NOTICE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

N 8900.122

National Policy

Effective Date:
6/7/10

Cancellation Date:
6/7/11

SUBJ: Title 14 CFR Part 121 Training Program Review

1. Purpose of This Notice. This notice provides guidance to principal operations inspectors (POIs) and program managers with oversight responsibilities of Title 14 of the Code of Federal Regulations (14 CFR) part 121 certificate holders. This notice also provides information related to training program approval, changes, and surveillance for inspectors to consider during design and performance assessments. The Safety Management System (SMS) principles presented and explained in this notice are used within the scope and context of training program development, administration, and oversight. This notice does not present complete instructions for SMS development, acceptance, or approval and should not be used as a basis for such actions. At present, the FAA does not authorize approval or acceptance of an operator's SMS.

2. Audience. The primary audience for this notice is Flight Standards District Office (FSDO), Certificate Management Team (CMT), and certificate management office (CMO) aviation safety inspectors (ASI) that have oversight responsibility of part 121 certificate holders and program managers. The secondary audience includes the Flight Standards branches and divisions in the regions and headquarters.

3. Where You Can Find This Notice. You can find this notice on the MyFAA Web site at https://employees.faa.gov/tools_resources/orders_notices/. Inspectors can access this notice through the Flight Standards Information Management System (FSIMS) at http://fsims.avs.faa.gov. Operators and the public may find this information at: http://fsims.faa.gov.

4. Background.

a. Need for Training Evolution. Traditional part 121 air carrier training programs need to evolve from simple ground school and flight training curriculum segments to more robust scenario-based training. This training program evolution demands crewmember cooperation and collaboration while managing a complex, changing set of challenges. The present challenge to training is the introduction of new-entry, lower-time flightcrew members into the system, along with the introduction of new aircraft and other new technologies. Also, air carrier safety assurance processes need to be able to identify, monitor, and mentor crewmembers who have demonstrated performance problems in previous training and operational flying.

b. Review of Training Programs. Canceled Notice 8900.78, Focused Program Review of Air Carrier Flight Crewmember Training, Qualification, and Management, required POIs to conduct a focused review of training programs to determine if air carriers have the capability to identify, track, and manage low-time flightcrew members, as well as those who have failed evaluation events and/or demonstrated a repetitive need for additional training. SAFO 10006, published 3/8/2010, alerted operators to the basic concepts of Safety Management Systems and the inherent benefits of utilizing its principles into traditional training programs.

5. Discussion—Safety Management Systems (SMS). To help ensure air carriers maintain the highest possible degree of safety, air carriers are encouraged to employ SMS principles as they build and revise their systems to meet the need of today's challenging environment. Training programs are an essential element of integrating people into system operations. Training is an integral part of a carrier's overall system and must be considered in safety management. An SMS consists of four components: policy, safety risk management, safety assurance, and safety promotion, all of which should be applied to training program development. The policy component sets up the management framework: safety risk management and safety assurance are the two highly interactive functional processes, and safety promotion shapes the organization's culture and supports both safety management and operational functions.

a. Policy.

(1) The policy component establishes the following:

- Management's commitment to safety;
- Management acceptance of top-level accountability, and establishment of the accountabilities, responsibilities, and authority of other members of the organization; and
- Management's safety management plan, objectives, and goals.

(2) The policy component is where an SMS differs from a traditional safety program. An SMS is a manager's tool that provides a framework for management's decisionmaking rather than a separate program. As such, top and line management decisionmakers must be personally and directly involved in managing safety in their organizations.

b. Safety Risk Management (SRM). SRM considers aspects of the system, including people (including demographic considerations), hardware (equipment and facilities), software (policies, directives, procedures, guidance— may be electronic, print, or visual), and other aspects of the operating environment. Robust SRM leads to identification of hazards in the environment and the things that could go wrong in operations. It facilitates consideration of the risks involved. The last step in SRM is design of risk controls, including organizational processes and procedures. Basic SRM consists of five steps:

- Describe and analyze the systems, and tasks, environment, and people;
- Identify hazards (e.g., lack of equipment, personnel, infrastructure, and guidance);

- Analyze the hazards to identify potential events and their consequences;
- Assess the risk for acceptability; and
- Develop and implement risk controls (e.g., focused training initiatives, dynamic crew pairing/scheduling, and frequent monitoring).

