Launch Failure Practice – Pass or Fail!

By Richard Carlson – SSF Chairman

Every April the Soaring Safety Foundation publishes an Annual Safety Report describing the accidents that happened in the preceding year. See https://www.soaringsafety.org/accidentprev/ssfreports.html for links to these reports. We also use this article space every April to publish a summary of that report. Finally, we present yearly data to attendees of our Flight Instructor Refresher Courses (FIRCs).

One of the major artifacts these reports and presentations identify is the breakdown of accidents in 3 phases of flight. Over the past 6 years (2019 – 2024) the NTSB data shows the percentage of accident breakdown is 21% in launch, 14% in cruise, 61% in landing, and 3% are unknown (figure 1). However, that is not the complete story. The SSF trustees also want to know how deadly each phase is. That is, what percentage of accidents, in a specific category, result in fatal injuries to pilots or passengers.

For the past few decades we have been breaking down fatal vs non-fatal accidents and showing graphs like Figure 2 (Landing Accidents 2019 – 2024). The blue bar shows the number of non-fatal accidents while the orange bar shows the fatal number. The total number of landing phase accidents per year is the sum of both bars.

Graphs for the launch and cruise phase of flight can be found in our annual reports. They show a very different breakdown between fatal and non-fatal accidents. Over this same 6 year period the data shows that 20% of all accidents were fatal. Breaking this down by flight phase we see that 38% of the launch accidents were fatal, 29% of the cruise accidents were fatal, while only 11% of the landing accidents were fatal. Figure 3 and Table 1 show the graphical and textual percentage of fatal to total accidents in each phase of flight over the past 15 years.

The graphs, charts, and tables the SSF generates help us create programs focused on reducing the total number of accidents (landing) and reducing the number of fatal accidents. The data clearly shows that 2 different types of programs are needed. Over 20 years ago the Goal Oriented Approach program was designed to reduce the total number of landing accidents. (See https://www.soaringsafety.org/accidentprev/SSF_2013_annual_report.pdf for more details on this approach). Briefly, it focuses on training pilots to adapt the landing approach to the conditions that exist instead of rigidly flying a rectangular ground track even when that is not appropriate.

The data also shows that over the long term, the fatal rate of launch accidents is much higher than can be explained by chance. Over the next few months the SSF will document the causes for this high fatal rate and describe ways the community can use to improve our training and practices to reduce the fatal rate of launch accidents.

To being, lets try and get a handle on what the problem is. According to the FAA and SSF survey data there are over 100,000 launches per year for the last 5 years. The question is, how many of these are practice launch failures (the dreaded 200 ft rope break)? Since this training typically takes place during flight reviews, spring checkouts, on practical tests, and before solo a conservation number of 1% will be used for this analysis. That means there are 1,000 simulated launch failures going on around the country every year. Thus the vast majority are successful with the glider returning to the runway. Yet around 1% of the time they end in an accident that gets reported to the NTSB.

However, that doesn't explain why 38% of these accidents result in the death of the pilot!

Something must be happening that gives us that result.

After years of reading NTSB accident report, it is clear that that something is our training!

The current training focuses on reaching a decision height of 200 ft AGL. That does not take other important factors like winds, terrain, temperature, density altitude, towplane and glider weight and performance, or pilot proficiency into account. Another issue is our typical practice of always returning to the runway during a practice event. While it may not be your intent as a instructor, your students and pilots assume 200 ft AGL is a rigid value that guarantees a successful return to the runway every time. Isn't that what they experience? How often do you practice not landing back on the runway? NTSB accident reports show that even when the pilot self briefed a non-return, they attempted to return anyway. The Law of Primacy is raising it's ugly head here.

At this point it is important to point out that tasks G, J, and P in Area of Operation IV of the Glider Practical Test Standard (PTS) is called Abnormal Occurrences. This is where an applicant is required to demonstrate knowledge and skills in handling a failed aerotow, ground, or self launch respectively. Note this does NOT say Emergency practice. It is an Abnormal Occurrence. It becomes an emergency when it happens outside of these training and practice events.

Aligning the training to better teach pilots how to handle emergencies is a key task going forward. Over the next few months the SSF trustees and advisors will cover this topic in detail. Next month we will discuss some common reasons why an aerotow launch may fail. Then we'll discuss why simply using 200 ft AGL is not a viable planning tool. We will cover a better set of criteria you can use to make a good emergency response plan for every launch. The following months will cover tools and practices you can use to better prepare for a real launch emergency. How Condor can be used to prepare pilots for NOT returning to the runway. Finally, we'll discuss why the current impulsive response to make a steep right turn to go back and land can lead to a fatal crash. That discussion includes ways to make safer and less stressful decisions.

The overall objective is to change the mindset from a simple PT3 return to the runway activity to a more thoughtful Goal Oriented Premature Termination of the Launch (GO-PTL) activity. Stay tuned for more next month.

Fly Safe.

