



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

September 5, 2017

SURVIVAL FACTORS

Specialist's Factual Report

ERA16LA195

A. ACCIDENT

Airplane	:	Republic P-47D [N1345B]
Location	:	New York, NY
Date	:	May 27, 2016
Time	:	~ 1930 eastern daylight time (EDT) ¹
NTSB #	:	ERA16LA195

B. SURVIVAL FACTORS SPECIALIST

Specialist	:	Peter Wentz National Transportation Safety Board Washington, DC
------------	---	---

C. SUMMARY

On May 27, 2016, about 1930 eastern daylight time, a Republic P-47D, N1345B, ditched in the Hudson River following a reported loss of engine power. The commercial pilot was fatally injured and the airplane was substantially damaged. The experimental, exhibition-category airplane was registered to a corporation and was operated by the American Airpower Museum under the provisions of Title 14 *Code of Federal Regulations* Part 91 as an aerial observation flight. Day, visual meteorological conditions prevailed at the time of the accident, and no flight plan was filed. The local flight originated from Republic Airport (FRG), Farmingdale, New York, about 1900.

¹ All times in this report are eastern daylight time, based on a 24-hour clock.

D. DETAILS OF THE INVESTIGATION

The airplane was examined on June 21, 2016 at Anglin Aircraft Recovery Services, in Clayton, DE where it had been transported after the accident. The Survival Factors specialist conducted an examination of the cockpit seatbelt/harness restraints and canopy system on the accident airplane.

1.0 Airplane Configuration

The airplane was a 1945 Republic P47D (N1345B) (photograph 1) with a single cockpit seat.



Photograph 1 - Republic P-47D.

2.0 Cockpit

2.1 Control Stick and Instrument Panel

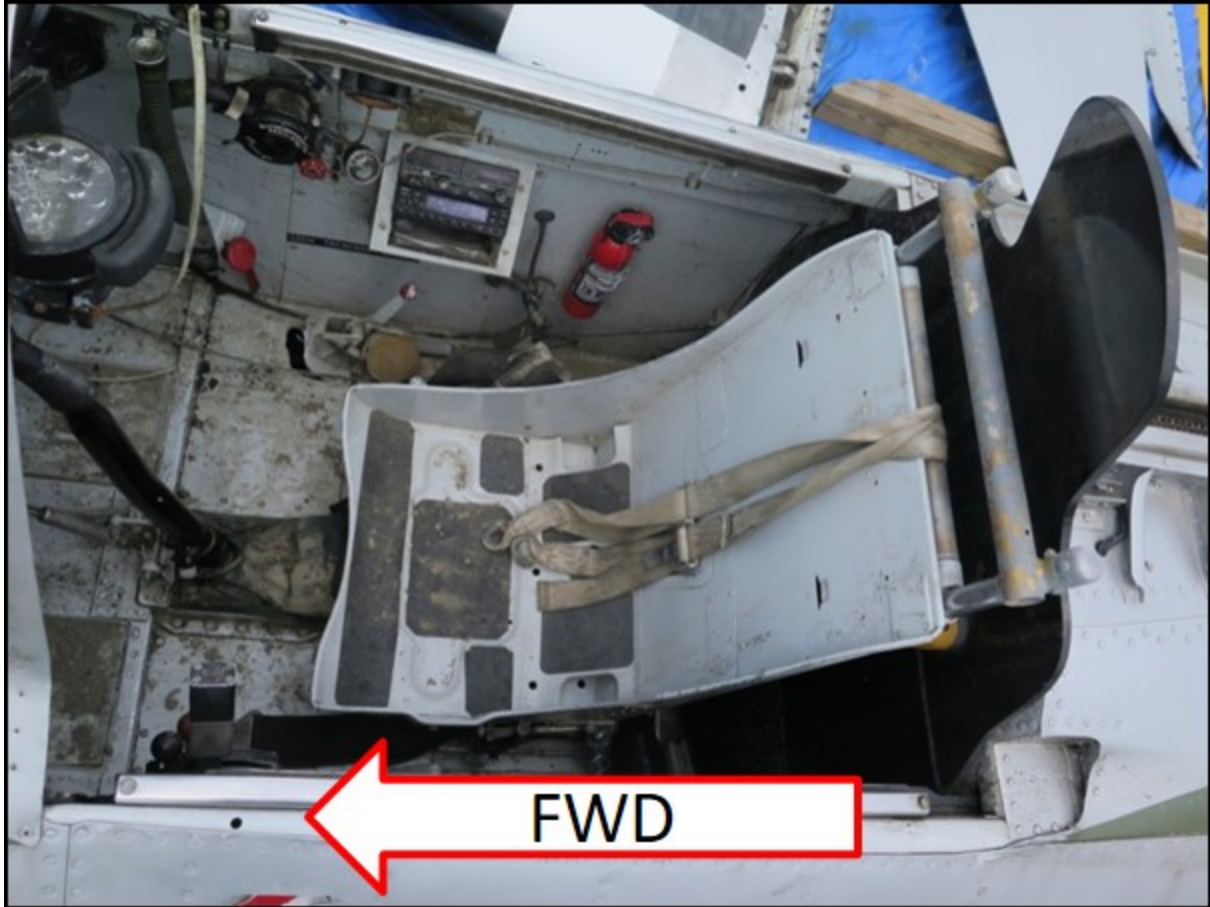
The airplane control stick and cockpit instrument panel (photograph 2) of the P-47D was visually inspected for damage. The inspection showed no evidence of damage to the airplane control stick and cockpit instrument panel.



