

Thoughts on Improving Pilot Proficiency

Peter Cassidy, February 2007

For several years I have wrestled with how to apply the concept of continuous improvement to pilot proficiency. We have the FAA PTS standards, but being able to pass a bi-annual flight review or an IPC does not necessarily mean you are a safe pilot or as good as you can be. When I go for recurrent training each year, the key question is always what areas to focus extra attention on. The answer is essentially a gut call. To improve our flying, the conventional wisdom is to study continually, to fly often, and do regular recurrent training. This wisdom is not bad, but it has its limitations. It is a broad-brush approach that assumes we need about the same attention in all areas of flying. We should be able to do better.

There are lots of ideas in the aviation community for dealing with specific issues. The primary challenge is figuring out where to focus our improvement efforts, i.e. what problem to solve.

A Personal Thing

Once we get past the rating and can perform reliably to PTS standards, improvement becomes a very personal thing. Each of us is unique in terms of how we learn and our operating manner. What works for one pilot may not work for another. Testament to this is the myriad of flying improvement ideas that we have to draw from, but few of which work for us personally. Ongoing improvement requires an approach that is tailored to individual needs.

One Pilot's Approach

In looking for a systematic way to measure performance and identify areas for improvement, I have developed an approach that has three parts.

First, I subscribe to the conventional proficiency practices as follows:

Read/Study Continually

- IFR Refresher
- IFR
- Light Plane Maintenance
- Aviation Consumer
- Aviation Safety
- AOPA magazine and newsletter
- EAA magazine and newsletter
- ABS magazine and newsgroup
- Attend all local FAA/AOPA safety seminars
- Attend ABS convention every other year
- Beech owners group email
- AvWeb weekly newsletter
- ANN daily newsletter
- faasafety.gov announcements
- NASA CallBack

Fly Often

- Fly at least every two weeks, and about 125 hours annually
- Night flying is minimal, no goal
- Personal IFR minimums are 500 and 1

Regular Recurrent Training

- Alternate annually between FAA Wings and a 2-day program like BPPP

Three practice approaches every three months
Night currency renewed every 90 days

Second, I've taken points from Richard Taylor's *Instrument Flying* and developed a self-assessment log with the following categories:

- Preflight and Weather Briefing
- Takeoff and Departure
- Enroute
- Descent/Transition into Terminal Area
- Approach and Landing
- Detail Work
- Communications Procedures
- Overall Planning

Against each of these categories, I've made a list of what I consider best practices. For example, Preflight and Weather Briefing lists the following best practices:

- Get weather assessment before calling FSS
- Make a list of desired information before calling FSS
- Record briefing information neatly and take along on flight
- Preflight checklist is tailored for IFR
- Charts are organized
- Approach plates are open at approach in use for the departure airport
- Approach plates pulled for the departure airport

When I debrief a flight, I make a note of errors made and events which did not come out as well as I believe they should. Attached is a copy of the self-assessment log form I use, including a list of best practices I consider important.

Third, from Tony Kern's *Redefining Airmanship* I've concluded the subject is better termed airmanship rather than flying proficiency and used his 10-point airmanship model as a way to classify self-assessment errors.

Discipline	Will to follow procedures, regs, rules
Skill	Ability to perform specific tasks
Proficiency	Precision in performing specific tasks
Knowledge Self	Readiness to fly
Knowledge Aircraft	Systems, performance, limitations
Knowledge Team	Abilities of co-pilot, ATC, FSS
Knowledge Environment	Wx, Regs, ATC, NOTAMs, Airports
Knowledge Risk	Hazards to flight
Situation Awareness	Big picture: Wx, Aircraft, Air Traffic
Judgment	Making good decisions

Analyzing the Data

So what have I learned from this effort? Here is the data collected for 2006 and what it shows.

Hours: 203 Total (Actual IMC 19)
Flights: 96 (<1 hr 27, 1-2 hrs 28, 2-3 hrs 16, >3 hrs 25)
Approaches: 32 (Actual 12, Simulated 20)

Errors and Deficiencies: Total 23

Discipline	18
Proficiency	4
Judgment	1

Whether 23 errors and deficiencies in a year is good or bad is difficult to say. Just because there were no accidents or even near accidents should not be comforting. Because even small errors in flying can be deadly, the goal needs to be zero defects, but we don't need to be fanatical about it. In addition there is the judgment factor as to what gets recorded. At this point it seems appropriate to just accept the data at face value and save the overall assessment until several years of comparable data is available.

Discipline (18)

This area has the most recorded entries. Of the 18 discipline errors, the majority (16) have to do with not using the checklist: cabin door not locked before takeoff, auto pilot not programmed before takeoff, no flaps on approach, pitot heat left on at shut down, etc. The remaining two have no pattern: did not check for new Airmets on turnaround, and forgot backup approach plates for one section of a route.

