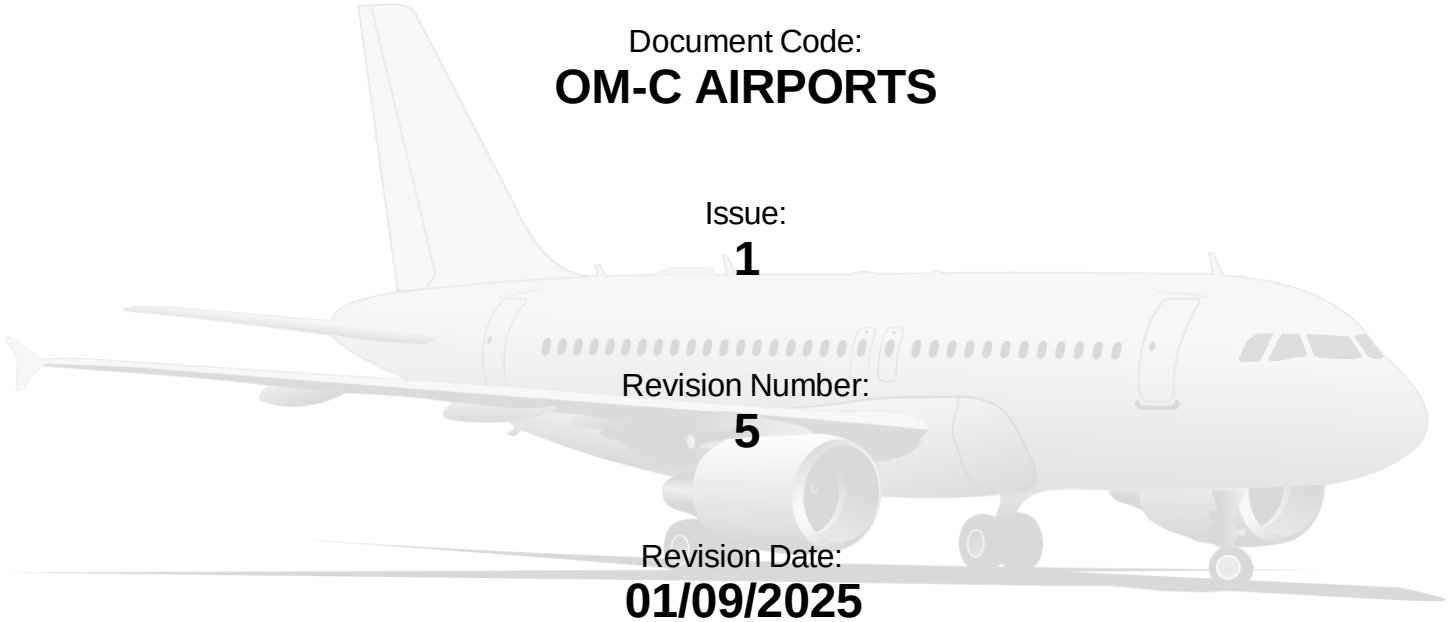
OM-C AIRPORTS



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PRELIMINARY PAGES

LIST OF EFFECTIVE SECTIONS/SUBSECTIONS

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(1) Evolution code: N=New, R=Revised, E=Effectivity, M=Moved

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GENERAL

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0-1 EXPLANATIONS AND DEFINITIONS OF TERMS & ABBREVIATIONS

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Localization Title	Toc Index	ID	Reason

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0-1-1 NOTES

Applicable to: ALL

REVISION INFO

This OM-C Airport manual is part of OM-C Issue 2, Revision 4 dated 05/10/23. The following Airport Briefings are parts of the OM-C. They contain operationally relevant information, local ATC and airport procedures that are not addressed in NOTAMs or AIPs, airport-specific Fly2Sky procedures which are not addressed in other parts of the OM, and ground handling information.

These briefings are updated when a change occurs in any of the items mentioned above. In case of any contradiction between the Jeppesen FD Pro X and the Airport briefings stated here, the information in the Jeppesen FD Pro X takes precedence.

In case of any discrepancy or relevant information missing from the following briefings, Crews are kindly asked to notify the Chief Pilot Performance, or in his/her absence the Director Flight Operations or the Chief Pilot Flight Standards and Documents by sending an e-mail to their respective email addresses, which can be found on the Centrik. The contents will be reviewed and corrected if necessary. This e-mail can also be used to make suggestions and provide feedback regarding the outlook and the.

0-1-2 APPROVED AERODROMES

Applicable to: ALL

Aerodromes are categorised A, B or C according to their operational complexity, based on an assessment of terrain characteristics, minimum safe altitudes, approach aids and approach procedures, seasonal/local weather conditions, performance limitations, and any other unusual characteristics. *Refer to: OM-A 8-1-2 DETERMINING THE ADEQUACY OF AERODROMES* for further details.

The following airports have been categorised and approved by Fly2Sky for normal operations. In case of queries please notify the Performance Pilot by sending an email to the Chief Pilot Performance, or in his/her absence the Director Flight Operations or the Chief Pilot Flight Standards and Documents by sending an e-mail to their respective email addresses.

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AIRPORTS

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Localization Title	Toc Index	ID	Reason

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1-1-1 TIA-LATI-TIRANA

Applicable to: ALL

CAT B	No LVP	GPU Recommended

WARNING	High terrain to the East, Southeast and South Due to terrain risk of turbulence and windshear on final Visual approaches prohibited Circle to land approaches prohibited VOR 35 has a non-standard final approach angle of 3.45°, whereas the PAPI associated with it is standard 3°. Exercise caution. SID to the East are prohibited due to rapidly rising terrain below.

DESCENT

NIL

APPROACH AND LANDING

- ILS 17: Glide Path has a non-standard intercept position with the runway.
- VOR 35: early configuration is advised due to non-standard approach angle and low platform altitude.
- LOC17/VOR17/VOR35: Missed approach altitude is lower than platform altitude. This might result in unwanted level-off during vertically selected approaches.

WINTER OPS

During winter taxiway centrelines can be hard to follow when covered by snow.

RUNWAY AND AIRPORT

NIL

TAKE-OFF

Intersection take-off is not allowed by aerodrome regulation.

GROUND HANDLING INFO

TBA

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1-2-1 SOF-LBSF-SOFIA

Applicable to: ALL

CAT B	LVP Available	GPU Recommended

WARNING	Due to high threshold elevation and low platform altitude for ILS RWY 27 the recommended config for GS interception: FLAPS 2, Gear Down, speed Vapp. High terrain in the vicinity of the Airport. Significant shortcuts are sometimes offered by ATC. In case the aircraft becomes high on the descent profile, be aware that high rates of descent over hilly areas can cause genuine GPWS warnings. Crews shall ask for additional radar vectoring for aircraft descent management rather than use high speed, speed brakes and high descent rate over the terrain. Circling north of the airport only. In case of strong southern winds, expect strong turbulence and windshear at low altitudes Taxiways may be slippery when temperatures are below 0° C.

DESCENT

Aircraft are held high due to high terrain:

- Expect to cross NISVA at FL150 for RWY 27 and FL130 for RWY 09.

Step descents with multiple altitude constraints.

APPROACH AND LANDING

Runway 27 is preferred for landing. Expect vectors for short final. Due to terrain in the vicinity, a visual approach is not allowed at night. STAR in force, but radar vectors are often offered. Expect a significant shortcut for RWY 09. Expect to vacate via Charlie or Foxtrot on RWY 27 or Echo on RWY 09. Vacating via Foxtrot after landing on RWY 09 is not allowed.

WINTER OPS

Treatment is conducted on remote East and West areas with engines running. Make sure the de/anti-icing request is communicated to the handling. Tell them if wings and tail or

wings, tail and fuselage need treatment. Report the need of de-icing to Tower on first contact.

RUNWAY AND AIRPORT

NIL

TAKE-OFF

Some SID with “Step Climb”. NADP in use, see Jeppesen FD Pro X for details.

GROUND HANDLING INFO

TBA

1-2-2 PDV-LBPD-PLOVDIV

Applicable to: ALL

CAT B	No LVP	GPU Recommended

WARNING	No approach radar. High Terrain in the vicinity of the aerodrome. In case of strong southern winds, expect strong turbulence and windshear at low altitudes Taxiways may be slippery when temperatures are below 0° C.

DESCENT

Aircraft are held high due to high terrain there are step descents with multiple altitude constraints.

APPROACH AND LANDING

NIL

WINTER OPS

Make sure the de/anti-icing request is communicated to the handling. Tell them if wings and tail or wings, tail and fuselage need treatment. Report the need of de-icing to Tower on first contact.

RUNWAY AND AIRPORT

NIL

TAKE-OFF

Some SID with “Step Climb”. NADP in use, see Jeppesen FD Pro X for details.

GROUND HANDLING INFO

TBA

1-2-3 VAR-LBWN-VARNA

Applicable to: ALL

CAT B	LVTO Available	GPU Recommended

WARNING	Expect windshear and moderate turbulence with Northerly and North-westerly winds.

DESCENT

If expecting shortcuts and planning a descent profile based on estimated track miles be careful to comply with altitude constraints. Some constraints are up to 3000 ft higher than surrounding MEA (e.g. WN704 on EXIGA 2F STAR RWY 27).

APPROACH AND LANDING

- RWY 09 is preferred for landing.
- RWY 27 non-standard final approach angle.

RUNWAY AND AIRPORT

Runway recently resurfaced: may be slippery when wet or contaminated. Poor visibility can be expected during the winter months. Heavy precipitation and prolonged runway contamination during winter months and Northerly winds.

TAKE-OFF

Runway 27 is preferred for Take-Off. If departing from RWY 09 use the CAT I holding point on taxiway E, unless otherwise instructed by the ATC. NADP applies, *Refer to: Jeppesen FD Pro X* for more details.

GROUND HANDLING INFO

TBA

1-2-4 BOJ-LBBG-BURGAS

Applicable to: ALL

CAT B	LVTO Available	GPU Recommended

DESCENT

Expect vectors for 8NM final for both runways.

APPROACH AND LANDING

Due to prevailing wind directions runway, 04 can be expected. STARs for RWY 04 terminate at BG367 which is slightly south, but very close to, BGS11 (intermediate fix for VOR 04 approach). Due to this, when approaching from the north, the FMS cannot properly link BG367 to BGS11. In the case of a direct to BG367, which can be anticipated for VOR 04, a DIR TO BGS11 is recommended instead.

RUNWAY AND AIRPORT

Taxiways and apron are in poor condition. Movement on the apron with “Follow Me” car only.

Weather reports and NOTAMs are not provided by Handling Agent. When requested, a fee will be charged.

Water and Toilet service are often provided without an explicit request for an additional charge. Recommend walkaround to be performed early to avoid unnecessary costs.

TAKE-OFF

The airport offers an efficient bird clearance service. Request if necessary during start-up It is recommended to have the Weather Radar turned off for the Take-Off roll as various radar failures have been reported possibly due to bumpy runway conditions.

GROUND HANDLING INFO

TBA

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1-3-1 NCE-LFMN-NICE

Applicable to: ALL

CAT B	No LVP	GPU Recommended

WARNING	The self-briefing of this document ensures that crews have followed a training program on current procedures and the basic characteristics of the airport infrastructure. Possibility of wind shear on final 04/22 combined with a strong tail wind component at medium ALT and cross wind on short final. Due to sea breeze and river valley proximity serious risk of full crosswind component (mainly at the THR 04 near to the valley of VAR) 850ft and 2000ft peaks at 3.5 and 5NM E of from RWY22 THR. Peaks up to 4200ft 9NM NW and NE of the field with peaks over 1000ft 29NM N/NE When strong westerly wind on RWY 22 expect high turbulence on short final leading to possible unstable approach, in this case the traffic may be carried exceptionally on RWY 22L.

CAUTION	RWY 04L/R is favoured up to 6kts of tailwind – see Jeppesen FD Pro X-REF for details. Do not mistake RWY 04L/22R with TWY U. Birds in vicinity of AD. Follow PAPI signal when in sight. Even though PAPI systems all RWYs are calibrated for THR overflight of B747 ACFT types this fact has negligible operational impact. No approach lights installed! From CM1 position is hard to see RWY lights at night for RWY 04L/R Non-standard GP intercept position on RWY 04L – see Jeppesen FD Pro X-REF for details RWY 22L/R with 3.5° PAPI. Several hotspots in taxiways – refer to the Jeppesen FD Pro X charts. Higher than standard Aerodrome Operating Minima.

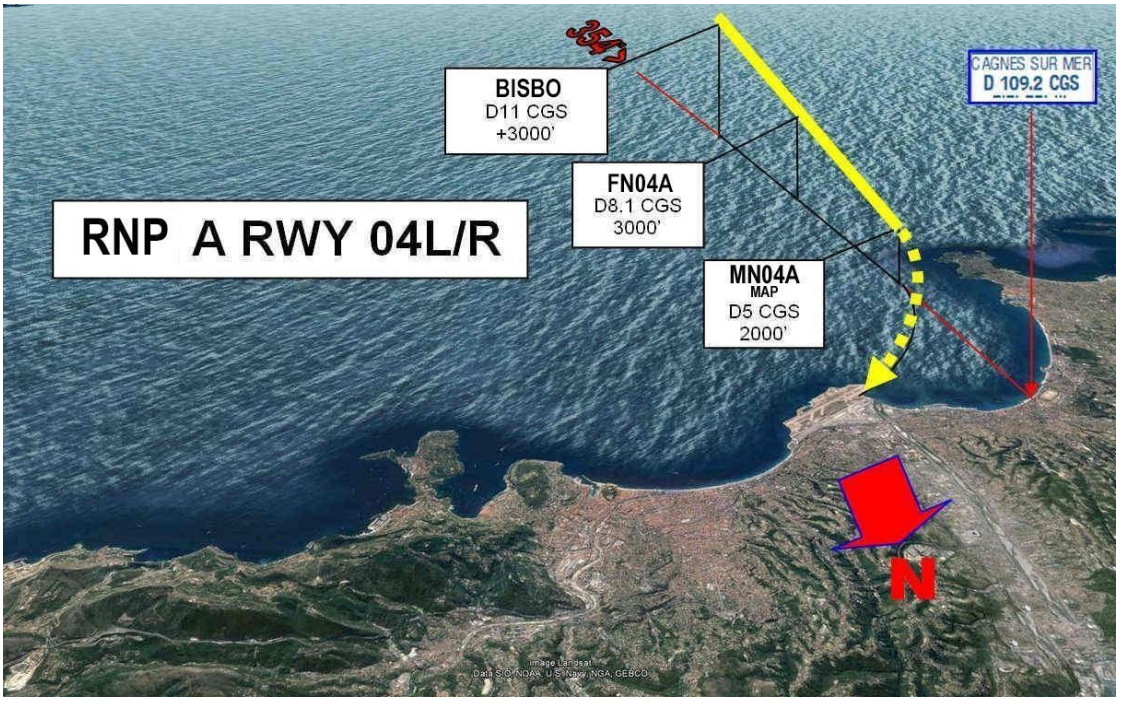
FLIGHT PLANNING

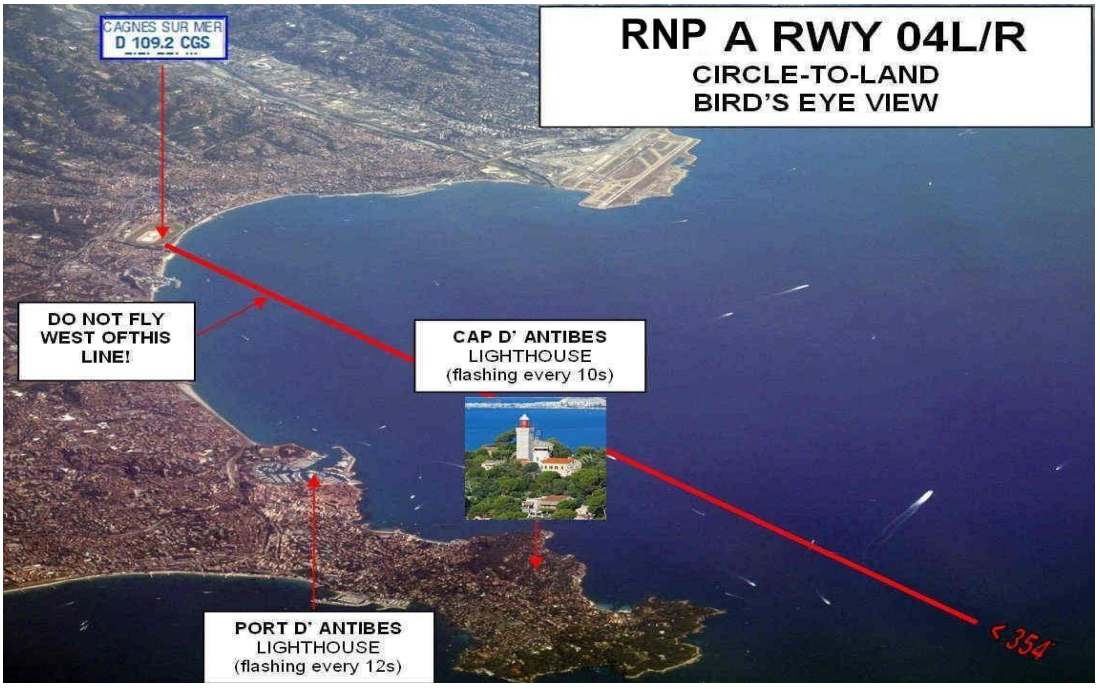
The approach to be planned by default is RNP A for RWY04L/R and RNP D for RWY22L/R. Consequently, the availability of P-RNAV capability is required for dispatch to LFMN including RAIM prediction check.

