What is TAA and how do I train TAA

FAA Flight Standards Perspective

Federal Aviation Administration

Presented to: NTSB Training Center

By: James Viola

Date: November 8, 2014

Agenda

Video of TAA

Defining TAA

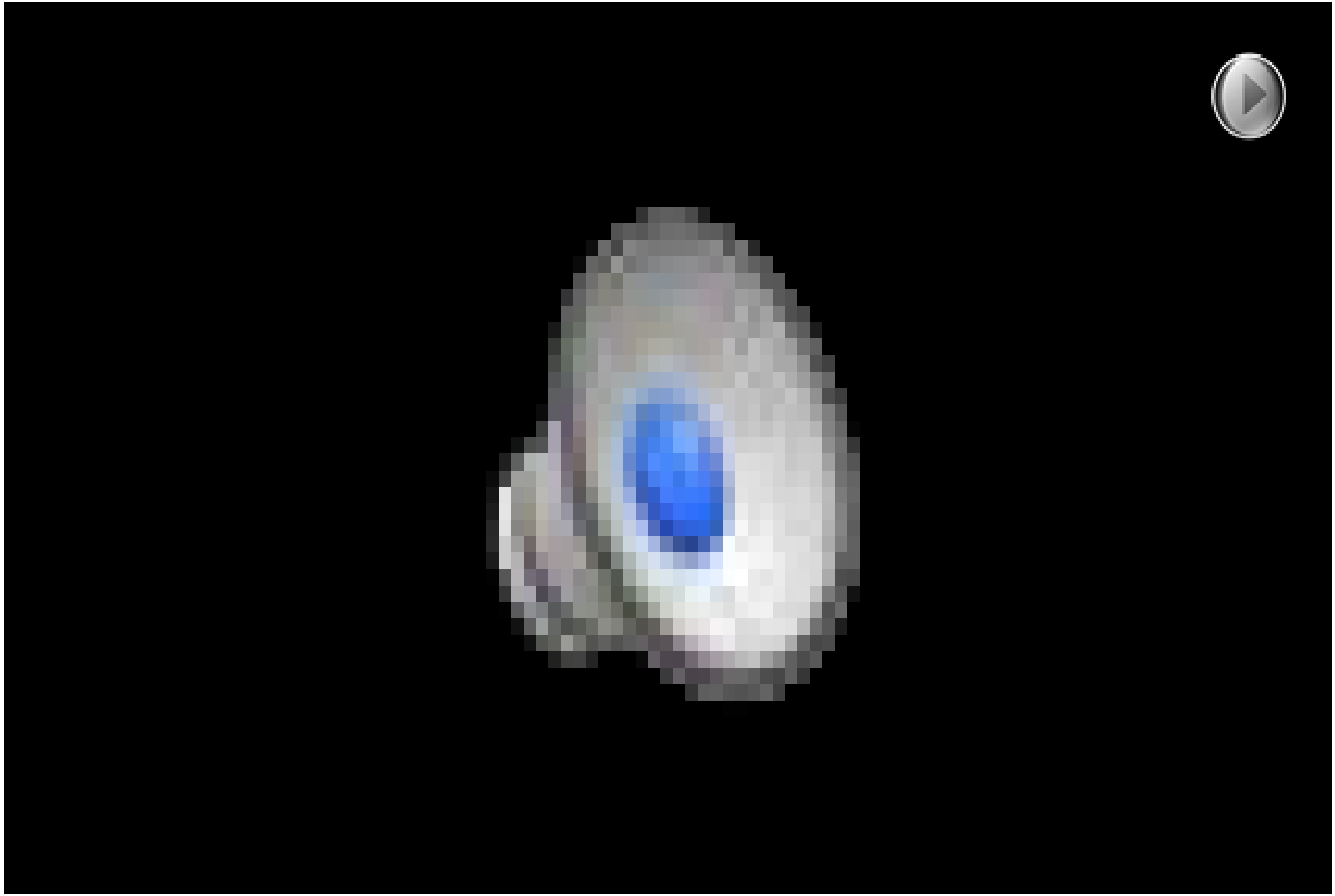
Resources Available for TAA and Studies (FAA.GOV/Training & Testing/ FITS)

