



# The View from Washington

BY RIC PERI  
VICE PRESIDENT, AEA GOVERNMENT & INDUSTRY AFFAIRS

## Human Factors: A Failing Exercise?

*When a theory applies to everything, it soon will apply to nothing.*

**H**uman factors has gained a life of its own, and as the FAA and other Civil Aviation Authorities continue in their broad-brush application of human factors, it is losing its value and benefit. Even worse, it creates another layer of pseudo-regulatory burden for maintenance shops.

This article was a bit of a challenge this month. How do you keep from throwing out the baby with the bathwater? The awareness and training resulting from the industry's narrow human factors' focus on the limitations of human performance has made a significant improvement in reducing human errors in aircraft maintenance. And yet, because of its success, human factors is rapidly taking on a life of its own. The awareness and training should be retained; the broad-brushed, unbound approach to human factors in maintenance should be thrown out.

"Human factors" is one of those general terms meaning something different to everyone who uses the term. For those in general industry, it can refer to the design of computers and screens, the usability of a mobile phone, and the feel of a television remote. For those in aircraft certification, it can be a term used to refer to the pilot — aircraft interface, switches, lights, colors, orientation. For those in the safety field, it's about human performance and the limitations of human performance.

Human performance, or the limitation of human performance, is what

safety professionals look at when evaluating a task to reduce negative events caused by human error. In aircraft maintenance, it's this narrow safety approach on which our human-factors training has been focused. And yet, there are no limits as to what this broad, unbound term "human factors" can be applied.

It is this broad, unbound use of the term "human factors" of which we should be cautious. In the broadest application of the term "human factors," what in aircraft maintenance doesn't involve a human factor? Every safety rule in maintenance, every preventative process, every safety initiative, and every technician error is directly or indirectly linked to what is broadly defined as "human factors."

But is it really human factors? Or, are we using the term human factors to mean human performance or, more appropriately, the limitations of human performance?

Wikipedia (the Internet-based encyclopedia) states the term "human factors" is, to a large extent, synonymous with the term "ergonomics." Ergonomics is "the application of scientific information concerning humans to the design of objects, systems and environment for human use."

Therefore, when a company buys the type of office furniture that can reduce stress as an employee sits at his desk all day, or a tool manufacturer designs a new screwdriver that reduces cramping

during extended use, they are using the principles of "ergonomic" engineering to reduce workplace stress.

According to the International Ergonomics Association, ergonomics (or human factors) is the scientific discipline concerned with the understanding of interactions among humans and other elements of a system, and the profession that applies theory, principles, data and methods to design in order to optimize human well-being and overall system performance.

The association also states, "work systems, sports and leisure, health and safety should all embody ergonomics principles if well designed. It is the applied science of equipment design intended to maximize productivity by reducing operator fatigue and discomfort."

Therefore, if we look at the traditional human aspect of human factors, it is to increase productivity and decrease errors through the use of sound, ergonomic design principles.

This is the discipline stating, "switches go up to turn them on, and down to turn them off;" or all switches in an aircraft have the same relative position for on and off, and red is a color for emergency action.

Somewhere along the way, safety professionals started to use the term to refer not only to improvements in human performance, but also to limitations of human performance. Now, we have a term that can be applied to

almost any situation — something like “pilot error” or “safety.” It’s such an overused, broadly interpreted term, it now has little real-world meaning.

You may be asking yourself, “So what? I have my approved repair station training program and I have AEA’s human factors training CD; my inspector’s happy. What’s the issue?”

The problem is, when a bureaucracy uses a broadly applicable term for a focused application, in time, the application begins to take on the shape of the original term. In this case, everything a mechanic comes in contact with broadly becomes another “human-factors” topic.

Look at the FAA’s attempt at “regulation plus.” It was presented as a system safety program by the FAA’s Training Institute in Oklahoma City, Okla. The concept was that air carriers “must” implement a system safety program, which essentially said if the regulations weren’t strict enough, the air carrier needed to regulate itself to a higher level. Every failure, mistake or error was a failure of its system safety program, and the air carrier had to place more restrictions — above and beyond the basic regulations — on itself to prevent this random error from happening again. Thus, regulation plus!

