
SKY

SKY's _ FDM

Risk monitoring, Evaluation and Management

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Content

1. Company Overview
2. Data Process
3. Status Flight Data
4. FOQA
5. MOQA

Our Company…


We´ve been in the South American and Chilean market since 2002, connecting and delighting our passengers with the best service, safely and efficiently.
CC-ABW
SKY

Our company…

- Monthly we transport 230.000 passengers...
- We take off 90 times a day...
- 22 commercial offices, including Peru, Bolivia, Argentina and Brazil.
- 2.300 employees...
- In Chile, SKY has the 25% market share *.

Experience of our passengers…

Twice SKY Airline, has been awarded as the best regional airline in South America.

This honor endorses our commitment to deliver the best travel experience for our passengers, with a service of excellency.

Forth generation fleet…

13 Airbus A 319 -100 150 Pax

3 Airbus A 320 / 200 168 Pax

SKY's Commercial Interlining Agreements Network…

- AIR CANADA
- AEROLINEAS ARGENTINAS
- ALITALIA
- AIR FRANCE
- KLM ROYAL DUTCH AIRLINES
- GOL LINHAS AEREAS
- LACSA - GRUPO AVIANCA
- AVIANCA
- AEROMEXICO
- QATAR AIRWAYS
- HAHN AIR
- EMIRATES AIRLINES
- TACA - GRUPO AVIANCA
- LUFTHANSA
- COPA AIR
- AVIATECA - GRUPO AVIANCA
- TAME EP
- TACA PERU - GRUPO AVIANCA
- TAM-TRANSP. AEREOS DEL MERCOSUR
- SWISS INTERNATIONAL AIRLINES
- TAM LINHAS AEREAS
- AIR EUROPA
- SOUTH AFRICAN AIRWAYS
- UNITED AIRLINES

SKY's IATA Registered & IOSA Certified

IATA

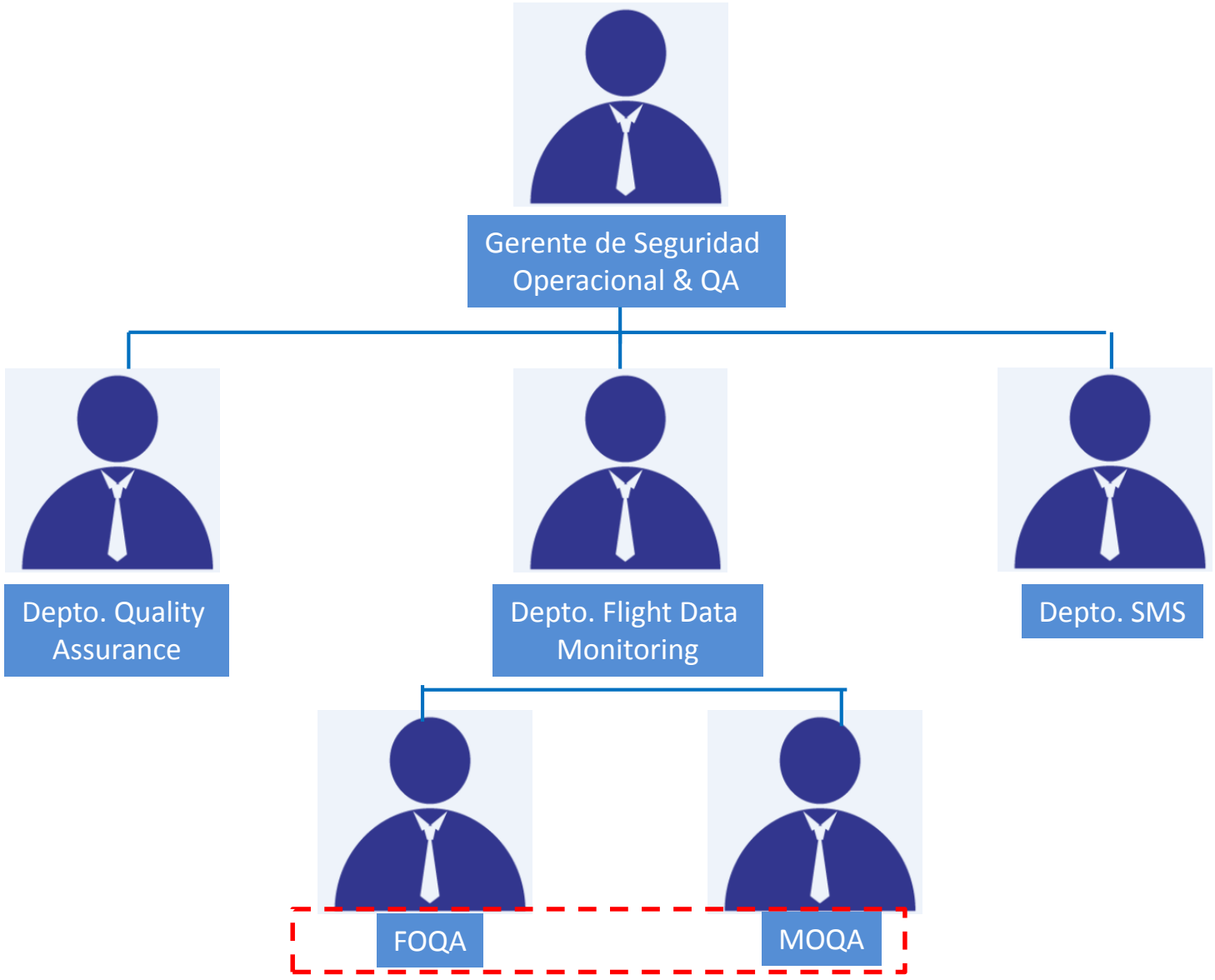
Registered since December 2014

IOSA

✓ Certified since May 2014

Flight Data Monitoring

Organization Chart

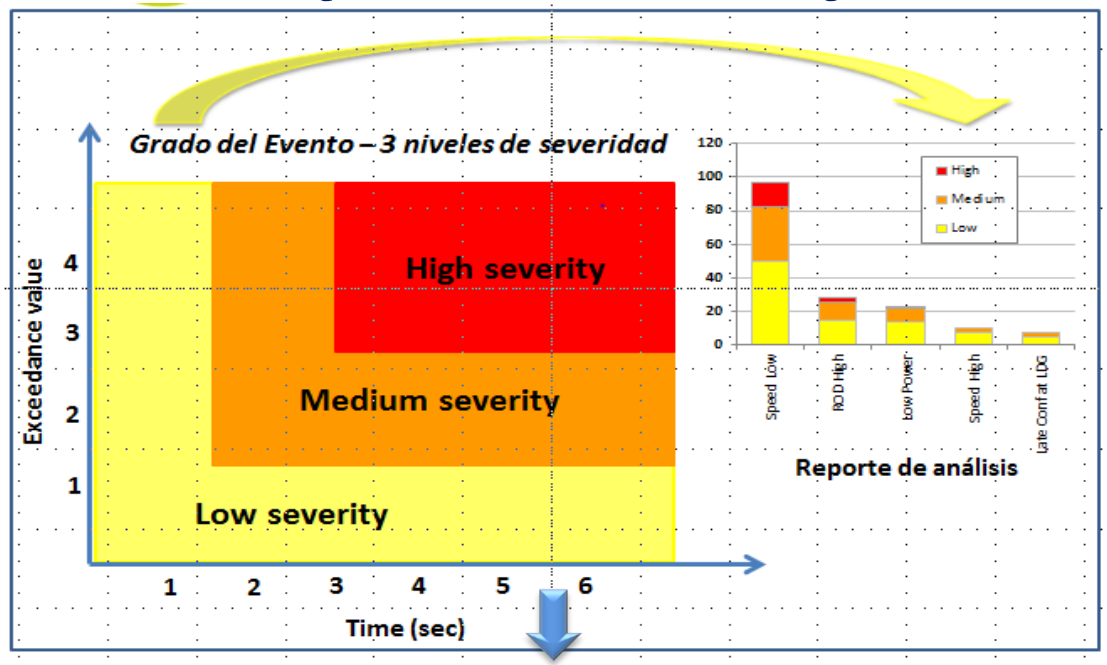


FOQA _ MOQA Management

FOQA - MOQA

Data Sharing FDX

Data Sharing Airbus



Operational Events

Maintenance Events

Gate Keeper

Just Culture

FOQA/MOQA Committee

Data Process

Data Process

Flight Data Interface Management Unit (FDIMU)

Computador de Adquisición de datos.

Wireless GroundLink® (WGL) System

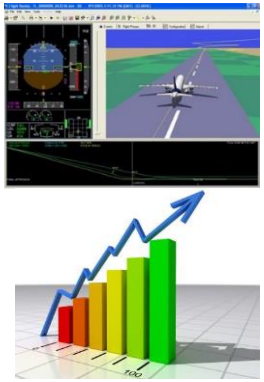
Computador grabador y Transmisor de datos

Local Cell Tower

Internet

Server Data Analysis

AirFASE®- Aircraft Flight Analysis & Safety Explorer



Data Analysis

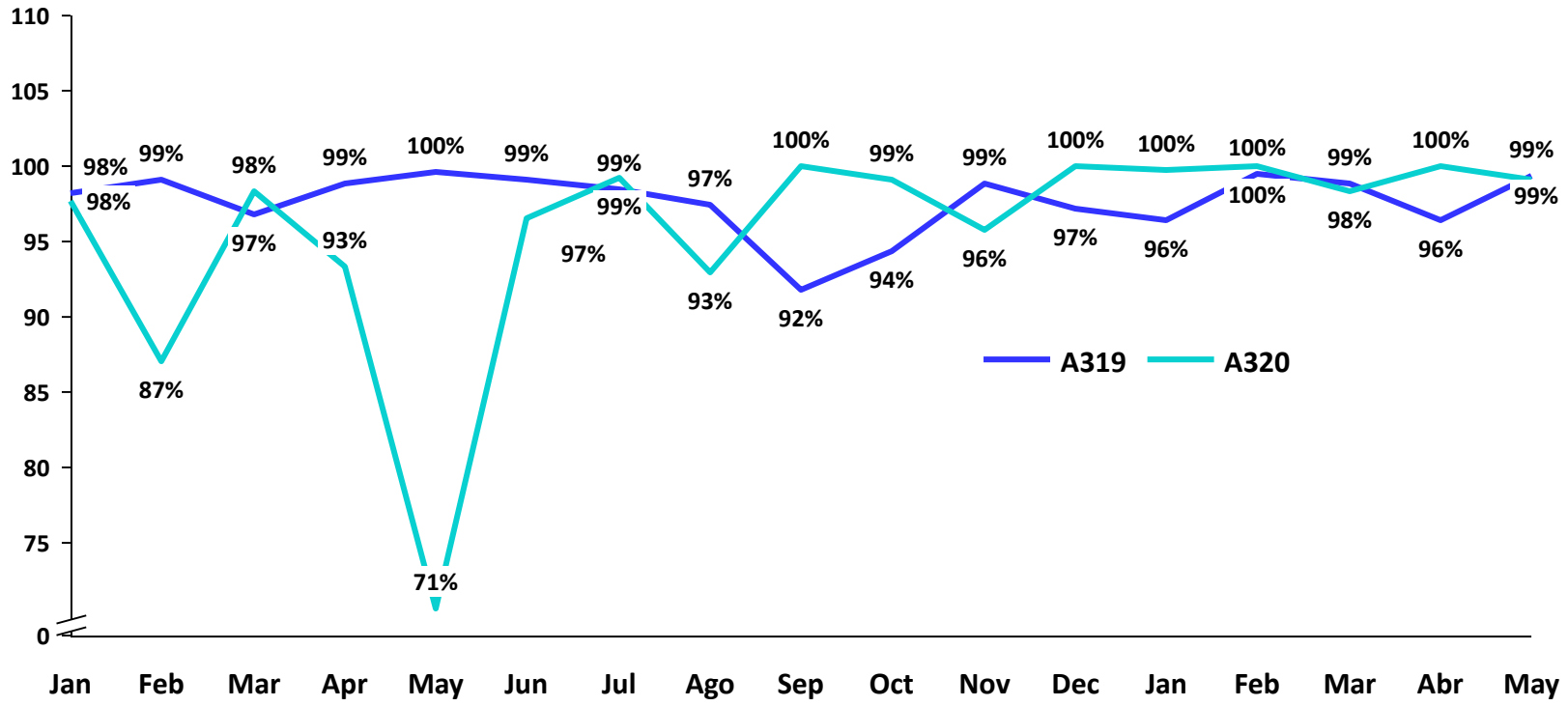
Operations

Maintenance & Engineering

Status Flight Data

Real Legs v/s AirFASE Legs

% x Fleet

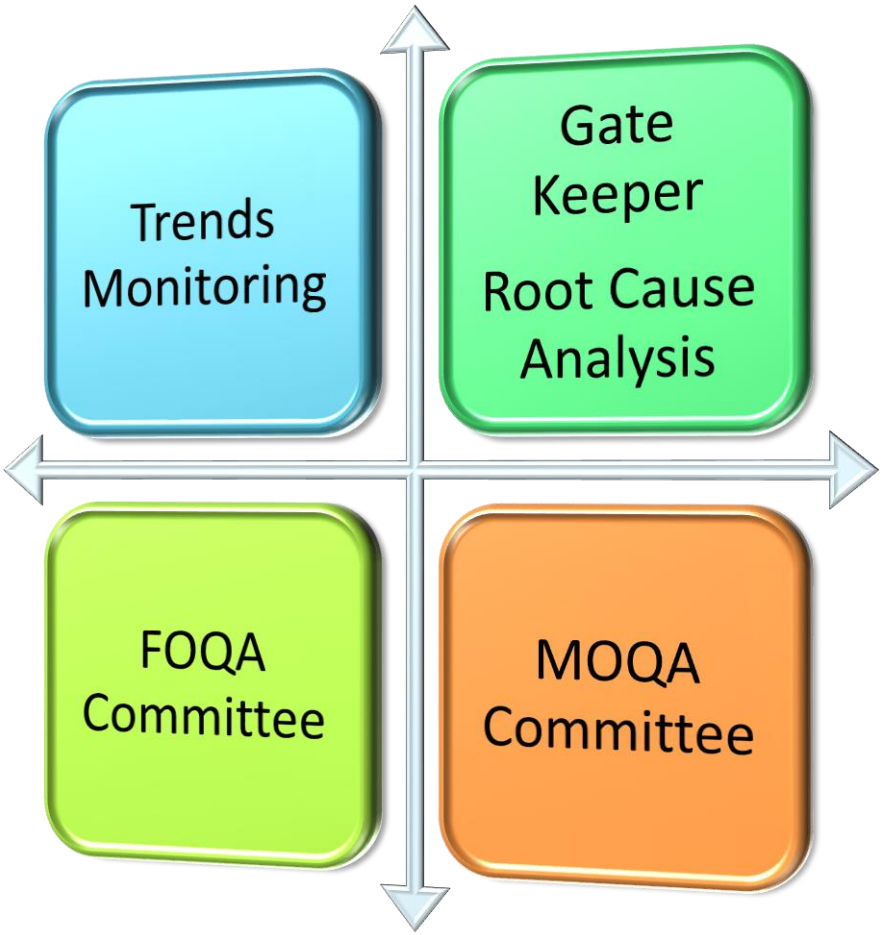


Fuente legs reales: Fleetwatch

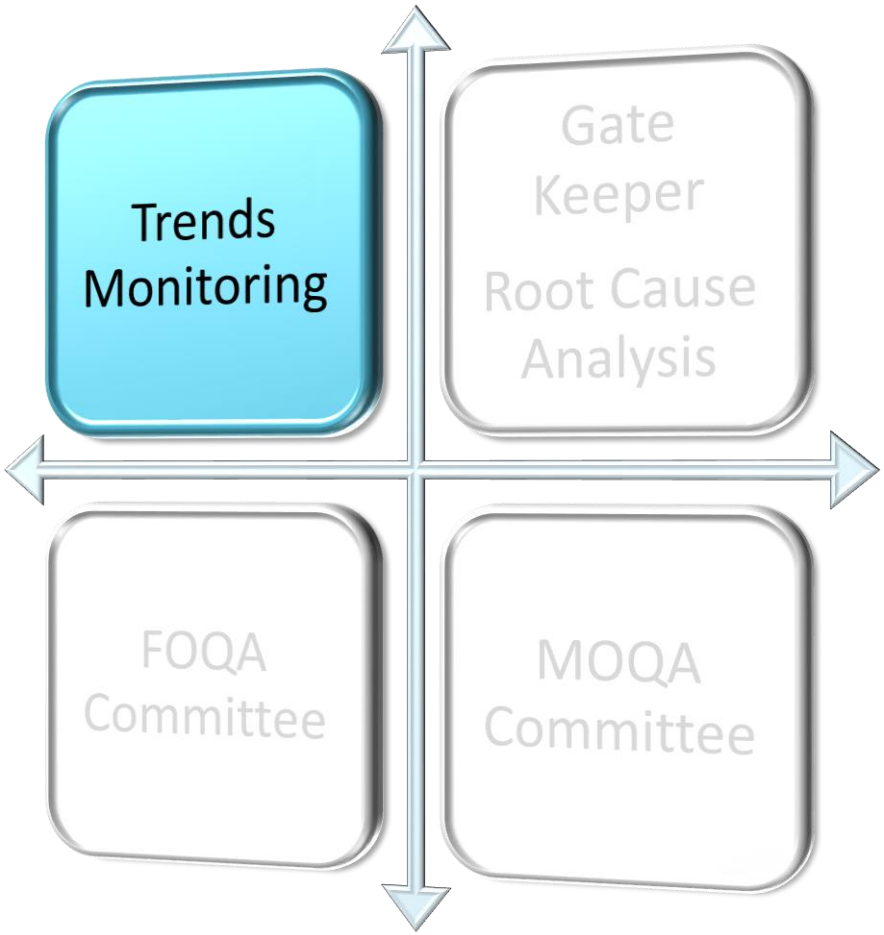
FOQA

(Flight Operation Quality Assurance)

Risk Monitoring, Evaluation and Management



Risk Monitoring, Evaluation and Management

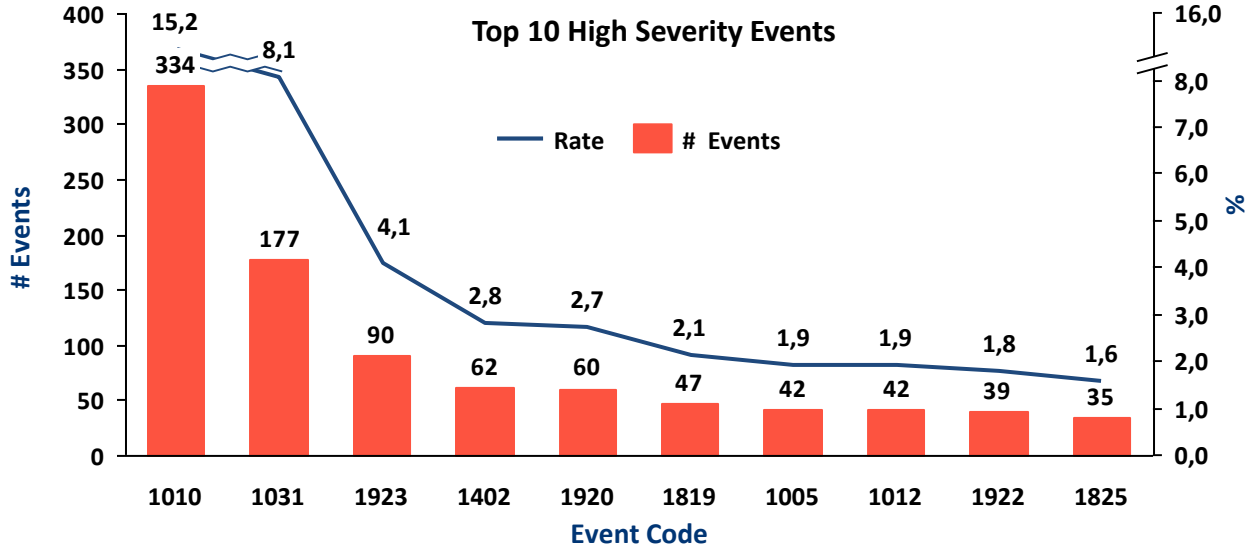


LOC_I

CFIT

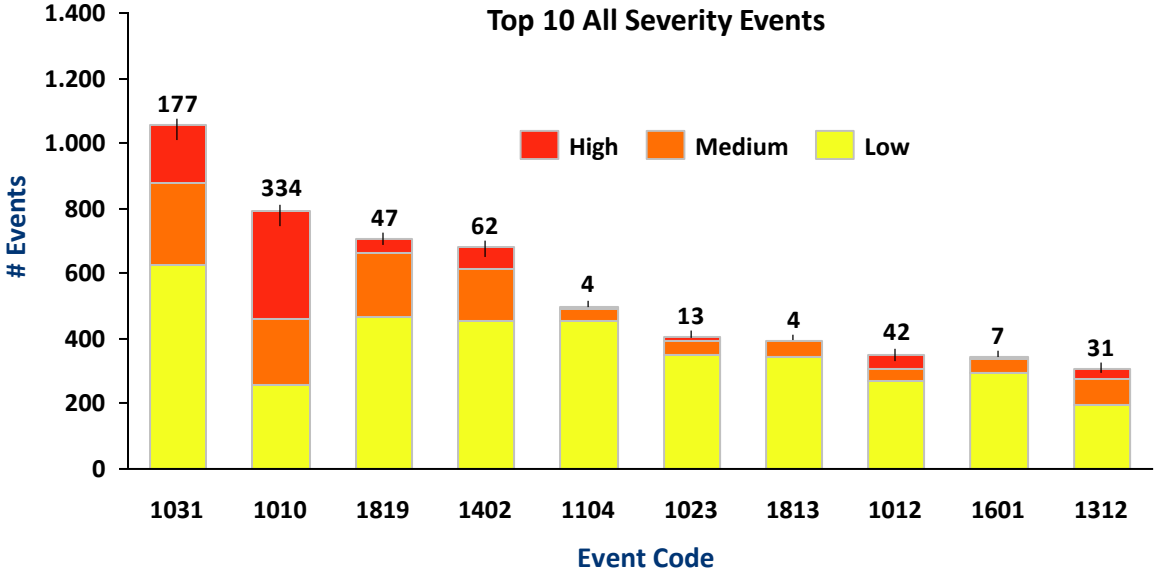
RE

Top 10 all Events



Code	DESCRIPTION
1010	Approach Speed high at 1000 ft AFE
1031	Taxi Speed exceedance in turn
1923	Autoland Warning
1402	High Rate of Descent App 2000-1000 ft AFE
1920	GPWS warning above1000ft AFE
1819	Short Flare Time
1005	Speed High in Approach (below 2500ft RA)
1012	Approach speed high at 500ft AFE
1922	GPWS warning Below 500 ft AFE
1825	Landing after unstabilized approach

