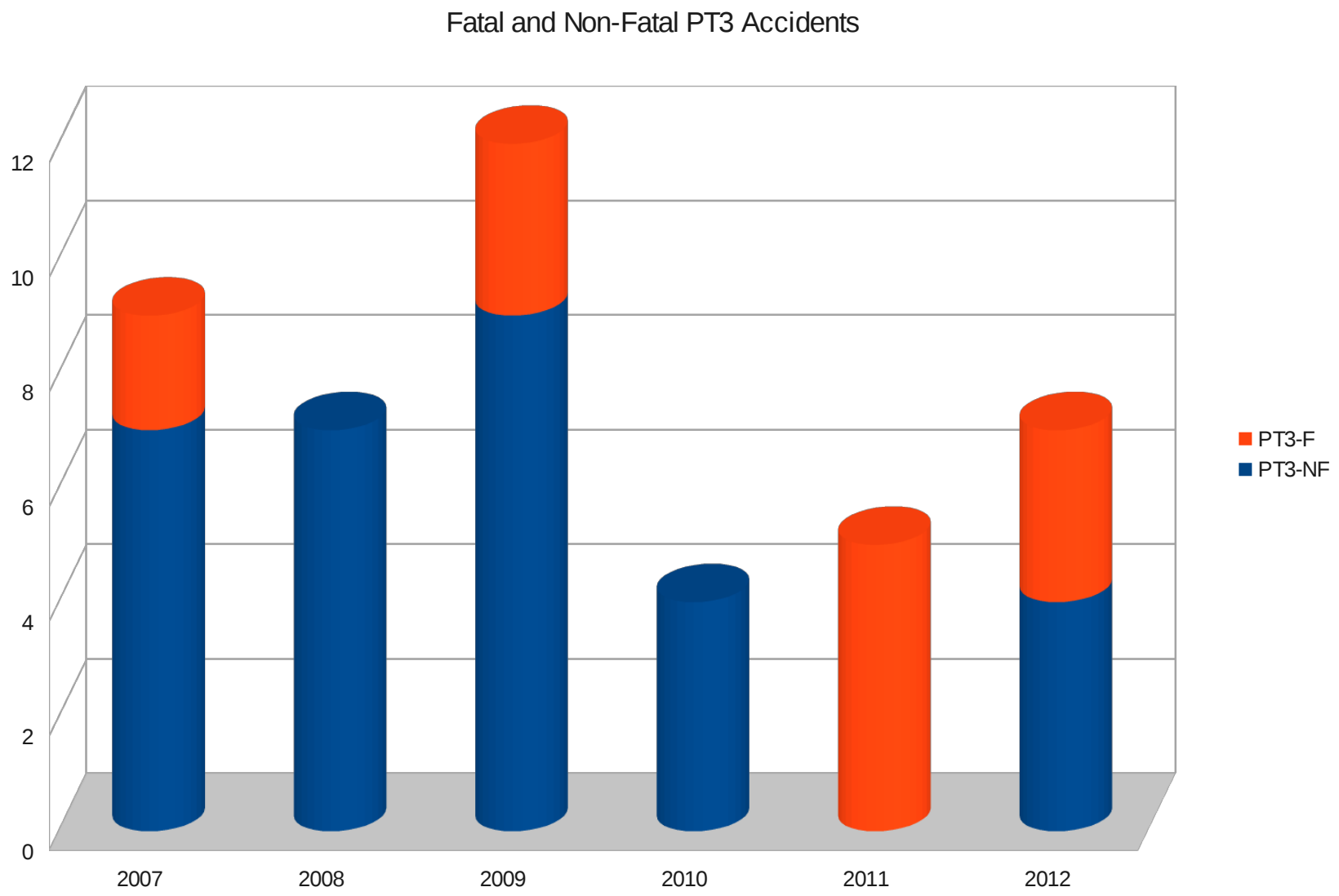
Launch Methods and Failures

Soaring Safety Foundation

Essential Launch Personnel

- Aerotow
  - Glider Pilot
  - Towplane Pilot
- Auto/Winch
  - Glider Pilot
  - Wing Runner
  - Auto/Winch Operator
- Self-launch
  - Glider Pilot

Launch Accidents



Accident Causal Factors

- Loss of directional control
- Collision with obstructions during takeoff
- Mechanical factors
- Premature Termination of The Tow (PT3)

Common Distractions

- Inadvertent extension of the spoilers / dive brakes during takeoff or climb
- Improperly closed or locked canopy
- Mechanical related occurrences
- Failure of the pilot to maintain control of the aircraft
- Dealing with an unexpected event

Pre-Launch Activities

- Pre-flight inspection
  - What is a good pre-flight inspection?
- Pre-flight Briefing
  - Cover broad goals of the flight
  - Cover initial tasks in some detail
- Pre-launch checklist
  - Both Aircraft and Pilot are ready

Ground Roll Activities

- Ground signals and confirming the A/C and pilot are ready for launch
  - Communicating with the wing-runner
  - Communicating with the tow-pilot
  - Communications between Student and Instructor
  - Common errors
- Dealing with the ground roll
  - Flight controls, position and motion
  - Tow-plane and Glider flight paths
  - Training to deal with potential distractions
  - Common errors

