfungskonzept 09:54 EA 1	
37	10.04.2019 09:44	keine Angabe				BP Entwurf EA2	
36	10.04.2019 09:40	e-Mail	ELO	Herr Baumann	10.04.2019	Verpflegung! (Rotes Kreuz)? Insp. 3 Dekton und AB OI - Personal (LZG für Dekton), PS4 Taxis 2 Hängematten, 6 Hängemulden 3 Gruppenbagger und 3 Schüten 2 * Hochdruckreiniger	

The situation module in the VPS.system offers a number of additional options compared with an analogue situation board. The situation of the operation can be recorded, stored and traced at any time. The digital storage of the situation data also offers a variety of possibilities for their evaluation and presentation. The generated situation report and the diaries are automatically stored in a legally compliant manner and can therefore be cited in court.

The basis of the situation report is the situation record of VPS. This is automatically filled by the program elements 'Edit Damage Accounts', 'Edit Situation Objects' and 'Situation Logging for Vessels'. It records properties of damage accounts, units, material resources, ships, aircraft, vehicles etc. with reference to time and location in the form of a textual description, resource data, coordinates, and further information.

This screenshot shows the 'Current situation' window. The main pane displays a hierarchical list of events and objects. One event is highlighted: 'Kollision PETER PAN / SÜDWIND'. The right-hand panel provides a detailed view of this event, including its position (X: 32.504.385, Y: 6.037.335), time (27.04.2019 10:17), object name ('ELO Husum'), forces (11 In Action: 0), and other metadata like 'Owner: unbekannt'. A note at the bottom states: 'This window is based wholly or partially on a particular instance of the local database. This data is only available to the registered users of this local database.'

In the GIS window, all situation objects appear in their positions corresponding to the displayed time of the situation. The 'Current Situation: GIS Version' window displays additional data from the situation log. Both windows are linked and allow the identification of situation objects on the map or the localization of listed situation objects in the GIS.

The representation of the Current Situation in the GIS makes comprehensible the dynamics of the situation and its development. The labelling of the symbols with names, reporting time, forces and total force is helpful, too.

Situation objects can also be queried in the GIS with the MapTip function, which in the case of damage accounts also provides the complete table of contents of the damage account at the time of the displayed status of the situation.

This screenshot shows the 'Current situation: GIS Version' window. It features a map of a coastal area with several situation objects marked. A tooltip for one object, 'BR Neue Freiheit', shows its details: 'Lageobjekt: BR Neue Freiheit, 09.04.20 20:17 LT, S252 E9'. Another tooltip for 'ELO Husum' shows its details: 'Name: ELO Husum, Führung: TEL Dithmarschen, Nutzung beginn: 27.02.2019 15:31:00, Objektart: Schadenskonto ELO, Bemerkungen: Im Gebäude der Wache der FFW Husum, Marienhofweg, Stärke: 11, Stärke im Einsatz: 0'. The bottom of the window has buttons for 'Inform', 'Move', 'Deactivate', 'Show Descriptions', and 'Show last event only'.

The evaluation of the situation record is carried out by the program and generates the representation of the 'Current Situation' at the present time or at any desired point in time.

The hierarchical arrangement of damage accounts allows to depict the actual dependencies of the management in the current situation.

All dispatched resources are summed up along the chain of command, so that the resources of subordinated sections are visible at a glance at any time.

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Automatic position logging for selected watercraft

The position of vessels can be logged automatically at adjustable intervals referring to the respective tag in the 'List of Vessels' and the current AIS data.

The system is recording the received AIS dataset.

The area of vessel monitoring corresponds to the area from which VPS receives the AIS data - at least the entire German marine waters.

The 'List of Vessels' is maintained in a separate window and can contain freely entered vessels, vessels from the AIS messages and vessels from the central or local VPS database.

