

Office of the Dy. Director General of Civil
Aviation (Northern Region)



**Investigation Report on Approach to Under-Construction
Runway Incident to M/s InterGlobe Aviation Limited
aircraft VT-INY on 03.02.2019 at MALE.**

FOREWORD

In accordance with Annex 13 to the International Civil Aviation Organisation Convention and the Aircraft (Investigation of Accidents & Incidents) Rules 2017, the sole objective of this investigation is to prevent aviation incidents and accidents in the future. It is not the purpose of the investigation to apportion blame or liability.

This report has been prepared based upon the evidences collected during the investigation and opinions obtained from the experts. Consequently, the use of this report for any purpose other than for the prevention of future incidents /accidents, could lead to erroneous interpretations.

GLOSSARY

1.	AIC	Aeronautical Information Circular
2.	AICC-Maldives	Accident Investigation Coordination Committee-Maldives
3.	AIP	Aeronautical Information Publication
4.	ALTP	Airline Transport Pilot's License
5.	A/P	Auto Pilot
6.	ATC	Air Traffic Control
7.	CAR	Civil Aviation Requirements
8.	CFD	Centralised Flight Dispatch
9.	CFIT	Controlled Flight Into Terrain
10.	CPL	Commercial Pilot License
11.	CVR	Cockpit Voice Recorder
12.	DME	Distance Measuring Equipment
13.	FDR	Flight Data Recorder
14.	DGCA	Directorate General of Civil Aviation
15.	ETA	Expected Time of Arrival
16.	ETD	Expected Time of Departure
17.	F/D	Flight Director
18.	F/O	First Officer
19.	FCOM	Flight Crew Operations Manual
20.	FCTM	Flight Crew Techniques Manual
21.	FMS	Flight Management System

22.	FRTOL	Flight Radio Telephone Operator's Licence
23.	ICAO	International Civil Aviation Organisation
24.	IFR	Instrument Flight Rules
25.	ILS	Instrument Landing System
26.	NOTAM	Notices to Airmen
27.	OFP	Operational Flight Plan
28.	PAPI	Precision Approach Path Indicator
29.	PDR	Pilot Defect Report
30.	PF	Pilot Flying
31.	PIC	Pilot In-Command
32.	PM	Pilot Monitoring
33.	RWY	Runway
34.	SOP	Standard Operating Procedure
35.	STAR	Standard Terminal Arrival Route
36.	STD	Standard Time of Departure
37.	UTC	Coordinated Universal Time
38.	VFR	Visual Flight Rules
39.	VHF	Very High Frequency
40.	VOR	Very High Frequency Omni Range

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Investigation Report on Approach to Under-Construction Runway Incident to M/s InterGlobe Aviation Limited aircraft VT-INY on 03.02.2019 at MALE.

1. Aircraft
Type : AIRBUS A320-232
Nationality : INDIAN
Registration : VT-INY
2. Owner : M/s PEMBROKE AIRCRAFT LEASING 4 LIMITED
Operator : M/s INTERGLOBE AVIATION LIMITED
3. Pilot-in-Command : ALTP Holder
Extent of injuries : NIL

Co-Pilot/First Officer : CPL Holder
Extent of injuries : NIL
4. Date of incident : 03.02.2019
Time of incident : 11:38 UTC
5. Place of incident : VELANA INTERNATIONAL AIRPORT, MALE
6. Co-ordinates of incident site : 04° 10' 53.4" N ; 73° 31' 51.6" E
7. Last point of Departure : VABB (CHHATRAPATI SHIVAJI INTERNATIONAL AIRPORT, MUMBAI)
8. Intended place of Landing : VRMM (VELANA INTERNATIONAL AIRPORT, MALE)
9. No. of passengers on board : 100(excluding crew)
10. Type of operation : Scheduled Commercial Air Transport Operation
11. Phase of operation : Approach
12. Type of Incident : CFIT- Marginally avoided

(All timings in the report are in UTC unless or otherwise specified)

Synopsis

M/s InterGlobe Aviation Ltd. aircraft VT-INY (MSN:3883) operated flight 6E-1783 of 03.02.2019 from Mumbai to MALE. The flight operation till descent to MALE(VRMM) was normal. During descend the crew was informed by ATC that ILS had become unserviceable. Hence, the operating crew performed a VOR-DME approach for RWY36 at MALE.

The operating crew was aware of the existence of an under-construction runway parallel to the existing active runway. However, there was confusion regarding the actual runway in use during approach and crew made an approach to the under construction runway. At about 12ft radio height, the PIC not being convinced that the runway to which they are approaching is the active runway carried out a missed approach. The aircraft later made a normal approach and landed at MALE by 1206UTC.

DGCA-India, vide Order No DGCA-15018(6)/3/2019-DAS dated 07.02.2019 instituted investigation of the incident under Rule 13 (1) of Aircraft (Investigation of Accidents and Incidents), Rules 2017 and appointed an Investigator-In-Charge.

AICC-Maldives was requested for aerodrome, ATC and ATC personnel related information. However, no reply has been received as on date of release of this report. Hence, only the information available from the AIP(VRMM)/AIC was available for the investigation.

The inability of the operating crew to positively identify the runway to which the aircraft was cleared to land during final approach was the cause of the incident.

Contributory factors included the following;-

- a) Inadequate flight planning/review by the operating crew despite operating for the first time to MALE(VRMM).
- b) Lack of assertiveness of the PIC.
- c) In-complete information supplied to the flight crew by dispatch (of M/s IndiGo) and lack of clarity of the information contained in the Operations Manual-Part C.
- d) Inappropriate scheduling of PIC to operate the flight without factoring for the time allowances required for transport between different terminals.

1. Factual information

1.1. History of flight:

M/s InterGlobe Aviation Ltd. Airbus A-320-232 aircraft VT-INY operated flight 6E-1783 of 03.02.2019 from Mumbai to MALE. The aircraft departed from Mumbai at 0823UTC. There was a total of 106 personnel on-board (including crew) the aircraft at the time of incident.

The First Officer was scheduled as per the crew roster for flight 6E-1783 (starting his flight duties of the date from Mumbai). On the date of incident, he reached IndiGo airline office - Terminal 2, Mumbai international airport and performed the mandatory pre-flight medical examination by 0646UTC.

The PIC was on standby duty on the date of incident and was assigned duty to operate flight from Bengaluru to Mumbai (6E-346) followed by 6E-1783(Mumbai-MALE) and 6E-1782(MALE-Kochi). The flight pattern for which the PIC was scheduled was not a standard flight pattern w.r.t crew scheduling.

The flight from Bengaluru to Mumbai (6E-346) departed from Bengaluru at 0449UTC and was parked on stand 84 of Apron 'D' of Mumbai-domestic apron at 0651UTC, 11 minutes after the expected time of arrival (ETA) of 0640UTC. PIC then proceeded by a vehicle to the international terminal from the city side. At the international terminal, he reached the company dispatch office (of M/s InterGlobe Aviation Ltd.) and had undergone the pre-flight medical examination at 0738UTC. The PIC then met the First Officer and lead cabin attendant in dispatch office. PIC went through the flight plan, he decided to discuss the destination NOTAM's with First Officer en-route in cruise. Then they proceeded to board the aircraft parked on stand V17R as passenger boarding was already completed.

This was the first flight operated by either of the operating crew to MALE. The scheduled time of departure from Mumbai-Male(6E-1783) was 0750UTC. The aircraft departed from Mumbai at 0823UTC with a delay of 33 minutes. Since the crew did not discuss the NOTAM's at Mumbai, they checked the company Operations Manual – Part 'C' in cruise. Since an approach on RWY18 was expected, the First Officer informed the PIC that as per the company Operations Manual-Part 'C' among the two parallel runways at MALE the one on the LEFT was the under-construction runway.

After establishing contact with MALE (VRMM), the crew received information that active runway at MALE was ILS RWY36 and crew planned for the same. During the descent to MALE passing FL110, due to traffic congestion the aircraft was advised to join the HOLD pattern (MM004) as per published STAR. While in the hold the ATC advised that, the ILS RWY36 has become unserviceable and 6E-1783 was advised to perform a RNAV approach for RWY36, however the crew asked for and performed a VOR36 approach instead.

After intercepting the final approach course the operating crew sighted the two parallel runways and the runway on the right appeared prominent to them. The winds at the time of approach was 14 to 15 kts cross from the right and hence the aircraft nose was pointing towards the right. The sea plane activity in the close vicinity also got attention of the crew.