Automation Dependency

FAA Collaboration – GAJSC / IHST / USHST

Final Comments / Questions

Video of TAA



Technically Advanced Airplane

Technically Advanced Airplane

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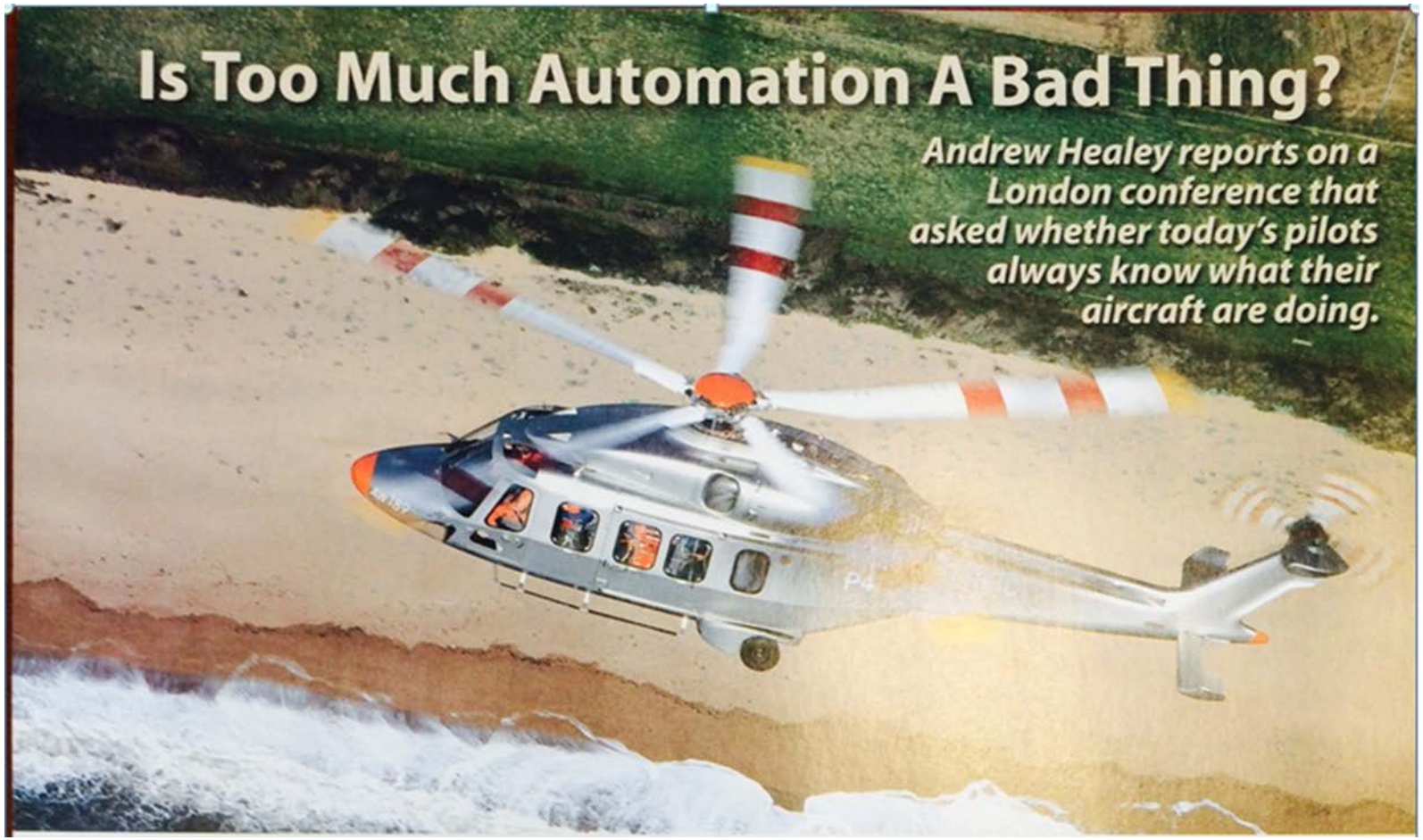


Technically Advanced Airplane

SITUATIONAL AWARENESS

A COMPLICATED AFFAIR

COMING TO TERMS WITH THE TECHNOLOGY THAT TELLS US WHERE WE ARE AND, HOPEFULLY, WHERE WE'RE GOING BY ROBERT GOYER

NAVIGATION WAS ONCE A CRAFT, AND PILOTS WOULD PLOT THEIR COURSES USING PAPER EN ROUTE CHARTS, A FLIGHT PLAN LOG AND A STOPWATCH. IT WAS A METHOD THAT REQUIRED A HIGH LEVEL OF PROFICIENCY AND WAS A CHALLENGE TO PULL OFF SINGLE-PILOT IN THE CLOUDS, ESPECIALLY WITHOUT AN AUTOPILOT.

FLYINGMAG.COM / 74 / NOVEMBER 2014

Technically Advanced Airplane

- **In an FAA-Industry Safety Study published in 2003, the FAA defined TAA as "a General Aviation aircraft that contains the following:**
  - **Advanced automated cockpit such as MFD or PFD or other variations of a Glass Cockpit, or a traditional cockpit with GPS navigation capability, moving map display and autopilot."**

- **Notwithstanding the previous use of terms such as glass cockpit and electronic flight instrument displays,**

- **the FAA is proposing to adopt an updated definition of "technically advanced airplane" in § 61.1 based on the common and essential components of advanced avionics systems equipped on the airplane, including a PFD, MFD and an integrated two axis autopilot.**

Technically Advanced Airplane

- **To date, the FAA has primarily used the term "glass cockpits" when referring to airplanes equipped with advanced avionics**

- **For example, the Instrument Flying Handbook acknowledges that PFDs and MFDs "are changing not only what information is available to a pilot but also how that information is displayed."**

Technically Advanced Airplane

- **The executive summary to the NTSB's Introduction of Glass Cockpit Avionics in Light Aircraft, states "in a span of only a few years, the cockpits of new light aircraft have undergone a transition from conventional analog flight instruments to**

  digital-based electronic displays,"

  that

- **"integrate aircraft control, autopilot, communication, navigation, and aircraft system monitoring functions,**

- **technology previously available only in transport-category aircraft."**

Technically Advanced Airplane

- **In general, the pilot interfaces with one or more computers in order to operate, navigate, or communicate.**
- **The proposed definition of TAA would apply to permanently-installed equipment and would not apply to any portable electronic device.**
- **The FAA recognizes the continuing advancements in aircraft avionics and *the need for a pilot to be proficient* with modern cockpit equipment and automation.**

Technically Advanced Airplane

The FAA proposal for an Airplane to be considered TAA;

a PFD that is an electronic display integrating Flight instruments (airspeed indicator, turn coordinator, attitude indicator, heading indicator, altimeter, and vertical speed indicator)

And an independent MFD installed that provides a GPS with moving map navigation system

And an integrated two axis autopilot.