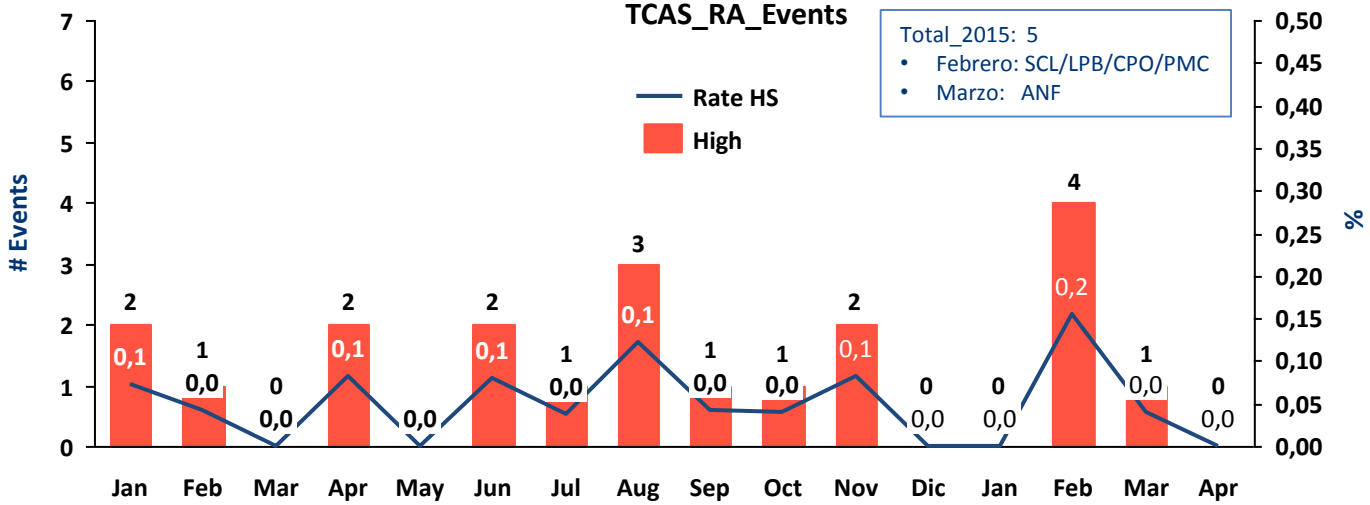
Considera todos los eventos High Severity.

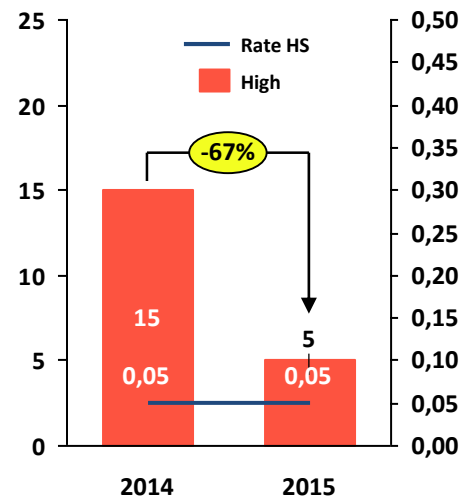


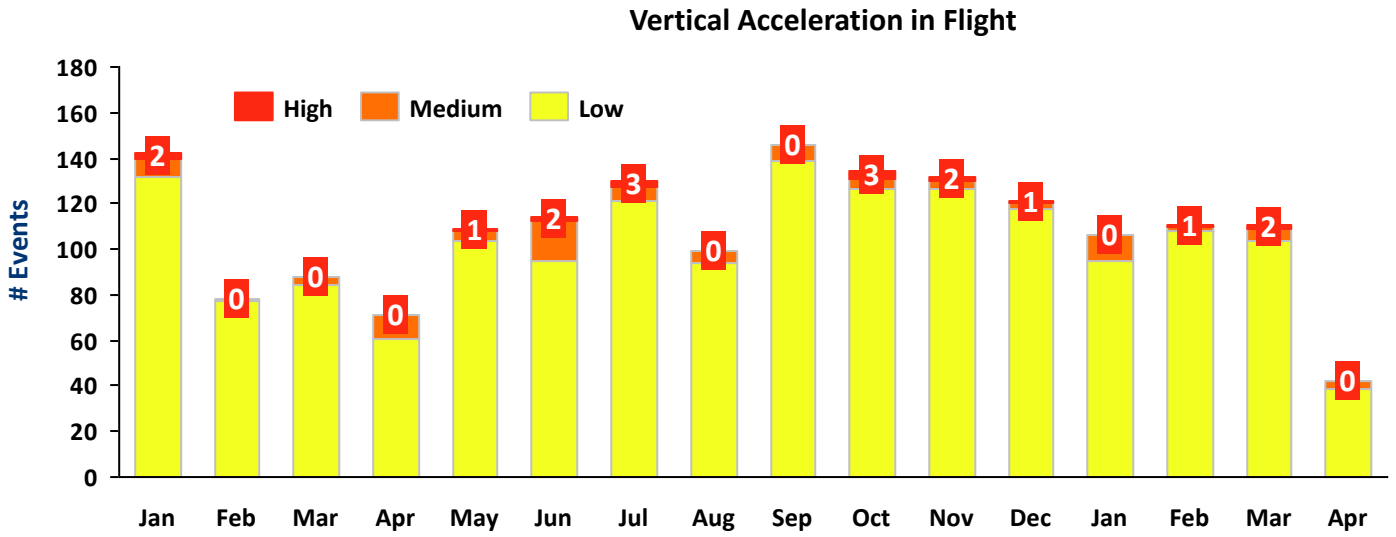
Code	DESCRIPTION
1031	Taxi Speed exceedance in turn
1010	Approach Speed high at 1000 ft AFE
1819	Short Flare Time
1402	High Rate of Descent App 2000-1000 ft AFE
1104	Pitch Low in Climb
1023	Low speed at landing
1813	Height High at Threshold
1012	Approach speed high at 500ft AFE
1601	Late setting of landing flaps
1312	Path High at 1200 ft AFE

Considera todos los eventos All Severity.

TCAS RA / Vertical Acc Events

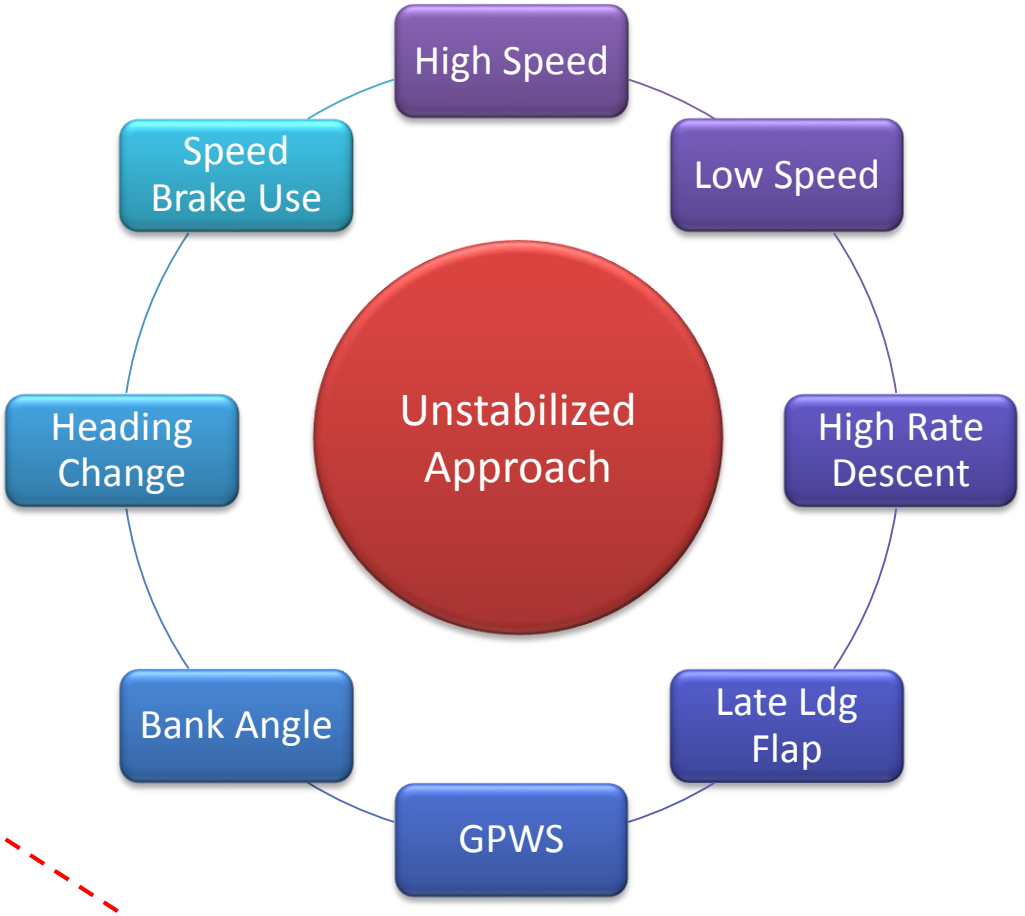




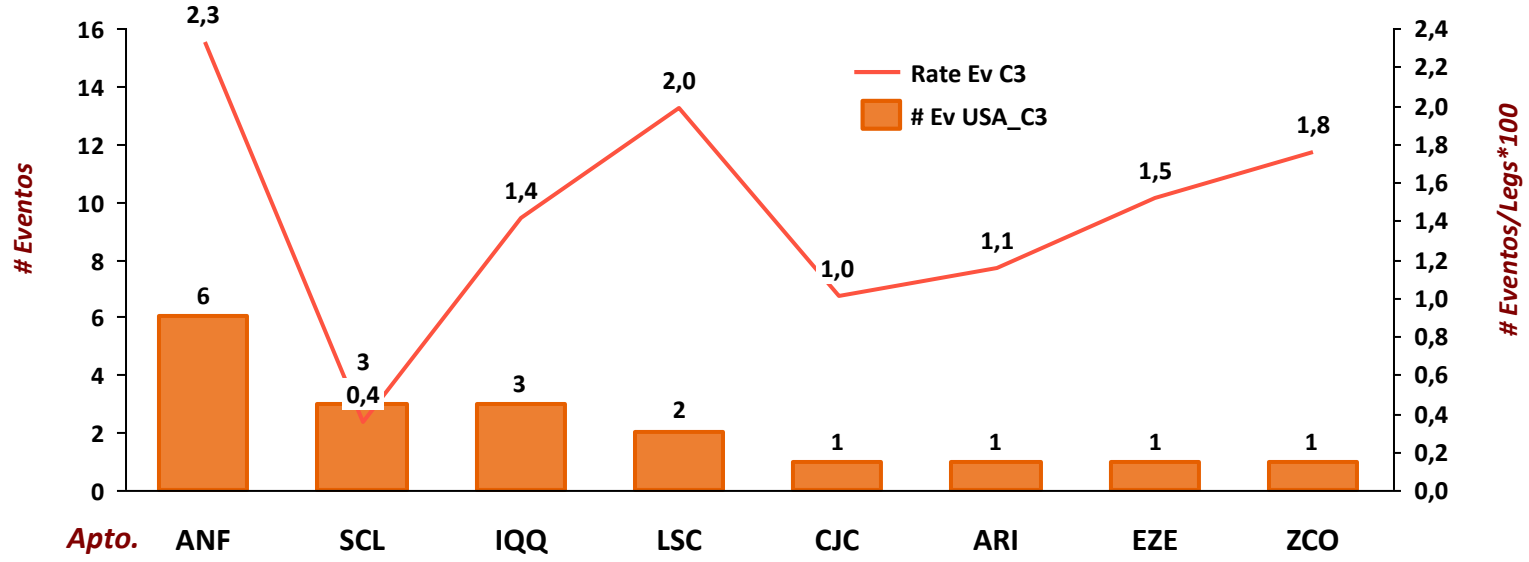


Unstabilized Approach
2015

Unstabilized Approach Event

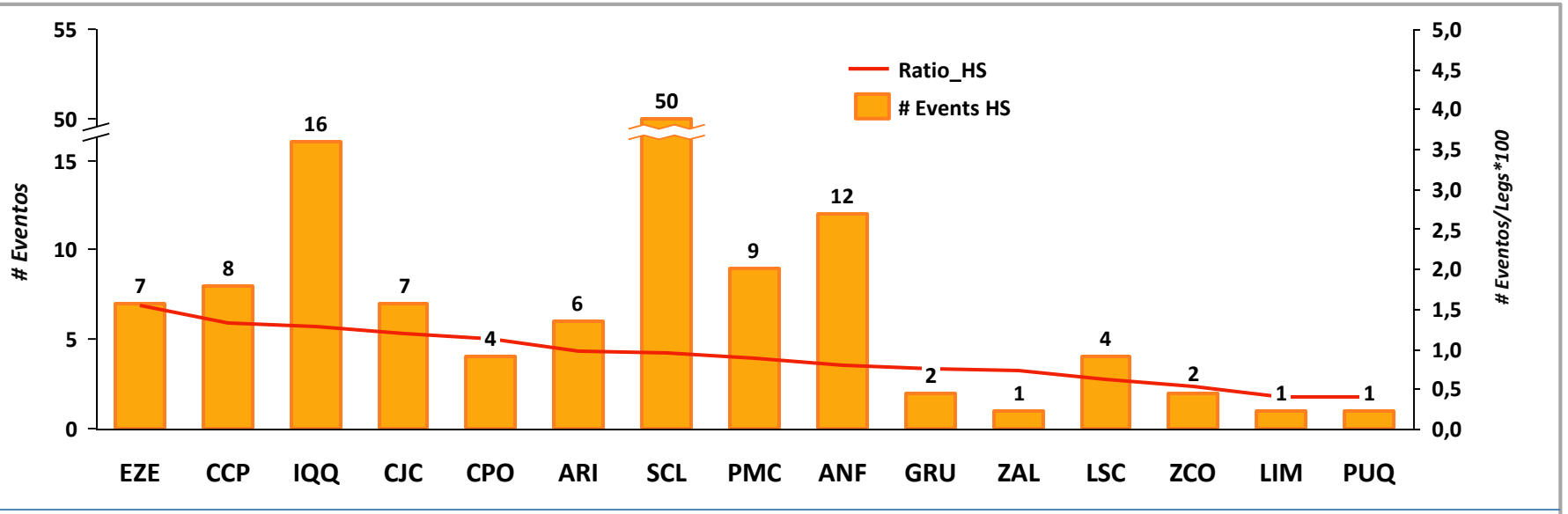


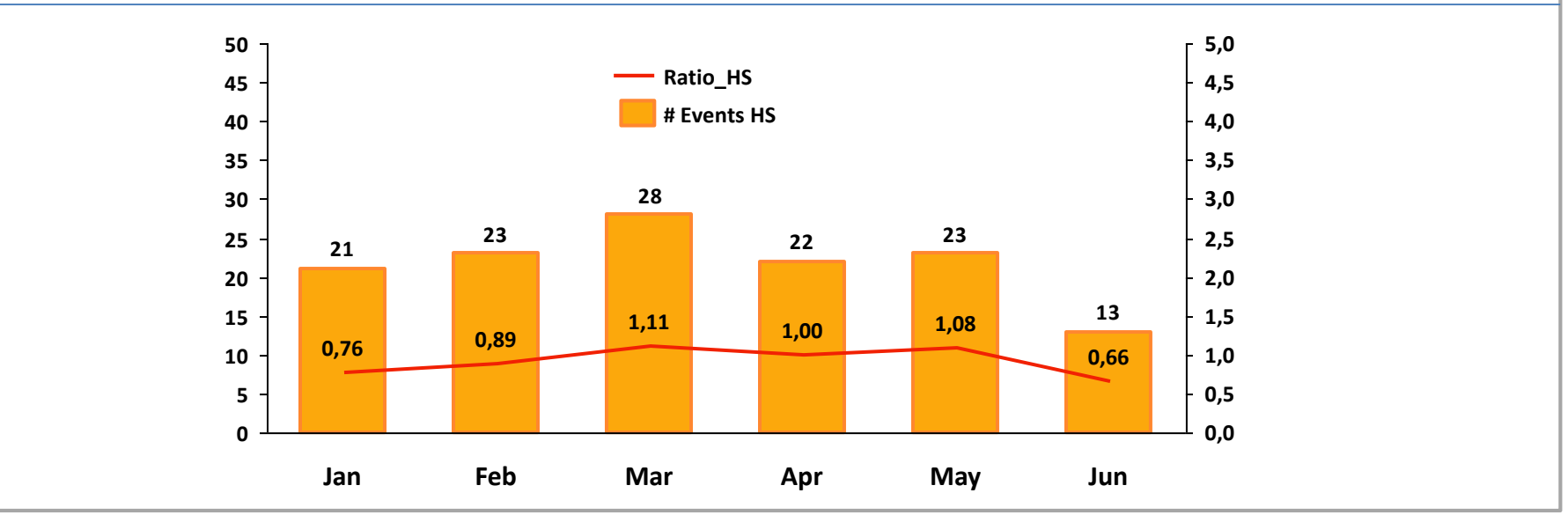
Unstabilized Approach High Severity (by Airports)



	ANF	SCL	IQQ	LSC	CJC	ARI	EZE	ZCO
# Ev USA_C3	6	3	3	2	1	1	1	1
Rate Ev C3	2.3	0.4	1.4	2.0	1.0	1.1	1.5	1.8
Legs AirFASE	258	855	212	101	99	87	66	57

