





INTERNATIONAL CIVIL AVIATION ORGANIZATION

A United Nations Specialized Agency

SMS AERODROMES PERSPECTIVE


**JAIME CALDERON
AGA REGIONAL OFFICER
ICAO NACC REGIONAL OFFICE**

What is SMS?

-  An SMS is a system to assure the safe operation of aircraft through effective management of safety risk.
-  This system is designed to continuously improve safety by identifying hazards, collecting and analyzing data and continuously assessing safety risks.



The SMS seeks to proactively contain or mitigate risks before they result in aviation accidents and incidents.

A large white aircraft, possibly a military transport plane, is parked on a runway. The aircraft is viewed from the front, showing its wings and tail. The runway is paved and has white markings. In the background, there are green fields and a blue sky with scattered white clouds. A small vehicle is visible on the right side of the runway.

It is a system that is commensurate with the organization's regulatory obligations and safety goals.




The SMS provides the means to identify safety hazards, implement actions to reduce safety risks, monitor safety performance and achieve continuous improvement in safety performance.

This system is designed to continuously improve safety by identifying hazards, collecting and analyzing data and continuously assessing safety risks.




Safety Management System

 The following stakeholders may provide inputs to service providers depending upon their potential impact on safety performance:

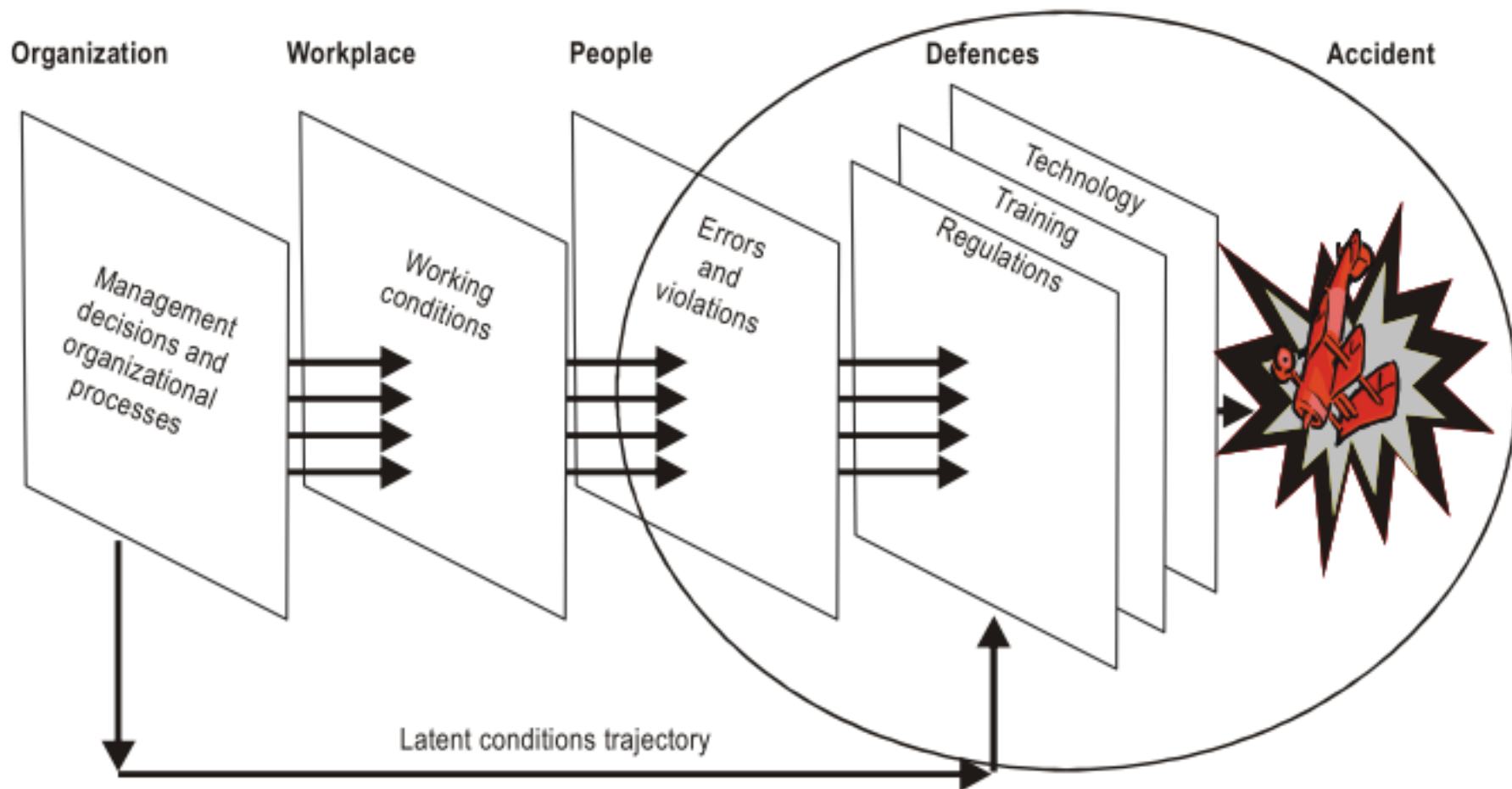
- a) aviation professionals;
- b) aviation regulatory and administrative authorities;
- c) industry trade associations;
- d) professional associations and federations;
- e) international aviation organizations;
- f) subcontractors or principals of a service provider; and
- g) the flying public.