After disconnection of the AUTO PILOT, the PIC took over controls and manually operated the aircraft. Even after reaching 400 radio altitude, the PIC had his inhibitions that the approach was being made to the wrong runway as he observed 'X' cross marks on the runway and he announced the same, but the First Officer insisted that the runway on the RIGHT was the correct runway. The PIC continued the approach. The crew also did-not sight the precision approach path indicator (PAPI) visual aid during the first approach. The aircraft descended to 12ft radio altitude above the runway under-construction, by this time the PIC still unable to confirm the active runway performed a go-around.

After performing go-around, the crew confirmed with the ATC whether approach was made to the wrong runway, to which the ATC replied affirmatively. The aircraft once again made an approach to RWY36, sighted the PAPI lights and landed safely at MALE by 1206UTC. The flight log entry made by the crew did not indicate any defect. An entry was made at MALE(VRMM) stating:-" TOGA performed".

1.2 Injuries to persons:

Injuries	Crew	Passengers	Others
Fatal	Nil	Nil	Nil
Serious	Nil	Nil	Nil
Minor/None	Nil/06	Nil/100	

Total personnel on-board : 106

1.3 Damage to aircraft:

Nil.

1.4 Other damages:

Nil

1.5 Personnel information:

The details of the licences and ratings are as detailed below:-

Personnel Information :		
Details	PIC	First Officer
a) Type of licence	ATPL holder	CPL holder
b) Valid upto	21.05.2020	20.01.2020
c) Date of Initial issue	22.05.2007 (ATPL)	21.01.2015
d) Class of licence	Multi Engine Land	Multi Engine Land
e) Category of licence	Aeroplane	Aeroplane
f) Age	59 yrs	30yrs
g) Aircraft Ratings	Dornier DO 228-101, A320	DA 40, DA 42, A320
h) Date of Endorsement as PIC	17.06.2009	N/A
i) Date of last Medical Exam	12.10.2018	30.11.2018

Details	PIC	First Officer
j) Medical Exam validity	11.10.2019	29.11.2019
k) FRTOL Valid upto	21.05.2022	20.01.2020
l) Instrument Rating	28.12.2014 (Last on ATPL)	26.03.2018
m) Date of Last LR check	27.10.2018	16.09.2018
n) Date of last Proficiency Check	27.10.2018	16.09.2018
o) Last technical refresher	30.08.2018	12.07.2018
p) Total flying experience	12923:07 Hrs	2214:07 Hrs
q) Experience on Type	8280:28 Hrs	2009:12 Hrs
r) Experience as PIC on type	7272:50 Hrs	N/A
s) Total flying experience in last 180 days	457:16 Hrs	423:48 Hrs
t) Total flying experience in last 30 days	87:48 Hrs	80:28 Hrs
u) Total flying experience in last 7 days	24:20 Hrs	15:07 Hrs
v) Total flying experience in last 24 hrs(excluding day of incident)	04:59 Hrs	03:35 Hrs
w) Total flying experience on 03.02.2019 till incident	05:56 Hrs	03:54 Hrs
x) Rest before duty	14:37 Hrs	22:45 Hrs
y) Previous incident history	NIL	NIL

1.6 Aircraft information:

Airbus A-320-232 is a twin engine aircraft fitted with IAE-V2527 A5 engines manufactured by IAE. The aircraft is equipped with winglet fence. The aircraft is certified in Normal category, for day and night operation under VFR & IFR.

1.6.1 Aircraft:-	
a) Manufacturer	AIRBUS
b) Type	AIRBUS A320-232
c) Owner	M/s PEMBROKE AIRCRAFT LEASING 4 LIMITED
d) Operator	M/s INTERGLOBE AVIATION LIMITED
e) Manufacturer Serial no.	3863
f) Year of Manufacture	2009
g) Certificate of Airworthiness	C of A No. 6050, Issue Date: 22.04.2009

h) Airworthiness Review Certificate	Issue Date:14.04.2018 Validity: 21.04.2019
i) Category	NORMAL
j) Certificate of Registration and validity	C of R No. 3941/4, Validity:21.04.2021
k) Minimum Crew Required	02 cockpit crew
l) Maximum All Up weight	73500 Kg
m) Last Major inspection	2250 FH/ 270 Days Dated: 26.12.2018
n) Last inspection	Weekly Inspection Dated: 01.02.2019
o) Airframe Hrs since new	35019:10 (as on 03.02.2019 BOM-MLE Sector)
p) Airframe hours since last C of A	23876(as on incident sector)
q) Status of Airworthiness Directive, Service Bulletins, DGCA Mandatory Modifications	Complied

1.6.2 Engine:-	LH	RH
a) Manufacturer	IAE	IAE
b) Type	V2527-A5	V2527-A5
c) Engine Serial no.	V15104	V15111
d) Time Since new(TSN)	29835	31409
e) Cycles since new(CSN)	20335	21417
f) Time since last shop visit(TSV)	522	2116
g) Cycle since last shop visit(CSV)	338	1423
h) Last Major Inspection Carried out	2400 FH Dated 29.01.2019	
i) Last inspection Carried out	Weekly Inspection Dated: 01.02.2019	
j) Average Oil consumption(last 6 months)	LH 0.50 Quartz/Hr RH 0.57 Quartz/Hr	
k) FUEL USED	Jet A-1	Jet A-1

1.6.3 Airbus Operational Philosophy:-

As per the Airbus Operational Philosophy in the FCTM; a correct application of task sharing and communication rules ensures a safe and effective operation of the aircraft.

NORMAL OPERATIONS

GENERAL

It is the responsibility of the PF to:

1. FLY

2. NAVIGATE.

It is the responsibility of the PM to:

- 1. MONITOR the flight path, the navigation and the aircraft systems
- 2. COMMUNICATE.

However, when necessary, the flight crew may re-allocate the tasks, as required.

1.6.4 SOP-Approach/ Normal Procedures:-

AT ENTERED MINIMUM

MINIMUM..... MONITOR OR
ANNOUNCE

Below minimum, the visual references must be the primary references until landing.

▪ **If visual references are sufficient:**

CONTINUE.....ANNOUNCE

AP..... OFF

- At minimum -50 ft, if the AP is still engaged, the message DISCONNECT AP FOR LDG

pulses on the FMA to remind the flight crew that automatic landing is not available.

FD..... OFF

- The PF orders the PM to set both FDs OFF.

RUNWAY

TRACK.....CHECK/SET

- If needed, the PF orders the PM to set the runway track.

▪ **If visual references are not sufficient:**

GOAROUND.....ANNOUNCE

- Initiate a go around.

1.6.5 Aircraft Technical log:-

The CHOCKS OFF time from Bengaluru of the previous flight operated by the PIC (6E-346 of 03.02.2019) was 0449UTC and the CHOCKS ON time of the flight sector (Bengaluru-Mumbai; 6E-346 of 03.02.2019) operated by the PIC at Mumbai was 0651UTC.

The CHOCKS OFF time of VT-INY from Mumbai to MALE was 0823UTC and the CHOCKS ON time at MALE was 1217UTC.

The flight log entry made by the crew did not indicate any defect. An entry was made at MALE(VRMM) stating:-" TOGA performed".

