DRAFT

Final Investigation Report on Serious Incident: Airprox
Between
Turkish Airlines, Airbus, A330-223F, Türkiye, TC-JOO
and
Flydubai, Boeing, B737 MAX 8, United Arab Emirates, A6-FKR
On
30 August 2025 in Mumbai FIR (INDIA)

AIRCRAFT ACCIDENT INVESTIGATION BUREAU
MINISTRY OF CIVIL AVIATION
GOVERNMENT OF INDIA

FOREWORD

In accordance with Annex 13 to the Convention on International Civil Aviation Organization (ICAO) and Rule 3 of Aircraft (Investigation of Accidents and Incidents), Rules 2025, the sole objective of the investigation of an Accident/Incident shall be the prevention of accidents and incidents and ***not to apportion blame or liability.*** *The investigation conducted in accordance with the provisions of the above-said rules shall be separate from any judicial or administrative proceedings to apportion blame or liability.*

This document has been prepared based upon the evidence collected during the investigation, an opinion obtained from the experts. Consequently, the use of this report for any purpose other than for the prevention of future accidents or incidents could lead to erroneous interpretations.

Unless otherwise indicated, all times in this report Time are stated in Coordinated Universal Time (UTC).

For reasons of data protection and simplification of the text, this report uses exclusively generic masculine.

Note 1:
Figures used in this report are taken from different sources and are adjusted from the original for the sole purpose of improving the clarity of the Report. Modifications to images used in this report are limited to cropping, magnification or addition of text boxes, arrows or lines.

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GLOSSARY

AAIB	Aircraft Accident Investigation Bureau
AAI	Airports Authority of India
ACAS	Airborne Collision Avoidance System
ADS-B	Automatic Dependent Surveillance–Broadcast
ADS-C	Automatic Dependent Surveillance–Contract
AFS	Automated Flight System
ANSP	Air Navigation Service Provider
ATC	Air Traffic Control
ATCO	Air Traffic Control Officer
Airprox	Aircraft Proximity
ATIS	Automatic Terminal Information Service
ATPL	Airline Transport Pilot License
ATSU	Air Traffic Service Unit, a crucial part of the Future Air Navigation System (FANS) and ACARS (Aircraft Communications Addressing and Reporting System)
BEA	Bureau d'Enquêtes et d'Analyses pour la sécurité de l'aviation civile (France). Bureau of enquiry and analysis of civil aviation safety.
CCWS	Common Controller Work Station
CCI	CPDLC Connection Confirm
CPDLC	Controller-Pilot Data Link Communications
CPL	Commercial Pilot License
CR	Clearance Request
CRM	Crew Resource Management
CRS	Certificate of Release to Service
CVR	Cockpit Voice Recorder
DCDU	Data Link Control and Display Unit in aircraft
DG	Director General
ETD	Estimated Time of Departure
FCOM	Flight Crew Operating Manual
FCU	Flight Control Unit
FDR	Flight Data Recorder
FIR	Flight Information Region
FL	Flight Level
FO	First Officer

FMS	Flight Management System
HF	High Frequency
Hrs	Hours
ICAO	International Civil Aviation Organization
IFR	Instrument Flight Rules
IST	Indian Standard Time
MEL	Minimum Equipment List
MRN	Message Reference Number (in CPDLC)
MTCD	Medium Term Conflict Detection
OCC	Oceanic Control Centre
PFD	Primary Flight Display
PF	Pilot Flying
PIC	Pilot-in-Command
RCP	Required Communication Performance
ROGER	CPDLC acknowledgement indicating message received
RVSM	Reduced Vertical Separation Minimum
SDD	Situation Display Device
TA	Traffic Advisory
TCAS	Traffic Collision Avoidance System
TSIC	Transport Safety Investigation Center (Türkiye)
UAB	Unable (CPDLC)
UAE	United Arab Emirates
UM	Uplink Message (CPDLC)
VABF	Mumbai FIR
VHF	Very High Frequency
WILCO	Will comply

SYNOPSIS

Date and time of serious incident	30 August 2025, at 23:47 (05:17 A.M IST)	
Type of Occurrence	Airprox (Loss of Longitudinal and Vertical Separation)	
Place of incident	Mumbai oceanic control area at approximately 197 miles east of Waypoint TOTOX on route P574.	
Applicable Standard	Aircraft on reciprocal tracks: Where lateral separation is not provided, vertical separation of 1000 feet shall be provided for at least 10 minutes prior to and after the time, the aircraft are estimated to pass, or are estimated to have passed. (Reference ICAO Doc 4444 para 5.4.2.2.3)	
	Aircraft1	**Aircraft2**
Operator	Turkish Airlines	Flydubai
Flight Number	THY6380	FDB2JQ
Type of aircraft	A330-223F	B737 MAX 8
Registration	TC-JOO	A6-FKR
Flight Rule	IFR	IFR
Sector	VOMM - LTFM	OMDB - VOCL
Route	P574-TOTOX-L555	N629-TOTOX-P574
Phase	Climb	Cruise
Type of Flight	Scheduled (Cargo)	Scheduled (Passenger)
Persons on Board	02	173

Brief resume of the Circumstances:

The serious incident occurred during the early morning hours at 0517 hrs local time on 30 August 2025 in Indian airspace. Both aircraft were cruising within the Mumbai FIR on ATS Route P574, operating in opposite directions.

An THY6380, A330F, registration TC-JOO, from Chennai to Istanbul, was flying westbound and maintaining FL340. FDB2JQ, B38M, registration A6-FKR, operating from Dubai to Calicut, was flying eastbound and maintaining FL350. Both flights were scheduled to operate on the same route, P574, in the Mumbai FIR.

The incident occurred on the common Route P574, approximately 197 NM east of waypoint TOTOX, when aircraft THY6380 vacated FL340 and commenced a climb to FL360. At that time, aircraft FDB2JQ was flying in the opposite direction, approximately 3 NM ahead and 2 NM laterally offset, maintaining 1,000 feet vertical separation above the climbing aircraft.

As aircraft THY6380 passed beneath aircraft FDB2JQ during the climb, a loss of vertical and

lateral separation occurred. Traffic Advisory (TA) alerts were generated on board both aircraft. The aircraft passed each other with less than the prescribed lateral and vertical separation, which has been assessed as a serious incident.

A loss of standard separation was also observed involving aircraft THY6380 and QTR67P (A320) at FL360 in the same direction, as well as UAE348 (B77W) at FL350 in the opposite direction. However, these occurrences have not been assessed as serious incidents. Therefore, this report addresses only the serious incident involving aircraft THY6380 and FDB2JQ.

