NORWEGIAN AIR AMBULANCE
FOUNDATION

Restricted Icing

Why we need it!

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FOUNDATION

Thank you EASA!

For making All Weather Ops regulations for helicopters

3

LUFTAMBULANSETJENESTEN

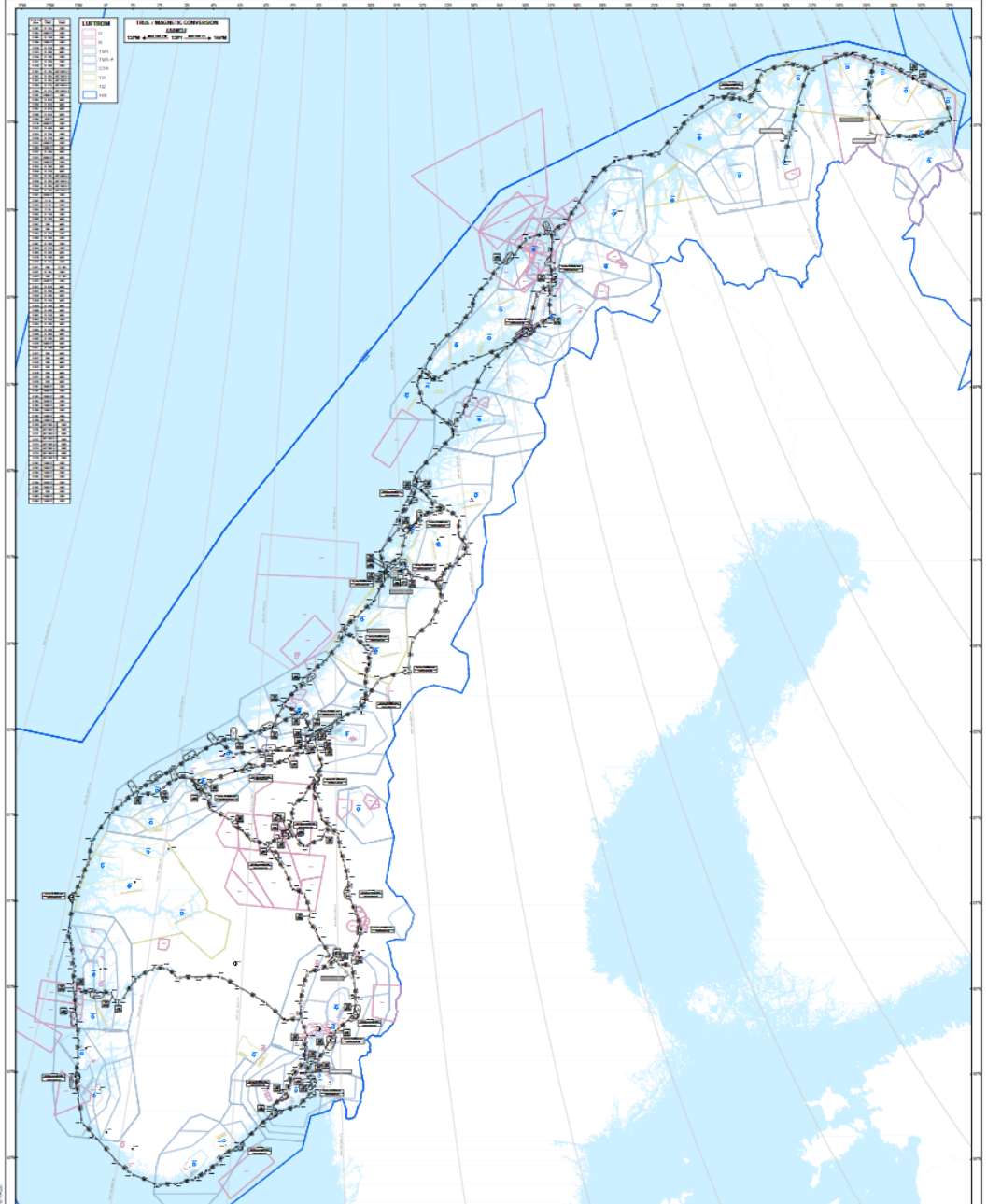
HELICOPTER IFR ROUTES

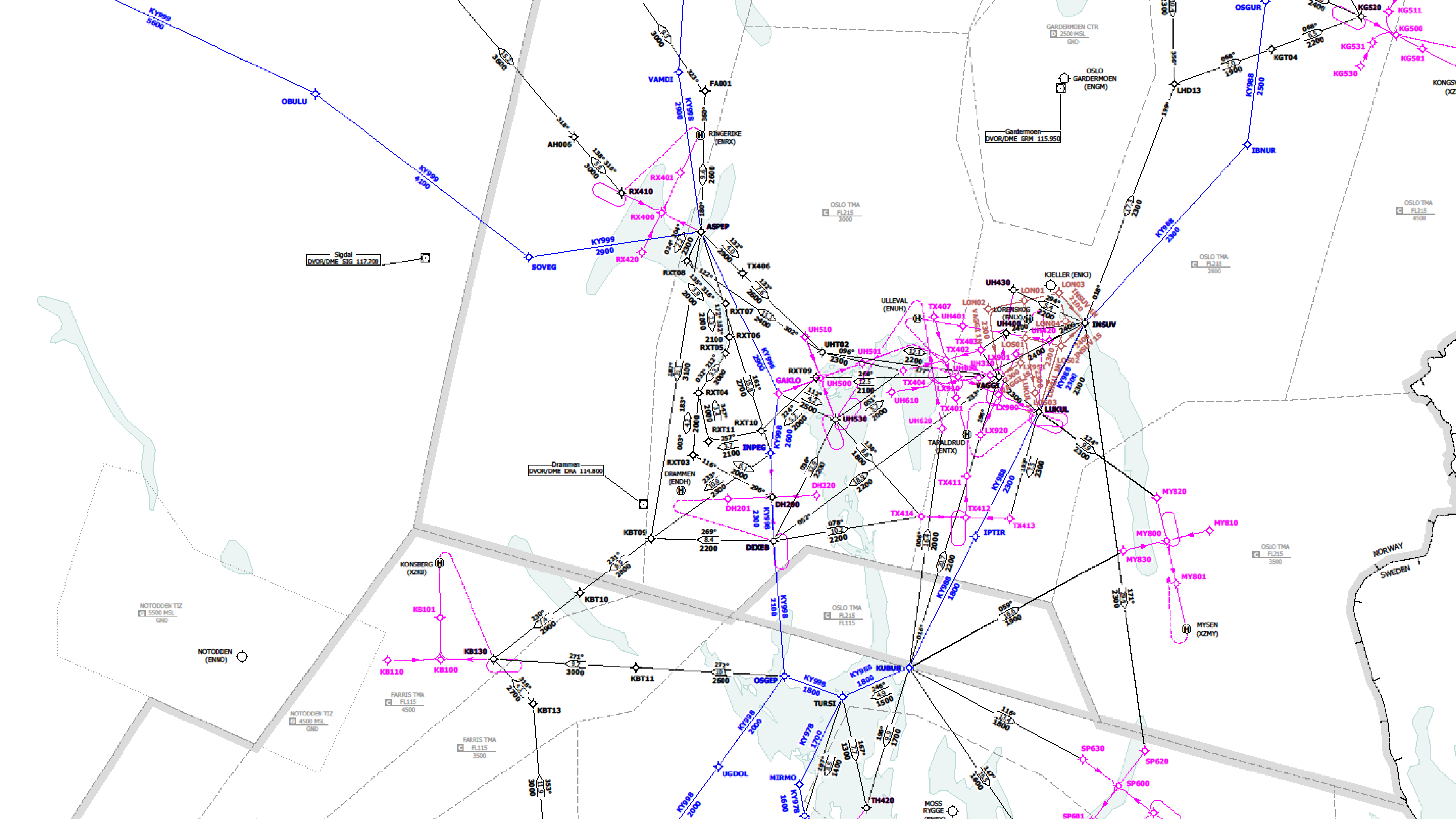
RNP 1

27 JAN 2022

ELEV AND ALT IN FT	SPEED IN KT	DIST IN NM	BEARINGS ARE TRUE

APPROVED OPERATORS ONLY





KY999
5600
OBULU
KY999
4100
SOVEG
KY999
2900
Sigdal
DVOR/DME SIG 117.700
VAMDI
FA001
AH006
RINGERIKE
(ENRK)
RX401
RX410
RX400
RX420
ASPEP
RXT08
TX406
RXT07
RXT06
RXT05
RXT04
RXT10
RXT11
RXT03
RXT09
UH510
UHT02
UH501
UH500
GAKLO
UH530
UH610
UH620
INPEG
Drammen
DVOR/DME DRA 114.800
DRAMMEN
(ENDH)
DH220
DH201
DH200
KBT05
DIXEB
TX414
TX412
TX413
TX411
IPTIR
TX401
TX402
TX403
TX404
TX407
UH401
UH400
UH430
UH420
UH310
UH330
LX901
LX910
LX920
LX980
LX951
LON01
LON02
LON03
LON04
LOS01
LOS02
LOS03
ULLEVAL
(ENUH)
LORENSKOG
(ENLX)
KJELLER (ENKJ)
TAPALDRUD
(ENTX)
VAGGI
LUKUL
INSUV
OSLO
GARDERMOEN
(ENGM)
Gardermoen
