Flying in Canada and the North Atlantic
Thursday, March 26, 2015 | 10:45a.m. – 12:00p.m.

PRESENTED BY:
John Esping
Flying the North Atlantic

What’s the big deal?

• Adventurous
• Rewarding
• Challenging
• Unique
Flying in Canada and the North Atlantic

Overview

- Flying in Canada
  - Customs
  - Flight planning
  - Tech Stops
- Flying the North Atlantic
  - Flight Planning
  - NAT
  - ETP Planning
  - Wet Footprint
  - Oceanic Clearance
  - Journey Log
  - HF Radio
  - SLOP
Flying in Canada

Customs

• eAPIS - Electronic Advance Passenger Information System
  – Aircraft Registration
  – Passenger names/passports
  – Accuracy is important
Flying in Canada

Customs

• CANPASS- Eligibility
  – To be eligible for CANPASS – you must meet these criteria:
  – Be a citizen or permanent resident of Canada or the United States and have lived in Canada and/or the United States continuously for the last three years;
  – You are admissible to Canada under applicable immigration laws;
  – You have provided true and accurate information;
  – You have not been convicted of a criminal offence for which a pardon or rehabilitation has not been granted;
  – You have not had a customs seizure within the past five years; and
  – You are not in violation of any customs or immigration legislation.
Flying in Canada

Customs

- **CANPASS**
  - Private Aircraft program can land at any airport of entry **any time** the site is open, regardless of the hours of operation of the local Canada Border Service Agency (CBSA) office.
  - Pilots (PIC) are responsible for reporting themselves, their crew and passengers by calling **1-888-CANPASS (1-888-226-7277)** at least 2 hours before but no more than 48 hours prior to the aircraft's ETA in Canada.
Flying in Canada - Customs

CANPASS

• The PIC must provide the following information to the CBSA:
  – the estimated time of arrival (ETA);
  – the aircraft tail number/registration number;
  – the full name, date of birth and citizenship of all persons on board;
  – the destination, purpose of the trip and length of stay in Canada for non-residents;
  – the landing point (must be a designated airport of entry or CANPASS-only airport);
  – the length of absence for each passenger who is a returning resident of Canada;
  – a declaration of all goods being imported (alcohol, tobacco) including firearms and weapons;
  – a declaration of all currency and/or monetary instruments totaling CAN$10,000 or more
Flying in Canada

Customs

• CANPASS
  – Note: If the ETA changes by more than 30 minutes or if there are any changes to the point of arrival, the list of passengers or their declarations, the pilot must advise prior to arrival in Canada.
  – The pilot must call CANPASS number at arrival, if there is no officer waiting to meet the aircraft.

• Cabotage – laws governing the carriage of passengers, to protect a country’s carriers from outside competition.
  – If transporting Canadians from point to point in Canada – beware
  – The Canadians take this seriously
  – Get help from a trip support company
Flying in Canada

Flight Planning

- Do it yourselfers - call 1-866 – WX – BRIEF
- NAV Canada – CFPS (https://plan.navcanada.ca/)
- At Textron Aviation – we use ARINC
• Flying in Canada – Flight Planning
• Short-range aircraft - Winter

• Wichita (KICT) – Thunder Bay (CYQT) – La Grande River (CYGL) – Iqaluit (CYFB)
• Flying in Canada – Flight Planning
• Short-range aircraft - Summer

• Wichita (KICT) – Sault Ste Marie (CYAM) – La Grande River (CYGL) – Iqaluit (CYFB)
• Flying in Canada – Flight Planning
• Medium-range aircraft

• Wichita (KICT) – Sault Ste Marie (CYAM) – Goose Bay (CYYR)
• Flying in Canada – Flight Planning
• Medium-range + aircraft

• Wichita (KICT) – St. John (CYYT) or Gander (CYQX) or Stephenville (CYJT)
• Flying in Canada – Cold Weather Ops

• Review AFM
• **Flying in Canada – Cold Weather Ops**

• **How cold?**
  – Review Cold Weather Operations in AFM
  – Check your aircraft limitations
  – Minimum temperatures
    • Battery
    • Oxygen masks
    • Avionics
    • Engine Oil
    • Fuel
    • Hydraulics
    • Flaps

