Reducing Exposure to LOCi in Go Arounds

SASS, Singapore March 27th, 2018.

Capt. Bill Curtis, Head of Aviation, Presage Group Inc.

presage

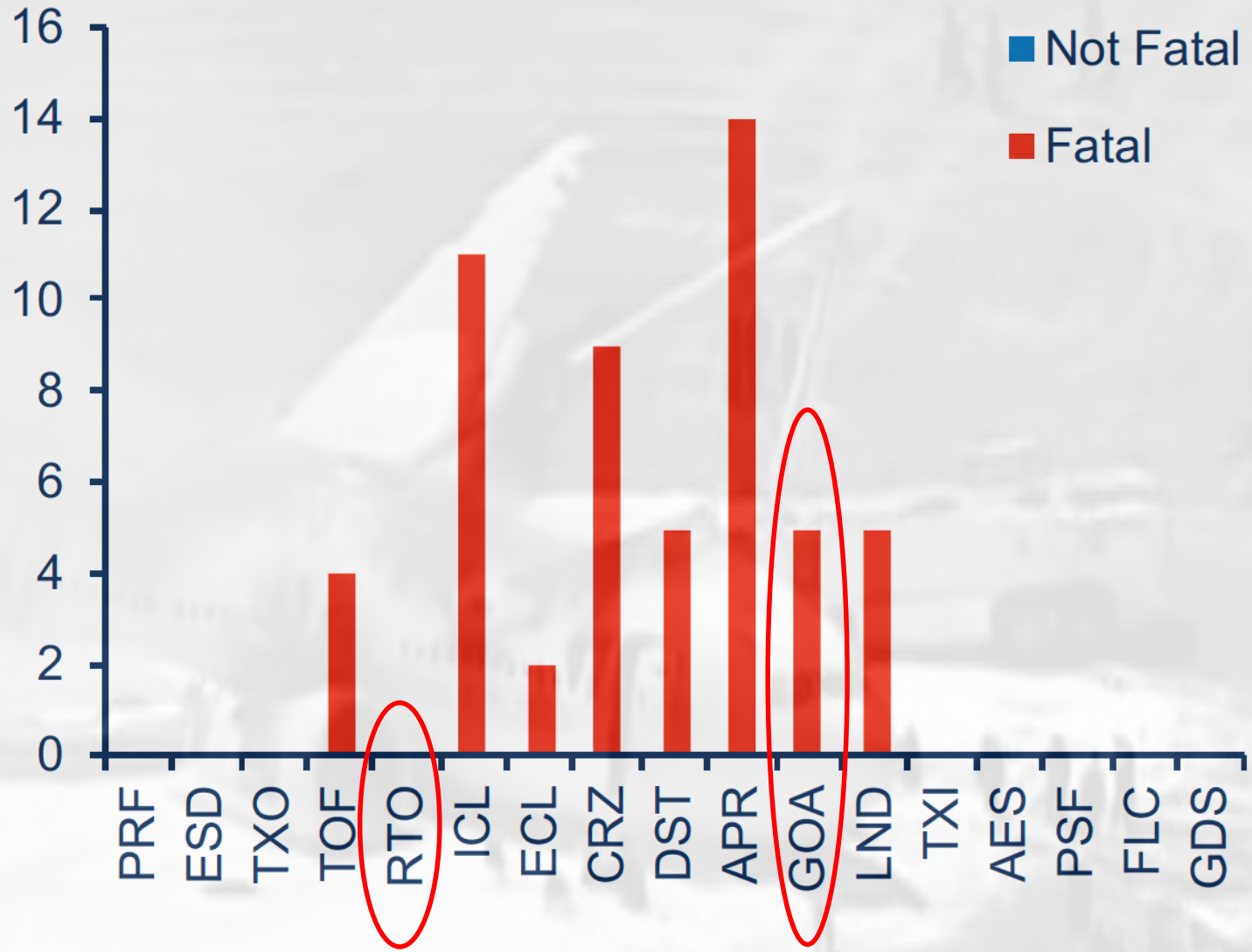
FLIGHT SAFETY FOUNDATION

independent • impartial • international

All Accidents

Accidents per Phase of Flight (2012-2016)

Total Number of Accidents (Fatal vs. Non-Fatal)

