

SMS and Bird/Wildlife Management Programs



Dr. Nicholas Carter
Birdstrike Control Program
Director - CARSAMPAF

What is SMS?

Safety

Management

System(s)



WESTERN AIRLINES

N388PX







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

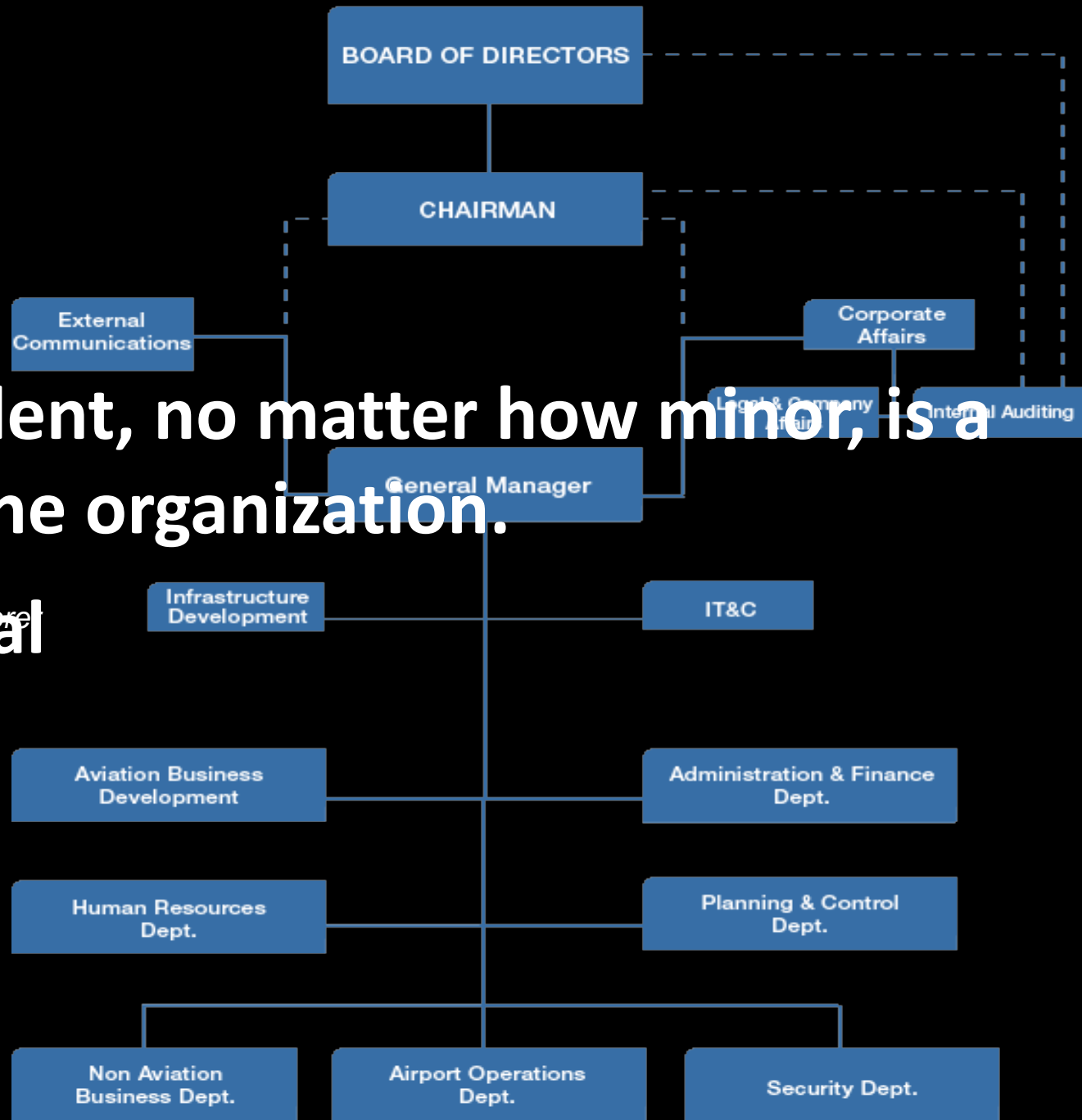


