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PAKISTAN CIVIL AVIATION AUTHORITY
Safety Investigation Board



INVESTIGATION REPORT

SERIOUS INCIDENT OF LANDING ON WRONG RUNWAY
BY PIA ATR42, PK-1592, AP-BHJ
ON 18 MAY 2011, AT BHIT

INVESTIGATION REPORT : SERIOUS INCIDENT OF LANDING ON WRONG RUNWAY
PIAC FLIGHT PK-1592, ATR42, REG. NO. AP-BHJ, KARACHI TO SEHWAN,
LANDED AT BHIT AIRFIELD ON 18 MAY 2011

SYNOPSIS: On 18th May 2011, PIAC Chartered Flight No. PK-1592, ATR 42-500 Aircraft, was scheduled from Karachi - Sehwan - Islamabad. PK-1592 took off from Karachi, and while proceeding to Sehwan, at point "Nawabshah" the flight was to turn left for Sehwan. However, it turned left but in the direction of Bhit, and landed at wrong runway "Bhit Airfield" at 1750 hrs. Later, at 1855 hrs, the flight took off from Bhit for Sehwan, and then onwards proceeded to Islamabad.

The investigation in to the serious Incident of "Runway Incursion" was undertaken vide Director General Civil Aviation Authority Memorandum No. HQCAA/1901/345/SIB/2707 dated 23 May 2011.

1. FACTUAL INFORMATION

1.1 **History of the Flight:** Chartered flight by ENI Pakistan from Karachi – Sehwan Sharif-Islamabad, PK-1592, Registration No: AP-BHJ,

1.2 **Injuries to Persons:** Nil.

1.3 **Damage to Aircraft:** No damage reported.

1.4 **Personal Information:** Total POB.07. Details as follows:

1.4.1 **Captain Tariq Samad, (PIC & PF),**

1.4.1.1 Total Flying Hours :11681 Hrs

1.4.1.2 Flying Hours as Captain ATR :1750 Hrs

1.4.1.3 Flying Hours as Captain all aircraft :2500 Hrs

1.4.2 **First Officer Amir Siddiq, (PM)**

1.4.2.1 Total Flying Hours :400 Hrs

1.4.2.2 Flying Hours as First Officer ATR :70 Hrs (+50 hrs U/S)

1.4.2.3 Flying Hours as FO all aircraft :Same as on ATR

1.4.3 **Operators' crewmembers :** 05

1.4.3.1 Flight Engineer : 01

1.4.3.2 Trim Sheet Representative : 01

1.4.3.3 ASF Guard : 01

1.4.3.4 Cabin Crew (Air Hostess) : 02

1.5 **Aircraft Information:**

Aircraft : ATR-42-500

Registration : AP-BHJ

Flight Hours : 10440:20

Landings : 10236

1.6 **Meteorological Information:**

1.6.1 **Sehwan Airport:** S/W 170/06 Kts, Visibility 07 Km, QNH 1006, Temp 47 C.

1.6.2 **Bhit Airfield:** S/W 210/15 Kts, Visibility 05 Km, sky clear, Temp 40 C.

1.7 **Communication:** PK-1592 experienced no difficulty in establishing communication with Karachi radar and Sehwan Tower. Frequencies detail is as follows:

1.7.1 Sehwan Tower Frequency 120.9 MHz.

1.7.2 Bhit Air Field Tower Frequency 122.5 MHz

1.8 Aerodrome Information:

1.8.1 **Sehwan Airport:** Standing on the west bank of the river Indus, the town of Sehwan of great antiquity is known for Sufi saint Hazrat Lal Shahbaz Qalandar who lived here in 13th century. The famous mausoleum of Hazrat Shahbaz Qalandar attracts hundreds of thousands of faithful every year. PIAC used to operate schedule flights to Sehwan airport. Visitors to tomb of Hazrat Shahbaz Qalandar mostly prefer to travel by road as they come from nearby towns and localities. The passenger turn out at the airport generally remained meager throughout the year, due to which the airport was scaled down on 16th April, 2001. CAA has withdrawn all the facilities from the airport except VHF frequency of control tower. In scale down status, the airport is administratively looked after by a CAA airport in-charge who also does radio communication with the non-schedule flights. From Sehwan airport, employees of Bhp Billiton Petroleum utilize chartered flights to other parts of the country.

