Aeronautical Charts

NAM/CAR Data Sets Management and eCharts Workshop

ABOUT US

Our Mission

AIM for Safer Skies

To enable State AIS and AIM staff to achieve their operational goals by providing Software, Services, Training and Support in the field of Aeronautical information Management.

M-AIS ACTIVITIES

SOFTWARE

M-AIS offer a range of effective Aeronautical Publishing and AIXM Data solutions.

SERVICES

We provide many tailored services to our customers to ease the transition and migration to AIM.

TRAINING

Our training specialists share their own expert knowledge and experience to ensure that each course achieves the best results.

SUPPORT & MAINTENANCE

Customer relationships are vital to everything we do. we employ a full maintenance and support team to manage customer enquiries.

OUR WORK WITH AERONAUTICAL DATA

EAD

Data Integration for FrameAPS, AIP / eAIP / and DITA for more than 12 releases and 4 AIXM Data model changes

UK NATS

AIXM 4.5 and AIXM 5.1 Suite creating, managing and publishing datasets for all UK data from 2005 until 2019.

THALES France

Development of joint AIXM technology from 2005 until 2011. Multiple countries using the software, successful joint IPR venture.

Global Customer Base

AIXM 4.5 and AIXM 5.1 eAIP customers for Software, Services training and support. Currently undergoing intensive AIP table data review for AIXM usage with Central European Client.

Worldwide Projects

Global Implementations and Training for AIXM

- M-AIS provid AIXM 5.1, Dataset and PANS-AIM training and consultancy to a worldwide clientele.
    - **Software** – AIXM Data Management Suite and FrameAPS
    - **Services** – eAIP and AIXM Data Migration
    - **Training** - AIM, AIXM, Cartography, eAIP and PBN Data Coding and Visualisation training.
    - **Support and Maintenance -** Multiple AIXM and eAIP support contracts

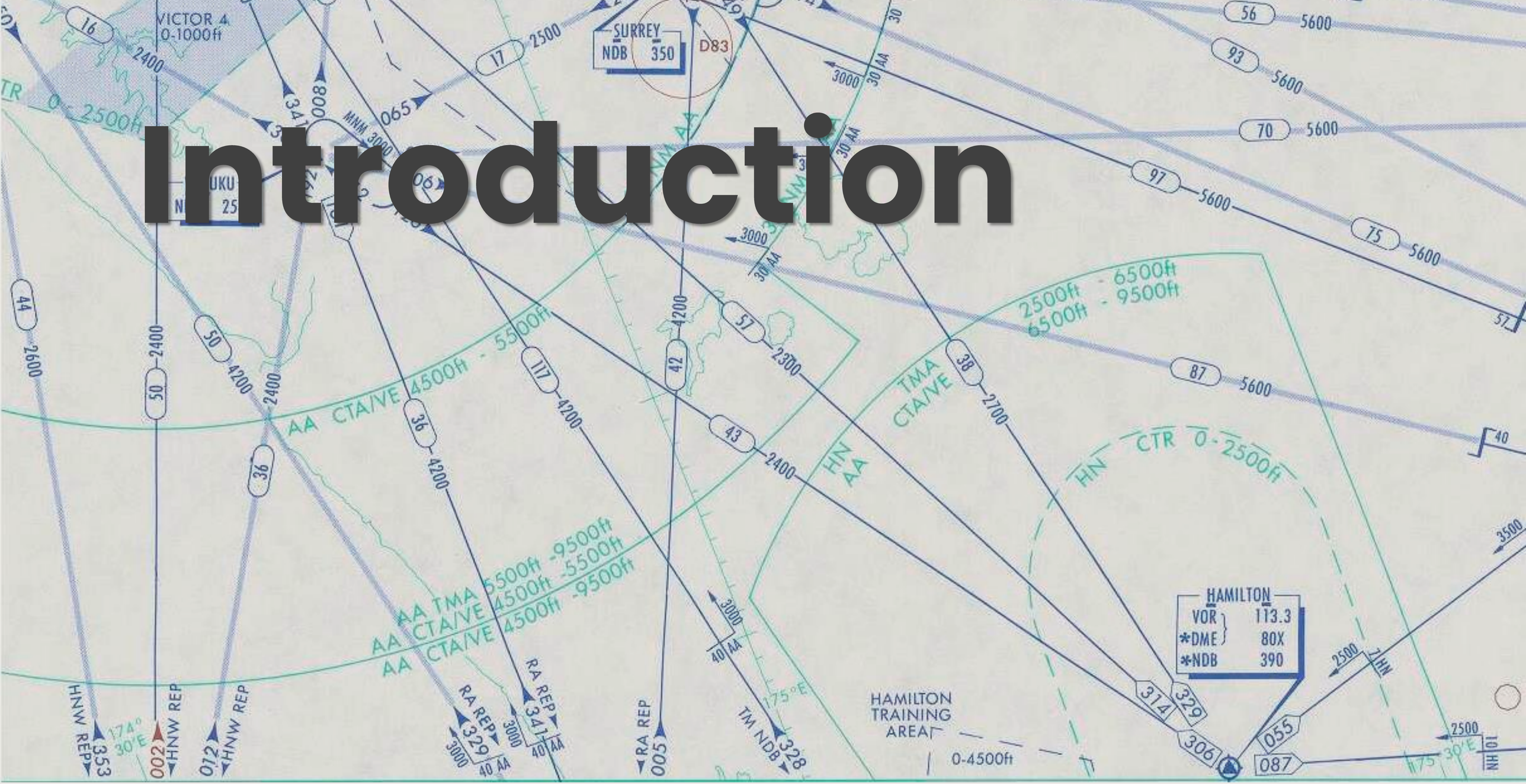
MAIS

Your Presenter:

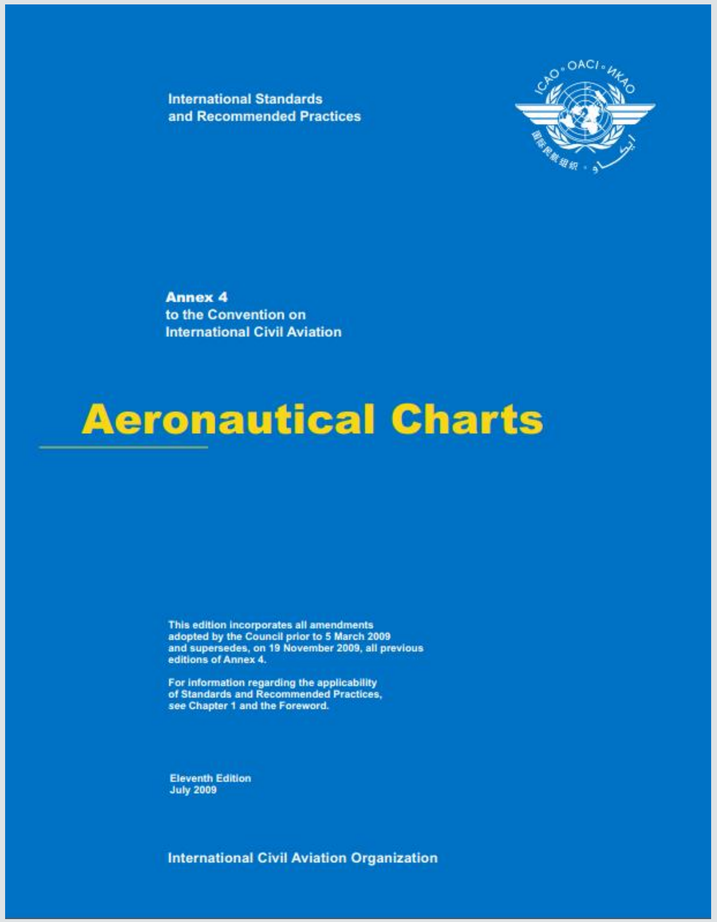
Antonio Locandro

- Instrument Flight Procedure Design Expert
- Aeronautical Information Expert
  - +16 Year Industry Experience
  - Aeronautical Charting & GIS Expert
  - AIM and IFP Training Expert
  - Participant of ICAO AIXM CCB and Advisor to IFAIMA for ICAO AIM WG-A
  - Participated as expert for ICAO Technical Cooperation Bureau for Obstacle Assessment for Airport Master Plan

Introduction

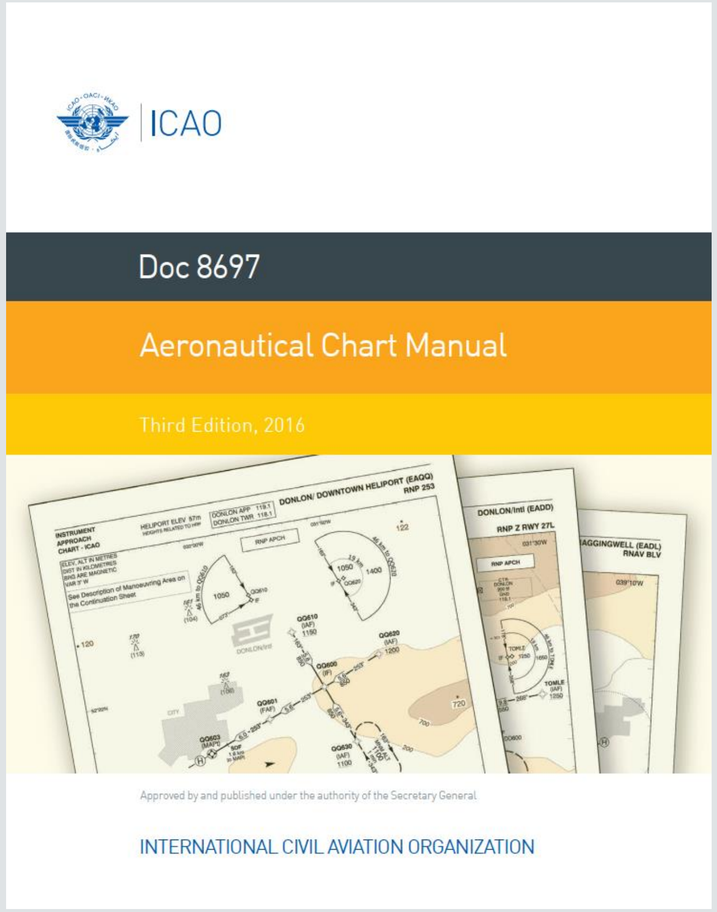


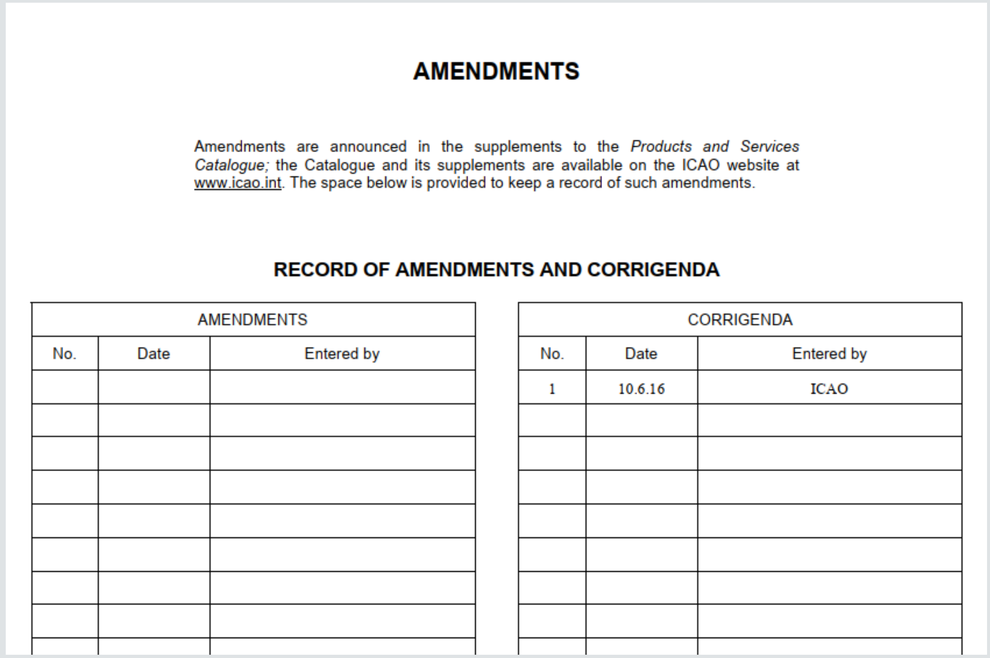
Annex 4 and Doc 8697



59	Second meeting of the Operational Data Link Panel (OPLINKP/2); and twelfth meeting of the Instrument Flight Procedure Panel (IFPP/12)	Provisions concerning satellite voice communications (SATVOICE); visual segment surface (VSS) penetrations charting requirements; and update of the provisions relating to publication depiction and functionality requirements of fly-by and fly-over significant points, area minimum altitude (AMA), CAT H procedures and en-route airway directional use restrictions.	22 February 2016 11 July 2016 10 November 2016
60	Twelfth meeting of the Aeronautical Information Service (AIS) to Aeronautical Information Management (AIM) Study Group (AIS-AIMSG/12) and the thirteenth meeting of the Instrument Flight Procedures Panel (IFPP/13)	Amendments as a result of the review and restructure of Annex 15 — *Aeronautical Information Services* and the introduction of PANS-AIM concerning data quality requirements and performance-based data error detection requirements; and amendments as a result of the revised definition and description of "procedure altitude/height" in the *Procedures for Air Navigation Services — Aircraft Operations*, Volume I — *Flight Procedures* and Volume II — *Construction of Visual and Instrument Flight Procedures* (Doc 8168).	9 March 2018 16 July 2018 8 November 2018
61	Third meeting of the Aerodromes Panel (ADOP/3) and the fourteenth meeting of the Instrument Flight Procedures Panel (IFPP/14)	a) Consequential amendment as a result of the incorporation of folding wing tips (FWT); and b) consequential amendments as a result of charting conventional navigation aids on PBN procedures, visual segment surface, simultaneous operations on parallel and near parallel runways and charted altitudes and flight levels.	9 March 2020 20 July 2020 4 November 2021

Annex 4 and Doc 8697





AMENDMENTS

Amendments are announced in the supplements to the *Products and Services Catalogue;* the Catalogue and its supplements are available on the ICAO website at www.icao.int. The space below is provided to keep a record of such amendments.

RECORD OF AMENDMENTS AND CORRIGENDA

AMENDMENTS		
No.	Date	Entered by

CORRIGENDA		
No.	Date	Entered by
1	10.6.16	ICAO

ICAO AIM WG-A
Aeronautical Charting Focus Group

Within the Information Management Panel from ICAO and the AIM Working Group A, the Aeronautical Charting Focus Group is a specialized body that has the intention to:

- Review current aeronautical charts
- Proposed changes to current ICAO documents, including the possibility to withdraw production of certain charts
- Enable the transition to a completely digital environment for chart production

The above is a long process that has a horizon 2028

ICAO AIM WG-A
Aeronautical Charting Focus Group

- A need to check what users really require
- Acknowledges that the current manual is out of date and needs to be reviewed
- Data and datasets are mentioned as the future for provision of the required information versus “static” views

The information is being analyzed to see what changes are to be incorporated

International Civil Aviation Organization | Organisation de l'aviation civile internationale | Organización de Aviación Civil Internacional | Международная организация гражданской авиации | منظمة الطيران المدني الدولي | 国际民用航空组织

Tel.: +1 514-954-8219 ext. 5872

11 February 2020

Ref.: AN 2/19-20/10

Subject: Aeronautical Chart Review questionnaire

Action required: Complete online Aeronautical Chart Review questionnaire by 20 March 2020

Sir/Madam,

The International Civil Aviation Organization (ICAO) originally published Annex 4 — *Aeronautical Charts* in March 1949 during a time when aeronautical charts, created by manual methods, were the main source of information for air navigation by airspace users. Since that time eleven editions of Annex 4 have been published, most recently the eleventh edition in July 2009.

Current aeronautical charts are still “static views” designed for human interpretation. In an age where aircraft performance is increasingly dependent on digital data and electronic information, it is evident that the functions, format, needs and design of the aeronautical charts in Annex 4, as well as those in the *Aeronautical Chart Manual* (Doc 8697), need revision. Data or data sets represent the future for data/information and provision of information, while digital or electronic charts will replace the need for paper charts. In order to implement these changes, there is a need to review existing Annex 4 content and determine which charts are still necessary, which should be replaced with digital data sets or electronic charts, and which can be discontinued.

Pursuant to the above, our initial step is to query Civil Aviation Authorities (CAAs) and Air Navigation Service Providers (ANSPs), which produce and distribute aeronautical charts, to determine both their current and future needs. Therefore, we would appreciate your assistance in completing the Aeronautical Chart Questionnaire for CAA and ANSP, available in English only, no later than **20 March 2020**.

Another questionnaire, intended for users of aeronautical charts, e.g. data houses, airlines etc., will be distributed shortly. The responses to both questionnaires will be analysed in order to determine the suitability of current Annex 4 charts.

