Instrument Rating Instructor Handbook

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HARV'S AIR SERVICE MULTI-IFR INSTRUCTOR HANDBOOK

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REASONS FOR THIS HANDBOOK

This handbook was created to help the new multi-IFR instructor understand how to proceed with the multi-ifr course. It is meant as a supplement to ongoing discussions with a supervising instructor who will provide much needed guidance. Within this book there are the following: tips for teaching, basic structure of how things are run, what items to give a student when they arrive, how to proceed with the training--ground school vs. flying, common training practices, instructor training (to prepare them for teaching IFR), etc. When new multi-IFR instructors start up, they often don't know where to begin and find it a little challenging that they have to run to so many different people to try to find out "how it is done." Hopefully this clarifies a few things, but there will still be ongoing supervision, similar to a class 4 instructor, to aid in day to day flight training issues that will arise. If you or your students have any suggestions to improve the Multi or IFR program, please forward them to your supervising instructor or to Adam.

Company Training for Multi-IFR Instructors

As Multi-IFR instructor, you will be given 5 hours of company flight training on the twin and 2 hours of company ground training. You will also be required to “sit in” on a couple of simulator/multi/ifr ground and flight sessions to learn from senior instructors. The basic break down is as follows:

Ground Training

-Discussion on supervision of multi and ifr instructors (similar to class 4)
-Review of applicable flight test guides
-Discussion on training syllabus for multi-ifr (ground and flying)
-Use of duo-tang syllabus/PTR
-Conducting preflight tests for multi and ifr
-Simulator set up/scenarios/etc (possible solo or dual sim time if needed).

Flight Training

1.5 hours Day VFR Multi Engine Instructor Right Seat Check Out
    -review of airwork, engine failures, and circuits, emergency procedures, etc.
    -training on student deficiencies, common errors,

1.5 hours Night VFR/IFR Multi Engine Instructor Right Seat Check Out
1.5 hours IFR Multi Engine Instructor Right Seat Check Out

*spending some time in the shop with the AME is a great way to get to know the airplane. Please ask them questions about systems/engines/etc (when they are not very busy with priority work).

See Next Page for instructor training records. (Make copies as necessary)

Instructor Handouts (you should have a copy of the following)

-IFR Instructor Handbook
-IFR SIMULATOR syllabus
-MULTI-IFR FLIGHT syllabus
-multi-ground school package handouts (that students also get)
-have copies (or access to) current flight test guides for the rating that you are teaching
-be familiar with the online ground schools, the computer files of miscellaneous ifr/multi handouts/ assignments

Company Training for Multi-IFR Instructors

Date:
Name of instructor in training:
Name of supervisory instructor:

Ground Training Comments:

Flight Training Comments:

Monitored Sessions (sim or flight) comments:

Please include the following in each section:
Date of each event
Time Spent/Aircraft type and registration
Topics covered
Comments from Supervising instructor
Further training recommended or other recommendations.

Signature of Supervising Instructor or Chief Pilot:

Types of Student Scenarios You May See:

Professional Pilot Course—following the syllabus directly.
Commerial flight test complete, then doing sim training then multi, then IFR
Same as above but doing multi and IFR somewhat together (like the syllabus)
Doing multi-ifr first and then the commercial flight test after.
Single-IFR course

IFR renewal-recent experience or fairly current candidate
IFR renewal-not so recent experience, may be expired or need written exam again

Indian IFR requirement of 15 hours of instrument training.
Student only doing Multi rating/some IFR training/but no IFR flight test
Some other requirement.

Please talk to your supervising instructor regarding each student's intent of training. Also, make sure you book your students a couple weeks ahead so you both have a plan and not searching for available slots last minute. If you need to cancel bookings or rearrange them, please contact the student as soon as possible and let other instructors know of the availability of the aircraft. At times when it is really busy, we should not let open spot go to waste when they are in high demand.

