

# FINAL INVESTIGATION REPORT



SERIOUS INCIDENT OF TCAS – RA REPORTED BY  
M/S. OMAN AIR FLIGHT OMA325, B-738, REG. NO.  
A4OBU (MCT – KHI) ON 02-01-2018

## FINAL REPORT

### SERIOUS INCIDENT OF TCAS – RA REPORTED BY M/S. OMAN AIR FLIGHT OMA325, B-738, REG. NO. A4OBU, OOMS – OPKC (MCT – KHI) ON 02-01-2018

#### Synopsis

On 02<sup>nd</sup> January, 2018 M/s Oman Air flight OMA325, B738, Reg. No. A4OBU, operating from Muscat to Karachi (OOMS – OPKC), was cleared by Approach Radar Controller (Karachi) to descent FL100. PAF Masroor military flying was in progress in Karachi Control Zone. At time 17:07:00 UTC, OMA325 in descending phase passing FL119 reported getting “TCAS-RA Climb” and started climbing under TCAS-Resolution Advisory.

At time 17:07:12 UTC, Approach Radar Controller in consultation with MMR DETT (PAF Military Controller) passed traffic information about the Military Traffic (XEROX52) which was cleared for instrument letdown at Masroor by PAF Controller and was proceeding out bond track 210° (Degrees) passing FL076 for 4000 Feet AMSL and the relative position with respect to OMA325 was 9 O'clock range 2.2 NM. XEROX52 (Military flight) had been maintaining FL080 (8000 Feet) since 17:04:46 and at time 17:05:31 reported Beacon 2 at FL080 (8000 Feet) proceeding out bond.

At time 17:07:27 UTC while passing FL122, OMA325 reported “CLEAR OF CONFLICT AND RETURNING TO FL100”.

This TCAS–RA incident was reported in the daily IOUDO report dated 03<sup>rd</sup> January, 2018 for the period 020500LT to 030500LT (**Appendix ‘A’**). Memorandum and Corrigendum were issued vide letter No. HQCAA/1904/40/116/SIB/038 dated 15<sup>th</sup> January, 2018 (**Appendix ‘B’**) and HQCAA/1904/40/116/SIB/248 dated 31<sup>st</sup> May, 2018 (**Appendix ‘C’**). All available evidences were analyzed at Safety Investigation Board (SIB). Significant findings and Safety Recommendations of the Board are as under:-

#### 1. FACTUAL INFORMATION

- 1.1 **History of Flights.** M/s Oman Air Flight No. OMA325 (B738, Reg. No. A4OBU) was a scheduled flight operating from Muscat to Karachi (OOMS – OPKC). PAF flight XEROX52 (F7-PG) was a Military flight operating from Masroor to Masroor.
- 1.2 **Injuries to person(s).** No injury was reported on board to anyone on both aircraft.
- 1.3 **Damage to Aircraft.** No damage occurred due to this incident to any of the aircraft.
- 1.4 **Personnel (Flight Crew) Information.** Not applicable.



1.5 **Aircraft Information.**

1.5.1. M/s Oman Air (**OMA325**)

|                       |   |                   |
|-----------------------|---|-------------------|
| Aircraft Make         | : | Boeing            |
| Type of Aircraft      | : | B-738             |
| Aircraft Registration | : | A4OBU             |
| Sector                | : | Muscat to Karachi |
| Altitude              | : | FL120             |

1.5.2. Pakistan Air Force (**XEROX52**)

|                       |   |                    |
|-----------------------|---|--------------------|
| Aircraft Make         | : | Combat             |
| Type of Aircraft      | : | F7-PG              |
| Aircraft Registration | : | N/A                |
| Sector                | : | Masroor to Masroor |
| Altitude              | : | FL080              |

1.6 **Meteorological Information.** No significant weather was reported at operating altitude at the time of occurrence, conditions were IMC.

1.7 **ATC Tape Extracts.** Audio tape extracts were obtained for detailed analysis (**Appendix 'D'**).

1.8 **Radar SDD Screenshots.** Screenshots of Situation Data Display (SDD) of Approach Radar (Karachi) were obtained for detailed analysis (**Appendix 'E'**).

