Galley heater explosion, McDonnell Douglas MD-83, 9Y-THR, October 3, 1993

Micro-summary: A galley water heater on this MD-82 exploded during climb.

Event Date: 1993-10-03 at 1555 EDT

Investigative Body: National Transportation Safety Board (NTSB), USA

Investigative Body's Web Site: http://www.ntsb.gov/

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NTSB ID: MIA94FA001 Aircraft Registration Number: 9YTHR

Occurrence Date: 10/03/1993 Most Critical Injury: Serious

Occurrence Type: Accident Investigated By: NTSB

Location/Time

Nearest City/Place
MIAMI

State
FL

Zip Code
1555

Local Time
EDT

Airport Proximity: Off Airport/Airstrip

Distance From Landing Facility:

Direction From Airport:

Aircraft Information Summary

Aircraft Manufacturer Model/Series Type of Aircraft
MCDONNELL DOUGLAS MD-83 Airplane

Sightseeing Flight: No Air Medical Transport Flight: No

Narrative

Brief narrative statement of facts, conditions and circumstances pertinent to the accident/incident:

HISTORY OF FLIGHT

On October 3, 1993, about 1555 eastern daylight time, 9Y-THR, a McDonnell Douglas MD-83, experienced an explosion in the forward galley during climb to cruise altitude. The airplane was registered to and operating as British West Indies Airlines [BWIA] flight No. 431, scheduled, international, passenger service from Miami, Florida, to Barbados. The airplane was substantially damaged, 1 flight attendant received serious injuries, 1 flight attendant received minor injuries, 82 persons were not injured. Visual meteorological conditions prevailed at the time and an IFR flight plan was filed. The flight had originated from Miami, Florida, about 1525 and landed back at Miami, Florida, around 1625 the same day.

Examination of the airplane revealed that a water heater, Nordskog model, had over pressurized and exploded. The entire forward galley and the cabin wall to the cockpit was destroyed. The water heater was removed and examined at the NTSB laboratory. All failures noted were consistent with overload. The over pressure valve was examined and the "O" ring had migrated blocking the valve "Pop Off" function. The electrical contacts to the heater element were found failed in a way that allowed constant power to the element. Details of these examinations are included in this report as attachments.

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AVIATION Occurre			rrence Type: Accident											
Landing Facility/Approach Information														
Airport Name Air			Airpor	t ID:		rport Elevation Runway Used Ft. MSL 0			Runway Length		h	Runw	vay Width	
Runway Surface Type:									<u> </u>					
Runway Surface Condition:														
Type Instrument Approach: NONE														
VFR Approach/Landing: None														
Aircraft Information														
Aircraft Manufacturer MCDONNELL DOUGLAS				Model/S MD-83						Serial 4956	Number 88			
Airworthiness Certificate(s): Transport														
Landing Gear Type: Retractable	- Tricycle													
Homebuilt Aircraft? No	Number of Seats: 138				Certified Max Gross Wt.				160000 LBS Number			er of Engines: 2		
				Engine Manufacturer: Model/Series: JT8D-219									d Power: 00 LBS	
- Aircraft Inspection Information														
Type of Last Inspection Date				Date of Last Inspection Time Si				nce Last Insp	Airfran	ne To	tal Time			
Continuous Airworthiness				09/1993					162 Ho	ours		14	657 Hours	
- Emergency Locator Transmitter (ELT) Information														
ELT Installed? Yes	ELT Operat	ed? No)			ELT	Aided in	n Locating Ac	cident S	ite?				
Owner/Operator Information														
Registered Aircraft Owner			S	Street A	ddress ADMIN E	SI DG	PIARC	CO						
BRITISH WEST INDIES			City							Stat	е	Zip Code		
					TRINIDAD OF 00 Street Address									
Operator of Aircraft ADMIN BLDG PIARCO														
Same as Reg'd Aircraft Owner				City TRINIDAD						Stat OF		Zip Code 00		
Operator Does Business As:	Operator Designator Code: BWIA													
- Type of U.S. Certificate(s) Held:														
Air Carrier Operating Certificate(s)	: Flag Carrier/Don	nestic												
Operating Certificate:					Operator C	Certific	cate:							
Regulation Flight Conducted Unde	r: Part 129: Forei	gn												
Type of Flight Operation Conducted	d: Scheduled; Inte	ernation	nal; Pa	assenç	ger Only									
		FACTU	UAL I	REPOI	RT - AVIATI	ON							Page 2	

