

Attachment # 5A

Field Notes EWR

WASHINGTON, DC 20594

**OPERATIONS/HUMAN PERFORMANCE GROUP CHAIRMAN'S FIELD NOTES
NEWARK, NJ - JULY 31- AUGUST 2, 1997**

DCA97MA055

A. ACCIDENT

Operator: FedEx
Location: Newark International Airport (EWR), Newark, NJ.
Date: July 31, 1997
Time: 0131 Eastern Daylight Time (EDT)¹ - 0531 UTC²
Airplane: MD-11, N611FE

B. OPERATIONS/HUMAN PERFORMANCE GROUP

P.D. Weston, NTSB, Operations Group Chairman

Evan A. Byrne, NTSB, Human Performance Investigator

Ron Krantz, FAA

Mike Padron, FedEx

Mark B. Klair, FedEx

Larry Wilkinson, FPA

Tom Melody, McDonnell Douglas

¹ All times are Eastern Standard Time (EDT) based on a 24-hour clock, unless otherwise noted. Times noted are approximate.

² Coordinated Universal Time - Formerly Greenwich Mean Time (GMT) or (Z). UTC equals EDT plus four hours.
DCA97MA055

D. INTERVIEWS

Interviews were conducted on July 31, August 1 and 2 as part of the on-site investigation of FDX Flight 14 which crashed during landing at EWR.

Interview: Jeff S. Loving
Represented by: Lee Seham, FPA
Present: Operations group (note: Wilkinson and Melody not present)
Time: 2050 EDT 7/31/97
Location: Sheraton EWR

DOB [REDACTED]/50. DOB 4/17/96. Second officer DC-10.

He was in a DC-10 on the ground at EWR when accident occurred. He said the DC-10 had just left the ramp and was taxiing. He said the position of the DC-10 at the time of the accident was about taxiway RB. He cannot remember what directed his attention to the accident – whether someone said something or if it was the flash. He said that he saw explosion and flames out of the corner of his eye at first. He said he saw it through the first officer's window. He said he never heard anything on the radio. He recalls billowing fire and rolling movement of the accident airplane. He remembers seeing movement of the fuselage inside the fireball but was not sure of any exact angles or positions. He said that a number of minutes after the airplane came to rest they radioed ground to ask what it was. Ground said it was a MD-11 and a few minutes later they said it was a company MD-11. During the accident sequence he was concerned that the fireball was coming towards their DC-10. He remembers telling the captain that they needed to move and grabbed the captain's arm – and a few moments later it became clear that the momentum of the airplane and the fireball had decreased and it would not reach the DC-10. He described the flames as bright orange, yellow and orange, and said that they reminded him of flames that he'd seen in firefighting school in the Navy. He did not see the MD-11 crew on the ground. The DC-10 held position and shut engines down. They were towed into the ramp after contacting the company to have company contact ground via landline. The DC-10 had blocked out at 0124, 2 minutes early. He said that the accident airplane was coming towards them from the 0100-0130 position and at that time it was angling off the runway towards them.

Interview: Joey J. Johnson
Represented by: Lee Seham, FPA
Present: Operations group (note: Wilkinson and Melody not present)
Time: 2105 EDT 7/31/97
Location: Sheraton EWR

DOB [REDACTED]/51. DOH 8/7/89 (Flying Tigers in 1978). Captain DC-10.

He was the captain of flight 1192 which was a DC-10 from EWR to OAK on the ground at the time of the accident. He was taxiing the airplane to runway 22R for takeoff and was just coming out of the ramp area. He said there is an intersection to turn onto taxiway B to go to 22R and as he was getting ready to make the turn he saw the silhouette of an airplane. He said the airplane was in a nose high attitude and the radome was about 60 to 50 feet in the air. He knew it was off the ground and could see the tail section in the air. He said the airplane was about halfway down the runway and the nose was about 30 degrees off the runway centerline. He said the airplane was coming towards their position, towards the right side of 22R. He said the airplane was slowing down, and it pitched slightly nose down, and as it was pitching nose down it started banking towards the right. It was not a normal bank, the right wing impacted the ground, and as it hit the right wing broke and flames started shooting out. He said it broke about 3/4 of the way in from the wingtip. He said at that time the second officer grabbed his arm. He said the first officer was giving him progressive taxi instructions, the instructor pilot in the jumpseat was not looking out, and the second officer said something like "what is that?" Next the captain said he made an emergency stop and first officer was now looking up at the accident airplane. The captain said that after the wing broke off the airplane started sliding, uncontrollably, and at that time he saw the fuselage break. He said when the fuselage broke there were more flames and the flames were obscuring everything. He said he next saw the left wing come over the top and it was completely engulfed in flames. He commented that there was a lot of smoke and flames and they were less than 1/2 mile from the fireball. He said that finally the fireball came to rest and it was followed by more explosion, a big plume, and black cloud. They called the tower and said there was a crash. The tower said the airport was closed, hold your position. He said there were numerous tower communications to ground vehicles. He said they shut down their engines. He said that the fireball was bright yellow, orange, yellow and described it as "like when you strike a match - the bright part of the flame." He did not see landing gear or fire when he saw the silhouette before impact. He said it was too far to see the gear from his position. He said when the wing hit it was not on the runway. He said the fire started at the root of the wings. He said the silhouette of the airplane when he first saw it was about halfway down the runway. He said he saw air between the airplane and the ground. He said the airplane was airborne when it began to roll right wing down. He said his DC-10 flight blocked out 2 minutes early.

