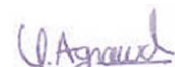


TEL: 91-11-24632950 Extn: 2219/2233 AFS: VIDDYXAX FAX: 91-11-24615508 E_mail:- gmais@aai.aero	INDIA AERONAUTICAL INFORMATION SERVICES AIRPORTS AUTHORITY OF INDIA RAJIV GANDHI BHAVAN SAFDARJUNG AIRPORT NEW DELHI – 110003	30/ 2009
		27 th August 2009

File No. AAI/ATM/AIS/ 09-09/ 2009

This Supplement is issued for information, guidance and necessary action.


V.P. AGRAWAL
CHAIRMAN

AIRPORTS AUTHORITY OF INDIA

[Effective Date: 22nd October 2009]**Sub: - MIXED MODE OPERATION RUNWAY 28/10 and 29/11 AT IGI AIRPORT, NEW DELHI****1. Introduction**

In order to reduce taxiing distance and time, mixed mode operations will be used during Cat I operations on runway 28/10 for ‘Domestic arrival’ / ‘Domestic Departures’ and runway 29/11 for ‘International arrivals’ / ‘International departures’ at IGI airport, New Delhi.

2. Aerodrome**2.1 Physical characteristics of Runways**

a) The details of the runway length, orientation and ILS are given below:

WESTERLY FLOW

RUNWAY	ORIENTATION	TORA	TODA	ASDA	LDA	ILS Frequency Identification Category
28	284 ⁰	3810m	4084m	3810m	3810m	110.3 MHz IPLM CAT-I
29	283 ⁰	4280m	4280m	4430m	2820m	110.90 MHz IDGM CAT-I

EASTERLY FLOW

RUNWAY	ORIENTATION	TORA	TODA	ASDA	LDA	ILS Frequency Identification Category
10	104 ⁰	3810m	3810m	3810m	3810m	109.5 MHz IDEL CAT-I
11	103 ⁰	4110m	4110m	4430m	3465m	111.30 MHz IDMR CAT-I

b) The exit taxiways associated with the proposed arrival runways:

WESTERLY FLOW

RUNWAY	RAPID EXIT	NORMAL EXIT
29	Z6, Z7	S4, S5, Z8, Z9
28	D1	E4, D, K, L, M, N

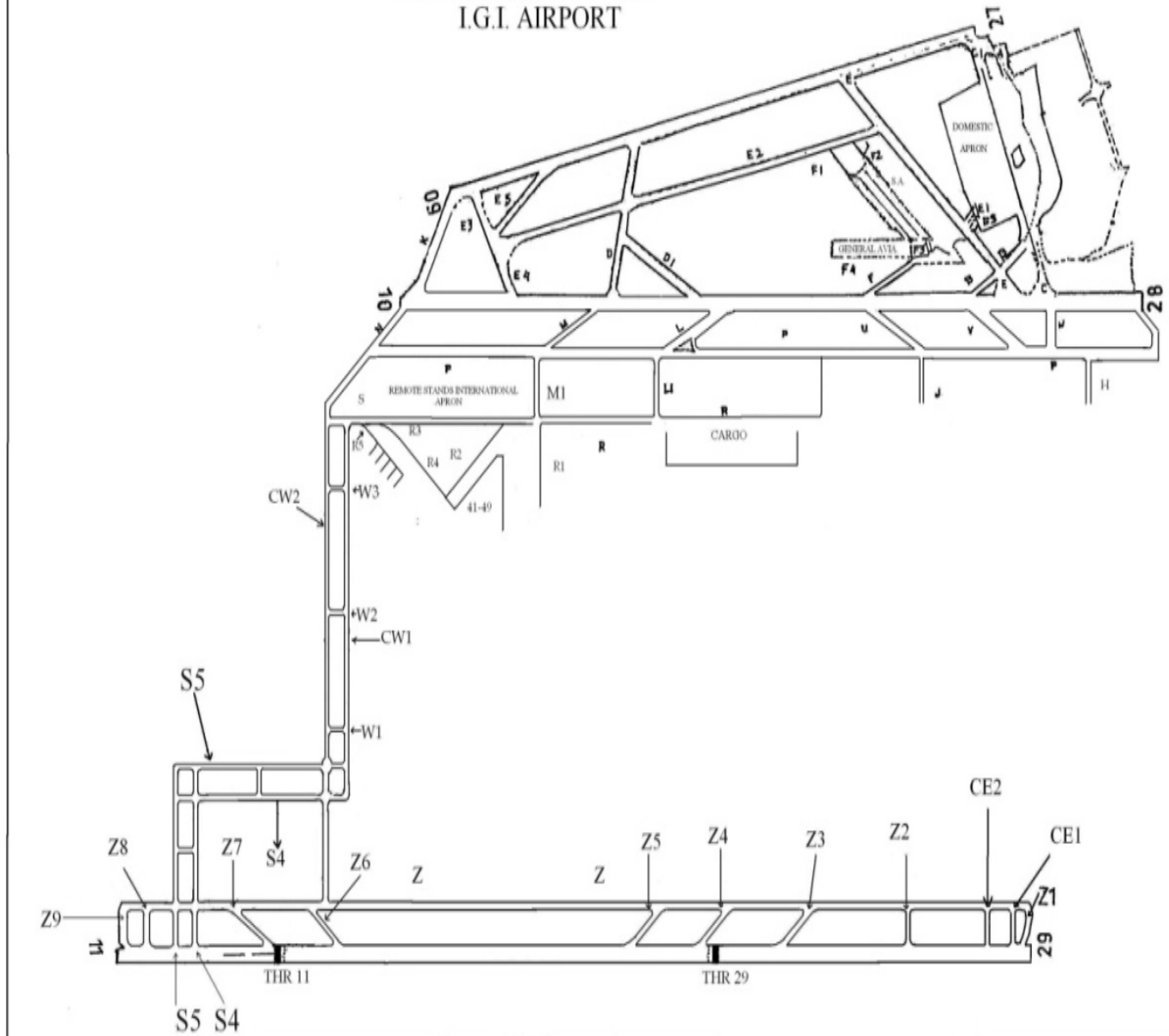
EASTERLY FLOW

RUNWAY	RAPID EXIT	NORMAL EXIT
10	U,V	F, B, E, C, W, P
11	Z5, Z4,Z3	Z1, Z2, CE1, CE2,

2.2 Layout

The map of IGI Airport [not to scale] showing mainly Runways, Aprons, Parallel Taxiways and other taxiways including rapid exit taxiways is given below:

AERODROME LAYOUT I.G.I. AIRPORT



3. OPERATING PROCEDURE AND RUNWAY USAGE:

3.1 A) Plan for Normal Density Traffic handling

i) *Westerly Flow:*

Runway 28 shall be used for domestic departures and arrivals

Runway 29 shall be used for international departures and arrivals

ii) *Easterly Flow:*

Runway 10 shall be used for domestic departures and arrivals

Runway 11 shall be used for international departures and arrivals

B) Plan for high density traffic handling

When the combined traffic density of domestic arrivals and departures exceeds the capacity of Runway 28 or 10 and the principle of least average delay needs application, to increase throughput and reduce congestion in air and if there is delay in domestic departures (say more than 5 aircraft on holding point) and delay is being given to subsequent aircraft for startup then domestic arrivals to be taken to Runway 29, so that domestic departures can be expedited from Runway 28.

Westerly Flow: The domestic arrivals shall be diverted to Runway 29.

The candidates for makeover shall be:

a) Aircraft of light wake turbulence category and all other non-sked / GA flights.

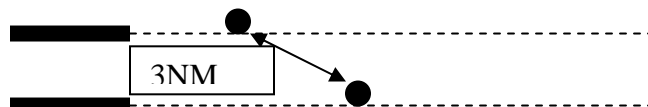
b) Alternate Domestic scheduled arrivals on runway 28 and 29.

Easterly Flow: The domestic departures shall be routed for Runway 11.

The candidates for makeover shall be The 7th to 10th aircraft in the departure sequence

C) SEPARATION BETWEEN ARRIVALS ON TWO RUNWAYS

- i) Simultaneous independent approaches on Runway 28/10 and 29/11 shall not be permitted. Dependent parallel approaches will be applicable on Runway 28/10 and 29/11.
- ii) Both arrival radar controllers should avoid positioning aircraft on crossing / converging tracks, unless aircraft are vertically separated.
- iii) 3 NM Radar separations will be applicable with in Terminal Approach Radar jurisdiction at I.G.I. airport Delhi.
- iv) The sequence of both international and domestic arrivals shall be considered as one stream for the purpose of sequencing.
- v) A minimum of 1 000 ft vertical separation or a minimum of 3.0 NM radar separations shall be provided between aircraft during turn-on to parallel ILS localizer courses.
- vi) 3.0 NM between successive aircraft on adjacent ILS localizer courses.



