

## AIRCRAFT ACCIDENT

## **FINAL REPORT**

# SI 11/17

# Air Accident Investigation Bureau (AAIB) Ministry of

**Transport Malaysia** 

## Accident Involving Airbus A320-216 Registration 9M-AHM at Subang Airport/Sultan Abdul Aziz Shah, Kuala Lumpur on 30<sup>th</sup> November 2017



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## AIR ACCIDENT INVESTIGATION BUREAU (AAIB) MALAYSIA

#### **REPORT NO.:** SI 11/17

OPERATOR	:	AIRASIA BERHAD
AIRCRAFT TYPE	:	AIRBUS A320-216
NATIONALITY	:	MALAYSIA
REGISTRATION	:	9M-AHM
PLACE OF OCCURRENCE	:	SUBANG AIRPORT/SULTAN ABDUL AZIZ SHAH, KUALA LUMPUR
DATE AND TIME	:	30 <sup>th</sup> NOVEMBER 2017 AT 0555 LT

The sole objective of the investigation is the prevention of accidents and incidents. In accordance with Annex 13 to the Convention on International Civil Aviation, it is not the purpose of this investigation to apportion blame or liability.

All-time in this report is Local Time (LT) unless stated otherwise. LT is UTC +8 hours.

#### INTRODUCTION

#### The Air Accident Investigation Bureau of Malaysia

The Air Accident Investigation Bureau (AAIB) is the air accident and serious incident investigation authority in Malaysia and is responsible to the Minister of Transport. Its mission is to promote aviation safety through the conduct of independent and objective investigations into air accidents and serious incidents.

The AAIB conducts the investigation in accordance with Annex 13 to the Chicago Convention and Civil Aviation Regulations of Malaysia 2016.

It is inappropriate that AAIB reports should be used to assign fault or blame or determine liability since neither the investigation nor the reporting process has been undertaken for that purpose.

Unless otherwise indicated, recommendations in this report are addressed to the investigating or regulatory authorities of the State having responsibility for the matters with which the recommendations are concerned. It is for those authorities to decide what action is taken.

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## **GLOSSARY OF ABBREVIATIONS**

Α		
AAIB	:	Air Accident Investigation Bureau
AAL	:	Above Aerodrome Level
AD	:	Aerodrome
ADIRU	:	Air Data Inertial Reference Unit
AE	:	Authorized Examiner
AFRS	:	Airport Fire Rescue Services
AIP	:	Aeronautical Information Publication
APU	:	Auxiliary Power Unit
ATC	:	Air Traffic Control
ATCO	:	Air Traffic Control Officer
ATIS	:	Automated Terminal Information Service
ATPL	:	Airline Transport Pilot License
ATS	:	Air Traffic Services
AXM	:	IATA Code for AirAsia Berhad

### С

Captain
Civil Aviation Regulations
Calibrated Air Speed
Category
Centre of Gravity
Climb
Configuration
Commercial Pilot License
Continuous Repetitive Chime
Cockpit Voice Recorder

### D

D1L	:	Door One Left
D1R	:	Door One Right
D2L	:	Door Two Left

D2R	:	Door Two Right
DAME	:	Designated Aviation Medical Examiner
DCA	:	Department of Civil Aviation
DIIC	:	Deputy Investigator-in-Charge

## Ε

ECAM	:	Electronic Centralized Aircraft Monitor
ELAC	:	Elevator Aileron Computer
ESLD	:	ECAM System Logic Data
E/WD	:	Engine/Warning Display

### F

:	Flight Crew Operating Manual
-	0 1 0
:	Flight Crew Techniques Manual
:	Flight Data Interface Management Unit
:	Flight Data Recorder
:	Full Flight Simulator
:	Flex/Maximum Continuous Thrust
:	First Officer
:	Flight Operations Directives
:	Feet
:	Flight Warning Computer

## G

GND	:	Ground
GS	:	Ground Speed

## Н

HDG	:	Heading
HIALS	:	High Intensity Approach Lighting System
HIRL	:	High Intensity Runway Edge Lights

I.		
ICAO	:	International Civil Aviation Organisation
IIC	:	Investigator-in-Charge
ILS	:	Instrument Landing System
К		
KG	:	Kilogram
KLIA 2	:	Kuala Lumpur International Airport 2
KTS	:	Knots
KUL	:	Kuala Lumpur International Airport
L		
LAT	:	Latitude
LH	:	Left Hand
LONG	:	Longitude
М		
М	:	Metres
MAA	:	Malaysia AirAsia
MAHB	:	Malaysia Airports Holdings Berhad
MCDU	:	Multipurpose Control and Display Unit
METAR	:	Meteorological Terminal Aviation Routine Weather Report
MHz	:	Mega Hertz
MLG	:	Main Landing Gear
MOR	:	Mandatory Occurrence Report
MR 1 / 2	:	Maintenance Record 1 / 2
MRO	:	Maintenance, Repair and Overhaul
MSN	:	Manufacturer Serial Number

### Ν

N/A	:	Not applicable
ND	:	Navigation Display
NLG	:	Nose Landing Gear

NM	:	Nautical Mile
0		
OM-D	:	Operations Manual Part D
OR	:	Organisation Requirements
Р		
PAPI		Precision Approach Path Indicator
PIC		Pilot-in-Command
PF		Pilot Flying
PFD	:	Primary Flight Display
PFR	:	Post Flight Report
PM	:	Pilot Monitoring
		5
Q		
QAR	:	Quick Access Recorder
R		
RA	:	Radio Altimeter
RESA	:	Runway End Safety Area
RET	:	Retracted
RH	:	Right Hand
RTO	:	Rejected Take-off
RWY	:	Runway
S		
SEC	:	Spoiler Elevator Computer
SOP	:	Standard Operating Procedures
SPD BRK	:	Speed brakes
STD	:	Standard Time of Departure
SZB	:	Sultan Azlan Shah, Subang Airport

т		
TLA	:	Thrust Lever Angle
TRE	:	Type Rating Examiner
ТО	:	Take-off
TOGA	:	Take-Off – Go-Around
U		
U/S		Unserviceable
UTC	:	Universal Time Coordinated
V		
-		Decision Speed
V1	:	Decision Speed
Vapp	:	Approach Speed
VHF	:	Very High Frequency
W		
WMKK	:	Kuala Lumpur International Airport
		Subang / Sultan Abdul Aziz Shah Airr

VVIVINN	•	Kuala Lumpur International Airport
WMSA	:	Subang / Sultan Abdul Aziz Shah Airport
W/O	:	Workorder

#### SYNOPSIS

On 30th November 2017, an Airbus A320-216 aircraft with the registration 9M-AHM was being operated by AirAsia Berhad as an Aircraft Base Training (Endorsement) flight, performing Touch and Go exercises at Subang International Airport (WMSA/SZB) in Kuala Lumpur with three crew on- board. Aircraft departed from Kuala Lumpur International Airport (WMKK/KUL) and was performing its Touch and Go training on Runway 15. At 0555 LT, upon touchdown on its third Touch and Go exercise, the Pilot-in-Command rejected the take-off after setting take-off thrusts. The aircraft did not manage to stop before the end of the runway and departed the runway surface into an open muddy field. The aircraft came to a complete stop at approximately 62 metres from the end of the runway and approximately 15 metres from the ILS Localizer Antenna Array. None of the 3 crew members were injured. Evacuation was not deemed necessary however the crew deplaned the aircraft via the escape slides and was transported to the AFRS facility in SZB.

#### 1.0 FACTUAL INFORMATION

### 1.1 History of the Flight

On 30th November 2017, an Airbus A320-216 aircraft with the registration 9M-AHM was being operated by AirAsia Berhad as an **AirAsia Endorsement Flight Policy / Touch and Go Procedure (Appendix C)**. For endorsement flights, the trainee will be flying the actual aircraft for the first time, under supervision of a type rating examiner, after completing his ground-based training.

This particular flight was performing Touch and Go exercises at Subang Airport (WMSA) in Kuala Lumpur with three crew on-board. Aircraft departed from Kuala Lumpur International Airport (WMKK) approximately 25NM southeast of Subang and the training involves performing visual circuit patterns for the trainee to complete at least 6 landings, as per the Operator's training manual (MAA Operations Manual Part D).

Injuries	Crew	Passenger	Others
Fatal	Nil	Nil	Nil
Serious	Nil	Nil	Nil
Minor	Nil	Nil	Nil
None	3	Nil	Nil

#### 1.2 Injuries to Persons

Figure 1: Injuries to persons

#### 1.3 Damage to Aircraft

Aircraft was secured and initial assessment was carried out on the aircraft condition and position. The aircraft removal process started at 12:00 LT on 30th November 2017. Aircraft was successfully removed from the unpaved area at 15:00 LT on the 1st of December. At 17:20 LT on the 1st of December, the aircraft was already towed to a nearby MRO hangar in SZB for **Engineering Initial Assessment Report as per Appendix D**.

Initial Aircraft Damage Assessment		
Airframe	Fuselage-sign of long cut on LH aft lower belly fairing	
	Both LH landing gear mainwheel found deflated	
Engine no 1	Signs of mud and soil ingestion into engine. 2 fan blades	
	found with bent and cut respectively.	
Engine no 2	Signs of mud and soil ingestion into engine	

Figure 2: Damage to aircraft



Figure 3: Long cut on LH Aft Lower Belly Fairing



Figure 4: Left main landing gear

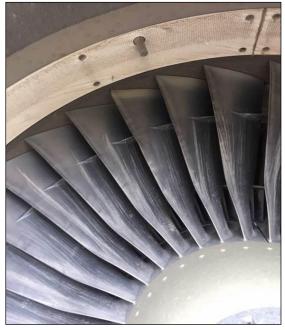


Figure 5: Right main landing gear



Figure 6: Engine 2

Figure 7: Engine 1



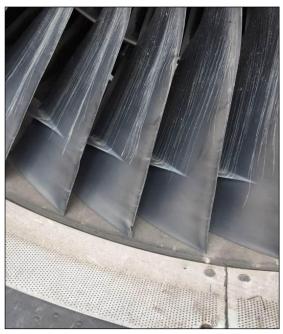


Figure 8: Engine Fan Blades

#### 1.4 **Other Damages**

#### **Initial Assessment of Other Damages**

During the issuance of this report, only the initial Assessment Of Other **Damages as per Appendix E** is available because the final assessment involves numerous other parties outside the purview of the investigation team. Final assessment of the damages shall be supplemented to this report if deemed necessary in the future.

Other Damage Assessment (Initial)		
- Damaged Near Field antenna and cabling system		
<ul> <li>Cabling System – 1-unit concrete light canister</li> <li>1unit approach light pole - Soil and Slope Contour</li> </ul>		

Figure 9: Other Damage Assessment

#### 1.5 **Personal Information**

All crew had sufficient rest according to their roster analysis and did not experience any significant issues on the day of the flight

### 1.5.1 Pilot-in-Command (PIC/CAPT)

Status	PIC/Capt
Nationality	Malaysian
Age	57 years old
Gender	Male
Licence Type	ATPL 1656
Licence Validity	Valid until 31 March 2018
Total Hours Operating on Type	8,897
Total Flying Hours	17,697
Rest Period Since Last Flight	> 24 hours
Medical Expiry Date	31 March 2018

Figure 10: Pilot-in-Command

The CAPT is a DCA Authorized Examiner (AE) and a Type Rating Examiner (TRE) with 21 years of experience in AirAsia. He has been an AE since 2007. Under this capacity, he has significant experience in conducting endorsement flights. On this flight, the CAPT was occupying the left seat as the TRE and Pilot Monitoring (PM) but was also responsible for all the critical actions and procedures apart from conducting the training for the Co-Pilot.

The CAPT was diagnosed as a diabetic 3 years ago and was on prescription medication but is certified as fit to fly with a Class 1 Medical License with which the medication for his diabetic was also prescribed by a Designated Aviation Medical Examiner (DAME).

Co-Pilot (Trainee)
Malaysian
27 years old
Male
CPL 6558
Valid until 31 April 2018
N/A
170
> 24 hours
23 March 2018

#### 1.5.2 Co-Pilot (Trainee)

Figure 11: Co-Pilot

The Trainee was on his first flight on an actual A320 and was occupying the right seat as the Pilot Flying (PF). He had just cleared his initial Type Rating Skill Test on the 23rd of November 2017 (7 days prior to incident) and was to complete this endorsement flight for the issuance of his A320 Type Rating. He was previously a Cabin Crew with AirAsia and had received his Commercial Pilot's

License (CPL) on the 08th of August 2017. His record shows that he had very good progress during his training period. Apart from requiring corrective lenses, the Trainee had no significant medical histories

### 1.5.3 Safety Pilot

Status	Safety Pilot
Nationality	Malaysian
Age	23 years old
Gender	Male
Licence Type	CPL 6119
Licence Validity	Valid until 31 March 2018
Total Hours Operating on Type	1040.58
Total Flying Hours	1211.28
Rest Period Since Last Flight	> 24 hours
Medical Expiry Date	31 March 2018

Figure 12: Safety Pilot

The safety pilot is a First Officer with 3 years of flying experience and was a CPL holder. He joined AirAsia in 2016 and received his A320 Type Rating on the 7th of October 2016. This was his first time as a safety pilot on an endorsement flight. He had done one previous safety pilot duty on a line training flight. The Safety Pilot is long-sighted and was not wearing his reading glasses at the time of the event.

### **1.6** Aircraft Information

### 1.6.1 General

Aircraft Manufacturer	Airbus Industries, France
Aircraft Model / Type	A320-216
Aircraft MSN	3536
Date of Manufacture	1 July 2008
Aircraft Registration	9M-AHM
Certificate of Registration Valid till	22 June 2019
Certificate of Airworthiness till	30 June 2018
Aircraft Owner	Parilease SAS
	41, Avenue De L"Opera 75002
	Paris, France
Aircraft Operator	AirAsia Berhad
Time Since New	33980:30
Cycle Since New	22334

Figure 13: Aircraft Information

### 1.6.2 Engine & APU

Engine Type	Turbofan	
Manufacturer	SNECMA	
Model	CFM56-5B6/3	
	Engine No. 1	Engine No. 2
Serial No.	697874	699198
Time Since New	28109:22	29838:51
Cycle Since New	18488	20073

Figure 14: Engine information

APU	GTCP 131-9(A)
Serial No.	P-5681
Time Since New	9114
Cycle Since New	11126
APU cycle	22367

Figure 15: APU information

### 1.6.3 Defects

Based on the report from the operator for the previous one year, no outstanding defects were found. There are also no significant recurring defects. Analysis of the Post Flight Report (PFR) for this flight indicated no significant faults or failures of aircraft systems at the time preceding, during and after the incident (see figure 16).

PAIR CITY FLTN A/C ID GMT DATE MMKK WMSA AXM9700 . 9M-AHM JØNDV 0604 DB/N MAINTENANCE POST FLIGHT REPORT : CITY PAIR A/C ID DATE FLTN GMT UNKK UNSA AX119700 .9M-AHM 29NOV 2108/2156 WARNING/MAINT.STATUS MESSAGES NO WARNING MESSAGE FAILURE MESSAGES IDENT. SOURCE GMT PH ATA 2108 02 23-28-34 NO SDU DATA CFDS

Figure 16: PFR printout after the flight

#### 1.6.4 Aircraft Load

Refer to Appendix F for Flight Documents

73500 kg
52897.97 kg / 24.6%
66000 kg
51464.85 kg / 28.0%
10147.46 kg

Figure 17: Aircraft load and balance

Aircraft load and balance did not indicate anything abnormal. During the incident, all the aircraft's weight and trim were within the normal parameters.

### 1.6.4 Operational Procedures

#### a. Touch and Go Procedure

A Touch and Go involves landing the aircraft and immediately continuing with the next take-off without stopping the aircraft. After the touchdown, the crew will immediately set the aircraft's configuration for the take-off and set take-off power again. Speeds are very high during a Touch and Go and time is critical as distance of the runway is used significantly. The Touch and Go procedure adopted by the Operator (figure 18) in the training manual are consistent with the recommended procedures from Airbus in the Flight Crew Techniques Manual.

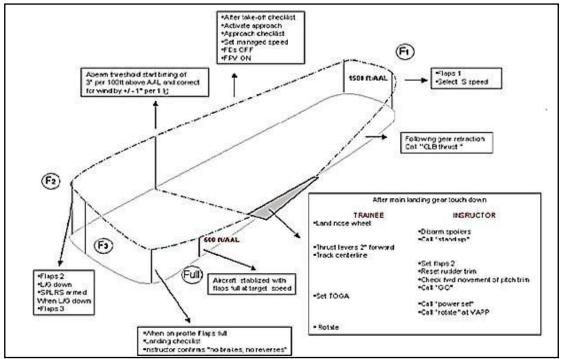


Figure 18: AirAsia Touch and Go procedure (Operations Manual - Part D: 1.2E Aircraft Base Training (Endorsement))

One of the procedures required that is pertinent to this incident is the disarming of the ground spoilers upon touchdown by the "Instructor". This procedure is intended to expedite the retraction of the spoiler surfaces11. It was found that on this flight, the speed brake levers were inadvertently extended after this disarming action was done (see 1.6.5.a).

#### (i). Aircraft performance on Touch and Go

Apart from the manufacturer's guidance for procedures of the Touch and Go, there is no other available guidance on the performance data of the aircraft during a Touch and Go, such as performance speeds and Accelerate/Stop distance calculations. Airbus has stated under the same documentation that on a touch and go, rotation of the aircraft can be done at Vapp but no guidance is given with regards to the runway length considerations in the event of a discontinued touch and go.

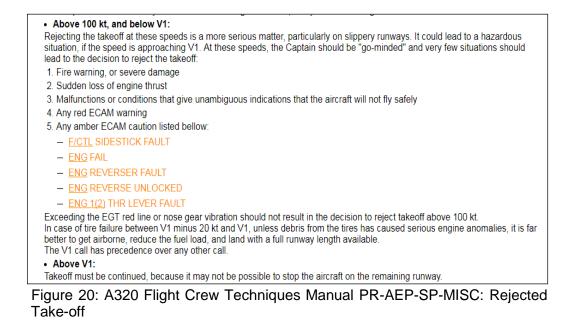
There are no V1 or decision speeds available during a Touch and Go and Airbus has recommended that the crew be "Go-Minded" especially after TOGA power has been set (see figure 19) but setting of TOGA power may occur at any speed and does not directly determine the accelerate/stop distances of the aircraft. Critical failures may still occur at low speeds (before Vapp or recommended rotation speed) after application of TOGA on a Touch and Go. Likewise, if TOGA application is delayed for any reason, critical failure may occur at high speed before application of TOGA and there are no calculations to ensure that the runway will be sufficient for the abort. On a normal rejected take-off, the manufacturer is very clear that after decision speed (V1) take-off must be continued under any circumstances due to possibility of insufficient runway.

The flight crew should pay attention to the following remarks when they perform a touch and go:

Figure 19: A320 Flight Crew Techniques Manual PR-NP-SP: Touch and Go

The decision speed (V1) does not apply to touch and go. The PFD does not display V1 during the roll phase of a touch and go. Therefore, the flight crew should be go-minded.

If the instructor wants to abandon the touch and go, the instructor calls "STOP – I HAVE CONTROL". Simultaneously the instructor takes control and stops the aircraft, with the use of maximum braking and reverse. When the aircraft stops, the instructor calls for any applicable ECAM actions. The decision to discontinue a touch and go after the application of TOGA must only be taken if the instructor is sure that the aircraft cannot safely fly.



### (ii) Discontinuing Touch and Go after TOGA

The Operator has stated in its training manual that the decision to discontinue the Touch and Go after application of TOGA must only be taken if the instructor is certain that the aircraft cannot fly safely (see figure 21), consistent with the manufacturer's recommendation. Maximum braking and reverse must be used. The title "take off abort after touch and go" is also written as a reminder for the instructor to discuss.

#### Emergencies :

If the instructor wishes to abandon the touch and go, he/she will call "STOP" simultaneously taking control of the aircraft and bring it to a halt using maximum braking and reverse. Once the aircraft has stopped he will call for any appropriate ECAM actions. The decision to discontinue a touch and go after the application of TOGA must only be taken if the instructor is certain that the aircraft cannot fly safely. Remember there is no V<sub>1</sub> on a touch and go.

Note: The take-off configuration warning may sound if the application of TOGA is made while the flaps or pitch trim are resetting but still outside of the takeoff range.

Figure 21: MAA Operations Manual - Part D: 1.2E Aircraft Base Training (Endorsements)

### 1.6.5 Aircraft Systems with Bearing on the Incident

All reference of flight data in this subchapter shall be read together with the flight data parameters and timeline in **Flight Data Recording as per Appendix G**.

### a. Take-off Configuration (TO Config) Warning Triggered

It was initially suspected that during the application of take-off power, at the time of incident, a "TO Config Warning" was triggered. This is a warning that would be triggered if the aircraft is not in the correct take-off configuration, when either the TO CONFIG TEST is done or when take-off power (above CLB detent) is applied.

The investigation found that there was in fact a TO Config Warning that was triggered 3 seconds after the thrust's levers were set to take-off power setting at time 05:44:43 LT. The TO Config Warning appeared at 05:44:46 LT while the aircraft was already at 136kts, 6kts above its Vapp speed of 130kts.

It was also found that the warning was due to the speed brakes lever which was not in retracted position when take-off power was applied. CVR audio during and after the incident also indicates that the crew was not sure what was happening when the warning was triggered, but knew that it was something to do with the speed brakes.

### (i). Flight Warning Computer and TO Config Warning

This warning is given by the Flight Warning Computer (FWC) when one of the conditions listed in the Flight Crew Operating Manual occurs and its triggering logic is dependent upon the FWC Software Standard and Modification status. The aircraft's FWC information is as follows:

Hardware / Software	H2/F9D
PN Number	350E053021818
Modification Number	161832

Figure 22: Aircraft Flight Warning Computer information

If the warning is triggered, the flight crew will be alerted with a Continuous Repetitive Chime (CRC) in the cockpit accompanied by a "MASTER WARN" flashing red light on both the CAPT and FO side of the glare shield. A red Warning Message indicating the system which is not in the correct TO Config will also be displayed on the E/WD (see figure 23).

Flight data shows that a Master Warning event was recorded on the FDR at 05:55:46 LT, approximately 2 seconds after both thrust levers were above CLB detent (see figure 24 and 25). It was extinguished at 05:55:55 LT, after 11 seconds and it was simultaneous with the initiation of the rejected take-off.

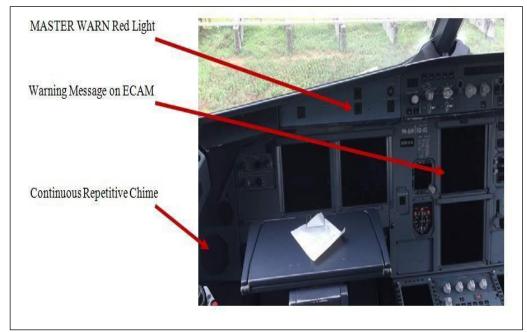


Figure 23: "TO Config Warning" indications in the flight deck

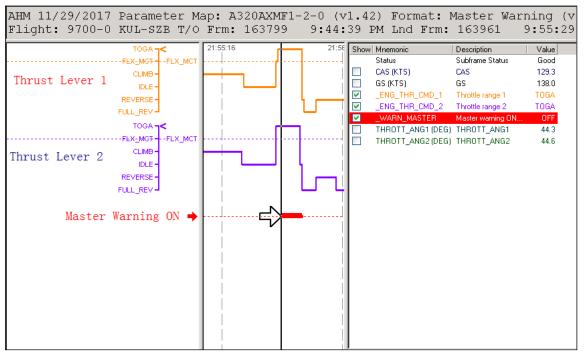


Figure 24: FDR (A Master Warning event was recorded on the FDR at 21:55:46 UTC, approximately 2 seconds after both thrust levers were set at above CLB detent)

						Throttle (	a) <sub>Throttle</sub>	Naster warning	(1	b)
	Frame-Sf	SfCount	Time	CAS CAS KTS	GS GS KTS	range 1 _ENG_THR_CHD_1	range 2 _ENG_THR_CHD_2	ON/OFF _VARN_NASTER	THROTT_ANG1 THROTT_ANG1 DEG	
	163962-4	655851	21:55:35	116.5	130.0	IDLE	IDLE	OFF	11.3	10.9
	163963-1	655852	21:55:36	115.1	129.0	IDLE	IDLE	OFF	11.3	10.9
Application of Takeoff Power	163963-2	655853	21:55:37	113.4	128.0	IDLE	IDLE	OFF	11.3	10.9
	163963-3	655854	21:55:38	114.1	128.0	IDLE	IDLE	OFF	11.3	10.9
(TOGA or FLEX MCT)	163963-4	655855	21:55:39	115.5	128.0	IDLE	IDLE	OFF	11.3	10.9
N 1	163964-1	655856	21:55:40	> 117.6	129.0	IDLE	IDLE	OFF	11.3	10,9
Ν.	163964-2	655857	21:55:41	117.4	129.0	IDLE	IDLE	OFF	11.3	10.9
3	163964-3	655858	21:55:42	116.6	130.0	IDLE	IDLE	OFF	11.3	14.8
	163964-4	655859	21:55:43	121.4	132.0	FLX MCT	TOGA	OFF	31.6	44.6
	163965-1	655860	21:55:44	125.8	134.0	TOGA	TOGA	OFF	44.3	44.6
MASTER WARNING	163965-2	655861	21:55:45	129.3	138.0	TOGA	TOGA	OFF	44.3	44.6
	163965-3	655862	21:55:46	135.8	142.0	TOGA	TOGA	ON	44.3	44.6
TRIGGERED	163965-4	655863	21:55:47	139.6		TOGA	TOGA	ON	44.3	44.6
	163966-1	655864	21:55:48	144.0	154.0	TOGA	TOGA	ON	44.3	44.6
	163966-2	655865	21:55:49	149.4	158.0	TOGA	TOGA	CN	44.3	44.6
	163966-3	655866	21:55:50	153.5	161.0	TOGA	TOGA	ON	44.3	44.6
	163966-4	655867	21:55:51	157.5	169.0	TOGA	TOGA	ON	44.3	44.6
	163967-1	655868	21:55:52	162.9	172.0	TOGA	TOGA	CN	44.3	44.6
	163967-2	655869	21:55:53	166.8	176.0	TOGA	TOGA	ON	44.3	44.6
	163967-3	655870	21:55:54	171.8	179.0	TOGA	TOGA	ON	44.3	44.6
	163967-4		21:55:55	174.4	185.0	TOGA	IDLE	CN	44.3	-0.4
	163968-1		21:55:56	170.4		REVERSE	FULL_REV	OFF	-10.2	-20.0
	163968-2		21:55:57	159.4		FULL_REV	FULL_REV	OFF	-20.4	-20.0
	163968-3		21:55:58	150.8		FULL_REV	FULL_REV	OFF	-20,4	-20.0
	163968-4	and the second second second	21:55:59	144.3		FULL_REV	FULL_REV	OFT	-20.4	-20.0
	163969-1	655876	21:56:00	139.9	164.0	FULL_REV	FULL_REV	OFF	-20.4	-20.0
	163969-2	655877	21:56:01	133.0	159.0	FULL REV	FULL REV	OFF	-20.4	-20.0

Figure 25: FDR (Master Warning triggered after application of take-off power)

#### ii. Spoilers / Speed Brakes

The aircraft has 5 spoiler surfaces on each wing, used as speed brakes as well as to assist in roll control in flight or as spoilers on the ground. These spoiler surfaces are controlled by a lever on the centre pedestal which sends electrical signals to the Spoiler Elevator Computer (SECs) and are actuated hydraulically. Movement of the speed brake lever aft-ward will command the extension of number 2, 3 and 4 spoiler surfaces to act as speed brakes. The levers are free moving with no detents. Any movement of the speed brake levers by more than 0° will trigger an extension command to the SECs (see figure 26).

!	LEVER POSITION	!	SPEEDBRAKE ANGLE (deg)	!
!	ARMED	!	-3	!
! !	RET 1/2	!	+28.5	!
! 	FULL	!	+57	!

Figure 26: A320 Aircraft Maintenance Manual 27-60-00: Spoiler (Speed Brake Lever Position / Angle)

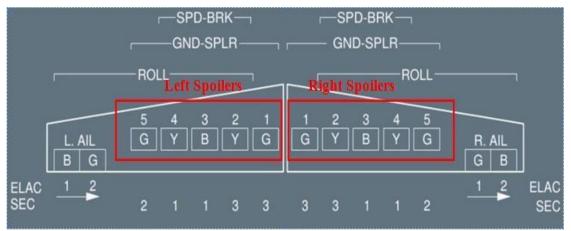
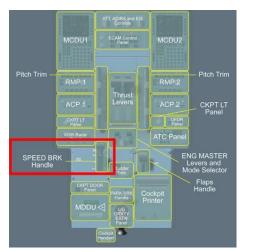


Figure 27: A320 Flight Crew Operating Manual DSC 27-10-20: Speed Brakes and Ground Spoilers (General Architecture of the A320 spoiler surfaces)

Note:

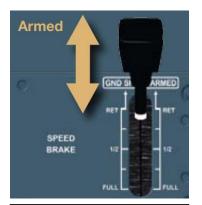
G – Green Hydraulics, Y – Yellow Hydraulics, B – Blue Hydraulics

The ground spoiler's system on the other hand involves the automatic deployment of all spoiler surfaces on the ground when the aircraft touches down and this system can be armed by pulling the speed brake lever UP into the armed position. Disarming is either automatic under certain conditions or manually by pushing the speed brake lever DOWN into the disarmed position (see figure 28).

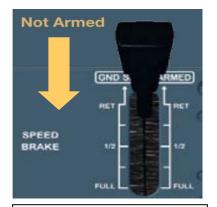




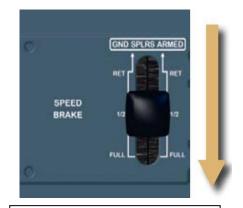




Spoilers armed by Pulling Speed Brake lever UP. White band will be visible



Speed brake lever in neutral condition, no armina of ground spoilers and no Extension of speed brakes. Disarming action will be by pressing the bake lever speed DOWN from the Armed position.



Spoiler surfaces extend when speed brake lever is moved aft-wards. Speed brake lever can move freely from RET to FULL with no detents or locks.

Figure 29: Speed brake lever arming, disarming and extension mechanism

Due to the free movement of the speed brake levers and the same direction of physical force application to disarm and move the speed brake lever, an accidental movement of the lever may occur during the disarming. Airbus has already documented this risk of accidental extension in its recommended Touch and Go procedures, and has advised for caution to be applied (see figure 30). This risk is however not given similar emphasis or reference in the Operator's training manual.

Figure 30: A320 Flight Crew Techniques Manual PR-NP-SP: Touch and Go (caution for accidental movement of the speed brakes during the disarming action)

#### iii. Speed Brake Lever Handling on Touch and Go

The manufacturer's documented Touch and Go procedures shows that the aircraft would land with the speed brake levers in ARMED position. After touchdown, the Ground Spoilers will automatically deploy. The CAPT will then disarm the spoilers by pushing on the speed brake levers before commencing the take-off. On this flight however, the speed brake lever did not return to retracted position (0°) after the disarming, compared to the previous Touch and Go, instead the lever went to a slightly extended position of +3° (See Flight Data Recording as per Appendix G)

PHASE	SPEED BRAKE LEVER					
	On Touchdown	After Disarming	At Take-off Power			
First Touch and Go	ARMED / -3°	RETRACTED / 0°	RETRACTED / 0°			
Second Touch and Go	ARMED / -3°	RETRACTED / 0°	RETRACTED / 0°			
Third Touch and Go	ARMED / -3°	EXTENDED / +3°	EXTENDED / +3°			

Figure 31: Comparison of speed brake lever parameter after disarming action with the preceding Touch and Go

<sup>1.</sup> At nosewheel touchdown, the instructor pushes on the SPEED BRAKE lever to disarm the ground spoilers. The objective is to initiate the immediate retraction of the ground spoilers, and not to wait for their automatic retraction while the thrust levers are advanced. Carefully disarm the ground spoilers, so that the SPEED BRAKE lever is not moved. If the SPEED BRAKE lever is not in the fully-retracted position, the <u>CONFIG</u> SPEED BRAKES NOT RETRACTED alert will appear and the SPEED BRAKE lever will possibly command speed brakes extension. As per aircraft design, ground spoilers automatically retract when thrust levers are set above CLB detent.

#### iv. "CONFIG Spd Brk Not Retracted" Configuration Warning

The specific TO Config Warning that was triggered on this flight and the actual warning message displayed on the E/WD could not be determined as the message itself is not recorded on the FDR or FDIMU, however the investigation found that at the specific time when the Master Warning was triggered, all other parameters were normal except for the ground spoilers/speed brake.

When take-off power is applied (thrust levers are above CLB detent), the spoilers/speed brake lever must be fully retracted and any speed brake extension command will trigger the TO Config warning.

FDR data showed that on this flight, when take-off power was set, the speed brake lever was at +3° (extended) deflection instead of 0° (retracted) (see figure 33) At the same time, the actual angles of the spoiler surfaces were also showing that they were partially extended. This was found to be the cause that had triggered the TO Config warning and was not due to any faults or system failures which was corroborated with the aircraft's Post Flight Report which did not receive any fault messages.

At Take-off Power Application (21:55:43 UTC)					
Thrust Lever 1 Detent / TLA	FLXMCT / 31.6°				
Thrust Lever 2 Detent / TLA	TOGA / 44.7°				
Speed Brake Lever Angle	+3°				
Spoiler Angles	Left Spoilers	Right Spoilers			
Spoiler 2 Angle	+0.1°	+0.2°			
Spoiler 3 Angle	-0.2°	-0.2°			
Spoiler 4 Angle	-0.4°	-0.4°			
Spoiler 5 Angle	0.0°	0.0°			

Figure 32: Speed brake lever and spoiler angles at application of take-off power (21:55:43 UTC)

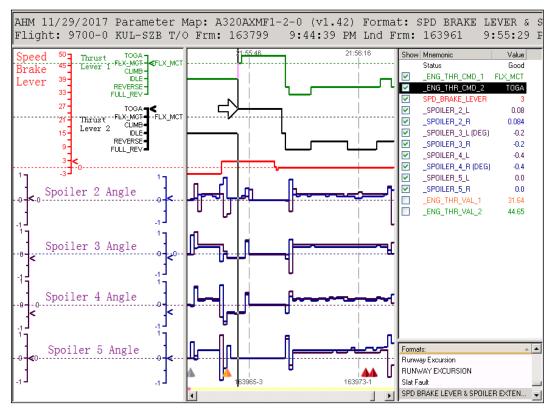


Figure 33: Speed brake lever and corresponding spoiler surface angle at application of take-off power (21:55:44 UTC)

#### b) Auto Retraction of Spoilers at Take-off Thrusts

Despite the triggering of the TO Config warning, all documentations by the manufacturer indicates that the aircraft was still safe for take-off. As per Airbus, when thrust levers are advanced to take-off power setting which is above FLX/MCT detent, or more than 20° during a Touch and Go, all spoiler surfaces will automatically retract fully regardless of what the speed brake lever is set at. Flight Data confirms that this feature did not fail on this flight where 4 seconds after thrust levers were set above MCT Detent, all spoiler surfaces had fully retracted automatically at while the speed brake lever remained at extended position (see figure 34).

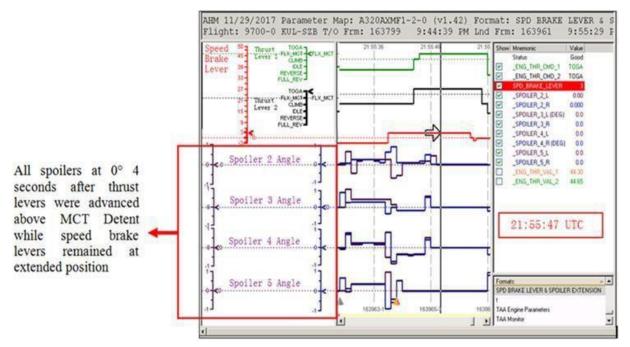


Figure 34: L FDR (Speed brake lever and corresponding spoiler surface angle at application of take-off power 21:55:44 UTC)

This safety feature is described in detail for Touch and Go Exercises in the manufacturer's Flight Crew Techniques Manual as an assurance that even if the "CONFIG Speed Brake Not Retracted" Warning is triggered, the aircraft design ensures that the spoiler surfaces will retract automatically after thrusts are increased above CLB detent as a safety feature.

The Operator's training manual does mention the automatic retraction of spoiler surfaces at take-off power but not within the context similar to the caution given by the manufacturer. (See figure 35 and 36). It is also listed as a topic to discuss under item 16 of the "Topics to be discussed" but is only briefly mentioned with no other details such as an FCTM reference for that specific situation.

Figure 35: MAA Operations Manual - Part D 1.2E: Aircraft Base Training (Endorsement)

The detailed procedure is explained in item "e. Touch and Go". To summarize, upon landing, at nose wheel touch down, the TRI will disarm the spoilers by pushing on the speed brake lever to initiate the retraction sooner. The purpose of this procedure instead of waiting for the automatic retraction while advancing the thrust levers is due to the physical position of the thrust levers. Depending on the Fly-By-Wire aircraft, the automatic retraction will start between a TLA ranging from 20° up to 35°, which is well above the setting for spool up of the engines.

