

FLYING IN GREENLAND

A guide for airlines and pilots

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LEGAL DISCLAIMER

Kalaallit Airports offers the following introduction and education to pilots, dispatchers, and other operational functions about air operations in Greenland. The guide is for information only and not to be used for flight planning. The material presented is not a substitute for the Greenland Aviation Information Publication (AIP), other official information, or any other applicable current regulations. Should there be conflicting information between this guide and information in the AIP or other regulatory document, the AIP or other official publications shall be regarded as the authoritative source. Kalaallit Airports accepts no liability for damage of any kind resulting from the risk inherent in its use.

This guide will not be revised in sequence with other aeronautical documentation. While Kalaallit Airports have done its utmost to ensure the information contained herein is correct at the time of publication, its accuracy is not guaranteed. Please submit any errors, updates, or recommendations to Kalaallit Airports website.

INTRODUCTION

Flying in the Arctic and Greenland requires a different mindset than other places due to the vast distances, hostile and dynamic weather and the relative scarcity of suitable airports. Kalaallit Airports is striving to mitigate risk and even to a greater extent open Greenland to the public by the introduction of new airports with 2,200 meter runways at Nuuk and Ilulissat. The aim of this guide is to assist you in flight planning and safe execution of your flight to and inside Greenland.

While flying in Greenland you can expect fantastic scenery, beautiful landscapes, and unique experiences. But the climate and landscape is also rapidly changing, unforgiving, and can impact your flight at the first sign of changes.

This guide is designed as an introduction to flight operations professions about flying in Greenland. It includes practical information as well as regulations and processes that can help educate people unfamiliar with operating in Greenland and the Arctic environment. It is not an official publication and should not be used for flight planning.

GREENLAND'S GEOGRAPHY

Greenland covers an area of approximately 635,000 square nautical miles and is the largest island in the world. Greenland reaches south to approximately 59°46' north Latitude and stretches north to 83°40' north latitude while occupying the area between 12° west longitude to approximately 73° west longitude. To put it other terms Greenland is roughly 2,700 kilometers long by 1,000 kilometers wide at the widest stretch.

Greenland is 80% covered by the Greenland ice sheet, the highest point being 10,800 feet (3,292 meters) above mean sea level. The highest mountain, Gunnbjørns Fjeld, reaches into navigable airspace with a peak at 12,120 feet (3,694 meters).

The coastal areas are dominated by mountainous terrain, countless deep fjords, and spectacular ice glaciers. Greenland's Arctic location brings unfavorable conditions that are amplified by distances to suitable alternates, reduced visibility, changing light conditions, and challenging obstacle clearance.

GENERAL METEOROLOGICAL CONDITIONS

Although significant periods of pristine and superb flight conditions often exist, the Greenlandic climate is unforgiving and hostile towards aviation activities when the weather turns sour. Due to the sheer size of Greenland, the climate varies from polar climate in the North to temperate coastal climate in the South and is furthermore characterized by extreme volatility and that requires constant vigilance when assessing flight conditions. North of approximately 65° - i.e. most of Greenland, surface temperature can reach -50° Celsius (-58° F) adding to the significant challenges faced by equipment and humans alike. Particularly in the south during winter the climate is affected by frequent low pressure system passage which in combination with local typography can generate winds in excess of 80 knots at sea level. Along the east coast, outflows of cold air from the inland ice sheet can create winds in the fjords and canyons in excess of 150 knots

WEATHER

Common weather phenomena in the Greenlandic area generally include:

- Low pressure movement northbound along the coastlines. Variations do occur, but ordinarily systems are most frequent in the area between Cape Brewster (just south of Ittoqqortoormiit) and Cape Farewell.
- On the west coast, weather conditions are fair during the approach of low-pressure systems due to the prevailing wind stemming from the inland ice sheet. Conversely weather conditions deteriorate when the pressure increases because the prevailing wind will be moisture rich air from the Atlantic.
- On the east coast, weather conditions are often poor before and during low-pressure passage if the system moves towards or along the coastline. After system passage weather conditions in the fjords generally improve.
- When deep low-pressure systems move towards north east in the Denmark Strait, and in particular when the center of the system is located adjacent to the coastline, a server cold katabatic wind (Piteraq) originating from the icecap can occur generating winds typically between 100 – 160 knots.
- Foehn winds occur on the west coast when deep low-pressure systems move along the coastline between Prince Christian Sound and Tasiilaq. Foehn winds are most frequently in the Nuuk, Narsarsuaq and Kangerlussuaq areas but have been observed in the Disco Bay area as well. The wind, which is warm and dry, is amplified by the surrounding terrain and wind speeds of 135 knots have been measured at Narsarsuaq and 100 knots in Nuuk and Kangerlussuaq.
- Fog often develops in the area along the ice edge and anywhere that contains a mix of ice and open sea water. This is especially prevalent along the coastline in the Davis Strait during spring and summer with onshore wind. Due to the mixture of warm air over the oceans and cold air over the icecap, heavy fog may build up over the coasts, affecting many of Greenland's airports simultaneously. It develops rapidly and is often unpredictable.
- Airframe icing is frequent and often severe.

DAYLIGHT

Greenland's location predominantly north of the Arctic Circle has significant influence on available light or lack thereof, which can hamper operations. During late autumn, through winter, and until early spring, polar is below the sun horizon and consequently embraced by darkness. The situation is further amplified by the lack of artificial lighting if not in the immediate vicinity of cities/settlements.

This does, however, not mean that there is absolutely no light and only darkness. Although the sun disk is not directly in view, and is indeed often well below the horizon, reflected sunlight provides sufficient illumination to partly allow identification of visual references and visible obstacles. Sunset and sunrise tables can be accessed from the AIM Navair website, although these tables address civil twilight only (neither nautical nor astronomical twilight).

Nighttime flying in Greenland is often assisted by significant levels of moonlight and by reflections from snow covered areas. Although Aurora Borealis (commonly known as Northern Lights) are also frequent especially between 70° and 80° north and can reach light levels comparable to a half moon, it is seldom significant to aviation.

VFR night flights are permitted for helicopters but not fixed wing aircraft, and must follow regulations set forward in Danish Civil Aviation Administration regulation.

WEATHER REPORTING

The Danish Meteorological Institute (DMI) is the provider of meteorological service for the civilian aviation in Greenland. DMI provides weather information for Nuuk FIR except for Thule Air Base that is provided by the United States Air Force.

METAR can be expected to updated hourly along with special observations as required. Automatic observations (AUTOMETAR) are updated every half hour outside operating hours at most airports with the exception of Kangerslussuaq.

