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## Landing with nosewheel assembly rotated 90 degrees, Airbus A319-131, November 21, 2002

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**Micro-summary:** This Airbus Industrie A319-131 landed with the nose wheels turned 90 degrees.

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**Event Date:** 2002-11-21 at 1006 CST


**Investigative Body:** National Transportation Safety Board (NTSB), USA

**Investigative Body's Web Site:** <http://www.nts.gov/>

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		NTSB ID: CHI03IA027		Aircraft Registration Number: N804UA	
		Occurrence Date: 11/21/2002		Most Critical Injury: None	
		Occurrence Type: Incident		Investigated By: NTSB	
Location/Time					
Nearest City/Place Chicago		State IL	Zip Code 60666	Local Time 1006	Time Zone CST
Airport Proximity: On Airport		Distance From Landing Facility:		Direction From Airport:	
Aircraft Information Summary					
Aircraft Manufacturer Airbus Industrie		Model/Series A319-131		Type of Aircraft Airplane	
Sightseeing Flight: No			Air Medical Transport Flight: No		
Narrative					
<p>Brief narrative statement of facts, conditions and circumstances pertinent to the accident/incident:</p> <p>On November 21, 2002, at 1006 central standard time, an Airbus Industrie A319-131, N804UA, operated by United Airlines (UAL) as flight 603, received minor damage when it landed on runway 04R (8,071 feet by 150 feet, asphalt) at the O'Hare International Airport (ORD), Chicago, Illinois. The airplane landed with the nose landing gear (NLG) wheels turned 90 degrees to the direction of travel. There were no injuries to the 2 pilots, 3 flight attendants, and 77 passengers on board. The 14 CFR Part 121 flight was being conducted in visual meteorological conditions and an instrument flight rules flight plan was filed. Flight 603 departed ORD at 0918, en route to Los Angeles, California.</p> <p>The captain reported that they received a "L/G shock absorber fault" on the upper display of the electronic centralized aircraft monitoring (ECAM) system when the crew attempted to retract the landing gear after takeoff. He reported they placed the gear handle in the down position after which time they also received the "AUTOFLIGHT" ECAM message and they lost use of the autopilot, autothrust, and flight directors. The captain reported that he instructed the first officer to fly the airplane while he accomplished the ECAM action items. He instructed the first officer to inform air traffic control of their problem and to request that they be able to stay near the airport in case they needed to return. The captain stated he then contacted dispatch and the system aircraft maintenance controller (SAMC) for further guidance. The captain reported the ECAM landing gear page, on the lower display, showed all three landing gear were down and locked, and the gear doors were closed, along with an amber nose wheel steering message. UAL reported that during the flight SAMC instructed the crew to interrogate the Centralized Fault Display System (CFDS), which revealed the "Nose Wheel Steering" fault. After troubleshooting the gear problem with SAMC, it was determined that the airplane should return to ORD. The captain reported that given the ECAM messages that they had, he was concerned that there would not be any nose wheel steering during the landing roll. SAMC informed the captain that if they did not have nose wheel steering it might be recovered during the landing roll when the nose strut was compressed.</p> <p>The captain reported he took over flying the airplane and prepared for a landing on runway 04R. He stated the landing was smooth and the nose wheel felt normal on the wet runway. However, during the landing roll, the control tower informed him that sparks were visible from the nose gear. He reported that as the airplane slowed, they noticed a noise and vibration prior to the airplane stopping on the runway just short of the "Q" turnoff. The captain reported he informed the passengers to remain seated until he was able to assess the condition outside the airplane. He stated the Fire Department reached the airplane within one or two minutes. He was informed that there were no hazards outside the airplane and the passengers were deplaned.</p> <p>Post-incident inspection revealed the NLG wheels were turned 90 degrees to the left. Both of the tires were blown. The left side tire rim was ground down to the axle. The right side tire rim was nearly ground down to the axle. There was no damage present on the airplane except for the NLG assembly.</p>					
FACTUAL REPORT - AVIATION					

National Transportation Safety Board

## FACTUAL REPORT

AVIATION

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Occurrence Date: 11/21/2002

Occurrence Type: Incident

## Narrative (Continued)

## NLG Shock Absorber Description and Operation

The manufacturer of the NLG shock absorber is Messier-Dowty. The shock absorber is a double-acting, oleopneumatic type with no separator piston.

