



## Aviation Rulemaking Advisory Committee Airman Testing Standards and Training Working Group

### FREQUENTLY ASKED QUESTIONS

#### What is the ACS project all about?

*The goal of this project is to improve airman training and testing with an integrated, holistic system that clearly aligns testing with certification standards and guidance.*

#### What is the ATST WG? How does it relate to the ARC?

*ARC refers to the Airman Testing Standards and Training Aviation Rulemaking Committee, which the FAA chartered in September 2011 to make recommendations for more effective training and testing. The ARC submitted its report and nine recommendations to the FAA on April 13, 2012.*

*To benefit from industry expertise in implementing the ARC recommendations, in August 2012 the FAA turned to the Aviation Rulemaking Advisory Committee (ARAC). ARAC, a formal standing committee of aviation associations and industry, assigned this work to a newly-formed Airman Testing Standards and Training Working Group (ATST WG) consisting of aviation education and training professionals from all major segments of this community.*

#### Who are these people? What expertise do they have?

*When the FAA asked the industry-comprised Aviation Rulemaking Advisory Committee (ARAC) to accept this project, the agency stipulated that the Airman Testing Standards and Training Working Group should be:*

*(C)omprised of aviation professionals with experience and expertise in airman training and testing, and technical experts having an interest in the assigned task. The FAA would like a wide range of members to ensure that all aspects of airman testing and training, including best practices, are considered in the development of its recommendations.*

*In response to the Federal Register notice published on September 12, 2012[77 FR 56251], a number of individuals and organizations contacted the FAA to request participation on the ATST WG. The FAA selected its membership to include aviation professionals who could collectively represent all major sectors of the industry. These include flight instructors, designated pilot examiners, the aviation academic community, industry advocacy associations, and training and test preparation providers involved with aviation training and testing in 14 CFR Part 61, 141, 147, and 121 environments. To help ensure that the FAA has a full understanding of the ATST WG's work and the rationale for its recommendations, the FAA also assigned subject matter experts from a number of its policy divisions to attend ATST WG meetings.*



### **What is the problem you're trying to solve? What's wrong with the tests we have now?**

*To many stakeholders, FAA knowledge testing is the most deeply flawed part of the airman certification system. It matters because the knowledge test is an important component of the airman certification process. It measures an applicant's understanding of the rules, regulations, and knowledge areas required to receive an FAA airman certificate.*

*For the flight proficiency (skills) part of the airman certification process, the FAA developed the Practical Test Standards (PTS) to define acceptable performance of the required skills. There is currently no such guidance for the knowledge test, which creates problems familiar to anyone who has ever taken an FAA knowledge test. These include questions that are overly broad, trivial, outdated, and sometimes irrelevant. Test questions that require multiple interpolations to calculate takeoff, landing, and density altitude to the foot imply a level of precision that, ironically, is grossly inaccurate in terms of safety and reality.*

*Moreover, the knowledge exam is not a reflection of a typical ground training program. Consequently, applicants who have demonstrated knowledge and mastery in an approved flight and ground school curriculum must still conduct a comprehensive "test prep" to pass the knowledge test. It is difficult for instructors to provide the required remedial training for missed knowledge, and difficult for examiners to accurately re-test the missed knowledge. As a result, the knowledge exam is disconnected from both training and the practical test. For these reasons, many regard the knowledge test as a rote memorization exercise that has no real value for aviation safety education and training.*

### **If there are problems with the knowledge test, why can't you just fix those and leave the rest alone?**

*In September 2011, the FAA convened a group of industry experts to recommend ways to "fix testing." This group – the Airman Testing Standards and Training Aviation Rulemaking Committee (ARC) – quickly determined that there is no way to fix the knowledge test in a meaningful and sustainable way without having a knowledge test standard akin to the PTS.*

*The ARC briefly considered proposing a "Knowledge Test Standards" (KTS) document that would be the knowledge test companion to the skill-focused PTS. After much discussion, the ARC discarded this approach as unworkable. ARC members feared that creation of separate KTS documents could result in divergence between the KTS and the PTS. It would burden stakeholders with an additional set of documents, and require a greater expenditure of shrinking FAA resources to develop, deploy, and maintain a full range of KTS documents.*

