Asia-Pacific
Economic Cooperation

CASE STUDY OF THREE ECONOMIES
Seminar on the Necessity of Cultural Change to Promote Reporting on Air Safety Issues to Complement ICAO Requirements

APEC Transportation Working Group

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Seminar on the Necessity of Cultural Change to Promote
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PREFACE

"The shift from rule-based to more goal-based regulation—now apparent in most hazardous technologies—has brought a number of advantages, most particularly in the necessity for regulatees to think for themselves (often for the first time) about the dangers that beset their operations. But it has also brought problems—most especially for the regulator. It has, in short, put regulators between a rock and a hard place. The Regulator has two tasks: first, to evaluate the SMS documentation and it's associated programmes; second, if the SMS is approved, to check that the organisation remains in compliance with its documentation and programmes. The difficulty with this is that almost any subsequent accident affecting that organisation will put the regulator in the frame. There are two possibilities. The accident occurred as the result of activities that were in compliance with the SMS—in which case, the regulator should not have approved it in the first place. Alternatively, the contributing factors revealed a lack of compliance with the SMS— in which case, it was a failure of regulatory oversight."

Reason 2008

INTRODUCTION

PURPOSE

This Report discusses the background, methods and results of the Case Study for three participating Asia Pacific Economic Cooperation (APEC) Economies, Singapore, Peru and USA. The Case Study centers on the possible need for change in organizational and safety cultures within civil aviation authorities as a result of ICAO safety initiatives.

BACKGROUND

ICAO suggests that the entire aviation industry should implement a robust Safety Management System (SMS). ICAO has defined the key components of a sound SMS program and has recommended methods for SMS implementation. One critical component of a successful SMS is the promotion and installation of a strong and just Safety Culture (ICAO 2009). There are numerous definitions of "safety culture." The definition below was selected as a useful point of departure for this study (See also JPDO 2010 for more definitions and an extensive discussion of safety culture concepts.)

"An organization's culture consists of its values, beliefs, legends, rituals, mission goals, performance measures, and sense of responsibility to its employees, customers, and the community." The principles or attributes discussed above, that make up the SMS functions, will not achieve their goals unless the people that comprise the organization function together in a manner that promotes safe operations. The organizational aspect that is related to safety is frequently called the safety culture. The safety culture consists of psychological (how people think and feel), behavioral (how people and groups act and perform), and organizational or systematic (the programs, procedures, and organization of the enterprise) elements (AC 120-92A_12 August 2010).

Necessity for Culture Change

The Asia Pacific Economic Cooperation (APEC) initiated a culture change project in recognition of the perceived need for the regulator and service providers to make possible changes to their culture necessary to adopt the ICAO mandated SMS implementation. Service providers were faced with an ICAO generated deadline of January 2009 for the initial SMS implementation, and then on November , 18, 2010 for SSP implementation.

Most safety experts believe that a successful SMS implementation "cannot be completed without the adoption of state safety programs (SSP) by national governments worldwide. (Werfelman, 2009). The ICAO deadline for SSP implementation was set for November 2010. But, it appears that service providers moved more quickly toward implementation of SMS, while development of the SSP lagged considerably.

Gonzales (2009) Civil Aeronautic General Direction, Peru presented data at the 32nd Asia Pacific Economic Cooperation Transportation Working Group, held in Singapore in July 2009. The results of that survey indeed supported the idea that one reason for slow adoption of SSP – SMS might be due to cultural factors and resistance to change.

Several issues regarding SMS were brought to light at the 32nd APEC –WG - Aviation Safety Subgroup meeting held in Singapore in 2009. One key issue raised in the Peru presentation was the importance of establishing a "just culture" in support of SMS implementation. Results of a Peru survey (Gonzales, 2009) showed that there might be cultural barriers to successful SMS implementation. It was suggested that APEC continue to pursue data collection and to apply management methodologies to prepare APEC Economies for the culture changes needed for a successful SMS implementation. The APEC Aviation Safety Subgroup is particularly focused on advancing the economic development, while at the same time taking measures to enhance the safety and security of air transport services (APEC 2009).

As a result of this APEC 2009 Conference, a study was commissioned to examine the organizational cultures of Civil Aviation Authorities. The specific focus of the study is to provide the tools necessary to assess the status of SSP and SMS implementation, and to determine a proper course of action for cultural change and acceptance.

(**Appendix one** includes excerpts from TPT 07/2009A: *Seminar on the necessity of cultural change to promote reporting on air safety issues to complement ICAO requirements.*)

The methods proposed will provide the means to systematically assess SSP - SMS status and implementation effectiveness; and will help determine the need for culture change.

Various reasons organizations differ in their SSP - SMS reception and in their preparation for implementing a successful SMS. Some of the reasons are:

- Cultural barriers exist that impede organizational change
- All Economies are not equally equipped because they are in various stages of economic development and have different business challenges
- The Labor Climate may require building or rebuilding trust in management
- Organizations do not recognize the expanding role of women in the work force and fail to consider gender issues in the formulation of SMS plans
- There is no systematic method to determine the state of SMS development and its implementation status.
- There is seldom an established feedback loop to continuously assess and communicate to management problems in SMS implementation, and to provide information as to whether or not specific practices are in fact working.

Focus of the Culture Change Study

The primary focus of the study was placed on finding out the progress of SSP implementation among the three participating Economies, and also in assessing the possible presence of cultural barriers that might be inhibiting acceptance of ICAO initiatives and thereby delaying implementation.

Relevant documents pertaining to the establishment of both State Safety Programme and Safety Management Systems were reviewed in order to define the ICAO recommended SSP and SMS frameworks, and to serve as part of the foundation for understanding the

possible need for a culture change. The definitions of SSP and SMS are presented in the next few paragraphs, mostly quoted directly from ICAO publications.

Basic Definition of the State Safety Programme (SSP)

ICAO provides the following definition of an SSP:

The State Safety Programme (SSP) is a system for the management of safety within a State. It provides an enabling platform for the different civil aviation organizations within a State to apply two basic safety management activities essential to the discharge of their safety responsibilities; safety risk management (SRM) and safety assurance (SA). (ICAO HLSC 2010-WP4, 2009 p. 4)

The 2009 ICAO Safety Management Manual (SMM), further states that implementation of an SSP must be commensurate with the size and complexity of the State's aviation system, and may require coordination among multiple authorities that are responsible for individual elements of civil aviation functions in the State.

An SSP then, can provide an essential framework for the State to organize and manage its safety responsibilities and functions, thereby serving as:

- A platform for the State to apply the two basic safety management principles throughout its civil aviation organizations
  - safety risk management (SRM)
  - safety assurance (SA)

- A framework that allows the State safety oversight authority and service providers to interact more effectively in the resolution of safety concerns (ICAO SSP Implementation Course - 25 Feb 2010)

(Appendix Two includes ICAO Recommended SSP Framework)

Basic definition of the Safety Management System (SMS)

A safety management system (SMS) is a systematic approach to managing safety, including the necessary organizational structure, accountabilities, policies and processes. In order to reinforce the notion of safety management process the new ICAO safety management requirements include provisions for an organization to establish lines of safety accountability throughout the organization, as well as at the senior management level. The requirements impose upon States the responsibility to establish a safety programme and, as part of such programme, require that air operators, maintenance organizations, air traffic services providers and certified aerodrome operators implement a safety management system (SMS). The SMS requirement refers to all service providers. Lastly, the requirements impose on States the responsibility to establish an acceptable level of safety for the activities/provision of services under consideration (ICAO SMS Course Outline 2008).

Eight basic and generic building blocks underlie the process of managing safety, as follows (ICAO 2009, Section 3.7.1).

1) ***Senior management's commitment to the management of safety.*** Managing safety, just like any other management activity, requires allocation of resources. This allocation of resources is, in all organizations, a function of senior management, hence the need for senior management's commitment to the management of safety. In plain language: no money, no safety.

2) ***Effective safety reporting.*** It is a known aphorism that "one cannot manage what one cannot measure". In order to manage safety, organizations need to acquire safety data on hazards that allow for measurement to take place. Operational personnel will acquire most of such data through voluntary and self-reporting. It is essential therefore for organizations to develop working environments where effective safety reporting by operational personnel takes place.

3) ***Continuous monitoring*** through systems that collect safety data on hazards during normal operations. Safety data collection is just the first step. Beyond collection, organizations must analyze and extract safety information and safety intelligence from data, because data that are collected and relegated to a drawer are as good as no data at all. Furthermore, it is essential to share the safety information and intelligence gleaned with those who operate the system daily for they are the ones who are in constant contact with the hazards, the consequences of which effective safety reporting aims to mitigate.

4) ***Investigation of safety occurrences*** with the objective of identifying systemic safety. System resilience can be much more effectively reinforced by removing systemic deficiencies rather than assigning blame.

5) ***Sharing safety lessons learned and best practices*** through the active exchange of safety information. Another well-known aphorism eloquently illustrates the need for data sharing and exchange of safety information: "learn from the mistakes of others, you are not going to live long enough to make them all yourself". The aviation industry's excellent tradition of sharing safety data must be maintained and, if at all possible, reinforced.

6) ***Integration of safety training for operational personnel.*** Seldom do training curricula for operational personnel include dedicated safety training. There is an assumption that since "safety is everybody's responsibility", operational personnel are safety experts in their own right. The fallacy of this line of reasoning is evident and is discussed in Chapter 7. There is an urgent need to include dedicated training addressing the basics of safety management at all levels of operational personnel training.

7) ***Effective implementation of standard operating procedures (SOPs)***, including the use of checklists and briefings. SOPs, checklists and briefings, whether on a flight deck, in an air traffic control room, in a maintenance shop or an aerodrome apron, are amongst the most effective safety devices operational personnel have to discharge their daily

responsibilities. They are a powerful mandate from the organization regarding how senior management wants operations to be conducted. The safety value of realistic, properly written and constantly adhered to SOPs, checklists and briefings should never be underestimated.

8) **Continuous improvement of the overall level of safety.** Managing safety is not a one-day affair. It is an ongoing activity that can be successful only through continuous improvement. (ICAO 2009, Section 3.7.2)

The result of implementing these eight building blocks will be an *organizational culture* that fosters safe practices, encourages effective safety communication, and actively manage SMS results in the design and implementation of organizational processes and procedures to identify safety hazards and their consequences and bring the safety risks in aviation operations associated under the control of the organization (ICAO 2009, Section 7.613)

(Appendix Two includes the ICAO SSP and SMS Frameworks)
(Appendix Three includes Assessment Metrics for Estimating SSP-SMS Implementation Status)

SMS from a Human Factors (Lowe 2009) of View

Lowe (2009) nicely expands and clarifies the basic components of a Safety Management System (SMS), as follows, and then addresses the SMS from a human factors viewpoint:

- **A safety policy.** This is a clear written statement of the organisation's view, attitudes, and objectives with respect to safety in relation to the other business processes.

- **Organisational arrangements to support safety.** This involves the organisation, supervision, recruitment, and training of staff to support the safety policy and processes.

- **A safety plan.** This involves elements of establishing standards and processes for safety, and conducting risk assessment and mitigation.

- **A means of measuring safety performance.** Processes and data are required in order to monitor the current and past safety performance.
- **A means of reviewing safety performance.** This element of the SMS exists to enable feedback on operations and also may involve processes such as incident investigation and safety surveys. Including a method assess and understand safety performance against the safety objectives.

- **A feedback loop to improve safety performance.** This element of the SMS is associated with making sure that any lessons that are learnt, or any changes necessary for improvement, are properly accounted for by the organisation, and properly communicated to all relevant staff (Lowe 2009, p.3)

A SMS exhibits many facets that are common to socio-technical systems, or systems that represent the complex combination of humans, technology, and management processes:

• A social dimension. This refers to the 'operational' aspects such as the interactions between the staff members (safety managers, incident investigators, front-line staff and maintenance technicians) to perform the activities that comprise the safety-related aspects of the organisation).

• A cultural dimension. This refers to the attitudes, values, beliefs, perceptions, and practices of individuals and groups within the organisation towards safety within the organisation.

• A technological dimension. In this sense, 'technology' refers to a broad description of the tools and artifacts that support safety management. This includes procedures, sources of information, databases, and other documentation. (Lowe, 2009 p.4)

High Reliability Organizational Culture

The primary foundation for the APEC culture change study is the concept of a High Reliability Organization (HRO). The research conducted by Professor Karlene Roberts (1990), for example, suggests that organizations like the US Naval Aviation, Air Traffic Control and Nuclear Power Plants all enjoy a relatively low accident occurrence because they operate as high reliability organizations (HROs). An HRO is an organization with a strong safety culture and structural features that enable accurate perception and management of risk, provide continuous training, set high quality work standards, and encourage candid communication between workers and managers to identify situations that may pose unacceptable risks during day to day operations. Factors that contribute to an organization's high-reliability performance have been discussed extensively in the literature (Roberts, 1993; 1990; Weick, 1999; Ciavarelli, 2007)

An important component of the high-reliability organization is the *Organizational Culture* as defined below:

Organizational Culture is the sum total of all the shared, taken-for-granted assumptions that a group has learned throughout its history (Schein, 1999, p. 29)

Schein, E.H. (1999) identified three levels of culture:

- Artifacts (visible organizational structures and processes)
- Espoused values (strategies, goals, and philosophies)
- Basic underlying assumptions (unconscious taken for granted beliefs perceptions, thoughts and feelings) (Shein, 2999 p. 16)

Schein briefly discusses organizational culture and its impact on performance and risk. He mentions that "error detection and correction systems" are an important component of organizational cultures, and poses these questions (Shein, 1999 p. 38).