The shock absorber assembly consists of two sections: a stationary inner cylinder (piston), which is mounted inside the shock strut assembly, and a sliding tube, which is the lower portion and contains the wheel axle. The upper portion of the inner cylinder contains anti-rotation lugs. During installation of the shock absorber, the anti-rotation lugs are aligned in slots on a backplate, which is mounted inside the top of the shock strut. A nut is then installed to secure the inner cylinder of the shock absorber/gear assembly to the backplate.

The bottom of the inner cylinder contains the lower cam. The upper part of the sliding tube contains the upper cam. This cam is held in place by eight dowel pins retained by a bushing and a retaining ring. During gear extension and retraction, the sliding tube extends down and the two cams engage, centering the nose wheel. When the strut is compressed on the ground, the cams are separated and the nose wheel is free to move for on ground steering.

## Teardown Inspection

When the NLG was removed from the airplane, it was determined that the anti-rotation lugs at the top of the shock absorber were not properly seated in the backplate, which indexed and bolted to the inside of the shock strut assembly.

The shock absorber assembly was shipped to the UAL Maintenance facility in San Francisco, California, where it was disassembled and inspected on December 5, 2002.

The shock absorber assembly was disassembled using the Job Instruction Cards (JIC) provided by UAL. These were the same JICs used when the strut was assembled during recent maintenance.

This teardown revealed the upper centering cam had been rotated 20 - 30 degrees when it was installed in the inner cylinder. With this condition, in order for the upper cam to mate properly with the lower cam, the sliding tube was rotated 20 to 30 degrees in relation to the aircraft centerline. In order for the axle to be perpendicular with the aircraft centerline when installed, the position of the anti-rotation lugs were rotated 20 - 30 degrees. This resulted in the anti-rotation lugs at the upper end of the strut not being properly engaged in the backplate slots.


## Recent Maintenance

A heavy maintenance visit, C-check, on N804UA was completed on November 20, 2002. This maintenance was performed by a contract Federal Aviation Administration (FAA) Certified, Part 145 Repair Station.

The NLG dynamic seal was replaced during the maintenance. In order for the seals to be replaced, the shock absorber assembly was removed from the airplane and the sliding tube was removed from the inner cylinder. The seals were replaced, the shock absorber was reassembled, and reinstalled in the aircraft.

Although the maintenance was performed by a contract facility, UAL JICs were used. The assembly tasks on the job cards were derived from the FAA-Approved Airbus Aircraft Maintenance Manual (AMM).

The airplane flew one non-revenue ferry flight and two revenue flights prior to the incident takeoff. The airplane had accumulated a total of 9 hours of flight time between the maintenance and the incident.

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## Narrative (Continued)

UAL reported they had performed about 60 NLG dynamic changes in the past. The contract maintenance facility had previously performed six NLG dynamic seal changes. The mechanic who performed the dynamic seal change on the incident NLG shock absorber had performed this job two times prior to the assembly for N804UA. The first time was with a trainer and the second time was on his own.

## Additional Incidents

On November 1, 2002, an Airbus A320, being operated by JetBlue landed at the John F. Kennedy International (JFK) Airport, New York, New York, with its NLG turned 90 degrees. This airplane had come out of maintenance where the NLG dynamic seal was replaced approximately 3 days prior to the incident. The airplane had flown 15 cycles and 23 hours between the completion of the maintenance and the incident. The investigation into this incident revealed the same findings as were found on N804UA. The upper centering cam on the inner cylinder had been mis-installed. This resulted in the anti-rotation lugs not being perpendicular to the axle and consequently the lugs were not properly seated in the backplate slots.

Messier-Dowty reported that there have been two additional incidents involving the mis-assembly of the NLG shock absorber. One of these involved a Canada 3000 A320 and the other occurred in Ireland.

## Additional Information

## Component Maintenance Manual (CMM)

The disassembly instructions in the CMM provided by Messier-Dowty does not contain any reference to marking any of the shock absorber components prior to disassembly.