*The ARC ultimately concluded that aviation safety and stakeholder needs, including the core desire for a more relevant FAA knowledge test, would be best served by integrating task-specific aeronautical knowledge into the appropriate Area of Operation in the existing PTS, and by adding task-appropriate risk management elements for each Area of Operation. The ACS would thus define not only the performance metrics for knowledge and skill, but also the required content for guidance materials such as the FAA-H-series handbooks and for relevant knowledge test questions.*



## What's wrong with the PTS?

*The PTS provides metrics to define acceptable performance of the “flight proficiency” skills listed in 14 CFR part 61 for a given certificate or rating. Most people believe that the PTS generally serves its intended purpose but, like all such documents, it has become bloated over the years with an ever-expanding list of “special emphasis” items, repetitive or overlapping Areas of Operation/tasks, and poorly-defined additional requirements (e.g., evaluation of the applicant’s risk management and aeronautical decision-making skills).*

## How does the ACS approach improve the PTS?

*The ACS approach does **not** increase or expand any of the skill evaluation requirements in the existing PTS, but it significantly improves the PTS in several ways. The ACS:*

- *Provides integrated guidance that defines performance metrics for aeronautical knowledge as well as flight proficiency (skill).*
- *Strengthens the PTS by explicitly defining the aeronautical knowledge needed to support each Area of Operation/task. This linkage enhances the relevance of the testing/training process for adult learners by clearly answering the “why do I need to know **that**?!” question.*
- *Enhances safety by using the risk management section in each ACS Area of Operation to translate abstract terms like “aeronautical decision-making” into specific safety behaviors relevant to each task.*
- *Eliminates “bloat” by consolidating duplicative or overlapping tasks in the existing PTS.*

## Why does the ACS have a separate section for risk management? Isn't that just the latest buzz word?

*The PTS already requires evaluation of the applicant’s risk management abilities, but the existing document doesn’t offer the kind of concrete “what do I have to do?” guidance that users need and deserve.*

*The rationale for including a risk management section in the ACS is to enhance safety by translating abstract terms into specific safety behaviors relevant to each task. The ACS is also intended to communicate and demonstrate that risk management is a continuous process that includes identification, assessment, and mitigation of task-specific hazards that create risk. The risk management element identifies the circumstantial issues that aviators must consider in association with a particular task.*

## So how does the ACS approach improve the test?

*Accepted industry practices for any certification process stipulate that training and testing be based on a job/task analysis. The ACS documents function as the required job/task analysis, as they define the knowledge and skills needed to perform at the level of the target certificate or rating. By so doing, the ACS approach better serves the applicant, the instructor, and the evaluator. And because the process of developing the ACS requires a thorough review and update of knowledge and skills for airman certification, it aligns with certification industry standards for periodic review and revision of the job/task analysis. In addition, the ACS approach will enable the FAA to create and maintain a clear link between the regulations, knowledge/skill performance standards, guidance, and test materials.*



## How do you propose to provide the “clear link” connecting knowledge/skill performance standards, guidance, and test materials?

*One of the overarching goals of this project is to create an integrated, coherent airman certification system in which standards, guidance, and testing can be aligned and maintained in alignment. Such symmetry is key to fully realizing the benefits the ACS system promises to both the FAA and its many stakeholders. It is also key to conformance with accepted industry standards for certification programs, which require that items to be trained and tested be directly linked to the job/task analysis – in this case, the ACS.*

*You may have noticed that the revised versions of the private pilot and instrument rating ACS documents and the new authorized instructor ACS include a series of letters and numbers after each task. These codes provide the means to correlate the tasks in the ACS with guidance and testing, and to keep them aligned going forward. The proposed ACS codes would supersede the current system of “Learning Statement Codes” (LSC), which is too limited to serve as the mechanism for alignment and too complex to effectively serve the needs of the FAA and the stakeholder community.*

*The proposed coding system has five elements that are anchored in the ACS (not in reference documents, like the current LSCs).*

