

# Better International Trip Planning



The aviation world is changing from top to bottom; those who don't keep up areaced out. If you don't have the right equipment, permits, and know how, you may not be allowed to complete your Point A to Point B objectives. Pilots are often left to pick up the pieces armed only with the notes they've gathered from the Internet and word-of-mouth from the last crew to make the trip. In both cases, the information could be several years old. The penalty for getting it wrong can be expensive and, as some have recently found out, can include getting on the wrong side of the law in foreign countries.

The challenge is immense; regulatory agencies race to incorporate advances in technology and procedures to pack more and more aircraft into increasingly crowded skies. Not only do the rules change from region to region, they change with the calendar.

There are options to cope with the demands of international trip planning; some are more effective than others:

- 1) A well-thought-out International Trip Planning Checklist is a must. It is far too easy to miss one of the hundreds of details that go into every international trip.
- 2) If a large flight department has the necessary resources, a dedicated in-house expert can provide crews the needed support and provide real-time support when the crew is airborne or in foreign countries with immediate needs.
- 3) A professional International Trip Planner with the necessary technical expertise and worldwide presence can make quick work of even the most complicated trips.

## The Challenge: Regulatory Compliance

At first glance, keeping up with the myriad of navigation, communications, and surveillance regulations would seem an impossible task. The International Civil Aviation Organization (ICAO), the European Aviation Safety Agency (EASA), and just

about every other national aviation entity can stipulate rules and procedures that must be obeyed. Matters are made worse by the rush to upgrade outdated technology and procedures in an effort to increase airspace capacity. Future deadlines stretch from the current year into the 2030's and beyond. Even with a firm grasp on the nature of the requirements, operators must still play a guessing game on which requirements exist, where, and when.

The entire world is marching towards the Future Air Navigation System (FANS). It was never enough to simply equip the aircraft with the needed technological breakthroughs, however. Individual nations also had to play catch up by investing in the required infrastructure to make it all happen. As various regions of the world establish their own timetables, compliance has become a moving target.

## Navigation.

Aircraft can no longer operate in many parts of the world by simply installing the right equipment and promising to stay on course. Performance-Based Navigation (PBN) now specifies navigation accuracy, integrity, availability, monitoring, and alerting standards. Capabilities need to be documented in aircraft flight manuals, letters of authorization, or operations specifications. In some cases, a country-specific approval may be needed.

Produced by

**AVIATION WEEK**  
& SPACE TECHNOLOGY

Sponsored by

**JEPPESEN**  
A BOEING COMPANY

The nomenclature still contains confusing ambiguities. Generally speaking, a specification labeled as RNP, Required Navigation Performance, adheres to PBN. But not always! Older area navigation (RNAV) standards are giving way to RNP, but the implementation dates are in a state of flux. The RNP-4 standard, for example, was mandated in parts of the world only to be delayed because operators just couldn't comply in time. Older standards such as the Minimum Navigation Performance Specification (MNPS) and Precision RNAV (P-RNAV) will still buy the price of admission in many parts of the world, but for how long?

## Communications.

There are fewer and fewer places in the world where simply having a radio will suffice. New systems must comply with a level of Required Communications Performance (RCP). An RCP is already specified for operations in some remote and oceanic airspace. An RCP standard also exists for many congested areas, such as in Europe. Data Link solves these RCP issues, but only if implemented correctly.

Controller Pilot Data Link Communications (CPDLC) is already implemented in many remote and oceanic regions of the world; aircraft with qualifying systems are granted favorable handling. In the North Atlantic, for example, aircraft without CPDLC can be denied optimal routes and altitudes. Domestic implementation in Europe has already started and much of the world is sure to follow suit.

Knowing the data link requirements before departing on a trip is obviously critical. The ICAO attempted to solve this problem with publication of a manual directed squarely at the issue. Unfortunately, updates to the ICAO Global Operational Data Link Document (GOLD) have been sparse. (The last update came 3 years after the previous edition.)

