

FAA VS. ICAO PROCEDURES

BACKGROUND

Most European carriers and many U.S. international carriers teach the differences between FAA and ICAO procedures. This is an important topic and is fairly complex. I have been able to identify 66 differences, and I am sure that there are many others that I am not even aware of. These differences are so important they are taught in a course that is two days long at some airlines.

For the UAL pilot who flies internationally there is presently no information available in one easy to read location, about this topic. In fact, the differences between FAA and ICAO procedures are NOT even taught in our International School.

This document is my attempt to fill this important void. I have contacted pilots from several international carriers to come up with this information.

PROCEDURE DIFFERENCES

The following information is only a brief and incomplete summary of the major differences that I have been able to come up with between ICAO and FAA procedures. Additional information is available in the Airman's Information Manual (AIM), our Flight Operations Manual (FOM) and from ICAO and JAA documents. (More research is required.)

DISCLAIMER

CAUTION - This paper is a "Work in Progress". It is NOT complete and may contain errors. This information is unofficial, and may be incorrect. There is no revision service available for this information.

CREDIT

My thanks to Captain Andre Berger of Sabena Airlines. He came up with the first draft of these differences and has given me permission to expand upon them.

DRAFT VERSION

Questions, Comments or Corrections? Contact:

Capt. Phil Simon, SFOFO
Phone: (415) 454-5946
FAX: (415) 460-0210
Email: philsimon@compuserve.com

FAA VS. ICAO PROCEDURES

CONTENTS

A. General Information:

1. Radio Communications
2. VOR Check
3. Transponder
4. Oxygen Requirements
5. IFR Minimum Equipment
6. Wake Turbulence Separation Criteria
7. High and Low Altitude Airspace Fixes
8. Heading or Track

B. Flight Planning:

9. Fuel Requirements
10. Holding Fuel
11. Alternate Weather Minimums
12. For Filing as Alternate

C. Departure:

13. Taxi Instructions
14. Textual Description of a SID
15. Noise Abatement Procedures

D. Enroute:

16. Changes in TAS vs. Cruising Speed
17. Loss of Radio Communications
18. Minimum Vertical Rates
19. VFR on Top
20. Descents - QNH Altimeter setting

E. Holding:

21. Racetrack vs. Holding Pattern
22. Holding Speeds
23. Holding Pattern Timing
24. Two and Three Fix Holding Patterns
25. MHA / MAX IAS for Holding Patterns
26. EFCs When Holding Instructions are issued

F. Arrivals:

27. Setting QNH on Altimeters
28. Descent Crossing Restrictions
29. Class B Airspace
30. Cruise Clearance
31. Penetrations, CDAs
32. Alternative Arrivals
33. Maneuvering to Position for the Entry Sector before the IAF
34. Course Reversal
35. Touchdown Zone RVR Reporting System Failure

G. Approaches:

36. Ceiling Required
37. Visibility
38. DH on CAT III autoland
39. Non Precision Approach (NPA) ribbon
40. Contact Approach
41. Visual Approach
42. Sidestep Approach
43. Timed Approach
44. Straight-in Minima not Charted (only Circling Minima Published)
45. ASR Approach
46. Circling Approach Obstacle Clearance Protected Area
47. Procedure Turn (U.S. Pilots: CAUTION!)
48. Maximum Speed during Initial Approach Course Reversal
49. OCA vs. DH - Approach Minima
50. Circling Approach Weather Requirements
51. Circling Approach with Prescribed Flight Track
52. ILS Alpha, Bravo, Charlie Approaches
53. Initial - Final and Intermediate - Final Approaches
54. Standard Approaches
55. Alternative Approaches
56. Tear Drop Variations
57. Holding Pattern Let-Downs
58. Complex and Difficult Approaches
59. ILS PRM (Simultaneous Close Parallel)
60. LNAV Approaches
61. Cloud Break Procedure
62. Wind Limitations for landing

H. Missed Approaches:

63. Radio Failure Following a Missed Approach
64. Missed Approaches with Optional Procedures

I. Miscellaneous:

65. Cockpit door and Jump seat access
66. Holding short of the runway (Canada)

A. GENERAL INFORMATION

1. Radio Communications:

- a. FAA - Phraseology and radio communication procedures are different in many respects. In general, the FAA system is more prone to errors, especially if the pilot's native language is not English. Many ICAO recommendations are not enforced by the FAA.
- b. ICAO - Strict adherence to proper terminology is required (diagonal vs. slash, zero vs. oh, etc.). American slang probably will not be understood. ICAO Phraseology may not be familiar to many U.S. pilots; some examples might include: "Orbit" - to circle 360°, "Join" - to enter the traffic pattern, "Vacate" - to leave the runway or an altitude, "Backtrack" - to taxi the opposite direction on a runway, "Line up" - to taxi into position for takeoff and await clearance, "Holding Point" - taxi to, but hold short of, the runway. Note the term "Overshoot" - to make a missed approach, is a UK term, not an ICAO one. Since you can overshoot final, overshoot an altitude, ICAO changed "Overshoot" to "Go Around" when used in relation to the missed approach.

2. VOR Check:

- a. According to the FAA, a VOR receiver must be checked every 30 days.
- b. ICAO does not require this check. In many countries, the regular VOR check is left to the mechanics, that is why ICAO does not require that the pilot do the check.