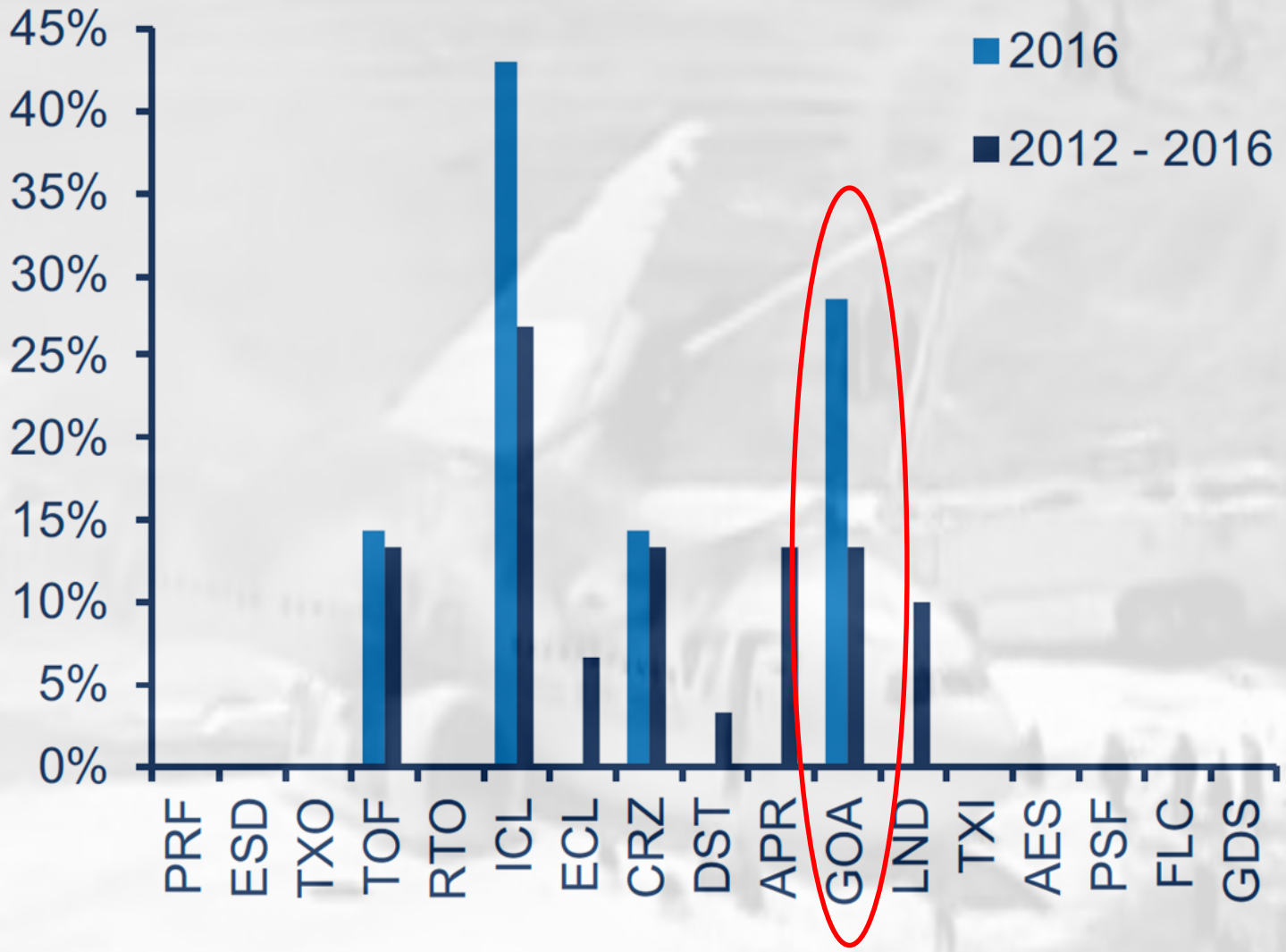


Source; IATA ACTF

Accidents per Phase of Flight (2012-2016)

Distribution of accidents as percentage of total

LOC-i



Source; IATA ACTF

Somatogravic Go Around Accidents/Serious Incidents 2000 - 2016

Date	Type	Operation	Location	Conditions.	Phase	Pilot Hrs	A/SI	Fatal/POB
13 Jun 00	Falcon 20	Charter Freight	Ontario, Canada	Night IMC	GA	11800/2300	A	0/2
23 Aug 00	A320	Scheduled Pax	Bahrain	Night VMC	GA	4416/608	A	143/143
11 Oct 01	Metro	Medevac	Manitoba, Canada	Night IMC	GA	3100/1200	A	2/3
22 Jan 02	B757	Scheduled Pax	Oslo, Norway.	Day IMC	GA	8034/2485	SI	0/82
27 Sep 03	Cesena 182	Private	Concorde, MA, USA	Day IMC	GA	2600	A	2/2
03 May 06	A320	Scheduled Pax	Sochi, Russia	Night IMC	GA	5458/2185	A	113/113
30 Mar 07	A330	Scheduled Pax	Abidjan, Ivory Coast	Night VMC	GA	n/k	SI	0/ n/k
07 Jan 07	King Air	Medevac	Saskatoon, Canada	Night IMC	GA	8814/672	A	1/4
23 Sep 09	Cessna 210	Private	Hilltop Lakes, TX, USA	Night VMC	GA	1276	A	1/1
12 May 10	A330-200*	Scheduled Pax	Tripoli, Libiya	Night IMC	GA	17016/4216	A	103/104
29 Jan 13	CRJ200	Scheduled Pax	Almaty, Kazakhstan.	Day IMC	GA	18194/3507	A	21/21
23 Sep 13	C182	Training	Hamilton, Victoria, Aus.	Night VMC	GA	135	A	1/1
16 Oct 13	ATR 72	Scheduled Pax	Pakse, Laos	Day IMC	GA	5600/400	A	49/49
17 Nov 13	B737-500	Scheduled Pax	Kazan, Russia	Night IMC	GA	2500/2000	A	52/52
22 Nov 15	B737- 300	Scheduled Pax	Osh, Kazakhstan.	Day IMC	GA	10600/16400	A	0/153

