



← EMBRAER



EMBRAER

contribution to ARCM

Lima, Peru 3 – 7 Sept 2018

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- EMBRAER at a glance (2 minutes)
- EMBRAER contribution to ARCM

Training & Lectures

Support for investigations



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EMBRAER

AT A GLANCE



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WHERE WE OPERATE



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GLOBAL PRESENCE



DIVERSITY IS WEALTH



CUSTOMERS

COMMERCIAL AVIATION



* E-Jets families and ERJ only; scheduled and non-scheduled airlines.



CLIENTS

EXECUTIVE AVIATION



JETS
DELIVERED

1000 +

COUNTRIES

70 +



CLIENTS

DEFENSE & SECURITY



ARMED
FORCES

50 +

Note: Excludes undisclosed clients



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COMMERCIAL AVIATION

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ERJ 145 Family



ERJ 135



ERJ 140



ERJ 145



ERJ 145 XR

Rolls-Royce
AE3007



50



Mach 0.78



2,000 nm



E-JETS



EMBRAER 170



EMBRAER 175



EMBRAER 190



EMBRAER 195



General Electric
CF34

70 - 124



~ 2,400 nm



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E190-E2

BEHOLD THE POWER OF 2



97 - 114



GTF PW1900G
engines



2,850 nm



E190-E2

SYNTHETIC VISION



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1



BECAUSE
OF **YOU**

AIN &
PROFESSIONAL PILOT
Product Support Surveys 2016



EXECUTIVE AVIATION



PHENOM 100E



PHENOM 300



LEGACY 450



LEGACY 500



LEGACY 600



LEGACY 650



LINEAGE 1000E



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PHENOM[®] 100E

ENTRY LEVEL



5 - 7



1 - 2



1,178 nm

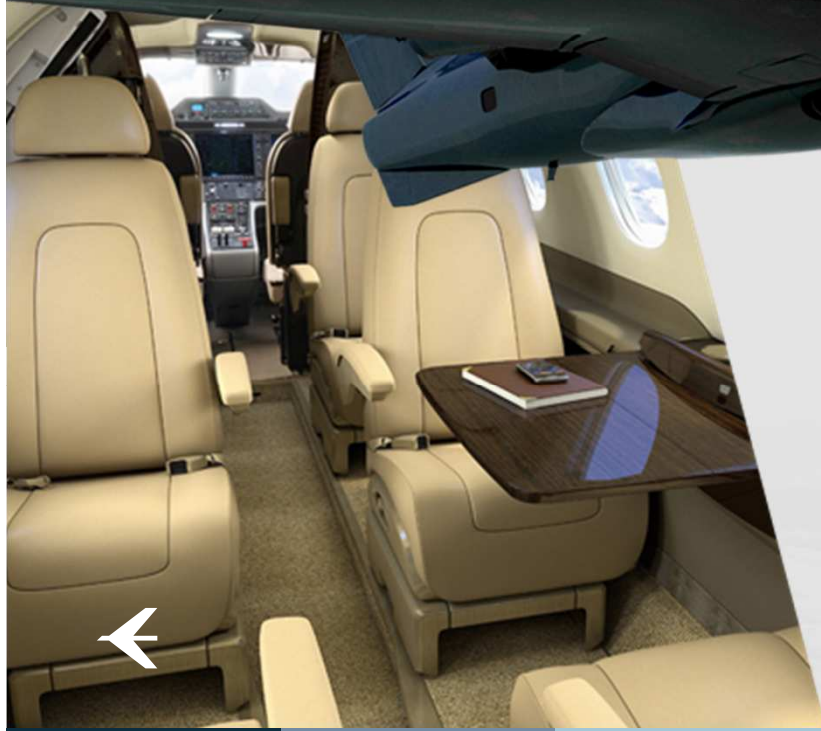


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PHENOM[®] 300

LIGHT



1 - 2



7 - 10



1,971 nm



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LEGACY[®] 450 -500

MIDSIZE



7 - 12



2



2500 - 3,125 nm



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LEGACY[®] 650

LARGE



13 - 14



2



3,900 nm



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LINEAGE[®] 1000E

ULTRA LARGE



13 - 19



2



4,600 nm



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**BOLDNESS AND INNOVATION
ARE OUR HALLMARKS**



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Training and Lectures

E-Jets

***E-Jets Aircraft Systems
Familiarization Training
for Investigators***



Buenos Aires
Sept 26th to 29th, 2017



Training and Lectures



China – April 2018

Training for Investigators



CENIPA – Brazil - Fev 2018

Lectures

- Adverse meteorology
- The importance of standard procedures
- Human fatigue
- Runway overrun prevention
- How airplanes are developed (coming soon)



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Contacts



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Paulo Soares: +55 12 98151 2289

Investigations, Human and Operational Factors



Embraer Investigations Group

Advisers of CENIPA's Accredited Representatives



Investigations,
and Operational
Aspects
Paulo Soares



Carlos Eduardo

Investigations



Frederico Moreira

Investigations



Jose Pistilli Junior

Investigations
&
Cabin Safety



Fabio Bonnett

Investigations
&
Operational Aspects



Pedro Abreu

Investigations
&
Engines



Jules Marcelo

Safety Overview
&
Archives

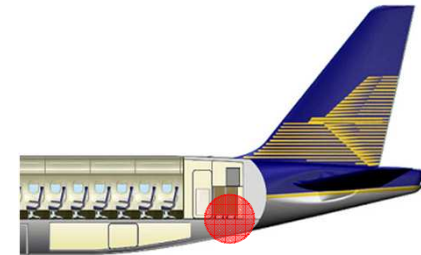
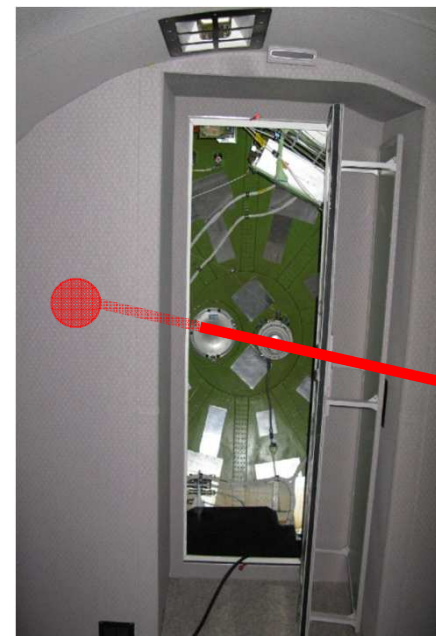
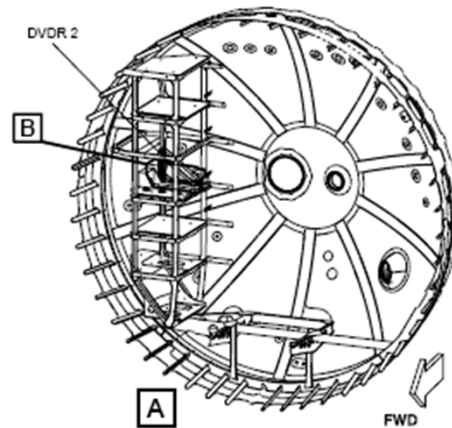
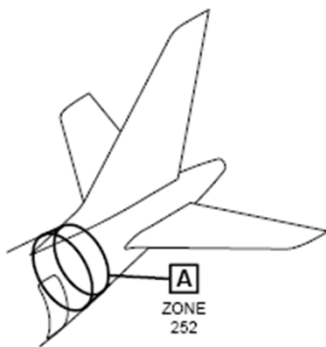
+40 Embraer Specialists

Embraer support to investigations



Information about **Recorders**:

- Download and access
- Installation details
- Dataframe and parameters



AFT Cargo Compartment



Embraer support to investigations – Supplier Integration

E-JETS E2 SUPPLIERS

E-JETS
E2
THE SECOND
GENERATION

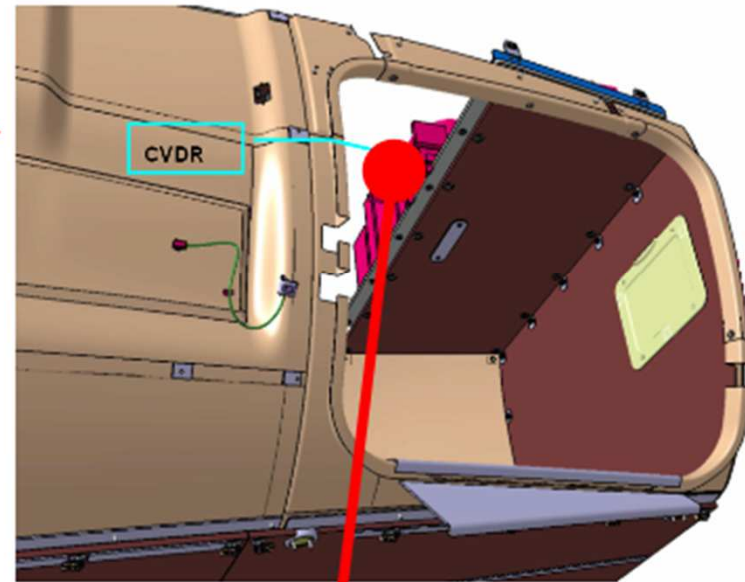
The image shows an Embraer E190-E2 aircraft in profile, facing left. The aircraft is white with blue and yellow accents. The tail features a large 'E2' logo. Surrounding the aircraft are various supplier logos and component names, organized as follows:

- Control Wheel Column-by-Wire Control Pedals:** Esterline
- Cockpit Lighting:** Sirio Panel
- External Lights:** EMTEQ
- AMS:** LIEBHERR
- Fuel System Water & Waste Pax Oxygen:** ZODIAC AEROSPACE
- Avionics:** Honeywell
- Flight Controls:** MOOG, LIEBHERR, Rockwell Collins
- Center III, Rear Fuselage Rudder, Elevator, Insulation:** Triumph Group, Inc.
- Vertical and Horizontal Tail:** AERnova
- Spoilers / Ailerons:** facc
- Pilots Seats Observer Seat FA seats:** Ipeco
- Cabin Management Sys Cabin Lights Emergency Battery Passenger Service Unit:** DIEHL Aerospace
- Hydraulic Pumps:** FATON
- Powerplant / APU:** (Logo of Pratt & Whitney)
- Wheels & Brakes APU Electrical System (Generation, Distribution, Emergency, Batteries e Converters):** UTC Aerospace Systems, United Technologies
- PACIS AVTECHTYPEE**
- Crew Oxygen:** B/E Aerospace
- Cockpit Printer:** RITEC
- E-bay Cooling Sensors Fans package Recirculation Filter:** SAFRAN
- LG Controls:** CRANE

Embraer support to investigations - Recorder's Download



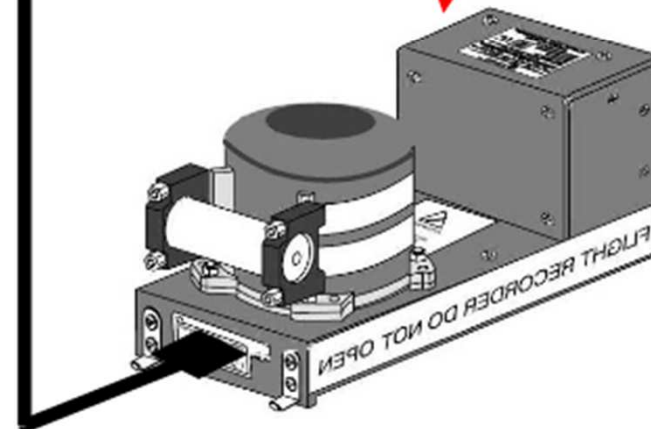
Baggage Compartment



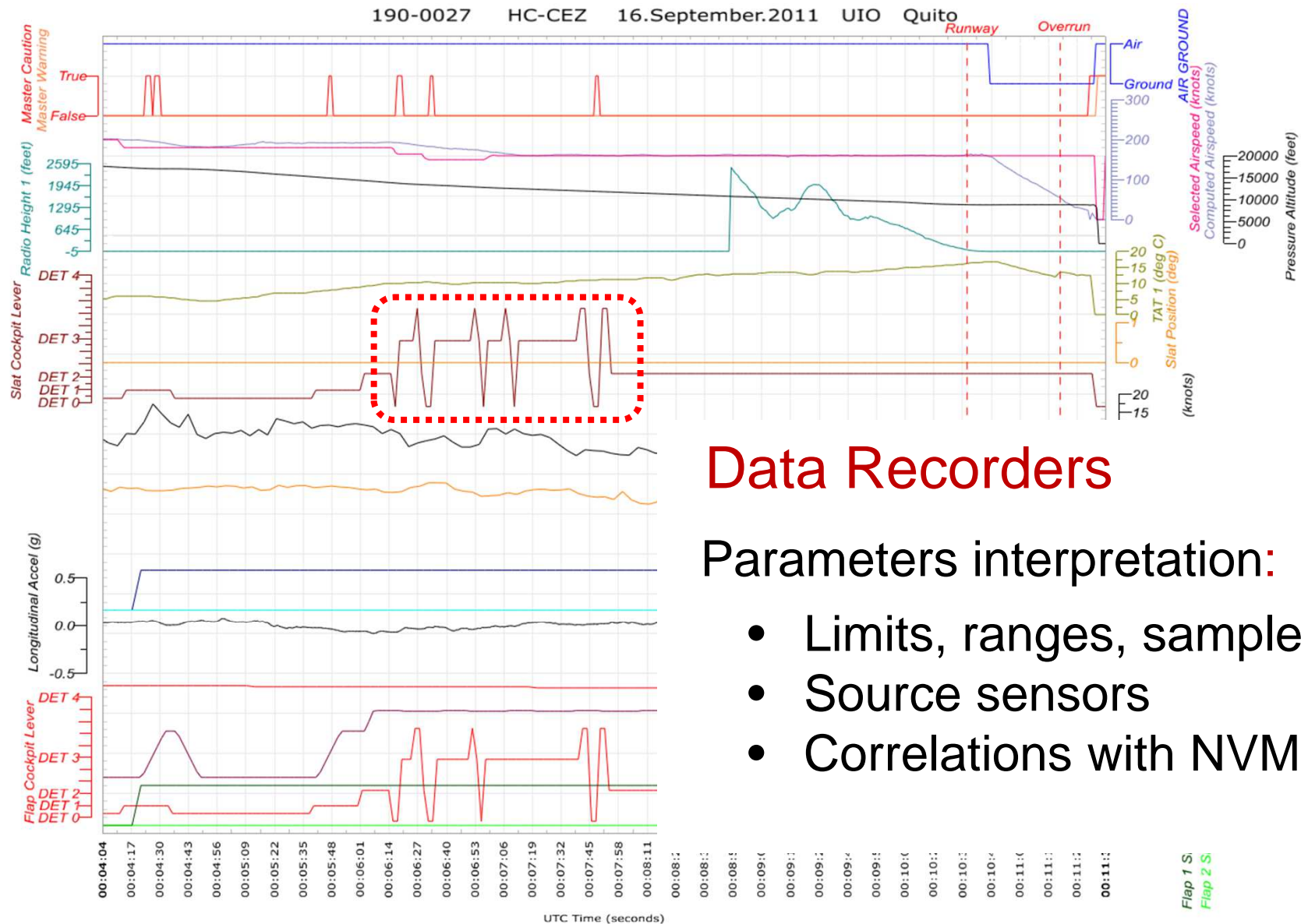
Data Download (only data)