- vii) Where applicable, Wake turbulence radar separation minima shall be applied.

Westerly Flow

Aircraft on ILS 28 to intercept LLZ at 3600 feet and aircraft on ILS 29 to intercept LLZ at 2600 feet.

Easterly Flow

Aircraft on ILS 10 to intercept LLZ at 3600 feet and aircraft on ILS 11 to intercept LLZ at 2600 feet.

4. CONTINGENCY PROCEDURES FOR MIXED MODE OPERATIONS (Refer: **Annexure A**)

5. SPEED PROFILE TO BE ADHERED DURING MIXED MODE OPERATIONS:

Below FL 100	30-20 NM from touchdown	20-10 NM from touchdown	10-4 NM from touchdown
250 Kts IAS	220 Kts IAS	180 Kts IAS	160 Kts IAS

Note: Aircraft unable to maintain above specified speeds shall advise ATC immediately and follow ATC instructions.

6. LIMITATIONS, SUSPENSION AND TERMINATION:

- i) The Tower Supervisor in consultation with and the approval of the Watch Supervisory Officer may suspend or terminate mixed mode runway operations and commence either a two runway (departure/arrival segregated) or a single runway operation in adherence to the laid down SOPs appropriate to that mode of operations, whenever Weather/ VVIP movement /Special condition /Equipment degradation may so require.
- ii) The Aerodrome Operating Minima criteria for mixed mode two runway operations shall be in accordance with the DGCA guidelines laid down in DGCA circular no. 06/1999, any reduction in these criteria **shall** necessitate suspension or termination of mix mode of operations.
- iii) Mixed mode runway operations **should** be suspended when full emergency has been declared whilst handling an aircraft in emergency / accident.
- iv) Mixed mode runway operations **shall** be suspended when Surveillance equipment in Tower (SMR/SIT) or Approach (TAR) are out of service.
- v) Mixed mode runway operations **shall** be suspended when Terminal Navigation Aids (ILS), serving the runways in the direction of flow, or their status indicators is out of service.

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ANNEXURE A

CONTINGENCY PROCEDURES DURING MIXED MODE OPERATIONS – DELHI AIRPORT [RW28 & 29, RW10 & 11]

