

FINAL INVESTIGATION REPORT



SERIOUS INCIDENT OF M/S PIAC FLIGHT PK762, SECTOR
JED – KHI, B-777, AIRCRAFT REG NO. AP-BMS ON
6TH MARCH, 2018

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Synopsis

The serious incident was reported through Voluntary Reporting System (**Appendix 'A'**) of Safety & Quality Management System (SQMS) of Pakistan CAA at JIAP, Karachi. Later on the Operator, M/s Pakistan International Airlines (PIAC) initiated Mandatory Occurrence Report (MOR) (**Appendix 'B'**). Aviation Division, Government of Pakistan issued Memorandum vide letter No. HQCAA/1901/411/SIB dated 7th May, 2018 (**Appendix 'C'**) and investigation was conducted by SIB, Pakistan.

M/s PIAC B-777, while performing Flight PK762 on 6th March, 2018 from Jeddah to Karachi, was advised by the ATC to expect ILS Approach for RWY 25L at Karachi. Approach (Radar) Control cleared the flight for ILS RWY 25L. ATC Tower also gave clearance to PK762 to land on RWY25L. The aircraft, however, landed on RWY 25R. After landing, the aircraft cleared runway at the end and taxied to the gate. The incident was neither reported by the cockpit crew nor by ATC.

1. FACTUAL INFORMATION

- 1.1 **History of the Flight.** On 6th March, 2018, M/s PIAC Flight PK762 Boeing 777 aircraft Reg. No. AP-BMS from Jeddah to Karachi was given clearance on Standard Terminal Arrival Route (STAR) LOTAT 2A and to expect vectoring for ILS RWY 25L. Subsequently, Approach Control used runway designator 25L five (05) times while issuing different clearances for vectoring and / or capturing of ILS approach. All were acknowledged by the pilot as RWY 25L. Tower controller, even after being reported by the aircraft that she was established ILS RWY 25L, was in doubt of aircraft alignment to the given runway, reconfirmed from the pilot who again asserted as "fully established on ILS RWY 25L" but landed on RWY 25R.
- 1.2 **Injuries to Persons.** There were no injuries to any person during the incident.
- 1.3 **Damage to Aircraft.** There was no damage to the aircraft.
- 1.4 **Other Damages.** None.
- 1.5 **Personnel Information.** The cockpit crew was qualified for their respective assignments and held medical fitness. Their details are mentioned below :-

Captain

Handwritten signature

- Total Flying Experience : 12863 Hrs
- Total on Type Hrs : 541 Hrs

First Officer

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- Total Flying Experience : 3829 Hrs
- Total On Type Hrs : 1356 Hrs

- 1.6 **Meteorological Information.** On 6th March, 2018 at the time of occurrence the weather prevailing at JIAP, Karachi is appended below :-

Outlook	Visibility	Clouds	Wind	Temp	QNH
Clear	7 Km	NSC 30/03	250 ⁰ - 05 Kts	30/03	1012 hPa

- 1.7 **Aids to Navigation.** B777 AP-BMS aircraft was equipped with serviceable ADF, VOR / DME, ILS and FMC / GPS equipment for the conduct of flight operations. All the ground equipment installed at Karachi related to ADF, VOR / DME and ILS was found serviceable at the time of occurrence.
- 1.8 **Communications.** B777 AP-BMS aircraft was equipped with UHF and VHF sets for radio contact with all concerned / relevant agencies during the conduct of flight.
- 1.9 **Aerodrome Information.** The JIAP, Karachi Standard Terminal Arrival Route (STAR) LOTAT 2A and detailed aerodrome data is appended below :-