Nonroutine aerodrome forecasts for aerodromes in Greenland will be issued by the meteorological office in Nuuk upon request provided that meteorological reports from the aerodrome concerned are available immediately prior to the time of issue and during the validity time of the forecast. The forecast will be issued at the earliest with a lead time of 1 hour and with a validity time of maximum 9 hours.

SIGMET information for Nuuk FIR below FL195 will have a general validity of not more than four hours and are issued in accordance with ICAO Annex 3.

Current weather and NOTAMS for Nuuk Fir can be accessed Navair GL website.

CORRECTION FOR TEMPERATURE AND WIND

As mentioned above, temperatures in Greenland dip well below standard. Apart from being very cold it also has significant and potentially lethal implications if corrections are not made for it. When the temperature is below ISA, aircraft will be lower than indicated by the altimeter. Therefore, all minimum altitudes (MSA, MDA, DA, missed approach altitude, and all enroute altitudes) should be corrected. This is also stated in PANS-OPS doc. 8168. Vol.1.

TEMPERATURE

Pilots intending to apply corrections to any arrival procedure must advise ATC of their intentions and the correction being applied. IFR assigned altitudes can be refused if altimeter temperature error will reduce obstacle clearance below acceptable minima, but if an assigned altitude is accepted, it must not be adjusted to compensate for temperature error.

When correcting temperature, temperature data from same source you received QNH should be used. A rule of thumb is to apply 4% correction to all altitudes, but this correction is only good down to -15°C. Table 1 provides more detailed temperature correction data.

Table 1: Altitude Error Due to Temperature

ICAO Doc. 8168 table III-1-4-1b

Station Temperature (°C)	Height above altimeter source elevation (feet)													
	200	300	400	500	600	700	800	900	1000	1500	2000	3000	4000	5000
0	20	20	30	30	40	40	50	50	60	90	120	170	230	280
-10	20	30	40	50	60	70	80	90	100	150	200	290	390	490
-20	30	50	60	70	90	100	120	130	140	210	280	420	570	710
-30	40	60	80	100	120	140	150	170	190	280	380	570	760	950
-40	50	80	100	120	150	170	190	220	240	360	480	720	970	1210
-50	60	90	120	150	180	210	240	270	300	450	590	890	1190	1500

CORRECTIONS FOR WIND

Altimeters are not only affected by temperature. Strong winds across terrain can cause local changes in the atmospheric pressure due to the Bernoulli effect. No exact calculations are available but the theoretical error values stated in table 2 below should be remembered in addition to standard corrections for pressure and temperature.

Table 2: Altitude error due wind

Source: ICAO Doc. 8168 table III-1-4-5

Wind speed (knots)	Altimeter error (feet)
20	53
40	201
60	455
80	812

MAGNETIC VARIATION

Any publication regarding nautical subjects would be incomplete if omitting mention of magnetic variation. Magnetic variation affects navigating in Greenland, as it does elsewhere.

Table 3: Magnetic variation

Source; AIP Greenland

Nuuk (MAR 2021)	Ilulissat (JUN 2015)	Kangerlussuaq (JUN 2015)
26° West var.	32° West var.	30° West var.
Decreasing 23' annually	Decreasing 27' annually	Decreasing 24' annually

The magnetic variation is both significant and varies greatly. Standard practices with regard to magnetic variation should be applied and special attention paid to flight planning and the true/magnetic wind differences.

Remember, winds aloft, METAR and TAF and surface analysis winds are oriented **true north** – ATIS, PIREPS and reported surface winds are oriented towards **magnetic north**.

At the time of writing the magnetic variation at Nuuk, Ilulissat and Kangerlussuaq is as given in table 3 above. However, the current AIP or other latest applicable documents should be consulted for proper flight planning.

RUNWAY CONDITION

Since Greenland often sees subzero temperatures, a significant factor impacting aircraft operations in Greenland is runway condition, runway treatment and snow plan. Reporting of runway surface condition can be expected at the international aerodromes listed in table 5. Greenland follows ICAO¹ standards when it comes to runway condition reporting, not EASA standard.

The aerodrome operator reports runway condition for each third of the runway using a Runway Condition Report (RCR). The movement area is inspected prior to opening hours and again if weather or other conditions warrant another inspection. Pilots can request an inspection, although the runway inspector will occupy the runway while it is being surveyed.

Many terms are used when describing braking action and table 4 indicates the connection between runway condition code and friction coefficient.

Table 4: Braking action

Friction coefficient	ICAO Braking action	Runway Condition Code	Snowtam reporting (01-90 Friction coefficient)
0.40 and above	Good	5	95
0.39 – 0.36	Good / Medium	4	94
0.35 – 0.30	Medium	3	93
0.29 – 0.26	Medium / Poor	2	92
0.25 and below	Poor	1	91

¹ As of October 2022, the new Global Reporting Format (GRF) would be implemented in Greenland.

FLIGHT PLANNING

All operators intending to perform commercial air traffic to/from Greenland as well as operators seeking to conduct commercial air traffic in Greenland shall submit an application prior to operations. The application shall be submitted to:

Danish Civil Aviation and Railway Authority

Carsten Niebuhrs Gade 43

1577 Copenhagen V

Denmark

Email: info@trafikstyrelsen.dk

and shall include documentation and information as listed on the web page.

AIRPORTS OF ENTRY

All flights to and from Greenland – including to and from off-shore installations located within the Continental Area – may take place only by use of the international airports listed in table 5.

Table 5: Available International Aerodromes

Aerodrome (ICAO ident.)	AIP Greenland ref / link	Customs / Immigration PNR	Tel. Nr.	Email
Aasiaat (BGAA)	AD 2	By arrangement	+299 38 27 00	bgaa@mit.gl
Ilulissat (BGJN)	AD 2	4 Hr before flight commencement	+299 94 41 40	bgjn@mit.gl
Kangerlussuaq (BGSF)	AD 2	4 Hr before flight commencement	+299 38 29 05 +299 52 42 27	bgsf@mit.gl
Kulusuk (BGKK)	AD 2	2 Hr before flight commencement	+299 38 28 65	bgkk@mit.gl
Maniitsoq (BGMQ)	AD 2	By arrangement	+299 38 27 80 (AD) +299 38 27 86 (AFIS)	bgmq@mit.gl
Narsarsuaq (BGBW)	AD 2	12 Hr before flight commencement	+299 38 28 12	bgbw@mit.gl (ATS/AFIS) narsarsuaq@mit.gl (AD)
Nerlerit Inaat (BGCO)	AD 2	PPR, to be submitted not later than 1300 within AD HR. Outside AD HR PPR 9 HR	+299 99 38 54 (ATS) +299 38 28 81 (AD)	bgco@mit.gl (ATS) cnp@mit.gl (AD)
Nuuk (BGGH)	AD 2	4 Hr before flight commencement	+299 38 26 54	bggh@mit.gl
Paamiut (BGPT)	AD 2	By arrangement	+299 38 27 93	bgpt@mit.gl
Qaanaaq (BGQQ)	AD 2	By arrangement	++299 38 27 75 (ATS/AFIS)	bgqq@mit.gl
Sisimiut (BGSS)	AD 2	By arrangement	+299 38 26 90	bgss@mit.gl
Upernavik (BGUK)	AD 2	By arrangement	+299 38 43 21 (ATS) +299 38 27 61 (administration)	bguk@mit.gl (ATS) upernavik@mit.gl (administration)
Uummannaq/Qaarsut (BGUQ)	AD 2	By arrangement	+299 38 27 50	bguq@mit.gl (ATS/AFIS) qaarsut@mit.gl (Administration)

If you are arriving from a Schengen country, immigration is not required for entry into Greenland. However, Customs clearance is.