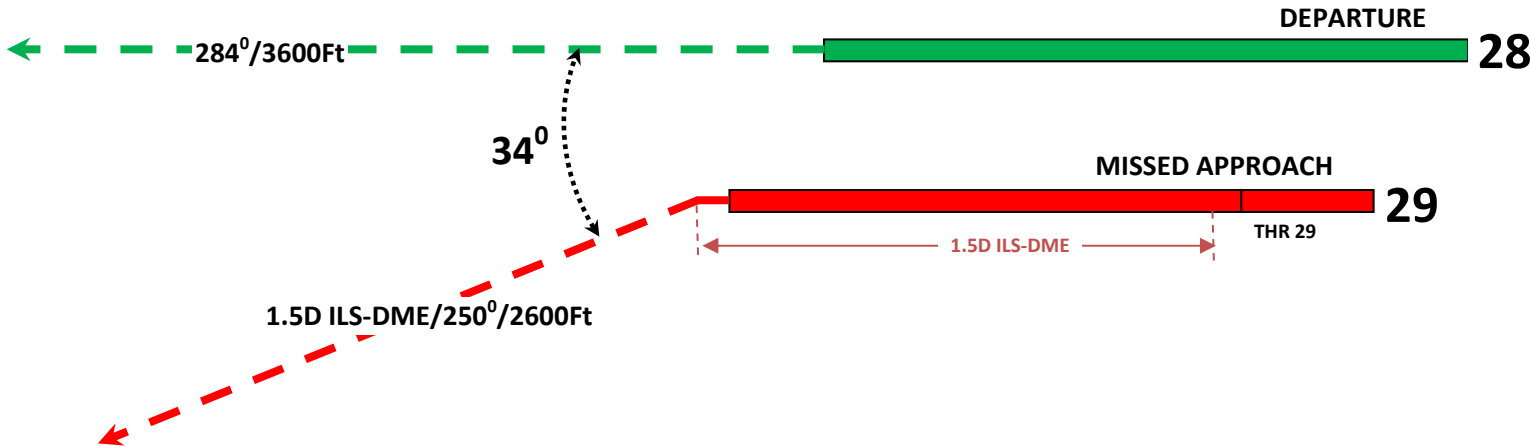
Possible Simultaneous Operations Event

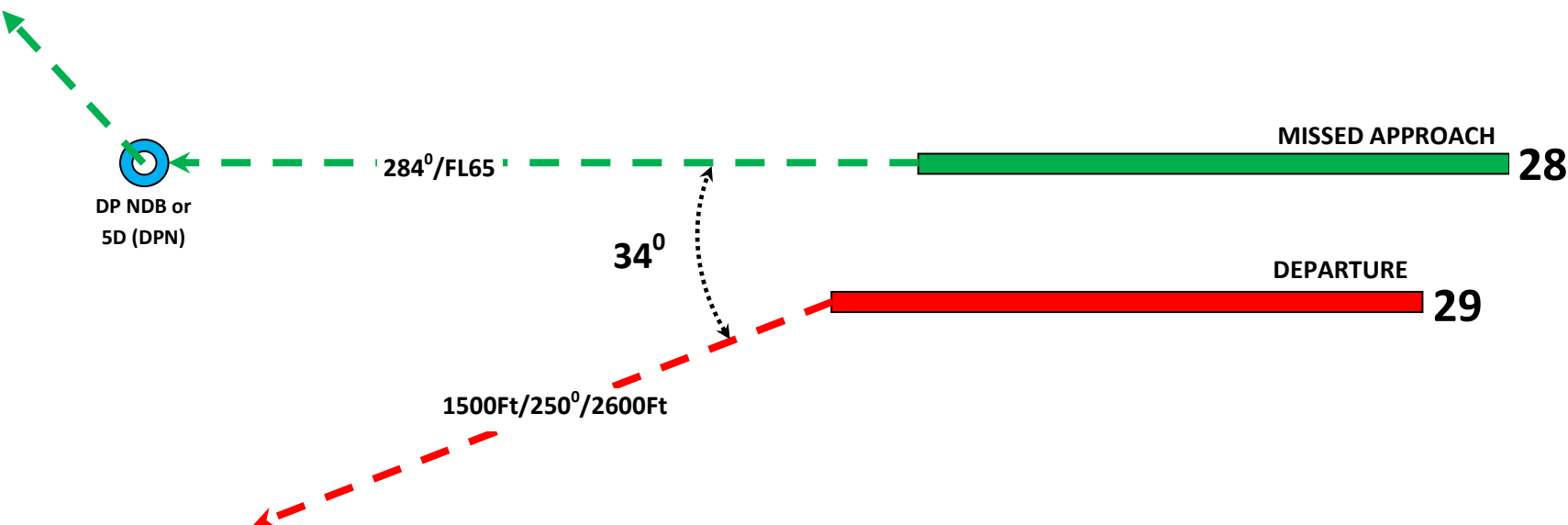
RW 28	RW 29
Departure	Departure
Departure	Missed Approach
Missed Approach	Departure
Missed Approach	Missed Approach
RW 10	RW 11
Departure	Departure
Departure	Missed Approach
Missed Approach	Departure
Missed Approach	Missed Approach

MIXED MODE OPERATION [RW 28 & RW 29]