Situation Aware Vessels - Data Editing

14 / 34 **+ neuer Eintrag** **- Eintrag löschen** **OK und speichern**

Overview of the Situation Aware Ships

TauName	MMSI-Nr.	aus VPS data	aus VPS Lokal
ADLER EXPRESS (DLXA)	211209390		
ALFRIED KRUPP (DBAA)	211203740		
ANKE (DCVNG)	211231490		
Arkona	211300000		✓
Bottsand	211212490		✓
Eversand	211210630		✓
Fehmarn	211477060		✓
Granitz	211249410		✓
Gustav Meyer	211214270		✓
Haihabu	211651920		✓
Hermann Marwede	211384950		✓
Jan	123456789		✓
Knechtband	211221440		✓
Leyhorn	211263350		✓
Leysand	218515000		✓
Luchs	211290720		✓
Lunesplate	211854000		✓
Mellum	211200300		✓
MPOSS	211289760		✓
Neuwerk	211267710		✓
Norderneyer	211309720		✓
Olewehr 1	211597210		✓
OSK 1	211223350		✓

Ships Name: Leyhorn **MMSI-Nr.:** 211363350

Ship from VPS.Lokat: **the situation aware ships can be freely entered or selected from the vps databases - even several at once.**

Ship from VPS.data:

Ship from Current AIS Data:

Information about the:

Autolog für Schiffe

For this purpose, it is absolutely necessary to enter the MMSI number of the vessel, as it is the only internationally unique vessel identification that all relevant vessels have.

Automatic position logging for watercraft in event areas

Additionally, there is the option to define certain areas as 'event area' e.g. by determining the position of an incident (a damaged ship) and a radius.

Within a circular area around this point, VPS will automatically log all AIS datasets of ships entering this 'event area' in the situation protocol – independent of whether the ship is tagged in the 'List of Vessels' or not.

When a ship is leaving the 'event area' the recording of AIS-data will be suspended for this vessel and it is no longer on display.

An 'event area' is always assigned to an event and thus it automatically provides data of all related traffic to the situation map in the GIS.

The automatic position logging offers significant support by taking over routine tasks either for daily logs but especially during phases of high workload in response situations.

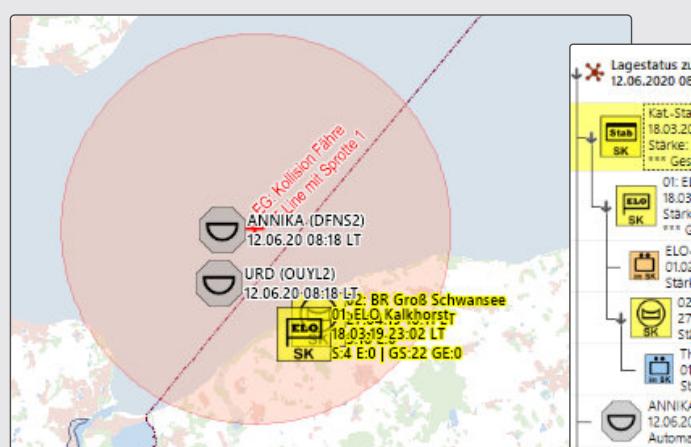
Both variants are controlled within this separate window.

Auto Sit. for Situation Aware Ships
Countdown: 20,0 min.
The AIS data of all ships in the list of the situation aware ships are written into a position log.

Auto Situation for Event Areas
Countdown: 7,9 min.
The AIS data of all ships passing through one of the currently active event areas are written into a situation log.

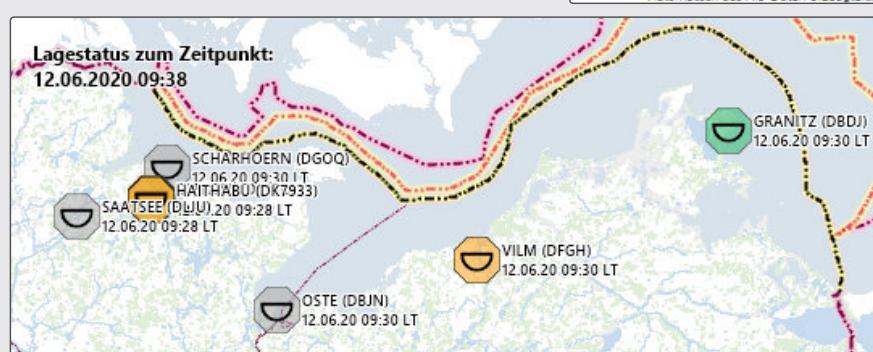
List of Situation Aware Ships **Event Areas**