DVOR/DME GRM 115.950
GARDERMOEN CTR
2500 MSL
GND
OSGUR
KG520
KG511
KG500
KG531
KG501
KG530
KGT04
LHD13
IBNUR
KY988
2500
KY988
2300
OSLO TMA
FL215
3000
OSLO TMA
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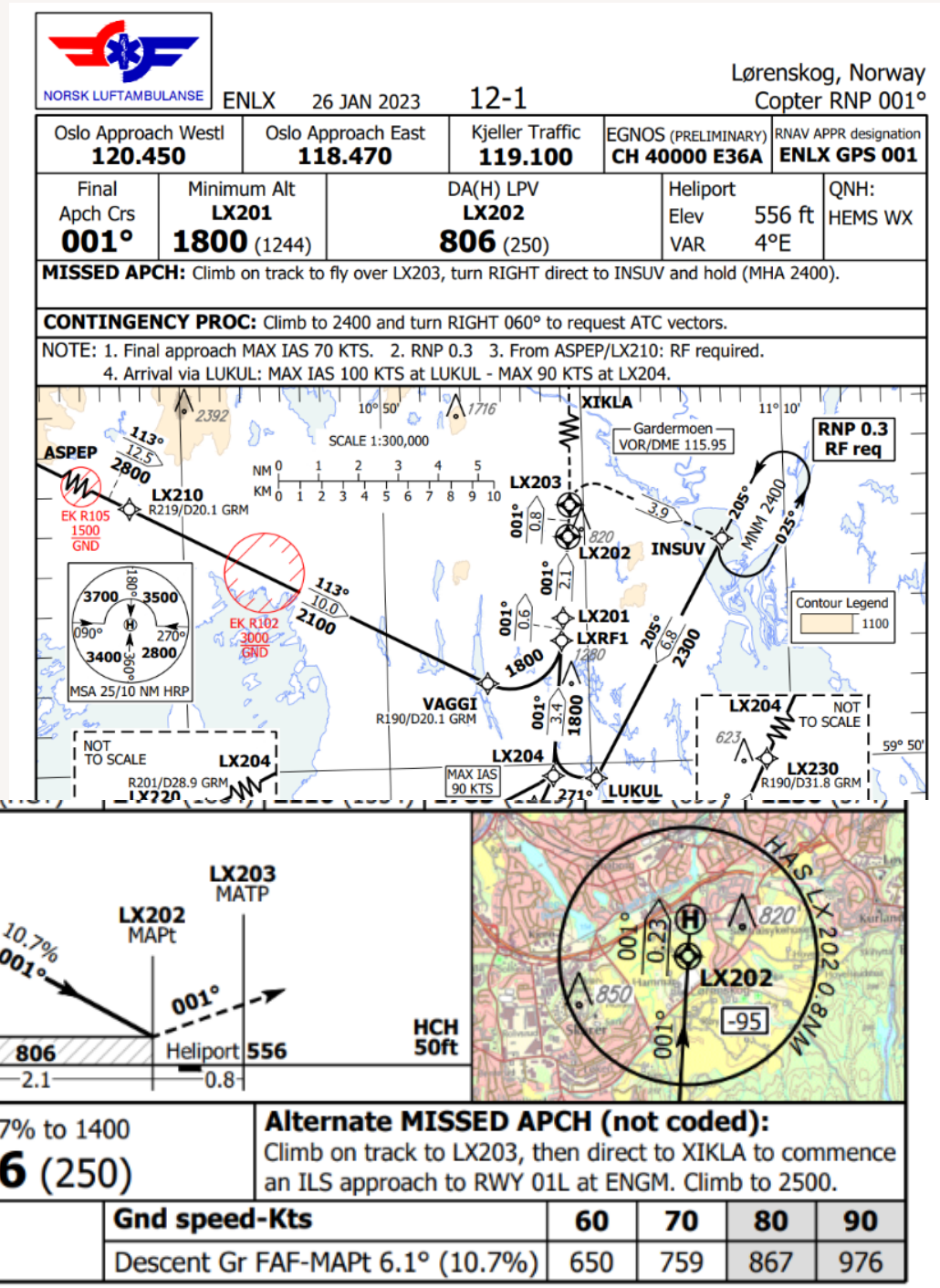
MY820
MY810
MY800
MY830
MY801
MYSEN
(XZMY)
NORWAY
SWEDEN
KONSBERG
(XZKB)
KB101
KB110
KB100
KB130
KBT10
KBT11
KBT13
NOTODDEN TIZ
5500 MSL
GND
NOTODDEN
(ENNO)
NOTODDEN TIZ
4500 MSL
GND
FARRIS TMA
FL115
4500
FARRIS TMA
FL115
3500
OSGEP
KY998
1800
TURSI
KUBUB
KY988
1800
UGDOL
MIRMO
KY978
1700
TH420
MOSS
RYGGE
SP630
SP620
SP600
SP601

Fog project

In parts of Norway and Denmark the fall and early winter weather is typically wide spread fog and low visibillity. This gives the following challenges:

1. Can not depart due to low visibillity
2. Can not fly IFR due to lack of alternate
3. Can not land at base or hospital because we can not see at missed approach point



IFR in the “toolbox”

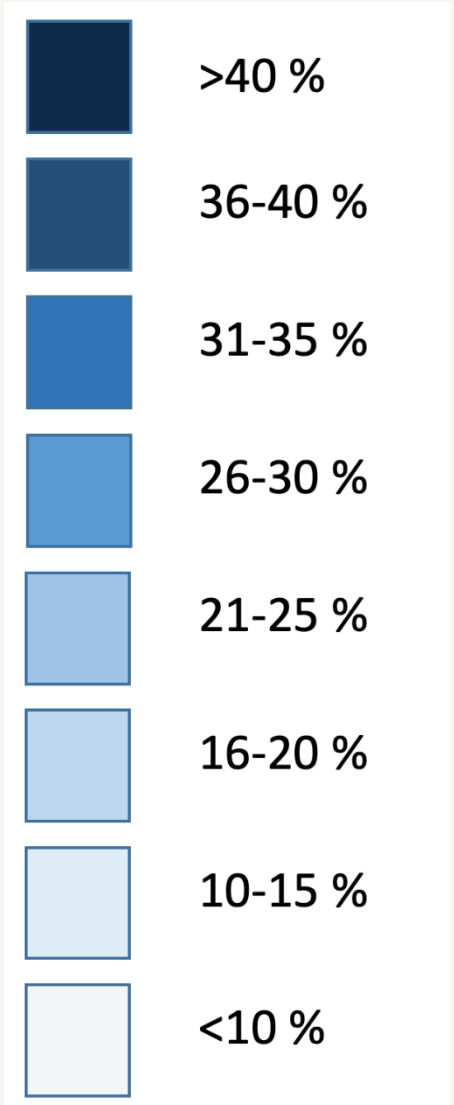
Since 2009 **IFR flight time** has increased from **6,9% to 13%**