Please take note of operating hours of the airports. Request for opening of aerodromes outside published hours should be submitted to the airport administration. Operating hours and current charges can be found in the AIP for Greenland.

CREW AND ENTRY REQUIREMENTS

International flights into, from, or over Greenlandic territory are subject to current Danish regulations relating to civil aviation. These regulations correspond to standards and recommended practices contained in ICAO annex 9. For third party liability coverage, please consult the current AIP.

Crew member licenses or crew member certificates issued by the competent authorities of a Contracting State of the International Civil Aviation Organization is valid travel documentation for entry into or exit from Greenland when acting as a crewmember on the aircraft.

CUSTOMS, IMMIGRATIONS AND PUBLIC HEALTH REQUIREMENTS

All international arrivals will be subject to customs inspection. Please take note of when this is available and what prior notice required.

There are a number of areas where Denmark differs from ICAO standard with regard to passport control and visa requirements.

Passengers who are nationals from Finland, Norway, Sweden, and Iceland are exempted from any kind of identity document (reference Ministry of Justice order no. 19 of 18th of January 1984). For specific requirements for identity papers and/or visa requirements from other countries please consult current AIP or the Danish Ministry of Foreign Affairs.

It is important to note that Greenland is a fairly remote country that at present has limited health care system. Larger towns have small to medium hospital facilities while there are nursing clinics in the settlements.

COVID-19

At present there are no specific requirements or precautions concerning COVID-19. Consequently, there are no PCR-testing or proof of vaccination requirements for entry into Greenland, and it is no longer required to wear facemasks in Greenlandic airports. However, it is highly recommended that you verify current regulations during planning.

If symptoms develop while in Greenland, you should self-isolate, monitor symptoms, and advise local contacts.

TRANSPORT OF ANIMALS

There are specific regulations for travel to Greenland with animals and pets and permission must be obtained from the Government of Greenland prior to departure. Specific information and guidelines can be found at the Greenland Representations website.

OPERATIONAL REQUIREMENTS

The distances, vast expanses of barren land, and scarcity of available airfields dictate a higher level of equipment and security than is typical in other regions.

The following paragraph should by no means be considered comprehensive, and relevant ICAO/EU-OPS/FAA documents should be referenced for compliance prior to flight. The Danish Civil Aviation and Railway Authority has also published BL 5-24, *Operational regulations for internal flights in Greenland and for transit flights in Nuuk Flight Information Region (FIR)* which can be accessed via the Danish Civil Aviation and Railway Authority's website.

SPECIAL EQUIPMENT TO BE CARRIED

Aircraft operating in the airspace surrounding and above Greenland have to meet specific requirements that are partially mandated by ICAO and partially by national legislation.

Minimum Navigation Performance Specification (MNPS) require aircraft carry navigational equipment which permits an enhanced degree of accuracy, especially with regards to tracking, while Reduced Vertical Separation Minima (RVSM) defines vertical precision and necessary equipment supplemented with specific contingency procedures. RVSM and MNPS thus encompasses specific equipment requirements and aircraft certification that should be referenced before flight if MNPS and/or RVSM airspace will be utilized. Specific requirements also exist with regard to datalink in specific portions of the NAT region and in particular between FL350 and FL390. Attachment 10 in the NAT Operations and Airspace Manual provides an excellent checklist for dispatchers.

Furthermore, national regulations require specific equipment when flying in Greenland and transiting Nuuk FIR. However, requirements are not accumulative, and if RVSM and MNPS are met, the navigational requirements in BL5-24 will most likely be met as well.

RADIOS

All aircraft shall carry communication equipment enabling two-way communication with at least one aeronautical radio station on an applicable frequency as listed in the AIP Greenland. If prior arrangements with Flight Information Centre (FIC) Nuuk are made, a satellite-based communication system is sufficient. All aircraft shall be equipped ADF, GNSS, or other approved long range navigation system.

FIC NUUK

Table 6: Relevant Contact Information

FIC Nuuk (Nuuk Information)		
AFS	BGGLZQZX	IFR
	BGGLZFZX	VFR
Tel.:	+299 363352	Sector South
	+299 363353	Sector North
VHF	121.3 MHz	Sector South
	120.3 MHz	Sector North
HF	5526 / 8945 / 10042 KHz	Entire FIR. SELCAL AVBL
Fax.:	+299 363309	
Iridium	+881631417431	Sector South
	+881623457247	Sector North
Email	fic@naviair.dk	
COM Center		
AFS	BGGHYFYX	COM
	BGGHNYX	NOTAM
Tel.:	+299 363304	
Fax.:	+299 363309	
Joint Rescue Coordination Center (JRCC)		
JRCC	BGGLCYX rc@naviair.dk	+299 36 33 18
Meteorological Service		
Tel.:	+299 36 40 94 + 45 39 15 75 00	Nuuk Copenhagen
Fax:	+45 39 27 10 80	
AFS	EKMIYMYX	