System =

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

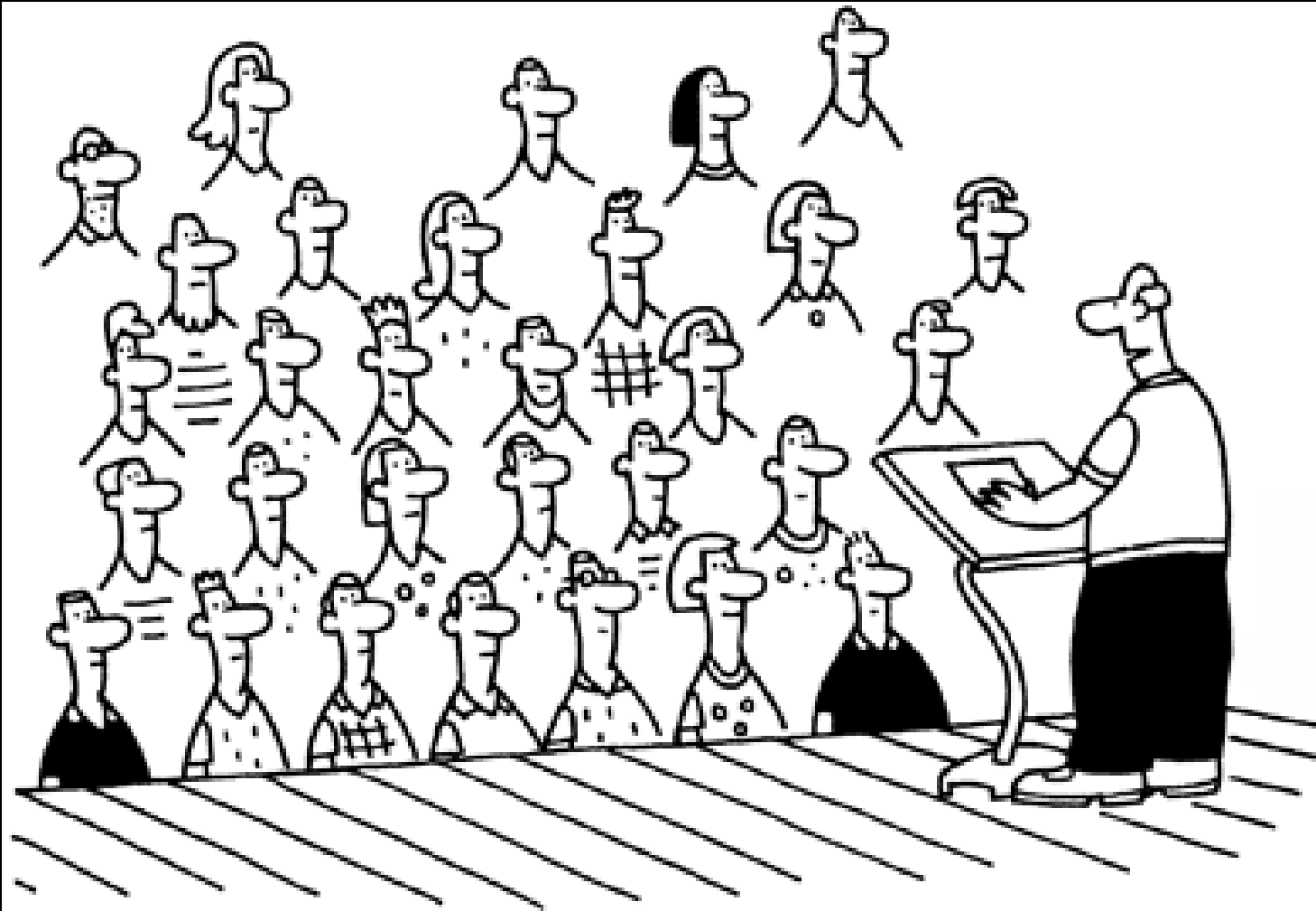
organizational

James Loder



System =

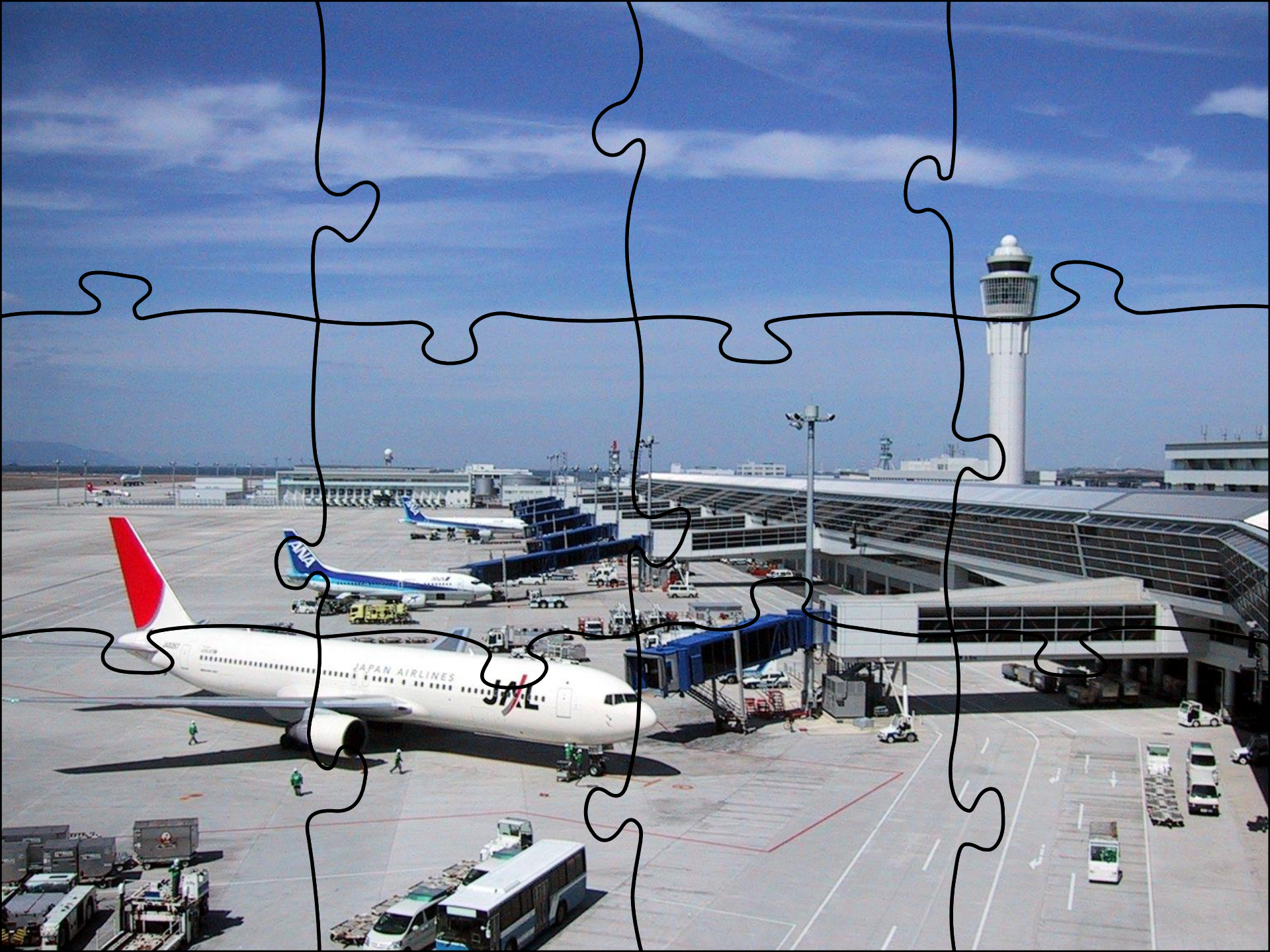
cultural



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

System =

“big picture”





