

Research on Safety of Winter Navigation and
Environmental Protection in the Gulf of Finland
Seminar 23rd-24th November 2007 in Kotka

Spill Response in Finland and in the Baltic Sea Area

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Finnish Environment Institute

Spill Response in Finland and in the Baltic Sea Area

CONTENT

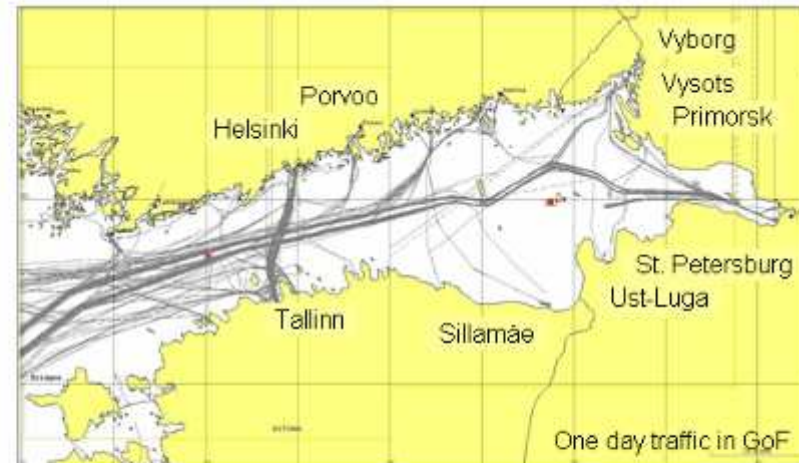
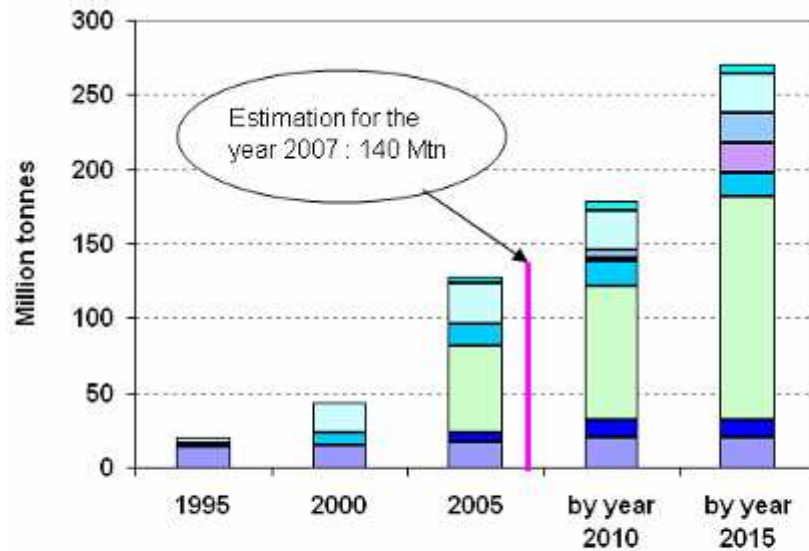
- **Maritime traffic**
- **Accidents and risk scenarios**
- **International cooperation - HELCOM**
- **Finnish approach - Recovery vessels and boats. Aerial surveillance aircrafts. Satellite surveillance. Operational principles. Targets to achieve: 2007- 2015**
- **Recovery technology development for ice conditions**

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OIL TRANSPORTATION IN THE GULF OF FINLAND THROUGH MAIN OIL PORTS

Years 1995-2005 and estimated development by year 2015

MH 15th Aug 2007



Seatrack Web



| OIL PORT | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | Estimated 2007 | by year 2010 | by year 2015 |
|-----------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------|----------------|--------------|--------------|
| Porvoo | 13 | 12 | 15 | 15 | 15 | 15 | 17 | 17 | 18 | 19 | 17 | 20 | 17 | 20 | 20 |
| Vysotsk | | | | | | | | | | 2 | 7 | 9 | 9 | 12 | 12 |
| Primorsk | | | | | | | | 12 | 18 | 45 | 57 | 66 | 73 | 90 | 150 |
| St.Petersburg | 3 | 3 | 6 | 6 | 7 | 8 | 9 | 11 | 11 | 13 | 15 | 13 | 13 | 16 | 16 |
| Ust-Luga | | | | | | | | | | | | 0 | 0 | 3 | 20 |
| Sillamäe | | | | | | | | | | | 0 | 0,3 | 1,1 | 5 | 20 |
| Tallinn | 3 | 6 | 9 | 13 | 18 | 20 | 22 | 26 | 26 | 28 | 28 | 24 | 25 | 26 | 26 |
| Others (smaller oil ports)* | | | | | | | 3 | 3 | 6 | 4 | 4 | 6 | 5 | 6 | 6 |
| Total | 20 | 22 | 30 | 34 | 40 | 43 | 50 | 68 | 78 | 110 | 128 | 138 | 142 | 178 | 270 |

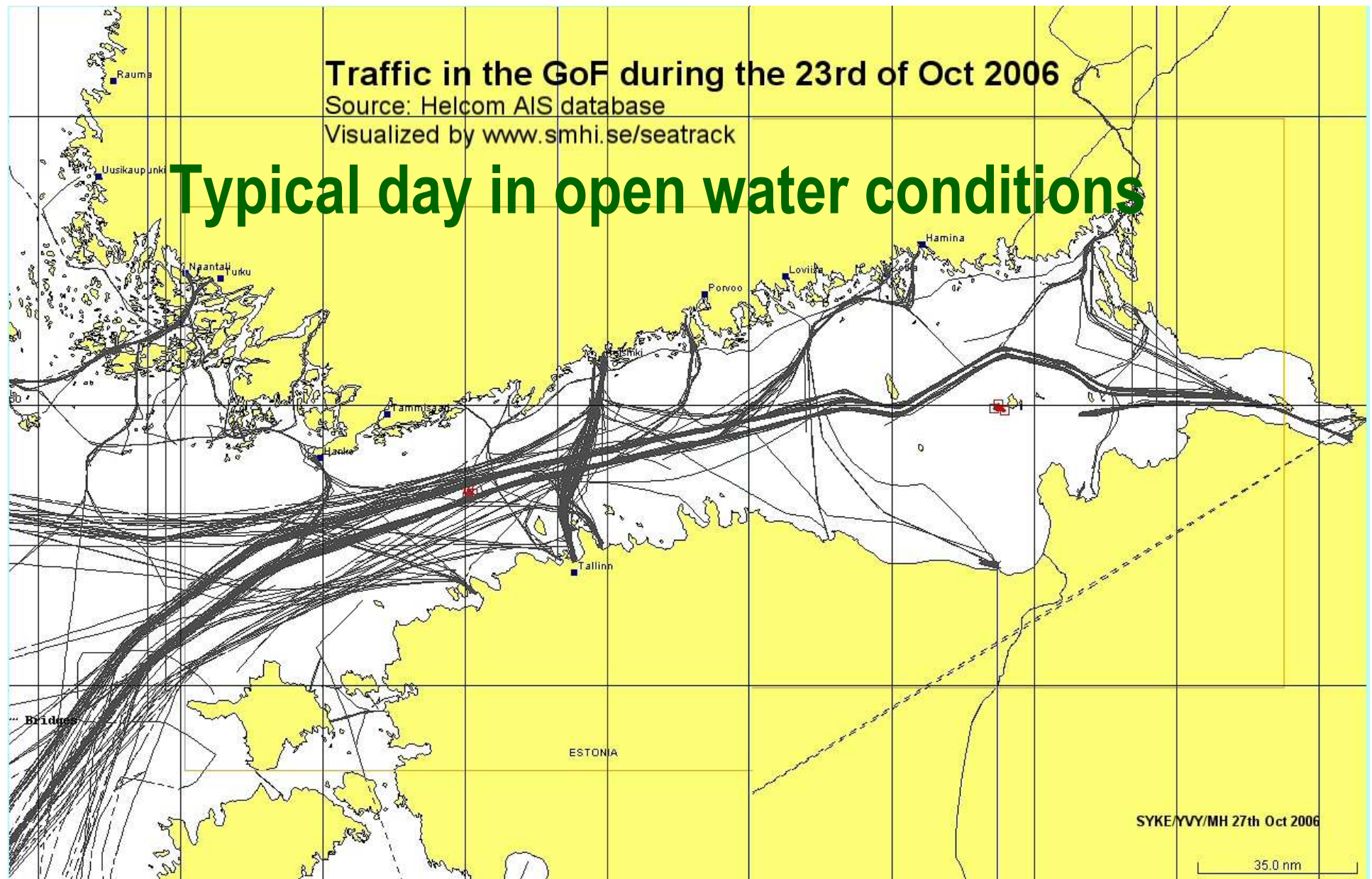
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Traffic in the GoF during the 23rd of Oct 2006