APPROACH AND LANDING

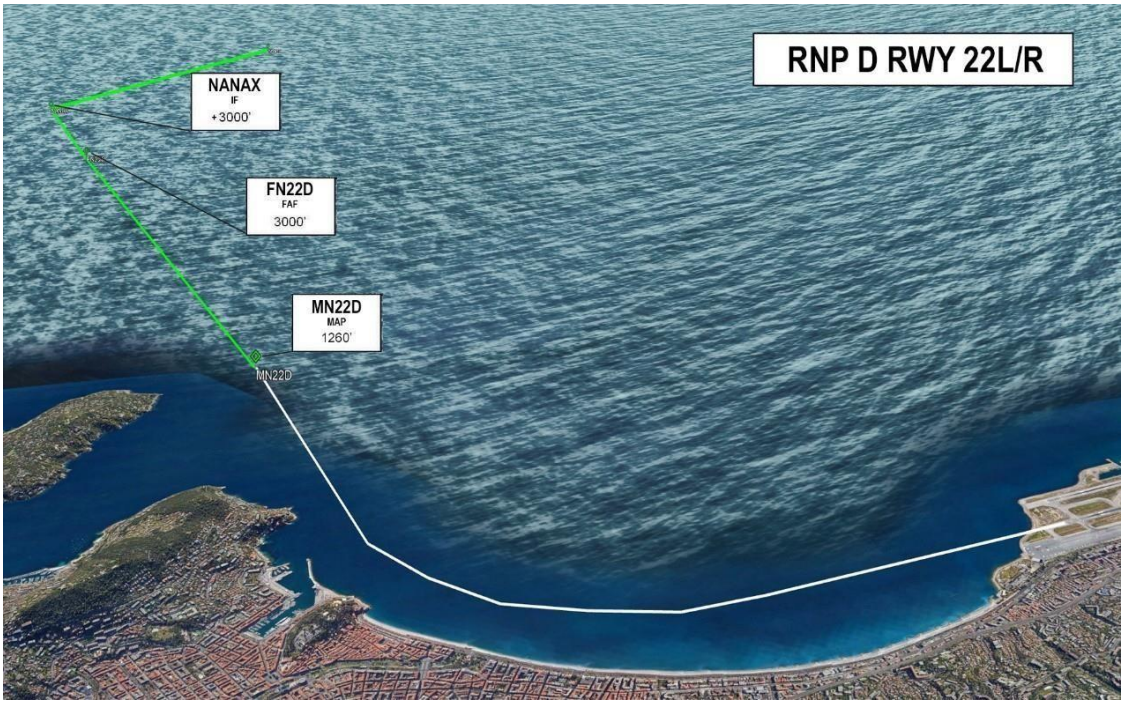
Guideline for RNP approaches followed by circle-to-land with prescribed tracks.

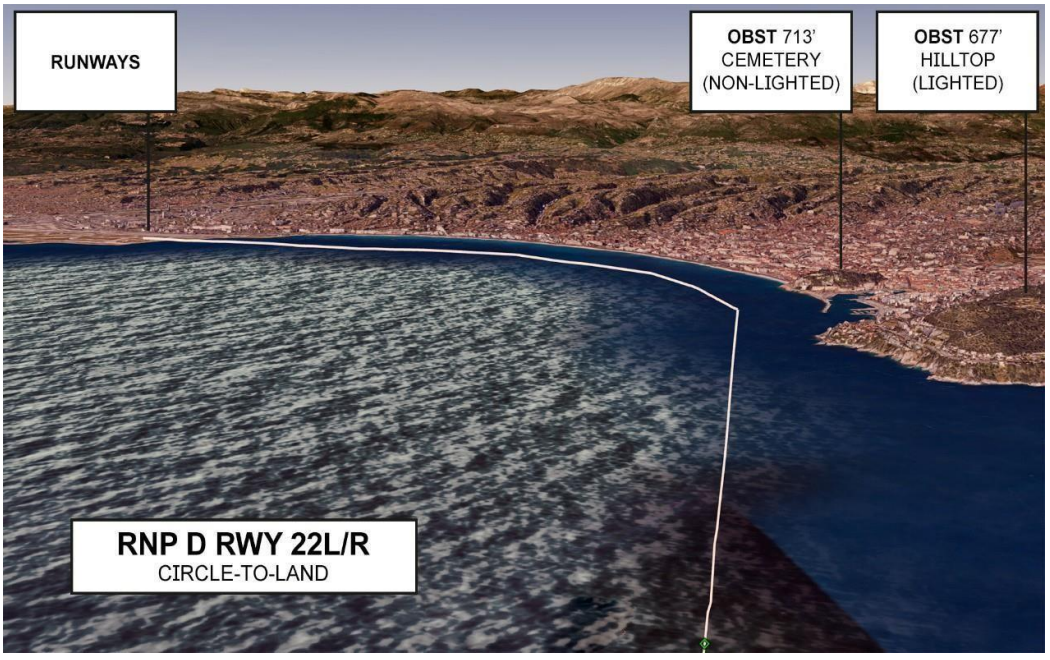
04L RNP A FOLLOWED BY CIRCLE-TO-LAND WITH PRESCRIBED TRACKS





22R RNP D FOLLOWED BY CIRCLE-TO-LAND WITH PRESCRIBED TRACKS





Crews can expect:

- Radar vectors close to FAF, followed by instrument final approach and finished with circle to land with prescribed tracks;
- Radar vectors followed by visual approach (offered by ATC, or on pilot request).

Note: *Do not accept visual approach for RWY22, as the stabilization criteria cannot be met without breaching noise restrictions*

RECOMMENDED FM GUIDANCE AND SETUP

Prepare landing runway in SEC F-PLN (do not forget to sequence). When visual with airport:

- Select FPA – TRK
- Proceed on instrument final course (base leg for visual approach)
- Activate SEC F-PLN (Caution: missed approach for original instrument approach is lost but can be manually prepared during approach briefing.)
- AP-OFF, FD-OFF
- Position (turn) the aircraft onto final with the help of the ND (5NM final displayed for landing runway)
- Set landing configuration when appropriate, observe stabilization criteria (500 ft AAL)

NON-STANDARD PROCEDURE

Prepare landing runway in SEC F-PLN (do not forget to sequence). When visual with airport:

- Proceed on instrument final course (base leg for visual approach)
- AP-OFF, FD-OFF, BIRD-ON, SET FINAL TRACK
- Position (turn) the aircraft onto final with the help of the ND (radial inserted on FIX INFO displayed)
- Set landing configuration when appropriate, observe stabilization criteria (500 ft AAL)
- Use active F-PLN during circle-to-land procedure (missed approach of instrument approach remains available, but provides no depiction of final track for landing runway)

Do not use more than idle reverse if possible.

RUNWAY AND AIRPORT

Air bridge door access code changes frequently, ask the ramp agent for the current code before leaving the aircraft.

- LDG RWY 04L/22R
- TKOF RWY 04R/22L
- RWY 04L/22R is difficult to recognize visually. Easy to be mistaken with taxiway “U” or 04R/22L.

Special operation conditions for use of single RWY 04L. See Jeppesen FD Pro X for details Sharklets aircraft having received a taxiing instruction via TWY R must report their particularity on GND frequency.

- Push-back clearance valid for 1 min only
- APU prohibited on APN K
- Expect parking at Terminal/Extension 2

TAKE-OFF

NADP1 *Refer to: OM-B 2-6-1 NOISE ABATEMENT PROCEDURES*

GROUND HANDLING INFO

TBA

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1-4-1 RIX-EVRA-RIGA

Applicable to: ALL

CAT A	LVP Available	GPU Recommended

DESCENT

NIL

APPROACH AND LANDING

Shortcuts to IAF can be requested from Riga Radar. High speed below FL100 and vectors for short final are available from Riga Approach for both RWYs. In this case low platform altitude (1500ft), early configuration is recommended. Visual approaches possible but avoid restricted airspace (Jurmala 2) west of centerline for RWY18. IDLE descent and CDA recommended.

If DRY RWY and no tailwind conditions expect to vacate:

- RWY 18 - TWY C
- RWY 36 - TWY D

RUNWAY AND AIRPORT

Taxiway markings are not visible when taxiways are wet or covered with snow. Taxi out from stands 9 and 108 require an immediate sharp turn towards TWY F.

WINTER OPS/DE/ANTI-ICING

Hot air fan blade de-icing is available - arrange with Maintenance/handling. De-icing may be performed either on stand or after push-back. Engines mounted under wing will normally be de-iced on remote de-icing pads. Initial de-icing requests shall be submitted to “Riga Apron”, FREQ 131.600 MHz as early as possible but at least 15 MIN prior to off-block. The planned de-icing position will be assigned upon contact. Normally de-icing on apron will take place with aircraft engines off.

PROCEDURES FOR DE-ICING ON REMOTE DE-ICING PADS

Upon reaching the perimeter of the pad “Riga Ground” will hand over the aircraft to the de-icing operator and marshaller. Aircraft should enter the assigned de-icing position

with marshaller guidance. Marshaller will require to set parking brake on. Aircraft engines shall be set to idle. Detailed de-icing order should normally be communicated directly to the de-icing operator via VHF radio (callsign shall be “ICE TRUCK [de-icing position id]” and FREQ shall be displayed on the de-icing vehicle). Aircraft registration number will be used as a callsign for the aircraft. During de-icing treatment monitoring “Riga Ground” frequency is recommended.

After de-icing is completed and de-icing team has reverted to a safe position, de-icing operator will report “de-icing completed”, including anti-icing code and start time if any, and will hand over the aircraft to “Riga Ground” 118.800 MHz. After clearance from “Riga Ground” 118.800 MHz taxiing shall be commenced only after receiving an “all clear” (thumbs-up) signal from the ground staff.” For details please refer to Jeppesen FD Pro X Charts.

TAKE-OFF

Use NADP 1, *Refer to OM-B 2-6-1 NOISE ABATEMENT PROCEDURES*.

GROUND HANDLING INFO

TBA

1-5-1 AMS-EHAM-AMSTERDAM SCHIPHOL

Applicable to: ALL

CAT A	LVP Available	GPU Recommended

DESCENT

NIL

APPROACH AND LANDING

Strictly adhere to ATC speed control. Unless instructed, Fly maximum 250 kt below FL100. ATC will initiate speed reductions below 250 kt. After IAF maintain speed 220 kt until further notice. When established on final, maintain 160 kt until 4 NM before threshold. Speed greater than 220 kt shall be accurate within 10 kt and below 220 kt shall be accurate within 5 kt. Use idle reverse only, except for safety reasons.

RUNWAY AND AIRPORT

Unless advised, pilots should vacate vie the first convenient runway exit. After vacating the landing runway, pilots should contact without instruction Schiphol ground on the frequency indicated on the approach plate.

Runway	Frequency
06/24	121,705
04/22, 09/27, 18L/36R	121,805
18C/36C	121,905
18R	121,560

WINTER OPS/DE/ANTI-ICING

If de/anti-icing is required, please request as soon as possible.

TAKE-OFF

The standard Instrument Departure routes as shown on the Jeppesen FD Pro X charts avoid residential areas as much as possible. Use NADP 1 *Refer to OM-B 2-6-1 NOISE ABATEMENT PROCEDURES*.

1-5-2 EIN-EHEH-EINDHOVEN

Applicable to: ALL

CAT A	LVP Available	GPU Recommended

WARNING	When deviating from published arrival or departure routes (WX or vectors), max. speed is 220 KTS or green dot speed + 10 KTS whichever is higher (in descent and climb) below FL 100 as flight path may enter into Airspace Class E. Maintain visual lookout. Beware of false LOC captures - Avoid arming APPR too early! Cross active runway only with explicit clearance from Tower.

DESCENT

Early descent is given by ATC. Expect the following constraints: DENOL at FL 250 or below, ROTEK FL100 or below.

APPROACH AND LANDING

Visual approaches prohibited due to noise abatement. Langen RAD will typically give initial clearance via ROTEK, LNO, etc. EIN APP will subsequently change this with vectors or DCT to a RNAV CDO waypoint to intercept this procedure. The following is strongly recommended:

- Prepare ILS X with RNAV CDA arrival in Primary F-PLN.
- Insert ILS Y with STAR (ROTEK, LNO, etc,) in Secondary F-PLN.

If not transferred from Langen inbound EHV, be ready to activate the secondary F-PLN. DO NOT combine the STARs (e.g. ROTEK, LNO) with the ILS X RNAV CDA approaches – the STARs are designed to be used only with the ILS Y and additionally pay attention to:

- G/S interception occurs shortly after base leg turn;
- Early configuration is recommended;
- Pay special attention to minimum altitudes and waypoints (check FMS);
- Use Idle Reverse Thrust only, except for safety reasons.

RUNWAY AND AIRPORT

Early morning arrivals: Please avoid landing before 08:00 Local (unless STA is before this time). This is due to noise sensitivity. Request GPU from handling via VHF when passing ETA and fuel figures.

WINTER OPS/DE/ANTI-ICING

If de/anti-icing is required, please request as soon as possible.

TAKE-OFF

Use Standard THR RED/ACCEL ALT. If continuous CLB at CLB THR is possible, CLB at speed 250kts. CLB gradient ensures clearance from Airspace Class E.

GROUND HANDLING INFO

TBA

1-5-3 MST-EHBK-MAASTRICHT

Applicable to: ALL

CAT A	LVP Available	GPU Recommended

WARNING	Class E airspace below FL100 - high concentration of VFR traffic with or without transponder. Speed limitation: Max 220kts below FL100. Maintain visual lookout. Proximity of uncontrolled VFR corridor close to ILS 03 final turn (south) combined with low platform altitude (1800 ft). Increased risk of conflicting traffic due potential VFR navigation error. Extra vigilance for visual lookout is essential. In case of suitable conditions, prefer visual approach (shorter final).

DESCENT

NIL

APPROACH AND LANDING

It is recommended to prepare the arrival to include the RNAV transition to final.

RUNWAY AND AIRPORT

Touchdown zone is non-standard painted with 4 pairs of TDZ markings instead of 6. TDZ is 600m instead of standard 900m. Multiple restrictions on use of runway Turning pads – see Jeppesen FD Pro X for details. Special notes regarding setting of TO power from RWY 03 – see Jeppesen FD Pro X for details.

TAKE-OFF

NETEX1A, OSGOS1A, and PESER3A SID require very steep initial climb gradient (10.3% until 3500') to avoid Glider ATZ situated close to MAS VOR. For flights using these departures it is necessary to use the following non-standard, modified ICAO A:

- THR RED/ACC: 1900/3500 AMSL

GROUND HANDLING INFO

NIL

1-6-1 FRA-EDDF-FRANKFURT/MAIN

Applicable to: ALL

CAT A	LVP Available	GPU Recommended

WARNING	In cases of strong winds, wind shear and increased turbulence must be expected on RWY 18.

DESCENT

NIL

APPROACH AND LANDING

Parallel runway operations with reduced minimum radar separation. Strictly adhere to ATC speed control. Use idle reverse only, except for safety reasons.

RUNWAY AND AIRPORT

RWY 07L/25R equipped with two glide-paths at 3.0° and 3.2°. PAPIs gives a correct indication for both down to 200ft AGL. When vacating the runway, if no further taxi instructions are received, stop clear of the runway and await ATC instructions. Marshaller assistance or visual docking guidance is mandatory for parking. If not available, STOP and advise ATC.

ATC uses standard taxi route phraseology, see Jeppesen FD Pro X for definition. Long taxi times possible. For departure, advise ATC if an intersection takeoff is possible. When RWY 18 is used for departure (and RWY 07 for landing), be prepared to advise ATC if an intersection takeoff from M is possible.

WINTER OPS/DE/ANTI-ICING

If de/anti-icing is required, please request as soon as possible. It generally takes place on a stand or de-icing pads DP1 and DP2. Other locations are also available.

TAKE-OFF

Departures not permitted from RWYs 07L/25R. Use standard THR RED/ACCEL ALT.
Some SIDs have non-standard climb gradients.

GROUND HANDLING INFO

TBA

1-7-1 PVK-LGPZ-PREVEZA

Applicable to: ALL

CAT A	LVTO Available	GPU Recommended

WARNING	RWY 07R/25L marked and lighted as RWY but used as taxiway.

DESCENT

Unless special permission by ATC, during 1500-1730LT and 2300-0700LT aircraft are requested to avoid overflying Preveza city below 2 000 ft.