presage

FLIGHT SAFETY FOUNDATION
independent • impartial • international

How can we manage exposure to GA LOCi

presage

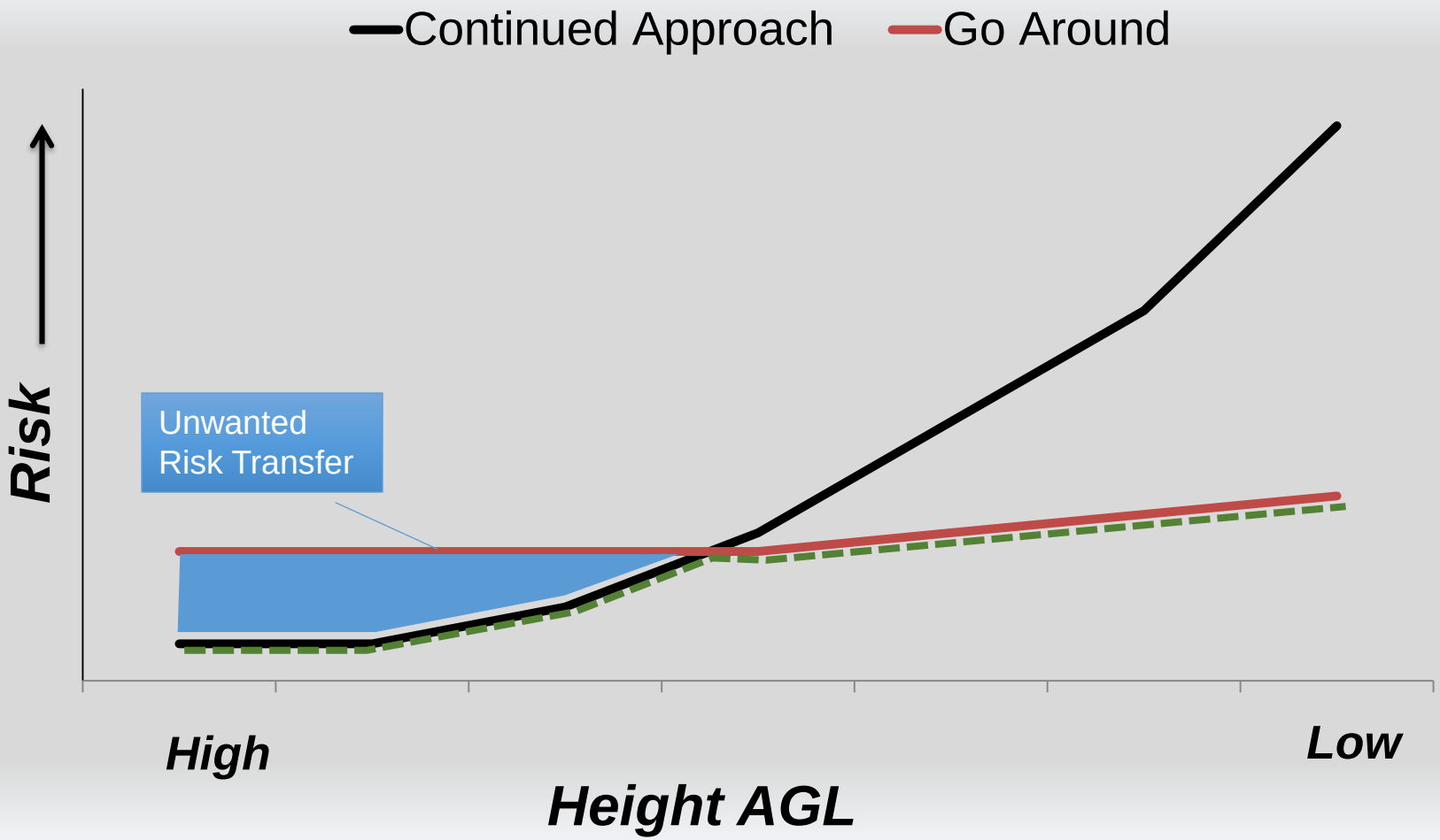
Transfer of Risk; Unstable Approach – to Go Around?

Today's Dilemma…

- We want flight crews to follow GA Policies
- We don't want to have a go-around for every unstable approach
- Can't have both…

presage

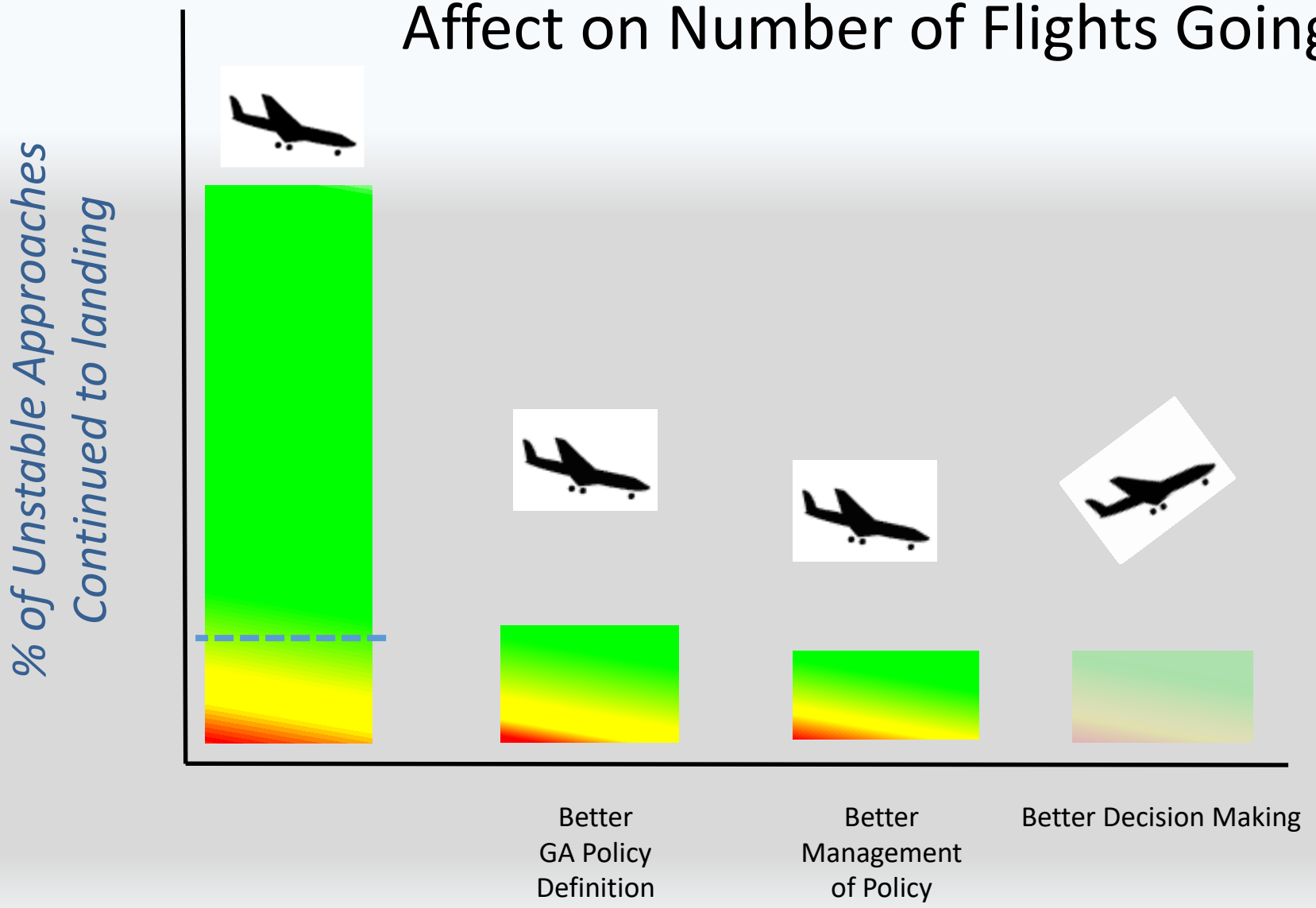
Continued Approach / Go Around Risk Relationship



