

# Analysing Flight Data

## The hidden safety issue

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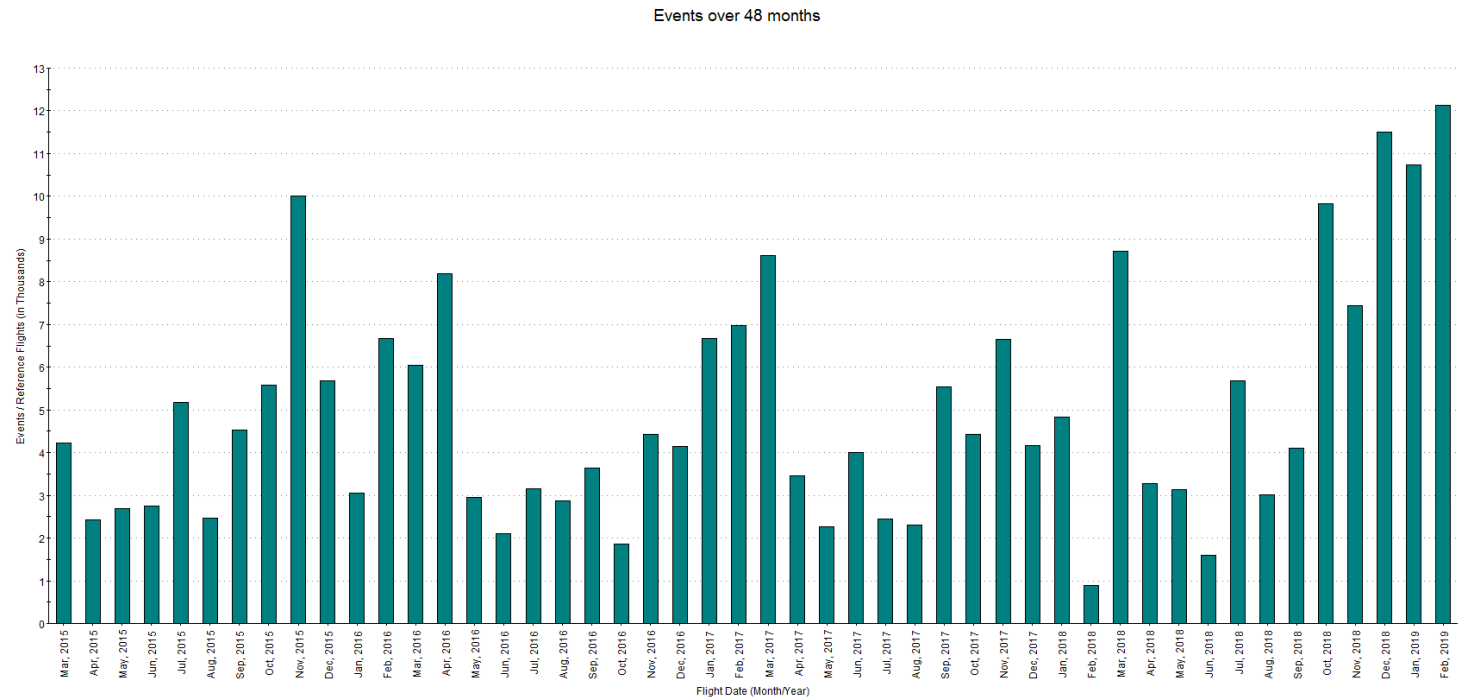
# The Hidden Safety Issue

FDP typical graph analysis

Drilling into the data.....

What else can you learn?

What are the limitations of your system?



Analysis processed 18 Mar 2019, 14:05 UTC+8

# Some possible system limitations

- Personnel (Including training and retention);
- Data capture;
- Event definition;
- Reporting;
- System design – Case Study
  - Fokker 100 aircraft – Limited data capture:
    - FDAU – 64 WPS
    - No position information
    - No weight (and derived V speed parameters)

**Is your organisation  
able to interpret the  
data  
and understand its  
limitations?**

# Case study - Skipped Landings

The Lift Dumper System – destroy lift and to achieve more effective braking after a touchdown.

Five panels on each wing and are operated by hydraulic system

The system can be activated automatically and manually.



# Case Study - Skipped Landings

When armed before landing, the lift dumpers will only extend **automatically** once the following conditions have been met:

1. Aircraft is on the ground (both Ground/Flight Switches “Ground”)
2. Thrust levers are in idle
3. Wheel speed is above 50kts

When armed in flight, the system will **disarm** automatically if the TOGA are activated or when either thrust lever is advanced to maximum TLA.