High Speed below 500ft AFE

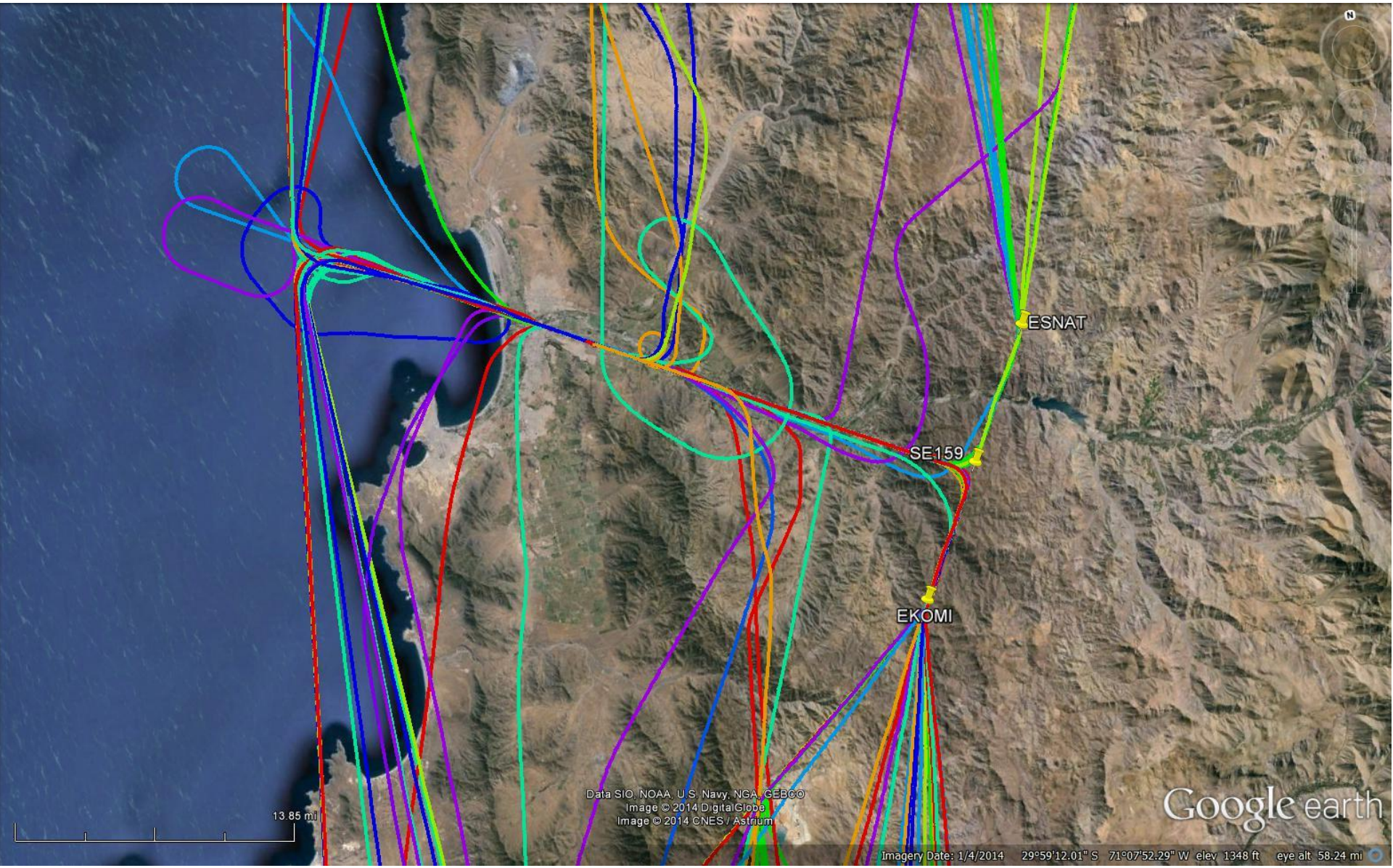




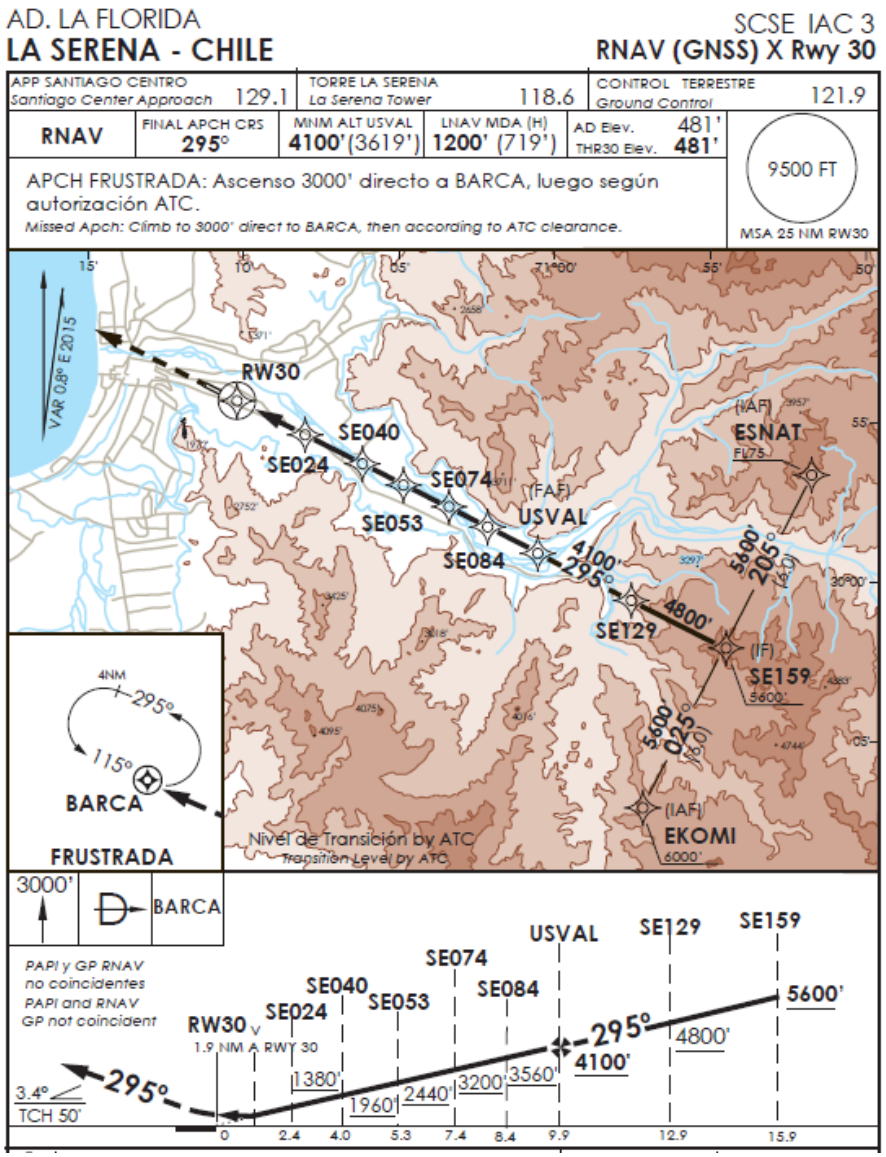
Unstabilized Approach
La Serena (LSC) Airport

La Serena (LSC) Airport

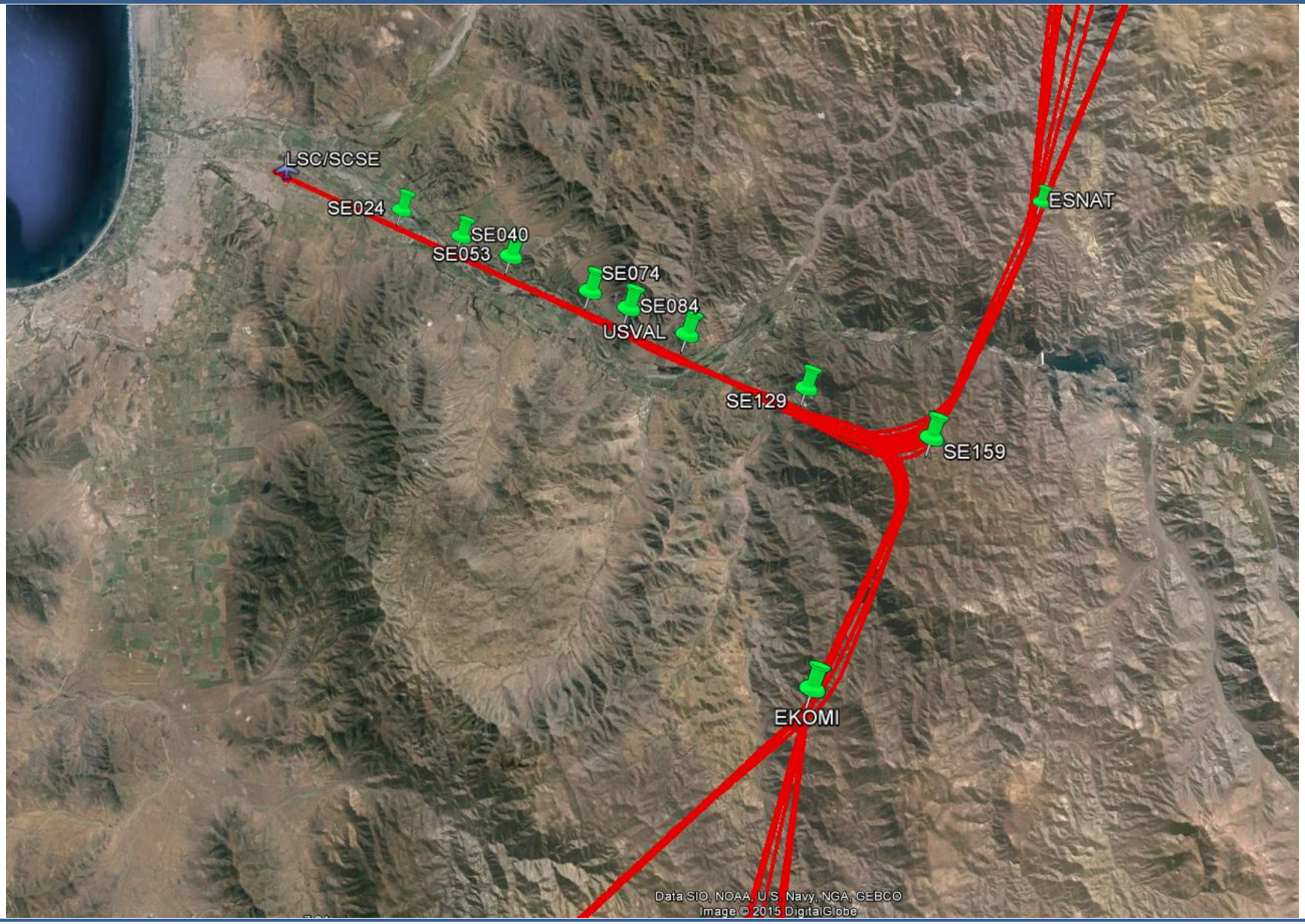
Approach SCSE



RNAV (GNSS) Rwy 30 (SCSE)



Unstabilized Approach LSC



RNAV (RNP) Y/Z Rwy 30 (SCSE)

AD. LA FLORIDA
LA SERENA - CHILE

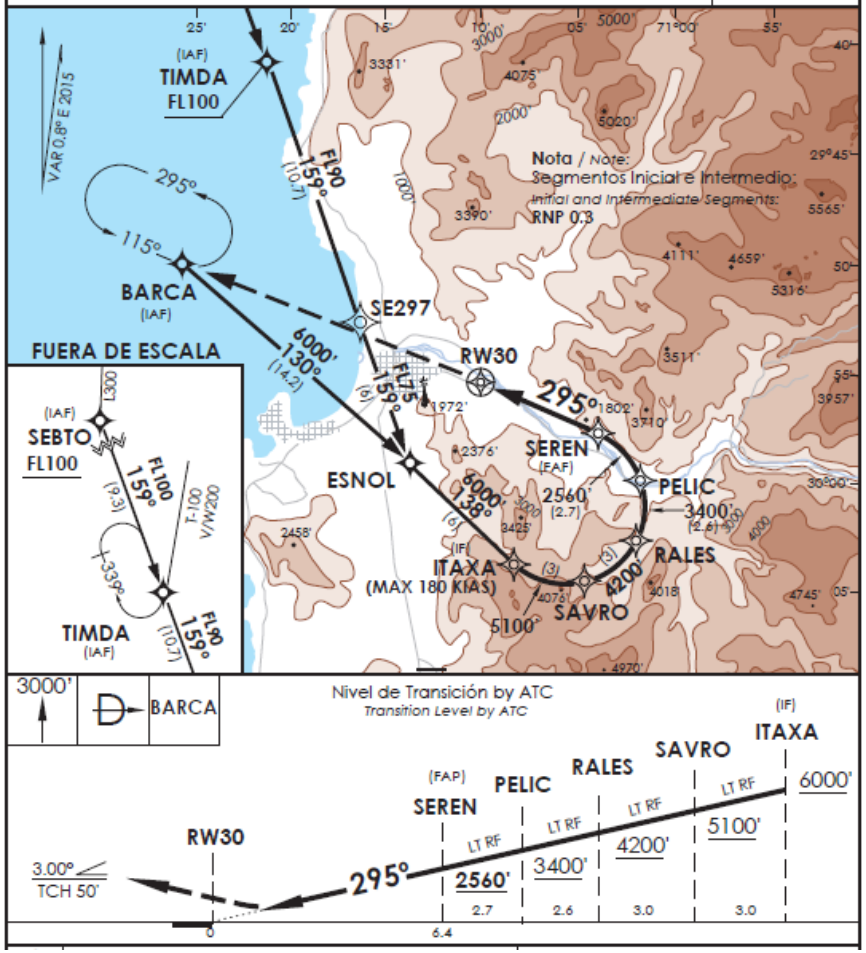
SCSE IAC 5
RNAV (RNP) Y Rwy 30

APP SANTIAGO CENTRO *Santiago Center Approach* 129.1	TORRE LA SERENA *La Serena Tower* 118.6	CONTROL TERRESTRE *Ground Control* 121.9

RNAV	FINAL APCH CRS 295°	MNM ALT SEREN 2560'(2079') *DA/H refer to minimums*	DA/H ver mínimos	AD Elev. 481' THR30 Elev. 481'

APCH FRUSTRADA: Ascenso 3000' directo a BARCA, luego según autorización ATC.
Missed Apch: Climb to 3000' direct to BARCA, then according to ATC clearance.

9500 FT
MSA 25 NM RW30



AD. LA FLORIDA
LA SERENA - CHILE

SCSE IAC 4
RNAV (RNP) Z Rwy 30

APP SANTIAGO CENTRO *Santiago Center Approach* 129.1	TORRE LA SERENA *La Serena Tower* 118.6	CONTROL TERRESTRE *Ground Control* 121.9

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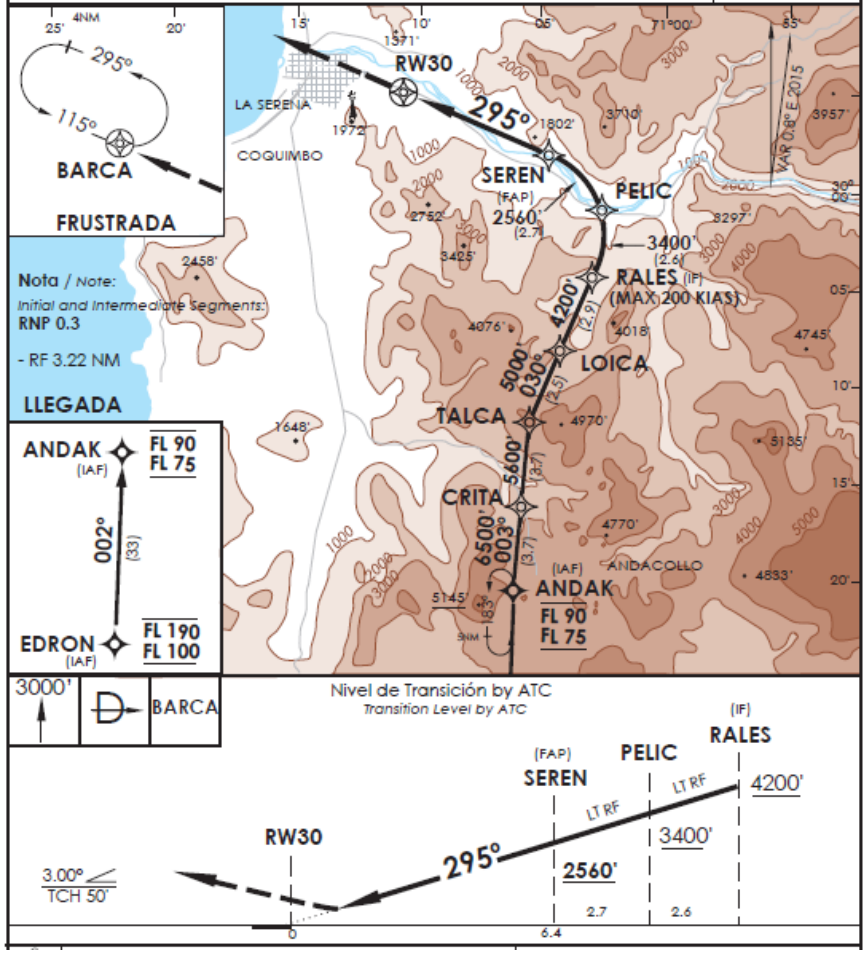
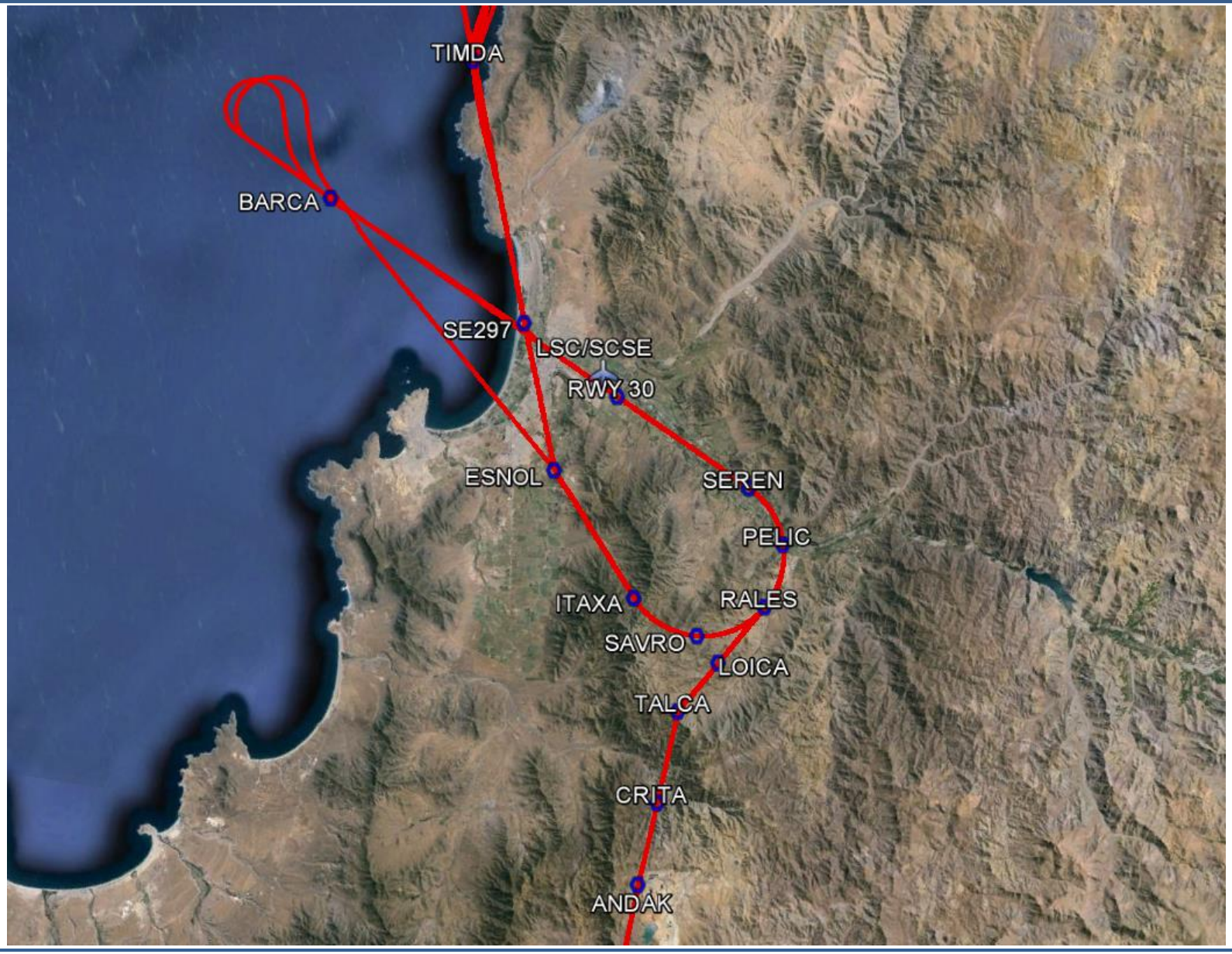
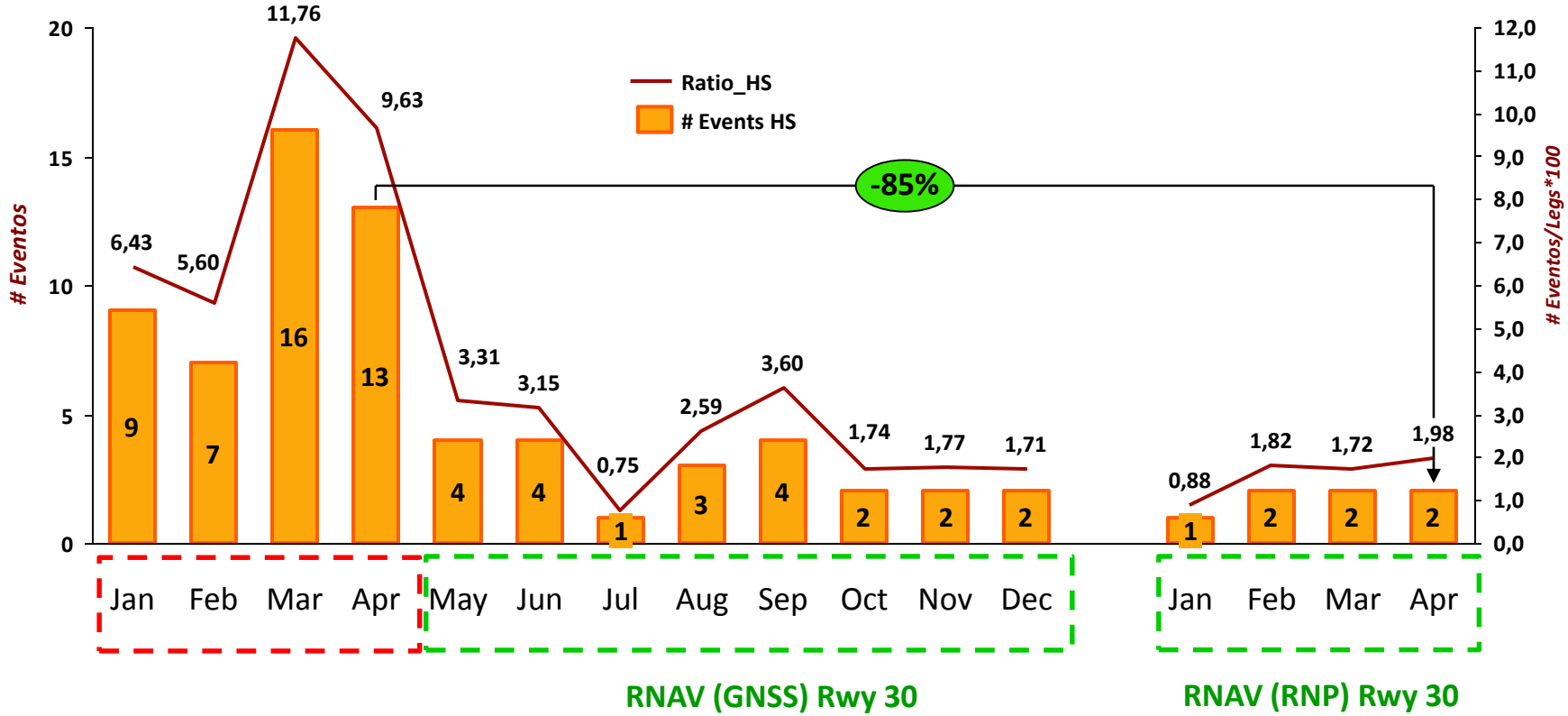


RNAV (RNP) Y/Z Rwy 30 (SCSE)