How does the organization measure itself, detect errors, and correct them? How does it know what is going on out there? (Shein 1999, p. 38)

Schein cautions about becoming a "blame" culture, and holds the organization's founders and managers responsible for the character of the culture that evolves over the course of the organization's history.

Westrum and Adamski (1999) believe that "organizational factors" include such things as organizational structure, management, corporate culture, training and recruitment"(p. 67). These authors propose a model of "high-integrity" which underlies the "effective organization." Their model encompasses some of the same or similar attributes of the high-reliability organization discussed by Roberts (1990). Based on Westrum's earlier work, the authors suggest that the 'critical feature' of organizational culture for safety is 'information flow' (p. 70). Westrum believes that organizational culture is what "personality is to an individual, in that every organization develops a characteristic way of doing things" (p.70). Three types of information flow are defined, *pathological, bureaucratic*, and *generative*. We are most familiar with a bureaucratic culture in which roles and responsibilities are defined and a logical, typically hierarchical, framework for organizational functionality is established. We also know that bureaucratic cultures establish sometimes quite inflexible rules of operation and are slow adapting to change. A pathological culture actively suppresses "bad news," or seeks to contain negative information. **A generative culture is one that actively seeks information, and welcomes the feedback whether it is good or bad news.**

Reason (1997) defined organizational culture as:

Shared values (what is important) and beliefs (how things work) that interact with an organization's structures and control systems to produce behavioral norms (the way we do things). A strong culture is one in which all levels of the organization share the same goals and values. In a strong culture people way down the line know what the guiding values are and the practices are crystal clear (Reason 1997, p.2).

It is important to recognize that "safety culture" exists as a subset of organizational culture and provides an overall foundation influencing safety culture. A strong safety culture has the following attributes.

- Clear leadership commitment to safety
- Formal policies and procedures promoting safe operations
- Adequate resources allocated to safety initiatives
- Organizational structure that establishes safety performance standards
- Agreement between supervisors and workers as to what is safe and unsafe
- Transmission of shared values, beliefs and norms of behavior concerning safety
- Open reporting of hazards, incidents and human errors (non punitive work environment)

CULTURE ASSESSMENT METHODOLOGY

GENERAL

The Culture Change Study Methodology used here is broken into three phases: (1) Conducting interviews with the organization's leaders and workers, (2) Construction and application of a tailored High-Reliability Organizational Effectiveness Survey (HROES ^{TM}), and (3) Conducting a Culture Change Seminar and Workshop, with planned follow-on culture change activities and periodic re-assessments of organizational culture.

INTERVIEW METHOD

The first step in assessing the current state of the organizations culture consists of conducting interviews with a cross section of supervisors and workers from each organization (Civil Aviation Authorities in the case study). The purpose of the interviews is to collect basic information regarding policies, practices, and the cultural norms of operation. The interview information is subsequently used to adapt HROES ^{TM} survey instrument, developed by Human Factors Associates, Inc. for specific APEC study application. Interviews were conducted with three participating Economies, Singapore CAA, Peru DGAC, and USA FAA. Singapore and FAA interviews were conducted via teleconference calls and the Peru interviews were conducted live in Lima.

(Appendix Four shows the Interview Protocol.)

SURVEY METHOD

The HROES^{TM} "culture survey" used here was derived from over 10 years of research applying the principles of High – Reliability Organizations to assessing organizational effectiveness and high reliability cultures (Ciavarelli 2005, Roberts 1993). The survey process and the core sample of survey items used in culture assessment have evolved over numerous applications in aviation (aircraft flight operations and air traffic control operations), the aerospace industry, and medical care facilities.

In this study, we have selected and tailored specific survey items based on completion of the Interviews – and with consideration to the Civil Aviation Authority mission, role and responsibilities. The Survey was distributed September 10, 2010, with an designated survey closure date of 24 September. The resulting survey is divided into several sections, including a section designed to assess the status of SSP and SMS implementation and a section containing the HROES^{TM} culture assessment survey that includes survey items using a five point Likert Rating scale, an open - ended items section, that allows survey takers to provide comments and suggestions, and a section for collecting survey taker's professional background information.

The survey rating items measure five specific areas of high reliability using the HROES^{TM} framework established by Ciavarelli (2005).

1. **Safety Process auditing (SPA)** – conducts adequate audits and reviews of CAA safety management processes to ensure they are working as intended.

2. Safety Culture & Reward system (SCRS) – creates a "just culture" policy and procedures for open reporting and rewards individuals that report deficiencies.

3. **Risk management (RSKMGMT**) – has risk management processes in place and continuous risk assessment by employees at all levels.

4. **Quality Assurance (QA**) best practices – promotes and monitors use of standard procedures and best practices

5. **Leadership and Supervision (LDSHP**) -- Command Control – clearly communicates safety management policies, objectives, and provides active leadership and resources to promote effective safety management operations

(Appendix Five shows the High Reliability Organizational Effectiveness Survey.)

RESULTS AND DISCUSSION

FINDINGS FROM INTERVIEWS

The next three subsections show selected notations made by the author during interview sessions with the three Economies used in this case study, Singapore CAA, Peru DGAC, and USA FAA. Detailed notations can be found in **Appendix 6.**

In general, the comments cover areas dealing with the progress that each CAA is making on their SSP and SMS implementation, and include several discussion topics related to possible barriers to progress, or strategies underway to make the SSP – SMS programme implementation work more smoothly and effectively.

Singapore Interview Findings From Teleconferences

- Singapore is on schedule to produce their SSP by the November 18 due date.
- There is a reasonable consensus as to the contents of the SSP among Singapore CAA personnel – at least in concept.
- A key challenge in producing the SSP at this point is the difficulty of defining clear performance indicators (metrics) for determining safety levels among operators.
- Part of the problem of establishing valid safety metrics is the reliance on outcome measures (accidents and incidents).
- It was agreed that "leading measures" of safety performance are needed to establish process measures that serve as valid and reliable metrics of "healthy" safety level (acceptable risk environment supported by a strong safety culture).
- Singapore CAA has specifically increased resources to ensure adequate support for SSP/SMS implementation.
- CAAS executives interviewed do not perceive any significant "culture lag" or resistance to changes brought about by the ICAO promotion of SMS.

In the case of Singapore CAA, the interviewees believed that they are on schedule to produce their SSP in the near term. A key issue discussed with Singapore CAA was the need to identify valid metrics for use in determining whether or not service providers have reached a satisfactory state of safety.

Finally, as a consequence of our web teleconference interviews and subsequent email discussions with Singapore participants, the following items were added to the Interview Protocol for future use:

1. Given the changes brought about in both organizations from SSP/SMS implementation – how has or will the relationship between the regulator and operator change?

2. Is the regulator culture prepared to accept the change in relationship – or in particular to trust that the operator with an implemented SMS can do sufficient "self-assessments" of SMS effectiveness to "relax" direct oversight and reduce field audits?

3. What steps have been taken to prepare investigators and managers of service organizations to establish trust and open communications?

4. Will your SSP recommend methods to be used by operators to assess progress and success in SMS implementation, including metrics for assessing safety culture?

(See **Appendix Six** for detailed interview notes.)

Peru – DGAC Findings from Onsite Interviews, Lima Peru

- SMS implementation is underway, with work accomplished for the early phases
- SSP development is progressing while the agency is maintaining regulatory oversight with its service providers
- There are some areas of SSP that are subject to interpretation – in which the ICAO guidance is not completely clear
- It is understood that a non'-punitive reporting system is an important factors in safety assurance – but there are issues regarding the necessary legal framework
- Peru would benefit from assistance from other Economy Civil Aviation Authorities who have faced possible legal constraints and inhibitions
- DGAC was put in contact with key personnel associated with the legal formation and administration of the US Aviation Safety Reporting System so that DGAC might benefit from their expertise.
- Most supervisors and workers at DGAC accept, in principal, the substance of ICAO SSP and SMS goals and processes but there are differences in interpretation and implementation strategies., therefore
- It might be useful to develop universal templates and more detailed guidance

In the case of Peru DGAC, the main issue that surfaced was related to creating a proper legal and regulatory framework for establishing a "non – punitive" safety reporting system as an integral part of SMS implementation. Personnel at DGAC were put in touch with key individuals in the United States, who have direct experience and knowledge in how the USA has established the Aviation Safety Reporting System (ASRS) and the legal foundation of ASRS that supports non-punitive safety incident reporting.

(See **Appendix Six** for detailed interview notes.)

USA – FAA Findings from Teleconferences

- FAA will not be developing an independent, overarching single SSP document, but rather a series of separate but related FAA Advisory Circulars
- ICAO is mainly looking for whether or not specific SMS functions are in place and working rather than a comprehensive SSP or SMS documentation.
- FAA representatives agree that the ICAO guidelines for SSP and SMS are very broad and are subject to different interpretation and viewpoints.

- Final implementation of SSP – SMS will not necessarily reduce the number of FAA inspections and audits, it most likely will affect the nature and scope of oversight by helping to target specific strengths and weakness.
- The relationship between the FAA (regulator) and operators will change in some respects as they may very well be working closer together – but one should avoid the term "partnership" as the regulator must by its safety assurance role remain vigilant and independent.
- FAA executives are very much aware of the movement toward "high – reliability" and are engaged in identifying the means and methods to achieve improvement in their processes and organizational performance.

In the case of the United States, Federal Aviation Agency (FAA), it was discovered that the FAA will not be publishing a single overarching, comprehensive single SSP document. The FAA instead will rely upon a series of interrelated FAA Advisory Circulars that address key SMS components (safety policy and objectives; safety risk management; safety assurance; and safety promotion). Further, the FAA has established a comprehensive training program for its employees to help with SMS implementation.

(See **Appendix Six** for detailed interview notes.)

Results from Interviews were found to be very useful in framing the survey questionnaire and for tailoring the survey items in the final culture assessment instrument HROES^{TM} used in the Case Study.

SURVEY RESULTS SUMMARY

General

All results presented here were based on the aggregate of all three Case Study Economies, so all statistics and survey comments made by respondents are not identified as to a particular Economy or any respondent identity in this report. In addition to this report, which integrates findings across Economies, individual presentations of survey results will be prepared for each Economy separately to preserve the privacy and the confidentiality of the data. Forty six (46) valid surveys were returned for anaysis.

Survey Ratings

The culture survey HROES^{TM} had 54 rating scale items, that are scored 1- 5 (1 - Strongly disagree, 2 - Disagree, 3 - Neutral, 4 - Agree, and 5 - Strongly agree). In a survey of this type, a selection of **4** and **5** on the scale is considered "**favorable**" and a selection of **1** or **2** is considered "**unfavorable**". One should note that there are a few items that were cast in a negative way, like item 12 – *I am not comfortable reporting errors or mistakes....*Such items are re-scored 1 = 5, 2 = 4, 3 = 3, 4 = 2, 5 = 1, so that all items on the survey are placed on a common 1- 5 favorability scale for analysis.

All statistical findings reported here are based on the common scale achieved through this rescoring process, such that a 1 or 2 is always *unfavorable*, and a 4 and 5 is always *favorable*. A value of 3 on this scale is always neutral.

The next four subsections list and briefly discuss, (1) Items that attained Average (Mean) ratings *above* and *below* the 3.0 neutral scale point, taken across all Economies, and (2) the percent agreement for items *above* and *below* 50% agreement, taken across all Economies. In a survey of this nature, we would like to achieve a Mean greater than 3.0, the "neutral point" – preferably a mean between **4** and **5.** And we would like to achieve an agreement percentage over 50% for each survey item. Survey items that fell above or below these criteria are listed below and considered for further review and discussion.

Survey Items with Averages (Means) Near or Below 3.0 on 5 point scale

Figure one is a chart showing the distribution of Means for all 54 survey items. Listed below are those items that had Means near or below 3.0 neutral point of the scale, in other words these items received *unfavorable* average ratings.

4. We have an informal process in place... to report errors of judgment...
8. Employees are comfortable reporting any decision errors or mistakes...
9. There is a strong culture among our supervisors and workers regarding positive attitudes toward SSP – SMS implementation.
22. Employees at my location are held accountable for below average work performance.
27. Our supervisors receive adequate training to ensure high quality leadership and effective management practices.
41. Good communication flow exists up and down the CAA.
46. I believe that it might be difficult to achieve a uniform culture across various CAA functions...
48. I think that it might be difficult to fully implement our SSP because the ICAO guidelines are subject to many different interpretations.
50. Some CAA employees have not embraced the concept of SSP – SMS.
51. Some CAA employees do not believe that the SSP – SMS framework has added much value to safety management.
52. We do not have sufficient resources, in my work group, to meet the expected timelines for full SSP – SMS implementation

Survey Items with an Averages (Means) 4.0 or above 4.0 on 5 point scale

Figure one is a chart showing the distribution of Means for all 54 survey items. Listed below are those items that had Means of 4.0 or above. In other words these items received *favorable* average ratings.

