## Uncontained engine failure, McDonnell Douglas MD-83, June 17, 1997

Micro-summary: Uncontained engine failure for this McDonnell Douglas MD-83 following takeoff.

Event Date: 1997-06-17 at 1701 PDT

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

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

## Cautions:

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!

3. Reports may or may not represent reality. Many many non-scientific factors go into an investigation, including the magnitude of the event, the experience of the investigator, the political climate, relationship with the regulatory authority, technological and recovery capabilities, etc. It is recommended that the reader review all reports analytically. Even a "bad" report can be a very useful launching point for learning.

4. Contact us before reproducing or redistributing a report from this anthology. Individual countries have very differing views on copyright! We can advise you on the steps to follow.

Aircraft Accident Reports on DVD, Copyright © 2006 by Flight Simulation Systems, LLC All rights reserved. www.fss.aero

FACTURE REPORT UNITION         Documence Date: 08/17/1997         Most Critical Injury: None           Location/Time         Investigated By: NTSB           Nearest City/Place         State         Zp Code           Location/Time         Investigated By: NTSB           Natest City/Place         State         Sp Code           Location/Time         Bast         Bast           Natest City/Place         State         Bast           Location/Time         Bast         Distance From Landing Facility:           Location/Line         Office Code         Distance From Landing Facility:           Aircraft Information Summary         Model/Scries         Mp -83           Aircraft Manufacturer         Model/Scries         Mp -83           McDonnell Douglas         Air Medical Transport Flight: No           Narrative         Model/Scries         Np -83           Model/Scries         No -81         Np -83           Model/Scries         No -81         Np -83           Model/Scries         No -81         Np -83           Model/Scries         Np -83         Airplace           Sightseeing Flight: No         Air Medical Transport Flight: No           Narrative         Scries Airplace         Scries Airplace           On Ju	National Transportation Safety Board		NTSB ID: LAX97IA209 Aircraft Registration Number: N875RA							
Documence Type:         Investigated by:         NTSB           Location/Time         NV         State         Zip Code         Local Time         Time Zone         PDT           Algoet ROMPBace         Local Time         Time Zone         PDT         PDT         PDT           Algoet Rowshity: Off Algoet/Algoet         Datance From Landing Facility:         Directon From Algoet:         Algoet Rowshity: Off Algoet/Algoet         Algoet Rowshity: Off Algoet/Algoet Rowshity:         Algoet Rowshity: Off Algoet/Algoet Rowshity: No           Algoet Rowshity: Off Algoet/Algoet Rowshity: No         Algoet Rowshity: Off Algoet/Algoet Rowshity: No         Algoet Rowshity: No         Algoet Rowshity: No           Narrative         Bast annets address ad statement of them, contenses addresses patients to the acceleration and an uncontained Local State Rowshity: No         Narrative           Wast annets address of them, State Rowshity: Ro	FACTUAL REPORT	Occurre	nce Date: 06/17	7/1997	Most Critical In	Aost Critical Injury: None				
Location/Time         Location/Time         Time Zone         Direction File           NV         B9111         1701         PDT         PDT           Airpar Proximity: Off Airport/Airstrip         Distance From Landing Facility:         Direction File         Aircraft Information Summary           Aircraft Information Summary         Aircraft Information Summary         Model/Series         Type of Aircraft           Aircraft Information Summary         Model/Series         Model/Series         Type of Aircraft           McConnell Douglas         Model/Series         Model/Series         Airplane           Sightsceing Flight: No         Air Medical Transport Flight: No         Aircraft Informations contenses and visual structures and structure and structures and structures and structures and stru	AVIATION	Occurrence Type: Incident Investigated By: NTSB								
Nearest City/Place         State         Zp Code         Local Time         Time Zone         PDT           Alroot Proximity: Off Airport/Airstrip         Distance From Landing Facility:         Direction From Airport:           Aircraft Mandacturer         Model/Series         Type of Aircraft           Aircraft Mandacturer         Model/Series         Type of Aircraft           McDonnell Douglas         MD-83         Airplane           Sightseeing Flight: No         Air Medical Transport Flight: No         Airplane           Narrative         Bear Airplane         Model/Series         Type of Aircraft           Mission Section Sections and orders and order section to be accession determined.         HISTORY OF FLIGHT         No           On June 17, 1997, about 1701 hours Pacific daylight time, a McDonnell Douglas MD-83, NB75RA, operated by Reno Airlines of Reno, Navada, experienced an uncontained left engine failure during the initial club from Lass Vegas, Nevada, The flight use operating as flight 516, a schedul flight to colorado springe, Colorado. The aircraft received minor damage, and there were no injucies to the 140 passengers and orew of 5. Visual meteorological conditions prevailed for the departure from numey 258 at 1,000 Feet agl, the crew heard a loud noise followed by a left engine with penetration to the cowling and minor damage to the fuselage.           ENGINE INFORMATION         The engine had accumulated 20,039.4 total hours and 56 cycles since it was repaired at American Airlines Maintenance and Engineering Center, Tulea, Oklahoma, following an ice ing	Location/Time									