Accept, Sir/Madam, the assurances of my highest consideration.

Fang Liu
Secretary General

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Aeronautical Charting Standards

Aeronautical Charting Standards

- **States** are bounded to comply with ICAO Standards and Recommended Practices and adopt Guidance material as much as possible
- **Commercial Providers** have a different set of requirements as they are geared toward the end users

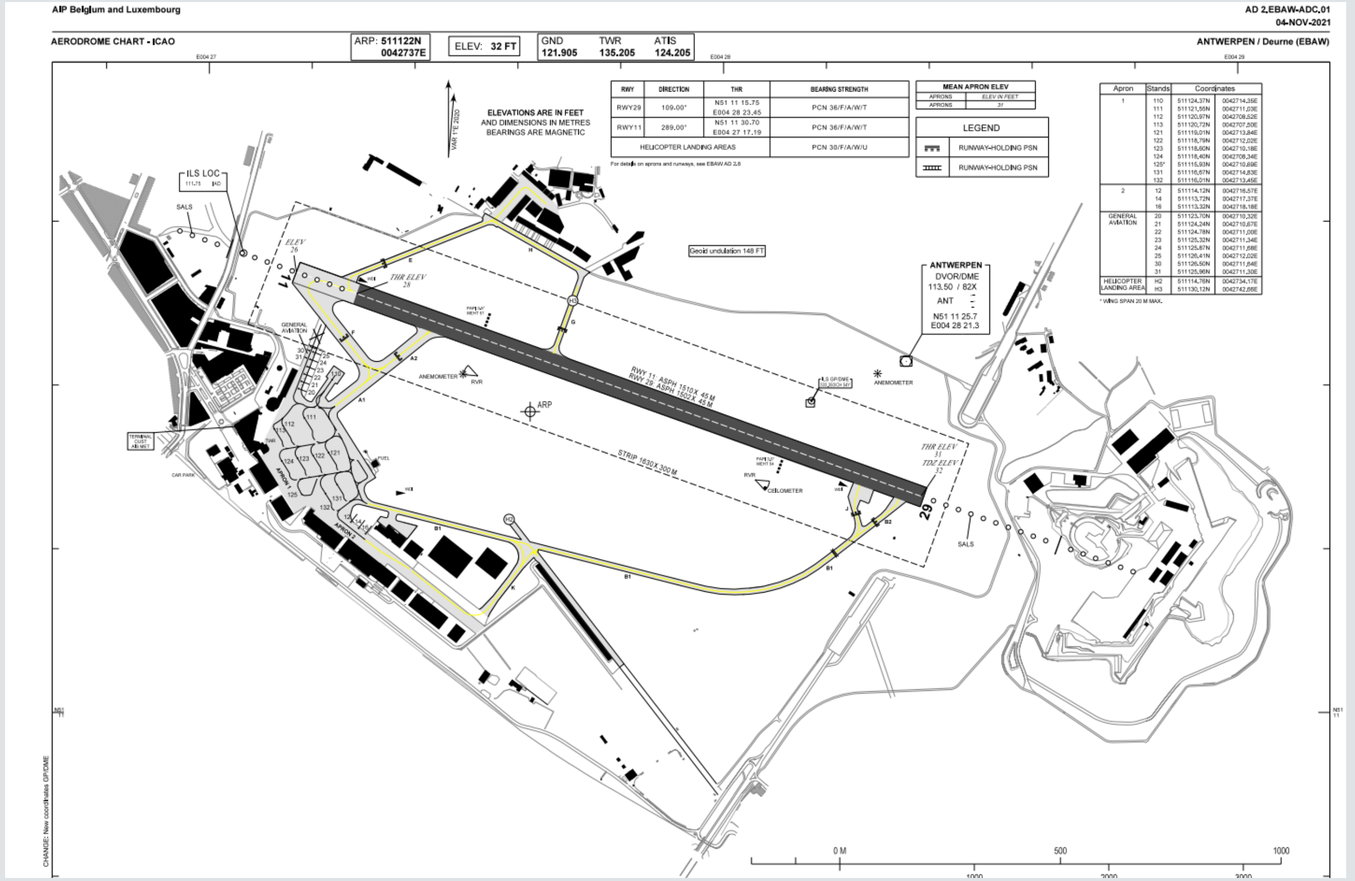
Both States and Commercial Providers are satisfying aeronautical chart production but from different angles

When States are not complying with ICAO requirements, they have a requirement to file differences to ICAO or publish them in the AIP. This depends on if the difference is on a SARPs or other documentation.

Annex 4: Aeronautical Charts (11th Edition) (AMDT 59)				
ICAO Ref.	Category (Standard, Rec'd Practice, etc.)	Difference	Details of Difference	Comments/Status
C4 4.1 to 4.10.4	Standard	Less protective or partially implemented or not implemented	The UK does not produce an Aerodrome Obstacle Chart ICAO Type B.	A demand for this chart has not been identified in the UK. User requirement is satisfied by the current content of the AIP. There are no current plans to produce this chart.
C5 5.1 to 5.8.8	Standard	Less protective or partially implemented or not implemented	The UK does not produce an Aerodrome Terrain and Obstacle Chart - ICAO (Electronic).	Work is currently underway to identify the measures required to achieve compliance with this standard. If resolved, a resolution to this difference will be implemented within an as yet to be assessed time frame.
C7 7.1 to 7.9.4.2	Standard	Less protective or partially implemented or not implemented	The Enroute Chart is not produced by the UK.	Information is published in tabular format in UK AIP ENR 3. Similar charts produced by industry are more appropriate for use by aircraft operators.
C8 8.1 to 8.9.4.1.1	Standard	Less protective or partially implemented or not implemented	The Area Chart is not produced by the UK.	Requirement fulfilled by other means - SID and STAR charts, Approach charts and 1:500,000 charts.
C9 9.9.3.1	Standard	Different in character or other means of compliance	Only Area Minimum Altitude (AMA) is shown.	The extent of the Minimum Sector Altitude (MSA) does not sufficiently take account of the complete route.
C9 9.9.4.2	Recommendation	Different in character or other means of compliance	The communication failure procedure is not shown.	Communication failure procedures are shown on ATC Surveillance Minimum Altitude Chart. No immediate plans to eradicate this difference.
C10 10.9.3.1	Standard	Different in character or other means of compliance	Only Area Minimum Altitude (AMA) is shown.	The extent of the Minimum Sector Altitude (MSA) does not sufficiently take account of the complete route.
C10 10.9.4.2	Recommendation	Different in character or other means of compliance	The communication failure procedure is not shown.	Communication failure procedures are shown on ATC Surveillance Minimum Altitude Chart. No immediate plans to eradicate this difference.
C11 11.4	Recommendation	More exacting or exceeds	In the UK the basic sheet size of the charts is 297 MM x 210 MM (A4).	Reduction in sheet size would reduce the area of coverage and the amount of data published. No immediate plans to eradicate this difference.

Aeronautical Charting Standards

1.3.3 A Contracting State shall take all reasonable measures to ensure that the information it provides and the aeronautical charts made available are adequate and accurate and that they are maintained up to date by an adequate revision service.



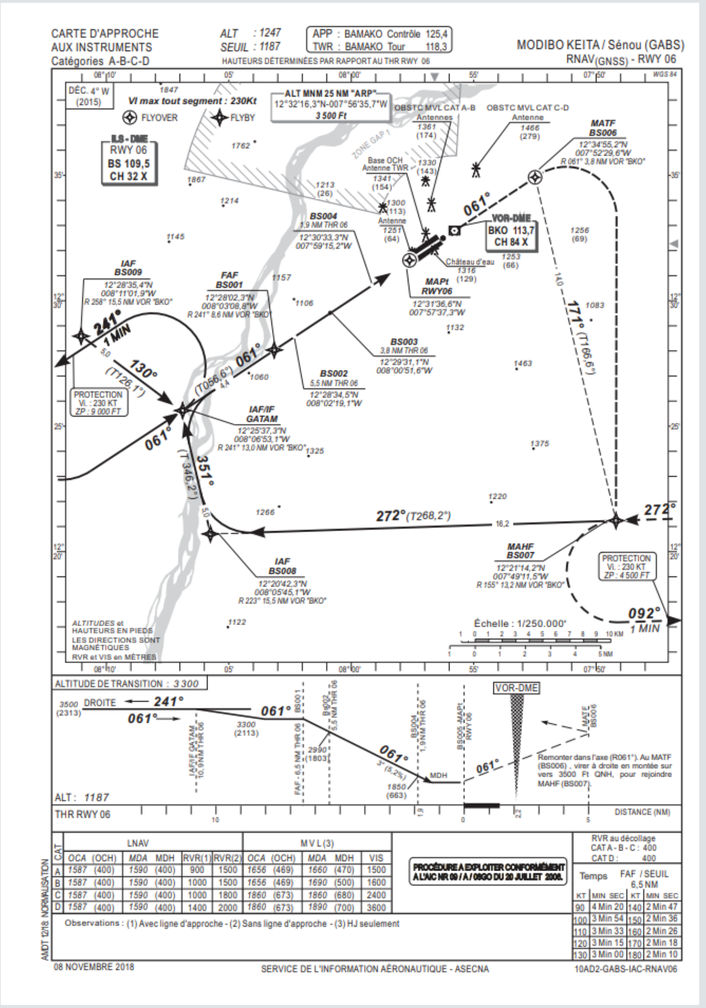
Aeronautical Charting Standards

1.3.2.1 For any chart or single sheet of a chart series entirely contained within the territory of a Contracting State, the State having jurisdiction over the territory shall either:

a) produce the chart or sheet itself; or

b) arrange for its production by another Contracting State or by an agency; or

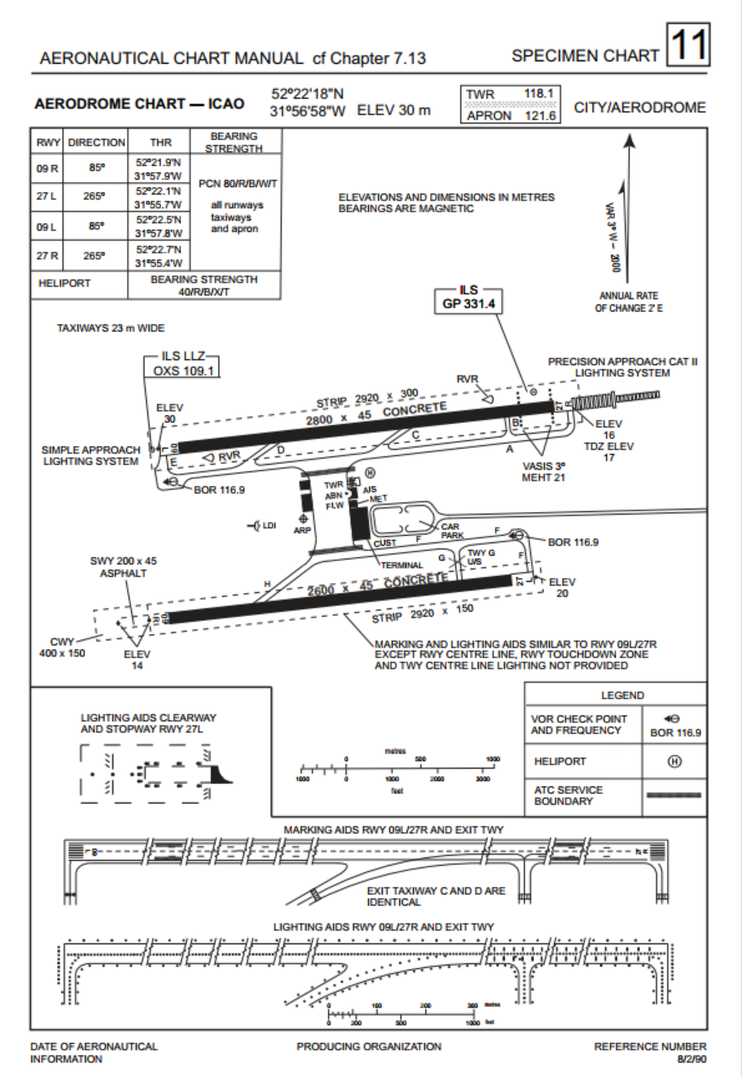
c) provide another Contracting State prepared to accept an obligation to produce the chart or sheet with the data necessary for its production.

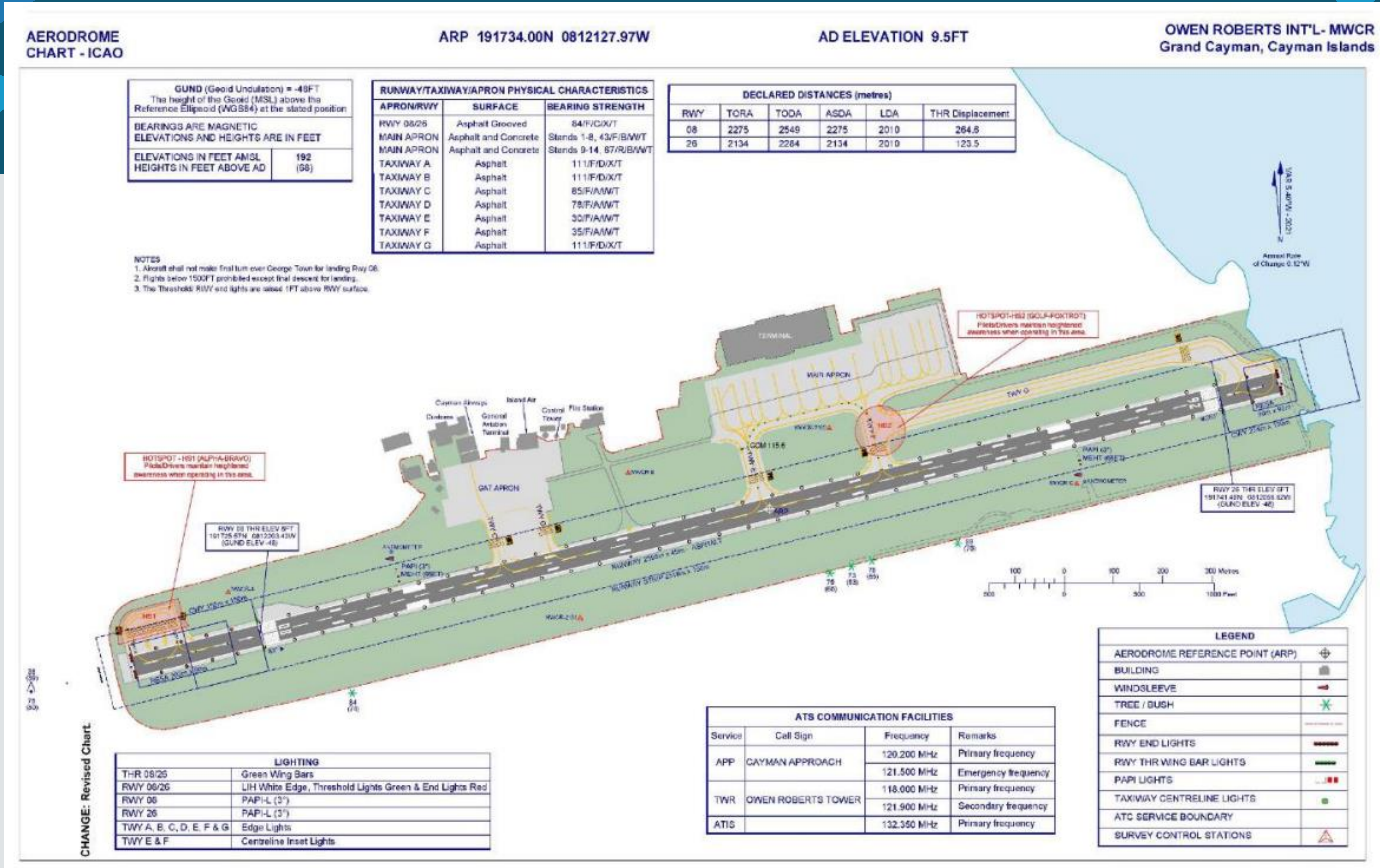


Examples of differences

ICAO Specimen Chart

Aerodrome Chart - ICAO




AERODROME CHART - ICAO
ARP 191734.00N 0812127.97W
AD ELEVATION 9.5FT
OWEN ROBERTS INT'L- MWCR
Grand Cayman, Cayman Islands
GUND (Geoid Undulation) = -48FT
The height of the Geoid (MSL) above the Reference Ellipsoid (WGS84) at the stated position
BEARINGS ARE MAGNETIC
ELEVATIONS AND HEIGHTS ARE IN FEET
ELEVATIONS IN FEET AMSL 192
HEIGHTS IN FEET ABOVE AD (68)
NOTES
1. Aircraft shall not make final turn over George Town for landing Rwy 08.
2. Flights below 1500FT prohibited except final descent for landing.
3. The Threshold/ RWY end lights are raised 1FT above RWY surface.
TERMINAL
MAIN APRON
TWY G
GAT APRON
HOTSPOT - HS1 (ALPHA-BRAVO)
Pilots/Drivers maintain heightened awareness when operating in this area.
HOTSPOT-HS2 (GOLF-FOXTROT)
Pilots/Drivers maintain heightened awareness when operating in this area.
HS1
HS2
Cayman Airways
Customs
General Aviation Terminal
Island Air
Control Tower
Fire Station
RWY 08 THR ELEV 8FT
RWY 26 THR ELEV 6FT
LEGEND
AERODROME REFERENCE POINT (ARP)
BUILDING
WINDSLEEVE
TREE / BUSH
FENCE
RWY END LIGHTS
RWY THR WING BAR LIGHTS
PAPI LIGHTS
TAXIWAY CENTRELINE LIGHTS
ATC SERVICE BOUNDARY
SURVEY CONTROL STATIONS
CHANGE: Revised Chart.

