Special Study

JET BLAST HAZARDS

Adopted: July 6, 1972

Details of illustrations in this document may be better studied on microfiche

NATIONAL TRANSPORTATION SAFETY BOARD
Washington, D. C. 20591
REPORT NUMBER: NTSB-AAS-72-7

TABLE OF CONTENTS

NATIONAL TRANSPORTATION SAFETY BOARD
Washington, D.C. 20591
SPECIAL STUDY

Adopted: July 5, 1972

JET BLAST HAZARDS

INTRODUCTION

With the first commercial flight of a Boeing 707 jet liner from New York to Paris in 1958, air transportation entered a new era of safety efforts, schedule reliability, and passenger comfort. Since that time, however, jet blast has become increasingly hazardous during ground operations at airport terminals, on maintenance ramps and along taxiways.

Safety statistics have always been concerned with accidents and incidents in flight and during landings or takeoffs. However, this study by the National Transportation Safety Board (NTSB) reveals a disturbing number of ground accidents – some involving loss of life, serious injury and property damage – due to jet blast. Some accidents have resulted in undetected ground damage to aircraft which later caused serious flight accidents. Many of these accidents were reported to any one of a number of agencies, such as airport or airline managers, rather than to any one, central agency such as the Federal Aviation Administration of the NTSB.

The immediacy of the problem is accentuated by the new, wide-body, three- or four-engines jet transports now operating at major airports throughout the world. These "jumbo" jet aircraft have added a new dimension to ground hazards associated with jet blast. The newest model trijet has a passenger capacity of up to 350 and engines even more powerful than those in the wide-body, four-engine airplane. This jet is likely to present greater jet blast hazards than has been known before.

The high bypass ratio fan engines used on the wide-body jet moves some 300 percent more air per second than engines on such conventional jet transports as the DC-8 or 707.

The purpose of this study, therefore, is to alert the aviation community to these ground operation problems. Successful solutions will depend on cooperation between flight crews, airport designers and managers, airline officials, and ground service personnel.

We hope this study will contribute to public understanding of the jet blast hazard and to the prevention of jet blast accidents.

BACKGROUND

The jet airplane was introduced into civilian airports by the military. The first jets were single-engine fighters, followed by four-engine B-47s and KC-135 tankers. The KC-135 tanker was the forerunner of the Boeing 707 passenger transport airplane.

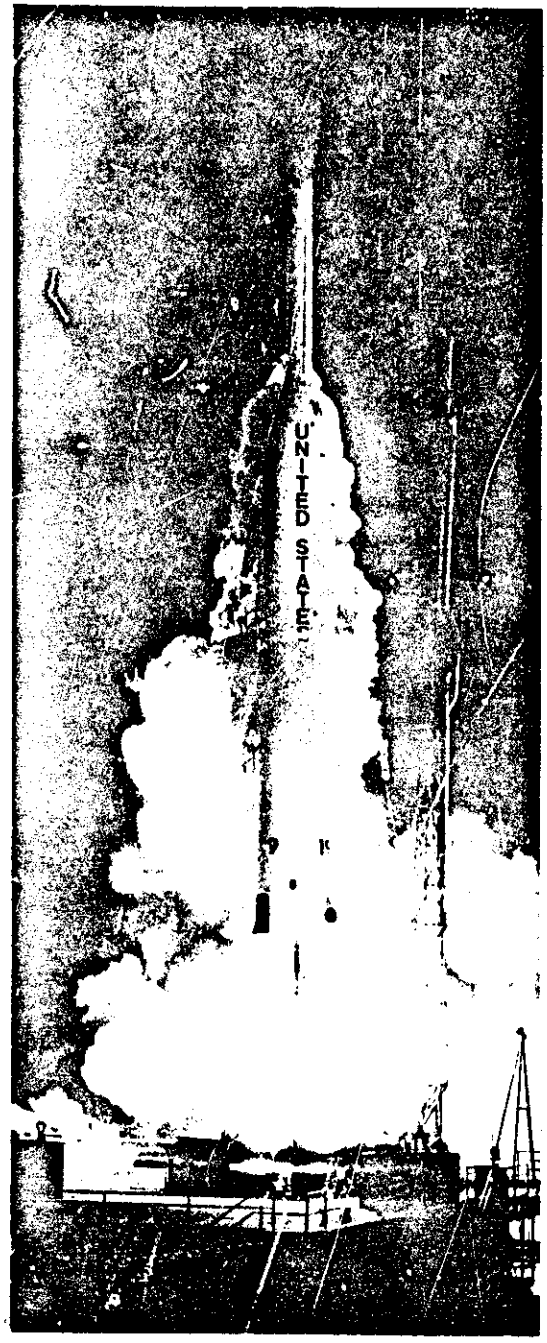
These early jets were treated with respect. Ground personnel and other aircraft usually kept their distance. The kerosene exhaust was plainly visible even on a sunny day. Also, the diesel odor, tremendous heat and ear-splitting scream of the early engines made people wary of getting too close to them.

The original problem of jet operations on the ground was not so much the jet blast from the exhaust, but ingestion of foreign objects due to the enormous suction of engine air intakes in the front of the airplane. The front end of a jet has no whirling propellers and looks fairly harmless, even with the engines running. Until ground crews became aware of the suction problem, any number of helmets, goggles, headsets, and wrenches were swallowed. And there were some tragic accidents which resulted in serious injuries and fatalities.

As far as jet blast was concerned, the early jet even up to the first version of the 707 were fairly innocuous. The jet exhaust was not much stronger than the backwash of the last generation of four-engine propeller-driven airplanes.

As jet engine technology advanced, however, the ground operations problem increased. Operators are pleased with the performance of aircraft powered by the new engines in the air, but they have tended to overlook the hazards on the ground.

The original Boeing 707-120 used the Pratt-Whitney JT3C-6 engine with 13,000 pounds of thrust at takeoff power. The next version, the 707-120B, graduated to the JT3D

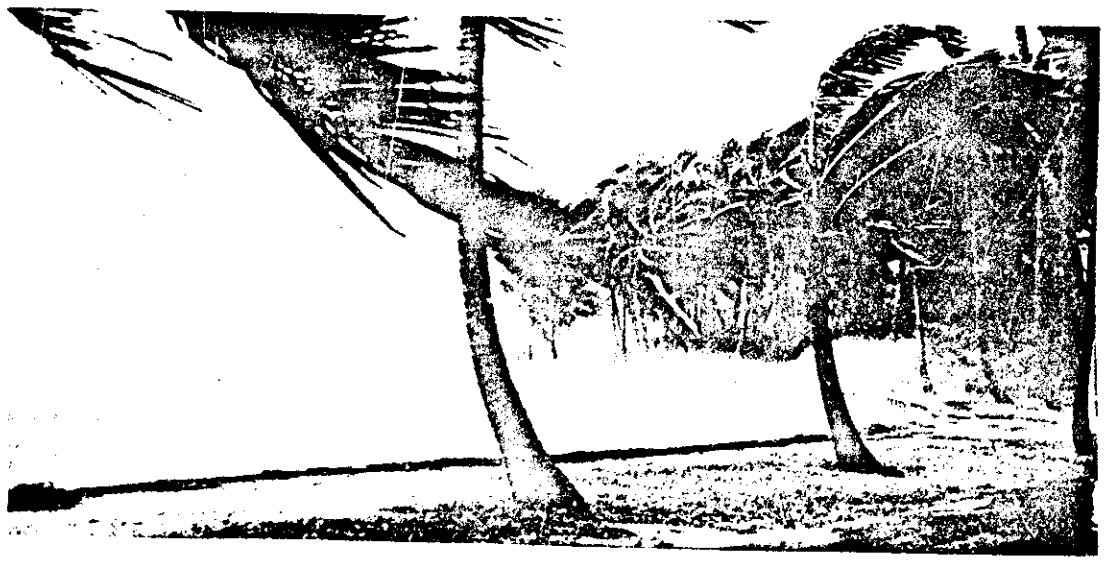


Delta Rocket Launch

engine with 18,000 pounds of takeoff thrust power. The four JT9D series engines on the 747 generate a takeoff thrust of approximately 180,000 pounds – more than twice the thrust of the 707 – and roughly equivalent to the thrust of a Delta rocket used to launch communications satellites into outer space. Even though a Delta rocket's thrust is directed downward instead of sideways, no one would think of attempting to launch one from a busy airport. Yet, with airplanes, the same amount of thrust is used for takeoffs every day.

thrust that must be applied to get as much as 778,000 pounds of airplane moving from a standing position, as in the case of the Boeing 747. Once the airplane starts to roll, the thrust required to keep it moving is considerably less, but still a potent force.

Unfortunately, breakaway power must be applied in the most congested parts of the airport – in the terminal and maintenance areas and in the takeoff area. As pilots strive to maintain schedules and meet assigned takeoff times, there is a temptation to use more power



Hurricane

Actually, takeoff thrust is not the major problem. Pilots and ground personnel have always respected the turbulence created by large aircraft on takeoff, even before the days of the jet transport. In still air conditions, a jet's wake can create a hazard for following aircraft for as long as five minutes. Tower personnel usually warn following aircraft of turbulence and most pilots – some as a result of hair-raising personal experiences – are aware of the danger.

The main problems are "breakaway" and taxi jet blasts. Breakaway blast is the result of the

than needed to get the aircraft moving quickly.

Detailed diagrams and charts of jet-blast patterns are included in this study. However, a few facts may help to explain the problem.

A four-engine wide-body jet produces the following exhaust velocities: at idle, 25 feet behind the tail, 50 m.p.h.; at breakaway, 110 feet behind the tail, 80 m.p.h. (liftoff speed for many small aircraft). The 80 m.p.h. breakaway blast compares with the speed of hurricane winds which cause severe property damage and

many fatalities. A weather warning of a wind like this probably would cause people to evacuate fragile structures, tie down planes and close down small airports.

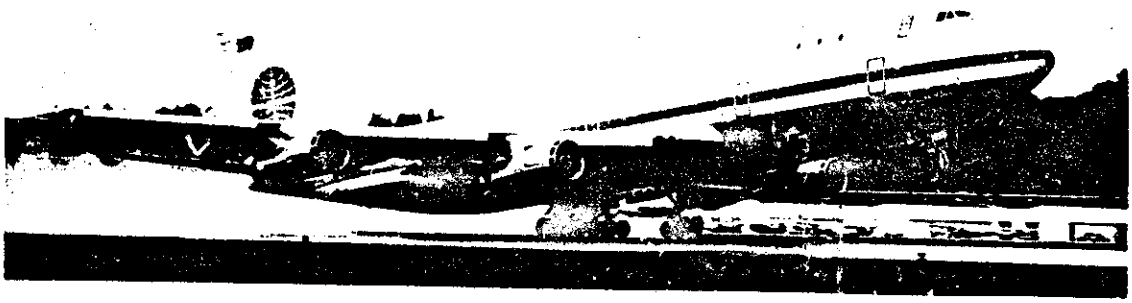
A deceptive feature of jet blast from new high bypass engines is that the exhaust is invisible. Early jet engines produced a combination of smoke and shimmering heat waves which served as a warning. Exhaust of the bypass engine is cooler and cleaner and cannot be seen throughout much of its high velocity range.