Automatic Situation Logging:



Results of automatic situation logging for watercrafts in event areas

For a collision und water pollution in the Bay of Lübeck, an 'event area' was set out and marked on the seaward side, to log the shipping traffic within the circle. The two ships ANNIKA and URD are on display in this area at the time shown and have been automatically included in the operational picture.



Results of the automatic situation logging for selected watercrafts

All tagged and listed watercrafts have been included in the operational picture - regardless of where they are currently located. The only requirement is that VPS.system receives the AIS data of the vessel.

Database

The database offers the alphanumeric information in an easy-to-handle user interface and connects this information with all further VPS-components.

The different windows generally offer the opportunity to switch from the current dataset to content-related data in other windows. In doing so, you crosslink the application into an encyclopaedia-like information system.

The screenshot displays a complex software interface for maritime incident response, featuring multiple overlapping windows and data tables. Key components include:

- Watercrafts Window:** Shows a list of ships with columns for Function, Ship Name, MMSI NR., Moorage, Owner, and State. A yellow arrow points from this window to a detailed view of a specific ship.
- Detailed Ship View:** Shows a ship named "Haithabu" with tabs for Master Data, Engine Dimensions, Communication, Operational Capacities, and Photos. It includes fields for Ship Name, Year of, IMO-Nr., MMSI-Nr., Shipyards, Purchase Date, and Purchase Price.
- Equipment Overview:** A table showing equipment details like Device Type, Model, Amount, and Ship Name. It lists items such as "Mehrzweckschiffe", "Schlepper", and "Schadstoffunfallbekämpfungsschiff".
- Photo View:** A window displaying a photograph of the ship "Haithabu" at sea.
- Details of Corporation:** A window showing the details of a corporation, including its name, address, and higher corporation information. It also lists connections and persons of the corporation.
- Details of Person:** A window showing the details of a person, including their name, department, and remarks. It also lists connections of the person.

A large yellow arrow on the left side of the interface indicates the flow of data from the main "Watercrafts" list through the detailed ship view and into the corporation and person details.

Annotations:

The text below the screenshot provides annotations for the "Watercrafts" window:

The window 'Watercrafts' represents the data set of a multi-purpose ship and contains e.g.

- the connection with its home port,
- all other ships in this port,
- the assigned photos,
- the operator and his employees (persons) and his superior authority as well as
- other watercraft of the same type of 'multi-purpose ships'.

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Database functions for daily use

Any computerised solution is only fully mastered if it is practiced or used as often as possible. In order not to limit the use of VPS.system to luckily rather rare situations or large scale response operations, practical functions have been integrated which are also applicable and useful in daily routine.

These functions include, for example, the **checklists for the maintenance of technical equipment**, e.g. for oil removal.

These checklists contain the maintenance plans for almost all types of equipment stored in the various depots. They can be used to plan the effort required for maintenance, provide maintenance instructions, and to report on performed maintenance work.

The checklists are complemented by program functions that simplify the annual detailed maintenance planning for all equipment in response stations or depots.

The maintenance planning is complemented by an e-mail service, which reminds the maintenance personnel of upcoming maintenance without having to start VPS.system.

Checkliste für die Instandhaltung von Ölwehrgeräten

Gerät: AB Öl Riege

Arb-takt	1	2	3	4	5	Bezeichnung / Beschreibung der Tätigkeiten	Bearb.-Vermerk
1.						Allgemein	
1.01	☒					Prüfen auf Sauberkeit, Zustand u. mechanische Beschädigung	
1.02	☒					Farbanstrich prüfen / erneuern	
1.03	☒					Beschilderung lesbar	
1.04	☒					Laufrollen fetteln	
1.05	☒					Schmiere fetteln	
1.06	☒					Vorriegelungen und Schlosser dichten	
1.07	☒					Auszüge fetteln	

The two opposite tools dispense the personnel of the equipment stores from the task of issuing the appropriate checklists of the maintenance scheduled for the year individually for all equipment in the store and to enter the respective dates in the VPS.system.

