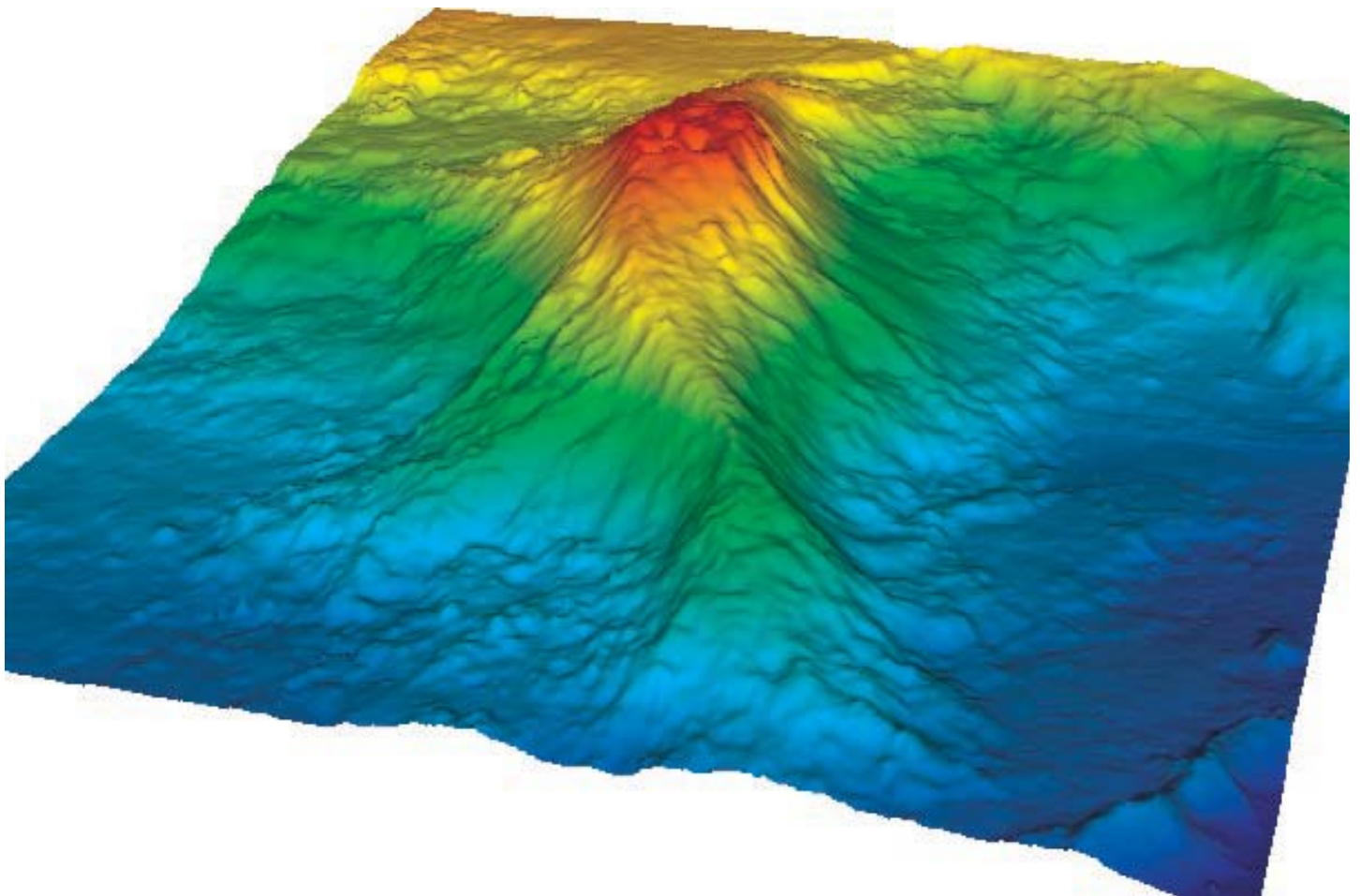


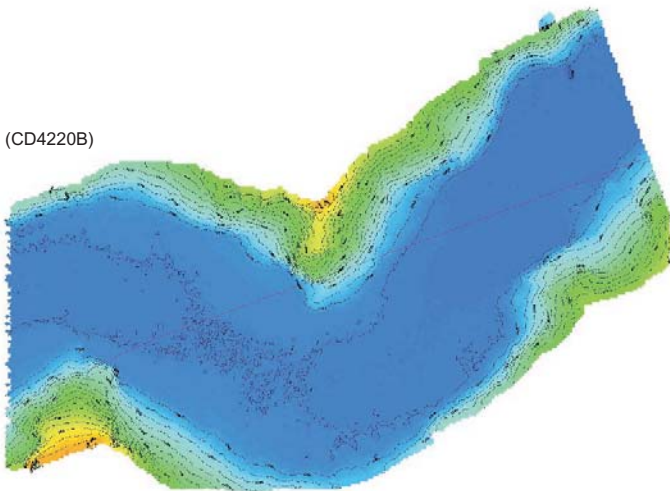
EM 300



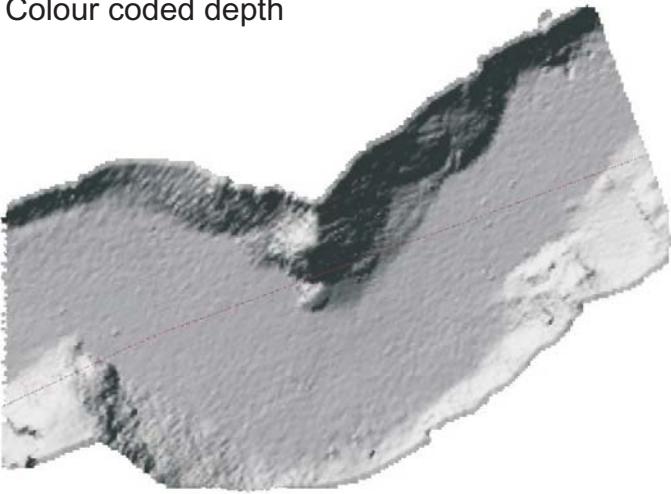
KONGSBERG

30 kHz multibeam echo sounder
for depths reaching 5000 meters

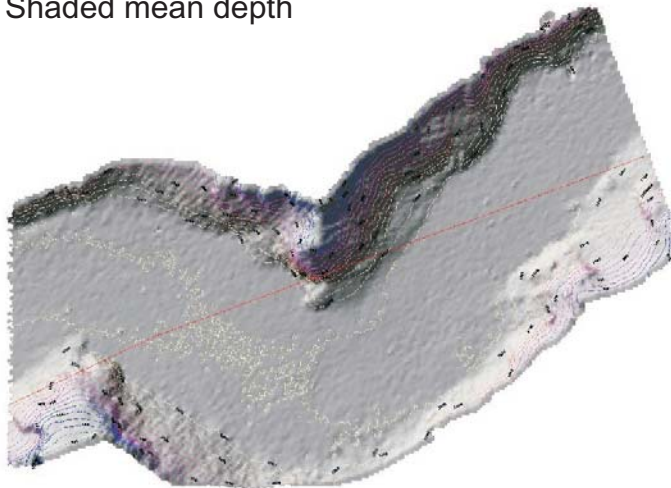




Colour coded depth



Shaded mean depth



Shaded mean depth with contour lines

The EM 300 multibeam echo sounder is designed for seabed mapping from the shoreline to beyond the continental rises. The system will also cover the shallower ocean basins to more than 5000 m depth with swath widths up to 5000 m. Compared to a full ocean depth multibeam echo sounder, such as the EM 12 the EM 300 is less expensive, has much smaller transducers allowing easier installation, and meets IHO specifications for accuracy also in shallow waters.

Performance

The superior performance of the EM 300 with respect to accuracy, coverage and depth capability is due to the advanced signal processing technology proven through many years of experience with the Kongsberg range of multibeam echo sounders.

The EM 300 includes features such as phase detection, equidistant beam spacing, calibrated seabed acoustic imaging, and ease of use.

