

ASSUNTO: REQUISITOS APLICÁVEIS ÀS ORGANIZAÇÕES DE PRODUÇÃO DE CARTAS AERONÁUTICAS



DIRETIVA OPERACIONAL
DE SEGURANÇA
DOS – 08-2018

1. Objetivo

Esta diretiva sobre Cartas Aeronáuticas é emitida para estabelecer obrigatoriedade na implementação dos procedimentos de estrutura do treinamento dos cartógrafos, registo, descrição de cargos e funções dos técnicos, mecanismo para eliminação de deficiências e verificação de Cartas Aeronáuticas exigidas pela Autoridade Reguladora da Aviação Civil.

2. Aplicabilidade

Esta diretiva sobre Cartas Aeronáuticas é aplicável a todas as Organizações vocacionadas na Produção de Cartas Aeronáuticas e a todas as entidades sujeitas à jurisdição do IACM.

3. Autoridade

3.1 Esta diretiva sobre Cartas Aeronáuticas é emitida pelo Instituto de Aviação Civil de Moçambique (IACM) em aplicação dos poderes conferidos nº 1 e 3 do art. 12 da Lei nº 05/2016 de 14 de Junho.

4. Referências

- a) Anexo 4;
- b) Manual de MAP Doc. 8697 da ICAO;
- c) Manual do AIS Doc. 8126 da ICAO;
- d) Manual de Treinamento Doc. 7192 Part E-3 – ICAO

5. Estrutura de Formação de Cartografia

O programa de treinamento de Cartografia deve ser estruturado da seguinte maneira:

- a) Formação básica;
- b) Formação no local de trabalho (OLT);
- c) Formação recorrente;
- d) Formação de refrescamento;
- e) Formação avançada;
- f) Formação de especialização.

O provedor de serviço no desenvolvimento e implementação do programa de formação de cartografia deve estruturá-lo e incluir o seguinte:

- a) Formação de auditoria Interna do Sistema de Gestão de Qualidade (QMS);

O Provedor de Serviço de Cartografia deve garantir que os registos de treinamento, incluindo o OJT, sejam devidamente mantidos em arquivo.

Os registos de treinamento devem incluir certificados, tarefas de OJT realizadas e quaisquer outros documentos relacionados à formação e aprovação de trabalhos realizados.

7 - Descrição de cargos e funções do pessoal de Cartografia

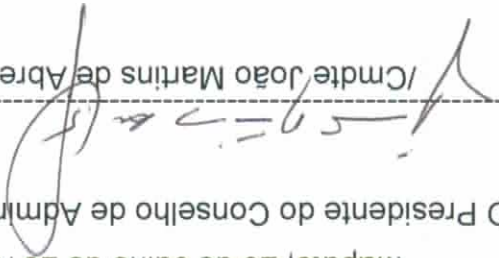
O Provedor de Serviço de Cartografia Aeronáutica, deve estabelecer a descrição de funções para cada posição dos sectores e/ou serviços, a fim de garantir que as funções e actividades de Cartografia estejam alinhadas com os requisitos dos regulamentos e do manual de Cartografia Aeronáutica. Os deveres e responsabilidades do pessoal de Cartografia Aeronáutica, deve incluir o seguinte:

- a) Gerir o pessoal de cartografia e requisitos orgânicos;
- b) Manter uma estreita coordenação com os usuários de Cartografia;
- c) Administração e gerenciamento de operações de cartografia dentro da Informação de voo na região e assegurar que todas as unidades AIS e Aeródromos funcionem de acordo com o Regulamento da Aviação Civil aplicável, Manual de normas ANS, Circulares de Aviação Civil e outros procedimentos locais relevantes;
- d) Garantir o processamento e fornecimento de informações/dados e briefing do plano de voo para facilitar o fluxo seguro e expedito do tráfego aéreo, pesquisa e operações de resgate;
- e) Preparação e implementação de programas de treinamento para pessoal de cartografia incluindo treinamento no local (trabalho OJT);
- f) Avaliar o desempenho do pessoal e identificar as necessidades de treinamento;
- g) Conduzir OJT para o pessoal de cartografia;
- h) Verificação e autorização de dados aeronáuticos de várias fontes antes da publicação, distribuição e armazenamento em base de dados;
- i) Garantir a melhoria contínua de todos os aspectos da gestão da qualidade do sistema;
- j) Garantir a adesão ao sistema AIRAC;
- k) Garantir a implementação do WGS 84 e TOD;
- l) Desenvolver e publicar cartas aeronáuticos.

8 - Mecanismos para eliminação de deficiências na prestação de Serviços de Cartografia

Aeronáutica

O Provedor de Serviço, deve desenvolver Planos de Acções Corretivas de curto e longo prazo, dependendo do impacto de segurança e da disponibilidade de recursos, com vista a corrigir as deficiências identificadas no quadro de APIRG e Serviços de Informação Aeronáutica e apresentar os mesmos ao IACM para a sua aprovação.

Maputo, 20 de Julho de 2018
O Presidente do Conselho de Administração

/Cmdte João Martins de Abreu/

Esta diretiva entra em vigor na data da sua publicação.
Esta diretiva permanece em vigor até a data de publicação do MOZCAR Parte 177 Regulamento Sobre Cartas Aeronáuticas.

11- Entrada em vigor

As disposições constantes da presente diretiva têm carácter obrigatório e de efeito imediato.