Notification:

The occurrence was classified as a serious incident by AAIB (India), and an investigation was ordered vide No. INV 12012/2/2025-AAIB dated 15 Sept 2025 under rule 11 (1) of aircraft (Investigation of Accidents and Incidents) rules, 2025. Director General, AAIB appointed the Investigator-in-Charge. Notification was sent to ICAO, Transport Safety Investigation Center (TSIC, Türkiye), General Civil Aviation Authority (GCAA, UAE), Bureau of Enquiry and Analysis for Civil Aviation Safety (BEA, France) and National Transportation Safety Board (NTSB, USA) on 9th September 2025. Further TSIC, Türkiye and GCAA, UAE appointed Accredited Representative to participate in the investigation in accordance with ICAO Annex 13 requirements.

1. Factual Information

1.1 History of Flight

1. 1. 1 General

THY6380: Turkish Airlines, a cargo flight, THY6380, an Airbus A330 (Registration: TC-JOO), was scheduled to operate from Chennai International Airport (VOMM), India, to Istanbul Airport (LTFM), Türkiye, with an estimated flight time of 7 hours and 20 minutes. The actual departure time was 21:42. The flight was planned via route: P574 → TOTOX → L555 → TULBU → N563 → A4 → ERSEN. The aircraft was equipped with a serviceable Traffic Collision Avoidance System (TCAS).

FDB2JQ: Flydubai passenger flight FDB2JQ, a Boeing 737 MAX 8 (Registration: A6-FKR), was scheduled to operate from Dubai International Airport (OMDB), United Arab Emirates (UAE) to Calicut International Airport, India, with an estimated flight time of 3 hours and 38 minutes. The actual departure time was 22:17. The flight was planned via route: ANVIX → L223 → TARDI → N629 → TOTOX → P574 → UDULO → W15. The aircraft was equipped with serviceable TCAS.

Both aircraft were under the control of Mumbai Control i.e. THY6380 on CPDLC (Controller Pilot Data Link Communications) and FDB2JQ on HF (High Frequency). Both the aircrafts were at their respective cruising levels in opposite directions. Flydubai was flying at FL350, with a vertical separation of 1000 feet above Turkish Airlines at FL340. The traffic information of the other flight was not passed by ATC to either flight.

1.1.2 Event:

As per crew reports by THY6380 the cruise briefing was completed on reaching cruise level. After continuing the flight for a while, the PIC asked the FO that he would like to take rest. The FO agreed after which the PIC proceeded for controlled rest.

Approximately one minute before the incident, FBD2JQ deviated right of track to fly 2 miles off set of the route due to turbulence as reported by the FO. During this period the PIC of FBD2JQ was also on controlled rest and the FO was PF.

Whereas in opposite direction while the PIC of THY6380 was in-controlled rest, the FO requested ATC a climb to FL360 via CPDLC. ATC responded: “Unable due to traffic.” The flight continued at same level. As per FO statement, the blue ATC message light illuminated in the cockpit and to the FO it appeared as though a clearance to climb FL360 was given by the ATC. The FO entered change in level in FCU to initiate climb to FL360 and the aircraft left FL340 to climb FL360.

At this time the opposite direction traffic FDB2JQ was 3 miles ahead and 2 miles offset

towards right of THY6380 in the opposite direction and 1000 feet above as shown in Fig:01.

As per crew statement of both the aircraft the respective PICs of THY6380 and FBD2JQ were awakened from controlled rest by the sound of Traffic Advisory “TRAFFIC TRAFFIC”.

As per statement of the crew the PIC of THY6380 corrected his seating posture and the FO provided information about the traffic, on the left side (which should have been FDB2JQ). The PIC reminded the FO that he was in control of the aircraft. It was only when the PIC looked at the PFD, he realized that the aircraft was climbing. The PIC asked FO if he had obtained clearance for the climb, from ATC. The FO replied that he had received a CPDLC clearance.

To verify, the PIC pressed the “RECALL” button on the DCDU and saw that, the only message displayed was: “REQ CLIMB FL360.” The traffic advisory had stopped by this time. PIC took control of the aircraft and asked the FO again if he had received the clearance to climb. The FO replied that initially, it was not approved, but then the blue light came on, so he pressed ‘ROGER’ and initiated the climb.

The PIC leveled off the aircraft briefly at FL350. But because FO claimed that he had received the message, and as FL350 was opposite to the direction of cruise, the PIC continued the climb slowly to FL360 while verifying the clearance with ATC. The PIC attempted to confirm the clearance via voice radio, but no response was received.

So, the PIC sent a free text message to ATC asking again whether the climb was approved to which the ATC replied, “CLIMB WAS NOT APPROVED”. Shortly after, the ATC sent another message advising the aircraft to maintain a speed of Mach 0.78 or less.

When asked by the PIC again the FO insisted, “Yes Captain, we got the message”. To reconfirm, the PIC sent another message to the ATC asking whether any climb instruction had been issued. ATC replied stating: “NO CLIMB INSTRUCTION WAS GIVEN”.

Flight continued normally till LTFM.