RUNWAY/TAXIWAY/APRON PHYSICAL CHARACTERISTICS		
APRON/RWY	SURFACE	BEARING STRENGTH
RWY 08/26	Asphalt Grooved	84/F/C/X/T
MAIN APRON	Asphalt and Concrete	Stands 1-8, 43/F/B/W/T
MAIN APRON	Asphalt and Concrete	Stands 9-14, 87/R/B/W/T
TAXIWAY A	Asphalt	111/F/D/X/T
TAXIWAY B	Asphalt	111/F/D/X/T
TAXIWAY C	Asphalt	85/F/A/W/T
TAXIWAY D	Asphalt	78/F/A/W/T
TAXIWAY E	Asphalt	30/F/A/W/T
TAXIWAY F	Asphalt	35/F/A/W/T
TAXIWAY G	Asphalt	111/F/D/X/T

DECLARED DISTANCES (metres)					
RWY	TORA	TODA	ASDA	LDA	THR Displacement
08	2275	2549	2275	2010	264.6
26	2134	2264	2134	2010	123.5

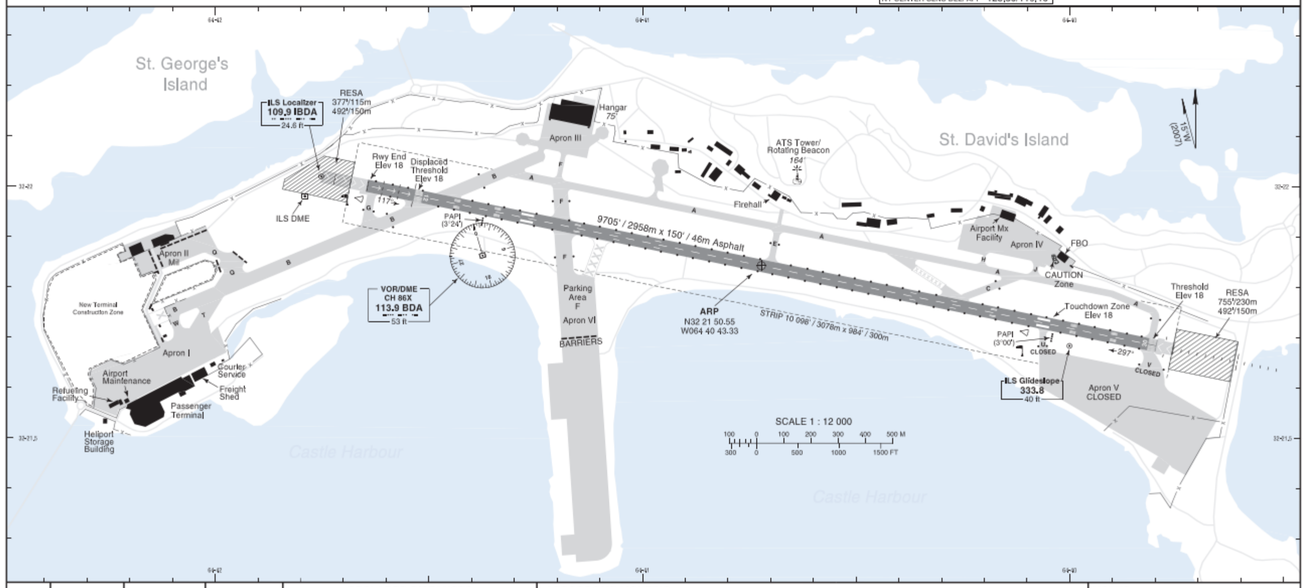
LIGHTING	
THR 08/26	Green Wing Bars
RWY 08/26	LIH White Edge, Threshold Lights Green & End Lights Red
RWY 08	PAPI-L (3°)
RWY 26	PAPI-L (3°)
TWY A, B, C, D, E, F & G	Edge Lights
TWY E & F	Centreline Inset Lights

ATS COMMUNICATION FACILITIES			
Service	Call Sign	Frequency	Remarks
APP	CAYMAN APPROACH	120.200 MHz	Primary frequency
		121.500 MHz	Emergency frequency
TWR	OWEN ROBERTS TOWER	118.000 MHz	Primary frequency
		121.900 MHz	Secondary frequency
ATIS		132.350 MHz	Primary frequency

AERODROME CHART - ICAO | WGS-84 | AD ELEV 18 FT

BERMUDA TOWER	118,10/ 291,00
BERMUDA GROUND	124,50
CTAF	122,80
ATIS	119,60
NY CENTER CLNC DEL/ APP	128,50/119,10

BERMUDA
L.F. Wade Intl Airport (TXKF)



RWY	DIRECTION	THRESHOLD	STRENGTH	DECLARED DISTANCES			
				TORA	TODA	ASDA	LDA
12	117° MAG	N 32 21 58.94 W 064 41 32.10	80/F/A/W/U	9705'/ 2958m	9705'/ 2958m	9705'/ 2958m	9127'/ 2782m
30	297° MAG	N 32 21 41.00 W 064 39 47.81	80/F/A/W/U	9705'/ 2958m	9705'/ 2958m	9705'/ 2958m	9705'/ 2958m

AMENDMENT: Aerodrome lighting.

AERODROME LIGHTING

RWY 12: High Intensity Approach Lights - SSALS
Green LED Threshold Lights
PAPI: 3°24' (right side of Runway; 4-box type)
Runway Aiming Point not coincident with PAPI location and angle
Bi-directional white LED runway edge (amber/white last 1941'), spaced 60m, 5 intensity levels
Red LED Runway end Lights
Bi-directional white LED runway centerline (red last 1000') spaced 30m, 5 intensity levels

RWY 30: CAT-I ALSF-I
Green LED Threshold Lights
PAPI: 3°00'(left side of Runway; 4-box Type)
Bi-directional white LED runway edge (last 1941' comprises amber/white for 1403' and amber/red for 538'), spaced 60m, 5 intensity levels
Red LED Runway End Lights
Bi-directional white LED runway centerline (red last 1000') spaced 30m, 5 intensity levels

Other: Runway Guard Lights
Rotating Beacon Green-White

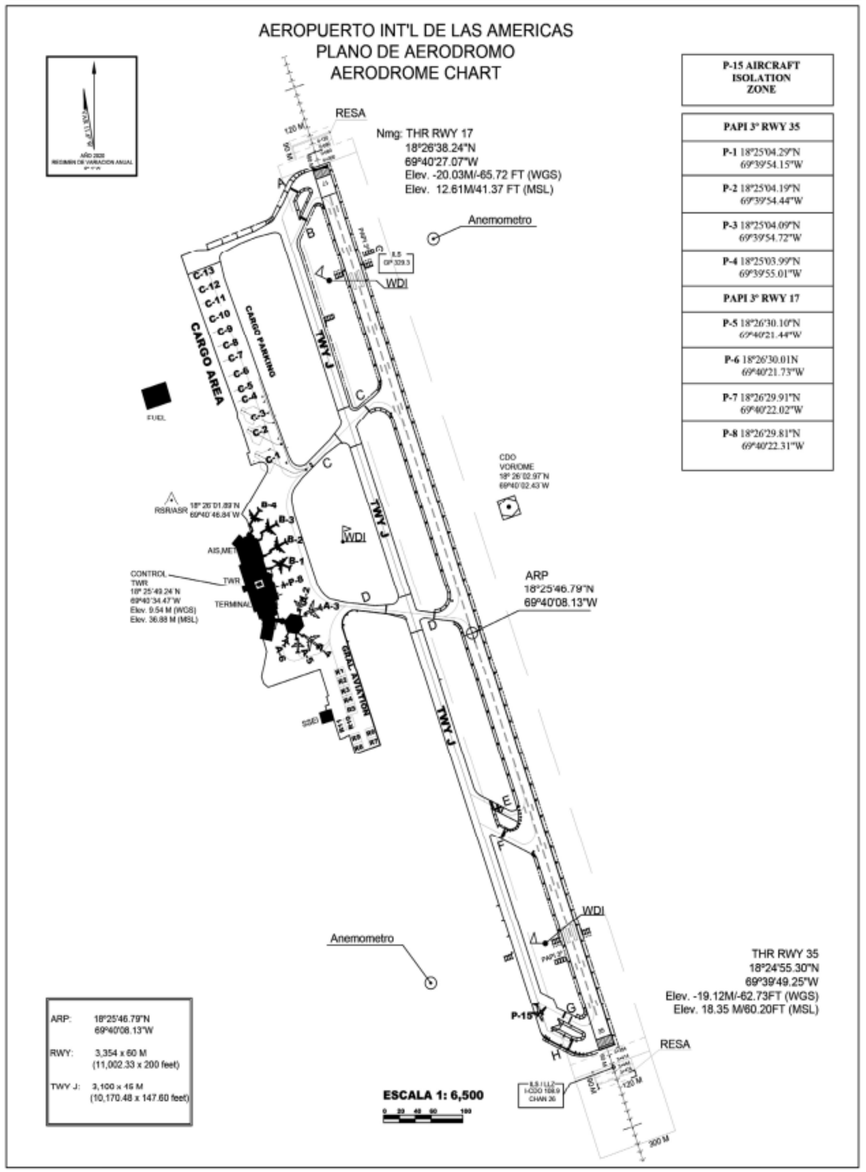
Pilot control of airport lighting is available on CTAF during hours of ATS Tower unmanned. The system consists of a 3-step control responsive to 7, 5 and/or 3 microphone clicks. Lighting is illuminated for 15 minutes from most recent activation and can not be extinguished prior to the end of the 15-minute period.

NOTES:

1. All taxiways are asphalt with no weight restrictions.
2. Aircraft apron movements are uncontrolled due to limited sight availability from Bermuda Control Tower.

TAKE-OFF MINIMA	CAT A	CAT B	CAT C	CAT D
RWY 12	800			
RWY 30	800			

Minima given as RVR in meters

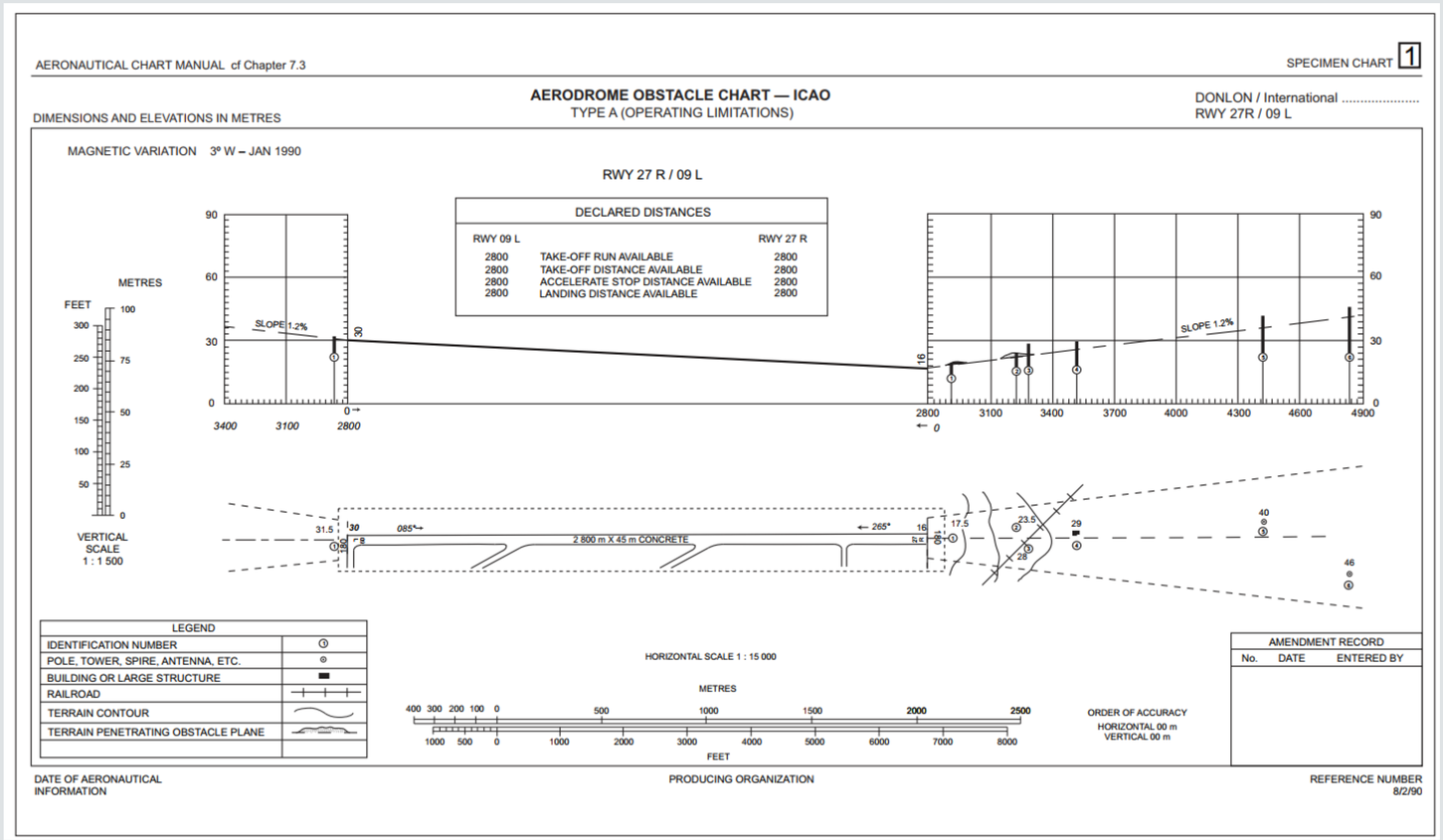

AEROPUERTO INT'L DE LAS AMERICAS
PLANO DE AERODROMO
AERODROME CHART
P-15 AIRCRAFT ISOLATION ZONE
PAPI 3° RWY 35
P-1 18°25'04.29"N 69°39'54.15"W
P-2 18°25'04.19"N 69°39'54.44"W
P-3 18°25'04.09"N 69°39'54.72"W
P-4 18°25'03.99"N 69°39'55.01"W
PAPI 3° RWY 17
P-5 18°26'30.10"N 69°40'21.44"W
P-6 18°26'30.01N 69°40'21.73"W
P-7 18°26'29.91"N 69°40'22.02"W
P-8 18°26'29.81"N 69°40'22.31"W
RESA
Nmg: THR RWY 17
18°26'38.24"N
69°40'27.07"W
Elev. -20.03M/-65.72 FT (WGS)
Elev. 12.61M/41.37 FT (MSL)
Anemometro
WDI
CARGO AREA
CARGO PARKING
TWY J
FUEL
CDO
VOR/DME
18° 26' 02.97"N
69°40' 02.43"W
RSR/ASR 18° 26' 01.89"N 69°40' 46.84"W
AIS,MET
CONTROL TWR
18° 25' 49.24"N
69°40' 34.47"W
Elev. 9.54 M (WGS)
Elev. 36.88 M (MSL)
TWR
TERMINAL
ARP
18°25'46.79"N
69°40'08.13"W
EXECUTIVE AVIATION
THR RWY 35
18°24'55.30"N
69°39'49.25"W
Elev. -19.12M/-62.73FT (WGS)
Elev. 18.35 M/60.20FT (MSL)
ARP: 18°25'46.79"N 69°40'08.13"W
RWY: 3,354 x 60 M (11,002.33 x 200 feet)
TWY J: 3,100 x 46 M (10,170.48 x 147.60 feet)
ESCALA 1: 6,500

