SP-20
Log 1775

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: February 22, 1985

Forwarded to:

Honorable Donald D. Engen
Administrator
Federal Aviation Administration
Washington, D.C. 20591

SAFETY RECOMMENDATION(S)

A-85-15 through -17

About 0003 Yukon standard time on December 19, 1983, Japan Airlines Flight 1036, a Boeing 747-200, collided with a pickup truck (PU3) traversing the runway after the flight had completed a Category II instrument landing system (ILS) approach to runway 6R at Anchorage International Airport, Alaska. At the time, instrument meteorological conditions (IMC) prevailed, and the runway visual range (RVR) was reported as 1,000 feet. The airplane incurred substantial damage, but the three crewmembers were uninjured. The pickup truck was demolished and the driver was seriously injured.

About 1316 central standard time on December 20, 1983, Ozark Airlines Flight 650, a DC-9-31, collided with a Snowblast snow sweeper (SWEEPER 7) clearing the runway after the flight had completed an ILS approach to runway 3 at Joe Foss Field, Sioux Falls, South Dakota. At the time, IMC prevailed, and the runway 3 RVR was reported as 3,500 feet. Prevailing visibility at the time was reported as 1 mile with light snow. The aircraft received substantial damage, the crew of 5 and 81 passengers evacuated the airplane via the forward escape slides without reported injury. The snow sweeper was demolished, and the driver was killed. 1/

On December 21, 1983, as a result of the Anchorage and Sioux Falls accidents, the Federal Aviation Administration's (FAA) Air Traffic Service issued a general notice (GENOT N7110.876) to all air traffic control facilities providing airport advisory service. The GENOT directed facility Air Traffic Managers to conduct mandatory briefings to assigned personnel regarding proper coordination and application of procedures relative to landing aircraft and when there are vehicle operations in progress on runways.

1/ For more information read Aircraft Accident/Incident Summary Report dated February 1, 1985, and see attached brief of accident.

On March 8, 1984, about 0742 eastern standard time, Piedmont Airlines Flight 322, a Boeing 737-200, executed an emergency go-around after it landed on runway 36 at the Covington/Greater Cincinnati International Airport, Covington, Kentucky, after the flightcrew saw amber flashing lights on eight pieces of snow removal equipment located about 1,000 feet ahead of the airplane on the runway. At the time, IMC prevailed, and the runway 36 RVR was reported as 1,200 feet. The scheduled passenger flight had completed a Category II ILS approach to runway 36. The airplane lifted off the runway and missed the snow removal equipment by an estimated 10 feet. The occupants of the airplane and the snow removal equipment were not injured. During the on-scene investigation at Cincinnati, Safety Board investigators verified that the individuals assigned the local and ground control positions during the Piedmont incident had received the mandatory briefing required by the GENOT.

In all three occurrences, vehicles were operating within ILS critical areas at a time when aircraft were executing Category II II S approaches in reduced visibility conditions. ILS critical areas were established to ensure that no vehicles or aircraft would be operating in an area that could cause a deviation in course or elevation (glide slope) signals from the ILS system. A deviation in either course or elevation signal information caused by vehicles operating in a critical area could cause a flightcrew, by following those signals, to deviate from the actual ILS course or glide slope with a potential for disastrous results. The GENOT referred to previously did not contain any requirements for briefing control personnel concerning the requirements in Air Traffic Control Handbook 7110.65D, 3-84, for restricting vehicle and aircraft operations in the ILS critical areas when the reported ceiling, visibility, or runway visual range are below specified levels.

After the Sioux Falls accident, the Air Traffic Manager (ATM) installed a mechanical alerting device, similar to a flag on a rural mail box, between the local and ground control positions. The ATM stated that the device was intended to alert the local and ground controllers when vehicles are on the active runway on a long-term basis, such as when snow removal operations were in progress. The device is put in the up position when vehicles are on the runway and in the down, or lowered, position when the runway is clear.