Interview: Charles R. Liverance
Represented by: Lee Seham, FPA
Present: Operations group (note: Wilkinson and Melody not present)
Time: 2130 EDT 7/31/97
Location: Sheraton EWR

DOB [REDACTED]/47. DOH 5/28/79. DC-10 Check Airman.

He was occupying front jumpseat behind the captain. He first saw the accident airplane when the second officer remarked about something – he said that Jeff hollered “look at that” and that is when he saw the airplane. He said the airplane was coming at them, right wing down. He said the airplane had come off from center line about 20-30 deg to the right as they were tracking, and then the right wing was down and the wingtip hit first and broke, and it was almost immediately followed by the nose coming down and impact and flame. He said that is when wing came off. He said the airplane came a bit farther in that position, then it turned to the left, almost perpendicular to runway, and made its roll with the left wing coming over the top. He said he did not see any bright white flame and said it was pretty much a solid orange ball of fire. He did not see the crew and said that the flames were midsection to back and all shadow was projected to front of airplane which would have made that difficult. He never saw gear on the accident airplane until later at the terminal when he saw them sticking in the air. Said first response vehicles came within 2-3 minutes. He said he was impressed with reaction time and number of vehicles that responded. He has been captain on the DC-10 for 5 years and was a first officer for 3.5 years. He said the accident airplane’s nose was pointing at them. He said he first noticed the accident airplane as the right wing hit or was hitting. He did not see the tail when it came into view – and said that when it was possible to see it he did not feel that the vertical portion of the tail was there. He said the fire stayed with the wreckage. He cannot recall whether there was an engine or not on the right wing or left wing - he did not see it – but he added that there was a lot of fire and smoke. He did not see airplane when it was airborne – saw it when it was down - wing tip down or just coming down. He said he did not see gear and added that it was too dark underneath to see it. He said he saw the airplane off the right side out of the front windscreen and added that the slanted right windscreen was perpendicular to the wreckage path.

Interview: Thomas K. Hall
Represented by: Lee Seham, FPA
Present: Operations group (note: Wilkinson and Melody not present)
Time: 2150 EDT 7/31/97
Location: Sheraton EWR

DOB [REDACTED]/60. DOH 8/20/90. DC-10 First officer.

He said he has been a first officer on the DC-10 for one year; and was a flight engineer for 1 year before that. He said as the DC-10 was making a turn onto taxiway B he saw a flash out of his peripheral vision. He said about that time he was coordinating the turn and looking down. He saw a flash, and did not know it was an airplane at that time. He said when the fireball grew he saw it was an airplane and the right wing was down, the nose was coming down, and the airplane was aimed basically right at the DC-10. He said at this time part of the right wing broke off and he turned to look for an escape route ahead of them. He said the airplane was coming at them. He then looked at the accident airplane again and the fire was bigger and he saw a wing in a vertical position but cannot recall whether an engine was attached to the wing or not – he said it could have been. He said they were on ground control frequency at the time. He said the captain was on a checkride and he had not been to EWR for a while. He said they were coming out of taxiway F-E and making a 45 degree turn to the left to R-B and then making the turn onto B. He said he could see the plane coming at them from out the sliding window on his side.

Interview: Donald E. Goodin
Represented by: Lee Seham, FPA
Present: Operations group
Time: 1910 EDT 1 August 1997
Location: Short Hills Hilton, NJ

DOB [REDACTED]/58. **DOH** 9/6/94 (temporary for 12 mos; went into flight ops 10/95). First officer MD-11.

Hired into flight operations at FDX as first officer on B-727 in 10/95. Initial MD-11 training 3/97 and IOE completed about 28 June 1997. Including IOE he has about 73 hours in the MD-11. He said he has been flying quite a bit to get familiar with the airplane.

He was at DAL as a B-727 flight engineer before FDX. He has also flown P-3's in the Navy for about 6.5 years and reserves for a couple more. Before that he was at Hughes as a test engineer on the Apache.

He said they were at FL350 enroute and the flight was uneventful. They started a normal approach. The captain was flying the airplane. The captain made no comments after takeoff about the airplane's performance.

He said there were two write-ups on the airplane: (1) mechanics were working on the #1 thrust reverser when they arrived at the airplane, the cowl was open and it was not in the initial flight release paperwork. He said that the reverser had a door that had delaminated and the mechanics had written it off to certify that it was inoperative for the flight. He said they could dispatch with it that way per the MEL. (2) He said the airplane had a series of 3 write-ups signed off as completed that the autobrakes had failed to arm at takeoff or failed to work at landing. He said that because of this information they elected to make a max power takeoff in ANC. He said the autobrakes worked for them during the flight.

He said the In Range checklist is a hard-card checklist. He said that the checklist should be accomplished through FL180 and recalls doing the In Range checklist during this flight. He said reference or V speeds for landing are not set during that checklist. He said the programmed flight time was about 6.5 hours and they had a 45 knot tail wind.

