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EXTRAORDINARY

भाग II—खण्ड 3—उप-खण्ड (ii)

PART II—Section 3—Sub-section (ii)

प्राधिकार से प्रकाशित

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नागर विमानन मंत्रालय

अधिसूचना

नई दिल्ली, 14 जनवरी, 2010

का.आ. 84(अ).—वायुयान अधिनियम, 1934 की धारा 9क द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए नागर विमानन मंत्रालय का कार्यालय आदेश 1589(अ), तारीख 30 जून, 2008 में भारत सरकार की अधिसूचना का अधिक्रमण करते हुए केन्द्रीय सरकार की राय है कि वायुयान प्रचालन की सुरक्षा के लिए ऐसा करना आवश्यक और समीचीन है, इसके द्वारा निदेश देती है कि :

1. अनापत्ति प्रमाण-पत्र लिए बिना अनुलग्नक III क, III ख, III ग, III घ III ड III च में सूचीबद्ध वैमानिक संचार स्टेशनों और सिविल व रक्षा विमानक्षेत्रों पर अनुलग्नक I व II में विनिर्दिष्ट परिसीमा के भीतर किसी भूमि पर कोई भवन, या संरचना का सन्निर्माण नहीं किया जाएगा या पेड़ नहीं लगाया जाएगा।

2. पैरा में संदर्भित अनापत्ति प्रमाण पत्र जारी करने के प्रयोजन से,-

1,-

क) भारतीय विमानपत्तन प्राधिकरण भारत में सभी सिविल विमान क्षेत्रों की बाबत जिसके अंतर्गत राज्य विमान क्षेत्र और प्राइवेट विमान क्षेत्र हैं जहां सिविल, वाणिज्यिक उड़ानें प्रचालित की जाती रही हैं तथा जो अनुलग्नक III क में सूचीबद्ध हैं, किसी सन्निर्माण के लिए केंद्रीय सरकार की ओर से अनापत्ति प्रमाण पत्र जारी करने के लिए जिम्मेदार होगा।

ख) सैनिक विमानक्षेत्रों के लिए रक्षा प्राधिकारी अनापत्ति प्रमाण-पत्र जारी करने के लिए जिम्मेदार होंगे। रक्षा प्राधिकारी ऐसे किसी अतिरिक्त निबंधन के जो अनापत्ति प्रमाण-पत्र जारी करने के लिए उपयुक्त समझा जाए इस अधिसूचना में विनिर्दिष्ट रूप में मार्गदर्शन का पालन करेगें ।

3. संलग्नक I व II में विर्निदिष्ट ऊचांई से अधिक कोई भी भवन अथवा संरचना के निर्माण और संलग्नक I व II में विर्निदिष्ट ऊचाँई से उच्चतर कोई वृक्ष जिसके बढने की संभावना है, विमानक्षेत्र संदर्भ बिंदु के 20 किलोमीटर की त्रिज्या के अन्दर नहीं उगाया जाएगा।

4. किसी हवाई अड्डे जिसका निर्माण या विकास अपेक्षित है, जहां ऐसी भूमि पर किसी भवन, संरचना या वृक्ष की ऊंचाई उक्त अनुलग्नक I व II में विनिर्दिष्ट ऊंचाई से उच्चतर है, वहां ऐसे भवन ,संरचना या वृक्ष का स्वामी

MINISTRY OF CIVIL AVIATION

NOTIFICATION

New Delhi, the 14th January, 2010

S.O. 84(E).—In exercise of the powers conferred by section 9-A of the Aircraft Act, 1934 and in supersession of the notification of the Government of India in the Ministry of Civil Aviation number S.O. 1589(E), dated the 30th June, 2008, the Central Government being of opinion that it is necessary and expedient so to do for the safety of aircraft operations hereby direct as under:

1. No building or structure shall be constructed or erected and no tree shall be planted on any land within the limits specified in Annexure I and II from Civil and Defence Aerodromes and Aeronautical communication stations listed in Annexure-IIIA, IIIB, IIIC, IIID and IIIE without obtaining 'No Objection Certificate'.

2. For the purpose of issuing of No Objection Certificate referred to in paragraph 1,-

(a) the Airports Authority of India shall be responsible for issuing the No Objection Certificate on behalf of Central Government in respect of all civil aerodromes in India including the State Government aerodromes and the Private aerodromes where civil commercial flights are operating as listed at Annexure IIIA;

(b) for Defence aerodromes, defence authorities shall be responsible for issuing No Objection Certificate in accordance with this notification and subject to any other restriction or condition which such authorities deemed fit for issuing the 'No Objection Certificate'.

3. No building or structure higher than the height specified in Annexure I and II shall be constructed or erected and no tree which is likely to grow or ordinarily grows higher than the height specified in the said Annexure I and II shall be planted on any land within a radius of twenty kilometers from the aerodrome reference point.

4. In respect of Aerodromes which are required to be constructed or developed where the height of any existing building or structure or tree on any land within the limits specified in Annexure I and Annexure II, exceeds the height specified in this notification, the owner or the person having control of such building, structure or tree shall reduce the height thereof within a period of one month from the date of publication of notification in this regard so as not to exceed the specified height.

5. Where the owner or the person having control over the building or structure or tree fails to reduce the height within the period specified in para 4, the State Government authorities or any other concerned authority shall be responsible for taking action in respect of such building, structure or tree; and any building or structure including tower, installation or chimney that is constructed or erected or

any tree that is grown in violation of the provisions contained in this notification shall be considered as illegal and the authorities referred to above shall be responsible for removal or reduction of height thereof.

6. In case of Government and Private civil aerodromes and airstrips specified in Annexure III B where, at present, civil schedule operations are not taking place or there is no possibility of such operations taking place for reasons including airspace restrictions, permanent structures or terrain penetrating the obstacle limitation surface, national security, etc., the provisions of this notification shall be applicable on the basis of the aerodrome reference code and operational usage of that aerodrome or strip.

7. Each Aerodrome Operator shall be responsible for preparing zoning maps in conformity with the provisions of this notification with digitized data in WGS84 Coordinates indicating all the latest features around the airport.

[F. No. AV-20036/66/2000-AAI]

ALOK SINHA, Jt. Secy.

ANNEXURE-I

The Land area specified below shall be completely free from all obstacles as provided hereunder:-

1. The land comprising within the Runway strip of uniform width of 150 meters on either side of centerline which extends to 60 meters beyond each extremity of Runway end along extended centerline of Runway for a Instrument runway code 3 and 4.

2. The land comprising within the Runway strip of uniform width of 75 meters on either side of centerline which extends to 66 meters beyond each extremity of Runway end along extended centerline of the Runway for instrument Runway code 1 and 2 for non-Instrument runway code 3 and 4.

3. The land comprising within the Runway strip of uniform width of 40 meters on either side of centerline which extends to 60 meters beyond each extremity of Runway end along extended centerline of the Runway for a non-Instrument runway code 2.

4. The land comprising within the Runway strip of uniform width of 30 meters on either side of centerline which extends to 30 meters beyond each extremity of Runway end along extended centerline of the Runway for a Instrument runway code 1.

5. The rectangular area of land enclosed within the approach funnel of the Runway within a maximum distance of 300 meters from the extremity of the Runway and 60 meters on either side of the extended Runway centerline for code 3 and 4 and 45 meters on either side of extended Runway centerline for code 1 and 2.

6. In an aerodrome, where-

(a) Very High Frequency Omni Radio Range (VOR)/Distance Measuring Equipments (DME)/Very High Frequency Direction Finder (VHF DF) facilities are available, land within the 300 meters radius of the facility;

(b) Localizer facilities are available, the area bounded by the following, namely:-

(i) a line 300 meters in the direction of approach or nearest end of the runway, whichever is greater from localizer antenna and perpendicular to the runway;

(ii) a line 60 meters from the centerline of localizer antenna on both side and parallel to the runway;

(iii) a line containing centre of localizer antennas and perpendicular to the runway; and

(iv) area within circle of 75 meters radius with centre at middle of the antenna system;

(c) GLIDE PATH facilities are available, the area bounded by the following, namely-

(i) a line 300 meters in the direction of approach from the glide path facility;

(ii) a line containing glide path antenna and perpendicular of runway;

(iii) near edge of the runway from the glide path;

(iv) a line 30 meters in the directions away from the runway and parallel to it;

(d) Locators or Markers Beacons facilities are available, the land within a radius of 30 meters of the site of the markers and locator beacons;

(e) Air Surveillance Radar facilities are available, no structure will be permitted on the land above the level of 3 meters below the pedestal height up to the distance of 500 meters from Radar antenna;

(f) Air Routes Surveillance Radar facilities are available, no structure will be permitted on land above the level of 5 meters below the pedestal height up to the distance of 200 meters from Radar antenna;

(g) Secondary Surveillance Radar are available, the distance and the height restriction shall be the same as in respect of the Air Surveillance Radar or Air Routes Surveillance Radar, depending upon operational usage;

(h) Microwave Link facilities are available, on corridor of 30 meters on either side of the direct line of the azimuth and 10 meters below from the direct line or flight in the vertical plane;

(i) Ultra High Frequency (UHF) Link facilities are available, on a corridor of 30 meters on either side of the direct line of the azimuth and 10 meters below from the direct line of sight in the vertical plane;

(j) En-route Beacons facilities are available, land within a radius of 30 meters around the antenna;

(k) Remote Receiver facilities are available, land within a radius of 1525 meters of the site.

Explanation.- For the purpose of this Annexure,-

(a) "Runway Strip" means a defined area included the runway and stop-way, if provided, intended:-

(i) to reduce the risk of damage to aircraft running off a runway; and
(ii) to protect aircraft flying over it during take off or landing operations;

(b) "Runway Code", means the Runway Code, in relation to the dimension of Runway strip, specified in column (1) of the Table below:

DIMENSION OF RUNWAY STRIP

Runway Code	Length (Meter)	Width Extending laterally on either side of Runway Centre Line (Meter)	Length beyond Runway End/ Stopway (Meter)	Width Extending laterally on either side of Runway Centre Line (Meter)	Length beyond Runway End/ Stopway (Meter)
(1)	(2)	(3)	(4)	(5)	(6)
1.	<800	75	60	30	30
2.	800<1200	75	60	40	60
3.	1200<1800	150	60	75	60
4.	1800 & above	150	60	75	60

(c) "Approach funnel", in relation to-

(i) an Instrument runway code 3 and 4, means the area in the shape of an isosceles trapezium having the longer parallel side 4800 meters long (2400 meters on either side of the extended centerline o the runway) and smaller parallel side 300 meters long (150 meters on either side of the extended centerline of the runway), where the smaller and longer parallel sides are placed at a distance of 60 meters and 15060 meters respectively, from the end of the runway and at right angles to the extended centerline;

(ii) an Instrument runway (precision) code 1 and 2, means the area in the shape of an isosceles trapezium having the longer parallel side 4650 meters long 92325 meters on either side of the extended centerline of the runway) and smaller parallel side where the smaller and longer parallel sides are placed at a distance of 60 meters and 15060 meters respectively, from the end of the runway and at right angles to the extended centerline;

(iii) an Instrument runway (non precision) code 1 and 2, means the area in the shape of an isosceles trapezium having the longer parallel side 900 meters long (450 meters on either side of the extended centerline of the runway) and smaller parallel side 150meters long (75 meters on either side of the extended centerline of the runway) where the smaller and longer parallel sides are placed at a distance of 620 meters and 2560 meters respectively, from the end of the runway and at right angles to the extended centerline;

(iv) non-Instrument runway code 3 and 4, means the arc in the shape of an isosceles trapezium having the longer parallel side 750 meters long (375 meters on either side of the extended centerline of the runway) and smaller parallel side 150 meters long (75 meters on either side of the extended centerline of the runway) where the smaller and longer parallel sides are placed at a distance of 60 meters and 3060 meters respectively, from the end of the runway and at right angles to the extended centerline;

(v) an Instrument runway code 2, means the area in the shape of an isosceles trapezium having the longer parallel side 580 meters long 9290 meters on either side of the extended centerline of the runway) where the smaller and longer parallel sides are placed at a distance of 60 meters and 2560 meters respectively, from the end of the runway and at right angles to the extended centerline;

(vi) an Instrument runway code 1, means the area in the shape of an isosceles trapezium having the longer parallel side 320 meters long (160 meters on either side of the extended centerline of the runway) and smaller parallel side 60 meters long (30 meters on either side of the extended centerline of the runway) where the smaller and longer parallel sided are placed at a distance of 30 meters and 1660 meters respectively, from the end of the runway and at right angles to the extended centerline. The diagrams of Runway strip and approach funnel of Instrument runway code 1, 2, 3 and 4 and non-Instrument runway code 3 and 4 have been shown in the Appendix;

(d) "Instrument runway" means a runway served by visual aid and non-visual aids providing directional guidance adequate for a straight in approach and intended for the operation of aircraft using instrument approach procedures;

(i) Non-precision approach runway- An instrument runway served by visual aids and a non-visual aid providing at least directional guidance adequate for a straight-in approach,

(ii) Precision approach runway, category I- An instrument runway served by Instrument Landing System and/ or MLS and visual aids intended for operations with a decision height not lower than 60 meters and either a visibility not less than 800 meters or a runway visual range not less than 550 meters,

(iii) Precision approach runway, category II- An instrument runway served by Instrument Landing System and or MLS and visual aids intended for operations with a decision height lower than 60 meters but not lower than 30 meters and a runway visual range not less than 350 meters,

(iv) Precision approach runway, category III- An instrument runway served by Instrument Landing System and/ or MLS to and along the surface of the runway and-

A- intended for operations with a decision height lower than 30 meters, or no decision height and a runway visual range not less than 200 meters,
B-intended for operations with a decision height lower than 15 meters, or no decision height and a runway visual range less than 200 meters but not less than 50 meters,
C- intended for operations with no decision height and no runway visual range limitations.

