TERPS vs. PANS-Ops

Instrument Procedure Design and Operational Differences

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TERPS vs. PANS-Ops

They Are The Same, Only Different

- Departures
- Holding
- Arrival Maneuvering
- Approaches
- Missed Approaches

TERPS vs. PANS-Ops

They Are The Same, Only Different

- Physics, Aerodynamics, Mathematics
- Units of Measure
  - US Customary Units vs. Meters
  - Conversions ?
- Rounding of Numbers
- Fix Tolerances and Accuracy
- Flight Technical Errors

TERPS vs. PANS-Ops

Who is In Charge Here ?

–State (Country)

- Aeronautical Information Publication, AIP
- Flight Check, Maintain
- Publish, Revise

–Design Criteria

- Standard Design Development
- Role of the Procedure Designer
- Pilot Operational Procedures
- SARPS vs. Documents

TERPS vs. PANS-Ops

14 CFR 91.703

When over the "High Seas"...comply with ICAO Annex 2

and 91.117c 200KIAS below Class "B"

91.127 Control Tower Operations

91.129 Class "D" Operations

91.131 Class "B" Operations

While operating in a foreign country, comply with national regulations, *Part 91 when not in conflict with Annex 2 or national regulations* and always with:

91.307b	Parachute Operations,	91.309	Glider Operations
91.323	>TOGW AK Operations,	91.131	Foreign Ops in USA
91.705	MNPS	91.706	RVSM

TERPS vs. PANS-Ops

96 Articles, UN Chicago Convention 1947

Article 1-18, Air Regulations

Article 18-96, Meeting Regulations

18 Annexes Standards and Recommend Practices, SARPS

Annex 2- Rules of the Air... *14 CFR 91.703*

Annex 6- Operation of Aircraft

?? Documents

TERPS vs. PANS-Ops

ICAO Documents

#7030, Regional Supplements

Procedures for Air Navigation Services "PANS"

#4444, Air Traffic Management, Document,"PANS-ATM"

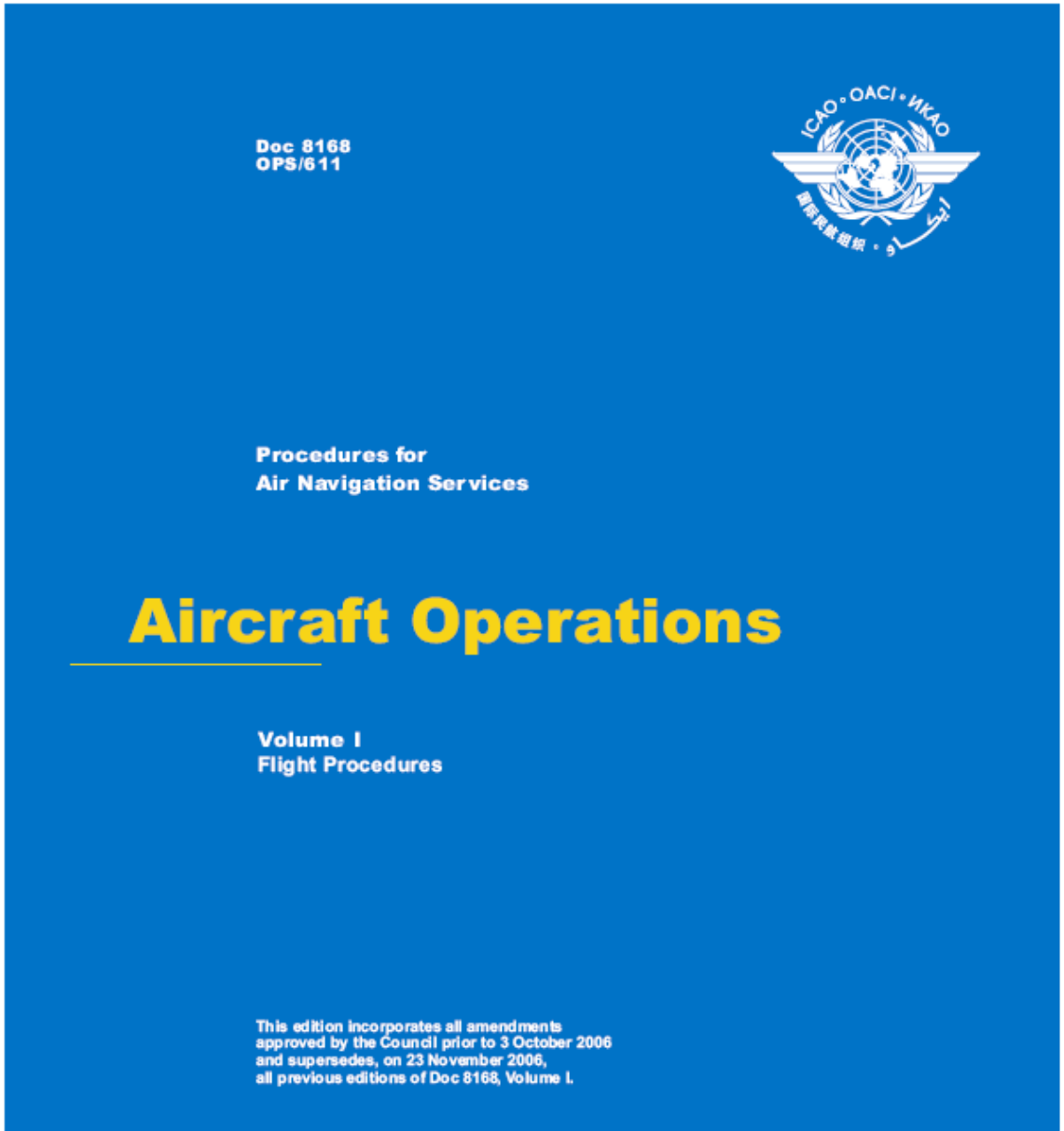
#9869, Manual for Training, "PANS-Training"

#8168 Operations, "PANS-Ops"

Volumes I *"Aeronautical Information Manual"*

Volume II *"TERPS"*

TERPS vs. PANS-Ops



Annexes à la Convention de l'Organisation internationale de l'aviation civile (OACI)

La Convention sur l'aviation civile internationale, également connue sous les noms de Convention de Chicago, comporte dix-huit annexes contenant des normes et pratiques recommandées (SARPs) dans le domaine de l'aviation civile.

Pour des raisons de droits d'auteur les annexes ne peuvent être imprimées. L'OACI offre sur son site Internet (ci-joint le lien) une possibilité de commande ou d'abonnement.

Les documents suivants n'ont qu'un caractère informatif, l'autorité ne répond ni de l'exactitude de leur contenu, ni de leur exhaustivité.

Annexe 1: Personnel Licensing

ICAO Annex 1, Personnel Licensing
Tenth edition
Valable dès le 18.11.2010 | Dimension: 666 kb | Typ: PDF

Annexe 2: Rules of the Air

ICAO Annex 2, Rules of the Air
Tenth edition
Valable dès le 19.11.2009 | Dimension: 1048 kb | Typ: PDF

Informations complémentaires

- Convention relative à l'aviation civile

Neuvième édition, 2006
25.01.2010 | 8056 kb | PDF

Liens utiles

Les annexes peuvent aussi être commandées auprès d l'OACI. Ils offrent aussi un service d'abonnement:

- International Civil Aviation Organization - Publications

TERPS vs. PANS-Ops

Procedures for Air Navigation Services

Doc 8168 — *OPS — Aircraft Operations.*

Volume I — *Flight Procedures.*

This volume describes operational procedures recommended for the guidance of flight operations personnel. It also outlines the various parameters on which the criteria in Volume II are based so as to illustrate the need for operational personnel including flight crew to adhere strictly to the published procedures in order to achieve and maintain an acceptable level of safety in operations.

Volume II — *Construction of Visual and Instrument Flight Procedures.*

This volume is intended for the guidance of procedures specialists and describes the essential areas and obstacle clearance requirements for the achievement of safe, regular instrument flight operations. It provides the basic guidelines to States, and those operators and organizations producing instrument flight charts that will result in uniform practices at all aerodromes where instrument flight procedures are carried out.

5th edition, incorporating Amendment 1, 2006. 832 pp.

E, F, R, S	ISBN 92-9194-864-0	**Order No. 8168-2**	**$539.00**
Corrigendum (12/6/07)		**Order No. 8168-2/E/16**	**FREE**
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$54.00*

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$19.00*

IRAN - RULES AND PROCEDURES

GENERAL

In general, the air traffic rules and procedures in force and the organization of the air traffic services are in conformity with ICAO Standards, Recommended Practices and Procedures.

Units of measurement used in connection with all air traffic services in Iran:

MEASUREMENT OF	UNIT
Distance used in navigation, position reporting, etc., generally in excess of 2 to 3 nautical miles	Nautical Miles and Tenths
Relatively short distances such as those relating to aerodromes (e.g., runway lengths)	Meters
Altitude, elevations, and heights	Feet
Horizontal speed including wind speed	Knots
Vertical speed	Feet Per Minute
Wind direction for landing and taking off	Degrees Magnetic
Wind direction except for landing and taking off	Degrees True
Visibility including runway visual range	Kilometers or Meters
[illegible]	Hectopascals

– Class 'D' airspace along airways for IFR flights.

Submission of a flight plan and establishing of two-way communication is compulsory within Tehran FIR/UIR.

For differences from ICAO VMC specifications refer to ATC Iran, Chapter "Differences from ICAO Standards and Procedures".

SPECIAL REQUIREMENTS AND REGULATIONS

AIR DEFENCE IDENTIFICATION ZONE (ADIZ) PROCEDURES

General

All aircraft entering Iranian airspace must be at FL150 or above. Aircraft unable to comply shall obtain prior permission. FIR entry estimates shall be made good within ± 5 minutes. Entry into Tehran FIR shall be via published ATS Routes. Aircraft not complying with these procedures are subject to interception.

Communications

All flights are required to establish contact at least 10 minutes prior to entering Iran ADIZ (Tehran FIR) with the following appropriate defense radar station on 127.8MHz and 135.1MHz for the purpose of military identification and avoidance of interception especially for those aircraft entering via Persian Gulf and Oman Sea. After establishing contact, inform Tehran ACC accordingly.

a. Tabriz Radar when entering from ALRAM, [illegible]

Wind direction except for landing and taking off	Degrees True
Visibility including runway visual range	Kilometers or Meters
Altimeter setting, atmospheric pressure	Hectopascals
Temperature	Degrees Celsius
Weight	Metric Tons or Kilograms
Time	Hours and minutes, the day of 24 hrs beginning at midnight UTC

WGS-84 IMPLEMENTATION STATUS

WGS-84 compliant.

FLIGHT PROCEDURES

HOLDING

Holding speeds comply with ATC Chapter Part IV. Holding Procedures", table "Holding Speeds ICAO DOC 8168".

PROCEDURE LIMITATIONS AND OPTIONS

Instrument approach procedures, except holding speeds, comply with an earlier version of PANS-OPS, Document 8168, Volume I.

ATS AIRSPACE CLASSIFICATIONS

Iran has adopted the ICAO airspace classification as listed in ATC-Chapter "ICAO ATS Airspace Classifications - Annex 11". Airspace classes "B," "E," and "F" are not used within Tehran FIR/UIR.

The use transponder Mode A and C is compulsory in the following airspaces:

- class "A" airspace;
- class "C" airspace in the Tehran and Shiraz TMAs;
- class "D" airspace in the Tehran and Shiraz CTRs;

tary identification and avoidance of interception especially for those aircraft entering via Persian Gulf and Oman Sea. After establishing contact, inform Tehran ACC accordingly.

a. Tabriz Radar when entering from ALRAM, BONAM, DASIS, DULAV, MAGRI, PARSU and AGINA.

b. Babolsar Radar when entering from LALDA, PUTMA and ULDUS.

c. Mashhad Radar when entering from GIRUN, RIKOP, ORPAB, OTRUZ and CHARN.

d. Birjand Radar when entering from SOKAM and KAMAR.

e. Zabol Radar when entering from DERBO and DANIB.

f. ChahBahar Radar when entering from KEBUD, EGSAL, EGRON, METBI, DENDA and IMLOT.

g. Bandar Abbass Radar when entering from DARAX, KUMUN and ORSAR.

h. Bushehr Radar when entering from MIDSI, ALSER, VUXAL, NANPI, PATIR, TULAX and KUVER.

i. Hamadan Radar when entering from MIGMI, RAGET and PAXAT.

FLIGHT PLANNING

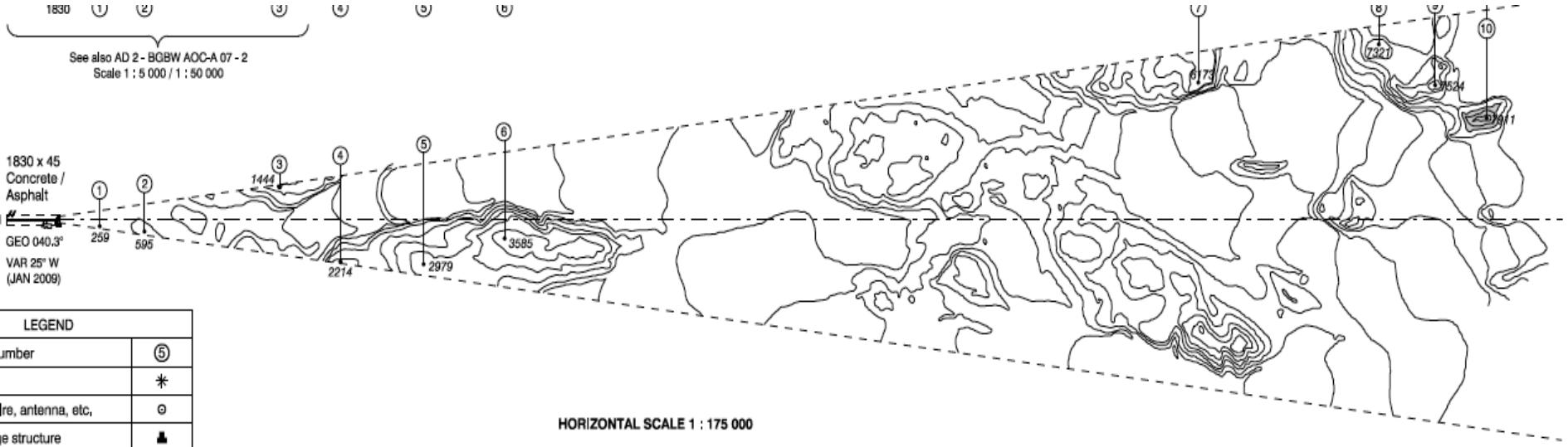
Except for RPLs, flight plans shall be submitted no sooner than 24 hours and no later than 60 minutes before EOBT, unless more restrictive time provisions have been promulgated by other states. Scramble, ambulance, VIP, and search and rescue (SAR) aircraft in the event of an aircraft accident are exempt from these time provisions.

Flight movement messages relating to traffic into or via the Tehran FIR shall be addressed as stated below in order to warrant correct relay and delivery:

TERPS vs. PANS-Ops

Where Does This Data Come From ?

- ✓ State (Country)
- ✓ Commercial Provider
- ✓ WGS-84 Compliant
  - Airport, Country
  - All of it, Somewhere?



TERPS vs. PANS-Ops

Standard Instrument Departure

X – "Normal" Operations X

X – Maintain the Ground Track X

X – Maintain the Required Climb Gradient X

1.7 ABNORMAL AND EMERGENCY OPERATIONS

1.7.1 The design of procedures in accordance with this section assumes normal operations and that all engines are operating.

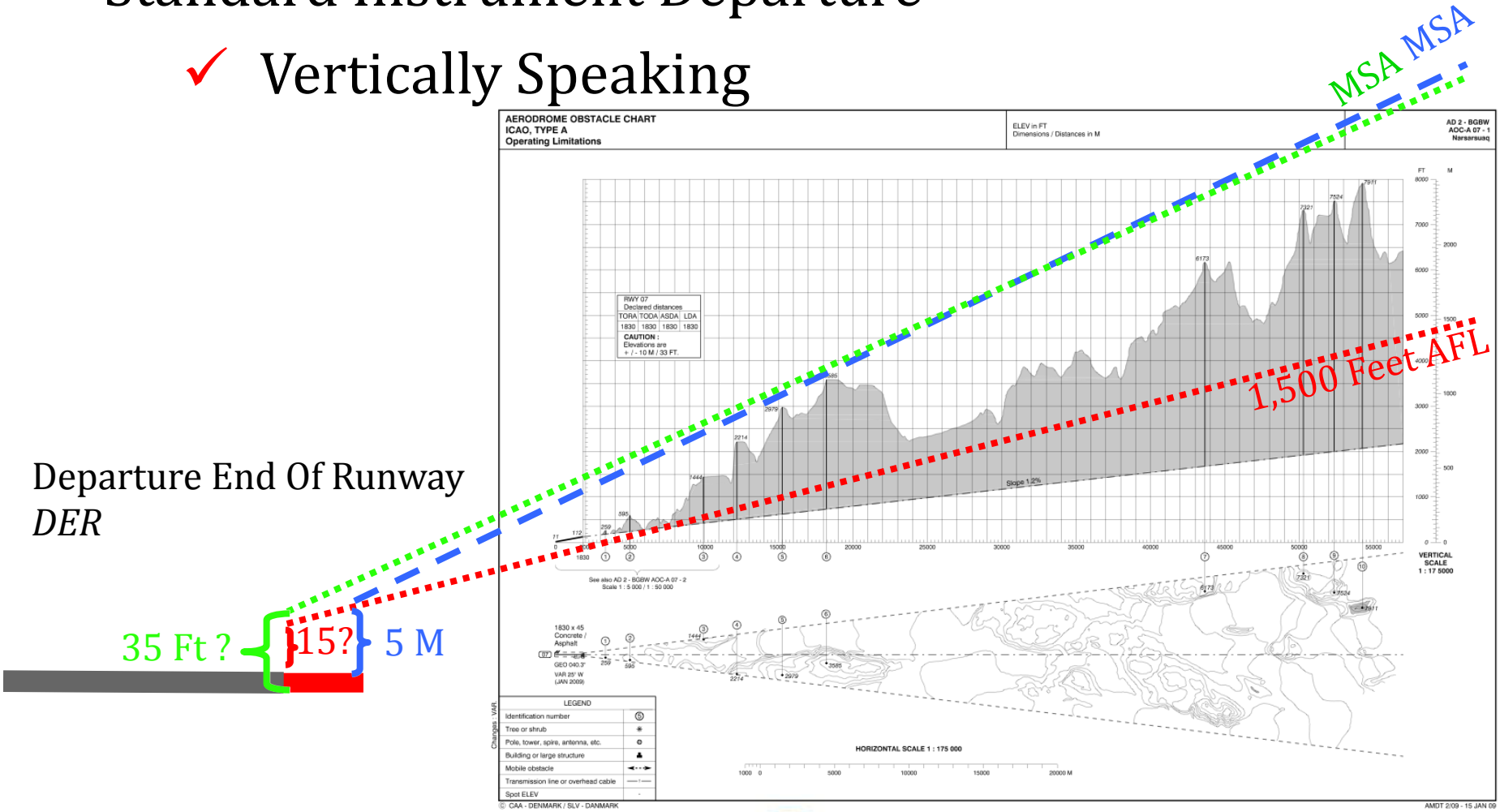
1.7.2 It is the responsibility of the operator to conduct an examination of all relevant obstacles and to ensure that the performance requirements of Annex 6 are met by the provision of contingency procedures for abnormal and emergency operations. Where terrain and/or obstacle considerations permit, the contingency procedure routing should follow that of the departure procedure.

1.7.3 It is the responsibility of the State to make available the obstacle information described in Annexes 4 and 6, and any additional information used in the design of departures in accordance with this Section.

TERPS vs. Pans-Ops vs. FAR 25

Standard Instrument Departure

- ✓ Vertically Speaking



TERPS vs. PANS-Ops

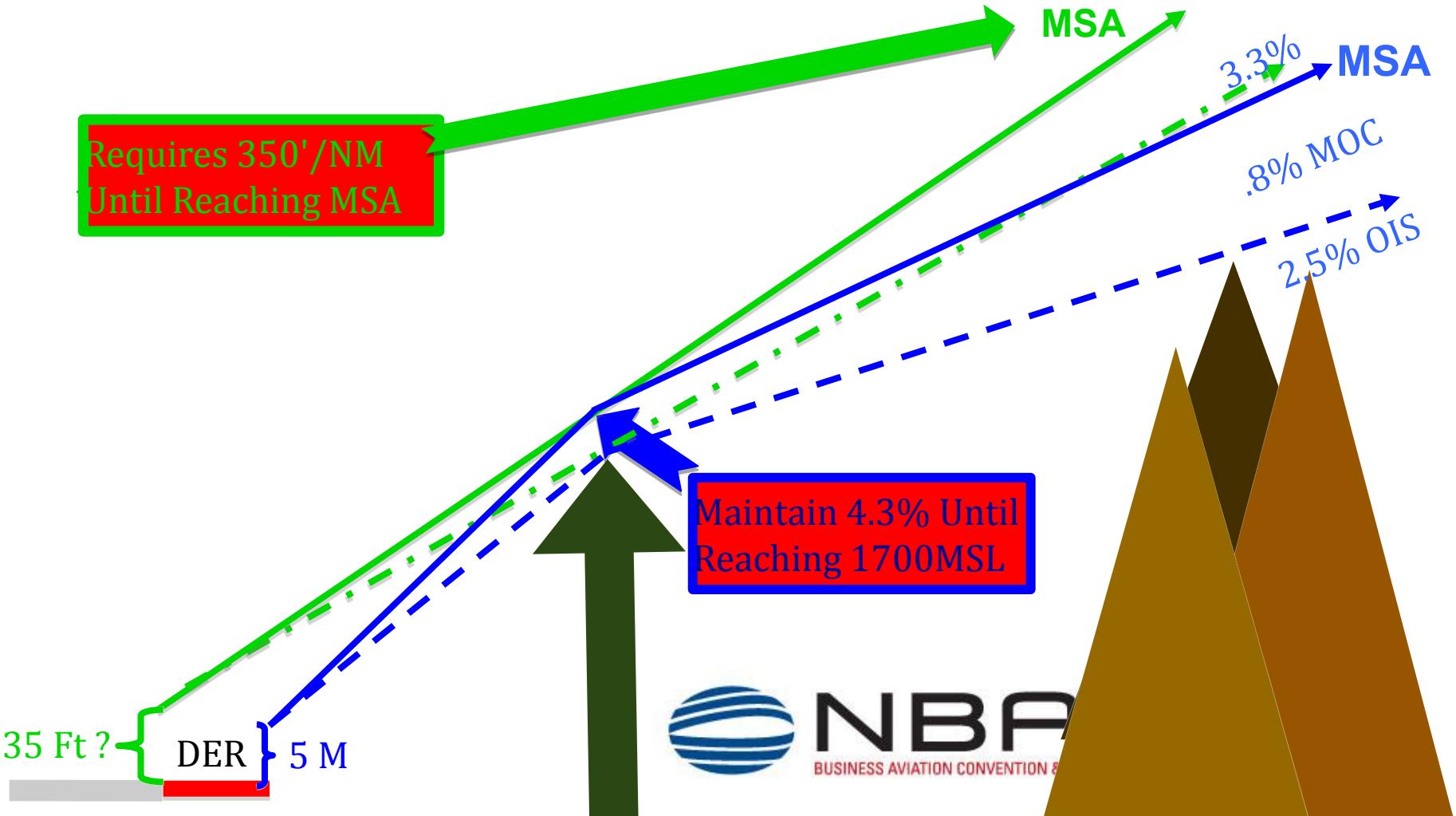
Standard Instrument Departure
If straight out will not work…

X	Climb faster over obstacle	X
X	Turn away from obstacle	X
X	Keep in sight, “See and avoid”	X
X	Climb in a safe sector away from obstacle	X
X	Speed limiting	X
X	Combinations of any of the above	X

TERPS vs. PANS-Ops

Standard Instrument Departure

Climb Faster Over Obstacle



TERPS vs. PANS-Ops

SCEL/SCL
ARTURO MERINO BENITEZ INTL

JEPPESEN
20-3S
12 SEP 14
Eff 18 Sep

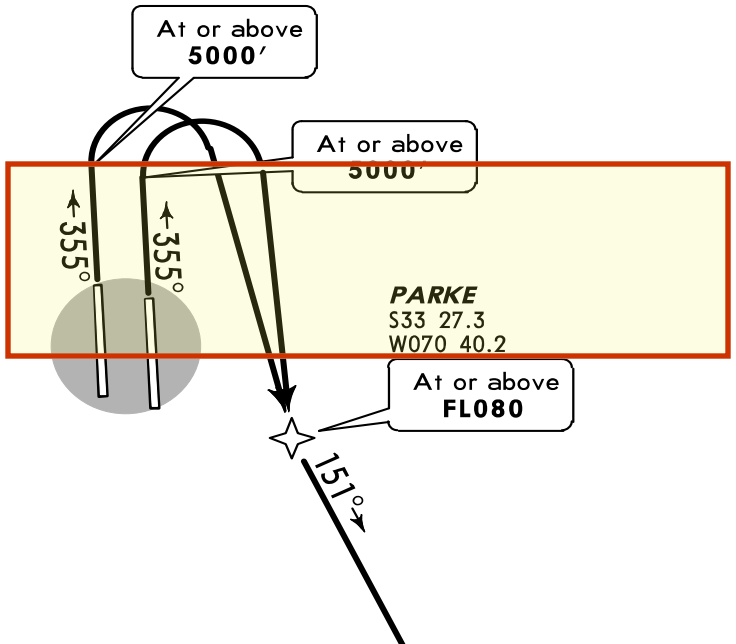
SANTIAGO, CHILE
RNAV SID

Apt Elev	Trans level: By ATC Trans alt: 5000′
1555′	**1. GNSS required.**
	2. RNAV 1 or RNP 1 approval required.