PI – Portable Interface



Understanding the Flight Data



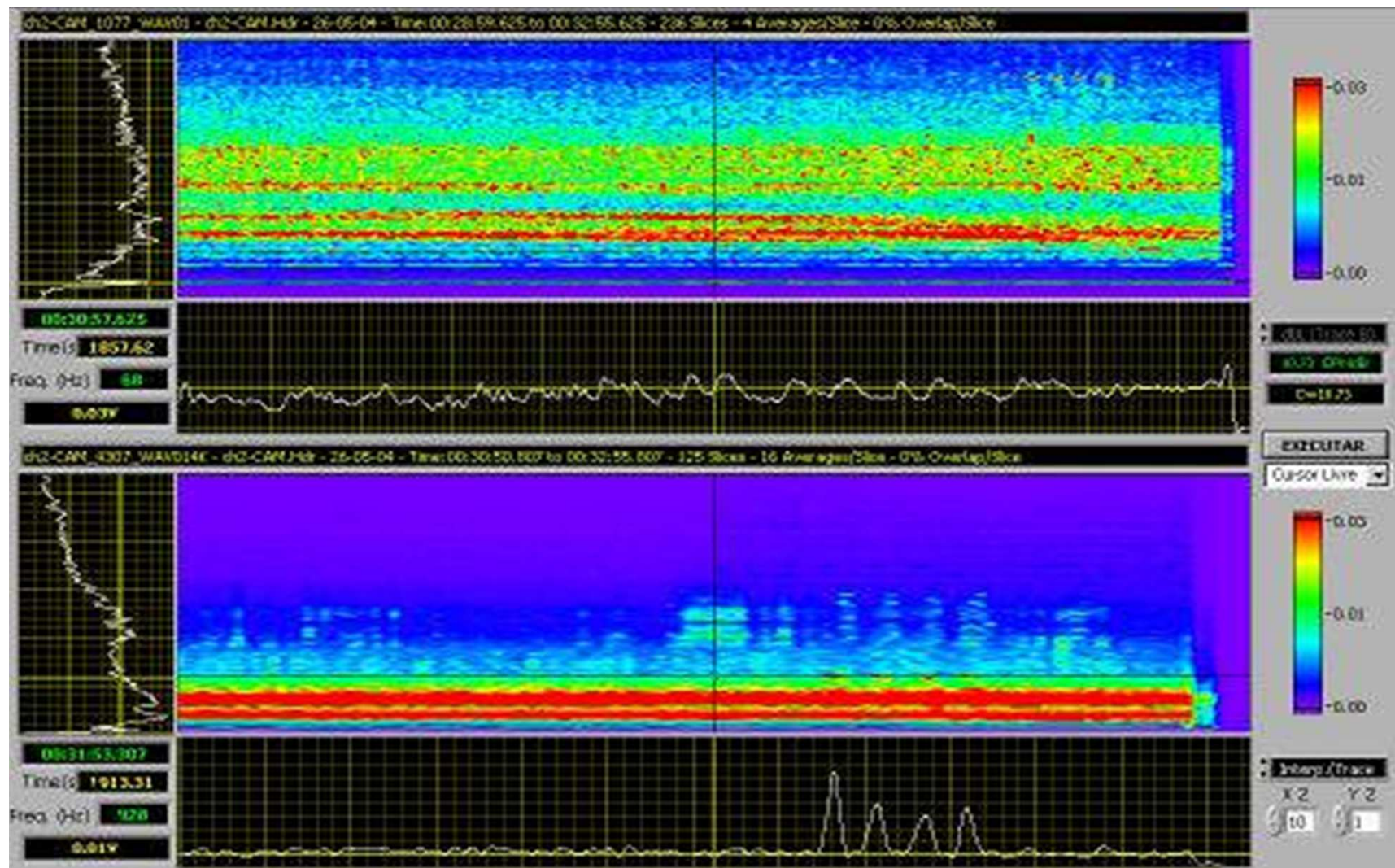
Data Recorders

Parameters interpretation:

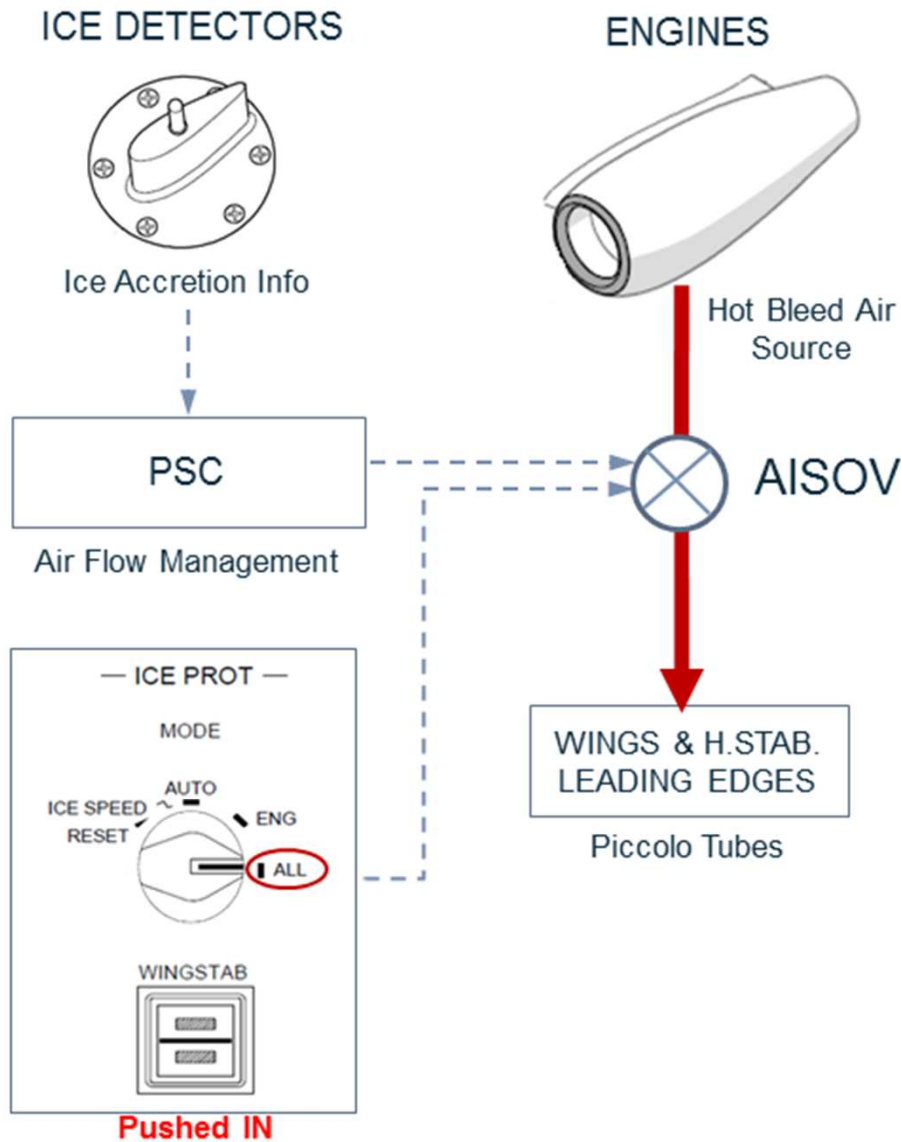
- Limits, ranges, sample
- Source sensors
- Correlations with NVM

