National Transportation Safety Board
Aviation Incident Final Report

Location:	Jamaica, NY	**Incident Number:**	NYC03IA117
Date & Time:	05/30/2003, 0431 EDT	**Registration:**	N703GC
Aircraft:	McDonnell Douglas MD-11F	**Aircraft Damage:**	Minor
Defining Event:		**Injuries:**	3 None
Flight Conducted Under:	Part 121: Air Carrier - Scheduled		

Analysis

The cargo airplane was on approach to land at night, on runway 4R; an 8,400-foot-long, asphalt runway. The flight crew received the current automated terminal information service weather, which included winds from 240 degrees at 4 knots. The captain was the flying pilot. He stated that he utilized the autopilot to 500 feet, before clicking it off, and stayed on the glide slope. The airplane's landing weight was about 470,000 pounds, and it was configured for a normal approach, which included autobrakes set to minimum and 35 degrees of flaps. The captain reported that the airplane touched down between 1,500 and 1,800 feet beyond the approach end of the runway, at an airspeed of about 158 knots. The captain applied reverse thrust and everything seemed normal until he observed the alternating red and white runway lights, which seemed to be coming up fast. The captain stated that with about 3,000 feet of runway remaining, at a speed of 110 knots, he began to apply manual braking. The first officer stated he could feel the brakes grab, and the airplane's nose pitched down. The airplane departed the end of the runway and entered an Engineered Materials Arresting System (EMAS). The airplane's nose gear came to rest approximately 238 feet beyond the end of the runway, 115 feet into the EMAS. Both flight crew members reported normal cockpit indications before, during, and after the incident. Post incident examination of the airplane, which included a brake inspection and an operational check of the autobrake system, did not reveal any faults or abnormalities. A recorded radar and performance study indicated that the airplane crossed the runway threshold at an altitude of about 60 to 120 feet above the ground. The main landing gear touched down approximately 2,800 to 3,000 feet from the beginning of runway 4R, and the nose gear touched down at about 4,300 feet. The automatic braking system initiated approximately three seconds after nose wheel touchdown. The pilot initiated manual braking with about 1,400 feet of runway remaining. According to the operator's performance data for the airplane, the maximum landing weight allowed to utilized runway 4R for the incident landing configuration was 491,500 pounds in a zero wind condition, and 452,800 pounds, with a 5 knot tailwind.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this incident to be: The Captain's misjudgment of speed/distance which resulted in his failure to obtain the proper touch point resulting in an overrun. Factors in this accident were the tail wind, and night light conditions.

Findings

Occurrence #1: OVERRUN
Phase of Operation: LANDING - ROLL

Findings
1. (F) LIGHT CONDITION - NIGHT
2. (C) PROPER TOUCHDOWN POINT - NOT OBTAINED - PILOT IN COMMAND
3. (F) WEATHER CONDITION - TAILWIND
4. DISTANCE/SPEED - MISJUDGED - PILOT IN COMMAND

Factual Information

HISTORY OF FLIGHT

On May 30, 2003, at 0431 eastern daylight time, a McDonnell Douglas MD-11F, N703GC, operated by Gemini Air Cargo, as flight 17, sustained minor damage during a landing overrun at John F. Kennedy International Airport (JFK), Jamaica, New York. The two certificated airline transport pilots and one other crewmember were not injured. Visual meteorological conditions prevailed, and an instrument flight rules flight plan was filed for the scheduled international cargo flight that departed Brussels Airport (BRU), Brussels, Belgium. The flight was conducted under 14 CFR Part 121.

During interviews, the captain and first officer both described the flight as normal and without incident. As the airplane approached the airport, they received the current automated terminal information service (ATIS). The ATIS weather included a visibility greater than 6 miles, winds from 240 degrees at 4 knots, ceilings of 15,000 and 25,000 feet broken, an altimeter setting of 29.56 in/hg, and a temperature and dew point of 15 and 14 degrees Celsius, respectively. The ATIS also indicated that runway 31R/13L was closed, and that inbound flights should expect vectors for the instrument landing system (ILS) approach to runway 4R. The first officer reported that they had originally planned to land on runway 31R, (a 10,000-foot-long, 150-foot-wide, asphalt runway); however, at the airplane's gross weight of about 470,000 pounds, they could also land on runway 4R (a 8,400-foot-long, 200-foot-wide, asphalt runway.) While they usually did not land on runway 4R, both pilots reported that they had landed on runway 4R during prior flights.