Furthermore, crosswinds can move the unseen blast from a position directly behind the airplane, where it might be anticipated, to the right or left of the plane. A crosswind of 35 m.p.h., for example, can displace the 45 m.p.h. exhaust zone sideways as much as 175 feet at idle power. At taxi power, the 45 m.p.h. zone may move anywhere up to 225 feet on either side of the plane. At takeoff power, the 45 m.p.h. zone, with the same 35 m.p.h. crosswind, may shift as much as 775 feet on either side of the departing runway.

Although this study concentrates on ground damage, it discusses, in some detail, at least two ground incidents directly related to inflight accidents. Other categories are discussed under Damage to Airport Property.

It should be emphasized that this is the first known study of its kind. Much of the information came from such sources as reports of airport police and company ground personnel. Accident reports are factual, although fragmentary in many cases.

The Board makes no effort to assess blame, responsibility or negligence on the part of any of the people or organizations concerned. The purpose is to identify the nature of the problem, suggest some solutions based on experience, and encourage positive contributions from all segments of the air transportation industry.



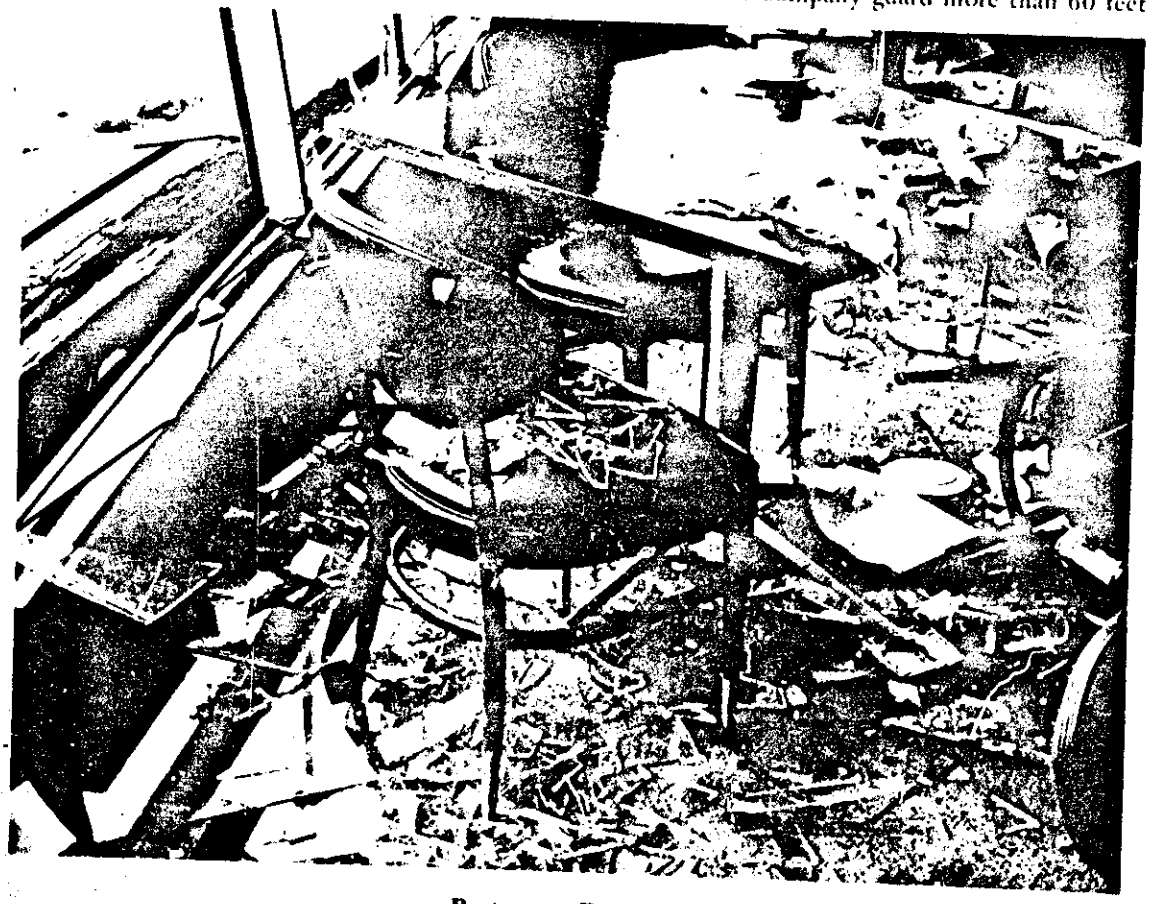
Boeing 747 Takeoff

PERSONNEL INJURIES

Three airline stewardesses having lunch at an airport restaurant were hospitalized after the windows of the restaurant were blown in by a jet leaving the gate area. The aircraft was required to make a short forward roll and a sharp turn to clear another aircraft parked at the adjacent gate. The ramp was covered with a layer of packed snow and slush. As the aircraft executed its turn out of the gate, the No. 2 rear mounted engine was 75-to-85 feet from the restaurant windows. The nosewheel began to slide during the taxi out, and the aircraft's forward momentum was slowed down due to ramp conditions and the incline. When additional breakaway power was applied, the restaurant windows were blown in as well as the door of another airline's cargo building.

A mechanic was killed as he was retrieving a tool box behind a wide-body jet just at the moment that the pilot decided to make a snap acceleration. The mechanic was about 135 feet behind the engine, but he was blown high into the air and came down 150 feet from his original position.

An aircraft with rear high engines was maneuvering to enter a ramp area when it blew a construction company guard more than 60 feet



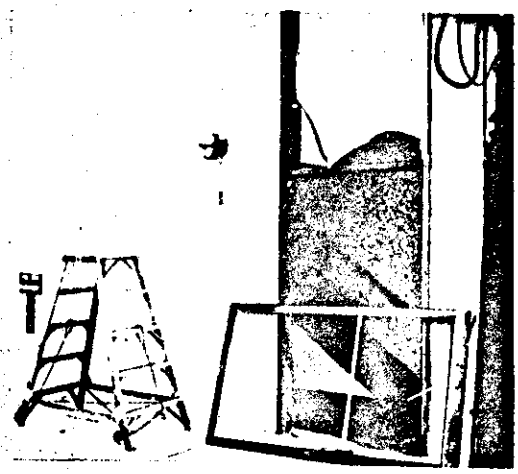
Restaurant Damage

across the ramp. The guard was lacerated on the head, nose, right wrist, and both legs. The pilot of the aircraft, in this case, was unaware of the incident.

AIRPORT PROPERTY DAMAGE

Property damage, as a result of jet blast, is so widespread that only a few typical examples will be given.

A jet blew an airport shack over when the pilot opened the throttles to start taxiing from a



Airport Building Damage

parked position on the ramp. A woman inside the shack suffered injuries and was hospitalized.

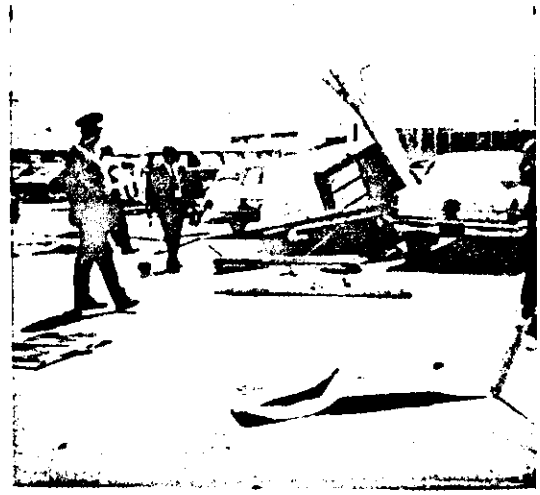
The shack was located 26 feet from the ramp and separated from it by a driveway 24 feet wide, with chainlink fencing on both sides. As the shack was being blown about, it damaged 11 vehicles parked in the driveway and seriously injured a number of people on the ground.

In another case, a jet blast blew over approximately 200 feet of chainlink fence. Eight

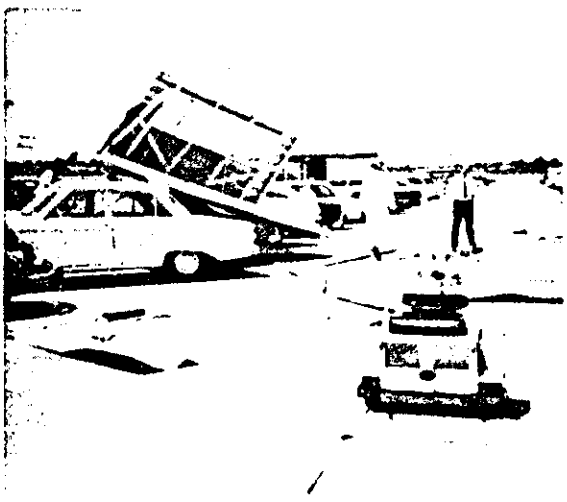
Airport Building Damage

mobile metal pallets started rolling and came to rest on top of the downed fence against a booth, shattering its glass doors.

In still another case, a jet blast toppled a large shack while a tug was pushing a DC-8 back from a freight building. When the engines were revved up, the plane was just to the rear of the shack. The jet blast was directed towards the shack and



Airport Ramp Damage



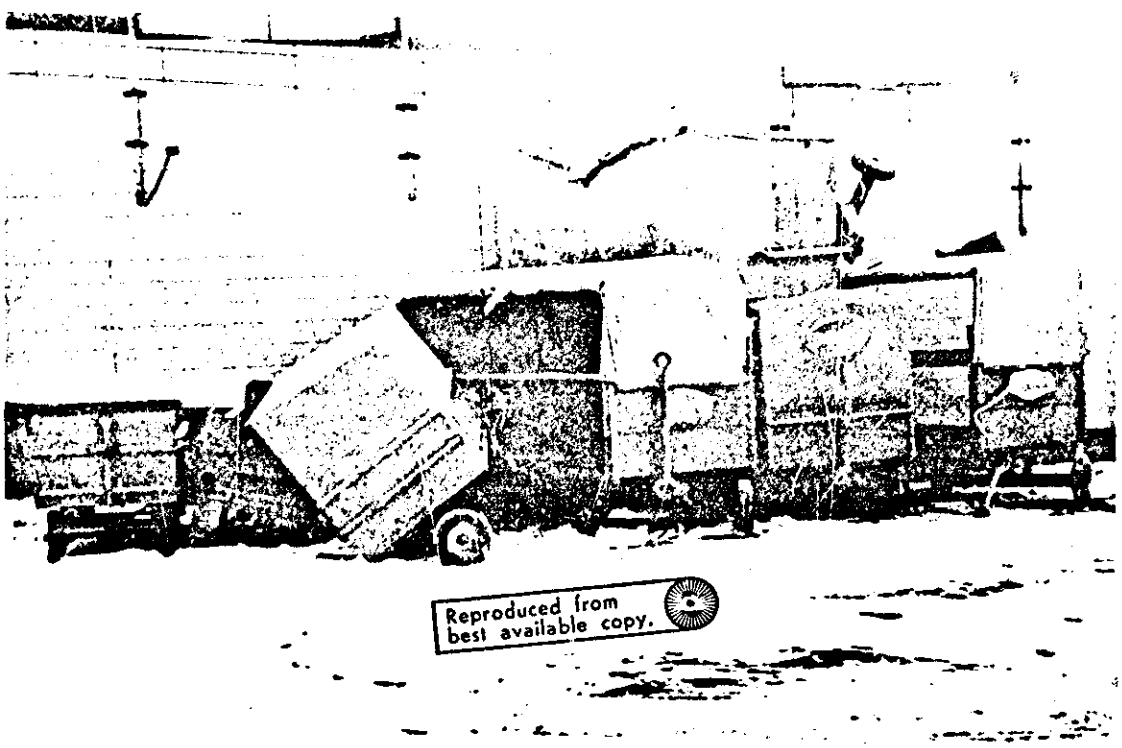
Airport Ramp Damage

the adjacent parking area. The shack rocked violently and blew over only moments after ground service people inside escaped, avoiding serious injury or possible death.