Source: Helcom AIS database

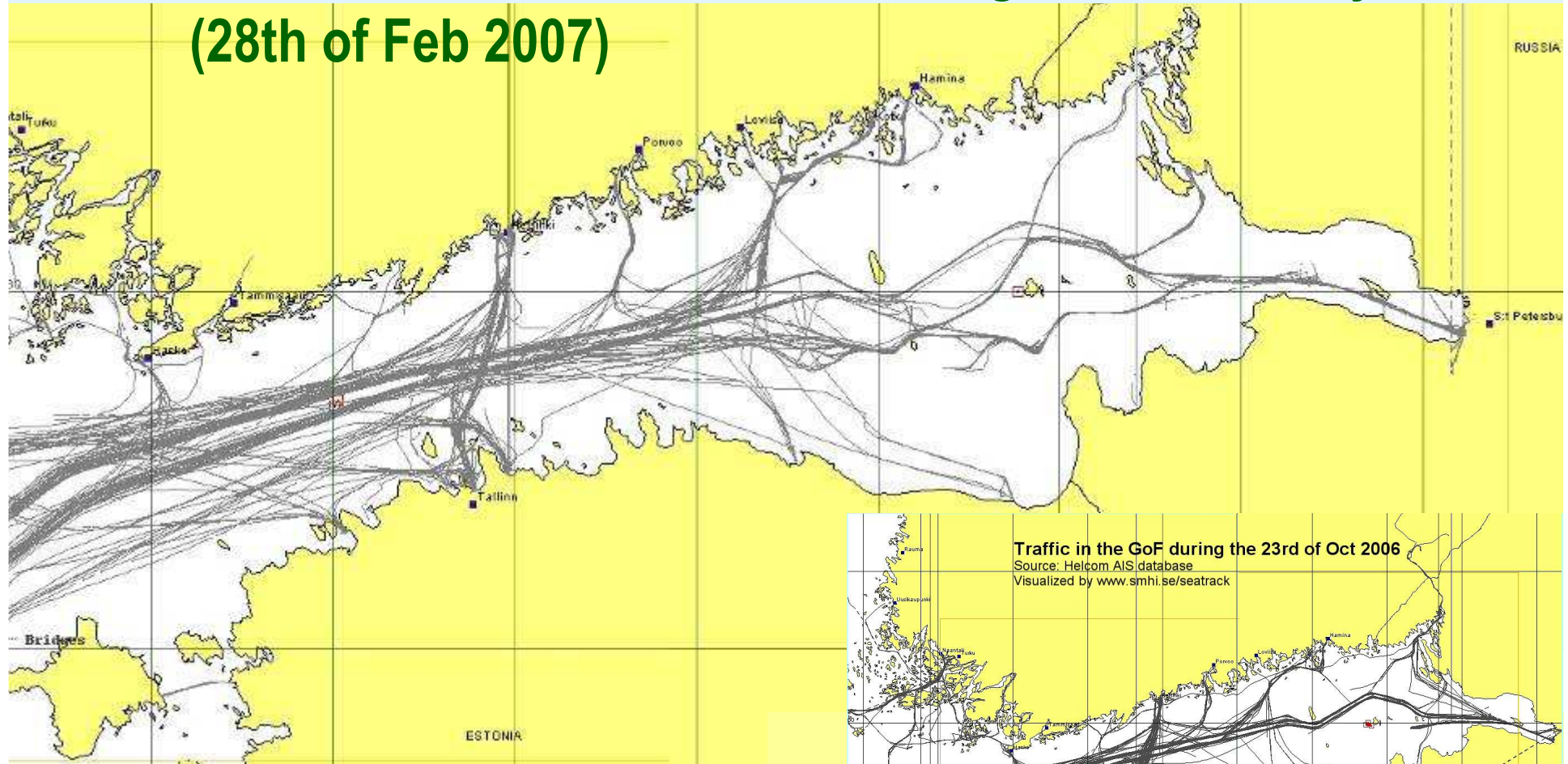
Visualized by www.smhi.se/seatrack

Typical day in open water conditions

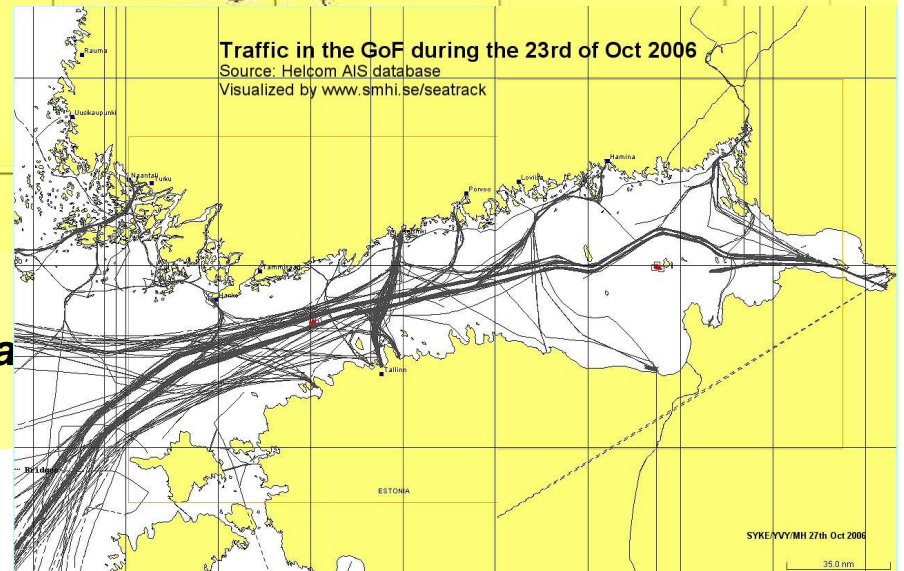


Typical day in ice conditions

Traffic in the Gulf of Finland during one winter day
(28th of Feb 2007)



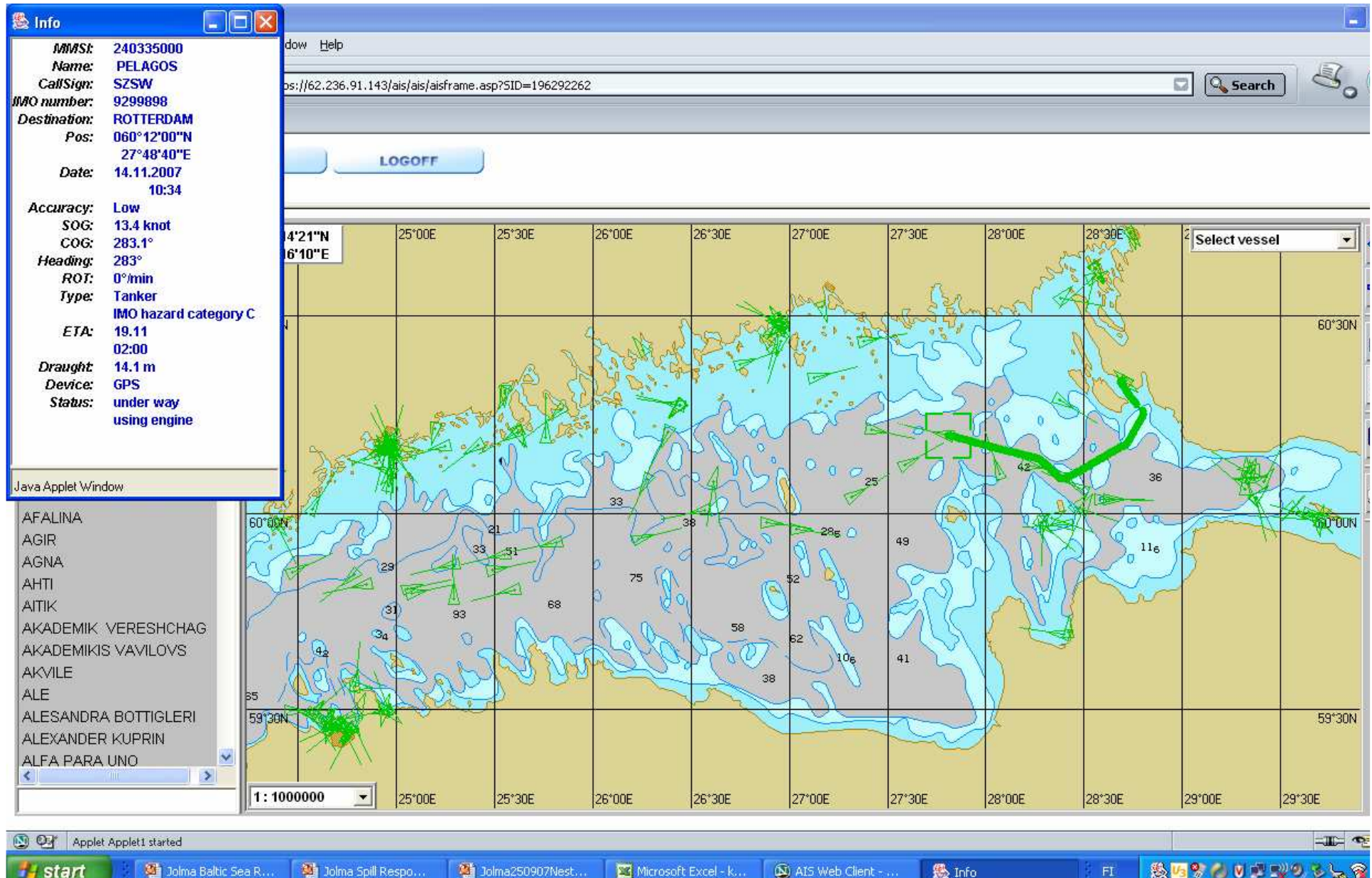
Sea



SYKE/VVY/MI 27th Oct 2006

35.0 nm

Big tankers – shallow waters



Maritime traffic development trends

- Maritime Traffic is increasing in the Baltic Sea
- Oil transportations will grow significantly especially in the Gulf of Finland area
- Because of growth of size of vessels and traffic the risk of damages may increase in the Baltic Sea
- New risk control options are needed in the near future
- Winter navigation may encounter problems in severe winters

