



Is your training relevant?

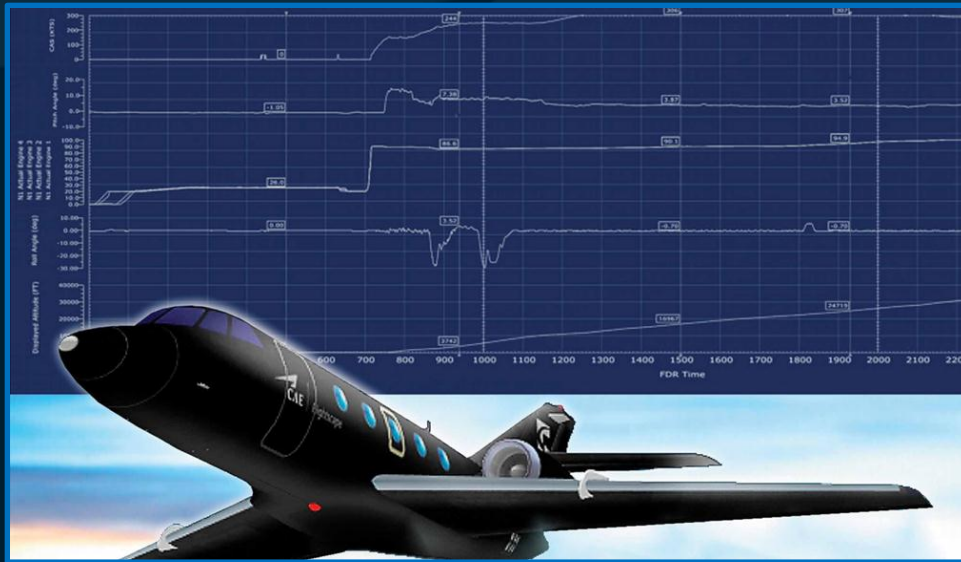
Training Priorities:
Improving Safety and Performance
through Flight Data-Driven Training

Captain Lou Németh
Chief Safety Officer, CAE
July 2012

Background

This presentation:

- Contemplates a self-mining option whereby an operator can use their own operational aircraft data
- Reports on the use of evidence mining in simulators in a concept known as SOQA - Simulator Operations Quality Assurance
- DoD sponsored study



Before & After

- ▶ Management committees meet and decide agendas based on evidence brought to their attention
- ▶ Relevance difficult to measure
- ▶ Data drives the safety and training agenda
- ▶ Relevance quantifiable



Adverse Event

Inadequate technique

Lack of supervision

Poor communication

Inadequate training

Poor monitoring

Line of confluence of the different factors

Risks

[illegible]

Evolution of Safety through Pilot Training

SOQA Video Example



Privacy Concerns

- ▶ The same safeguards as FOQA (gatekeeper)
- ▶ Videos destroyed in front of crew
- ▶ Learning videos re-created by actors with consent
- ▶ The value is in the aggregate data

SOQA Study

▶ Executive Summary

- *“... to evaluate the application of Flight Operations Quality Assurance (FOQA) principles to flight training through Full Flight Simulators (FFS).”*

▶ Project Purpose

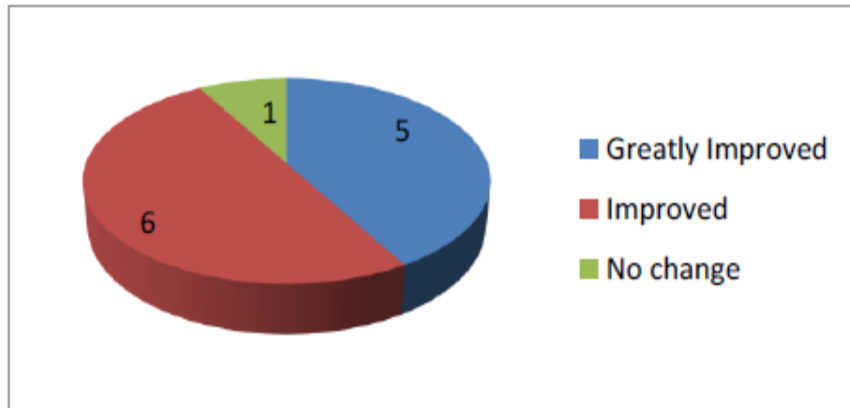
- *“... demonstrate the technical feasibility and mishap reduction potential of SOQA (Simulator Operations Quality Assurance).”*