At Cincinnati, the ATM has installed an electronic alerting device at the local and ground control positions. The device consists of a red light with a switch located near the wind indicators at both the local and ground control positions. The ATM stated that the device will be used in the following manner: When the ground controller requests permission to allow vehicles on the runway for other than routine runway crossings, he must verbally ask the local controller for permission. When verbal approval is received, the ground controller will activate the switch associated with the red light at his operating position which in turn will illuminate the red lights at both positions to indicate that vehicles are on the active runway. When the vehicles are clear of the runway, the ground controller is responsible for verbally advising the local controller that the runway is clear of vehicles and the local controller is responsible for deactivating the lights via the switch located at his operating position.

The Safety Board is aware that mechanical alerting devices have been in use at several U.S. Air Force Control Towers for some time as an aid to alerting control personnel that vehicles, such as snow removal equipment, are utilizing the active runway(s) on a long-term basis.

Accordingly the National Transportation Safety Board recommends that the Federal Aviation Administration:

> Develop a mechanical/aural/visual (or combination thereof) alert device and require its use by local and ground controllers to coordinate their activities when a vehicle has been cleared to operate on the active duty runway for an extended period such as in snow removal operations. (Class II, Priority Action) (A-85-15)
>
> Periodically emphasize in the training of air traffic control personnel providing airport advisory services the proper application of runway usage procedures stressing positive coordination between control positions. (Class II, Priority Action) (A-85-16)
>
> Periodically emphasize in the training of air traffic controller personnel the requirements contained in the Air Traffic Control Handbook 7110.65D, March 1984, for restricting vehicle and aircraft operations in the ILS critical areas when the ILS is being used for approach/landing guidance and the reported ceiling, visibility or runway visual range are below the specified levels. (Class II, Priority Action) (A-85-17)

BURNETT, Chairman, GOLDMAN, Vice Chairman, and BURSLEY, Member, concurred in these recommendations.

By: Jim Burnett
Chairman

File - 6000 12/19/83 ANCHORAGE,AK C Rcd. No. J8151 Time (Lcl) - 0005 AST

----Basic Information----

Type Operating Certificate-AIR CARRIER - FLAG/DOMESTIC
Name of Carrier -JAPAN AIRLINES
Type of Operation -SCHEDULED,INTL,CARGO
Flight Conducted Under -14 CFR 121
Acc/Inc Occurred During -LANDING

Aircraft Damage
SUBSTANTIAL
Fire
NONE

	Injuries			
	Fatal	Serious	Minor	None
Crew	0	0	0	3
Pass	0	0	0	0
Other	0	1	0	0

----Aircraft Information----

Make/Model - BOEING 747-200F
Landing Gear - TRICYCLE-RETRACTABLE
Max Gross Wt - 820000
No. of Seats - UNK/NR

Eng Make/Model - P & W JT9D-7Q
Number Engines - 4
Engine Type - TURBOFAN
Rated Power - 53000 LBS THRUST

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

----Environment/Operations Information----

Weather Data
Wx Briefing - COMPANY
Method - IN PERSON
Completeness - UNK/NR
Basic Weather - IMC
Wind Dir/Speed- CALM
Visibility - ,060 SM
Lowest Sky/Clouds - 100 FT
Lowest Ceiling - 100 FT OBSCURED
Obstructions to Vision- FOG
Precipitation - NONE
Condition of Light - NIGHT(DARK)

Itinerary
Last Departure Point
TOKYO, JAPAN
Destination
SAME AS ACC/INC

ATC/Airspace
Type of Flight Plan - IFR
Type of Clearance - IFR
Type Apch/Lnds - ILS - COMPLETE

Airport Proximity
ON AIRPORT

Airport Data
ANCHORAGE INTL
Runway Ident - 06R
Runway Lth/Wid - 10897/ 150
Runway Surface - MACADAM
Runway Status - DRY

----Personnel Information----

Pilot-In-Command
Certificate(s)/Rating(s)
ATP
ME LAND

Age - 52
Biennial Flight Review
Current - YES
Months Since - 1
Aircraft Type - B-747

Medical Certificate - VALID MEDICAL-WAIVERS/LIMIT

Flight Time (Hours)