General Steps for Students

Study as much on their own as possible:

-using the TC IFR Study and Reference Guide study all related IFR topics
-AIM, IPM, CAP GEN, CARS,
-Get access to the online IFR ground school through Adam's site: www.pilottraining.ca
-attend an IFR ground school at Harv's
-use other resources such as Aerocourse IFR books

General Steps for students to take when they are doing the Multi course:

Study as much on their own as possible:

-read through a multi engine ground school book (such as Jeppesen, etc)
-the multi engine ground school online (as well as videos of the course)
-the POH for the aircraft
-multi engine ground school package (speeds, emergency procedures, etc.)

After they have studied quite a bit on their own, the instructor will:

-Do a ground session, covering all of what they should have learned (you could run through the slides with them, going over any thing that they didn't understand, use the multi engine ground school package as a guide):

-multi-engine aerodynamics and handling
-speeds and definitions
-aircraft systems, and POH
-normal procedures
-emergency procedures
-pre-flight breifings on individual flights (as necessary)
-etc.

-Do a thorough pre-flight inspection with the student, going over various parts of the aircraft, and any questions

-Sit in the cockpit with them to familiarize them with instruments, systems, etc. Go over the checklist and procedures (it's much cheaper to do this while the engines are shut down) The student should spend a coulple of hours sitting in the cockpit themselves, going over the instrument panel, knowing what all the different switches do, reviewing all procedures/checklists (normal, abnormal, and emergency items). They should take notes on items they have questions about and discuss them with their instructor.

-Then start flight training following the syllubus (right now the multi and IFR only have one syllubus together—you can follow it that way or just do the multi rating by itself first, just only do the relevant parts of each lesson for multi training)

-For information about pre-flights and supervision, refer to the section in this manual called IFR or Multi Preflights/Supervision

SIMULATOR SESSIONS

Every student that starts the IFR program will be starting with the simulator training. There is a simulator syllabus and they should be given their own copy in a duo tang (from Greg's office). You will label it with their name on it and use it to keep notes on each session. This will be like a PTR and it should be kept with all the log books so instructors can refer to it as necessary. Before you start teaching in the simulator, make sure you are familiar with the program, including how to set up different scenarios—weather and emergencies. Knowing how to operate the sim thoroughly will keep sim sessions runnning smoothly and effectively. Take some time yourself to be proficient on the sim too, so you remember what your student is going through.

Sim sessions need to be written on the flight sheets and the hobbs time as well. If you do more than 0.2 of accumulated ground discussions when the sim is paused, record that time as IFR ground (include this in the ptr too under ground school in the front, along with what items were covered). Turn the master off at the end (so no one gets charged for extra time). The first session in the sim should include at least 30 minutes of basic attitude instrument flying on the sim--just getting used to flying the sim properly with use of trim during all basic full panel manouevers before starting the first "session" in the sim syllabus. This should occur as often as needed when students are not able to "fly" the sim properly. If learned properly in the beginning, we should have no one complaining that the sim is too hard to fly and not realistic.

Keep our sim room clean and professional looking. Always clean up after yourself.

The sim room should always have the following:

-ALL IFR CHECKLISTS IN USE THROUGH THE SCHOOL(in a position so that students can easily check them while flying the sim), including a tempereature correction chart

-IFR publications for SIM room use only (not to be removed)

-CFS, CAP GEN, LO CHARTS, TERMINAL CHARTS, CAP

-clean white board, eraser, working markers

-scrap paper, pencils,

-local IFR charts on the walls/IFR posters, etc.

-garbage can

-pencil/pen holder

-table/chairs

-a binder or bookshelf for the following

-copy of the sim syllubus, multi syllubus, ifr flight syllabus

-copy of the ground school package given out to students

-copy of the instructor handbook?

-clearance sheets

-ifr navlogs?aircraft data/performance sheets

-any other publications that would be useful (ie school copy of AIM and Instrument Procedures Manual)

IFR OR MULTI PREFIGHTS/SUPERVISION

Near the end of either the multi or IFR training, the instructor should prepare the student for the pre flight test (just like any other flight test). They should sit down and have a pre-flight preparation discussion which should include at least the following:

1. A review of the appropriate flight test guide (make sure they read it completely and thoroughly-especially the acceptable performance sections-which state exactly what the examiner is looking for on each item.
2. Give them some handouts that have appropriate study material for the ground portion of the test
3. Quiz them randomly on flight test items to see where there knowledge is at.
4. Give them some practice questions/scenarios to work on.
5. Send them to study all this and then set up a ground session to go over any questions they have as well as one last quizing ***prior*** to the pre-flight test.
6. When they demonstrated they are ready, book a day for the pre-flight test.
7. Try to have the flight test booked withina few days of the pre-flight test but no longer than a week later if possible.

