



HGS (INDIA) LIMITED



SPECIFICATION SHEET - GStreamer - 3C Multi-level Downhole Seismic Array with Spring Anchoring

GStreamer is designed for vertical seismic profiling (VSP) and cross-hole seismic testing and tomography (CST) in boreholes with PVC casing. Tool locking is provided by a spring system with controlled remote triggering. It can consist of 4 or 8 borehole 3C geophones on a cable.

The use of a spring system allowed to smooth the dependence of the clamping force from the well diameter. The ratio is between 1:7 - 1:11 relative to the tool weight, that correlates to the parameters of "oil & gas" VSP probes and guarantees the highest data quality.

GStreamer has two geophones for each component with a natural frequency of 12 Hz. This grouping allowed to increase the sensitivity and at the same time maintain the minimum dimensions of the tool. Data registration is provided by almost any seismograph.

At the user's request, GStreamer can be equipped with a connector for reference geophone on the surface to control source-seismograph synchronization and improve the accuracy of interval velocities calculation.

GStreamer with borehole sources of shear waves SHock or GeoSV are designed for crosshole seismic testing (ASTM D4428 / D4428M) or crosshole seismic tomography with registration of P and S waves in dry and water-filled wells. You can read about these technologies here.

GStreamer can be supplied on a reel or a BGW light winch, both with a slip ring.



Main Features:

- Remote triggering of anchoring system
- Most compact and lightweight in the world
- No extra load required to lower into the well
- Compatible with almost all seismographs
- Simple and reliable design

**Delivery set:**

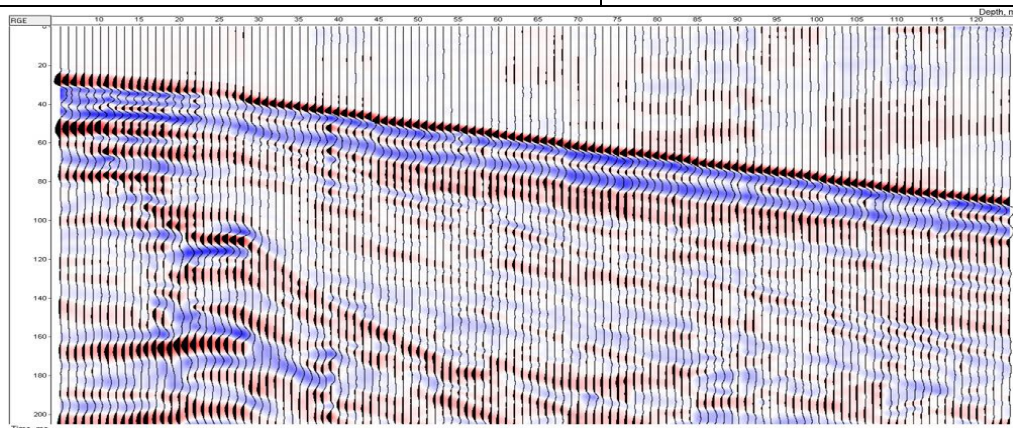
- 4 or 8 tools multi-level 3C borehole array GStreamer
- Additional set of springs
- Wire rope on a reel for triggering anchoring system and securing

**In addition to sparker Pulse the following items can be purchased:**

- Reel for a 12-channel GStreamer
- Reel for a 24-channel GStreamer
- BGW light winch
- Energy source Jack with remote control JackPad
- Borehole sources of pressure P (Pulse) or shear SH-waves (SHock) and SV-waves (GeoSV)
- Borehole hydrophone array WellStreamer
- High -frequency seismograph Sigma 4+ or DAQlink 5
- Borehole inclinometer



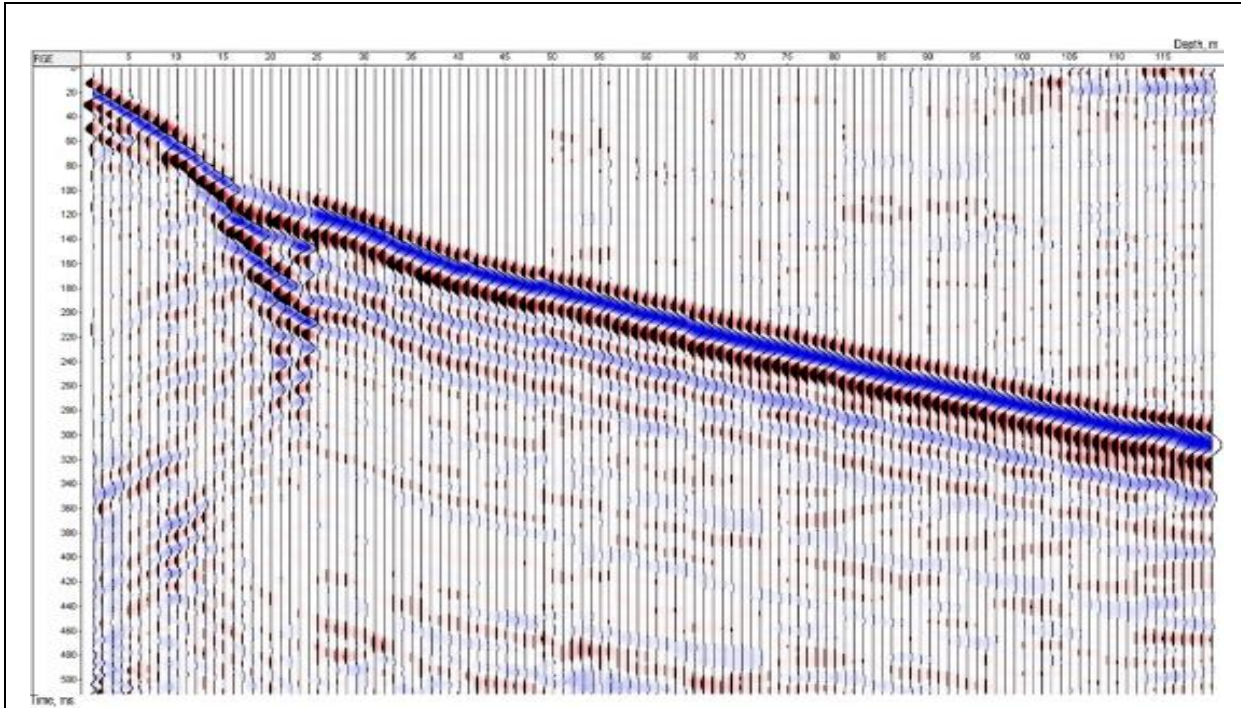
We have also developed multi-level 3C systems GStreamer-E with individually controlled electromechanical anchor, as well as simpler and cheaper GStreamer-P with pneumatic driven anchors.