The captain was the flying pilot. He received vectors to the final approach course for the ILS to runway 4R and planned to land visually. The airplane's approach speed was an indicated airspeed of 163 knots. He utilized the autopilot to 500 feet, before clicking it off, and stayed on the glide slope. The airplane was configured for a normal approach, which included autobrakes set to minimum and 35 degrees of flaps. The captain reported that the airplane touched down between 1,500 and 1,800 feet beyond the approach end of the runway, at an airspeed of about 158 knots.

The captain applied reverse thrust and everything seemed normal until he observed the alternating red and white runway lights, which seemed to be coming up fast. The captain stated that with about 3,000 feet of runway remaining, at a speed of 110 knots, he began to apply manual braking. The first officer stated he could feel the brakes grab, and the airplane's nose pitched down. With 1,000 feet of runway remaining, the airplane's speed was about 80 knots. The first officer reported that he intentionally did not make the "80-knot callout" because he did not want the captain to secure the thrust reversers. The captain reported that the airplane did not seem to be responding normally to manual braking. He added that the airplane's speed was "between 60 and 80 knots, maybe even 40 knots," when the airplane departed the end of the runway.

The airplane departed the end of the runway and entered an Engineered Materials Arresting System (EMAS), located about 123 feet beyond the end of the runway. The captain stated he remained on the brakes until the airplane came to a stop. He secured the thrust reversers as the airplane entered the EMAS because he did not want them to sustain "FOD" damage.

The captain further stated that he felt the airplane should have been able to stop in the distance

remaining when he began to apply manual braking, and suspected that the runway might have been wet; however, when he exited the airplane, he did not notice any moisture on the pavement.

The airplane was equipped with a cockpit voice recorder and a flight data recorder, which were retained for further examination.

The incident occurred during the hours of night, approximately 40 degrees, 38.75 minutes north latitude, and 73 degrees, 45.26 minutes west longitude.

PERSONNEL INFORMATION

The captain was hired by Gemini Air Cargo on May 18, 1998. The captain held an airline transport pilot certificate for multi-engine land airplanes, and a commercial pilot certificate for single engine land airplanes. He also held type ratings for Lear 60, Boeing 707, 720, and McDonnell Douglas DC-10 and MD-11 series airplanes.

He reported 7,000 hours of total flight experience, which included about 1,000 hours in the MD-11F, all as pilot-in-command. The captain completed a satisfactory company flight proficiency check on April 12, 2003.

The captain's most recent FAA first class medical certificate was issued on March 18, 2003.

The first officer was hired by Gemini Air Cargo on December 12, 2000. The first officer held an airline transport pilot certificate for multi engine land airplanes. He also held type ratings for Raytheon BE-200, and McDonnell Douglas MD-11 series airplanes.

The first officer reported 6,000 hours of total flight experience, which included 900 hours in the MD-11F. The first officer completed a satisfactory company flight proficiency check on December 8, 2002.

The first officer's most recent FAA first class medical certificate was issued on May 8, 2003.

AIRCRAFT INFORMATION

Both flight crew members reported normal cockpit indications before, during, and after the incident.

The airplane was maintained under a continuous airworthiness inspection program and was most recently inspected on May 26, 2003. There were no open minimum equipment list (MEL) items for the flight.

The airplane was equipped with an automatic braking system (ABS) configured for a high deceleration rate, and selectable for minimum, medium, or maximum braking. In the minimum setting, braking is automatically applied after spoiler deployment, and at 3 seconds after nose wheel touchdown.

Post incident examination of the airplane, which included a brake inspection and an operational check of the autobrake system, did not reveal any faults or abnormalities. Five main landing gear tires, and the right nose gear tire were damaged during the incident. In addition, two first stage compressor blades from the number 3 engine, one first stage compressor blade from the number 1 engine sustained minor damage.

METEOROLOGICAL INFORMATION

A weather observation taken at JFK, at 0451, reported: Winds from 230 degrees at 4 knots;

visibility 7 statue miles, ceiling 25,000 broken; temperature and dew point 14 degrees C; altimeter 29.56 in\hg.