IMC flight time from 1,1% in 2009 to more than 10%

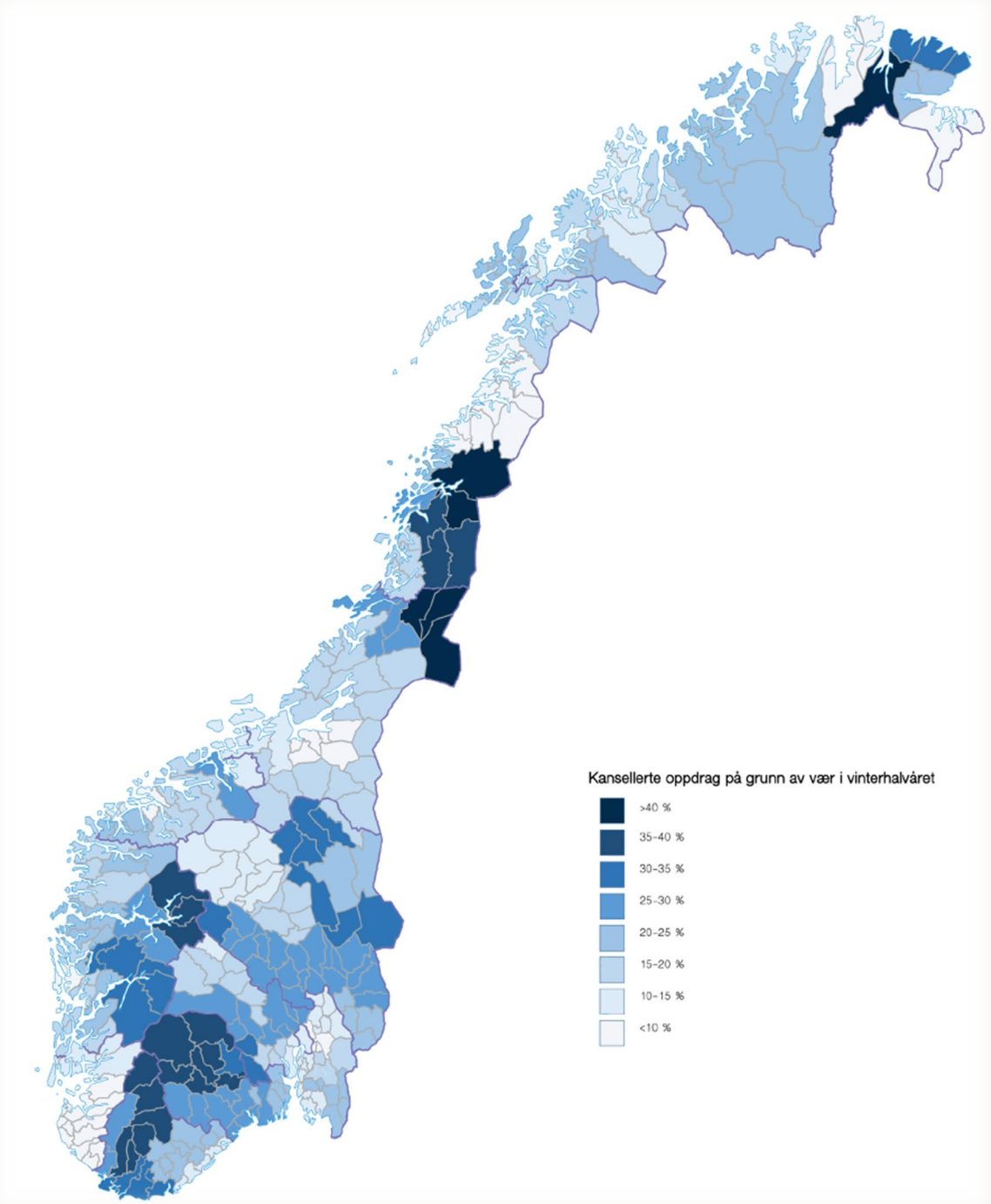

LN-ODM
LEGE
LUFTAMBULANSETJENESTEN

Virksomhetsdata i LAT

Norway; 6 winter months



CNL due WX Winter



We need 3 things

1. Optimized icing forecasting
2. A safe way of operating our current fleet in winter conditions – even IFR.
3. A HEMS aircraft with Full Ice Protection

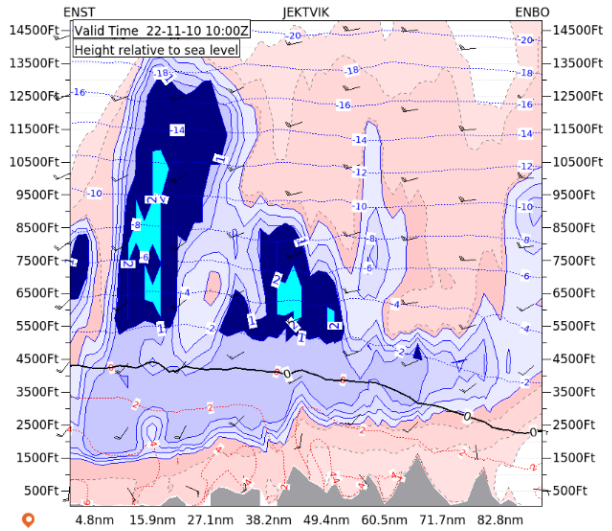
Speedtest by Oo | illustration the be | Beginning Illustra | Startseite | Koeln | Møteschedule EF | Info map - Hems | Speedtest by Oo | Info map - Hems

https://hemswx.no/index.php

Synkroniserer ikke

Route Forecast

10.11.2022 11:00



ENST — Jektvik — ENBO

Diagramforklaring

STOK
ENEV
NARVIK
ENLK
SKROVA
NORDFOLDA
KIRUNA
ENBO
GÄLLIVARE
EKTVIK
ENRA
RØSSVATNET
TOKLI
ENBN
ARVIDSJAUR
STORUMAN
99999'-0'
60 km

Kartverket, Geovekst, Kommuner, Corine og OSM - Geodata AS | Meteorologisk institutt | Meteorologisk institutt og SMHI | NLA Teknologi