LAS VEGAS         NV         B9111         1701         PDT           Airport Proximity: Off Airport/Airstrip         Distance From Landing Facility:         Direction From Airport           Aircraft Information Summary         Aircraft Information Summary         Model/Series         Type of Aircraft           Aircraft Information Summary         Model/Series         Model/Series         Type of Aircraft           McDonnell Douglas         MD-83         Airplane         Sightseoing Flight: No           Narrative         Model/Series         MD-83         Airplane           Sightseoing Flight: No         Air Medical Transport Flight: No         Model/Series           Marrative         Model/Series         Model/Series         Airplane           Sightseoing Flight: No         Air Medical Transport Flight: No         Model/Series           Marrative         Model/Series         Model/Series         Airplane           Sightseoing Flight: No         Air Medical Transport Flight: No         Narrative           Marrative         Model/Series         Model/Series         Airplane           Model/Series         Model/Series         Model/Series         Airplane           Distribution and Series         Officine Compares         Series         Series           Distris         Officine Co	Nearest City/Place	State	Z	Zip Code	Local Time	Time Zone				
Airport Proximity: Off Airport/Airstrip         Distance From Landing Facility:         Direction From Airport:           Aircraft Information Summary         Aircraft Information Summary         ModeWSenies         Type of Aircraft           Aircraft Monufacturer         ModeWSenies         MD-83         Airplane           Sightseeing Flight No         Air Medical Transport Flight: No         Narrative           Marrative         Bief number datament discussions and clournatances periment to the accident/indext:         HISTORY OF FLIGHT           On Junea 17, 1997, shout 1701 hours Pacific daylight time, a McDonnell Douglas MD-83, N875EA, operated by Reno Airlines of Reno, Nevada, experienced an uncontained left engine failure during the initial clinb from Law Vegas, Nevada, The flight was operating as flight 516, a scheduled flight to Colorado Springs, Colorado.           Unries to Colorado Springs, Colorado.         The aircraft received minor damage, and hore were no injuries to the 140 passengers and crew of 5. Visual meteorological conditions prevailed for the departure and an IFR flight plan was filed.           During departure from runway 25R at 1,000 fest agl, the crew heard a loud noise followed by a left engine vibration and subsequent shutdown. An emergency was declared and the aircraft returned for an uneventful landing.           Postincident inspection of the engine revealed that the engine had experienced an uncontained internal failure with penetration to the cowling and minor damage to the fuselage.           ENGINE INFORMATION           The No. 1 (left) engine was a Pratt and Whitney JT8D-219 turbo	LAS VEGAS	NV	8	39111	1701	PDT				
Aircraft Information Summary         Model/Series         Type of Aircraft           Aircraft Manufacturer         Model/Series         Type of Aircraft           McDonnell Douglas         Air Medical Transport Flight: No         Airplane           Sightseeing Flight No         Air Medical Transport Flight: No         Airplane           Sightseeing Flight, No         Air Medical Transport Flight: No         Narrative           Bief number submerse of facts, conditions and circumstances pertinent to the acident/incident:         HISTORY OF FLIGHT         No           On June 17, 1997, about 1701 hours Pacific daylight time, a McDonnell Douglas MD-83, N975RA, operating as flight 516, a scheduled flight to Colorado Springs, Colorado. The aircraft received minor damage, and there were no in juries to the 140 passengers and crew of 5. Visual meteorological conditions prevailed for the departure from runway 25R at 1,000 feet agl, the orew heard a loud noise followed by a left engine vibration and subsequent shutdown. An emergency was declared and the aircraft returned for an uneventful landing.           Dostincident inspection of the engine revealed that the engine had experienced an uncontained internal failure with penetration to the cowling and minor damage to the fuselage.           ENGINE INFORMATION           The engine had accumulated 76.9 hours and 56 cycles since it was repaired at American Airlines Maintenance and Engineering Center, Tulsa, Oklahoma, following an ice ingention incident on March 14,1997.           A postincident examination of the engine had four holes in the American facility. An external examination revea	Airport Proximity:     Off Airport/Airstrip     Distance From Landing Facility:     Direction From Airport:									
Arccaft Manufacturer         Mode/Series         Type of Arccaft           McDonnell Douglas         MD-B3         Arglane           Sighteesing Flight: No         Air Medical Transport Flight: No         Air Medical Transport Flight: No           Narrative         Normative         Normative         Normative           Bert number submement of these, conditions and cournetworks perform to the accident models.         History OF PLIGHT         No June 17, 1997, about 1701 hours Pacific daylight time, a McDonnell Douglas MD-83, NB75RA, opportance by Reno Airlines of Reno, Nevada, experienced an uncontained left engine failure during the initial climb from Las Vegoa, Nevada, the flight was operating as Light 516, a scheduled flight to Colorado Springs, Colorado. The aircraft received minor damage, and there were no injuries to the 140 passengers and crew of 5. Visual meteorological conditions prevailed for the departure from runway 25R at 1,000 fest agl, the crew heard a loud noise followed by a left engine vibration and subsequent shutdown. An emergency was declared and the aircraft returned for an uneventful landing.           Postincident inspection of the engine revealed that the engine had experienced an uncontained internal failure with penetration to the cowling and minor damage to the fuselage.           ENGINE INFORMATION           The No. 1 (left) engine was a Pratt and Whitney JT8D-219 turbofan. At the time of the incident the engine had accumulated 20,039.0 total hours and 56 cycles in the combustion chamber fan ducts just forward of the engine had four holes in the combustion incident on March 14,1997.           A postincident examination of the engine was conducted again at t	Aircraft Information Summary									