The nominal operational frequency is 30 kHz with an angular coverage sector of up to 150°, 135 simultaneous 1x1°, 1x2°, 2x2° or optionally 2x4° beams, and a range sampling interval of 17 cm. The angular coverage sector and beam pointing angles are variable with depth according to achievable coverage to always maximize the number of usable beams. The beam spacing is normally equidistant, corresponding to 1.5% of depth at 90° angular coverage, 2.5% at 120° and 4% at 140°.

The transmit fan is split in several individual sectors with independent active steering according to vessel roll, pitch and yaw to get a best fit to a line perpendicular to the survey line and thus a uniform sampling of the bottom. The sectors are frequency coded (30-34 kHz) and are all transmitted sequentially at each ping. The steering is fully taken into account when the position and depth of each sounding is calculated, as is the sound speed profile effect on raybending.

- Full swath width accuracy to the latest IHO standard
- Swath width up to 5.5 x water depth or 5000 m
- Depth range from 10 to 5000 meters
- 100% bottom coverage even with 10% yaw and pitch
- Real-time ray bending and attitude compensation
- Bottom detection by phase or amplitude
- Seabed image (sidescan) data output

Pulse length and range sampling rate are also variable with depth for best resolution, and in shallow waters (10-50 m) due care is taken to near field effects.