The VPS database contains an extensive **document library**, which includes texts on the topics of occupational health and safety, waste disposal, legal texts and much more. In other words, documents that are necessary for daily work are always at hand with VPS.

Tree diagrams clearly display hierarchical structure.

This form of representation is widely used in VPS.system, since the technical data presented here are mostly interdependent or hierarchically structured data.

So far, we have already encountered them in this brochure in the Situation Module for the representation of the chain of command and to structure the document library.

Of course, all tree diagram contain links along dependencies throughout the entire VPS.system.

The screenshot shows the 'Explorer for Coastal and Combating Sections' interface. On the left is a tree diagram of German states (Baden-Württemberg, Bayern, Berlin, Brandenburg, Freie Hansestadt Bremen, Freie und Hansestadt Hamburg, Hessen, Mecklenburg-Vorpommern, Niedersachsen, Sachsen, Sachsen-Anhalt, Thüringen) and their respective coastal and combatting sections. A specific entry for 'Cuxhaven Nordsee (km 545,3 - km 612,5)' is selected. On the right, a detailed list of 'Combating Sections' is shown with columns for Name, from, to km, Type, and a thumbnail image. A yellow arrow points from the selected tree node to the thumbnail image of an aerial photograph of a coastal area labeled 'Cuxhaven Alte Liebe'.

This tree diagram links the Federal States of Germany, their respective coastal and operation sector and the photo documentation.

The example shows the pop-up of an oblique aerial photo of the marked operation sector.

The data of the coastal and operation sector are also available by push button, of course.

The screenshot shows the 'Damage Accounts' module. It displays a tree view of damage accounts for event [Nr. 69188] Kollision PETER PAN / SÜDWIND. The tree view shows various units and their assigned forces. A specific entry for 'TEL Nordfriesland 1' is selected. On the right, a detailed view of this account is shown with fields for Name, Organisation, Mission State, PL, GL, T, Total, and unit properties like 'im Einsatz' and 'im SK'. A blue arrow points from the selected tree node to the detailed view of the unit.

The tree diagram is particularly suitable for depicting the hierarchy of the damage accounts and supports well-structured chains of command.

In the right part of the window, the data of the selected damage account are listed, in this case the assigned units with their properties.

In case an incident occurs, users have access to functionally relevant and well-structured contact data via the module Alarm Plan that provide links to the address and telephone database.

The entities, persons and resources listed here were selected according to functional criteria when the plan was drawn up. This list is therefore also referred to as the 'functional structure'.

The screenshot shows the 'Alarm Plan' module for 'F. u. H. Hamburg, Schadstoffunfall'. It displays a tree view of contacts under 'Schadstoffunfall im Küstenbereich'. A specific contact entry for 'Bundesamt für Seeschifffahrt und Hydrographie, Hamburg' is selected. On the right, a table titled 'Connections' lists various communication channels (Telefon, Fax, e-Mail, Internet) with their categories and remarks. A green arrow points from the selected tree node to the 'Connections' table.

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Photo Documentation

The photo documentation of the entire coast supports a fast situation assessment by the control centre, as it allows a remote assessment of the local conditions.

The data of the photo documentation are closely connected with the VPS-data structure and they are available with just one click within the user-interface.

