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AIP AIRAC SUP
20/16
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ENGM - NYE INSTRUMENTINNFLYGINGS-PROSEDYRER FOR OSLO LUFTHAVN, GARDERMOEN (LPV)

Kansellerer AIP SUP 15/16

RNP APCH-prosedyrer

Denne AIP SUP inneholder reviderte versjoner av de eksisterende RNP APCH -prosedyrene til Oslo lufthavn. Prosedyrenavnet inneholder nå karakteren Z for å skille prosedyrene fra RNP AR -prosedyrene som benytter karakterene X og W.

LPV minima opprinnelig publisert i AIP SUP 15/16 er oppdatert til å utnytte LPV200 -tjenesten slik tilbudt av EGNOS, for å muliggjøre APV type B -operasjoner.

Ingen spesielle krav utover det å være sertifisert for å fly en RNP APCH er nødvendig for å bruke RNP APCH -prosedyrene.

Følgende prosedyrer suspenderes videre:

- RNAV(GNSS) 01R
  AD 2 ENGM 5 - 3/4 EFF 17 SEP 2015
- RNAV(GNSS) 01L
  AD 2 ENGM 5 - 7/8 EFF 17 SEP 2015
- RNAV(GNSS) 19R
  AD 2 ENGM 5 - 13/14 EFF 17 SEP 2015
- RNAV(GNSS) 19L,
  AD 2 ENGM 5 - 19/20 EFF 17 SEP 2015

Vedlegg:

- ENGM RNAV(GNSS) Z RWY 01R, inkludert Recommended RNAV coding
- ENGM RNAV(GNSS) Z RWY 01L, inkludert Recommended RNAV coding
- ENGM RNAV(GNSS) Z RWY 19R, inkludert Recommended RNAV coding
- ENGM RNAV(GNSS) Z RWY 19L, inkludert Recommended RNAV coding

-Vedlegg-

ENGM - NEW INSTRUMENT APPROACH PROCEDURES AT OSLO AIRPORT, GARDERMOEN (LPV)

Cancels AIP SUP 15/16

RNP APCH procedures

This AIP SUP contains revised versions of the existing RNP APCH procedures at Oslo airport. The procedure name suffix Z has been added to the RNP APCH procedures to separate them from the RNP AR procedures which utilise the suffixes X and W.

LPV minima originally published in AIP SUP 15/16 have been updated to make use of the LPV200 service provided by EGNOS, to serve APV type B operations.

No additional requirements beyond being certified or RNP APCH is required to use the RNP APCH procedures.

The following procedures are still suspended:

- RNAV(GNSS) 01R
  AD 2 ENGM 5 - 3/4 EFF 17 SEP 2015
- RNAV(GNSS) 01L
  AD 2 ENGM 5 - 7/8 EFF 17 SEP 2015
- RNAV(GNSS) 19R
  AD 2 ENGM 5 - 13/14 EFF 17 SEP 2015
- RNAV(GNSS) 19L,
  AD 2 ENGM 5 - 19/20 EFF 17 SEP 2015

Attachments:

- ENGM RNAV(GNSS) Z RWY 01R, including Recommended RNAV coding
- ENGM RNAV(GNSS) Z RWY 01L, including Recommended RNAV coding
- ENGM RNAV(GNSS) Z RWY 19R, including Recommended RNAV coding
- ENGM RNAV(GNSS) Z RWY 19L, including Recommended RNAV coding

