NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

Attachment 11 - Omega Aerial Refueling Services B707 Checklists

OPERATIONAL FACTORS

DCA11MA075

A. ACCIDENT

Operator:	Omega Aerial Refueling Services, Inc.
Location:	Point Mugu Naval Air Station, California
Date:	May 18, 2011
Airplane:	Boeing 707-321B, Registration Number: N707AR

B. NATIONAL TRANSPORTATION SAFETY BOARD (NTSB) OPERATIONS GROUP

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C. SUMMARY

On May 18, 2011, at approximately 1727 pm local time (0027 UTC), Omega Air flight 70, a Boeing 707-321B (N707AR), crashed on takeoff at the Point Mugu Naval Air Station[1], Point Mugu, California. The airplane impacted beyond the departure end of runway 21 and was destroyed by post-impact fire. All three flight crewmembers aboard escaped with minor injuries.

[1] Naval Base Ventura County.

D. NORMAL CHECKLIST

OMEGA AERIAL REFUELING SERVICES

Normal Checklist – N707AR

BEFORE STARTING ENGINES (F/E reads)

Cockpit Preparation	"COMPLETE"	ALL
Aircraft Forms	"CHECKED"	C, E
Oxygen Valve	OPEN	E
Oxygen & Interphone	"CHECKED & ON/100%"	All
Circuit Breakers	CHECKED	E
Battery CB and Switch	CLSD, CHKD, & ON	E
Fuel Manifold Valves	ALL OPEN	E
External Power	ON	E
Essential Power Switch	ON EXT	E
Radio Bus Switches	ON	E
Aux Pump 1 & Interconnect	"ON & SYS"	F/O
Parking Brake	"SET"	C
Emergency Flap Switches	"NORMAL"	C
Antiskid	"OFF"	C
Rudder & Spoiler Switches	"ON"	C
Nacelle & Wing Anti-Ice	"OFF"	C
No Smoking & Seat Belt Switches	"ON"	C
Emergency Exit Lights	"ARMED"	C
Landing Flap Warning Switch	"AS REQUIRED"	C
Pitot, Q-Inlet, Probe Heat	"OFF"	C
Window Heat	"LOW"	C
Yaw Damper	"ON, LIGHT ON"	C
Radios, Radar, Transponder	"SET & STANDBY"	C,F/O
Radio Altimeters	"CHECKED"	C,F/O
Emergency Brake	"SAFETIED & CHKD"	C
Standby Horizon	"CHECKED"	C
FMS & GPS	"ALIGN & PROGRAMMED"	C,F/O
Compasses and Controllers	"SET, SYNCH & CROSS CHECKED"	C,F/O
Flt Inst, Altimeters & Flt Dir	"SET & CHECK"	ALL
Trim Cutout Switches	"NORMAL, MACH WARNING LIGHT OUT"	C
Stabilizer Trim	"____ UNITS, SET"	C
Rudder & Aileron Trim	"FREE & ZERO"	C
Gear Lever & Lights	"DOWN, IN, 3 GREEN"	ALL
Gear Locks	"ABOARD / REMOVED"	P, E
Engine Instruments	"NORMAL"	C, E
EPR & Airspeed Bugs	"SET"	C,F/O
Utility Hydraulic Pumps	"ON"	F/O
Rudder Boost Pressure	"CHECKED"	F/O
Speed Brake Lever	"FULL FWD"	C
Flap Lever	"UP / CHECKED"	C
Reverse Thrust	"DOWN & CLOSED"	C
Start Levers	"CUTOFF"	C
Autopilot	"OFF"	C
Fuel Qty, Valves & Switches	"____LBS, SET FOR START"	E
Air Conditioning Unit Switches	OFF	E
Wing Isolation Valves	OPEN	E
Pressurization Controls	SET FOR TAKEOFF	E
Hydraulic Qty	CHECKED	E
Engine Start Selector Switch	SET FOR START	E
Before Starting Engines Checklist	**"COMPLETED"**	E

STARTING ENGINES (F/E reads)

Beacon Switch	ON	P
Start Pressure	"____ PSI"	E
Start Engines	3, 4, 2, 1	C, E
External Equipment	"REMOVE"	E
Starting Engines Checklist	**"COMPLETED"**	E

AFTER START (F/E reads)

Hydraulics	"CHECKED & ON"	F/O
Start Levers	IDLE	E
Engine Start Switches	OFF	E
Engine Anti-Ice	"AS REQUIRED"	C
Electrical Power	"ESS ON 3, NO LIGHTS"	E
Flap Lever	"14, 14, 2 GREEN LIGHTS"	ALL
Flight Controls	"CHECKED"	C,F/O
Crew Briefing	"COMPLETED"	P
Pack Valves	OPEN	E
Air Condition System Switches	ON	E
Turbo compressors	2 & 3 ON	E
Freon Switches	AS REQUIRED	E
All Fuel Pumps & Manifold Valves	ON & SET	E
Galley Power	ON	E
Engine Instruments	"CHECKED"	C, E
Ground Mechanics	"AS REQUIRED"	E
Door Warning Lights	"OFF"	E
Ground Support Equipment	"CLEAR L/R"	C,F/O
After Start Checklist	**"COMPLETED"**	E

