



FAA
Aviation Safety

SPECIAL AIRWORTHINESS INFORMATION BULLETIN

SAIB: NM-13-25

Date: March 22, 2013

SUBJ: Landing Gear: Nose Wheel Steering

This is information only. Recommendations aren't mandatory.

Introduction

This Special Airworthiness Information Bulletin advises registered owners and operators of **certain Gulfstream Aerospace Corporation Model GVI airplanes** of an airworthiness concern regarding loss of function of the nose wheel steering of the landing gear after landing.

Background

Recent reports indicated that four operators encountered a "Steer by Wire Fail" Crew Alerting System (CAS) amber caution message upon landing. In each case, the nose wheel steering function was lost. When these failures occurred, the nose wheel steering actuator reverted to the free castor/shimmy damping mode, and the tiller failed to operate. Directional control through the landing rollout was accomplished with use of rudder input and differential braking. In all cases, the steering system functionality was successfully restored by cycling the Solid State Power Controller (SSPC) #3206, in accordance with the procedure contained in the airplane flight manual (AFM). Subsequent investigation of each airplane indicated that the failure was initiated by unintended activation of built-in monitors designed to inhibit nose wheel steering actuator activation should deviations to defined operating parameters occur.

Gulfstream Aerospace Corporation is currently working on a corrective action to reduce the probability of these failures.

At this time the airworthiness concern has not been determined to be an unsafe condition that would warrant airworthiness directive (AD) action under Title 14 of the Code of Federal Aviation Regulations (14 CFR) part 39.

Recommendations

The FAA recommends that all owners and operators of the subject airplanes be aware of the potential for nose wheel steering failures immediately after touchdown. We also recommend that operators be aware of additional risks if this failure is combined with elevated crew workload, narrow runways, high crosswinds, or asymmetrical braking/reverse thrust. This failure condition does not manifest itself until immediately after nose wheel touchdown; as a result there is no crew indication of this failure until after landing. This failure is identified by a "Steer by Wire Fail" CAS message and a loss of nose wheel steering authority. It should be noted that there is no audible alert for this failure because the warning is inhibited during the "Before Landing" checklist.

To provide awareness to the flight crew and to prepare operators to handle these failures, we recommend that operators familiarize themselves with the guidance in the AFM normal procedure "Before Landing" in AFM 02-05-50. A CAUTION has been added to the AFM to verify after landing that the amber STEER BY WIRE FAIL CAS message is not displayed. If the message is displayed, rudder inputs and differential braking must be used to maintain directional control, in accordance with AFM procedure 03-18-50, "Nose Wheel Steering (NWS) Failure." After landing, when pilot

workload and airplane controllability permit, the SSPC #3206 should be cycled, as specified in the procedure in AFM 03-18-50, to restore system functionality. Owners and operators should be aware that turning the airplane with differential braking in taxi operations could result in damage to the nose wheel if the nose wheel angle exceeds 84 degrees.

We request that owners and operators report all nose wheel steering failures to Gulfstream Aerospace Corporation. The report should include a description of the failure, the date the failure occurred, airplane serial number, airplane registration number, airport identification, runway number, and wind direction and speed. Under the provisions of the Paperwork Reduction Act (44 U.S.C. 3501 et seq.), the Office of Management and Budget (OMB) has approved the information collection contained in this SAIB, and assigned OMB Control Number 2120-0731.

For Further Information Contact

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Reporting Information Contact

Gulfstream Aerospace Corporation, Attn: Customer Support, P.O. Box 2206, Savannah, GA 31402-2206; phone: 800-810-4853 or 912-965-4178; fax: 912-965-3520, or email: technical.operations@gulfstream.com