presage

FLIGHT SAFETY FOUNDATION
independent • impartial • international

Affect on Number of Flights Going Around



presage

FLIGHT SAFETY FOUNDATION
independent • impartial • international

Unstable Approach Rates

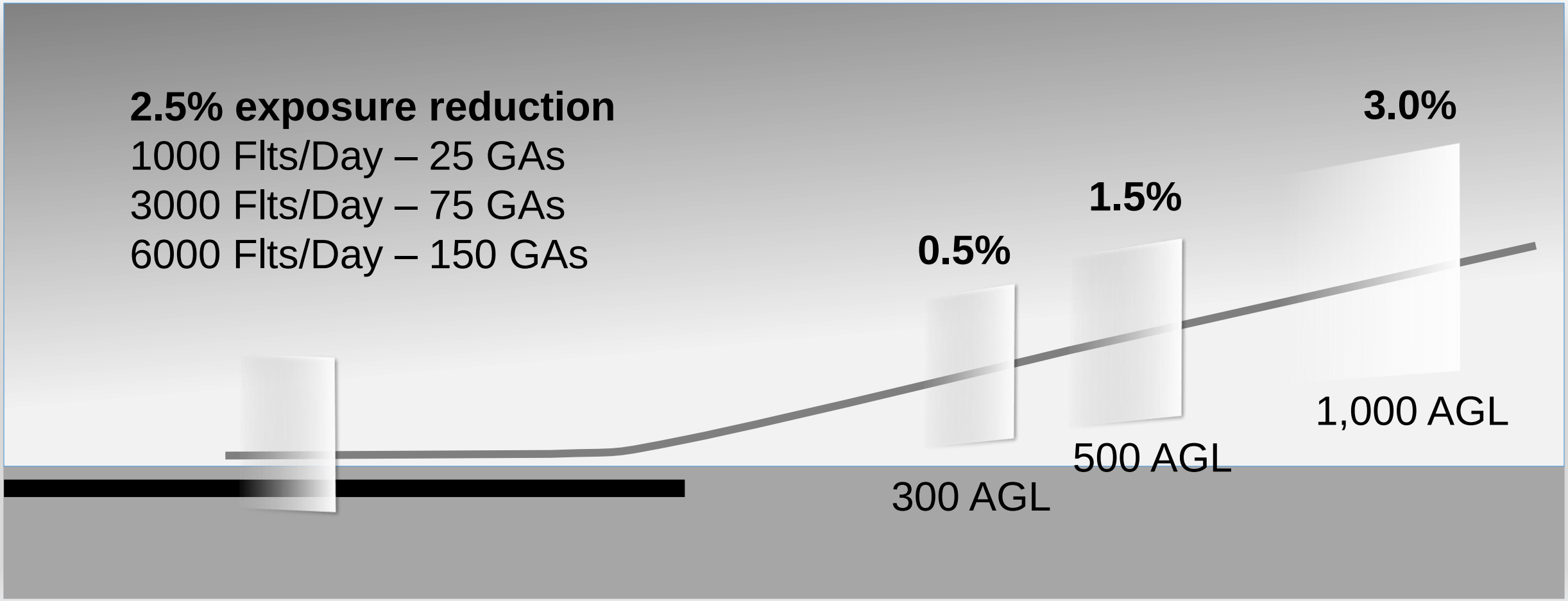
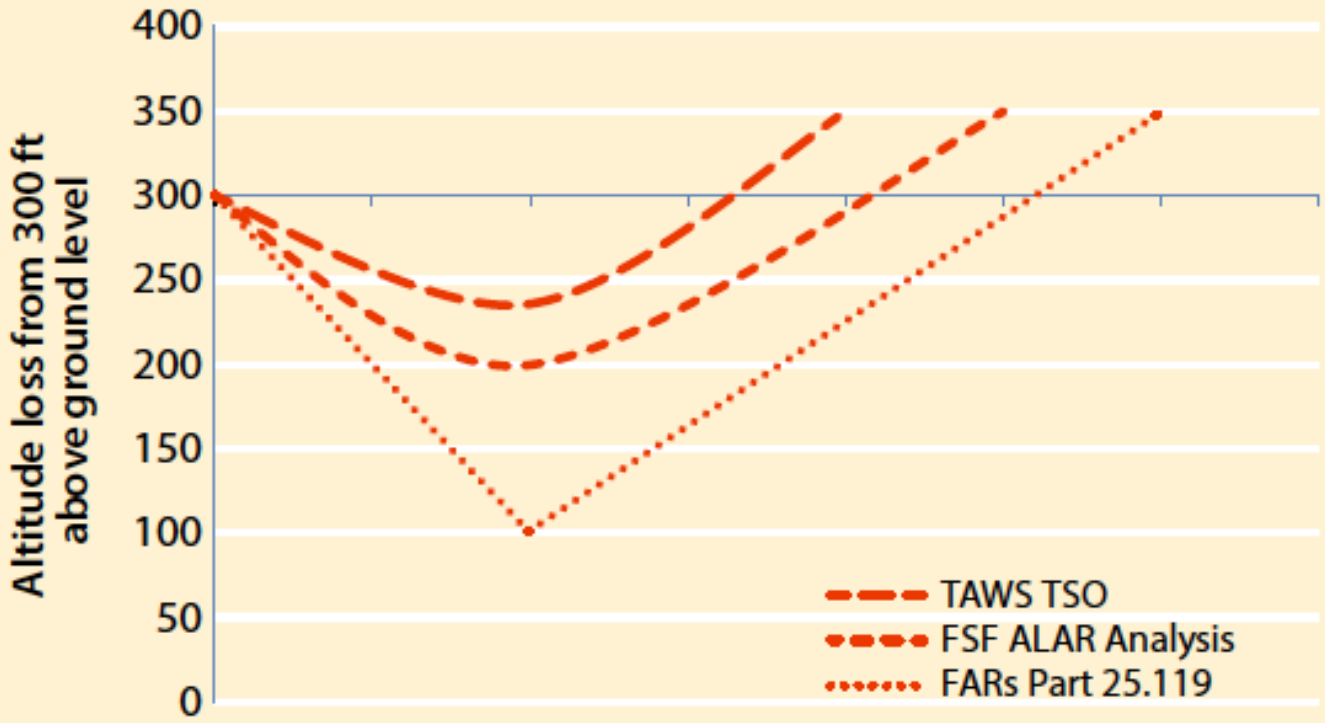


