



ministère
de l'Écologie,
du Développement
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durables

BEA
Bureau d'Enquêtes et d'Analyses
pour la sécurité de l'aviation civile

Washington, DC, le 04/06/2008

Mauricio Andres Letona
TACA 390 investigation representative
for the flight recorder read-out operation
in Washington

Objet : FDR Preliminary Sequence of Events
V/réf : 30/05/2008 A320 EI-TAF TACA accident in Tegucigalpa Airport
P.J. : 2+15 pages

Please find attached a document provided by Airbus concerning the 30/05/2008 EI-TAF accident in Tegucigalpa.

This document n° GSE 420;0226/08 is a preliminary description of the sequence of events based on the FDR recording, as proposed by Airbus. It includes some pieces of data analysis which are also preliminary and which still need to be validated and correlated against other available information.

Please feel free to provide the parties involved in the investigation as per ICAO annex 13 with this document.

Jérôme BAUER

Preliminary sequence of events from DFDR

Approach performed with auto-pilots and flight-directors OFF, auto-thrust ON. Auto-brake MED was selected. After the final turn to runway 02, there was an approximately 10kt tailwind.

At flare initiation, approximately 50ft:
CAS=145kt, TAS=155kt, GS=168kt.

The thrust levers were retarded at approximately 5ft, 5sec before touch down.

Touch down occurred approximately 9sec after passing 50ft:
CAS=138kt, TAS=146kt, GS=160kt.

Integration of the ground speed from the probable time of runway excursion shows a touch down at approximately 400m after the displaced threshold (This value will have to be refined by a trajectory computation).

Time of touch down, referenced here after as T0: 15:45:12 (EVXOR time).

T0+1s: Spoilers started to deploy. Max reverse selection.

T0+4s: Start of manual braking action, leading to A/BRK disengagement.

- Remark: A/BRK normally starts to apply brake pressure 4 sec after spoilers' deployment. Manual braking action prevented A/BRK activation in this case.

T0+7s: Nose gear compressed. Brake pedals were progressively applied up to maximum (80°). Some aft stick was maintained during 8sec after nose landing gear touch down.

T0+10s: Deceleration reached approximately 0.45g.

T0+15sec: Thrust levers were advanced from full reverse to idle reverse. There was no more aft stick. The deceleration started to decrease from approximately 0.35g to approximately 0.15g.

T0+17s: Thrust levers were advanced to forward idle. Thrust lever 1 was transitorily advanced to a recorded position of 10°. The ground spoilers started to retract (Indicating that the thrust lever #1 reached probably 20°, even if not recorded due to sampling rate). Ground speed was approximately 72kt at this time. Then spoilers 5 deployed again while spoilers 1 to 4 remained stowed. This was probably due to the following:

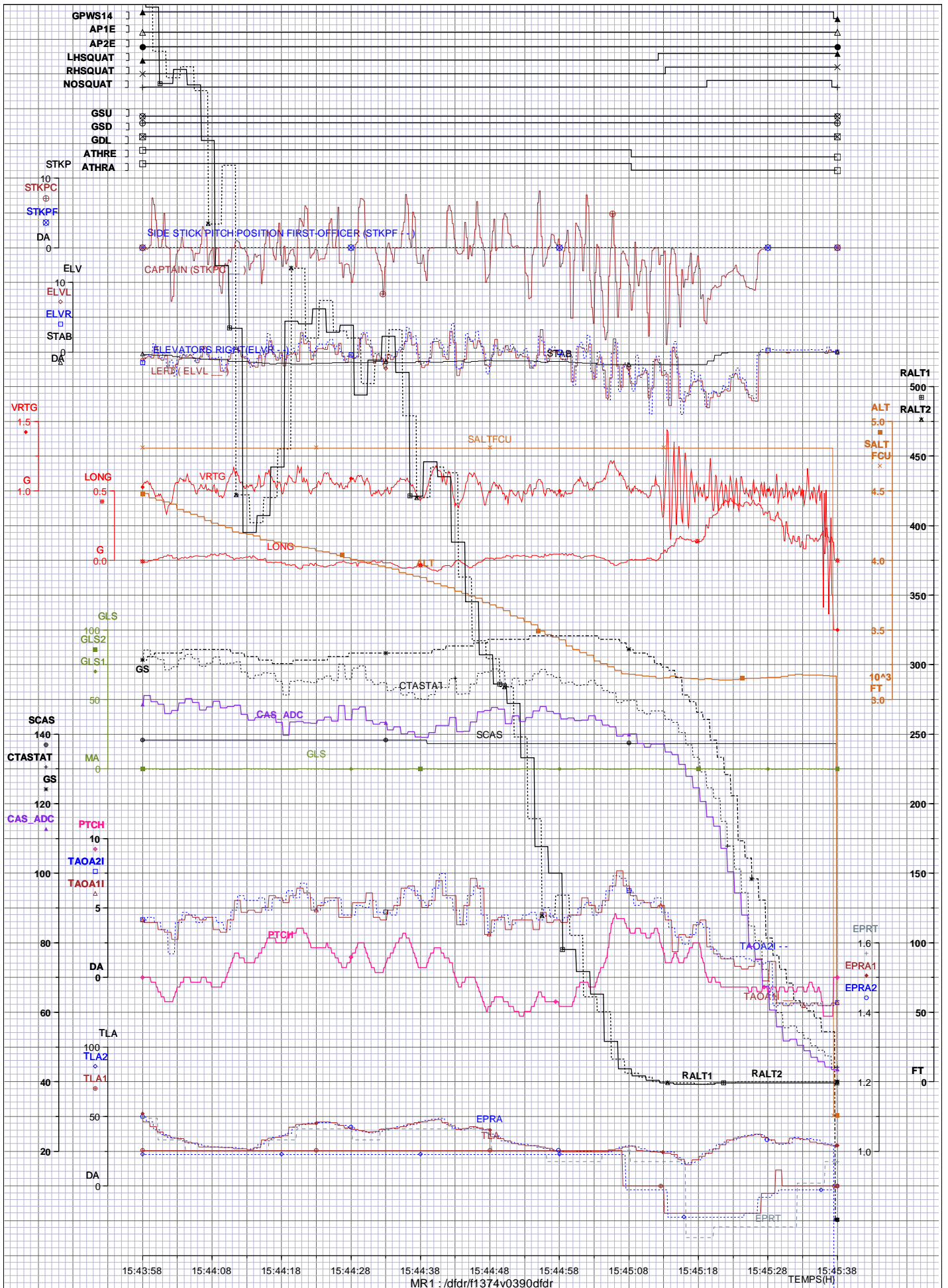
- Ground spoilers logic:
 - o SEC#1 commands spoilers#3 & #4, SEC#2 commands spoilers#5, SEC#3 commands spoilers#1 & #2.
 - o The ground spoilers logic leads to spoilers extension if thrust levers are at idle and (there is a transition to gear compressed or wheel speed is above 72kt).
- When the thrust lever#1 was advanced, all spoilers retracted. When it was retarded again, the wheel speed was approximately 72kt. The wheel speed acquired by the SEC#2 was probably just above 72kt, leading to spoilers #5 re-deployment. At this time, the wheel speed acquired by the SEC#1 & #3 was probably just below 72kt, preventing Spoilers#1 to #4 re-deployment.