Evolution of Aviation Safety Thinking

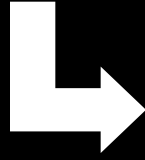


TORS



TODAY

**ORGANIZATIONAL
FACTORS**



1950s

1970s

1990s

2000s

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



Impending Requirements

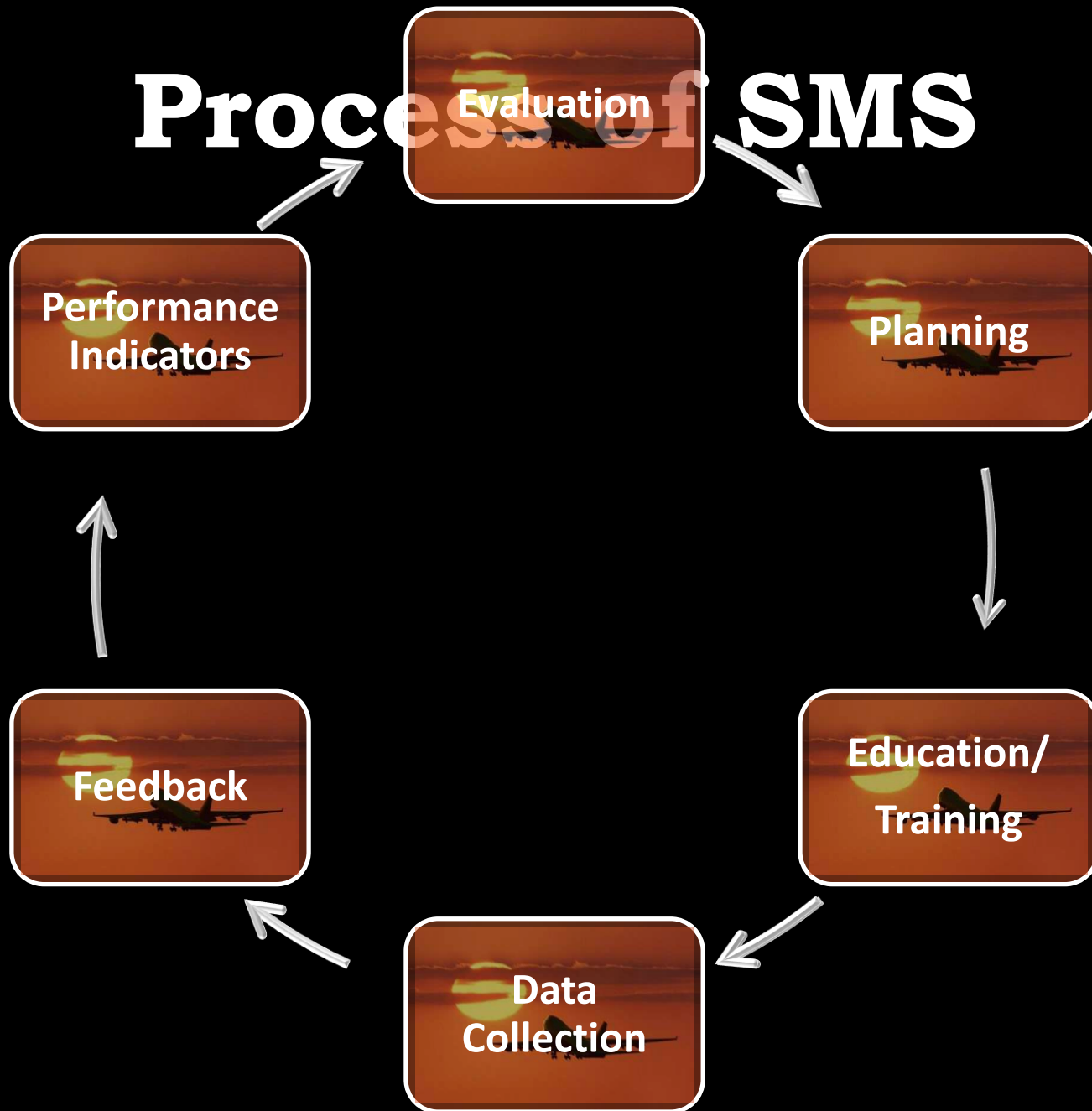
Amended Annex 14, Vol. I
(Nov. 2005)