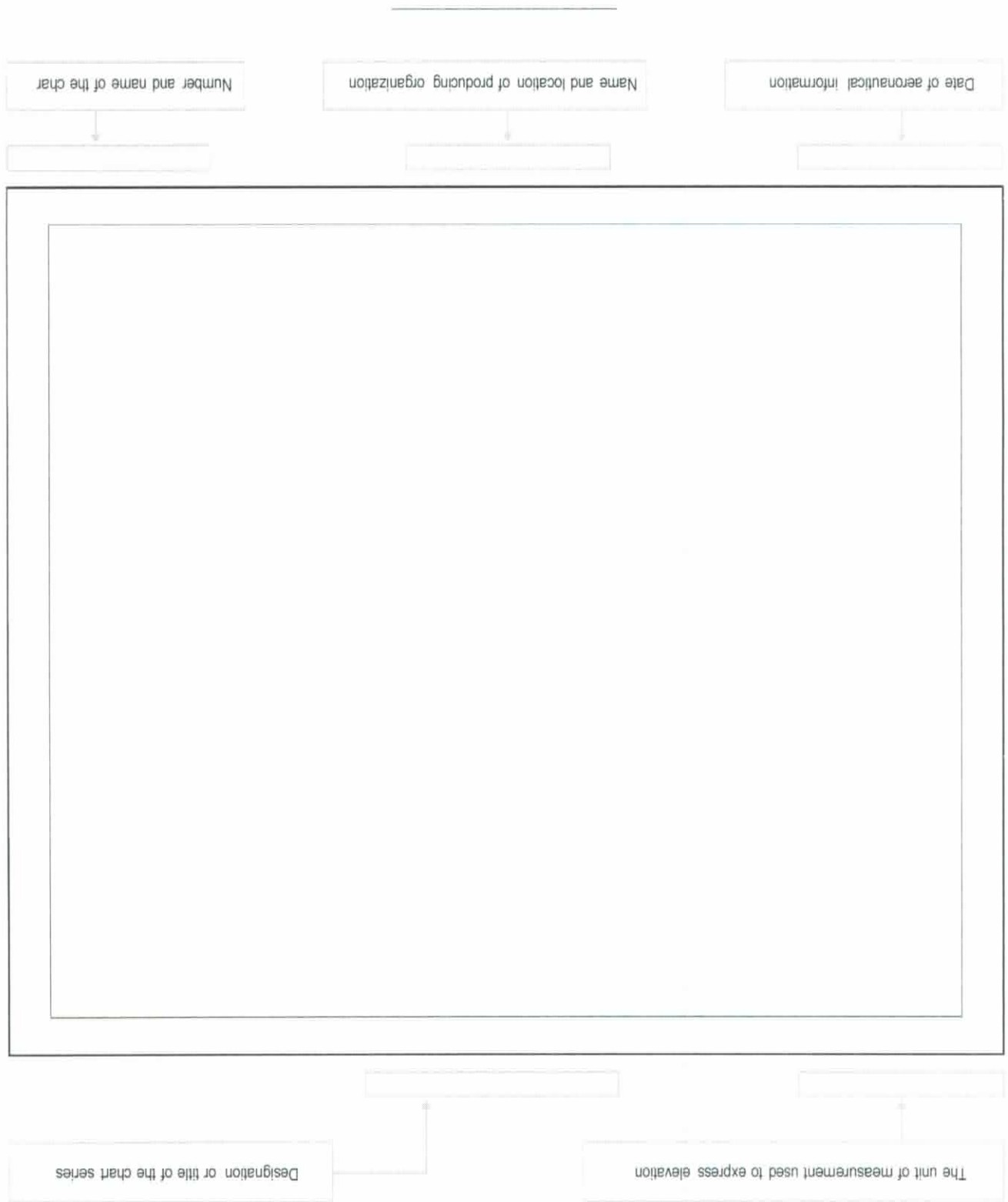
10-Cumprimento

- após a recepção dos dados aeronáuticos, conforme o descrito nos apêndices 1-6 da DSO-08-2018.
- h) O provedor deve estabelecer procedimentos de verificação e validação que assegurem o cumprimento dos requisitos de qualidade (precisão, resolução, integridade e rastreabilidade), necessárias foram incluídas o que é correcto em detalhes antes da distribuição;
- g) O material a ser emitido como parte do Pacote Integrado de Informações deve ser cuidadosamente verificado antes de ser submetido, a fim de assegurar que todas as informações da carta para e adequado à fase de voo;
- f) A apresentação das informações fornecidas em cada tipo de carta deve permitir a transição suave consistente e condições de operação;
- e) A informação deve ser de uma forma que permita ao piloto adquiri-la em um tempo razoável facilmente pelo piloto em condições variadas de luz natural e artificial;
- d) As cores ou tonalidades e o tamanho devem ser tais que a carta possa ser lida e interpretada transição de uma carta para outra, conforme a fase de voo;
- c) A apresentação da informação fornecida em cada tipo de carta é feita de forma a facilitar a correspondente, a fim de garantir a operação da aeronave da maneira expedita e segura;
- b) Cada tipo de carta fornece a informação correspondente a sua função e a própria fase do voo factores principais que facilitam o seu uso;
- a) Cada tipo de carta deve fornecer informações relevantes para a sua função e deve observar

9- Procedimento para verificação de cartas

APPENDIX 1 a 6 DA DSO-08-2018

APPENDIX 1. MARGINAL NOTE LAYOUT



APPENDIX 2. ICAO CHART SYMBOLS

1. CATEGORY INDEX

Symbol
No.

2	Approximate contours.....
18	Areas not surveyed for contour information or relief data incomplete.....
4	Bluff, cliff or escarpment.....
15	Coniferous trees.....
1	Contours.....
8	Gravel.....
12	Highest elevation on chart.....
5	Lava flow.....
9	Levee or esker.....
11	Mountain pass.....
16	Other trees.....
17	Palms.....
3	Relief shown by hachures.....
7	Sand area.....
6	Sand dunes.....
14	Spot elevation (of doubtful accuracy).....
13	Spot elevation.....
10	Unusual land features appropriately labelled.....
TOPOGRAPHY (1-18)	
30	Abandoned canal.....
29	Canal.....
44	Charted isolated rock.....
22	Coral reefs and ledges.....
43	Danger line (2 m or one fathom line).....
39	Dry lake bed.....
28	Falls.....
42	Glaciers and ice caps.....
32	Lakes (non-perennial).....
31	Lakes (perennial).....
23	Large river (perennial).....
27	Rapids.....
38	Reservoir.....
36	Rice field.....
25	Rivers and streams (non-perennial).....
26	Rivers and streams (unsurveyed).....
45	Rock awash.....
33	Salt lake.....
34	Salt pans (evaporator).....
HYDROGRAPHY (19-46)	

Symbol
No.

41	Shoals
19	Shore line (reliable)
20	Shore line (unreliable)
24	Small river (perennial)
37	Spring, well or water hole
35	Swamp
21	Tidal flats
46	Unusual water features appropriately labelled
40	Wash

CULTURE (47-83)

50	Buildings
47	City or large town
48	Town
49	Village

Railroads (51-56)

51	Railroad (single track)
52	Railroad (two or more tracks)
53	Railroad (under construction)
54	Railroad bridge
56	Railroad station
55	Railroad tunnel

Highways and Roads (57-62)

57	Dual highway
58	Primary road
61	Road bridge
62	Road tunnel
59	Secondary road
60	Trail

Miscellaneous (63-83)

63	Boundaries (international)
80	Church
73	Coast guard station
67	Dam
65	Fence
68	Ferry
76	Forest ranger station
79	Fort
74	Lookout tower
75	Mine
81	Mosque
72	Nuclear power station
70	Oil or gas field
64	Outer boundaries
82	Pagoda

Symbol
No.