Study Conclusions

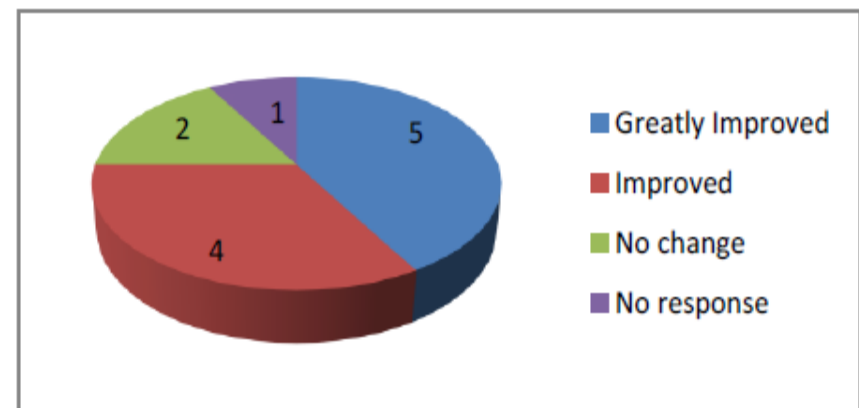
- ▶ “... successful in demonstrating the ability to apply *Flight Operations Quality Assurance (FOQA)* concepts to the simulator environment.”
- ▶ “... The ability to automatically detect SOPs and objectively rate pilot performance against a desired standard is considered a major innovation.”
- ▶ “... objectivity of a software report ... can... reduce controversy due to the current subjective assessment ...”

Value Added to Training

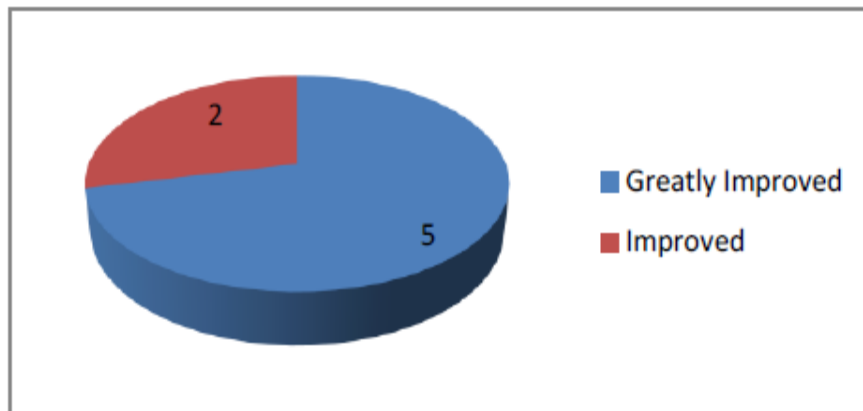
Value added by the animation software



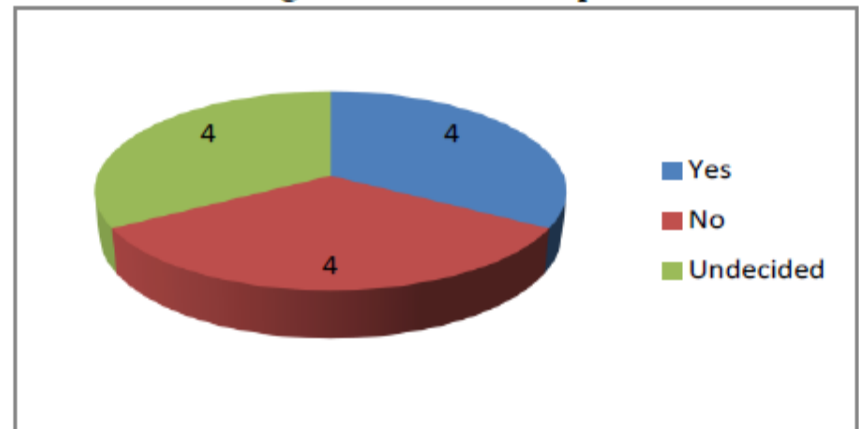
Value added by the Event and SOP reports