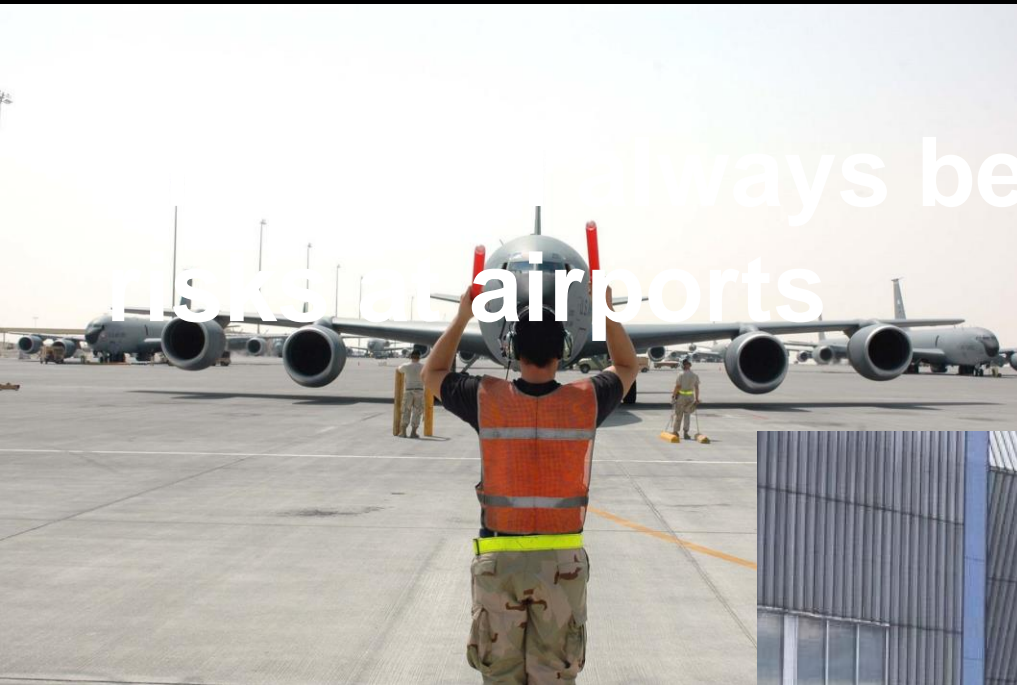
Doc 9859

Safety Management Manual
(SMM)