The storage and assembly portion of the CMM contains the following Cautions:

CAUTION: TURN THE UPPER CAM (1-360) IN THE SLIDING ROD UNTIL THE REFERENCE LINE ON THE UPPER CAM (1-360) IS ALIGNED WITH THE ONE ON THE LOWER CAM (1-370).  
REFER TO Figure 701 FOR THE POSITIONS OF THE PARTS.

CAUTION: AFTER INSTALLATION, MAKE SURE THAT THE POSITIONS OF THE UPPER AND LOWER CAMS ARE CORRECT. MEASURE DIMENSION "A" WITH THE SHOCK ABSORBER FULLY EXTENDED. IT MUST BE APPROXIMATELY 377.5 MM (14.86 IN).

## Airbus

On December 13, 2002, Airbus issued an Operator Information Telex (OIT). The purpose of the OIT was to inform A319/A320/A321 operators of both NLG incidents. The OIT cautioned operators to strictly adhere to the instructions in the AMM. The OIT also stated that Airbus was adding an additional step in the installation instructions. That step recommends "rotating the shock absorber around its vertical axis to ensure that it correctly engaged in the slots of the backplate before tightening the shock absorber upper bolt. If installation is correct then rotation of the shock absorber will not be possible."

On March 13, 2003, Airbus issued another OIT. This OIT clarified the one issued on December 13, 2002, by stating that the shock absorber needed to be extended and pressurized prior to rotating it in order to assure that the lugs are engaged in the backplate slots. The OIT also stated that items in the AMM that were listed as "NOTES" were going to be changed to "WARNINGS." Finally the OIT stated that Airbus was reviewing the design of the backplate to further reduce the possibility

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## Narrative (Continued)

of installation errors.

AMM

Airbus issued AMM Temporary Revision No. 32-048 dated December 23, 2003. The filing instructions for this revision stated, "Insert this Temporary Revision immediately before 32-21-13, Page 425, with the issue date Nov 01/02." This revision changed the procedures for installing the shock absorber in the airplane by adding the following Note and steps under Section B:

NOTE: When the shock absorber (11) is fully engaged in the top of the shock strut (8), the length of the thread (16) that you can see is between 17 and 18 mm (0.67 and 0.71 in.)

- (9) Install and tighten the nut (7) with you hand.
- (10) Try to turn the NLG axle to make sure that the anti-rotation lugs are fully engaged in the slots of the back plate.

Following this incident, Airbus revised the shock absorber disassembly and installation sections in the AMM.

The AMM Subtask 32-21-13-020-053 addresses the removal and disassembly of the shock absorber.

Revision date Aug 01/02 states in part:

- (1) Before you remove the cylinder (3), make a mark with a felt tip marker to show the position of the sliding cool (9), upper cam (7), cylinder (3).

Revision date May 01/03 contains an additional warning, which says:

WARNING: BEFORE YOU REMOVE PARTS FROM THE SHOCK ABSORBER, MAKE SURE THAT YOU MAKE MATCHMARKS WITH A FELT-TIP MARKER. THIS IS VERY IMPORTANT. IT WILL LET YOU INSTALL THE PARTS IN THE CORRECT POSITION WHEN YOU ASSEMBLE THE SHOCK ABSORBER AGAIN. INCORRECT ASSEMBLY OF THE SHOCK ABSORBER IS DANGEROUS FOR AIRCRAFT SAFETY.

The AMM Subtask 32-21-13-020-054 addresses the assembly of the shock absorber. Revision date Aug 01/02 states, in part:

- (2) Install the upper cam (7) on the cylinder (3).

NOTE: You must align the reference line on the upper cam (7) with the reference line on the lower cam (8). (Ref. Fig. 406/TASK 32-21-13-991-007)

- (4) Carefully engage the cylinder (3) with the upper cam (7) in the sliding rod (9) until it touches the bottom of the bore.

NOTE: During the installation of the cylinder, try to keep the axis XX' parallel to teh axis YY' and the axis ZZ' perpendicular to the axis YY'. (Ref. Fig. 406/TASK 32-21-13-991-007)

- (5) Put the upper cam (7) in the position that agrees with the mark you made at removal.

