



Marinefliegergeschwader 3

Graf Zeppelin



Marine

Remote Sensing workshop  
April 2015, Middelburg, NL

**What the operator  
can provide...**



# Marinefliegergeschwader 3

## Graf Zeppelin



# Marine

**DO 228 NG**  
**57+05**



Richter /Juhls

Crew DO228



# Marinefliegergeschwader 3

## Graf Zeppelin



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## New Generation Cockpit



Richter / Juhs

Crew DO228



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## New Mission-System



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Crew DO228



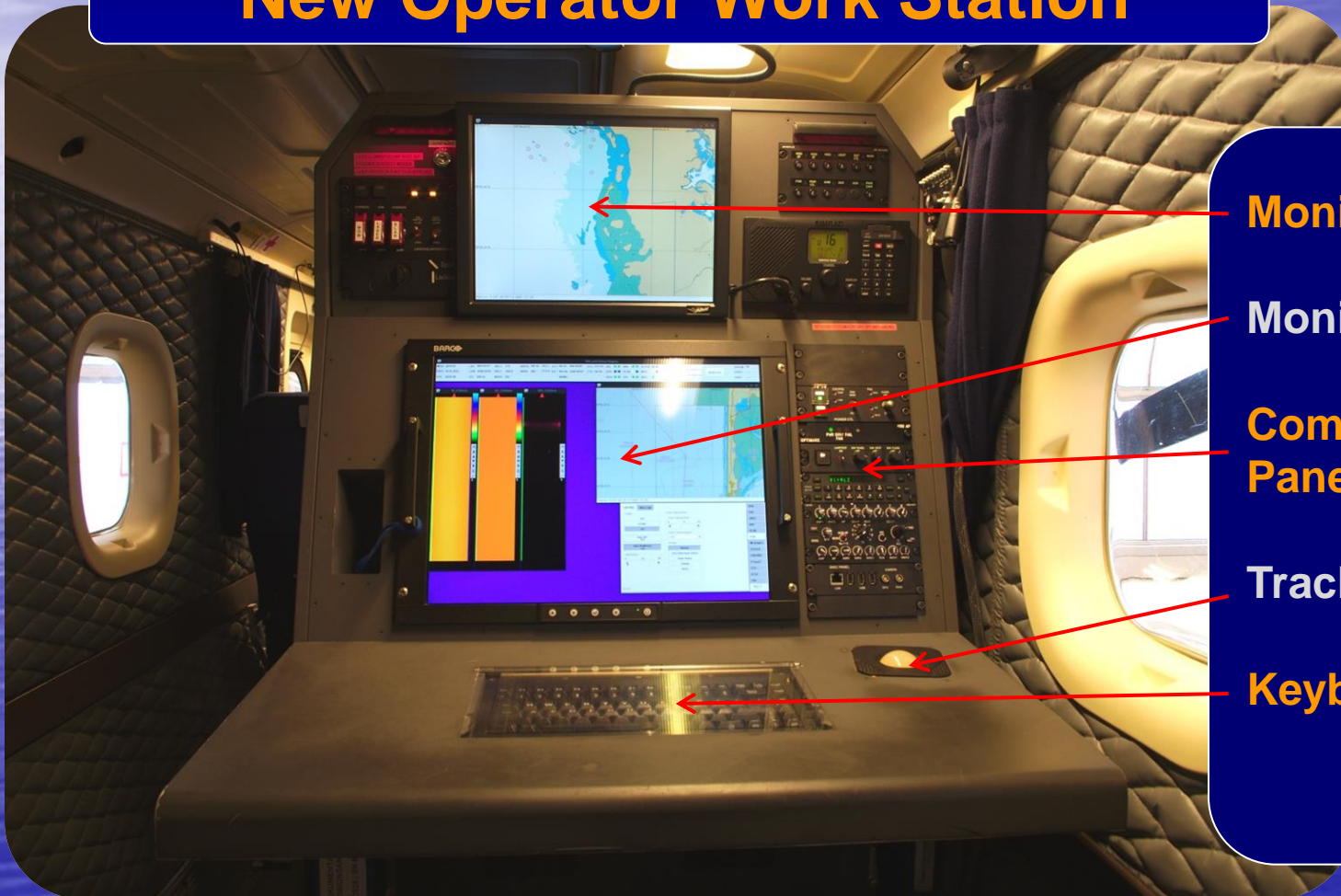
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## New Operator Work Station