In-Flight Activities

- Initial climb, position and relative motion
- Straight flight
  - Position and relative motion
  - Common errors
- Turning flight
  - Position and relative motion
  - Common errors
- Release
  - Clearing and pre-release tasks
  - Glider turns and positioning
  - Tow-plane turns and positioning

Aerotow Launch Emergencies

- Towrope break
  - On the ground
  - Inflight
- Inadvertent release
  - misunderstood signal from tow-plane
- Loss of power or failure of tow-plane to accelerate
- signal to release from the tow-plane

Glider Pilot Actions

- Develop a “plan of action” for each contingency/takeoff emergency.
  - Rope break
  - Inadvertent released
  - Tow-plane fails to accelerate or engine fails
- Review/Practice each response with a CFI
- Review emergency signals

Towpilot Actions

- Develop a “plan of action” for each contingency/takeoff emergency.
  - Rope break
  - Inadvertent released
  - Tow-plane fails to accelerate or engine fails
- Coordinate action plans with glider pilot
- Review emergency signals

Ground Crew Actions

- Verify with PIC that pilot glider is properly configured and ready for takeoff
- Verify with towpilot that tow-plane is properly configured and fueled
- Verify that runway and pattern clear of other traffic/obstacles
- Review emergency signals

Ground Launch Emergencies

- Towrope break
  - On the ground
  - During initial climb phase
  - During steep climb phase
- Inadvertent release,
  - misunderstood signal from ground crew
- Loss of power or failure or auto/winch to accelerate
- Glider wing beginning to drop

Ground Crew Actions

- Verify with PIC that pilot glider is properly configured and ready for takeoff\
- Verify that auto/winch operator is ready for launch
- Verify that runway and pattern clear of other traffic/obstacles
- Review emergency signals

Glider Pilot Actions

- Develop a “plan of action” for each contingency/takeoff emergency.
  - Rope break
  - Inadvertent released
  - Auto/winch fails to accelerate or engine fails
- Review/Practice each response with a CFI
- Review emergency signals

Auto/Winch Operator Actions

- Develop a “plan of action” for each contingency/takeoff emergency.
  - Rope break
  - Inadvertent released
  - Auto/winch fails to accelerate or engine fails
- Coordinate actions with glider pilot and ground crew
- Review emergency signals

Self-launch Emergencies

- Loss of power or failure or motorglider to accelerate

Glider Pilot Actions

- Develop a “plan of action” for each contingency/takeoff emergency.
  - Motorglider fails to accelerate or engine fails
- Review/Practice each response with a CFI
- Review emergency signals

On-Line Training

- SSF Wing Runners Course
  - http://www.soaringsafety.org/school/wingrunner/toc.htm

    - Ground Handling,
    - Assisting the Pilot with Pre-Flight Preparations,
    - Positioning the Glider for Takeoff,
    - Assisting the Pilot with Pre-Takeoff Checklist,
    - Connecting the Towline,
    - Launching the Glider,
    - Final Exam

On-Line Training

SSF Tow Pilot Training Course

- Course Introduction
- Tow Hook, Tow Ring, Tow Rope Inspection,
- Takeoff Planning,
- Standard American Soaring Signals – Ground Signals,
- Take Off and Climb,
- Tow Positions, Turns and Release,
- Descent, Approach, and Landing,
- Cross-Country Aerotow,
- Emergencies,
- Other Airborne Non-Emergency Signals,
- Federal Aviation Regulations for Two Pilots,
- Flight Training Syllabus,
- Final Examination.

Recommendations

- Effective Use of Checklist
- Takeoff Emergency Planning
  - Review “plan of action” prior to takeoff
  - Coordinate with Wing Runner
  - Coordinate with Tow Pilot
- Proper Use of SSA Recommended Signals
- Effective Use of Resources

- The Kite
  SSF Identification: CSA11DC001
  Aircraft: Pawnee PA-25, ASK-13
  Injuries: 1 Serious, 1 Uninjured
  The tow-pilot was seriously injured and the Pawnee was substantially damaged after the airplane flipped over during a failed aerotow launch. The glider pilot reported "*I lost sight of the tow-plane so I released and landed in the runway overrun area. I realized the tow-plane had flipped over after I got out of the glider.*"

  Probable Cause: The pilot's improper control inputs resulted in the glider kitting during the initial portion of the aerotow.

  Instructor Guide

Launch Failure Scenario

http://www.soaringsafety.org/school/SSF-1.wmv

Launch Interruption Scenario

- **Problem**
  - **Missed pre-launch checklist item**
    - **Checklist performed from memory**
    - **Radio call from tow-pilot**
    - **Ground crew points out traffic in pattern**
  - **Use PAVE model and write bullet for each element**

Scenario (Tow Position)

Pilot issues

- Student not recognizing relative motion
- Pilot distracted by nearby glider

Aircraft issues

- SGS 1-26
- Flying from back seat of a 2 place

EnVironment issues

- Towing in turbulent air
- Towing in smooth air

External factors

- Friend wants a ride
- You have taken an OTC cold medicine