APPROACH AND LANDING

Parallel runway operations with reduced minimum radar separation. Strictly adhere to ATC speed control. Use idle reverse only, except for safety reasons.

RUNWAY AND AIRPORT

No docking system available. Do not turn into the stand unless marshaller in sight. Unless otherwise instructed, use the following intersections to enter the apron:

Stand	Intersection
1A, 1B	D3
1, 2, 3	D2
4, 5	D1

WINTER OPS/DE/ANTI-ICING

NIL

TAKE-OFF

Use standard THR RED/ACCEL altitudes.

GROUND HANDLING INFO

TBA

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1-8-1 AEY-BIAR-AKUREYRI

Applicable to: ALL

CAT B	LVP Available	GPU Not Available

WARNING	ILS for Runway 01 is not allowed due to the steep final gradient of 5.30°. Taxi with extreme caution as helicopters, air ambulance and passengers are nearby. Routing crosses BIRD FIR (Reykjavik Oceanic) - NAT HLA procedures. Crew must have completed the NAT HLA training detailed in the OM-D. Airport is surrounded by Class "D" airspace. Pilots of IFR flights must ensure own visual separation from VFR traffic. Only traffic information is provided by ATC about VFR traffic.

FLIGHT PLANNING

For General NAT HLA information and rules *Refer to OM-A 8-3-2-15 NAT HLA*. For communication procedures *Refer to OM-C 3-6-20 NAT HLA PHRASEOLOGY*.

For Iceland specific procedures, *Refer to OM-C AIRPORTS 1-8-3 KEF-BIKF-KEFLAVIK.*

ENROUTE

Routing will remain completely within VHF and Radar coverage. If contact with "Reykjavik Control" is lost, revert to "Iceland Radio" for relay. If no clearance is received by the FIR boundary entry is permitted - Norway control can authorize this while you continue to try to contact Iceland. There is no need to hold or delay entry unless instructed by ATC.

Reroutes are common so be prepared for this and don't just assume the FPLN route will be cleared.

APPROACH AND LANDING

For runway 19, windshear may occur below 300 ft on final if winds aloft are either 130-160° or 230-250° due to funnelling effects from valleys near the airport. In case of GA, monitor navigation missed approached trajectory closely.

The Missed Approach Climb Gradient is higher then standard. Wind direction may vary constantly during the approach and short final. On a 3.5° path angle, weights close to MLW, the vertical speed can be above 1 000 feet per minute.

Wind direction may vary constantly during the approach and short final. Tailwinds of up to 15 kts may be experienced, even with calm winds at aerodrome level. When winds aloft are blowing from the east or the west quadrant, expect turbulence. When the winds are blowing from the north or the south quadrant, expect moderate turbulence Near ARLAX. Avoid level segments. Due to wind shifting at very low altitude, be aware of energy loss my occur. Consider increasing VAPP + 5 or 1/3 of headwind component.

High surrounding terrain, therefore, the PM shall select TERR ON ND at all times and if the weather is not significant, it is recommended that the PF also selects TERR ON ND below the MSA.

Microlight operations are to be expected within the BIAR CTR.

RECOMMENDED FLYING TECHNIQUE

Runway 01, at IEY D17.0 the latest, Configuration 2, Landing Gear - Down. No STAR Available, for Descend Planning, expect GILTU at 7 000 ft. ATC usually issues approach clearance from GILTU, approach clearance implies descent according to profile. Do not expect intermediate descent clearance. Final Landing configuration at D12.0 IEY the latest, observe minimum recommended altitude.

Runway 19, at REFUM the latest, Configuration 2, Landing Gear - Down.

RUNWAY AND AIRPORT

General declarations are not mandatory. However, crews have been requested for GEN DEC to be filled. Centreline taxiway markings are hard to see in the dark and wet.

Parking on North Apron/International terminal - Apron Entry/Exit routes for specific stands. Eastbound Oceanic Clearance should be requested from DLV/TWR with normal ATC Clearance 15 minutes prior to filed blocks time.

WINTER OPS/DE/ANTI-ICING

NIL

TAKE-OFF

In case any Performance Limitation applies on RWY 19, consider taking off from Runway 01 after performance comparison. Occasionally. temperature inversion may be expected during Departure and Approach.

Expect high wind gradient, winds aloft can reach up to 60 kts at 6 000 ft. Wind aloft can be provided by AEY TWR, based on nearby elevated Weather Observation Stations.

Due to high surrounding terrain and aerodrome characteristics, the preferential SID for both runways will be performed. These SID initial trajectory is similar to the validated EOSID on EFB. Coordinate with the ATC in advance the following SID on a permanent basis:

- RWY 01: AKI 2B
- RWY 19: ASKUR 1E

No direct turns allowed before reaching MSA.

After departure ATC will clear for turns when passing 6 000 ft during the climb out. Handover from Reykjavik Control with Akureyri APP/TWR will take place at FL100 descending.

The ATIS is available at short range from the airfield, weather changes rapidly and ATIS may not update accordingly. Anticipation and planning ahead is strongly recommended, contact Akureyri in advance to check current conditions and type of approach expected.

GROUND HANDLING INFO

TBA

1-8-2 EGS-BIEG-EGILSSTADIR

Applicable to: ALL

CAT B	No LVPs	GPU: TBD

WARNING	High terrain, respect minimum altitudes. Short runway, in winter conditions consider associated likelihood of contamination. Treated ice may be expected on the runway. Taxiways and apron may be extremely slippery, consider use of differential braking and thrust. Arrival and departure routes transit Class "E" and "G" airspace and may encounter uncontrolled VFR traffic.

CAUTION	Uncontrolled airport, no clearances will be issued. AFIS available from 0700-2300UTC or on prior request. Refer to Jeppesen FD Pro X.

DESCENT

If there is more than one inbound traffic to BIEG, there may be a delay in receiving clearance to descend into uncontrolled airspace. This might incur further delay. No radar control below FL280.

APPROACH AND LANDING

High terrain in close proximity to the airport.

RUNWAY AND AIRPORT

Small apron with limited number of parking spots, carefully follow marshaller's instructions. Fuel is available between 0900-1800 UTC, or prior notice on holidays. A General Declaration is required even if not disembarking.

WINTER OPS / DE/ANTI-ICING

NIL

TAKE-OFF

For both runways, two take-off positions are available: from the displaced threshold markings or the entire paved strip (gives slightly longer take-off distance). In slippery conditions consider calculating take-off performance from the displaced thresholds but use the entire paved length (particularly for RWY 22) as this will allow extra margin for alignment with the runway.

GROUND HANDLING INFO

TBA

1-8-3 KEF-BIKF-KEFLAVIK

Applicable to: ALL

CAT A	LVP Available	GPU Recommended

WARNING	Fly2Sky does not have an approval for operating to isolated aerodromes. Routing crosses BIRD FIR (Reykjavik Oceanic) - NAT HLA procedures. Crew must have completed the NAT HLA training detailed in the OM-D. Airport is surrounded by Class "D" airspace. Pilots of IFR flights must ensure own visual separation from VFR traffic. Only traffic information is provided by ATC about VFR traffic.

FLIGHT PLANNING

For General NAT HLA information and rules *Refer to OM-A 8-3-2-15 NAT HLA*. For communication procedures *Refer to OM-C 3-6-20 NAT HLA PHRASEOLOGY*.

Fixed Mach number must be flown within BIRD FIR. This will also be applied on the OFP and should be taken from the OFP nav-log for the clearance request. It is the OCC responsibility to ensure that flights remain non-ETOPS. The critical airport is BIEG. If BIEG is not adequate*, the routing will be restricted to route no further north than the Faroe Islands ('MY' NDB on Airway G3).

Note: *Adequate (for the purpose of defining the non-ETOPS airspace) does not include WX suitability.*

BIAR is Category B and cannot always be planned as an ALTN. BIEG (Egilsstadir) is the only suitable diversion airport on Iceland. If BIEG (Egilsstadir) airport is below planning minima for use as a destination ALTN, the next available alternates are in Scotland (EGPD, EGPF or EGPK). According to regulations, this scenario will result in Keflavik becoming an "Isolated Destination" (due to flight time to nearest ALTN exceeding 1hr 30mins).

Fly2Sky does not have an approval for operating to isolated aerodromes.

ENROUTE

Routing will remain completely within VHF and Radar coverage. If contact with "Reykjavik Control" is lost, revert to "Iceland Radio" for relay. If no clearance is received by the FIR boundary entry is permitted - Norway control can authorize this while you continue to try to contact Iceland. There is no need to hold or delay entry unless instructed by ATC.

Reroutes are common so be prepared for this and don't just assume the FPLN route will be cleared.

APPROACH AND LANDING

Whenever clear to **"DESCEND VIA STAR TO FL XYZ"**:

- Descend to the cleared level and comply with published level restrictions
- Follow the lateral profile of the STAR; and
- Comply with published speed restrictions or ATC-issued speed control instructions as applicable.

RWY 01 GP not to be used 4 degrees either side of LOC course

ALTERNATE – BIEG (EGILSSTADIR)

Primary ALTN BIEG is Category B with high terrain in the immediate vicinity - crew should brief the approach into BIEG during the cruise/APP preparation. BIEG is an uncontrolled airport - AFIS only. OM-B Speed restrictions should be applied when exiting controlled airspace.

RUNWAY AND AIRPORT

General declarations are not mandatory. However, crews have been requested for GEN DEC to be filled. Centreline taxiway markings are hard to see in the dark and wet.

Parking on North Apron/International terminal - Apron Entry/Exit routes for specific stands. Eastbound Oceanic Clearance should be requested from DLV/TWR with normal ATC Clearance 15 minutes prior to filed blocks time. Fuel slip gives fuel uplift in US Gallons - divide by 0.26417 to obtain value in Liters.

WINTER OPS/DE/ANTI-ICING

Request for De-icing via VHF 131,77. Request must include:

- Flight number
- Surfaces requiring treatment
- Number of steps
- Fluid mix
- Stand number

Once rig is at A/C, operator will communicate via headset that rig is ready, request the A/C to be configured for treatment and obtain crew permission to start. When process is completed, vital information will be provided over headset.

TAKE-OFF

NADP applies. See Jeppesen FD Pro X – Aerodrome Reference for details.

ATC departure clearance may not give initial HDG/SID or Stop altitude - should be confirmed with T/O Clearance.

Whenever clear to "CLIMB VIA SID TO FLXYZ":

- Climb to the cleared level and comply with published level restrictions
- Follow the lateral profile of the SID; and
- Comply with published speed restrictions or ATC-issued speed control instructions as applicable.

GROUND HANDLING INFO

TBA

1-9-1 ARN-ESSA-ARLANDA

Applicable to: ALL

CAT A	LVP Available	GPU Recommended

DESCENT

NIL

APPROACH AND LANDING

NIL

RUNWAY AND AIRPORT

The Ground will give very brief taxi instructions, prepare respectively arrival or departure chart with the relevant routing.

WINTER OPS/DE/ANTI-ICING

If de/anti-icing is available upon request.

TAKE-OFF

NADP 2 is recommended. Use standard THR RED/ACCEL ALT.

GROUND HANDLING INFO

TBA

1-9-2 LLA-ESPA-LULEA

Applicable to: ALL

CAT A	LVP Available	GPU Recommended

DESCENT

NIL

APPROACH AND LANDING

NIL

RUNWAY AND AIRPORT

NIL

WINTER OPS/DE/ANTI-ICING

If de/anti-icing is available upon request.

TAKE-OFF

Use standard THR RED/ACCEL ALT.

GROUND HANDLING INFO

TBA

1-9-3 UME-ESNU-UMEA

Applicable to: ALL

CAT A	No LVPs	GPU Recommended

DESCENT

NIL

APPROACH AND LANDING

NIL

RUNWAY AND AIRPORT

Between 2200-0700 LT, take-off from Runway 32 and landing on Runway 14 are not permitted unless required by flight safety reasons.

WINTER OPS/DE/ANTI-ICING

If de/anti-icing is available upon request.

TAKE-OFF

Use standard THR RED/ACCEL ALT.

GROUND HANDLING INFO

TBA

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1-10-1 MIA-KMIA-MIAMI

Applicable to: ALL

CAT A	No LVPs	GPU Recommended

GENERAL

Busy airspace, expect vectors to FAP. 250 kt below 10 000 ft and the restriction cannot be waived by the ATC. Unless otherwise specified by the ATC, approach clearances supersede any prior ATC speed restrictions.

On the ground after landing the tower can make the change with ground, "**CONTACT POINT EIGHT (.8)"** means 121,8 as in the US the ground frequency always starts with 121 MHz.

DESCENT

NIL

APPROACH AND LANDING

PAPI not aligned with the approach profile. Runways 08L and 26R don't have ALS. Runway 09 ILS DME does not read 0 NM at the threshold.

RUNWAY AND AIRPORT

Ground control or tower will give specific taxi instructions for instance. When arriving at the terminal, there are spots in which the frequency is changed with MIA gates, and they will give the last parking instructions. As a precaution, both frequencies must be monitored before entering the spots because either of the two frequencies can issue a request or last-minute change. This procedure is the applicable to all terminals.

Call the ramp prior to entry. The ATC may give clearance, but the ramp must confirm it as the ATC does not have jurisdiction on ramps.0

Example landing at the runway 08R parking position J7:

- VAW: **"DORAL123 LEAVING RWY 08R ON M6 TO J7"**
- Tower: **"TURN RIGHT ON MIKE CONTACT POINT EIGHT (.8)"**
- VAW on Ground (121,8): **"DORAL123 ON MIKE"**

- Ground: **"TAXI MIKE LEFT ON YANKEE LEFT ON PAPA"**

Approaching Spot 24:

- VHF 1 Monitoring ground as it follows the ground control area
- VHF 2 contact MIA gates for instructions.
- VHF 2 VAW: **"MIAMI GATES AIR CENTURY 123 ON P APPROACHING SPOT 24"**
- MIA Gates: **"DORAL123 CLEAR TO J7 VIA SPOT 22"**

WINTER OPS/DE/ANTI-ICING

If de/anti-icing is available upon request.

TAKE-OFF

For departures, the pushback and engine start are requested to Miami gates, and they will give instructions until a spot and ready to taxi. The change to ground frequency is made at this point. Runways 12 and 08R have a joint holding point that is also an airport hotspot. The ATC can assign either runway at that point for immediate take-off. It is a good idea to do the briefings of both runways and the performance calculations.

Higher than standard climb gradients.

GROUND HANDLING INFO

TBA

HOLDOVER TIMES

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2-1

2-2 GENERAL

2-3 HOLDOVER TIMES – CLEAN CONFIGURATION

2-4 HOLDOVER TIMES – FLAPS/SLATS EXTENDED

2-5 GUIDELINES FOR THE APPLICATION OF SAE FLUIDS

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HOLDOVER TIMES

PRELIMINARY PAGES

SUMMARY OF HIGHLIGHTS

Localization Title	Toc Index	ID	Reason
2-1 2-1-1 DE/ANTI-ICING WINTER 2025-2026	A	1	Table 48, Snowfall Intensities as a Function of Prevailing Visibility updated to the FAA Winter 2025-2026 revision.
2-2 HOLDOVER TIMES – CLEAN CONFIGURATION	A-M	2	Holdover time tables updated to the FAA Winter 2025-2026 revision.
2-3 HOLDOVER TIMES – FLAPS/SLATS EXTENDED	A-M	3	Holdover time tables updated to the FAA Winter 2025-2026 revision.
2-4 2-4-1 GUIDELINES FOR THE APPLICATION OF SAE TYPE I FLUID	A	4	Table 55: Guidelines for the Application of SAE Type I Fluid updated to the FAA Winter 2025-2026 revision.
2-4 2-4-2 GUIDELINES FOR THE APPLICATION OF SAE TYPE II AND IV FLUID	B	5	Table 55: Guidelines for the Application of SAE Type I Fluid updated to the FAA Winter 2025-2026 revision.

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2-1-1 DE/ANTI-ICING WINTER 2025-2026

Applicable to: ALL

When determining the Hold Over Time (HOT) during snow conditions alone, use Table54 (shown below) to determine the snowfall intensity. It does not require pilot-company coordination or company reporting procedures since this table is more conservative than the visibility table used by official weather observers in determining snowfall intensities. If the visibility is being reduced by snow and other obscuration forms such as fog, haze, smoke, etc., Table 48 does not need to be used to estimate the snowfall intensity for HOT determination during the presence of this obscuration.

If applicable, and once the snowfall intensity is determined, refer to the applicable HOT table. The tables are divided into Holdover Times in Clean Configuration and Holdover Times with Flaps/Slats Extended during De/Anti-icing. Furthermore, the HOT tables are divided into tables for specific fluids and more conservative generic ones. Finally, at the end of the document, you can find guidelines for applying the fluids.

