Log 2071 SP-20

National Transportation Safety Board

Washington, D. C. 20594

Safety Recommendation

Date: August 10, 1989

In reply refer to: A-89-81 and -82

Honorable James B. Busey
Administrator
Federal Aviation Administration
Washington, D.C. 20591

On June 5, 1988, a Dornier 228-201, N259MC, operated by Fisher Brothers Aviation, Inc., as a Midway Commuter under the provisions of 14 CFR Part 135, experienced a loss of directional control and braking during a single-engine taxi for takeoff. The captain reported that as the airplane began to roll forward, he noticed that he did not have nose wheel steering. He applied the brakes but they did not respond. He then moved the hydraulic pump switch from the "NORM" position to the "MAN ON" position, which allows the hydraulic pump to operate from battery power instead of generator power. As the captain reached for the parking brake handle to stop the airplane, N259MC collided with another Dornier, N264MC, parked adjacent to it at Midway Airport, Chicago, Illinois. Both airplanes were damaged; there were no injuries.[1]

Investigation of the accident revealed that the generator on the running, No. 2 engine was disconnected from the generator bus. The nose wheel steering and wheel braking system on the Dornier airplane is electro-hydraulically actuated. During ground operation, should the generators, or in the case of single-engine operation, the generator, become disconnected from the generator bus, a loss of nose wheel steering and normal braking will occur. The airline's training program, operation manual, and the Dornier 228-series Pilot Operating Handbook did not address single-engine ground operation and the effects of an interruption in generator power. At numerous airports within the continental United States, it has become an accepted and routine practice for many operators of multiengine commercial airplanes to conduct single-engine ground operations. The Safety Board is concerned that there are airplanes, as this accident illustrates, which have characteristics in their systems warranting enhanced pilot awareness when single-engine ground operations are contemplated. It is not difficult to imagine the potential catastrophic consequences had the accident airplane's steering and brake system failed as it was approaching a runway in use.

Therefore, the National Transportation Safety Board recommends that the Federal Aviation Administration:

[1]For more information, read Field Accident Brief No 1723 (attached).

Require the Dornier 228-series Pilot Operating Handbook to address single-engine ground operation procedures. These procedures should place special emphasis on the need to perform nose wheel steering and brake integrity checks before taxi and include a discussion on the feasibility of placing the hydraulic switch in the MAN ON position. (Class II, Priority Action) (A-89-81)

Review the pilot operating handbooks of other multiengine airplanes used in commuter operations and verify that adequate procedures are included to accomplish safe single-engine ground operations; if adequate procedures are not included, require development and inclusion of appropriate single-engine ground operation procedures. (Class II, Priority Action) (A-89-82)

KOLSTAD, Acting Chairman, BURNETT, LAUBER, NALL, and DICKINSON, Members, concurred in these recommendations.

By: James L. Kolstad
Acting Chairman

National Transportation Safety Board
Washington, D.C. 20594

Brief of Accident

File No. - 1723 6/05/88 CHICAGO,IL A/C Reg. No. N259MC Time (Lcl) - 1140 CDT

----Basic Information----
Type Operating Certificate-COMMUTER
Name of Carrier -MIDWAY COMMUTER
Type of Operation -SCHEDULED,DOMESTIC,PASSENGER
Flight Conducted Under -14 CFR 135
Accident Occurred During -TAXI

Aircraft Damage
SUBSTANTIAL
Fire
NONE

Injuries	Fatal	Serious	Minor	None
Crew	0	0	0	2
Pass	0	0	0	1

----Aircraft Information----
Make/Model - DORNIER 228-201
Landing Gear - TRICYCLE-RETRACTABLE
Max Gross Wt - 12500
No. of Seats - 19

Eng Make/Model - AIRESEARCH TPE-331-5
Number Engines - 2
Engine Type - TURBOPROP
Rated Power - 715 HP

ELT Installed/Activated - YES/NO
Stall Warning System - YES

----Environment/Operations Information----
Weather Data
Wx Briefing - COMPANY
Method - IN PERSON
Completeness - FULL
Basic Weather - VMC
Wind Dir/Speed- 300/010 KTS
Visibility - 15.0 SM
Lowest Sky/Clouds - 20000 FT SCATTERED
Lowest Ceiling - NONE
Obstructions to Vision- NONE
Precipitation - NONE
Condition of Light - DAYLIGHT