Monitor II

Monitor I

Communication  
Panel

Trackball

Keyboard



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**Long-range detection:**

**S L A R**

**Side Looking Airborne Radar**

- **40 km** to each side
- Terma system with **2 antennas**



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**right-side SLAR-antenna**



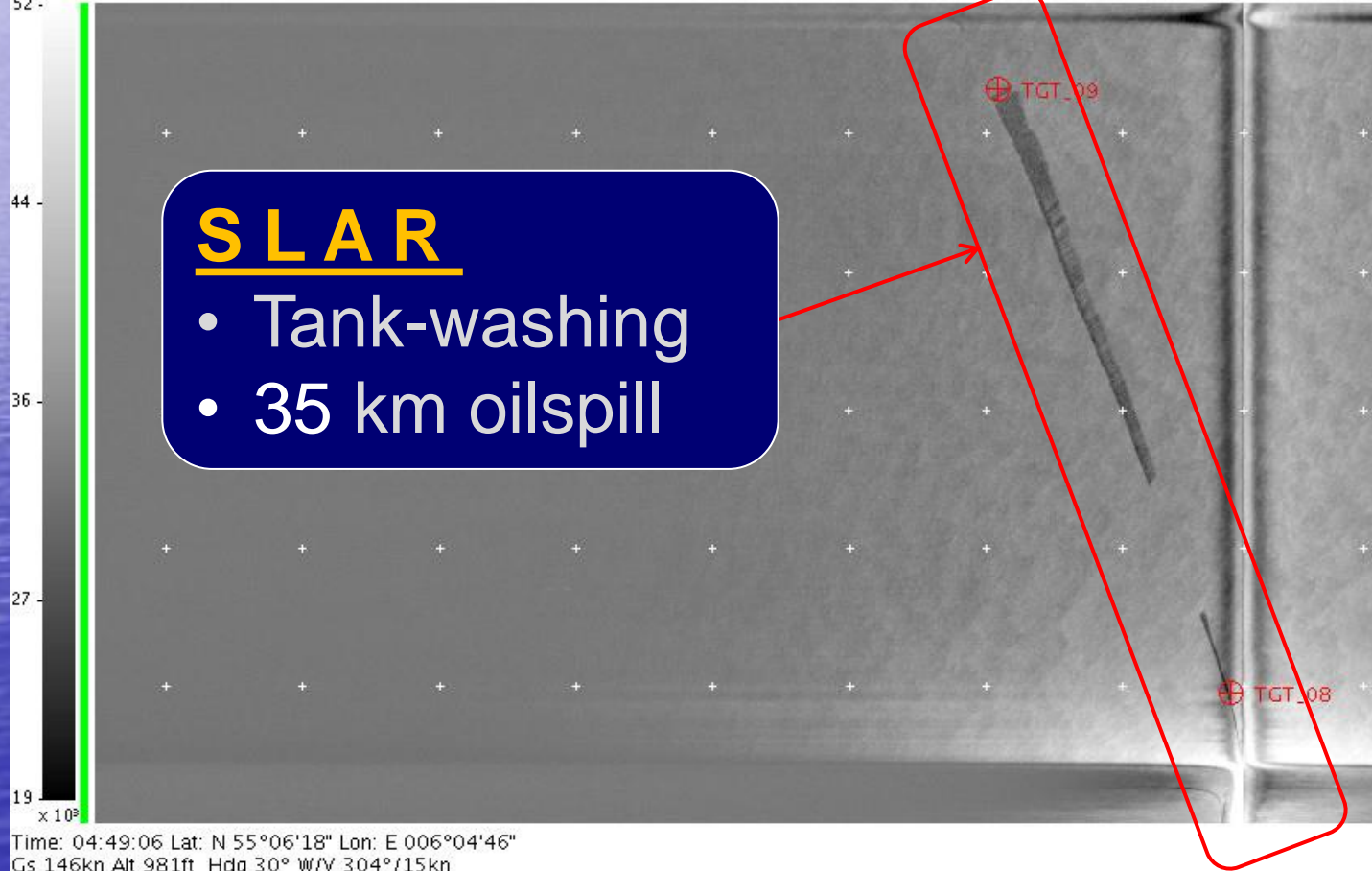
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Sensor: SLAR (Grid: 5000, Geopos: on, Geotarget: off, Zoom: 1)  
LUT Range: 19071 - 52359  
Mission: PCT401 2014-07-30 02:55:35.0 ACFT: 57+05  
Op: Alexander Brüns  
Time: 04:54:54 Lat: N 54°56'47" Lon: E 005°44'31"  
Gs 180kn Alt 1968ft Hdg 240° W/V 281°/17kn  
52 -



Time: 04:49:06 Lat: N 55°06'18" Lon: E 006°04'46"  
Gs 146kn Alt 981ft Hdg 30° W/V 304°/15kn





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## Short-range detection:

### IR – UV - VIS

InfraRed - UltraViolett - Visline  
Scanheads

- detection of oilspills
- detection of possible polluters
- detection of other pollutions



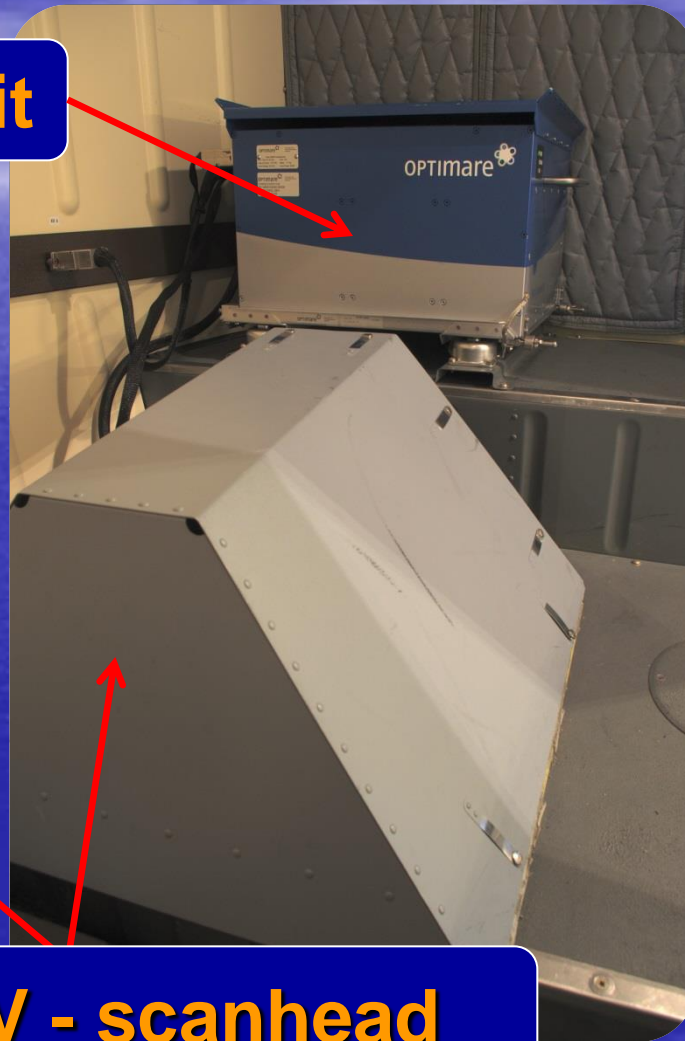
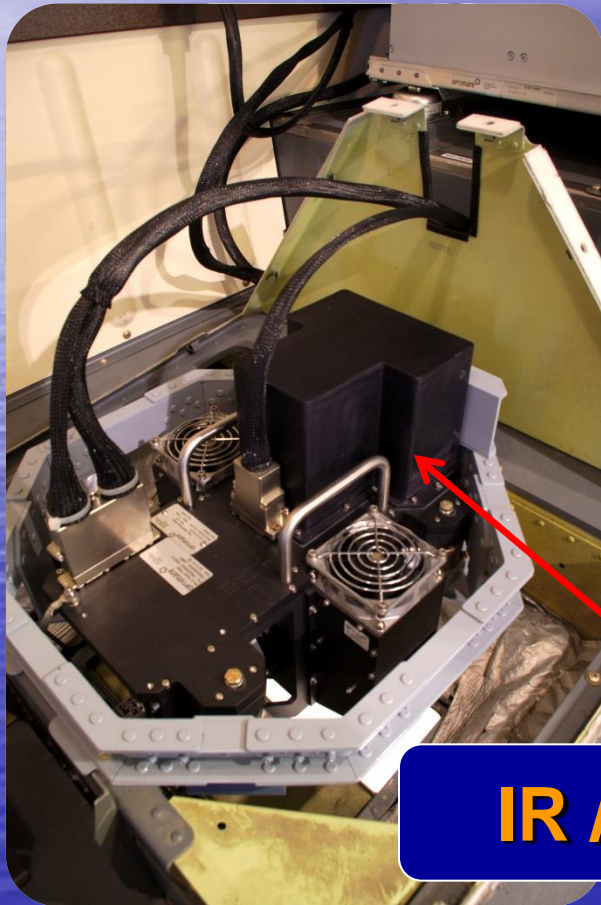
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**IR / UV - control unit**