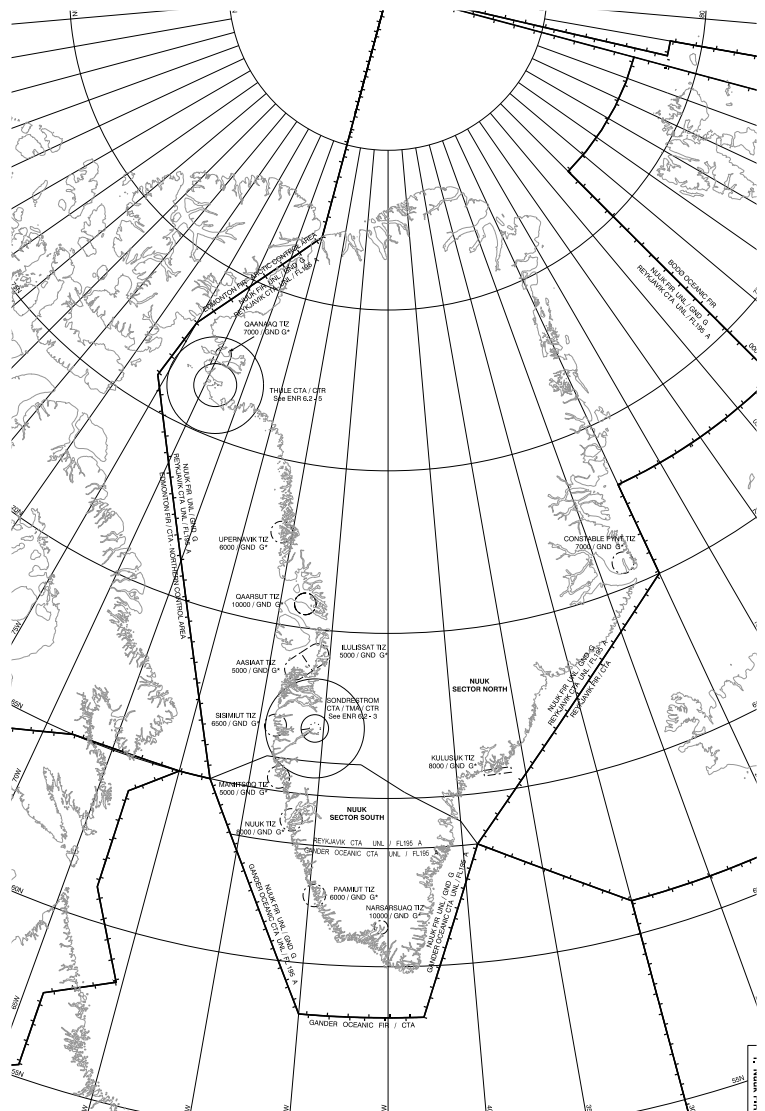


Chart 2: Nuuk FIC Sectors

Sectors listed above refer to sectors on chart 2. Nuuk Information is responsible for Flight Information Service within Nuuk FIR to both IFR and VFR flights below FL 195. Located together with the Flight Information Center is also located an international NOTAM office, a communication center and the Joint Rescue Coordination Center. Relevant contact details listed are listed in table 6.

Furthermore, all aircraft shall be equipped with an approved Emergency Locator Transmitter (ELT) able to transmit simultaneously on 406,00 MHz and 121.500 Mhz.

EMERGENCY EQUIPMENT

National rules also list the minimum emergency equipment to be carried on board your aircraft if your operating internal flights, operating a single engine aircraft or twin-engine aircraft unable to maintain minimum safe altitude in case of engine failure. An overview of requirements is listed in table 7.

Table 7: Emergency equipment

Signal equipment	Survival Equipment	Other supplies	During winter or flights over the ice cap
ELT	Compas	Life vest for all if flight over water	Snow shovel or saw
2 signal flares (day and night type)	Knife	Sufficient emergency supplies equalling 2000 cal/person.	Candels with 11pprox... 2 hours burn time per person, and not less than 40 hours burn time
8 signal cartridges with firing device	Sleeping bag with waterproof lining or rescue blanket per person		Tent to house all onboard
Signal mirror	4 boxes waterproof matches		
Hand torch	1 ball of string		
	Cooking stove with fuel and mess tin.		

ALTERNATES

Alternates are few and far between. This combined with highly dynamic and often hostile weather, many short runways but few long, non-precision approaches coupled with often contaminated surfaces, require foresight, planning, as well as swift, sound decision making and good airmanship. One part is knowing what options are available and a matrix of possible alternative runways and their respective distances is listed in Table 8. The matrix is developed primarily for Atlantic crossings, not for internal traffic.

If diverting, needed routes or alternates may not be made available until within radar coverage.

Table 8: Great Circle distances (NM)

		ICAO Identifier / Field length											
		BGBW 6004'	BGGH 7217	BGSF 9220	BGJN 7217	BGTL 9997	EKVG 5902	ENTC 8041	ENBO 9167	ENVA 9839	BIAR 7874	BIEG 6070	BIKF 10020
ICAO Ident	BGBW		250	379	505	1038	1079	1605	1544	1533	778	868	652
	BGGH	250		169	304	809	1187	1595	1562	1590	849	943	755
	BGSF	379	169		135	660	1138	1472	1454	1505	784	878	718
	BGJN	505	304	135		534	1134	1393	1390	1462	778	868	739
	BGTL	1038	809	660	534		1465	1432	1495	1645	1130	1200	1153
	EKVG	1079	1187	1138	1134	1465		783	653	508	358	271	437
	ENTC	1605	1595	1472	1393	1432	783		177	423	867	803	1020
	ENBO	1544	1562	1454	1390	1495	635	177		247	780	704	929
	ENVA	1533	1590	1505	1462	1645	508	423	247		756	665	885
	BIAR	778	849	784	778	1130	358	867	780	756		95	154
	BIEG	868	943	878	868	1200	271	803	704	665	95		226
	BIKF	652	755	718	739	1153	437	1020	929	885	154	226	

AIRSPACE, COMMUNICATION AND REPORTING

The airspace in the North Atlantic is among the busiest in the world with approximately 400,000 crossing flights per annum. And it must be traversed to get to Greenland.

Prior to dispatch in the NAT High Level Airspace (NAT HLA) one should always ensure that both aircraft (even if dispatching according to the MEL) and crew meet requirements. Contingency planning should include the use of Blue Spruce Routes (routes developed for aircraft not complying fully with requirements for navigating NAT HLA) that are listed in the NAT Operations and Airspace manual chapter 3.

SLOP

The ICAO NAT MNPS Airspace Operations Manual encourages Strategic Lateral Offset Procedure for vertical and lateral separation issues when traversing the North Atlantic. Certain requirements must be met:

- Only aircraft able to automatic offset may fly an offset route
- Offset right of route centerline
- Offset left is not permitted
- Offset up to a maximum off 2 NM

For full description please consult the NAT Operations and Airspace Manual.

The North Atlantic Region encompasses almost all non-domestic airspace and thus also lies overhead the entire area of Greenland and encompasses the entirety of Nuuk Fir (BGGL). Two Oceanic Control Areas share control of the upper airspace above FL195 with no vertical limit: Gander Oceanic South of 63° 30' north and Reykjavik Oceanic from there and to the North Pole.

The airspace over the high seas above FL055 is airspace class A – e.g. controlled airspace and are thus required to be conducted in accordance with instrument flight rules even if operating in visual meteorological conditions.

Below FL195 over Greenland, with the exception of areas in conjunction with the airfields, is uncontrolled airspace G.