69	Pipeline.....
77	Race track or stadium.....
78	Ruins.....
71	Tank farms.....
66	Telegraph or telephone line (when a landmark).....
83	Temple.....

AERODROMES (84-95)

91	Abandoned or closed aerodrome.....
93	Aerodrome for use on charts on which aerodrome classification is not required.....
84	Civil — Land.....
85	Civil — Water.....
90	Emergency aerodrome or aerodrome with no facilities.....
94	Heliport.....
88	Joint civil and military — Land.....
89	Joint civil and military — Water.....
86	Military — Land.....
87	Military — Water.....
95	Runway pattern in lieu of the aerodrome symbol.....
92	Sheltered anchorage.....
96	<i>Aerodrome data in abbreviated form which may be in association with aerodrome symbols.....</i>
97	<i>Aerodromes affecting the traffic pattern on the aerodrome on which the procedure is based.....</i>
98	<i>The aerodrome on which the procedure is based.....</i>

RADIO NAVIGATION AIDS (99-110)

99	Basic radio navigation aid symbol.....
103	Collocated VOR and DME radio navigation aids — VOR/DME.....
107	Collocated VOR and TACAN radio navigation aids — VORTAC.....
110	Compass rose.....
102	Distance measuring equipment — DME.....
104	DME distance.....
108	Instrument landing system — ILS.....
100	Non-directional radio beacon — NDB.....
109	Radio marker beacon.....
106	UHF tactical air navigation aid — TACAN.....
101	VHF omnidirectional radio range — VOR.....
105	VOR radial.....
115	Advisory airspace — ADA.....
118	Advisory route — ADR.....
112	Aerodrome traffic zone — ATZ.....
117	Air defence identification zone — ADIZ.....
125	Altitudes/flight levels.....

AIR TRAFFIC SERVICES (111-144)

Symbol
No.

123	ATS/MET reporting point — MRP
122	Change-over point — COP
113	Control area, Airway, Controlled route
116	Control zone — CTR
124	Final approach fix — FAF
111	Flight information region — FIR
121	Reporting and Fly-by/Flyover functionality
120	Scale-break (on ATS route)
114	Uncontrolled route
119	Visual flight path
<i>Airspace Classifications (126 and 127)</i>	
127	Aeronautical data in abbreviated form to be used in association with airspace classification symbols
126	Airspace classifications
<i>Airspace Restrictions (128 and 129)</i>	
129	International boundary closed to passage of aircraft except through air corridor
128	Restricted airspace (prohibited, restricted or danger area)
<i>Obstacles (130-136)</i>	
136	Elevation of top/Height above specified datum
135	Exceptionally high obstacle — lighted (optional symbol)
134	Exceptionally high obstacle (optional symbol)
132	Group obstacles
133	Lighted group obstacles
131	Lighted obstacle
130	Obstacle
<i>Miscellaneous (137-141)</i>	
138	Isogonic line or isogonal
139	Ocean station vessel (normal position)
137	Prominent transmission line
140	Wind turbine — unlighted and lighted
141	Wind turbines — minor group and group in major area, lighted
<i>Visual Aids (142-144)</i>	
143	Aeronautical ground light
144	Lightship
142	Marine light
SYMBOLS FOR AERODROME/HELIPORT CHARTS (145-161)	
151	Aerodrome reference point
145	Hard surface runway
150	Helicopter alighting area on an aerodrome
161	Hot spot
160	Intermediate holding position
156	Landing direction indicator (lighted)
157	Landing direction indicator (unlighted)
155	Obstacle light

Symbol
No.

146	Pierced steel plank or steel mesh runway
154	Point light
159	Runway-holding position
153	Runway visual range (RVR) observation site
158	Stop bar
148	Stopway
149	Taxiways and parking areas
147	Unpaved runway
152	VOR check-point

SYMBOLS FOR AERODROME OBSTACLE CHARTS — TYPE A, B AND C (162-170)

164	Building or large structure
170	Clearway
168	Escarpment
163	Pole, tower, spire, antenna, etc.
165	Railroad
169	Stopway
167	Terrain penetrating obstacle plane
166	Transmission line or overhead cable
162	Tree or shrub

ADDITIONAL SYMBOLS FOR USE ON PAPER AND ELECTRONIC CHARTS (171-180)

180	Collocated DME fix and marker beacon
178	Collocated radio navigation aid and marker beacon
179	DME fix
173	Holding pattern
171	Minimum sector altitude
174	Missed approach track
177	Radio marker beacon
176	Radio navigation aid
175	Runway
172	Terminal arrival altitude

A

30	Abandoned canal
115	Advisory airspace — ADA
118	Advisory route — ADR
96	Aerodrome data in abbreviated form
145-161	Aerodrome/Heliport Charts
162-170	Aerodrome Obstacle Charts
151	Aerodrome reference point
84-98	Aerodromes
91	Abandoned or closed aerodrome
90	Emergency aerodrome or aerodrome with no facilities
97, 98	Aerodrome symbols for Approach Charts
112	Aerodrome traffic zone — ATZ
143	Aeronautical ground light
117	Air defence identification zone — ADIZ
115	Airspace, advisory — ADA
126, 127	Airspace classifications
128	Airspace (prohibited, restricted or danger area), restricted, and common boundary of two areas
128, 129	Airspace restrictions
111-144	Air Traffic Services
113	Airway — AWY
	Altitude
171	Minimum sector
172	Terminal arrival
125	Altitudes/flight levels
92	Anchorage, sheltered
163	Antenna
	Areas
47-50	Built-up
18	Not surveyed for contour information or relief data incomplete
128	Prohibited
128	Restricted
123	ATS/MET reporting point — MRP (compulsory, on request)
	Bluff
4	Boundaries
	International
63	Outer
64	Building (on Aerodrome Obstacle Charts)
164	Buildings
50	

B

2. ALPHABETICAL INDEX

Symbol
No.