 At nosewheel touchdown, the instructor pushes on the SPEED BRAKE lever to disarm the ground spoilers. The objective is to initiate the immediate retraction of the ground spoilers, and not to wait for their automatic retraction while the thrust levers are advanced.

Carefully disarm the ground spoilers, so that the SPEED BRAKE lever is not moved. If the SPEED BRAKE lever is not in the fullyretracted position, the <u>CONEIG</u> SPEED BRAKES NOT RETRACTED alert will appear and the SPEED BRAKE lever will possibly command speed brakes extension. As per aircraft design, ground spoilers automatically retract when thrust levers are set above CLB detent.

Figure 36: A320 FCTM PR-NP-SP: Touch and Go

#### c) Speed Brake Lever Stowed before Rejected Take-off

Based on the flight data, after the master warning was triggered, simultaneous with the confusion recorded in the CVR, the crew had tried to disarm / move the speed brake lever again and again to try and extinguish the master warning. This happened within the 9 seconds lapse between the TO Config warning and the rejected take-off initiation. The speed brake lever was eventually retracted back to 0° at 05:55:56 LT, 3 seconds before the CAPT announced "I have controls", however the spoiler surfaces were already fully retracted 5 seconds before that at 05:55:47 LT. Rejected take-off was performed, the spoilers had fully retracted and the speed brake lever was already back to 0° (retracted) position

	Crew's Attention on the Speed Brake Lever							
TIME	EVENT	SPEED BRAKE LEVER						
21:55:43	TOGA power was set	+3°						
21:55:46	TO Config warning was triggered	+3°						
21:55:47	All spoiler surfaces fully retracted automatically due to application of take-off power	+3°						
21:55:52	Speed brake lever moved	0°						
21:55:55	Rejected take-off simultaneous with end of TO Config warning	0°						

Figure 37: Crew moved the speed brake lever back to retracted position

#### d) Braking and Reversers

Flight data showed that all the brakes and both reversers were fully functional and serviceable during the deceleration after the reject take-off

was initiated at 05:55:55 LT. Examination of the brake pressures, brake pedals and reverser engagement parameters were satisfactory.

In a Touch and Go procedure, Airbus has recommended that maximum braking and reverse be used (see figure 38). This recommendation is also incorporated into the Operator's training manual. Consistent with that, under a normal reject take-off procedure, airbus recommends that Full Reversers may be used until the aircraft comes to a complete stop during a rejected take-off, but if there is enough runway available at the end of the deceleration, idle reversers can be used when passing 70 kts. (See figure 39).

Figure 38: Flight Crew Techniques Manual PR-NP-SP: Touch and Go (recommendation for use of maximum braking and reverse after rejecting a take-off roll on a Touch and Go)

Full reverse may be used until coming to a complete stop. But, if there is enough runway available at the end of the deceleration, it is preferable to reduce reverse thrust when passing 70 kt

Figure 39: Flight Crew Techniques Manual PR-AEP-MISC: Rejected Takeoff

Flight data for this incident showed that the Full Reversers were used from initiation of reject take- off (05:55:55 LT) only until passing 114kts or groundspeed of 137kts (05:56:03 LT). It was then retarded to Idle Reverse for 10 seconds before full reversers were applied again (05:56:13 LT) approximately 10 seconds until aircraft has stopped at 05:56:23 LT. (See Flight Data Recording as per Appendix G).

If the instructor wants to abandon the touch and go, the instructor calls "STOP – I HAVE CONTROL". Simultaneously the instructor takes control and stops the aircraft, with the use of maximum braking and reverse. When the aircraft stops, the instructor calls for any applicable ECAM actions. The decision to discontinue a touch and go after the application of TOGA must only be taken if the instructor is sure that the aircraft cannot safely fly.

AHM 11/29/2017 Parameter Map: A320AXMF1-2-0 (v1.42) Format: Master War Flight: 9700-0 KUL-SZB T/O Frm: 163799 9:44:39 PM Lnd Frm: 163961							
Frame-Sf	SfCount	Time	st	CAS CAS KTS	GS GS KTS	Throttle range 1 _ENG_THR_CMD_1	Throttle range 2 _ENG_THR_CMD_2
163967-2	655869	21:55:53		166.8	176.0	TOGA	TOGA
163967-3	655870	21:55:54		171.8	179.0	TOGA	TOGA
163967-4	655871	21:55:55		174.4	185.0	TOGA	IDLE
163968-1		21:55:56		170.4	187.0	REVERSE	FULL_REV
163968-2	655873	21:55:57		159.4	185.0	FULL_REV	FULL REV
163968-3	655874	21:55:58		150.8	180.0	FULL REV	FULL REV
163968-4	655875	21:55:59		144.3	170.0	FULL REV	FULL REV
163969-1	655876	21:56:00		139.9	164.0	FULL REV	FULL REV
163969-2	655877	21:56:01		133.0	159.0	FULL REV	FULL REV
163969-3	655878	21:56:02		122.9	152.0	FULL REV	FULL REV
163969-4	655879	21:56:03		113.9	137.0	REVERSE	REVERSE
163970-1	655880	21:56:04		104.0	129.0	REVERSE	REVERSE
163970-2	655881	21:56:05		96.9	121.0	REVERSE	REVERSE
163970-3	655882	21:56:06		87.8	114.0	REVERSE	REVERSE
163970-4	655883	21:56:07		82.8	100.0	REVERSE	REVERSE
163971-1	655884	21:56:08		73.1	95.0	REVERSE	REVERSE

Figure 40: Flight Data showing full reversers were cancelled at 114kts

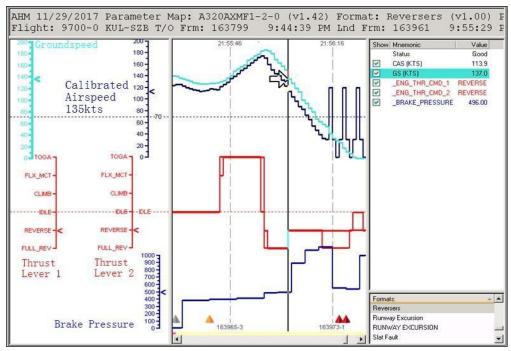


Figure 41: Flight Data showing full reversers were cancelled at 114kts

### 1.7 Meteorological Information

### 1.7.1 General

Aircraft conducted the approach in tailwind conditions and in darkness. The tailwind condition was not made aware to the crew by the ATCO based on the CVR recordings. ATIS indicated minimal tailwind, however all Touch and Go indicated presence of strong tailwind.

### 1.7.2 Meteorological Reports

Weather report for Sultan Abdul Aziz Shah - Subang METAR at 0500 LT as per **Appendix H: Meteorological Reports (METAR)** 

Surface wind	310/04 knots Direction Variable from 260 to 010			
Visibility WMSA METAR	8000 meters			
Present weather	Slight Rain			
Cloud	Few 1700 feet Cumulonimbus, Scattered 14000 feet, Broken 26000 feet			
Temperature	24 degrees			
Dew point	23 degrees			
QNH	1006 Milibar			
Figure 42: WMSA METAR				

Figure 42: WMSA METAR

The weather reported on the ATIS, recorded at 0500 LT as per Appendix F:

### Flight Documents

Information	Yankee
Runway in Use	Runway 15
Surface wind	310/04 knots Direction Variable from 260 to 030
Visibility	7000 meters
Present weather	Slight Rain
Cloud	Few 500 feet Cumulonimbus, Scattered 14000 feet, Overcast 26000 feet
Temperature	24 degrees
Dew point	23 degrees
QNH	1006 Milibar

Figure 43: WMSA ATIS

### 1.7.3 Wind Conditions

It was found that the Touch and Go exercise was conducted in tailwind conditions (Appendix B and Appendix G) and that on the third Touch and Go, the aircraft landed with a recorded wind data of 336/14, which is a 14 knots tailwind

component. It was also identified in the CVR readout that mentions of strong winds and tailwind conditions were made on the first two circuits and were in fact a concern to the flight crew.

Phase of Flight	CVR Recorder Time (HH:MM:SS)	Actual Time (flight data) (UTC)	Extract of CVR Read-out	Data from FDR
First Final Approach	01:35:39	21:35:27	Voice 1 : "Windoh 30 knots!.(**)" Voice 2: "30 knots tailwind" Voice 3 : "(**)on ground it should be okay"	316/30 kts (29 kts tailwind) At 1700 ft
	01:37:00	21:36:48	Voice 1 : "Biar betul 22 knots" Voice 2 : "Tailwind 22 knots." Voice 1: "Nevermind just (unintelligible)Reported 4 knots, isn't it?" Automatic Callout : "500" Voice 1 and 2 : "Check" Voice 3 : "Ya" Voice 1 : "Okay (**) manually, visually" Voice 3 : "4 knots (**)" Automatic Callout : "100" Voice 1 : "It's okay, runway is longtak apa"	336/22 kts (22 kts tailwind) At 760 ft
Second Final Approach	01:43:52	21:43:40	Voice 1 : "Ala wind la(**)strong wind man"	346/19 kts (18 kts tailwind) At 520 ft
Third Final Approach (Incident)	01:54:47	21:54:35	Voice 1 : oh very strong wind, I think the most we can do is one only after that (**) no worry (**)	331/20 kts (20 kts tailwind) At 780 ft

Figure 44: Extract of pertinent CVR read-out regarding wind conditions on landing

Note:

a. The excerpt above is only extracts of the CVR recording audio which are pertinent to the wind data chapter above. It does not in any way represent the whole context of the conversation and atmosphere within the cockpit

Height (AAL)	Wind	Longitudinal Wind Component
At 1000 feet	322/22	Tailwind 22 knots
At 500 feet	332/19	Tailwind 19 knots
At touchdown	336/14	Tailwind 14 knots
At Rejected Take-off	331/9	Tailwind 9 knots

Figure 45: Wind values and tailwind components immediately prior to Incident

WMSA is fully equipped with 24-hour Wind and Runway Visual Range System measurement for wind and visibility adjacent to runway touchdown zones and stop-end. The investigation found that no updated surface wind information was given to the crew on all three approaches when significant changes in the wind value are present and likewise, no updated information of the surface conditions were requested by the crew

## 1.7.4 Natural Light Condition

All interviews conducted with the Crew and ATCO (refer to 2.2.4) indicated that the natural light condition was total darkness. Examination of the sunrise times also showed that incident occurred 1 hour and 9 minutes before apparent sunrise for the location. The ATCO informed investigators that he was only able to see the aircraft's navigational lights throughout their circuit practice and he was also unable to see the aircraft at its final position due to the darkness.

Reference Lat / Long (WGS84)	AD Reference Point N 3° 07" 52.00" E 101° 32" 53.00"
Apparent Sunrise	23:04 UTC
Time of Incident	21:55 UTC

Figure 46: AIP Malaysia (AMDT 01/2017) GEN 2.7-51: Sunrise/Sunset Table WMSA (Table 10: Sunrise)

## 1.8 Aid to Navigation

There was no reported malfunction or abnormality reported.

# 1.9 Communication

Aircraft was employing the use of VHF radio to communicate with the ATC. After departure, the crew was transferred from Lumpur controller to Subang controller on frequency 118.2 MHz until the point of incident. All communications were as per recommended practices however the investigation found out that the crew were never updated with the aerodrome surface condition from the point of transfer until the incident happened (1.7.3).

## **1.10 Aerodrome Information**

## 1.10.1 General

Refer to Appendix I for Jeppesen Chart and AIP WMSA.

Aerodrome Code	WMSA / SZB
Airport Name	Subang/Sultan Abdul Aziz Shah Airport
Airport Address	Sultan Abdul Aziz Shah Airport 47200 Subang, Selangor Darul Ehsan
City	Kuala Lumpur
Airport Operator	Department of Civil Aviation Malaysia
ATC Services	Department of Civil Aviation Malaysia
Types of traffic permitted (IFR/VFR)	IFR/VFR
AD Administration	H24
AD Reference Point Coordinates (WGS84)	N 3° 07" 52.00" E 101° 32" 53.00"
Elevation / Reference Temperature	89 feet / 32°C
Runways	15/33

## **1.10.2 Incident Runway Characteristics**

Runway 15 was a CAT I rated runway

Threshold Reference Coordinate (WGS84)	N 3° 08" 43.27" E 101° 32" 26.72"
Runway 15 Length	3780 metres / 12402 feet
Runway Landing Distance Available	3780 metres / 12402 feet
Stopway Dimensions	61m x 45 m (Stopway not to be used)
Runway Width	45 M
Runway Bearing	149°T
Strength (PCN) / Surface of RWY and SWY	PCN 59/F/B/X/U Asphalt
Slope of RWY-SWY	0.137 %

Figure 48: Runway 15 information

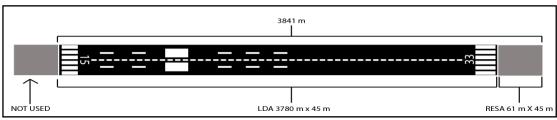


Figure 49: Runway 15 dimensions (not to scale)

## 1.10.3 Inspections

The runway inspection was done immediately prior to the incident and runway was found to be in satisfactory condition.

## 1.10.4 Visual Aids and Aerodrome Ground Lighting

Runway markings were found to be satisfactory and in compliance to regulatory standard. According to crew and ATCO interview (refer to 2.2.4), WMSA did not have any centre line lightings as per recommended standard. The runway is equipped with High Intensity Approach Lighting System (HIALS), High Intensity Runway Edge Lights (HIRL) and vertical guidance is provided by a 3° precision approach path indicator (PAPI) on both sides of the runway. All were serviceable at the time.

## 1.11 Flight Recorders

The aircraft was equipped with FDR and CVR units. The FDR and CVR were removed and handed over to the Air Accident Investigation Bureau (AAIB) for the purpose of the data download. This was performed on the 7th of December 2017 at the AAIB Flight Recorder Laboratory facility by AAIB personnel.

## 1.11.1 Flight Data Recorder

Manufacturer	L-3 Aviation Recorders
Model	FA2100
Part Number	2100-4043-02
Serial Number	000 494 630
Number of Parameters Recorded	855
Recording Medium	Solid State Flash Memory
Recording Duration	Approximately 25 Hours

Figure 50: Flight Data Recorder information

## 1.11.2 Cockpit Voice Recorder

Manufacturer	L-3 Aviation Recorders
Model	FA2100
Part Number	2100-1020-02
Serial Number	000 442 665
Number of Channels	4
Recording Duration	2 Hours

Figure 51: Cockpit Voice Recorder information

## 1.11.3 Flight Data Interface Management Unit

Manufacturer	Teledyne Controls
Model	-
Part Number	2234320-01-01
Serial Number	QA02865
Number of Parameters Recorded	994
Recording Duration	Approximately 60-120 Hours

Figure 52: Flight Data Interface Management Unit

# 1.12 Wreckage and Impact Information

# Refer to Flight Data Recording as per Appendix G.

## 1.12.1 General

The aircraft stopped in an intact condition and no wreckage is involved. The final stopping position of the aircraft is hereby regarded as the "impact area".

# 1.12.2 Distances

The aircraft touched down 564 metres from the Threshold of Runway 15, The touchdown point is approximately 1850 ft and is also lesser than one third of the 3780 m runway length, well within the regulatory requirement for touchdown distance (see figure 53). There was no abnormality with the aircraft's touchdown

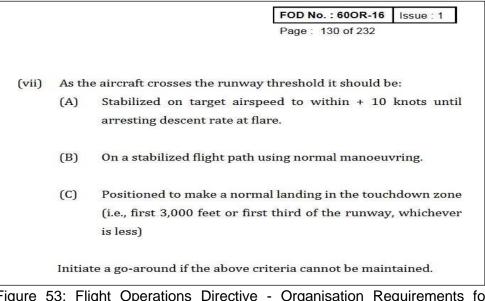


Figure 53: Flight Operations Directive - Organisation Requirements for Air Operations - 21.9.19 (regulatory requirement for touchdown zone)

TOGA was applied at approximately 1525 meters which was still at less than half of the runway. Aircraft then rolled for another 939 meters before the Rejected Take-off was initiated (total travelled 2464 meters). With a paved runway length of 3841 meters (Runway + RESA), this was approximately two thirds of the runway. The aircraft then took 1454 meters to decelerate to zero velocity. In total the aircraft travelled for 3918 metres from its position over threshold of runway 15 to the position that it stopped, exceeding the total paved surface of the runway including the RESA

by 77 meters. The ground distance measured on-site from the end of the RESA to the aircraft main landing gears were 62 metres.

Aircraft stopped at a muddy open field area with the nose measured to be approximately 15 metres away from the Runway 15 Localizer Antenna Array ahead of it. Aircraft did not veer off laterally and remained on the extended runway centreline

Impact Area Coordinates (WGS84)	N 3° 6' 53.27" E 101° 33' 30.55"
Type of Surface	Grass and Soil (unpaved)
Measured Distance from Runway	62 meters

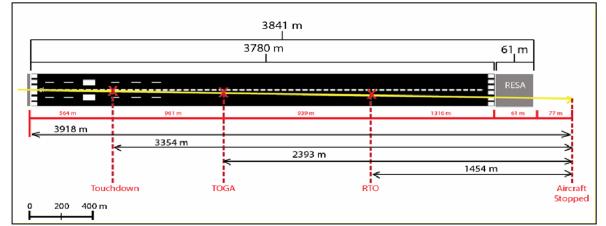


Figure 54: Aircraft impact area information

Figure 55: Distances Travelled by Aircraft from Threshold to Aircraft Stopped

In accordance to ICAO Annex 13, the investigation team had requested assistance from the Manufacturer for more accurate analyses of the distances, especially the actual braking and stopping distance which are very complex due to changing aerodynamics, propulsion and rolling friction forces. The result of these analyses shall be complemented to this report if deemed necessary, at a later date.



Figure 56: Overview of aircraft trajectory on the runway until incident



Figure 57: Zoom in of impact area at the end of runway 15



Figure 58 : Aerial Photo of Aircraft at Impact Area



Figure 59: Aircraft View from the Starboar Side



Figure 60: Aircraft Stopped 15 m from ILS Localizer Antenna Array



Figure 61: Aircraft Stopped View from Cockpit

## 1.13 Medical and Pathological Information

## 1.13.1 Crew Performance and Toxicology

All the crew was fit for the flight and medical examination immediately after the incident indicated no abnormalities. There was no evidence that physiological factors or incapacitation affected the performance of flight crew members.

## 1.13.2 Medical Results

In accordance to Annex 13, Chapter 5, only medical results which has significant effect to the human performance of the crew shall be included in the report. In view that no such factor was found, crew medical reports shall remain protected and release of such information will only be with the appropriate authority of the law.

## 1.14 Fire

There was no trace of fire found at the site and no explosions

## **1.15 Survival Aspects**

The AFRS was informed by the ATCO approximately 19 seconds after the mayday call was acknowledged at time 05:56:48 LT via telephone. AFRS was mobilized at 05:57:57 LT within 12 seconds.

The crew deplaned the aircraft via the Escape Slide on Door 1 Left approximately after 06:10:00 LT when APU was shut down. The door was initially disarmed as the commander was satisfied that there was no urgency for an emergency evacuation. Slide was deployed successfully when the AFRS arrived and all three crew vacated the aircraft safely. Before leaving the aircraft, the crew performed the Parking and Securing the Aircraft checklists.





Figure 62: Aircraft Escape Slide Deployed from Door 1L Figure 63: Escape Slide View from Door 1L

### 1.16 Test and Research

#### 1.16.1 General

In view of the all the available data and tools, no testing was found to be necessary. The investigation board however reserves the option of conducting such tests if the necessity arises, results of which shall be supplemented to this report in the future.

## 1.16.2 Research

The investigation team appointed a team of representatives from the aircraft manufacturer Airbus as participants/observers to the investigation in order to obtain the best specialist knowledge for the purpose of data analysis.

The Manufacturer has finalized their analysis and the result of their investigation is supplemented in this Report as per **Appendix P** (Airbus Handling **Quality Analysis).** It is important to note that the findings of the Manufacturer are entirely consistent with the findings in this Report and does not result in any amendments or revision to the outcome of this Report

#### a. TO Config Warning

The Manufacturer's analysis of the data (refer Appendix P - Airbus Handling Quality Analysis) results in the same findings with regards to the TO Config Warning that was triggered due to the accidental extension of the speed brake lever by 2.7°, exceeding the Speed Brake Command alert triggering threshold of 2° during the disarming action. The analysis further verifies that the triggering of the warning was not due to any system failures or faults.

#### b. Distance Required Computation

The Manufacturer's Handling Quality Analysis (**Appendix P - Airbus Handling Quality Analysis)** also includes a theoretical stopping distance computation using the actual aircraft and environmental conditions based on recommended rejected take-off procedure in the FCTM.

The result of this calculation is a theoretical required distance of 940 meters from the initiation of the RTO. The actual distance travelled by the aircraft from initiation of RTO was 1454 meters (see 1.12.2) and the aircraft overshot the paved surface of the runway by approximately 77 meters (see 1.12.2). This would mean that theoretically, with the recommended rejected take-off procedure, the aircraft would have reached zero velocity with a margin of 437 meters of runway still available.

It must be noted that there is only a difference of 8 meters between the calculation of the actual total distance travelled by the aircraft from the Manufacturer (of 3910 meters, and **Appendix O - Final Assessment of Damages)** and the 3918 meters calculation by the investigation team in this report (refer 1.12.2).

Operator	AirAsia Berhad
Address	Jalan Pekeliling 5
	Kuala Lumpur International Airport (KLIA
	2) 64000 Sepang, Selangor Darul Ehsan
Air Traffic Service	DCA Malaysia
Aerodrome Administration	Malaysia Airports Sdn. Bhd.
	Terminal 3 Sultan Abdul Aziz Shah
	Airport 47200 Subang, Selangor
	Darul Ehsan

## 1.17 Organisational and Management Information

Figure 64: Organisational information

# 1.17.1 Aircraft Base Training (Endorsement)

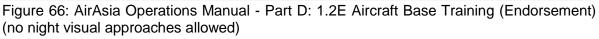
## a. Operator Policy

The Endorsement flight was conducted to satisfy DCA Malaysia requirement for the Trainee's flight crew licensing and type rating. The requirement also states that this type of training conducted must be conducted by day in aeroplane in flight (see figure 65) which includes 20 minutes before sunrise until 20 minutes after sunset. This requirement is clearly reflected on the Training form as per Appendix C (AirAsia Endorsement Flight Policy / Touch and Go Procedure) that is used by the CAPT to conduct the flight as well as the Operator's dispatch planning minima for endorsement (see figure 66).

5.1	By day in aeroplane in flight
5.1.1	Normal take-off and climb to circuit (See Note 2.0)
5.1.2	Visual circuit, approach without visual or radio glideslope guidance, autothrust system disengaged, and go-around from 100ft AGL. (See Note 2.0)
5.1.3	Visual circuit, approach without visual or radio glideslope guidance, autothrust system in operation, and fullstop landing using reverse thrust and wheelbrakes. (See Note 2.1)

Figure 65: DCA Borang A320 APPLICATION FOR THE INCLUSION OF THE AIRBUS A320 IN THE AIRCRAFT RATING OF A PILOT'S LICENSE (AEROPLANES), Section 5.1 (requirement for flight to be conducted by day only)

WEATHER	Dispatch Considerations for Base Training
	A. Planning Minima
	1. Weather limitations – Destination and Alternate: 5000 and clear of clouds
	2. Wind limitations - Destination and Alternate: Maximum x-wind 20 knots
	3. Day/Night limitations – Dest. and Alt: No night Visual Approaches allowed
	4. Take-off alternate – if required: Not applicable
	5. Runway condition – Dry
	6. Runway Length Minimum – 2700 m.
	7. Braking action – Good
	8. A320 fuel – 15.0 tons plus positioning fuel, (may be adjusted to suit the detail).
	9. Aerodrome ATC facilities – Standard CAT A airport.
	10. Weight and Balance – As per FOVE
	B. Dispatch Information
	a. Standard AirAsia briefing package – Wx, Notams, OFP, Base Training Forms
	b. Minimum Equipment List – As per OMA
	C. Crew Qualification
	Licenses and Type Ratings – DCAM CPL/ATPL with A320 validation as applicable.



The flight was however rostered and planned as per **Appendix J** (Flight/Roster Planning) for a STD of 0430 LT. The actual departure time was 0510 LT. The overrun incident itself occurred at 0555 LT which was approximately 1 hour and 9 minutes before the local sunrise time of 0704 LT.

# 1.17.2 Safety Pilot

Investigation found that there are no guidance or policy for the duties of the Safety Pilot that is specific for the procedures employed in a Touch and Go training, in particular the items that should be monitored which are different than the standard operating procedures of a normal flight. There is also currently no requirement for minimum level of experience for safety pilots on endorsement flights.

There is also no guidance or policy on the briefing for the duties of the Safety Pilot that is specific for the procedures employed in a Touch and Go training. The current policy adopted in the Operator's training manual states that "The safety pilot shall be briefed by the instructor on all relevant requirements, prior to first flight of the duty".

#### 1.18 Additional Information

Nil

## 1.19 Useful or Effective Investigation Techniques

Investigation Team conducted the investigation in accordance to the Standards and Recommended Practices of Annex 13 to the Chicago Convention

### 2.0 ANALYSIS

In this section of the report, the relevant evidence and factual information will be discussed and analysed to determine the cause and contributing factors to the accident. The conclusions will provide the answer to why the accident occurred.

### 2.1 General

The Endorsement flight was planned to depart and conduct its visual pattern exercises before the hour of sunrise, contrary to the regulator and Operator's own policy.

These training flight leads to a possibility of a pre-existing latent condition in which such flights are continuously being planned and continuously being accepted despite the irregularity of the timing against the Operator's own policies.

The entire flight itself, including the first two Touch and Go practices were uneventful, however the two preceding approaches should have been sufficient to warn the crew that their safety margins were being reduced with the presence of a strong tailwind. The CAPT did indicate that they might not be able to continue for any more circuits after the third Touch and Go due to the strong winds. The strong tailwind was also evident during the incident itself which may have contributed significantly in extending the stopping distance of the aircraft.

The risk of this flight significantly increases by the fact that there are no performance calculations for Touch and Go that would give the crew a reference of the accelerate/stop distances or decision speeds. Added to that, it was an Aircraft Base Training in which the Trainee is not expected to perform to the standards of normal

operations, significantly increasing the CAPT"s workload by many folds. The presence of a safety pilot does not reduce this hazard as the safety pilot does not have any exact set of procedure or duties to comply with such as a checklist or specific briefings for them to adhere to unless prescribed by the instructor prior to the flight.

## 2.2 The Incident

On the third Touch and Go, a master warning was triggered after the application of take-off thrusts by the Trainee. This warning was in fact a TO Config warning which had triggered due to the accidental extension of the speed brake lever after the disarming action by the CAPT. Flight data confirms this with the indication of an extended speed brake lever by 3° when TOGA was being selected. The crews were all caught off guard and were unable to process what was going on based on the CVR audio. It is evident that the crew were all distracted as evidence and crew interview statements indicated that the crew's attention was diverted to the speed brake lever immediately after the triggering of the TO Config warning, in which the crew were continuously trying to "disarm" the spoilers thinking that the spoilers had not retracted after the initial disarming.

The aircraft continued to accelerate for the take-off while the crew was still trying to find the source of the warning. The manufacturer has made sufficient cautions in their documentations regarding the possibility of this TO Config situation happening. This was not reflected in the Operator's training manual which was used as guidance by the instructors in conducting such flights.

As the speed was increasing past 175kts, the CAPT discontinued the touch and go simultaneous with the end of the TO Config warning. Although the manufacturer and the Operator has stated in its manuals that after application of TOGA, "decision to reject should only be made if the instructor is sure that the aircraft cannot safely fly", no references or guidance are given with regards to the runway length remaining. For a normal reject take-off, the manufacturer has stated very clearly that after V1, take-off must continue due to runway length considerations but this is very ambiguous for a Touch a Go as application of TOGA does not determine the length of runway remaining. If a reference point for the crew to be committed to the take-off is available, such as a certain speed or the application of take-off power itself, there would be no hesitation and ambiguity on whether to abort or continue.

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On that note, the aircraft was in fact safe for the take-off because spoiler surfaces had retracted automatically after the application of take-off power, as documented by the manufacturer. The speed brake lever was also eventually stowed back to 0° 3 seconds before the rejected take-off. The Operator's training manual does mention about the auto retraction of the spoilers, however it was not written in the context of the TO Config warning but more of a note explaining a separate procedure during the Touch and Go. This effectively disassociates the auto-retraction of the spoilers from being a safety feature for the crew to take note of.

Post incident CVR recording indicated that the CAPT was not sure what had happened and that the Safety Pilot saw the indication but was not sure what it meant (he was confused between the arming/disarming of the spoilers with the extension of the speed brake). Pilot statements and crew interview also indicated that the crew was not sure what had happened and believed that the warning was triggered because the ground spoilers were not properly disarmed.

At critical situations such as this incident, the crew should not be made to recall system logics and mechanisms as time is critical. The information displayed to them should be able to be quickly understood in order for a decision to be made effectively. The quick identification of the abnormality, the level of preparedness by the crew and the understanding of aircraft systems and safety features of the aircraft would have stood as effective barriers to the incident.

#### 2.2.1 Flight Data Analysis

#### Refer to Flight Data Recording as per Appendix 7.

Analysis of the flight data establishes the facts and circumstances as described above in Part 1 of the report.

1) There were no abnormalities with the aircraft's landing. It touched down within the nominal and regulated touchdown zone.

2) A TO Config Warning was triggered on the third Touch and Go during the application of take-off power due to the inadvertent extension of the speed brake levers during the disarming action. The possibility of this happening is documented

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by the manufacturer under Touch and Go procedures, but was not adopted in the Operator's training manual used as a guide for the instructors.

3) Despite the extension of the speed brake and the triggering of the TO Config, the aircraft was safe to take-off as the aircraft design ensures that all spoiler surfaces are automatically thrusts levers are advanced to above CLB detent. This safety feature functioned correctly during the incident. This feature is also stated clearly in the Flight Crew Techniques Manual but is ambiguously stated in the Operator's training manual.

4) Crew was distracted with trying to disarm the spoilers repeatedly. The speed brake lever was eventually stowed back to 0° 3 seconds before initiation of rejected take-off.

5) Rejected take-off was done at high speed (174 kts) and was initiated at approximately 1/3 of the runway remaining. The speed at reject take-off was also approximately 45 knots above Vapp (130kts). There are no available accelerate/stop distance references for the crew to act on. The manufacturer's recommendation which was also adopted by the crew regarding discontinuing a Touch and Go after application of TOGA is not as definitive as the caution for a normal reject take-off which gives a decision speed for take-off to be continued under any circumstances.

6) Use of full reversers was not maximized. Both manufacturer and Operator procedures are streamlined in recommending the maximum usage of braking and reversers in a discontinued touch and go. The change from full reversers to idle reversers during the abort occurred at a high speed of 114kts. Manufacturer and Operator procedures are streamlined in recommending 70kts as the preferred speed at which maximum reversers be cancelled, subject to the availability of remaining runway. Manufacturer's Handling Quality Analysis has found that there would be sufficient runway remaining with the recommended usage of thrusts reversers.

7) There were no system failures.

# 2.2.2 CVR Analysis (See Appendix 2)

Analysis of the CVR confirms the facts and circumstances established from the flight data. CVR analysis also points to significant findings:

1) That the flight was conducted in strong tailwind condition and no wind report was received by the crew requested from the ATC on all three landings.

2) There were no abnormalities during the touchdown.

3) The TO Config Warning was heard and seen by the crew and the warning message displayed on the E/WD was related to the speed brakes. The CAPT and the Safety Pilot both knew that the warning was a TO Config warning and was with regards to the speed brakes / spoilers. Crew were however confused during the period of the warning being triggered and it took the CAPT 7 seconds to call for controls and another 2 seconds to initiate the reject. This indicated that the crew was distracted with the master warning, and distracted with disarming the lever.

4) The CAPT took over controls and rejected the take-off while the warning was still heard. The warning ended simultaneously with the CAPT retarding the thrusts levers.

# 2.2.3 Reports

A **Mandatory Occurrence Report (MOR)** was submitted to the Department of Civil Aviation Malaysia as per **Appendix K.** 

# 2.2.4 Interview and Statements

Written statements in the form of Air Safety Reports were gathered from all the crew involved. The crew were also interviewed by the Investigation team at the Emergency Operations Centre (EOC) Room, AirAsia Safety Department. All of the crew involved had also submitted a written statement to be included in this report as follows:

- a. Written statement for Pilot-in-Command (PIC/CAPT) as per Appendix L.
- b. Written statement for Co-Pilot (Trainee) as per Appendix M.
- c. Written statement for Safety Pilot as per Appendix N

d. Additional Statements by crew

An Air Safety Report (ASR/12459) was filed as a joined statement from all three crew before the crew interview was conducted

Report Title		RUNWAY I	EXCURSIO	N		asr/12459	
Report Statu	IS	Under Inve	stigation	Date of Occurrence		****	
Reported Ev Descriptor	/ent	Airport Operations- Incursion / excursion- Runway excursion		Investigation Due Date		•	
Initial ERC score 0			Investigation Close Date		-		
Final ERC score		0		MOR Sent to		-	
Reported by	r	*****		Opened by		*****	
For Info Aler	rt Groups			Lead Investig	gator	-	
Report flagged Confidential	N	Red flag Alert	N	Recommen dations	N	Peer Review	N
Event Principal Sa		ription		asr/12459			
Principal Sa IT WAS AN VISIBILITY I DEGREES (	fety Report ENDORSEM REPORTED CELCIUS AN	IENT TRAININ OF 8 KM, SUI ID DRY RUNA FLAPS WERE	NG FLIGHT. N RFACE WINI AWAY. AFTE	WEATHER CO D OF 320/4 K R THE THIRE	NOTS, TEMP D TOUCH AN	PERATURE 2 ID GO, DURII	24 NG THE

Figure 67: Air Safety Reports (ASR/12459)

# 2.3 Flight Operations

# 2.3.1 Operational Analysis

# a) Time of Flight

It was found that the conduct of the flight at the scheduled departure time of 0430 LT was not in accordance to the Operator's own policy of "no night visual approaches allowed". It was also ultimately not in accordance to the state regulation for the specific training being conducted which allows only flights in day time. Conduct of endorsement flights at this time also increases the risk of an accident considering the amount of workload that the instructor would have to bear and the limited visibility due to the lack of natural lighting while conducting a Visual Pattern.

### b) Safety Pilot

Safety Pilots for Endorsement flights should be required to know the specific procedures for Touch and Go in order for them to be able perform the duties satisfactorily. There are very significant differences in the procedures during the Touch and Go compared to normal day to day operations such as the immediate actions required to be done by the instructor after touchdown, the safety margins and also the risks involved such as possibility of the TO Config warning and the lack of any speed references for accelerate/stop considerations. The safety pilot will not be able to know what to monitor unless he has extensive experience as a pilot and understands the touch and go procedures well enough.

#### 2.3.2 Weather

The flight was conducted in strong tailwind conditions. This was not relayed to the crew on all approaches and crew were assuming that the surface wind conditions would be lower, or closer to the reported wind from the ATIS.

#### 2.3.3 Aerodrome

There were no centre line lights for the runway. The crew's early cancellation of the Full Reversers indicates a possible misjudgement of the distance remaining during the Reject Take-off. Centre Line light availability would have aided the crew in their judgement.

## 2.4 Aircraft

## 2.4.1 Aircraft System

## a) Manuals and Documentations

Although the TO Config Warning did cause the crew to initiate the take-off abort, Airbus has documented this possibility adequately. This includes the possibility of accidental extension of the speed brake, as well the subsequent safety feature of the aircraft that will retract the spoiler surfaces at application of take-off power. These items should be reflected clearly in all Operator manuals that are used as reference for flights conducting Touch and Go exercises to increase the awareness of the instructor / safety pilot and highlights all the risks involved to the crew. Inclusion of the FCTM reference may be sufficient as a guide for the instructor to conduct discussions/briefing on without missing out any important items.

## b) System Failures

The aircraft systems worked as it was designed to and no failures were found to be a factor in this incident. All present procedures available as per recommended by the manufacturer with regards to operation of the speed brake lever and ground spoilers are sufficient and did not in any way contribute to the incident.

The aircraft brakes and reversers functioned without any failures.

# 2.4.2 Aircraft Performance

There are no specific performance calculations for Touch and Go exercise which will give the accelerate/stop distances for a Touch and Go. Airbus references also only indicate Vapp as the equivalent of a rotation speed on a Touch and Go. This is also why airbus has recommended that after the application of TOGA, crew should be "Go-minded". Nevertheless, there is an obvious lack of guideline for the decision point a crew needs to have with regards to rejecting the take-off on a Touch and Go as there are no V1 or decision speeds, but setting of TOGA power may occur at any speed and does not directly determine the accelerate/stop distances of the aircraft. Critical failures may still

occur at low speeds (before Vapp or recommended rotation speed) after application of TOGA on a Touch and Go. Likewise, if TOGA application is delayed for any reason, critical failure may occur at high speed before application of TOGA and there are no calculations to ensure that the runway will be sufficient for the abort. On a normal rejected take-off, the manufacturer is very clear that after decision speed (V1) take-off must be continued under any circumstances due to possibility of insufficient runway. The investigation finds that this area of ambiguity and uncertainty may present contextual conditions for accidents to occur.

### 2.5 Human Factors

Analysis of the crew's medical and pathological report, as well as their duty and rest patterns do not indicate any impairment of their performance standards physiologically. All duty and rest policies employed are in accordance to recommended practices and safety standards.

