



A MULTI PURPOSE HIGH RESOLUTION SEISMIC SOUND SOURCE ARRAY

Seismic Staffing has acquired the whole SeaSCAN product line. We will continue to support these product lines and modify them as needed for our clients.

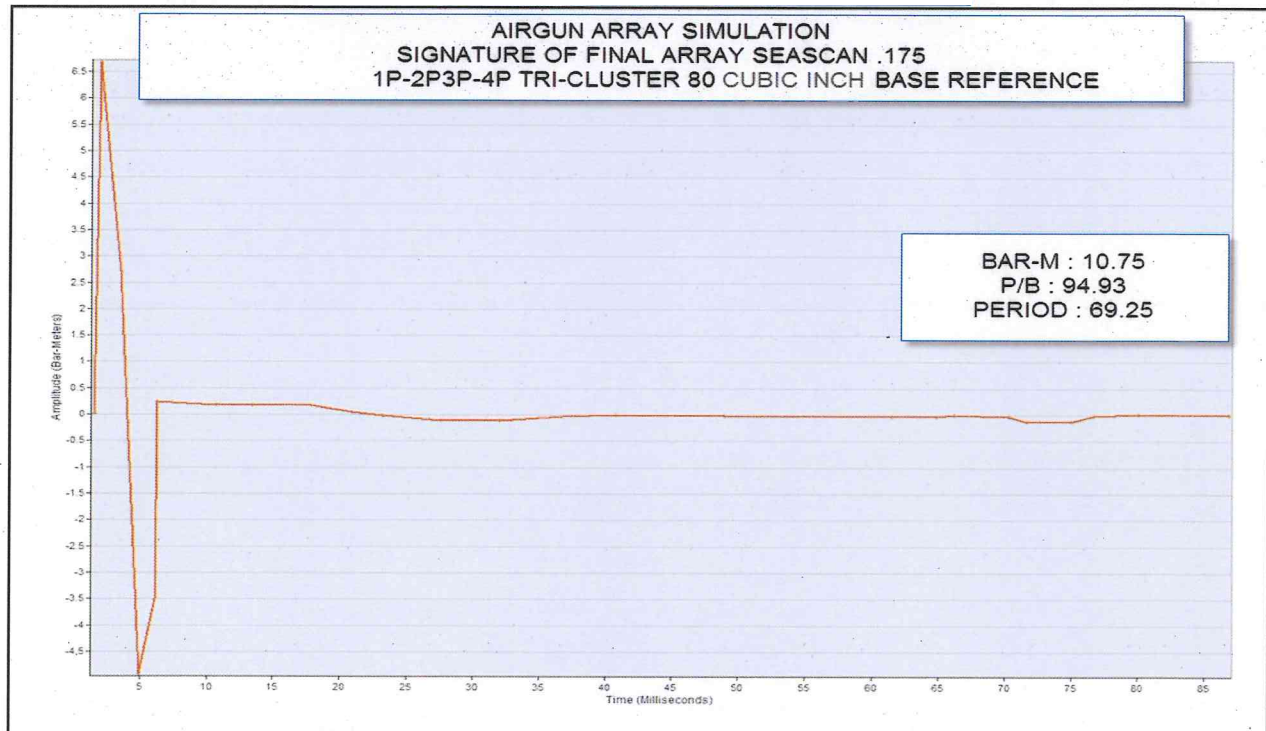
SeaSCAN Inc. is engaged in expanding applications of its innovative high resolution marine seismic source whose signal characteristics generate a powerful broad band pulse which is largely free of bubble pulse oscillations. The Tri-Cluster air gun array is a unique three dimensional, scalable, heavy centered symmetrical marine seismic energy source suitable for use in all water depths. Tri-Cluster's sequential gun timing and shock-mounted gun suspension offers the most repeatable, most symmetrical energy source on the market, in a rigid, easily transported and deployed frame mount. The power output of this array at 80 cubic inches has been measured to be approximately 10 bar-meters peak to peak.

Spectral characteristics of the pulse show it to be far superior to conventional gun strings. The measured farfield signature is similar to that of the mini-sleeve exploder. The primary rise time for peak pressure is less than 5 milliseconds. Signature repeatability is excellent with gun synchronization of +/- 0.25 microseconds.