YEVGENI TITOV – WERDER

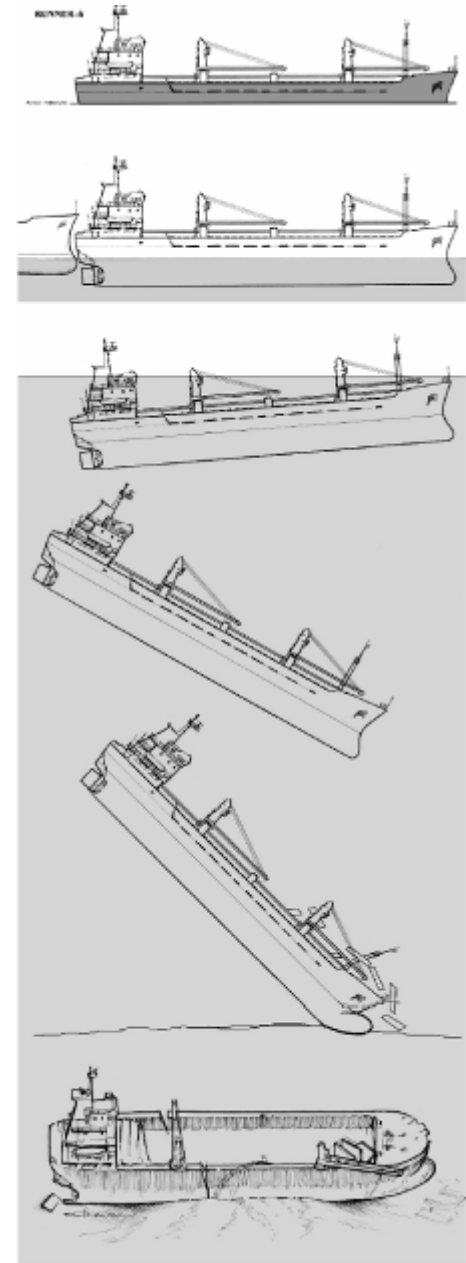


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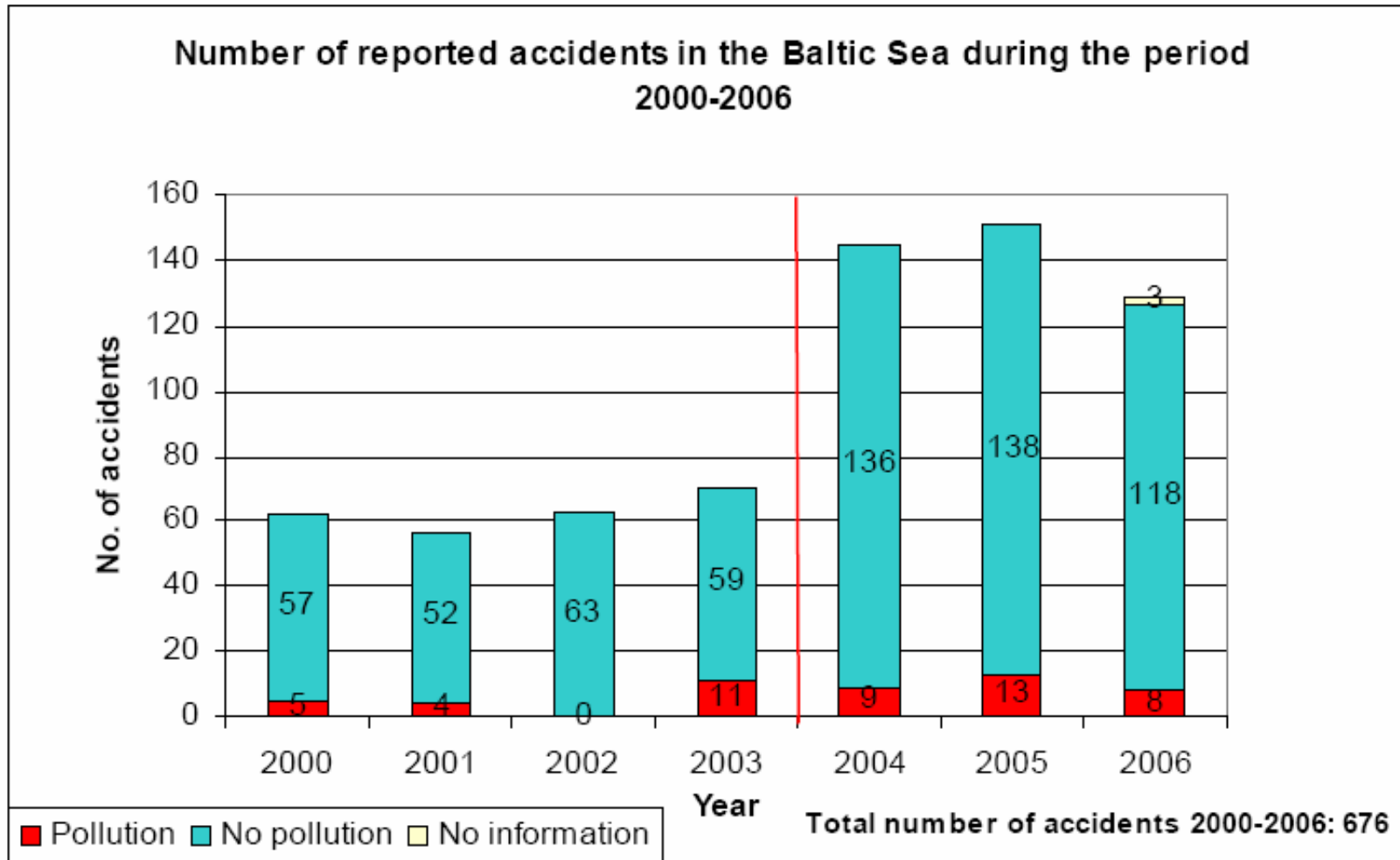
Runner 4 case

- Sank 5.3.2006 due collision in Estonian waters in convoy in ice channel on the way from St. Petersburg.
- Amount of different type of oils 160 t.
- Spilled oil between 30 – 50 t.
- Joint Estonian – Finnish operation.
- Collected in March about 15 t. with several bucket brush skimmers.
- Oil removal from the wreck autumn 2006, about 110 t.



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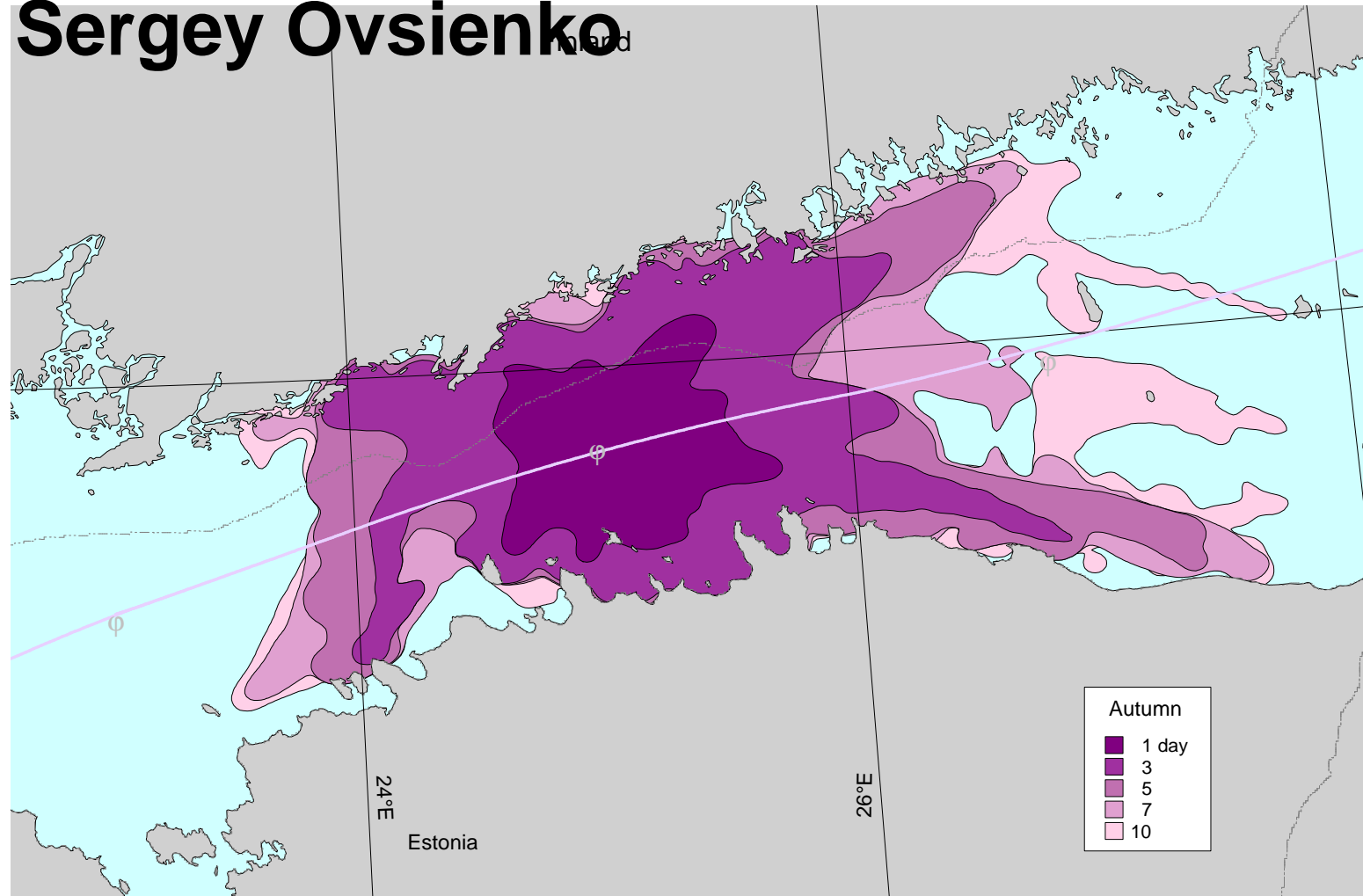
Shipping accidents in the Baltic



