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

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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 nev, 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 far 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.

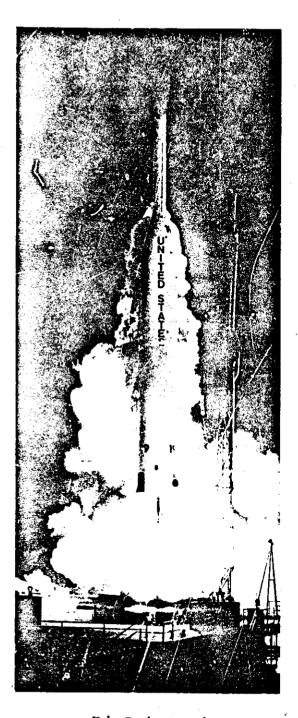
These early jets were treated with respect. Ground personnel and other aircraft usually kept their distance. The kerosene exhaust was plainly visible even on a sunny day. Also, the diesel odor, tremendons heat and car-splitting scream of the early engines made people wary of getting too close to them.

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

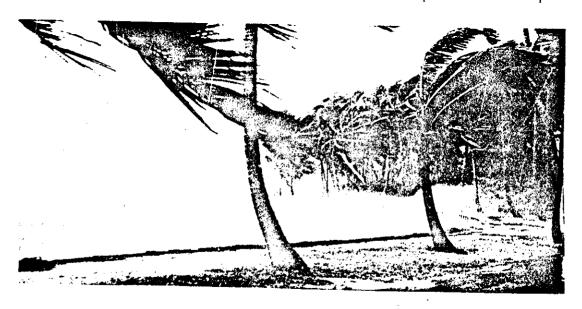


Delta Rocket Launch

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.

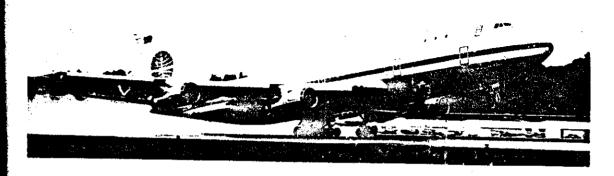
Furthermore, crosswinds can move the unseen blast from a position directly behind the airplane, where it might be anticipated, to the right or left of the plane. A crosswind of 35 m.p.h., for example, can displace the 45 m.p.h. exhaust zone sideways as much as 175 feet at idle power. At taxi power, the 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.



Bocing 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 taxling from a

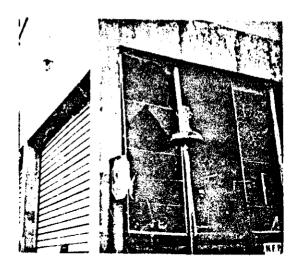


Airport Building Damage

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 whiches parked in the driveway and seriously bared a number of people on the ground.

In another case, a jet blast blew over approxmacly 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



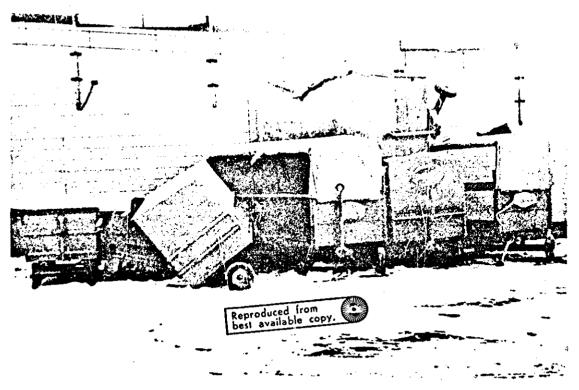
Airport Ramp Damage

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 approximately 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.

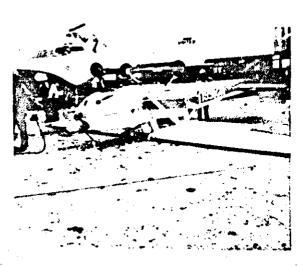
Before the light plane was cleared into takeoff position, however, the tower had cautioned the pilot on possible wake turbulence from the departing jet transport. Obviously, the pilot did not expect it before he got into takeoff position.

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,

Taxing behind large jets in terminal areas can be very hazardous. For example, the pilot of a light aircraft was taxing 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 inpact, 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 fourengine jet crashed while attempting to abort a takeoff. Twenty-nine passenger; 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 or the right side of the plane and felt a vaw 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 13% knots. As the twin-jet applied power in the altempt 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 five.

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

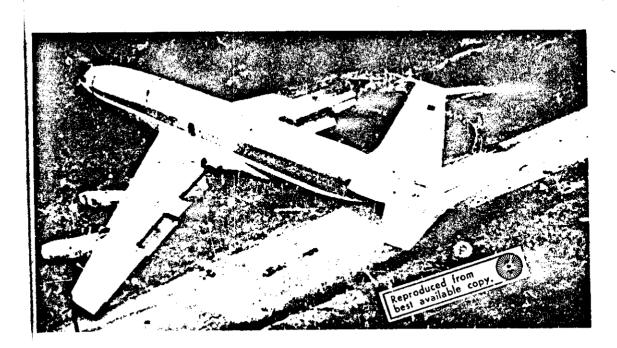
To protect the public, ground crew personnel and other members of the aviation community from accidents and injuries related to jet blast, the Safety Board recommends that the Federal Aviation Administration and other segments and organizations in the aviation community:

(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.



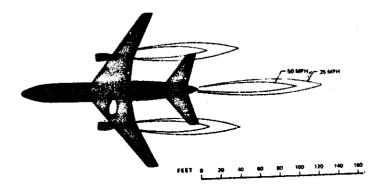
Damaged Transport Aircraft

BY THE NATIONAL TRANSPORTATION SAFETY BOARD:

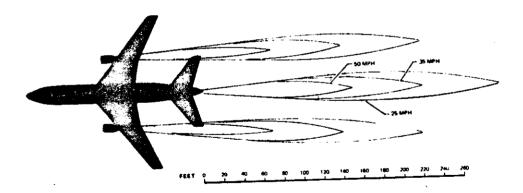
/s/	JOHN H. REED
	Chairman
/s/	FRANCIS H, McADAMS
	Member
/s/	LOUIS M. THAYER
	Member
/s/	ISABEL A. BURGESS
	Member
/s/	WILLIAM R. HALEY
	Member

July 5, 1972.

