SERVICE ADVISORY

NO.: 0407b

TO: **All GARMIN Aviation Dealers, All Registered CNX80 Owners**

DATE: 24 June 2004

SUBJECT: Loss Of Integrity In Fringe WAAS Coverage Areas in CNX80 SW Version 1.X

PURPOSE

This Service Advisory provides information about Loss Of Integrity (LOI) messages when operating the CNX80 on the fringes, or outside, of WAAS coverage.

DESCRIPTION

An increase in Loss of Integrity or insufficient satellite messages may occur when operating on the very fringes of WAAS coverage. Aircraft operations limited to the continental US will not be affected and this advisory does not apply. The northern extremes of Canada and Alaska may have marginal coverage. These messages may also occur in operations where a WAAS satellite is on the edge of the horizon but still in view, such as in Europe or Australia.

The LOI or loss of position is due in part to the requirements in TSO C146a for the selection process of satellites. Primary consideration in the selection process is given to GPS satellites for which the CNX80 has received valid WAAS correction data. For instance, in Europe the CNX80 may receive WAAS data for GPS satellites on the far western horizon while GPS satellites directly overhead will not have any WAAS data and therefore will not be used in the position solution. This results in suboptimal satellite geometry and may generate excessive horizontal protection level (HPL). The LOI indication is generated when the HPL exceeds the horizontal alarm limit (HAL) for the current phase of flight (e.g. 2 nm for en route, 1 nm for terminal, and 0.3 nm for non-precision approach operations).

Temporary instances of LOI are due to the fact that the CNX80 is operating with a marginal set of satellites. If the number of WAAS corrected satellites drops below five, the CNX80 will revert to a non-WAAS mode of operation and select other satellites and begin using a GPS satellite fault detection scheme. Non-precision approaches are still possible as long as the GPS constellation is sufficient to allow the CNX80 to calculate an HPL of less than 0.3 nm. The embedded VHF Nav receiver will still allow for ILS precision approaches and primary navigation.

The CNX80 does not use EGNOS or any other space based GPS augmentation signals other than WAAS at this time. When those systems come into service, they will be evaluated for compatibility.

Additional Information

Software version 2.0, and later, will include a method of enabling or disabling WAAS correction usage. In software version 2.0, the CNX80 will have the ability to calculate RAIM manually. Software version 2.0 will be available in the third quarter of 2004.