

Final Investigation Report on Serious Incident:
Runway incursion involving M/s Air India Express Limited aircraft,VT-BXL, B 737-800 and a Navy aircraft at Dabolim Airport, South GOA (INDIA)

Aircraft Accident Investigation Bureau
Government of India
Ministry of Civil Aviation

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, and 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 are stated in Coordinated Universal Time (UTC).

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

Note1:
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
ATC	Air Traffic Control
ATS	Air Traffic Services
ATPL	Airline Transport Pilot License
CPL	Commercial Pilot License
CVR	Cockpit Voice Recorder
DATCO	Duty Air Traffic Controller
DFDR	Digital Flight Data Recorder
DEP	Departure
DNAS	Directorate of Naval Air Staff, Indian Navy
FDTL	Flight Duty Time Limitation
FO	First Officer
Hrs	Hours
IFR	Instrument Flight Rule
Kts	Knots
LOC	Localizer
LTC	Line Training Captain
MHz	Mega Hertz
NA	Not Applicable
NM	Nautical miles
PF	Pilot Flying
PIC	Pilot in Command
PM	Pilot Monitoring
QTA	Quick turn Around
R/T	Radiotelephony
RWY	Runway
SOP	Standard Operating Procedure
SLF	Supervised Line Flying
SMC	Surface Movement Control
STD	Standard Time of Departure
TCAS	Traffic alert and Collision Avoidance System
TWY	Taxiway
UTC	Universal Time Coordinated

Synopsis

On 03 Apr 2026 at 0237 UTC, Air India Express flight AXB-1109, operating from Dabolim Airport, South GOA to Delhi was given startup and pushback clearance for RWY 26 departure by the SMC controller. The aircraft was informed that the runway has changed to RWY 08 and to 'expect a backtrack' just prior to taxi. The aircraft was then instructed by the SMC controller to "Taxi via N2, hold at holding point RWY 08". The Aircraft acknowledged this call as "Taxi via N2 for RWY 08".

After issuing departure clearance during taxi, the SMC controller asked AXB-1109 to change frequency to ATC approach on 119.7MHz which was readback by the aircraft suffixed by the R/T 'entering runway'. This call was not acknowledged by the SMC Controller. The aircraft continued to taxi without establishing two-way on the said frequency. At the same time, a Navy fighter aircraft was issued takeoff clearance by the ATC tower controller and started rolling on RWY 08. The departing Navy aircraft was informed by the ATC Tower controller that an unidentified aircraft has entered runway. The Navy Aircraft acknowledged the call and executed lift- off abeam N5 RWY 08 while AXB-1109 continued backtracking for RWY 08.

After the occurrence, AXB-1109 re-established two-way contact with SMC Controller. There was a brief confusion on the frequency between the aircraft and SMC controller, after which it was changed over to ATC approach frequency 119.7MHz. The approach controller advised the aircraft to vacate via N6 TWY and hold at TWY N5 holding point to accommodate the departure of another Navy fighter that was in formation with the preceding Navy aircraft. AXB-1109 was then, instructed to contact Tower frequency on 118.1MHz and subsequently to SMC frequency 121.95MHz on vacating the runway, after which the confusion about the occurrence was discussed on SMC frequency again.

After the takeoff of the second Navy aircraft, AXB-1109 was cleared to enter runway by the Tower controller and takeoff from RWY 08. The take-off and flight, post occurrence was uneventful and AXB 1109 landed safely at Delhi airport. The pilot of AXB-1109 had reported the occurrence to Air India Express Safety department after the flight and the Naval ATC officials had reported the event to Naval Headquarters, DNAS, which further forwarded the occurrence to the Aircraft Accident Investigation Bureau.

Unless otherwise indicated, recommendations in this report are addressed to the regulatory authorities of the State having the responsibility for the matters with which the recommendation is concerned. It is for those authorities to decide what action is taken.

General Information

Date and Time of Incident	03 April 2026 at time 02:47:50 UTC
Operator	M/s Air India Express Limited
Flight Number	AXB-1109
Type of aircraft	B 737-800
Registration	VT-BXL
Place of Incident	Dabolim Airport, South GOA, India
Type of occurrence	Runway Incursion due to Unauthorized Entry of civil aircraft on runway while a Navy fighter aircraft was taking off
Applicable Standard	1. Runway and takeoff path must be clear of any obstacle/ aircraft/ vehicle.
Flight Rule	IFR
Sector	VOGO-VIDP
Phase	Taxi
Type of Flight	Schedule Flight

1. Factual Information

1.1 History of Flight:

On 03rd Apr 2026 at 0247 UTC, a scheduled passenger flight, of Air India Express Ltd, Reg. VT-BXL, C/s AXB-1109, was operating a QTA flight from Delhi to Dabolim Airport, South GOA and Dabolim Goa to Delhi. The PIC was a Line training Captain conducting training for the first officer under training, for his SLF 29 and SLF 30 on consecutive sectors. The first sector from Delhi to Dabolim Goa was uneventful and AXB-1108 was given landing clearance by Dabolim Approach at 0731AM local time, on RWY 08. The runway in use was changed to RWY 08 at 0209 UTC (0739 A.M local time). The estimated time of departure for the return sector from Dabolim Goa to Delhi was scheduled at 0230 UTC.



Fig 1: At 02:37:02 UTC, AXB-1109 requested for start- up and was approved for start-up pushback clearance facing east abeam stand, for RWY 26 departure by the SMC controller.

Since it was a training flight, the PIC was continuously occupied giving training instructions and monitoring the flight parameters and ground activities while the trainee first officer was following the instructions and handling the R/T communication. The captain explained to the trainee first officer as recorded in the CVR that N2 backtrack was given to avoid blocking the runway for longer period and they will do it fast. The trainee first officer clarified if they were to maintain normal taxi speed on runway for which the captain replied that they will be maintaining normal taxi speed.

At 02:46:06 UTC, the crew asked for taxi instructions. The SMC controller advised the aircraft to TAXI via N2, hold at holding point RWY 08. The trainee Co-pilot replied taxi via N2 RWY 08 and informed aircraft registration and routing but **'the hold at holding point' was missed by the pilot**. The incomplete read-back was not acknowledged by the SMC controller. The departure clearance was issued and the trainee first officer requested for a repeat read back of the clearance



Fig 2: At 02:42:39, SMC controller informed of RWY change and to expect backtrack for RWY 08 and instructed the aircraft to taxi via N2 to holding point RWY 08. At the same time, a Navy Fighter aircraft was lined up for RWY 08 departure.

At 02:47:02 UTC, AXB-1109 stopped at N2 holding point till 02:47:18 for 16 seconds as per the FDR data while a repeat for the departure clearance was being given by the SMC controller. As per the ATC tower controller's account, the civil aircraft was observed to be holding at November 2 holding point for some time, when the Navy fighter aircraft was issued take off clearance on tower frequency 118.1Mhz. While the trainee first officer was reading back the departure clearance on the SMC channel, the PIC was heard on CVR, prompting "entering RWY bol do" in the background, twice to the first officer.



Fig:3- From 02:47:20, AXB-1109 started to enter RWY for backtrack while informing SMC that it is entering Runway, but without establishing two-way with ATC tower.

At 02:47:28 UTC the SMC controller acknowledged that the read back was correct and asked AXB-1109 to contact tower frequency on 119.7MHz. The captain prompted again and the first officer replied on R/T "One one nine seven entering Runway". The SMC controller did not acknowledge the entering Runway call. As per the SMC controller's statement, it was presumed that AXB-1109 had established two-way with Navy – ATC and has been issued clearance to enter RWY on 119.7MHz by the tower controller.

At 02:47:39 UTC -the trainee first officer was asked by the PIC to calculate values for RWY 08 as the RWY had changed. As per the first officer's statement, the PIC had taken over the R/T control and thereafter, the first officer got busy doing the heads down tasks. The first officer is heard calculating Vr (Rotation speed) and being advised by the captain to re-enter all the values in N1 page.
At **02:48:16** the captain says "seriously, I said entering runway"
At **02:48:27** the Navy fighter aircraft taking off sound is heard at a distance.
At **02:48:33** the captain gives blind call on Ground frequency.
At **02:48:42** the captain confirms Ground frequency from the first officer and transmits again. On seeing the Navy aircraft at lift off, in the opposite direction, the PIC of AXB-1109 mentioned to the trainee First Officer that the Fighter did a low pass, as per the CVR recording.



Fig:4- At 02:49:56, AXB-1109 established contact with Radar controller by which time it had already taxied on RWY till TWY N5. Another Navy fighter in formation with preceding departing fighter was holding at TWY N7 for RWY 08 departure.

At 02:48:01 to 02:49:21 - There is a Hotline conversation between ATC Navy and SMC AAI. The Navy controller mentioned to SMC controller that "fighter was rolling when the aircraft entered and it was a NEAR MISS."

At 02:49:22 the SMC controller replies back and confronts the captain on entering active RWY without permission. The captain tries to clarify that he had informed of entering runway and they were initially given backtrack to 08. The SMC controller clarifies that it was an information that they can expect backtrack since there was a change in RWY and it was not a permission. The SMC controller asks the PIC to contact tower on 119.7MHz.