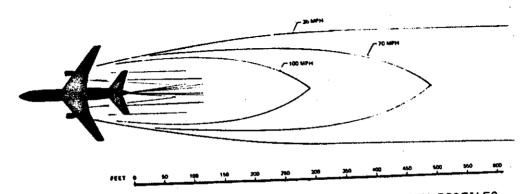
IDLE THRUST



BREAKAWAY THRUST



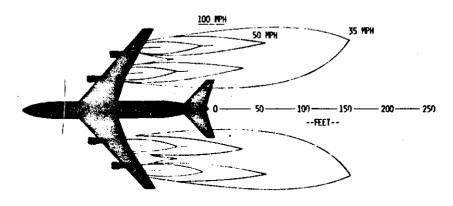
TAKEOFF THRUST



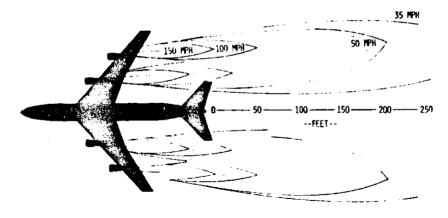
TYPICAL THREE (3) ENGINE WIDE-BODY VELOCITY PROFILES

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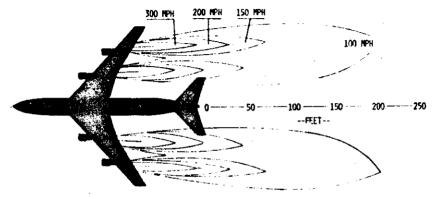
IDLE THRUST



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

PAGE 15

PROBABLE CAUSE(S)
MISCELLANEOUS - PROP/JET/ROTOM BLAST

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		DAMAGE-SUBSTANIIAL	PHASE	PHASE OF OPERATION TAXI: FROM LANDING	
	PROBABLE CAUSE(S) MISCELLANEOUS - PROP/JET/ROTOR BLAST MESCELLANEOUS - PROP BLAST FROM DC-6 AIRCRAFT.	TOR BLAST , AIRCRAFT+			26F 31c 2641
2-0845	11/16/67 NEWARK APT FAC.NJ	BELL 47G N9408 N9408 CIRCTANTSAL	CR- 00	1 COMMERCIAL O AIR TAXI-PASSG	COMPECIAL: NOT IN TYPE. TOTAL HUNRS, 167 IN TYPE. NOT INSTRUMENT RATED.
	TIME TO STATE OF THE TO STATE OF THE STATE OF ACCIDENT PROPELER JET ROTOR BLAST ROLL OVER	Danace Section 1940	ž.	PMASE OF UPERATION STATIC: IDLING ENGINE(S) STATIC: IDLING ENGINE(S)	
	PROBABLE CAUSEIS) MISCELLANEOUS - PROP/JET/ROTOR BLAST MISCELLANEOUS - LEFT AIRCRAFT UNATTENDED, ENGINE RUNNING PILOT IN COMMANY - LEFT AIRCRAFT UNATTENDED,	OTOR BLAST RCRAFT UNATTENDED, EP	4GINE RUNNING		

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FILE DATE LOCATION 3-0191 2/5/67 TIME - 1431 TYPE UF ACCIDENT PRUBELLER/JET/AUTON BLINDEN MISCELLANGUS - PROP/J MISCELLANGUS - PROP/J PLUT IN CUMMANO - EXE REMARKS - PLT TAXTED DIRE REMARKS - PLT TAXTED DIRE REMARKS - PLT TAXTED DIRE TYPE OF ACCIDENT TYPE OF ACCIDENT	LOCATION LUNG BEACH CALIF	AIRCAAFT DATA GRUMMAN G-21A GRUMMAN G-21A	i iii v		AIRLINE TRANSPORTS AGE
	VG BEACH CALIF	GRUMMAN G-21A	۰¦۰		AIRLINE TRANSPORT, AGE
			0 0 -xd	COMPENCIAL AIR TAXI-PASSG	50, 17307 TOTAL HUUNS: 5700 IN TYPE, INSIRUMENT RATED.
	ME UF AIRPORT - LONG BEACH PPE UF ACCIDENT PRUPELLER/JET/AUTOR BLAST NOSE NVER/DOMN		PHAS CU TAXIS TAXIS	PHASC UP OPENATION TAXIS TO TAKEUFF TAXIS TO TAKEOFF	
	E(S) DUS - PROP/JET/ROI JAMANO - EXERCISEC TAXIED DIRECTLY	OR BLAST POOR JUDGMENT SEHIND DEPARTING C-11	9. THE PILUTS	PROBAGLE CAUSE(S) MISCELLANCOUS - PROP/JET/ROTOR BLAST PILUT IN CUMMAND - EXERCISEO POOR JUDGMENT PILUT IN CUMMAND - EXERCISE BHIND DEPARTING C-119. THE PILUTS WEKE NUT USING THE SAME TUNER RADIO FREQ. REMARKS- PLT TAXIED DIRECTLY BEHIND DEPARTING C-119.	JHER RADIO FREG.
NAME OF AIRP TYPE OF ACCI PROPELLERY	RONUKE + OKLA	CESSNA 172 NZ GESSNA 172 NZ GEST SCHOOT ALL	CR+ 00 0 -x4	INSTRUCTIONAL SOLO	STUDENT, AGE 18: 58 TOTAL HOURS, & IN TYPE, NOT INSTRUMENT RATED.
	THE DESCRIPT ARONGRE MUNITAGE OF ACCIDENT PROPELLER/JE/ROTOR BLAST	•	PHASE	PHASE UF OPERATION Taxir to tareoff	
PRUBABLE CAU PILOT IN C MISCELLANE KEMARKS- TAX	SEES) DMMAND - EXERCISE OUS - PROP/JET/RE LED BEHIND CONSTE	PRUBABLE CAUSE(S) - EXERCISED POOR JUDGMENT PILOT IN COMMAND - EXERCISED POOR JUDGMENT MISCELLANEOUS - PRODYJET/ROTOR BLAST RUN UP POSITION-KEMARKS- TAXIED BEHIND CONSTELLATION IN RUN UP POSITION-	SITION.		
3-0601 2/24/67	CORPUS CHRIST, TEX	CESSNA 175 NBOLUT	0 0 0 0 0 0 0	2 INSTRUCTIONAL O CHECK	STUDENT, AGE 33, 96 TOTAL HOUKS, 64 IN TYPE, NOT INSTRUMENT RATED.
	ME - 0830 ME OF AIRPORT - CORPUS CHR PPE OF ACCIDENT PROPELLER/JET/ROTOR BLAST NOSE OVER/OGNN	TIME - 0850 DAMAGE-SUBSIANITAL NAME OF AIRPORT - CORPUS CHRISTI TYPE OF ACIDENT TYPE OF ACIDENT NOSE OVER/DOMN	ŧ	PHASE OF OPERATION STATIC: IOLING ENGINE(S) STATIC: IOLING ENGINE(S)	
PROBABLE CAUSE(S) MISCELLANEOUS FACTOR(S) WEATHER UNFAV	COBABLE CAUSEIS! PRUP/JET/ROTOR BLAST MISCELLANEUUS - PRUP/JET/ROTOR BLAST MISCELLANEURS! WHATHER - UNFAVURABLE MIND CONDITIONS WEATHER -	OTOR BLAST CONDITIONS		CEST ING AT ACCIDENT SITE	•
SKY CONDITION CLEAR VISIBILITY AT ACCIDE 5 UN OVER 0BSTRUCTIONS TO 41ST NGNE CLEAR	SKY CONDITION CLEAR VISIBILITY AT ACCIDENT SITE S VM DVER DS TRUCTIONS TO 41STON AT ACCIDENT SITE NONE.	CCIDENT SITE	PRECIPI NONE NONE NONE TYPE OF	UNLINITED PRECIPITATION AT ACCIDENT SITE NONE 20 20 179E OF WEATHER CONDITIONS VFR	
TYPE OF FLIGHT PLAN NONE NONE NONE NONE NONE NONE NONE NO	IGHT PLAN	4 KNOTS GUSTING 23 K	NOTS.PROP WASH	HIND VECTOR TO THE STATE OF FLIGHT PLAN TYPE OF FLIGHT PLAN TYPE OF FLIGHT PLAN LANDING AIRCRAFT. NONE	