Example of VSP data (Z component) acquired with GStreamer.

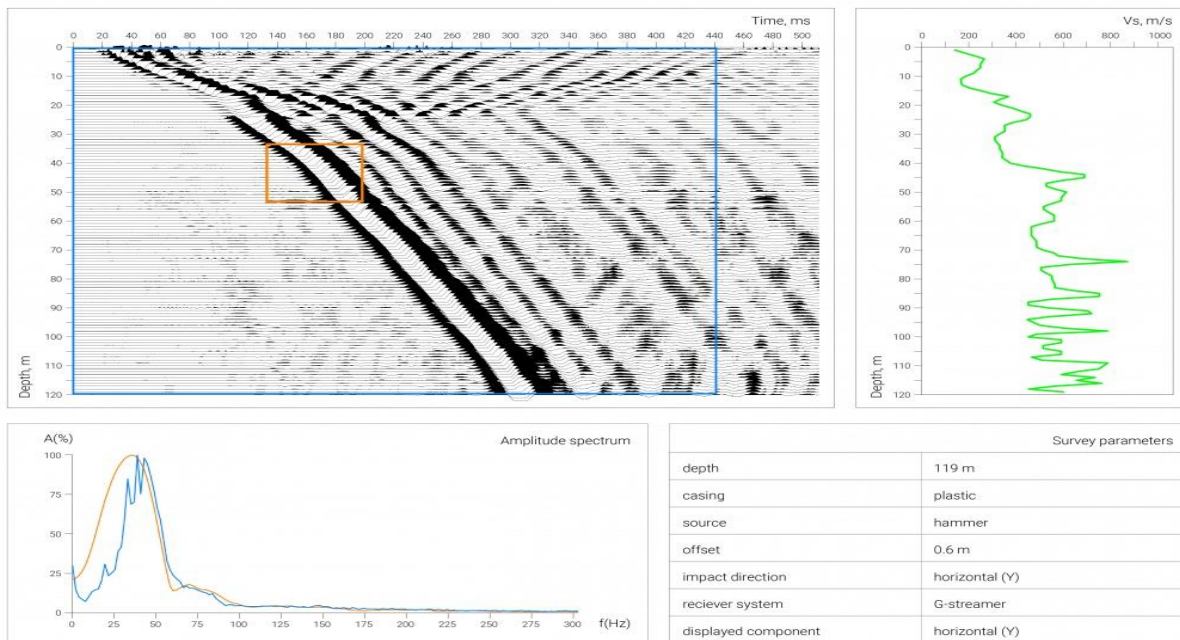
The distance between the source (sledgehammer) position and wellhead is 5 m. Borehole receiver position spacing - 1 m, depth range - from 5 to 124 m.





Example of S-waves VSP data acquired with GStreamer.

Horizontal component after orientation and subtraction of right and left shots. The distance between the source (sledgehammer) position and wellhead is 0.6 m. Borehole receiver position



Example of S-waves VSP data acquired with GStreamer.

Horizontal component after orientation and subtraction of right and left shots. The distance between the source (sledgehammer) position and wellhead is 0.6 m. Borehole receiver position spacing - 1 m, depth range - from 1 to 120 m.



Specifications:			
Model	GStreamer	GStreamer-P	GStreamer-E
Number of levels	4 or 8	4 or 8	1, 4, or 8
Anchoring	Spring system	Pneumatic cylinder	Geared motor
Well casing type	PVC	Any or open hole	Any or open hole
Number of components	3	3	3
Geophones natural frequency	12 Hz or 20 Hz (on request)	12 Hz or 4.5 / 20 Hz (on request)	
Tool locking	Remote triggering	Simultaneous	Individual
Clamping force	1:7 – 1:11	1:11 at 7 atm.	1:11
Maximum tool diameter	60 mm	58 mm	
Well diameter range	70 - 150 mm	65 - 150 mm and more with anchor extenders	
Maximum operating pressure	15 bar	>100 bar	

Ordering Information	
Item Description	HGS Part No.
GStreamer - 3C multi-level downhole seismic array with spring anchoring	MK001573

Version 1.0



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