Australian Government
Civil Aviation Safety Authority

Airworthiness Bulletin

AWB 27-022 Issue 1 - 16 June 2025

Boeing 737 Flight Spoiler Control Cable Failures

An Airworthiness Bulletin is an advisory document that alerts, educates and makes recommendations about airworthiness matters.
Recommendations in this bulletin are not mandatory.

1. Effectivity

All Boeing 737 Classic and Next Gen aircraft.

2. Purpose

Issue 01 of this AWB is issued:

- To advise operators of multiple occurrences of flight spoiler control cable failures.
- To share a summary of CASA's continuing airworthiness analysis of the issue.
- To recommend that operators include an operator-task into their Approved Maintenance Programs (AMP) to remove from service the control cables.

3. Background

CASA has observed an adverse trend in flight spoiler control cable failures reported by Australian operators as major defects, in compliance with r.51A of the Civil Aviation Regulations (1988) and r.42.C.4 of the Civil Aviation Safety Regulations (1998).

Flight spoilers on the 737 Classic and Next Gen aircraft are a secondary flight control, assisting with roll control and speed brake control of the aircraft. The flight spoilers are operated by mechanical input via a closed-loop cable system. The WSA and WSB wing-spoiler cables (refer to relevant IPC) take the mechanical output from the spoiler mixer unit to operate the spoiler actuators located in the wings.

Over the past 15 years, failures of the WSA and WSB cables have occurred on multiple aircraft, across five (5) different Australian operators. Reported failure effects have included:

- uncommanded roll when speed brakes were deployed; and
- abnormal handling during commanded roll.

A cluster of reports from 2020 onwards, across four (4) Australian operators, suggests that the risk exposure to control cable failures is increasing as the average age of the Australian 737 Classic and NG fleet increases.

See Figure 1.

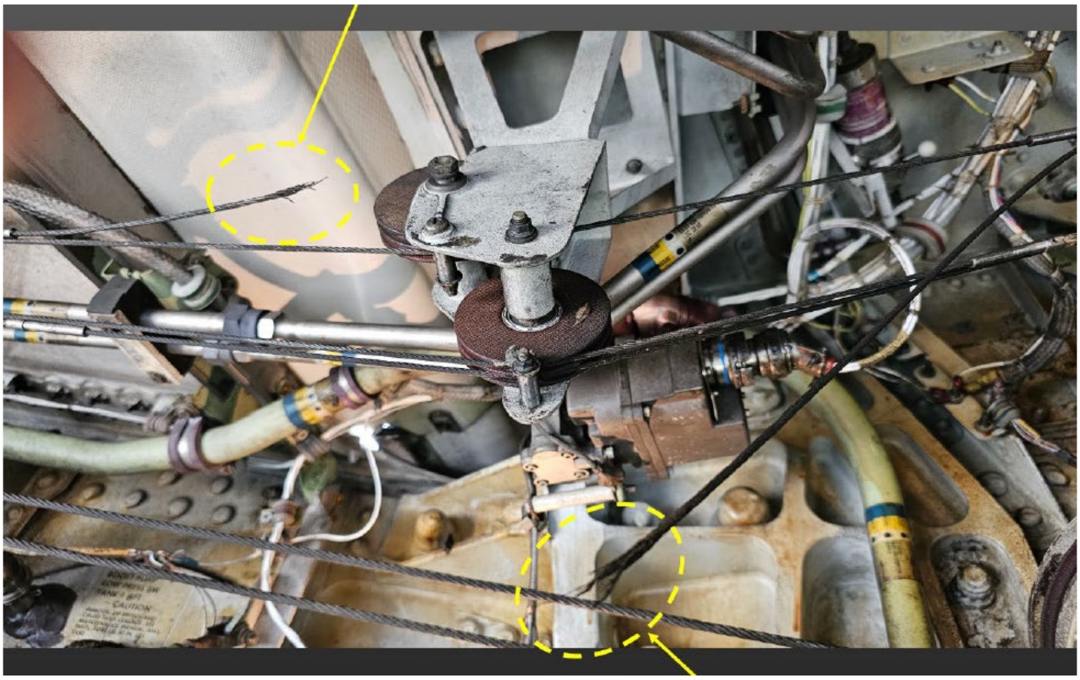

Figure 1. Operator-provided image of a separated spoiler cable

4. Failure cause and contributing factors

A failed cable was analysed by the Australian Transport Safety Bureau laboratory in Canberra in 2021, and a second failed cable from a 2023 incident by Boeing's Research & Technology laboratory in California.

