

Figure 1
Rear pressure bulkhead
Location of failure on C-GAGI, and prior instance of failure on
another L1011 aircraft

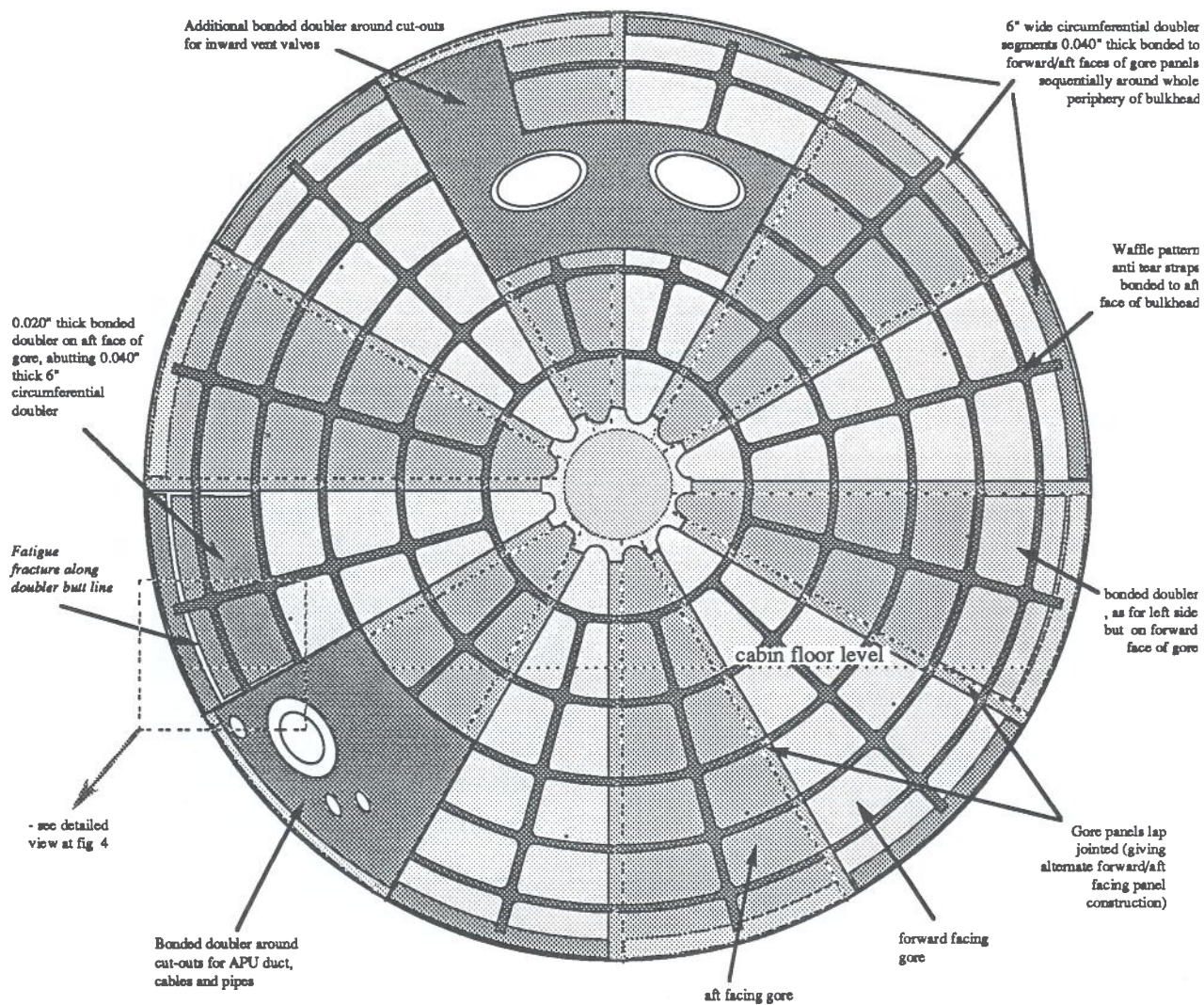


Figure 2
Rear pressure bulkhead constructional details
 Viewed from rear

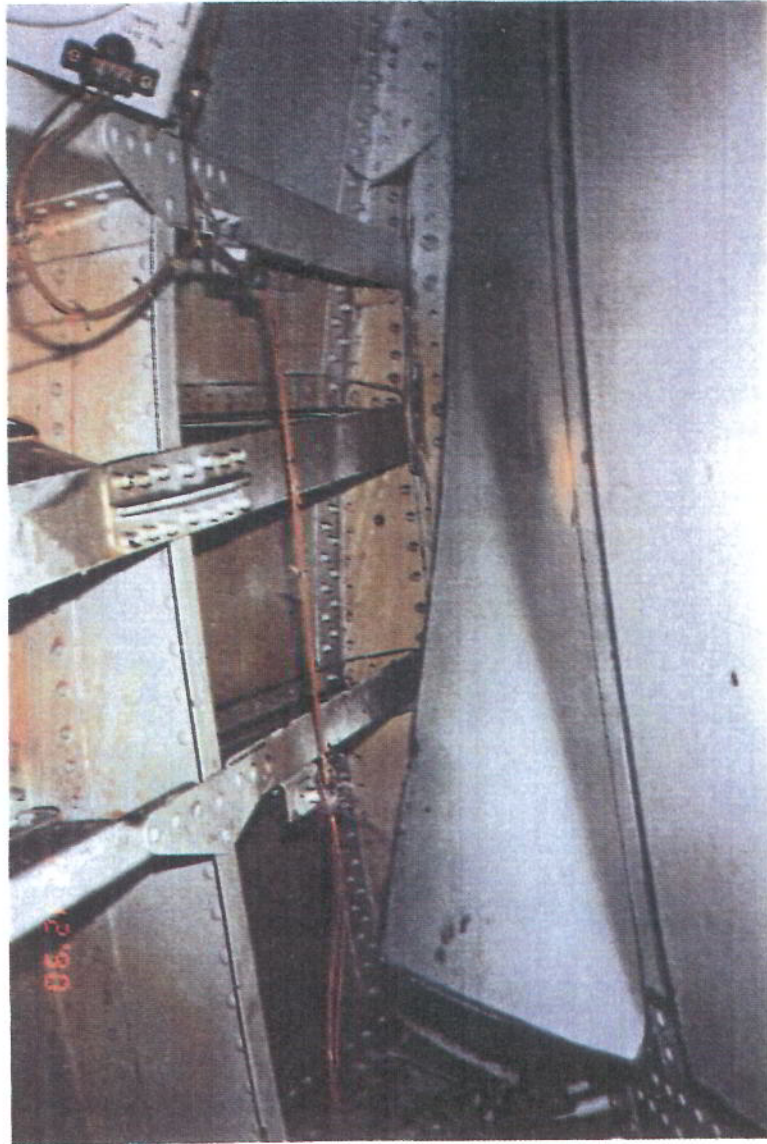


Figure 3

Rear pressure bulkhead rupture

Photograph of rupture on C-GAGI, taken from inside unpressurised section of aft fuselage, looking forward onto bulkhead left side at cabin floor level

(This photograph is reproduced courtesy of the CAA)