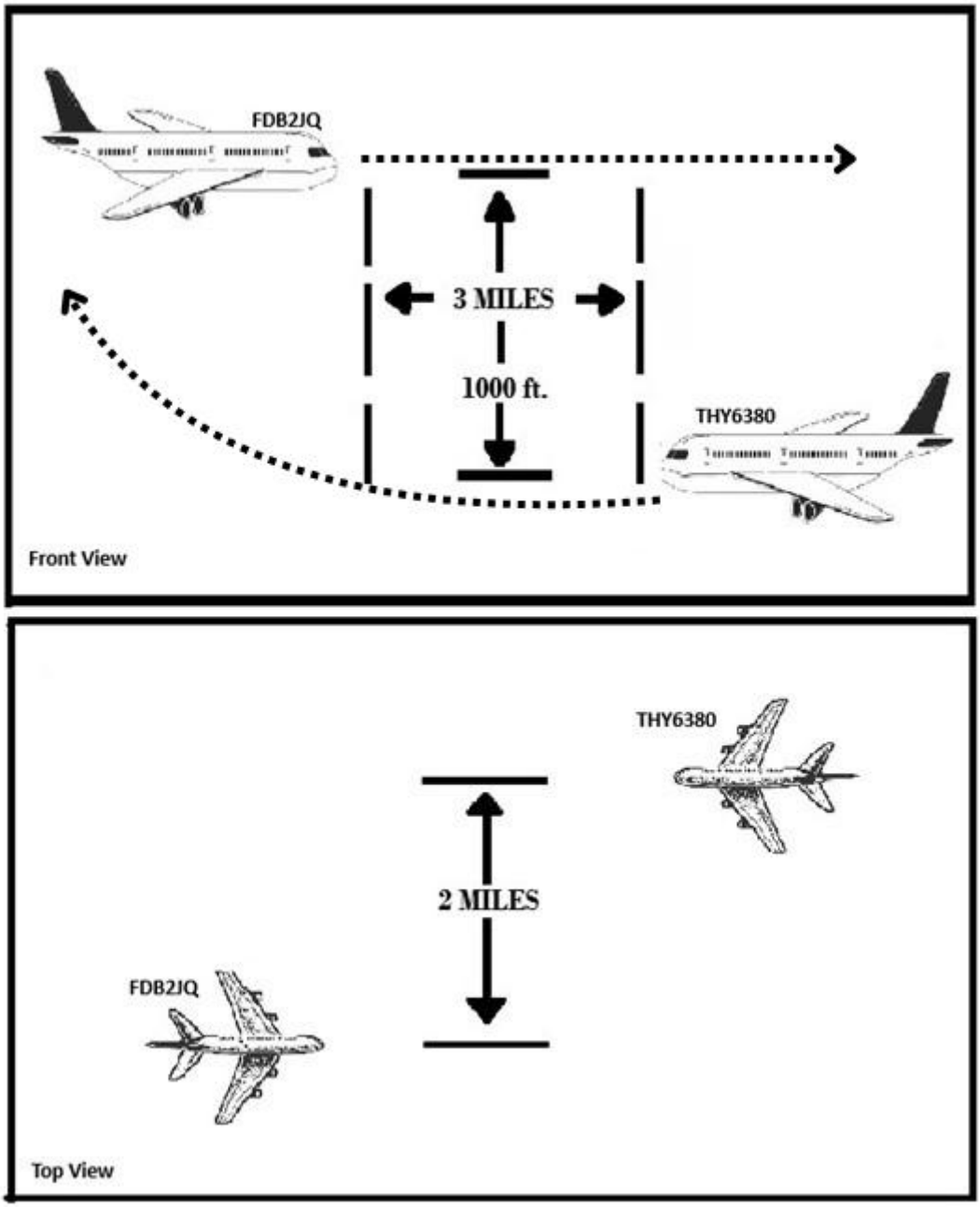

Fig: 01 When TC-JOO (THY6380) initiated climb. Vertically separated by 1000 feet and 3 miles apart in opposite direction. FDB2JQ was flying offset by 2 miles. (Aircraft positions not to scale)

1.1.1 Sequence of events:

Time stamp (UTC)	From- To	Direction of CPDLC	CPDLC messages
22:33:12	ATC-THY6380	UpLink	CPDLC Connection Request
22:33:29	THY6380-ATC	DownLink	Connect confirm (CCI)
22:33:42	Received at ATC	DownLink	CPDLC Connection Confirm
23:38:36	THY6380-ATC	DownLink	Request: FL360 by FO
23:38:37	Received at ATC	DownLink	REQUEST {F360}
23:40:10	ATC-THY6380	UpLink	UNABLE DUE TO TRAFFIC
23:40:10	Received at THY6380	UpLink	UNABLE DUE TO TRAFFIC
23:45:22	**FBD2JQ**		**FBD2JQ deviated right to fly 2miles offset.**
23:46:17	**THY6380**	**EVENT**	**FO selected FL360 in FCU**
23:46:32	**THY6380**		**THY6380 initiated climb to FL360. (longitudnal distance was 3.6 nm in opposite direction with aircraft FDB2JQ facing each other)**
23:46:44	**THY6380 and FBD2JQ**		**TCAS TA initiated at 34164 ft (lateral distance was 2.17 nm in opposite direction passing each other climbing)**
23:46:58	**THY6380 and FBD2JQ**		**TCAS TA ended at 34308 ft (lateral distance was 5.43 nm in opposite direction crossed each other climbing)**
23:50:10	THY6380-ATC	DownLink	{CONFIRM CLIMB 360} by PIC
23:50:10	Received at ATC	DownLink	{CONFIRM CLIMB 360}
23:50:16	ATC-THY6380	UpLink	{REPORT MACH NO}
23:50:16	Received at THY6380	UpLink	REPORT MACH NO
23:50:33	THY6380- ATC	DownLink	ROGER
23:50:34	Received at ATC	DownLink	ROGER
23:50:40	THY6380	UpLink	YOUR CLIMB WAS NOT APPROVED
23:50:41	Received at THY6380	UpLink	YOUR CLIMB WAS NOT APPROVED
23:51:05	THY6380-ATC	DownLink	ROGER
23:51:06	Received at ATC	DownLink	ROGER
23:51:20	THY6380-ATC	DownLink	MACH .82
23:51:20	Received at ATC	DownLink	{MACH .82}
23:51:26	ATC-THY6380	UpLink	MAINTAIN FL360..STANDBY FOR FURTHER INSTRUCTION
23:51:27	Received at THY6380	UpLink	MAINTAIN FL360..STANDBY FOR FURTHER INSTRUCTION
23:51:42	THY6380-ATC	DownLink	ROGER
23:51:43	Received at ATC	DownLink	ROGER
23:53:25	ATC-THY6380	UpLink	MAINTAIN 0.78 OR LESS
23:53:25	Received at THY6380	UpLink	{MAINTAIN 0.78 OR LESS}
23:53:42	THY6380-ATC	DownLink	ROGER
23:53:48	Received at ATC	DownLink	ROGER

00:01:20	ATC-THY6380	UpLink	CONTACT {OOMS CONTROL} {126.550}
00:01:21	Received at THY6380	UpLink	CONTACT: OOMS, CONTROL, 126.550 (VHF)
00:01:49	THY6380-ATC	DownLink	WILCO
00:01:50	Received at ATC	DownLink	WILCO
00:05:47	THY6380-ATC	DownLink	WE HAD ANOTHER MESSAGE AFTER UNABLE
00:05:48	Received at ATC	DownLink	WE HAD ANOTHER MESSAGE AFTER UNABLE
00:08:56	ATC-THY6380	UpLink	NO CLIMB INSTRUCTION WAS GIVEN
00:08:57	Received at THY6380	UpLink	NO CLIMB INSTRUCTION WAS GIVEN
00:09:15	THY6380-ATC	DownLink	ROGER
00:09:15	Received at ATC	DownLink	ROGER
00:12:54	ATC-THY6380	UpLink	END OF SERVICE.
00:12:54	Received at THY6380	UpLink	END OF SERVICE.
00:13:01	THY6380	DownLink	CPDLC Disconnect Request