Figure 1

Go-Around Altitude Loss Analysis

Unstable condition: Speed V_{REF}, Thrust Idle, Vertical Rate 1,500 fpm



ALAR = FSF Approach and Landing Accident Reduction; FARs = U.S. Federal Aviation Regulations; TAWS = terrain awareness and warning system; TSO = technical standard order; V_{REF} = reference landing speed

Source: Flight Safety Foundation

FLIGHT SAFETY FOUNDATION

10.3 Analysis: New Stabilized Approach and Go-Around Guidelines, 2017 (proposed for industry validation)

New Stabilized Approach and Go-Around Guidelines, 2017 (proposed for industry validation)

An approach is fully stabilized when all of the following criteria are met:

Go-Around Decision-Making and Execution Project

Tzvetomir Blajev, Eurocontrol
(Co-Chair and FSF European Advisory Committee Chair)
Capt. William Curtis, The Presage Group
(Co-Chair and FSF International Advisory Committee Chair)

MARCH 2017

10.3 Analysis: New Stabilized Approach and Go-Around Guidelines, 2017 (proposed for industry validation)

New Stabilized Approach and Go-Around Guidelines, 2017 (proposed for industry validation)

- Sink rate is no greater than 1,000 fpm.

General:

- The stabilized approach gates should be observed, and active communication calls made during each approach.
- Normal bracketing corrections in maintaining stabilized conditions occasionally involve momentary overshoots made necessary by atmospheric conditions; such overshoots are acceptable. Frequent or sustained overshoots are not.
- Unique approach procedures or abnormal conditions requiring a deviation from the above elements require a special briefing.

Approach Gate	Objective[1]	Example of Active Communication[2]
1,000 ft AGL Note: This can vary between 800 and 1,500 ft, depending on aircraft category type	The final landing configuration should be selected.	PM: "1,000; Configured/Not configured" or "Flaps" PF: "Roger"
500 feet AGL	The aircraft should be fully stable.	PM: "500; Stabilized/Not stabilized" or "Speed [parameter]" PF: "Roger"
300 feet AGL and below	Initiate a go-around without hesitation if unstable.	PM: "300; Stabilized/Go around" or "[Condition to go around]" PF: "Continue/Go around"

AGL = above ground level; CAT I = Category I; ILS = instrument landing system; LOC/VOR = localizer/VHF omnidirectional radio; PF = pilot flying; PM = pilot monitoring; RNAV = area navigation; RNP = required navigation performance; V_{REF} = reference landing speed

Notes:

1. Continuing past the related gate should only occur if meeting the objective of the next gate is achievable; otherwise, go around. Example: If the flight is not configured by 1,000 ft, it could continue if being fully stable by 500 ft is achievable.
2. If the call at the respective gate indicates an undesired state (e.g., "Not configured", or "Flaps"), that call should be repeated at an appropriate interval until the condition is corrected. Example: "Flaps"; "Flaps" repeated every 50 ft.

