Oversight of SMS Implementation - Singapore's Experience

31 August 2015

CAAS

Civil Aviation Authority of Singapore

Agenda

- Background

- Early Challenges

- Potential / Future Challenges

- What we plan to do next …

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Background

SMS Initial Implementation & Acceptance

- Preparation work and industry engagements started since 2005

- SMS regulations were made effective in Jan 2009

- SMS Manuals, together with its Safety Performance Indicators (SPIs) and Safety Performance Targets (SPTs), were reviewed and accepted by CAAS within a year

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Background

Guidance Materials

- Advisory Circular AC1-3 was issued to provide guidance on SMS implementation

[1st issue in 2006]

[2nd issue in 2008]

[3rd issue in 2010]

AC 1-3(4)
6 March 2013

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Civil Aviation Authority of Singapore

Advisory Circular

SAFETY MANAGEMENT SYSTEM
(AOC HOLDERS, SAR-145 AMOs & ATOs)

39 Pages

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CAAS SMS ASSESSMENT CHECKLIST

CAAS Form AW127(R1)   Dec 2008

INPUT COLUMN: ANNOTATE "Y" for YES," N " for NO, "NA" for NOT APPLICABLE

Organisation Name:	Date of Assessment:	Assessed by POI/ PMI:	REF:

Component / Element		Level 1	Input	Doc Ref/ Remarks	Level 2	Input	Doc Ref/ Remarks	Level 3	Input	Doc Ref/ Remarks
Management Commitment & Responsibilities	Safety Policy	SP/L1/1			SP/L2/1			SP/L3/1		
		There is a documented Safety Policy statement.			The Safety Policy is readily visible or accessible to all personnel.			There is evidence that the Safety Policy is communicated to all employees with intent that they are made aware of their individual safety obligations.		
		SP/L1/2			SP/L2/2			SP/L3/2		
		The Safety Policy is appropriate to the size, nature and complexity of the organisation.			The Safety Policy is endorsed by the Accountable Manager.			There is a periodic review of the Safety Policy by senior management or the Safety Committee		
		SP/L1/3			SP/L2/3					
		The Safety Policy is relevant to aviation safety.			The safety policy do address the provision of necessary human and financial resources for its implementation.					
		AM/L1/1			AM/L2/1			AM/L3/1		

SUB-	CATEGORY 1
Y	0
N	0
NA	0
NO OF QN	37
COMPLETED	0

	CATEGORY 2
	0
	0
	0
	33
	0

	CATEGORY 3
	0
	0
	0
	30
	0

	GRAND TOTAL*
Y	0
N	0
NA	0
NO. OF QN	100
COMPLETED	0

100 Questions

ASSESSMENT RESULT (% OF YES):

0.0%

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Background

Audit & Continuous Monitoring

- SMS audits were conducted during the renewal audit which include the review of the following:
  - o SMS Manual for any changes
  - o Safety Meeting minutes which include safety reports
  - o SPIs for any adverse trends, breaches of SPTs and corrective action plans and implementation

- Focus on Safety Risk Management
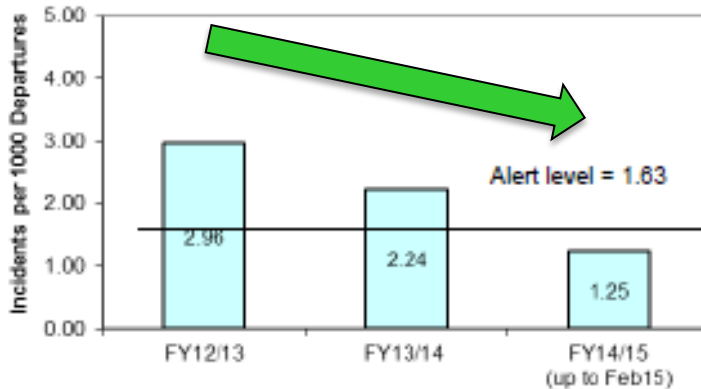 - o Hazard Identification Risk Assessment (HIRA)