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The following warning was added to the task in revision May 01/03:

WARNING: DURING INSTALLATION OF THE CYLINDER, MAKE SURE THAT YOU KEEP THE AXIS XX' PARALLEL TO THE AXIS YY' AND THE AXIS ZZ' PERPENDICULAR TO TH AXIS YY'. IF YOU DO NOT DO THIS, THE ASSEMBLY WILL NOT BE CORRECT. THIS IS DANGEROUS FOR AIRCRAFT SAFETY.

The AMM Subtask 32-21-13-420-052 addresses the installation of the shock absorber. Revision dates Aug 01/02 and Aug 01/03 both state in part:

CAUTION: WHEN YOU INSTALL THE SHOCK ABSORBER, MAKE SURE THAT YOU ALIGN THE PISTON LUGS WITH THE SLOTS IN THE SHOCK STRUT BACKPLATE. THE SHOCK ABSORBER WILL THUS BE IN THE CORRECT POSITION (THE WHEEL AXLE PERPENDICULAR TO THE AIRCRAFT CENTERLINE). AN INCORRECT INSTALLATION CAN CAUSE IMPORTANT DAMAGE TO THE NLG.

Airbus issued further revisions dated May 01/03.

The subtask was revised to read:

- (14) With the shock absorber fully extended, make sure that the wheel axle is perpendicular to the aircraft centerline.
- NOTE: In the fully extended position of the shock absorber, the NLG is automatically centered (the nose wheel steering is in zero position).
- (a) Make sure that the dimension H of the extended part of the NLG sliding tube between the lower area of the NLG lower bearing and the upper surface of the towing fitting lug is between 454.6 mm (17.8976 in.) and 445.6 mm (17.5433 in.). (Ref. Fig. 404/TASK 32-21-13-991-009)
- (15) Try to turn the NLG shock absorber around its vertical axis to make sure that the anti-rotation lugs are engaged in the slots of the back plate:
- (a) The shock absorber must not turn.
- (b) If you can turn the shock absorber, this shows that the anti-rotation lugs are not engaged in the slots because the centering cams are not correctly installed. You must remove the shock absorber to install the cams in the correct position.

UAL

Prior to the incident the UAL job cards for removing and disassembling the NLG shock absorber instructed maintenance personnel to draw a reference mark with a grease pencil to show the position of the sliding tube, upper cam, and lower cam prior to removing the inner cylinder. This is in accordance with the Airbus AMM, with the exception that Airbus states to use a felt tip marker.

During the teardown inspection of the incident NLG, on December 5, 2002, it was difficult to determine which part of the assembly was the upper cam by using the drawings in the AMM. The marks were made with a felt tip marker on what was thought to be the sliding tube, the upper cam, and the retaining bushing. When the retaining bushing was removed it became obvious which part was actually the upper cam. During the reassembling of the NLG, it was discovered that the marks made

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at disassembly had been wiped off during handling of the components. Based on this observation, UAL removed the item requiring the use of a marker to index the parts and instead added the following procedure to the JICs used to remove and disassemble the NLG in preparation for replacing the dynamic seals.

CAUTION: BEFORE SEPARATING THE UPPER CAM FROM THE SLIDING TUBE, SELECT AN "INDEX" DOWEL HOLE IN THE SLIDING TUBE AND ITS CORRESPONDING UPPER CM DOWEL HOLE. IMMEDIATELY AFTER SEPARATING THE UPPER CAM FROM THE SLIDING TUBE, LOOP A LARGE TIE-WRAP THROUGH EACH "INDEX" DOWELHOLE TO FACILITATE PROPER PARTS ORIENTATION DURING RE-ASSEMBLY. DO NOT TRIM THE EXCESS TIE-WRAP. IF TIE-WRAPs ARE NOT AVAILABLE, SELECT AN EQUIVALENT TEMPORARY DURABLE METHOD OF IDENTIFYING THE "INDEX" DOWEL HOLES.

The following note was added to Item 14 on the same JICs.