presage

SAFETY FOUNDATION
independent • impartial • international

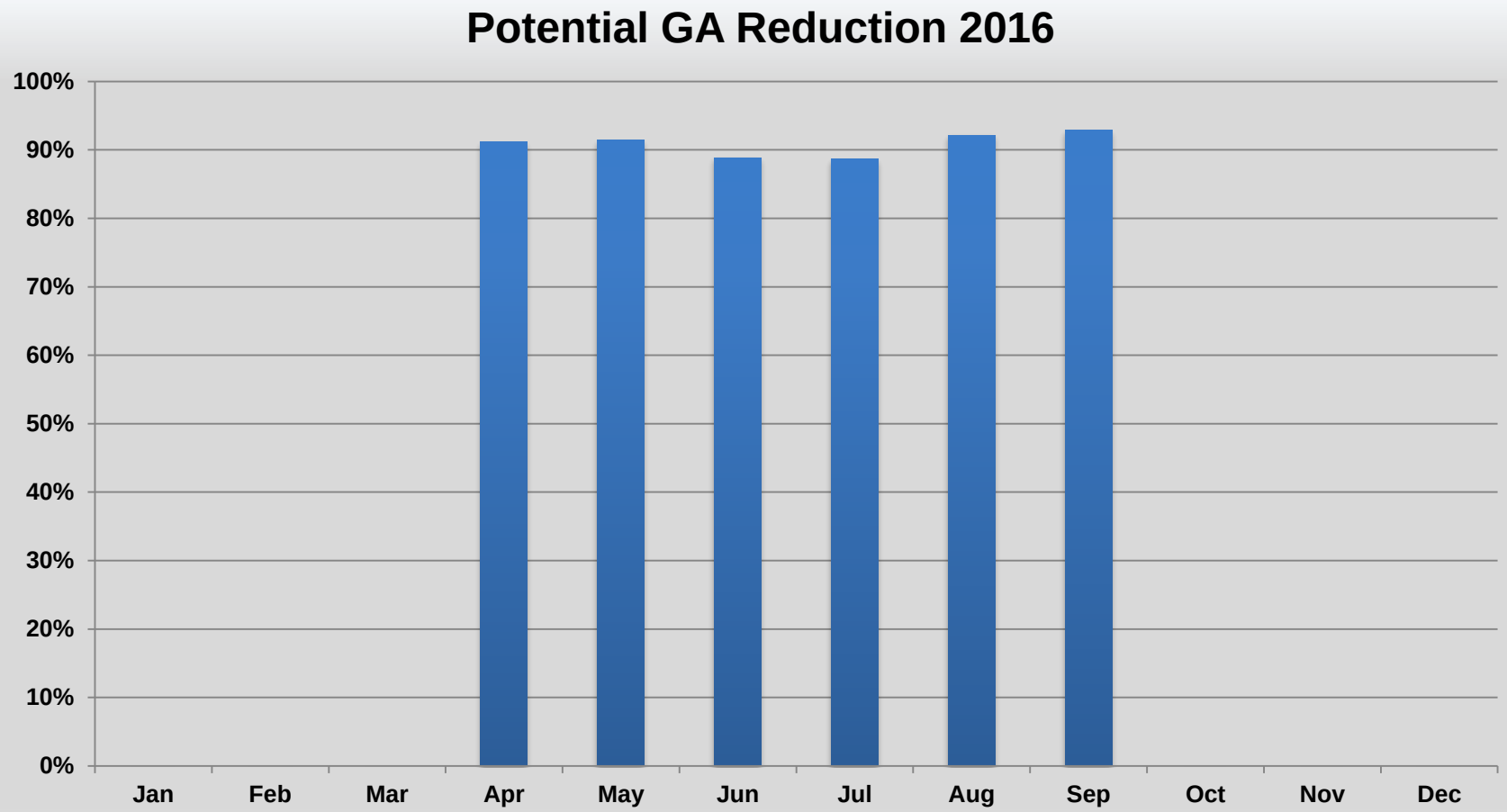

CAT II
CAT II

Airline Experience of Exposure Reduction

presage

FLIGHT SAFETY FOUNDATION
independent • impartial • international

Reduction in Go Around Exposure 2016



presage

FLIGHT SAFETY FOUNDATION
independent • impartial • international

Are current GA Gates cast in stone?

- Stable Approach Monitoring systems alert crews to GA below 500 feet
- Circling Approach Stable criteria allow 300 feet stable height
- Have you ever seen a safety analysis done for 1000 or 500 feet?

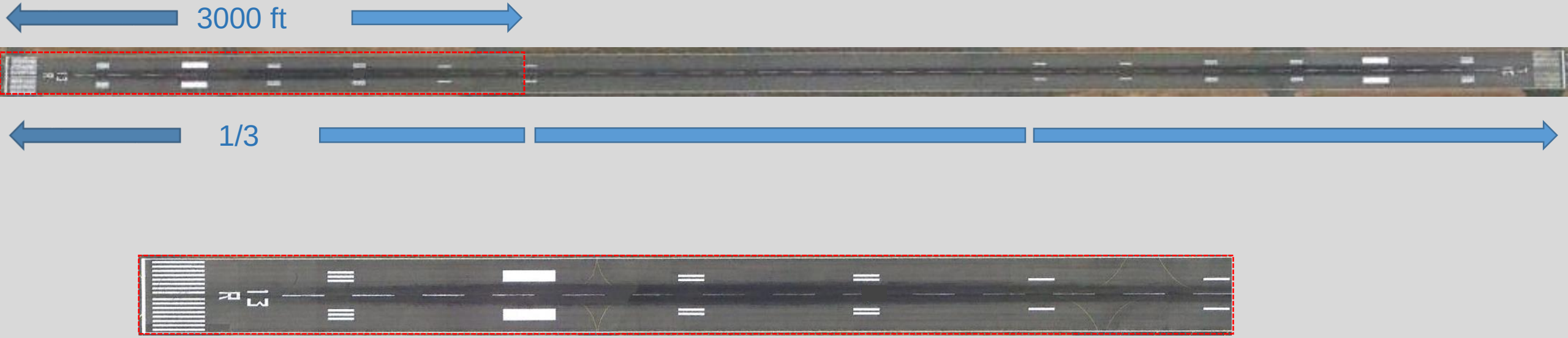
What about Touchdown Point Limits (TPL)?

- Should a marked Touchdown Zone (TDZ) dictate the limit of a safe TDP?
- TDZ 3000 foot limit same for
  - 9000 foot runway
  - 12000 foot runway

- Is it better to go around in a low energy state when you have 4000 feet extra runway?

- Can a TPL determination reduce exposure to LOC-i?

