



PAKISTAN CIVIL AVIATION AUTHORITY
(SAFETY & INVESTIGATION BOARD)



**SERIOUS INCIDENT (WEATHER TURBULENCE) TO
M/S. SHAHEEN AIR BOEING – 737-200, REG. NO. AP-BJI
ON 5TH DECEMBER 2008
(SECTOR KARACHI – DUBAI)**

FINAL REPORT

SERIOUS INCIDENT TO SHAHEEN AIR BOEING-737-200, REG. NO. AP-BJI ON 5-12-2008 (SECTOR KARACHI – DUBAI)

Authority: Director General Civil Aviation Authority Memorandum No.
HQCAA/1901/328/SIB dated 16 December 2008 (**Appendix 'A'**).

SYNOPSIS

On 5th December, 2008 SAI Flt No NL-738 was on schedule flight on sector KHI – DXB. Actual weather and the forecast for Karachi and southern / central parts indicated probability of thunderstorm and rain. After about 15 minutes from take off, Karachi Approach gave direct routing and climb clearance to requested altitude in Pakistan airspace and asked NL-738 to change over to Karachi-West frequency 128.3. During this process, the cockpit crew picked up active weather cell in front / en-route. Flight entered into active weather cell at FL 220 and was struck with lightening and hail. After exiting active weather area, heavy icing on the aircraft wing was observed. During rest of the flight abnormal hissing noise was observed in the cabin, however, flight crew decided to continue to the destination Dubai. Post flight inspection revealed damage to Wing Leading Edge, Leading Edge Slots, fairing and lights.

1. FACTUAL INFORMATION

- 1.1 **History of the Flight:** Karachi – Dubai.
- 1.2 **Maintenance History:** Last 30 days history of defects did not document any significant pending defect. However, detailed trend on weather radar and TCAS is discussed under separate heading of analysis.
- 1.3 **Injuries to Persons:** Nil.
- 1.4 **Damage to Aircraft:** The aircraft sustained dents on both Wing Leading Edge surfaces and missing / broken lights. Details and Photographs at **Appendix 'B'**.
- 1.5 **Crew Information:**

Detailed information of following crew members is attached at **Appendix 'C'**.

1.5.1 **Capt. Amlar** (Pilot Flying) **Indonesian ATPL holder** validated by PCAA

1.5.2 **First Officer Zulfiqar H Khan** (Pilot Monitoring).

1.6 **Aircraft Information:** Manufactured Boeing Company, Aircraft Reg. No. **AP-BJI**.

2. ANALYSIS

2.1 **Weather Information:** Weather information received on ground indicated possible thunderstorm and rain for Karachi and southern / central parts of Pakistan (**Appendix 'D'**). Current information on prevailing weather was available through visual contact where lightening could be seen from appreciable distance.

2.2 **Flight Data Recorder / CVR:** DFDR and CVR were sent for strip examination and analysis. SAI does not have in-country arrangements for down loading the information and data for CVR and DFDR. It was also learnt that there is no standing agreement for down loading of these components, which is necessary for accidents / incidents investigations as well as the **FDA Programme**. Hence the information from these components could not be retrieved. It is assessed that DFDR might not have been of significant use in this particular incident; and the CVR having limitation of 30 minutes, would not have had any information on the occurrence as the flight continued to Dubai for more than 30 minutes after the weather incursion. However regardless of these assumptions, an AOC holder should have reasonable quick arrangements to download CVRs and DFDRs on board its fleet.

2.3 **ATC Tape extract:** Radio transmission / reception of AP-BJI was intermittent on ground while at parking location, however, it became satisfactory during taxi, take off, departure and climb out. While approaching active weather area, there could be repeated attempts from flight crew to seek heading change from Karachi West and Approach, but clear contact could not be established. It was either due to the very close proximity of the active weather cell (excessive moisture), the transmission remained weaker and unclear as analyzes from the tape extract (**Appendix 'E'**) due to which two-way radio contact between aircraft and Karachi / West could not be established. The other reason for unclear R/T contact between aircraft and Karachi West in the area of concerned could have been due to persistent problem of weak / intermittent R/T as it is an observation of number of aircrew.