AIRCRAFT DAMAGE

The first two accidents cited are believed to be partially due to crosswind effect on jet blast.

A light aircraft was taxiing into position for takeoff. The wind at the time was reported from 320° at 8 knots with gusts to 28 knots. About two minutes before the accident, a large jet transport was cleared for takeoff on the runway. As the pilot of the light plane taxied into takeoff position on a heading of approcimately 40°, strong gusts of wind shifted the jet's takeoff blast into a position where it lifted the light plane's left wing upward, causing the air-



Baggage Cart Upsets

craft to flip over and come to rest upside down. Although none of the occupants was injured, the airplane was substantially damaged.

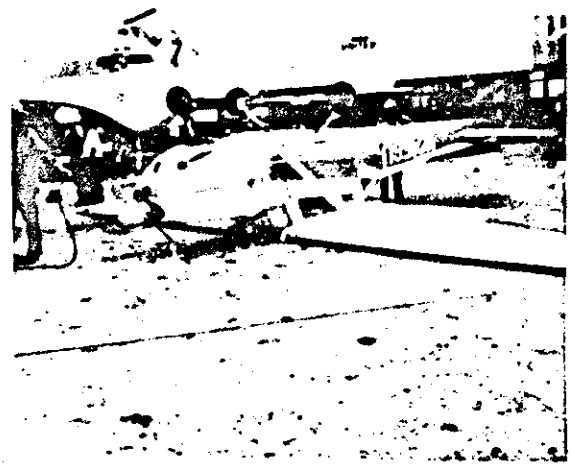
Before the light plane was cleared into takeoff position, however, the tower had cautioned the pilot on possible wake turbulence from the departing jet transport. Obviously, the pilot did not expect it before he got into takeoff position.

In a second case, the pilot of a light plane was cleared to Runway 23 via 27 with winds at 240°, at 18 knots gusting to 30 knots. He complied with the clearance and received one amendment to hold short of a taxiway to allow a four-engine jet to proceed onto 27 bound for 23 ahead of the small aircraft.

At the time, the jet transport was in position on 23 while the light plane was approximately 100 feet short of 23 on 27 heading west. Fifteen seconds from the time the jet transport acknowledged takeoff clearance, the pilot of the small aircraft advised the tower that he was taking the active runway. The tower acknowledged with a caution of wake turbulence and surface winds. At this time, the small aircraft was approximately 50 feet short of the active runway, heading west, and checking for possible traffic. Suddenly the pilot felt the wheels rise from the ground. He took corrective action by turning to a northeast heading, but it was too late. The aircraft struck the threshold lights on the left side of the runway, entered a soft area, and overturned with extensive damage.

Taxiing behind large jets in terminal areas can be very hazardous. For example, the pilot of a light aircraft was taxiing to a tiedown area after landing. As he taxied past a large maintenance hangar, his aircraft was upset by a Boeing 707 which was being runup by check crew mechanics. The 707 was positioned in front of a blast fence in an assigned runup area. The No. 2 engine was running at 95 percent power, and No. 3 at 75 percent power.

Just before the accident, the ground mechanic lookout attempted to advise the runup crew of the approaching aircraft. However, due to a



Overturned Aircraft

headset failure, which affected the mouthpiece, the lookout was unable to communicate with the runup crew in the cockpit. As the lighter plane taxied behind the 707, it flipped over on its back.

And in still another case, a Cessna 150 was blown over as it taxied behind a Boeing 727 just as the jet was preparing to depart from the ramp. The jet had started its engines and was in the process of receiving an instrument clearance when its exhaust blew the Cessna over.

This accident might have been prevented if the ground crewmen who were in telephone contact with the jet pilot had advised him of the approaching Cessna.

INFLIGHT ACCIDENTS

During takeoff, a twin-engine commuter aircraft drifted to the right of the runway, lost all elevator control and crashed.

According to crew statements, the copilot was at the controls at the start of the takeoff run. After takeoff, when the airplane was drifting to the right and not climbing fast enough, the captain took over the controls and applied full back elevator. The airplane started to climb momentarily, then began to sink rapidly as it was losing elevator control and finally it crashed.

Rudder Damage

The nose landing gear was torn out, and the nose section of the fuselage was extensively buckled and torn as a result of the impact, but there were no injuries.

Examination of the flight controls disclosed that the rudder lower trim tab was buckled and bent over to the right. No impact marks were found on the tab.

Investigation of the elevator control system disclosed that the elevator push-rod assembly had separated. The rod and adapter had pulled out of the tube assembly at the magneform joint.

Further investigation revealed that just before the accident occurred the aircraft had been parked for more than an hour in a general aviation parking area. The plane's tail was positioned towards the airline terminal gates from which large transport jets were operating.

Shortly after the aircraft was parked, a jet transport departed from the terminal gate and was directed to make a left turn which headed its tail directly toward the tail of the twin-engine commuter aircraft.

The cause of the accident was attributed to jet blast from the transport and inadequate preflight inspection of the twin-engine commuter aircraft. Proper inspection might have disclosed visible damage to the rudder tab.

Another accident occurred when a four-engine jet crashed while attempting to abort a takeoff. Twenty-nine passengers and crewmembers escaped from the aircraft. However, 11 were treated for injuries and one died four days later.

The first officer was making the takeoff. During the takeoff roll, he heard a loud report on the right side of the plane and felt a yaw and movement of the flight controls as he passed a twin-jet transport mired in the mud adjacent to the runway. He concluded that his aircraft had struck the twin-jet and he attempted to abort the takeoff.

The aircraft passed behind the twin-jet at the speed of approximately 135 knots. As the twin-jet applied power in an attempt to get out of the mud, the jet-blast perpendicular to the takeoff plane's path caused a short-duration compressor stall in the No. 4 engine. Although the stall resulted in a loud report and the jet blast apparently moved the flight controls, the performance capabilities of the aircraft were not affected. However, the first officer, convinced that a collision had occurred, elected to abort the takeoff. The aircraft ran approximately 421 feet. The main landing gear was sheared, and the aircraft was extensively damaged by ground slide and fire.

The National Transportation Safety Board determined that the probable cause of the accident was the inability of the crew to abort successfully at their takeoff speed. The abort, however, was understandably initiated because of the first officer's belief that his plane had collided with the twin-jet aircraft. A contributing factor was that the twin-jet crew advised the tower that their plane was clear of the runway without carefully ascertaining the facts. Actually, their aircraft was not at a safe distance from another aircraft taking off on that runway.

RECOMMENDATIONS

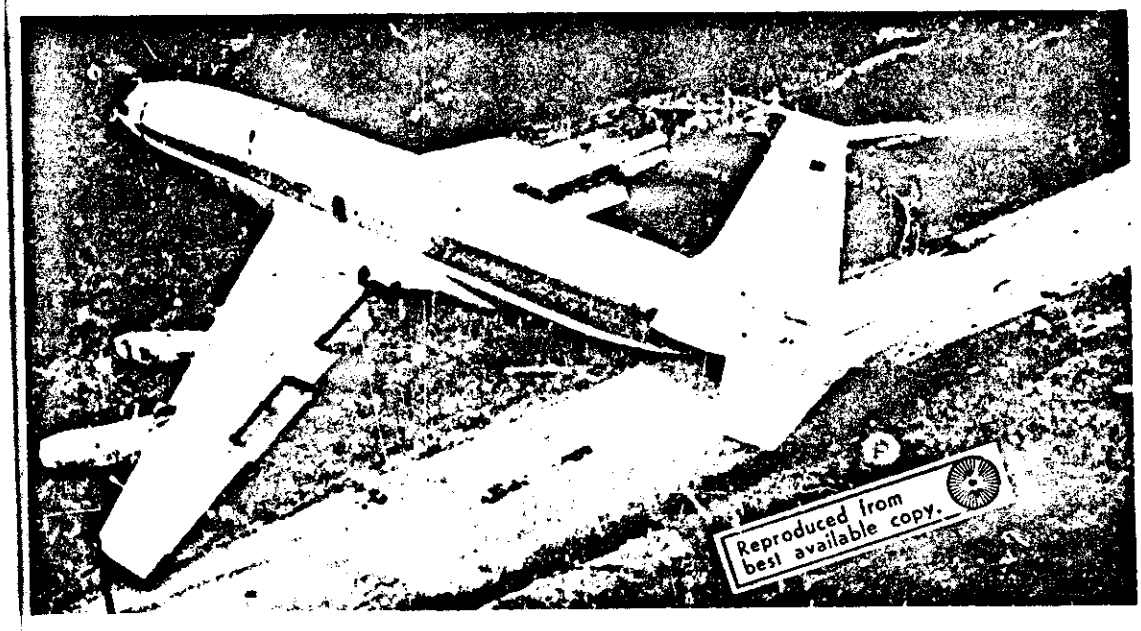
To protect the public, ground crew personnel and other members of the aviation community from accidents and injuries related to jet blast, the Safety Board recommends that the Federal Aviation Administration and other segments and organizations in the aviation community:

(1) Reemphasize and communicate directly to airport designers and operators the hazards associated with jet blast from wide-body aircraft, with particular reference to protecting passengers, ramp and maintenance personnel.

(2) Reemphasize and communicate directly to operators of small aircraft, maintenance ground crews and airport personnel techniques for avoiding jet blast.

In addition, the Board recommends that:

(3) In connection with the airport safety inspection program, as required by the Airport and Airways Development Act of 1970, the FAA require incident reporting of events involving damage/injury from jet blast during ground operation not incident to flight.