I do not believe this was the intent of FAA headquarters when it started the program. In fact, a couple of FAA HQ types who audited the program were expelled from the course for pointing this error out to the instructors. But the school had some instructors who were believers in the system safety mantra and, as a result, were preaching the new gospel to young, impressionable FAA inspectors. Whether or not it was HQ’s intent to implement system safe-

ty in this manner really didn’t matter — we soon had to deal with these new pressures.

The FAA recommends human factors training as part of the courses offered in a repair station training program, but then it offers human-performance-related topics.

The following are the recommended human factors training topics from the FAA’s Advisory Circular 145-10, which addresses the repair station training program:

- General/introduction to human factors
- Statistics
- Safety culture/organizational factors
- Human error
- Types of errors in maintenance tasks
- Human reliability
- Human performance and limitation
- Vision
- Hearing
- Stress
- Situational awareness
- Workload management

The topics on this list are relevant to a safety awareness program and limitations on human performance; at best, they are only a fraction of the broad applications of human factors.

The FAA’s Aircraft Certification Service discusses human factors in its Advisory Circular 25-11, which addresses transport category airplane electronic display systems. In this AC, the FAA addresses the human/machine interface and the ability of the human to efficiently use the machines (displays) installed in the cockpit.

The AC requires the applicant to demonstrate human-factors considerations, such that its test program “should include sufficient flight and simulation time, using a representative

population of pilots, to substantiate:

- Reasonable training times and learning curves.
- Usability in an operational environment.
- Acceptable interpretation error rates equivalent to or less than conventional displays.
- Proper integration with other equipment that uses electronic display functions.
- Acceptability of all failure modes not shown to be extremely improbable.
- Compatibility with other displays and controls.

This FAA use of human factors (that is, ergonomics) in aircraft design clearly is in line with the engineering principles of ergonomic design.

But what about the FAA’s Flight Standards use of human factors? Like most initiatives, this one seems to have achieved a life of its own, and it’s an initiative without borders. In my opinion, the overuse and often improper use of this broad term is rampant worldwide. If not managed or redirected, it will result in another layer of regulatory burden placed on repair stations as well as all other certificate holders.

Of course, I am not opposed to the safety benefits of instruction on what we’ve been calling “human factors” nor the ergonomic design of cockpits. This article is not about the specific topics discussed under the “umbrella” of what we currently call “human factors.” These topics make us think about the limitations of our employee’s performance and are a significant factor in reducing human error in our workplaces.

Rather, this article is about the overuse of a term and the broad-brush ap-

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plication its overuse has led to. As a result of its overuse and misuse, I think the effectiveness and safety benefits of the original human factors in maintenance initiative is being compromised severely.

### Human Factors in Maintenance

Is the recommendation in AC 145-10 to include human factors just another way of increasing regulatory burden without rulemaking — along the same lines as safety management systems? All indications point to rulemaking coming forward in the next few years mandating human factors training — the challenge will be which “human factors?”

Many of the human performance issues our industry deals with already are regulatory for aviation maintenance — and the regulations on maintenance performance are remarkably clear. Part 43 of the Federal Aviation Regulations provides the direction.

Section 43.13, the overall general maintenance performance rules, which apply to everyone performing maintenance, states: “Each person performing maintenance, alteration or preventive maintenance on an aircraft, engine, propeller or appliance shall use the methods, techniques and practices prescribed in the current manufacturer’s maintenance manual or instructions for continued airworthiness prepared by its manufacturer.”

Section 43.13 requires the person performing maintenance “shall use the tools, equipment and test apparatus necessary to assure completion of the work in accordance with accepted industry practices.”

Section 43.13 concludes, “Each person maintaining or altering, or performing preventive maintenance, shall

do that work in such a manner and use materials of such a quality that the condition of the aircraft, airframe, aircraft engine, propeller or appliance worked on will be at least equal to its original or properly altered condition.”