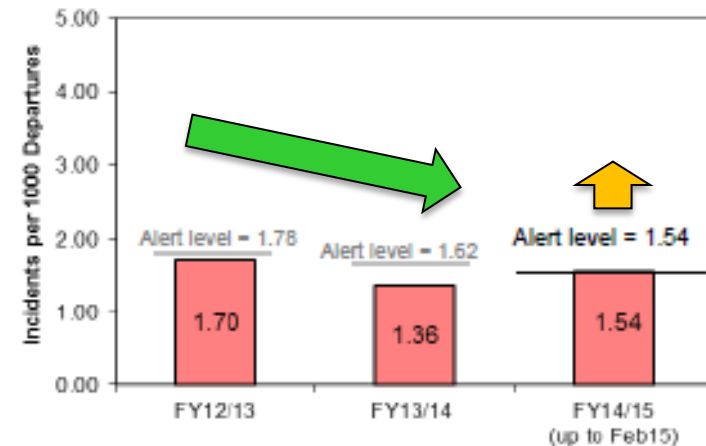CAAS

Review of AOC SPIs & SPTs

Unstable Approaches

Aircraft Fleet A
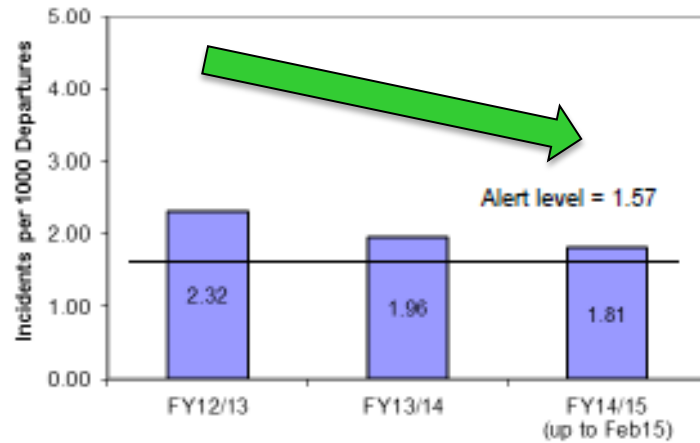
Aircraft Fleet B

Aircraft Fleet C

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Challenges

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Early Areas of Challenges

#1 SMS Manual

- Weak content
  - "Standard" statements
  - Adopt / Adapt from other SMS Manuals

- Solely written by Safety Manager
  - Not representative of the organisation

- Delinked from other Top Level Manuals / Documents
  - Conflicting overall operations

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Early Areas of Challenges

#2 SMS SPIs and SPTs

- SPIs adopted from ICAO Doc 9859
  - o Generic SPIs
  - o Not aligned with Safety Policy and Safety Objectives

SSP SPIs were not established yet!

- Mainly Lower-consequence SPIs
  - o Should have a mix of both high and lower consequence indicators

- Unachievable SPTs and Ineffective Safety Alerts
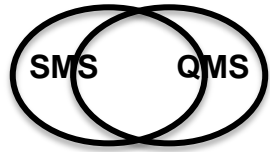
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Early Areas of Challenges

#3 Auditing of SMS

- Lack of Information / guidance materials
  - o Subject to interpretation

- Auditor's Understanding
  - o Most training doesn't cover "How to check implementation"

- Ineffective Audit checklist
  - o Closed questions ie Yes / No

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Early Areas of Challenges

Others

- Industry senior management's commitment

- SMS requirements on foreign approval holders

- Implementing Emergency Response Planning (ERP)

- Difference between SMS and QMS

- Risk Management: "Elimination" vs "Mitigation"

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What have you done?

What we have done

- More Guidance Materials
  - Advisory Circular on SPIs and SPTs

- SMS Briefing & Training
  - Updated Procedures
  - SMS Implementation Course - SAA

- Assessment Checklist to Validation Checklist
  - Ensure SMS is effectively implemented

AC AOC-30(0)
26 September 2012

CAAS
Civil Aviation Authority of Singapore

Advisory Circular

SAFETY MANAGEMENT SYSTEM – SAFETY PERFORMANCE INDICATORS FOR AOC HOLDERS

General..1
Purpose..1
Applicability...1
Cancellation...1
Effective date...1
References..1
Introduction...1
Safety Performance...1
Safety Performance Indicators for AOC Holders 2
Safety Performance Targets for AOC Holders 2
Appendix 1 : Typical Examples of Safety Performance Indicators.................3

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Component 3	SAFETY ASSURANCE
Element 3.1	**Safety Performance Monitoring and Measurement**
Question-3.1.1	Are the CAAS accepted Safety Performance Indicators (SPIs) regularly reviewed by the safety committee for relevancy? *[Ref: ICAO Doc 9859 Chapter 9]*
Reply / Comments	
Evidence	*Provide attachment(s)*
Question-3.1.2	There are high (eg accident, serious incident & significant non-compliance) and / or lower (eg other non-compliance, events etc) consequence databased safety performance indicators? *[Ref: ICAO Doc 9859 3rd Ed Chapter 3 Annex 7]*
Reply / Comments	
Evidence	*Provide attachment(s)*
Question-3.1.3	Are Safety Performance Indicators (SPIs) regularly monitored by the safety committee for safety trend? *[Ref: ICAO Doc 9859 Chapter 9]*
Reply /	