15. I would not hesitate to ask my supervisor for help when needed.
16. I am comfortable admitting to my supervisor that I have made a mistake.
17. We take great pride in the quality of our work.
18. My work group has an excellent reputation for high quality work.
20. Best practices are followed in my work group to ensure high quality work...
32. My supervisor can be relied on to keep his/her word.
34. My supervisor would not ask me to do something against our work group's policy jus to complete a job on schedule.

53. I believe that implementation of the SSP – SMS framework will improve our regulator – service provider relationship.

Percent Agreement on 1-5 Rating Scale: Ten Items that Rated the lowest - below 50%

Figure two is a chart showing the distribution of the Percent Agreement for all 54 survey items. Listed below are those items in which 50% or less agreement. In other words, these items were given ratings of 1 or 2 on a 5 point scale or *unfavorable* ratings.

52. We do not have sufficient resources in my work group to meet the expected timelines for full SSP and SMS implementation. [7.5%]
50. Some CAA employees have not embraced the concept of SSP – SMS. [11.9%]
51. Some CAA employees do not believe that the SSP – SMS framework has added much value to safety management. [15.79%] -- Reverse scored received mostly 1 and 2 ratings.
46. I believe that it might be difficult to achieve a uniform culture across various CAA functions. [27.3%] – Reverse scored received mostly 1 and 2 ratings.
27. In my work group, new initiatives like SSP – SMS implementation are carefully evaluated for possible risk of failure. [34.1%]
41. Good communication flow exists up and down the CAA. [34.9%]
8. Employees are comfortable reporting any decision errors or mistakes they have made that may influence effective job performance. [34.9%]
9. There is a strong culture among our supervisors and workers regarding positive attitudes about SSP – SMS implementation. [35.6%]
48. I think that it might be difficult to fully implement our SSP because the ICAO guidelines are subject to many different interpretations. [35.7%] – Reverse scored received mostly 1 – 2 ratings.
22. Employees at my location are held accountable for below average work performance. [37%]

Percent Agreement on Standard 1 -5 Scale: Ten Items that Rated the highest above 50%

Figure two is a chart showing the distribution of the Percent Agreement for all 54 survey items. Listed below are those items in which indicated more than 50% agreement. These are *favorable* ratings.

17. We take great pride in the quality of our work. [87%]
16. I am comfortable admitting to my supervisor that I have made a mistake. [80%]
20. Best practices are followed in my work group to ensure high quality work... [78.3%]
15. I would not hesitate to ask my supervisor for help when needed. [78.3%]
53. I believe that implementation of the SSP – SMS framework will improve our regulator – service provider relationship. [76.2%]
10. Employees that I know are well – rounded professionals that share the values of my work group regarding best work practices. [75%]
21. Management clearly communicates the need to maintain high – quality standards. [73.4%]
34. My supervisor would not ask me to do something against our work group's policy just to complete a job on time. [72.7%]
32. My supervisor can be relied upon to keep his/her word. [71.1%]
18. My work group has and excellent reputation for high – quality work. [71.1%]

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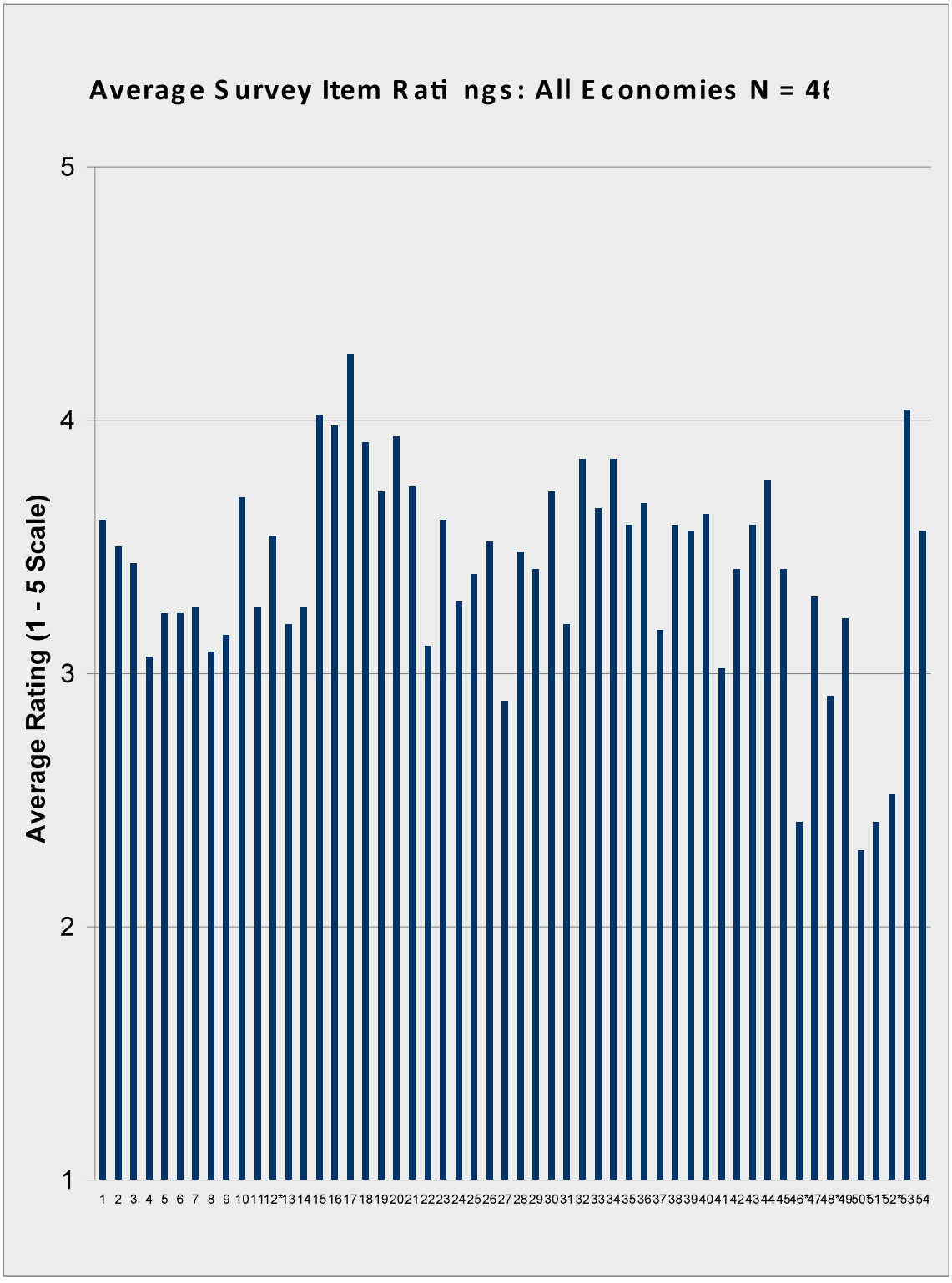
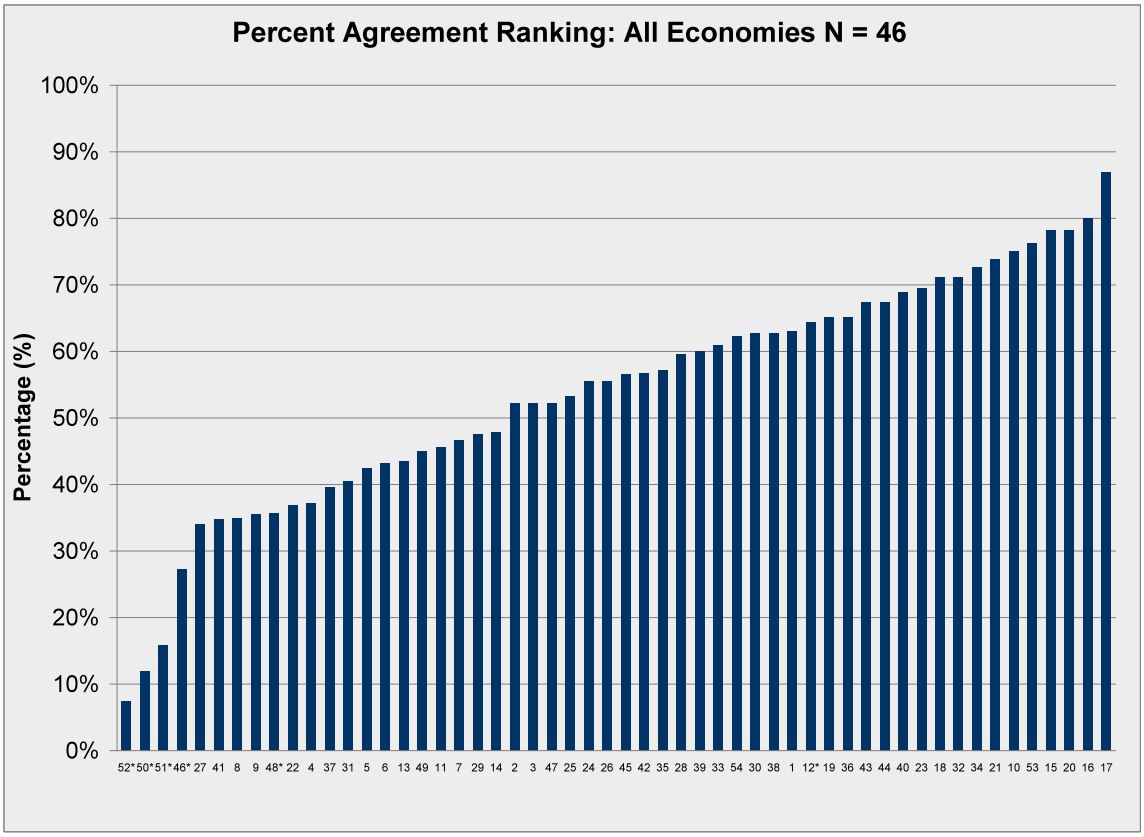
SEE FIGURES NEXT PAGE

Figure One



Survey Items 1 – 54 (normalized 1 – 5 scale)
(See Appendix 5 for item descriptions)

Figure 1



Survey Items 1 – 54 (normalized 1-5 scale)
(See Appendix 5 for item descriptions)

Figure 2

Summary of key findings

In general, results taken across all three Economies indicate that each CAA is taking useful steps in the process of implementing SSP and SMS. The results reflect the fact that SMS and SSP implementations are in the early stages of development and application. In terms of survey ratings, it appears that items falling into the "unfavorable" category are mainly related gaining acceptance of the possible changes in the regulatory role and possible revised responsibilities in executing their oversight mission. For example lower ratings for Survey Item 50 – "not all CAA employees have embraced the concept of SSP – SMS", and Survey Item 51 – "Some CAA employees do not believe that the SMS framework has added much value" may indicate a slow acceptance of changes by some CAA personnel.

An important finding is the finding that Item 41 – "Good communication flow exists up and down the CAA" received a mean rating below 3.0, and a low agreement value of 34.9 % thereby placing this important aspect of SSP/SMS promotion and acceptance among the bottom ten items of low favorability. These findings would seem to indicate a need to improve communication regarding the goals and intent of SSP – SMS – and suggests closer attention by management to involving all personnel to actively participate in the implementation process.

Finally, there seems to be some indication that resources are not completely adequate to satisfy some of the goals and to support the personnel workloads for people assigned to SMS implementation and oversight. (Item 52 – "we do not have sufficient resources...").

Selected Comments from Open- Ended Survey Items

All submitted comments from the survey are presented in **Appendix Seven**. Selected comments are listed below and emerging themes and key issues are briefly discussed.

1. Will the relationship between the regulator and the operator change with SSP/SMS implementation?

Yes, the relationship will become stronger through consultative discussions on improving safety management...

Yes, the regulator is more proactive in engaging the operator to conduct risk assessment... and to address safety deficiencies...

Yes, it becomes more of a partnership rather than the traditional regulator – knows best.

Yes, it will necessitate a closer working relationship.

Broader scope of information sharing. Safety Assurance efforts between operator and the CAA will have more common and defined focus.

The SMS will enable the CAA to have a higher expectation for rigor in safety decision making on the part of the operators.

While SSP/SMS is [still] in progress, we do not expect changes in our reciprocal relationship.

It is still not clear the relation between the operator and the regulator.

2. Is the regulator culture prepared to accept the change in relationship ... to trust that the operator ... can do sufficient "self assessments" of SMS effectiveness?

Yes, the regulator sees the service provider as a partner in the continual improvement of the safety management system.

Yes, if the service provider has implemented a good safety management system acceptable to the regulator...

The relationship will be guided by trust with some flexibility and regular and continuous audits.

