

PB86-910410

**.Aircraft Accident/Incident Summary Reports**  
**Detroit:, Michigan - April 25, 1985**

**(U.S.) National Transportation Safety Board**  
**Washington, DC**

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# NATIONAL TRANSPORTATION SAFETY BOARD

WASHINGTON, D.C. 20594

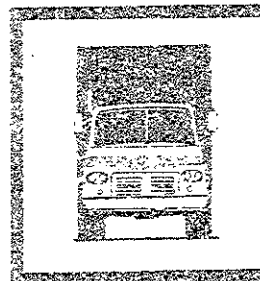
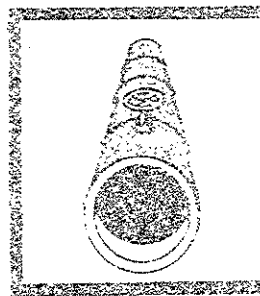
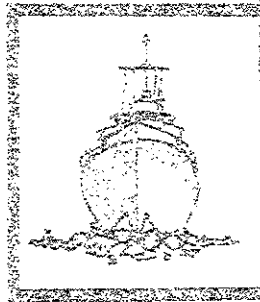
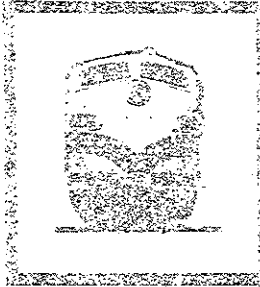
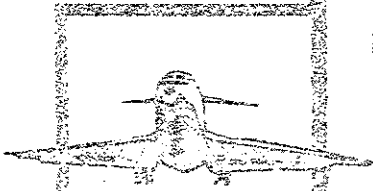
## AIRCRAFT ACCIDENT/INCIDENT SUMMARY REPORTS

DETROIT MICHIGAN - - APRIL 25, 1985

NTSB/AAR-85/03/SUM

UNITED STATES GOVERNMENT

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# National Transportation Safety Board

Washington, D.C. 20594  
Safety Recommendation

File No.:	5008
Aircraft Operator:	United Air Carrier, Inc. dba National Airlines dba Overseas National Airways
Aircraft Type and Registration:	Boeing 747-123, N9663
Location:	Wayne County Detroit Metropolitan Airport, Detroit, Michigan
Date and Time:	April 25, 1985, 1045 eastern standard time
Persons On Board:	481
Injuries:	41 Minor, 440 None
Aircraft Damage:	None
Other Damage or Injury:	None
First Occurrence:	Smoke (in cabin)
Phase of Operation:	Preflight
Second Occurrence:	Miscellaneous-Evacuation by slide and jetway
Phase of Operation:	Preflight-Before start of engine(s)

On April 25, 1985, at 1015 eastern standard time, National Airlines flight OV302, a Boeing 747-123, N9663, was scheduled to depart gate 61 in the International Terminal, Wayne County Detroit Metropolitan Airport, Detroit, Michigan. The flight was being operated as a charter flight to Las Vegas, Nevada, under the provisions of 14 CFR Part 121. The 481 persons on board included 3 flight crewmembers, 16 flight attendants, an additional flight crewmember who was a flight operations inspector for the Federal Aviation Administration (FAA), and 461 passengers.

The flight was delayed about 30 minutes while the ground crew secured some loose cargo in the aft body cargo compartment. The passengers were seated, the boarding jetway was removed, and the flightcrew were at the "start the engines" point on the checklist. The flight attendants in the forward cabin detected a faint odor before closing door 1L (1L). They could not determine the source of the odor and closed door 1L in preparation for pushback. The in-flight supervisor flight attendant at door 1L went to the cockpit and advised the flight engineer of the smell. She returned to her station and noticed that the smell "had gotten stronger." Shortly thereafter, smoke was discovered in the vicinity of the overhead bin at row 16. The in-flight supervisor started to return to the cockpit when she encountered the flight engineer on the stairs. She told him of the smoke, and on her way back to the cabin, she heard the captain announce on the public address system, "evacuate, if there is a fire onboard."

The jetway was brought back to door 1L, which was reopened. Because the smoke had started to dissipate, the flight attendants at doors 1R, 2L, and 2R did not open their doors. However, the flight attendants at doors 3L, 3R, 4L, 4R, 5L, and 5R were not aware that the smoke was dissipating and opened the doors. Doors 3L and 3R opened properly, but the ramps mounted to the doors, while deploying properly, failed to inflate. The wing slide, which was packed in the fuselage/wing fairing, deployed and inflated properly. Door 5R jammed partially open and its evacuation slide did not deploy. The passengers in the forward cabin were evacuated through door 1L using the jetway. The other passengers evacuated the aircraft using the slides at doors 4L, 4R, and 5L. The in-flight supervisor attempted to redirect passengers forward by using the public address system. However, the system did not work because the cockpit crew had removed power from the airplane. According to the flight attendants, the evacuation was calm and orderly.