APPROACHING NUUK FIR BELOW FL195

All IFR aircraft approaching Nuuk FIR below FL195 are required to contact Nuuk Information before entering the FIR for traffic information, clearance delivery, and weather updates.

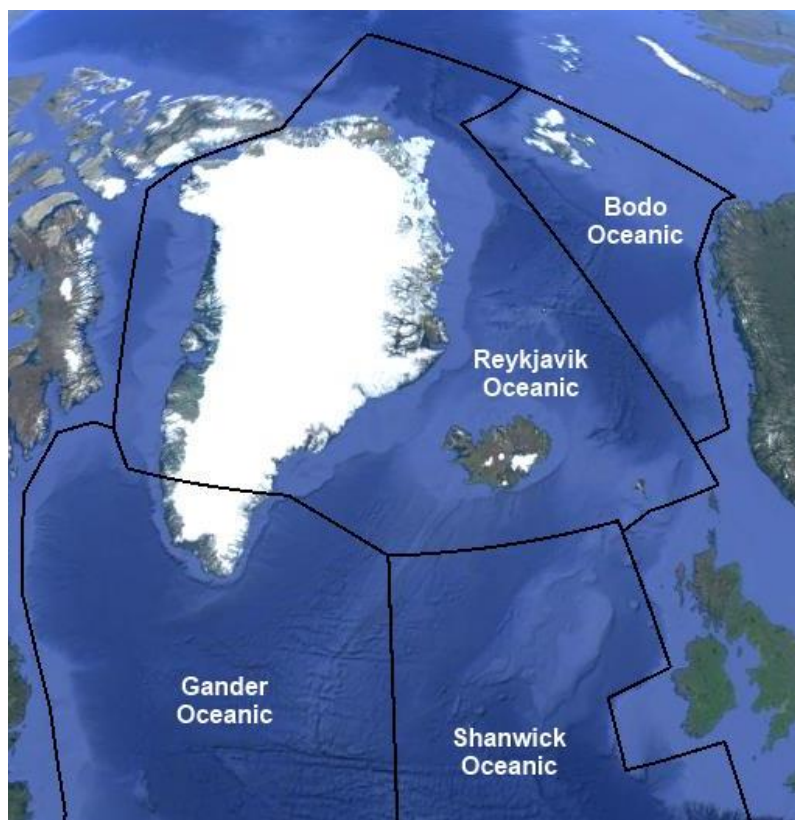


Chart 3: Oceanic Control Areas (Ref.: The NAT Operations and Airspace Manual)

APPROACHING NUUK FIR ABOVE FL195

While approaching above FL 195, contact will be maintained with either Gander Oceanic or Reykjavik Oceanic and even under radar control in certain areas, and will be handed over to relevant ATS unit if approaching controlled airspace (e.g. Sondrestrom CTA) or Nuuk Information for traffic information if descending out of controlled airspace.

SUBMISSION OF FLIGHT PLANS

A flight plan shall be submitted to ATS prior to:

- Any IFR Flight
- Any VFR flight when:
 - ❖ Flying in airspace class D
 - ❖ Crossing Nuuk FIR boundaries
 - ❖ Crossing a TIZ
 - ❖ If you require alerting service for a specific part of the route.

Flight plan can be submitted to:

Table 9: Flight Plan Submission

	Route	AFTN address
IFR	Entering Nuuk FIR from the West (Reykjavik CTA) and above FL195	BIRDZPZX BGGLYIYR Include BGGLZQZX (for mil. Aircraft)
	Entering Nuuk FIR from East and above FL 195 (Gander CTA)	CZQXZQZX BGGL YIYR Include BGGLZQZX (for mil. Aircraft)
	Landing or entering Nuuk FIR below FL195	BGGLZQZX
	Departing from Nuuk FIRzpzx preceded by identifier for departure aerodrome, e.g. BGSFZPZX for Kangerlussuaq
VFR	Landing or entering Nuuk FIR	BGGLZFZX
	Departure from Nuuk FIRzpzx preceded by identifier for departure aerodrome, e.g. BGSFZFZX for Kangerlussuaq

Both complete and abbreviated flight plans are accepted if expecting to conduct a VFR flight where part of the flight is to be carried out in controlled airspace. In a TIA/TIZ, part distance alerting service is required or where IFR is expected or required for part of the flight, an abbreviated flight plan shall be submitted containing:

- aircraft callsign
- aircraft type
- cruising speed if necessary
- flight rules (IFR/VFR)
- entry point respectively exit point
- level wanted, if necessary
- for arriving aircraft, estimated time of arrival
- persons on board

If the complete flight is inside Nuuk FIR and below FL 195 the owner/operator must be included in item 18 of the flight plan.

SPECIAL FLIGHT PLAN FORMAT

Besides the general ICAO flight plan two special types of flight plans can be used in Nuuk FIR: Flight Plan Through (FPT), and Special Greenlandic Flight Plan Through (GPT). Each of the two types incorporate specific requirements.

- Flight Plan Through (FPT). FPT may be used for VFR flights within Nuuk FIR below flight level 195.
 - ❖ May contain up to 4 intermediate stops.
 - ❖ Must have a maximum of two alternates for each route segment.
 - ❖ The general ICAO flight plan format shall be used with specific requirements for item 3, 7, 13, 15, 16, 18 and 19.
 - ❖ Each departure and arrival must be reported unless these are observed by ATS.
 - ❖ Report endurance and POB at the start of each segment.
- Special Greenlandic Flight Plan Through (GPT) can only be used by VFR-flights on approved charter- and settlement flights and when existing types of flight plans cannot be used, because the missions or the prevailing weather conditions dictate, that the order of intermediate stops can be expected to change enroute.
 - ❖ The general ICAO flight plan format shall be used with specific requirements for item 3, 15, 16 and 18.
 - ❖ For each departure the aerodrome of departure and time, next intermediate stop and expected time as well as route, endurance and POB must be reported to the ATS.

For further details please check the AIP Greenland.

REPORTING PROCEDURES

A tight alerting service is provided and is compulsory² when flying in Nuuk FIR and because of the risks involved in flying over vast barren stretches in the Arctic. Other VFR traffic can request this in the flight plan item 18 by inserting "REQ SPECIAL ALRETING SERVICE".

Other reporting procedures have been put in place to help ensure safety:

- Flights along ATS routes shall report compulsory reporting points
- Flights outside ATS routes and with flight time over 40 minutes, shall report their position at HH+00 and HH+30
- Special requirements for reporting if landing in terrain or where no ATS is provided and also if multiple flights are conducted within a confined area (radius max 20 NM)

As with most other reporting procedures, reports should include flight number/tail number, position (waypoint, altitude/flight level and time), estimate for next position and the following position.

For further details please check the AIP Greenland.