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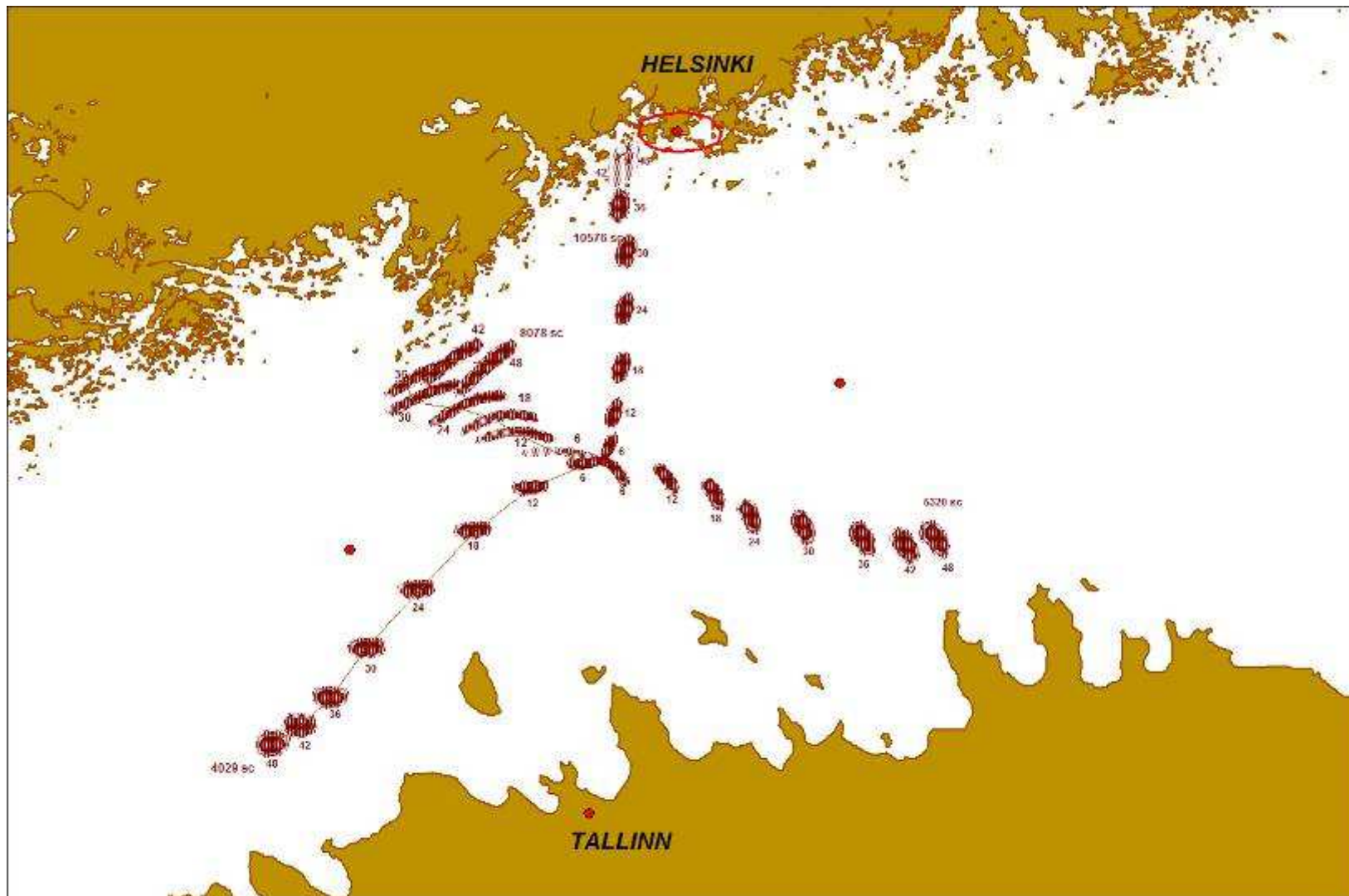
The number of shipping accidents in the Baltic Sea, 2000-2006.

Example of oil spreading in the Gulf of Finland on a typical Autumn day by Sergey Ovsienko



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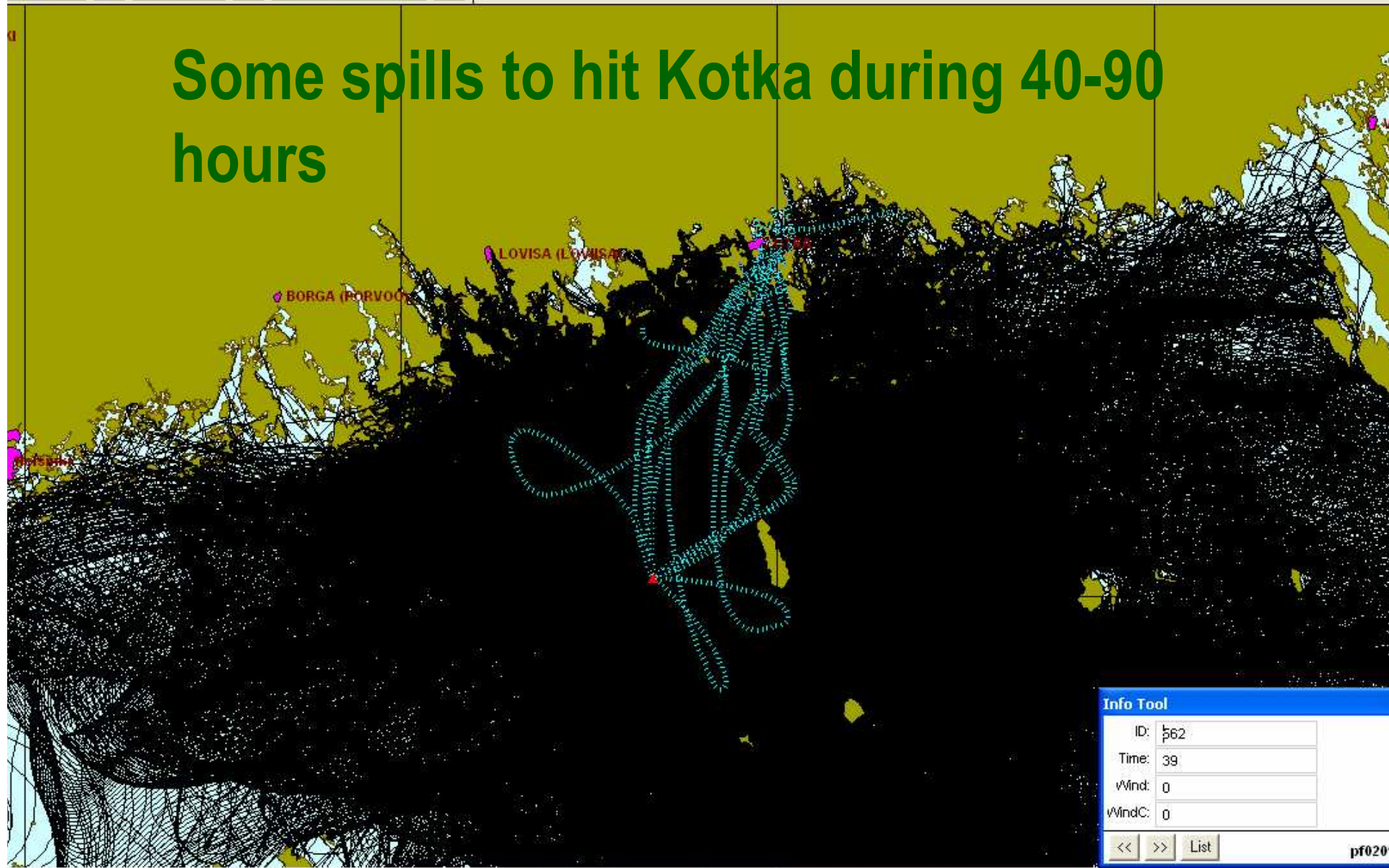
SOME EXAMPLES...15 000 tn crude oil



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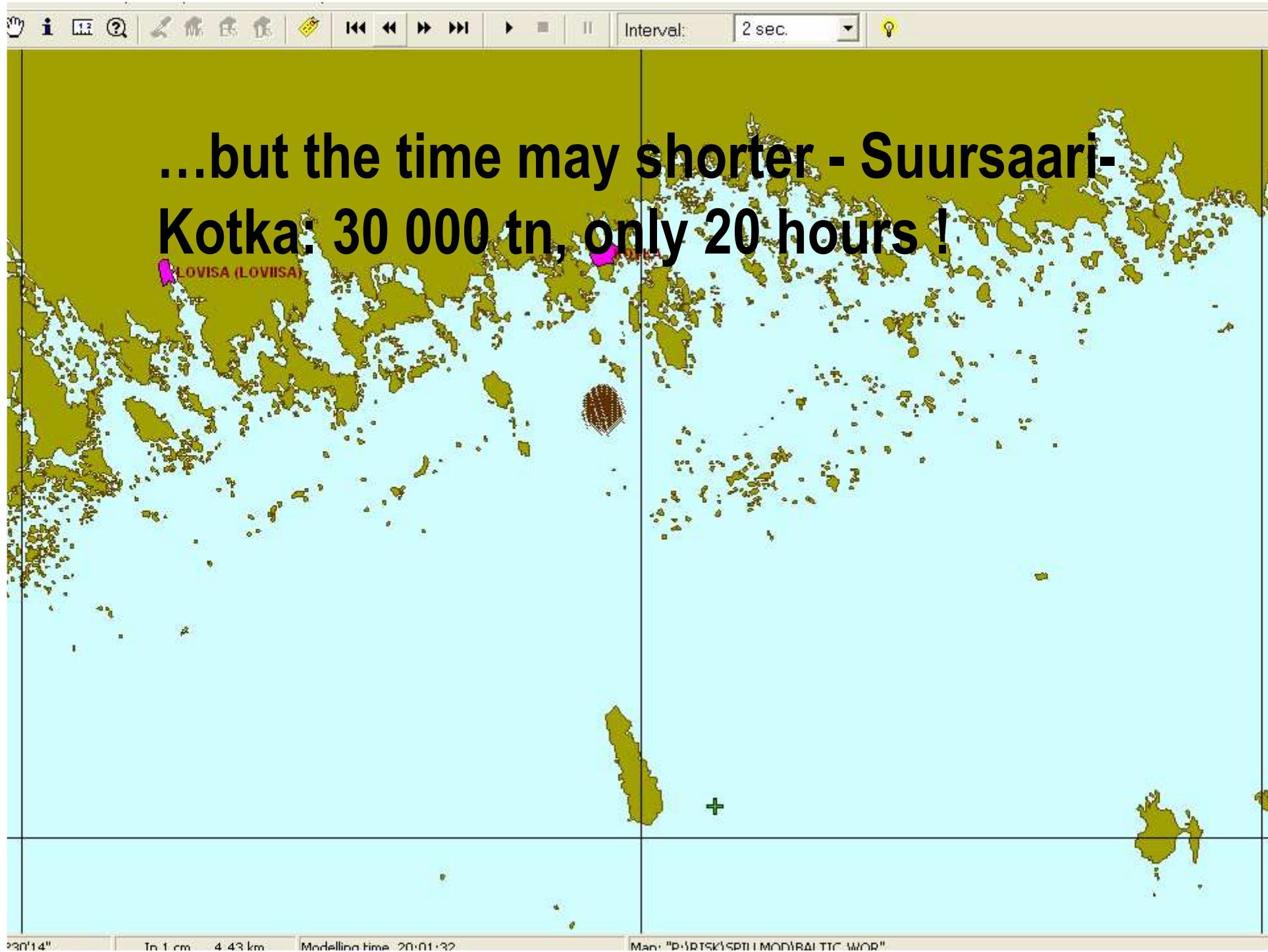
Some spills to hit Kotka during 40-90 hours



Info Tool

| | |
|---------|-----|
| ID: | 562 |
| Time: | 39 |
| vWind: | 0 |
| wWindC: | 0 |

<< >> List pf020



...but the time may shorter - Suursaari-Kotka: 30 000 tn, only 20 hours !