SMS Framework

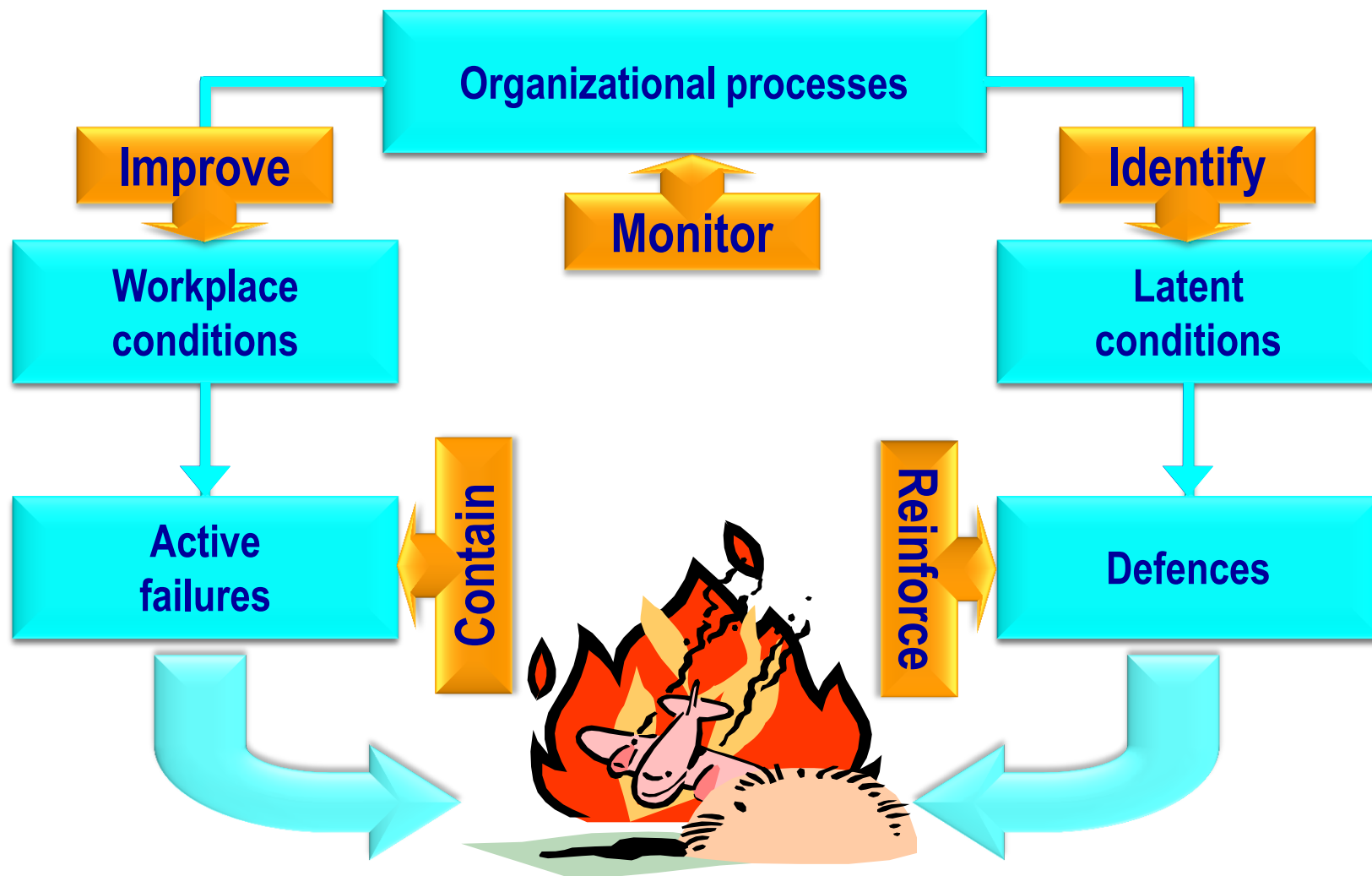
 The ICAO SMS framework comprises the four following components as well as twelve underlying elements:

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

The concept of accident causation



The organizational accident



Workplace interaction

- Aviation workplaces involve complex interrelationships among components
- To understand operational performance, we must understand the interrelationship among components of the workplace



SHEL MODEL

Software (S) (procedures, training, support, etc.); Hardware (H) (machines and equipment); Environment (E) (the operating circumstances in which the rest of the L-H-S system must function); and Liveware (L) (humans in the workplace)

Management =

active (proactive)

“Ground Rules.” Safe Practices for Line Personnel

The best way to stop an accident from happening is to spot it before it does. Appoint qualified employees to inspect your workplace periodically, using a checklist, to make sure all is well.