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FILE	DATE	LOCATION	AIRCRAFT DATA	INJURIES F S M/N	FL IGHT PURPOSE	1	
3-1028	3/27/67 P	PATUKENT NAS,MO	PIPER PA-22 N57302 DAMAGE-SUBSTANTIAL	CR- 0 0 2 0 0 0 0	INSTRUCTIONAL DUAL	04׫	COMMERCIAL, FL.INSTR., AGE 23, 319 TOTAL HOUKS, 56 IN IYPE, NOT INSTRUMENT RATED.
	NAME OF AIRPORT - TYPE OF ACCIDENT PROPELLER/JET/	NAME OF AIRPORT - PATUXENT NAS TYPE OF ACCIDENT PROPELLER/JET/ROTOR BLAST	vs.	PHASE O STATE	PHASE OF OPERATION STATIC: IDLING ENGINE(S)		
	PRODABLE CAUSE(S) PILOT IN COMMAN MISCELLANEOUS - REMARKS- PLT TAXI	IODABLE CAUSE(S) PILOT IN COMMAND — EXERCISED POOR JUDGMENT MISCELLANEOUS — PROP/JE/KOTOK BLAS! Harks- PLT Taxieu Too Close To acft im Kun	PROBABLE CAUSE(S) PILOT IN COMMAND - EXERCISED POOR JUDGMENT MISCELLANEOUS - PROF/JET/KOTOK BLAS! MISCELLANEOUS - PROF/JET/KOTOK BLAS! AEMARKS- PLT TAXIEU TOO CLOSE TO ACFT IN KUNUP PUSITION»	.1T10N•			
3-1094		4/5/67 MASON CITY, 10MA TIME - 1257	CESSNA 142 N7114F DAMAGE-SUBSTANTIAL	CR- 0 0 1	COMMERCIAL Air taxi-passg	04-4	COMMERCIAL, FL.INSTR., AGE 22, 248 TOTAL HOURS, 14 IN TYPE, NOT INSTRUMENT RATED.
	TYPE OF A	NAME OF AIRPORT - MASON CITY NUNI TYPE OF ACCIDENT PROPELLER/JET/ROTOR BLAST NOSE OVER/DOMN	INDM	PHASE G TAXES	PHASE OF OPERATION IAXI: FRUM LANDING TAXI: FRUM LANDING		
	PROBABLE MISCELI PILOT FACTORIS PERSON REMARKS-	PROBABLE CAUSELS) MISCELLANGUS PROP/JET/ROTUR BLAST MISCELLANGUS PROP/JET/ROTUR BLAST PLOT IN COMMAND EXERCISED POOR JUDGHENT FACTOR(3) PERSONNEL MISCELLANEOUS-PERSUMMEL: PILOT REMARKS OZARK 456A MAKING RUNUP UN RAMP. CE	PROBABLE CAUSELS) MISCELLANEOUS PROP/JET/ROTOR BLAST MISCELLANEOUS PROP/JET/ROTOR JUDGMENT PILOT IN COMMAND EXERCISED POOR JUDGMENT FACTORIS! PERSONNEL MISCELLANEOUS-PERSONNEL: PILOT OF OTHER AIRCRAFT PERSONNEL MISCELLANEOUS-PERSONNEL: PILOT OF OTHER AIRCRAFT REMARKS- OZARK 456A MAKING RUNUP UN RAMP, CESSNA PLT TAXYING BEHIND OZARK ACFT.	THER AIRCRAFT PLI TAXVING BE	HIND DZARK ACFT.		
3-1311		RENG•NEV	CESSNA 172 NZ133Y DAMAGE-SUBSTANTIAL	0 0 1 1 1 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1	NONCOMMERCIAL PLEASUME/PERSONAL BRANSP		PRIVATE, AGE 53, 1135 TOTAL HOUKS, ALL IN IYPE, INSTRUMENT RATED.
	NAME OF TYPE OF PROPEL	NAME OF AIRPORT - REND MUNIC TYPE OF ACCIDENT PROPELER/JET/ROTOR BLAST		PHASE STAT	PHASE UF UPERATION STATIC: LOLING ENGINELS)		

