I. THE SHORAN RADIOPOSITIONING SYSTEM (continued)

The factor, k, depends upon several factors among which are included antenna gain, receiver sensitivity, transmitted power and atmospheric refractive index. It will vary in value from 1.5 to 2.5, under normally encountered conditions.

The range formula presumes no obstructions between mobile and base stations. The presence of intervening hills or other obstructions can reduce the otherwise obtainable range.

Under certain conditions, abnormally long Shoran ranges can be obtained by exploiting the existence of an atmospheric phenomenon known as a temperature inversion layer. This is a layer of high refractive index occurring within the first few thousand feet of the atmosphere. It has the effect of confining the radio waves near the earth's surface, and acts as a duct to bend radio waves around the curvature of the earth. Under these conditions the factor, k, may be several times greater than normal. In some marine areas of the world, this phenomenon occurs quite regularly during certain seasons.

The instrumental accuracy of the Shoran equipment, when properly calibrated, is $\pm$ 50-75 feet on a single range. The overall position accuracy is related to the range accuracy by