They had two female FDX noncrewmember jumpseaters. Company allows them to carry company employees. Man named Phil Logan on cockpit jumpseat, pilot from Penn Air.

He described the HAZMAT procedures at FDX. He said about 15 minutes before departure a hazmat specialist brings paperwork to the first officer (in a 2 pilot airplane) after the hazmat has been secured in the pallet or can. The first officer verifies the paperwork and checks to make sure the material has been positioned properly. Some hazmat is required to be accessible in flight and some is not. First officers are required to inspect accessible material. His duties are to make sure the hazmat is properly secured, incompatible material is spaced correctly, labeled, and positioned.

He said that the pilot not flying gets the ATIS. He said speed bugs for approach are set automatically and pilots confirm that they are the correct speeds during the approach checklist. They pull up a page on the FMS that has the approach speeds. The approach is programmed in the FMS. This is verified at the approach checklist. Normally they do not do the approach checklist until they are about 25 miles out - which is the distance where the MD-11 self-tunes the radios and they can be identified. He said the landing weight of the airplane was about 452,000 pounds. He said this number comes from a computer. He said they have an APLC laptop computer on board to help calculate performance. Information is input such as ATIS, FMS-computed landing weight, winds and runway, etc. Computer provides landing distances and runway required for landing. He said typically the APLC approach speeds will match the FMS-calculated speeds; for takeoff if the APLC numbers are off by a knot they will update the FMS but on landing they will use the FMS-calculated speeds. He said V_{app} was about 156 or 157 knots - and defined V_{app} as $V_{ref} + 5$ knots.

He said they were cleared for the visual approach to 22R. They normally do not do a visual approach per se but back it up with nav aids and shoot the approach like they are going to minimums on the ILS. They briefed the ILS approach, set it in the FMS. He said the autotune system worked properly on this flight.

He said they were vectored by approach control up to the point they turned final. They were told to go to the fix outside of the final approach fix for runway 22R. He said the captain selected approach land and used FMS Speed not Speed Select. He said autothrottles were engaged all the way throughout the approach.

He said the tail fuel management system was functional during the flight.

He said that when he initially pulled up the APLC - it gives landing distances - they talked about brake settings for the landing. He said the captain initially requested medium brakes and if they need to use more they would jump on the brakes. The first officer said that they had about 6,800 feet available after touch down and the APLC output was 6,000 feet for stopping distance. He was concerned that the 800 foot margin seemed small and suggested the use of max brakes. He said 5,100 feet for max brakes. He said it was a "crm type thing" to put his input in and the captain accepted this input and decided to use max brakes for the landing.

He said there were no warnings or alerts on the EAD.

He said they saw the airport a way out - saw the beacon initially and then the strobes.

He said the max brakes stop the airplane rapidly. He said the captain asked him to make a PA announcement to the cabin passengers about stopping short. He acknowledged that there was a problem making this transmission.

He said the captain turned the autopilot off and was "dead-on hand flying on the ILS and the localizer." He said they were coming down the glideslope and the 3 bar VASI was red-red-white. He said looking at the runway he could see they would land within the landing threshold

and it did not concern him. He does not remember seeing 110.75 as a selected radio frequency during the approach.

He said they get a sheet from ANC that contains the weight and CG. He said he puts it in a folder with other flight paperwork, the flight release, ACARS, WX, etc. He said that during descent he stapled these together and stowed them in a folder to the right of his seat.

He said the airplane and the captain make callouts at 1,000 feet and the captain made this callout. He said the captain was hand flying the airplane and was on the localizer, glideslope, and bug speed. He said the position was right on and they got cleared to land. The first officer made a call at 500 feet and called minimums at 211 feet. He does not remember hearing the 10 foot call. He said the airplane does not make any calls below 10 feet.

He said he was looking back and forth during the final segment of the approach at the airspeed and then out to pitch attitude and runway centerline. He said they were coming down to touchdown and they got the routine calls through 20 feet. At that point it felt like there was a slight settling of the airplane. He said this was more of a "seat of a pants thing versus a VSI indication" and from looking at the end of the runway he could tell it would be a firm landing. He said he has seen it before in his short time on the airplane and in jumpseat commutes from MSP on the MD-11. He could tell it would be firm and the airplane started to settle.

The airplane then touched down, skip/bounced back in the air. He said the landing felt firm and added that he had seen firmer, and he has seen the skip/bounce before and said that it can happen in this airplane. He stated that mains were probably 5 to 10 feet in the air during the bounce and on centerline. He said auto speedbrakes were armed. He is not certain whether they deployed or not. He was looking at the end of the runway and the centerline not at the speedbrake handle.

He said that it looked like a normal approach and the airspeeds were right on the bug down the approach until touchdown. He said that airspeed was not deviating during the final flare. He said that if deviations occur before this then he has been trained about the unusual handling characteristics that can occur – tail strike awareness training. He said this training advocates not letting the nose go to an extreme high attitude and do not control sink on the second bounce with pitch but to possibly nose forward and add power. In his peripheral vision he noticed the captain was doing this. He said the attitude was 7 deg, they were tracking down the runway, and the captain was holding the yoke pretty steady. He said they were coming down on the runway again and at that point it seemed like a routine landing with added thrust.

