

Credible information about what national governments do — and fail to do — to keep airline travel safe has become easier to find since the International Civil Aviation Organization (ICAO) launched its Flight Safety Information Exchange (FSIX) Web site <www.icao.int/fsix> two years ago. As of mid-2008, all member states have consented to post on this site their results from the current six-year cycle of audits, 2005–2010, under the ICAO Universal Safety Oversight Audit Program (USOAP).

This public disclosure is required by a joint declaration by these states, but the results posted may consist of a one-page *level of implementation chart* or a comprehensive *final report*, each state deciding what it will post. Which level of disclosure predominates — and how effectively the information disclosed achieves the original goals of public transparency and accountability — remain open questions.

Every civil aviation authority audited by the USOAP receives an unabridged confidential audit final report that authorized officials of other states can obtain from secure pages of FSIX. Member states also have secure access to confidential contents of ICAO’s Audit Findings and Differences Database. Any report published in public areas of FSIX is an abridged version of the confidential audit final report.

Anyone who has Internet access can download current-cycle results for 28 of the 190 ICAO member states. Of these 28 states, 14 (Table 1) have posted the final report along with the chart. Posting of a 15th final report and chart — for Mali — was pending in July. The other 14 states of the 28 have posted only the chart.

A list on FSIX showed that 47 more states have consented to post only the chart when it becomes available. ICAO has not yet released details of what FSIX will post for the remaining 114 member states of ICAO. By

comparison, from the initial audit cycle of USOAP — that is, audit visits in 1999–2001 and follow-up audit missions in 2001–2004 — a total of 162 states gave consent to post 75 full audit summary reports and 87 executive summaries, ICAO said.

Roberto Kobeh González, president of the ICAO Council, said, “The fact that ... states have authorized ICAO to go public means that they recognize the critical safety benefit of transparency. I commend all member states for embracing such transparency in sharing audit results among themselves through the ICAO Web site. I also encourage them to provide their consent for posting audit results under the comprehensive [systems] approach as soon as they become available. This will further enhance aviation safety around the world and promote greater understanding by the public about a critical aspect of civil aviation.”

FSIX also has evolved into a source of facts and opinions about

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Going Public Again

BY WAYNE ROSENKRANS

Most countries opt for a one-page chart to release their results in the current cycle of ICAO safety-oversight audits.

ICAO USOAP Final Reports on Public Web Site

Member State	Report Date	Previous Audit Cycle Posting
Belgium	November 2006	ESFR
Bulgaria	March 2007	ES
Canada	January 2006	ESFR
Czech Republic	September 2006	ESFR
Ethiopia	October 2007	ESFR
Ghana	August 2007	ES
Indonesia	November 2007	None
Italy	March 2007	ESFR
Jordan	September 2007	None
New Zealand	November 2006	ESFR
Norway	February 2007	ES
South Africa	July 2007	ESFR
Sudan	August 2007	None
Trinidad and Tobago	November 2007	None

ES = pre-2004 executive summary of results; ESFR = pre-2004 executive summary and full report of results; ICAO = International Civil Aviation Organization; USOAP = Universal Safety Oversight Audit Program

Note: Final reports from these audits, conducted in the 2005–2010 audit cycle using ICAO's comprehensive systems approach, were downloadable from <www.icao.int/fsix> as of July 15, 2008. Another public area of this Web site contains results from the 1999–2004 audit cycle for 162 states.

Source: ICAO Flight Safety Information Exchange

Table 1

the performance of ICAO itself through state comments within final reports and comments posted separately by states. The site recently added a new table of information about the safety actions recommended to ICAO by individual states, the origin of these recommendations and how ICAO has responded (Table 2, p. 33).

The site is one of the products of March 2006 decisions by the world's directors general of civil aviation, who endorsed the *Global Aviation Safety Roadmap* and agreed to raise public awareness of deficiencies, corrective actions and financial/political costs (ASW, 1/07, p. 28). The motivation was, and is, to accelerate compliance by national governments with the eight critical elements of safety oversight¹ as expressed in the USOAP. The strategy treats the citizens of all states as valued stakeholders who have a legitimate interest in improving commercial air transport safety (ASW, 2/07, p. 39).