NOTE: DO NOT REMOVE THE TIE-WRAPs (OR EQUIVALENT) FROM THE DOWEL HOLES IN THE SLIDING TUBE OR UPPER CAM DURING THE CLEANING PROCESS.

- (2) Exercise care during cleaning to not remove felt tip pen marks. Restore any reference marks inadvertantly removed. (these marks were installed during item 10.C.)

UAL also revised their NLG shock absorber assembly and installation JICs.

The following cautions were added to Item 4 in the assembly and installation JICs:

CAUTION: ALWAYS INSTALL THE SAME LOWER CAM WITH THE SAME UPPER CAM, THEY ARE A MATCHED ASSEMBLY AND MUST STAY TOGETHER. DO NOT REMOVE THE TIE-WRAPs INSTALLED THRU THE DOWEL HOLES OF THE UPPER CAM AND SLIDING TUBE UNTIL INSTRUCTED TO DO SO.

CAUTION: DURING INSTALLATION OF THE INNER CYLINDER INTO THE SLIDING TUBE, ENSURE THE ANTI-ROTATION LUGS ON THE TOP OF THE INNER CYLINDER ARE INDEXED PERPENDICULAR (90 DEGREES) TO THE AXIS RUNNING THRU THE AXLE.

Item 4, Step E, was revised to read:

POSITION THE UPPER CAM SO THAT THE TIE-WRAPs INSTALLED IN THE UPPER CAM AND SLIDING TUBE DOWEL HOLES ARE VETICALLY-ALIGNED THEN REMOVE THE TIE-WRAPs. ENGAGE THE UPPER CAM WITH THE SLIDING TUBE EXERCISING CARE TO ENSURE THE PREVIOUSLY "INDEXED" DOWEL HOLES IN BOTH THE UPPER CAM AND SLIDING TUBE ARE NOW LATERALLY ALIGNED.

The following caution was added to Item 5 on the installation JICs.

CAUTION: WHILE THE SHOCK ABSORBER ASSEMBLY IS ON THE BENCH, POSITION THE AXLES HORIZONTALLY AT 3 O'CLOCK AND 9 O'CLOCK. ENSURE THE ANTI-ROTATION LUGS AT THE TIP OF

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THE ASSEMBLY ARE VERTICALLY POSITIONED AT 12 O'CLOCK AND 6 O'CLOCK. IF NOT, THE INNER CYLINDER ASSEMBLY IS INCORRECTLY INSTALLED IN THE SLIDING TUBE.

In the old JICs, the caution under Item 8 stated:

CAUTION: WHEN INSTALLING THE SHOCK ABSORBER, ENSURE THAT YOU ALIGN THE PISTON LUGS WITH THE SLOTS IN THE SHOCK STRUT BACKPLATE. THE SHOCK ABSORBER WILL THEN BE IN THE CORRECT POSITION. (THE WHEEL AXLE PERPENDICULAR TO THE AIRCRAFT CENTERLINE). AN INCORRECT INSTALLATION WILL PREVENT RETRACTION OF THE NOSE LANDING GEAR.

This caution was revised to read:

CAUTION: WHEN INSTALLING THE SHOCK ABSORBER, ENSURE THAT THE ANTI- ROTATION LUGS ARE CORRECTLY ENGAGED IN THE SHOCK STRUT BACK PLATE. WHEN CORRECTLY INSTALLED, THE NLG AXLE WILL BE PERPENDICULAR TO AIRCRAFT CENTERLINE.

The following note, steps, and Caution were added to Item 8.

NOTE: WHEN THE SHOCK ABSORBER IS FULLY ENGAGED IN THE TOP OF THE SHOCK STRUT, ENSURE THAT 0.67 TO 0.71 INCHES OF THE THREAD AT THE TOP OF THE SHOCK ASORBER IS VISIBLE.

J. SLOWLY EXTEND THE SHOCK ABSORBER AND PRESSURIZE TO 70 PSI WITH NITROGEN SUFFICIENT TO FULLY ENGAGE THE UPPER AND LOWER CAMS INSIDE OF THE SLIDING TUBE.