Yes, the regulator is ready to trust the operator to carry out self assessments of SMS effectiveness.

Don't think we are ready yet. This new culture requires a mindset shift for both regulator and operator at all levels.

No, but we expect the operator to increase and improve their efforts over the next several years and become more proactive in focusing on safety issues.

Acceptance is highly variable across CAA lines of business...

The regulator is not prepared and the implementation of SMS is not sufficient. P-4

3. Will self assessments result in "relaxed" direct oversight and/or reduce the number of field audits?

No, the audit process is essential to maintain a strict set of "play by" rules...

No, we have annual surveillance programme and the programme will be dependent on the shortcomings and deficiencies identified...

No, surveillance programme would ensure compliance...

No, it will not reduce the number of audits.

The number of field audits may decrease. However, this will not result in a "relaxed" direct oversight...

Audits will be more effective and standardized to provide assurance that risk controls in the service provider's operational environment are effective.

No. I think detailed analysis of audits will occur, facilitating better risk analysis of conditions found during oversight.

I think that it would be an incorrect assumption that the SMS will result in relaxation of oversight and it would be an incorrect approach to SMS...

To reduce the number of field audits, SMS/SSP must be fully implemented.

4. What steps have been taken to prepare the regulatory staff and service provider's managers to establish trust and open communications?

More training and interaction is needed.

Confidence building through frequent dialogue... (Regulator and provider)

Regular meetings and consultations

More communications [needed]

Regular dialogues, meetings between regulator and service provider

[Creation of] a combined training program and safety program promotes open communication and feedback.

This is a weak area... although steps have been taken to develop SMS training.

Documentation, Education, Knowledge

Training courses

Meetings, Conferences, and delivery of Documentation

5. Will your SSP recommend methods to be used by operators to assess progress and success in SMS implementation, including metrics for assessing safety culture?

Yes, this is being done by the operator and the results are very encouraging.

We have already established safety performance indicators and targets to monitor SMS performance, but not to assess safety culture...

This has to be done.

That [better feedback] is our goal.

SMS work actually is made by a regulator specialized team that provides adequate feedback to operators and maintenance organizations for... assessment...

[There is] no comparable initiative for SSP.
In SMS implementation yes – but not in assessing safety culture.

Summary Analysis of Open – Ended Items

Most open ended comments support the view that the relationship between the regulator and the service provider will change following full implementation of SMS. This view is exemplified in the following survey taker comment.

> *Yes, the regulator sees the service provider as a partner in the continual improvement of the safety management system*.

Most responders indicated that the change in "culture" needed to accept SSP-SMS will be accepted, but there were a few comments indicating that this change will take some time.

Yes, the regulator sees the service provider as a partner in the continual improvement of the safety management system.

Don't think we are ready yet. This new culture requires a mindset shift for both regulator and operator at all levels.

Most respondents do expect that SMS implementation will help to standardize safety management processes and provide a closer relationship – with less of an "enforcement" mentality and more of a proactive collaboration strategy. However, there are differences of opinion as to whether or not direct "hands on" safety oversight through periodic audits and other assessments will be relaxed with more responsibility shifting from the regulator to the service provider, as depicted in the following two comments.

No, the audit process is essential to maintain a strict set of "play by" rules...
It is possible to reduce the number of field audits after SMS implementation.
To reduce the number of field audits, SMS/SSP must be fully implemented.

A variety of methods were suggested by respondents regarding how to promote and prepare for SSP and SMS implementation.

Regular dialogues, meetings between regulator and service provider

[Creation of] a combined training program and safety program promotes open communication and feedback.

Documentation, Education, Knowledge

There are differences of opinion regarding use of performance assessment methods used for judging SMS implementation and effectiveness – this is particularly true with respect to the use of safety culture assessments.

We have already established safety performance indicators and targets to monitor SMS performance, but not to assess safety culture...
[Assessment] In SMS implementation yes – but not in assessing safety culture.

CONCLUSIONS AND RECOMMENDATIONS

The Case Study was conducted with three Economies to assess the need for culture change due to the impact of ICAO mandated international safety initiatives – namely the implementation of a State Sponsored Safety Programme, in addition to the requirement for CAA in providing oversight during the implementation of Safety Management Systems among the service providers.

Based on findings from interviews and survey questionnaire results, it appears that there is a need to examine further the need for culture change. The ICAO initiatives represent an extensive and comprehensive change in the processes to be used by service providers in managing safety within their organizations, and concomitant changes in the safety assurance and oversight responsibilities of the Civil Aviation Authorities.

The manner of conducting business between the regulator and operators has changed as a consequence of the ICAO SSP – SMS initiatives and the corresponding operational frameworks recommended (as presented by ICAO and discussed in this report).

There appears to be some culture lag, in the sense that all CAA employees are not convinced that the ICAO initiatives represent a significant improvement over past safety management and oversight processes. And, as with any new organizational change, management must be engaged in clarifying the organizational goals and in providing sufficient resources to assure success (budget, staffing and training).

The findings summarized in this report will serve as an empirical foundation for planning and organizing a "culture change" workshop to include (1) reporting results of this Case Study, (2) invited speakers representing the ICAO viewpoint, (2) Speaker/Panel members from each of the three participating Economies, and (3) a culture change workshop organized to provide Seminar participants with the tools and processes involved in addressing culture change needs and methods for engaging in organizational change management at their respective Civil Aviation Authority organizations.

(See **Appendix 8** for Preliminary Seminar Organizational Framework)

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APPENDIX ONE

Tender No: TPT 07/2009A

Project: Seminar on the necessity of cultural change to promote reporting on air safety issues to complement ICAO requirements

1. This is a project proposal by the **Aviation Safety Sub-group** of the APEC Transportation Working Group (TPT-WG) [(1)].

2. The TPT-WG aims to achieve liberalization of transportation services and works to enhance the safety and security of APEC transportation systems in order to encourage economic development in the Asia-Pacific region. The TPT-WG works to achieve a balance between trade and security issues related to regional transport systems operations.

3. In the 6th Meeting of APEC Transportation Ministers (TMM6), Ministers, taking into account the different stages of economic development among member economies, instructed the Working Group to ensure efforts in the area of aviation safety to contribute to complement the work of ICAO (International Civil Aviation Organization). Member economies are encouraged to implement ICAO standards in English proficiency and safety management systems and to share aviation safety data. Furthermore, ICAO has mandated a phased implementation of SMS by all member states, starting November 2005. Specifically, the deadline for airlines and maintenance organizations was January 01, 2009.

4. The project proposal is in response to the 5th and 6th Meetings of APEC Transportation Ministers (TMM5 and TMM6) and further endorsed by the 32nd APEC Transportation Working Group Meeting (TPT-WG32). APEC Transportation Ministers requested member economies to develop initiatives to improve their own capacity to comply with international standards in aviation safety and to adapt to new and better ways of operating, including the use of new technologies. In this respect, they note the value of advanced approaches to safety administration in transport, including the implementation of State Safety Program (SSP) and Safety Management Systems (SMS) in the aviation system. They recognize the practical challenges in implementing SMS effectively both in aviation and in other transport modes. They encourage economies to assist in information sharing and capacity building initiatives in this area.

[(1)] TPT-WG is one of eleven APEC Working Groups, established to implement priorities relating to transport determined by Leaders and Ministers, see http://www.apec.org/. Further details on TPT-WG are available at: http://www.apec-tptwg.org.cn/

5. This project responds directly to the needs and interests of developing member economies. APEC member economies are struggling with how to successfully implement SMS and related oversight activities. Despite ICAO mandate for SMS implementation, there is no clear model for correct SMS implementation. At the same time, there is a natural cultural bias against reporting instances of aviation safety violations, incidents, near accidents and other safety related events among developing APEC economies. History shows that accurate and thorough reporting of accidents, incidents and other violations clearly provides civil aviation authorities with the ability to analyze reported data and take necessary measures to prevent systemic safety problems from persisting.

6. This project will bring to the forefront the cultural biases that are standing in the way of successful SMS implementation, and improving aviation safety oversight among developing APEC economies. After case studies, proposed actions and feedback obtained at seminar we can be able to develop a standardized procedure that other economies could use to implement into their own organizations to achieve an organizational cultural change who will promote a safety reporting system into the region. The seminar will also identify best practices among the more experienced APEC economies, and will provide an open forum for widely sharing related information that developing economies need to move forward with SMS implementation.

7. The project will be conducted in consultation with interested agencies. The RFP should be read in conjunction with the approved project proposal which is available at: http://www.apec-tptwg.org.cn/ under Projects.

Objectives of the Project:

Consultants are invited to bid to undertake this APEC-funded project developed by the Aviation Safety Sub-group of the APEC Transportation Working Group. Bidders are required to undertake the following:

1. Stage 1: Conduct case studies of each of the CAA of three APEC economies organizations.

2. Stage 2: With the experience gained from the case studies, prepare and conduct a presentation of the results, the identification of regularities and singularities, recommendations and proposed actions in a Seminar of two days.

3. Stage 3: Report on Seminar outcomes, conclusions, recommendations, etc., to the APEC economy members. It will provide tools to promote an organizational cultural change into CAAs and Service Providers organizations during the implementation of SMS, and the necessary

measures, data and procedures allowing for the adoption of a proactive approach to a Safety Culture[2] (Positive Culture) and showing the spread and benefits of open reporting systems. The consultant will provide an electronic copy of the documents and information generated by the above work to the APEC Secretariat for dissemination via the APEC Website.

Benefits from the project

1. To complement State Safety Program (SSP) and Safety management System (SMS) activities prescribed by ICAO, to achieve a Safety Culture[2] (Positive Culture) into Civil Aviation Authorities (CAAs) and Air Service Providers of APEC economies.

2. After concluding this project, APEC economies may obtain a methodology and procedures to induce a cultural change within their CAAs and Service Providers organizations oriented to a Safety Culture[2] (Positive Culture) that facilitates the implementation of the SSP and SMS of their respective States, as required by ICAO.

3. In all APEC's forum, providing that some significant change is necessary in the institutions to take advantage of the big benefits of the technology or to implement modern techniques of management it is said that a change is needed in the organizational culture. Nevertheless, little or nothing is realized to achieve this wished purpose. Therefore, of the results of this project the APEC economies can take advantage of the methodology and procedures to reach this purpose.

4. Overall, this project will guarantee the correct implementation of the SMS in the organizations of the suppliers of aeronautical services, with which ICAO expects to reduce the plane crashes in the world, benefiting the last users of the commercial flights: the passengers.

APPENDIX TWO:
ICAO SSP - SMS FRAMEWORKS[2]

11.2 THE COMPONENTS AND ELEMENTS OF AN SSP

11.2.1 An SSP is a management system for the management of safety by the State. The implementation of an SSP must be commensurate with the size and complexity of the State's aviation system, and may require coordination among multiple authorities responsible for individual elements of civil aviation functions in the State.

11.2.2 There are four components of an SSP, which represent the two core operational activities an SSP must undertake, as well as the organizational arrangements that are necessary to support such core operational activities.

The four components of an SSP are:

a) State safety policy and objectives;
b) State safety risk management;
c) State safety assurance; and
d) State safety promotion.

11.2.3 From the point of view of safety interventions and mitigation strategies, the two core operational activities of an SSP are State safety risk management and State safety assurance. These two core operational activities take place under the umbrella provided by the State safety policy and objectives and are supported by the State safety promotion. Most of the equivalent components of an SMS presented in Chapter 8, 8.2 and 8.3 also apply to the SSP. There is, however, one difference: under the SSP, the accident and serious incident investigation process, although formally considered an element of the State policy and objectives, is also a core operational activity that contributes to safety data collection analysis and exchange, as well as to the targeting of oversight of areas of greater concern (State safety assurance).

11.3 THE ICAO SSP FRAMEWORK

11.3.1 The four components, combined with the elements discussed in Section 11.2, comprise the ICAO SSP framework, which is intended as a principled guide for the development, implementation and maintenance of an SSP, as follows:

1.0 State safety policy and objectives
1.1 State safety legislative framework
1.2 State safety responsibilities and accountabilities
1.3 Accident and incident investigation
1.4 Enforcement policy

[2] Excerpted from ICAO (2009). Safety Management Manual (SMM), 2nd edition *Chapter 11. State Safety Programme (SSP) 11-3*

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2.0 State safety risk management
2.1 Safety requirements for the service provider's SMS
2.2 Agreement on the service provider's safety performance
3.0 State safety assurance
3.1 Safety oversight
3.2 Safety data collection, analysis and exchange
3.3 Safety-data-driven targeting of oversight of areas of greater concern or need
4.0 State safety promotion
4.1 Internal training, communication and dissemination of safety information
4.2 External training, communication and dissemination of safety information.

11.3.2 The SSP framework introduced in this chapter, and the safety management system (SMS) framework specified in Chapter 8, must be viewed as complementary, yet distinct, framework.

APPENDIX TWO:

ICAO SSP –SMS FRAMEWORKS[3]

8.2 THE COMPONENTS AND ELEMENTS OF AN SMS

8.2.1 There are four components of an SMS that represent the two core operational processes underlying an SMS, as well as the organizational arrangements that are necessary to support the two core operational processes.

