# Deep-Tow Boomer and Sparker

**Description**

A high-resolution, sub-bottom profiler that incorporates the boomer and sparker systems in a single tow fish. It is designed for use in tough offshore and overwater environments, where reliability, ease of operation, accuracy and optimal data resolution are of paramount importance.

Communications between the boomer, sparker, and topside equipment are fully digital.

These DTS systems have been used in remote areas such as the Arctic, Antarctic, in all oceans and many of the seas of the world.

# Deep-Tow Boomer and Sparker

The evolution of the DTS® boomer/sparker sub-bottom profiler over more than four decades is a case study in successful Canadian Government / Private Sector collaboration. It demonstrates how a survey tool retains its competitiveness in global seafloor mapping through continuous improvements building on the Huntec DTS core technology.

The DTS® deep-tow boomer/sparker system is a high resolution sub-bottom profiler incorporating the boomer and sparker subsystems in a single tow fish. The system has been designed for use in the world's toughest offshore environments, where reliability, ease of operation, accuracy and optimal data resolution are of paramount importance. The manufacturer has implemented fully digital communications between the towed equipment and topside equipment, allowing in lossless hydrophone and sensor data. The DTS® is the only system to have two acoustic sources integrated in the same tow body, the selection of the acoustic source can be controlled by the surface interface.

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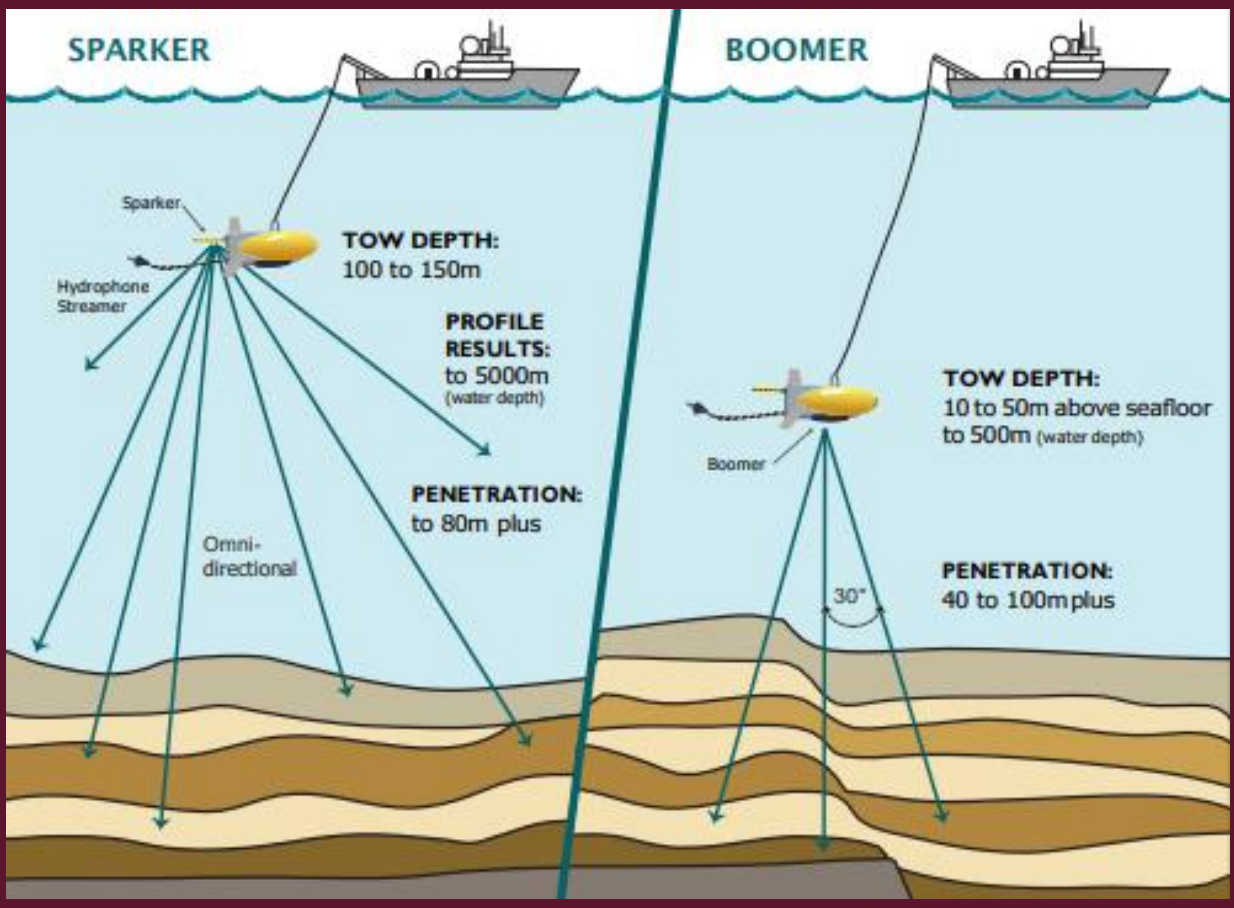
**TopsideControlUnit (TCU)** provides the DC voltage to the Energy Storage Unit (ESU). The voltages are selectable using the up and down voltage selector on the front of the unit. These voltages range in units of 500 and can be selected from 500 Vdc to 6000 Vdc.

