

MULTIWAVE GEOPHYSICAL COMPANY



SBL

"the new"
SOLUTION



Sea Bed Logging technique

Background

Sea Bed Logging – A new method using Electro Magnetic waves to measure if a reservoir is Hydro Carbon or water filled.

The method has been developed and tested by Statoil since 1997.

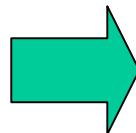
To make this possible Statoil has made use of knowledge and equipment developed the last 15 to 20 years by different research groups.

The Technology is now made commercially available through the ElectroMagnetic GeoServices company (emgs a/s), and the method is protected by several submitted patents.



Electro Magnetic Seabed Logging

- The method make use of discrete receivers placed on the seafloor.
- The receivers have electric dipole antennas that measure the electromagnetic field generated by:
- A powerful electromagnetic source.
- The source is towed behind the vessel and transmit the electric current into the sea using a dipole antenna.

 MGC selected by EMGS as to have exclusive rights to acquire SBL data world wide.



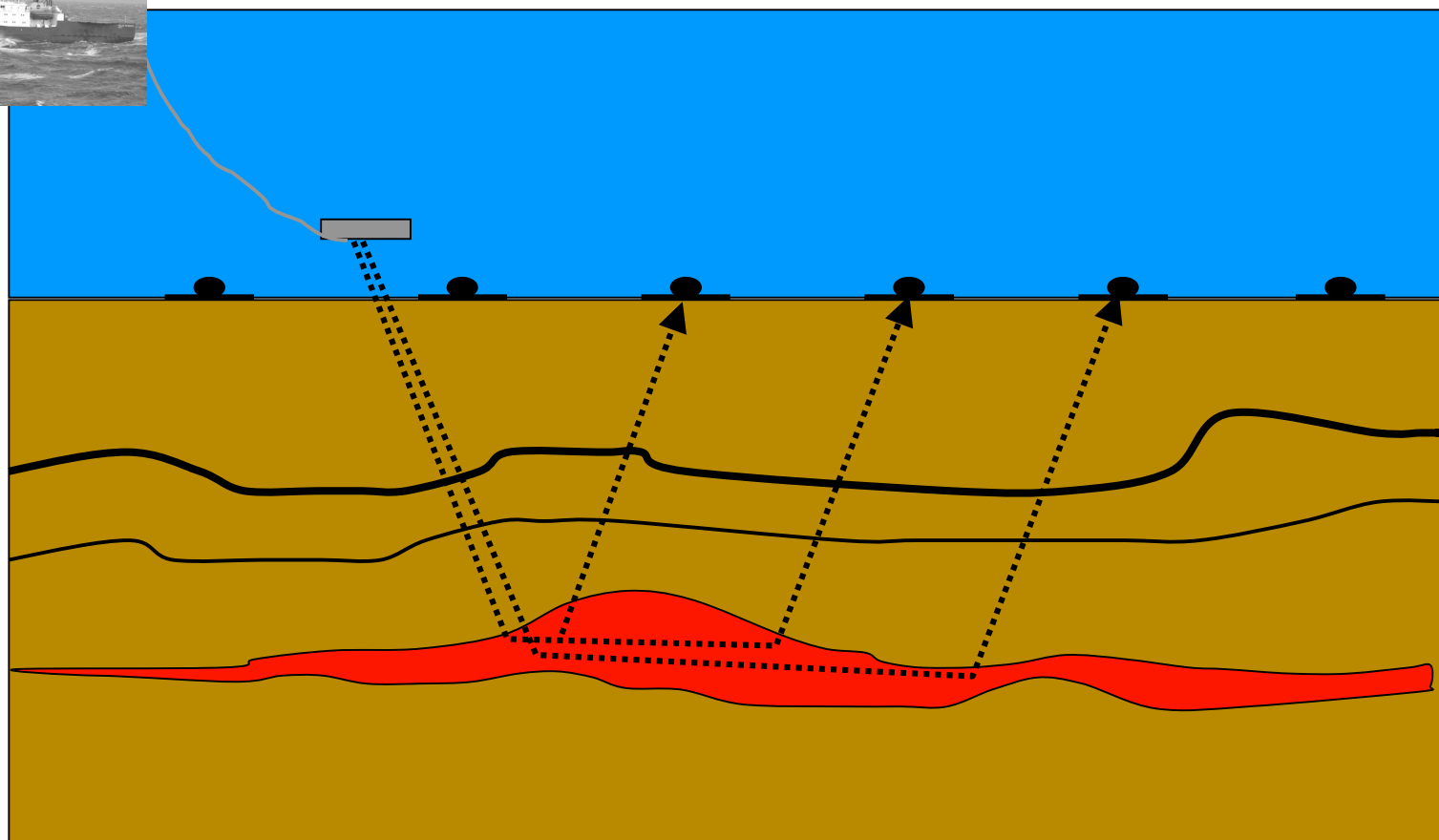
Sea Bed Logging principles

- **Receivers measure the electric field that has followed diffusion paths through the seabed**
- **These measurements are used to determine a model of sub-seafloor resistivity**
- **The interpretation of the resistivity model relies on the large resistivity contrast of hydrocarbon filled reservoirs and aqueous saline fluid filled reservoirs.**