## Surveillance.

When the skies over the oceans started to fill up, standards were developed to ensure at least 2,000 feet vertical separation and track keeping accuracy typically around 12.6 nautical miles. Most of the world is now using only 1,000 feet vertical separation and the remote and oceanic track keeping accuracy is shrinking to only 4 nautical miles. Outside of radar coverage there was no way to routinely monitor aircraft position. It was simply an act of trust that aircraft were where they were supposed to be. That has all changed.

Automatic Dependent Surveillance (ADS) capitalizes on improved navigation and communications performance. Now air traffic control can determine exactly where the aircraft in its jurisdiction are, and can do so in a timely manner. ADS-Contract (ADS-C) is used in many remote and oceanic areas by establishing a "contract" between the aircraft and air traffic control to report aircraft position and other data on a regular basis. ADS-Broadcast (ADS-B) comes in two flavors: "ADS-B In" and "ADS-B Out." ADS-B Out automatically transmits aircraft GPS position and other data to ATC and anyone else equipped to receive it. Aircraft with ADS-B In can receive ADS-B Out data from other aircraft.

ADS-C mandates are evolving throughout the world's remote and oceanic regions and aircraft without the necessary equipment and authorizations are already excluded in some areas. Those areas are sure to expand.

ADS-B Out mandates are already in effect in many areas of the world and the list is expanding. Mandates in many parts of Asia began in 2013 and are planned for the United States in 2020.

There are no known mandates for ADS-B In. Yet!

## A Pilot's Story: Twenty years of North Atlantic experience, all for naught!

**Captain Stuart Jones** has been flying from White Plains, New York, to Shannon, Ireland for over twenty years. He started in a Gulfstream II flying for a small private owner and worked his way to International Pilot and Check Airman for one of the largest fractional operators flying a top-of-the-line Gulfstream 550. In early 2014 he found himself flying thirty nautical miles off course when coasting out of Newfoundland, Canada.

Captain Jones programmed his flight management system as he had for most of his career "hopping the pond," using familiar notation that makes quick work turning latitude and longitude waypoints into the language his aircraft's computer

systems understand. Unfortunately, he did not know of a recent change in the North Atlantic Track system, decreasing the latitude spacing from one to one-half degree on some oceanic tracks.

Captain Jones was not alone. Only the most astute international planners were aware of the recent change. This professional pilot's experience is not unique. The list of changes to airspace rules coming up in the next few years and decades can overwhelm even the most diligent flight operations.

## **OPTION ONE**

# **A Well-Thought-out International Trip Planning Checklist**

International flight operations have become both easier and more difficult since the dawn of jet travel. Improved communications and navigation systems are easier to use once mastered, but have steep learning curves. The skies are more crowded worldwide, but capacities have grown to keep up. International Trip Planners are responsible for volumes of information and must rely on well-thought-out checklists to ensure nothing is overlooked.

## **1. Aircraft Performance**

The first step is to ensure the aircraft has sufficient range to make each leg of the trip, but this is more than just placing the proverbial string against a map. En route winds can affect aircraft range by a thousand miles or more. Airport construction and runway closures can turn easy city pairs into impossible journeys. Even the simple matter of a passing rain storm can necessitate an additional fuel stop. Not only does the distance between airports need to be considered when planning a trip, it must be re-evaluated as the trip progresses.

## **2. Crew Considerations**

The day's destination may require more than just an additional fuel stop but also additional crew. The decision to augment the crew versus pre-positioning crews along the way complicates trip logistics and impacts the overall cost. While augmenting a crew can be the most cost effective solution, it can strain limited cabin space. Pre-positioning a crew may constrain the choice of refueling stops to ones with access to airlines, but may be the only sensible option.

## **3. Airport Logistics**

The airport not only needs to have a runway of sufficient length and width to handle the aircraft, but the pavement needs to be strong enough to support the aircraft's weight when fully loaded for the outbound flight leg. The runways, taxiways, and all ramp areas need to be evaluated for pavement strength and the physical size of the airplane. Nearby obstacles can limit aircraft fuel and passenger loading.