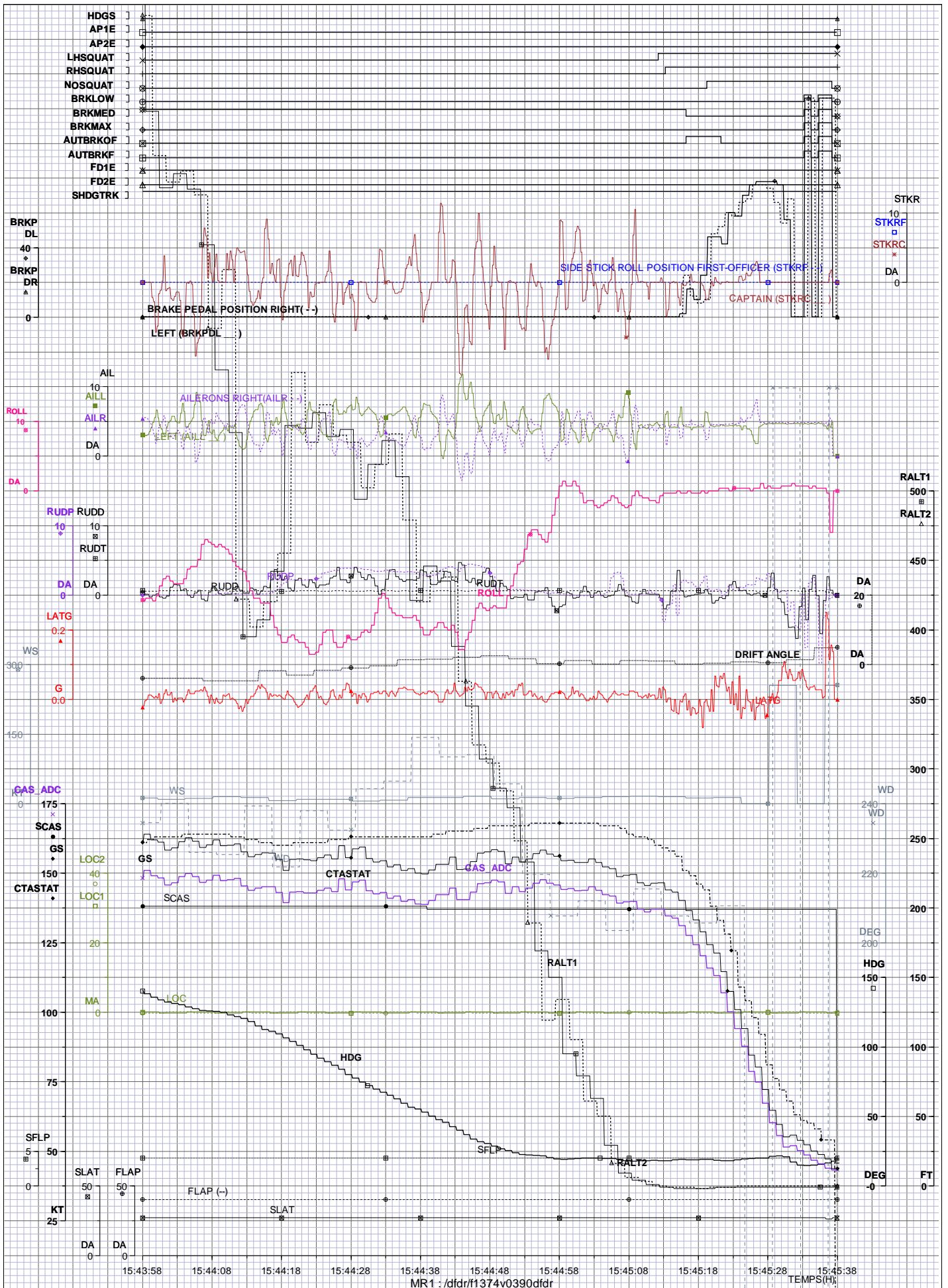
T0+19s: ASKIDON changed from 1 to 0. This was most probably due to the fact that the “A/SKID & N/W STRG” switch was manually selected to OFF.

- The ASKIDON comes from the SDAC and corresponds to the switch position. The ASKIDF, coming from the FWC, was at 0, showing that there was no antiskid failure detected by the BSCU. All parameters from BSCU were no more recorded correctly by the DFDR, which is the case when the “A/SKID & N/W STRG” switch is on OFF.

The brake pedals are no more recorded when A/SKID is OFF. Before this time, they were maintained to almost full braking.

T0+23s The aircraft probably left the runway at this time (vertical and longitudinal accelerations, pitch angle).





A/C : - MSN 1374 No 0390 MR1 : /dfdr/f1374v0390dfdr

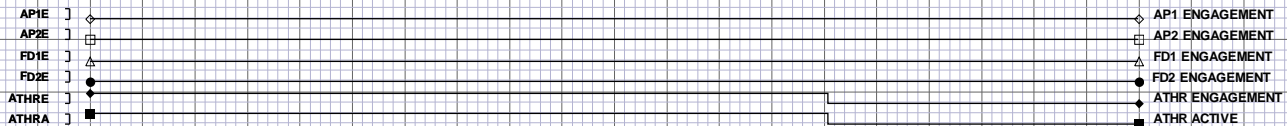
WGT (LBS) 140120
 EXHAUSTION
 WGT (KG) 63558

APPROACH (LATERAL AXIS)