If not armed...

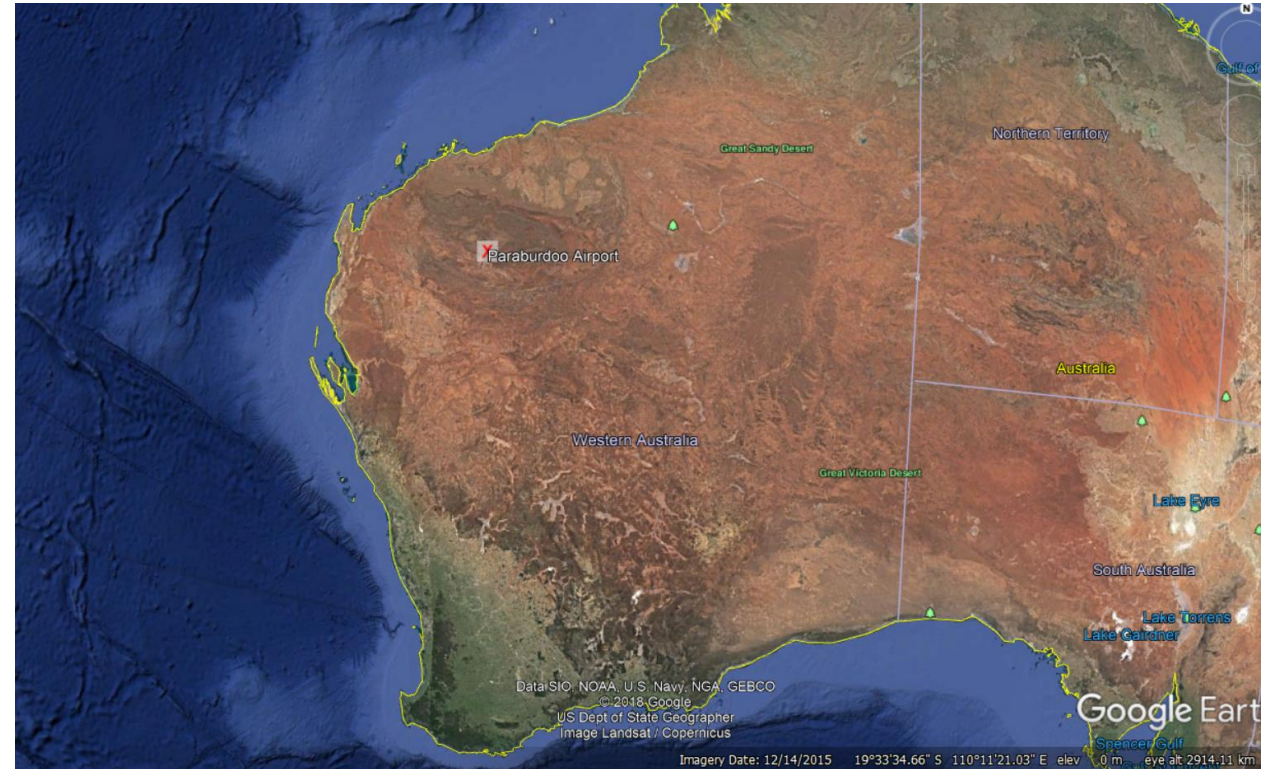
**Manual extension will occur after reverser deployment.**

# Skipped Landings - The environment

The Western Australian Summer....  
Daily Maximum Temperature

|               | Dec 18 | Jan 19 | Feb 19 |
|---------------|--------|--------|--------|
| Highest daily | 46.5°C | 46.0°C | 45.7°C |
| Lowest daily  | 32.4°C | 36.2°C | 41.0°C |
| Monthly mean  | 42.4°C | 43.1°C | 43.7°C |

Source: Australian Bureau of Meteorology



Hot weather, turbulence, convective weather, thunderstorms, Class G airspace...