(e) "Non-Instrument runway" means a runway intended for operations of the aircraft using visual approach procedure;

(f) "Very High Frequency Omni Radio Range, Terminal Very High Frequency Omni Radio Range, and Doppler Very High Frequency Omni Radio Range" means the facilities operating in the Very High Frequency band of frequencies 112 to 118 MHz radiate signals whereby an aircraft with the help of an instrument in its cockpit when tuned to the ground equipment frequency automatically gets its direction with respect to the facility and helps an aircraft to navigate on a predetermined course or home to an airport served by the facility;

(g) "Instrument Landing System" means the facility which serves to help an aircraft to make a safe landing on the runway in conditions of poor visibility and comprises of the following component facilities, namely:-

(i) Localizer facility which radiates Very High Frequency signals which when picked up by an aircraft guide it onto the centerline of the runway in the horizontal lane and is normally situated about 305 meters from the runway end;

(ii) Glide Path facility radiates Ultra High Frequency signals and is normally situated about 275 meters to 305 meters from the runway threshold and offset about 122 meters to 137 meters from the centerline of the runway and provides the glide angle information to a landing aircraft with the help of an instrument in the cockpit which when tuned to the glide path frequency indicates whether the aircraft is flying up or down or along the correct glide angle;

(iii) Outer Marker or Outer Locator facility operating on 75 MHz in the Very High Frequency band is normally installed along the extended centerline of the runway at a distance between 3.5 and 6 nautical miles (1 nautical mile = 1853 meters) and produces radiation pattern to indicate the landing aircraft, the pre-determined distance from the threshold along the Instrument Landing System glide path;

(h) "Radar" includes-

(i) Air Surveillance Radar which is a radar facility serving an aerodrome to scan the air traffic within 50 to 60 nautical miles of the aerodrome;

(ii) Air Routes Surveillance Radar or Secondary Surveillance Radar is a high power long-range radar covering a distance of 200 nautical miles approximately and it scans air traffic to a larger distance than Air Surveillance Radar;

(i) Communication/Navigational facilities include-

(i) Microwave Link which is a radio facility whereby mostly intelligence/data is carried to the Air Traffic Control Display site;

(ii) Ultra High Frequency Link which is a radio relay facility operating in Ultra High Frequency Band;

(iii) Beacons which are radio transmitters operating in the Medium Frequency band from 200 to 400 KLHz radiating omni directionally in the horizontal plane and an aircraft equipped with a suitable cockpit instrument can get its location automatically with respect to this facility;

(iv) Remote Receivers which are radio receiving stations (HF Band) installed at remote site away from factory or industrial areas to avoid interference link man-made static, etc.

Note 1: Any equipment or installation required for air navigation purposes must be located-

(a) on that portion of the strip within:
   i) 75 meters of the Runway centerline where the Runway code is 3 or 4,
   ii) 45 meters of the Runway centerline where Runway code is 1 or 2; or

(b) on a runway end safety area, a taxiway strip or within the distances specified in Annex 14 of the guidelines of the International Civil Aviation Organisation; or

(c) on a clearway and which would endanger an aircraft in the air, and shall be frangible and mounted as low as possible.

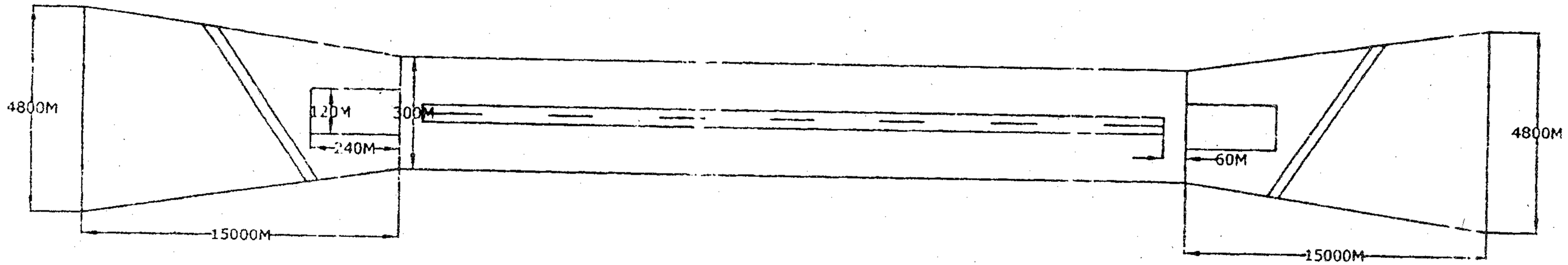
Note 2: Any equipment or installation required for air navigation purposes which must be located on or near a strip of precision approach Runway category I, II or III of Instrument Landing System and which-

(a) is situated on that portion of the strip within the 77.5 meters of the Runway centerline where the code number is 4 and code letter is F;
(b) is situated within 240 meters from the end of the strip and within-
   (i) 60 meters of the extended Runway centerline where Runway code is 3 or 4: or
   (ii) 45 meters of the extended Runway centerline where Runway code is 1 or 2: or
   (iii) penetrates the inner approach surface, the inner transitional surface or the balked landing surface,

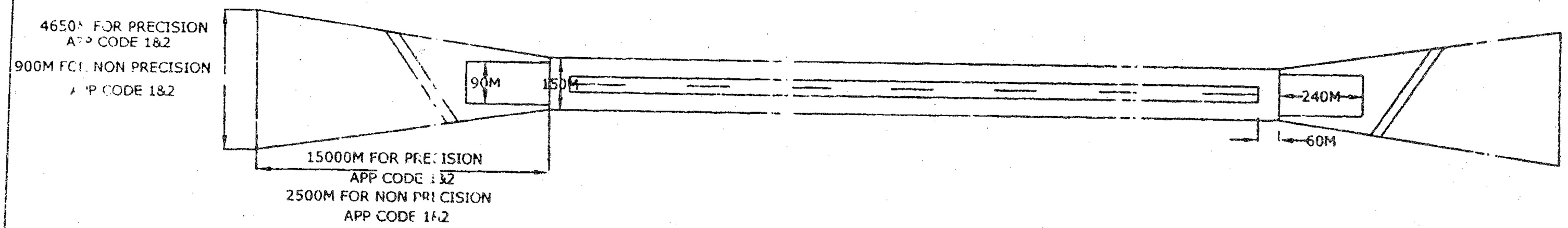
and shall be frangible and mounted as low as possible.

NOTE 3. Location of Navigational Aids shall be determined as per the provisions of Annex-10 of the guidelines of International Civil Aviation Organisation.

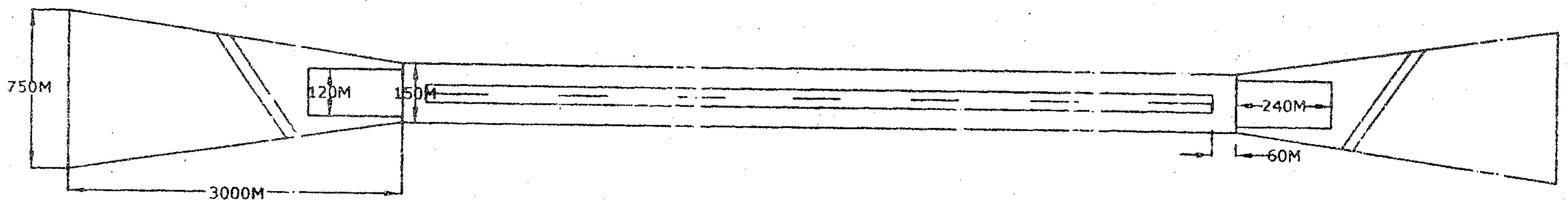
Rwy strip & approach funnel of instrument Rwy code 3&4



Rwy strip & approach funnel of instrument Rwy code 1&2



Rwy strip & approach funnel of non instrument Rwy code 3&4



ANNEXURE-II

The height or permissible elevations shall be calculated based upon the Annex 14 obstacle limitation surfaces, the radio navigation aids based on Annex 10 and the operational requirements for minimum altitudes of various segments of published instrument approach procedures based on Document 8168, VOI II of International Civil Aviation Organisation.

1. Based on Annex 14 Obstacle Limitation surface as under:

1.1 Take-off climb surface – The dimensions of the take-off climb surface shall not be less than the dimensions specified in the table given below except that if a runway is meant for takeoff, a lesser length may be adopted for the takeoff climb surface where such lesser length would be consistent with procedural measures adopted to govern the outward flight of aeroplanes, namely:-

Table

Dimensions and slopes of obstacle limitation surfaces
(RUNWAYS MEANT FOR TAKE-OFF)

Surface and dimensions* (1)	Code Number		
	1 (2)	2 (3)	3or 4 2 (4)
TAKE-OFF CLIMB			
Length of inner edge	60 meters	80 meters	180 meters
Distance from runway end	30 meters	60 meters	60 meters
Divergence (each side)	10%	10%	12.05%
Final width	380 meters	580 meters	1200meters 1800 meters **
Length	1600 meters	2500 meters	15000 meters
Slope	5%	4%	2%

* All dimensions are measured horizontally.
** 1800 meters when the intended track includes changes of heading greater than
15 degree for operations conducted in IMC, VMC by night.

1.2 Transitional Surface

1.2.1 The outer limit of the transitional surface is determined by its intersection with the plane containing inner horizontal surface and the slopes of transitional surfaces are as given below, namely:-

1.2.2

(i) Precision approach Runway - 14.3% (1:7)
(ii) Non precision - 14.3% (1:7) for code 3 & 4
- 20% (1:5) for code 1 & 2
(iii) Non-Instrument runway - 14.3% (1:7) for code 3 & 4.
- 20% (1:5) for code 1 & 2;

1.2.3 The slope of the transitional surface shall be measured in a vertical plane at right angles to the center line of the Runway;

1.2.4 The elevation of a point on a lower edge shall be-

(a) along the side of approach surface, equal to the elevation approach surface at the point; and

(b) along the strip, equal to the elevation of nearest point of the center line of the Runway or its extension;

1.3 Approach Surface

1.3.1 The approach surface shall be established for each Runway strip in the direction of intended landing of the aeroplanes and the limits and slopes are given in table below:

1 3.1.1. Instrument runway (divergence 15% on either side)

Length of Inner edge – 150 meters for Code No. 1 and 2

_ 300 meters for Code No. 3 and 4

Distance from Threshold _ 60 meters

Table

RUNWAY		Precision approach Runway		Non-Precision approach Runway		
Code No.	Length (meter)	First Section Length (Meter) Slope	Second Section Length (Meter) Slope	First Section length (meter) Slope	Second Section Length (Meter) Slope	Horizontal Section (Meter)
1.	<800	3000 2.5%	12000** 3%	2500 3.33%	- -	- -
2.	800<1200	3000 2.5%	12000** 3.33%	2500 3.33%	- -	- -
3.	1200<1800	3000 2%	3600 2.5%	3000 2%	3600 2.5%	8400**
4.	1800 and Above	3000 2%	3600 2.5%	3000 2%	3600 2.5%	8400**

*Total length of approach surface for code No. 3 and 4 (precision and non-precision shall be 15000 meters.

** Total length of approach surface for Precision approach Runway Code No. 1 and 2 shall be 15000 meters.

1.3.1.2. Non-Instrumental runway

Length of Inner edge – 80 meters for code No. 1 and 2 and 150 meters for Code No. 3 and 4

Distance from Threshold – 60 meters

Table

RUNWAY		DIVERGENCE 10% ON EITHER SIDE	
Code No.	Code Length No. (Metre)	Length (Meter)	Section slope
1.	<800	1600	5%
2.	800<1200	2500	4%
3.	1200<1800	3000	3.33%
4.	1800 & above	3000	2.5%

1.3.1.3. Aerodrome where there are more than one runway with over-lapping approach areas and associated surface, most stringent of the two would be the applicable criteria.

1.3.1.4. for determining the approach, the physical extremities of the runway shall only be considered. In case of displaced threshold the permissible height shall be calculated based on approach surface and transitional surface with respect to the runway extremity or displaced threshold whichever is more restrictive. However in case the threshold has been displaced due to obstacles of permanent nature, which are not likely to be removed, the displaced threshold will be taken as reference point.

1.3.1.5. at Aerodromes, where the proposals for runway extension exist, the requisite surface shall be determined from the proposed extension as well as from the existing runway strip/ associated clearway, as applicable and the lower of the two elevations shall be permitted.

1.3.1.6. the elevation of the associated Runway extremity/ displaced threshold/ proposed extension of Runway shall be the datum for approach surface.

1.3.1.7. the slope of the approach surface shall be measured in a vertical plane containing the centerline of the runway.

1.4 Inner Horizontal Surface

1.4.1 Dimensions and permissible heights of Inner Horizontal Surface are given in the table below:

DIMENSIONS AND PERMISSIBLE HEIGHTS OF INNER HORIZONTAL SURFACE

RUNWAY		INSTRUMENT		NON-INSTRUMENT	
Code No.	Length (Meter)	Radius (Meter)	Height (Meter)	Radius (Meter)	Height (Meter)
1.	<800	3500*	45	2000*	45

2.	800<1200	3500*	45	2500*	45
3.	1200<1800	4000**	45	4000**	45
4.	1800 and above	4000**	45	4000**	45

*Radius shall be measured from the Aerodrome Reference Point.

** Radius shall be measured from the extremities of the Runway.

1.4.1.1. The reference datum for Inner-Horizontal Surface shall be the Aerodrome elevation as defined in clause (g) of the Explanation to this notification.

1.4.2. For Runway code 3 and 4, the Inner Horizontal Surface shall be a composite pattern, which consists of two circular areas centered at the two ends with a radius of 4000 meters These areas shall be joined tangentially to form an elliptical shape as shown in Appendix-A.

1.4.3. Where it is required to protect two or more widely spaced long runways, an even more complex pattern involving four or more circular areas are formed. These areas should be joined tangentially by straight lines and the Inner Horizontal Surface shall be defined by the external limits of the resulting pattern.

1.4.4. When two aerodromes are close to each other with overlapping circuits the Inner Horizontal Surface will be drawn as prescribed in para 1.4.2. The inner horizontal surface of these two aerodromes shall be joined tangentially to form one common Inner Horizontal Surface.

1.4.5. In case of common horizontal surface serving two aerodromes, the elevation of the Inner Horizontal Surface will be the lower of the two aerodromes.