C

166	Cable, overhead
29	Canal
30	Canal, abandoned
122	Change-over point — COP
44	Charted isolated rock
12	Chart, highest elevation on
108, 143,	Chart symbols, electronic
171-180	Church
80	City or large town
47	Clearway — CWY
170	Cliff
4	Coast guard station
73	Collocated DME fix and marker beacon
180	Collocated radio navigation aid and marker beacon
178	Collocated VOR and DME radio navigation aids — VOR/DME
103, 110	Collocated VOR and TACAN radio navigation aids — VORTAC
107, 110	Compass rose
110	Coniferous trees
15	Contours
1	Contours, approximate
2	Control area — CTA
113	Controlled route
113	Control zone — CTR
116	Coral reefs and ledges
22	Culture
47-83	Culture, miscellaneous
63-83	Dam
67	Danger area
128	Danger line
43	Distance measuring equipment — DME
102, 110,	DME distance
176, 177	DME fix
179	Collocated DME fix and marker beacon
180	Dry lake bed
39	Dual highway
57	Dunes, sand
6	

D

<p>E</p> <p>Electronic chart symbols 108, 143, 171-180</p> <p>Elevation (of doubtful accuracy), spot 14</p> <p>Elevation, spot 13</p> <p>Escarpment 4</p> <p>Escarpment (on Aerodrome Obstacle Charts) 168</p> <p>Esker 9</p>	<p>F</p> <p>Falls 28</p> <p>Fence 65</p> <p>Ferry 68</p> <p>Final approach fix — FAF 124</p> <p>Flight information region — FIR 111</p> <p>Flight levels 125</p> <p>Forest ranger station 76</p> <p>Fort 79</p>	<p>G</p> <p>Gas field 70</p> <p>Glaciers 42</p> <p>Gravel 8</p>	<p>H</p> <p>Hard surface runway 145</p> <p>Helicopter alighting area on an aerodrome 150</p> <p>Heliport 94</p> <p>Highest elevation on chart 12</p> <p>Highway, dual 57</p> <p>Highways and roads 57-62</p> <p>Holding pattern 173</p> <p>Hot spot 161</p> <p>Hydrography 19-46</p>	<p>I</p> <p>Ice caps 42</p> <p>Instrument landing system — ILS 108</p> <p>Intermediate holding position 160</p> <p>International boundary closed to passage of aircraft except through air corridor 129</p> <p>Intersection NT 121</p> <p>Isogonic line or isogonal 138</p>
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Symbol
No.

L

39	Lake bed, dry.....
	Lakes.....
32	Non-perennial.....
31	Perennial.....
	Land.....
84	Civil.....
86	Military.....
88	Joint civil and military.....
10	Land features appropriately labelled, unusual
156	Landing direction indicator
	Lighted
157	Unlighted.....
23	Large river (perennial).....
164	Large structure.....
5	Lava flow.....
22	Ledges.....
9	Levee.....
144	Lighthouse.....
74	Lookout tower.....
M	
142	Marine light.....
75	Mine.....
171	Minimum sector altitude — MSA.....
	Miscellaneous symbols.....
137-141	Air Traffic Services.....
63-83	Culture.....
174	Missed approach track.....
81	Mosque.....
11	Mountain pass.....
N	
121	NDB.....
100	Non-directional radio beacon — NDB.....
72	Nuclear power station.....
O	
155	Obstacle light.....
130-136	Obstacles.....
139	Ocean station vessel.....
70	Oil field.....
166	Overhead cable.....

P

82	Pagoda
17	Palms
149	Parking areas
146	Pierced steel plank or steel mesh runway
69	Pipeline
154	Point light
163	Pole
72	Power station, nuclear
58	Primary road
128	Prohibited area
137	Prominent transmission line

R

77	Race track
109, 177	Radio marker beacon
176	Radio navigation aid
99	Basic
178	Collocated radio navigation aid and marker beacon
103	Collocated VOR and DME
107	Collocated VOR and TACAN
99-110,	Radio navigation aids
176, 178	Railroad (on Aerodrome Obstacle Charts)
51-56	Railroads (Culture)
27	Rapids
18	Relief data incomplete
3	Relief shown by hachures
121	Reporting and fly-by/flyover functionality
38	Reservoir
128	Restricted airspace (prohibited, restricted or danger area) and common boundary of two areas
128	Restricted area
36	Rice field
24	(Perennial), small
23	(Perennial), large
25	Rivers and streams
25	Non-perennial
26	Unsurveyed
61	Road bridge
58	Road, primary
59	Road, secondary
57-62	Roads (Highways and Roads)
62	Road tunnel
45	Rock awash
44	Rock, charted isolated

S

118	Route
118	Advisory — ADR
113	Controlled
114	Uncontrolled
78	Ruins
175	Runway
145	Hard surface
147	Unpaved
159	Runway-holding position
153	Runway visual range (RVR) observation site

T

33	Salt lake
34	Salt pans (evaporator)
7	Sand area
6	Sand dunes
120	Scale-break (on ATS route)
59	Secondary road
92	Sheltered anchorage
41	Shoals
19	Shore line
19	Reliable
20	Unreliable
162	Shrub
24	Small river (perennial)
163	Spire
13	Spot elevation
14	Spot elevation (of doubtful accuracy)
37	Spring (perennial or intermittent)
77	Stadium
146	Steel mesh runway
146	Steel plank, pierced
158	Stop bar
148	Stopway — SWY (on Aerodrome/Heliport Charts)
169	Stopway — SWY (on Aerodrome Obstacle Charts)
25, 26	Streams
164	Structure, large
35	Swamp
121	TACAN
106, 110	TACAN (UHF tactical air navigation aid)
71	Tank farms
149	Taxiways
66	Telegraph or telephone line (when a landmark)
83	Temple

Symbol
No.

101	VOR (VHF omnidirectional radio range).....
107	VORTAC (collocated VOR and TACAN radio navigation aids).....
121	VORTAC.....
105	VOR radial.....
103	VOR/DME (collocated VOR and DME radio navigation aids).....
121	VOR/DME.....
152	VOR check-point.....
121	VOR.....
119	Visual flight path.....
142-144	Visual aids.....
49	Village.....
101, 110	VHF omnidirectional radio range — VOR.....
121	VFR reporting point.....

V

46	Unusual water features appropriately labelled.....
10	Unusual land features appropriately labelled.....
147	Unpaved runway.....
114	Uncontrolled route.....
106, 110	VHF tactical air navigation aid — TACAN.....

U

16	Other.....
162	On Aerodrome Obstacle Charts.....
15	Coniferous.....
	Tree.....
137	Prominent.....
166	On Aerodrome Obstacle Charts.....
	Transmission line.....
60	Tail.....
47	Town, large.....
48	Town.....
163	On Aerodrome Obstacle Charts.....
74	Lookout.....
	Tower.....
1-18	Topography.....
21	Tidal flats.....
167	Terrain penetrating obstacle plane.....
172	Terminal arrival altitude — TAA.....