-Attachement-

INSTRUMENT APPROACH CHART - ICAO

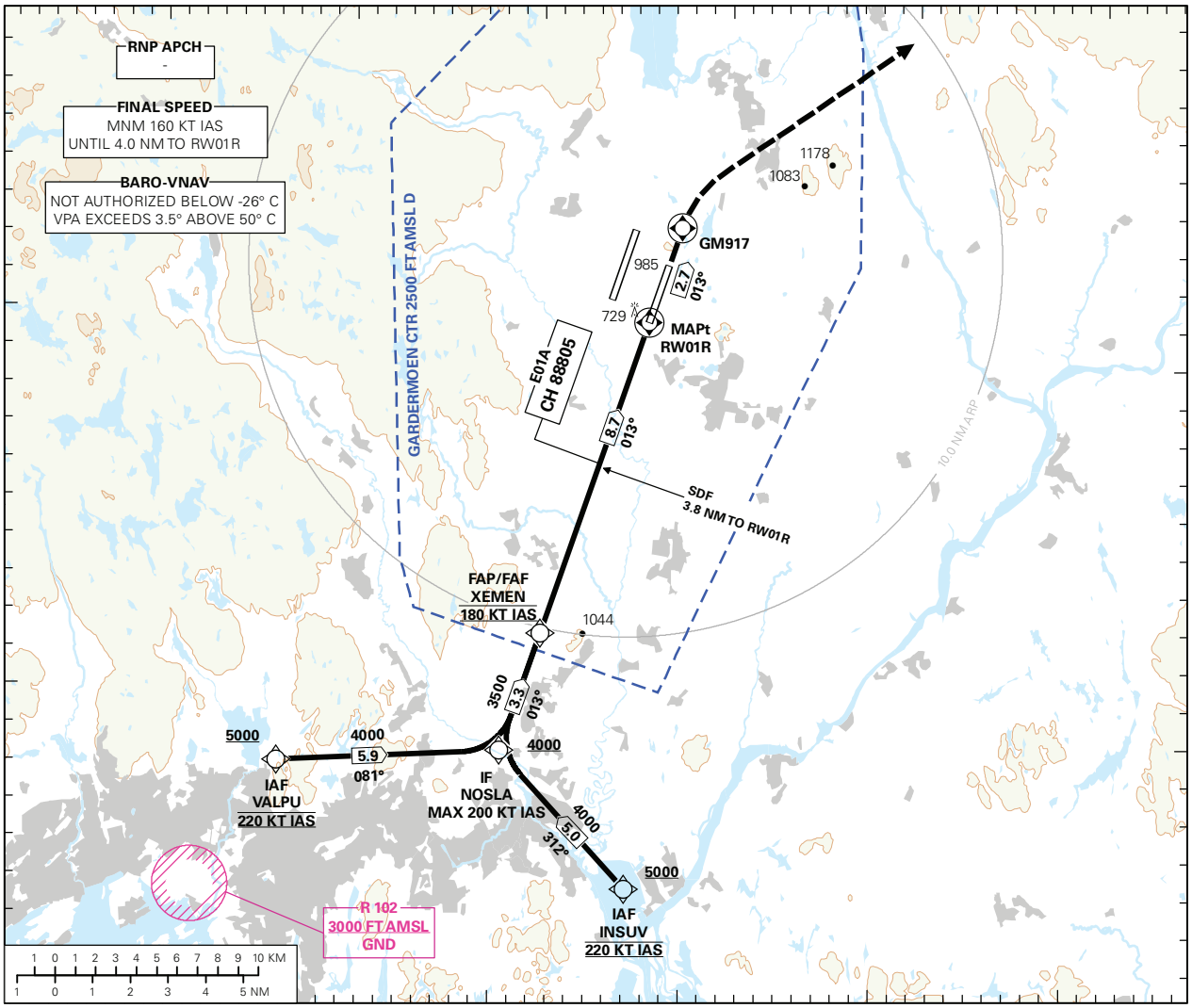
PLAN VIEW SCALE: 1:350 000

OSLO

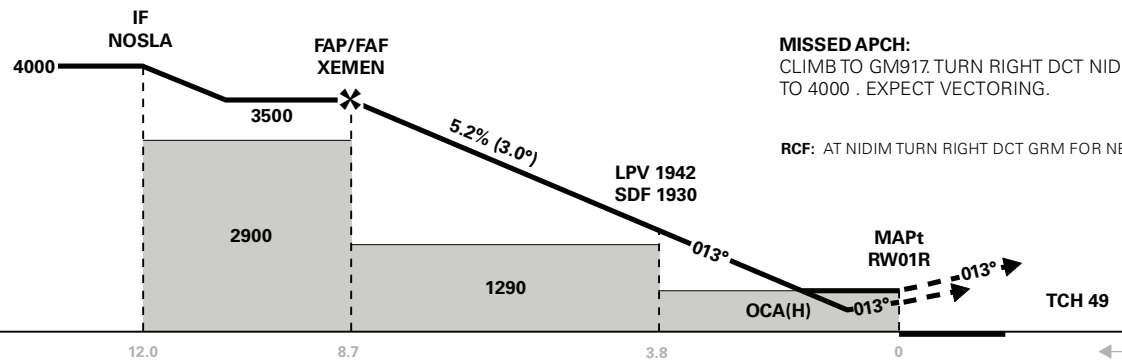
GARDERMOEN

RNAV(GNSS) Z RWY 01R

3 9	ATIS: 126.125	AD ELEV: 681	
	APP: 118.475 120.450	THR ELEV: 670	DIST IN NM
	DIR: 136.400 (119.975) FIN: 128.900	HGT RELATED TO THR RWY 01R	ELEV, ALT AND HGT IN FT
	TWR: 120.100 (123.325)	CIRCLING HGT RELATED TO AD ELEV	TRANSITION ALTITUDE 7000
MSA 25 NM ARP	GND: 121.900	BEARINGS ARE MAGNETIC - VAR 2.8 ° E (2015)	



DIST TO RW01R	9	8	7	6	5	4	3	2
ALT (HGT)	-	3270 (2600)	2950 (2280)	2640 (1970)	2320 (1650)	2000 (1330)	1680 (1010)	1360 (690)



MISSED APCH:
CLIMB TO GM917. TURN RIGHT DCT NIDIM, CLIMBING TO 4000 . EXPECT VECTORING.

RCF: AT NIDIM TURN RIGHT DCT GRM FOR NEW APCH.

CAT OF ACFT		A	B	C	D	FINAL APCH	DIST FAF - MAPt: 8.7					
OCA(H) STRAIGHT - IN	LPV	849 (179)	861 (191)	869 (199)	880 (210)							
	LNAV/VNAV	970 (300)	990 (320)	1010 (340)	1030 (360)	SPEED	KT	70	90	120	150	180
	LNAV	1230 (560)				TIME	MIN:SEC	07:30	05:50	04:22	03:30	02:55
CIRCLING		1280 (599)		1530 (849)	1630 (949)	ROD	FT/MIN	370	480	635	795	955

NOTE: CIRCLING E OF RWY ONLY.

CHANGES: LPV MINIMA.

