No. 5

McDonnell Douglas DC-8-61, JA8048, at Shanghai Hongqiao Airport, China, on 17 September 1982. Report released by the General Administration of Civil Aviation of China

SYNOPSIS

At 0630 GMT (1430 local time) on September 17, 1982 Japan Air Lines, Flight JL792, a DC-8-61 (JA8048) crash-landed at Shanghai Hongqiao Airport after it overran the runway. 39 persons of the 113 passengers and 11 crew members on board were injured and the aircraft was destroyed.

Immediately after the occurrence, the General Administration of Civil Aviation of China notified the Japan Civil Aviation Bureau and Japan Air Lines of the accident and sent an aircraft accident investigation team to the scene to conduct an investigation. The Japan Accredited Representative together with his advisers arrived in Shanghai the following day and participated in the investigation as observers.

The final report of the investigation was prepared and released by the General Administration of Civil Aviation of China on December 6, 1982.

1. FACTUAL INFORMATION

1.1 History of the Flight

Japan Air Lines flight JL792, a DC-8-61, was a regular scheduled international passenger flight between Tokyo and Shanghai. On September 17, 1982, JL792, on its return trip from Shanghai to Tokyo, departed Hongqiao Airport at 0557 GMT (1357 local time) on an instrument flight rules (IFR) flight plan with 113 passengers and a crew of 11 on board.

The flight crew stated that, 9 minutes after take-off, they heard a strange sound coming from the lower part of the middle section of the fuselage. The captain found that the hydraulic low level warning light was on while the flight engineer found that the hydraulic reservoir air low pressure warning light was also on and the hydraulic system pressure indicator pointed at "0". Almost at the same time, the co-pilot found the abnormal indication of the flap position indicator and zero indication of the air brake pressure indicator. The captain then instructed to take the hydraulic system failure procedure. The crew called Hongqiao Control Tower reporting failure of the hydraulic system and requesting permission to return to the airport for landing at 0607, which was cleared at once.

Before landing on runway 36, JL792 circled over the aerodrome twice during which the crew performed approach check, landing check and prepared zero flap landing data. The aircraft touched down within the touchdown zone at a faster than normal speed. Despite the application of reverse thrust, the aircraft decelerated at a very slow rate. At 0630 GMT (1430 local time), with a runway heading, it ran off the end of the runway and 200 m stopway and finally stopped by and rested over a drainage ditch surrounding the airport.

The accident occurred at latitude 31°12'52"N and longitude 21°20'02"E, 218 m away from the end of runway 36. The elevation of the accident site was 2.47 m.

1.2 Injuries to Persons

Injuries	Crew	Passengers	Other
Fatal	-	-	-
Serious	3	7	-
Minor/None	7/1	22/84	

1.3 Damage to Aircraft

The aircraft was destroyed by impact.

1.4 Other Damage

One overrun light (red) was smashed by the aircraft's right main landing gear.

1.5 Crew Information

a) Pilot-in-command:
Age: 57
Validity of licences:
Pilot ATR-000286-59/08/26
NAV 2NV-000108-53/05/04
R/O 3RO-000205-53/12/12

Ratings:
DC-4 Pilot 57/10/12
DC-6 Pilot 62/08/18
CV-880 Pilot 63/02/15
DC-8 Pilot 65/03/05
B-747 Pilot 77/05/26

Flying experience:
Total: 14 882 hours
On type: 4 715 hours

Pathological/Effectiveness (P/E): 11129481-83/01/23

b) Co-pilot:
Age: 34
Validity of licences:
Pilot COM-005228-73/04/11
F/E F/E-00145-74/08/09
R/O RRB-IWE043-72/04/19

Ratings:
DC-8 Engineer 74/08/09
DC-8 Pilot 77/12/01

Flying experiences:
Total: 3 483 hours
On type: 3 166 hours
P/E: 11128909-83/03/31

c) Second officer (flight engineer)
Age: 28
Validity of licences:
Pilot COM-006640-77/03/18
F/E F/E-001821-79/09/12
R/O RRB-IZE068-76/03/02

Rating:
DC-8 Engineer 79/09/12

Flying experiences:
Total: 1 845 hours
On type: 1 559 hours
P/E: 11128733-83/02/28

1.6 Aircraft Information

The aircraft was certificated, equipped and maintained in accordance with Japanese regulations and Japan Air Lines procedures. When the aircraft arrived at Hongqiao Airport the crew stated that all systems of the aircraft had been operating properly. Therefore, it was serviced, walk-inspected and released for its return trip by the Japan Air Lines maintenance personnel at the airport.

The centre of gravity of the aircraft was 26.7 per cent which was within the prescribed limits (16.0 per cent - 33.6 per cent MAC). It was refuelled with 23 206 L of RP-2 fuel at the airport.