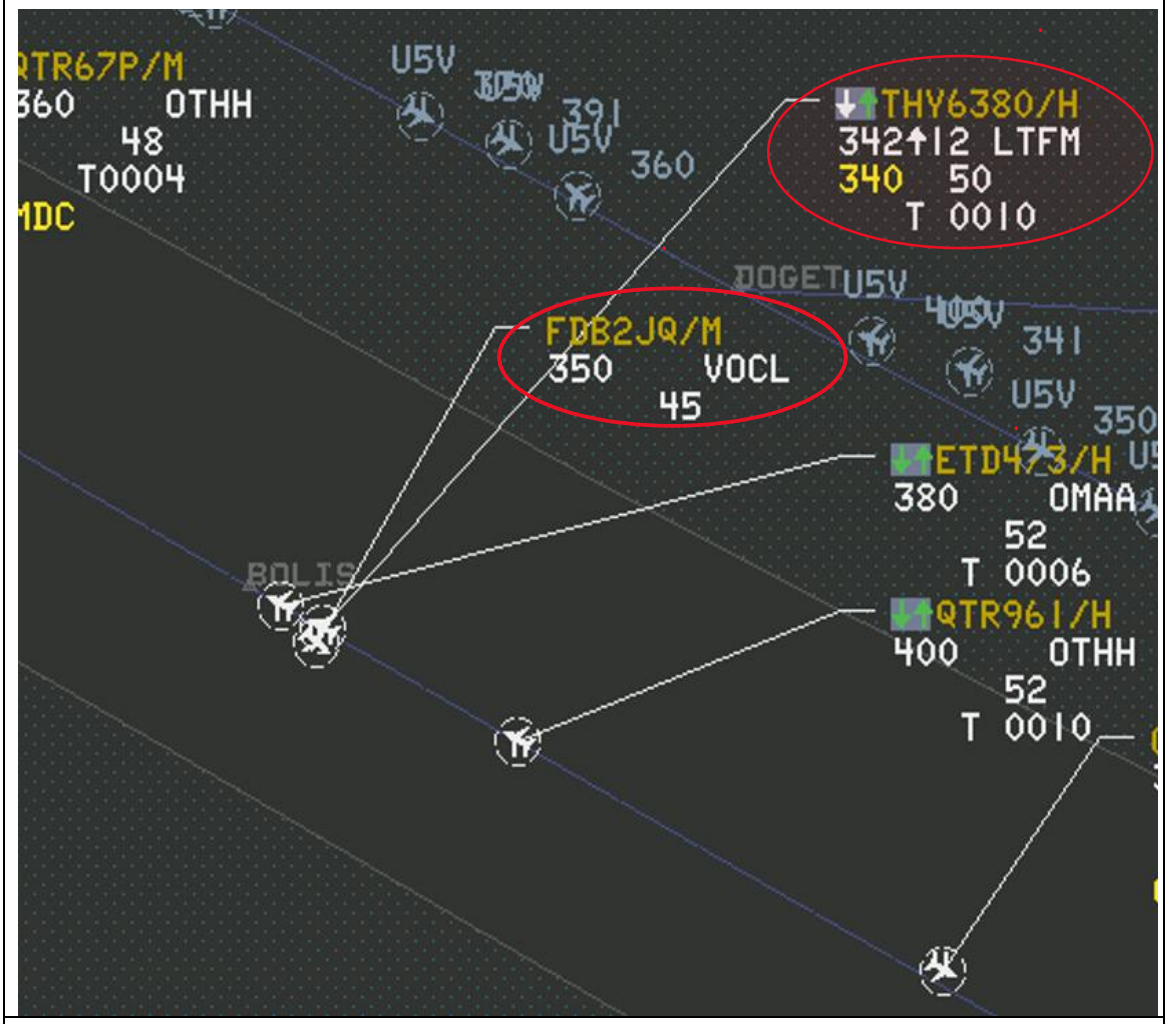

Fig: 02 Position of THY6380 passing FL342 in climbing phase and FDB2JQ at FL350 (Screen shot of Controller work Position in OCC, by Mumbai ATC)

1.2 Injuries to persons:

There was no injury reported to any occupant on board.

1.3 Damage to Aircraft:

There was no damage reported to either aircraft.

1.4 Other damage:

No other damage reported.

1.5 Personnel Information:

1.5.1 Crew Information:

THY6380	PIC	FO
Nationality	Türkiye	Türkiye
Date of Joining Organization	02.05.2011	14.10.2019
Date of Birth	01.12.1987	20.03.1986
License	ATPL	CPL
Date of Issue of License	02.05.2024	03.07.2025
License Valid up to	29.04.2026	29.06.2026
Date of Class I Medical Exam	15.04.2025	15.08.2025
Class I Medical valid up to date	03.05.2026	26.08.2026
Total flying experience	10570:08 Hrs	969:12 Hrs
Total flying experience on type	6341:48 Hrs	144:29 Hrs
Total flying experience during last 1 year	783:14 Hrs	427:20 Hrs
Total flying experience during last 6 Months	368:59 Hrs	219:40 Hrs
Total flying experience during last 30 days	57:07 Hrs	65.07 Hrs
Total flying experience during last 07 Days	11:29 Hrs	14.46 Hrs
Total flying experience in last 24 Hrs	06:39 Hrs	06.39 Hrs
Rest before flight	40:40 Hrs	28:02 Hrs

The crew in THY6380 were paired for the first time. They were trained in CPDLC operations.

FDB2JQ	PIC	FO
Nationality	South Africa	India
Date of Joining Organization	06.06.2022	10.07.2023
Date of Birth	14.01.1973	09.03.1989
License	ATPL	ATPL
Date of Issue of License	02.08.2022	05.09.2023
License Valid up to	01.08.2030	04.09.2031
Total flying experience	17698 Hrs	3885 Hrs
Total flying on type	15098 Hrs	3626 Hrs
Total flying experience during last 1 year	755 Hrs	680 Hrs

Total flying experience during last 6 Months	366 Hrs	378 Hrs
Total flying experience during last 30 days	73 Hrs	79 Hrs
Total flying experience during last 07 Days	24 Hrs	16 Hrs
Total flying experience during last 24 Hours	4 Hrs	0 Hrs
Rest before flight	72 Hrs	24 Hrs

1.5.2 Air Traffic Controller Information:

ATCO - Mumbai OCC, India	
Age (Years)	38 YEARS
Station and Unit	VABB / OCC
Date of Issue & Date of validity of License	14.06.2021 / 26.04.2047
Date of Medical Validity	13.06.2027
Last date of Proficiency check	21.06.2025
Total experience	4 years, 5 months

1.6 Aircraft Information:

Both aircraft were Airworthy. All pertinent documents/certificates for the aircraft's operation were valid as on date of serious incident.

THY6380	
Aircraft Model	A330-223F
Aircraft Serial No.	1164
Year of Manufacturer	2012
Registration Marks	TC-JOO
Nationality	Turkiye
Name of Owner	Turk Hava Yollari A.O.
Certificate of Registration issued on	10.10.2018
Certificate of Airworthiness issued on	10.10.2018
Airworthiness Review Certificate validity	06.08.2026
Last Major Inspection	Son A check A039 CRS date 26.08.2025
MEL detail	NIL
Last transponder/ Radio check	24.08.2025
Aircraft total hours on the day of incident	43229 Hrs

FDB2JQ	
Aircraft Model	737 MAX 8
Aircraft Serial No.	61026

Year of Manufacturer	05 Dec 2023
Registration Marks	A6-FKR
Nationality	United Arab Emirates
Name of Owner	Al Nakhla Five Limited, Abu Dhabi Commercial Bank PJSC
Certificate of Registration issued on	05.12.2023
Certificate of Airworthiness issued on	05.12.2023
Airworthiness Review Certificate validity	04.12.2025
Last Major Inspection	*Last A- Check carried on 12.04.2025 *Last 6-year check carried out on 22.05.2024
MEL detail	A05 Check, 16 July,2025
Last transponder/ Radio check	No data available
Aircraft total hours as on the day of incident	6890 Hrs

1.7 Meteorological Information:

The weather as per the satellite imagery provided by the meteorological department, India during the time of the serious incident depicted that no significant cloud cover was observed. (Fig: 03)

The location of the incident lies over the North-East Arabian Sea.