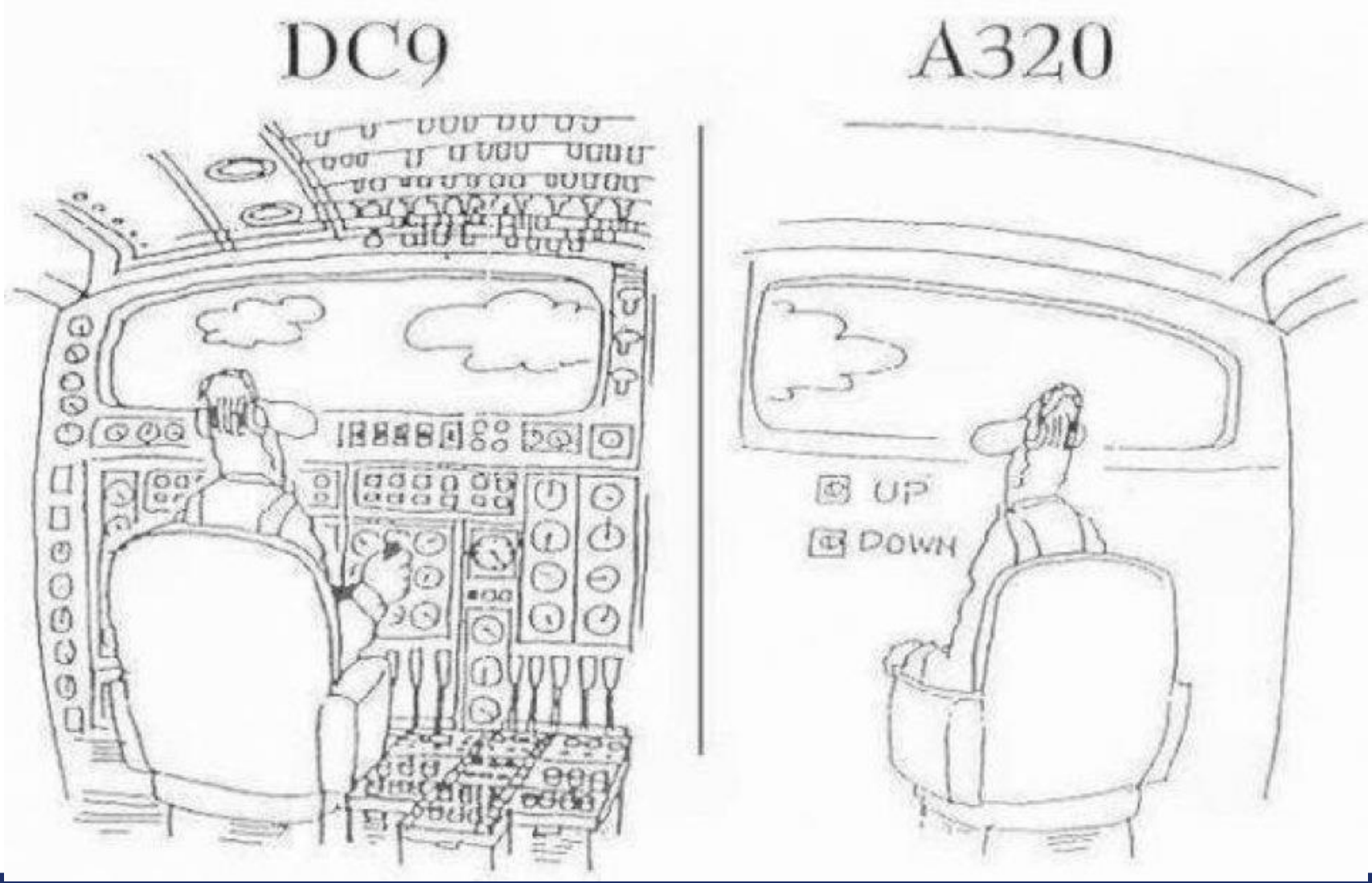
Do We Need Training?

•Legacy vs. Technically Advanced Airplane

•Greater

•Sophistication – Speed – Range - Single engine performance - Payload

•All major OEMs now offering "glass cockpit" avionics.


DC9
A320
UP
DOWN

Background

- **Automation – Can you become dependent?**

- **Automation Dependency, what is it?**
  - FAA Initiatives in Pilot Training
    - Air Carrier Training vs. GA Training
    - Changes to Regulations and Policy Documents

  - Human Performance and Error Management

What is Automation?

- **Autopilot**
- **Flight Director**
- **Flight Management Systems (FMS)**
- **Automated Systems**

Automation = Autopilot

- **In older general aviation aircraft, our automation is primarily the autopilot**

What we think we see?

- **An over-reliance on the autopilot is causing pilots to lose situational awareness, or even control of their aircraft**
- **Hand-flying skills diminishing**
- **Statistics on accidents caused by automation dependency are still lacking**

Back to Basics

Types of Autopilots

Rate-Based

- Uses turn-and-bank sensor
- Rate information for yaw and roll

Example: KAP 140

Attitude-Based

- Gyro senses pitch, roll, and heading changes

Example:

GFC-700

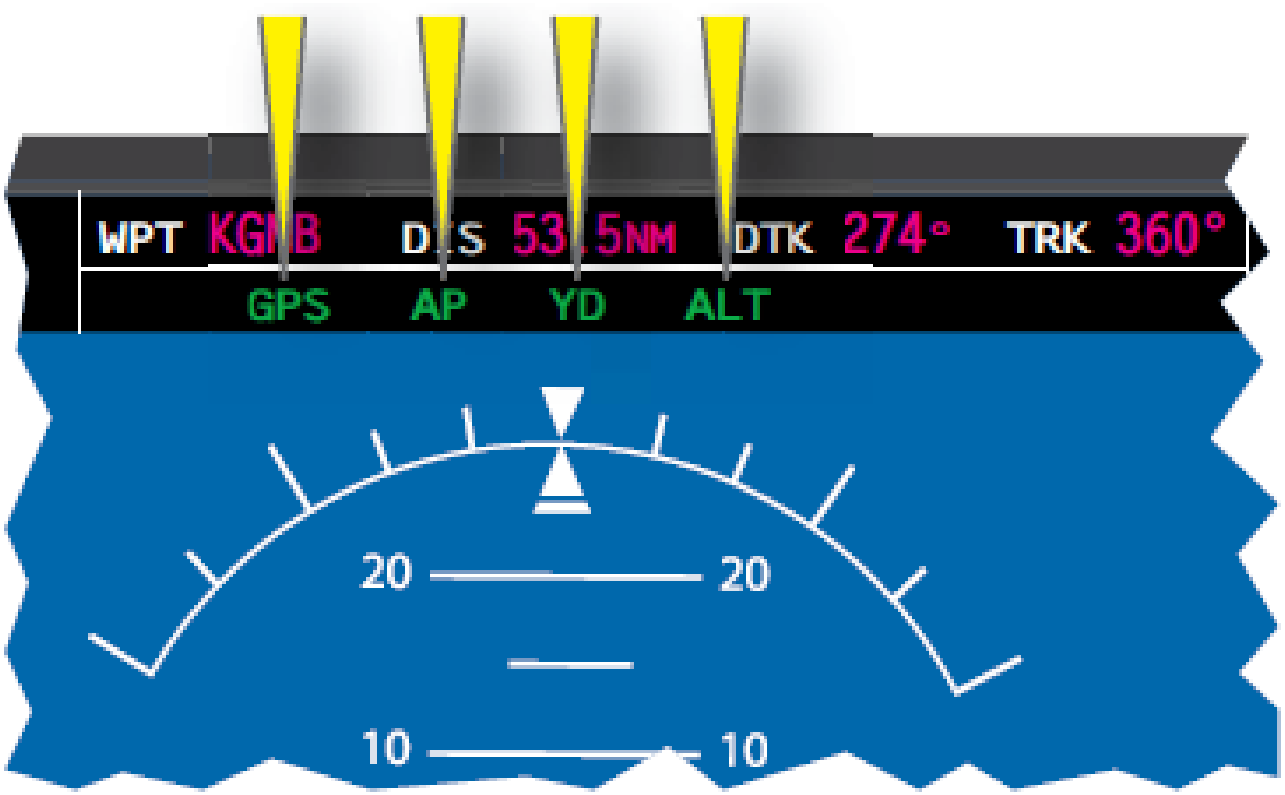
Basic Operation

- **Must select both lateral and vertical modes**
- **Lateral:**
  - HDG, NAV, BC
- **Vertical:**
  - V/S, FLC, VNAV
- **Approach mode**
  - Can be considered both a lateral and vertical mode

BENDIX/KING
KAP 140
HDG
REV
ARM
AP
ALT
ARM
7200
FT
ARM
BARO
ALT SEL
UP
DN
AP
HDG
NAV
APR
REV
ALT

Basic Operation

- **Understand autopilot mode annunciators**



Levels of Automation

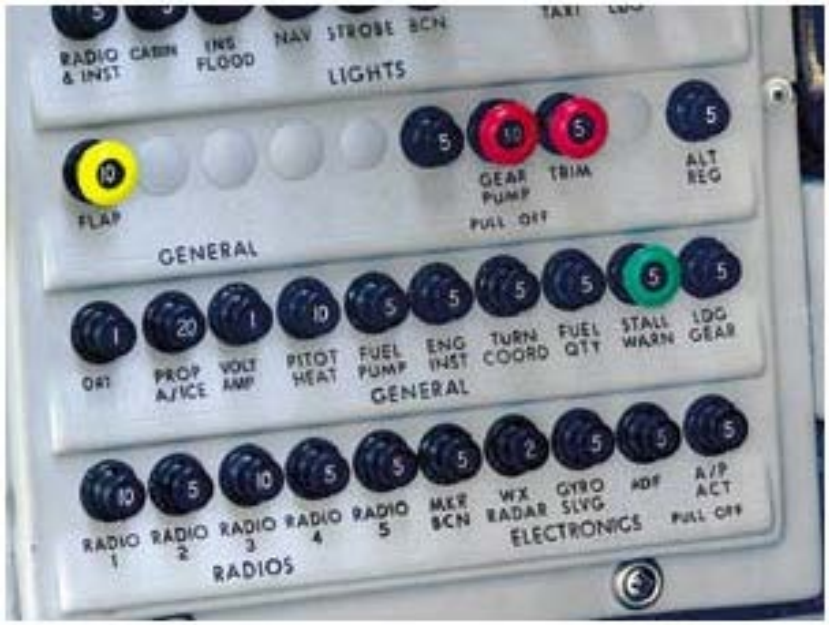
- **Level 0: Autopilot off**
- **Level 1: Flight Director Only**
- **Level 2: Direct Autopilot Modes**
- **Level 3: Long-range autopilot modes**

Levels of Automation

- **Going down a level can reduce workload**
- **Do not be afraid to hand fly**

Functionality Problems

- **Runaway trim**
- **Stuck autopilot servo**
- **Inadvertent activation**



Programming Issues

- “Garbage in = garbage out”
- HDG mode without NAV armed
- V/S or FLC with incorrect altitude preselect
- Forgetting to arm altitude capture

Unexpected Operations

- **Missing an altitude level off**
- **Turning in the wrong direction**
- **Will not capture glideslope**

If you ask yourself a “why?”

Or

“What is going on "question

DISCONNECT!

What can we do?

- **Understand our autopilot systems and how they work**

- **Don't be afraid to drop down a level of automation**
  - Be proficient in hand flying
  - If there is any doubt, disconnect

- **Verbal callouts – YES talk to yourself**

Stay vigilant!

Stay vigilant!

- **Continue to mentally fly the airplane with the autopilot engaged**
  - Monitor primary flight instruments to avoid loss of aircraft control
  - The autopilot will fly the airplane into an unrecoverable situation

- **Don't be afraid to disconnect**

Factors that Reduce Situational Awareness

- **Insufficient Communication**
- **Fatigue/Stress**
- **Task Overload**
- **Task Underload**
- **Degraded Operating Conditions**

Scope of Problem

- **Pilot Training has not kept pace with advancements in automation**
- **3,400 Flight Schools in United States**
- **Until recently standards for practical and knowledge tests have remained relatively constant despite developing technologies**

FAA Initiatives (GA)

- **GA Joint Steering Committee**
  - Automation Management for General Aviation Pilots educational outreach
  - **Single Pilot Resource Management** in PTS
  - Upgrades to the General Aviation Handbooks
  - Monthly topics in pilot safety education distributed through FAA's Safety Team

Single-Pilot Resource Management Training (SRM)

- **Is the art and science of managing all resources (both from on-board and external sources) available to the single-pilot (prior to and during flight) to ensure the successful outcome of the flight.**