K. ATTEMPT TO TURN THE SLIDING TUBE ASSEMBLY AROUND ITS VERTICAL AXIS (INSIDE THE OUTER CYLINDER) TO ENSURE THE ANTI-ROTATION LUGS ARE PROPERLY ENGAGED IN THE SLOTS OF THE BACK PLATE.

CAUTION: FAILURE TO PROPERLY ENGAGE THE ANTI-ROTATION LUGS IN THE BACK PLATE WILL PREVENT RETRACTION OF THE NLG AND CAUSE AIRCRAFT DAMAGE.

## Messier Dowty

According to Messier Dowty, they have redesigned the backplate so that the space between the slots is solid. This will prevent the lugs from inadvertently being seated in this area. If the lugs are in this area, the retaining nut cannot be properly installed.

Messier Dowty has stated they are currently waiting for Airbus and the Direction Generale l'Aviation Civile (DGAC) to approve the new design, in accordance with normal certification procedures.

## Maintenance Contractor

Following this incident the contract maintenance facility distributed a Maintenance Bulletin throughout their facility to increase the awareness of the potential for misassembling the Airbus NLG shock absorber. In addition, the facility instituted a procedure for an additional person to inspect the process during assembly of the Airbus NLG shock absorbers.



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## ECAM Messages

The flight crew reported they received the L/G SHOCK ABSORBER FAULT message on the ECAM upper display when they raised the gear after takeoff, followed by the AUTO FLT A/THR OFF message when they put the gear handle in the down position. UAL reported that during the flight SAMC instructed the crew to interrogate the Centralized Fault Display System (CFDS), which revealed a WHEEL N/W STEER FAULT.

A review of the Maintenance Post Flight Report (PFR) revealed the following ECAM warning messages had been stored for the flight:


- 1) WHEEL N/W STEER FAULT
- 2) AUTO FLT A/THR OFF.


The PFR also revealed the following failure messages were stored in the ECAM:

- 1) STEERING ELECTO HYDRAULIC MODULE 6GC
- 2) N L/G EXT PROX SNSR 25GA TGT POS
- 3) N L/G EXT PROX SNSR 24GA TGT POS
- 4) AFS: MCDU2
- 5) STEERING FEEDBACK CONTROL SENSOR 3GC

The UAL A320 Flight Manual contains the following information regarding both the L/G SHOCK ABSORBER FAULT and the WHEEL N/W STEER FAULT. "If WHEEL N.W. STEER FAULT is also displayed, the nose wheels may be at maximum deflection (turned 90 from center). During landing, delay nose wheel touchdown for as long as possible."

Parties to this incident were the FAA and UAL. A representative from the Bureau d'Enquetes et d'Analysis pour la Securite de l'Aviation Civil was assigned as an Accredited Representative to the investigation and Airbus served as Technical Advisors to the Accredited Representative.

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<b>Landing Facility/Approach Information</b>					
Airport Name	Airport ID:	Airport Elevation	Runway Used	Runway Length	Runway Width
O'Hare International	ORD	668 Ft. MSL	4R	8071	150
Runway Surface Type: Asphalt					
Runway Surface Condition: Wet					
Type Instrument Approach: Visual					
VFR Approach/Landing: Precautionary Landing					
<b>Aircraft Information</b>					
Aircraft Manufacturer		Model/Series		Serial Number	
Airbus Industrie		A319-131		759	
Airworthiness Certificate(s): Transport					
Landing Gear Type: Retractable - Tricycle					
Homebuilt Aircraft? No	Number of Seats: 124	Certified Max Gross Wt.	154300 LBS	Number of Engines: 2	
Engine Type:	Engine Manufacturer:	Model/Series:	Rated Power:		
Turbo Fan	International Aero Engines	V2522-A5	26500 LBS		
- Aircraft Inspection Information					
Type of Last Inspection	Date of Last Inspection	Time Since Last Inspection	Airframe Total Time		
Continuous Airworthiness	11/2002	9 Hours	17152 Hours		
- Emergency Locator Transmitter (ELT) Information					
ELT Installed? No	ELT Operated? No	ELT Aided in Locating Accident Site? No			
<b>Owner/Operator Information</b>					
Registered Aircraft Owner		Street Address			
United Air Lines Inc.		1200 E. Algonquin Rd.			
		City	State	Zip Code	
		Arlington Heights	IL	60005	
Operator of Aircraft		Street Address			
Same as Reg'd Aircraft Owner		Same as Reg'd Aircraft Owner			
		City	State	Zip Code	
Operator Does Business As: United Air Lines			Operator Designator Code: UAL		
- Type of U.S. Certificate(s) Held:					
Air Carrier Operating Certificate(s): Flag Carrier/Domestic					
Operating Certificate:			Operator Certificate:		
Regulation Flight Conducted Under: Part 121: Air Carrier					
Type of Flight Operation Conducted: Scheduled; Domestic; Passenger Only					
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**First Pilot Information**