**IR / UV - scanhead**



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**IR / UV - hatch**



**VIS - hatch**



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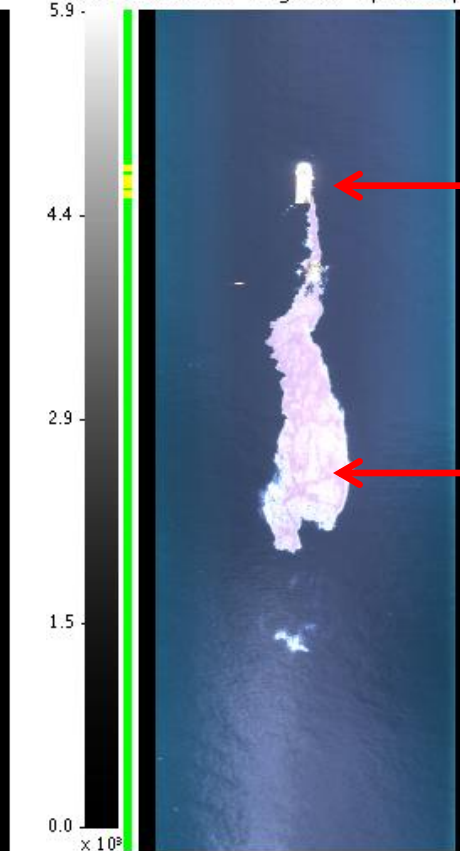
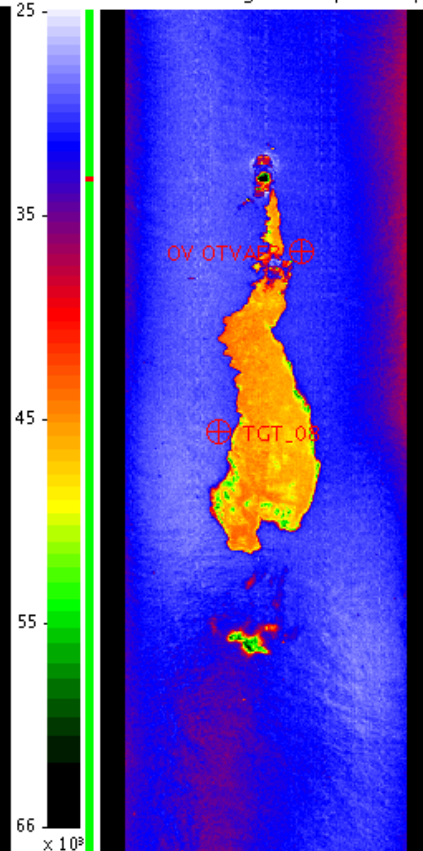
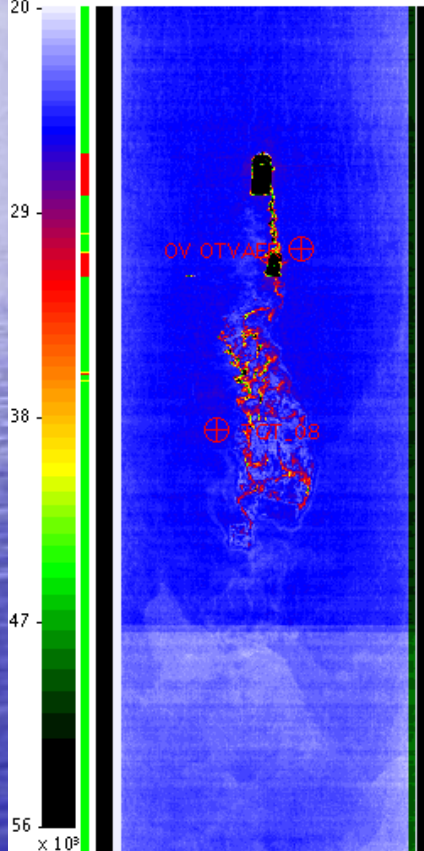
# Marine

### IR

### UV

### VIS

Time: 12:56:40 Lat: N 59°59'06" Lon: E 002°26'44" Time: 12:56:41 Lat: N 59°59'07" Lon: E 002°26'44"  
 Gs 123kn Alt 576ft Hdg 286° W/V 292°/14kr Gs 123kn Alt 576ft Hdg 286° W/V 292°/14kr Gs 123kn Alt 576ft Hdg 286° W/V 292°/14kr