McBonnell Douglas         MD-B3         Airplane           Sightseeing Flight: No         Air Medical Transport Flight: No           Narrative         Sightseeing Flight: No         Air Medical Transport Flight: No           Narrative         Sightseeing Flight: No         Air Medical Transport Flight: No           Narrative         Sightseeing Flight: No         Air Medical Transport Flight: No           On June 17, 1997, about 1701 hours Pacific daylight time, a McDonnell Douglas MD-B3, N875RA, operated by Reno Airlines of Peno, Nevada, experienced an uncontained left engine failure during the initial climb from Las Vegas, Nevada. The flight so perating as flight 516, a scheduled flight to Colorado Springs, Colorado. The aircraft received minor damage, and there were no injuries to the 140 passengers and crew of 5. Visual meteorological conditions prevailed for the departure and an IFR flight plan was filed.           During departure from runway 25R at 1,000 feet agl, the crew heard a loud noise followed by a left engine with ation and subsequent shutdown. An emergency was declared and the aircraft returned for an uneventful landing.           Postincident inspection of the engine revealed that the engine had experienced an uncontained internal failure with penetration to the cowling and minor damage to the fuscient.           ENGINE INFORMATION           The engine had accumulated 76.9 hours and 56 cycles since it was repaired at American Airlines Maintenance and Engineering Center, Tulsa, Oklahoma, following an ice ingestion incident on March 14,1997.           A postincident examination of the engine was conducted again at the American facility. An	Aircraft Manufacturer			Model/Series	S			Type of Aircraft		
Sightseeing Flight: No         Air Medical Transport Flight: No           Narrative         Bief analyse subment of hick, condense and dromshores performed to the academ/moder:           HISTORY OF FLIGHT         On June 17, 1997, about 1701 hours Pacific daylight time, a McDonnell Douglas MD-83, N875RA, operated by Reno Airlines of Reno, Nevada, experienced an uncontained left engine failure during the initial climb from Las Vegas, Nevada. The flight was operating as flight 516, a scheduled flight to Colorado Springs, Colorado. The aircraft received minor damage, and there were no injuries to the 140 passengers and crew of 5. Visual meteorological conditions prevailed for the departure and an IFR flight plan was filed.           During departure from runway 25R at 1,000 feet agl, the crew heard a loud noise followed by a left engine wibration and subsequent shutdown. An emergency was declared and the aircraft returned for an uneventful landing.           Postincident inspection of the engine revealed that the engine had experienced an uncontained internal failure with penetration to the cowling and minor damage to the fuselage.           ENGINE INFORMATION           The engine had accumulated 76.9 hours and 56 cycles since it was repaired at American Airlines Maintenance and Engineering Center, Tulsa, Oklahoma, following an ice ingestion incident on March 14.1997.           A postincident examination of the engine was conducted egain at the American facility. An external examination revealed that the engine had four holes in the combustion chamber fan ducts just forward of the High Pressure Turbine (HFT) plane of rotation.           An internal inspection revealed that the HFT shaft had separated at the No. 4 1/2 bearing hole scavenge oil holes, which were	McDonnell Douglas			MD-83				Airplane		
Narrative Bief narrative statement of fact, conditions and orcumstances periment to be acident/modent. HISTORY OF FLIGHT On June 17, 1997, about 1701 hours Pacific daylight time, a McDonnell Douglas MD-83, N875RA, operated by Reno Airlines of Reno, Nevada, experienced an uncontained left engine failure during the initial climb from Las Vegas, Nevada. The flight was operating as flight 516, a scheduled flight to Colorado Springs, Colorado. The aircraft received minor damage, and there were no injuries to the 140 passengers and crew of 5. Visual meteorological conditions prevailed for the departure and an IFF flight plan was filed. During departure from runway 25R at 1,000 feet agl, the crew heard a loud noise followed by a left engine vibration and subsequent shutdown. An emergency was declared and the aircraft returned for an uneventful landing. Postincident inspection of the engine revealed that the engine had experienced an uncontained internal failure with penetration to the cowling and minor damage to the fuselage. ENGINE INFORMATION The No. 1 (left) engine was a Pratt and Whitney JT8D-219 turbofan. At the time of the incident the engine had accumulated 20,039.0 total hours and 56 cycles since it was repaired at American Airlines Maintenance and Engineering Center, Tulsa, Oklahoma, following an ice ingestion incident on March 14,1997. A postincident examination of the engine had four holes in the combustion chamber fan ducts just forward of the High Pressure Turbine (HFT) plane of rotation. An internal inspection revealed that the HFT shaft had separated at the No. 4 1/2 bearing hole scawenge oil holes, which were elongated away from the direction of rotation. The oil holes in the No. 5 bearing inner race retaining nut were found plugged with a hard, black colored material. The assembly sheets for the No. 5 bearing race and nucle specific instructions to check the holes in the inner race retaining nut. The sheet has a general instructi	Sightseeing Flight: No			Air Medical Tr	ansport Flight: No	D		- 		
