Ground cabin smoke, Final Report of the Aircraft Accident Investigation Bureau concerning the incident of the airplane Mc Donnell Douglas DC-9-83, HB-IUM on 5 June 2000 at Geneva Airport

Micro-summary: **Light smoke in the cabin on taxi-out to the runway results in a taxi back to the gate.**

Event Date: **2000-06-05 at 1140 LT (UTC+2)**

Investigative Body: **Aircraft Accident Investigation Bureau (AAIB), Switzerland**

Investigative Body's Web Site: **http://www.bfu.admin.ch**

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1. Accident reports can be and sometimes are revised. Be sure to consult the investigative agency for the latest version before basing anything significant on content (e.g., thesis, research, etc).

2. Readers are advised that each report is a glimpse of events at specific points in time. While broad themes permeate the causal events leading up to crashes, and we can learn from those, the specific regulatory and technological environments can and do change. ***Your company's flight operations manual is the final authority as to the safe operation of your aircraft!***

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**Federal Department of the Environment,
Transport, Energy and Communications** **No. 1786**

Final Report of the Aircraft Accident Investigation Bureau

concerning the incident

of the airplane Mc Donnell Douglas DC-9-83, HB-IUM
on 5 June 2000
at Geneva Airport

Bundeshaus Nord, CH-3003 Bern

Ursache

Der Vorfall wurde verursacht durch einen erhöhten elektrischen Widerstand aufgrund eines ungenügenden Drucks zwischen den Kontakten Nr. 7 und der Anschlussklemme S3-25.

Aufgrund des erhöhten Widerstands nahm die Temperatur zu, was zu “elektrischem Geruch und Rauch” führte.

Aircraft Accident Investigation Bureau

Final Report

This report has been prepared for the purpose of accident/incident prevention. The legal assessment of accident/incident causes and circumstances is no concern of the incident investigation (art. 24 of the air navigation law)

AIRCRAFT	McDonnell Douglas Corporation DC-9-83		HB-IUM		
OPERATOR	Crossair AG, P.O. Box, 4002 Basel				
OWNER	Mycal Finance Netherlands B.V c/o Crossair AG, Basel				

PILOTS	PIC:	Swiss citizen, born 1943			
	COPI:	German citizen, born 1976			
LICENCES	ATPL CH and CPL CH				
FLIGHT EXPERIENCE (PIC)	**Total**	11'629	**In the previous 90 days**	45	
	On accident type	7'484	**In the previous 90 days**	45	
FLIGHT EXPERIENCE (COPI)	**Total**	1'254	**In the previous 90 days**	200	
	On accident type	1'049	**In the previous 90 days**	200	

PLACE	Geneva Airport
DATE AND TIME	05 June 2000 11:40 LT (UTC+2)

TYPE OF FLIGHT	Commercial scheduled flight / SR 3314
PHASE OF FLIGHT	Taxi
TYPE OF INCIDENT	Smoke in galley

INJURIES TO PERSONS

	Crew	Passengers	Others
Fatal	---	---	---
Serious	---	---	---
Minor or none	5	98	

DAMAGE TO AIRCRAFT	---
OTHER DAMAGE	---

History of flight

During taxi out, the flight attendants have realised a strong electrical smell and have immediately informed the flight crew. The crew requested to taxi back to the gate. They had to wait a few minutes behind an aircraft before being able to make a 180° turn in the holding bay of runway 23.

The strong smell and even light smoke in the forward galley area was confirmed by the cabin crew. Therefore, the CDR asked for the fire brigade and informed the passengers about the situation through the public address system.

The aircraft taxied to position 63, where they disembarked with their handbaggage. After the disembarkation of the passengers, the firebrigade entered the aircraft to identify the source of the smell and smoke with IR equipment. No observation was made.

Nobody was hurt during the disembarkation of the plane and the passengers remained calm.

Investigation

The ACC of Geneva informed the Swiss Federal Aircraft Accident Bureau about the incident.

An investigation according to ICAO Annex 13 was opened on the same day.

During the investigation the Cockpit Voice Recorder (CVR) and Flight Data Recorder (FDR) were removed by the Swiss AAIB for evaluation. The CVR recordings were of no use, as after the arrival of the aircraft, the circuit breaker was not pulled and the recording of the relevant data was overwritten during the time in the gate.