# Skipped Landing Vs Bounced Landing

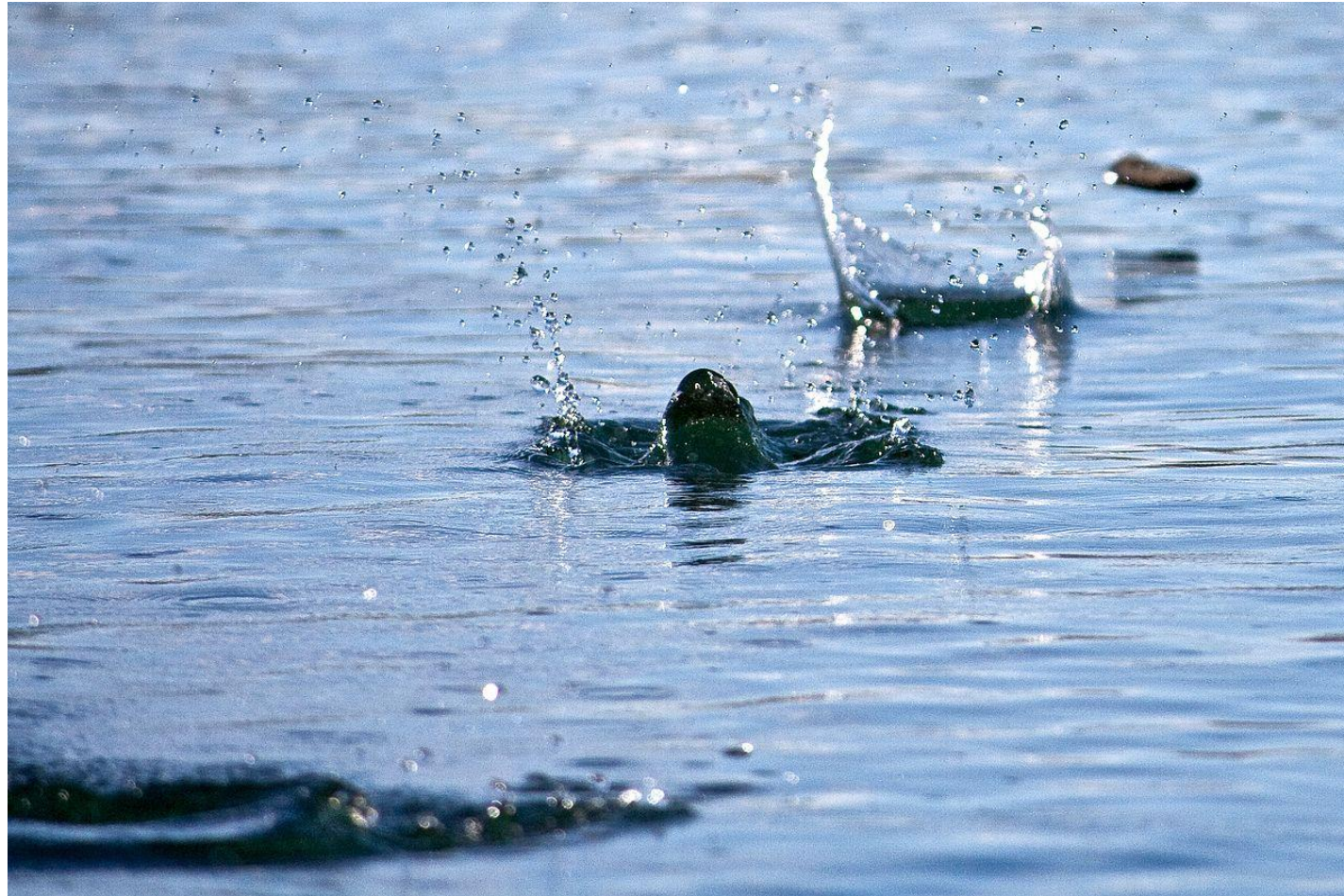
## Bounced Landing:

- Two transitions of both left and right Air/Ground;
- LFTD may deploy after first bounce;
- Higher likelihood of Hard Landings