AERODROME INFORMATION

John F. Kennedy International Airport was operated by the Port Authority of New York and New Jersey. The airport was positioned at 40 degrees, 38 minutes, 28.5 seconds, north latitude; 73 degrees, 46 minutes, 41.9 seconds, west longitude, at an elevation of 12.7 feet above sea level.

Runway 4R-22L, was 8,400 feet long, 200 feet wide, and constructed of grooved asphalt and concrete. It was equipped at both ends with an instrument landing system (ILS), and an approach lighting system, with sequenced flashers, and touchdown zone lighting.

All runway and approach lighting systems on runway 4R-22L were operational at the time of the incident.

The overrun area of runway 4R contained an EMAS, that was 392 feet long, and 200 feet wide. The EMAS consisted of cellular cement material, which was intended to safely decelerate and stop aircraft that overrun the runway. The EMAS bed contained a paved "set back" area of 113 feet.

FLIGHT RECORDERS

Examination of the flight data recorder revealed that the airplane's ground speed at main gear touchdown was about 164 knots. The spoilers deployed and the nose gear touched down about 6 seconds later, at a ground speed of 154 knots, after the airplane had rolled a calculated distance of approximately 1,612 feet. After the nose gear touched down, the number 1, 2, and 3 engine thrust reversers deployed. The airplane's calculated ground roll from main gear touchdown to where it came to rest, was about 5,950 feet.

The 30 minute cockpit voice recorder only contained post incident conversations. The first officer was unaware of any company policies which required pulling the cockpit voice recorder circuit breaker after an abnormal incident.

WRECKAGE INFORMATION

The airplane's nose gear came to a stop approximately 238 feet beyond the end of the runway, after it traveled approximately 115 feet into the EMAS.

Three sets of parallel of tire marks were observed, and could be followed from the airplane's left, fuselage, and right main landing gear assemblies, to a point about 1,400 feet prior to the end of the runway. The tire marks veered to the right of the runway centerline, about 200 feet before the end of the runway. After 1,400 feet, the tire marks blended into other tire marks present on the runway.

TESTS AND RESEARCH

Runway friction tests were conducted at 40 and 60 mph in both directions (4R-22L), on May 31, 2003, using continuous friction measuring equipment. The average friction values were within acceptable FAA guidelines.

ADDITIONAL INFORMATION

Airplane Performance

A recorded radar and performance study was completed for the incident flight by a Safety Board Specialist using data from the airplane's FDR, JFK airport surveillance radar, ATIS weather information, and on scene measurements.

According to the specialist's report, the airplane crossed the runway threshold at an altitude of about 60 to 120 feet above the ground. The main landing gear touched down approximately 2,800 to 3,000 feet from the beginning of runway 4R, and the nose gear touched down at about 4,300 feet. The automatic braking system initiated approximately three seconds after nose wheel touchdown. The pilot initiated manual braking with about 1,400 feet of runway remaining. The airplane departed the end of the runway traveling at a ground speed of about 30 knots, before stopping in the EMAS. The airplane's center of gravity came to rest about 160 feet from the end of runway 4R.

The required stopping distance for an airplane configured with high deceleration rate, minimum braking setting, weighing 471,600 pounds, and 35 degrees of flaps was about 6,600 feet.

Gemini Runway Selection Criteria

According to the operator's performance data for the airplane, the maximum landing weight allowed to utilized runway 4R with zero wind, in a 35 degree flap, auto-spoiler configuration was 491,500 pounds for a "dry" runway, and 417,500 pounds for a "wet" runway. With a 5 knot tailwind, the maximum landing weights for a "dry" and 'wet" runway were 452,800, and 378,600 pounds, respectively.

The maximum landing weight allowed to utilized runway 4R with zero wind, in a 50 degree flap, auto-spoiler configuration was 491,500 pounds for a "dry" runway, and 463,100 pounds for a "wet" runway. With a 5 knot tailwind, the maximum landing weights for a "dry" and 'wet" runway were 491,500, and 420,700 pounds, respectively.

The airplane's maximum structural landing weight was 491,500 pounds.