SRM

- **Single Pilot Resource Management is about the unique situations we find ourselves in the "Technically Advanced Airplane"**
  - Weather
  - Traffic
  - Cockpit Automation
  - Data-Link Systems
  - Passengers
- **Follows the lead provided by the airline industry to improve flight safety through CRM training.**
- **Human factors-related accidents motivated the airline industry to implement CRM training for flight crews.**
- **Now, pilot-error related accidents are motivating single-pilot operators to implement SRM training.**

SRM Training Focuses On

- **Situational Awareness**
- **Task management**
- **Automation management**
- **Risk Management**
- **Aeronautical Decision making**
- **CFIT Awareness**

TAA 01	Single Pilot Resource Management (SRM)	
Unit Objective – Demonstrates safe and efficient operations by adequately managing all available resources.		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1.Task Management (TM)	Note: All tasks under SRM will be embedded into the curriculum and the training will occur selectively during all phases of training. SRM will be graded enario syllabus.	Prioritize and select the most appropriate tasks (or series of tasks) to ensure successful completion of the training scenario.
2. Automation Manage		Program and utilize the most appropriate and useful modes of cockpit automation to ensure successful completion of the training scenario.
3. Risk Management (Making (ADM)		Consistently make informed decisions in a timely manner based on the task at hand and a thorough knowledge and use of all available resources.
4. Situational Awareness (SA)		as traffic, weather, fuel nical condition, and pilot have an impact on the of the training scenario.
5. Controlled Flight Into Terrain (CFIT) Awareness		ply techniques to avoid counters with Instrument itions during VFR flight vigation failures and ts during IFR flight

- **SRM**
- **Starts with**
- **Initial Training:**

- **And continues**
- **throughout**
- **A Pilots Career!**

AC 120-51c Says:

Good training for routine operations can have a strong positive effect on how well individuals function during times of high workload or high stress. During emergency situation, it is highly unlikely (and probably undesirable) that any crewmember [pilot] would take the time to reflect upon his or her CRM [SRM] training in order to choose the appropriate behavior. But practice of desirable behaviors during times of low stress increases the likelihood that emergencies will be handled effectively.

•Emergency Escape Maneuver

•What this means to us:

•TAA pilots should make SRM procedures a regular part of every flight. A well practiced habit that can be relied upon in times of stress. Before SRM can become a habit, we have to learn it!!

The SRM 5P Check:

- **The "5P" Check**
  - The Plan?
  - The Plane?
  - The Pilot?
  - The Passengers?
  - The Programming?

- Often,
- when one
- door opens,
- another closes
- behind you!

- **The "Decision Points"**
  - **Before Leaving the Flight Planning Room**
  - **Before Leaving the Ground**
  - **Hourly SRM Updates (Every Second Fuel Check?)**
  - **Before Leaving Cruise Altitude**
  - **Before Leaving the IAF**

SRM "5P" Check

- **The Plan?**
  - Weather?
  - Route?
  - Publications?
  - ATC Reroutes and Delays?
  - Fuel Remaining?

- **The Plane?**
  - Mechanical Status?
  - Automation Status?
  - Database Currency?
  - Circuit Breakers?
  - Backup Systems?

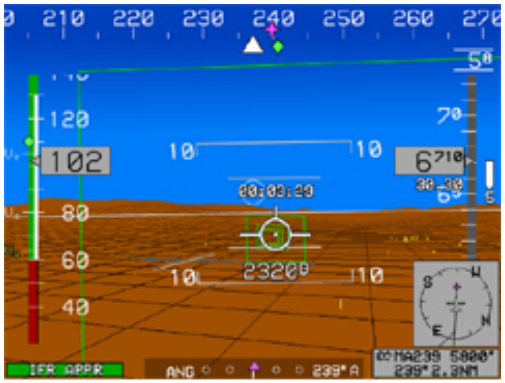
SRM "5P" Check

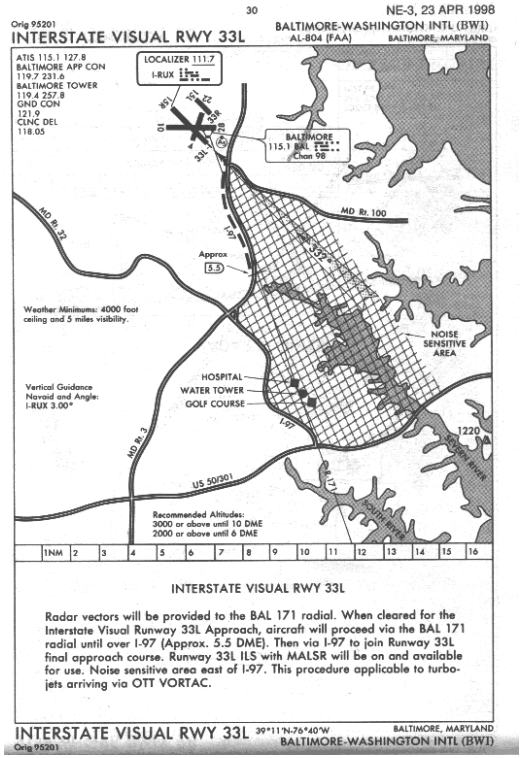
- **The Pilot?**
  - "I"llness?
  - "M"edication?
  - "S"tress?
  - "A"lcohol
  - "F"atique
  - "E"ating

- **The Passengers?**
  - Pilots or Non pilots?
  - Nervous or Quiet?
  - Experienced or New?
  - Helpful or a Handful?
  - Urgent or Optional?
  - Business or Pleasure?

SRM “5P” Check

- **The Programming:**
  - **Preprogram the:**
    - **Autopilot?**
    - **GPS?**
    - **MFD/PFD?**
  - **Anticipate:**
    - **Likely Reroutes and Clearances?**
    - **“Crunch” Points?**
    - **Manual Backup?**
    - **High terrain Encounters?**
  - **Question:**
    - **What’s it doing?**
    - **Why is it doing that?**
    - **Did I Do That?**





SRM Decision Process

At several predetermined decision points consider the following!