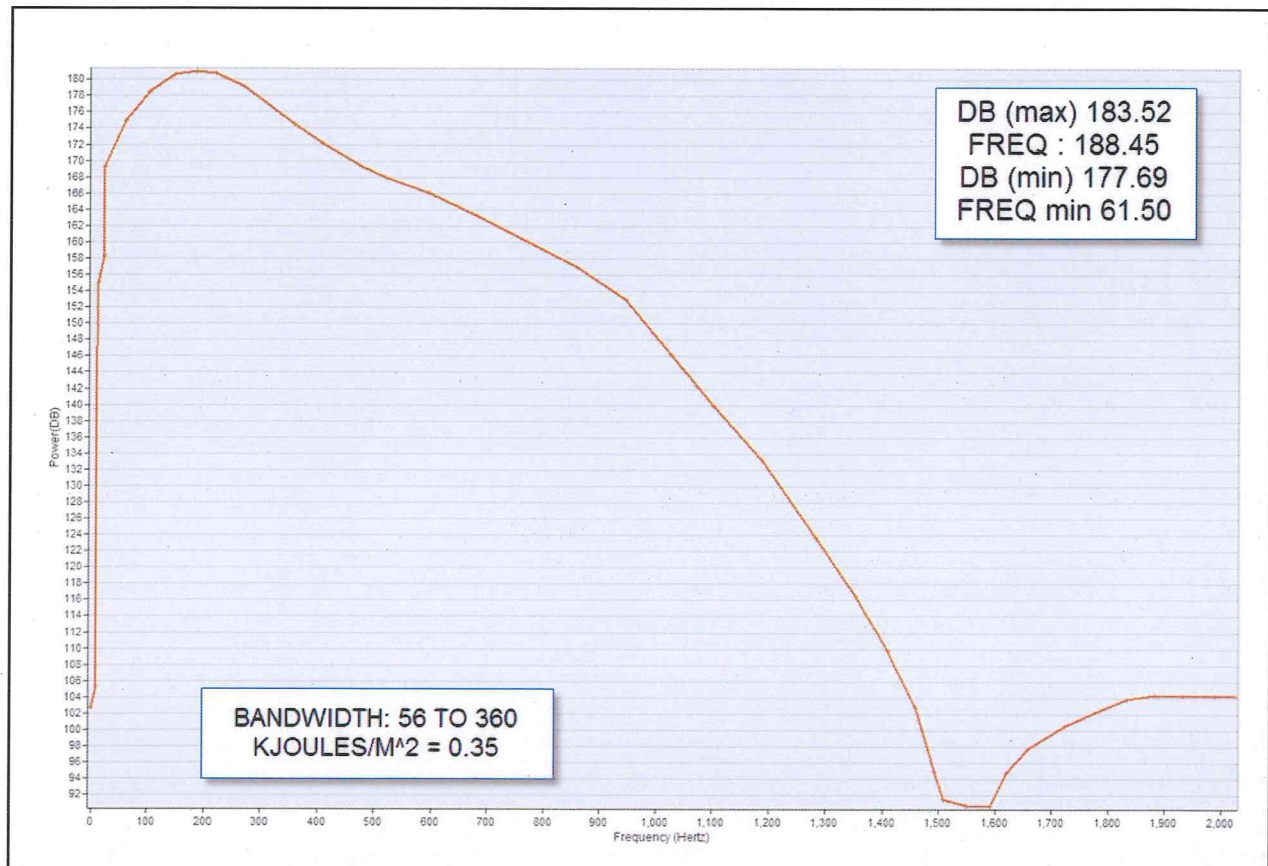
SeaSCAN refers to the source as the TRI-CLUSTER because of its configuration. Its initial composition of eight, 10 cubic inch GSI "Sleeve Guns" suspended in a horizontal posture from a flotation frame and towed at a very shallow depth has been expanded to include a family of source arrays with volumes of 80, 160, 320, 560, 1120 (2 x 560) cubic inch arrays. The guns are arranged in a 2 x 4 x 2 configuration giving the array a tapered, heavy center, point source.

The TRI-CLUSTER was developed for and is currently being used in the high-resolution 3D shallow and intermediate seismic market. For those targets requiring a focus depth of 2.0 to 3.0 seconds (shallow depth targets) and extended depths to 8.0 seconds below mud line (BML), The Tri-Cluster provides high resolution and good penetration.