He said that where the airplane should have made contact with the ground again it instead started to roll to the right, about 2 to 3 degrees, and there was a muffled "poooh." He described this sound as a small muffled explosion, a muffled bang. He said the entire side of the windshield out of his right eye was a bright orange flash. He did not turn his head to look at it because he knew that something wasn't right and he did not want to take his eye off where the airplane was going. He said when the wheels should have been on the runway he did not feel that – and there was no jolting as if the airplane had hit something hard.

He said at the time of the flash the airplane went about 15 degrees off runway centerline and began a slow turn to the right. He said the orange was very, very bright orange out his back window. He moved his hands at this time from near the yoke to the glareshield because he knew the airplane was moving off the runway at that point and rolling off to the right. He said the captain was going up and he was going down, with his weight hanging off to the right side. He then put his hand down on the center of the side window to support himself. He said the movement of the airplane was not violent but there was a lot of noise and orange flame. As the airplane was rolling over he saw just fire and sparks, and remembered seeing asphalt coming up at him through the window. At this point he unbuckled, feeling that the window structure would fail, and he pulled around and rolled to the outside of his seat – standing on the overhead instrument panel he bear-hugged his chair. He said the airplane had rolled about 135 degrees at that point and he was hanging onto his chair between the center console and his chair.

When the airplane came to a stop he was standing upright. As it came to a stop, he could see the movement was slowing down out the window, the airplane was almost upside down. The captain yelled “we’ve got to get out of here.” He said the cockpit jumpseat rider and the captain were hanging upside down.

The first officer ran through the cockpit door to the back cabin area. One of the jumpseat riders had unbuckled and was on the floor and the other was still strapped in upside down. He asked if they were OK and they were talking. He said the courier seats were padded and he just saw padding around these passengers. He looked at them and then went to the right exterior door handle. He pulled on the handle and he heard the bottle blow but the door moved only about 1 inch – he could see possibly a gap between the door seal and the airplane but it did not move any more. He said smoke was coming in through the cabin – the smoke barrier, either coming through the zipper area or it was torn. He said there was a lot of smoke coming in.

He then turned around and the two passengers were standing up. He pushed them into the cockpit to move them out of the way and went to the other door handle on the left side. This door was covered with debris and he reached to grab the handle but there was a lot of material around it – pieces of the bulkhead and stuff hanging down there so he could not pull it. He turned to the cockpit and yelled that the doors would not open that they got to get the window open. The captain had unlocked and opened the window. He said the captain exited, followed by the cockpit jumpseat rider, and then the two cabin jumpseat riders. The first officer then went into the cockpit and exited through the window.

He said fire trucks were coming towards them when they exited. When he got out the captain and other passengers were about 50 feet away. He saw an engine in front of the airplane. He felt they needed to get away from the airplane and look out for the fire trucks and told them to move to the lighted runway marker so that the trucks would see them. They moved to a runway marker off the nose of the airplane.

He described the roll as a controlled soft turnover – like the Navy “helodunker.” He said it was identical to that. He said there was no slamming of the harness and the rolling was nice and slow. He was certain there was no flipping.

The first officer lives in the MSP area and is based in ANC. He first officer on reserve and had 2 days off before the flight.

On the day before the accident he woke up at 0700 local time after about 8 hours sleep. He shopped locally in the morning had lunch about 1200 then looked at houses in the afternoon until about 1500 when he went salmon fishing until about 1900. About 1900 he went shopping until about 2100 and went back to his ANC residence. He ate dinner and did laundry and read before going to sleep about 0000. The day of the accident he woke up about 0630 and at 0700 drove a friend to the airport and returned to his ANC residence about 0800-0830 and went back to sleep. At 1200 he woke up and got ready for the trip. He reported to ANC at 1400. He ate normal meals that day and ate meals enroute. He said the captain also ate meals enroute.

He did not know the captain before this flight.

He said the left landing light was inoperative and they turn the turnoff lights on at FL180 and the landing lights at FL100.

He transitioned to the MD-11 because he did not like the B-727 hub turns. He said he had no difficulties transitioning to the glass cockpit and likes the glass. He said he completed MD-11 transition training 2-3 weeks faster than he was scheduled to finish.

He said he broadcast the PA to center or approach because he was not used to making PA announcements on these flights and pushed the transmit button out of habit when he spoke.

He said he was healthy, no significant life changes occurred to him in the past 12 months, nonsmoker, consumed alcohol infrequently.

He was certain the mains came off the ground during the bounce.

He does not remember hearing any alerts from the GPWS.

He said he felt they were on the centerline for the second touchdown. He said they were tracking right on down the centerline and they never felt the touchdown. The flash occurred out the window and they started going down to the right. He said the wings were level as they were coming back down after the initial bounce. He said it felt like dragging an engine on the second hop – he felt an engine had blown and they were dragging an engine. He said that when the “pouough” happened, the airplane rolled to the right.

He said the cockpit jumpseat rider was in the seat behind the captain.

He said the landing distance from the APLC was from the initial touchdown to the stop - glideslope intercept to the end of the runway.

He said the first touchdown was firm and there were no unusual vibrations – only the bounce. He has seen a couple of touchdowns like this before on the line and while commuting to work on the MD-11.

He said that the captain was flying the approach with precision and because he is new to the airplane he was trying to learn as much as he could. He said he was impressed at how well the captain was holding the glideslope. He said the autothrottles were holding the speed and they were working fine.