Itinerary
Last Departure Point
SAME AS ACC/INC
Destination
SPRINGFIELD,IL

ATC/Airspace
Type of Flight Plan - IFR
Type of Clearance - NONE
Type Apch/Lnds - NONE

Airport Proximity
ON AIRPORT

Airport Data
MIDWAY
Runway Ident - UNK/NR
Runway Lth/Wid - UNK/NR
Runway Surface - CONCRETE
Runway Status - DRY

----Personnel Information----
Pilot-In-Command
Age - 37
Medical Certificate - VALID MEDICAL-WAIVERS/LIMIT
Certificate(s)/Rating(s)
ATP,CFI
SE LAND,ME LAND
Instrument Rating(s) - AIRPLANE

Biennial Flight Review
Current - YES
Months Since - 4
Aircraft Type - UNK/NR

Flight Time (Hours)

Total -	4300	Last 24 Hrs -	4
Make/Model-	300	Last 30 Days-	80
Instrument-	150	Last 90 Days-	120
Multi-Eng -	2200		

----Narrative----
THE CAPT WAS COMPLETING THE CHECKLIST DRG PAX LOADING & THE F/O SECURED THE DOOR & CAME FWD. THE CAPT STARTED THE #2 ENG & BGN SINGLE ENG TAXI WHILE ATMTG A RGT TURN TO STAY CLR OF A PARKED DORNIER (N264MC). AS N259MC BGN ROLLING FWD, THE CAPT NOTED THE NOSEWHEEL STEERING (NWS) WAS INOP. HE APPLIED NORMAL BRAKING, BUT GOT NO RESPONSE & N259MC BGN A LEFT TURN. THE CAPT SWITCHED THE HYDR PUMP FM "NORMAL" TO "MAN ON" (MANUAL); HOWEVER, BFR HYD PRES WAS BUILT UP BY BATTERY PWR, N259MC COLLIDED WITH N264MC. AN INV REVEALED THE #2 GENERATOR (GEN) WAS NOT CONNECTED TO THE GEN BUS. NO PART MALFUNCTION/FAILURE WAS FND DRG CHECKS OF THE ACFT SYSTEMS. THE NWS & NORMAL BRAKES WERE ELECTRO-HYDRAULICALLY ACTUATED. W/O GENERATOR PWR, THE HYD SYS, NWS & NORMAL BRAKES WOULD NOT HAVE BEEN OPERATING WITH THE HYD SW IN THE "NORMAL" PSN. AN EMERG (PARKING) BRAKE WAS AVAILABLE, BUT IT WAS NOT USED. THE TRAINING PROGRAM, OPN MANUAL & DORNIER 228-SERIES PILOT OPERATING HANDBOOK DID NOT ADDRESS SINGLE-ENG GROUND OPN OR THE EFFECTS OF AN INTERRUPTION IN GENERATOR PWR.

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Occurrence #1 LOSS OF CONTROL - ON GROUND
Phase of Operation TAXI - TO TAKEOFF

Finding(s)
1. CREW/GROUP COORDINATION - INADEQUATE - PILOT IN COMMAND
2. ELECTRICAL SYSTEM,GENERATOR - NOT ENGAGED
3. HYDRAULIC SYSTEM - NOT ENGAGED
4. LANDING GEAR,STEERING SYSTEM - NOT OPERATING
5. LANDING GEAR,NORMAL BRAKE SYSTEM - NOT OPERATING
6. BRAKES(EMERGENCY) - NOT USED - PILOT IN COMMAND
7. AIRCRAFT MANUALS,SYSTEM INFORMATION - INADEQUATE
8. AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND
9. PROCEDURE INADEQUATE - MANUFACTURER

Occurrence #2 ON GROUND COLLISION WITH OBJECT
Phase of Operation TAXI - TO TAKEOFF

Finding(s)
10. OBJECT - AIRCRAFT PARKED

----Probable Cause----

The National Transportation Safety Board determines that the Probable Cause(s) of this accident is/are finding(s) 3,6,8

Factor(s) relating to this accident is/are finding(s) 1,2,7,9,10