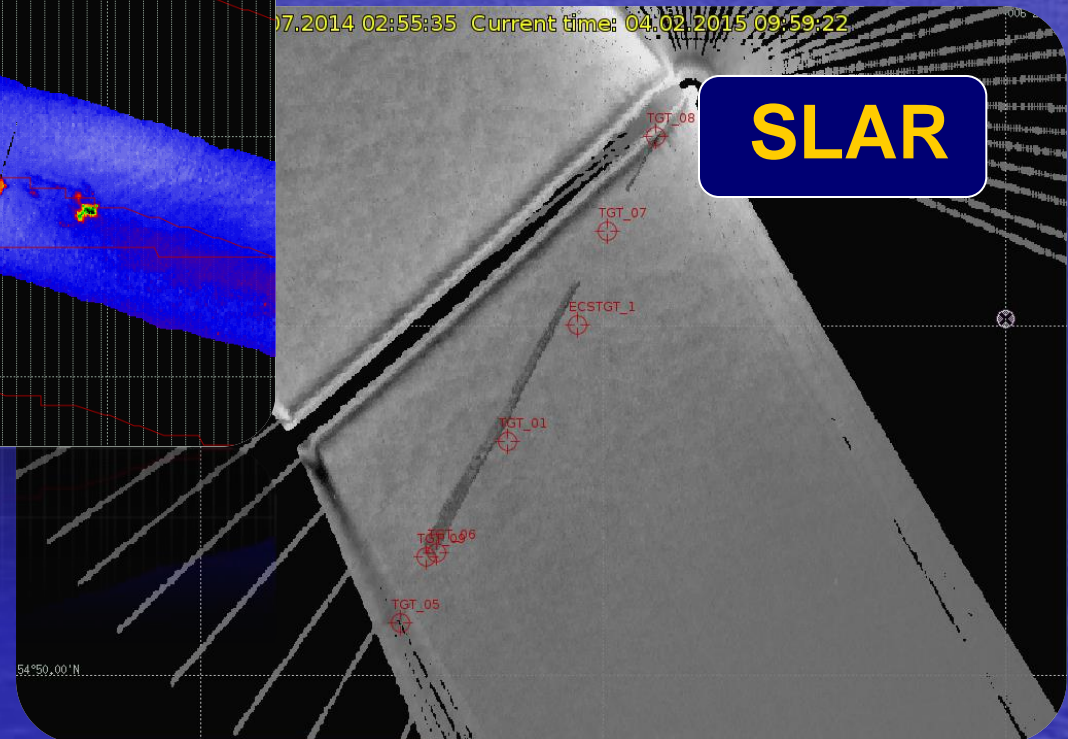
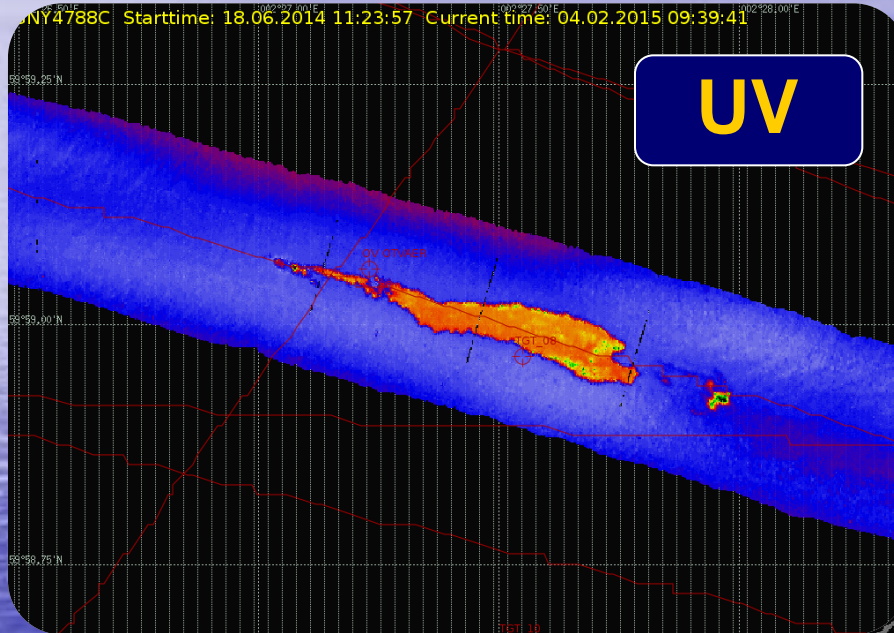
**ship**

**oilspill**

Time: 12:56:15 Lat: N 59°58'52" Lon: E 002°28'23" Time: 12:56:15 Lat: N 59°58'52" Lon: E 002°28'23"  
 Gs 119kn Alt 579ft Hdg 288° W/V 294°/16kr Gs 119kn Alt 579ft Hdg 288° W/V 294°/16kr Gs 119kn Alt 580ft Hdg 288° W/V 294°/16kr



## Georeferenced sensor-images





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Getting optical evidents with

- Video-system
- Photo-system



WesCam MX15



Nikon D3s



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## ElectroOptical / InfraRed - system

EOIR - turret



Handcontrol



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## ElectroOptical / InfraRed - system

- **Infrared and videocamera-system**
- Gyro-stabilized
- **GPS supported**
- Laser range-finder
- **Laser illuminator**
- **Datastorage** → digital videorecorder





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**EO / IR – observation (during night)**

**M O V I E**

**W O A T E**



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**Zoom lense: 70 – 200 (f/2.8)**  
**Quality: RAW + Fine**  
**Overlay: @Havariekommando**  
**Overlay: mission-data**



**Nikon D3s**



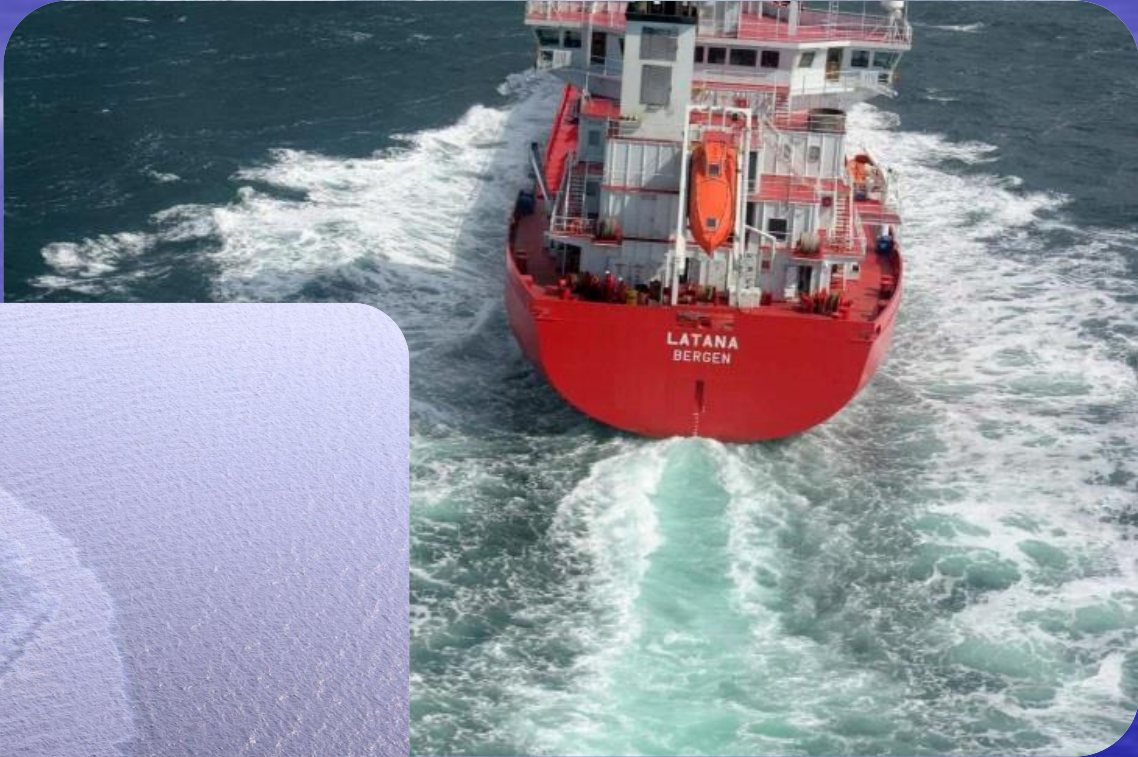
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**SHIPS**