### **PA.XI.A.KI.a:**

*PA = (private pilot airplane) – identifies the applicable ACS.*

*XI = Area of Operation (night operation)*

*A = Task (night preparation);*

*KI = Task element [knowledge (K), skill (S), risk management (R)]*

*a = rote – represents the level of learning and guides question development (e.g., rote would require the applicant to define, recall, list, name, match, label).*

*(b = understanding, c = application, d = correlation), representing the level of learning which also informs the manner of the question (rote = define, recall, list, name, match, label).*

*The proposed ACS-based coding scheme will:*

- *Clearly align guidance and test questions to the ACS;*
- *Make the airman test report meaningful to stakeholders (applicant, instructor, evaluator);*
- *Provide a means for automated generation of tests, whether using the existing test forms or future randomized selections; and*
- *Eliminate subjectivity and vastly simplify system management requirements for the FAA.*



### Isn't the real problem related to deficient skills? If so, what is the point of this change?

*Aviators love to debate, and we can argue endlessly about what **really** causes accidents. Perhaps we can agree, though, that most accidents have multiple causes.*

*According to the AOPA Air Safety Institute, the three leading general aviation (GA) fatal accident factors are maneuvering flight, continued VFR into IMC, and loss of control on takeoff. These factors all imply some degree of deficiency in the pilot's knowledge, skill, and risk management abilities. Even the world's best stick-and-rudder pilot is at risk for loss of control if he or she has an inadvertent flight into IMC because of deficiencies in weather knowledge or risk management ability. Safety is not served by emphasizing just one of these three abilities. On the contrary, each supports the others.*

*The ACS is therefore an improvement over the current system, because it offers a holistic approach to aviation training and testing – it integrates knowledge, skills, and risk management, and it provides a way to ensure that the elements of the certification process – standards, guidance, and testing – are correlated to these abilities and aligned with each other.*

### How can you map knowledge to skills?

*The ATST WG invested considerable time developing a standardized approach to integrating knowledge and risk management with the skills in the existing PTS Areas of Operation/tasks. To assist the FAA in this process, the ATST WG's final report will describe its PTS-to-ACS transition methodology in detail. In summary, though, the ATST WG sought to:*

- *Ensure that all aeronautical knowledge topics listed in 14 CFR part 61 are addressed in the appropriate Area(s) of Operation in the ACS*
- *Define the knowledge topics required to support the skill area for the level of airman certificate covered by the target ACS.*
- *Calibrate the required knowledge to the level of the airman certificate or rating level.*

*The ATST WG strongly recommends that the FAA seek expert stakeholder participation in this process. And, while calibration is unavoidably somewhat subjective, the use of standardized rubrics and a comprehensive task chart (i.e., a document that displays the required level of performance for each Area or Operation and/or task) would be helpful.*

*The group took a similar approach to risk management. Drawing from the special emphasis topics in the existing PTS and sources such as the FAA Risk Management Handbook (FAA-H-8083-2), the group listed specific, practical, risk management tasks, skills, or behaviors appropriate to each Area of Operation.*



### **What benefits come from mapping knowledge to skills?**

*Most accidents have multiple causes, and many involve at least some degree of deficiency in the pilot's knowledge, skill, and risk management abilities. Each of these abilities supports the others. The ACS reflects this reality because it offers a holistic approach to aviation training and testing – it integrates knowledge, skills, and risk management, and it provides a way to ensure that the elements of the certification process – standards, guidance, and testing – are correlated to these abilities and aligned with each other.*

*Another benefit is that the holistic ACS approach is consistent with principles for effective adult education and meaningful testing. According to Malcolm Knowles, effective instruction and education of adults occurs when they perceive a need for certain knowledge or skills, understand how the area of learning relates to what they want to achieve, and recognize how the area of learning applies to the life or work context.*

*By mapping specific items of aeronautical knowledge and actionable risk management practices with the flying skill performance metrics in the existing PTS, the ACS meets these needs and significantly enhances the educational value of the FAA knowledge test.*

*Finally, the holistic ACS approach is consistent with accepted industry practices for any certification process. The ACS documents function as the required job/task analysis, because they define the knowledge and skills needed to perform at the level of the target certificate or rating. By so doing, the ACS approach better serves the applicant, the instructor, and the evaluator.*

