

NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

February 3, 2012

Addendum to Group Chairman's Factual Report

STRUCTURES

DCA11PA075

Addendum 1

A. ACCIDENT

Operator: Omega Aerial Refueling Services
Location: Point Mugu, California
Date: May 18, 2011
Time: 1727 Pacific Daylight Time (PDT)
Airplane: Boeing 707-321B, Registration Number: N707AR, Serial #: 20029

B. STRUCTURES GROUP

Chairman: Brian Murphy
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C. SUMMARY

On May 18, 2011, at 5:27 pm Pacific Daylight Time (PDT), a modified Boeing 707, registration N707AR, operated by Omega Aerial Refuelling Services as flight 70, crashed on takeoff from runway 21 at the Point Mugu Naval Air Station, California (KNTD). The airplane impacted beyond the departure end of the runway and was destroyed by post-impact fire. The three flight crewmembers received minor injuries.

D. DETAILS OF THE INVESTIGATION

1.0 Aircraft Description

| | |
|---------------------------|-----------------------------|
| Registration Number | N707AR |
| Aircraft Serial Number | 20029 |
| Aircraft Manufacturer | Boeing Commercial Airplanes |
| Aircraft Model | B707-321B |
| Engine Manufacturer | Pratt and Whitney |
| Engine Model | JT3D-3B |
| Aircraft Year | 1969 |
| Airworthiness Certificate | Special |
| Approved Operations | Part 91 Public Use |
| Aircraft Type | Fixed Wing Multi-Engine |
| Engine Type | Turbo-fan |
| Aircraft Category | Experimental |
| Number of Engines | 4 |
| Number of Seats | 24 |
| Max. Gross Weight | 321,000 lbs |
| Total Time | 47,856 hours |
| Total Cycles | 15,186 cycles |
| Type Certificate | 4A26 |

2.0 History of Flight

The observed debris field extended 4,120 feet on a heading of 218 degrees. The first pieces of wreckage found along the debris path were fragments of the number two (left inboard) engine pylon; they were just past taxiway Alpha 2, about 7,500 feet from the beginning of runway 21. The number one engine (left outboard) nose cowl was about 450 feet further into the debris field and left of the runway surface in the grass infield. The number two engine nose cowl was near the runway arresting gear on the left side of the runway at the 8,500 foot point. The number two engine was about 230 feet further, and on the left side of the runway surface. The airplane departed the asphalt surface near taxiway Alpha 1, which was 9,500 feet from the departure end of the runway. Ground scars continued through the grass infield to taxiway Alpha at the end of the runway. The number one engine was in the grass infield near taxiway Alpha. The main wreckage came to rest in a wetland marsh left of the runway overrun, and caught fire. Fire consumed the top of the cabin and the cockpit. The main wreckage consisted of the cockpit, cabin, and right wing with the number three (right inboard) engine partially attached, empennage, and the inboard half of the left wing, which sustained thermal damage and was under water. Scattered debris aft of the main wreckage included the nose gear, remnants of the burned outboard left wing, right main landing gear truck, and number four (right outboard) engine.

3.0 Accident Site

The airplane departed Naval Base Ventura County Point Mugu's (KNTD) runway and impacted the terrain after climbing to an altitude of about 20 feet above ground level (agl).

4.0 Fire Damage

The fuselage and left wing were partly consumed by fire.

5.0 Structure

5.1 Nacelle Strut Attachment Structural Description

The nacelle strut attaches to the wing at four primary locations. The upper connection consists of the over wing fitting and the front spar fitting. The two middle connections consist of the midspar, wing drag fittings, and the vertical attach fittings. The lower connections consist of the lower spar fitting, diagonal brace (thrust link), and the wing aft drag fitting.

The engine attaches to the nacelle strut in four locations, two connections at the front of strut using cone bolts and two connections directly below the upper strut connection to the wing.

5.2 Number Three Engine and Nacelle Strut Attachment Structure

The number three engine (inboard right) remained attached to the number three strut. The number three strut separated from the wing at the over wing front spar fitting interface, the diagonal brace to aft drag support fitting interface and the strut middle spar chords. The over wing support fitting to front spar fitting pin fractured and a portion of the pin remained in the lug hole of the front spar fitting. The drag brace diagonal remained attached to the lower spar fitting at its forward end and was separated from the wing at the aft drag support fitting. The lug holes of the diagonal brace at the aft end were elongated and the pin was not recovered. The outboard and inboard strut middle spar chords fractured about 5 and 25 inches aft of the front spar fitting. The mid spar fittings and vertical attach fittings were intact and remained attached to the wing structure. The inboard mid spar fitting was removed and sent to the Boeing Material and Process Technology laboratory for further examination and non destructive inspection (NDI). All of the examined fracture surfaces had features consistent with overstress with no evidence of fatigue.

5.3 Number Four Engine and Nacelle Strut Attachment Structure

The number four engine (outboard right) remained attached to the number four strut. The number four strut separated from the wing at the over wing front spar fitting interface, the mid spar fittings to forward drag brace fittings interfaces and the diagonal brace. The over wing support fitting fractured at the front spar fitting interface. A portion of the over wing support fitting remained attached to the front spar fitting along with a fractured section of the fuse pin. The outboard mid spar fitting remained intact and attached to both the forward drag fitting and the outboard vertical support fitting. The outboard forward drag fitting fractured about nine inches aft of the mid spar fitting and the vertical support fitting fractured about seven inches above the mid spar fitting. The inboard mid spar fitting was also intact and the inboard forward drag fitting and pin were not identified in the wreckage. The diagonal brace fractured at the forward lower spar fitting and a small section measuring about two inches in length and the pin remained attached to the lower spar

fitting. The diagonal brace and the aft drag fitting were not identified in the wreckage. All of the examined fracture surfaces had features consistent with overstress with no evidence of fatigue.

Prepared by:

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