RNAV_RNP_GNSS RWY30 LSC

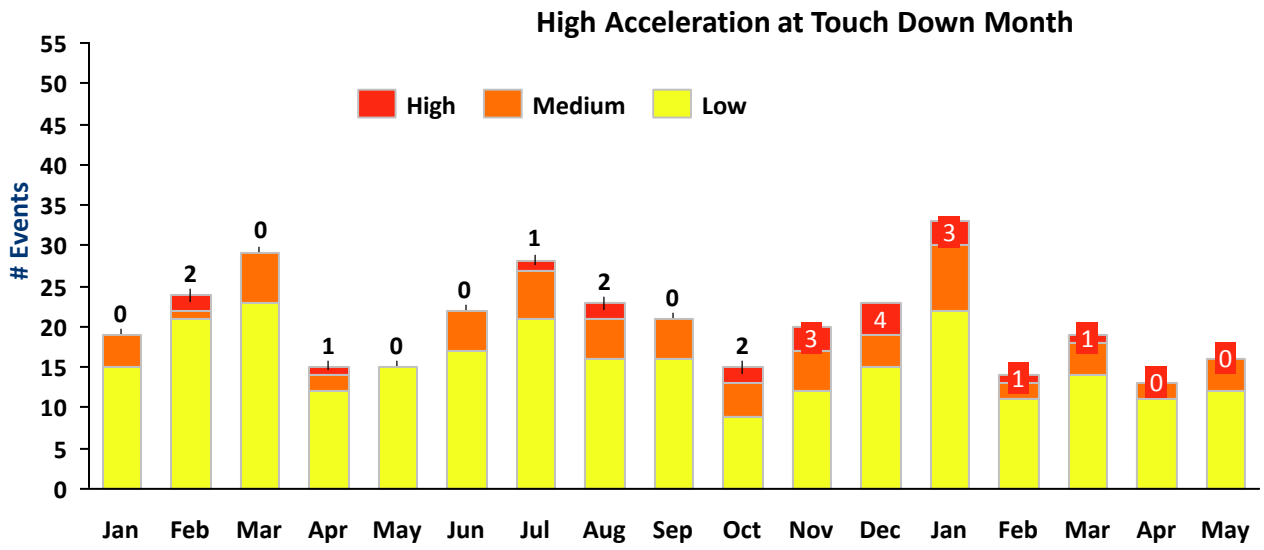
Unstabilized Approach LSC

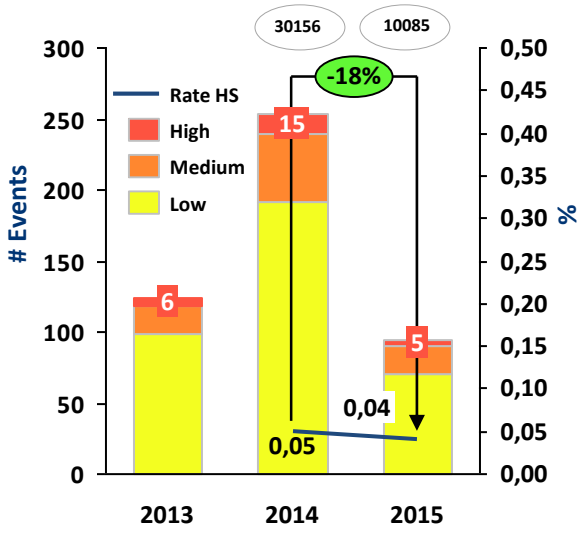


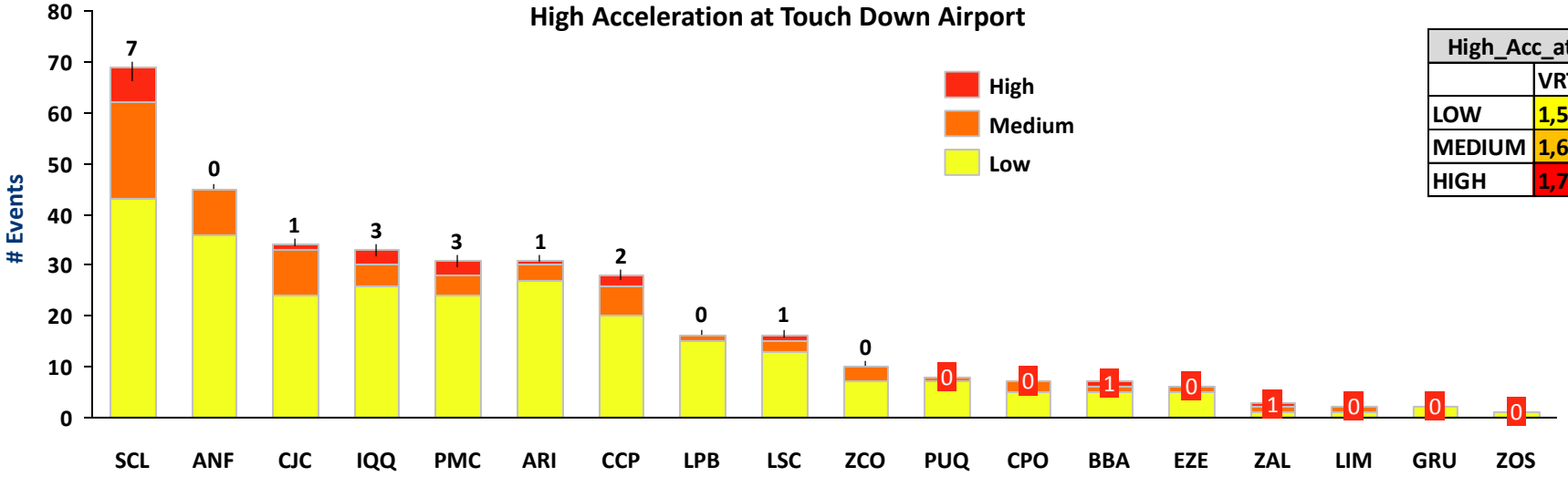
2014	2015
# Ev = 67	# Ev = 7
4.5 %	1.6 %

Acceleration at Touch down (2014/2015)