### **Why is the Authorized Instructor ACS different?**

*Because the ACS is intended to be a foundation for the entire airman certification testing and training system, the ATST WG invested considerable effort developing an ACS framework that can be consistently applied to the majority of airman certificates and ratings.*

*The draft authorized instructor ACS follows the overall conceptual framework developed for the private pilot ACS and the instrument rating ACS, but its construction reflects fundamental differences between the family of pilot certificates/ratings and the instructor certificate. The core of the authorized instructor ACS addresses practical application of the instructional concepts and techniques presented in the traditional Fundamentals of Instructing (FOI). The authorized instructor ACS uses appendices to define the acceptable standards for knowledge, skill, and risk management in the aeronautical proficiency tasks unique to a particular instructor certificate or rating.*

*It is also important to understand that the authorized instructor ACS is not intended to be a stand-alone document. Just as a flight instructor certificate must be accompanied by a commercial pilot certificate, the authorized instructor ACS is to be used in conjunction with the ACS for the pilot certificate level or rating for which the instructor-applicant seeks to provide instruction. In addition to mastery of the knowledge and skills defined in the authorized instructor ACS, the instructor-applicant must demonstrate instructional competence for Tasks in the ACS for the appropriate certificate level or rating, to include analyzing and correcting common learner errors.*



**What's the point of changing terms to words like "evaluator" or "plan of action?"**

*One of the goals of this project is greater consistency. Instead of trying to list every category of person authorized to conduct a practical test (e.g., examiner, designee, designated pilot examiner, aviation safety inspector), the ACS uses the term "evaluator" to cover the entire range. The term "plan of action" is used in the authorized instructor ACS because a plan of action for instruction better conveys the intended concept, and also because it corresponds with the requirement for an evaluator to have a plan of action for conducting the test.*

**Why does the ACS mix the terms "learner" and "student pilot?"**

*The education and training industry has generally adopted the term "learner," because it conveys recognition and respect for adults' experience and motivation. We followed this convention in most instances. However, the ACS retains the term "student pilot" when it refers to certification activities involving an individual who is a student pilot within the meaning of 14 CFR part 61.*

**Why use the term "airman" instead of "pilot" or "aviator?"**

*The regulations use the term "airman" to encompass the full range of aviation functions that require an FAA certificate or rating. Not all airman certificates and ratings are for pilots or aviators; some apply to aircraft maintenance technicians, dispatchers, and other specialties. We continued to use this term because it includes all aviation functions that require an FAA certificate or rating, and because it is used in the regulations. We did not recommend a change because changes that require rulemaking are beyond the scope of this group's charter.*

**Doesn't this kind of change require a formal rulemaking process?**

*No. Like the PTS, the ACS simply defines the metrics – the standards -- for meeting the regulatory requirements that 14 CFR part 61 enumerates for aeronautical knowledge and flight proficiency. The ACS does not change any of the requirements in 14 CFR.*

**Doesn't this approach increase the standards?**

*No. The ACS approach does not increase the standards. Except for those areas where the ACS consolidates overlapping or duplicative Areas of Operation/tasks in the existing PTS, none of the PTS material has changed. The knowledge and risk management sections simply define the standards for meeting the requirements in 14 CFR part 61.*



**Doesn't the ACS approach increase the cost of flight training?**

*No. In fact, a more integrated and efficient presentation of the material to be tested could make training far more effective and efficient for all stakeholders – and thus less costly. Instructors will be able to effectively and efficiently remediate any deficient knowledge identified on the airman knowledge test report in preparation for the practical test.*

**Won't the ACS approach dramatically increase the length (and expense) of the practical test?**

*No. In fact, a more integrated and efficient presentation of the material to be tested could even shorten the test, especially if the evaluator has more confidence in the quality and meaning of the applicant's knowledge test score. Evaluators will be able to effectively and efficiently re-test any deficient knowledge identified on the airman knowledge test report to ensure the applicant has trained to proficiency in all areas.*

**How much will the ACS cost in terms of money and manpower?**

*Today's airman certification system is far more costly than it should be for both the FAA and stakeholders, because the absence of a knowledge standard and the lack of standardized and solid integration of standards, guidance, and testing leads to disconnects and errors that have to be corrected on a piecemeal basis. For the FAA, the shortcomings of the present system also make it difficult to coherently accommodate and integrate requests for new or enhanced material on special emphasis topics.*