Even if the airport is capable of supporting the airplane, the host nation or the airport itself may restrict access. An airport must be considered an "airport on entry" under most conditions. You may need a landing permit. The airport itself may require proof of special qualification.

## **4. Airspace Concerns**

Many oceanic and remote areas require special navigation authorizations while others severely limit access. Authorizations often require more than the proper equipment be installed, but that crews be properly trained. You cannot fly over many oceans without a Required Navigation Performance (RNP) -4 or -10 authorization. Many operators are forbidden from flying near the poles without high latitude certification. Much of European

airspace is restricted unless aircraft and crews are Basic Area Navigation (B-RNAV) and Precision Area Navigation (P-RNAV) qualified. (And changes to these authorizations are underway.) Access to some parts of the world is restricted to aircraft with certain datalink capability. Virtually all of the world now uses tighter Reduced Vertical Separation Minimum (RVSM) altitude standards.

## **5. Country and International Mandates**

Every country is free to make exceptions to the rules set down by the ICAO, but must publish those exceptions. Of course getting a copy of those exceptions in English can be next to impossible. But that doesn't relieve you of the responsibility of knowing that country's agriculture, cabotage, customs, immigration, import, and security rules. And these considerations apply not only to your departure and destination countries, but also to every country whose airspace you overfly.

## **6. Local Support**

You will need more than a tourist's travel guide and local language phrase book for each location you visit. You should have a local contact fluent in the local language and customs. This will pay dividends in terms of lowering support costs, improving access to aircraft support infrastructure, finding the best local hotels and other facilities, and will ensure aircraft, crew, and passengers remain safe for the duration of the stay.

## **International Trip Planning Checklist**

- Aircraft Performance**  
*Does the aircraft have the necessary range?*
- Crew Considerations**  
*Are augmented or pre-positioned crews needed?*
- Airport Logistics**  
*Are there pavement or obstacle limitations?*
- Airspace Concerns**  
*What are the regulatory requirements?*
- Country and International Mandates**  
*What are the ICAO and host nation rules?*
- Local Support**  
*What resources are available away from home?*

## A Pilot's Story: Having a detailed checklist reveals a critical planning error but isn't foolproof.

Captain Anita Clark has a well-deserved reputation for being a meticulous international pilot who never leaves details uncovered. When her charter customers asked to end a three-week Africa trip with a flight from Botswana to Paris, her checklist reminded her to check the weight bearing capability of the airport in Maun, Botswana. She realized the airport would work for the middle of the trip, when takeoff weights would be low, but not for the final leg when her fully loaded Global Express would exceed the runway's published pavement strength.

The charter company was grateful that Captain Clark was able to replan the trip to include the Botswana stop earlier in

the week and the passengers were none the wiser for the near miss in the process. In fact, the trip went flawlessly except for their first day on the continent.

"I try very hard to set the tone early in the trip," Captain Clark said. "It was more than embarrassing that we had set up a local handler for the wrong airport on the first stop. We called the right handling company but they had offices in Zambia and Nigeria. We were going to Zambia. Guess which one we got? Our passengers were very understanding and we managed to pay a local agent and were only delayed an hour. Fortunately the rest of the trip went well."

### **OPTION TWO**

#### **An In-House International Trip Planning "Guru"**

Flight departments with heavy international trip schedules can recruit or develop in-house experts who immerse themselves in all things ICAO and subscribe to every aviation journal they can get their hands on. While it has become nearly impossible for a small team of experts to keep abreast of ever changing, worldwide regulatory requirements, it can be done.

There are many pitfalls. An in-house guru tends also to be a pilot with his or her own flight duties. There is hardly enough time to plan for more than the simplest trip while still flying a routine schedule. Even a dedicated expert who doesn't actively fly – a retired Air Force navigator would be ideal – even such an expert can hardly be expected to keep up with all the changes throughout the aviation world.