LOVISA (LOVIISA)

TIME OF OPPORTUNITY for oil recovery

- FOR OPEN SEA ACTIONS 1 – 10 DAYS
- FOR ACTIONS AT WATERS OF ARHIPELAGO ONE MONTH
- FOR SHORELINE CLEAN-UP ONE YEAR, PERHAPS

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International cooperation

- The Convention on the Protection of the Marine Environment of the Baltic Sea Area (Helsinki Convention). HELCOM, Baltic Marine Environment Protection Commission
- The Copenhagen agreement on mutual assistance between the Nordic countries will take joint action in the event of accidental spill in the marine environment.
- The Finnish-Russian cooperation agreement for the recovery of oil and other hazardous chemicals in accidents affecting the Baltic Sea area.
- The Finnish-Estonian agreement on the cooperation in combating against pollution incidents at sea.
- The 1990 International Convention on Oil Pollution Preparedness, Response and Co-operation (IOPRC).
- EU
 - **EMSA, Maritime Safety Agency : Consultative Technical Group for Marine Pollution Preparedness and Response (CTG MPPR)**
 - **European Commission, Civil Protection Co-operation Mechanism: MIC – Monitoring and Information Centre**

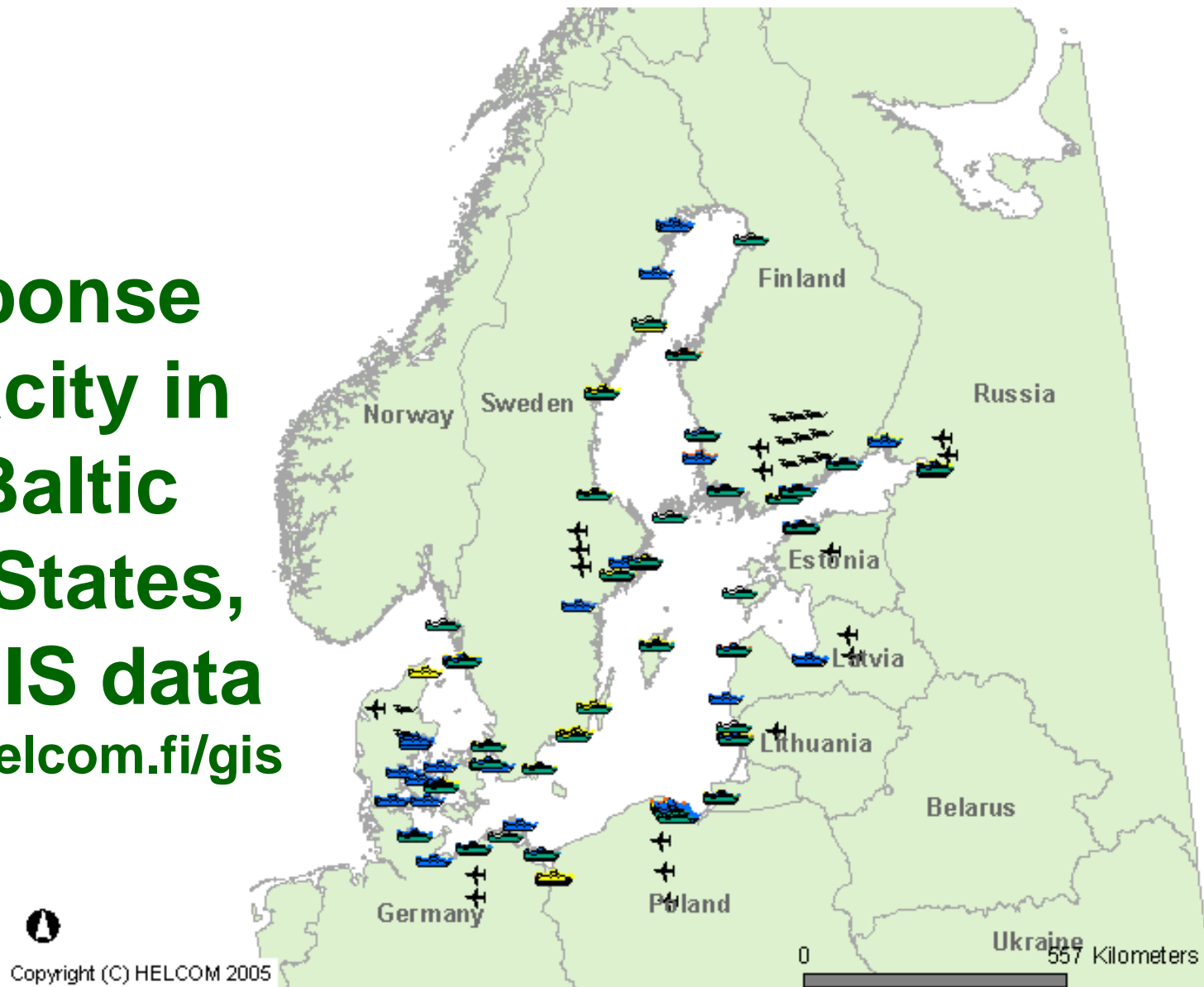
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HELCOM

Main response recommendations

- Prefer mechanical recovery
- Not use
 - dispersants without proper consideration
 - sinking agents at all
- Airborne surveillance
- Drift modelling
- Development of national ability to respond spills
- Regional cooperation (new)

**Response
capacity in
the Baltic
Sea States,
MARIS data
www.helcom.fi/gis**



EU




EMSA, European Maritime Safety Agency

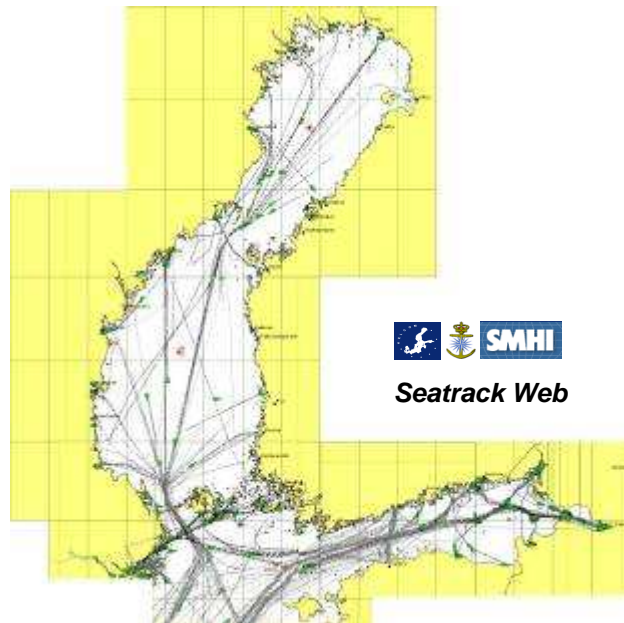
- Based in Lisbon
- Hired five response vessels for Baltic Sea
- Satellite imagery service
- Organize workshops



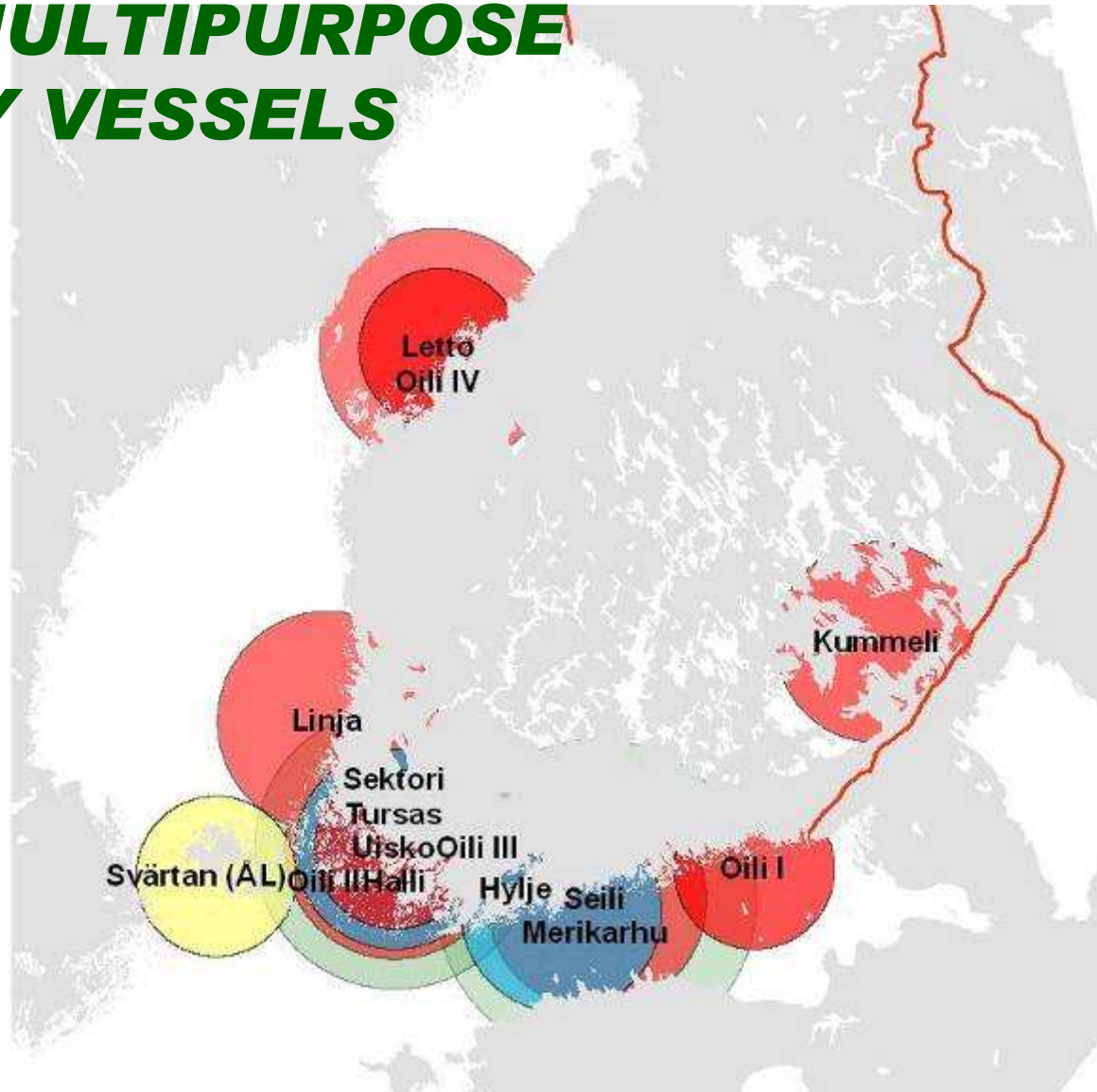
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FINLAND: 15 MULTIPURPOSE OIL RECOVERY VESSELS