*For stakeholders, the current system is costly because it creates uncertainty and leads to expensive last-minute or off-cycle changes and corrections to training and test preparation materials. It is certainly costly for applicants, instructors, and evaluators, if only because of the time wasted in teaching or learning topics that have no value for safe operation in today's National Airspace System (NAS).*

*While there will be an initial investment needed to implement the ACS approach, the ATST WG's proposal for a phased transition – designed to match the existing schedule for updates – will minimize the cost. And, if properly implemented, the ACS approach to airman certification testing and training will be much less costly than today's highly inefficient system.*



### **What do you mean when you say that the ACS concept is consistent with SMS principles?**

*The safety management system (SMS) framework provides a systematic approach to achieving acceptable levels of safety risk. The holistic ACS concept for the overall airman certification system is consistent with SMS, because it addresses each of the four SMS “pillars:”*

- *Safety Policy that demonstrates FAA senior management commitment to continually improve safety through enhancements to the airman certification testing and training system; specifically, better integration of the aeronautical knowledge, flight proficiency, and risk management components of the airman certification system;*
- *Safety Risk Management processes that create a structured means of safety risk management decision making to identify, assess, and determine acceptable level of risk associated with regulatory changes, safety recommendations, or other factors requiring modification of airman testing and training materials;*
- *Safety Assurance processes which allow increased confidence on the part of industry and FAA stakeholders in risk controls through a continual review of FAA products and the systematic, prompt and appropriate incorporation of changes arising from new regulations, data analysis, and safety recommendations; and*
- *Safety Promotion framework to support a positive safety culture in the form of training and ongoing engagement with both external stakeholders (e.g., the aviation training industry) and FAA policy divisions.*

### **What did you do with the comments submitted to the docket on the initial private pilot and instrument rating ACS documents?**

*We appreciate the many comments and questions we received in response to the first set of documents. As planned, we used this feedback to refine the draft ACS documents. You will see some of that feedback reflected in the revised ACS for the private pilot certificate and the instrument rating. Other comments and questions were very valuable in showing us the areas we need to clarify or better explain, as we have tried to do with these “frequently asked questions.” The ATST WG’s final report (due to the FAA in September) will include a more detailed discussion of how we addressed the comments received through this process.*



### **What's the difference between this ACS and a training syllabus?**

*The ACS defines **what** the applicant must know, do, and consider to earn an airman certificate or rating. A training syllabus defines **how** (where, when and why) these standards are met. Accepted industry practices for any certification process stipulate that it be based on a job/task analysis. The certification process must analyze, define, and publish the domains and tasks that are a part of the certification process. It must further identify the knowledge and skills associated with performance of those tasks. The required knowledge and skills become the basis for development of assessment activities.*

*The ACS documents function as the required job/task analysis, as they define the knowledge and skills needed to perform at the level of the target certificate or rating. By so doing, the ACS approach better serves the applicant, the instructor, and the evaluator. Because the process of developing the ACS required a thorough review and update of knowledge and skills for airman certification, it also aligns with certification industry standards requiring periodic review and revision of the job/task analysis.*

### **How can risk management be tested on a knowledge test?**

*Risk management can be effectively tested on a knowledge test through the use of scenarios, common student errors, misconceptions, or frequent accident causes. Risk management questions will remain objective because they will be specific to an area of operation/task.*

### **How do you expect to evaluate soft skills?**

*So called “soft skills” are already evaluated through the use of scenarios and circumstances that require decision-making and judgment. By providing more specific guidance on the knowledge and risk management abilities needed to support a particular skill, the ACS will give applicants, instructors, and evaluators much better guidance than they have in today’s system.*

### **How will use of the ACS approach change airman training?**

*With clearly defined standards for knowledge, skill and risk management, airman training can be conducted more effectively to ensure applicants who complete flight and ground training are safe, competent aviators as well as successful in passing the FAA knowledge test. Training and testing will be aligned, which means that “test prep” will be a review of the ground school curriculum rather than a separate, unrelated step to learn questions for the sole purpose of passing a test.*