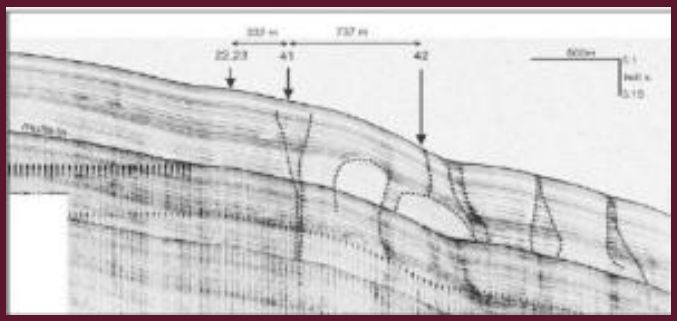
**Features and capabilities**

- Fully digital system
- Remote selector switch for Boomer or Sparker mode
- Tow speeds typical 3.5 – 6 knots
- Results in water depths from 20m to 5000m
- Penetration of up to l00 m in soft sediments, 40m in sand when in boomer-mode
- Penetration of >80m in sands when in sparker mode
- Adjustable firing rates and source energy to meet a wide range of survey requirements and geological situations
- Energy Storage Unit contained in Tow Fish, thus eliminating cable transmission losses
- Boomer pulse shape and intensity independent of depth due to automatic depth compensation
- Unique Body Motion Compensator allows operation in up to Beaufort Sea State7-8
- 540 Joule/1000 Joule sparker allows greater survey flexibility
- Can be run with one channel dedicated to resolution data; the other for penetration data
- Capacitors can easily be changed out in Energy Storage Unit
- Long lasting sparker tips due to the Negative Voltage power supplied from the TCU (Topside Control Unit)
- TCU has Positive or negative power supply depending on application.

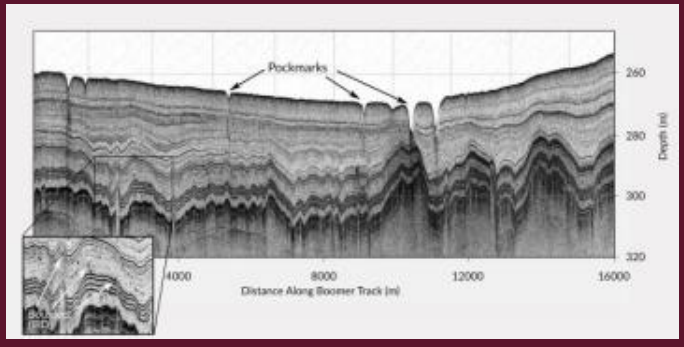
# Deep-Tow Boomer and Sparker




Boomer vs. Sparker Mode – activated through a remote selector switch.



Sparker profile: 2500m. shows core targeted for subvertical reflections, and 'wipeouts' interpreted as fluid conduits or chimneys