1.9 **Sequence of Events.**

1.9.1 At 17:00:32 (UTC) coordination effected between Karachi Approach Radar (Civil ATC) and MMR DETT (PAF ATC) for OMA325 to descend FL100.

1.9.2 At 17:00:49 (UTC) OMA325 came in contact with Karachi Approach Radar and was cleared to descend FL100.

1.9.3 At 17:03:18 (UTC) coordination effected between MMR DETT (PAF ATC) and Karachi Approach Radar (Civil ATC) for XEROX52 to carry out Instrument Letdown at Masroor from FL080 (8000 Feet).

1.9.4 At 17:04:46 (UTC) XEROX52 reported MMR DETT (PAF ATC) maintaining 8000 FEET (FL080) and was operating **North of Masroor (N / NW of Karachi)**.

1.9.5 At 17:05:13 (UTC) OMA325 was vectored on Radar Heading 075<sup>0</sup> for ILS RWY 25L.

1.9.6 At 17:05:31 (UTC) XEROX52 reported overhead Masroor at 8000 FEET (FL080) for Instrument Letdown

1.9.7 At 17:06:35 (UTC) XEROX52 reported leaving 8000 FEET (FL080). At that time OMA325 was passing FL120 for FL100.



- 1.9.8 At 17:07:01 (UTC) OMA325 passing FL116 reported "TCAS-RA Climb" and climbed to FL125. At that point in time XEROX52 was passing FL076 for 4000 Feet AMSL. The relative position of XEROX52 was 9 O'clock to OMA325 range 2.2 NM.
- 1.9.9 At 17:07:27 (UTC) OMA325 reported clear of conflict and returning to FL100.
- 1.10 **Resumption of Navigation by Aircraft.** Post occurrence, both the military and civil aircraft continued flights as per their respective flight plans.

## 2. FINDINGS

- 2.1 Military aircraft, XEROX52, was transponder equipped and positive Mode-C information was continuously depicted on Radar SDD (Situation Data Display).
- 2.2 M/s Oman Air flight, OMA325, was passing FL122 and descending to FL100 whereas Military traffic was descending from 8000 Feet (FL080) to 4000 Feet AMSL for Instrument letdown at Masroor.
- 2.3 At the time of TCAS - RA there existed more than 4000 Feet vertical separation between both the aircraft.
- 2.4 OMA325 was maintaining rate of descent @1800 - 2000 feet per minute.
- 2.5 Although, Approach Radar Controller had restricted descent of OMA325 due to XEROX52 carrying out instrument letdown at Masroor and the same was well coordinated between Karachi Approach Radar (Civil ATC) and MMR DETT (PAF ATC). However, he did not pass traffic information to OMA325 well in time before the activation of TCAS-RA. Whereas the same was provided upon activation of TCAS-RA.
- 2.6 **Cause of Occurrence**
- 2.6.1 The reported TCAS-RA probably have occurred / activated due to the excessive rate of descent (i.e. approximately 1800 feet per minute) of OMA325 within the TCAS Coverage Area. Had the traffic information about XEROX52 been provided at appropriate time i.e. while restricting the descent of OMA325 at FL100 this TCAS-RA could have averted. However, the standard separation between OMA325 and XEROX52 did not infringe.

## 3. SAFETY RECOMMENDATIONS

- 3.1 Pakistan CAA (Directorate of Airspace and Aerodrome Regulations), may consider issuing guidance material on the subject, in line with ICAO Doc 9863 (Airborne Collision Avoidance System Manual), for ANSPs.
- 3.2 Pakistan CAA (Operations Directorate), being ANSP, shall issue necessary directions to provide appropriate traffic information, whenever / wherever circumstances so warrant, to avoid such recurrences and should preferably issue necessary guidance material on the subject or may consider to circulate Chapter-6 of ICAO Doc 9863 for ATC.



- 3.3 Pakistan CAA (Operations Directorate), being ANSP, should also arrange necessary briefings / workshops for ATC on the functioning of ACAS in accordance with the guidance material provided in ICAO Doc 9863.
- 3.4 M/s Oman Air is requested to review and update pilot trainings and guidance on the subject are consistent with ICAO Doc 9863, specific to mention Chapter-5.