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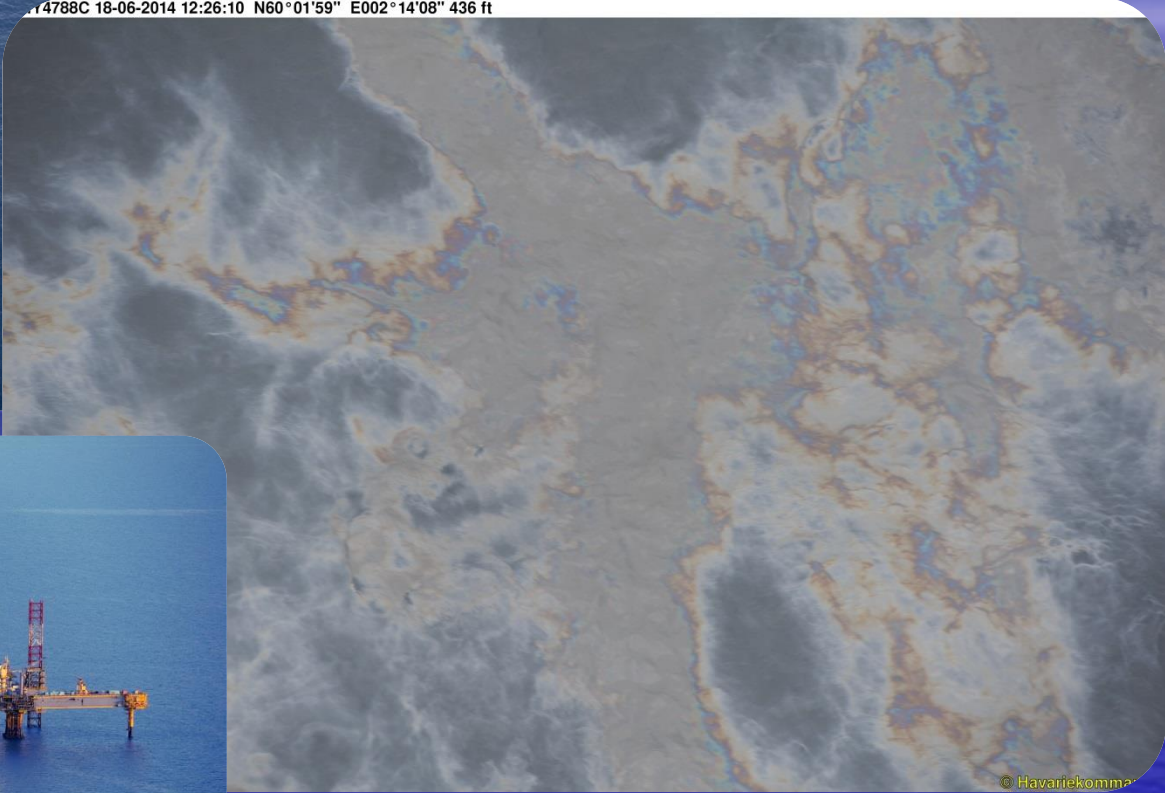


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### OIL-RIGs



14788C 18-06-2014 12:26:10 N60°01'59" E002°14'08" 436 ft



© Havariekommisjonen





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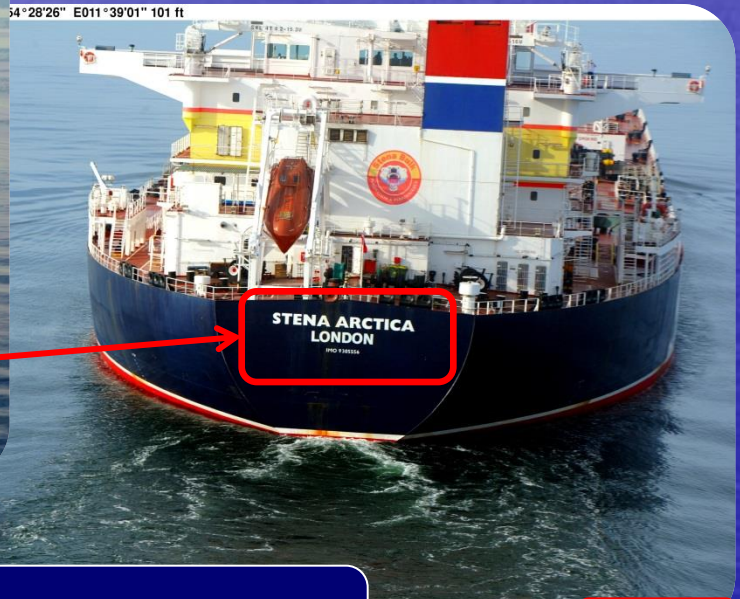
Marine