Powered by Esri

Skriv her for å søke

10°C

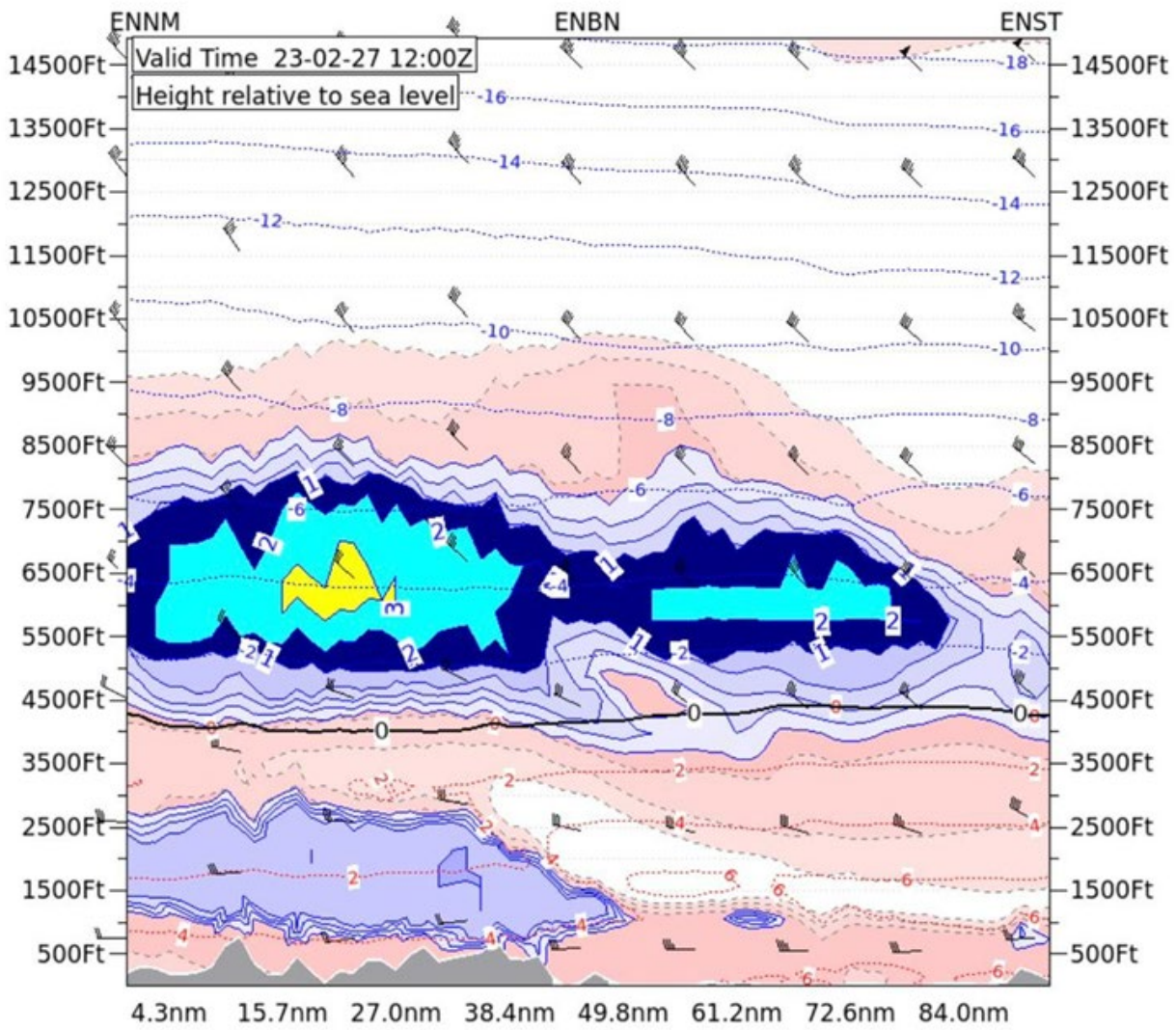
09:41
10.11.2022


HemsWX | **Himmeltind**

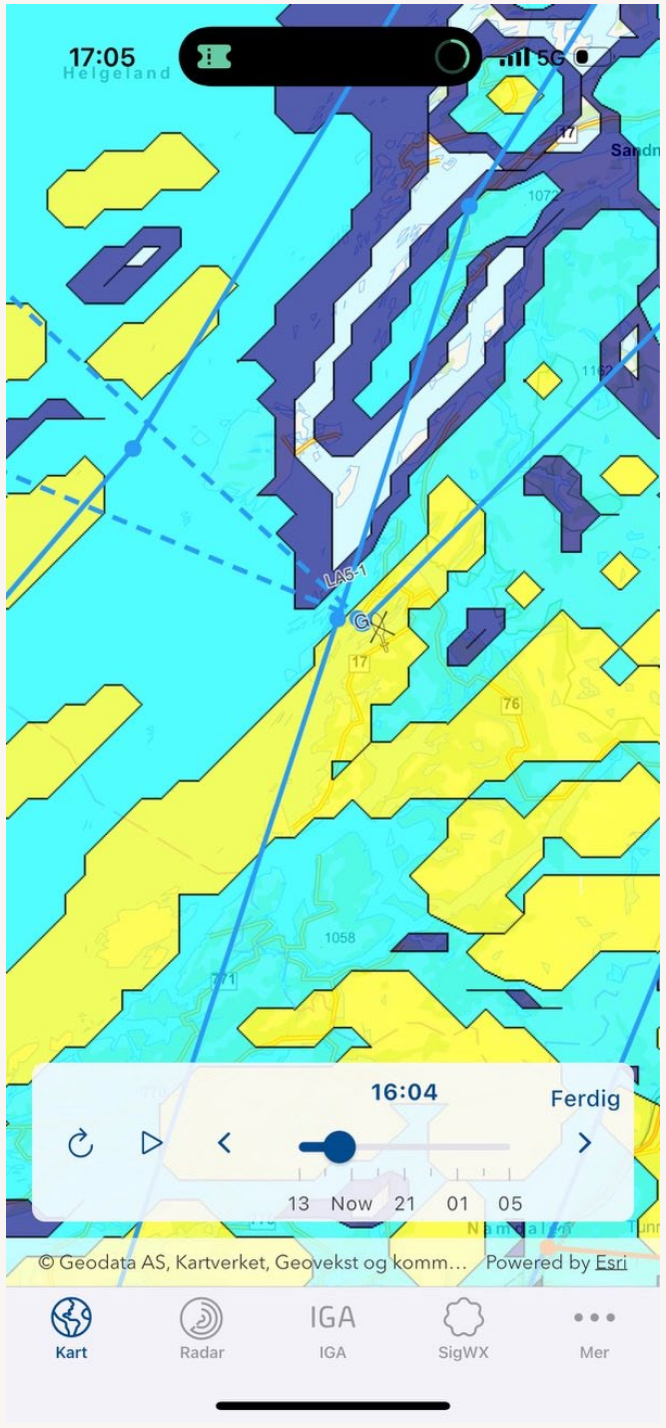

HemsWX | Himmeltind

ENNM-ENST

27.02.2023 13:00



ENBN



The Flight Manuals

2.5.2 **Prohibited environmental conditions**

The following are prohibited:

– flight into known icing conditions. In the case that icing conditions are encountered unexpectedly, the icing conditions shall be vacated immediately.

ICING LIMITATIONS

Flight into known icing conditions is prohibited.

Flight into freezing rain is prohibited.

ICING LIMITATIONS

Flight into known icing conditions is prohibited.

Flight into freezing rain and freezing fog is prohibited.

Icing…

History repeats it selv…

HELICOPTER FLIGHT IN ICING CONDITIONS
- OPERATIONAL ASPECTS

By
Captain K. Lande
Helikopter Service AS
Norway

Abstract

Helicopter fligt in icing conditions has developed as a necessary requirement for all weather Instrument Flight

systems. This has forced operators to develop their own operational procedures and has made them capable of dealing with the icing problem.

In Europe the offshore helicopter flying have led to development and certification of helicopters for flight in icing conditions, both with cold blades and with heated blades.

After nearly 30 years of offshore helicopter flying in day and night all weather operations in a hostile area, stretching from the North Sea over the Norwegian and

problem among North Sea pilots. This does not mean that icing is not taken seriously. It just means that North Sea

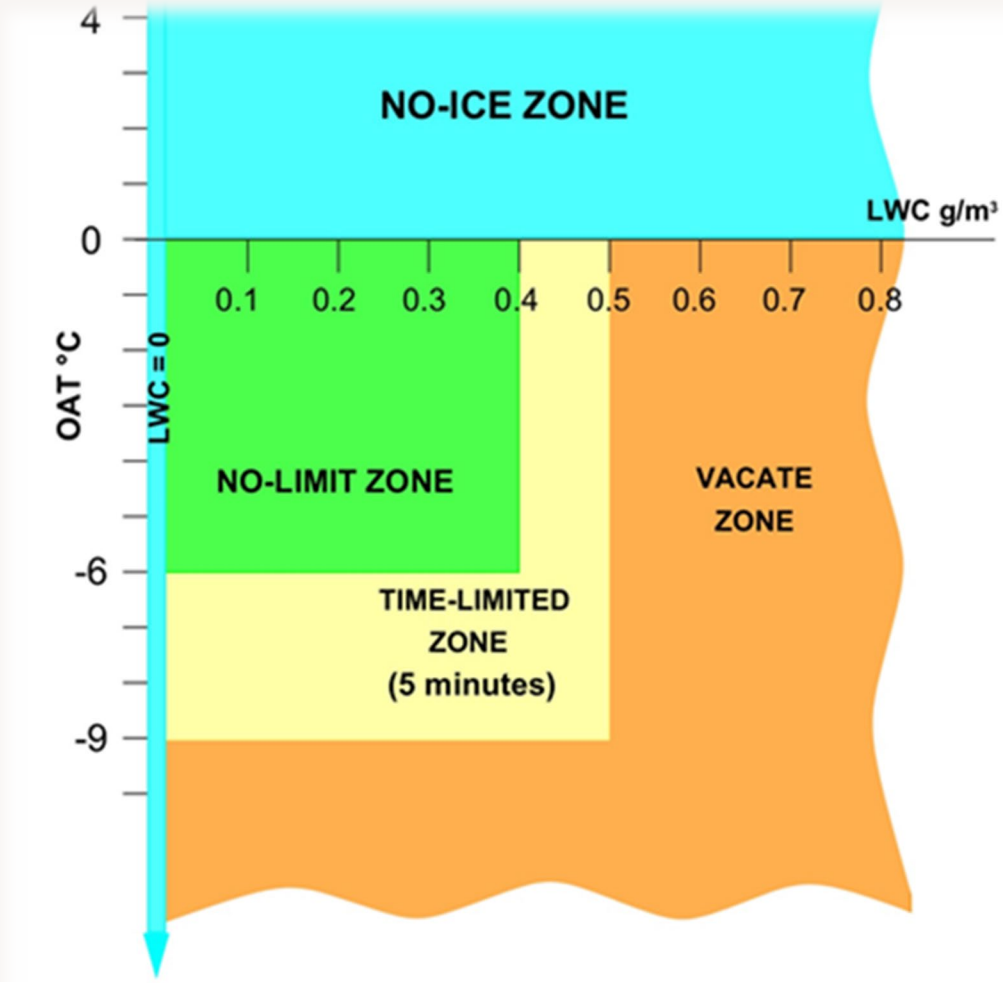
ef 1).