BEFORE TAKEOFF (F/E reads)

Brakes	"CKECKED"	C
Yaw Damper	"CHECKED"	C,F/O
Seat Belts & Shoulder Harness	"FASTENED"	ALL
Flt Dir, Instruments & Radios	"CHECKED & SET FOR DEPARTURE"	C,F/O
Antiskid	"ON, NO RELEASES"	E
Flight Recorder Switch	ON	E
Service Interphone	OFF	E
Electrical System	AC & DC CHECKED	E
Fuel System	SET FOR TAKEOFF	E
Fuel Heat	CHECKED, OFF	E
Air Conditioning System	CHECKED	E
Pressurization Mode Selector	TAKEOFF	E
Hydraulics	PRESSURE & QTY NORMAL	E
Cabin Report	"SECURED"	E

----------CLEARED FOR TAKEOFF----------

Transponder	"ON"	P, E
Radar	"ON"	P
TCAS Indicators	"ON"	F/O, E
Landing Lights	"ON"	E
Pitot, Q-Inlet, Probe Heat	"ON"	E
Engine Ignition Switches	FLT START	E
Takeoff Configuration	"CHECKED"	ALL
Before Takeoff Checklist	**"COMPLETED"**	E

P=Either Pilot; C=Captain; F/O=First Officer; E=Engineer; T= Traffic Pattern

Version 3 Jan 2010

E. B707 EMERGENCY CHECKLIST

OMEGA AERIAL REFUELING SERVICES
Emergency Checklist 1

ENGINE FIRE/DAMAGE OR SEPARATION

Thrust Lever ..... CLOSED
Essential Power ..... CHECKED
Start Lever ..... CUTOFF
Transit Light ..... MONITOR
Fire Switch ..... PULLED

Yaw Damper & Autopilot ..... OFF

- **If fire warning light on, visible damage, or separation confirmed:**
  Fire Bottle ..... DISCHARGE
  Wait at least 30 seconds
- **If fire indication persists:**
  Transfer Switch. ..... TRANSFER
  Fire Bottle ..... DISCHARGE
- **If fire still persists,** attempt to blow out the fire:
  Do not lower flaps or use speedbrakes unless landing is imminent.
  Clean Up Airplane ..... GEAR AND FLAPS UP
  Accelerate to at least 250 kts (Vmo max).
- **If fire is NOT out,** land as soon as possible.
- **If fire IS out,** complete the following when time permits:
  Fuel Shutoff Valve ..... CLOSE
  Engine Ignition ..... OFF
  Ignition CB, P6 ..... PULL
  GB Light ..... CHECK ON
  Check Electrical Load:
  Freon ..... 36 KW MAX ea generator
  ACM ..... 27 KW MAX ea generator
  Turbos and Bleeds ..... OFF
  Cabin Altitude and Ventilation ..... CHECK
  Fuel Management ..... As required

WHEEL WELL FIRE

Landing Gear (320 Kt/.83M max) ..... DOWN

Gear Doors ..... OPEN
Place gear handle in UP position until DOOR light comes on, then rapidly move gear handle to OFF.
Wheel Well Light Switch ..... ON
Wheel Well and Gear ..... INSPECT
If FIRE is still evident, ... LAND
..... (at nearest suitable airfield)

SMOKE SOURCE IDENTIFICATION

Consider landing at nearest suitable airport.
Consider use of oxygen masks and goggles.
Galley Power ..... OFF
(Freon) Airconditioning System Switches .....
..... BOTH OFF
Gasper Fan ..... OFF
Pilots' Foot and Shoulder Heaters ..... OFF
Radar ..... OFF

- **If smoke STOPS,** use normal ventilation to evacuate residual smoke.

- **If smoke CONTINUES,** check the following in order:

CARGO
Smoke Detectors and Main Cabin Cargo Compartment .....
..... CHECK

- **If smoke is visible,** use Main Cabin Cargo Smoke or Fire Checklist, this section page 3.

AIRCONDITIONING
Cockpit Airconditioning Outlets ..... CHECK FOR
..... SMOKE OR ODOR

- **If smoke or odor is present,** use Airconditioning System Smoke Checklist, this section pg 3.