The ping rate is only limited by round trip travel time in the water up to a ping rate of 10 Hz. The achieved system accuracy is in the order of 17 cm or 0.2% of depth RMS (whichever is greater) fully corrected in real time for the effects of sound speed and vessel attitude.

Transducers

The EM 300 transducers are linear arrays in a Mills cross configuration with separate units for transmit and receive. The transmit array extends 1.5 or 3 m fore-and-aft with 432 or 864 individual elements and the receive array 0.8, 1.6 or 3.3 m athwartship with 32, 64 or 128 individual staves. The array lengths may be adjusted according to particular installation requirements. The arrays are divided into modules which are diver replacable.

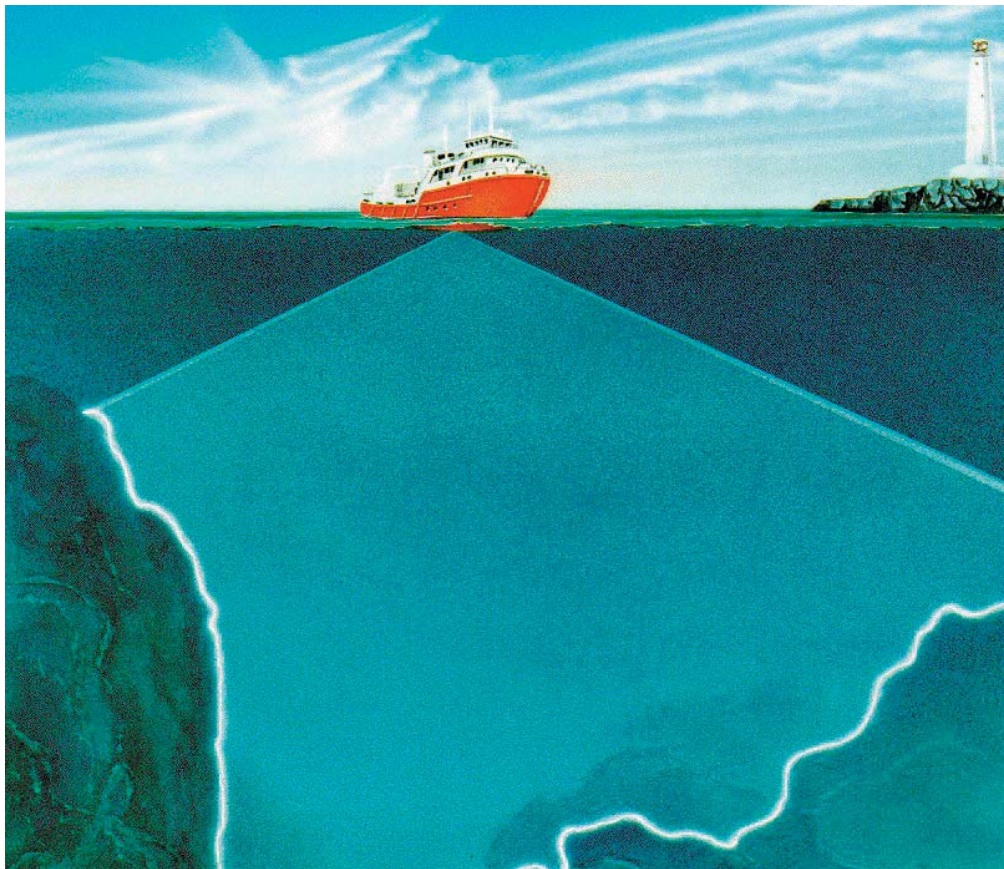
Transceiver

The transceiver unit, delivered in a wall mountable cabinet (1392 mm high), contains all transmitter and receiver electronics, beamforming and bottom detection processors, and all interfaces for external real-time sensors such as vessel motion sensor, gyrocompass, positioning and external clock.

Operator Station

The operator station contains the control interface, displays the collected data, and logs them to disk and tape (depth, seabed imaging, vessel position and attitude, and sound velocity data logging is included as standard). Real-time display functions such as seabed imaging, contour, and depth shaded plots geographically oriented for complete quality control of collected data is included.

The **Neptune** post-processing system may be used to process EM 300 data.