-  1 Åland's vessel
-  2 Navy vessels
-  3 Coast guard vessels
-  9 Finstашip vessels



One day traffic (2007-06-26)



Circles = area's reached within 4 hours

CAPACITIES OF FINNISH FLEET

Finnish Government's vessels with a permanently fitted brush oil recovery system

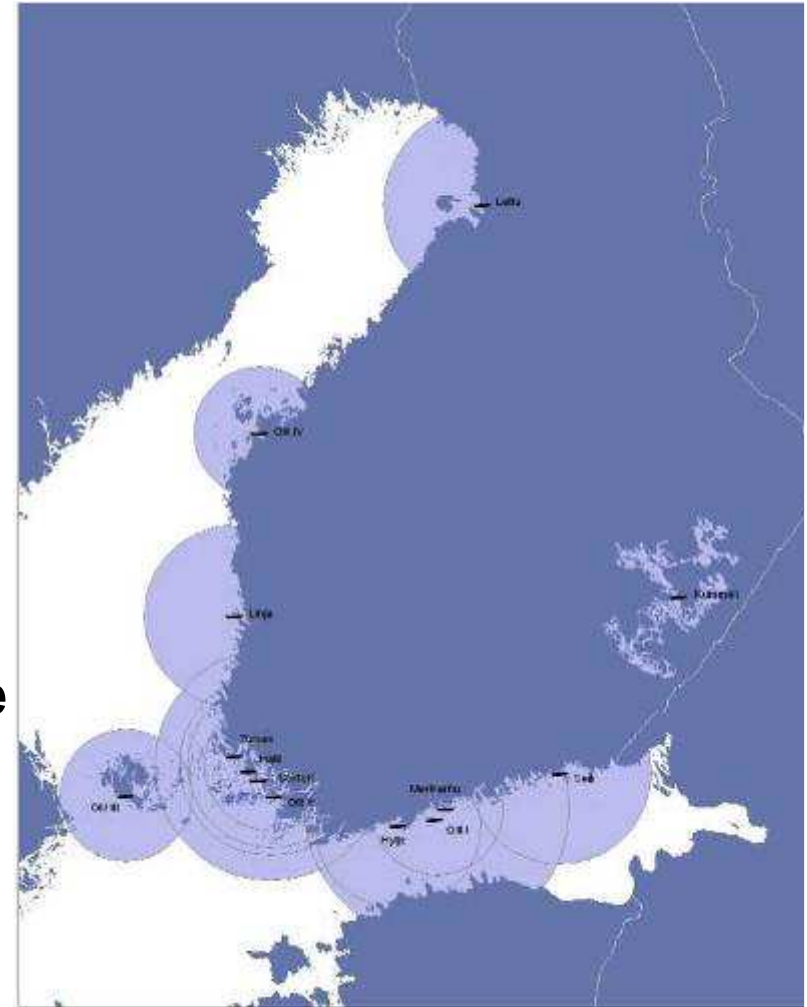
| VESSEL'S NAME | OWNER | LENGHT [m] | BREADTH [m] | SWEEPING BREADTH [m] | TANK VOLUME [m³] | SWEEPING AREA [km²/ 12h] | RECOVERY CAPACITY [m³/h] | MAX LIFTING CAPACITY OF BRUSHES [m³/h] |
|---------------|-----------|------------|-------------|----------------------|------------------|--------------------------|--------------------------|--|
| Halli | NAVY | 60 | 12,5 | 40 | 1400 | 0,9 | 74 | 450 |
| Hylje | NAVY | 54 | 12,5 | 35 | 800 | 0,8 | 65 | 400 |
| Merikarhu | BG | 58 | 11 | 32 | 40 | 0,7 | 59 | 378 |
| Tursas | BG | 61,3 | 10,2 | 30 | 100 | 0,7 | 56 | 300 |
| Uisko | BG | 61,3 | 10,2 | 30 | 100 | 0,7 | 56 | 300 |
| Oili I | SE | 24 | 6,6 | 21 | 80 | 0,5 | 39 | 250 |
| Oili II | SE | 24 | 6,6 | 21 | 80 | 0,5 | 39 | 250 |
| Oili III | SE | 24 | 6,6 | 21 | 80 | 0,5 | 39 | 250 |
| Oili IV | SE | 19 | 6,5 | 19 | 30 | 0,4 | 35 | 250 |
| Kummeli | SE,Saimaa | 28 | 7,9 | 24,9 | 70 | 0,6 | 46 | 250 |
| Sektor | SE | 33 | 7,9 | 24,9 | 108 | 0,6 | 46 | 250 |
| Linja | SE | 35 | 9 | 23 | 77 | 0,5 | 43 | 278 |
| Letto | SE | 43 | 12,2 | 30 | 43 | 0,7 | 56 | 306 |
| Seili | SE | 50,5 | 12,2 | 30 | 196 | 0,7 | 56 | 300 |
| Svärtn | ÅG | 24 | 6,6 | 21 | 52 | 0,5 | 39 | 250 |
| TOTAL | | | | | 3256 | 9,0 | 746 | 4461 |

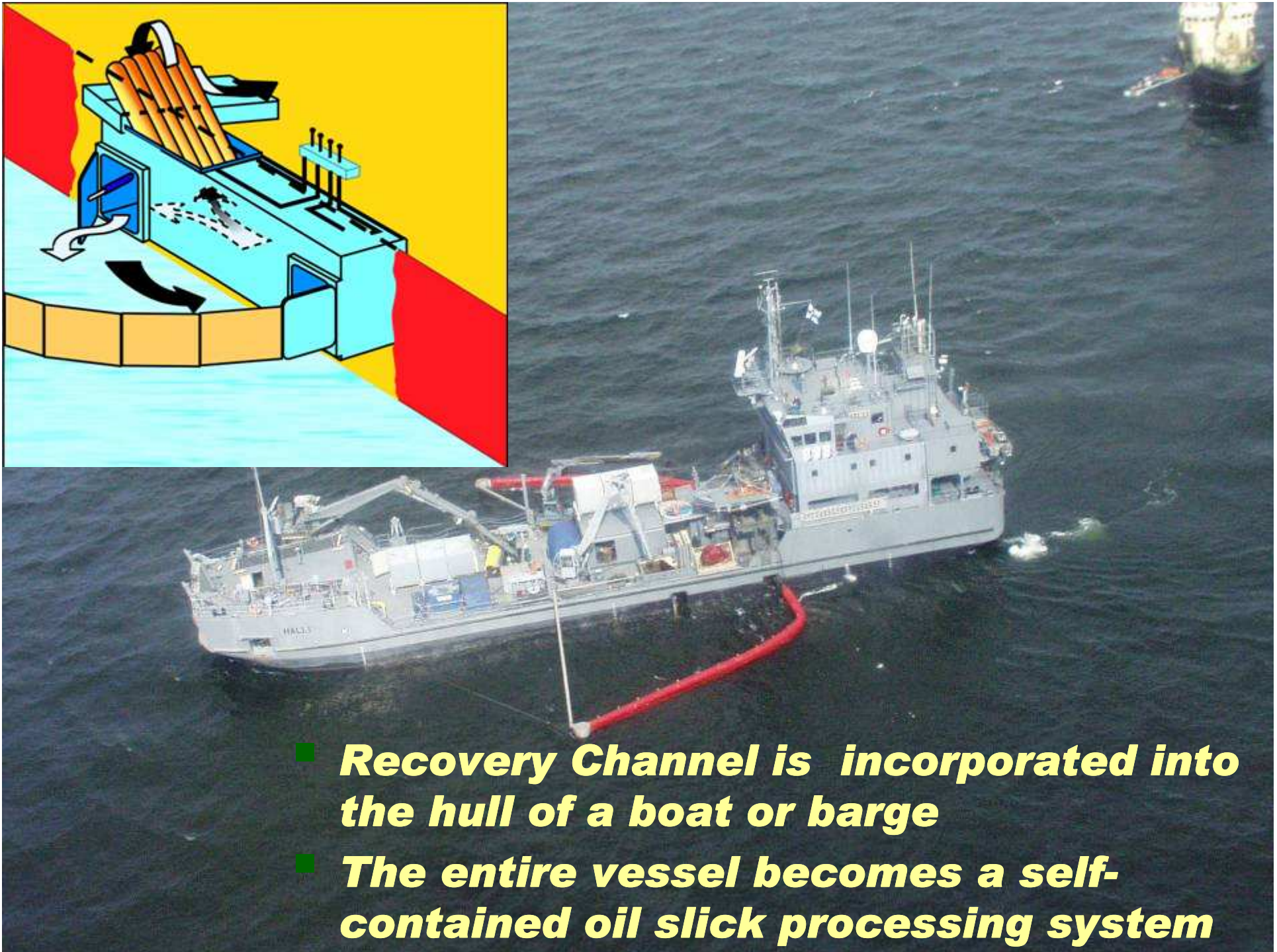
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NAVY= NAVAL FORCES, BG=BORDER GUARD, SE=FINSTASHIP, SHIPPING ENTERPRISE (OF THE STATE), ÅG=ÅLAND'S GOVERNMENT

Operational principles

- Finnish Environment Institute is the competent oil pollution response authority in Finland
- All 15 ship-size oil recovery vessels have build in recovery systems with sweeping arms.
- Dispersants are not used
- All Finnish oil recovery vessels are multipurpose
 - Navy support vessels
 - Out Guardian Vessels (FFG)
 - Fairway vessels (Finstaship)
 - Rescue department boats
- SYKE has made agreements with these governmental authorities
- In normal situation the vessels are under command –and in tasks – of the administration that owns them
- In pollution incident situations the SYKE duty officer orders the vessels to operate under the Response Commander