NEBEG 1D RNAV DEPARTURE

[NEBE1D]

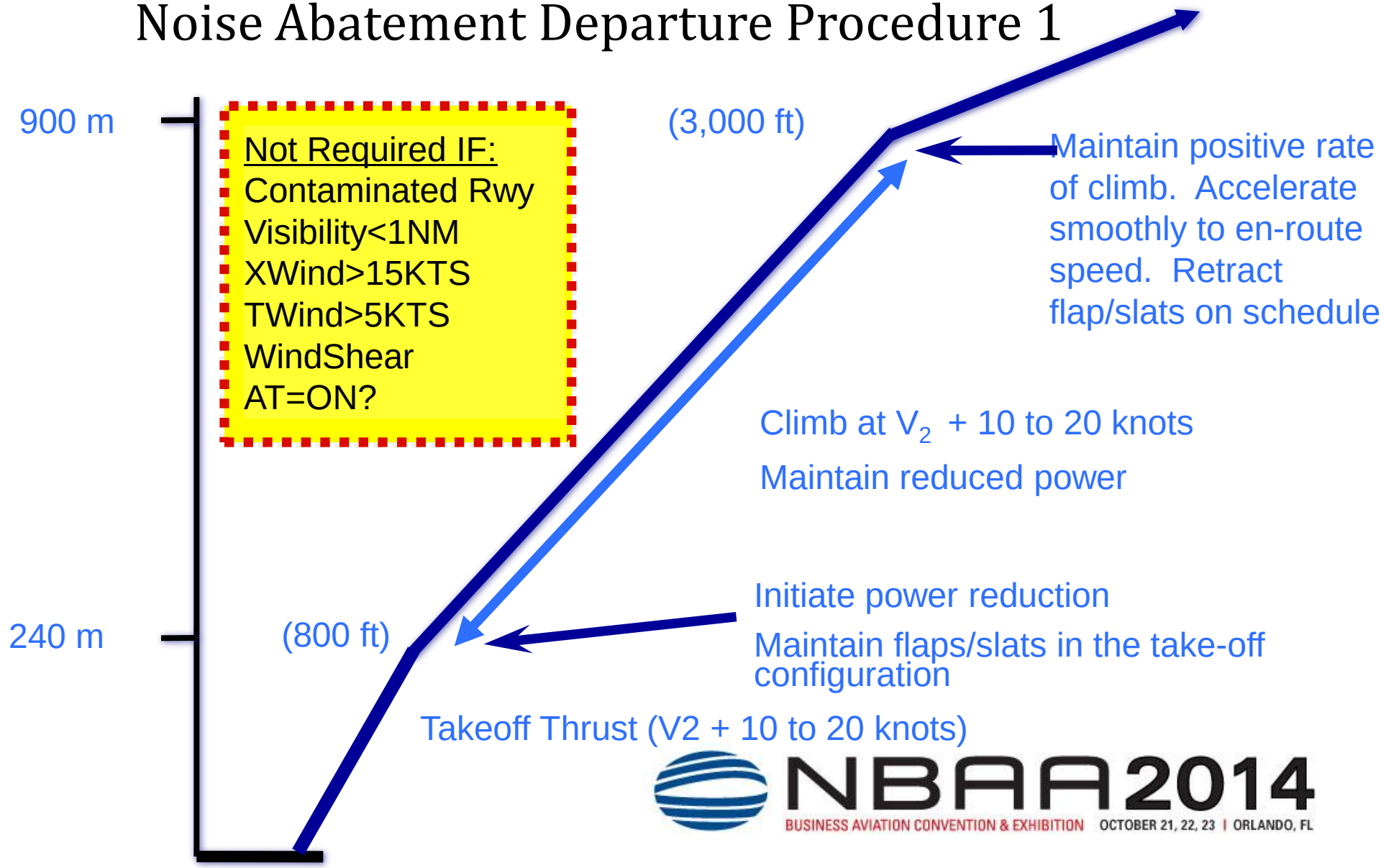
(RWYS 35L/R)



Direct distance from Arturo Merino Benitez Intl to:
PARKE 7 NM

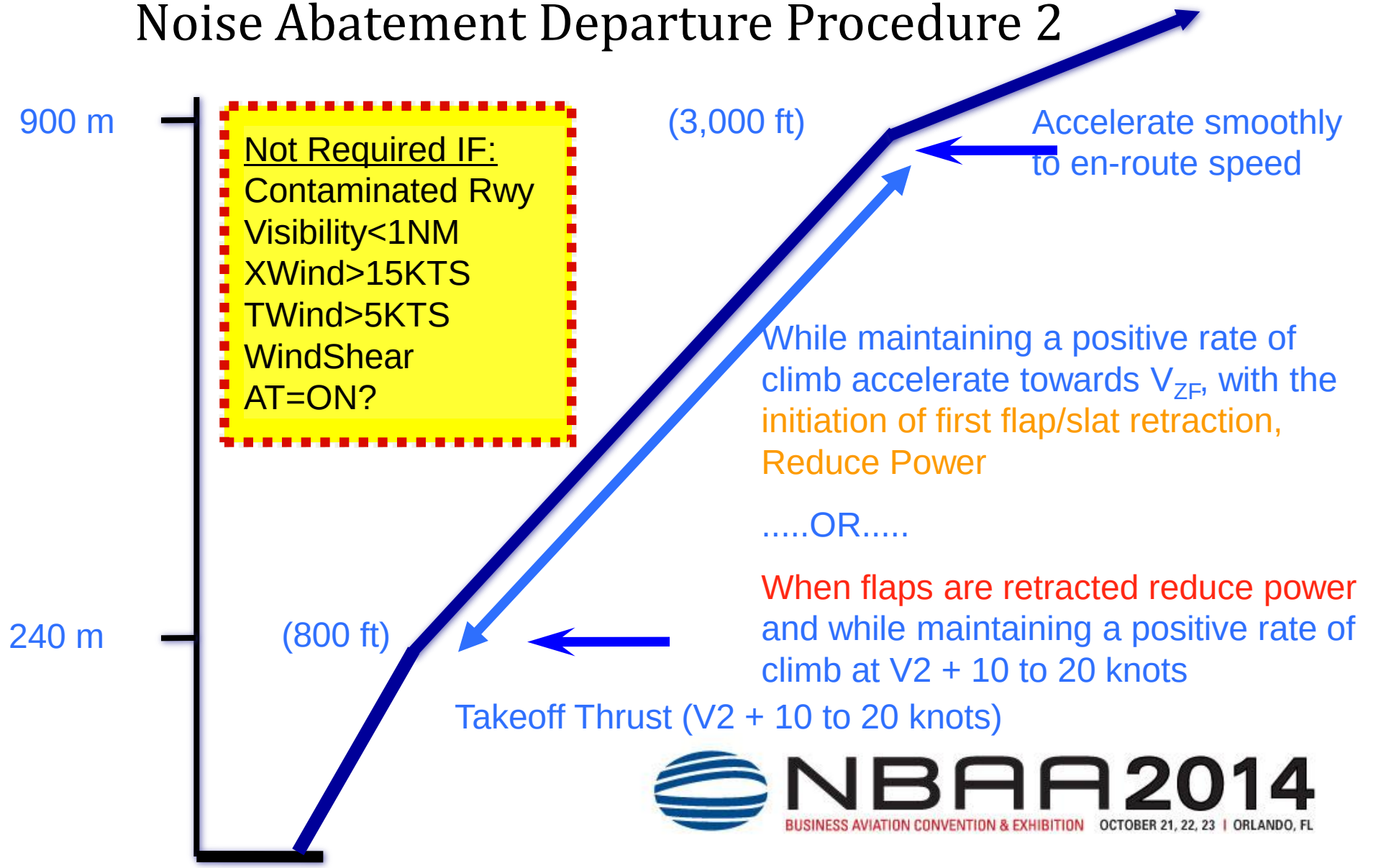
TERPS vs. PANS-Ops

Noise Abatement Departure Procedure 1



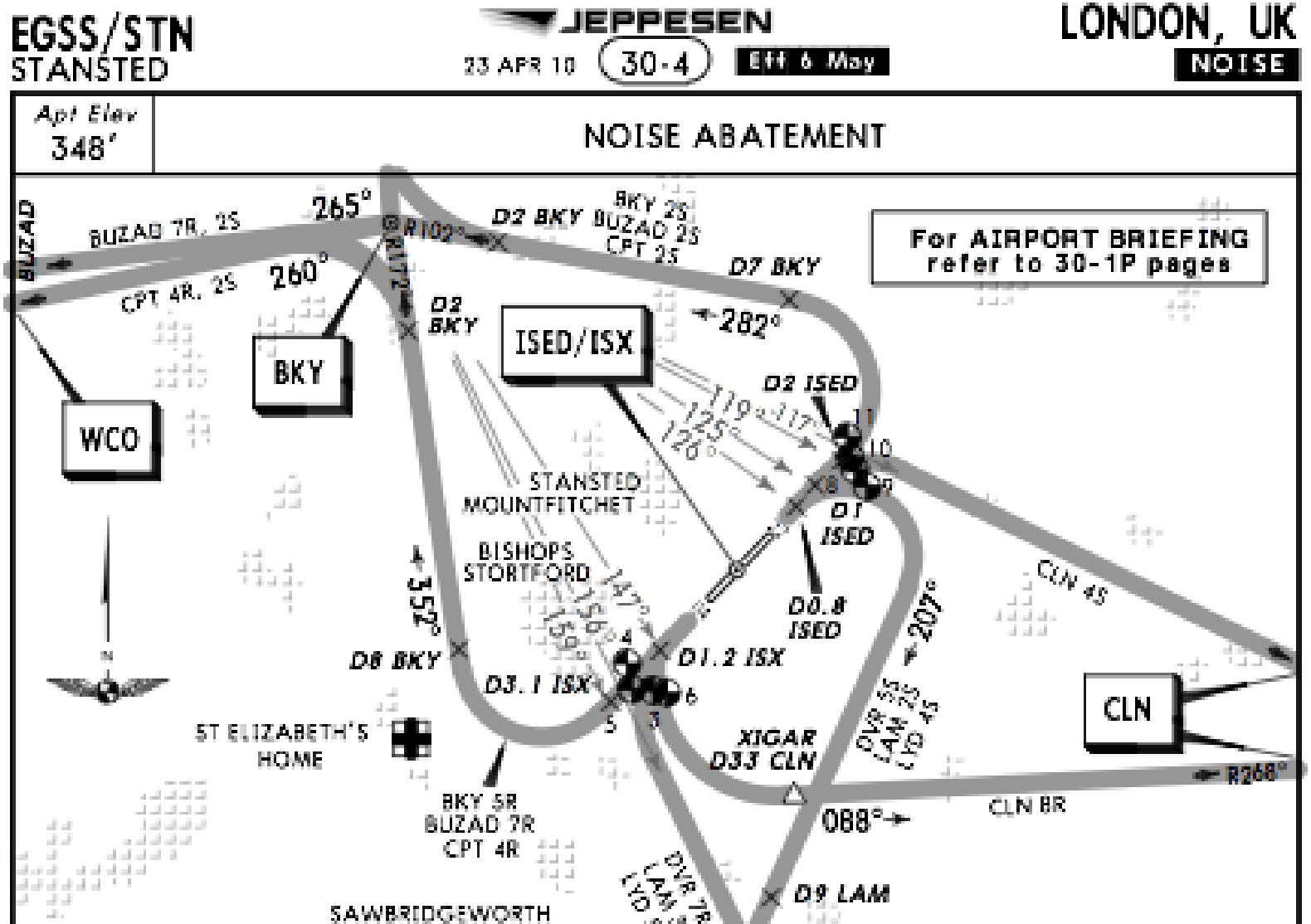
TERPS vs. PANS-Ops

Noise Abatement Departure Procedure 2



TERPS vs. PANS-Ops

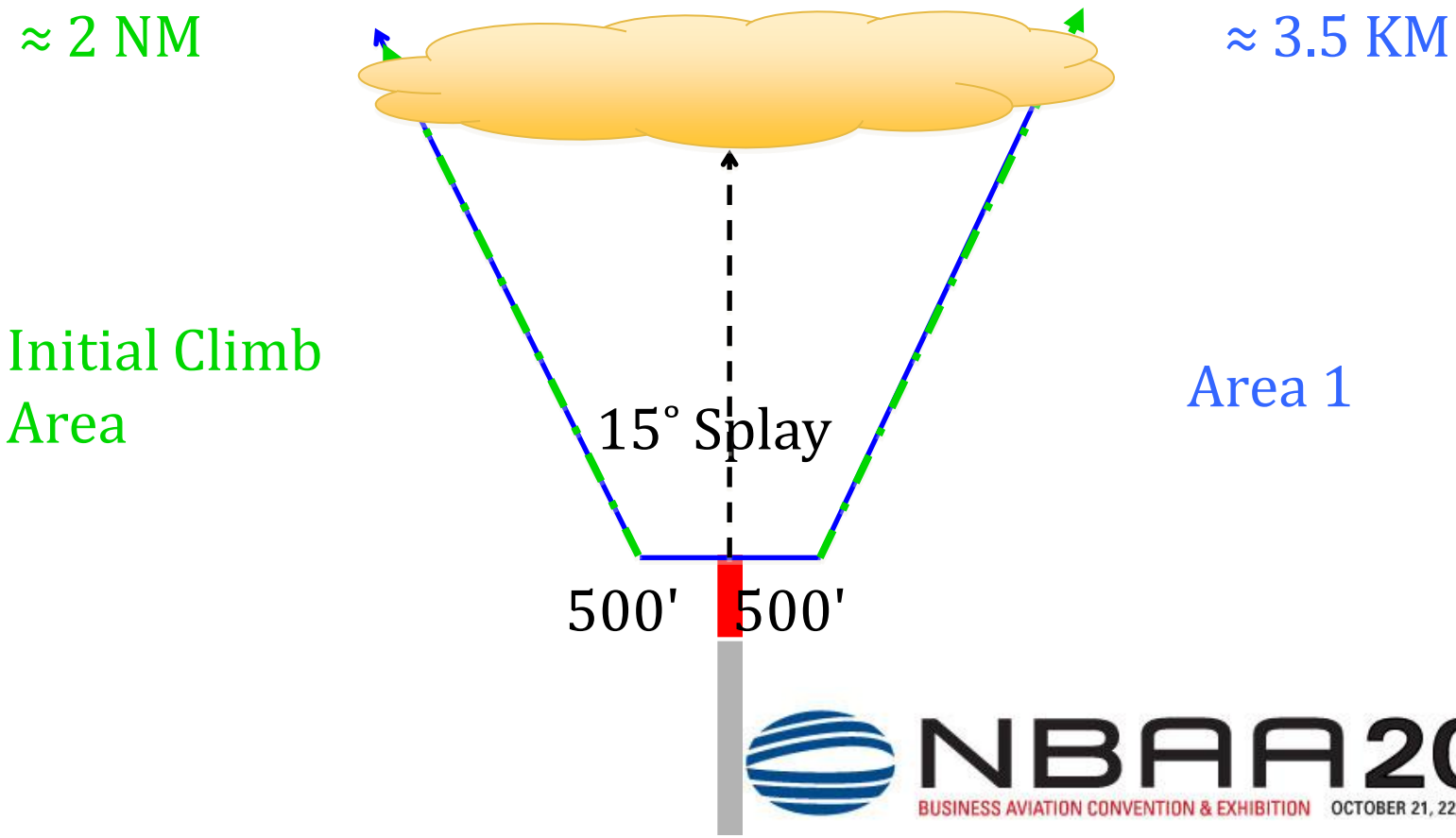
Noise Abatement Departure Procedure 1 and 2



TERPS vs. PANS-Ops

Standard Instrument Departure

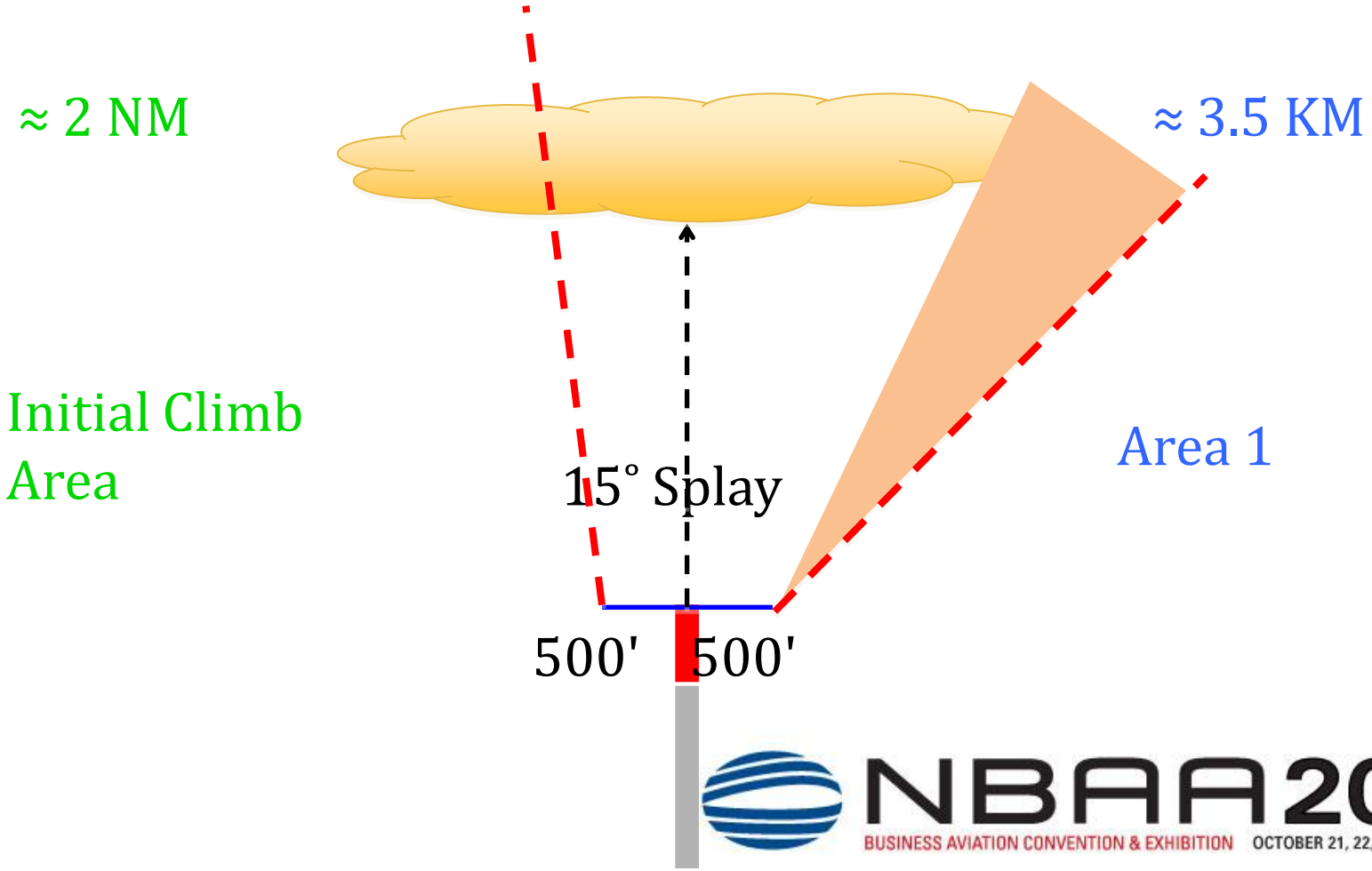
Turn Away From Obstacle



TERPS vs. PANS-Ops

Standard Instrument Departure

Turn Away From Obstacle



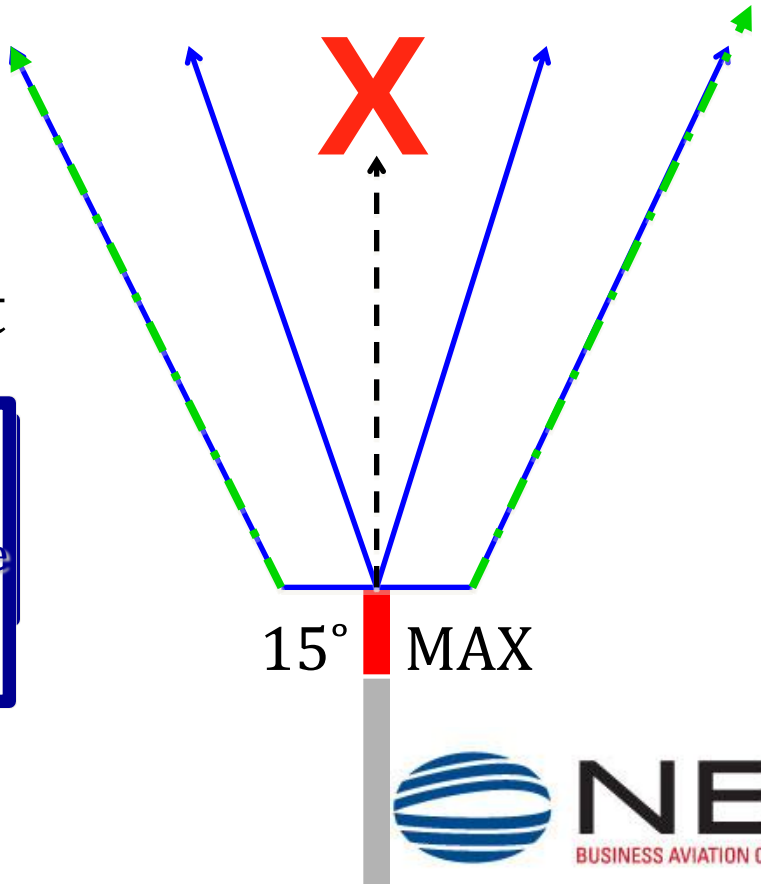
TERPS vs. PANS-Ops

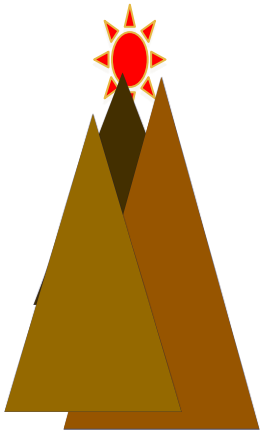
Standard Instrument Departure, TERPS

Keep in Sight and Tell Pilot to "See and Avoid"