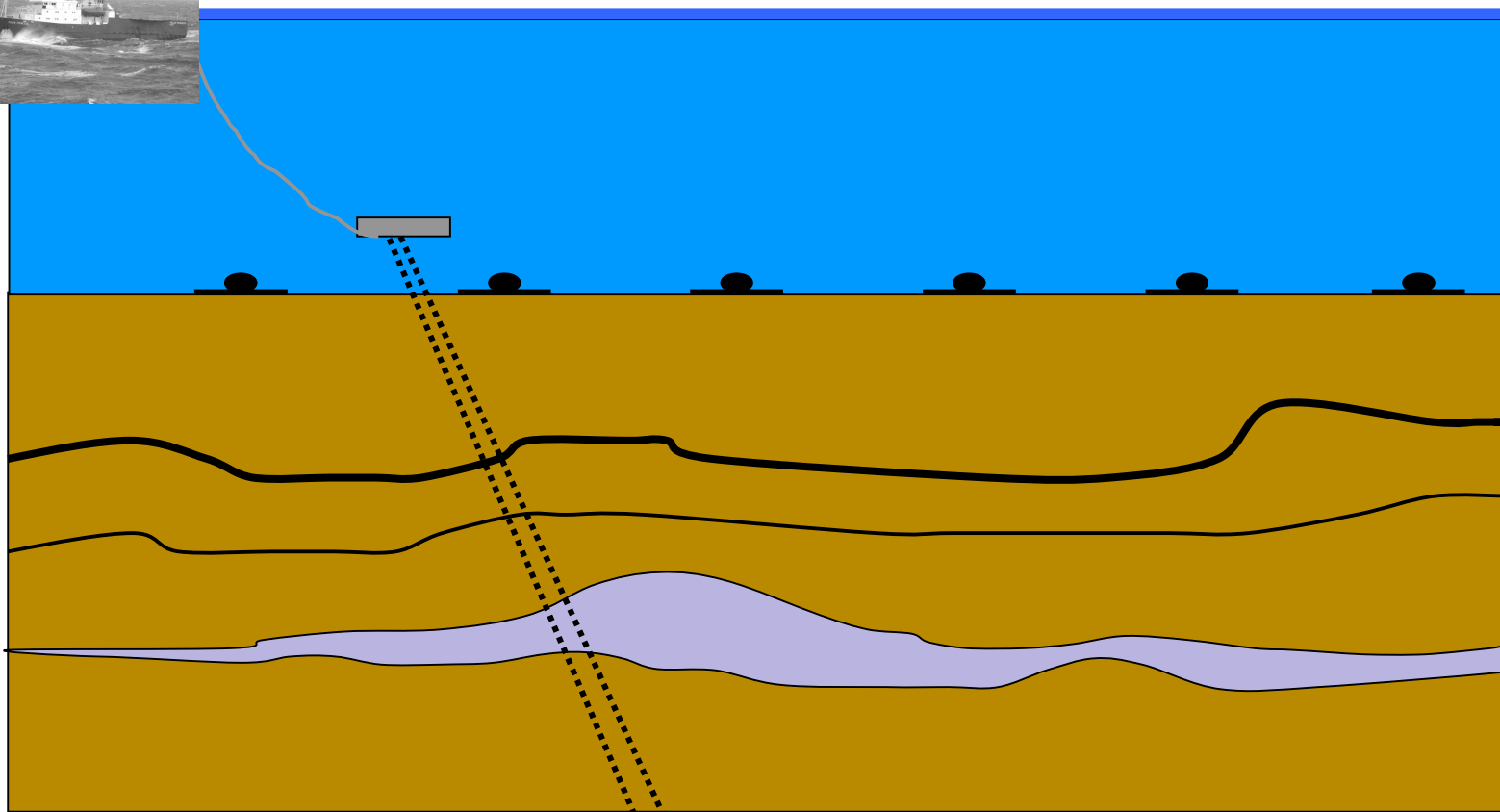
Sea Bed Logging principles

HC-filled reservoir



Sea Bed Logging principles

Water-filled reservoir



MGC EM SBL Vessel

Main Particulars