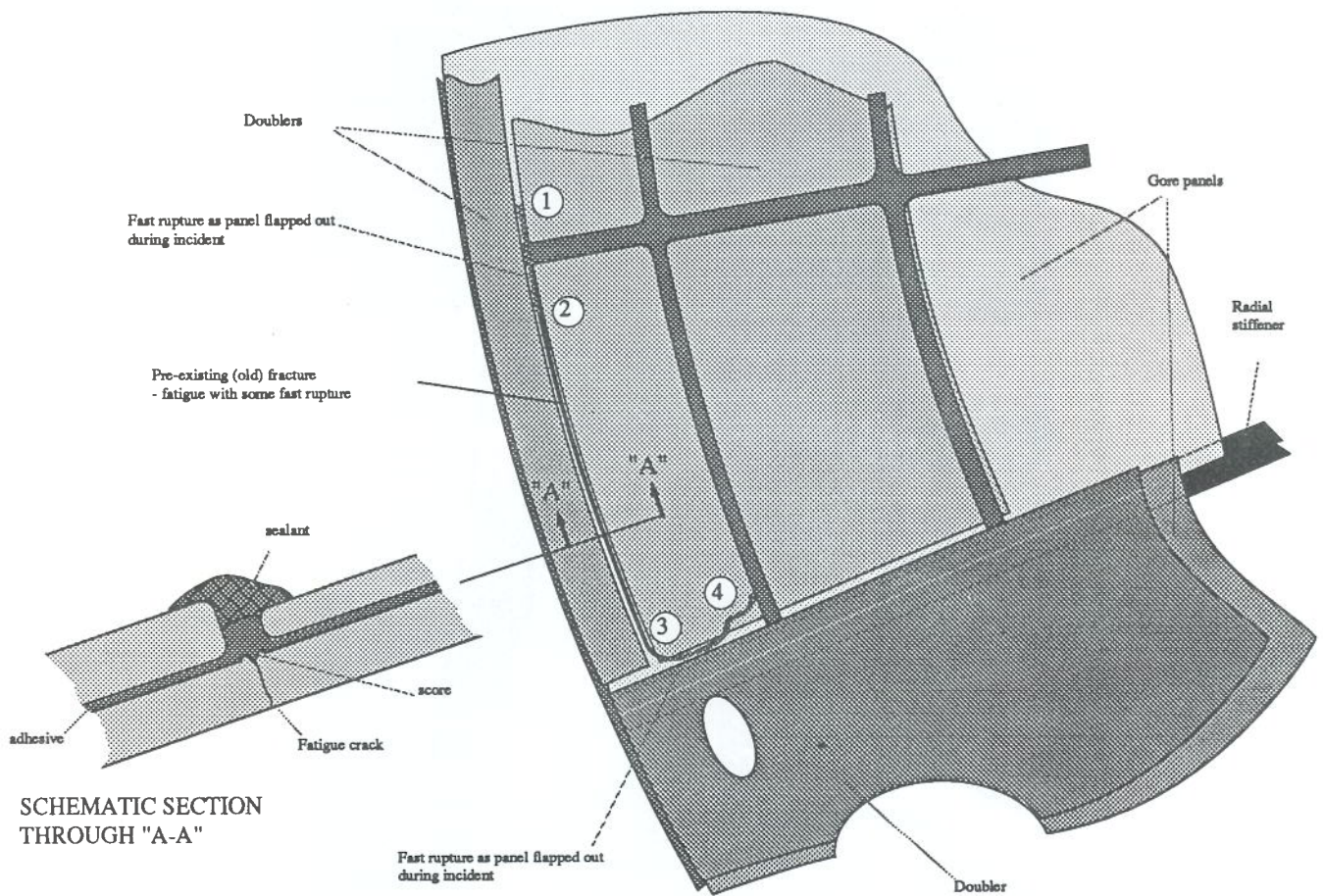


Figure 4
Rear pressure bulkhead fracture details
 View looking on aft side of bulkhead (region identified in figure 3)