Embraer support to investigations

Cockpit Voice Recorder (CVR) Sound Spectrum Analysis



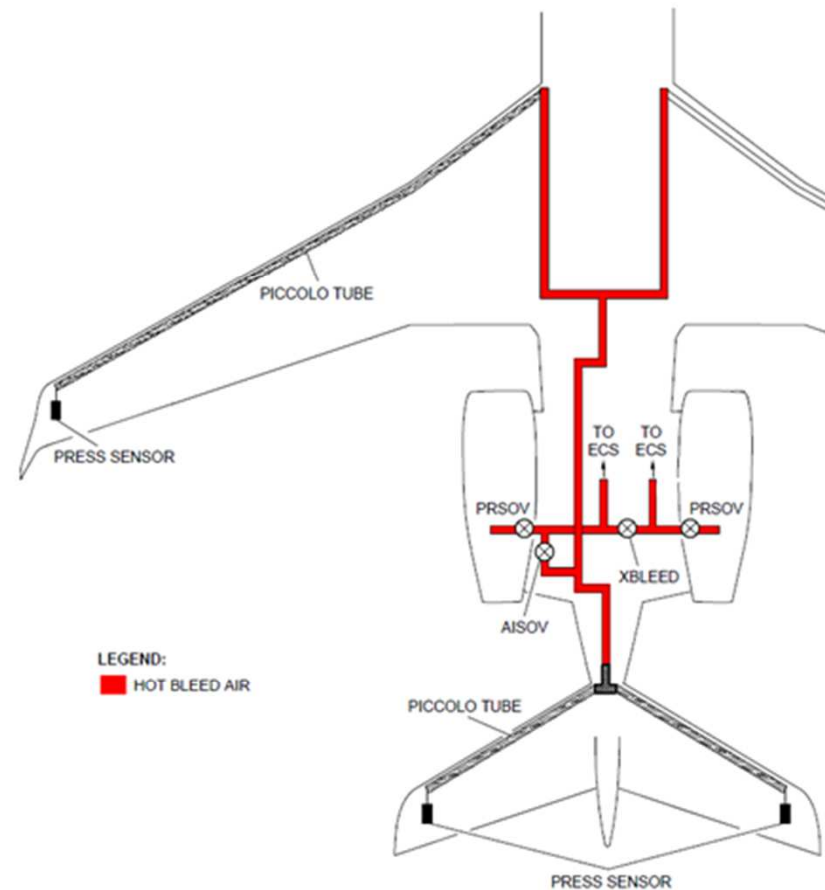
Embraer support to investigations – Explaining the aircraft



550-0063 RA-02788

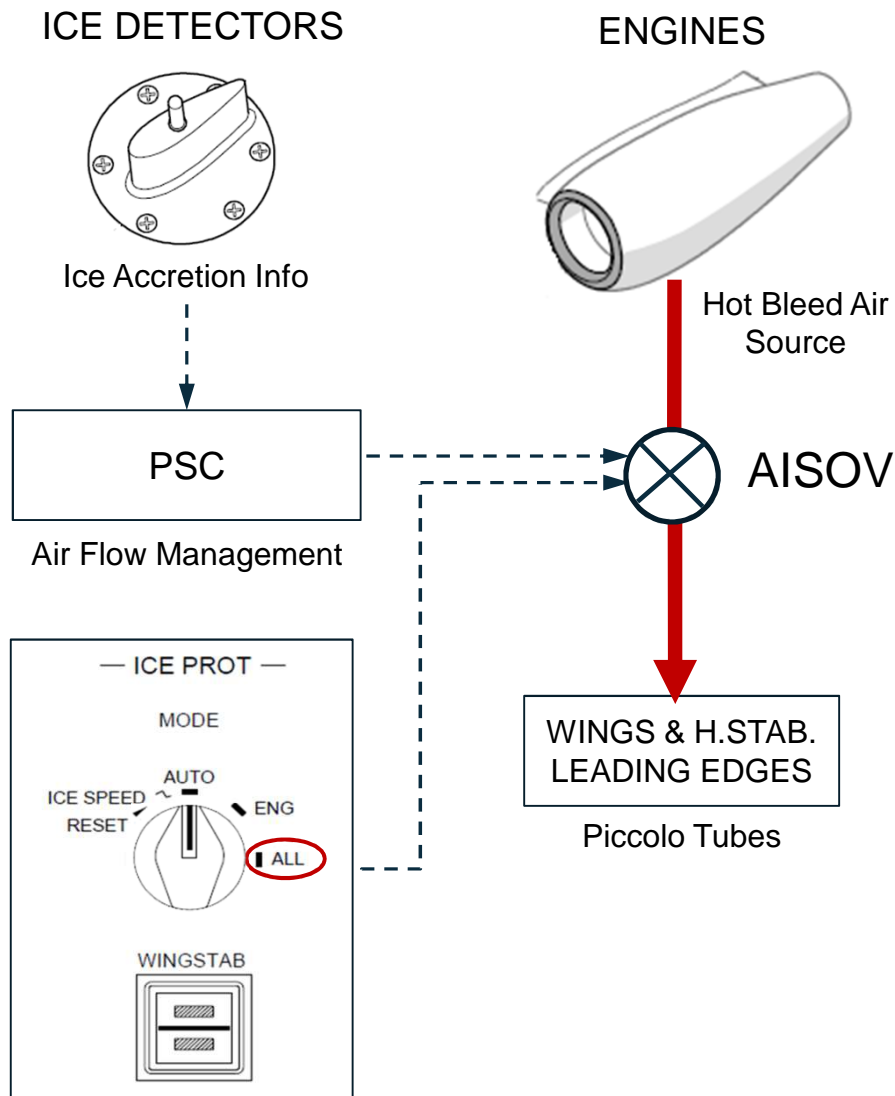
PSC: Pneumatic System Control

ICE PROTECTION SYSTEM



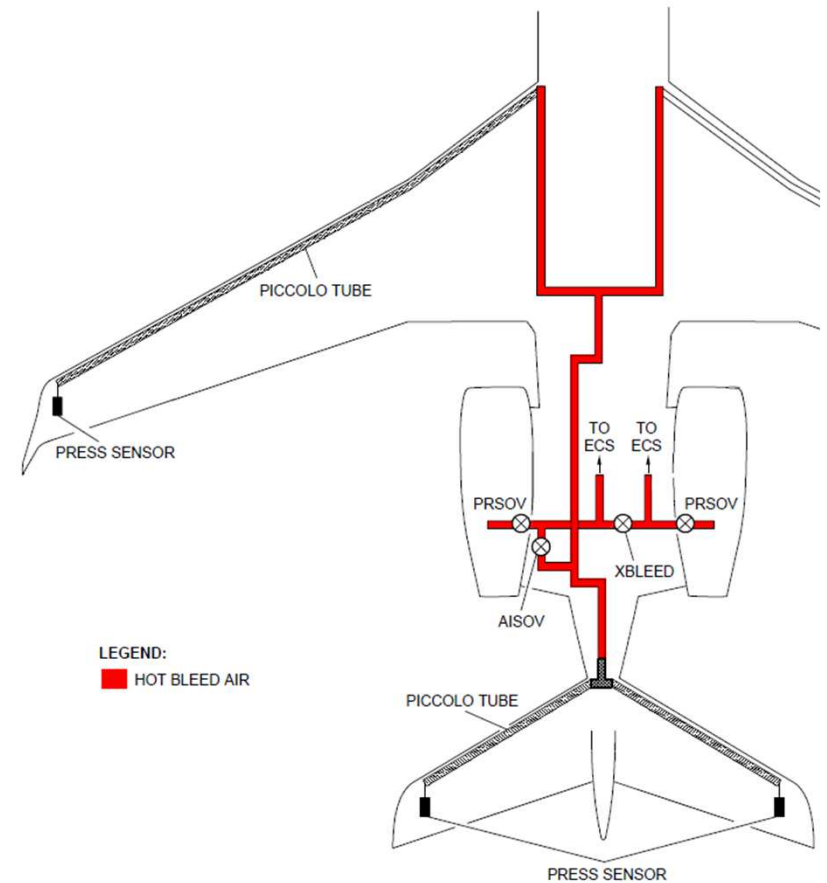
AISOV: Anti-Ice Shutoff Valve

Embraer support to investigations – Explaining the aircraft



Pushed IN

PSC: Pneumatic System Control



AISOV: Anti-Ice Shutoff Valve

Embraer support to investigations



Embraer support to investigations

The use of Irons Birds for aircraft systems investigations

- Software analysis
- Electrical system & Avionics (e.g.)
- Hydraulics system
- Flight controls
- Environmental
- Fuel & Fire Protection Systems
- Mechanical systems
- Landing Gear systems



