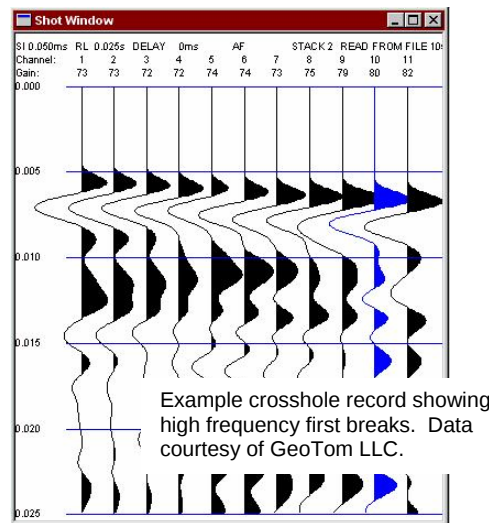




# New Design!

## Model DHA-7 Downhole Hydrophone Array

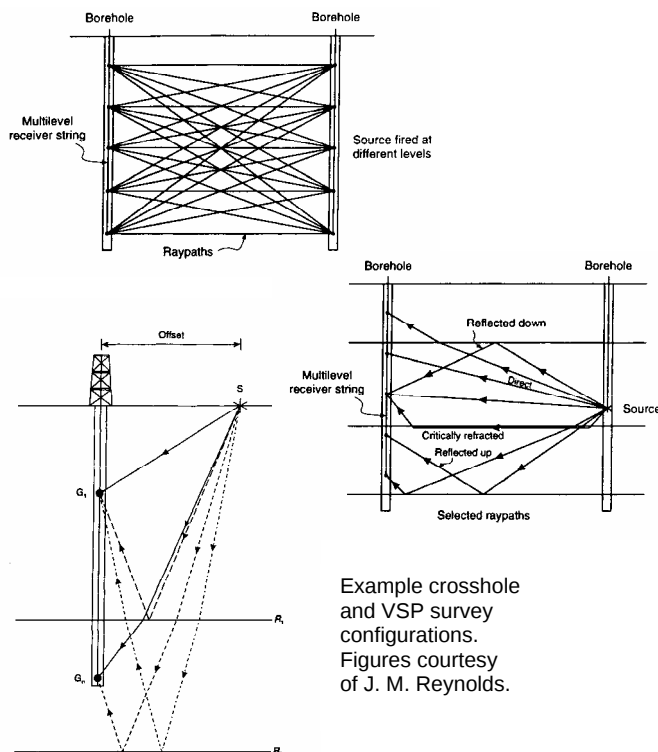
- Image faults and fractures, stratigraphy, voids, mineral deposits, underground structures; determine soil, rock and reservoir properties
- Ideal for shallow gas and mining investigations, earthquake engineering and foundation studies, teaching and research
- Suited for high-resolution uphole, VSP, and crosshole surveys
- State-of-the-art polymer hydrophones provide superior, stable response
- Unique design isolates vibration and suppresses cable-related noise
- Small diameter and light weight make for easy deployment
- Reliably performs under the rigors of borehole applications



The Model DHA-7 downhole hydrophone array is designed for high-resolution seismic borehole imaging. Unique proprietary polymer hydrophones (no ceramics) are in-line molded to a fully integrated, triple-sealed multi-conductor cable. Non-shattering polymer material provides superior performance and durability under the rigors of borehole applications and a stable signal response up to 10 kHz.

The Model DHA-7 is suited for use in cased and uncased, water-filled, narrow-diameter boreholes. The standard configurations include a group interval of 0.5 to 5 m and a total cable length of up to 400 m (1,312 ft). The cable is terminated topside with suitable connectors to mate with the seismograph and a 12VDC rechargeable power supply. Custom group intervals and multi-borehole configurations are also available to tailor the system to meet your needs. The array is easily deployed by hand or with a small winch.