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Occurrence Date: 10/03/1993

AVIATI	Occurrence Type: Accident												
First Pilot Information													
Name	City					State	: C	Date of Birth	Age				
On File On Fi							File					On File	39
Sex: M Seat Occupied:	n Pilot	ot Certificate Number: On File											
Certificate(s): Airline Transport													
Airplane Rating(s): Multi-engine Land; Single-engine Land													
Rotorcraft/Glider/LTA: None													
Instrument Rating(s): Airpl	ane												
Instructor Rating(s): None													
Type Rating/Endorsement for	or Accident/In	cident Aircra	ft? Yes			Cı	urrent Bi	ennial F	light Re	eview?	>		
Medical Cert.: Class 1	Medica	l Cert. Status	S: Valid Me	dicalno wa	aivers/lir	n.		Dat	e of Las	st Med	lical Ex	am: 08/1993	
	•							•					
- Flight Time Matrix	All A/C	This Make and Model	Airplane Single Engine	Airplane Mult-Engine	Night	ght In:		Instrument		Ro	otorcraft	Glider	Lighter Than Air
Total Time	8500	4200											
Pilot In Command(PIC)	220	2000						\perp					
Instructor								_		_			
Last 90 Days	200 65	200 65								_			
Last 30 Days Last 24 Hours	4	4						\dashv		+			
Seatbelt Used? Yes		Ider Harness	Used? Yes		Т	oxico	logy Per	formed			Sec	cond Pilot? Ye	l es
	1 01100	idoi i idiiiooo	700				9)		110				,,,
Flight Plan/Itinerary													
Type of Flight Plan Filed: IF	R												
Departure Point						State Airport Identifi			dentifier	ier Departure Time		ure Time	Time Zone
Same as Accident/Incident Location										1520			EDT
Destination State Airport Identifier													
BARBADOS							ОБ ТВРВ						
Type of Clearance: IFR													
Type of Airspace: Class	E												
Weather Information													
Source of Briefing: Commercial Weather Service													
Method of Briefing:													
			FACTUAI	REPORT	- AVIA	TION	1						Page 3

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Occurrence Date: 10/03/1993

Occurrence Type: Accident

Weather	Information														
WOF ID	Observation Time	Time Zone	WOF	Elevation	1	WOF Distance From Accident Site Direct			Direction From	Direction From Accident Site					
MIA	1550	EDT		16 Ft. M	1SL	100 NM				350 Deg. Mag.					
Sky/Lowes	st Cloud Condition: Sca	ttered		9000 Ft. AGL						Condition of Light: Day					
Lowest Ce	iling: Overcast	14000 Ft. AGL					lity:	7	SM	SM Altimeter: 30.00			"Hg		
Temperatu	uture: 26 °C Dew Point: 23 °C Wind Direction: 330 Density A							nsity Altitude:		Ft.					
Wind Spee	7 Gusts: Weather Condtions at Accident Site: Visual Conditions														
Visibility (F	/isibility (RVR): 0 Ft. Visibility (RVV) 0 SM Intensity of Precipitation: Unknown														
Restriction	Restrictions to Visibility: None														
Type of Pro	Type of Precipitation: None														
Accident Information															
Aircraft Da	Aircraft Damage: Substantial Aircraft Fire: None Aircraft Explosion In-flight														
Classification: Foreign Registered/U.S. Soil															
- Injury Su	mmary Matrix	Fatal	Serious	ious Minor None TOTA			TOTAL								
First Pi	lot					1	1								
Second	d Pilot					1	1								
Studen	t Pilot	1													
Flight I	nstructor														
Check	Pilot														
Flight E	Engineer														
Cabin A	Attendants		1		1		2								
Other C	Crew					2	2								
Passer	ngers					76	76								
- TOTAL A	ABOARD -		1		1	80	82								
Other 0	Ground	0	0		0		0								
- GRANE	TOTAL -	0	1		1	80	82								
				•	•	'									

National Transportation Safety Board

FACTUAL REPORT AVIATION

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Occurrence Type: Accident

Admir	nistrative	Information

Investigator-In-Charge (IIC)

ANDREW A. ALSTON

Additional Persons Participating in This Accident/Incident Investigation:

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