Captain's Previous Landing on Runway 4R

The captain reported that the incident landing was his second landing attempt on Runway 4R, in less than 10 days. According to company records, the captain landed on runway 4R, on May 21, 2003; however the airplane's weight during the landing was about 14,000 pounds lighter than on the incident flight.

Sun Position

According to United States Naval Observatory astronomical data obtained for the Jamaica, New York, area for the date of the incident, civil twilight was to begin at 0455, and sunrise was to occur at 0527.

Wreckage Release

The airplane was released on June 2, 2003, to a representative of the operator.

Pilot Information

Certificate:	Airline Transport	**Age:**	59, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane Multi-engine; Airplane Single-engine	**Toxicology Performed:**	Yes
Medical Certification:	Class 1 Valid Medical--w/ waivers/lim.	**Last FAA Medical Exam:**	03/18/2003
Occupational Pilot:		**Last Flight Review or Equivalent:**	04/12/2003
Flight Time:	7000 hours (Total, all aircraft), 1000 hours (Total, this make and model), 5500 hours (Pilot In Command, all aircraft), 103 hours (Last 90 days, all aircraft), 42 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Co-Pilot Information

Certificate:	Airline Transport	**Age:**	45, Male
Airplane Rating(s):	Multi-engine Land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	05/08/2003
Occupational Pilot:		**Last Flight Review or Equivalent:**	12/08/2002
Flight Time:	5930 hours (Total, all aircraft), 900 hours (Total, this make and model), 88 hours (Last 90 days, all aircraft), 14 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	McDonnell Douglas	**Registration:**	N703GC
Model/Series:	MD-11F	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Transport	**Serial Number:**	48411
Landing Gear Type:	Retractable - Tricycle	**Seats:**	3
Date/Type of Last Inspection:	05/26/2003, Continuous Airworthiness	**Certified Max Gross Wt.:**	630500 lbs
Time Since Last Inspection:	306 Hours	**Engines:**	3 Turbo Jet
Airframe Total Time:	41725 Hours at time of accident	**Engine Manufacturer:**	General Electric
ELT:	Installed, not activated	**Engine Model/Series:**	CF6-80-C2D1F
Registered Owner:	Wells Fargo Bank Northwest	**Rated Power:**	63500 lbs
Operator:	GEMINI AIR CARGO INC	**Operating Certificate(s) Held:**	Air Cargo
Operator Does Business As:		**Operator Designator Code:**	G6OA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	**Condition of Light:**	Night
Observation Facility, Elevation:	JFK, 13 ft msl	**Distance from Accident Site:**	
Observation Time:	0451 EDT	**Direction from Accident Site:**	
Lowest Cloud Condition:		**Visibility**	7 Miles
Lowest Ceiling:	Broken / 12000 ft agl	**Visibility (RVR):**	
Wind Speed/Gusts:	4 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	230°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.56 inches Hg	**Temperature/Dew Point:**	14°C / 24°C
Precipitation and Obscuration:			
Departure Point:	Brussels (EBBR)	**Type of Flight Plan Filed:**	IFR
Destination:	Jamaica, NY (KJFK)	**Type of Clearance:**	IFR
Departure Time:	2127 EDT	**Type of Airspace:**	Class B

Airport Information

Airport:	John F. Kennedy International (JFK)	**Runway Surface Type:**	Asphalt
Airport Elevation:	13 ft	**Runway Surface Condition:**	Dry
Runway Used:	4R	**IFR Approach:**	ILS
Runway Length/Width:	8400 ft / 200 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	3 None	**Aircraft Damage:**	Minor
Passenger Injuries:	N/A	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	3 None	**Latitude, Longitude:**	40.645556, -73.754444

Administrative Information

Investigator In Charge (IIC):	Luke Schiada	**Adopted Date:**	04/28/2005
Additional Participating Persons:	Eric E West; FAA Headquarters (AAI-100); Washington, DC Jim Carlson; Gemini Air Cargo; Dulles, VA William C Steelhammer; Boeing Long Beach Division; Long Beach, CA		
Publish Date:			
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at pubinq@ntsb.gov, or at 800-877-6799. Dockets released after this date are available at http://dms.ntsb.gov/pubdms/.		