Process of SMS



Reactive vs. Proactive



There are always be hazards and risks at airports

SMS focuses on the control of processes, not end results



**After the ship has sunk, everyone knows
how she might have been saved.**

Italian proverb

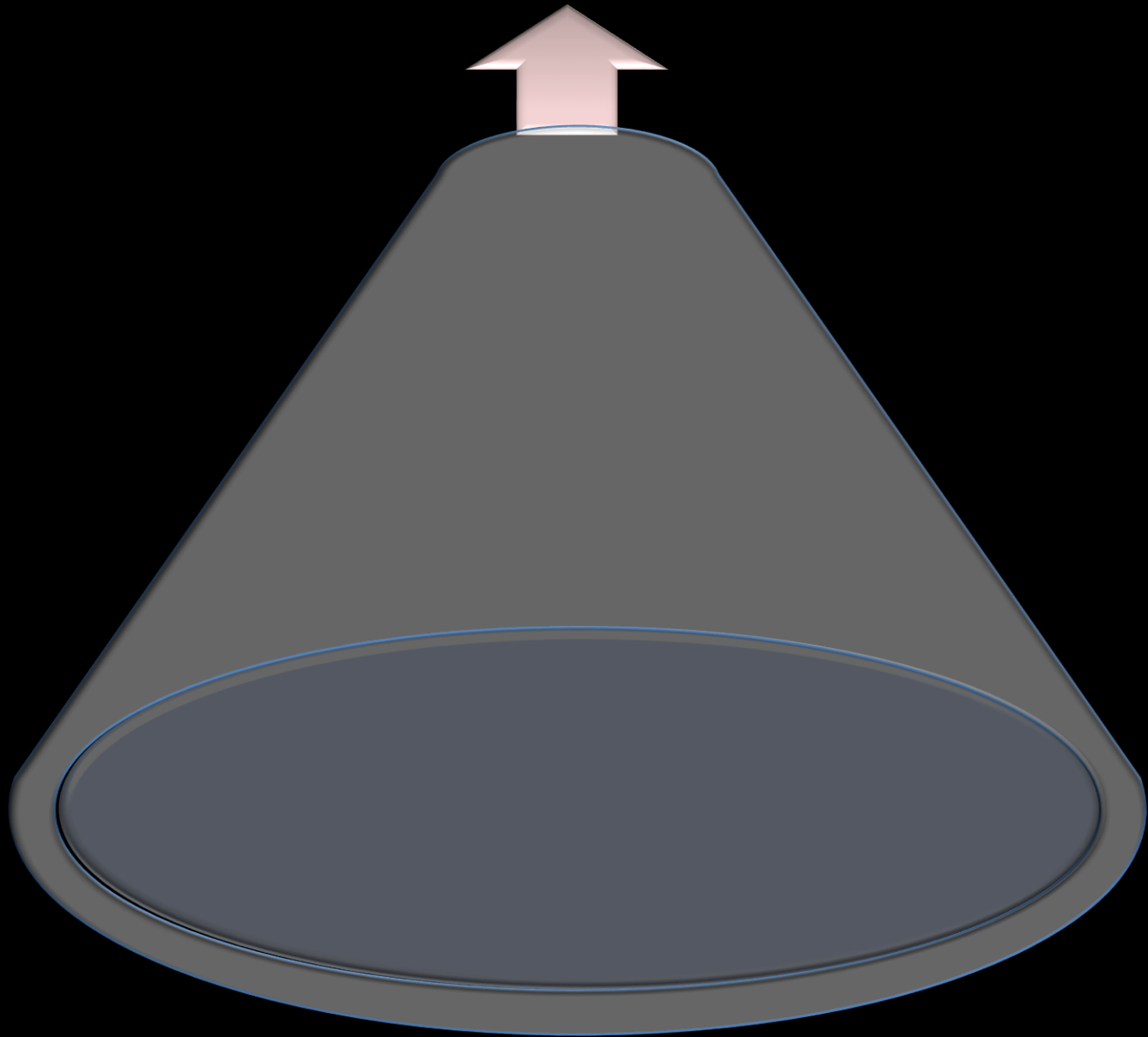
Safety Culture

“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

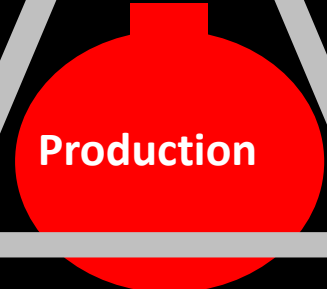


2007-08

Management

Resources

Resources



Safety is expensive



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

Dr. Trevor Kletz

Institution of Chemical Engineers



K

In

In





“Not My Job”











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.

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



Risk

Safety



Time

There are no new types of air crashes — only people with short memories. Every accident has its own forerunners, and every one happens either because somebody did not know where to draw the vital dividing line between the unforeseen and the unforeseeable or because well-meaning people deemed the risk acceptable.