Fig 5: At 02:51:22 the radar controller advises AXB-1109 to vacate via N6, hold at N5 holding point to accommodate the departure of another Navy fighter in formation and advises AXB-1109 to contact Tower frequency on 118.1Mhz so that the crew could monitor Aerodrome traffic.

The ATC controller instructs the aircraft to hold position on runway and confirms if an explicit clearance was given by SMC to enter runway. The pilot replies that there was confusion since they had informed the SMC controller that they are entering and there was no readback after that.



Fig 6: At 0306 UTC (0836 IST), AXB-1109 was issued Takeoff clearance from RWY 08.

1.2 Injuries to persons:

There was no Injury reported to any occupant on board.

Injuries	Crew	Passengers	Others
Fatal	0	0	0
Serious	0	0	0
Minor	0	0	0
None	06	165	0
Total persons on Board: 171			

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: Air India Express Ltd

	Pilot-in-command	First Officer
Age	51 years	24 years
License	ATPL	CPL
Date of Issue	03/ 08/2011 (initial) 21/12/2025 (renewal)	26/07/2023
Valid up to	20/12/2035	28/07/2028
Category	ATPL	CPL
Class I Medical Valid up to	26/07/2026	27/07/2026
Date of issue FRTOL License	30/10/2010 (initial) 30 /06/2025 (renewal)	26/07/2023
FRTOL License Valid up to	16/11/2030	27/06/2082
Total flying experience	9500:00 hrs	284:55 hrs
Total flying experience on Type	5000:00 hrs	78:50 hrs
Total flying experience during last 1 year	591:27 hrs	78:50 hrs
Total flying experience during last 6 Months	271:53 hrs	78:50 hrs
Total flying experience during last 90 days	111:07 hrs	56:59 hrs
Total flying experience during last 30 days	29:57 hrs	19:25 hrs
Total flying experience during last 07 days	13:11 hrs	02:53 hrs
Total flying experience during last 24 Hours	NIL	00:00
Rest period before flight	More than 24 hrs	24:00 hrs
Whether involved in Accident/Incident earlier	NO	NO
Date of latest Flight Checks and Ground Classes	10 /10/2026	17/03/2026

Both crew of AXB-1109 had valid licenses as on the incident date. The Pilot in Command (PIC) had prior experience operating at Dabolim airport but the trainee first officer had no experience operating at this airport. Moreover, it was their first flight together.

The Indian Naval aircraft was a single-pilot fighter aircraft operated by appropriately qualified and licensed personnel as per the existing regulations of Indian Navy.

1.5.2 ATCO Information:

INS HANSA is responsible for provision of Air Traffic services at Dabolim Airport. Both the tower and approach controllers are from Indian Navy and were appropriately qualified to perform ATC duties. The Approach controller at INS HANSA was radar qualified and held a valid ATC rating.

1.5.3 SMC Controller Information:

The Surface movement control at the civil enclave of Dabolim Airport is provided by Airports Authority of India (AAI). The details of SMC controller on duty are as follows:

Unit	SMC Control
ATCO License validity date	31-10-2050
Medical check validity date	17-09-2029
Date of rating	07-10-2025
Total experience	10 Years
Annual refresher training date	NA
Other rating	NA
Instructor	NA
Incident in the past two years	None

On the incident date, the SMC controller was managing the ground frequency and simultaneously coordinating via the hotline without any assistance, which is a regular practice in Dabolim airport when the civil traffic density is low. However, during the peak hours, two SMC controllers are positioned on watch to assist and relieve each other as per traffic requirements.

1.6 Aircraft Information:

The aircraft was Airworthy. All pertinent documents/certificates for the aircraft's operation were valid as on the incident date.

Aircraft Detail	
Aircraft Model	Boeing 737-8 (MAX)
Aircraft Serial No.	61662
Year of Manufacturer	27/02/2024
Registration Marks	VT- BXL
Nationality	INDIAN
Name of Owner	GARA ISSUER DESIGNATEDACTIVITY COMPANY
Certificate of Registration No & Validity	5799 & 28-02-2033

Certificate of Airworthiness Validity	7874 & C of A remains valid, subject to compliance with mandatory conditions and a valid ARC, unless suspended or withdrawn.
Airworthiness Review Certificate validity	20/03/2027
Last Major Inspection	17-Feb-2026 DAY CHECK
List of Repairs carried out after last major inspectio till the date of incident	NIL
Aero mobile License	12-03-2029
Aircraft total hours on the day of incident	6643:31

1.7 Meteorological Information:

METAR information is provided by the meteorological office, INS HANSA which is operational 24 hrs. It provides:

I) Landing forecast; METAR/ met report half an hourly and

ii) Trend Type; forecast appended to METAR/met report as and when required.

The weather as per the METAR at the time of the incident was as follows:

Time (UTC)	Wind (Kts)	Visibility (km)	Wx	Cloud	Temp (°C)	QNH (hPa)
0230	110/04	6 km	Mainly clear	Few 030, Few 090	33.6	1011.9
0300	140/04	6 km	Mainly clear	Few 030, Few 090	35.2	1012.2

1.8 Aids to Navigation:

All RWY and TWY Navigation marking, signage and lights, were reported to be serviceable on the incident date. There is no provision of STOP BARs at the airport as per AIPS 61/2019 (AD 2.1 VOGO) (Annexure I). However, STOP Bars are installed at TWY S1, TWY S2, TWY S3, TWY N2, TWY N3, TWY N4, TWY N5, TWY N6, TWY N8 and North PTT (parallel taxi track) short of N6 and are used as an additional aid during low visibility operations. Other Navigation aids VOR/DME and ILS/DME were reported serviceable. SMGCS radar is not installed with SMC- Dabolim.

Due to the Runway slope, RWY 08 end is not visible from TWY N1, TWY N2 and TWY N3 and likewise, RWY 26 end is not visible from TWY N8 and N9. However, both ends of RWY are clearly visible from the ATC Tower. No Hotspots are identified in Dabolim Airport Goa as on date.

1.9 Communications:

The ATC Tower at Dabolim airport is manned by two controllers, Tower and Radar, viz Channel-1, 118.1MHz which is the tower frequency and Channel- 2, 119.7MHz, which is the approach frequency. Radar services are provided on the approach channel. As per the controllers account, the SMC is required to take briefing from the previous SMC controller at the start of the watch to change over the traffic from Ground to either Tower frequency or Approach frequency in accordance with Navy flying requirements. The SMC controller was advised to change over the traffic to Approach channel i.e., 119.7MHz on the incident date as Navy flying had commenced on the other channel i.e., 118.1MHz (tower frequency).

At the time of incident, the aircraft was in contact with SMC Ground on frequency 121.95MHz. The aircraft was instructed to contact Approach frequency on 119.7MHz at holding point N2, however, the aircraft did not establish two-way with tower or approach frequency at the time of the incident. No abnormality was reported in any communication system. No blind cones were recorded. CVR recording, VHF and hotline recording for the occurrence period was obtained along with the ATC tape transcript.

The following is the Relevant VHF Tape transcript between SMC and AXB 1109 at the time of the incident:

UTC	NARRATOR	TEXT
02:36:50	AXB-1109	EXPRESS INDIA ONE ONE ZERO NINE STAND TWO DESTINATION DELHI ONE SEVEN ONE PASSENGERS ON BOARD THROUGH SECURITY REQUEST PUSH AND START
02:37:02	SMC- GROUND	EXPRESS INDIA ONE ONE ZERO NINE GROUND PUSH BACK APPROVED **FACING EAST ABEAM STAND** STARTUP APPROVED
02:42:39	SMC- GROUND	EXPRESS INDIA ONE ONE ZERO NINE GROUND, RUNWAY CHANGE RUNWAY ZERO EIGHT NOW, **EXPECT BACK TRACK RUNWAY**
02:42:49	AXB-1109	**SAY AGAIN THE LAST PART MAAM.**
02:42:50	SMC- GROUND	**EXPECT BACK TRACK**
02:42:52	AXB-1109	COPIED MAAM
02:46:06	AXB-1109	GROUND EXPRESS INDIA ONE ONE ZERO NINE REQUESTING TAXI.
02:46:10	SMC- GROUND	EXPRESS INDIA ONE ONE ZERO NINE GROUND **TAXI VIA NOVEMBER TWO HOLD AT HOLDING POINT RUNWAY ZERO EIGHT.** REPORT YOUR REGISTRATION AND ROUTING.
02:46:21	AXB-1109	EXPRESS INDIA ONE ONE ZERO EIGHT **TAXI VIA NOVEMBER TWO RUNWAY ZERO EIGH**T REGISTARTION VTBXLDESTINATION DELHI.
AFTER DEPARTURE CLEARANCE		
02:47:28	AXB-1109	READ BACK CORRECT **CONTACT TOWER FREQUENCY ONE ONE NINE DECIMAL SEVEN.**
02:47:35	SMC- GROUND	**ONE ONE NINE DECIMAL SEVEN ENTERING RUNWAY INDIA ONE ONE ZERO NINE.**
AFTER THE OCCURRENCE		
02:48:33	AXB-1109	TOWER EXPRESS INDIA ONE ONE ZERO NINE.
02:48:47	AXB-1109	GROUND EXPRESS INDIA ONE ONE ZERO NINE.
02:49:05	AXB-1109	GROUND EXPRESS INDIA ONE ONE ZERO NINE HOW DO YOU READ.
02:49:20	SMC- GROUND	STATION CALLING.
02:49:22	AXB-1109	EXPRESS INDIA ONE ONE ZERO NINE HOW DO YOU READ.
02:49:24	SMC- GROUND	**ALREADY CHANGED OVER TO TOWER SIR ONE ONE NINE DECIMAL SEVEN. INFORMED YOU TO HOLD AT HOLDING POINT NOVEMBER TWO CONTACT TOWER FREQUENCY AND YOU ARE ENTERING RUNWAY WITHOUT PERMISSION SIR.**
02:49:30	AXB-1109	**MAAM, WE SAID WE ARE ENTERING RUNWAY YOU GIVE US BACK TRACK RUNWAY ZERO EIGHT.**
02:49:34	SMC- GROUND	INFORMED YOU, YOU WILL BACK TRACK AND NOT GIVEN PERMISSION TO ENTER RUNWAY. I SAID YOU TO ON REACHING NOVEMBER TWO CONTACT TOWER