Visual Climb
Over Airport

Hazard Beacons on top of hill to the east clearly visible or Take Off Minimums 600/1





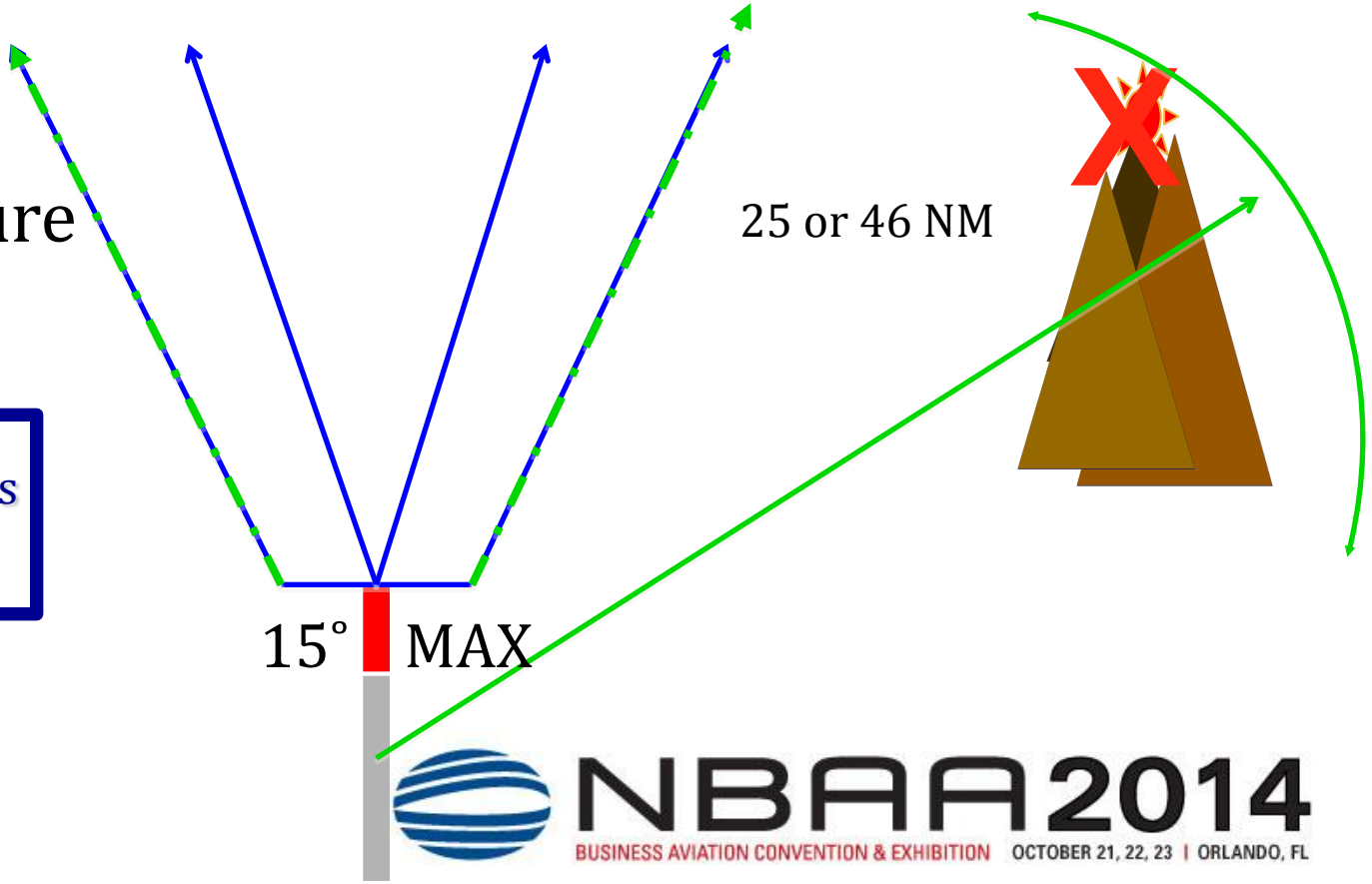
TERPS vs. PANS-Ops

Standard Instrument Departure, TERPS

Climb in a Safe Sector

Diverse Departure Evaluation

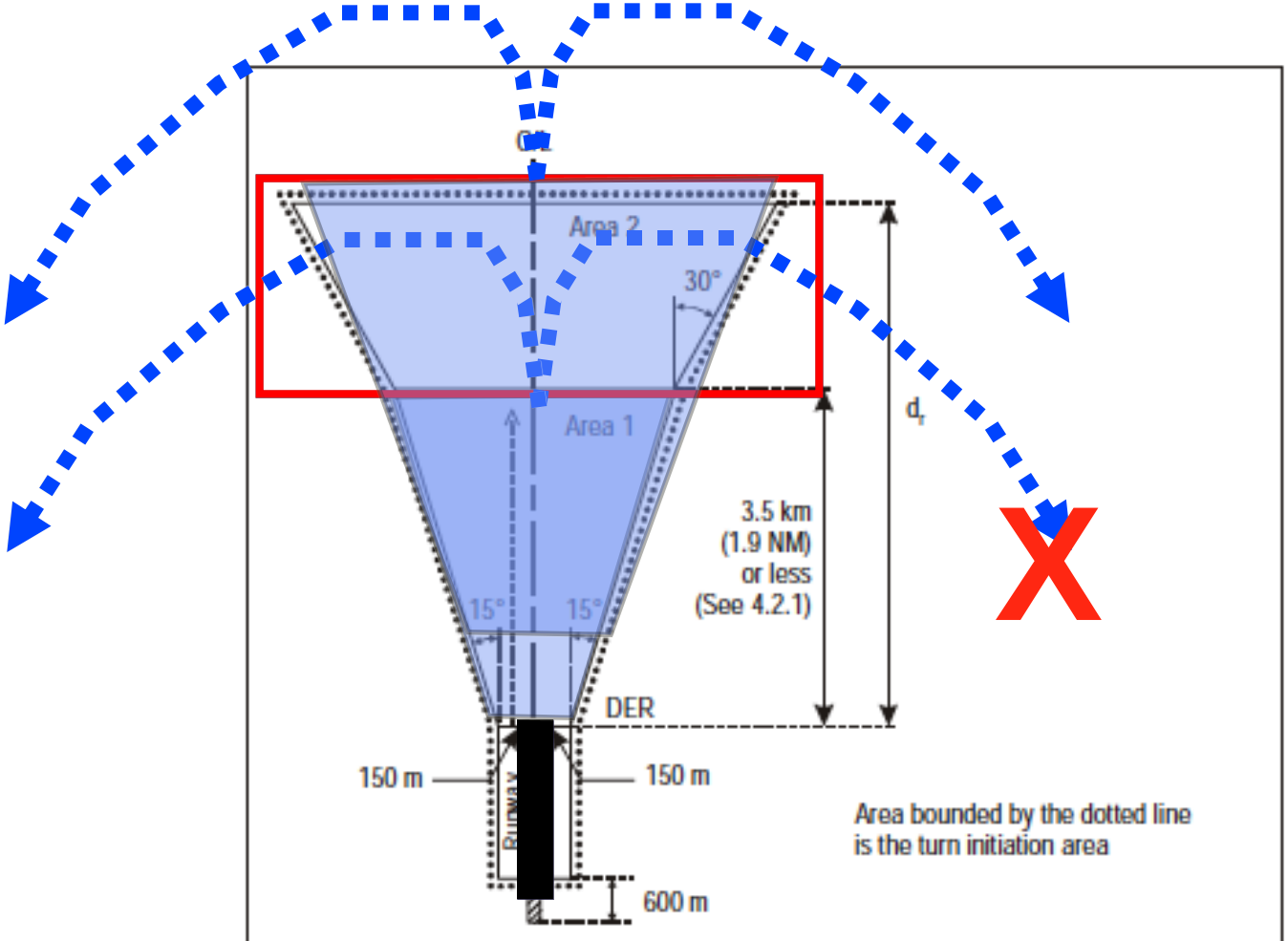
No Departure Turns East



TERPS vs. PANS-Ops

Standard Instrument Departure, PANS-Ops

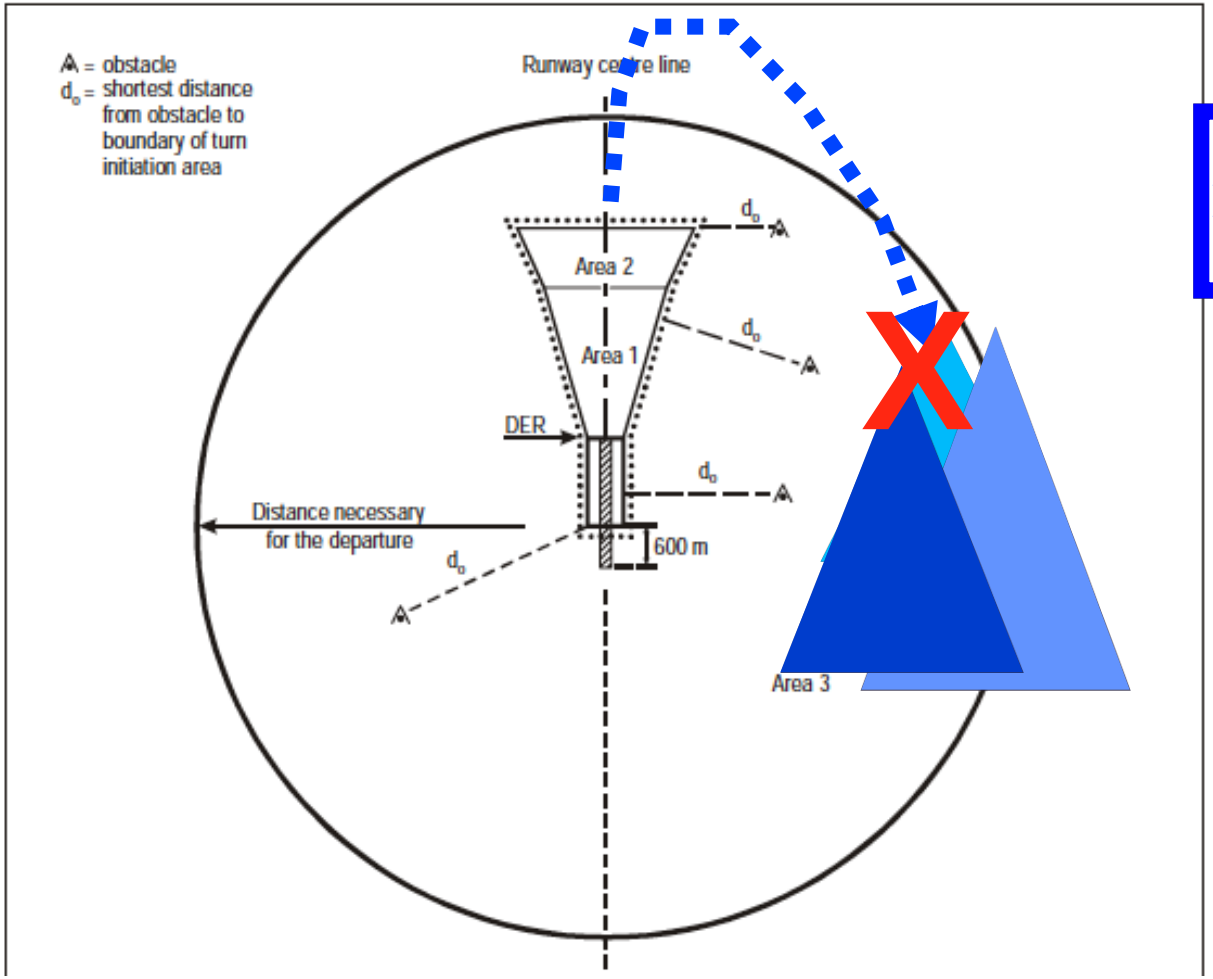
Climb in a Safe Sector



TERPS vs. PANS-Ops

Standard Instrument Departure, PANS-Ops

Climb in a Safe Sector



No Turns Eastbound

TERPS vs. PANS-Ops

Standard Instrument Departure

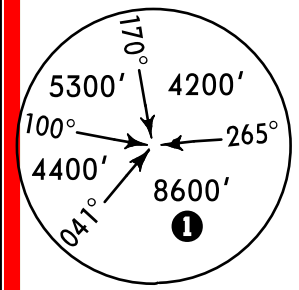
Departure Restrictions

LSZH/ZRH
ZURICH

JEPPESEN
19 SEP 14 (10-3B)

ZURICH, SWITZERLAND
SID

ZURICH Departure 125.95	*Apt Elev* 1417′	Trans level: By ATC Trans alt: 7000′ 1. When instructed contact ZURICH Departure. 2. SIDs are also noise abatement procedures. Strict adherence within the limits of aircraft performance is mandatory. 3. EXPECT close-in obstacles. 4. Turn speed limit must be adhered to during the turn even after a "DIRECT TO" clearance.