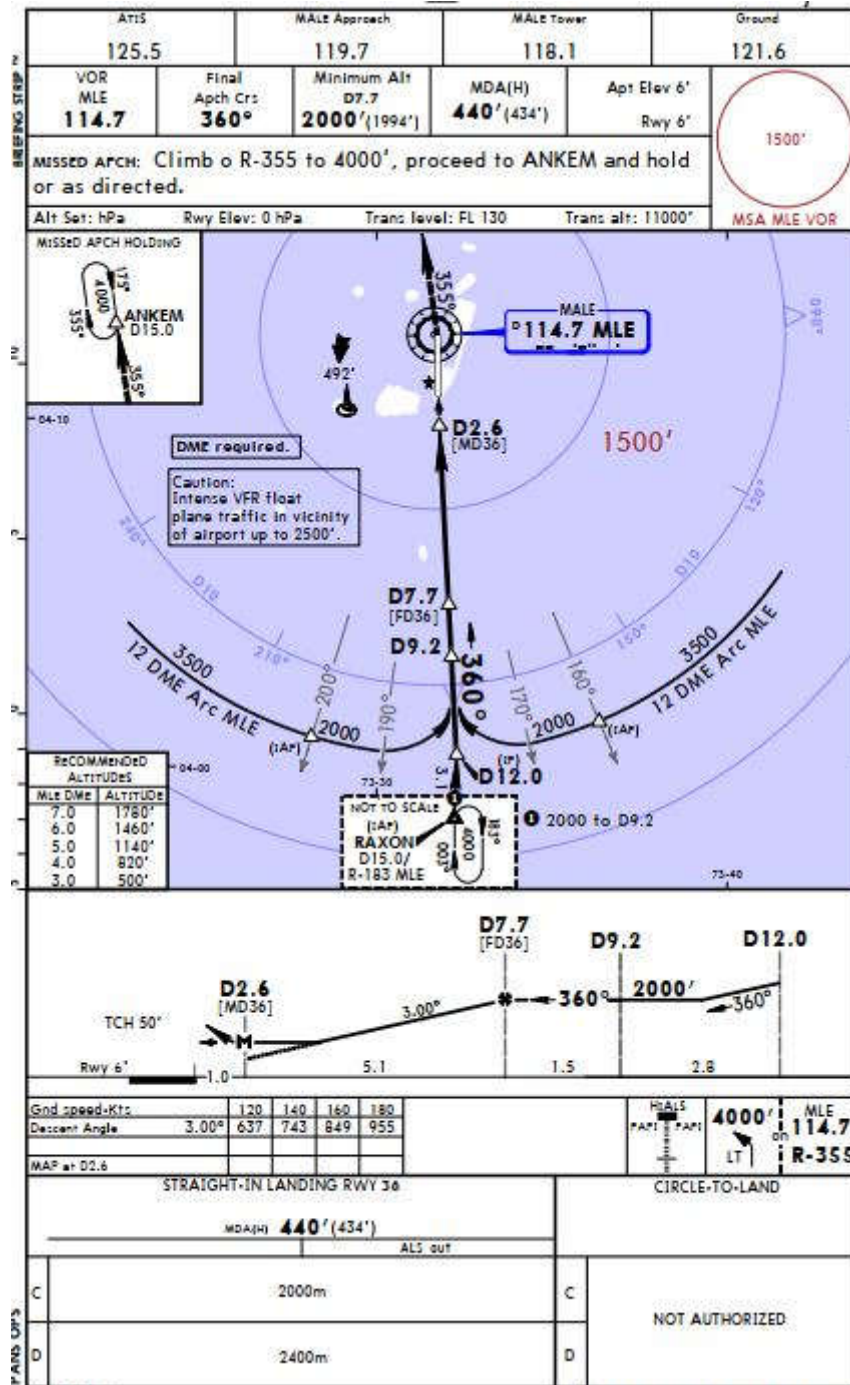
1.7 Meteorological information:

Though meteorological information was requested from AICC-Maldives, same is not available for investigation, as on date of release of this report.

1.8 Aids of navigation:

As per the available information, ILS became unserviceable prior to the aircraft initiated approach to MALE. The crew performed a VOR-DME approach to MALE (VRMM).

Though information on the aids to navigation and their status as on date of incident was requested from AICC-Maldives, same is not available for investigation, as on date of release of this report.



MALE(VRMM)-Approach Chart-VOR Z RWY36.

1.9 Communication:

Two way radio communications was available between aircraft and ATC. The crew did not report any un-serviceability and/ communication issues.

The comments of ATC personnel on-duty was requested from AICC MALE, same is not available for investigation, as on date of release of this report.

1.10 Aerodrome information:

MALE has a tropical monsoon climate. The city features a mix of both wet and dry seasons. The wet season lasts from May through December when it receives heavy rain fall due south west monsoon. Average rainfall during the year is 1900mm with maximum rain recorded in the months of May (218mm) and November (231mm). January to April is comparatively drier with highest rainfall recorded in January (114mm) due North East monsoon. MALE experiences relatively consistent temperatures throughout the year, with an average high of 30°C and low of 27°C.

1.10.1 Notices to Airmen (NOTAM):-

The active NOTAM at VRMM w.r.t the new runway under-construction as on date of incident:-

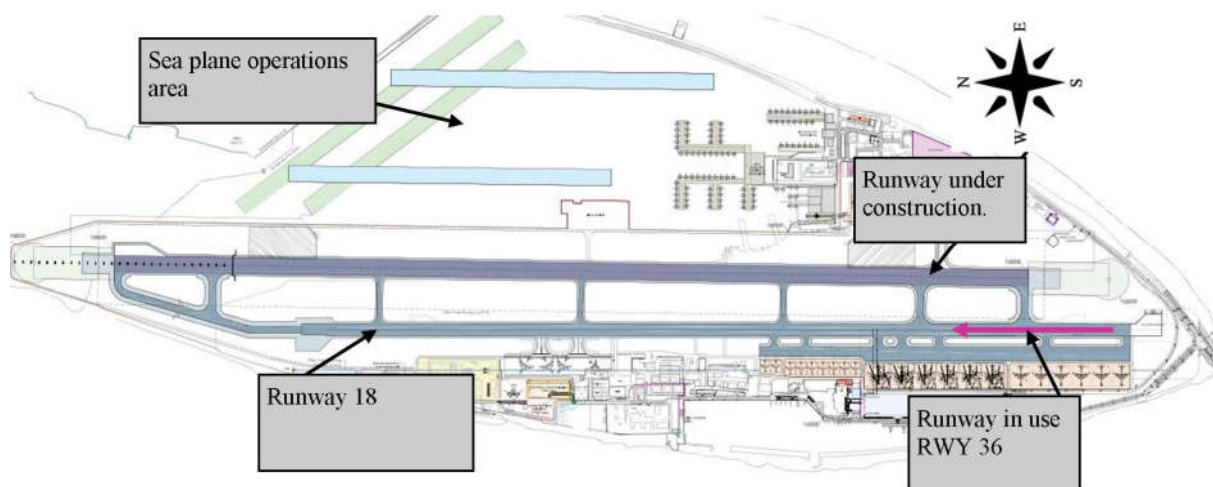
-VRMM A0360/18 02DEC0453-02MAR1859 2019EST

CONST OF NEW RWY IN PROGRESS. NEW RWY E AND PARALLEL TO CURRENT ACTIVE RWY. ACTIVE RWY EDGE LGT ON DAY AND NIGHT.

ALL OPR TO EXER CTN. REFER AIC 04/17

1.10.2 AIC 04/2017-MALDIVES:-

A new runway of ICAO Code F standard is being constructed parallel and East of the present runway, staggered northwards approximately 500m. The under construction runway will be 3400m in length with a width of 60m and 7.5m paved shoulders on both sides. RESA 420m x 120m is also proposed to be provided at both ends of the runway



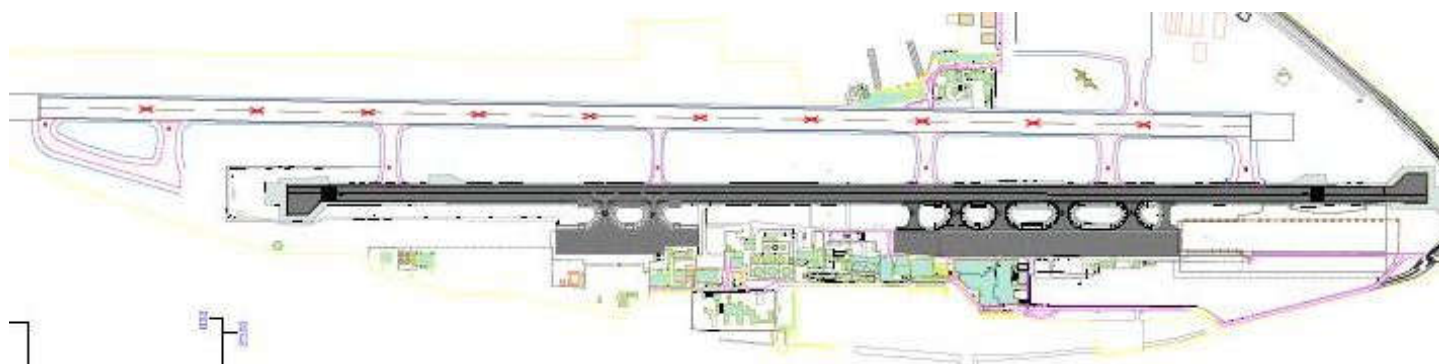
Schematic (Not to scale) – Runway configuration VRMM(MALE)