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			BAIEFS	BRIEFS OF ACCIDENTS		************************
FILE	DATE	LOCATION	AIRCRAFT DATA	ENJUATES F 5 M/N	FLIGHT PUKPOSE	PILUT DATA
3-1529	5/11/67 A	7 ATLANTA, GA 1221	CESSNA 1728 N965M:3 DAMAGE - SUBSTANTIAL	CK- 0 0 1	NUNCOMMERCIAL PLEASURE/PERSONAL TRANSP	COMMERCIAL, AGE 26, 550 TOTAL HOURS, IC? IN TYPE, INSTRUMENT RATEU.
	NAME OF ACCIDENT TYPE OF ACCIDENT PROPELLEK/JET/INNSE NOSE NEW POWN	NAME JE ALFPURT – ATLANTA MUNI TYPE OF ACCIDENT PRUPELLEK/JET/RJITOR BLAST NOSE :VYEK/DUMN		PHASE UF TAXI: TAXI:	PHASE UF UPERATION TAXI: TO TAKEUFF TAXI: TO TAKEUFF	
	PRUBABLE CAUSE(S) MISCELLANEUUS PILUT IN CUMMAN REMAKKS- PLT FAIL	UDBBLE CAUSE(S) MISCELLANEUUS - PRUP/JET/ROTOR BLAST PILUT IN CUMMAND - EXEMCISED POUM JUDGMENT MANKS- PLT FAILED TO HEED CONTRGI TUMEN MA	OR BLAST PGUR JUDGMENT INTRGL TUMER MARNING»	TAXIEU BEHINO	PROBABLE CAUSE(S) MISCELLAMENUS - PRUP/JET/ROTOR BLAST PILUT IN CUMMAND - EXEMCISED POUM JUDGMENT PILUT IN CUMMAND - EXEMCISED CONTROL TUMEN MARNING» TAXIEU BEHIND DC-6 IN RUNUP POSITIUN. REMANKS- PLT FAILED TU HEEU CONTROL TUMEN MARNING» TAXIEU BEHIND DC-6 IN RUNUP POSITIUN.	
3-1751	5/8/67 TIME - 1445	UMAHA, NEBR 'S	BEECH 35-55 N1711Y UAMAGE-SUBSTANTIAL	CR- 0 0 1	NONCOMMENCIAL PLEASURE/PERSONAL TRANSP	COMMERCIAL, FL. INSTRACE SO. 17136 TOTAL HUGHS, 300 IN IYPE, INSTRUMENT RATED.
	NAME OF AIMPURT - IYPE OF ACCIDENT PRUPELLEN/JE!/	NAME OF ALMPURT - EPPLEY TYPE OF ACCIDENT PRUPELLEK/JE!/MDION BLAST NUSE OVER/DOWN		PHASE U TAXII	PHASE UF DPERATION IAXI: TO TAKEUFF IAXI: TO TAKEUFF	
	PROBABLE CAUSELS) MISCELLANEUUS — PILUT IN COMMAN REMARKS- PLT GLEA	TOBABLE CAUSE(S) MISCELLANKUUS – PRUP/JET/ROTOR KLAST PILOT IN LOMMAND – SPONTANENDS-INPKU MARKS- PLT CLEAKEU BY FOMEN TO HULU	TOR BLAST BUS-INPRUPER ACTION TH HULD BEHIND DC-6	UN KNAW.PLT CR	PROBABLE CAUSELS) MISCLLIANIUUS - PRUPZJET/ROTOR HLAST PILOT IN COMMAND - SPONTANFOUS-INPRUPER ACTION PILOT IN COMMAND - SPONTANFOUS-INPRUPER ACTION REMARKS- PLI CLEAKED BY TOMER TO HOLD BEHIND DC-6 UN RNAV.PLT CROSSED BEHIND AS DC-6 APPLIED TAKEOFF PUWER.	IEO TAKEUFF Puwfm.
3-2683	19/1/4 11/8 - 145	#EST COLUMBIA,SC	PIPER PA-22 NSHOUZ NAMAGE-SUBSTANTIAL	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	INSTRUCTIONAL SOLO	STUDENT, AGE 21, 36 TOTAL HOURS, ALE IN TYPE, NUT INSTRUMENT RATED.
	NAME OF AIRPORT - TYPE OF ACCIDENT PROPELLEM/JET/I NUSE OVER/DUMN	NAME OF AIRPORT - COLUMBIA TYPE OF ACCIDENT PROPELLEK/JET/ROTOR BLAST NUSE OVER/DUMN.		PHASE (TAXI	PHASE OF UPERATION FAXI: FRUM LANDING TAXI: FRUM LANDING	
	PAGRANLE CAUSEIS) MISCFLLANEUUS PILGI IN CUMMAN REMARKS- AINCRAFI	GRABLE CAUSELS) MISSELLANEUS PILOT IN COMMAND - MISJUNGED DISTANCE PARKS- AINCHAFT TAXIED BENIND DGG WAI!	PROBABLE CAUSELS) MISCELLAMEUUS - PRUPZJETZRUTUM BLAST PILOT IN COMMAND - MISJUGGED DISTRACE REMARKS- AINCRAFT TAXIED BENIND DGG MAITING TAKE-OFF.	• • •		

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		COMERCIAL FL. INSTR AGE 44. 4200 TOTAL HUURS.	1200 IN TYPE, NOT INSTRU- MENT KATED.			STUDENT, AGE 30, 23 TOTAL HUUNS, ALL IN TYPE, NUT INSTRUMENT RATED.		RAMP CREMS Potential Danger.	STUDENT, AUE 24, 40 TOTAL HOURS, ALL IN TYPE, NOT INSTRUMENT RATED.	
BRIEFS OF ACCIDENTS	INJURIES FLIGHT F S M/N PUAPOSE	0	0	PHASE OF OPERATION TAXIS TO TAKEOFF TAXIS TO TAKEOFF	PROBABLE CAUSE(S) PERSONNEL MISCELLANEOUS-PERSONNEL: PILOT OF OTHER AIRCRAFT REMARKS- UPERATOR OF JET ACFT FAILED TO CHECK AREA PRIUR TO RUNNING UP ENGINE.	CR- 0 0 1 INSTRUCTIONAL PX- 0 0 0 TRAINING	PHASE OF OPERATION TAX1: TO TAKEOFF FAXI: TO TAKEOFF	PROBABLE CAUSELS) MISCELLANE DUS - PROPJUET/ROTOR BLAST MISCELLANE DUS - PROPJUET/ROTOR BLAST PERSONNEL - OPERATIGNAL SUPERVISORY PERSONNEL: INADEQUATE SUPERVISIUN/TRAINING OF RAMP CREMS PILOT IN COMMAND - MISUMDERSTANDING OF UNDERS UR INSTRUCTIONS PILOT IN COMMAND - MISUMDERSTANDING NUMBLEM ACFT OVER. TUMER WARNED BOTH PARTIES OF POTENTIAL DANGFR. REMARKS - T.T.L.CUMVAIR IN ENG NAINT RUM BLEW ACFT OVER.	CR- 0 0 1 INSTRUCTIONAL PX- 0 0 TRAINING	PHASE OF OPERATION TAXI: TO TAKEUF TAXI: TO TAKEUF
BRIEFS	AIRCRAFT DATA		CESSNA 150 N7178F DAMAGE-SUBSTANTIAL		PERSONNEL! PILOT OF O T FAILED TO CMFCK ARE	CESSNA 150 N3725J Damage-Substantial		COTOR BLAST DERVISORY PERSONNELS ERSTANDING OF UNDERS (NG MAINT RUN BLEW ACF)	CESSNA 150 NGSBUF DAMAGE-SUBSTANTIAL	
	DATE LOCATION	İ	4/5/67 BURBANK,CALIF TIME - 1700	NAME OF ATRPORT - LOCKHEED TYPE OF ACCIDENT PROPELLER/JET/ROTOR BLAST NOSE OVER/DOWN	PROBABLE CAUSE(S) PERSONNEL - MISCELLANEOUS-PERSONNEL; PILOT OF OTHER AIRCRAFT REMARKS- UPERATOR OF JET ACFT FAILED TO CHECK AREA PRIOR TO RU	10/28/67 MCALLEM.TEK IIME - 1315	NAME OF AIRPORT - MILLER INTL TYPE OF ACCIDENT PROPELLEYJET/ROTOR BLAST NOSE OVER/DOWN	PROBABLE CAUSELS) MISCELLANE DUS - PRUP/JET/ROTOR BLAST MISCELLANE DUS - PRUP/JET/ROTOR BLAST PERSONNEL - OPERATIONAL SUPERVISORY PERSONNEL: INAIRUCTIONS PILOT IN COMMAND - MISUNDERSTANDING OF UNDERS UR INSTRUCTIONS PILOT IN COMMAND - MISUNDERSTANDING OF UNDER ACFT OVER, TUNER W REMARKS- I.T.L.CUNVAIR IN ENG MAINT RUN BLEM ACFT OVER.	16/25/67 BEOFORD+MASS TIME - 1500	NAME OF AIRPORT - MANSCOM TYPE OF ACCIDENT PROPELLERJET/ROTOR BLAST NOSE OVER/UDWN
		1111	-3080			3-3803			3-4027	

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PROBABLE CAUSE(S) PIJUT IN COMMAND - EXERCISED POOR JUUGHENT MISCELLANGUUS - PROP/JET/ROTOR BLAST REMARKS- PLT TAXIFD BEHIND C-124 IN ENG RUN UP. BOTH ACFT WERE ON DIFFERENT FREQUENCIES.

