



INTEGRATED  
**FULL FLIGHT SIMULATOR  
SOLUTIONS**  
TO LOSS OF CONTROL IN-FLIGHT



**EMERGENCY MANEUVER TRAINING**

# THE LOSS OF CONTROL THREAT

Consistently over the past 49 years of statistically analyzed accident history in commercial aviation, Loss of Control In-Flight (LOC-I) is indisputably one of the leading causes of airplane crashes and crash-related fatalities worldwide<sup>i</sup>. Rivalled only by Controlled Flight Into Terrain (CFIT) in magnitude and persistence, LOC-I presents a unique challenge to professional aviation as it highlights a serious deficiency in the pilot's ability to deal with a variety of unusual flight attitudes and flight envelope excursions. Regrettably, current pilot training curricula, standards and certification requirements perpetuate this pilot-skill deficiency.

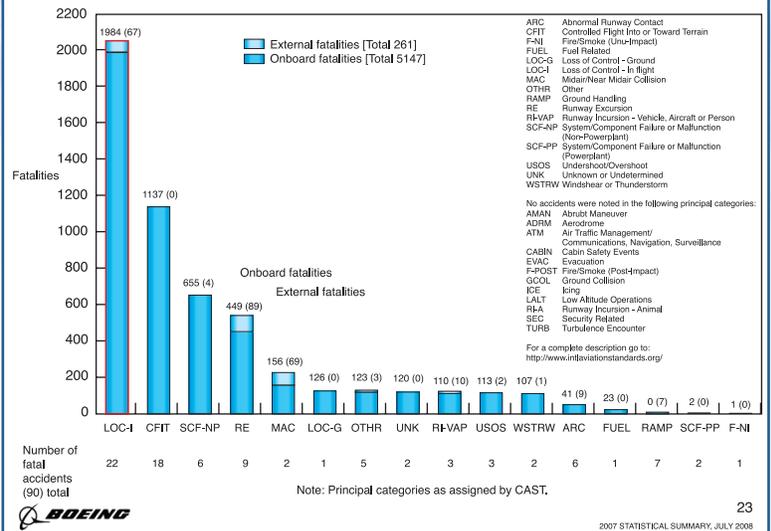
In a report issued by Boeing in July 2008<sup>ii</sup>, LOC-I represents the most severe cause factor in commercial aviation over the past 10 years, resulting in the most crash-related fatalities from 1998 through 2007 – even more than CFIT. According to the Commercial Aviation Safety Team (CAST), there has been recent aviation-industry emphasis on fatalities being a more accurate representation of the severity of an accident as opposed to hull-losses that has historically been used as an indicator of crash severity.

Aviation safety organizations and legislating agencies continue to accurately identify the lethality and severity of LOC-I. Unfortunately, without any demonstrated ability to implement an effective solution commercial aviation will continue to be plagued by high rates of LOC-I fatalities until a solution is found. Where CFIT can be economically addressed through the integration of ground proximity warning systems and synthetic vision instrumentation augmentation, technology does not offer a “quick fix” to LOC-I. Short of re-equipping commercial aircraft around the world with fly-by wire flight control systems with yet-to-be programmed all-attitude all-envelope flight control laws, an industry-wide technological solution to LOC-I is unlikely in the foreseeable future.



## Fatalities by CAST/ICAO Common Taxonomy Team (CICTT) Aviation Occurrence Categories

Fatal Accidents - Worldwide Commercial Jet Fleet - 1998 Through 2007



## WHY SELECT APS

APS has a diversity of turnkey solutions to mitigate the Loss of Control threat. Whether looking for an online Computer-Based Training (CBT) solution or a fully integrated full motion simulator curriculum complimented by real aircraft training, APS has the answer. Our team is committed to providing the highest quality upset recovery training available in the industry at the best value for the training dollar. Each one of our instructor pilot's professional flight experience spans a highly specialized spectrum of aviation uniquely qualifying them as ideal training providers. Each APS instructor has extensive experience in; all-attitude all-envelope maneuvering in jet aircraft, military instruction, technologically advanced aircraft and

transport category flight operations. In addition to delivering training courses year-round at APS Training's modern corporate headquarters located at the Phoenix/Mesa Gateway Airport in Mesa Arizona, our team is deployable worldwide. Combined with 13-years of hands-on business experience and over 12,000 flight hours dedicated to refining upset recovery training techniques common to all categories of fixed wing aircraft, these capabilities make APS an unparalleled training resource. In addition to all training being in compliance with the FAA Upset Recovery Training Aid, APS Emergency Maneuver Training is the only Part 141 Flight School certified in the delivery of upset recovery, spin and instrument recovery training courses in the nation.