3. Transponder:

- a. FAA - In the USA, a mode A transponder is required for all flights within 30 MILES of an airport with CLASS B airspace, above 10,000 FT MSL, in CLASS C airspace, and within 10 NM of designated airports.
- b. ICAO - Transponder requirements are locally defined in ICAO and may be different.

4. Oxygen Requirements:

- a. FAA - According to FAR PART 91, passengers need oxygen above 15,000 FT MSL. Crew must use oxygen above 14,000 FT MSL. Between 12,500 and 14,000 FT MSL, the crew must use oxygen except for the first 30 minutes.
- b. ICAO - Some states are different. JAR-OPS 1.385, for example, requires the crew to use oxygen continuously if the cabin altitude exceeds 10,000 feet for a period in excess of 30 minutes, or if the cabin altitude exceeds 13,000 feet.

5. IFR Minimum Equipment:

Some ICAO regulations are much more demanding than the FAA requirements. Dispatching a ICAO aircraft with operational equipment below ICAO minimum standards is not allowed. However, transport category aircraft must comply with their company MEL.

6. Wake Turbulence Separation Criteria:

- a. FAA - Wake turbulence separation criteria:
 - i - Enroute/ Arriving: heavy following heavy - 4 miles
large following heavy - 5 miles
large following B-757 - 4 miles
 - ii - Departing: The same above separations apply in a radar environment. In a non-radar any aircraft departing behind a heavy or a B-757 must wait two minutes.
- b. ICAO - Wake turbulence separation criteria:
 - i - Enroute/ Arriving:
 - Heavy following Heavy - 7.4KM (4NM).
 - Medium following Heavy - 9.3KM (5NM)
 - ii - non-radar environment a medium aircraft may not land until 2 minutes after a heavy aircraft.
 - iii - Departing: a medium aircraft must wait two minutes after a heavy aircraft.

7. High and Low Altitude Airspace Fixes:

- a. FAA - These do not exist in the USA.
- b. ICAO - These are common in Latin and South America. This is not so much an ICAO procedure difference as it is a charting technique of Jeppesen. There are certain enroute and area charts in this part of the world where both the High altitude and the Low altitude airways are on the same charts (as opposed to separate High and Low altitude charts that we are familiar with in the USA). The airway will have two names (e.g. G 633 and UG 633) and the airspace fixes will be shown with an "low" or a "high" triangle to indicate whether they are a low or a high altitude fix.

8. Heading or Track:

When a flight segment is labeled "hdg", or when a textual description of a published route (SID, STAR, ...) reads to turn to a published "heading", do you have to correct for wind?

- a. FAA - SID: No, must not. See note (1), (2) just below.
STAR: No (but you are allowed to correct for wind if RNAV equipped)
Enroute: Your choice: yes or no
 - (1) When ATC instructs you to fly a heading (e.g. runway heading, radar heading) you must not correct for wind.
 - (2) Note on Jeppesen charts: if the radar vector symbol is printed on the chart, you must not correct for wind.
- b. ICAO - SID: Yes. See note (3) just below.
STAR: Yes.
Enroute: Your choice: yes or no.
 - (3) See Pans-Ops 8168. Not all ICAO states follow these rules exactly, minor variations exist.

(NOTE-THIS WHOLE SUBJECT MATTER IS CONFUSING AND NOT FINALIZED!)

B.

FLIGHT PLANNING

9. Fuel Requirement for Alternate Airports:

- a. FAA - According to the FAA, you do not need fuel to fly to an alternate airport if the forecast weather at the destination is: ceiling 2000 FT, visibility 3 MILES, from 1 hour before the ETA until 1 hour after the ETA.
- b. ICAO - Each country can be different. A typical JAA approved procedure is: A suitable alternate must be available for each IFR flight unless:
 - Flight duration is less than 6 hours.
 - A VMC approach is possible from the MSA, based on a forecast valid from one hour before the ETA until one hour after the ETA.
 - Two separate runways are available with approach procedures based on separate aids.

10. Holding Fuel:

- a. FAA - The FAA requires holding fuel for 45 MIN at normal cruising speed.
- b. ICAO - The ICAO requirement is for 45 MIN at holding speed (this is less fuel). Note - this may apply mainly to light aircraft. For transport category aircraft, each company's FOM has fuel requirements that apply to that carrier worldwide.

11. Alternate Weather Minimums:

- a. FAA - Standard minimums for filing as alternate in the USA are: ceiling 600 FT + visibility 2 MILES (precision approach), and ceiling 800 FT + visibility 2 MILES (non-precision approach). Note - UAL pilots must use alternate minimums required in our operating specs: at an airport with one operational CAT 1 rwy add 400-1 to the minimums. With two operational CAT 1 runways add 200' to highest and 1/ 2 mile to highest, and add 400' to lowest and 1 mile to lowest. Compare and use the lowest.
- b. ICAO - There are no such standard minimums according to ICAO. JAA minimums for operators with JAR approval are typically: (Type of Approach/ Planning Minima)
 - CAT 2 and CAT 3 approach / plan using CAT 1 minima.
 - CAT 1 approach / plan on using published non-precision minima.
 - Non-precision approach / plan on using published non-precision minima corrected as follows: MDA + 200FT and RVR + 1000M.
 - Circling approach / Plan on using circling minima.