# 3.0 CONCLUSIONS

# 3.1 Findings

# 3.1.1 All Significant Conditions / Events

The investigation concludes these conditions, events or circumstances as having significant bearing on the incident.

TIME (UTC)	EVENT / CONDITION	BEARING
N/A	Endorsement Flight was scheduled not in accordance to Operator and Regulator's requirement for day operations only.	Inconsistency with policies
21:10	Endorsement Flight was accepted and departed despite not satisfying regulatory requirements for daylight operations only.	Policy had failed as a barrier
21:38	No updated surface wind report was given to crew despite the <i>significant change</i> between the MET Report and actual winds. This is also taking into account that it was an endorsement flight, and that no accelerate/stop distance calculations are available for Touch and Go.	Possible longer runway length used during landing and take-off roll in strong tailwind conditions.
21:55:3	The disarming of the spoilers inadvertently caused the speed brake lever to be slightly extended.	Caused TO Config Warning to be triggered
21:55:46	TO Config Warning for " <b>CONFIG Spd Brk</b> <b>Not Retracted</b> " was triggered. Crew identified the warning correctly but could not determine the cause, and the system safety feature.	Caused the crew to initiate the rejected take- off
21:55:47 to 21:55:52	<ul> <li>Crew were distracted with :</li> <li>The TO Config warning, which had confused them</li> <li>Trying to disarm the speed brake lever repeatedly</li> </ul>	Late decision to reject the take-off.
21:55:55	Reject Take-off at High Speed. RTO was also initiated with approximately one third of runway length left. At the time of reject take- off, aircraft was safe to continue, as documented in the manuals.	Insufficient Runway Length remaining resulting in a Runway Overrun.
21:56:03	Use of Full Reversers were not maximised due to <i>possible</i> misjudgment of distance remaining caused by lack of center line lighting and dark natural light conditions. Cancellation of full reverse thrusts were arbitrary and is not at recommended values by the manufacturer	Increase in braking distance.

Figure 68: Findings

# 3.1.2 Other Findings

a). The flight crew members were licensed and qualified for the flight in accordance with existing regulations.

b). The maintenance records indicated that the aircraft was equipped and maintained in accordance with existing regulations and approved procedures.

c). Safety Pilot was unable to assist in this incident and did not have any contributing effect to the safety of the flight. This is likely caused by the lack of guidelines or tools to aid the safety pilot in performing his duties on a Touch and Go flight, which is not a normal routine flight that he would be used to. As such, investigation also finds that there is also no inclusion of the Touch and Go procedure in the Operator's standard operating procedure (SOP) for safety pilots to be familiar with. At this point, the requirement in the Operator's training manual for what to brief the safety pilot on, remains upon the discretion of the TRE.

# 3.1.3 Eliminated Factors

a). Flight crew fatigue and medical background was not a factor in the incident.

b). There was no evidence of airframe failure or system malfunction that has led to the incident.

# 3.1.4 Ambiguities

a). The investigation was unable to establish the actual runway surface condition at the time of the incident due to mixed precipitation information from the Met reports, crew statement and ATCO interview. Wet runway conditions, if present, may have contributed to the prolonged braking distance of the aircraft due to reduced braking co-efficient.

b). The investigation was initially unable to establish the exact braking and deceleration performance of the aircraft and how it affects the distance travelled during the rejected take- off due to the limited availability of the correct tools in measuring such dynamics. New information from the Manufacturer was received and shows a result of the aircraft's braking and deceleration performance analysis. This information is supplemented into this report under 1.16.2 and **Appendix P** (Airbus Handling Quality **Analysis**)

c). The investigation was initially unable to determine the actual stopping distances required at all the given conditions due to the unavailability of such tool and expertise to the investigators. Determination of such performance figures will give a more definitive finding with regards to the sufficiency of the remaining length of runway at the time of RTO. As such, the investigation was also unable to determine if a continuous use of full reversers would have prevented the overrun.

New information from the Manufacturer based on their Handling Quality Analysis was received which gives the approximate stopping distance required in this event. This new information is supplemented into this report under 1.16.2 and **Appendix P (Airbus Handling Quality Analysis).** 

# 3.2 Causal / Contributory Factors

# 3.2.1 Causes of the Incident

a). Distraction of the pilot due to TO config warning during the take-off roll.

b). Distraction of the pilot with the speed brake lever arming and disarming.

c). Uncertainty by the crew regarding the safety of the aircraft to continue the take-off.

d). The rejected take-off at a non-recommended speed with insufficient runway length remaining.

- e). Insufficient use of reverse thrust.
- f). Possible increase of braking distance due to strong tailwind.

# 3.2.2 Contributing Factors to the Incident

a). Insufficient emphasis or reference by Operator in their guideline used for Touch and Go, of known and documented systemic characteristics vital to the safe conduct of the Touch and Go exercise, such as:

i). The high possibility of accidental extension of the speed brake levers during disarming action and the possibility for the TO Configuration warning for Speed Brakes to be triggered as described in the manufacturer's flight crew techniques manual.

ii). The manufacturer's note on the safety feature related to the auto-retraction of the spoilers, which means that the take-off was safe to be continued with.

b). The items above (a) had likely caused a possible confusion of aircraft systems and warnings with regards to the TO Config warning and the autoretraction of the spoiler surfaces at application of take-off thrusts and led to the CAPT being uncertain of the safety of the aircraft for take-off. It had also directly caused the distraction experienced by the crew which also caused the rejected take-off to be initiated very late.

c). The dark environment at the time of incident, likely causing the misjudgement of distance remaining resulting in the insufficient use of reverse thrusts. It is verified that correct usage of the reverse thrusts during the RTO would have stopped the aircraft with sufficient margin without overrunning the runway.

d). Lack of communication between ATCO and flight crew regarding known environmental risks on landing such as the strong tailwind. This had directly led to the crew continuing to operate the Touch and Go exercise in strong tailwind condition. The lack of performance data calculations

availability for Touch and Go also causes the crew to operate in ambiguity regarding the accelerate/stop distances.

e). Safety Pilot was unable to assist in this incident and did not have any contributing effect to the safety of the flight.

# 4.0 SAFETY RECOMMENDATION

In accordance with Annex 13, the sole objective of the investigation of an occurrence shall be the prevention of accidents and incidents. One very important tool to achieve this objective is the issuance of timely safety recommendations. A safety recommendation is defined as a proposal of an accident investigation authority based on information derived from an investigation. The intended purpose of a safety recommendation is the prevention of accidents or incidents and the reduction of the consequences of such occurrences. It, in no case, has the purpose of creating a presumption of blame or liability for an accident or incident.

4.1 It is recommended that the manufacturer make a review of the probable need for performance calculations for Touch and Go, such as considerations for decision speed, accelerate/stop distances, minimum runway distance requirement and/or other related factors.

4.2. It is recommended that the Operator reflect or insert a reference to the manufacturer's note regarding accidental speed brake extension as well as the autoretraction safety feature from the Flight Crew Techniques Manual into the Operator's training manual used for Touch and Go reference as a reminder and emphasis to the instructor.

4.3 It is recommended that the current Operator's training manual be enhanced to include a specific safety/reject briefing to be used regarding the procedures and considerations for a discontinuation of Touch and Go after TOGA.

4.4 It is recommended that the Operator review the need for a more detailed guideline or brief for the Safety Pilot which incorporates the specific procedures, differences then normal SOP and specific parameters for the safety pilot to monitor in a touch and go. The

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safety pilot is to be selected from experienced co-pilot with a minimum of hours and experience as may be determine by the operator where suitable.

4.5 It is recommended that the Operator emphasizes the recommended procedures for the use of full reversers in the event of a discontinued Touch and Go.

4.6 It is recommended that all Aircraft Base Training (Endorsement) is conducted during the day time as required by DCA *Borang* A 320 APPLICATION FOR THEINCLUSION OF THE AIRBUS A 320 IN THE AIRCRAFT RATING OF A PILOT"S LICENSE (AEROPLANES, Section 5.1)

4.7 It is recommended that that the ATC shall update all surface condition or weather reports to flights under their control sufficiently as per ICAO Annex 3 Appendix 3 Paragraph 2.32 requirement for weather update when there is significant change.

# APPENDICES

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# Appendix A: AAIB Accident/Incident Notification

# APPENDIX A

	AAIB (Mala Accident/Incident		Ref No MOT/BSKU(S)600
Ministry of Transport Malays (Air Accident Investigation E No 26, Jalan Tun Hussein, Presint 4, 62100 Putrajaya, Malaysia		Telephone: +603 8 Facsimile: +603 88 Website: <u>www.mot</u> Ernail: <u>yahaya@mx</u>	88 0163 . <u>gov.my</u>
A. Classification accident / Incident (Serious) / Incident (Minor)	ACCID	INCID (Serious)	INCID (Minor)
B. Detail of Aircraft / Flight	Manufacturer Model Nationality Registration Flight Number Serial Number	:AJRBUS :A320-216 :MALAYSIA :9M-AHM :AXM9700 :3536	
C. Detail of Owner / Operator / Lessee (If applicable)	Owner Lessee (if Applicable) Operator	:PARILEASE SA : :AIR ASIA BERH	
D. Date and Time (Local / UTC) of the event i.e. accident or serious incident	Date Time	:30 NOVEMBER :0555H	2017
E. Last point of departure and point of intended landing of the aircraft	Last point of departure Point of intended landing	:WMSA :WMKK	······································
F. Last known position	Latitude Longitude	: 	······································
	Descriptions END OF RUNWAY 15	WMSA	

G. No of crew and passengers; aboard,	Total occupant on beard:
killed and seriously injured	∘ Pilot :NIL ∝ Passengers :NIL
:	Conditions
	(Example : Pilot managed to vacate during fire.)
	ALL 3 CREW EVACUATED VIA EMERGENCY SLIDE AT DOOR 1 LEFT
H. Qualification of the pilot in	Pilot in Command gualification :AUTHORISED EXAMINER
command and nationality	Pilot in Command nationality :MALAYSIAN
of the crew and passengers	First Officer nationality :MALAYSIAN
passengers	Passengers nationality :NIL
<ol> <li>Description of the accident or serious incident and the extent of damage to the aircraft so far as is known:</li> </ol>	AIRCRAFT WAS ON ENDORSEMENT FLIGHT AND WAS PERFORMING CIRCUIT AND LANDING. ON THE THIRD TOUCH AND GO, THE CREW REJECTED THE TAKE-OFF. AIRCRAFT OVERRUN RUNWAY 15 INTO THE GRASS AREA.
J. An indication to what extent the investigation will be conducted or is proposed to be delegated by the State of Occurrence	Note : To be filled up by the Bureau
<ul> <li>K. Presence and description of dangerous goods on board the aircraft</li> </ul>	No  Yes (Please describe)
L. Operation Type	Commercial Aviation Scheduled Passenger
	General Aviation O Non Scheduled Cargo
	Others (e) Others (e)
	TRAINING FLIGHT
M. Level of damage to aircraft (If information is available)	Destroyed Substantial Minor None
of delay and by the most suita of the Operator c) the State of	forward a notification of an accident or serious incident with a minimum ble and quickest means available to: a) the State of Registry b) the State Design d) the State of Manufacture and e) the International Civil Aviation t involved is of a maximum mass of over 2250 kg.

BSKU/Notification Form/Issue 1 Rev Initial

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APPENDIX B

# Appendix B: CVR Transcript

Flight Data Time	CVR Time	Ambient Sounds	System Sounds	Voice 1 (CAPT)	Voice 2 (Trainee)	Voice 3 (Safety Pilot)	ATC
21:55:18	1:55:29		One hundred	checkgo down a bit	ok		
21:55:21	1:55:32			centreline			
21:55:23	1:55:34		Fifty				
21:55:24	1:55:35		Forty	eyy centreline			
21:55:25	1:55:36		Thirty				
21:55:25	1:55:36		Twenty	oo aaa			
21:55:27	1:55:38		Retard				
21:55:29	1:55:40		Dual Input				
21:55:30	1:55:41		Retard				
21:55:33	1:55:44			Centreline, standup	ok		
21:55:42	1:55:53			Okay go			
					MAN TOGA SRS Go		
21:55:44	1:55:55	Engine spool up			around Track		
			Master Warning				
			Continous Repetitive				
21:55:46	1:55:57		Chime (CRC)		autothrustblue		
21:55:48	1:55:59			(**)(**)?		(**)	
21:55:52	1:56:03			hah?		(**)	
21:55:54	1:56:05	Engine spool down		My control!			
21:55:54	1:56:05				You have control		
21:56:00	1:56:11			Red cap 9700 stopping!			
		Sounds of aircraft entering					
		rough surface and tire					
21:56:13	1:56:24	screech			Oh shh		
21:56:14	1:56:25				ooww		
21:56:18	1:56:29				sirsir		
21:56:19	1:56:30				sir.		
21:56:22	1:56:33				sir		
21:56:23	1:56:34				sir		
21:56:25	1:56:36			ah shit	oh my god sir		
				Red Cap 9700 Mayday			
				Mayday Mayday			
21:56:27	1:56:38			stopping!	sir		
21:56:33	1:56:44						Red Cap 9700 roger your mayday
21:56:41	1:56:52			adoi shit			
21:56:45	1:56:56				oh my god sir		
21:56:47	1:56:58			ahh			
				okaywe shut down			
				engineshut down			
21:56:50	1:57:01			engine			
21:56:55	1:57:06			start APU (**)			
21:56:58	1:57:09			oh my god		standby standby	
21:57:00	1:57:11				I cannot believe this		
				okay nevermind			
21:57:05	1:57:16		Single chime	nevermind			

			do the after landing			
21:57:06	1:57:17		checklist			
21.37.00	1.37.17		(**) checklistone by		-	
21:57:07	1:57:18		one aah			
21:57:07	1:57:18		one aan			
			ground red captower			
21:57:12	1:57:23		red cap 9700			
21:57:17	1:57:28					red cap 9700 go ahead
			ah we have overrun the			
			runway sir, stopping at			
			present position sir.			
21:57:19	1:57:30		request assistance	(**)	(**) its not your fault	
						Roger REDCAP9700 a copy
21:57:24	1:57:35					that. Our ARFS on the way.
21:57:30	1:57:41		9700 copied			
21:57:32	1:57:43			oh my god sir		
21:57:35	1:57:46		aduhhh	im so sorry sir		
19:59:49			(**) its okay			
			(**)what happened			
21:57:40	1:57:51	Single chime	just now ah?			
					The speedbrake didn't	
					retractjust now the	
					speedbrakeI saw it I then call	
					(**) the speedbrake retract	
21:57:42	1:57:53				(**) back already	
					( ,,	
			(**) was retract or not?			
21:57:49	1:58:00		Was retract or not?			
21.071.10	1.50100					
21:57:53	1:58:04				not retract aah (**) its aa(**)	
21.57.55	1.50.04				so means this one is not	
19:59:49			(**)		upthis one is down	
15.55.45					up.tema one ia down	redcap 9700 check your
21:58:07	1:58:18		(**)			situation
21.30.07	1.30.10				red cap 9700 aircraft just	artiation
					overrun the runway sir, we are	
					at the, stopped at the ditch, we	
					are going to shut down the	
					aircraft and then need the	
					aircraft be towed from preent	
21:58:14	1:58:25				position	
21:58:25	1:58:36					roger redcap 9700 copy that

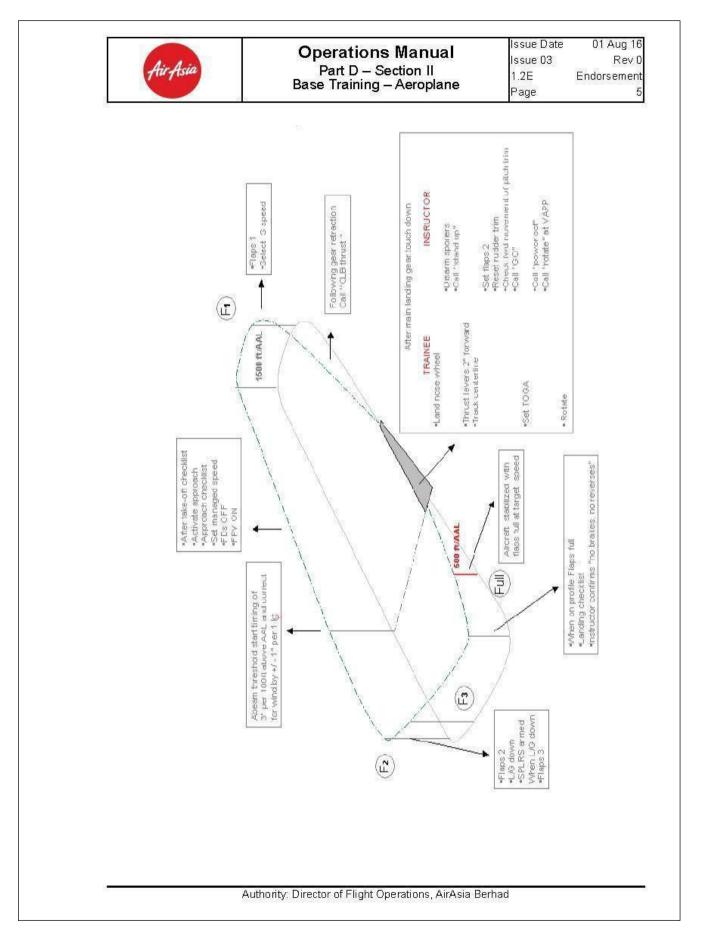
# Appendix C: AirAsia Endorsement Flight Policy / Touch and Go Procedure

Air Asia	Pa	r <b>ations Manual</b> rt D – Section II raining – Aeroplane	Issue Date 01 Aug 16 Issue 03 Rev 0 1.2E Endorsement Page 1
GENER		ION	
Course	Title & Code	Base Training – Aer	oplane (Endorsement)
Course	Nomination	Chief Pilot Training &	Standards
Particip	oants' <b>P</b> rofile	Pilots not meeting Air	Asia ZFTT requirements
Instruc	tors' Profile	DCAM and AirAsia ap	proved TRE
Course	Purpose	For the issuance of D rating	CAM license and A320
Course	e Objectives		
Course	Parts	Aircraft Base Training	2
Course	Footprint		
	t Base Training		20 ·
2 hou	rs	2 hours	30 min
Pre-flig	ght briefing	Base Training	Debriefing

<ul> <li>Aircraft base training of the FFS to the aircraft for the first time the reade-rotation, etc. Then exercises in Base Training Division pehaviour and has no</li> <li>The detailed procedure whee speed brake lever to</li> </ul>	xtensively tested by the manufacturer's Flight Test Division and proved to be very realistic from the point of view of aircraft o safety related impact.			
to the physical position the automatic retraction well above the setting Trainees should read session. A full briefing will be g Note: When trans be highlight overhead one engi	re is explained in item "e. Touch and Go". To summarize, upor I touch down, the TRI will disarm the spoilers by pushing on the initiate the retraction sooner. The purpose of this procedure he automatic retraction while advancing the thrust levers is due on of the thrust levers. Depending on the Fly-By-Wire aircraft, on will start between a TLA ranging from 20° up to 35°, which is of spool up of the engines. the briefing to understand the content and requirements of the priven by the TRI prior to the flight. <i>Siliconing from another Fly-By-Wire aircraft, following points will</i> <i>for another fly-By-Wire aircraft, following points will</i>			
• Pre-flight briefing dur: • The TRI will ensure th	ation = 1:00 hr nat the trainee has reviewed the walk around.			
• Training flights must l and regulations.	<ul> <li>Training flights must be conducted in accordance with AirAsia training procedures and regulations.</li> </ul>			
	<ul> <li>Trainees are normally required to report 2 hours before scheduled departure time where they will meet their instructor.</li> </ul>			
ASSENGERS specifically approved	engers is limited to technical observers from AirAsia and other by the Chief Pilot Training & Standards or his nominee, and the instructor. The number of passengers may not exceed four			

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	Airbus A320 Base Training (A320 Endorseme	ent)
The	<ul> <li>Touch and Go</li> <li>Touch and go are used to reduce the amount of the aircraft back to the holding point and awaiting maintain a high level of safety they must be cond manner. The following technique is to be used:</li> <li>Prior to EVERY touch and go, the <b>INSTRUCTOR</b> - Reverse thrust will not be used</li> <li>Brakes (auto or manual) will not be used</li> <li>The <b>TRAINEE</b> will: land the nose wheel after main allows pitch trim reset)</li> <li>track the runway centreline using rudder pedal</li> <li>The <b>INSTRUCTOR</b> will: disarm spoilers</li> <li>call "STAND UP"</li> <li><b>trainee</b> will: advance the thrust levers approximate gines reducing to ground idle).</li> </ul>	g take-off clearance. In order to lucted in a properly disciplined will confirm with the trainee that: in gear touchdown (Which also I inputs only
	<ul> <li>The INS TRUCTOR will: move the flap handle to priflaps are running         <ul> <li>reset the rudder tim if necessary</li> <li>monitor the forward movement of the pitch trim</li> <li>place one hand behind the thrust levers ensuriapproximately 2" (5 cm)</li> <li>call "GO" when aircraft is in the correct configu.</li> </ul> </li> <li>The TRAINEE will: advance the thrust levers to the Maintain the runway centreline.</li> <li>The INSTRUCTOR will: - monitor engine accelering check FMA annunciation (when appropriate)</li> <li>check TOGA thrust obtained and call "POWEF call "ROTATE" at VAPP</li> <li>maintain his hand behind the thrust levers to e of power or no unwanted stop</li> <li>The TRAINEE will: rotate the aircraft to the pitch a or 15° if no FD is available.</li> </ul>	n ing they are advanced uration he TOGA detent ation R SET" ensure no inadvertent reduction
	(SEE FOLLOWING DIA	GRAM)
	<ul> <li>Following gear retraction the instructor will call fo</li> <li>The trainee will move the thrust levers to the CLE THRCLB   SRS   GA TRK).</li> <li>At acceleration altitude or ALT*, whichever occurs 1 and S speed. Approach may be activated at thi</li> </ul>	3 detent (the FMA will read s first, and F speed: select FLAP



Air Asia	<b>Operations Manual</b> Part D – Section II Base Training – Aeroplane	Issue Date 01 Au Issue 03 R 1.2E Endorsen Page
FLIG • En Ift sim bra EC TC Re No F. R • G. N • H. In		Page go, he/she will call "STOP" ing it to a halt using maximum d he will call for any appropriate h and go after the application of h that the aircraft cannot fly safe ay sound if the application of h trim are resetting but still outsi munications and maintaining a s (including the observer in the he instructor in this regard and t. t exercise to be performed duri es' understanding of this exercise d the trainee whether a full stop
F. Fu Fo J. Au Fr th pr	On the A320 there is no intermediate step for or recommendations (oral guidance) and total tak button on the sidestick. Because of the nature or control inputs by the instructor may be of negat and can generate confusion in the handling of emphasized and reviewed with the trainees du take-over becomes necessary during the flight, CON TROL" and press sidestick priority pushbur by calling "YOU HAVE CONTROL", release the arrow on the sidestick priority panel on the glar side priority pushbutton depressed until the air safe to return control to the trainee. However the necessary to apply back stick without warning is be emphasized that a take-over is a very rare of is necessary the trainee should not regard this a normal take-over method for an A320. On Ground : It should be emphasized that the nosewheel st at high speeds (GS > 30 kt) because of over cor- tillers are additive, and corrective inputs by the potentially dangerous. Should a take-over be n immediately call out "I HAVE CONTROL", and differential braking to regain control or bring the uel Management or normal flight training sessions, the normal fue mong would be performed at approximately MLV onsumption is 3000kg per hour. utom atic Landings or demonstration purposes, instructors may cam- ne weather and the ILS meet CAT 1 criteria or ba- rep ared to take manual control immediately if the rainees should be reminded of all the conditions	ke-over by pressing the push- of the "fly by wire" system, additi tive value for instruction purpos the trajectory. This should be uring the pre-flight briefing. If , instructor will clearly call "I HAY tton. The trainee will acknowled e sidestick and observe the rec reshield. Instructor will keep his craft is under full control and it here may be cases where it is in case of a very late flare. It music occurrence and that if a take-ov as a negative development but t teering tiller should NOT be use instructor can be confusing an necessary, the instructor will if necessary, be prepared to u e aircraft to a stop. I load should be such that the fi W – 10,000 kg. Estimated avera y out automatic landings provid etter. The instructor should be e flight path or roll out deviate.
10 C	onducting an automatic landing during low visibi ote: See FCOM references for limitations landing system.	2010 CONTRACTOR CONTRA

Air Asia	<b>Operations Manual</b> Part D – Section II Base Training – Aeroplane	Issue Date 01 Au Issue 03 R 1.2E Endorser Page
L (	<ul> <li>FMGS Use</li> <li>The FMGS should be initialised for the intended fl com pany route or by waypoint and PBD. Managed to intercept the first ILS assisted approach and wh impossible. All visual circuits should be flown with fact that the approach and runway will remain dist assistance for positioning the aircraft on final approach preparation and Engine Start. The trainee crew will occupy the left and right seat instructor supervising from the jumpseat. Just price will occupy either the right or the left seat.</li> <li>Taxi</li> <li>Little if any power above idle thrust will be require training weights. Thrust should be used symmetric at low ground speeds due to the risk of ingestion of engines are close to the ground; this is a particula BAC 1-11 and B727 pilots. Avoid placing engines unprepared ground e.g. over the edge of taxiways the aircraft is moving and thereafter the normal m 30 kts in a straight line, 10 kts for a sharp turn. As higher than many other aircraft monitor ND ground taxi speed. Do not "ride" the brakes, as 30kts is exc and decelerate to 10kts, release the brakes and a again.</li> <li>Note: Use of engine anti-ice increases grout taken on slippery surfaces. Nose wh The inputs of the nose wheel steering side stick). Care is needed to steer the tiller inputs. Sharp tums particularly response of the nose wheel to tiller in the stiller inputs.</li> </ul>	lateral navigation may be us en weather makes visual flip FDs off and FPV selected. T olayed is of considerable bach. for cockpit preparation with 1 or to engine start the instruct d to get the aircraft moving cally. Avoid high thrust settin (FOD). The wing mounted ar point to note for ex DC9, over unconsolidated or Brakes may be checked or aximum taxi speed should I pilot eye height at 15 feet i speed displays to help asse ceeded, apply brakes smoot illow the aircraft to accelera und idle thrust. Care must b eel steering is also fly by wi tillers are additive (just like 1
0.1	<ul> <li>Take off</li> <li>Half forward stick is used at the commencement of take off, routine use of into-wind aileron is not record conditions, small amounts of lateral control may be but the pilot should avoid using excessive amount spoiler deployment, which increases the aircraft te stage power application to TOGA or FLEX is made by use of the rudder. At 150 kts the connection berand the rudder pedals is removed (the nose whee The down elevator input may be gently removed the At V<sub>R</sub>, use a constant pitch rate of about 3°/section engine attitude of about 15° (A320).</li> <li>If some lateral control has been applied on the during rotation so that the aircraft gets airborne.</li> <li>After lift off, follow the SRS pitch command bar</li> <li>If one engine has failed, at V<sub>R</sub>, rotate the aircraft pitch rate to an initial pitch attitude of 12.5°.</li> <li>nitial Climb</li> <li>Having confirmed a positive rate of climb, the gear climbs away following the FD commands. Care sh inputs to those necessary to change or correct the controlling. At thrust Reduction Altitude "CLB" will (ATHR) of the PFD. Move the thrust levers to the TOGA or one "click" from FLEX). Do not do this to the ATHR may disconnect. The autothrust is now or ALT*, whichever occurs first, and F speed : sel Approach may be activated at this stage.</li> </ul>	the take-off run. For crossw mmended. In strong crosswi e used to maintain wings lev s. This causes excessive ndency to turn into wind. A t and the aircraft is kept strain tween the nose wheel steer I now centralized). by 100 kts and rotate to a typical all- ground, center the side stice with a zero roll rate deman t smoothly, using a continuc flight path only i.e. avoid of flash on the upper left porti CLB detent (two "clicks" fro to slowly or there is a risk th active. At acceleration altitu

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Air Asia	Operations Manual Part D – Section II Base Training – Aeroplane	Issue Date 01 Aug 1 Issue 03 Rev 1.2E Endorsemer Page
Q. F R. F	<ul> <li>Circuit Handling</li> <li>Remember that in pitch the sidestick is demanding roll rate. All visual circuits MUST be five selected, bank angle should be limited to 30°. It is beginning of the downwind leg. Use of managed s well as use of autothrust. The standard timing of 3 corrected for wind by 1 sec per 1 kt may be used 1 runway prior to turning base leg. Turning base leg down and spoilers armed. The most useful PED diassist in setting the aircraft up on the correct down maintain altitude and to avoid gross errors.</li> <li>Note: With the FDs off the speed target ren final Approach and Landing</li> <li>LS guidance may be used, if available, for the first after this the use of the LS should be restricted. T demonstrate their ability to fly a visual approach with the FDs are not to be used for visual approach path again however, trainees must demonstrate their a both m anual and automatic thrust. The speed trans achieving timely and correct thrust response. Care descent through the correct approach path with idle situation without prompt thrust increase may lead and altitude loss. Endeavour to have the aircraft "s on the correct approach path at VAPP (and corred approach. One dot below the glide at 50° is 14' bel is 28'. When the aircraft's glide slope antenna is a AGL and at threshold; the main gear is at 28'. In a of the approach in the last 100' to give the best ch touchdown at the required position.</li> <li>The pilot's view from the cockpit during approariag soot. The cockpit cut off angle is 20° which give close to the aircraft. Students must make sure the the flare and landing to enhance their ability to jurelative to the ground. At 20' "Retard" will be care appropriate thread and anding to enhance their ability to jurelative to the ground. At 20' "Retard" will be care apromptly to idle. Commence a gentle progressive touch down without a prolonged float may be follow. Cross wind Landings:</li> <li>Either the "forward slip" or the "decrab" technique is the decrab method;</li></ul>	g "g load" and that in roll it is own with FDs off and FPV susual to switch FDs off at the speed is normal procedure as sec per 100 ft above AAL and from abeam the end of the (end of timing), select F2, gear splay is the raw FPV symbol to nwind, approach path, to nains magenta VAPP target. tILS assisted visual approach, trainees are required to <i>v</i> ithout ILS or VASI guidance. . The FPV symbol is the most Autothrust is normally used, bility to fly the approach using d arrow is particularly useful for e should be exercised to avoid e thrust. Late recognition of this to considerable speed decay stabilized" by 500' AGL, that is ct configuration) with the hieved, a go around should be n the later stages of the low the ideal glide path. 2 dots at 50', the main gear is at 32' ny event, avoid destabilization hance of achieving a good ch and landing is particularly es a superb view of the runway hat they look well ahead during udge the position of the aircraft alled. Reduce the thrust levers re flare and allow the aircraft to Do not attempt to "hold the ed by a hard touchdown. Use may be used. The preferred raft to point into wind, pushing are. If the decrab using large or mally and aileron sidestick ck demands roll rate, once the bold offs". Tailstrike will occur if given in SOP Vol. 3 "Normal

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WEATHER	<ul> <li>Dispatch Considerations for Base Training</li> <li>A. Planning Minima</li> <li>1. Weather limitations – Destination and Alternate: 5</li> <li>2. Wind limitations – Destination and Alternate: Maxi</li> <li>3. Day/Night limitations – Dest. and Alt. No night Visu</li> <li>4. Take-off alternate – if required: Not applicable</li> <li>5. Runway condition – Dry</li> <li>6. Runway Length Minimum – 2700 m.</li> <li>7. Braking action – Good</li> <li>8. A320 fuel – 15.0 tons plus positioning fuel, (may b</li> <li>9. Aerodrome ATC facilities – Standard CAT A airpo</li> <li>10. Weight and Balance – As per FOVE</li> <li>B. Dispatch Information <ul> <li>a. Standard AirAsia briefing package – Wx, Notams, b. Minimum Equipment List – As per OMA</li> </ul> </li> <li>C. Crew Qualification <ul> <li>Licenses and Type Ratings – DCAM CPL/ATPL with A32</li> </ul> </li> </ul>	mum x-wind 20 ual Approache e adjusted to s rt. OFP, Base Tr	) knots s allowed suit the detail). aining Form s
Instructor Support	<ul> <li>TOPICS TO BE DISCUSSED: <ol> <li>Seat and pedal adjustment</li> <li>PM: Position of hand during the Approach</li> <li>Visual Targets <ul> <li>Correct height over the App. Lights</li> <li>Touchdown point</li> <li>Visual perception, target point on final</li> <li>Utilization of visual references to assist scan</li> <li>Utilization of PAPI (when to stop)</li> <li>Optical Illusions</li> <li>Marginal Visibility</li> </ul> </li> <li>FMGS calculation of V app and V app target</li> <li>Flare Mode</li> <li>Screen Height (50 feet)</li> <li>Corrections for vertical and lateral offsets</li> <li>PIO (Pilot Induced Oscillation) on final/Instructors resp</li> <li>Landing Configuration Height (latest)</li> <li>Maximum sink rate</li> <li>Conseswind Landings (peculiarities/risks)</li> <li>Contaminated Runways</li> <li>Maximum Pitch and Bank Limits for Touchdown</li> <li>Engines Spool up time</li> <li>Importance of THR LVR IDLE at Touchdown/Spoiler I</li> <li>Configuration 3 Landings</li> <li>Pitch and Power values</li> <li>Bounced Landings: Cause/Recovery</li> <li>ADDITIONAL TOPICS FOR THE INSTRUCTOR : <ul> <li>Take off abort after touch and go</li> <li>Who is doing what</li> <li>Thrust lever take over after touch down</li> <li>Centreline control responsibility</li> <li>Al/C never slows down</li> <li>Always over V<sub>MCA</sub></li> </ul> </li> </ol></li></ul>		

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## **Appendix D: Engineering Initial Assessment Report**

#### 9M-AHM Overshoot Runway Incident Report

Initial damage assessment on aircraft					
Airframe	Fuselage-sign of long cut on LH aft lower belly faring				
	Both LH landing gear mainwheel found deflated				
Engine no 1	Signs of mud and soil ingestion into engine. 2 fan blades				
	found with bent and cut respectively.				
Engine no 2	Signs of mud and soil ingestion into engine				

Seco	Secondary damage caused on ac during ac pull back process						
Airframe	LH nose wheel blown during ac pull back due to hitting steel						
	plates						
Engine no 1	LH lower fan cowl damage due to hitting ground light fixture during ac pull back						

Aircraft was towed by pulling it backwards using two tug masters. A combination of strap and cable were installed on each main gear cylinder. During ac pull back, steel plates were positioned at areas where the soil were extremely soft and muddy in order to assist with aircraft towing.

Tug master (x2); Cable assembly (x2); Straps (x2); Excavator; Tractor; 2" thick steel plates (x6); Generators; Ground Power Unit; Flood lights; Passenger steps

Agencies/Organization/Operator	Services provided
MAB	Airport Manager/Rescue coordinator
DCA Malaysia	Airport status/ATC
Telekom Malaysia	Equipment maintenance for ATC
Police	Provide incident side access control; escort service
Airport Fire & Rescue Services	On standby during ac defueling and ac pull back
Claudera Aviation Services Sdn Bhd	Provides equipment and manpower support
Sapura Aero Sdn Bhd	Provides equipment, manpower and transport support
Asia Aero Technologies Sdn Bhd	Provides manpower and transport support during
	initial stage

	Chronology of events							
Date	Tim	Event						
	e							
30 <sup>th</sup> Nov	0930	AirAsia team arrived at Emergency and Operations Centre meeting room. Various other agencies were already in the meeting room.						
2017	1000	Briefing and coordination meeting with various agencies; chaired by SZB Airport Manager						
	1130	AirAsia team arrived at the scene of the incident. Assessment carried						

		out on aircraft condition and position					
	1230	Aircraft defueling started					
	1330	Parts & equipment arrived from AirAsia store					
	1400	Ground assessment and preparation in progress					
	1600	Still waiting for equipment to arrive					
	1700	Cables and straps for ac towing arrived					
	1900	Tug masters arrived at scene of incident					
	1930	Excavator arrived at scene of incident					
	1945	Cables for towing being laid out form runway pavement to the aircraft					
	2100	Steel plates being put into position					
	2330	Aircraft towing started					
	0010	Aircraft towing in progress and both main wheel on perimeter road					
	0030	LH landing gear main wheel change started					
	0400	Aircraft towing still in progress. Towing hampered by soft soil and ac					
		sliding off during towing process					
	0830	Attended meeting with rescue coordination team					
	0930	Aircraft towing resumed and nose wheel on perimeter road					
1 <sup>st</sup>	1000	JCB tractor arrived due to excavator unserviceable					
	1030	LH nose wheel replacement in progress					
December 2017	1200	Further ground preparation work in progress					
2017	1300	Steel plates being repositioned for ac to continue being towed					
	1500	Aircraft towing from grass area completed and nose wheel on runway					
		pavement					
	1520	Nose wheel replacement in progress					
	1640	Aircraft washing (gears only) by AFRS					
	1720	Aircraft towing and arrived at Sapura Aero hangar					
	1800	CVR & FDR removed					
	1000						

#### **Appendix E: Assessment of Other Damages**

Dear all A post mortem meeting was held just now between all parties concerned wrt the rescue of this plane on.