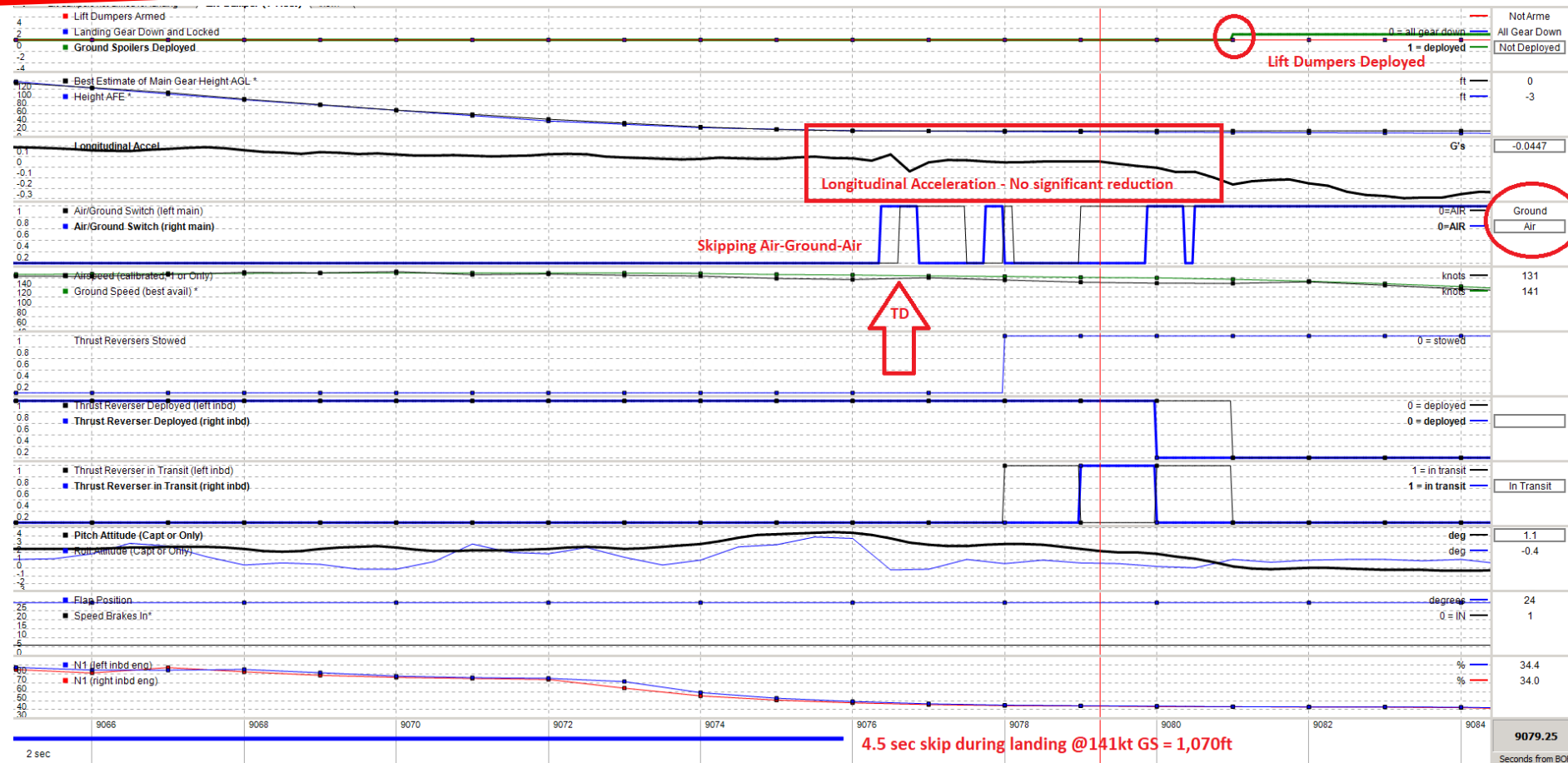




# Skipped Landing Vs Bounced Landing



# Case Study - Skipped Landings

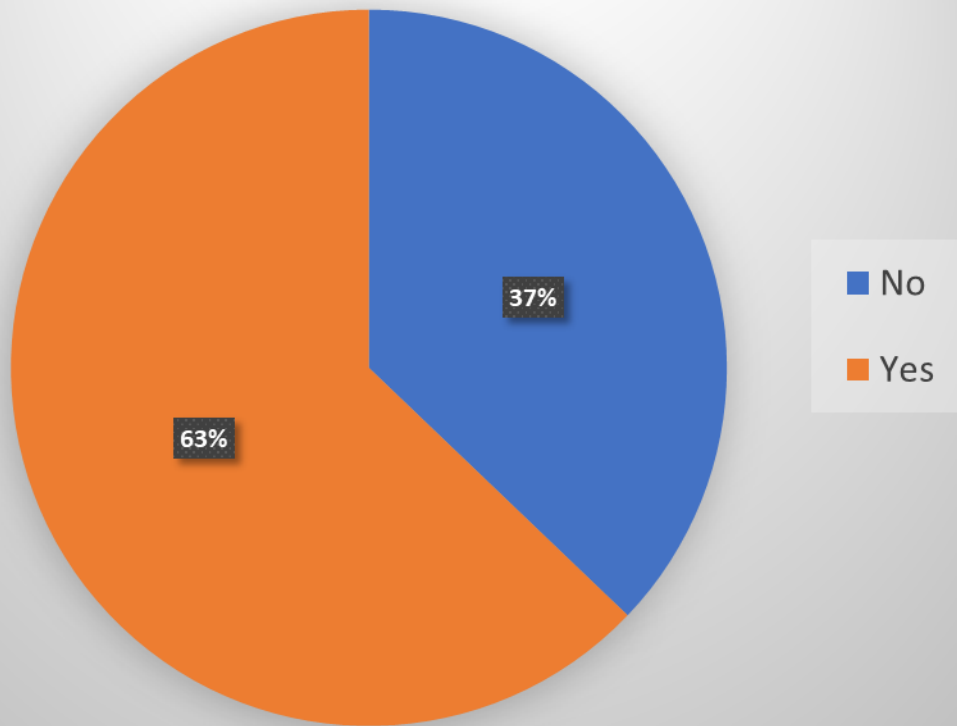


## Skipped Landing:

- No significant Longitudinal deceleration;
- Multiple transitions of Air/Ground;
- Thrust Reversers not deploying;
- Delayed deployment of Lift Dumpers.

