



Australian Government

Australian Transport Safety Bureau

Debris examination – update No. 2

Missing aircraft, Boeing 777, 9M-MRO, 8 March 2014

**Identification of two items of debris
recovered from beaches in South Africa
and Mauritius**

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Addendum

Page	Change	Date
1 and 3	Inclusion of text and photograph of Part No. 3 as found on 23 Dec 2015	24 May 2016

Missing aircraft, Boeing 777, 9M-MRO, 8 March 2014

Identification of two items of debris recovered in South Africa and Mauritius

Introduction

On 22 and 30 March 2016, two items of debris were independently found on beaches at Mossel Bay, South Africa and Rodrigues Island in Mauritius. Both items were delivered to the relevant Civil Aviation Authorities in South Africa and Mauritius. Assistance from the Australian Transport Safety Bureau (ATSB) was requested by the Malaysian Government in the formal identification of the items to determine if they came from the Malaysian Airlines Berhad (MAB) Boeing 777 aircraft, registered 9M-MRO, operating as MH370.

The items were packaged in South Africa and Mauritius respectively and delivered safe-hand to the ATSB in their original packaging, in the custody of the ICAO Annex 13 Safety Investigation Team members.

This document (Update 2) is a brief summary of the outcomes from the identification of these items, designated as Part numbers 3 and 4. It follows the identification of Part numbers 1 and 2, the outcomes of which were released by the ATSB in Update 1 on 19 April 2016. This debris identification summary is released with the concurrence of the Malaysian ICAO Annex 13 Safety Investigation Team for MH370.

Quarantine and marine ecology

On arrival into Australia, both parts were quarantined at the Geoscience Australia facility in Canberra. The parts were unwrapped and examined for the presence of marine ecology and remnants of biological material. Visible marine ecology was present on both parts and these items were removed and preserved. The parts were subsequently cleaned and released from quarantine.

Identification

Part No. 3

Part number 3 was initially identified from the partial Rolls-Royce stencil as a segment from an aircraft engine cowling. The panel thickness, materials and construction conformed to the applicable drawings for Boeing 777 engine cowlings.

There were no identifiers on the engine cowling segment that were unique to 9M-MRO, however the Rolls-Royce stencil font and detail did not match the original from manufacture. The stencil was consistent with that developed and used by Malaysian Airlines and closely matched exemplar stencils on other MAB Boeing 777 aircraft (Figure 1).

There were identical inboard and outboard stencils present on the cowlings of each of the engines and the location of the stencils was found to vary between engines. Taking that into consideration, there were no significant differentiators on the cowling segment to assist in determining whether the item of debris was from the left or right side of the aircraft, or the inboard or outboard side the cowling.

On 17 May 2016, the ATSB was provided with an earlier photograph of the item, taken on 23 December 2015. This photograph showed the part was significantly colonised by barnacles at the time it arrived on the beach (Figure 3).

Part No. 4

Part number 4 was preliminarily identified by the decorative laminate as an interior panel from the main cabin. The location of a piano hinge on the part surface was consistent with a work-table support leg, utilised on the exterior of the MAB Door R1 (forward, right hand) closet panel (Figure 2). The part materials, dimensions, construction and fasteners were all consistent with the drawing for the panel assembly and matched that installed on other MAB Boeing 777 aircraft at the Door R1 location.

There were no identifiers on the panel segment that were unique to 9M-MRO, however the pattern, colour and texture of the laminate was only specified by MAB for use on Boeing 747 and 777 aircraft. There is no record of the laminate being used by any other Boeing 777 customer.

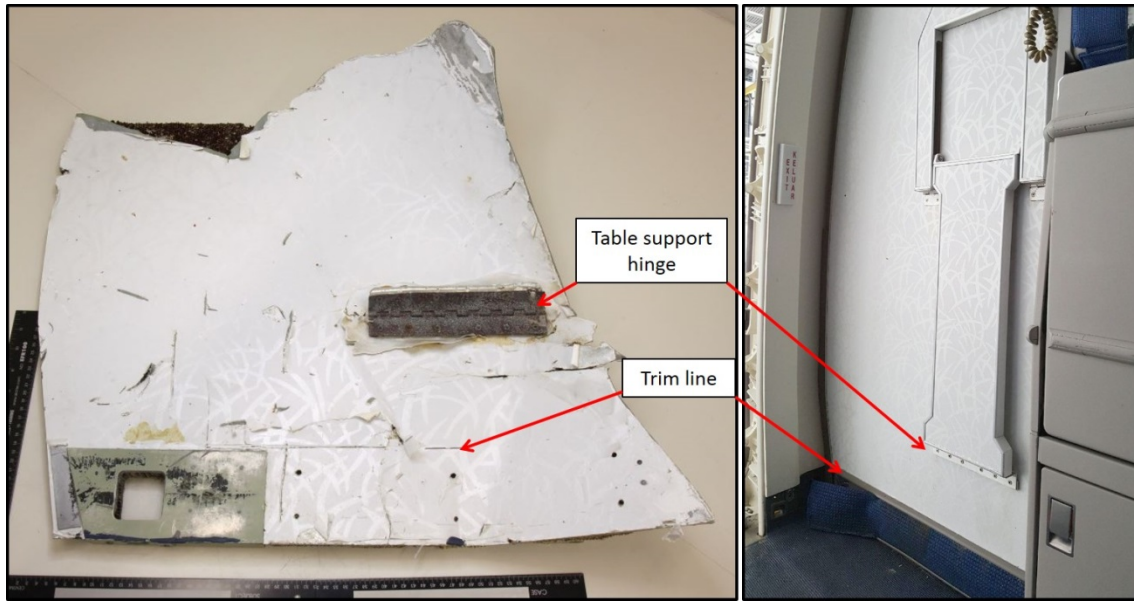
Figure 1: Comparison of Boeing 777 engine cowling stencils



Note the thickness of the “ROYCE” lettering and the serif geometry on the main ‘R’s (enlarged for ease of comparison).

Source: Malaysian MOT / ATSB

Figure 2: Comparison of recovered item with MAB Boeing 777 Door R1 panel assembly



Source: Malaysian MOT / ATSB

Figure 3: Photograph taken 23 Dec 2015 showing Part No. 3 significantly colonised by barnacles



Source: Schalk Lückhoff

Conclusions

At the time of writing, work was ongoing with respect to the marine ecology samples. The results from these tests will be provided to the Malaysian investigation team once complete. In terms of the identification of the two items of debris, it was concluded that:

- Part No. 3 was a Malaysian Airlines Boeing 777 engine cowling segment, almost certainly from the aircraft registered 9M-MRO.
- Part No. 4 was a Malaysian Airlines Boeing 777 panel segment from the main cabin, associated with the Door R1 closet, almost certainly from the aircraft registered 9M-MRO.