ocess.

nt matter so all stay out of icing conditions. That was possible in closly controlled military operations where they rarely flew real IFR flying, or canceled flying in bad weather.

When starting flying in the North Sea the nature of flying changed completely, with standard instrument departures, company developed offshore NDB/radar approaches,

“Restricted Icing Envelope”:



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Why not the real thing?

There are helicopters available that can handle the icing…

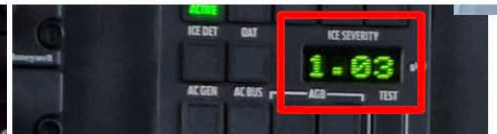
We know, but…

1818 LT, single layer

1825LT, N of Bodø

1823LT, 8.000FT

1849 LT, NW Svartisen



1853 LT, two layers

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When can Restricted Icing be usefull?

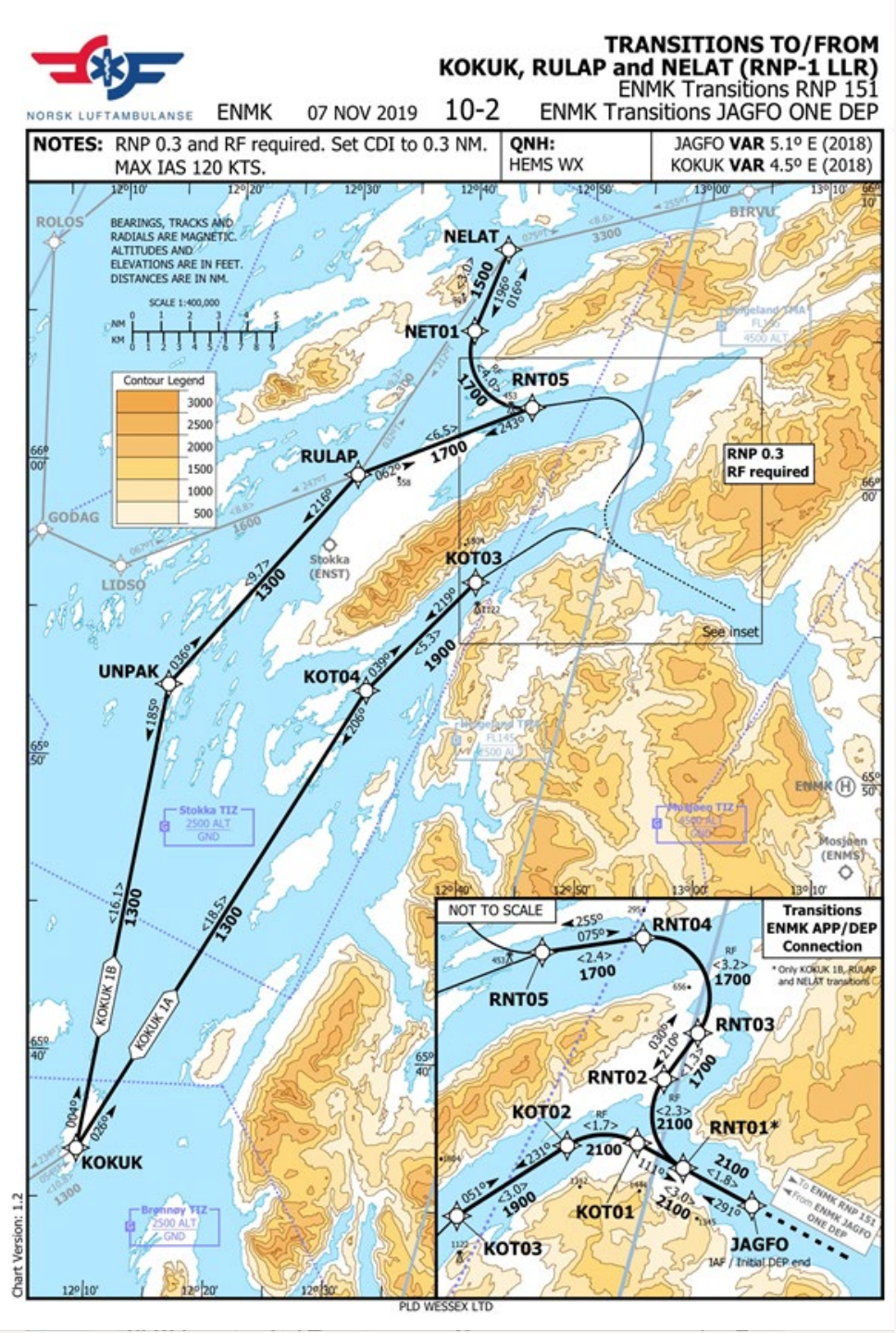
Departure and return in fog

Many parts of Europe has challenges related to fog (fall and winter)

Routing inland from co

Low level routing at 1200 feet over “warm” sea.

Climb to 2-3000 feet to get to towns or hospitals inland.