SPO   SRM   SA   SP

ver Sheet / Summary / Component 1 / Component 2 / **Component 3** / Component 4 /

Focus more on Component 2 & 3

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Ongoing Challenges

- Safety Data Collection & Processing System (SDCPS)
  - Mandatory Occurrence Reporting ✓
  - Hazards Reporting
  - Quality Data
  - Taxonomy
  - Analysis Tools

Safety Database
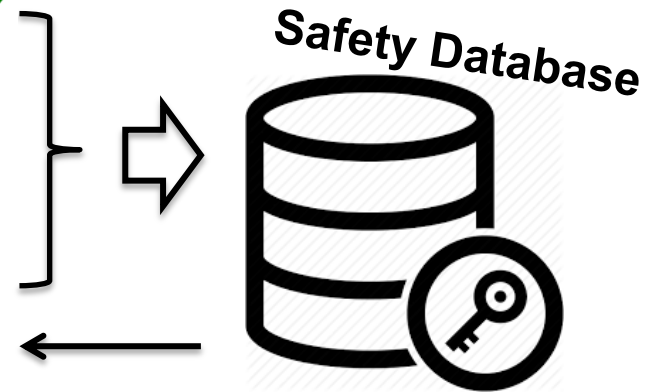
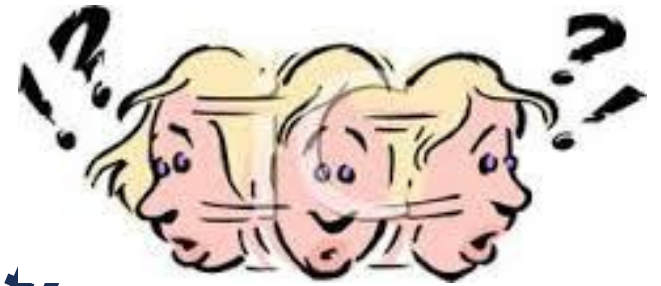- Implementing Hazard Identification and Risk Mitigation

BowTieXP
The next generation BowTie methodology tool

- Mind-set change

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Are we good enough?

Have we missed anything?

Are we on the right track?

New Challenges ?
New Challenges ?
New Challenges ?
New Challenges ?

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USOAP CMA PQs on SMS

- Periodic review of SMS requirements

- Initial review and acceptance of SMS

- Acceptance of SPIs and SPTs

- Periodic review of agreed SPIs for relevancy

- Periodic assessment and monitoring of SPIs and SPTs

USOAP CMA PQs on SMS

- Periodic assessment of hazard identification process and safety risk management

- Prioritize audits towards those areas of greater safety concern and need

- Prioritization based on the analysis of safety risks or quality data

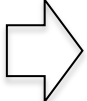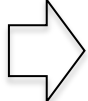# Potential / Future Challenges

- Giving credits to a good SMS
  - Reduce regulatory audit frequency

- Various Level of Implementation
  - Within each Sector
  - Across the Sectors
  - Across the States

- Sharing of Safety Data
  - Close Culture
  - De-identification of data

safety
culture
a way of life

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What we plan to do next

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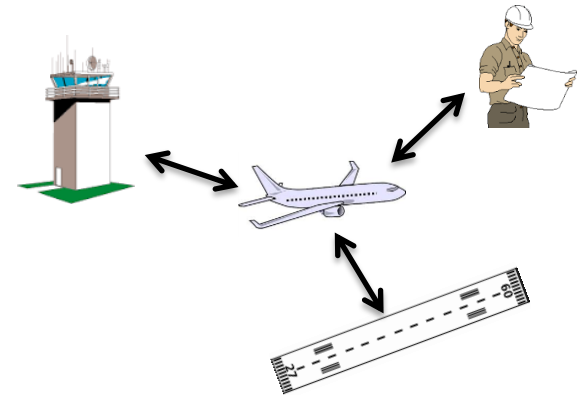
Moving Forward

- Revising audit checklist (including SMS) to PQ format
  - Leading questions, coding of questions

- Reactive ⇨ Proactive ⇨ **Predictive**

- Performance-based Monitoring and Measurement
  - Risk-based Methodology

- More Safety Information Sharing Events
  - Further strengthening Safety Culture