Damaged Transport Aircraft

BY THE NATIONAL TRANSPORTATION SAFETY BOARD:

/s/ JOHN H. REED
Chairman

/s/ FRANCIS H. McADAMS
Member

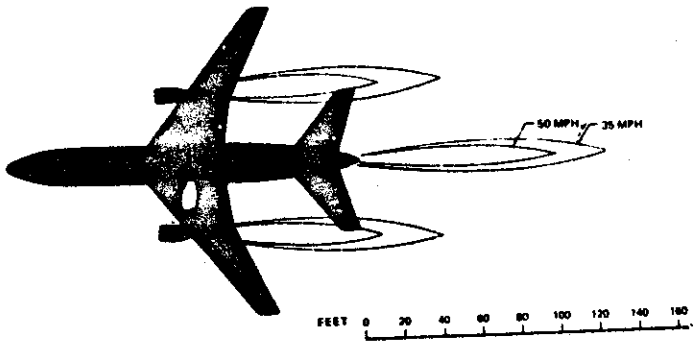
/s/ LOUIS M. THAYER
Member

/s/ ISABEL A. BURGESS
Member

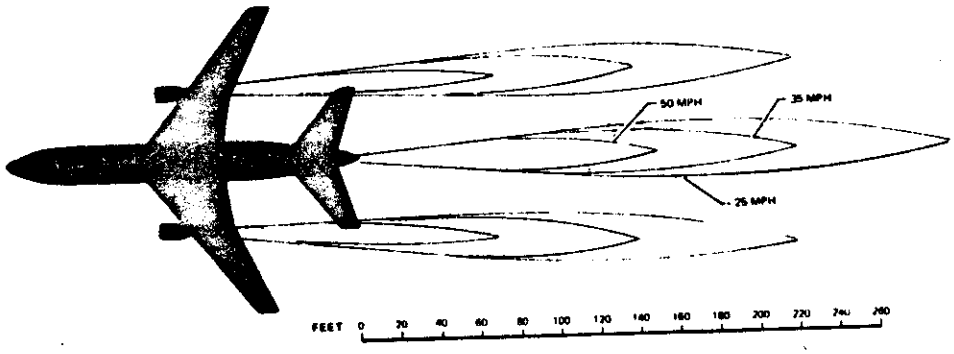
/s/ WILLIAM R. HALEY
Member

July 5, 1972.

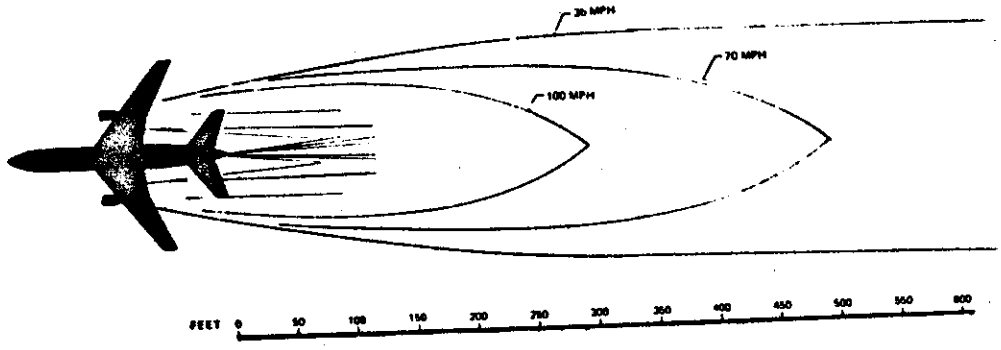
IDLE THRUST



BREAKAWAY THRUST



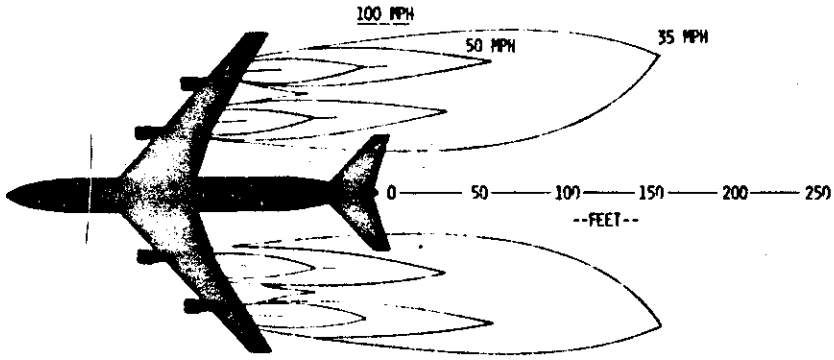
TAKEOFF THRUST



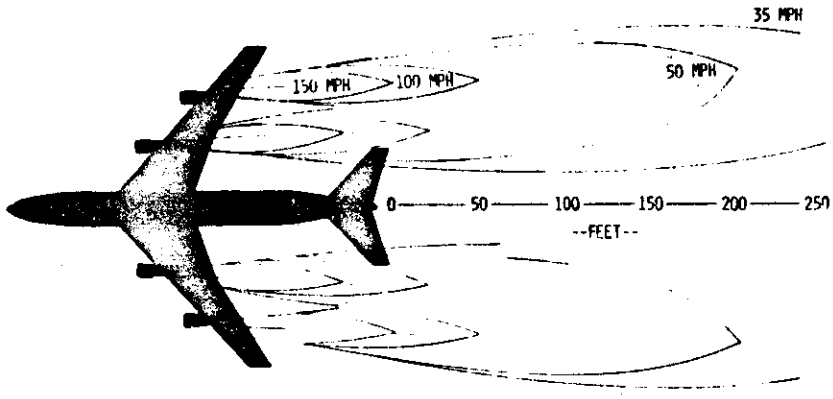
TYPICAL THREE (3) ENGINE WIDE-BODY VELOCITY PROFILES

Preceding page blank

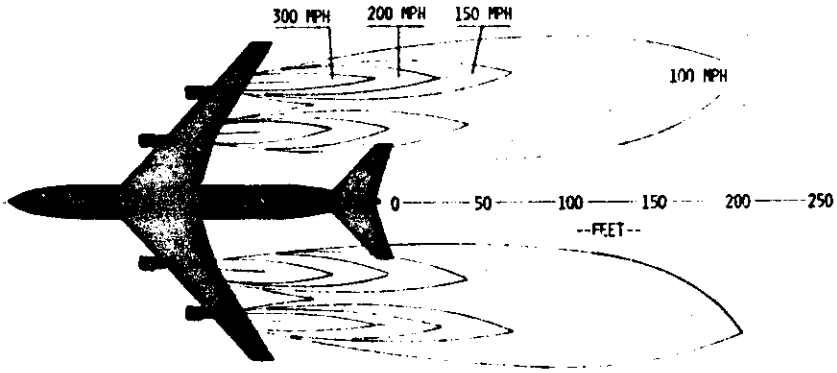
IDLE THRUST



BREAKAWAY THRUST



TAKEOFF THRUST



TYPICAL FOUR (4) ENGINE WIDE-BODY VELOCITY PROFILES

BRIEFS OF ACCIDENTS

INVOLVING

PROPELLER/JET/ROTOR BLAST

U. S. CIVIL AVIATION

1964-65-66-67-68-69-1970

1970 DATA BASED ON 900 RECORDS

FILE	DATE	LOCATION	AIRCRAFT DATA	INJURIES F S M/N	FLIGHT PURPOSE	PILOT DATA
3-1005	4/22/64 TIME - 1718	NEWARK NJ	AERO COMM 680 N41441 DAMAGE-SUBSTANTIAL	CR- 0 0 2 PX- 0 0 2	NONCOMMERCIAL CORP/EXEC	AIRLINE TRANSPORT, AGE 29, 6000 TOTAL HOURS, 1500 IN TYPE, NOT INSTRUMENT RATED.
	NAME OF AIRPORT - NEWARK TYPE OF ACCIDENT PROPELLER/JET/ROTOR BLAST			PHASE OF OPERATION STATIC: IDLING ENGINE(S)		
	PROBABLE CAUSE(S) AIRPORTS/AIRWAYS/FACILITIES - AIRPORT CONDITIONS: POORLY MAINTAINED RAMP/TAXIWAY SURFACE PERSONNEL - BLAST FROM B707 BLEW GRAVEL INTO ACFT.					
3-1704	6/19/64 TIME - 1520	LOS ANGELES CALIF	CESSNA 1720 N2754U DAMAGE-SUBSTANTIAL	CR- 0 0 1 PX- 0 0 0	COMMERCIAL AIR TAXI-PASSG	AIRLINE TRANSPORT, AGE 35, 11321 TOTAL HOURS, 4000 IN TYPE, INSTRUMENT RATED.
	NAME OF AIRPORT - LOS ANGELES INTL TYPE OF ACCIDENT PROPELLER/JET/ROTOR BLAST NOSE OVER/DOWN			PHASE OF OPERATION TAXI: TO TAKEOFF TAXI: TO TAKEOFF		
	PROBABLE CAUSE(S) PILOT IN COMMAND - FAILED TO FOLLOW APPROVED PROCEDURES,DIRECTIVES,ETC. FACTOR(S) MISCELLANEOUS ACTS,CONDITIONS - INSTRUCTIONS-MISINTERPRETED					
3-2231	7/27/64 TIME - 2130	WILMINGTON DEL	CESSNA 172 N7790U DAMAGE-SUBSTANTIAL	CR- 0 0 1 PX- 0 0 0	NONCOMMERCIAL BUSINESS	PRIVATE, AGE 23, 1000 TOTAL HOURS, 060 IN TYPE, NOT INSTRUMENT RATED.
	NAME OF AIRPORT - WILMINGTON TYPE OF ACCIDENT PROPELLER/JET/ROTOR BLAST NOSE OVER/DOWN			PHASE OF OPERATION TAXI: TO TAKEOFF TAXI: TO TAKEOFF		
	PROBABLE CAUSE(S) MISCELLANEOUS - PROP/JET/ROTOR BLAST					

