A Textron Company

INFORMATION LETTER **GEN-19-143**

11 June 2019

TO: **All owners and operators of Bell helicopters**

SUBJECT: FREEFLIGHT SYSTEMS SERVICE INFORMATION LETTER SILFFS22-2000-2101-GPS-EPOCH, SOFTWARE UPDATE

This General Information Letter is issued to ensure complete distribution of the attached FreeFlight Systems Service Information Letter SILFFS22-2000-2101-GPS-EPOCH. The subject Service Information Letter informs customers of a required system software update to correct the rollover date and time issue.

For any questions regarding this letter, please contact:

Attn: Technical Customer Support
FreeFlight Systems
7333 Interstate 35 South
Robinson, Texas 76706 U.S.A.
Toll Free (US only); 1 (800) 487-4662
Telephone number; 1 (254) 662-0000
Fax number; 1 (254) 662-9452
Email: support@freeflightsystems.com
www.FreeFlightSystems.com

Please contact FreeFlight Factory Repair Service Center for modifications and update requests.
Attn: Repair Department
FreeFlight Systems
7333 Interstate 35 South
Robinson, Texas 76706 U.S.A.
Toll Free (US only); 1 (800) 487-4662
Telephone number; 1 (254) 662-0000
Fax number; 1 (254) 662-9452
Email: repair@freeflightsystems.com
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Approved for public release.

Service Information Letter

SILFFS22-2000-2101-GPS-EPOCH

To: FreeFlight Systems OEM's, Dealers, Service Centers and Customers

From: FreeFlight Systems Customer Service

Subject: Effects of the GPS Week Number 1023 rollover to Week Number 0 which occurs at midnight (GMT) on April 6, 2019 on FreeFlight Systems TSO-C129 certified GPS Navigator Product Series - 2101 I/O Approach Plus, 2101 I/O Approach, 2101 Approach Plus, 2101 Approach, 2000 Approach Plus and 2000 Approach.

Purpose: The GPS Week Number Rollover (WNRO) is peculiar to GPS technology. The constellation of the GPS satellites, broadcast date and time in the form of current week and current number of seconds into the week. This allows GPS receivers to translate the date and time into a more typical format – day, month, year, and time of day. GPS navigation message uses 10 bits to count GPS Week Numbers. Week numbers range from 0 to 1023. This representation can only cover a finite period of 1024 weeks (19.7-year epoch). When GPS technology was official launched by the United States Government, Week Zero started on January 6, 1980 and the week 1023 ended on August 21, 1999. Thus, concluding the first epoch (19.7 years). The number week counter in the GPS message then reset to zero and began recounting to 1023. which will end on April 6, 2019. GPS Date and Time is presently in its second epoch. As a result of this event, some GPS receivers may recognize an incorrect date when powered on after April 6, 2019 that may impact navigation and functional performances of the GPS receivers.

Action: For FreeFlight Systems ZSUS and Panel Mounted GPS Navigator product series and solutions (See Table 1 below for applicable equipment part numbers) require a system software update to correct the rollover date and time issue.

The internal TSO-C129 certified GPS receiver week number counter will roll over incorrectly and the date and time will revert to week 1 of Epoch two, which will report as August 21, 1999. The degradation of almanac data affecting RAIM predictions will begin at 02:00 UTC on Thursday 4 April 2019.

During and after this week rollover event the navigation, integrity and functional performance of the FreeFlight Systems GPS navigators (See **Table *1***) will continue to be met with minimal, or no interruption or no user intervention with the following exceptions:

1. UTC Date and time will be reported incorrectly by the Navigator on the "System Status" Page.

2. Serial and ARINC data outputs will report incorrect date and time. This may or may not impact other systems interfacing to the navigator system.
3. Navigation database expiration check may pass initial system power up and will not notify the operator or installer to update the database every 28 days. Database expiration date must be manually checked on the "System Status" page at regular intervals will require continued operator vigilance until the release of the new system software.
4. RAIM predictions will be affected.

FreeFlight Systems will be introducing a software update to the product and part numbers listed below to ensure uninterrupted and accurate operation. Customers, Operators and Service Centers are requested to contact FreeFlight Systems support and repair departments for additional information.

Applicability: The following 2101 and 2000 GPS Navigator product series part numbers will be impacted with the GPS week number rollover on April 6, 2019.

Table 1: Applicable Equipment Part Numbers[1, 2]

FreeFlight Systems Model Name	FreeFlight Systems Part Number
2101 I/O Approach Plus	81440-02-241X 81440-03-241X 81440-12-241X 81440-32-241X 81440-33-241X 81440-42-241X
2101 I/O Approach	81440-00-243X 81440-01-243X 81440-10-243X 81440-11-243X
2101 Approach Plus	81439-02-240X 81439-03-240X 81439-12-240X 81439-13-240X
2000 Approach Plus	81438-02-240X 81438-03-240X 81438-12-240X 81438-13-240X
2101 Approach	81439-00-242X 81439-01-242X 81439-10-242X 81439-11-242X
2000 Approach	81438-00-242X 81438-01-242X

	81438-10-242X 81438-11-242X

[1]Note: X= M, N and P. Customers with system versions prior to M.N and P must contact FreeFlight Systems Repair Department for available service options.

[2]Note: The 'Approach' Series contains a 9-channel parallel tracking internal GPS receiver while the 'Approach Plus' contains a 12-channel parallel tracking internal GPS receiver

Contact: Please contact FreeFlight Systems Technical Customer Support if you experience any disruption of service and need additional information.

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