

Technical document

CVR examination

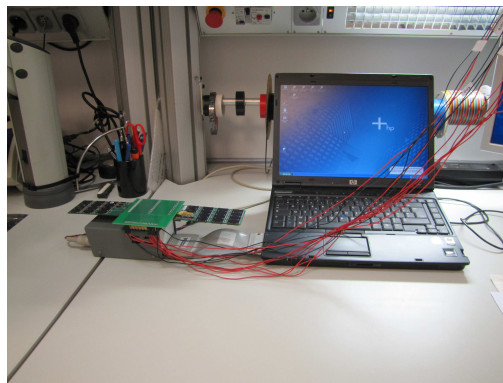
Date of occurrence:	January 25 th , 2010
Place of occurrence:	Off Beirut (Lebanon)
Aircraft type:	Boeing B737-800
Registration number:	ET-ANB
Operator:	Ethiopia (Ethiopian Airlines)
Flight Recorder:	Solid State Cockpit Voice Recorder (SSCVR) <ul style="list-style-type: none"> • Make and model: Allied Signal 6022 • P/N: 980-6022-001 • S/N: 05449

The CVR board examination was performed based on the agreed test plan referenced “*ET-ANB_CVRActionplan / Date of issue November 2nd 2010*”.

WORK PERFORMED:

A direct read out was performed prior starting the examination. The memory boards were connected with the recovery cable to the BEA 6022 CVR chassis used as a playback system. The download was performed using the manufacturer reading device. This readout operation was successful and identical to the download performed on February 17th, 2010.

The CVR boards were connected to the BEA memory reader and each memory chip was individually selected and read out. All the memory chips were correctly read out except U16 (also referred as CE#19 memory chip in Honeywell documentation) which could not be read out at all. The read-out data was saved.



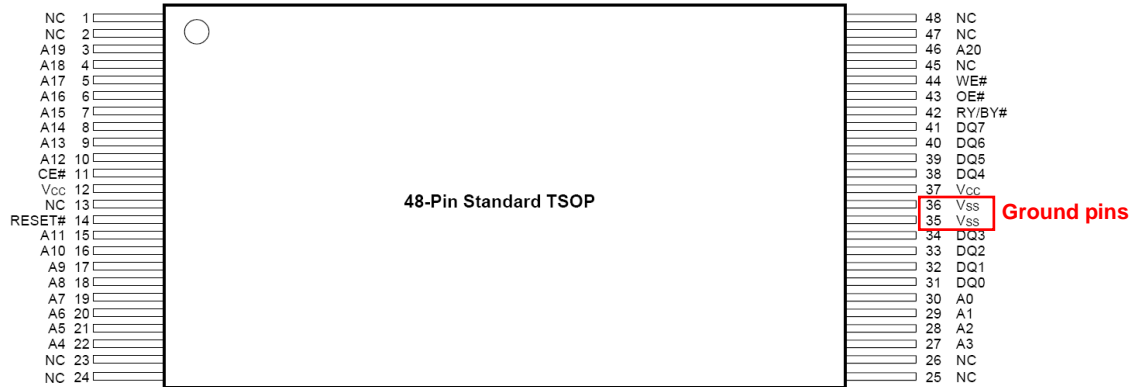
CVR boards connected to BEA memory reader

The assumption based on the visual inspection performed in February 17th, 2010 is confirmed: U16, the memory chip with the crack, is the non-functioning memory chip.

Each pin of U16 memory was then lifted off and was electrically characterized. Electrical characterisation consists in:

1. Connecting one of the ground pin of U16 to the ground reference of the BEA characterizer.
2. Varying voltage input on every pin and measuring current consumption. A curve Intensity versus voltage can then be plotted.

Note: the electrical characterization does alter neither the memory content nor the internal circuitry because of the limited voltage range used.



Connection diagram of U16 (AM29F016D)

All the pins located on the same side as the ground pins (Vss) show proper characterization. On the other side, the characterization of most of the pins, including CE pin used to activate the memory chip, was not the one expected.

CONCLUSION:

Based on the external visual inspection and the asymmetrical results of the electrical characterization, it is very probable that the internal die is cracked and the data from U16 cannot be retrieved.