This record strongly suggests a concerted effort is warranted in using the various checklists more consistently and I'm working on just that. Most of my checklists are the "do-check" type, so I'm looking at the checklist sequence to see if I can get a better flow, and using triggers to prompt running the checklist such as anytime power is changed. Just knowing that running checklists is a known weakness should help.

Proficiency (4)

I conclude that my flying proficiency is not too bad. There was no patten in the deficiencies recorded: a sloppy approach, a misjudged runway position, a communications miscall, a climb through assigned altitude. It would seem my current regimen of once a year recurrent training and practice approaches every three months is barely adequate. Possible solutions are: flying more (unlikely), more frequent recurrent training, perhaps every six or nine months (possible), more frequent and demanding IFR practice (possible).

Judgment (1)

The error in judgment involved getting involved in icing conditions and staying there longer than was necessary. While the outcome was never in doubt, a better call would have been to act sooner to get clear of the icing conditions. Lesson learned.

Conclusion

Being legal is fairly easy, being safe requires a concerted effort. Airplanes can be unforgiving when things go wrong, so safety is of paramount importance.

There is no shortage of advice on how to improve one's proficiency. Unfortunately, it's of limited use unless we put it into the context of a personal plan for improvement. Each pilot is different in terms of what works for him. We owe it to ourselves to develop a structured approach to improving our proficiency to be not only legal, but the safest pilot we can be.

- end -

Airmanship Self-Assessment Log

Airmanship Factors

D – Discipline Will to follow procedure, regs, rules
 S – Skill Ability to perform specific tasks
 P – Proficiency Precision in performing specific tasks

KS – Knowledge Self Readiness to fly
 KA – Knowledge Aircraft Systems, performance, limitations
 KT – Knowledge Team Abilities of co-pilot, ATC, FSS
 KE – Knowledge Environment Wx, Regs, ATC, NOTAMs, Airports
 KR – Knowledge Risk Hazards to flight

SA – Situation Awareness Awareness of big picture: Wx, Aircraft, Air Traffic
 J – Judgment Making good decisions

Errors and Deficiencies	Best Practices
Date and Deficiency	
1. Preflight and Weather Briefing	
	<ul style="list-style-type: none"> - Get weather assessment before calling FSS - Make a list of desired information before calling FSS - Record briefing information neatly and take along on flight - Preflight checklist is tailored for IFR - Charts are organized - Approach plates are open at approach in use for the departure airport - Approach plates pulled for the departure airport - Check DPs for restrictions/instructions re terrain/obstruction avoidance - -
2. Takeoff and Departure	
	<ul style="list-style-type: none"> - On takeoff, glance at MAP, RPM, Fuel Flow, alternator output, vacuum. - Go on instruments before entering clouds - Don't record instructions during turns - Hold assigned headings $\pm 5^\circ$ - Run checklist - -

3. Enroute	
	<ul style="list-style-type: none"> - Positively identify each navaid used - Cross check Nav systems (e.g. GPS vs VOR DME) - Check weather with FSS/TWEB/Datalink. - Maintain Hdg $\pm 15^\circ$, Alt ± 200 ft, Nav needles $< 1/2$ scale deflection - Scan for VFR traffic in VMC conditions - Set power and lean smartly for flight conditions - Do LOP mag check - Run checklist - -
4. Descent/Transition into Terminal Area	
	<ul style="list-style-type: none"> - Listen to ATIS 40 miles out - Anticipate descent requirements - Maintain Hdg $\pm 15^\circ$, Alt ± 200 ft - Maintain position awareness - Prepare for approach. Memorize Hdg, DH, MA - Run checklist - -
5. Approach and Landing	
	<ul style="list-style-type: none"> - Maintain attitude and position awareness - Never went below approach segment minimums - Built a mental picture of wind and final approach course - Used all available aids to maintain position awareness - Fly approach by the numbers - ASI ± 5 KIAS - LOC needle ± 2 dots. - GS needle ± 2 dots - MA executed if needles full scale deflection. - MA executed in a timely manner. Hdg, ASI on target numbers - Run checklist - -
6. Detail Work	
	<ul style="list-style-type: none"> - All Alt assignments recorded, including req'ts to report leaving or passing altitudes - All frequency assignments recorded - All enroute clearances recorded - Notes are legible - No notes taken in a turn - -

7. Communications Procedures	
	<ul style="list-style-type: none"> - Speak clearly in requests and response. Be brief - Know what you are going to say before you key mic - Be courteous - -
8. Overall Planning	
	<ul style="list-style-type: none"> - Have a plan if destination and alternate go sour - Select route to minimize risks - Plan for equipment failure - Request Hdg and Alt changes ahead of needs (icing, TRW, Turb) - -