Please see enclosed farfield signature examples. This data was acquired using a deep tow signature hydrophone. The data was recorded on a Texas Instruments-DFS V configured in the dual sample mode. The 1.0 ms sample data has a low-cut filter of 27Hz and a hi-cut of 256Hz. The 0.25 ms sample data has a low-cut of 115Hz and a high-cut filter of 1024Hz. Data was acquired at a normal survey of 4 knots. Water depth was approximately 1000 feet.

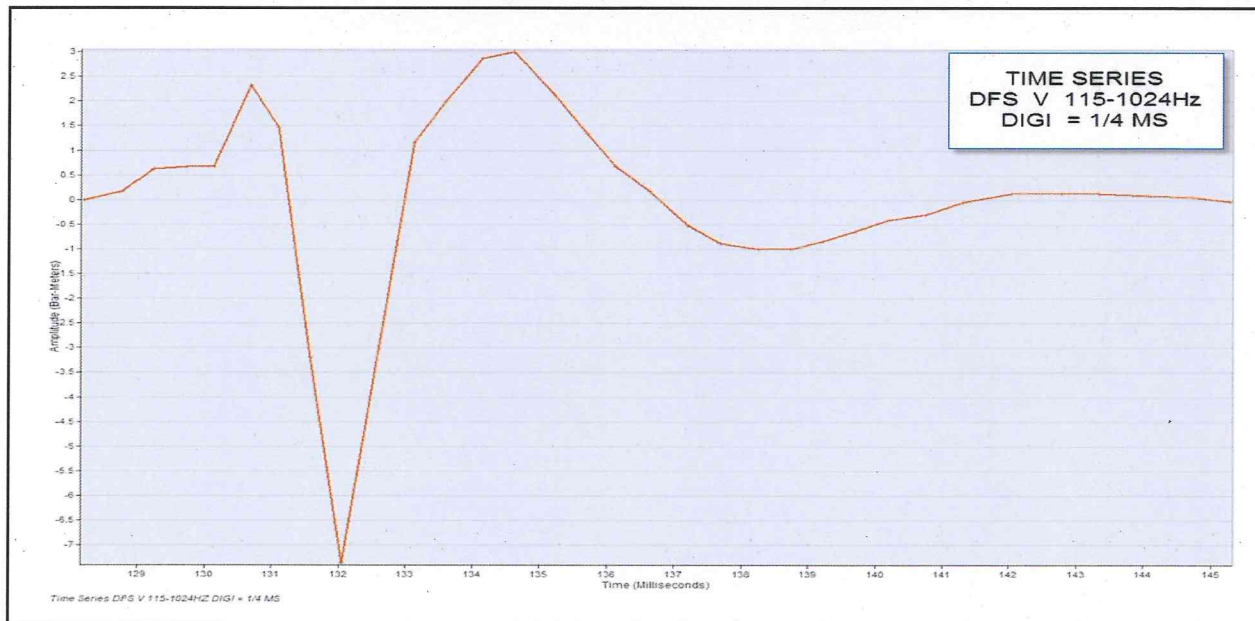


Airgun Array Simulation

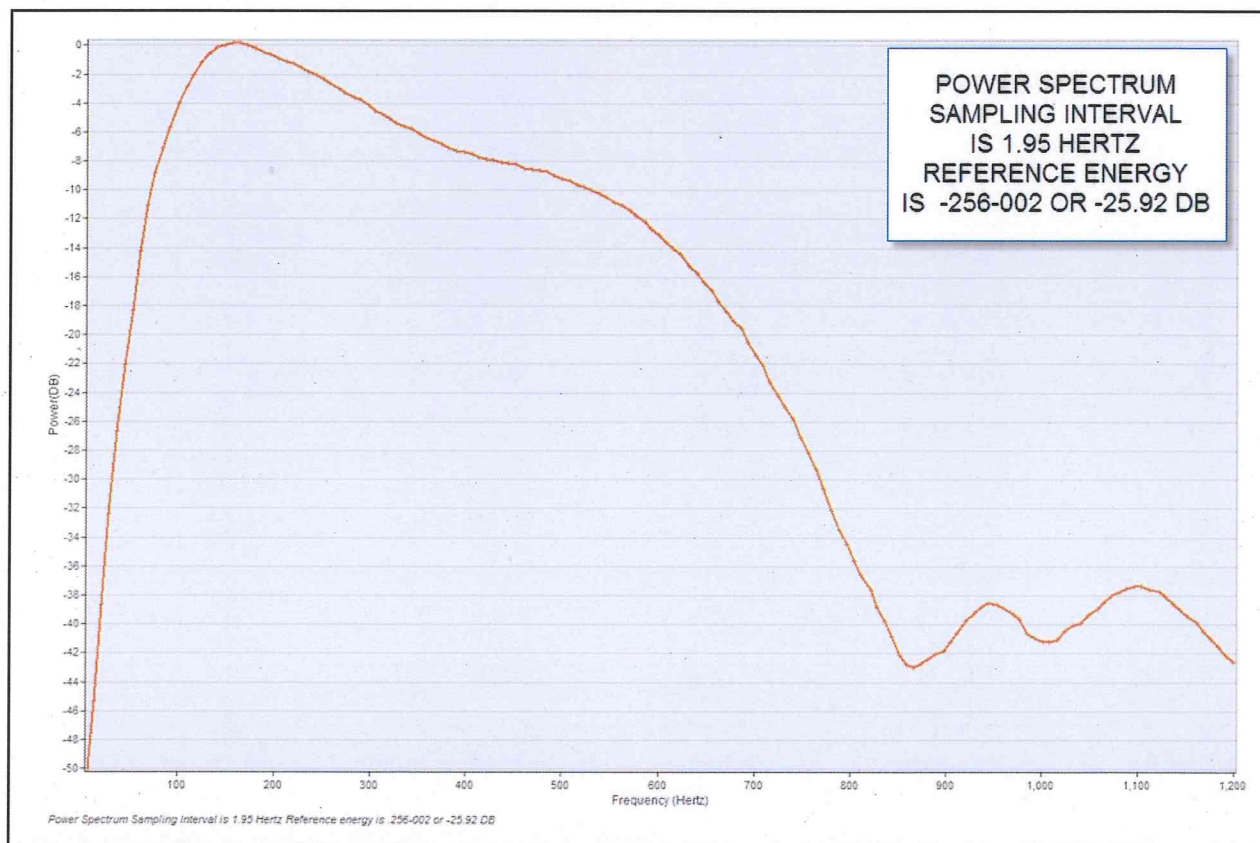




ACTUAL OBSERVED FAR FIELD OUTPUT
Tri-Cluster 80 Cubic Inch Source

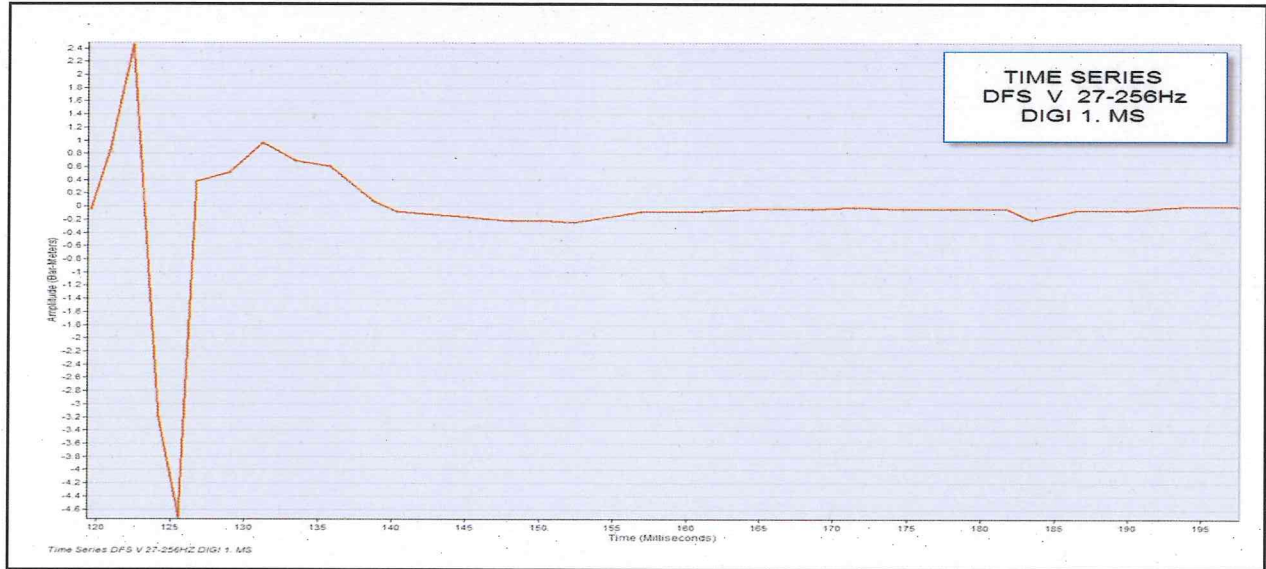


Tri-Cluster 80 Cubic Inch Source

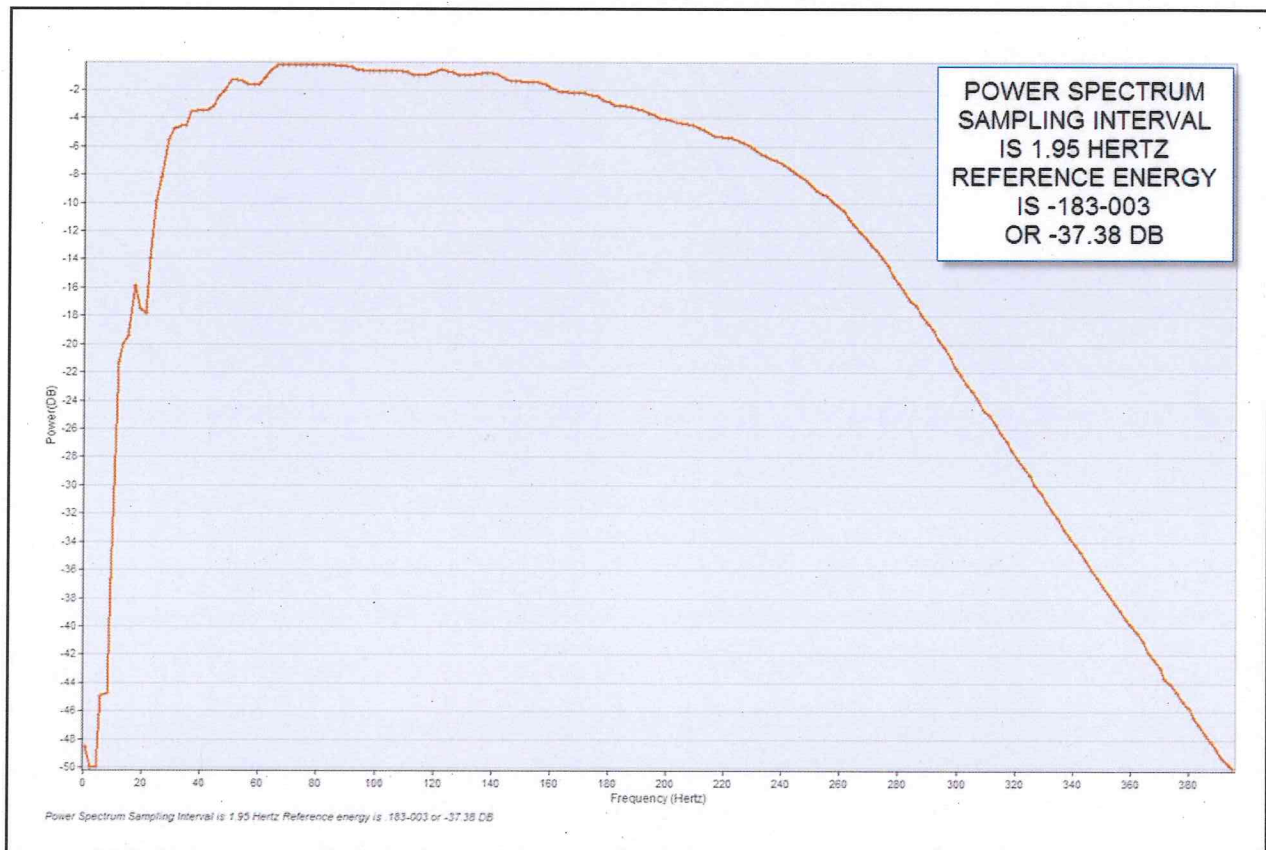




ACTUAL OBSERVED FAR FIELD OUTPUT
Tri-Cluster 80 Cubic Inch Source