He does not recall hitting, kicking, or pulling the number 2 fire handle.

He met the captain initially when dropping off bags. During the flight they had normal conversations about their families and other activities.

He said the captain popped the autopilot off, had it on approach land, and the first officer was impressed at the way he did that. He said that every captain he flies with is very good. He said that the captain seemed like a senior guy and said that he was with Tigers and had been a 747 pilot. The first officer saw the captain bringing power up when the bounce occurred and said he was doing the right things. He felt comfortable flying with the captain and would fly with him again.

He said the VSI appeared to be normal during the approach. He does not know if the MD-11 presents IVSI but thinks it is IVSI based on the cockpit technology.

He said on the second touch down he felt no right gear. He said he never felt a touch down from that second point – no sensation of stopping from time they were going down to the time the engine blew. There was no bump and then there was an explosion. He said he was only assuming the engine blew. He stated that the investigation should focus attention on the right gear structure, inspections, etc.

The first officer is married and has three children ages 8, 6, and 6.

He said he knows the captain was coming forward with the yoke at the high attitude. He knows the pitch attitude was not higher than what he's seen in the sim. He said the mains were only about 10 feet in the air and feels that the nose came up. He said the orange flash he saw occurred when the airplane was in a normal landing attitude – gear on the runway in a flare situation. He said the nose was not coming up at that point but going down.

He conducted the preflight inspection of the airplane. He said the strut extension was about 3 inches which was normal. He said the 2 hard bolts on gear were separated by about 8 inches. He said the strut was not near a bottomed-out or hyper-extended condition but he saw normal strut indications.

He said the roll to the right started about the time of the flash – while airborne. He said the airplane was in a level attitude with about 2-3 deg of roll at the time of the flash.

He said he felt comfortable with the approach until the flash.

Interview: Robert M. Freeman
Represented by: Lee Seham, FPA
Present: Operations group
Time: 2105 EDT 1 August 1997
Location: Short Hills Hilton, NJ

DOB [REDACTED]/51. DOH 8/7/89 - "T Day" Tigers - 5/15/79. MD-11 Captain.

DC-8 second officer at Flying Tigers. Transitioned to B-747 second officer then upgraded to first officer. His first FDX-trained position was DC-10 first officer. Transitioned to MD-11 first officer and then upgraded to captain. His release to line date on the MD-11 was January 1997. He is civilian trained, has flown for several Part 135 commuter flying medium twins, DC-3.

He said he has had CRM courses at both Tigers and FDX.

He is based in ANC and lives in Carson City NV. He commutes to ANC. At ANC they get a 3 hour call before departure. 1500 local was scheduled departure. He met the first officer past security as they were tagging up bags. Never flew with him before.

He said it is an exception if they do not carry hazmat. He said first officer duties require the first officer to look at hazmat. The captain signs for it. Recalls signing for hazmat for the accident trip and mentioned that flammable liquids and corrosives were on the list.

He said there was nothing on flight plan release about deferred maintenance items (DMI). At the ramp, mechanics were working on number 1 thrust reverser. He has noticed, since he has been captain, that there can be periods where airplanes are very clean to some that are carrying several DMI's. If MEL says take it, you can take it. The thrust reverser problem was found by maintenance and they blocked out/deactivated number 1 reverser – and dispatched in compliance with MEL.

He said there were write-ups, not open items - with the autobrakes not arming for takeoff or disarming for landing. No cause was found for it and the system had checked out. He brought it up with the first officer and kept it in the back of his mind.

They had 3 jumpseat riders. 2 female company employees and a male pilot from Penn Air. He said the cockpit jumpseat rider was not a distraction.

The captain was flying this leg and he traditionally flies the first leg.

He noted nothing out of the ordinary regarding aircraft performance on takeoff. Flight plan time to EWR was 5 hrs 31 minutes (estimate). He said it was an excellent trip and there were no problems. They were routed over SYR and he said the enroute was normal. He said the approach was normal, nothing out of the ordinary. They were vectored onto the approach,

established on the ILS, got configured completely about the vicinity of 1200 feet and everything was completely lined up, right within parameters.

He recalls completing In Range checklist.

He said speed bugs are set automatically. When gear is extended he goes to FMS Speed mode. He looks at the FMS speed page to check these numbers against the computer calculated landing data.

He said the landing weight was about 456,000 pounds. He said V_{ref} was about 157 and bug speed about 162.

He likes to hand fly the airplane and does not normally do autoland in this airplane. Company has minimums for mandatory use of autoland. He disconnected autopilot about 1200 feet. He said autotune worked to his recollection and he did not recall 110.75 being used.

He discussed landing on shorter runway with the first officer because of the concern about the number 1 reverser inoperative and the autobrake history. Autobrakes worked fine coming out of ANC because they armed. He said he "wasn't going to grease it... but try to put on end of runway and try to make sure we would not get any floating out of it." During his approach brief he discussed use of medium brakes. First officer pointed out on the performance computer the difference between med and max brakes and distance. They decided to use max brakes. He said max brakes bring you to an abrupt stop and has used them before, last time was EWR 4R. He said first officer's point was very valid and he had no difficulty accepting it and implementing it.