The Model DHA-7 production and performance is backed by Geometrics, now in its 38<sup>th</sup> year of knowledgeable and prompt customer support.



Example crosshole and VSP survey configurations. Figures courtesy of J. M. Reynolds.



Individually isolated hydrophone and preamp in-line molded to multi-conductor cable with Kevlar strength member.

# Model DHA-7 Downhole Hydrophone Array

## Specifications:

|                       |                               |                                                                                                                                                        |
|-----------------------|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Electrical</b>     |                               |                                                                                                                                                        |
| <b>Hydrophone</b>     | Sensor type                   | Proprietary Polymer                                                                                                                                    |
|                       | Sensors per group             | One                                                                                                                                                    |
|                       | Frequency response            | 1 Hz to 10,000 Hz +/- 1.0 dB                                                                                                                           |
|                       | Capacitance                   | 5 nF at 22°C                                                                                                                                           |
|                       | Sensitivity                   | -197 dB re 1 Volt per 1 µPa                                                                                                                            |
|                       | Sensitivity with depth        | < 1.0 dB over 400 m depth                                                                                                                              |
|                       | Sensitivity with acceleration | < -70 dB re 1 Volt per g                                                                                                                               |
| <b>Preamplifier</b>   | Type                          | Ultra-low noise differential                                                                                                                           |
|                       | Gain                          | 14 dB                                                                                                                                                  |
|                       | Power                         | +/- 12 to 18 VDC, regulated                                                                                                                            |
|                       | Current                       | 10 mA per channel                                                                                                                                      |
|                       | Power                         | 12 VDC battery on surface                                                                                                                              |
| <b>Physical</b>       |                               |                                                                                                                                                        |
| <b>Cable</b>          | Type                          | Multi-conductor with polyurethane jacket                                                                                                               |
|                       | Termination                   | Topside: Y-type with connectors to mate with seismograph and battery<br>Tail: 1-m (3.28-ft) long with stainless steel swivel and 6-kg (13.2-lb) weight |
|                       | Maximum total length          | 400 m (or 1,300 ft) (lead plus active section)                                                                                                         |
|                       | Strength member               | Kevlar center stress core                                                                                                                              |
|                       | Outside diameter              | 12 channels: 11.4 mm (0.45 in)<br>24 channels: 13.5 mm (0.53 in)                                                                                       |
|                       | Weight                        | 12 channels: 0.12 kg per m (0.08 lbs per foot)<br>24 channels: 0.15 kg per m (0.10 lbs per foot)                                                       |
|                       | Bend radius                   | 12.7 cm (5 in)                                                                                                                                         |
|                       | Working load                  | 273 kg (600 lbs)                                                                                                                                       |
|                       | Breaking strength             | 909 kg (2,000 lbs)                                                                                                                                     |
|                       |                               |                                                                                                                                                        |
| <b>Active section</b> | Channels                      | 12 or 24 standard; other counts available*                                                                                                             |
|                       | Group Interval                | 0.5 to 5 m (or 18 in to 15 ft) standard; other intervals available*                                                                                    |
|                       | Outside diameter (hydrophone) | 27.9 mm (1.10 in)                                                                                                                                      |
|                       | Length (hydrophone)           | 30.5 cm (12 in)                                                                                                                                        |
|                       | Weight (hydrophone)           | 0.16 kg (0.35 lbs)                                                                                                                                     |
|                       | Bend radius                   | 22.9 cm (9 in)                                                                                                                                         |
| <b>Environmental</b>  |                               |                                                                                                                                                        |
| <b>Depth</b>          | Operating maximum             | 400 m (or 1,300 ft)                                                                                                                                    |
|                       |                               |                                                                                                                                                        |
| <b>Temperature</b>    | Operating range               | -10°C to +85°C                                                                                                                                         |
|                       | Storage range                 | -40°C to +85°C                                                                                                                                         |

\*Please contact the factory to discuss your requirements.

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