The two-tiered approach to disclosing results on FSIX reflects different points of view expressed by directors general in 2006 — and the compromise they reached. States do not explain their choice on FSIX, and the compromise does not restrict them from providing copies of a final report on their own Web site or otherwise if they wish.

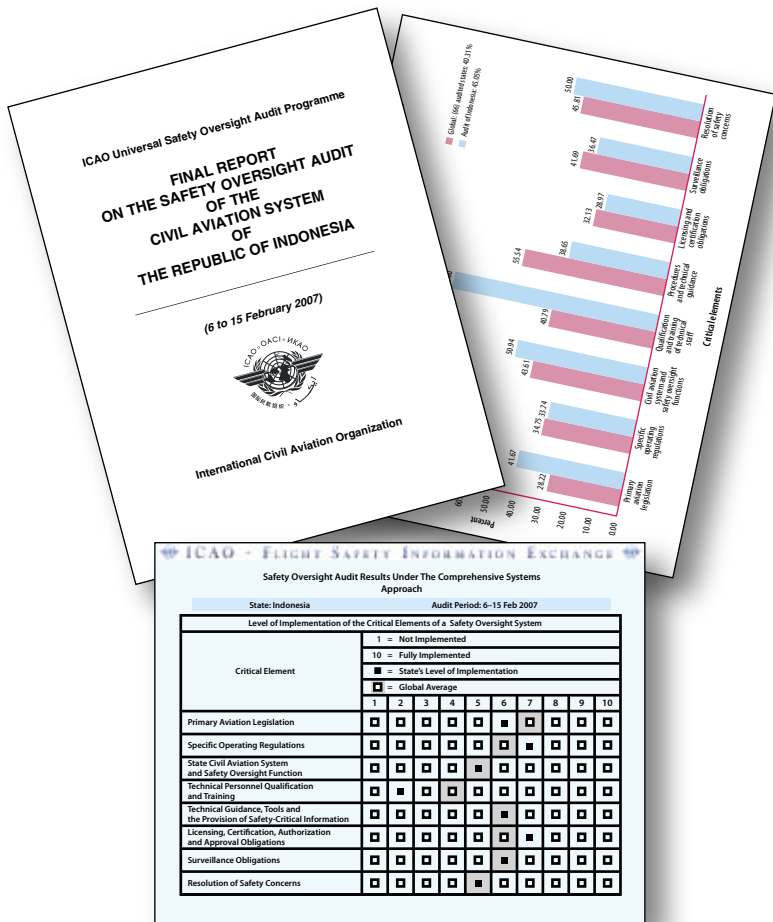
Full-Disclosure States

Among the 14 states that posted a final report, the reports range from 79 to 272 pages and average 152 pages.

States that have consented to post only a chart from the current cycle, and have done so, are Cameroon, Democratic Republic of the Congo, Egypt, Fiji, Gambia, Greece, India, Israel, Malaysia, Panama, Seychelles, Sierra Leone, Thailand and Vanuatu. This compares with decisions by Cameroon, Gambia and Greece to post a full audit summary report in the previous audit cycle; the other initial-audit states in this group posted an executive summary and/or a one-page graph, or they did not consent to the posting of any results.

States that said they would post only the chart from the current cycle, but have not yet done so, are Angola, Argentina, Armenia, Australia, Austria, Bolivia, Chile, Comoros, Congo, Côte d'Ivoire, Cuba, Democratic People's Republic of Korea, Denmark, Djibouti, Dominican Republic, France, Guinea-Bissau, Honduras, Hungary, Jamaica, Kazakhstan, Kenya, Madagascar, Malawi, Mauritania, Nauru, Netherlands, Nicaragua, Philippines, Poland, Republic of Korea, San Marino, Slovakia, Sweden, Syrian Arab Republic, Tajikistan, Tanzania, Turkey, Turkmenistan, Uganda, Ukraine, United Kingdom, Uruguay, Uzbekistan, Venezuela, Vietnam and Zambia.

This compares with decisions by Armenia, Australia, Chile, Denmark, Dominican Republic, France, Guinea, Honduras, Hungary, Netherlands, Poland, Slovakia, Sweden, Tanzania, Turkmenistan and the United Kingdom to post a full audit summary report in the previous audit cycle; the other states in this group posted an executive summary and/or their graph, or they did not consent to the posting of any results.