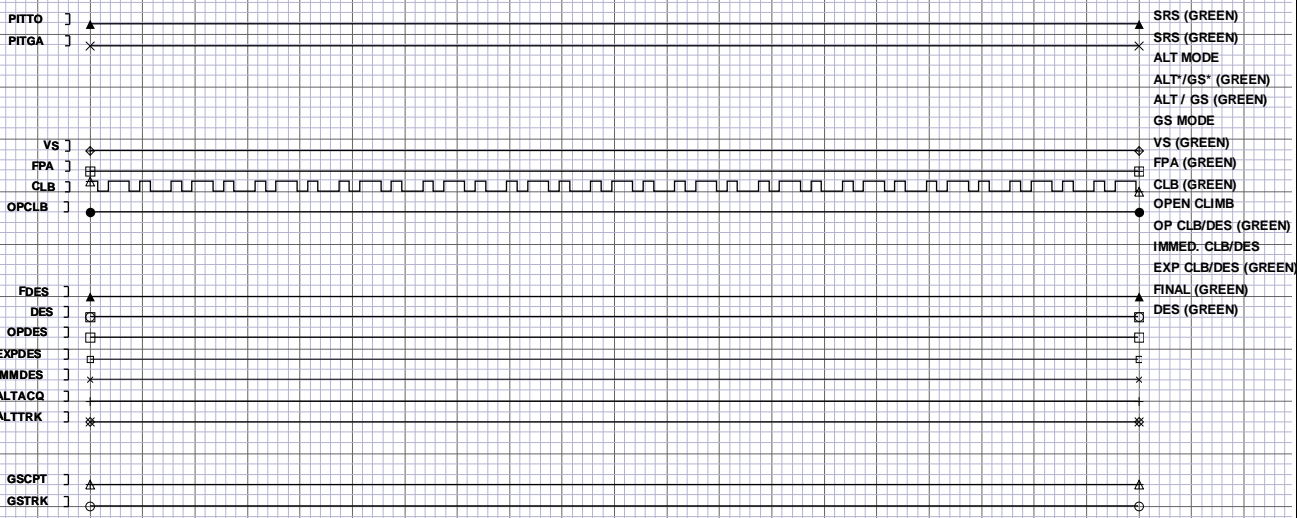


 Edited : 4/6/2008 Figure 1.2

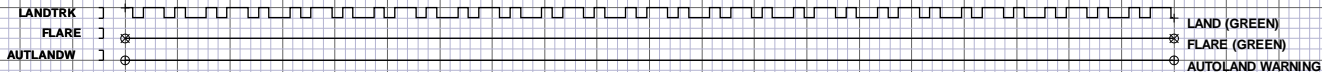
AP/FD/ATHR ENGAGEMENT



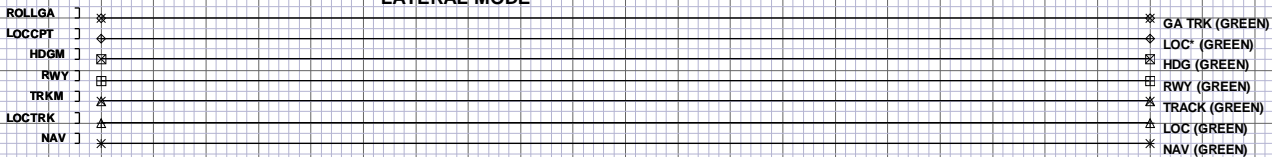
LONGITUDINAL MODE



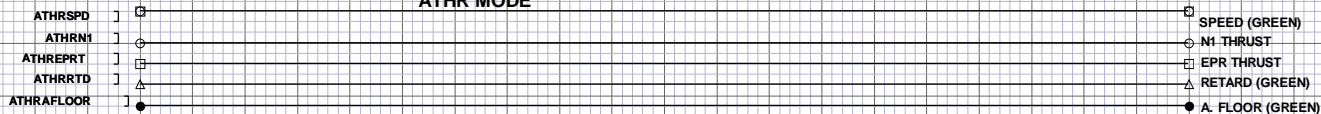
LANDING MODE



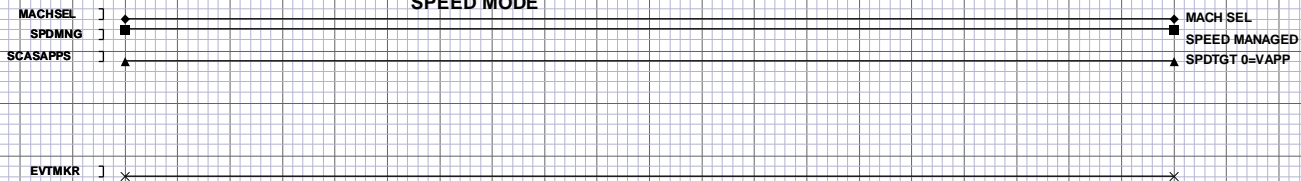
LATERAL MODE



ATHR MODE



SPEED MODE



15:43:58 15:44:08 15:44:18 15:44:28 15:44:38 15:44:48 15:44:58 15:45:08 15:45:18 15:45:28 15:45:38
MR1 : /dfdr/f1374v0390dfdr TEMPS(H)