		ONE ONE NINE DECIMAL SEVEN.
02:49:43	AXB-1109	MAAM, I WAS CONFIRMING IT.
02:49:47	SMC- GROUND	CONTACT TOWER FREQUENCY ONE ONE NINE DECIMAL SEVEN.
02:49:50	AXB-1109	ONE ONE NINE DECIMAL SEVEN COPIED

The following is the relevant hotline conversation extract between Navy ATC and SMC AAI**,** at the time of the incident:

UTC	NARRATOR	TEXT
02:48:15	TOWER- NAVY	HELLO BACKTRACK KE LIYE BATAYA THA KYA AAPNE
02:48:18	SMC	HAAN HAAN MAINE BOLA THA BACKTRACK KE LIYE
02:48:19	TOWER- NAVY	NAHI MAM ABHI BACKTRACK NAHI DENA THA, NOVEMBER 2 PE HOLDING THA WOH.
02:48:22	SMC	USKO MAINE HOLD HOLDING POINT PE CHANGE KIYA HAI-- HELLO
02:48:25	TOWER- NAVY	HELLO
02:48:26	SMC	USKO ENTER KARNE NAHI BOLA THA-- USNE
02:48:28	TOWER- NAVY	WHAT IS HE—HE IS ENTERING RUNWAY HE HAD ENTERED RUNWAY AND NOW ON RUNWAY WE HAD A FIGHTER ON RUNWAY-- WE HAD TO-- FIGHTER EXPEDITE TAKEOFF AND THIS IS NOT ACCEPTABLE
02:48:39	SMC	SIR ACTUALLY MAINE TOH USKO HOLD AT HOLDING POINT KAHA, USNE MISS KAR DIYA
02:48:41	TOWER- NAVY	I DON'T KNOW WHAT--- IS HE WITH YOU-- CAN YOU SEE HIM
02:48:45	SMC	AH COPIED SIR WILL DO THAT
02:48:45	TOWER- NAVY	AH
02:48:46	SMC	SAY AGAIN SIR
02:48:47	TOWER- NAVY	CAN YOU SEE HIM-- CAN YOU SEE THE AIRCRAFT.
02:48:49	SMC	YES SIR I CAN SEE I CAN SEE I CAN SEE
02:48:52	TOWER- NAVY	HE IS ENTERING ON RUNWAY WITHOUT YOUR PERMISSION WHAT IS HAPPENING.
02:48:54	SMC	SIR--- AH--- MAINE USE HOLD AT HOLDING POINT MISS KAR DIYA, MAINE USE BOLA THA ON REACHING NOVEMBER 2 CONTACT TOWER FREQUENCY
02:49:01	TOWER- NAVY	THEN PLEASE CHANGE HIM OVER WE WILL COORDINATE WITH HIM PLEASE CHANGE HIM OVER. NOW HE IS TAXIING ON ACTIVE RUNWAY.
02:49:05	SMC	ALREADY CHANGED ALREADY CHANGED
02:49:06	TOWER- NAVY	HE IS BACKTRACKING ON RUNWAY
02:49:08	SMC	ALREADY CHANGED HIM SIR, I TOLD HIM ON REACHING NOVEMBER 2, CONTACT TOWER FREQUENCY.
02:49:09	TOWER- NAVY	NO, HE HAS NOT CHANGED OVER AND HE IS NOT ON OUR FREQUENCY
02:49:15	SMC	OK SIR WILL AH – WILL
02:49:20	SMC (on R/T)	STATION CALLING
02:49:21	AXB 1109(on R/T)	EXPRESS INDIA 1109 HOW DO YOU READ
02:49:24	SMC- GROUND (on R/T)	**ALREADY CHANGED OVER TO TOWER SIR ONE ONE NINE DECIMAL SEVEN. INFORMED YOU TO HOLD AT HOLDING POINT NOVEMBER TWO CONTACT TOWER FREQUENCY AND YOU ARE ENTERING RUNWAY WITHOUT PERMISSION SIR**

1.10 Aerodrome Information:

Dabolim Airport (IATA: GOI, ICAO: VOGO is an international airport operated by the Indian Navy in the naval airbase named INS Hansa. The ARP coordinates are 152251.02N 0734937.44E and the aerodrome elevation is 186 FT. It is located 30 Km South of Panaji City on a bearing of 140 deg at a distance of 2.34 Km from Vasco Railway Station. The Aerodrome fire-fighting category is CAT-VIII.

The Declared distances for RWY 08/26 are as follows:

RWY Designator	TORA (Mts)	TODA (Mts)	ASDA (Mts)	LDA (Mts)
08	3426	3576	3546	3426
26	3426	3626	3626	3426

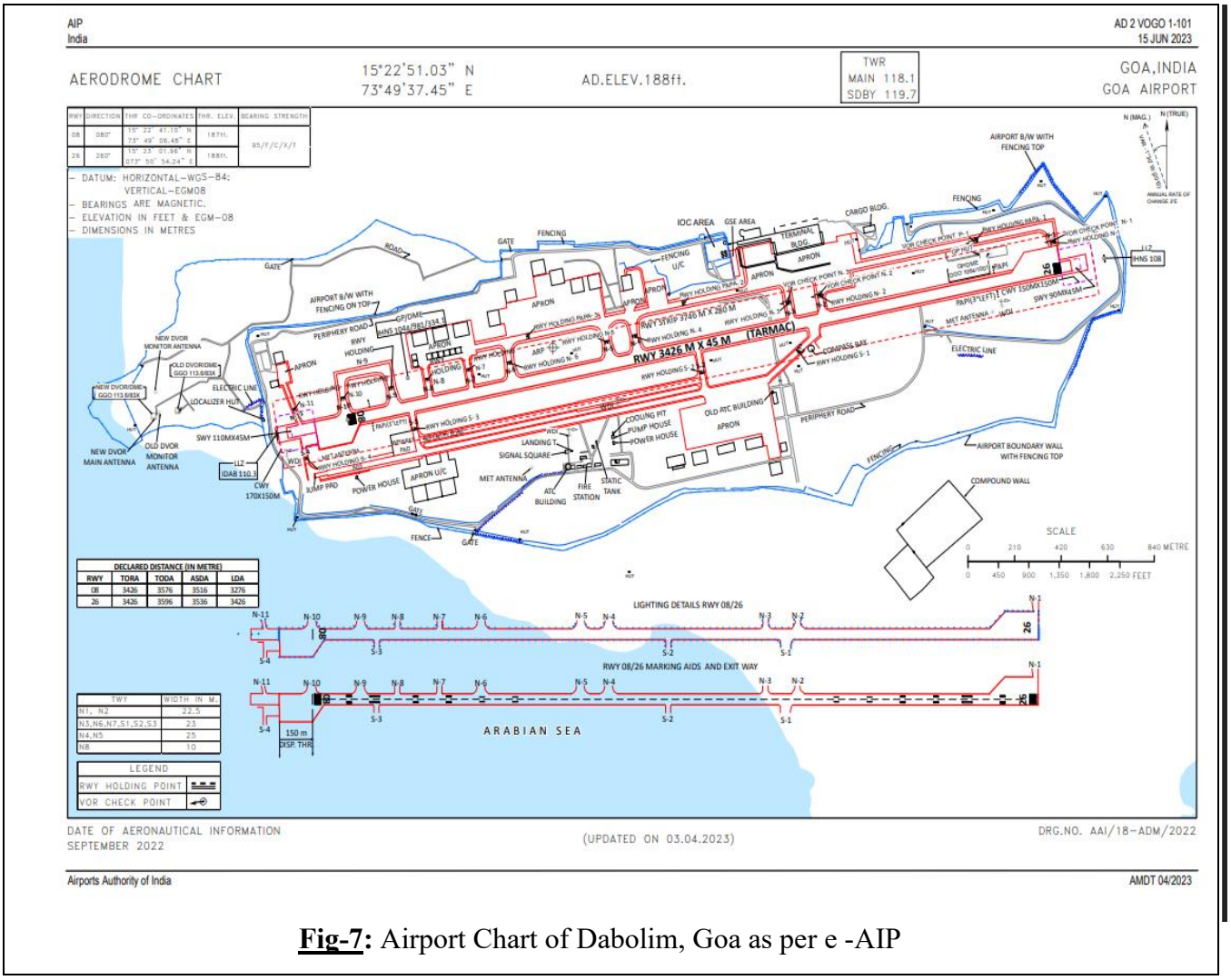


Fig-7: Airport Chart of Dabolim, Goa as per e -AIP

Air Traffic services at Dabolim Airport are provided by the Indian Navy with operational hours being 24/7. The Civil flights operation is not permitted between 0300 to 0700 UTC and 1000 to 1100 UTC from Mon- Fri in view of intensive Navy flying. Prior co-ordination is mandatory for non-scheduled operations. The surface movement services for civil aircraft are provided by the AAI controllers at Dabolim Airport, vide MoU dt 18 July 2023. The area of Jurisdiction as per MoU is as follows: -

i. RWYs and operations on RWY (landing, take-off, crossing etc.), RWY protection area and Approach airspace is controlled by Navy ATC. Movement area south of the main RWY