*No.
Symbol*

Symbol
No.

W

40	Wash.....
	Water.....
85	Civil.....
87	Military.....
89	Joint civil and military.....
46	Water features appropriately labelled, unusual.....
37	Water hole (perennial or intermittent).....
121	Waypoint — WPT.....
37	Well (perennial or intermittent).....
140	Wind turbine, unlighted and lighted.....
141	Wind turbines, minor group and group in major area, lighted.....

TOPOGRAPHY		
1	Contours	
2	Approximate contours	
3	Relief shown by hachures	
4	Bluff, cliff or escarpment	
5	Lava flow	
6	Sand dunes	
7	Sand area	
8	Gravel	
9	Levee or esker	 Alternative
10	Unusual land features appropriately labelled	
10	Active volcano	
11	Mountain pass	
12	Highest elevation on chart	17456
	Alternative	17456
13	Spot elevation	.8975
14	Spot elevation (of doubtful accuracy)	.8370
15	Coniferous trees	
16	Other trees	
17	Palm	
15	Areas not surveyed for contour information or relief data incomplete	Caution

HYDROGRAPHY		
19	Shore line (variable)	
20	Shore line (irregular)	
21	Tidal flats	
22	Coral reefs and ledges	
23	Large river (perennial)	
24	Small river (perennial)	
25	Rivers and streams (non-perennial)	 Alternative
26	Rivers and streams (intermittent)	
27	Rapids	
28	Falls	
29	Canal	
30	Abandoned canal	 Note — Dry canal having landmark value
31	Lakes (perennial)	
32	Lakes (non-perennial)	 Alternative
33	Salt lake	
34	Salt pans (evaporator)	
35	Swamp	
36	Rice field	 Alternative
37	Spring, well or water hole	 perennial intermittent
38	Reservoir	 ■ Reservoir
39	Dry lake bed	 Alternative
40	Wash	 Alternative
41	Shoals	
42	Glaciers and ice caps	
43	Danger line (2 m or one fathom line)	
44	Charred isolated rock	
45	Rock awash	
46	Unusual water features appropriately labelled	

CULTURE

BUILT-UP AREAS		HIGHWAYS AND ROADS		MISCELLANEOUS		RAILROADS		AERODROMES							
47	City or large town		57	Dual highway		51	Railroad (single track)	84	Civil	Land		84	Civil	Land	
48	Town		58	Primary road		52	Railroad (two or more tracks)	85	Civil	Water		85	Civil	Water	
49	Village		59	Trail		53	Railroad (under construction)	86	Military	Land		86	Military	Land	
50	Buildings		60	Road tunnel		54	Railroad bridge	87	Military	Water		87	Military	Water	
51	Railroad (single track)		61	Road bridge		55	Railroad tunnel	88	Ferry		88	Ferry			
52	Railroad (two or more tracks)		62	Road tunnel		56	Railroad bridge	89	Abandoned or closed aerodrome		89	Abandoned or closed aerodrome			
53	Railroad (under construction)		63	Secondary road		57	Dam	90	Emergency aerodrome or aerodrome with no facilities		90	Emergency aerodrome or aerodrome with no facilities			
54	Railroad bridge		64	Other boundaries		58	Towpath or telephore line (when a landmark)	91	Ident civil and military	Water		91	Ident civil and military	Water	
55	Railroad tunnel		65	Fence		59	Fence	92	Ident civil and military	Land		92	Ident civil and military	Land	
56	Railroad station		66	Other boundaries		60	Other boundaries	93	Aerodrome for use on charts on which aerodrome classification is not required e.g. Enroute Charts		93	Aerodrome for use on charts on which aerodrome classification is not required e.g. Enroute Charts			
57	Dual highway		67	Boundaries (international)		61	Boundaries (international)	94	Helipad		94	Helipad			
58	Primary road		68	Race track or stadium		62	Race track or stadium	95	Note — Where required by the function of the chart, the runway pattern of the aerodrome may be shown in lieu of the aerodrome symbol, for example.		95	Note — Where required by the function of the chart, the runway pattern of the aerodrome may be shown in lieu of the aerodrome symbol, for example.			
59	Secondary road		69	Pipeline		63	Pipeline	96	Note — Aerodromes for the exclusive use of helicopters		96	Note — Aerodromes for the exclusive use of helicopters			
60	Road tunnel		70	Oil or gas field		64	Oil or gas field	97	Sheltered anchorage		97	Sheltered anchorage			
61	Road bridge		71	Tank farms		65	Tank farms	98	Temples		98	Temples			
62	Road tunnel		72	Nuclear power station		66	Nuclear power station	99	Church		99	Church			
63	Secondary road		73	Coast guard station		67	Coast guard station	100	Mosque		100	Mosque			
64	Other boundaries		74	Lookout tower		68	Lookout tower	101	Pagoda		101	Pagoda			
65	Fence		75	Mine		69	Mine	102	Fort		102	Fort			
66	Other boundaries		76	Forest ranger station		70	Forest ranger station	103	Ruins		103	Ruins			
67	Boundaries (international)		77	Railroad (under construction)		71	Railroad (under construction)	104	Sheltered anchorage		104	Sheltered anchorage			
68	Other boundaries		78	Railroad bridge		72	Railroad bridge	105	Aerodrome for use on charts on which aerodrome classification is not required e.g. Enroute Charts		105	Aerodrome for use on charts on which aerodrome classification is not required e.g. Enroute Charts			
69	Pipeline		79	Railroad tunnel		73	Railroad tunnel	106	Helipad		106	Helipad			
70	Oil or gas field		80	Railroad station		74	Railroad station	107	Temples		107	Temples			
71	Tank farms		81	Railroad bridge		75	Railroad bridge	108	Church		108	Church			
72	Nuclear power station		82	Railroad tunnel		76	Railroad tunnel	109	Mosque		109	Mosque			
73	Coast guard station		83	Railroad (under construction)		77	Railroad (under construction)	110	Pagoda		110	Pagoda			
74	Lookout tower		84	Railroad bridge		78	Railroad bridge	111	Fort		111	Fort			
75	Mine		85	Railroad tunnel		79	Railroad tunnel	112	Ruins		112	Ruins			
76	Forest ranger station		86	Railroad station		80	Railroad station	113	Sheltered anchorage		113	Sheltered anchorage			
77	Railroad (under construction)		87	Railroad (under construction)		81	Railroad (under construction)	114	Aerodrome for use on charts on which aerodrome classification is not required e.g. Enroute Charts		114	Aerodrome for use on charts on which aerodrome classification is not required e.g. Enroute Charts			
78	Railroad bridge		88	Railroad tunnel		82	Railroad tunnel	115	Helipad		115	Helipad			
79	Railroad tunnel		89	Railroad (under construction)		83	Railroad (under construction)	116	Temples		116	Temples			
80	Railroad station		90	Railroad bridge		84	Railroad bridge	117	Church		117	Church			
81	Railroad (under construction)		91	Railroad tunnel		85	Railroad tunnel	118	Mosque		118	Mosque			
82	Railroad bridge		92	Railroad station		86	Railroad station	119	Pagoda		119	Pagoda			
83	Railroad tunnel		93	Railroad (under construction)		87	Railroad (under construction)	120	Fort		120	Fort			
84	Railroad station		94	Railroad bridge		88	Railroad bridge	121	Ruins		121	Ruins			
85	Railroad (under construction)		95	Railroad tunnel		89	Railroad tunnel	122	Sheltered anchorage		122	Sheltered anchorage			
86	Railroad bridge		96	Railroad station		90	Railroad station	123	Aerodrome for use on charts on which aerodrome classification is not required e.g. Enroute Charts		123	Aerodrome for use on charts on which aerodrome classification is not required e.g. Enroute Charts			
87	Railroad tunnel		97	Railroad (under construction)		91	Railroad (under construction)	124	Helipad		124	Helipad			
88	Railroad station		98	Railroad bridge		92	Railroad bridge	125	Temples		125	Temples			
89	Railroad (under construction)		99	Railroad tunnel		93	Railroad tunnel	126	Church		126	Church			
90	Railroad bridge		100	Railroad station		94	Railroad station	127	Mosque		127	Mosque			
91	Railroad tunnel		101	Railroad (under construction)		95	Railroad (under construction)	128	Pagoda		128	Pagoda			
92	Railroad station		102	Railroad bridge		96	Railroad bridge	129	Fort		129	Fort			
93	Railroad (under construction)		103	Railroad tunnel		97	Railroad tunnel	130	Ruins		130	Ruins			
94	Railroad bridge		104	Railroad station		98	Railroad station	131	Sheltered anchorage		131	Sheltered anchorage			
95	Railroad tunnel		105	Railroad (under construction)		99	Railroad (under construction)	132	Aerodrome for use on charts on which aerodrome classification is not required e.g. Enroute Charts		132	Aerodrome for use on charts on which aerodrome classification is not required e.g. Enroute Charts			
96	Railroad station		106	Railroad bridge		100	Railroad bridge	133	Helipad		133	Helipad			
97	Railroad (under construction)		107	Railroad tunnel		101	Railroad tunnel	134	Temples		134	Temples			
98	Railroad bridge		108	Railroad station		102	Railroad station	135	Church		135	Church			
99	Railroad tunnel		109	Railroad (under construction)		103	Railroad (under construction)	136	Mosque		136	Mosque			
100	Railroad station		110	Railroad bridge		104	Railroad bridge	137	Pagoda		137	Pagoda			
101	Railroad (under construction)		111	Railroad tunnel		105	Railroad tunnel	138	Fort		138	Fort			
102	Railroad bridge		112	Railroad station		106	Railroad station	139	Ruins		139	Ruins			
103	Railroad tunnel		113	Railroad (under construction)		107	Railroad (under construction)	140	Sheltered anchorage		140	Sheltered anchorage			
104	Railroad station		114	Railroad bridge		108	Railroad bridge	141	Aerodrome for use on charts on which aerodrome classification is not required e.g. Enroute Charts		141	Aerodrome for use on charts on which aerodrome classification is not required e.g. Enroute Charts			
105	Railroad (under construction)		115	Railroad tunnel		109	Railroad tunnel	142	Helipad		142	Helipad			
106	Railroad bridge		116	Railroad station		110	Railroad station	143	Temples		143	Temples			
107	Railroad tunnel		117	Railroad (under construction)		111	Railroad (under construction)	144	Church		144	Church			
108	Railroad station		118	Railroad bridge		112	Railroad bridge	145	Mosque		145	Mosque			
109	Railroad (under construction)		119	Railroad tunnel		113	Railroad tunnel	146	Pagoda		146	Pagoda			