A/C : - MSN 1374 No 0390

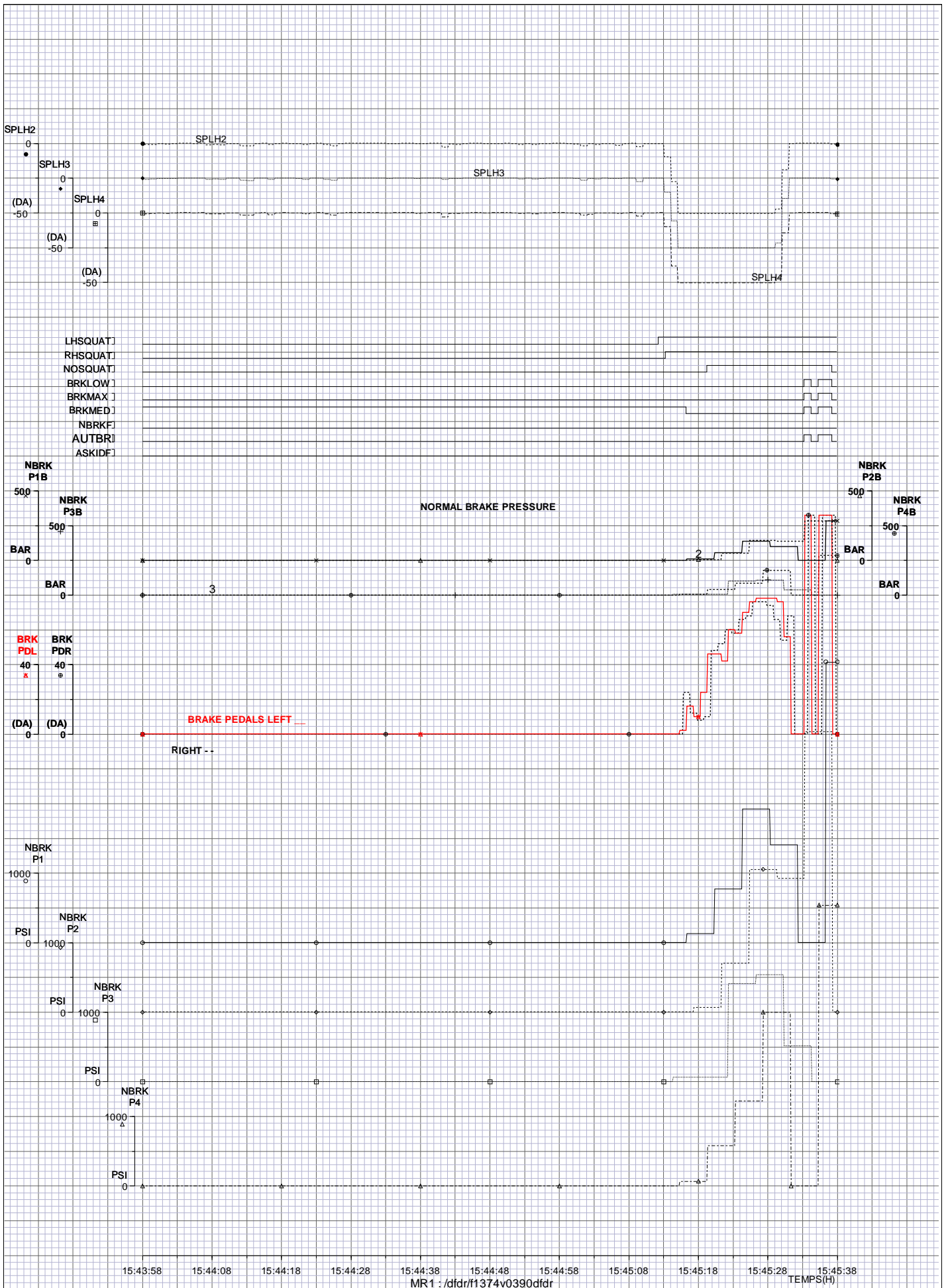
Excursion

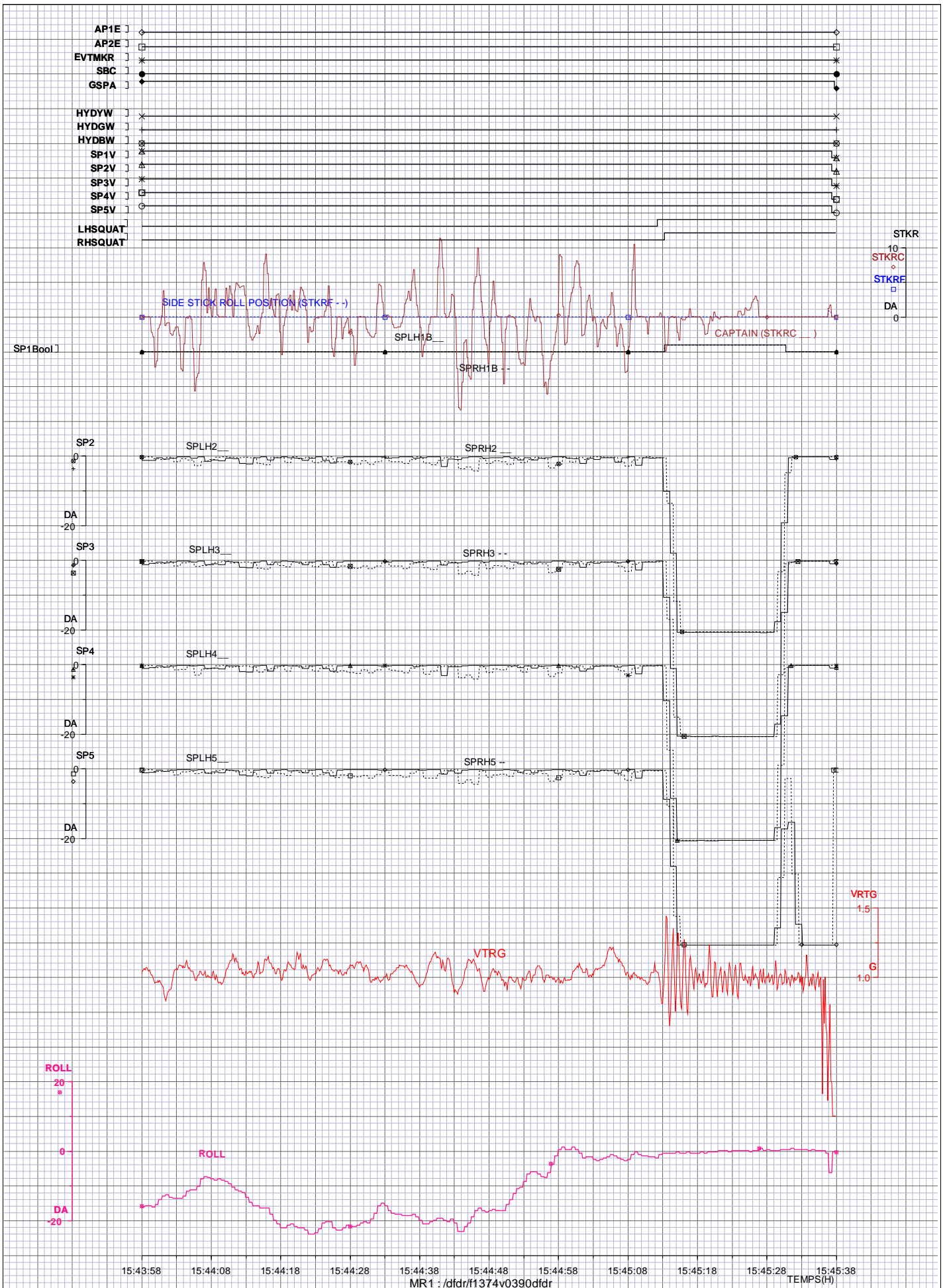