(RWY26) is controlled by Naval ATC. The Tower controller is responsible for control of aircraft, vehicle or personnel on or near the runway and traffic within his/her area of jurisdiction and on frequency 118.1MHz. R/T callsign is Dabolim Tower.

ii. SMC-AAI provides surface movement control and apron management service for civil flights at Dabolim Airport. The Movement area north of main RWY is controlled by AAI-SMC except portion of the movement area adjacent to the Navy installation beyond P2 intermediate holding point which is under Naval Jurisdiction. The Surface movement controller is responsible for control of civil traffic on the maneuvering area and movement area, excluding the runway and portion of parallel taxi track beyond P2 holding point, adjoining Navy dispersal. Its frequency is 121.95MHz and R/T call sign is Dabolim-Ground.

1.11 Flight Recorders:

The aircraft V T - B X L was equipped with Digital Flight Data Recorder (DFDR) and Cockpit Voice Recorder (CVR). The DFDR and CVR data of the incident flight was analyzed and used in the investigation to corroborate with the other available evidence to confirm the findings and other factors leading to the incident. The CDR (Cockpit data Recorder) of the Navy flight was analyzed at the Navy base during preliminary investigation. However, it was not shared with AAIB during the investigation for technical reasons.

1.11.1 The relevant extract of CVR at the time of incident is as follows:

CVR TRANSCRIPT AT THE TIME OF INCIDENT		
02:47:01	Co pilot	Ah mam can you say the clearance again express India 1-1- 0-9er
02:47:05	Ground SMC	Affirm after departure runway zero eight climb straight ahead one thousand turn left heading three six zero climb to six thousand feet sqwak two zero two three
02:47:16	Co pilot	Departure runway 08, initial 1000 ft and turn left heading 3-6-0 climb to six thousand feet sqwak two zero two three express India 1-1-0-9er
02:47:24	Capt	Entering runway bol do
02:47:26	Capt	Bol do entering runway
02:47:28	Ground SMC	Read back correct contact tower frequency 1-1-9 decimal seven.
02:47:29	Capt	One one nine seven entering runway
02:47:35	Co pilot	One one nine seven entering runway express India 1-1-0-9er
02:47:39	Cockpit audio cue	Two clicks
02:47:42	Co pilot	Captain departure Runway 08
02:47:44	Capt	Calculate for 08 again--- has been changed
02:47:48	Capt	OK
02:47:53	Capt	08 calculate
02:47:58	Co pilot	1-1-5- V r---- 1-1
02:48:00	Capt	Now again Put everything
02:48:02	Co pilot	Yes captain
02:48:06	Capt	N1 page
02:48:09	Co pilot	Page

02:48:12	Co pilot	1-1-5
02:48:14	COCKPIT AUDIO CUE	2 cockpit beeps (Cabin chime sound)
02:48:15	Co pilot	1-1-5
02:48:16	Capt	I said entering runway. She said
02:48:19	Capt	seriously
02:48:21	Capt	She said enter runway
02:48:24	Co pilot	She said enter runway
02:48:27	**NAVY AIRCRAFT TAKEOFF SOUND**	
02:48:33	Capt	Tower express India 1-1-0-9
02:48:40	Co pilot	1-1
02:48:42	Capt	1-2-1-9-5 Ground
02:48:45	Co pilot	Yes captain
02:48:47	Capt	Ground express India 1-1-0-9
02:49:04	Capt	He did a low pass now they also
02:49:05	Capt	Ground express India 1-1-0-9
02:49:13	Capt	Ground express India 1-1-0-9 how do you read
02:49:20	SMC controller	Station calling

1.11.2 The following are the observations of the DFDR of AXB 1109

DFDR OBSERVATIONS	
UTC	FACTUAL INFORMATION
02:46:11	AXB 1109 commenced taxi after pushback
02:47:02 02:47:20 02:47:50 02: 48:21 02:49:13	Stopped at TWY 'N2' holding point for RWY 08 for 16 secs. AXB 1109 commenced TAXI towards RWY. AXB 1109 entered RWY and started backtrack towards RWY 08. AXB 1109 was backtracking on RWY with a speed of 15 kts Ground speed of AXB 1109 on RWY increased to 26 kts.
02:50:17 02:50:53	AXB 1109 stopped on the Runway. Aircraft was on hold on the RWY for 37 seconds as per radar controller instructions
02:50:54 02:51:40 02:54:20	AXB 1109 started to taxi on Runway Aircraft vacated on TWY N6 and taxied towards TWY N5. Aircraft stopped at taxi Holding point TWY N5.
03:00:50 03:01:20 03:01:39	AXB 1109 commenced its Taxi from the holding point towards RWY AXB 1109 entered RWY and started backtrack towards RWY 08. AXB 1109 was backtracking on RWY with a speed of 15 kts
03:03:03	AXB1109 commenced 180-degree turn on the Runway to line-up for RWY 08
03:04:10	Aircraft lined up for RWY 08
03:05:07	Aircraft commenced its Takeoff Roll
03:05:51	Aircraft lifted off the RWY

1.12 Wreckage and Impact Information:

Not relevant with respect to this investigation.

1.13 Medical and Pathological Information:

The crew of AXB-1109 has undergone the preflight Breath analyzer and found negative.

1.14 Fire:

There was no fire.

1.15 Survival Aspects:

The incident was survivable.

1.16 Tests and Research:

Nil

1.17 Organizational and management information:

1.17.1 Air India Express Ltd:

Air India Express is an Indian low-cost airline owned by the Air India Group. It is headquartered in Gurgaon, Haryana. The airline operates more than 500 flights per day to 45 domestic and 17 international destinations, with its primary hubs at Bengaluru, Delhi, and Mumbai.

1.17.2 Dabolim Airport- Indian Navy:

Dabolim International Airport (IATA: GOX), is an international airport serving Panaji, the capital of the state of Goa, India. It is operated by the Airports Authority of India (AAI) as a civil enclave in an Indian Naval airbase named INS Hansa. ATC is being provided by Indian Navy. The ATC functions to ensure the safe and efficient movement of aircraft, providing clearances, information, and guidance to pilots, while also maintaining separation between aircraft in the air and on the ground.

1.17.3 Airports Authority of India:

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.

A separate apron management controller (by AAI) performs the functions of surveillance, control, routing (planning) and guidance of surface movement of civil traffic for efficient apron/resource management, lesser ground delays, incidents and decreased controller workload at Dabolim Airport.

1.18 Additional information:

1.18.1 Apron Management service

A service provided to regulate the activities and the movement of aircraft and vehicles on an apron. Apron management services may be provided by the air traffic service unit, by a unit set up by the aerodrome operator, or by coordinated control between ATS (AAI) and the aerodrome operator (Indian Navy). The objective of Apron management service as per the MoU dated 18 July 2023 between ATC Navy and SMC- AAI, is as follows:

Objective of apron management service:

- Regulate entry of aircraft into, and coordinate exit of aircraft from, the apron with the aerodrome control tower.
- Ensure safe and expeditious movement of vehicles and appropriate regulation of other activities.
- An aircraft stand shall be visually monitored to ensure that the recommended clearance distances are provided to an aircraft using the stand.
- Maintain a continuous watch on all flight operations on an aerodrome as well as vehicles and personnel on the maneuvering area. Watch shall be maintained by visual observation.

1.18.2 Pushback procedures.

Pushback is an airport procedure during which an aircraft is pushed backwards away from an airport gate by external power. Pushback is carried out by special, low-profile vehicles called pushback tractors or tugs. The pushback procedures at Dabolim airport as prescribed in the MoU dated 18 July 2023 are as follows

Departure Procedure:

A. Departure RWY 26: All aircraft are expected to pushback facing east. All aircraft will be released to tower at P1 holding point. Small aircraft requesting intermediate departure may be accommodated with prior coordination from Tower in which case aircraft shall be handed over at holding points N2 or N3 whichever the case may be.

B. (ii) Departure RWY 08: All aircraft are expected to pushback facing west. They shall be released on P2 intermediate holding point or at any other taxiway as directed by Tower ATC.