The airport fire department received the alarm from the control tower at 1045. Four firetrucks and two ambulances with 11 firefighters arrived on scene at 1047. The evacuation was still in progress. The flight attendant at door 5L informed the firefighters that there was no fire on board the aircraft at that time. The officer-in-charge and another firefighter ascended the exterior jetway stairs and entered the aircraft. Other firefighters assisted passengers on the ground. Forty-one passengers received injuries during the evacuation and use of the slides. Several firefighters trained as emergency medical technicians established a triage in the customs area of the terminal. When it became apparent that a large number of passengers were injured, the firefighters requested mutual aid assistance. A private ambulance service responded to the call for mutual aid with four units, which were used to transport the injured to area hospitals.

The day of the incident, 18 passengers were treated at the airport and released. Another 23 passengers were taken to three area hospitals. Typical injuries for those treated included lacerations, contusions, abrasions, and sprains. The most serious injuries were a knee injury and a cervical spine strain. The only passenger admitted to the hospital was complaining of chest pains and remained hospitalized for observation for over 24 hours.

When Safety Board investigators later arrived on the scene, the aircraft had been secured and was still parked at the gate. The slides that deployed during the emergency evacuation had been detached from the door sills to prevent damage from the wind and were lying on the ramp outside the airplane. Investigators examined the doors, the ramps to the slides, and the slide/raft combinations of the airplane.

Examination of open doors 3L and 3R revealed that the ramp packs were improperly mounted to the doors. The overwing doors of the B-747 are designed with a mechanical rotary drive system that initiates the flow of nitrogen into the ramp packs from the reservoir when the drive plate on the pressure regulator is rotated through an angle of 70 to 90°. When properly installed, the two prongs in the door drive, align with, and insert into the drive plate. As the door is opened in the automatic mode, the prongs rotate and the drive plate opens the regulator to inflate the ramp. Investigators closed and reopened both doors to demonstrate that they operated properly. However, an examination of both drive plates revealed marks where the prongs had rotated on the surface of the drive plates, indicating that the prongs had not inserted into the drive plates.

The airplane doors were equipped with bottles containing a charge of air that were designed to assist in opening the doors. Investigators found that the bottle at door 5R was empty. The slide/raft was still mounted to door 5R, but the cover had been removed and the door handle was in the manual mode. Another door assist bottle was installed and the door was reopened. The assist bottle discharged and the door jammed partially open, duplicating the problem found on flight QV302. The door could not be closed or opened, since pneumatic pressure was forcing the door partially open. Examination of the packboard 1/ revealed that it was designed to be installed on a left side door. The aft packboard lanyard was not connected to the aft primary bottom panel pulley. In fact, the pulley was not even installed on the packboard. Had the pulley been installed and the lanyard attached, the slide/raft would have properly released from the packboard. The packboard used for the slide/raft in door 5R should have been modified to conform with Air Cruisers Supplemental Type Certificate (STC) No. SA 1215EA issued on December 18, 1980. Compliance with the STC would allow the packboard to function properly on either a left or right side door.

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1/ A rack which holds the slide in a compact package for easy installation.

Investigators found that the slide/raft pack at door 1L was mounted to the door and both the inflation bottle and door assist bottle were fully charged. Doors 1R, 2L, and 2R were not opened during the incident, and the mode selector handles were in the manual position. The slide/raft packs were mounted securely to each door and the door assist and inflation bottles were fully charged. All slide/raft assemblies at these locations were within a current inspection cycle.

A mechanic employed by the contract maintenance organization used by Overseas National Airlines in Detroit boarded the airplane after the evacuation and discovered an overheated and slightly deformed ballast unit used for right edge overhead fluorescent lighting above and outboard of the overhead bin at row 14 in zone B on the right side of the airplane. He reported the finding to the airline and was instructed to remove the unit as well as to pull all circuit breakers associated with overhead cabin lighting. The mechanic stated that no circuit breakers were tripped before he pulled them.