The four components of an SMS are:

a) safety policy and objectives;
b) safety risk management;
c) safety assurance; and
d) safety promotion.

8.2.2 The two core operational activities of an SMS are safety risk management and safety assurance. Safety risk management must be considered as an early system design activity, aimed at initial identification of hazards in the context in which operations related to the delivery of services will take place. Safety assurance must be considered as a continuous, ongoing activity aimed at:

8-2 Safety Management Manual (SMM)

a) Ensuring that the initial identification of hazards and assumptions in relation to the assessment of the consequences of safety risks, and the defences that exist in the system as a means of control, remain valid and applicable as the system evolves over time; and/or by
b) Introducing changes in the defences as necessary.

8.3 THE ICAO SMS FRAMEWORK

Note. — Details of the ICAO SMS framework are contained in Appendix 1 to this chapter.

The four components, combined with the twelve elements discussed in section 8.2, comprise the ICAO SMS framework, intended as a principled guide for the development and implementation of a service provider's SMS, as follows:

1.0 Safety policy and objectives
1.1 Management commitment and responsibility
1.2 Safety accountabilities
1.3 Appointment of key safety personnel

[3] Excerpted from ICAO (2009). Safety Management Manual (SMM), 2nd edition.

1.4 Coordination of emergency response planning
1.5 SMS documentation
2.0 Safety risk management
2.1 Hazard identification
2.2 Risk assessment and mitigation
3.0 Safety assurance
3.1 Safety performance monitoring and measurement
3.2 The management of change
3.3 Continuous improvement of the SMS
4.0 Safety promotion
4.1 Training and education
4.2 Safety communication.

APPENDIX THREE:

ICAO SSP – SMS SELF ASSESSMENT[4]:

SSP ASSESSMENT METHOD

1) Not Accomplished, 2) Mostly Accomplished, 3) Completely Accomplished

ICAO SSP Component	**Documentation & Dissemination**	**Guidance & Education**	**Oversight & Enforcement**
1. Safety Policy 2. Investigation 3. Risk Management 4. Safety Promotion **5**. Acceptance by the Organizational Culture – added by Ciavarelli (2010)			

SMS ASSESSMENT METHOD

ICAO SMS Component	**Documentation & Dissemination**	**Guidance & Education**	**Oversight & Enforcement**
1. Safety Policy 2. Investigation 3. Risk Management 4. Safety Promotion **5.** Acceptance by the Organizational Culture – added by Ciavarelli (2010)			

[4] Excerpted from ICAO (2009). Safety Management Manual (SMM), 2nd edition.

APPENDIX THREE:

ICAO SSP - SMS–SELF ASSESSMENT[5]

SMS ASSESSMENT ALTRNATIVE METHOD – WITH EXPANDED CRITERIA

1) Not Accomplished, 2) Mostly Accomplished, 3) Completely Accomplished

SMS COMPONENT	Documentation & Dissemination	Guidance & Education	Oversight & Enforcement
1. Safety Policy 2. Safety Organizational Structure 3. Non-Punitive Safety Reporting 4. Safety Training 5. Safety Communication 6. Investigation and Discipline 7. Emergency Response - Alerting 8. Management Oversight 9. Risk Management & Safety Assurance **10. Acceptance by the Organizational Culture – added by Ciavarelli (2010)**			

As Adapted by Flight Safety Foundation – SMS Airline Self- Assessment (2008). Note that the major ICAO components (safety policy, investigation, risk management, and promotion are further broken down into important subcomponents of SMS**.**

[5] Excerpted from ICAO (2009). Safety Management Manual (SMM), 2nd edition.

APPENDIX FOUR:

INTERVIEW PROTOCOL

Interview Protocol for Civil Aviation Authorities [6]

1. Does the CAA have a systematic process in place to review and update SMS/SSP policies?
2. Are staffing and resources adequate to support policy review, revisions and updates?
3. Does CAA staff regularly monitor and review the status of SMS/SSP implementation by operators under CAA oversight.
4. Are CAA staff roles and responsibilities related to SMS/SSP oversight responsibility clearly defined for CAA staff members?
5. Are there clear goals and standards in place to evaluate CAA staff performance against CAA responsibilities (disseminating safety policy, educating operators, providing SMS/SSP oversight)?
6. Do senior CAA managers and middle managers and employees agree on the goals and standards and how these CAA goals and standards will be applied in employee performance evaluation?
7. Has CAA provided adequate resources, corporate communications, and educational materials to prepare its employees (at all levels) for changes in CAA organizational structure and practices?
8. In your opinion, <u>what works and what does not work</u> for your organization in providing operators with the proper policies, operating standards, implementation plans, and oversight?
9. Would you say that your organization has an open communication culture? In other words,
10. Do people routinely provide management with information regarding policies, resource adequacy, employee concerns about supervision, and suggestions, (without fear of reprisal or criticism)?
11. What do you think about the following issues?

    - Adequacy of SMS/SSP policy guidelines for operators
    - Adequacy CAA employee qualifications and experience levels now and for the future
    - Leadership commitment to SMS/SSP promotion and support
    - Success or effectiveness of SMS/SSP education and training for CAA staff.
    - Success or effectiveness of SMS/SSP CAA - led education and training for operators
    - CAA's role in ensuring operator compliance with SOP's and published safety guidelines

- Adequacy of resources to perform the CAA mission (policy, education, oversight)
- Adequacy of information available for employees to perform assigned tasks effectively
- Decision making regarding in reaction to limited resources and operational constraints
- CAA employee perception regarding pressure to meet schedule – budget expectations
- Adequacy of oversight in general or in specific areas of SMS/SSP compliance
- Ensuring that required training standards, and operator employee qualification programs are working among operators (for pilots, aircraft maintenance, airport services).
- CAA employee attitudes and acceptance of changes in their own work environment
- Assessing whether or not CAA culture and culture of operators are adapting to changes in work practices brought about through introduction of ICAO standards in SMS/SSP.

12. Has the CAA purposely attempted to define and assess safety culture, and/or safety culture changes resulting from introduction of SMS/SSP implementation?

APPENDIX FIVE

CAA CULTURE ASSESSMENT QUESTONNAIRE[7]
High Reliability Organizational Effectiveness Survey – HROES ®

RATING ITEMS (1-5 Scale – level of agreement from low = 1 to high = 5)

1.0 Process Auditing – PA

1. I believe that my *work group* conducts adequate reviews and updates of its work practices and standard operating procedures.
2. My *work group* closely monitors worker qualification training to ensure that all personnel are qualified to perform their jobs.
3. In my *work group*, we follow a specific process to review employee performance against our training standards.
4. We have an informal process in place, in my *work group*, to report errors of judgment that may not require an official reporting process.
5. I receive feedback on the resolution of any SMS implementation issues that I r report to management.
6. We have an effective means in my *work group* to provide input on SSP or SMS issues.

2.0 Organizational Culture and Reward System – CRS

7. 1Supervisors encourage reporting any concerns about the effectiveness of our policies and procedures for SSP or SMS implementation
8. Employees are comfortable reporting any decision errors or mistakes they have made that may influence effective work performance.
9. There is a strong culture among our supervisors and workers regarding positive attitudes about SSP/SMS implementation
10. Employees that I know are well-rounded professionals that share the values of my *work group* regarding best work practices.
11. Our *work group* recognizes individual achievement through rewards and incentives.
12. I am not comfortable reporting any errors or mistakes made on the job, because people in my *work group* would react negatively toward me.
13. Our *work group* ensures that good performance on the job is recognized and rewarded.
14. Our *work group* ensures that poor performance is identified and corrected.
15. I would not hesitate to ask my supervisor for help when needed.
16. I am comfortable admitting to my supervisor if I have made a mistake.

[7] Copyright 2001-2010 for this form, held by Human Factors Associates, Inc., is released in perpetuity to APEC for use by participating Civil Aviation Authorities under contract TPT 07/2009A, with the exclusion that the form is not to be commercially exploited or disseminated for commercial gain.

APPENDIX FIVE
CAA CULTURE ASSESSMENT QUESTONNAIRE[8]
High Reliability Organizational Effectiveness Survey – HROES ®

3.0 Quality Control and Best Practices – QA

17. We take great pride in the quality of our work.
18. My *work group* has an excellent reputation for high-quality work.
19. My *work group* closely monitors work quality and corrects any deviations from standard practices.
20. Best practices are followed in my *work group* to ensure high quality work efforts.
21. Management clearly communicates the need to maintain high-quality standards.
22. Employees at my location are held accountable for below average work performance.

4.0 Risk Management – RSK

23. I believe that my daily workload is at a normally expected level.
24. I believe that we are adequately staffed in my *work group*.
25. I do not feel overburdened with my current job assignments.
26. Our Supervisors receive adequate training to ensure high quality leadership and effective management practices.
27. In my *work group,* new initiatives, like SSP-SMS implementation, are carefully evaluated for possible risk of failure.
28. Only the most qualified people in my *work group* make decisions about regulatory actions.

5.0 Leadership and Supervision – LDRS

29. Management has given me an opportunity to provide inputs to SSP or SMS policies and procedures.
30. Our CAA Senior Executives have clearly shown support for our ongoing SSP-SMS implementation goals and / or activities.
31. Managers at all levels in the CAA are actively involved in the promotion and/or implementation of our SSP/SMS program.
32. My supervisor can be relied on to keep his/her word.
33. In our *work group*, the leaders and supervisors can be trusted.
34. My supervisor would not ask me to do something against our *work group*'s policy just complete a job on schedule.

35. Supervisors in my *work group* have clearly communicated the CAA goals to me and to those around me.
36. My *work group* provides a positive climate that promotes effective work operations.
37. Senior Executives at the CAA have shown commitment to SSP - SMS implementation by providing the necessary resources.
38. My *work group* ensures that the appropriate people are responsible and accountable for an effective SSP/SMS implementation.
39. Managers in my *work group* willingly provide advice to workers concerning SSP – SMS issues.
40. Managers at my *work group* react well to unexpected changes.
41. Good communication flow exists up and down the CAA.
42. The CAA has good two-way communication with other regulator and operator organizations that we do business with.
43. I get all the information from my *work group* that I need to perform my job effectively.
44. Our supervisor listens carefully to employees regardless of their level or rank in the CAA or *work group.*
45. I believe that employee morale in my *work group* is high.
46. I believe that it might be difficult to achieve a uniform culture across various civil aviation authority functions or *work groups*.
47. Employees willingly provide advice to one another concerning SSP – SMS issues.
48. I think that it might be difficult to fully implement our SSP because the ICAO guidelines are subject to many different interpretations.
49. I believe that we are in compliance with ICAO SSP requirements now.
50. Some CAA employees have not embraced the concept of SSP – SMS.
51. Some CAA employees do not believe that the SSP – SMS framework has added much value to safety management.
52. We do not have sufficient resources, in my *work group,* to meet the expected timelines for full SSP and SMS implementation.
53. I believe that implementation of the SSP – SMS framework will improve our regulator – service provider relationship.
54. A culture change is underway already in our *work group* following the ICAO promotion of SSP - SMS.

SSP – SMS IMPLEMENTATION STATUS

SSP COMPLETION STATUS[9]

Place a value **1 – 3** in the appropriate cell of the table based on your understanding of the level of completion in each of the five listed SSP areas:

1) Not Accomplished, 2) Mostly Accomplished, 3) Completely Accomplished

SSP AREA	Documentation & Dissemination	Guidance & Education	Oversight & Enforcement
1. Safety Policy			
2. Risk Management			
3. Safety Assurance			
4. Safety Promotion			
5. Cultural Acceptance Mark column three only	XXXXXXXXXX	XXXXXXXXXX	

Comments: _____

SMS COMPLETION STATUS

Place a value **1 – 3** in the appropriate cell of the table based on your understanding of the level of completion in each of the five listed SMS areas:

1) Not Accomplished, 2) Mostly Accomplished, 3) Completely Accomplished

SMS AREA	Documentation & Dissemination	Guidance & Education	Oversight & Enforcement
1. Safety Policy			
2. Risk Management			
3. Safety Assurance			
4. Safety Promotion			
5. Cultural Acceptance Mark column three only	XXXXXXXXX	XXXXXXXXXX	

Comments: _____

OPEN-ENDED SURVEY ITEMS

[9] Areas for SSP and SMS based on ICAO (2009). Safety Management Manual (SMM), 2nd edition.

Please PRINT answers CLEARLY:

1. Given the changes brought in both regulators and operators from SSP/SMS implementation – will - the relationship between the regulator and the operator change? If yes, how will the relationship change?

2. Is the regulator culture prepared to accept the change in relationship – or in particular ready to trust that the operator with an implemented SMS can do sufficient "self assessments" of SMS effectiveness?

3. And will such self-assessments result in a "relaxed" direct oversight and/or to reduce the number of field audits?

4. What steps have been taken to prepare the regulatory staff and service provider's managers to establish trust and open communications?