• Hangar - Preheat
• Cabin fluids
• Deice capability
• External power cart
• Flying the North Atlantic – Flight Planning

• The North Atlantic is the busiest oceanic airspace in the world
• On average...1300 flights per day – mostly large carriers
• Over 50% North Atlantic Track System
• Approximately 40% on random routes
• Few conventional Navaids/extremely limited radar coverage
• How are aircraft separated?
  – High standards of vertical and horizontal navigation performance and accuracy
  – Crew operating discipline
• Flying the North Atlantic – Flight planning

• Minimum Navigation Performance Specification – MNPS
• Lateral Dimensions
• Flying the North Atlantic – Flight Planning

• Vertical Dimensions of MNPS
  – FL285 to FL420
  – Includes cruise altitude – FL290 to FL410

• Requirements
  – Specified Required Navigation Specification (RNP)
  – Letter of Authorization (LOA)
  – Copy of LOA onboard
  – Crew training
  – Designated - Responsible Person
  – Special Routes – if only one Long Range Navigation System (LRNS)
  – HF...without use certain Special Routes
Letter of Authorization
Operations in North Atlantic Minimum
Navigation Performance Specifications (NAT/MNPS) Airspace

1. The operator listed at the bottom of this document is authorized to conduct operations within North Atlantic Minimum Navigation Performance Specifications (NAT/MNPS) Airspace in accordance with the limitations and provisions of this Letter of Authorization (LOA) and is subject to the conditions that all operations conducted within the NAT/MNPS Airspace are in accordance with Title 14 CFR Part 91, § 91.703 and the flight rules contained in International Civil Aviation Organization (ICAO) Annex 2, Rules of the Air.

2. Airplanes Authorized with Multiple Long-Range Navigation Systems (M-LRNS). The operator is authorized to use the airplanes listed in Table 1 below for unrestricted operations within the entire NAT/MNPS Airspace. At least two long-range navigation systems must be operational at entry into NAT/MNPS Airspace. The installed equipment must be maintained in accordance with the airplane or equipment manufacturer’s recommendations. (If this authorization does not apply, select or enter N/A for each cell in Table 1).

Table 1 – Airplanes with Multiple Long-Range Navigation Systems (M-LRNS) Authorized for Unrestricted Operations within NAT/MNPS Airspace

<table>
<thead>
<tr>
<th>Airplane Serial Number</th>
<th>Airplane Registration Number</th>
<th>Airplane M/M/S</th>
<th>Multiple Long-Range Navigation Systems M/M</th>
<th>Communications Equipment M/M</th>
<th>Restrictions or Limitations</th>
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<tr>
<td>525B-0451</td>
<td>N30CJ</td>
<td>CE-525B-525B</td>
<td>2) Garmin GIA-63W</td>
<td>1) Collins HF 9000 HF 2) Garmin GIA-63W VHF</td>
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</table>
14 CFR Part 91 Operations

<table>
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<tr>
<th>Airplane Serial Number</th>
<th>Airplane Registration Number</th>
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<th>Communications Equipment M/M</th>
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<td>(2) Garmin GIA 63W</td>
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<td>(2) Garmin GPS Sensors</td>
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<td>(GIA63W) w/GPS</td>
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3. Airplanes Authorized with Single Long-Range Navigation Systems (S-LRNS). The operator is authorized to operate within NAT/MNPS airspace over special routes/Blue Spruce Routes using the airplanes equipped with a S-LRNS listed in Table 2 below. Detailed information about these routes is published in NAT Doc 007, North Atlantic Operations and Airspace Manual and the Icelandic Aeronautical Information Publication (AIP). The installed equipment must be operational and maintained in accordance with the airplane or equipment manufacturer’s recommendations. *(If this authorization does not apply, select or enter N/A in each cell in Table 2).*

**Table 2 – Airplanes with Single Long-Range Navigation Systems (S-LRNS) Authorized to Use Special Contingency Routes Only in NAT/MNPS Airspace**

<table>
<thead>
<tr>
<th>Airplane Serial Number</th>
<th>Airplane Registration Number</th>
<th>Airplane M/M/S</th>
<th>Single Long-Range Navigation Systems M/M</th>
<th>Communications Equipment M/M</th>
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<td>N445MU</td>
<td>CE-510-510</td>
<td>Garmin GIA 63W</td>
<td>Garmin GIA 63W VHF</td>
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<td>N800CZ</td>
<td>CE-525-525</td>
<td>Garmin GIA 63W</td>
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</table>
14 CFR Part 91 Operations

