Fred Brisbois
Sikorsky Aircraft Corporation
Co-Chair, U.S. Industry Implementation Team
THE BEGINNING

• International Helicopter Safety Symposium (IHSS) Montreal, Canada, September 2005

• 300 attendees from the worldwide helicopter community

• Unanimous agreement – accident rate trends unacceptable

• Formed the International Helicopter Safety Team (IHST)
IHST GOAL ESTABLISHED

Reduce worldwide helicopter accident rate by 80% by 2016!
ORGANIZATION STRUCTURE
Supported By Sikorsky At All Levels

IHST

Joint Helicopter Safety Analysis Team (JHSAT)
- Data analyses

Joint Helicopter Safety Implementation Team (JHSIT)
- Safety enhancement development

Joint Helicopter Implementation Measurement Data Analysis Team (JHIMDAT)
- Results measurements
CHALLENGES

Not the same for IHST as for CAST

CAST = fatal accidents / Part 21 Operations

IHST = all accidents / all operators

IHST = more diversity of aircraft, mission, operations
REGIONAL ACCIDENT RATES
Pre (2001 – 2005) vs. 2010

North America
Pre: 9.3
2010: 5.0

South America
Pre: 9.7
2010: 8.7

Europe
Pre: 7.1
2010: 6.4

Africa
Pre: 12.9
2010: 7.4

Asia
Pre: 9.4
2010: 8.3

Oceania
Pre: 17.5
2010: 14.2

World
Pre: 9.4
2010 Dec: 6.3

Accidents per 100K flight hrs
### IHST - Regional Process Tracking (03 2011)

<table>
<thead>
<tr>
<th>IHSS Formed</th>
<th>Excom Formed</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
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<td>E</td>
<td>4</td>
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</table>

#### Key:
- **E**: Early Development
- **P**: Preliminary
- **Key**: Preliminary Report/Data

- **1**: Regional Kickoff Meeting
- **2**: JHSAT Team Formed
- **3**: Accident Dataset Established
- **4**: JHSAT Report Complete
- **5**: JHSIT Formed
- **6**: JHSIT Process Refined
- **7**: JHSIT SEs complete
- **8**: JHSIT DIPs complete
- **9**: JHIMDAT Formed

Program staffing, marketing, management, communications, international outreach
U.S. ANALYSIS
523 Accidents Analyzed

COMPENDIUM REPORT FORTHCOMING
Although the final set of regional analyses are not yet complete the data shows many common themes.

- Need to develop strategies to move in concert on the common themes.
- IHST will act to minimize duplication of effort.
- Unique regional needs best worked locally.
IHST Region-by-Region SPS Data
Top 6 by Overall Frequency (Regional fleets > 1000 helicopters)
OTHER IHST PRODUCTS

- Helicopter Safety Leaflets
  - Safety Considerations, 2010
    - Degraded Visual Environment (DVE)
    - Vortex Ring State
    - Loss of Tail Rotor Effectiveness (LTE)
    - Static and dynamic rollover
- Helicopter Safety Video, March 2011
  - Degraded Visual Environment (DVE)
- Pre-flight Risk Assessment Checklist Tool
## U.S. JHSIT CORE MEMBERSHIP

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Larry Buehler Co-Chair</td>
<td>FAA, 135 Air Carrier Operations Branch</td>
</tr>
<tr>
<td>Fred Brisbois Co-Chair</td>
<td>Sikorsky Aircraft Corporation</td>
</tr>
<tr>
<td>Keith Johnson</td>
<td>Airborne Law Enforcement Association, Safety Manager</td>
</tr>
<tr>
<td>Tom Judge</td>
<td>Executive Director, Life Flight of Maine</td>
</tr>
<tr>
<td>Terry Palmer</td>
<td>FlightSafety International</td>
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<tr>
<td>Wade Cook</td>
<td>Petroleum Helicopters International (PHI)</td>
</tr>
<tr>
<td>Stan Rose</td>
<td>Helicopter Association International (HAI)</td>
</tr>
<tr>
<td>Chris Meinhardt</td>
<td>Air Methods</td>
</tr>
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</table>
JHSIT WORKING GROUPS
Strategic Areas of Intervention

- Safety Management
- Training
- Systems, Equipment & Information (HFDM)
- Maintenance
- Infrastructure

Plan to have a Systems & Equipment IWG in addition to FDM

Keith Johnson + 5
Terry Palmer + 6
Kipp Lau (FDM) + 2
Fred Brisbois (S&E) +0
Chris Meinhardt +0
Tom Judge + ~20

* Reason, 1990
CALL FOR ACTION COMMITMENT

- The letter calls upon “all those who operate our products to implement the safety enhancements recommended by the International Helicopter Safety Team (IHST).”