The FSIX posting for Indonesia includes both its 272-page final report and its level of implementation chart.

Value of a Final Report

A final report provides significantly more information than a level of implementation chart. Each final report also incorporates a *lack of effective implementation chart* — a more precise and detailed presentation of state versus global performance on critical elements of a safety oversight system. Review of the final reports already posted shows that they provide insights into the auditing process and expectations of the international aviation community; the performance of ICAO auditors; the extent to which auditors’ findings are accepted or rejected by the state; the effects on safety oversight of inadequate financial, technical and human resources; the difficulty of changing practices that vary from global standards; and ICAO’s challenges in following up on corrective actions by states.

In contrast, a level of implementation chart provides only a whole-number scale from 1 (not

implemented) to 10 (fully implemented) of black squares showing the auditors’ ranking of state implementation of each element; gray squares showing the global average level of implementation; whether the audited state’s performance generally is better, worse or equal to the global average; and the audit period. The chart included in a final report notably adds a comparison of the exact percentage lack of effective implementation in global audits and in the audited state; the total number of audited states at the time; and one overall audit result for the state and the world, respectively, also expressed as a percentage.

Common Challenges

Review of the first 14 final reports posted on FSIX shows that some audit findings — or related issues — appear repeatedly among these states, as noted below for the states in parentheses (*ASW*, 8/07, p. 30). These paraphrased examples of findings suggest that posting a final report not only fulfills a state’s public disclosure commitment but also promotes international public understanding of the underlying challenges of global standardization in air transport oversight.

A policy existed to notify ICAO of a state’s regulatory differences from standards and recommended practices (SARPs) but the state had no procedure or systematic review to identify differences (Belgium, Bulgaria, Canada, Indonesia, Italy, New Zealand and Sudan). ICAO was not informed properly about accidents and incidents as required, related procedures were inadequate or incorrect data formats were sent to ICAO (Belgium, Canada, Czech Republic, Norway and Trinidad and Tobago).

Parliamentary review of, interference with or resistance to amendments to civil aviation regulations slowed or deterred state compliance with changes in SARPs, or the state said that regulations would not comply with SARPs because the state exceeded requirements of SARPs in an alternate manner (Czech Republic, Ghana and New Zealand). State regulations allowed

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ICAO Responses to Safety Recommendations by Member States