1.10.3VRMM (MALE) Runway physical characteristics:-

Designation RWY NR	True & MAG BRG	Dimensions of RWY (M)	THR coordinates	THR elevation and highest elevation of TDZ of precision APP RWY
18	179° GEO 182° MAG	3200 X 45	041219.31N 0733144.12E	THR 1.73 M / 6 FT
36	359° GEO 002° MAG	3200 X 45	041047.82N 0733145.62E	THR 1.62 M / 5 FT

1.10.4VRMM (MALE) Approach and runway lighting:-

RWY Designator	APP LGT type LEN INTST	THR LGT colour WBAR	VASIS (MEHT) PAPI	TDZ LGT LEN	RWY Centre Line LGT Length,spacing colour, INTST	RWY edge LGT LEN, spacing colour INTST	RWY End LGT colour WBAR
1	2	3	4	5	6	7	8
18	Nil	Green Yes	PAPI on both sides/ 2.86° (65FT)	Nil	Nil	3200 M 60 M White, LIH	Red -
36	SALS 300 M LIH	Green Yes	PAPI on both sides/ 2.86° (65FT)	Nil	Nil	3200 M 60 M White, LIH	Red -



Grid Map(Not to scale) of VRMM(MALE)

Though information on the status of runway's, their features and markings were requested from AICC Maldives, same is not available for investigation, as on date of release of this report. The information used in this report is based on data published in AIP/AIC. Based on estimates from Google maps, the under construction runway is 150m-180m east from the existing runway centerline.

1.11 Flight recorders:

1.11.1 CVR:-

The aircraft was installed with a Solid State Cockpit Voice Recorder.

Part No. of CVR	Serial number	Model No of CVR	Make of CVR	Duration of recording
980-6022-001	0803	HFR5-V	HONEYWELL	2 Hours

The communications with ATS units were carried out by the First Officer. Following are the salient observations made:-

1. At relative time 09:13, during descend to MALE(VRMM), 6E-1783 was advised to join HOLD MM004.
2. At relative time 23:09 crew was advised by MALE(VRMM) Approach controller to expect RNAV APP for runway 36, as ILS was un-serviceable at the time. The crew replied that they were unable to perform a RNAV approach. Hence crew was advised to expect VOR Z approach for Runway 36.
3. At relative time 25:57, MALE Approach controller advised the crew to cancel hold and descend to 4000ft.
4. During descend at relative time 29:41 the F/O is observed to be stating "So while approaching runway 36 the parallel Runway, which is the new runway, is to the left, so we are not going to go on the left"
5. The aircraft was cleared for VOR Z approach, RWY 36 at 30:52 relative time (1128UTC), and by 33:06 relative time the crew reported to MALE approach that, they have established on track for the approach. The crew was advised to contact MALE tower for further course.
6. At relative time 38:49 the ATC tower controller cleared the aircraft for landing on RWY36 and the prevailing winds at the time of grant of landing clearance was 050° 13KT.
7. The crew carried out the landing checklist at 39:08 and A/P, F/D were selected OFF by 40:08 passing 1000ft. The PIC announced that he is at controls.
8. At relative time 40:34 the crew discussed about the traffic nearby and F/O advised the PIC that sea plane activity is common.
9. At relative time the 'minimums' auto call out is heard and the PIC enquired with the F/O that there are cross marks 'X' on the runway and confirmed whether F/O is sure of the runway. PIC asked the F/O: 'just ask'. F/O replied that the runway to the RIGHT is the correct one.
10. By 41:40 relative time (1138UTC) the 'retard' auto reminder call out is heard. The PIC still not being convinced of the runway announced 'this is not the one' and performed a 'go-around'.
11. By 42:12 relative time the PIC advised the F/O to confirm with the ATC whether the runway on the LEFT is correct or the runway on the RIGHT is the correct runway. To which ATC tower controller replied "Affirm you aimed for the wrong runway".

12. At 43:15 relative time the PIC is observed to be telling the F/O that "I knew that was not the Runway, because it had a cross" and the F/O replied "But it was written over there.."
13. By 46:25 relative time the F/O stated that "So they told that one which looks like the runway is not the one which is the runway".
14. To which PIC replied that:" No but I saw the cross, but you kept telling me this is the thing. Then when I came close then I knew that this is not the runway".
15. F/O replied that: "Even I saw the cross. Then it was sure that was not the runway when came close. Even is the OPS Manual 'C' I read it, it says that once you come it's on the right"
16. PIC stated that "That is 'right' for which runway? Runway 36 or 18. He also stated that ATC knew that they are coming to the wrong runway.
17. By 48:10 relative time, the PIC is observed to have referred to the Operations Manual-Part C.
18. F/O replied: 'That confuses us; runway is to the right when you are saying, so I thought runway is to the right
19. At 52:03 relative time the PIC told the F/O that , they should have clarified with the ATC whether one on the left or the right was the runway.
20. The F/O stated by 58:40(relative time) that," But this runway look weird, I mean that runway is actually longer. The one who told me ; like I asked my friends anything specific to MALE, they said one which is the longer runway the new runway, don't land on that runway that's the runway you should not land. I found it the opposite way."
21. And the PIC replied that: "that's what the winds were very badly cross, otherwise I would have made out which was the correct runway"

1.11.2 FDR:-

The aircraft was installed with a Solid State Flight Data Recorder.

Part No of FDR Fitted	Serial number	Model No of FDR	Make of FDR	Duration of recording
980-4700-042	09195	HFR5-D	HONEYWELL	25 Hours

The recording of the unit was retrieved and salient points are as interpreted below:-

1. The AP1 which was disengaged by 1015ft radio altitude at 11:37:10UTC.
2. Side-stick inputs during approach are observed only from the PIC side from 11:37:17UTC, indicating that PIC was on controls during the final approach and both engine TLA's were in the CLIMB detent of 22.5°.
3. In the approach till 11:38:31UTC the winds were recorded as 14 to 11 kt from 52° to 72°.
4. From 11:38:41UTC continuous pitch up commands observed from the PIC side-stick with a peak value of 11.6° pitch up command by 11:38:41 at 12ft radio altitude.
5. During final approach the aircraft reached 08ft radio altitude at 11:38:43UTC, followed by climb.
6. By 11:38:44UTC Eng#1TLA was advanced to 45°, which corresponds to TOGA thrust demand and Eng#2 is observed to be 42.5 °

7. By 11:38:45UTC Eng #2 TLA also reached 45 °, which corresponds to TOGA thrust demand.
8. The aircraft engines accelerated to the demanded TOGA position and the aircraft went around.
9. The aircraft again performed an approach and landed at MALE by 1205UTC.

1.12 Wreckage and impact information:

Not applicable.

1.13 Medical and pathological information:

Not applicable.

1.14 Fire:

There was no fire or smoke during or following the incident.

1.15 Survival aspects:

The incident was survivable. There was no injury reported to the passengers, crew or any other personnel.

1.16 Tests and research:

Nil.

1.17 Organizational & Management Information:-

1.17.1 DGCA:-

1.17.1.1 Civil Aviation Requirements, Section 08, Series-O, Part-II:-

9.4.3: Pilot-in-command area, route and aerodrome qualification.

9.4.3.1: An operator shall not utilize a pilot as pilot-in-command of an aeroplane on a route or route segment for which that pilot is not currently qualified until such pilot has complied with 9.4.3.2 and 9.4.3.3.

9.4.3.2: Each such pilot shall demonstrate to the operator an adequate knowledge of:

a) the route to be flown, and the aerodromes which are to be used.

This shall include knowledge of:

1. the terrain and minimum safe altitudes;

2. the seasonal meteorological conditions;

3. the meteorological, communication and air traffic facilities, services and procedures;

4. the search and rescue procedures; and

5. the navigational facilities and procedures, including any long range navigation procedures, associated with the route along which the flight is to take place; and

b) Procedures applicable to flight paths over heavily populated areas and areas of high air traffic density, obstructions, physical layout, lighting, approach aids

and arrival, departure, holding and instrument approach procedures, and applicable operating minima.

Note- That portion of the demonstration relating to arrival, departure, holding and instrument approach procedures may be accomplished in an appropriate training device which is adequate for this purpose.