Check aircraft chocked and tied-down walkways clean of obstacles rags and chemicals properly stowed tools, workstands and equipment put away other accidents waiting to happen.

Ref.: OSHA Regulations 1910.22 and 1910.132 General Requirements

NATA
An NATA Member Service
created by
USAIG
UNITED STATES AIRCRAFT INSURANCE GROUP



LOOK FOR AN ACCIDENT!

Management =

planning



Management =

evaluative

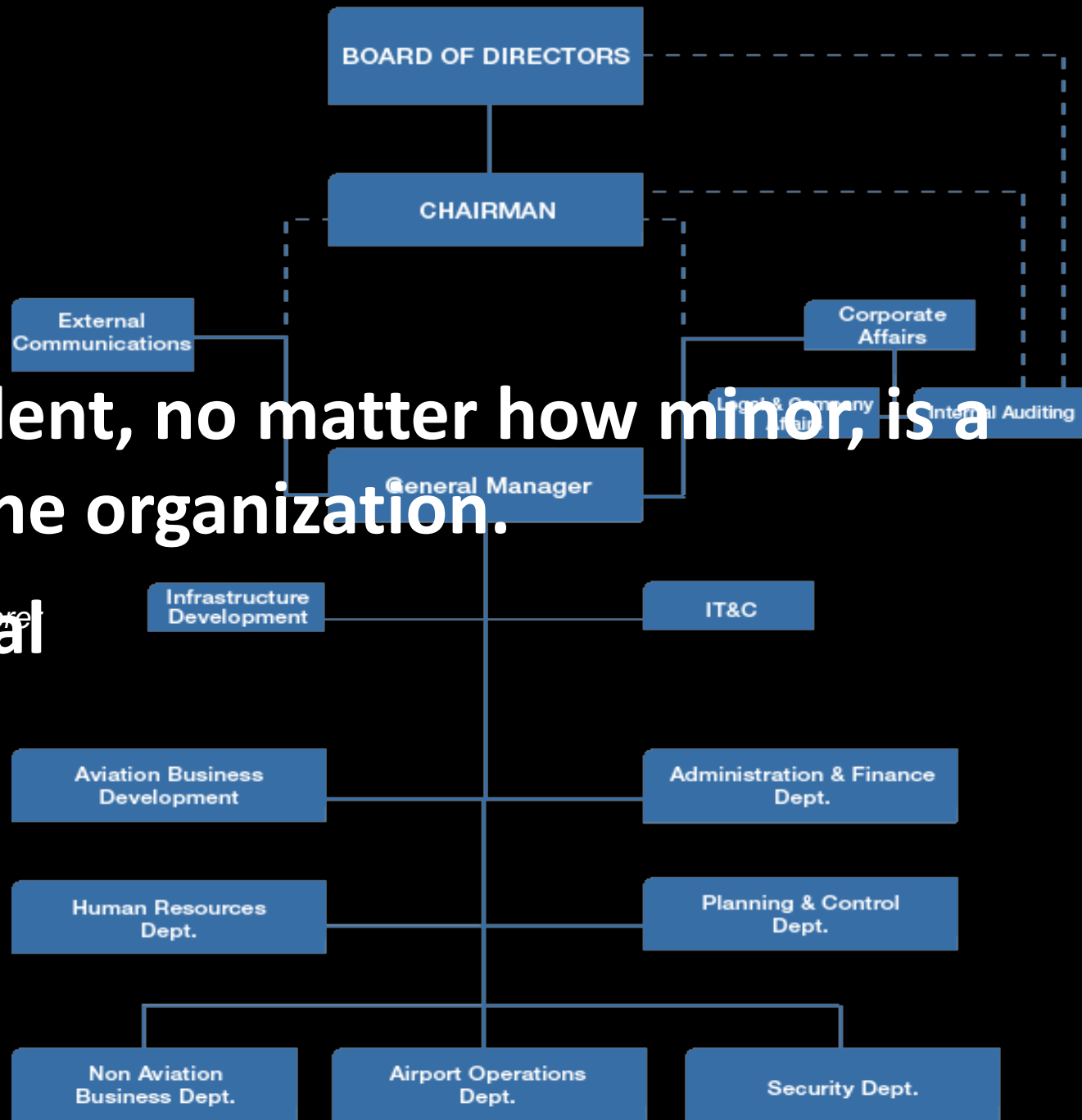


System =

Every accident, no matter how minor, is a failure of the organization.