RECOMMENDED RNAV PROCEDURE CODING

ENGM RNAV(GNSS) Z RWY 01R										
Serial Number	Path Descriptor	Waypoint Identifier	Fly-over	Course °M(°T)	MAG VAR	DIST (NM)	Turn Dir	ALT (FT)	Speed (KT)	VPA/ TCH
010	IF	INSUV	-	-	-	-	-	A5000+	K220	-
020	TF	NOSLA	-	312 (314.9)	-	5.0	-	A4000+	K200-	-
010	IF	VALPU	-	-	-	-	-	A5000+	K220	-
020	TF	NOSLA	-	081 (084.1)	-	5.9	-	A4000+	K200-	-
030	TF	XEMEN	-	013 (015.9)	-	3.3	-	A3500+	K180	-
040	TF	RW01R	Y	013 (016.0)	-	8.7	-	-	-	-3.0/15
050	TF	GM917	Y	013 (016.0)	-	2.7	-	-	-	-
060	DF	NIDIM	-	-	-	-	-	A4000	-	-

Note: Recommended RNAV procedure coding is based on ARINC 424-15 and is provided solely to indicate which procedure design protection areas were used in the Instrument Flight Procedure Design process.

Note: The use of SBAS/GNSS geometric altitude as a source of altitude for approaches to LNAV/VNAV minima is permitted only for aircraft specifically certified for this type of operation. See "EASA-CM-AS-002 Clarifications to AMC 20-27" for additional information.

Note: Published OCA(H) values are obstacle clearance values. Decision heights (DH) below 200 FT shall not be used due to APV approach operation Type B limitations.

FAS DATA BLOCK

Operation type	0	**LTP/FTP ellipsoidal height**	242.6
SBAS Provider	1	**FPAP latitude**	601208.4170N
Airport Identifier	ENGM	**FPAP longitude**	0110723.3005E
Runway	RW01R	**Threshold crossing height**	15
Approach performance designator	0	**TCH units**	M
Route Indicator	Z	**Glide path angle**	3.0
Reference path data selector	0	**Course width at threshold**	105
Reference path Identifier	E01A	**Length offset**	136
LTP/FTP latitude	601032.7195N	**Horizontal alert limit (HAL)**	40
LTP/FTP longitude	0110628.0150E	**Vertical alert limit (VAL)**	35
	PRECISION APPROACH PATH CRC REMAINDER		**A35394B1**

