Aviation Safety Investigation Report 198901542

Armstrong Whitworth AW650-322 Argosy

3 May 1989

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NOTE: All air safety occurrences reported to the ATSB are categorised and recorded. For a detailed explanation on Category definitions please refer to the ATSB website at www.atsb.gov.au.

Occurrence Number: 198901542 **Occurrence Type:** Accident
Location: Melbourne Airport VIC
Date: 3 May 1989 **Time:** 235
Highest Injury Level: Nil
Injuries:

	Fatal	Serious	Minor	None
Crew	0	0	2	2
Ground	0	0	0	-
Passenger	0	0	0	0
Total	**0**	**0**	**0**	**2**

Aircraft Details: Armstrong Whitworth AW650-322 Argosy
Registration: VH-IPA
Serial Number: 6803
Operation Type: RPT - Scheduled Domestic Cargo
Damage Level: Substantial
Departure Point: Sydney NSW
Departure Time: 0015
Destination: Melbourne Airport VIC

Approved for Release: 16th February 1990

Circumstances:

While taxiing after a normal landing, a rumbling noise was heard from the vicinity of the nosegear, the hydraulic low pressure light illuminated and nosegear steering authority was lost. The right hand nosewheel had separated from the aircraft due to fracturing of the axle. As the nosewheel departed it damaged the nosegear uplock assembly with consequent loss of hydraulic system integrity. It then continued under the fuselage causing skin damage. The nosewheel axle was recovered and subjected to metallurgical examination which showed that the fracture was due to fatigue. The fracture resulted from prior long term fatigue cracking which occupied approximately 75 of the cross sectional area of the axle. Stress corrosion cracks were present which were the most likely initiator of the fatigue cracks. A mandatory crack inspection requirement called up for this axle did not cover the specific area in which the stress corrosion was located. Consequently, during the axle refurbishment, the stress corrosion cracks were covered by a layer of electroplated chromium. Upon advice of the failure mode by the Bureau, the operator carried out an inspection of all inservice and spare axles, to remove any axles with stress corrosion under the electroplated chromium.

Significant Factors:

The following factors were considered relevant to the development of the accident

1. The nosewheel axle failed due to fatigue initiated by stress corrosion cracks.

2. The recurrent Non Destructive Inspection for the axles does not address the area where the stress corrosion occured. Consequently, pre- and post- refurbishment inspections did not detect the cracks.

Reccomendations:

1. The Civil Aviation Authority consider extending the current mandatory Non Destructive Inspection for the axles, to address the area discovered in this accident.