MSA
KLO VOR

1 5900′ within 17 DME

ALBIX 1C *[ALBI1C]*, ALBIX 1D *[ALBI1D]*
ALBIX 2R *[ALBI2R]*
RWYS 10, 16 DEPARTURES

SPEED: MAX 250 KT BELOW FL100

ALBIX 1D
At **KLO R-360** at or above **4000′**

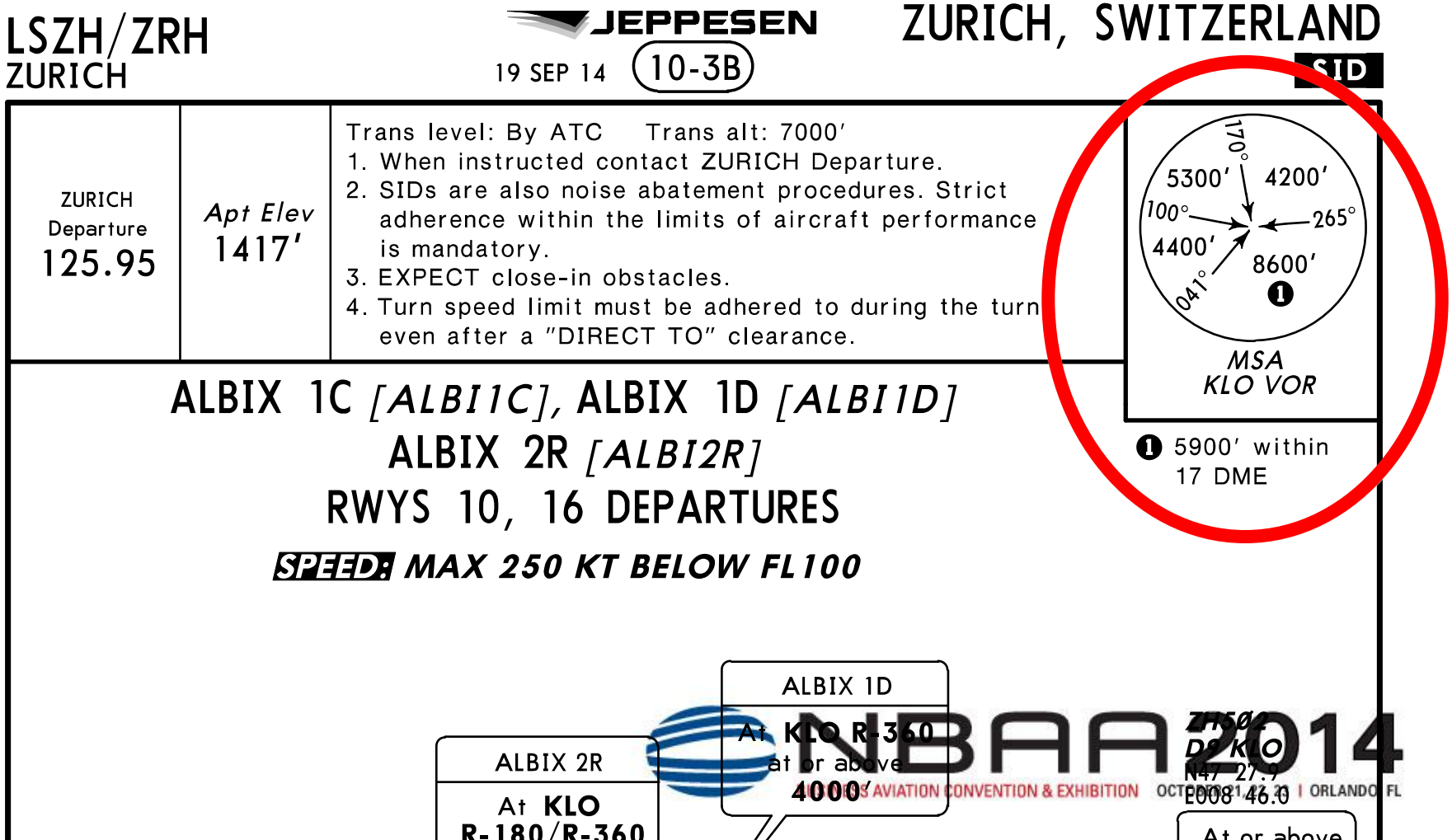
ALBIX 2R
At **KLO R-180/R-360**

ZH5Ø2
D9 KLO
N47 27.9
E008 46.0

TERPS vs. PANS-Ops

Standard Instrument Departure

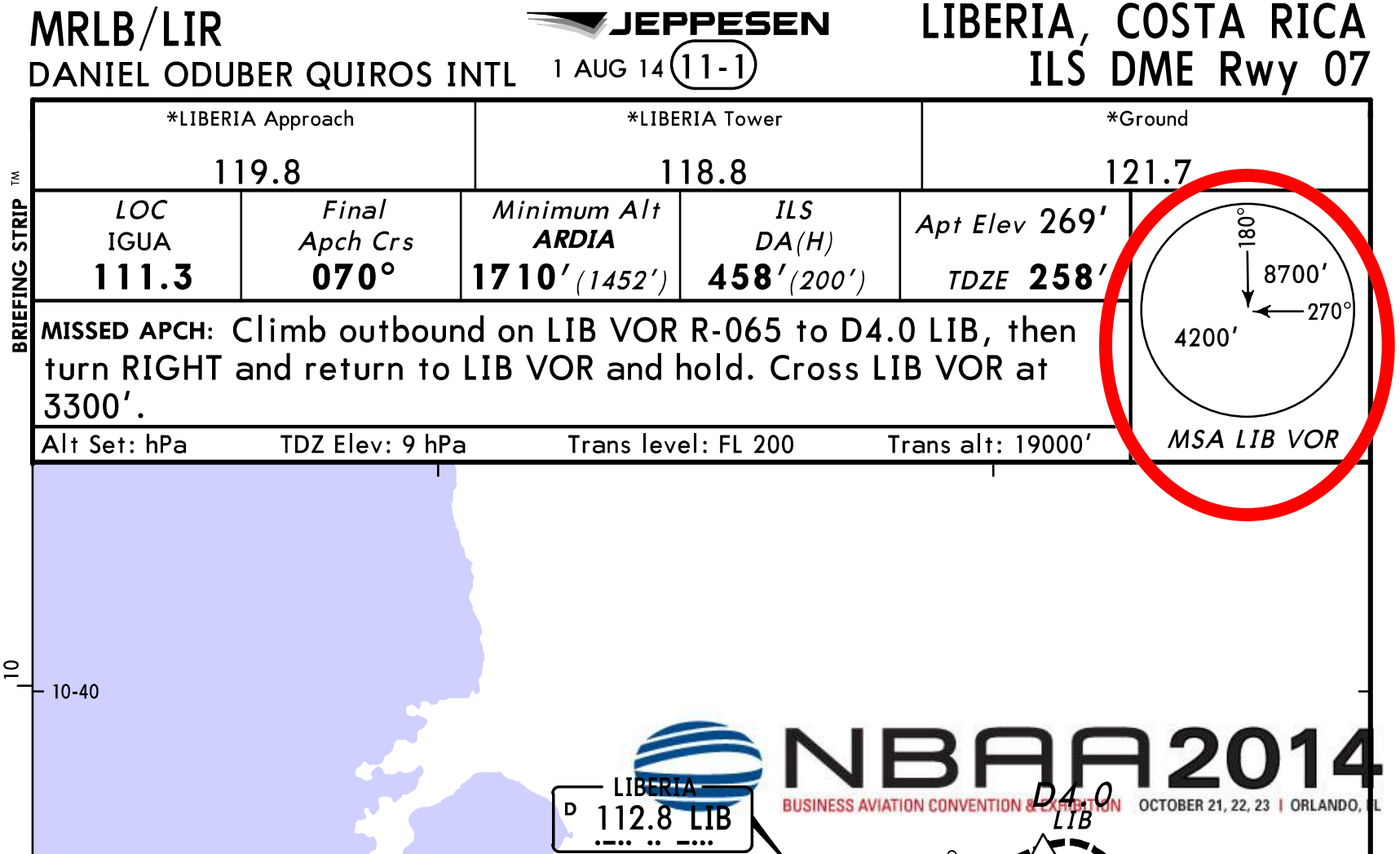
"Minimum Sector Altitude" MSA



TERPS vs. PANS-Ops

Standard Instrument Departure

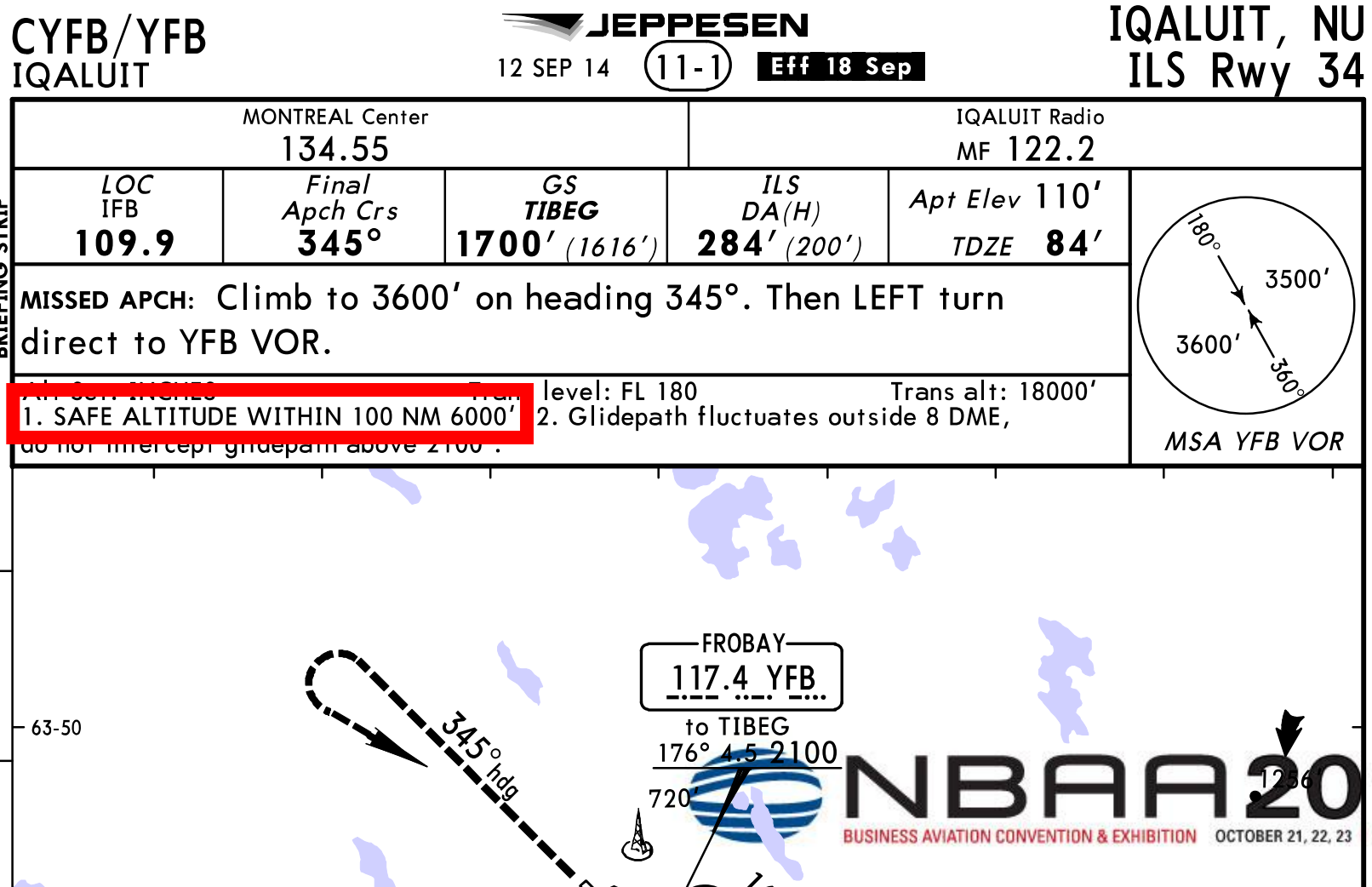
"Minimum Safe Altitude" MSA



TERPS vs. PANS-Ops

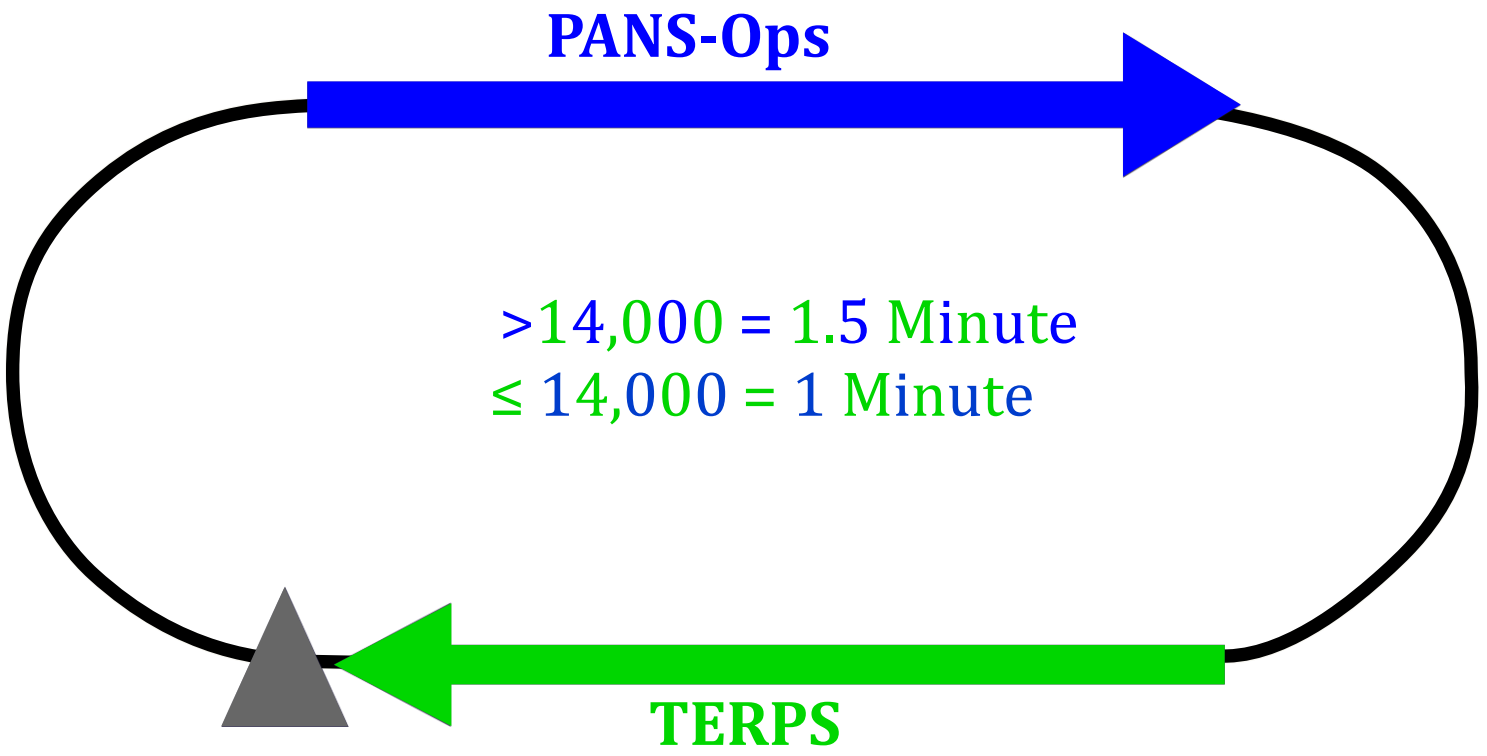
Standard Instrument Departure

"Minimum Safe Altitude" MSA PANS-Ops



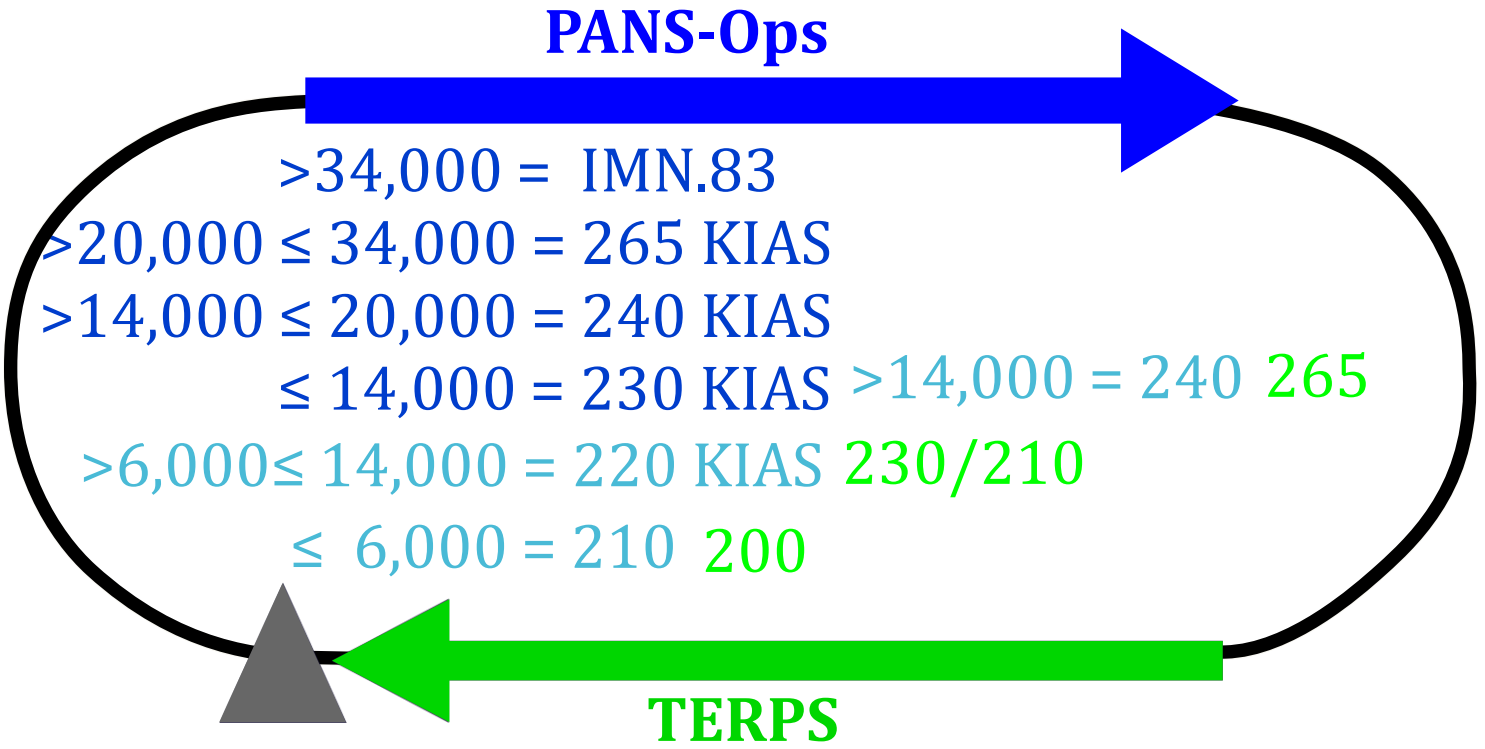
TERPS vs. PANS-Ops

Holding, Timing



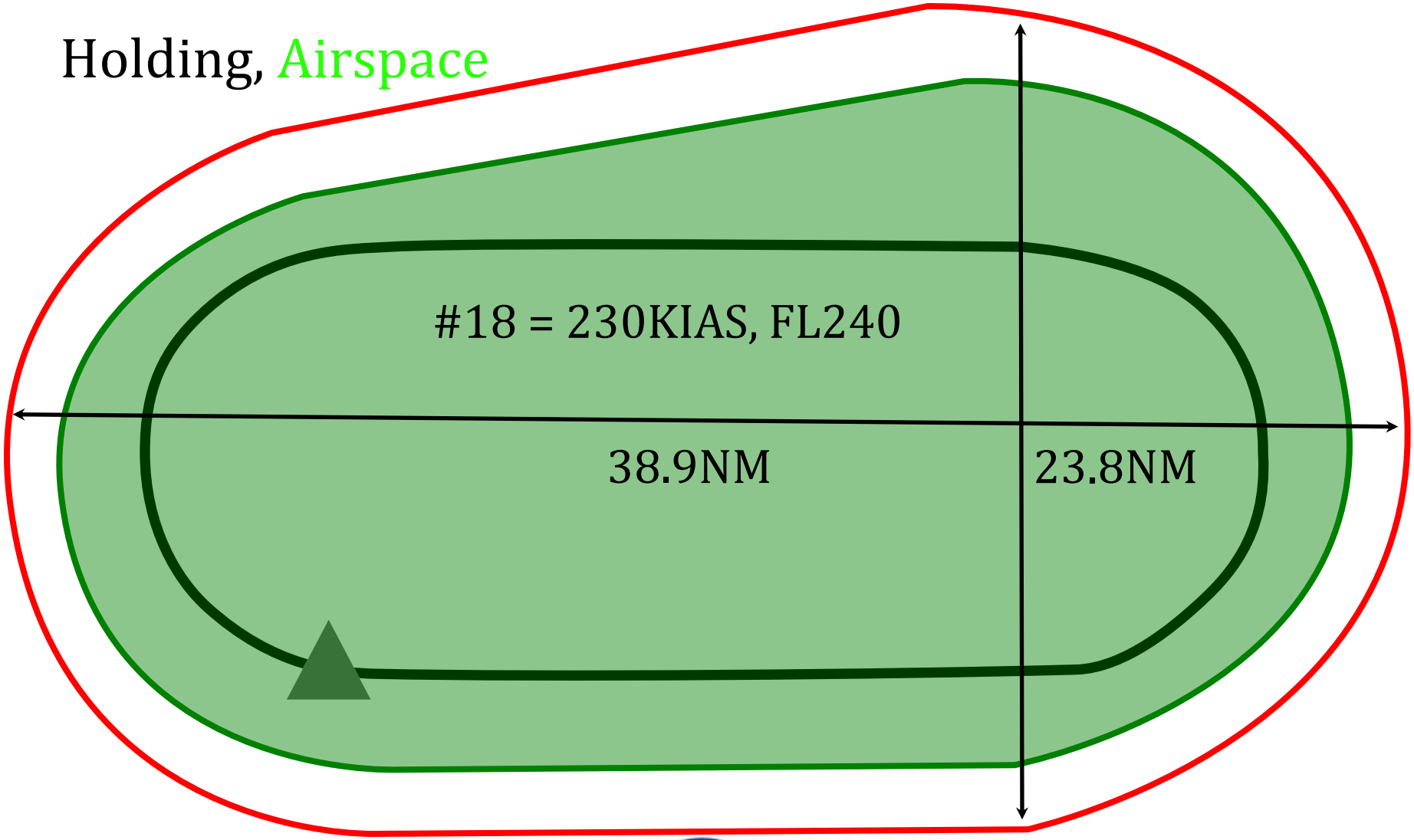
TERPS vs. PANS-Ops

Holding, Speeds



TERPS vs. PANS-Ops

Holding, Airspace



TERPS vs. PANS-Ops

Holding, Airspace

TERPS vs. PANS-Ops

Arrivals and Maneuvering Procedures

X	Definitions and Use of	X
X	Entry Procedures	X
X	Evaluated Airspace	X
X	Obstacle Clearance	X
X	Speeds	X
X	Selection of Turn	X

TERPS vs. PANS-Ops

Arrivals and Maneuvering Procedures, Speeds

3. When the approach procedure involves a procedure turn, a maximum speed of not greater than 200 knots (IAS) should be observed from first overheading the course reversal IAF through the procedure turn maneuver to ensure containment within the obstruction clearance area. Pilots should begin the outbound turn immediately after passing the procedure turn fix. The procedure turn maneuver must be executed within the distance specified in the profile view. The normal procedure turn distance is 10 miles. This may be reduced to a minimum of 5 miles where only Category A or helicopter aircraft are to be operated or increased to as much as 15 miles to accommodate high performance aircraft.

TERPS vs. PANS-Ops

Arrivals and Maneuvering Procedures, Speeds

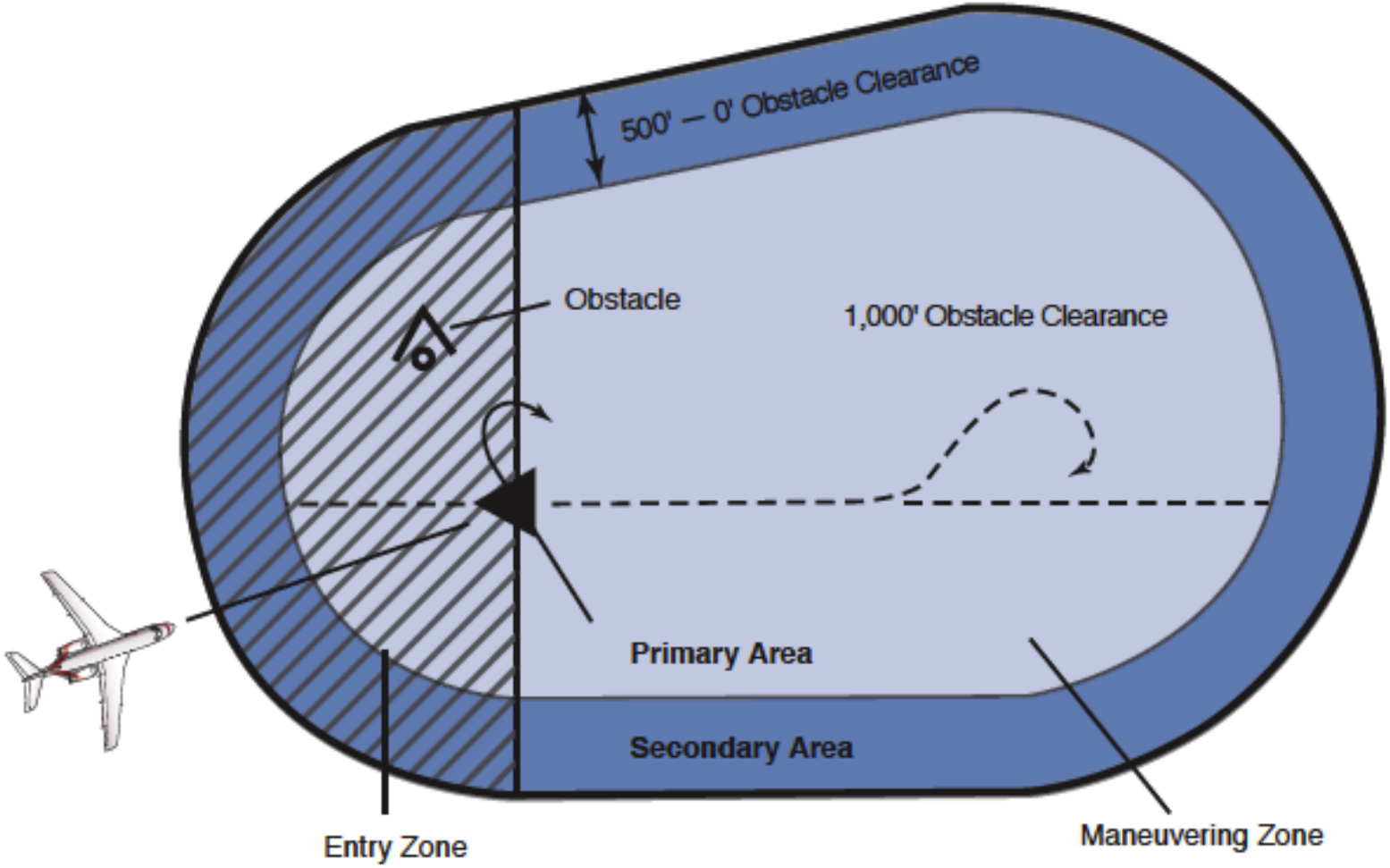
Table I-4-1-2. Speeds (IAS) for procedure calculations in knots (kt)

Aircraft category	V_{at}	*Range of speeds for initial approach*	*Range of final approach speeds*	*Max speeds for visual manoeuvring (circling)*	*Max speeds for missed approach*	
					Intermediate	*Final*
A	<91	90/150(110*)	70/100	100	100	110
B	91/120	120/180(140*)	85/130	135	130	150
C	121/140	160/240	115/160	180	160	240
D	141/165	185/250	130/185	205	185	265
E	166/210	185/250	155/230	240	230	275