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		٠	BRIEFS	BRIEFS OF ACCIDENTS		
FILE	DATE	LOCATION	AIRCRAFI DAÍA	INJURIES F S M/N	FL 1GHT PURPOSE	PILOT DAFA
3-0463	3/3/68 TIME - 1930	FLUSHING,NY 330	CESSNA 182K N2630K DAMAGE-SUBSTANTIAL	CR- 0 0 1	NONCONMENCIAL PLEASURE/PERSONAL TRANSP	PRIVATE FL. INST. 4. AGE 24, 580 Tutal HJURS, 300 IN TYPE, INSTRUKENT RATED.
	NAME OF AIRPORT - TYPE OF ACCIDENT PROPELLEK/JET/I	NAME OF AIRPORT - LAGUARDIA TYPE OF ACCIDENT PROPELLEKJET/RUTOR BLAST NOSE UVER/DUAN		PHASE OF TAXII	ASE OF OPERATION TAXIX TO TAKEOFF TAXIX TO TAKEOFF	
	PRUBABLE PILOT I NISCELE WEATHER I	PRUBABLE CAUSELS! PILOT IN CUMMAND - EXERCISED POOR JUNGMENT MISCELLANE OUS - PRUP/JET/ROTOR BLAST METHER - UNA YURBALE WIND CUNDITIONS MEATHER BRIEFING - BRIFEED BY FLIGHT SERVICE MARTHER FORECAST - FUNECAST SUBSTANTIALLY CO	PROBABLE CAUSE(S) PILOT IN CUMMAND - EXERCISED POOR JUNGMENT MISCELLANGOUS - PROFJETZOORS BLASS MISCELLANGOUS - PROFJETZOORS BLASS METHER - UMAYORABLE WIND CUMDITIONS WEATHER ARTEFING - BRIEFED BY FLIGHT SERVICE PERSUNNEL, BY PHOME WEATHER FORFETS - FUNECAST SUBSTANTIALLY CORRECT	INNEL, BY PHUNE		
	SKY CONDITION CLEAR VISIBILITY AT 5 ON OVER OBSTRUCTIONS MONE MIND DIRECTION 110	SKY CONDITION CLEAR VISIBILITY AT ACCIDENT SITE 5 UN UVER NOUNE	JOENT SITE	CELLING AT A UNLIMITED PRECEPTATIVE NONE RELATIVE BEA HIND WELDCH TYPE OF FLIC	CELLING AT ACCIDENT SITE UNLINITED PECTPITATION AT ACCIDENT SITE RELATIVE BEARING OF MIND HIAD MIND 388-022 DEGREES MIND VELUCITY-KNUTS 18	
	TYPE OF VFR REMARKS-	TYPE OF MEATHER CONDITIONS VFR REMARKS- XMIND LOK GUSTIMG 20	SK.JET ACFT TUSK UFF L	IFR IN SAME KNUY JU	TYPE UF MERTHER CONDITIONS VFR REMARKS- XWIND LOK GUSTING 20K.JET ACFT TUJK UFF UN SAME ANMY JUST PRIOK TO ACCIDENT.PLT NZO3OR WAS ADVISED	NZ630R MAS ADVISED
3-173 2	9/16/63 0121 - 3H17	CLEVELAND, UHID 510	CESSNA 172 NBJ53L DAMAGE~SUBSTANTIAL	CR- 0 0 1	NONCOMMERCIAL BUSINESS	AIRLINE FPANSPINT, AGE 35, 2930 IUSH HUNRS, 10 IN TYPE, INSTRUMENT RATEU.
	NAME OF TYPE OF PROPEL	NAME OF ALREDAT - CLEVELAND-HUPKINS TYPE OF ACCIDENT PRUPELLER/JET/RUTOR BLAST	HUPKINS	PHASE (PHASE UF UPERATION TAXI: TO TAKEUFF	
	PRUBABLE PILOT RF MAY 5-	PRUBABLE CAUSEES) PILOT IN CUMMAND - EXERCÍSE REMAKES- PILOT TAXITED ON TO	ED POOR JUDGMENT ACTIVE RNWY FUG 100!N	REHIMO JET 720	PROBABLE CAUSE(S) PILOT IN CHMMAND - EXERCISED POOR JUDGMENT REMAKES- PILUT TAXILED ON TO ACTIVE RNWY TUD SOUN BEHIND JET 720 THAT HAD JUST DEPARTED.	
3-1782	5/7/68 1146 - 1978	MASHINGTUN+UC	BEECH C35 N653U UAMAGL-SUBSTANTIAL	20 0 0 1 X 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	NUNCUMMERCIAL P.EASUKE/PEMSONAL TRANSP	CUMMERCIAL, AGE 58, 2060 SP TOTAL MOUNS, 1650 IN TYPE, INSTRUMENT MATED.
	NAME OF TYPE OF PROPER NUSE O	NAME OF ALKPORT - WASHINGTON TYPE OF ACCIDENT PROPELE FYJETKHITTER BLAST NUSE CYER/DJUNN	Ž	PHASE FART TAXE	PHASE OF UPPRATION FARIEF FOR TAKEUFF TAXIS TO TAKEUFF	

PROBABLE CAUSELS) MISCELLAMEGUS - PROPZJET/RUTOM BLAST REMARKS- JET OLAST FAOM 727 ACFT.

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BUILDS OF ACCIDENCS	116191111111111111111111111111111111111	A 1 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

