

# Airman Certification Standards

## What's New and What's Next?

Presented to: ATEC – Washington Fly-in

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Date: September 5, 2017



Federal Aviation  
Administration



# Overview – ACS Project



- Why, What, Who?
- What's new in 2017?
  - Private Pilot Airplane – revised
  - Instrument Airplane rating – revised
  - Commercial Pilot Airplane – new
- How do I use the ACS?
- What's next?
  - Instructor, ATP
  - Aircraft Mechanic
  - Other....?
- Resources



# Houston, we have a problem...

## *2011 Explosion*

Ill-advised changes to Fundamentals of Instructing knowledge exam led to skyrocketing failure rate.



Aviation training community demanded action to address fundamental flaws in FAA certification testing, which drives the way industry conducts aviation training.



# Why Change?

## *Longstanding systemic flaws*

For each airman certificate or rating, 14 CFR lists required areas of *aeronautical knowledge* and *flight proficiency*.

- FAA developed the PTS to provide practical test performance metrics for flight proficiency in each Area of Operation and Task.
- Each PTS includes a lengthy list of largely undefined “special emphasis” areas.

There has never been a corresponding set of defined “KTS” (knowledge test standards) metrics for the aeronautical knowledge elements tested via “the written” exam.



# Why Change?

## *Longstanding systemic flaws*

Lack of “KTS” allowed the accumulation of too many FAA knowledge test questions that were:

- Out-of-date (e.g., lots of wood, dope and fabric, not much composites)
- Irrelevant (e.g., two types of human failure)
- Disconnected from “real” skills and knowledge required for safe maintenance of today’s equipment.

Also, PTS did not evolve in a systematic way – results include redundant and conflicting tasks.



# Why change?

- ACS started as a way to fix knowledge testing.
- FAA and industry partners determined the need for a systematic approach that would:
  - Provide clear standards for aeronautical knowledge
  - List specific behaviors for risk management and ADM
  - Consolidate overlapping tasks in the PTS
  - Tie the many “special emphasis” items to knowledge and skill
  - Connect the standards for knowledge, risk management, and skill to guidance (H-series handbooks), to knowledge test questions, and the practical test



# What is the ACS?

Definition & integration of elements = comprehensive standard

Aeronautical knowledge

<b>Subject</b>	<b>A. Metallic Structures</b>
<b>References</b>	FAA-H-8083-31, AC 43.13-1
<b>Objective</b>	To determine that the applicant exhibits satisfactory knowledge, risk management, and skills associated with aircraft metallic structures.
<b>Knowledge</b>	The applicant demonstrates understanding of:
<i>AM.II.A.K1</i>	Inspection/testing of sheet metal structures.
<i>AM.II.A.K2</i>	Types of sheet metal defects.
<i>AM.II.A.K3</i>	Selection of sheet metals.
<i>AM.II.A.K4</i>	Layout, and/or forming of sheet metal.
<i>AM.II.A.K5</i>	Select Sheet metal rivets and hardware.
<i>AM.II.A.K6</i>	Heat treatment of aluminum.
<i>AM.II.A.K7</i>	Rivet layout.
<i>AM.II.A.K8</i>	Rivet installation.
<i>AM.II.A.K9</i>	Maintenance safety practices/precautions for sheet metal.

Know

Aeronautical decision-making

<b>Risk Management</b>	The applicant demonstrates the ability to identify, assess and mitigate risks, encompassing:
<i>AM.II.A.R1</i>	Consequences of improper selection of repair materials.
<i>AM.II.A.R2</i>	The need for maintenance safety practices/precautions for sheet metal structures.
<i>AM.II.A.R3</i>	Using appropriate personal protective equipment to prevent injury when working with sheet metal structures.