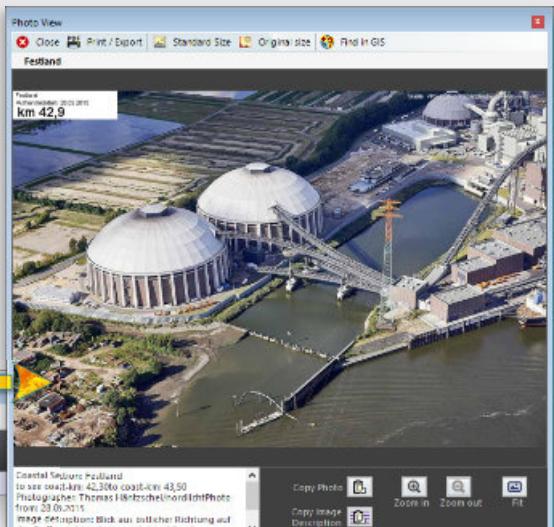
Of course, VPS.system offers the possibility to print the photos or to use them via clipboard in other applications.

All captures contain coordinates and thus the respective place the photo was taken at can be opened in the GIS by mouse click on

The almost 14,000 oblique aerial photos taken of the German North and Baltic Sea coasts are a comprehensive source of information, which allows the trained user to draw conclusions regard-

ding the coastal structure, access roads to river banks and beaches, ecological sensitivity of coastal sections and recommended response strategies.

In VPS the oblique aerial images are regularly updated in a 5-year cycle since 2000.



Federal State	Coastal Section	from km	to km	Thumbnail View	Type of photo	Shooting Date	Image Description
Freie und Hansestadt Hamburg	Festland	41,9	43,2		Schrägluftfoto	28.09.2015	Blick aus östlicher Richtung auf das Kraftwerk Moorburg am linken Ufer der Süderelbe
Freie und Hansestadt Hamburg	Festland	42,3	43,5		Schrägluftfoto	28.09.2015	Blick aus östlicher Richtung auf das Kraftwerk Moorburg am linken Ufer der Süderelbe
Freie und Hansestadt Hamburg	Festland	42,4	42,5		Landfoto	11.08.2014	Staustufe an der Einfahrt zur Süderelbe
Freie und Hansestadt Hamburg	Festland	42,5	42,6		Landfoto	11.08.2014	Förderanlagen des Kraftwerk der Alten Süderelbe
Freie und Hansestadt Hamburg	Festland	43,2	43,6		Schrägluftfoto	28.09.2015	Blick aus östlicher Richtung auf das Kraftwerk Moorburg am linken Ufer der Süderelbe
Freie und Hansestadt Hamburg	Festland	43,3	43,3		Landfoto	11.08.2014	Schutzwand und Wattfläche Kraftwerk und Schrottplatz

The oblique aerial photos are overlapping, and thus the single image can be presented like a video of the coastal section to provide a quick overview on the structure of the affected coastal section.

For this purpose the module 'Viewer for Aerial Photos' is used, which offers additional useful functions.

Since, among other things, the respective coastal kilometre and response section is displayed with the photos, a simultaneous use of GIS, database and aerial photo viewer is possible and useful, to get a maximum of information out of the VPS.system.

Response Manual and Equipment Manual

All manuals for oil-spill response management are available in VPS.system as convenient electronic reference books.

5.4.1 Drei Phasen des Öls nach dem Auslaufen auf Wasser

Nach dem Auslaufen von Öl auf Wasser können drei wesentliche Phasen unterschieden werden:

- Phase 1: Verdunstung,
- Phase 2: Emulsionsbildung (kann bereits während der Phase 1 einsetzen),
- Phase 3: natürlicher, biochemischer Abbau.

It provides information on

- exemplary response strategies,
- assessment methods for oil-spill situations,
- incorporation of volunteers into large operations
- applicable response equipment, as well as on many other topics.

Referring to typical properties of North- and Baltic Sea shoreline VPS.system suggests specific response procedures.

This function again is linked to the database and the GIS.

Each description of a specific response procedure includes, among others, the following categories:

- Properties of the shore type
- Special features
- What is to be done?
- What has to be avoided?