AIP
PAKISTAN

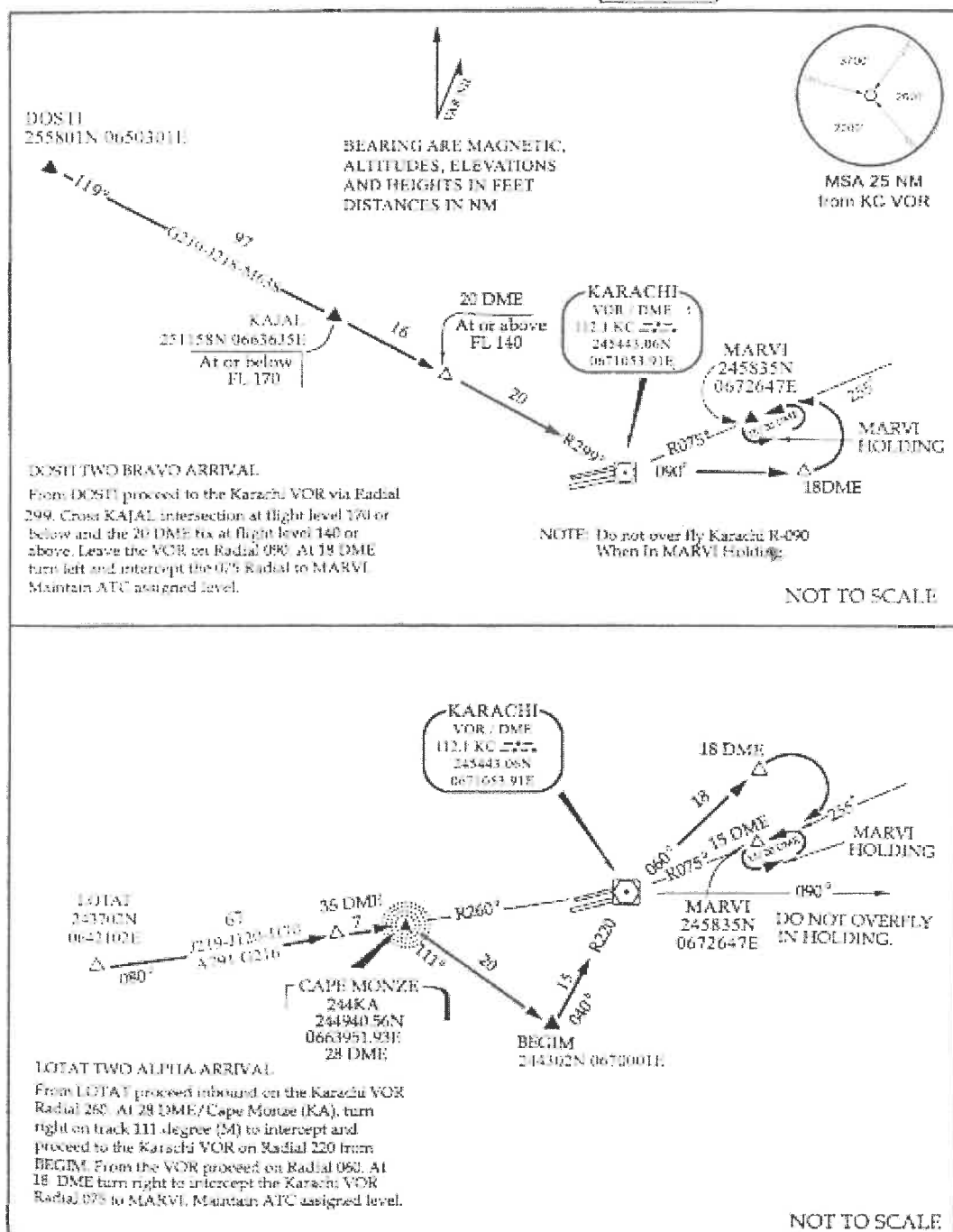
AD2. OPRC-31
01 JUL 15

STANDARD ARRIVAL CHART
INSTRUMENT (STAR) - ICAO

TRANS LEVEL FL 50.
TRANS ALT 3000'

TWR	118.3
APP	118.8
ATIS	125.5
	121.3
	126.7

KARACHI/Jinnah Int'l
DOSTI 2B
LOTAT 2A



Civil Aviation Authority

AMDT 01/15

OPKC AD 2.12 RUNWAY PHYSICAL CHARACTERISTICS

Designations RWY NR	True bearing	Dimensions of RWY (M)	Strength (PCN) and surface of RWY and SWY	THR coordinates	THR elevation and highest elevation of TDZ of precision APP RWY
1	2	3	4	5	6
07L	074.29	3200 x 45	54'R/C/X/U CONCRETE ACFT upto A310 are permitted	245416.90N 0670851.02E	THR23.50M/77FT
25R	254.29			245444.69N 0671040.84E	THR30.40M/100FT
07R	074.29	3400 x 45	87'R/B/W/T CONCRETE SWY bitumen	245402.15N 0670833.56E	THR21.62M/71FT
25L	254.29			245431.79N 0671030.20E	THR27.25M/89FT

Designations RWY NR	Slope of RWY/SWY	SWY dimension (M)	CWY dimension (M)	Strip dimension (M)	Obstacle Free Zone
7	8	9	10	11	12
07L	0.2% UP	305 x 46	914	3930 x 300	-
25R		305 x 46	580	3930 x 300	
07R	0.168% UP	305 x 45	870x150	4130 x 300	-
25L		301 x 45	483X150	4126 x 300	

* Remarks: RWY07R RESA – 180M X 120M & RESA RWY 25L 150M X 150 M.