ICAO aircraft may be dispatched when the destination is closed and when both required alternates are down to CAT III minima. The solution for ICAO pilots is to use the minimas published by Jeppesen. However, it is up to the captain to decide the course of action.

12. For Filing as Alternate:

- a. FAA - The requirement is that if an alternate airport has more than one operational CAT 1 approach that is to be considered, the approaches must be to different runways.
- b. IACO - IACO allows reciprocal approaches to the same runway to be considered. But JAR Ops requirements in Europe are now the same as the FAA.

C.

DEPARTURE

13. **Taxi Instructions:**

- a. FAA - Clearance to taxi to a runway also includes permission to cross any runways along the taxi route.
- b. ICAO - Clearance to taxi to a runway usually does include permission to cross any runways along the taxi route, however some states, and/ or airports are different. At Milan for example, taxi clearance does NOT give permission to cross other runways.

14. **Textual Description of a SID:**

- a. FAA - To fly an SID in the USA, you need at least a textual description of it.
- b. ICAO - This is not required according to ICAO. France, for instance, publishes many SIDs with no wording at all.

15. **Noise Abatement:**

- a. FAA: Has no such procedures (to be researched). However, some airports do require special procedures, e.g. KSNA, John Wayne Airport, Calif. has city regulations for noise abatement.
- b. ICAO: Publishes two procedures: A and B.
 1. ICAO publishes procedure A (1500ft thrust reduction, 3000 ft acceleration), which many airports require (Jeppesen charts 10-4)
 2. ICAO procedure B (1000ft acceleration to Vz_f, then climb thrust and at 3000ft accelerate to climb speed)

D.

ENROUTE

16. **Changes in TAS vs. Cruising Speed:**

- a. FAA - Notify ATC if your cruising speed varies by plus or minus 5%.
- b. ICAO - Notify ATC if your TAS varies in excess of 5%.

17. **Loss of Radio Communications:**

The cruising altitude after a loss of all radio communications is different:

- a. FAA - Requires the pilot to fly highest of: last assigned altitude, expected altitude, or MEA.
- b. ICAO - Requires the pilot to fly the altitude filed in the flight plan.

18. **Minimum Vertical Rates:**

- a. FAA - Requires a minimum descent rate of 1,000 FPM. According to the FAA, when complying with a climb or descent instruction, if a pilot cannot maintain a 500 FPM rate, ATC must be advised. As a result, during descent in a non-pressurized aircraft, a 500 FPM rate is the minimum (ATC) and the maximum (non-pressurized airplane).
- b. ICAO - For ICAO, there is no such thing as a minimum climb rate, but controllers are "normal" vertical rates for the type of aircraft. Advise of deviating from this. If a rate restriction (minimum or maximum) applies, it will be included in the routine instructions given by ATC. (Exception: Finland has its own national rules). Note the UK may require a minimum descent rate of 2,000 FPM (**VERIFY**).

19. **VFR on Top:**

- a. FAA - In the USA, both VFR and IFR rules apply in this case.
- b. ICAO - In most other countries flying VFR on top it is not permitted. When it is permitted, only VFR rules apply.

20. **Descents- QNH Altimeter Setting:**

- a. FAA - Do not set local altimeter (QNH) until descending below FL180.
- b. ICAO - The the Published ICAO procedure is to reset altimeters when passing TL (or TA when climbing). However, this depends on the country - e.g. the UK expects you to set QNH on the aircraft's altimeters as soon as you are given a descent to an altitude that is below the transition level, even though you might be presently at FL 350! (**Refer to RTS-E-8, QNH altimeter setting.**) **NOTE: See item 27 below, for additional information on techniques!**

E.

HOLDING

21. Racetrack versus Holding Pattern:

- a. FAA - In the USA, there is no difference between the two.
- b. ICAO - According to ICAO, there are differences regarding the maximum aircraft speed (depending on the approach category), the timing and the inbound track interception (the last one is VERY IMPORTANT!!).

22. Holding Speeds:

- a. FAA:
 - i - minimum holding altitude through 6,000 FT: 200 KIAS.
 - ii - above 6,000 through 14,000 FT: 230 KIAS (except 210 KIAS where published).
 - iii - above 14,000 FT: 265 KIAS.
- b. ICAO:
 - i - to and including 6,000 FT: 210 KIAS.
 - ii - above 6,000' to and including 14,000' : 220 KIAS. (Note - cat A and B only: 170 KIAS below 14,000 FT)
 - iii - above 14,000 to and including 20,000 FT: 240 KIAS.
 - iv - above 20,000 to and including 34,000 FT: 265 KIAS.
 - v - above 34,000 FT: M 0.83.

23. Holding Pattern Timing:

- a. FAA - Holding pattern leg length is measured on either the inbound or the outbound leg in the USA. When using "timing" the standard length, measured on the inbound leg, is one minute below at or below 14,000'; and 1-1/2 minute above 14,000'. When using DME the length is measured on the outbound leg.
- b. ICAO - Holding pattern leg length is measured on the outbound leg. Standard length is the same as for the FAA - one minute below 14000' and 1 -1/ 2 minute 14000' and above, but applicable on the Outbound leg. Due to confined airspace in Europe there are many holding patterns where the length of the outbound leg is determined by DME, not by timing. This is published on the chart or approach plate and is indicated in one of two ways - it is either shown as a DME notation (D17/ 22, indicating 5 miles in this case), or by the addition of a second fix.