5. Will your SSP recommend methods to be used by operators to assess progress and success in SMS implementation, including metrics for assessing safety culture? And provide feedback to regulator on results of those assessments?

BACKGROUND INFORMATION

1. Work Group: (check 1) [ ] AERODROME [ ] AIRWORTHINESS

[ ] NAVIGATION/ATC [ ] MAINTENANCE [ ] FLIGHT STANDARDS

[ ] OPERATIONS [ ] OTHER

Comment or briefly to clarify selection:

_____

2. Do you supervise personnel? 9. If yes, number supervised

_____

10. Sex: [] Female [] Male (voluntary)

11. Years of service in current job: _____ 12. Total years of service in CAA

_____

13. Job title: _____ (voluntary)

14. Year of birth: _____ 15. Today's date: ___/___/___

Day / Mo / year

Any Additional Comments: _____

THANK YOU VERY MUCH FOR YOUR PARTICIPATION.

SUBMIT TO: aciavarelli@hfa-oses.com

Or MAIL TO:

Human Factors Associates
18367 Corral Del Cielo
Salinas CA 9390

APPENDIX SIX

SUMMARY NOTES FROM INTERVIEWS

Singapore Web Teleconferences

14 June (15 June Singapore) Go to meeting

Attendees: Tan Meng Lee, Chew Wah Wong (from Germany) and Luis Gonzales, Raul Castillo (Peru)

AGENDA

Presentation of APEC Culture Change Study Program Overview
Review of Culture Change Interview Protocol
Open Discussion

Discussion Topics and Comments noted:

ICAO preparation deadlines – SMS January 2009, SSP November 2010

CAAS SSP is currently in draft form and will be ready by Nov 2010.

SMS is already implemented by operators and approved maintenance organizations

On the subject of safety culture, our view is that concentrating this effort at the service provider level will have greater returns than on the State CAA's. The reason being is that CAA's primary objective in their regulatory oversight is ensuring safety of the industry and hence an implied safety culture should already pervade in a CAA. The service providers' agenda is mainly about profit making and thus contention may exist between the drive to derive maximum profit versus proliferation of a safe culture. In the SMS training that is provided by ICAO, it clearly identifies 'organisational factor' as one of the three contributing factors to safety. This factor is directly linked with the culture in a company. The topic of safety culture and the selection of CAA verses service provider were further discussed and Mr. Gonzales clarified the objective of the study and its relationship to SSP and CAA culture. See 21 July Teleconference notes for clarification.

The engagement from industry is good, although there are some issues. For example, operators have implemented several components of SMS, but there are ambiguities related to performance indicators and targets – here the ICAO training is not completely clear.

APPENDIX SIX

SUMMARY NOTES FROM INTERVIEWS

A key challenge will be to develop and apply metrics that indicate safety level – without having to depend upon safety outcomes (accidents and incidents).
There are fortunately very few untoward events on which it will be statistically meaningful to set an outcome standard.

Many more Economies have implemented SMS but have not completed their SSP.

The deadline for SSP is November 18 2010, so CAAS is working on the draft SSP now.
A key objective of the SSP will be to provide metrics to assess safety level – but this goal is not easy to achieve as there are different views regarding the need, and the type and method of applying metrics.

The SSP should serve as a framework and road map for how a particular CAA will adopt, implement and manage SMS with the service providers.

There is strong "engagement" at the top levels of CAAS for SSP/SMS. The challenge will be to get complete "buy in" from the management of the service providers.

For universal acceptance of SSP/SMS at all organizational levels, this may require a "culture change", requiring new beliefs and procedures to be accepted and put into practice.

16 June (17 June Singapore) Go to meeting

Attendees: TAN Meng Lee, Alan Foo, Tang Kok Liang, Louis Gonzales, and Raul Castillo

AGENDA

Presentation of APEC Culture Change Study Program Overview
Review of Culture Change Interview Protocol
Open Discussion

Discussion Topics and Comments:

Singapore split the regulator and the airport operator functions a year ago, just before that it was only one body doing both functions (also the airport operator).

Requested an organization chart for CAAS that shows functional departmental structure and function or area of responsibility.

APPENDIX SIX

SUMMARY NOTES FROM INTERVIEWS

Requested that we plan on conducting interviews with worker level (inspectors, SMS implementation team)

Alan Foo, Safety Policy and Licensing Division Head, and also a member of the National Aviation Safety Committee, stated that most CAAS members agree in concept on SSP/SMS but when it was first introduced, there were different ideas on what and how to implement.

Most economies are implementing SMS, but behind on SSP development in part because SMS was launched first with an earlier deadline from ICAO.

Part of the problem of establishing valid safety metrics is the dependence on outcome events (accidents and incidents) as these events do not occur that frequently (fortunately). It is agreed that "leading measures" of safety performance are needed to establish process measures that would serve as valid and reliable metrics of a "healthy" safety level (acceptable risk environment)

Tony Ciavarelli indicated that the Organizational Safety Effectiveness Survey – a measure of organizational climate (which includes cultural and safety process performance factors) has served as a reliable and valid metric, as survey ratings were shown to be correlated with safety outcomes (i.e. safety climate ratings are associated with rise and fall of accidents in US Naval Aviation studies).

CAAS (Meng Lee) requests to preview the specification of content in the Peru Seminar to be held in late October 2010.

The SSP under development will take the best metrics that CAAS has and will consider the essential components specified by ICAO, including, legislation, regulations, CAAS aviation circulars and related documentation.

We are seeking to improve our reporting structure and process, including developing a strong "safety reporting culture."

The National Aviation Safety Committee will drive the SSP with inputs from CAAS's key divisions, the Air Accident Investigation Bureau and the Meteorological Services. Most of us agree in principle what should go into the SSP, but there is a need to iron out what safety metrics will be used as the State's ALoS.

APPENDIX SIX

SUMMARY NOTES FROM INTERVIEWS

Resources have been increased by about 25 % recently, partly in order to accommodate the SSP/SMS planning and implementation activities. CAAS (executives) believe that there is no significant resistance to change, and that there is good communications up and down the organization. Managers are approachable and willing to listen to employees regarding concerns and suggestions.

CAAS has engaged employees in decision making during the process of developing SSP and SMS. CAAS employees (Inspectors, etc.) are given individual performance standards against which they are evaluated. Singapore is using a merit based employee evaluation.

In closing, Mr. Luis Gonzales made the point about the importance of addressing cultural issues, and that culture change was the main focus of the study. CAAS concurred and recognizes the importance of culture and the focus of the study.

17 June (18 June Singapore) Go to meeting

Attendees: TAN Meng Lee, NG Tee Chiou, Peter Rabot, SIA Hon Yu, ONG Chuan Bin, DIEU Eng Kwee, and Louis Gonzales, and Raul Castillo

AGENDA

Presentation of APEC Culture Change Study Program Overview
Review of Culture Change Interview Protocol
Open Discussion

Discussion Topics and Comments:

Opening statement was made by Tony Ciavarelli to reiterate goal of culture change (per input from Luis Gonzales).

Ask if you can see their draft SSP so that you can get a perspective on the emphasis and content. Maybe at least obtain an outline of SSP topics. [Clarification: Singapore's SSP topics are based on ICAO's. I have provided the Safety Policy earlier.]

Although SSP has not been formalized, but there has already been a separate entitling ATS Division. SMS was formalized 2003-2004. [Not sure what's being written here, but I thought it may be trying to capture this: Air Traffic Division is a "service provider" division from the regulating division (Aerodrome & Air Navigation Services Regulation Division). ICAO introduced SMS for air traffic service providers earlier and ATS has since implemented SMS in 2003/04 periods.]

APPENDIX SIX

SUMMARY NOTES FROM INTERVIEWS

The Regulatory Division oversees SMS as reflected in the ICAO handbook (edited inputs from Singapore participants are below).

Since regulatory and operator division are both within CAAS, we have to be very sure that both safety oversight and regulation of ATS are satisfactory. To ensure independence, the operator and regulatory divisions have separate reporting lines.

Employees are able to meet with managers and discuss any issues during in service training (for controllers). At those meetings we discuss ATC incidents and concerns. Secondly, we have a volunteer Corp of Safety Officers from the operations floor, whose role is to identify any safety issues for discussion or action.

For the regulatory division, DG of CAAS chairs the National Aviation Safety Committee. NASC includes the investigation agency and meteorological services. The aim is to review safety performance indicators and to coordinate SSP implementation.

We discussed schedule (August start for Peru Case Study and late September or October 2010 for Seminar). CAAS has dual roles when it comes to air traffic services. Air Traffic.

Services Division is the service provider and it was represented by:

NG Tee Chiou
Director (Air Traffic Services)
Air Traffic Services Division

Peter Rabot
Head (Air Navigation Services Safety Office)
Air Traffic Services Division

SIA Hon Yu
Manager (Air Navigation Services Safety Office)
Air Traffic Services Division

Aerodrome & ANS Regulation Division performs the regulation function. It is represented by:

ONG Chuan Bin,
Head (CNS Safety Oversight)
Aerodrome & Air Navigation Services Regulation Division

DIEU Eng Kwee, Head (ATS Safety Oversight)
Aerodrome & Air Navigation Services Regulation Division

APPENDIX SIX

SUMMARY NOTES FROM INTERVIEWS

21 July (22 July Singapore) Go to meeting

Attendees: TAN Meng Lee, Pauline, Yip, Michael Shee, Valerie Sim, Louis Gonzales, Fredy Nunez, and Raul Castillo

AGENDA

Presentation of APEC Culture Change Study Program Overview
Review of Culture Change Interview Protocol
Open Discussion

Discussion Topics and Comments:

Mr. Luis Gonzales made an opening comment regarding main objective of the study and its relationship to SSP implementation among CAA, and the issue of culture change.

All participants agreed on the objective and focus of the study.

Dr. Ciavarelli led discussions with participants, including representatives from Singapore Air Traffic Control Management. Issues related to Air Traffic SMS implementation and the relationship between controllers and CAA regulators was discussed.

Attention then turned to revision and update of the Interview Protocol, to place greater emphasis on examining the cultural relationship between regulators and service providers or operators. The questions discussed were as follows and will be incorporated.

1. Given the changes brought about in both organizations from SSP/SMS implementation – how has or will the relationship between the regulator and operator change?

2. Is the regulator culture prepared to accept the change in relationship – or in particular to trust that the operator with an implemented SMS can do sufficient "self-assessments" of SMS effectiveness to "relax" direct oversight and reduce field audits?

3. What steps have been taken to prepare investigators and managers of service organizations to establish trust and open communications?

4. Will your SSP recommend methods to be used by operators to assess progress and success in SMS implementation, including metrics for assessing safety culture?

APPENDIX SIX

INTERVIEW SUMMARY NOTES

DGAC Onsite in Lima Peru

2-3 August 2010

SAFETY OPERATIONS

1. SMS implementation is proceeding in several stages and we are just in the first stages. See later definition of stages from ICAO document.

2. DGAC is now working on the SSP while at the same time maintaining oversight over the providers who are now implementing SMS.

3. Resources may be an issue at DGAC. We need to educate our people and train them on how to interact with the providers given the new ICAO guidelines for SMS.

4. DGAC is working on the SSP but I am not sure that there is a DGAC steering group that cuts across different functions – it is not clear whether or not inputs from inspectors are sought Is there participation by grass root workers?

5. ICAO Guidelines for helping providers with their SMS – are not as clear as they could be for DGAC. *What to do* seems clearer than *how to do* it. The SSP should include guidelines to help the providers define exact requirements.

6. It might be good to provide providers with templates and a toolkit rather than broad guidelines. The toolkit would include examples of the best practices of for providers to follow.

7. It is understood by DGAC that a non-punitive reporting system is an essential factor if not the most important factor, serving as the cornerstone for a successful SMS implementation.

8. DGAC believes that the current oversight is working (with or without SMS) and that there is good compliance with regulations.

9. SMS implementation Phases are as follows:

Phase I — Planning SMS implementation
Phase II — Reactive safety management processes
Phase III — Proactive and predictive safety management processes
Phase IV – Operational safety assurance (ICAO 9859)

APPENDIX SIX

INTERVIEW SUMMARY NOTES

DGAC Onsite in Lima Peru

10. There was a recent turnover of the DGAC Director. Former Director was fully supportive. We met with the new DGAC Director and he appears fully behind the SSP – SMS program and the Culture Study – Seminar.
AIRWORTHINESS

1. The SSP development at DGAC is now underway.

2. ICAO guideline for SSP is very general and difficult to apply in some cases because "one size does not fit all." There are differences in across countries in interpreting the requirements, and differences in laws that regulate aviation.

3. For example, the legal framework in Peru may pose a barrier because the law treats some procedural violations as criminal offenses.

4. The laws may have to be changed to allow SMS implementation to work – especially in light of a need for "non-punitive" reporting.

5. People may be very reluctant to report errors or mistakes because of the fear of retribution – which could include criminal prosecution.

6. Even if law is changed, there may be a "cultural lag" -- until people believe that they will not be "blamed" for a mistake or error. The belief system takes time to change. A new level of trust must occur before beliefs will change.