TERPS vs. PANS-Ops

Arrivals and Maneuvering Procedures, TERPS

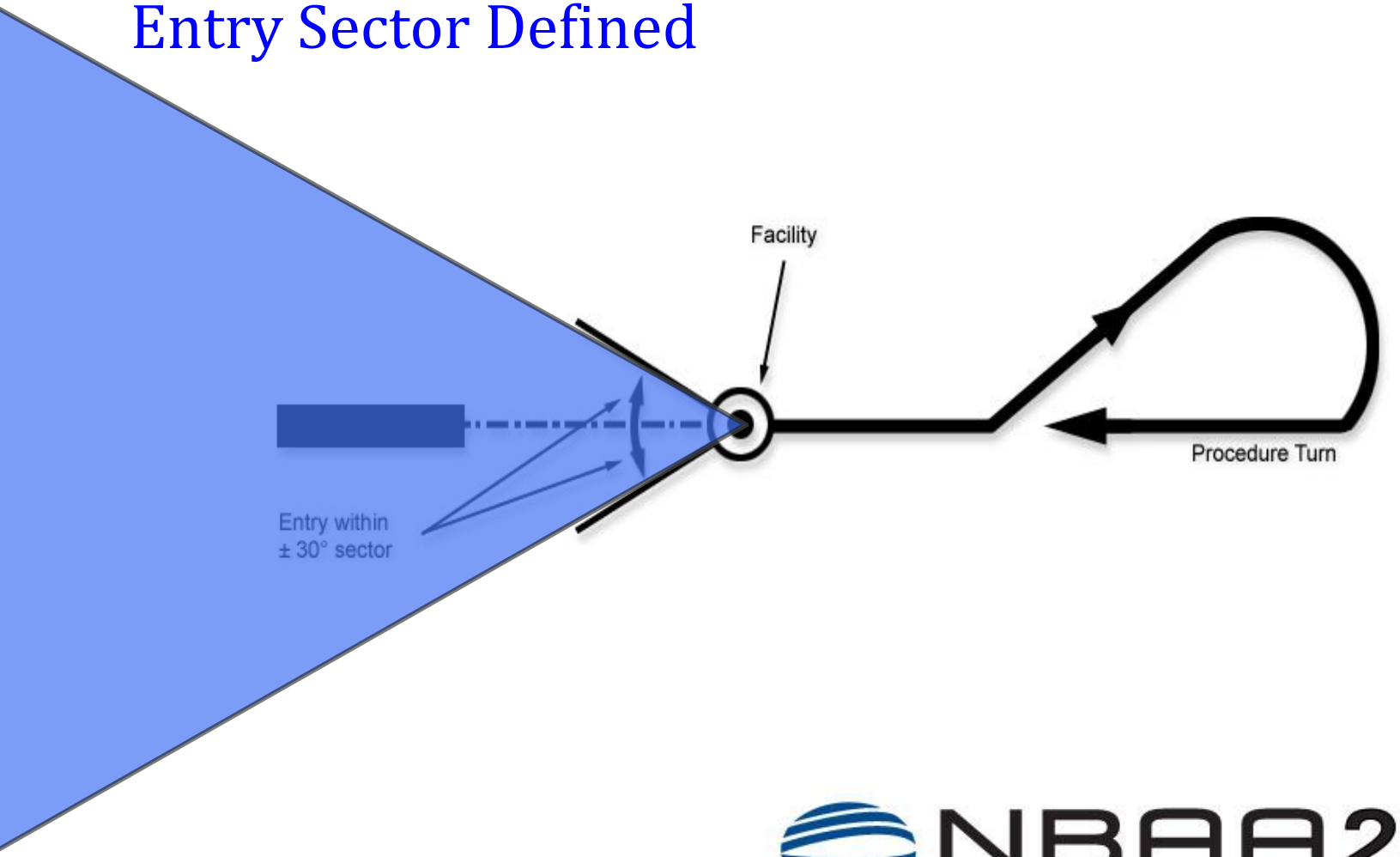
Entry Zone



TERPS vs. PANS-Ops

Arrivals and Maneuvering Procedures, PANS-Ops

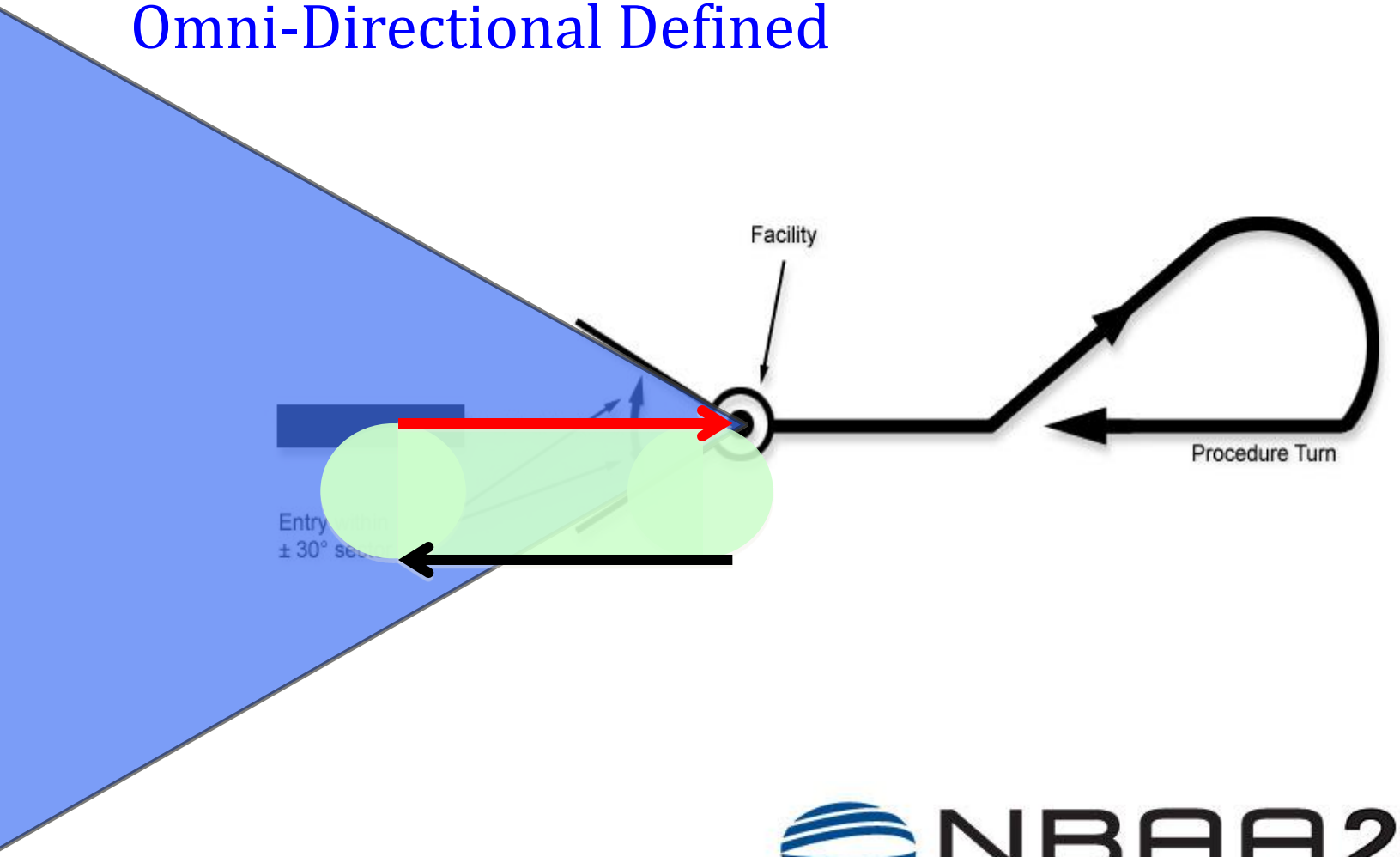
Entry Sector Defined



TERPS vs. PANS-Ops

Arrivals and Maneuvering Procedures, PANS-Ops

Omni-Directional Defined



TERPS vs. PANS-Ops

Arrivals and Maneuvering Procedures

45/180

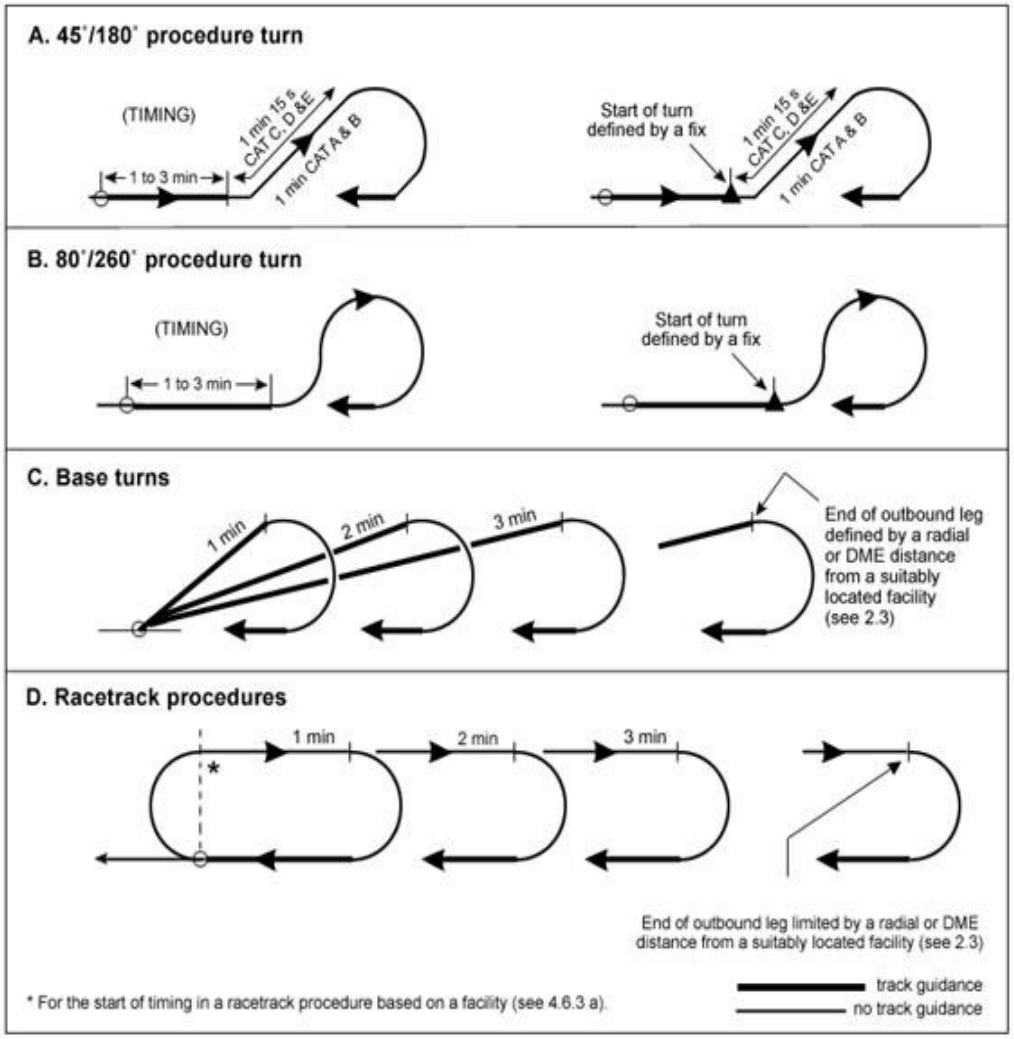
80/260

Teardrop

10 NM Limit

Holding

In lieu of



45/180

80/260

Base Turn

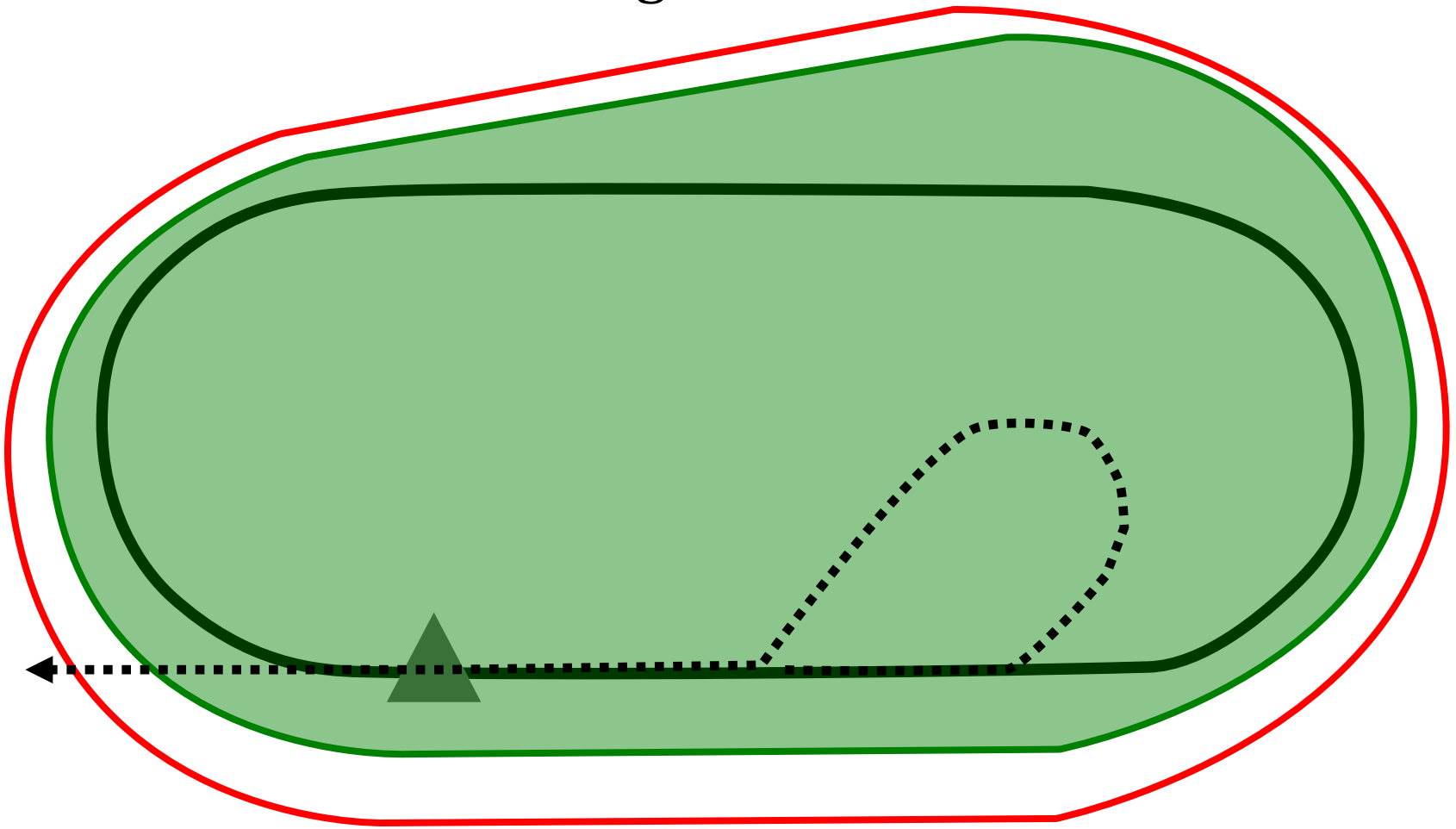
Turn point

Entry Sector

Racetrack

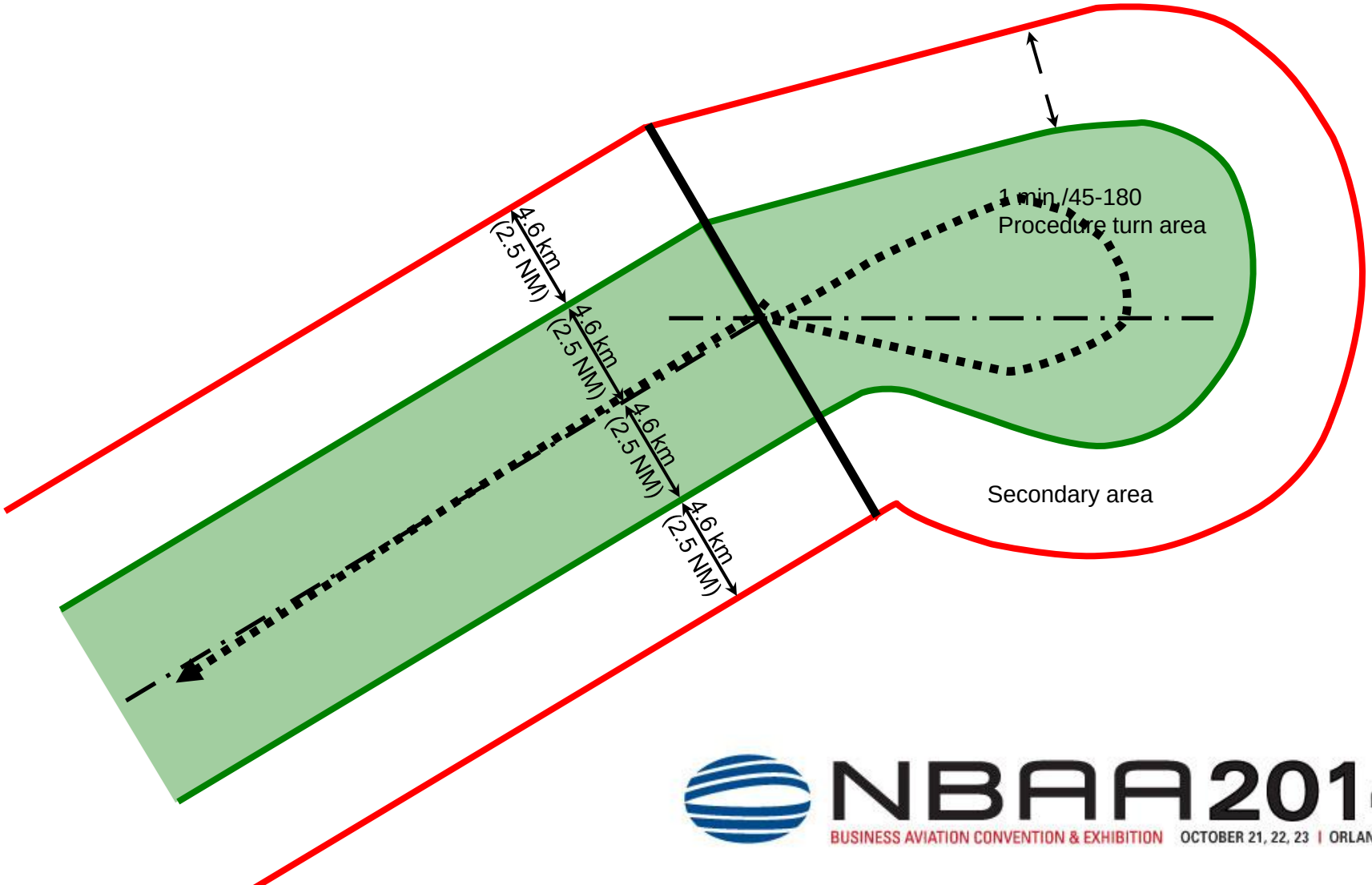
TERPS vs. PANS-Ops

Arrivals and Maneuvering Procedures



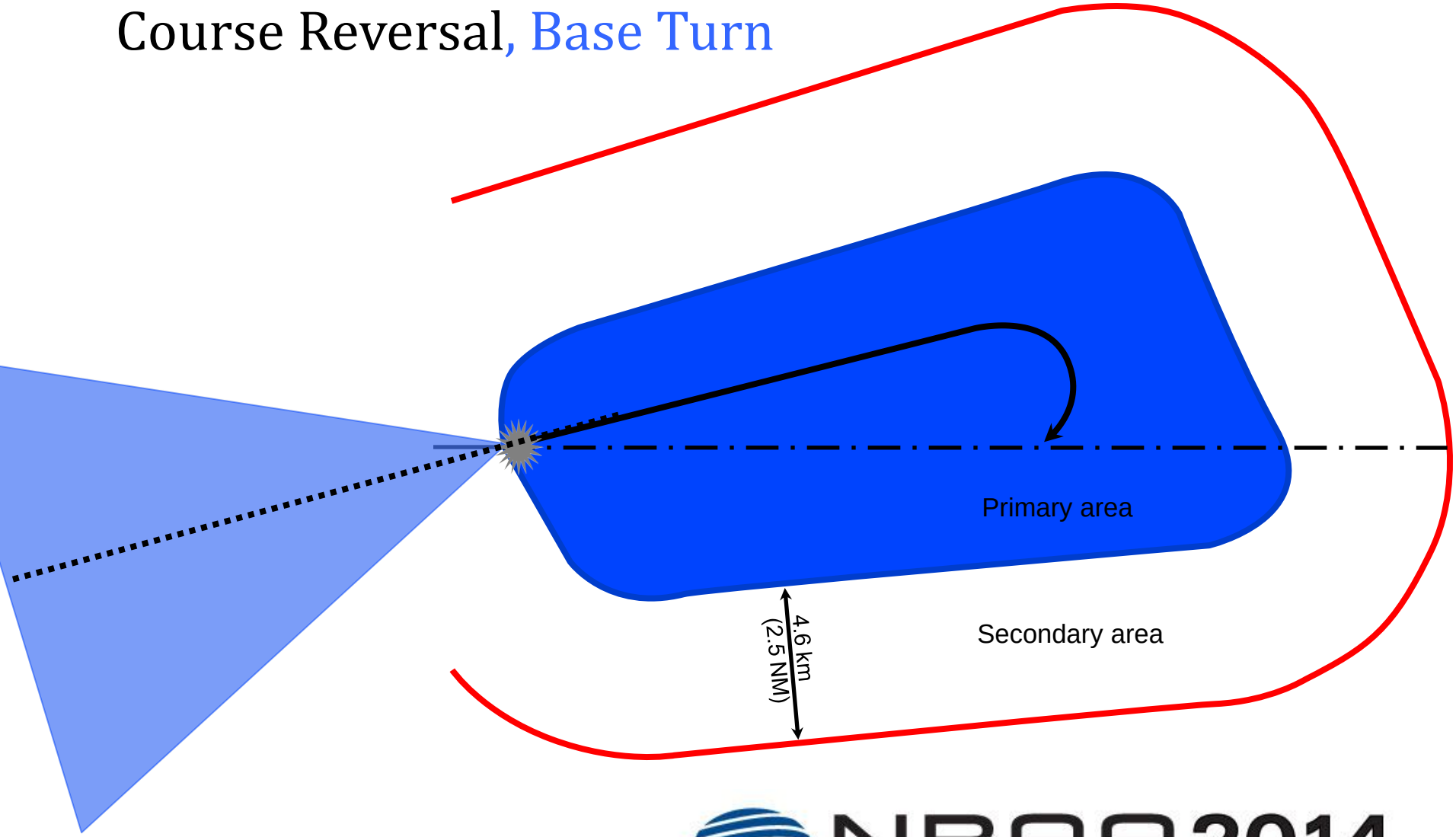
TERPS vs. PANS-Ops

Arrivals and Maneuvering Procedures



TERPS vs. PANS-Ops

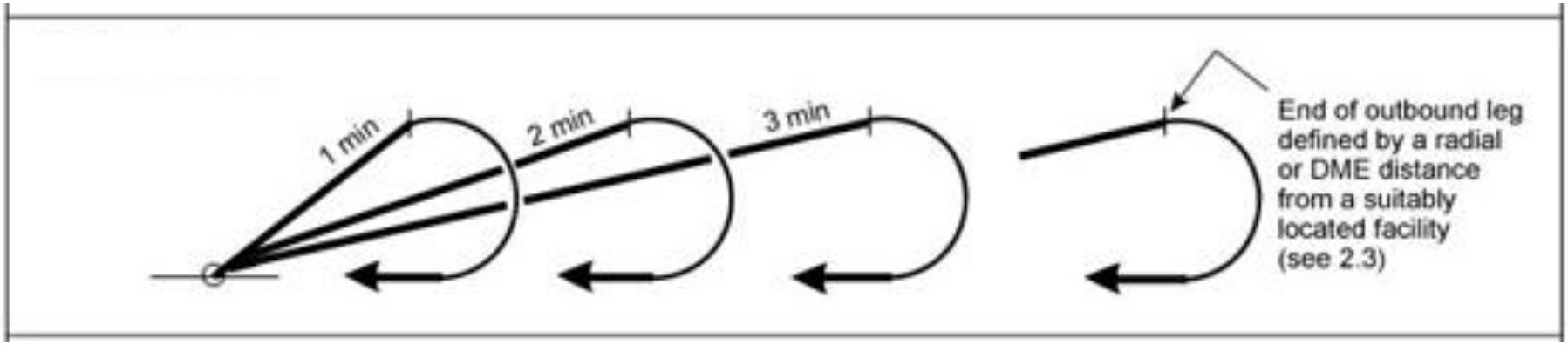
Course Reversal, Base Turn



TERPS vs. PANS-Ops

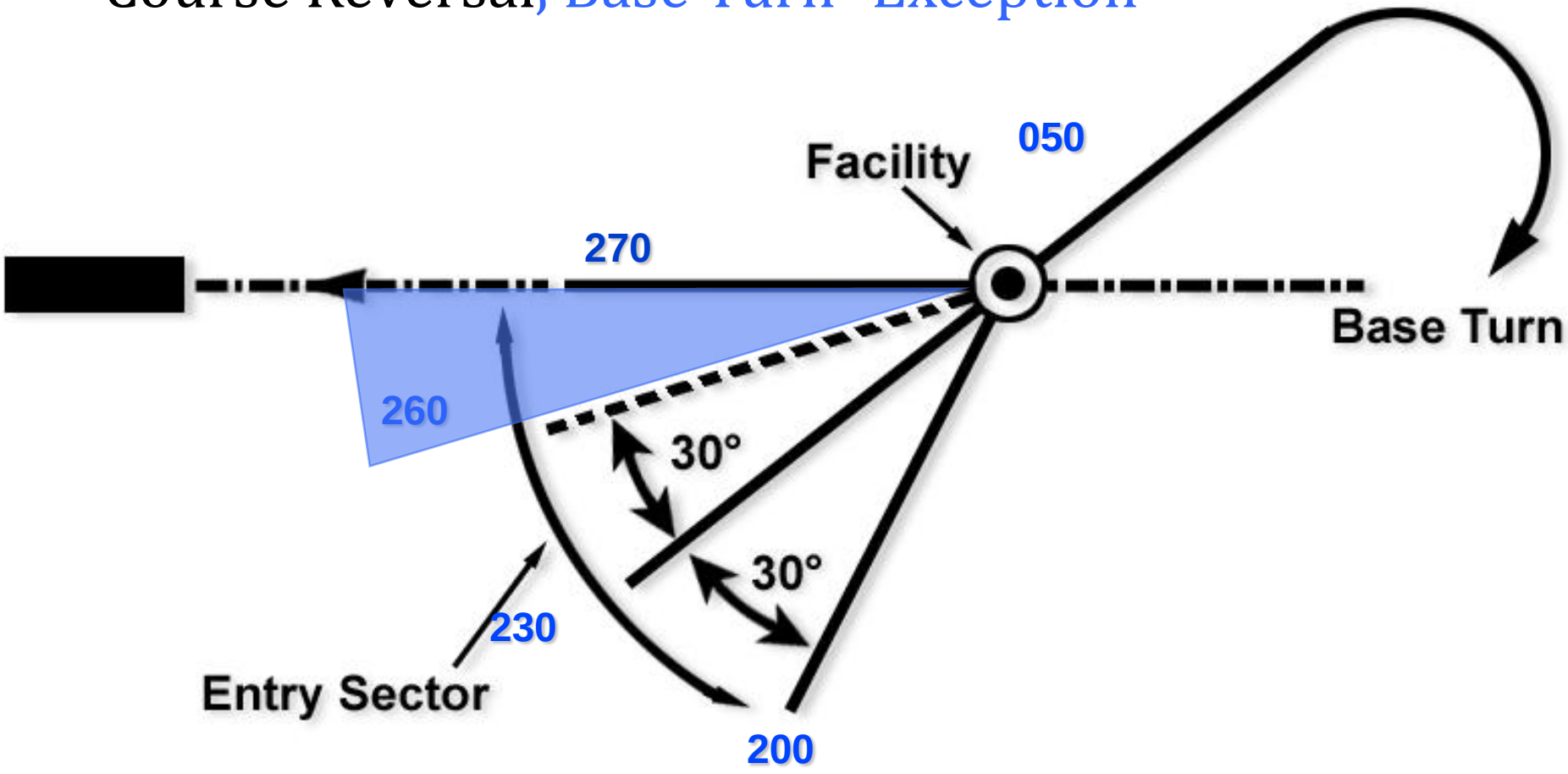
Course Reversal, Teardrop Turn

- ✓ Timing ?
- ✓ Defined Limit “10NM” ?
- ✓ Altitude Loss



TERPS vs. PANS-Ops

Course Reversal, Base Turn- Exception

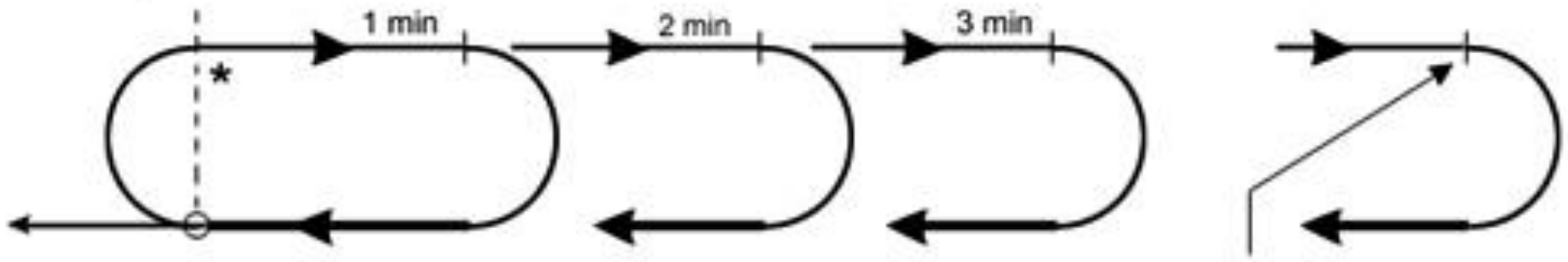