If there is a failure to perform the rules to the requisite standard, the question is, “Why?” Why was the work not performed to the standards prescribed in 14 CFR 43.13? Do we need a broad-brushed, human-factors regulation to cover other failures to comply with the current rule?

If 14 CFR 43.13 covers the performance of maintenance, what about the workplace? Section 145.103 prescribes the housing and facilities requirements for repair stations.

The FAA prescribes, “Each certificated repair station must provide facilities for properly performing the maintenance, preventive maintenance or alterations of articles or the specialized services for which it is rated.”

It goes on to require each facility “must include the following ventilation, lighting and control of temperature, humidity and other climatic conditions sufficient to ensure personnel perform maintenance, preventive maintenance or alterations to the standards required by this part.”

It seems to me human factors in the workplace already is addressed in current regulations. Add to that current aircraft manufacturers’ efforts to add ergonomics to the maintenance instructions and programs through the use of MSG-3 and other proactive methodologies. Is the FAA just catching up or is it dictating something that broadly fits into human factors rather than calling it the more focused “human performance?”

Should we consider issues such as safety; the types of errors technicians are likely to experience in maintenance

tasks; limitations of visual inspections; situational awareness; and workload management? Absolutely, but where in the broad spectrum of human factors do they fall?

While improving human performance is a function of ergonomically designing the workplace and, in our case, maintenance tasks, the limitations of human performance might not be. The correct tool, proper maintenance manuals and requisite experience are not ergonomic issues; they are common regulatory requirements.

I freely admit having a workplace with adequate lighting and the correct work environment to be able to perform a visual inspection, as well as adequate check-stands and lifts to safely and comfortably perform tasks at elevated levels, are ergonomic issues, which might be part of the broader description of human factors, they also are issues already mandated by regulation.

Fatigue, stress and other factors affecting a technician’s ability to focus on the task at hand isn’t an ergonomic issue. It is, however, a human-performance issue and a limitation of human performance, which could and likely would cause an accident or incident. Therefore, it is a safety issue. Again, instead of focusing on human performance, these factors are labeled with the broadest term available: “human factors.”

Some individuals argue human performance is a discipline of human factors. This might be true, but using too broad of a descriptive term can cause it to lose its luster and focus. Everything in aviation is described at its lowest common term for clarity and to reduce human error — perhaps, human factors should be as well.

The other challenge of using such a broad term as “human factors” is it is unbound in its definition. If it involves

a human and some interaction with a machine or task, it broadly falls into the description of human factors. I would agree to focus on human-performance limitations leading to human error, but not as a scapegoat for failure of the FAA to enforce existing regulations.

For aircraft maintenance, the grouping of human performance and ergonomics into the broad-brush of human factors — similar to how the regulating community has grouped these topics in the aircraft operational area — is a serious error.

The issues of human performance and the design of cockpits are closely aligned for flight operations. In aircraft maintenance, human performance and the design of maintenance organizations are not necessarily aligned. The maintenance flow of tasks mandated by aircraft or engine manufacturers usually is based on the required build-up of the product, not on the most efficient “performance” perspective.

“Ergonomics” has a place in aircraft maintenance — in the design of maintenance organizations, the layout of benches, and the placement of lighting. But the design of organizations has not,

as yet, been mandated by regulation. (If it should, I would recommend the FAA start at 800 Independence Ave., Washington, D.C.)

“Human performance” and the “limitation of human performance” have a place in aviation industrial and occupational safety. The AEA will continue to provide training for the recommended human performance topics of AC 145-10, listed under the heading of “Human Factors.” While the FAA might be misusing the term, the limitations to technician performance still should be addressed through design, training and scheduling by repair station management.