- The areas cited in the letters are the adoption of:
  - Safety Management Systems (SMS)
  - Improved Training
  - Use of advanced systems/equipment
    - Flight data monitoring systems (FDM)
    - Health monitoring systems (HUMS)
  - Use of mission-specific equipment
    - Night vision goggles
    - Avionics to avoid controlled flight into terrain
  - Strict compliance with manufacturer’s maintenance program
  - Cultural/Behavioural Change, and
  - Crew Resource Management (CRM) Program

CEO’s of AgustaWestland, Sikorsky, Eurocopter and Bell Heli-Expo 2010

Major Offshore Operators IHSS 2010
“A Call to Action by Helicopter Emergency Medical Services Organizations” – AAMS, AeroMed, ACCT, AMOA, EHAC, MedEvac, NEMSPA.

The letter calls upon “all those who operate helicopters in the HEMS environment to implement the safety enhancements recommended by the IHST.”

The four areas cited in the letter are the adoption of:

- Safety Management Systems (SMS)
- Improved Training
- Use of advanced systems/equipment
  - Flight data monitoring systems (FDM)
  - Health monitoring systems (HUMS)
- Cultural/Behavioural Change, and
- Aeromedical Crew Resource Management (CRM) Programs
An international partnership recently supported the development of revisions to IS-BAO to make it fully effective for helicopters.

- Jointly sponsored by International Business Aviation Council (IBAC), Helicopter Association International (HAI), the new European Helicopter Association (EHA), and the British Helicopter Association (BHA)
- Developed by an international team including IHST and EHEST members
- Publication planned January 2012

IS-BAO is recognised by the CEN as a European standard

Goal is to provide a performance-based standard and auditor accreditation process for operator certification, with potential to simplify/standardise customer audit processes.
SIKORSKY AIRCRAFT CORPORATION
Improving The Industry By Leading

A United Technologies Company

SAFETY TECHNICAL COMMITTEE

PRESIDENT & NE REGIONAL VP

CO-CHAIRS

ADVISOR

AIRCRAFT BUILDERS COUNCIL CONFERENCE – September 20, 2011
Boston, Massachusetts
WHY SUCH UNIVERSAL SUPPORT?

EACH AND EVERY HELICOPTER ACCIDENT IS OUR ACCIDENT!!
COMPETITORS FOR BUSINESS,  
...PARTNERS FOR SAFETY

William Amelio  
President and CEO  
CHC Helicopter

William E. Chiles  
President, Chief Executive Officer & Director  
Bristow Group, Inc.
A NEW & MODERN CULTURE
Sikorsky Aircraft established another rotorcraft industry first by standardizing its new S-76 and S-92 helicopter safety baseline to include Enhanced Ground Proximity Warning Systems (EGPWS) in all civil aircraft configurations.

STRATFORD, Conn., May 28, 2004 -- Sikorsky Aircraft established another rotorcraft industry first by standardizing its new S-76 and S-92 helicopter safety baseline to include Enhanced Ground Proximity Warning Systems (EGPWS) in all civil aircraft configurations.
SAFETY MANAGEMENT SYSTEMS (SMS)

The SMS Table

Safety Policy
- Procedures
- Organization

Safety Promotion
- Culture
- Training
- Communication

Safety Assurance
- Corrective Action
- IEP
- Internal Audits

Safety Risk Management
- Risk Mitigation
- Risk Assessment
- Hazard Identification And Tracking

The Table Top Joins The Pillars

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A ‘JUST’ CULTURE PROCESS (EXAMPLE)

Start

Was the job understood?

Yes

No

Was the action as intended?

Yes

No

Were the results as intended?

Yes

No

Knowingly violated procedures?

Yes

No

Pass substitution test?

Yes

No

History of violating procedures?

Yes

No

Defective training or selection experience?

Yes

No

Repeate Incident With Similar Root Cause

Sabotage or Malevolent Act

Severe Sanctions

Final warning and negative performance appraisal

First written warning; Coaching / Increased Supervision until behavior is corrected.

Documented for the purpose of accident prevention awareness and training will suffice.