Meeting was chaired by En Basha (MAB's SZB Airport Manager) and attendees were as follow: 1. Police (Airport) 2. AFRS 3. Telekom Malaysia 4. DCA Malaysia (for ATC) 5. MAB Engineering 6. Claudera Aviation Services Sdn Bhd

A. Reported damages were as follow: 1. Telekom Malaysia: Damaged 'Near Field' antenna and cabling system. (Note-The maintenance of this unit falls under Telekom Malaysia but end user is DCA).

2. MAB Engineering: Damaged cabling system, 1 unit approach light pole and 1 unit concrete light canister.

3. MAB Engineering: Soil and slope contour.

B. Damages claim and other claims: 1. Telekom (DCA) and MAHB shall provide quotation for repair on above damages.

2. AFRS will provide claims for standby near the plane during defuelling process and also for wheels/tyre cleaning after ac have been pulled.

3. As for soil and slope contour repair, Claudera shall wait for further instruction from AAB wether to proceed or AAB wish to engage MAHB or any other party to do the work.

C. Feedback from other parties concerning AAB: 1. MAHB-Ideally there should be another person from AAB stationed at Emergency Operation Centre to assist with feedback and co-ordination work apart from those involved directly in doing rescue work.

2. Police (Airport) request for AAB to provide its own transport within the airport to shuttle its own staff as their transport are rather limited within the airport itself.

(Note-for item C2 above, I have clarified that none of AAB security staff contacted me to request for transport to pick up from Skypark staff entrance point . AAB transport was available through out (that was used by AirAsia Corporate Charter team), plus Sapura Aero also provided transport for us to use. Perhaps in future all important AAB contact point to be notified to all HODs during an incident).

I suggested to the team to have emergency medical team to be on standby at site in case of any mishaps/injury to anyone involved in the rescue work. I noticed there wasn't any medical team on standby.

E. Action item for AAB: To provide focal point of contact for damages claim submission by relevant parties.

Best regards, Kamsul

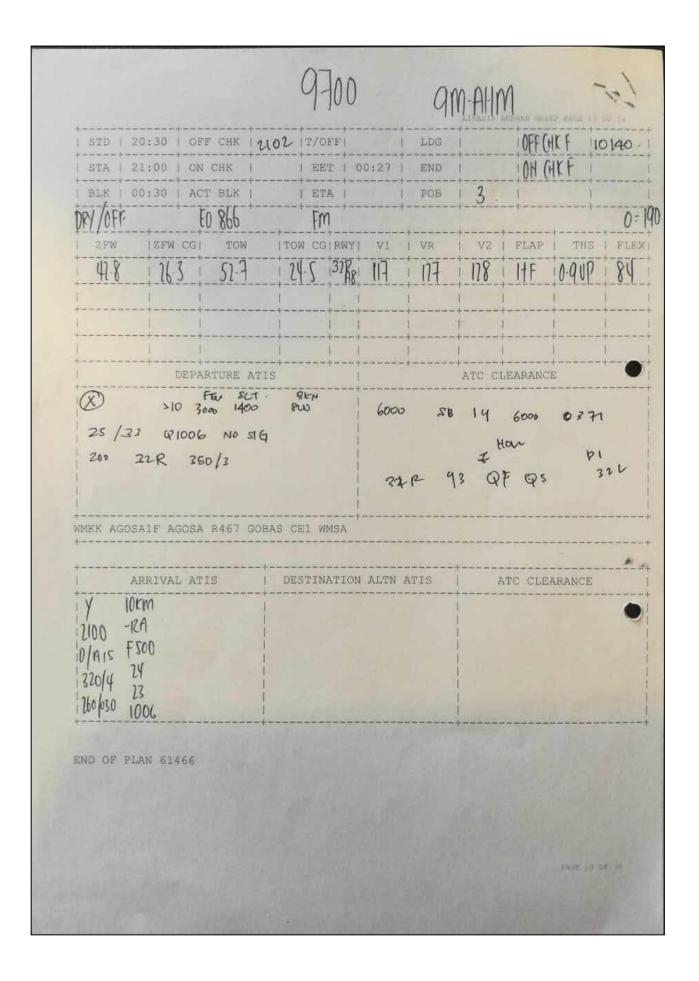
### **Appendix F: Flight Documents**

#### Page: 1 Air LOCAL DATE 30/1 1/17 VOYAGE REPORT ID. INMC USE ONLY Endorsment Ferry Training Test Fit Revenue Charter NAME REPORT AJMS ID POS CP" FO 19:30 TAIB, OMAR BIN 10053 KON, CHEN YI BRIAN 19:30 114168 19:30 FO 15641 YEO, ZONE HEE 4 5 6 7 8 9 10 11 12 13 All Time in UTC BLK OFF CHK T/O LDG ON CHK ACT BLK PF 0:30 21 10 21 20 21 27 21 30 0 20 /53.4/ 0:58 24 :30 21 :33 21 :52 21 :57 0 :25 15.6/u # FLT NO. REG STD FROM STA 9700 9M-AHM 9700A 9M-AHM 20:30 21:01 KUL SZ8 22:00 SZB SZB MHA-MR 23:30 0:29 9701 SZ8 KUL 2 5 6 OFP BLOCK PLAN ACT OFP AB + TAXL UPLIFT (LTR) DEP (FOB) ARR BURN SAVE (-)' EXCEED(+) ¥ Reports Submitted. 8109 10150 7000 MOR INCIDENT REPORT AIR TRAFFIC INCIDENT Departure TIME Arrival **Delay Comments** TIME CODE TIME CODE # ADDITIONAL COMMENTS: 1. ENDORSEMENT TRAINING PURHT 2. \$10 BAINN KOY AS SAPETY MUST FDP/FT Extension / Rest Reduction Staten I certify that the Crew were fit for extension (as SIGNATURE Extn / Rest EDP/ET Hours Alivette required). 30/11/17 Use opposite side for additional commenta-Version 15/01 CAPTAIN'S SIGNATURE AND DATE

APPENDIX F

ALC: NO. 10. 10. 10.	-	Marks of National	and the second			Flight		AK9700 Date 30/Nov/17
epar	cure	LICON KUALA LUMPUR INTL, KLIA	A2(MALAYSIA)	Arr	ival at	SUBA	ING SI	JETAN ABDUL (MALAYSIA)
		(*Airport)* Co		FLIGHT ROUTI		stop and d	estinat	tion)
IR	PS	NAME	GEN DER	PASSPORT	PASSP	BIRTH	NTLY	NO. OF PASSENGERS ON THIS STAGE**
UL ZB	CP FO FO	OMAR BIN TAIB BRIAN KON CHEN YI YEO ZONE HEE	M M	A39971527 K35579431 A31762485	20/07/20	21/06/60 03/03/94 04/03/90	MYS	Departure Place: KUL Embarking: Through on same flight Arrival Place: SZB Disembarking:
							1	Through on same flight
•								
lisease	und i cness e (a )	VTION OP HEALTH east number or function of persons on boa or the effects of accidents, who may fever-temperature 38°C/100°F or greater-as (gas or symptoms, e.g. appearing obvious)	be suffering fr	on a communicabl	e.			FOR OFFICIAL DEE ONLY
ame ( irsic) isense olice npairs a blo ikeli ikeli of ill	and i cness e (a ) ing a ed to red in hood i	seat number or function of persons on bos or the effects of accidents, who may fever temperature 38°C/100°F or greater-as gins or symptoms, e.g. appearing obviously reathing, persistent diarrnea, persistent 1 without previous injury, or confusion that the person is suffaring a communicabl disembarked during a previous stop	be suffering fr asociated with o y unwell; persis Vomating; skin of recent onset le disease) as w	nom a communicabl me or more of th stent coughing; rash; bruising ; increases th will as such case	e e s			
Anne i irsic iiseane olice ngair a hlu ikeli of lli etail he fl of most	and i aness a (a ) ing s: ed to bood in hood in hood in a of i ight.	seat number or function of persons on bos or the effects of accidents , who may fever temperature 38°C/100°F or greater-au- igns or symptoms, e.g. appearing obviously conting, persistent trainness persistent 1 without previous injury, or confision that the person is suffering a communicabl disembacked during a previous stop	be suffering fr msociated with do y unwell: perpis vomating; skin of recent onset is disease) as w place, date, time during the flig	<pre>com a communicabl nue or more of th stent coughing, ramin bruising c, increases th well as such case t, method) during nht, give details</pre>	e e s			
ame ( irsic) isean ollow mpair e hl ikeli f ll erail he fl f mos	and i cness e (a ) ing s ed to bedin hood i ness ight. t reO	<pre>seat number or function of persons on bos or the effects of accidents. who may fever temperature 38°C/100°F or greater-as gins or symptoms, e.g. appearing obviously reathing, persistent diarrnea, persistent j without previous injury; or confusion that the person is suffering a communicabl disembarked during a previous stop each disinsecting or sanitary treatment (p if no disinsecting has been carried out</pre>	be suffering fr asociated with o y unwell, persis vomiting; skin of recent onset in disease) as w place, date, time during the flig	<pre>com a communicabl me or more of th stent coughing, ramh, bruising t, increases th well as such case t, method) during ht, give decails</pre>	e e 8			
ame ( irsic) isean ollow mpairw r hl ikeli f ili etail he fl f mos decl creen	and i chess c (a ) ing a: ed to cedine bood in hood i ight. t reo fight. t reo fight. t reo	seat number or function of persons on bos or the effects of accidents. who may fever-temperature 38*C/100*F or greater-au igns or symptoms, e.g. appearing obviously centing; persistent tiarmea; permistent f without previous injury; or confusion that the person is suffering a communicabl lisembarked during a previous stop each disinsecting or sanitary treatment (p if no disinsecting has been carried out ent disinsecting.	be suffering fr maciated with 0 v unwell: persis vomiting skin of recent onset le diseasel as w place, date,time during the flig Crew Memb and in this Gene	om a communicabl me or more of th thent coughing, rash; bruising , increases th sell as such case s, method) during ht, give details ser concerned rail Declaration	e e and in any :	nupplement: s and that	my for all th	ONLY
ame ( irsic) iseane ollow mpairw r hl ikeli f ili etail he fl f mos  decl xesen	and i chess c (a ) ing a: ed to cedine bood in hood i ight. t reo fight. t reo fight. t reo	seat number or function of persons on bos or the effects of accidents. who may fever-temperature 38*C/100*F or greater-au igns or symptoms, e.g. appearing obviously continue, persistent diarrmear permittent g without previous injury; or confusion that the person is suffering a communicabl lisembarked during a previous stop	be suffering fr asociated with o y unwell, persis vemiting; skin of recent onset in disease) as w place, date, time during the flig Crew Memb ced in this Gene , exact and true	om a commutcabl me or more of th thent coughing, ramh; bruising , increases th sell as such case , method) during int, give details er concerned trail Declaration t to the best of	e e s and in any ; my knowledge	e and that	all th	ONLY

+	L/WMKK - SZB/WMSA/ AI	TN: KUL/WMKK   A320/AHM	- KGS	- PF/ 4.7%
CORTE/ R1   FM	GS RTE/WMKKWMSA01	RZ/CI024 DISPATCH	ER MAA	2886
- PL	MPUTED AT 18.092 FOR M AN VALID UNTIL 30/11/1 OSAYF AGOSK R467 GOBA 1	17 02.30Z		
ESAD : 010	5 W/C : P000	TTL DIST : 0104	EET	: 00:27
	PLAN MAX 0 180	i   AB		1124
CARGO WT	0	CONST RES   HOLD RES		179 1054
IZ F WT	43090 62500	I BC		1434
	12320 55410 73500	ADDITIONAL		
and the second of the second sec	1124	MANDATORY TANKERING	00.00	U
LDG WT	54286 66000 11196	MIN. SECTOR FUEL	01:39	3791
		FUEL PADDING ECONOMIC TANKERING	00:00	0
		ECONOMIC TANKERING	03.04	8529
FUEL PRICE RA	TIO : 0.93	TAXI		180
	: NO	S   BLOCK FUEL	04.42	12500
	KGS BURN MORE 16 KG		04:43	12509
+		+ EXTRA		***
1 FL DIS 12ND 160 010	T W/C TIME FUE 4 P000 00:27 112	L   5   ADJUSTED BLOCK FUEL		
	4 M001 00:27 113	0		
		DIVN		2488
â		DIVN RDG		
TAKEOFF ALTN				
FEA  ETOPS ALTN	: NOT APPLICABLE : NON ETOPS			
ALTN W/C	DIST FL TIME	FUEL MDF		
WMKK M004	0165 F250 00.37	01434 02488 01496 2550 01581 2635.		
WMKP P009	0181 F280 00.39 0200 F290 00.41	01496 2635.		
+				



	FORM NO	DISCREPANCY	DEPARTURE FUEL	DEPARTURE FUEL	REFUELLER	ARRIVAL FUEL	SG (FROM BOWSER)	MA AHM	A/C REGN.	
	FORM NO : AAM1022		GAUGE	(CALC)	DEFUEL	GAUGE	(R)	30 (11)2017	DATE (LOCAL)	A320 T
		DEPAR	5120	ADD A	2109	1750	LH TANK	KUL	STATION	RANSIT
CA		DEPARTURE (CALC) TO DEPARTURE (GAUGE)	ø	ADD ARRIVAL FUEL (G) TO BOWSER UPLIFT	LITRES X	ø	CTR TANK	AR7700	FLIGHT NO.	CHECK &
CAPT. TO ENTER	ISS 01 REV 01	PARTURE (GAUGE)	5030	BOWSER UPLIFT	0.793 SPECIFIC GRAVITY	2010	C RH TANK	AR LOLCS OOL 24	A/C TAKE-OFF WT+	A320 TRANSIT CHECK & FUEL DIL RECORD
	1	OH B	10150	10190	6430	3760	TOTAL	VOLE	MIN. SECTOR FUEL+	CORD
		KGS	KGS	KGS	KGS	KGS		KGS	UEL+	S/NO
	DATE : 01	LICIA.H. NO.	60E, 1.D.	( AAA	ALICIA.H. SIGN	RAJASEELAN	REFUEL & TRANSIT/DEPARTURE CHECK CARRIED OUT BY:	MAINTENAN	OIL UPLIFT TO BE RECORDED IN	S/NO:B 011769
	DATE : 01 AUG 2017	LIC. NO.	( JA2 (68)	>	CAPT. SIGN	LAN	UT BY:	MAINTENANCE REPORT 1	E RECORDED IN	-A

AT	33482210
6	30/11/2017
PETRONAS	
Kuala Lu (COMPANY NO	mpur (KUL) : 88222 - D)
	Y TICKET
ACN No : 80045398	Berhad - MYS Dagangan Berhad
odt	Dagangun Derma
Service : Fuelling Flight Number: AK9700	
Arrive From : KUL	Flight Type : D
Next Dest : SZB	Final Dest : SZB Aircraft Reg: 9MAHM
Aircraft Type: 320	Alfcrait Reg. Grannin
Plant Code : 80	
PI NO : 1013915	
Vehicle : DJ124 Stand : J004	HP No : JHP 38
Product : JETA1	Unit : LT
•	
Times :	
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	4:06 04:21
	000000 HIN
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Tot. before: 51802290 Meter Total: 8109	0
	8109 LT
Quantity	0100 11
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CENTIFIED SEDIMENT AND WATER FREE O	NEDECON CONFORM TO THE RELEVANT
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THE RUSSER AS ADDRESS SUBJECT.	ANTITIES OF PETROLEUM PRODUCT HAVE
AND THAT I AM RESERVINGELE FOR THE L	HAVE VERIFIED AS FAR AS POSSIBLE.
THAT THE GRADE QUALITY AND QUANTI REQUESTED.	TT OF THE FOLL DELIVERED ARE AS
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M.	A
120	
Land Barriel	
CUST	OMER

Flight No	Aircraft A/C Type Tail N A370 Q	Airport Io Departure Arrival	Airfuin	
Axm 9700	H370 9	M-AHM TOL SZB	Less Paper Cockpit -Weight & I	Balance
Configuration	Crew 3 D		DOW: 47800	%cg MAC 76:3
Loading	A C I	Cargo + Baggage (kg) CP1 CP3 CP4 CP5		
	OA OB	OC Total Cargo + Compartment	Payload: + 0 ZFW: 41800	76-3
Fuel	FOB (Take off + taxi) (kg) 10000 Taxi Fuel (kg)		T/O Fuel: + 9800 TOW: 52700	24.5
	180 Trip Fuel (kg) 1124		Trip Fuel: 1100 Landing: 51500	246
0	Last Minute Changes	Weight	THS 24.5	0.90P
Specification	CL +		Prepared by : BRIAN	

HIT () BAY NO JY ETD 7030 B/O 1174 NO. PAX ()	6 1 1 2 4 6 1 1 2 4 6 1 1 2 4 6 1 1 2 4 9 1 2 4 9 1 2 4 9 1 2 4 1 2 4 0 0 0 5 1 3 3 0 0 1 0 0 5 1 2 1 4 0 1 0 0 5 1 2 1 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0	(Z
FUEL CHIT FLIGHT NO AK G700 BAY ACFT REGN 9M AHM ETD SECTOR (1) / 578 B/O DATE )Q / 11 / 17 NO	REGULATED LDG WT         ADD BURN OFF         REGULATED T/OFF WT         REGULATED T/OFF WT         TEMP         RMV         TEMP         RWV         REGULATED T/OFF WT         REGULATED ZFW         MIN SECTOR FUEL         MIN SECTOR FUEL         PLUS TAXI FUEL         PLUS TAXI FUEL         FUEL IN TANKS (KG)	SIGNATURE (CAPTAIN)

# Appendix G – Flight Data Recording

List of parameters FDR – FAP A320AXMF1-2-0

No	Parameter Description	Mnemonic
1	Barometric Altitude	_ALT_BARO
2	Radio Height	_ALT_RADIO
3	Vertical speed	
4	Heading	_HEADING
5	Wind direction	_WINDIR
6	Wind speed	_WIND_SPD
7	Auto Throttle Mode	_ATS_MODE
8	Lateral FMA	_FMA_LAT
9	Longitudinal FMA	_FMA_LONG
	DH_MDAMDH	DH_MDAMDH
11	Auto Pilot status	_AP_STATUS
12	Flight Director status	_FD_STATUS
13	Auto Throttle Status	_ATS_STATUS
14	Landing gear selection	_LDG_SEL
15	Flaps/Slats configuration	_CONF
16	LEVER_POS	LEVER_POS
17	GD_SPOIL_ARM	GD_SPOIL_ARM
18	SPD_BRAKE_LEVER	SPD_BRAKE_LEVER
19	Speed brake	_SPD_BRAKE
20	N1 Eng 1	_N1_1
21	N1 Eng 2	_N1_2
22	PITCH	PITCH
23	ROLL	ROLL
	PITCH_CAPT	PITCH_CAPT
25	PITCH_FO	PITCH_FO
26		ROLL_CAPT
27	ROLL_FO	ROLL_FO
28	LDG_RH	LDG_RH
29	LDG_NOSE	LDG_NOSE
30	LDG_LH	LDG_LH
31	VRTG	VRTG
32	VAPP	_VAPP
33	Calibrated Air Speed	_CAS
34	Ground Speed	_GS
35	Throttle range 1	_ENG_THR_CMD_1
36	Throttle range 2	_ENG_THR_CMD_2
37	THROTT_ANG1	THROTT_ANG1
38	THROTT_ANG2	THROTT_ANG2
39	Master warning ON/OFF	_WARN_MASTER
40	Spoiler 2 left angle	_SPOILER_2_L

41	Spoiler 2 Right angle	_SPOILER_2_R
42	· · ·	SPOILER_3_L
43	Spoiler 3 Right Angle	SPOILER_3_R
44		SPOILER_4_L
45	Spoiler 4 Right angle	SPOILER_4_R
46	Spoiler 5 Left angle	SPOILER_5_L
47	Spoiler 5 Right angle	SPOILER 5 R
48	Left Brakes Angle	BRAKE_PED_LH
49	Right Brakes Angle	BRAKE_PED_RH
50	Brakes Pressure	BRAKE_PRESSURE
51	BRK_PRESS_1	BRK_PRESS_1
52	BRK_PRESS_2	BRK_PRESS_2
53	BRK_PRESS_3	BRK_PRESS_3
54	BRK_PRESS_4	BRK_PRESS_4
55	BRK_PRESS_5	BRK_PRESS_5
56	BRK_PRESS_6	BRK_PRESS_6
57	BRK_PRESS_7	BRK_PRESS_7
58	BRK_PRESS_8	BRK_PRESS_8
59	Latitude	_LATITUDE
60	Longitude	_LONGITUDE
	ENG1 MASTER LEVER	
61	SELECTED OFF	ENG1_MASTER_LEVER
	ENG2 MASTER LEVER	
62	SELECTED ON	ENG2_MASTER_LEVER
63	Gross Weight of aircraft	_GROSS_WEIGHT

No	Barometric Altitude	_ALT_BARO
1	Radio Height	_ALT_RADIO
2	Auto Pilot status	_AP_STATUS
3	Flight Director status	_FD_STATUS
4	Auto Throttle Mode	_ATS_MODE
5	Auto Thrust Status	_ATS_STATUS
6	Lateral FMA	_FMA_LAT
7	Longitudinal FMA	_FMA_LONG
8	1	_GS
9	Calibrated Air Speed	_CAS
10		_VAPP
11	Vertical speed	_IVV
12		_LDG_SEL
13	1	FLAP_LEVER
14	Flaps/Slats configuration	_CONF
	Vertical accel corrected	_VRTG
	SPEED BRAKE COMMAND	SPD_BRK
	LDG LH COMPRESSED HI	LDGLHHI
	LDG NOSE COMPRESSED HI	LDGNOSEHI
19	LDG RH COMPRESSED HI	LDGRHHI
20	0	_ENG_THR_CMD_1
21	Throttle range 2	_ENG_THR_CMD_2
22	Throttle angle 1	_ENG_THR_VAL_1
23	Throttle angle 2	_ENG_THR_VAL_2
24		N1_1
25	N1 ACTUAL (LOW ROTOR	N1_2
26		_PITCH
27	0	_ROLL
28		_PITCH_CAPT_SSTICK
	FO stick pitch order	_PITCH_FO_SSTICK
30		_ROLL_CAPT_SSTICK
31	FO stick roll order	_ROLL_FO_SSTICK
32	Wind Speed corrected	_WIND_SPD
33	Wind direction	_WINDIR
34	Master warning ON/OFF	_WARN_MASTER
35	Spoiler 1 Left Angle	_SPOILER_1_L
36		_SPOILER_1_R
37	Spoiler 2 Left Angle	_SPOILER_2_L
38	Spoiler 2 Right Angle	_SPOILER_2_R
39	1 0	_SPOILER_3_L
40	Spoiler 3 Right Angle	_SPOILER_3_R
41	Spoiler 4 Left Angle	_SPOILER_4_L
42	Spoiler 4 Right Angle	_SPOILER_4_R
43	Spoiler 5 Left Angle	_SPOILER_5_L
44	Spoiler 5 Right Angle	_SPOILER_5_R

# List of parameters FDIMU - FAP A320AXMT2-3-9

45	Left Brakes Angle	_BRAKE_PED_LH
46	0 0	_BRAKE_PED_RH
47	BRAKE PRESS 1 NORM	BRK_PRESS_1
48	BRAKE PRESS 2 NORM	BRK_PRESS_2
49	BRAKE PRESS 3 NORM	BRK_PRESS_3
50	BRAKE PRESS 4 NORM	BRK_PRESS_4
51	BRAKE PRESS 5 NORM	BRK_PRESS_5
52	BRAKE PRESS 6 NORM	BRK_PRESS_6
53	BRAKE PRESS 7 NORM	BRK_PRESS_7
54	BRAKE PRESS 8 NORM	BRK_PRESS_8
55	MASTER LEVER OFF ENGINE 1	SW3B111
56	MASTER LEVER OFF ENGINE 2	SW3B112
57	LATITUDE acquired param	_LATITUDE_ACQ
58	LONGITUDE acquired param	_LONGITUDE_ACQ
59	GROSS WEIGHT (KGS.)	GW

# Flight data recording (FDR)

# a. <u>1000ft AAL to GS Zero (21:54:08 UTC - 21:56:23 UTC)</u>

ingno.	9700-0 KU	JL-SZB T/O Fr	cm: 163799				0) Paramet 1:55:29	ers: 63													
rame-Sf	SfCount	Time St	Barometric Altitude _ALT_BARO _ft	Radio Height _ALT_RADIO feet	Vertical speed _ <sup>IVV</sup>	Heading _HEADING Degree	Wind direction 	Wind speed _WIND_SPD Kts	Auto Throttle Node _ATS_MODE	Lateral FMA _FMA_LAT	Longitudinal FMA _FMA_LONG	DH_MDAMDH DH_MDAMDH FEET	Auto Pilot status _AP_STATUS	Flight Director status _FD_STATUS	Auto Throttle Status _ATS_STATUS		Flaps/Slats configuration _CONF	LEVER_POS LEVER_POS	VAPP _VAPP kts	Calibrated Air Speed _CAS KTS	Speed
		21:54:08 21:54:09	1094 1078	1045 1046	-720 -736	93.9 95.3	322.0 319.9	22.0 22.0	SPEED	OF F OF F	OFF OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	ACTIVE ACTIVE	DOWN DOWN	3	POS_3 POS_3	129.6 129.6	130.8 130.8	151. 151.
3941-3 3941-4	655767	21:54:10 21:54:11	1066 1050	1053 1047	-752 -752	96.7 98.4	322.0 320.6	21.0 21.0	SPEED	OFF	OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	ACTIVE ACTIVE	DOWN DOWN	3	POS_3 POS_3	129.6 129.6	131.4 130.6	151.
3942-2	655769	21:54:12 21:54:13	1042 1026	1039 1036	-720	100.2	319.2 322.0	21.0	SPEED	OFF	OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	ACTIVE	DOWN	3	POS_3 POS_3	129.6 129.6	131.0 130.5	152.
3942-4		21:54:14 21:54:15 21:54:16	1018 1006 998	1011 992 962	-688	105.1	319.9 317.1	21.0	SPEED	OFF	OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	ACTIVE ACTIVE ACTIVE	DOWN	3	POS_3 POS_3	129.6 129.6	131.1 129.8	152.
	655773		998 986 978	951 924	-672 -624 -560	111.1 113.6 115.0	315.0 315.0 317.8	20.0 21.0 21.0	SPEED SPEED SPEED	OFF OFF OFF	OFF OFF OFF		NO AP ON NO AP ON NO AP ON	NO FD ON NO FD ON NO FD ON	ACTIVE	DOWN DOWN DOWN	3	POS_3 POS_3 POS_3	129.6 129.6 129.6	129.9 129.9 129.3	153. 153. 153.
3943-4 3943-4	655775	21:54:19 21:54:20	970	918 901	-544	116.7 118.1	320.6	22.0	SPEED SPEED	OFF	OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	ACTIVE	DOWN	3	POS_3 POS_3 POS_3	129.6	129.1	153.
3944-2 3944-3	655777	21:54:21 21:54:22	950	896	-640	119.5	324.8	22.0	SPEED	OFF	OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	ACTIVE	DOWN	3	POS_3 POS_3	129.6	130.9	154.
3944-4 3945-1	655779	21:54:23	926	867	-912	122.0	326.3	21.0	SPEED	OFF	OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	ACTIVE	DOWN	3	POS_3 POS_3	129.6	131.4	155.
3945-2 3945-3	655781	21:54:25 21:54:26	886	814	-1104	122.7	328.4	22.0	SPEED	OFF	OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	ACTIVE	DOWN	3	POS_3 POS_3	129.6 129.6	132.3	156.
3945-4	655783	21:54:27 21:54:28	850	799	-1168	121.6	333.3 332.6	21.0	SPEED	OFF	OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	ACTIVE	DOWN	3	POS_3 POS_3	129.6	133.1 133.4	156.
3946-2 3946-3	655785	21:54:29 21:54:30 <b>&gt;</b>	810 794	730 702	-1216	120.9 120.9	332.6 331.9	21.0 20.0	SPEED	OFF	OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	ACTIVE ACTIVE	DOWN DOWN	3	POS_3 POS_3	129.6 129.6	134.0 133.8	156.
3946-4 3947-1	655787	21:54:31 21:54:32	770	702	-1232	120.6 120.6	332.6 333.3	21.0	SPEED	OFF	OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	ACTIVE	DOWN	3	POS_3 POS_3	129.6 129.6	134.5 134.3	155.
3947-2 3947-3	655789	21:54:33 21:54:34	730	669 667	-1184	120.6 120.9	333.3 331.9	20.0	SPEED	OFF	OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	ACTIVE ACTIVE	DOWN	3	POS_3 POS_3	129.6 129.6	133.6 133.9	155.
3947-4 3948-1	655791	21:54:35 21:54:36	694 682	649 627	-1088	121.3 121.3	331.2 331.9	20.0 19.0	SPEED	OFF	OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	ACTIVE ACTIVE	DOWN DOWN	3	POS_3 POS_3	129.6 129.6	134.0 134.3	155.
3948-2 3948-3		21:54:37 21:54:38	662 650	620 598	-960 -928	121.3 121.6	332.6 331.9	19.0 19.0	SPEED	OFF	OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	ACTIVE ACTIVE	DOWN DOWN	3 3	POS_3 POS_3	129.6 129.6	133.6 132.5	155. 154.
3948-4 3949-1		21:54:39 21:54:40	630 622	589 562	-896 -848	122.0 122.7	331.2 331.9	20.0 20.0	SPEED	OFF	OFF	284.0	NO AP ON NO AP ON	NO FD ON NO FD ON	ACTIVE ACTIVE	DOWN DOWN	3 3	POS_3 POS_3	129.6 129.6	132.9 131.4	154. 153.
3949-2 3949-3	655797 655798	21:54:41 21:54:42	606 594	554 525	-816 -720	123.4 124.5	331.9 331.9	20.0 19.0	SPEED SPEED	OF F OF F	OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	ACTIVE ACTIVE	DOWN DOWN	3	POS_3 POS_3	129.6 129.6	132.4 132.0	153. 153.
3949-4 3950-1		21:54:43 21:54:44	582 574	518 528	-672 -624	125.5 126.2	331.9 331.2	18.0 19.0	SPEED SPEED	OFF	OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	ACTIVE ACTIVE	DOWN DOWN	3	POS_3 POS_3	129.6 129.6	132.4 131.3	152. 152.
3950-2 3950-3	655802	21:54:45 21:54:46	562 554	517 506	-608 -592	127.6 128.7	332.6 333.3	18.0 18.0	SPEED SPEED	OF F OF F	OFF OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	ACTIVE ACTIVE	DOWN DOWN	3	POS_3 POS_3	129.6 129.6	131.6 130.4	152. 151.
3950-4 3951-1	655804	21:54:47 21:54:48	542 534	499 491	-608 -608	130.1 131.5	331.9 335.4	19.0 16.0	SPEED SPEED	OF F OF F	OFF OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	ACTIVE ACTIVE	DOWN DOWN	3 3	POS_3 POS_3	129.6 129.6	132.4 130.4	151. 151.
3951-2 3951-3	655806	21:54:49 21:54:50	522 510	486 484	-624 -672	133.2 135.0	333.3 334.7	18.0 17.0	SPEED SPEED	OF F OF F	OFF OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	ACTIVE ACTIVE	DOWN DOWN	3 3	POS_3 POS_3	129.6 129.6	129.8 131.3	151. 151.
3951-4 3952-1	655808	21:54:51 21:54:52	498 490	499 462	-672 -688	137.5 139.6	334.0 331.9	16.0 17.0	SPEED SPEED	OFF	OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	ACTIVE ACTIVE	DOUN DOUN	3	POS_3 POS_3	129.6 129.6	132.3 130.6	151 151
952-2 952-3	655810	21:54:53 21:54:54	478 466	461 459	-720 -752	142.0 143.8	329.1 329.1	18.0 18.0	SPEED SPEED	OFF OFF	OFF OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	ACTIVE ACTIVE	DOWN DOWN	3	POS_3 POS_3	129.6 129.6	129.9 132.3	151 151
952-4 953-1	655812	21:54:55 21:54:56	450 442	410 422	-720 -736	145.2 146.2	332.6 336.8	15.0 13.0	SPEED SPEED	OFF OFF	OFF OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	ACTIVE ACTIVE	DOWN DOWN	3 3	POS_3 POS_3	129.6 129.6	132.9 133.0	151 151
953-2 953-3		21:54:57 21:54:58	426 414	414 396	-832 -1008	147.7 149.1	338.2 335.4	15.0 16.0	SPEED SPEED	OFF OFF	OFF OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	ACTIVE ACTIVE	DOWN DOWN	3 3	POS_3 POS_3	129.6 129.6	131.1 132.1	150 150
953-4 954-1	655816	21:54:59 <b>&gt;</b> 21:55:00	394 378	386 360	-1040 -1040	149.4 149.4	336.1 338.9	15.0 16.0	SPEED SPEED	OFF	OFF OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	ACTIVE ACTIVE	DOWN DOWN	3 3	POS_3 POS_3	129.6 129.6	132.8 134.5	150 150
1954-2 1954-3		21:55:01 21:55:02	358 342	347 342	-1024 -1024	148.7 148.4	345.2 345.9	14.0 15.0	SPEED SPEED	OFF OFF	OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	ACTIVE ACTIVE	DOWN DOWN	3	POS_3 POS_3	129.6 129.6	133.5 134.0	150 150
954-4 955-1	655820	21:55:03 21:55:04	322 310	314 289	-992 -912	148.7 149.1	345.9 344.5	14.0 13.0	SPEED SPEED	OFF OFF	OFF OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	ACTIVE ACTIVE	DOWN DOWN	3	POS_3 POS_3	129.6 129.6	133.6 132.8	150 150
955-3	655822	21:55:05 21:55:06	294 282	277 261	-864 -768	148.4 147.0	339.6 343.8	14.0 13.0	SPEED SPEED	OFF	OFF OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	ACTIVE ACTIVE	DOWN DOWN	3	POS_3 POS_3	129.6 129.6	132.4 131.5	149 149
955-4 956-1	655824	21:55:07 21:55:08	270 258	256 238	-784 -800	145.5 145.2	346.6 346.6	15.0 15.0	SPEED	OFF	OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	ACTIVE ACTIVE	DOWN DOWN	3	POS_3 POS_3	129.6 129.6	130.1 129.4	148 147
956-2 956-3	655826	21:55:09 21:55:10	242 234	226 216	-800 -752	144.8 145.5	345.2 342.4	15.0 14.0	SPEED SPEED	OFF	OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	ACTIVE ACTIVE	DOWN DOWN	3	POS_3 POS_3	129.6 129.6	130.8 130.4	147 147
956-4 957-1	655828	21:55:11 21:55:12	218 210	207 190	-720 -704	145.5 145.2	342.4 342.4	13.0 13.0	SPEED SPEED	OFF OFF	OFF OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	ACTIVE ACTIVE	DOWN DOWN	3	POS_3 POS_3	129.6 129.6	129.5 128.9	146
3957-2 3957-3	655830	21:55:13 21:55:14	194 186	178 162	-720 -736	145.9 147.3	341.0 338.2	14.0 15.0	SPEED SPEED	OFF OFF	OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	ACTIVE ACTIVE	DOWN DOWN	3	POS_3 POS_3	129.6 129.6	128.4 128.8	146 146
957-4 958-1	655832	21:55:15 21:55:16	170 162	151 132	-720 -672	148.0 148.7	338.9 337.5	12.0 12.0	SPEED SPEED	OFF	OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	ACTIVE ACTIVE	DOWN DOWN	3	POS_3 POS_3	129.6 129.6	131.9 129.8	145 145
3958-2 3958-3	655834	21:55:17 21:55:18	146 138	126 97	-672 -640	149.8 149.8	335.4 335.4	12.0 12.0	SPEED	OFF	OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	ACTIVE ACTIVE	DOWN DOWN	3	POS_3 POS_3	129.6 129.6	130.0 129.0	145 145
3958-4 3959-1	655836	21:55:19 21:55:20	122 114	93 73	-672 -672	149.8 150.1	340.3 342.4	14.0 11.0	SPEED SPEED	OFF	OFF OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	ACTIVE ACTIVE	DOWN DOWN	3	POS_3 POS_3	129.6 129.6	130.5 131.8	145 144
959-2 959-3	655838	21:55:21 > 21:55:22	102 90	67 51	-656 -656	150.5 149.8	342.4 341.7	10.0 11.0	SPEED	OFF OFF	OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	ACTIVE ACTIVE	DOWN DOWN	3	POS_3 POS_3	129.6 129.6	130.4 130.0	144 144
959-4 960-1	655840	21:55:23 <b>&gt;</b> 21:55:24	74 62	45 28	-672 -656	149.1 148.7	341.0 341.7	12.0 12.0	SPEED SPEED	OFF OFF	OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	ACTIVE ACTIVE	DOWN DOWN	3	POS_3 POS_3	129.6 129.6	129.3 129.4	144 144
3960-2 3960-3	655842	21:55:25 21:55:26	34	22 6	-560 -288	148.4 147.7	338.9 338.2	12.0 13.0	SPEED SPEED	OFF	OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	ACTIVE ACTIVE	DOWN DOWN	3	POS_3 POS_3	129.6 129.6	128.9 126.8	144 144
3960-4 3961-1	655844	21:55:27 > 21:55:28	22	4	-176 -160	147.3 147.0	337.5 336.8	13.0 13.0	SPEED OFF	OFF	OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	ACTIVE OFF	DOWN DOWN	3	POS_3 POS_3	129.6 129.6	127.6 126.4	143 142
961-2 961-3	655846	21:55:29 > 21:55:30 >	18	1	-208	146.6 147.0	336.8 335.4	14.0 13.0	OFF	OFF	OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	OFF	DOWN	3	POS_3 POS_3	129.6 129.6	124.0 125.8	142 141
961-4 962-1	655848	21:55:31 21:55:32	42	0	-48	148.0 148.7	327.0 317.1	9.0	OFF	OFF	OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	OFF	DOWN	3	POS_3 POS_3	129.6 129.6	125.4	138
962-2 962-3 962-4	655850	21:55:33 21:55:34 21:55:35	46 46 46	0	-48 -32	149.1 149.8 150.8	319.9 320.6 315.0	10.0 11.0 10.0	OFF OFF OFF	OFF OFF OFF	OFF OFF OFF		NO AP ON NO AP ON NO AP ON	NO FD ON NO FD ON NO FD ON	OFF OFF OFF	DOWN DOWN DOWN	3 3 3	POS_3 POS_3 POS_3	129.6 129.6 129.6	119.9 118.1 116.5	135 133 130
962-4 963-1 963-2	655852	21:55:35 21:55:36 21:55:37	46 54 54	0	0	150.8 151.2 150.8	315.0 317.1 323.4	10.0 11.0 11.0	OFF	OFF OFF OFF	OFF OFF OFF		NO AP ON NO AP ON NO AP ON	NO FD ON NO FD ON NO FD ON	OFF OFF OFF	DOWN DOWN DOWN	3	POS_3 POS_2 POS_2	129.6 129.6 129.6	116.5 115.1 113.4	130 129 128
963-2 963-3 963-4	655854	21:55:37 21:55:38 21:55:39	54	0	-16	150.8 150.8 151.2	323.4 328.4 325.5	11.0	OFF	OFF	OFF		NO AP ON NO AP ON NO AP ON	NO FD ON NO FD ON NO FD ON	OFF	DOWN	2 2 2	POS_2 POS_2 POS_2	129.6 129.6 129.6	113.4 114.1 115.5	128 128 128
963-4 964-1 964-2	655856	21:55:39 21:55:40 > 21:55:41	50	0	16	151.2 150.8 150.5	325.5 326.3 331.9	10.0	OFF	OFF	OFF OFF OFF		NO AP ON NO AP ON	NO FD ON NO FD ON	OFF	DOWN DOWN DOWN	2 2 2	POS_2 POS_2 POS_2	129.6 129.6 129.6	115.5	128 129 129
964-2 964-3 964-4	655858	21:55:41 21:55:42 21:55:43	50	0	48	150.5 149.4 149.1	331.9 336.1 337.5	10.0 11.0 10.0	OFF OFF OFF	OFF OFF OFF	OFF OFF OFF	284.0	NO AP ON NO AP ON NO AP ON	NO FD ON NO FD ON NO FD ON	OFF OFF OFF	DOWN DOWN DOWN	2 2 2 2	POS_2 POS_2 POS_2	129.6 129.6 129.6	117.4 116.6 121.4	129 130 132
964-4 965-1 965-2	655860	21:55:43 21:55:44 21:55:45	66	0	32 80 64	149.1 149.1 148.7	337.5 334.7 336.8	9.0	MAN TOGA MAN TOGA	OFF	SRS	201.0	NO AP ON	BOTH FD ON BOTH FD ON	ARMED	DOWN	2	POS_2 POS_2 POS_2	129.6	121.4 125.8 129.3	132 134 138
965-2 965-3 965-4	655862	21:55:45 21:55:46 21:55:47	66	0	96	148.4	334.7 334.0	11.0	MAN TOGA MAN TOGA	OFF	SRS		NO AP ON	BOTH FD ON BOTH FD ON BOTH FD ON	ARMED	DOWN	2	POS_2 POS_2 POS_2	129.6	135.8	130
966-1 966-2	655864	21:55:48 21:55:49	66	0	96	148.0	334.0 334.0	11.0	MAN TOGA MAN TOGA	OFF	SRS		NO AP ON	BOTH FD ON BOTH FD ON BOTH FD ON	ARMED	DOWN	2	POS_2 POS_2 POS_2	129.6	144.0	150
966-2 966-3 966-4	655866	21:55:50 21:55:51	66	0	112 144	148.7	329.8 317.1	10.0	MAN TOGA MAN TOGA	OFF	SRS		NO AP ON	BOTH FD ON BOTH FD ON BOTH FD ON	ARMED	DOWN	2	POS_2 POS_2 POS_2	129.6	149.4	161
967-1 967-2	655868	21:55:52 21:55:53	66	0	144 160 144	149.4 149.1 149.8	322.7	11.0	MAN TOGA MAN TOGA	OFF	SRS		NO AP ON	BOTH FD ON BOTH FD ON BOTH FD ON	ARMED	DOWN	2	POS_2 POS_2 POS_2	129.6	162.9	172
967-2 967-3 967-4	655870	21:55:54	78	0	96	149.8	318.5	10.0	MAN TOGA MAN TOGA	OFF	SRS		NO AP ON	BOTH FD ON BOTH FD ON BOTH FD ON	ARMED	DOWN	2	POS_2 POS_2 POS_2	129.6	171.8	179
968-1 968-2	655872	21:55:56	54	0	48	149.8	329.1 324.8	9.0	OFF OFF	OFF	SRS		NO AP ON	BOTH FD ON BOTH FD ON	OFF	DOWN	2	POS_2 POS_2 POS_2	129.6	170.4	187
968-3 968-4	655874	21:55:58	-34	0	48	149.8	329.1 329.1	16.0	OFF	OFF	SRS		NO AP ON	BOTH FD ON BOTH FD ON	OFF	DOWN	2	POS_2 POS_2 POS_2	129.6	150.8	180
968-4 969-1 969-2	655876	21:55:59 21:56:00 21:56:01	-38	0	-32	151.5	329.1	19.0	OFF	OFF	SRS		NO AP ON	BOTH FD ON BOTH FD ON BOTH FD ON	OFF	DOWN	2	POS_2 POS_2 POS_2	129.6	139.9	164
969-2 969-3 969-4	655878	21:56:01 21:56:02 21:56:03	-22	0	-48 -32 -144	151.5	322.0 324.1 329.1	15.0 15.0 15.0	OFF	OFF	SRS		NO AP ON	BOTH FD ON BOTH FD ON BOTH FD ON	OFF	DOWN	2	POS_2 POS_2 POS_2	129.6	133.0 122.9 113.9	159
970-1	655880	21:56:03 21:56:04 21:56:05	18 42	0	-144 -80 -128	151.9 150.8 149.4	329.1 329.8 329.8	14.0 14.0	OFF	OFF	SRS		NO AP ON	BOTH FD ON BOTH FD ON BOTH FD ON	OFF	DOWN	2 2 2	POS_2 POS_2 POS_2	129.6	113.9	137 129 121
970-2 970-3 970-4	655882	21:56:06	50	0	-64	149.4	329.8	14.0	OFF	OFF	SRS		NO AP ON	BOTH FD ON	OFF	DOWN	2	POS_2	129.6	87.8	114
970-4	655884	21:56:07 21:56:08	58	0	-96	149.1 147.7	329.8	14.0	OFF	OFF	SRS		NO AP ON	BOTH FD ON BOTH FD ON	OFF	DOWN DOWN	2	POS_2 POS_2	129.6	82.8	100
971-2 971-3	655886	21:56:09 21:56:10	70	0	-80	147.7 148.7	329.8 329.8	14.0	OFF	OFF	SRS SRS		NO AP ON	BOTH FD ON BOTH FD ON	OFF	DOWN DOWN	2	POS_2 POS_2	129.6 129.6	65.3 53.9	87
	655888		74 70	0	-64 -32	149.4 150.1	329.8 329.8	14.0 14.0	OFF	OFF	SRS SRS		NO AP ON	BOTH FD ON BOTH FD ON	OFF OFF	DOWN DOWN	2	POS_2 POS_2	129.6 129.6	46.5 39.8	68. 63.
972-3	655890	21:56:13 21:56:14	66 74	0	-80 16	151.2 151.9	329.8 329.8	14.0 14.0	OFF	OFF	SRS SRS		NO AP ON	BOTH FD ON BOTH FD ON	OFF	DOWN DOWN	2	POS_2 POS_2	129.6 129.6	0.0	59. 55.
		21:56:15 21:56:16	78 78	0	-256 -256		329.8 329.8	14.0 14.0	OFF	OFF	SRS SRS			BOTH FD ON BOTH FD ON	OFF	DOWN DOWN	2	POS_2 POS_2	129.6 129.6	0.0	43.