DIFFERENCES FROM ICAO STANDARDS, RECOMMENDED PRACTICES AND PROCEDURES

Greenland (due to Greenland being an integral part of the Kingdom of Denmark) is bound by EU regulations including amendments with regard to aviation. Thus deviations from ICAO standards are implemented to comply with EU regulation. Deviations from ICAO standards include (excerpt and not a complete list – please check AIP for full text):

- Personnel Licensing
- General rules
 - The runway in use determined by the ATS unit shall be used unless safety determines otherwise.

² For VFR route-, taxi-, and charter flights

- Departure reports shall be made at the earliest possible moment after departure by any flight for which a flight plan has been submitted. Submission of a departure report is not required after departure if air traffic services is provided.
- Rules of the air
 - No person may perform duty on an aircraft with an alcohol concentration in his blood of 0.20 per thousand or more, or due another other drug are unable to perform their duties
- Visual Flight Rules
 - VFR flights not in sight of the surface shall be conducted in accordance with Regulations for Civil Aviation BL 5-61
 - Except when necessary for take-off or landing, or except by permission from the competent authority, a VFR flight shall not be flown:
 - Over the congested areas of cities, towns or settlements or over an open-air assembly of persons at a height less than 300 m (1,000 ft) above the highest obstacle within a radius of 600 m from the aircraft
 - Elsewhere than as specified in (1), at a height less than 150 m (500 ft) above the ground or water, or 150 m (500 ft) above the highest obstacle within a radius of 150 m (500 ft) from the aircraft.
- At controlled aerodromes separation minima may be applied which are lower than the minima stated in ICAO DOC 4444, para. 7.9 and 7.10. Air Traffic Control will exercise discretion in the application of reduced runway separation minima. However, the pilot of the following aircraft will be responsible for judging that adequate separation exists in relation to the preceding aircraft
- Minimum Flight Altitudes have not been established for Greenland. However, Minimum Obstacle Clearance Altitudes (MOCA) have been established for certain ATS routes to ensure at least 2000 FT vertical clearance above the highest obstacle within 22 NM on each side of the centre line of the ATS route.

IFR minimum enroute altitudes are not published in Greenland but all airways have published minimum obstruction clearance altitude. Therefore, it is not recommended to conduct flight below published minimum off route altitude (Grid MORA) is straying of airways. The published MOCA must be corrected for temperature, wind and pressure.

AIRPORT FAMILIARIZATION BRIEFING

NUUK (BGGH)

GEOGRAPHICAL LOCATION AND PHYSICAL CONDITION

The new airfield in Nuuk (ICAO BGGH, IATA GOH) is expected to be an uncontrolled airfield and open for flights in autumn 2024. Set at the center of a 20 NM radius Traffic Information Zone³, the airfield, when finished, will have runways 04 / 22 available with a field length of 2,200 meters (TODA, LDA, ASDA, and TORA) by 45 meters wide (ICAO ref. CAT 4E). Field elevation will be 261 feet. The runway will be serviced by category 1 ILS, 420-meter approach lights, center line lights and 3.2° PAPI for both runways.



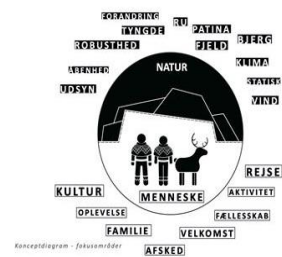
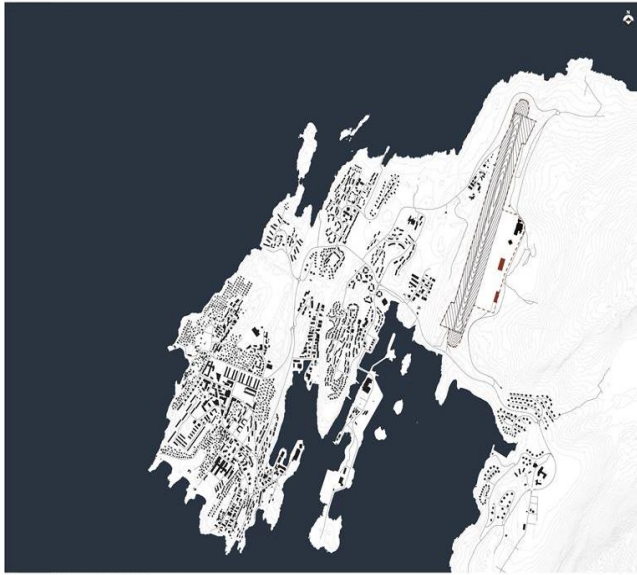
Artist impression of future Nuuk Airport, Kalaallit Airports

METEOROLOGICAL CONDITIONS AND LOCAL WEATHER PHENOMENA

Nuuk has typical coastal climate and with that the airfield has rapidly changing weather. But not only is weather in Nuuk impacted by the city's location on the coastline, but perhaps even more so by frequent low-pressure passage. Where the coastal climate drives frequent periods of fog and low stratus, swift low pressure system passage can cause wind to increase rapidly, culminating in 80 – 100 knot winds from the South.

Where the winds can be expected to die down upon low pressure system passage, in the summertime fog most often lifts prior to noon local time resulting in vastly improved visibility.

³ TIZ center is airport reference point, 64° 11 27,32N 051° 40 41,03 W. Vertical limit 8000 ft. Call sign Nuuk AFIS

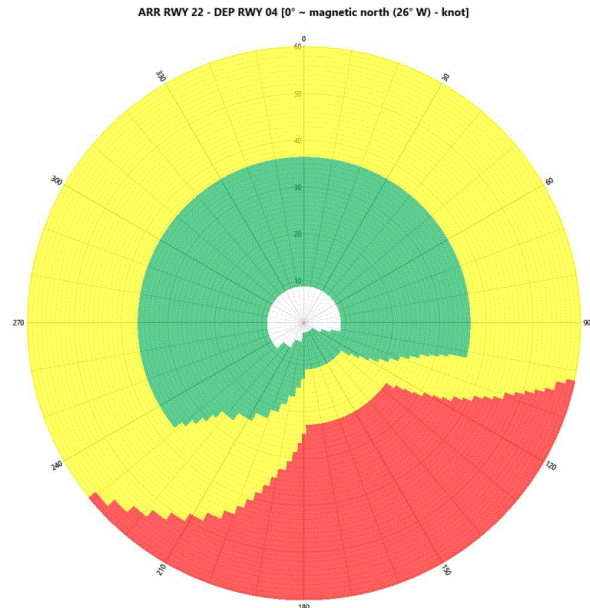
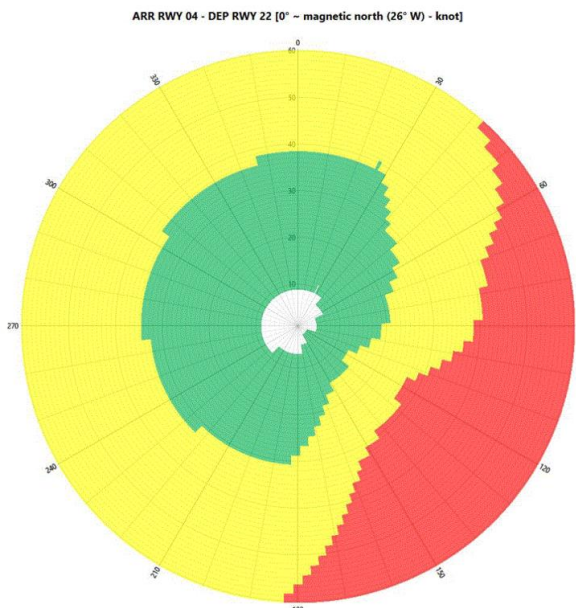


