

Integration of Aeronautical Knowledge and Safety Management into Flight Operations

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Problem

- Current trends in rotorcraft accident rates worldwide do not appear to be subsiding
- Many factors contribute to this situation
- Most important are statistics that point to the human factor

Contributing Factors

Pilot Judgment & Actions.....	84%
Pilot Situation Awareness.....	31%
Maintenance.....	20%
Mission Risk.....	19%

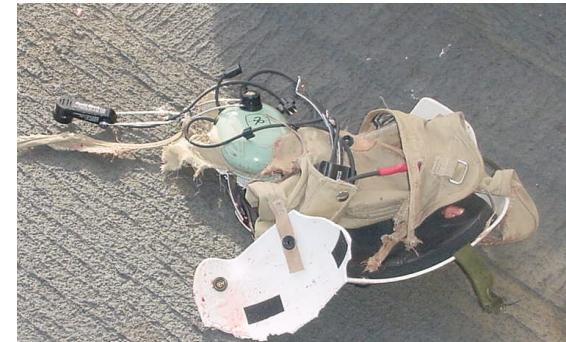


TALKING POINTS

- WE HAVEN'T DEVELOPED NEW WAYS TO CRASH AIRCRAFT..... I KNOW WE HAVE ALL HEARD THAT BEFORE.
- FACTORS CONTRIBUTING TO ACCIDENTS ARE NUMEROUS AND EACH ACCIDENT CARRIES MULTIPLE FACTORS BUT PILOT JUDGEMENT AND ACTIONS TOP THAT LIST.
- BUT IN THE HELICOPTER INDUSTRY WE HAVE TAKEN A HARD LOOK AT THIS AND TRIED TO NARROW DOWN THE PROBLEM AREAS AND POPULATIONS.

Research Question

- Can the use of graphic aircraft accident information (aligned with requisite helicopter operational knowledge) influence and enhance aircrew knowledge and learning during training to enhance safety?



TALKING POINTS

- WHAT MAKES US REMEMBER THINGS FROM HOLLYWOOD? THE VISUALS AND GRAPHICS.
- BUT WHY? WHAT WAS IT THAT REALLY MAKE US REMEMBER THAT?