9.4.3.3 A pilot-in-command shall have made an actual approach into each aerodrome of landing on the route, accompanied by a pilot who is qualified for the aerodrome, as a member of the flight crew or as an observer on the flight deck, unless:

- a) the approach to the aerodrome is not over difficult terrain and the instrument approach procedures and aids available are similar to those with which the pilot is familiar, and a margin approved by DGCA is added to the normal operating minima, or there is reasonable certainty that approach and landing can be made in visual meteorological conditions; or
- b) the descent from the initial approach altitude can be made by day in visual meteorological conditions; or
- c) the operator qualifies the pilot-in-command to land at the aerodrome concerned by means of an adequate pictorial presentation; or
- d) the aerodrome concerned is adjacent to another aerodrome at which the pilot-in-command is currently qualified to land.

1.17.1.2 Operations Circular 02 of 2012:- Route and Aerodrome Competence Qualification

The purpose of the Operations circular no 02 of 2012 is described as ‘ it lays down the framework for determining route and aerodrome competence qualification and is supplementary to the provisions in CAR, Section 8, Series O, Part II Operation of Commercial Air Transport –Aeroplanes and CAR, Section 8, Series O, Part VII-Requirements for Preparation of Operation Manual.

3.ROUTE COMPETENCE

3.1 Route competence training should include knowledge of;

Terrain and minimum safe altitudes;

Seasonal meteorological conditions;

Meteorological, communication and air traffic facilities, services and procedures;

Search and rescue procedures; and

Navigational facilities associated with the route along which the flight is to take place.

3.2 Depending on the complexity of the route, as assessed by the operator, the following methods of familiarization should be used:

(a) For the less complex routes, familiarization by self-briefing with route documentation, or by means of programmed instruction; and

(b) For the more complex routes, in addition to sub-paragraph 3.1 (a) above, inflight familiarization as a PIC, co-pilot or observer under supervision, or

familiarization in an FTD/FFS using a database appropriate to the route concerned.

4. AERODROME COMPETENCE

4.1 All operators shall carry out an assessment of the area of operation and categorize the aerodromes depending upon the safety risk assessment and shall define the training and qualification requirements for those aerodromes.

4.2 The Operations Manual should specify a method of categorization of aerodromes and specify the requirements necessary for each of these categories. If the least demanding aerodromes are Category A, Category B and C would be applied to progressively more demanding aerodromes. The Operations Manual should specify the parameters which qualify an aerodrome to be considered Category A and then provide a list of those aerodromes categorized as B or C.

4.3 All aerodromes to which an operator operates should be categorized in one of these three categories. The operator's categorization should be acceptable to FSD, DGCA.

4.3.1 Category A. An aerodrome which satisfies all of the following requirements:

(a) An approved instrument approach procedure;

(b) At least one runway with no performance limited procedure for take-off and/or landing;

(c) Published circling minima not higher than 1 000 feet above aerodrome level; and

(d) Night operations capability

4.3.2 Category B. An aerodrome which does not satisfy the Category A requirements or which requires extra considerations such as:

(a) Non-standard approach aids and/or approach patterns; or

(b) Unusual local weather conditions; or

(c) Unusual characteristics or performance limitations; or

(d) Any other relevant considerations including obstructions, physical layout, lighting etc.

Prior to operating to a Category B aerodrome, the PIC should be briefed, or self briefed by means of programmed instruction, on the Category B aerodrome(s) concerned and should certify that he has carried out these instructions.

1.17.2 M/s InterGlobe Aviation Ltd.:-

M/s InterGlobe Aviation Ltd.(IndiGo) is a scheduled airline(AOC Number: S-19, Valid upto 02.08.2022) operating a fleet of Airbus A-320,A-320 neo,A-321 and ATR 72. The airline operates flights on domestic and international sectors.

1.17.2.1 Operations Manual Part-A

1.1.7.58 Controlling Flight Dispatchers

A Flight Dispatcher, qualified as per DGCA CAR Section 7, Series M, Part-II is assigned the responsibility of exercising safe and efficient operational

supervision over flights in conjunction with the PIC, on behalf of the Senior Vice President (Flight Operations). He is to report on duty, minimum one hour before the scheduled departure of a flight.

For exercising operational supervision and assist the PIC for the safe & efficient planning and monitoring of a flight. Performing Operational Flight Watch and for determining if changes in operational and meteorological conditions may affect the safety of flights within a prescribed area or on assigned routes, and for communicating those changes to the PIC.

Maintaining the Flight dispatch written log and record of all Company Radio between OCC and Aircraft. (ACARS Transmissions are recorded automatically)

a) Pre Flight Duties:

He is responsible to:

i) Collect the latest meteorological data from the concerned agencies and thoroughly analyse the possible effects of the weather on the route to be flown in the light of meteorological reports and forecasts for the destination and alternate aerodromes; recent weather reports and forecasts for the route and areas adjacent to it; and current weather maps;

ii) Provide the meteorological briefing to the flight crew.

iii) Collect the latest available data on standard instrument departures, en-route facilities, noise abatement operational procedures, navigation aids, aerodrome facilities, ATC and communication procedures, NOTAM, runway conditions, search and rescue facilities and other information and regulations likely to affect the flight and brief the flight crew as required.

iv) Prepare and file the ATC flight plan.

Prepare an Operational Flight Plan consistent with standard instrument departures, noise abatement operational procedures, ATC regulations and the regulations of all the States to be overflown for the consideration of the pilot-in-command.

v) Communicating to Air Traffic Control Services all Operational Flight Plan requirements.

vi) Soliciting, interpreting, and maintaining current flight and field conditions reports, NOTAMs

etc. to provide flight crew with the latest operational information.

vi) Providing and communicating revised information for Load Control with total fuel requirements and aircraft weight limitations that maximizes revenue payload potential while satisfying all Safety standards.

viii) Formulating and implementing revised Operational Flight Plans when conditions warrant,

and for communicating the revised plans to the PIC.

ix) To provide the PIC with a thorough and professional flight crew briefing package, covering all

significant information which may impact the operation of his flight.

- x)** Brief the crew on the route analysis and the operational flight plan bringing to his notice the factors that have influenced the choice of route;
- xi)** Furnish the PIC with all latest available information on the Route to be flown;
Analysing operational and meteorological conditions to evaluate and determine the safest and most efficient minimum fuel requirement.
- xii)** Obtain the Pilot-in-command's signed concurrence with the operational flight plan; and assisting the PIC for the release of an aircraft to operate in accordance with the terms and conditions established by the Operational Flight Plan. However the final decision lies with the PIC.
- xiii)** Resolving with Maintenance Control, the PIC, Flight Operations Management Pilots, as required, problems caused by any aircraft deviation from standards including MEL, which may limit or impact flight operational capabilities, and to communicate any operational limitations to the respective operating Departments, as required.
- xiv)** Apprising respective operating departments and Flight Operations Management Pilots, if warranted, of any reported deviations from standard which occur during flight and which could impact down line scheduling integrity.
- xv)** During irregular operations, congruent when practical with the PIC, advising flight delays to Associate Director (Flight Dispatch)/ Director (OCC); and when conditions warrant, recommending flight cancellations, and initiating alternative plans; Such as a possible/ alternative routes which may be flown safely in accordance with company procedures & standards, taking into account likely weather conditions at the destination and alternate aerodromes; en-route weather; with the maximum fuel load possible.
- xvi)** Providing timely analysis of meteorological risk which may reasonably be anticipated to impact local and/or system operations including aircraft on layover, to Maintenance and Ground Operations.
- xvii)** Administering, managing, and implementing economic fuel policies to maximize company profitability, subject to operational constraints and within proper Safety parameters.
- xviii)** Any other functions deemed necessary for the safe operation of the flight such as analysing operational conditions and identify any conditions/opportunities that may constrain, impede or benefit operational capabilities inclusive of, but not limited to weather, facilities, Air Traffic Control, and aircraft performance.
- xix)** Ensure safe and efficient operational supervision in accordance with all Company policies and procedures in addition to other duties listed in the Company Operation Manual.