WIND AND TURBULENCE

As Nuuk is nestled on a peninsula jutting out into Nuuk Fjord, and the airport located on a shelf 283 feet above mean sea level with steep slopes at either end and squeezed up against a significant mountain formation, turbulence is bound to develop. This is especially true if winds are in excess of 35 knots from approximately 120° – 190° magnetic. With winds in this quadrant, moderate to severe turbulence may be encountered inside, but not limited to, eight nautical miles from threshold and can be expected to be proportional to wind speed due to Sermitsiaq (mountain, elevation 3,925 feet) approximately 2.5 nautical miles to the east. Furthermore, downdrafts on short final and overhead threshold to both runways can be expected due to significant terrain east of the runway.

TURBULENCE WARNING INDICATOR (TWI)

Turbulence in the vicinity of Nuuk was a known issue operating at the legacy airport, and to ensure continued safe operations a turbulence warning system has been developed and fielded. The TWI system uses data from other aerodrome systems to calculate turbulence in real time and advise Nuuk AFIS by posting warning messages for expected turbulence below 1,500 feet above runway elevation. The calculated wind rose for both runways can be seen below.



	No turbulence
	Light turbulence
	Moderate turbulence
	Severe turbulence

Table 10: Turbulence level

AFIS PHRASEOLOGY

Dissemination of the TWI indication of turbulence is done by the duty AFIS operator to all aircraft operating at Nuuk Airport. Turbulence information will be given to aircraft if the turbulence level is light, moderate, or severe. Prior to take off and approach and as soon as an aircraft has established two-way communication with Nuuk, the aircraft will be made aware of relevant meteorological and turbulence information. The system is already in a test phase and continuously improved, and it is therefore required that all aircraft must report /state to Nuuk AFIS turbulence level experienced below 1500 feet AGL. Pilot shall also report experienced levels when climbing out as well as after landing.

Table 11: AFIS phraseology

AFIS Operator Phraseology	Pilot Phraseology
No turbulence indicated	No turbulence experienced
Light turbulence indicated	Light turbulence experienced
Moderate turbulence indicated	Moderate turbulence experienced
Severe turbulence indicated	Severe turbulence experienced

There may be cases where turbulence is experienced differently from the set values, i.e. several turbulence levels during approach or departure. These should also be reported to the AFIS operator, so the system can continually improve to the benefit of all.

APPROACH AND DEPARTURE

Standard instrument arrival and departure charts will be published in a timely manner but are not available at the time of publishing this guide. However, initial surveys indicate that a 5% missed approach climb gradient can be expected to be required.

GROUND OPERATIONS

Two-way communication with Nuuk AFIS is required prior to engine start and AFIS frequency must be continuously monitored while engines are running.

When departing Nuuk and planning on operating in Gander OCA/CTA, oceanic clearance must be requested no later than 45 minutes prior to departure. It is recommended that engine start be delayed until clearance is received.

HANDLING

In order to facilitate handling, customs clearance and security checks, all charter aircraft arriving from or departing to destinations outside Greenland should include number of embarked passengers in item 18 of the flight plan. Furthermore, a passenger manifest including name, date of birth, nationality and gender shall be forwarded to Nuuk AFIS (BGGHZTZ or bggh@mit.gl).

When flying empty to Nuuk and intending to embark passengers on the outbound leg, both the inbound and outbound flight plans should be submitted at the same time.

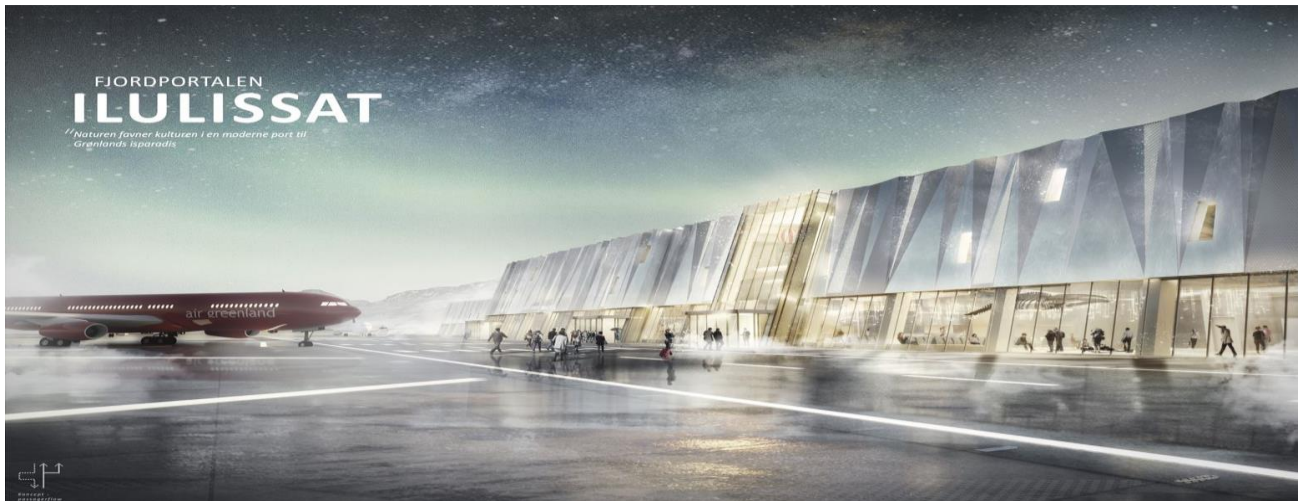
AIRPORT FAMILIARIZATION BRIEFING

ILULISSAT (BGJN)