5. In other words, it will take some time to build a bond of trust between the regulator and the provider, such that candid reporting of incidents can be expected.

6. One key recommendation of ICAO for SMS to succeed is systematic reporting of incidents, mistakes and errors, which require correction.

7. In order for non - punitive reporting to work, however, there has to be a strong (and just) safety culture.

8. In order for SMS to work, providers have to enable non – punitive reporting and the regulator has to trust that the reporting system is working.

9. Ultimately, if SMS is successful, then there should be improved risk management by the provider, and relaxed regulatory requirement.

APPENDIX SIX

INTERVIEW SUMMARY NOTES

DGAC Onsite in Lima Peru

10. There is a low turnover of Airworthiness inspectors here at DGAC. It is a small group (17 inspectors) who are a close - knit group.

11. At DGAC, concerning the concept of SSP – most personnel accept SMS, but there are differences in interpreting the requirements and the exact methods for implementation.

12. DGAC handles airworthiness for both civil and military aircraft that will fly in the Peruvian Airspace.

13. An internal training program as been initiated by DGAC for training inspectors on SMS basics.

14. Inspectors have not been requested to make inputs to the developing SSP, and some appear unsure of its progress and structures or content.

15. There is typically a backlog of certifications in the approval queue. There are a limited number of inspectors and there has been a recent growth in the industry. The process is lengthy – with slow throughput.

16. Some at DGAC, do believe that the role of the Inspector and the relationship between the regulator and provider will change when SMS is fully implemented. If so, this will require a culture change by both parties. Trust but Verify!

LEGAL REVIEW

1. A very important consideration in preparing the SSP-SMS strategy is that Peru law is based on the Roman legal model – that holds people responsible for errors and mistakes – which in the case of an unintentional violation or accident can be treated as a criminal offense.

2. This fact makes it difficult to have a true “just culture” which calls for “honest” mistakes NOT to be punished – unless violations are deliberate.

3. In the United States, legislation was passed that changed the way in which violations are prosecuted. This change was necessary to enable the formation of a national non-punitive safety reporting system (Aviation Safety Reporting System - ASRS).

4. Suggest – research to find out more about legislature passed to enable non-punitive reporting for both aviation and medicine.

APPENDIX SIX

INTERVIEW SUMMARY NOTES

DGAC Onsite in Lima Peru

5. I corresponded with Linda Connell at NASA, ASRS Director, and Chris Hart – NTSB (former FAA – ASRS legal expert) to help us get clear background on the law and the current policy.

6. ICAO may not understand the difficulties of SMS implementation due to the existing legal frameworks that may serve as a significant barrier to non-punitive reporting.

7. CLAC has formed a "steering group" to study legal ramifications for Latin America – but at this time there is DGAC is not participating.

8. DGAC attorney and ICAO representative (Veronica – Veronica) are very aware of the legal issues and are currently studying options.
9. Can a change be implemented that simply changes how violations are treated by the law -- how violations are prosecuted – relaxation regarding prosecution of unintentional acts? During the review consider privacy, freedom of information and criminal law – especially area of endangerment is viewed under Peru law.

10. A workable safety reporting system must be non-punitive, easy to use, and provide feedback to the person reporting.

AERODROME

1. There has been a recent reorganization to separate general oversight responsibility from Aerodrome construction oversight.

2. We are not directly involved with the SSP development but expect that it will somewhat change the way we operate now.

3. We are now in the process of observing the implementation of Phase 1 SMS among the providers.

4. We have added another inspector to help.

5. We handle large and small Aerodromes – some smaller private ones too.

NAVIGATION (ATC)

1. Managed by CORPAC – a semi – private (joint government – private) corporation.

2. CORPAC is a strong and politically well -connected organization.

APPENDIX SIX

INTERVIEW SUMMARY NOTES

DGAC Onsite in Lima Peru

3. In addition, Air Traffic Controllers are unionized – posing additional complexity to conducting oversight of ATC.

4. DGAC does not have full regulatory enforcement authority over CORPAC.

5. The lack of authority may make it difficult to provide complete oversight for SMS.

6. There are 6 Inspectors for ATC. More may be needed for more complete oversight.

APPENDIX SIX

INTERVIEW SUMMARY NOTES

DGAC Peru – Follow up on US Law

CORRESPONDENCE REGARDING LEGAL FRAMEWORK FOR SMS

Email from Honorable Chris Hart, Vice Chairman NTSB – 10 August 2010

Tony – Great to hear from you again . . . thanks for your question.

In true lawyerly fashion, I'm going to respond that the question is not as simple as it seems because in the U.S., at least four legal issues are contained in your question regarding information reported about potential safety concerns in the system.

The four issues relate to legal protection regarding:

- Public disclosure, under the (U.S.) Freedom of Information Act, of information reported or otherwise given to government agencies,

- Use of reported information by an employer or regulator for punitive or enforcement purposes, respectively,

- Use by prosecutors of reported information in criminal prosecution, and

- Availability of reported information to discovery in civil litigation.

Regarding the first issue, 49 U.S.C Section 40123, as supplemented by 14 C.F.R. Part 193, protects voluntarily supplied safety and security information from public disclosure. The statute is relatively recent (1996), and I have not researched the issue recently, but I am not aware of any litigation that challenges the boundaries of the statute or regulation.

Regarding the second issue, I am not aware of any statutory or regulatory protection regarding use by an employer of reported information for punitive purposes, but the use by the regulator (FAA) of reported information for enforcement purposes is limited by the ASRS statutes for information that qualifies for ASRS protection. This, by the way, is the only portion of these four legal issues that is reached by ASRS protection.

I am not aware of any statutory or regulatory protection regarding the third and fourth issues. That is obviously a very cursory response . . . I'd be happy to pursue any of the above that you would like to in greater detail.

Thoughts? Thx . . . Chris

APPENDIX SIX

INTERVIEW SUMMARY NOTES

DGAC Peru – Follow up on US Law

CORRESPONDENCE REGARDING LEGAL FRAMEWORK FOR SMS

Email From ASRS Director Linda Connell– NASA – August 9 2010

Good to hear from you Tony. One place to start is the ASRS website under Immunity Policy. In there is the statute (14 CFR 91.25) and the FAA Advisory Circular AC 00-46D, as well as the FAA Air Traffic guidance. The FAA has other statutes of protection that Chris can probably describe for you since he was instrumental in getting them established.

Another thought is that Brazil has a reporting system that may be under similar laws to Peru?? Check out the ASRS website for our international partners. Also, the international group, ICASS, is holding the annual meeting in Brasilia, Brazil in October. This would be a great meeting for Peru to understand how other countries accomplish the confidential, non-punitive, voluntary safety reporting. Let me know and I will contact the host to send an invitation.

Not only is ICAO implementing SSP and SMS, but also under the Annex 13 revisions, it will now be a "Standard" that member countries operate a voluntary, confidential reporting system. Keep me posted on Peru.

Thanks
Linda
(408) 541-2827 ASRS Office

APPENDIX SIX

INTERVIEW SUMMARY NOTES

DGAC Peru – Follow up on US Law

CORRESPONDENCE REGARDING LEGAL FRAMEWORK FOR SMS

Email from Tony Ciavarelli to Linda Connell (ASRS) and Chris Hart (NTSB)

_____

From: Tony Ciavarelli [aciavarelli@msn.com]
Sent: Monday, August 09, 2010 12:39 PM
To: Connell, Linda J. (ARC-TH); chris.hart@ntsb.gov
Cc: Luis Gonzales - Peru
Subject: ASRS Legal Framework

Hello Linda and Chris:

I am working on a culture study with the Asia Pacific Economic Cooperation (APEC). The purpose of the study is to examine the need and means of culture change resulting from implementation of the State Sponsored Safety Program (SSP) and Safety Management System (SMS). As you may know ICAO has made SMS implementation a requirement for all international aviation service providers.

I am working under the direction of Mr. Luis Gonzales, DGAC Peru -- who is the project overseer. During the course of our study the question of a supportive legal framework was discussed. In Peru for example, the legal roots are in Roman law and not English. As such, even unintended violations may be treated as criminal offenses.
Of course, if this is true, it makes it difficult to have open reporting.

I was wondering if either of you can provide me with some background on how the legal issues of protecting individuals reporting violations in ASRS are handled. Is there specific legislation, and if so what statutes govern "safety privilege"? By what laws and policy does ASRS operate?

APPENDIX SIX

INTERVIEW SUMMARY NOTES

DGAC Peru – Follow up on US Law

CORRESPONDENCE REGARDING LEGAL FRAMEWORK FOR SMS

_____

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I was wondering if either of you can provide me with some background on how the legal issues of protecting individuals reporting violations in ASRS are handled. Is there specific legislation, and if so what statutes govern "safety privilege"? By what laws and policy does ASRS operate? Any help or insight into this will be very beneficial to me and to my colleagues in APEC.

THANKS MUCH -- Tony

APPENDIX SIX

INTERVIEW SUMMARY NOTES

DGAC Peru – Follow up on US Law

ASRS POLICY TAKE FROM THEIR WEB SITE

http://asrs.arc.nasa.gov/overview/immunity.html
(August 10 2010)

Prohibition Against the Use of Reports for Enforcement Purposes

- Section 91.25 of the Federal Aviation Regulations (FAR) (14 CFR 91.25) prohibits the use of any reports submitted to NASA under the ASRS (or information derived there from) in any disciplinary action, except information concerning criminal offenses or accidents which are covered under paragraphs 7a(1) and 7a(2).
- When violation of the FAR comes to the attention of the FAA from a source other than a report filed with NASA under the ASRS, appropriate action will be taken. See paragraph 9.
- The NASA ASRS security system is designed and operated by NASA to ensure confidentiality and anonymity of the reporter and all other parties involved in a reported occurrence or incident. The FAA will not seek, and NASA will not release or make available to the FAA, any report filed with NASA under the ASRS or any other information that might reveal the identity of any party involved in an occurrence or incident reported under the ASRS. There has been no breach of confidentiality in more than 30 years of the ASRS under NASA management.

APPENDIX SIX

INTERVIEW SUMMARY NOTES

DGAC Peru – Follow up on US Law

CORRESPONDENCE REGARDING LEGAL FRAMEWORK FOR SMS

Enforcement Policy

- The Administrator of the FAA will perform his/her responsibility under Title 49, United States Code, Subtitle VII, and enforce the statute and the FAR in a manner that will reduce or eliminate the possibility of, or recurrence of, aircraft accidents. The FAA enforcement procedures are set forth in Part 13 of the FAR (14 CFR Part 13) and FAA enforcement handbooks.
- In determining the type and extent of the enforcement action to be taken in a particular case, the following factors are considered:
    - Nature of the violation;
    - Whether the violation was inadvertent or deliberate;
    - The certificate holder's level of experience and responsibility;
    - Attitude of the violator;
    - The hazard to safety of others which should have been foreseen;
    - Action taken by employer or other government authority;
    - Length of time which has elapsed since violation;(8) the certificate holder's use of the certificate;
    - The need for special deterrent action in a particular regulatory area, or segment of the aviation community; and
    - Presence of any factors involving national interest, such as the use of aircraft for criminal purposes.
- The filing of a report with NASA concerning an incident or occurrence involving a violation of 49 U.S.C. Subtitle VII, or the FAR is considered by FAA to be indicative of a constructive attitude. Such an attitude will tend to prevent future violations. Accordingly, although a finding of violation may be made, neither a civil penalty nor certificate suspension will be imposed if:
    - The violation was inadvertent and not deliberate;
    - The violation did not involve a criminal offense, or accident. or action under 49 U.S.C. Section 44709 which discloses a lack of qualification or competency, which is wholly excluded from this policy;
    - The person has not been found in any prior FAA enforcement action to have committed a violation of 49 U.S.C. Subtitle VII, or any regulation promulgated there for a period of 5 years prior to the date of occurrence; and
    - The person proves that, within 10 days after the violation, he or she completed and delivered or mailed a written report of the incident or occurrence to NASA under ASRS. See paragraphs 5c and 7b.

APPENDIX SIX

INTERVIEW SUMMARY NOTES

APEC – FAA WEB Teleconferences

FAA – 1: 25 August 2010 Go to meeting

Attendees: Dr. Donald Arendt, Mr. Dudley B. Oatman, and Mr. Raul Castillo
Don.arend@faa.gov Dudley.b.oatman@faa.gov rcastillo@hfa-oses.com

AGENDA

Presentation of APEC Culture Change Study Program Overview
Review of Culture Change Interview Protocol
Open Discussion

Discussion Topics and Comments noted:

1. FAA will not be developing an independent overarching SSP document, but will depend upon a series of related FAA Advisor Circulars. For example, the following Circular outlines the FAA recommendations for safety management for operators (airlines, air taxi operators, corporate flight departments, and pilot schools).

FAA (2006). AC 120 – 92 I*ntroduction to Safety Management Systems for Air Operators*. Washington DC: Federal Aviation Agency (AFS – 800)

2. An ICAO audit, for example, is more likely to look for whether or not specific system management functions are in place and operating as expected – and not necessarily looking for an single comprehensive SSP policy document.