1.7 Meteorological Information

a) Forecast for Shanghai Hongqiao Airport
Before 1400 (local time) (0600 GMT)
Wind: 80 degrees 5 m/s
Visibility: 2 km mist
7/8 altocumulus/3 000 m
0900-1100 (local time) gradually visibility changing to 5 km

After 1400 (local time)
Wind: 80 degrees 5 m/s
Visibility: 5 km mist
3/8 cumulus/600 m; 6/8 strato-cumulus/1 500 m;
8/8 altocumulus/3 600 m
1700-1900 (local time) gradually changing to:
Wind: 69 degrees 3 m/s
Visibility: 5 km, rain
5/8 strato-cumulus/300 m; 8/8 altocumulus/3 600 m

b) Actual condition (local time)
1300: Wind 100 degrees 5 m/s; Visibility more than 10 km;
2/8 cumulus/690 m; 3/8 strato-cumulus/2 400 m;
7/8 altocumulus/4 500 m; Temperature 26°C; Dewpoint 20°C;
QNH 1018; QFE 7631

1400: Wind 90 degrees 5 m/s; Visibility more than 10 km;
1/8 cumulus/690 m; 3/8 strato-cumulus/2 400 m
7/8 altocumulus/4 500 m, Temperature 26°C;
Dewpoint 20°C; QNH 1017; QFE 7627

1430: Wind 90 degrees 5 m/s; Visibility more than 10 km;
4/8 strato-cumulus/2 400 m; 8/8 altocumulus/4 500 m

c) Daylight

1.8 Aids to Navigation

ILS and 3 NDBs for runway 36 were operated normally.

1.9 Communications

VHF transmitter and receiver located in the control tower were operated normally. There were no communication problems.

1.10 Aerodrome Information

The runway surface was dry, clean and free of obstacles. The runway is 3 200 m long, the stopway is 200 m long and both of them are 58 m wide.

1.11 Flight Recorders

Both flight data recorder (FDR) and cockpit voice recorder (CVR) were mounted in the aft section of the fuselage. They were recovered and intact.

All FDR parameters were clearly and actively recorded. The entire CVR tape was transcribed and the transcript, both in English and Japanese, was compiled by the investigation team.

1.12 Wreckage and Impact Information

When the aircraft reached the airport drainage ditch, 12 m across, after overshooting the runway and crossing the stopway, its lower part of the nose section of the fuselage and nose gear first hit the northern edge of the ditch, 218 m north of the end of the runway, 34 m to the right of the extended runway centre line and at an elevation of 2.47 m. After the initial impact, the aircraft kept on moving which led to successive strikes on the same area of the ditch edge with its engines Nos. 2, 3 and 1 and main gears. It finally stopped over the ditch with the main gears in the ditch, nose on a heading of 15 degrees and the lower part of the middle and aft sections of the fuselage touching the ground.

Major Damages:

a) The fuselage nose lower section was broken, the lower part of the fuselage structure was severely deformed and the skin badly torn.

b) The nose gear down lock link assembly was broken.

c) The pylons of engines Nos. 2, 3 and 1 were broken.

d) A 9 x 10 inch hole was blown by the fragments of the blown-up air bottle near centre wing-fuselage joint at the trailing edge of left wing upper surface.

e) The emergency air brake bottle was found blown up.

f) 13 hydraulic system tubes, 2 emergency air brake system tubes and some components were damaged.

1.13 Rescue and Survival

Emergency rescue measures were taken right after the accident. The airport crash crew, fire trucks, ambulances and buses rushed to the scene without delay. The evacuation and rescue of the passengers and crew members were carried out efficiently and all injured passengers and crew members were sent to hospital for examination and proper treatment.

2. ANALYSIS

The flight crew had been trained and properly certificated and they were qualified for the flight. There was no evidence of medical or psychological problems that might have affected their performances.

The emergency air brake bottle exploded and damaged 13 hydraulic system tubes and 2 emergency air brake system tubes nearby, some of which lead to brakes and flaps, causing the failure of the flap actuating hydraulic system and normal and emergency wheel braking function.

Upon examination by the respective inspection departments concerned in China and Japan, it was found that the cause of the explosion of the emergency air brake bottle under normal pressure was several cracks resulting from stress corrosion on the inner surface of the air bottle, which had combined together along circumferential direction into one slender crack thus causing reduction of the strength of the bottle.

3. CONCLUSIONS

The Aircraft Accident Investigation Team of the General Administration of Civil Aviation of China determines that the main cause for this accident was the explosion of the air brake bottle damaging 13 hydraulic system tubes and 2 emergency air brake system tubes, some of which resulted in the failure of extension of flaps and loss of normal as well as emergency wheel braking, thus increasing the roll after touchdown distance to a value greater than the available runway and stopway length. These factors prevented the captain from stopping the aircraft within the runway and stopway confines.

ICAO Note: Names of personnel were deleted. The Attachments were not reproduced.

ICAO Ref.: 304/82