<ul> <li>Beed menable statement of dates, conditions and droumstances performed to the accident/Mocdent</li> <li>HISTORY OF FLIGHT</li> <li>On June 17, 1997, about 1701 hours Pacific daylight time, a McDonnell Douglas MD-83, N875RA, operated by Reno Airlines of Reno, Nevada, experienced an uncontained left engine failure during the initial climb from Las Vegas, Nevada. The flight was operating as flight 516, a scheduled flight to Colorado Springs, Colorado. The aircraft received minor damage, and there were no injuries to the 140 passengers and crew of 5. Visual meteorological conditions prevailed for the departure and an IFR flight plan was filed.</li> <li>During departure from runway 28R at 1.000 feet agl, the crew heard a loud noise followed by a left engine vibration and subsequent shutdown. An emergency was declared and the aircraft returned for an uneventful landing.</li> <li>Postincident inspection of the engine revealed that the engine had experienced an uncontained internal failure with penetration to the cowling and minor damage to the fuselage.</li> <li>ENGINE INFORMATION</li> <li>The No. 1 (left) engine was a Pratt and Whitney JT8D-219 turbofan. At the time of the incident the engine had accumulated 20,039.0 total hours and 16,057 cycles.</li> <li>The engine had accumulated 76.9 hours and 56 cycles since it was repaired at American Airlines Maintenance and Engineering Center, Tulsa, Oklahoma, following an ice ingestion incident on March 14,197.</li> <li>A postincident examination of the engine was conducted again at the American facility. An external examination revealed that the HPT shaft had separated at the No. 4 1/2 bearing hole scavenge oil holes, which were elongated away from the direction of rotation.</li> <li>The oil holes in the No. 5 bearing inner race retaining nut were found plugged with a hard, black colored material. The assembly sheets for the No. 5 bearing area do not have specific instructions to check the holes in the inner race retaining nut. The sheet has a general instruction a</li></ul>	Narrative									
<ul> <li>On June 17, 1997, about 1701 hours Pacific daylight time, a McDonnell Douglas MD-83, N875RA, operated by Reno Airlines of Reno, Nevada, experienced an uncontained left engine failure during the initial climb from Las Vegas, Nevada. The flight was operating as flight 516, a scheduled flight to Colorado Springs, Colorado. The aircraft received minor damage, and there were no injuries to the 140 passengers and crew of 5. Visual meteorological conditions prevailed for the departure and an IFP flight plan was filed.</li> <li>During departure from runway 25R at 1,000 feet agl, the crew heard a loud noise followed by a left engine vibration and subsequent shutdown. An emergency was declared and the aircraft returned for an uneventful landing.</li> <li>Postincident inspection of the engine revealed that the engine had experienced an uncontained internal failure with penetration to the cowling and minor damage to the fuselage.</li> <li>ENGINE INFORMATION</li> <li>The No. 1 (left) engine was a Pratt and Whitney JT8D-219 turbofan. At the time of the incident the engine had accumulated 20,039.0 total hours and 16,057 cycles.</li> <li>The engine had accumulated 76.9 hours and 56 cycles since it was repaired at American Airlines Maintenance and Engineering Center, Tulsa, Oklahoma, following an ice ingestion incident on March 14,1997.</li> <li>A postincident examination of the engine was conducted again at the American facility. An external examination revealed that the engine had four holes in the combustion chamber fan ducts just forward of the High Pressure Turbine (HFT) plane of rotation.</li> <li>The oil holes, which were elongated away from the direction of rotation.</li> <li>The oil holes, in the No. 5 bearing inner race retaining nut were found plugged with a hard, black colored material. The assembly sheets for the No. 5 bearing aread on thave specific instructions to check the holes in the inner race retaining nut. The sheet has a general instruction at the top of the sheet that states, "NOTE: BEFORE ASSEME</li></ul>	Brief narrative statement of facts, conditions and circumstan HISTORY OF FLIGHT	ices perti	inent to the a	ccident/incident:						
The No. 5 bearing inner race retaining nuts in the American inventory were examined. Of 17 nuts awaiting assembly, one had several oil supply holes plugged.	<ul> <li>operated by Reno Allines of Reno, Nevada, experienced an uncontained left engine failure during the initial climb from Las Vegas, Nevada. The flight was operating as flight 56, a scheduled flight to Colorado Springs, Colorado. The aircraft received minor damage, and there were no injuries to the 140 passengers and crew of 5. Visual meteorological conditions prevailed for the departure and an IFR flight plan was filed.</li> <li>During departure from runway 25R at 1,000 feet agl, the crew heard a loud noise followed by a left engine vibration and subsequent shutdown. An emergency was declared and the aircraft returned for an uneventful landing.</li> <li>Postincident inspection of the engine revealed that the engine had experienced an uncontained internal failure with penetration to the cowling and minor damage to the fuselage.</li> <li>ENGINE INFORMATION</li> <li>The No. 1 (left) engine was a Pratt and Whitney JT8D-219 turbofan. At the time of the incident the engine had accumulated 20,039.0 total hours and 16,057 cycles.</li> <li>The engine had accumulated 76.9 hours and 56 cycles since it was repaired at American Airlines Maintenance and Engineering Center, Tulsa, Oklahoma, following an ice ingestion incident on March 14,1997.</li> <li>A postincident examination of the engine was conducted again at the American facility. An external examination revealed that the engine had four holes in the combustion chamber fan ducts just forward of the High Pressure Turbine (HPT) plane of rotation.</li> <li>An internal inspection revealed that the HPT shaft had separated at the No. 4 1/2 bearing hole scavenge oil holes, which were elongated away from the direction of rotation.</li> <li>The oil holes in the No. 5 bearing inner race retaining nut were found plugged with a hard, black colored material. The assembly sheets for the No. 5 bearing area do not have specific instructions to check the holes in the inner race retaining nut. The sheet has a general instruction at the top</li> </ul>									
	The No. 5 bearing inner race retaining nuts in the American inventory were examined. Of 17 nuts awaiting assembly, one had several oil supply holes plugged.									