The common failure cause between the two analyses is that:

- corrosion reduces the overall cross-sectional area of the cable (see Figure 2); and
- wear is also likely to have been a common failure cause.

The WSA and WSB cables are located in the MLG wheel well (see Figure 3). Exposure to moisture and dirt kicked up from the main wheels is likely to be a contributing factor, exacerbating the corrosion and rate of wear.

Figure 2. The ATSB found substantial corrosion at the fracture site

5. Baseline continuing airworthiness regime

The flight spoiler control cables are carbon steel wire rope of 3/32” diameter consisting of a 7 x 7 construction (see Figure 3). Individual strands are coated with tin over zinc at production to provide corrosion resistance and lubrication. The cables are made to BMS 7-265 specifications, which require endurance testing to 35,000 test cycles in laboratory conditions.

The OEM-recommended continuing airworthiness management of these cables can be summarised as follows[1]:

1. Nil life limit.
2. A detailed visual inspection (DVI) to detect degradation in cable condition to be done every 6,600 flying hours or 3 years.
3. Lubrication is done on-condition, if the licensed engineer deems it necessary at the time of the DVI[2].

The OEM’s position is that the DVI should drive on-condition replacement of the cable, with operators free to implement scheduled replacement based on their reliability data.

As at the time of writing, there are no published OEM Service Letters or Fleet Technical Digests specifically addressing management of these cables.

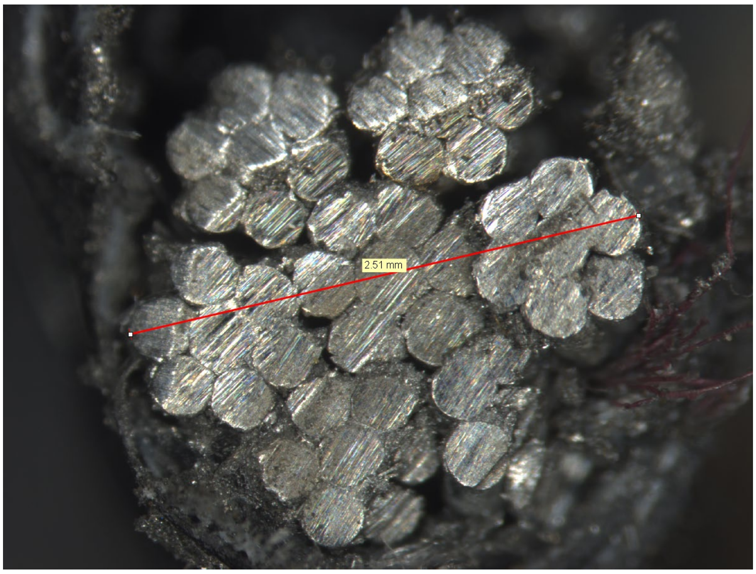

Figure 3. Carbon steel wire rope of 7 x 7 construction

[1] As per the Maintenance Review Board Report for the 737 Next Gen aircraft, current as at the time of publishing Issue 01 of this Airworthiness Bulletin. The maintenance requirements for the 737 Classic aircraft may vary slightly, and is particularly dependent on whether an operator is following the MSG-3 based MRBR or the older MSG-2 based MRBR. The information in this AWB is not prescriptive. Please refer to the relevant ICA applicable to an aircraft to determine the applicable baseline continuing airworthiness requirements for that aircraft.
[2] Refer to 737-SL 05-023 for further information from the OEM for further information about the proper lubrication of control cables.

6. Additional continuing airworthiness considerations

a. Surface preparation prior to DVI

The AMM instructions for surface preparation prior to doing the DVI calls for wiping the cable with a dry, lint-free cloth.