		BALLES	BALLES OF ACCIDENCS		PILOT DATA
		AIRCKAFT DATA	DATA INJURIES	FL IGHT PURPOSE	0008 227 300
F11.6	DATE LUCATION		-0	NUNC JAME KO BAL	COMMERCIAL MULKS 30 IN 17PE.
3-3102	9/21/68 SANTA ANA-CALIF CO 9/21/68 SASO NAME OF ALC: URT - DEANGE COUNTY TYPE OF ACCIDENT	CESSNA 150 N2b695 UAMALE-SUBSTATETAL IY	PHASE U	O C PLEASURE/PERSONNE PHASE UF UPERATION STATIC: JULING ENGINEIS) STATIC: JULING ENGINEIS)	NOT INSTRUMENT
	PROBELLENGEN NOSE OBFIGUR PROBECT CAUSTAN MISCELLANGUS — PROUP JET/ROTOR BLANT MISCELLANGUS — AMPOURT SUPERVISORY PERSONNEL: OTHER FACIUALS) PERSONNEL — AMPOURT SUPERVISORS OATE OLDER CESSNA UVER. LT AGET PARAING AREA LOCATED CLOSE TO TERMINAL GATE.	IUN BLAST SUMW PENSCHNELT UTHEY NG GATE ELEM CESSNA	UKR. LI ACFI	DARRING AREA LUCATED CLUSE	TO TERMINAL GATE.
;	KERAKKA LOLDING	CF SSNA 172	CK+ CO D F	NUNCUMMERCIPL HUSINISS	PRIVATE, AGE 20° 124 TUTAL HOUKS, 24 IN TYPE, NOT INSTRUMENT RATED.
42E-E	NAME OF ALL TYPE OF ACT PRESPECTOR	NAMAČE-SUNSTANTIPE	ă.	PHASE OF OPERATION STATES STATES TOLING ENGINESS STATES TOLING ENGINESS	
	PRUBANLE CAUSERS) PRUBANLE CAUSERS - EXERCISED PUGR JUGGNENT PILUT IN CUMMAND - PRIP/JET/RUTO? BLAST MISCELLAW UUS - PRIP/JET/RUTO? BLAST MISCELLAW UUS - PRIP/JET/RUTO? BLAST MERMAKS- NASSAN PAKKEU IN RUN-UP AREA TUD CLUSE TU BUEING 707 WHICH MAS MUVENG UNTU RUN-UP AREA	IED PUDR JUDGMENT LUTOR BLAST JN-UP AREA TUD CLUSK	TO BUEING TOF	WHICH MAS MOVING UNTO RNMY	
•	CULO SPHINGS COLO	GESSNA 150 Nebadu	CA-00-X4	1 INSTRUCTIONAL 0 TRAINING	
	NAME OF A TYPE OF A	DAMAGE - SUGSTANTIAL F15.20	å	PHASE OF UPLING ENGINEES) STATIC: TOLING ENGINEES)	
	PRUBABLE CAUSELS) MISCILLANG DUS - PROPIJET/ROTOR BLAST FACTORIS - MISCILLANG TOS-PERSUNNELS PILOT OF JIHER ALKERAFT FRICORIS - MISCILLANG TOS-PERSUNNELS PILOT OF JIHER ALKERAFT PLOT IN LOMMAND - FRICE SEU PRODA JUDGMENT PAUD TO TOS PACTING OF AIRCRAFT PLOT IN LOMMAND - FRICE TOWER PERSONNELS INAUGUSANTE SPACING OF AIRCRAFT PLOT IN LOMMAND - FRICE TOWER TOWN JET REAST OF DC-5- PLOT - FRIPPED OUTP FROM JET REAST OF DC-5-	FROTON BLAST 1SED POOK JUDGEN'N 1SED POOK JUDGEN'N HILL PEKSONYEL: INADE- EKOM JET GEAST OF DA	STHER ALKCRAF	T JF AERCRAFT	

BRIEFS OF ACCIDENTS

	DATE LUCATION	AIRC-AFF DATA	INJUKIES F S M/N	PURPUSE	FILUI DATA
3-4331	10726/63 CMANITLY-VA 11ME - 1313 NAME - 1014 TYPE OF ACCIDENT	CESSNA 172 NOULN DAMAGE-SUBSTANTIAL	CK- U 3 1 PX- O 0 1 	3 I NUNCOMMERCIAL 0 I PLEASUME/PLUSUMAL TRANSP PHASE OF UPL-ATTUM STATIC: LULING ENGINELS)	PKIVATE, AGE 42, 156 TOTAL HUNS, 31 IN TYPE, NGT INSTRUMENT MATED.
	PROBBUE CAUSE(S) MISCRILANEUUS - PRUPZJET/KUTUM MLASE PERSUNVEL - MISCRILANEUUS-PENSUMMEL: PILUT OF OTHER AF FACTOMES) MISCRILANEUUS ACTV.CUNUTITONS - CUMMUNICATIONS FAILUME MISCRILANEUUS ACTV.CUNUTITONS - CUMMUNICATIONS FAILUME	DSELS) - MISCILLANENUS-PENSURAKEI PILUT OF OTHER AIKCHAPT - MISCILLANENUS-PENSURAKEI PILUT OF OTHER AIKCHAPT FOUS ACTY-CUNDITIONS - CUMMUNICATIONS FAILURE MAILING FOR CLEARANCE FOR TYU-TOWER LLEAVED TOT F	HER AIRCHAPT Aleure Leaved 707 fur	USEES) - MISCELLANEUWS-PFNSWAWELT PILUT OF OTHER AIRCRAFT - MISCELLANEUWS-PFNSWAWELT PILUT OF OTHER AIRCRAFT FUUS ACTS-CUNDITIONS - CUMMUNICATIONS FAILURE I WATTING FOR CLEARANCE FUR TYU-TUWER CLEAVED TOT FUR TYU JET BLAST FLIPPEU ACFT ON BACK.	T DN BACK.
	11/16/63 WHRISVILLE-NG TIME - 1303	LESSNA P736C N86441 DAMAGC-SUESFAHTAL	CR- 0 0 2 Px- 0 0 1	INSTRUCTIONAL DUAL	COMMEKCIAL, FL.INSTR., AGE 31. SUV TUTAL HOURS, I IN TYPE, INSTRUMENT KATED.
	NAME OF ALCIDENT - MALEIGH-UUMHAN TYPE OF ALCIDENT PROPELLEK/JET/HUTGH SLAST	F	PHASE UP	PHASE OF UPENATION STATICS DATES	
	PROMBLE CAUGHTS) PILUT IN COMMAND — MISJUDGEO OISTANCE PERS INSCL — MISCLELANE ODS-PEKSOMELE : MISCELANEDOS — PROPZJETAKOTOR NEAST REMARKS- TAKEPEL PLI TO MINERELUCKING J	AUGELS) COAMAND — MISJUDGEO UISTANCE L — MISCLELAREDDS-PEKISPHELE PIEUT UF DITHEM AIMCMAFT NEDUS — PRUPZJETZKOTUF NEMŠT MICHEJ PELITU MINEPHEUGRIEG JEG. PET DIONE MUNE SUFFICIENT DISTANCE.	HEA AINCAAFT NI MOVL SUFFICE	IENT DISTANCE.	
	5-3634 : 5/13/AV ** ** IDLANOSTEX 	CESSTA TOUR 1803AJ 184UL – SUDSTANTIAL	CK- 0 0 1	MUNCOMMERCIAL PLEAJURE/PEASUMAL TRANSP	COMMERCIAL, FL-INSTR., ALE 37, 3950 FOIAL HUURS, 315 IN TYPE, NJT INSTRU- HENT RATED.
	NAME OF AEPORT - MENLAND-UDESSA TYPE OF ACCENTY PROPELLEP/JET/NGTCK BLAST RISE INFPENDINT	4 5.	PHA-1 FAXIS	PHASE OF UPERATION FAXIS TO TAKEUFF	
	PRIMABLE CAUSICS) PILUT IN COMMAND - PRECISED POOR JUDGHT ME MISCELET WOUS - PPOPULATENDERS BEAST MESCELET TAXIED BEHIND A DES CELAKED	AUSTICS) COMMAND - PREKCISED POOK JUNGMENF COMMAND - PREKLISED POOK JUNGMENF ANAL TREE PEPPSETE PERSON ON THE HAMY.	US ON THE RNAY		