1.5. Conical Surface

1.5.1. The conical surface shall be projected upwards and outwards from the periphery of the Inner Horizontal Surface. The slope 5% (1:20) of the conical surface shall be measured in a vertical plane perpendicular to the periphery of Inner Horizontal Surface. The outer limits and permissible heights of the conical surface are given in the table below:

Table

OUTER LIMITS AND PERMISSBLE HEIGHTS OF CONICAL SURFACE

RUNWAY		INSTRUMENT RUNWAY		NON-INSTRUMENT RUNWAY	
Code No.	Length (Meter)	Precision Runway	Non-precision Runway	Horizontal Distance of Conical Surface beyond	Maximum Height above Inner Horizontal

						Inner Horizontal Surface (Meter)	Surface (Meter)
1.	<800	1200	60	1200	60	700	35
2.	800<1200	1200	60	1200	60	1100	35
3.	1200<1800	2000	100	1500	75	1500	75
4.	1800 & above	2000	100	2000	100	2000	100

The reference datum for Conical Surface shall be the aerodrome elevation as defined in this Annexure.

Note: Where a part of Inner Horizontal Surface and conical surface lies below the approach/ take – off climb surface, the permissible heights shall be the lowest of the applicable surfaces.

1.6 Outer Horizontal Surface

1.6.1. The Outer Horizontal Surface shall extend to 15000 meters from the Aerodrome Reference Point for Aerodrome with runway code 3 and 4.

1.6.2. In case of Aerodrome with Runway Code-2, the Outer Horizontal Surface shall extend to 14740 meters from Aerodrome Reference Point for Instrument runways and 13740 meters for Non-Instrument runways.

1.6.3. Where combined Outer Horizontal Surface is established for two Aerodromes, the Outer Horizontal Surface shall be centered on the Aerodrome Reference Point of the Aerodrome of higher category.

1.6.4. Outer Horizontal Surface for Aerodrome with runway code No. 1 shall not be established.

1.6.5. The Outer Horizontal Surface, would be defined such that the Conical Surface may continue to be extended at 5% slope to a point wherein the permissible maximum height of 300 meters (above aerodrome elevation) is reached and thereafter this surface is maintained upto 15 Kilometers from Aerodrome Reference Point. Construction (s) protruding above these surfaces shall normally not be permitted. Obstructions existing in the area should be marked or lighted.

1.6.6. In order to avoid abrupt vertical changes in surfaces, the surfaces beyond the conical surfaces will slope laterally at 1:7 from edges of the approach and take off surfaces between the permissible heights of 150 meters to 300 meters.

1.6.7. The datum for Outer Horizontal Surface shall be the aerodrome elevation as defined in this Annexure.

1.7. The Inner approach, inner transitional and balked landing surfaces (OFZ).

1.7.1 Obstacles free zone shall be established for precision approach Category II and III operations. The zone shall be kept free from fixed objects other than light weight frangible mounted aids to air navigation which must be near the Runway to perform their functions, and from transient objects such as aircraft and vehicles when the Runway is being used for Category II or III operations.

1.7.2 The dimensions and slopes of the Obstacles free zone (Code 3 and 4) are given below:

Note: Obstacles free zone for Runway code No. 1 and 2 are not established.

1.7.2.1 The Inner approach surface

Width	-	120 meters
Distance from Threshold	-	60 meters
Length	-	900 meters
Slope	-	2%

1.7.2.2 The inner transitional surface

Slope	33.3%

1.7.2.3 Balked Landing surface

Length of the Inner edge	-	120 meters
Distance from Threshold	-	180 meters
Divergence	-	10%
Slope	-	3.33%

1.8. The No Objection Certificate needs to be obtained from the competent authority in all cases wherein the requested height of the structure etc. is more than 150 meters above the reference datum up to a distance of 20 Kilometers from the Reference point.

2. Based on Annex 10 (Navigational Aids)

2.1 Very High Frequency Omni Radio Range (VOR), Terminal Very High Frequency Omni Radio Range (TVOR), and Very High Frequency Omni Radio Range Distance Measuring Equipment (VOR DME)- An area beyond the radius of 300 meters from the facility no structure shall sustain vertical angle greater than 1.5 degree at the center of the Very High Frequency Omni Radio Range counterpoise from the horizontal plane passing through the counterpoise.

2.2 Stand alone Distance Measuring Equipment- Beyond 150 meters no steel towers, power lines, metal buildings shall protrude elevation angle of 3 degree measured from the base of Distance Measuring Equipment antenna.

2.3 Localizer

2.3.1. Beyond the area specified in Annexure I and within ± 10 degrees azimuth in front of antenna, an object should not sustain an angle of elevation more than 0.75 degrees at the centre of antenna array.

2.3.2. Beyond areas specified in Annexure I and within ± 10 degrees to ± 35 degrees azimuth in front of antenna an object should not sustain an angle of elevation more than

2.4.

Beyond the area specified in Annexure I and within ± 8 degrees azimuth in front of the glide path antenna, a building/ structure should not subtend an angle of elevation of more than 1.1 degree at antenna base.

2.5 Air Surveillance Radar:

Beyond 500 meters from particular Radar site the height of the permissible structures may be increased at the rate of 0.05 meter per meter, up to a point wherein the height of the permissible structure does not protrude above the line drawn from a point 10% below the minimum sector altitude at the farthest point (from Radar site) to the center of antenna pedestal, considering the Minimum Sector Altitude (MSA) in that particular sector. Beyond the above stated point no large object would be permitted to protrude above the line drawn from a point 10% below the minimum sector altitude at the farthest point (from Radar site) to the center of antenna pedestal depending on the Minimum Sector Altitude in that particular sector. Large object means the structure/s in isolation or collectively subtending azimuth angle of 0.4 degree or above at Radar antenna. In case of cluster of buildings wherein the gap between the two adjacent buildings subtends an azimuth angle of less than 0.4 degree on the antenna pedestal, the entire cluster should be considered as one object. Diagrammatic representation is at Appendix-B.

2.6 Air Route Surveillance Radar:

Beyond 200 meters from particular Radar site the height of the permissible structures may be increased at the rate of 0.05 meter per meter up to a point wherein the height of the permissible structure does not protrude above an angle of elevation of more than 0.5 degree at the antenna pedestal or an angle equal to antenna tilt angle set during last flight inspection whoever is higher. Beyond the above stated point, no large object would be permitted to protrude above the line drawn at an angle of 0.5 degree from antenna pedestal or an angle equal to antenna tilt angle set during last flight inspection whichever is higher. Large object means the structure subtending azimuth angle of 0.4 degree or above at Radar antenna. In case of cluster of buildings wherein the gap between the two adjacent buildings subtends an azimuth angle of less than 0.4 degree on the antenna pedestal, the entire cluster should be considered as one object. Diagrammatic representation is at Appendix-C.

2.7 Secondary Surveillance Radar

Same as Air Surveillance Radar / Air Route Surveillance Radar depending on operational usage.

2.8 Advance Surface Movement Guidance and control system (ASMGCS)
No structure should be built on the relevant area of the airport surface which blocks the line of sight between any of the sensors of the Advance Surface Movement Guidance and control system and the relevant operational area. In case there is operational or safety/ security requirement to add a structure on the airport surface which may obstruct the line of sight between Surface Movement Radar (SMR) antenna/sensors, Airports Authority of India (AAI) would augment the system to meet the Advance Surface Movement Guidance and control system operational requirement.

2.9 Indian Land Uplink Station (INLUS)/Indian National Reference Station (INRES) of GPS Aided Geo Augmented Navigation (GAGAN) System
No structure will be permitted to protrude the above the plane inclined at elevation angle of 2 degree from the horizontal surface drawn at the level of antenna of Indian Land Uplink Station and Indian National Reference Station of GPS Aided Geo Augmented Navigation system which is a part of Global Navigation Satellite System (GNSS).

2.10 Communication Navigation Surveillance (CNS) Simulation study
In case any structure is required to be made within aerodrome surface in the operational interest which creates an obstruction from Communication Navigation Surveillance point of view, a simulation study could be carried out to study the impact of this structure on the performance of the relevant facility and in case the study confirms that the impact would not hamper the operability of the facility, such structure could be permitted within the aerodrome boundary.

3. Operational criteria based on Document 8168, Vol II

In order to achieve the lowest possible operating minima for aircraft operation, it is necessary to protect not only the Annex 14 Obstacle Limitation Surfaces but also to safeguard the Procedure for Air Navigation Service (PANS) Operations (OPS) (Document 8168) Surfaces. Considerations need to be given to the objects which penetrate the Procedure for Air Navigation Service Operations Surface, regardless whether or not they penetrate Annex 14 Obstacle Limitation Surfaces. Such obstacle may result in an operational penalty like higher Obstruction Clearance Altitude or Height (OCA/H) and introduction of longer approach segment. Therefore, while examining the cases for issue of No Objection Certificate from the considerations of Annex 14 and Annex 10 criteria as provided in para 1 and 2 above, the operational criteria needs to be considered based on the provisions of Document 8168, Vol. II. It needs to be ensured that the minimum altitude of the following segment of published or the proposed instrument approach procedures are not infringed by the proposed construction either within the Obstruction Limit Surface (OLS) or outside of it.

(i) Minimum Sector Altitude (MSA)
(ii) Minimum Holding Altitude (MHA)

(iii) Minimum Vectoring Altitude (MVA)
(iv) Minimum Altitude of Initial and intermediate Segments
(v) OCA/H (Straight-in and Circling) for all aircraft categories.

Note:
1. Instrument approach procedures of all the civil aerodromes in India have been published in the AIP India under the section Aerodrome. In the published procedures, the minimum altitudes of the various segments of instrument approach procedures have been specified.

2. The minimum obstacle clearance criteria are applied as per the provisions of International Civil Aviation Organization (ICAO) Document 8168 Vol. II. Normally, for minimum sector altitudes (applicable upto 30 NM from the facility on which procedure is designed), minimum vectoring altitudes, minimum holding altitudes and for the initial approach an obstacle clearance of 1000 feet is applied.

3. Final approach areas of Very High Frequency Omni Radio Range (VOR)/ Non Directional Beacon (NDB) have been illustrated in Appendix-D.

4. Shielding Benefit

Shielding principles as indicated below are employed with respect to natural terrain/ duly authorized existing obstacles which penetrate above the obstacle limitation surfaces described and as contained in this document, subject to aeronautical study, if considered necessary by the competent authority.

4.1 Aerodrome and Ground Aids (AGA) parameters

4.1.1 The following criteria shall be applied for the purpose of applying shielding benefits for the proposed building or structure with respect to existing natural terrain/building structures.

4.1.2 The principle of shielding will not be applied in the transitional surface area.

4.1.3 The principle of shielding shall be applied in the approach areas beyond 4000 meters of the inner edge of runway strip.

4.1.4 The principle of shielding shall be applied in the Inner Horizontal Surface (IHS) beyond radius of 3000 meters from the nearest runway strip.

4.1.5 The principle of shielding shall also be applied in conical and outer horizontal surfaces.

4.1.6 The shielding benefit is to be provided with respect to the authorized structures/natural terrain in a horizontal plane projected from the top of the each of the obstacle away from the runway and on a plane

having negative slope of 10% towards the runway. In case of Inner Horizontal Surface the benefit of the negative slope shall be applicable upto 3000 meters from the nearest Runway end or the Aerodrome Reference Point as the case may be. In case of approach surface the benefit of negative slope shall be applicable upto 4000 meters from the nearest runway end. In case of Conical and Outer Horizontal surfaces, shielding benefit of negative slope shall be restricted to same surface.

4.1.7 The following guidelines are provided for determining the areas where the shielding benefit would be applicable:

4.1.7.1 Towards the runway (Negative slope)

(i) Draw a line from the highest point of the reference terrain/obstacle to the end of all runways for obstacles located within the Inner Horizontal Surface, Conical or the Outer Horizontal Surface.

(ii) The shielding benefit will cover the areas bound within the lines as in para 4.1.6 and para 4.1.7 (i).

(iii) In case of obstacle located within the approach surface of any runway, the negative shielding shall be applicable to that particular runway only. The area shall be drawn by joining the highest point of the reference terrain/ obstacle to the nearest runway end. The dimension of the area shall be same as the dimension of the obstacle.

4.1.7.2. Away from the runway (Horizontal plane)

(i) For obstacles located in the Inner Horizontal Surface, Conical and Outer Horizontal Surface, draw a line from the Aerodrome Reference Point to the centre of the obstacle.

(ii) Draw the projection from the extremities of the obstacle away from the runway parallel to the line drawn as per para 4.1.7.2 (i).

(iii) For obstacle located in the approach surface, draw a line from the nearest runway end to the centre of the obstacle.

(iv) Draw the projection of the obstacle away from the runway parallel to the line drawn as per para 4.1.7.2. (iii).

(v) The shielding benefit of horizontal plan shall be applicable to the obstacles located below the projection line drawn as per para 4.1.7.2 (ii and iv) as indicated in Appendix-E.

4.1.8. Tall and skeletal obstructions such as isolated towers, chimney, masts, electric pylons, telephone and power lines and poles will not provide any shielding.

4.1.9. While providing the shielding benefit it shall be ensured that the minimum altitude, of various segments of the published instrument approach procedures are not adversely affected.

4.2. Communication Navigation Surveillance (CNS) Parameters

For navigational Aids and Surveillance facilities shielding benefit could be provided to the structures in cases wherein such structures are in their shadow of highest existing authorized structure/terrain of permanent nature. Shadow for this purpose is defined as an area falling below a line drawn from the top and both the extremities of the existing authorized structure/terrain of permanent nature, to the facility and extrapolation of the same plane behind from the said obstacle.

5. Conduct of Aeronautical Study

The following guidelines are provided for conduct of aeronautical study:-

(ii) The request for aeronautical study shall be processed by Airports Authority of India on case to case basis.

(iii) Aeronautical study shall be undertaken by a predetermined and approved agency and as per guidelines.

(iv) Recommendations of aeronautical study after approval of the competent authority shall be considered by Airports Authority of India for issuing No Objection Certificate for the height sought.

6. Procedure for determining the maximum permissible heights:

6.1 The following steps shall be taken for calculating the maximum permissible heights for cases relating to the issue of No Objection Certificate for building/installations.

6.1.1 Annex 14 Criteria

(i) The site of the proposed buildings/installations shall be marked on the zoning map of the aerodrome, prepared by the aerodrome operator, where Annex 14 surfaces have been drawn.

(ii) If the location is within the approach/take off surface, the permissible applicable heights in the approach /take off climb surface, transitional surface, Inner Horizontal Surface/conical surface shall be calculated.