1562 30-10-2014 11:16:28 N54°29'07" E011°38'12" 272 ft

**Overlay mission-data**



**Identification**

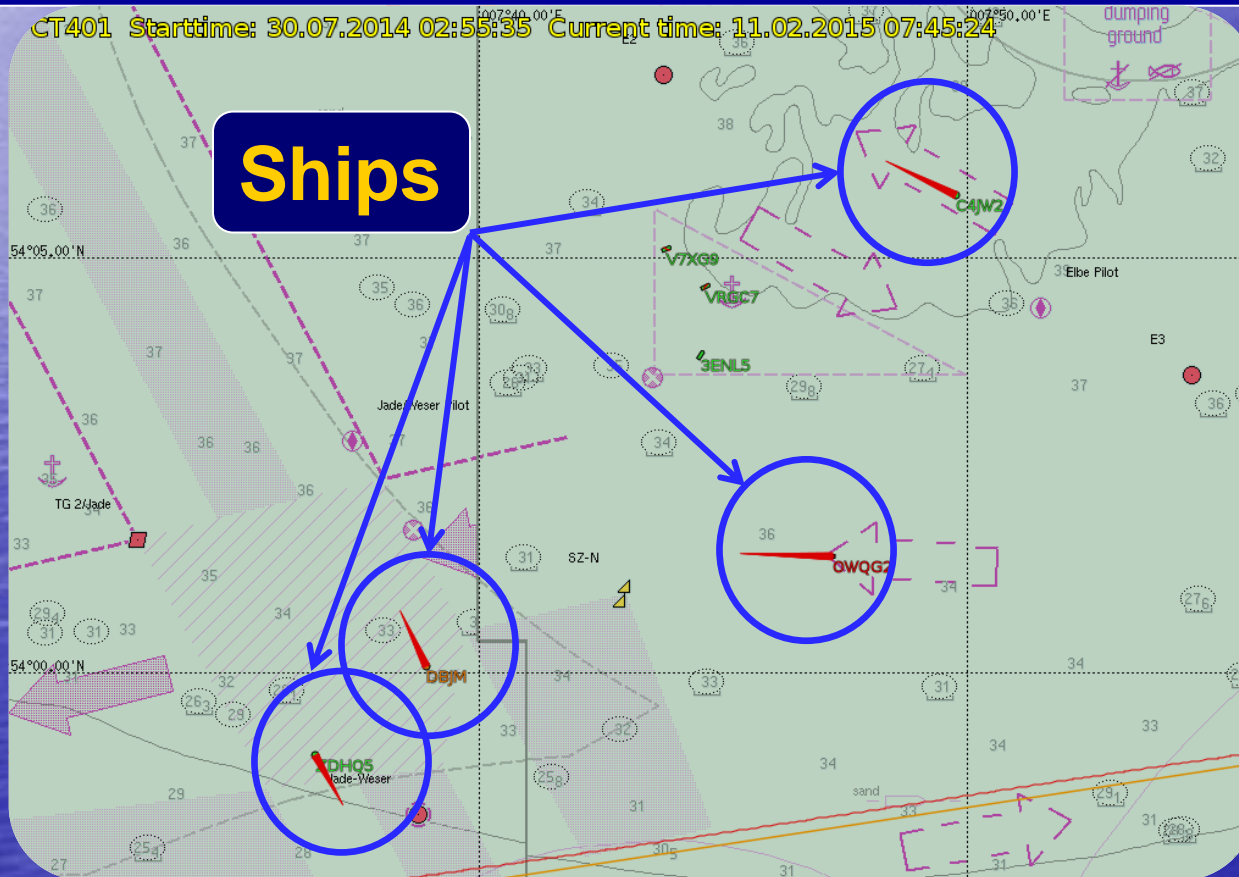


**Overlay @Havariekommando**

© Havariekommando



# Automatic Identification System AIS





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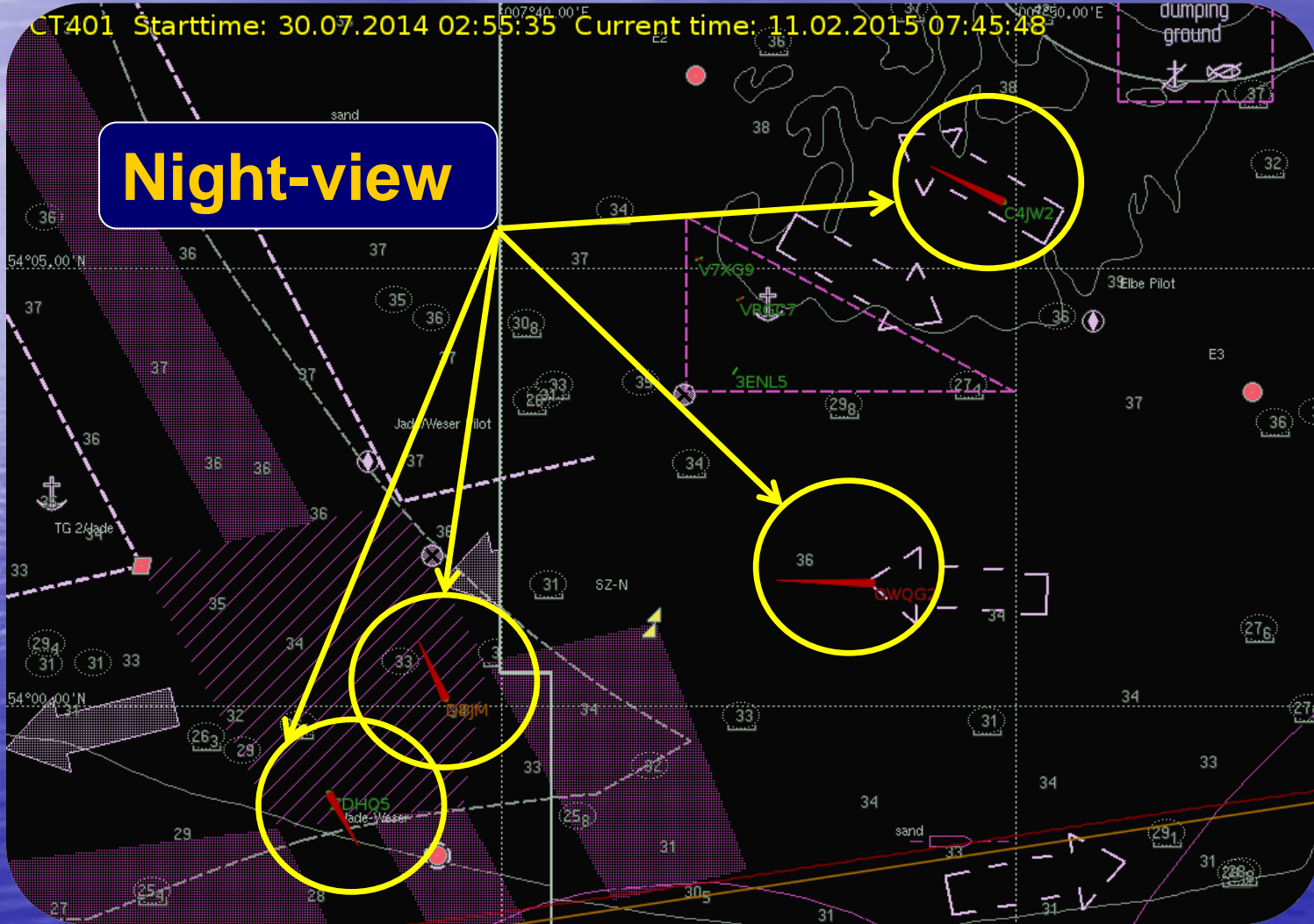
## Graf Zeppelin



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CT401 Starttime: 30.07.2014 02:55:35 Current time: 11.02.2015 07:45:48