- **What's the situation? The 5 P's (Plan, Plane, Pilot, Passengers, and Programming)**
  - **What's changed since your original Go/No Go decision.**
  - **What negative outcomes are we more exposed to?**
    - **Engine failure**
    - **Avionics failure**
    - **Missed approach**
    - **Pilot overload**
    - **Mistakes on approach / final**
    - **CFIT**
    - **Fuel exhaustion**
    - **Icing or loss of control**

SRM Decision Process

At several predetermined decision points consider the following!

- **What can we do to minimize the increased risk associated with those outcomes?**
  - **Use automation to reduce workload / increase awareness.**
  - **Use MFD to maintain terrain awareness, etc**
  - **Use passengers to share workload / monitor environment**
  - **Request**
    - **A simpler approach**
    - **Single frequency approach**
    - **Vectors to final**
    - **Declare min fuel**
    - **Ask for altitude / routing change**
    - **Turn down "difficult" ATC requests**

SRM Decision Process

At several predetermined decision points consider the following!

- **Prioritize tasks**
  - **If we can't do everything well, at least get the important things right.**
  - **What are they?**
  - **What can we "shed“**
- **Is the resulting risk acceptable?**
  - **Would I have taken off knowing this was going to happen?**
  - **If not, divert / terminate the flight early**

Sample SRM Scenario

•“5P” Check

- **Before Takeoff**
  - **Plan**
    - Clearance delivery gives a new routing to ATL
    - Tower advises ATL is undergoing flow control delays
  - **Plane**
    - Autopilot fails the preflight check
      - 15 minute repair (popped CB)
    - Engine requires three tries to start but seems to run well
  - **Pilot?**
    - 7 hrs sleep, arose at 0800
  - **Passengers**
    - 45 minute delay for child who is not feeling well
  - **Programming**
    - Pilot can’t seem to find “**dopey**” intersection along V53
    - Rest of route programs as planned

Sample SRM Scenario

•“5P” Check

- **One Hour After Takeoff**
  - **Plan**
    - ATL Center requires a position report passing “dopey”
    - ATL ceiling and vis is dropping to 1800 ft, 2 miles, “BR”
    - Center asks for a descent to 3,000 ft
  - **Plane**
    - Oil temp has gone up 15 degrees
    - Oil pressure constant
  - **Pilot?**
    - Feels good but seems to make minor mistakes while programming the GPS
  - **Passengers**
    - Sound asleep
  - **Programming**
    - You notice the Jepp database out of date on the GPS?

Sample SRM Scenario

•“5P” Check

- **Before Leaving Cruise Altitude**
  - **Plan**
  - ATL gives you a hold for 30 minutes for flow control
  - ATC advises you to expect extended vectors to final to 25R
  - ATL weather 1100 OVC/1 mile, BR
  - **Plane**
    - Oil temp is up 8 more degrees
    - Oil pressure is down 3 lbs
    - Autopilot breaker pops again, won’t reset
  - **Pilot?**
    - Feels good
    - Did miss a couple of radio calls
  - **Passengers**
    - Sound asleep
  - **Programming**
    - Final approach fix in the GPS for 25R has a different name than on the Jepp charts

Sample SRM Scenario

•“5P” Check

- **Before Leaving IAF**
  - **Plan**
    - ATL weather is 800 ft, ¾ mile and continuing to deteriorate
    - ATC advises you to change to the ILS for the left runway instead of the right
  - **Plane**
    - Oil pressure is down 2 more lbs
    - Trace ice appears on the windshield
  - **Pilot**
    - Awake, seemingly alert, a little irritable
  - **Passengers**
    - Awake now
    - Younger child is crying
  - **Programming**
    - Can’t seem to delete the 25R approach and insert the 25 L
    - Took three tries to program the approach
    - Made same key stroke error twice

The "5P's" At each decision point?

- The "Decision Points"
  - Before Leaving the Flight Planning Room?
  - Before Leaving the Ground?
  - Hourly SRM Checks?
  - Before Leaving Cruise Altitude?
  - Before Leaving the IAF?

- What is the situation?
- What are the tasks?
- How can automation help?
- What is the risk involved?
  - How can risk be reduced?
  - Are there terrain issues?
- What is my decision?

- The "5P" Check
  - The Plan?
  - The Plane?
  - The Pilot?
  - The Passengers?
  - The Programming?

Failure to make a decision, is a decision!!

•Delivering NextGen

Automatic Dependent Surveillance - Broadcast

Radar Surveillance → **Satellite-Based Surveillance**

•Satellite-based surveillance

- Precision position updates
- Cockpit traffic and weather
- Safer flights
- Reduced separation
- Oceanic altitude changes
- Ground infrastructure

TAA Lessons Learned

1. **Stay ahead of automation**

2. **Don't be afraid to drop down a level in automation**

3. **If in any doubt – disconnect!**

4. **Have sound hand-flying skills for when the automation fails**

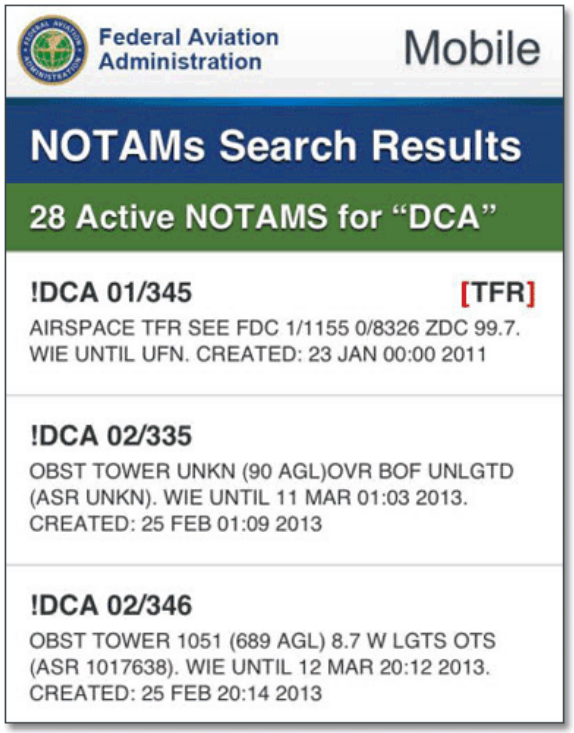
5. **Train to the specifics of your automation**

Where do I get Help?