# Case Study - Skipped Landings

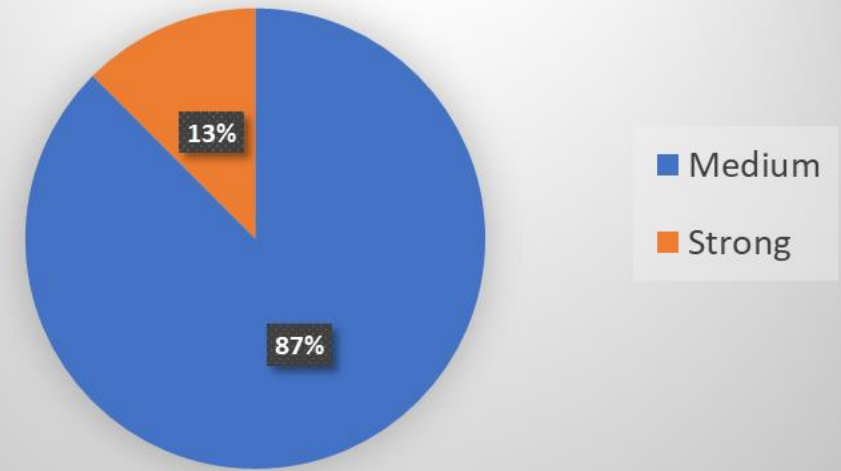
Skipped Landing - LFTD disarmed



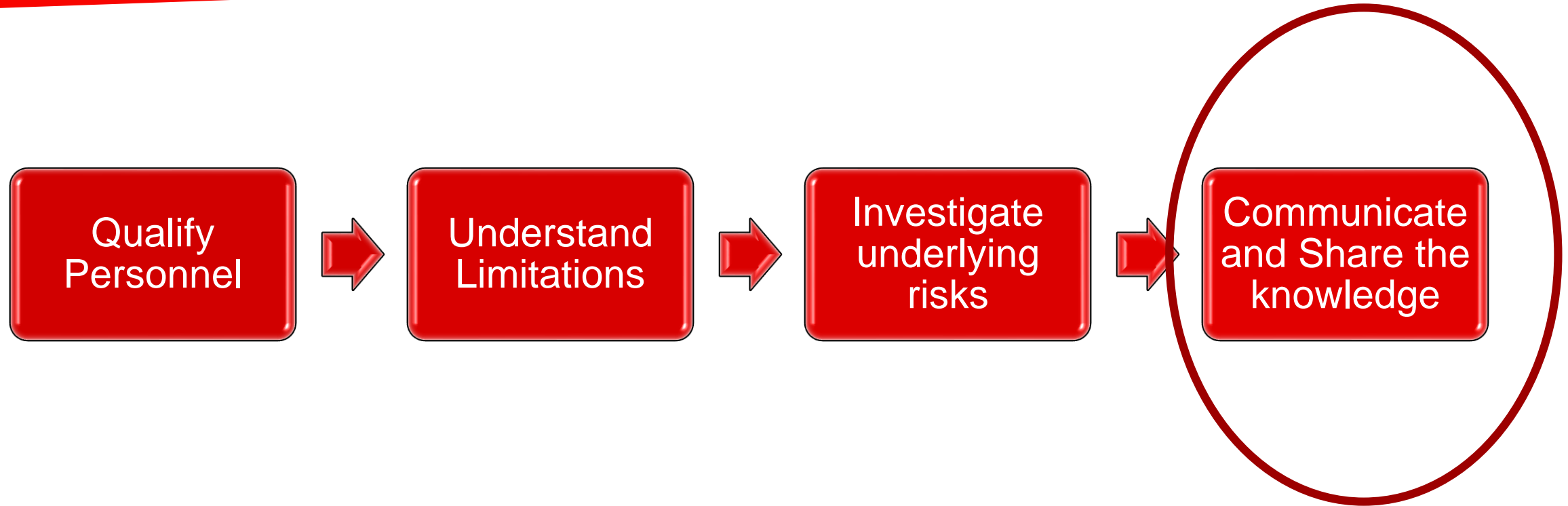
## End states

- 63% of landings resulted in some degree of skipping;
