



National Transportation Safety Board

Washington, D.C. 20594
Safety Recommendation

2306

Date: AUG 23 1991
In reply, refer to A-91-75 and -76

Honorable James B. Busey
Administrator
Federal Aviation Administration
Washington, D. C. 20591

On March 27, 1989, the main rotors of two Sikorsky S-76A helicopters, N586C and N760P, intermeshed when the helicopters were positioned too close together on the Wall Street Heliport parking barge in Manhattan, New York. The first S-76, N586C, had been landed on a parking spot on the barge; its pilot had been directed to the parking spot to await passenger boarding. N586C was stationary and its rotors were still turning when the accident occurred. The second S-76, N760P, arrived shortly after N586C and its pilot was directed to a parking spot that was on the left side and adjacent to N586C. As N760P touched down, the main rotor systems of the two helicopters intermeshed. Both helicopters were substantially damaged; however, there were no injuries to the flightcrews or persons on the ground.¹

The Safety Board's investigation of the accident disclosed that the Wall Street Heliport parking barge was marked to provide for 12 helicopter parking spaces that were based on centerline to centerline dimensions. To accommodate helicopters with different main rotor diameters the measurements between centerlines varied from a minimum of 45 feet to a maximum of 57 feet. The main rotor diameter of helicopters operating from the Wall Street Heliport could range from 33 feet to 62 feet in diameter. The two S-76 helicopters involved in this accident were spotted on helipads with centerlines 45 feet apart (the smallest pads on the barge). The first helicopter had landed 4 feet off the centerline, toward the adjacent parking spot used later by the second helicopter. This error resulted in the longitudinal axis of the two helicopters being only 41 feet apart. The main rotor diameter of the S-76 is 44 feet.

The Wall Street Heliport parking barge is a federally funded public facility operated by the Port Authority of New York and New Jersey. The barge parking plan had been approved by the Federal Aviation Administration (FAA) and reportedly met the criteria of the Heliport Design Guide, Advisory Circular (AC) 150/5390-1B, dated August 22, 1977. The AC recommended that each parking spot, whether used for boarding passengers or servicing helicopters, or extended parking, be sufficiently large to satisfy the

¹ For additional information, see NTSB Accident Brief, File No. 1637 (attached).

requirements of the largest helicopter expected to use the facility and to provide a minimum of 10 feet of clearance between spots. On January 4, 1988, AC 150/5390-2 was published cancelling the previous version of the AC and changing Section 26, Parking Areas, as follows,

- a. Except for helipads and helidecks located in the FATO or takeoff and landing area, the parking area shall be located such that parked helicopters are clear of the approach and departure surfaces and have at least 1/3 rotor diameter but not less than 10 foot (3 m) clearance from a takeoff and landing area or a fixed or moveable object.

There was no requirement to upgrade the parking plan after the FAA had approved it in accordance with the previous AC.

The Safety Board is concerned that the Wall Street Heliport barge parking plan did not provide adequate clearance between the two S-76 helicopters that were directed to land on adjacent parking spots. In the accident, even if both helicopters had been on their parking spot centerlines, clearance between the tips of the main rotor blades would have been only 12 inches. The existing plan is quite detailed on the positioning of main rotor blades after the rotor is static. However, the plan does not specifically provide for the simultaneous operation of helicopters using adjacent parking spots. The Safety Board believes that the FAA should require a revision to the Wall Street barge parking plan to increase the clearances between adjacent parking spots, Heliport and to ensure adequate rotorcraft clearances while landing, taking off, or taxiing from adjacent spots.

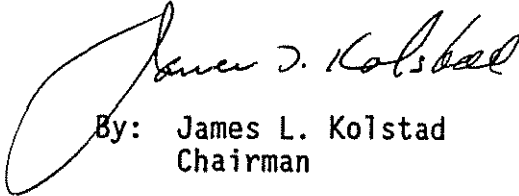
The Safety Board also believes that this accident indicates a hazardous condition potentially applicable to other heliport parking areas. The hazard could be alleviated if a uniform marking standard were developed and implemented to provide the pilot of an airborne helicopter with a visual indication of the maximum rotor diameter that heliport parking spots could accommodate. An amendment to AC 150/5390-2 would satisfy the Safety Board's concerns.

Therefore, the National Transportation Safety Board recommends that the Federal Aviation Administration:

Require the Port Authority of New York and New Jersey to revise its Wall Street Heliport barge parking plan to provide the minimum clearance between parking spots currently specified in Advisory Circular 150/5390-2, to accommodate the largest diameter rotors on the helicopters that are permitted to use the heliport.
(Class II, Priority Action) (A-91-75)

Revise Advisory Circular 150/5390-2 to require the marking of heliport parking spots in a manner that would provide the pilot of an airborne helicopter a numerical indication of the maximum rotor diameter that the parking spot could safely accommodate. (Class II, Priority Action) (A-91-76)

Chairman KOLSTAD, Vice Chairman COUGHLIN, and Members LAUBER, HART, and HAMMERSCHMIDT concurred in these recommendations.