Consider

PTS-based proficiency

<b>Skills</b>	The applicant demonstrates the ability to:
<i>AM.II.A.S1</i>	Install and remove solid rivets.
<i>AM.II.A.S2</i>	Inspect sheet metal.
<i>AM.II.A.S3</i>	Select and install special fasteners.
<i>AM.II.A.S4</i>	Properly use Manufacturer's Structural Repair Manual.
<i>AM.II.A.S5</i>	Prepare and install a patch to repair an aircraft or component.
<i>AM.II.A.S6</i>	Make a drawing of a repair including the number of rivets and size of sheet metal required.
<i>AM.II.A.S7</i>	Remove a patch that was installed with rivets.
<i>AM.II.A.S8</i>	Trim and form a piece of sheet metal to fit a prepared area.
<i>AM.II.A.S9</i>	Fabricate a complex aluminum part in accordance with a drawing.
<i>AM.II.A.S10</i>	Determine a rivet pattern for a specific repair given pitch, gauge, and edge distance.
<i>AM.II.A.S11</i>	Countersink holes in sheet metal to .010 tolerance.
<i>AM.II.A.S12</i>	Perform a repair on a damaged aluminum sheet.
<i>AM.II.A.S13</i>	Utilizing approved data, determine if damage is repairable or the item must be replaced.

Do



# What is the ACS?

## II. Airframe Structures

<b>Subject</b>	<b>A. Metallic Structures</b>
<b>References</b>	FAA-H-8083-31, AC 43.13-1
<b>Objective</b>	To determine that the applicant exhibits satisfactory knowledge, risk management, and skills associated with aircraft metallic structures.
<b>Knowledge</b>	The applicant demonstrates understanding of:
AM.II.A.K1	Inspection/testing of sheet metal structures.
AM.II.A.K2	Types of sheet metal defects.
AM.II.A.K3	Selection of sheet metals.
AM.II.A.K4	Layout, and/or forming of sheet metal.
AM.II.A.K5	Select Sheet metal rivets and hardware.
AM.II.A.K6	Heat treatment of aluminum.
AM.II.A.K7	Rivet layout.
AM.II.A.K8	Rivet installation.
AM.II.A.K9	Maintenance safety practices/precautions for sheet metal.
<b>Risk Management</b>	The applicant demonstrates the ability to identify, assess and mitigate risks, encompassing:
AM.II.A.R1	Consequences of improper selection of repair materials.
AM.II.A.R2	The need for maintenance safety practices/precautions for sheet metal structures.
AM.II.A.R3	Using appropriate personal protective equipment to prevent injury when working with sheet metal structures.
<b>Skills</b>	The applicant demonstrates the ability to:
AM.II.A.S1	Install and remove solid rivets.
AM.II.A.S2	Inspect sheet metal.
AM.II.A.S3	Select and install special fasteners.
AM.II.A.S4	Properly use Manufacturer's Structural Repair Manual.
AM.II.A.S5	Prepare and install a patch to repair an aircraft or component.
AM.II.A.S6	Make a drawing of a repair including the number of rivets and size of sheet metal required.
AM.II.A.S7	Remove a patch that was installed with rivets.
AM.II.A.S8	Trim and form a piece of sheet metal to fit a prepared area.
AM.II.A.S9	Fabricate a complex aluminum part in accordance with a drawing.
AM.II.A.S10	Determine a rivet pattern for a specific repair given pitch, gauge, and edge distance.
AM.II.A.S11	Countersink holes in sheet metal to .010 tolerance.
AM.II.A.S12	Perform a repair on a damaged aluminum sheet.
AM.II.A.S13	Utilizing approved data, determine if damage is repairable or the item must be replaced.

## ACS coding system

The ACS assigns a unique code to each element of knowledge, risk management, & skill