Photograph 2 – Cockpit control stick and instrument panel.

2.2 Pilot Seat

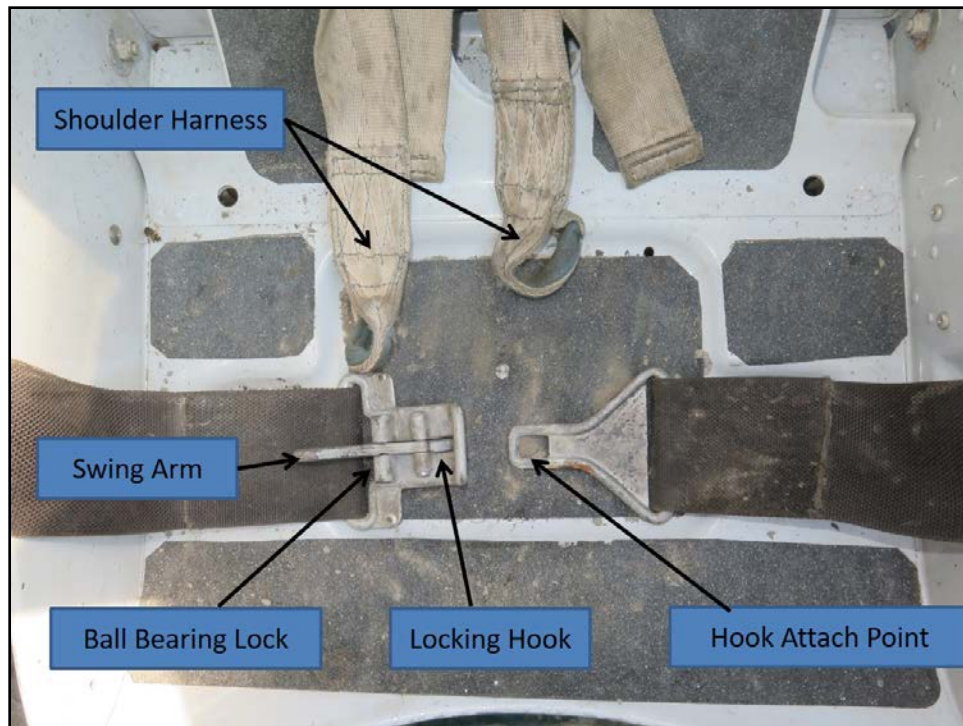
The pilot seat (photograph 3) was permanently attached in the cockpit. The seat bottom was attached to the cockpit floor while the seat back was attached to the aft bulkhead. The seat did not adjust forward or backward, but was vertically adjustable by pulling the adjustment handle located at the right seat corner. No part number was visible on the seat or frame. The seat was examined and able to be adjusted in its full range of motion. The pilot's parachute was used as a cushion.



Photograph 3 – Pilot seat.