163973-3 163973-4 163974-2 163974-2 163974-3 163975-1 163975-2 163975-3 163975-4 163976-1 163976-2 163976-2 163976-3	655893         21           655894         21           655895         21           655896         21           655896         21           655897         21           655898         21           655899         21           655890         21           655901         21           655902         21           655903         21           655904         21           655905         21           655904         21           655905         21           655905         21           655905         21           655905         21           655905         21           655905         21           655905         21           655906         21           655906         21           655906         21	:56:18 :56:19 :56:20 :56:22 :56:23 :56:24 :56:25 :56:26 :56:27 :56:28 :56:29 :56:29 :56:30		58 74 74 70 70 66 66 62 62 62 62 62 62 62 62 62 62 54			-384 -112 -256 -288 -16 -48 -32 -16 -32 -16 -16 -16 -16 -16	152.6 153.0 154.3 154.3 154.3 152.6 152.9 152.9 152.9 152.9 152.9 152.9 152.9	5     3       3     3       7     3       3     3       6     3       9     3       9     3       9     3       9     3       9     3       9     3       9     3       9     3       9     3       9     3       9     3       9     3       9     3       9     3	29.8 29.8 29.8 29.8 29.8 29.8 29.8 29.8	14 14 14 14 14 14 14 14 14 14 14 14 14	.0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0			OFF OFF OFF OFF OFF OFF OFF OFF OFF OFF	10 10 10 10 10 10 10 10 10	FF	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	RS RS RS RS RS RS RS RS RS RS RS RS RS		NO NO NO NO NO NO NO NO NO NO NO NO	AP ON AP ON	BOTH I BOTH I	NO         1           NO         1		DFF DFF DFF DFF DFF DFF DFF DFF DFF DFF	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	DOWN DOWN DOWN DOWN DOWN DOWN DOWN DOWN	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		Pos 2 Pos 2	129.6 129.6 129.6 129.6 129.6 129.6 129.6 129.6 129.6 129.6 129.6 129.6
163977-1 163977-2 AHM 11/29,	655907 21 655908 21 655909 21 2017 Para 200-0 KUL-	:56:32 :56:33 meter Map							9 3 9 3 1.00) P		14 14 14 ers: 6	.0 .0			OFF OFF OFF	OF OF OF	FF	S	RS RS RS		NO	AP ON AP ON AP ON	BOTH I	DON	c	OFF OFF OFF	I	DOWN DOWN DOWN	2 2 2		POS_2 POS_2 POS_2	129.6
Frame-Sf		Time St	N1 Eng 1 _N1_1 *	N1 Eng 2 _N1_2 \$		DI PI			ROI ROI de	LL		PITCH PITCH DI	CAPT			PITC PITC DE	h_fo			ROLL ROLL DI	CAPT			ROLL ROLL DEC	FO				VI	RTG RTG G		
163941-1 163941-2 163941-3 163941-4	655764 21 655765 21 655766 21 655767 21	.:54:08 .:54:09 .:54:10 .:54:11	46.1 44.7 43.4 42.8	42.8	3.5 3.5	3.5	3.5	3.5	9.9 10.6	9.2 10.2 10.9 11.6	0.0	0.0		0.0	0.0 0.0 0.0	0.0	0.0 0.0 0.0 -1.1	0.0 0.0 0.0 -1.2	-0.7 -0.0 0.0 -0.0	-0.3 0.0 -0.5 -0.0	0.0	0.0	-0.8 -1.3	-1.1 -1.3	-1.3	-1.7 -0.4	0.96 0 0.96 0	).96 O. ).98 O.	96 0.96 98 0.98	0.96	0.96 0.3 0.96 0.3 0.98 0.3	96 0.96 98 0.98
163942-2 163942-3 163942-4 163943-1 163943-2 163943-3	655768 21 655769 21 655770 21 655771 21 655772 21 655773 21 655774 21	:54:13 :54:14 :54:15 :54:16 :54:17 :54:18	41.9 41.1 41.0 41.7 42.2 43.0 44.2	41.2 41.4 41.9 42.3 44.2 44.8	3.9 4.2 4.2 4.6 4.9 4.9	4.9 4.9	3.9 4.2 4.2 4.2 4.6 4.9 4.9	4.2 4.2 4.6 4.9 4.9 4.9		16.5 19.0 19.7 18.7 15.8 14.4	0.0 0.0 -1.2 -0.9 0.0 0.0	0.0 0.0 -1.2 -0.1 0.0 0.0	0.0 -1.1 -1.2 -0.0 0.0 0.0	0.0 -1.6 -1.1 -0.0 0.0 0.0	-1.1 -1.0 0.0 0.0 0.0 0.0	-0.7 0.0 0.0 0.0 0.0 0.0	-0.0 0.0 0.0 0.0 0.0 0.0	-1.1 0.0 0.0 0.0 0.0 0.0 0.0	0.0 -7.3 -0.7 -0.2 0.5 0.0 0.0	-5.5 -4.7 -1.2 0.0 0.5 0.0 0.0	-5.1 -2.8 0.9 0.0 0.0 0.0	-3.1 -2.5 1.2 0.0 0.0 0.0	-0.8 2.5 1.1 4.6 2.1 -0.4	-0.6 1.1 1.7 4.8 0.7 -0.1	-0.1 0.6 2.3 5.0 -0.0 -0.1	-0.1 1.0 3.3 3.8 -1.4 -0.0	1.02 1 1.00 1 1.02 1 1.02 1 1.04 1	L.02 1. L.00 1. L.02 1. L.04 1. L.05 1. L.02 1.	02 1.02 00 1.02 02 1.04 04 1.04 06 1.05 02 1.02	1.02 1.02 1.04 1.05 1.04 1.04	1.00 1.0 1.00 1.0 1.02 1.0 1.02 1.0 1.05 1.0 1.05 1.0 1.00 1.0	<ol> <li>1.00</li> <li>1.02</li> <li>1.04</li> <li>1.04</li> <li>1.04</li> <li>1.04</li> <li>1.04</li> <li>1.04</li> <li>1.04</li> </ol>
163944-1 163944-2 163944-3 163944-4 163945-1 163945-2	655775 21 655776 21 655777 21 655778 21 655778 21 655779 21 655780 21 655780 21 655781 21 655782 21	:54:20 :54:21 :54:22 :54:23 :54:24 :54:25	45.0 46.4 47.4 48.2 47.0 44.7 42.4 39.8	46.6 48.4 48.0 46.6 44.2 39.4	4.6 3.9 2.8 2.1 1.8 1.8	3.5 2.5 2.1 1.4	4.9 4.2 3.2 2.5 1.8 1.4 1.8 1.4	4.2 2.8 2.1 1.8 1.4 1.8		13.4 11.6 9.2 7.7 4.9 -0.4	0.0 2.9 -0.0 0.0 0.0 -0.8 -0.8	0.0 0.4 0.0 -1.0 -0.1 0.0	1.2 -0.0 0.0 -0.3 -0.0	3.6 -0.0 0.0 -0.8 -0.0	0.7 2.5 2.5 1.8 0.6 0.7 1.6	2.9 2.5 3.2 2.1 0.5 0.4	2.1 2.8 2.5 2.4 1.4 0.7 2.1 0.0	2.4 2.6 1.8 1.0 0.8 1.8 0.0	0.0 0.0 0.0 0.0 0.0 0.0 5.8 0.0	0.0 0.0 0.0 -1.8 6.9 3.6 0.0	12.1 1.9	0.0 0.0 -1.3 9.8 0.0	2.8 2.4 2.6 2.0 4.0 3.4	0.0 2.9 2.5 2.6 3.2 3.9 0.8 -3.0		2.5 2.9 1.5 3.5 4.0 -0.1	1.00 0 0.96 0 0.91 0 0.90 0 0.90 0	0.98 0. 0.96 0. 0.91 0. 0.91 0. 0.91 0. 0.91 0.	98 0.98 93 0.93 90 0.91 90 0.90 92 0.90 96 0.96	0.98 0.93 0.90 0.90 0.90 0.90	1.00 1.1 0.98 0.3 0.91 0.3 0.90 0.3 0.90 0.3 0.89 0.3 0.96 0.3	08 0.96 01 0.91 01 0.91 00 0.90 09 0.90 06 0.96
163946-1 163946-2 163946-3 163946-4 163947-1 163947-2	655783 21 655784 21 655785 21 655786 21 655787 21 655788 21 655788 21 655789 21	:54:28 :54:29 :54:30 :54:31 :54:32 :54:33	33.1 30.6 29.0 27.8 26.9 26.9 27.0 27.1	30.6 28.0 27.4 27.3 27.4 27.6	1.1 1.1 1.1 1.1 1.1 1.1		1.1	1.1 1.1 1.1 1.4 1.4	-2.5 -2.8 -2.1 -1.8 -1.4 -0.7 0.4 0.7	-2.5 -2.1 -1.8	0.0 0.0 1.0 0.0 0.0 0.0 0.0 0.0	0.0 0.8 0.1 0.0 0.0 0.0 0.0	0.0	0.0 -0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 -1.8 -1.2 -1.0	0.0 0.0 0.0 0.0 -1.9	-1.5		3.4 -0.0 0.0 0.0 0.0 0.0 0.0 0.0	4.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0	5.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0	-1.8 -0.4 -1.1 -2.5 -1.1 -1.0	-1.8 -0.2 -1.2 -2.6 -1.1 -0.9	-1.7 -0.5 -1.2 -2.4 -1.1 -0.8	-0.9 -0.9 -2.5 -1.8 -1.0 -0.6	0.95 0 0.96 0 0.96 0 0.96 0 0.95 0	0.95 0. 0.96 0. 0.96 0. 0.96 0. 0.96 0. 0.96 0.	96 0.96 96 0.96 96 0.98 96 0.98 96 0.98 98 0.98	0.96 0.96 0.98 0.98 0.98 0.98	0.94 0.9 0.96 0.9 0.96 0.9 0.96 0.9 0.98 0.9 0.98 0.9 1.00 1.9	96 0.96 96 0.96 96 0.98 98 0.98 98 0.98 98 0.98
163947-4 163948-1 163948-2 163948-3 163948-4 163949-1 163949-2	655791 21 655792 21 655793 21 655794 21 655795 21 655796 21 655797 21	:54:35 :54:36 :54:37 :54:38 :54:39 :54:40 :54:41	27.3 27.3 27.3 27.3 27.3 27.3 27.5 28.8	27.6 27.6 27.7 27.7 27.7 27.9 30.5	1.8 2.1 2.5 2.5 2.5 2.8 3.2	1.8 2.1 2.5 2.5 2.8 2.8 3.2	1.8 2.1 2.5 2.5 2.8 3.2 3.2	2.1 2.5 2.5 2.8 3.2 3.5	1.1 1.1 1.4 3.2 4.9 5.3	1.4 1.1 2.1 4.2 5.3 5.6	0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0	-1.4 -1.5 -0.6 -1.0 -1.5 -1.3 -1.4	-1.9 -1.4 -0.4 -1.3 -1.4 -1.3 -1.3	-1.8 -0.7 -0.5 -1.5 -1.2 -1.3 -0.7	-1.6 -0.7 -0.8 -1.5 -1.3 -1.4 -1.0	0.0 -1.0 -0.0 -0.0 0.0 0.0 -0.0	0.0 -0.0 -0.0 -0.0 0.0 0.0	0.0 -0.0 -1.6 -0.0 0.0 1.6 0.0	0.0 -0.0 -2.2 -0.1 0.0 1.0 0.0	-0.5 -0.6 0.5 -3.3 -2.4 -1.5 -1.5	-0.3 0.0 -0.1 -3.3 -2.2 -1.5 -1.5	-0.3 1.9 -2.3 -2.7 -1.6 -1.5 -1.5	-0.7 1.4 -3.1 -2.6 -1.5 -1.5 -1.5	0.98 0 1.02 1 1.00 1 0.98 0 0.98 0 1.00 0 1.00 1	0.98 0. 1.00 1. 1.00 1. 0.98 0. 0.98 0. 0.98 1. 1.00 1.	98 0.98 00 1.00 98 0.98 98 0.98 00 1.00 00 1.00	1.00 1.00 0.98 0.98 0.98	1.00 1.0 1.00 1.0 1.00 0.3 0.98 0.3 0.98 0.3 0.98 0.3 1.00 1.0	00       1.02         00       1.00         08       0.98         08       0.98         08       1.00         08       1.00         00       1.02
163950-1 163950-2 163950-3 163950-4 163951-1 163951-2	655798 21 655799 21 655800 21 655801 21 655802 21 655803 21 655804 21 655805 21	:54:43 :54:44 :54:45 :54:46 :54:47 :54:48 :54:49	42.0	33.6 35.4 38.1 39.4 40.2 41.0 41.9	3.9 3.9 3.9 3.9 3.9 4.2 3.9	3.9 3.9 3.9 3.9 3.9 3.9 3.9 3.5	3.9 3.9 3.9 3.5	3.9 3.9 3.9 4.2 3.9 4.2 3.9 3.5	9.9 10.9 11.3	10.9 12.3	0.0	0.0	0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0	0.7	-0.6 0.0 0.0 0.0 0.0 2.3 0.5	0.0 0.0 1.3 1.3 0.0	0.0	0.0	0.0	0.0	0.0 0.0 0.0 0.0 0.0 0.0	-1.6 -2.3 -1.3 0.0 -3.2 -2.6 -2.8	-1.7 -2.8 -0.1 0.0 -2.5 -2.6 -3.5	-2.0 -2.9 -0.1 -3.2 -2.1 -2.5 -4.0	-2.1 -2.5 -0.1 -3.3 -2.5 -2.9 -3.7	1.00 1 1.00 1 0.98 0 0.98 0 0.96 0 1.00 1 0.95 0	L.00 1. L.00 1. D.98 0. D.98 0. D.98 0. L.00 1. D.95 0.	00 1.00 00 1.00 98 1.00 98 0.98 96 0.96 00 1.00 95 0.95	1.00 0.98 0.98 0.98 0.98 0.98 0.98	1.02 1.0 1.00 1.0 0.98 0.0 0.98 1.0 0.98 0.0 0.98 0.0 0.96 0.0 0.95 0.0	00 1.00 98 1.00 90 1.00 98 0.98 98 0.98 96 0.95 95 0.95
163952-1 163952-2 163952-3 163952-4 163953-1	655806         21           655807         21           655808         21           655809         21           655810         21           655811         21           655812         21           655813         21	:54:51 :54:52 :54:53 :54:54 :54:55 :54:55	42.0 42.6 42.1 40.6 39.7 41.3 41.4 39.3	42.8 41.9 39.8 40.4 41.4		3.5 3.5 3.5 3.9 3.9 3.5 3.2 1.8	3.9 3.5 3.5 3.9 3.9 3.9 3.5 2.8 1.8	3.9 3.5 3.9 3.9 3.9 3.5 2.5 1.8	13.7 15.1 15.1 15.1 13.7 12.0 11.3 10.6	15.1 14.8 12.7 11.6	0.0 0.0 0.0 0.0 0.0 2.7 0.3	0.0 0.0 0.0 0.0 0.0 3.2 -0.0	0.0 0.0 0.0 0.5 3.3	0.0	0.0 0.0 0.0 1.2 0.3 0.7 1.6	0.0 0.0 1.0 0.1 3.5	0.0 0.0 1.4 0.9 0.1 3.6 0.0	0.0 0.0 1.4 0.7 0.1 1.9 0.0	0.0 0.0 0.7 0.0 0.0 1.5 0.7	1.7 0.0 1.2 0.0 0.0 1.7 0.0	0.0 0.0 0.6 0.0 0.0 2.1 0.0	0.0 0.0 0.0 0.0 1.2	-2.8 2.9 0.1 1.5 2.9 -0.4 -0.0 0.0	-0.0 2.6 2.2 -2.6	1.5 -0.1 3.4 2.3 -2.6	0.7 -0.1 3.5 0.8 -3.1 -0.0	1.00 1 0.98 0 0.98 1 1.02 1 1.00 1	1.00 1.0 0.98 0.2 0.98 0.2 1.00 0.2 1.02 1.0	00 1.00 98 0.98 98 0.98 98 0.98 02 1.00 02 1.00	1.00 0.98 0.98 0.98 1.00	1.00 1.0 1.00 1.0 0.98 1.0 0.98 0.9 1.00 1.0 1.00 0.9 0.88 0.9	0 0.98 0 0.98 8 0.98 0 1.00 0 0.98 6 0.96
163953-4 163954-1 163954-2 163954-3 163954-4 163955-1	655814 21 655815 21 655816 21 655817 21 655818 21 655819 21 655820 21 655821 21	:54:59 :55:00 :55:01 :55:02 :55:03 :55:04	37.3 36.3 35.2 32.5 30.2 27.6 26.9	28.9 27.9 27.4	1.4 1.8 1.8 1.8 2.1 2.5	1.8 1.8 1.8 1.8 1.8 2.1 2.5	1.8 1.8 1.8 1.8 1.8 2.1 2.8 3.5	1.8 1.8 1.8 1.8 1.8 2.1 2.8	9.5 5.6 1.1 -1.1 -1.1 0.0 0.0	7.7 3.2 -0.4 -1.4 -0.7 0.4 -1.8	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.3	0.0 0.0 -0.4 -2.3 -3.0	0.0 0.0 -0.2 -0.7 -2.0 -2.3	0.0 0.0 -0.9 -0.0 -3.7 -1.1 -2.2	0.0 0.0 -0.8 0.2 -4.0 -2.5 -1.6	0.0 0.0 0.0 0.0 0.0 0.0 1.3	0.0 0.0 0.0 0.0 0.0 0.0 6.4	0.0 0.0 0.0 0.0 0.0 0.0 0.0 9.9	0.0 0.0 0.0 0.0 7.2	7.2 6.5 2.2 -1.0 -1.6 0.0 4.7	-1.1 0.8 4.8	-0.6 -0.1 2.6 5.1	1.8 -0.1 -1.4 -0.0 4.1 2.9	0.94 0 0.96 0 1.00 0 0.96 0 0.98 1 1.02 1	).95 0.3 ).98 0.3 ).98 0.3 ).96 0.3 1.00 1.1	96 0.96 96 0.98 98 0.95 96 0.95 00 1.00 00 1.00	0.96 ( 0.98 ( 0.95 ( 0.96 ( 1.00 2 0.98 (	0.92 0.9 0.98 0.9 0.98 0.9 0.94 0.9 0.96 0.9 1.00 1.0 0.96 0.9	<ul> <li>8 0.96</li> <li>8 1.00</li> <li>9 0.95</li> <li>6 0.96</li> <li>1.02</li> <li>8 0.98</li> </ul>
163955-3 163955-4 163956-1 163956-2 163956-3 163956-4	655822 21 655822 21 655823 21 655824 21 655825 21 655826 21 655827 21 655828 21	:55:06 :55:07 :55:08 :55:09 :55:10 :55:11	26.8 26.9 27.6 29.0 31.4 34.1 37.8 37.5	27.4 27.9 29.5 34.7 37.7 37.8	3.2 3.2 2.8 3.2 3.5 3.9 3.5 3.9 3.5	3.5 3.2 3.2 3.2 3.5 3.9 3.5 3.9 3.5 3.9	3.2 3.2 3.2 3.5 3.9 3.5 3.9 3.5 3.9	3.5 3.2 3.2 3.5 3.5 3.5 3.5 3.5 3.5 3.9	-5.3 -7.4 -5.6 -4.2 -2.5 1.1 -0.7 0.4	-6.7 -7.0 -4.6 -4.2 0.4 0.0 -0.4 1.8	0.6 2.2 -0.2 0.0 0.8 -0.0 0.0 -0.0	0.2 0.6 -0.0 -1.1 1.2 -0.0 0.0 -0.0	0.0 0.0 -0.4 0.9 0.0 0.0 1.4	-0.0 -0.0 -0.1 0.0 0.3 2.1	-0.4 0.0 -0.6 -1.0 -1.3 -0.4 -0.8 -0.8	0.0 -0.7 -1.1 -1.3 -0.5 -0.8	0.0 0.0 -0.7 -1.1 -1.1 -0.6 -0.7 -0.8	0.0 0.0 -0.7 -1.1 -0.6 -0.6 -0.8 -0.8	2.2 -1.2 -1.0 6.7 -7.5 8.1 0.0 -0.6	-0.7 -1.1 0.0 2.2 -4.8 5.3 -0.0 -0.2	-3.0 -0.9 2.7 -2.2 0.7 0.0 -3.3 -6.3	-0.9 6.3 -6.6 5.1 0.0 -5.0	-3.9 -1.1 -4.3 2.2 -3.3	-2.9 -3.6 -1.3 -2.3 1.5 -3.8	-3.4 -3.3 -3.2 0.2 -0.1 -3.3	-4.0 -2.9 -4.2 1.7 -2.4 -3.5	1.04 1 0.96 0 0.95 0 0.95 0 1.02 1 0.98 0	1.04 1.0 0.96 0.3 0.96 0.3 0.96 0.3 1.02 1.0 0.96 0.3	02 1.00 96 0.96 96 0.98 95 0.96 02 1.00 98 0.98	0.98 ( 0.95 ( 0.98 ( 0.98 ( 1.00 ( 0.98 (	1.02 1.0 0.98 0.9 0.94 0.9 0.98 0.9 1.00 0.9 0.98 0.9 1.00 0.9	6 0.95 6 0.96 8 0.96 8 1.00 8 0.98 6 0.98
163957-3 163957-4 163958-1 163958-2 163958-3 163958-4	655829 21 655830 21 655831 21 655832 21 655833 21 655834 21 655835 21	:55:14 :55:15 :55:16 :55:17 :55:18 :55:19	37.8 38.4 40.9 41.5 40.6 38.9 39.6	39.8 41.1 41.5 38.9 39.3 39.6	3.5 3.5 3.5	3.9 3.9 3.5 3.5 3.5 3.5 3.5	3.9 3.9 3.5 3.5 3.9 3.5 3.5	3.9 3.9 3.5 3.5 3.5 3.5 3.5	4.2 6.7 5.6 4.6 4.9 3.2 2.8	5.6 6.7 4.9 4.6 4.2 2.8 2.8	0.4 0.0 0.0 0.0 0.0 0.0 0.0	-0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 1.0	-0.5 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.5 0.0 0.0	-0.2 0.0 0.0 0.0 0.5 0.0 0.0	-0.2 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0	1.7 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 1.6	4.1 -0.0 0.0 0.0 0.8 -1.4	0.0 3.1 -0.0 -0.1	4.4	1.0 0.0 3.8 -2.8 6.4	0.96 0 0.98 0 1.02 1 0.95 0 1.00 1 0.93 0	).96 0.3 ).98 1.0 1.02 0.3 ).96 0.3 1.00 0.3	96 0.98 00 1.00 98 0.96 98 0.98 98 0.98 95 0.94	0.98 ( 1.00 ( 0.96 ( 1.02 ( 0.96 ( 0.96 (	0.98 0.9 0.98 0.9 1.00 1.0 0.96 0.9 1.02 1.0 0.94 0.9 0.96 0.9	<ul> <li>0.96</li> <li>1.02</li> <li>0.93</li> <li>1.00</li> <li>1.00</li> <li>0.93</li> <li>0.93</li> <li>0.93</li> </ul>
163959-2 163959-3 163959-4 163960-1 163960-2 163960-3	655836 21 655837 21 655838 21 655839 21 655840 21 655841 21 655842 21 655843 21	:55:21 :55:22 :55:23 :55:24 :55:25 :55:26	39.9 40.9 40.6 39.6 39.8 40.3 40.3 40.6 40.3	40.2 40.5 39.8 39.7 39.9 40.6 40.8 40.2	3.5 3.2 3.5 3.5	3.5 3.2 3.2 3.2 3.5 3.9 6.3 5.6	3.5 3.5 3.2 3.5 4.2 6.3 5.6	3.5 3.5 3.2 3.2 3.5 4.9 6.3 5.3	2.1 0.0 -2.5 -4.2 -3.9 -3.9 -3.9 -3.9 -3.5	1.4 -1.1 -3.5 -4.6 -3.9 -3.9 -3.5 -3.2	1.4 -0.0 -0.5 0.0 -1.8 -0.1 -0.2 2.0	0.3 0.0 -0.1 0.0 -1.1 -1.9 3.8 2.2	-0.0 0.0 -1.2 -0.8 -6.8 4.8 1.3	-0.0 0.0 -0.3 -1.8 -1.0 -6.1 0.0 -0.0	0.0 0.0 -0.4 -0.6 -4.2 -5.7 -3.5	0.0 0.0 -0.3 -0.2 -5.9 -5.5	0.0 0.0 -0.4 -6.2 -5.4 -3.3		1.6 0.0 0.0 -4.4 -0.0 -0.5 -0.6	0.9 0.0 0.0 -2.2 -0.1 -0.0 -0.9	0.0 0.0 -2.8 -0.4 -3.6 -0.1 -0.2	0.0 0.0 -4.7 -0.4 -3.4 -4.4	4.4 3.3 0.6 -0.5 2.9 2.4 0.3 0.0		3.1 1.5 -0.0 3.3 1.1 0.0 0.0	1.6 -0.5 -0.0 2.3 0.9 0.0	0.98 0 0.96 0 0.96 0 0.96 0 0.98 0 1.14 1	).96 0.3 ).96 0.3 ).96 0.3 ).96 0.3 ).98 0.3 1.98 0.3	98 0.98 95 0.96 95 0.96 98 0.98 98 0.98 18 1.18	0.96 ( 0.96 ( 0.98 ( 0.98 ( 0.98 ( 1.16 (	0.98 0.9 0.96 0.9 0.98 0.9 0.96 0.9 0.98 0.9 1.02 1.0 1.15 1.3	<ul> <li>8 0.96</li> <li>8 0.96</li> <li>9 0.98</li> <li>8 0.98</li> <li>1.11</li> <li>3 1.09</li> </ul>
163961-1 163961-2 163961-3 163961-4 163962-1 163962-2 163962-3	655844 21 655845 21 655846 21 655847 21 655848 21 655849 21 655850 21	:55:28 :55:29 :55:30 :55:31 :55:32 :55:33 :55:34	36.1 32.4 30.1 27.4 26.9 26.8 27.6	36.4 30.5 29.1 27.9 27.4 28.4 30.5	4.9 4.6 2.8 0.7 0.4 0.0 -0.4	4.9 4.2 2.1 0.4 0.4 0.0 -0.4	4.6 3.9 1.8 0.4 0.4 0.0 -0.4	4.6 3.5 1.4 0.4 0.4 -0.4 -0.4	-2.5 -2.1 0.0 0.0 -0.4 -0.7 -0.7	-2.1 -0.7 0.0 -0.4 -0.7 -0.7 -0.7	-0.0 0.0 0.0 0.0 0.0 0.0	-0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 -0.0 0.0	0.0 0.0 0.5 0.0 0.0	-3.3 -2.1 1.7 0.0 0.0 0.0	-3.3 -1.8 0.1 0.0 0.0 0.0 0.0	-2.8 -0.7 0.0 0.0 0.0 0.0 0.0	-2.2 0.0 0.0 0.0 0.0 0.0 0.0	-0.0 0.0 0.0 0.0 0.0 -0.6	-0.0 0.0 0.0 0.0 -0.4 0.0	0.0 0.0 0.0 -0.6 -0.5 0.0	0.0 0.0 0.0 -0.6 -0.2 0.0	0.0 0.0 -1.8 -0.1 0.0 0.0 0.0	0.0 0.0 -0.4 0.0 0.0 0.0 0.0	0.0 -0.1 0.0 0.0 0.0 0.0	0.0 -1.0 -0.0 0.0 0.0 0.0 0.0	0.98 0 0.94 0 1.14 0 1.05 0 1.00 0 0.98 0 0.90 1	0.98         0.3           0.93         0.3           0.98         0.3           0.98         0.3           0.98         0.3           0.98         0.3           0.98         0.3           0.98         0.3           0.98         0.3           0.98         0.3           0.98         0.3           0.98         0.3	96 0.96 93 1.00 96 0.84 98 0.95 00 0.98 96 1.02 98 0.96	0.96 ( 1.00 2 0.88 ( 0.92 ( 0.95 ( 0.96 ( 1.00 (	0.95 0.9 1.04 1.0 0.98 1.0 0.93 0.9 0.95 0.9 0.98 1.0 0.95 0.9	5 0.95 14 1.12 14 1.13 18 0.96 18 1.00 10 0.92 12 0.98
163963-1 163963-2 163963-3 163963-4 163964-1 163964-2 163964-3	655851 21 655852 21 655853 21 655854 21 655855 21 655855 21 655857 21 655857 21	:55:36 :55:37 :55:38 :55:39 :55:40 :55:41 :55:42	32.7 39.9 53.6 54.9 55.0 54.9 55.0 55.0 55.0	43.6 54.5 54.4 54.6 54.6 54.6 54.6 54.7	0.0 0.4 0.4 -0.4 -0.7 -0.7	0.4 0.4 -0.4 -0.4 -0.4 -0.4 -0.4	0.0 0.4 0.4 -0.4 -0.4 -0.4 -0.4	-0.4	-1.1 -0.7 -0.7 -0.4 -0.4 -0.4 -0.4 0.0	-1.1 -0.7 -0.7 -0.7 -0.4 -0.4 -0.4 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0	1.00 1 1.02 0 0.98 0 0.87 1 1.00 1 1.04 1 0.93 1	1.00 1.0 0.92 0.9 0.92 0.9 1.06 1.0 1.04 1.0 1.00 1.0 1.02 0.9	04 0.96 90 0.95 93 1.02 04 1.02 06 0.87 04 1.00 96 0.96	0.86 ( 0.95 ( 1.02 ( 0.94 ( 0.88 ( 0.90 ( 1.04 (	1.02 0.9 0.96 1.0 0.98 0.9 0.98 0.9 0.90 0.9 0.92 0.9 0.90 0.9 1.00 0.9	12 1.04 6 1.00 0 0.92 12 0.96 13 0.98 6 0.95 11 0.93
163965-1 163965-2 163965-3 163965-4 163966-1 163966-2 163966-3	655859 21 655860 21 655861 21 655862 21 655863 21 655864 21 655865 21 655866 21	:55:44 :55:45 :55:46 :55:47 :55:48 :55:49 :55:50	59.8 74.6 87.5 88.9 89.3 89.2 89.1 89.2	78.6 88.9 89.1 89.1 89.1 89.1 89.1	0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0	-0.4 -0.4 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 -0.4 0.0 0.0 0.0 -0.4 -0.4	0.0 0.0 0.0 0.0 -0.4 0.0 -0.4	0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 -0.1 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0	-0.1 0.0 0.0 0.0 0.0 0.0	-0.0 0.0 0.0 0.0 0.0 0.0 0.0	1.00 0 0.96 0 0.88 0 0.93 0 0.88 1 0.96 1 1.06 1	0.96         0.3           0.86         0.3           0.88         0.3           0.93         0.3           1.02         1.3           1.02         0.3           1.00         1.3	93 0.95 85 1.02 93 1.02 92 1.00 04 1.00 96 0.95 00 1.00	0.93 ( 1.07 1 1.02 1 1.11 1 0.96 ( 0.98 ( 0.92 (	0.92 0.9 0.98 1.0 1.07 1.0 1.02 0.9 1.02 0.9 0.98 0.9 0.93 0.9	<ol> <li>1.10</li> <li>0.93</li> <li>0.95</li> <li>0.93</li> <li>0.93</li> <li>0.93</li> <li>0.95</li> <li>1.00</li> <li>0.94</li> </ol>
163967-1 163967-2 163967-3 163967-4 163968-1 163968-2 163968-3	655867 21 655868 21 655869 21 655870 21 655871 21 655872 21 655873 21 655874 21	:55:52 :55:53 :55:54 :55:55 :55:56 :55:57 :55:58	89.1 89.1 89.2 89.2 82.7 72.3 66.9	89.1 89.0 80.8 66.2 65.6	0.0 0.0 -0.4 0.0 0.4 0.7	-0.4 -0.4 0.4 0.7	0.7	0.0 -0.4 0.7 1.1	-1.1	0.0 -0.7 -0.7		1.6 -0.9	0.8 0.3 -0.1	0.3	0.0	0.0 0.0 0.0 0.0 0.0 0.0	0.0	0.0	-3.3 -2.5	-3.2 -2.6 -1.2	-3.3 -0.5 -1.2	0.0 0.0 -1.5 -2.4 -2.3 -1.4 -1.9	0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.96 0 0.96 0 1.00 1 1.09 1 0.94 0 1.23 1 1.23 1	0.96 0.9 0.95 0.9 0.96 0.9 1.04 0.9 0.93 0.9 1.02 0.9	98 1.02 94 0.96 90 0.94 96 0.92 92 0.87 95 0.83 77 0.80	1.00 0.95 0.92 0.98 0.80 0.80 0.80	0.94 0.9 1.04 1.0 0.94 0.9 0.95 0.9 0.85 0.9 0.96 1.0 0.95 1.0	2 0.98 8 1.00 5 1.08 6 0.96 3 1.02 4 1.06 6 1.12
163969-1 163969-2 163969-3 163969-4 163970-1 163970-2 163970-3	655875 21 655876 21 655877 21 655878 21 655879 21 655880 21 655881 21 655882 21	:56:00 :56:01 :56:02 :56:03 :56:04 :56:05 :56:06	70.6 70.1 70.3 70.4 67.9 60.2 52.6 45.4	70.1 70.4 70.4 66.7 59.4	0.7 0.4 0.0 0.4 0.0 0.0	0.7 0.4 0.0 0.4 0.0 0.4 0.0	0.4 0.4 0.0 0.0 0.0	0.4 0.0 0.0 0.0 0.0 0.0 0.0	-0.7 -0.7 -0.7 -0.7 -0.4 0.0 0.4	-1.1 -0.7 -0.7 -0.4 -0.7 0.0 0.0 0.0	0.0 -1.4 -2.7 -2.6 -3.0 -2.6 -2.5	0.7 -1.5 -3.2 -2.1 -2.8 -2.4 -0.4	-0.1 -1.9 -2.3 -3.5 -2.4 -1.5 -0.2	-0.7 -2.1 -2.0 -3.5 -2.6 -2.4 -0.0	0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0	0.0	0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.5 0.0 0.0 0.0	-0.0 0.0 0.4 0.6 0.0 0.0	-0.2 0.0 0.1 -0.1 0.0	0.0	0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0	0.98 0 1.05 1 1.16 1 0.93 1 0.98 0 0.91 0	).91 0.3 1.18 1. 1.05 0.3 1.00 0.3 0.92 0.3	95 1.00 11 0.96 92 0.90 98 0.87 93 1.02 02 1.00	1.02 ( 0.85 ( 0.91 ( 0.96 ) 1.04 ( 0.87 (	1.04 1.3 0.92 0.8 0.81 0.9 0.92 1.0 1.04 1.0 1.02 0.9 0.87 1.0 0.90 0.9	<ol> <li>6 0.90</li> <li>1.09</li> <li>4 1.00</li> <li>0.94</li> <li>0.90</li> <li>1.13</li> </ol>
163970-4 163971-1 163971-2 163971-3 163971-4 163972-1 163972-2 163972-3	655883 21 655884 21 655885 21 655886 21 655887 21 655888 21 655889 21 655890 21 655891 21	:56:07 :56:08 :56:09 :56:10 :56:11 :56:12 :56:13 :56:14	33.6 30.4 28.5 27.3 25.9	33.6 30.5 27.5 26.6 26.3 26.8 31.2 36.6	0.0 0.0 -0.4 -0.7 -0.7 -0.4 -0.7 0.4	-0.4 -0.4 -0.7 -0.4 -0.4 -0.4 -1.1	-0.4 -0.4 -0.4 -0.4 -0.7 -1.4 -0.7	0.0 -0.4 -0.4 -0.4 -0.4 -0.4 -0.4 -0.7	-0.4 0.0 -0.4 -0.7 -0.7 -0.7 -0.7 -1.1	-0.4 -0.4 0.0 -0.7 -0.7 -0.7 -0.7 -0.7	-0.0 0.0 -4.1 -5.9 -6.3 -7.0 -7.7 -8.5	-0.0 0.0 -4.8 -6.1 -6.7 -7.0 -8.2 -7.5	0.0 -1.8 -5.3 -6.1 -6.5 -7.2 -8.5 -8.6	0.0 -2.3 -6.1 -6.0 -6.6 -7.4 -8.8 -8.8	0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0	-0.0 0.0 -2.6 -2.7 -2.3 -1.0 -1.3 -0.7	-0.0 0.0 -3.2 -2.5 -2.0 -0.9 -1.5 -2.2	0.0 -1.4 -3.0 -3.2 -0.8 -1.0 -1.4 -3.5		0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.98 0 1.02 0 0.96 1 1.02 0 0.92 0 1.00 0 0.91 0 1.20 1	0.98         0.9           0.94         0.9           0.95         0.9           0.95         0.9           0.95         1.9           0.95         0.9           0.95         0.9           0.95         0.9           0.95         0.9           0.95         0.9           0.95         1.9           0.95         0.9           0.95         0.9           0.95         0.9	90 0.92 92 0.98 94 0.93 86 1.00 00 0.98 96 0.98 98 1.02 20 0.86	0.94 ( 0.96 ( 1.04 ( 0.93 ( 1.00 ( 0.82 ( 0.80 (	0.91 1.0 0.98 0.9 0.98 0.9 1.00 0.9 0.93 0.9 0.96 0.9 0.96 0.8 0.90 1.0 0.77 1.3	0 1.00 6 0.89 8 0.95 4 0.96 6 1.04 6 0.95 5 0.80 12 0.93