Issue	State and Context	ICAO Response
Airworthiness. Develop standards for the classification and format of service information issued by aircraft, engine and component manufacturers, including a robust global system of distributing service bulletins. Develop standards for states to ensure appropriate performance measures for continuing airworthiness.	Australia said that uncertainty about continuing airworthiness regulatory requirements, reliance on operator expertise and reliance on actions of regulators in other states led to missed metal-fatigue inspections of airliners in 2000–2001 and other breakdowns in safety oversight.	The Airworthiness Panel of the Air Navigation Commission determined that the global standards of continuing airworthiness as requested were unfeasible. ICAO said that in 2004, amendments to Annex 8, <i>Airworthiness of Aircraft</i> , adequately addressed the need for consistent practices.
Defibrillators. Develop global standards and recommended practices (SARPs) requiring the carriage of automated external defibrillators (AEDs) by all airliners in international commercial air transport and related crew training.	Belgium said that a Boeing 737 captain in September 2002 became incapacitated by cardiac arrest after takeoff with no AED aboard the airplane; the unconscious captain occupied the left cockpit seat until after landing.	Analysis of the issue by ICAO is ongoing. Data show AED use has been indicated for about 44 in-flight cardiac arrests per year and, with global AED carriage, could save about 224 lives in 10 years.
State Responsibility. Distinctions between scheduled flights and charter flights affect state oversight, responsibility to ensure operators' regulatory compliance and technical support from ICAO and other states.	Benin and the BEA of France said that the December 2003 fatal crash of an overloaded 727 during takeoff raised questions about whether ICAO had adequately educated leaders of states about their safety oversight responsibilities.	ICAO said that the proliferation of different types of commercial aviation operations has challenged many states, and that its strategic-level efforts and publications in 2005 and 2006 have addressed these issues.
Takeoff Safety. ICAO and other authorities should develop a requirement for a takeoff performance monitoring system that would provide an accurate and timely warning of inadequate takeoff performance.	Canada said that the fatal takeoff overrun accident of a 747 in October 2004 raised the issue of a crew being unaware that performance is less than required until it is too late to reject the takeoff.	ICAO said that the proposed system would have to use mature technology and be proved effective before any change to SARPs, and that ICAO could participate in studying systems developed by others.
ACAS Response. Pilots must be educated and trained to respond correctly to an ACAS resolution advisory (RA) and to have confidence in the system. Investigators of ACAS incidents would benefit from relevant data recordings and from audio recordings capturing the sound in workspace of air traffic controllers.	Germany said that the July 2002 midair collision of a 757 and a Tupolev TU154 in part involved inadequate standards from ICAO for the standardization of national ACAS regulations, operations and procedural instructions by manufacturers and operators. ICAO should ensure globally consistent RA responses.	ICAO said that various documents concerning ACAS, including standards for operations manuals and training, have been "clarified and strengthened" but implementation depends on states and industry even with the USOAP. ICAO relayed recommendations to the Air Navigation Commission for consideration, noting potential methods of recording ACAS data.
Audit Follow-Up and CVRs. ICAO should conduct in-depth tracking of corrective action taken in response to its audit findings, applying pressure on states if required for timely implementation of action plans. Requirements for CVRs and DFDRs also should be upgraded.	Greece said, following a fatal accident in August 2005 involving in-flight cabin depressurization of a 737, that action was needed on recommendations that ICAO require audio recordings of company communications, that CVRs that can record an entire flight be considered and that cabin altitude be recorded on the DFDR. The United Kingdom separately called for installing advanced CVRs on all public transport category aircraft, including helicopters, and promoting the development of lightweight CVRs and DFDRs after a Hughes 369 accident in July 2003.	ICAO said that the comprehensive systems approach for USOAP as of 2005 addressed the issues of corrective action plans and target dates with ICAO follow-up procedures, and Web site availability of USOAP results to all states. ICAO said that CVRs already record company aural communications, but that the Flight Recorder Panel began to consider the other changes in 2007.
Runway Friction. International requirements for runway friction measurement should be reassessed in light of the latest research on determining friction characteristics of contaminated runways.	Iceland said that in December 2003, a 737 stopped beyond the landing distance available for a runway and that differences between braking conditions reported and those experienced were a factor.	ICAO plans to address the recommendation "in due time" considering that the Aerodromes Panel of the Air Navigation Commission in December 2006 also has recommended work on the measurement and reporting of runway surface friction characteristics.
Audit Results. Different policies on treatment of European operators create uncertainty and confusion for the public when an operator from one state is found by another state to have safety deficiencies. The state of registration may not enforce minimum requirements.	The Netherlands said, following a McDonnell Douglas MD-88 runway-overrun in June 2003 after a rejected takeoff beyond V_1 , that ICAO should verify how audit results on the quality of a state's safety oversight can be made available to the public under the USOAP.	ICAO said that since March 2006, states have been encouraged to disclose to the public their USOAP audit results, and ICAO has "developed an ongoing process to allow the release of relevant information to the public."

Table 2

(continued next page)