(iii) If the site is located outside the approach /take off climb surface, the height shall be determined as per the location applicable to the relevant surface (transitional, Inner Horizontal Surface, Conical or Outer Horizontal Surface.)

6.1.2. Annex 14 Criteria

Determine the distance of the proposed site from the each communication/navigational aid/surveillance facility separately and calculate the applicable heights based on the provisions as contained in para 2 of Annexure II.

6.1.3. The permissible height from the above two criterion shall be the lowest as applicable to the specific surface/individual communication /navigational aid/surveillance facility.

6.2 Procedure for Air Navigation Service Operations (PANS OPS) Criteria

i) After having determined the permissible heights based on the Annex 14 Obstruction Limit Surface (OLS) criteria and Annex 10 criteria, it shall further be ensured that the Procedure for Air Navigation Service Operations (PANS OPS) Surfaces are not infringed and the minimum altitudes of the published/proposed segments of instrument approach procedures are fully protected. This has also been referred to at para 3.

ii) For the obstacles located even outside the limits of Annex 14 OLS, it shall be ensured that Procedure for Air Navigation Service Operations (PANS OPS) Surfaces of the published instrument approach procedures are not penetrated.

iii) For consideration of obstacle clearance in the final approach area for the proposed construction, the criteria of primary and secondary area shall be applicable.

iv) The limits of the Procedure for Air Navigation Service Operations (PANS OPS) Surfaces extend up to 30 NM from the facility [Very High Frequency Omni Radio Range (VOR) & Non Directional Beacon (NDB)] serving the aerodrome based on which procedure is designed. This is to ensure that the minimum sector altitudes and the minimum vectoring altitudes are not adversely affected by the proposed constructions.

6.3 The lowest height determined based on Annex 14, Annex 10 and Procedure for Air Navigation Service Operations (PANS OPS) shall be the permissible height of the proposed building/installations for which NO Objection Certificate is to be issued.

Explanation,----- Description of Annex 14 Obstacle Limitation Surface for the purpose of this Annexure shall be as given hereunder and the diagrams in respect thereof shall be as given in Appendix-F-1 to F-5.

(a) Conical Surface – A surface sloping upwards and outwards from the periphery of the inner horizontal surface.

The limits of the conical surface shall comprise :

(i) a lower edge coincident with the periphery of the inner horizontal surface; and

(ii) an upper edge located at a specified height above the inner horizontal surface.

The slope of the conical surface shall be measured in a vertical plane perpendicular to the periphery of the inner horizontal surface.

(b) Inner horizontal surface - A surface located in a horizontal plane above an aerodrome and its environs. The radius of outer limits of the inner horizontal surface shall be measured from a reference point or points established for such purpose.

(c) Inner approach surface – A rectangular portion of the approach surface immediately preceding the threshold. The limits of the inner approach surface shall comprise:

(i) a lower edge beginning at the intersection of the side of the approach surface with the inner horizontal surface and extending down the side of the approach surface with the inner edge of the approach surface and from there along the length of the strip parallel to the runway center line.

(ii) an upper edge located in the plane of the inner horizontal surface.

(d) Inner transitional surface – A surface similar to the transitional surface but closer to the runway. The limits of an inner transitional surface shall comprise:

(i) a lower edge beginning at the end of the inner approach surface and extending down the side of the inner approach surface to the inner edge of that surface, from there along the strip parallel to the runway centerline to the inner edge of the balked landing surface and from there up the side of the balked landing surface to the point where the side intersects the inner horizontal surface; and

(ii) an upper edge located in the plane of the inner horizontal surface.

(e) Balked landing surface – An inclined plane located at a specified distance after the threshold extending between the inner transitional surface. The limits of the balked landing surface shall comprise:

(i) an inner edge horizontal and perpendicular to the centre line of the runway and located at a specified distance after the threshold;

(ii) two sides originating at the ends of the inner edge and diverging uniformly at a specified rate from the vertical plane containing the centre line of the runway; and

(iii) an outer edge parallel to the inner edge and located in the plane of the inner horizontal surface.

(f) Take-off climb surface – The surface shall be established for a runway meant for take-off. The limits of the take-off climb surface shall comprise:

(i) an inner edge horizontal and perpendicular to the centre line of the runway and located either at a 'specified distance beyond the end of the runway or at the end of the clear way when such is provided and its length exceeds the specified distance;

(ii) two sides originating at the ends of the inner edge o and diverging uniformly at a specified rate from the take-off to specified final width and continuing thereafter at that width for the remainder of the length of the take-off climb surface; and

(iii) an outer edge horizontal and perpendicular to the specified take-off track.

(g) Aerodrome elevation – The elevation of the highest point of the landing area.

(h) Aerodrome Reference Point – The designed geographical location of an Aerodrome.

(i) Threshold- The beginning of that portion of the runway usable for landing.

(j) Displaced Threshold- A threshold- not located at the extremity of a runway.

(k) Frangible Object – An object of low mast designed to break, distort or yield on impact so as to present the minimum hazard to aircraft.

(l) Obstacle- All fixed(whether temporary or permanent) and mobile objects, or parts thereof, that are located on an area intended for surface movement or aircraft or that extend above a defined surface (indicated in Annexure IV) intended to protect aircraft in-flight.

(m) Obstacle Free Zone (OFZ)- The airspace above the inner approach surface, inner transitional surfaces and balked landing surface and that portion of the strip bounded by these surfaces, which is not penetrated by any fixed obstacle other than low mast and frangible mounted one, required for air navigation purposes.

(n) Runway – A defined rectangular area on a land aerodrome prepared for the landing and take off aircraft.

(o) Runway End Safety Area (RESA) – An area symmetrical about the extended runway centerline and adjacent to the end of the strip primarily intended to reduce the risk of damage to an aeroplane undershooting or overrunning the runway.

(p) Runway Strip – A defined area included the runway and stop-way, if provided, intended:-

(i) To reduce the risk of damage to aircraft running off a runway; and
(ii) To protect aircraft flying over it during take off or landing operations.

DIMENSION OF RUNWAY STRIP

Code No.	Length (Meter)	Width Extending laterally on either side of Runway Centre Line (Meter)	Length beyond Runway End/ Stopway (Meter)	Width Extending laterally on either side of Runway Centre Line (Meter)	Length beyond Runway End/ Stopway (Meter)
1.	<800	75	60	30	30
2.	800<1200	75	60	40	60
3.	1200<1800	150	60	75	60
4.	1800 and above	150	60	75	60

(q) Clearway – A defined rectangular area on the ground or water under the control of the appropriate authority selected or prepared as a suitable area over which an aeroplane may make a portion of its initial climb to specified height.

(r) Stopway - A defined rectangular area on the ground at the end of take off run available prepared as a suitable area in which an aircraft can be stopped in case of an abandoned take-off.

(s) Take-off Runway - A runway intended to take-off only.

(t) Obstacle Clearance Altitude/Height (OCA/H) – The lowest altitude or the lowest height above the elevation of the relevant runway threshold or the aerodrome elevation as applicable used in establishing compliance with appropriate clearance criteria.

(u) Declared Distances:-

(i) Take Off Run Available (TORA):- The length of the runway declared available and suitable for the ground run of an aeroplane taking off.

(ii) Take Off Distance Available (TODA):- The length of take-off run available plus the length of clearway, if provided

(iii) Accelerate Stop Distance Available (ASDA):- The length of take-off run available plus the length of stopway, if provided.

(iv) Landing Distance Available (LDA):- The length of the runway declared available and suitable for the ground run of an aeroplane landing.

(v) Critical Area- Critical area is an area of defined dimensions about the localizer and glide path antenna where vehicles including aircraft are excluded during Instrument Landing System (ILS) operations. The critical area is protected because the presence of vehicles and/or aircraft inside its boundary will cause unacceptable discrepancies to the Instrument Landing System (ILS) signal in space.

ANNEXURE-III-A
LIST OF AAI OPERATIONAL AERODROMES

S. NO.	AIRPORT	STATE	COORD. LAT / LONG. (IN DEGREES)	ELEV. (IN MTRS.)	RUNWAY ORIENTATION	DIMENSION (IN MTRS.)	OWNER
1	AGARTALA	TRIPURA	235326N 911421E	1403	18/36	2286X45	AAI
2	AGATTI	LAKSHWADEEP ISLANDS (U.T.)	104926N 0721037E	4	04/22	1204 x 30	AAI
3	AHEMDABAD (SVBPI AIRPORT)	GUJARAT	230414.4N 0723737.3E	57.44	05/23	3505 x 45	AAI
4	AKOLA	MAHARASHTRA	204152N 0770332E	305	10/28	1219 x 45	AAI
5	AMRITSAR (RAJA SANSI)	PUNJAB	314216N 0744811E	229.5	16/34	3289 x 45	AAI
6	AURANGABAD (CHIKAL THANA)	MAHARASHTRA	195152N 0752351E	582	09/27	2286 x 45	AAI
7	BARAPANI SHILLONG	MEGHALAYA	254210N 0915152E	887	04/22	1829 x 45	AAI
8	BELGAUM (SAMBRA)	KARNATAKA	155127N 0743707E	759	08/26	1830 x 45	AAI
9	BHAVNAGAR	GUJARAT	214513N 0721128E	13	07/25	1920 x 45	AAI
10	BHOPAL (RAJA BHOJ AIRPORT)	MADHYA PRADESH	231711N 0772017.4E	523	12/30	2045 x 45	AAI
11	BHUBNESHWAR (BIJU PATNAIK AIRPORT)	ORISSA	201448N 0854906E	44.5	14/32 05/23	2243 x 45 1381 x 45	AAI
12	CHENNAI	TAMIL NADU	215941.7N 0801031.8E	15.84	07/25 12/30	3658 X 45 2032 X 45	AAI
13	COIMBATORE (PEELAMEDU)	TAMIL NADU	110149N 0770230E	404	05/23	2290 x 45	AAI
14	COOCH BEHAR	WEST BENGAL	261949N 0892815E	41.5	04/22	1069 x 30	AAI
15	CUDDAPAH	ANDRA PRADESH	1431N 07847E	131	11/29	1098 x 18	AAI
16	DELHI IGI AIRPORT (PALAM)	DELHI	283407.42N 0770643.69E	227	10/28 09/27 11/29	3810 x 45 2813 x 45 4280 x 60	DIAL JV
17	DEHRADUN (JOLLYGRANT)	UTTARAKHAND	301125N 0781054E	550	08/26	2140 x 45	AAI
18	DIBRUGARH (MOHANBARI)	ASSAM	272851.7N 0950104.9E	110	05/23	1829 x 45	IAF
19	DIMAPUR	NAGALAND	255258N 0934628E	144	12/30	2290 x 45	AAI
20	GUWAHATI (LGBI AIRPORT)	ASSAM	260617.8N 0913507.7E	49.21	02/20	2743 x 45	AAI
21	GAYA	BIHAR	244451N 0845641E	110	10/28	2286 x 45	AAI
22	HUBLI	KARNATAKA	152139N 0750508E	659	08/26	1674 x 30	AAI
23	HYDERABAD (BEGUMPET)	ANDRA PRADESH	172709N 0782750E	531	09/27	3103 x 45	AAI
24	IMPHAL (TULIHAL)	MANIPUR	244549N 0935411E	774.2	04/22	2746 x 45	AAI

25	INDORE DEVI AHILYABAI HOLKAR AIRPORT	MADHYA PRADESH	224321.9N 0754823.4E	560.8	07/25	2750 x 45	AAI
26	JABALPUR	MADHYA PRADESH	231058N 0800343E	495	06/24	1988 x 45	AAI
27	JAIPUR (SANGANER)	RAJASTHAN	264926N 0754812E	385	09/27	2797 x 45	AAI
28	JHARSUGUDA	ORISSA	215451N 0840303E	228	06/24	1882x45	AAI
29	MUMBAI(JUHU)	MAHARASHTRA	190548N 0725004E	2.74	16/34 08/26	727 x 45 1143 x 30	AAI
30	KESHOD	GUJARAT	211852N 701610E	51	05/23	1372 x 45	AAI
31	KANDLA	GUJARAT	230642N 0700605E	29	05/23	1524 x 30	AAI
32	GAGGAL (KANGRA)	HIMACHAL PRADESH	320954N 0761542E	759.6	15/33	1372 x 45	AAI
33	KANPUR (CIVIL)	UTTAR PRADESH	262625N 0802153E	125	10/28	1082 x 45	AAI
34	KHAJURAHO	MADHYA PRADESH	244910N 0795512E	217.4	01/19	1829 x 45	AAI
35	CALICUT (KOZHIKODE)	KERALA	110817N 0755701E	104	10/28	2860 x 45	AAI
36	KOLHAPUR	MAHARASHTRA	163955N 0741729E	606.5	07/25	1372 x 45	AAI
37	KOLKATA (NSCBI AIRPORT)	WEST BENGAL	223911.0N 0882657.25	5	01R/19L 01L/19R	3627 x 46 2399 x 46	AAI
38	KULLU-MANALI (BHUNTAR)	HIMACHAL PRADESH	315237N 0770919E	1088.8	16/34	1128 x 30	AAI
39	NORTH LAKHIMPUR (LILABARI)	ASSAM	271726N 0940549E	100	04/22	2286 x 45	AAI
40	LUCKNOW (AMOUSI)	UTTAR PRADESH	264543N 0805301E	122	09/27	2742 x 45	AAI
41	LUDHIANA	PUNJAB	305120N 0755706E	254	12/30	1463 x 30	AAI
42	MADURAI	TAMIL NADU	095001N 0780522E	136	09/27	1826 x 45	AAI
43	MANGALORE (BAJPE)	KARNATAKA	125743N 0745323.9E	102.6	09/27 06/24	1625 x 45 2450 x 45	AAI
44	MUMBAI (CSI AIRPORT)	MAHARASHTRA	190527N 0725200E	8	09/27 14/32	3489 x 45 2925 x 45	MIAL JV
45	MYSORE	KARNATAKA	121345N 0763930E	716	05/23 09/27	1348 x 45 1740x30	AAI
46	NAGPUR (SONEGAON)	MAHARASHTRA	210528N 0790259E	308.45	14/32 09/27	3200 x 45 1957 x 45	MIHAN JV
47	PANTNAGAR	UTTARAKHAND	290156N 0792827E	233	10/28	1097 x 38.4	AAI
48	PATNA	BIHAR	253537N 0850531E	51.18	07/25	1954 x 45	AAI
49	PORBANDAR	GUJARAT	213859N 0693932E	5.18	09/27	1372 x 45	AAI
50	RAIPUR (MANA)	CHATTISGARH	211049N 0814425E	313	06/24	1955 x 45	AAI
51	RAJAHMUNDARY	ANDHRA PRADESH	170630N 0814916E	45	05/23	1750 x 45	AAI
52	RAJKOT	GUJARAT	221834N 0704645E	133.4	05/23	1846 x 45	AAI
53	RANCHI (BIRSA MUNDA AIRPORT)	JHARKHAND	231851N 0851915E	646	13/31	2713 x 45	AAI