Touchdown Zone

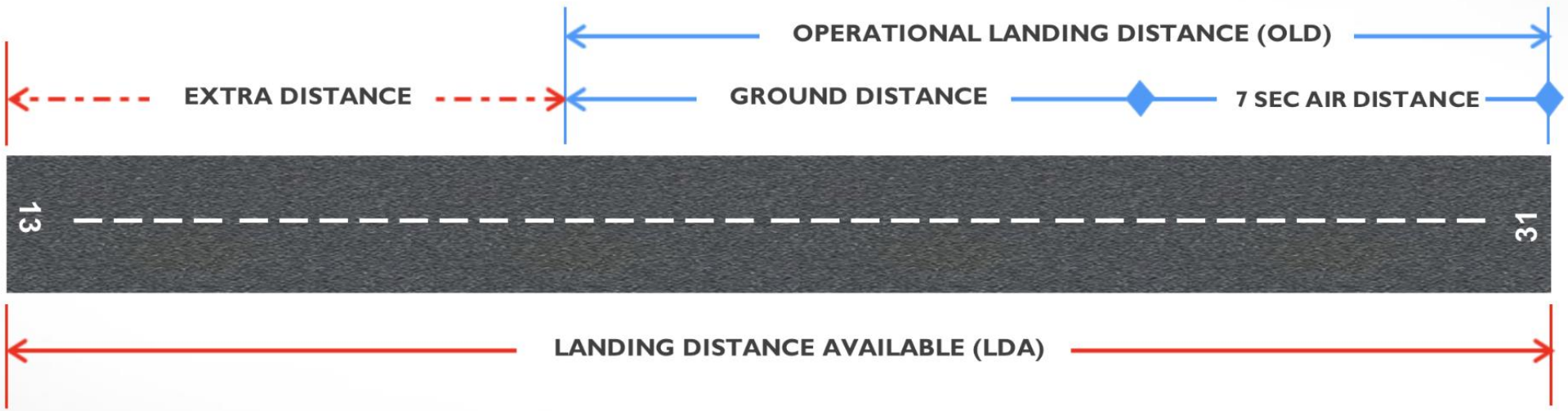


Touch down in this zone or Go-around – Right?