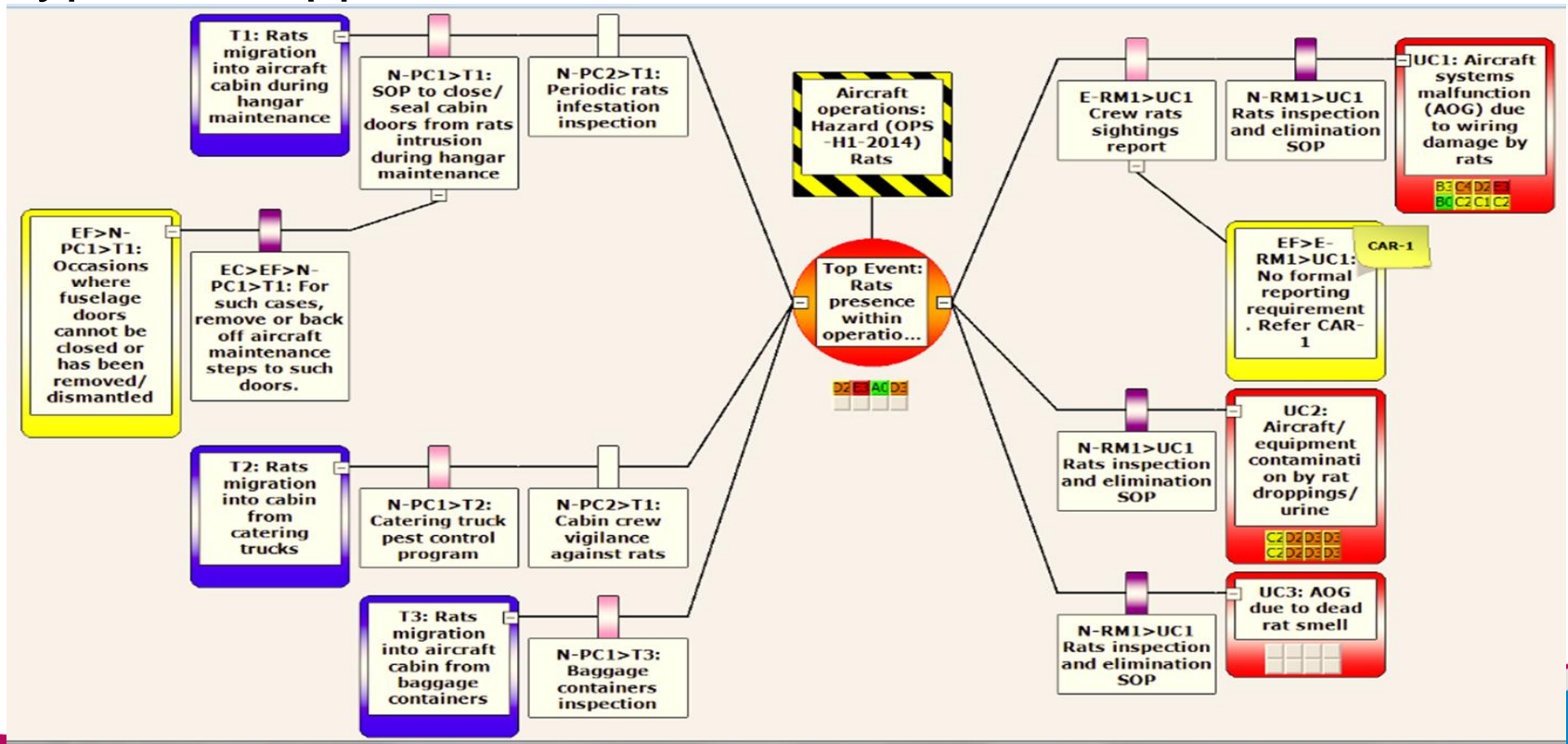| Safety Forum	Safety Mgt Workshop	Safety Info Exchange

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References

- ICAO Doc 9859 (3rd Edition)
  - Organisation Risk Profile (ORP) Assessment Checklist
    - Chapter 2 Appendix 1
  - SMS Safety Performance Indicators
    - Chapter 5 Appendix 6
  - SMS Gap Analysis Checklist & Implementation Plan
    - Chapter 5 Appendix 7

- Hazard Identification & Risk Mitigation (HIRM) Worksheet
  - Safety Assessment [BowtieXP]

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References

- UK CAA – Significant Seven Bowtie

  http://www.caa.co.uk/application.aspx?catid=2792&pagetype=65&appid=57&mode=terms

Thank You

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