The removed terminal and associated cable ends with terminals were sent for investigation.

Findings

- All crew members held licences.
- The aircraft had no story of smell or smoke.
- The aircraft had undergone a D- and C3- check in December 1999 at Shannon Aerospace together with a modification package.
- After opening the necessary access panels, at STA 218, a burned contact on the terminal board assy S3-25 was located (Fig. 1).
- The terminal board assy and the associated, burned terminals were removed for investigation.
- The terminal Nr. 7 of the terminal board assy P/N MS27212-6-14 showed extensive heat damage (Fig.2).
- The connection between wire and contact did not show thermal damage and had a firm seat.
- The terminals of the attached cables H735L8C and H735M8C showed extensive heat traces (Fig. 3).

Analysis

The decision of the cockpit crew to return the gate was appropriate. The crew's decision to perform a normal disembarkment of the passengers was a good choice after the situation had stabilized.

The Maintenance Control System (MCS) has been searched for irregularities with respect to the aircraft AC electrical system. No entries have been found under ATA chapter 24 since the D check, which are in relation with the Galley 3 power supply.

During the D- Check there has been a record of some repositioning of feeder cables in Zone 51. It is not possible to identify the cables from the record.

The analysis of the protection cover and wire pieces is stating an increase of temperature due to an insufficient pressure between the terminals. The temperature may have increased to between 800° C and 1000° C. No arcing was observed. The damage to the protection cover and the proximity cable terminal are to be considered as secondary damage.

If properly torqued and the lock washer in good condition, the connection should remain firm.

Cause

The incident was caused by an increased electrical resistance due to an insufficient pressure between the terminals on contact 7 of the terminal board assy S3-25.
Due to the increase in resistance, there was a temperature increase leading to an "electrical smell and smoke".