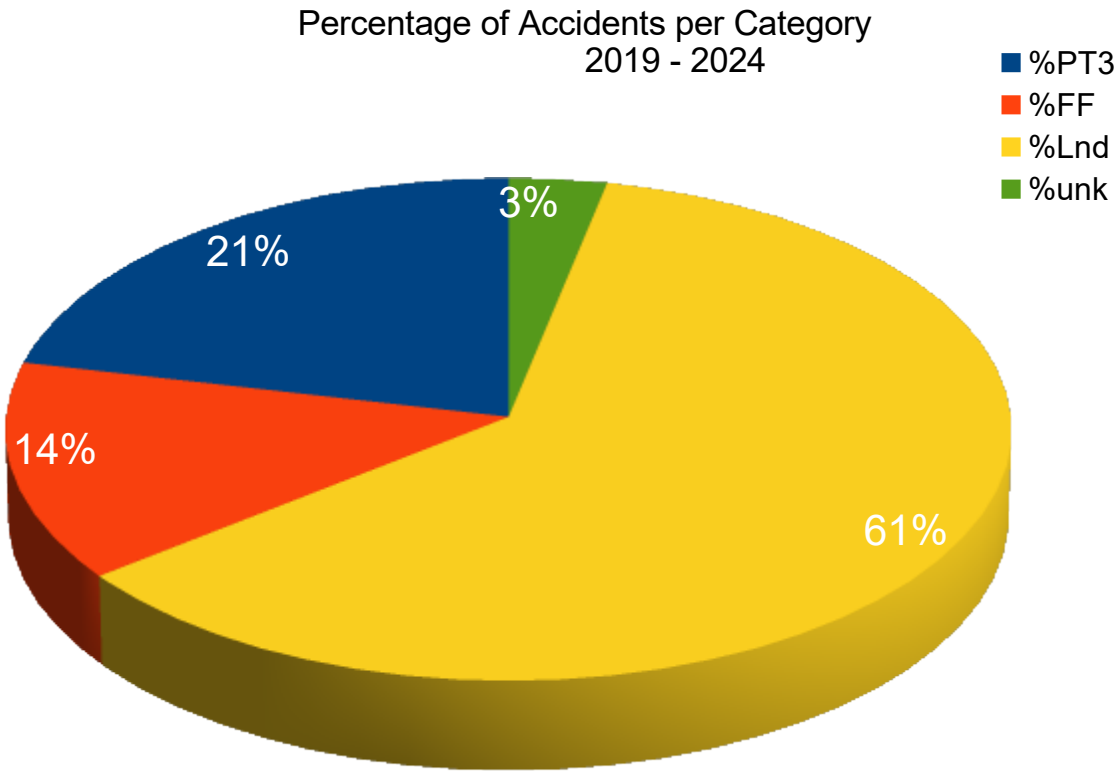

Figure 1: Percentage of Accidents per phase of flight

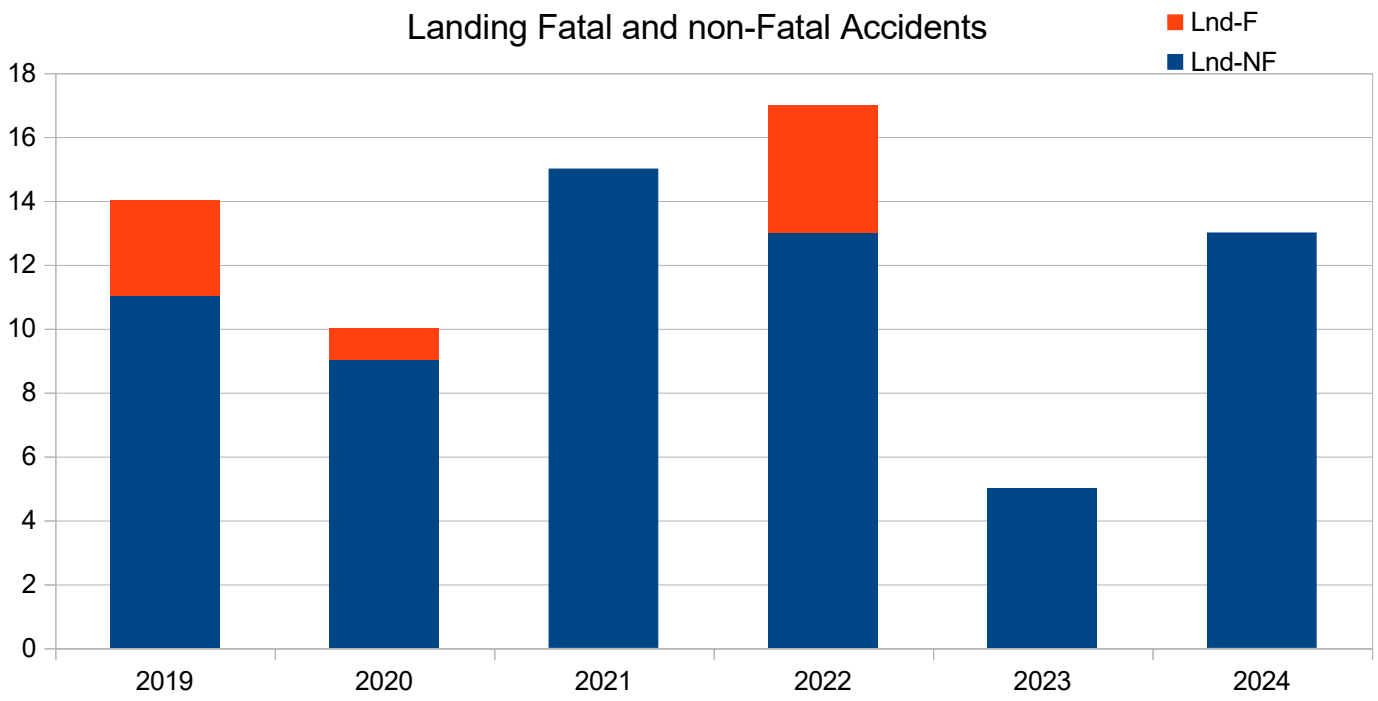

Figure 2: Landing Accidents non-fatal and fatal 2019 - 2024

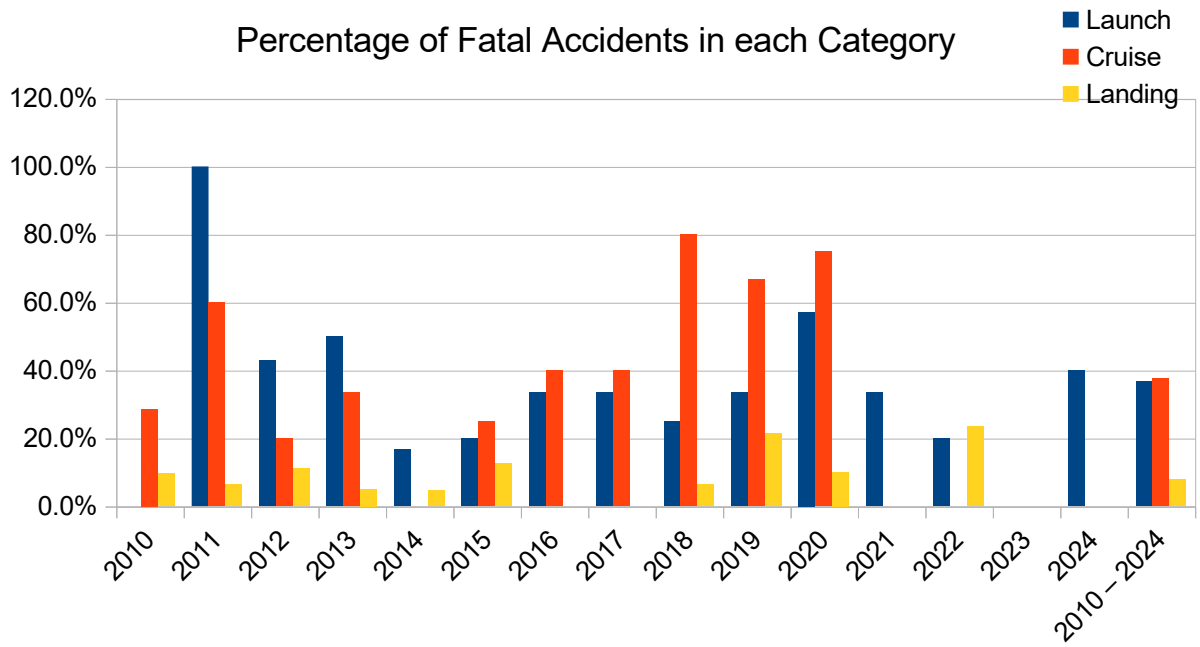

Figure 3: Percentage of Fatal Accidents in each category

Table 1: Percentage of Fatal/Category Accidents per year. Total is the percentage of fatal/total accidents per year across all categories.

Year	Launch	Cruise	Landing	Unknown	Total*

2010	0.0%	28.6%	9.5%	100.0%	20.0%
2011	100.0%	60.0%	6.3%	100.0%	37.0%
2012	42.9%	20.0%	11.1%	0.0%	20.0%
2013	50.0%	33.3%	5.0%	0.0%	12.0%
2014	16.7%	0.0%	4.5%	100.0%	10.3%
2015	20.0%	25.0%	12.5%	100.0%	26.3%
2016	33.3%	40.0%	0.0%	0.0%	16.7%
2017	33.3%	40.0%	0.0%	100.0%	21.7%
2018	25.0%	80.0%	6.3%	100.0%	25.9%
2019	33.3%	66.7%	21.4%	100.0%	31.8%
2020	57.1%	75.0%	10.0%	0.0%	36.4%
2021	33.3%	0.0%	0.0%	0.0%	8.7%
2022	20.0%	0.0%	23.5%	100.0%	21.4%
2023	0.0%	0.0%	0.0%	100.0%	9.1%
2024	40.0%	0.0%	0.0%	0.0%	9.5%
2010 – 2024	36.8%	37.5%	7.9%	92.3%	20.8%