1

TABLE 54 SNOWFALL INTENSITIES AS A FUNCTION OF PREVAILING VISIBILITY

Visibility		Day		Night	
Statute Miles	Meters	**Below -1°C** Below 30°F	**-1°C and above** 30°F and above	**Below -1°C** Below 30°F	**-1°C and above** 30°F and above
≤1/4 (≤3/8)	**≤400** (≤600)	Heavy	Heavy	Heavy	Heavy
1/2 (>3/8 to ≤5/8)	**800** (>600 to ≤1000)	Moderate	Heavy	Heavy	Heavy
3/4 (>5/8 to ≤7/8)	**1200** (>1000 to ≤1400)	Moderate	Moderate	Heavy	Heavy
1 (>7/8 to ≤1 1/8)	**1600** (>1400 to ≤1800)	Light	Light	Moderate	Heavy
1 ¼ (>1 1/8 to ≤1 3/8)	**2000** (>1800 to ≤2200)	Light	Light	Moderate	Moderate
1 ½ (>1 3/8 to ≤1 5/8)	**2400** (>2200 to ≤2600)	Light	Light	Moderate	Moderate
1 ¾ (>1 5/8 to ≤1 7/8)	**2800** (>2600 to ≤3000)	Light	Light	Light	Light
2 (>1 7/8 to ≤2 ¼)	**3200** (>3000 to ≤3600)	Very Light	Very Light	Light	Light
2 ½ (>2 ¼ to ≤2 ¾)	**4000** (>3600 to	Very Light	Very Light	Light	Light

	≤4400)				
3 (>2 ¾ to ≤3 ¼)	**4800** (>4400 to ≤5200)	Very Light	Very Light	Very Light	Light
≥3 ½ (>3 ¼)	**≥5600** (>5200)	Very Light	Very Light	Very Light	Very Light

NOTES

- The METAR/SPECI reported visibility or flight crew observed visibility will be used with this visibility table to establish snowfall intensity for Type I, II, III and IV holdover time guidelines, during snow, snow grain, or snow pellet precipitation conditions. This visibility table will also be used when snow, snow grains, or snow pellets are accompanied by blowing or drifting snow, or when snow is mixed with ice crystals or freezing fog in the METAR/SPECI.

- The use of Runway Visual Range (RVR) is not permitted for determining visibility used with the holdover tables.
- Some METARs contain tower visibility as well as surface visibility. Whenever surface visibility is available from an official source, such as a METAR, in either the main body of the METAR or in the Remarks ("RMK") section, the preferred action is to use the surface visibility value.
- If the visibility is being reduced by snow along with form(s) of obscuration such as fog, haze, smoke, etc., use of the table above may overestimate the actual snowfall intensity. However, use of the snowfall intensity being reported by the weather observer or automated surface observing system (ASOS), from the FMH-1 Table, may underestimate the actual snowfall intensity as it does not directly correlate to the snowfall intensities used when determining holdover times. Use of the visibility table in all snow conditions with or without obscurations is recommended.

Example for how to read and use the table: `CYVO 160200Z 15011G17KT 1SM -SN DRSN OVC009 M06/M08 A2948`

In the above METAR the snowfall intensity is reported as light. However, based upon the "Snowfall Intensities as a Function of Prevailing Visibility" table, with a visibility of 1 statute mile, at night and a temperature of -6°C, the snowfall intensity is classified as moderate. The snowfall intensity of moderate - not the METAR reported intensity of light - will be used to determine which holdover time guideline value is appropriate for the fluid in use.

2-2-1 ABAX ECOWING AD-2

Applicable to: ALL

TABLE 5: TYPE II HOLDOVER TIMES FOR ABAX ECOWING AD-2

Outside Air Temperature[1]	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist[2], or Ice Crystals[3]	Snow mixed with Freezing Fog[4]	Very Light Snow, Snow Grains or Snow Pellets[5,6]	Light Snow, Snow Grains or Snow Pellets[5,6]	Moderate Snow, Snow Grains or Snow Pellets[5,6]	Freezing Drizzle[7]	Light Freezing Rain	Moderate Snow mixed with Rain[8,9]	Rain on Cold-Soaked Wing[9]	Other[10]
-3°C and above (27°F and above)	100/0	1:20 - 3:00	0:30 - 0:55	2:00 - 2:00	1:15 - 2:00	0:40 - 1:15	0:40 - 1:40	0:30 - 0:45	0:07 - 0:07	0:09 - 1:25	
	75/25	1:15 - 1:25	0:20 - 0:40	1:45 - 2:00	0:55 - 1:45	0:25 - 0:55	0:35 - 1:05	0:20 - 0:30	0:03 - 0:03	0:04 - 0:50	
	50/50	0:15 - 0:30	0:05 - 0:10	0:35 - 0:40	0:15 - 0:35	0:07 - 0:15	0:09 - 0:15	0:06 - 0:09			
below -3 to -8°C (below 27 to 18°F)	100/0	0:45 - 2:30	0:25 - 0:45	2:00 - 2:00	1:00 - 2:00	0:30 - 1:00	0:25 - 1:10	0:20 - 0:30			
	75/25	0:35 - 1:55	0:20 - 0:35	1:40 - 2:00	0:50 - 1:40	0:25 - 0:50	0:15 - 0:55	0:20 - 0:35			
below -8 to -14°C (below 18 to 7°F)	100/0	0:45 - 2:30	0:20 - 0:40	1:45 - 2:00	0:55 - 1:45	0:30 - 0:55	0:25 - 1:10[11]	0:20 - 0:30[11]			
	75/25	0:35 - 1:55	0:20 - 0:35	1:35 - 2:00	0:50 - 1:35	0:25 - 0:50	0:15 - 0:55[11]	0:20 - 0:35[11]			
below -14 to -18°C (below 7 to 0°F)	100/0	0:15 - 0:40	0:01 - 0:05	0:20 - 0:30	0:07 - 0:20	0:02 - 0:07					
below -18 to -25°C (below 0 to -13°F)	100/0	0:15 - 0:40	0:00 - 0:02	0:09 - 0:15	0:03 - 0:09	0:01 - 0:03					
below -25 to -27°C (below -13 to -17°F)	100/0	0:15 - 0:40	0:00 - 0:00	0:05 - 0:07	0:01 - 0:05	0:00 - 0:01					

CAUTION:
No holdover time guidelines exist

NOTES

1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
2 Freezing mist is best confirmed by observation. It is never reported by METAR; however, it can occur when mist is present at 0°C (32°F) and below.
3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or freezing mist.
4 The Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required.
6 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
7 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.

8 These holdover times apply to conditions of “moderate” precipitation intensity. In cases of very light or light snow mixed with light rain or drizzle, use light freezing rain holdover times. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required to confirm the precipitation intensity. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
11 No holdover time guidelines exist for this condition below -10°C (14°F).

2-2-2 ABAX ECOWING 49

Applicable to: ALL

TABLE 20: TYPE IV HOLDOVER TIMES FOR ABAX ECOWING AD-49

Outside Air Temperature[1]	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist[2], or Ice Crystals[3]	Snow mixed with Freezing Fog[4]	Very Light Snow, Snow Grains or Snow Pellets[5,6]	Light Snow, Snow Grains or Snow Pellets[5,6]	Moderate Snow, Snow Grains or Snow Pellets[5,6]	Freezing Drizzle[7]	Light Freezing Rain	Moderate Snow mixed with Rain[8,9]	Rain on Cold-Soaked Wing[9]	Other[10]
-3°C and above (27°F and above)	100/0	3:20 - 4:00	0:45 - 1:25	2:00 - 2:00	1:55 - 2:00	1:00 - 1:55	1:25 - 2:00	1:00 - 1:25	0:08 - 0:08	0:10 - 1:55	
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	CAUTION: No holdover time guidelines exist		
below -3 to -8°C (below 27 to 18°F)	100/0	0:20 - 1:35	0:35 - 1:05	2:00 - 2:00	1:30 - 2:00	0:45 - 1:30	0:25 - 1:25	0:20 - 0:25			
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
below -8 to -14°C (below 18 to 7°F)	100/0	0:20 - 1:35	0:30 - 0:55	2:00 - 2:00	1:15 - 2:00	0:40 - 1:15	0:25 - 1:25[11]	0:20 - 0:25[11]			
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
below -14 to -18°C (below 7 to 0°F)	100/0	0:25 - 0:40	0:01 - 0:06	0:30 - 0:45	0:09 - 0:30	0:02 - 0:09					
below -18 to -25°C (below 0 to -13°F)	100/0	0:25 - 0:40	0:00 - 0:02	0:10 - 0:20	0:03 - 0:10	0:01 - 0:03					
below -25 to -26°C (below -13 to -15°F)	100/0	0:25 - 0:40	0:00 - 0:01	0:07 - 0:10	0:02 - 0:07	0:00 - 0:02					

NOTES

1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
2 Freezing mist is best confirmed by observation. It is never reported by METAR; however, it can occur when mist is present at 0°C (32°F) and below.

3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or freezing mist.
4 Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required.
6 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
7 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
8 These holdover times apply to conditions of “moderate” precipitation intensity. In cases of very light or light snow mixed with light rain or drizzle, use light freezing rain holdover times. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required to confirm the precipitation intensity. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 53 provides allowance times for Type IV PG fluids in ice pellets and small hail).
11 No holdover time guidelines exist for this condition below -10°C (14°F).

2-2-3 INTENTIONALLY OPEN

Applicable to: ALL

2-2-4 INTENTIONALLY OPEN

Applicable to: ALL

2-2-5 INTENTIONALLY OPEN

Applicable to: ALL

2-2-6 CLARIANT SAFEWING MP IV LAUNCH

Applicable to: ALL

TABLE 33: TYPE IV HOLDOVER TIMES FOR CLARIANT SAFEWING MP IV LAUNCH

Outside Air Temperature[1]	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist[2], or Ice Crystals[3]	Snow mixed with Freezing Fog[4]	Very Light Snow, Snow Grains or Snow Pellets[5,6,7]	Light Snow, Snow Grains or Snow Pellets[5,6,7]	Moderate Snow, Snow Grains or Snow Pellets[5,7]	Freezing Drizzle[8]	Light Freezing Rain	Rain on Cold-Soaked Wing[9]	Other[10]
-3 °C and above (27 °F and above)	100/0	4:00 - 4:00	0:50 - 1:20	2:50 - 3:00	1:45 - 2:50	1:05 - 1:45	1:30 - 2:00	1:00 - 1:40	0:15 - 1:40	
	75/25	3:40 - 4:00	0:45 - 1:20	3:00 - 3:00	1:45 - 3:00	1:00 - 1:45	1:40 - 2:00	0:45 - 1:15	0:10 - 1:45	
	50/50	1:25 - 2:45	0:20 - 0:35	1:25 - 1:40	0:45 - 1:25	0:25 - 0:45	0:30 - 0:50	0:20 - 0:25		
below -3 to -8 °C (below 27 to 18 °F)	100/0	1:00 - 1:55	0:40 - 1:05	2:25 - 2:50	1:30 - 2:25	0:55 - 1:30	0:35 - 1:40	0:25 - 0:45		
	75/25	0:40 - 1:20	0:40 - 1:10	2:40 - 3:00	1:30 - 2:40	0:50 - 1:30	0:25 - 1:10	0:25 - 0:45		
below -8 to -14 °C (below 18 to 7 °F)	100/0	1:00 - 1:55	0:35 - 1:00	2:10 - 2:30	1:20 - 2:10	0:50 - 1:20	0:35 - 1:40[11]	0:25 - 0:45[11]		
	75/25	0:40 - 1:20	0:35 - 1:00	2:25 - 2:55	1:25 - 2:25	0:45 - 1:25	0:25 - 1:10[11]	0:25 - 0:45[11]	CAUTION: No holdover time guidelines exist	
below -14 to -18 °C (below 7 to 0 °F)	100/0	0:30 - 0:50	0:05 - 0:15	1:15 - 1:45	0:20 - 1:15	0:06 - 0:20				
below -18 to -25 °C (below 0 to -13 °F)	100/0	0:30 - 0:50	0:02 - 0:06	0:30 - 0:45	0:09 - 0:30	0:02 - 0:09				
below -25 to -28.5 °C (below -13 to -19 °F)	100/0	0:30 - 0:50	0:01 - 0:04	0:20 - 0:30	0:06 - 0:20	0:01 - 0:06				

NOTES

1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
2 Freezing mist is best confirmed by observation. It is never reported by METAR; however, it can occur when mist is present at 0°C (32°F) and below.
3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or freezing mist.
4 The Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required.
6 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
7 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
8 These holdover times apply to conditions of “moderate” precipitation intensity. In cases of very light or light snow mixed with light rain or drizzle, use light freezing rain holdover times. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required to confirm the precipitation intensity. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 53 provides allowance times for Type IV PG fluids in ice pellets and small hail).
11 No holdover time guidelines exist for this condition below -10°C (14°F).

2-2-7 CRYOTECH POLAR GUARD ® II

Applicable to: ALL

TABLE 8: TYPE II HOLDOVER TIMES FOR CRYOTECH POLAR GUARD® II

Outside Air Temperature[1]	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist[2], or Ice Crystals[3]	Snow mixed with Freezing Fog[4]	Very Light Snow, Snow Grains or Snow Pellets[5,6]	Light Snow, Snow Grains or Snow Pellets[5,6]	Moderate Snow, Snow Grains or Snow Pellets[5,6]	Freezing Drizzle[7]	Light Freezing Rain	Moderate Snow mixed with Rain[8,9]	Rain on Cold-Soaked Wing[9]	Other[10]
-3°C and above (27°F and above)	100/0	2:50 - 4:00	0:50 - 1:25	2:00 - 2:00	1:55 - 2:00	1:05 - 1:55	1:35 - 2:00	1:15 - 1:30	0:10 - 0:10	0:15 - 2:00	
	75/25	2:30 - 4:00	0:30 - 1:05	2:00 - 2:00	1:25 - 2:00	0:40 - 1:25	1:40 - 2:00	0:40 - 1:10	0:07 - 0:07	0:09 - 1:40	
	50/50	0:50 - 1:25	0:07 - 0:20	1:10 - 1:35	0:25 - 1:10	0:10 - 0:25	0:20 - 0:45	0:09 - 0:20			
below -3 to -8°C (below 27 to 18°F)	100/0	0:55 - 2:30	0:35 - 1:05	2:00 - 2:00	1:25 - 2:00	0:50 - 1:25	0:35 - 1:35	0:35 - 0:45			
	75/25	0:40 - 1:30	0:25 - 0:50	2:00 - 2:00	1:05 - 2:00	0:30 - 1:05	0:25 - 1:05	0:35 - 0:45			
below -8 to -14°C (below 18 to 7°F)	100/0	0:55 - 2:30	0:30 - 0:50	2:00 - 2:00	1:10 - 2:00	0:40 - 1:10	0:35 - 1:35[11]	0:35 - 0:45[11]			
	75/25	0:40 - 1:30	0:20 - 0:45	2:00 - 2:00	0:55 - 2:00	0:25 - 0:55	0:25 - 1:05[11]	0:35 - 0:45[11]			
below -14 to -18°C (below 7 to 0°F)	100/0	0:25 - 0:50	0:08 - 0:25	1:35 - 2:00	0:35 - 1:35	0:10 - 0:35					
below -18 to -25°C (below 0 to -13°F)	100/0	0:25 - 0:50	0:03 - 0:10	0:40 - 0:55	0:15 - 0:40	0:04 - 0:15					
below -25 to -30.5°C (below -13 to -23°F)	100/0	0:25 - 0:50	0:02 - 0:05	0:25 - 0:30	0:07 - 0:25	0:02 - 0:07					

CAUTION:
No holdover time guidelines exist

NOTES

1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.

2 Freezing mist is best confirmed by observation. It is never reported by METAR; however, it can occur when mist is present at 0°C (32°F) and below.

3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or freezing mist.

4 The Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.

5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required.
6 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
7 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
8 These holdover times apply to conditions of “moderate” precipitation intensity. In cases of very light or light snow mixed with light rain or drizzle, use light freezing rain holdover times. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required to confirm the precipitation intensity. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
11 No holdover time guidelines exist for this condition below -10°C (14°F).

2-2-8 KILFROST ABC-K PLUS

Applicable to: ALL

TABLE 10: TYPE II HOLDOVER TIMES FOR KILFROST ABC-K PLUS

Outside Air Temperature[1]	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist[2], or Ice Crystals[3]	Snow mixed with Freezing Fog[4]	Snow, Snow Grains or Snow Pellets[5,6]	Freezing Drizzle[7]	Light Freezing Rain	Moderate Snow mixed with Rain[8,9]	Rain on Cold-Soaked Wing[9]	Other[10]
-3°C and above (27°F and above)	100/0	2:15 - 3:45	0:45 - 1:15	1:00 - 1:40	1:50 - 2:00	1:00 - 1:25	0:15 - 0:15	0:20 - 2:00	
	75/25	1:40 - 2:30	0:25 - 0:50	0:35 - 1:10	1:25 - 2:00	0:50 - 1:10	0:10 - 0:10	0:15 - 2:00	
	50/50	0:35 - 1:05	0:05 - 0:10	0:07 - 0:15	0:20 - 0:30	0:10 - 0:15			
below -3 to -8°C (below 27 to 18°F)	100/0	0:30 - 1:05	0:40 - 1:10	0:55 - 1:30	0:25 - 1:00	0:15 - 0:35			
	75/25	0:25 - 1:25	0:25 - 0:50	0:35 - 1:05	0:20 - 0:55	0:09 - 0:30			
below -8 to -14°C (below 18 to 7°F)	100/0	0:30 - 1:05	0:40 - 1:05	0:50 - 1:25	0:25 - 1:00[11]	0:15 - 0:35[11]			
	75/25	0:25 - 1:25	0:25 - 0:50	0:35 - 1:05	0:20 - 0:55[11]	0:09 - 0:30[11]			
below -14 to -18°C (below 7 to 0°F)	100/0	0:30 - 0:55	0:01 - 0:05	0:02 - 0:07					
below -18 to -25°C (below 0 to -13°F)	100/0	0:30 - 0:55	0:00 - 0:02	0:01 - 0:03					
below -25 to -29°C (below -13 to -20°F)	100/0	0:30 - 0:55	0:00 - 0:00	0:00 - 0:01					

CAUTION:
No holdover time guidelines exist

NOTES

1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.