Berne, 16 October 2003 Aircraft Accident Investigation Bureau

Annex 1

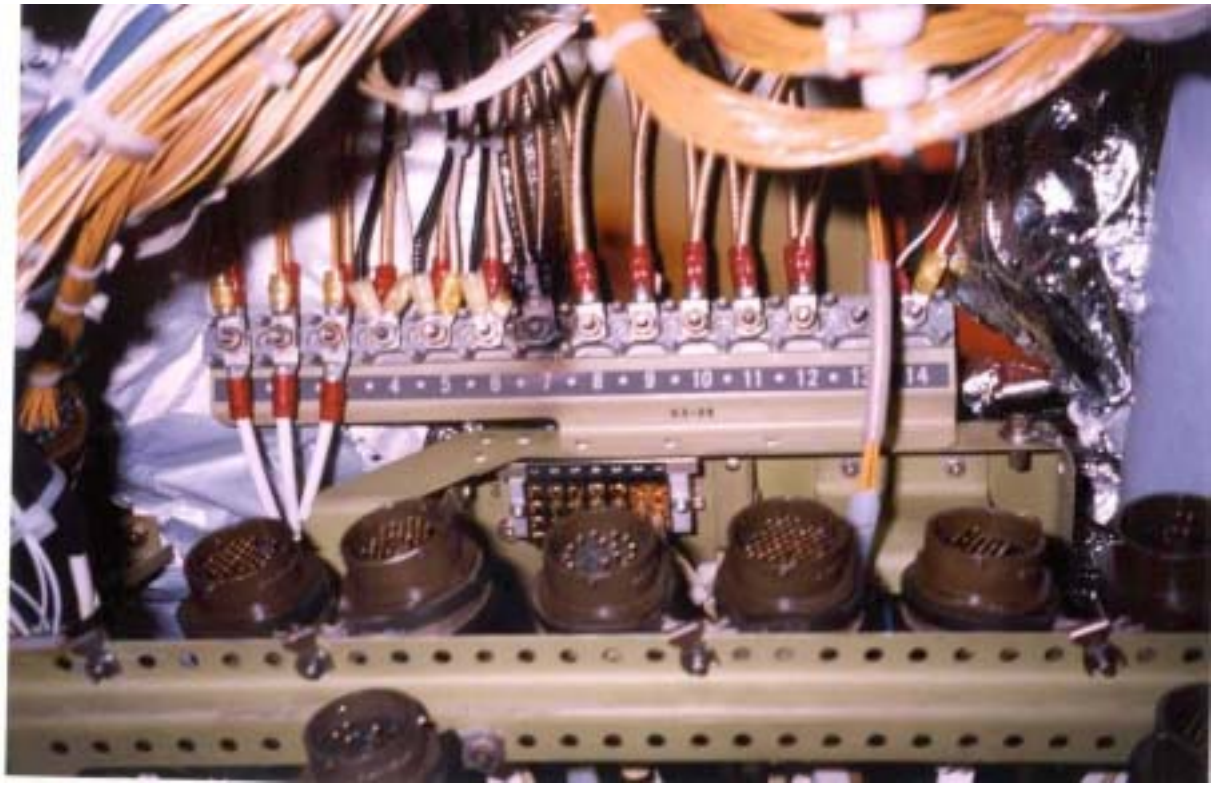

Fig. 1 Terminal Board S3-25 in situ

Fig. 2 Terminal Board with heat damage

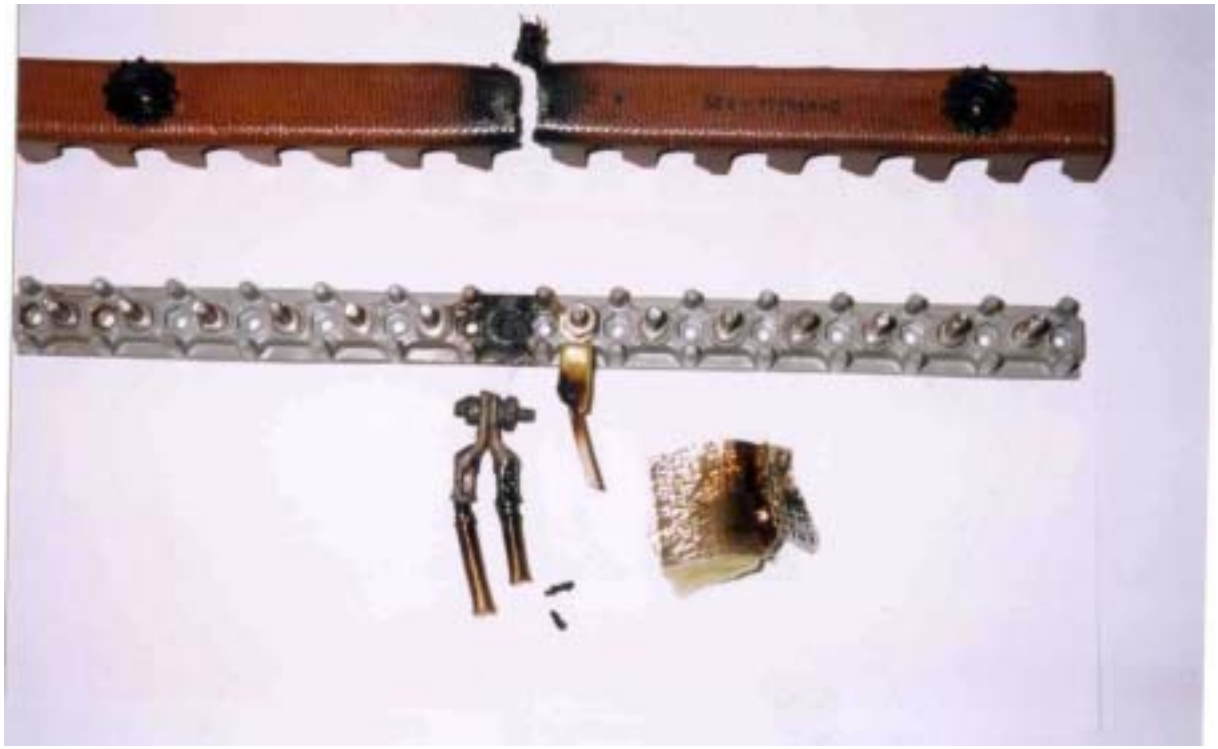

Fig. 3 Terminals with overheated connection