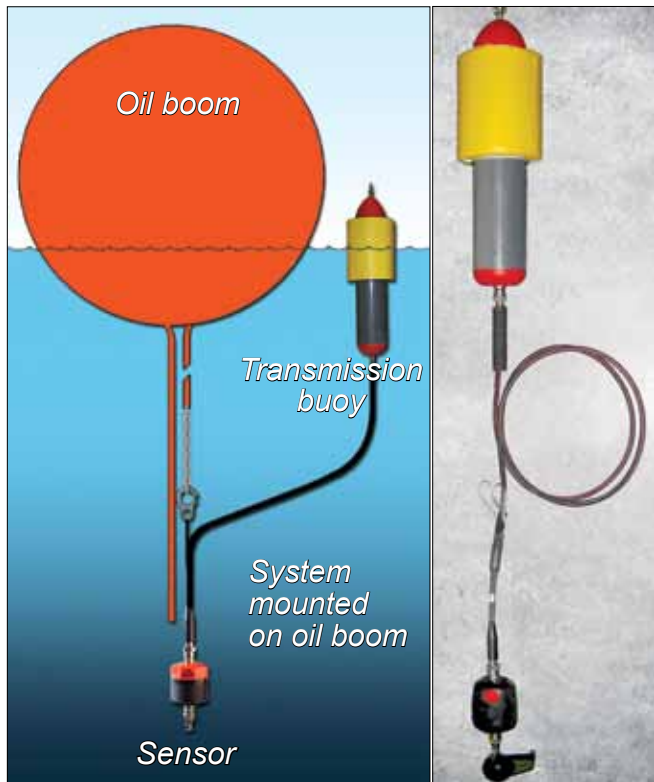


Doppler Log System 4900 for Oil Booms

D379 - November 2010



Doppler Log System 4900

provides the oil boom speed through water. The system is designed for all oil booms to be operated at the optimal speed. This ensures correct build-up of oil in the boom, and efficient and secure collection of oil.

Features:

- Acoustic Doppler measurement for speed through water
- Software to display and store data
- Wireless data communication
- Rugged construction
- Easily installed
- Battery powered for 7 days continuous operation

The AADI Doppler Log System for Oil Booms is designed to be used in an oil spill recovery operation. The oil boom towing speed through water, (not over ground), is critical for an efficient and successful operation.

If the oil boom is towed too fast the oil will escape underneath the boom or, you may damage the oil boom or other recovery equipment. Therefore it is vital to know the true oil boom speed through water in order to operate the various oil booms within the manufacturers' specifications. The Doppler Log easily snaps directly onto different oil booms using two shackles.

The Doppler Log System consists of:

- Doppler Current Sensor, DCS 4100R, for boom speed, sensor tilt and water temperature
- Sensor weight
- Data Buoy with batteries and VHF radio transmitter
- PC with display program and VHF radio receiver
- Transport and storage case for complete system
- Battery charger
- Maintenance kit

The Data Buoy is connected to the Doppler Current Sensor with a short cable. This is used for transferring data and power to the Doppler Current Sensor.

The VHF radio transmits the oil boom speed to the radio receiver and PC located on the vessel's bridge. The real-time Display

Program presents the oil boom speed to the captain/pilot. An alarm function with high and low speed is available for easy operation. The minimum/maximum towing speed is user configured based on the oil boom specifications.