Operator Station highlights

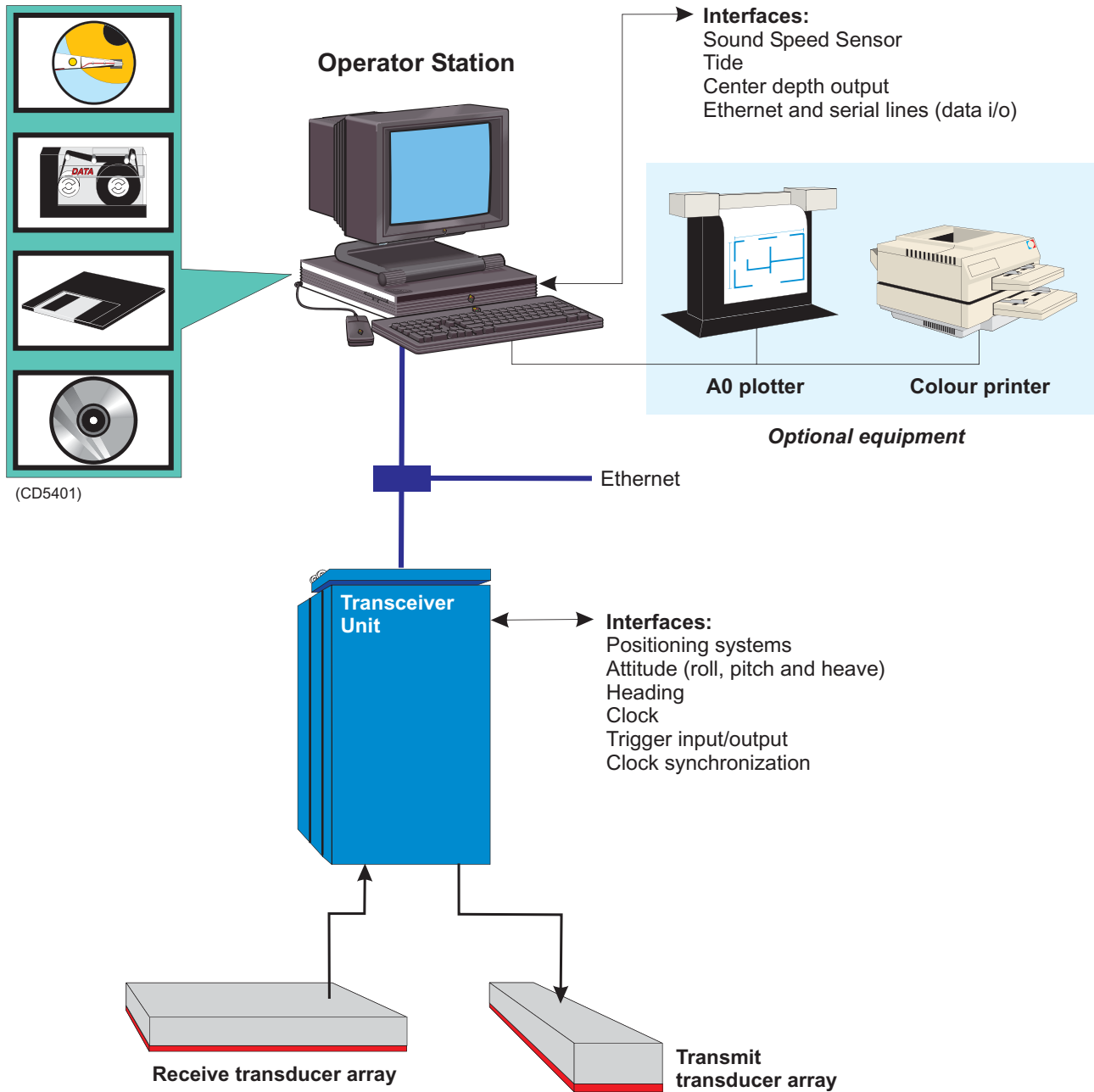
- Display of sensor status and values
- Extended log of all occurrences important for the system quality
- Displays showing depths, quality factors, detection method (amplitude and phase), reflectivity etc.
- Waterfall, ping and geographical displays
- Real time grid display with
 - Contouring
 - Artificial sunlight from different angles
 - Seabed reflectivity
- Fair sheet plots
- Supports colour post-script printers, A4 to A0
- Include high resolution seabed image (sidescan) display
- Helms and steering display with autopilot interface
- Interfaces different types of sound speed probes
- Logging of attitude and refraction corrected data
- Logging of raw and sensor data allows full reprocessing

Technical specifications

Basic specifications

Frequency.....30 kHz
Peak power.....4.5 or 9 kW
Pulse length.....0.7, 2, or 15 ms
Number of beams.....135

Beamwidth..... 1x1°, 1x2°, 2x2° or 2x4°
Coverage sector..... 150°
Depth range..... 10 m to > 5000m
Maximum swath width > 5000 m



These specifications are subject to changes. Kongsberg Maritime is engaged in continuous developments of its products and reserves the right to alter specifications without prior notice.

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