By the way, the Smiths and the Honeywell FMCs do NOT build their DME racetracks based on the outbound leg, but the inbound leg! (Thanks to Capt. Bill Bulfer, author of the "FMC User's Guide" for this tip).

24. **Two and Three Fix Holding Patterns:**

- a. FAA - Two or three fix holds do not exist in the U.S.A., except for a few in Alaska.
- b. ICAO - Two fix holding patterns are located all over Europe, Latin and South America, the Caribbean, Greenland, etc. France even has some three fix holding patterns. The second fix can serve one of several purposes: as an "entry" fix flown over one time only, to enter the holding pattern, and never flown over again; as an indicator for the length of the outbound leg; serving as both an entry fix and then to indicate the length of the outbound leg.
Note - The "high level holding", shown on the Brussels 10-1 Area chart, over Brussels (BUB) and Nicky (NIK) is a "procedure" and as such, both fixes must be flown over every circuit of the holding pattern. This is the ONLY two fix hold that I have been able to locate, where the second fix must be flown over each orbit of the pattern.

25. **MHA / MAX IAS In Holding Patterns:**

- a. FAA - This is rarely shown on published holding patterns in the U.S., almost all holding patterns are treated the same.
- b. ICAO - There are many holding patterns which have minimum holding altitudes (MHA) or speed restrictions (MAX IAS). This information, which is unique to that pattern, is printed on the chart adjacent to the holding pattern.

26. **EFCs when Holding Instructions are Issued:**

- a. FAA - ATC in the USA will always assign an EFC when issuing holding instructions.
- b. ICAO - You may not be given an EFC (this is common in South America). In the UK no EFC will be given for holds of 20 minutes or less. EFCs will not be given in Belgium and Germany if delay is less than 10 minutes.

F.

ARRIVALS

27. Setting QNH on Altimeters:

- a. FAA - when given a lower altitude set QNH when leaving FL180.
- b. ICAO - when given a lower altitude that is below the transition level, set QNH even though you may be at a much higher altitude. The UK CAA recommendations are that this is recommended way to operate.

Note: ICAO Doc. 8168 Volume 1, Part VI, Chapter 2, Sec. 2.5.3.1. States that you can set QNH while above Transition Level after you have received a clearance from ATC to execute the instrument approach and you start the descent to an altitude below Transition Level.

At FedEx when outside the U.S. the altimeter is set to QNH when cleared below the transition level and to QNE when cleared above transition, regardless of their current altitude unless there are intervening crossing restrictions. If there are, they delay resetting altimeters until they have passed those restrictions.

KLM's JAA approved FOM contains the procedure to change immediately to QNH once cleared below the TL, not to wait until passing the TL. However, this is a breach of ICAO procedures, which state that you can only change to QNH when above TL if cleared for the approach. But KLM simply drops the approach clearance requirement, and has their FOM approved that way.

Per the Chief ATC, Cape Town Int'l Airport: The South Africa AIP, page ENR1.7-1 ff, states that "... Vertical position of aircraft above the transition level, may be by reference to altitude (QNH) provided that, after the descent to land is commenced, level flight above the transition altitude is not indicated to anticipated." NOTE- **See item 20 above, for additional information.**

28. Descent Crossing Restrictions

- a. FAA - A later clearance removes a previous crossing restriction unless that crossing restriction is repeated again.
- b. ICAO: Unlike in the USA, a later clearance does NOT remove the crossing altitude restriction given in an earlier clearance. e.g. in Europe, a second crossing restriction does not eliminate the requirement to comply with the first restriction. A typical example would be London - ATC instruction "cross 40 miles from BNN at FL200", after commencing descent to meet this restriction you are told to "cross 25 miles prior to BNN at FL150". You must still comply with the first restriction. NOTE-This may NOT be correct, new reports indicate it is the same as the USA.

29. Class B Airspace:

- a. FAA - Class B airspace has a FAA 200 kt speed limit and large turbine powered aircraft operating to and from a primary airport are prohibited from operating below the floor of any portion of Class B airspace, unless specifically authorized by ATC. A visual approach does not constitute authorization to operate below the floor of a Class B airspace. A visual approach through Class B airspace should be conducted only with reference to the chart depicting the Class B airspace, etc.
- b. ICAO - Does not exist in ICAO procedures.

30. **Cruise Clearance:**

- a. FAA - According to the FAA, a cruise clearance assigns a pilot a block of airspace from the minimum IFR altitude (MEA) up to and including the altitude specified in the cruise clearance. Climb and descent within the block is at the discretion of the pilot.
- b. ICAO - According to ICAO, minimum and maximum altitudes are given by ATC.

31. **Penetrations and CDAs:**

- a. FAA - These are not used in the USA.
- b. ICAO - Penetrations are very common on approaches in Brazil, while the CDA can be found in the Netherlands and Germany. Penetrations are indicated by the little boxes forming a dashed line on the approach plate and have a specified speed and rate of descent for the approach. CDAs on the other hand are shown by a solid line with the notation that the descent path is by the pilot. They are designed to be used with VNAV. (See attached example.)

