

## WPR15IA252

Revisions to analysis and PC

### Analysis revised

While the pilot receiving instruction was landing the airplane, the main landing gear touched down first; as he was slowly lowering the nose landing gear (NLG) to the runway, he felt a "shimmy" in the NLG. Despite applying back pressure to lift the weight off the NLG, the airplane's nose slowly started falling forward, and the nosewheel collapsed. Post incident examination of the airplane revealed that the NLG was fractured through the strut tube adjacent to the forward edge of the gusset tube attachment welds. Metallurgical testing revealed that the ~~NLG resulted from failure was the result of~~ high-stress fatigue cracking due to sideways bending from one side. No mechanical or metallurgical anomalies were noted with the NLG. After the incident, the airplane manufacturer conducted structural testing of the NLG, which revealed that shimmy events or nonstandard towing could result in cracks and the eventual separation of the NLG. As a result, the airplane manufacturer issued two service advisory letters, which outlined appropriate towing and inspection procedures. The airplane manufacturer also issued a series of service bulletins, which, in part, recommended that all NLG on the affected airplanes be inspected for cracks in the welds between the strut tube and the gusset tubes and that post shimmy inspections also be conducted to look for cracks in this area. Additionally, the ~~airplane~~ manufacturer ~~changed- updated~~ the design of the NLG to increase the strength of the ~~NLG weld strut tube~~.

### PC Statement revised

~~The failure of the nose landing gear (NLG) due to high-stress fatigue cracking due to a shimmy event. Contributing to the accident was the design of the NLG, which allowed fatigue cracks to develop during nonstandard towing and shimmy events. The failure of the nose landing gear due to unanticipated fatigue loads.~~