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PILOT DATA	A TOTAL	STUDENT ACE 35 CO. HUNCKS ALL IN 1YPE NOT	INSTRUMENT KATEU.			PATYATE, &SEE 43" AVEC- INSP TGTAL HORRS, 40 1M TVPE- NUIT INSTKUMENT RATED-			CUMPRACTOR COLORS AGE 50-70-70-70-70-70-70-70-70-70-70-70-70-70		2540 MAS BEHINU IT.
BRIEFS OF ACCIDENTS	INJURIES FLIGHT INJURIES PURPUSE F S M/N PURPUSE	0 0	PX- 0 0 0 1KAINING	PHASE OF UPLEATIUN TAXII TU TAKEOFF TAXII TU TAKEOFF	PROBABLE CAUSE(S) — MISJUNGED CLEARANCE PILOT IN COMMAND — MISJUNGED BLAST MISCELLANGUS — PROPJET/ROTOR BLAST REMARKS— TAXIED TOO CLUSE BEHIND JET HOLOTNS ON TAXIMAY FUR TAKFUFF CLEARANCE.	CR- 0 0 1 NUNCUPHERCIAL PK- 0 0 0 PLEASUME/PERSUMAL TRAMSP	PHASE OF UPENATION TAXI: 10 TAX-UF TAXI: 10 TAXEUFF		CK- 0 0 2 INSTRUCTIONAL PK- 0 0 DUAL	PHASE OF UPERATION TAXI: TO TAKEUFF TAXI: TO TAKEUFF	PROBABLE CAUSELS! PILCT IN COMMAND - EXERCISED POOR JUDGMENT REMARKS- IP TULD STUDENT TO TAXI BEHTHU 8-2> IN RUN-UP AKEA.B-25 BEGAN RUN-UP AS N22540 WAS BEHTNU IT. REMARKS- IP TULD STUDENT TO TAXI BEHTHU 8-2> IN RUN-UP AKEA.B-25 BEGAN RUN-UP AS N22540 WAS BEHTNU IT.
BRIFFS OF	AIRCRAFT DATA		CESSNA 182 N6452A SAMAGE-SUBSTANTIAL		DOGED CLEARANCE F/ROTOR BLAST BEHIND JET HOLDING ON TAXI	AERUNCA 70C NZ804E NZ804E		ACISED POOR JUDGMENT ET/KOTOR BLAST 124, ALL 4 ENG RUNNING.	1F CESSNA 150 N22593 DAMAGE—SUBSTANTIAL	CUUNTY SANTA ANAFCALIF SANTA ANAFCALIF	ERCISEO POOR JUDGMENT IT TO TAXI BEMIND 8-25 IN R
	NO11700	DATE	4/20/69 DAKLAND.CALIF	NAME OF AIRPORT - GARLAND INTL TYPE OF ACCIDENT PROPELLER/JET/RUTUR BLAST NUSE GVER/DOWN	PROBABLE CAUSE(S) PROBABLE IN COMPAND — MESJUDGED CLEARANCE PROFILE IN COMPAND PROPYJET/ROTOR BLAST MISCELLANCOUS — PROPYJET/ROTOR BLAST REMARKS— TAXIED TOO CLUSE BEHIND JET HOL	6/21/69 BACO-TEX	NAME OF AIRPORT - WACO NAME OF ACCIDENT PROPELLER/JET/ROTOR BLAST NOSE OVER/DOWN	PROBABLE CAUSE(S) PRIGIT IN COMMAND - EXERCISED POOR JUDGMENT PRIGIT IN COMMAND - PRUP/JET/ROTOR BLAST MISCELLANEOUS - PRUP/JET/ROTOR BLAST REMARKS- TAXIED BEHIND C124, ALL 4 ENG RUNMING.	5/20/69 SANTA AMA,CAL1F FINE - 1435	MANE OF ALMPHAT - UNANGE COUNTY OF PARTURE POINT SANTA ANA/CALTP TYPE UP ACCIDENT PROPELLER/JET/ROTOR BLAST NOSE UVFR/DOWN	PROBABLE CAUSE(S) PILOT IN COMMAND - EXI REMARKS- IP TOLD STUDEN
		FILE	3-1356 4/	, 2⊷		F-1813			3-2524		·

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			BRIEFS	BRIEFS OF ACCIDENTS	ENTS		
FILE	DATE LOCATION	NO1.	AIRC3AFT DATA	INJURIES F S M	SAZN	FLIGHT PURPOSE	PILOT DATA
3-2983	9/23/69 PENSAGULA,FLA 1146 - 1120	A,FLA	CESSNA 150H N6587S DAMAGE-SUBSTANTIAL	20	NO 00	INSTRUCTIONAL DUAL	CUNMERCIAL, FL.INSTR., AGE 24, 1200 TUTAL HUUMS, 700 IN IYPE, NUT INSTRU- MENT RATEU.
	NAME OF AIRPORT - PENSACOLA, MUN DEBARTURE PUINT PENSACOLA, FLA TYPE OF ACCIVENT PRUPELLER/JET/RUTOR BLAST	ENSACOLA,M I OR BLAST	MUN INTENDED DESTINATION LUCAL	Ŧ	ASE OF TAXE:	PHASE OF OPERATION Taxi: 10 Taxeoff	
	PROBABLE CAUSE(S) MISCELLAREUUS — PROP/JET/ROTOR BLAST PILOT IN CUMMAND — EXERCISED POOH JUDGMENT FACTORIS P PERSONNEL — MISCELLANEOUS—PERSONNEL: MISCELLANEOUS ACIS+COMDITIONS — CONGESTED REMARKS—727 COMMENCED TAXI FROM PARKING RAM	ROP/JET/RC - EXERCISE LLANEOUS-F S-CONDITIONED TAXI	JOR BLASI 20 PODN JUDGMENT PERSONNEL: GROUND SIG 3NS - CONCESTED FAMP FROM PARKING RAMP AS	yalman Taximay Vosb7s Tax	2 E0 8	EHINU 11.GAND CREM D	PROBABLE CAUSE(S) MISCELLANEOUS - PROP/JET/ROTOR BLAST MISCELLANEOUS - PROP/JET/ROTOR JUDGMENT PILOT IN COMMAND - EXERCISED POOR JUDGMENT FACTORISS FESTONISS MISCELLANEOUS ACTS, COBUITIONS - CONGESTED FAMP/TAXIMAY MISCELLANEOUS ACTS, COBUITIONS - CONGESTED FAMP/TAXIMAY MISCELLANEOUS ACTS, COBUITIONS - CONGESTED FAMP/TAXIMAY MISCELLANEOUS ACTS, COBUITIONS - CONGESTED FAMP AS NOSSETS TAXIED BEHIND IT, GRND CREW DIPECTING 727 NUT ALERT.
33841	9/8/69 JAKLAND,CALIF TIME - 1558	CALIF	CESSNA 150 N5797E Damage-Substantial	0 0 0 1 X	O	NUNCOMMERCIAL Business	PRIVATE, AGE 43, 178 101AL HOURS, 84 IN 14PE, NUT INSTRUMENT RALED.
	NAME OF AIRPORT - DAKLAND DEPARTURE POINT UKIAH-CALIF TYPE JA CCCDENT PROPELLEX/JET/AUTOR BLAST NOSC UVER/DUMN		INTENDED DESTINATION DAKLAND, CALIF	ā	HASE OTAKE	PHASE OF UPERATION TAXI: FROM LANDING TAXI: FACH LANDING	
	PAGGABLE CAUSE(S) INSTRUMENTS/EGUIP MISCELLAMEGUS - P REMARKS- 6707 in ch	PMENT AND PROP/JET/X NG KUN UP	PROBABLE CAUSE(S) INSTRUMENTS/EQUIPMENT AND ACCESSORIES — MISCELLANEOUS EQUIPMENT: OTHER MISCELLANEOUS — PROP/JET/ROTOR BLAST REMARKS- 6707 IN ENG KUN UP AREA-GRND STGTALMAN UN AUT CHECK CREM UF TAXING ACFT DUE HEADSET FAILUNE»	ANEDUS EU	UIPNEN CK CAÉ	HI GTHER H OF TAXING ACFT DUE	HEADSET FAILUME.
7-4719	8/24/69 11/46 = 064	LUS ANGELES CALIF	CESSNA 1720 N2856U DAMAGE-SU3STANTIAL	CR- PX- 0	00	NUNCUMMERCIAL PLEASURE/PEASUNAL TRANSP	CUMPRCIAL, FL.INSTR., IRANSP ACE 35, 1500 TUTAL HUNRS, 160 IN TYPE, NUT INSTRU-
	NAME OF AIRPONT - LIS ANGELES DEPARTURE FULINT RIVERSIDE GALIF TYPE OF ACCIDENT PROFELEKJEFRUTOR BLAST NISE UVLK/DOWN	LIIS ANGELE ITOR BLAST	INTENDED DESTINATION LUS ANGELES,CALIF	•	HASE STAT	PHASE UF UPERATION STATIC: PAKKED-ENGINES NUT OPERATING STATIC: PAKKED-ENGINES NUT OPERATING	UT OPERATING Ut operating
	PROBABLE CAUSE(S) PERSINAEL - ARPOIRT SUBERVISORY PERSINAEL MISCELLANGOUS - PAGP/JET/ROJOR BLAST FATOR(S) MISCELLANGOUS - CONGINIONS - CONGINIONS - CONGINIONS - CONGINIONS - CANGINIONS - CONGINIONS - CANGINIONS -	ORT SUPERIPED PAGE / JET/1	PROBABLE CAUSELS) PERSONNEL - AIRPORT SUPERVISORY PERSONNEL: OTHER MISCELLANGOUS - PAGP/JET/ROTOR BLAST MISCELANGOUS AGTS.CONDITIONS - CONGESTED RAMP/TAXIMAY MISCELANGOUS AGTS.CONDITIONS - CONGESTED RAMP/TAXIMAY MISCELANGOUS AGTS.CONDITIONS - THE MIXING UF LIGHT AND.MEAVY AGFF IN CLOSE PROXIMITY.	ER / TAX I WAY GHT AND "	HEAVY	ACFF IN CLOSE PRIXIM	177.

