Scenario Based Practical Tests (SBPT)

Objectives:
> Increase DPE confidence, use and quality of scenario based tests.
> Develop tools and aids for the DPE

Background:
1. Required by Order: The plan of action includes a scenario. The examiner must develop a Scenario that allows the evaluation of most of the Areas of Operations and Tasks required in the practical tests with minimum disruptions. Some maneuvers (stalls, steep turns, performance maneuvers) are not normally done during routine flight operations. These maneuvers still must be demonstrated. It is preferable that these maneuvers be demonstrated after the scenario is completed. But, practical test scenario can be suspended to do maneuvers, and then resumed, if the situation, due to time and efficiency of the practical test dictates so. (Pg 7-14, 8900.2)
Scenarios are the recommended method for both training and evaluating SRM skills. Developing a scenario that will effectively evaluate all required tasks of an appropriate PTS may present a challenge to the examiner, for that reason this section is added. (Pg 7-15, 8900.2)

2. Required in PTS: http://www.faa.gov/training_testing/testing/airmen/test_standards/

3. Training Reform:
http://www.pilottrainingreform.org/documents/Symposium_Prelim_Report_06Jun2011.pdf
(Revise FAA doctrine and standards to implement scenario-based testing, risk management, and other higher-order pilot skills)

Outcomes:
1. Mentoring each other—how is it done well, who is doing it well.
2. Checklist for Scenario Development
3. Tool to critique your Scenario Based Test—Quality control—post development, post use, revisions
    a. What is good?
    b. What are problems?
4. Event Trigger Library
5. Scenario Lead-in Possibilities
6. Model or Examples of SBPT
7. Model Script and Evaluation outlines (TLYF)

Questions and Potential Issues:
1. How will SBPT work for Maneuver based trained applicants? Hypothesis: There would be less success for this type of applicant.
2. Are Initial and retest scenarios the same?
3. Are Additional category, category and class, well suited to SBPT? Likely yes and more so.
4. Is it acceptably to consider the task judgment matrix at the AOA level vs task level for the PT?   Each Area of Operation has three courses of action for each of the six SRM tenets; hence, a matrix. The possible courses of action are "worst", "okay", and "best". (8900.2)
5. PT in two stages?: one bigger scenario and one shorter maneuver oriented?

Discussion:

This change to a scenario-based PTS is really an enhancement and clarification of what the FAA intended back in the 1990s. Changes are coming, but don't panic. They will be slow and purposeful. This time we will include all the tools to handle the changes. http://www.iflyamerica.org/safety-scenario-based.asp

"A scenario may represent a simple, sequential string of events. On the other hand, it may be a complex set of events, branching into now solutions. The pilot could make a decision that leads to a new and unexpected direction, perhaps diverting to another airport. Never the less a good scenario is a realistic event requiring practical application of various bits of knowledge." (TLYF)

REQUIREMENTS AND CONCEPTS

Glossary:

Cognitive Skills: Analysis, synthesis, evaluation

Event Set. A relatively independent segment of a scenario made up of several events, including an event trigger, possible distracters, and supporting events..

Event Trigger: Those actions taken to cause the pilot to take some action that was not part of the original flight plan (scenario). Event trigger is the condition or conditions under which the event is fully activated. The distracters are conditions inserted within the event set timeframe that are designed to divert the crew's attention from other events that are occurring or are about to occur. Finally, supporting events are other events taking place within the event set designed to further CRM and technical training objectives
> Inside: inside scenarios within the larger context of an outside scenario.
> Outside

http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgAdvisoryCircular.nsf/0/b86de77a355ea57b86256f25006d977a/$FILE/AC120-35c.pdf

FITS: concepts developed under the FAA Industry Training Standards (FITS) program. An approach to GA flight training that embraces concepts central to system safety. These include risk management, aeronautical decision-making, situational awareness, and single-pilot resource management. Instead of treating each element as a separate or stand-alone lesson, scenario based training will be used to efficiently integrate these important concepts into every institutional lesson. The FITS program incorporates three tenets
> ☐☐ Scenario-based training (SBT)
> ☐☐ Single-pilot resource management (SRM)
> ☐☐ Learner-centered grading (LCG)

HOTS: Higher Order Thinking Skills. These skills are aeronautical decision making, risk management, automation management, situational awareness, and Controlled Flight into Terrain (CFIT) awareness.