163973-3         655894         21:56:           163973-4         655895         21:56:           163974-1         655897         21:56:           163974-2         655897         21:56:           163974-3         655892         21:56:           163974-4         655892         21:56:           163974-5         655900         21:56:           163975-1         655902         21:56:           163975-4         655903         21:56:           163975-4         655903         21:56:           163975-6         655904         21:56:           163976-7         655905         21:56:           163976-8         655905         21:56:           163976-3         655906         21:56:           163976-3         655905         21:56:           163976-3         655906         21:56:           163976-3         655906         21:56:           163976-4         655907         21:56:           163976-3         655906         21:56:           163976-4         655902         21:56:           163977-3         655902         21:56:	18         51.5         69.9         -6.3           19         51.4         68.9         -1.4           20         51.1         69.9         -1.4           21         49.9         67.5         -2.1           22         43.6         60.4         -3.9           3         34.6         53.2         -3.2           24         31.0         46.2         -3.2           25         29.1         37.6         -3.2           26         28.6         39.6         -3.2           27         33.0         42.3         -3.2           29         41.8         41.1         -2.8           30         41.4         37.0         -2.8           31         33.3         33.6         -2.8           32         30.9         30.9         -2.8	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	0.0         -5.2         -0.6           0.0         -6.5         -5.5           0.0         6.5         3.9           0.0         2.2         -1.0           0.0         -0.3         -0.2           0.0         -0.5         0.0           0.0         -0.3         -0.2           0.0         -0.0         0.0           0.0         -0.0         -0.0           0.0         -0.0         -0.0           0.0         -0.0         -0.0           0.0         -0.1         -1.2           0.0         -0.9         -0.2           0.0         -0.9         -0.2           0.0         -0.2         -0.1           0.0         0.0         0.0	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	44         0.98         1.15         1.27         0.93         0.73           2         0.84         1.06         1.02         0.73         1.0           8         0.80         0.93         0.96         1.12         1.0           8         0.80         0.93         0.96         1.12         1.0           1         1.48         0.77         0.62         0.50         0.3           1         0.83         0.92         1.02         1.30         1.2           1         0.61         0.73         1.02         1.32         1.2           1         0.96         1.02         1.10         1.02         0.94           1         0.96         0.92         1.02         1.02         0.94           1         0.96         0.94         1.02         0.94         1.02         0.94           0         0.96         0.94         0.94         1.02         0.94         0.94         0.04           0         0.96         0.95         0.94         0.94         0.94         0.94         0.94         0.94         0.94         0.94         0.94         0.94         0.94         0.96         0.96 <th>2 1.31 1.00 8 1.05 1.27 9 0.65 1.70 7 1.11 0.95 3 0.86 0.80 0 .90 0.98 2 0.98 0.98 8 0.94 0.96 6 0.96 0.98 6 0.98 0.96 6 0.96 0.96 6 0.96 0.96 6 0.96 0.96 6 0.96 0.96 6 0.96 0.96</th>	2 1.31 1.00 8 1.05 1.27 9 0.65 1.70 7 1.11 0.95 3 0.86 0.80 0 .90 0.98 2 0.98 0.98 8 0.94 0.96 6 0.96 0.98 6 0.98 0.96 6 0.96 0.96 6 0.96 0.96 6 0.96 0.96 6 0.96 0.96 6 0.96 0.96
	r Map: A320AXMF1-2-0 (v1.45	-2.8 -2.8 -2.8 -1.1 -1.1 0.0		0.0 0.0 0.0 0.0 Throttle range 1 _ ENG_THR_CMD_1 _	Throttle range 2 ENG_THR_CMD_2 THROTT_J DEG	ING1 THROTT_ANG2	GD_SPOIL_ARM GD_SPOIL_ARM GD_SPOIL_ARM	Naster varning
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21:55:27         NO_COMPR           21:55:28         NO_COMPR           21:55:30         COMPRESD           21:55:31         COMPRESD           21:55:32         COMPRESD           21:55:33         COMPRESD           21:55:34         COMPRESD           21:55:35         COMPRESD           21:55:36         COMPRESD           21:55:37         COMPRESD           21:55:37         COMPRESD           21:55:38         COMPRESD           21:55:38         COMPRESD           21:55:38         COMPRESD           21:55:39         COMPRESD           21:55:30         COMPRESD           21:55:38         COMPRESD           21:55:30         COMPRESD           21:55:30         COMPRESD           21:55:30         COMPRESD           21:55:30         COMPRESD           21:55:40         COMPRESD	NO_COMPR NO_COMPR NO_COMPR           NO_COMPR NO_COMPR NO_COMPR           NO_COMPR NO_COMPR NO_COMPR           NO_COMPRESD COMPRESD           COMPRESD COMPRESD	R NO_COMPR NO_COMPR NO_COMPR NO_CO R NO_COMPR NO_COMPR NO_COMPR NO_CO D NO_COMPR NO_COMPR NO_CO D NO_COMPR NO_COMPR NO_CO D NO_COMPR NO_COMPR NO_CO D NO_COMPRESD COMPRESD COMPRESD COMPRESD D COMPRESD COMPRESD COMPRESD COMPRESD D COMPRESD COMPRESD COMPRESD COMPRESD D COMPRESD COMPRESD COMPRESD COMPRESD D COMPRESD COMPRESD COMPRESD COMP D COMPRESD COMPRESD COMPRESD COMPRESD D COMPRESD COMPRESD COMPRESD COMPRESD COMPRESD D COMPRESD COMPRESD COMPRESD COMPRESD COMPRESD D COMPRESD	ESD COMPRESD COMPRESD COMPRESD COMPRESD SD COMPRESD COMPRESD COMPRESD COMPRESD SD COMPRESD COMPRESD COMPRESD COMPRESD	IDLE	IDLE         10.9           IDLE         1.1           IDLE         -0.4           IDLE         10.5           IDLE         10.5           IDLE         11.3           IDLE         11.3           IDLE         11.3           IDLE         11.3           IDLE         11.3           IDLE         11.3	3.5           -0.4           -0.4           -0.4           -0.4           -0.4           -0.4           -0.4           -0.4           -0.4           -0.4           -0.4           -0.4           -0.4           -0.4           -0.4           -0.5           10.9           10.9           10.9           10.9           10.9           10.9           10.9           10.9           10.9	ARMED ARMED NO COMMJ ARMED NO ARMED COMMJ ON ARMED NO ARMED COMMJ NO ARMED NO ARMED COMMJ	ND         -3         -3         OFF           ND         -3         3         OFF           ND         3         3         OFF
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. 21:55:57 COMPRESD . 21:55:58 COMPRESD . 21:55:50 COMPRESD . 21:55:00 COMPRESD . 21:56:02 COMPRESD . 21:56:02 COMPRESD . 21:56:03 COMPRESD . 21:56:04 COMPRESD . 21:56:06 COMPRESD . 21:56:06 COMPRESD . 21:56:06 COMPRESD . 21:56:08 COMPRESD	COMPRESD COMPRESD COMPRESD COMPRESD COMPRESD COMPRESD COMPRESD COMPRESD	D         COMPRESD         CO	SID         COMPRESD	FULL_REV           FULL_REV           FULL_REV           FULL_REV           FULL_REV           FULL_REV           REVERSE	FUL_REV         -10.2           FUL_REV         -20.4           REVERSE         -6.0	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	NO ARNED NO ARNED NO COMM. NO ARNED NO ARNED NO COMM.	NND         O         O         OFF

<ul> <li>. 21:56:17</li> <li>. 21:56:18</li> <li>. 21:56:19</li> <li>. 21:56:20</li> <li>. 21:56:21</li> <li>. 21:56:22</li> <li>. 21:56:22</li> <li>. 21:56:23</li> </ul>	COMPRESD C COMPRESD C COMPRESD C COMPRESD C COMPRESD C	COMPRESD COMPRE COMPRESD COMPRE COMPRESD COMPRE COMPRESD COMPRE COMPRESD COMPRE	SD COMPRESD SD COMPRESD SD COMPRESD SD COMPRESD SD COMPRESD SD COMPRESD	COMPRESD COMPR COMPRESD COMPR COMPRESD COMPR COMPRESD COMPR COMPRESD COMPR COMPRESD COMPR	ESD COMPRES ESD COMPRES ESD COMPRES ESD COMPRES ESD COMPRES ESD COMPRES	D COMPRESD CON D COMPRESD CON D COMPRESD CON D COMPRESD CON D COMPRESD CON D COMPRESD CON	MPRESD COMPRESD MPRESD COMPRESD MPRESD COMPRESD MPRESD COMPRESD MPRESD COMPRESD MPRESD COMPRESD	COMPRESD COMPR COMPRESD COMPR COMPRESD COMPR COMPRESD COMPR COMPRESD COMPR COMPRESD COMPR COMPRESD COMPR	ESD REVI ESD REVI ESD REVI ESD REVI ESD	RSE : RSE : RSE : RSE : DLE : DLE :	FULL_REV         -13.           FULL_REV         -13.           FULL_REV         -12.           FULL_REV         -12.           REVERSE         -12.           REVERSE         -0.           REVERSE         -0.	0 -20.0 7 -20.0 3 -20.0 3 -8.3 4 -6.0	NO_ARME           NO_ARME	D NO_ARMED NO D NO_ARMED NO D NO_ARMED NO D NO_ARMED NO D NO_ARMED NO D NO_ARMED NO D NO_ARMED NO	COMMAND COMMAND COMMAND COMMAND COMMAND	0 0 0 0	0 OFF 0 OFF 0 OFF 0 OFF 0 OFF 0 OFF 0 OFF
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	KUL-SZB T/ Spoiler left angle	Map: A320AXMF1 O Frm: 163799 Spoiler 2 Right angle	21:44:39 L Spoiler 3 Left angle	nd Frm: 163961 Spoiler 3 Right Angle	21:55:29 Spoiler 4 Left angl	Spoiler 4 e Right angle	Spoiler 5 Left angle	Spoiler 5 Right angle B	Left takes Angle	Right Brakes Angl	Le Brakes Pressure	BRK PRESS 1	BRK PRESS 2	BRK PRESS 3	BRK PRESS 4	BRK PRESS 5	BRK PRESS 6
. Time .	POILER_2_I	SPOILER_2_R 0.0	_SPOILER_3_L DEG 0.0	_SPOILER_3_R	_SPOILER_4_3	LSPOILER_4_H DEG 0.0	C_SPOILER_5_L	_SPOILER_5_R _B	RAKE_PED_LH _	BRAKE_PED_	RH _BRAKE_PRESSURE	BRK_PRESS_1 PSI 0.0	BRK_PRESS_2 PSI	BRK_PRESS_3 I PSI 0.0	BRK_PRESS_4 PSI	BRK_PRESS_5 PSI	BRK_PRESS_6 PSI
. 21:54:09 . 21:54:10 . 21:54:11 . 21:54:12	0.0 0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0	0.0 0.0 0.0	0.0 0.0 0.0 -0.4	0			0.0	0.0	0.0	0.0	64.0	64.0
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. 21:54:20 . 21:54:21 . 21:54:22 . 21:54:23	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0	0.0	0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0	0 0 0	0 0 0	) ) )	0.0	0.0	0.0	0.0	64.0	64.0
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. 21:54:28 . 21:54:29 . 21:54:30	0.0	0.0 0.0 0.0 0.0	0.0	0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0	0.0	0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0	0		) 16.00 )	0.0	0.0	0.0	0.0	0.0	0.0
. 21:54:31 . 21:54:32 . 21:54:33 . 21:54:34 . 21:54:35	0.0	0.0	0.0	0.0 0.0 0.0 0.0 0.0	0.0	0.0	0.0	0.0 0.0 0.0 0.0 0.0			0.00 0	0.0	0.0	0.0	0.0	0.0	0.0
. 21:54:36 . 21:54:37 . 21:54:38	0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	0	C C C	0.00 0	0.0	0.0	0.0	0.0		0.0
. 21:54:39 . 21:54:40 . 21:54:41 . 21:54:42	0.0	0.0 0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0	0.0 0.0 0.0	0.0 0.0 0.0	0 0 0		0.00 0	0.0	0.0	0.0	0.0	0.0	0.0
. 21:54:43 . 21:54:44 . 21:54:45 . 21:54:46	0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0 0.0	0.0 0.0 0.0	0.0	0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0	0 0 0	0 0 0	8.00	0.0	0.0	0.0	0.0	64.0	64.0
21:54:47 21:54:48 21:54:49 21:54:50	0.0	0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0	0.0 0.0 0.0	0.0 0.0 0.0 0.0	0		16.00	0.0	0.0	0.0	0.0	64.0	64.0
. 21:54:51 . 21:54:52 . 21:54:53 . 21:54:54	0.0 0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0	0.0 0.0 0.0	0.0 0.0 0.0 0.0	0 0 0		16.00	0.0	0.0	0.0	0.0	64.0	64.0
. 21:54:55 . 21:54:56 . 21:54:57 . 21:54:58	0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0 0.0	0.0	0.0 0.0 0.0 -0.7	0.0 0.0 0.0	0		16.00	0.0	0.0	0.0	0.0	64.0	64.0
. 21:54:59 . 21:55:00 . 21:55:01 . 21:55:02	-1.8 -1.1 0.4 0.0	0.0	-1.6 0.5 0.0 0.0	0.0	-1.7 0.4 0.0 0.0	0.0	-1.4 0.5 0.0	0.0 0.0 0.0 0.0	0		) 16.00 )	0.0	0.0	0.0	0.0	64.0	0.0
. 21:55:03 . 21:55:04 . 21:55:05	0.0 0.0 -6.9	0.0 0.0 0.0	0.0 0.0 -6.0	0.0 0.0 0.0	0.0 0.0 -0.6	0.0	0.0 0.0 -1.2	0.0 0.0 0.0	0 0	0 0	0 0.00 0 0.00	0.0	0.0	0.0	0.0	0.0	0.0
. 21:55:06 . 21:55:07 . 21:55:08 . 21:55:09	0.4 0.0 0.0 0.0	0.0 0.0 0.0 -5.5	0.6 0.0 0.0	0.0 0.0 0.0 -1.1	0.5 0.0 0.0 0.0	0.0 0.0 0.0	0.5 0.0 0.0 0.0	0.0 0.0 -3.2 0.5	0 0 0	0 0 0	) 0.00 ) 0.00	0.0	0.0	0.0	0.0	0.0	64.0
. 21:55:10 . 21:55:11 . 21:55:12 . 21:55:13	0.0 0.0 0.0 0.0	0.4 0.0 0.3 0.4	0.0 0.0 0.0 0.0	0.5 0.0 -2.3 0.5	0.0 0.0 0.0	0.4 0.0 -2.6 0.4	0.0 0.0 0.0	0.0 0.1 -4.4 0.5	0 0 0	0 0 0 0	16.00	0.0	0.0	0.0	0.0	64.0	64.0
. 21:55:14 . 21:55:15 . 21:55:16 . 21:55:17	0.0 0.0 0.0	0.4 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0 0.0	0.0	0.0 0.0 0.0	0.0 0.0 0.0	0		16.00	0.0	0.0	0.0	0.0	64.0	64.0
. 21:55:18 . 21:55:19 . 21:55:20 . 21:55:21	0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0	0.0 0.0 0.0	0.0 0.0 0.0	0	0 0	) ) ) 16.00	0.0		0.0		64.0	
. 21:55:22 . 21:55:23 . 21:55:24	0.0	0.0 0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0	0.0 0.0 0.0	0.0 0.0 0.0	0 0 0		) ) ) 16.00	0.0	0.0	0.0	0.0	64.0	64.0
. 21:55:25 . 21:55:26 . 21:55:27 . 21:55:28	0.0	0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0 0.0	0.0	0.0 0.0 0.0	0.0 0.0 0.0 0.0	0 0 0	0 0 0	) )	0.0	0.0	0.0	0.0	0.0	64.0
. 21:55:29 . 21:55:30 . 21:55:31 . 21:55:32	0.0 0.0 -19.3 -48.4	0.0 -1.9 -33.9 -49.7	0.0 0.0 -23.0 -49.6	0.0 -5.1 -37.7 -49.7	0.0 0.0 -31.2 -49.7	0.0 -16.1 -45.3 -49.8	0.0 0.0 -29.9 -49.7	0.0 -11.3 -44.0 -49.7	0 0 0		) )	0.0	0.0	0.0	0.0	3072.0	0.0
. 21:55:33 . 21:55:34 . 21:55:35 . 21:55:36	-49.7 -49.7 -49.7 -49.7	-49.8 -49.7 -49.7 -49.8	-49.6 -49.6 -49.6 -49.6	-49.7 -49.7 -49.7 -49.7	-49.7 -49.7 -49.7 -49.7	-49.8 -49.7 -49.7 -49.8	-49.7 -49.7 -49.7 -49.7	-49.7 -49.7 -49.7 -49.7	0	C C C C	) ) )	0.0	0.0	0.0	0.0	3072.0	0.0
. 21:55:36 . 21:55:37 . 21:55:38 . 21:55:39 . 21:55:40	-49.7 -49.7 -28.7 -0.5	-49.8 -49.9 -43.3 -15.0 0.1	-49.6 -49.6 -27.9 -0.2	-49.7 -49.7 -42.4 -14.0 -0.2	-49.7 -49.7 -48.5 -20.8 -0.4	-49.8 -49.8 -35.2 -6.8 -0.4	-49.7 -49.7 -47.0 -18.6 0.5	-49.7 -49.7 -32.9 -4.4 0.5	0		) ) )	0.0	0.0	0.0	0.0	3136.0	64.0
. 21:55:41 . 21:55:42 . 21:55:43	0.1 0.1 0.1	0.1 0.1 0.1	-0.2 -0.2 -0.2	-0.2 -0.2 -0.2	-0.4 -0.4 -0.4	-0.4 -0.4 -0.4	0.0 0.0 0.0	0.0 0.0 0.0	0 0	0 0	) ) )		0.0		0.0	3136.0	64.0
. 21:55:44 . 21:55:45 . 21:55:46 . 21:55:47	0.1 0.2 0.4 0.0	0.2	-0.2 0.6 0.0	-0.2 0.6 0.0	-0.4 0.5 0.0	-0.4 0.4 0.0	0.0	0.0 0.0 0.0 0.0	0		) ) )	0.0	0.0	0.0	0.0	3200.0	128.0
. 21:55:48 . 21:55:49 . 21:55:50 . 21:55:51	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0	0.0	0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0	0 0 0	0 0 0	) )	0.0	0.0	0.0	0.0	3200.0	128.0
. 21:55:52 . 21:55:53 . 21:55:54 . 21:55:55	0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0 0.0	0.0	0.0 0.0 0.0	0.0 0.0 0.0 0.0	0 0 0	0 0 0	9 416.00 9	0.0	0.0	0.0	0.0	3200.0	128.0
. 21:55:56 . 21:55:57 . 21:55:58 . 21:55:59	0.0 -16.4 -45.5	-2.0 -31.1 -49.7	0.0 -26.8 -49.6	-12.2 -41.3 -49.7	0.0 -27.4 -49.7	-12.4 -41.7 -49.8	-5.2 -34.3 -49.7	-19.1 -48.4 -49.7	0	28 0 0	488.00 )	0.0	64.0	576.0	64.0	3200.0	128.0
. 21:56:00 . 21:56:01 . 21:56:02	-49.7 -49.7 -49.7 -49.7	-49.8 -49.7 -49.7 -49.8	-49.6 -49.6 -49.6 -49.6	-49.7 -49.7 -49.7 -49.7	-49.7 -49.7 -49.7 -49.7	-49.7 -49.8 -49.7 -49.7	-49.7 -49.7 -49.7 -49.7	-49.7 -49.7 -49.7 -49.7	0 36 56	16 24 44 50	496.00 4	64.0	640.0	448.0	832.0		128.0
. 21:56:03 . 21:56:04 . 21:56:05 . 21:56:06	-49.7 -49.7 -49.7 -49.7	-49.7 -49.7 -49.7 -49.7	-49.6 -49.6 -49.6 -49.6	-49.6 -49.7 -49.7 -49.7	-49.7 -49.7 -49.7 -49.7	-49.8 -49.8 -49.7 -49.7	-49.7 -49.7 -49.7 -49.7	-49.7 -49.7 -49.7 -49.7	36 54 50 54	58 58 54 54	896.00 1	1280.0	960.0	1216.0	1472.0	3072.0	0.0
21:56:07 21:56:08 21:56:09 21:56:10	-49.7 -49.7 -49.7 -49.7	-49.8 -49.7 -49.7 -49.8	-49.6 -49.6 -49.6 -49.6	-49.7 -49.7 -49.7 -49.7	-49.7 -49.7 -49.7 -49.7	-49.8 -49.7 -49.7 -49.7	-49.7 -49.7 -49.7 -49.7	-49.7 -49.7 -49.7 -49.7	56 60 60 60	66 66 66	5 *****	1280.0	2176.0	1792.0	1856.0	3072.0	0.0
. 21:56:11 . 21:56:12 . 21:56:13 . 21:56:14	-49.7 -49.8 -49.7 -49.7	-49.8 -49.8 -49.8 -49.8	-49.6 -49.6 -49.6 -49.6	-49.7 -49.7 -49.7 -49.7	-49.7 -49.7 -49.7 -49.7	-49.7 -49.8 -49.8 -49.8	-49.7 -49.7 -49.7 -49.7	-49.7 -49.7 -49.7 -49.6	60 60 60 60	66 66 66	5 ***** 5	896.0	448.0	896.0	512.0	3072.0	0.0
. 21:56:15 . 21:56:15 . 21:56:16	-49.7	-49.9	-49.6 -49.6	-49.7 -49.7	-49.7 -49.7	-49.7	-49.7 -49.7	-49.7	60 60	66	5	64.0		256.0		3136.0	