The weather inference over the requested area has been extracted based on the NWP model chart data and satellite images.

Yellow box marked on the Satellite image represents the approximate location at which the incident occurred. There were no significant convective clouds present around the location of the incident. There were some patches of medium cloud i.e Altocumulus clouds.

The image also shows an Easterly wind with wind speed 10 kt- 15kt and Temperature between -37°C to -36°C at FL 340 around the location of incident.

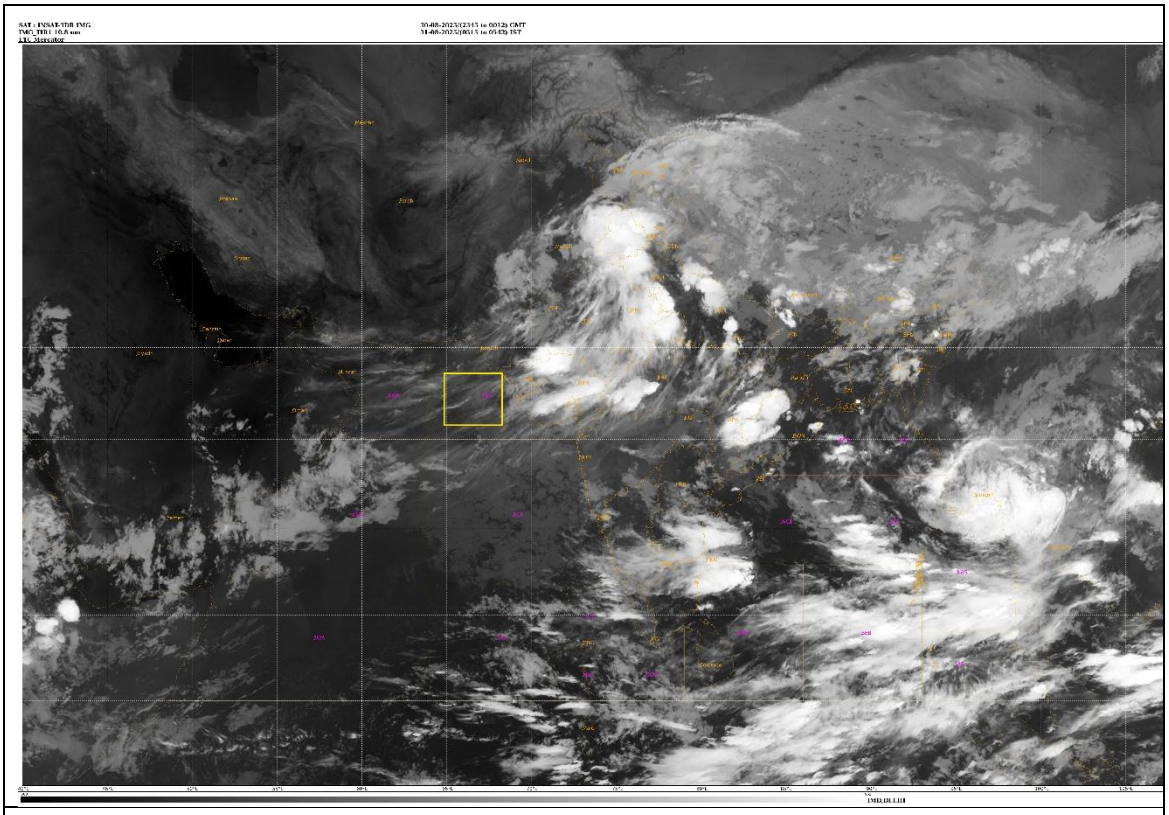

Fig: 03 Satellite image of (Waypoint 'PARAR' marked on the image from Aviation Meteorological office, Mumbai)

1.8 Aids to Navigation:

The aircraft were operating in an oceanic segment under the procedural control of the Mumbai FIR region. All ground-based navigational aids at Mumbai Airport were serviceable at the time of the occurrence. Surveillance services were not provided, as the aircraft were operating outside radar coverage. However, ADS-C position reports were available to the controller for monitoring over the oceanic area.

1.9 Communications:

FDB2JQ was in contact with Mumbai OCC through HF but during the incident when the aircraft called ATC, no effective communication could be established. THY6380 was in contact on CPDLC with the ATC.

1.10 Aerodrome Information:

Not relevant to the serious incident.

1.11 Flight Recorders:

FDR data of both the aircraft were available but CVR data could not be retrieved.

1.12 Wreckage and Impact Information:

Not relevant with respect to this investigation.

1.13 Medical and Pathological Information:

No adverse observations were reported.

1.14 Fire:

There was no fire.

1.15 Survival Aspects:

The serious incident was survivable.

1.16 Tests and Research:

Nil

1.17 Organizational and management information:

1.17.1 Flydubai:

Dubai Aviation Corporation, doing business as flydubai, is an Emirati government-owned airline based in Dubai, United Arab Emirates. The airline operates approximately 131 destinations, serving the Middle East, Africa, Asia and Europe from Dubai.

1.17.2 Turkish Airlines:

Turkish Airlines is the flag carrier of Türkiye with headquarter in Istanbul. It operates scheduled services to approximately 352 destinations (including cargo) in Europe, Asia, Oceania, Africa, and the Americas. The airline serves more destinations non-stop from a single airport than any other airline in the world and operates to approximately 131 countries with a fleet of around 24 cargo aircraft.

1.17.2.1 Controlled Rest on the Flight Deck as in Para 8.3.10.3 Operation Manual Part-A of Turkish Airlines.

(A) During all phases of flight each flight crew member is required to be on duty in the

flight crew compartment and shall remain alert. If a lack of alertness is encountered, appropriate counter measures shall be used. If unexpected fatigue is experienced, a controlled rest procedure, organized by the Commander, can be used subject to workload permits.

(B) Controlled rest taken in this way shall not be considered to be part of a rest period for purposes of calculating flight duty time limitations nor used to justify any extension of the duty period.

(C) When applying controlled rest procedures, the Commander shall ensure that:

1. The other flight crew member(s) is/are adequately briefed to carry out the duties of the resting flight crew member;
2. One flight crew member is fully able to exercise control of the aeroplane at all times;
3. **Any system intervention that would normally require a cross-check according to multi-crew principles is avoided until the resting flight crew member resumes his duties.**

1.17.2.2 Critical Actions Requiring Cross-Check and Confirmation as in Para 3.1.1.2 Operation Manual Part-B of Turkish Airlines.

