SINGAPORE AVIATION ACADEMY

Hazard Identification

SASS

Gim T TEO

Principal Training Specialist (Safety Management)

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SINGAPORE AVIATION ACADEMY

Presentation Objective

This presentation provides you with the awareness about various sources and methodology for capturing hazards.

Hazard Identification

Intermediate Objectives:

- Identify hazards from occurrence *notification* reports
- Identify hazards from occurrence *investigation* process
- Identify hazards from voluntary reporting system
- Identify hazards from review of aviation equipment and processes
- Identify hazards during safety/ quality audit process
- Identify hazards during operational monitoring systems data review
- Establish supplementary hazard survey programs
- Establish a central hazards register

Hazard identification from occurrence notification reports

- Liaise with Safety/ Quality function to review routine *occurrence notification* reporting formats to ensure there is provision for recording of pertinent hazards; and their correlation with the organization's SMS hazards register, where appropriate.

Operational Incident/ Occurrence Notification Report
(enhanced contents)

To: Safety/ Quality Manager

1. Preliminary Information/ Data:
2. Description of Incident/ Occurrence:
3. Rectification Action Taken (if any):
4. **Hazard/ Threat Identified (if any):**

From: Operational Personnel

- Operational personnel will now be made aware of the need to annotate any known or observed hazard/ threat information, *in the course of making an occurrence/ incident notification report*.

>>> 4_Incident_notification

[SMM 5.3.50 (f); Fig 5-3; 5.5.5, 2.1 (ii) (a)]

Hazard identification from occurrence investigation process

- Liaise with Safety/ Quality function to review existing *occurrence investigation* reporting format, to incorporate provision for recording of hazards uncovered during occurrence investigation process, and their correlation with the SMS hazard register.

Safety/ Quality Occurrence Investigation Report

(SMS enhanced format)

To: Safety/ Quality Manager

1. Preliminary Information/ Data:
2. Description of Occurrence:
3. Rectification Action Taken (if any):
4. Safety/ QC Investigation Findings:
5. Hazards/ Threats Identified (in notification report or during investigation, if any):

   Yes / No [if Yes, please fill out Table below]

Item	Hazard/ Threat Description	*Action Taken/ Recommended

6. Conclusion (cause of occurrence):
7. Action Taken/ Recommended to prevent recurrence:

From: Safety/ QC Inspector

- Investigation personnel will now be made aware of the need to address any notified or uncovered hazards/ threats, *in the course of investigating an occurrence/ incident.*

>>> 5_Occ_Inv_Rpt

Voluntary-Confidential Reporting System

- Liaise with Safety/ Quality function to develop voluntary / confidential reporting procedure.

Voluntary Reporting Form 6_Voluntary Hazard form >>>

(essential contents)

To: Voluntary Reporting System Administrator/ Manager

1. Preliminary Information:
2. Type of Report (select as applicable): Hazard / Incident / Self-disclosure
3. Description of Hazard/ Incident/ Self-disclosure:
4. Suggested follow up action (if any):

_____

Name/ Contact (optional)

Note: The company assures that all voluntary reports received is covered by the company's SIP policy (and its principles of exceptions), as stated in company SOP xxx.

SMM 5.3.50 (b); Fig 5-3; 5.5.4, 2.1 (i) (a); C5-App 5]

HIRM Review of Aviation Equipment and Processes

❖ Liaise with operational managers to establish program for systematic review (survey) of all relevant aviation safety-related equipment/ processes deemed eligible for HIRM.

- Identify list of safety-critical equipment and installation types to be periodically scheduled for an operational survey of its hazards and risk mitigation status
- Review equipment's existing or previous HIRM records (if any)
- Review equipment's OEM HIRM records (if any)
- Prioritise those equipment with no existing safety survey record, especially if they are locally developed/ integrated/ modified with no continuing original equipment manufacturer (OEM) HIRM support
- Establish equipment hazard survey procedure and documentation

7_hazard survey procedure_form_rpt >>>

[SMM 5.3.49; 5.5.4, 2.1 (i) (b)]

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Hazard Identification from Safety/ Quality Audit Reports

- Liaise with Safety/ Quality function to review internal safety/ quality audit reporting format to ensure their provision for recording of hazards uncovered during auditing process; and their necessary correlation with the organization's hazards register.