NORSK LUFTAMBULANSE

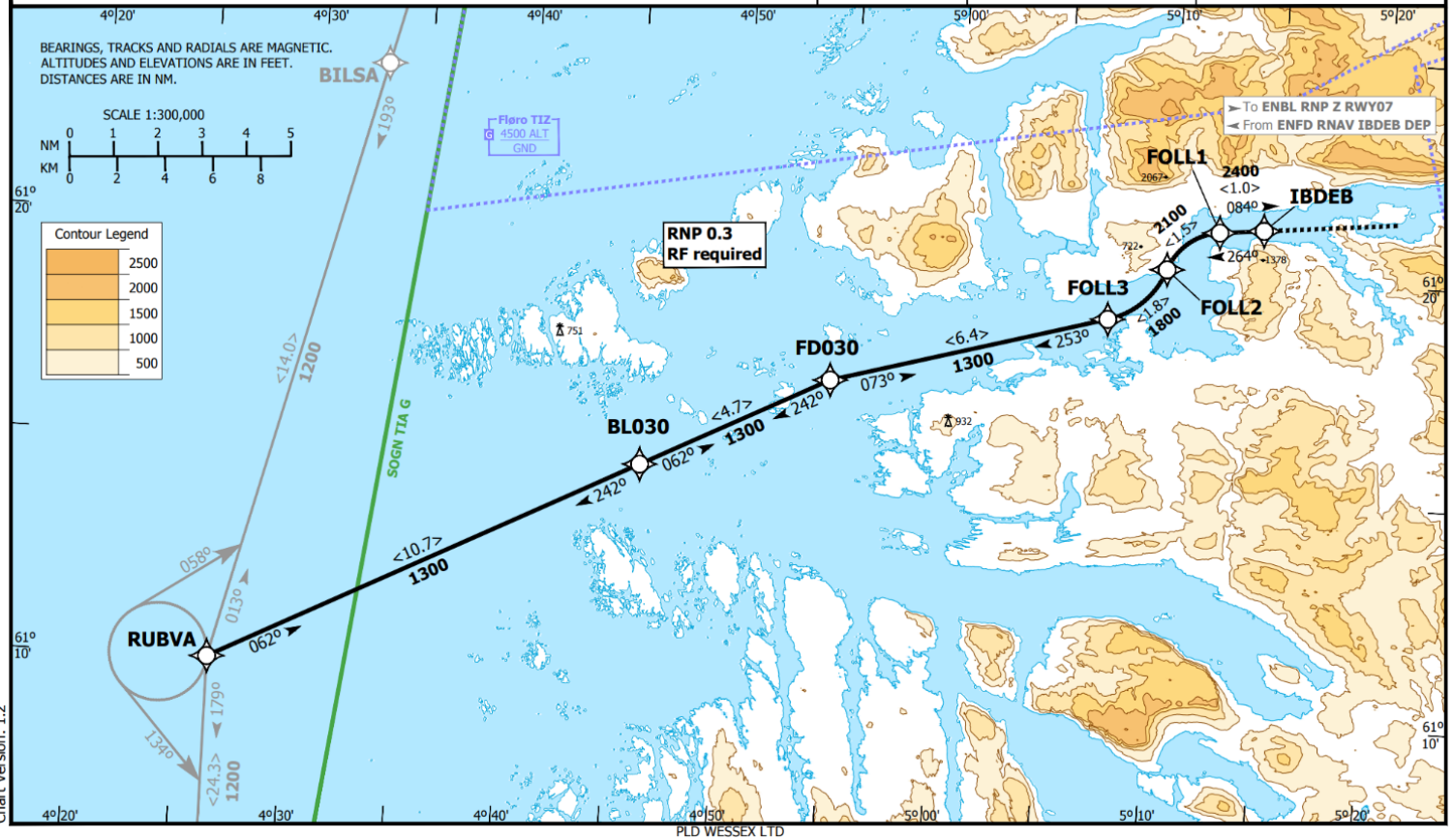
ENBL
ENFD 13 SEP 2019 10-2b

TRANSITION TO/FROM RUBVA (RNP-1 LLR)

ENBL Transition RNP Z RWY 07
ENFD Transition RNAV IBDEB DEP

NOTES: RNP 0.3 and RF required. Set CDI to 0.3 NM.
MAX IAS 120 KTS.

ENBL AFIS	QNH: ENFD HEMS WX ENBL AFIS	RUBVA **VAR** 0.5° E (2018) IBDEB **VAR** 0.9° E (2018)
118.450		



NORSK LUFTAMBULANSE

AUTHORIZATION REQUIRED

ENBL 13 SEP 2019 12-5

Førde / Bringeland, Norway
Copter RNP Z RWY07 (LNAV, LPV)

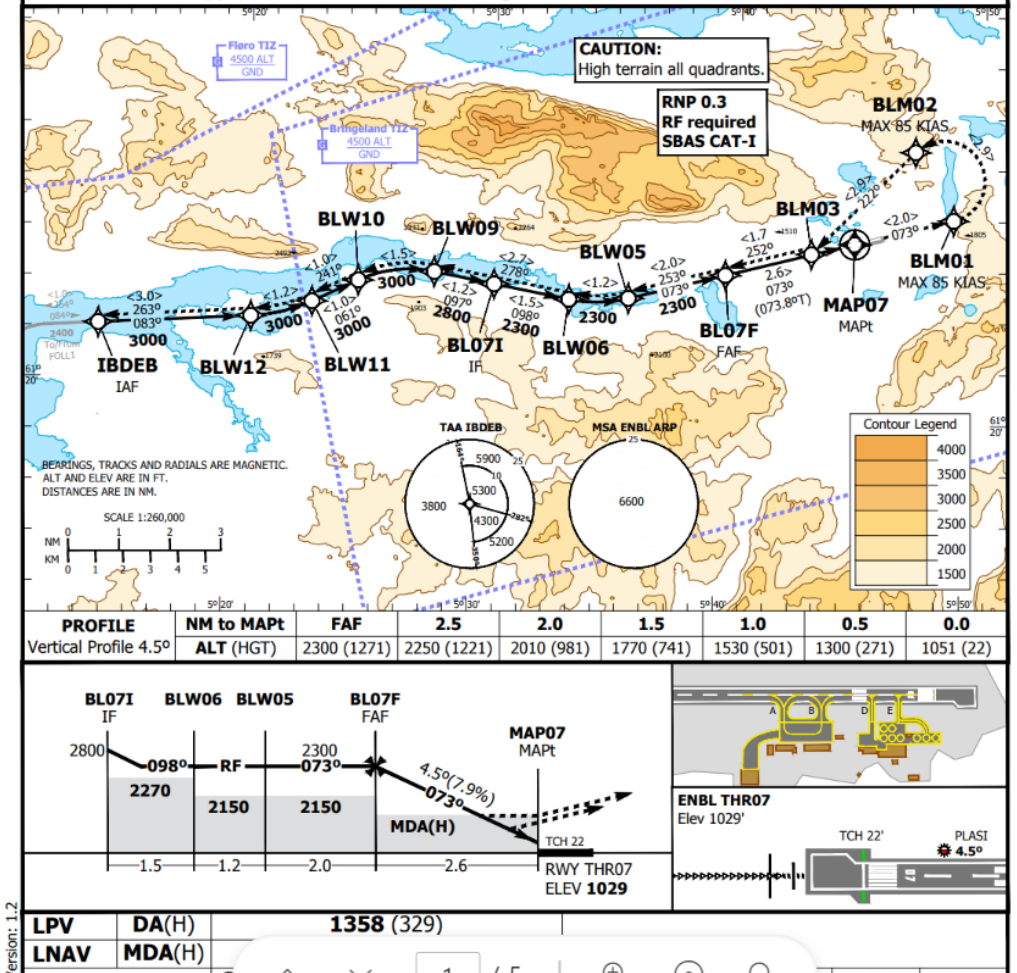
ENBL AFIS	ENBL VDF	EGNOS	RNAV APCH designation
118.450	118.450	CH 62374 E07B	ENBL GPS Z RWY07

Final Apch Crs	Procedure Alt	DA(H) LPV	MDA(H) LNAV	THR RWY 07	QNH:
073°	**BL07F** **2300** (1271)	**1358** (329)	**1650** (621)	Elev 1029 FT VAR 1.1°E (2018) Annual Change 11' E	ENFD HEMS WX ENBL AFIS

MISSED APCH: Climb to BLM01, then turn left and follow the RNP missed approach at 2500'.

CONTINGENCY PROC: Obtain MNM IFR speed, then left or right turn to navigate out fiord at 3000'

NOTES: RNP 0.3 and RF required. Set CDI to 0.3 NM.
Required MACG 6.0% (365 ft/NM, 3.4°).
Missed approach MAX IAS 85 KTS during BLM01-BLM02 RF turn, then MAX IAS 120 KTS.



PROFILE	NM to MAPt	FAF	2.5	2.0	1.5	1.0	0.5	0.0
Vertical Profile 4.5°	ALT (HGT)	2300 (1271)	2250 (1221)	2010 (981)	1770 (741)	1530 (501)	1300 (271)	1051 (22)

