

長榮航太科技股份有限公司 EVERGREEN AVIATION TECHNOLOGIES CORP.

Deploying SMS in EGAT: Case studies in adopting a risk-based approach.

Presented at: Safety Information Exchange Seminar in ASC, Taiwan R. O. C.

Presented by: Jerry Chang from EGAT



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Outline

SMS Organization

Risk Management Process

Risk-Based Approach - Cases

SMS deploying (Risk-based)

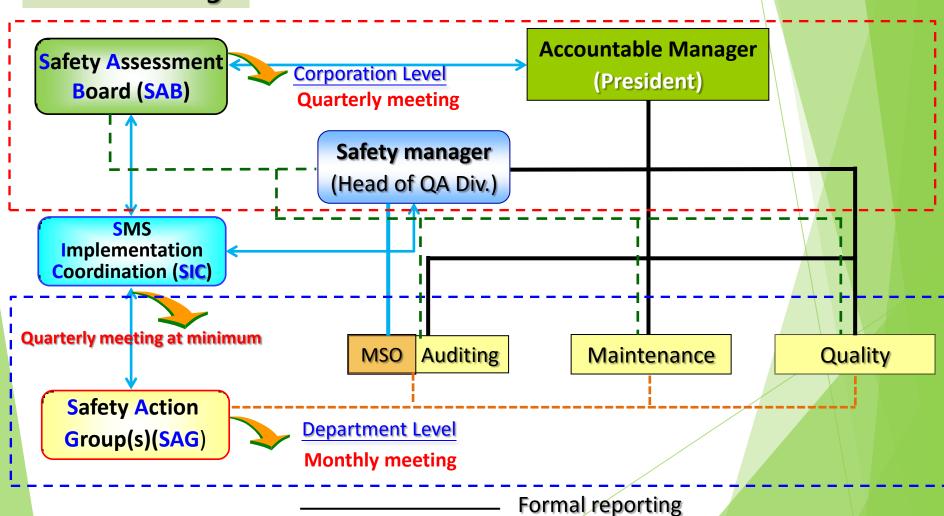
Conclusions





SMS Organization

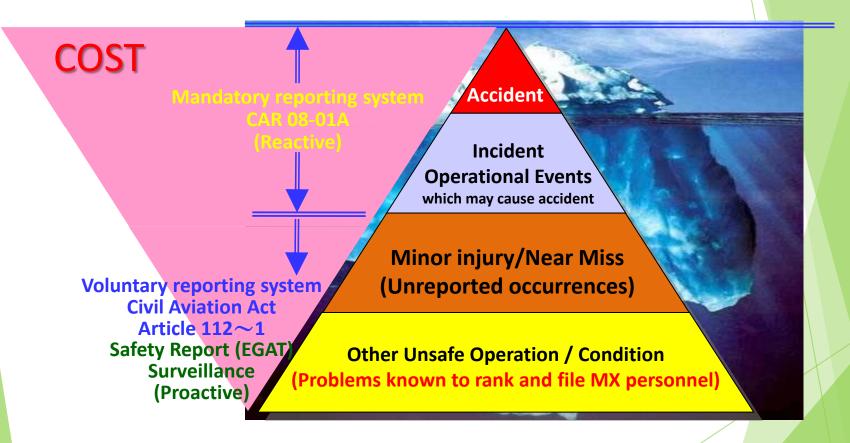
SMS Meeting







Risk Management Process







Risk Management Process



Reactive (Past)

- MOR
- Mandatory Report
- Customer complain
- Inspection Report
- NAA Inspection
 Major Finding





- ✓ Surveillance report
- ✓ Industry case
- ✓ Near Miss report
- √ Safety Report



- Safety Data analysis
- Monitoring Day to day Operation
- Management of change (Rating, Capability....)





Reactive

Proactive

Risk-based Approach



First Task Assessment – Analyze the customer compliant letter and discover the first-time hazard occurrence at EGAT.

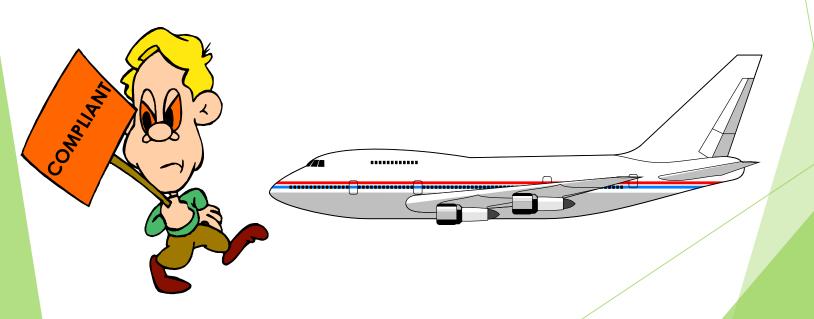
Management of Change - Amend aircraft approval type rating.