**AERODROMES (Cont.)
AERODROME DATA IN ABBREVIATED FORM WHICH MAY BE
IN ASSOCIATION WITH AERODROME SYMBOLS**

(Reference: 16.9.2.2 and 17.9.2.2)

Mean of aerodrome
Elevation given in units of measurement (metres or feet) selected for use on the chart
LIVINGSTONE 357 1 1 95
(Length of longest runway in hundreds of metres or feet, whichever unit is selected for use on the chart)

Minimum lighting — obstacle, boundary or runway lights and lighted wind indicator or landing direction indicator
Runway hard surface, normally all weather
Note — A dash (-) is to be inserted where L or H do not apply.

AERODROME SYMBOLS FOR APPROACH CHARTS



98 The aerodrome on which the procedure is based



97 Aerodrome affecting the traffic pattern in the aerodrome on which the procedure is based

RADIO NAVIGATION AIDS*



107 Calculated VOR and TACAN radio navigation aids



100 Non-directional radio beacon



101 VHF omnidirectional radio range



102 Distance measuring equipment



103 Combined VOR and DME radio navigation aids



104 DME distance



105 VOR radial



106 VHF tactical air navigation aid



110 Compass rose
To be oriented on the chart in accordance with the alignment of the station (normally Magnetic North)

Note — Additional points of compass may be added as required
Compass roses to be used as appropriate in conjunction with the following symbols



Note — Marker beacon may be shown by outline, or shape, or both.



Figure-eight



Oval



Triangle with vertical line



Rectangle with vertical line



Rectangle with vertical and horizontal lines



Rectangle with vertical and horizontal lines and dot



Rectangle with vertical and horizontal lines, dot, and vertical line through dot



Rectangle with vertical and horizontal lines, dot, vertical line through dot, and horizontal line through dot



Rectangle with vertical and horizontal lines, dot, vertical line through dot, horizontal line through dot, and vertical line through horizontal line

108 Instrument landing system (ILS)

109 Radio marker beacon

Electronic

Electronic

Electronic

Electronic

Electronic

Electronic

Electronic

Electronic

Electronic

Electronic

Electronic

Electronic

Electronic

Electronic

Electronic

Electronic

Electronic

Electronic

Electronic

Electronic

Electronic

Electronic

Electronic

Electronic

Electronic

Electronic

Electronic

Electronic

Electronic

Electronic

*Note — Guidance material on the presentation of radio navigation aid data is given in the Aeronautical Chart Manual (Doc 5697).