FAA.gov and GA

FAA.gov is a key resource for GA pilot information

- **5.7 million downloads of documents, guidance, handbooks and diagrams**
- **16.4 million N-number look ups were processed**
- **40,000 N-number look-ups on FAA.gov/Mobile**
- **1 million NOTAMS searched**



Training Resources & Guides
Schools
Airman Testing
FAA Academy

Training & Testing

Print Share

Training and testing are key parts of the FAA's safety mission. We provide, promote, and approve a wide range of training and testing opportunities to everyone from hobbyists to certificate holders.

Training

- Air Traffic Collegiate Training Initiative Program
- Aircraft Certification Technical Training Program
- FAA-Industry Training Standards (FITS)
- Pilot Training
- Mechanic Training
- Aircraft Dispatcher Training (PDF)
- Flight Standards District Offices (FSDO)

Testing

- Airmen Practical Test Standards (PTS)
- Sample Airman Knowledge Test Questions
- Airmen Knowledge Test Guides

FAA Safety Team (FAASTeam)

The FAASTeam provides training, outreach, and education for anyone interested in aviation safety.

- Online Course Catalog
- WINGS Pilot Proficiency Program
- About the FAASTeam

FAA Academy

- Student Services
- College Credit for FAA Training
- Air Traffic Technical Training

Top Tasks

- Get pilot training information
- Review airmen knowledge test questions
- Become an air traffic controller
- Review airmen practical test standards
- Find a handbook or manual

FITS Research and Studies

- Develop a Methodology to Justify the Inclusion or Removal of Maneuvers from the Practical Test Standards
  - Summary of Findings and Recommendations to the FAA (PDF)
  - Methodology for Validation of Tasks and Completion Standards (PDF)
  - Results of Initial Validation of Tasks and Completion Standards (PDF)
- Effectiveness of FITS Training
  - Embry Riddle Aeronautical University (ERAU) Study (PDF)
  - University of North Dakota (UND) Study (PDF)
- Middle Tennessee State University (MTSU) Research
  - MTSU Initial FITS Results (PDF)
  - Implementation of the FITS Program in TAAs: Lessons Learned (PDF)
  - Best Evidence for the FITS Program in TAAs* (PDF)
  - FITS Enhances GPS Proficiency* (PDF)
  - FITS Commercial Pilot Training Course □ A Student□s Perspective (PDF)
  - Guide for Instructors and Examiners-Evaluating Pilots Using a Scenario-Based Methodology (PDF)
- General Aviation Technically Advance Aircraft Safety Study (PDF)
- Scenario Based training to teach Single Pilot Resource Management (PDF)
- Examining Learner Centered Grading (PDF)
- Scenario Based Training in TAA to Improve Risk Management (PDF)
- Student Pilot Situational Awareness: The Effects of Trust in Technology (PDF)
- Evaluating the Satisfaction and Quality of FITS Flight Training (PDF)
- Evaluating the Effectiveness of Scenario Based Training in the Collegiate Flight Training Environment (PDF)
- Validity and Reliability of Learner Centered and Collaborative Grading (PDF)
- Determining Appropriate Levels of Automation (PDF)

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Aircraft | Airports | Air Traffic | Data & Research | Licenses & Certificates | Regulations & Policies | Training & Testing

FAA-Industry Training Standards (FITS)

- Example Scenarios
- FITS Members
- FITS Presentations
- FITS Research and Studies
- **FITS Training & Curriculums**
- Guidance & Documents
- National Simulator Program (NSP)

FAA Home ⊐ Training & Testing ⊐ Training Resources & Guides ⊐ FAA-Industry Training Standards (FITS) ⊐ FITS Training & Curriculums

Print Share

Aircraft & Equipment Specific Training Curriculums

- Adam 500 Transition Syllabus (PDF)
- A500 Instructor Syllabus (PDF)
- Adam 700 Scenario-Based Transition Syllabus (PDF)
- Garmin 530/430 Sample Training Syllabus (PDF)
- MTSU FITS Scenario Based Private/Instrument Pilot Certification Course (PDF)

Top Tasks

- Get pilot training information
- Find a handbook or manual
- Apply for scholarships & grants
- Join in the aircraft certification technical training program
- Get pilot testing information

Get pilot testing information

FAA-Industry Training Standards (FITS)

Example Scenarios

FITS Members

FITS Presentations

FITS Research and Studies

FITS Training & Curriculums

Guidance & Documents

National Simulator Program (NSP)

Guidance & Documents

- FITS Curriculum Acceptance Criteria and Levels of Accepted FITS Training (PDF)
- Advisory Circular 100-90A, U.S Terminal and En Route Area Navigation (RNAV) Operations
- Changes in GA Flight Operations & Their Impact on System Safety & Flight Training (MS Word)
- Flight Instructor Refresher Clinic (FIRC) Development
- Managing Risk through Scenario Based Training, Single Pilot Resource Management, and Learner Centered Grading (PDF)

Top Tasks

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Get pilot testing information

FITS Articles

- Overview (PDF)
- Current Status (PDF)
  - March-April 2005 Program Update (PDF)
- The Future (PDF)

- FITS: What Users Think (PDF)
- G1000 Guide for Designated Pilot Examiners and Certified Flight Instructors

GARMIN

G1000™

guide for designated pilot examiners and certified flight instructors

INTRODUCTION

Technology, such as that found in the G1000 integrated avionics system has the potential to bring a higher level of safety to general aviation (GA). However, this can only occur if pilots operating aircraft with such equipment are properly trained and held accountable to the Practical Test Standards (PTS). The purpose of this document is to provide both an overview of the typical G1000 potential failure modes and sample system operation/failure mode scenarios that correspond to the applicable sections of FAA-S-8081-4D, Instrument Rating Practical Test Standards, so that the Designated Pilot Examiner (DPE) and Certified Flight Instructor – Instrument (CFII) can properly prepare pilots for the instrument rating by simulating realistic failures and teaching appropriate failure response plans.

