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Towards an efficient FDA Programme

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AIRBUS

AIRBUS

A Non-Punitive Programme

Data Into Perspective

Challenge The Read-Outs

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A Non-Punitive Programme

"an FDAP may be described as a **non-punitive programme** for the routine collection and analysis of flight data to develop objective and predictive information **for advancing safety**".

Manual of Flight Data Analysis Programmes / Doc 10000

Why a non-punitive programme?

A Non-Punitive Programme

Runway Overrun

Precursors

+ Late Descent
+ Too High
+ Too Fast
+ Long Flare

+ **Landing after an unstabilized Approach**

A Non-Punitive Programme

Runway Overrun

Contributing Factors

+ Fatigue
+ No Crew Communication
+ No Crew Coordination
+ F/O Lack of Assertiveness

➢ **Many Pitch and Thrust adjustments during the flare**

Latent Handling Problem?

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A Non-Punitive Programme

Runway Overrun

Handling Skill

+ No reported training issue

Recent Crew Interview

+ Called for a Hard Landing

A Non-Punitive Programme

Safety Policy

- The “Three Strikes Law” in force at that airline

Three Hard Landings  You are Fired

Contributing Factor

A Non-Punitive Programme

Hard Landing

Hazard Identification

+ Numerous **High Vertical G at Landing** FDA event

Mitigation Action

+ Put **Fine** on Captain triggering an event

Monitoring the Effectiveness

+ Less High vertical G at landing after few months

Safety Improvement?

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Hard Landing

Side Effects

+ No more landing by FO
+ Increase number of **Long Flare distance** FDA events

+ **Flying the Software**
+ **Killing Voluntary reporting**

A Non-Punitive Programme


A Non-Punitive Programme
Data Into Perspective
Challenge The Read-Outs

Hard Landing

- We do not monitor Hard Landings
- We monitor High Vertical G at Landing

Goal :

- To Identify Handling Issue at Landing
- To Prevent Hard Landing

High Vertical G at Landing

- High Vertical G at Landing Triggering Values
  - VRTG > 1.50 G → Low Severity Event
  - VRTG > 1.60 G → Medium Severity Event
  - **VRTG > 1.75 G → High Severity Event**

- A320 Vertical G Hard Landing Threshold = 2.6 G

A High severity event "High Vertical G at Landing" is NOT a hard landing as per the maintenance definition.

Data Into Perspective

High Vertical G at Landing

An FDA Tool is Not a Maintenance Tool

To Identify Trends

Predictive Safety Management

Hard Landing Risk

Precursors

+ Path High at Landing (below 20ft)
+ Vertical Speed High before touchdown
+ Pitch and/or Roll Cycling at Landing
+ Pitch High at Landing
+ Speed Low
+ etc.


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Data Into Perspective
Challenge The Read-Outs

Challenge the Read-Outs

Speed Above VFE

File Edit View Tools Window Help

Events | Flight Phases | 3D | Configuration | Airport

Single Events

Event	Time /	Description	Unit	Low	Medium	High
1053	13/03/2015 15:19:44 GMT	Rolling Take Off				
1017	13/03/2015 15:25:37 GMT	Speed above VFE	CAS >; TOL >= 3s	#	VFE	VFE + 4 Kts
1812	13/03/2015 18:52:36 GMT	Height Low at Threshold	Height Low at THR	<= 35	<= 30	<= 25
1023	13/03/2015 18:52:42 GMT	Speed Low at Touch down	CAS <:	VLS -5 Kts	VLS -8 Kts	VLS -10 Kts
1817	13/03/2015 18:52:42 GMT	Short Flare Distance	DIST_TO_THR (at TD) <=:	450 m	350 m	250 m

High Severity Event Triggering conditions:
CAS > VFE + 4 Kt for a Time Over Limit of 3 Sec

Trend Events

Event	Time

CONF 1
VFE = 230 KT
CAS = 237 KT

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Speed Above VFE

Recording Limitation

+ VFE not recorded
+ Flaps lever position not recorded
+ Configuration not recorded