LPV / LNAV	DA(H) / MDA(H)	1358 (329)						
RVR 800 m	G						80	90
	Des						640	720

Chart Version: 1.2

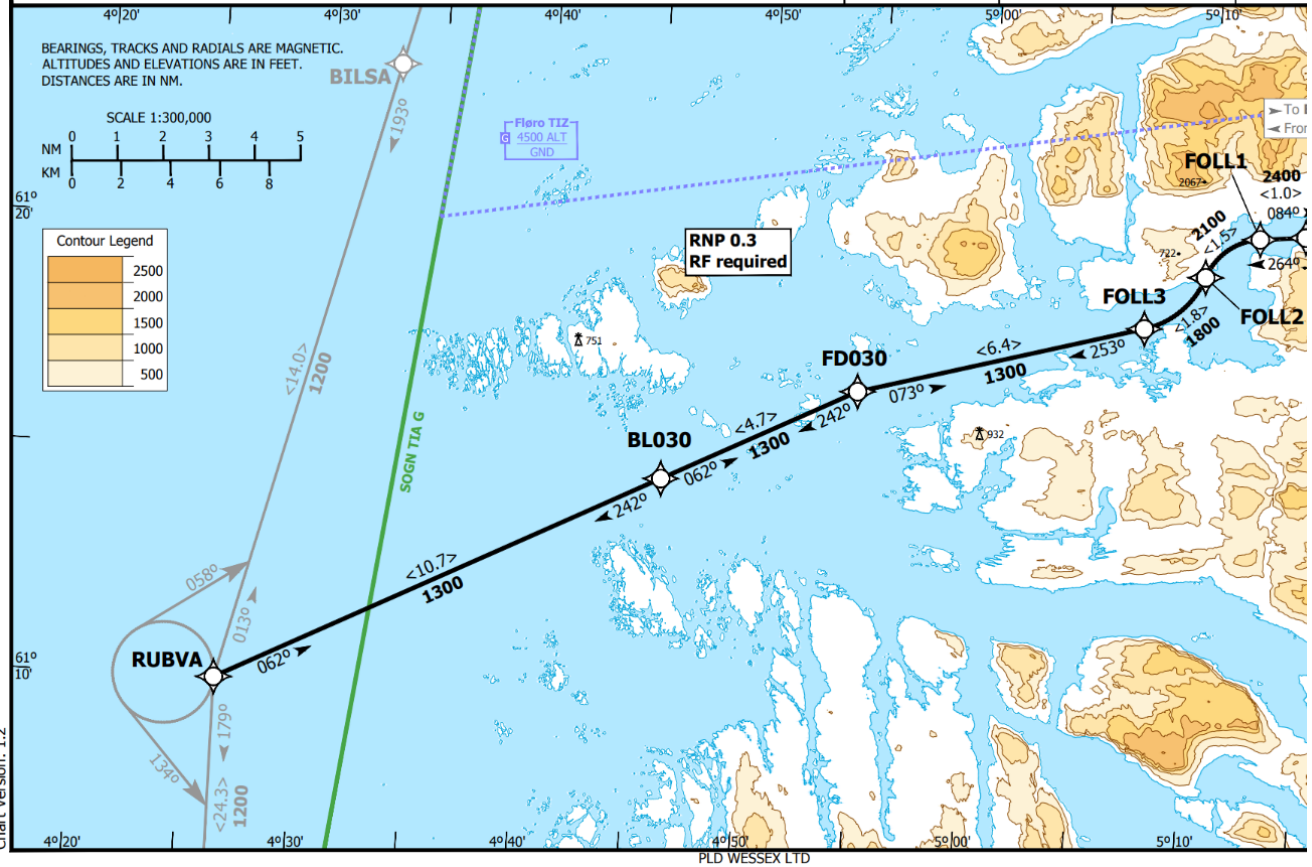
NORSK LUFTAMBULANSE

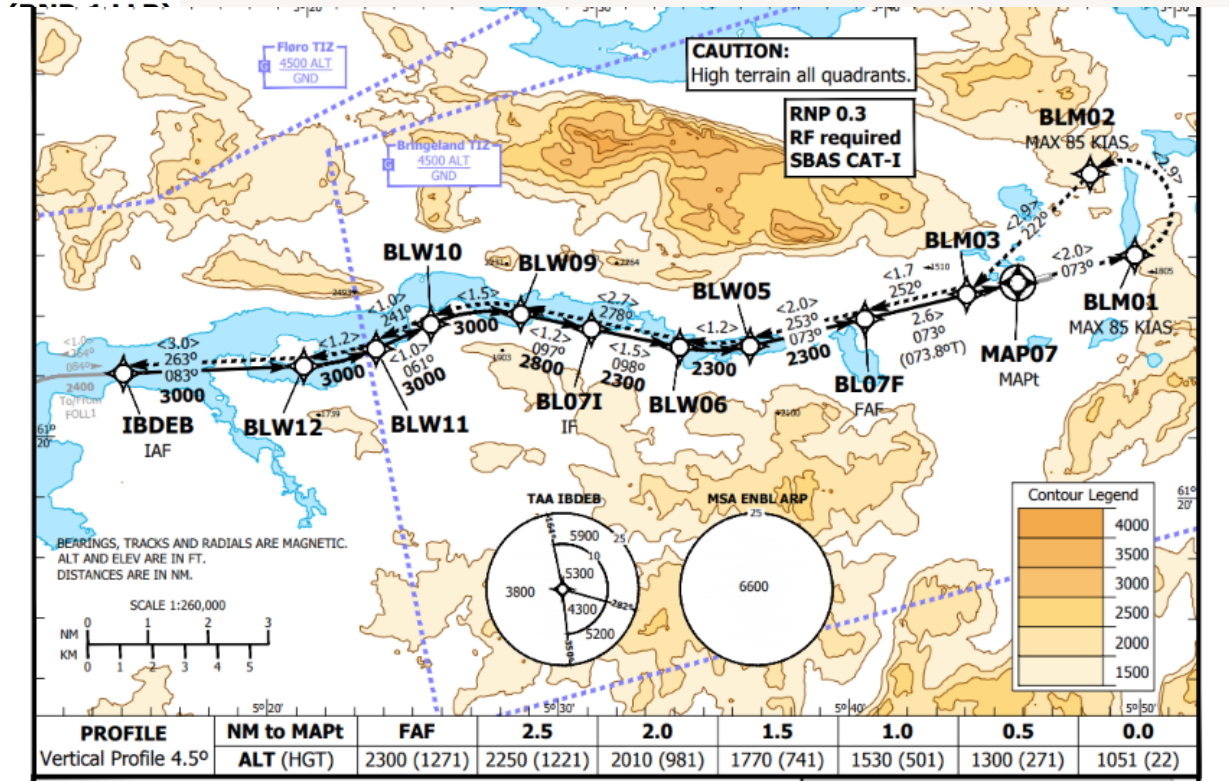
ENBL
ENFD 13 SEP 2019 10-2b

TRANSITION TO/FROM RUBVA
ENBL Transition
ENFD Transition R

NOTES: RNP 0.3 and RF required. Set CDI to 0.3 NM.
MAX IAS 120 KTS.