Instructors should give your supervisor notice when your student is getting close to pre-flight for IFR (single or multi) or the Multi rating. The supervisor may like to spend a bit of time with your students to quiz them a bit before they go to the flight test, just as a last check before they get sent in. Ideally this should occur after you have prepared them for the test and you think they are ready to go. The supervisor will then give a recommendation of any further training if necessary. This may cover ground knowledge. as well as flying. Although, the supervisor may fly with your student at any point during the course to see how things are going, or to help out if you are having any difficuties in certain areas.

INSTRUCTOR TIPS

The following are just a few things that may be helpful as a new Multi-IFR instructor. Harv's Air has a number of useful documents that are on the main computer under the titles of IFR or MULTI information. Be familiar with them and use them to your benefit and to your students' benefit. There are many handouts and assingments that you can print off to use throughout your training and pre flight test stages.

If you or any other instructor have created a useful handout or assignment, please check with your supervisor, they can proof read it, then you can add it to the file for everyone else to use as well.

There are DVDs and CD roms of airborne icing training that Adam or Harv should have available. The plan is to get them copied on to the computer in the large ground school rooms (kk7 and cyav) so that they are available for all students to view. We should make this a mandatory part of the IFR course, with the instructor quizing their knowledge after concerning what they have learned about icing, etc. Any other information that you find online or elsewhere that you feel would be beneficial, please notify your supervisor.

IFR CHECKLISTS

APPROACH BRIEFING

Correct Approach Plate
Radios—Tune/ID/Test/Track bar/ADF volume/RAIM
Approach Plan – Heading, Entry
Minimums – MDA, DH, P.T. Limit, altimeter set?
Times – Mile back/threshold
Special Procedures
Cold Temperature Corrections
Aircraft set for approach (&:PreLanding Checks)
Missed Approach Procedure

Navigation and Holds

After Hold clearance:

Tune
Identify
Test
Turn Direct to
Track
Entry?

Reason

Altitude

Wind

Lower?

EFC?

Fuel-enough? conserve

IFR CHECKLISTS cont.

Passing Beacon or Waypoint

Time

Turn

Throttle

Think (gear/altitude)

Talk

Pre-Landing Check

Gas/Gauges (mains, gauges checked)

Undercarriage (down and locked)

Mixture (full rich)

Props (full fine on final)

Switches (fuel pumps, flaps, landing light, etc.)

Departure ATIS: _____

Time: _____ Zulu / _____ Local

Winds _____@ ____G____ Visibility _____SM

Ceiling _____ Temperature _____/_____

Altimeter ____.____ Runways _____

NOTAMS _____

_____

Departure Clearance

Cleared to _____ / As Filed

_____

_____

_____ then as filed

Maintain _____ ft, expect _____ ft,

In _____ minutes.

Departure freq: _____.____ Squawk: _____

Takeoff clearance: Heading: _____° R/L Turn

Holding Request

Hold N / S / E / W of _____ on the

_____ radial / track between _____ and

_____ DME, Turns R / L

EFC at _____ past _____

Arrival ATIS: _____

Time: _____ Zulu/ _____ Local

Ceiling _____ Temperature ____ /_____

Altimeter ____.____ Runways _____

NOTAMS _____

_____

Multi Rating Threshold Knowledge Test

The student should be able to give general answers to most of these questions prior to their first flight in the twin.