1.18.3 Coordination procedures between Indian Navy and AAI

The MoU dated 18 July 2023 outlines the requirement of close coordination between Navy- ATC and AAI- SMC for smooth and efficient handling of Civil Air Traffic. The Naval ATC is responsible for Air space and maneuvering area within its jurisdiction and the AAI is responsible for Apron Management and SMC within its jurisdiction. The MoU also specifies that when advised by Navy, SMC will hold pushback or hold start-up after pushback, depending upon Navy flying or traffic congestion.

Coordination procedure between Navy ATC and AAI SMC:

A. Coordination between Navy ATC and AAI-SMC will be done via hotline and walkie-talkie. A walkie-talkie may be provided by AAI for exclusive use for this purpose. SMC controller shall coordinate with concerned person on walkie-talkie in tower.
B. Ground frequency shall be monitored by tower. Equipment for the same will be provided by AAI due to acute shortage of VHF sets with Navy.
C. Tower and ground control may delegate their responsibilities to each other for the provision of air traffic control service. The delegation of responsibilities, between the two units, shall be done after proper coordination. The coordination for arriving and departing aircraft for either runway is required to be done early enough to initiate appropriate action. The points for transfer for control as per the MoU dated 18July 2023 is as follows.

Transfer of Control Points:

- **Runway 26 Arrivals:** For aircraft vacating via North PTT-P2(Parallel Taxi Track-p2) For aircraft vacating via south PTT - N2 or N3
- **Runway 26 Departures:** At P1 holding position
- **Runway 08 Arrivals:** At P1 or N2 or N3.
- **Runway 08 Departures:** At P2 intermediate holding position.

1.18.4 Runway entry procedure:

A Runway-holding position is a designated position intended to protect a runway, an obstacle

limitation surface, or an ILS/MLS critical/sensitive area at which taxiing aircraft and vehicles shall stop and hold, unless otherwise authorized by the aerodrome control tower.

The ICAO Annex 2, Rules of the Air, para 3.2.2.7.2 states that "An aircraft taxiing on the maneuvering area shall stop and hold at all runway-holding positions unless otherwise authorized by the aerodrome control tower."

ICAO Doc 4444 (PANS-ATM) paragraph 7.6.3.1.1.2 mandates "explicit crossing instructions or hold-short commands whenever a taxi route encounters a runway. The phraseology **requires a mandatory readback by the flight crew to explicitly read back hold-short and runway crossing instructions to prevent misunderstandings."**

1.18.5 Readback of clearances:

A readback is a procedure whereby the receiving station repeats a received message or an appropriate part thereof back to the transmitting station so as to obtain confirmation of correct reception. The pilot's read-back must be complete and clear to ensure a complete and correct understanding by the controller. The action of reading back a clearance gives the controller an opportunity to confirm that the message has been correctly received, and if necessary, to correct any errors.

Read-back of a clearance should never be replaced by the use of terms such as "Roger", "Wilco" or "Copied". Likewise, a controller should not use similar terms to acknowledge a message requiring a definite answer.

ICAO Annex 11 Chapter 3 Para 3.7.3, prescribes that "the flight crew must read back to the air traffic controller safety-related parts of ATC clearances and instructions which are transmitted by voice. ***The following items must always be read back:***

a) ATC route clearances;

b) ***clearances and instructions to enter, land on, take off from, hold short of, cross or backtrack on any runway; and***

c) runway-in-use, altimeter settings, SSR codes, level instructions, heading and speed instructions and, whether issued by the controller or contained in Automatic Terminal Information Service (ATIS) broadcasts, transition levels.

Other clearances or instructions, including conditional clearances, must be read back or acknowledged in a manner to clearly indicate that they have been understood and will be complied with. The controller must listen to the read-back to ascertain that the clearance or instruction has been correctly acknowledged by the flight crew and shall take ***immediate action to correct any discrepancies revealed by the read-back."***

1.18.6 Hear back error

An uncorrected erroneous read-back (known as a hear-back error) may lead to a deviation from the intended clearance and may not be detected until the controller observes the deviation on his/her situational display. The absence of an acknowledgement or a correction following a clearance read-back is perceived by most flight crew as an implicit confirmation of the read-back. The absence of acknowledgement by the controller may usually be the result of frequency congestion and the need for the controller to issue clearances to several aircraft in succession. This may cause mis understanding or an expectation bias in understanding a communication that can lead to shifting a clearance or instruction from one parameter to another (e.g. perceiving a clearance to "expect backtrack" as a clearance to enter backtrack").

The reluctance to seek confirmation may cause pilots to**:**

i. Accept an inadequate instruction (over-reliance on ATC); or,

ii. Determine for them the most probable interpretation.

1.18.7 Stop Bars

A stop bar is a row of red lights built into the ground across a taxiway at an airport. Runway stop bars effectively act as traffic lights for aircraft, and consist of a row of lights embedded in the ground around the entrance to a runway. When the lights display as red, pilots must stop and halt their journey to the runway. When the red light turns off and becomes green, pilots have been cleared to advance, provided they have also been given clearance by air traffic control via radio instruction.



Figure 8. Stop Bars at Dabolim Airport

Stop bars are most often used:

i. For low visibility operations (Runway Visual Range [RVR] < 350m/1,200ft)

ii. At night, or as determined by local SMGCS.

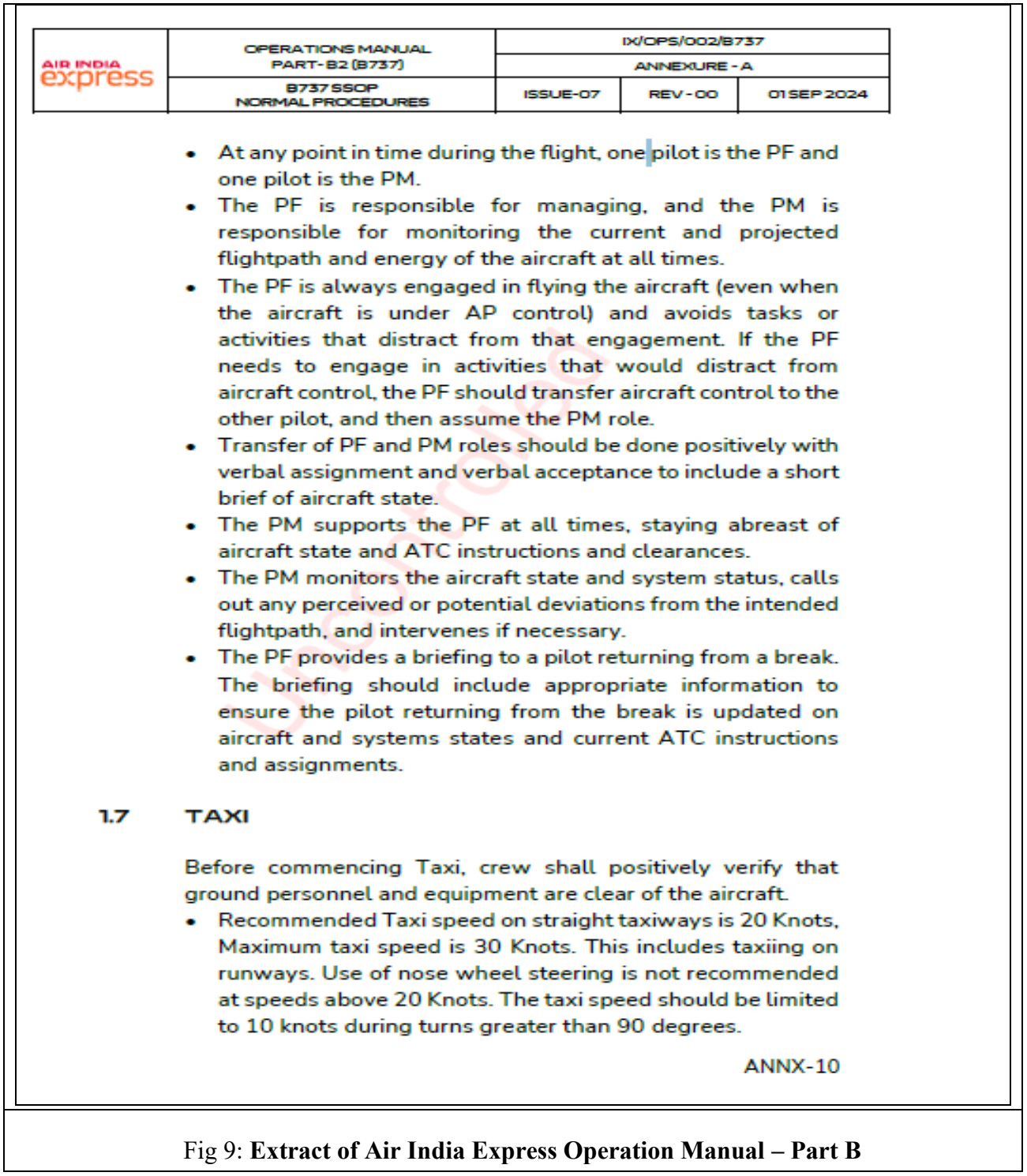
iii. Runway Safety: to block accidental entry onto active runways and stop accidents.

