U.S. Department
of Transportation
**Federal Aviation
Administration**

SAFO

Safety Alert for Operators

SAFO 10007
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Flight Standards Service
Washington, DC

http://www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/safo

A SAFO contains important safety information and may include recommended action. SAFO content should be especially valuable to air carriers in meeting their statutory duty to provide service with the highest possible degree of safety in the public interest. Besides the specific action recommended in a SAFO, an alternative action may be as effective in addressing the safety issue named in the SAFO.

Subject: Tundra Tire Installation/Approval for Airplanes Equipped with Leaf Spring Type Main Landing Gear

Purpose: To provide safety information to the public of potential problems associated with aircraft with oversize tires (tundra tires), ski, and wheel/ski configurations.

Background: Many aircraft operating in harsh and/or rough terrain environments have obtained Federal Aviation Administration (FAA) approval for installation of wheel/tire combinations larger than originally certificated. These wheel/tire combinations are commonly referred to as tundra tire modifications. Modifications also include the installation of ski and wheel/ski modifications to better adapt to a particular flying environment.

There has been an increase of structural failures on aircraft operating with these modifications. To date there are at least 32 documented accidents caused by failure of the landing gear leg near the attachment holes of the axle. Based on statistical data the expectation is that under current conditions approximately 15 additional accidents will occur on aircraft with leaf spring gear having tundra tire, ski, and wheel/ski modifications producing a potential risk for serious or fatal injuries to occur.

Discussion: With a wide range of operating parameters, it is not always possible to predict the affects of vibration, harmonics, drag, loading, or other characteristics induced by aircraft operating with these configurations. Therefore, it is incumbent on the operator to understand the potential risks and take appropriate measures for safe operation of the aircraft.

The FAA published guidance in Advisory Circular (AC) 23-17, Systems and Equipment Guide for Certification of Part 23 Airplanes and Airships, summarizing flight test results, possible safety hazards, and general information about certification of aircraft with oversized tundra tires. This information is useful for other aircraft installations even though the test aircraft for the data collected was primarily a Piper PA-18.

Recommended Action: Persons interested in operating aircraft with oversize tundra tire, ski, or wheel/ski installations should be aware of the safety risks involved and take appropriate measures to reduce those risks.

Operators intending to modify aircraft to these configurations should;

- Inspect the area of the axle attaching holes for cracks, corrosion, and any other defect that might induce failure. Performance of these inspections should be in accordance with “best practices” commonly used in

industry with, at a minimum, the use of a dye penetrant method of nondestructive testing (NDT) with the aide of magnification, or other methods techniques and practices acceptable to the FAA.

- Corrosion, fatigue, and/or hardware substitution can be detrimental to other areas of the strut as well and the manufacturer's recommendations should be thoroughly reviewed and understood. Compatibility of materials should be considered. Particularly, when aircraft have been modified with components of different base metals than originally certified, such as titanium/cadmium combinations or other noncompatible materials. The effects of time in service on hardware should be considered and replacement intervals established.

- Aircraft in service with these modifications should have an increased inspection frequency with records maintained to indicate the method and status since last inspection.

- Instructions for Continued Airworthiness (ICA) are required for continuous operation of the aircraft. Apply careful consideration when developing maintenance and inspection procedures that define the methods, techniques, and practices used in determining safe operation of the aircraft.

- When establishing the frequency of these repetitive inspections, special consideration should be given to the number of hours flown, type of flying, operational environment, age, and previous operating history of the aircraft.

- Aircraft operators who obtained approval for these installations prior to the data package requirement for field approval or ICA requirement for supplemental type certificate (STC) are encouraged to develop an ICA for their aircraft.

Contact: Questions or comments pertaining to this SAFO can be directed to the Manager, General Aviation Branch, AFS-350, phone 202-385-4277.