Solution

+ Slats and Flaps Angles

Challenge the Read-Outs

Speed Above VFE

To Sum up to get the VFE

Slats_Angle values

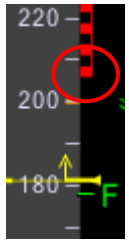
_Slats_Angle

Algorythm
Range, offset,
0 position value

_Slats_Position

_Config

_VFE



Algorythm
Range, offset,
0 position value

_Flaps_Position

Flaps_Angle values

_Flaps_Angle

Speed Above VFE

Issue

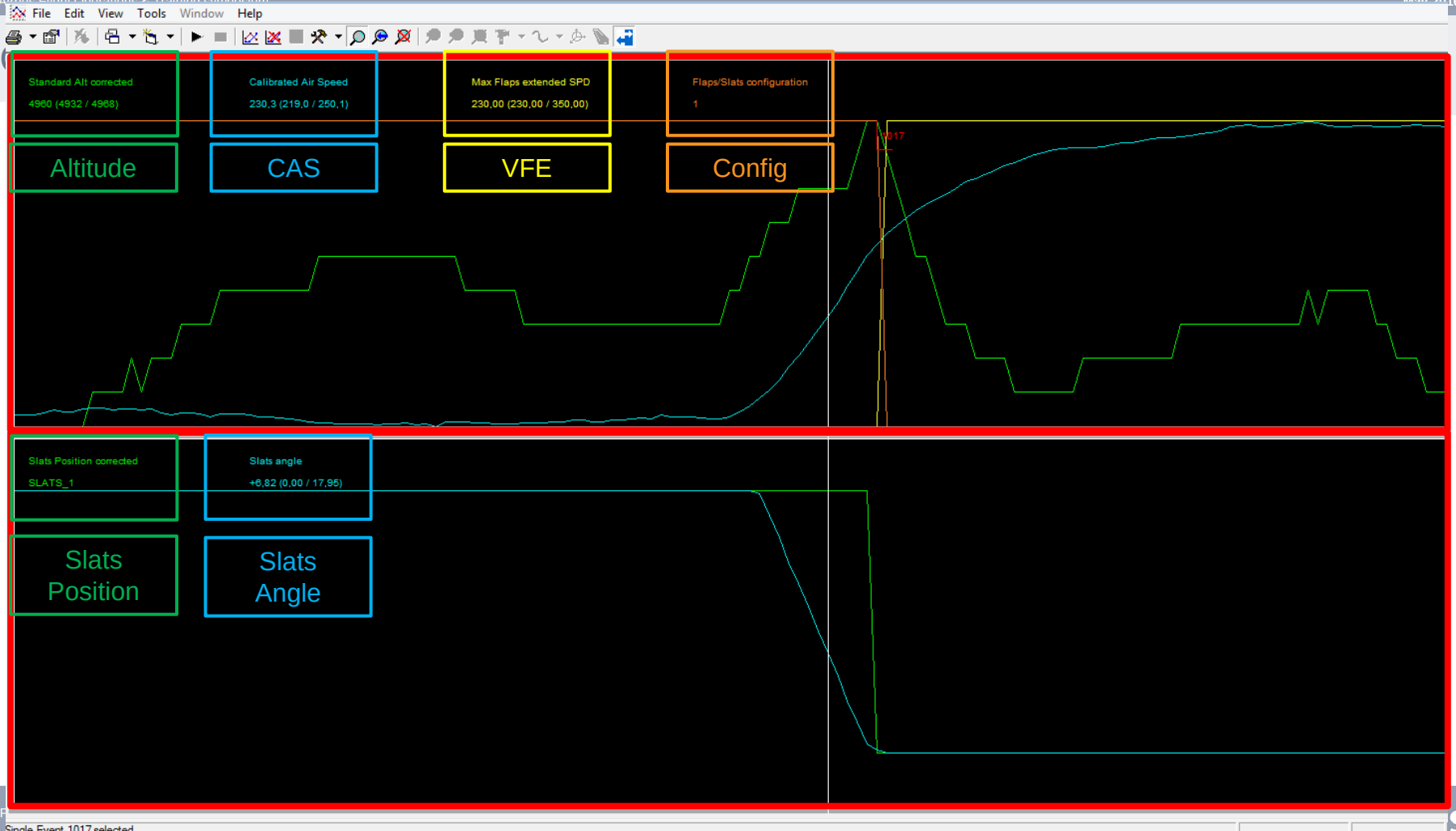
- Slats & Flaps Angles at the next configuration position to get the right VFE
- On board VFE is linked with the Flaps Lever Position