4. **Airplanes Authorized with Only Short-Range Navigation Equipment: VOR, DME, ADF.** The operator is authorized to use the airplanes equipped with only short-range navigation equipment such as VOR, DME, and ADF listed in Table 3 below to operate within NAT/MNPS Airspace over special routes of short stage lengths. Detailed information about these special routes is published in NAT Doc 007, North Atlantic Operations and Airspace Manual and the Icelandic Aeronautical Information Publication (AIP). The installed equipment must be operational and maintained in accordance with the airplane or equipment manufacturer’s recommendations. (If only M-LRNS and/or S-LRNS equipped airplanes are authorized, select or enter N/A in each of the cells for Table 3).

<table>
<thead>
<tr>
<th>Airplane Serial Number</th>
<th>Airplane Registration Number</th>
<th>Airplane M/M/S</th>
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5. **Crew Training.** Crew training conducted by Flight Safety International and In House Training or other FAA approved course. In accordance with 14 CFR § 91.3 and 91.703 (a)(1)(2) and ICAO Annex 2 (Rules of the Air), paragraph 2.3.2 (Pre-flight action) crews are responsible for policies and procedures in areas of operations where flights are conducted.

6. **Responsible Person.** The Responsible Person for crew operations may be either an agent for service (who must be a U.S. citizen) or a person who is a U.S. citizen or holds a U.S. pilot certificate and accepts responsibility for complying with the stated regulations by signing this document.

   a. If the Responsible Person signing this LOA relinquishes responsibility, this LOA becomes invalid.

   b. Enter the name, email address, and telephone number in Table 4 of the Responsible Person signing this LOA:
• Flying the North Atlantic – Special Routes
Flying the North Atlantic
• Flying the North Atlantic

1. SPECIAL ROUTES FOR USE WITHIN MNPSA WITH LESS THAN ACCEPTABLE MNPS LONG RANGE NAVIGATION EQUIPMENT
   No aircraft should use these routes unless specifically authorized by the State of Registry or state of the operator as appropriate.

2. Aircraft with SHORT RANGE navigation equipment plus ONE operational LONG RANGE navigation equipment.
   a) ROUTES Europe to/from Canada via Greenland/Iceland
      1. Minimum acceptable operational navigation equipment:
         (i) VOR/DME and ADF plus
         (ii) Single INS, or single GNSS, or one navigation system using the inputs from one or more IRSs or any other sensor system complying with MNPS specifications.
         (iii) LORAN-C with Computer (but because of incomplete coverage the use would entail an operational restriction to routes on which unambiguous ground wave coverage is available).
         (iv) DOPPLER with Computer (not recommended for unrestricted operation approvals).

2. Approved SPECIAL ROUTES:
   BEL/SHA/GOW/MAC - GOMUP - 60N 15W - 61N 1630W - BREKI - KEF
   BEN/STN - ATSIX - 61N 1234W - ALDAN - KEF
   BEN/STN - RATSU - ALDAN - KEF
   KEF - EMBLA - 63N 30W - 61N 40W - OZN
   KEF - GIMLI - DA - SF - YFB
   OZN - 59N 50W - (PRAWN - NAIN)
   OZN - 59N 50W - (PORGY - HO)
   OZN - 58N 50W - (LOACH - YYR)
   Sondre Stromfjord - 67N 60W
   KU (Kook Islands) - 66N 60W
   KU (Kook Islands) - 64N 60W - 64N 63W - YFB
   RE (Reykjanesskagi) - 6930N 2240W - CP

1. HF is required.
2. VHF coverage exists at FL 240 and above subject to prior coordination with Scottish/Shanwick.
3. VHF coverage exists on these routes at FL 300 and above.
4. VHF coverage exists.
• Flying the North Atlantic – Flight Planning distances
• Flying the North Atlantic – Flight Planning

Iqaluit (CYYB) – Kangerlussuaq (BGSF) – Reykjavik (BIRK) – Prestwick (EGPK)
• Flying the North Atlantic – Flight Planning

Goose Bay (CYYR)- Narsarsuaq (BGBW)- Reykjavik (BIRK) – Prestwick (EGPK)
• Flying the North Atlantic – Flight Planning

Goose Bay (CYYR) – Reykjavik (BIRK) – Prestwick EGPK)
• Flying the North Atlantic – Flight Planning

St Johns (CYYT) – Shannon (EINN)
• Flying the North Atlantic – Narsarsuaq (BGBW)???
• Flying the North Atlantic – BGBW – Caution Terrain!