54	SALEM	TAMIL NADU	114647N 0780355E	300	04/22	1829 x 45	AAI
55	SHIMLA (JUBBARHATTI)	HIMACHAL PRADESH	310454N 0770407E	1540	14/32	1189 x 23	AAI
56	SHOLAPUR	MAHARASHTRA	173735N 0755606E	481	15/33	1365 x 45	AAI
57	SURAT	GUJARAT	210647N 0724435E	6	04/22	2250 x 45	AAI
58	TIRUPATHI	ANDHRA PRADESH	133759N 0793230E	106.75	08/26	2286 x 45	AAI
59	TIRUCHIRAPALLI (TRICHY)	TAMIL NADU	104557N 0784253E	85	09/27	1864 x 45	AAI
60	THIRUVANANTHA -PURAM	KERALA	082847N 0765511E	4	14/32 10/28	3398 x 45 1224 x 45	AAI
61	TUTICORIN (TOOTHKUDI)	TAMIL NADU	084317N 0780140E	25.6	10/28	1350 x 30	AAI
62	UDAIPUR (MAHARANA PRATAP AIRPORT)	RAJASTHAN	243702N 0735343E	509	08/26	2281 x 45	AAI
63	VADODARA	GUJARAT	221946N 0731310E	37	04/22	2469 x 45	AAI
64	VARANASI (BABATPUR)	U.P.	252703N 0825138E	80	09/27	2206 x 45	AAI
65	VIJAYAWADA	ANDHRA PRADESH	163135N 0804754E	21	08/26	1745 x 45	AAI

STATE GOVERNMENT OWNED OPERATIONAL AIRPORTS

S. NO.	AIRPORT	STATE	COORD. LAT / LONG. (IN DEGREES)	ELEV. (IN MTRS.)	RUNWAY ORIENTATION	DIMENSION (IN MTRS.)	OWNER
1	AIZAWL (LENGPUI)	MIZORAM	235016.88N 0923736.38E	418	17/35	2500x45	SG
2	DIU	UNION TERRITORY	204247N 0705514E	4.9	05/23 13/31	1826 x 45 1069x25	U.T.

PRIVATE AIRPORTS

S. NO.	AIRPORT	STATE	COORD. LAT / LONG. (IN DEGREES)	ELEV. (IN MTRS.)	RUNWAY ORIENTATION.	DIMENSION (IN MTRS.)	OWNER
1	COCHIN INTERNATIONAL AIRPORT LTD(CIAL)	KERALA	100914N 0762425E	7.68	09/27	3400 x 45	PVT
2	HYDERABAD INTERNATIONAL AIRPORT(HIAL) SHAMSABAD	ANDHRA PRADESH	171426N 0782544E	617	09/27	4260x60	PVT JV
3	BENGALURU INTERNATIONAL AIRPORT (BIAL) DEVANHALLI	KARNATAKA	131155.92N 774219.70E	914.68	09/27	4000x45	PVT JV
4	PUTTAPARTHY	ANDHRA PRADESH	1409N 07748E	475	09/27	2237x45	PVT
5	VIDYANAGAR	KARNATAKA	151019N 0763837E	502	13/31	1600 x 30	PVT
6	MUNDRA	GUJARAT	225003N 0694552E	5.18	05/23	1700x30	PVT
7	JAMSHEDPUR	JHARKHAND	2249N 08610E	141.7	08/26	1220 x 45	PVT.

ANNEXURE-IIIB
LIST OF AERODROMES CONTROLLED BY AAI

S. NO.	AIRPORT	STATE	COORD. LAT / LONG. (IN DEGREES)	ELEV. (IN MTRS.)	RUNWAY ORIENTATION	DIMENSION (IN MTRS.)	OWNER
1	AIZAWL (TURIAL)	MIZORAM	234443N 0924822E	334	01/19	1190x27	AAI
2	ASANSOL	WEST BENGAL	2340N 08701E	98	10/28	1826 x 45	AAI
3	BALURGHAT	WEST BENGAL	251547N 0884754E	24	09/27	1097x30	AAI
4	BEHALA	WEST BENGAL	223022N 0881748E	3	18/36	861 x 30	AAI
5	BILASPUR	CHATTISGARH	220000N 0820400E	274	06/24 17/35	1448X45 1455X45	AAI
6	CHAKULIA	JHARKHAND	222736N 0864237E	129	17/35	2221X45	AAI
7	DEESA (PALANPUR)	GUJARAT	241604N 0721218E	145	06/24	1008 x 30	AAI
8	DONAKONDA	ANDHRA PRADESH	1550N 7930E	142	04/23	915X30	AAI
9	GONDIA	MAHARASHTRA	2131N 08020E	311.16	05/23	1966 x 45	AAI
10	JHANSI	UTTAR PRADESH	2529N 07834E	244	15/33	1295 x 45	AAI (UNDER ARMY)
11	JHARSUGUDA	ORISSA	2155N 08403E	228	06/24	1890X45	AAI
12	JOGBANI	BIHAR	2618N 8718E	59	09/27	1525X152	AAI
13	KAILASHAHAR	TRIPURA	241828N 920033E	24	03/21	900X30	AAI
14	KAMALPUR	TRIPURA	240754N 0914851E	39	01/19	1372 x 30	AAI
15	KHANDWA	MADHYA PRADESH	215125N 761959E	329	10/28	890X30	AAI
16	KHOWAI	TRIPURA	240342N 913627E	29	18/36	915X30	AAI
17	KISHANGARH	RAJASTHAN	2636N 07449E	480	03/21	1219 x 30	AAI
18	KOTA	RAJASTHAN	250935N 0755056E	273	08/26	1220 x 38	AAI
19	LALITPUR	MADHYA PRADESH	244258N 0782503E	367	10/28	1890 x 45	AAI
20	MALDA	WEST BENGAL	250040N 880750E	24	11/29	1099X30	AAI
21	MUZZAFARPUR	BIHAR	260701N 0851854E	53	11/29	1219 x 30	AAI
22	NADIRGUL	ANDRA PRADESH	1711N 07833E	552	14/32	914 x 23	AAI
23	PANNA	MADHYA PRADESH	243915N 810546E	424	17/35	1538X18	AAI
24	PASSIGHAT	ARUNACHAL PRADESH	2806N 9523E	157	17/35	1006X18	AAI
25	PONDICHERRY	PONDICHERRY	115759N 0794843E	43	07/25	1222 x 30	AAI
26	RAXAUL	BIHAR	2658N 8450E	79	10/28	1097X30	AAI
27	RUPSI	ASSAM	2608N 8945E	40	05/23	1829X45	AAI
28	DELHI (SAFDARJUNG)	DELHI	283504N 0771229E	212	12/30	1180 x 45	AAI

29	SATNA	MADHYA PRADESH	243345N 0805116E	319	11/29	1062X30	AAI
30	VELLORE	TAMIL NADU	125424N 0790406E	233	07/25	793 x 150	AAI
31	WARANGAL	ANDHRA PRADESH	175452N 0793608E	284	09/27	1859 x 45	AAI

ANNEXURE - IIIC

LIST OF DEFENCE AERODROMES

S. NO.	AIRPORT	STATE	COORD. LAT / LONG. (IN DEGREES)	ELEV. (IN MTRS.)	RUNWAY ORIENTATION	DIMENSION (IN MTRS.)	OWNER
1	AGRA	UTTAR PRADESH	270932N 775730E	167.7	05/23	2744X45	IAF
2	ALLAHABAD	UTTAR PRADESH	252626N 814409E	97.2	12/30	2477X45	IAF
3	ALONG	ARUNACHAL PRADESH	281035N 0944824E	250	05/23	914 x 45	IAF
4	BAGDOGRA (SILIGURI)	WEST BENGAL	264108N 0881948E	126	18/36	2744 x 45	IAF
5	BENGLURU (HAL)	KARNATAKA	125703N 0773957E	888	09/27	3306 x 45	HAL
6	BHUJ (RUDRAMATA)	GUJARAT	231713N 0694015E	78	05/23	2515 x 45	IAF
7	BIKANER (NAL)	RAJASTHAN	280418N 0731225E	215	05/23	2746 x 45	IAF
8	CHANDIGARH	UNION TERRITORY	3040N 07647E	314	11/29	2744 x 45	IAF
9	DAPARIJO	ARUNACHAL PRADESH	2800N 09411E	244	07/25	1001 x 27	IAF
10	GOA (DABOLIM)	GOA	152247.41N 0734940.05E	46	08/26	3430 x 45	NAVY
11	GORAKHPUR	UTTAR PRADESH	264429N 0832709E	78	11/29	2744 x 45	IAF
12	GWALIOR	MADHYA PRADESH	261730N 0781341E	188	06/24	2744 x 45	IAF
13	JAISALMER	RAJASTHAN	2653N 07052E	236	04/22	2744 x 45	IAF
14	JAMMU	J & K	234132N 0745024E	291	18/36	2042 x 45	IAF/CE
15	JODHPUR	RAJASTHAN	26125N 0730308E	217	05/23	2743 x 45	IAF
16	JORHAT	ASSAM	2644N 09411E	91	04/22	2652 x 45	IAF
17	KANPUR (CHAKERI)	UTTAR PRADESH	2624N 08025E	124	09/27	2744 x 45	IAF
18	LEH	J & K	3408N 07733E	3256	07/25	2922 x 45	IAF
19	OZAR (NASIK)	MAHARASHTRA	2007N 07355E	598	09/27	3000 x 45	IAF
20	PATHANKOT	PUNJAB	321402N 0753802E	312	01/19	2744 x 45	IAF
21	PORT BLAIR (VEER SAVARKAR AIRPORT)	ANDAMAN ISLAND	1138549N 0924406E	5	04/22	3414 x 45	INDIAN NAVY
22	PUNE (LOHEGAON)	MAHARASHTRA	183458N 0735513E	592	10/28	2535 x 45	IAF
23	SILCHAR (KHUMBIGRAM)	ASSAM	245448N 0925851E	103	06/24	1785 x 45	IAF
24	SRINAGAR	J & K	3359N 07447E	1656.5	13/31	3658 x 45	IAF
25	TEZPUR	ASSAM	2643N 09247E	70	05/23	2744 x 45	IAF
26	VISHAKAPATNAM	ANDHRA PRADESH	174316N 0831329E	3	05/23 10/28	1829 x 45 3048 x 45	NAVY

Annexure III D

Stand alone Aeronautical Communication Stations

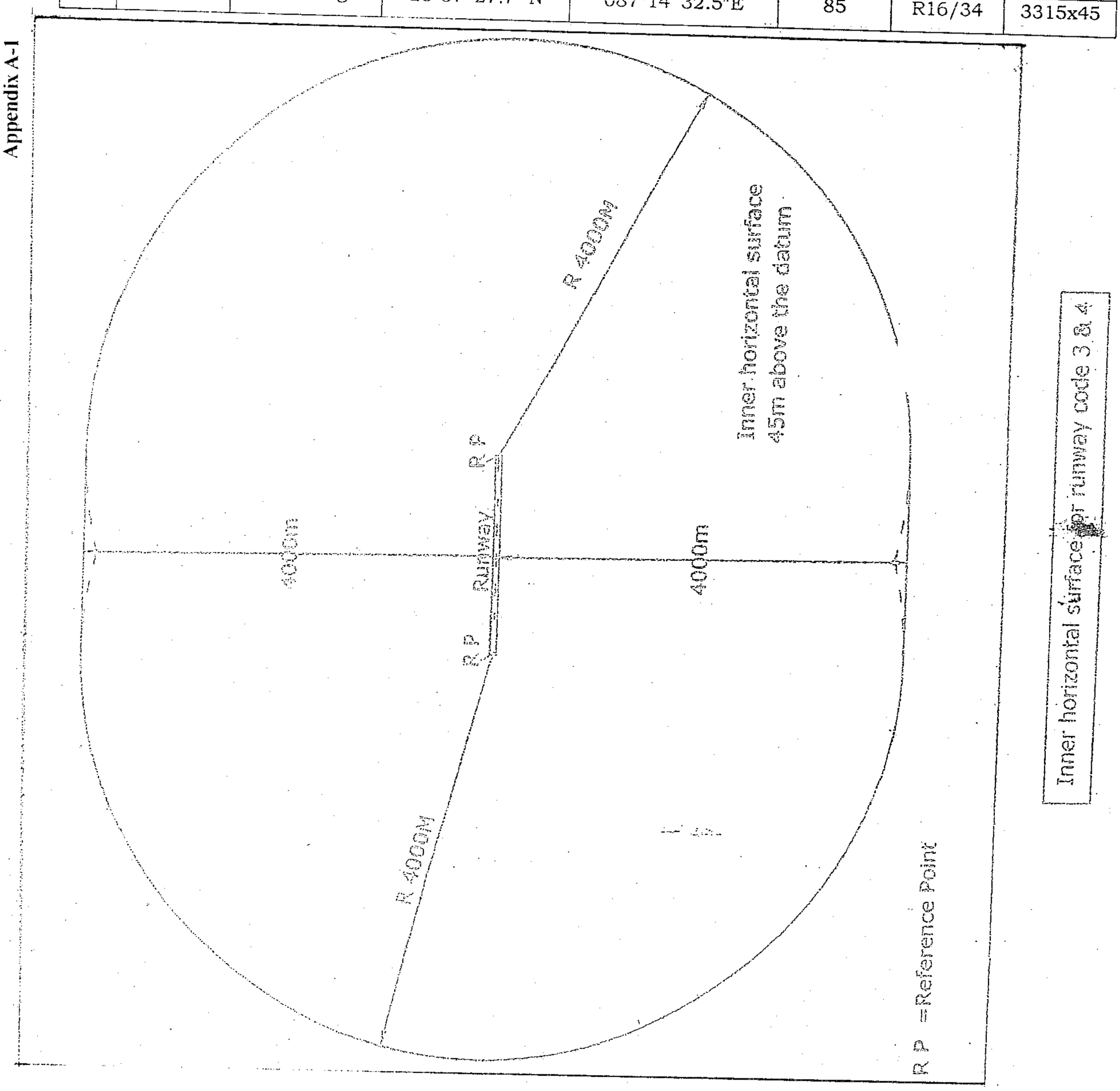
S. No.	Station	Name of the Facility	Coordinates	
			Coord N (WGS 84)	Coord E (WGS - 84)
1.	Aligarh	CVOR/DME(HP)	27 49' 45.5"	78 10' 42"
2	Behrampur	MSSR	19 26'00"	84 52' 08"
3	Bellary	DVOR/DME(HP)	15 09'54.4"	76 52' 50"
4	Bikaner-Lunka 1	DVOR/DME(HP)	28 33' 09.84"	77 47' 15.61"
5	Bikaner – Lunka 2	DVOR/DME(HP)	28 11' 20.422"	74 06' 41.267"
6	Chillarki	CVOR/DME(HP)	28 20' 51.2"	76 39' 20.2"
7	Gulbarga	DVOR/DME(HP)	17 18' 48.8"	76 48' 11"
8	Jalalabad	CVOR/DME(HP)	27 41' 39.6"	79 42' 44.7"
9	Jharsuguda	NDB	2153' 47.6"	84 02' 19.5"
10	Kanchipuram	DVOR/DME(HP)	12 47' 1 5.1"	79 42' 44.7"
11	Katihar	NDB	25 34'1.7"	8733' 20.6"
12	Keshod	NDB	21 18' 53"	7016' 10"
13	Khammam	NDB	17 15' 45"	80 08' 15"
14	Kishanganj	NDB	26 06' 45"	87 56' 30.3"
15	Pratapgarh	DVOR/DME(HP)	24 02' 13.65"	74 44' 38.16"
16	Rajamundri	NDB	17 06' 31"	81 49' 18"
17	Sakras	CVOR/DME(HP)	27 50' 54.4"	77 00' 29.6"
18	Sampla	CVOR/DME(HP)	28 49' 11.1"	76 49' 9.6"
19	Sikndrabad	CVOR/DME(HP)	28 23' 36.2"	77 42' 29.2"
20	Songarh	NDB	21 10' 2.5"	73 33' 57.4"
21	Tuticorin	NDB	08 43' 32.2"	78 01' 32.5"
22	Vikarabad	NDB	17 20' 3.8"	77 53' 55.5"

