

DEPARTMENT OF CIVIL AVIATION
MALAYSIA
AIRWORTHINESS NOTICE

No:91	Issue: 1	Page: 1
-------	----------	---------

Date: 15 May 2005

MULTIPLE “SCRIBE MARK” SCRATCHES

1 INTRODUCTION

- 1.1 A number of Boeing Model 737, 747, 757 and 767 were reported to have multiple “*scribe mark*” scratches at significant structural parts of the aircraft (i.e. fuselage skin lap joints, butt joints). These “*scribe mark*” scratches were caused by the use of sharp scrapers (possibly made of metal, certain woods, or plastic), putty knives, razor blades, or other tools used to remove sealant or trim decals. These tools can damage the clad layer of fuselage skins. These scratches can be hidden by sealant and may reside just under the lap joint step depending on the tool angle.
- 1.2 One of Boeing 737, which has “scribe mark” scratches in the mid-1990, has developed into 5 to 10 inches of crack after 21,000 to 25,000 flight cycles. Because the repair of the crack is expensive one operator has decided to retire the aircraft at 22,000 flight cycles. According to the FAA, a number of other type aircraft are also affected. Our search of aircraft accident database concluded that a Boeing 727 had experienced cabin decompression after the fuselage skin peeled off from its stringers in 1988. NTSB concluded that the skin failure was the result of “scribe mark” scratches which was introduced during the aircraft maintenance.
- 1.3 It is obvious that such “scribe mark” scratches, if not repaired, will initiate fatigue cracks and resulting in widespread multi-site fatigue damage (MSD), which would result in rapid decompression and loss of aircraft in-flight. “Scribing mark” scratches run across the tear straps and adjacent to lap joint lower row MSD could potentially lead to very long cracks (“zipper effect”). Aloha Airlines 737 and Air China 747 accidents were the result of MSD.
- 1.4 Boeing has reviewed and proposed changes to the Structural Repair Manual (SRM) for the Boeing Model 737. These changes will be published in the September revision of the 737 SRM. Boeing issued an inspection SB for Boeing Model 737 classic fleet on 9th December 2004. The FAA is considering mandating this SB.

2 OBJECTIVE

- 2.1 “Scribe Mark” scratches have been on the aircraft for a number of years without being noticed until a cabin decompression accident and a number of aircraft were found with cracks on their significant structures. In the view of the seriousness of this issue, the DCA is requiring action from the Malaysian aircraft operators, who operate pressurized aircraft type, and the aircraft maintenance organizations, who are carrying out paint stripping, painting and installing decals. This AN outline the action required for inspection and prevention against the “scribe mark” damage.

3 APPLICABILITY

- 3.1 Malaysian aircraft operators who operate any types of pressurized aircraft, where cabin decompression would cause loss of aircraft in-flight, and the aircraft maintenance organizations who carry out paint stripping, painting and installation of large decals.

4 REQUIREMENTS

- 4.1 All the aircraft operators and repair station to inspect the aircraft significant structures (i.e. fuselage skin lap joints, butt joints, decal areas, repair areas, wing to body fairings and door cutout areas) against damage for “scribe mark” scratches at heavy maintenance, when the paint is stripped, or at any time the aircraft go for paint strip.

All the aircraft operators and repair station;

- a) Provide training to the affected personnel to ensure they adhere to the standard practices and manufacturers' instructions for stripping paint, cleaning sealants, and performing general care of fuselage pressure boundaries.
- b) Review current practices of sealant removal, paint stripping and installation of decals. The practices may be required to be changed as necessary to prevent the introduction of "scribe mark" scratches. The following may be required;
 - i) Task cards to have notes to ensure proper tools.
 - ii) Process specifications / work instructions / process sheet to have notes to ensure proper tools.
 - iii) Relevant department manual to have notes to ensure proper tools.
- c) QA and QC personnel are required to be more vigilant during the paint stripping or installation of decals.

5 NOTIFICATIONS

QA Department of the aircraft operators and maintenance organizations,

- a) to notify DCA on any result of aircraft inspection for "scribe mark" damages.
- b) to submit the plan of action to comply with the above requirements
- c) to notify the DCA on the implementation of the plan of action.

DIRECTOR GENERAL
DEPARTMENT OF CIVIL AVIATION
MALAYSIA.