What are the speeds for the aircraft you are flying? (Vmc Vso Vs Vx Vy Vxse Vyse Vfe Vle Vsse Va Vno Vne, etc) Can you explain the significance of each of them?
What power setting does this aircraft use for take off, climb, cruise, descent, and approach.
What actions would you take in the event of an overshoot?
What is the worst phase of flight for your engine to fail? Why?
How would you recognize that the engine has failed? How will you control it?
Why does the airplane react the way it does?
What actions will you take for an engine failure?
What airspeed will you maintain? Why?
What is Vmc? What happens if you decelerate below Vmc?
How much fuel can the Travel Air carry? How much does it burn on average?
What kind of endurance do we have in this aircraft with full tanks (at high cruise settings)?
What if the Mains are full and Auxilaries are empty, then how long is the endurance?
What phases of flight would you use the main tanks vs. the auxilary tanks and why?
What are the takeoff and approach speeds for the Travel Air?
How are the engines and propellers different from the planes you've flown thus far?
If you want to increase/decrease power, in what order do you manipulate the levers?
Add other questions as necessary

IFR Preflight Test Questions

IFR Preflight Test

Name:

Date:

ADMINISTRATION

- License
- Medical
- Flight Time
- Sim. Time
- Written
- X-Country
- 50 hours PIC X-country
- Cfs'
- Flight test guide
- Cap
- Lo charts and map questions

OBTAINING WEATHER INFORMATION

- Gfa's; metars; tafs; freezing level; radar; sigmets; airmets; pireps
- Significance of BECMG, TEMPO, AND PROB 30/40
- What active runway will we be using today?
- What type of weather will we expect to have at our destination at our ETA and what approach can we expect?
- Upper winds?
- Freezing level?
- Icing? Turbulence?
- Thunderstorms?
- What kind of weather and approach can we expect at our alternate?

FLIGHT PLANNING

- Nav. log; w + b; flight-plan
- How did you choose this route? CFs' preferred routing?

- Why did you choose this altitude?
- What are the IFR Requirements?
- Fuel Requirements for contingencies?
- Notams?
- TAS? Fuel Burn? True to magnetic for winds aloft?
- Weight and Balance, loading
- Standard weights?
- Take off, landing and zero fuel?
- Knowledge of envelope
- Flight Plan – When can you file and Itinerary? (Flight part or in whole outside controlled airspace.)
- Who can you file it with?
- When and who are you required to notify when there is a change in your flight plan or itinerary? (altitude, 5% TAS, mach#.01, route, destination)
- When are you required to file an arrival report for a flight plan? Itinerary? (24 hrs.)
- When can you cancel IFR? IFR flight plan? (company note)

REGULATORY REQUIREMENTS

- What are the privileges of an instrument rating? Validity? (24 months)
- Recency requirements? (Previous 6 months, 6 hours, 6 approaches in an airplane or class b, c, or d simulator, or as an instructor)
- What are the requirements for equipment? (AI, VSI, OAT GAUGE, PITOT HEAT, VACUUM POWER FAILURE DEVICE, ALTERNATE STATIC SOURCE, 2 WAY RADIO, 2 NAV EQUIPMENT, ALTIMETER, TC)
- How often does the pitot-static system have to be certified?
- Tolerance for the altimeter?
- What documents do we need to have aboard this flight today?
- What items would make the airplane un-airworthy?

IFR OPERATIONAL KNOWLEDGE

DEPARTURE

- What is the legal take off visibility today? (*spec vis or not assessed)
- In order of precedence how is take off visibility defined? (rvr, reported vis, pic)
- What basic requirements do we need to insure obstacle clearance?
- What is the significance of the asterisk?
- In order to meet the requirements what minimum rate of climb/ground speed do we need?
- You are cleared to maintain rwy heading on departure, do you track rwy heading or just fly the heading?
- Sid scenario: you depart the airport in IMC and you have a comm. Failure what do you do? (Follow sid instructions)
- You depart in VMC and you have a comm.. Failure what do you do?