“Human factors” as the latest buzzword with applications to everything and little meaning, except to the purists, has no place in aircraft maintenance. Human factors in maintenance is a well-intended initiative to reduce maintenance accidents. However, as a result of the overuse and misuse of these term by regulatory authorities (and many specialty training organizations), it clearly has lost its way in the quagmire of government bureaucracy. □

# Regulatory Update

## United States

### Recording of Major Repairs, Major Alterations

On Sept. 20, 2007, in the Federal Register, the FAA published an amendment to the instructions to aviation maintenance providers regarding submittal of FAA Form 337, "Major Repair and Alteration," for either major repair or major alteration, or for extended-range fuel tanks installed within the passenger compartment or a baggage compartment.

This change clarifies the mailing instructions when submitting Form 337 to the FAA. The intent of this action is to amend the regulation to ensure mailing requirements are clear and accurate.

On Sept. 9, 1987, the FAA published a final rule entitled "Aircraft Identification and Retention of Fuel System Modification Records" (52 FR 34096). Among other changes, this rule amended Part 43, Appendix B, by revising the introductory text of paragraph (a) and adding a new paragraph (d). This rule provided instructions for major alterations of fuel tanks and system modifications to be segregated from other major repairs and alterations.

The new paragraph (d) provided instructions for disposition of the Form 337 whenever extended-range fuel tanks are installed within the passenger compartment or a baggage compartment. As part of those instructions, paragraph (c)(2) of Appendix B is referenced for distribution of Form 337.

Since adding paragraph (d), the FAA has seen a decline in Form 337s received for extended-range fuel tanks. Review of Part 43, Appendix B, revealed a wrong address. As currently written, paragraph (c)(2) directs individuals to send a copy of Form 337 to an incorrect address.

Any FAA Form 337 describing a

modification to an aircraft fuel system or showing additional tanks installed should be mailed to: FAA, Aircraft Registration Branch, AFS-751, P.O. Box 25724, Oklahoma City, OK 73125.

All other FAA Form 337s, including all FAA Form 337 documenting avionics alterations, should be mailed to: FAA, Aircraft Registration Branch, AFS-750, P.O. Box 25504, Oklahoma City, OK 73125.

The change in this final rule will clarify and correct the mailing instructions, but does not affect any other requirements in Part 43.

The following are the changes to 14 CFR Part 43, "Maintenance, Preventative Maintenance, Rebuilding and Alterations."

Appendix B is amended by revising paragraphs (c) and (d) to read as follows:

(c) Except as provided in paragraph (d) of this appendix, for a major repair or major alteration made by a person authorized in Section 43.17, the person who performs the major repair or major alteration and the person authorized by Section 43.17 to approve that work shall execute an FAA Form 337 at least in duplicate. A completed copy of that form shall be:

- 1) given to the aircraft owner; and
- 2) forwarded to the Federal Aviation Administration, Aircraft Registration Branch, AFS-750, Post Office Box 25504, Oklahoma City, OK 73125, within 48 hours after the work is inspected.

(d) For extended-range fuel tanks installed within the passenger compartment or a baggage compartment, the person who performs the work and the person authorized to approve the work by Section 43.7 shall execute an FAA Form 337 in at least triplicate. A completed copy of that form shall be:

- 1) placed onboard the aircraft as specified in Section 91.417 of this

chapter;

- 2) given to the aircraft owner; and
- 3) forwarded to the Federal Aviation Administration, Aircraft Registration Branch, AFS-751, P.O. Box 25724, Oklahoma City, OK 73125, within 48 hours after the work is inspected.

### FAA Publishes Revised Policy for RSTP Approval

As a result of the confusion the FAA has been dealing with regarding approval of repair station training programs, the FAA has published a revised policy for RSTP approval in FAA Notice N8900.14, "Approval of a Repair Station Employee Training Program."

The FAA states a well-designed training program covering all repair station employees who perform maintenance, preventative maintenance, alterations or inspections will enhance aviation safety by ensuring those employees are fully capable of performing the assigned work. To ensure the training program is appropriate and tailored to the individual repair station, the FAA will review and approve each program.

The training program must be appropriate for the repair station and may vary depending on the size of the repair station and the nature of the work performed. A small repair station consisting of one or two employees performing only altimeter, static system and altitude reporting equipment tests and inspections could effectively document its training program using only a few pages. In contrast, a large repair station employing several hundred technicians and utilizing an in-house training department may require 30 or more pages to effectively document its training program.