## A Pilot's Story: The flight department guru saves the day, usually.

Captain Simon George cut his teeth in a large flight department where all international trips are planned by a retired airline pilot who grew up flying with navigators, radio operators, and a sextant. "Gordy knows just about everything there is to know about flying overseas," Captain George remembered. "The company always calls Gordy before putting together a trip and he tells them in no time flat if the trip is doable and where the pitfalls are. Like the time we got a special trip to Innsbruck. We as a company never went there before but Gordy knew about special pilot training requirements. He sent three of us to the simulator to get qualified, two primaries and a spare. Even after the planned SIC got sick the spare was ready to go and we pulled another

rabbit out of the hat. That is the usual Gordy show. He hardly ever makes a mistake."

Hardly? "Well we got taken by surprise new RVSM rules in China," Captain Simon explained. "We pretty much assumed they were the same all over the world but on our first trip over there we found out the hard way their altitude structure isn't the same as ours. We later found out it had been in a few aviation publications, but somehow Gordy missed those. But so did we. Gordy's been batting a thousand percent ever since. We do dread his monthly vacation in August. I sure hope he never retires."

## **OPTION THREE**

### **A Full Time International Trip Planning Service**

Very few flight departments have experts versed in every facet of international operations for every country they regularly visit. And they certainly cannot be fluent in the rules and regulations for every possible destination. Having a full time International Trip Planner not only provides these experts, but also offers around the clock support whenever the unexpected happens. The best international trip planners have a worldwide presence and can leverage technology and expertise in a way that turns a flight department's international trip planning into a cost effective, one-stop solution.

#### **Worldwide Presence**

No international flight planning service is complete without local representation wherever a flight's operation happens to take it. There are some challenges that require a local human interface:

- **Mother Nature.** Sometimes, despite one's best efforts, nature itself conspires to undo even the best-laid plans. Weather, volcanic activity, a tsunami, or even an earthquake can mean the correct solution changed between takeoff and landing
- **Human Nature.** The rules domestically and overseas can change unexpectedly after political upheavals, sudden policy changes, or even the simple whim of an administrator.
- **Culture Shock.** A travel guide can come in handy when setting up ground transportation and accommodations but tends to be less than reliable when taking into consideration passenger and crew safety and security needs.
- **Reality Check.** When it comes to international operations, the "book answer" isn't always the right answer. Just because the country's regulatory materials allow a practice in theory, that theory isn't always supported by reality.

Having representatives in the local area can overcome these challenges and others. Someone who is on your payroll, has your best interests in mind and has the right local contacts to smooth over problems and come up with solutions where others fail. You can adjust a slot time using published guidance, for example, but your efforts may be hit and miss since you don't have the lay of the land and don't often do this. A local representative has the right phone numbers, knows just the right people, and does this routinely.

#### **Technical Savvy**

While everyone uses hardware and software to some degree when planning an international trip, only the truly "tech savvy" can leverage the power of computers for the ultimate cost savings: eliminating the duplication of effort. An electronic submission of customer data isn't enough; once the data is entered it should be captured for all relevant uses. Since that

effort is likely to be spread across many organizations, the true savings can be surprising.

- All aircraft and aircrew data are entered when the account is established and edited whenever changes are made. A similar database can be established for regular passengers and destinations.
- Initial trip set up can be accomplished either by authorized company representatives or the flight department itself. There is no need to re-enter any data already in the system, such as passenger passport numbers, they are all stored and accessed through secure online systems.
- Computerized databases are crosschecked with airport data, country rules and regulations, even the most recent news that can impact a trip's progress. Everything from a local transportation strike to a large-scale volcano eruption can impact a trip, and can be automatically highlighted.
- The system automatically ensures the aircraft is suitable for the trip, the crews are properly trained and current, and no other technicalities exist that could hinder the trip's progress. All problems are immediately flagged and solutions are suggested.
- Changes to any trip details can be made at any point, even after the trip has begun.
- The system continuously learns, not only from a particular company's trips but from a database of "lessons learned" from a much larger universe of trips. There is no need to learn from your mistakes when you can learn from the mistakes of others.
- Once the trip is underway, all authorized and interested parties are given real time tracking ability if desired. Even halfway around the world, the International Trip Planner is on call, ready to react.
- After the trip the support continues. As the bills trickle in from all over the world, each is crosschecked to ensure validity and the customer can be presented with a single, itemized bill or each individual bill as desired. Where possible, the International Trip Planner secures volume discounts. The crew is not buying fuel for a single aircraft, for example. It is the International Trip Planner who routinely purchases fuel for hundreds of aircraft.