SA A/P MODES

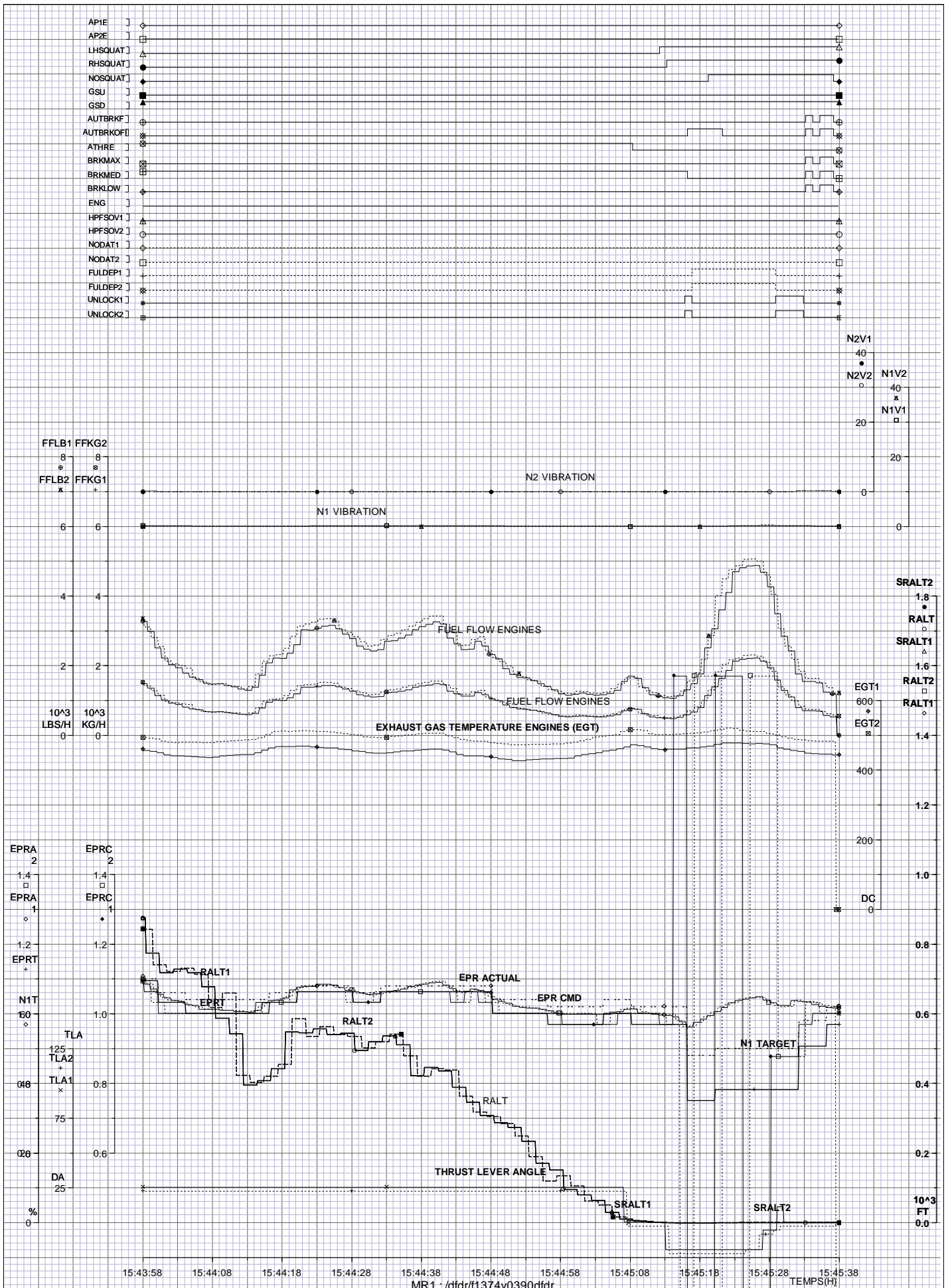


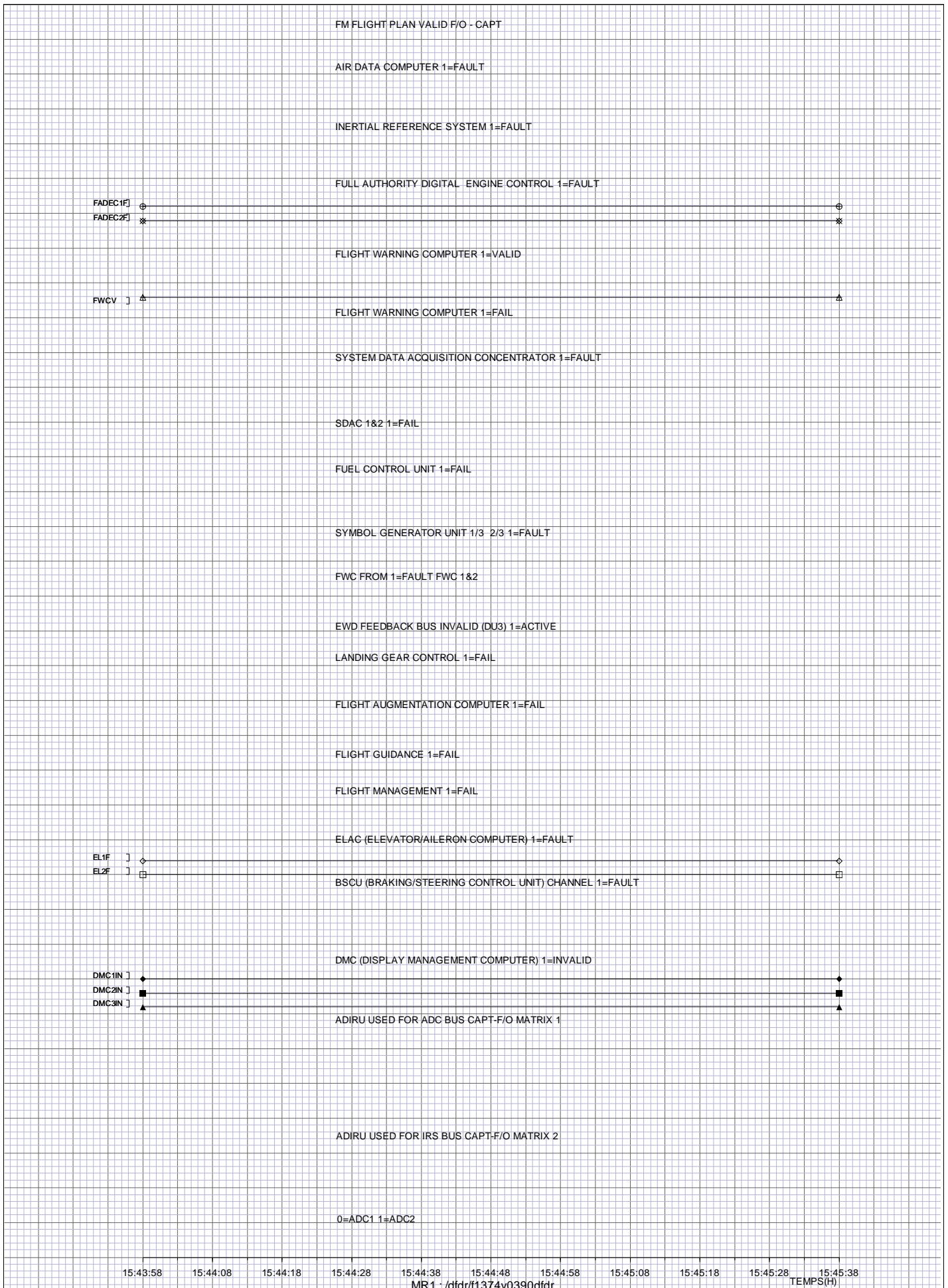