He said synthesized voice callouts were heard except for 10. Coming down glideslope, speed, localizer and glideslope were "completely nailed" and working the way they were supposed to be. Somewhere below 50 feet he noticed an increased sink rate. He said he is pretty much on gauges until below 500 feet and then in and out and more so about 100 feet on down. He looks down at the far end of the runway and cross checks with the glideslope. He said the glideslope held them on the lower path of the 3 bar VASI which was on the left side. At 20 feet he felt sink, did not cross check, but made slight pitch and power change. On the glideslope he remembers about 700-800 fpm. He said they hit "very firmly."

He said it was firm enough to bounce it but he's witnessed much harder landings than that. He said it was not excessive rate of descent but firm. He said the autothrottles have a tendency to want to come back in the flare and he held them up which helped them a bit. He landed where he wanted to be. He wanted to do his best to stay on the glide slope and that is where the touchdown was. He said he's observed and probably done much worse. He knew it was hard enough to get bounce. He is uncertain if speed brakes deployed and believes that they did. He said the tendency is for pitchup when they deploy and he remembers compensating with forward column movement and some power. He did not believe he was in any situation he would not recover from at this point in time. He described his pitch and power response as instinctive and one he has also been trained for in the Tail Strike Awareness Training.

As he came down the second time to where wheels should have been on the ground the airplane started rolling to the right, a gradual roll. He felt he had left rudder in when he felt it going over. Somewhere in there (he is uncertain of timing) there was an explosion, and orange flames. He said they kept rolling to the right and he could not understand it. He said there was nothing violent. He said the explosion was loud, a boom that was louder than most compressor stalls he's heard.

The airplane rolled on its side and stayed on it for a while. It then continued rolling and then pivoted and came around. He said it was a very slow roll and he expected it to be more violent than it was. He believes as they were sliding he said "we've got to get out of here." Does not remember hearing first officer say anything. When they stopped he released his harness and fell on his head and hand. The first officer had left his seat early and was going back to get the jumpseaters. The captain went for his window and there was no fire outside. He pushed the handle down and it seemed jammed but with more force it released. When cranking the window it stopped but he kicked an obstruction away that he said might have been his flight case with his foot and got it open. He got outside and does not remember the cockpit jumpseat rider getting out. He looked back in window yelled "this window is open." They got away from airplane after all got out. He said first vehicle came very quickly within 2 min.

He does not remember moving, stepping on, or kicking the number 2 fire handle.

He said he got along very well with the first officer and thinks the first officer would think the same.

He said the tail fuel management system was functioning normally and does not recall CG enroute. He does not recall any alerts on the EAD.

He said he has about 15,000 hours. About 1300-1500 on the MD-11, including just over 300 as PIC.

In the days before the accident he was off duty and at home reporting normal activities. He went to ANC the day before the departure of the accident flight, leaving home at 1500 local and arriving ANC at 2100 local. He went to a crash pad and about 2200 was in bed. He woke up about 0830 the day of the accident. He reported normal activities.

He wears glasses for near and distant vision. They are no-line bifocals. Lost them when getting out but was wearing them during the flight. He uses alcohol occasionally, does not smoke, is in good health, and reported no significant life changes in the past 12 months.

He did not think there were TDZ or centerline lights on.

He said the wind readout on the INS was as he expected during the approach.

He said that autospoilers deploy partially with main gear spin up. He does not feel he was aggressive with the throttles to the point that it would have retracted the spoilers.

He said that during the bounce the right wing may have been down a bit but that the actual rolling started when he felt they should have been on the mains. He believes he felt the highside wheel touch. He described the second touchdown as a very soft and slow situation.

He said he transitions at 100 to 50 feet to looking straight out at the runway. He said the left landing light was inoperative. He became aware of this when they extended it. He does not remember seeing anything and does not remember seeing anything down on the left side shining down.

He did not recall hearing any aural annunciation about tire failure.

He did not take anything with him when he exited the cockpit.

He always engages autothrottles, per company policy which says use them if they are operative.

He said cockpit jumpseater told him on tarmac after accident he did not notice anything that may have caused the accident.

He is married with two children ages 10 and 16.

He felt rested when he woke up and on the day of the accident. He said you get tired at the end of a long flight and was tired at the end of this flight but not where it affected his performance.

He said he sleeps about 8 to 9 hours normally.

Interview: Philip N. Logan
Represented by: Declined
Present: Operations Group
Time: 1355 EDT 2 August 1997
Location: FedEx EWR Chief Pilot's office

DOB [REDACTED]/59. DOH at Penn Air 2/1/90. Employed by Penn Air as a pilot, station manager for Cold Bay office, he said he was an assistant chief pilot, and handles the 135 operations..

Aviation background: currently CE441 and Chieftain, C-185, C180, Navaho, DHC-7. No type rating in any transport category airplane. Blackhawk helicopter; largest fixed wing Conquest.

Cockpit jumpseat on FDX flight. Checked in at ANC, met crew in cockpit of MD-11. Occupied seat immediately behind captain in left hand side. Does not recall captain mentioning anything about airplane performance on takeoff.

He remembers before departure, during the preflight duties, mx was working at aircraft. Did not follow conversation but something about the ABS braking of some sort but it came up to normal once he got the air going. He recalls one of the engines had thrust reverser written up in the MEL.. Not certain of details.