Throughout it all, no one piece of data had to be made twice. Every change to the plan was immediately reflected in real time. At each stop, the local handler already had all the necessary entry paperwork completed and all each passenger had to do was sign a completed form. Because the handler had a good working relationship with customs officials, entry and exits were problem free.

## A Pilot's Story: A short-notice itinerary change, a ramp check, no problems.

Captain John Grande flies for a major computer hardware manufacturer with businesses spread throughout the world, including several countries in Europe. As a Part 91 operator, Captain Grande has a keen understanding of international operations but realizes having a full time international trip planner can be an invaluable resource.

"We were en route to Munich where the company has a plant," Captain Grande said about the flight. "It was the normal monthly run but the passengers were unusually busy. About halfway across the Atlantic the CEO came to the cockpit and announced we needed to stop in Frankfurt to pickup the regional vice president for sales, a German national. We got the person's particulars and set about to make these changes happen."

Captain Grande went on to explain that with a single phone call to their international trip planner in Denver, they were able to make the change to their next destination, plan the new second leg, downlink both flight plans, and arrange ground handling needs at the new destination. The crew thought they had everything figured out.

### International Trip Planning: A Cost Effective, One-Stop Solution

There is a wide range of international trip planning solutions, starting with a highly experienced pilot relying on a well-thought-out checklist and ending with a full time international trip planner. There is no doubt that "more is better" when dealing with the complexities of international air travel, but at what cost? In many cases, such as when buying fuel and arranging ground transportation, an international trip planner with a large clientele can garner substantial discounts. These savings, in some cases, can offset the total cost of hiring the international trip planner. But there are more important savings to be had.

- Allowing flight crews to concentrate on flying and to avoid the distractions of arranging logistics can ensure other, more critical factors are not missed.
- Having a knowledgeable local contact who speaks the native language can avoid delays waiting for customs officials on arrival and airport time slots on departure. These delays can subtract from passenger effectiveness and are paid with the "time is money" maxim of business.
- The cost of making mistakes in international trip planning involve substantial fines and, in some cases, aircraft impoundment and other civil penalties.

"About ten minutes after we put the phone down it rang. It was our trip planner. They realized that the German citizen passenger we were about to pick up might attract civil aviation authorities to a possible case of cabotage. Their representative in Munich said it had been a recent hot button issue with the airport."

The international trip planner knew from experience that many European Union nations did not consider Part 91 flights from the United States to be non-commercial when used for business and that transporting a German national citizen within their borders could be considered a violation of International commercial flight restrictions.

"They knew that in cases like these a letter from an officer of the company stating the relationship of the passenger to the company would solve the problem," Captain Grande said. "His assistant drafted and faxed a letter which the CEO signed. When we got to Munich, sure enough, customs and immigration asked the question. We immediately showed them the letter and the whole issue went away. The flight crew was looking pretty smart to the CEO that day!"

While the financial benefits are obvious, the primary reason for using a professional international trip planner is that it has become a necessity in today's environment. The world is getting smaller, airspace is getting more crowded, and the competition for ramp space at foreign airports is becoming fierce. Only an international flight planner with a firm grasp on the many regulatory compliance issues can hope to keep pace. But international operations are more than rules and regulations; they include a human component that complicates every aspect of a foreign destination. Only an international flight planner with a worldwide presence can overcome these complications. Computers can obviously improve trip-planning efficiency, but only if considered as a holistic system. Only a flight planner with the right technical know how can minimize the duplication of effort while getting the job done as if it had been a maximum effort.