Stephen Barlay

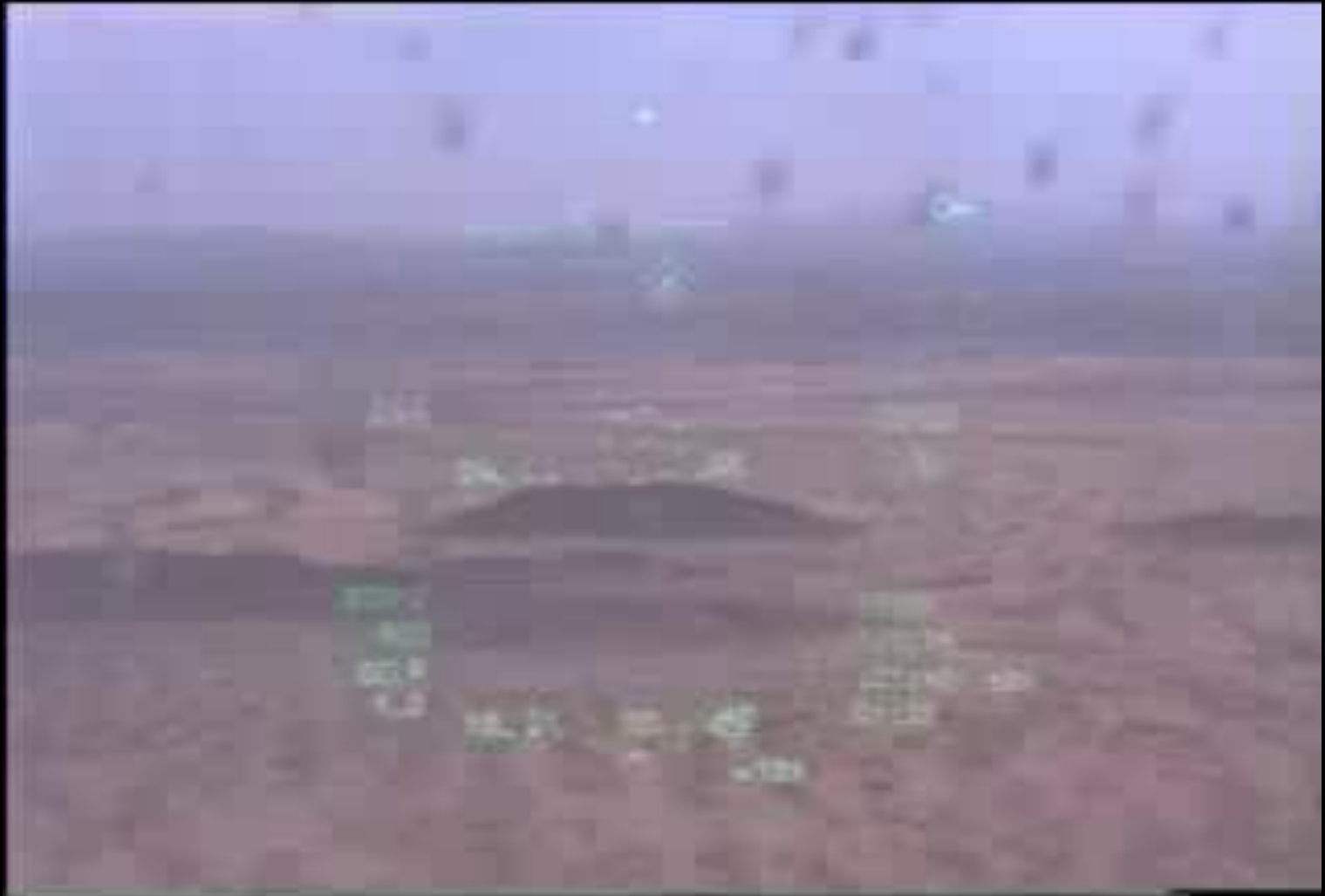
The Final Call: Why Airline Disasters Continue to Happen

Species Group	Overall Risk Ranking	Relative Hazard Percentage
Canada Geese	1	100
Snow Geese	2	94
Seagulls (all species)	3	8
Ducks	4	6
Vultures	5	5
Flocking Birds*	6	4
Raptors	7	1
Egrets/Herons	8	1
Crows	9	<1
Songbirds	10	<1
Shorebirds	11	<1
Kestrels	12	<1
Owls	13	<1
Swallows	14	<1
Groundhogs	15	<1
Deer	16	<1
Foxes	17	<1
Rabbits	18	<1

Risk Analysis must be performed

* Flocking birds consists of species such as red-winged blackbirds, starlings, grackles, etc.