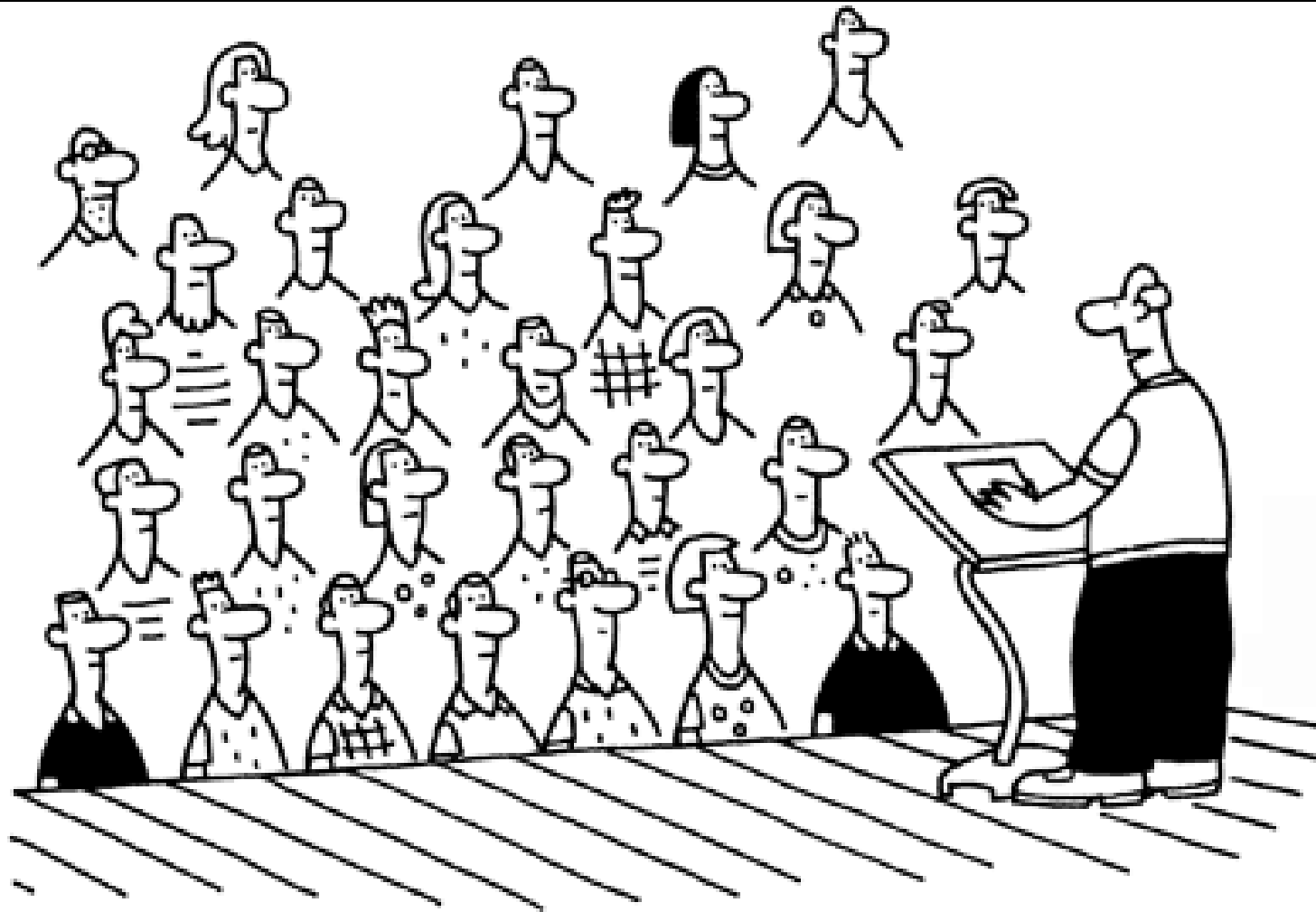
organizational

James Ledwith



System =

cultural



“If you skipped the last safety meeting, please raise your hand, assuming you still have one.”

System =

“big picture”

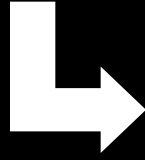


TORS



TODAY

**ORGANIZATIONAL
FACTORS**



1950s

1970s

1990s

2000s

What is the objective of a business organization?



