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Australian Transport Safety Bureau

Debris examination – update No. 4

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

**Preliminary examination of two items of
debris recovered near Sainte Luce,
Madagascar**

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Addendum

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

Preliminary examination of two items of debris recovered near Sainte Luce, Madagascar

Introduction

Two items of fibreglass-honeycomb composite debris were recovered near Sainte Luce on the south-east coast of Madagascar, having reportedly washed ashore in February 2016. They were hand-delivered to the Australian Transport Safety Bureau on 12 September 2016. The items were initially reported in the media as being burnt.

This document summarises the ATSB's preliminary examination of the items for any evidence of exposure to heat or fire.

Examination

No manufacturing identifiers, such as a part numbers or serial numbers were present on either item, that may have provided direct clues as to their origin. At the time of writing, the items had not been identified and work in this respect is ongoing.

A dark grey colouration was present on a significant proportion of both sides of each item (Figures 1, 2 and 3). Detailed examination of these areas showed that the colour related exclusively to a translucent resin that had been applied to those surfaces (Figure 4).

A cross section through the panel showed a clear delineation between the dark resin and the other surface coatings without any evidence of gradual transition. The lighter grey surface areas resulted from a thinner film of the same resin applied over an off-white background. Figure 5 shows the cross section directly and Figure 6 shows the same section at an oblique angle. This confirmed that the dark colour of the coating was an inherent property of the resin, and not the result of exposure to heat or fire.

Despite no evidence of overall gross heat damage, two small (<10mm) marks on one side of the larger item and one on the reverse side were identified as damage resulting from localised heating (Figures 2 and 3). A burnt odour emanating from the large item was isolated to these discrete areas. The origin and age of these marks was not apparent. However, it was considered that burning odours would generally dissipate after an extended period of environmental exposure, including salt water immersion, as expected for items originating from 9M-MRO.

Figure 1: Smaller composite panel



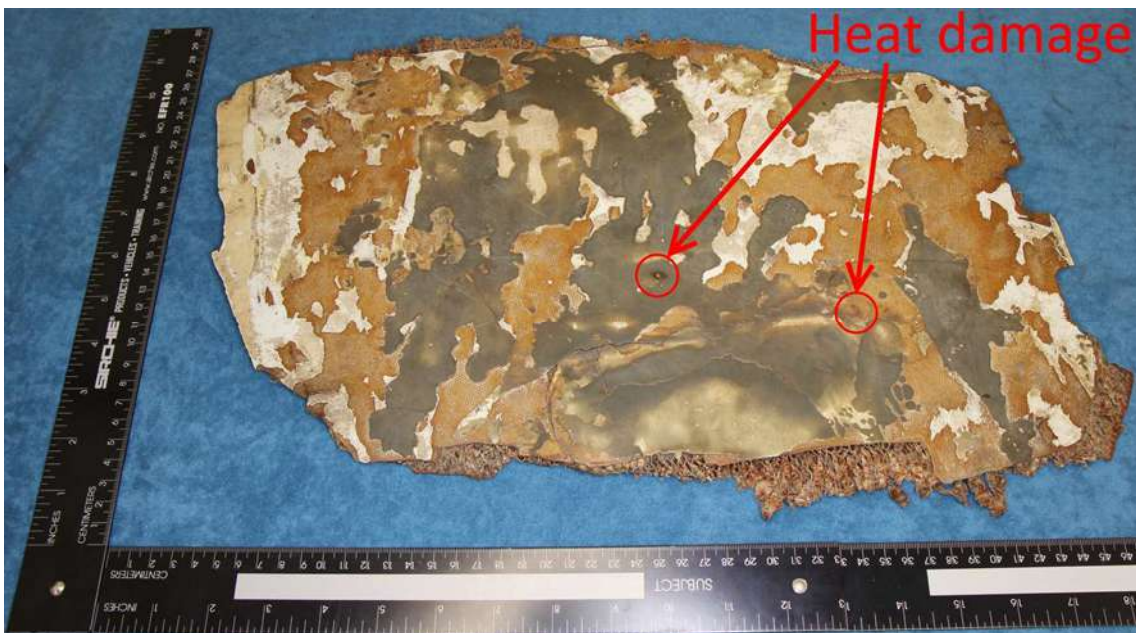
Source: ATSB

Figure 2: Larger composite panel showing discrete area of heat damage



Source: ATSB

Figure 3: Reverse side of larger composite panel showing discrete areas of heat damage