Embraer support to investigations

RF A-022/CENIPA/2008



Figura 5. Bancada de integração Primus 1000

PR- GTD / N600XL

29 SET 2006

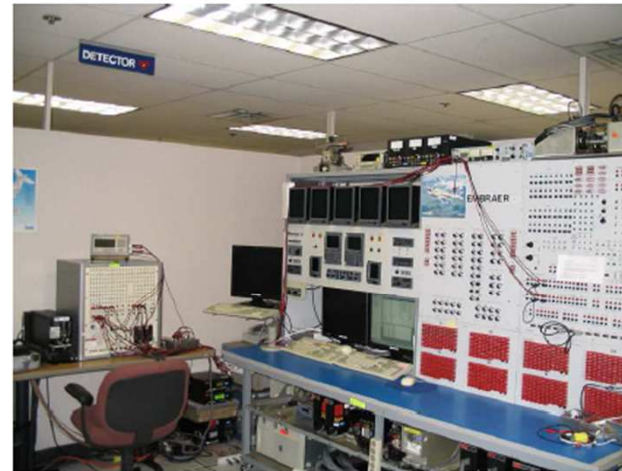


Figura 6. Bancada de integração Primus 1000 e TCAS

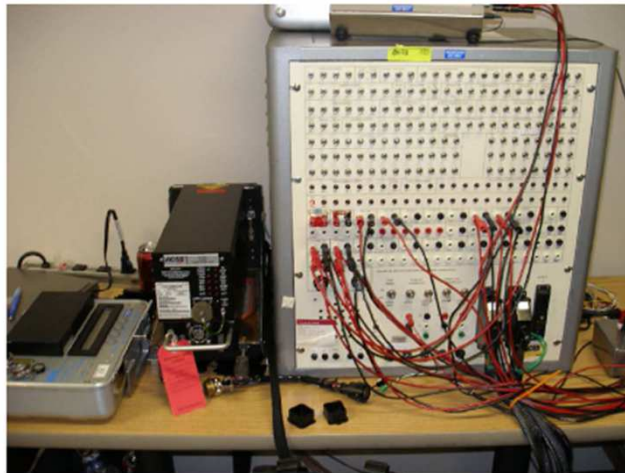


Figura 7. Bancada TCAS

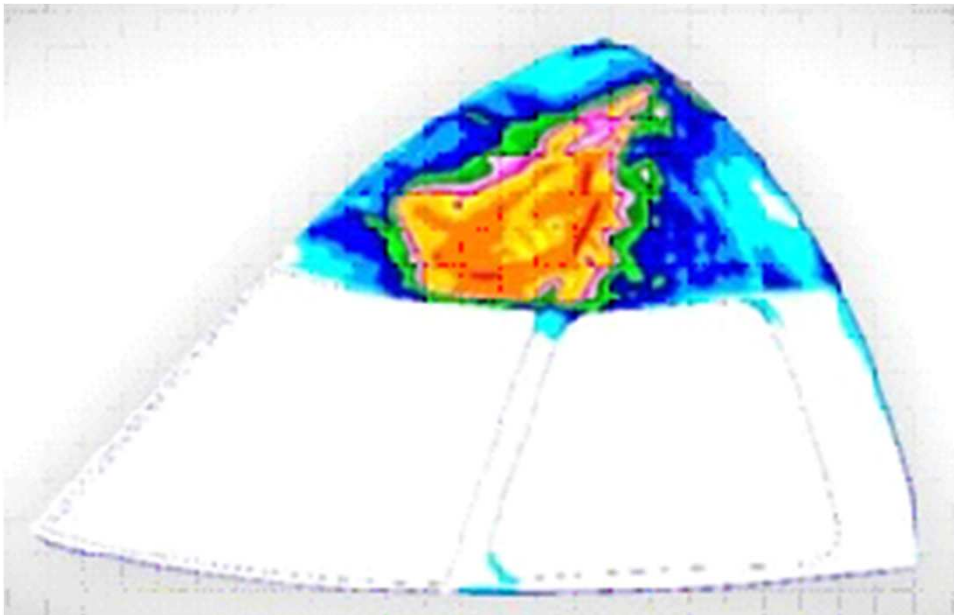
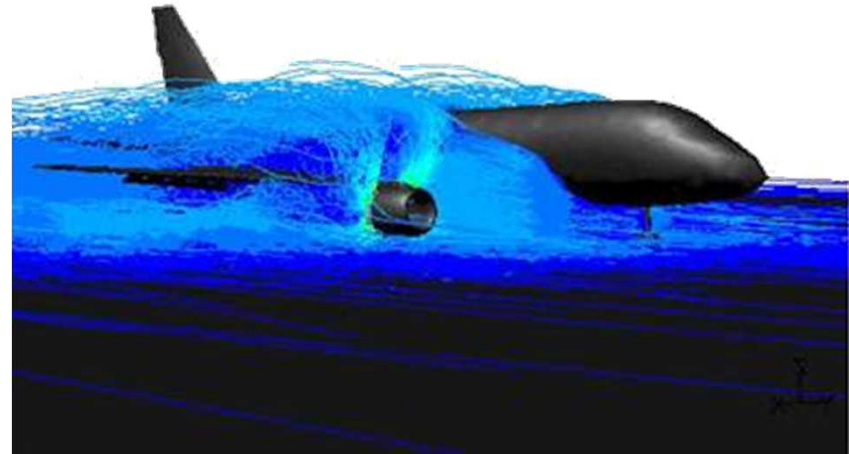


Figura 8. Bancada Primus II (Radio Navegação)