**AM** = Aviation Mechanic  
(*applicable ACS*)

**II** = Airframe Structures  
(*Section*)

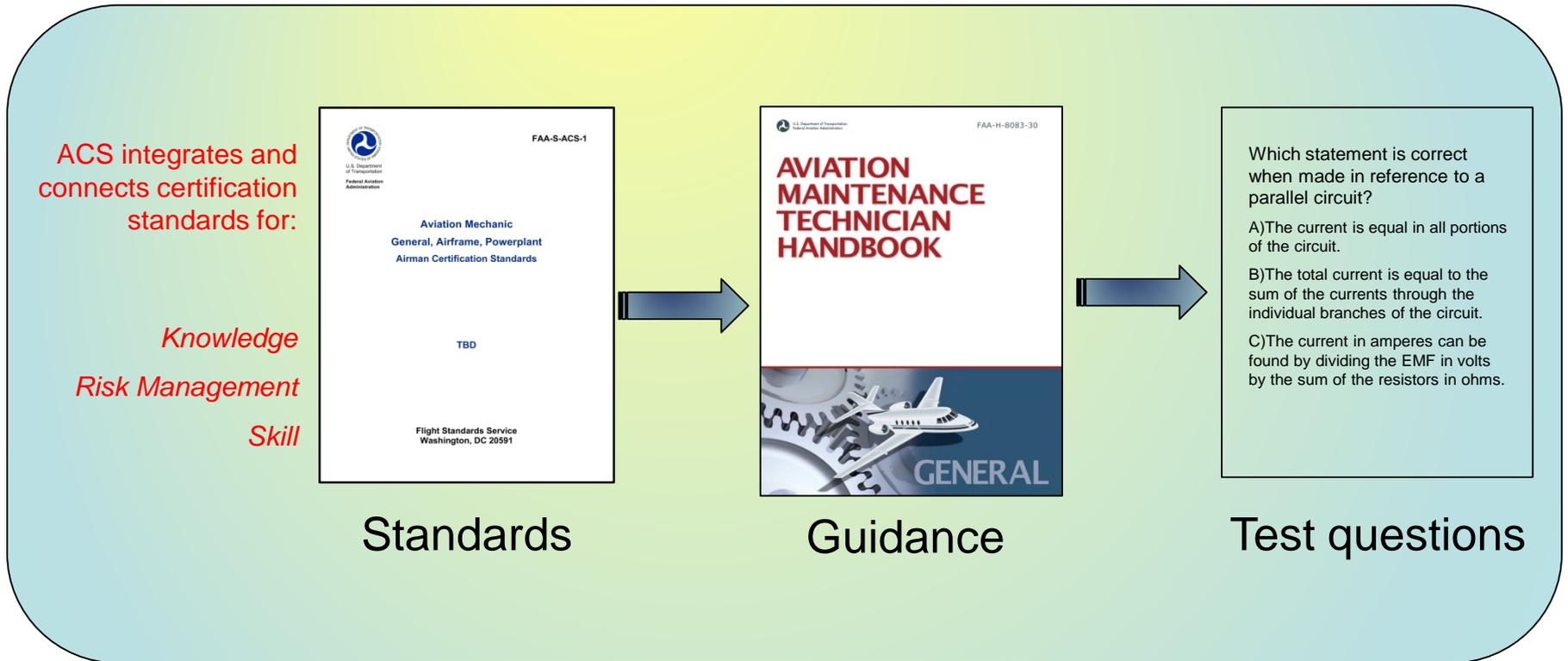
**A** = Metallic Structures  
(*Subject*)

**K1** = Inspection/testing of sheet metal structures  
(*Subject Element Knowledge*)



# Recap - What is the ACS?

ACS is single-source set of standards for knowledge exam & oral and practical test.

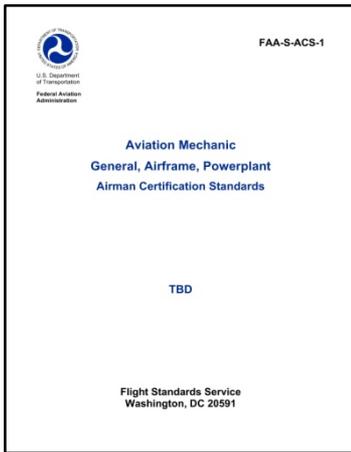


ACS coding connects standards to guidance and test questions.