Boomer profile: ~ Shelf depth 260 metres

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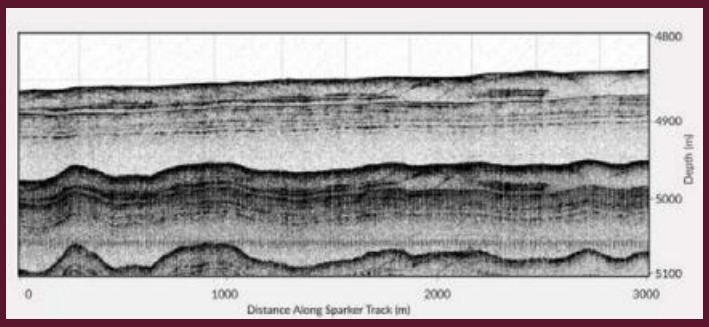
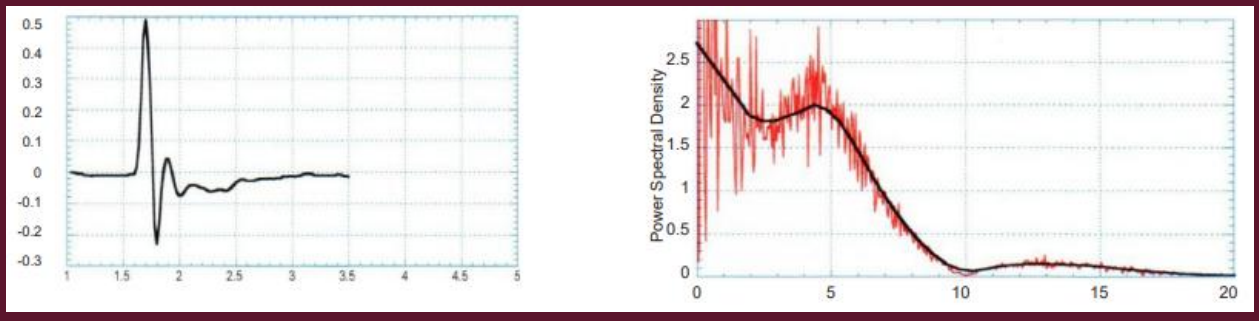
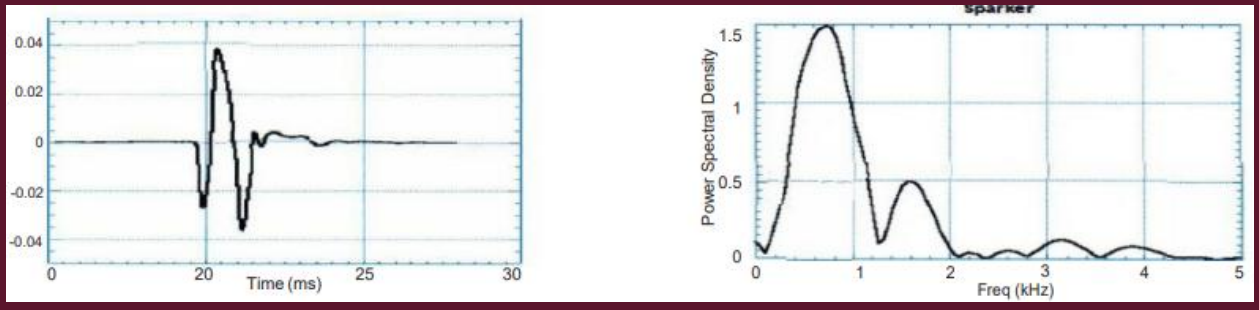



Geoforce DTS data collected in 5000 meters water depth. Note the motion of the towed body in the multiple, the sea floor topography is motion corrected to show the true seafloor representation




Geoforce DTS Boomer source: time signature (left) and frequency spectrum (right)




Geoforce DTS Boomer source: time signature (left) and frequency spectrum (right)

# Deep-Tow Boomer and Sparker

| Functional specifications | |
|---|---|
| Survey tow speed | 3.5–6 knots |
| Maximum tow depth | 500 m |
| Survey water depth | 20–5000 m |
| Layer resolution frequency spectrum | 6 cm or 20 cm |
| Source input | 500 Hz – 10 kHz |
| Energy source | 60–1000 J |
| Characteristics of the ED10/FC | 120µs duration 217 dB/µPa at 1m, 79 dB/µPa at 10m |
| Source firing rate | 300–3000 ms |
| Body motion compensation | Removes effective heave motion |
| **Power requirements** | |
| Winch | 300m, 600m, 900m 1200m cable capability |
| Geoforce Cerebella | 115V/230V AC, 100W,50/60Hz, single phase |
| Topside Control Unit (TCU) | 220-240V AC, 3kVA, 50/60Hz, single phase |

# Deep-Tow Boomer and Sparker

| Mechanical specifications | |
|---|---|
| Tow fish assembly dimensions | 184 x 126 x 52 cm |
| Tow fish assembly weight | 450 kg |
| TCU dimensions | 56 x 37 x 83 cm |
| TCU weight | 45 kg |
| Cable | 14-conductor cable; diameter 1.64cm (0.645 inch) |
| Tow cable weight in air | 83.33 kg/100 m (560 lb. 11,000 ft) |
| Min. recommended sheave diameter | 56 cm (22 inch) |