Night-view



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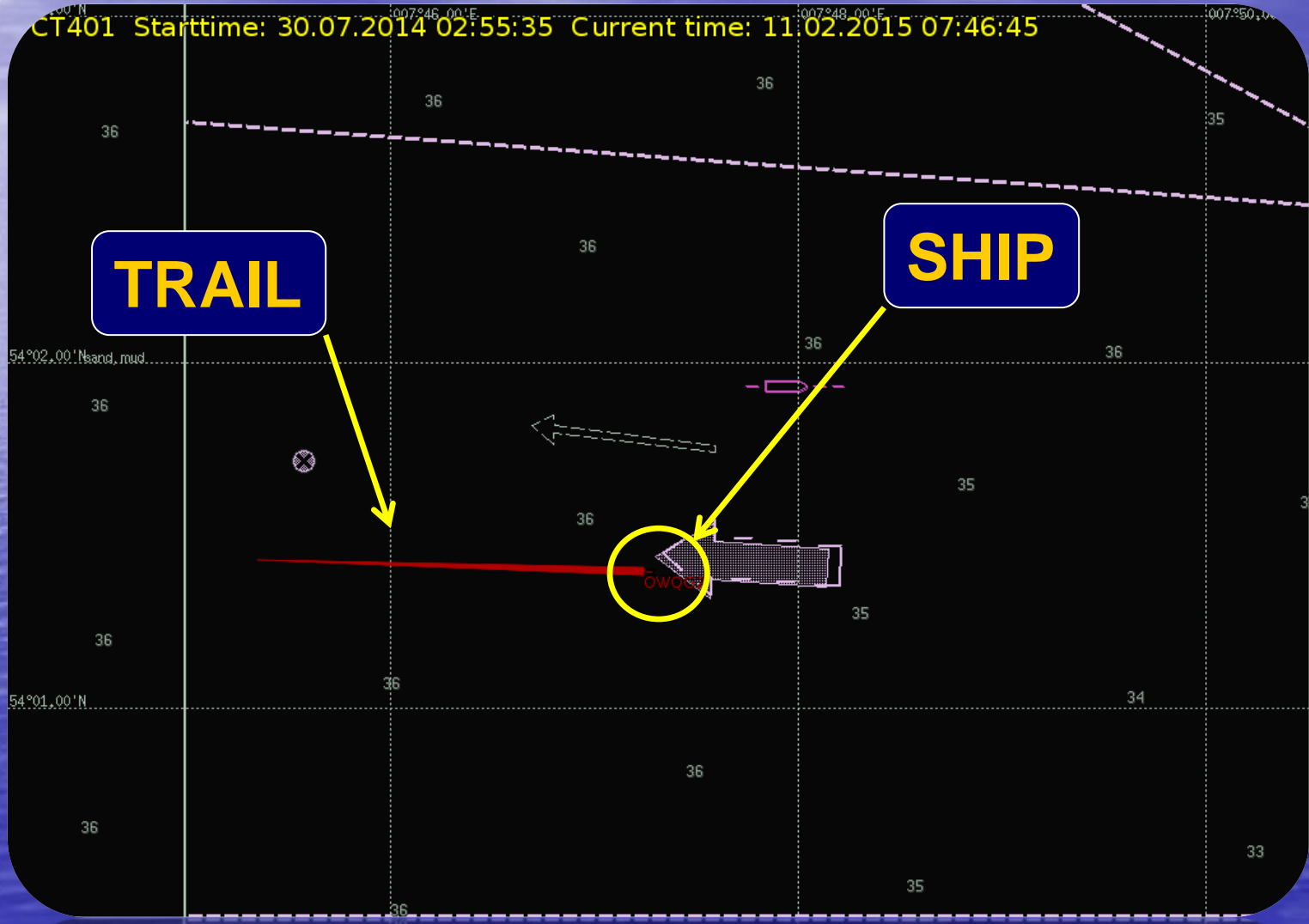
# Marinefliegergeschwader 3

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# Marine

CT401 Starttime: 30.07.2014 02:55:35 Current time: 11.02.2015 07:46:45







### AIS information window

<b>MMSI</b>	: 257970000
<b>Callsign</b>	: LAUR5
<b>Name</b>	: XANTHIA
<b>Shiptype</b>	: 89 (Tanker)
<b>Destination</b>	: DUNKIRK VIA NOK
<b>Dimension</b>	: 147m x 22m
<b>IMO number</b>	: 9246152
<b>ETA</b>	: 05/11 00:05 (MM/DD hh:mm)
<b>Last report time</b>	: 10.05.2012 15:02:07
<b>Last position</b>	: N 54° 11' 53" / E 007° 20' 38"
<b>Heading</b>	: 268 degree
<b>CoG</b>	: 269.1 degree
<b>SoG</b>	: 15.1 knots
<b>Navig. Status</b>	: 0 (under way using engine)
<b>Last navig. time</b>	: 10.05.2012 15:02:07