He said it was a very quiet flight. Not much radio conversation, standard switchovers, not much wx, perhaps some thunderstorm deviations over Canada. Believes FL330 was cruise altitude.

He was reading book during descent. Heard some radio traffic. Heard through overhead speakers when he was paying attention.

Described crew coordination, after thinking about it post-accident, he thought they had a very good rapport with each other. He thought the captain and the first officer were doing a routine run and business as usual. Friendly to each other. Did not talk excessively of other subjects other than what they were doing.

Had ILS charts for runway 22R out in front of them. FO made a prelanding briefing for benefit of himself and pax in rear. Made briefing inadvertently to center or approach. Brief was approach for landing, buckled up, seat upright, etc. – essentially a wake-up call to the pax in the back. He flipped the correct switch and made it again correctly.

Feels that the captain might have been apprehensive, but said that was not the appropriate word and perhaps too strong, more appropriate may be the word concerned about the length of the runway. He said the captain was concerned about the length of the runway. Wasn't really discussed just a feeling he got somehow. He said they ultimately were cleared for a visual on 22R. He said it might have been discussed at a point of time right prior to descent he thinks but at that time he was reading his book and was not really following the conversation.

He said it looked like the airplane was set up on the approach – VASI was right on. Has not flown glass. He said he was looking at a 3 bar VASI on left hand side of runway.

Does not recall hearing audible warnings or alerts. Remembers hearing female voice calling out 100, 50, 30, 20 feet and when at 20 feet he said the upwind VASI bar was going by the left window. 20 feet was the last synthesized altitude callout he heard. He said everything still seemed normal at this point in time.

Firm landing - not grease soft but not a cruncher either. He said it was a firm, positive, contact. He said it was well within what he would call within the normal landing spectrum, but on the firm side not on the greaser side.

At the initial contact at touchdown, it seemed to him that the right side was lower than it should have been. Felt as if they were in a bit of a right roll, lower right side than what he would have expected. When nosegear came down that too was more solid than he had anticipated it being.

He said that in a short time span, 1 or 2 seconds after nose gear touched down, the airplane went immediately back into a pitch high, and he felt like the airplane was in trouble and cinched his harness straps down.

He does not remember hearing any unusual noises at the initial touch down. He said the pitch of the airplane was changing, listing to the right on the roll axis as the pitch came back up, and they started a right yaw off centerline. He was most concerned with the rapid pitch change upwards. He said it was a coordinated pitch up, yaw to right, and roll right – simultaneously.

His next thought was nose was coming too far off centerline and it was too high. That was when he cinched his straps down tight. Nose came up and continued to roll to the right. And at peak up he felt they were too high. He cannot put a number on the degree of roll they had to the right. Pitch was up too high to get a good judgment on. He could see ground out the first officer's window. As they started coming down it continued in the right roll and right yaw, and pitch down -- all simultaneously.

He was looking out right side because they were going that direction, out the side window and the one by the first officer. First officer was in his seat at that point, not on the controls. He cannot address the captain's actions because he was not looking in that direction.

Right before they hit he was thinking if there was an impact they'd be trouble, but no impact followed, it kind of laid down. Big fireball came around airplane from rear to front – right before the airplane contacted the ground. He said it wasn't really an impact as much as it was a lay down.

He said at this point they were sliding down the runway on the right side for some seconds and then the right roll continued until they went inverted. As they were in the right roll, still in contact with the ground, there was another big fireball. He said the first fireball they kind of outran momentarily, but now there was another one that they also outran. He could see out

the captain's windshield and was looking out ahead concerned about hitting something. He said the remaining fire or light seemed to be metal-on-concrete, scraping spark type thing.

He did not hear anything that resembled a compressor stall.

He said he was hanging upside down, saw they were not going to impact anything, and he started thinking they would get out. It seemed that somewhere towards the end, the aft part of the airplane started to come around us to the right and the nose to the left. Feeling was that the back end was coming around more than the cockpit was moving around - pivot point more forward than mid. He saw paper material floating around in cockpit, smoke in the cockpit, visibility was getting less all the time rather than better, and there was just a lot of paper debris - charts, etc. He said they were pretty much hanging and not really looking at the other guys at that time instead he was looking outside the window.

Prior to coming to the stop he just does not remember any verbiage. He remembers first officer holding onto the dash and the captain holding onto the seat and it seemed that everyone was braced. When the airplane came to a stop the first officer got himself unfastened first and then the captain and he got down out of their seats. He undid his latch and did a half twist and roll to get down to the ceiling. Other crewmembers were doing same but first officer was a little ahead of them. The first officer was working on his window momentarily and then he went out of his area and by him [cockpit jumpseater] into the aft area. He recalls hearing "are you all right" after first officer went aft. He then remembers hearing first officer saying "back doors won't open." He had positioned himself in between the doors at this point waiting for either the first officer or captain to open an escape route. The captain opened the window and said come forward I have the window open or something to that effect and he followed, the female passengers came next, and first officer last. He said before they left, the top half of the available space was filled with seats upside down, etc., very little room to maneuver, had to watch your head to keep from banging on seats and cabin etc. He said he did think about donning an oxygen mask because of visibility. He could not have seen it to get to it if he wanted to.