SMS and Wildlife Control



Birdstrike Reporting

**Biologist /
Wildlife Control**









Birdstrike Control
Program
www.birdstrikecontrol.com

UNITED STATES OF AMERICA



28000

Maintenance

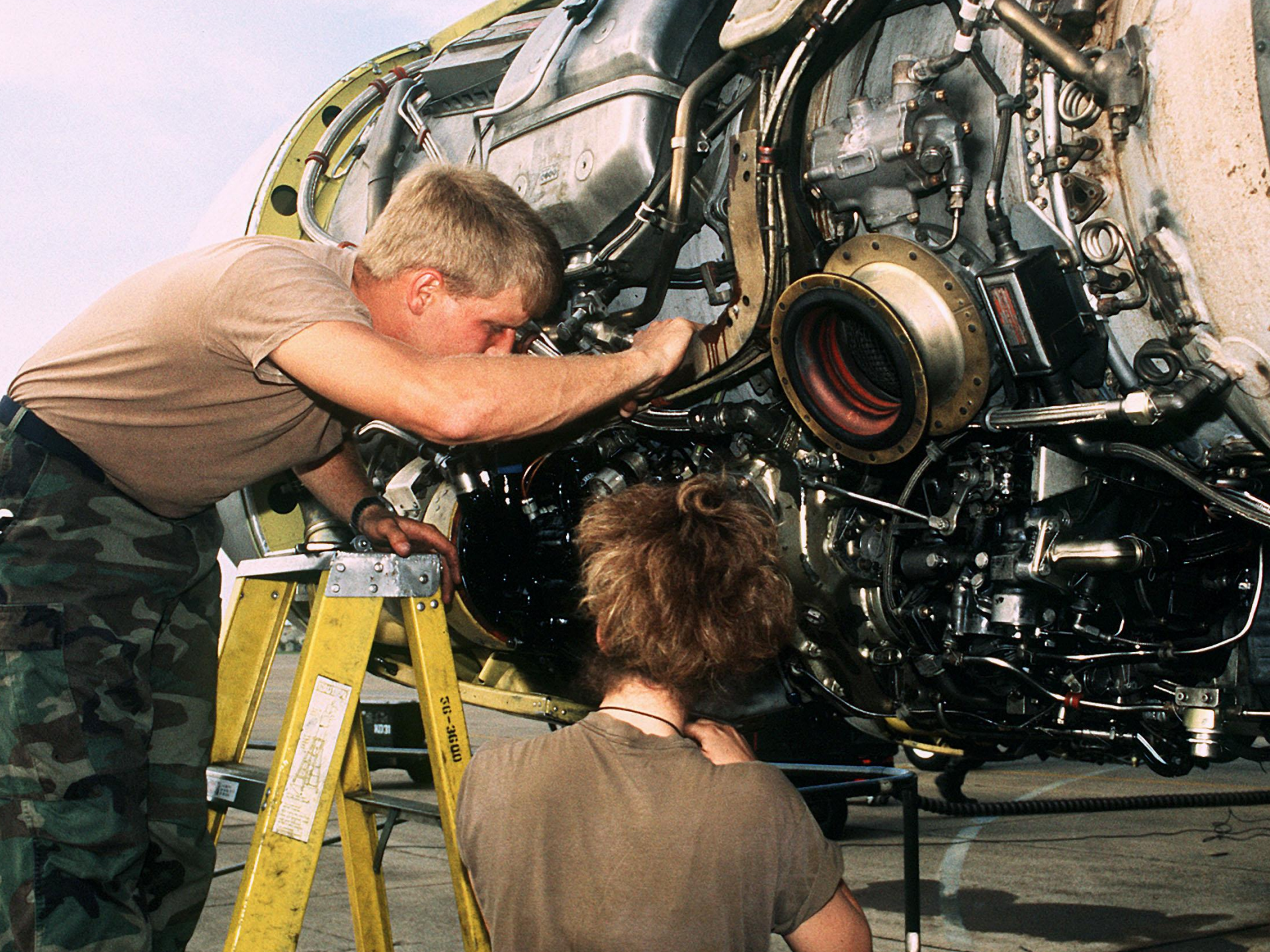




NAVY









MS72

0534

0534

427TH AW

427TH AW





+

0174

Z02



CAUTION DO NOT



Operations







REMEMBER SEAT BELTS

virgin atlantic





Pilots

NO SMOKING







Air Traffic Control











Ground Crews



312









FAA / AFSAS / 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 <input type="checkbox"/> Night 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"/>	<input type="checkbox"/>	H. Propeller	<input type="checkbox"/>
		B. Windshield	<input type="checkbox"/>	<input type="checkbox"/>	I. Wing/Rotor	<input type="checkbox"/>
		C. Nose	<input type="checkbox"/>	<input type="checkbox"/>	J. Fuselage	<input type="checkbox"/>
		D. Engine No. 1	<input type="checkbox"/>	<input type="checkbox"/>	K. Landing Gear	<input type="checkbox"/>
		E. Engine No. 2	<input type="checkbox"/>	<input type="checkbox"/>	L. Tail	<input type="checkbox"/>
		F. Engine No. 3	<input type="checkbox"/>	<input type="checkbox"/>	M. Lights	<input type="checkbox"/>
		G. Engine No. 4	<input type="checkbox"/>	<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	

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

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.)