21:56:17 21:56:18	-49.7 -49.7	-49.8	-49.6	-49.7 -49.7	-49.7 -49.7	-49.7	-49.7 -49.7	-49.7	60 60	6	56 56			128.0		128.0		64.0
. 21:56:19 . 21:56:20	-49.7 -49.7 -49.7 -49.7	-49.8 -49.8 -49.8	-49.6 -49.6 -49.6 -49.6	-49.7 -49.7 -49.6 -49.7	-49.7 -49.7 -49.7 -49.7	-49.8 -49.8 -49.7 -49.7	-49.7 -49.7 -49.7 -49.7	-49.6 -49.7 -49.6 -49.6	70 70 70 70	6	56 56 544.00 56	0	192.0	64.0	640.0	1216.0	3200.0	0.0
21:56:22 21:56:23 21:56:24 21:56:25 21:56:26	-49.7 -37.4 -9.0 0.4	-49.7 -23.5 0.4 0.6	-49.6 -38.0 -9.5 0.0	-49.7 -23.8 0.0 0.0	-49.7 -37.7 -1.9 0.5	-49.8 -23.7 0.4 0.0	-49.7 -30.8 -2.3 0.5	-45.5 -17.1 0.6 0.0	64 60 58 56	6	54 56 ***** 56	* 1	664.0	1472.0	1984.0	1984.0	3072.0	0.0
21:56:27 21:56:28 21:56:29	0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	56 56 56	6	56 ***** 56 *****	* 1	344.0	1344.0	1984.0	1984.0	3072.0	0.0
21:56:30 21:56:31 21:56:32 21:56:33	0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0	0.0 0.0 0.0 0.0	0.0 0.0 0.0	0.0 0.0 0.0	56 56 56 56	6	56 56 ***** 56	* 1	344.0	1280.0	1984.0	1984.0	3136.0	0.0
		Frm: 163799 Left	21:44:39 Lnd Right	Format: AHM (v1.0 1 Frm: 163961 2	1:55:29		BRK PRESS 3	BRK PRESS 4	BRK PRESS 5	BRK PRESS 6	5 BRK PRESS 7	BRK PRESS	8 Latitude	Longitude	ENG1 MASTE SELECTED		ENG2 MASTER	Gross Weight N of aircraft
Frame-Sf SfCour		BRAKE_PED_LI		H _BRAKE_PRESSUR	E BRK_PRESS_1 PSI		BRK_PRESS_3 PSI						B _LATITUDE Degree	LONGITUDE Degree	ENG1_MASTE	R_LEVER 1	ENG2_MASTER_LEVE	R _GROSS_WEIGHT TONSS
163941-1 65576 163941-2 65576 163941-3 65576 163941-4 65576	65 21:54:09 66 21:54:10	0	0		0.0	0.0	0.0	0.0	64.0	64.0	0.0	0.0	3.178826 3.178826	101.502869 101.504074 101.504074 101.505447	NOT SELEC	T OFF	SELECT ON SELECT ON SELECT ON SELECT ON	51.46485 51.46485 51.46485 51.46485
163942-1 65576 163942-2 65576 163942-3 65577 163942-4 65577	68 21:54:12 69 21:54:13 70 21:54:14	0	0	16.00	0.0	0.0	0.0	0.0	64.0	64.0	0.0	0.0	3.178139 3.178139	101.505447 101.506989 101.506989 101.508194	NOT SELEC NOT SELEC NOT SELEC	T OFF T OFF T OFF	SELECT ON SELECT ON SELECT ON SELECT ON	51.46485 51.46485 51.46485 51.46485 51.46485
163943-1 65577 163943-2 65577 163943-3 65577	73 21:54:17	0	0		0.0	0.0	0.0	0.0		64.0		0.0	3.177109	101.508194 101.509567 101.509567	NOT SELEC NOT SELEC NOT SELEC	T OFF	SELECT ON SELECT ON SELECT ON	51.46485 51.46485 51.46485
163943-4 65577 163944-1 65577 163944-2 65577 163944-3 65577	76 21:54:20 77 21:54:21	000000000000000000000000000000000000000	0	16.00	0.0	0.0	0.0	0.0	64.0	64.0	0.0	0.0	3.176594 3.175908	101.510765 101.510765 101.512138 101.512138	NOT SELEC	CT OFF	SELECT ON SELECT ON SELECT ON SELECT ON	51.46485 51.46485 51.46485 51.46485
163944-4 65577 163945-1 65578 163945-2 65578	80 21:54:24	0	0	16.00	0.0	0.0	0.0	0.0	64.0	64.0	0.0	0.0	3.175221	101.513168 101.513168 101.514542	NOT SELEC	T OFF	SELECT ON SELECT ON SELECT ON	51.46485 51.46485 51.46485
163945-3 65578 163945-4 65578 163946-1 65578		0	0		0.0		0.0		64.0		0.0		3.173504	101.514542 101.515572 101.515572	NOT SELEC NOT SELEC NOT SELEC	T OFF	SELECT ON SELECT ON SELECT ON	51.46485 51.46485 51.46485
163946-2 65578 163946-3 65578 163946-4 65578	86 21:54:30 87 21:54:31	0	0			0.0		0.0	0.0	0.0	0.0	0.0	3.172646	101.516777 101.516777 101.517975	NOT SELEC	CT OFF	SELECT ON SELECT ON SELECT ON	51.46485 51.46485 51.46485
163947-2 65578 163947-3 65579	90 21:54:34	0	0		0.0	0.0	0.0	0.0		0.0		0.0	3.170929 3.170929	101.517975 101.519180 101.519180	NOT SELEC	CT OFF	SELECT ON SELECT ON SELECT ON	51.46485 51.46485 51.46485
	92 21:54:36 93 21:54:37	0	0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.170071 3.169384	101.520378 101.520378 101.521408	NOT SELEC	T OFF	SELECT ON SELECT ON SELECT ON	51.46485 51.46485 51.46485
163948-4 65579	94 21:54:38 95 21:54:39 96 21:54:40 97 21:54:41	0	0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.168526 3.168526	101.521408 101.522781 101.522781 101.523811	NOT SELEC	CT OFF	SELECT ON SELECT ON SELECT ON SELECT ON	51.46485 51.46485 51.46485 51.46485
163949-4 65579	98 21:54:42 99 21:54:43 00 21:54:44	0	0		0.0		0.0		64.0		0.0		3.166810	101.523811 101.525185 101.525185		T OFF	SELECT ON SELECT ON SELECT ON	51.46485 51.46485 51.46485
163950-2 65580 163950-3 65580 163950-4 65580	02 21:54:46	0	0			0.0		0.0	64.0	64.0	0.0	0.0	3.165951	101.526215 101.526215 101.527245	NOT SELEC	T OFF	SELECT ON SELECT ON SELECT ON	51.46485 51.46485 51.46485
163951-1 65580 163951-2 65580 163951-3 65580	05 21:54:49 06 21:54:50	0	0		0.0	0.0	0.0	0.0		64.0		0.0	3.163891 3.163891	101.527245 101.528275 101.528275	NOT SELEC	CT OFF	SELECT ON SELECT ON SELECT ON	51.46485 51.46485 51.46485
163951-4 65580 163952-1 65580 163952-2 65580 163952-3 65581	08 21:54:52 09 21:54:53	0	0	16.00	0.0	0.0	0.0	0.0	64.0	64.0	0.0	0.0	3.163033 3.162003	101.529305 101.529305 101.530167	NOT SELEC	T OFF	SELECT ON SELECT ON SELECT ON	51.46485 51.46485 51.46485
163952-3 65581 163952-4 65581 163953-1 65581 163953-2 65581	11 21:54:55 12 21:54:56	0	0	16.00	0.0	0.0	0.0	0.0	64.0	64.0	0.0	0.0	3.160801 3.160801	101.530167 101.531197 101.531197 101.531883	NOT SELEC	T OFF	SELECT ON SELECT ON SELECT ON SELECT ON	51.46485 51.46485 51.46485 51.46485
163953-2 65581 163953-3 65581 163953-4 65581 163954-1 65581	14 21:54:58 15 21:54:59	0	0		0.0	0.0	0.0	0.0	64.0	04.0	0.0	0.0	3.159771 3.158570	101.531883 101.532570 101.532570	NOT SELEC	CT OFF	SELECT ON SELECT ON SELECT ON SELECT ON	51.46485 51.46485 51.46485
163954-2 65581 163954-3 65581 163954-4 65581	17 21:55:01 18 21:55:02	0	0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.157368 3.157368	101.533257 101.533257 101.534111	NOT SELEC	CT OFF	SELECT ON SELECT ON SELECT ON	51.46485 51.46485 51.46485
163955-1 65582 163955-2 65582 163955-3 65582	21 21:55:05 22 21:55:06	0	0		0.0	0.0	0.0	0.0		0.0		0.0	3.154965 3.154965	101.534111 101.534630 101.534630	NOT SELEC	CT OFF	SELECT ON SELECT ON SELECT ON	51.46485 51.46485 51.46485
163955-4 65582 163956-1 65582 163956-2 65582	24 21:55:08 25 21:55:09	0	0	0.00	0.0	0.0	0.0	0.0	0.0	64.0	0.0	0.0	3.153592 3.152562	101.535484 101.535484 101.536171	NOT SELEC	CT OFF	SELECT ON SELECT ON SELECT ON	51.46485 51.46485 51.46485
163956-3 65582 163956-4 65582 163957-1 65582 163957-2 65582	27 21:55:11 28 21:55:12	0	0	16.00	0.0	0.0	0.0	0.0	64.0	64.0	0.0	0.0	3.151360 3.151360	101.536171 101.536858 101.536858 101.537544	NOT SELEC	T OFF	SELECT ON SELECT ON SELECT ON SELECT ON	51.46485 51.46485 51.46485 51.46485
163957-3 65583 163957-4 65583 163958-1 65583	30 21:55:14 31 21:55:15	0	0		0.0		0.0		64.0		0.0		3.150330 3.149128	101.537544 101.538231 101.538231	NOT SELEC	T OFF	SELECT ON SELECT ON SELECT ON	51.46485 51.46485 51.46485
163958-2 65583 163958-3 65583 163958-4 65583	34 21:55:18	0	0			0.0		0.0	64.0	64.0	0.0	0.0	3.148098	101.539093 101.539093 101.539780	NOT SELEC	T OFF	SELECT ON SELECT ON SELECT ON	51.46485 51.46485 51.46485
163959-1 65583 163959-2 65583 163959-3 65583	37 21:55:21 38 21:55:22	0	0		0.0	0.0	0.0	0.0		64.0		0.0	3.145524	101.539780 101.540466 101.540466	NOT SELEC	T OFF	SELECT ON SELECT ON SELECT ON	51.46485 51.46485 51.46485
163959-4 65583 163960-1 65584 163960-2 65584	40 21:55:24 41 21:55:25	0	0	16.00	0.0	0.0	0.0	0.0	64.0	64.0	0.0	0.0	3.144322 3.143120	101.541153 101.541153 101.541840	NOT SELEC	CT OFF	SELECT ON SELECT ON SELECT ON	51.46485 51.46485 51.46485
163960-3 65584 163960-4 65584 163961-1 65584	43 21:55:27 44 21:55:28	0	0	8.00	0.0		0.0		0.0		0.0		3.141919 3.141919	101.541840 101.542351 101.542351	NOT SELEC	T OFF	SELECT ON SELECT ON SELECT ON	51.46485 51.46485 51.46485
163961-2 65584 163961-3 65584 163961-4 65584 163962-1 65584	46 21:55:30 47 21:55:31		0		0.0	0.0	0.0	0.0	3072.0	0.0	0.0	0.0	3.140889 3.139687	101.543213 101.543213 101.543724 101.543724	NOT SELEC	T OFF	SELECT ON SELECT ON SELECT ON SELECT ON	51.46485 51.46485 51.46485 51.46485
163962-2 65584 163962-3 65585 163962-4 65585	49 21:55:33 50 21:55:34	0	0		0.0	0.0	0.0	0.0	3072.0	0.0	0.0	0.0	3.138657 3.138657	101.544586 101.544586 101.544586	NOT SELEC NOT SELEC	CT OFF	SELECT ON SELECT ON SELECT ON	51.46485 51.46485 51.46485
163963-1 65585 163963-2 65585 163963-3 65585	52 21:55:36 53 21:55:37	0	0	384.00	0.0	0.0	0.0	0.0		64.0		0.0	3.137455 3.136425	101.545097 101.545784 101.545784	NOT SELEC	CT OFF	SELECT ON SELECT ON SELECT ON	51.46485 51.46485 51.46485
163963-4 65585 163964-1 65585 163964-2 65585	56 21:55:40 57 21:55:41	0	0	400.00	0.0	0.0	0.0	0.0	3136.0	64.0	0.0	0.0	3.135396	101.546471 101.546471 101.546989	NOT SELEC	T OFF	SELECT ON SELECT ON SELECT ON	51.46485 51.46485 51.46485
163964-3 65585 163964-4 65585 163965-1 65586	59 21:55:43 60 21:55:44	0	0	400.00	0.0		0.0		3136.0		0.0		3.133336 3.133336	101.546989 101.547501 101.547501	NOT SELEC	CT OFF	SELECT ON SELECT ON SELECT ON	51.46485 51.46485 51.46485
163965-2 65586 163965-3 65586 163965-4 65586	62 21:55:46 63 21:55:47	0	0			0.0		0.0	3200.0	128.0	0.0	0.0	3.132306 3.131104	101.548187 101.548187 101.548706	NOT SELEC	CT OFF	SELECT ON SELECT ON SELECT ON	51.46485 51.46485 51.46485
163966-1 65586 163966-2 65586 163966-3 65586 163966-4 65586	65 21:55:49 66 21:55:50	0	0		0.0	0.0	0.0	0.0	3200.0	128.0	0.0	0.0	3.129902 3.129902	101.548706 101.549561 101.549561	NOT SELEC	CT OFF	SELECT ON SELECT ON SELECT ON SELECT ON	51.46485 51.46485 51.46485 51.46485
163966-4 65586 163967-1 65586 163967-2 65586 163967-3 65587	68 21:55:52 69 21:55:53	0	0	416.00	0.0	0.0	0.0	0.0	3200.0	128.0	0.0	0.0	3.128701 3.127327	101.550247 101.550247 101.551109 101.551109	NOT SELEC	CT OFF	SELECT ON SELECT ON SELECT ON SELECT ON	51.46485 51.46485 51.46485 51.46485
163967-4 65587 163968-1 65587 163968-2 65587	71 21:55:55 72 21:55:56	0	0 28 0		0.0	64.0	576.0	64.0	3200.0	128.0	0.0	0.0	3.126126 3.126126	101.551964 101.551964 101.552994	NOT SELEC	CT OFF	SELECT ON SELECT ON SELECT ON	51.46485 51.46485 51.46485
163968-3 65587 163968-4 65587 163969-1 65587	75 21:55:59 76 21:56:00	0	0 16 24	496.00	64.0		448.0		3200.0		0.0		3.123036 3.123036	101.552994 101.553680 101.553680	NOT SELEC	T OFF	SELECT ON SELECT ON SELECT ON	51.46485 51.46485 51.46485
163969-2 65587 163969-3 65587 163969-4 65587	78 21:56:02 79 21:56:03	36 56 36	44 50 58			640.0		832.0	3072.0	128.0	0.0	0.0	3.121491 3.120289	101.554543 101.554543 101.555054	NOT SELEC	T OFF	SELECT ON SELECT ON SELECT ON	51.46485 51.46485 51.46485
163970-1 65588 163970-2 65588 163970-3 65588	81 21:56:05 82 21:56:06	54 50 54	58 54 54		1280.0	960.0	1216.0	1472.0		0.0		0.0	3.119088 3.119088	101.555054 101.555916 101.555916	NOT SELEC	T OFF	SELECT ON SELECT ON SELECT ON	51.46485 51.37415 51.37415
163970-4 65588 163971-1 65588 163971-2 65588	84 21:56:08 85 21:56:09	56 60 60	66 66 66	*****	1280.0	2176.0	1792.0	1856.0	3072.0	0.0	0.0	0.0	3.118229 3.117199	101.556427 101.556427 101.556770	NOT SELEC	CT OFF	SELECT ON SELECT ON SELECT ON	51.37415 51.37415 51.37415
163971-3 65588 163971-4 65588 163972-1 65588 163972-2 65588	87 21:56:11 88 21:56:12	60 60 60 60	66 66 66	*****	896.0	448.0	896.0	512.0	3072.0	0.0	0.0	0.0	3.116684 3.116684	101.556770 101.557289 101.557289 101.557632	NOT SELEC	CT OFF	SELECT ON SELECT ON SELECT ON SELECT ON	51.37415 51.37415 51.37415 51.37415
163972-2 65589 163972-3 65589 163972-4 65589	90 21:56:14	60 60 60	66 66		64.0	.10.0	256.0	512.0	3136.0	0.0	0.0	0.0	3.116169 3.115654	101.557632 101.557632 101.557976 101.557976	NOT SELEC	CT OFF	SELECT ON SELECT ON SELECT ON SELECT ON	51.37415 51.37415 51.37415 51.37415

163973-2 655893 21:56:17	60	66			128.0		128.0		64.0		0.0	3.115139	101.558144	NOT SELECT OFF	SELECT ON	51.37415
163973-3 655894 21:56:18	60	66										3.115139	101.558144	NOT SELECT OFF	SELECT ON	51.37415
163973-4 655895 21:56:19	70	66						3200.0		0.0		3.114968	101.558319	NOT SELECT OFF	SELECT ON	51.37415
163974-1 655896 21:56:20	70	66	544.00	192.0		640.0						3.114968	101.558319	NOT SELECT OFF	SELECT ON	51.37415
163974-2 655897 21:56:21	70	66			64.0		1216.0		0.0		0.0	3.114796	101.558319	NOT SELECT OFF	SELECT ON	51.37415
163974-3 655898 21:56:22	70	66										3.114796	101.558319	NOT SELECT OFF	SELECT ON	51.37415
163974-4 655899 21:56:23	64	64						3072.0		0.0		3.114625	101.558319	NOT SELECT OFF	SELECT ON	51.37415
163975-1 655900 21:56:24	60	66	*****	1664.0		1984.0						3.114625	101.558319	NOT SELECT OFF	SELECT ON	51.37415
163975-2 655901 21:56:25	58	66			1472.0		1984.0		0.0		0.0	3.114625	101.558319	NOT SELECT OFF	SELECT ON	51.37415
163975-3 655902 21:56:26	56	66										3.114625	101.558319	NOT SELECT OFF	SELECT ON	51.37415
163975-4 655903 21:56:27	56	66						3072.0		0.0		3.114625	101.558319	NOT SELECT OFF	SELECT ON	51.37415
163976-1 655904 21:56:28	56	66	* * * * * *	1344.0		1984.0						3.114625	101.558319	NOT SELECT OFF	SELECT ON	51.37415
163976-2 655905 21:56:29	56	66			1344.0		1984.0		0.0		0.0	3.114625	101.558487	NOT SELECT OFF	SELECT ON	51.37415
163976-3 655906 21:56:30	56	66										3.114625	101.558487	NOT SELECT OFF	SELECT ON	51.37415
163976-4 655907 21:56:31	56	66						3136.0		0.0		3.114625	101.558487	NOT SELECT OFF	SELECT ON	51.37415
163977-1 655908 21:56:32	56	66	* * * * * *	1344.0		1984.0						3.114625	101.558487	NOT SELECT OFF	SELECT ON	51.37415
163977-2 655909 21:56:33	56	66			1280.0		1984.0		0.0		0.0	3.114796	101.558487	NOT SELECT OFF	SELECT ON	51.37415

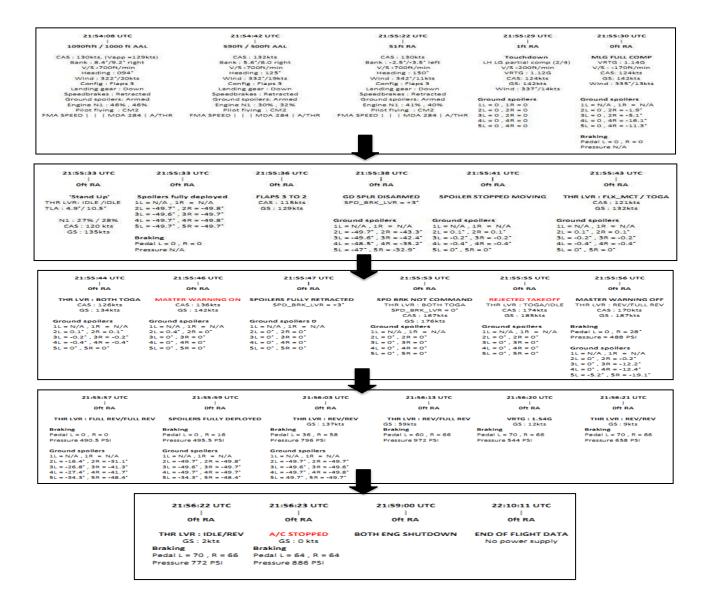
b.	Engines shutdown	(21:58:48 UTC - 21:59:00 UTC)
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Frame-Sf	SfCount	Time	St	DAY DAY	DATEO DATEO	UTC_HOUR UTC_HOUR				ENG1 MASTER LEVER SELECTED OFF ENG1_MASTER_LEVER	ENG2 MASTER LEVER SELECTED ON ENG2_MASTER_LEVER	N1_1 N1_1 %	N1_2 N1_2 *
164010-4		14:14:03								NOT SELECT OFF	SELECT ON	19.5	19.4
164011-1	656044	14:14:04					58	48	9700	NOT SELECT OFF	SELECT ON	19.5	19.3
164011-2	656045	14:14:05								NOT SELECT OFF	SELECT ON	19.6	19.3
164011-3	656046	14:14:06								NOT SELECT OFF	SELECT ON	19.6	19.3
164011-4	656047	14:14:07								NOT SELECT OFF	SELECT ON	19.6	19.4
164012-1	656048	14:14:08				21	58	52		NOT SELECT OFF	SELECT ON	19.8	19.5
164012-2	656049	14:14:09								NOT SELECT OFF	SELECT ON	20.0	19.6
164012-3	656050	14:14:10								NOT SELECT OFF	SELECT ON	20.1	19.7
164012-4	656051	14:14:11								NOT SELECT OFF	SELECT ON	20.2	19.8
164013-1	656052	14:14:12		29			58	56		NOT SELECT OFF	SELECT ON	20.3	19.7
164013-2	656053	14:14:13								NOT SELECT OFF	SELECT ON	20.3	19.7
164013-3	656054	14:14:14								NOT SELECT OFF	NOT SELECT ON	20.3	19.6
164013-4	656055	14:14:15								NOT SELECT OFF	NOT SELECT ON	20.3	16.5
164014-1	656056	14:14:16	A		2911		59	0		SELECT OFF	NOT SELECT ON	20.2	15.2
164014-2	656057	14:14:17	A							SELECT OFF	NOT SELECT ON	16.6	14.1
164014-3	656058	14:14:18	A							SELECT OFF	NOT SELECT ON	15.3	13.1

# Flight data recording (FDIMU)

					Ground		LATITUDE						SPEED	Master
			Barometric Altitude ALT BARO	Radio Height ALT RADIO	speed corrected GS		acquired param LATITUDE ACQ	LONGITUDE acquired param LONGITUDE ACQ	Throttle range 1 ENG THR CMD 1	Throttle range 2 ENG THR CMD 2	Throttle angle 1 ENG THR VAL 1	Throttle angle 2 ENG THR VAL 3	BRAKE COMMAND 2 SPD BRK	warning ON/OFF WARN MASTE
ne-Sf S	SfCount	Time St	ft	ft	kts.s	kts.s							DISCRETE	-
353-4 354-1		21:54:09 21:54:10	1094	1053	151.0	131.4	3.178654 3.178483	101.504929	CLIMB CLIMB	CLIMB	22.5	22.5	NO COMMAND	OFF
854-2		21:54:11	1066	1046	152.0	131.1	3.178311	101.506302	CLIMB	CLIMB	22.5	22.5		OFF
354-3 354-4		21:54:12 21:54:13	1054	1044	152.0	130.8	3.178139	101.506989	CLIMB	CLIMB	22.5	22.5		OFF
855-1		21:54:14	1030	1029	152.0	131.5	3.177796	101.508362	CLIMB	CLIMB	22.5	22.5	NO COMMAND	OFF
355-2 355-3		21:54:15 21:54:16	1018	1014 993	153.0	131.1 130.3	3.177453 3.177281	101.509048	CLIMB	CLIMB	22.5	22.5		OFF
855-4	3423	21:54:17	998	967	153.0	130.3	3.176938	101.510254	CLIMB	CLIMB	22.5	22.5		OFF
856-1 856-2		21:54:18 21:54:19	990 978	951	153.0	129.6	3.176594 3.176251	101.510941 101.511627	CLIMB CLIMB	CLIMB	22.5	22.5	NO COMMAND	OFF
856-3		21:54:20	970	922	154.0	129.3	3.175908	101.512138	CLIMB	CLIMB	22.5	22.5		OFF
56-4 57-1		21:54:21	962 954	904	154.0	129.1	3.175564 3.175221	101.512825	CLIMB CLIMB	CLIMB	22.5	22.5	NO COMMAND	OFF
57-2		21:54:23	942	877	155.0	130.9	3.174706	101.514030	CLIMB	CLIMB	22.5	22.5	No contrato	OFF
857-3 857-4		21:54:24	930 914	853	155.0	130.8	3.174363 3.173848	101.514542	CLIMB	CLIMB	22.5	22.5		OFF
58-1		21:54:26	894	815	156.0	132.0	3.173504	101.515747	CLIMB	CLIMB	22.5	22.5	NO COMMAND	OFF
58-2		21:54:27 21:54:28	874 854	802	156.0	133.0 133.4	3.172989 3.172646	101.516258	CLIMB CLIMB	CLIMB	22.5	22.5		OFF
58-4		21:54:29	834	742	156.0	133.4	3.172303	101.517464	CLIMB	CLIMB	22.5	22.5		OFF
59-1 59-2		21:54:30 21:54:31	818	728	155.0	133.1	3.171788	101.518150 101.518661	CLIMB CLIMB	CLIMB	22.5	22.5	NO COMMAND	OFF
59-3		21:54:32	774	703	155.0	134.4	3.170929	101.519348	CLIMB	CLIMB	22.5	22.5		OFF
859-4 860-1		21:54:33 21:54:34	754 734	674 672	155.0	134.3 134.4	3.170586	101.519867 101.520554	CLIMB	CLIMB	22.5	22.5	NO COMMAND	OFF
60-2		21:54:35	718	668	155.0	134.1	3.169728	101.521065	CLIMB	CLIMB	22.5	22.5	NO COMMAND	OFF
60-3		21:54:36	698	646	155.0	133.9	3.169384	101.521584	CLIMB	CLIMB	22.5	22.5		OFF
860-4 861-1		21:54:37 21:54:38	682 666	630 617	154.0 154.0	134.0 134.3	3.168869 3.168526	101.522270	CLIMB	CLIMB	22.5	22.5	NO COMMAND	OFF
61-2		21:54:39	650	600	154.0	133.3	3.168011	101.523468	CLIMB	CLIMB	22.5	22.5		OFF
61-3 61-4		21:54:40 21:54:41	634 622	585 566	153.0	132.1	3.167668 3.167153	101.523987 101.524498	CLIMB CLIMB	CLIMB CLIMB	22.5	22.5		OFF
62-1	3448	21:54:42	606	554	153.0	132.6	3.166810	101.525185	CLIMB	CLIMB	22.5	22.5	NO COMMAND	OFF
62-2 62-3		21:54:43	594 582	542 527	152.0	132.4	3.166295	101.525703	CLIMB CLIMB	CLIMB CLIMB	22.5	22.5		OFF
62-4	3451	21:54:45	574	527	152.0	131.3	3.165436	101.526733	CLIMB	CLIMB	22.5	22.5		OFF
63-1 63-2		21:54:46 21:54:47	566 554	516	151.0	131.3	3.164921 3.164578	101.527245	CLIMB CLIMB	CLIMB	22.5	22.5	NO COMMAND	OFF
63-3		21:54:48	546	499	151.0	130.0	3.164063	101.528450	CLIMB	CLIMB	22.5	22.5		OFF
63-4 64-1		21:54:49 21:54:50	538 526	492	151.0	132.1	3.163548	101.528793	CLIMB	CLIMB	22.5	22.5	NO COMMAND	OFF
64-2		21:54:51	514	484	151.0	132.1	3.162518	101.529823	CLIMB	CLIMB	22.5	22.5	no commo	OFF
64-3		21:54:52 21:54:53	502 490	484	151.0	132.6 131.1	3.162003 3.161488	101.530334 101.530678	CLIMB	CLIMB	22.5	22.5		OFF
65-1		21:54:54	482	463	151.0	129.9	3.160973	101.531197	CLIMB	CLIMB	22.5	22.5	NO COMMAND	OFF
65-2		21:54:55 21:54:56	470 454	451	151.0	129.8	3.160286	101.531540 101.531883	CLIMB	CLIMB CLIMB	22.5	22.5		OFF
65-4		21:54:57	442	424	150.0	132.4	3.159085	101.531883	CLIMB	CLIMB	22.5	22.5		OFF
66-1		21:54:58 21:54:59	430 414	405	150.0	132.9	3.158570	101.532738 101.533081	CLIMB	CLIMB CLIMB	22.5	22.5	NO COMMAND	OFF
66-2 66-3		21:55:00	398	390	150.0	132.4	3.157368	101.533424	CLIMB	CLIMB	22.5	22.5		OFF
66-4		21:55:01 21:55:02	382	362 346	150.0	131.8	3.156682 3.156167	101.533768 101.534111	CLIMB	CLIMB CLIMB	22.5	22.5	NO COMOND	OFF
67-2		21:55:03	346	342	150.0	132.4	3.155480	101.534454	CLIMB	CLIMB	22.5	22.5	NO COMMAND	OFF
67-3		21:55:04 21:55:05	326 310	312 286	150.0	133.9 134.4	3.154965 3.154278	101.534798 101.535141	CLIMB	CLIMB CLIMB	22.5	22.5		OFF
868-1		21:55:06	298	275	148.0	134.4	3.153763	101.535484	CLIMB	CLIMB	22.5	22.5	NO COMMAND	OFF
68-2 68-3		21:55:07	286 270	262	148.0	132.5	3.153077 3.152562	101.535828	CLIMB	CLIMB CLIMB	22.5	22.5		OFF
68-4		21:55:08	270	239	147.0	129.8	3.152562	101.536171 101.536514	CLIMB	CLIMB	22.5	22.5		OFF
69-1		21:55:10 🍉	246	219	147.0	130.0	3.151360	101.537033	CLIMB	CLIMB	22.5	22.5	NO COMMAND	OFF
77-1 77-2		21:55:42 21:55:43	50 50	0	130.0	117.0	3.133336 3.132821	101.547676	IDLE TOGA	IDLE TOGA	11.3	8.4	COMMANDED	OFF
377-3	3510	21:55:44	58	0	134.0	118.8	3.132306	101.548187	TOGA	TOGA	42.2	42.2		OFF
877-4 878-1		21:55:45 21:55:46	66 66	0	139.0	122.5	3.131791 3.131104	101.548531 101.548874	TOGA	TOGA	42.2	42.2	COMMANDED	OFF
78-2	3513	21:55:47	66	0	149.0	132.4	3.130589	101.549217	TOGA	TOGA	42.2	42.2		ON
878-3 878-4		21:55:48 21:55:49	66 66	0	154.0	136.8	3.130074 3.129387	101.549561	TOGA TOGA	TOGA	42.2	42.2		ON
79-1	3516	21:55:50	62	0	164.0	145.9	3.128701	101.550423	TOGA	TOGA	42.2	42.2	COMMANDED	ON
79-2		21:55:51 21:55:52	66 62	0	168.0	151.3	3.128014 3.127327	101.550766 101.551277	TOGA TOGA	TOGA	42.2	42.2		ON
79-4	3519	21:55:53	66	0	177.0	160.4	3.126641	101.551620	TOGA	TOGA	42.2	42.2		ON
80-1 80-2		21:55:54 21:55:55	62 74	0	181.0	165.1	3.125954 3.125268	101.551964	TOGA	TOGA	42.2	42.2	NO COMMAND	ON
80-3	3522	21:55:56	66	0	187.0	172.0	3.124581	101.552994	FULL_REV	FULL_REV	-22.5	-22.5		OFF
80-4 81-1		21:55:57 21:55:58	62 -38	0	183.0 177.0	175.6	3.123723 3.123036	101.553337 101.553856	FULL_REV FULL REV	FULL_REV FULL REV	-22.5	-22.5	NO COMMAND	OFF
81-2	3525	21:55:59	-34	0	170.0	155.4	3.122349	101.554199	FULL_REV	FULL_REV	-22.5	-22.5		OFF
81-3 81-4		21:56:00 21:56:01	-38	0	164.0	147.1	3.121663 3.120976	101.554543	FULL_REV FULL REV	FULL_REV FULL_REV	-22.5	-22.5		OFF
82-1	3528	21:56:02	-26	0	147.0	136.5	3.120289	101.555229	FULL_REV	FULL_REV	-22.5	-22.5	NO COMMAND	OFF
82-2		21:56:03	-18	0	138.0	127.5	3.119774 3.119259	101.555573	REVERSE	REVERSE	-8.4	-8.4		OFF
82-4	3531	21:56:05	18	0	119.0	108.8	3.118744	101.556259	REVERSE	REVERSE	-8.4	-8.4		OFF
83-1		21:56:06 21:56:07	34 50	0	110.0	100.1 92.4	3.118229	101.556427 101.556770	REVERSE	REVERSE	-8.4	-8.4	NO COMMAND	OFF
83-3	3534	21:56:08	58	0	94.0	84.8	3.117371	101.556946	REVERSE	REVERSE	-8.4	-8.4		OFF
83-4		21:56:09 21:56:10	66 70	0	84.0	78.9 69.6	3.117028 3.116684	101.557114 101.557289	REVERSE	REVERSE	-8.4	-8.4	NO COMMAND	OFF
84-2	3537	21:56:11	70	0	69.0	60.6	3.116341	101.557457	REVERSE	REVERSE	-14.1	-8.4		OFF
84-3		21:56:12 21:56:13	70 70	0	63.0 57.0	52.5 43.6	3.116169	101.557632	REVERSE	FULL_REV	-14.1	-19.7		OFF
84-4		21:56:13	70	0	57.0	43.6	3.115826	101.557800	REVERSE	FULL_REV FULL_REV	-16.9	-19.7	NO COMMAND	OFF
85-2	3541	21:56:15	70	0	45.0	0.0	3.115483	101.558144	REVERSE	FULL_REV	-14.1	-22.5		OFF
85-3		21:56:16	62	0	34.0	0.0	3.115311	101.558144	REVERSE	FULL_REV	-14.1	-22.5		OFF
885-4 886-1		21:56:17 21:56:18	82 58	0	29.0	0.0	3.115139 3.114968	101.558319	REVERSE	FULL_REV	-14.1	-22.5	NO COMMAND	OFF
86-2		21:56:19	78	0	18.0	0.0	3.114968	101.558319	REVERSE	FULL_REV	-14.1	-22.5		OFF
886-3		21:56:20	58	0	11.0	0.0	3.114796	101.558319	REVERSE	FULL_REV	-14.1	-22.5		OFF
886-4 887-1		21:56:21 21:56:22	70 70	0	7.0	0.0	3.114796 3.114796	101.558319 101.558487	IDLE	REVERSE	0.0	-8.4	NO COMMAND	OFF
887-2		21:56:22	66	0	0.0	0.0	3.114796	101.558487	IDLE	REVERSE	-2.8	-8.4	COLUMND	OFF
887-3	3550	21:56:24	62	0	0.0	0.0	3.114796	101.558487	IDLE	IDLE	-2.8	-2.8		OFF
887-4 888-1		21:56:25	66	0	0.0	0.0	3.114796 3.114796	101.558487	REVERSE	REVERSE	-8.4	-8.4	NO COMMAND	OFF
88-1		21:56:26 21:56:27	62 62	0	0.0	0.0	3.114796	101.558487 101.558487	REVERSE	REVERSE REVERSE	-8.4	-8.4	NO COMPAND	OFF
888-3	3554	21:56:28	62	0	0.0	0.0	3.114796	101.558487	REVERSE	REVERSE	-8.4	-8.4		OFF
888-4		21:56:29	58	0	0.0	0.0	3.114796	101.558487	REVERSE	REVERSE	-8.4	-8.4	110.000	OFF
889-1	3556	21:56:30	58	0	0.0	0.0	3.114796	101.558487	IDLE	IDLE	0.0	0.0	NO COMMAND	OFF

#### Flight Data Timeline



## Appendix H: Meteorological Reports (METAR)

WMSA 291700Z 33005KT 240V050 9000 -RA FEW008 SCT140 OVC260 24/23 Q1009

WMSA 291800Z 35005KT 300V030 9000 -RA FEW008 SCT140 OVC260 24/23 Q1008

WMSA 291900Z 30005KT 280V350 9000 -RA FEW008 SCT140 OVC260 24/23 Q1007

WMSA 292000Z 30005KT 8000 -RA FEW008 SCT140 OVC260 24/23 Q1007

WMSA 292100Z 32004KT 260V030 7000 -RA FEW005 SCT140 OVC260 24/23 Q1006

WMSA,2017-11-29 22:00,WMSA 292200Z 32005KT 280V010 7000 -RA FEW005 SCT140 BKN260 24/23 Q1007

WMSA,2017-11-29 23:00,WMSA 292300Z 32003KT 280V030 9999 FEW003 SCT140 BKN260 24/23 Q100

APPENDIX I

# Appendix I: Aeronautical Information Publication (AIP) and Jeppesen Charts

	WMSA AD 2.1 AE			DICATOR AND NAME
	WMSA - S	UBANG/SUL		UL AZIZ SHAH
	WMSA AD 2.2 AERO	DROME GEOG	RAPHICAL	AND ADMINISTRATIVE DATA
1	ARP coordinates and site at AD			LONG 1013253 E wy - 1356 M, brg 309° fm Twr.
2	Direction and distance from city		15 KM (8 NM) br	rg 262° fm Kuala Lumpur Railway Station
3	Llevation / Reference temperature		8911 (27 M) / 33	2° C
4	Geoid Undulation (ARP)		-2 879 M	
5	MAG VAR / Annual change		07 min 00 sec W	/est (2012)
6	AI) Administration, address, telephone	e, teletax, telex, Al S	Operator :	Malaysia Airports Sdn. Bhd. Terminal 3 Sultan Abdul Aziz Shah Airport 47200 Subang Selangor Darul Ehsan. Tel : 603 - 70453251 Fax : 603 - 78463679
			ATC Services .	Department of Civil Aviation Malaysia Block B, Air Trathic Control Complex Sultan Abdul Aziz Shah Airport 47200 Subang Selangor Darul Ehsan. Tel.: 603-78473573 / 78465233 (Control Centre 603-7/8465502 (Control Tower) Fax: 603-78473572 (Control Tower) 603 78/71089 (Control Tower) AFTN : WMFCZQZX
7	Types of traffic permitted (IFR/VFR)		IFR / VFR	
8	Remarks		Nil	
	WMS	A AD 2.3 OP	ERATIONAL	HOURS
1	AD Administration	H24		
	Customs and immigration	2300 1500		
	Health and sanitation	Nil		
4	AIS Briefing Office	H24 Location: Subar	ng Control Tower.	
			5602778465233 es	xt 119
E	ATS Departing Office (ADO)	Fax: 603 784 H24	1089	
	ATS Reporting Office (ARO) MET Briefing Office	NA NA		
	ATS	H24		
	Fuelling	PETRONAS Re		F 000 70/01007
0			31733 / 78473726	Fax: 603 - 78401687
10.02	Handling		t with handling agen	it.
	Security	H24		
	De-icing	Nil Terminel bldg e	or hts 2200 4500	Outside this time, terminal blds and the Other DOD
12	Remarks	fm Malaysia Air		Outside this time, terminal bldg avbl on 24 hr PPR
		in Malaysia Ar	port Sen. Bild.	
ED	ARTMENT OF CIVIL AVIATION M			08 MAR 201

WMSA AD 2 - 4

AIP MALAYSIA

#### WMSA AD 2.11 METEOROLOGICAL INFORMATION PROVIDED

1	Associated MET Office	SUBANG / Sultan Abdul Aziz Shah
2	Hours of service MET Office outside hours	H24
3	Office responsible for TAF preparation Periods of validity	Subang Meteorological Office and KLIA Meteorological Office 24
4	Type of landing forecast Interval of issuance	METAR/SPECI and TREND (0000UTC - 0900UTC) Hourly
Ь	Briefing / consultation provided	Provided
6	l light documentation Language(s) used	Charts, Tabular Form and Abbreviated Plain Language Text English
7	Charts and other information available for briefing or consultation	Flight Level Wind/Temp FL50, FL100, FL140, FL180, FL250, FL320 and FL380, SIGW/X, Volcanic Ash/Tropical Cyclone Advisory, SIGMET, AIRMET, Aerodrome Warning, METAR Bulletin, TAFOR Bulletin, Radar and Satellite Pictures.
8	Supplementary equipment available for providing information	Self-Briefing Terminals
9	ATS units provided with information	Subang Control Tower
10	Additional information	Tcl : 603 - 78461441 Fax : 603 - 78464082

#### WMSA AD 2.12 RUNWAY PHYSICAL CHARACTERISTICS

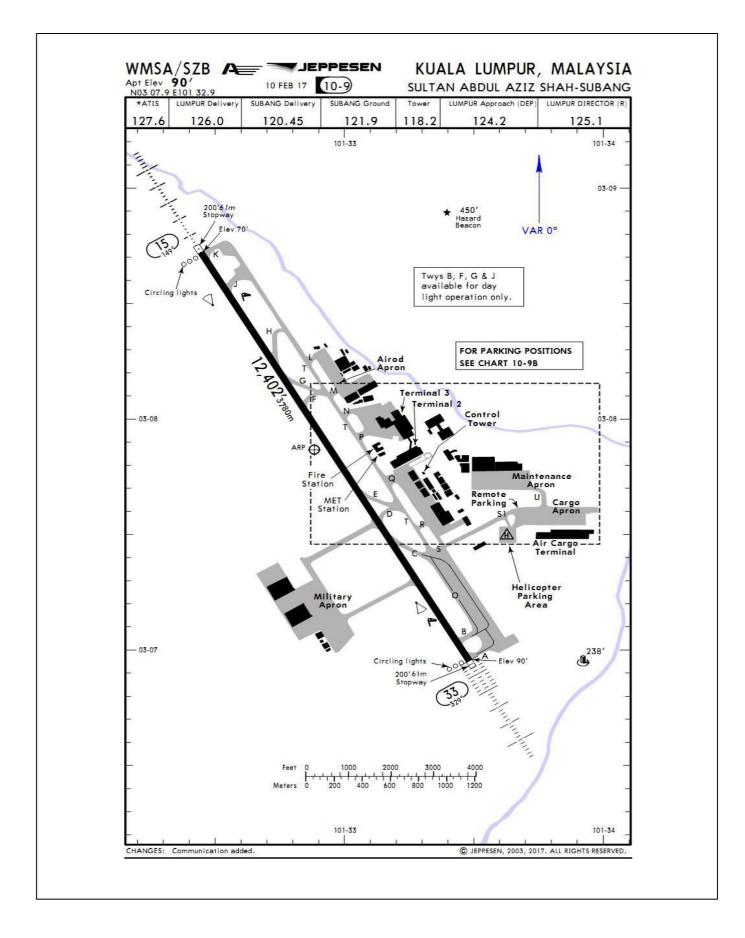
Designation RWY NR	TRUE and MAG BRG	Dimensions of RWY (M)	Strength (PCN) Surface of RWY and SWY	THR Coordinates	THR elevation and highest elevation of TD2 of precision APP RWY
1	2	3	4	5	6
15	149° T	3780 x 15	PCN 59/F/B/X/U Asphalt	030843.27N 1013226.72E	70 FT(21.39 M)
33	329° T	3780 x 45	PCN 59/F/B/X/U Asphalt	030657.17N 1013328.89E	90 FT (26.59 M)

Slope of RWY - SWY	SWY Dimensions (M)	CWY Dimensions (M)	Strips Dimensions (M)	OL Z	Remarks
7	8	9	10	11	12
0.137 %	61 X 45	Nil	3902 x 304	Nil	Swy not to be used.
0.137 %	61 X 45	Nil	-1	Nil	Swy not to be used.