NON FAS DATA BLOCK FIELDS

LTP Ortometric Height	204.2
FPAP Ortometric Height	204.2

INSTRUMENT APPROACH CHART - ICAO

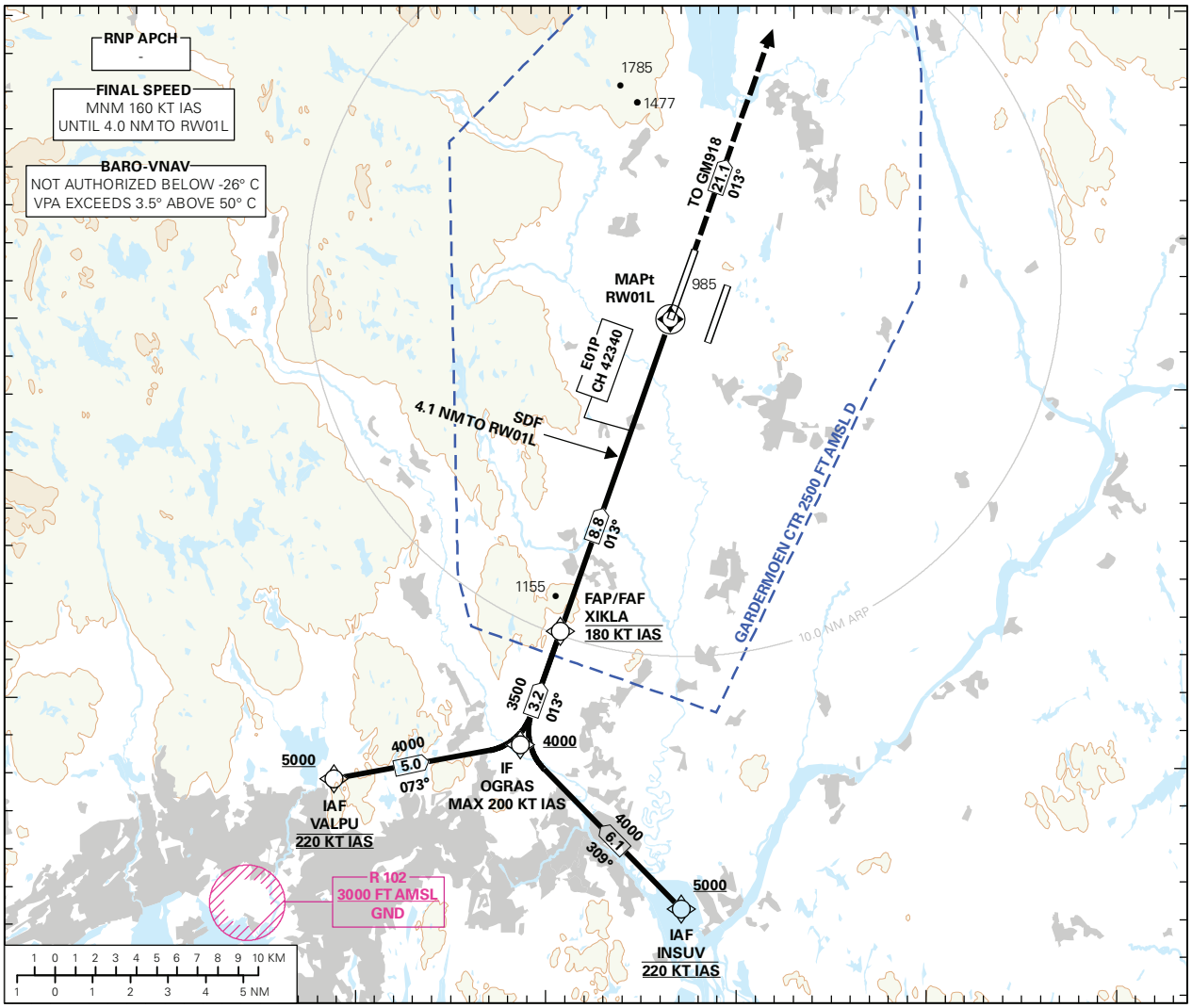
PLAN VIEW SCALE: 1:350 000

OSLO

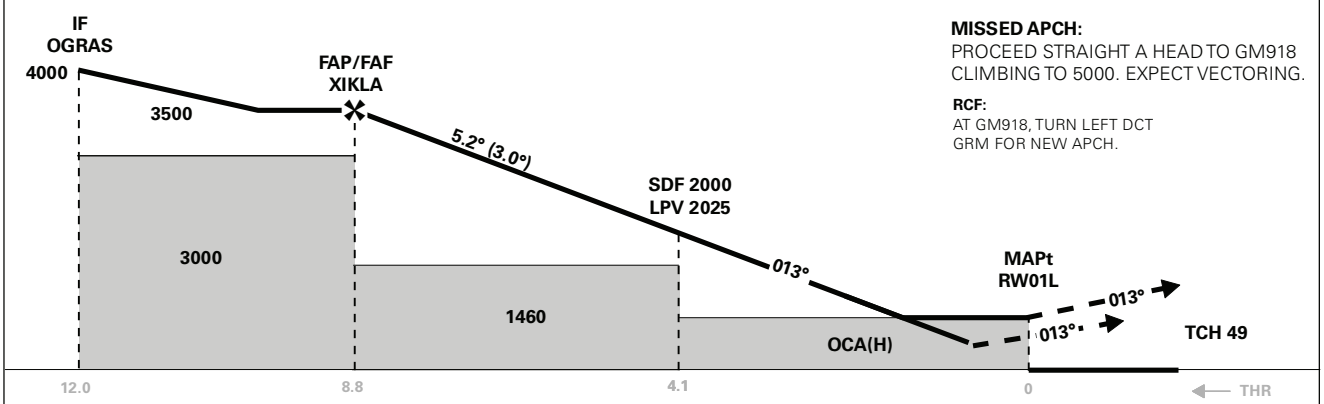
GARDERMOEN

RNAV(GNSS) Z RWY 01L

3 9	ATIS: 126.125	AD ELEV: 681	
	APP: 118.475 120.450	THR ELEV: 655	DIST IN NM
	DIR: 136.400 (119.975) FIN: 128.900	HGT RELATED TO THR RWY 01L	ELEV, ALT AND HGT IN FT
	TWR: 118.300 (118.700)	CIRCLING HGT RELATED TO AD ELEV	TRANSITION ALTITUDE 7000
MSA 25 NM ARP	GND: 121.600	BEARINGS ARE MAGNETIC - VAR 2.8 ° E (2015)	



DIST TO RW01L	9	8	7	6	5	4	3	2
ALT (HGT)	-	3260 (2605)	2940 (2285)	2620 (1965)	2300 (1645)	1980 (1325)	1670 (1015)	1350 (695)



MISSED APCH:
PROCEED STRAIGHT A HEAD TO GM918
CLIMBING TO 5000. EXPECT VECTORING.

RCF:
AT GM918, TURN LEFT DCT
GRM FOR NEW APCH.

CAT OF ACFT		A	B	C	D	FINAL APCH	DIST FAF - MAPt: 8.8					
OCA(H) STRAIGHT - IN	LPV	823 (168)	832 (177)	842 (187)	852 (197)							
	LNAV/VNAV	1000 (345)	1010 (355)	1030 (375)	1150 (495)	SPEED	KT	70	90	120	150	180
	LNAV	1240 (585)				TIME	MIN:SEC	07:32	05:52	04:24	03:31	02:56
CIRCLING		1280 (599)		1920 (1239)	2230 (1549)	ROD	FT/MIN	370	480	635	795	955

NOTE: CIRCLING W OF RWY ONLY.

CHANGES: LPV MINIMA.

RECOMMENDED RNAV PROCEDURE CODING

ENGM RNAV(GNSS) Z RWY 01L										
Serial Number	Path Descriptor	Waypoint Identifier	Fly-over	Course °M(°T)	MAG VAR	DIST (NM)	Turn Dir	ALT (FT)	Speed (KT)	VPA/ TCH
010	IF	VALPU	-	-	-	-	-	A5000+	K220	-
020	TF	OGRAS	-	073 (076.0)	-	5.0	-	A4000+	K200-	-
010	IF	INSUV	-	-	-	-	-	A5000+	K220	-
020	TF	OGRAS	-	309 (312.2)	-	6.1	-	A4000+	K200-	-
030	TF	XIKLA	-	013 (015.9)	-	3.2	-	A3500+	K180	-
040	TF	RW01L	Y	013 (016.0)	-	8.8	-	-	-	-3.0/15
050	TF	GM918	-	013 (016.0)	-	21.1	-	A5000	-	-

Note: Recommended RNAV procedure coding is based on ARINC 424-15 and is provided solely to indicate which procedure design protection areas were used in the Instrument Flight Procedure Design process.