1.8.2 **Bhp Billiton Petroleum Company:** Close to Sehwan, 12 KM West of DADU, a natural gas field at Zamzama was explored by an Australian company BHP Billiton which is working in Pakistan since 1994. The company discovered Zamzama gas field in 1995 which was its first commercial project in Pakistan. Its prospective buyers are Sui Southern and Sui Northern Gas companies. Bhp has contracted PIAC for its chartered flights to these airfields including Sehwan. Earlier, before the onset of floods during recent years, the flights used to operate directly to Zamzama.

1.8.3 Sehwan Airfield Layout:

Sehwan Runway	17/35
Co-ordinates	N26 28.24 E 67 43.02
Runway Length	6000 feet
Runway Width	100 feet
Runway Surface	Bitumen Black Top
Night Landing Facilities	Nil
PCN	13/F/C/Y/T
Parking	02 ATR-500
Fire Services	At Operator's Arrangement.
Type of Operation	VMC/VFR
Location.	39NM/ Bearing 293 deg from NSH.

1.8.4 **Bhit Airfield:** The airfield is located at 48NM West of Nawabshah. It is a private airfield operated by ENI Pakistan Limited. ENI is one of the largest companies in the world operating in oil and gas, power generation, petrochemicals and oilfield services. The company is the operator of Bhit air field. The company has been operating in Pakistan since 2000 at Zamzama and Kadanwari gas fields. Kadanwari gas field is situated at 55NM on a bearing of 037 degrees.

1.8.5 Bhit Airfield Layout:

Runway	17/35
Co-ordinates	N26 11.00 E 67 30.00
Runway Length	5479 feet
Runway Width	99 feet
Runway Surface	Bitumen Black Top
Night Landing Facilities	Available for landing for medical evacuation purposes
Elevation	474 feet
Location	48 NM on Bearing 272 degrees from NSH.

1.9 Karachi Area Control Center:

- 1.9.1 Karachi Area Control Center (ACC) is equipped with AIRCON 2100 ATM System which is one of the advanced automated Air Traffic Control Management System meeting the International Civil Aviation Organization (ICAO) standards and recommended practices in Air Traffic Management. AIRCON 2100 enhances the safety of the flights by providing the controllers with information of air movements from radars, flight plans, direction finders and air-ground data-link messages (ADS/CPDLC). It also provides a high degree of automation of the control tasks, with flight plan management tools, automatic flight tracking system, automatic coordination between control position and control centres. The safety nets provided by the system are Medium Term Conflict Detection (MTCD) for detection of potential conflicts in standard separations of Flight Plans, Minimum Safe Altitude Warning (MSAW) for prediction and violation of altitude separation between aircraft and terrain, Short Term Conflict Alert (STCA) for prediction and violation of separation between aircraft in standard and RVSM (Reduced Vertical Separation Minimum) airspaces, Area Proximity Warning (APW) for prediction and violation of incursion by aircraft into active protected area, Cleared Flight Level Conformance Alarms (CLAM), and Route Adherence Monitoring (RAM). These safety nets warn the controllers of the potential danger if the situation so arises.
- 1.9.2 In Karachi ACC there are three sectors named as sector East, West and North. Sehwan and Bhit air fields are located at North North East of Karachi and fall within the area of jurisdiction of Sector East of Karachi ACC. Radar scope has the facility to depict both of the air fields for air traffic controllers. .
- 1.10 **Aids to Navigation:** No Electronic NAV aids are available at Sehwan, whereas Bhit airfield is equipped with NDB 425MHz.
- 1.11 **PIAC Flight Operations Manual (Special Flights).** "The CAA does not lay down any physical qualification requirements for pilots operating aircraft engaged in Charter Operations. However, adequate knowledge of the route to be flown, the main and the alternate aerodromes which are to be used, etc, as specified in CARs is required. Compliance will normally be achieved by providing the Captain with route briefing material which will cover any operational material not included in Company operations Manual. Route briefing material will be approved by the Chief Pilot Training or his delegate". (Para 22.5.3 Charter Operations, FOM Part-A, Chapter 22, page 10)
- 1.12 **Sequence of Events (Time Ref : Local):**
- | | |
|-----------|---|
| 16:57 hrs | PK-1592 started up at Karachi for destination Sehwan. |
| 17:01 hrs | Karachi Tower passed ATC Clearance to PK-1592 for destination Sehwan. Pilot read back destination as Nawabshah. |
| 17:08 hrs | PK-1592 was airborne from Karachi RWY-25L. The aircraft climbing to FL150 passed ETA Sehwan 17:49hrs. |
| 17:12 hrs | PK-1592 came in contact with radar and reported destination Bhit. |
| 17:31hrs | Karachi Radar changed PK-1592 to Nawabshah Tower. |
| 17:29 hrs | PK-1592 Requested Weather from Sehwan. |
| 17:30 hrs | Aircraft was approaching OPNH. Weather Information was passed to Pk-1592 by Sehwan. |
| 17:32 hrs | PK-1592 checked status of Sehwan NDB from Sehwan. The aircraft was informed about the non-availability of Sehwan NDB. |