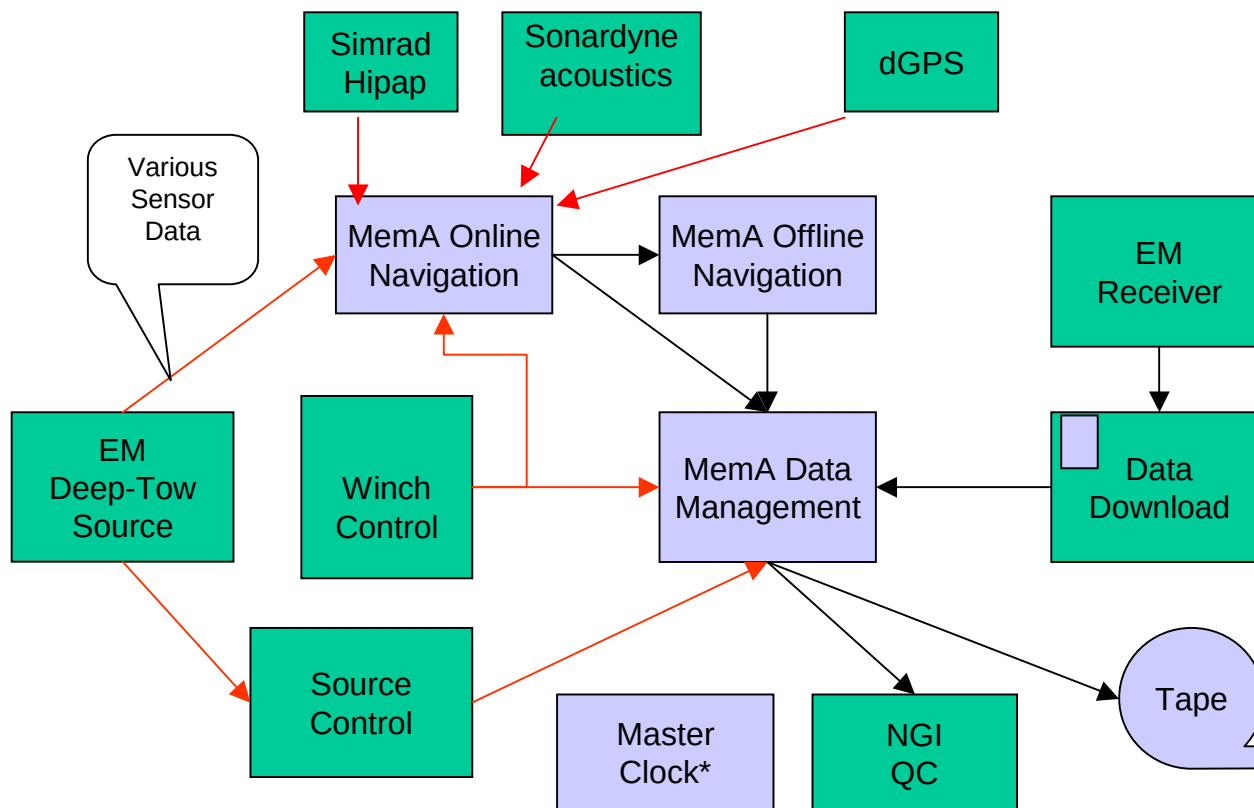
R/V POLARBJØRN

Built	Norway, September 2001
Type	Expedition / offshore, subsea and cable support vessel
Flag	Norwegian
L.o.a.	90 m
L.p.p.	80,4 m
Breadth mld.	18 m