### Choosing an International Trip Planner

There are several high quality international trip-planning services with high tech solutions and a worldwide presence, such as Jeppesen International Trip Planning Services (A Boeing company), Rockwell Collins (formerly Air Routing International), and Universal Weather & Aviation, Inc.

When choosing an international trip planner, you should consider your needs for the many services available.

Jeppesen, for example, offers the following:

- 24/7/365 service
- ITP centers around the globe offering continuity of service and local expertise
- Years of experience in the ITP business
- Convenient web portals, offering secure, up-to-date access to trip information and status as well as intelligent electronic submission of customer data
- First class local handlers
- Line-item invoicing
- Unique pricing solutions such as sector pricing, which provides a standardized service with predictable fees
- Itinerary and route planning, flight plans, filing, charting, weather and NOTAMs
- Over flight and landing permits, airfield slots, customs notifications, eAPIS
- Ground handling, fuel, security
- Hotel, ground transportation, catering, travel services
- EU ETS support, concierge services Whichever company you select, it will be well worth your while to have your crews, dispatchers, and schedulers trained to maximize the available services.

## Glossary

**Area Navigation (RNAV)** – An aircraft's ability to navigate on any desired flight path within the coverage of ground or space based navigation aids.

**Augmented flight crew** – Additional crewmembers on a flight used to extend the maximum duration a flight may fly in a single day. Automatic

**Dependent Surveillance (ADS)** – Technology that allows an aircraft to transmit its position and other data to air traffic control and others.

**Cabotage** – The air transport of people and things within a country. Some countries prohibit other nations from taking on passengers, mail, and cargo destined for another point within its territories.

**Controller Pilot Data Link Communications (CPDLC)** – A method by which air traffic controllers can communicate with aircraft via data link.

**European Aviation Safety Agency (EASA)** – The aviation regulatory agency of the European Union.

**European Union Emission Trading Scheme (EU ETS)** – An emissions trading system that establishes a maximum total amount of CO<sub>2</sub> emissions from individual aircraft and imposes fees and administrative requirements on all aircraft using EU airspace.

**Future Air Navigations System (FANS)** – An integrated system designed to modernize aviation communication, navigation, surveillance, and air traffic management.

**International Civil Aviation Organization (ICAO)** – The international body that governs international aviation. (The U.S. is a member.)

**Minimum Navigation Performance Specifications (MNPS)** – A navigation standard implemented in the North Atlantic. Performance

**Based Navigation (PBN)** – An aircraft's capability to navigate using performance standards.

**Precision Area Navigation (P-RNAV)** – A navigation standard used in European terminal airspace.

**Pre-positioned flight crew** – An additional crew that flies to an intermediate destination a day or more ahead of time so that a trip can be continued by trading a "fresh" crew for one that will run out of maximum duty time if used for subsequent legs.

**Reduced Vertical Separation Minimums (RVSM)** – A reduction in the standard vertical separation required between aircraft from 2,000 to 1,000 feet.

**Required Communications Performance (RCP)** – A standard of communications between air traffic control and aircraft that measures the "round-trip" time from a controller's instructions to the aircrew's acknowledgement.

**Required Navigation Performance (RNP)** – RNAV with the addition of onboard performance monitoring and alerting capability.

## A Pilot's Story: The flight department guru saves the day, usually.

Captain Fred O'Connor has learned over the years that the best way to get from airport to airport in Europe is to file flight plans well in advance and to insist passengers show up on time, every time. "But it doesn't always work out," he admits. "One day, in Luxembourg, we were cooling our heels in the FBO waiting for our delayed slot with other crews

doing the same thing. I overheard a Falcon 900 captain talking to his handler and the next thing you know their slot time is moved up by an hour. I asked him how he got such a good handler. He had a one word answer: Jeppesen. We have been using Jeppesen for years when it comes to charting services. It's time we upgrade our international trip planner."