To achieve its production objectives

Safety management – Rationale

- ✈ In order to achieve its production objectives, the management of any aviation organization requires the management of many business processes
- ✈ Managing safety is one such business processes

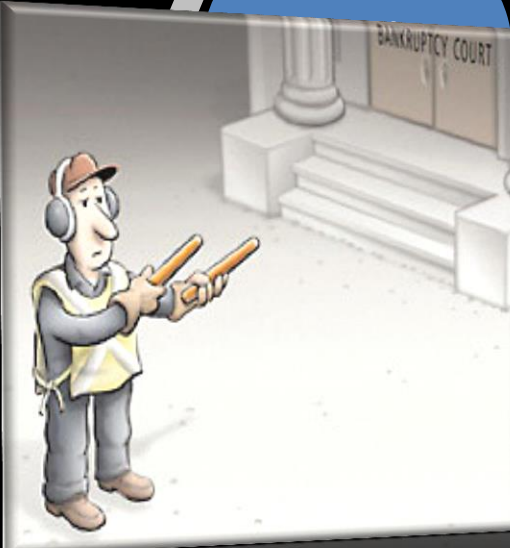
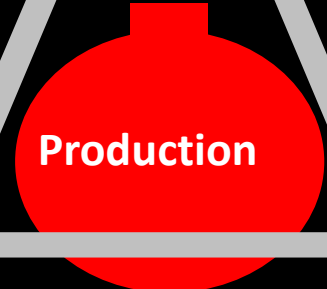
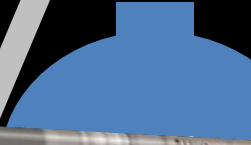
Safety management – Rationale cont.

- ✈ Safety management is a core business function (financial management, HR management, etc.)
- ✈ There is no aviation organization that has been created to deliver only safety
- ✈ This brings a potential dilemma for management