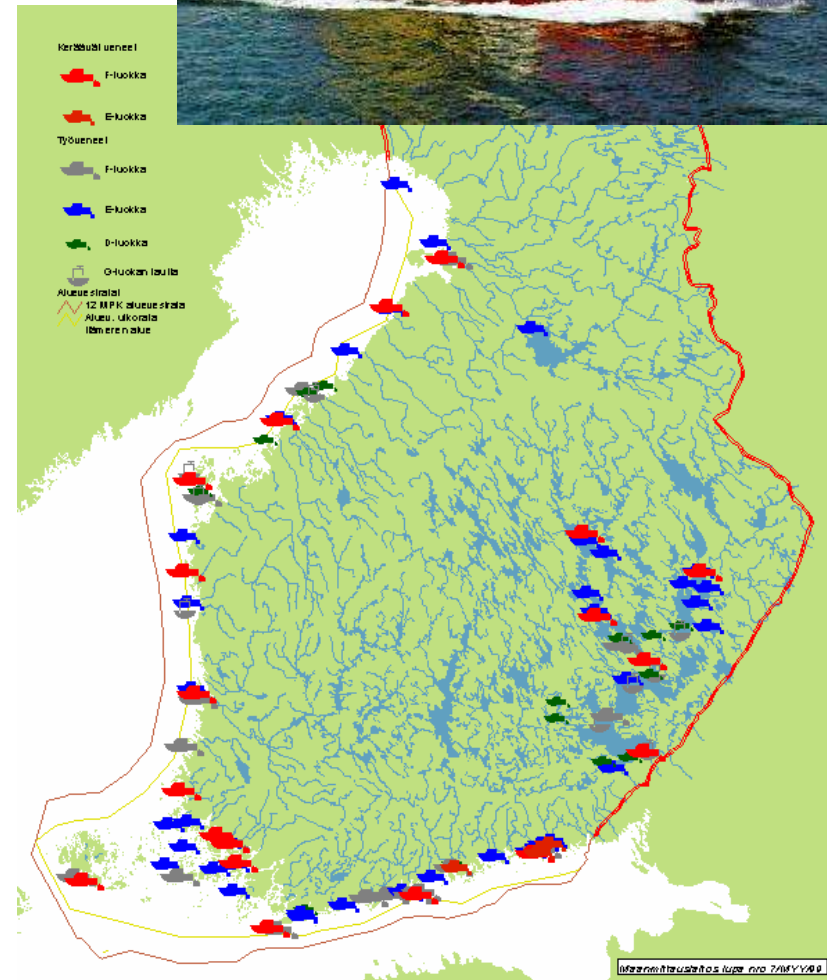




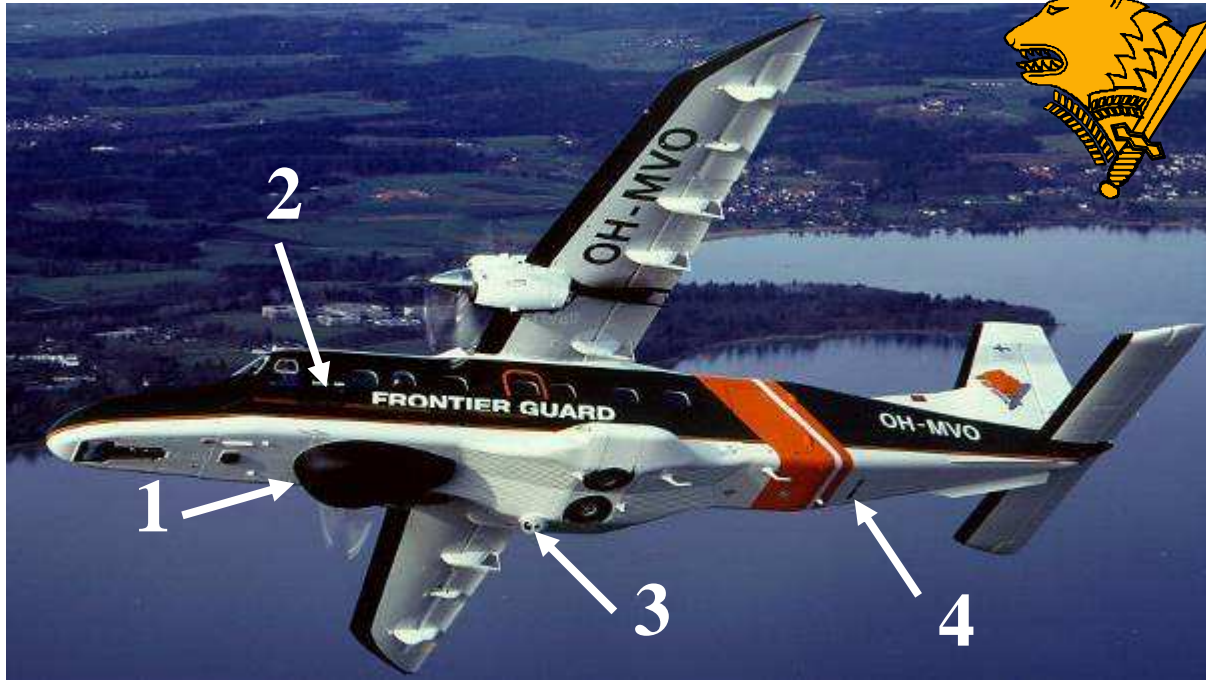
- ***Recovery Channel is incorporated into the hull of a boat or barge***
- ***The entire vessel becomes a self-contained oil slick processing system***

Oil spill response boats of Rescue Services Districts

- Rescue Services Districts have 97 oil spill response boats with a length of 7 – 20 metres and 31 of the boats have brush oil recovery system , in 17 of them the system is fitted permanently inside vessel hull
- Used for shore protection
- Districts have right to get compensation for purchasing equipment and for oil spill response costs from National Oil Pollution Compensation Fund



2 Dornier surveillance aircrafts of the Finnish Frontier Guard

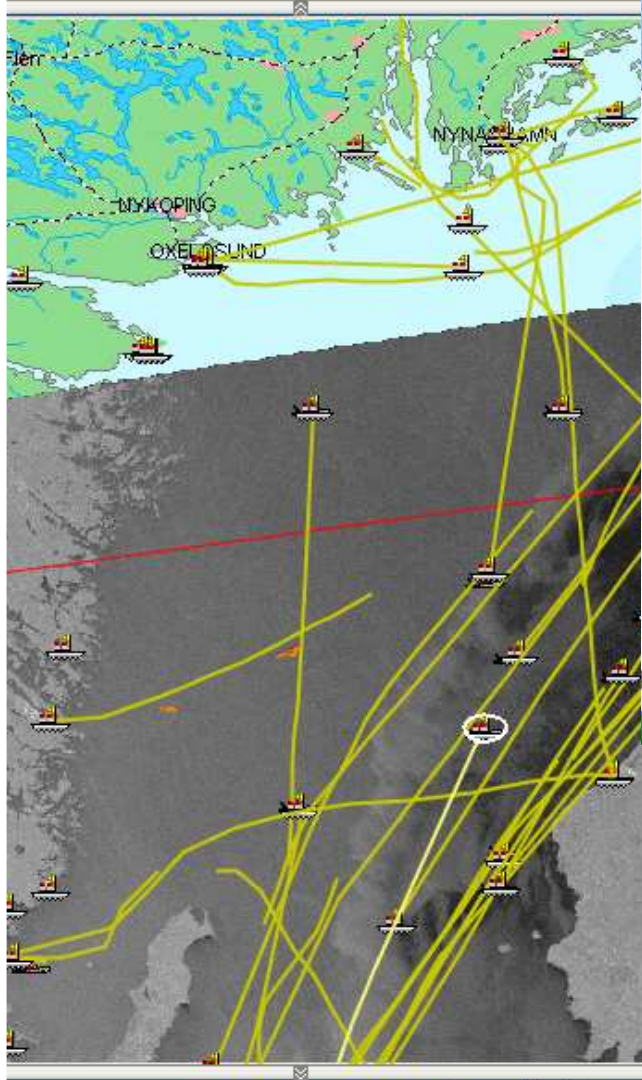


1. Surveillance radar 360°
2. SLAR
3. FLIR/LLTV
4. IR/UV scanner

Environmental administration has purchased SLAR and IR/UV sensors and still and video cameras (3 million €)

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Image
 Center
 Oil
 Oil net
 Wind sar
 Wind met
 Ship
 AIS
 AIS track



Microsoft PowerPoint - 1.Juonia Spilmasma 2007 Kotka.ppt

CleanSeaNet - EMSA Flidutyril * 11:49:23 UTC * kaakivikko * 2007-11-14 * BOY 318 * week 46 * Local time 13:45:23 [UTC-0200]

File AutoRecover View Help

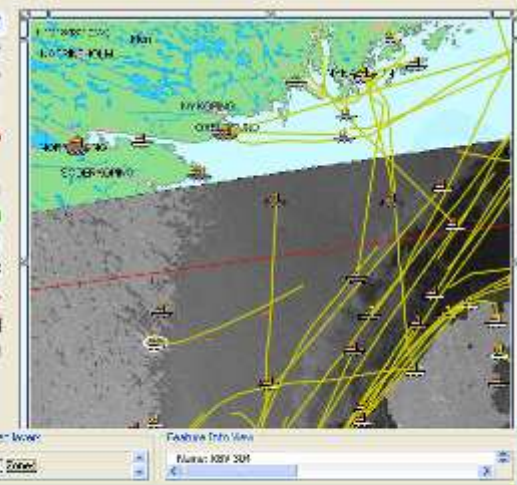
CleanSeaNet / European Maritime Safety Agency