Note: The use of SBAS/GNSS geometric altitude as a source of altitude for approaches to LNAV/VNAV minima is permitted only for aircraft specifically certified for this type of operation. See "EASA-CM-AS-002 Clarifications to AMC 20-27" for additional information.

Note: Published OCA(H) values are obstacle clearance values. Decision heights (DH) below 200 FT shall not be used due to APV approach operation Type B limitations.

FAS DATA BLOCK

Operation type	0	**LTP/FTP ellipsoidal height**	238.3
SBAS Provider	1	**FPAP latitude**	601301.9020N
Airport Identifier	ENGM	**FPAP longitude**	0110532.3330E
Runway	RW01L	**Threshold crossing height**	15
Approach performance designator	0	**TCH units**	M
Route Indicator	Z	**Glide path angle**	3.0
Reference path data selector	0	**Course width at threshold**	105
Reference path Identifier	E01P	**Length offset**	136
LTP/FTP latitude	601106.0040N	**Horizontal alert limit (HAL)**	40
LTP/FTP longitude	0110425.4770E	**Vertical alert limit (VAL)**	35
	PRECISION APPROACH PATH CRC REMAINDER		**195DC908**

NON FAS DATA BLOCK FIELDS

LTP Ortometric Height	199.8
FPAP Ortometric Height	199.8

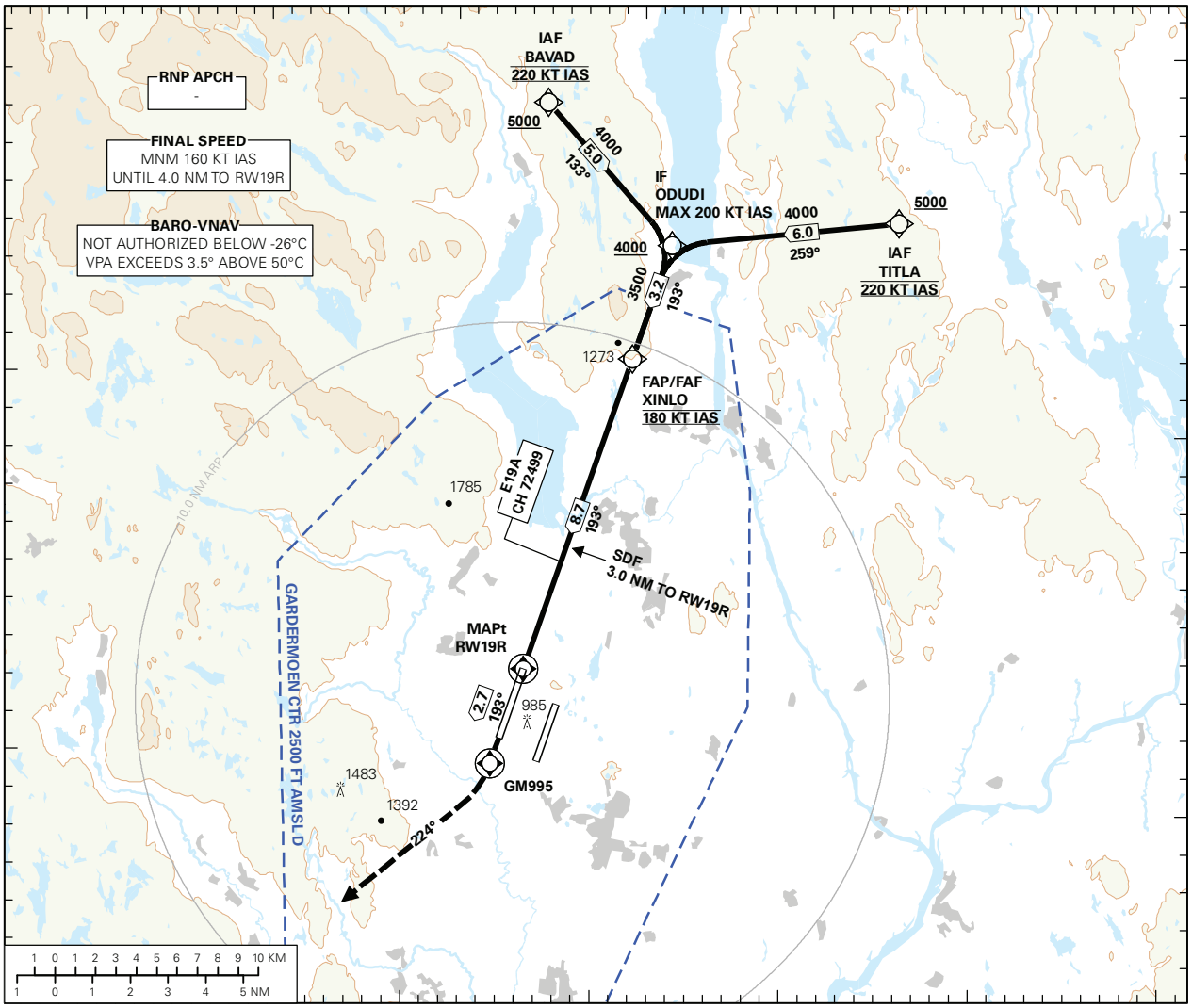
INSTRUMENT APPROACH CHART - ICAO PLAN VIEW SCALE: 1:350 000

OSLO

GARDERMOEN

RNAV(GNSS) Z RWY 19R

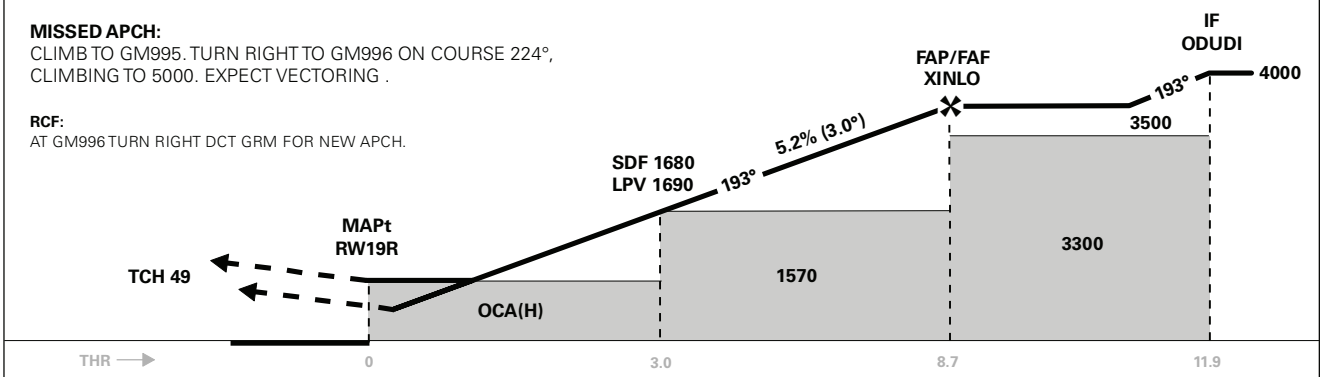
3 9	ATIS: 126.125	AD ELEV: 681	
	APP: 118.475 120.450	THR ELEV: 675	DIST IN NM
	DIR: 136.400 (119.975) FIN: 128.900	HGT RELATED TO THR RWY 19R	ELEV, ALT AND HGT IN FT
	TWR: 118.300 (118.700)	CIRCLING HGT RELATED TO AD ELEV	TRANSITION ALTITUDE 7000
MSA 25 NM ARP	GND: 121.600	BEARINGS ARE MAGNETIC - VAR 2.8 ° E (2015)	



DIST TO RW19R	8	7	6	5	4	3	2	1
ALT (HGT)	3280 (2605)	2960 (2285)	2640 (1965)	2320 (1645)	2000 (1325)	1680 (1005)	1370 (695)	1050 (375)

MISSED APCH:
CLIMB TO GM995. TURN RIGHT TO GM996 ON COURSE 224°, CLIMBING TO 5000. EXPECT VECTORING .

RCF:
AT GM996 TURN RIGHT DCT GRM FOR NEW APCH.



CAT OF ACFT		A	B	C	D	FINAL APCH	DIST FAF - MAPt: 8.7					
OCA(H) STRAIGHT - IN	LPV 3.1%*	836 (161)	848 (173)	857 (182)	867 (192)							
	LPV 2.5%*	940 (265)	952 (277)	960 (285)	971 (296)							
	LNAV/VNAV	970 (295)	980 (305)	1000 (325)	1030 (355)	SPEED	KT	70	90	120	150	180
	LNAV	1040 (365)		1060 (385)	1080 (405)	TIME	MIN:SEC	07:29	05:49	04:22	03:30	02:55
CIRCLING		1280 (599)		1920 (1239)	2230 (1549)	ROD	FT/MIN	370	480	635	795	955

NOTE: CIRCLING W OF RWY ONLY. *MINIMUM MISSED APCH CLIMB GRADIENT.

CHANGES: LPV MINIMA.

RECOMMENDED RNAV PROCEDURE CODING

ENGM RNAV(GNSS) Z RWY 19R										
Serial Number	Path Descriptor	Waypoint Identifier	Fly-over	Course °M(°T)	MAG VAR	DIST (NM)	Turn Dir	ALT (FT)	Speed (KT)	VPA/ TCH
010	IF	TITLA	-	-	-	-	-	A5000+	K220	-
020	TF	ODUDI	-	259 (261.4)	-	6.0	-	A4000+	K200-	-
010	IF	BAVAD	-	-	-	-	-	A5000+	K220	-
020	TF	ODUDI	-	133 (135.9)	-	5.0	-	A4000+	K200-	-
030	TF	XINLO	-	193 (196.0)	-	3.2	-	A3500+	K180	-
040	TF	RW19R	Y	193 (196.1)	-	8.7	-	-	-	-3.0/15
050	TF	GM995	Y	193 (196.0)	-	2.7	-	-	-	-
060	CF	GM996	-	224 (227.0)	-	-	-	A5000	-	-

Note: Recommended RNAV procedure coding is based on ARINC 424-15 and is provided solely to indicate which procedure design protection areas were used in the Instrument Flight Procedure Design process.

Note: The use of SBAS/GNSS geometric altitude as a source of altitude for approaches to LNAV/VNAV minima is permitted only for aircraft specifically certified for this type of operation. See "EASA-CM-AS-002 Clarifications to AMC 20-27" for additional information.

Note: Published OCA(H) values are obstacle clearance values. Decision heights (DH) below 200 FT shall not be used due to APV approach operation Type B limitations.