Management

Resources

Resources



SMS

Executives

Administration

Employees

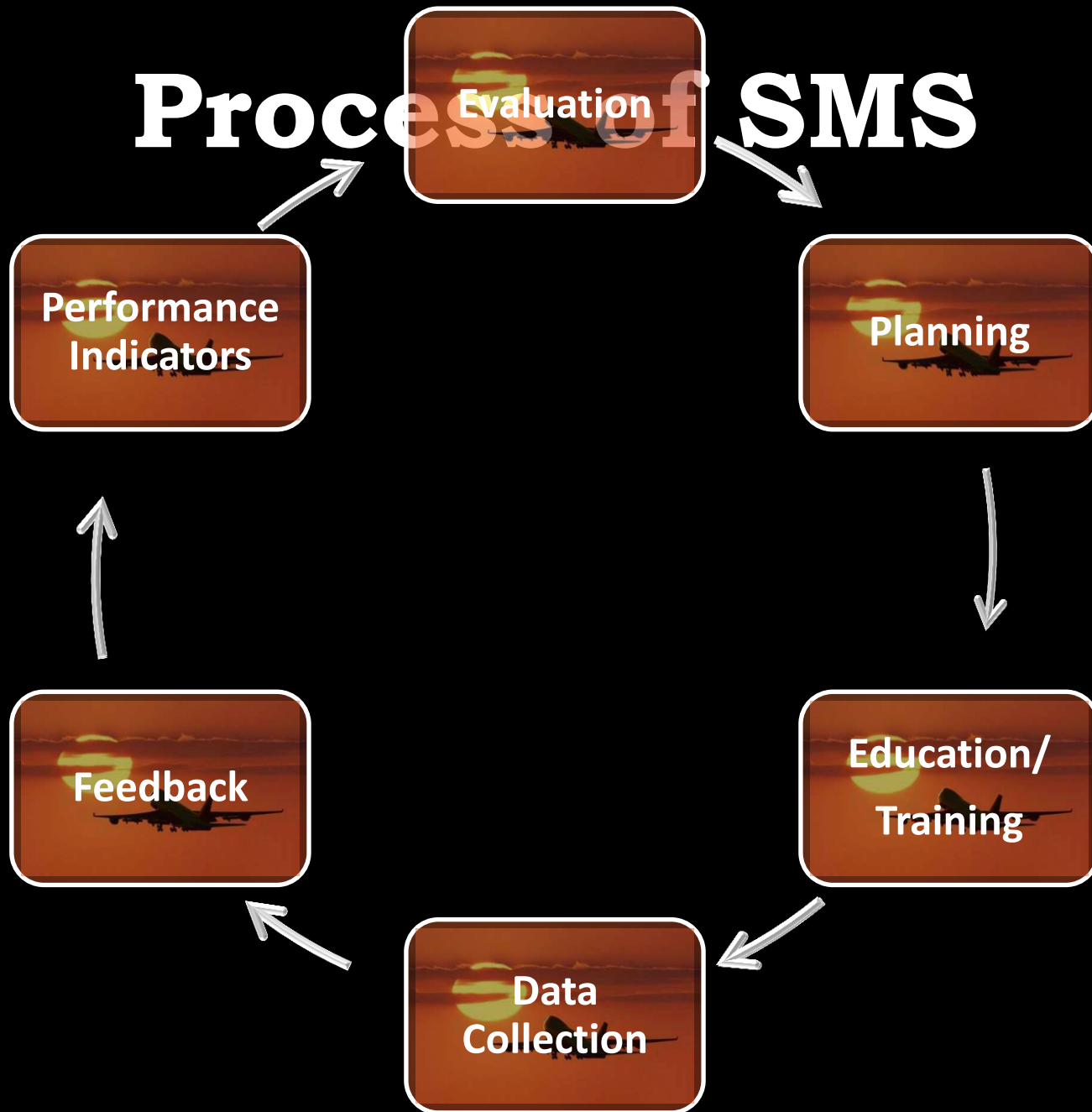


No matter how interested individual employees might be, or what assistance a manufacturer offers, or how insistent a certificating authority might be — none of these factors will have a significant effect on safety without support from top management.

John O'Brian

ALPA's Engineering and Air Safety Department

Process of SMS



Reactive vs. Proactive



There will always be hazards and risks at airports

SMS focuses on the control of processes, not end results



Safety Culture

“Way of Life” for an airport

**Involvement at all levels –
Commitment from the top**

**Comprehensive program – all facets
of operations**



Accountability



The Business of Safety

Part of the Comprehensive

Monetary Commitment

Consequences of Accidents



2007-08

If you think safety is expensive... try an accident.

Dr. Trevor Kletz

Institution of Chemical Engineers









Important Definitions

Safety is the state in which the risk of harm to persons or property damage is reduced to, and maintained at or below, an acceptable level through a continuing process of hazard identification and risk management.