Helicopter Industry Safety Situation

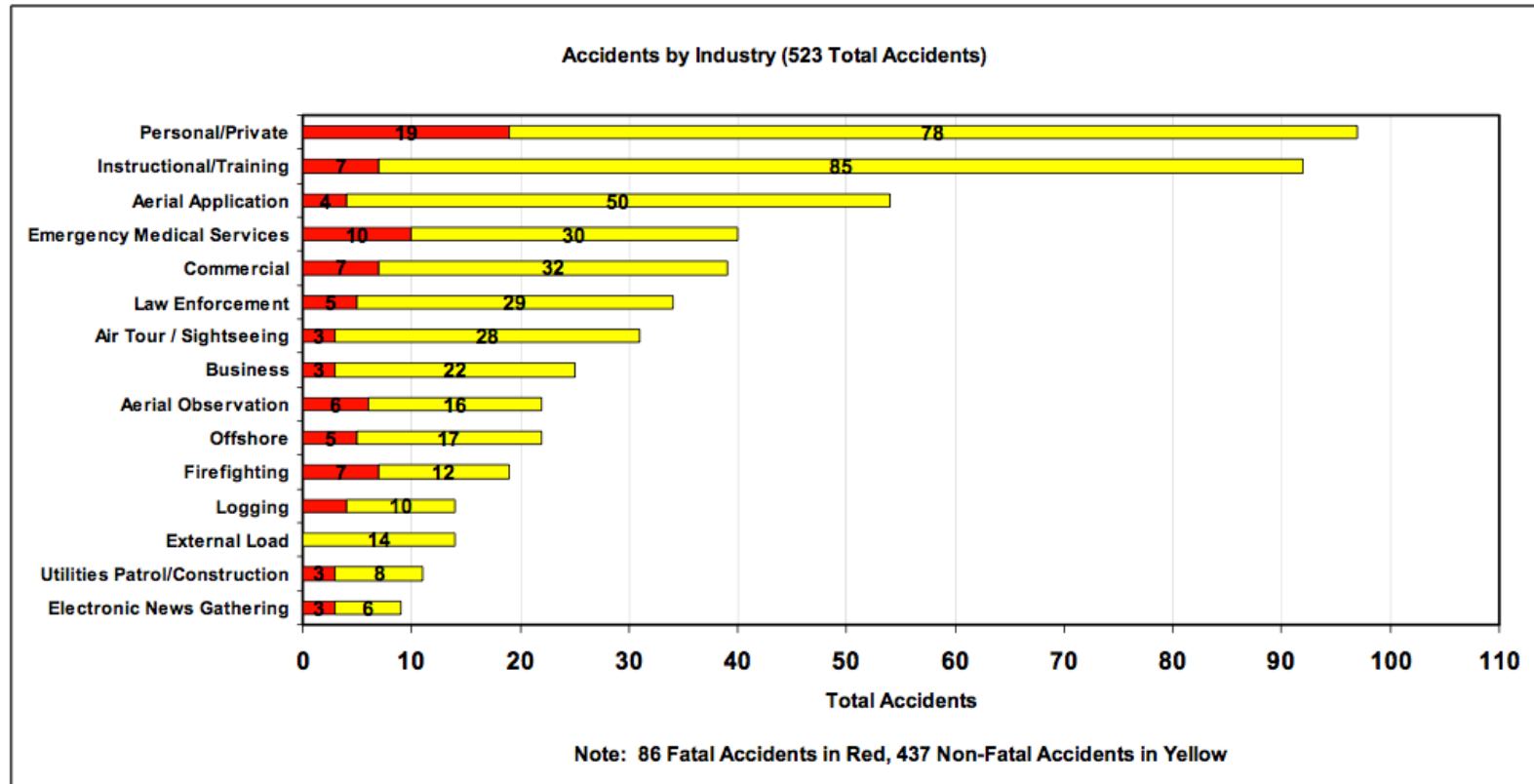


Figure 6. Accidents by Industry (523 Total Accidents)
Note: 86 Fatal Accidents in Red, 437 Non-Fatal Accidents in Yellow

Source: Data from multiple documents from the International Helicopter Safety Team, www.IHST.org



TALKING POINTS

- THE INDUSTRY SEGMENTS WHOM ARE HAVING THE MOST ACCIDENTS IN THE INDUSTRY ARE PERSONAL/PRIVATE AND INSTRUCTIONAL/TRAINING