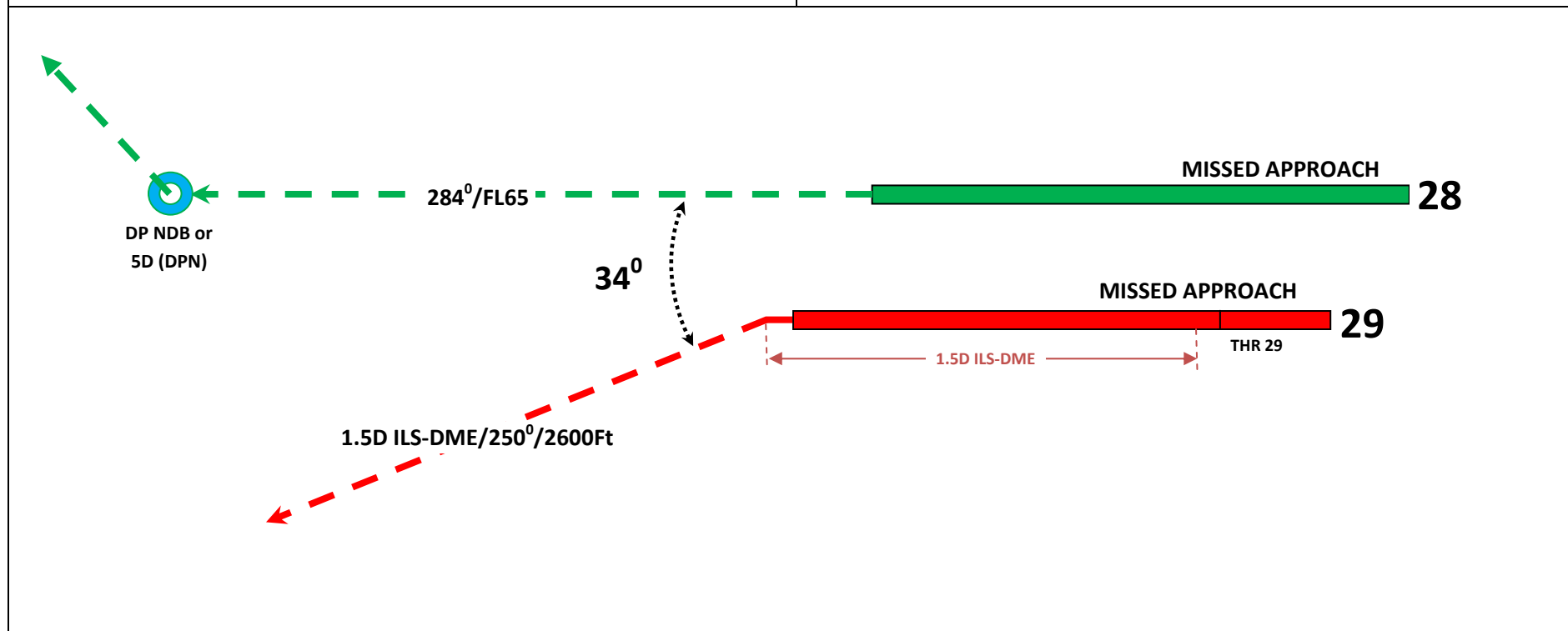
DEPARTURE RW 28	DEPARTURE RW 29
<p>Radar Departure - After departure climb on runway heading to 3600Ft before executing turn.</p> <p>Following SID is permitted: RNAV SID – LOSDO, KABGU, NUBGU Non-RNAV SID – All</p>	<p>Radar Departure only – After departure at 1500Ft turn left heading 250⁰ M climbing to 2600Ft, further with radar.</p>

The diagram shows two departure paths. The top path, for Runway 28, is a green dashed line extending left with an arrow, labeled '284°/3600Ft', and a solid green bar to its right labeled 'DEPARTURE 28'. The bottom path, for Runway 29, is a red dashed line extending down and to the left with an arrow, labeled '1500Ft/250°/2600Ft', and a solid red bar to its right labeled 'DEPARTURE 29'. A dotted curved arrow indicates a 34° turn from the Runway 28 path down towards the Runway 29 path.