Examples of differences

ICAO Specimen Chart

Aerodrome Obstacle Chart – ICAO

Type A (Operating Limitations

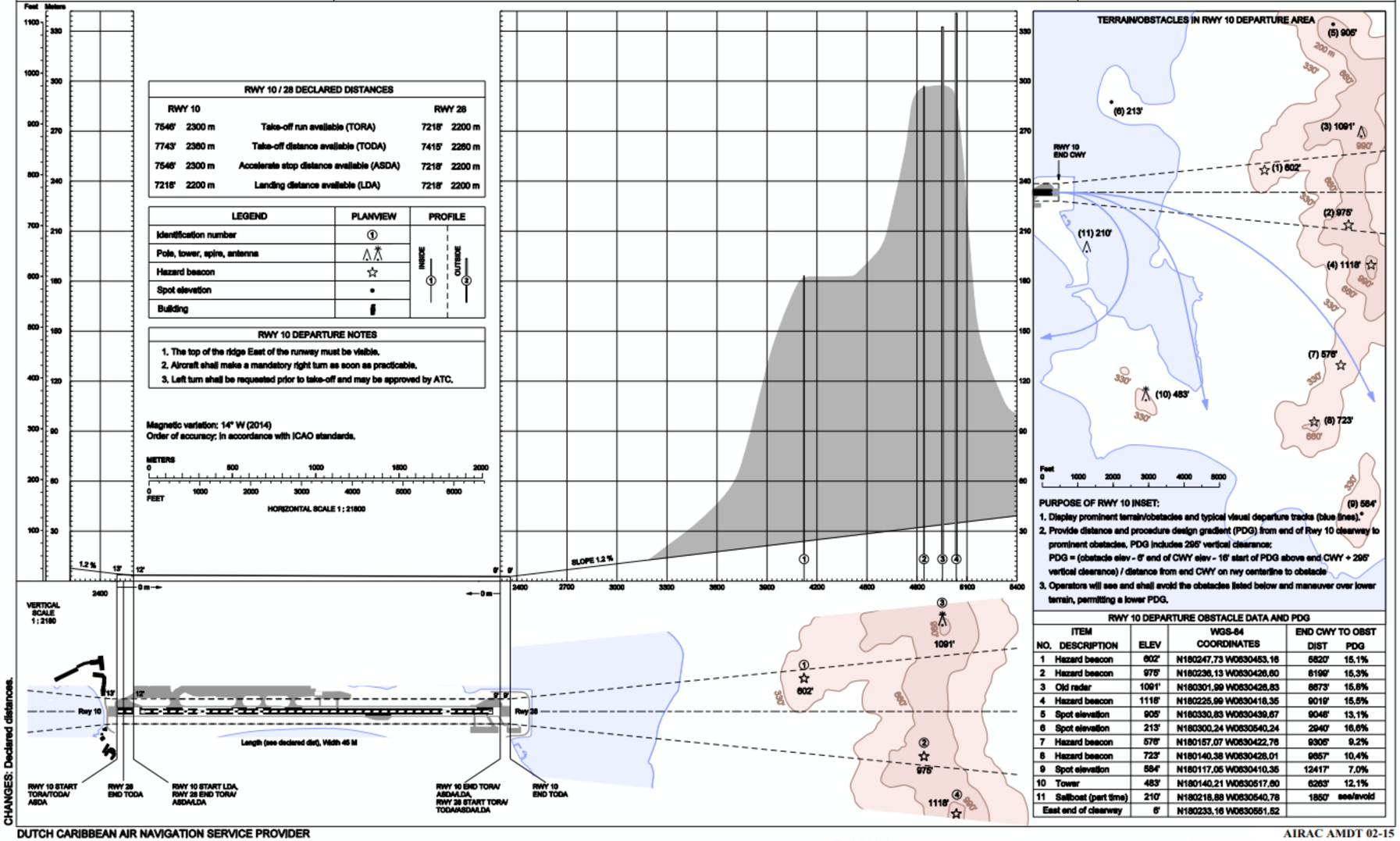


AIP DUTCH CARIBBEAN

DIMENSIONS IN FEET / METERS
ELEVATIONS IN FEET

AERODROME OBSTACLE CHART - ICAO TYPE A (OPERATING LIMITATIONS)

PRINCESS JULIANA INT'L (TNCM)
PHILIPSBURG, NETHERLANDS ANTILLES



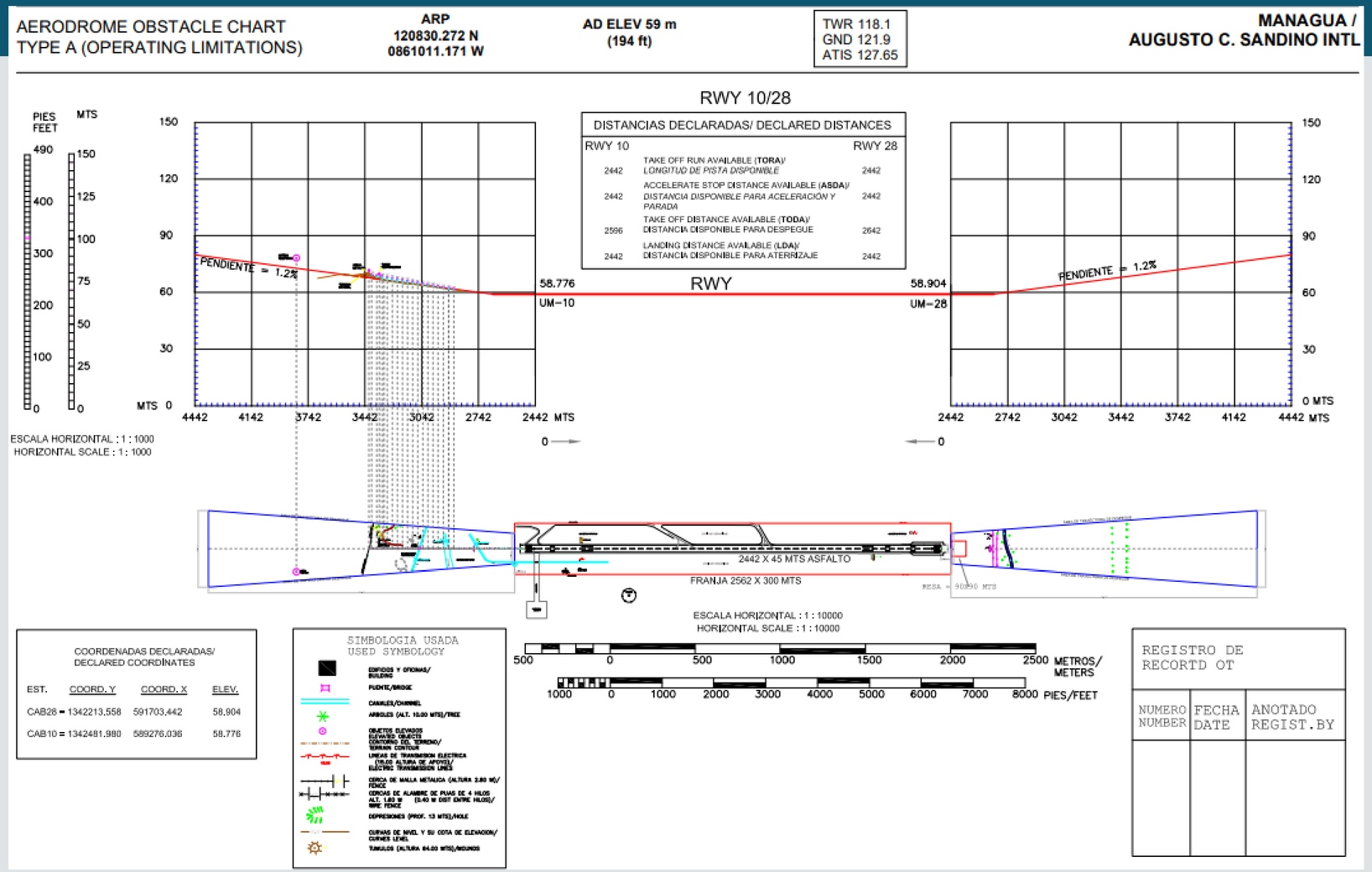
RWY 10 DEPARTURE OBSTACLE DATA AND PDG

ITEM NO.	DESCRIPTION	ELEV	WGS-84 COORDINATES	END CWY TO OBST DIST	PDG
1	Hazard beacon	602'	N180247.73 W0630453.16	5820'	15.1%
2	Hazard beacon	975'	N180236.13 W0630426.60	8199'	15.3%
3	Old radar	1091'	N180301.99 W0630426.83	8673'	15.8%
4	Hazard beacon	1116'	N180225.99 W0630418.35	9019'	15.5%
5	Spot elevation	905'	N180330.83 W0630439.67	9046'	13.1%
6	Spot elevation	213'	N180300.24 W0630540.24	2940'	16.6%
7	Hazard beacon	576'	N180157.07 W0630422.78	9305'	9.2%
8	Hazard beacon	723'	N180140.38 W0630426.01	9857'	10.4%
9	Spot elevation	584'	N180117.05 W0630410.35	12417'	7.0%
10	Tower	483'	N180140.21 W0630517.60	6263'	12.1%
11	Sailboat (part time)	210'	N180218.88 W0630540.78	1850'	see/avoid
	East end of clearway	6'	N180233.16 W0630551.52		

CHANGES: Declared distances.

DUTCH CARIBBEAN AIR NAVIGATION SERVICE PROVIDER

AIRAC AMDT 02-15


AERODROME OBSTACLE CHART
TYPE A (OPERATING LIMITATIONS)
ARP
120830.272 N
0861011.171 W
AD ELEV 59 m
(194 ft)
TWR 118.1
GND 121.9
ATIS 127.65
MANAGUA /
AUGUSTO C. SANDINO INTL
RWY 10/28
DISTANCIAS DECLARADAS/ DECLARED DISTANCES
RWY 10
RWY 28
2442 TAKE OFF RUN AVAILABLE (TORA)/ LONGITUD DE PISTA DISPONIBLE 2442
2442 ACCELERATE STOP DISTANCE AVAILABLE (ASDA)/ DISTANCIA DISPONIBLE PARA ACELERACIÓN Y PARADA 2442
2596 TAKE OFF DISTANCE AVAILABLE (TODA)/ DISTANCIA DISPONIBLE PARA DESPEGUE 2642
2442 LANDING DISTANCE AVAILABLE (LDA)/ DISTANCIA DISPONIBLE PARA ATERRIZAJE 2442
PIES FEET
MTS
PENDIENTE = 1.2%
58.776
UM-10
RWY
58.904
UM-28
ESCALA HORIZONTAL : 1 : 1000
HORIZONTAL SCALE : 1 : 1000
2442 X 45 MTS ASFALTO
FRANJA 2562 X 300 MTS
ESCALA HORIZONTAL : 1 : 10000
HORIZONTAL SCALE : 1 : 10000
METROS/ METERS
PIES/FEET
COORDENADAS DECLARADAS/ DECLARED COORDINATES
EST. COORD. Y COORD. X ELEV.
CAB28 = 1342213.558 591703.442 58.904
CAB10 = 1342481.980 589276.036 58.776
SIMBOLOGIA USADA
USED SYMBOLOGY
REGISTRO DE RECORTD OT
NUMERO NUMBER
FECHA DATE
ANOTADO REGIST.BY

Aeronautical Charting Standards

All the previous charts contain the required information but differences in the presentation can be noted

Why is this happening?

Possible reasons for differences

- SARPs are not up to date and contain old techniques that may no longer be relevant with the emergence of CAD/GIS

- Training in fundamentals of cartography is missing
  - Projections, typography, color theory, cartographic techniques

- Training in aeronautical charting and refreshers are needed

- More regulator oversight is required

Updates and Maintenance

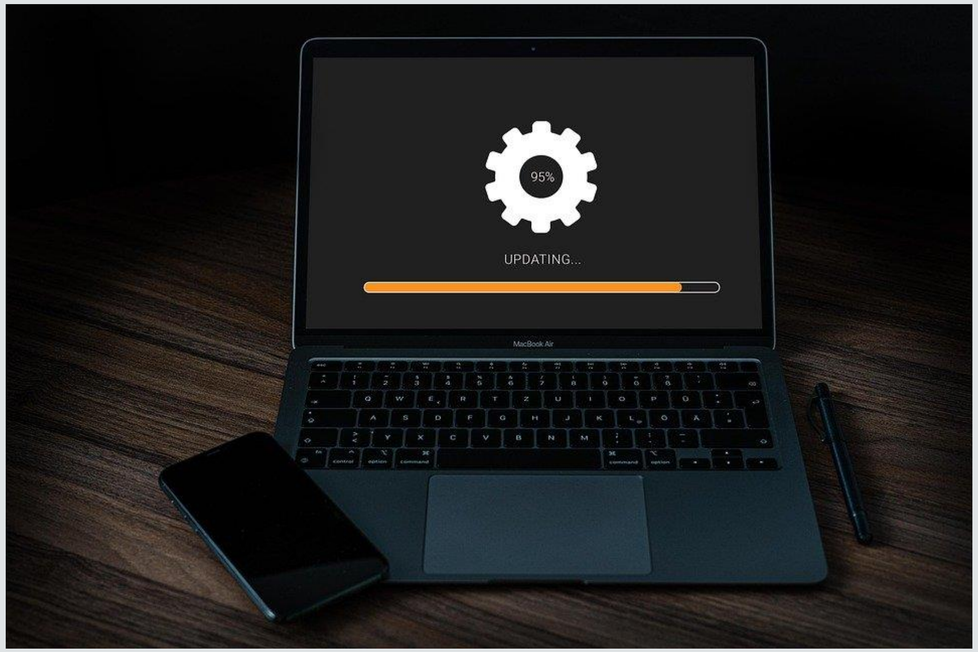


Chart data product specification

5.8.1 A comprehensive statement of the data sets comprising the chart shall be provided in the form of data product specifications on which basis air navigation users will be able to evaluate the chart data product and determine whether it fulfils the requirements for its intended use (application).

Updates and Maintenance

5.8.6 The chart data product specifications shall include a data capture statement which shall be a general description of the sources and of processes applied for the capture of chart data.

The principles and criteria applied in the maintenance of the chart shall also be provided in the chart data product specifications, including the *frequency with which the chart product is updated*. Of particular importance shall be the maintenance information of obstacle data sets included on the chart and an indication of the principles, methods and criteria applied for obstacle data maintenance

Annex 4 Aeronautical Charts

Charts Mandatory/Non Mandatory & Conditional

Name	Annex 4	DOC 8697	Classification
Aerodrome Obstacle Chart — ICAO Type A (Operating limitations)	3	7.3	Mandatory
Aerodrome Obstacle Chart — ICAO Type B	4	7.4	Non-mandatory
Aerodrome Terrain and Obstacle Chart — ICAO (Electronic)	5	7.5	
Precision Approach Terrain Chart — ICAO	6	7.6	Mandatory
Enroute Chart — ICAO	7	7.7	Mandatory
Area Chart — ICAO	8	7.8	Conditional
Standard Departure Chart — Instrument (SID) — ICAO	9	7.9	Conditional
Standard Arrival Chart — Instrument (STAR) — ICAO	10	7.10	Conditional
Instrument Approach Chart — ICAO	11	7.11	Mandatory
Visual Approach Chart — ICAO	12	7.12	Conditional
Aerodrome/Heliport Chart — ICAO	13	7.13	Mandatory
Aerodrome Ground Movement Chart — ICAO	14	7.14	Non-mandatory
Aircraft Parking/Docking Chart — ICAO	15	7.15	Non-mandatory
World Aeronautical Chart — ICAO 1:1 000 000	16	7.16	Mandatory
Aeronautical Chart — ICAO 1:500 000	17	7.17	Non-mandatory
Aeronautical Navigation Chart — ICAO Small Scale	18	7.18	Non-mandatory
Plotting Chart — ICAO	19	7.19	Non-mandatory
Electronic Aeronautical Chart Display — ICAO	20	7.20	
ATC Surveillance Minimum Altitude Chart — ICAO	21	7.21	

Mandatory

Name	Annex 4	DOC 8697	Classification
Aerodrome Obstacle Chart — ICAO Type A (Operating limitations)	3	7.3	Mandatory
Precision Approach Terrain Chart — ICAO	6	7.6	Mandatory
Enroute Chart — ICAO	7	7.7	Mandatory
Instrument Approach Chart — ICAO	11	7.11	Mandatory
Aerodrome/Heliport Chart — ICAO	13	7.13	Mandatory
World Aeronautical Chart — ICAO 1:1 000 000	16	7.16	Mandatory

AERONAUTICAL CHART MANUAL cf Chapter 7.3

SPECIMEN CHART 1

AERODROME OBSTACLE CHART — ICAO
TYPE A (OPERATING LIMITATIONS)