ICAO Responses to Safety Recommendations by Member States

Issue	State and Context	ICAO Response
Helicopter Work. Absence of ICAO standards leaves all decisions about regulating aerial work operations to individual states and so is detrimental to safety.	Oman said, after a May 2005 landing accident in which the main rotor blades of a Bell 212 struck a 25-m (82-ft) ground antenna mast, that states are unable to base their helicopter regulations on international standards because of the current ICAO policy.	ICAO annexes omit any requirements for helicopters engaged in aerial work primarily because of the diversity of work, intentionally leaving any operational restrictions to the discretion of states. ICAO said that compliance with locally developed, state-supervised operating procedures is sufficient to prevent such accidents.
Circling Category. International standards do not require formal notification to ATC of a widebody aircraft's approach category or circling minimum. The controller typically has to ask the pilot directly, which may cause higher workload, misunderstanding and error.	The Republic of Korea , citing the April 2002 crash of a Boeing 767 during a circling approach, recommended that a standard be developed to add an aircraft approach category column to ICAO's standard flight plans to record the category and circling minimum of the specific aircraft for ATC.	The Air Traffic Management Section of the Air Navigation Bureau declined to pursue this change. ICAO said that it would not benefit ATC, which cannot require flight crew compliance with approach and landing minimums and does not accept primary responsibility for terrain clearance during a circling approach.
Water Drainage. International standards of runway construction should be reviewed to ensure adequate drainage of heavy rain, and research should be encouraged to measure braking action on runways under all conditions of surface contamination.	Singapore said, in the context of a December 2002 runway overrun by a DC-8 during heavy rain and a January 2004 runway excursion by a 777 during rain, that better test equipment should be produced to measure wet runway characteristics.	ICAO agreed to consider amending relevant annexes to provide for small stepdowns from runway surface to shoulder and from shoulder to grass as a possible means of improving drainage at airports affected frequently by heavy rain.
Improvised Approaches. The accident report of a controlled flight into terrain involving failure to use the current published instrument procedures should be disseminated.	Timor-Leste said, after an Ilyushin 76 crashed in January 2003 on approach, that lessons from this fatal accident should be applied worldwide.	ICAO summarized the accident in the <i>ICAO Journal</i> and has made a digital copy of the complete report available on <www.icao.int>.
Cockpit Image Recorder. Accident investigators wanted but were unable to determine how propellers were selected by a pilot during flight from flight control range to ground control range.	United Arab Emirates , citing the fatal crash of a Fokker 50 during approach in February 2004, recommended the use of a crash-protected cockpit image recorder to help answer questions about which pilot handled the propeller controls. The United Kingdom issued a similar recommendation in the wake of a major electrical failure incident in October 2005 on an Airbus A319 in which the primary flight displays and navigation displays went blank for 90 seconds.	ICAO said that the global standards for cockpit image recorders have been an ongoing work project of the Flight Recorder Panel.
Blast Pad Debris. Damage was caused to an airliner's tailplane and elevator when takeoff thrust lifted and broke up a blast pad at the runway threshold.	The United Kingdom , citing undetected damage from blast pad debris to a 737 prior to takeoff in July 2005, recommended standardized markings and pad and pavement designs resistant to damage from engine inlet suction/jet blast.	ICAO referred the issues to the Aerodromes Panel for further study. ICAO has been consulting states on a November 2007 proposal that called for blast pad inspections and monitoring to reduce risk of debris and loose objects.
Accident Investigation. First responders and investigators need protection from hazardous goods and other risks at aircraft accident sites based on correct information about cargo.	The United Kingdom , citing the crash of a 747 in December 1999, urged adequate support of the work of the ICAO Hazards at Accident Sites Group and consideration of new technology for tracking cargo to assist accident investigations.	ICAO in 2007 issued guidance for working safely at accident sites, and said that its Dangerous Goods Panel in 2004 had amended relevant guidance and forwarded the dangerous goods tracking concept for further discussion by an appropriate working group.
Runway Distance Markers. Benefits to runway situational awareness and disadvantages should be considered as a first step toward installing distance markers when the runway profile prevents a flight crew from having a continuous view of the end of the paved surface.	The United Kingdom , citing a May 2005 incident involving the flight crew's emergency steering of an A320 to prevent a landing overrun, recommended consideration of this visual aid for runways with unusual profiles.	ICAO said that the Air Navigation Commission would study the issues and develop new runway specifications, if necessary, as amendments to Annex 14, <i>Aerodromes</i> .

ACAS = airborne collision avoidance system; ATC = air traffic control; BEA = Bureau d'Enquêtes et d'Analyses pour la Sécurité de l'Aviation Civile; CVR = cockpit voice recorder; DFDR = digital flight data recorder; ICAO = International Civil Aviation Organization; USOAP = Universal Safety Oversight Audit Program

Note: Australia's recommendation about ballistic parachutes for light general aviation aircraft are excluded. The United Kingdom's recommendations for handling airport magnetic anomalies (*ASW*, 05/08, p. 18) are excluded.