Search

From: 2007-11-11 11:00 To: 2007-11-17 00:00 Search: 1/10 results

| Date | Time | SAF | Operator | Response number | Status | Flags | Feedback | Close ID |
|------------|----------|------|----------|--------------------|-----------|------------|----------|------------|
| 2007-11-11 | 10:42:31 | EMV | EMSA | 110, E, UK | No sticks | 4 | Auto | 2007110... |
| 2007-11-11 | 20:26:34 | EMV | EMSA | DK, LT, LV, PL, SE | No sticks | 4 | Auto | 2007110... |
| 2007-11-11 | 22:42:00 | EMV | EMSA | ES, FR | No sticks | 3 | AutoView | 2007110... |
| 2007-11-11 | 22:43:30 | EMV | EMSA | FR | No sticks | 3 | AutoView | 2007110... |
| 2007-11-12 | 10:00:28 | EMV | EMSA | NO | No sticks | 4 | Auto | 2007110... |
| 2007-11-13 | 06:08:28 | RSAT | EMSA | EE, PL, LV, SE | No sticks | 4 | Auto | 2007110... |
| 2007-11-13 | 06:10:14 | RSAT | EMSA | DK, LV, LT, PL, SE | No sticks | 4 | Auto | 2007110... |
| 2007-11-13 | 09:32:16 | BN | EMSA | NO | No sticks | 4 | Auto | 2007110... |
| 2007-11-13 | 16:32:08 | RSAT | EMSA | IT, EL | No sticks | 3 | Auto | 2007110... |
| 2007-11-13 | 21:02:03 | BN | EMSA | DE, DK, NO, SE | Assess | None found | Auto | 2007110... |
| 2007-11-14 | 06:23:12 | RSAT | EMSA | FR, UK | No sticks | 4 | Auto | 2007110... |
| 2007-11-14 | 06:27:03 | RSAT | EMSA | ES | No sticks | 3 | Auto | 2007110... |
| 2007-11-14 | 09:05:44 | BN | EMSA | EE, LV, LT, PL, SE | No sticks | 4 | AutoView | 2007110... |
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| 2007-11-14 | 10:45:59 | BN | EMSA | ES | No sticks | 3 | Auto | 2007110... |
| 2007-11-14 | 10:50:56 | BN | EMSA | ES, IT | No sticks | 3 | Auto | 2007110... |
| 2007-11-14 | 16:07:19 | RSAT | EMSA | EE, LV, LT, SE | Oriskreit | N/A | N/A | 2007110... |
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| 2007-11-15 | 04:16:58 | RSAT | EMSA | EL | Oriskreit | N/A | N/A | 2007110... |
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0:31:46 List report (1/10 results)



Feature Info View

Properties
MMSI: 353081000

start Microsoft PowerPoint Microsoft Excel CleanSeaNet - ...

KEY ELEMENTS IN THE FINNISH OIL SPILL RESPONSE

- **RESPONSE ON THE SOURCE**
- **AIRBORNE SURVEILLANCE**
- **MULTIPURPOSE RESPONSE VESSELS**
- **PREFER MECHANICAL RECOVERY**
- **FOCUS ON HIGH VISCOSITY OILS AND COLD CONDITIONS**
- **RELIABLE DRIFT MODELS**
- **INTERNATIONAL CO-OPERATION**

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Working Group on Finnish oil pollution preparedness 2007-2015/ Target spills

- Gulf of Finland: 30 000 tons
- Archipelago Sea: 15 000 tons
- Gulf of Bothnia: 5 000 tons

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Working Group on Finnish oil pollution preparedness 2007-2015/ Target levels for oil spill response at sea

- **At open water conditions the oil recovery capacity of the first 24 hours shall be 50% of target spill: Aiming to full recovery during 3 days**
- **In ice conditions the oil recovery capacity of the first 72 hours shall be 50% of target spill: Aiming to full recovery during 9-10 days**

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Working Group on Finnish oil pollution preparedness 2007-2015/ Gaps to targets

- **2007: GoF/10 000 - 12 000 tons, AS/2 500 tons, GoB/ 500 – 2 200 tons**
- **2010: GoF/ 6 500 – 7 000 tons**
- **2015: GoF/ 2 000 – 3 500 tons**

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**Working Group on Finnish oil pollution
preparedness 2007-2015/ Gaps to
targets as new ships with a 2000
tons/day capacity (heavy duty vessels)**

- **2007: GoF/10 000 - 12 000 tons, AS/2500 tons, GoB/ 500 – 2200 tons – 7 ships**
- **2010: GoF/ 6500 – 7000 tons – 5 ships**
- **2015: GoF/ 2000 – 3500 tons – 1,5 ships**

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Working Group on Finnish oil pollution preparedness 2007-2015/ Proposals and hopes

- To maintain prevailing capacity
- To rise capacities and readiness of the ships of the present fleet
- To have in Finland 1 – 2 new heavy duty recovery vessels
- To expect that neighbouring states will have at least 3-4 new heavy duty recovery vessels!

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MAIN CHALLENGES TO OVERCOME, DEVELOPMENT NEEDS, COVERAGE OF CONDITIONS AND INCIDENTS

- Response in high sea conditions, significant wave heights
- Darkness, bad visibility, remote sensing
- Response in ice conditions
- Recovery of high viscous oils
- Orimulson
- Shoreline cleaning
- Submerged oil
- Leaking wrecks

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Oil recovery in ice (winter 2002 and 2006)

“Oil Recovery Bucket”

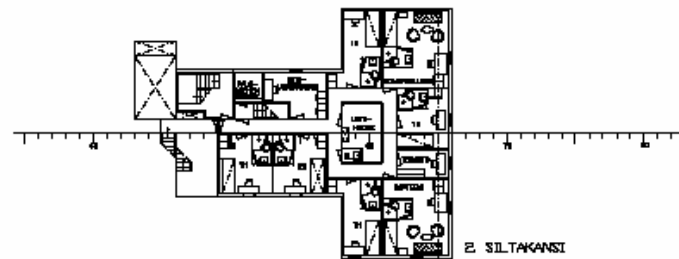
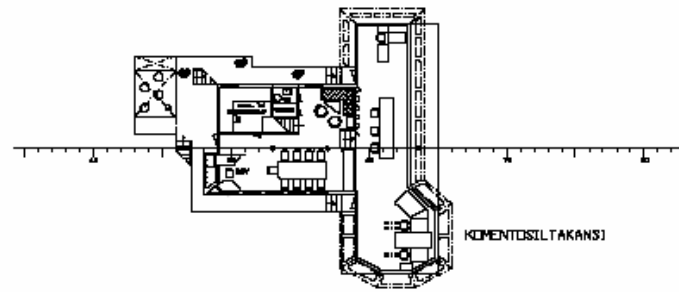
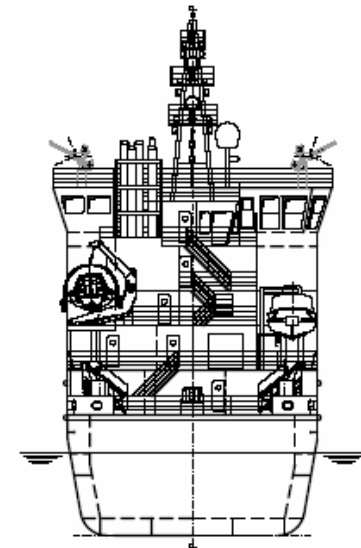
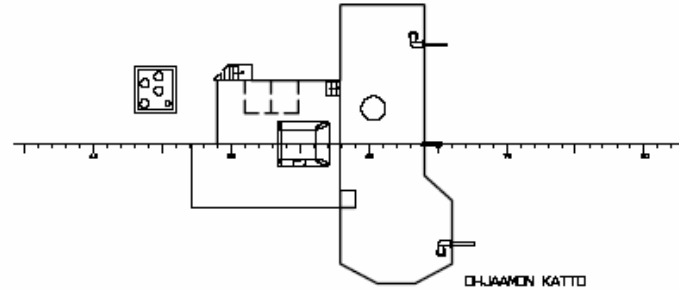
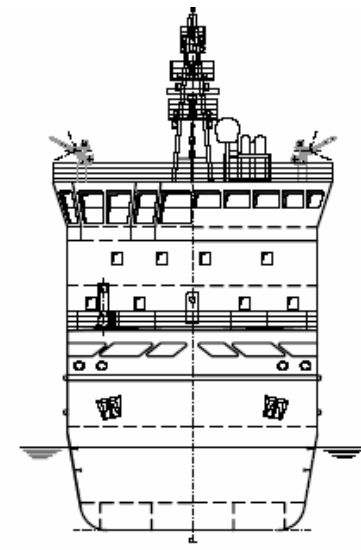
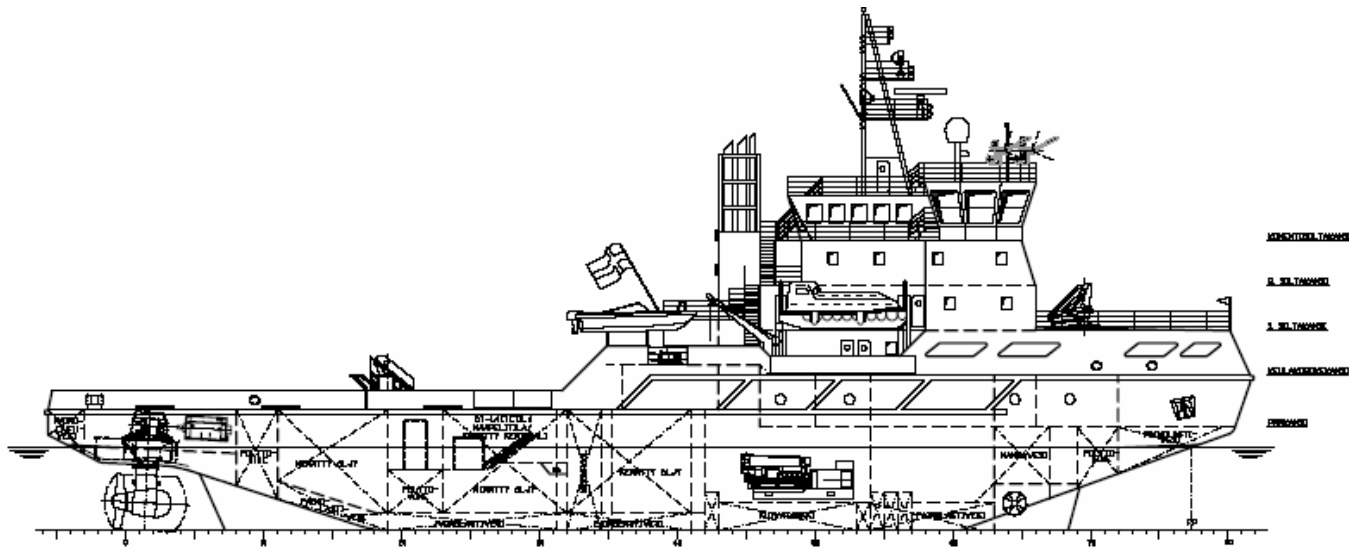


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SYKE has made the 26th October 2007 a 47 million € contract for new-building of a multipurpose vessel that will be delivered to use of the Finnish Navy in the beginning of 2011



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Thank you for attention!
Questions, Please ?



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