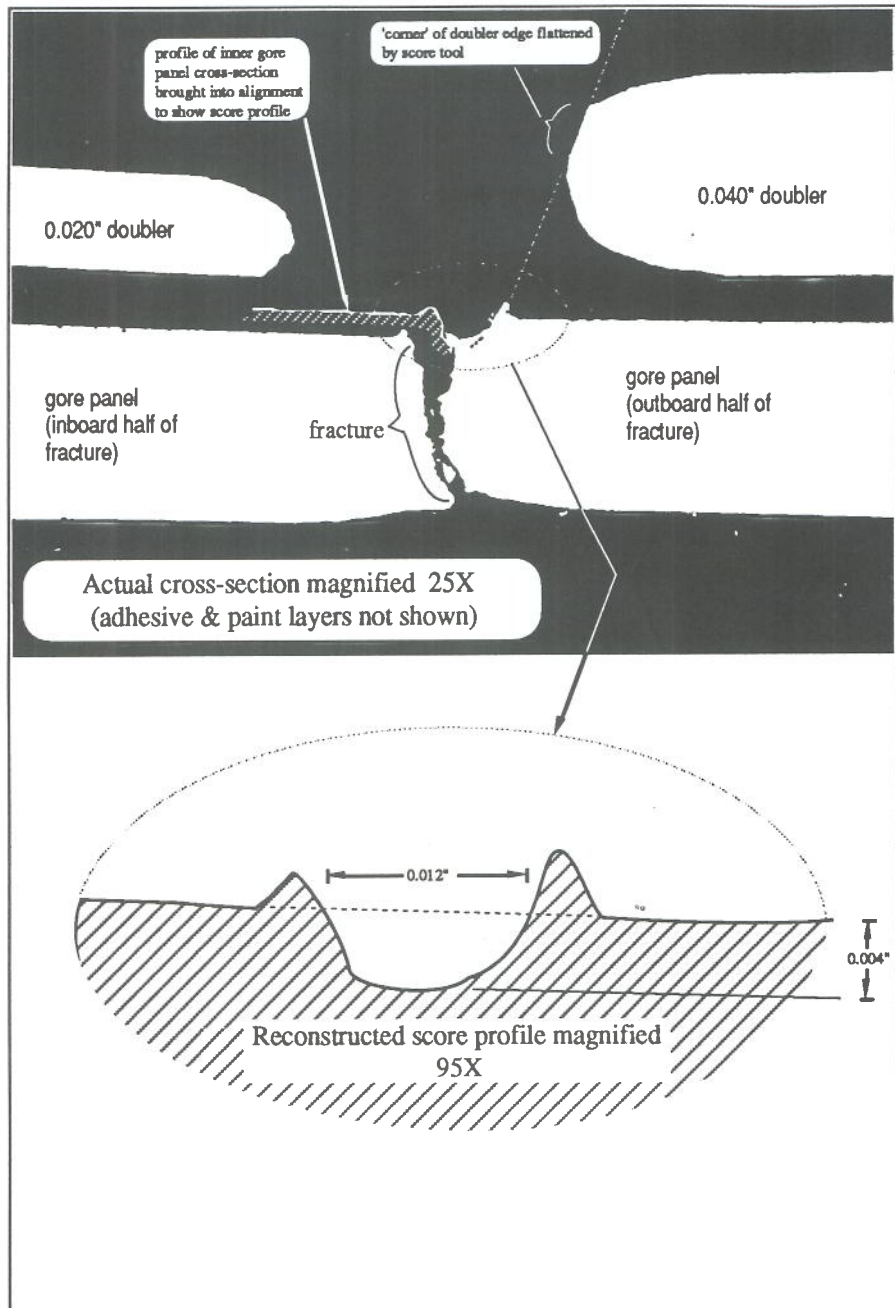


Figure 5
Score details

Actual profile of bulkhead gore panel and doublers in fatigue fracture region showing relationship between score and 0.040" doubler, and reconstructed score profile.