Obstacle	Symbol	Description
130		Obstacle
131		Lighted obstacle
132		Group obstacle
133		Lighted group obstacle

134 Exceptionally high obstacle (optional symbol)

135 Exceptionally high obstacle – lighted (optional symbol)

Note—For obstacles having a height of the order of 500 m (1 600 ft) above terrain

Elevation of top (feet)

Height above specified datum (height type in parentheses)

OBSTACLES

129		International boundary closed to passage of aircraft except through air corridor
128		Restricted airspace (prohibited, restricted or danger area)
		Common boundary of two airways

Note—The angle and density of hairs may be varied according to class and the size, shape and location of the area.

AIRSPACE RESTRICTIONS

127	<p>Alternative</p> <p>TMA DONLON 119.1 200m AGL - FL 245</p> <p>TMA DONLON 119.1 200m AGL - FL 245</p> <p>Type Name or call sign Radio frequency(ies) Airspace classification Vertical limits</p>	
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Aeronautical data in abbreviated form to be used in association with airspace classification symbols

AIRSPACE CLASSIFICATIONS

126	<p>Note—For use only on SID and STAR charts. Not intended for depiction of minimum obstacle clearance altitude.</p> <table border="1"> <thead> <tr> <th>Altitude/flight level "window"</th> <th>At or above altitude/flight level</th> <th>At or below altitude/flight level</th> <th>"Mandatory" altitude/flight level</th> <th>"Recommended" procedure altitude/flight level</th> <th>"Expected" altitude</th> </tr> </thead> <tbody> <tr> <td>FL 220 - 10 000</td> <td>7 000</td> <td>5 000</td> <td>FL 30</td> <td>5 000</td> <td>Expect 5 000 Expect FL 50</td> </tr> </tbody> </table>	Altitude/flight level "window"	At or above altitude/flight level	At or below altitude/flight level	"Mandatory" altitude/flight level	"Recommended" procedure altitude/flight level	"Expected" altitude	FL 220 - 10 000	7 000	5 000	FL 30	5 000	Expect 5 000 Expect FL 50	<p>Altitude/flight levels</p>
Altitude/flight level "window"	At or above altitude/flight level	At or below altitude/flight level	"Mandatory" altitude/flight level	"Recommended" procedure altitude/flight level	"Expected" altitude									
FL 220 - 10 000	7 000	5 000	FL 30	5 000	Expect 5 000 Expect FL 50									

AIR TRAFFIC SERVICES (cont.)

MISCELLANEOUS

137	Fluvial transmission line	
138	Isogonic line of isogonic	
139	Ocean station vessel (normal position)	
140	Wind turbines — unlighted and lighted	
141	Wind turbines — minor group and group in major area, lighted	

VISUAL AIDS

142	Marine light	<p>Note 1: Marine alternating lights are red and white unless otherwise indicated. Marine lights are white unless colours are stated.</p> <p>Note 2: Characteristics are as follows:</p> <p>Flashing (F) Green (G) Red (R) White (W) Blue (B) Yellow (Y) Purple (P) Green (G) Red (R) White (W) Blue (B) Yellow (Y) Purple (P)</p>
143	Aeronautical ground light	<p>Flashing (F) Green (G) Red (R) White (W) Blue (B) Yellow (Y) Purple (P)</p> <p>Steady (S) Green (G) Red (R) White (W) Blue (B) Yellow (Y) Purple (P)</p> <p>Alternating (A) Blue (B) Yellow (Y) Purple (P)</p> <p>Fixed (F) Blue (B) Yellow (Y) Purple (P)</p> <p>Excess (E)</p>
144	Lightship	

SYMBOLS FOR AERODROME/HELIPORT CHARTS

145	Hard surface runway	
146	Perforated steel plate or steel mesh runway	
147	Unsurfaced runway	
148	Stopway	
149	Taxways and parking areas	
150	Helicopter alighting area on an aerodrome	
151	Aerodrome reference point	
152	VOR omni point	
153	Runway visual range (RVR) observation site	
154	Point light	
154	Point light	
155	Obstacle light	
156	Landing direction indicator (lighted)	
157	Landing direction indicator (unlighted)	
158	Stop bar	
159	Runway-landing position	<p>Pattern A: </p> <p>Pattern B: </p>
160	Intermediate holding position	
161	Hot spot	

SYMBOLS FOR AERODROME OBSTACLE CHARTS - TYPE A, B AND C

162	Tree or shrub	
163	Tall tower, spire, antenna, etc.	
164	Building or large structure	
165	Railroad	
166	Transmission line or overhead cable	
167	Terrain penetrating obstacle plane	<p>Plan: </p> <p>Profile: </p>
168	Escarpment	
169	Stopway	
170	Clearway	

130	Obstacle		134	Exceptionally high obstacle (optional symbol)	
131	Lighted obstacle		135	Exceptionally high obstacle - lighted (optional symbol)	
132	Group obstacles		136	Lighted group obstacles	

Note: For obstacles having a height or the order of 100 or 1 000 ft above terrain. Elevation of top (feet) (height type in parentheses) Height above specified datum

OBSTACLES

128	Restricted airspace (prohibited, restricted or danger area)		129	International boundary closed to passage of aircraft except through air corridor	
128	Common boundary of two areas				

Note: The angle and density of rings may be varied according to scale and the size, shape and location of the area.

AIRSPACE RESTRICTIONS

125	Airspace classifications		127	Alternative	
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Aeronautical data in abbreviated form to be used in association with airspace classification symbols

AIRSPACE CLASSIFICATIONS

125	Altitude/flight levels	<p>Note: For use only on SID and STAR charts. Not intended for depiction of minimum obstacle clearance altitude.</p> <table border="1"> <tr> <td>Altitude/flight level "window"</td> <td>17 000</td> <td>10 000</td> </tr> <tr> <td>"At or above" altitude/flight level</td> <td>7 000</td> <td>FL 70</td> </tr> <tr> <td>"At or below" altitude/flight level</td> <td>5 000</td> <td>FL 50</td> </tr> <tr> <td>"Mandatory" altitude/flight level</td> <td>3 000</td> <td>FL 30</td> </tr> <tr> <td>"Recommended" procedure altitude/flight level</td> <td>5 000</td> <td>FL 50</td> </tr> <tr> <td>"Expected" altitude</td> <td>5 000</td> <td>Expect FL 50</td> </tr> </table>	Altitude/flight level "window"	17 000	10 000	"At or above" altitude/flight level	7 000	FL 70	"At or below" altitude/flight level	5 000	FL 50	"Mandatory" altitude/flight level	3 000	FL 30	"Recommended" procedure altitude/flight level	5 000	FL 50	"Expected" altitude	5 000	Expect FL 50
Altitude/flight level "window"	17 000	10 000																		
"At or above" altitude/flight level	7 000	FL 70																		
"At or below" altitude/flight level	5 000	FL 50																		
"Mandatory" altitude/flight level	3 000	FL 30																		
"Recommended" procedure altitude/flight level	5 000	FL 50																		
"Expected" altitude	5 000	Expect FL 50																		

AIR TRAFFIC SERVICES (cont.)