2.3 Seatbelt Restraint

The seatbelt restraints system consisted of a lapbelt and shoulder harness. The left (male) portion of the lapbelt attaches to the right (female) portion of the lapbelt and is locked in place with a metal hook. The swing arm presses between two ball bearings on each side of the swing arm (photograph 4) and the compression of the ball bearing locked it in place. The lapbelt was attached to the seat in the rear corners of the seat pan with bolts. A data tag was sewn into the webbing of each lapbelt, but was illegible. The shoulder harness attaches to the back of the seat with the end portions being reinforced loops that slide over the male metal tongue to complete the system (photograph 5).



Photograph 4 – Pilot seat restraint.



Photograph 5 – Seatbelt restraint system buckled.

2.4 Seatbelt Restraint Measurements

Table 1 is a record of the length of each lapbelt and shoulder harness.

Pilot Restraint Dimensions	
Right Lapbelt	24"
Left Lapbelt	26"
Right Shoulder Harness	33"
Left Shoulder Harness	32.5"

Table 1 – Seat restraint measurements.

2.5 Cockpit Canopy

The cockpit canopy was found in the fully open position (photograph 6).



Photograph 6 – Cockpit Canopy.

The cockpit canopy was designed to be operated (figure 1) either manually, or by an electric motor. The motor could be controlled from an internal switch in the cockpit, or by an external switch located forward of the left cockpit window in an access panel. The limits of canopy travel are controlled by two switches mounted on the deck behind the pilot seat. The entire operating mechanism is covered by the tail of the canopy in the closed position.

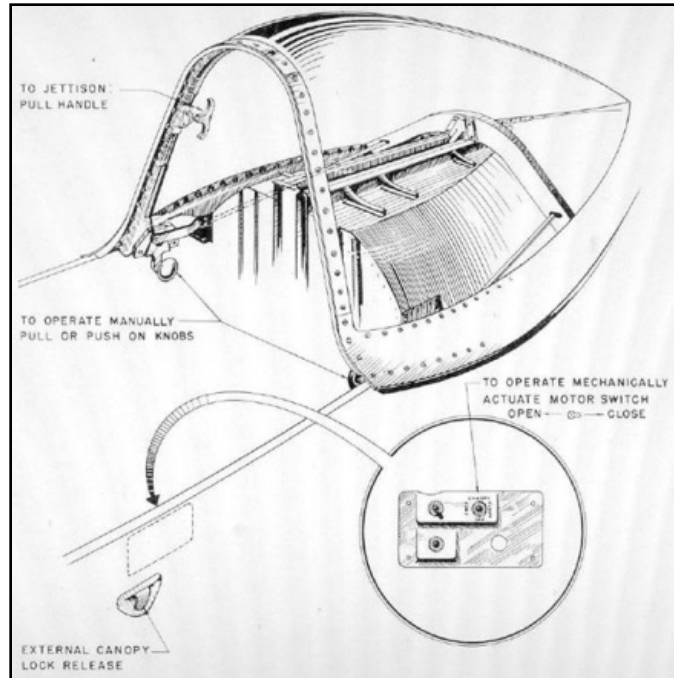
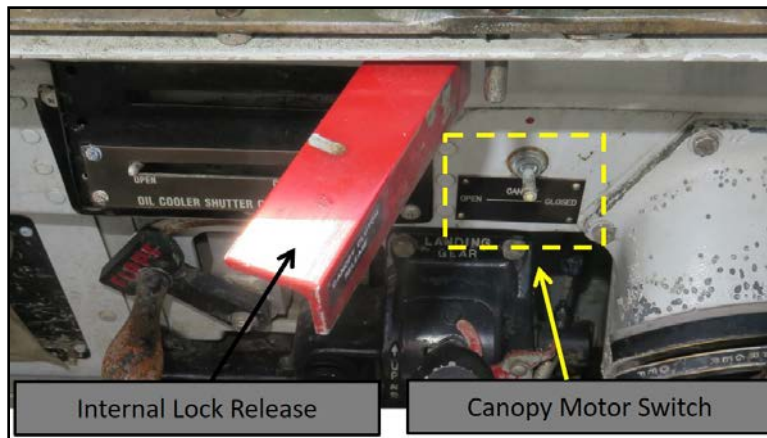


Figure 1 – Cockpit canopy controls.