A program can be defined as a plan of action to accomplish a specified end. The FAA is required only to approve the program or the plan of action to

accomplish the training, not the curriculum, specific courses, instructors, training sources or methods of instruction.

In situations where the repair station chooses to develop a comprehensive training manual that includes curriculum, specific courses, training sources, instructor names and such, the repair station should segregate the training program section from the other contents. If this is impractical, the repair station may develop a matrix or similar method to identify each paragraph or page of the training program. Regardless of the method selected, the training program must contain all required elements.

ASIs must ensure each training program is in compliance with all applicable regulatory requirements. While certain elements are required in each program, the method of achieving the requirements may be different depending on the repair station's needs.

ASIs are encouraged to use the new, expanded checklist to assist in establishing a basis for approval. The checklist identifies all required program elements and includes several recommended elements. This checklist is intended to replace the checklist contained in FAA Order 8300.10, Volume 2, Chapter 160, "Review and Approve a Part 145 Repair Station's Training Program," Figure 160-2.

FAA approval will be indicated by stamping "Approved" on the list of effective (LOE) pages. In addition, the approving inspector will enter the date, office identification and signature. If the program does not include LOE pages, approval will be indicated on each page of the document. If a matrix is used to define the program, FAA approval will be indicated on each page of the matrix.

A letter indicating the effective date of the approval should be provided to the repair station. This is particularly important for programs submitted elec-

tronically, which may preclude the use of an approval stamp and signature.

This notice further supports the RSTP template available to AEA members on its Resource One website.

### **FAA Withdraws Notice Regarding Hijack Situations**

In the Aug. 27, 2007, Federal Register, the FAA published a notice withdrawing its NPRM published on Jan. 14, 2003, which proposed to require airplanes operated in domestic, flag and supplemental operations to ensure immediate activation and continuous transmission of the designated hijack alert code to air traffic control during a hijack situation.

After Sept. 11, 2001, the increased threat of hijacking and the realization an airplane could be used as a weapon became the basis for the proposed rule. The intent was to provide the flight crew of commercial airplanes with the ability to initiate an immediate national security response in the event of a hijacking.

The overwhelming majority of comments opposed the proposal for several reasons. Because of the reasons given, including completed security enhancements to strengthen flight-deck doors, the FAA is withdrawing the proposal. According to the FAA, current regulations ensure an adequate level of aviation security.

Because the FAA has determined this regulatory course of action is no longer necessary, it has withdrawn Notice No. 03-02, published at 68 FR 1982 on Jan. 14, 2003.

### **FAA Notice Supplements Procedures for EFBs**

FAA Notice N8900.17, "Electronic Flight Bag Systems Used in Aircraft Operated Under 14 CFR Part 91," provides guidance for all Flight Standards District Offices, aviation safety inspectors and aircraft evaluation group inspectors regarding the use of Class 1

or Class 2 electronic flight bag systems in aircraft conducting operations under Title 14 of the Code of Federal Regulations, 14 CFR Part 91.

For the purpose of this notice, EFB systems do not include appliances typically granted technical standard order authorization and receive installation and operational approval by means of type certification or supplemental type certification.

This notice supplements procedures in Advisory Circular 120-76A, "Guidelines for the Certification, Airworthiness and Operational Approval of Electronic Flight Bag Computing Devices," and clarifies N8200.98, "Electronic Flight Bag Job Aid," requiring an ASI to approve Class 1 and Class 2 EFB hardware and associated Type A and B software applications.

### **General Considerations:**

The in-flight use of EFB systems to depict images in lieu of paper reference material is the decision of the aircraft operator and the pilot in command. Any Type A or Type B EFB application, as defined in AC 120-76A, may be substituted for the paper equivalent.

It is suggested a secondary or backup source of aeronautical information, or paper reference material necessary for the flight, be available to the pilot in the aircraft. The secondary or backup information may be either traditional paper-based material or displayed electronically by other means.