High Acceleration at Touch down





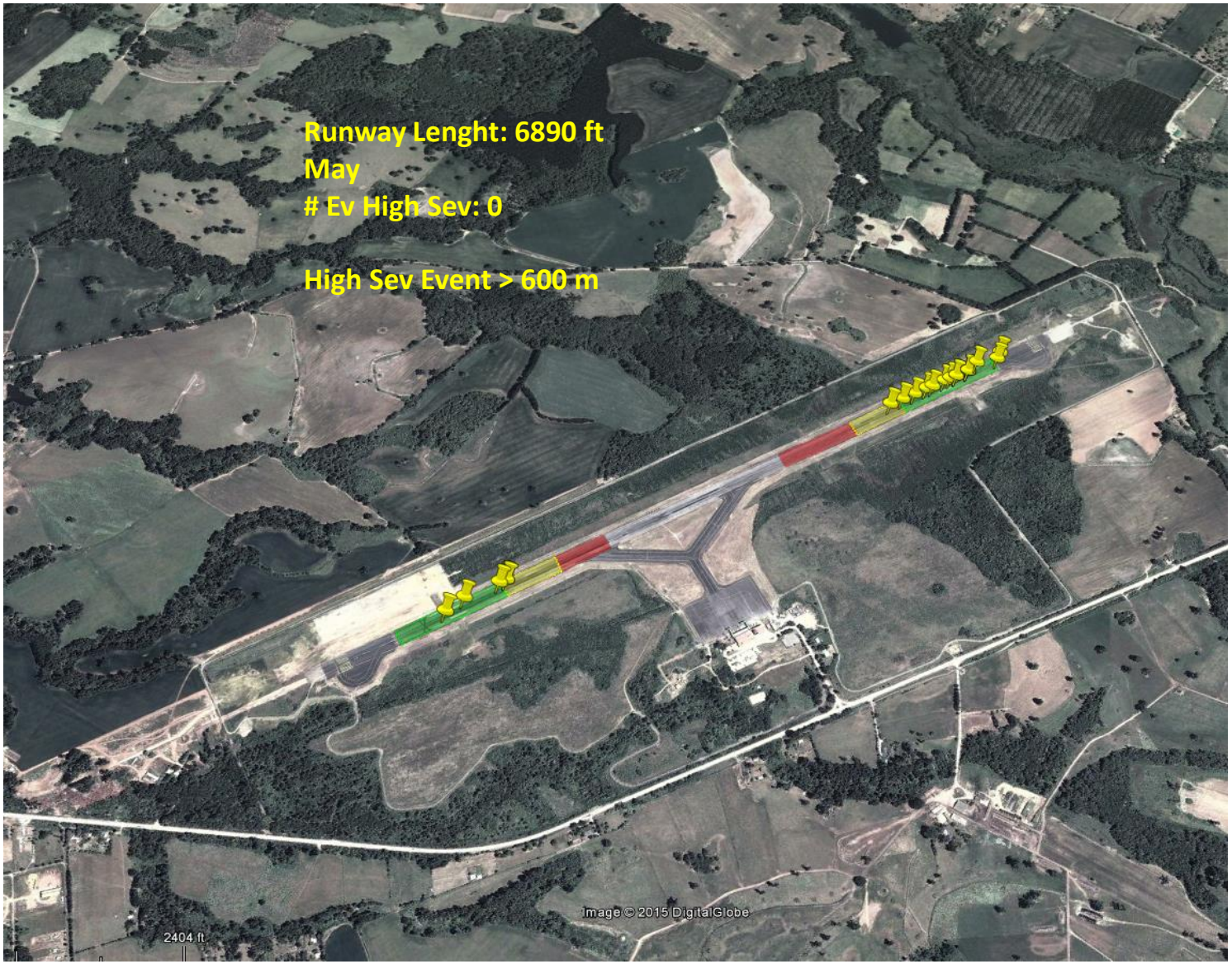


High_Acc_at_TD	
	VRTG >=
LOW	1,5 g
MEDIUM	1,6 g
HIGH	1,75 g

Deep Landing

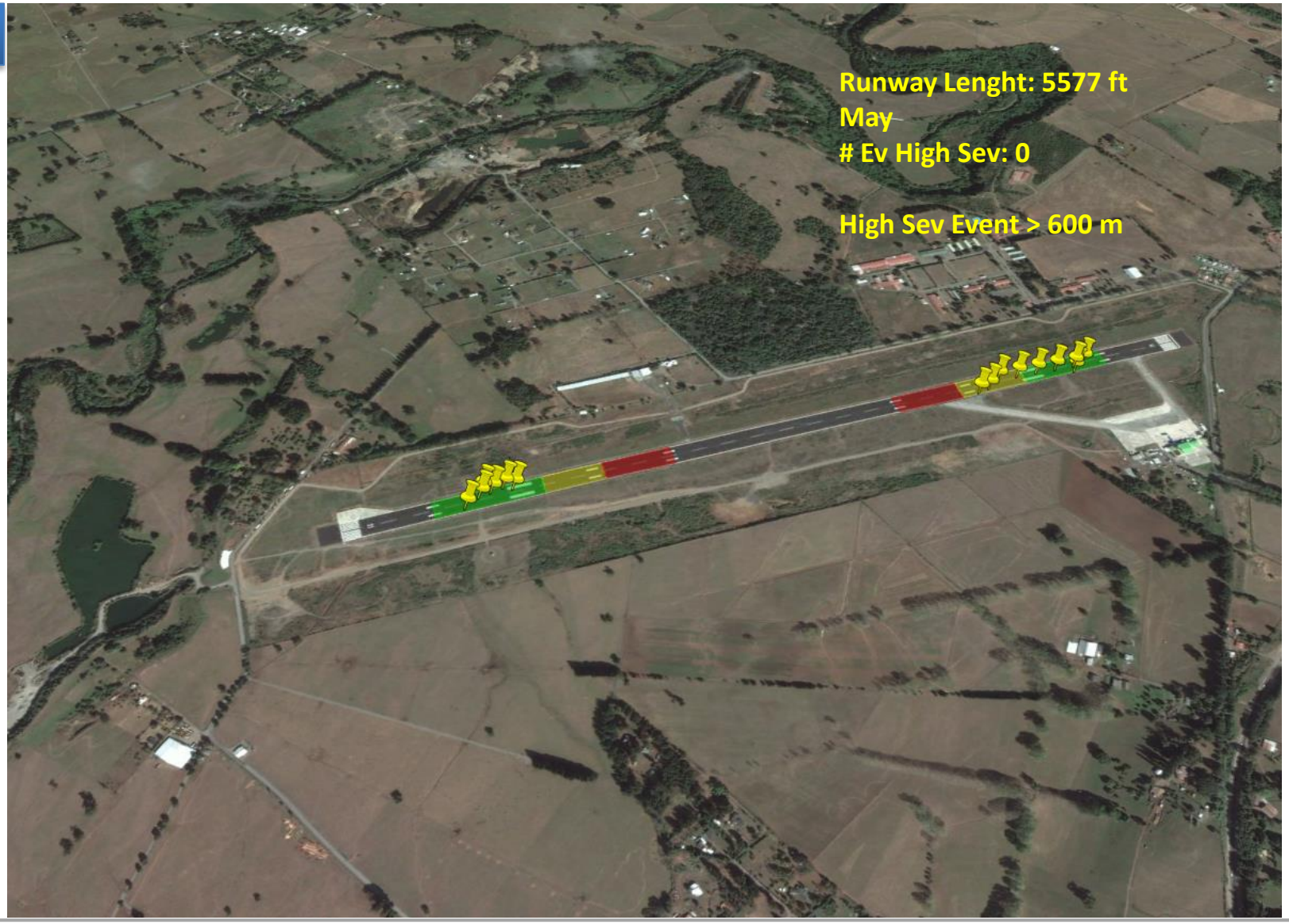
Touch Down Point

ZAL



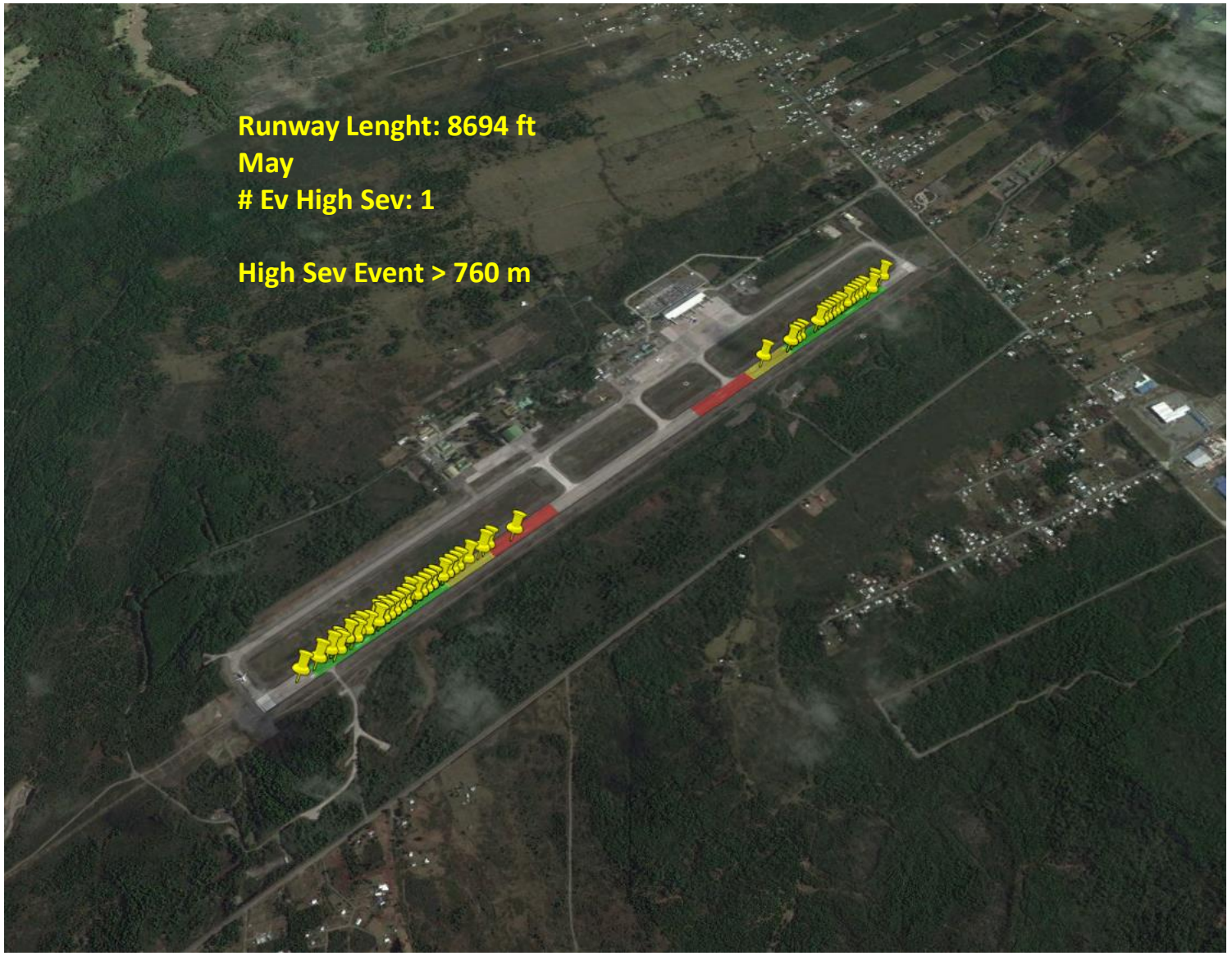
Touch Down Point

ZOS

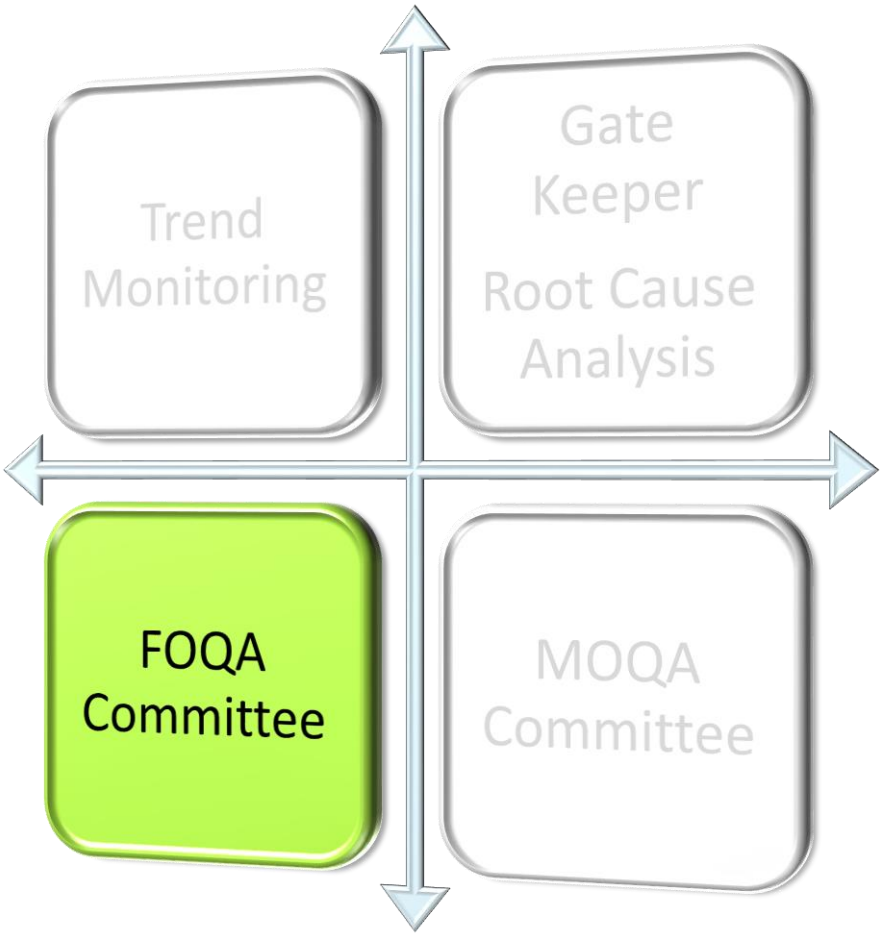


Touch Down Point

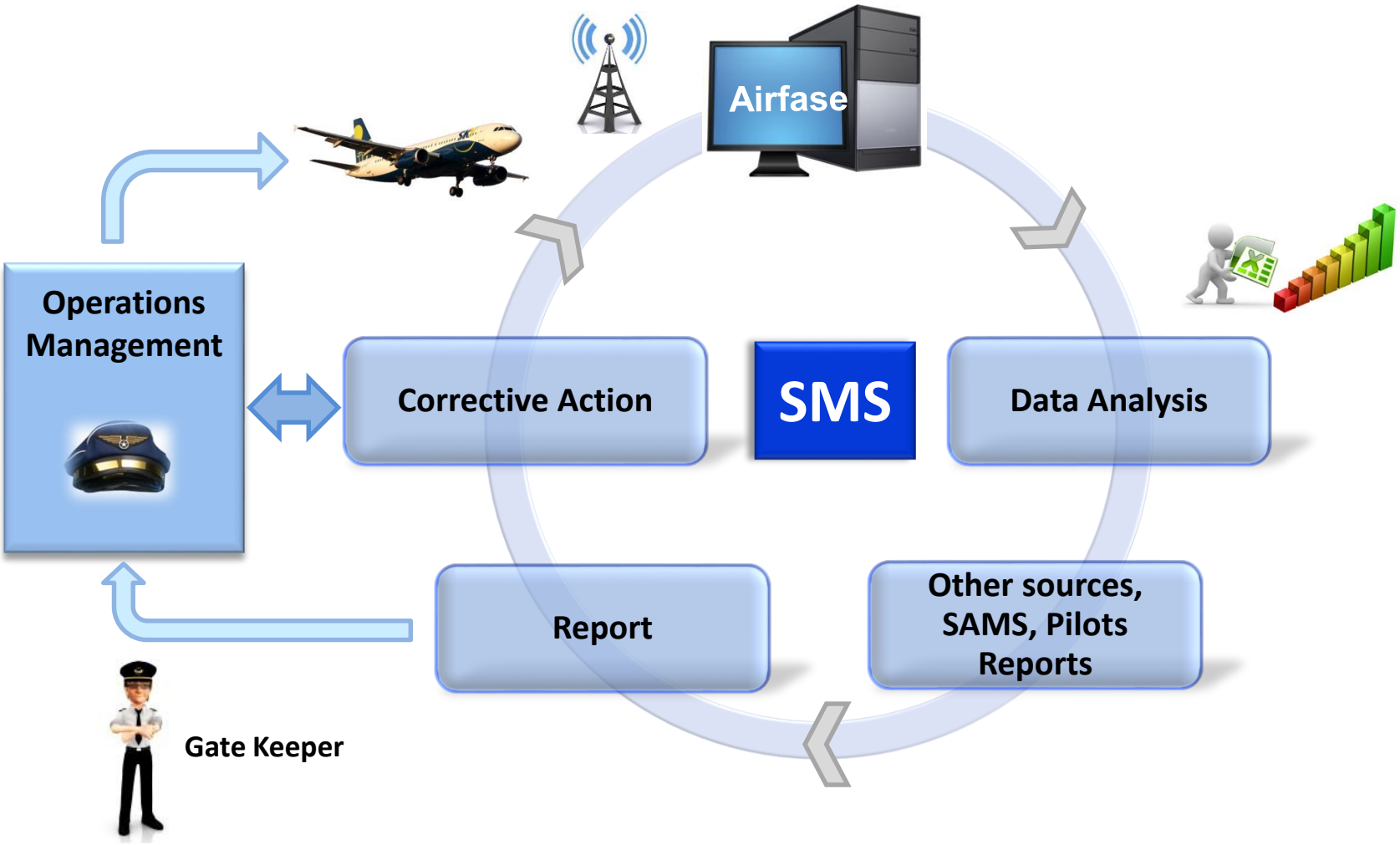
PMC



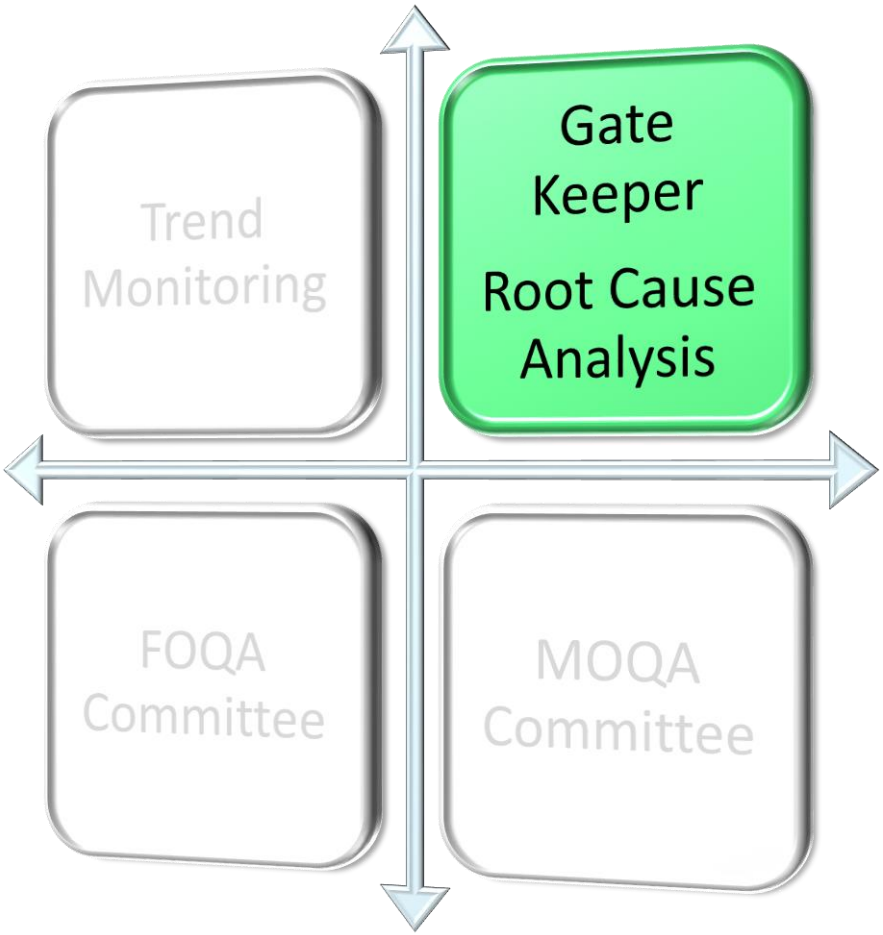
Risk Monitoring, Evaluation and Management



FOQA Committee



Risk Monitoring, Evaluation and Management



Gate Keeper

Gatekeeper functions

- ✓ Protect the de-identified data.
- ✓ Evaluate high severity events, and determine whether it is an error or a violation
- ✓ Contact crews with significant high severity events.
- ✓ Analyzing flight data and perform root cause analysis.
- ✓ Participate in the FOQA & Just Culture committees
- ✓ Participate in LOSA program.

RCA (Root Cause Analysis)

SKY	**Informe Evento No Deseado** Investigación y Acciones Correctivas	**Sky Ariline SA** Form.INV-001 Revisión 01

Control END	
Código de Control	1
Toma conocimiento END	25-Jun
Tipo Hallazgo (sólo auditoria)	
No Conformidad	
Observacion	

Origen END	
Auditoría Interna	
Auditoría 2da parte	
Auditoría 3ra parte	
Auditoría a proveedores	
Reporte	
Revisión x la dirección	
Otros	

Paso 1. Defina el END

Que	Problema(s)	Daño a puerta delantera al AHC, provoca avion AOG
Cuando	Fecha	6/25/2015
	Hora	19:00Hrs
Donde	Instalación, lugar	MANGA
	Gerencia / Área	Despacho comercial
	Tarea / actividad que estaba siendo desarrollada	Postura de manga
	Equipo involucrado	DPC

Objetivo Impactado (Safety, Security, Seguridad Laboral, Medio Ambiente, Calidad)

Safety

Categoría del Evento (Evento Tipo I / Evento Tipo II)

Evento Tipo I

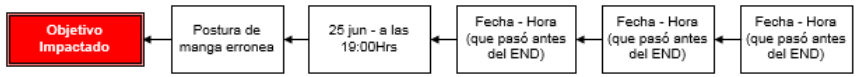
RCA (Root Cause Analysis)

Paso 3. Listado de evidencias recopiladas (entrevistas, fotografías, etc.)

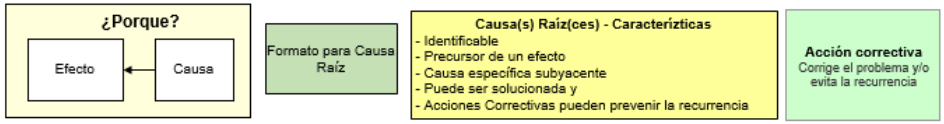
Evidencias recopiladas
- .Informes de los involucrados
- Fotografías
-
-
-

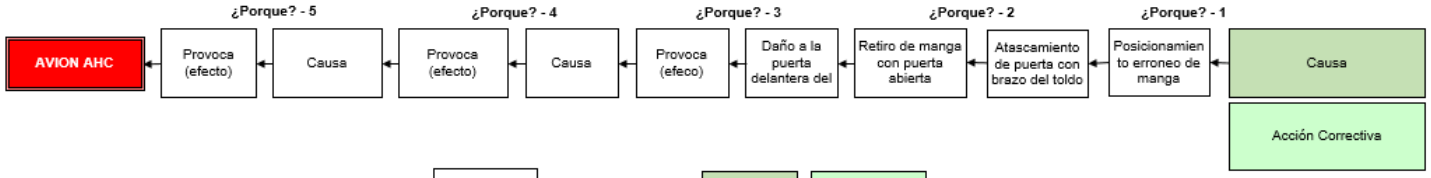
Equipo Investigador
Investigador Líder - Juan Henriquez///Jefe DPC
Investigador 1 -
Investigador 2 -
Investigador 3 -
Investigador 4 -

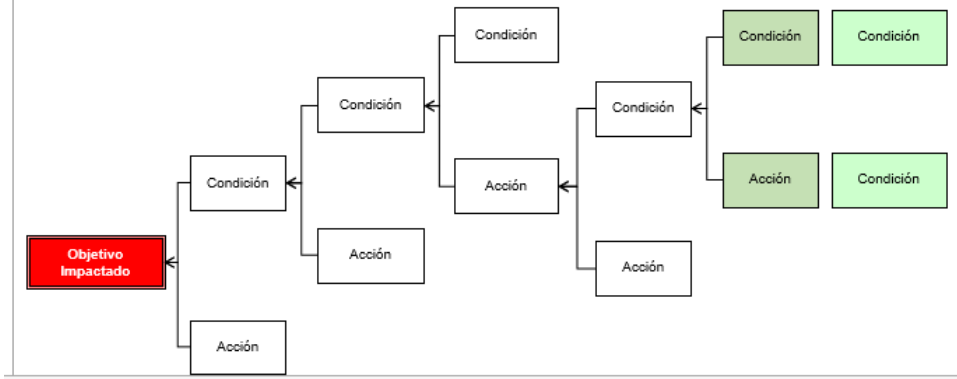
Paso 4. Línea de Tiempo



Paso 5. Análisis de Causa Raíz & Mapa Causa Efecto o Metodología de 5 ¿porqué?



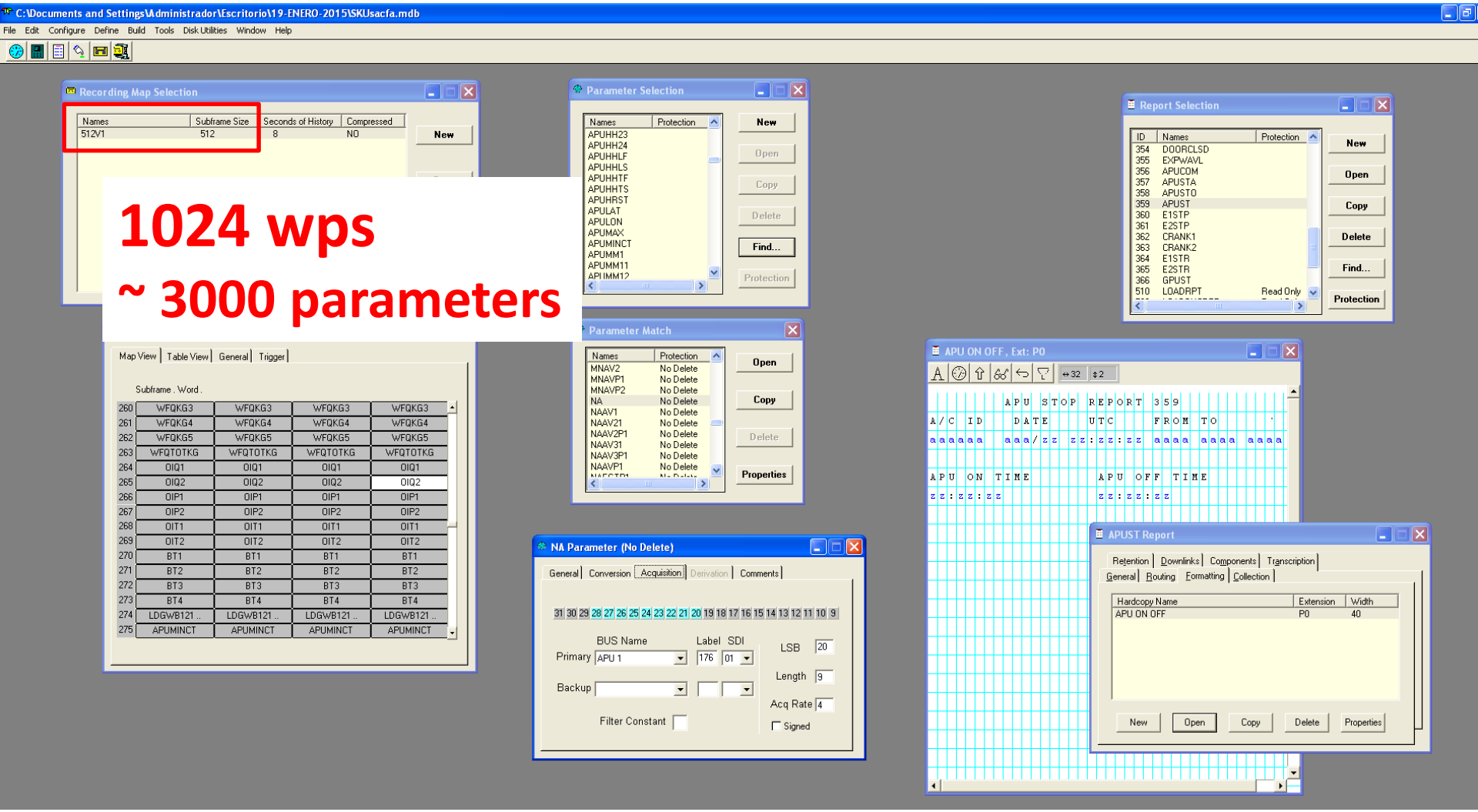




MOQA

(Maintenance Operation Quality Assurance)

Data Frame A319



Maintenance & Engineering

- Hard Ldg/ Overweight Ldg
- VMO/MMO Exceedance / Turbulence
- Engine Vibration Exceedance
- Engine Parameters
- Fuel Consumption
- Flight Controls
- Ldg gear Operation & Positions
- Presurization system
- Door Indication System
- NLG Steering System Operation / Indication

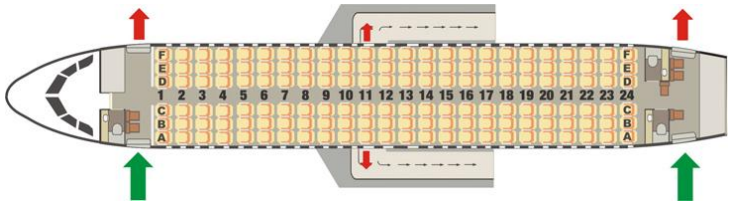
Maintenance & Engineering

- Hyd System
- APU
- Fuel System
- Auto Pilot Operation
- Slat Flap System
- Electrical Power
- Windshield Heater System
- Bleed System
- Packs System
- Speed Brake System
- Auto Brake/AntiSkid System

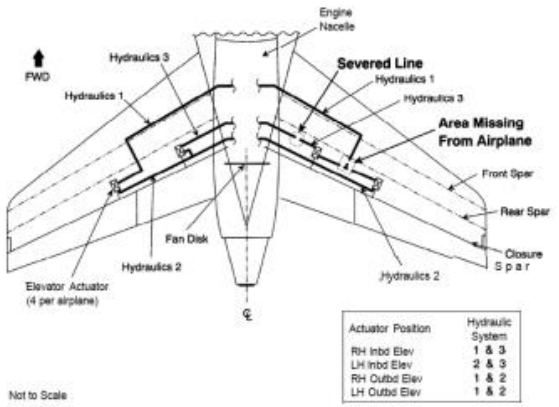
New Parameters in our Data Frame

ENGINE

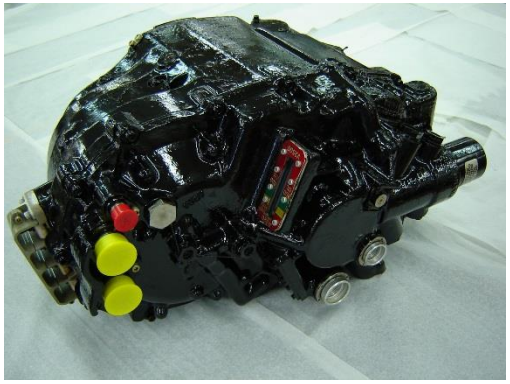
CABIN



HYD SYSTEM



IDG (Integrated Drive Generator)



APU (Auxiliary Power Unit)

New reports in Data Frame

FDIMU (Flight Data Interface Management Unit)

ACARS (Aircraft Communications Addressing and Reporting System)

Engine Oil Report

- OIQ – Oil Quantity
- OIP – Oil pressure
- OIT – Oil Temp.

IDG Oil Report

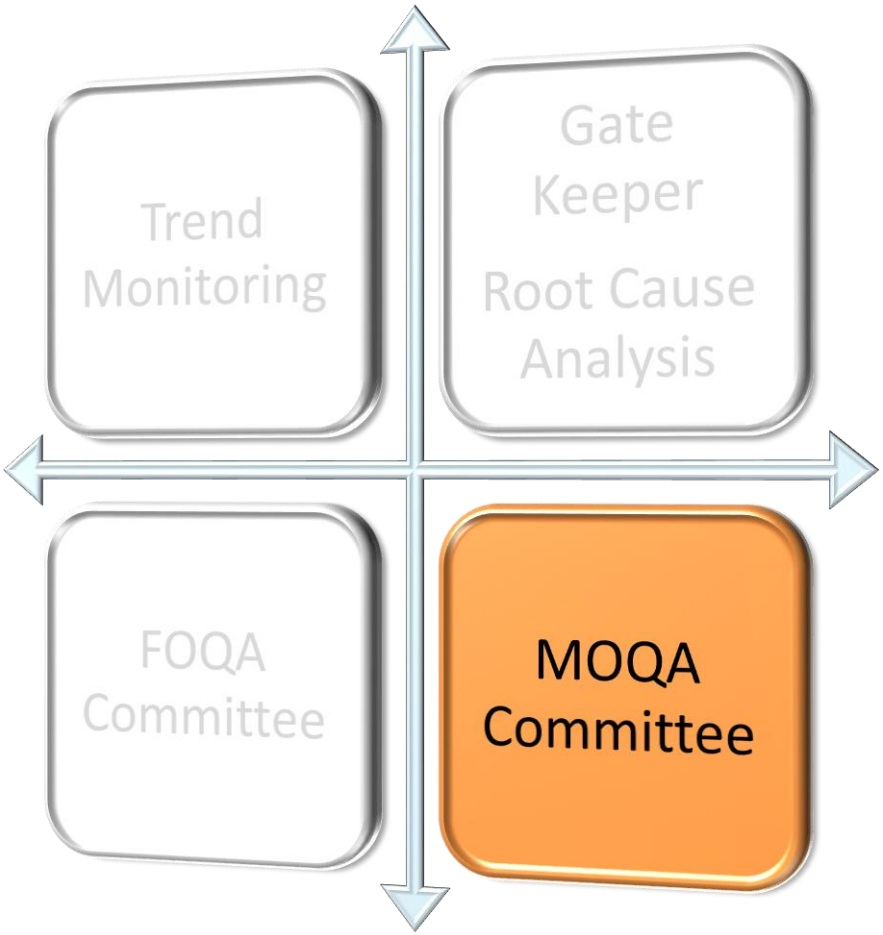
- IDG OLV – Oil Level
- IDGT – Oil temp.
- IDG RISE – Oil Rise

APU Report

- APU_Start_Stop_TIME
- APU – Oil Quantity
- APU LVL

MACRO

Risk Monitoring, Evaluation and Management



Monitoring by ATA

New Parameters in Data Frame

ENGINE

ENG 1 BLEED PB
ENG 2 BLEED PB
ENG2 AICE PB
ENG1 AICE PB
ENGINE 1 PRV POSITION
ENGINE 2 PRV POSITION
ENG FUEL USED
ENG FUEL USED
ENG2 HPV POSITION
ENG1 HPV POSITION
ENG1 PRECOOLER INLET P
ENG2 PRECOOLER INLET P
ENG 1 PRECOOLER OUTLET T°
ENG 2 PRECOOLER OUTLET T°
SELECTED VARIABLE STATOR
SELECTED VARIABLE STATOR
T2.5 (LPC EXIT TEMPERATUR
T2.5 (LPC EXIT TEMPERATUR
T3 (HPC EXIT TEMPERATURE)
T3 (HPC EXIT TEMPERATURE)
T5 TEMPERATURE AT POSITIO
T5 TEMPERATURE AT POSITIO

IDG

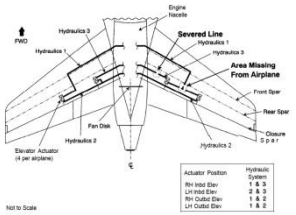
IDG 1 INLET TEMP
IDG 1 OUTLET TEMP
IDG 2 INLET TEMP
IDG 2 OUTLET TEMP
IDG 1 DISCRETES SDAC STA
IDG 2 DISCRETES SDAC STAT
IDG1 DISCONNECTED
IDG1 DISC P/B OFF
IDG1 OIL OVERHEAT
IDG1 OIL LOW PRESSURE
IDG2 DISCONNECTED
IDG2 DISC P/B OFF
IDG2 OIL OVHT
IDG2 OIL LOW PRESSURE

APU

APU BLEED VALVE OPEN
APU FUEL LOW PRESSURE
APU STARTER
APU BLEED PB
APU FIRE SYS. 1
APU START SWITCH
APU STOP SWITCH
EGT (APU)
APU OIL SUMP TEMP
APU GEN LOAD SYS. 1
APU GEN P/B OFF
APU GEN FAULT
APU GEN OVERLOAD
APU MASTER SWITCH P/B OFF
IGV ACTUATOR
IGV LVDT
IGV POSITION
RPM
BLEED AIR TEMP
BLEED AIR PRESSURE