Annexure III E

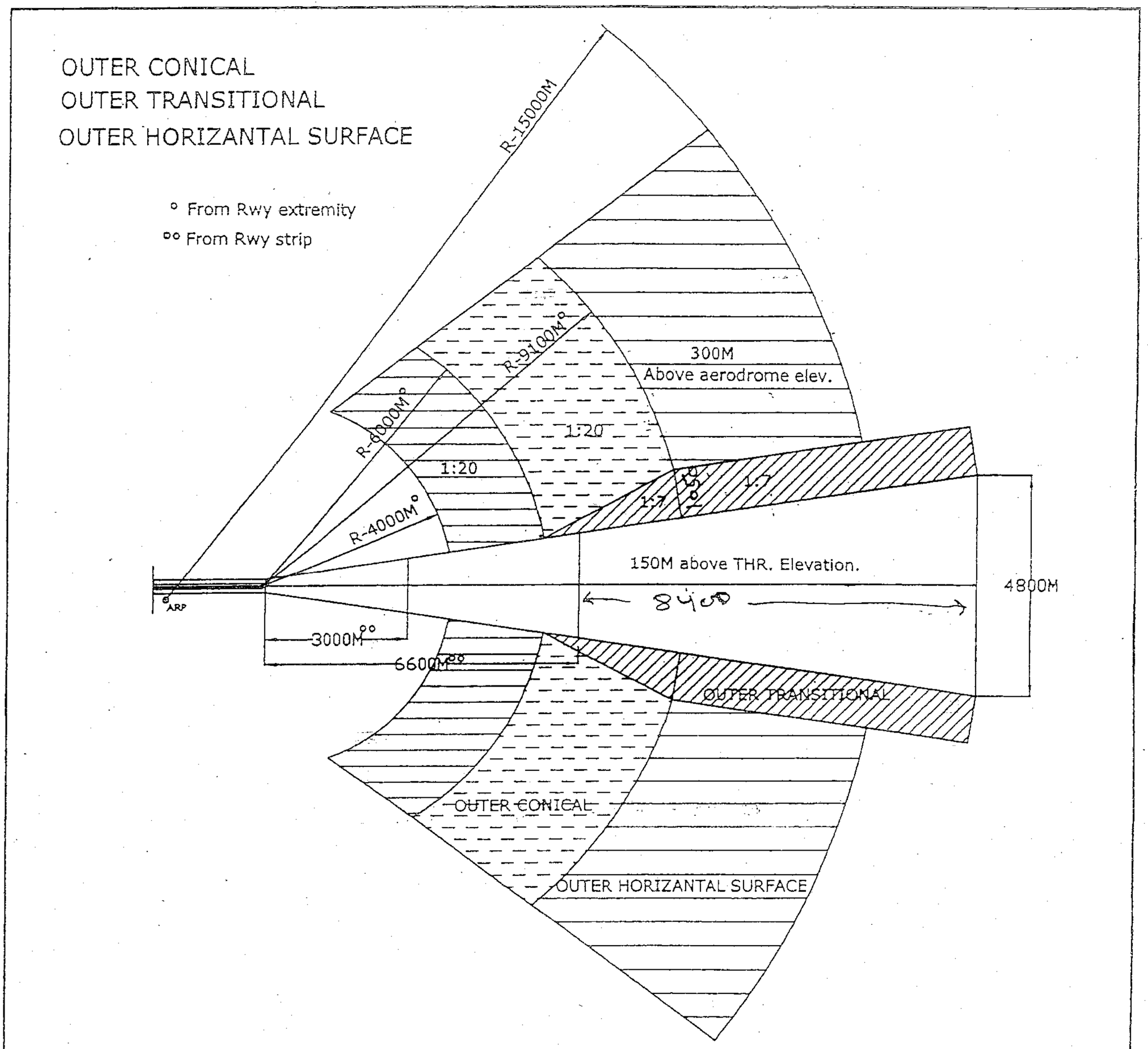
List of aerodromes for which Government has given "in-principle" approval for setting up of aerodromes

S. No.	Name	State/ Union Territory	Location		Elevation Meters (feet)	R/w Directions	Dimensions Meters (feet)
			Latitude (North)	Longitude (East)			
1.	Dabra	Madhya Pradesh	25°49'42.8"N	078°19'1.7"E	240	R09/27	3000x45
2.	Navi Mumbai	Maharashtra	18°59' 33"N	073°04' 18"E	5.00	R08/26	3700x60
3.	Pakyong	Sikkim	27°13' 58.2691N	088°35' 18.7927 E	1321.27	R02/20	1700x30
4.	Durgapur	West Bengal	23°37' 27.7" N	087°14' 32.5"E	85	R16/34	3315x45

Appendix A-1



Appendix A -2


OUTER CONICAL
OUTER TRANSITIONAL
OUTER HORIZANTAL SURFACE
° From Rwy extremity
°° From Rwy strip
R-15000M
R-9100M°
R-6000M°
R-4000M°
300M
Above aerodrome elev.
1:20
1:20
1:7
1:7
150M above THR. Elevation.
4800M
8450
ARP
3000M°°
6600M°°
OUTER TRANSITIONAL
OUTER CONICAL
OUTER HORIZANTAL SURFACE