Value of the Wind Shear Exercise (only 7 pilots exposed)



Interest in having a DVD of their experience

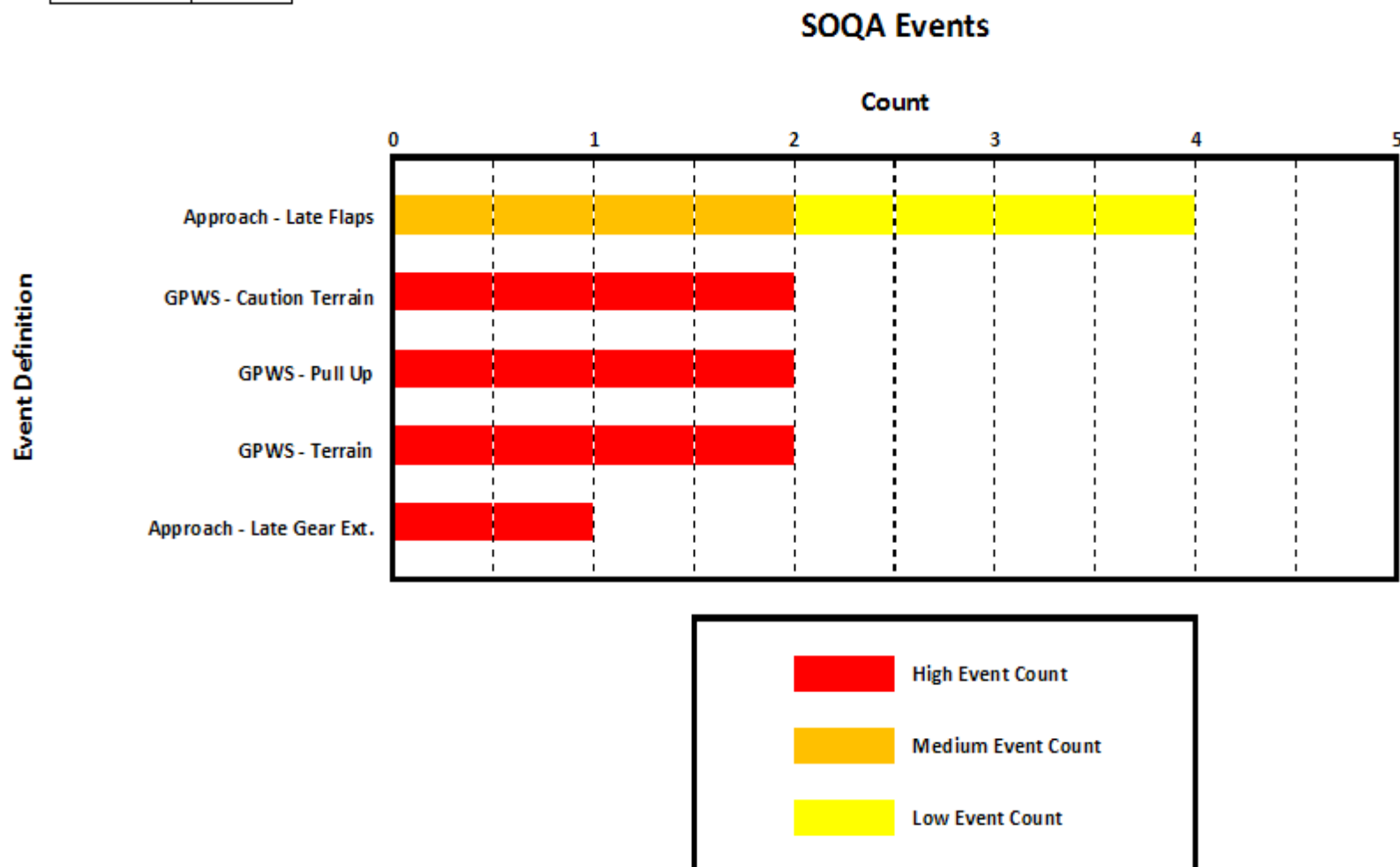


Study Statistics (all sessions)