TERPS vs. PANS-Ops

Course Reversal, Racetrack

- ✓ Timing: 1 to 3 Minutes
- ✓ DME Defined
- ✓ Crossing Radial/Intersection

D. Racetrack procedures



End of outbound leg limited by a radial or DME distance from a suitably located facility (see 2.3)

track guidance

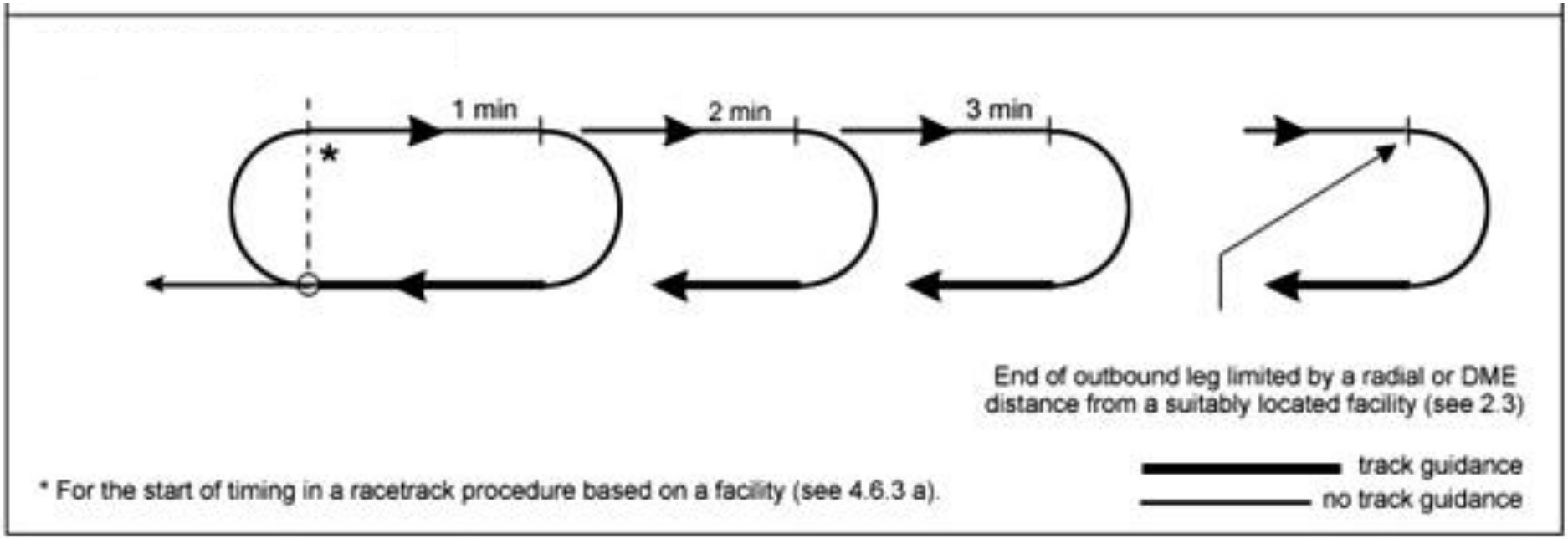
no track guidance

* For the start of timing in a racetrack procedure based on a facility (see 4.6.3 a).

TERPS vs. PANS-Ops

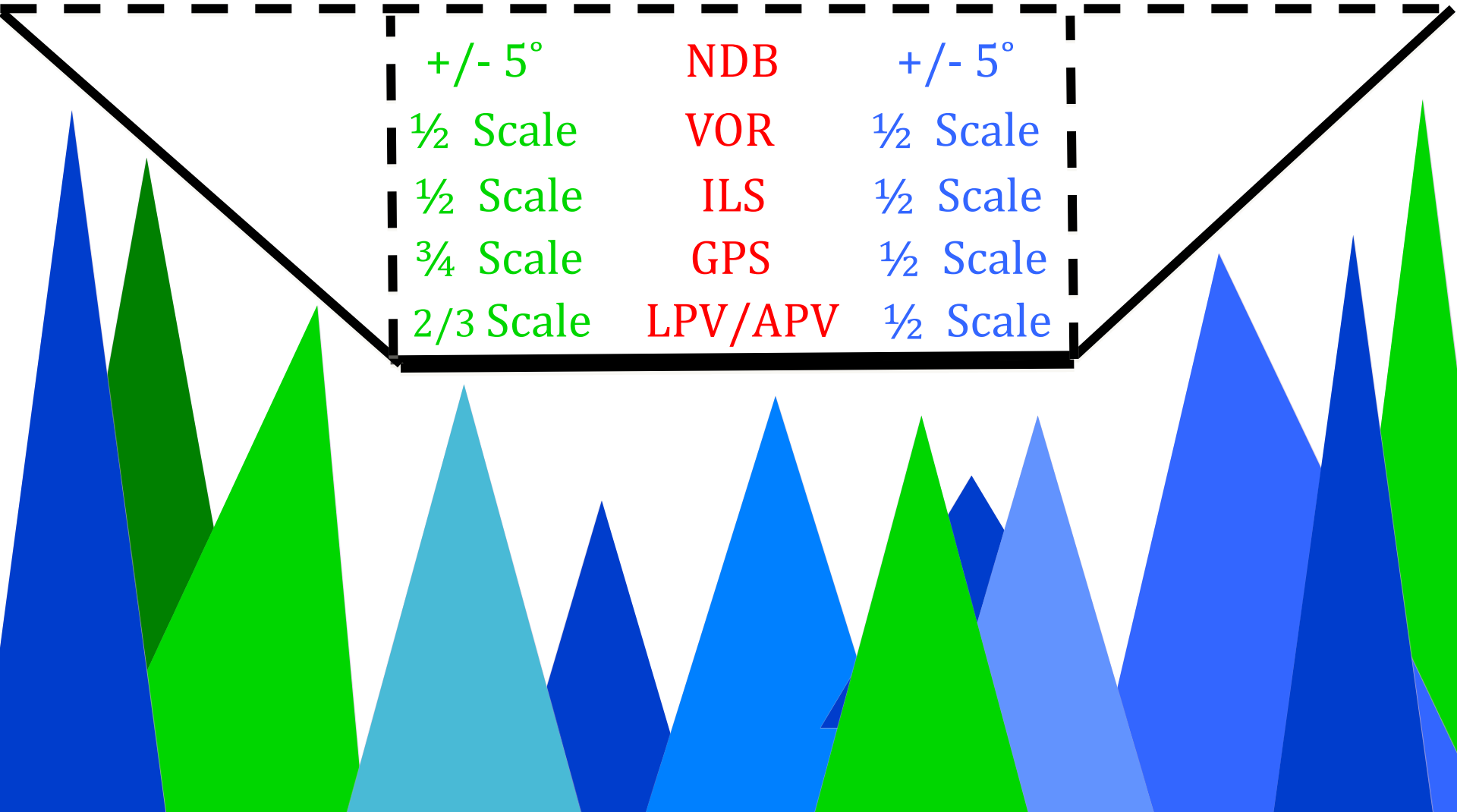
Course Reversal, Holding in Lieu of

- ✓ Timing: 1 to 3 Minutes
- ✓ DME Defined
- ✓ Crossing Radial/Intersection



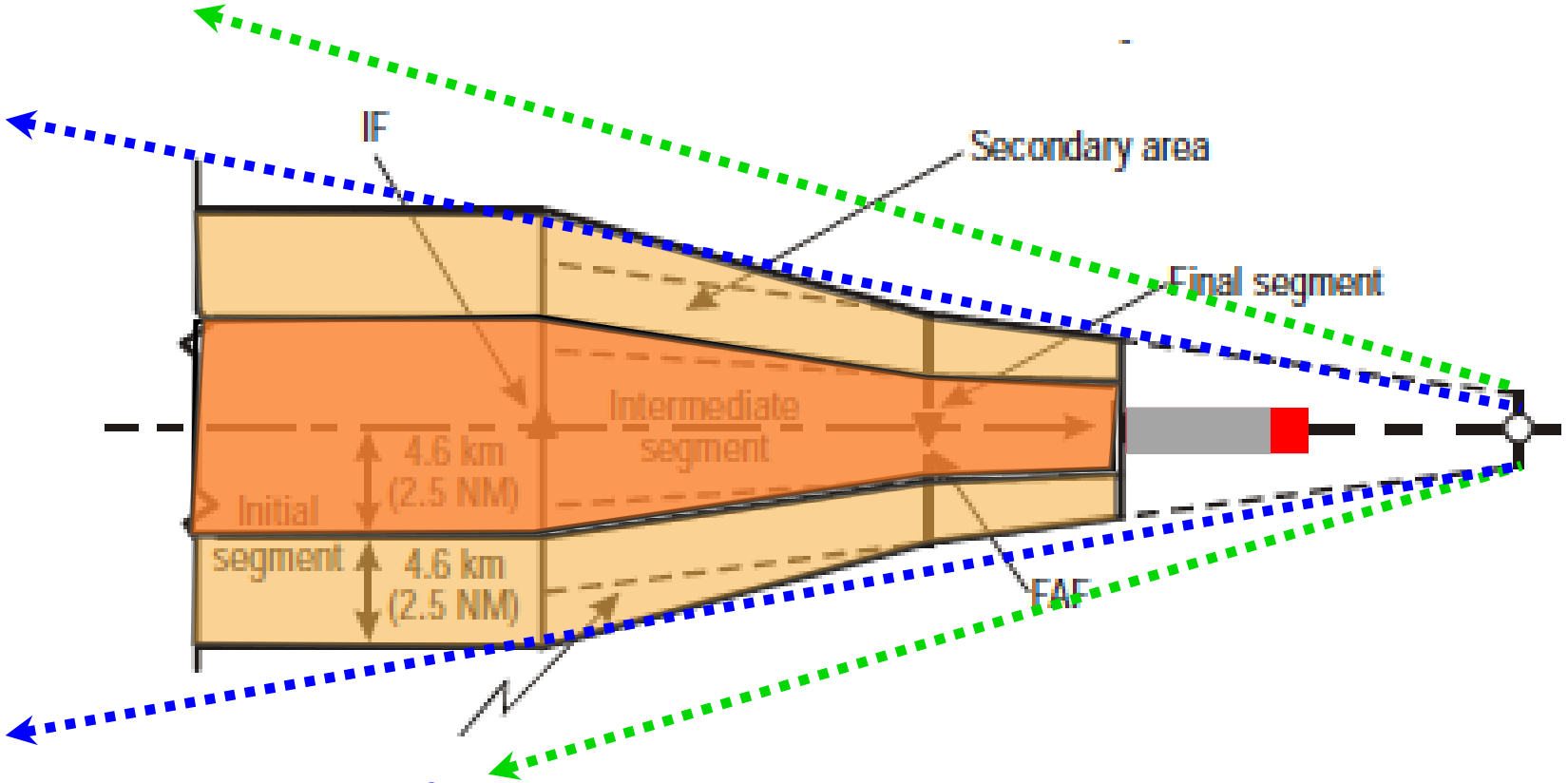
TERPS vs. PANS-Ops

Procedure Course Tracking, @ End of Final Approach



TERPS vs. PANS-Ops

Evaluated Airspace Final Segment, Non-Precision/2D



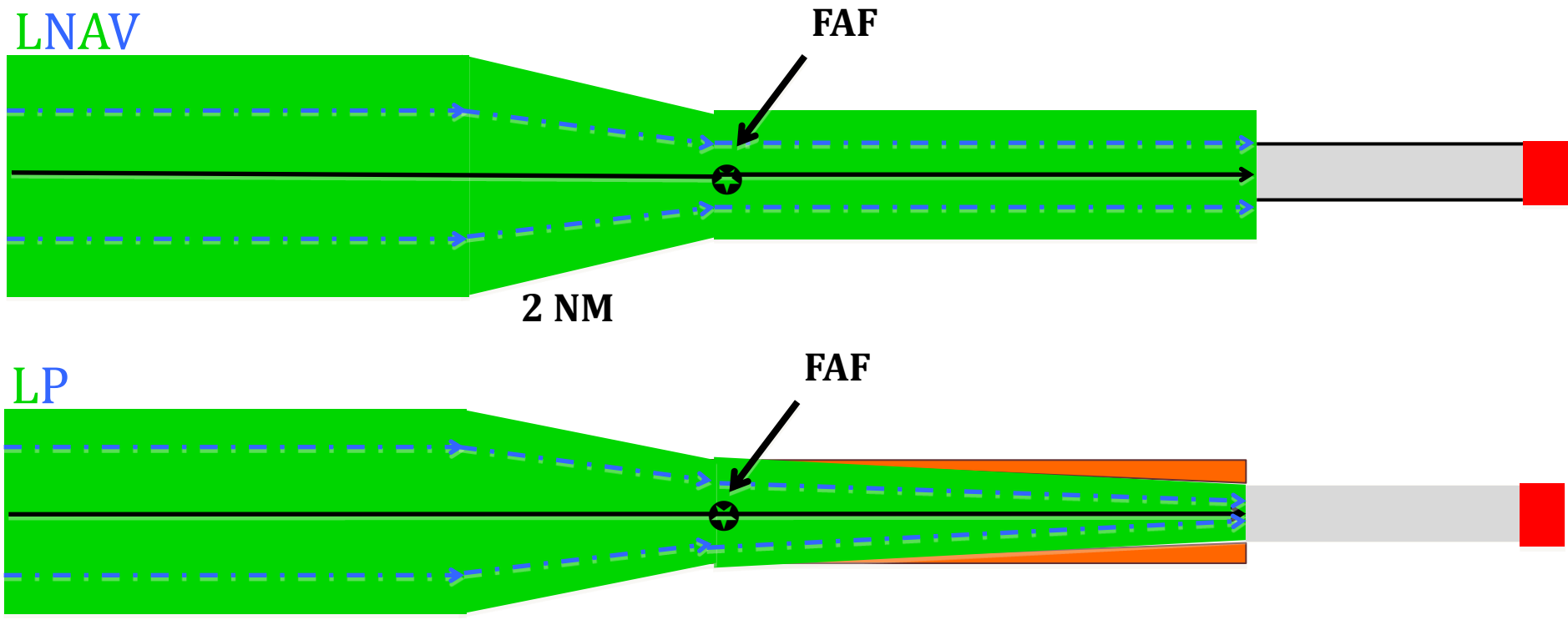
VOR = 7.8° SPLAY

NDB = 10.3° SPLAY

VOR/NDB = 14.29° SPLAY

TERPS vs. PANS-Ops

Evaluated Airspace Final Segment, Non-Precision/2D



VOR = 7.8° SPLAY

NDB = 10.3° SPLAY

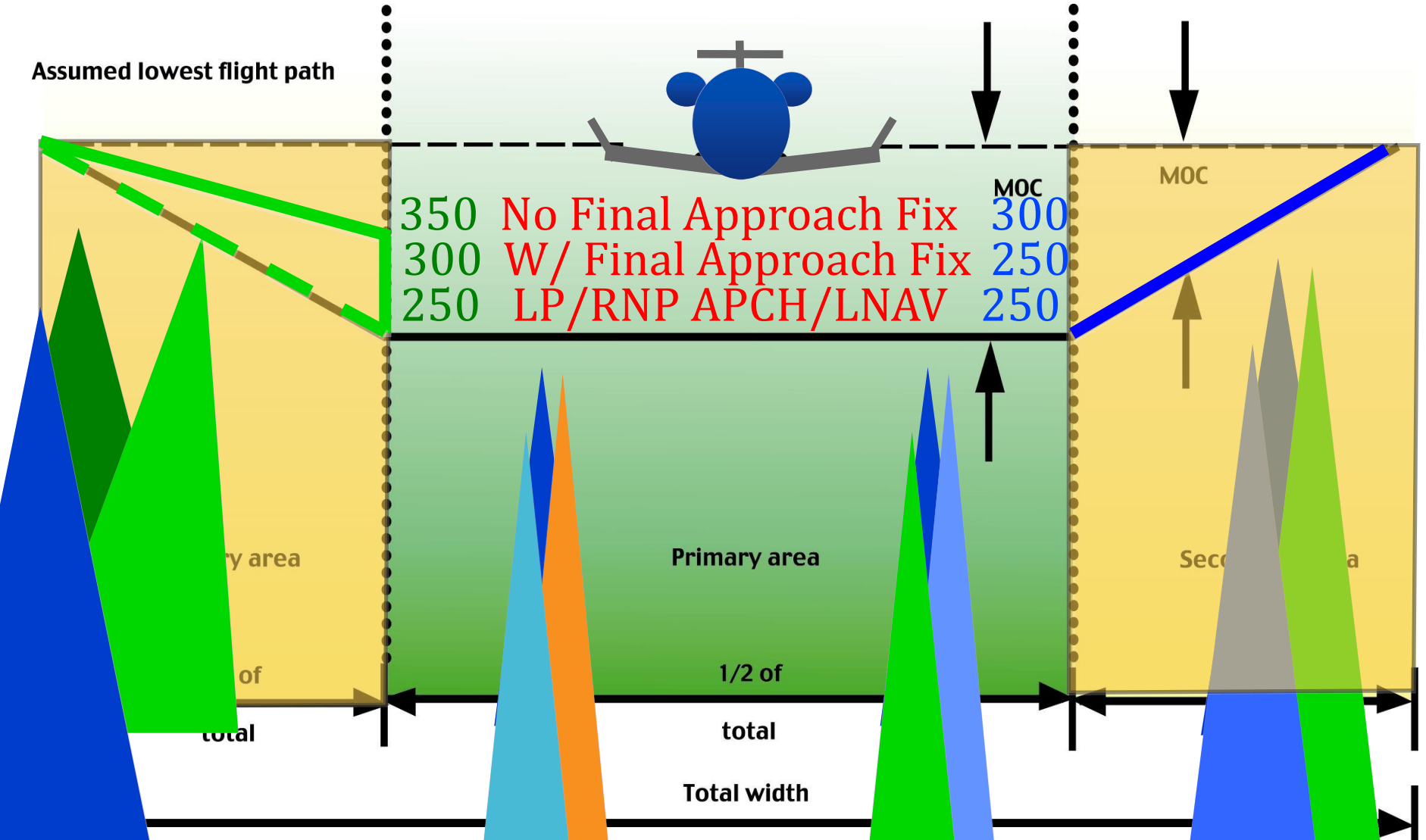
VOR/NDB = 14.29° SPLAY

LNAV = RNP X 2/RNP X 2

LP = Taper/Taper

TERPS vs. PANS-Ops

Approach Procedures, MDA (H)