Acquisition System

MemA

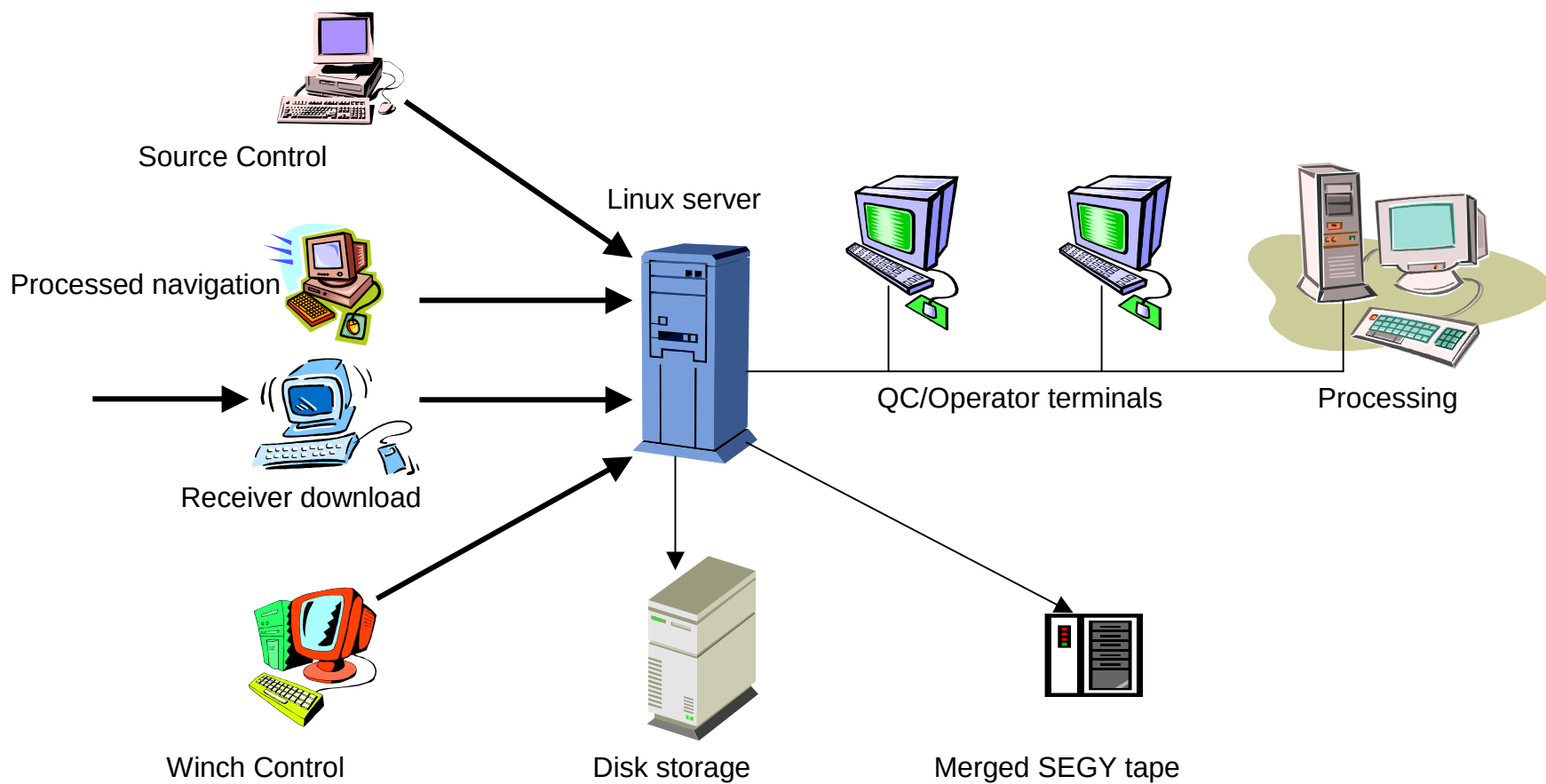


* Master clock supply all systems with correct UTC time, connections not shown.