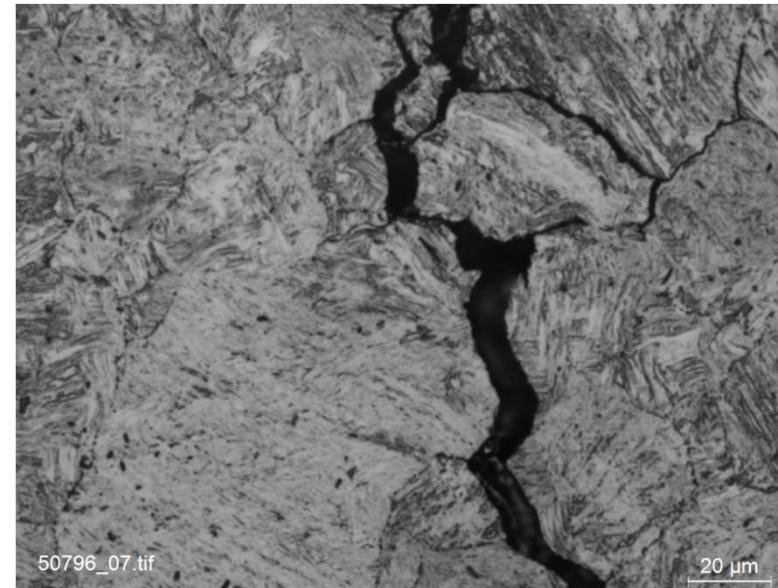
Embraer support to investigations

Computer based simulations
and studies

- Thermal
- Impact
- Fluid

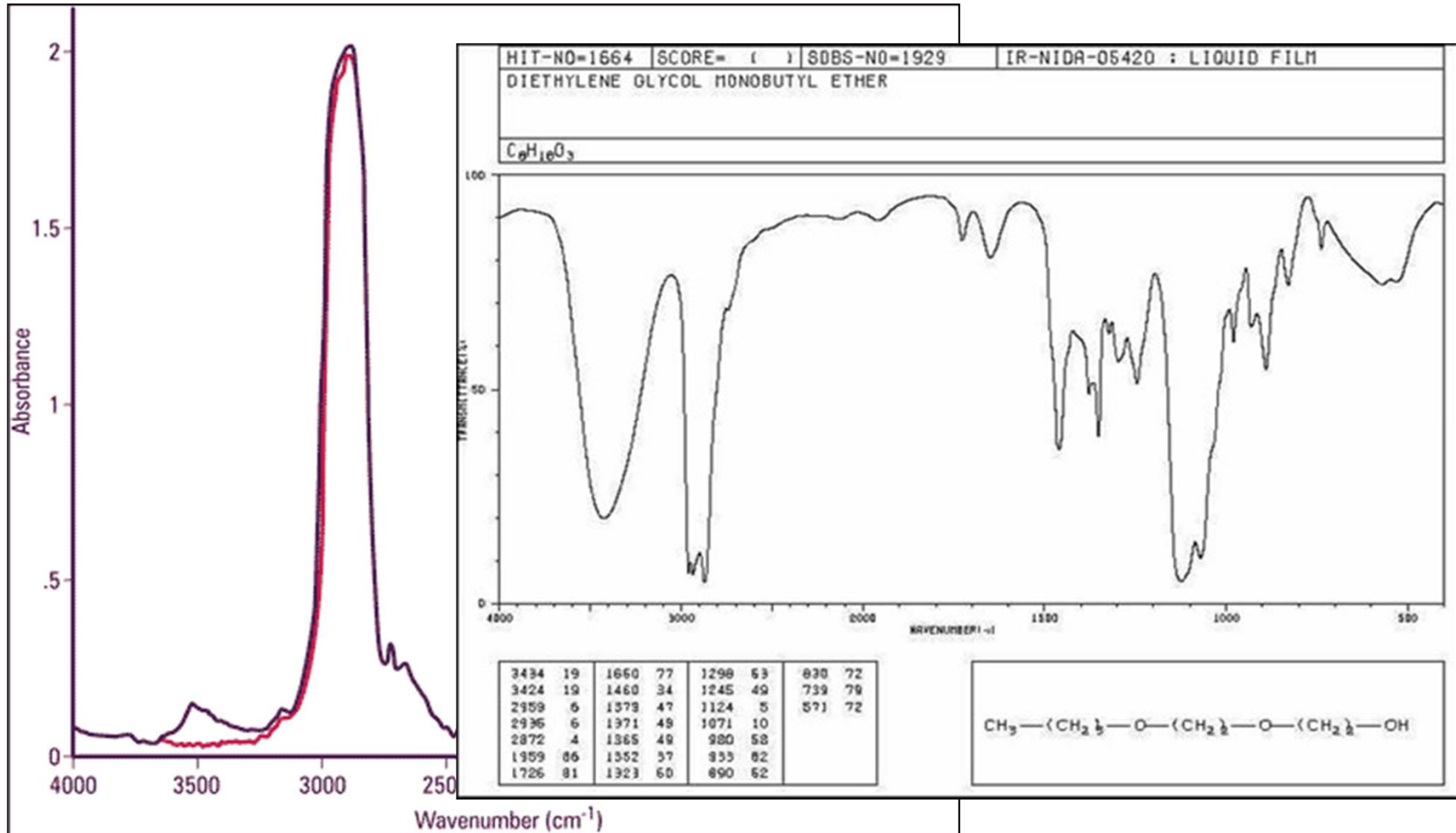


Embraer support to investigations – Metal Analysis

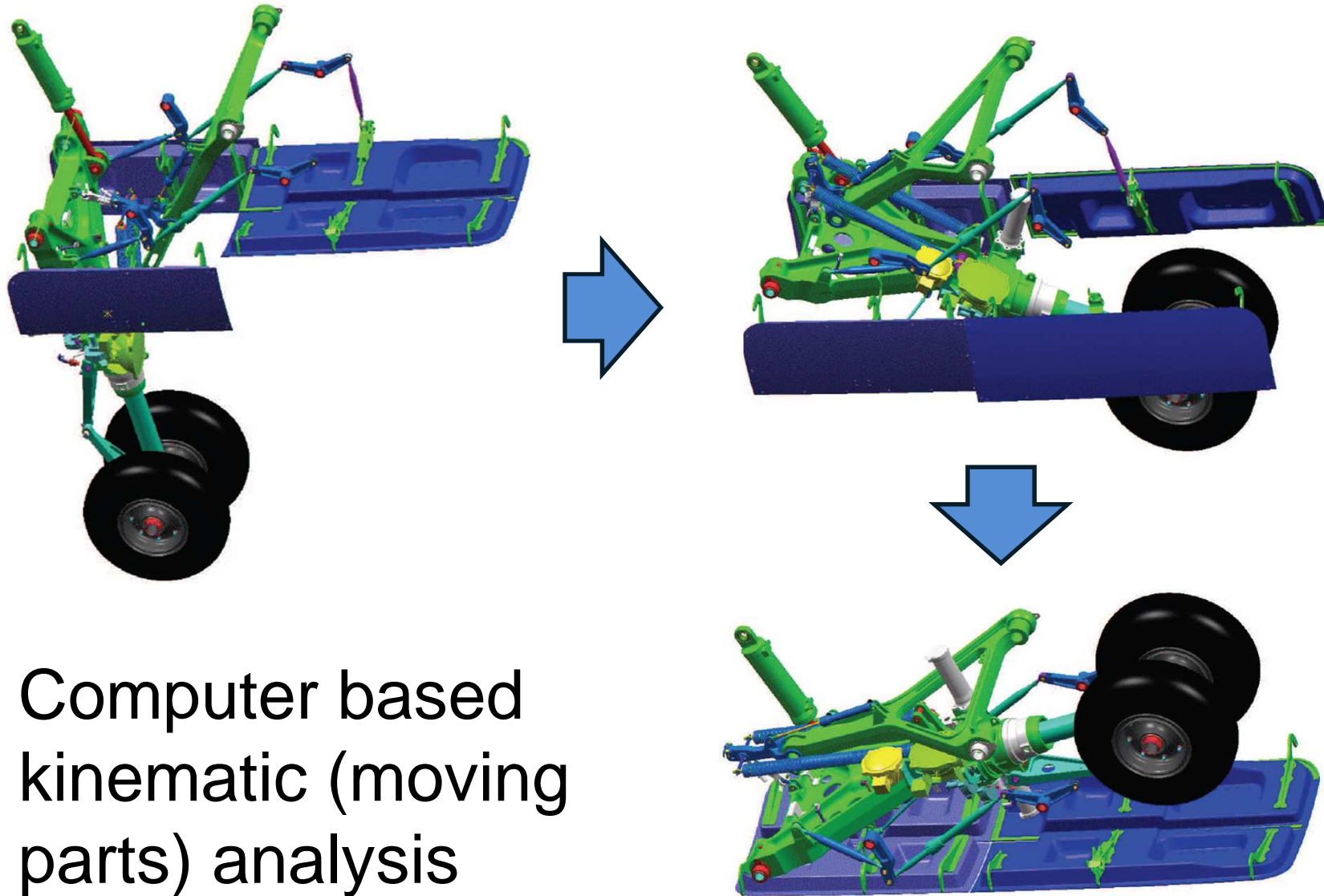


Embraer support to investigations – Fluid Analysis

Laboratory for fluid spectrum analysis



Embraer support to investigations



Computer based kinematic (moving parts) analysis

Embraer support to investigations

FR A-022/CENIPA/2008

PR-GTD and N600XL 29 SEPT 2006

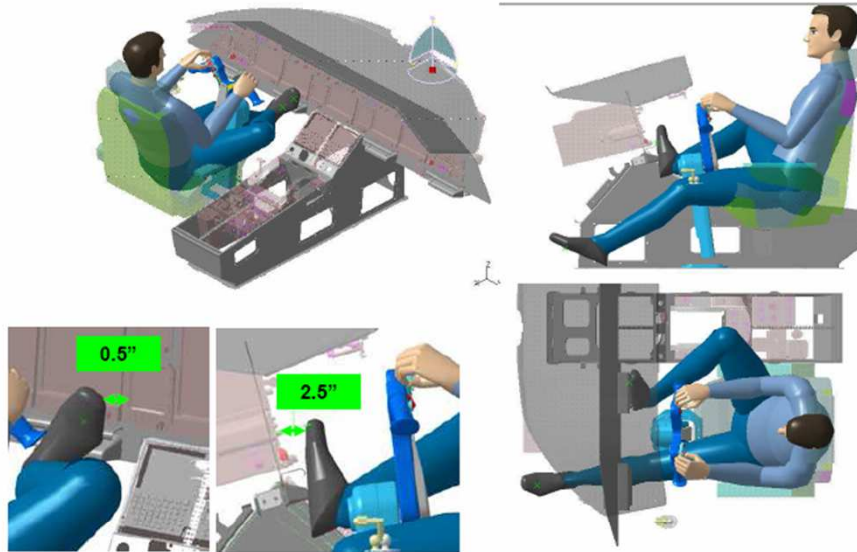


Figure 49