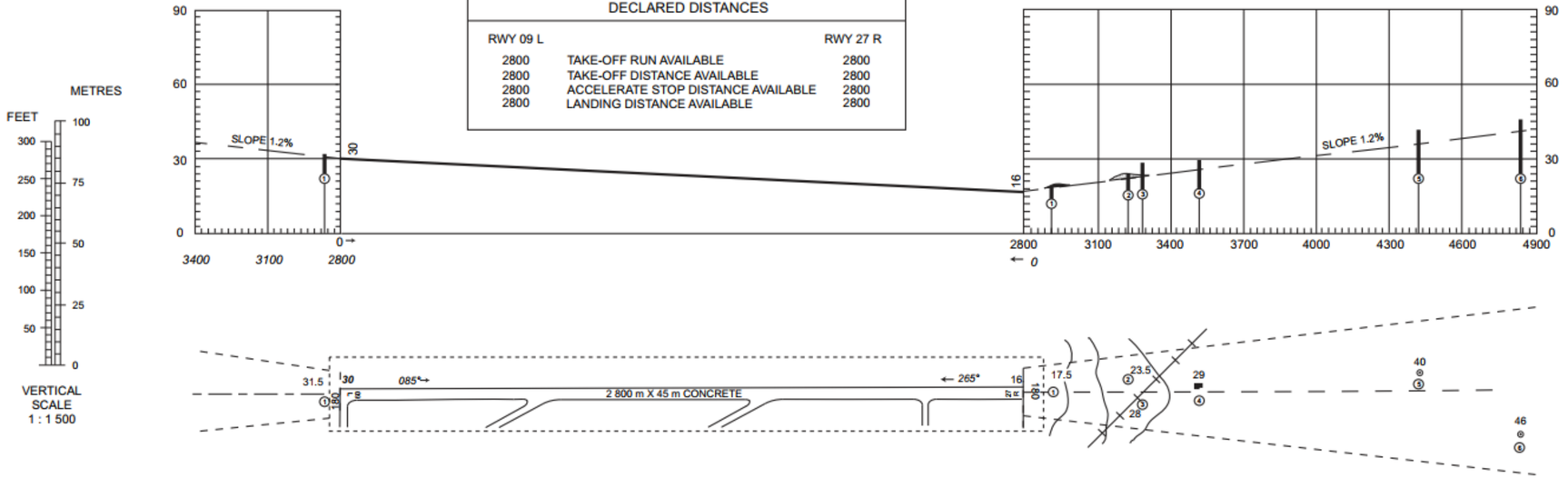
DONLON / International .....
RWY 27R / 09 L

DIMENSIONS AND ELEVATIONS IN METRES

MAGNETIC VARIATION 3° W – JAN 1990

RWY 27 R / 09 L

DECLARED DISTANCES		
RWY 09 L		RWY 27 R
2800	TAKE-OFF RUN AVAILABLE	2800
2800	TAKE-OFF DISTANCE AVAILABLE	2800
2800	ACCELERATE STOP DISTANCE AVAILABLE	2800
2800	LANDING DISTANCE AVAILABLE	2800



LEGEND	
IDENTIFICATION NUMBER	①
POLE, TOWER, SPIRE, ANTENNA, ETC.	⊙
BUILDING OR LARGE STRUCTURE	■
RAILROAD	
TERRAIN CONTOUR	
TERRAIN PENETRATING OBSTACLE PLANE	

HORIZONTAL SCALE 1 : 15 000

METRES 400 300 200 100 0 500 1000 1500 2000 2500

FEET 1000 500 0 1000 2000 3000 4000 5000 6000 7000 8000

ORDER OF ACCURACY
HORIZONTAL 00 m
VERTICAL 00 m

AMENDMENT RECORD		
No.	DATE	ENTERED BY

DATE OF AERONAUTICAL INFORMATION

PRODUCING ORGANIZATION

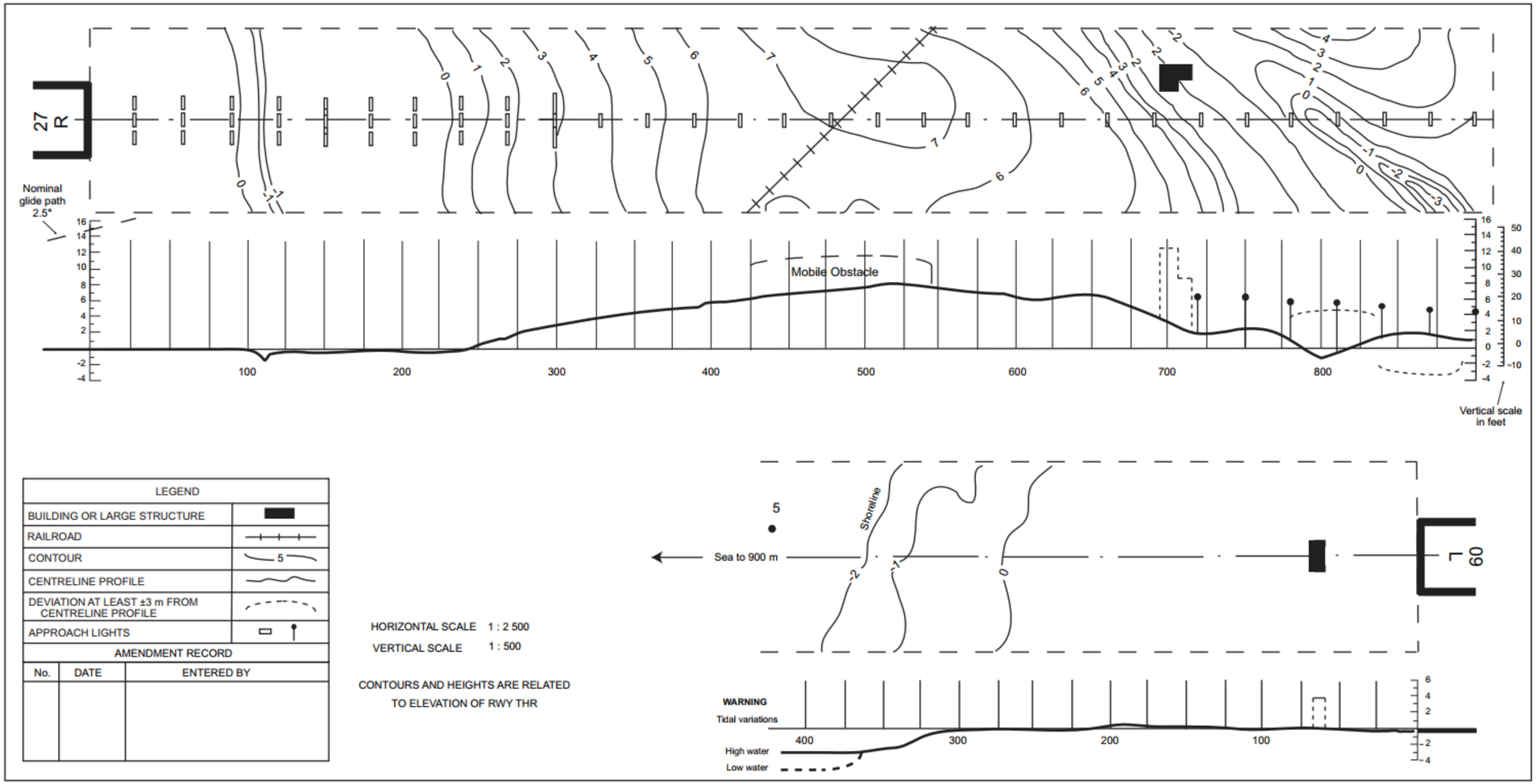
REFERENCE NUMBER
8/2/90

DISTANCES AND HEIGHT IN METRES

PRECISION APPROACH TERRAIN CHART — ICAO

CITY/AERODROME

RWY 27 R/09 L



LEGEND	
BUILDING OR LARGE STRUCTURE	
RAILROAD	
CONTOUR	5
CENTRELINE PROFILE	
DEVIATION AT LEAST ±3 m FROM CENTRELINE PROFILE	
APPROACH LIGHTS	

AMENDMENT RECORD

No.	DATE	ENTERED BY

HORIZONTAL SCALE 1 : 2 500

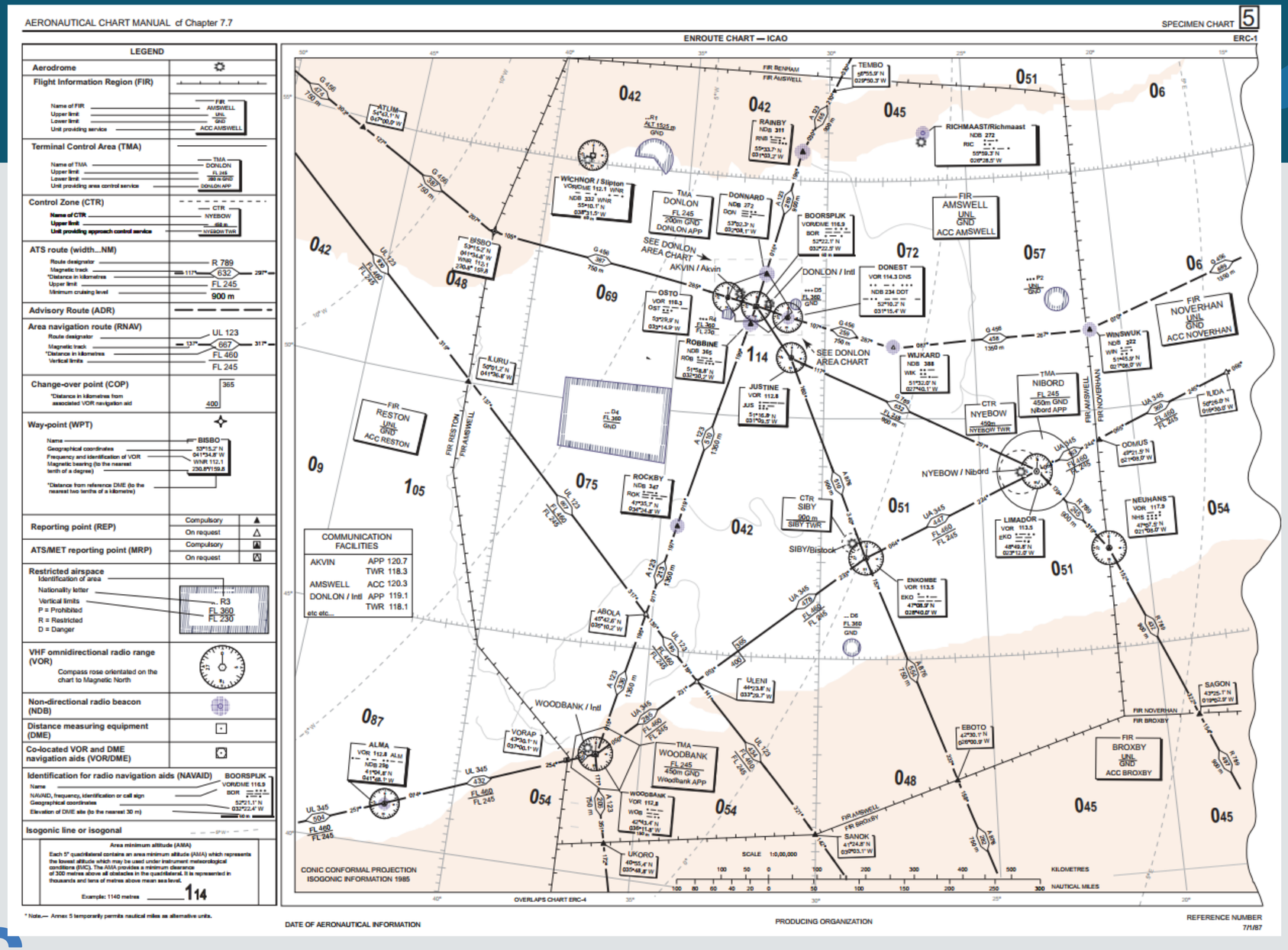
VERTICAL SCALE 1 : 500

CONTOURS AND HEIGHTS ARE RELATED TO ELEVATION OF RWY THR

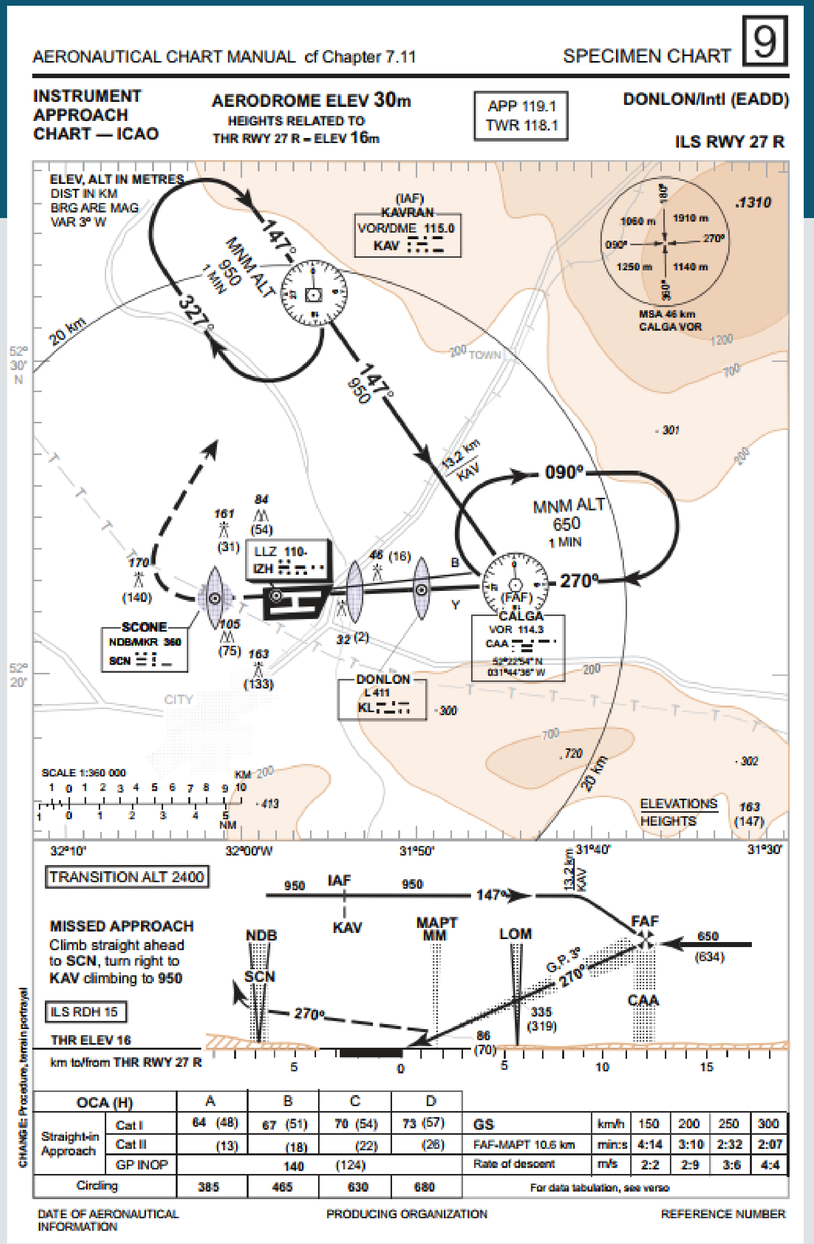
DATE OF AERONAUTICAL INFORMATION

PRODUCING ORGANIZATION

REFERENCE NUMBER 7/1/67



* Note.— Annex 5 temporarily permits nautical miles as alternative units.



