

**Attachment “C3.P92” Extract of “Draft Final” PwC report / Final PwC report**  
**(Subject : Number of units section Paragraph 8.63 – 8.78 (final doc 694))**

Final Draft Investigation Report into Areas of Concern Raised  
 by Mr Brian Little

May 2007

MAC: Aeronca - Airbus A340 non-recurring costs

- 8.73 While the MAC's EAC projects production and deliveries to FY2012, other MAC-prepared volume projections show continued deliveries through until FY2021, which would provide MAC with a more realistic 20-year period over which to amortise the NRC for the A340 programme, given that deliveries commenced in FY2001.
- 8.74 Assuming a maximum 20-year amortisation period for the A340 programme and the 8-year average useful life of exhaust system units would imply the following:
- (a) Production units delivered between FY2001 and FY2012 would need to be replaced or repaired twice by FY2021.
  - (b) Production units delivered in FY2013 would need to be replaced or repaired once prior to FY2021.
  - (c) Production units delivered in FY2014 and thereafter would not need to be replaced or repaired prior to FY2021.
- 8.75 The table below summarises the implication of the above assumptions and indicates that 1,572 exhaust system units would need to be replaced or repaired by FY2021.

Time Period	Production Units (Source Data)	Units to Replace or Repair by FY2021
FY2001 - FY2006	414 (Aeronca)	828
FY2007 - FY2012	348 (FI April 2007 Report)	696
FY2013	48 (FI April 2007 Report)	48
FY2014 - FY2016	72 (FI April 2007 Report)	-
<b>Total</b>	<b>882</b>	<b>1,572</b>

Note: Table prepared by PwC based on the Q4 FY2006 EAC provided by Aeronca and information obtained from Forecast International

- 8.76 In order to achieve MAC's EAC projections, only 365 replacement (i.e., spare) exhaust system units would need to be delivered. This is far below the expected demand of 1,572 spare and repair units, as set out in paragraph 1.63 above.
- 8.77 MAC's practice of including spare units in the total volume estimation within an EAC calculation is evident in its accounting treatment applied on other programmes.
- 8.78 PwC Observation: Based on third party information presented above and on management information obtained, the delivery of a combination of production units and spare units totalling at least 1,285 units over the life of the programme ending FY21 is not unreasonable.

and this was preceded by Para 8.72 which includes the “management asserts” - Mr Neill

- (c) MAC has also performed a study to assess the future demand which may arise from the need for spare units and repairs of the product. As explained below, MAC estimates that exhaust systems will need to be replaced or repaired twice over the life of each aircraft. With the end of this programme being estimated at FY2021, 1,500 units would have to be replaced or repaired.
- 8.68 Of the 833 units remaining to be delivered (as estimated by MAC), it is projected that a further 468 production units will be required to serve the estimated market demand (as per FI report dated April 2007). The shortfall of 365 units is therefore required to be made up of spares in order to support the future programme volume estimate of MAC.
- 8.69 As per discussion with management, the initial specifications from Airbus regarding the manufacturing of an exhaust system solution, made reference to an estimated life of 100,000 hours for the part. This approximates to the estimated life of an aircraft; being 20 years where there is approximately 5,000 hours of flight time per annum. At this stage a number of different material options were under consideration and were presented by Aeronca as part of the proposal process.
- 8.70 Ultimately, a decision was taken to use a light material (Beta 21) to the detriment of the estimated life of the part. Weight restrictions were a major concern and Beta 21 was the preferred choice in order to manufacture a light product. The shorter estimated life of the exhaust system gives rise to a requirement for spares and repairs in the future.
- 8.71 In considering the requirement for spare units, an internal engineering report entitled ‘Durability Analysis on Aircelle A340-500/600 Exhaust System’ (exhibit 8.5) was prepared by Dr. Raj Thamburaj, Director at AMES, Orenda (a subsidiary of MAC), which concludes on the estimated life of the product. The internal report states that “Actual life limit would be between 33,333h to 37,593h which means that repairs would be required after 6.6-7.5 years at the least”. MAC proposes that an estimated life of 8 years (i.e., 40,000h at 5,000h per annum) would be a reasonable assumption.
- 8.72 It is of note that the internal report also makes reference to the requirement for repairs in its conclusion and not explicitly to the need for spares or replacement units. Management acknowledges the unpredictability of repair work and has appropriately chosen not to consider repairs in its EAC analysis. Management believes that given the estimated life of the exhaust system, there will be a combination of spare units and repair work. Further, management asserts that the requirement for spare units will support and exceed the total number of units projected in the EAC.