Judgment Task Matrix. This matrix is a tool that breaks down the components of judgment into individual parts for scoring. To use it, the examiner only needs to circle the tenet under the level of accomplishment that the applicant achieves (worst action-Red, Okay action-Yellow, Best action-Green)

Learner-Centered Grading: http://www.faa.gov/training_testing/training/fits/guidance/media/lcg.pdf
 Maneuver Grades (Tasks): Describe, Explain, Practice, Perform, Not Observed
 Single Pilot Resource Management (SRM) Grades: Explain, Practice, Manage/Decide, Not Observed
Grading will be conducted independently by the student and the instructor, then compared during the post flight critique.
Learner centered grading (outcomes assessment) is a vital part of the FITS concept.
Grading should be progressive.

Mission: those tasks required for the safe and effective accomplishment of a flight that the aircraft is capable of and required to complete. (TLYF)

Scenario: For a practical test, a scenario is a single mission that it planned and carried out. That mission, plus trigger events that the examiner implements during the flight, should allow the applicant to demonstrate most of the Areas of Operations and Tasks required in the practical tests with minimum disruptions.

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For the purpose of training and evaluating SRM skills: (a) A scenario is a flight that
the applicant can and may do with the certificate or rating he/she is seeking. …. (b) The scenario should be
something that the applicant may want to do and it should provide opportunities to complete the
various tasks required in the appropriate PTS. If the scenario is something the applicant is likely
to do, it is likely that the applicant will take a real interest in making the flight and will not
simply treat it as a training exercise, and (c) The scenario should be a complete flight that
includes the planning, the flight, and the post-flight phases appropriate for the certificate or
rating being sought.

There are at least two requirements for a scenario. The mission must have a purpose (reason to go) and
consequences if the mission is not completed (pg7-15, 8900.2)

Scenario Based Training (SBT). A training system that uses a highly structured script of
Real-world experiences to address flight-training objectives in an operational environment (8900.2). A training
system that uses a highly structured script of real-world experiences to address flight training objectives in an
operational environment. Such training can include initial training, transition training, upgrade training, recurrent
training and special training. (TLYF)

References

Text based:

McMahon, Arlyn, **Train Like You Fly: A Flight Instructor's Guide to Scenario-based Training** (TLYF)

McMahon, Arlyn, **Lesson Plans: To train like you fly. A flight Instructor's reference for scenario based training.**

Web based documents:

FAA Regulation and Guidance Library
     FAA Order 8900.2 Section 2 Paragraph 7e
http://www.faa.gov/regulations_policies/orders_notices/index.cfm/go/document.information/documentID/73754

Aviation Instructor Handbook http://www.faa.gov/library/manuals/aviation/aviation_instructors_handbook/
Risk Management http://www.faa.gov/library/manuals/aviation/media/FAA-H-8083-2.pdf
Automation Management Chapter 7 in above.

Portal for many FITS documents: http://www.faa.gov/training_testing/training/fits/ including:
     http://www.faa.gov/training_testing/training/fits/scenarios/fis/
     http://www.faa.gov/training_testing/training/fits/research/media/und.pdf
     http://www.faa.gov/training_testing/training/fits/guidance/media/RM_thorugh_SBT.pdf
     www.faa.gov/training_testing/training/fits/.../LCG%20Scenario.ppt

http://webcache.googleusercontent.com/search?q=cache:blHO7-Ee5HQJ:https://dschool.stanford.edu/groups/k12/wiki/ce3d8/Testing_Scenarios.html+testing+students+scenario&cd=2&hl=en&ct=clnk&gl=us&source=www.google.com

http://www.iflyamerica.org/safety-scenario-based.asp
http://human-factors.arc.nasa.gov/ihi/hcsl/publications/NewmanTR-02-07A.pdf
http://www.aopa.org/asf/publications/inst_reports2.cfm?article=5714

http://www.avhf.com/html/Library/Introduction%20to%20Scenario-Based%20Training.pdf
Aviation Human Factors http://www.avhf.com/
     Risk Management Preflight Checklist
     http://www.avhf.com/html/Library/Preflight_Risk_Assessment_Version_2.pdf
     http://www.avhf.com/html/Library/Teaching%20Risk%20Management.pdf
     http://www.avhf.com/html/Library/ga_safety_sourcebook_2005.pdf
     Pilot Judgment in Training and Evaluation
     http://www.avhf.com/html/Library/Tech_Reports/Jensen%20&%20Benel%20(1982)%20Pilot%20judgment_%20training%20and%20evaluation.pdf

http://www.freewayaviation.com/docs/Customer%20Sport_Private%20Syllabus%2008_06_09.pdf

http://www.flight1tech.com/Products/ScenarioBuilder.aspx ?