Total	17000	Last 24 Hrs	7
Make/Model	3300	Last 30 Days	UNK/NR
Instrument	UNK/NR	Last 90 Days	UNK/NR
Multi-Eng	UNK/NR	Rotorcraft	UNK/NR

Instrument Rating(s) - AIRPLANE

----Narrative----

AT 2359 THE LOCAL CONTROLLER CLEARED THE FLT TO LAND ON RWY 6R. AT 0001 THE GROUND CONTROLLER CLEARED A STATE-OPERATED PICK-UP TRUCK ONTO RWY 6R FOR A TAPLEY RUN. THE GROUND CONTROLLER STATED THAT HE REQUESTED CLEARANCE FROM THE LOCAL CONTROLLER TO ALLOW THE TRUCK ON THE RWY. HE WAS NOT AWARE THAT THE B-747 HAD BEEN CLEARED TO LAND. THE LOCAL CONTROLLER WAS BUSY WITH OTHER COMMUNICATIONS & WAS NOT SURE IF HE ACKNOWLEDGED THE REQUEST FROM GROUND CONTROL; HOWEVER, THE GROUND CONTROLLER BELIEVED THE LOCAL CONTROLLER SAID "OKAY." THE ACFT STRUCK THE TRUCK ABOUT 2,000 FT BEYOND THE APPROACH END OF THE RWY WHILE THE ACFT'S MAIN LANDING GEAR WAS ON THE GROUND BUT THE NOSE HAD NOT YET BEEN LOWERED FROM THE LANDING ATTITUDE. THE FLT CREW STATED THAT THEY DID NOT SEE THE TRUCK PRIOR TO THE COLLISION. AT 0013 THE RWY VISUAL RANGE(RVR) WAS 600 FT VARIABLE 800 FT.

Brief of Accident/Incident (Continued)

File No. - 6000 12/19/83 ANCHORAGE,AK A/C Reg. No. JB151 Time (Lcl) - 0005 AST

Occurrence IN FLIGHT COLLISION WITH OBJECT
Phase of Operation LANDING - FLARE/TOUCHDOWN

Finding(s)
1. LIGHT CONDITION - DARK NIGHT
2. WEATHER CONDITION - LOW CEILING
3. WEATHER CONDITION - FOG
4. WEATHER CONDITION - OBSCURATION
5. CONTROL TOWER SERVICE - INADEQUATE - ATC PSNL(LCL/GND/CLNC)
6. OBJECT - VEHICLE

----Probable Cause----

The National Transportation Safety Board determines that the Probable Cause(s) of this accident/incident is/are finding(s) 5

Factor(s) relating to this incident is/are finding(s) 1,2,3,4,6

File - 3315 12/20/83 SIOUX FALLS,SD Reg. No. N934Z Time (Lcl) - 1317 CST

----Basic Information----

Type Operating Certificate-AIR CARRIER - FLAG/DOMESTIC
Name of Carrier -OZARK AIR LINES, INC
Type of Operation -SCHEDULED,DOMESTIC,PAX/CARGO
Flight Conducted Under -14 CFR 121
Accident Occurred During -LANDING

Aircraft Damage: SUBSTANTIAL
Fire ON GROUND

	Injuries			
	Fatal	Serious	Minor	None
Crew	0	0	0	5
Pass	0	0	2	79
Other	1	0	0	0

----Aircraft Information----

Make/Model - DOUGLAS DC-9-31
Landing Gear - TRICYCLE-RETRACTABLE
Max Gross Wt - UNK/NR
No. of Seats - 110

Eng Make/Model - P & W JT8D-7
Number Engines - 2
Engine Type - TURBOJET
Rated Power - UNK/NR

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

----Environment/Operations Information----

Weather Data
Wx Briefing - NWS
Method - TELETYPE
Completeness - UNK/NR
Basic Weather - IMC
Wind Dir/Speed- 070/009 KTS
Visibility - 1.000 SM
Lowest Sky/Clouds - PART OBS
Lowest Ceiling - 1000 FT OBSCURED
Obstructions to Vision- BLOWING SNOW
Precipitation - SNOW
Condition of Light - DAYLIGHT