3. There is a bit of debate over "who owns" an SSP in the USA. Is it FAA, the department of transportation, or some part of the US Legislative branch of government?

4. We at FAA have found the SSP – SMS guidelines (including guidelines covered in ICAO documentation and the ICAO SSP course) to be very broad and subject to many different interpretations.

5. With respect to the question as to the ultimate impact of SMS – there probably will not fewer regulatory inspections or audits – just better more targeted reviews because presumably operators will have implemented a "standard" or effective SMS.

6. As far as FAA representatives attending this Go To meeting know – there is no published ICAO SMS audit protocol, like a written audit checklist for example.

7. Conversation was very engaging – making in unnecessary to present the full program briefing. We used only selected parts of the presentation and interview protocol

APPENDIX SIX

INTERVIEW SUMMARY NOTES

APEC – FAA WEB Teleconferences

FAA- 2: 26 August 2010 Go to meeting

Attendees: Dr. Donald Arendt, Michael Halloran, and Joan Devine
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Tom.s.stachiw@faa.gov Dale.whitmore@faa.gov michael.k.woodward@faa.gov
nicole.didyk@faa.gov rcastillo@hfa-oses.com

AGENDA

Presentation of APEC Culture Change Study Program Overview
Review of Culture Change Interview Protocol
Open Discussion

Discussion Topics and Comments noted:

1. Reiterated that FAA will not produce an overarching document specifically for SSP.

2. Mention was made about a Washington Post article on BP – such as to move away from a "blame culture" to focus on improving safety.

3. Flight Standards – FAA – is moving more effective use of resources with SMS implementation. Essentially, safety assurance is more focused on critical issues.

4. FAA is beginning to use "safety round tables" in which regulator and with some operators also, participating in problem solving – solution discussions. Such meetings represent part of an ongoing culture change.

5. A caution was raised, however, about using the term "partnership" when speaking about the regulator – operator relationship – as we do not want to imply that the regulator is developing to "cozy" a relationship or leaning toward a permissive role.

6. There also is a movement to form and conduct high-reliability organization (HRO) networks and working groups – and one is underway now in DC for Department of Transportation (DoT) wide discussions – with an active proposal in the works for studying culture within the DoT (government operations).

7. Follow on discussion with Joan Devine – is planned regarding HRO culture study.

APPENDIX SIX

INTERVIEW SUMMARY NOTES

APEC – FAA WEB Teleconferences

30 August 2010 FAA Go to meeting

Attendees: Dr. Donald Arendt, Michael Woodward, and Jennifer Adair
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lgonzales@mintc.gob.pe rcastilo@hfa-oses.com

AGENDA

Presentation of APEC Culture Change Study Program Overview
Review of Culture Change Interview Protocol
Open Discussion

Discussion Topics and Comments noted:

1. The acceptance of ICAO driven SSP – SMS principles are largely recognized and accepted by most FAA employees -- but there are some pockets of resistance and differences of opinion about the value of SMS and the methods for implementation.
2. The new air safety law for Part 121 has caused a bit of a stir, with an immediate increase in workload associates with the impact on FAA rule – making.
3. It should be noted that most US service providers are implementing SMS and that effort is moving along nicely – even though implementation is voluntary at this time.
4. Some in FAA see the SMS as the origination of a "paradigm shift" in principle and in culture – on both sides – the regulator and the service provider. FAA is getting very positive feedback on the changed relationship and understanding of the regulatory requirements for safety management.
5. The FAA Training Academy is promoting systems safety management in new and recurrent training for its inspectors. It is believed (and rightfully so) that a culture change begins in the schoolroom. Jennifer Adair is knowledgeable about the Academy and FAA documents and will correspond following the meeting regarding FAA publications.
6. Inspectors are drawn from a diverse population with varying backgrounds and experiences. In addition, there are different views on regulatory matters across various regulatory functions – Aerodrome, Certification, NAV/ATO and AMO.

7. Mr. Gonzales closed the session by agreeing with the fact that there are differences within each CAA as well as across different Economies (countries). He also would like to make certain that the FAA participants are on the invitation list for the APEC seminar on The "Necessity for Culture Change" to be held in Peru the last week of October 2010.

APPENDIX SEVEN

Selected Comments from Open- Ended Survey Items

1. Will the relationship between the regulator and the operator change with SSP/SMS implementation?

Yes, the relationship will become stronger through consultative discussions on improving safety management...

Yes, the regulator is more proactive in engaging the operator to conduct risk assessment... and to address safety deficiencies...

Yes, it becomes more of a partnership rather than the traditional regulator – knows best.

Yes, SSP/SMS complement each other in assuring protection...

Yes, the relationship will change. Regulators, going forward, instead of "at arms length" with the operator. We will now have a closer relationship.

Unable to comment as the SSP-SMS is not completed yet.

Yes, it will necessitate a closer working relationship.

Broader scope of information sharing. Safety Assurance efforts between operator and the CAA will have more common and defined focus.

The changes will provide both the regulator and the operator better tools and processes for doing their jobs which can result in working collaboratively toward a shared safety mission of managing safety risk to an acceptable level.

The State Safety Program will shift our oversight more towards Safety Assurance. The shift will also clearly define the service provider's responsibility for safety management based on our policy guides and future regulations.

The SMS will enable the CAA to have a higher expectation for rigor in safety decision making on the part of the operators.

While SSP/SMS is [still] in progress, we do not expect changes in our reciprocal relationship.

Yes, the relationship will improve. The operator can be selected for authority delegation functions.

It is still not clear the relation between the operator and the regulator.

Yes, this will improve safety culture.

SSP/SMS is in progress, we supposed not significant changes occur in our reciprocal relationship.

[More] oriented to performance.

Yes, operational safety will get better.

Yes, the relationship will improve.

2. Is the regulator culture prepared to accept the change in relationship ... to trust that the operator ... can do sufficient "self assessments" of SMS effectiveness?

Yes, the regulator sees the service provider as a partner in the continual improvement of the safety management system.

Yes, the service provider has implemented a good safety management system acceptable to the regulator

The relationship will be guided by trust with some flexibility and regular and continuous audits.

No, not all parts of CAA.

Yes, regulator and service provider work closely to safeguard the aviation industry.

Yes, the regulator is ready to trust the operator to carry out self assessments of SMS effectiveness.

Don't think we are ready yet. This new culture requires a mindset shift for both regulator and operator at all levels. It has to be seen and be convinced by cultivation of the "trust" element, which will take time. S-16

[More] education and training

No, but we expect the operator to increase and improve their efforts over the next several years and become more proactive in focusing on safety issues.

With proper training inspectors will buy into the trust but verify philosophy?

As a whole, I have to say no. The current regulator culture has deep enforcement roots rather than managing safety through risk management.

Acceptance is highly variable across CAA lines of business. Many do not accept the newer concepts based on system safety, risk management and human factors... favoring more traditional methods that stress “hands on” inspections and enforcement.

Yes, we understand that a change in relationship is coming. But we also know that self assessments made by operators are not expecting to be quite a real picture.

The regulator will accept the change in relationship.

No, not yet.

The regulator is not prepared and the implementation of SMS is not sufficient.

No [not prepared to accept change in relationship yet.

No [not prepared to accept change in relationship yet.

It won’t change.

Not so far.

3. Will self assessments result in “relaxed” direct oversight and/or reduce the number of field audits?

No, the audit process is essential to maintain a strict set of “play by” rules

No, we have annual surveillance programme and the programme will be dependent on the shortcomings and deficiencies identified.

No, surveillance programme would ensure compliance

No, it will not reduce the number of audits.

The number of field audits may decrease. However, this will not result in a “relaxed” direct oversight.

No, field audits are still required for compliance.
It all depends on the experiences and track records of both regulator and operator.

The number of field audits may not be reduced. Shorter, more focused audits.

I believe the goal would be to reduce field audits

I do not believe our CAA will accept “less surveillance” assessments than we are currently doing.

Resources are increasing in communicating the SMS program requirements and the need for open communications and commitment to structured programs that allow for information sharing between organizations.

Audits will be more effective and standardized to provide assurance that risk controls in the service provider's operational environment are effective.

No. I think detailed analysis of audits will occur, facilitating better risk analysis of conditions found during oversight.

I think that it would be an incorrect assumption that the SMS will result in relaxation of oversight and it would be an incorrect approach to SMS.

After implementation of SMS we hope to maintain for a while a close tailored oversight based on the performance of each (provider).

It is possible to reduce the number of field audits after SMS implementation.

To reduce the number of field audits, SMS/SSP must be fully implemented.

Perhaps, yes.

There is no change at this time.

No [audits will not be reduced]

I think that the number of field audits will be maintained until the operators SMS effectiveness is clearly demonstrated.

4. What steps have been taken to prepare the regulatory staff and service provider's managers to establish trust and open communications?

None that I can see.

More training and interaction is needed.

Confidence building through frequent dialogue... (Regulator and provider)

Regular meetings and consultations

By submission of monthly report on safety performance (other interactions)

More communications [needed]

Regular dialogues, meetings between regulator and service provider

[Creation of] a combined training program and safety program promotes open communication and feedback.

[There is] no serious problem with trust.

The compliance part has to be proven and objective evidence of improvement on SMS.

Not much. So far it is usually left up to the regulator and service provider's manager.

Developed and deployed Academy training for the Inspector workforce and conduct Seminars for both industry and CAA employees. Support voluntary implementation pilot projects.... CAA employees become actively engaged... Higher authorities have selected high standards service and capable individuals to manage these areas who became trustable by fellow workers. Also, they have trained them in these respective areas.

Flight Standards is always improving its communications process through surveys, best practices and lessons learned. This also facilitates trust between employees and management.

This is a weak area... although steps have been taken to develop SMS training.

Informative meetings have been held. Self studying is in most cases for a better/deeper understanding and knowledge.

Documentation, Education, Knowledge.

Training and dissemination, just in the lower level of the organizations.

[Working on modifications to] regulation and law.

Training courses.

Meetings, Conferences, and delivery of Documentation

5. Will your SSP recommend methods to be used by operators to assess progress and success in SMS implementation, including metrics for assessing safety culture?

Yes, this is being done by the operator and the results are very encouraging.
We have already established safety performance indicators and targets to monitor SMS performance, but not to assess safety culture.
This has to be done.
Not sure. We still have not established an appropriate method of determining is an SMS is actually effective. Feedback on assessment results, if any, are usually discussed during and audit
That [better feedback] is our goal.
Yes, the SMS Safety Assurance guide has been developed for assessment of the design and performance of aviation service providers.
Yes, I am sure that the CAA will provide strong foundations for best practices from lessons learned in the past as well as input/feedback from employee reporting systems
The CAA has an active "focus group" that meets to provide a forum for discussion between CAA, operators, and others to share information and lessons l earned.
SMS work actually is mad by a regulator specialized team that provides adequate feedback to operators and maintenance organizations for an appropriate assessment
[There is] no comparable initiative for SSP
Yes, there are circular advisories to assess progress and success in SMS implementation.
I agree [that such assessments should be made].
Yes, and as part of the plan of annual vigilance is checking the progress of SMS and the results of evaluations.
No, not yet.
SSP is not up to date.
In SMS implementation yes – but not in assessing safety culture.
Not yet, since our SSP is in the initial phase of implementation.

Seminar on the Necessity of Culture Change to Promote Reporting on Air Issues to Complement ICAO Safety Requirements

Asia-Pacific Economic Cooperation

SEMINAR DETAILS

The Seminar will take place in Lima, Peru on 25-26 October 2010 – at the exquisite Defines Hotel & Casino. The Seminar aims to help APEC Economies to develop initiative for Improving their own capacity to comply with International standards in aviation safety, Including a State Safety Program (SSP) and the Safety Management System (SMS).

1st day - 25 October General Agenda:

Welcome – Opening Comments – DGAC Peru
Speakers from regional ICAO and IATA offices
SSP – SMS Stakeholders Panel Introduction
Culture Change Case Study Report Presentation

Questions and Discussion with Stakeholder Panel
Definition of Overall Culture Change Objectives
Day 2 Workshop Culture Change Process & Agenda

2nd day – 26 October Workshop Agenda

Summary and Discussion of "lessons learned"
– From Day 1 Seminar Session
Guidelines for "culture change"
Handouts of culture change management tool kit
Culture Change Workshop and Networking

SUMMARY

Delivered by:

Human Factors Associates

Dr. Anthony Ciavarelli – Leader
Mr. Kent Lewis – Facilitator
Mr. Raul Castillo – Facilitator

Who is it for?
APEC Civil Aviation Authority Executives and employees

Where?
Hotel Los Defines, Lima, Peru
Calle Los Eucaliptos 555 | San Isidro, Lima, Peru (1-800-551-2409)

What time:
Each day starts promptly at 09:00 and ends at 17:00 [download seminar program]

What is included?
Presentations & panel discussion

Culture change materials and management tools

Seminar Attendance by invitation only Contact:
lgonzales@mtc.gob.pe & pmann@mtc.gob.pe