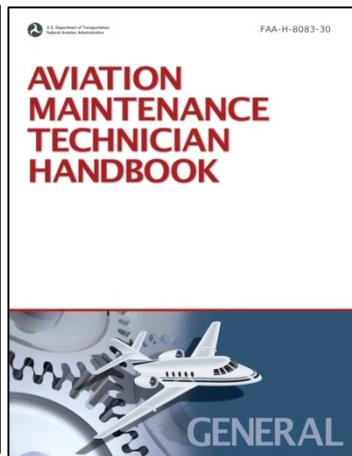


# What is the ACS?

## Changes to Regulations, Policies, Procedures



Standards

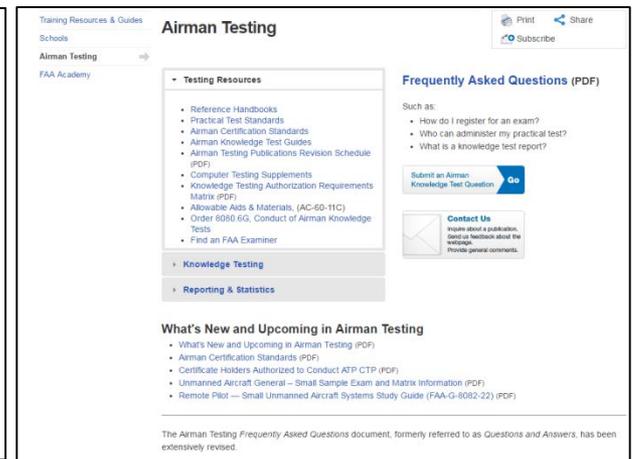


Guidance

Which statement is correct when made in reference to a parallel circuit?

- A) The current is equal in all portions of the circuit.
- B) The total current is equal to the sum of the currents through the individual branches of the circuit.
- C) The current in amperes can be found by dividing the EMF in volts by the sum of the resistors in ohms.