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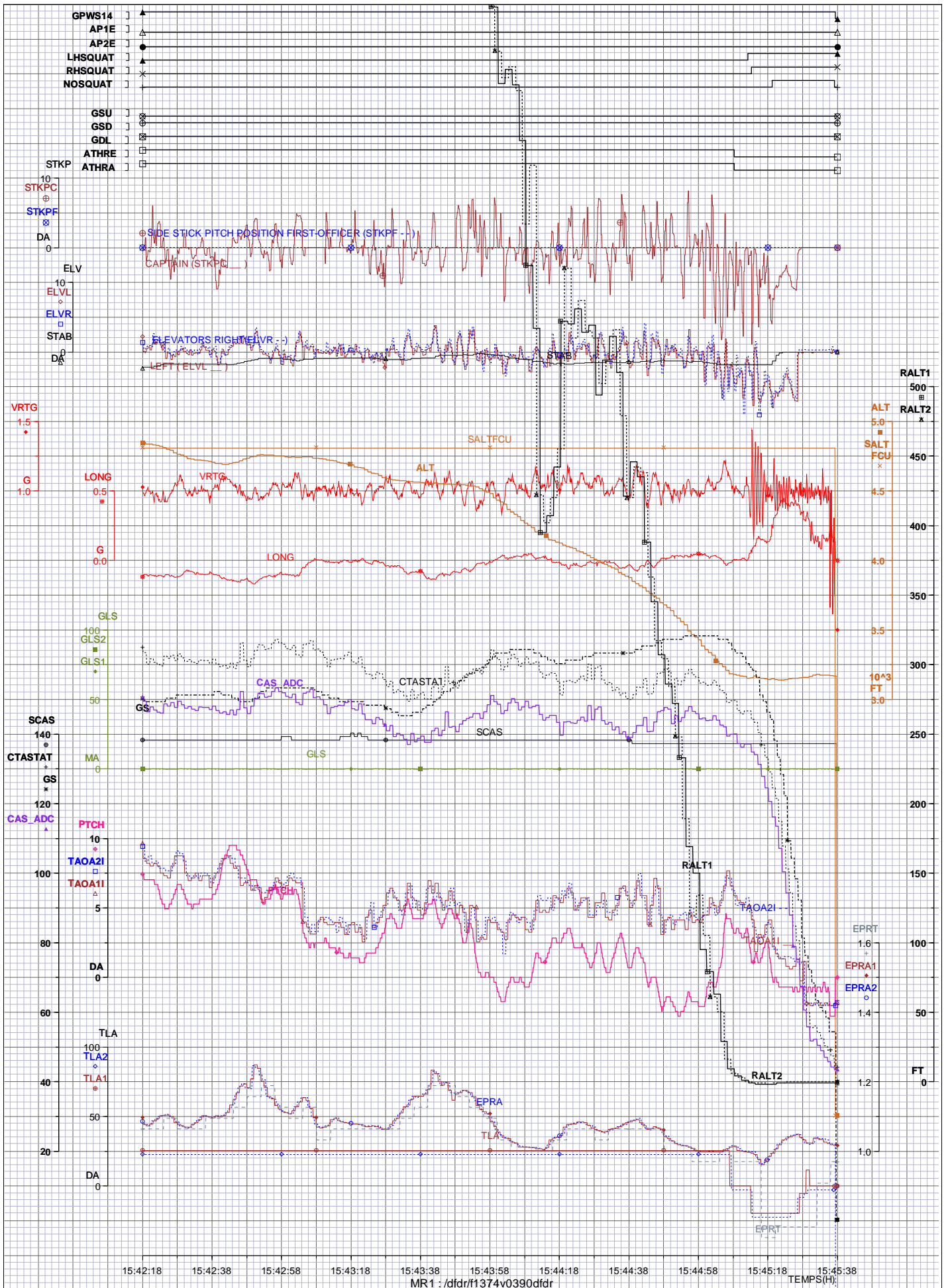
Figure