Table with measured angles in reference to the necessary movements to attain the posture of the pilot:

	Simulation Foot on footrest	Simulation attempt Foot on RMU	Comfort Range
Thigh Flexion	112°	113°	60° to 85°
Thigh Abduction	44°	50°	0° to 20°
Thigh Rotation	-30.13°	-40°	-15° to 15°
Leg Flexion	112.5°	104.5°	45° to 85°
Leg Rotation	16°	-14°	-5° to 5°
Plantar Flexion	38°	19.5°	0° to 25°
Inversion	19.7°	17.5°	0° to 13°

HUMAN FACTORS

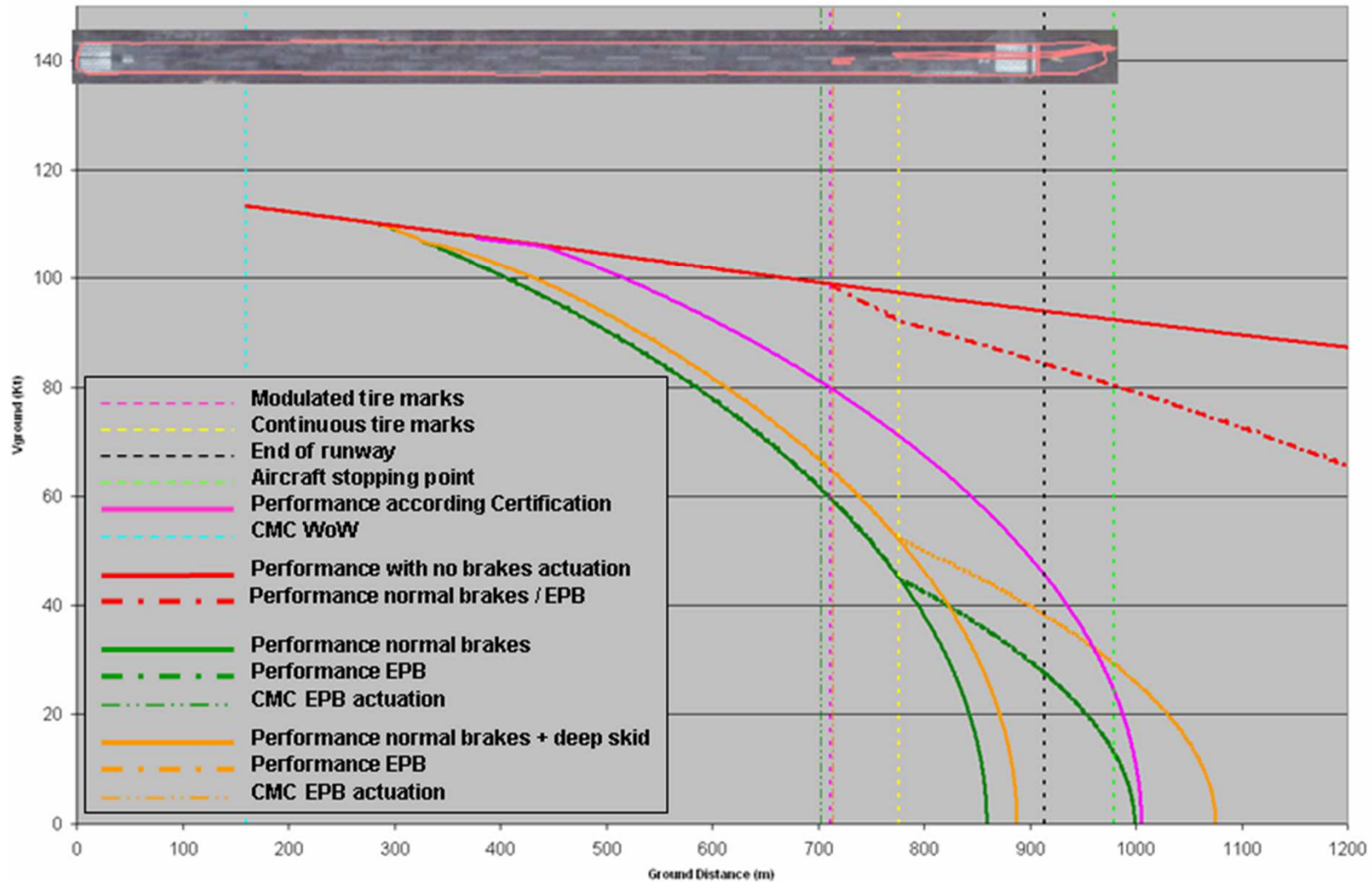
ERGONOMIC ANALYSIS

- Thigh Flexion;
- Thigh Abduction;
- Thigh Rotation;
- Leg Flexion;
- Leg Rotation
- Plantar Flexion; and
- Inversion (foot).