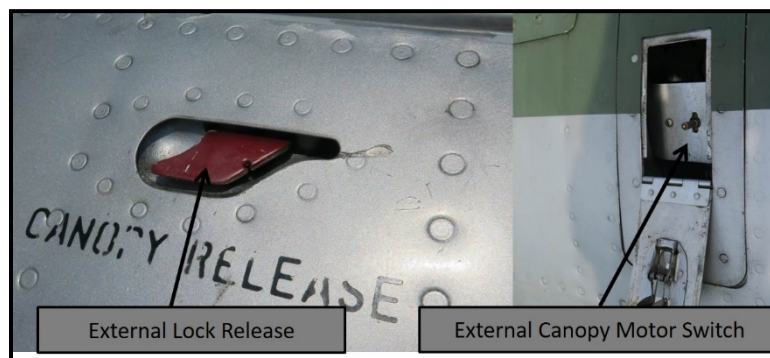
To manually operate the canopy from inside the airplane, the internal lock release is pushed forward to the full stop. This action disengages the clutch on the canopy motor. While holding forward pressure on the lock release the pilot can freely slide the canopy on its rails. To automatically move the canopy from inside the airplane the pilot would select the open or closed position on the canopy switch which is located in front of the lock release on the left cockpit sidewall (photograph 7).



Photograph 7 – Internal canopy release mechanism.

To manually operate the canopy from outside the airplane, the external lock release is pulled backward to the full stop. This action disengages the clutch on the canopy motor. While holding rearward pressure on the external lock release, persons outside the airplane can manually move the canopy freely on its rails. To automatically move the canopy from the exterior of the airplane, locate the canopy switch in a hatch on the front left side of the airplane in front of the cockpit window. Push the switch to select the canopy to open or closed (photograph 8). The clutch is engaged on the motor until either lock release is activated and held open. Once the switch is released the motor becomes reengaged.

An examination of the internal and external lock release mechanism was performed. Both lock release mechanisms disengaged the motor and allowed the canopy to move freely on its rails. Due to flammable fluids in the area and no power source, the automatic motor switches were not tested.



Photograph 8 – External canopy release mechanisms.

The canopy was designed to jettison from the airplane. To accomplish this the pilot would pull the red jettison handle (photograph 9) mounted on the front right frame of the canopy. This action allows the locking pins to be pulled from the jettison fittings which hold the canopy to the roller assemblies. All three fittings are then free and the canopy may be jettisoned in flight or removed while the airplane is on the ground. The jettison system was tested by pulling the t-handle, which released the canopy from the rails. The canopy was then removed from the airplane, demonstrating the system worked as designed. (photograph 10).



Photograph 9 – Jettison handle.



Photograph 10 – Cockpit Canopy.

2.6 Canopy Jettison Procedure

The procedures for ditching the airplane are found the pilot's Flight Operating Instructions, (AN 01-65BC-1A) (diagram 2).



Figure 2 – Ditching procedures.

Section IV, bullet 8 of the Emergency Operating Instructions, page 37 describes the procedures for ditching- *If it becomes necessary to abandon the airplane over water and it is not desirable to bail out, the following procedure is suggested. (1) Make sure safety belt and shoulder harness are secure. (2) Lower flaps. (3) Jettison canopy. (4) Make normal approach glide into the wind. Hold off until stall speed is reached, then set down tail first. (5) Ditch into the wind on upslope wave.*

3.0 Flight Helmet

The flight helmet (photograph 11) was recovered from the accident airplane. The helmet shell showed no signs of impact damage and all manual functions of the helmet operated normally. The electronics components of the helmet were not tested. The helmet did not display a make or model number.



Photograph 11 – Flight helmet.

4.0 Injuries

The Office of the Chief Medical Examiner, City of New York determined the pilot's cause of death was drowning and the manner of death as an accident. Figure 3 describes the pilot's injuries.

Gender	Weight	Evidence of Injuries	Cause of Death	Injury Classification
M	223 lbs	Bilateral, symmetric (9 x 2 and 8 x 1.5 inch) deep muscular hemorrhages in the paraspinal muscles of the low cervical and high thoracic area without associated fracture or obvious spinal cord injury. Superficial abrasions on all four extremities and a small laceration of the left leg.	Drowning	Fatal

Figure 3 – Injury chart.

Peter Wentz
Survival Factors Investigator