17:37 hrs	PK-1592 again established contact with Sehwan. The aircraft was given descent to circuit altitude by Sehwan and was asked to report field insight. The aircraft acknowledged the descent and informed Sehwan that they will call Left Base RWY-17.
17:47 hrs	PK-1592 reported Left Base RWY-17 to Sehwan.
17:49 hrs	PK-1592 reported long finals RWY-17. The aircraft was issued landing clearance by Sehwan.
17:50 hrs	Sehwan checked position of PK-1592 and informed the aircraft that Sehwan has no visual contact. No response was received from aircraft.
17:52 hrs	Sehwan again checked the position of the aircraft. No response was received from aircraft.
18:00 hrs	Sehwan informed Karachi ACC about negative contact with PK-1592. Search and Rescue actions were initiated by Karachi ACC.
18:17 hrs	ATA PK-1592 at Bhit Airfield.
18:21 hrs	Captain of PK-1592 informed Karachi radar on mobile phone that they have landed at Bhit at 1817 hrs.
18:30 hrs	O/C Zamzama Gas Plant of ENI Company, operator of the Bhit airfield, informed Sehwan that PK-1592 has landed at Bhit airfield.
18:36 hrs	PK-1592 got airborne (ATD) from Bhit for destination Sehwan.
18:40 hrs	PK-1592 again established contact with Sehwan.
18:42 hrs	PK-1592 reported finals RWY-17. The aircraft was given landing clearance.
18:46 hrs	PK-1592 landed (ATA) at Sehwan.
18:52 hrs	PK-1592 requested start up from Sehwan for destination Islamabad.
18:55 hrs	PK-1592 was airborne (ATD) from Sehwan.
18:59 hrs	While proceeding towards Islamabad, PK-1592 reported in contact with Karachi radar.
19:10 hrs	The time for Sun Set at Sehwan.
19:35 hrs	The evening twilight / last light time at Sehwan.

2. ANALYSIS

- 2.1 Automation in flying, especially in Flight Management has brought great comforts to the flight crew and as well as to the passengers, but at the same time the blunders due to incorrect application of automation is well known facts. Slight error in providing input and its optimum utilization can keep the crew totally unaware of potential occurrence, as well as risk to safety of the aircraft. ATR aircraft is equipped with similar modern FMS and Glass Cockpit arrangement, demanding higher level of understanding and flight preparation commensurate with its latest ergonomics and multiple functions.