ADDITIONAL SYMBOLS FOR USE ON PAPER AND ELECTRONIC CHARTS

PLAN VIEW		PROFILE	
171	Minimum sector altitude Note — The symbol may be modified to reflect particular sector angles	MSA	
172	Terminal arrival altitude Note — This symbol may be modified to reflect particular TAA angles	TAA	
173	Holding pattern		
174	Blended approach track		
175	Runway		
176	Radio navigation aid (type of aid and its use in the procedure to be annotated on top of the symbol)		
177	Radio marker beacon (type of beacon to be annotated on top of the symbol)		
178	Cocorated radio navigation aid and marker beacon (type of aid to be annotated on top of the symbol)		
179	DME fix (distance from DME and its use in the procedure to be annotated on top of the symbol)		
180	Cocorated DME fix and marker beacon (distance from DME and the type of beacon to be annotated on top of the symbol)		

CHART SYMBOLS (Cont)

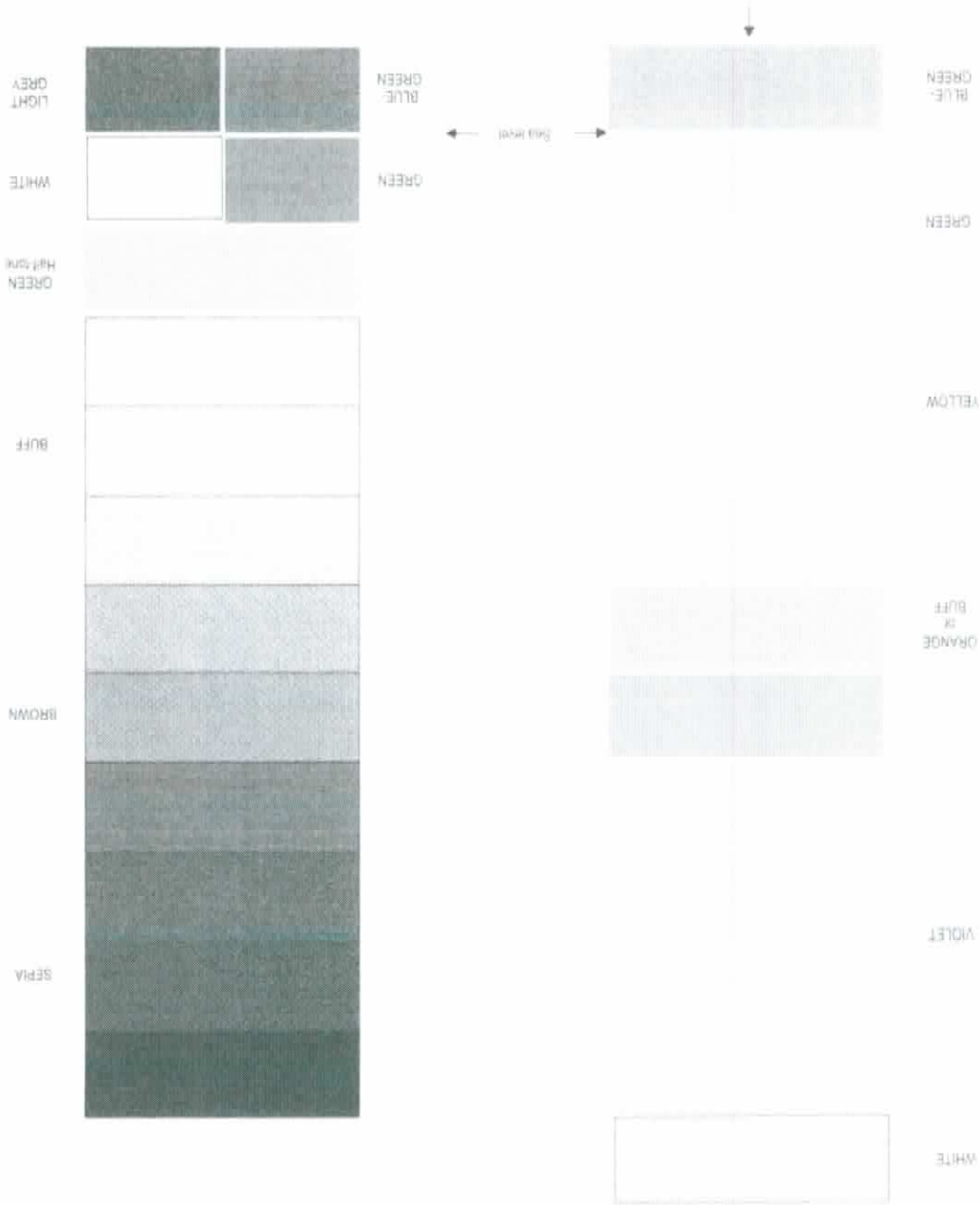
	GREEN	Optional colours	WAGNS
	WHITE	Optional colours	Areas which have not been surveyed for contour information or (not data are incomplete)

HYPSONOMETRIC TINTS

	SEPIA	Tint for extreme elevations	VIOLET		WHITE
	BROWN	Tint for higher range elevations	ORANGE or BUFF		ORANGE or BUFF
	BUFF	Tint for middle range elevations	YELLOW		YELLOW
	GREEN	Tint for lower range elevations	GREEN		GREEN
	WHITE	Optional colours	BLUE		BLUE
	BLUE-GREEN	Optional colours	Tint for areas below sea level		BLUE-GREEN
	LIGHT GREY	Optional colours	Note — Basic tints are identical to those specified for the International Map of the World		

APPENDIX 4. HYPSONETRIC TINT GUIDE

(Alternative systems, reference 2.12.2)



Map 1 - These tints are identical to those specified for the International Map of the World.

Map 2 - Elevations have not been associated with tints of other systems in order to allow for flexibility in their selection.