Safety / Quality Audit Report
(enhanced contents)

To: Safety/ Quality Manager

1. Preliminary Information/ Data:
2. Area/ Operation/ Process audited:
3. Relevant standards & SOPs:
4. Non-conformance Findings:
5. Corrective Action Requests (CARs) issued:
6. **Hazards/ Threats identified during audit (if any):**
7. Verification of CARs action closure:

From: Safety/ QC Inspector

- Safety/ Quality Inspectors will now be made aware of the need to *address and uncover hazards/ threats in the course of a routine audit/ surveillance*.

>>> 8_Quality Audit rpt_enhanced

[SMM 5.3.50 (d)]

Hazard identification from operational monitoring systems data

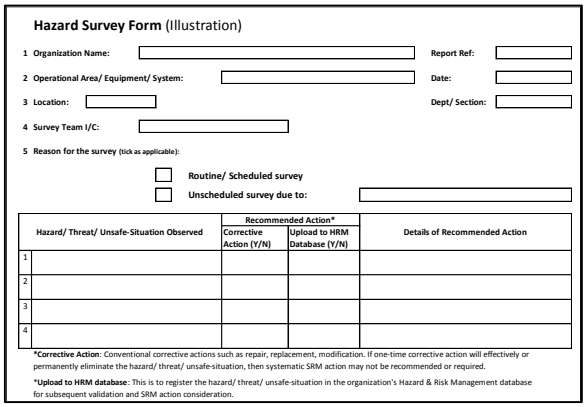
- Liaise with operational/ safety/ quality managers to establish provision for identification of potential operational hazards during operational performance monitoring systems data review process (eg FDAP, automatic data capture systems, etc).

  - Routine operational data capture systems which show recurring deviations are likely indications of a potential underlying hazard
  - Such potential hazard indications should be captured during routine data review process for necessary follow up actions
  - Hazard so identified, should be registered with the organization's central hazards register

Establish other supplementary safety survey programs

- Liaise with operational/ safety/ quality managers to establish other supplementary or collaborative safety review/ survey programs, where appropriate.

  - Such surveys should include sub-contractors' operational areas where appropriate
  - Such operational areas on-site hazards survey may also be triggered or initiated by virtue of specific SPI Alerts



Hazard Survey Form (Illustration)

1 Organization Name: Report Ref:

2 Operational Area/ Equipment/ System: Date:

3 Location: Dept/ Section:

4 Survey Team I/C:

5 Reason for the survey (tick as applicable):

☐ Routine/ Scheduled survey

☐ Unscheduled survey due to:

	Hazard/ Threat/ Unsafe-Situation Observed	Recommended Action*		Details of Recommended Action
		Corrective Action (Y/N)	Upload to HRM Database (Y/N)	
1				
2				
3				
4				

*Corrective Action: Conventional corrective actions such as repair, replacement, modification. If one-time corrective action will effectively or permanently eliminate the hazard/ threat/ unsafe-situation, then systematic SRM action may not be recommended or required.

*Upload to HRM database: This is to register the hazard/ threat/ unsafe-situation in the organization's Hazard & Risk Management database for subsequent validation and SRM action consideration.

7_Hazard Survey Form >>>

[SMM 5.5.5, 3.3 (ii) (b); 5.3.24]

Establish central hazards register

- **Liaise with SMS administration office to develop a Hazards Register to serve as a master repository of all hazard reports received.**

  - Liaise with SMS administration office to create a *Hazards Register to serve as a master repository of all hazard reports received*.
  - A central Hazards Register should normally be administered by the permanent SMS administration office or the office responsible for administering the organization's voluntary reporting system.
  - Such a central hazards registry (database) is important to *ensure harmonization and integration of the organization's HIRM process*.

[SMM 5.5.3, 1.5 (ii) (a) (3)]

Establish central hazards register

Sheet 11 **Hazard & Risk Management Database** (Register) 9Sep16 <<<

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Hazard Registration											**SRM Project Registration***						
Item	Area/ Operation/ Equipment	**Hazard [H] / Threat [T]**				**Unsafe-Event [UE] / Consequence [C]***		**Recommended Action**			**SRM Project Assignment**			**SRM Project Completion**			
		Generic Hazard/ Threat (Original Report)	Source of Information*	Specific Hazard/ Threat*	Hazard ID Code	*Reported with* the Hazard	*Projected from* the Hazard	Corrective Action* [Yes/ No]	SRM Action* [Yes / No]	SRM Priority Level* (H, M, L)	Dept / Sect	Project I/C	Date Activated	Date Completed / Rpt Ref	Existing RI & Tolerability (UE/UC)	Resultant RI & Tolerability (UE/UC)	Next Review Date
Example	*A320 aircraft operation.*	*Cabin crew reported one large rat sighted in aircraft rear galley area during cruise.*	*Inflight incident notification report ref: A320/ OPS/ 012/ 2005.*	[H] - *Rats infestation of A320 aircraft*	OPS-ALPHA-H1-M-013	*Nil*	[C] - *Aircraft wiring/ equipment damage by rats.*	*No*	*Yes*	Medium	*A320 Operations*	*ABC*					
1																	
2																	
3																	