1.5 Operational Policies & Processes

1.5.1 Flight Dispatch Activity - Responsibility Matrix

Time : Hrs	Flight Dispatch Activity	Action by
D-04:00	EZFW based on booked load & assumed cargo are automatically updated in the Flight Planning Software through Reservation system (Navitaire)	Automatic
D-03:30	Compute Company Operational Flight Plan which includes NOTAMS and Met Folder from NAVTECH – NFP Flight Planning	CFD
D-02:00	Collate all documents in flight folder and upload on 6E world Portal.	CFD
D-01:45	Obtain FIC/ADC – Locally at VA, VO and VE FIRs by airport services - Flights originating from DEL FIR - Responsibility – Central Flight Dispatch	CFD
D-01:30	Retrieve Flight documents from 6E World Portal	Airport Services
D-01:30	Print all documents and place them in Pre-Flight Envelope for Crew Briefing	Airport Services
D-01:00	Obtain latest weather of DEP/ DEST/ ALT from Company Report Engine and provide it to crew.	Airport Services
D-01:00	Crew reporting at Airport for Domestic operations (D- 01:15 for International operations) D-00:45 for ATR 72-600	Crew
D-00:55	Pre-Flight Medical operating crew for domestic operations (D-1:10 for international operations) D-40 for ATR 72-600	Doctor
D-00:55	All flight briefing documents provided to Operating Crew for domestic operations (D-1:10 for International Operations) D-00:40 for ATR 72-600	Airport Services
D-00:50	Dispatcher contacting crew if there is any important briefing for domestic operations (D-1:05 for International Operations) D-00:35 for ATR 72-600	CFD
D-00:50	Crew contacting CFD if they have any queries related to flight for domestic operations (D-1:05 for International Operations) (facilitated by Airport Services) D-00:35 for ATR 72-600	Airport Services
D-00:45	Finalize Fuel figure for the flight for domestic operations (D-1:00 for International Operations) D-00:30 for ATR 72-600	Crew
D-00:45	Pass final figure to Load Planner and AME/SIC for domestic operations (D-1:00 for International Operations)D-00:30 for ATR 72-600	Airport Services
D-00:45	Crew signs the flight Release with time and date. This signifies flight acceptance by Operating crew for domestic operations (D-1:00 for International Operations) D-00:30 for ATR 72-600	CFD
D-00:35	Crew reporting at Aircraft D-00:20 for ATR 72-600	Crew
D-00:10	Maintain the signed copies of all flight releases at respective station.	Airport Services
D-00:10	Check on the latest for DEP/ DEST/ ALT Wx	INDIGO MET
D-00:10	Any bad weather reported, intimate CFD	INDIGO MET
D-00:05	Intimate bad weather if reported, to operating crew	CFD

Time : Hrs	Flight Dispatch Activity	Action by
ETD	Flight departure from station	
At event	Capture airborne timings of the flight from ACARS and automatic update of airborne time in Flight Following software for the purpose of flight tracking	Automatic
In-Flight	Flight Following software obtains position report through ACARS for Flight Tracking	Automatic
In-Flight	ORIG/ DEST/ ALTN weather uploaded to aircraft through ACARS	Automated Wx Server
At event	Capture Touchdown timings of the flight by AIMS/ Flight Following software	Automatic

1.5.10 Crew briefing

Central Flight Dispatch is responsible to provide comprehensive briefing documentation for self-briefing of Crew.

At each airport, station staff have been trained to help the crew in accessing precompiled briefing documentation, taking print outs, maintaining data-links with

Central Flight Dispatch, providing communication facilities to crew whenever they want to discuss an operationally important matter with flight dispatch.

The crew briefing documentation will contain the following information:

- i) Flight Release
- ii) An OFP for each flight segment
- iii) ATS Flight Plan for each flight segment
- iv) MET Folder containing:
 - METAR, TAF for departure, destination and alternate airports.
 - Significant Weather Charts and Upper Air Wind Data.
 - Satellite Picture uploaded on crew portal for Domestic Flights & provided along with the Met Folder for International Flights.
- v) NOTAMs for departure, destination and alternate airports. (Alternate airports may be destination/ en-route alternates, and take off alternate when required) and list of important NOTAMs for each FIR.
- vi) MEL/ CDL listing applicable.
- vii) Security Briefing when applicable.
- viii) Miscellaneous Documents:
 - ix) Frequency List
 - x) Flight Safety Circulars
 - xi) Any other important circulars etc.
 - xii) List of alternates (preferred/ non preferred)

2.8.4 Reporting time:

2.8.4.1 Flight Crew are to report at the dispatch (airport) latest by:

Aircraft Type	Sector	Normal (Planning Purposes)	Day of Operation
A 320	Domestic	60 min	45 Min
	International	75 Min	60 Min
ATR 72-600	Domestic	45 min	45 min

2.8.4.2 A standard allowance of 30 minutes shall be added at the end of flight time to allow for the completion of checks and records.

2.8.4.3 For record purposes, the pre-flight report time shall count both as duty and as flight duty, and the post-flight allowance shall count as duty.

1.17.2.2 Operations Manual-Part C

1.3 Specific Hazards at MALE:-

APRON lighting at MALE airport is insufficient due to low height of flood light masts restricted to 12m. Pilots to exercise caution.

- Caution: Fuel availability should be checked before departure to MALE. Usually non-availability of fuel at MALE is given under NOTAM.
- Caution: Flight Crew to be cautious of Black hole effect during night arrivals.
- Extensive VFR aircraft operation can be expected within 20NM of airport.
- No aircraft stands are available. All aircraft to be guided to the respective parking spots by marshalls and wing walkers only.
- Medium aircrafts with max landing weight of 49,000KG or above are prohibited from making 180DEG turns on rwy18/36 other than at runway turn pads during 0600-1100UTC. Heavy aircrafts are prohibited from making 180DEG turns on rwy18/36 other than at runway turn pads at all times.
- Bird activity (e.g. Seagull) in the vicinity of the aerodrome.
- Parallel runway identification - Flight crew to specifically brief about the newly constructed parallel runway. Flight crew to fly the instrument approach till the published minimums and in both cases (RWY18/36), they should specifically identify the correct runway before landing.
 - While carrying out ILS approach for RWY 36 flight crew to brief parallel runway is to the right and hence will fly the instrument approach till minimums.
 - While carrying out approach for Runway 18, flight crew to specifically brief that the newly constructed parallel runway is to the left of RWY 18.

1.4 ROUTE/ ROLE COMPETENCE QUALIFICATION

1.4.1 Route and Aerodrome Competence

The pilot must ensure, prior to being assigned as PIC on a route or as pilot to whom the flight may be delegated by the PIC, that he/ she has obtained adequate knowledge of the route to be flown and of the aerodromes (including alternates) facilities and procedures to be used.

1.4.1.1 Route Competence

i) Training

- Route competence training includes knowledge of:
- Terrain and minimum safe altitudes
- Seasonal meteorological conditions
- Meteorological, communications and air traffic facilities, services and procedures
- Search and rescue procedures
- Navigational facilities associated with the route along which the flight is to take place
- Depending upon the complexity of the route the following methods of familiarization will be used:
 - Less complex routes: self-briefing with documentation, or programmed instructions.
 - More complex routes: Routes in the vicinity of high terrain, using metric system for altitude reporting, not using English as the official language for communication are considered as more complex routes.
In addition to the self-instruction, in-flight familiarization under supervision or familiarization in an approved simulator using a database appropriate to route concerned.

ii) Requirements

For route competence, the PIC must have knowledge of:

- Terrain and minimum safe altitudes;
- Seasonal meteorological conditions;
- Meteorological, communication and air traffic facilities, services and procedures.
- Search and rescue procedures; and
- Navigational facilities associated with the route along which the flight is to take place.
- Loss of radio communication procedures

The following method of familiarization will be used:

○ For less complex routes:

- Familiarization by self-briefing with route documentation.
- In flight familiarisation as observer & co-pilot, or pilot under supervision.

○ For more complex routes: specific route competence is required.

1.4.1.2 Aerodrome Competence

i) Training

Aerodrome competence training includes knowledge of:

- Obstacles, general topography, lighting approach aids, minimum safety altitudes.

- Arrival, departure, holding and instrument approach procedures, as well as any procedure applicable to flight path over heavily populated areas.
- Loss of radio communication procedures for the particular aerodrome.
- Depending upon the complexity, aerodrome are classified in categories from A to C. Category A is given to the least demanding aerodrome; Category B and C are applied to more demanding aerodromes.
- Where applicable; noise abatement procedure may be practiced.

ii) **Requirements**

For Aerodrome competence the PIC must have knowledge of and must brief himself on the parameters indicated below:

- Aerodrome layout
- Radio Aids
- Standard Instrument Arrival and Departure procedures
- Local weather and Company minima
- Emergency and Safety Services
- Obstacle and minimum safe altitudes

1.18 Additional information:

1.18.1 During review of the flight folder of the subject flight, it was observed that the supporting document (AIC-04/17-Maldives) of NOTAM-VRMM A0360/18 02DEC0453-02MAR1859 2019EST, was not included in the flight folder presented to the operating crew. Additionally, during sample checks it was observed that the AIC-04/17 was not included in flight folder of flights operated to MALE9VRMM) before the incident.