- 2.4 **Aircrew Actions:** Weather avoidance is greatly dependant on meteorological knowledge of aircrew, weather forecast and information on current weather conditions through airborne weather radar. Often, visual cue / contact with weather activity do provide significant information on prevalent weather. In this particular case, aircrew was well aware of the presence of active weather as it is evident from their statements and calls to Karachi-West. Despite adequate information about prevalent weather conditions, there appeared to be a hesitation by pilot flying to positively alter the course of aircraft and to avoid active weather cell. Most probable reasons for taking inadequate action could have been poor performance of weather radar and / or under assessment of the severity of weather being encountered. Moreover, if the Weather Radar was serviceable, aircrew could not employ it to effectively circumnavigate / avoid the weather affected area. Whereas, the only avoidance turn was initiated at 10 NM from the nucleus of the active weather cell which proved to be insufficient and extremely late.
- 2.5 **History of weather encounter by AP-BJI.** During the course of investigations it was revealed that this particular aircraft (AP-BJI) has a history of getting into active weather cells at different occasions / different routes. Only as per the reported occurrences, AP-BJI entered active weather thrice in just five months (**Appendix 'F'**) and sustained various levels of damages.
- 2.6 **Reliability of airborne Weather Radar / TCAS.** Weather radar of AP-BJI had a typical un-serviceability by which it did not possibly display weather picture especially in banks and turbulent / disturbed flight conditions despite different selections (Stab – On/Off) on Radar / TCAS control panel. The fact was also witnessed during inspection flights. Aircrew is therefore denied of actual weather picture. While analyzing the trend of discrepancies / snags pertaining to airborne weather radar during last six months, it was revealed that AP-BJI had 36 weather radar related reported defects / entries on the performance of weather radar alone (**Appendix 'G'**). At times, there are repeated entries to this effect also. Additionally, the reliability of TCAS was also observed not fully reliable as there were 11 reported defects / entries on the performance of TCAS in last six months. Weather Radar and TCAS onboard AP-BJI were also observed to be unserviceable during inspection flights.
- 2.7 **Validation / Recurrent Training of Aircrew.** Training of aircrew specially those holding foreign licenses is conducted as per plan attached as **Appendix 'H'**. In case

of Pilot Flying (Capt Amlar), the required number of observation flights and CAA inspectors' flight check were not undertaken **Appendix 'J'**.

- 2.8 **Accident investigation support by Operator:** Information about the occurrence was delayed by six days (due to Eid holidays); however, all out support and help from operator was extended thereafter.

2.9 **OBSERVATIONS**

- 2.9.1 VHF 128.3 is observed to be a weak communication link between Karachi West and aircraft in that particular area/zone.
- 2.9.2 The aircraft was held up by safety officer of UAE (Dubai) for three days i.e. from 6th to 8th December; SAI was not permitted to work on the aircraft. This important information was not passed to concerned departments of Pak CAA.
- 2.9.3 First information about the occurrence was communicated to SIB after six days as there were five holidays on account of religious festival "Eid-ul-Azha" following the occurrence. No telephonic message was passed on to SIB (**Appendix 'K' & 'L'**).
- 2.9.4 SAI repaired the aircraft and subsequently ferried it to Pakistan without obtaining prior clearance from CAA (**Appendix 'M'**).
- 2.9.5 SAI Engineering was not aware of the fact that an investigation by SIB was in progress. It indicates lack of inter-communication and coordination within Corporate Safety and Engineering Departments of SAI.
- 2.7.6 Flight Data Analysis Programme is not being satisfactorily implemented in SAI.
- 2.7.7 TCAS on board the aircraft indicates low serviceability and reliability.
- 2.7.8 Aircrew with foreign ATPLs are not subjected to any check flight either by CAA Inspectors or type DCP-A prior to undertaking passenger flight.
- 2.10 **Conclusion:** Though, airborne weather radar of this aircraft has a history of unreliability and repeated defects, there was adequate information available on approaching weather en-route. Pilot-in-Command delayed the decision to avoid

active weather cell despite knowing the presence of deteriorating weather information. Pilot flying (Capt Amlar) displayed inadequate airmanship and undesirable knowledge of meteorology.