Helicopter Industry Safety Situation

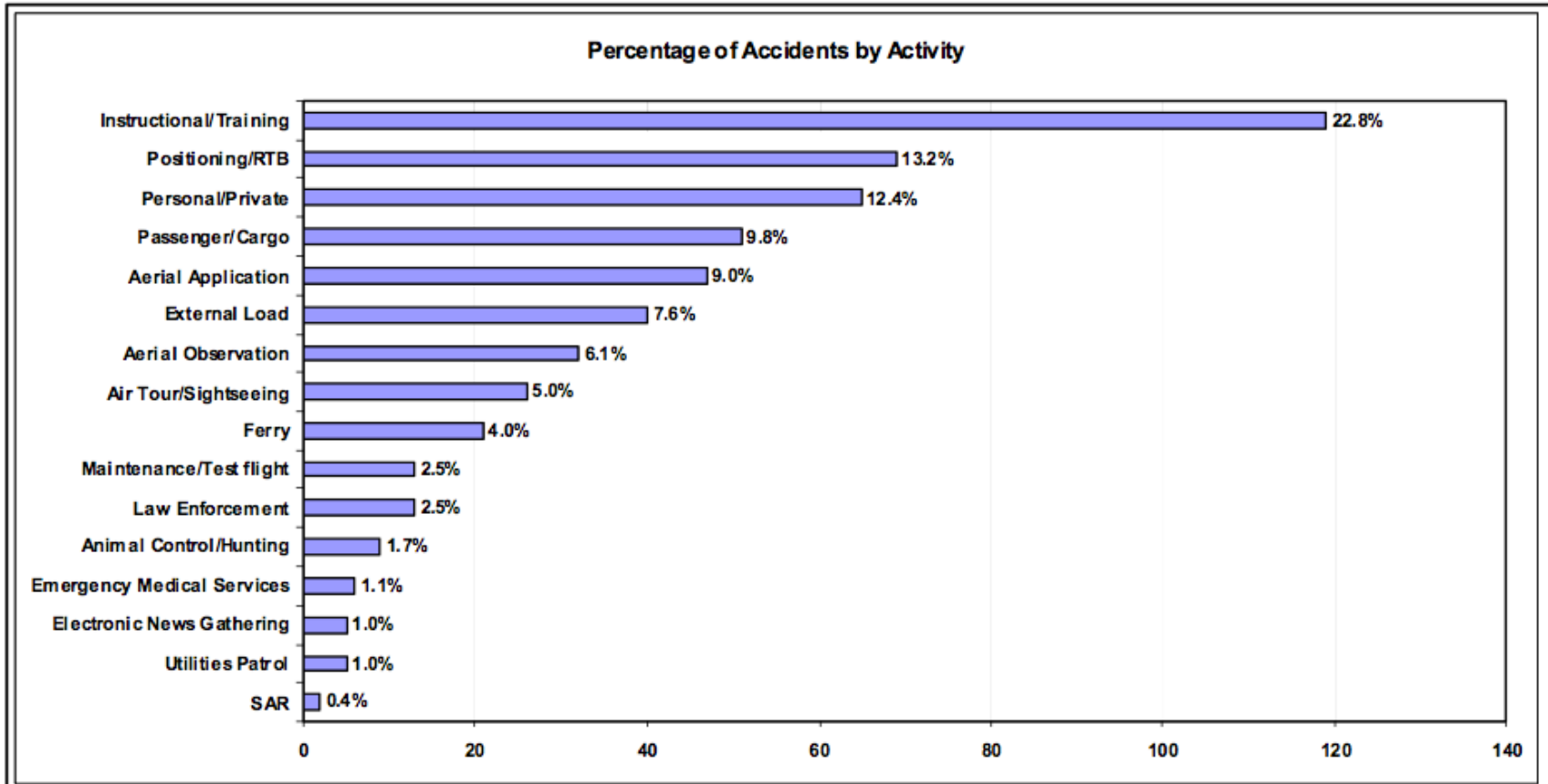


Figure 7. Percentage of Accidents by Activity

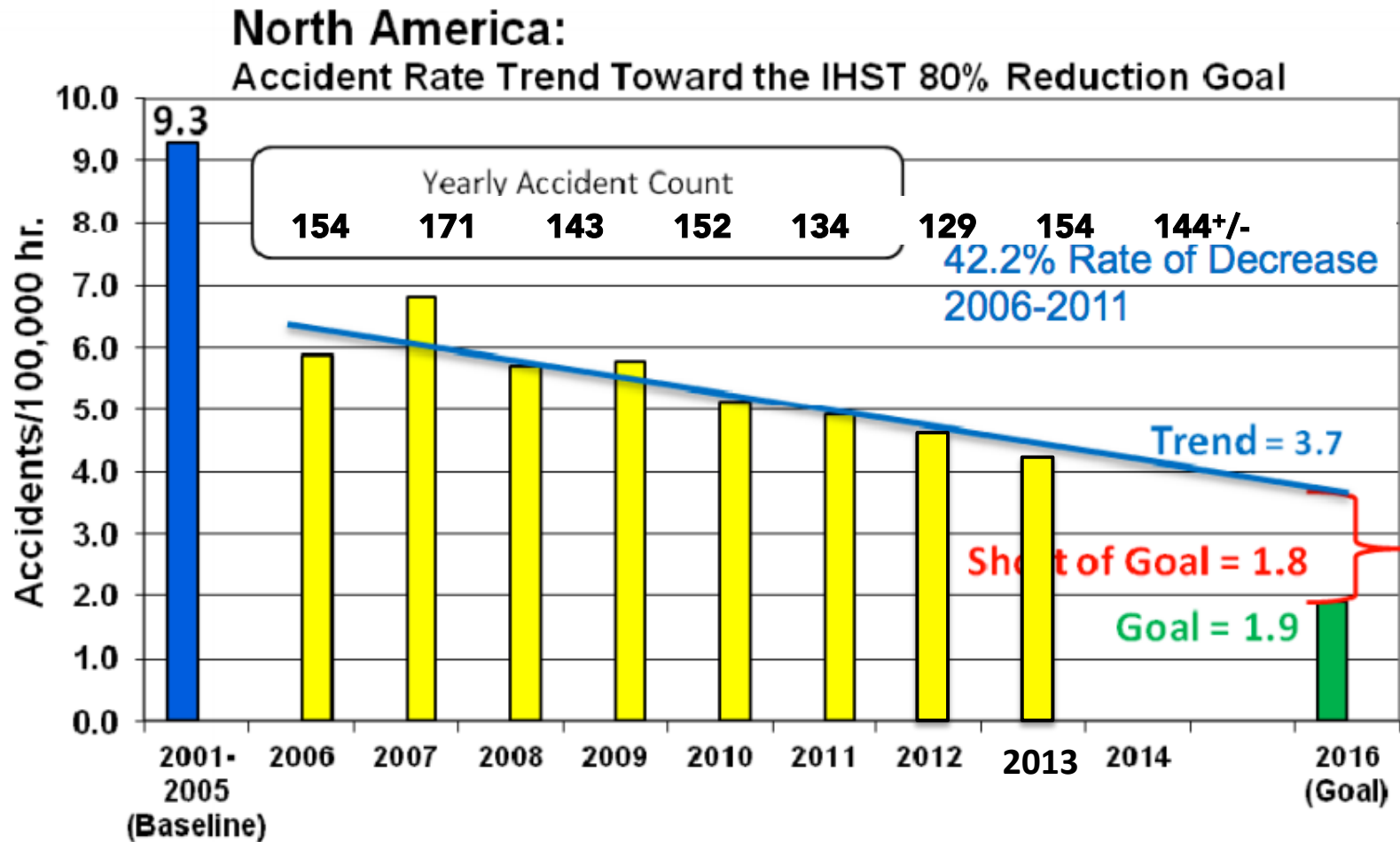
Source: Data from multiple documents from the International Helicopter Safety Team, www.IHST.org



TALKING POINTS

- NOTICE THE ACTIVITY'S FOR THE TWO SEGMENTS PERSONAL/PRIVATE AND INSTRUCTIONAL/TRAINING ARE ALSO DISPLAYED IN THE TOP THREE ACCIDENT FREQUENCIES.

Helicopter Industry Safety Situation



Source: Data from multiple documents from the International Helicopter Safety Team, www.IHST.org



TALKING POINTS

- TRENDS ARE POSITIVE, BUT THIS DOESN'T ACCOUNT FOR DIFFERENCES IN AMOUNT OF FATALS, NOR DOES IT ACCOUNT FOR THE SEEMINGLY STATIC YEARLY ACCIDENT COUNTS

The Training Environment and Culture

- Current Aeronautical Knowledge Training Approach
 - FAR Part 61/141 dictate requirements for certifications and ratings
 - Limited resources accompanying regulations to develop aeronautical knowledge
 - Schools often offer minimum needed to pass FAA tests (anomaly's are large Pt. 141 institutions)
 - NTSB utility



TALKING POINTS

- PILOTS ARE MOSTLY TRAINED IN SMALL COMPANIES THAT CAN AFFORD TO MEET THE MINIMUMS AND THEIR GRADUATES NORMALLY THEY STAY AT THEIR SCHOOL TO INSTRUCT. MANY WILL TRANSFER UP TO ANOTHER AIRCRAFT EVENTUALLY. HOW CAN THEY MAXIMISE THE TIME IN TRAINING WITH ASSETS READILY AVAILABLE: HARNESS NTSB AND OTHER ENTITIES AND AGENCIES TO ENHANCE KNOWLEDGE AND TRAINING

Discussion Cont.