Ölsperrre

Festkörpersperre Typ Hydrotechnik 900, 600, Finnboom 900, Flexiboom MP 900

Technische Daten

Hydrotechnik 600, Gesamthöhe 0,6 m
Hydrotechnik 900, Finnboom 900, Hexiboom MP 900, Gesamthöhe 0,9 m

Gerätebeschreibung / Funktionsprinzip

Die Festkörpersperre besteht aus einem mit Schaum gefüllten Schwimmkörper und einer daran befestigten Schürze aus gleichem Kunststoffmaterial, die unten mit einer durchlaufenden Metallkette beschwert wird, so dass die Konstruktion senkrecht im Wasser schwimmt. Das Verhältnis von Schwimmkörperdurchmesser zu Schürzenlänge beträgt ca. 1/3 zu 2/3, infolge der Segmentbauweise (2 m Länge) und des in sich beweglichen Schwimmkörpers kann die Sperrre dem Wellengang folgen. Sperren sind in Längen von 200m in 20' Containern mit Wechseldämmverkleidung gelagert. Alle nötige Zubehörteile, wie z.B. Schleppvorrichtungen, Kupplungen, Seile, Schäkel, Bojen usw. sind im Container verstaat.

The response manual is an integral part of VPS.system, but can also be used as an independent e-book.

It was also made available on the website www.vps-web.de.

In order to ensure the quality of data and descriptions of methods, technology and procedures the manuals are updated at certain intervals..

9.8.2 Sandwatt

Eigenschaften

Sandwatten bilden meistens ebene oder flach geneigte Wattflächen deren Oberflächen durch Kleinrippel strukturiert sind. Sandwatten setzen hohe Stromungsgeschwindigkeiten voraus.

Sandanteil (>0,06 mm): > 85%
Tonanteil (<0,06mm): > 10% ... 12%
organische Bestandteile: < 2,5%

Besonderheiten

Die Zuwegung zu den Sandwatten ist landseitig meist über die Deichverteidigungswege möglich. Ausgedehnte Deichvorländer, meist durchzogen von Entwässerungsgräben, können die Zuwegung deutlich erschweren. Eine umfassende Verorterkundung ist in

The response manual is complemented by an equipment manual, which summarises properties, application criteria, user instructions and references the most common equipment used in pollution control.

Einsatzbeispiel

Die Vakuumlage wird möglichst nah an der Einsatzstelle aufgebaut (Falttanks zur Zwischenlogierung sollten bereitgestellt werden).

Mit den Saugrohren kann das Öl direkt aus dem Nutzraum aufgesaugt werden. Dabei ist darauf zu achten, die Öffnung des Rohres nah an der Wasseroberfläche zu führen (etwas Luft sollte immer mitgeführt werden), um nicht zuviel Wasser mit aufzunehmen.

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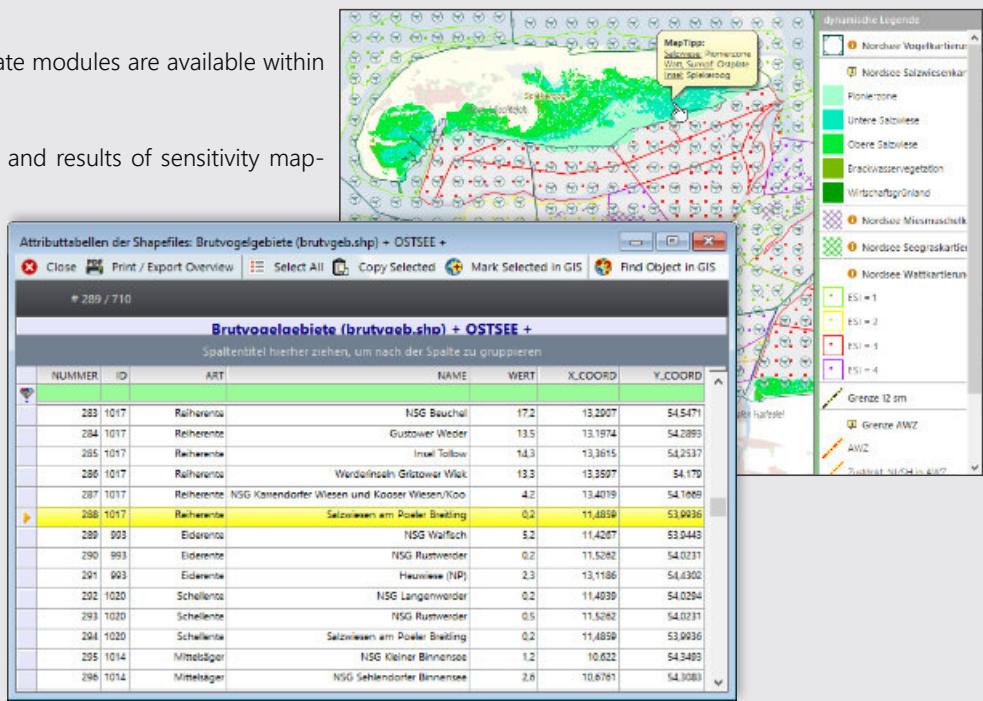
Additional Modules