In some instances, pilots report of inconsistent local policies on the use of stop bars (e.g. low visibility ops only, H24 operation on some runways, at some airports, in some States), which, in their opinion, contributed to confusion or to an assumed ATC clearance to proceed. It is important that the ICAO provisions related to runway-holding positions, the operation of stop bars and associated ATC clearance are read and understood in conjunction with one another and in the appropriate context. If they are installed but not switched ON, there is a risk that this is misconstrued as authority for pilots to proceed beyond the holding position/stop bar without an ATC clearance. On the day of the occurrence, the PIC stated that the stop bars were not illuminated; therefore, he proceeded towards the runway after holding the Aircraft for 16 sec at holding point of TWY N2.

Runway-holding position markings are the primary means used to protect the integrity of the runway. Where switchable stop bars are provided, either at a runway or elsewhere in the taxiway system, they are there to support and reinforce designated positions and are not a replacement for them.

1.18.8. Responsibilities of Pilot flying (PF) and pilot monitoring (PM)

During the flight the Pilot–in– Command (PIC) was Pilot Flying (PF) and Trainee Co-Pilot was Pilot Monitoring (PM). The responsibilities of PF and PM as outlined in the extract of Air India Express Operations Manual Part B are as follows:



AIR INDIA express	OPERATIONS MANUAL PART-B2 (B737)	IX/OPS/002/B737		
		ANNEXURE - A		
	B737 SSOP NORMAL PROCEDURES	ISSUE-07	REV - 00	01 SEP 2024

- At any point in time during the flight, one pilot is the PF and one pilot is the PM.
- The PF is responsible for managing, and the PM is responsible for monitoring the current and projected flightpath and energy of the aircraft at all times.
- The PF is always engaged in flying the aircraft (even when the aircraft is under AP control) and avoids tasks or activities that distract from that engagement. If the PF needs to engage in activities that would distract from aircraft control, the PF should transfer aircraft control to the other pilot, and then assume the PM role.
- Transfer of PF and PM roles should be done positively with verbal assignment and verbal acceptance to include a short brief of aircraft state.
- The PM supports the PF at all times, staying abreast of aircraft state and ATC instructions and clearances.
- The PM monitors the aircraft state and system status, calls out any perceived or potential deviations from the intended flightpath, and intervenes if necessary.
- The PF provides a briefing to a pilot returning from a break. The briefing should include appropriate information to ensure the pilot returning from the break is updated on aircraft and systems states and current ATC instructions and assignments.

1.7 TAXI

Before commencing Taxi, crew shall positively verify that ground personnel and equipment are clear of the aircraft.

- Recommended Taxi speed on straight taxiways is 20 Knots, Maximum taxi speed is 30 Knots. This includes taxiing on runways. Use of nose wheel steering is not recommended at speeds above 20 Knots. The taxi speed should be limited to 10 knots during turns greater than 90 degrees.

ANNX-10

Fig 9: **Extract of Air India Express Operation Manual – Part B**

1.18.9 Coordination procedures between AAIB and Defence Authorities.

The Aircraft (Investigation of Accidents and Incidents) Rules, 2025 provide the requisite statutory authority to AAIB/DGCA to conduct inquiries into aircraft accidents and incidents. However, no formalized procedure exists between Navy authorities and AAIB that govern the exchange of safety-related information, facilitate the collection of evidence by investigation personnel and enable access to Defence premises particularly in cases involving navy personnel or aircraft operating in civil enclaves and civil aircraft operating in navy airfields.

In this case, Indian Navy provided the required information and remained cooperative and supportive throughout the course of the investigation. The AAIB investigating officers were also facilitated to visit the premises and achieve an understanding of the dynamics of Navy/ Naval Aviation including procedures, facilities and systems currently available to support the civil aircraft operations. Although partial evidence was not disclosed, most of the essential evidence was shared for the purpose of investigation.

However, due to the absence of a formal mechanism for obtaining data and evidence directly from the concerned Navy unit- INS HANSA, certain information could not be obtained in a timely manner. The resulting delay in obtaining the information through DNAS, Naval Headquarters, led to the loss of certain crucial evidence due to its subsequent erasure.

During its previous accident investigations, the AAIB experienced difficulties arising from the non-availability of essential evidence from Defence authorities. The absence of such evidence has posed significant challenges in corroborating witness statements, particularly when discrepancies or conflicting accounts arise. In view of the recurring issues, AAIB had issued recommendations to establish clear procedures with Defence authorities for the exchange of information, evidence, as per the CAR requirements.

Although, AAIB has previously issued recommendations for coordination with Defence authorities as part of its investigation reports into the Accident Involving Directorate of Aviation, Government of Madhya Pradesh (DoA, GoMP), SKA B200GT Aircraft VT-MPQ at Gwalior Airport on 06.05.2021 and Serious Incident of Airprox between ALH MK III (Defence Helicopter) and A319-112 Aircraft VT-SCV (AIC788) operated by Air India at Port Blair Airport on 02 Feb 2024, formalized procedure that govern the exchange of safety-related information, facilitate collection of evidence and enable access of investigation officials to Defence premises, has not yet been established.

The absence of a formalized coordination framework may limit or hinder the timely exchange of safety-critical information essential for effective investigations under time critical circumstances.

1.19 Useful or effective investigation techniques:

Standard investigation procedures and techniques were used during investigation.

2. Analysis

The analysis was carried out based on the available evidence such as Crew & ATC & SMC Controllers' Statements, ATC Tape Transcript, Hotline conversation recordings, DFDR and CVR data of AXB 1109.

2.1 General:

a) The incident occurred during the day, before the commencement of civil flying closure hours as prescribed in the AIP.

b) The airport navigation signage, markings and lighting were serviceable as per standard.

c) STOPBARS were not switched ON, on the day of incident as the weather and visibility were favorable for normal visibility operations. However, the stop bar details were published as 'nil' in AIP 61/2019 of VOGO which was in effect on the occurrence date.

d) Pushback procedure was followed for an incorrect runway due to inadequate handing over/ taking over by the SMC controllers.

e) Miscommunication on the R/T led to a read back error by the pilot and a hear-back error by the controller.

f) 'Expect Backtrack line up for RWY 08' was wrongly interpreted as 'Enter backtrack Lineup for RWY 08' by the crew of AXB-1109.

g) R/T monitoring and readback of calls was not effective.

h) The trainee first officer missed to acknowledge the call. 'Hold at holding point for RWY 08'. PM requested for a repeat of the departure clearance while the aircraft stopped at the N2 holding point for 16 secs.

i) As per CVR, the PF appeared to be in a hurry to line up and take off to reduce the RWY occupancy time.

j) The Taxiway N2 is a short TWY, used for Taxi-in of RWY 08 Arrivals as per SOP. It was used for AXB-1109 Taxi-out on the incident date to avoid a full length backtrack for RWY 08.

k) The PM was distracted by pre-take-off tasks for change in RWY for RWY 08 departure, after taxi holding point and therefore was heads down during the runway entry procedure. This led to critical oversight in identifying the runway holding position, taxi holding point, and effective R/T monitoring.

l) It was a training flight and there was possible training or physiological stress on both the pilots.

m) The Aircraft Ground speed on active runway increased from 15 kts to 26 kts as per FDR.

n) The Crew had rest as per the FDTL scheme.

o) Crew coordination and CRM were found to be satisfactory.

p) The crew of AXB 1109 did not establish two-way with ATC- Navy at N2 holding point as instructed by the SMC controller. As per their statements and the CVR recording, they were not aware that Navy flying had commenced.

q) The Navy crew initiated the lift off abeam N5 taxi link on RWY while AXB 1109 was already backtracking for RWY 08 abeam, TWY N3.

r) Coordination on HOTLINE between the SMC controller on watch and ATC Navy regarding the unauthorized entry of civil aircraft while Navy flying was in progress, took place after the occurrence.

s) The crew of AXB 1109 did not stop on the active RWY till they established contact with ATC Navy and were instructed to hold position by the approach controller. By this time, they were on RWY abeam TWY N5.

t) AXB 1109 was asked to vacate via N6, turn right to Alpha and hold at Holding point N5 to accommodate departure of another Navy fighter aircraft in formation with the preceding Navy aircraft.

u) Certain evidence like the video and camera footages was not preserved by the ATC- Navy and the SMC- AAI. The Cockpit Data recorder of the Navy fighter aircraft was not shared with AAIB due to technical reasons.

2.2. Situation and Human factors:

2.2.1 Actions by the AIXL Crew.

As per the PIC's account, the crew was informed regarding the runway change just prior to taxi and was given instructions to backtrack for RWY 08. The crew was occupied with training activities, as this was a training flight and the CVR recording indicated student over-reliance on the instructor, task saturation resulting in missed radio calls and communication miss-outs due to ambiguous terminology.

The crew did not read back the 'hold at the holding point' instruction and did not obtain explicit clearance to enter the active runway. It was observed that repeat clearances were frequently requested; however, on certain occasions, there was reluctance to seek confirmation, which led the pilot to believe that the expected clearance to enter and backtrack the runway had already been received.