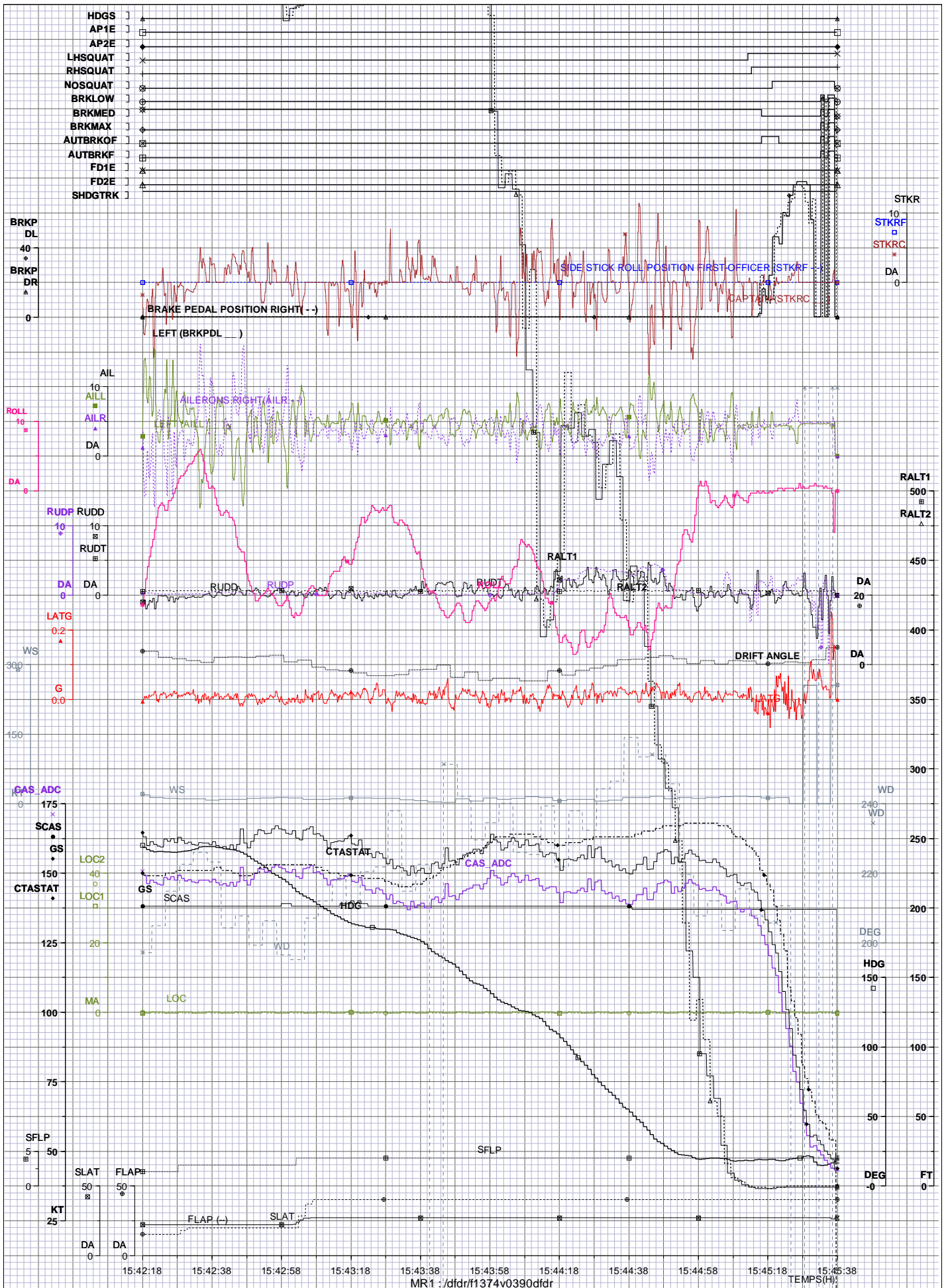


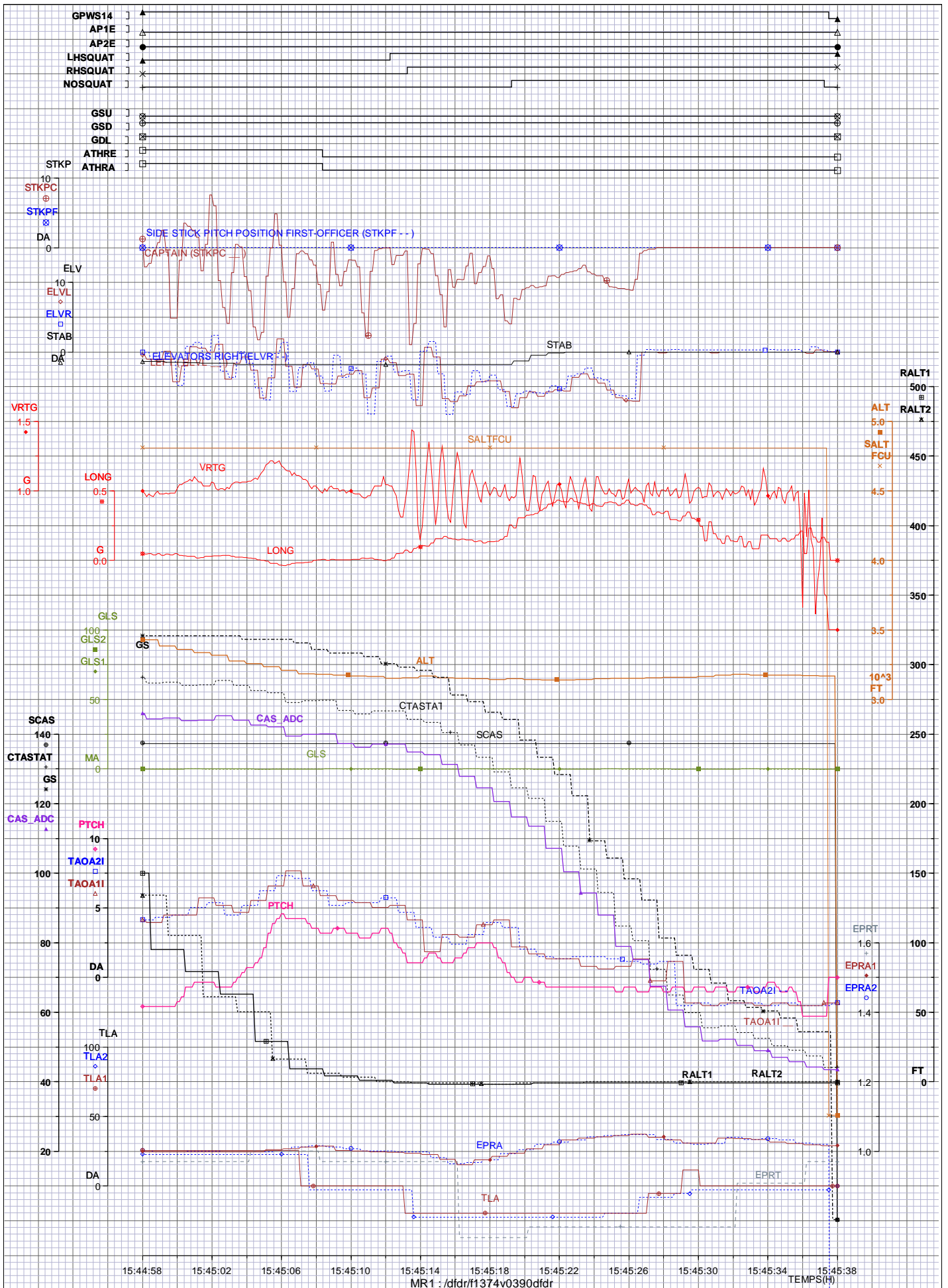














A/C : - MSN 1374 No 0390 MR1 : /dfdr/f1374v0390dfdr

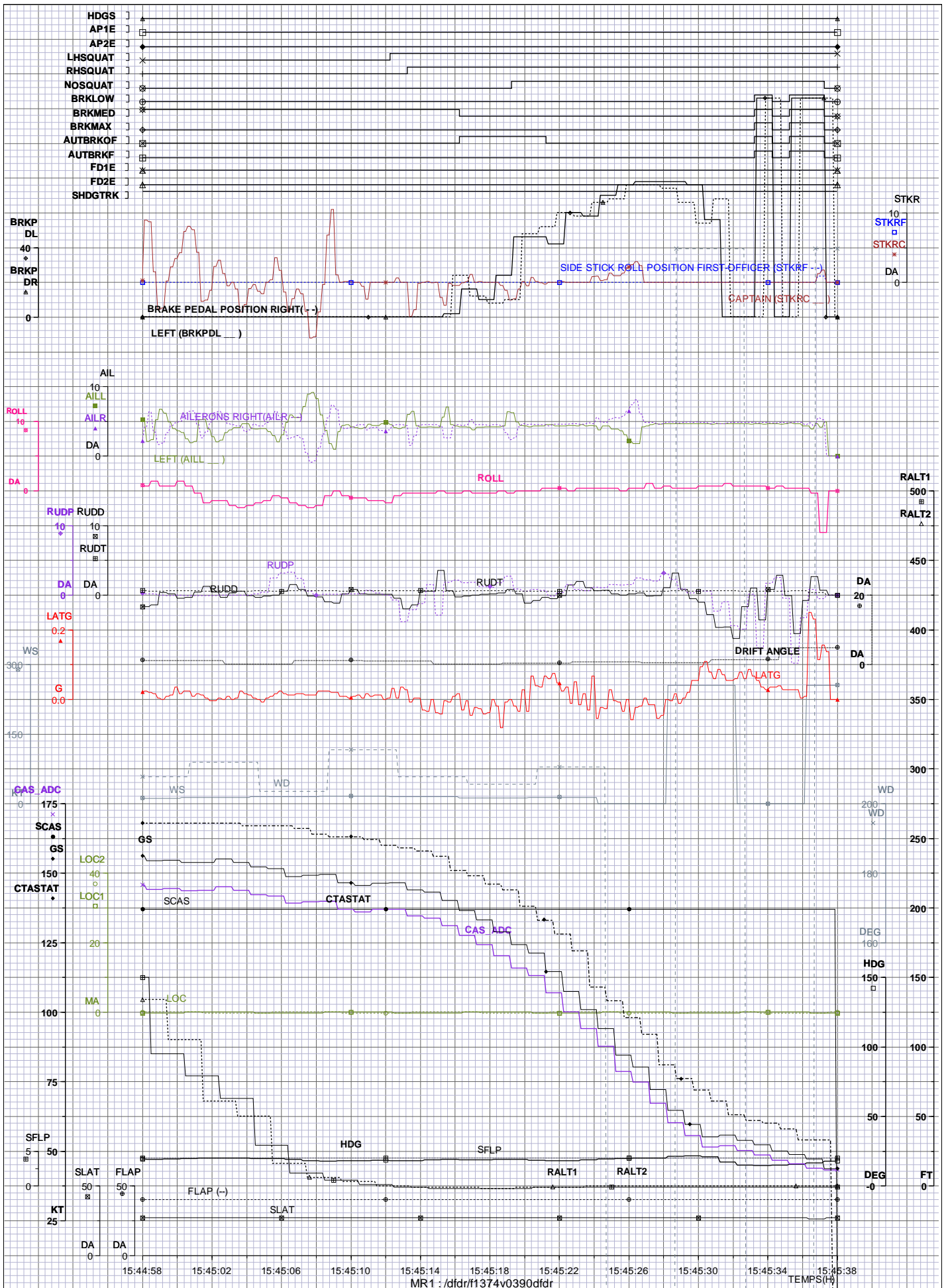
WGT (LBS) 140000
 Zoom
 WGT (KG) 63504

APPROACH (LONGITUDINAL)

/workgroup/operation/dfdr/visage/guillaume/F1374-RunwayExcursion/Approach-Longitudinal.iv

Edited : 4/6/2008 Figure 3.1




A/C : - MSN 1374 No 0390 MR1 : /dfdr/f1374v0390dfdr