Minimums are 1800 ft. and 6000 m (3.75 sm)

377 nm to BGSF

Nearest alternate is Nuuk (BGGH), 250 nm
• Flying the North Atlantic – Flight Planning

• Do I need to file an alternate?

  – FAA: + or – 1 hr...ceiling at least 2000 ft/visibility of at least 3 sm

  – ICAO: + or - 2 hr...ceiling at least 1000 ft/visibility of at least 3.4 sm

  – At Textron Aviation – we use...+ or- 2 hrs with FAA ceiling/visibility

  – Often times an alternate airport is required even if not required by weather
• Flying the North Atlantic – Flight Planning

• Departing Iqaluit, at least 15 min prior before crossing oceanic boundary, contact Iceland Radio for an Oceanic Clearance

• Provide ICAO flight plan format for handler in BGSF and BIRK

• Flight plans into and out of Greenland can be filed in a few minutes (closed Sunday)

• Flight plans into Europe must be filed a least two hours in advance

• Consider Trip Support – flight planning, permits, weather, handling, fuel releases, transportation, hotel, catering, etc.
• Flying the North Atlantic - OTS

• Organized Track System (OTC)

• Normally include FL310 to FL400

• Westbound – departs Europe in the morning - valid from 1130-1900Z

• Eastbound – departs North America in the evening – valid from 0100-0800Z

• Tracks change daily – minimum time is near center of flow

• Track locations are important in case of emergency descent
• Flying the North Atlantic – Eastbound OTS
• Flying the North Atlantic – Westbound OTS
Flying the North Atlantic - ETP

Equal Time Point (ETP) – is a point along a route where the times to reach two divert airports are equal.

- Short of ETP...the crew would turn around
- After ETP...the crew would continue
- Useful for loss engine, medical problem, or pressurization loss
- Most critical – loss pressurization

- Descend to FL250 for passenger oxygen
- Descend to FL100 when oxygen is depleted
• Flying the North Atlantic - ETP
### ETP Analysis for trip from CYYR to BIRK

**DEPRESS - FL PROFILE: OXYGEN ALTITUDE FOR 80 MIN THEN FL100**

<table>
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<tr>
<th>LAT/LONG</th>
<th>N57 13.4/W046 25.4</th>
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<th>BGSF</th>
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**DEPRESS - FL PROFILE: OXYGEN ALTITUDE FOR 80 MIN THEN FL100**

<table>
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<td>003986/002551</td>
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</tbody>
</table>

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- Flying the North Atlantic - ETP
• Flying the North Atlantic – ETP
• Flying the North Atlantic – Wet Footprint Analysis

• What is a wet footprint?
  – If a flight cannot fly to ETP, lose pressurization, descend as required and reach the divert airport with a specified amount of fuel…it has a wet footprint.
  – Under FAR Part 91 – operators must specify how much fuel they want at ETP alternate.
  – Example of wet footprint from CYYR to BIKF in a CE-525
• Flying the North Atlantic – How the Big Jets do it!
• Flying the North Atlantic – Oceanic Clearance

• An ATC clearance does not constitute approval to enter oceanic airspace

• Pilots should request Oceanic clearance at least 40 min. prior to entry point

• After receiving an oceanic clearance, monitor estimate for entry point, if it changes by 3 min., notify ATC

• Oceanic clearances have three elements:
  – Route (complete route)
  – Mach number
  – Flight Level

• When practical, both pilots should listen to and record every oceanic clearance
• Flying the North Atlantic – Master Document

• Navigation procedures must include a “Master Document” to be used on the flight deck

• Also called a Journey Log

• It is based on flight plan data

• Sequentially lists waypoints defining the route, the track and distance between each waypoint, and other relevant information (wind/temp)

• Must be retained for six months after flight

• Prior to departure, CAREFULLY compare FMS waypoints to Master Document waypoints. Both crew members!