BRIEFS OF ACCIDENTS

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FILE	DATE	LUÇATION	AIRCAAFT DATA INJURIES F S M/N	INJURIES F S M/N	FL 1GHT PURPUSE	PILOT DATA
5910-	3-0165 3/6/70 W	MINUSOR LUEKOCONN DEHAVILLAND DHC-6 NIZIP4 DAMACE-SUBSTANTIAL	DEMAYILLAND DHG-6 N121P4 DAMAGE-SUBSTANTIAL	CR- 0 0 2	COMMERCIAL AIR TAXI-PASSG	CUMMERCIAL» AGE 28° +022 TOTAL HOURS, 2503 IN TYPE, INSTRUMENT RATED.
	NAME OF AIRPORT DEPARTURE PAINT WINDSOR LACKA TYPE OF ACCIDEN PROPELLER/JET COLLISTON WITH	- Brauley Cunn T Frutor Blast H Gkiund/Wate	INTENDED DESTINATION NEW HAVEN-CONN K: UNCONTHOLLEC	PHASE (M STATIC TAKEU	PHASE OF UPERATION STATIC: PACKED-ENGINES MUT OPERATING TAKEUFF: INITIAL CLIMB	IT OPERATING
	PRUDABLE MISCELL PILUT I MISCELL FACTOMISI PEHSCHN	PRUJABLE CAUSELS! MISCELLAHEOUS - PROP/JET/KUTUR BLAS! MISCELLAHEOUS - HADRUMATE PREFLIGHT PREPARATION AND/UK PLAYNING PLOT I'M COMMAND - HADRUMATE PREFLIGHT DAMANE MISCELLANGOUS ACTS, CONDITIONS - PREVIOUS DAMANE FACTORIS! PERSCHYEL - AIRPORT SUPERVISORY PERSCHNEL: IMPRIJER UPERATION OF FACILITIES PERSCHYEL - AIRPORT SUPERVISORY PERSCHNEL IMPRIJER UPERATION OF STYLUST CNIL ON T/U, KOU SEPARATED.	TE PREFLIGHT PREPARAT NS — PREVIOUS DAMAGE SORY PERSUNEL: IMPRI HER RUDDEK TRIM TABA	TON AND/UK PLA' UPEK UPEKATION (LEVATOK PUSH K	INTNG JF FACTLITIES DD ASSYLUST CNTL D:	N T/UORIGU SEPAKATED.
3-0363		1/11/70 S FRANCISCU.CALIF [IME - 083]	BEECH D35 N21330 DAMAGE-SUBSTANTIAL	CR- 0 0 1 PX- 0 0 0	NUNCUMMERCIAL BUSINESS	AIRLINE TRANSPORT, AGE 57, 30508 TUTAL HOURS, 750 IN TYPE, INSTRUMENT RATED.
	NAME OF DEPARTUR S FRAM TYPE OF	NAME OF AIRPORT - SAN FRANCISCO DEPARTURE POINT S FRANCISCO-CALIF TYPE OF ACCLOENT PROPELLER/JFT/ROTOR BLAST	SCO INTENDED DESTINATION URLAND, CALIF	PHASE O	PHASE OF UPERATION TAXIS TO TAKEDFF	
	PRUBBBLI PERSON PERSON MISCE REMARKS	PRUBABLE CAUSTIS) PERSONALL - TRAFFIC CONTROL PERSONNEL: ISSUED IMPRUPER DIR CONFLICTING INSTRUCTIONS PERSONALL - MISCELLANE OUS-PERSONNEL: PILOT OF OTHER AIRCRAFT MISCELLANEOUS - PRUPAULTIVEURS MISCELLANEOUS - PRUPAULTIVEUR GLAST REMARKS- GRND CTL CLRO BEECH IAXI-ADVSD B727 DN RNMY HOLDING-LCL CTL CLRO B727 FOR I/O.	PERSONNEL: 155UFD 1 ERSONNEL: PILUT OF U TOR ULAST TAXI, ADVSO B727 UN R	MPRUPER DR CONF THER AIRCARFT NWY HOLDING,LCL	LICTING INSTRUCTION CTL CLRD B727 FOR	s 1/0•

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