CABIN

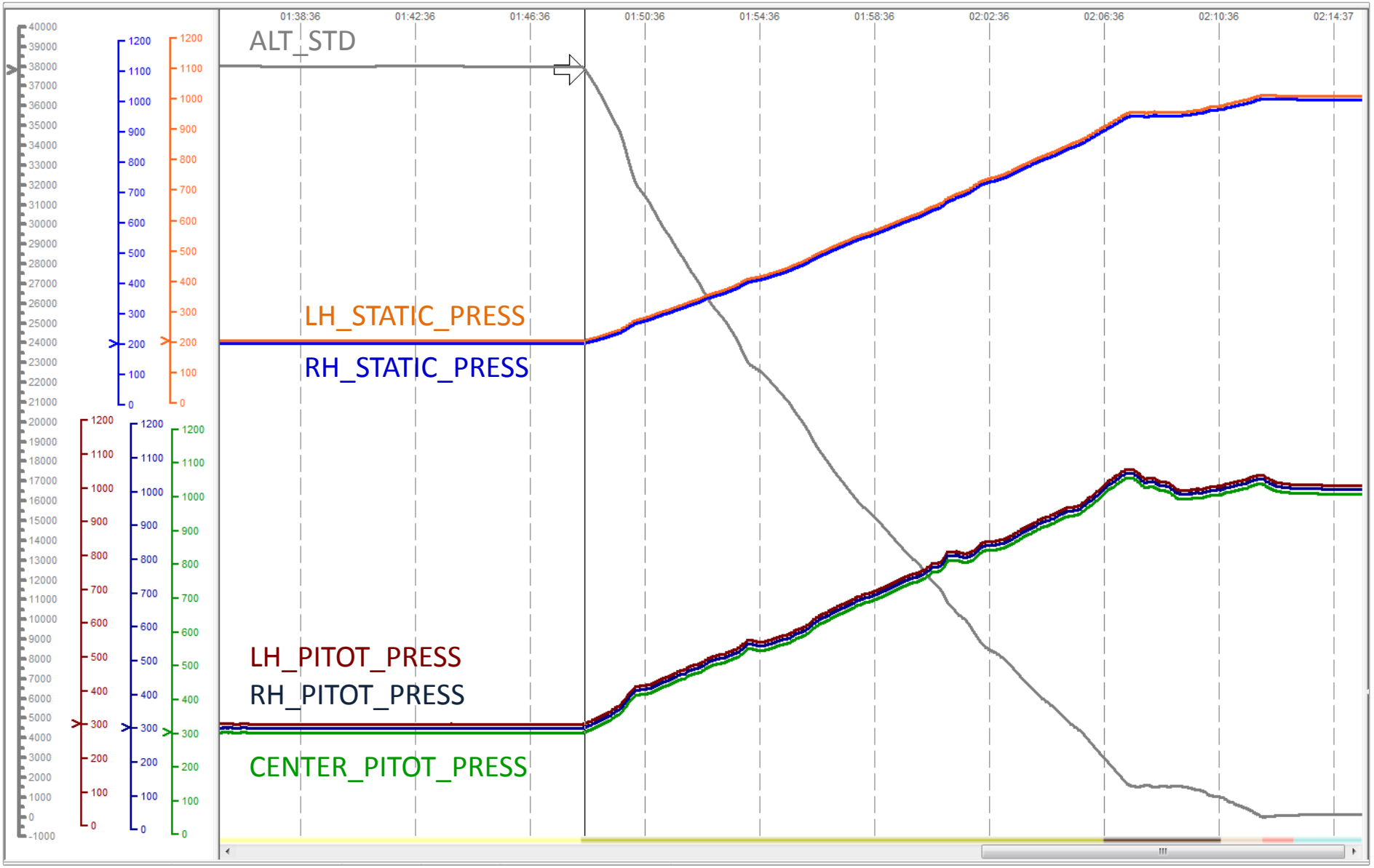
NO_SMOKING
FASTEN SEAT BELT
CABIN ALTITUDE
CABIN ALTITUDE SDAC
CABIN DIFF. PRESSURE SYS.
CABIN PRESSURE SDAC
EXCESSIVE CABIN ALTITUDE
FWD CABIN COMPT TEMPERATU
FWD CABIN COMPT TEMPERATU
AFT CABIN COMPT TEMPERATU
CKPT COMPT TEMPERATURE
AFT CABIN COMPT TEMPERATU
SELECTED CKPT COMPT TEMP
SEL FWD CAB COMPT TEMP SY
SEL AFT CAB COMPT TEMP SY



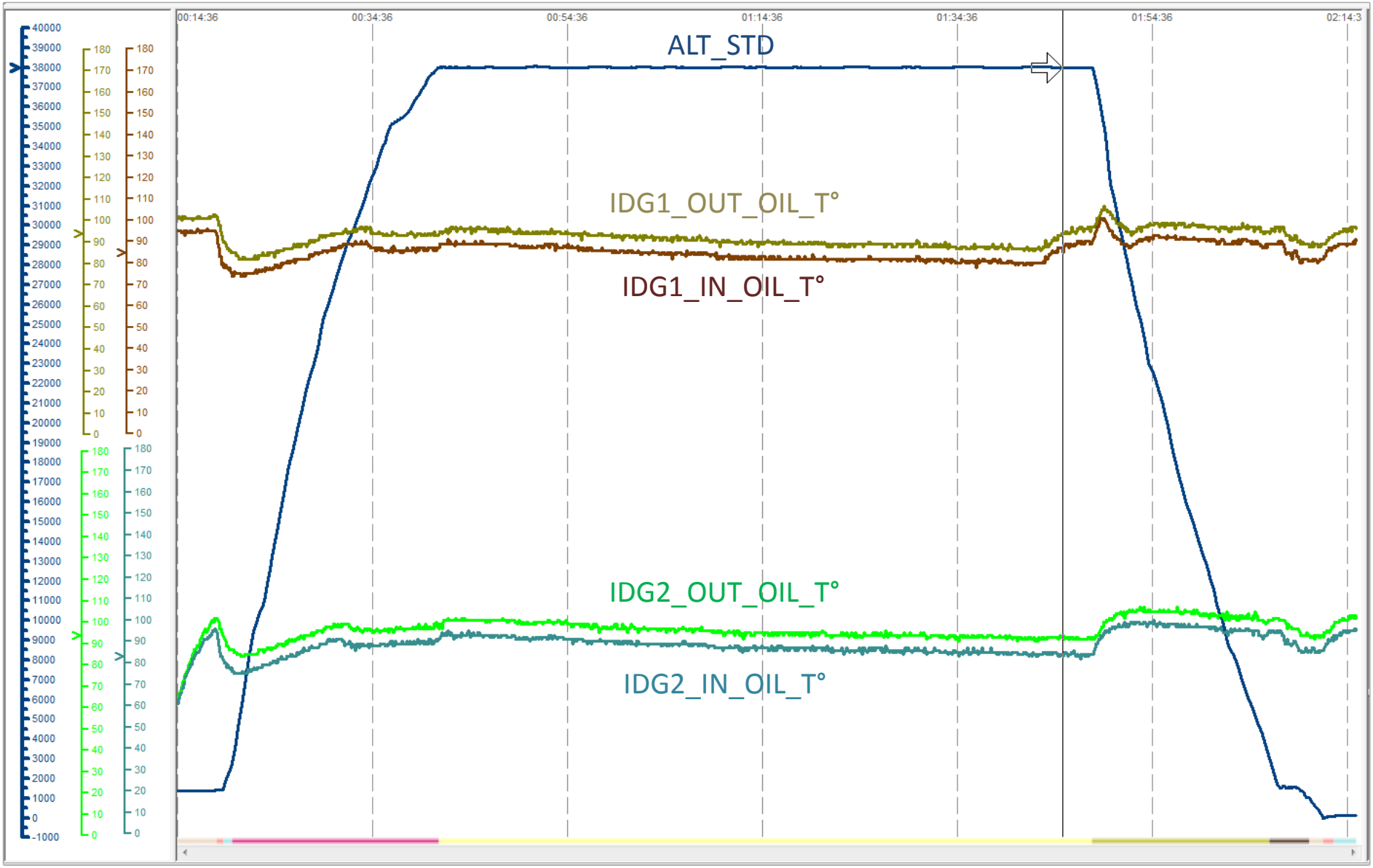
HYD SYSTEM

YELLOW HYD LOW PRESSURE S
YELLOW ELECTRIC PUMP P/B
YELLOW ELECTRIC PUMP
YELLOW ENGINE PUMP
YELLOW SYS PRESSURE
YELLOW RSVR QUANTITY
YELLOW RSVR TEMPERATURE
GREEN ENGINE PUMP
GREEN SYS PRESSURE
GREEN RSVR QUANTITY
GREEN RSVR TEMPERATURE
BLUE ELECTRIC PUMP PB
BLUE ELECTRIC PUMP
BLUE SYS PRESSURE
BLUE RSVR QUANTITY
BLUE RSVR TEMPERATURE
PTU PB
PTU VALVE CONTROL