Test questions

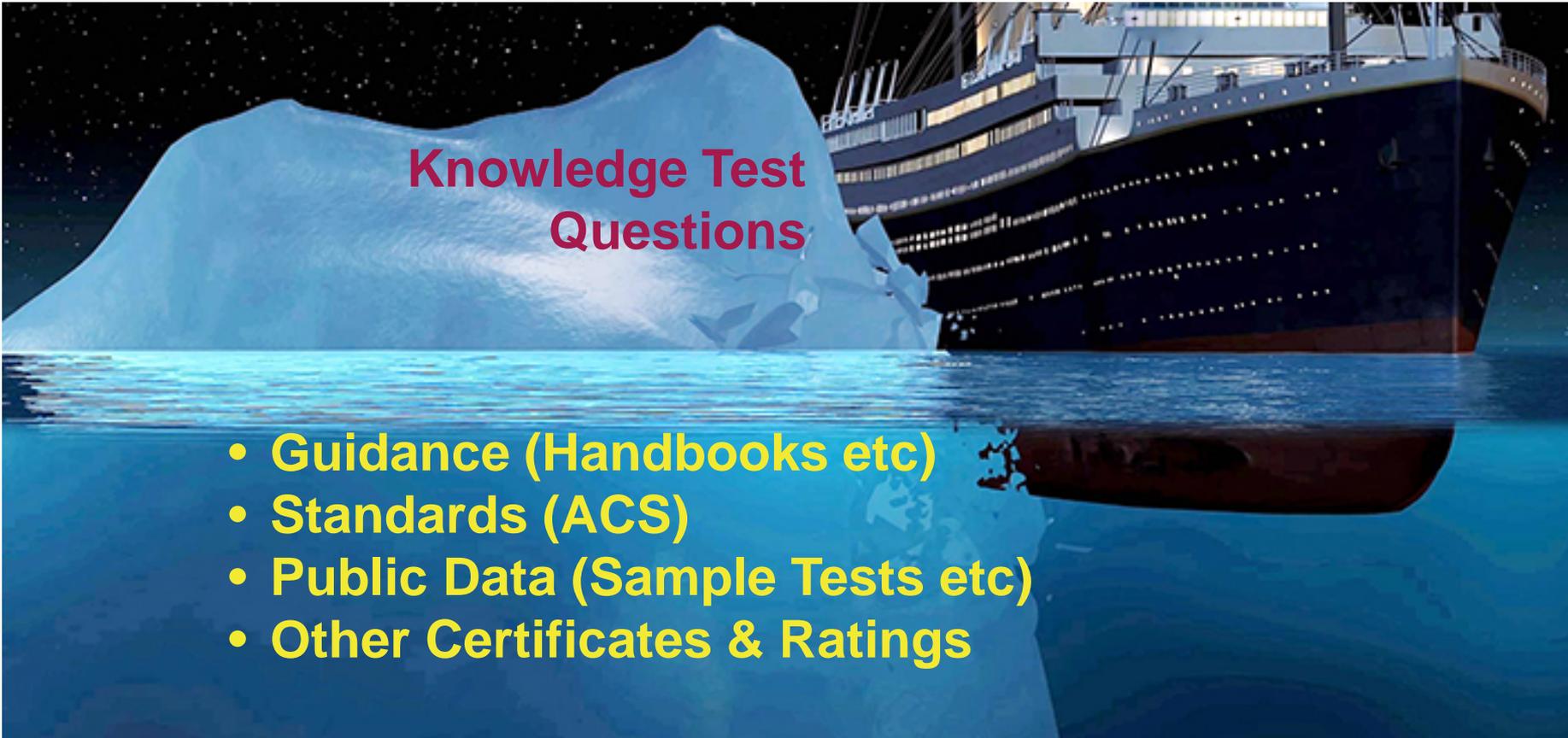


Public data

## Other Certificates / Ratings



# What is the ACS?



## Knowledge Test Questions

- **Guidance (Handbooks etc)**
- **Standards (ACS)**
- **Public Data (Sample Tests etc)**
- **Other Certificates & Ratings**



# Who created the ACS?

ACS arises from extensive FAA/industry collaboration



- **Industry-led development** – the ACS has been developed, refined, and tested through three consecutive aviation training industry groups with diverse representation.
- **Public comment** - the FAA established several dockets for the industry groups to receive public comments on the ACS.
- **Prototyping** - the FAA and its industry partners conducted ACS prototype activities to test and refine the ACS for private pilot (airplane) and instrument rating (airplane). *Similar approach envisioned for AMT ACS.*



# What's New?

June 2017:

- First version of ACS for Commercial Pilot – Airplane
- Updates to ACS for Private Pilot Airplane certificate and Instrument-Airplane Rating that will:
  - Incorporate corrections and changes suggested by stakeholders
  - Streamline presentation by consolidating certain task elements
  - Standardize phrasing and sequence of certain task elements
- Modifications to Slow Flight and Stalls Area of Operation in Private and Commercial Airplane ACS.
- Documents published to the FAA website's Airman Testing page with an effective date of June 12, 2017.



# What's Next for the ACS?

In development:

Airline Transport Pilot (Airplane)



Aircraft Mechanic Certificate  
with Airframe and/or  
Powerplant ratings



Instructor (Airplane)



# What's Next for the ACS?

Rotorcraft....?



*FAA & ACS Working Group members will jointly determine priority for development of ACS in additional categories/classes and certificates/ratings.*



# Thanks to Aviation Community Partners!

## Current and Past Aviation Community Participants

AOPA	CAPA	King Schools	Redbird Simulations
Airlines for America (A4A)	ERAU	Liberty University	RACCA
ALPA	FAA	Mary Schu Aviation	Robert Stewart, CFI
AnywhereEducation Inc.	FedEx Express	NATA	Savvy Aircraft Maintenance
AABI	Flight Safety International	NAFI	Satcom Direct (Mariellen Couppee)
Aviation Research Training & Services	GAMA	NBAA	SAFE
ASA	Gleim	Navy Technologies	Sportys Academy
ATEC	Florida Institute of Technology	Oxford Flying Club	UAA
CAE	Florida State College	Paul Alp, CFI	UND
Cessna Pilot Centers	Jeppesen	Polk State College	



# Resources



- **Airman Testing Web Page**

- [http://www.faa.gov/training\\_testing/testing/](http://www.faa.gov/training_testing/testing/)
- [http://www.faa.gov/training\\_testing/testing/acs/](http://www.faa.gov/training_testing/testing/acs/)

- **ACS Focus Team**

- [9-AVS-ACS-Focus-Team@FAA.gov](mailto:9-AVS-ACS-Focus-Team@FAA.gov)