FACTUAL REPORT - AVIATION

National Transportation Safety Board	NTSB ID: LAX97IA209	
FACEUAL REPORT	Occurrence Date: 06/17/1997	
AV LATION	Occurrence Type: Incident	
Narrative (Continued)		

The Pratt and Whitney (P&W) standard practice manual for overhaul plating (SPOP) of silver over steel specifies that the No. 5 bearing race should be grit blasted to remove old plating per SPOP 10, which specifies using PMC 3052-9 aluminum oxide grit. The P&W standard practice manual of consumable materials list identifies PMC 3052-9 as 500 aluminum oxide grit.

The actual processing of the incident nut consisted of grit blasting with 120 aluminum oxide grit, contrary to P&W recommendation to use 200 to 500 aluminum oxide grit media or glass beads. The nut is to be cleaned and flushed after the blasting.

FACTUAL REPORT - AVIATION

National Transportation Safety Board	NTS	B ID:	LAX97	7IA209							
FACTUAL REPORT	Occurrence Date: 06/17/1997										
AVIATION											
Landing Eacility/Approach Information											
Landing Facility/Approach Informat	lion	Airo		Airport Elova	tion	Pup	way Used	Pupwe	w Longth		owov Width
Allport Name		Allpo	JILID.	Allpoit Eleva	MSI		way Useu	Runwa	iy Lengii		iway wiutii
					. IVIOL	U					
Runway Surface Type:											
Runway Surface Condition:											
Type Instrument Approach:											
VFR Approach/Landing: Forced Landing											
Aircraft Information											
Aircraft Manufacturer			Model/	Series					Serial N	lumber	
McDonnell Douglas			MD-8	3					53182	2	
Airworthiness Certificate(s): Transport											
Landing Gear Type: Retractable - Tricycle											
Homebuilt Aircraft? No Number of Seats: 145 Certified Max Gross Wt. 137500 LBS Number of Engines: 2								es: 2			
Engine Type:Engine Manufacturer:Model/Series:Rated Power:Turbo FanP&WJT8D-21921700 LBS									ted Power: 1700 LBS		
- Aircraft Inspection Information											
Type of Last Inspection         Date of Last Inspection         Time Since Last Inspection         Airframe Total Time											
Continuous Airworthiness     04/1997     76 Hours     10417 Hours											
- Emergency Locator Transmitter (ELT) In	formation										
ELT Installed?	LT Installed? ELT Operated? ELT Aided in Locating Accident Site?										
Owner/Operator Information											
Registered Aircraft Owner Street Address											
RENO AIR	City State Zip Co							Zip Code			
				RENO NV 89502							89502
Operator of Aircraft Same as Regid Aircraft Owner											
Same as Regid Aircraft Owner		City State Zip Co							Zip Code		
Operator Does Business As: Operator Designator Code: ORJA											
- Type of U.S. Certificate(s) Held:											
Operating Certificate: Operator Certificate:											
Regulation Flight Conducted Under: Part	121: Air Carrier										
Type of Flight Operation Conducted: Sche	eduled; Domestic	;; Pas	ssenger	<sup>.</sup> Only							
FACTUAL REPORT - AVIATION Page 2											

Nation	TRANS	Safety Room	1	NTSB ID:	LAX97IA2	209								
FACTUAL BEDGRT Occurrence Date: 06/17/1997														
									-					
Occurrence Type: Incident														
First Pilo	ot Information													
Name City S										State	Da	ate of Birth	Age	
On File On File On File 50														
Sex: M Seat Occupied: Left Principal Profession: Civilian Pilot Certificate Number: On File														
Certificate(s): Airline Transport														
Airplane Rating(s): Multi-engine Land: Single-engine Land														
Rotorcraft/	/Glider/LTA: None	e e	,	<u>g</u>										
Instrument	t Rating(s): Airol	ane												
Instructor Rating(s): None														
Type Rating/Endorsement for Accident/Incident Aircraft? Yes Current Biennial Flight Review?														
Medical Cert.: Class 1 Medical Cert. Status: Valid Medicalno waivers/lim. Date of Last Medical Exam: 02/1997														
- Flight Tir	me Matrix	Hatrix All A/C This Make Airplane Airplane Night Actual							Instrument Si	mulated	Rotor	craft	Glider	Lighter Than Air
Total Time	Э	21000	8000											
Pilot In Co	ommand(PIC)													
Instructor						_					_			
Last 90 Da	ays		240			_								
Last 30 Da	ays					_					_			
Last 24 Ho	ours											1		
Seatbelt Used? Yes         Shoulder Harness Used? Yes         Toxicology Performed? No         Second Pilot? Yes									S					
Flight Pla	an/Itinerary													
Type of Fli	ight Plan Filed: IF	R												
Departure Point         State         Airport Identifier         Departure Time         Time Zor								Time Zone						
Same as Accident/Incident Location KLAS 1700 PDT														
Destination State Airport Identifier														
COLORADO SPRING CO KCOS														
Type of Clearance: IFR														
Type of Ai	rspace: Class	В												
Weather	<sup>-</sup> Information													
Source of	Briefing: Compa	any												
Method of	f Briefing:													
	-			FACTIAI	REPORT	ς - γλι	ATIOI	N						Page 3