Appendix B

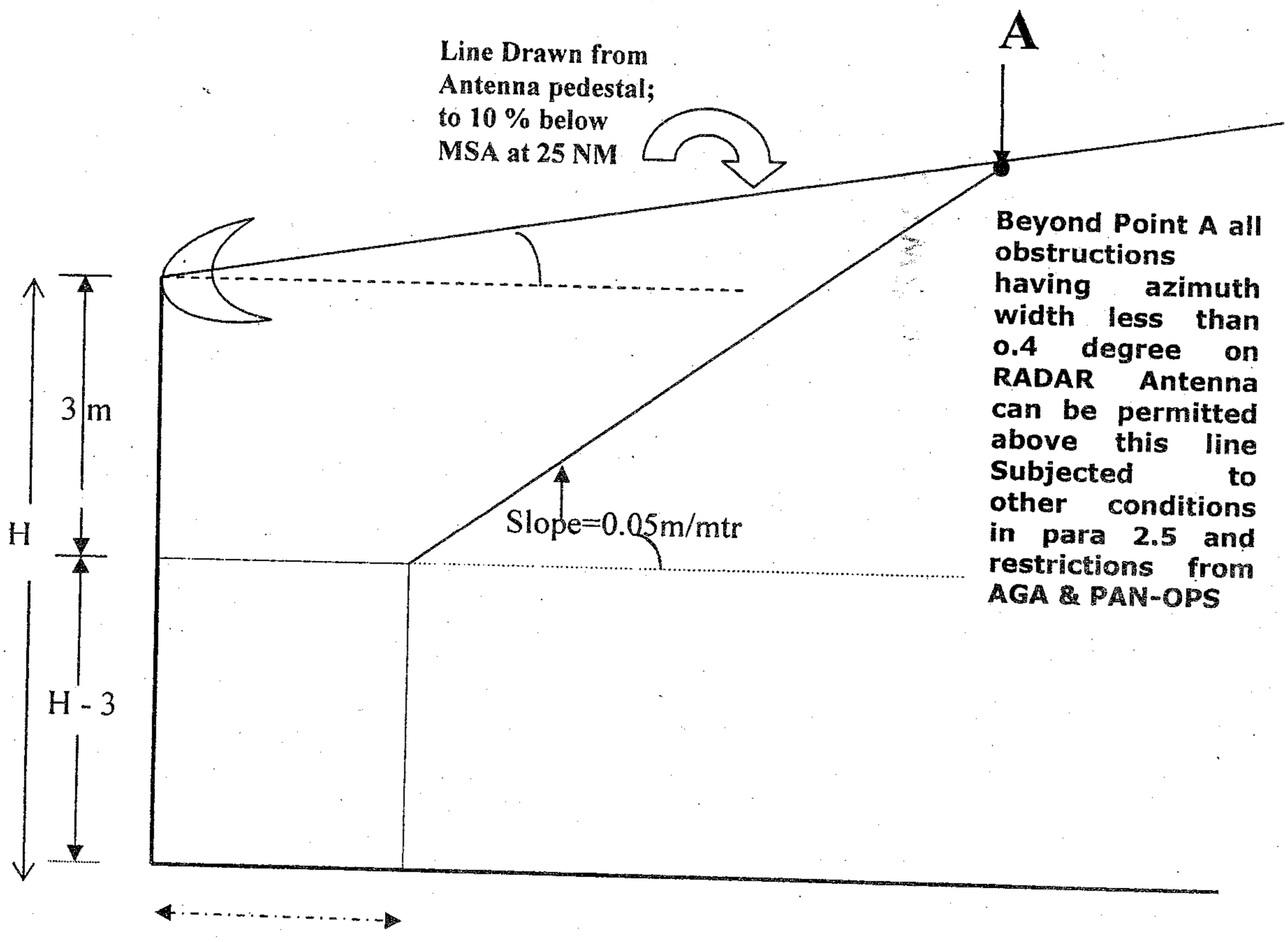


Fig 1 Criteria for height restriction with respect to ASR

Appendix C

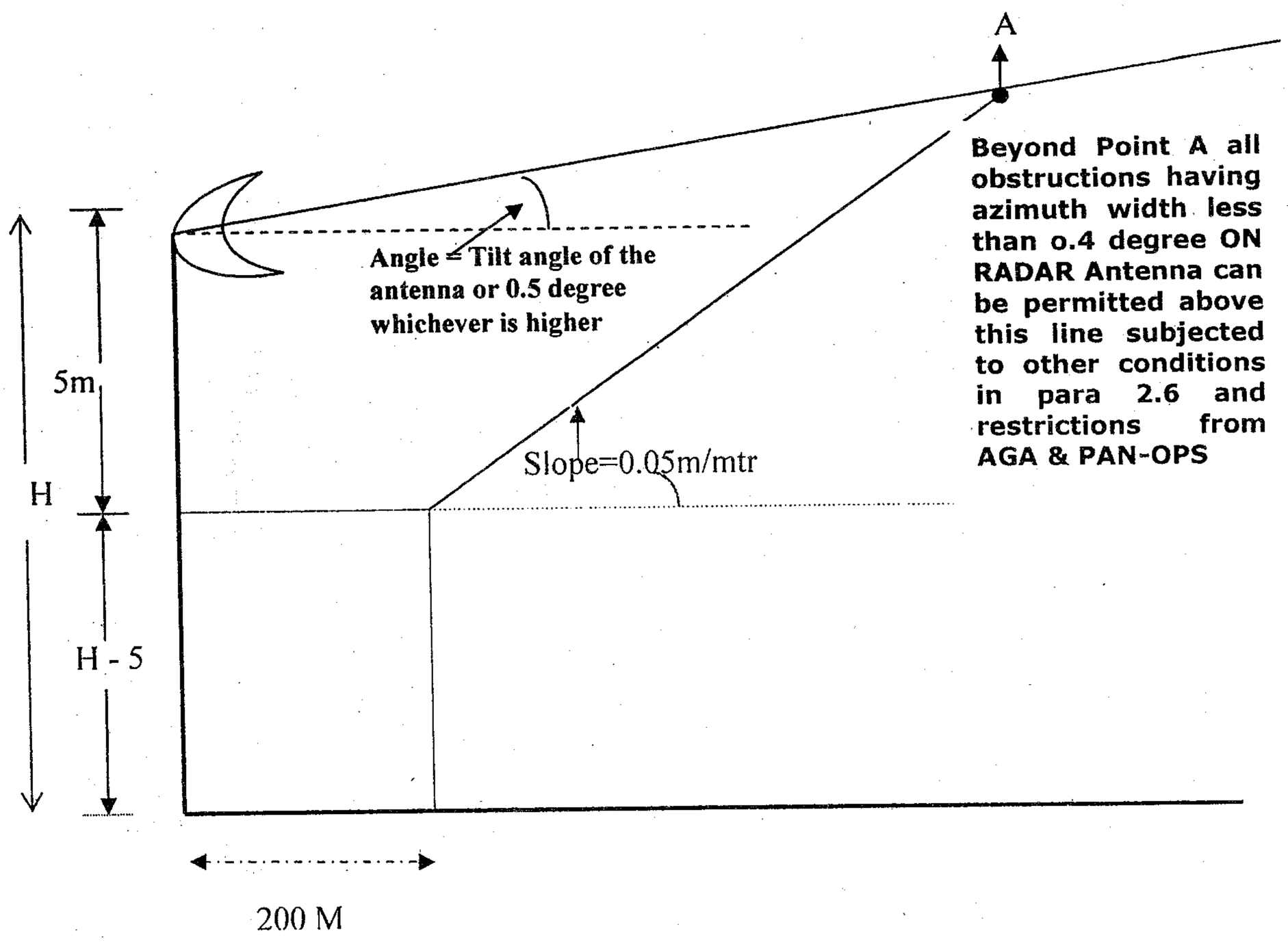
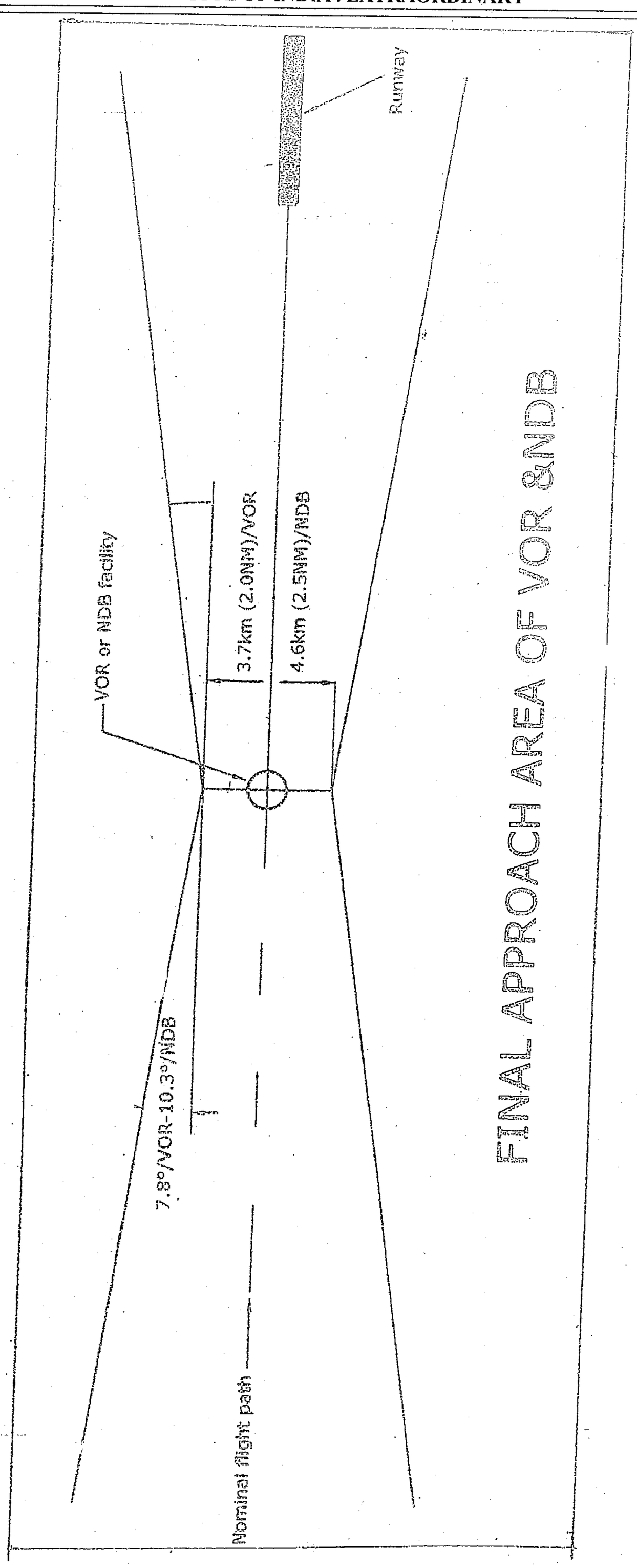


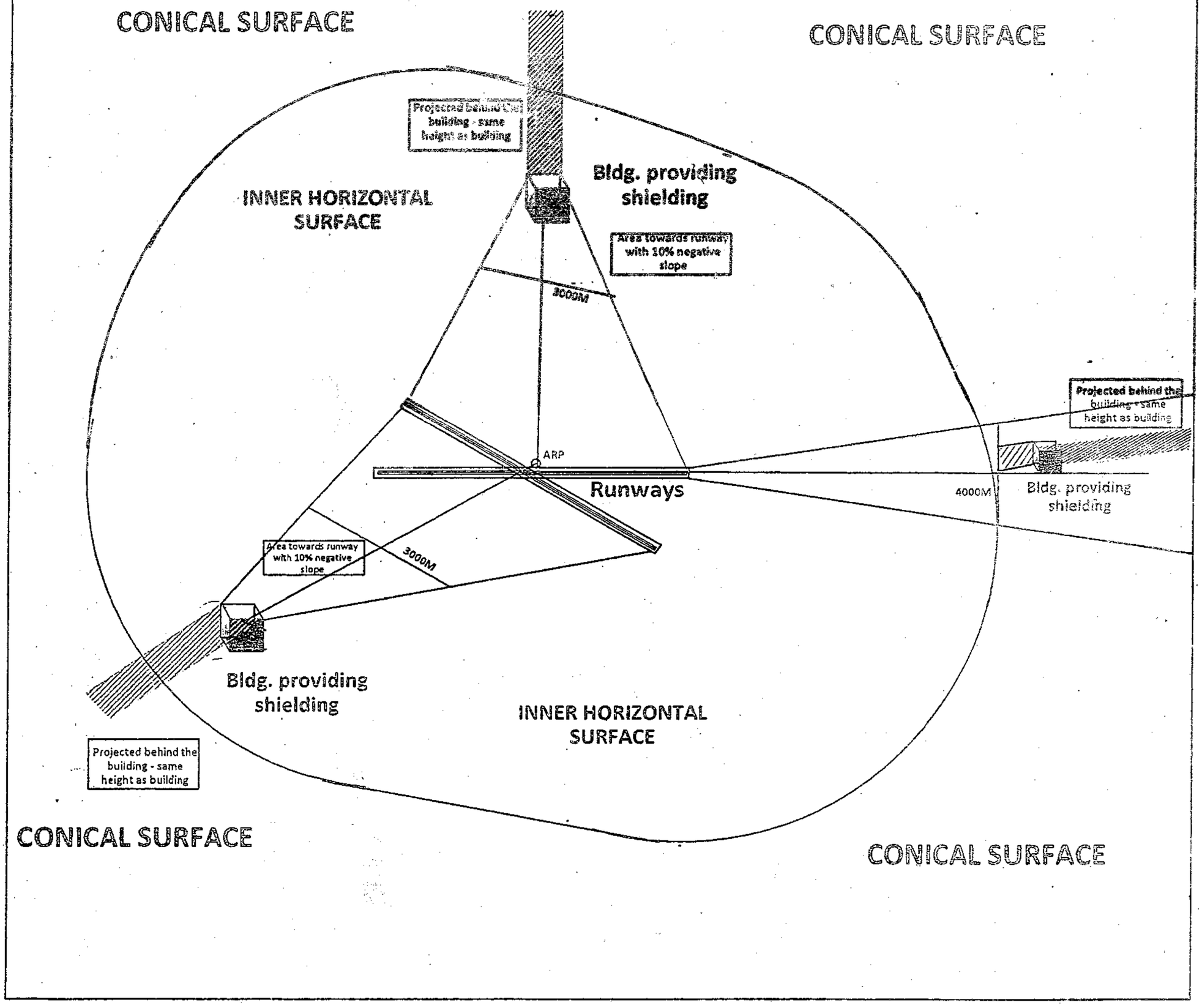
Fig 2 Criteria for height restriction with respect to ARSR

Appendix D


FINAL APPROACH AREA OF VOR &NDB
Runway
VOR or NDB facility
3.7km (2.0NM)/VOR
4.6km (2.5NM)/NDB
7.8°/VOR-10.3°/NDB
Nominal flight path