He said that from the time he released his seatbelt to the time they were all out 20-30 feet from the left side of the airplane was less than 45 seconds. He said it was an automatic, swift happening thing, not much communication other than status of efforts to open exits.

He said they got about 100-150 feet away from cockpit and made sure everyone was OK. He said on his left ring finger he has a cut and on the webbing of his right hand he has a very irritating skin cut. He has a slightly skinned shin. He described the events as slow motion, almost gentle.

He did not hear anything other than the electronic callouts for altitude. He did not hear anything regarding tire failure. He said he perceived a minimal flare from his vantage point behind the captain. He does not remember any verbiage after the initial touchdown. He said there was some element of smoke, not billowing, but something in the air as they were coming down sideways before the first officer side of the airplane touched down. As they continued it got worse. He remembers seeing the first officer with his hand on the window that was just above the pavement. He does not remember any other actions of the first officer during the

slide because his attention was focused outside. He said he believes that the available light was the only source of illumination in the cockpit when they stopped.

He said at touchdown the right seemed lower than it should have been, he said this was his sensation. He said prior to initial touchdown there was no right wing down. Routine until touchdown and then right side felt down. Still tracking straight down. Did not start to yaw until nose started to pitch back up.

He said at the first touchdown he had absolutely zero concern. He had a feeling that after touchdown the right side was lower than it should have been and then his real concern came after the nose gear touched down and the feeling of the strut coming up to limit and then pitching back up. He said the right seemed lower than it should have been.

He said it was very light wind condition. Does not know the ATIS. He would put the wind at less than 8 knots out of the south south-west. He said the entire approach right down to touchdown was routine. He said they looked to be tracking straight to the runway, wings level. Based direction on the practice of landing into the wind. He said the initial mains touched down, then the feeling that the right side was lower than it should have been, then the nose touching down and pitching back up.

When the weight of the airplane should have been on the wheels it seemed we were right side low. He was looking left at the 20 foot call - looking at bridge and crane lights. He said there was ample light from the fires. He said color of flames was orange, yellow. More orange in color.

Interview: Robert Gibney, Tower Controller
Represented by: Robert Varcadipane
Present: Operations group (note: Krantz and Byren not present)
Time: 11:00 EDT 8/05/97
Location: Telephone Conference

Mr. Gibney had been on duty since 11:00 PM local time, his shift was from 11:00 PM to 07:00 AM. This was the third day of a five day rotation. He has been in his present position at the EWR tower for the past four years. Prior to his assignment to EWR he had been with Cleveland center. Mr. Gibney said he had been facing to the east when he first observed the accident aircraft and issued the landing clearance. Mr. Gibney said that the approach had appeared normal when he first saw the accident aircraft. Mr. Gibney said he observed the first touch down of the aircraft and it appeared to be a hard landing followed by a bounce. Mr. Gibney said as the aircraft became airborne again, the nose appeared to pitch up and on the second touch down something appeared to break off from under the aircraft, sparks began then the thing ignited. Mr. Gibney said that the accident aircraft then began to flip tail over nose about 45/60° then exploded. Mr. Gibney said he knew the first landing was hard but no objects were leaving the aircraft, after the first bounce the nose pitched forward, and on the second touchdown parts started leaving the aircraft. Mr. Gibney said he put his hand on the crash phone after the first bounce and the AARF vehicles were rolling in less than one minute. Mr. Gibney reiterated that the first touchdown appeared normal and when the aircraft touched down the second time it was in a bank , he did not know the bank angle.

When asked Mr. Gibney said he had his hand on the crash phone because of the first bounce.

When asked where the spark came from Mr. Gibney said from under the aircraft , not a wing tip.

Mr. Gibney said the aircraft wings appeared level prior to the second touch down, and the nose came down before going back down again

Interview: John Borkowski, FedX Mechanic
Represented by: N/A
Present: Operations group (note: Krantz and Byren not present)
Time: 15:00 EDT 8/05/97
Location: Telephone Conference

Mr. Borkowski is employed by FedX as a ramp agent and works for Continental Airlines as a mechanic. On the night of the accident he had finished his shift at FedX and was working at hanger 55 for Continental Airlines. Mr. Borkowski said he first observed the accident aircraft as it pass overhead on the approach to runway 22R. Mr. Borkowski said that his field of vision was from the north to the south toward the tower. Mr. Borkowski said the approach looked normal for a DC-10/MD-11, he visually followed the accident aircraft toward the landing, but did not see the touch down. Mr. Borkowski said his attention was again drawn to the accident aircraft when he heard a loud power application that sounded like full power. Mr. Borkowski said he then turned to look and saw the accident aircraft right wing down position, flames, and parts flying into the air then it disappeared behind the tower. Mr. Borkowski said the accident aircraft appeared to have the right wing down and the left wing high, with flames going down the runway then a ball of fire.

When asked Mr. Borkowski said he did not observe the first touchdown and wing parts were missing when he saw the accident aircraft.

When asked Mr. Borkowski said when he saw the accident aircraft with the right wing down he did not know if the aircraft was in the air, no altitude loss was apparent .

When asked Mr. Borkowski said he thought the loud engine noise was going to be a go-around or missed approach.