As per the statement submitted by the PIC, the crew did not receive any reply from ATC, and since the stop bar lights were not ON, they presumed that ATC is probably busy and has already cleared them to 'enter and backtrack'. AXB-1109 entered the runway without obtaining clearance and without establishing positive two-way contact with tower. They continued backtrack on the active runway; on a converging course without being aware of the departing Navy traffic.

2.2.2 Actions by the SMC Controller- AAI.

The SMC controller had taken over watch at 0800 IST and stated that RWY in use at that time was RWY 26 and change over frequency was 119.7MHz which is the approach frequency. The SMC was not informed about the Navy flying. As per the SMC controllers' statement; the handing over taking over is carried out verbally between the SMC controllers and marked in the register with a symbol (.) as "briefing carried out and all ok." The handing over controller was unable to remember the details of RWY- in -use that was last used in his watch before the occurrence for the said date and the same could not be ascertained as the hotline recording for the previous watch was not preserved.

The SMC controller on duty, on the incident date stated that the RWY in use, generally during that time of the day is RWY 26 and from the Hot line conversation recording between SMC and ATC Navy, it can be inferred that the SMC controller presumed RWY in use to be RWY 26 and issued start-up and pushback procedures, facing east, as prescribed for RWY 26 without clarifying on the RWY- in Use, in particular.

Later on, the SMC controller, on being informed by the ATC on Hotline that RWY- in- Use is RWY 08 informed AXB-1109 prior to taxiing 'to expect backtrack for RWY 08' for which the crew asked for repeating the instruction. The SMC controller repeated R/T as 'Expect backtrack' for which the AXB crew replied 'Copied'. Thereafter, the SMC controller instructed AXB-1109 to Taxi via N2, hold at holding point RWY 08". The Aircraft acknowledged the call as "Taxi via N2 for RWY 08 but missed 'hold at holding point' call and the SMC controller did not insist on a complete read back.

The SMC controller continued with departure clearance and instructed AXB-1109 to changeover to 119.7MHz frequency. The pilot repeated the changeover frequency and suffixed 'entering runway'

which was again, not acknowledged by the SMC controller presuming that positive communication of AXB-1109 has been established with Navy- ATC.

Post occurrence, AXB 1109 continued to give blind transmissions on the SMC channel as per the VHF recording, however, the SMC controller was occupied conversing with ATC Tower on the Hotline and was unable to respond to the pilot for a gap of 1 min 45 sec. As per the VHF tape recording, the SMC controller clarified with the PIC of AXB-1109 about unauthorized entry into the active runway and had a heated argument on the R/T while another civil aircraft was requesting start-up and pushback. The other traffic was attended only after AXB-1109 had apologized for the confusion and was then changed over to ATC- NAVY.

The Airports Authority of India had raised an occurrence report on 06 Apr 2026 via AIIMs with limited details that could not ascertain the seriousness of the incident as there was no mention of a Navy aircraft taking off during the unauthorized backtrack of AXB-1109 on active runway. Due to the delay in identifying and classifying the occurrence, essential evidence like video footages and Apron Camera footages have been erased and were not available for further investigation.

2.2.3 Actions by the Tower controller- Indian Navy.

On the incident date, the Tower controller observed a civil aircraft being pushed back for RWY 26 while RWY 08 was in use. Therefore, they clarified with SMC controller on the Hotline and agreed for issuing TWY N2 holding point so that the civil aircraft can later backtrack for line up RWY 08. The Navy controller issued takeoff clearance to Navy aircraft when they observed that the civil aircraft was holding at the N2 holding point. Later, when the Navy aircraft had commenced rolling, they observed that the civil aircraft had intruded onto the active RWY without establishing contact on either tower or approach channel. They immediately informed the departing Navy traffic on R/T to excise caution stating that an unidentified aircraft has entered the RWY. This prompt action of passing traffic information, by the Navy Controller enabled the Navy fighter pilot in taking timely action to prevent a mishap on ground between the two aircraft, which were on a converging course.

Later on, the controller clarified with SMC on the unauthorized entry of the civil aircraft on Hotline. As per the Navy Controller's narrative, the approach controller advised AXB 1109, on changeover from SMC, to vacate via TWY N6 and hold at holding point N5 to accommodate the departure of Navy formation aircraft in order to prevent disruption of an operational mission. Thereafter, the approach controller- Navy changed over AXB 1109 to tower frequency, so that they are able to monitor the aerodrome traffic.

The Navy Controller proactively raised an occurrence report to the Navy Headquarters but there was a delay in processing and forwarding the report through proper channel during which time essential evidences like video recordings of the incident, hotline recordings, VHF recording beyond the occurrence period, were erased at the Naval unit- INS HANSA and could not be made available for investigation purpose.

2.2.4 Actions by the Navy crew

The Navy aircraft was a formation of two fighter aircraft ready for departure from RWY 08 with the leader aircraft at takeoff point and another aircraft holding at N7 taxi holding point. The CDR and details of the Navy Fighter was verified physically during the preliminary investigation. However, the evidence was not shared with the investigation team stating technical reasons.

The Pilot of leader aircraft was informed about an unidentified aircraft entering runway while he had commenced his takeoff roll. As per the initial data recorded in the CDR, the Navy aircraft leader 1 had attained V1 (decision speed) at 100 Kts, at a horizontal distance of 1250 mts from takeoff point, RWY 08, and reached a rotation speed of 130 kts IAS at 1850 mts when he received a call from ATC regarding the unauthorized entry of another aircraft. However, he was unable to sight the traffic visually due to the runway slope.

The Navy fighter aircraft expedited its take-off and lifted-off at a distance of 2000 mts approximately from take-off point RWY 08, on runway abeam TWY N6 and N5. At this point, he noticed AXB 1109, taxiing on runway at an average taxi speed, with its nose towards RWY 08 designation marking. The distance between the lift-off point to AXB 1109 was approximately 900-1000 Mts with both aircraft closing in towards each other, as per the Tower Controller's narrative.

The Navy aircraft reached a height of approximately 450 ft over the runway abeam N3. As per the Navy pilot's narrative, the navy fighter aircraft was carrying fuel of medium weight for a mission sortie and would require full length of runway in case of an engine failure or any other thrust issues entailing an aborted takeoff. However, the pilot dismissed this option completely during his take off roll, as he was aware that required length of runway was not available to him in case of an emergency, due to the presence of a civil aircraft. The event could have had catastrophic consequences, particularly if an emergency had occurred with the Navy aircraft. However, the fighter pilot's presence of mind and prompt reaction prevented a potential ground collision.

The second aircraft, holding at N7 TWY holding point was a witness to the occurrence and corroborated with the distances mentioned by Leader-1. He further added that he had observed AXB 1109 stopping for a few seconds on the runway between N5 and N6, after leader 1's departure. At this time, as per the CVR and DFDR recording, AXB 1109 had established contact with the approach frequency and was informed of its unauthorized entry. Thereafter, the civil aircraft was instructed to vacate on N6, and hold at N5 holding point and to contact SMC. Since it was a Navy formation, the intrusion of AXB 1109 between the two Navy fighter aircraft resulted in a delay of 4- 5 minutes in the sortie. The second Navy aircraft was cleared to line up and take-off after AXB 1109, vacated the runway.

3. Conclusion

3.1 Findings:

a. The SMC controller after taking over watch, was not clear on the runway change to RWY 08 and issued the start-up and pushback procedures, facing east, for an incorrect Runway.

b. The existing vacation plan prescribes TAXI-IN via N2 taxi track for RWY 08 arrivals. The departures for aircraft Taxi out as per the standard operating procedures are only catered for P1 and P2 intermediate holding points respectively. N2 taxi out was given as a corrective action for an in correct Pushback instruction.

c. The SMC controller did not insist on a complete read back of crucial R/T call 'hold at holding point'.

d. The crew of AXB-1109 was completely focused on training and missed out on effective monitoring and proper read back of R/T calls.

e. The runway entry procedures were completed in a hurry and were being verified while back tracking on the active runway as change of RWY-in- Use information was received just prior to TAXI.

f. The PF did not establish positive communication with ATC- Navy as instructed by the SMC controller at N2 holding point. PF was not aware of the aerodrome traffic nor did he obtain an explicit clearance to enter runway from ATC tower assuming that clearance for enter backtrack was issued by the SMC prior to TAXI.

g. The PM was busy with heads down, as he was verifying his calculations and trying to login on N1 page resulting in degraded situational awareness.

h. The Navy aircraft was maintaining two-way with ATC tower on 118.1MHz and the civil traffic AXB-1109 was in contact with the SMC on Ground frequency 121.95MHz and had not changed over as instructed, at the time of the occurrence. Therefore, ATC- Navy was able to caution the Navy aircraft but could not advise the civil aircraft to stop as two-way communication was not established with them.

i. The SMC controller had instructed AXB-1109 to contact ATC on 119.7MHz and assumed the aircraft had already changed over to tower and obtained clearance to enter RWY. Therefore, the SMC controller did not advise AXB-1109 to stop while entering RWY. There was a significant disparity in the flow of communication and coordination between AXB 1109, SMC- AAI and Navy- ATC due to the confusion on Runway and channel change over.

j. As the Navy aircraft and AXB-1109 were monitoring two different channels, they were not aware of each other's traffic situation.

k. Due to topography at the airport, the Navy aircraft was unable to visually sight the civil traffic at N-3 from RWY 08 beginning and AXB-1109 was unable to visually see the Navy aircraft lined up at RWY 08 threshold.

l. The usage of TWY N3 and N2 and vacation plan requires a review to avoid operational conflicts and facilitate effective planning of ground movements.