The system recommendations provided in this document are Garmin's recommendations only and are superseded by the aircraft manufacturer's recommendations and FAA-approved documentation for each aircraft model. The basic G1000 system architecture is similar across many aircraft models. However, the location of the actual components of the system, the location and grouping of the circuit breakers, and the engine instrumentation presentations vary between aircraft. Therefore, it is important to review the aircraft manufacturer documentation for each aircraft model.

***NOTE:** As part of Garmin's commitment to flight safety, any specific questions or recommendations about both this document and the G1000 system as it is to be used for the instrument check-ride can be sent via e-mail to "**CFI_Tools@garmin.com**". For general questions, please visit "**http://www.garmin.com/support**" to correspond with Garmin's aviation technical support specialists.*

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The system re ... ft manufacturer's re ... is similar across ma ... e circuit breakers, a ... ft manufacturer doc ...

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Garmin GNS 530/430

Sample Training Syllabus and Flight Lessons for Use by Flight Schools & Flying Clubs

Home Study Worksheets 2

GNS 530/430 Home Study 1 3

Worksheet – Use of GPS in lieu of other avionics, regulations

GNS 530/430 Home Study 2 4

Worksheet – Terminology Review

GNS 530/430 Home Study 3 5

Worksheet – COM and VLOC Operation

GNS 530/430 Home Study 4 6

Worksheet – Direct-to and Flight Plan Navigation

GNS 530/430 Home Study 5 7

Worksheet – Arrival, Departure and Approach Procedure Operation

GNS 530/430 Home Study 6 8

Worksheet – GNS 530/430 Series Display Interfaces; TIS

GNS 530/430 Home Study 7 9

Worksheet – GNS 530/430 Series Display Interfaces; GDL 49 Weather

GNS 530/430 Home Study 8 10

The Role of Avionics in Aeronautical Decision Making and Single-Pilot Resource Management

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Lesson 2: Local Operational Flight Review 14

Risk Management

Task G: Risk Management

- 1. Principles of Risk Management
- 2. Risk Management Process
- 3. Level of Risk
- 4. Assessing Risk
- 5. Mitigating Risk
- 6. IMSAFE checklist
- 7. PAVE check
- 8. 5P checklist

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CFI PTS

All Practical Tests

- **Special Emphasis Areas. Among these are;**
  - Single Pilot Resource Management (SRM), and
  - Other areas deemed appropriate to any phase of the practical test

Integrated Approach

- **Integrated and…**
- **SRM includes all available resources; human resources, hardware and information.**

- **…evident in everything you do**
  - SRM is a set of skill competencies evident in all tasks

Examiner Responsibility

- **Oral questioning to determine applicant's understanding**
  - Used **judiciously** at all times, especially during flight portions
  - Test applicant's **correlative** abilities rather than mere rote enumeration of facts
  - Satisfactory performance; **demonstrates**
    - sound judgment, exercises aeronautical decision-making/risk management

Page 11, FAA-S-8081-14B, Private Pilot PTS

Single Pilot Resource Management

- **“ The examiner shall evaluate the applicant’s ability throughout the practical test to….use good aeronautical decision-making procedures in order to evaluate risk”**

Page 12, FAA-S-8081-14B, Private Pilot PTS

ADM and RM (Cont' d.)

- **For example…….**

"develop a scenario that incorporates weather decisions and performance planning and distractions that may result in a loss of runway/taxiway situational awareness"

Page 15, FAA-S-8081-6D (CFI PTS)

Aeronautical Decision-Making

- **Use a sound decision-making process such as DECIDE model, 3-P model**
- **Recognize and explain any hazardous attitudes**
- **Decide and execute an appropriate course of action. Applicant explains factors influencing decision**
- **Explain how the elements of risk management, CFIT awareness, use of automation and task management influence the decisions made**

Page 13, FAA-S-8081-14B, Private Pilot PTS

Risk Management

- **Explain the four fundamental risk elements**
- **Use a tool such as the PAVE checklist to help assess the elements**
- **Use a personal checklist such as I' M SAFE to determine personal risk**
- **Use weather reports and forecasts to determine weather-related risk**

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Risk Management (Cont' d.)

- **Explain how to recognize risk and how to mitigate those risks throughout the flight**
- **Use the 5P model to assess the risks associated with each of the five factors**

Task Management

- **Explain how to prioritize tasks in such a way to minimize distractions from flying the aircraft**
- **Complete all tasks in a timely manner considering the phase of flight without causing a distraction from flying**
- **Execute all checklists and procedures in a manner that does not increase workload at critical times**

Automation Management

- **Explain how to recognize the current mode of operation of the autopilot/FMS**
- **Explain how to recognize anticipated and unanticipated mode or status changes of the autopilot/FMS**
- **State at any time during the flight the current mode or status and what the next anticipated mode or status will be**

Automation Management

- **Use the autopilot/FMS top reduce workload as appropriate for the phase of flight, during emergency or abnormal operations**
- **Recognize unanticipated mode changes in a timely manner and promptly return the automation to the correct mode**

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FAA Collaboration – GAJSC

SE-24

Best practices regarding single-pilot CRM will be identified.

The identified best practices should be communicated to the GA community through a public education campaign.

- **The FAA and industry will identify the best practices regarding single-pilot CRM.**

- **The FAA and industry will conduct a public education campaign emphasizing the best practices regarding single-pilot CRM operational techniques.**

FAA Collaboration – GAJSC

SE-27

Review 14 CFR part 21 § 21.8 and 21.9, and make sure that these rules are not unintentionally producing roadblocks to the installation of non-required, safety-enhancing equipment.

If these rules are creating an unintended roadblock, create paths that are more cost effective up to and including using the exemption process.

•FAA evaluation of rules to identify areas where their compliance costs far exceed the safety value provided.

•Recommendations can be made for changing these requirements.

Questions?