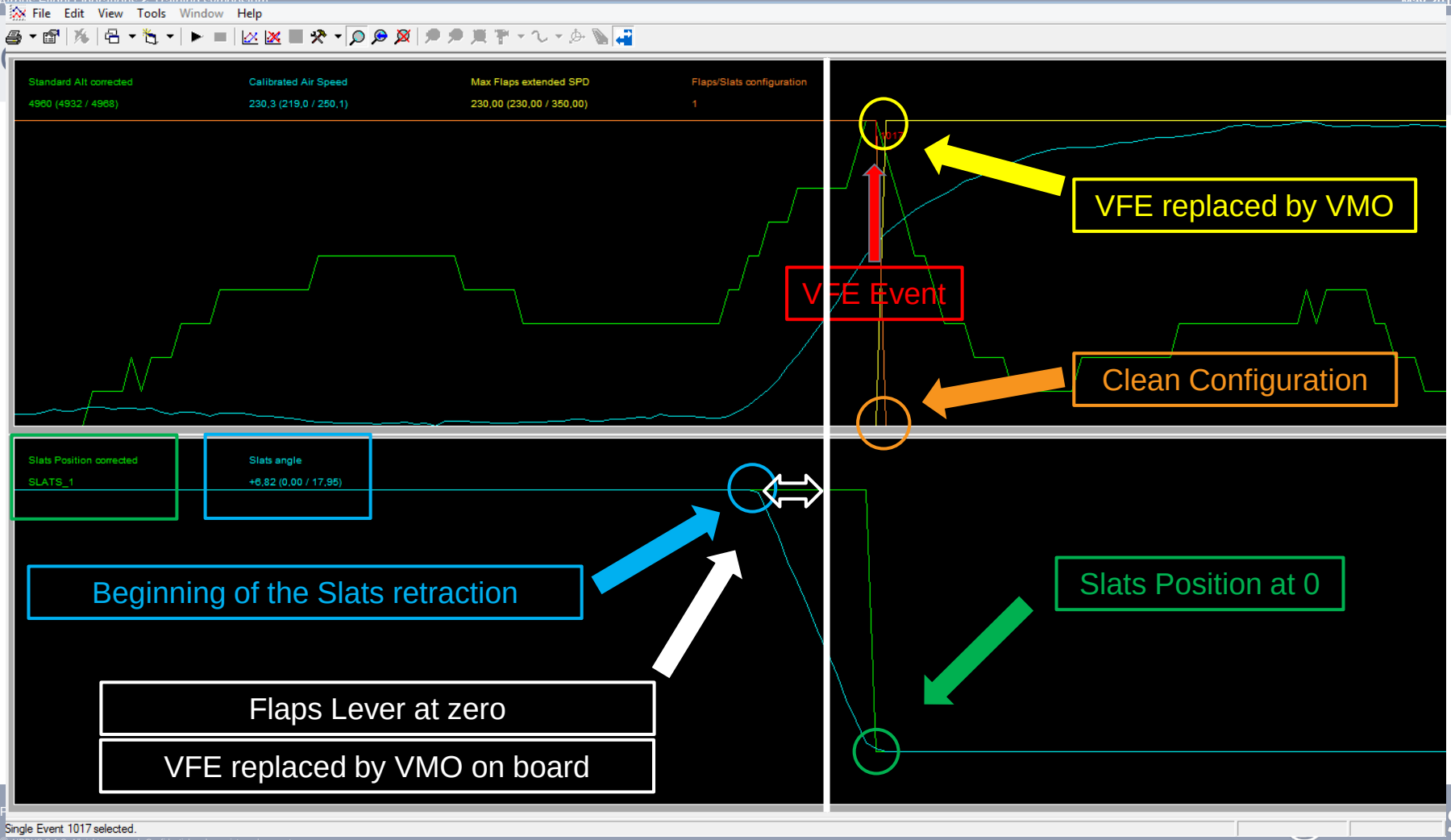
Consequence

- Delay in updating the VFE

Solution

- Call the right parameter





Challenge the Read-Outs

Event Investigation

Requirements

- Investigation without delay
- Competent FDA team member
- Ability to challenge in order to validate the results

Risks

- Loss of time on wrong events
- Focussing at finding solutions on unexisting issue
- Loss of Confidence in the FDA programme by the crew

Conclusion

Fundamentals for FDAP Efficiency

A Non-Punitive Programme

- + De-identification process - Confidentiality
- + Safety Policy promoting a just culture endorsed by the Management

Competent FDA Team Members

- + A Critical Eye
- + Put the data into perspective
- + Able to challenge the results

Improving Safety