By: James L. Kolstad
Chairman

Brief of Accident

File No. - 1637 3/27/89 MANHATTAN,NY A/C Reg. No. N760P Time (Lcl) - 1555 EST

-----Basic Information-----
 Type Operating Certificate-NONE (GENERAL AVIATION)
 Type of Operation -EXECUTIVE/CORPORATE
 Flight Conducted Under -14 CFR 9j
 Accident Occurred During -LANDING
 Aircraft Information-----
 Make/Model - SIKORSKY 9-76A
 Landing Gear - TRICYCLE-RETRACTABLE
 Max Gross Wt - 10300
 No. of Seats - 8
 Aircraft Damage
 Fire SUBSTANTIAL
 NONE
 Crew 0
 Pass 0
 Other 0
 Injuries
 Fatal 0
 Serious 0
 Minor 0
 None 2
 0
 0
 0
 2

-----Aircraft Information-----
 End Make/Model - ALLISON 250-C30S
 Number Engines - 2
 Engine Type - TURROSHAFT
 Rated Power - 650 HP
 ELT Installed/Activated - YES/NO
 Stall Warning System - NO

-----Environment/Operations Information-----
 Weather Data
 Wx Briefings - NO RECORD OF BRIEFING
 Method - N/A
 Completeness - N/A
 Basic Weather - VMC
 Wind Dir/Speed- 160/014 KTS
 Visibility - 10.0 SM
 Lowest Sky/Clouds - 25000 FT THIN BKN
 Lowest Ceiling - NONE
 Obstructions to Vision- NONE
 Precipitation - NONE
 Condition of Light - DAYLIGHT
 Itinerary
 Last Departure Point
 ARMONK,NY
 Destination
 SAME AS ACC/INC
 Airport Proximity
 ON AIRPORT
 Airport Data
 WALL ST HELIPOINT
 Runway Ident - UNK/NR
 Runway Lth/Wid - UNK/NR
 Runway Surface - METAL/WOOD
 Runway Status - DRY

-----Personnel Information-----
 Pilot-In-Command
 Certificate(s)/Rating(s)
 ATP
 SE LAND,ME LAND
 HELICOPTER
 Age - 57
 Biennial Flight Review
 Current - YES
 Months Since - 1
 Aircraft Type - S-76A
 Medical Certificate - VALID MEDICAL-WAIVERS/LIMIT
 Flight Time (Hours)
 Total - 13500
 Make/Model- 1950
 Instrument- 1200
 Multi-End - 8600
 Last 24 Hrs - 3
 Last 30 Days- 25
 Last 90 Days- 75
 Rotorcraft - 4000

-----Instrument Rating(s) - AIRPLANE,HELICOPTER
 Narrative-----
 THE MAIN ROTOR BLADES OF 2 SIKORSKY 9-76A HELICOPTERS MADE CTC AT THE WALL STREET HELIPOINT/PARKING BARGE, AS ONE (N586C) WAS PARKED IN SPOT 11 WITH THE ROTORS TURNING & THE OTHER (N760P) LNDD IN SPOT 12, THE PLTS OF N586C HAD LNDD 7 MIN EARLIER & WERE WAITING FOR PAX. THE UNICOM OPERATOR SAID THAT AS N760P WAS ARRIVING, HE TOLD THE PLTS THERE WAS ANOTHER HELICOPTER *TURNING ON SPOT 11 & TO PARK ALONG SIDE THEM AT THEIR DISCRETION.* AN INV REVEALED THE BARGE HAD 12 PARKING SPOTS. THE PADS AT SPOTS 4, 5 & 6 WERE DESIGNATED FOR S-76 HELICOPTERS & MEASURED 57'. THE OTHER PARKING SPOTS WERE FOR BELL 222'S & WERE 45' APART. THE MAIN ROTOR SPAN OF AN S-76 WAS 44'. N586C WAS PARKED ABT 4' LEFT OF SPOT 11'S CENTER-LINE. AS N760P LNDD IN THE CENTER OF SPOT 12 (LEFT OF SPOT 11), THE ROTOR BLADES INTERMESHED. NEITHER CREW WAS ADZD THAT SPOTS 4, 5 & 6 WERE FOR LARGER (S-76) HELICOPTERS, EXISTING FAA ADVISORIES FOR HELIPOINTS DID NOT PROVIDE FOR MARKINGS TO INDICATE THE MAXIMUM ROTOR DIAMETER ACCEPTABLE FOR DESIGNATED PARKING AREAS.

Brief of Accident (Continued)

File No. - 1637 3/27/89 MANHATTAN,NY A/C Res. No. N760P Time (Lcl) - 1555 EBT

Occurrence #1 ON GROUND COLLISION WITH OBJECT
Phase of Operation LANDING - FLARE/TOUCHDOWN

Findings(s)

1. AIRPORT FACILITIES,HELIPORT - INADEQUATE
2. INSUFFICIENT STANDARDS/REQUIREMENTS - FAA(ORGANIZATION)
3. INFORMATION - NOT ISSUED - GROUND PERSONNEL
4. CLEARANCE - MISJUDGED - PILOT IN COMMAND
5. OBJECT - AIRCRAFT PARKED

-----Probable Cause-----

The National Transportation Safety Board determines that the Probable Cause(s) of this accident was: THE PILOT MISJUDGED CLEARANCE BETWEEN HIS AND THE OTHER HELICOPTER. FACTORS RELATED TO THE ACCIDENT WERE: INADEQUATE LAYOUT (MARKINGS) OF THE HELIPORT PARKING AREA, INSUFFICIENT STANDARD/REQUIREMENT FOR NUMERICAL INDICATION OF MAXIMUM ROTOR DIAMETER ACCOMMODATIONS AT HELICOPTER PARKING FACILITIES, FAILURE OF THE UNICOM OPERATOR TO ADVISE THE PILOTS OF PARKING SPOTS THAT WERE DESIGNATED FOR LARGER (S-76) HELICOPTERS, AND PROXIMITY OF THE OTHER HELICOPTER.