• Record altimeter cross checks on Master Document
Computed Flight Plan

Master Document
crew: John Esping
Craig Maki

Date: 02-20-06

There were advisories associated with this flight plan calculation. Click here to view them.

Flight Plan P7172:
Filing Info: NO REQUEST FOR FILING

--- START-OF-PLAN

ABINC DIRECT TOLL FREE 866-321-6660 /INTL 410-266-2266
FAX 410-266-2020

--- PMT ID - C3

CYTT/EINN MACH:MAX A/C: N593XL /CSX ROUTE CALCULATED: 16/1913

RTO

EINN

BTD: 17/00022 PEB

ORG CYTT DEST EINN

FUEL

DEST EINN 004871 03.55 015358 014577 0034

REZV 000600 00.34 ALTN 000000 00.00 ALTN DIST 0000 W/C 0000

HOLD 000000 00.00

REQD 006740 05.33 BOW 012793 PAYLOAD 000000

EXTRA 001134 01:04

TAXI 000135

TTL AT BO 006740 05.33

Fl 410 / 0.70 Mach

CYTT DCT 4850N 5040N 5230N 5320N BURAK U/L SHA DCT EINN

CYTT 410 5230N 450

Climb Sched: 250/M62
Cruise Sched: MAX
Descent Sched: NORMAL

Field Elev: 4614
Altimeters: Cpt: 4800 ft
5760: 4400 ft
56: 4300 ft
### Computed Flight Plan

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### Master Document

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• Flying the North Atlantic - HF Radio

• Lower frequencies are better at night and higher during the day.

• Upper Side Band (USB) is used almost exclusively for airborne operations

• Test HF before you depart VHF service

• Receive time signals…10000

• SELCAL – Selective Call-up – is worth the money!

• Initial call – state 4 or 5 digit frequency
  – Shanwick radio, N173CX position on 8606
  – Wait for reply

• International Distress Frequency - 2182
Flying the North Atlantic – HF Position Report

- You just crossed position 50N 050 W at 0105 UTC at FL 410

- What do you say?
  - Gander Radio, N173CX position...(wait for Gander to respond)
  - N173CX, position
  - 50 North, 050 West at 0105, Flight Level 410
  - Estimate 52 North 040 West at 0143
  - 50 North 030 West next
• Flying the North Atlantic - SLOP

• Strategic Lateral Offset Procedure (SLOP)

• Expectation is to fly centerline, 1 nm, or 2 nm to the right of centerline

• No required report for ATC
BIKF (Keflavik, Iceland)

- Hours: 24 Hours; Customs: Yes; RWY: (1) 10,020 x 197 ft & (2) 10,056 x 197 ft; Approaches: ILS/DME VOR
  - Crew made sure to check the weather multiple times from multiple sources
  - The crew noted that snow removal was extremely efficient – a recent squall had just laid two feet of snow, but the runway was clear
  - ATC services were excellent
  - The crew complimented the fact that BIKF is an excellent tech stop, with first-class handling services
  - The aircraft was fueled and de-iced quickly, picked up catering, and was aloft in less than 60 minutes
Special: Let’s Check In with Our Flight

• TXKF (Hamilton, Bermuda)
  – Hours: 0700 – 2300 LCL (2301 - 0659: PPR Required); Customs: Yes; RWY: (1) 9,705 x 150 ft; Approaches: ILS/DME VOR
    • Uneventful flight to Bermuda; approach was standard and ATC services were good
    • Crew arrived during normal operating hours, but understood they could operate outside of those hours with a PPR; they would also have to pay Bermuda Fire & Rescue Services (BFRS) after hours fees
    • CIQ procedures were quick and painless (standard GENDEC) and the crew was quickly driven to a local resort hotel by “George,” in a pre-paid taxi
    • The island was a bit pricey, but the food and amenities were excellent
    • The crew chose to fuel on departure, and experienced a slight delay (<15minutes) waiting for the fuel truck
    • The crew noted it was a nice stop – a little out of the way – but nice nonetheless
• Questions?

“Mr. Osborne, may I be excused?
My brain is full.”