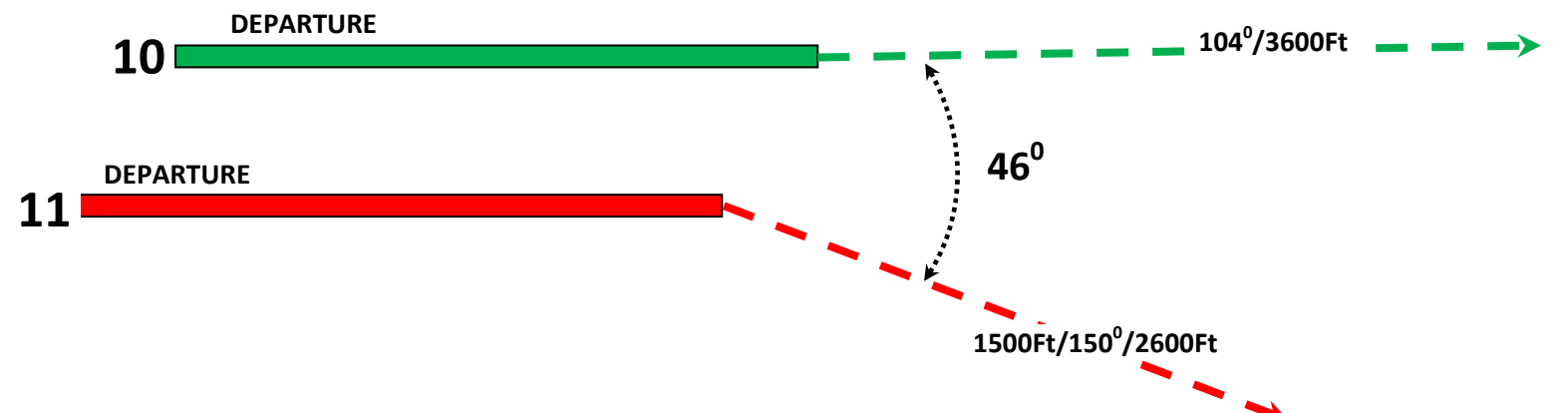
DEPARTURE RW 28	MISSED APPROACH RW 29
<p>Radar Departure - After departure climb on runway heading to 3600Ft before executing turn.</p> <p>Following SID is permitted: RNAV SID – LOSDO, KABGU, NUBGU Non-RNAV SID – All</p>	<p>Missed Approach instructions – As published vide NOTAM G0030/09.</p>
 <p>The diagram illustrates the missed approach procedure for Runway 29. It shows a green dashed line representing the departure path from Runway 28, heading 284 degrees to 3600 feet. A red dashed line represents the missed approach path, starting 1.5D ILS-DME (250 degrees) from Runway 29 and climbing to 2600 feet. A 34-degree turn is indicated between the two paths. Runway 28 is labeled 'DEPARTURE 28' and Runway 29 is labeled 'MISSED APPROACH 29' with 'THR 29' at its end.</p>	

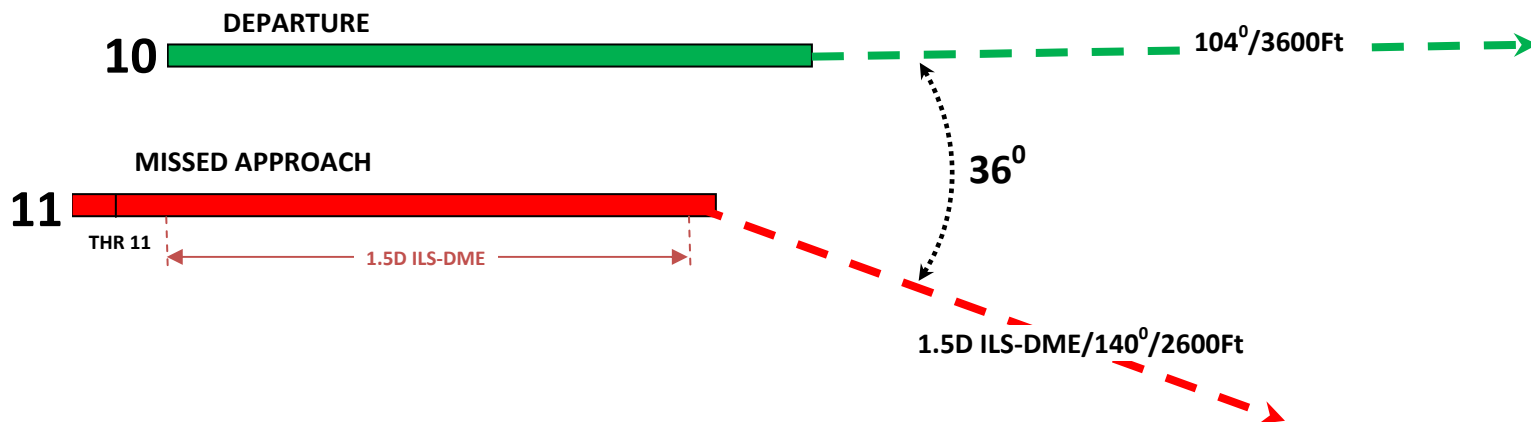
MISSED APPROACH RW 28	DEPARTURE RW 29
<p>Missed Approach instructions – As published in AIP India 6th Ed, chart AD2-VIDP 52 (ILS CAT-I RW28).</p>	<p>Radar Departure only – After departure climb to 1500Ft, turn left heading 250⁰ M climbing to 2600Ft, further with radar</p>
 <p>The diagram illustrates the flight paths for a missed approach and a radar departure. On the left, a blue circle with a green arrow represents the 'DP NDB or 5D (DPN)'. A green dashed line extends horizontally to the right from this point, labeled '284°/FL65'. This line transitions into a solid green horizontal bar labeled 'MISSED APPROACH 28'. Below this, a red dashed line starts from a point further right, labeled '1500Ft/250°/2600Ft', and extends downwards and to the left. A red solid horizontal bar labeled 'DEPARTURE 29' is positioned above this red dashed line. A curved dotted arrow indicates a 34° turn from the green missed approach line down to the red departure line.</p>	