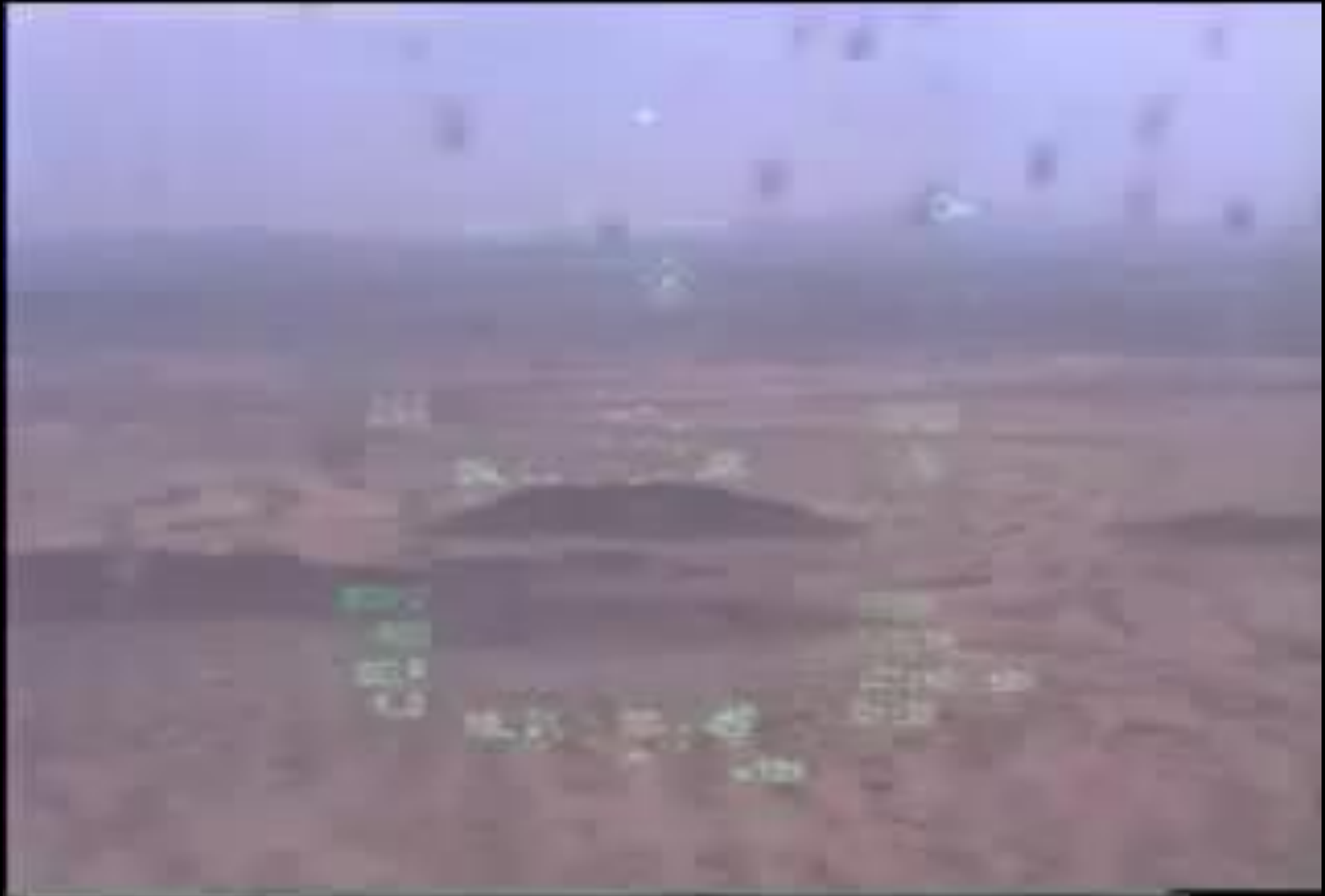


Hazard is a condition, object or activity with the potential of causing injuries to personnel, damage to equipment or structures, loss of material, or reduction of ability to perform a prescribed function.

Risk is the chance of loss or injury, measured in terms of severity and probability. The chance that something is going to happen, and the consequences if it does.

$$\text{Risk} = p \cdot s$$

SMS and Wildlife Control



Birdstrike Reporting

**Biologist /
Wildlife Control**









Birdstrike Control
Program
www.birdstrikecontrol.com

UNITED STATES OF AMERICA



29000

Maintenance





Operations





REMEMBER SEAT BELTS





Pilots

NO SMOKING



Air Traffic Control







Ground Crews





IBIS



U.S. Department of Transportation
Federal Aviation Administration

BIRD / OTHER WILDLIFE STRIKE REPORT

| | | | | | | |
|--|--|---|--------------------------|--|---|--|
| 1. Name of Operator | | 2. Aircraft Make/Model | | 3. Engine Make/Model | | |
| 4. Aircraft Registration | | 5. Date of Incident ____/____/____ Month Day Year | | 6. Local Time of Incident <input type="checkbox"/> Dawn <input type="checkbox"/> Dusk <input type="checkbox"/> Night <input type="checkbox"/> Day ____ HR ____ MIN <input type="checkbox"/> AM <input type="checkbox"/> PM | | |
| 7. Airport Name | | 8. Runway Used | | 9. Location if En Route (Nearest Town/Reference & State) | | |
| 10. Height (AGL) | | 11. Speed (IAS) | | | | |
| 12. Phase of Flight <input type="checkbox"/> A. Parked <input type="checkbox"/> B. Taxi <input type="checkbox"/> C. Take-off Run <input type="checkbox"/> D. Climb <input type="checkbox"/> E. En Route <input type="checkbox"/> F. Descent <input type="checkbox"/> G. Approach <input type="checkbox"/> H. Landing Roll | | 13. Part(s) of Aircraft Struck or Damaged | | | | |
| | | | | Struck | Damaged | |
| | | A. Radome <input type="checkbox"/> | | H. Propeller <input type="checkbox"/> | | |
| | | B. Windshield <input type="checkbox"/> | | I. Wing/Rotor <input type="checkbox"/> | | |
| | | C. Nose <input type="checkbox"/> | | J. Fuselage <input type="checkbox"/> | | |
| | | D. Engine No. 1 <input type="checkbox"/> | | K. Landing Gear <input type="checkbox"/> | | |
| | | E. Engine No. 2 <input type="checkbox"/> | | L. Tail <input type="checkbox"/> | | |
| | | F. Engine No. 3 <input type="checkbox"/> | | M. Lights <input type="checkbox"/> | | |
| | | G. Engine No. 4 <input type="checkbox"/> | | N. Other: (Specify) <input type="checkbox"/> | | |
| 14. Effect on Flight <input type="checkbox"/> None <input type="checkbox"/> Aborted Take-Off <input type="checkbox"/> Precautionary Landing <input type="checkbox"/> Engines Shut Down <input type="checkbox"/> Other: (Specify) | | 15. Sky Condition <input type="checkbox"/> No Cloud <input type="checkbox"/> Some Cloud <input type="checkbox"/> Overcast | | 16. Precipitation <input type="checkbox"/> Fog <input type="checkbox"/> Rain <input type="checkbox"/> Snow <input type="checkbox"/> None | | |
| 17. Bird/Other Wildlife Species | | 18. Number of birds seen and/or struck | | | 19. Size of Bird(s) <input type="checkbox"/> Small <input type="checkbox"/> Medium <input type="checkbox"/> Large | |
| | | Number of Birds | Seen | Struck | | |
| | | 1 | <input type="checkbox"/> | <input type="checkbox"/> | | |
| | | 2-10 | <input type="checkbox"/> | <input type="checkbox"/> | | |
| | | 11-100 | <input type="checkbox"/> | <input type="checkbox"/> | | |
| | | more than 100 | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 20. Pilot Warned of Birds <input type="checkbox"/> Yes <input type="checkbox"/> No | | | | | | |
| 21. Remarks (Describe damage, injuries and other pertinent information) | | | | | | |
| DAMAGE / COST INFORMATION | | | | | | |
| 22. Aircraft time out of service: _____ hours | | 23. Estimated cost of repairs or replacement (U.S. \$): \$ _____ | | 24. Estimated other Cost (U.S. \$ (e.g. loss of revenue, fuel, hotels): \$ _____ | | |
| Reported by (Optional) | | | Title | | Date | |
| <p>Paperwork Reduction Act Statement: The information collected on this form is necessary to allow the Federal Aviation Administration to assess the magnitude and severity of the wildlife-aircraft strike problem in the U.S. The information is used in determining the best management practices for reducing the hazard to aviation safety caused by wildlife-aircraft strikes. We estimate that it will take approximately 6 minutes to complete the form. The information collected is voluntary. Please note that an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The OMB control number associated with this collection is 2120-0045. Comments concerning the accuracy of this burden and suggestions for reducing the burden should be directed to the FAA at: 800 Independence Ave SW, Washington, DC 20591, Attn: Information Collection Clearance Officer, ABA-20</p> | | | | | | |