RADIO COMMUNICATIONS ASSOCIATED WITH THE DESCENT

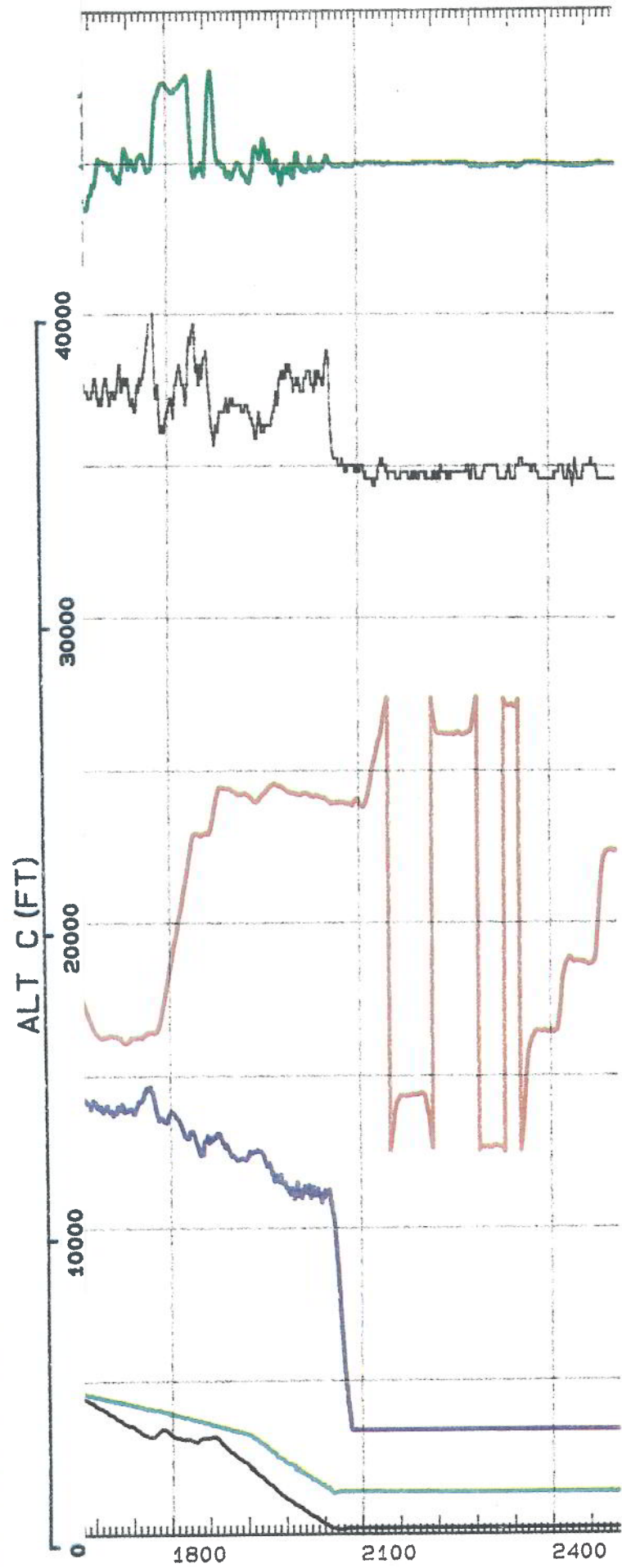
TIME	FROM	TO	RECORDED SPEECH
(London Control 131.05 mhz Irish Sea/Pole Hill Sector Airways Control)			
0629.27	ACA866	ATC	LONDON AIR CANADA 866 IS REQUESTING DESCENT
0629.30	ATC	ACA866	866 ROGER FOR DESCENT LONDON 133.7
0629.33	ACA866	ATC	337 GOOD DAY
(London Control 133.7 mhz Daventry B Southbound Sector Airways Control)			
0630.04	ACA866	ATC	LONDON IT'S AIR CANADA 866 REQUESTING DESCENT
0630.13	ATC	-	I'M SORRY - TRANSWORLD CALLING SAY AGAIN
0630.19	ACA866	ATC	(change of speech tone possibly due to oxygen mask) AIR CANADA 866 REQUESTING AN IMMEDIATE DESCENT
0630.24	ATC	ACA866	866 GOOD MORNING TO YOU. DESCEND TO FLIGHT LEVEL 290 INITIALLY
0630.28	ACA866	ATC	DESCEND TO 290 AIR CANADA 866. WE HAVE A LITTLE PROBLEM WITH OUR CABIN. CAN YOU GIVE US AN IMMEDIATE DESCENT?
0630.36	ATC	ACA866	YOU'RE CLEARED NOW TO 130. IS IT A PRESS-URISATION PROBLEM?
0630.41	ACA866	ATC	CLEARED TO 130. THAT'S AFFIRMATIVE
0630.45	ATC	ACA866	ROGER
(communications with other aircraft)			

TIME	FROM	TO	RECORDED SPEECH
0631.37	ACA866	ATC	LONDON AIR CANADA 866 IS DECLARING THE EMERGENCY.WE'RE OUT OF 310 NOW FOR 13 THOUSAND
0631.45	ATC	ACA866	866 ROGER. DO YOU WISH TO GO TO MANCHESTER?
0631.49	ACA866	ATC	THAT'S NEGATIVE
0631.51	ATC	ACA866	OKAY YOU'RE INBOUND TO HEATHROW. UNDERSTOOD. BUT YOU HAVE AN EMERGENCY. ANY MORE DETAILS YOU HAVE PLEASE LET ME KNOW
0631.57	ACA866	ATC	IT WOULD APPEAR THAT WE LOST OUR CABIN. I'D SAY RAPID DECOMPRESSION - SO WE ARE IN THE EMERGENCY DESCENT AT THIS TIME
0632.07	ATC	ACA866	866 ROGER. YOU ARE CLEAR TO DESCEND TO WHATEVER LEVEL YOU REQUIRE. LET ME KNOW WHEN YOU'RE LEVELLING OFF
0632.13	ACA866	ATC	ROGER. IS PRESENT HEADING OKAY NOW SIR?
0632.16	ATC	ACA866	PRESENT HEADING IS FINE. I HAVE NO RESTRICTION 866
0632.20	ACA866	ATC	THANKYOU SIR