Safety Board investigators found no damage to the cabin interior as a result of the overheated ballast unit. A small amount of a black tar-like residue was found on the mounting plate for the ballast. The interconnecting wiring associated with the ballast unit was inspected and no evidence of overheating or discoloration was observed. A later examination of the inside of the encapsulating material in the ballast revealed deformation around the choke. <sup>2/</sup> In addition, the internal fuse link, which is enclosed within the encapsulating material, had blown from current overload. The heat from the overload had melted the encapsulating material within the ballast, which produced the odor and dense smoke within the cabin.

Replacement of the lighting ballast units in model 747 airplanes was the subject of Boeing Service Bulletin No. 33-2029 issued in April 1971. Early model 747 airplanes were delivered with the passenger compartment lighting ballast units enclosed in plastic cases. The service bulletin stated that, "In the event of a ballast failure, the ballast may emit an objectionable amount of smoke for a short period of time. The smoke may unnecessarily alarm passengers and attendants in the passenger cabin." The service bulletin further stated that to reduce smoke emission and improve service life, the plastic encased ballast units could be replaced with improved ballasts in metal cases. N9663 was in the group of airplanes affected by the service bulletin. At the time the service bulletin was issued, N9663 was operated by American Airlines. Compliance with the service bulletin was "recommended" by Boeing; however, no mandatory action was required. In addition to the Boeing service bulletin, on May 4, 1982, the FAA issued Air Carrier Operations Bulletin No. 8-82-1, Cabin Fluorescent Light Ballast Fires, which discussed the degree of hazard associated with the lighting units.

The airline had completed a maintenance "A" check on N9663 the day before the incident. The maintenance log indicated a total of 16 deferred maintenance items that had not been corrected. None of these items involved the cabin fluorescent lighting systems.

The Safety Board believes that the captain's decision to evacuate was in the best interest of the passengers and was based on the best available information provided to him by the crewmembers. However, a review of the flightcrew actions and evacuation procedures disclosed some areas where corrective action was needed. During the evacuation, the captain issued a nonstandard command over the public address system to evacuate the airplane, "(1144:39) Ileen <sup>3/</sup> evacuate the passengers right now if we have a

<sup>2/</sup> The purpose of the choke is to regulate current.

<sup>3/</sup> Represents the way the voice transmission from the cockpit voice recorder was transcribed. This transmission represents the in-flight supervisor's first name.

fire. . . . leen ah get the passengers off right now." The captain should have initiated the announcement with the preparatory command "stand by" as stated in the flight attendant's manual (Chapter 7, page 12). **This** command is issued if the need for evacuation cannot be determined immediately, as in this case. If, in the captain's judgment, evacuation becomes necessary, the captain is to then issue the command "evacuate." The purpose **of** the preparatory command "stand by" is to ensure that all flightcrew members are in place to effect an orderly evacuation, and **also** to give the captain (**or** other flightcrew members, if **the** captain is incapacitated) time to evaluate the situation properly. Although at the time **of** the incident, **all** flight crewmembers were properly certificated and were current in their proficiency checks and training, it is apparent that the captain was not totally familiar with emergency evacuation procedures.

**As** a result of the incident, the airline immediately inspected its other airplanes to ensure that ramps and slides were installed correctly. The Boeing service bulletin and FAA air carrier operations bulletin that applied to the cabin fluorescent lighting system were brought to the attention of the airline's qualified **747** flightcrews and were made a part **of** the company's training program. The airline **also** recertified **all of** its flightcrews and cabin crewmembers and emphasized emergency evacuation procedures.

The attached brief contains the Safety Board's **findings** of probable cause(s) relating to this incident.



National Transportation Safety Board  
Washington, D.C. 20594

Brief of Incident

File No. - 5008      4/25/85      DETROIT, MI      A/C Reg. No. N9663      Time (Lcl) - 1045 EST

-----Basic Information-----

Type Operating Certificate - AIR CARRIER - SUPPLEMENTAL	Aircraft Damage	Injuries			
Name of Carrier - UNITED AIR CARRIERS	NONE	Fatal	Serious	Minor	None
Type of Operation - NON SCHED, DOMESTIC, PASSENGER	Fire	Crew	0	0	0
Flight Conducted Under - 14 CFR 121	ON GROUND	Pass	0	0	42
Incident Occurred During - STANDING					20
					419

-----Aircraft Information-----

Make/Model - BOEING 747-123	Eng. Make/Model - P&W JT9	ELT Installed/Activated - UNK/NR
Landing Gear - TRICYCLE-RETRACTABLE	Number Engines - 4	Stall Warnins System - YES
Max Gross Wt - 110000	Engine Type - TURBOFAN	
No. of Seats - 495	Rated Power - 14500 LBS THRUST	