FILE	DATE	LOCATION	AIRCRAFT DATA	INJURIES F S M/N	FLIGHT PURPOSE	PILOT DATA
3-2846	9/10/64 TIME - 1315	DETROIT MICH	CESSNA 172 N3661S DAMAGE-SUBSTANTIAL	CR- 0 0 1 PX- 0 0 0	COMMERCIAL AIR TAXI-PASSG	COMMERCIAL, FL.INSTR., AGE 21, 485 TOTAL HOURS, 273 IN TYPE, NOT INSTRU- MENT RATED.
	NAME OF AIRPORT - METROPOLITAN TYPE OF ACCIDENT PROPELLER/JET/ROTOR BLAST NOSE OVER/DOWN			PHASE OF OPERATION TAXI: FROM LANDING TAXI: FROM LANDING		
	PROBABLE CAUSE(S) PILOT IN COMMAND - EXERCISED POOR JUDGMENT PILOT - TAXIED INTO PROP BLAST OF LARGE AIRCRAFT					
3-3598	12/2/64 TIME - 1630	HOUSTON TEX	CESSNA 182 N3997O DAMAGE-SUBSTANTIAL	CR- 0 0 1 PX- 0 0 1	NONCOMMERCIAL BUSINESS	PRIVATE, AGE 67, 1070 TOTAL HOURS, 700 IN TYPE, NOT INSTRUMENT RATED.
	NAME OF AIRPORT - HOUSTON INT TYPE OF ACCIDENT PROPELLER/JET/ROTOR BLAST NOSE OVER/DOWN			PHASE OF OPERATION TAXI: FROM LANDING TAXI: FROM LANDING		
	PROBABLE CAUSE(S) PILOT - FAILED TO FOLLOW TOWER INSTRUCTIONS.					
3-1065	5/8/65 TIME - 1154	DENVER COLO	CESSNA 175 N8141T DAMAGE-SUBSTANTIAL	CR- 0 0 1 PX- 0 0 2	NONCOMMERCIAL BUSINESS	COMMERCIAL, FL.INSTR., AGE 62, 5000 TOTAL HOURS, 400 IN TYPE, NOT INSTRU- MENT RATED.
	NAME OF AIRPORT - STAPLETON FIELD TYPE OF ACCIDENT PROPELLER/JET/ROTOR BLAST NOSE OVER/DOWN			PHASE OF OPERATION TAXI: TO TAKEOFF TAXI: TO TAKEOFF		
	PROBABLE CAUSE(S) PERSONNEL - TRAFFIC CONTROL PERSONNEL: ISSUED IMPROPER OR CONFLICTING INSTRUCTIONS REMARKS- CONTROLLER FAILED TO RECONIZE JET BLAST HAZARD IN CLEARING LRGE JET A/C PAST & CLOSE TO SMALL A/C.					
3-1786	3/30/65 TIME - 1120	LAS VEGAS NEV	PIPER PA-22 N3348Z DAMAGE-SUBSTANTIAL	CR- 0 0 1 PX- 0 0 0	NONCOMMERCIAL BUSINESS	PRIVATE, AGE 32, 150 TOTAL HOURS, ALL IN TYPE, NOT INSTRUMENT RATED.
	NAME OF AIRPORT - MCCARRAN FIELD TYPE OF ACCIDENT PROPELLER/JET/ROTOR BLAST NOSE OVER/DOWN			PHASE OF OPERATION TAXI: TO TAKEOFF TAXI: TO TAKEOFF		
	PROBABLE CAUSE(S) MISCELLANEOUS - PROP/JET/ROTOR BLAST REMARKS- 6263T TAXIED TO CLOSED BEHIND LARGE AIRCRAFT					

FILE	DATE	LOCATION	AIRCRAFT DATA	INJURIES F S M/N	FLIGHT PURPOSE	PILOT DATA
3-1698	5/28/66 TIME - 1215	DENVER COLO	CESSNA 150 N7997Z DAMAGE-SUBSTANTIAL	CR- 0 0 1 PX- 0 0 0	NONCOMMERCIAL PRACTICE	STUDENT, AGE 25, 17 TOTAL HOURS, ALL IN TYPE, NOT INSTRUMENT RATED.

NAME OF AIRPORT - STAPLETON
TYPE OF ACCIDENT
PROPELLER/JET/ROTOR BLAST

PHASE OF OPERATION-
TAXI: TO TAKEOFF

PROBABLE CAUSE(S)
PILOT IN COMMAND - MISJUDGED DISTANCE
REMARKS- STUDENT TAXIED TOO CLOSE BEHIND TWO LARGE AIRCRAFT ON RUNUP AREA.

FILE	DATE	LOCATION	AIRCRAFT DATA	INJURIES F S M/N	FLIGHT PURPOSE	PILOT DATA
3-3764	11/10/66 TIME - 0830	OPA LOCKA FLA	CESSNA 172 N5359R DAMAGE-SUBSTANTIAL	CR- 0 0 2 PX- 0 0 0	INSTRUCTIONAL DUAL	COMMERCIAL, FL.INSTR., AGE 22, 700 TOTAL HOURS, 400 IN TYPE, INSTRUMENT RATED.

NAME OF AIRPORT - OPA LOCKA
TYPE OF ACCIDENT
PROPELLER/JET/ROTOR BLAST

PHASE OF OPERATION
STATIC: IDLING ENGINE(S)

PROBABLE CAUSE(S)
PERSONNEL - MISCELLANEOUS-PERSONNEL: PILOT OF OTHER AIRCRAFT
REMARKS- LARGE ACFT WAS TAXIED INTO POSITION WITH TAIL TOWARD N5359R AND IMMEDIATE ENGINE RUN-UP STARTED.

FILE	DATE	LOCATION	AIRCRAFT DATA	INJURIES F S M/N	FLIGHT PURPOSE	PILOT DATA
3-3897	11/17/66 TIME - 1527	FARGO N DAK	CESSNA 172H N1633F DAMAGE-SUBSTANTIAL	CR- 0 0 2 PX- 0 0 0	INSTRUCTIONAL DUAL	COMMERCIAL, FL.INSTR., AGE 23, 800 TOTAL HOURS, 60 IN TYPE, NOT INSTRUMENT RATED.

NAME OF AIRPORT - HECTOR
TYPE OF ACCIDENT
PROPELLER/JET/ROTOR BLAST
NOSE OVER/DOWN

PHASE OF OPERATION
TAXI: TO TAKEOFF
TAXI: TO TAKEOFF

PROBABLE CAUSE(S)
MISCELLANEOUS - PROP/JET/ROTOR BLAST
PILOT IN COMMAND - EXERCISED POOR JUDGMENT
FACTOR(S)
PERSONNEL - MISCELLANEOUS-PERSONNEL: PILOT OF OTHER AIRCRAFT
MISCELLANEOUS ACTS,CONDITIONS - CONGESTED TRAFFIC-PATTERN
REMARKS- OTHER AIRCRAFT NOR DC-3,FLT.784. PLT.1633F VOLUNTARILY TAXIED TO POSITION WHERE BLOW OVER OCCURED.

FILE	DATE	LOCATION	AIRCRAFT DATA	INJURIES F S M/N	FLIGHT PURPOSE	PILOT DATA
3-4056	11/8/66 TIME - 0709	SAN ANTONIO TEX	CESSNA 182 N8467T DAMAGE-SUBSTANTIAL	CR- 0 0 1 PX- 0 0 0	NONCOMMERCIAL BUSINESS	PRIVATE, AGE 48, 2000 TOTAL HOURS, 1900 IN TYPE, INSTRUMENT RATED.

NAME OF AIRPORT - SAN ANTONIO INTL
TYPE OF ACCIDENT
PROPELLER/JET/ROTOR BLAST
GEAR COLLAPSED

PHASE OF OPERATION
TAXI: TO TAKEOFF
TAXI: TO TAKEOFF

PROBABLE CAUSE(S)
MISCELLANEOUS - PROP/JET/ROTOR BLAST
PERSONNEL - MISCELLANEOUS-PERSONNEL: PILOT OF OTHER AIRCRAFT
FACTOR(S)
PERSONNEL - MISCELLANEOUS-PERSONNEL: GROUND CREWMAN
MISCELLANEOUS ACTS,CONDITIONS - OVERLOAD FAILURE
REMARKS- B-707 PLT STARTING ENG. BLEW CESSNA FROM TAXIWAY. GROUND-TO-ACFT INTERPHONE NOT USED DURING START.

FILE	DATE	LOCATION	AIRCRAFT DATA	INJURIES F S M/N	FLIGHT PURPOSE	PILOT DATA
3-4419	10/9/66 TIME - 0830	FLUSHING,NY	CESSNA 172 N2549Y DAMAGE-SUBSTANTIAL	CR- 0 0 1 PX- 0 0 1	NONCOMMERCIAL PLEASURE/PERSONAL TRANSP	PRIVATE, AGE 21, 57 TOTAL HOURS, 2 IN TYPE, NOT INSTRUMENT RATED.

NAME OF AIRPORT - LA GUARDIA
TYPE OF ACCIDENT
PROPELLER/JET/ROTOR BLAST

PHASE OF OPERATION
TAXI: FROM LANDING

PROBABLE CAUSE(S)
MISCELLANEOUS - PROP/JET/ROTOR BLAST
REMARKS- PROP BLAST FROM DC-6 AIRCRAFT.

FILE	DATE	LOCATION	AIRCRAFT DATA	INJURIES F S M/N	FLIGHT PURPOSE	PILOT DATA
2-0845	11/16/67 TIME - 0838	NEWARK APT FAC,NJ	BELL 47G N9408 DAMAGE-SUBSTANTIAL	CR- 0 0 1 PX- 0 0 0	COMMERCIAL AIR TAXI-PASSG	COMMERCIAL, AGE 31, 2641 TOTAL HOURS, 167 IN TYPE, NOT INSTRUMENT RATED.

NAME OF AIRPORT - NEWARK HELIPAD
TYPE OF ACCIDENT
PROPELLER/JET/ROTOR BLAST
ROLL OVER

PHASE OF OPERATION
STATIC: IDLING ENGINE(S)
STATIC: IDLING ENGINE(S)

PROBABLE CAUSE(S)
MISCELLANEOUS - PROP/JET/ROTOR BLAST
PILOT IN COMMAND - LEFT AIRCRAFT UNATTENDED, ENGINE RUNNING

FILE	DATE	LOCATION	AIRCRAFT DATA	INJURIES F S M/N	FLIGHT PURPOSE	PILOT DATA
3-0191	2/5/67 TIME - 1451	LONG BEACH CALIF	GRUMMAN G-21A N32d DAMAGE-SUBSTANTIAL	CR- 0 0 1 PX- 0 0 1	COMMERCIAL AIR TAXI-PASSG	AIRLINE TRANSPORT, AGE 50, 17307 TOTAL HOURS, 5700 IN TYPE, INSTRUMENT RATED.

NAME OF AIRPORT - LONG BEACH
TYPE OF ACCIDENT
PROPELLER/JET/ROTOR BLAST
NOSE OVER/DOWN

PHASE OF OPERATION
TAXI: TO TAKEOFF
TAXI: TO TAKEOFF

PROBABLE CAUSE(S)
MISCELLANEOUS - PROP/JET/ROTOR BLAST
PILOT IN COMMAND - EXERCISED POOR JUDGMENT
REMARKS- PLT TAXIED DIRECTLY BEHIND DEPARTING C-119. THE PILOTS WERE NOT USING THE SAME TOWER RADIO FREQ.

FILE	DATE	LOCATION	AIRCRAFT DATA	INJURIES F S M/N	FLIGHT PURPOSE	PILOT DATA
3-0489	2/14/67 TIME - 0923	ARDMORE,OKLA	CESSNA 172 N2468Y DAMAGE-SUBSTANTIAL	CR- 0 0 1 PX- 0 0 0	INSTRUCTIONAL SOLO	STUDENT, AGE 18, 58 TOTAL HOURS, 6 IN TYPE, NOT INSTRUMENT RATED.