- ▶ Total recorded time: 23 hours 48 minutes and 6 seconds
- ▶ Total flights = 246
 - Total take offs = 135
 - Total landings = 111
 - Wind shear flights = 27
 - Engine out flights = 29
 - Number of flights with severity events = 115
 - Total number of low, medium and high severity events = 416

SOQA Dem/Val Session Event Detection Report

Flight Count	1
Service	Navy



SOQA Dem/Val Standard Operating Procedure (Event Sequence) Report

Takeoff

Session Summary

Number of SOP sequences detected in this session

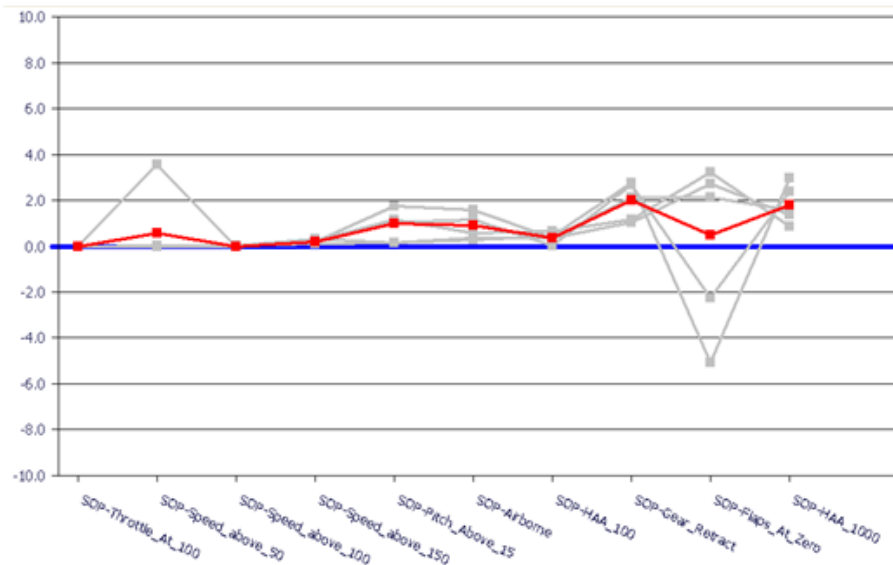
6

Number of out-of-range events detected

0

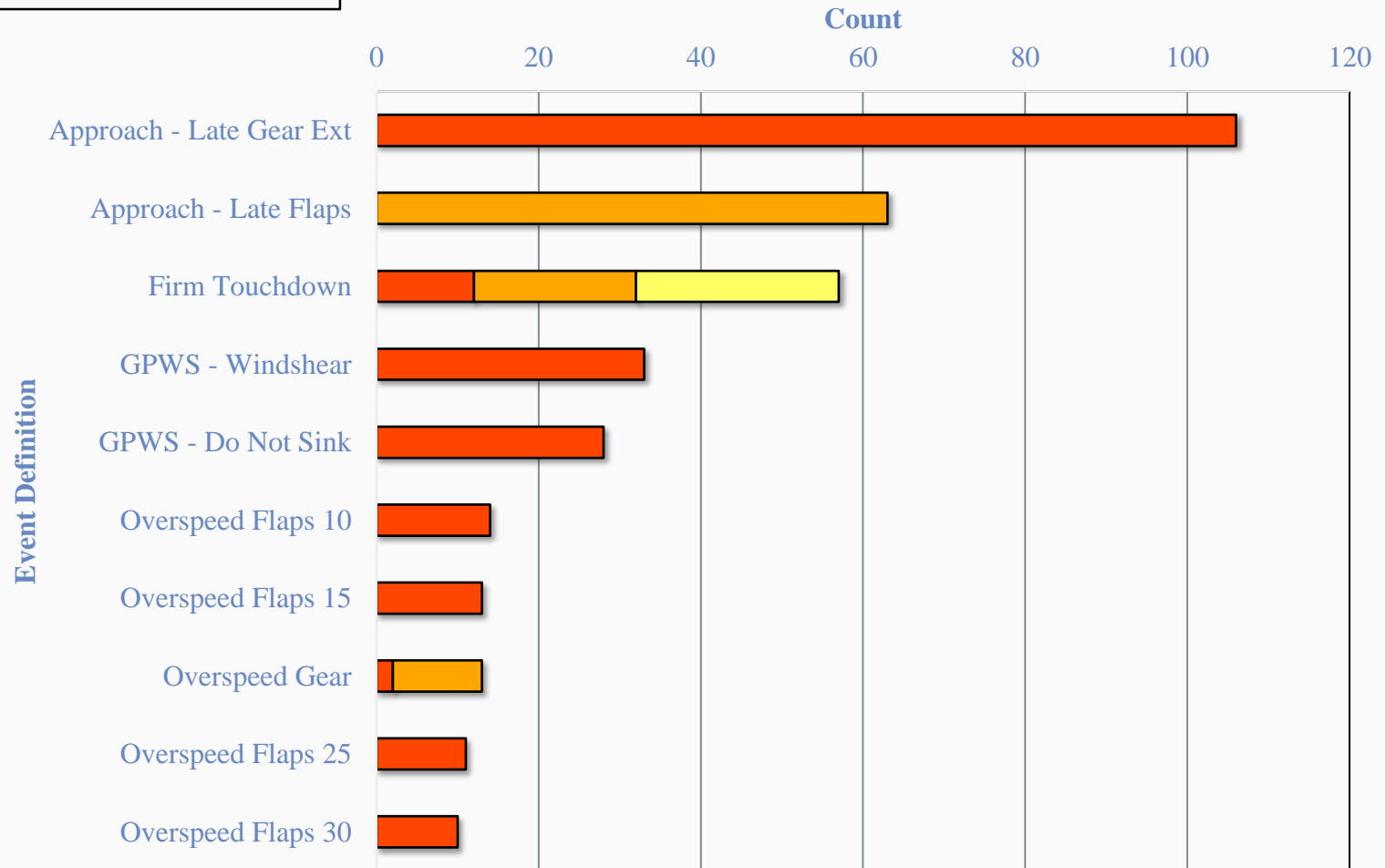
Session Details (out-of-range events shaded red)

Normal Event Sequence	Nominal Time (sec)	Average Variance
SOP-Throttle_At_100	0	-
SOP-Speed_above_50	8	0.6
SOP-Speed_above_100	18	0
SOP-Speed_above_150	30	0.2
SOP-Pitch_Above_15	38	1
SOP-Airborne	32	0.9
SOP-HAA_100	39	0.4
SOP-Gear_Retract	47	2
SOP-Flaps_At_Zero	93	0.5
SOP-HAA_1000	59	1.8