Itinerary
Last Departure Point
SIOUX CITY,IA
Destination
SAME AS ACC/INC

ATC/Airspace
Type of Flight Plan - IFR
Type of Clearance - IFR
Type Arch/Lnds - ILS - COMPLETE
FULL STOP

Airport Proximity
ON AIRPORT

Airport Data
JOE FOSS FIELD
Runway Ident - 03
Runway Lth/Wid - 8999/ 150
Runway Surface - CONCRETE
Runway Status - SNOW - DRY

----Personnel Information----

Pilot-In-Command
Certificate(s)/Rating(s)
ATP
SE LAND,ME LAND

Age - 58
Biennial Flight Review
Current - YES
Months Since - 5
Aircraft Type - DC-9-30

Medical Certificate - VALID MEDICAL-WAIVERS/LIMIT

Flight Time (Hours)

Total	- 25217	Last 24 Hrs	- UNK/NR
Make/Model	- 9776	Last 30 Days	- UNK/NR
Instrument	- UNK/NR	Last 90 Days	- UNK/NR
Multi-Eng	- UNK/NR	Rotorcraft	- UNK/NR

Instrument Rating(s) - AIRPLANE

----Narrative----

DURING LANDING THE CREW ACQUIRED VISUAL REFERENCE WITH THE GROUND & APCH LIGHTS ABOUT 200 FT AGL, FOLLOWED BY VISUAL SIGHTING OF THE RWY. SINCE THE ATIS REPORTED BLOWING SNOW, THE CREW EXPECTED TO SEE, & WAS NOT SURPRISED TO SEE, SNOW BLOWING ACROSS THE RWY ABOUT 2,000 FT BEYOND THE THRESHOLD. AT ABOUT 2,200 FT DOWN THE RWY THE ACFT ENTERED A CLOUD OF SNOW, & THE RIGHT WING STRUCK A LARGE SNOW SWEEPING VEHICLE WHICH WAS TRAVELING IN THE SAME DIRECTION & TO THE RIGHT OF THE RWY CENTERLINE. THE ACFT'S RIGHT WING SEPARATED & IT SWERVED OFF THE RWY. NEITHER THE APPROACH CONTROLLER NOR THE LOCAL CONTROLLER ADVISED THE FLT OF SNOW REMOVAL OPERATIONS, NOR DID THE LOCAL CONTROLLER COMMUNICATE WITH THE SWEEPER AFTER HE TOOK THE HAND-OFF OF THE FLT FROM APPROACH CONTROL. HE ALSO STATED HE DID NOT KNOW WHERE THE SWEEPER WAS WHEN HE CLEARED THE FLT TO LAND.

Brief of Accident (Continued)

File No. - 3315 12/20/83 SIOUX FALLS,SD A/C Reg. No. N934Z Time (Lcl) - 1317 CST

Occurrence ON GROUND COLLISION WITH OBJECT
Phase of Operation LANDING - ROLL

Finding(s)

1. WEATHER CONDITION - SNOW
2. WEATHER CONDITION - OBSCURATION
3. CONTROL TOWER SERVICE - INADEQUATE - ATC PSNL(LCL/GND/CLNC)
4. OBJECT - VEHICLE

----Probable Cause----

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

Factor(s) relating to this accident is/are finding(s) 1,2,4

File - 5031 3/08/84 ERLANGER,KY A/C Reg. No. N794N Time (Lcl) - 0742 EST

---Basic Information---

Type Operating Certificate-AIR CARRIER - FLAG/DOMESTIC
Name of Carrier -PIEDMONT AVIATION
Type of Operation -SCHEDULED,DOMESTIC,PAX/CARGO
Flight Conducted Under -14 CFR 121
Incident Occurred During -LANDING

Aircraft Damage
NONE
Fire
NONE

	Injuries			
	Fatal	Serious	Minor	None
Crew	0	0	0	5
Pass	0	0	0	17
Other	0	0	0	8

---Aircraft Information---

Make/Model - BOEING 737-200
Landing Gear - TRICYCLE-RETRACTABLE
Max Gross Wt - 90000
No. of Seats - 112

Eng Make/Model - P & W JT8-15
Number Engines - 2
Engine Type - TURBOJET
Rated Power - 15500 LBS THRUST