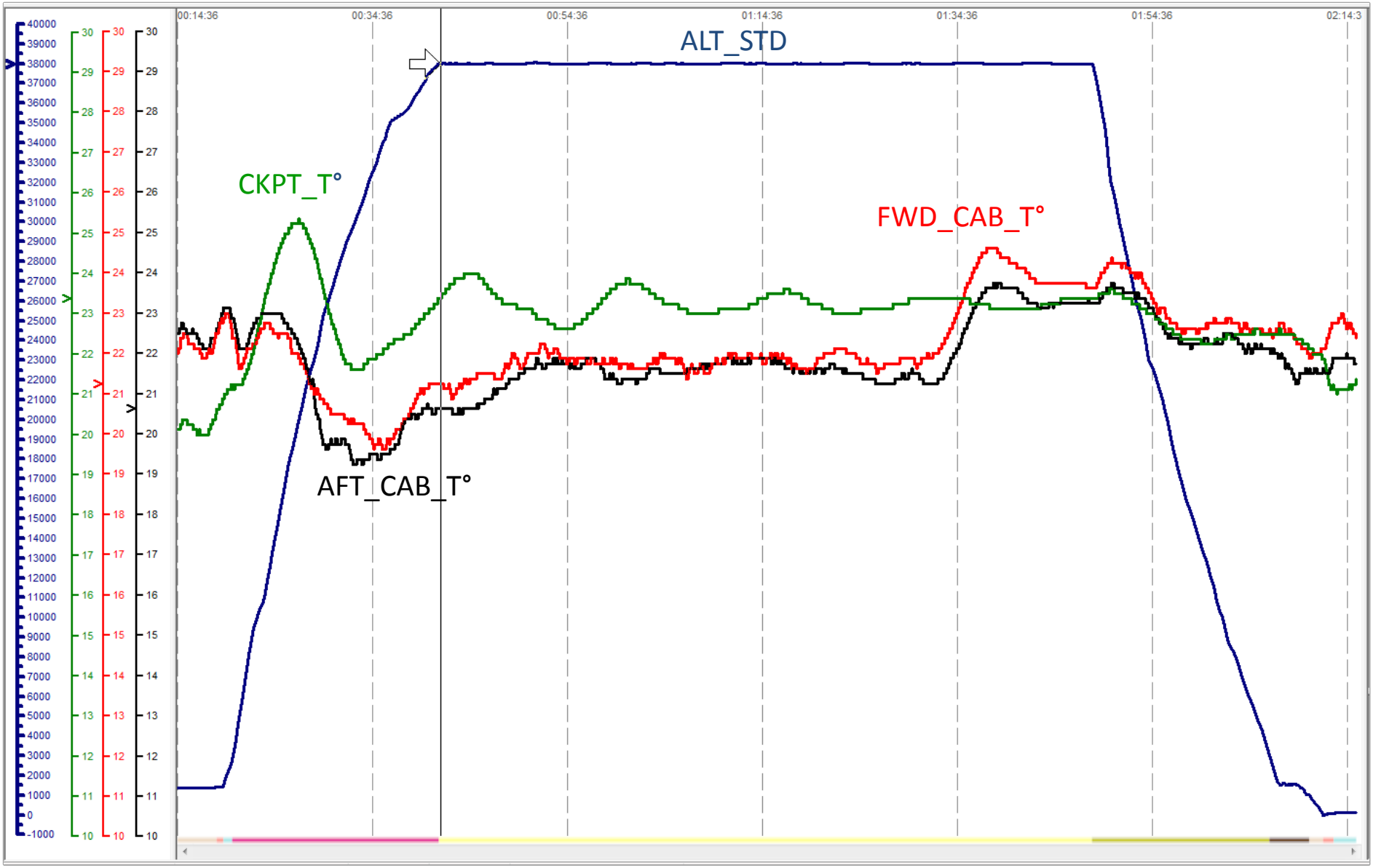
ATA 34 – PITOT & STATIC PRESS



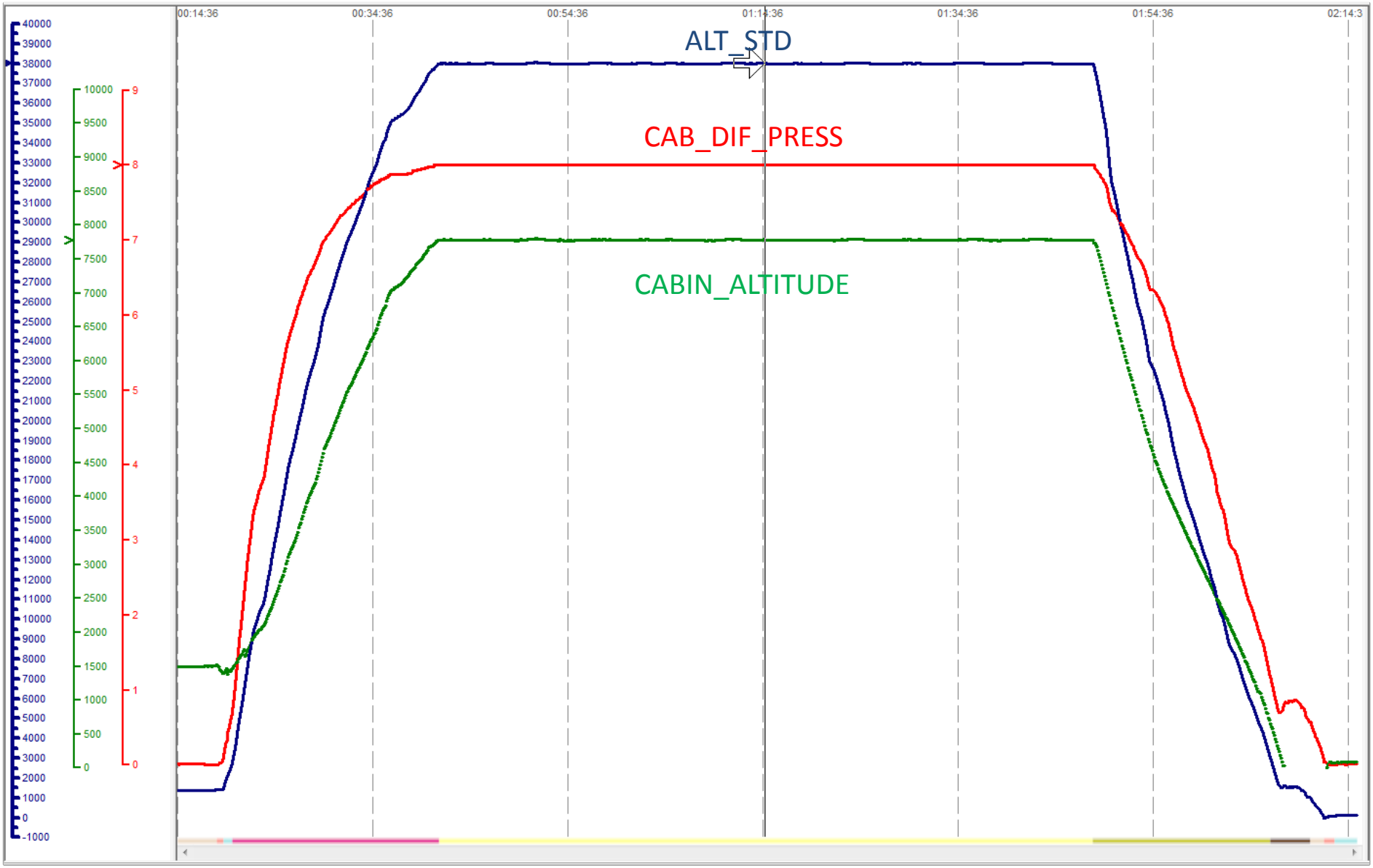
ATA 24 - IDG's OIL TEMP



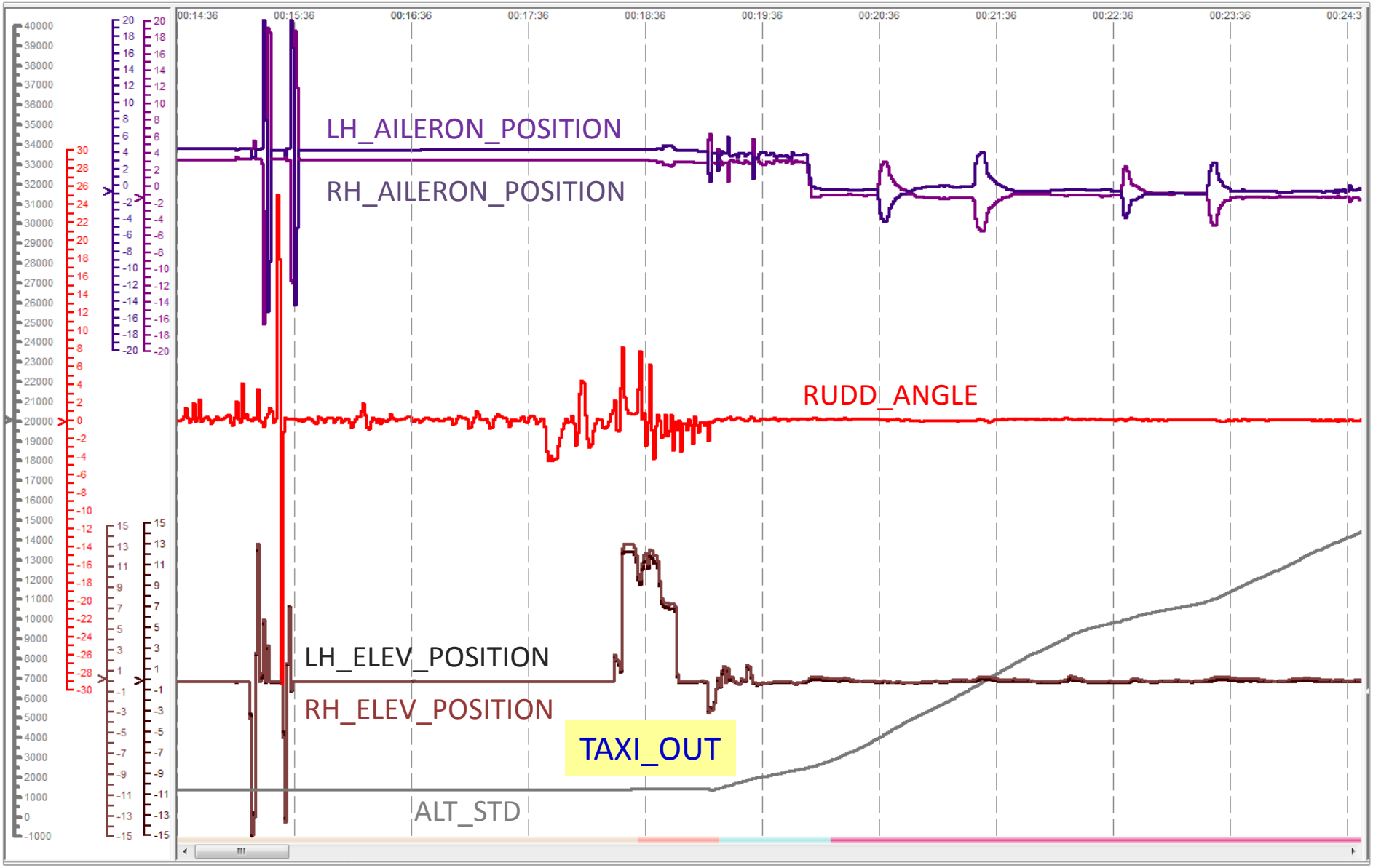
ATA 21 – CABIN TEMP



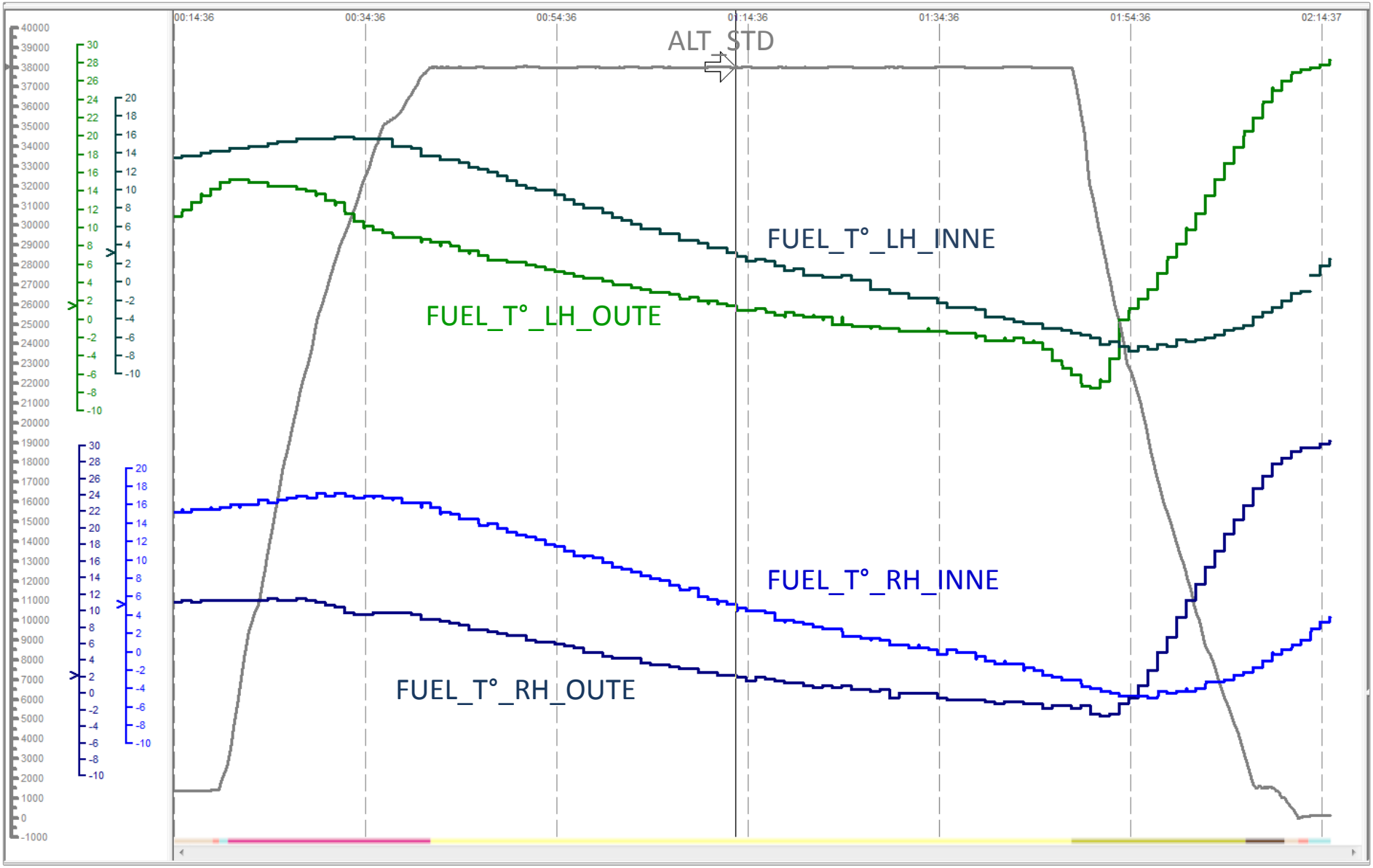
ATA 21 – CAB-PRESS



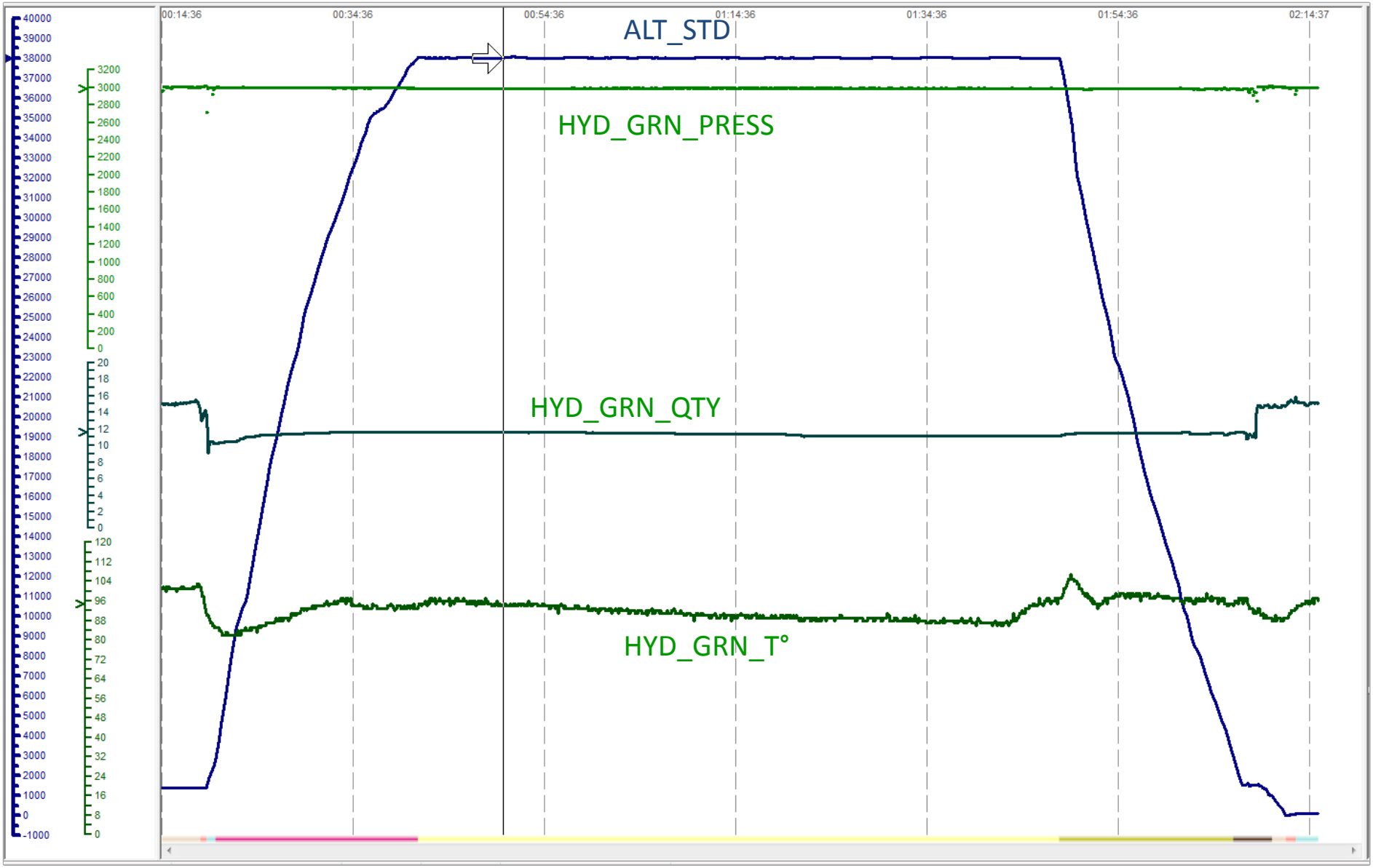
ATA 27 – Flight Controls



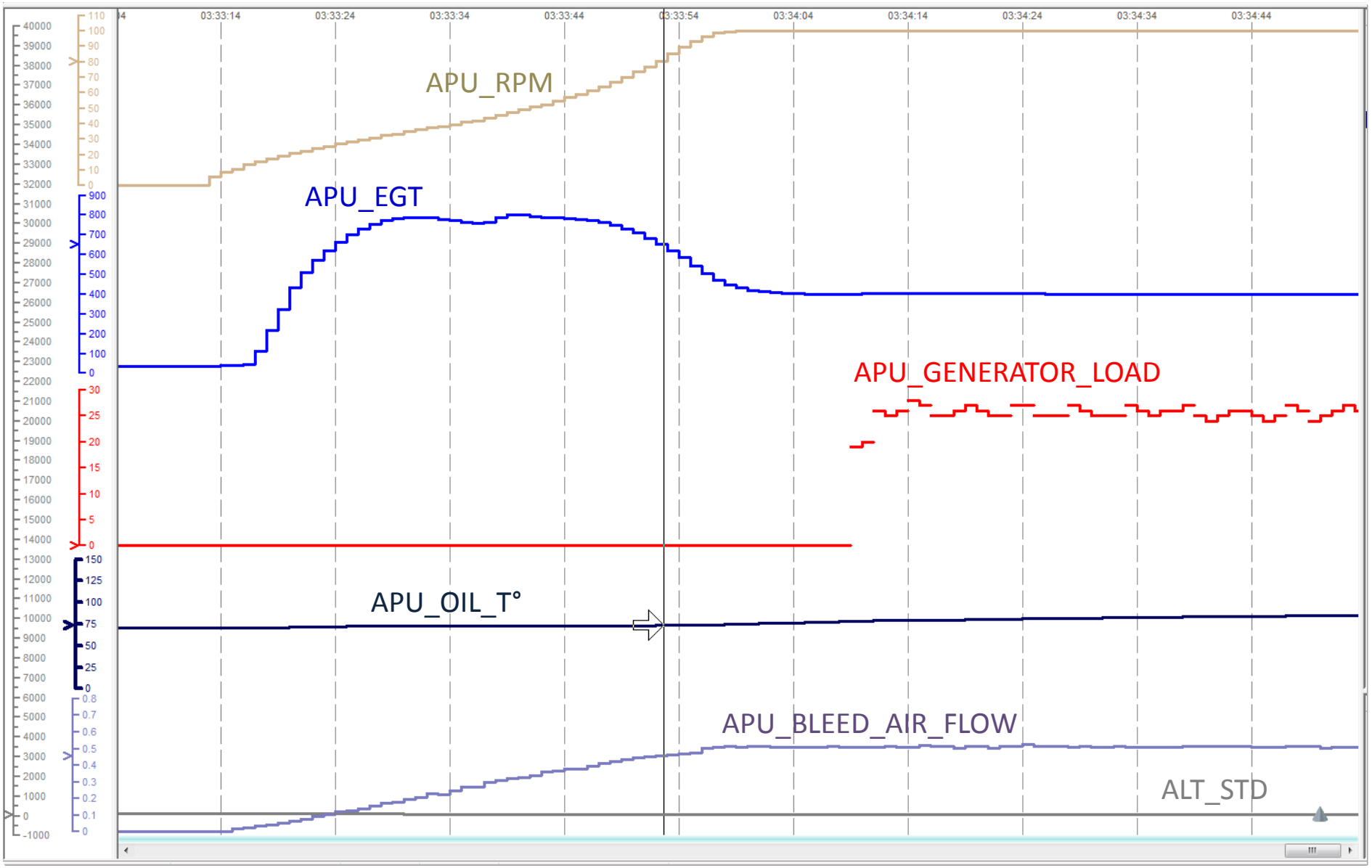
ATA 28 – FUEL TEMP



ATA 29 – HYD GRN QTY-PRESS-TEMP



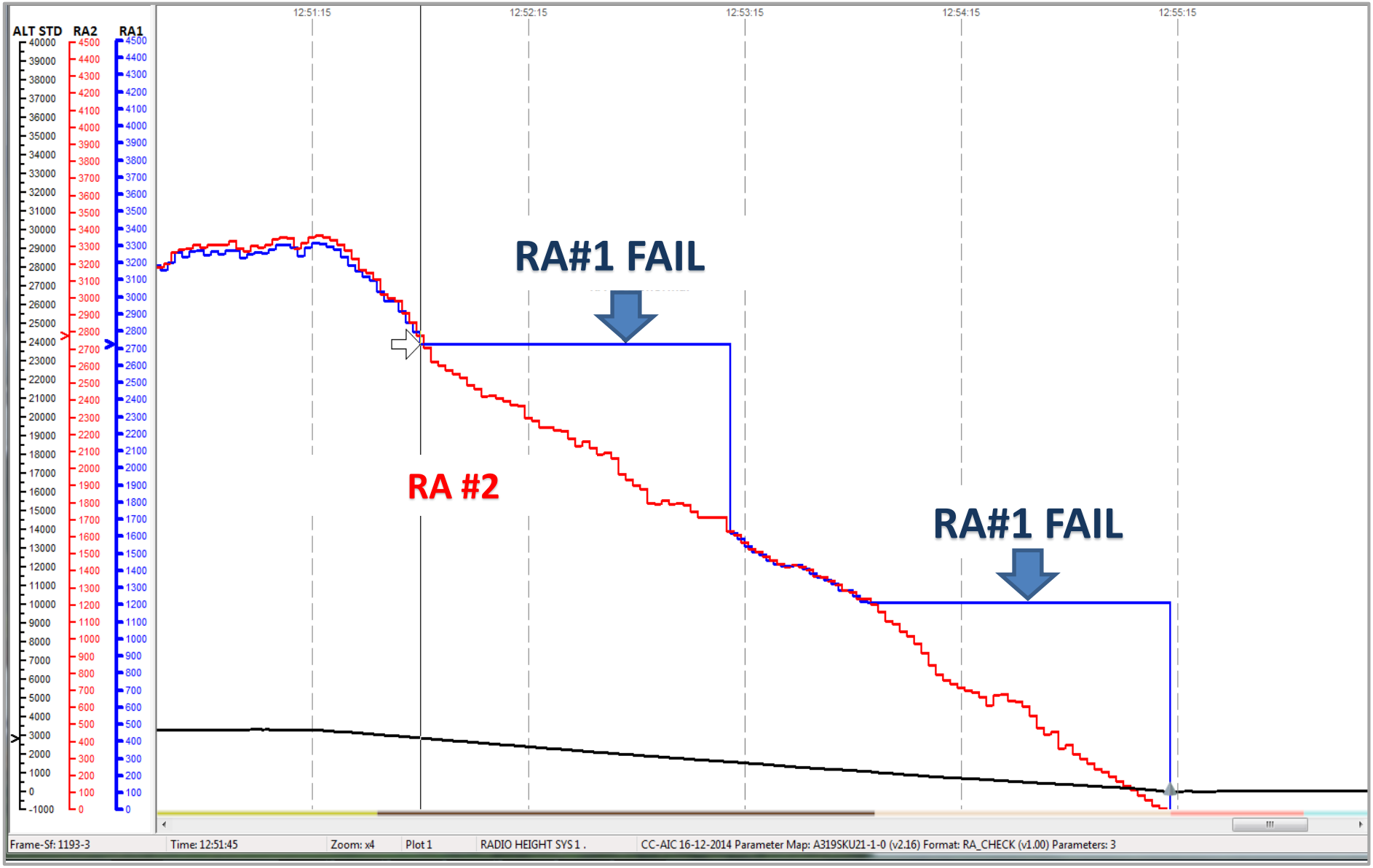
ATA 49 – APU MONITORING



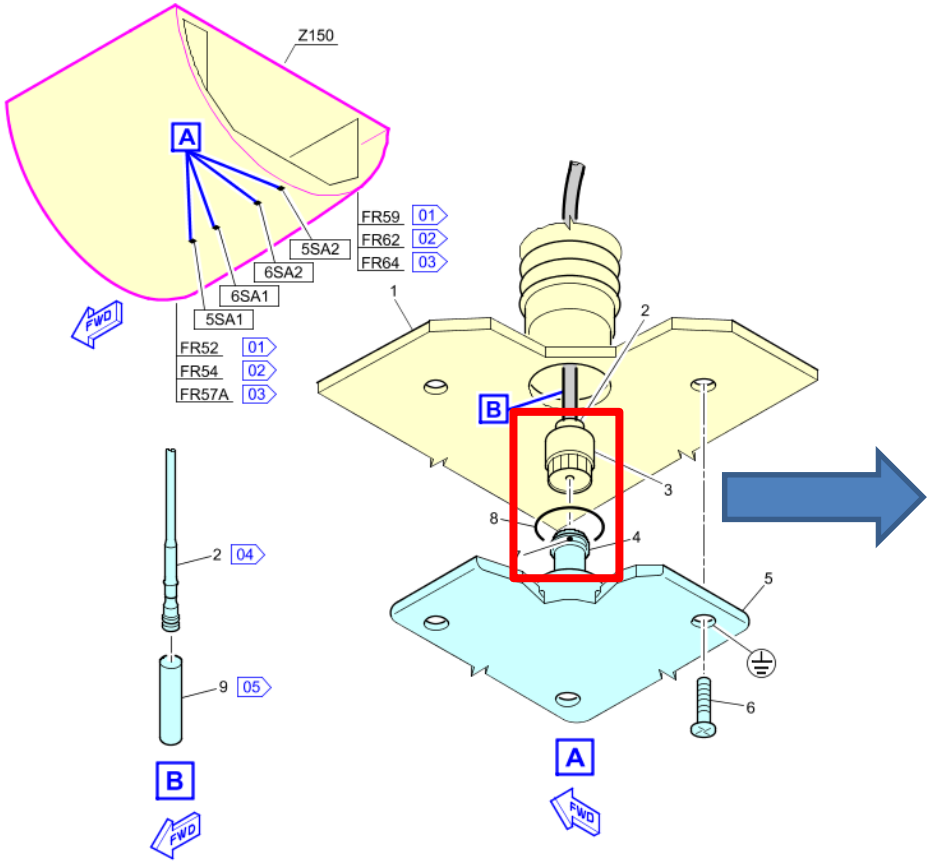
ATA 72 – Engine VSV

Maintenance Events

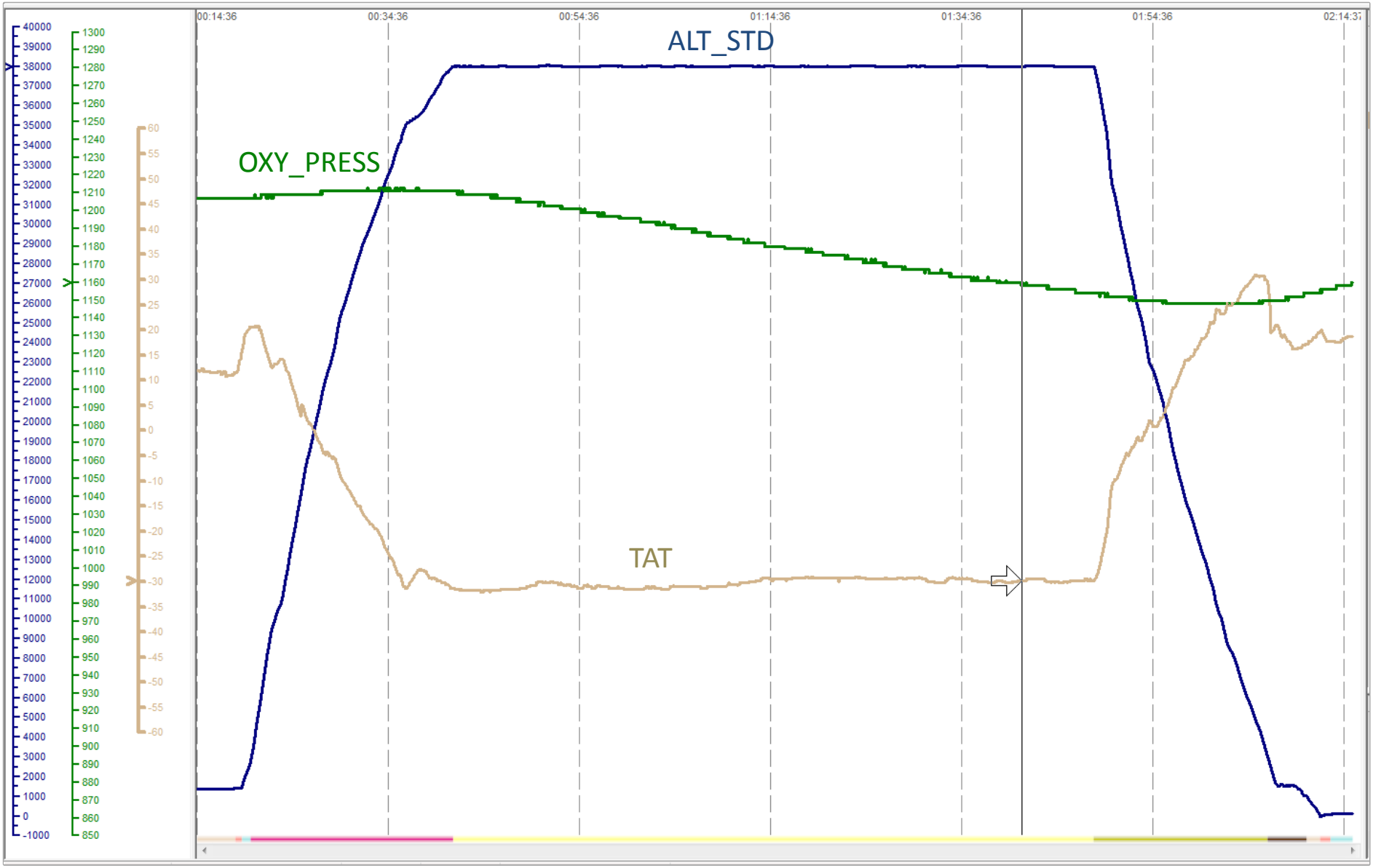
ATA 34 – Autoland Fail



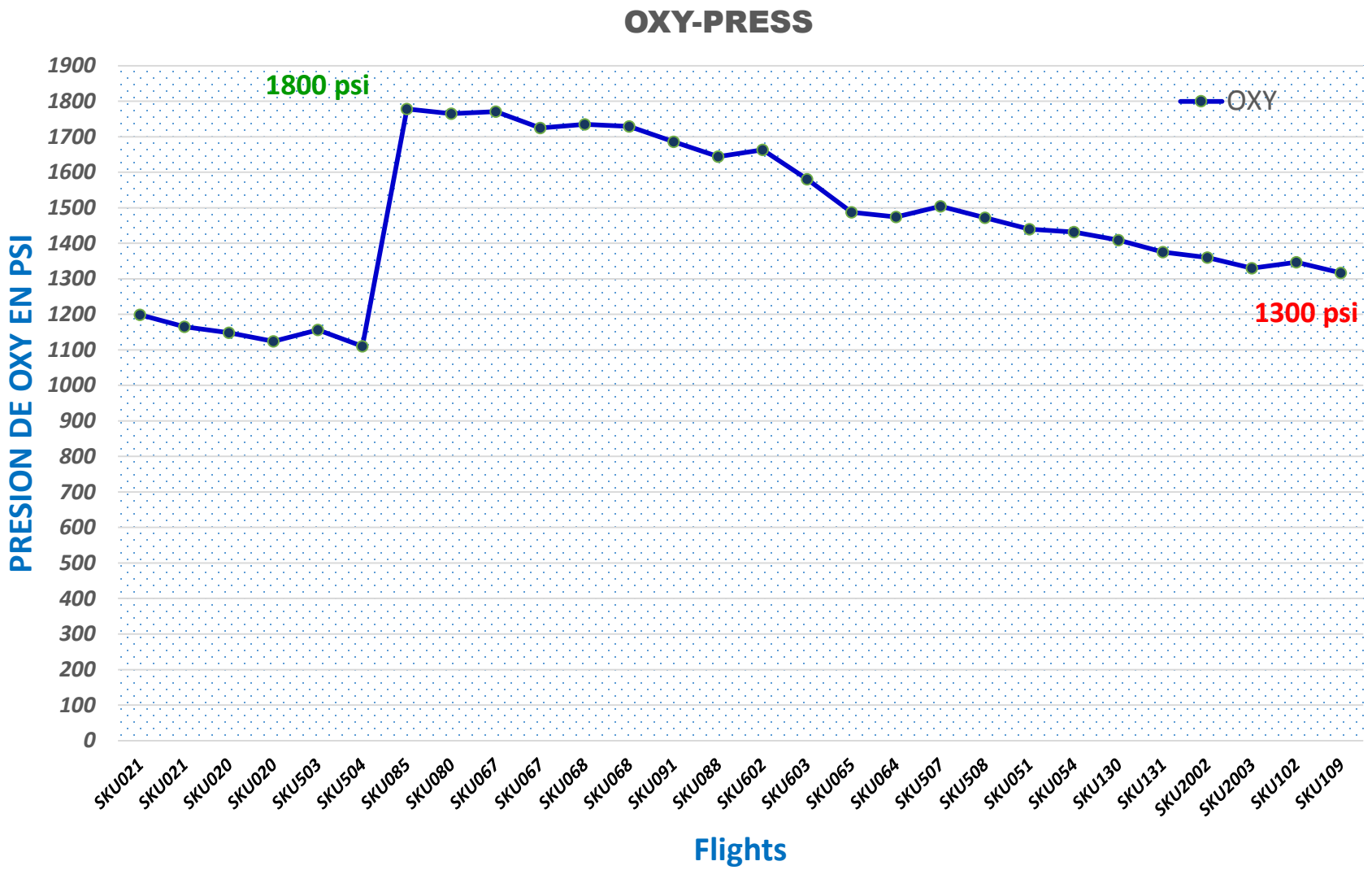
ATA 34 – Autoland Fail