Secure Date: 06/17/1997           Occurrence Type: Incident           Weather Information           Weather Information         Time Zone         WOF Elevation Time         MOF Elevation Time         Direction From Accident Site         Direction From Accident Site           Uses         PDT         0 FL MSL         VOF Diatance From Accident Site         Direction From Accident Site           Uses         PDT         0 FL MSL         Vor Elevation Time         MOF Diatance From Accident Site         Direction From Accident Site           SkyLowest Cloud Condition:         State         Vor Elevation         WOF Elevation Time         None         Type           Lowest Celling: None         O error None         Conditions to Visibility         None         Type         Minor         None         Type           Type of Precipitation:         None         Tortal         Aircraft Exposion None           Cloudert Information           Aircraft Precipitation:         None         Tortal         Tortal         Tortal           Free None         Cloudert None         Cortal         Tortal         Tortal         Tortal           Second Plac         Cloudert None         Cortal         Tortal         Tortal         Tortal         Tortal	Nationa	al Transportation Safety	Board	NTSB ID	LAX97	IA209							
Occurrence Type: Incident         Weather Information       Time Zone       WOF Elevation       WOF Distance From Accident Site       Direction From Accident Site         LAS       1656       PDT       0 FL MSL       0 M0       0 Deg. Mag.         SkylLowest Cloud Condition: Scattered       8500 FL AGL       Condition of Light: Day         Lowest Ceiling: None       0 FL AGL       Visibility: 10       SM       Attimeter: 29.00       'Hg         Temperature:       38 °C       Dew Point:       7 °C       Wind Direction: 330       Density Attitude:       FL         Wind Speed: 3       Gusts:       Weather Conditions at Accident Site: Visual Conditions       Density Attitude:       FL         Visibility (RVR):       0       FL       Visibility (RVV)       0       SM       Intensity of Precipitation:       Unitensity of Precipitation:         Atteraft Enershow       Aiteraft Fire: None       Aiteraft Explosion       None       Classifier of TAL       Intensity Attifier Side Side Side Side Side Side Side Side	FA	ACTUAL REPOR	RT	Occurrer	Occurrence Date: 06/17/1997								
Meather Information         More and the point         Time Zone         WOF Elevation         WOF Distance From Accident Site         Direction From Accident Site           LAS         1856         PDT         0 Ft. MSL         0 MM         0 Deg. Mag.           SkyLowest Cloud Condition: Scattered         0 Ft. AGL         Visibility:         10         SM         Attimeter:         29.00         "Hg           Lowest Ceiling: None         0 ev Point:         7 °C         Wind Direction: 330         Density Attitude:         Ft.           Wind Speed:         3         Gusts:         Weather Conditions at Accident Site:         Visual Conditions           Visibility (RVR):         0         Ft.         Visibility (RVV)         0         SM         Intensity of Precipitation:         Intensity of Precipitation:         Intensity of Precipitation:         Visual Conditions           Atcraft Damage: Minor         Arcraft Fire: None         Aircraft Explosion None         Aircraft Explosion None         Classification: U.S. Registered/U.S. Soil         1         1           - Injury Summary Matrix         Fatal         Serios         Minor         Nore         TOTAL         1         1           Right Instructor         I         I         I         1         1         1         1         1 <td></td> <td><b>AVIATION</b></td> <td></td> <td>Occurrer</td> <td>ce Type:</td> <td>Incident</td> <td></td> <td></td> <td>1</td> <td></td> <td></td> <td></td> <td></td>		<b>AVIATION</b>		Occurrer	ce Type:	Incident			1				
Norealite         Time Zone         WOF Elevation         WOF Distance From Accident Site         Direction From Accident Site           LAS         1656         PDT         0 Ft. MSL         0 MM         0 Deg. Mag.           SkyLowest Cloud Condition: Scatteret         8500 Ft. AGL         Condition - Light: Day         Attimeter: 29.00 'Hg           Lowest Celling: None         0 Ft. AGL         Visibility: 10 SM         Attimeter: 29.00 'Hg           Temperature:         38 °C         0 ev Point:         7 °C         Wind Direction: 330         Density Altitude:         Ft.           Wind Speed:         3         Gusts:         Weather Conditions at Accident Site: Visual Conditions         Ft.           Visibility (RVR):         0 Ft.         Visibility (RVV)         0 SM         Intensity of Precipitation: Unknown         Intensity of Precipitation: Unknown           Restrictions to Visibility: None         Attrart Fire: None         Aitrart Explosion None         Intensity of Precipitation: U.S. Registered/U.S. Soil         Intensity of ToTAL         Intensity of ToTAL         Intensity of ToTAL         Intensity of ToTAL           Final Plant         Feal         Serious         Minor         None         ToTAL         Intensity of Precipitation: U.S. Registered/U.S. Soil         Intensity of ToTAL         Intensity of ToTAL         Intensity of ToTAL         Int	Weather	Information											
LAS       1656       PDT       0 FL MSL       0 NM       0 Deg. Mag.         SkyLowest Cloud Condition: Scattered       0 FL AGL       Condition of Light: Day         Lowest Ceiling: None       0 FL AGL       Visibility: 10       SM       Attimeter: 29.00       "Hg         Temperature:       38 °C       Dew Point:       7 °C       Wind Direction: 330       Density Attitude:       FL         Wind Speed:       3       Gusts:       Weather Conditions at Accident Site: Visual Conditions       Density Attitude:       FL         Wind Speed:       0       FL       Visibility (RVV)       SM       Intensity of Precipitation: Unknown       FL         Restrictions to Visibility:       None       Atriant Fire: None       Aircraft Exclose None       Intensity of Precipitation: Unknown         Accident Information       Aircraft Fire: None       Aircraft Exclose None       Intensity of Precipitation: U.S. Registered/U.S. Soil       Intensity       1       1         Second Plat       Gustification:       U.S. Registered/U.S. Soil       Intensity       1       1         Second Plat       Gustification:       Gustification:       Gustification: U.S. Registered/U.S. Soil       Intensity       Intensity       Intensity       Intensity       Intensity         Flight Instructor	WOF ID	Observation Time	Time Zone	WOF Eleva	tion	WOF Di	stance From	Accio	dent Site		Direction Fron	n Accident Site	9
