Radars Accuracy

Accuracy is the degree of conformance between the estimated or measured position and/or the velocity of a platform at a given time and its true position or velocity. Radio navigation performance accuracy is usually presented as a statistical measure of system error and is specified as:

1. Predictable: The accuracy of a position in relation to the geographic or geodetic co-ordinates of the earth.
2. Repeatable: The accuracy in which a user can return to a position whose co-ordinates have been measured at a previous time with the same navigation system.
3. Relative: The accuracy which a user can determine one position relative to another (by neglegting all possible errors).

Some results of radar units are indicated in the following table as example:

radar unit	accuracyin bearing	accuracyin range	accuracyin height
BOR–A 550	< ±0.3°	< 20 m	
LANZA	< ±0.14°	< 50 m	340 m ≈ 1150 feet (at 100 NM)
GM 400	< ±0,3°	< 50 m	600 m ≈ 2000 feet (at 100 NM)
RRP–117	< ±0,18°	< 463 m	1000 m ≈ 3000 feet (at 100 NM)
MSSR-2000	< ±0.049°	< 44.4 m	
STAR-2000	< ±0.16°	< 60 m	
Variant	< ±0.25°	< 25 m	

Table 1: Examples

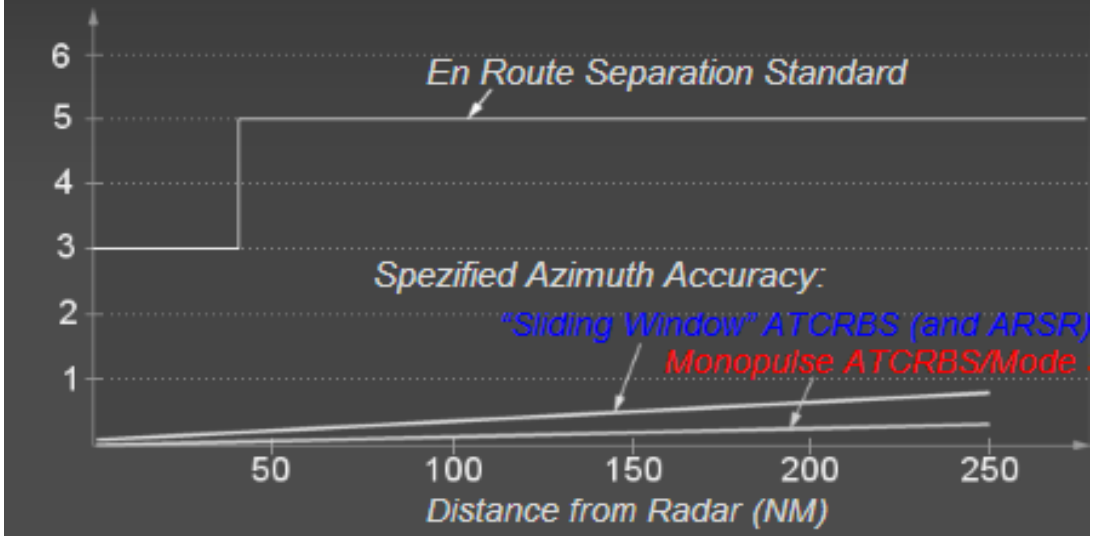

Figure 1: Dependence of the accuracy of the range
(Source: MIT Lincoln Laboratory)

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The stated value of required accuracy represents the uncertainty of the reported value with respect to the true value and indicates the interval in which the true value lies with a stated probability. The recommended probability level is 95 per cent, which corresponds to 2 standard deviations of the mean for a normal (Gaussian) distribution of the variable. The assumption that all known correction are taken into account implies that the errors in the reported values will have a mean value (or bias) close to zero.

Any residual bias should be small compared with the stated accuracy requirement. The true value is that value which, under operational conditions, characterizes perfectly the variable to be measured/observed over the representative time, area and/or volume interval required, taking into account siting and exposure.

Accuracy should not be confused with resolution.

Source:
http://www.radartutorial.eu/01.basics/Radars%20Accuracy.en.html