2 Freezing mist is best confirmed by observation. It is never reported by METAR; however, it can occur when mist is present at 0°C (32°F) and below.

3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or freezing mist.

4 The Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.

5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required.

6 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.

7 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive

identification of freezing drizzle is not possible.

8 These holdover times apply to conditions of “moderate” precipitation intensity. In cases of very light or light snow mixed with light rain or drizzle, use light freezing rain holdover times. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required to confirm the precipitation intensity. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.

9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.

10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.

11 No holdover time guidelines exist for this condition below -10°C (14°F).

CAUTIONS

2-2-9 KILFROST ABC-S PLUS

Applicable to: ALL

TABLE 43: TYPE IV HOLDOVER TIMES FOR KILFROST ABC-S PLUS

Outside Air Temperature[1]	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist[2], or Ice Crystals[3]	Snow mixed with Freezing Fog[4]	Very Light Snow, Snow Grains or Snow Pellets[5,6]	Light Snow, Snow Grains or Snow Pellets[5,6]	Moderate Snow, Snow Grains or Snow Pellets[5,6]	Freezing Drizzle[7]	Light Freezing Rain	Moderate Snow mixed with Rain[8,9]	Rain on Cold-Soaked Wing[9]	Other[10]
-3°C and above (27°F and above)	100/0	2:10 - 4:00	0:55 - 1:35	2:00 - 2:00	2:00 - 2:00	1:15 - 2:00	1:50 - 2:00	1:05 - 2:00	0:15 - 0:15	0:25 - 2:00	
	75/25	1:25 - 2:40	0:30 - 0:55	2:00 - 2:00	1:15 - 2:00	0:45 - 1:15	1:00 - 1:20	0:30 - 0:50	0:08 - 0:08	0:10 - 1:20	
	50/50	0:30 - 0:55	0:15 - 0:25	1:00 - 1:10	0:30 - 1:00	0:15 - 0:30	0:15 - 0:40	0:15 - 0:20	CAUTION: No holdover time guidelines exist		
below -3 to -8°C (below 27 to 18°F)	100/0	0:55 - 3:30	0:50 - 1:25	2:00 - 2:00	1:50 - 2:00	1:05 - 1:50	0:25 - 1:35	0:20 - 0:30			
	75/25	0:45 - 1:50	0:30 - 0:50	1:50 - 2:00	1:05 - 1:50	0:40 - 1:05	0:20 - 1:10	0:15 - 0:25			
below -8 to -14°C (below 18 to 7°F)	100/0	0:55 - 3:30	0:45 - 1:15	2:00 - 2:00	1:45 - 2:00	1:00 - 1:45	0:25 - 1:35[11]	0:20 - 0:30[11]			
	75/25	0:45 - 1:50	0:25 - 0:45	1:45 - 2:00	1:00 - 1:45	0:35 - 1:00	0:20 - 1:10[11]	0:15 - 0:25[11]			
below -14 to -18°C (below 7 to 0°F)	100/0	0:40 - 1:00	0:01 - 0:06	0:30 - 0:45	0:09 - 0:30	0:02 - 0:09					
below -18 to -25°C (below 0 to -13°F)	100/0	0:40 - 1:00	0:00 - 0:02	0:10 - 0:20	0:03 - 0:10	0:01 - 0:03					
below -25 to -28°C (below -13 to -18°F)	100/0	0:40 - 1:00	0:00 - 0:01	0:07 - 0:10	0:02 - 0:07	0:00 - 0:02					

NOTES

1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.

2 Freezing mist is best confirmed by observation. It is never reported by METAR; however, it can occur when mist is present at 0°C (32°F) and below.

3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or freezing mist.

4 The Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.

5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table

54) is required.

6 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.

7 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.

8 These holdover times apply to conditions of “moderate” precipitation intensity. In cases of very light or light snow mixed with light rain or drizzle, use light freezing rain holdover times. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required to confirm the precipitation intensity. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.

9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.

10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 53 provides allowance times for Type IV PG fluids in ice pellets and small hail).

11 No holdover time guidelines exist for this condition below -10°C (14°F).

2-2-10 ACTIVE FROST HOLDOVER TIMES FOR TYPE I, II, III AND TYPE IV FLUIDS

Applicable to: ALL

TABLE 1: ACTIVE FROST HOLDOVER TIMES FOR TYPE I, II, III AND TYPE IV FLUIDS

Outside Air Temperature[2,3,4]	Type I Aluminum	Type I Composite
-1 °C and above (30 °F and above)	0:45	0:35
below -1 to -3 °C (below 30 to 27 °F)		
below -3 to -10 °C (below 27 to 14 °F)		
below -10 to -14 °C (below 14 to 7 °F)		
below -14 to -21 °C (below 7 to -6 °F)		
below -21 to -25 °C (below -6 to -13 °F)		
below -25 °C to LOUT (below -13 °F to LOUT)		

Outside Air Temperature[3,4]	Concentration Fluid/Water By % Volume	Type II	Type III[5]	Type IV
-1 °C and above (30 °F and above)	100/0	8:00	2:00	12:00
	75/25	5:00	1:00	5:00
	50/50	2:00	0:30	3:00
below -1 to -3 °C (below 30 to 27 °F)	100/0	8:00	2:00	12:00
	75/25	5:00	1:00	5:00
	50/50	1:30	0:30	3:00
below -3 to -10 °C (below 27 to 14 °F)	100/0	8:00	2:00	10:00
	75/25	4:00	1:00	5:00
below -10 to -14 °C (below 14 to 7 °F)	100/0	6:00	2:00	6:00
	75/25	1:00	1:00	1:00
below -14 to -21 °C (below 7 to -6 °F)	100/0	3:00	2:00	6:00
below -21 to -25 °C (below -6 to -13 °F)	100/0	2:00	2:00	4:00
below -25 °C (below -13 °F)	100/0	No Holdover Time Guidelines Exist		

NOTES

1. To use the HOTs in this table, ensure that the fluid and dilution being used is listed in the List of Qualified Fluids Tested for Anti-Icing Performance and Aerodynamic Acceptance table (Table 49 - Table 52). Any restrictions on the use of the fluid have to be identified and applied.
2. Type I Fluid / Water Mixture must be selected so that the freezing point of the mixture is at least 10 °C (18 °F) below outside air temperature.
3. Ensure that the lowest operational use temperature (LOUT) is respected.
4. Changes in outside air temperature (OAT) over the course of longer frost events can be significant; the appropriate holdover time to use is the one provided for the coldest OAT that has occurred in the time between the de/anti-icing fluid application and takeoff.
5. To use the Type III fluid frost holdover times, the fluid brand being used must be known. AllClear AeroClear MAX must be applied unheated.

2-2-11 GENERIC TYPE I HOT (ALUMINUM)

Applicable to: ALL

TABLE 2: HOLDOVER TIMES FOR SAE TYPE I FLUID ON CRITICAL AIRCRAFT SURFACES COMPOSED PREDOMINANTLY OF ALUMINUM

Outside Air Temperature[2,3]	Freezing Fog, Freezing Mist[4], or Ice Crystals[5]	Snow mixed with Freezing Fog[6]	Very Light Snow, Snow Grains or Snow Pellets[7,8]	Light Snow, Snow Grains or Snow Pellets[7,8]	Moderate Snow, Snow Grains or Snow Pellets[7,8]	Freezing Drizzle[9]	Light Freezing Rain	Moderate Snow mixed with Rain[10,11]	Rain on Cold-Soaked Wing[11]	Other[12]
-3°C and above (27°F and above)	0:11 - 0:17	0:06 - 0:11	0:18 - 0:22	0:11 - 0:18	0:06 - 0:11	0:09 - 0:13	0:04 - 0:06	0:02 - 0:02	0:02 - 0:05	
below -3 to -6°C (below 27 to 21°F)	0:08 - 0:13	0:05 - 0:08	0:14 - 0:17	0:08 - 0:14	0:05 - 0:08	0:05 - 0:09	0:04 - 0:06	CAUTION: No holdover time guidelines exist		
below -6 to -10°C (below 21 to 14°F)	0:06 - 0:10	0:04 - 0:06	0:11 - 0:13	0:06 - 0:11	0:04 - 0:06	0:04 - 0:07	0:02 - 0:05			
below -10°C (below 14°F)	0:05 - 0:09	0:02 - 0:04	0:07 - 0:08	0:04 - 0:07	0:02 - 0:04					

NOTES

1 These holdover times apply to aircraft with critical surfaces constructed predominantly or entirely of aluminum materials that have demonstrated satisfactory use of these holdover times. Takeoff after the longest applicable holdover time has been exceeded is not permitted for Type I fluids.
2 Type I fluid / water mixture must be selected so that the freezing point of the mixture is at least 10°C (18°F) below outside air temperature.
3 Ensure that the lowest operational use temperature (LOUT) is respected.
4 Freezing mist is best confirmed by observation. It is never reported by METAR; however, it can occur when mist is present at 0°C (32°F) and below.
5 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or freezing mist.
6 The Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
7 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required.
8 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
9 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.

10 These holdover times apply to conditions of “moderate” precipitation intensity. In cases of very light or light snow mixed with light rain or drizzle, use light freezing rain holdover times. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required to confirm the precipitation intensity. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.

11 No holdover time guidelines exist for this condition for 0°C (32°F) and below.

12 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.

CAUTIONS

2-2-12 GENERIC TYPE II HOT

Applicable to: ALL

TABLE 4: GENERIC HOLDOVER TIMES FOR SAE TYPE II FLUIDS[1]

Outside Air Temperature[2]	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist[3], or Ice Crystals[4]	Snow mixed with Freezing Fog[5]	Snow, Snow Grains or Snow Pellets[6,7]	Freezing Drizzle[8]	Light Freezing Rain	Moderate Snow mixed with Rain[9,10]	Rain on Cold-Soaked Wing[10]	Other[11]
-3°C and above (27°F and above)	100/0	0:55 - 1:50	0:20 - 0:40	0:30 - 0:55	0:35 - 1:05	0:25 - 0:35	0:05 - 0:05	0:07 - 0:45	
	75/25	0:40 - 1:10	0:15 - 0:25	0:15 - 0:30	0:25 - 0:40	0:15 - 0:25	0:03 - 0:03	0:04 - 0:25	
	50/50	0:15 - 0:30	0:05 - 0:10	0:07 - 0:15	0:09 - 0:15	0:06 - 0:09			
below -3 to -8°C (below 27 to 18°F)	100/0	0:30 - 0:45	0:15 - 0:30	0:20 - 0:40	0:20 - 0:45	0:15 - 0:20			
	75/25	0:25 - 0:55	0:09 - 0:15	0:10 - 0:25	0:15 - 0:30	0:09 - 0:20			
below -8 to -14°C (below 18 to 7°F)	100/0	0:30 - 0:45	0:10 - 0:25	0:15 - 0:30	0:20 - 0:45[12]	0:15 - 0:20[12]			
	75/25	0:25 - 0:55	0:07 - 0:15	0:09 - 0:20	0:15 - 0:30[12]	0:09 - 0:20[12]			
below -14 to -18°C (below 7 to 0°F)	100/0	0:15 - 0:20	0:01 - 0:05	0:02 - 0:07					
below -18 to -25°C (below 0 to -13°F)	100/0	0:15 - 0:20	0:00 - 0:02	0:01 - 0:03					
below -25°C (below -13°F)	100/0	0:15 - 0:20	0:00 - 0:00	0:00 - 0:01					

CAUTION:
No holdover time guidelines exist

NOTES

1 To use the HOTs in this table, ensure that the fluid and dilution being used is listed in the Type II Fluids Tested for Anti-Icing Performance and Aerodynamic Acceptance table (Table 56). Any restrictions on the use of the fluid have to be identified and applied.

2 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.

3 Freezing mist is best confirmed by observation. It is never reported by METAR; however, it can occur when mist is present at 0°C (32°F) and below.

4 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or freezing mist.

5 The Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility

correlates to a “heavy” precipitation intensity.

6 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required.

7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.

8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.

9 These holdover times apply to conditions of “moderate” precipitation intensity. In cases of very light or light snow mixed with light rain or drizzle, use light freezing rain holdover times. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required to confirm the precipitation intensity. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.

10 No holdover time guidelines exist for this condition for 0°C (32°F) and below.

11 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.

12 No holdover time guidelines exist for this condition below -10°C (14°F).

2-2-13 GENERIC TYPE IV HOT

Applicable to: ALL

TABLE 19: GENERIC HOLDOVER TIMES FOR SAE TYPE IV FLUIDS[1]

Outside Air Temperature[2]	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist[3], or Ice Crystals[4]	Snow mixed with Freezing Fog[5]	Very Light Snow, Snow Grains or Snow Pellets[6,7]	Light Snow, Snow Grains or Snow Pellets[6,7]	Moderate Snow, Snow Grains or Snow Pellets[6,7]	Freezing Drizzle[8]	Light Freezing Rain	Moderate Snow mixed with Rain[9,10]	Rain on Cold-Soaked Wing[10]	Other[11]
-3°C and above (27°F and above)	100/0	1:15 - 2:15	0:20 - 0:40	1:50 - 2:00	0:55 - 1:50	0:25 - 0:55	0:35 - 1:10	0:15 - 0:30	0:06 - 0:06	0:08 - 1:05	
	75/25	1:25 - 2:40	0:30 - 0:55	2:00 - 2:00	1:15 - 2:00	0:40 - 1:15	1:00 - 1:20	0:30 - 0:50	0:07 - 0:07	0:09 - 1:20	
	50/50	0:30 - 0:55	0:07 - 0:20	1:00 - 1:10	0:25 - 1:00	0:10 - 0:25	0:15 - 0:40	0:09 - 0:20			
below -3 to -8°C (below 27 to 18°F)	100/0	0:15 - 0:35	0:20 - 0:35	1:35 - 2:00	0:45 - 1:35	0:25 - 0:45	0:25 - 1:00	0:20 - 0:25			
	75/25	0:40 - 1:20	0:25 - 0:50	1:50 - 2:00	1:05 - 1:50	0:30 - 1:05	0:20 - 1:05	0:15 - 0:25			
below -8 to -14°C (below 18 to 7°F)	100/0	0:15 - 0:35	0:15 - 0:30	1:25 - 1:50	0:45 - 1:25	0:20 - 0:45	0:25 - 1:00[12]	0:20 - 0:25[12]			
	75/25	0:40 - 1:20	0:20 - 0:45	1:45 - 2:00	0:55 - 1:45	0:25 - 0:55	0:20 - 1:05[12]	0:15 - 0:25[12]			
below -14 to -18°C (below 7 to 0°F)	100/0	0:15 - 0:30	0:01 - 0:06	0:30 - 0:45	0:09 - 0:30	0:02 - 0:09					
below -18 to -25°C (below 0 to -13°F)	100/0	0:15 - 0:30	0:00 - 0:02	0:10 - 0:20	0:03 - 0:10	0:01 - 0:03					
below -25°C (below -13°F)	100/0	0:15 - 0:30	0:00 - 0:01	0:07 - 0:10	0:02 - 0:07	0:00 - 0:02					

CAUTION:
No holdover time guidelines exist

NOTES

1 To use the HOTs in this table, ensure that the fluid and dilution being used is listed in the Type IV Fluids Tested for Anti-Icing Performance and Aerodynamic Acceptance table (Table 58). Any restrictions on the use of the fluid have to be identified and applied.

2 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.

3 Freezing mist is best confirmed by observation. It is never reported by METAR; however, it can occur when mist is present at 0°C (32°F) and below.

4 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or freezing mist.

5 The Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.

6 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required.

7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.

8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.

9 These holdover times apply to conditions of “moderate” precipitation intensity. In cases of very light or light snow mixed with light rain or drizzle, use light freezing rain holdover times. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required to confirm the precipitation intensity. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.

10 No holdover time guidelines exist for this condition for 0°C (32°F) and below.

11 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 52 provides allowance times for Type IV EG fluids and Table 53 provides allowance times for Type IV PG fluids in ice pellets and small hail.