TERPS vs. PANS-Ops

ILS Approach and RNP Compared

ILS/ILS		LPV/APV
X	Definition of	X
X	Use for	X
X	Evaluated Airspace	X
X	OCA/ROC	X
X	Speeds	X
X	Visual Aids and Cues	X
_	EVS	_

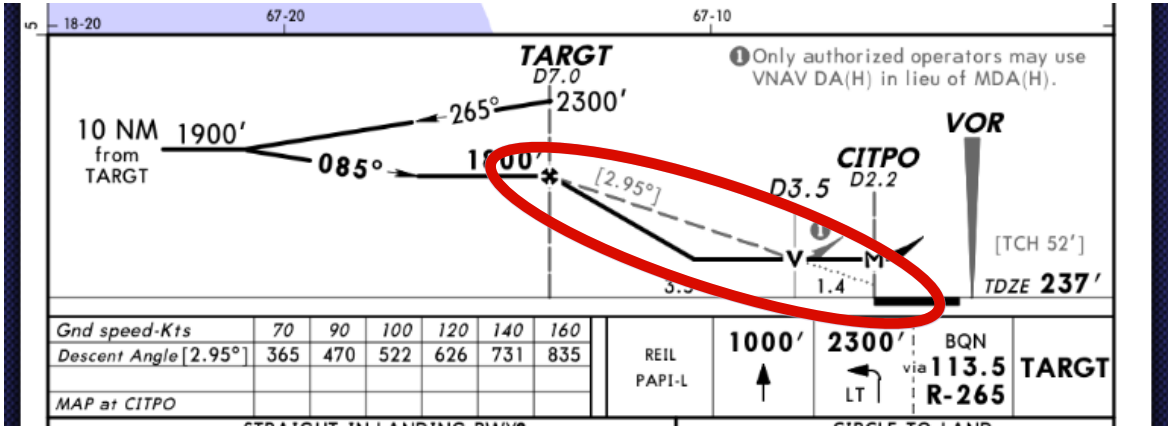
TERPS vs. PANS-Ops

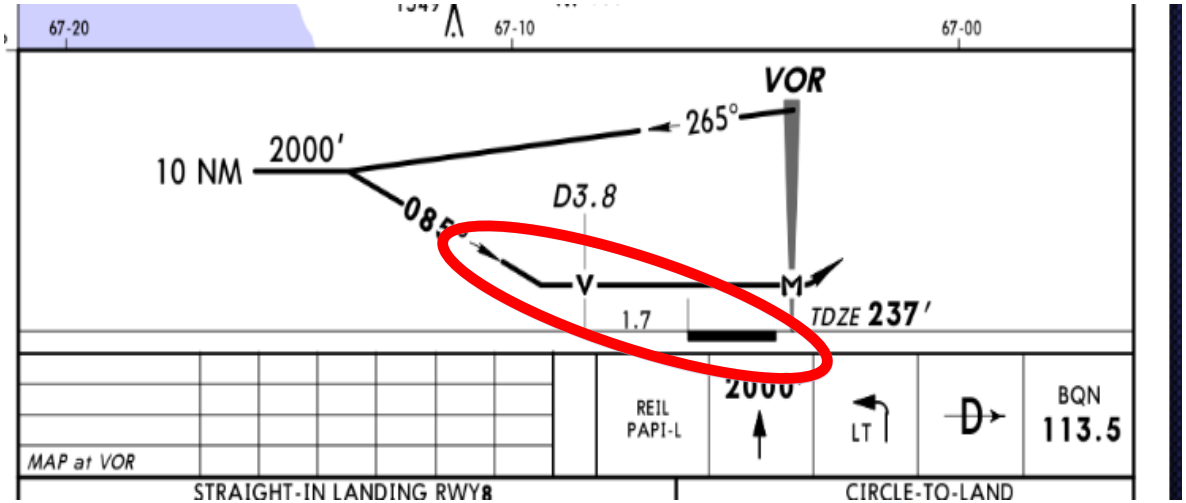
Visual Approaches

X	Definition of	X
X	Use for	X
X	Evaluated Airspace	X
X	OCA/ROC	X
X	Speeds	X
X	Visual Aids and Cues	X

TERPS vs. PANS-Ops

IAP Approach Protected Airspace

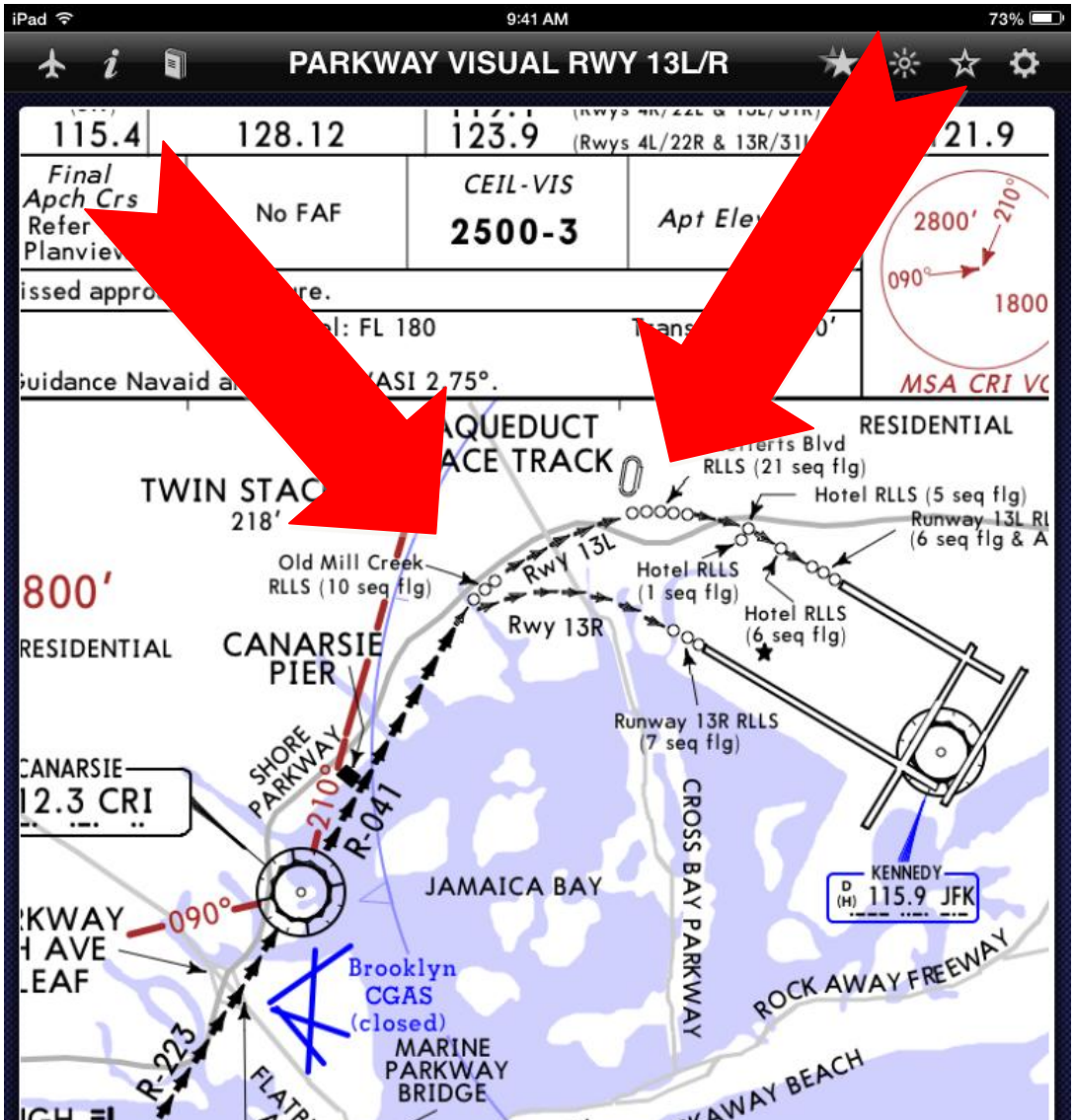




Visual Approach Protected Airspace ?

TERPS vs. PANS-Ops

Visual Approaches vs. Visual w/ Ground Track



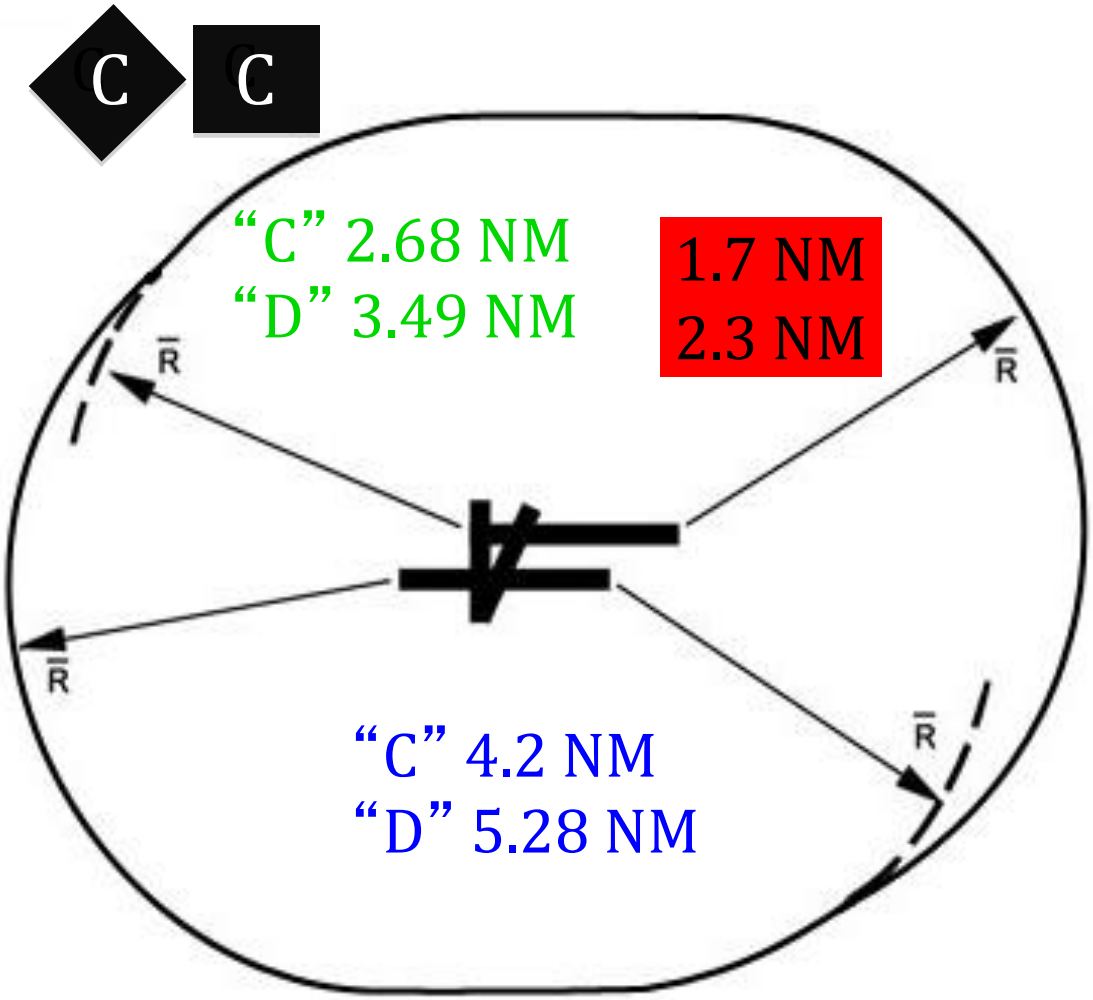
TERPS vs. PANS-Ops

Visual Maneuvering vs. Circle-to-Land

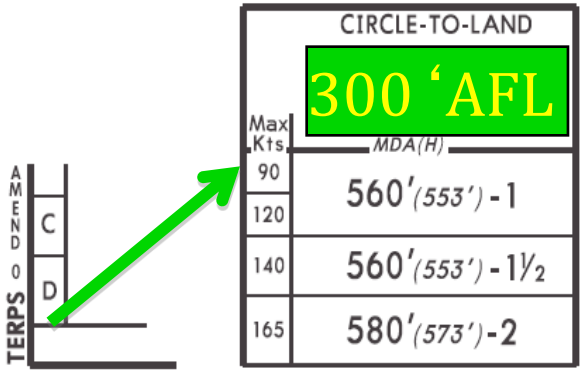
X	Definition of	X
X	Use for	X
X	Evaluated Airspace	X
X	OCA/ROC	X
X	Speeds	X
X	Visual Aids and Cues	X
X	MDA vs. Descent Point	X

TERPS vs. PANS-Ops

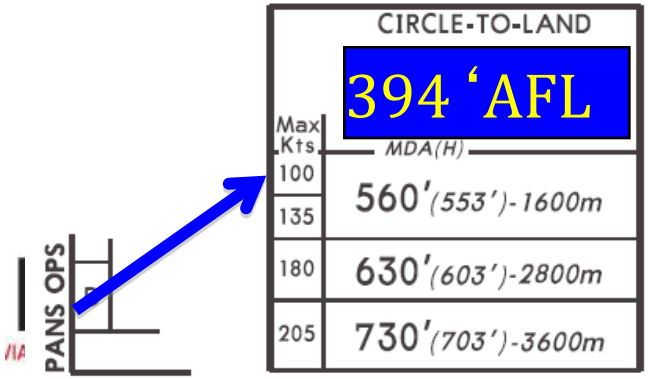
Circling Approaches and Maneuvering



U.S. Standard for Terminal Instrument Procedures (TERPS)



ICAO Procedures for Air Navigation Services – Aircraft Operations (PANS OPS)



TERPS vs. PANS-Ops

Circling Approaches and Maneuvering

Pans-Ops

Acft Cat	Min Vis	MOC/HAA	Max Spd/ºAOB	2xR + Straight
C	2.0 NM	394/ 591 ft	180 KIAS/20º	3.70+.5 = **4.20 NM**
D	2.5 NM	394/ 689 ft	205 KIAS/20º	4.68+.6 = **5.28 NM**

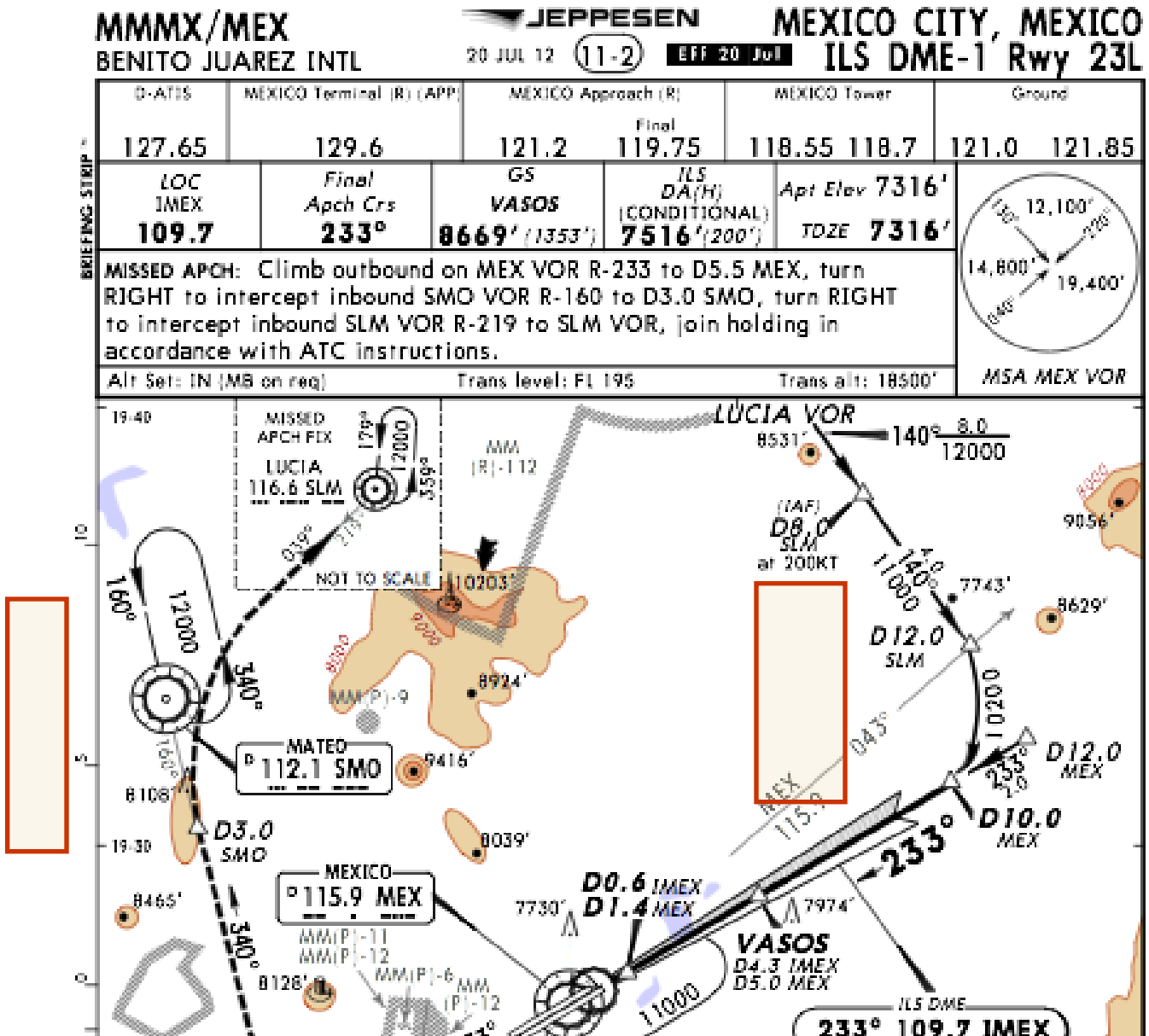
TERPS

Acft Cat	Min Vis	ROC/HAA	Max Speed/ºAOB	OEA Radius + Straight=CAR*
C	1½ SM	300/ 450 ft	145 KIAS/20º	2.68+.5 = **3.18 NM**
D	2.0 SM	300/ 550 ft	165 KIAS/20º	3.49+.6 = **4.09 NM**

With Change #21 and later, At 2000ʼMSL, ISA Standard and 25KTS of added wind. Visibility in Statue Miles

OEA= Obstacle Evaluated Area, CAR= Circling Area Radius (1.3NM Minimum)

TERPS vs. PANS-Ops



and the organization of air traffic services are in conformity with ICAO Standards, Recommended Practices and Procedures.

Units of measurement used in air and ground operations are as listed in the following table.

MEASUREMENT OF	UNIT
Distance used in navigation, position reporting, etc. (Generally more than 2 NM)	Nautical Miles and tenths of NM
Relatively short distances such as those relating to airport (e.g., runway lengths)	Meters/Feet
Altitudes, elevations and heights	Meters/Feet
Vertical speed	Feet Per Minute
Wind direction for landing and taking off	Degrees Magnetic
Visibility, including runway visual range	Statute Miles / Meters
Altimeter setting	Hectopascals, Millibars or Inches of Mercury
Temperature	Degrees Celsius (Centigrade)
Weight	Metric Tons / Kilograms / Pounds
Time	Hours and Minutes, the day of 24 hours beginning at midnight UTC

FLIGHT PROCEDURES

HOLDING

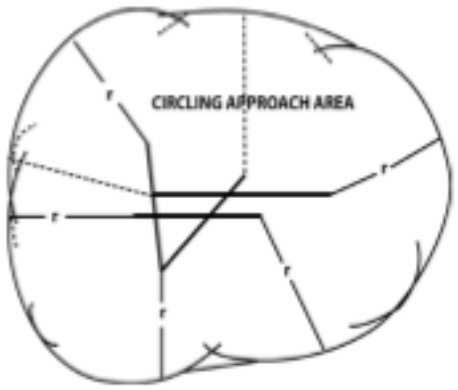
Maximum Speeds

a. Propeller-driven aircraft to 14,000' – 170 KIAS
b. Propeller-driven aircraft above 14,000' – 175 KIAS
c. Turbo-Jet aircraft to 6000' – 200 KIAS
d. Turbo-Jet above 6000' to 14,000' – 210 KIAS
e. Turbo-jet above 14,000' – 230 KIAS

In general, holding pattern circuits are limited to one minute outbound.

PROCEDURE LIMITATIONS AND OPTIONS

Instrument approach procedures are based on those contained in PANS-OPS Document 8168.



Radii (r) defining size of areas, vary with the approach category.

APPROACH CATEGORY	RADIUS (NAUTICAL MILES)
A	1.3
B	1.5
C	1.7
D	2.3
E	4.5

A minimum obstacle clearance of 300' is provided within the circling approach area.

Aircraft Speed Restrictions

Maximum speed 250 KIAS:

a. Aircraft operating under VFR;
b. Aircraft operating under IFR:
   1. below 10,000' in the national airspace;
   2. within 30 NM from any airport at or below 10,000' AGL of the airport elevation.

Maximum speed 200 KIAS:

– Aircraft operating under IFR within 10 NM of an aerodrome when below 3000' AGL above that aerodromes elevation.

Aircraft operating under IFR shall not exceed those speeds established for descent, climb and holding procedures.

When Radar Control is provided, adjusted speeds will not exceed those stipulated by ATC.

AIRPORT OPERATING MINIMUMS

Mexico publishes DH(HAT), MDA(HAT or HAA) and visibility for landing. Ceiling and visibility are published for take-off and alternate.

Jeppesen charted minimums are not below State minimums.

MEXICO — RULES AND PROCEDURES

GENERAL

In general, the air traffic rules and procedures in force and the organization of air traffic services are in conformity with ICAO Standards, Recommended Practices and Procedures.