GENERAL

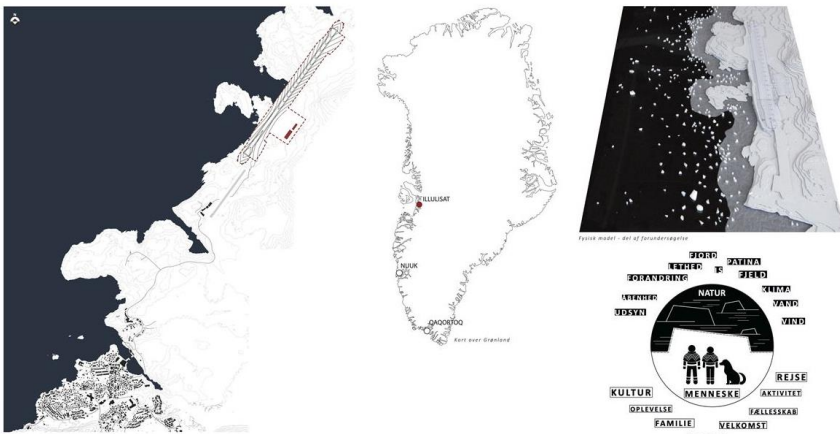
The airport at Ilulissat (ICAO BGJN/IATA JAV) will be built with a 2,200 meter by 45 meter runway (ICAO ref. Code 4E), two taxiways, and a terminal area complete with apron along with a passenger terminal and service buildings.

The runway will be serviced by an Instrument Landing System, ILS CAT 1, 420-meter approach lights, center line lights and 3.2° PAPI for both runways to enable landings even with reduced visibility and thus improving the reliability of the airports.



Artist impression of future Ilulissat Airport, Kalaallit Airports

GEOGRAPHICAL LOCATION AND PHYSICAL CONDITION



The airfield in Ilulissat is located north of the Arctic Circle on the western coastline of the Disco Bay approximately 22 nautical miles from the island of Disco and approximately three nautical miles from the city of Ilulissat. For declared distances, pavement classification number, applicable frequencies and contact information for the handling agent, and refer to the Greenland AIP.

METEOROLOGICAL CONDITIONS, LOCAL WEATHER PHENOMENA AND WIND AND TURBULENCE

The winds are predominantly from an easterly direction resulting in good flight conditions. However, if the winds are out of the South or South East, and in particular in the transitionally seasons with open water in the bay area, there is significant risk of poor flight conditions due to fog and low stratiform clouds. Due to the nature of the surrounding terrain, this airport is susceptible to turbulence in high winds, particularly when the wind is out of the

Southeast. When the wind speed approaches 25 kts, the turbulence can be expected to increase proportionally with wind speed. In an unstable air mass, the wind speed and direction will vary rapidly and often the wind will change from tailwind to headwind and back again. Rapid change in the wind direction and the air temperature is often a forewarning of turbulence to come. Use of the any available onboard available wind source during the approach may help in decision-making as to whether to continue the approach or to execute missed approach.

APPROACH AND DEPARTURE

Standard instrument arrival and departure charts will be published in a timely manner but are not available at the time of publishing this guide.

GROUND OPERATIONS

Two-way communication with Ilulissat AFIS is required prior to engine start and AFIS frequency must be continuously monitored while engines are running.

HANDLING

In order to facilitate handling, customs clearance and security checks, all charter aircraft arriving from or departing to destinations outside Greenland should include number of embarked passengers in item 18 of the flight plan. Furthermore, a passenger manifest including name, date of birth, nationality and gender shall be forwarded to Ilulissat AFIS (BGJNZTZX or bgjin@mit.gl)

When flying empty to Nuuk and intending to embark passengers on the outbound leg, both the inbound and outbound flight plans should be submitted at the same time.

ABBREVIATIONS

Abbreviation	Meaning	Comments
AGL	Above Ground Level	
ASDA	Accelerate Stop Distance Available	
ATS	Air Traffic Service	
DA	Decision Altitude	
F	Fahrenheit	
FIR	Flight Information Region	
FPT	Flight Plan Trough	
GPT	Greenland Flight Plan Through	
HLA	High Level Airspace	
ICAO	International Civil Aviation Organization	
IFR	Instrument Flight Rules	
ILS	Instrument Landing System	
ISA	International Standard Atmosphere	
MDA	Minimum Descent Altitude	
METAR	Meteorological Aerodrome Report	
MORA	Minimum Off Route Altitude	
MSA	Minimum Safe Altitude	
MNPS	Minimum Navigation Performance Specification	A specified set of minimum navigation performance standards which aircraft must meet in order to operate in MNPS designated airspace. In addition, aircraft must be certified by their State of Registry for MNPS operation.
NAT	North Atlantic	
NM	Nautical Miles	
PIREP	Pilot Report	
POB	Persons On Board	
RCR	Runway Condition Reading	
RVSM	Reduced Vertical Separation Minima	RVSM separation minima is 1000 feet vertical separation, usually between FL290 and FL410. Aircraft must be RVSM-approved to operate in RVSM airspace. All MNPS airspace is also RVSM airspace
SLOP	Strategic Lateral Offset Procedure	
TAF	Terminal Area Forecast	
TODA	Take Off Distance Available	
TORA	Take Off Runway Available	
TIZ	Traffic Information Zone	
VFR	Visual Flight Rules	

HYPERLINKS / REFERENCES

Reference to this document	Link
Sunset/sunrise	https://aim.naviair.dk/media/files/bu2as0ekq5r/BG_GEN_2_7_en.pdf
Requirements for commercial operations in Greenland	https://tbst.dk/en/Civil-aviation/Flight-Operations/Flight-Operations#operations-to-and-from-and-domestic-in-greenland
Current airport tariffs	https://mit.gl/wp-content/uploads/2020/09/Bilag-1-Tariffs-and-payments-using-helicopter-aerodromes-and-airports-in-Greenland-2021-ver-1.pdf
Health requirements	https://corona.nun.gl/en/travel/
AIP (including AIP Greenland)	https://aim.naviair.dk/en/
BL 5-24	https://selvbetjening.trafikstyrelsen.dk/civilluftfart/Dokumenter/Love%20og%20bestemmelser/Bestemmelser%20for%20Civil%20Luftfart%20(BL)/BL%2005-serien/BL%205-24,%20202.%20Udgave.pdf
Ministry of Foreign Affairs of Denmark	https://um.dk/en/travel-and-residence/where-to-apply
North Atlantic Operations and Airspace Manual (V.2019-2)	https://www.icao.int/WACAF/Documents/Meetings/2019/SAT24/SAT%2024%20WP%2017e%20_APP%20E_NAT%20Doc%20007%20%20(EN)%20-%20Edition%20V.2019-2_eff.pdf
Naalakkersuisut, Import of animals	https://gri-rep.dk/en/dyr/
Naviair.gl (METAR, TAF, NOTAM)	https://naviair.gl/app/map