- After skipping, braking was medium (L.A.-0.3Gs) to strong ( $> -0.45Gs$ ).

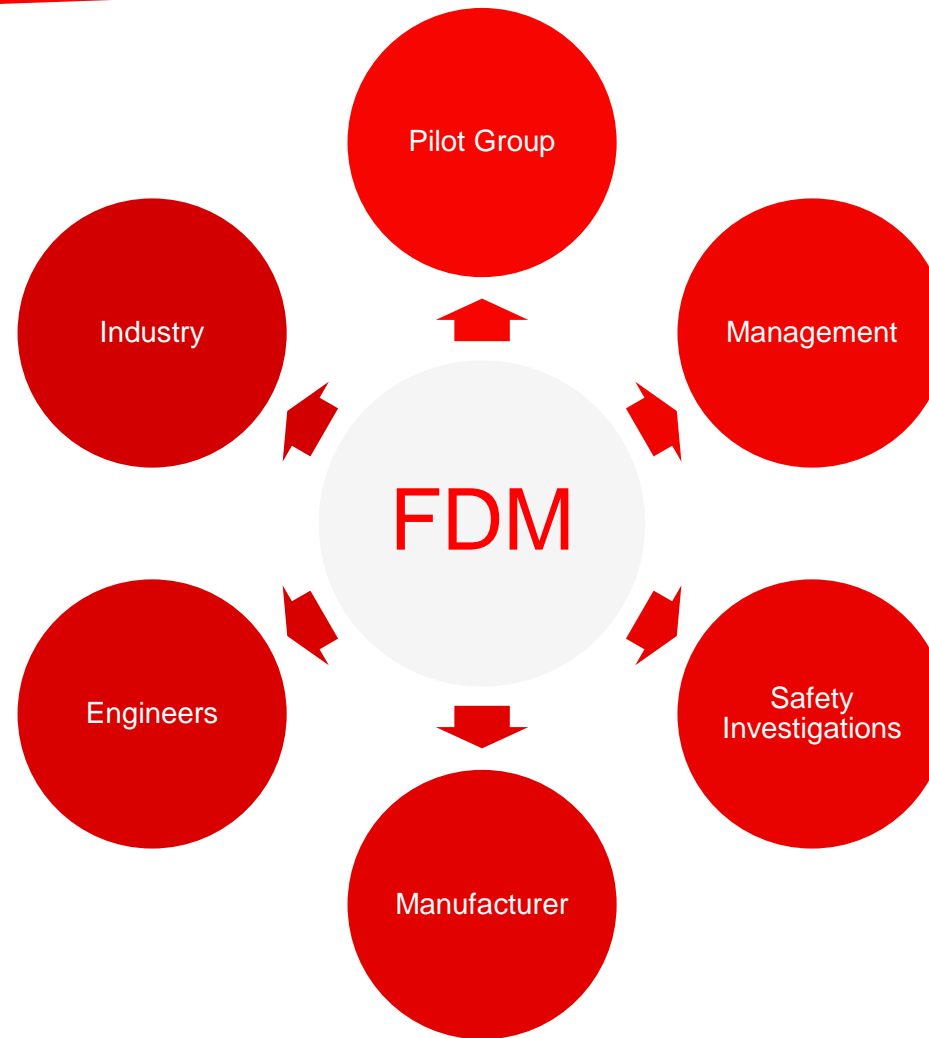
Braking after landing



# What is your organisation's hidden safety issue?



# Communicating and Sharing the Knowledge



Thank you