BIRD STRIKE REPORTING FORM

<p>Send to _____</p> <p>Operator _____ 01/02</p> <p>Aircraft Make/Model _____ 03/04</p> <p>Engine Make/Model _____ 05/06</p> <p>Aircraft Registration _____ 07</p> <p>Date day _____ month _____ year _____ 08</p> <p>Local Time _____ 09</p> <p>dawn <input type="checkbox"/> A day <input type="checkbox"/> B dusk <input type="checkbox"/> C night <input type="checkbox"/> D 10</p> <p>Aerodrome Name _____ 11/12</p> <p>Runway Used _____ 13</p> <p>Location if En Route _____ 14</p> <p>Height AGL _____ ft 15</p> <p>Speed (IAS) _____ kt 16</p> <p>Phase of Flight 17</p> <p style="margin-left: 40px;"> parked <input type="checkbox"/> A en route <input type="checkbox"/> E taxi <input type="checkbox"/> B descent <input type="checkbox"/> F take-off run <input type="checkbox"/> C approach <input type="checkbox"/> G climb <input type="checkbox"/> D landing roll <input type="checkbox"/> H </p> <p>Part(s) of Aircraft</p> <table border="0" style="width: 100%; margin-left: 20px;"> <thead> <tr> <th style="width: 30%;"></th> <th style="width: 10%;"><i>Struck</i></th> <th style="width: 10%;"></th> <th style="width: 10%;"><i>Damaged</i></th> <th style="width: 10%;"></th> </tr> </thead> <tbody> <tr><td>radome</td><td><input type="checkbox"/></td><td>18</td><td><input type="checkbox"/></td><td></td></tr> <tr><td>windshield</td><td><input type="checkbox"/></td><td>19</td><td><input type="checkbox"/></td><td></td></tr> <tr><td>nose (excluding above)</td><td><input type="checkbox"/></td><td>20</td><td><input type="checkbox"/></td><td></td></tr> <tr><td>engine no. 1</td><td><input type="checkbox"/></td><td>21</td><td><input type="checkbox"/></td><td></td></tr> <tr><td>2</td><td><input type="checkbox"/></td><td>22</td><td><input type="checkbox"/></td><td></td></tr> <tr><td>3</td><td><input type="checkbox"/></td><td>23</td><td><input type="checkbox"/></td><td></td></tr> <tr><td>4</td><td><input type="checkbox"/></td><td>24</td><td><input type="checkbox"/></td><td></td></tr> <tr><td>propeller</td><td><input type="checkbox"/></td><td>25</td><td><input type="checkbox"/></td><td></td></tr> <tr><td>wing/rotor</td><td><input type="checkbox"/></td><td>26</td><td><input type="checkbox"/></td><td></td></tr> <tr><td>fuselage</td><td><input type="checkbox"/></td><td>27</td><td><input type="checkbox"/></td><td></td></tr> <tr><td>landing gear</td><td><input type="checkbox"/></td><td>28</td><td><input type="checkbox"/></td><td></td></tr> <tr><td>tail</td><td><input type="checkbox"/></td><td>29</td><td><input type="checkbox"/></td><td></td></tr> <tr><td>lights</td><td><input type="checkbox"/></td><td>30</td><td><input type="checkbox"/></td><td></td></tr> <tr><td>others (specify)</td><td><input type="checkbox"/></td><td>31</td><td><input type="checkbox"/></td><td></td></tr> </tbody> </table>		<i>Struck</i>		<i>Damaged</i>		radome	<input type="checkbox"/>	18	<input type="checkbox"/>		windshield	<input type="checkbox"/>	19	<input type="checkbox"/>		nose (excluding above)	<input type="checkbox"/>	20	<input type="checkbox"/>		engine no. 1	<input type="checkbox"/>	21	<input type="checkbox"/>		2	<input type="checkbox"/>	22	<input type="checkbox"/>		3	<input type="checkbox"/>	23	<input type="checkbox"/>		4	<input type="checkbox"/>	24	<input type="checkbox"/>		propeller	<input type="checkbox"/>	25	<input type="checkbox"/>		wing/rotor	<input type="checkbox"/>	26	<input type="checkbox"/>		fuselage	<input type="checkbox"/>	27	<input type="checkbox"/>		landing gear	<input type="checkbox"/>	28	<input type="checkbox"/>		tail	<input type="checkbox"/>	29	<input type="checkbox"/>		lights	<input type="checkbox"/>	30	<input type="checkbox"/>		others (specify)	<input type="checkbox"/>	31	<input type="checkbox"/>		<p>Effect on Flight</p> <p>none <input type="checkbox"/> 32</p> <p>aborted take-off <input type="checkbox"/> 33</p> <p>precautionary landing <input type="checkbox"/> 34</p> <p>engines shut down <input type="checkbox"/> 35</p> <p>other (specify) <input type="checkbox"/> 36</p> <p>Sky Condition 37</p> <p>no cloud <input type="checkbox"/> A</p> <p>some cloud <input type="checkbox"/> B</p> <p>overcast <input type="checkbox"/> C</p> <p>Precipitation</p> <p>fog <input type="checkbox"/> 38</p> <p>rain <input type="checkbox"/> 39</p> <p>snow <input type="checkbox"/> 40</p> <p>Bird Species* _____ 41</p> <p>Number of Birds</p> <table border="0" style="width: 100%; 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Reported by _____
(Optional)

**Send all bird remains including feather fragments to:*

THIS INFORMATION IS REQUIRED FOR AVIATION SAFETY

Notification







TWEED

NEW HAVEN REGIONAL AIRPORT




BOEING



**PLEASE
DO NOT
FEED BIRDS**

**AVIATION
HAZARD**



One Final Challenge

...AFTER SEVEN HOURS OF WADING THROUGH HEIGHTENED AIRPORT SECURITY, LARRY FACED ONE FINAL CHALLENGE...



Performance Indicators?

Number of strikes





Number of Birds Harassed



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

**When you get it right mighty beasts float
up into the sky. When you get it wrong
people die.**

Roger Bacon

c. 1384