
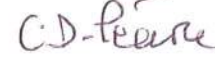

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Subject: Reduction of Boresight Angle for Wideband LUSBL Arrays in Deep Water

Summary – Disadvantage of Toneburst Arrays in Deep Water

For precise and robust performance LUSBL positioning systems rely on range accuracy to at least four (preferably five) array transponders in order to optimise the stability of the vessel's position.

Position accuracy is proportional to range accuracy and the distances between array transponders on the seabed. Traditionally, we have recommended that boresight angles (the angle between the vertical at the Transceiver and each transponder) of approximately 20° are used.

The disadvantages of this in deep water are the resulting large baselines. For example, in 2000m water depth, each transponder would be deployed more than 700m from vessel centre with consequently longer deployment times and greater operational costs.

Solution – Employ Wideband Arrays

Due to the much greater accuracy of Sonardyne Wideband ranges, it is possible to considerably reduce boresight angle whilst maintaining the same position stability as legacy toneburst systems. This benefit has been proven offshore using Sonardyne's new Marksman LUSBL system (please see article "To boldly go..." in Sonardyne's Baseline magazine for further details on this topic: http://www.sonardyne.com/News/baseline/baseline_issue_5.pdf).

We therefore recommend that boresight angles as low as 8° may be employed in deep water (i.e. in water depths of 1000m or greater).

It should be noted that the array should still cover the expected operational area of the vessel, which may require larger boresight angles than the recommended minimum.

Should you require any further clarification please contact customer support on support@sonardyne.com or +44 1252 877600.