9 SPECIMEN CHART AERONAUTICAL CHART MANUAL cf Chapter 7.11

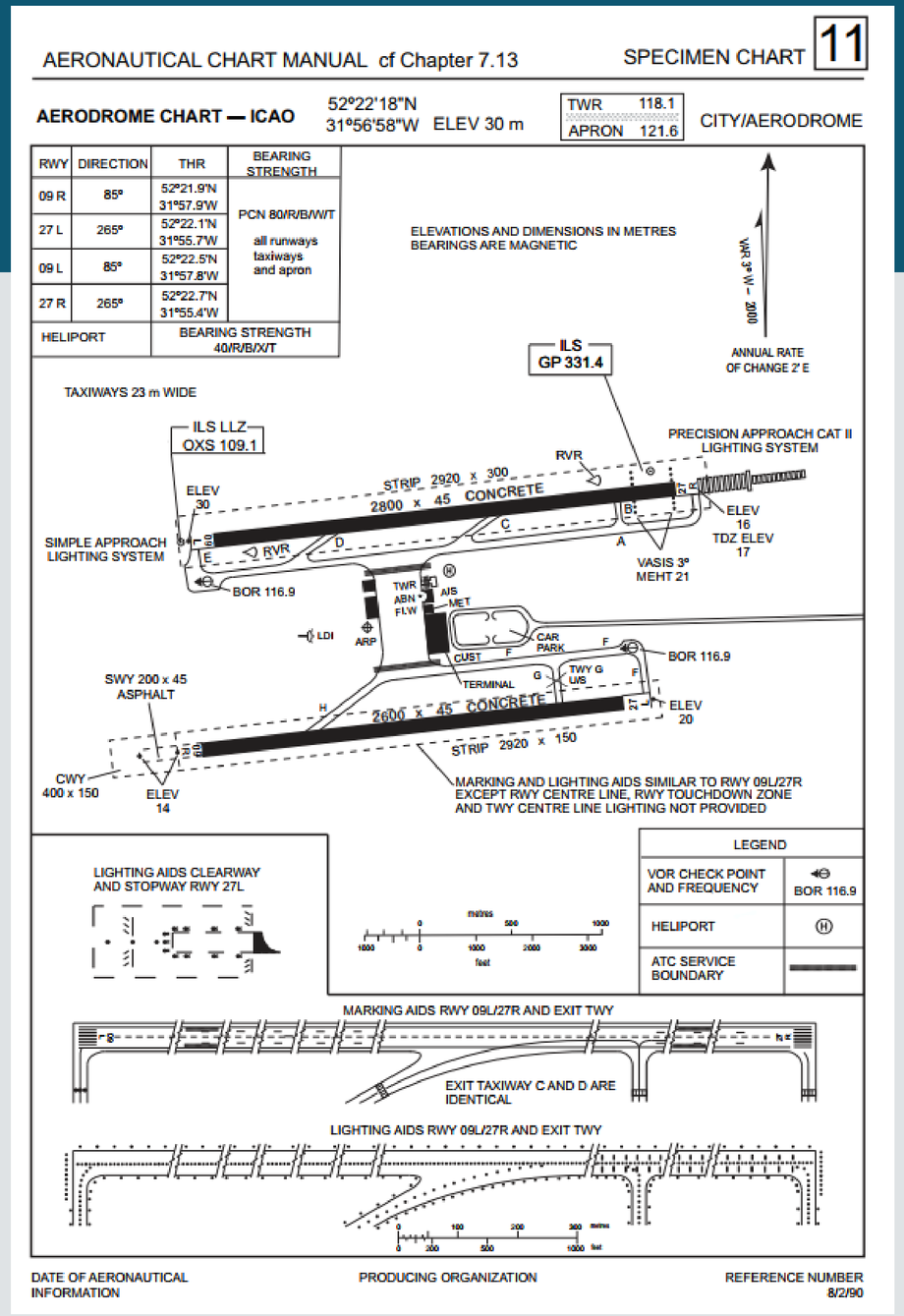
DONLON/Intl (EADD)

ILS RWY 27 R

AERONAUTICAL DATA TABULATION

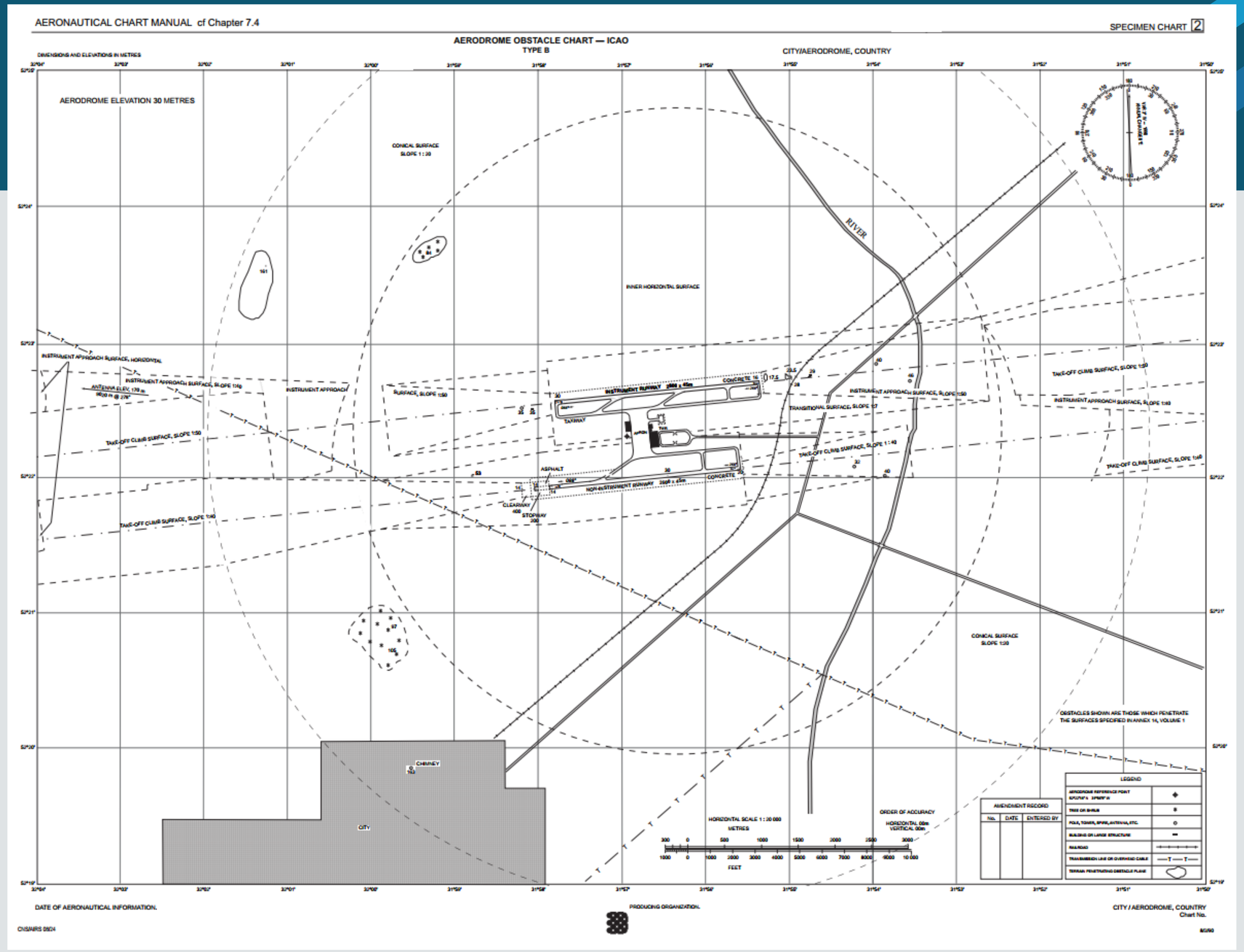
ILS approach to RWY 27R from KAV VOR/DME	
Fix/point	**Coordinates**
KAV VOR/DME (IAF)	52° 32'18.1"N 031°55'12.3"W
13.2 D KAV – BRG 147.05°/13.20 km KAV	52° 26'12.3"N 031°48'55.1"W
CAA VOR (FAF)	52° 22'54.2"N 031°44'36.1"W
KL L	52° 22'49.4"N 031°44'36.8"W
MM (MAPT) – BRG 270.03°/10.61 km CAA	52° 22'41.7"N 031°53'36.4"W
THR RWY 27R	52° 22'38.91"N 031°55'27.29"W
IZH LLZ	52° 22'38.0"N 031°58'00.9"W
SCN NDB/MKR	52° 22'22.4"N 031°01'40.2"W

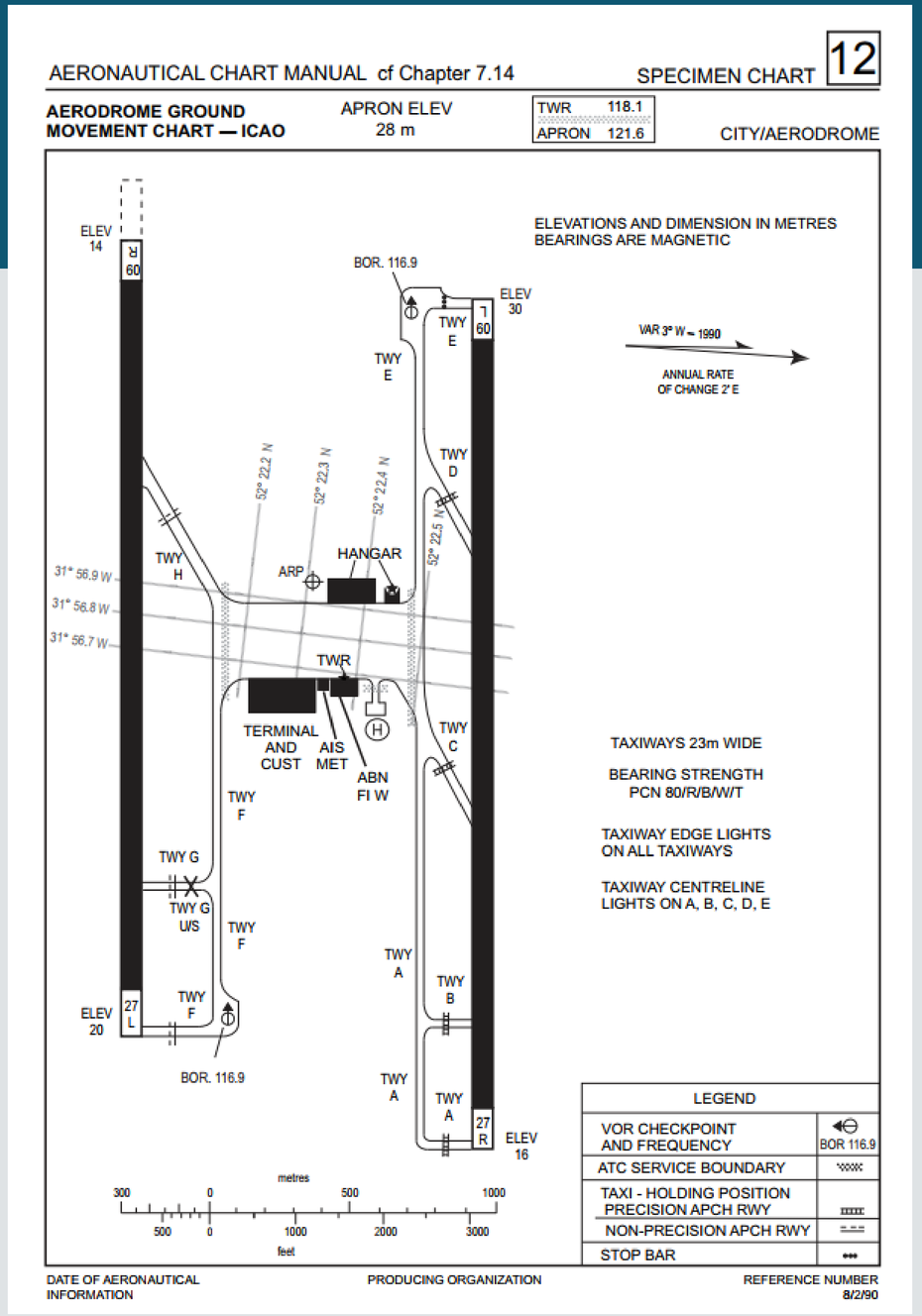
DATE OF AERONAUTICAL INFORMATION | PRODUCING ORGANIZATION | REFERENCE NUMBER


AERONAUTICAL CHART MANUAL cf Chapter 7.13
SPECIMEN CHART 11
AERODROME CHART — ICAO
52°22'18"N
31°56'58"W ELEV 30 m
TWR 118.1
APRON 121.6
CITY/AERODROME
RWY | DIRECTION | THR | BEARING STRENGTH
09 R | 85° | 52°21.9'N 31°57.9'W | PCN 80/R/B/W/T all runways taxiways and apron
27 L | 265° | 52°22.1'N 31°55.7'W
09 L | 85° | 52°22.5'N 31°57.8'W
27 R | 265° | 52°22.7'N 31°55.4'W
HELIPORT | BEARING STRENGTH 40/R/B/X/T
ELEVATIONS AND DIMENSIONS IN METRES
BEARINGS ARE MAGNETIC
VAR 9° W – 2000
ANNUAL RATE OF CHANGE 2' E
ILS GP 331.4
TAXIWAYS 23 m WIDE
ILS LLZ OXS 109.1
PRECISION APPROACH CAT II LIGHTING SYSTEM
RVR
STRIP 2920 x 300
ELEV 30
2800 x 45 CONCRETE
ELEV 16
TDZ ELEV 17
SIMPLE APPROACH LIGHTING SYSTEM
VASIS 3° MEHT 21
BOR 116.9
TWR ABN FLW
AIS
MET
LDI
ARP
CUST
CAR PARK
TERMINAL
TWY G U/S
BOR 116.9
SWY 200 x 45 ASPHALT
2600 x 45 CONCRETE
ELEV 20
STRIP 2920 x 150
CWY 400 x 150
ELEV 14
MARKING AND LIGHTING AIDS SIMILAR TO RWY 09L/27R EXCEPT RWY CENTRE LINE, RWY TOUCHDOWN ZONE AND TWY CENTRE LINE LIGHTING NOT PROVIDED
LEGEND
VOR CHECK POINT AND FREQUENCY
BOR 116.9
HELIPORT
ATC SERVICE BOUNDARY
LIGHTING AIDS CLEARWAY AND STOPWAY RWY 27L
MARKING AIDS RWY 09L/27R AND EXIT TWY
EXIT TAXIWAY C AND D ARE IDENTICAL
LIGHTING AIDS RWY 09L/27R AND EXIT TWY
DATE OF AERONAUTICAL INFORMATION
PRODUCING ORGANIZATION
REFERENCE NUMBER
8/2/90

Non Mandatory

Name	Annex 4	DOC 8697	Classification
Aerodrome Obstacle Chart — ICAO Type B	4	7.4	Non-mandatory
Aerodrome Ground Movement Chart — ICAO	14	7.14	Non-mandatory
Aircraft Parking/Docking Chart — ICAO	15	7.15	Non-mandatory
Aeronautical Chart — ICAO 1:500 000	17	7.17	Non-mandatory
Aeronautical Navigation Chart — ICAO Small Scale	18	7.18	Non-mandatory
Plotting Chart — ICAO	19	7.19	Non-mandatory


AERODROME OBSTACLE CHART — ICAO
TYPE B
CITY/AERODROME, COUNTRY
DIMENSIONS AND ELEVATIONS IN METRES
AERODROME ELEVATION 30 METRES
CONICAL SURFACE SLOPE 1:20
INNER HORIZONTAL SURFACE
RIVER
INSTRUMENT APPROACH SURFACE, HORIZONTAL
INSTRUMENT APPROACH SURFACE, SLOPE 1:40
INSTRUMENT APPROACH
SURFACE, SLOPE 1:50
TAKE-OFF CLIMB SURFACE, SLOPE 1:50
TAKE-OFF CLIMB SURFACE, SLOPE 1:40
INSTRUMENT RUNWAY 2800 x 45m
CONCRETE
TAXIWAY
TRANSITIONAL SURFACE, SLOPE 1:7
INSTRUMENT APPROACH SURFACE, SLOPE 1:50
TAKE-OFF CLIMB SURFACE, SLOPE 1:40
INSTRUMENT APPROACH SURFACE, SLOPE 1:40
TAKE-OFF CLIMB SURFACE, SLOPE 1:50
ASPHALT
NON-INSTRUMENT RUNWAY 2500 x 45m
CONCRETE
CLEARWAY 400
STOPWAY 300
CONICAL SURFACE SLOPE 1:20
OBSTACLES SHOWN ARE THOSE WHICH PENETRATE THE SURFACES SPECIFIED IN ANNEX 14, VOLUME I
CHIMNEY
CITY
HORIZONTAL SCALE 1:20 000
METRES
FEET
ORDER OF ACCURACY
HORIZONTAL 00m
VERTICAL 00m
AMENDMENT RECORD
No.
DATE
ENTERED BY
LEGEND
AERODROME REFERENCE POINT
TREE OR SHRUB
POLE, TOWER, SPIRE, ANTENNA, ETC.
BUILDING OR LARGE STRUCTURE
RAILROAD
TRANSMISSION LINE OR OVERHEAD CABLE
TERRAIN PENETRATING OBSTACLE PLANE
DATE OF AERONAUTICAL INFORMATION.
PRODUCING ORGANIZATION.
CITY / AERODROME, COUNTRY
Chart No.
CNSANRS 0924


AERONAUTICAL CHART MANUAL cf Chapter 7.14
SPECIMEN CHART 12
AERODROME GROUND MOVEMENT CHART — ICAO
APRON ELEV 28 m
TWR 118.1
APRON 121.6
CITY/AERODROME
ELEVATIONS AND DIMENSION IN METRES
BEARINGS ARE MAGNETIC
VAR 3° W – 1990
ANNUAL RATE OF CHANGE 2' E
ELEV 14
R 60
BOR. 116.9
ELEV 30
L 60
TWY E
TWY D
TWY C
TWY B
TWY A
TWY F
TWY G
TWY G U/S
TWY H
ARP
HANGAR
TWR
TERMINAL AND CUST
AIS MET
ABN FI W
52° 22.2 N
52° 22.3 N
52° 22.4 N
52° 22.5 N
31° 56.9 W
31° 56.8 W
31° 56.7 W
ELEV 20
27 L
27 R
ELEV 16
TAXIWAYS 23m WIDE
BEARING STRENGTH PCN 80/R/B/W/T
TAXIWAY EDGE LIGHTS ON ALL TAXIWAYS
TAXIWAY CENTRELINE LIGHTS ON A, B, C, D, E
LEGEND
VOR CHECKPOINT AND FREQUENCY
BOR 116.9
ATC SERVICE BOUNDARY
TAXI - HOLDING POSITION PRECISION APCH RWY
NON-PRECISION APCH RWY
STOP BAR
metres
300 0 500 1000
500 0 1000 2000 3000
feet
DATE OF AERONAUTICAL INFORMATION
PRODUCING ORGANIZATION
REFERENCE NUMBER 8/2/90