12 No holdover time guidelines exist for this condition below -10°C (14°F).

Intentionally left blank

2-3-1 ABAX ECOWING AD-2

Applicable to: ALL

2 TABLE ADJ-5: ADJUSTED TYPE II HOLDOVER TIMES FOR ABAX ECOWING AD-2

Outside Air Temperature[1]	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist[2], or Ice Crystals[3]	Snow mixed with Freezing Fog[4]	Very Light Snow, Snow Grains or Snow Pellets[5,6]	Light Snow, Snow Grains or Snow Pellets[5,6]	Moderate Snow, Snow Grains or Snow Pellets[5,6]	Freezing Drizzle[7]	Light Freezing Rain	Moderate Snow mixed with Rain[8,9]	Rain on Cold-Soaked Wing[9]	Other[10]
-3°C and above (27°F and above)	100/0	1:01 - 2:17	0:23 - 0:42	1:50 - 2:00	0:57 - 1:50	0:30 - 0:57	0:30 - 1:16	0:23 - 0:34	0:05 - 0:05	0:07 - 1:05	
	75/25	0:57 - 1:05	0:15 - 0:30	1:20 - 1:39	0:42 - 1:20	0:19 - 0:42	0:27 - 0:49	0:15 - 0:23	0:02 - 0:02	0:03 - 0:38	
	50/50	0:11 - 0:23	0:04 - 0:08	0:27 - 0:30	0:11 - 0:27	0:05 - 0:11	0:07 - 0:11	0:05 - 0:07	CAUTION: No holdover time guidelines exist		
below -3 to -8°C (below 27 to 18°F)	100/0	0:34 - 1:54	0:19 - 0:34	1:31 - 1:50	0:46 - 1:31	0:23 - 0:46	0:19 - 0:53	0:15 - 0:23			
	75/25	0:27 - 1:27	0:15 - 0:27	1:16 - 1:35	0:38 - 1:16	0:19 - 0:38	0:11 - 0:42	0:15 - 0:27			
below -8 to -14°C (below 18 to 7°F)	100/0	0:34 - 1:54	0:15 - 0:30	1:20 - 1:35	0:42 - 1:20	0:23 - 0:42	0:19 - 0:53[11]	0:15 - 0:23[11]			
	75/25	0:27 - 1:27	0:15 - 0:27	1:12 - 1:31	0:38 - 1:12	0:19 - 0:38	0:11 - 0:42[11]	0:15 - 0:27[11]			
below -14 to -18°C (below 7 to 0°F)	100/0	0:11 - 0:30	0:01 - 0:04	0:15 - 0:23	0:05 - 0:15	0:02 - 0:05					
below -18 to -25°C (below 0 to -13°F)	100/0	0:11 - 0:30	0:00 - 0:02	0:07 - 0:11	0:02 - 0:07	0:01 - 0:02					
below -25 to -27°C (below -13 to -17°F)	100/0	0:11 - 0:30	0:00 - 0:00	0:04 - 0:05	0:01 - 0:04	0:00 - 0:01					

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
2 Freezing mist is best confirmed by observation. It is never reported by METAR; however, it can occur when mist is present at 0°C (32°F) and below.
3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or freezing mist.
4 The Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required.

6 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
7 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
8 These holdover times apply to conditions of “moderate” precipitation intensity. In cases of very light or light snow mixed with light rain or drizzle, use light freezing rain holdover times. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required to confirm the precipitation intensity. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.
10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
11 No holdover time guidelines exist for this condition below -10°C (14°F).

2-3-2 ABAX ECOWING 49

Applicable to: ALL

TABLE ADJ-20: ADJUSTED TYPE IV HOLDOVER TIMES FOR ABAX ECOWING AD-49

Outside Air Temperature[1]	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist[2], or Ice Crystals[3]	Snow mixed with Freezing Fog[4]	Very Light Snow, Snow Grains or Snow Pellets[5,6]	Light Snow, Snow Grains or Snow Pellets[5,6]	Moderate Snow, Snow Grains or Snow Pellets[5,6]	Freezing Drizzle[7]	Light Freezing Rain	Moderate Snow mixed with Rain[8,9]	Rain on Cold-Soaked Wing[9]	Other[10]
-3°C and above (27°F and above)	100/0	2:32 - 3:02	0:34 - 1:05	2:00 - 2:00	1:27 - 2:00	0:46 - 1:27	1:05 - 1:31	0:46 - 1:05	0:06 - 0:06	0:08 - 1:27	
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	50/50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	CAUTION: No holdover time guidelines exist		
below -3 to -8°C (below 27 to 18°F)	100/0	0:15 - 1:12	0:27 - 0:49	2:00 - 2:00	1:08 - 2:00	0:34 - 1:08	0:19 - 1:05	0:15 - 0:19			
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
below -8 to -14°C (below 18 to 7°F)	100/0	0:15 - 1:12	0:23 - 0:42	1:50 - 2:00	0:57 - 1:50	0:30 - 0:57	0:19 - 1:05[11]	0:15 - 0:19[11]			
	75/25	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
below -14 to -18°C (below 7 to 0°F)	100/0	0:19 - 0:30	0:01 - 0:05	0:23 - 0:34	0:07 - 0:23	0:02 - 0:07					
below -18 to -25°C (below 0 to -13°F)	100/0	0:19 - 0:30	0:00 - 0:02	0:08 - 0:15	0:02 - 0:08	0:01 - 0:02					
below -25 to -26°C (below -13 to -15°F)	100/0	0:19 - 0:30	0:00 - 0:01	0:05 - 0:08	0:02 - 0:05	0:00 - 0:02					

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.

2 Freezing mist is best confirmed by observation. It is never reported by METAR; however, it can occur when mist is present at 0°C (32°F) and below.

3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or freezing mist.

4 The Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.

5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table

54) is required.

6 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.

7 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.

8 These holdover times apply to conditions of “moderate” precipitation intensity. In cases of very light or light snow mixed with light rain or drizzle, use light freezing rain holdover times. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required to confirm the precipitation intensity. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.

9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.

10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table Adj-52 provides adjusted allowance times for Type IV PG fluids in ice pellets and small hail).

11 No holdover time guidelines exist for this condition below -10°C (14°F).

2-3-3 INTENTIONALLY OPEN

Applicable to: ALL

2-3-4 INTENTIONALLY OPEN

Applicable to: ALL

2-3-5 INTENTIONALLY OPEN

Applicable to: ALL

2-3-6 CLARIANT SAFEWING MP IV LAUNCH

Applicable to: ALL

TABLE ADJ-33: ADJUSTED TYPE IV HOLDOVER TIMES FOR CLARIANT SAFEWING MP IV LAUNCH

Outside Air Temperature[1]	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist[2], or Ice Crystals[3]	Snow mixed with Freezing Fog[4]	Very Light Snow, Snow Grains or Snow Pellets[5,6]	Light Snow, Snow Grains or Snow Pellets[5,6]	Moderate Snow, Snow Grains or Snow Pellets[5,6]	Freezing Drizzle[7]	Light Freezing Rain	Moderate Snow mixed with Rain[8,9]	Rain on Cold-Soaked Wing[9]	Other[10]
-3°C and above (27°F and above)	100/0	3:02 - 3:02	0:38 - 1:01	2:00 - 2:00	1:20 - 2:00	0:49 - 1:20	1:08 - 1:31	0:46 - 1:16	0:08 - 0:08	0:11 - 1:16	
	75/25	2:47 - 3:02	0:34 - 1:01	2:00 - 2:00	1:20 - 2:00	0:46 - 1:20	1:16 - 1:31	0:34 - 0:57	0:06 - 0:06	0:08 - 1:20	
	50/50	1:05 - 2:05	0:15 - 0:27	1:05 - 1:16	0:34 - 1:05	0:19 - 0:34	0:23 - 0:38	0:15 - 0:19	CAUTION: No holdover time guidelines exist		
below -3 to -8°C (below 27 to 18°F)	100/0	0:46 - 1:27	0:30 - 0:49	1:50 - 2:00	1:08 - 1:50	0:42 - 1:08	0:27 - 1:16	0:19 - 0:34			
	75/25	0:30 - 1:01	0:30 - 0:53	2:00 - 2:00	1:08 - 2:00	0:38 - 1:08	0:19 - 0:53	0:19 - 0:34			
below -8 to -14°C (below 18 to 7°F)	100/0	0:46 - 1:27	0:27 - 0:46	1:39 - 1:54	1:01 - 1:39	0:38 - 1:01	0:27 - 1:16[11]	0:19 - 0:34[11]			
	75/25	0:30 - 1:01	0:27 - 0:46	1:50 - 2:00	1:05 - 1:50	0:34 - 1:05	0:19 - 0:53[11]	0:19 - 0:34[11]			
below -14 to -18°C (below 7 to 0°F)	100/0	0:23 - 0:38	0:04 - 0:11	0:57 - 1:20	0:15 - 0:57	0:05 - 0:15					
below -18 to -25°C (below 0 to -13°F)	100/0	0:23 - 0:38	0:02 - 0:05	0:23 - 0:34	0:07 - 0:23	0:02 - 0:07					
below -25 to -28.5°C (below -13 to -19°F)	100/0	0:23 - 0:38	0:01 - 0:03	0:15 - 0:23	0:05 - 0:15	0:01 - 0:05					

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.

2 Freezing mist is best confirmed by observation. It is never reported by METAR; however, it can occur when mist is present at 0°C (32°F) and below.

3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or freezing mist.

4 The Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.

5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required.

6 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.

7 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.

8 These holdover times apply to conditions of “moderate” precipitation intensity. In cases of very light or light snow mixed with light rain or drizzle, use light freezing rain holdover times. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required to confirm the precipitation intensity. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.

9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.

10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table Adj-52 provides adjusted allowance times for Type IV PG fluids in ice pellets and small hail).

11 No holdover time guidelines exist for this condition below -10°C (14°F).

2-3-7 CRYOTECH POLAR GUARD ® II

Applicable to: ALL

TABLE ADJ-8: ADJUSTED TYPE II HOLDOVER TIMES FOR POLAR GUARD® II

Outside Air Temperature[1]	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist[2], or Ice Crystals[3]	Snow mixed with Freezing Fog[4]	Very Light Snow, Snow Grains or Snow Pellets[5,6,7]	Light Snow, Snow Grains or Snow Pellets[5,6,7]	Moderate Snow, Snow Grains or Snow Pellets[5,7]	Freezing Drizzle[8]	Light Freezing Rain	Rain on Cold-Soaked Wing[9]	Other[10]
-3 °C and above (27 °F and above)	100/0	2:09 - 3:02	0:38 - 1:05	2:28 - 2:59	1:27 - 2:28	0:49 - 1:27	1:12 - 1:31	0:57 - 1:08	0:11 - 1:31	
	75/25	1:54 - 3:02	0:23 - 0:49	2:17 - 2:55	1:05 - 2:17	0:30 - 1:05	1:16 - 1:31	0:30 - 0:53	0:07 - 1:16	
	50/50	0:38 - 1:05	0:05 - 0:15	0:53 - 1:12	0:19 - 0:53	0:08 - 0:19	0:15 - 0:34	0:07 - 0:15	CAUTION: No holdover time guidelines exist	
below -3 to -8 °C (below 27 to 18 °F)	100/0	0:42 - 1:54	0:27 - 0:49	1:50 - 2:09	1:05 - 1:50	0:38 - 1:05	0:27 - 1:12	0:27 - 0:34		
	75/25	0:30 - 1:08	0:19 - 0:38	1:46 - 2:17	0:49 - 1:46	0:23 - 0:49	0:19 - 0:49	0:27 - 0:34		
below -8 to -14 °C (below 18 to 7 °F)	100/0	0:42 - 1:54	0:23 - 0:38	1:31 - 1:46	0:53 - 1:31	0:30 - 0:53	0:27 - 1:12[11]	0:27 - 0:34[11]		
	75/25	0:30 - 1:08	0:15 - 0:34	1:31 - 1:54	0:42 - 1:31	0:19 - 0:42	0:19 - 0:49[11]	0:27 - 0:34[11]		
below -14 to -18 °C (below 7 to 0 °F)	100/0	0:19 - 0:38	0:06 - 0:19	1:12 - 1:43	0:27 - 1:12	0:08 - 0:27				
below -18 to -25 °C (below 0 to -13 °F)	100/0	0:19 - 0:38	0:02 - 0:08	0:30 - 0:42	0:11 - 0:30	0:03 - 0:11				
below -25 to -30.5 °C (below -13 to -23 °F)	100/0	0:19 - 0:38	0:02 - 0:04	0:19 - 0:23	0:05 - 0:19	0:02 - 0:05				

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

1. Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.
2. Freezing mist is best confirmed by observation. It is never reported by METAR however it can occur when mist is present at 0 °C (32 °F) and below.
3. Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or mist.

4. These holdover times are for use in -SNFZFG and SNFZFG. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
5. To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required.
6. Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain or drizzle. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 48) is required to confirm the precipitation intensity is no greater than “light”. No holdover times exist if the reported visibility correlates to a “moderate” or “heavy” precipitation intensity.
7. Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
8. Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
9. No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
10. Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.
11. No holdover time guidelines exist for this condition below -10 °C (14 °F).

2-3-8 KILFROST ABC-K PLUS

Applicable to: ALL

TABLE ADJ-10: ADJUSTED TYPE II HOLDOVER TIMES FOR KILFROST ABC-K PLUS

Outside Air Temperature[1]	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist[2], or Ice Crystals[3]	Snow mixed with Freezing Fog[4]	Snow, Snow Grains or Snow Pellets[5,6]	Freezing Drizzle[7]	Light Freezing Rain	Moderate Snow mixed with Rain[8,9]	Rain on Cold-Soaked Wing[9]	Other[10]
-3°C and above (27°F and above)	100/0	1:43 - 2:51	0:34 - 0:57	0:46 - 1:16	1:24 - 1:31	0:46 - 1:05	0:11 - 0:11	0:15 - 1:31	
	75/25	1:16 - 1:54	0:19 - 0:38	0:27 - 0:53	1:05 - 1:31	0:38 - 0:53	0:08 - 0:08	0:11 - 1:31	
	50/50	0:27 - 0:49	0:04 - 0:08	0:05 - 0:11	0:15 - 0:23	0:08 - 0:11	CAUTION: No holdover time guidelines exist		
below -3 to -8°C (below 27 to 18°F)	100/0	0:23 - 0:49	0:30 - 0:53	0:42 - 1:08	0:19 - 0:46	0:11 - 0:27			
	75/25	0:19 - 1:05	0:19 - 0:38	0:27 - 0:49	0:15 - 0:42	0:07 - 0:23			
below -8 to -14°C (below 18 to 7°F)	100/0	0:23 - 0:49	0:30 - 0:49	0:38 - 1:05	0:19 - 0:46[11]	0:11 - 0:27[11]			
	75/25	0:19 - 1:05	0:19 - 0:38	0:27 - 0:49	0:15 - 0:42[11]	0:07 - 0:23[11]			
below -14 to -18°C (below 7 to 0°F)	100/0	0:23 - 0:42	0:01 - 0:04	0:02 - 0:05					
below -18 to -25°C (below 0 to -13°F)	100/0	0:23 - 0:42	0:00 - 0:02	0:01 - 0:02					
below -25 to -29°C (below -13 to -20°F)	100/0	0:23 - 0:42	0:00 - 0:00	0:00 - 0:01					

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.

2 Freezing mist is best confirmed by observation. It is never reported by METAR; however, it can occur when mist is present at 0°C (32°F) and below.

3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or freezing mist.

4 The Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.

5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required.

6 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.

7 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.

8 These holdover times apply to conditions of “moderate” precipitation intensity. In cases of very light or light snow mixed with light rain or drizzle, use light freezing rain holdover times. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required to confirm the precipitation intensity. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.

9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.

10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.