FAS DATA BLOCK

Operation type	0	**LTP/FTP ellipsoidal height**	244.2
SBAS Provider	1	**FPAP latitude**	601105.0455N
Airport Identifier	ENGM	**FPAP longitude**	0110424.9250E
Runway	RW19R	**Threshold crossing height**	15
Approach performance designator	0	**TCH units**	M
Route Indicator	Z	**Glide path angle**	3.0
Reference path data selector	0	**Course width at threshold**	105
Reference path Identifier	E19A	**Length offset**	32
LTP/FTP latitude	601257.8380N	**Horizontal alert limit (HAL)**	40
LTP/FTP longitude	0110529.9865E	**Vertical alert limit (VAL)**	35
	PRECISION APPROACH PATH CRC REMAINDER		**4AABC3C2**

NON FAS DATA BLOCK FIELDS

LTP Ortometric Height	205.8
FPAP Ortometric Height	205.8

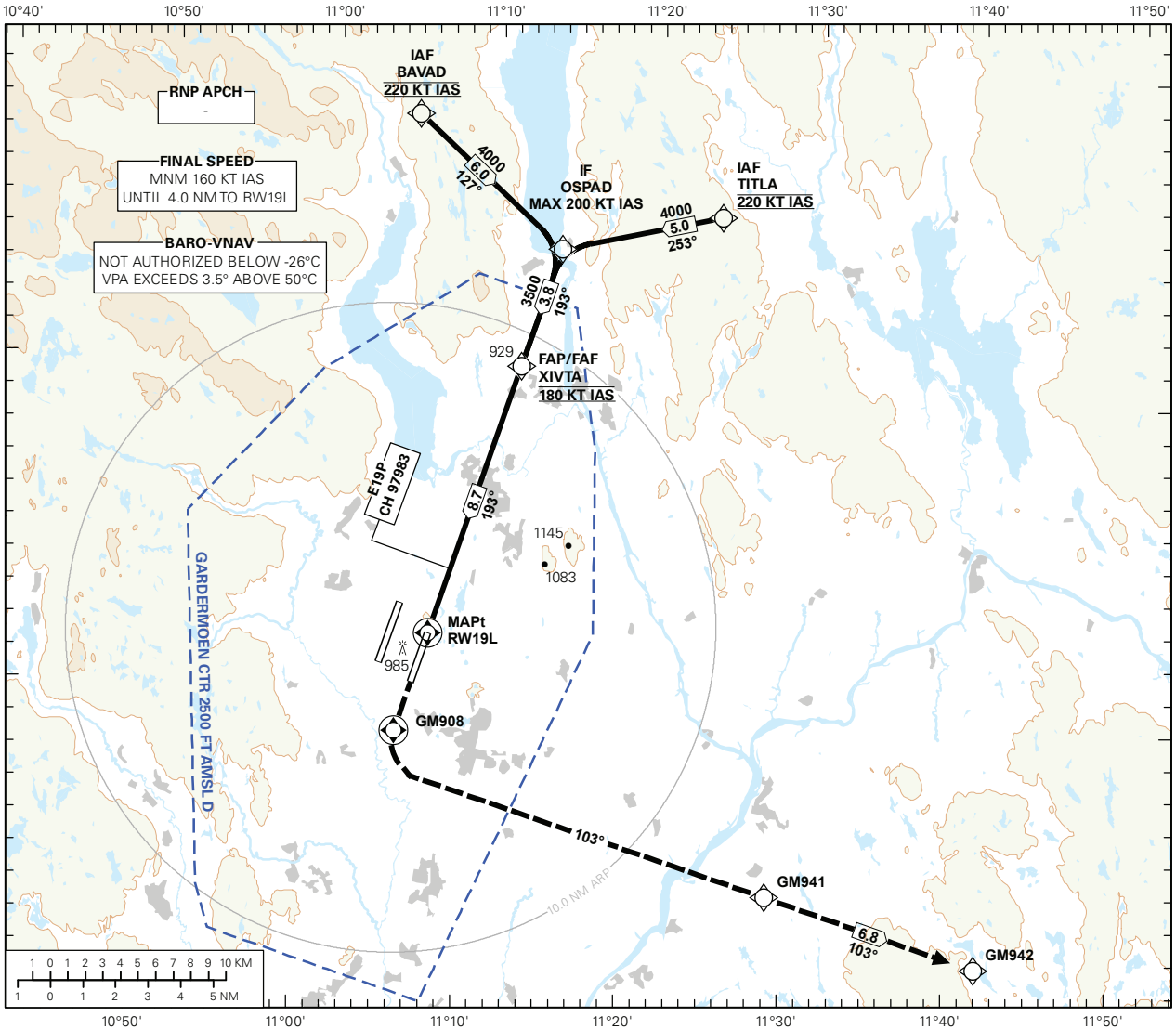
INSTRUMENT APPROACH CHART - ICAO PLAN VIEW SCALE: 1:400 000

OSLO

GARDERMOEN

RNAV(GNSS) Z RWY 19L

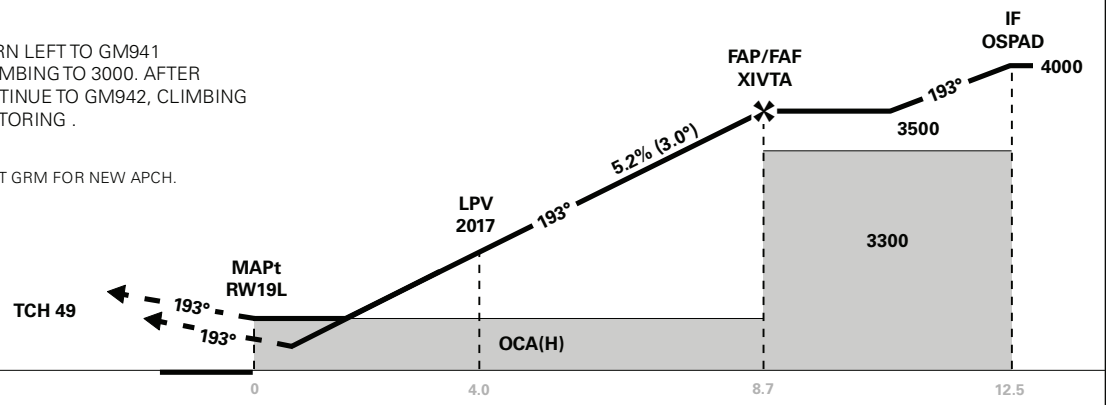
3 9	ATIS: 126.125	AD ELEV: 681	
	APP: 118.475 120.450	THR ELEV: 681	DIST IN NM
	DIR: 136.400 (119.975) FIN: 128.900	HGT RELATED TO THR RWY 19L	ELEV, ALT AND HGT IN FT
	GND: 120.100 (123.325)	CIRCLING HGT RELATED TO AD ELEV	TRANSITION ALTITUDE 7000
MSA 25 NM ARP	VDF: 121.900	BEARINGS ARE MAGNETIC - VAR 2.8 ° E (2015)	



DIST TO RW19L	9	8	7	6	5	4	3	2
ALT (HGT)	-	3280 (2599)	2970 (2289)	2650 (1969)	2330 (1649)	2010 (1329)	1690 (1009)	1370 (689)

MISSED APCH:
CLIMB TO GM908. TURN LEFT TO GM941 ON COURSE 103°, CLIMBING TO 3000. AFTER PASSING GM941 CONTINUE TO GM942, CLIMBING TO 5000. EXPECT VECTORING .

RCF:
AT GM942 TURN LEFT DCT GRM FOR NEW APCH.



CAT OF ACFT		A	B	C	D	FINAL APCH	DIST FAF - MAPt: 8.7					
OCA(H) STRAIGHT - IN	LPV	820 (139)	828 (147)	838 (157)	849 (168)							
	LNAV/VNAV	1000 (319)	1010 (329)	1030 (349)	1150 (469)	SPEED	KT	70	90	120	150	180
	LNAV	1230 (560)				TIME	MIN:SEC	07:28	05:48	04:21	03:29	02:54
CIRCLING		1280 (599)		1530 (849)	1630 (949)	ROD	FT/MIN	370	480	635	795	955

NOTE: CIRCLING E OF RWY ONLY.

CHANGES: LPV MINIMA.