32. **Alternative Arrivals:**

- a. FAA - These are not used in the USA.
- b. ICAO - This is common on arrivals in South America and in France. The alternative routing is shown by a series of small boxes (forming a dashed line) and this routing is in addition to the normal routing. (See attached example.)

33. **Maneuvering to position for the entry sector before the IAF:** (This refers to the 30° cone of entry.)

- a. FAA: ATC does not expect you to maneuver. Many controllers outside the USA don't even know that there is an ICAO entry sector. This situation is potentially dangerous and confusing!
- b. ICAO: The entry sector is valid for a procedure turn or a base turn, not for a racetrack reversal. The ICAO rule is simple: if you are NOT in the entry sector, you can NOT fly the approach reversal as charted (procedure or base turn). If you are outside the entry sector, can you maneuver to put yourself inside the entry sector? You have to, otherwise you must not fly the approach. ICAO, does not describe which maneuver to execute. So you have only one option: Call ATC, tell them what you need and fly into the entry sector.

Sabena teaches their pilots a few tricks on how to maneuver efficiently. They are:

1. Request a routing direct to the field at a safe altitude. If visual, request a visual approach and forget the instrument approach. If not visual a few miles before the field, turn to the IAF, you will be in the entry sector. Of course, you need a CLEARANCE to do so
2. If the MAP is a fix you can navigate to, request a direct route to the MAP and try the same trick as above.
3. If these choices are not a good solution, request to deviate about 4 NM off track to position for the approach, most controllers will accept. This is a good solution in IMC, however check your safety altitude.

4. If you are outside the entry sector, you are probably set up for a straight-in. Look at the approach chart, verify if you can fly a straight-in non-precision. Carefully check if you can safely join the FAF straight-in. In the radar environment of NRT, this is easy.
5. If all else fails and a suitable holding over the IAF is available, request entry in the hold to position for the approach, but this costs extra time and is not very efficient. It is kind of a "last resort" solution.

34. **Course Reversal:**

- a. FAA - Has "holding in lieu" with a max of 45°. This refers to the cone of entry: ICAO vs. "conveniently aligned" for the FAA.
- b. ICAO - Has race track entry with a max of 30°. The only two approved ICAO methods for course reversal are: 80°/ 260° and 45°/180°.

35. **Touchdown Zone RVR reporting System Failure:**

- a. FAA - Allowances for one RVR transmissometer to be inoperative.
- b. ICAO/ JAA - Language (see Draft OPs SPECs C78) that will say, "...in circumstances where the touchdown zone RVR reporting system has failed, is inaccurate, or is not available, the certificate holder is authorized to substitute pilot assessment of equivalent RVR ..."(!) This really puts more responsibility for the go/ no-go decision on the PIC.

G.

APPROACHES

36. Ceiling Required:

FAA - Ceilings are no longer required in the USA, visibility is controlling.

ICAO - Ceilings are still required by some countries. If they are, the approach plate will have a black box with the words "Ceiling Required" in white, located below the profile view. The minimums will be stated showing both "Ceiling - Visibility". Ceiling is not required for the JAA, except when marked on the approach plate.

37. Visibility:

- a. FAA - This is controlling in the USA, and is generally stated in feet, RVR, or miles (e.g. RVR 18 or 1/ 2). However there are exceptions, for example Howard AFB, Panama, has the visibility stated in meters.
- b. ICAO - May be given in miles, meters (m), or in kilometers (km) - (e.g. vis1600m; 2.4km).

38. DH on CAT III autoland.

- a. FAA - Not required. The CAT II Decision Height (DH) is used as an Alert Height. There is no requirement ever to see the runway and the landing may be made "blind".
- b. ICAO - Some countries (Italy) still require a DH on CAT III autolandings and a missed approach must be made if the runway can not be seen at the DH. DH on CAT 3 autolands can depend on the aircraft type.

39. Non Precision Approach (NPA) ribbon:

- a. FAA - Approach plates give step down altitudes and a MDA. There is no "ribbon" on the approach plate which would enable a stabilized, constant descent NPA approach. A very few airlines (UAL among them) still do an unstabilized "dive and drive" type of NPA approach, diving for the MDA and then flying along level at the MDA until the PDP (this technique has high exposure for CFIT).
- b. ICAO - Approach plates have a "ribbon" between the plan view and the profile view. With the introduction of the B-747, almost 30 years ago, BEA (now BA) decided that flying an unstabilized "dive and drive" NPA approach was unsafe. They pioneered the "ribbon" on their approach plates (through their in-house chart company - Aerad; now all chart manufacturers provide this feature) which makes possible a stabilized, constant descent NPA approach. The ribbon allows the PNF to constantly monitor the vertical profile of the the flight by checking its altitude against either DME or against time (every 20 or 30 seconds). When the aircraft reaches the MDA the PF treats it as a DH and either continues (requiring no change in the stabilized approach) or makes an immediate missed approach. At no time does the aircraft fly level at the MDA, therefore there is much less exposure to CFIT. Note that neither glass, nor V-NAV, are required for this technique. The majority of the airlines in the world use this type of NPA. (See attached "ribbon" example.)