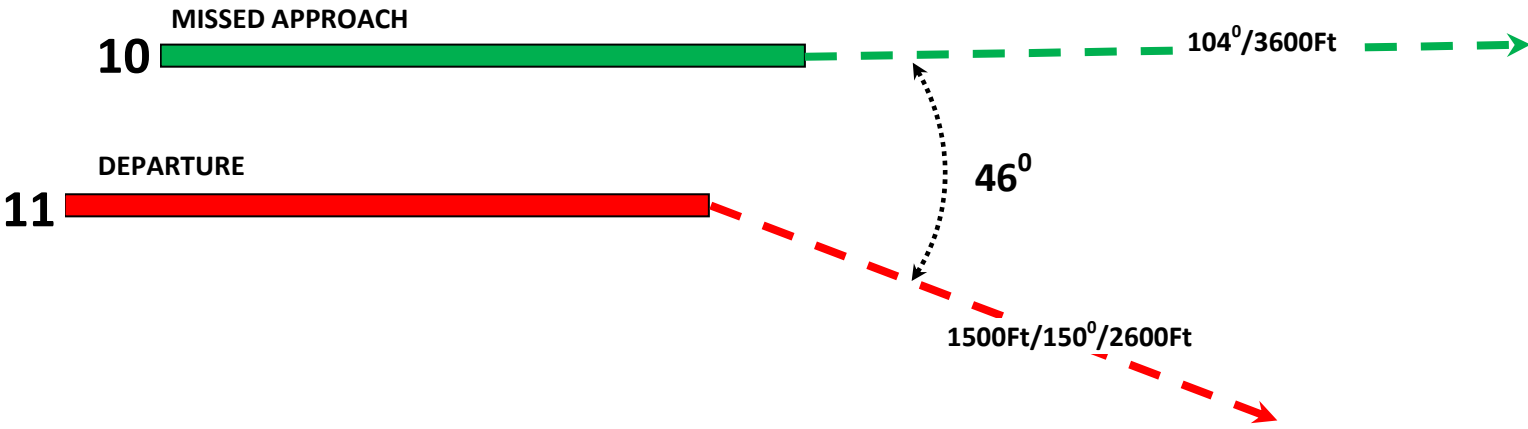
MISSED APPROACH RW 28	MISSED APPROACH RW 29
Missed Approach instructions – As published in AIP India 6 th Ed, chart AD2-VIDP 52 (ILS CAT-I RW28).	Missed Approach instructions – As published vide NOTAM G0030/09.