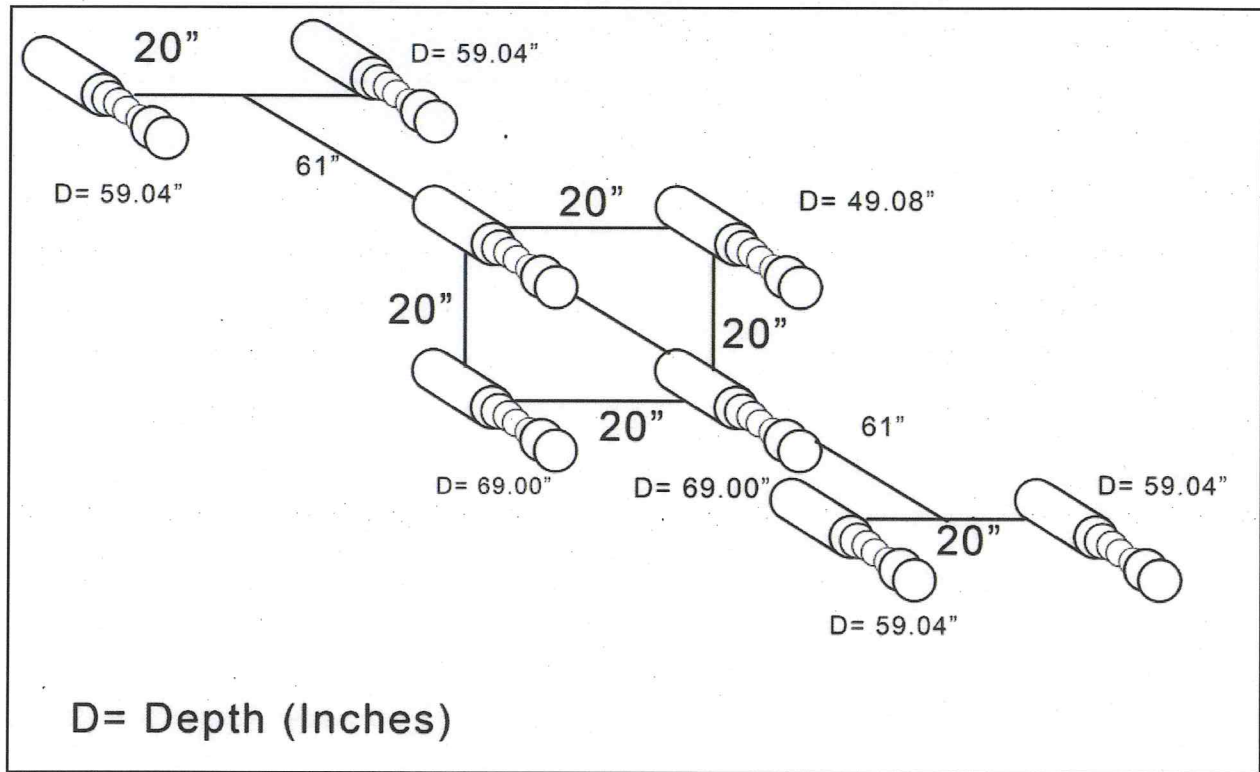


Tri-Cluster 80 Cubic Inch Source





SeaSCAN Tri-Cluster 80 Cubic Inch Physical Geometry



TRI-CLUSTER PHYSICAL AND SIGNAL ATTRIBUTES

- A PORTABLE COMPACT LIGHT WEIGHT TOW SLED AND ARRAY DESIGN
- PURPOSE BUILT HANDLING SYSTEM WHICH ALLOWS FOR CUSTOM INSTALLATION ON VESSELS OF OPPORTUNITY
- FIXED VARIABLE FRAME WHICH ALLOWS FOR VARIABLE TOW DEPTHS
- OUTPUTS A POWERFUL BROAD-BAND NEAR TRANSIENT ACOUSTIC PULSE
- A NEAR FLAT POWER SPECTRUM WHICH ALLOWS FOR HIGH RESOLUTION IMAGING AND MAXIMIZED DEPTH PENETRATIONS
- RIGID GUN FRAME INCREASES SHOT TO SHOT SIGNATURES STABILITY AND REPEATABILITY
- COMPACT FORM PERMITS NEAR POINT SOURCE PERFORMANCE TO ELIMINATE ANISOTROPY ARTIFACTS FROM DATA
- SYMMETRIC SOURCE CONFIGURATION ELIMINATES SURVEY TO SURVEY DIFFERENCES DUE TO DIRECTIONALITY