40. **Contact Approach:**

- a. FAA - Pilot must stay clear of clouds and have 1 mile visibility.
- b. ICAO - A contact approach does not exist for ICAO, and this procedure may not be trained or flown in some European companies.

41. **Visual Approach:**

- a. FAA - An FAA air traffic controller may assign a visual approach to a pilot flying on an IFR flight plan. Separation from preceding traffic becomes then the pilot's responsibility. Radar service is automatically terminated when the pilot is advised to contact the tower. A pilot cleared for a visual approach may not descend below the floor of the CLASS B airspace.
- b. ICAO - According to ICAO, an air traffic controller may not assign a visual approach to an IFR flight, unless the pilot requests such an approach. Separation services (sometimes reduced) from preceding traffic will still be provided by ATC, and it remains the controller's responsibility to keep the aircraft in controlled airspace.

Minima requirements: To request a visual approach in airspace with ICAO rules:

- i. The field is in sight and expected to remain in sight for the rest of the approach (pilot's discretion).
- ii. If the field is not in sight: the reported ceiling must be above the initial approach altitude and there must be enough visibility to see the runway at that distance.

Missed Approach: A visual approach in ICAO has no missed approach segment. It is simply not defined. However, some European airlines suggest that their pilots do the following missed approach procedure from a visual approach: In ICAO operations the missed approach from a visual approach is to join the traffic pattern on a left downwind at 1500 feet AGL (jets and turboprops) or at 1000 feet AGL (piston), not the instrument (missed) approach procedure you were perhaps planning.

42. **Sidestep Approach:**

- a. FAA - If two runways are less than 1200 FT apart, a sidestep approach may be published. Once the aircraft is visual, the pilot should sidestep as soon as possible, to align the aircraft with the landing runway (at or above MDA).
- b. ICAO - There is no such procedure under ICAO regulations.

43. **Timed Approach:**

This approach is not defined in ICAO regulations.

44. **Straight in Minima Not Charted (only Circling Minimums are Published):**

- a. FAA - In the USA, a straight-in landing (using the circling minimums as MDA) is allowed if the instrument approach final approach course is within 30° of the landing runway alignment, the runway is in sight and a stabilized approach can be conducted to the landing runway. If all this is not possible, a new clearance must be requested from ATC.
- b. ICAO - According to ICAO, a straight-in landing in these circumstances is sometimes not permitted (always request more detailed information from ATC). Local regulation vary and are NOT always published according to ICAO requirements (for example Turkey).

45. **ASR Approach:**

- a. FAA - The air traffic controller will give you the recommended altitudes only if you ask him before starting the approach.
- b. ICAO - The controller will always provide you with the recommended altitudes. Descent below recommended altitudes is allowed, and sometimes REQUIRED (see ASR at Brussels for runway 02).

46. **Circling Approach Obstacle Clearance Protected Area:**

- a. FAA - The protected area is much smaller in the USA (1.7 mile radius for approach category C and 2.3 mile radius for category D), this is well below ICAO requirements, and makes the circling approach even more difficult and dangerous.
- b. ICAO - Requires a much larger area. Circling area radius from threshold in ICAO (DOC 8168 OPS/ 611PANS-OPS-4, page 3-26): A: 1.68nm; B: 2.66nm; C: 4.20nm; D: 5.28nm; E: 6.94nm. The maximum speeds are A: 100KIAS; B: 135KIAS; C: 180KIAS; D:205KIAS; E: 240KIAS. The radius is the distance from the threshold used to determine the circling area.

47. **Procedure Turn:**

- a. FAA - There are no entry sector limitations and a procedure turn in the USA, does not necessarily have to be flown as charted.
- b. ICAO - ICAO has entry sector limitations and European pilots will always fly procedure turns as charted (corrected for the wind) since this is an ICAO requirement.(US pilots:CAUTION!)

48. **Maximum Speed during Initial Approach Course Reversal:**

- a. FAA - The maximum speed is 250 KIAS for all categories.
- b. ICAO - The maximum speeds are: 110 KIAS (CAT A), 140 KIAS (CAT B), 240 KIAS (CAT C). It is 250 KIAS for the higher category aircraft (CAT D & E) only.

49. **OCA vs. DH - Approach Minimums:**

OCA is an ICAO term defined as Obstacle Clearance Altitude/ Height (OCA/ OCH). It is the lowest altitude (OCA) or alternatively the lowest height above the elevation of the relevant runway threshold or above the aerodrome elevation (OCH), used in establishing compliance with appropriate obstacle clearance criteria. OCA values for precision approaches procedures (ILS) are calculated in accordance with ICAO Document 8168-OPS/611 (PANS OPS) that provides standard maximum vertical distance between the flight paths of the wheels and glide path antenna.

- a. FAA - OCAs are not published on the approach plates in the USA, as they are on the approach plates for airports with ICAO standards. At international airports where the approach minimums are determined by ICAO standards, Jeppesen will take the OCA information and change it so they can display the minimums in a format that U.S. pilots are used to seeing (e.g. CAT 1 approach will have minimums of 200'). The actual ICAO minimums may well be 200' for Cat D, 190' Cat C, 180' for Cat B and 170' for Cat A. note - in this case with published Jeppesen minimums of 200' and a published OCA of 170' (for a Cat A aircraft) there would be 30' of protected airspace below the aircraft at the published Jeppesen minimums.
- b. ICAO - Minimums are based on OCA approach design criteria. These usually are different for each category of aircraft.

