

The picture shown represents the geographic location of a vessel and the radar presentation at the same time. Which statement is TRUE?

A. Ship No. 1 is not detected due to the shadow effect of the headland.

Incorrect. Ship No. 1 is combined with the landmass due to distortion caused by the radar's beam width. The distance between the ship and land is less than one-half the beam width therefore they appear as one object. The vessel is in line of sight and not within the "shadows" of the headland.

B. The small island is not detected due to the effect of beam width.

Incorrect. The small island is not detected due to the "shadow" created by the mountain directly astern of the vessel and is not a limitation caused by beam width. The radar paints the prominent mountain on the radar screen and no other targets that may lie in its "shadows".

C. A tangent bearing of the headland to the south-southeast should be corrected by adding one-half of the beam width.

Correct. The tangent bearing to the headland to the south-southeast is a left tangent bearing therefore the correction of one-half the beam width must be added. Fixes by tangent bearings is one of the least accurate methods of navigation. Tangent bearings are inaccurate due to beam width distortion and must be corrected using an estimate of one-half the horizontal beam width.

D. Ship No. 2 is not detected due to the reflective mass of the background mountain overpowering the ship's reflective signals.

Incorrect. Ship No. 2 is painted as a "bump" in the landmass on the radar screen. This is due to a combination of beam width and pulse length distortion. Because of beam width distortion a shoreline that is straight or nearly straight will often appear as crescent shape on the radar screen with the distortion increasing as the beam width increases. Conversely, the ability of radar to separate targets close together at the same range is called resolution in range which is related primarily to pulse length.