- 2.2 The First Officer was not scheduled for this flight, until it was only a night before that FO was informed of taking this flight in the morning. The delayed information did not facilitate as well as allow the officer to adequately prepare himself for the flight. It was the first flight of the Captain of PK-1592 as well as the FO to Sehwan.
- 2.3 There are number of private airfields / scaled down airfields which are not included in the database FMS including Sehwan and Bhit. Had the airfield data for Sehwan was available in the GNSS data base of the aircraft, the manual feeding could have been avoided.
- 2.4 As the coordinates of Sehwan were not available in the GNSS data base of the aircraft the flight crew had to feed the coordinates manually. The aircrew wrongly fed the coordinates of Bhit airfield as destination in the GNSS which resulted in landing on Bhit, which was a wrong destination. Had the airfield data for desired airfield was correctly fed, landing on wrong runway could have not taken place.
- 2.5 At 17:01 hrs, when Karachi Tower passed ATC clearance to PK-1592 for destination Sehwan, the pilot read back destination as Nawabshah. This was the first indication of the preoccupied state of mind of the pilot. Karachi Tower did not correct the pilot for wrong read back. It is the responsibility of ATC to listen to the read backs of all the clearances and correct the pilot if the read backs are wrong.
- 2.6 After departure at 17:12 hrs, Pk-1592 came in contact with Karachi radar and reported destination as Bhit. This was the second time that pilot did not mention correct destination. It further strengthens lack of clarity about the destination. Radar either, did not correct the pilot for reporting wrong destination. Had ATC at this stage corrected the pilot, it would have averted the situation.
- 2.7 Both the flight crew members i.e. Captain and the First Officer were flying to Sehwan for the first time. Captain has stated that no route training was given to the flight crew for taking first flight to Sehwan. As per SOP with the operator the route qualification for Sehwan was not required.
- 2.8 As per the SOP, whenever co-ordinates are to be fed manually, one of the flight crew reads the co-ordinate, while the other keys them in the GNSS. In this manner the co-ordinates are checked which eliminates the possibility of error.
- 2.9 After passing Nawabshah the Captain of the flight fed the coordinates of the destination as a reference point. The Captain fed the coordinates of Bhit instead of Sehwan manually. Had the First officer, the pilot monitoring, challenged the Captain for feeding wrong coordinates in GNSS as well as flying wrong heading for destination Sehwan, the incident could have been avoided.
- 2.10 Besides, altogether different topography around both the airfields, from Nawabshah airfield, Sehwan is situated at 293 degrees 39 NM, whereas, Bhit airfield is located at 267 degrees 48 NM from Nawabshah. There is 26 degrees of heading difference between Sehwan and Bhit from Nawabshah. Incidentally runway designators (RWY-17/35) of Sehwan and Bhit are same.
- 2.11 After the aircraft passed over Nawabshah the track of the aircraft on radar was heading towards Bhit which was monitored by the Radar. Had the Radar appreciated wrong track and pointed out to the flight crew, the incident could have been averted.
- 2.12 PK-1592 from Karachi to Sehwan was to be a VFR flight after passing Nawabshah. However after Nawabshah the VOR Radial for Sehwan was to be followed. Instead the flight crew decided to follow FMS heading for destination; whereas the destination was fed wrongly.
- 2.13 The aircraft landed on a wrong destination airfield beyond the operation hours of Bhit. Though the Captain of the flight stated that at no stage safety of the aircraft was jeopardized,

yet landing on an air field without any information and clearance can be disastrous. Field Manager, Bhit stated, that on the request of the Captain, he informed about the general location of "Sehwan" and "Grid Reference" of Sehwan airport, also indicating less than desired level of flight preparedness of the flightcrew.

- 2.14 Night is defined as "The hours between the end of evening civil twilight and the beginning of the morning civil twilight or such other period between sunset and sunrise as may be prescribed by the appropriate authority".
- 2.15 After PK-1592 had landed at the wrong airfield Bhit, the flight to Sehwan and onward to Islamabad was allowed by the operator without seeking approval of CAA. The hurriedness in taking off from Bhit, and then leaving Sehwan for Islamabad at the earliest was to avoid night stop at Sehwan; the airfield without night facilities.
- 2.16 As the aircraft had landed on a wrong airfield due to the perceived error of judgement on the part of the aircrew, necessitated thorough medical assessment to ascertain the fitness of the flight crew. Allowing the aircrew to continue further operation without ascertaining the medical fitness of the flight crew can be disastrous for aircraft and its occupants.