Rest assured every APS client is in caring hands and treated as a professional aviator. Our staff excels in quality customer service and, as well as providing world-class training in leading-edge equipment, we put the customer first while simultaneously ensuring our training services are being delivered in strict adherence to contracted performance standards. Our business philosophy integrates quality training amidst an easy-going enjoyable atmosphere.

<sup>i</sup> Vahid Motevalli and Christian M. Salmon, Developing Greater Flexibility and Resolution in Aviation Accident Analyses, Aviation Institute - School of Engineering and Applied Sciences The George Washington University, <http://www.gwu.edu/~aviation/research/Developing.pdf>, 1, (Oct. 23, 2007)

<sup>ii</sup> Aviation Safety - Boeing Commercial Airplanes, Statistical Summary of Commercial Jet Airplane Accidents - Worldwide Operations 1959 - 2007, The Boeing Company, 23, (Jul. 31, 2008). [Original Source: CAST/ICAO Common Taxonomy Team (CICTT), <http://www.intlaviationstandards.org/>]

# FLIGHT TRAINING SERVICES

Today's commercial and business aviation training marketplace does not currently offer a tangible solution to dealing with LOC-I using readily available resources. This is primarily due to the perceived risk of thorough upset recovery training, the limited accuracy of simulator fidelity in extreme flight conditions, and the stark absence of instructor knowledge to effectively teach all-attitude all-envelope recovery procedures. However, in our decade of experience instructing upset recovery techniques to thousands of professional pilots in real aircraft and advanced flight simulators, we have found it is the total absence of fundamental all-attitude recovery skills, not simulator fidelity or aircraft type, that is the leading contributing factor to industry-wide piloting deficiency in extreme upset recovery capability.

With just a few hours of dedicated all-attitude upset recovery training, pilots of every skill-level can be armed to effectively and efficiently deal with any recoverable in-flight upset. APS offers a variety of solutions to meet almost any flight department's budget and performance needs.

**I would like to thank you and your staff for a most professional and thorough training experience. Together we have over 60 years of flying experience and have attended numerous flight training operations, and can tell you from our side that we think APS ranks among the best in the world.**

**Paul Woessner II**, Executive Director  
Embry-Riddle Aeronautical University  
Aviation Training

**Part of my duties as Flight Training Standards Inspector with Transport Canada HQ is the design of flight tests. Many of them are based on a scale of 0- 5 with '5' being considered the "ideal performance" under existing conditions. If I had to give you a mark on the quality of the emergency maneuvers training I would have to place my mark somewhere around a '7'. Well done!**

**Gavin Shanks**  
Flight Training Inspector  
Transport Canada Headquarters

## Upset Recovery Training Programs Available



### Academic-only Upset Recovery Training (Web-based):

- Self-paced Computer-Based Training (CBT) to establish threshold LOC-I knowledge
- Core training: FAA Airplane Upset Recovery Training Aid
- Required for all follow-on programs

### Simulator-based Upset Recovery Training:

- Comprehensive scenario-based training in a full flight simulator
- Self-paced CBT
- Estimated 70% mitigation of the LOC-I threat



### Real Aircraft-only Upset Recovery Training:

- Comprehensive scenario-based training in safe aerobatic aircraft
- Self-paced CBT
- Estimated 80% mitigation of the LOC-I threat



### Integrated Simulator / Real Aircraft Upset Recovery Training:

- Comprehensive scenario-based training in a full flight simulator and safe aerobatic aircraft
- Self-paced CBT
- Estimated 95% mitigation of the LOC-I threat

If a flight department's interest is limited to academic-only then our high-quality, self-paced CBT will provide the knowledge needed to understand any upset recovery scenario from the comfort of home or any Internet access point. Unfortunately, book-knowledge alone is of limited value unless pilots have the opportunity to repeatedly apply recovery principles during dedicated scenario-based training sessions. The listed programs have been proven effective in developing skills necessary for the professional pilot's survival in the time-critical aircraft upset arena. Each of our training programs will challenge professional pilots of all experience levels in a rewarding atmosphere of learning and accomplishment.

**APS Emergency Maneuver Training is an absolutely phenomenal company and a concept whose time has come! As a USAF Test Pilot and Fighter Weapons School graduate, I have flown over 50 different aircraft from gliders, to fighters to heavies ... I am convinced that your short courses could aid any pilot when faced with a new and terrifying unplanned departure from controlled flight.**

**Colonel Curtis J. Papke**, Chief, Warfighter Training and Research Division, Commander, Mesa Research Site

# STATISTICAL RESEARCH: EFFECTIVENESS RESULTS

## Research Data:

- Research Time Period: 3-Months (2007 – 2008)  
 Total Number Data Points (Pilots Trained at APS) Included in Research: 115 Pilots  
 Data Filtered Below Includes All Pilots Meeting the Following Criteria (total of 75 pilots):
- Pilots Flying Turbo Prop and/or Turbo Jet Aircraft Group Demographic (Including Initial and Recurrent Participants):
  - 88.0 % had greater than 1500 hours of flight experience
  - 91.6 % were between 25 and 59 years of age
  - 51.4 % were certified flight instructors
  - 81.3 % had less than 10 hours of aerobatic experience