Hazard ID Code:

Sector (1) - Organization (2) - Hazard No (3) - Priority Level (4) - Year (5)

1 **Sector**: AGA / ANS / OPS / DMO / AMO / MDO* (*MDO - Materials Distribution Organizations, including fuel distribution)
2 **Organization**: Five letters code (eg ALPHA - Alpha Airline)
3 **Hazard No**: Hazard number (eg H001) as assigned by the organization concerned within a given Year.
4 **Priority Level**: Hazard prioritization Level [High (Accident), Medium (Serious Incident), Low (Incident)].
5 **Year**: Year when the Hazard was registered in the organization's Hazard Register.

Hazard ID Code Illustration:

a) **OPS-ALPHA-H001-M-013** [Air Operations - Alpha Airline - Hazard #1 - Moderate Priority - Year 2013]
b) **AGA-GATB-H005-L-012** [Aerodrome - Timbaktu Airport - Hazard #5 - Low Priority - Year 2012]

***Explanatory Notes**:

1 **Source of Information**: Hazard information as may be extracted from - Voluntary Hazard Rpt, Occurrence Notification/ Investigation Rpt, Internal Audit Rpt, External Audit Rpt, Hazard Survey Rpt, Operational Data Review Rpt
2 **Specific Hazard/ Threat**: If more than one Hazard/ Threat identified, register such additional Hazard/ Threat under new row/ item
3 **Unsafe Event / Consequence:** As reported (occurred) with the Hazard, OR as projected (predicted) from the Hazard. If multiple UE/ C involved, register such additional H>UE>C threads under a new row/ item.
4 **Corrective Action**: If the Hazard can be effectively eliminated through conventional corrective action (eg disposal, repair, replacement, modification), annotate YES with the action taken/ recommended. Otherwise annotate NO.
5 **SRM Action**: Annotate YES to indicate systematic SRM action is recommended (or has been taken already). Annotate NO if systematic SRM action is not recommended (or not necessary).
6 **Priority Level:** SRM or Corrective Action Priority Level based on (Annex 13) occurrence category of the projected (or reported) Unsafe Event or Consequence. Accident - High; Serious Incident - Medium; Incident - Low.
7 **SRM Project Registration:** This column for registration of assigned (new) SRM project, or a previously completed SRM project (with respect to the specific H>UE>C thread).

Note: More details about hazards register in M4. >>> 2_HIRM (sht 11)

Establish Hazards Prioritization Procedure

- **Coordinate with SMS administration office to develop a process for classification of registered hazards in order to facilitate their prioritization for risk mitigation.**
  - The priority of a hazard to be scheduled for corrective or SRM action may depend on the severity of its projected Consequence

Hazard Prioritization Procedure (Illustration)

	OPTION 1 (Basic)	OPTION 2 (Advanced)
Criteria	Prioritization in relation to the Hazard's worst possible consequence (incident severity) category.	Prioritization in relation to the Risk Index (severity & likelihood) category of the Hazard's worst possible consequence.
Methodology	a) Project the Hazard's worst possible consequence b) Project this consequence's likely occurrence classification ie it will be deemed to be an accident, serious incident or incident? c) The Hazard's prioritization is thus: **Projected Consequence** / **Hazard Level** Accident / Level 1 Serious Incident / Level 2 Incident / Level 3	a) Project the Risk Index number (based on the Severity & Likelihood matrix) of the hazard's worst possible consequence. b) With reference to the related Tolerability matrix, determine the Risk Index's Tolerability level, such as Extreme Risk, High Risk, Moderate Risk, Low Risk, Negligible Risk) c) The Hazard's prioritization is thus: **Projected Risk Level** / **Hazard Level** Extreme Risk / R1 High Risk / R2 Moderate Risk / R3 Low Risk / R4 Negligible Risk / R5
Remarks	This Option 1 takes into consideration the severity of the Hazard's projected Consequence only.	This Option 2 takes into consideration the severity & likelihood of the Hazard's projected Consequence – a more comprehensive criteria than Option 1.

Note: More details about hazards prioritization in Module 4

[SMM 5.5.4, 2.1 (i) [c]; C2-App 3]