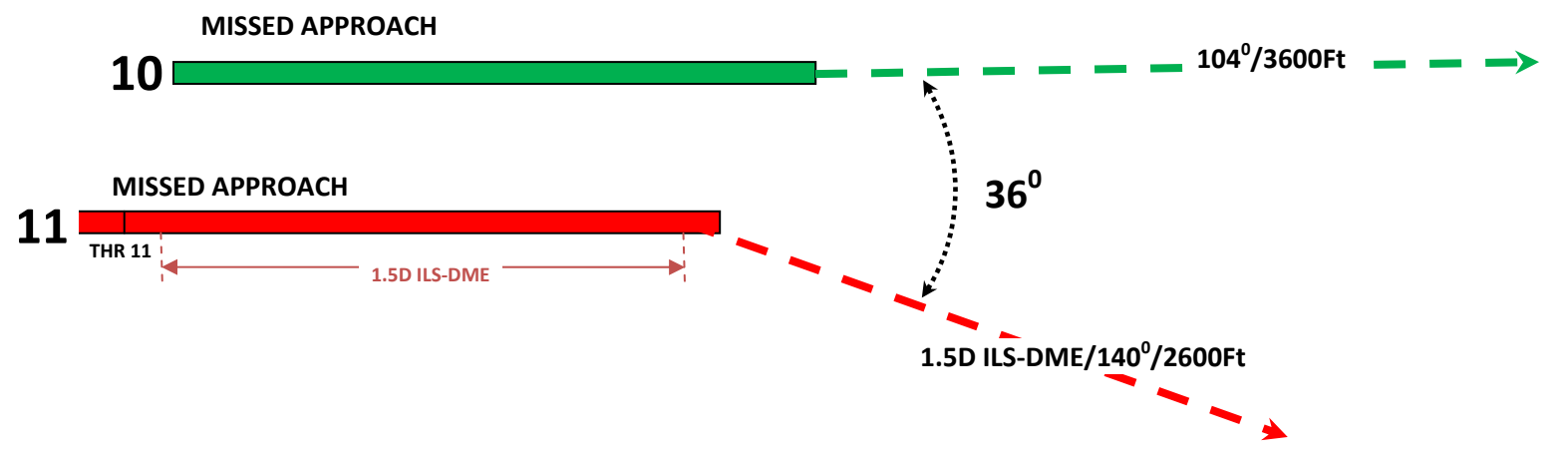


MIXED MODE OPERATION [RW 10 & RW 11]

DEPARTURE RW 10	DEPARTURE RW 11
<p>Radar Departure - After departure climb on runway heading to 3600Ft before executing turn.</p> <p>Following SID are permitted: RNAV SID – GOPNU Non-RNAV SID – All</p>	<p>Radar Departure only – After departure at 1500Ft, turn right heading 150° M climbing to 2600Ft, further with radar.</p>
 <p>The diagram shows two departure paths. Path 10 (green) starts with a solid line labeled 'DEPARTURE' and '10', followed by a dashed line at 104°/3600Ft. Path 11 (red) starts with a solid line labeled 'DEPARTURE' and '11', followed by a dashed line at 1500Ft/150°/2600Ft. A curved arrow indicates a 46° turn angle between the two paths.</p>	

DEPARTURE RW 10	MISSED APPROACH RW 11
<p>Radar Departure - After departure climb on runway heading to 3600Ft before executing turn.</p> <p>Following SID is permitted: RNAV SID – GOPNU Non-RNAV SID – All</p>	<p>Missed Approach instructions – As published vide NOTAM G0031/09.</p>
 <p>The diagram illustrates the missed approach procedure for Runway 11. It shows two paths: a green 'DEPARTURE' path for Runway 10 and a red 'MISSED APPROACH' path for Runway 11. The missed approach starts at a 1.5D ILS-DME distance from THR 11, turns 36 degrees, and continues at 1.5D ILS-DME/140 degrees/2600Ft.</p>	

MISSED APPROACH RW 10	DEPARTURE RW 11
<p>Missed Approach instructions – Climb straight ahead to 3600Ft, climbing turn right on heading 120⁰ M to establish R-107 (116.1 DPN) to join holding at SSB VOR at F65 or as instructed by ATC</p>	<p>Radar Departure only – After departure, at 1500Ft turn right heading 150⁰ M climbing to 2600Ft, further with radar.</p>
 <p>The diagram illustrates the missed approach and radar departure procedures for Runway 10 and Runway 11. Runway 10 (green) shows a missed approach path: straight ahead to 3600Ft, then a 46-degree turn right to heading 104 degrees, climbing to 3600Ft. Runway 11 (red) shows a radar departure path: straight ahead, then a 46-degree turn right at 1500Ft to heading 150 degrees, climbing to 2600Ft. The angle between the two paths is 46 degrees.</p>	

MISSED APPROACH RW 10	MISSED APPROACH RW 11
<p>Missed Approach instructions – Climb straight ahead to 3600Ft, climbing turn right on heading 120⁰ M to establish R-107 (116.1 DPN) to join holding at SSB VOR at F65 or as instructed by ATC</p>	<p>Missed Approach instructions – As published vide NOTAM G0031/09.</p>
 <p>The diagram illustrates the missed approach procedures for Runway 10 and Runway 11. Runway 10 is represented by a green bar, and Runway 11 by a red bar. For Runway 10, the missed approach path is shown as a green dashed line that turns right to a heading of 104° and reaches an altitude of 3600Ft. For Runway 11, the missed approach path is shown as a red dashed line that turns right to a heading of 140° and reaches an altitude of 2600Ft. A 36° angle is indicated between the two paths. The distance from the runway threshold (THR 11) to the start of the missed approach path for Runway 11 is 1.5D ILS-DME.</p>	