Source: ATSB

Figure 4: Close-up of applied coatings



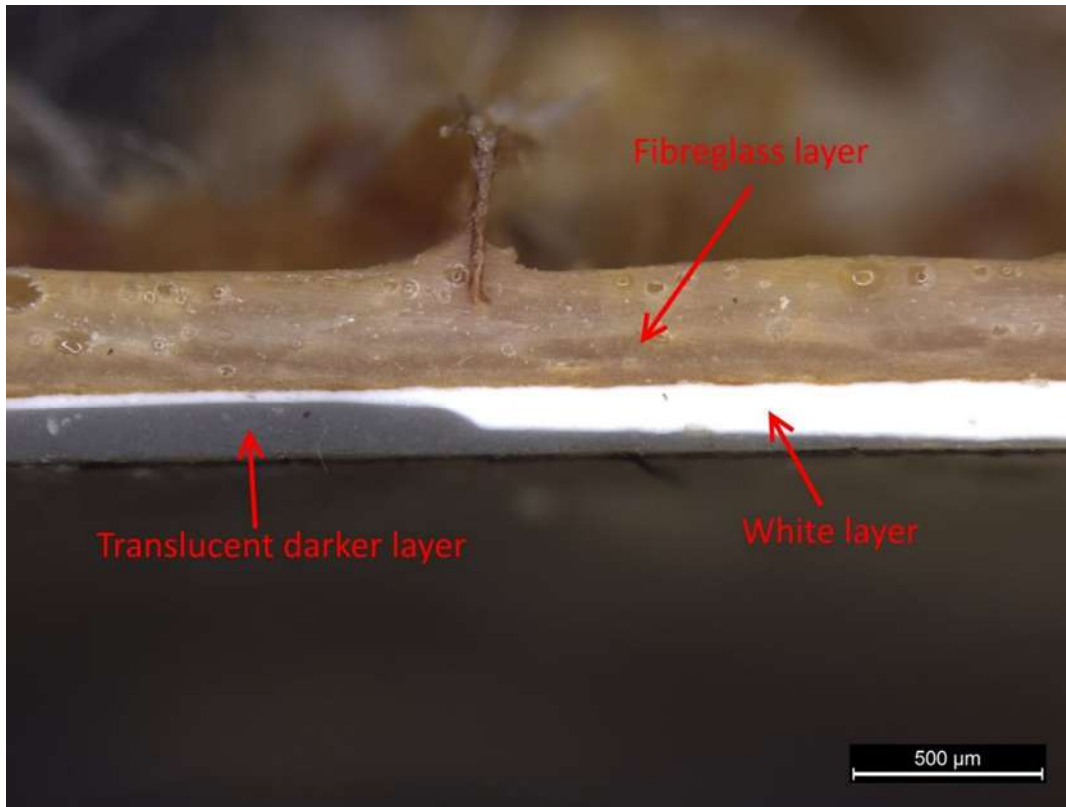
Source: ATSB

Figure 5: Cross-section through composite skin, showing surface colouration through thickness.



Source: ATSB

Figure 6: Higher magnification image of Figure 5, showing clear delineation between layers



Source: ATSB

Summary

The following findings were made during a preliminary examination of two items of composite debris, recovered near Sainte Luce, Madagascar. At the time of writing, work is ongoing to determine the origin of the items, specifically, whether they originated from a Boeing 777 aircraft.

- 1) The dark grey colouration on the outer surfaces of the items related to an applied resin and was not the result of exposure to heat or fire.
- 2) Three small marks on the larger item were indicative of localised heating. The age and origin of these marks was not apparent.