50. **Circling Approach Weather Requirements:**

- a. FAA - Circling approaches have visibility requirements. Air carrier operating specifications may add the requirement for ceilings
- b. ICAO - Circling approaches require visibility and ceiling.

51. **Circling Approach with Prescribed Flight Tracks:**

- a. FAA - Prescribed flight tracks do not exist for circling approaches in the USA, and this topic is not even addressed by UAL.
- b. ICAO - ICAO regulations allow this procedure. These prescribed tracks are indicated by a line of dashed arrows on the approach plate. Examples can be found at airports in Europe, including Italy, Madeira Islands, etc. France (and its ex-colonies) use this procedure to lower circling minima. Some European operators allow the use of these procedures if the pilots are familiar with the airport, terrain and procedure (simulator and/ or airport qualification training may be required). (See attached example.)

52. **ILS Alpha, Bravo and Charlie Approaches:**

- a. FAA - This terminology is not used, however (IAF) routes are marked with bold lines.
- b. ICAO - A different method of showing (IAF) routes. This is common on approaches in the U.K. The Alpha and Charlie routes are usually shown on the plan view, while the Bravo routing is explained in a textual description.(See attached example.)

53. **Initial - Final, and Intermediate - Final, Approaches:**

- a. FAA - This is not used, there are no approaches in the USA that require two plates to fly.

ICAO - This is common for approaches in France and in the U.K. It is necessary to use two plates, the Initial or the Intermediate Approach plate and the Final Approach plate, to shoot the approach. This is necessary as the information required to shoot the approach is split onto two separate plates. The Initial or Intermediate plate shows the (IAF) routing, while the Final plate has the information for the final portion of the approach. There does not seem to be any difference between the Initial or the Intermediate plates. (See attached example.)

54. **Standard Approaches:**

- a. FAA - not used.
- b. ICAO - This is common on approaches in France. There may be three plates involved - the first plate explains the procedures involved with the Standard Approach, while the second and third plates give the intermediate (IAF) routing and the final approach information. (See attached example.)

55. **Alternative Approaches:**

- a. FAA - not used.

ICAO - This is common on approaches in the U.K. and France. The alternative routing is explained in a textual description. Typically the procedure allows the pilot to transition from a holding pattern to the final approach by extending the outbound leg of the hold, instead of flying the published procedure turn for the course reversal. (See attached example.)

56. **Tear Drop Variations:**

- a. FAA - Tear drops are rarely used on approaches in the USA.
- b. ICAO - They are very common on ICAO approaches world wide. There are many tear drop variations. Some approaches have maximum (others, minimum) speeds shown. There are many variations in the manner in which the plan view is drawn, as each country seems to want it drawn in a different manner and Jeppesen complies with each nation's wishes. (See the attached examples.)

57. **Holding Pattern Let Downs:**

- a. FAA - Holding pattern approaches are not used in the USA.
- b. ICAO - These approaches are very common in Central and South America. The approach is designed to allow an aircraft to let down in a bowl surrounded by mountainous terrain. There is usually no straight in minima shown, as there is no way to know which way the aircraft will be headed when it descends out of the clouds. (See attached example.)

58. **Complex and Difficult Approaches:**

- a. FAA - There is nothing very difficult about the vast majority of the approaches in the USA.
- b. ICAO - There are some very complex approaches in Central and South America. Look at San Pedro Sula, Honduras and Brasilia, Brazil for examples. Some of these approaches will have high altitude penetrations coupled with holding pattern let downs and one (Brasilia) even has four 180° turns on the approach path! (See attached example.)

59. **ILS PRM (Simultaneous Close Parallel):**

- a. FAA - In use at Minneapolis-St. Paul International airport, Minneapolis, Minn. A new type of ILS procedure using special high resolution/ high update radar and tracking software called "precision runway monitor" (PRM). Allows simultaneous approaches at parallel runways closer together than 4,300'. Requires pilots to have viewed training videos, dual VHF communications is required (one for the tower controller and one for the monitor controller) and all ATC directed "breakouts" are to be HAND FLOWN. Traffic management will segregate PRM participants from non-PRM participants. Crews unable to participate are to so advise ATC (Minneapolis Center) on initial contact to enable sequencing.
- b. ICAO - No such procedures at the present time.

60. **LNAV Approaches:**

- a. FAA - Only a very few in the USA at the present time. SEA, OAK and BOS have them.
- b. ICAO - Becoming more and more common in Holland, Germany and France. Almost every approach in Germany is now on a fold out page, instead of the standard smaller size, as as LNAV transitions have been made part of the approach.

61. **Cloud Break Procedure:**

- a. FAA - No such procedure exists.
- b. ICAO - A "Cloud Break Procedure" can be attached to the end of an approach (typically a NDB or VOR approach) that terminates at a point in space. The intent is to get the pilot under the clouds and to a point abeam the airport so that he can "break" off the approach and circle to land visually. The procedure generally has a prescribed track that is used for circling to either end of a runway. See the NDB approach to the airport at Vagar, Faroe Islands, or the South Caicos Islands for an example of this procedure.