1.18.2: The approximate time to reach the stand V17R from the IndiGo airline office in Mumbai Terminal 2 is estimated as a minimum of 15 minutes.

1.18.3: Following information regarding ATS units, status of runway's, their features and markings were requested from AICC MALE.

- 1 Comments of the approach frequency controller and the tower controller.
- 2 ATC Tape transcript of the approach and tower frequency, when 6E-1783 was in contact with these ATS units.
- 3 METAR released from 11:00UTC to 12:30UTC and any SIGMET.
- 4 Status of PAPI and runway lights, at the time of incident.
- 5 Status of ILS and NAV AIDS, at the time of incident.
- 6 Status of VOR and serviceability at the time of incident.
- 7 Status of the runway under-construction at the time of incident, including markings made on the under-construction runway, signage's/any other used to distinguish the active runway from the under-construction runway or not in use markings/any lighting or any other means for the under-construction runway.

- 8 Distance between the current runway center-line and the under-construction runway. Heading and course details of the under-construction runway.
- 9 Copy of NOTAM's issued w.r.t under-construction runway(as on 03.02.2019).
- 10 Copy of grid map of VRMM(as on 03.02.2019).

Though the above data was requested from AICC MALE, same is not available for investigation as on date of release of this report. The information used in this report is based on data published in AIP/AIC.

1.19 Useful or effective investigation techniques:-

Nil.

2. Analysis

2.1 Flight planning and dispatch:-

M/s IndiGo has a Centralised Flight Dispatch(CFD) policy wherein a dispatcher located at the centralised facility(Gurugram) assists the PIC in flight preparation, flight plan filing, collection and compilation of NOTAMS's, MET information, and other relevant documents.

The flight planning for the subject flight was performed by an approved flight dispatcher as per the flight dispatch policy of M/s IndiGo. The flight folder consisting of the OFP, Weather data, NOTAM's along with other documents were uploaded on the online system; and the flight folder was presented by the IndiGo office to the flight crew at Mumbai.

During review of flight folder of the subject flight, it was observed that the supporting document (AIC 04/17-MALDIVES) of NOTAM-VRMM A0360/18 02DEC0453-02MAR1859 2019EST, was not included in the flight folder presented to the operating crew.

The flight crew failed to adequately analyse the flight documents and did not notice the absence of the supporting document (AIC 04/17-MALDIVES). The cockpit crew members did not perform a proper review/ discussion of Notices to Airmen (NOTAMS) even though they were operating to MALE for the first time.

2.2 Flight Crew- Route and Aerodrome qualification:-

The scheduling of the operating crew by M/s IndiGo to MALE (without any specific training/instruction) is not in disagreement with the guidelines in Civil Aviation Requirements, Section 08, Series O, Part II, para 9.4.3.3.

Also the Operations Manual (of M/s IndiGo) states the 'Requirements for aerodrome competence' as follows:-

For Aerodrome competence the PIC must have knowledge of and must 'brief himself' on the parameters indicated below:

- Aerodrome layout

- Radio Aids
- Standard Instrument Arrival and Departure procedures
- Local weather and Company minima
- Emergency and Safety Services
- Obstacle and minimum safe altitudes

The operator in above reference has added that, PIC must have knowledge of and must ‘brief himself’ on the parameters as above. Whereas, the operating crew had limited information in the flight folder to discuss/ brief about the flight.

W.r.t the guidance material- Operations circular no.02 of 2012, it is an advisory circular and is supplemental to the provisions contained in the Civil Aviation Requirements, Section 08, Series O, Part II. The operational circular states for ‘route competence’ for less complex routes can be achieved by ‘familiarisation by self-briefing with route documentation or programmed instruction’.

PIC was the PF operating the sector. This was the first time either of the cockpit crew members were operating to MALE(VRMM).

For Category-A aerodromes, no training is required to be imparted to the operating crew as per Operations circular no.02 of 2012. In the absence of requirement for the operator to qualify the pilot-in-command to land at MALE by means of an adequate pictorial presentation, crew self-briefed and operated the sector.

2.3 Operational guidelines- IndiGo Operations Manual:-

Under hazard specific to MALE(VRMM) parallel runway identification is also included. As per which the flight crew are required to specifically brief about the ‘newly constructed parallel runway’. Flight crew are required to fly the instrument approach till the published minimums and in both cases (RWY18/36), they should specifically identify the correct runway before landing.

- While carrying out ILS approach for RWY 36 flight crew to brief parallel runway is to the right and hence will fly the instrument approach till minimums.
- While carrying out approach for Runway 18, flight crew to specifically brief that the newly constructed parallel runway is to the left of RWY 18.

The terminology used by M/s IndiGo in its Operations Manual-Part C for the ‘**under-construction runway**’ is ‘**newly constructed parallel runway**’. In the absence of MALE-AIC 04/17 in the flight folder made available to the crew, Operations Manual-Part C was the only document available to the crew for reference. This erroneous use of terminology added to the crew confusion. The reference made by the operating crew members to the Operations Manual for the Specific Hazard of “Parallel Runway Identification” is considered equally valid for ILS/VOR approaches, as the risk of “Parallel Runway Identification” and mitigation is identical for both approaches.

The MALE- AIC 04/17 specifically states that, the runway being constructed is to the “East of the present runway staggered northwards approximately 500m”; the operational guidelines in the Operations manual of M/s IndiGo on the other hand, makes use of relative direction (i.e., left and right) to define the runway configuration. It is stated that, while carrying out ILS approach for RWY 36 flight crew to brief ‘**parallel runway**’ is to the **RIGHT** and hence will fly the instrument approach till minimums. But this does not clarify which runway is to the **RIGHT**, whether the ‘actual runway’ or ‘under-construction runway’.

The above factors created confusion for the operating crew, who were operating for the first time to MALE (VRMM) in differentiating the actual/active runway from the under-construction runway.

2.4 Crew Resource Management:-

During planning for approach to MALE (in cruise phase) an approach on RWY18 was expected by the crew, the First Officer informed the PIC that as per the company Operations Manual-Part ‘C’ among the two parallel runways at MALE the one on the LEFT was the under-construction runway. Whereas, at the time of descend of the subject aircraft to MALE, RWY36 was in use, the ILS navigational aid became un-serviceable and the crew was advised to perform a RNAV approach RWY36, however since they were not approved for RNAV approach, the crew made a VOR-DME approach for RWY36 followed by transition to visual approach.

From the CVR it is noted that, the First Officer had his presumptions regarding the runway configuration at MALE based on discussions with other cockpit crew members who had previously operated to MALE. The reference to company Operations Manual-Part C, also did not give any clarity to the crew, as it states that during approach to RWY36 the runway on the RIGHT is the ‘parallel runway’. The First Officer did not consider clarifying with the ATC regarding the active runway, despite a request from the PIC.

Neither of the operating crew identified the visual glide path of the available Precision Approach Path Indicator (PAPI), during first approach, which would have not only indicated the glide path indications but also the relative location to the runway to which they intended to land.

The PIC was not confident of the runway to which approach was being made, even below minimums, as he noticed the ‘X’ marks made on the ‘under-construction’ runway. However, the First Officer kept advising the PIC to continue the approach. The First Officer continued to be assertive regarding visual identification of the under-construction runway as the actual runway during approach. The PIC did not make an assertive command to confirm the runway from ATC, even though there was no consensus between the operating crew on the runway identification, as they continued the final approach below minimums unaware of the runway to which the approach was being made. A go-around was not considered at this point.

Neither of the operating crew appropriately assess the destination aerodrome- MALE(VRMM) peculiar characteristics prior to departure, nor did they ask for any additional guidance from the dispatch office, even-though they were operating to MALE for the first time.

Instead of the expected RWY18, RWY36 was in use at the time of clearance to approach for MALE, however the Operations Manual guideline regarding, new runway being to the left of the existing runway (guideline for RWY18 approach) was being recollected by the First Officer. The First Officer identified the under-construction runway as the actual runway and was assertive in advising the PIC on the same.

The result was that the aircraft descended to 12ft radio altitude above the runway under-construction; however PIC still unable to confirm the active runway performed a go-round. The aircraft had descended to 08ft above the runway under-construction, prior to climb.