Flight crew members shall cross-check and confirm critical actions such as:
1) ATIS information.
2) ATC clearances (monitored by both pilots and consequent action including readback by one pilot and confirmed/monitored by the other).
3) Take-off and landing performance calculations, Load sheet and associated entries.
4) System status and mode changes.
5) Configuration changes.
6) Autopilot and FMS modifications.
7) Altimeter, altitude settings and DIR TO actions.
8) Change in speeds or Mach numbers;
9) Transfers of control (and/or communication) of the aircraft;
10) Changes to the Automated Flight System (AFS) and
11) Weight/mass and balance calculations and associated FMS entries;

1.17.3 Airports Authority of India:

1.17.3.1 General

The Airports Authority of India (AAI), a statutory body under the Ministry of Civil Aviation, is responsible for creating, upgrading, maintaining, and managing civil aviation infrastructure in India, including airports and air traffic management services.

Mumbai Oceanic Control is a unit of the Airports Authority of India (AAI), responsible for managing air traffic within the Mumbai Flight Information Region (FIR). It operates 24/7 and provides air traffic control services.

1.17.3.2 General procedure followed for transmitting CPDLC messages by ATC Mumbai

The ATC automation system prompts a default pre-formatted response to all clearance requests (CR) from connected aircraft. The association of a MRN to a downlink clearance request has to be done automatically by the configuration of the ATC automation system. For clearance requests seeking flight level changes, the default response is:

"Climb/Descend to FL____, report reaching ".

However, in Mumbai ATC the controllers always "clear" such requests and then initiate a separate message explaining the inability/expected time when the request can possibly be accommodated. Reason for clearing the request is given that any unintended response to a request is not sent by mistake.

Therefore the general procedure followed by the controllers is " To Clear the CR, if unable to accept/accommodate immediately and send Unable (UAB) or any other explanatory message". This is considered general practice and is not documented.

1.17.3.3 CCWS and CPDLC related data in Mumbai Oceanic Control: (from Automation-ATC)

The input data in CCWS and the corresponding update time	In case of ADS-C, unlike (ADS-B) the rate of receipt of position update from the avionics is based on a Contract, and hence the name ADS-C. The default rate of contract set in automation system is 1620 seconds (27 minutes). The controller may choose a different interval if required.
The lag if observed in CPDLC transmission	The system is reportedly compliant with RCP240 specifications. A timeout, if detected is displayed to the controller as "message not sent" or "error".
The alert in CCWS	The MTCD- medium term conflict alerts - are based on the (profiles) trajectories of tracks. An update received from ADS-C, (based on the update contract) updates the trajectory and initiate the alert.

1.18 Additional information:

1.18.1 Separation applicable: Refer Para 5.4.2.2.3 of ICAO Doc 4444.

Aircraft on reciprocal tracks. Where lateral separation is not provided, vertical separation shall be provided for at least ten minutes prior to and after the time the aircraft are estimated to pass, or are estimated to have passed (Fig: 04). Provided it has been determined that the aircraft have passed each other, this minimum need not apply.

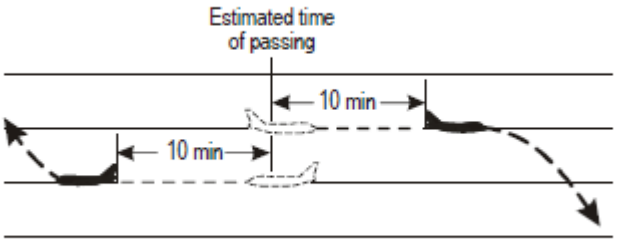

Fig 04: Ten- minute separation between aircraft on reciprocal tracks.

1.18.2. Review of the CPDLC/datalink logs for THY6380 by SITA Service Operations.

In summary given by SITA service operations, based on the system logs, there was no datalink traffic messages logged between 23:40 and 23:50. They have also verified that there were no synchronization issues, or system interruptions on their side during this period.

Thank you for your message. We have reviewed the CPDLC/datalink logs for TC-JOO on 30 August around the reported time. Please see our findings below

- The last entry visible in our logs prior to the reported gap is at **23:40:14.043 UTC:**

```
QU BOMCAYA
.FANS1XS 302340
MAS
AN TC-JOO/MA 851S
DT QXT IOR5 302340 S43A
```