3. **CONCLUSION:** The flight crew of PK-1592 was operating flight to Sehwan for the first time and the flight preparation was lacking and has direct contribution towards causation of this occurrence. Although the route segment between Nawabshah to Sehwan was VFR, the flight crew attempted tracking on GNSS. The flight crew failed to feed correct coordinates for desired destination (Sehwan) and did not adhere to the SOP of flying VFR from Nawabshah to Sehwan, which ultimately resulted in landing on a wrong airfield. CRM and flightcrew training on flight preparation, therefore appear to be the weak areas. The ATS Radar monitoring also did not play its required role to avert the situation.

- 3.1 **Cause.** Inadequate flight preparation as well as violation of SOPs by flight crew and ineffective employment of CRM caused the occurrence. Whereas, ineffective monitoring of flight and its significant deviation from planed route by ATS contributed towards the causation of the occurrence.

4. FINDINGS

- 4.1 Flight crew was informed at 2200 hrs night to operate this flight next day, and did not adequately prepared the flight, and appeared to be confused about the destination.
- 4.2 There did not exist SOP for Charter flights to Private airfields Sehwan.
- 4.3 Both the flight crew were not sure of their destination, and also had no clue of Sehwan (destination airfield) and its location.
- 4.4 Sehwan as well as Bhit airfields are not included in database of GNSS.
- 4.5 Captain of the flight fed the co-ordinates of Bhit, instead of Sehwan as destination in the GNSS system.
- 4.6 Pilot monitoring (F/O) did not challenge the captain for feeding the wrong coordinates nor did he challenge the Captain for flying wrong heading for Sehwan destination and hence CRM failure was portrayed.
- 4.7 Contrary to the company Charter procedures of undertaking VFR operation from Nawabshah to Sehwan, the flight crew continued GNSS tracking from Nawabshah to Sehwan. FO remained unaware of what was happening.

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- 4.8 Sehwan airfield is a Private airfield, and the Air Traffic Controller positioned at Sehwan cleared PK-1592 for landing at Sehwan without having established visual contact with the aircraft. In fact, the aircraft was on Finals for Bhit.
- 4.9 After the aircraft landed on wrong destination Bhit, the Chief pilot ATR instructed the Captain to take off again and proceed to Sehwan and further to Islamabad. Operator wrongly allowed the same set of flight crew who were engaged in error of judgement to continue the flight for further destinations, without ascertaining the exact cause of the occurrence.
- 4.10 The hurriedness in leaving Sehwan at the earliest was to avoid night stop at Sehwan; the airfield without night facilities. Aircraft, however, did not violate the day light hours limit at Sehwan.
- 4.11 First Officer, a qualified cockpit resource remained of no assistance.
- 4.12 Karachi Tower did not check the pilot for repeatedly reading back wrong destination after issuance of the ATC Clearance.
- 4.13 Karachi radar did not monitor and check pilot for the flying the wrong track after passing Nawabshah.

5. SAFETY RECOMMENDATIONS. In addition to the corrective actions undertaken by the Operator vide their letter CS/2011/01/1063, dated 27 May 2011, following Safety Recommendations are made:

- 5.1 Adherence of existing SOPs and flight preparation be re-emphasised to all aircrew. Whereas, detailed SOP for Charter Operations for each specific airfield separately be developed at the earliest possible time frame.
- 5.2 All aircrew need to be educated on the very purpose and spirit of CRM, and when & how to employ it.
- 5.3 Air Traffic Controllers to be trained on ensuring correct and complete read backs of the ATC clearances, correcting the flight crew for giving wrong information, and monitoring of the radar tracks of aircraft as per the flight plan.
- 5.4 Route familiarization of the flight crew to be emphasized in aircrew training. SOP for scheduling of the flight crew unfamiliar with the destination / routes needs to be reviewed for providing better understanding of Charter flights to uncommon airfields.
- 5.5 CAA to include all such Private airfields in AIP. Whereas, Operators to make arrangements for aircraft GNSS data base with updated information of all the required destinations.
- 5.6 After the serious incidents such as this, the flight crew is not be allowed to continue further operation the Operator unless their fitness has been determined verified by the CAA.