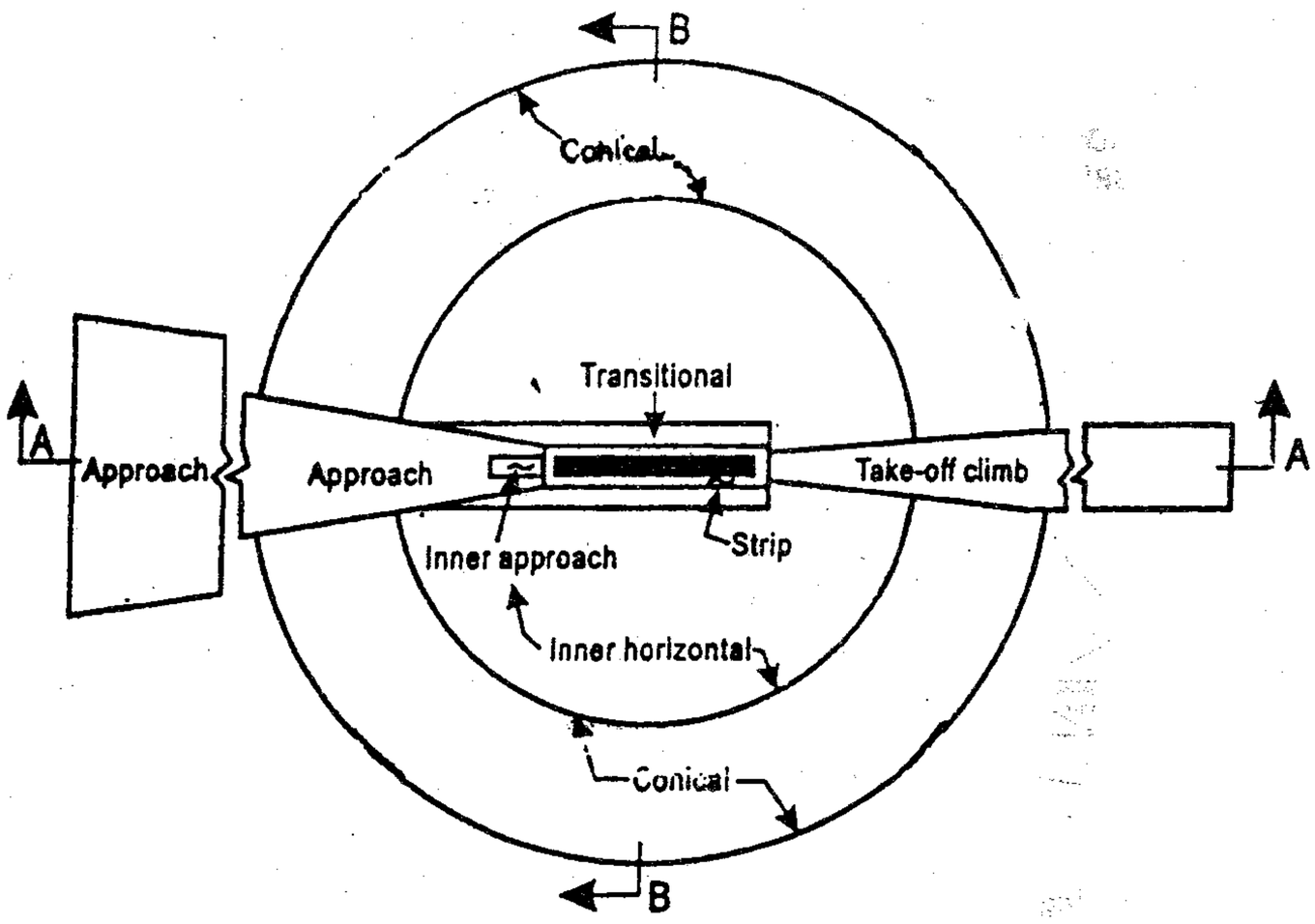
Appendix E

ILLUSTRATION OF SHIELDING BENEFITS



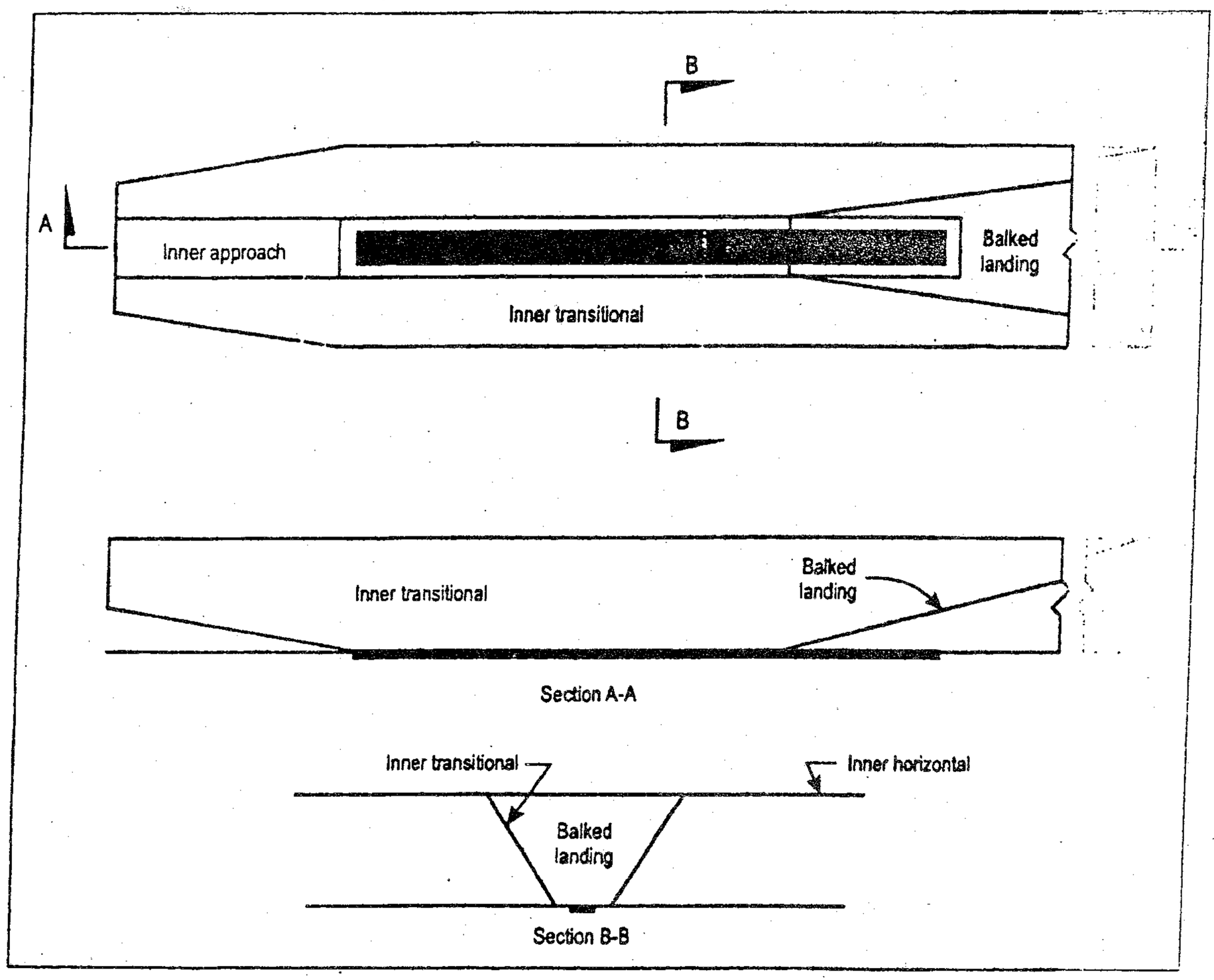
Appendix F-1

Diagrams of Obstacle Limitations Surfaces, ILS Critical Areas and Shielding Benefits



Obstacle limitation surfaces

Appendix F-2

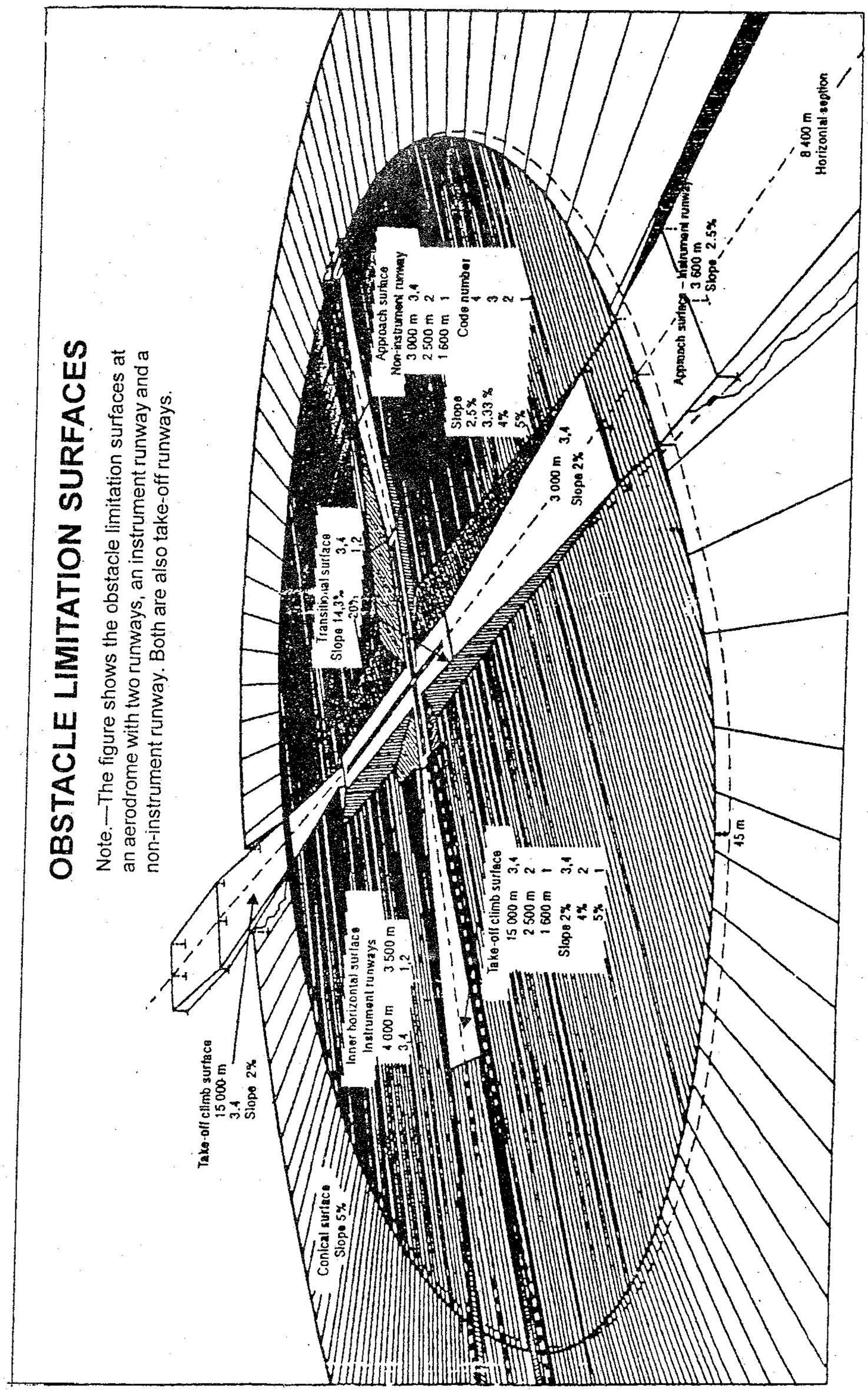


Inner approach, inner transitional and balked landing obstacle limitation surfaces

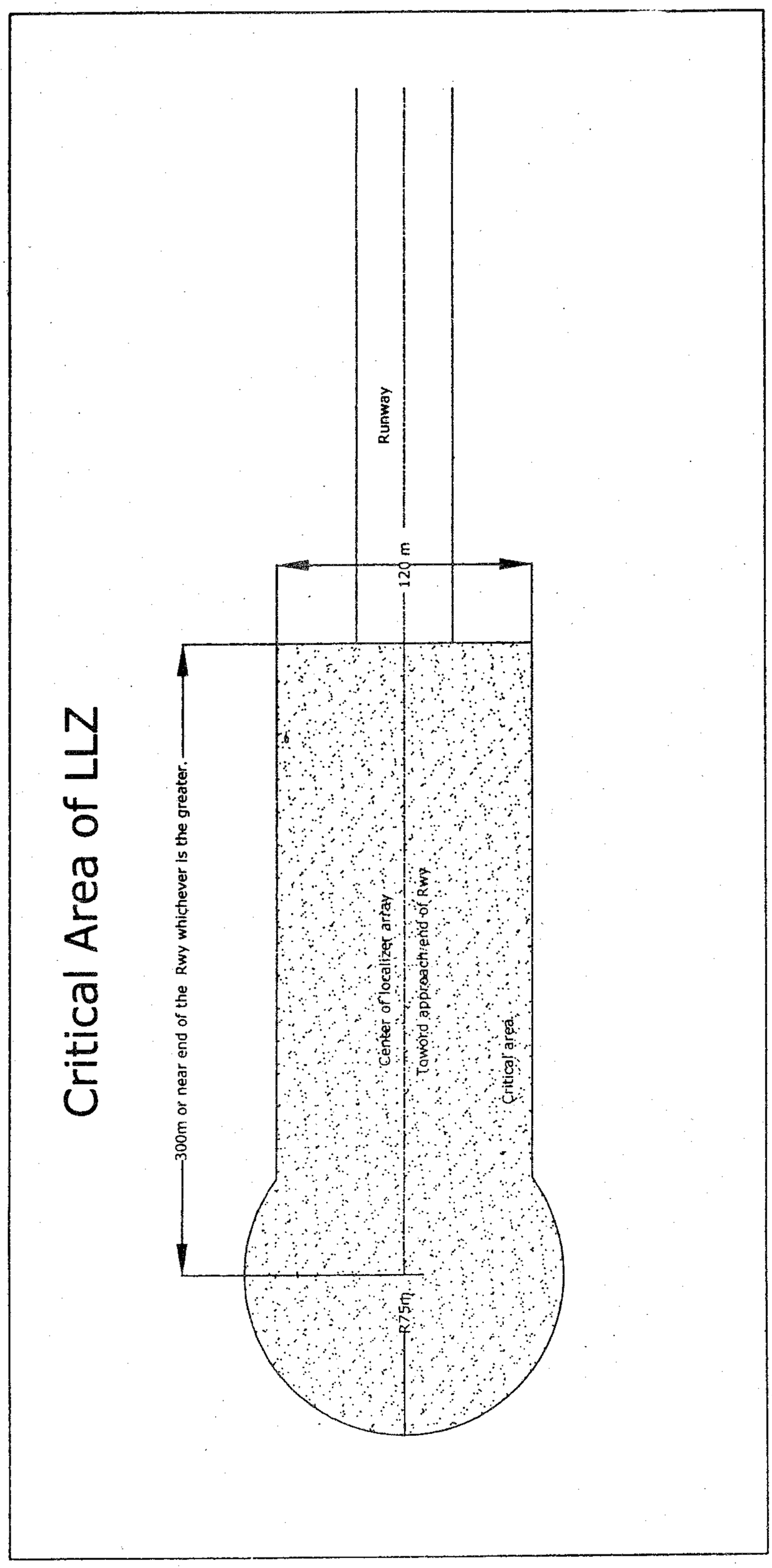
Appendix F-3

OBSTACLE LIMITATION SURFACES

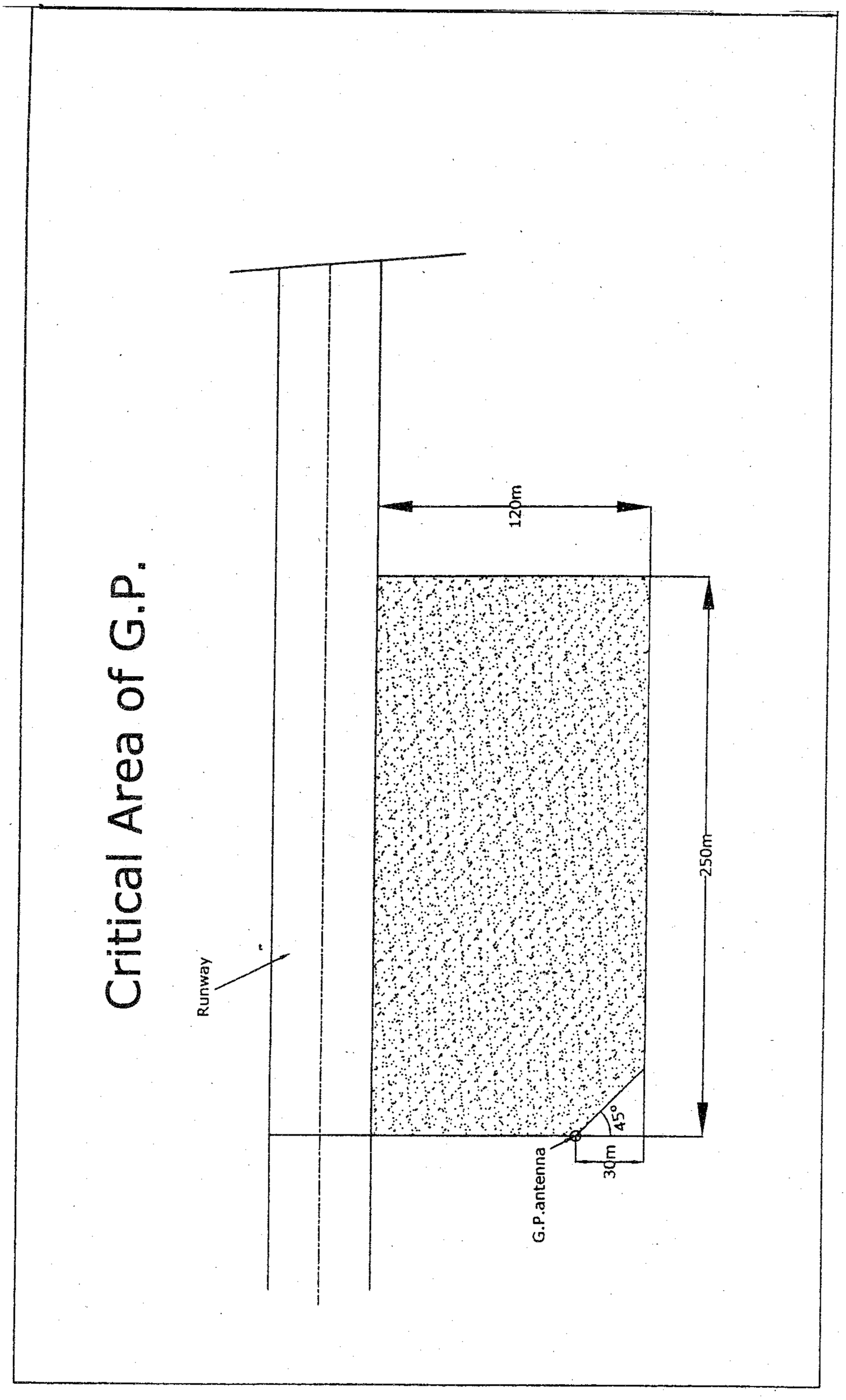
Note.—The figure shows the obstacle limitation surfaces at an aerodrome with two runways, an instrument runway and a non-instrument runway. Both are also take-off runways.



Appendix F-4


Critical Area of LLZ
300m or near end of the Rwy whichever is the greater.
Runway
120 m
Center of localizer array
Toward approach end of Rwy
Critical area
R75m

Appendix F-5



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