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

Weather Data	Itinerary	Airport Proximity
Wx Briefings - UNK/NR	Last Departure Point	ON AIRPORT
Method - UNK/NR	DETROIT, MI	
Completeness - UNK/NR	Destination	Airport Data
Basic Weather - VMC	LAS VEGAS, NV	Runway Ident - UNK/NR
Wind Dir/Speed - 280/013 KTS	ATC/Airspace	Runway Lth/Wid - UNK/NR
Visibility - 10.0 SM	Type of Flight Plan - IFR	Runway Surface - UNK/NR
Lowest Sky/Clouds - 2300 FT	Type of Clearance - UNK/NR	Runway Status - UNK/NR
Lowest Ceiling - 2300 FT BROKEN	Type Arch/Lnds - NONE	
Obstructions to Vision - NONE		
Precipitation - NONE		
Condition of Light - DAYLIGHT		

-----Personnel Information-----

Pilot-In-Command	Age - 46	Medical Certificate - VALID MEDICAL-NO WAIVERS/LIMIT
Certificate(s)/Rating(s)	Biennial Flight Review	Flight Time (Hours)
ATP	Current - YES	Total - 12000
SE LAND, ME LAND, SE SEA	Months Since - 1	Make/Model - 600
	Aircraft Type - 747	Instrument - UNK/NR
		Multi-End - UNK/NR
		Last 24 Hrs - UNK/NR
		Last 30 Days - UNK/NR
		Last 90 Days - UNK/NR
		Rotorcraft - UNK/NR

Instrument Rating(s) - AIRPLANE

-----Narrative-----

THE FLT CREWMEMBERS OF THE JUMBO JET WERE PREPARING TO START THE ENGS WHEN FLT ATTENDANTS (F/A'S) IN THE FORWARD CABIN DETECTED A FAINT ODOR PRIOR TO CLOSING DOOR 1L. THE SOURCE COULD NOT BE DETERMINED, SO THE DOOR WAS CLOSED IN PREPARATION FOR A PUSHBACK, SHORTLY THEREAFTER, SMOKE WAS DISCOVERED IN THE VICINITY OF THE OVERHEAD BIN AT ROW 16. THE CAPTAIN WAS NOTIFIED & HE ORDERED THAT 'OCCUPANTS EVACUATE, IF THERE IS A FIRE ONBOARD.' THE JETWAY WAS BROUGHT BACK TO DOOR 1L, THE SMOKE DISSIPATED; THUS, THE F/A'S AT DOORS 1R, 2L & 2R DID NOT OPEN THEIR DOORS, HOWEVER, THE F/A'S AT THE OTHER 6 DOORS WERE UNAWARE OF THE SITUATION & CONTINUED THE EVACUATION. THE RAMPS AT DOORS 3L & 3R DID NOT INFLATE & DOOR 5R JAMMED HALFWAY OPEN. THE RAMP PACKS FOR 3R & 3L WERE IMPROPERLY MOUNTED, THE 5R PACK BOARD WAS MADE FOR A LEFT HAND DOOR & THE LANYARD WAS NOT CONNECTED TO THE BOTTOM PANEL PULLEY. AN EXAM REVEALED A BALLAST FOR AN OVERHEAD FLOURESCENT LIGHT, PN 69-33C, HAD OVERHEATED & MELTED THE PLASTIC CASE.

Brief of Incident (Continued)

File No. - 5008

4/25/85

DETROIT, MI

A/C Reg. No. N9663

Time (Lcl) - 1045 EST

Occurrence AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION  
Phase of Operation STANDING - PRE-FLIGHT

Findings(s)

1. PASSENGER COMPARTMENT LIGHTS - OVERTEMPERATURE
2. MAINTENANCE, SERVICE BULLETINS - NOT FOLLOWED - COMPANY/OPERATOR HGHT
3. FUSELAGE, CABIN - SMOKE
4. EMERGENCY PROCEDURE - PERFORMED -
5. MISC EQPT/FURNISHINGS, SLIDES - INOPERATIVE
6. MAINTENANCE, INSTALLATION - IMPROPER - COMPANY MAINTENANCE PSNL
7. DOOR, EMERGENCY EXIT - IMPROPER
8. MAINTENANCE, INSTALLATION - IMPROPER - COMPANY MAINTENANCE PSNL
9. DOOR, EMERGENCY EXIT - JAHMEU

---Probable Cause---

The National Transportation Safety Board determines that the Probable Cause(s) of this incident is/are finding(s) 1

Factor(s) relating to this incident is/are finding(s) 2,5,6,7,8,9