NAME OF AIRPORT - ARDMORE MUNI.
TYPE OF ACCIDENT
PROPELLER/JET/ROTOR BLAST

PHASE OF OPERATION
TAXI: TO TAKEOFF

PROBABLE CAUSE(S)
PILOT IN COMMAND - EXERCISED POOR JUDGMENT
MISCELLANEOUS - PROP/JET/ROTOR BLAST
REMARKS- TAXIED BEHIND CONSTELLATION IN RUN UP POSITION.

FILE	DATE	LOCATION	AIRCRAFT DATA	INJURIES F S M/N	FLIGHT PURPOSE	PILOT DATA
3-0601	2/24/67 TIME - 0850	CORPUS CHRIST,TEX	CESSNA 175 N8018T DAMAGE-SUBSTANTIAL	CR- 0 0 2 PX- 0 0 0	INSTRUCTIONAL CHECK	STUDENT, AGE 33, 96 TOTAL HOURS, 64 IN TYPE, NOT INSTRUMENT RATED.

NAME OF AIRPORT - CORPUS CHRISTI
TYPE OF ACCIDENT
PROPELLER/JET/ROTOR BLAST
NOSE OVER/DOWN

PHASE OF OPERATION
STATIC: IDLING ENGINE(S)
STATIC: IDLING ENGINE(S)

PROBABLE CAUSE(S)
MISCELLANEOUS - PROP/JET/ROTOR BLAST
FACTOR(S)
WEATHER - UNFAVORABLE WIND CONDITIONS

SKY CONDITION
CLEAR
VISIBILITY AT ACCIDENT SITE
5 OR OVER
OBSTRUCTIONS TO VISION AT ACCIDENT SITE
NONE
WIND VELOCITY-KNOTS
14
TYPE OF FLIGHT PLAN
NONE

CEILING AT ACCIDENT SITE
UNLIMITED
PRECIPITATION AT ACCIDENT SITE
NONE
WIND DIRECTION-DEGREES
20
TYPE OF WEATHER CONDITIONS
VFR

REMARKS- WIND 020 DEGREES 14 KNOTS GUSTING 23 KNOTS.PROP WASH FROM LANDING AIRCRAFT.

FILE	DATE	LOCATION	AIRCRAFT DATA	INJURIES F S M/N	FLIGHT PURPOSE	PILOT DATA
3-1025	3/27/67 TIME - 1915	PATUXENT NAS,MD	PIPER PA-22 N5730Z DAMAGE-SUBSTANTIAL	CR- 0 0 2 PX- 0 0 0	INSTRUCTIONAL DUAL	COMMERCIAL, FL.INSTR., AGE 23, 319 TOTAL HOURS, 56 IN TYPE, NOT INSTRUMENT RATED.
	NAME OF AIRPORT - PATUXENT NAS TYPE OF ACCIDENT PROPELLER/JET/ROTOR BLAST			PHASE OF OPERATION STATIC: IDLING ENGINE(S)		
	PROBABLE CAUSE(S) PILOT IN COMMAND - EXERCISED POOR JUDGMENT MISCELLANEOUS - PROP/JET/ROTOR BLAST REMARKS- PLT TAXIED TOO CLOSE TO ACFT IN RUNUP POSITION.					
3-1094	4/5/67 TIME - 1257	MASON CITY, IOWA	CESSNA 182 N7114F DAMAGE-SUBSTANTIAL	CR- 0 0 1 PX- 0 0 1	COMMERCIAL AIR TAXI-PASSG	COMMERCIAL, FL.INSTR., AGE 22, 288 TOTAL HOURS, 14 IN TYPE, NOT INSTRUMENT RATED.
	NAME OF AIRPORT - MASON CITY MUNI TYPE OF ACCIDENT PROPELLER/JET/ROTOR BLAST NOSE OVER/DOWN			PHASE OF OPERATION TAXI: FROM LANDING TAXI: FROM LANDING		
	PROBABLE CAUSE(S) MISCELLANEOUS - PROP/JET/ROTOR BLAST PILOT IN COMMAND - EXERCISED POOR JUDGMENT FACTOR(S) PERSONNEL - MISCELLANEOUS-PERSONNEL: PILOT OF OTHER AIRCRAFT REMARKS- OZARK 456A MAKING RUNUP ON RAMP. CESSNA PLT TAXYING BEHIND OZARK ACFT.					
3-1311	4/22/67 TIME - 1000	RENO,NEV	CESSNA 172 N2133Y DAMAGE-SUBSTANTIAL	CR- 0 0 1 PX- 0 0 1	NONCOMMERCIAL PLEASURE/PERSONAL TRANSP	PRIVATE, AGE 53, 1135 TOTAL HOURS, ALL IN TYPE, INSTRUMENT RATED.
	NAME OF AIRPORT - RENO MUNIC TYPE OF ACCIDENT PROPELLER/JET/ROTOR BLAST			PHASE OF OPERATION STATIC: IDLING ENGINE(S)		
	PROBABLE CAUSE(S) PERSONNEL - MISCELLANEOUS-PERSONNEL: PILOT OF OTHER AIRCRAFT REMARKS- ENGS OF USAF GRUMMAN SA 16 WERE RUN UP WITH TAIL TOWARD REAR OF N2133Y WAITING FOR TAKEOFF CLRANCE					

FILE	DATE	LOCATION	AIRCRAFT DATA	INJURIES F S M/N	FLIGHT PURPOSE	PILOT DATA
3-1529	5/11/67 TIME - 1221	ATLANTA, GA	CESSNA 172B N965MJ DAMAGE-SUBSTANTIAL	CR- 0 0 1 PX- 0 0 3	NONCOMMERCIAL PLEASURE/PERSONAL TRANSP	COMMERCIAL, AGE 26, 550 TOTAL HOURS, 162 IN TYPE, INSTRUMENT RATED.
	NAME OF AIRPORT - ATLANTA MUNI TYPE OF ACCIDENT PROPELLER/JET/ROTOR BLAST NOSE OVER/DOWN			PHASE OF OPERATION TAXI: TO TAKEOFF TAXI: TO TAKEOFF		
	PROBABLE CAUSE(S) MISCELLANEOUS - PROP/JET/ROTOR BLAST PILOT IN COMMAND - EXERCISED POOR JUDGMENT REMARKS- PLT FAILED TO HEED CONTROL TOWER WARNING, TAXIED BEHIND DC-6 IN RUNUP POSITION.					
3-1751	5/9/67 TIME - 1445	OMAHA, NEBR	BEECH 95-55 N1711V DAMAGE-SUBSTANTIAL	CR- 0 0 1 PX- 0 0 0	NONCOMMERCIAL PLEASURE/PERSONAL TRANSP	COMMERCIAL, FL.INSTR. AGE 50, 17136 TOTAL HOURS, 300 IN TYPE, INSTRUMENT RATED.
	NAME OF AIRPORT - EPPLEY TYPE OF ACCIDENT PROPELLER/JET/ROTOR BLAST NOSE OVER/DOWN			PHASE OF OPERATION TAXI: TO TAKEOFF TAXI: TO TAKEOFF		
	PROBABLE CAUSE(S) MISCELLANEOUS - PROP/JET/ROTOR BLAST PILOT IN COMMAND - SPONTANEOUS-IMPROPER ACTION REMARKS- PLT CLEARED BY TOWER TO HOLD BEHIND DC-6 ON RNWY.PLT CROSSED BEHIND AS DC-6 APPLIED TAKEOFF POWER.					
3-2683	4/7/67 TIME - 1455	WEST COLUMBIA,SC	PIPER PA-22 N5886Z DAMAGE-SUBSTANTIAL	CR- 0 0 1 PX- 0 0 0	INSTRUCTIONAL SOLO	STUDENT, AGE 21, 36 TOTAL HOURS, ALL IN TYPE, NOT INSTRUMENT RATED.
	NAME OF AIRPORT - COLUMBIA TYPE OF ACCIDENT PROPELLER/JET/ROTOR BLAST NOSE OVER/DOWN			PHASE OF OPERATION TAXI: FROM LANDING TAXI: FROM LANDING		
	PROBABLE CAUSE(S) MISCELLANEOUS - PROP/JET/ROTOR BLAST PILOT IN COMMAND - MISJUDGED DISTANCE REMARKS- AIRCRAFT TAXIED BEHIND DC6 WAITING TAKE-OFF.					

FILE	DATE	LOCATION	AIRCRAFT DATA	INJURIES F S M/N	FLIGHT PURPOSE	PILOT DATA
3-3050	4/5/67 TIME - 1700	BURBANK,CALIF	CESSNA 150 N7178F DAMAGE-SUBSTANTIAL	CR- 0 0 2 PX- 0 0 0	INSTRUCTIONAL DUAL	COMMERCIAL, FL.INSTR., AGE 44, 4200 TOTAL HOURS, 1200 IN TYPE, NOT INSTRU- MENT RATED.

NAME OF AIRPORT - LOCKHEED
TYPE OF ACCIDENT
PROPELLER/JET/ROTOR BLAST
NOSE OVER/DOWN

PHASE OF OPERATION
TAXI: TO TAKEOFF
TAXI: TO TAKEOFF

PROBABLE CAUSE(S)
PERSONNEL - MISCELLANEOUS-PERSONNEL: PILOT OF OTHER AIRCRAFT
REMARKS- OPERATOR OF JET ACFT FAILED TO CHECK AREA PRIOR TO RUNNING UP ENGINE.

FILE	DATE	LOCATION	AIRCRAFT DATA	INJURIES F S M/N	FLIGHT PURPOSE	PILOT DATA
3-3803	10/28/67 TIME - 1315	MCALLEN,TEX	CESSNA 150 N3725J DAMAGE-SUBSTANTIAL	CR- 0 0 1 PX- 0 0 0	INSTRUCTIONAL TRAINING	STUDENT, AGE 30, 23 TOTAL HOURS, ALL IN TYPE, NOT INSTRUMENT RATED.

NAME OF AIRPORT - MILLER INTL
TYPE OF ACCIDENT
PROPELLER/JET/ROTOR BLAST
NOSE OVER/DOWN

PHASE OF OPERATION
TAXI: TO TAKEOFF
TAXI: TO TAKEOFF

PROBABLE CAUSE(S)
MISCELLANEOUS - PROP/JET/ROTOR BLAST
PERSONNEL - OPERATIONAL SUPERVISORY PERSONNEL: INADEQUATE SUPERVISION/TRAINING OF RAMP CREWS
PILOT IN COMMAND - MISUNDERSTANDING OF ORDERS OR INSTRUCTIONS
REMARKS- T.T.L.CONVAIR IN ENG MAINT RUN BLEW ACFT OVER. TOWER WARNED BOTH PARTIES OF POTENTIAL DANGER.

FILE	DATE	LOCATION	AIRCRAFT DATA	INJURIES F S M/N	FLIGHT PURPOSE	PILOT DATA
3-4027	10/25/67 TIME - 1500	BEDFORD,MASS	CESSNA 150 N6588F DAMAGE-SUBSTANTIAL	CR- 0 0 1 PX- 0 0 0	INSTRUCTIONAL TRAINING	STUDENT, AGE 24, 40 TOTAL HOURS, ALL IN TYPE, NOT INSTRUMENT RATED.