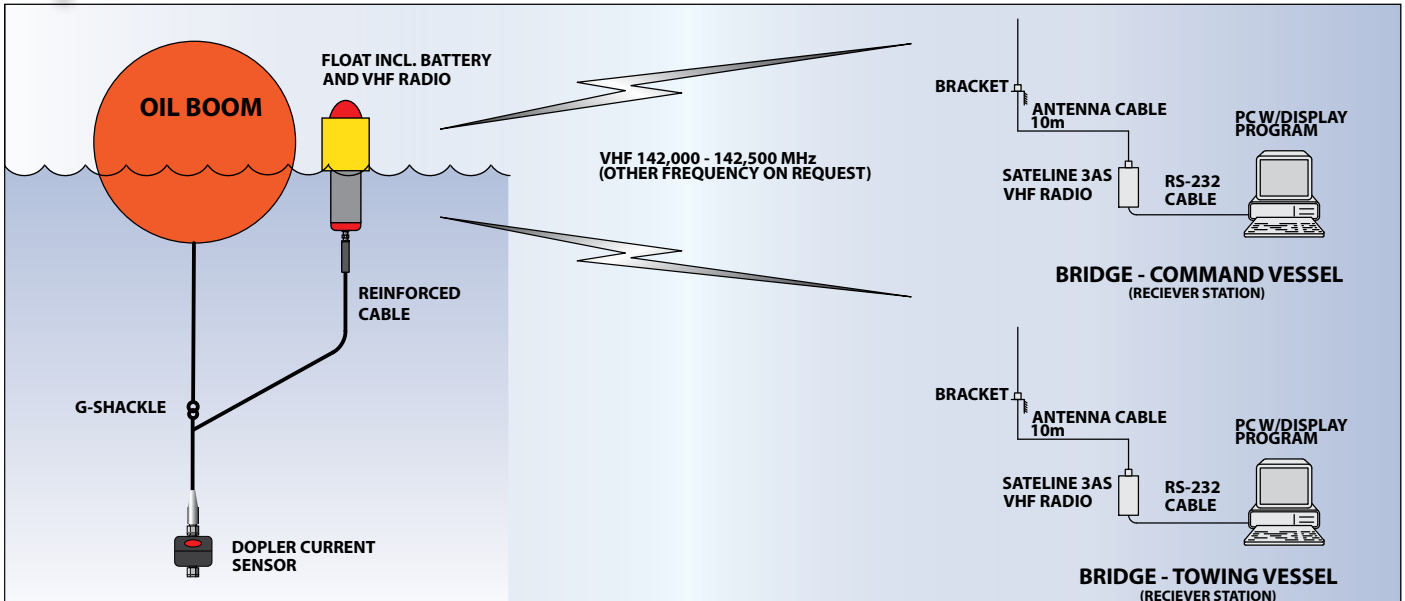
The Doppler Current Sensor is a smart sensor and self operating when power is applied to it. The sensor comprises four acoustic beams, a compass and a tilt sensor (which ensures that measured data are correct up to 35° tilt). The sensor always measures upstream to avoid the turbulence behind the oil boom. A series of 40 samples are taken and provide a speed measurement for the ship's captain every 12 seconds. Data are sent to the bridge via the Data Buoy's VHF radio and displayed on a dedicated computer screen on the bridge of the command vessel. A slave display for the towing vessel is also available.

The oil collectable by oil booms, floats on the ocean or water surface. The surface current is normally between 0.2 and 1.5 knot. Today's oil booms are limited to 0,7 knot or 3+ knots. Modern ships have instrumentation to compensate for current, however they measure under the keel. Therefore it is too deep to compensate for surface current because the surface current is wind driven.

Using the Doppler log system you ensure efficient buildup of oil in the boom and oil skimmers will have optimal working conditions. In addition your system can work within manufacturers' specification, thereby avoiding overloading and damaging the oil booms.

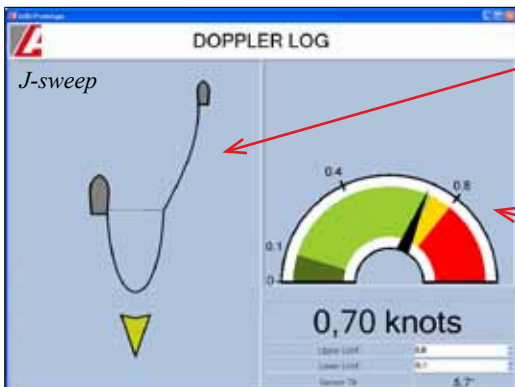
Specifications for 4900

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Display Program

The display program is designed to display the boom speed and the sensor tilt. In addition the data is saved to file for post-processing and documentation of oil boom operation. The additional parameters water temperature and speed/direction are also logged. The oil boom upper and lower speed limit is configured according to the oil boom manufacturers' specification. If you exceed the upper or lower limit an alarm is given to the captain.



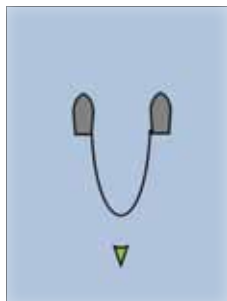
Select display:
 • Ocean buster
 • J-sweep
 • U-sweep

The maximum and minimum towing speed is set according to oil boom spec.

Select Display:

Ocean buster

U-sweep



COMMUNICATION

VHF-modem operation: 138 - 174 MHz frequency
 Transmitting interval: 12 seconds
 Data format: RS-232

SENSOR

Doppler Current Sensor: model 4100R/2 MHz
 Ping rate: 200 pings/minute

CABLE

Breaking load: 200 kg, reinforced for external wear

DATA BUOY

Material: PVC
 Weight: approx. 15 kg (incl. battery and modem)
 Battery: 30 Ah/12V rechargeable NiChadm

CHARGER

Battery charge time: 8 hours. Automatic maintenance charging

SYSTEM IN TRANSPORT AND STORAGE BOX

1 transport case (1200 x 530 x 270 mm)
 Basic system with one receiver unit: 66 kg
 Extended system with two receiver units: 72 kg



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Representative's stamp