- After this, we do not see any datalink traffic until **23:50:09.760 UTC**, when we received the following downlink(BA) from the aircraft:

```
2.TC-JOO BA6J48AIK6380/BOMCAYA.AT1.TC-JOO215F2110C421CF9D1A4D29A821CC933612066D98009D63
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Fig 05: Communication received from Service Operations, SITA FOR AIRCRAFT

1.18.3. Analysis of CPDLC message by AIRBUS.

1.18.3.1 (At 23:40:10, the VABF ATC Centre sent a CPDLC Uplink message *"UM#0 UNABLE + UM#166 DUE TO TRAFFIC"*. The visual cockpit ATC MSG pb lit up for 5 sec. (ATC audio alert is not recorded with DAR data frame).

ATC replied: "Unable due to traffic." The flight remained level.

This message did not contain any MRN (Message Reference Number) that is expected when answering to the aircraft downlink message sent at 23:36:36. In this case, the onboard ATC datalink system did not consider the VABF ATC uplink message at 23:40:10 as an answer to the aircraft downlink message sent at 23:36:36. The onboard ATC datalink system will trigger a timer to display a reminder message if no ATC uplink message with a MRN is received within 7min 30 sec. This function is described in the FCOM DSC-46-10-30-20 given in the appendix #3 and called an operational response timer.)

At 23:46:06, in absence of an ATC uplink message with a MRN, the onboard ATC datalink system displayed a reminder message on the DCDU associated with the visual cockpit ATC MSG pb light. The PB lights are the attention getters for the flight crew to have a look at the ECAM pages to deal with different kind of messages with ATC that are not only clearances but also report request, negotiation, information or reminder messages.
The FCOM indicates that it flashes when a datalink message from ATC centre is received or a reminder message (linked to a deferred clearance or a report request) is received.

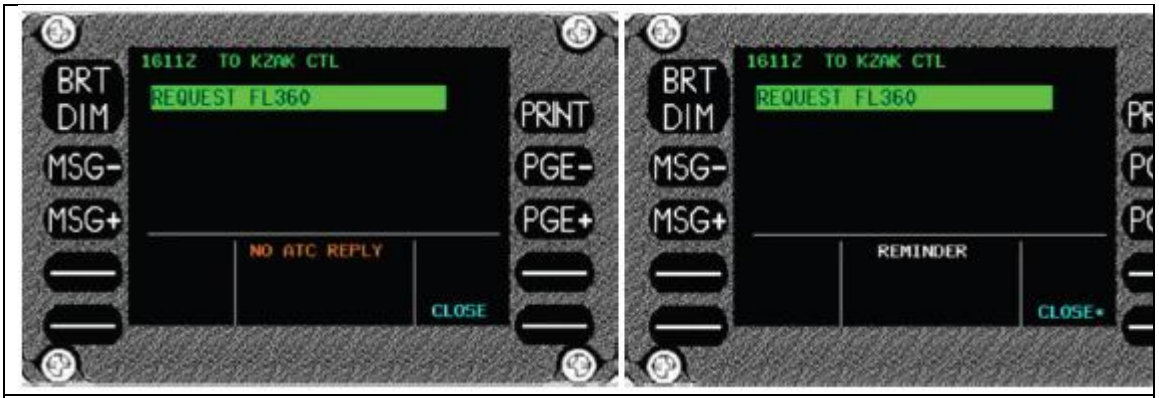

Fig 06: Example of the reminder messages displayed on the DCDU

At approximately 23:48, the blue ATC message light illuminated to get the pilot attention and have a look at the DCDU screen where a reminder message was presented. FO interpreted this reminder message as a clearance message to climb FL360 that is presented differently-

a) In accordance with the display visual rules differentiating the uplink and the downlink messages.

b) Without the standardized answer to a clearance such as WILCO or ROGER.

1.18.3.2 Most likely scenario: Given that neither the airline nor the investigation committee reported an Air Traffic Service Unit (ATSU) failure, the scenario being most consistent with the recorded data, the captain's report, and the onboard ATC datalink system, considers the following logic:

The First Officer misinterpreted the reminder messages, which appeared on the DCDU 7 minutes and 30 seconds after the request to VABF ATC for a climb to FL 360, as authorization to climb. The climb was initiated within 18 seconds of these reminder messages being displayed.

The next paragraphs aim at providing the human factors aspects that may have led to an incorrect interpretation of the reminder messages displayed on the DCDU:

- Hours of the day when the circadian rhythm is most affected that may degrade vigilance and consequently attention.

- First Officer expectations of a positive answer from ATC to his request strong enough to not fully perceive or inaccurately interpret the reminder messages content.

- Lack of knowledge of the reminders message function provided by the onboard ATC datalink system.

The onboard ATC datalink system activated the reminder messages because the CPDLC uplink message from ATC, which negatively responded to the FO's request for FL 360, lacked a Message Reference Number (MRN). Airbus is currently unaware of the specific method ATC uses to incorporate an MRN when replying to an aircraft request via a CPDLC message.

1.18.4. Requirement as per Para 8.2.11 of ICAO Annex 10, VOL II regarding "Free Text Message Element".

Quote "PANS. -The use of free text message elements by controllers or pilots should be avoided.
Note— Whilst it is recognized that non-routine and emergency situations may necessitate the use of free text, particularly when voice communication has failed, the avoidance of utilizing free text messages is intended to reduce the possibility of misinterpretation and ambiguity." **Unquote**
The message sent from ATC was a free text message. The operational message sent from aircraft was not a free text message and later the reminder message displayed on DCDU replicated the downlink message sent by the flight crew with the display rules associated with downlink.

1.18.5. Appendix B of Doc 9966 Page "App-B-1"- "Recommended

procedures for controlled rest on the flight deck”-Planning.

Planning

- One pilot only may take controlled rest at a time in his seat. The harness should be used and the seat positioned to minimize unintentional interference with the controls.
- The autopilot and auto-thrust systems (if available) should be operational.
- ***Any routine system or operational intervention which would normally require a cross check should be planned to occur outside controlled rest periods.***
- Controlled rest on the flight deck may be used at the discretion of the captain to manage both unexpected fatigue and to reduce the risk of fatigue during higher workload periods later in the flight.
- It should be clearly established who will take rest and when it will be taken. If the pilot-in-command requires, the rest may be terminated at any time.
- The pilot-in-command should define criteria for when his rest should be interrupted.
- Hand-over of duties and wake-up arrangements should be reviewed.
- Flight crews should use controlled rest only if they are familiar with the published procedures.
- Some operators involve a third crew member (not necessarily a pilot) to monitor controlled flight deck rest. This may include a planned wake-up call, a visit to be scheduled just after the planned rest period ends, or a third crew member on the flight deck throughout controlled rest.
- The controlled rest period should be no longer than 40 minutes, to minimize the risk of sleep inertia on awakening.
- **Controlled rest should be used only during the cruise period** from the top of climb to 20 minutes before the planned top of descent. This is to minimize the risk of sleep inertia.
- A short period of time should be allowed for rest preparation. This should include an operational briefing, completion of tasks in progress, and attention to any physiological needs of either crew member.
- During controlled rest, the non-resting pilot must perform the duties of the pilot flying and the pilot monitoring, be able to exercise control of the aircraft at all times, and maintain situational awareness. The non-resting pilot cannot leave his seat for any reason, including physiological breaks.
- Aids such as eye shades, neck supports, ear plugs, etc., should be permitted for the resting pilot.

1.19 Useful or effective investigation techniques:

Not relevant to this investigation.

2. Analysis

The serious incident occurred in the oceanic segment of the Mumbai FIR where procedural control was in effect and no radar surveillance was available. Both aircraft—THY6380 (A330F) and FDB2JQ (B737 MAX 8)—were on opposite-direction cruise at FL340 and FL350 respectively, operating with 1,000 ft vertical separation in accordance with applicable RVSM standards. In this environment, procedural longitudinal separation is assured through adherence to altitude clearances, position reporting through (CPDLC / HF) controller–pilot communications. The aircraft were vertically separated; therefore, ATC did not make aware each other' position to the flight crew. It is to be noted that TCAS also provides traffic awareness on ND.

At time 23:38:36 the FO of THY6380 requested ATC climb to FL360 through CPDLC. To which the ATC replied on CPDLC "UNABLE DUE TO TRAFFIC" at time 23:40:10. This ATC message seems to be generated without a Message Reference Number (MRN). This indicates that the uplink from ATC to Aircraft was sent as an independent message rather than as a correlated response to the aircraft's CPDLC request.