Embraer support to investigations

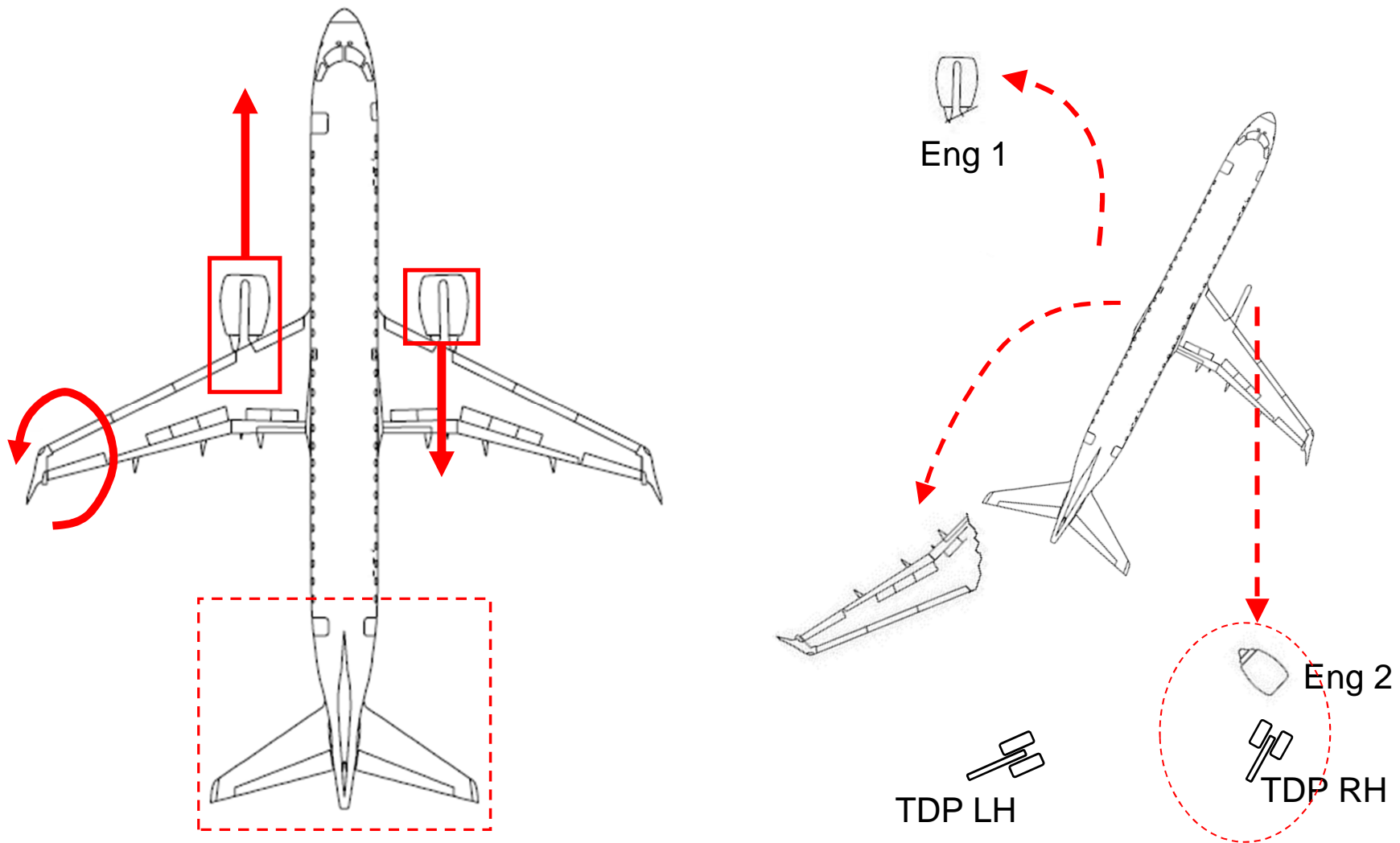
Landing Performance Preliminary Analysis

Vground x XCG: W = 4360kg; 113.4Kgs; TW 8Kts; Brakes on 2Sec; Mu 0.38



Embraer support to investigations

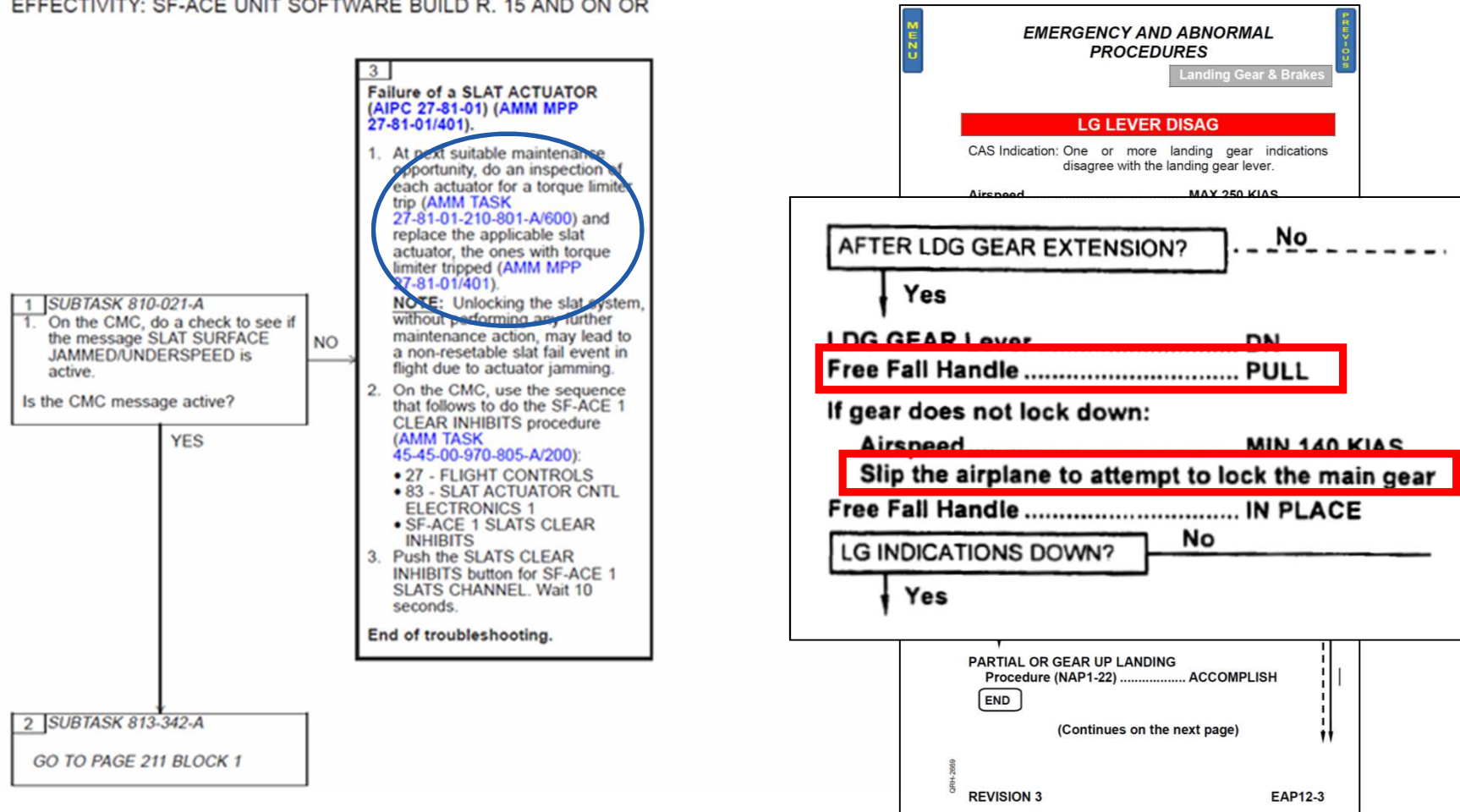
Crash dynamics and structural damage analysis



Embraer support to investigations

Aircraft documents – Understanding and correlation

EFFECTIVITY: SF-ACE UNIT SOFTWARE BUILD R. 15 AND ON OR





 **EMBRAER**

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