

Differences Between MGRS and USNG

MGRS and USNG 100,000-meter Square Identifications are Different when Used with the NAD 27 Datum

Both the MGRS and USNG systems default to the WGS84 datum. They differ when used with the NAD 27 Datum. This is particularly important to users within the Continental United States, where many topographic maps produced by the United States Geologic Survey are referenced to the NAD 27 Datum. The MGRS System shifts the second letter of the 100,000-meter square identification by ten letters (excluding I and O). The USNG system does not make this letter shift, but does require that the datum be specified.

The example coordinate we have been using would look like this when referenced to the NAD 27 Datum:

MGRS: 10S GU 0706832 4344683
USNG: 10S GJ 0706832 4344683 (NAD 27)

The letter shift also occurs in MGRS when working with other datum that use the Bessel 1841 and Clarke 1880 ellipsoids, which includes much of Africa, Japan, Korea, and Indonesia. When you are working with old maps and MGRS coordinates, be aware that occasional unusual letter adjustments have been used in the past.

Since most land navigation users drop the GZD and Grid Letters, the shift usually has little impact, unless you need to enter MGRS coordinates into your GPS for far away locations.

USNG is only defined for use "over all areas of the United States including outlying territories and possessions"

This allows the definition of USNG to avoid a number of complications. It does not include the UPS coordinate system for polar regions, nor does it need the zone boundary exceptions defined for Norway.

USNG allows the use of only the three datums (NAD83, WGS84 or NAD27) commonly used in the United States. The default USNG datum is NAD 83. WGS 84 is considered an acceptable alternative to NAD 83. When using NAD27 you must explicitly specify it.

For example, 10S GJ 068 446 (NAD27).

MGRS coordinates may be used with any datum, and there is no formal way to specify the datum. (It is still very important to specify the datum. It's just not formalized how to write it.)

100,000m truncation not specified in USNG

MGRS allows you to reference an entire 100,000m square area, e.g. 10S EH, whereas USNG suggests at least two digits and thus the largest area that can be described is a 10,000m square,

e.g. 10S GJ 0 4. The USNG does not specifically prohibit 100,000m truncation, but instead omits it from the standard document, whereas the MGRS standard specifically includes it.

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