At 23:46:06, in the absence of an ATC uplink message with a MRN corresponding to the MIN of the Downlink Request Climb TO FL360, the onboard ATC datalink system displayed on the DCDU a reminder message associated with Visual cockpit ATC MSG pb light. The reminder was not transmitted to ATC and system-generated CPDLC reminders displayed on DCDU were not recorded in a retrievable format within aircraft or ATSU data except in the CVR Datalink recording that could not be retrieved for the analysis. Therefore, the messages could not be recalled when checked by PIC.

The reminder on DCDU is an Airbus-specific feature in FANS/ATN systems to improve pilot situational awareness of pending query. ICAO focuses on dialogue management (UM/DM message sets), logon procedures, and general alerting for timeouts or failures, leaving cockpit display logic as an aircraft manufacturer implementation choice. ICAO documentation (Annex 10, Doc 4444, Doc 9880, and Doc 9869) defines CPDLC message sets, dialogue management, performance requirements, and system behaviour. However, ICAO does not prescribe cockpit display logic or reminder functions.

The First Officer misinterpreted the reminder message, which appeared on the DCDU 7 minutes and 30 seconds after the first request to ATC for a climb to FL 360, as authorization to climb. The climb was initiated within 18 seconds of this reminder messages. At the time the climb was initiated, PIC of THT6380 was in controlled rest, and the climb constituted a significant flight path change executed without full two-pilot verification of the CPDLC message violating the safeguard inherent in multi-crew operations.

The factors aspects that may have led to an incorrect interpretation of the reminder messages displayed on the DCDU could be:

a) Expectation bias: First Officer expectations of a positive answer from ATC to his request is strong enough to not fully perceive or inaccurately interpret the reminder

messages content. He read the last seen message as “REQUEST TO CLIMB FL360”. It is assumed that FO misunderstood this message and acted as it was clearance.

b) Lack of knowledge of the reminders message function provided by the onboard ATC datalink system.

c) Lack of cross verification

d) Degraded attention: The FO reported to have answered ‘ROGER’ as per statement whereas the operational reminder page proposes only a CLOSE answer, that does not correspond to the standard phraseology to answer a clearance.

The THY6380 initiated an unapproved climb from FL340 to FL360 while the opposite-direction FDB2JQ was only 3–3.6 NM ahead, 1,000 ft above and offset by 2 miles, resulting in an immediate loss of the required Vertical and Lateral separation and triggering TCAS Traffic Advisories (TA) on both aircraft.

The PIC of THY6380 who was on controlled rest, was awakened by the TCAS TA, and initially levelled the flight at FL350. He then continued the climb to FL360 based on the FO’s assurance that a clearance had been received. Meanwhile the PIC simultaneously attempted verification via CPDLC and HF/VHF. ATC reconfirmed that “CLIMB WAS NOT APPROVED.” There was no HF/CPDLC communication between the opposite direction aircraft FDB2JQ and ATC either.

The ATC controller relies exclusively on CPDLC/HF periodic position reports and the assumption that assigned levels would be maintained. The unexpected level deviation created an immediate longitudinal and vertical separation loss with the opposite-direction traffic.

ATC monitoring detected the deviation on SDD which is used as situation awareness only after the climb was highlighted. Only ACAS TA occurred—because the vertical tracks crossed at increasing separation as aircraft were already diverging laterally (FDB2JQ offset 2 NM right of track).

There is no evidence of system malfunction in aircraft or ground systems. The event was primarily attributable to flight crew misinterpretation of reminder in DCDU and non-adherence to procedures in CPDLC environment. The visual cockpit ATC MSG pb light and transmission/ reminders of CPDLC message displayed in DCDU was a important contributory factor in misinterpretation of message by FO.

3. Conclusion

3.1 Findings:

a) Both aircraft were operating under IFR in Mumbai FIR on reciprocal tracks on route P574.
b) ATC was operating under procedural control, without radar surveillance capability in the area.
c) THY6380 was maintaining FL340 and FDB2JQ was maintaining FL350 with required vertical separation assigned by ATC.
d) The flights were not aware of each other's position.
e) THY6380 requested climb to FL360 via CPDLC.
f) ATC responded via CPDLC as an independent message refusing the request to climb which was displayed on DCDU.
g) CPDLC message from ATC was transmitted to aircraft without MRN number.
h) The DCDU in aircraft did not recognize the message from ATC as a response to the initial request in absence of MRN number. It triggered a reminder containing the initial request.
i) The reminder was displayed on DCDU associated with ATC MSG pb light.
j) FO of THY6380 misinterpreted an alert on the DCDU as a clearance to climb and initiated the climb.
k) A substantial flight path change (initiation of climb) was executed while one flight crew member was in controlled rest, without full two-pilot verification of the CPDLC message in accordance with multi-crew operating principles.
l) At the time of climb initiation, FDB2JQ was 3–3.6 NM ahead and 1000 ft above with an offset of 2nm in opposite direction.
m) When THY6380 initiated climb, vertical separation reduced below 1000 ft and TCAS TA was triggered on both aircraft.
n) PICs of both THY6380 and FBD2JQ were on inflight controlled rest when the climb was initiated. They were awakened from sleep by TA alert.
o) The PIC of THY6380, after being awakened by TCAS TA, momentarily levelled at FL350 but subsequently continued climbing based on FO's assertion that clearance had been received.
p) Subsequent CPDLC communication confirmed that ATC did not issue any climb clearance.
q) There was no HF communication between FDB2JQ and ATC during the incident.
r) SITA datalink logs confirm no uplinks were sent to THY6380 between 23:40–23:50.
s) ATS system (CCWS, CPDLC, ADS-C) functioned normally.
t) No system malfunction (TCAS, CPDLC, ADS-C, or aircraft systems) was identified.
u) Meteorological conditions were favourable and not contributory.
v) Both aircraft and crew were licensed and medically fit.
w) No fatigue risk in terms of workload was identified for FO.
x) System-generated CPDLC reminder displayed on the DCDU could not be retrieved by the PIC later. The operational reminder is recorded in CVR datalink recording that was not retrieved during the investigation.

3.2 Probable Causes:

a) The flight crew initiated a climb without valid ATC clearance, in the absence of required cross-verification in accordance with multi-crew operating principles.

b) Misinterpretation by the FO of a system-generated CPDLC reminder message on the DCDU as an ATC clearance, following a non-MRN-correlated response from ATC.

3.3 Contributory factors:

a) Failure to correlate the ATC reply with the downlink request, causing the onboard system to trigger reminder.

4. Safety Recommendations

4.1 To Turkish Airlines (Operator of THY6380):

a) **Reinforce CPDLC procedures,** through training, emphasise on verification of message content (Reminder/received from other units) before executing clearances.

b) **OM Part- A 8.3.10.3 (C) may be amended** by adding a subparagraph "During the controlled rest period the requests which requires cross check such as significant flight path/Flight Level changes should be avoided unless they are deemed necessary."

4.2 To ANSP, AAI:

a) To conduct recurrent training for controllers on the risks of sending stand-alone CPDLC uplink messages in reply to aircraft requests.

4.3 To Airbus SAS:

a) Review the DCDU interface to ensure clear and unambiguous differentiation between CPDLC Downlink messages and system-generated reminder messages through distinct visual, textual, and alerting characteristics, preventing misinterpretation by flight crew.

b) In ATSU Standards 9 and 10, incorporating FANS C capabilities, the system-generated reminder has been removed on the basis that flight crew are better positioned to determine appropriate follow-up actions in the absence of an ATC response.

Date: 28 April, 2026 AAIB, India