2.5 Circumstances leading to the incident:-

The PIC was on stand-by duty on the date of incident. He was informed at 0140UTC about the flight duty assigned for the day. He first operated a flight from Bengaluru to Mumbai (VT-ITL, 6E-346), the aircraft was parked on stand 84 of Apron 'D' of domestic apron at 0651UTC against an expected time of arrival of 0640UTC. He then proceeded by a vehicle to the international terminal from the city side. At the international terminal he reached the dispatch of M/s InterGlobe Aviation Ltd. and performed the pre-flight medical examination at 0738UTC. The flight crew did not discuss the destination NOTAM's prior to departure from Mumbai. The approximate time to reach the stand V17R from the IndiGo dispatch is estimated at 15 minutes. The departure time (Chocks OFF) from Mumbai to MALE was 0823UTC.

The above translates to a total transit time (Chocks ON time of Bengaluru-Mumbai flight to Chocks OFF time of Mumbai-MALE flight) of 01hour and 33 minutes at Mumbai.

The PIC reported at M/s IndiGo dispatch/airline office at Terminal-2, 12 minutes prior to the ETD of flight to MALE(VRMM). Whereas, as per the Operations Manual of M/s IndiGo, operating crew are required to report 01 hour and 15 minutes prior to departure at airline's dispatch office. In-addition, as per the Operations Manual part-A, a standard allowance of 30 minutes is required to be added at the end of flight time to allow for the completion of checks and records.

Hence, it would have been evident at the stage of crew scheduling itself, that the time interval between the arrival (from Bengaluru, ETA: 0640UTC) and departure (to MALE, ETD: 0750UTC) flights was not sufficient to comply with the requirements stated in the Operations Manual-Part A.

Instead of the expected RWY18, RWY36 was in use at the time of clearance to approach for MALE. The Operations Manual guideline regarding, new runway being to the left of the existing runway (guideline for RWY18 approach) was being recollected by the First Officer during approach to RWY36.

Though the crew members successfully sighted the two runways during approach, their discussion in the cockpit did not indicate that they had positively identified the runway, which they were instructed to use by the ATC. The 'X' markings on the under-construction runway to identify the non-availability of the runway, was identified by crew members, neither did the crew raise any clarifications with the ATC nor did the ATC advise the crew that the approach path did-not align with the runway in use. The operating crew appeared to have remained unsure of their position relative to the active runway until the go-around, which occurred 12ft above the

under-construction runway. The aircraft had descended to 08ft above the runway under-construction prior to climb.

After the go-around the crew clarified with the ATC tower whether they made approach to the wrong runway. ATC Tower controller responded that the aircraft had in-fact aligned to the wrong runway, which signifies that the ATCO was also aware that 6E-1783 was not aligned for the runway to which the aircraft was cleared to land.

3. Conclusion

3.1 Findings:-

1. The aircraft was having a valid Certificate of Registration and Airworthiness Review Certificate as on date of incident.
2. The operating cockpit crew members were having valid licences and ratings for operating the aircraft for the sector.
3. Both the operating crew members were subjected to pre-flight medical (breath analyser test) prior to the flight at Mumbai. The breath analyser test results were negative and they were cleared to operate the flight.
4. Duty time of both the crew members was within the defined limits.
5. The aircraft was released from Mumbai in a serviceable condition, for a scheduled revenue passenger flight. There was no snag/defect reported prior to the incident sector or after the incident.
6. The PIC and First Officer were operating to MALE(VRMM) for the first time.
7. As required by DGCA, Operations Circular 02 /2012, the operator has classified aerodrome of operations into different categories; MALE(VRMM) as a category-A aerodrome.

As MALE(VRMM) is classified as a category-A aerodrome by the operator and accepted in the Operations Manual by FSD,DGCA; the operating crew is not required to undergo any specific route/aerodrome qualification training/ evaluation.

8. A flight dispatcher from the centralised dispatch facility of the company, based at Gurugram planned and uploaded the flight folder on the IndiGo portal, which was in-turn supplied to the crew at Mumbai.
9. The flight documents handed over to the flight crew did not contain the vital document-AIC 04/17-MALDIVES, which gives a pictorial representation of the current scenario of the under-construction runway and related facilities.
10. The PIC had operated one flight on the day of incident (i.e., Bengaluru-Mumbai) prior to operating Mumbai-MALE sector. After landing at Mumbai, the aircraft was parked on stand 84- Apron 'D' of domestic apron at 0651UTC. The flight arrival was delayed by 11 minutes.
The PIC then travelled to the international terminal and reached the company's dispatch office and performed the pre-flight medical examination at 0738UTC.
11. The aircraft (i.e, VT-INY) scheduled to operate to MALE was parked on stand V17R. The approximate time to reach the stand from company's dispatch office is estimated to be about 15 minutes.

The aircraft departed from Mumbai to MALE at 0823UTC with a delay of 33 minutes.

12. The flight crew did-not adequately evaluate the aerodrome requirements as required, prior to operating the flight and the same was performed during the flight. They did-not detect the non-availability of AIC-04/17 in the flight folder.
13. The PIC was the PF for the flight sector.
14. During descend to MALE, the ILS of RWY36 become un-serviceable and the crew performed a VOR-DME approach to MALE(VRMM) for RWY36.
15. Instead of the expected RWY18, RWY36 was in use at the time of clearance to approach for MALE. The Operations Manual guideline regarding, new runway being to the left of the existing runway (guideline for RWY18 approach) was being recollected by the First Officer during approach to RWY36.
16. The guidelines for MALE(VRMM) used in the Operations Manual-Part C of M/s IndiGo, makes use of relative directions(left and right) to define the runway configuration along with a term ‘newly constructed parallel runway’ instead of ‘under-construction runway’. The MALE- AIC 04/17 specifically states that, the runway being constructed is to the “East of the present runway staggered northwards approximately 500m”. Further, the guidelines in the Operations Manual-Part C of M/s IndiGo does not clarify which runway is to the RIGHT, i.e, whether the actual runway or under-construction runway during approach to MALE(VRMM)RWY36.
17. The First Officer had his presumptions about the runway configuration at MALE(VRMM) already based on his interaction with crew who had operated previously to MALE (VRMM). Hence, he did not request the ATC for any clarifications on the runway to which they were making approach.
18. The PIC was not assertive in getting a confirmation on the runway to which approach was being made from the ATC.
19. The aircraft descended to 12ft radio altitude on the runway under-construction, the PIC still unable to confirm the active runway performed a go-round. The aircraft had descended to 08ft on the runway under-construction prior to climb.
20. The ATC tower controller MALE(VRMM), was aware that 6E-1783 was not aligned for the runway to which the aircraft was cleared to land. However, the ATC tower controller did not advice/caution the crew of 6E-1783 about the same.

3.2 Probable cause:-

The inability of the operating crew to positively identify the runway to which the aircraft was cleared to land during final approach was the cause of the incident.

Contributory factors included the following:-

- a) Inadequate flight planning/review by the operating crew despite operating for the first time to MALE(VRMM).
- b) Lack of assertiveness of the PIC.
- c) In-complete information supplied to the flight crew by dispatch (of M/s IndiGo) and lack of clarity of the information contained in the Operations Manual-Part C.
- d) Inappropriate scheduling of PIC to operate the flight without factoring for the time allowances required for transport between different terminals.

4. Safety Recommendations

1. Necessary corrective actions including training may be imparted to both the cockpit crew members, in-view of the deficiencies in the flight planning and execution of flight.
2. Necessary corrective actions may be considered in respect of the flight dispatcher, in-view of non-consideration of the fact that the flight documents provided to the crew were incomplete.
3. In view of finding no.16 M/s InterGlobe Aviation Limited may modify the company Operations Manual-Part-C to incorporate terminology in standard with the regulatory/guidance documents w.r.t 'under-construction runway'. The use of relative directions (LEFT/RIGHT) may be minimised wherever possible and may be replaced with cardinal directions (N,S,E,W) for specifying operational guidelines in manuals/SOP.
4. M/s IndiGo may ensure sufficient time interval between flights for operating crew, when a change of aircraft is involved, especially when it involves flights from different terminals. The policy for the same may be included in the company Operations Manual.



(LINJU VALAYIL PHILIP)

Assistant Director Air Safety

Investigator-In-Charge

Date: 10/02/2020

Place: New Delhi