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## Cockpit Display options

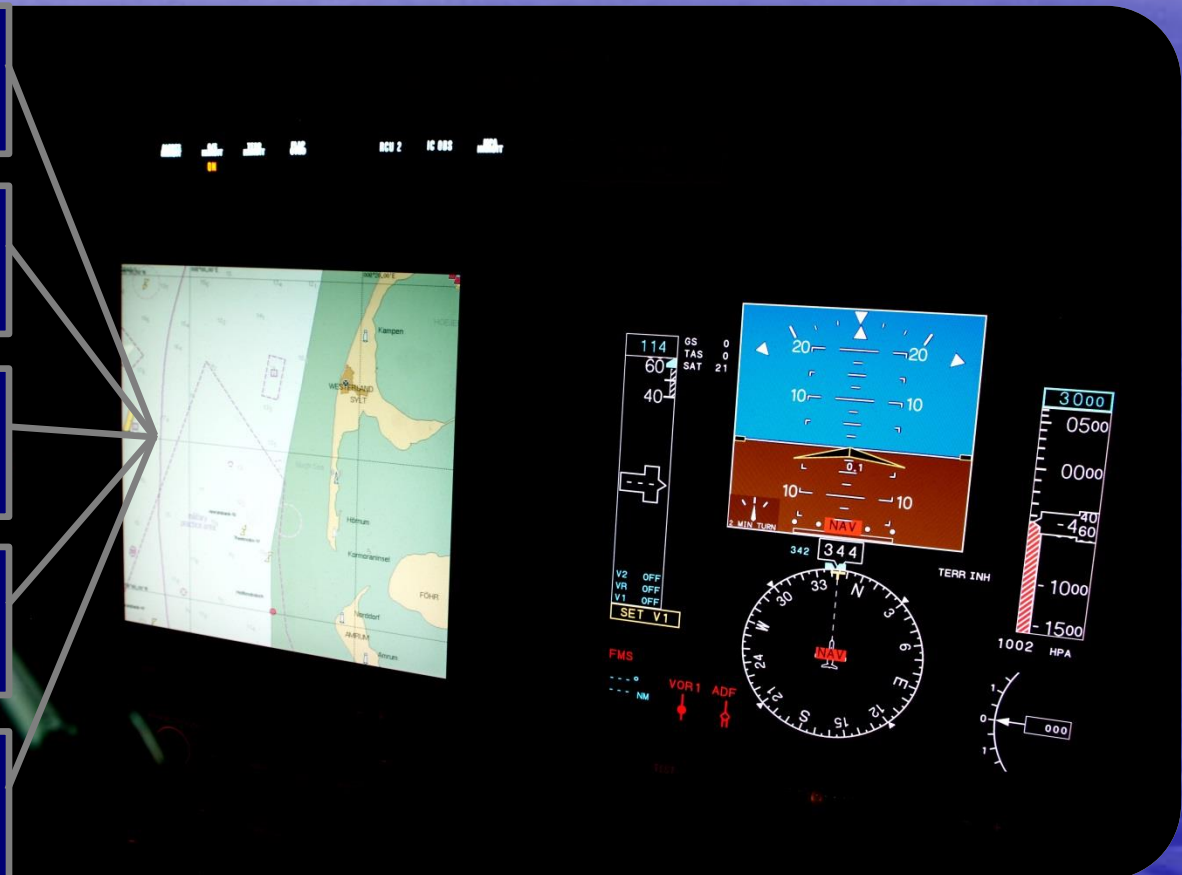
Navigation Chart

DigiCam Images

SLAR live

MOVIE live

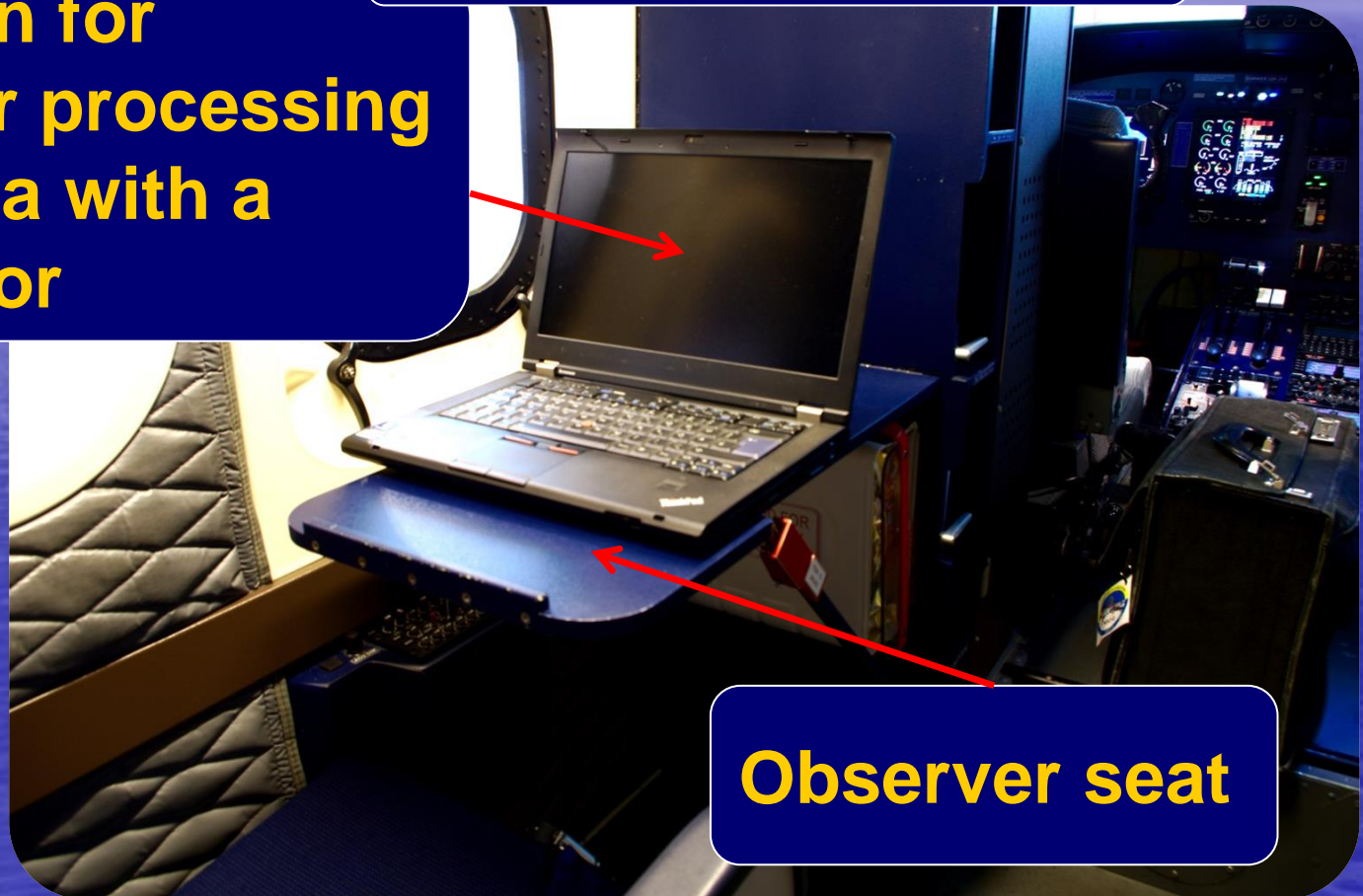
MOVIE playback





## 2nd Operator OPTION

Workstation for analyses or processing missiondata with a 2nd operator



Observer seat



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## Communication

- **VHF - UHF – HF – radios**
- **Satellite phone**
- **World Wide Web**
- **Email**
- **Maritime VHF**
- **Authorities radio device (BOS)**



**Satellite phone**

- CONNECTIONS:**
- LAN
  - USB
  - Camera GPS
  - Camera PWR



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## Aircraft to ship communication



GET TO THE POINT TO STAY ON THE AIR AND LANDING

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**QUESTIONS ?**



**DISCUSSION...**