Note: Action taken as per SOP dated 20 Apr 2026 (Copy of the extract of SOP amendment as Annexure II).

m. Handing over/ Taking over between SMC controllers was inadequate.

In the present event, the Handing Over Watch (HOW) and Taking Over Watch (TOW) briefing between SMC controllers was conducted verbally and no details were recorded in the logbook maintained by the Airports Authority of India (AAI). It is essential that critical information/ events are mandatorily recorded to enhance situational awareness and avoid conflicting situations between ATCOs/ SMC controllers.

Note: Post occurrence, the Naval and AAI Authorities had a meeting and revised the handing over taking over procedures. It was decided that the SMC controller will directly coordinate with the Navy ATC during watch taking over at the start of the day on the HOTLINE to particularly confirm critical elements pertaining to briefing like the Runway- in use, and change-over frequency. (Copy of the extract of Office order as Annexure III).

3.2 Probable Causes:

a. The R/T call of "Expect back track" by SMC controller was misinterpreted by the PF as 'enter backtrack clearance', resulting in the crew's cognitive focus to shift entirely toward executing the Runway entry, without seeking an explicit clearance. Failing to request clarification may have likely caused the PIC to believe erroneously that they have received an expected clearance to enter Runway.

b. The flight crew did not fully adhere to the SMC Controller's taxi instructions to 'hold at holding point and to contact Navy- Approach on 119.7 MHz at the holding point. Had they stopped and established positive communication with the Navy- ATC before entering the active runway, the incident could have been avoided.

3.3 Contributory factors:

a. The PM, being a trainee, was overly-reliant on the instructor and followed instructions without any hesitation. He got busy with heads down tasks after the taxi holding point trying to verify the values for RWY 08 take-off on the active runway due to which he was unable to monitor the R/T calls effectively; neither did the PM caution the PF from an unauthorized entry.

b. Hear back error by the SMC controller: If the SMC controller had insisted on a correct readback, read back error by the captain and hear-back error by the SMC with regard to a crucial R/T call 'hold at holding point', could have prevented the serious incident.

4. Safety Recommendations

1) Air India Express Limited: It is recommended that;

i. The Crew of AXB 1109 to undergo counseling and PIC to undergo training on the safety lapses that resulted in the Runway Incursion due to lack of operational clarity and communication miss outs.

ii. A Circular to be issued to sensitize all the crew for the lapses encountered in this occurrence.

2) SMC- Airports Authority of India: It is recommended that;

i. Airports Authority of India to issue a circular to sensitize ATCOs for emphasizing the use of standard R/T phraseology and to review the use of phrases like 'expect backtrack' by ground controllers which can be easily misinterpreted as 'enter backtrack'. ATCOs/ SMC controllers must listen carefully to the read-back and correct any factual error or any apparent misunderstanding.

ii. TWY N2 may be considered as a HOTSPOT due to its proximity with Bay 1 & 2 of civil apron and increased probability of the risk of potential ground collisions and RWY incursions.

3) Indian Navy: It is recommended that;

i. Indian Naval unit- INS HANSA should publish the installation of Stop Bars and their usage at DABOLIM airport in the AIP.

ii. Indian Naval unit- INS HANSA may consider establishing a standard frequency change over procedure for civil traffic transitioning from the Ground frequency to the Tower frequency, in order to avoid recurring confusion regarding the appropriate frequency to be used.

4) DGCA. It is recommended that;

i) Coordination between Civil Aviation Authorities and Defence Authorities including Indian Air force, Indian Navy, Indian Army and Indian Coast Guard. Recommendations from previous investigation reports regarding exchange of unclassified information & evidence for investigation of an accident/ serious incident / incident and a formal framework for collaboration between DGCA/AAIB and Defence authorities should be established, on a priority basis.

Annexure -I (AIP Supplement VOGO dt 20 June 2019)

GOA AIRPORT (VOGO)

VOGO AD 2.1 AERODROME LOCATION INDICATOR AND NAME

VOGO – GOA AIRPORT

VOGO AD 2.2 AERODROME GEOGRAPHICAL AND ADMINISTRATIVE DATA

1	Aerodrome reference point coordinates and its site	152251.02N 0734937.44E M. Brg 073.92 DEG/1121M from physical extremity of RWY 08	
2	Direction and distance of aerodrome reference point from the centre of the city or town which the aerodrome serves	30 Km South of Panaji City On a bearing of 140 DEG at a distance of 2.34KM from Vasco Railway Station	
3	Aerodrome elevation and reference temperature	186 FT/33.2 DEG C	
4	Magnetic, date of information and annual change	1.50 DEG W (2010) / 0.033 DEG E	
5	Name of aerodrome operator, address, telephone, telefax, e-mail address, AFS address, website (if available)	The Commanding Officer INS Hansa Dabolim Airport Goa – 403 801	
		Phone	+91-832-2585572 +91-832-2585430
		Fax	+91-832-2538456

VOGO AD 2.9 SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEM AND MARKINGS

1	Use of aircraft stand identification signs, taxiway guidelines and visual docking/parking guidance system at aircraft stands	Taxing guidance on RT. Guidelines and ID signs on TWY and stands		
2	Runway and taxiway markings and lights	RWY	Markings	Designation, THR, TDZ, Centerline, Edge, fix distance
			Lights	Edge, End, THR
		TWY	Marking	Centerline, holding position on all Taxi ways
			Lights	Edge
3	Stop bars (if any)	NIL		
4	Remarks	NIL		

Annexure -II (Extract of SOP Amendment NAVY- ATC and AAI- SMC) dt 20 Apr 2026

2. The following issues were discussed during the meeting:-

2.1. **Taxiway Usage and Vacation Plan**. It was mutually agreed that taxiway N2 shall be utilized as the standard vacation taxiway for arriving aircraft, keeping in view pre-planned pushback operations managed by SMC. Taxiway N3 Link for vacation shall be used strictly only after prior coordination and explicit approval from SMC.

2.2. **Taxi Procedure and Frequency Changeover**. All aircraft shall initially be given taxi up to Holding Point P1/P2 under the control of SMC. At P1/P2, aircraft shall be instructed to change over to Tower frequency for further control and clearance. This procedure is to be adhered uniformly to ensure clarity in control responsibilities.

2.3. **Emergency Communication Protocol**. To ensure seamless coordination during contingencies, it was agreed that SMC walkie-talkies shall be maintained and recorded by both SMC and Indian Navy. These communication sets shall be utilized mandatorily during emergencies or situations requiring immediate and direct coordination between the two agencies.

3. **Other issues discussed.**

3.1. **NOTAM Coordination**. AAI representatives shall ensure advance intimation and coordination with the Indian Navy for raising NOTAMs. Timely dissemination of information is essential to avoid operational conflicts and to facilitate effective planning of ground activities.

3.2. **SOP Amendment and Jurisdiction**. In view of the proposed installation of new signage boards from P1 to P4, necessary amendments to the existing SOP shall be carried out post fitment. Jurisdictional responsibilities were delineated as follows:

P1 to P3 : Under SMC Control

P4 : Under Indian Navy Control

Annexure -III (Extract of Office order- SMC AAI dt 21 Apr 2026)

गोवा 403801 Goa 403801

AAI/GOA/ATM/OO/2026/02 21/04/2026

कार्यालय आदेश/ OFFICE ORDER

विषय: शिफ्ट परिवर्तन के दौरान नियंत्रकों के लिए संक्षिप्त जानकारी

SUB: Briefing for Controllers during Shift Change and Runway Inspection.

यह कार्यालय आदेश शिफ्ट परिवर्तन के दौरान नियंत्रकों द्वारा ब्रीफिंग और प्रत्येक शिफ्ट की शुरुआत में टैक्सीवे ए के निरीक्षण के संबंध में जारी किया गया है।

सभी एयर ट्रैफिक कंट्रोल अधिकारियों (एटीसीओ) को निर्देश दिया जाता है कि शिफ्ट परिवर्तन के दौरान चैनल का कार्यभार संभालने से पहले, उन्हें नेवी टॉवर से टॉवर फ्रीक्वेंसी, उपयोग में आने वाले रनवे और अन्य महत्वपूर्ण जानकारी के बारे में ब्रीफिंग अवश्य लेनी चाहिए।

साथ ही, प्रत्येक एटीसीओ को प्रत्येक शिफ्ट की शुरुआत से पहले और आवश्यकतानुसार अन्य समय पर भी टैक्सीवे ए का निरीक्षण करना अनिवार्य है।

This office order is issued regarding Briefing by Controllers during Shift Change and inspection of Taxiway A at the start of each Shift.

All ATCOs (Air Traffic Control Officers) are instructed that before taking over channel during shift change-over, they must take briefing regarding TWR frequency, RWY in use and any other important information from Navy Tower.

Also, each ATCO is required to do inspection of Taxiway A at the start of each shift and at other times, as and when required.

A Kumar 21/04/26