62. **Wind Limitations for Landing:**

- a. FAA - No such limitations exist as airport restrictions. However, aircraft manufacturers have such limitations as part of the certification process for their aircraft. These limitations are not airport limitations.
- b. ICAO - Some airports (Funchal, Madeira Islands, for example) have an airport maximum permissible wind limitation for landing printed on the approach. This is typically shown by a circle around the airport, with various quadrants marked off. Each quadrant will have a different wind value. This wind limitation is given relative to the touchdown anemometer values only. The values might be, for example: "15KT gusts 25KT" cross wind quadrants, and "20KT gusts 30KT " headwind quadrant.

H.

MISSED APPROACHES

63. Radio Failure Following a Missed Approach:

- a. FAA - There may be a note on the approach plate with special instructions for loss of communications.
- b. ICAO - In the UK (London and Manchester) there are special plates describing the procedures to be used in the event of a radio failure following a missed approach.

64. Missed Approaches with optional Procedures:

- a. FAA - These do not exist.
- b. ICAO - There are a few airports that appear to have optional missed approach procedures. See Delhi, India, and Tehran, Iran. They have multiple missed approach procedures, that seem to be at the pilot's option. e.g. turn right or turn left, turn here or turn there, etc. (More research required here.)

I.

MISCELLANEOUS

65. Jump seat Authority, Cockpit Door:

- a. FAA - Access to the cockpit is highly restricted by the FAA. The rule was established in its current form primarily in 1964 (along with 121.587 requiring the cockpit door to be closed and locked) ... right after the airline high-jacking craze got going. 121.547 Admission to flight deck allows:
 - (1) A crew member;
 - (2) An FAA air carrier inspector, or an authorized representative of the NTSB;
 - (3) An employee of the United States, a certificate holder, or an aeronautical enterprise who has the permission of the pilot in command and whose duties are such that admission to the flight deck is necessary or advantageous for safe operations; or
 - (4) Any person who has the permission of the pilot in command and is specifically authorized by the certificate holder management and by the Administrator.
- b. ICAO - The Captain owns the jumpseat and controls who may or may not sit there subject to each companies' rules and regulations. SPANAIR; IATA; SAS; Aeromexico; TAROM; Finnair; Virgin Express; Air New Zealand, Qantas, Air Canada, Olympic Airways, ANN and many others all allow the Captain to control the jump seat. Some airlines even allow passengers to ride there and the jumpseat may be used as a passenger seat if the cabin is oversold. Cockpit doors may remain open or unlocked.

66. Holding Short of the Runway (in low visibility situations):

- a. FAA - Use the painted CAT II "Hold Short" lines.
- b. CANADA - Pilots must hold 200 feet short of the runway or they will be violated!

DRAFT VERSION, MAY CONTAIN ERRORS

NEW INFORMATION TO ADD IN THE FUTURE

NOTE: (12/ 03/ 99) ICAO has come up (1997 or 98) with a new com-failure procedure. (See ICAO Annex 2). It no longer is “follow current flight plan”, but: “:20 minutes after last compulsory reporting point, fly FILED flight planned level”. RESEARCH THIS ASAP!!

Annex 2 Rules of the Air Chapter 3; 3.6.5 Communications

3.6.5.2 Communication failure. If a communication failure precludes compliance with 3.6.5.1, the aircraft shall comply with the communication failure procedures of Annex 10, Volume II, and with such of the following procedures as are appropriate. In addition, the aircraft, when forming part of the aerodrome traffic at a controlled aerodrome, shall keep a watch for such instructions as may be issued by visual signals.

3.6.5.2.1 If in visual meteorological conditions, the aircraft shall:

- a) continue to fly in visual meteorological conditions;
- b) land at the nearest suitable aerodrome; and
- c) report its arrival by the most expeditious means to the appropriate air traffic control unit.

3.6.5.2.2 If in instrument meteorological conditions or when conditions are such that it does not appear feasible to complete the flight in accordance with 3.6.5.2.1 (see Note 1), the aircraft shall:

- a) unless otherwise prescribed on the basis of regional air navigation agreement, maintain the last assigned speed and level, or minimum flight altitude if higher, for a period of 20 minutes following the aircraft's failure to report its position over a compulsory reporting point and thereafter adjust level and speed in accordance with the ***filed flight plan***;
- b) proceed according to the current flight plan route to the appropriate designated navigation aid serving the destination aerodrome and, when required to ensure compliance with c) below, hold over this aid until commencement of descent;
- c) commence descent from the navigation aid specified in b) at, or as close as possible to, the expected approach time last received and acknowledged; or, if no expected approach time has been received and acknowledged, at, or as close as possible to, the estimated time of arrival resulting from the current flight plan;
- d) complete a normal instrument approach procedure as specified for the designated navigation aid; and
- e) land, if possible, within thirty minutes after the estimated time of arrival specified in c) or the last acknowledged expected approach time, whichever is later.

Note 1. As evidenced by the meteorological conditions prescribed therein, 3.6.5.2.1 relates to all controlled flights, whereas 3.6.5.2.2 relates only to IFR flights.

Note 2. The provision of air traffic control service to other flights operating in the airspace concerned will be based on the premise that an aircraft experiencing communication failure will comply with the rules in 3.6.5.2