OPKC AD 2.13 DECLARED DISTANCES (M)

Designations RWY NR	TORA	ASDA	TODA	LDA	Remarks
1	2	3	4	5	6
07L	3200	3500	4114	3200	-
25R	3200	3505	3780	3200	-
07R	3400	3705	4270	3400	-
25L	3400	3701	3683	3400	-

OPKC AD 2.14 APPROACH AND RUNWAY LIGHTS

Designations RWY NR	APCH LGT type LEN INTST	THRLGT colourW BAR	VASIS (MEH) PAPI	TDZMLGT LEN	RWY Centre line LGT Length, spacing, colour, INTST	RWY EDGE line LGT Length, spacing, colour, INTST	RWY End LGT spacing colourWBAR	SWYLG LEN (M) colour	Remarks
1	2	3	4	5	6	7	8	9	10
07L	SALS LH	GREEN	PAPI Left 3"	-	-	3200 M, 60 M,	RED	-	Strobe LGT
25R	FALS LH	GREEN	PAPI Left 3"	-	-	WHITE LH	RED	-	-
07R	SALS LH 300 M	GREEN	PAPI Both sides 2.91"	-	3400M 30 M white LH	3400 M, 60 M, white LH	RED	-	-
25L	FALS LH 300M	GREEN	PAPI Both sides 2.98"	900 M	Last 900 M alternate white/red	Last 600 M yellow	RED	-	Flashers

- 1.10 **Flight Recorders.** The aircraft was equipped with Cockpit Voice Recorder (CVR) and Flight Data Recorder (FDR). However, **data from recorders could not be recovered and was overwritten due to delayed reporting of the incident by the operator, M/s PIAC.**
- 1.11 **Wreckage and Runway Marks Information.** Not Applicable.
- 1.12 **Medical and Pathological Information.** Due to **delayed reporting of the incident** to SIB, the **blood and urine samples of the Captain & First Officer could not be collected for investigation.**
- 1.13 **Fire.** There was no fire reported by the crew members or observed at the site.
- 1.14 **Survival Aspects.** Not applicable.
- 1.15 **Tests and Research.** Not applicable.
- 1.16 **Organizational and Management Information.** Not applicable.
- 1.17 **Additional Information.**
- 1.17.1 **ATC Tape Extracts.** ATC Tower Tape Extracts (**Appendix 'D'**) were retrieved and utilized during the course of investigation for detailed analysis.

- 1.17.2 **Crew Resource Management (CRM).** At the time of occurrence, the Captain was the Pilot Flying (PF) whereas the First Officer was Pilot Monitoring (PM) and both the cockpit crew had valid CRM certification.
- 1.17.3 **Useful or Effective Investigation Techniques.** Standard investigation techniques were used.

2. ANALYSIS

- 2.1 PK762 was given a Standard Terminal Arrival Route (STAR) LOTAT 2A and later on vectored for ILS approach RWY 25L for landing at JIAP, Karachi.
- 2.2 The cockpit crew acknowledged and read back the clearance for RWY 25L.
- 2.3 However, the crew inserted the wrong runway i.e. RWY 25R in FMC that made the automation to fly the approach procedure for RWY25R against the ATC clearance for RWY 25L. The frequencies for the approach procedure are automatically tuned on runway selection in the FMC and followed by the autopilot.
- 2.4 The wrong runway selection was neither checked by the Captain (PF) nor by the First Officer (PM) at any stage during approach to land procedure, which indicated gross failure of crew resource management.
- 2.5 Entry of wrong runway could have been due to hurry up syndrome because of the following factors which were revealed from the tape extract :-
- 2.5.1 Crew requested RWY 07 as they were running behind the schedule.
- 2.5.2 They requested shorter vectors and high speed below 10,000 feet.
- 2.5.3 Accepted 7 NM finals for landing.
- 2.6 Runway entry is made when initial clearance is given (generally before TOD) as in this case. This could be a "Slip Error" that may have been due to some distraction in the cockpit which is hard to determine in the absence of CVR data.
- 2.7 Slip errors are easily corrected by the crew during the crosscheck procedure, which remained deficient in this case as the telephonic conversation between the Captain and ATC mentions Captain's acceptance that he did not check correct runway in FMC.
- 2.8 The Karachi Approach Radar and ATC Tower could have assisted the pilot in making a judgment about the approach on wrong runway as it is evident in attached radar tracing (**Appendix 'E'**).
- 2.9 As per duty controller at ATC Tower, she was almost sure that the flight was aligned with RWY 25R, should have given go around instructions to PK762. However, the communication between ATC Tower and the cockpit crew indicates that she confined her to obtain confirmation only, instead of issuing clear instructions for initiating a Go-Around. This may be due to lack of clear instructions by the management in such cases.