For special tasks the following separate modules are available within the VPS.system:

VPS.sensi contains all baseline data and results of sensitivity mapping in the North Sea and Baltic Sea.

VPS.sensi - Sensitivity Mapping ...

- Source- and Result Data
- N North Sea Sensitivity Mappings ...**
 - Sensitivität Frühjahr
 - Sensitivität Sommer
 - Sensitivität Herbst
 - Sensitivität Winter
 - Sensitivität Gesamtjahr
- Attribute Tables of Source Data ...
- Attribute Tables of Additional Data ...
- O Baltic Sea Sensitivity Mappings ...**
 - Sensitivität landseitig Frühjahr/Sommer
 - Sensitivität landseitig Herbst/Winter
 - Sensitivität seeseitig Frühjahr/Sommer
 - Sensitivität seeseitig Herbst/Winter
- Attribute Tables of Source Data ...



VPS.jüsp enables the participating partners of the Federal States and Government to register their annual exercises and training courses collated automatically as the Annual Exercise and Training Plan (JÜSP). VPS.jüsp also supports approval, accounting and evaluation of measures to provide a comprehensive basis for controlling and follow-up. This process, which is consolidated in VPS.system, has been made possible by the use of a central database server.

VPSJÜSP - Jahresübungsplanung ...

- Übersicht der Übungen
- Übersicht der Rechnungen zu Übungen
- Übungen bearbeiten, genehmigen, auswählen
- zur Genehmigung anstehende Übungen
- Übungs- und Schulungsplan (JÜSP)
- Übungs- und Schulungsplanauswertung (JÜSPA)

The screenshot shows the 'Übungen bearbeiten' (Exercise Management) window. It includes fields for JÜSP-Nr., Übung, Übungstitel, Übungstermin, Übungsort, Übungsbeschreibung, Übungszeitraum, Kosten, and Genehmigungen. Below this is a detailed view of a specific exercise entry for 'HH2020.003 Routine- und Manöverübungen 'MPOSS' und HEBO CAT II'. It shows participants (Hamburg, HH), date range (01.05.2020 to 01.06.2020), and details about the exercise, including 'Ziel und Aufgaben, Bemerkungen' (Goals and tasks, Remarks) and 'Beteiligte Körperschaften' (Involved bodies).

The window for requesting and approving exercises or trainings with links for evaluation and invoice receipt processing.

User Trainings

Since the year 2000, the beginning of the current VPS.system, user training courses have been held on an annual basis.

Thanks to the training courses the participants can get in touch with the programme managers, who in turn receive very direct feedback.

The training programme provides thematically separated courses for the introduction, advanced users, the situation module and regarding other topics.

Any course, like a workshop, foresees plenty time for practical exercises and the exchange of experiences within the group of participants.

The regular location for trainings is a well-equipped training room at Hamburg. On request, trainings are also provided at the user group's premises, e.g. at Husum or at Cuxhaven.

In this way, every year more than 200 participants can be provided with up-to-date knowledge and practical experience with VPS.system.





Contact

Project supervising by the working group Contingency Planning of the German Coastal States and the Federal Government

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For further information: www.vps-web.de