(1) The certificate holder should use the SRM process during the design of new programs, procedures, and processes. Certificate holders should use this process to assure that a complete analysis is made of the training and other needs that will help to assure mitigation of operational safety risk.

(2) Inspectors also may use the FAA's Air Transportation Oversight System (ATOS) risk management process, Order 8900.1 Volume 10, Chapter 3, Section 1, Risk Management Process to assess an operator's designs in cases where there are questions about the certificate holder's submitted design, or where operational problems discovered in performance assessments cause concern over the appropriateness of an existing design.

(3) Risk management in design should be done using a systems approach. Development of procedures, document authoring, and training development should all be conducted in a coordinated fashion. Training needs to be part of the system rather than developed as an afterthought.

c. Safety Assurance. Safety assurance is the collection of processes that are used to gain confidence that the processes an organization has designed and implemented continue to meet their design standards and safety objectives.

(1) Safety assurance consists of five steps:

- Monitoring operations;
- Data acquisition (collection—e.g., audits, evaluations, employee reports, investigations);
- System performance analysis;
- System performance assessment; and
- Preventive/corrective action.

(2) Certificate holders should incorporate safety assurance processes in their training programs and into evaluations of operational flying. Assessments should include trend analysis of crewmember and overall training program performance.

(3) Assessments of training programs by principal inspectors and aircrew program managers should include normal performance assessments in accordance with established procedures. During observations and data analysis associated with these performance assessments, particular attention should be given to issues identified during design as targets of

interest (e.g., low-time pilots, new equipment, aircraft, procedures, or training methods). Data analysis should also include trend analysis of pilot and overall training performance over time. Inspectors should also evaluate the processes and activities that the certificate holder uses to provide their own assurance.

(4) The certificate holder and the FAA should use performance assessments to assure continued operational safety. The FAA's performance assessment (Element Performance Inspections) should not only focus on the systems performance, but also the certificate holder's safety assurance processes.

d. Safety Promotion. The safety promotion component of an SMS has two major elements: competencies and training, and communication. Each organization must determine the critical job tasks in their operations (this is part of the SRM processes) and what training is needed to attain and maintain the knowledge, skills, and abilities required to meet those job tasks. They also need to communicate the elements of their policies, their safety objectives, information on risk controls developed in the SRM process, and specific findings of safety the safety assurance process.

6. Instructional Systems Design (ISD). Sophisticated training programs such as the Advanced Qualification Program use formal ISD principles to develop, implement, and validate their training programs. Any size organization can apply ISD techniques when developing its training programs. Moreover, the SRM principles discussed above can be applied to the ISD process to assure that risk management is designed into the training that is delivered to employees.

> **Note:** On October 2, 1990, the FAA published Special Federal Aviation Regulation 58, Advanced Qualification Program. Order 8900.1 Volume 3, Chapter 21, The Advanced Qualification Program, contains details about AQP.

a. ADDIE Model. Once designed, the safety assurance processes would be used to assure that training quality is maintained and that the training program continues to meet the organization's needs in line operations. These processes are particularly important for managing change, such as growth of operations, acquisition of new aircraft makes and models, operating in new environments, changes in demographics of new hires, changes in procedures, or corporate reorganization. Crucial to safety are ensuring that employees' training matches their capabilities, the characteristics of the organization's equipment, and the way the organization is run. A commonly used ISD process, the ADDIE model, has five steps:

(1) Analyze: Use the safety critical job tasks, competencies and the target audience characteristics (education, certification, language, etc.) to determine the training that will be necessary.