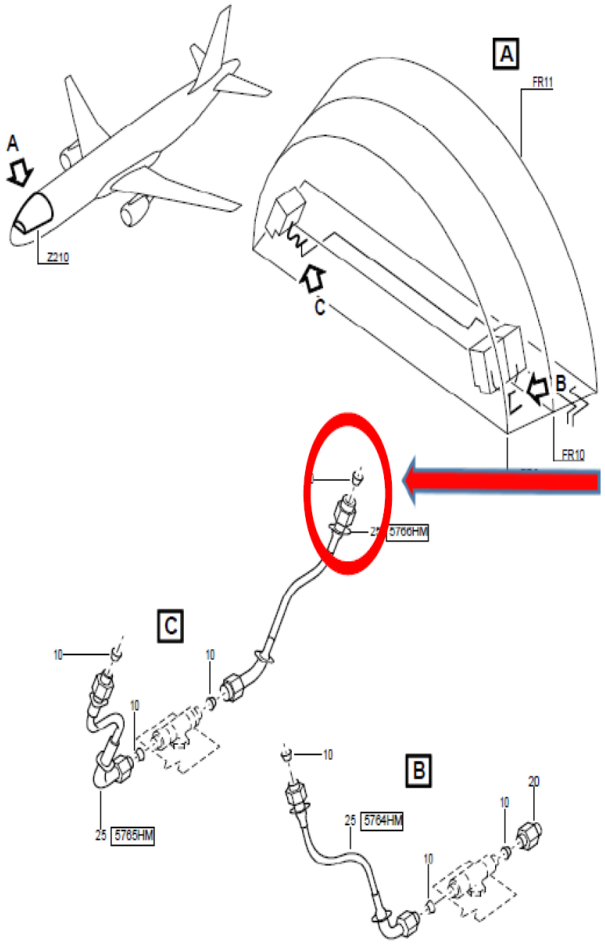
ATA 35 – OXY PRESS



ATA 35 – OXY PRESS

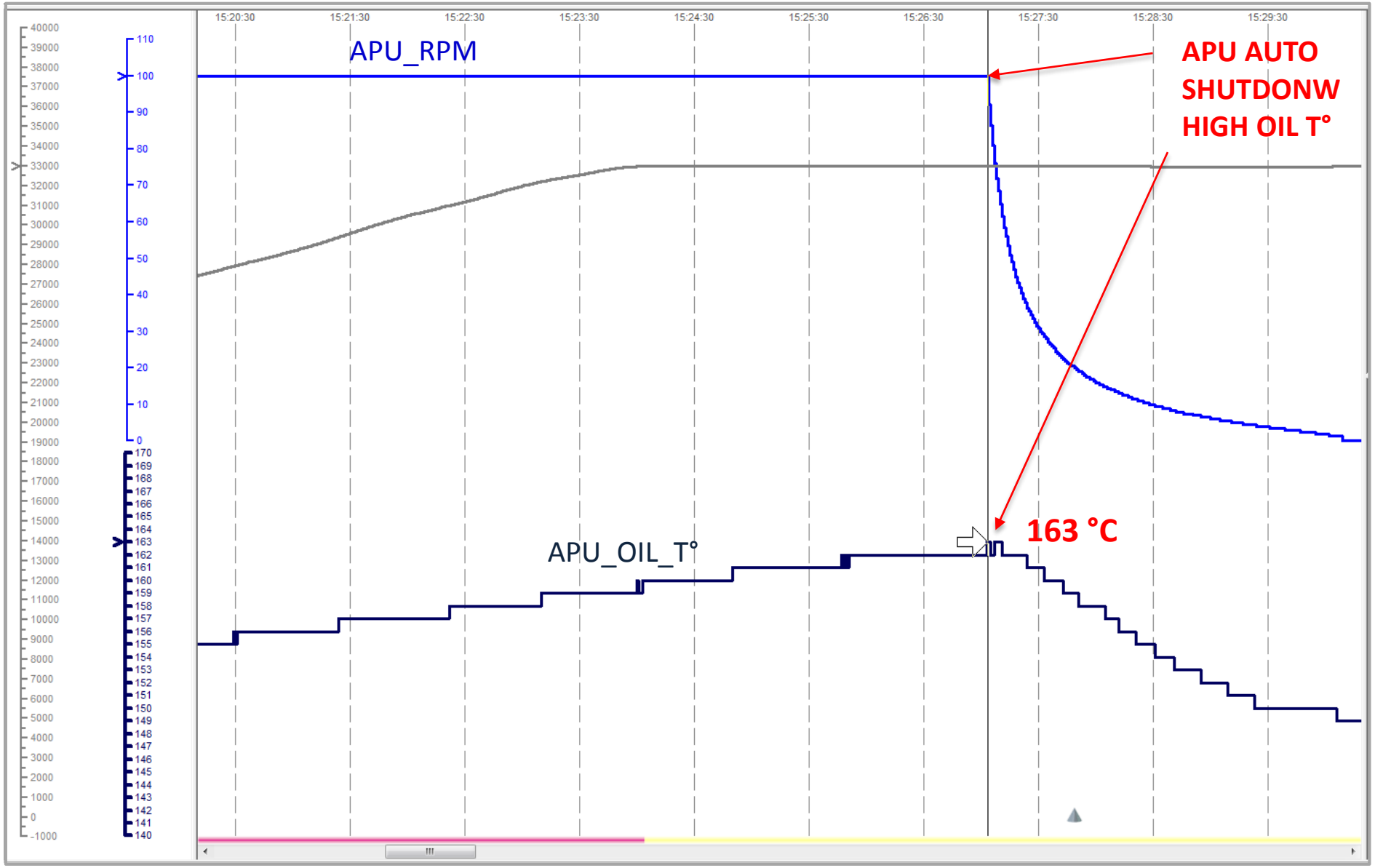


ATA 35 – OXY PRESS



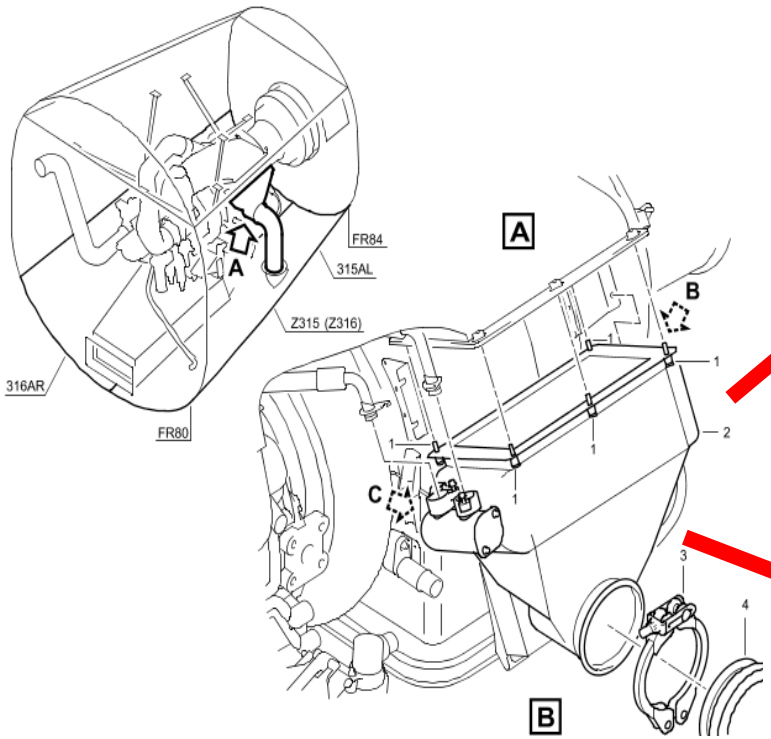
Sector de filtración por Ring de ajuste entre línea y caja del lado capitán con daño.

ATA 49 – Oil Temp

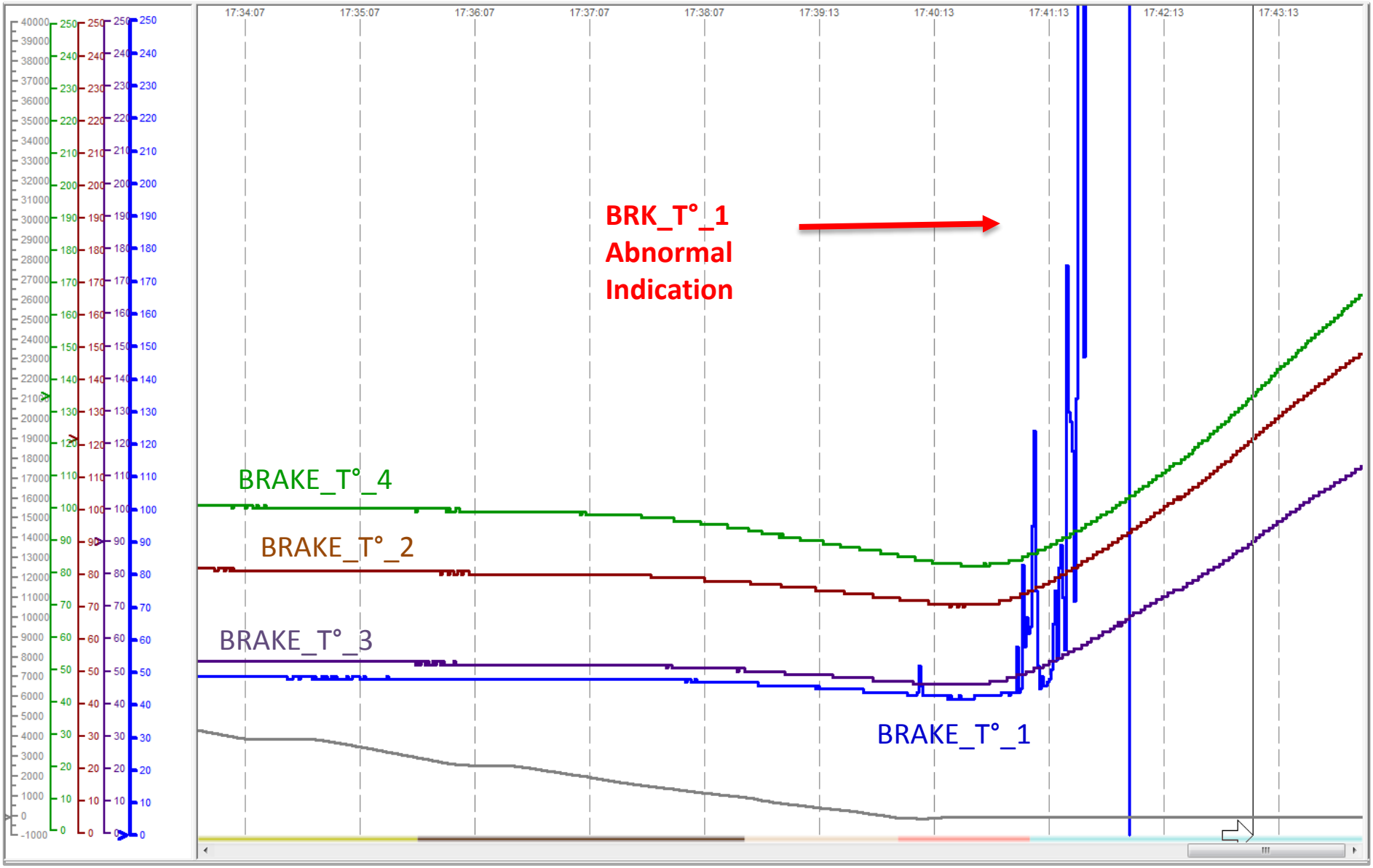


ATA 49 – Oil Temp

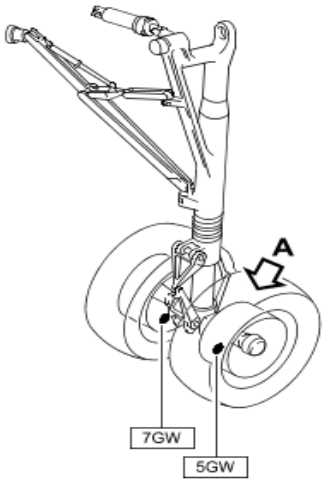
APU OIL COOLER CLOGGED AND POLLUTED

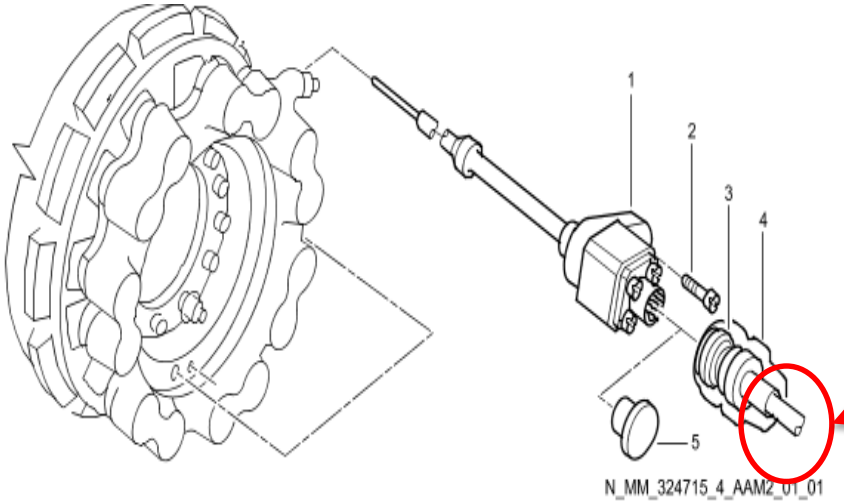


ATA 32 – Brake TEMP



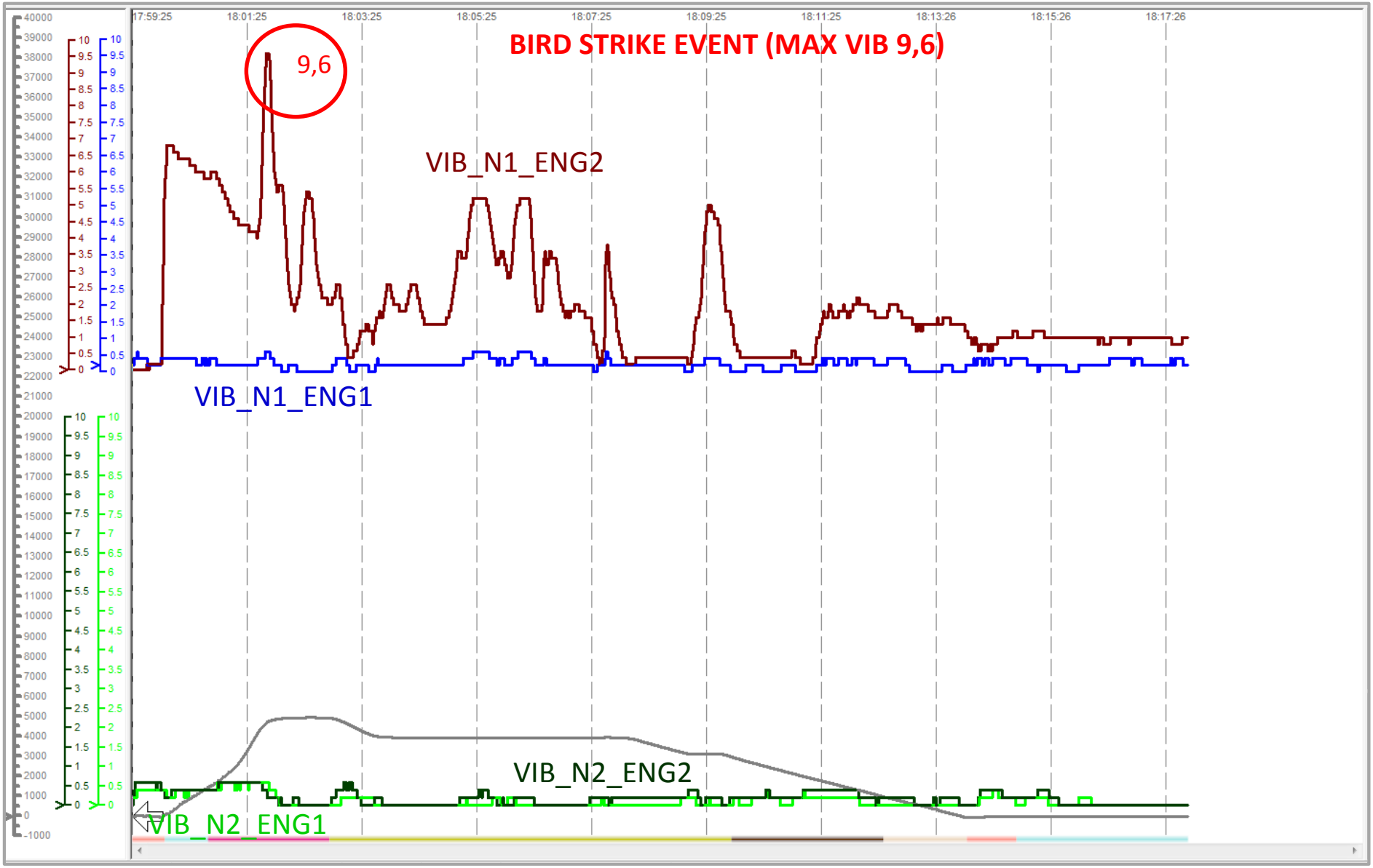
ATA 32 – Brake TEMP





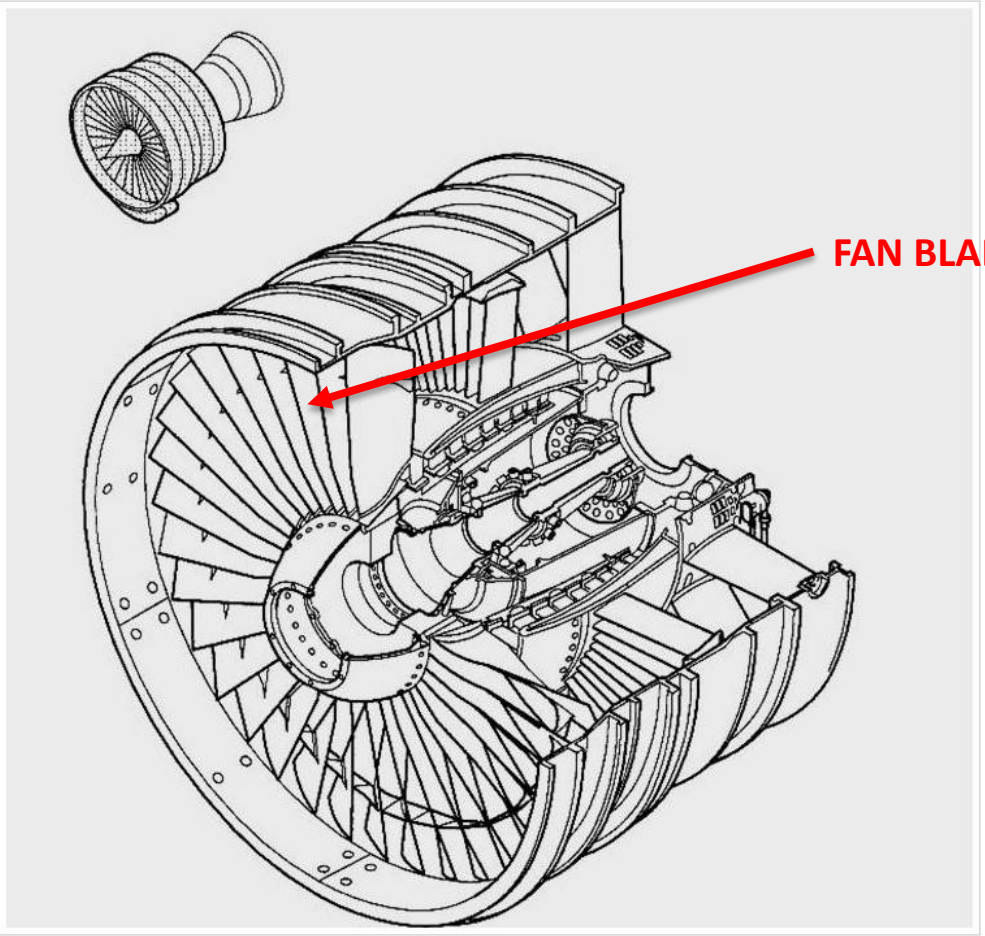
WIRING DAMAGE (conector)

ATA 77 – Engine Vibration



ATA 77 – Engine Vibration

Diagram of CFM56 Fan Assembly



Questions…?

Flight Data Monitoring