NAME OF AIRPORT - HANSCOM
TYPE OF ACCIDENT
PROPELLER/JET/ROTOR BLAST
NOSE OVER/DOWN

PHASE OF OPERATION
TAXI: TO TAKEOFF
TAXI: TO TAKEOFF

PROBABLE CAUSE(S)
PILOT IN COMMAND - EXERCISED POOR JUDGMENT
MISCELLANEOUS - PROP/JET/ROTOR BLAST
REMARKS- PLT TAXIED BEHIND C-124 IN ENG RUN UP. BOTH ACFT WERE ON DIFFERENT FREQUENCIES.

FILE	DATE	LOCATION	AIRCRAFT DATA	INJURIES F S M/N	FLIGHT PURPOSE	PILOT DATA
3-0463	3/3/68 TIME - 1930	FLUSHING,NY	CESSNA 182K N2630R DAMAGE-SUBSTANTIAL	CR- 0 0 1 PX- 0 0 2	NONCOMMERCIAL PLEASURE/PERSONAL TRANSP	PRIVATE,FL.INSTR., AGE 24, 580 TOTAL HOURS, 300 IN TYPE, INSTRUMENT RATED.

NAME OF AIRPORT - LAGUARDIA
TYPE OF ACCIDENT
PROPELLER/JET/ROTOR BLAST
NOSE OVER/DOWN

PHASE OF OPERATION
TAXI: TO TAKEOFF
TAXI: TO TAKEOFF

PROBABLE CAUSE(S)
PILOT IN COMMAND - EXERCISED POOR JUDGMENT
MISCELLANEOUS - PROP/JET/ROTOR BLAST
WEATHER - UNFAVORABLE WIND CONDITIONS
WEATHER BRIEFING - BRIEFED BY FLIGHT SERVICE PERSONNEL, BY PHONE
WEATHER FORECAST - FORECAST SUBSTANTIALLY CORRECT

SKY CONDITION
CLEAR
VISIBILITY AT ACCIDENT SITE
5 OR OVER
OBSTRUCTIONS TO VISION AT ACCIDENT SITE
NONE
WIND DIRECTION-DEGREES
310
TYPE OF WEATHER CONDITIONS
VFR

CEILING AT ACCIDENT SITE
UNLIMITED
PRECIPITATION AT ACCIDENT SITE
NONE
RELATIVE BEARING OF WIND
HEAD WIND 338-022 DEGREES
WIND VELOCITY-KNOTS
18
TYPE OF FLIGHT PLAN
IFR

REMARKS- XWIND 18K GUSTING 28K.JET ACFT TOOK OFF ON SAME RNWY JUST PRIOR TO ACCIDENT.PLT N2630R WAS ADVISED

FILE	DATE	LOCATION	AIRCRAFT DATA	INJURIES F S M/N	FLIGHT PURPOSE	PILOT DATA
3-1732	5/16/68 TIME - 1510	CLEVELAND,OHIO	CESSNA 172 N8353L DAMAGE-SUBSTANTIAL	CR- 0 0 1 PX- 0 0 1	NONCOMMERCIAL BUSINESS	AIRLINE TRANSPORT, AGE 35, 2930 TOTAL HOURS, 10 IN TYPE, INSTRUMENT RATED.

NAME OF AIRPORT - CLEVELAND-HOPKINS
TYPE OF ACCIDENT
PROPELLER/JET/ROTOR BLAST

PHASE OF OPERATION
TAXI: TO TAKEOFF

PROBABLE CAUSE(S)
PILOT IN COMMAND - EXERCISED POOR JUDGMENT
REMARKS- PILOT TAXIED ON TO ACTIVE RNWY TOO SOON BEHIND JET 720 THAT HAD JUST DEPARTED.

FILE	DATE	LOCATION	AIRCRAFT DATA	INJURIES F S M/N	FLIGHT PURPOSE	PILOT DATA
3-1782	5/7/68 TIME - 1028	WASHINGTON,DC	BEECH C35 N6530 DAMAGE-SUBSTANTIAL	CR- 0 0 1 PX- 0 0 1	NONCOMMERCIAL PLEASURE/PERSONAL TRANSP	COMMERCIAL, AGE 58, 2080 TOTAL HOURS, 1650 IN TYPE, INSTRUMENT RATED.

NAME OF AIRPORT - WASHINGTON NATL.
TYPE OF ACCIDENT
PROPELLER/JET/ROTOR BLAST
NOSE OVER/DOWN

PHASE OF OPERATION
TAXI: TO TAKEOFF
TAXI: TO TAKEOFF

PROBABLE CAUSE(S)
MISCELLANEOUS - PROP/JET/ROTOR BLAST
REMARKS- JET BLAST FROM 727 ACFT.

FILE	DATE	LOCATION	AIRCRAFT DATA	INJURIES F S M/N	FLIGHT PURPOSE	PILOT DATA
3-3102	9/24/68 TIME - 1820	SANTA ANA,CALIF	CESSNA 150 N2669S DAMAGE-SUBSTANTIAL	CR- 0 0 1 PX- 0 0 0	NONCOMMERCIAL PLEASURE/PERSONAL TRANSP	COMMERCIAL, AGE 47, 3000 TOTAL HOURS, 30 IN TYPE, NOT INSTRUMENT RATED.

NAME OF AIRPORT - ORANGE COUNTY
TYPE OF ACCIDENT
PROPELLER/JET/ROTOR BLAST
NOSE OVER/DOWN

PHASE OF OPERATION
STATIC: IDLING ENGINE(S)
STATIC: IDLING ENGINE(S)

PROBABLE CAUSE(S)
MISCELLANEOUS - PROP/JET/ROTOR BLAST
FACTOR(S)
PERSONNEL - AIRPORT SUPERVISORY PERSONNEL: OTHER
REMARKS- LOCKHEED 181 DEPARTING GATE BLEW CESSNA OVER. LT ACFT PARKING AREA LOCATED CLOSE TO TERMINAL GATE.

3-3845	11/13/68 TIME - 0945	RENO,NEV	CESSNA 172 N46384 DAMAGE-SUBSTANTIAL	CR- 0 0 1 PX- 0 0 0	NONCOMMERCIAL BUSINESS	PRIVATE, AGE 20, 124 TOTAL HOURS, 24 IN TYPE, NOT INSTRUMENT RATED.

NAME OF AIRPORT - RENO
TYPE OF ACCIDENT
PROPELLER/JET/ROTOR BLAST
NOSE OVER/DOWN

PHASE OF OPERATION
STATIC: IDLING ENGINE(S)
STATIC: IDLING ENGINE(S)

PROBABLE CAUSE(S)
PILOT IN COMMAND - EXERCISED POOR JUDGMENT
MISCELLANEOUS - PROP/JET/ROTOR BLAST
REMARKS- N46384 PARKED IN RUN-UP AREA TOO CLOSE TO BOEING 707 WHICH WAS MOVING ONTO RNWY.

3-3940	10/17/68 TIME - 1710	COLO SPRINGS,COLO	CESSNA 150 N6680G DAMAGE-SUBSTANTIAL	CR- 0 0 1 PX- 0 0 0	INSTRUCTIONAL TRAINING	STUDENT, AGE 52, 31 TOTAL HOURS, ALL IN TYPE, NOT INSTRUMENT RATED.

NAME OF AIRPORT - PETERSON FIELD
TYPE OF ACCIDENT
PROPELLER/JET/ROTOR BLAST

PHASE OF OPERATION
STATIC: IDLING ENGINE(S)

PROBABLE CAUSE(S)
MISCELLANEOUS - PROP/JET/ROTOR BLAST
FACTOR(S)
PERSONNEL - MISCELLANEOUS-PERSONNEL: PILOT OF OTHER AIRCRAFT
PILOT IN COMMAND - EXERCISED POOR JUDGMENT
PERSONNEL - TRAFFIC CONTROL PERSONNEL: INADEQUATE SPACING OF AIRCRAFT
REMARKS- ACFT FLIPPED OVER FROM JET BLAST OF DC-9.

FILE	DATE	LOCATION	AIRCRAFT DATA	INJURIES F S M/N	FLIGHT PURPOSE	PILOT DATA
3-4331	10/26/63 TIME - 1314	CHANTILLY,VA	CESSNA 172 N6011N DAMAGE-SUBSTANTIAL	CR- 0 0 1 PX- 0 0 1	NONCOMMERCIAL PLEASURE/PERSONAL TRANSP	PRIVATE, AGE 42, 156 TOTAL HOURS, 31 IN TYPE, NOT INSTRUMENT RATED.

NAME OF AIRPORT - DULLES INTL.
TYPE OF ACCIDENT
PROPELLER/JET/ROTOR BLAST
PHASE OF OPERATION
STATIC: IDLING ENGINE(S)

PROBABLE CAUSE(S)
MISCELLANEOUS - PROP/JET/ROTOR BLAST
PERSONNEL - MISCELLANEOUS-PERSONNEL: PILOT OF OTHER AIRCRAFT
FACTOR(S)
MISCELLANEOUS ACTS,CONDITIONS - COMMUNICATIONS FAILURE
REMARKS- PLT WAITING FOR CLEARANCE FOR T/O,TOWER CLEARED 707 FOR T/O JET BLAST FLIPPED ACFT ON BACK.

FILE	DATE	LOCATION	AIRCRAFT DATA	INJURIES F S M/N	FLIGHT PURPOSE	PILOT DATA
3-4397	11/16/63 TIME - 1303	MORRISVILLE,NC	CESSNA P206C N8644Z DAMAGE-SUBSTANTIAL	CR- 0 0 2 PX- 0 0 1	INSTRUCTIONAL DUAL	COMMERCIAL, FL.INSTR., AGE 31, 909 TOTAL HOURS, 1 IN TYPE, INSTRUMENT RATED.

NAME OF AIRPORT - RALEIGH-DURHAM
TYPE OF ACCIDENT
PROPELLER/JET/ROTOR BLAST
PHASE OF OPERATION
STATIC: IDLING ENGINE(S)

PROBABLE CAUSE(S)
PILOT IN COMMAND - MISJUDGED DISTANCE
PERSONNEL - MISCELLANEOUS-PERSONNEL: PILOT OF OTHER AIRCRAFT
MISCELLANEOUS - PROP/JET/ROTOR BLAST
REMARKS- TWO PAX PLT TO MOVE,BLOCKING JET. PLT DIDNT MOVE SUFFICIENT DISTANCE.

FILE	DATE	LOCATION	AIRCRAFT DATA	INJURIES F S M/N	FLIGHT PURPOSE	PILOT DATA
3-3634	7/13/59 TIME - 1655	MIDLAND,TEX	CESSNA 320E N3033J DAMAGE-SUBSTANTIAL	CR- 0 0 1 PX- 0 0 0	NONCOMMERCIAL PLEASURE/PERSONAL TRANSP	COMMERCIAL, FL.INSTR., AGE 37, 3950 TOTAL HOURS, 915 IN TYPE, NOT INSTRUMENT RATED.