Units of measurement used in air and ground operations are as listed in the following table.

MEASUREMENT OF	UNIT
Distance used in navigation, position reporting, etc. (Generally more than 2 NM)	Nautical Miles and tenths of NM
Relatively short distances such as those relating to airport (e.g., runway lengths)	Meters/Feet
Altitudes, elevations and heights	Meters/Feet
Vertical speed	Feet Per Minute
Wind direction for landing and taking off	Degrees Magnetic
Visibility, including runway visual range	Statute Miles / Meters
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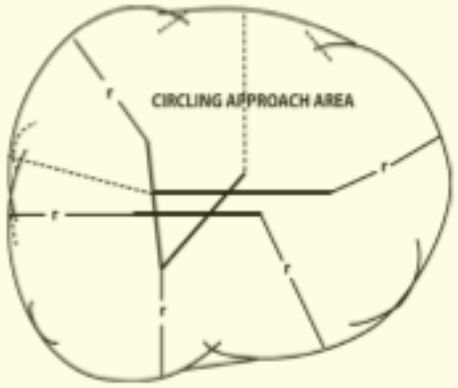
a. Propeller-driven aircraft to 14,000' – 170 KIAS
b. Propeller-driven aircraft above 14,000' – 175 KIAS
c. Turbo-Jet aircraft to 6000' – 200 KIAS
d. Turbo-Jet above 6000' to 14,000' – 210 KIAS
e. Turbo-jet above 14,000' – 230 KIAS

In general, holding pattern circuits are limited to one

Circling Approach Area



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When Radar Control is provided, adjusted speeds will not exceed those stipulated by ATC.

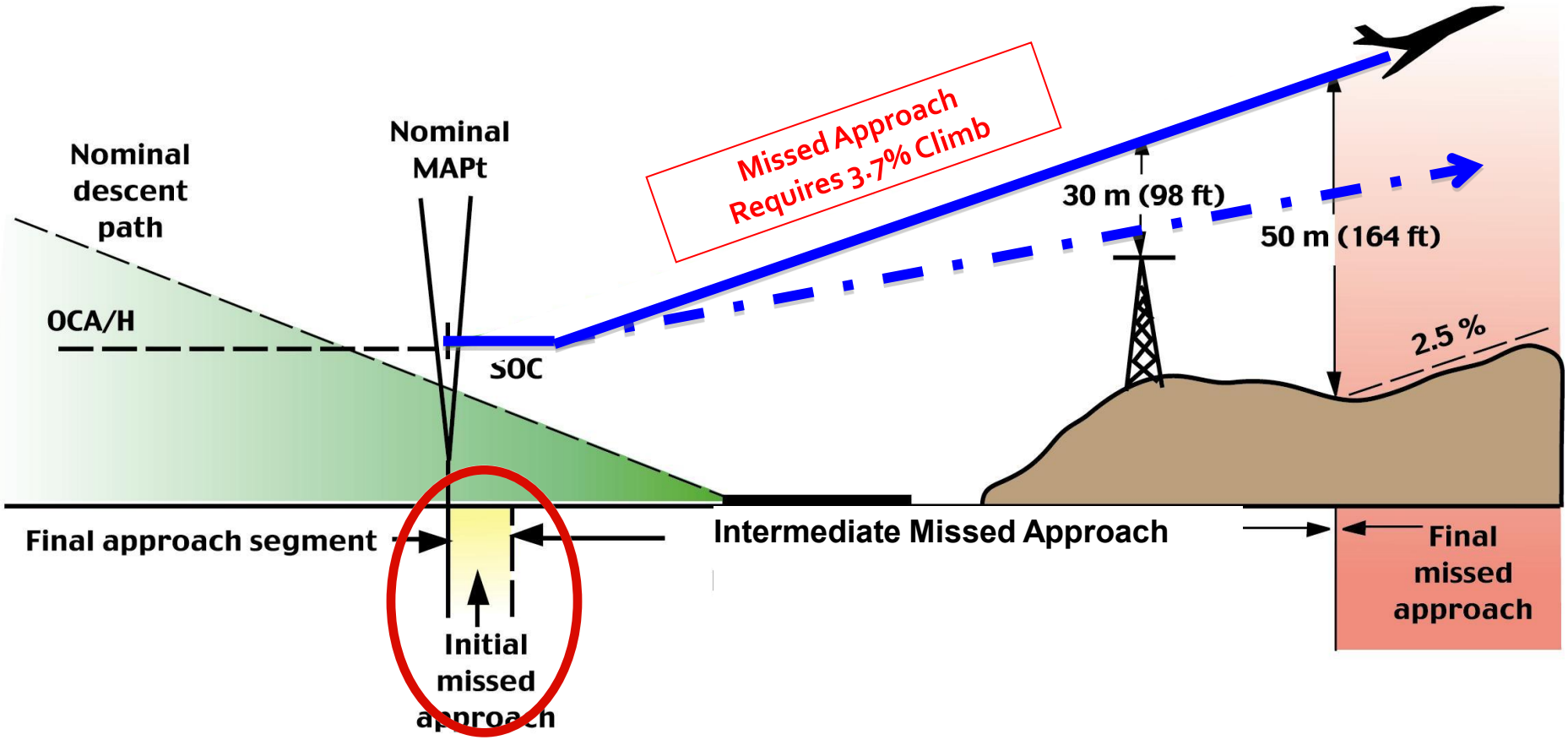
Greece
South Korea
Japan
Canada
Mexico
Venezuela

Azores
Germany

Saudi Arabia

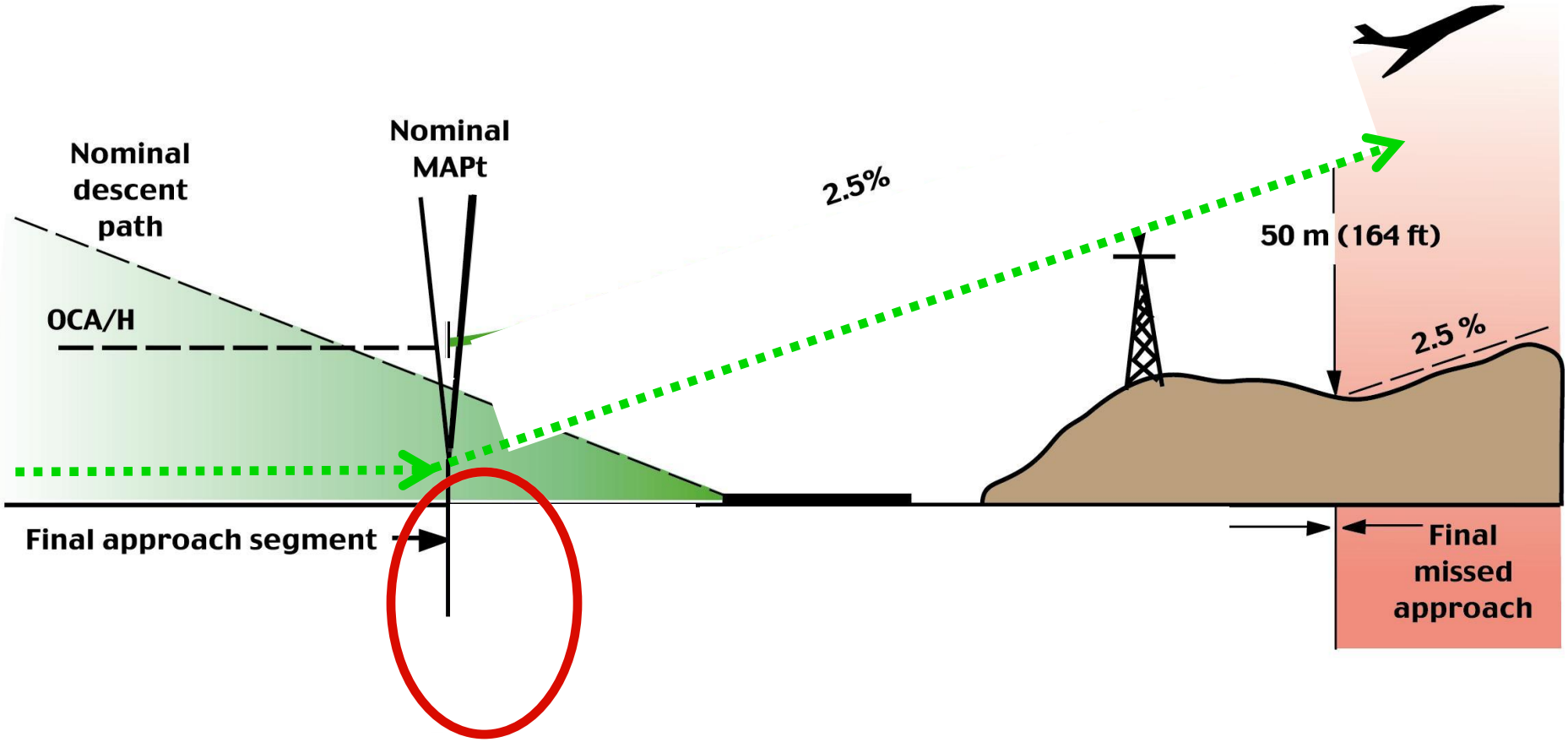
TERPS vs. PANS-Ops

Missed Approach Procedures, PANS-Ops



TERPS vs. PANS-Ops

Missed Approach Procedures, TERPS



TERPS vs. PANS-Ops

Constant Descent Final Approach Procedures, EU-Ops

FRANCE
RULES AND PROCEDURES

AIRPORT OPERATING MINIMUMS

General

French State minima are in accordance with EU-OPS, Appendix 1 (new) to Ops 1.430. (See ATC pages EU-OPS 1 AERODROME OPERATING MINIMUMS (AOM)).

Jeppesen published minima on approach charts with label Standard or on 10-9S pages are not below State minima.

Using MDA(H) as a DA(H) – CDFA flight technique

The operational minima published on French non-precision approach charts have been determined based on the assumption that these approaches are flown using the CDFA flight technique unless otherwise stated by the Authority for a particular approach to a particular runway.

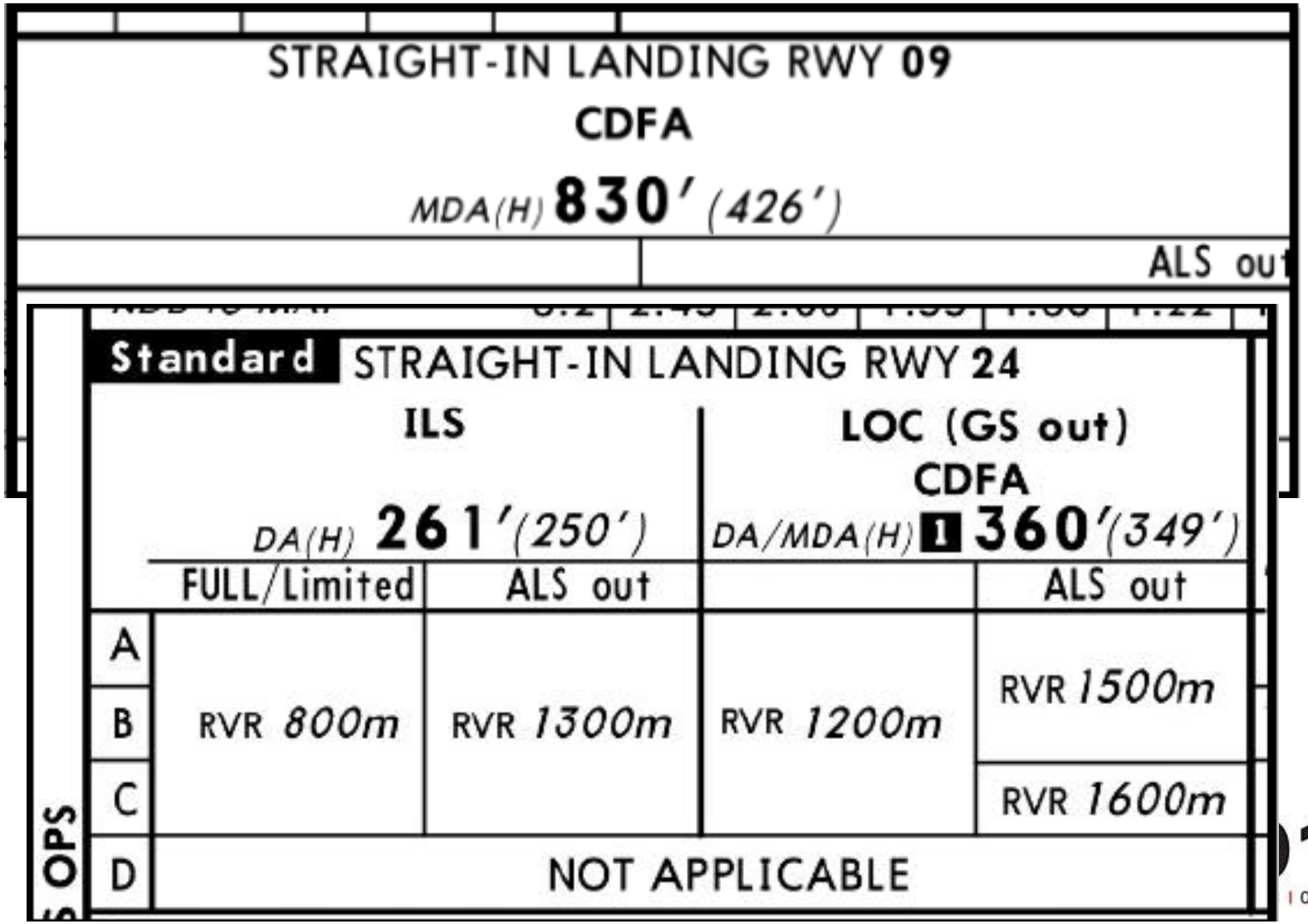
The CDFA flight technique implies a continuous descent on final approach, without level-off at or above the MDA(H).

To avoid descending below the MDA(H) in case of a Missed Approach, France State Authority recommends to add following mean vertical margins to the published MDA(H) to use it as a DA(H):

Aircraft Category	Margin/Add-On
A	20ft
B	30ft
C	40ft
D	60ft

TERPS vs. PANS-Ops

Constant Descent Final Approach Procedures, EU-Ops



STRAIGHT-IN LANDING RWY 09

CDFA

MDA(H) 830′ (426′)

ALS out

Standard STRAIGHT-IN LANDING RWY 24

	ILS		LOC (GS out) CDFA	
	DA(H) 261′ (250′)		DA/MDA(H) 1 360′ (349′)	
	FULL/Limited	ALS out		ALS out
A	RVR 800m	RVR 1300m	RVR 1200m	RVR 1500m
B				
C				RVR 1600m
D	NOT APPLICABLE			

S OPS

014

ORLANDO, FL

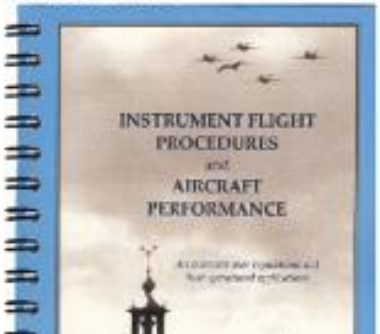
Håkan
ÖRTLUND
Produktion

Links Start

Books by Olle Åkerlind and Hå

• The ABZ of Flight Operation

• Instrument Flight Procedure
Performance



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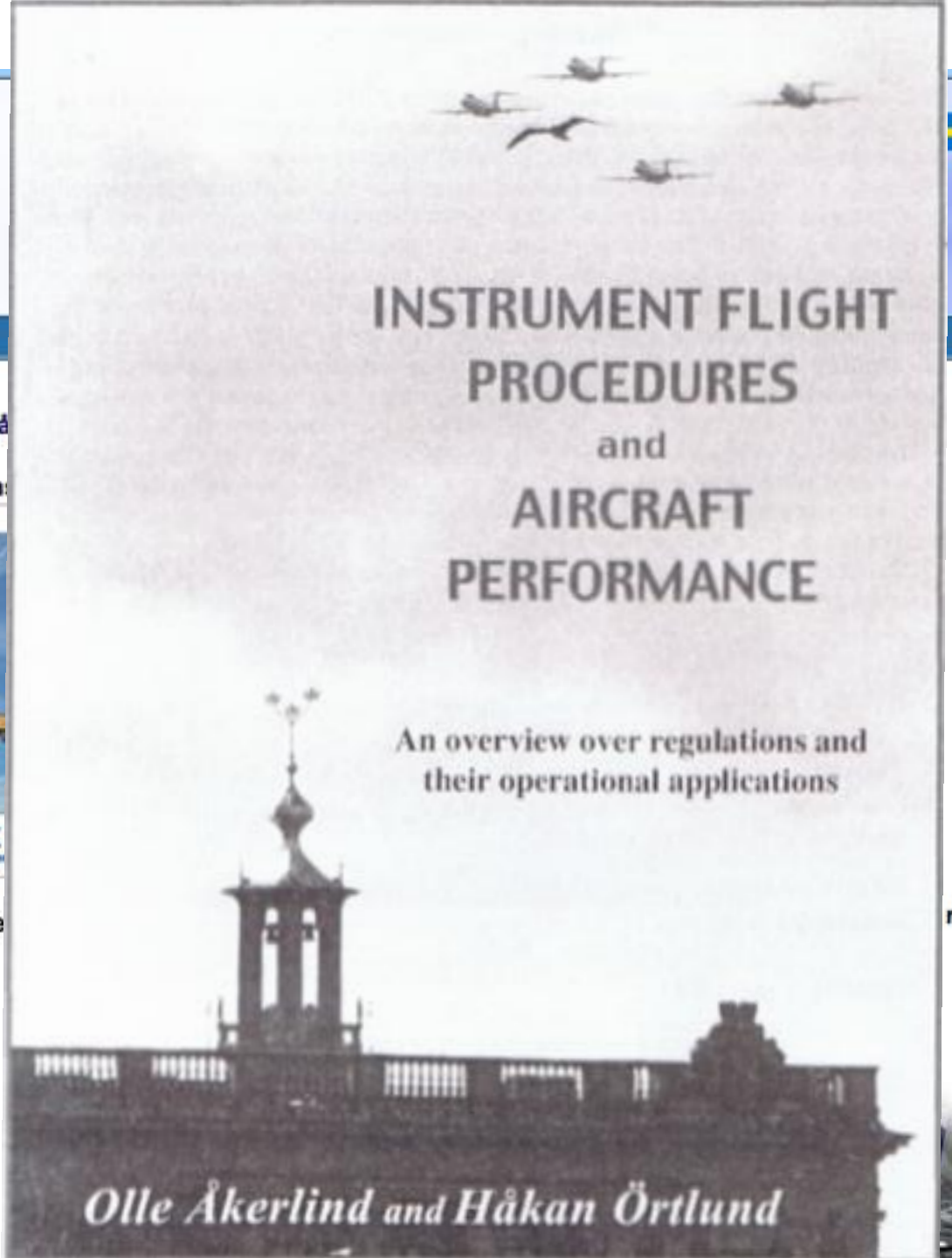

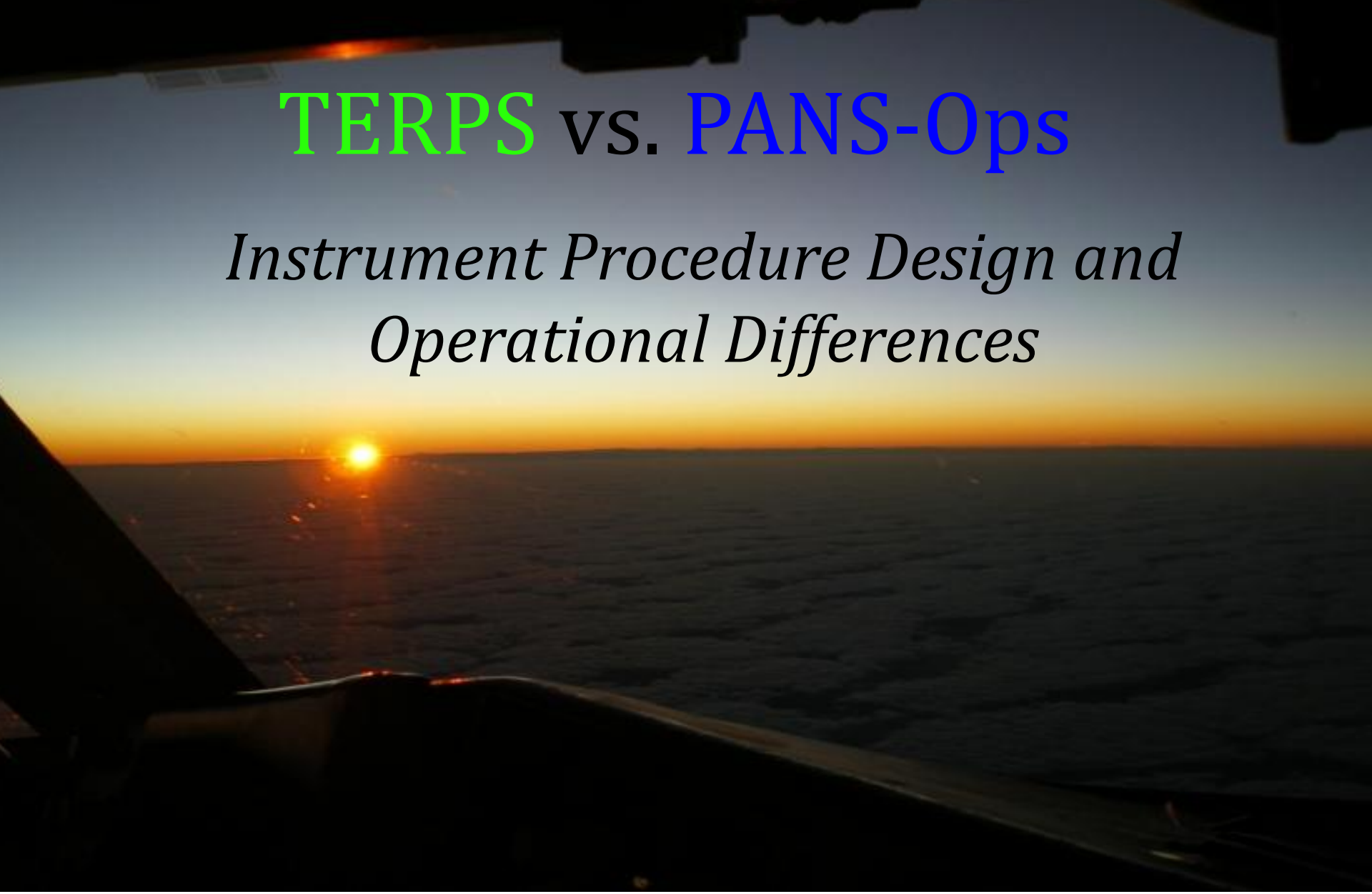

TERPS vs. PANS-Ops

Instrument Procedure Design and Operational Differences