LAS       1656       PDT       0 FL MSL       0 NM       0 Deg. Mag.         SkytLowest Cloud Condition: Scattered       Visibility: 10       SM       Attimeter: 29.00       *Hg         Lowest Celling: None       0 me Point:       7 °C       Visibility: 10       SM       Attimeter: 29.00       *Hg         Temperature:       38 °C       0 me Point:       7 °C       Wind Direction: 330       Density Attitude:       FL         Wind Speed:       3       Gusts:       Weather Conditions at Accident Site: Visual Conditions       Density Attitude:       FL         Visibility (RVR):       0       FL       Visibility (RVV)       0       SM       Intensity of Precipitation:       Unknown         Type of Precipitation:       None       Aircraft Fire: None       Aircraft Explosion       None       Aircraft Explosion       None         Classification:       U.S. Registered/U.S. Soil       Intensity of Precipitation       Aircraft Explosion       None       ToTAL         First Piot       Image:       Minor       None       ToTAL       Image: Minor       Second Piot       Image: Minor       Image: Minor       Image: Minor       Second Piot       Image: Minor       Image: Minor       Image: Minor       Image: Minor       Image: Minor       Image: Minor								, 10010			2.1000.011110.		-
Sky/Lowest Cloud Condition: Scattered Wind Site Ceilling: None       9 FL AG       Condition: Light: Day         Lowest Ceilling: None       Image: Coll Condition: Same Coll Condition: Same Coll Condition: Same Coll Coll Coll Coll Coll Coll Coll Col	LAS         1656         PDT         0 Ft. MSL         0 NM         0 Deg. Mag.												
Lowest Ceiling: None       OFLAL       Visibility:       10       SM       Attimeter:       29.00       "Hg         Temperature:       38 °C       Oew Point:       7 °C       Wind Direction: 330       Density Altitude:       FL         Wind Speed: 3       Gusts:       Gusts:       Weat+Econditions at Accident Site: Visual Conditions       FL       Visibility (RVR):       0       FL       Visibility (RVR):       0       SM       Intensity Precipitation: Unknown         Restrictions to Visibility:       None       FL       Visibility (RVR):       0       FL       Visibility (RVR):       0       SM       Intensity       Nonw       FR       Visibility:       None       SM       Alticraft Exception: Unknown       SM	Sky/Lowes	t Cloud Condition: Scat	ttered			8	3500 Ft. AG	L	Condition of	of Ligh	nt: Day		
Temperature:       38 °C       Dew Point:       7 °C       Wind Direction: 330       Density Altitude:       Ft.         Wind Speed: 3       Gusts:       Gusts:       Visibility (RVR):       0       Ft.       Visibility (RVV):       0       SM       Intensity of Precipitation:       SUBAL       SUBAL<	Lowest Ce	iling: None		0 Ft	. AGL	Visibi	lity:	10	SM	Alti	meter:	29.00	"Hg
Wind Speed: 3       Gusts:       Weather Conditions at Accident Site: Visual Conditions         Visibility (RVR):       0       FL       Visibility (RVV)       0       SM       Intensity of Precipitation: Unknown         Restrictions to Visibility:       None       Intensity of Precipitation: Unknown       Intensity of Precipitation: Unknown         Accident Information       Aircraft Damage: Minor       Aircraft Fire: None       Aircraft Explosion None         Classification:       U.S. Registered/U.S. Soil       Intensity       TOTAL         - Injury Summary Matrix       Fatal       Serious       Minor       None       TOTAL         First Pliot       I       1       1       1       1         Student Pliot       I       I       1       1         Student Pliot       I       I       I       I         Flight Instructor       I       I       I       I         Cabin Attendents       I       I       I       I         Passengers       I       I       I       I         Passengers       I       I       I       I         Other Ground       0       0       I       I       I         Other Ground       0       I	Temperatu	ıre: 38 °C	Dew Point:	7 °C	Wind	Direction:	330			Dei	nsity Altitude:		Ft.
Visibility (RVR):       0       Ft.       Visibility (RVV)       0       SM       Intensity of Precipitation: Unknown         Restrictions to Visibility:       None       Intensity of Precipitation: Unknown       Intensity of Precipitation: Unknown         Type of Precipitation:       None       Aircraft Erre: None       Aircraft Explosion None         Classification:       U.S. Registered/U.S. Soil       Aircraft Erre: None       TOTAL         - Injury Summary Matrix       Fatal       Serious       Minor       None       TOTAL         Second Pilot       1       1       1       1       1       1         Student Pilot       1 <td< td=""><td>Wind Spee</td><td>ed: 3</td><td>Gusts:</td><td></td><td>Weath</td><td>her Condt</td><td>ions at Accid</td><td>ent Si</td><td>ite: Visual C</td><td>Cond</td><td>itions</td><td></td><td></td></td<>	Wind Spee	ed: 3	Gusts:		Weath	her Condt	ions at Accid	ent Si	ite: Visual C	Cond	itions		
Restrictions to Visibility: None         Type of Precipitation: None         Accident Information         Aircraft Damage: Minor       Aircraft Fire: None         Classification: U.S. Registered/U.S. Soil         - Injury Summary Matrix       Fatal         Serious       Minor         None       TOTAL         First Plot       1         Student Plot       1         Flight Instructor       1         Flight Instructor       1         Flight Engineer       1         Cabin Attendants       3         Other Crew       140         Passengers       140         Other Ground       0         Other Ground       0         Other Ground       0	Visibility (R	RVR): 0 Ft.	Visibility (	(RVV) 0	SM	Intensity	/ of Precipita	tion: (	Jnknown				
None         Aircraft Information         Aircraft Damage: Minor       Aircraft Explosion None         Classification: U.S. Registered/U.S. Soil         - Injury Summary Matrix       Fatal       Serious       Minor       None       TOTAL         First Plot       1       1       1       1       1       1       1       1         Second Pilot       1	Restriction	s to Visibility: None					-						
Type of Precipitation:       None         Accident Information       Aircraft Fire: None       Aircraft Explosion None         Aircraft Damage: Minor       Aircraft Fire: None       Aircraft Explosion None         Classification: U.S. Registered/U.S. Soil       Imor       None       TOTAL         - Injury Summary Matrix       Fatal       Serious       Minor       TOTAL         First Pilot       C       1       1         Second Pilot       C       1       1         Student Pilot       C       C       C         Flight Instructor       C       C       C         Flight Engineer       C       3       3         Other Crew       C       140       140         Passengers       C       145       145         Other Ground       0       0       0       0         - GRAND TOTAL-       0       0       145       145		,											
Accident Information         Aircraft Fire: None       Aircraft Explosion None         Classification: U.S. Registered/U.S. Soil         - Injury Summary Matrix       Fatal       Serious       Minor       None       TOTAL         First Pilot       1       1       1       1       1         Second Pilot       1       1       1       1         Student Pilot       1       1       1       1         Flight Instructor       1       1       1       1         Clash Attendants       1       1       1       1         Passengers       1       1       1       1         Passengers       1       1       1       1         Other Ground       0       0       145       145         Other Ground       0       0       145       145		ecinitation: None											