(communications with other aircraft)

0633.57	ACA866	ATC	LONDON AIR CANADA 866 BE ADVISED WE'RE DESCENDING TO FLIGHT LEVEL 100
0634.05	ATC	ACA866	866 THAT'S FINE. I HAVE NO RESTRICTION. YOU CAN SET COURSE DIRECT TO BOVINGDON
0634.11	ACA866	ATC	OKAY. WE'LL GET ON TO THAT IN A MOMENT

Air Accidents Investigation Branch.....plotted on Wed Oct 30 09:31:29 1991
cal file can1011e sel file can1011a data file can1011c



Accidents Involving Loss of Pressurization

(extracted from NTSB/SS-85/09)

Case 1

On 1 April 1973 an L1011 with 212 passengers and a crew of 13 experienced a loss of pressurization while descending from 29,000 feet. During the decompression the cabin altitude rose to 20,000 feet. Most oxygen masks automatically deployed in the cabin but 20 oxygen compartment doors failed to open. Passengers donned their masks immediately, but in doing so some placed the mask over only their mouths instead of over their noses and mouths. During the emergency descent flight attendants assisted passengers who were hyperventilating and those who experienced ear blockage. One attendant sat on a folded over seat back and instructed passengers in the use of their masks. The flight attendants reported that it was difficult to instruct passengers while also breathing oxygen.

Case 2

A DC-10 on 1 May 1975, with 182 passengers and a crew of 12, failed to maintain cabin pressure and at 33,000 feet the crew noticed that the cabin altitude was 15,000 feet and increasing. The oxygen masks deployed and the cabin altitude eventually reached 18,000 feet during the emergency descent. Only two of the 182 passengers properly activated their oxygen systems and donned their oxygen masks. The flight attendants had to assist other passengers with initiating their oxygen systems and donning their masks.

Case 3

On 3 November 1973 a DC-10, cruising at 39,000 feet with 115 passengers and a crew of 12, experienced an engine disintegration and parts from the engine penetrated the fuselage and the No 1 engine. The cabin decompressed immediately and a passenger was ejected through a broken cabin window. Damage to the aircraft's electrical system caused some oxygen compartment doors not to open automatically. The cabin altitude reached 34,000 feet; the occupants were exposed to cabin altitudes above 30,000 feet for one minute and to altitudes over 25,000 feet

for over two minutes. After the oxygen masks deployed some passengers did not know how to use them. Other passengers correctly removed their masks from compartment doors but then leaned forward into the masks and did not pull the attached lanyard to start the flow of oxygen. Other passengers discontinued using their masks because the reservoir bags did not inflate as they breathed, and they erroneously concluded that the equipment was defective.

Case 4

An almost identical situation of passenger behaviour arose on 3 October 1974, when a DC-10 with 53 passengers and a crew of 12 depressurized during a descent from 35,000 feet, and the cabin altitude rose to 25,000 feet. When the oxygen masks deployed the senior flight attendant told the passengers to don their masks. Only two of the 53 passengers removed their masks from the compartments, pulling the lanyard to initiate the flow of oxygen, and donned their masks correctly. The remaining passengers either did not react at all or they leaned forward and attempted to breathe through their masks without first removing the masks fully from the compartment. Flight attendants circulated among the passengers and activated the oxygen generators and re-instructed passengers on the use of their masks. Both flight attendants' and passengers' reservoir bags did not inflate, oxygen was not flowing to the masks, and the attendants and passengers switched to other masks.

REFERENCES

1. British European Airways Vanguard G-APEC.
Report on the accident which occurred at Aarsele, Belgium
on 2 October 1971 : AIB Civil Aircraft Accident Report 15/72.
2. Turkish Airlines DC-10 TC-JAV.
Report on the accident in the Ermenonville Forest,
France on 3 March 1974. (Translation of the Report
published by the French Secretariat of State for
Transport). UK Aircraft Accident Report 8/76.
3. Japan Airlines Boeing 747SR JA-8119:
Aircraft Accident Investigation Commission Report on the
accident at Mount Ogura, Japan on 12 August 1985. Published
19 June 1987.