3. FINDINGS

3.1 Aircrew had adequate rest before the flight.

3.2 Aircrew had valid licenses and simulator training.

3.3 Capt Amlar Gata Thuarin was the Pilot Flying, and FO Zulfiqar H Khan was the Pilot Monitoring.

3.4 There was no known un-serviceability on aircraft communication system, yet satisfactory VHF contact on 128.3 could not be established with Karachi-West or Approach.

3.5 SAI has not been able to maintain weather radar on board AP-BJI in reliable conditions, as weather radar had number of recorded discrepancies on the performance of Weather Radar. Weather radar on board could not be employed optimally to avoid weather affected area.

3.6 CVR could not be analyzed due to maximum 30 minutes recording time limitation of CVR system on board SAI and the flight flew more than 30 minutes after the weather encounter.

3.7 Ample information (forecast & visual cues) on ground and in air was available to the crew on approaching weather activity en-route. Active weather was present en-route almost as per the forecast and was visible at night.

3.8 There was no significant conflicting traffic as NL-738 was given direct routing and climbs clearances after takeoff.

3.9 Pilot in Command failed to interpret information regarding the presence of active weather and its severity.

3.10 Aircrew preferred establishing radio contact first than to avoid weather affected area. Whereas, VHF 128.3 with Karachi West remained weaker and unclear.

3.11 Pilot flying did not pay attention to the advice of first officer to continue altering the course beyond 30 degrees as it was already a late avoidance turn.

3.12 Only half hearted, extremely late and minor alteration in the course was made by flight crew, which was not adequate.

Causes of Occurrence

Primary: Lack of knowledge, airmanship and poor handling of situation by pilot in command (Capt. Amlar).

Secondary: Reduced reliability of airborne weather radar of AP-BJI in different modes of operation in air.

Finalization

Human factor – Avoidable – Aircrew

Organization factor – Avoidable – SAI

4. SAFETY RECOMMENDATIONS

4.1 SAI needs to emphasize more on its crew in general and foreign crew in particular during recurrent training on weather avoidance and possible hazards of weather.

4.2 Directorate of Flight Standards to ensure such training for the crew is effectively conducted and documented.

4.3 SAI needs to maintain its Airborne Weather Radars and TCAS installed on its fleet in fully serviceable and reliable condition as per CAA approved MEL.

4.4 Directorate of Airworthiness and Flight Standards to ensure serviceability of Weather Radars and TCAS on board the aircraft as per MEL.

4.5 Directorate of Flight Standards to ensure formulation / availability of relevant SOPs and conduct of check flights of foreign crew either by CAA Inspector or type DCP-A before clearing them for passenger flights.

4.6 ANS Directorate needs to study the observation of weak communication link with aircraft on VHF 128.3 for improvement / new measures.

4.7 SAI need to implement Flight Data Analysis Programme as per the dictates of SMS.

4.8 Flight Safety and Operations of SAI along with DFS to carry out a study to identify foreign aircrew members likely to perform poorly while handling emergency situation, and take specific measures to ensure their operational fitness.

4.9 SAI to review its operations / maintenance procedures to ensure necessary clearances are obtained from Pakistan CAA before undertaking repair and ferry flights of the aircraft under investigation.

4.10 Occurrence reports be communicated strictly as per the procedures without delay and be confirmed on designated telephone / cell phones specially during holidays and weekends.