NAME OF AIRPORT - MIDLAND-ODESSA
TYPE OF ACCIDENT
PROPELLER/JET/ROTOR BLAST
NOSE OVER/DOWN
PHASE OF OPERATION
TAXI: TO TAKEOFF
TAXI: TO TAKEOFF

PROBABLE CAUSE(S)
PILOT IN COMMAND - EXERCISED POOR JUDGMENT
MISCELLANEOUS - PROP/JET/ROTOR BLAST
REMARKS- N3033J TAXIED BEHIND A DC9 CLEARED INTO POS ON THE RNWY.

FILE	DATE	LOCATION	AIRCRAFT DATA	INJURIES F S M/N	FLIGHT PURPOSE	PILOT DATA
3-1356	4/20/69 TIME - 2110	OAKLAND,CALIF	CESSNA 182 N6452A DAMAGE-SUBSTANTIAL	CR- 0 0 1 PX- 0 0 0	INSTRUCTIONAL TRAINING	STUDENT, AGE 35, 63 TOTAL HOURS, ALL IN TYPE, NOT INSTRUMENT RATED.
	NAME OF AIRPORT - OAKLAND INTL TYPE OF ACCIDENT PROPELLER/JET/ROTOR BLAST NOSE OVER/DOWN			PHASE OF OPERATION TAXI: TO TAKEOFF TAXI: TO TAKEOFF		
	PROBABLE CAUSE(S) PILOT IN COMMAND - MISJUDGED CLEARANCE MISCELLANEOUS - PROP/JET/ROTOR BLAST REMARKS- TAXIED TOO CLOSE BEHIND JET HOLDING ON TAXIWAY FOR TAKEOFF CLEARANCE.					
3-1813	6/21/69 TIME - 1045	WACO,TEX	AERONCA 7DC N2804E DAMAGE-SUBSTANTIAL	CR- 0 0 1 PX- 0 0 0	NONCOMMERCIAL PLEASURE/PERSONAL TRANSP	PRIVATE, AGE 43, 999 TOTAL HOURS, 40 IN TYPE, NOT INSTRUMENT RATED.
	NAME OF AIRPORT - WACO TYPE OF ACCIDENT PROPELLER/JET/ROTOR BLAST NOSE OVER/DOWN			PHASE OF OPERATION TAXI: TO TAKEOFF TAXI: TO TAKEOFF		
	PROBABLE CAUSE(S) PILOT IN COMMAND - EXERCISED POOR JUDGMENT MISCELLANEOUS - PROP/JET/ROTOR BLAST REMARKS- TAXIED BEHIND C124, ALL 4 ENG RUNNING.					
3-2524	8/20/69 TIME - 1435	SANTA ANA,CALIF	CESSNA 150 N22590 DAMAGE-SUBSTANTIAL	CR- 0 0 2 PX- 0 0 0	INSTRUCTIONAL DUAL	COMMERCIAL, FL.INSTR., AGE 32, 705 TOTAL HOURS, 240 IN TYPE, NOT INSTRUMENT RATED.
	NAME OF AIRPORT - ORANGE COUNTY DEPARTURE POINT SANTA ANA,CALIF TYPE OF ACCIDENT PROPELLER/JET/ROTOR BLAST NOSE OVER/DOWN	INTENDED DESTINATION SANTA ANA,CALIF		PHASE OF OPERATION TAXI: TO TAKEOFF TAXI: TO TAKEOFF		
	PROBABLE CAUSE(S) PILOT IN COMMAND - EXERCISED POOR JUDGMENT REMARKS- IP TOLD STUDENT TO TAXI BEHIND B-25 IN RUN-UP AREA, B-25 BEGAN RUN-UP AS N22590 WAS BEHIND IT.					

FILE	DATE	LOCATION	AIRCRAFT DATA	INJURIES F S N/N	FLIGHT PURPOSE	PILOT DATA
3-2983	9/23/69 TIME - 1120	PENSACOLA,FLA	CESSNA 150H N6587S DAMAGE-SUBSTANTIAL	CR- 0 0 2 PX- 0 0 0	INSTRUCTIONAL DUAL	COMMERCIAL, FL.INSTR., AGE 24, 1200 TOTAL HOURS, 700 IN TYPE, NOT INSTRU- MENT RATED.

NAME OF AIRPORT - PENSACOLA,MUN
DEPARTURE POINT
PENSACOLA,FLA
INTENDED DESTINATION
LOCAL
TYPE OF ACCIDENT
PROPELLER/JET/ROTOR BLAST
PHASE OF OPERATION
TAXI: TO TAKEOFF

PROBABLE CAUSE(S)
MISCELLANEOUS - PROP/JET/ROTOR BLAST
PILOT IN COMMAND - EXERCISED POOR JUDGMENT
FACTOR(S)
PERSONNEL - MISCELLANEOUS-PERSONNEL: GROUND SIGNALMAN
MISCELLANEOUS ACTS,CONDITIONS - CONGESTED RAMP/TAXIWAY
REMARKS- 727 COMMENCED TAXI FROM PARKING RAMP AS N6587S TAXIED BEHIND IT.GRND CREW DIRECTING 727 NOT ALERT.

FILE	DATE	LOCATION	AIRCRAFT DATA	INJURIES F S N/N	FLIGHT PURPOSE	PILOT DATA
3-3841	9/8/69 TIME - 1559	OAKLAND,CALIF	CESSNA 150 N5797E DAMAGE-SUBSTANTIAL	CR- 0 0 1 PX- 0 0 0	NONCOMMERCIAL BUSINESS	PRIVATE, AGE 43, 178 TOTAL HOURS, 84 IN TYPE, NOT INSTRUMENT RATED.

NAME OF AIRPORT - OAKLAND
DEPARTURE POINT
UKIAH,CALIF
INTENDED DESTINATION
OAKLAND,CALIF
TYPE OF ACCIDENT
PROPELLER/JET/ROTOR BLAST
NOSE OVER/DOWN
PHASE OF OPERATION
TAXI: FROM LANDING
TAXI: FROM LANDING

PROBABLE CAUSE(S)
INSTRUMENTS/EQUIPMENT AND ACCESSORIES - MISCELLANEOUS EQUIPMENT: OTHER
MISCELLANEOUS - PROP/JET/ROTOR BLAST
REMARKS- B707 IN ENG RUN UP AREA.GRND SIGNALMAN ON ADZ CHECK CREW OF TAXING ACFT DUE HEADSET FAILURE.

FILE	DATE	LOCATION	AIRCRAFT DATA	INJURIES F S N/N	FLIGHT PURPOSE	PILOT DATA
3-4719	8/24/69 TIME - 0643	LOS ANGELES,CALIF	CESSNA 172D N2856U DAMAGE-SUBSTANTIAL	CR- 0 0 1 PX- 0 0 1	NONCOMMERCIAL PLEASURE/PERSONAL TRANSP	COMMERCIAL, FL.INSTR., AGE 35, 1500 TOTAL HOURS, 160 IN TYPE, NOT INSTRU- MENT RATED.

NAME OF AIRPORT - LOS ANGELES
DEPARTURE POINT
RIVERSIDE,CALIF
INTENDED DESTINATION
LOS ANGELES,CALIF
TYPE OF ACCIDENT
PROPELLER/JET/ROTOR BLAST
NOSE OVER/DOWN
PHASE OF OPERATION
STATIC: PARKED-ENGINES NOT OPERATING
STATIC: PARKED-ENGINES NOT OPERATING

PROBABLE CAUSE(S)
PERSONNEL - AIRPORT SUPERVISORY PERSONNEL: OTHER
MISCELLANEOUS - PROP/JET/ROTOR BLAST
FACTOR(S)
MISCELLANEOUS ACTS,CONDITIONS - CONGESTED RAMP/TAXIWAY
REMARKS- APRT MANAGEMENT ALLOWED THE MIXING OF LIGHT AND,HEAVY ACFT IN CLOSE PROXIMITY.

FILE	DATE	LOCATION	AIRCRAFT DATA	INJURIES F S M/N	FLIGHT PURPOSE	PILOT DATA
3-0165	3/6/70 TIME - 2213	WINDSOR LOCK,CONN	DEHAVILLAND DHC-6 N121P4 DAMAGE-SUBSTANTIAL	CR- 0 0 2 PX- 0 0 0	COMMERCIAL AIR TAXI-PASSG	COMMERCIAL, AGE 28, 4022 TOTAL HOURS, 2503 IN TYPE, INSTRUMENT RATED.

NAME OF AIRPORT - BRADLEY
DEPARTURE POINT
WINDSOR LOCK,CONN
INTENDED DESTINATION
NEW HAVEN,CONN
TYPE OF ACCIDENT
PROPELLER/JET/ROTOR BLAST
COLLISION WITH GROUND/WATER: UNCONTROLLED
PHASE OF OPERATION
STATIC: PARKED-ENGINES NOT OPERATING
TAKEOFF: INITIAL CLIMB

PROBABLE CAUSE(S)
MISCELLANEOUS - PROP/JET/ROTOR BLAST
PILOT IN COMMAND - INADEQUATE PREFLIGHT PREPARATION AND/OR PLANNING
MISCELLANEOUS ACTS,CONDITIONS - PREVIOUS DAMAGE
FACTOR(S)
PERSONNEL - AIRPORT SUPERVISORY PERSONNEL: IMPROPER OPERATION OF FACILITIES
REMARKS- JET BLAST DAMAGED LOWER RUDDER TRIM TAB,ELEVATOR PUSH ROD ASSY.LOST CNTL ON T/O,ROD SEPARATED.

FILE	DATE	LOCATION	AIRCRAFT DATA	INJURIES F S M/N	FLIGHT PURPOSE	PILOT DATA
3-0363	1/11/70 TIME - 0831	S FRANCISCO,CALIF	BEECH D35 N2133D DAMAGE-SUBSTANTIAL	CR- 0 0 1 PX- 0 0 0	NONCOMMERCIAL BUSINESS	AIRLINE TRANSPORT, AGE 57, 30508 TOTAL HOURS, 750 IN TYPE, INSTRUMENT RATED.

NAME OF AIRPORT - SAN FRANCISCO
DEPARTURE POINT
S FRANCISCO,CALIF
INTENDED DESTINATION
ORLAND,CALIF
TYPE OF ACCIDENT
PROPELLER/JET/ROTOR BLAST
PHASE OF OPERATION
TAXI: TO TAKEOFF

PROBABLE CAUSE(S)
PERSONNEL - TRAFFIC CONTROL PERSONNEL: ISSUED IMPROPER OR CONFLICTING INSTRUCTIONS
PERSONNEL - MISCELLANEOUS-PERSONNEL: PILOT OF OTHER AIRCRAFT
MISCELLANEOUS - PROP/JET/ROTOR BLAST
REMARKS- GRND CTL CLRD BEECH TAXI,ADVSD B727 ON RNWY HOLDING,LCL CTL CLRD B727 FOR T/O.