http://www.pilottrainingreform.org/
http://www.pilottrainingreform.org/documents/Symposium_Prelim_Report_06Jun2011.pdf

FAAsafety.gov Library: http://www.faasafety.gov/gslac/ALC/lib_tableofcontents.aspx
     http://www.faasafety.gov/gslac/onlineresources.aspx?masterId=4
     http://www.faasafety.gov/gslac/ALC/lib_categoryview.aspx?categoryId=22

Organizations

Society of Aviation and Flight Educators http://www.safepilots.org/

National Association of Flight Instructors http://www.nafinet.org/

http://www.avhf.com/

http://www.faasafety.gov/   specifically
http://www.faasafety.gov/gslac/ALC/lib_categoryview.aspx?categoryId=22

www.IAFTP.org

www.skybrary.aero

Evaluate a Scenario for a Practical Test

Considerations:
- Title
- Set up
- One big scenario, two stages [one main; one maneuvers], or smaller multiple ones
- Props
- Relationship to current events
- Appropriate to test type and level

	On the Ground		In the Air	
	Explicit	Implicit	Explicit	Implicit
Safety (include DPE risk analysis of scenario and events)				
Time constraints/deadlines				
Consequences (other than PTS results)				
Ability to complete (play it through)				
Trigger events				
High Order Thinking Skills				
TM—Task Management				
AM—Automation Management				
RM—Risk Management				
ADM—Aeronautical Decision Making				
CFIT—Controlled Flight into Terrain (Things)				
SA—Situational Awareness				
Additions for instructor testing				
TC—Technically Correct				
AR—Appropriate reference				
A/C—Application or Correlative				
PT—Teaching procedures and techniques				

Evaluation check points:

Is it Clear?	
How complete is my scenario?	All required tasks
	Most required tasks
	Some required tasks
Is it Concise?	
Is it of sufficient depth?	
Application or Correlative?	
Risk level?	

Trigger Events Library

Clock was inoperative in aircraft. IP asks applicant, "Can we use Garmin time?"

Does your aircraft have any life limits: parts, accessories or perhaps the whole aircraft?

Interception Procedures

Illness of pilot or passenger

Partial power loss not full power loss

Bad magneto

Passenger needs to go to the bathroom now.

Smell (burning or other) in the cockpit that can't be identified or could be a problem

Bird strike

Equipment failures

Temperature and dew point coming together.

Fuel calculations to give order to the fuel trucks

Increasing turbulence

In flight weather briefings and changing weather situation

Encountering haze, smoke, reduced visibility

Smoke on the ground

There is a thunderstorm coming. What is required to secure the aircraft?

Alternator/generator goes off line

An unusual/different sound

MFD changes color

Carburetor or induction icing

Logbooks with problems

Altimeter breaks at adjustment.

Practical Test NOTAMS: Create a library of NOTAMS that will act as trigger events for

Scenario Lead-in Possibilities

Go to lunch at _____ with a plane full of people.

Go to Williams to take the train to the Grand Canyon

Join a group for a
      Trip along Route 66
      For a remote picnic or a camping trip

Take pictures of a new property purchase

Go parachute jumping at _____

Go to the river/lake for an event or celebration (spring break, anniversary, birthday, reunion, etc)

Fly to Puerto Penasco for a long weekend

Search for a missing/overdue aircraft, a missing person or vehicle between landmarks or navigation aids

Locate a person or object on the surface (mine, house, trail, geo cache, etc)

Take/drop supplies for a search crew

Travel to _____ to look at a new aircraft

Travel to _____ to transport your new aircraft home.

Your aircraft needs to go to _____ for routine maintenance

Your aircraft needs to go to _____ for non routine maintenance

Evacuate from weather or hazardous situation.

Business trip to _____

Join a Poker Run (   )

Join a rally, race, contest etc

Glider badge attempt for distance and endurance

Glider badge attempt for distance and altitude

Test an aircraft after maintenance

Test an aircraft you built

Support CAP or law enforcement by flying to _____ for _____

Instructor: Conduct an insurance required aircraft checkout (using a _____ PTS)

Instructor: Conduct a flight review for a person whose knowledge and skills are questionable. Use _____ PTS

Instructor: Conduct a sport pilot proficiency check

Instructor: Conduct FAA requested retraining following a Class B incursion. (Use private PTS)

Instructor: Conduct a progress check to confirm a pilot is ready for a practical test. (A mock practical test)