Accident Information         Aircraft Damage: Minor       Aircraft Fire: None       Aircraft Explosion None         Classification: U.S. Registered/U.S. Soil        None       TOTAL         - Injury Summary Matrix       Fatal       Serious       Minor       None       TOTAL         First Pilot         1       1       1         Second Pilot         1       1       1         Student Pilot          1       1         Flight Instructor           1         Cabin Attendants          3       3         Other Crew         140       140         -TOTAL ABOARD -         145       145         Other Ground       0       0       0       0       0													
Aircraft Damage: Minor       Aircraft Fire: None       Aircraft Explosion None         Classification: U.S. Registered/U.S. Soil        Minor       None       TOTAL         - Injury Summary Matrix       Fatal       Serious       Minor       None       TOTAL         First Pilot        1       1       1         Second Pilot        1       1         Student Pilot             Flight Instructor             Flight Engineer             Cabin Attendants        3       3         Other Crew        1440       140         - TOTAL ABOARD-        145       145	Accident	Information											
Classification: U.S. Registered/U.S. Soil         - Injury Summary Matrix       Fatal       Serious       Minor       None       TOTAL         First Pilot       1       1       1       1         Second Pilot       1       1       1         Student Pilot       1       1       1         Flight Instructor       1       1       1         Check Pilot       1       1       1         Classification:       3       3       3         Other Crew       1       140       140         Passengers       1440       1445       145         Other Ground       0       0       0       0         - GRAND TOTAL -       0       0       0       0	Aircraft Dar	mage: Minor		Aircraft Fi	re: None	;			Aircraft Exp	olosio	n None		
- Injury Summary Matrix       Fatal       Serious       Minor       None       TOTAL         First Pilot       1       1       1       1         Second Pilot       1       1       1         Student Pilot       1       1       1         Student Pilot       1       1       1         Flight Instructor       1       1       1         Check Pilot       1       1       1         Gabin Attendants       1       1       1         Passengers       1       140       140         -TOTAL ABOARD -       0       0       0         Other Ground       0       0       0	Classificati	on: U.S. Registered/L	J.S. Soil										
First PilotImage: Constraint of the second seco	- Injury Sur	mmary Matrix	Fatal	Serious Mir	ior	None	TOTAL						
Second Pilot11Student Pilot11Flight Instructor11Check Pilot11Flight Engineer11Cabin Attendants33Other Crew1140Passengers140140- TOTAL ABOARD -145145Other Ground000	First Pil	lot				1	1						
Student PilotImage: student PilotImage: student PilotFlight InstructorImage: student PilotImage: student PilotCheck PilotImage: student PilotImage: student PilotFlight EngineerImage: student PilotImage: student PilotCabin AttendantsImage: student PilotImage: student PilotCabin AttendantsImage: student PilotImage: student PilotOther CrewImage: student PilotImage: student PilotPassengersImage: student PilotImage: student PilotOther GroundImage: student PilotImage: student PilotOther GroundImage: student PilotImage: student Pilot <td>Second</td> <td>d Pilot</td> <td></td> <td></td> <td></td> <td>1</td> <td>1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Second	d Pilot				1	1						
Flight InstructorImage: Check PilotImage: Check PilotImage: Check PilotCheck PilotImage: Check PilotImage: Check PilotImage: Check PilotFlight EngineerImage: Check PilotImage: Check PilotImage: Check PilotCabin AttendantsImage: Check PilotImage: Check PilotImage: Check PilotCabin AttendantsImage: Check PilotImage: Check PilotImage: Check PilotCabin AttendantsImage: Check PilotImage: Check PilotImage: Check PilotOther CrewImage: Check PilotImage: Check PilotImage: Check PilotPassengersImage: Check PilotImage: Check PilotImage: Check PilotOther GroundImage: Check PilotImage: Check PilotImage: Check PilotOther GroundImage: Check PilotImage: Check PilotImage	Studen	t Pilot											
Check PilotImage: Check PilotImage: Check PilotImage: Check PilotFlight EngineerImage: Check PilotImage: Check PilotImage: Check PilotCabin AttendantsImage: Check PilotImage: Check PilotImage: Check PilotCabin AttendantsImage: Check PilotImage: Check PilotImage: Check PilotOther CrewImage: Check PilotImage: Check PilotImage: Check PilotPassengersImage: Check PilotImage: Check PilotImage: Check PilotOther GroundImage: Check PilotImage: Check PilotImage: Check PilotOther GroundImage: Check PilotImage: Check PilotIm	Flight Ir	nstructor											
Flight EngineerImage: Cabin AttendantsImage: Cabin AttendantsImage: Cabin AttendantsCabin AttendantsImage: Cabin AttendantsImage: Cabin AttendantsOther CrewImage: Cabin AttendantsImage: Cabin AttendantsPassengersImage: Cabin AttendantsImage: Cabin AttendantsPassengersImage: Cabin AttendantsImage: Cabin AttendantsOther GroundImage: Cabin AttendantsImage: Cabin AttendantsOther GroundImage: Cabin AttendantsImage: Cabin At	Check I	Pilot											
Cabin Attendants       Image: Cabin Attendants       Image: Cabin Attendants         Other Crew       Image: Cabin Attendants       Image: Cabin Attendants         Passengers       Image: Cabin Attendants       Image: Cabin Attendants         - TOTAL ABOARD -       Image: Cabin Attendants       Image: Cabin Attendants         Other Ground       Image: Cabin Attendants       Image: Cabin Attendants         - GRAND TOTAL -       Image: Cabin Attendants       Image: Cabin Attendants	Flight E	ingineer											
Other Crew         Image: Constraint of the second sec	Cabin A	Attendants				3	3						
Passengers         140         140           - TOTAL ABOARD -         145         145           Other Ground         0         0         0           - GRAND TOTAL -         0         0         145	Other C	Crew											
- TOTAL ABOARD -         145         145           Other Ground         0         0         0           - GRAND TOTAL -         0         0         145         145	Passen	igers				140	140						
Other Ground         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         145	- TOTAL A	ABOARD -				145	145						
- GRAND TOTAL - 0 0 145 145	Other G	Ground	0	0	0		0						
	- GRAND	) TOTAL -	0	0	0	145	145						
				FACTUA	L REPO	RT - AV	IATION					F	Page 4

National Transportation Safety Board	NTSB ID: LAX97IA209	
FACTUAL REPORT	Occurrence Date: 06/17/1997	
AVIATION	Occurrence Type: Incident	
Administrative Information		
Investigator-In-Charge (IIC)		
GEORGE E. PETTERSON		
Additional Persons Participating in This Accident/Incide	ant Investigation:	
HUSTON CRUTCHFIELD		
WP-LAS-FSDO LAS VEGAS, NV 89119		
PRATT & WHITNEY		
EAST HARTFORD, CT 06108		
PHIL NOVICK		
RENO, NV 03520		
HUGH J ROCHE WP-RNO-ESDO		
RENO, NV 89502		