(2) Design: Consider training tasks, qualification standards, courseware, etc.

(3) Develop: Consider the training medium, lessons, exercises, activities, tests, evaluations, etc.

(4) Implement: This is the safety assurance component of the SMS. It should monitor the effectiveness of the training program, through things like training delivery (performance assessments), records, testing, qualification demonstrations, etc.

(5) Evaluate: This is also a safety assurance component of the SMS. It should assess the effectiveness of the training program, through things like student evaluations and critiques, instructor critiques, on-the-job-training, and performance observations of trained personnel. Evaluation consists of the following three levels:

(a) Trainer evaluates. This level consists of traditional tests and checks.

(b) Trainee evaluates. This level consists of trainee feedback of training effectiveness.

(c) On-the-job performance. This level is accomplished during such activities as line checks, captains' evaluations of first officers, and, where applicable, Line Operational Safety Audits.

b. Usage of Performance Evaluations. All levels of evaluations should be analyzed for patterns or trends of performance problems, consistent complaints of poor performance of particular training modules, or of particular operations during line flying. This information should be reported to the analysis component to provide a continuous improvement loop.

7. The Training System. The training system is developed by matching ISD principles with the principles of SRM and safety assurance, the two active components of safety management. Both ISD and safety management are continuous, closed-loop processes. Organizations should use the tools of safety assurance (e.g., audits, employee reports, data sharing with OEMs, other operators, and training agencies) and SRM processes to continuously improve the training program and assure that it remains relevant and contributes to control of identified hazards. Neither ISD nor safety management are ever complete, as aviation is a dynamic industry and healthy organizations should always strive for growth in the maturity of their safety management processes and businesses.

Table 1. ADDIE Model and Safety Management Activities

ISD Component	Related Safety Management Activities
Analyze	System/Task Design (SRM) • Identify characteristics of equipment and operational environment (SRM). • Identify and document needed employee competencies (SRM, safety promotion). • Describe target audience characteristics (safety promotion—e.g. existing knowledge, skill, experience level, language capability).
Design	Design training tasks • Match tasks to critical equipment, environment, and personnel characteristics (SRM—this may entail interaction or research with aircraft original equipment manufacturers and/or experienced training agencies). • Develop qualification standards (safety performance—required level of

ISD Component	Related Safety Management Activities
	competency).
Develop	Develop courseware and training profiles. Be sure to match training and evaluation events with criticality of tasks (SRM) and required competency levels (safety promotion), and with expected existing employee knowledge, training, and experience levels.
Implement	Monitor the implementation of the program (safety assurance). Make sure that the program that's being practiced is the one that was designed
Evaluate	Evaluate safety assurance: • Trainee performance. • Trainee acceptance of training events. • Trainee on the job performance.

8. Incorporating SMS Principles. SAFO 10006 outlines how to benefit from incorporating SMS principles into an air carrier training program. Both of these initiatives are products of the Administrator's call to action. The FAA expects each carrier to review carefully its training programs to ensure that SMS principles are incorporated. Pilot training programs should include a specific process for tracking the performance of low-time/low-experience pilots, and pilots who demonstrate substandard performance in the training or operational arena. Failure to include ISD and SMS principles in existing training programs constitutes a safety risk and should be considered in Flight Standards Service's (AFS) oversight planning.

9. Action. Consider the information in this notice when performing design and performance assessments of aircrew training programs.

> **Note:** Accomplishment of the instructions in this notice will not constitute implementation of an SMS, be construed as a complete SMS development, or be the basis for acceptance or approval of an SMS. AFS currently does not authorize acceptance or approval of an operator's SMS.

10. Recording. Record completion of the ConDOR and any associated risk management programs in accordance with normal procedures outlined in Order 8900.1, Volume 10, Air Transportation Oversight System.

11. Disposition. We will permanently incorporate the information in this notice in FSIMS before this notice expires. Direct questions regarding this notice to the Air Transportation Division, AFS-200 at 202-267-8166.

 for

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