— Real Time Data

— Offline Data

MemA Data Management



2001 SBL - RECEIVER DEPLOYMENT



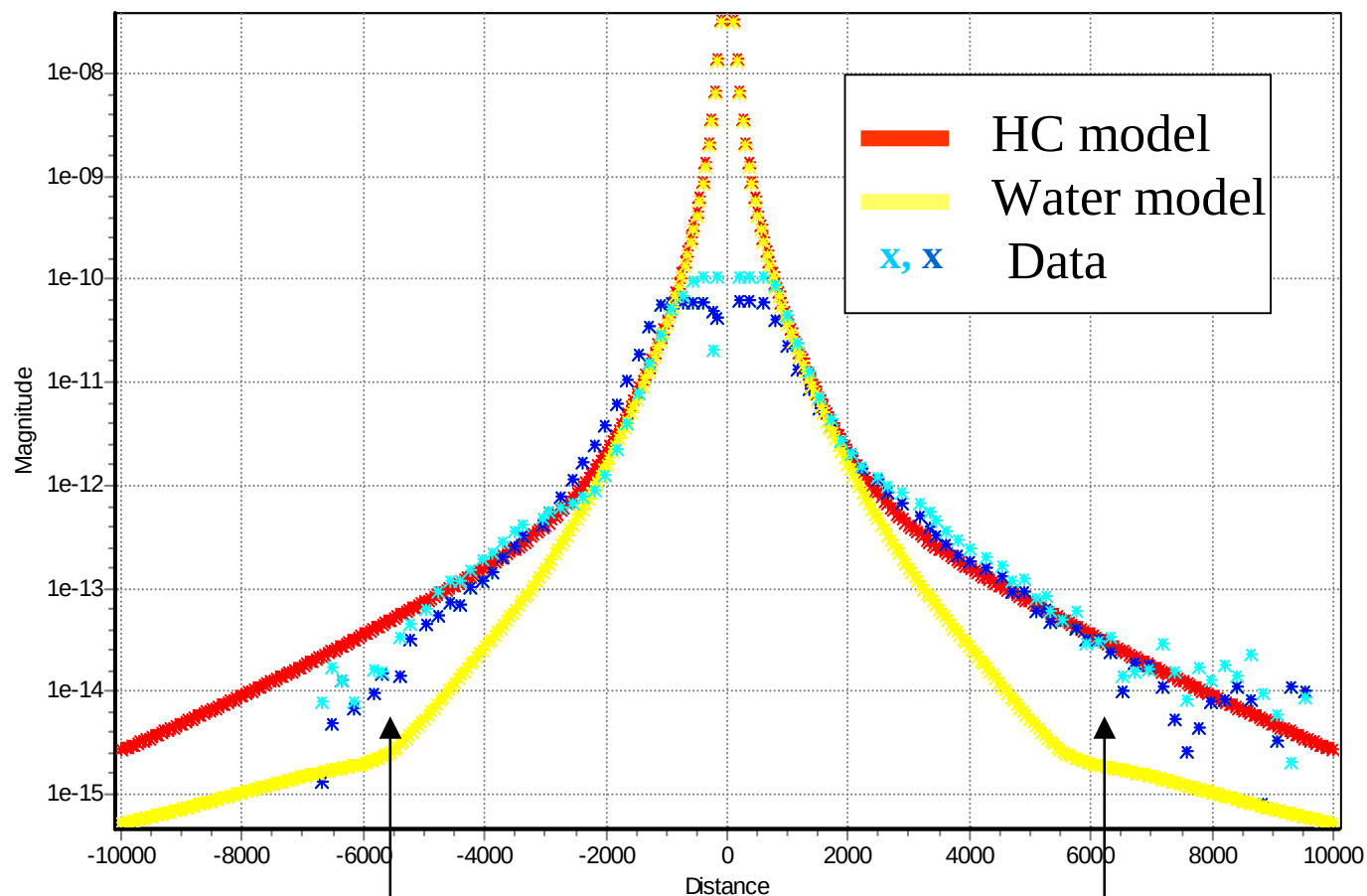
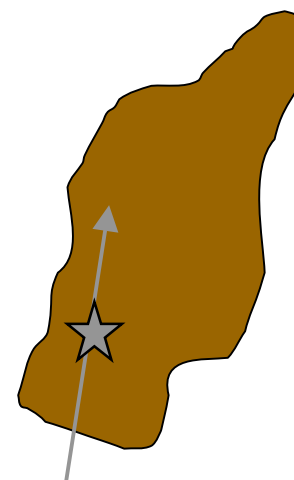
2001 SBL – SOURCE DEPLOYMENT



EM SBL Measured data

South

Bandicoot, time start = 309.93000000, time range = 0.25000000, freq = 2.4931e-01

North**North****South****Water****HC**

EM Sea Bed Logging - summary

- Remote, direct identification of hydrocarbon filled layers
- Technology developed by Statoil
- Technology now owned by new company EMGS A/S
- Statoil the majority owner of EMGS A/S
- MGC is the acquisition partner – available from Q3
- Web site: www.emgs.no
- First Break, March 2002 edition



EM Seabed Logging

Electro Magnetic GeoServices



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