Class 1 and Class 2 EFB systems can be used during all phases of flight operations in lieu of paper reference material when the information displayed meets the following criteria:

- a) The EFB system does not replace any system or equipment (such as navigation, communications or surveillance) is required by 14 CFR Part 91.
- b) The EFB system onboard the aircraft displays only precomposed or interactive information, which is

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functionally equivalent to the paper reference material the information is replacing or substituting.

c) The interactive or precomposed information being used for navigation or performance planning is current, up-to-date and valid as verified by the pilot.

d) The operator complies with requirements of 14 CFR Part 91, AC 91.21 to ensure the use of the EFB system does not interfere with equipment or systems required for flight.

### Specific Considerations:

The operator ensures that for carriage and acceptable use of a:

a) Class 1 EFB that it:

1) Is not dependent upon a dedicated aircraft power source or input from navigation equipment to provide display functionality, except it may connect to an aircraft's power through a certificated power source (such as a cigar lighter);

2) Is not attached to an aircraft mounting device.

3) Is not connected with, or receives data from, any aircraft system.

b) Class 2 EFB that it:

1) May receive power from the aircraft derived from an electrical bus source that is protected against short circuits with an appropriately rated circuit breaker or fuse.

2) May receive position reference from an onboard navigation system provided such input is designed and integrated in such a manner as to not adversely affect the output of the navigation source to which it is connected.

3) May be attached to a mounting device provided that the device is approved for installation into the aircraft (such as, if intended for installation into a type certificated aircraft, the mounting device must meet the requirements of 14 CFR Part 21, AC 21.303).

ASIs will not issue approvals or

authorizations for Class 1 and Class 2 EFB systems to 14 CFR Part 91 operators. Part 91 operators may use EFB systems to depict images in lieu of paper reference materials without approval or acceptance by the FAA.

ASIs and AEG inspectors may provide technical advice and guidance to operators when requested to assist them in evaluating their selected EFB systems using AC 120-76A and N8200.98, but will not issue FAA approvals for the EFB systems hardware and software applications.

AEG inspectors may issue operational suitability reports for Class 1 and Class 2 EFB systems as part of an installation accomplished by TC, STC, or through a request by an EFB system manufacturer. These OSRs are available to ASIs and operators at [www.opspecs.com](http://www.opspecs.com).

Class 3 devices and Type C software, which are FAA-approved by either TC or STC processes, will be evaluated and identified in the Flight Standardization Board report, if necessary, as part of the TC or STC evaluation requirement.

## Canada

### Transport Canada to Adopt New Accountability Framework for Aircraft Certification

At the CARAC Part V Technical Committee meeting in September, TCCA and industry agreed with the recommendations of the Aircraft Certification Accountability Framework working group. These recommendations are an outcome of TCCA's objective to implement a safety management systems approach into aircraft certification activities.

The existing system of ministerial delegation will be replaced by a system comprising accredited design organizations. Existing DAOs, AEOs and DARs will become ADOs.

Key points of the recommendations include:

- As a condition for eligibility for application for a design approval, applicants must demonstrate they either have or have access to knowledge, technical capability and effective design assurance procedures. The applicant would become the design approval or certificate holder.

- TCCA would certify organizations and individuals who have demonstrated they meet the requirements for knowledge, technical capability and effective design assurance procedures as an accredited design organization.

- An ADO would need everything a DAO or DAR has now, plus a safety management system. The working group recommends an ADO have an SMS commensurate with the size and complexity of the operation.

- The ADO would receive appropriate scope and authority to make declarations of compliance, which would be accepted by TC without further verification; although TC would continue to maintain an appropriate level of surveillance activities in certification programs.

In the future, TC aircraft certification staff will focus oversight of ADO compliance with their obligations as design agencies, and applicant and holder compliance with their obligations. Oversight activities will target design assurance and SMS effectiveness. TC surveillance of design compliance will continue to be carried out during certification programs using risk-based criteria for involvement.

