

BULLETIN ADDENDUM

AAIB File: EW/A94/11/1
Aircraft Type and Registration: Boeing 747-436, G-BNLA
Date & Time (UTC): 10 November 1994 at 1906 hrs
Location: Buenos Aires, Argentina
Information Source: AAIB Field Investigation

AAIB Bulletin No 7/95, page 13 refers:

Flight Recorders

The Flight Data Recorder (FDR), a Sundstrand Universal Flight Data Recorder (UFDR) was removed at Buenos Aires, and returned to Heathrow. The airline and AAIB both attempted a replay of the unit without success due to the amount of bad data on the recorder. The tape was then removed by AAIB and played "open reel", also with large data losses due to data jitter. No useful information was recovered from the FDR. The Cockpit Voice Recorder (CVR) was not removed.

The Quick Access Recorder was unserviceable, however limited data was extracted from the information stored by the Aircraft Condition Monitoring System (ACMS). The ACMS stores exceedance information together with time history information for 15 seconds prior to the exceedance for a period of 18 seconds. Three exceedance events were recorded on this flight; two of these were TGT exceedances on No 4 engine, the first maximum value recorded was 836.5°, the second maximum was 879.5° recorded 7 seconds later. An engine vibration exceedance was also recorded, with a maximum of 5 units, this parameter has a time limit of 8 seconds at 2.5 units, the time beyond the 8 second limit was 17 seconds.

The UFDR (serial number 1482) had been fitted to 'LA' on 29 October 1994, and it had previously been removed from a Boeing 757 aircraft on 9 October 1994. The reason for removal was the illumination of the Built-in Test Equipment (BITE) light on approach. The unit was then sent for repair where data check errors were found on all tracks. The Stepper Motor was changed and the unit tested to the specification and recertified.

After the 'LA' incident the unit was again taken to the workshops for investigation. Preliminary bench checks revealed data check errors on one of the eight tracks. The unit was tested against the specification and this showed jitter on the signal timing of around one millisecond, and occasionally more, and the other checks were within specification. Visual inspection showed wear of the p-belt and the flat belt, but the exact cause of the data jitter was not determined.

The FDR fault was not detected by the BITE and as a result the warning light did not illuminate; the unit is fitted "on-condition" such that it will not be removed until a BITE detected fault is indicated. There is a requirement for Mandatory readout periodically, however this refers to the aircraft and not the particular unit fitted, which can be replaced without a further requirement for readout. There is no required maintenance on the UFDR although, subsequent to the incident, the manufacturer strongly recommended to the operator that a programme of preventative, regular maintenance be performed. Service Information Letter (SIL) UFDR-4100-31-10 refers to Recommended Maintenance Information for UFDRs. The manufacturer quotes airlines who have found that when maintenance is performed coincident with C-Checks, a significant improvement in Mean Time Before Unscheduled Removal (MTBUR) and transcription performance results.