AMC IN-FLIGHT EMERGENCY AND UNUSUAL OCCURRENCE WORKSHEET

Information provided is collected under the provisions of AFI 91-204 solely for the purpose of mishap prevention within the United States Air Force and to determine all factors relating to the incident in order to prevent recurrence. All statements contained herein are not protected under the promise of confidentiality. Destroy in accordance with AFMAN 37-139 when no longer needed for mishap prevention purposes. Contact an appropriate Air Force safety officer if you have any questions concerning military safety privilege.

| SECTION I. FOR CREW USE | | | | |
|---|-------------------------|---|---------------------------------|--|
| 1. DATE | 2. TIME (ZULU) | 3. LAT/LONG | 4. CLOSEST AIRFIELD ICAO | |
| 5. REPORTING BASE (ICAO) | 6. MISSION NUMBER | 7. TYPE AIRCRAFT | 8. TAIL NO. | 9. HOME STATION (ICAO) |
| 10. WING | 12. ALTITUDE (MSL) | 13. WEATHER (VFR, IFR, THUNDERSTORMS, HAIL, LIGHTNING, TURBULENCE, RAIN, ICING, ETC.) | | |
| 11. SQUADRON | | | | |
| 14. PHASE OF FLIGHT | | | | |
| <input type="checkbox"/> TAXI <input type="checkbox"/> TAKEOFF <input type="checkbox"/> CLIMB <input type="checkbox"/> CRUISE <input type="checkbox"/> AIR REFUELING <input type="checkbox"/> DESCENT <input type="checkbox"/> LOW LEVEL <input type="checkbox"/> FINAL APPROACH <input type="checkbox"/> MISSED APPROACH <input type="checkbox"/> TRAFFIC PATTERN <input type="checkbox"/> TOUCH & GO <input type="checkbox"/> LANDING <input type="checkbox"/> UNKNOWN | | | | |
| 15. TIME FROM ALERT TO INCIDENT | 16. TAKEOFF TIME (ZULU) | 17. FLIGHT DURATION | 18. AIRCRAFT SYSTEM(S) INVOLVED | 19. ENGINE SHUTDOWN |
| | | | | <input type="checkbox"/> NO <input type="checkbox"/> YES POSITION NO: <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 |
| 20. STATEMENT: (A CONCISE, CHRONOLOGICAL DESCRIPTION OF THE FACTS AND CIRCUMSTANCES LEADING TO THE OCCURRENCE, ACTIONS TAKEN AND RESULTS. ATTACH EXTRA SHEETS IF ADDITIONAL SPACE IS REQUIRED.) | | | | |

Notification





TWEED

NEW HAVEN REGIONAL AIRPORT




BOEING



**PLEASE
DO NOT
FEED BIRDS**

**AVIATION
HAZARD**



Performance Indicators?

Number of strikes





Risk is the chance of loss or injury,
measured in terms of severity and
probability.





Risk Factors

Overall population size

Size of individual animal

Average number of individuals (flock)

Amount of time in environment

Time of day when active

Location

Time spent moving

Number of historical strikes

Ability to avoid aircraft

Ability to influence animal