PASSENGER CABIN
Check Lavs, Galleys, and Cabin ..... CHECK

- **If cove light smoke,** pull cove light CBs, P3.
- **If galley smoke,** pull galley CBs.
- **If lav smoke,** close door except to fight fire. Pull following CBs: Lav Dome, P6; Toilet Flush Motors, P1; Lav Water Heaters (6), P3; Toilet Flush Motors, P4; Lav Mirror Lts, P4, Shaver Outlets (2), P4.
- **If smoke STOPS,** use normal ventilation to evacuate residual smoke.

ELECTRICAL

- **If smoke or odor continues and is NOT from airconditioning system or main cabin,** use Electrical Smoke or Fire Checklist, this section page 2.

Version 1 Dec. 2007

F. B707 ABNORMAL CHECKLIST

OMEGA AERIAL REFUELING SERVICES
Abnormal Checklist 1

ENGINE SHUTDOWN

Essential Power ..... SET
Yaw Damper & Autopilot ..... OFF
Throttle ..... IDLE
Start lever ..... CUTOFF
Fuel Shutoff Valve ..... CLOSE

Engineer's Check
- Engine Ignition ..... OFF
- Ignition CB, P6 ..... PULL
- GB Light ..... CHECK ON
- Check Electrical Load:
  - Freon ..... 36 KW MAX EA GEN
  - ACM ..... 27 KW MAX EA GEN
- Turbo and Bleed ..... OFF
- Cabin Altitude and Ventilation ..... CHECK
- Fuel Management ..... AS REQUIRED

- **If N2 is above 25%, and engine not shutdown due to fire,** cool fuel control unit every 30 minutes:
  - Fuel Shutoff Valve ..... OPEN
  - Start Lever ..... IDLE 3 MINUTES
  - Start Lever ..... CUTOFF
  - Fuel Shutoff Valve ..... CLOSE

INFLIGHT ENGINE START

Throttle ..... IDLE
Start Lever ..... CUTOFF
Engine Fire Handle ..... PUSH IN
Fuel Shutoff Valve ..... OPEN
Fuel Boost Pumps ..... ON
Oil Pressure (any positive indication) ..... CHECK
N1 & N2 ..... ROTATING
Ignition CB, P6 ..... RESET
Engine Ignition ..... FLT START
Start Lever ..... START
Engine Instruments ..... STABILIZED WITHIN 90 SEC
Start Lever ..... IDLE
Engine Ignition ..... AS REQUIRED
Generator, Turbo, Bleed ..... AS REQUIRED

REVERSER LIGHT ON IN FLIGHT

- **If no yaw or loss of airspeed,** continue normal operation.
- **With yaw and/or loss of airspeed:**
  - Engine ..... SHUTDOWN
  - Lowering airspeed may reduce buffeting.

FUEL DUMPING

Briefing:
Advise ATC.
Seat belts on, advise cabin crew and pax.
Consider weather, route, landing, and holding.
Calculate fuel dump and check placard rate.
Avoid dumping in a circular flight path or in heavy static.
If possible, avoid dumping below 6000 ft AGL.
Maintain positive cabin differential pressure.
Observe dump chute airspeed limits:
- Chutes operating, 240 kt/.83M
- Chutes extended, 275 kt/.83M

BEFORE DUMPING

Wing Flaps ..... UP
Speedbrakes ..... FORWARD
Manifold Valves and Fuel Boost Pumps ..... SET

DUMPING

Dump Chutes ..... EXTEND
Dump Valves ..... OPEN
Fuel Gages ..... MONITOR
Dump Valves (at desired gage readings) ..... CLOSE

AFTER DUMPING

Dump Chutes (after 2 minute drain) ..... RETRACT
Dump Chute Switches (after 10 seconds) ..... OFF

MINIMUM FUEL GO-AROUND
Fuel in any Main Tank 1000lbs or Less

All Main Tank Fuel Boost Pumps ..... ON
All Fuel Manifold Valves ..... OPEN
Engine Ignition ..... FLIGHT START
Throttles ..... ADVANCE SLOWLY AND SMOOTHLY
Pitch Attitude ..... MAX 8 DEG
- **If aft boost pump lights come on,** lower nose.

Briefing: PARTIAL-FLAP LANDING

If flap handle will not be in 40 or 50 degree detent for landing, pull Grd Prox CBs (2), P5.
Airspeed Bug Considerations
- Set low bug to appropriate value:
  - Zero Flap ..... 50Vth + 40
  - Flaps 14 or 25 ..... 50 Vth + 10
  - Trailing Edge Flaps Split ..... 50 Vth + 15
  - No Leading Edge Flaps ..... 50 Vth + 15
  - Leading Edge Flaps Split ..... 50 Vth + 10
- Do not use optional performance adjustment.
- Use wind adjustments or + 5 kt to determine Vprog.

Maintain Vprog + 20 when maneuvering in landing config.
Use Vprog for target speed on final approach.
Use Normal Checklist for landing.

Version 1 Dec. 2007