Source: ICAO Flight Safety Information Exchange

Table 2

exemptions to ICAO flight operations or airport requirements but states had no criteria to conduct risk assessments, grant exemptions, require risk mitigations or monitor the resulting level of safety (Bulgaria, Jordan and South Africa).

Human resources management or staffing levels of government agencies or departments were insufficient to provide effective safety oversight, typically because of financial constraints, personnel retirements and high rates of employee turnover or difficulty competing with private companies to pay staff in critical areas (Belgium, Bulgaria, Indonesia, Italy, Norway, South Africa and Sudan). The state did not have an adequate method to determine whether the quantity and quality of technical staff and inspectors were sufficient for the level of air transport activity or to safely adjust to budget cuts (Czech Republic, Ethiopia, Ghana, Indonesia, Italy, New Zealand, Norway, South Africa, Sudan and Trinidad and Tobago).

No program or an inadequate program existed for safety oversight, quality control and/or safety inspections of airports, air navigation service providers and other third-party providers of aeronautical products, procedures and services (Bulgaria, Ethiopia and Sudan). States did not retain final safety oversight responsibility as required when delegating work to regional organizations such as the European Aviation Safety Agency, privatized air navigation service providers and privatized airport operators (Czech Republic, Italy and Trinidad and Tobago).

Safety management systems for airports and air traffic services, airport certification procedures, runway safety programs and/or associated risk assessment and auditing techniques were

not implemented or not implemented effectively, or corrective action was not taken in response to airport inspections (Bulgaria, Indonesia, Jordan, New Zealand, Sudan and Trinidad and Tobago). Runway end safety areas at airports were not compliant with state regulations or SARPs so formal risk assessments and mitigating measures were recommended (Bulgaria, Indonesia, Jordan and Trinidad and Tobago). The civil aviation authority was expected to perform safety oversight of aircraft rescue and fire fighting (ARFF) services at civil airports, validating adequate training, equipment and extinguishing agents even if the military or another government ministry operates ARFF (Bulgaria, Jordan and Trinidad and Tobago).

Regulations on dangerous goods training were expected to apply to commercial air transport operators whether or not they are currently involved in the transport of dangerous goods or whether police agencies enforce these regulations (Canada, Czech Republic and Indonesia). Financial penalties for regulatory noncompliance were nonexistent or no longer high enough to have a deterrent effect, whether imposed by a civil aviation authority or a police agency (Ethiopia, Italy, Sudan and Trinidad and Tobago).

Various categories of safety inspections were conducted and documented but systems/procedures were inadequate for monitoring and tracking deficiencies and follow-up actions (Bulgaria, Ethiopia, Indonesia and Jordan). Lack of national legislation or other problems prevented the introduction of nonpunitive voluntary incident reporting systems and/or databases for them (Belgium, Czech Republic, Ethiopia, Italy, New Zealand, Norway and Trinidad and Tobago).

Independence of accident investigation authorities was compromised compared with ICAO requirements according to auditors, although some states disagreed (Ghana, Italy, South Africa, Sudan and Trinidad and Tobago). Understaffing of accident investigation authorities or inadequate systems to allocate resources prevented the timely initiation or completion of significant numbers of accident investigations (Belgium, Indonesia, Italy and Norway).

Updating of official manuals for airworthiness, flight operations, airport and/or air navigation services inspectors lagged behind organizational changes, or these types of procedures in manuals needed to be strengthened (Canada, Czech Republic, Ethiopia, Ghana, Sudan and Trinidad and Tobago). Civil aviation regulations, the state aeronautical information publication, aircraft registration certificates, aircraft operating certificates and other safety-critical documents were not available in English to foreign operators (Indonesia). An aeronautical information publication was noncompliant if it directed users to a Web site to find the state's significant differences with SARPs; they must be included in this publication (Canada and New Zealand). ➔

Note

1. ICAO specifically audits how effectively member states provide the following critical elements of a safety-oversight system: primary aviation legislation; specific operating regulations; state civil aviation system and safety oversight functions; technical personnel qualification and training; technical guidance, tools and the provision of safety-critical information; licensing, certification, authorization and approval obligations; surveillance obligations; and resolution of safety concerns.