11 No holdover time guidelines exist for this condition below -10°C (14°F).

2-3-9 KILFROST ABC-S PLUS

Applicable to: ALL

TABLE ADJ-43: ADJUSTED TYPE IV HOLDOVER TIMES FOR KILFROST ABC-S PLUS

Outside Air Temperature[1]	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist[2], or Ice Crystals[3]	Snow mixed with Freezing Fog[4]	Very Light Snow, Snow Grains or Snow Pellets[5,6]	Light Snow, Snow Grains or Snow Pellets[5,6]	Moderate Snow, Snow Grains or Snow Pellets[5,6]	Freezing Drizzle[7]	Light Freezing Rain	Moderate Snow mixed with Rain[8,9]	Rain on Cold-Soaked Wing[9]	Other[10]
-3°C and above (27°F and above)	100/0	1:39 - 3:02	0:42 - 1:12	2:00 - 2:00	1:35 - 2:00	0:57 - 1:35	1:24 - 1:31	0:49 - 1:31	0:11 - 0:11	0:19 - 1:31	
	75/25	1:05 - 2:02	0:23 - 0:42	1:35 - 1:50	0:57 - 1:35	0:34 - 0:57	0:46 - 1:01	0:23 - 0:38	0:06 - 0:06	0:08 - 1:01	
	50/50	0:23 - 0:42	0:11 - 0:19	0:46 - 0:53	0:23 - 0:46	0:11 - 0:23	0:11 - 0:30	0:11 - 0:15	CAUTION: No holdover time guidelines exist		
below -3 to -8°C (below 27 to 18°F)	100/0	0:42 - 2:40	0:38 - 1:05	2:00 - 2:00	1:24 - 2:00	0:49 - 1:24	0:19 - 1:12	0:15 - 0:23			
	75/25	0:34 - 1:24	0:23 - 0:38	1:24 - 1:39	0:49 - 1:24	0:30 - 0:49	0:15 - 0:53	0:11 - 0:19			
below -8 to -14°C (below 18 to 7°F)	100/0	0:42 - 2:40	0:34 - 0:57	2:00 - 2:00	1:20 - 2:00	0:46 - 1:20	0:19 - 1:12[11]	0:15 - 0:23[11]			
	75/25	0:34 - 1:24	0:19 - 0:34	1:20 - 1:31	0:46 - 1:20	0:27 - 0:46	0:15 - 0:53[11]	0:11 - 0:19[11]			
below -14 to -18°C (below 7 to 0°F)	100/0	0:30 - 0:46	0:01 - 0:05	0:23 - 0:34	0:07 - 0:23	0:02 - 0:07					
below -18 to -25°C (below 0 to -13°F)	100/0	0:30 - 0:46	0:00 - 0:02	0:08 - 0:15	0:02 - 0:08	0:01 - 0:02					
below -25 to -28°C (below -13 to -18°F)	100/0	0:30 - 0:46	0:00 - 0:01	0:05 - 0:08	0:02 - 0:05	0:00 - 0:02					

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
2 Freezing mist is best confirmed by observation. It is never reported by METAR; however, it can occur when mist is present at 0°C (32°F) and below.
3 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or freezing mist.
4 The Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.

5 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required.

6 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.

7 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.

8 These holdover times apply to conditions of “moderate” precipitation intensity. In cases of very light or light snow mixed with light rain or drizzle, use light freezing rain holdover times. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required to confirm the precipitation intensity. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.

9 No holdover time guidelines exist for this condition for 0°C (32°F) and below.

10 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table Adj-52 provides adjusted allowance times for Type IV PG fluids in ice pellets and small hail).

11 No holdover time guidelines exist for this condition below -10°C (14°F).

2-3-10 ACTIVE FROST HOLDOVER TIMES FOR TYPE I, II, III AND TYPE IV FLUIDS

Applicable to: ALL

TABLE ADJ-1: ACTIVE FROST HOLDOVER TIMES FOR TYPE I, II, III, AND IV FLUIDS

Outside Air Temperature[2,3,4]	Type I Aluminum	Type I Composite
-1 °C and above (30 °F and above)	0:34	0:27
below -1 to -3 °C (below 30 to 27 °F)		
below -3 to -10 °C (below 27 to 14 °F)		
below -10 to -14 °C (below 14 to 7 °F)		
below -14 to -21 °C (below 7 to -6 °F)		
below -21 to -25 °C (below -6 to -13 °F)		
below -25 °C to LOUT (below -13 °F to LOUT)		

Outside Air Temperature[3,4]	Concentration Fluid/Water By % Volume	Type II	Type III[5]	Type IV
-1 °C and above (30 °F and above)	100/0	6:05	1:31	9:07
	75/25	3:48	0:46	3:48
	50/50	1:31	0:23	2:17
below -1 to -3 °C (below 30 to 27 °F)	100/0	6:05	1:31	9:07
	75/25	3:48	0:46	3:48
	50/50	1:08	0:23	2:17
below -3 to -10 °C (below 27 to 14 °F)	100/0	6:05	1:31	7:36
	75/25	3:02	0:46	3:48
below -10 to -14 °C (below 14 to 7 °F)	100/0	4:34	1:31	4:34
	75/25	0:46	0:46	0:46
below -14 to -21 °C (below 7 to -6 °F)	100/0	2:17	1:31	4:34
below -21 to -25 °C (below -6 to -13 °F)	100/0	1:31	1:31	3:02
below -25 °C (below -13 °F)	100/0	No Holdover Time Guidelines Exist		

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

1 To use the HOTs in this table, ensure that the fluid and dilution being used is listed in the List of Qualified Fluids Tested for Anti-Icing Performance and Aerodynamic Acceptance table (Table 49 - Table 52). Any restrictions on the use of the fluid have to be identified and applied.

2 Type I Fluid / Water Mixture must be selected so that the freezing point of the mixture is at least 10 °C (18 °F) below outside air temperature.

3 Ensure that the lowest operational use temperature (LOUT) is respected.

4 Changes in outside air temperature (OAT) over the course of longer frost events can be significant; the appropriate holdover time to use is the one provided for the coldest OAT that has occurred in the time between the de/anti-icing fluid application and takeoff.

5 To use the Type III fluid frost holdover times, the fluid brand being used must be known. AllClear AeroClear MAX must be applied unheated.

2-3-11 GENERIC TYPE I HOT (ALUMINUM)

Applicable to: ALL

TABLE ADJ-2: ADJUSTED HOLDOVER TIMES FOR SAE TYPE I FLUID ON CRITICAL AIRCRAFT SURFACES COMPOSED PREDOMINANTLY OF ALUMINUM

Outside Air Temperature[2,3]	Freezing Fog, Freezing Mist[4], or Ice Crystals[5]	Snow mixed with Freezing Fog[6]	Very Light Snow, Snow Grains or Snow Pellets[7,8]	Light Snow, Snow Grains or Snow Pellets[7,8]	Moderate Snow, Snow Grains or Snow Pellets[7,8]	Freezing Drizzle[9]	Light Freezing Rain	Moderate Snow mixed with Rain[10,11]	Rain on Cold-Soaked Wing[11]	Other[12]
-3°C and above (27°F and above)	0:08 - 0:13	0:05 - 0:08	0:14 - 0:17	0:08 - 0:14	0:05 - 0:08	0:07 - 0:10	0:03 - 0:05	0:02 - 0:02	0:02 - 0:04	
below -3 to -6°C (below 27 to 21°F)	0:06 - 0:10	0:04 - 0:06	0:11 - 0:13	0:06 - 0:11	0:04 - 0:06	0:04 - 0:07	0:03 - 0:05	CAUTION: No holdover time guidelines exist		
below -6 to -10°C (below 21 to 14°F)	0:05 - 0:08	0:03 - 0:05	0:08 - 0:10	0:05 - 0:08	0:03 - 0:05	0:03 - 0:05	0:02 - 0:04			
below -10°C (below 14°F)	0:04 - 0:07	0:02 - 0:03	0:05 - 0:06	0:03 - 0:05	0:02 - 0:03					

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

1 These holdover times apply to aircraft with critical surfaces constructed predominantly or entirely of aluminum materials that have demonstrated satisfactory use of these holdover times. Takeoff after the longest applicable holdover time has been exceeded is not permitted for Type I fluids.
2 Type I fluid / water mixture must be selected so that the freezing point of the mixture is at least 10°C (18°F) below outside air temperature.
3 Ensure that the lowest operational use temperature (LOUT) is respected.
4 Freezing mist is best confirmed by observation. It is never reported by METAR; however, it can occur when mist is present at 0°C (32°F) and below.
5 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or freezing mist.
6 The Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.
7 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required.
8 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.
9 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
10 These holdover times apply to conditions of “moderate” precipitation intensity. In cases of very light or light snow mixed with light rain or drizzle, use light freezing rain holdover times. The Snowfall Intensities

as a Function of Prevailing Visibility table (Table 54) is required to confirm the precipitation intensity. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.

11 No holdover time guidelines exist for this condition for 0°C (32°F) and below.

12 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.

2-3-12 GENERIC TYPE II HOT

Applicable to: ALL

TABLE ADJ-4: ADJUSTED GENERIC HOLDOVER TIMES FOR SAE TYPE II FLUIDS

Outside Air Temperature[2]	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist[3], or Ice Crystals[4]	Snow mixed with Freezing Fog[5]	Snow, Snow Grains or Snow Pellets[6,7]	Freezing Drizzle[8]	Light Freezing Rain	Moderate Snow mixed with Rain[9,10]	Rain on Cold-Soaked Wing[10]	Other[11]
-3°C and above (27°F and above)	100/0	0:42 - 1:24	0:15 - 0:30	0:23 - 0:42	0:27 - 0:49	0:19 - 0:27	0:04 - 0:04	0:05 - 0:34	
	75/25	0:30 - 0:53	0:11 - 0:19	0:11 - 0:23	0:19 - 0:30	0:11 - 0:19	0:02 - 0:02	0:03 - 0:19	
	50/50	0:11 - 0:23	0:04 - 0:08	0:05 - 0:11	0:07 - 0:11	0:05 - 0:07			
below -3 to -8°C (below 27 to 18°F)	100/0	0:23 - 0:34	0:11 - 0:23	0:15 - 0:30	0:15 - 0:34	0:11 - 0:15			
	75/25	0:19 - 0:42	0:07 - 0:11	0:08 - 0:19	0:11 - 0:23	0:07 - 0:15			
below -8 to -14°C (below 18 to 7°F)	100/0	0:23 - 0:34	0:08 - 0:19	0:11 - 0:23	0:15 - 0:34[12]	0:11 - 0:15[12]			
	75/25	0:19 - 0:42	0:05 - 0:11	0:07 - 0:15	0:11 - 0:23[12]	0:07 - 0:15[12]			
below -14 to -18°C (below 7 to 0°F)	100/0	0:11 - 0:15	0:01 - 0:04	0:02 - 0:05					
below -18 to -25°C (below 0 to -13°F)	100/0	0:11 - 0:15	0:00 - 0:02	0:01 - 0:02					
below -25°C (below -13°F)	100/0	0:11 - 0:15	0:00 - 0:00	0:00 - 0:01					

CAUTION:
No holdover time guidelines exist

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

1 To use the HOTs in this table, ensure that the fluid and dilution being used is listed in the Type II Fluids Tested for Anti-Icing Performance and Aerodynamic Acceptance table (Table 56). Any restrictions on the use of the fluid have to be identified and applied.

2 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type II fluid cannot be used.

3 Freezing mist is best confirmed by observation. It is never reported by METAR; however, it can occur when mist is present at 0°C (32°F) and below.

4 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or freezing mist.

5 The Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.

6 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required.

7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.

8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.

9 These holdover times apply to conditions of “moderate” precipitation intensity. In cases of very light or light snow mixed with light rain or drizzle, use light freezing rain holdover times. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required to confirm the precipitation intensity. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.

10 No holdover time guidelines exist for this condition for 0°C (32°F) and below.

11 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail.

12 No holdover time guidelines exist for this condition below -10°C (14°F).

2-3-13 GENERIC TYPE IV HOT

Applicable to: ALL

TABLE ADJ-19: ADJUSTED GENERIC HOLDOVER TIMES FOR SAE TYPE IV FLUIDS

Outside Air Temperature[2]	Fluid Concentration Fluid/Water By % Volume	Freezing Fog, Freezing Mist[3], or Ice Crystals[4]	Snow mixed with Freezing Fog[5]	Very Light Snow, Snow Grains or Snow Pellets[6,7]	Light Snow, Snow Grains or Snow Pellets[6,7]	Moderate Snow, Snow Grains or Snow Pellets[6,7]	Freezing Drizzle[8]	Light Freezing Rain	Moderate Snow mixed with Rain[9,10]	Rain on Cold-Soaked Wing[10]	Other[11]
-3°C and above (27°F and above)	100/0	0:57 - 1:43	0:15 - 0:30	1:24 - 1:43	0:42 - 1:24	0:19 - 0:42	0:27 - 0:53	0:11 - 0:23	0:05 - 0:05	0:06 - 0:49	
	75/25	1:05 - 2:02	0:23 - 0:42	1:35 - 1:50	0:57 - 1:35	0:30 - 0:57	0:46 - 1:01	0:23 - 0:38	0:05 - 0:05	0:07 - 1:01	
	50/50	0:23 - 0:42	0:05 - 0:15	0:46 - 0:53	0:19 - 0:46	0:08 - 0:19	0:11 - 0:30	0:07 - 0:15	CAUTION: No holdover time guidelines exist		
below -3 to -8°C (below 27 to 18°F)	100/0	0:11 - 0:27	0:15 - 0:27	1:12 - 1:31	0:34 - 1:12	0:19 - 0:34	0:19 - 0:46	0:15 - 0:19			
	75/25	0:30 - 1:01	0:19 - 0:38	1:24 - 1:39	0:49 - 1:24	0:23 - 0:49	0:15 - 0:49	0:11 - 0:19			
below -8 to -14°C (below 18 to 7°F)	100/0	0:11 - 0:27	0:11 - 0:23	1:05 - 1:24	0:34 - 1:05	0:15 - 0:34	0:19 - 0:46[12]	0:15 - 0:19[12]			
	75/25	0:30 - 1:01	0:15 - 0:34	1:20 - 1:31	0:42 - 1:20	0:19 - 0:42	0:15 - 0:49[12]	0:11 - 0:19[12]			
below -14 to -18°C (below 7 to 0°F)	100/0	0:11 - 0:23	0:01 - 0:05	0:23 - 0:34	0:07 - 0:23	0:02 - 0:07					
below -18 to -25°C (below 0 to -13°F)	100/0	0:11 - 0:23	0:00 - 0:02	0:08 - 0:15	0:02 - 0:08	0:01 - 0:02					
below -25°C (below -13°F)	100/0	0:11 - 0:23	0:00 - 0:01	0:05 - 0:08	0:02 - 0:05	0:00 - 0:02					

THIS TABLE IS FOR USE WHEN FLAPS/SLATS ARE DEPLOYED PRIOR TO DE/ANTI-ICING. HOLDOVER TIMES HAVE BEEN ADJUSTED TO 76 PERCENT.

NOTES

1 To use the HOTs in this table, ensure that the fluid and dilution being used is listed in the Type IV Fluids Tested for Anti-Icing Performance and Aerodynamic Acceptance table (Table 58). Any restrictions on the use of the fluid have to be identified and applied.

2 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.

3 Freezing mist is best confirmed by observation. It is never reported by METAR; however, it can occur when mist is present at 0°C (32°F) and below.

4 Use freezing fog holdover times in conditions of ice crystals mixed with freezing fog or freezing mist.

5 The Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required to confirm that the precipitation intensity is no greater than “moderate”. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.

6 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table

54) is required.

7 Use snow holdover times in conditions of very light, light, or moderate snow mixed with ice crystals.

8 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.

9 These holdover times apply to conditions of “moderate” precipitation intensity. In cases of very light or light snow mixed with light rain or drizzle, use light freezing rain holdover times. The Snowfall Intensities as a Function of Prevailing Visibility table (Table 54) is required to confirm the precipitation intensity. No holdover times exist if the reported visibility correlates to a “heavy” precipitation intensity.

10 No holdover time guidelines exist for this condition for 0°C (32°F) and below.

11 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table Adj-51 provides adjusted allowance times for Type IV EG fluids and Table Adj-52 provides adjusted allowance times for Type IV PG fluids in ice pellets and small hail.

12 No holdover time guidelines exist for this condition below -10°C (14°F).

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2-4-1 GUIDELINES FOR THE APPLICATION OF SAE TYPE I FLUID

Applicable to: ALL

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TABLE 60: GUIDELINES FOR THE APPLICATION OF SAE TYPE I FLUID

<table>
<tr><th rowspan="2">Outside Air Temperature (OAT)[1]</th><th rowspan="2">One-Step Procedure Deicing Only[2]</th><th rowspan="2">One-Step Procedure Anti-icing Only[3]</th><th colspan="2">Two-Step Procedure</th></tr>
<tr><th>First Step: Deicing[2]</th><th>Second Step: Anti-icing[4,5]</th></tr>
<tr><td>0°C (32°F) and above</td><td rowspan="2">Heated Type I fluid/water mixture with a freezing point of at least 10°C (18°F) below OAT</td><td rowspan="2">Fluid/water mixture heated to at least 60°C (140°F) at the nozzle</td><td>Heated water or a heated fluid/water mixture</td><td rowspan="2">Fluid/water mixture heated to at least 60°C (140°F) at the nozzle with a freezing point of at least 10°C (18°F) below OAT</td></tr>
<tr><td>Below 0°C (32°F)</td><td>Heated fluid/water mixture with a freezing point at OAT or below</td></tr>
</table>

NOTES

1 Fluids used for the anti-icing procedure must not be used at temperatures below their lowest operational use temperature (LOUT). First step fluids must not be used below their freezing points. The LOUT for a given Type I fluid is the higher (warmer) of:

a) The lowest temperature at which the fluid meets the aerodynamic acceptance test for a given aircraft type; or

b) The actual freezing point of the fluid plus its freezing point buffer of 10°C (18°F).

2 When deicing, there is no minimum fluid quantity required, use as much fluid as necessary to ensure the aircraft is free of frozen contamination. A fluid temperature of at least 60°C (140°F) at the nozzle is desirable. Deicing is complete after all contamination is removed. There is no holdover time for a “deicing only” operation.