* Indicates a ‘System’ induced error. Manager/supervisor must evaluate what part of the system failed and what corrective and preventative action is required. Corrective and preventative action shall be documented for management review.
HELCICOPTER FLIGHT DATA MONITORING

Typical Industry Intervention Point

1 major accident
15 minor accidents with damage and injury
300 incidents and "near misses"
15,000 observed work errors

HFDM Intervention Points

INDUSTRY TOOLS BEING DEVELOPED TO SUPPORT CULTURE CHANGE!

300-15,000 unreported incidents
INDUSTRY COLLABORATION

OPERATOR COLLABORATION
IHST HELI-SHARE PROGRAM
Global HFDM Community

INDUSTRY TOOLS BEING DEVELOPED TO SUPPORT CULTURE CHANGE!

Recorders
Small
Light weight
Inexpensive
Playback Analysis
Software
BRIDGING FINANCE & SAFETY

BUSINESS TALK: Finance/Operations

- Earnings/EPS
- ROI
- Payback
- PVRR
- Internal Rate of Return
- Production rates
- Earnings/employee
- Net Present Value
- Cost Benefit

ROHSEI Bridges the Gap

ROHSEI: Return on Health, Safety, Environmental Initiatives

SAFETY TALK: Safety/Industrial Hygiene

- Accident rates
- Property loss
- Insurance premiums
- Fines and citations
- No. of people trained
- Exposure Assessments
- Near misses
- Behavioral Observations
- Audit findings
MANAGEMENT SYSTEM = SAFETY SYSTEM

Financial Management System
- Finance Plan
- Targets & Objectives
- Budget
- Accountabilities
- Levels of Authority
- Procedures
- Checks and Balances
  - Audit Plan
  - Accountants
  - Audits
  - Balance Sheets

Safety Management System
- Safety Plan
- Targets & Objectives
- Budget
- Accountabilities
- Line Management Authorities
- Procedures
- Monitoring/Line Checks
  - Audit Plan
  - Audits
  - Safety Committee
  - Safety Achievement
EXAMPLE #2:
Double the cost
to implement and
aircraft value
50% less

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<tr>
<th>EXAMPLE</th>
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<tr>
<td>Hours per Week to Implement</td>
<td>80</td>
<td>160</td>
</tr>
<tr>
<td>Hours per Week to Maintain</td>
<td>4</td>
<td>8</td>
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<tr>
<td>Aircraft Replacement Cost</td>
<td>$10,000,000</td>
<td>$5,000,000</td>
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<tr>
<td>Return On Investment</td>
<td>189%</td>
<td>172%</td>
</tr>
<tr>
<td>Discounted Payback Period</td>
<td>0.1 Years</td>
<td>0.1 Years</td>
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<tr>
<td>Internal Rate Of Return</td>
<td>8894%</td>
<td>2186%</td>
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<tr>
<td>Net Present Value</td>
<td>$2,890,970</td>
<td>$1,399,940</td>
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</tbody>
</table>

SMS INVESTMENT PAYS!!
Net present value (NPV) $945,018
Internal rate of Return (IRR) 2773%
Return on Investment (ROI) 137%
Discounted payback Period (DPP) 0.1 years

HFDM INVESTMENT PAYS!!
Net present value (NPV) $2,963,129
Internal rate of Return (IRR) n/a
Return on Investment (ROI) 153%
Discounted payback Period (DPP) 0.1 years

SIMULATOR TRAINING INVESTMENT PAYS!!
SAFETY

Responsibility & Accountability

It Begins With US!!
Whenever we talk about a pilot who has been killed in a flying accident, we should all keep one thing in mind.

He called upon the sum of all his knowledge and made a judgment.

He believed in it so strongly that he knowingly bet his life on it.

That his judgment was faulty is a tragedy, not stupidity.

Every instructor, supervisor, and contemporary who ever spoke to him had an opportunity to influence his judgment, so a little bit of all of us goes with every pilot we lose.

author unknown
IHST.ORG
HELP US HELP EACH OTHER

• Add IHST to your web page
• Promote IHST at your industry conferences
• Sponsor IHST symposiums/conferences and workshops
OPPORTUNITIES TO SUPPORT

Sponsorship, Exhibits
Nothing happened today …

- No aircraft mishaps
- No near misses
- No personnel injuries

Nothing doesn’t just happen … it takes the diligence of every employee to achieve and maintain aviation safety.

Help Us Make Nothing Happen!
CONTACT

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fbrisbois@sikorsky.com
Telephone: (203) 605-7747