Reactive Case Study

Customer compliant letter with the discrepancy of L/H OUTBOARD AFT Flap damage caused by No. 1 Movable Fairing Missing.







Reactive Case Study

Investigation

- Findings:
 - R/H OUTBD SIDE BRACE FITTING CHAFING
 - L/H HINGE FITTING ASSY CHAFING
 - R/H BUSHING INTERIOR DAMAGE
 - R/H HINGE FITTING CHAFING
 - NO.1 TRACK AFT FARING SUPPORT FITTING BROKEN
- Conclusion:
 - Incomplete installation due to the both Front side Castle Nut of No. 1 Track AFT fairing Cotter Pins NOT INSTLALLED.







Reactive Case Study

Mitigation

- Issuance of "Maintenance Notice" circulated with read and sign.
- Photos taken on each installation for flight control system verification
- Revised to job planning procedure





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FORM NO. EM0042-06





Reactive Case Study

HAZARD	MITIGATION CONTROL LIST				Residual
Severity(S)	MITIGATION	Due date	In charge	Status	Severity(S)
С	Issuance of "Maintenance Notice" circulated with read and sign.	Xxx/xx/20xx	Aaron Soon	Closed	С
Likelihood(L)	Photos taken on each installation		00011		Likelihood(L)
2	for flight control system (Verify by production engineers)	Xxx/xx/20xx	Aaron Soon	Closed	1
RISK INDEX	Revision to job planning procedure (attached reminder)	Xxx/xx/20xx	Falcon Fu	Closed	RISK INDEX
(L+S) 2C					(L+S) 1C
Hazard					10
method					
Reactive		/			





Proactive Case Study



Purpose

To provide better service for our customers to reduce the quality deficiencies.

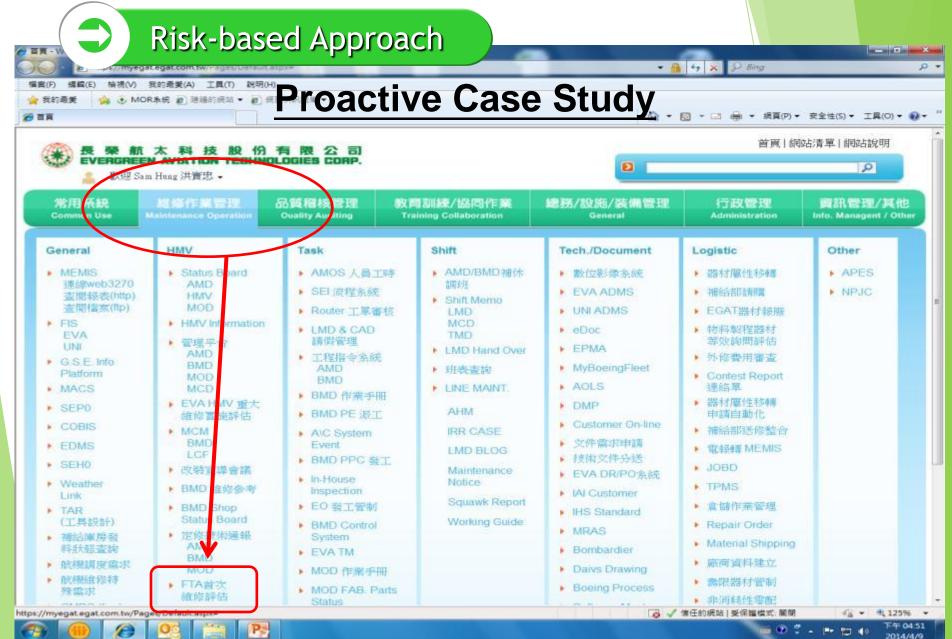
Analyze

The first time work performance, due to lack of work procedures......