RECOMMENDED RNAV PROCEDURE CODING

ENGM RNAV(GNSS) Z RWY 19L										
Serial Number	Path Descriptor	Waypoint Identifier	Fly-over	Course °M(°T)	MAG VAR	DIST (NM)	Turn Dir	ALT (FT)	Speed (KT)	VPA/ TCH
010	IF	TITLA	-	-	-	-	-	A5000+	K220	-
020	TF	OSPAD	-	253 (256.0)	-	5.0	-	A4000+	K200-	-
010	IF	BAVAD	-	-	-	-	-	A5000+	K220	-
020	TF	OSPAD	-	128 (130.4)	-	6.0	-	A4000+	K200-	-
030	TF	XIVTA	-	193 (196.2)	-	3.8	-	A3500+	K180	-
040	TF	RW19L	Y	193 (196.1)	-	8.7	-	-	-	-
050	TF	GM908	Y	193 (196.1)	-	3.2	-	-	-	-
060	CF	GM941	-	103 (106.0)	-	-	L	A3000	-	-
070	TF	GM942	-	104 (106.4)	-	6.8	-	A5000	-	-

Note: Recommended RNAV procedure coding is based on ARINC 424-15 and is provided solely to indicate which procedure design protection areas were used in the Instrument Flight Procedure Design process.

Note: The use of SBAS/GNSS geometric altitude as a source of altitude for approaches to LNAV/VNAV minima is permitted only for aircraft specifically certified for this type of operation. See "EASA-CM-AS-002 Clarifications to AMC 20-27" for additional information.

Note: Published OCA(H) values are obstacle clearance values. Decision heights (DH) below 200 FT shall not be used due to APV approach operation Type B limitations.

FAS DATA BLOCK

Operation type	0	**LTP/FTP ellipsoidal height**	246.0
SBAS Provider	1	**FPAP latitude**	601028.6565N
Airport Identifier	ENGM	**FPAP longitude**	0110625.6700E
Runway	RW19L	**Threshold crossing height**	15
Approach performance designator	0	**TCH units**	M
Route Indicator	Z	**Glide path angle**	3.0
Reference path data selector	0	**Course width at threshold**	105
Reference path Identifier	E19P	**Length offset**	136
LTP/FTP latitude	601204.3535N	**Horizontal alert limit (HAL)**	40
LTP/FTP longitude	0110720.9510E	**Vertical alert limit (VAL)**	35
	PRECISION APPROACH PATH CRC REMAINDER		**91831440**

NON FAS DATA BLOCK FIELDS

LTP Ortometric Height	207.6
FPAP Ortometric Height	207.6