Evidence suggests that this level of surface preparation is likely inadequate for a LAME to be able to reliably detect degradation of the cable during the DVI. For example:

> One of the investigation reports referred to in Section (4) above states that even after wiping the cable with a dry cloth, a "*substantial quantity [of excess dirt/lubricant] was still present*". Further cleaning was required, including an ultrasonic bath and Alconox in "*high concentrations*" to "*effectively remove the dirt/lubricant from sections of the cable*".

With the second of the investigations referred to in Section (4), the initial inspection by Boeing was reported as "nil corrosion" and it was only after laboratory inspections that corrosion and wear were reported present.

b. Adequacy of On-condition maintenance

For on-condition maintenance to be effective, it should be possible to detect the degradation of the system / equipment without the need for disassembly.

The evidence referred to in Section (6)(a) suggests this is not true of the DVI of the flight spoiler cable. Inadequate surface preparation renders the inspection ineffective.

Re-applying the MSG-3 decision logic for Systems / Powerplant, the most effective task selection appears to be a "discard task". This would reduce the fleetwide failure rate, and in some cases, possibly even eliminating the risk.

c. Trending defect rate

As the Australian domestic fleet increases in age, CASA has noted an adverse trend in the rate of this defect. At the time of writing, the defect rate does not meet a threshold for CASA to mandate any maintenance actions.

However, operators are reminded that the AMP and associated reliability program should be leveraged to ensure the level of safety and reliability inherent in the type design is actually achieved over the life of the aircraft in your fleet.

7. Response from Australian operators

The Boeing 737 currently forms the backbone of domestic air transport operations in Australia. Several of these operators have experienced multiple flight spoiler cable failures on their fleet, and subsequently have introduced cable discard tasks into their AMPs, summarized as follows:

Operator	Discard task interval
A	36,000FH
B	16,000FH
C	27,200FH, 15,000FC, or 8YE, whichever comes first
D	36,000FH

The above intervals equate to a range of ~11,000FC to ~17,000FC, well short of the 35,000 test cycles to which the BMS 7-265 specification requires endurance testing.

8. OEM Recommendations

Boeing have shared with CASA a presentation titled "Fractured Flight Control Cables" delivered to Aging Aircraft WTT stakeholders. The OEM makes three recommendations to operators:

1. Operators can consider reducing the inspection intervals for inspecting Flight Control Cables based on fleet service history
2. During inspections, cleaning, and lubrication tasks, maintainers should ensure that the cable system is fully displaced to allow the control cable to be properly maintained
3. Operators can consider replacing cables on older airplanes. To the OEM's knowledge, the average replacement period is ~12 years.

When evaluating these recommendations, operators should take into account the content of this AWB, in particular:

- Reducing the inspection interval may not yield the expected increase in reliability rates, due to the possibility of inadequate surface preparation as discussed in Section (6)(a) and (6)(b) of this AWB.
- Full displacement of the cable system during inspections, cleaning, and lubrications tasks should be adhered to, in accordance with the maintenance manual. During CASA's analysis of this airworthiness concern, there has been nil evidence of contrary maintenance practices.

9. Recommendations from CASA

For operators that have already implemented a cable discard task into their AMP, CASA recommends:

- Optimisation of the task interval as and when required, in accordance with data from the associated reliability program, with a low threshold for de-escalating the task interval in the event of findings.

For all other operators, CASA recommends:

- Implementation of a cable discard task into the operator's AMP, relying on the OEM's guidance for determining an optimal task interval.

10. Reporting

Findings of control cables that are separated, damaged, and/or worn/corroded should be reported to CASA as a major defect, under 51A of the Civil Aviation Regulations (1988) or 42.C.4 of the Civil Aviation Safety Regulations, as applicable. For further guidance on how to submit a report, refer to CASA Advisory Circular 20-06 which is available on the CASA website. The aircraft type certificate holder should also be notified to facilitate global monitoring of the issue.

11. Enquiries

Enquiries with regard to the content of this Airworthiness Bulletin should be made via the direct link email address:

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or in writing, to:

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