3 One-step anti-icing only procedure is only possible on a clean aircraft. If deicing and anti-icing are required, a two-step procedure should be followed.

4 To be applied before first step fluid freezes, typically within 3 minutes. This time may be longer than 3 minutes in some conditions, but potentially shorter in heavy precipitation, colder temperatures, or for critical surfaces constructed of composite materials. If necessary, the second step shall be applied area by area (sectionally).

5 When anti-icing, a minimum quantity of 1 litre/m2 (~2 gal./100 sq. ft.) of Type I fluid mixture heated to at least 60°C (140°F). This application is necessary to heat the surfaces, as heat contributes significantly to the Type I fluid holdover times.

CAUTIONS

- For heated fluids, the upper temperature limit shall not exceed fluid and aircraft manufacturers’ recommendations.
- Wing skin temperatures may be colder or warmer than the OAT. Causes can include: radiation cooling, cold-soaked wing, or hangar storage, etc. Consult the appropriate guidance (HOT Tables and TP 14052) for the contaminant in question.

2-4-2 GUIDELINES FOR THE APPLICATION OF SAE TYPE II AND IV FLUID

Applicable to: ALL

TABLE 61: GUIDELINES FOR THE APPLICATION OF SAE TYPE II AND IV FLUID

(FLUID CONCENTRATIONS IN % VOLUME)

Outside Air Temperature (OAT)[1]	One-Step Procedure Deicing Only[2]	One-Step Procedure Anti-icing Only[3]	Two-Step Procedure	
			First Step: Deicing[2]	Second Step: Anti-icing[4]
0°C (32°F) and above	Heated Type II or IV fluid/water mixture	100/0, 75/25, or 50/50 Heated or Unheated Type II or IV fluid/water mixture	Heated water or a heated fluid/water mixture	100/0, 75/25, or 50/50 Heated or Unheated Type II or IV fluid/water mixture
Below 0°C (32°F) to -3°C (27°F)		100/0, 75/25, or 50/50 Heated or Unheated Type II or IV fluid/water mixture	Heated fluid/water mixture with a freezing point at OAT or below	100/0, 75/25, or 50/50 Heated or Unheated Type II or IV fluid/water mixture
Below -3°C (27°F) to -14°C (7°F)		100/0 or 75/25 Heated or Unheated Type II or IV fluid/water mixture		100/0 or 75/25 Heated or Unheated Type II or IV fluid/water mixture
Below -14°C (7°F)		100/0 Heated or Unheated Type II or IV fluid		100/0 Heated or Unheated Type II or IV fluid

NOTES

1 Fluids used for the anti-icing procedure must not be used at temperatures below their lowest operational use temperature (LOUT). First step fluids must not be used below their freezing points. Consider the use of Type I/III fluid when Type II/IV fluid cannot be used due to LOUT limitations (see Table 56 and Table 58). The LOUT for a given Type II/IV fluid is the higher (warmer) of:

a) The lowest temperature at which the fluid meets the aerodynamic acceptance test for a given aircraft type; or

b) The actual freezing point of the fluid plus its freezing point buffer of 7°C (13°F).

Some diluted fluids have LOUTs that are below the coldest temperature for which holdover times are provided. Holdover times do not apply when anti-icing at temperatures for which holdover times are not provided.

2 When deicing, there is no minimum fluid quantity required, use as much fluid as necessary to ensure the aircraft is free of frozen contamination. A fluid temperature of at least 60°C (140°F) at the nozzle is desirable. Deicing is complete after all contamination is removed. There is no holdover time for a “deicing only” operation.

3 One-step anti-icing only procedure is only possible on a clean aircraft. If deicing and anti-icing are required, a two-step procedure should be followed.

4 To be applied before first step fluid freezes, typically within 3 minutes. This time may be longer than 3 minutes in some conditions, but potentially shorter in heavy precipitation, in colder temperatures, or for critical surfaces constructed of composite materials. If necessary, the second step shall be applied area by area (sectionally)

CAUTIONS:

- For heated fluids, the upper temperature limit shall not exceed fluid and aircraft manufacturers' recommendations.
- Wing skin temperatures may be colder or warmer than the OAT. Causes can include: radiation cooling, cold-soaked wing, or hangar storage, etc. Consult the appropriate guidance (HOT Tables and TP 14052) for the contaminant in question.
- Whenever frost or ice occurs on the lower surface of the wing in the area of the fuel tank, indicating a cold-soaked wing, the 50/50 dilution of Type II or IV is not to be used for the anti-icing step because fluid freezing may occur.
- An insufficient amount of anti-icing fluid may cause a substantial loss of holdover time. This is particularly true when using a Type I fluid mixture for the first step in a two-step procedure

APPENDICES

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3-1 NICOSIA/ERCAN PROCEDURES

3-2 DWC PROCEDURES

3-3 UK DECONFLICTION SERVICE

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APPENDICES

PRELIMINARY PAGES

SUMMARY OF HIGHLIGHTS

Localization Title	Toc Index	ID	Reason

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3-1-1 NICOSIA/ERCAN PROCEDURES

Applicable to: ALL

Comms Procedures for traffic crossing between Ankara and Nicosia FIRs. The following procedures reflect the company's interpretation of published procedures for crossing this disputed airspace as stated in national AIP and international NOTAMs. *Refer to: Jeppesen FD Pro X* for more details.

WARNING	If discrepancies are found between this guidance and official documentation (AIP, NOTAM, etc.) then the official sources must be followed. In such cases, email has to be sent to the Chief Pilot Performance, or in his/her absence to the Director Flight Operations or the Chief Pilot Flight Standards and Documents to report the issue.

SOUTHBOUND PROCEDURES

While in Ankara FIR (up to waypoint VESAR, DOREN or TOMBI) comply with control instructions issued by Ankara ACC. When approaching Cyprus over the Mediterranean Sea, Ankara ACC will instruct to contact ERCAN (which is a relay unit of Ankara ACC). Do so when instructed and contact ERCAN. The authority of Ankara (via ERCAN relay) will remain until handover points VESAR/DOREN/TOMBI.

Establish contact with Nicosia ACC at least 10 minutes before FIR Boundary to pass on flight information (Callsign, FL, ETA at entry Waypoint etc.):

- For VESAR/DOREN use 126.3 MHz
- For TOMBI use 125.5 MHz

Once this flight information has been passed, avoid FL or routing changes for the rest of the flight through Ankara FIR, unless absolutely necessary.

If changes are made after initial information passed – advise Nicosia ACC of the change. At VESAR, DOREN or TOMBI, flights will come under the sole control of Nicosia. Thereafter only accept control instructions issued by Nicosia ACC until hand over to the next ATC Unit or FIR/UIR. ERCAN may or may not instruct you to contact Nicosia ACC. Monitor both frequencies until ERCAN initiates the handover and inform ERCAN of all clearances received from Nicosia.

NORTHBOUND PROCEDURES

Control authority of Nicosia ACC remains absolute up to the point of entry into Ankara FIR. Advance flight information to Ankara can only be provided by relay. Provide flight information at least 10 minutes before entering Ankara FIR, to ERCAN Control on 126.70 for relay to Ankara.

Reaching the FIR boundary Nicosia will hand over to Ankara. However, the frequency given is not reachable yet therefore, ERCAN should be called on 126.7 MHz. Then, after spending some time on ERCAN frequency they will instruct you to change to Ankara on the frequency previously assigned by Nicosia.

3-2-1 DWC ENROUTE AIRPORTS

Applicable to: ALL

The following tables contain airports Fly2Sky have checked for suitability as diversion airports on the DWC route, they have approach aids and runways suitable for the A320 and charts for all are included in the Jeppesen FD Pro X. They have been colour-coded below according to the suitability research:

- Green: Suitable with no restrictions;
- Amber: Suitable with limitations;
- Red: Only to be used for serious medical or technical emergencies.

GREEN AIRPORTS

ICAO	Airport Name	Purpose	Info/Remarks
LBSF	Sofia Airport	Fly2Sky Base	
LBPD	Plovdiv Airport	Fuel/GH	
LROP	Bucharest	Fuel/GH	
LTFM	Istanbul Airport	Fuel/GH	
OBBU	Bahrain Intl.	Fuel/GH	
OKBK	Kuwait Intl.	Fuel/GH	
ORER	Erbil Intl.	Fuel/GH	

AMBER AIRPORTS

ICAO	Airport Name	Purpose	Info/Remarks
LTAT	Malatya	Fuel/GH	
LTCC	Diyarbakir	Fuel/GH	
LTCK	Mus	Fuel/GH	

RED AIRPORTS

ICAO	Airport Name	Purpose	Info/Remarks
OIAW	Ahwaz	Fuel/GH	
OIBK	Kish	Fuel/GH	
OIIE	Teheran Intl.	Fuel/GH	

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ICAO	Airport Name	Purpose	Info/Remarks
OITR	Urumiyeh	Fuel/GH	
OITT	Tabriz	Fuel/GH	
ORBI	Baghdad	Fuel/GH	
ORMM	Basrah	Fuel/GH	

3-2-2 DWC ENROUTE TERRAIN PROCEDURES

Applicable to: ALL

Due to significant areas of high terrain overflown in Turkey, Iran and Iraq, and relatively few suitable diversion airports it is mandatory to follow the PPS OFP lateral escape strategy (as an initial action) in the event of a decompression and emergency descent while over these countries.

Note: Engine failure in the cruise is not critical since the drift down to 1EO MAXIMUM ceiling will still be above the highest terrain encountered.

VERTICAL PROFILE

In addition to the Lateral escape route on the OFP, the crew must also apply the same vertical profile as is used by the PPS. This vertical profile makes full use of the available aircraft oxygen supply and regulatory allowances (Appendix 1 to EUOPS 1.770) and follows the vertical descent profile defined in the FCOM. Refer to: FCOM PRO-SPO-20-Flight Planning and Execution.

The maximum altitudes described in this profile must be flown until the crew are certain they are clear of critical terrain and/or established on a STAR/Instrument arrival procedure. In summary, this profile should be flown as follows:

Rapid Decompression:

- Don oxygen masks and carry out Memory Items for Emergency Descent.
- Start Chrono.
- Descend to FL180 and simultaneously turn as directed by the OFP towards the current escape ALTN for that route segment.
- After 12 minutes of elapsed time (from decompression), descend to FL140.

- FL140 can be maintained for up to 30 minutes (if needed). After this time the aircraft will be clear of mountainous terrain and can descend in accordance with GRID MORA/MSA.

Note: Maintaining FL180 for 12 minutes is conservative. Calculations show that the highest terrain will be cleared within 5 minutes from the start of the decompression, at the most unfavourable point on the route.

Once crews are certain of their respective GRID MORA/MSA then they may continue descent below the profile shown above.

RECOMMENDATIONS

During the pre-flight briefing, advise cabin crew that call "Cabin Crew to the Cockpit" call may be delayed due to the longer vertical profile. Cabin Crew must use oxygen for all time above FL130, therefore they will need to use the portable OXY once their fixed supply has expired (by this time aircraft will be at FL140).

Note: Passengers are not required to have OXY at FL140 provided the descent to FL100 is made within 30 minutes. Flight Crew Masks should be on and set to NORMAL until reaching FL100.

A thorough briefing of both the vertical and lateral profiles should be completed before entering the critical route segment. The OFP Terrain decision points (DP1, DP2 etc.) should be created as new waypoints or PD waypoints and inserted into appropriate positions in the Secondary flight plan in order to allow progress monitoring and easy decision making in the event of a problem.

The current Terrain emergency airport should be inserted into the FMGC PROG page to give continuous bearing and distance information:

- Jeppesen FD Pro X should be used for additional orientation;
- Charts for all of the listed emergency airports are included in the Jeppesen FD Pro X.

3-2-3 REDUCED RUNWAY SEPARATION MINIMA (RRSM)

Applicable to: ALL

When conditions permit, special landing and departing procedures may be used at Dubai Al Maktoum International for RWY 12/30, subject to the procedures and conditions are shown hereunder:

LANDING AFTER LANDING

When the runway in use is temporarily occupied by the previous landing traffic, a landing clearance may be issued to the next landing aircraft provided that ATC has reasonable assurance that the following separation distance will be met when the landing aircraft crosses the runway threshold:

- RWY 12: The preceding landing aircraft has landed and has vacated the runway or has passed a point at least 2400 m from the threshold (abeam TWY W12); and is in motion and will vacate the runway without stopping and/or backtracking;
- RWY 30: The preceding landing aircraft has landed and has vacated the runway or has passed a point at least 2400 m from the threshold (abeam TWY W10), is in motion and will vacate the runway without stopping and/or backtracking.

LANDING FOLLOWING DEPARTURE

When the runway in use is temporarily occupied by a previous departing aircraft, a landing clearance may be issued provided that ATC has reasonable assurance that the following separation distance will be met when the landing aircraft crosses the runway threshold:

- RWY 12: The preceding departing aircraft is, or will be, airborne and has passed a point at least 2400 m from the threshold (abeam TWY W12);
- RWY 30: The preceding departing aircraft is, or will be, airborne and has passed a point at least 2400 m from the threshold (abeam TWY W10).

DEPARTURE FOLLOWING A DEPARTURE

Take-off clearance may be issued to a departing aircraft, commencing its take-off roll from the threshold (TWY V1 or TWY V21) before the preceding departing aircraft has passed the upwind end of the runway, provided that:

- RWY 12: The preceding aircraft is airborne and has passed a point at least 2450 M from the threshold (abeam TWY W12) and increasing separation continues to exist between the two aircraft immediately after take-off of the second;
- RWY 30: The preceding aircraft is airborne and has passed a point at least 2400 M from the threshold (abeam TWY W10) and increasing separation continues to exist between the two aircraft immediately after take-off of the second.

CONDITIONS FOR THE APPLICATION OF RRSM

RRSM may be applied by day only between:

- A departing aircraft and a succeeding landing aircraft; or
- Two successive landing aircraft; or
- Two successive departing aircraft.

Provided that:

- Tailwind does not exceed 5 kt, and there are no reports of wind shear;
- MET visibility shall be equal to or greater than 5 km and the cloud ceiling shall not be lower than 1000 ft and the Air Traffic Controller is satisfied that the pilot of the following aircraft will be able to observe the relevant traffic clearly and continuously;
- The pilot of the following aircraft is provided with traffic information;
- The runway is dry and there is no evidence that the braking action may be adversely affected;
- The controller can assess separation visually or by radar-derived information;
- Wake turbulence separation minima shall be applied;
- Minimum separation continues to exist between two departing aircraft immediately after the take-off of the second aircraft.

TRAFFIC INFORMATION PHRASEOLOGY FOR PILOT OF FOLLOWING AIRCRAFT

When applying RRSM in a scenario where the runway is temporarily occupied by a previously landed or departing aircraft, ATC shall provide a warning (traffic information) to the following aircraft when issuing the landing clearance or departure clearance. The following examples illustrate ICAO standard phraseology that will be used:

- (LANDING CLEARANCE): "(Call sign) (traffic information e.g., aircraft type & vacating point), wind (direction (.) / speed (knots)), Runway (number) cleared to land"
- (LANDING CLEARANCE): "(Call sign) (traffic information e.g., aircraft type departing ahead), wind (direction (.) / speed (knots)), Runway (number) cleared to land";
- (TAKE OFF CLEARANCE): "(Call sign) (traffic information e.g., aircraft type departing ahead), wind (direction (.) /speed (knots)), Runway (number) cleared for take-off".

3-3-1 UK DECONFLICTION SERVICE

Applicable to: ALL

A Deconfliction service is an ATC service provided by UK ATC outside of controlled airspace (Classes F and G). The controller may, subject to workload, pass traffic information on deconflicted traffic in order to improve the pilot's situational awareness. A controller shall provide traffic information, accompanied by a heading and/or level aimed at achieving a planned deconfliction minima in (among others) class F/G airspace. Within Class F and G airspace, regardless of the service being provided, pilots are ultimately responsible for collision avoidance and terrain clearance.

The deconfliction minima against uncoordinated traffic are:

- 5 NM laterally (subject to surveillance capability and regulatory approval); or
- 3 000 ft vertically.

The deconfliction minima against aircraft that are being provided with a service by the same controller are:

- 3 NM laterally (subject to surveillance capability and regulatory approval); or
- 1 000 ft vertically.

High controller workload may reduce the ability of the controller to pass timely deconfliction advice. As unknown aircraft may make unpredictable or high-energy manoeuvres, maintaining the deconfliction minima is not always guaranteed. The controllers, however, will apply all reasonable means the avoidance of other traffic is ultimately the pilot's responsibility the pilot may deviate from the controller's deconfliction advice. If a heading or level is unacceptable to the pilot due to obvious safety reasons, he is required to advise the controller immediately. After informing the controller the pilot accepts responsibility for initiating any subsequent collision avoidance against the conflicting aircraft. However, the controller may provide further information in relation to the conflicting traffic, if in his opinion it continues to constitute a definite hazard. It aims to ensure deconfliction.

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