## Retention of Skill:

Important Note: Of the overall test group of 115 pilots, 35 pilots were repeat customers attending a recurrent upset recovery course at APS. Recurrent participants demonstrated 76.4% retention of skill returning after an average of 19 months between Initial and Recurrent Training programs. Skills are expected to atrophy at a greater rate the longer pilots delay time between Recurrent training courses.

## POST-TRAINING PARTICIPANT EVALUATION SUMMARY

Course Components Evaluated as Follows:

• Ground Training	90.7% Excellent	9.3% Above Average
• Flight Training	97.3% Excellent	2.7% Above Average
• Recovery Technique Effectiveness	98.7% Excellent	1.3% Above Average
• Quality of Instructors	100.0 % Excellent	

## Participant Recovery Performance Evaluation for Initial Courses

(Before Training versus After Training):

TRAINEE PERFORMANCE EVALUATION	TRAINEE'S ABILITY TO RECOVER	
	Before Training	After Training
Upset Scenario Assessed*		
Over-Bank Nose Low Upset	34.8%	97.9%
Cross-Controlled Stall to Over-Bank	41.9%	100.0%
Severe Wake Turbulence Encounter	42.9%	97.8%
Nose High Upset / Pitch Mis-Trim	47.8%	100.0%
Control Failure: Rudder Hard-Over	40.6%	92.3%

\*Scenarios are designed to reflect statistically life-threatening conditions; typically flight attitudes beyond 60 degrees angle of bank and/or 30 degrees of pitch. (Note: Many more scenarios than those listed in this chart are taught during the course. These particular maneuvers are evaluated to give representative indications of training effectiveness)

- **VALUE TO PILOTS:** 100% of the participants indicated that LOC-I training as provided by APS was valuable to all pilots with 64.0 % of those votes indicating that APS LOC-I training should be mandatory in pilot certification.
- **SKILL & KNOWLEDGE:** 100% indicated they learned quite a bit and developed life-saving skills with 76.0% of those votes indicating their understanding and pilot skill-set related to upset recovery training had grown dramatically
- **FACILITY:** 73.3% evaluated the APS facility as EXCELLENT with an additional 25.0% assessing the APS Facility as ABOVE AVERAGE
- **OVERALL EXPERIENCE:** 96.0% of the participants evaluated the overall experience as EXCELLENT with the remainder indicating it was ABOVE AVERAGE
- **MANUAL:** 68.0% of participants rated the APS Training Manual as EXCELLENT with an additional 26.7% ranking the manual as ABOVE AVERAGE

Our mandate at APS Emergency Maneuver Training is to provide a variety of affordable turnkey solutions to mitigate the Loss of Control In-Flight threat to operators worldwide. Throughout each of our programs, key learning concepts are frequently re-enforced using our proven building-block training methodology developed over the course of a decade. As a specialized Part 141 Flight School with thousands of instructional flight hours dedicated exclusively to upset recovery and emergency maneuver training, we are recognized experts in the production



**Paul BJ Ransbury, President**  
 Master CFI-Aerobatic, CFI, CFII, MEI, AGI  
 Fighter Weapons Instructor Graduate  
 Memberships: NBAA, NAFI, IAC, CUATE, AOPA  
 A320 Airline Pilot, F/A-18 Hornet Pilot

of safer, more educated, experienced and capable pilot graduates. Our clients can expect personalized customer service, safety-first operations, expert instruction and top-notch corporate facilities.

After thirty years of flying tail draggers, military fighters, and airliners, I am truly privileged to be part of an unmatched professional team dedicated to saving lives. In all my years of schooling and training, no organization rivals this company's ability to develop and enhance a pilot's safety skills and unparalleled efficiency in practical, easy-to-understand ways. It is my job to ensure you receive nothing short of



**J. Clarke McNeace, Director of Operations and Training Standards**  
 CFI-Aerobatic, CFI, CFII, MEI, AGI  
 Fighter Weapons Instructor Graduate  
 Memberships: NAFI, IAC, CUATE, AOPA  
 B737 Airline Captain, F/A-18 Hornet Pilot

personalized, safe, and expert instruction tailored to your specific operational needs. Guaranteed you will return to the cockpit with confidence and the necessary skills to be prepared to deal with the unexpected upset. I look forward to meeting you!



**EMERGENCY MANEUVER TRAINING**

## APS EMERGENCY MANEUVER TRAINING

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