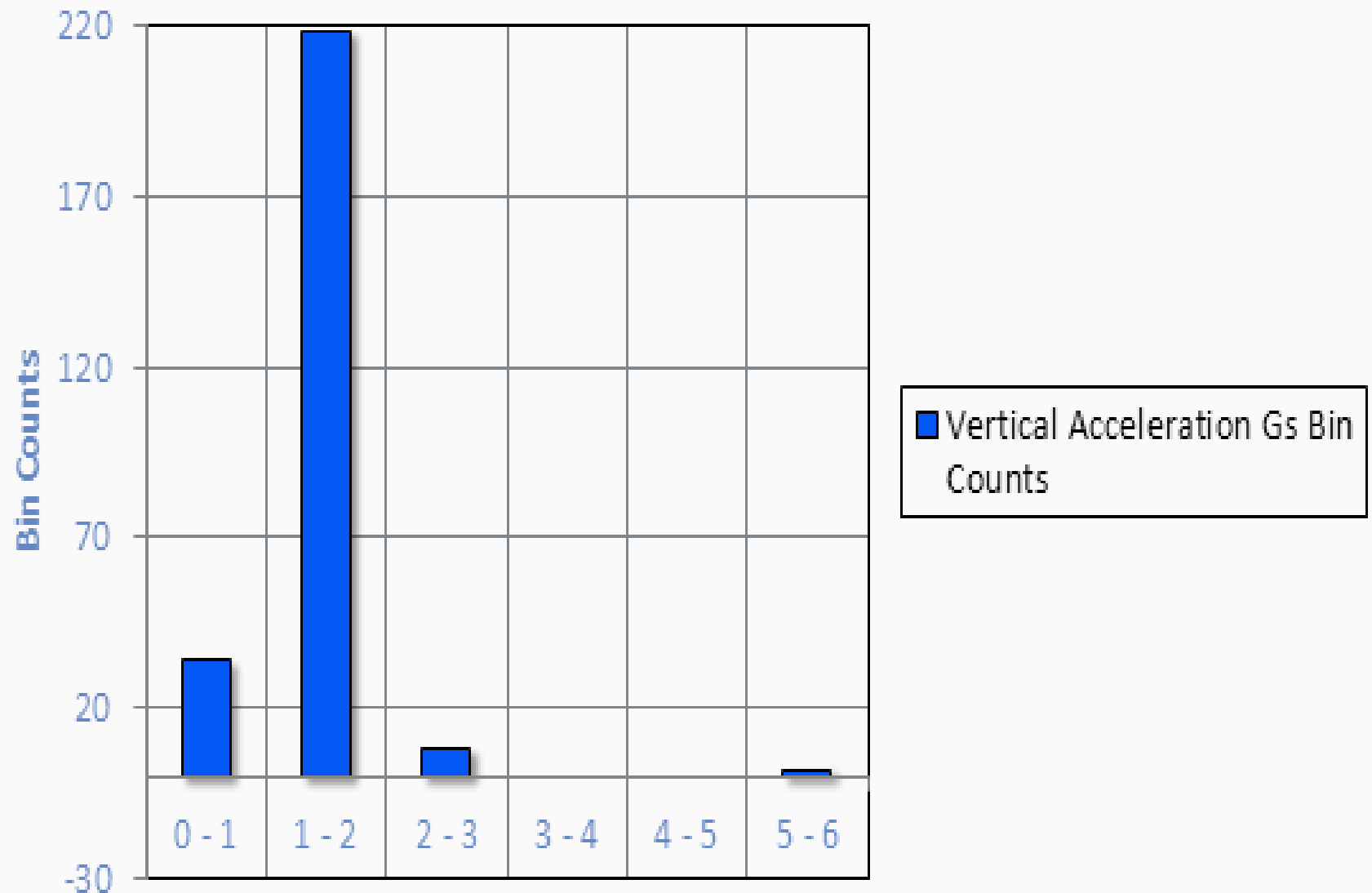


SOQA - TOP TEN EVENTS

- High Event Count
- Medium Event Count
- Low Event Count



SOQA - Landing G



SOQA Student / Client Benefits

- ▶ A more precise indication of their own performance
- ▶ Better assurance of impartial treatment
- ▶ A better way to identify what to practice in the simulator
- ▶ The means for interactive and intuitive self-reflection and analysis which is the basis for the development of judgement and a positive safety culture

SOQA Instructor Benefits

- ▶ A more precise indication of student performance
- ▶ A reduction in the requirement to keep extensive notes during flying missions, thereby providing more time for teaching flying
- ▶ Accurate replay for debriefing flying missions
- ▶ Accurate identification of student remedial simulation or flying mission requirements

SOQA Flight Safety Benefits

- ▶ A larger volume of aggregate data to replace the diminishing availability of live flight data
- ▶ Improved operational safety through more effective training
- ▶ Identification of patterns and trends that will identify problems in many areas such as unstable approaches, the exceeding of operating limitations, and training deficiencies

Conclusion

- ▶ Prescriptive training regulations haven't changed much in decades while the learning style and available technology have changed significantly
- ▶ Evidence-based training is a major innovation that should improve flight training as well as safety
- ▶ The appropriate visualization, automatic assessment and system reporting tools - when appropriately applied - should still further improve safety and training while giving all stakeholders a deeper insight to the challenges
- ▶ SOQA measures the continuous performance of the training system

Contact Information

Lou Németh

Chief Safety Officer, CAE

972.456.8278

Lou.Nemeth@cae.com

Thank You!



CAE

one step ahead