ENBL AFIS 118.450	**QNH:** ENFD HEMS WX ENBL AFIS	RUBVA IBDEB





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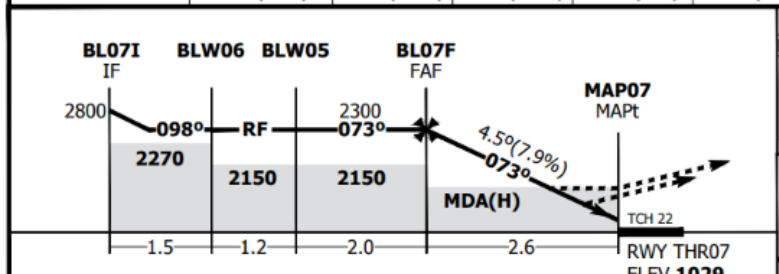
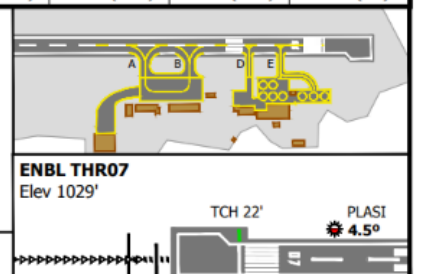
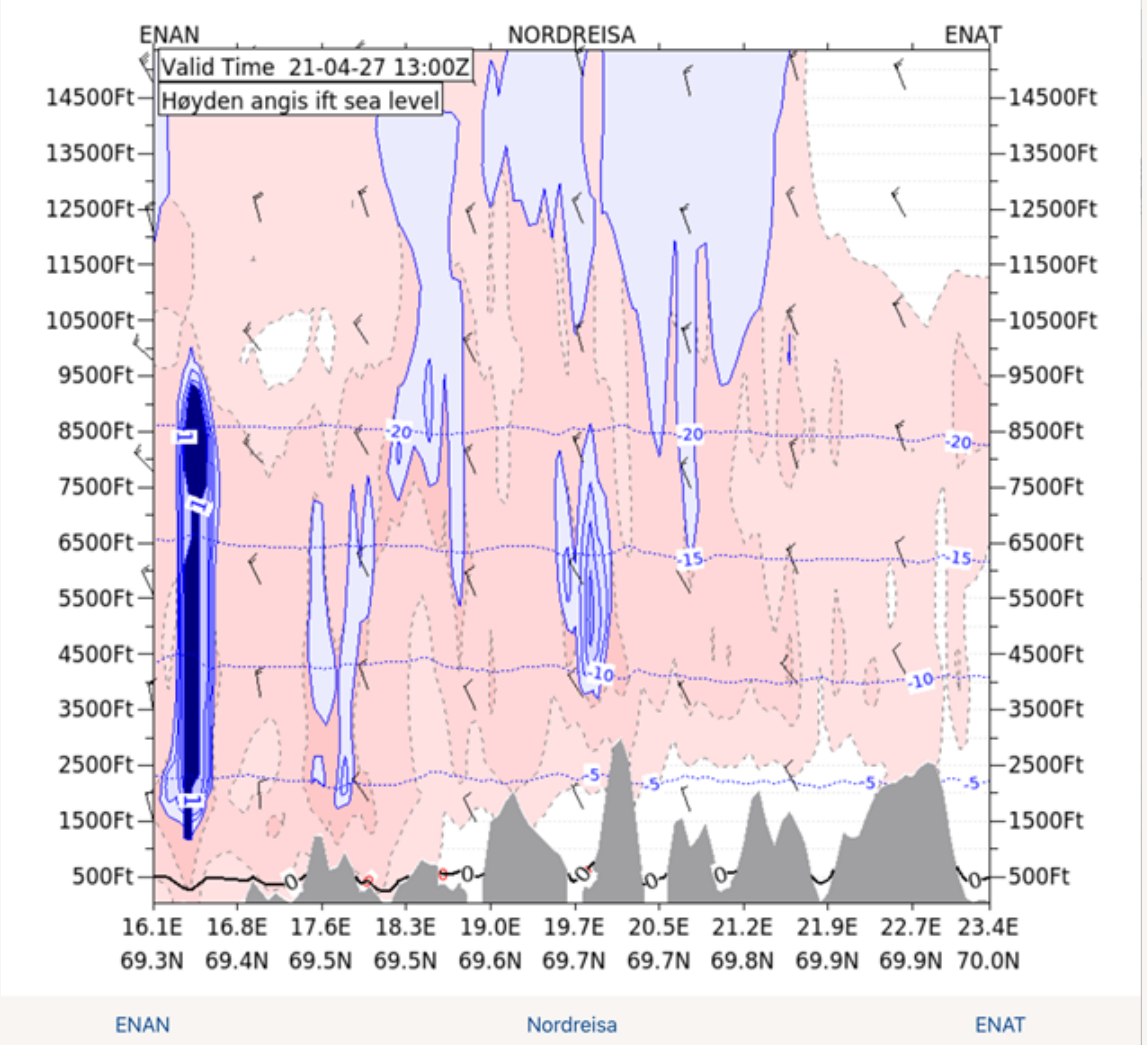




“Under” a snow shower

- Snow quickly brings WX below night HEMS minima.
- A snow shower is by definition a CB, but these are small and friendly ☺

- Most liquid water has become snow low in these clouds, but there is still a chance of ice



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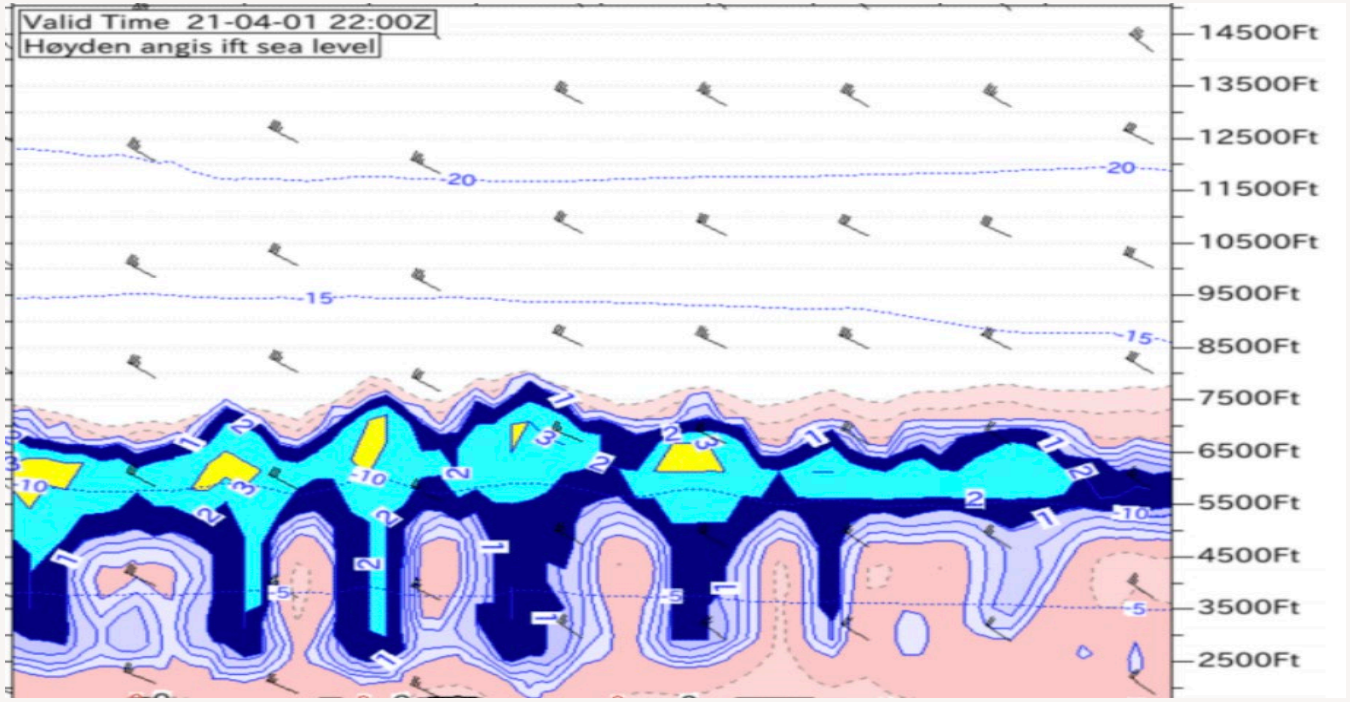

Is there a viable solution in a reasonable timeframe?

- Build on what was done for off-shore, and all the experience that our pilots have from that.
- Some operators - like us - have 20 years IFR experience from on-shore HEMS using PinS and RNP 0,3 in all phases.
- Aim for limitations that are useable for the pilot:
  - Forecast according to limitations
  - Limit OAT (-5/6?)
  - (LWC if it is usable for the pilot)
  - Max ice accretion on airframe?
  - A safe contingency plan must be part of pre flight planning!

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Where can we go from here?

If the industry sees this as an opportunity to both improve flight safety, and its contribution to society, we have a chance to be ahead of the devlopment.

For us to succeed we have to work together as a whole and draw on each others competencies.

- EASA must be willing to look at this as was done when the off-shore industry approached JAA
- We as operators must provide our needs and experience. And ensure that the result is something that can safely be implemented.
- The OEMs are key to make this safe, and this time we can avoid that the operators make their own solutions like the off-shore industry did in the 70s and 80s.
- When we discuss weather we need to include the expertise… We use Professor Eirik Mikal Samuelsen at the Norwegian Meteorological Institute as advisor, and can provide him in these discussions.
- Personally I think that the short to mid term solution might be to review the special conditions developed for off-shore and make them safe and useful for us!

Why do we need Restricted Icing certifcation/ clearance on-shore?

When the Limited Icing criteria for off-shore was developed it was because 30 years of experience in the North Sea had shown that operations at OATs warmer than -5°C could be performed safely with cold blades. Operators wanted standardized guidance for an operation that had developed over years, and was performed in icing conditins with aircraft where the FLM stated «flight in icing conditions prohibited». A «culture» had developed where different pilots and operators had different definitions to what this limitation in the FLM ment.

On-shore operations was not concidered because IFR operation was very limited. With GPS and the development of PinS procuedures that has changed, and we now have a chance to build on the positive experiences from off-shore to avoid that different standards develop. We can define the envelope, and the requiremnts to operate within it.

That will improve safety both by reducing VFR in marginal WX, and assuring that the IFR ops are safe!