WGT (LBS) 140000
 ZOOM
 WGT (KG) 63504

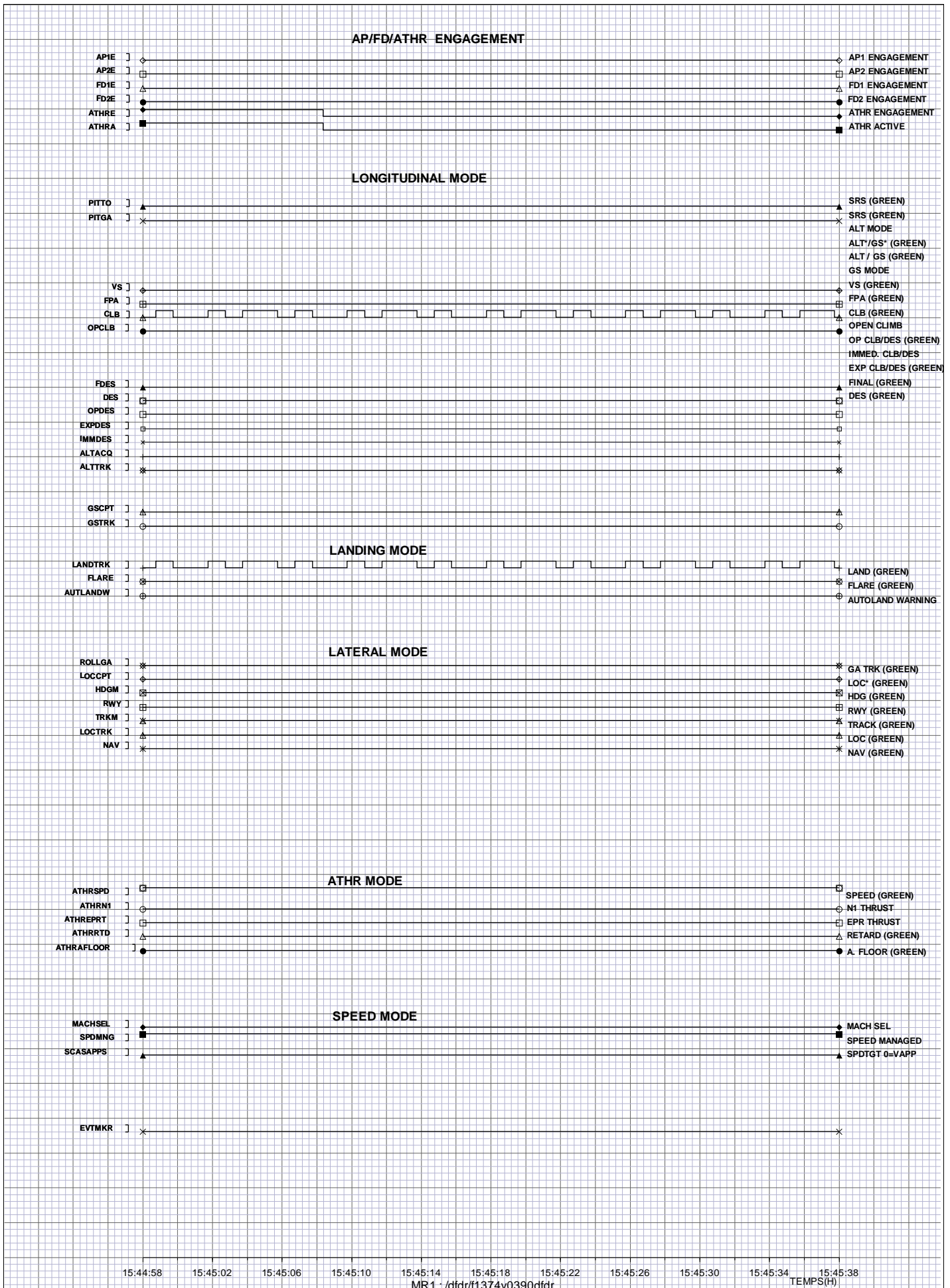
APPROACH (LATERAL AXIS)

/workgroup/operation/dfdr/visage/guillaume/F1374-RunwayExcursion/Approach-Lat.ilsue :



**Integration
Test
Centre**

Edited : 4/6/2008 Figure 3.2



A/C : - MSN 1374 No 0390

Zoom

SA A/P MODES

/workgroup/operation/dfdr/visage/guillaume/F1374-RunwayExcursion/AP-Modes.ilv Issue :



Edited : 4/6/2008

Figure

3.3