3. CONCLUSIONS

3.1 Findings

- 3.1.1 PK762 was given Standard Terminal Arrival Route (STAR) LOTAT 2A and later on vectored for ILS Approach RWY 25L for landing at JIAP, Karachi.
- 3.1.2 The cockpit crew acknowledged and read back the clearance for ILS RWY 25L.
- 3.1.3 However, the crew inserted / fed the wrong runway i.e. RWY 25R instead of RWY 25L in FMC that made the automation to fly the approach procedure for RWY 25R contrary to the ATC clearance for RWY 25L.

- 3.1.4 The wrong runway selection was neither checked by the Captain (Pilot Flying) nor by the First Officer (Pilot Monitoring) at any stage during approach to land procedure, which indicated gross failure of crew resource management.
- 3.1.5 Entry of wrong runway could have been due to hurry up syndrome because of the following factors which were revealed from the tape extracts :-
 - 3.1.5.1 Crew requested RWY 07 as they were running behind the schedule.
 - 3.1.5.2 They requested shorter vectors and high speed below 10,000 feet.
 - 3.1.5.3 Accepted 07 NM finals for landing.
- 3.1.6 Runway entry is made when initial clearance is given (generally before TOD) as in this case. This could be a "Slip Error" that may have been due to some distraction in the cockpit which is hard to determine in the absence of CVR data.
- 3.1.7 Slip errors are easily corrected by the crew during the crosscheck procedure, which remained deficient in this case.
- 3.1.8 The Karachi Approach Radar and ATC Tower could have assisted the pilot in making a judgment about the approach on wrong runway which was not done.
- 3.1.9 As per duty controller at ATC Tower, she was quite sure that the flight was aligned with RWY 25R, should have given go around instructions to PK762. However the communication between ATC Tower and the cockpit crew indicated that she confined herself to obtain confirmation only, instead of issuing clear instructions for initiating a Go-Around maneuver.

4. OBSERVATION

- 4.1 RWY 25R is declared for the operations of Airbus A310 and below and is unfit for Boeing B777 operations. Moreover, the last phase of the ILS CAT – I approach is supposed to be completed visually. This indicates complete failure of CRM, continuous distraction in the cockpit and disregard of published procedures.
- 4.2 The Pilot in Command failed timely filing of Mandatory Occurrence Report (MOR) instead the cockpit crew kept requesting ATC for not reporting the matter.
- 4.3 All involved ATC units failed to make proper log-book entries of the incident, none of them reported the incident to RFC / COO, Additional Director ATS, Director Operations, Director Flight Standards (Reg) and Safety Investigation Board (SIB).
- 4.4 Since the incident was not reported in time, medical evaluations of the crew could not be conducted which is a mandatory regulatory requirement.
- 4.5 Similarly, the FDR and CVR were also not recoverable / available due to the delay reporting, which were the most required credible evidence to judge the cockpit environment during the incident.
- 4.6 The ICAO Doc 4444 (Para 7.4.1.4) provides guidance to ATC controllers to cancel the landing clearance if the desired runway is not available and ask (the pilot) to initiate a Go-Around / missed approach. This guidance was not utilized in the incident under investigation.
- 4.7 **Cause of Occurrence.**
 - 4.7.1 Wrong selection of runway in FMC by the cockpit crew.
 - 4.7.2 Poor cross check and CRM failure by the cockpit crew.
 - 4.7.3 Failure to ask the cockpit crew for a go around by the ATC TWR / Approach Radar Controller.

5. SAFETY RECOMMENDATIONS

- 5.1 All air crew must be briefed about correct feeding of FMC as per approved OEM procedures given in Flight Crew Training Manuals (FCTM).
- 5.2 The involved cockpit crew should undergo one day ground schooling to refresh the landing procedures, Crew Resource Management (CRM) and FCTM guidelines.
- 5.3 Pakistan CAA is to issue instructions to all operators in Pakistan as well as all ATS units for ensuring reporting of incidents to appropriate authorities within stipulated time to ensure preservation of evidence(s). The attention is drawn to Rule 271 of Civil Aviation Rules 1994, in this case for implementation.
- 5.4 Pakistan CAA (Directorate of Operations) is to issue necessary instructions in line with ICAO Doc 4444 and National Regulations for maintaining better situational awareness and suggesting a Go-Around to approaching traffic, if circumstances so warrant.