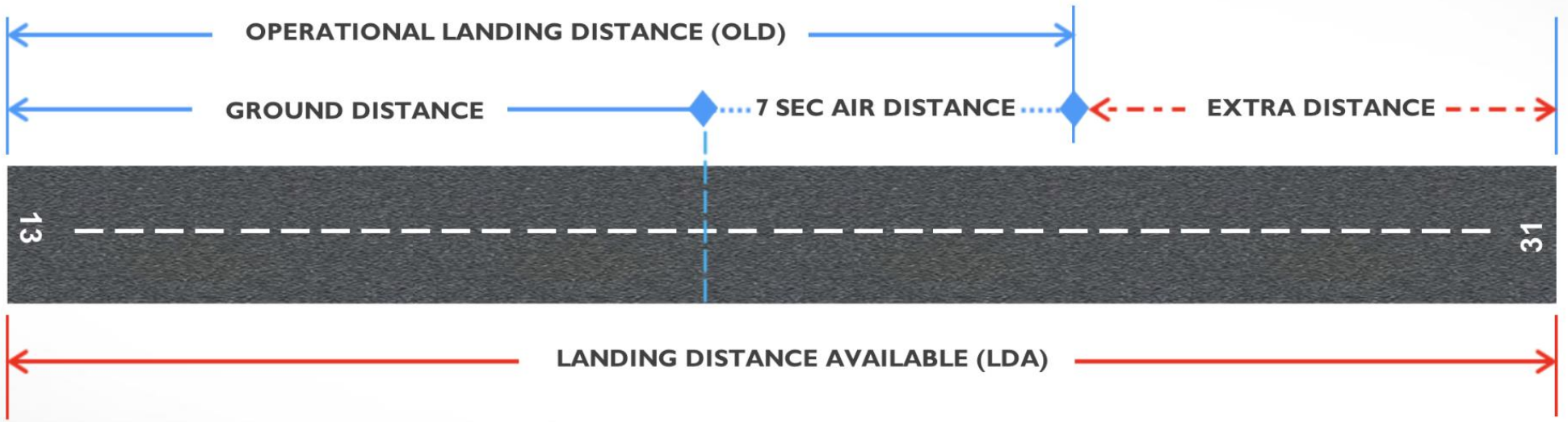
presage

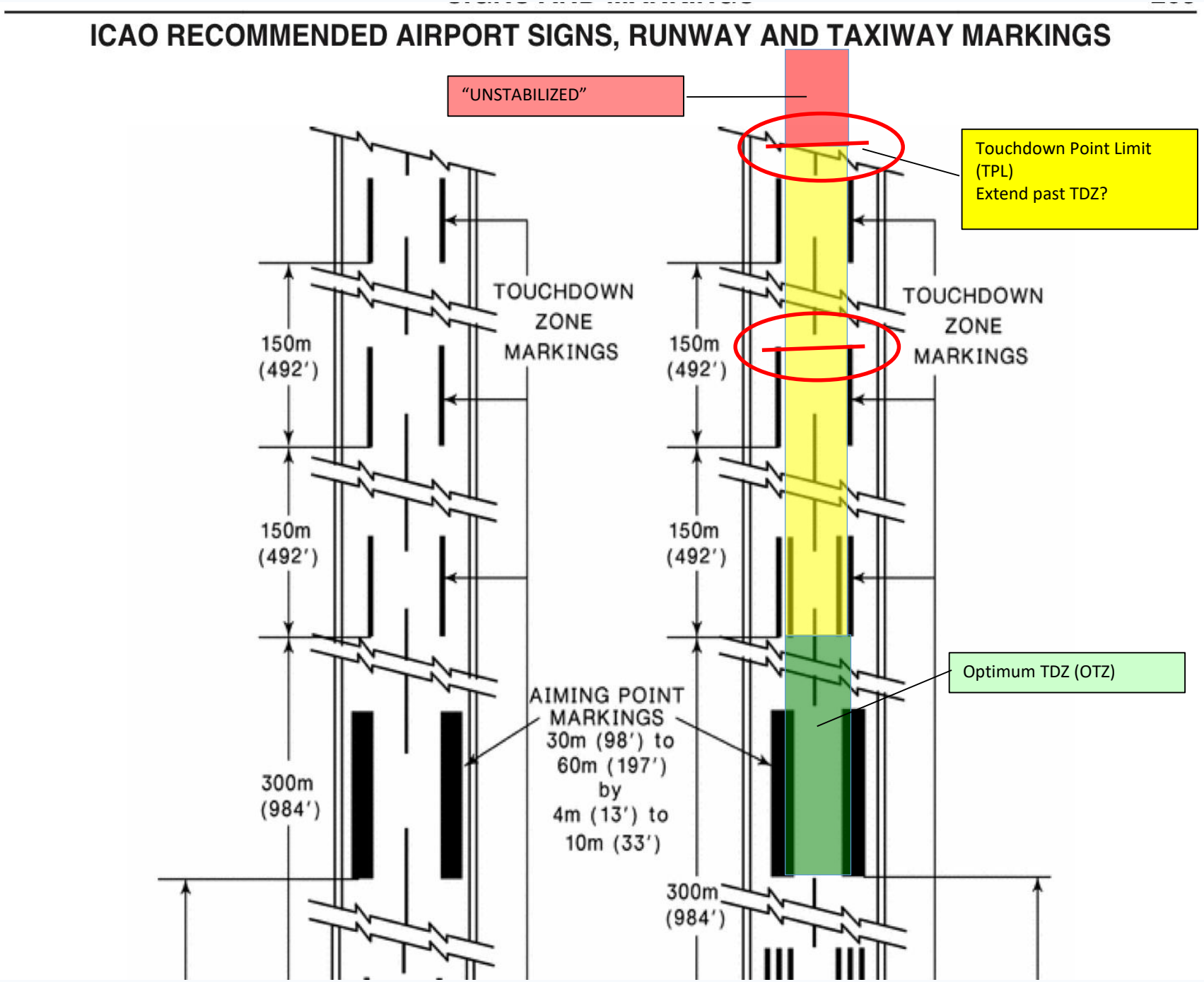
FLIGHT SAFETY FOUNDATION
independent • impartial • international

Touchdown Point Limit (TPL)

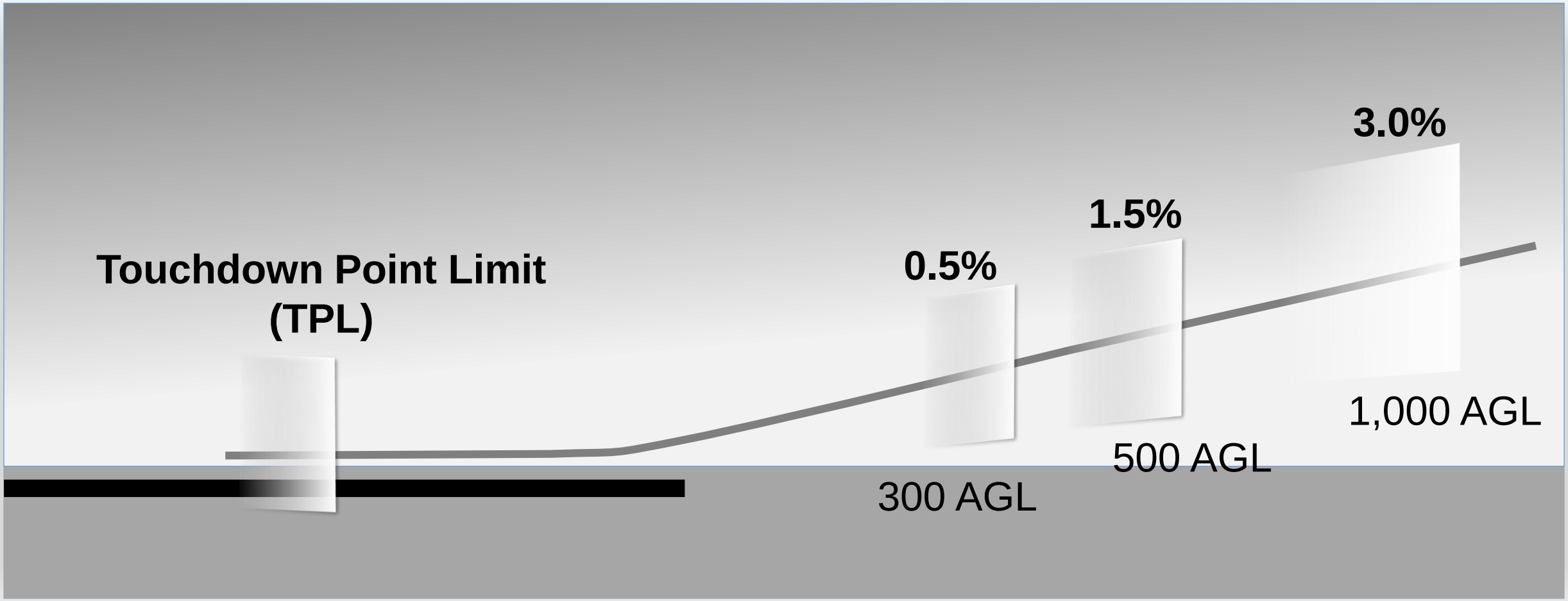


Touchdown Point Limit (TPL)





Unstable Approach Rates



In Summary

- Reducing exposure to the go around phase can reduce LOC-I risk
- Realistic steps can be done today to reduce exposure to go-arounds

presage

FLIGHT SAFETY FOUNDATION
independent • impartial • international

Thank you

presage

FLIGHT SAFETY FOUNDATION
independent • impartial • international