IFR OPERATIONAL KNOWLEDGE, continued

ENROUTE

- When is it necessary to provide a pirep? Who would you call?
- What is the significance of the MEA? MOCA? MEA gap?
- Why is there only sometimes one published instead of two?
- When can you request to fly below the MEA? (icing, turbulence, engine failure, if you have a GPS)
- Will ATC authorize an IFR flight below the MOCA?
- IF you are on an IFR flight plan and receive a clearance to a point short of your destination prior to receiving further instructions what are your actions?
- Refer to lo chart and set up scenario: While operating IFR in controlled airspace what procedures will you follow in the event you experience a communications failure in order to establish communications with ATC? (squawk 7600 maintain listening watch, call another ATS, use cell phone, other aircraft to relay message)
- Refer to lo chart and flight plan: If a communications failure occurs en-route in IMC, in order of precedence what action will you take in respect to your route? (1. Fly the route assigned in last clearance. 2. If radar vectored fly direct to the fix, route or airway specified in the vector clearance. 3. In absence of an assigned route, by the route ATC has advised in a further clearance. 4. In absence of clearance of EFC, the route filed on the flight plan.
- In order of precedence what altitude will you fly? (1. Altitude assigned in the last clearance. 2. The minimum IFR altitude. 3. The altitude given in an EFC.
- When are you required to give En-route IFR position reports? What information will they contain?
- While operating in uncontrolled airspace when should you make position reports and what information should they contain? (Over all nav-aids along the route to the nearest ATF and 126.7, they should contain present position, attitude, and track, altimeter setting in use, next positions and ETA.)

IFR OPERATIONAL KNOWLEDGE, continued

HOLDING

- What is the maximum holding speed for your aircraft?
- What is the timing in-bound at 14000’ higher?
- After receiving a holding clearance you experience a communications failure, what are your actions? (commence an approach at the EAT or EFC) (If the fix does not approach, leave the fix at the EFC time, proceed to a fix where an approach begins, and commence descent and or an approach as close as possible to the ETE. Calculated in the flight plan or amended with ATC.)

ARRIVAL

- What is considered to be the minimum descent rate for your aircraft? (500 fpm. Piston, 1000fpm. Turbo.)
- Based on today’s temperature, will the altitude correction chart be necessary?
- When will you start your descent? Do you need ATC’s approval? How do you get that?
- Do you expect vectors? Will you do the full procedure? Can you come straight in? (IAF) What information do you need to come straight in?
- You are 30 miles out from destination and you experience a communications failure, it is vmc, what do you do? It is imc, what do you do?
- What route do you fly? Altitude?
- Set up scenario for vectors with an altitude below a minimum vectoring altitude.
- What reporting procedures are you required to make when approaching to land at an uncontrolled aerodrome?

APPROACH BAN

- What criteria do you need to have an approach ban? (rwy served by rvr)
- When can you go past the FAF and continue the approach? (When the rvr is received the aircraft is already past the faf, the pic has informed atc that the aircraft is on a training flight and will initiate missed approach, the rvr is fluctuation above and below 1200', the reported ground visibility is at least a ¼ mile and rvr is below 1200' due to a localized phenomenon.

LANDING MINIMA

- When can you descend below D.H, MDA?
- What is the significance of the number beside the approach limits? (Advisory only)
- If the required reference does not become visual when will you initiate the missed approach?

CIRCLING

- What category is your aircraft? What category minima will you use for a circling approach?
- What do you do in case of a missed approach when circling?
- You are on a circling approach, you have just crossed midfield and you are at the MDA with the field in sight. There is a cloud in front of you and you cannot go around it, can you descend below it? (no it is an instrument approach and you are at the MDA)
- What dangers are there when commencing a circling approach when the weather is at minimums?

ALTERNATE MINIMA

- How many precision approaches exist at our alternate?
- If only one exists, what are the weather limits? (600-2 or 300-1)
- Are these the only limits? (700-11/2 and 800 and 1)
- If there is two precision approaches what are the weather limits? (400-1 or 200-1/2)
- If there is only a non precision approach what are the alternate requirements? (800-2 or 300-1)
- Sliding scale? (900-11/2 or 1000-1)
- What if there is no IFR approach available? (no lower than 500 above a minimum IFR altitude that will permit a VFR approach and landing)
- Is our alternate served by an aerodrome advisory? (500 above the lowest usable hat/haa and 3 sm.)
- Can an aerodrome served by a GFA qualify as an alternate and if so what are the limits? (no cloud below the lowest useable hat/haa, no cb's and 3 sm)
- If the hat is 615', what ceiling value will you use to round this figure off for flight planning purposes? 438'? (600, 500)
- When planning for an alternate that has the term BECMG in the forecast, what consideration must you make for flight planning? TEMPO? PROB?