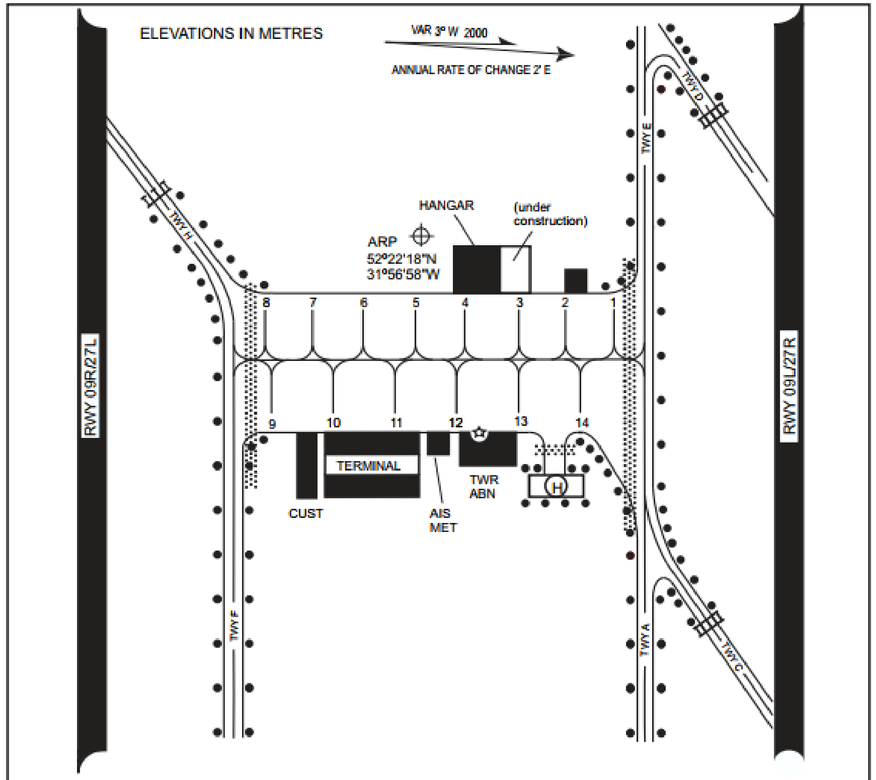
AERONAUTICAL CHART MANUAL cf Chapter 7.15 SPECIMEN CHART 13

AIRCRAFT PARKING/ DOCKING CHART — ICAO

APRON ELEV 28 m

TWR	118.1
APRON	121.6

CITY/AERODROME



LEGEND	
AIRCRAFT STAND	5
TAXIWAY LIGHT	•
ATC SERVICE BOUNDARY	
TAXI - HOLDING POSITION PRECISION APCH RWY	
NON - PRECISION APCH RWY	

metres
100 0 100 200 300 400 500
200 0 400 800 1200 1600
feet

TAXIWAYS 23 m WIDE

TAXIWAYS AND APPROACH BEARING STRENGTH PCN 80/R/B/W/T

AIRCRAFT STANDS 1 AND 8 NOT FOR B747

AIRCRAFT STANDS 10 TO 13 AGNIS EQUIPPED

INS COORDINATES FOR AIRCRAFT STANDS			
1	52°22.5'N 031°56.9'W	8	52°22.2'N 031°56.9'W
2,3	52°22.4'N 031°56.9'W	9,10	52°22.2'N 031°56.7'W
4,5	52°22.3'N 031°56.9'W	11,12	52°22.3'N 031°56.7'W
6,7	52°22.2'N 031°56.9'W	13,14	52°22.4'N 031°56.7'W

DATE OF AERONAUTICAL INFORMATION | PRODUCING ORGANIZATION | REFERENCE NUMBER 8/2/90

Conditional

Name	Annex 4	DOC 8697	Classification
Area Chart — ICAO	8	7.8	Conditional
Standard Departure Chart — Instrument (SID) — ICAO	9	7.9	Conditional
Standard Arrival Chart — Instrument (STAR) — ICAO	10	7.10	Conditional
Visual Approach Chart — ICAO	12	7.12	Conditional

AREA CHART — ICAO

TMA DONLON

LEGEND		
CONTROL AREA	(TMA) (AWY)	
ADVISORY ROUTE	(ADR)	
CONTROL ZONE	(CTR)	
REPORTING POINT	(Compulsory)	▲
DEPARTURE/ARRIVAL ROUTING		DON 2A
DISTANCE IN KILOMETRES		57
MINIMUM FLIGHT ALTITUDE		1 500 m
MAGNETIC BEARING		340°
RADIO NAVIGATION AID	NAME	BOORSPIJK
	NAVAID TYPE AND FREQUENCY	VOR/DME 116.9
	IDENTIFICATION	BOR
	COORDINATES	52°22'06" N 032°22'30" W
	ELEVATION OF DME ANTENNA	60 m

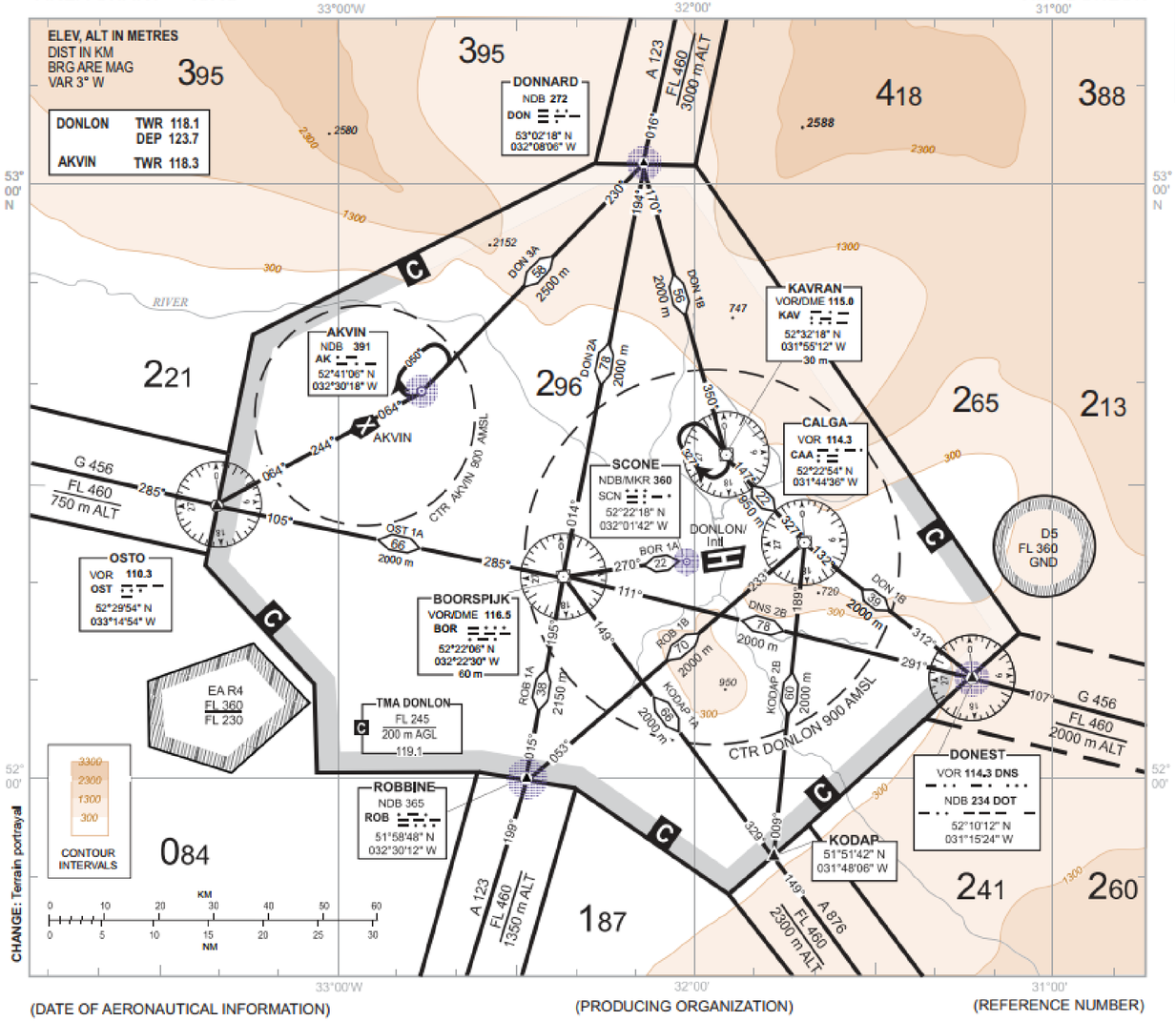
Area minimum altitude (AMA)

Each 1° quadrilateral contains an area minimum altitude (AMA) which represents the lowest altitude which may be used under instrument meteorological conditions (IMC). The AMA provides a minimum clearance of 300 metres (600 m in mountainous areas) above all obstacles in the quadrilateral. It is represented in thousands and tens of metres above mean sea level.

Example: 1140 metres 114

COM FAILURE

Set transponder code 7600
Maintain last assigned speed and LVL, or MNM FLT ALT, if higher for 7 MIN following time of:
a) reaching last assigned LVL or MNM FLT ALT; or
b) setting transponder code 7600; or
c) failure to REP over compulsory REP; whichever is later.
Thereafter adjust LVL and speed according to FPL.



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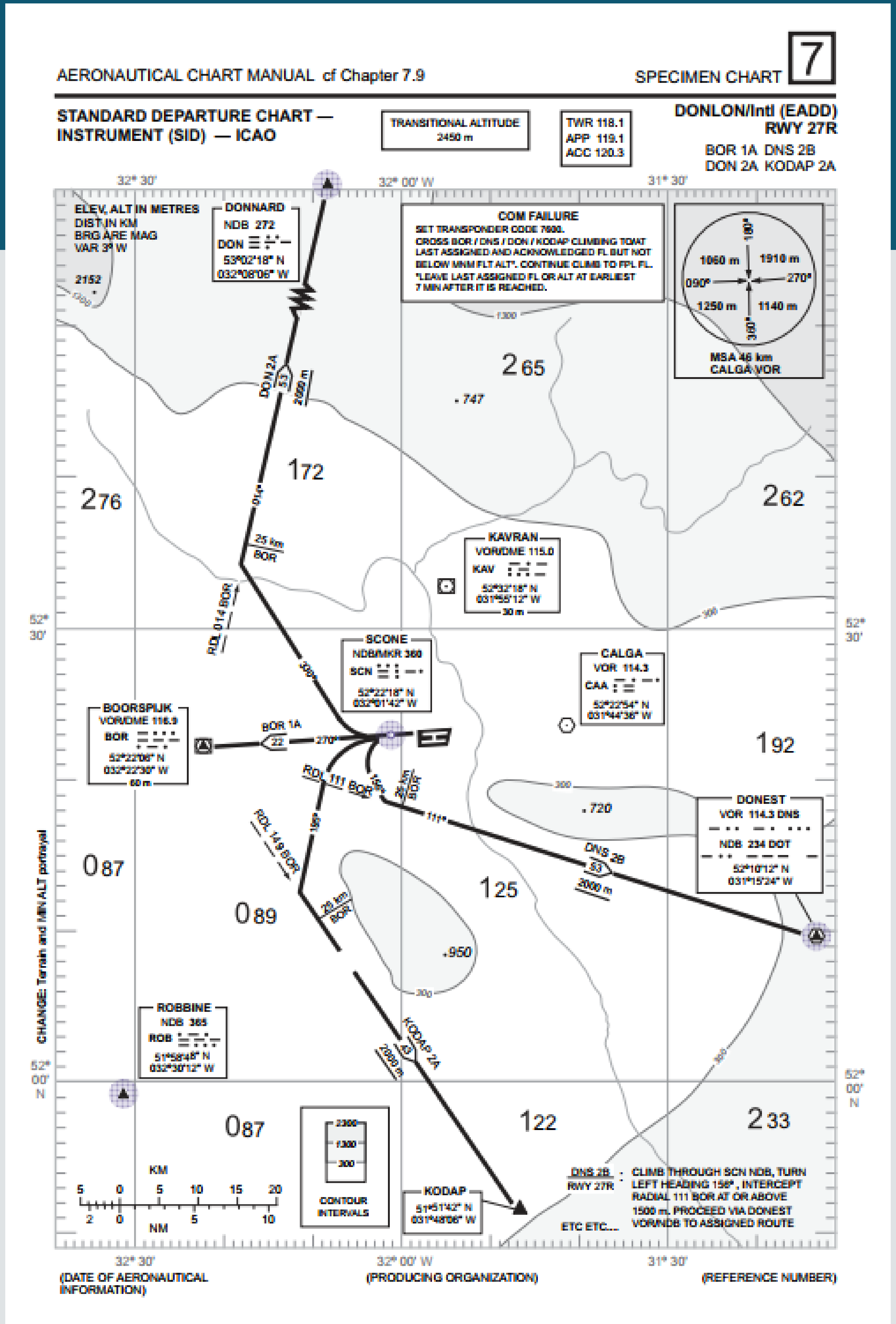
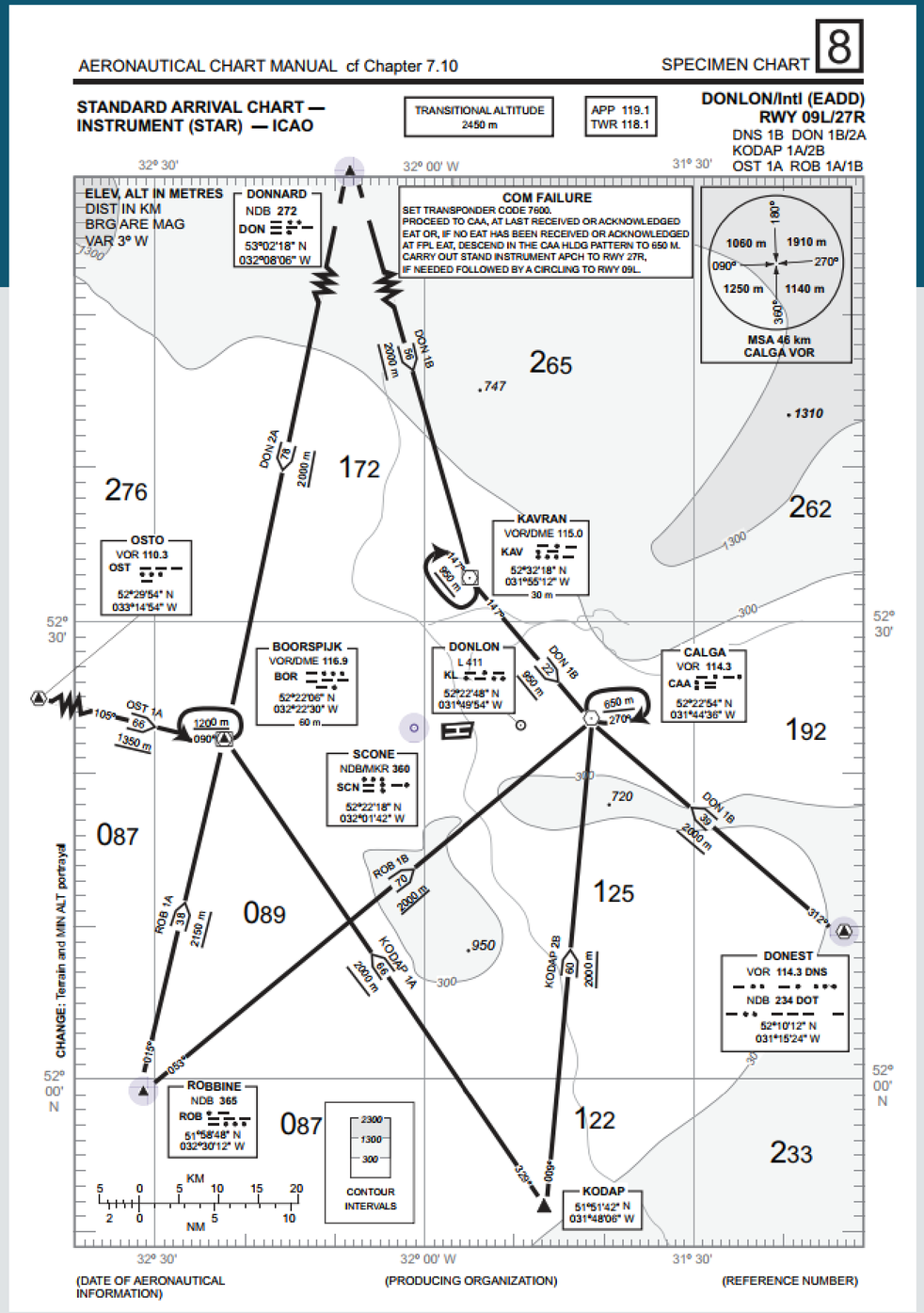
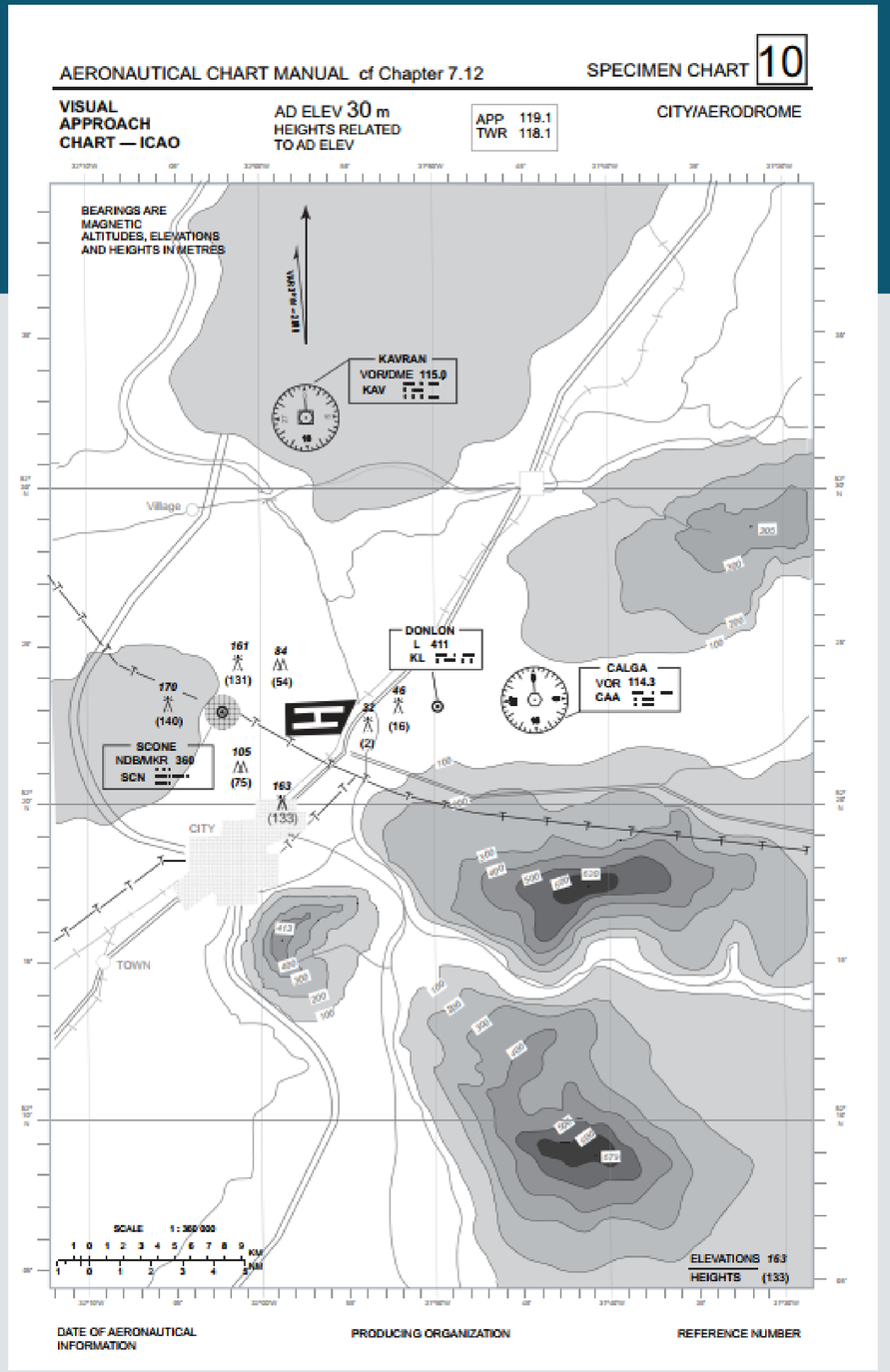