Hazard

Ineffective or lack of procedures to ensure materials, parts, or assemblies are worked or fabricated through a series of controlled steps









Performed by: MOD/PPC

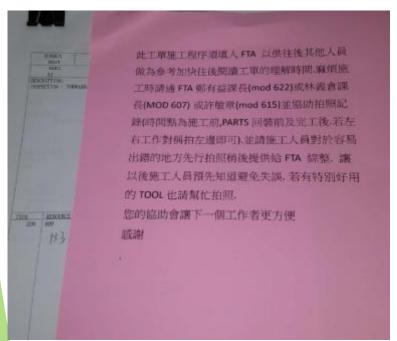
Preamble	■ Customer:	Part II(完工階段)
	Part I	■ 施工照片: □N, □Y
工作概要	■ Subject: PERFORM BLIND RIVET REPAIR AT BS806-826 L/H OVERWING DOOR ■ Customer EO#: NIL : 原廠 SB/SR/RD: NIL , Rev. , Part: ■ 是否 AD 相關: ■N, □Y NIL ; Customer 工單:□N, ■Y 30616261 ■ Jacking or Shoring 需求: ■N, □Y; Furl Tank Entry: ■N, □Y ■ 其他專業支援需求:□N, ■Y CBN , NDT ■ 主要工作敘述: _1. S/M 依 SRM 53-00-01 REPAIR 8 SECTION 1 PARAGRAPH 5 來執行 REPAIR 2. REMOVE FASTENER AND EDDY CURRENT INSPECTION FOR CRACK 3. OVER SIZE THE HOLE 1/16" (下個 SIZE) 4. INSTALL THE RIVET (依 SRM 規範回裝) 5. APPLY THE FINISH	Completed by the person carried out
預估工時	 ■ 原廠 SB 標準工時: M/H: MOD 預估工時: 12 M/H ■ 是否有 Access Removal /Installation 並未含蓋於工單內容: □N, ■ Y CBN ACCESS RMV 待飛機進來時才能確認與評估 	■ 實際工時: M/H ■ 其他注意事項:
物料需求	■ 客戶提供 Kit: ■N,□Y ■ 除 Kit 外,其餘施工需要的主要耗料:	■ Kit 內之物料是否符合施工需求: □ N , □ Y ■ 其他說明:
工具裝備	■ 是否有特殊工具/裝備需求:■ N,□Y ■ 特殊工具/裝備來源:□ Customer,□ EGAT / MOD,□Vendor: Engineered By: <u>許有利</u> ;FTA By: <u>尤千福</u>	Delegated By :







When the task is to be carried out for the first time. Production Controllers will print a notice to remind the maintenance staff. Production Engineer (PE) will ensure First Time Assessment (FTA) information is populated into FTA system. PE will be on shop floor to supervise Maintenance Engineer (ME).







When FTA task is complete, subsequent repeat actions by other MEs on another aircraft are to make use of experience and steps logged into FTA system with orange cover page notice.

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	Fact Tank Entry:					





Proactive Case Study

HAZARD	MITIGATION CONTROL LIST				Residual
Severity(S)	MITIGATION	Due date	In charge	Status	Severity(S)
С	Establishes FTA (First Time	Xxx/xx/20xx	YO-YI	Closed	D
Likelihood(L)	Assessment) System.		Cheng	0.030 u	Likelihood(L)
	PPC performs FTA (Part I) for the	V 1 /20	YO-YI	Classed	()
3	deferred repair and/or SB at the first time to be carried out in EGAT.	Xxx/xx/20xx	Cheng	Closed	2
RISK INDEX (L+S)	Performing staff take photos as required and data entry in Part II.	Xxx/xx/20xx	YO-YI Cheng	Closed	RISK INDEX (L+S)
3C	Initiate the job contained the notice with pink (1st) or orange	Xxx/xx/20xx	YO-YI Cheng	Closed 2D	
Hazard method					
Proactive					





Predictive Case Study

Amend Aircraft Type Rating

- Due to the business decision and needs, EGAT was going to amend aircraft type rating.
- ► Target type: B-787









Predictive Case Study



A/C Type	Procedures or Processes
Equipment	Training
Network	Security
Operating System/Utilities	Operator
Database	Authorization
Location	Organizational Structure
Documentation	Other

Identify the key personnel

Consider the effect of the change

Analyze and assess the risk associated with the change

Define an implementation plan and approve the change

Implement the actions as defined in the plan

Monitor performance and the effects of the changes



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CIVIL AERO MINISTRY OF TRANS

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長榮航太:

Evergreen Aviation

REPAIR STATI

依照民用航空局維修廢檢定訂 In accordance with the CAA Repair S specified as follows:

一、機體(Airframe): 限定

(一)限制從事下列機體各位 Limited to the followin Airframe Overhaul on: AIRBUS A318/A319/A320// AIRBUS A330-200/-300 se ATR72-212A series B737-600/-700/-800/-900 B747-400 series B767-200/-300 series B777-300ER series

B787-8/-9

Bombardier Dash-8 serie MD-11 series MD-90 series

(二)限制從事下列航空器: Limited to the followin B757-200 series Line ma

MAINTENANCE ORGANISATION APPROVAL SCHEDULE

Reference: EASA.145.0057

Organisation: EVERGREEN AVIATION TECHNOLOGIES

CORPORATION

t/a EGAT

6 Harng-Jann South Road

Taiwan Taoyuan International Airport

Dayuan

Taoyuan County, 33758

Taiwan

CLASS	RATING	LIMITATION	BASE	LINE
AIRCRAFT	A1 Aeroplanes above	Airbus A318/A319/A320/A321	YES	YES
	5700kg	Airbus A330	YES	YES
		Boeing 737-600/700/800/900	YES	YES
		Boeing 747-400	YES	YES
		Boeing 767-200/300	YES	YES
		Boeing 777-200/300	NO	YES
		Boeing 787-8/-9	YES	NO
		MD11	YES	YES

CLASS	RATING	LIMITATION	
ENGINES	B1 Turbine	GE CF6-80C2 series	
		GE CF6-80E1 series	
		GE 90 series	
	GEnx series		
		IAE V2500 series	





SMS deploying (risk-based)

- Ensure mitigation still working
- Identify safety hazards and apply mitigation

Safety Assurance

Safety Risk Management

- Policy(ALARP)
- Documentation
- System architecture

Safety Policy and Objective

Safety Promotion

- Training/Education
- Lesson learned
- Safety Communication
- Culture

Refer to "FRMS Challenges of an On-demand Operator", Cláudia Cabaço Flight Safety Assistant Manager,

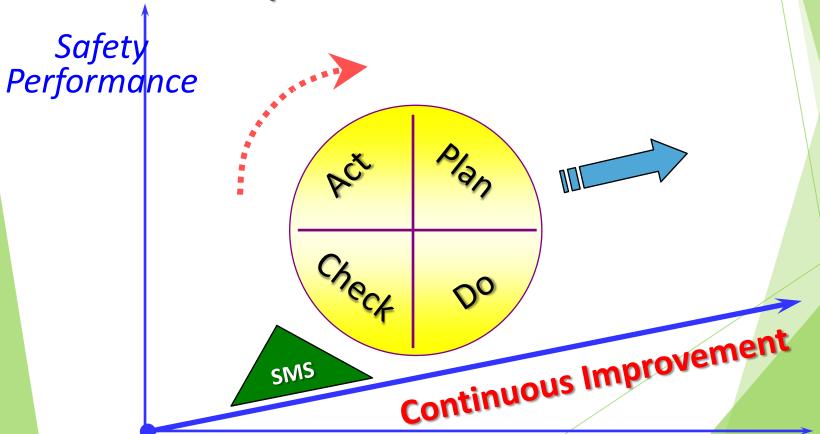
1st September 2011





Conclusions

 SMS is the preferred way of carrying out business and operational activities that places safety at the core of EGAT's practices.

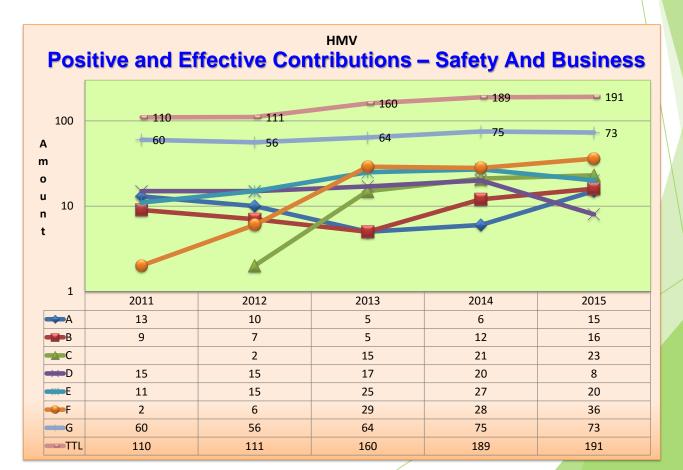






Conclusions

Effective Application of SMS will lead to a safer and more competitive industry





See it

Assess it

Fix it

Evaluate it

Review it

Any comment or question, please contact

jerrycchang@egat.com.tw