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

---Environment/Operations Information---

Weather Data
Wx Briefing - FSS
Method - TELEPHONE
Completeness - FULL
Basic Weather - IMC
Wind Dir/Speed- 100/010 KTS
Visibility - .300 SM
Lowest Sky/Clouds - 300 FT
Lowest Ceiling - 300 FT OBSCURED
Obstructions to Vision- BLOWING SNOW
Precipitation - SNOW
Condition of Light - DAYLIGHT

Itinerary
Last Departure Point
LOUISVILLE,KY
Destination
SAME AS ACC/INC

ATC/Airspace
Type of Flight Plan - IFR
Type of Clearance - IFR
Type Apch/Lndg - ILS - COMPLETE

Airport Proximity
ON AIRPORT

Airport Data
GREATER CINCINNATI INTL
Runway Ident - 36
Runway Lth/Wid - 9500/ 150
Runway Surface - CONCRETE
Runway Status - SNOW - WET

---Personnel Information---

Pilot-In-Command
Certificate(s)/Rating(s)
COMMERCIAL,ATP,FLT ENG
SE LAND,ME LAND

Age - 38
Biennial Flight Review
Current - YES
Months Since - 4
Aircraft Type - B-737

Medical Certificate - VALID MEDICAL-NO WAIVERS/LIMIT

Flight Time (Hours)

Total	- UNK/NR	Last 24 Hrs	- UNK/NR
Make/Model	- 2400	Last 30 Days	- UNK/NR
Instrument	- UNK/NR	Last 90 Days	- UNK/NR
Multi-Eng	- UNK/NR	Rotorcraft	- UNK/NR

Instrument Rating(s) - AIRPLANE

---Narrative---

WHILE THE ACFT WAS ABOUT 15 MI SW OF THE ARPT BEING VECTORED FOR A RWY 36 CAT II APPROACH, THE LOCAL CONTROLLER GAVE THE GROUND CONTROLLER PERMISSION TO CLEAR SNOW REMOVAL EQUIPMENT TO PROCEED NORTH ON RWY 36 & TO EXIT RWY 36 AT THE INTERSECTION OF RWY 27L. THE ACFT REPORTED AT THE OUTER MARKER & WAS CLEARED TO LAND. THERE WAS NO CONVERSATION BETWEEN THE CONTROLLERS AS TO THE STATUS OF THE SNOW REMOVAL EQUIPMENT. JUST AFTER TOUCHDOWN THE CAPTAIN OBSERVED THE AMBER ROTATING BEACON OF ONE OF THE VEHICLES ABOUT 1,000 FT AHEAD. THE CAPTAIN MADE AN IMMEDIATE GO-AROUND & THE ACFT MISSED THE 8 VEHICLES BY AN ESTIMATED 10 FT. THE RWY VISUAL RANGE (RVR) WAS REPORTED AS 3,000 FT.

Brief of Incident (Continued)

File No. - 5031 3/08/84 ERLANGER,KY A/C Reg. No. N794N Time (Lcl) - 0742 EST

Occurrence MISCELLANEOUS/OTHER
Phase of Operation LANDING

Finding(s)
1. WEATHER CONDITION - LOW CEILING
2. WEATHER CONDITION - SNOW
3. WEATHER CONDITION - OBSCURATION
4. CONTROL TOWER SERVICE - INADEQUATE - ATC PSNL(LCL/GND/CLNC)
5. OBJECT - VEHICLE
6. ABORTED LANDING - PERFORMED - PILOT IN COMMAND
7. GO-AROUND - INITIATED - PILOT IN COMMAND

----Probable Cause----

The National Transportation Safety Board determines that the Probable Cause(s) of this incident is/are finding(s) 4

Factor(s) relating to this incident is/are finding(s) 1,2,3,5

Safety Recommendation Reiteration List

SR Number	Reiteration Number	Report Number	Report Date	Accident Description	Accident City	Accident State	Accident Date
A-85-016	1	SIR-86-01	5/6/1986	Runway Incursions at Controlled Airports in the U.S.	N/A	N/A	N/a