Name On File	City On File	State On File	Date of Birth On File	Age 42
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Sex: M	Seat Occupied: Left	Principal Profession: Civilian Pilot	Certificate Number: On File
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Certificate(s): Airline Transport; Commercial; Flight Engineer

Airplane Rating(s): Multi-engine Land; Single-engine Land

Rotorcraft/Glider/LTA: None

Instrument Rating(s): Airplane

Instructor Rating(s): None

Type Rating/Endorsement for Accident/Incident Aircraft? Yes	Current Biennial Flight Review? 08/2001
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Medical Cert.: Class 1	Medical Cert. Status: Valid Medical--no waivers/lim.	Date of Last Medical Exam: 09/2002
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- Flight Time Matrix	All A/C	This Make and Model	Airplane Single Engine	Airplane Multi-Engine	Night	Instrument		Rotorcraft	Glider	Lighter Than Air
						Actual	Simulated			
Total Time	9359	1612								
Pilot In Command(PIC)		1612								
Instructor										
Last 90 Days		248								
Last 30 Days		118								
Last 24 Hours		7								

Seatbelt Used?	Shoulder Harness Used? Yes	Toxicology Performed? No	Second Pilot? Yes
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**Flight Plan/Itinerary**

Type of Flight Plan Filed: IFR

Departure Point Chicago	State IL	Airport Identifier ORD	Departure Time 0918	Time Zone CST
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Destination Los Angeles	State CA	Airport Identifier LAX	
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Type of Clearance: IFR

Type of Airspace: Class B

**Weather Information**

Source of Briefing:  
Company


Method of Briefing: In Person

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<b>Weather Information</b>					
WOF ID	Observation Time	Time Zone	WOF Elevation	WOF Distance From Accident Site	Direction From Accident Site
ORD	1013	CST	668 Ft. MSL	0 NM	0 Deg. Mag.
Sky/Lowest Cloud Condition:			Ft. AGL	Condition of Light: Day	
Lowest Ceiling: Overcast		1000 Ft. AGL	Visibility: 10	SM	Altimeter: 29.71 "Hg
Temperature: 6 °C	Dew Point: 4 °C	Wind Direction: 10		Density Altitude: -5 Ft.	
Wind Speed: 13	Gusts:	Weather Conditions at Accident Site: Visual Conditions			
Visibility (RVR): Ft.	Visibility (RVV)	SM	Intensity of Precipitation: Light		
Restrictions to Visibility: None					
Type of Precipitation: Rain					

<b>Accident Information</b>		
Aircraft Damage: Minor	Aircraft Fire: None	Aircraft Explosion: None

Classification: U.S. Registered/U.S. Soil					
<b>- Injury Summary Matrix</b>	Fatal	Serious	Minor	None	TOTAL
First Pilot				1	1
Second Pilot				1	1
Student Pilot					
Flight Instructor					
Check Pilot					
Flight Engineer					
Cabin Attendants				3	3
Other Crew					
Passengers				77	77
- TOTAL ABOARD -				82	82
Other Ground					
- GRAND TOTAL -				82	82

 <p>National Transportation Safety Board <b>FACTUAL REPORT</b> AVIATION</p>	NTSB ID: CHI03IA027
	Occurrence Date: 11/21/2002
	Occurrence Type: Incident

## Administrative Information

Investigator-In-Charge (IIC)

Pamela S. Sullivan

## Additional Persons Participating in This Accident/Incident Investigation:

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