AERONAUTICAL CHART MANUAL cf Chapter 7.9
SPECIMEN CHART 7
STANDARD DEPARTURE CHART — INSTRUMENT (SID) — ICAO
TRANSITIONAL ALTITUDE 2450 m
TWR 118.1
APP 119.1
ACC 120.3
DONLON/Intl (EADD)
RWY 27R
BOR 1A DNS 2B
DON 2A KODAP 2A
ELEV, ALT IN METRES
DIST IN KM
BRG ARE MAG
VAR 3° W
DONNARD
NDB 272
DON
53°02'18" N
032°08'06" W
COM FAILURE
SET TRANSPONDER CODE 7600.
CROSS BOR / DNS / DON / KODAP CLIMBING TO*AT LAST ASSIGNED AND ACKNOWLEDGED FL BUT NOT BELOW MNM FLT ALT*. CONTINUE CLIMB TO FPL FL.
*LEAVE LAST ASSIGNED FL OR ALT AT EARLIEST 7 MIN AFTER IT IS REACHED.
1060 m
1910 m
1250 m
1140 m
MSA 46 km
CALGA VOR
KAVRAN
VOR/DME 115.0
KAV
52°32'18" N
031°55'12" W
SCONE
NDB/MKR 360
SCN
52°22'18" N
032°01'42" W
CALGA
VOR 114.3
CAA
52°22'54" N
031°44'36" W
BOORSPIJK
VOR/DME 116.9
BOR
52°22'06" N
032°22'30" W
BOR 1A
DONEST
VOR 114.3 DNS
NDB 234 DOT
52°10'12" N
031°15'24" W
ROBBINE
NDB 365
ROB
51°58'48" N
032°30'12" W
KODAP
51°51'42" N
031°48'06" W
CONTOUR INTERVALS
KM
NM
DNS 2B
RWY 27R
CLIMB THROUGH SCN NDB, TURN LEFT HEADING 156°, INTERCEPT RADIAL 111 BOR AT OR ABOVE 1500 m. PROCEED VIA DONEST VOR/NDB TO ASSIGNED ROUTE
ETC ETC....
CHANGE: Terrain and MIN ALT portrayal
(DATE OF AERONAUTICAL INFORMATION)
(PRODUCING ORGANIZATION)
(REFERENCE NUMBER)


AERONAUTICAL CHART MANUAL cf Chapter 7.10
SPECIMEN CHART 8
STANDARD ARRIVAL CHART — INSTRUMENT (STAR) — ICAO
TRANSITIONAL ALTITUDE 2450 m
APP 119.1
TWR 118.1
DONLON/Intl (EADD)
RWY 09L/27R
DNS 1B DON 1B/2A
KODAP 1A/2B
OST 1A ROB 1A/1B
ELEV, ALT IN METRES
DIST IN KM
BRG ARE MAG
VAR 3° W
DONNARD
NDB 272
DON
53°02'18" N
032°08'06" W
COM FAILURE
SET TRANSPONDER CODE 7600.
PROCEED TO CAA, AT LAST RECEIVED OR ACKNOWLEDGED EAT OR, IF NO EAT HAS BEEN RECEIVED OR ACKNOWLEDGED AT FPL EAT, DESCEND IN THE CAA HLDG PATTERN TO 650 M. CARRY OUT STAND INSTRUMENT APCH TO RWY 27R, IF NEEDED FOLLOWED BY A CIRCLING TO RWY 09L.
1060 m
1910 m
1250 m
1140 m
MSA 46 km
CALGA VOR
OSTO
VOR 110.3
OST
52°29'54" N
033°14'54" W
KAVRAN
VOR/DME 115.0
KAV
52°32'18" N
031°55'12" W
30 m
BOORSPIJK
VOR/DME 116.9
BOR
52°22'06" N
032°22'30" W
60 m
DONLON
L 411
KL
52°22'48" N
031°49'54" W
CALGA
VOR 114.3
CAA
52°22'54" N
031°44'36" W
SCONE
NDB/MKR 360
SCN
52°22'18" N
032°01'42" W
DONEST
VOR 114.3 DNS
NDB 234 DOT
52°10'12" N
031°15'24" W
ROBBINE
NDB 365
ROB
51°58'48" N
032°30'12" W
KODAP
51°51'42" N
031°48'06" W
265
172
276
262
192
087
089
125
122
233
CONTOUR INTERVALS
2300
1300
300
KM
NM
CHANGE: Terrain and MIN ALT portrayal
32° 30'
32° 00' W
31° 30'
52° 30'
52° 00' N
(DATE OF AERONAUTICAL INFORMATION)
(PRODUCING ORGANIZATION)
(REFERENCE NUMBER)

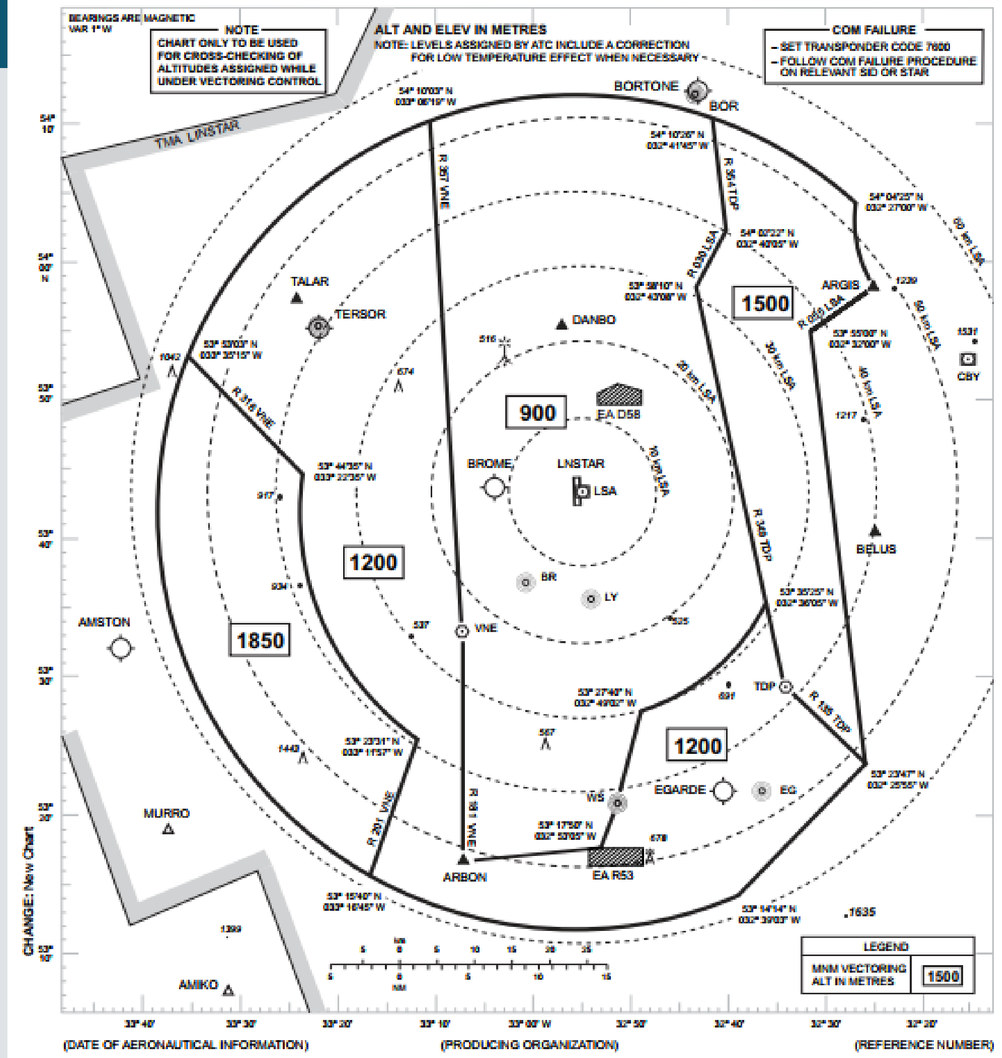

AERONAUTICAL CHART MANUAL cf Chapter 7.12
SPECIMEN CHART 10
VISUAL APPROACH CHART — ICAO
AD ELEV 30 m
HEIGHTS RELATED TO AD ELEV
APP 119.1
TWR 118.1
CITY/AERODROME
BEARINGS ARE MAGNETIC
ALTITUDES, ELEVATIONS AND HEIGHTS IN METRES
KAVRAN
VOR/DME 115.0
KAV
DONLON
L 411
KL
CALGA
VOR 114.3
CAA
SCONE
NDB/MKR 360
SCN
Village
CITY
TOWN
161 (131)
84 (54)
170 (140)
46 (16)
32 (2)
105 (75)
163 (133)
SCALE 1 : 360 000
ELEVATIONS 163
HEIGHTS (133)
DATE OF AERONAUTICAL INFORMATION
PRODUCING ORGANIZATION
REFERENCE NUMBER

Non-classified

Name	Annex 4	DOC 8697	Classification
Aerodrome Terrain and Obstacle Chart — ICAO (Electronic)	5	7.5	
Electronic Aeronautical Chart Display — ICAO	20	7.20	
ATC Surveillance Minimum Altitude Chart — ICAO	21	7.21	

AERONAUTICAL CHART MANUAL cf Chapter 7.21 SPECIMEN CHART 14

ATC SURVEILLANCE MINIMUM ALTITUDE CHART — ICAO | **AERODROME ELEV 250 m** **TRANSITION ALT 2150 m** | APP 119.8 | **LINSTAR/Intl (EADL)**



Conclusions

Conclusions

What can we do?

- Standardize
- Update and Maintenance
- Training

Additional resources and Forum

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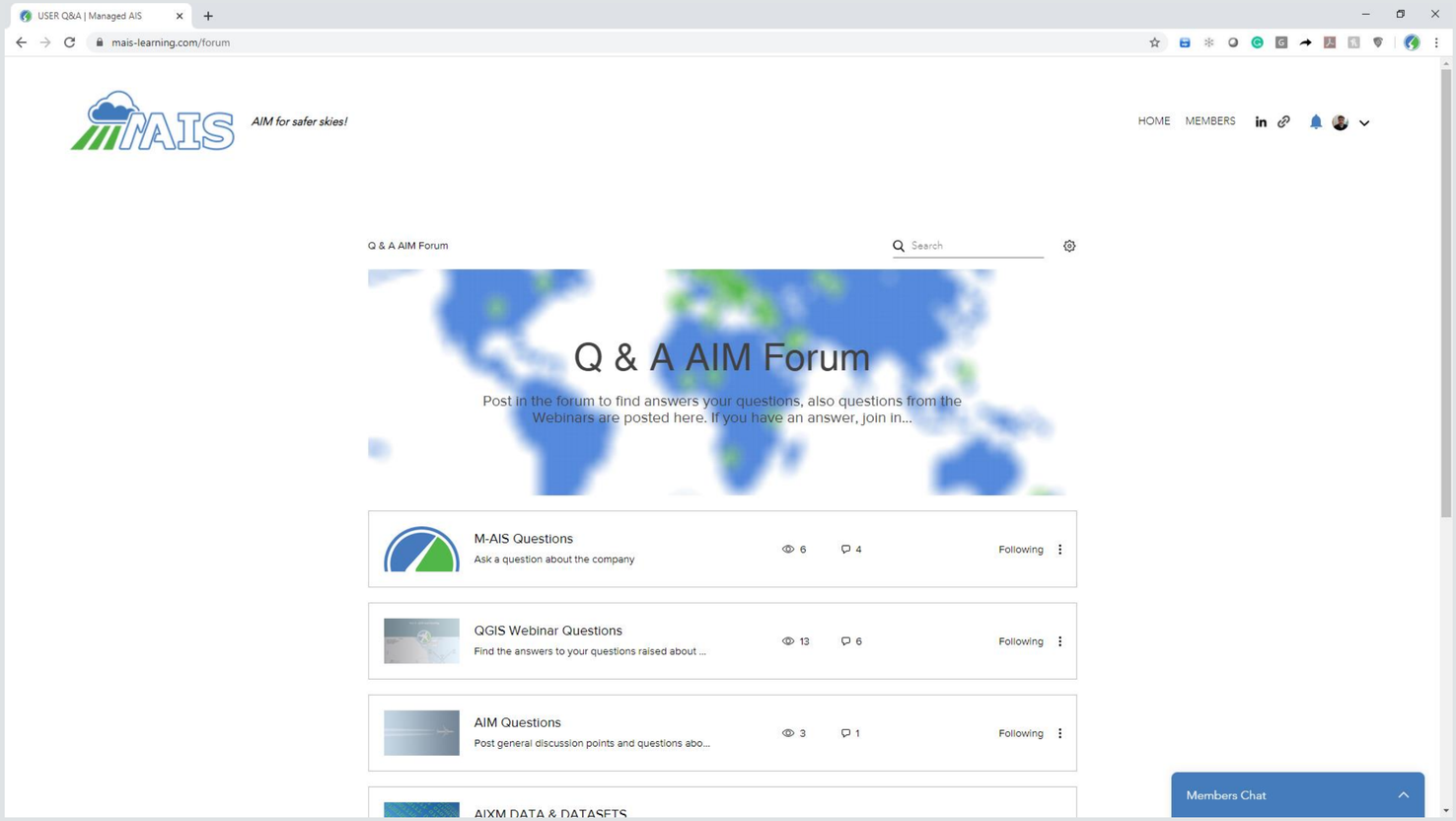

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