What is the potential impact on AEA members? All AMOs and manufacturers making applications for design approvals will need to have or have access to an ADO with an SMS. Any person or organization satisfying the eligibility requirements may make an application for a design approval or become the holder of a design approval. The applicant's ADO (own or

contracted) would issue the design approval certificate if within the scope of the ADO.

The recommendations now will proceed through the rulemaking process. It is anticipated they will come into effect sometime between 2010 and 2012.

## Europe

### EASA Surveys Website Users for Feedback

In an effort to improve usability and content of the regulatory web pages, EASA has decided to conduct a survey aimed at collecting valuable feedback on this matter. The information it is looking for is to evaluate the user-friendliness of the current structure, as well as the content of the website, and whether or not the website provides the services it was designed for in terms of information, consultation and publication of the agencies rulemaking activities.

In addition, EASA wants to receive information on the “expectations” of its users in regards to the information they want to find on EASA’s website.

The survey can be accessed from various locations on EASA’s website at [www.easa.eu.int/home](http://www.easa.eu.int/home).

### EASA Issues Revised Specifications for Large Aeroplanes

EASA has issued a revised “Certification Specification for Large Aeroplanes CS-25 Amdt. 3” to include latest developments. It came into force Sept. 19, 2007.

For companies involved in the design of large aeroplanes or changes thereto, the changes include the amendment of a new paragraph 25.1302: in-

stalled systems and equipment for use by the flight crew, which implies new improved general guidance on installations of indicators, displays and annunciators in the cockpit area.

### EASA Comment Period for NPAs Expires Dec. 12

New NPAs were issued by EASA and made public on its website and through its comment response center. NPA 2007-13 is addressing some changes to the authorized release certificate EASA Form 1. It proposes changes and improvements on the form — currently, Issue 2 — and on the completion of the form usually covered in the appendices to the Part 21/M/145.

NPA 2007-14 proposes to introduce new ETSO specifications technically similar to existing Federal Aviation Administration TSO. The NPA is proposing the introduction of following new ETSOs, which might be of interest for the member companies: ETSO C121a, ULB, C142a, non-rechargeable lithium cells and batteries; C161, ground-based augmentation system positioning and navigation equipment; C173, NiCd and Pb batteries; and C174, battery-based emergency power unit.

This effort is an attempt to reduce disadvantages for European parts and appliance producers and installers of such parts and appliances, which otherwise could not install or certify such parts except when they are part of an STC.

The comment period for these NPAs expires Dec. 12, 2007.

Of importance for an applicant and holder of a TC, STC or ETSO is the issue of a draft decision to NPA 2007-03: resolving ambiguity between AMC/GM and Part-21 in respect of eligibility for Subpart F and G for manufacturers of raw material. It con-

tains the draft change to the AMC and GM amending Decision No. 2003/01/RM. The decision should be published this month.

### Eurocontrol, Stakeholders Discuss Vertical Expansion Below FL195

Currently, the next step in 8.33 kHz operational expansion is being prepared. Vertical expansion below FL195 is being discussed in detail between Eurocontrol and stakeholders.

Despite the fact some nations currently do not support the further expansion, Eurocontrol has set some provisional dates for the introduction of services in 8.33 channel spacing below FL195 in the area of 8.33 operation as follows:

- ACC services, not tied to sector lower-limits and affecting IFR, controlled VFR and night VFR, as from 2010.

Full implementation as from 2013.

- Individually, Switzerland has decided to relax the transitional arrangement for the carriage and operation of Mode S airborne equipment for VFR flights (ELS) from March 31, 2008 to Dec. 31, 2009. More countries could follow.

A new TCAS II (ACAS) version is under development. It will include an improvement of the reversal resolution advisory logic and possibly a modification of the RA list. The new software version likely will be called “Version 7.1.” □

*Ric Peri*  
Vice President,  
AEA Government & Industry Affairs  
601 Pennsylvania Ave.  
Suite 900, South Building  
Washington, D.C. 20004  
phone: 202-589-1144  
fax: 202-639-8238  
[ricp@aea.net](mailto:ricp@aea.net)