- Use of graphic illustration in training/education
 - AASL promotes use of multimedia as an evolutionary area
 - Media can “help build and analyze mental models of problem situations”
 - Graphics enhance learning across a variety of tasks
 - Cognitive theory of multimedia learning as complementary to verbal learning

(AASL, 2013; Huerta, 2006; Huk & Steinke, 2007; Mayer, Hegarty, Mayer, & Campbell, 2005; Zacks & Tversky, 2003)



TALKING POINTS

- THE AVIATION INDUSTRY HAS BEEN PROMOTING THE USE OF GRAPHIC INFORMATION FOR DECADES
- IMPLEMENTING GRAPHIC DETAILS IN EDUCATION AND TRAINING HAVE FOUND TO BE EXTREMELY USEFUL

Visual Learning Facts

- Approximately 65% of the population are visual learners
- The brain processes visual information 60,000 times faster than text
- 90% of information that comes to the brain is visual
- 40% of all nerve fibers connected to the brain are linked to the retina
- Visual literacy is the ability to encode and decode
- Visual aids in the classroom and prove learning by up to 400%

<http://www.studymode.com/essays/Statistics-On-Visual-Learners-1211593.html>



TALKING POINTS

- AS THOSE WHO PARTAKE IN THE PURSUIT OF KNOWLEDGE, IT MIGHT BE GOOD TO BE FAMILIAR WITH A FEW FACTS ABOUT HOW WE LEARN
- WHILE IM NOT COMPLETELY CERTAIN THAT WE ONLY GET 10% OF OUR INFORMATION ORALLY, WE ARE ALWAYS LOOKING AT SOMETHING WHEN CONCIIOUS.

Challenges To Graphic Detail

- Sensitivity
- Perceptions of Government establishing low quality
- Potential Manufacturer litigation



TALKING POINTS

- THE PROBLEMS WITH THE PRESENTATION OF INFORMATION THAT IS PERHAPS A BIT GRAPHICALLY OVER-THE-TOP, ARE FIRST AND PRIMARILY THE SENSITIVITY ISSUE; THIS IS TO SAY THAT SOME WOULD NOT CARE TO ALLOW IMAGERY OF THEIR LOVED ONES TO BE PRESENTED PUBLICALLY. SHOWING SPECIFIC MANUFACTURER EQUIPMENT IN A DESTROYED STATE MAY LEND AN IMPRESSION THAT THE MAKE AND MODEL ARE FAULTY AND IN THE CASE OF THE INFORMATION WE TRY TO IMPART, THIS IS ACTUALLY FAR FROM THE TRUTH. MOST ACCIDENTS IN THIS INDUSTRY ARE PILOT ERROR. THERE COULD ALSO BE A POTENTIAL FOR LITIGATION THOUGH THERE ARE NO LEGAL STATUTES THAT PREVENT USING IMAGES FOR TRAINING.



Potential Course of Action

- Full Industry/FAA support of bringing graphic information into aeronautical knowledge to enhance awareness and applicability of skills training to aeronautical/safety knowledge.



TALKING POINTS

- MANY THINGS CAN BE DONE EVEN TODAY.
- YOU WON'T FIND THE FAA PROMOTING THIS BEHAVIOR.
- THE NTSB DOES USE SOME GRAPHIC IMAGERY IN THEIR ACADEMY COURSES, BUT LIKE MANY, THESE ARE CONTAINED INSIDE COURSEWORK THAT YOU MUST ATTEND TO OBTAIN

Recommendations

- Solution is simple and cost effective
 - Graphic results in training and in recurrency
- The result is a cost effective, poignant method of integrating safety awareness into actual training, which further enhances the organizations safety management processes.



TALKING POINTS

- IF UTILIZED IN THE CORRECT CONTEXT AND SETTING, THE USE OF VERY GRAPHIC IMAGERY FOR INITIAL PILOT CERTIFICATION AND RECURRENCY TRAINING CAN ADD VALUE TO INSTRUCTIONAL TRAINING, PROMPTING EXPANDED KNOWLEDGE WITH CAUSE AND EFFECT RELATIONSHIPS THAT ARE MEANINGFUL

Thank you for attending this session

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