#### WMSA AD 2.13 DECLARED DISTANCES

RWY Designator	ASICO (M)	(M)	ASIDA (M)	(M)	Remarks
1	2	3	4	5	6
15	3700	3841	3841	3780	Nil
33	3780	3841	3841	3780	Nil

15 NOV 2012 AIP AMDT 3/2012 DEPARTMENT OF CIVIL AVIATION MALAYSIA



# Appendix J: Flight / Roster Planning

# Flight Schedule

Tue ,26 De	c 2017				<u>17-29/11/17, AI</u> <, ALL CHARTE			Time : 13:3
	Monday	Tuesday	We	dnesday	Thursday	Friday	Saturday	Sunday
AK20	1		NOV29	l	1			
9м-анм	1		5247	BTU 0200	1		1 1	
1 .	1		1	KUL 0405	ľ		1	
Î a	I		1	2:05 l	l		L I	
1	1		NOV29	1	1		L 1	
i .	1		824	KUL 0430	ľ		I J	
1	1		1	HKT 0600	Ì		1 1	
1	1		825	HKT 0630	3		1	
Į.	1		1	KUL 0800	1		1	
I .	1		1	3:00	1		1 1	
1 .	1		NOV29	1	ľ		1 1	
I	I		717	KUL 0850	1		1	
Ĩ	1		1	SIN 1000	1		1 1	
[ *	1		716	SIN 1025	1		1	
I :	]		[	KUL 1130 [	I		] ]	
1	1		1	2:15	1		L 1	
I.	1		NOV29	1	]		1	
1	[		5134	KUL 1200 [	1		1	
1	1		1	BKI 1435	1		1 1	
I	I		5133	BKI 1505	1		[ ]	
Ι	I		1	KUL 1735	1		1 1	
1	1		1	5:05 [	1		1	
I :	1		NOV29	ſ	1		1 1	
I	1		l 9700	KUL 2030	1		L I	
1	1		1	SZB 2100	1		E	
I .	1		9700A	SZB 2101	I		1 1	
ı :	1		1	SZB 2200 [	ľ		1 1	
I.	I		9700B	SZB 2201	1		F 1	
I	I		1	SZB 2300	1		[ ]	
I .	1		9701	SZB 2301	Ľ		1	
I .	1		ſ	KUL 2330	T		1 1	
	1		1	2:57			1	

## **Crew Roster**

AIR ASIA Tue ,26 Dec 201	.7	S							FULL I					n UTC	1-	TD-STA based)	Page : 1 Time : 18:
IAME D	Thu	Fri Nov17	Sat Nov18	Sun Nov19	Mon Nov20	Tue Nov21	Wed	Thu Jov23	Fri Nov24	Sat Nov25	Sun Nov26	Mon Jov27	Tue Nov28	Wed Nov29			
JI AK20 CP DAIB, OMAR BIN 10053	ROFF	REST DPCI 21:15	1:15 5202 23:00 KUL	KCH 1:00 5203 1:25 KCH KUL 3:10 6434 3:35 KUL KBR 4:40 6435 5:05 KBR KUL 6:10	6122 2:55 KUL PEN 3:55 1502 4:20 PEN SGN 6:05 1503 6:35 SGN 8:20 6:25 SGN 8:20 6:25 SGN 8:20 6:25 SGN 8:20 8:20 8:20 8:20 8:20 50 8:20 8:20 8:20 50 8:20 8:20 50 8:20 8:20 50 8:20 8:20 8:20 8:20 8:20 8:20 8:20 8:2	DEF	DFF	REST 880 23:45 KUL	DMK 1:55 881 2:25 DMK KUL 4:40 713 5:20 KUL SIN 6:30 712 6:55 SIN KUL 8:00 8/TI	2:00 SIMI 22:00	193 - F. I	OFF	5118 9:20 KUL BKI 11:55 5119 12:25 BKI KUL 14:55	REST 9700 20:30 KUL SZB 21:00 9700A 21:01 SZB			
SLOCK CREDIT Daily				5:55	5:35				22:00				5:05				
JL AR20 FO (20, 20NE HEE 55641	OFF	DFF	COAD 1:00 L0:00	1:00	OFF	DFF	SPCO 1:00 .0:00	8/T L4:45 L8:45	REST	DFF	DFF		REST FFS 21:45	1:45 9700 20:30 KUL SZB 21:00 9700A 21:01 SZB SZB 22:00 9701 23:01 SZB KUL 23:30			
BLOCK CREDIT Daily														23:30			
JL AK20 FO KON, CHEN YI BRIAN 114168	REP 0:50 543 1:35 REP KUL 3:45	DFF	DFF	5104 2:50 KUL BKI 5:25 BKI L9:30 BKI	2:30	5137 9:45 BKI KUL 2:15 51388 2:50 KUL 5:30 5138 12:50 KUL BKI 15:30	6262 8:00 BKI TWU 8:55 6263 9:20 TWU BKI 0:10 5119 12:25 * BKI KUL 14:55	REST	OFF	DFF 403 23:25 KUL	PDG 0:35 402 1:00 PDG KUL 2:05 562 22:35 KUL	LPQ 1:30 563 2:00 LPQ KUL	OFF	REST 9700 20:30 KUL SZB 21:00 9700A 21:01 SZB 22:00 9701 23:01 SZB KUL 23:0			
BLOCK	4:15		15			5:40	3:55				2:15	5:05 6:00					

## APPENDIX K

# Appendix K: Mandatory Occurrence Report

Flight Operations Divisio Department of Civil Avia ND 27 Perslaran Perdan Level 2, Block Pedium E S2618 PUTRAJAYA	ation Malaysia na	OCCURRENC DEPARTMENT OF MALA	CIVIL AVIATION			F	A Borang S ax to: +603 8 or e mail to sty.MOR@do	871 433
Complete all s	sections where inform	ation is relevant.	Date received by I	DCA		DCA Oc	currence No	
For multi-choice b	ooxes, indicate which	entry is appropriate.	30/11/2017			MO	R/17/28	
Aircraft Type and Sene	es Registration	Operator	Date Of Occurer	nce	Flight Ph	ase	Nature Of	Flight
A320	9M-AHM	AIR ASIA	30/11/2017					
	FLIGHT AN	D WEATHER DETAILS		5,	PARKED TAXYING		PAX FREIGHT	
Filght No	UAY Wind	Thermony	10	1	IAKE OFF	X	SURVEY	Г
AK9700	NIGHT X 320/4	Runway Precipitalic Used	n Icing Turbu	lence	INIT CLIMB		PI FASURE	Г
From		15 RAIN		X	CLIMB	Ē	AGRICULTUR/	-
KUL	Time 110	State SNOW	NOD NOD		CRUISE		BUSINESS	
То	0550LT HUAIVEL		HEAVY SEVER	εΓ	DESCENT	-	CLUE/GROUP	· 「
SZB	Visibility GND	WET HAIL	EXTREM		HOLDING	<u> </u>	PRIVATE	
Geog. Position				<del>-</del>	APPROACH		POSITICNING	
Geog. Position	24		1	<u>e - 10</u>		-	FERRY	
	24	-				-	~~~~~	
		SLUSH HEAVY		11.8	CIRCUIT		TEST	
		Cloud Type	F1700	1 2	AEROEATICS		IRAINING	X
		-				0 <del>10</del>		
NARRATIVE		Hoight / Ft	1700		HOVER	<u> </u>	PARACHUT N TOWING	
II was an endorsement Celsus and dry runawa (TOCA) was applied wi instructor rechecked the reversers and braking	ay. After the third touch ith normal indications. A e speedbrakes in disarr The aircraft ended over		sibility reported of 8 km, s tage, the ftaps were selec infiguration warning came still persist. Rejected take	ted to 2 an out with sp	d of 320/4 k d the speed policr indica	d brake di atcd on th	TOWING operature 24 Isarmed, Full Ic ECAM, The	degrees power
It was an endorsement Celsus and dry runawa (TCCA) was applied wi instructor rechecked the reversers and braking	ay. After the third touch ith normal indications. A e speedbrakes in disarr The aircraft ended over	Amount / 30%	sibility reported of 8 km, s tage, the ftaps were selec infiguration warning came still persist. Rejected take	ted to 2 an out with sp	d of 320/4 k d the speed policr indica	d brake di atcd on th	TOWING operature 24 Isarmed, Full Ic ECAM, The	degrees power
It was an endorsement Celsius and dry runawa (TOCA) was applied wi instructor rechecked the	ay. After the third touch ith normal indications. A e speedbrakes in disarr The aircraft ended over	Amount / 30% condition was VMC with v and go, during the rolling s it 110 knots, the take-off c it 110 knots, the take-off c it not he but the warning run the threshold runway : ENGINEE	sibility reported of 8 km, s tage, the ftaps were selec infiguration warning came still persist. Rejected take 3 RING DETAILS Mainlenance Organis	ed to 2 an out with sp -off was ca	d of 320/4 ) d the spee poiler indice mied out by	d brake d atcd on th y the instr	TOWING operature 24 Isarmed, Full Ic ECAM, The	degrees power
II was an endorsement Celsus and dry runawa (TOCA) was applied wi instructor rechecked the reversers and braking	ay. After the third touch ith normal indications. A e speedbrakes in disam The aircraft ended over RF	Amount / 38%	sibility reported of 8 km, s tage, the ftaps were selec infiguration warning came still persist. Rejected take 3 RING DETAILS Mainlenance Organis	ed to 2 an out with sp -off was ca	d of 320/4 k d the speed policr indica	d brake d ated on th y the instr	Towins iperature 24 isarmed. Full to ECAM. The uctor with full Mantenance Ground Handlin Texy Unattended	degrees power
II was an endorsement Celsus and dry runawa (TOCA) was applied wi instructor rechecked the reversers and braking	ay. After the third touch ith normal indications. A e speedbrakes in disam The aircraft ended over RF	Amount / 30% concilion was VMC with v and go, during the rolling s it 110 knots, the take-off cu the varning run the threshold runway s ENGINEE ENGINEE Engine Type & Serie	sibility reported of 8 km, stage, the flaps were select onfiguration warning came still persist. Rejected take 3 RING DETAILS Maintenance Organis	ed to 2 an out with sp -off was ca	d of 320/4 ) d the spee poiler indice mied out by	d brake d atcd on th y the instr	Towins Iperature 24 Isarmed. Full Ice ECAM. The Uce ECAM. The Uce ECAM. The Ice ECAM. Ice ECAM. Ice ECAM. Ice Ice ECAM. Ice ECAM. Ice ECAM. Ice ECAM. Ice ECAM. Ice ECAM. Ice Ice ECAM. Ice ECAM.	degrees power
It was an endorsement Defsus and dry runawa (TOCA) was applied wi instructor rechecked the reversers and braking Occurrence Calegory Occurrence Calegory	Arter the third touch th normal indications. A e speedbrakes in disam The aircraft ended over RF Aircraft Constructor No Location on aircraft	Amount / 30%  concilion was VMC with v and go, during the rolling s it 110 knots, the take-off ce it 110 knots, the take-off ce it in the threshold numvay :  ENGINEE  ENGINEE  Manual Reference	sibility reported of 8 km s tage, the flaps were select onfiguration warning came still persist. Rejected take 3 RING DETAILS Maintenance Organis Maintenance Organis	ation	d of 320/4 ) d the spee poiler indica mied out by	d brake d ated on th y the instr hase <u>Maintce</u>	Towing Towing Towing Towing Towing Martenance Ground Handlin Toxy Unattended Prog A Store Martenance Martenanc	Llegrees power C I
It was an endorsement Defsus and dry runawa (TOCA) was applied wi instructor rechecked the reversers and braking f Occurrence Calegory	ay. After the third touch ith normal indications. A e speedbrakes in disarr The aircraft ended over RF	Amount / 30% concilion was VMC with v and go, during the rolling s it 110 knots, the take-off cu the varning run the threshold runway s ENGINEE ENGINEE Engine Type & Serie	sibility reported of 8 km is tage, the flaps were select infiguration warning came still persist. Rejected take a RINC DETAILS Maintenance Organis Tel No	ation	d of 320/4 ) d the speep poiler indica mied out by Ground PI	hase	Towins  Iperature 24 Isarmed. Full Ice ECAM. The Uctor with ful  Mantenance  Ground Handlin  Toxy  Unattended  Prog  A  Se  Man  Man  Man	degrees power c l l u u u u u u s d s d u r er u u
It was an endorsement Defsus and dry runawa (TOCA) was applied wi instructor rechecked the reversers and braking Occurrence Calegory Occurrence Calegory	Arter the third touch th normal indications. A e speedbrakes in disam The aircraft ended over RF Aircraft Constructor No Location on aircraft	Amount / 30%  concilion was VMC with v and go, during the rolling s it 110 knots, the take-off ce it 110 knots, the take-off ce it in the threshold numvay :  ENGINEE  ENGINEE  Manual Reference	sibility reported of 8 km s tage, the flaps were select onfiguration warning came still persist. Rejected take 3 RING DETAILS Maintenance Organis Maintenance Organis	ation	d of 320/4 ) d the speep poiler indica mied out by Ground PI	hase	Towing Towing Towing Towing Towing Martenance Ground Handlin Toxy Unattended Prog A Store Martenance Martenanc	degrees power c l l u u u u u u s d s d u r er u u

# Appendix L: Interview Written Statement – Pilot-in-Command (PIC/CAPT)

	CREW WRITTEN STATEMENT		
DATE :	30/11/17		
PLACE :	REDQ, AIR ASIA BERHAD		
FLIGHT NUMBER :	AK 9700		
FLIGHT DATE :	30/11/17		
CREW (CM1/CM2) :			
STATEMENT: 11 WORLAN ENDODRSENENT TRAINING PUGHT UNC CONDUTION			
WITH VISIBILITY OF SKIN, SURFACE WIND 320/04 KTS, TEMPERATURE			
DS'C AND DRY RUNAWAY.			
AFTER THIAD TOUCH AND BOY DURING THE AND A THE			
Prwer ( TOG.	A) WASS APPLIED WITH WARRAND WITH ANNED, FULL		
PRUER (DEA) WAS AppLIED WITH NORMAL INIBICATIONS, AT 100LIN THE TAKE-OFF CONFIG WARNING CAME OUT AND SPOILER INDIATED.			
SPOILER INDIANTO.			
The INSTRUCTOR DISANMED (PUSHED IN) THE SPEED BRANCE			
TO CONFIRM THE SPEED BRAKE BELING DISARM BUT THE WARANNES			
REPERTO PARE OFF WAS CARRIED DUT BY THE INSTRUCTOR			
ISRALING AND DI-			
The RUNAW	MY 33 TRESHOLD		
and the second second			

#### Appendix M: Interview Written Statement – Co-Pilot (Trainee)

CREW WRITTEN STATEMENT

DATE :	30/11/2017	1.26
PLACE :	REDQ	
LIGHT NUMBER :	AXM 9700	
LIGHT DATE :	30/11/2017	
CREW (CM1/CM2) :		

STATEMENT: ENDORGEMENT TRAINING FLIGHT AT WMSA RIGHT HAND CIRCULIT EWY 15, WEATHER IS FINE, USIBILITY > 8 Km, SHEFACE WIND 320/04 AND RUNWAY DRUL IT WAS THE THIRD TOUCH \$ 40

3 TH PM : DISARMED SPOILERS & ANNOUNCED "STAND UP" ON RWY IS . CHRONOLOGICAL : O MAIN WHEEL TOUCH DOWN 3 PF : RET 2" THURDT LEVER, FORWARD AFTER

- NOTE WHEEL TOUCH DOWN
- ( PM : SET FLAPS 2 & CALL "GO"
- @ PF : SET TOGA THPUST
- () SPEED EULOS UP > 100 HS BEFORE VAPP
- DECAM WARNING DISPLAY TAKE OFF CONFID SPLAS

RECHECKED D SPEED BRAKE LEVER - RECHECKE - AT PISABAED POSITION

O CIMI REJECT TAKE OFF WITH FULL REVERSE THURST & WANNAL BRAKING.

() A/C OVERDEUN AT RWY 33 THESHOLD.

## APPENDIX N

## Appendix N: Interview Written Statement – Safety Pilot

	CREW WRITTEN STATEMENT	
DATE :	30/11/17	
PLACE :	REDG	
FLIGHT NUMBER :	AXM 9700	
FLIGHT DATE :	30/11/17	

STATEMENT: IT WAS A ENDORSEMENT FUGHT. THE WEATHER REPORTED GOD. IT'S VMC. VISUALITY STATE TEMPERATURE 35C DEWPONT 24 WIND REPORTED 320/4 RWY DRY. AFTER THIRD TOUCH & GO DURING THE POLUNG STATE PLAPS 2 & SPEED BRAKES DISARMED. TOGA WAS APPLIED, WITH NORMAL INDICATION. AT & AROUND 100CTS THE ECAM WARNING CAME OUT (SEDER SPOLERS INDICATION). CAPT TOOK OVER CONTROL & PETECTED T/6 A/c COULDN'T STOP & OVERPUN THE RUNWAY.33 THERSOLD \* SPOLLEPS FROM CONFIRMED IN DISARMED

たい

## Appendix O: Final Assessment of Damages

1. Final Assessment of Damages to Aircraft

The final assessment of damages is a list of final major maintenance action that was carried out on the aircraft 9M-AHM in order to allow the aircraft to be operational again. These maintenance action amounts to the replacement of several components or parts of the aircraft that was directly impacted during the incident and also parts which were damaged during the aircraft recovery process from the impact area.

This final list does not in any way alter the course of the investigation, however for purpose of consistency and finality, the preliminary report is amended to reflect this new information under paragraph 1.3: Damage to Aircraft.

a. <u>Parts / Components damaged during the runway overrun incident (see</u> <u>Attachment 1):</u>

		FINAL ASSESSMENT OF DAMAGES TO AIRCRAFT	
SECTION	PART	REMARK	WORKORDER REF
Airframe	Fuselage Skin	Scratch on LH Lower Side Fuselage - temporary repair instructed.	W/O 12822264
Landing Gear	RH Main Landing Gear	<ul> <li>1 – Strut and Dressings replaced due to axle damage</li> <li>2 – Complete Sidestay replaced due to axle damage</li> <li>3 – Rear Pintle Pin Nut Assembly replaced</li> <li>4 – RH MLG Assembly replaced</li> </ul>	W/O 12949340 W/O 12949459 W/O 12949494 W/O 12951995
	LH Main Landing Gear	<ol> <li>1 – Leg, Strut and Dressings replaced</li> <li>2 – Complete Sidestay replaced</li> <li>3 – Rear Pintle Pin Nut Assembly replaced</li> <li>4 – LH MLG Assembly replaced</li> </ol>	W/O 12949757 W/O 12950020 W/O 12949768 W/O 12951989
	Nose Landing Gear	1 – NLG Leg Assembly replaced 2 – NLG Forestay replaced 3 – NLG Assembly replaced	W/O 12949683 W/O 12949722 W/O 12951985

1 – #1 Main Wheel Tyre burst	W/O 12930490
2 - # 2 Main Wheel Tyre burst	W/O 12930766
3 – LH Nose Wheel Tyre burst	W/O 12930854
4 – Main Wheel Assembly No.2 removed due to dirt contamination and made U/S	W/O 12938188
5 - #3 Wheel removed due to dirt contamination and made	
0/3	W/O 12938239
6 - #4 Wheel removed due to dirt contamination and made U/S	W/O 12949076
	<ul> <li>2 - # 2 Main Wheel Tyre burst</li> <li>3 - LH Nose Wheel Tyre burst</li> <li>4 - Main Wheel Assembly No.2 removed due to dirt contamination and made U/S</li> <li>5 - #3 Wheel removed due to dirt contamination and made U/S</li> <li>6 - #4 Wheel removed due to dirt contamination and</li> </ul>

	Brakes	1 – MLG Brake Assembly #1 replaced due to dirt contamination	W/O 12938633
		2 – MLG Brake Assembly #2 replaced due to dirt contamination	W/O 12938768
		3 – Brake Fan Motor Assembly No.1 removed due to brake fan motor unable to rotate	W/O 12949517
		4 – Brake #4 removed and made U/S due to dirt contamination	W/O 12938942
		5 – Brake #3 removed and made U/S due to dirt contamination	W/O 12938965
Powerplant	Engines	1 – Engine #1 replaced	W/O 12951969
		2 – Engine #2 replaced	W/O 12961976
Lights	Lights	1 – Lower Strobe Light replaced	W/O 12951204
		2 – LH Landing Light Assembly broken and replaced	W/O 12949734
Doors	Door Slides	1 – Door 1 Left Slide Deployed and replaced	W/O 12856445

b. Parts / Components damaged during the aircraft recovery process (see Attachment 1):

	FINAL ASSESSMENT OF DAMAGES TO AIRCRAFT											
SECTION	SECTION PART REMARK											
Landing Gear	Wheel	1 – RH Nose Wheel and Hub Cap replaced due to damage during recovery	W/O 12822264									

## 2. Final Assessment of Other Damages

The final assessment of other damages (see Attachment 2) is a list of damages unto other equipment, fixture or structure that had occurred as a direct consequence from the incident.

This final list does not in any way alter the course of the investigation, however for purpose of consistency and finality, the preliminary report is amended to reflect this new information under paragraph 1.4: Other Damages.

FINAL ASSESSMENT OF OTHER DAMAGES											
Assessment PART											
МАНВ	1 – One CAT 1, Calvert Approach (Type A) Lighting System unit										

Attachments

a. Attachment 1 : Airasia Workorder Summary

Air Asia					GRS 18:54	11.Jun.2018 Page 59/122											
No	W/O	A/C	State	Issue-Date	Due-/CDate	ATA	Туре	Parts	Ref.	Mel	DD	Iss	Workorder-descriptio	on and/or com	plaint		
633	12950294	JPR	Closed 📝	29.Nov.2017	07.Jan.2018	05-51-	М 🏇		2			AXM410	D3. TO C/OUT RUNWAY LEAVING INS A3. TASK C/OUT AS PER AMM 05-21-24 INSPECTION				
634	12951909	JPR	Closed 📝	07.Jan.2018	07.Jan.2018	05	s 🖼		5			AXM410	D2. 36 HOURS CHECK DUE A2. 36 HOURS CHECK C/OUT AS PER T	ГSF 7002R13. F	OUND SATIS		
635	12951914	JPR	Closed	07.Jan.2018	07.Jan.2018	71-13-	м 🏇		5			AXM486	D1. TO C/OUT OPENING AND CLOSING A2. TASK C/OUT AS PER AMM 71-13-00				
636	12951924	JPR	Closed 📝	07.Jan.2018	07.Jan.2018	71-13-	M 🏇		5			AXM410	D2. TO C/OUT OPENING AND CLOSING A2. TASK C/OUT AS PER AMM 71-13-00				
637	12951969	JPR	Closed 🜌	07.Jan.2018	07.Jan.2018	71-00-	M 🏇		5			AXM486	D1. WRT MR1 AB320759 TO C/OUT REF A1. TASK C/OUT AS PER AMM 71-00-00	759 TO C/OUT REPLACEMENT OF ENG #1. PER AMM 71-00-000-042A.			
638	12951976	JPR	Closed 📝	07.Jan.2018	07.Jan.2018	71-00-	M 🏇		5			AXM410	and the second second second second second second second	/RT MRI AB320759 TO C/OUT REPLACEMENT OF ENG #2 ASK C/OUT AS PER AMM 71-00-000-0042A. REFER CHECK KAGE			
639	12951985	JPR	Closed	07.Jan.2018	07.Jan.2018	32-21-	M 🎄		2			AXM410	D3. WRT MR1 AB320759 TO C/OUT REF LANDING GEAR ASSY. A3. TASK C/OUT AS PER AMM 32-21-11 RUNWAY				
640	12951989	JPR	Closed 📝	07.Jan.2018	07.Jan.2018	32-11-	м 🏇					AXM486	D1. WRT MR1 AB320759 TO C/OUT REF Landing gear ASSY.	PLACEMENT	DF L/H MAIN		
641	12951995	JPR	Closed 📝	07.Jan.2018	07.Jan.2018	32-11-	M 🏇					AXM410	D2. WRT MR1 AB320759 TO C/OUT REF LANDING GEAR ASSY.	PLACEMENT	OF R/H MAIN		
642	1994419	JPR	Closed 📝	17.Dec.2017	06.Jan.2018	71	S 🖼		5			MDY	EI-15-058-A322 REV.B INSPECTION OF LH AFT ENGINE MOU BRACKET	JNT INNER RE	TAINER		
643	10335879	JPR	Closed 📝	17.Dec.2017	06.Jan.2018	72-21	s 🛤					MDY	EI-15-067-A322 REV.C DETAILED INSPECTION OF THE FORW LH ENGINE	VARD ENGINI	E MOUNT OF THE		

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Air Asia					W	<i>V</i> O	-S	um	m	ary		GRS 11.Jun.2 18:54 Page 60				
No	W/O	A/C	State	Issue-Date	Due-/CDate	ATA	Туре	Parts	Ref.	Mel DD	Iss	Workorder-description and/or complaint				
644	12310838	JPR	Closed 📝	15.Dec.2017	06.Jan.2018	72-00	s 🖼		3		MDI	CR-AHM-001 REMOVE: > ENGINE				
645	12704269	JPR	Closed 📝	16.Dec.2017	06.Jan.2018	72-00	S 🖼		3		MDY	RUNAWAY EXCURSION AT SZB. ENGINE REMOVE DUE TO MUD FOUND STUCK AT BOOSTER ARE AFTER A FEW TIMES	EA			
646	12782751	JPR	Closed 📝	15.Dec.2017	06.Jan.2018	24	S 🖾				MDI	IC-AHM-002 OPERATIONAL CHECK OF THE INTEGRATED DRIVE GENERATOR (IDG) DISCONNECT	Ł			
647	12786566	JPR	Closed 📝	17.Dec.2017	06.Jan.2018	24	S 🕅				MDY	OPERATIONAL CHECK OF THE INTEGRATED DRIVE GENERATOR (IDG) DISCONNECT AND RECONNECT FUNCTION ON ESN 729406	t			
648	12786568	JPR	Closed 📝	17.Dec.2017	06.Jan.2018	72	S 🖼				MDY	SURVEILLANCE INSPECTION OF TURBINE FRAME AFT ENGINE MOUNT LUGS ON ESN 729406 AS PER AMM 71-22-12-210-001				
649	12786570	JPR	Closed 📝	17.Dec.2017	06.Jan.2018	72	S 🖾				MDY	TO INSPECT FANBLADE CONDITION AS PER AMM 72-21-00-210-009-A ON ESN 729406	72-21-00-210-009-A ON ESN			
650	12786572	JPR	Closed 📝	17.Dec.2017	06.Jan.2018	71	S 🖾				MDY	TO PERFORM FIRST INSPECTION ON ENGINE MOUNTING AFTER ENGINE INSTALLATION OF ESN 729406 AS PER SINGLE CRITICAL TASK INSPECTION IN				
651	12786573	JPR	Closed 📝	17.Dec.2017	06.Jan.2018	71	S 🕅				MDY	TO PERFORM SECOND INSPECTION ON ENGINE MOUNTING AFTE ENGINE INSTALLATION OF ESN 729406 AS PER SINGLE CRITICAL TASK INSPECTION IN	ΞR			
652	12786576	JPR	Closed 📝	17.Dec.2017	06.Jan.2018	72	S 🖾				MDY	TO PERFORM DEPRESERVATION OF ESN 729406 AFTER ENGINE INSTALLATION AS PER AMM 72-00-00-600-027-A				
653	12786577	JPR	Closed 📝	17.Dec.2017	06.Jan.2018	29	S 🖼				MDY	TO INSPECT RESERVOIR PRESSURIZATION HOSE P/N: D0001037900000 IS INSTALLED ON HIGH PRESSURE BLEED LINE. IPC REFERENCE 29-14-06-01 ITEM	S			

					V	V <b>C</b>	)-S	um	m		ŗ	y	GRS 11.Jun.2018 18:54 Page 61/122
No	W/O	A/C	State	Issue-Date	Due-/CDate	ATA	Туре	Parts	Ref.	Mel	DD	lss	Workorder-descriptiona nd/or complai nt
654	12786579	JPR	C losed ;>	17.Dec.2017	06 .Jan. 20 I 8	31	<b>S</b> i:;;;;J					MD V	QDF 0008 EGR RECORDING
655	1279 0733	JPR	C losed	19.Dec.2017	06.Jan.20 18	71	<b>S</b> I:;.J					MDI	IC-AHM-001 TO PERFORM ENG IN E RUN ON EN GIN E #2 AT HIGH POWER IN DEPENDEN TL Y FROM
656	12790805	JPR	C losed j'	19.De c.20   7	06.Ja n .20 18	71	S					MDV	TO PERFORM ENG IN E RUN ON ENG IN E # I AT HIGH POWER IN DEPENDENTL Y FROM EACH OTHER AS PER AM M TASK 71-00 -00-7 10-008 -8 WITH ASSOCIA TED CHECKS
657	12938650	JPR	C losed 7	06.Jan.20   8	06.Jan.20 I 8	53- 45-	S					NID	MAN DATORY: PERFORM TSF2016R00 SRC- 18-005-T322 (ST RUC TURA L RECTIFICATION CARD) REV. A
658	1295 162 1	JPR	C losed 7	06.Jan.20 18	06 .Jan.20 18	33-5 1-	М					AXM 486	DI. TO C/OUT IN STALLA T ION OF CA BIN WALL MOUNTED EM ERGENCY EXIT M ARKERS LEN S (90W L I ), (90WL2), (90WL3), (90WLA), (90W L5), (90WL6), (90WL7) AND
659	1295 17 17	JPR	C losed :;	06.Jan.20 18	06. Jan .20 18	30-71-	М					AXM410	D2. DURING IN SPECTION FOUN D FWD DRAIN MAST DENTE D. A2. INSPECTION C/OUT AS PER AMM 30-71-51-200-001-A. FO UN D DAMAGE IS
660	1298 6066	JPR	Closed '7	06.Jan.2018	06.Ja n.20 18	7 1-00	M g).		gj			AXM486	TO COUT INSTA LLAT ION OF ENG #I LH FAN COWL DOOR ON ENG ESN 697773 TASK COUT AS PER AM M: 71-31 -1 1 TORQUE AN D SECURJTY CHK COUTFOUND
66 1	1327976 1	JPR	C losed 7	27.Dec.2017	06.Jan.20I 8	72	S					MDV	PERFORM TSFI 00 I ROS E I-10- 038 -N322 COM PONENT (ENGINE ERING IN STRUCTION) REV. B
662	12876322	JPR	C lo sed	02.Jan.20 18	04 .Jan.20 18	00	S					SDA	TO INSERT NEW RADIO STA TION LI CENCE (RSL) IN TO CERT FI LE & REMOVE TH E OLD ONE
663	12901828	JPR	C losed 7	03.Jan.20I 8	04.Jan.2018	00	s					MI P	TO REMOVE OLD RADIO STATIO N LICENSE (RSL) FROM CERT FILE DONE
<u> </u>							<b>L</b>		-		-		

				W	0	)-5	Sum	m	a	r	y	18:54 Page 62/122
GRS	w/ol1.Jumc2	01State	Issue-Date	Due-/CDate	ATA	Туре	Parts	Ref.	Mel	סס	155	Workorder-descriptionand/or complaint
664	12951398 JPR	C <u>19885</u> ,≧	04.Jan.2018	04 .Jan.2018	52-10	M /)		g)			AXM410	D2. WRT MR I AB320760 DI / A L TO C/OUT RE PLA CEMENTOF DIA PHRAGM IN THE PERCUSSION ME CHANISM OF THE DOOR I L EFT DAMPER.
665	12951430 JPR	Closed	04.Jan.2018	06.189.2018.	52-10	м / }		ill			AXM410	D3. WRT MR I AB320772 D2/A2, TO C/OUT CHARGING OF THE DOOR DAMPER CYLINDER
666	12786564 JPR	C <mark>(386)_2</mark>	17.Dec.2017	03.Jan.2018 1	εί	8					MDV	TO PRIN T OUT CLASS 3 REPORT ON ENGINE I ESN 697874 BEFORE REMOVAL. REFER TO AMM 73-21-60- 740-026-A FOR PROCEDURE TO ACCESS THE CLA SS 3
667	667 12134137 JPR Closed 04.N ov 2013 02 Jan 2018 22 S MFC MFC AUTO FLIGHT • FLIGHT MANAGEMENT (FM) NAVI ATION DATABASE LOADING*											REV.K AUTO FLIGHT - FLIGHT MANAGEMENT (FM) NA VII ATION
668	12951204 JPR	Closed	<u>02.Jan.</u> 2018	02 Jan.2018 3	3-48- 1	i/0 ء		i2l			AXM624	DI. LOWER STROBE LIGHT FOUND INOP. AI. LOWER STROBE LIGHT REPLACED AND SECURED. OPS TEST SATIS.
669	12951247 JPR	C losed	02.Jan.20 18 0	2. Jan.2018 25-	52-M/	)					AXM486	D2. TO C/OUT IN STAL LATION OF DOOR I LEFT SLIDE AFTER BEING DEPLOY AS PER MRI A B320760DI A I.
670	12951388 JPR	Closed	02.Jan.2018	02 Jan.2018	25-33-	мIII					AXM486	D3. FOUND AFT GALLEY WATER LEAKING A3. T/S FOUND AFT GALLEY WATER FILTER ASSY VALVE LEAKING. VALVE
671	3410545 JPR	Closed :	24.0 ct.20 17	29.Dec.2017	26-21-5	3 Gil					імн	CR-AHM-170984 TO REPLACE ENG FIREX DUE TO WORKSHOP CARTRIDGE REPLACEMENT
672	3410548 JPR	Closed	22.N ov.20 17	29 .Dec .20 17	26-2 1-	8					шн	CR-AHM-171080 TO REPLACE ENG FIREX DUE TO WORKSHOP CARTROIGE REPLACEMENT
673	12784959 JPR	Closed	<u>15.Dec.</u> 2017	29.Dec.2017	2	s					MDI	IC-AHM-007 TO PERFORM DEPRESERVATION OF ESN 577561 AFTER ENGINE INSTALLATION AS
674	12784965 JPR	Closed	<u>15.Dec.</u> 2017	29.Dec .2017	29	s					MDI	IC-AHM-008 TO INSPECT BLANK CAP IS INSTALLED ON ESN 577561 HIG H PRESSURE BL EED
												·

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No	W/O	A/C	State	Issue-Date	Due-/CDate	ATA	Туре	Parts	Ref.	Mel	DD	) 📖	Workorder-descriptions ad/or complaint.			
675	12784971	JPR	C losed.	5.Dec.2017	29.Dec.2017	71	S 📖					MDI	QDF 0008 A320 CFM56-58			
676	12950794	JPR	C losed	29.Dec.2017	29.Dec.2017	33-51-	MI)		ill			AXM486	L I. TO ROB CABIN WALL MOUN TED EMERGENCY EXIT MARKERS LENS (90WLI) TO FIT ON 9M-AGT.			
677	12950819	JPR	C LOSER 7	29.Dec.2017	29.Dec.20 17	33-51-	м /		5			AXM486	D2. TO ROB CABIN WALL MOUN TED EMERGENCY EXIT MARKERS LENS (90WL 2)TO FIT ON 9M-AGT.			
678	12950894	JPR	C LOSER 7	29.Dec.20 17	29.Dec.2017	33-51-	M I)		sj			AXM486	D3. TO ROB CABIN WALL MOUN TED EMERGENCY EXIT MARKERS LENS (90WL3 ) TO FIT ON 9M-AGT.			
679	12950905	JPR	C losed	29.Dec.2017	29.Dec.2017	33-51-	м /		<u>si</u>			AXM486	DL_ TO ROB CABIN WALL MOUN TEDEMERGENCY EXIT MARKERS LENS (90W L4) TO FIT ON 9M-AGT.			
680	12950951	JPR	C losed	29.Dec.20 17	29.Dec.20 17	33-51-	M I)					AXM 486	D2. TO ROB CABIN WALL MOUN TEDEMERGENCY EXIT MARKERS LENS (90WL5) TO FIT ON 9M-AGT.			
68	12951092	JPR	C losed	29.Dec.2017	29.Dec.2017	33-51-	мD		i.11			AXM486	D3. TO ROB CABIN WALL MOUNTEDEMERGENCY EXIT MARKERS LENS (90WL2) TO FIT ON 9M-AGT.			
68	12951156	JPR	C losed.":(	29.Dec.2017	29 .Dec. 20 17	33-51-	м /					AXM486	DL_TO C/OUT ROB CABIN WALL MOUN TEDEMERGENCY EXIT MARKERS LENS (90WL7) TO FI T ON 9M-AGT.			
68	12951181	JPR	C losed.	29.Dec.2017	29.Dec.2017	33-51-	м /					AXM486	D2. TO C/OUT ROB CABIN WALL MOUNTEDEMERGENCY EXIT MARKE RS LENS (90WL 8) TO FIT ON 9M-AGT.			
68	12949340	JPR	C lo sed	17.Dec.2017	28.Dec.2017	32	s					MFC	TO REPLACE RH MAIN STRUT AND DRESSING SIDUE TO AXLE DAMAGE DUE TO RUNWAY EXCURSION			
68	12949753	JPR	C losed 7	18.Dec.2017	28.Dec.2017	32	s					MFC	TO REPLACE LH MLG LEG& DRESSING DU E TO RUN WA Y EXCURSION POSN: LH MLG			

													GRS	<u>11.Jun.</u> 2018
	W/0 A/C	Panta	Issue-Date	Due (C. I	WO	-S	umr	na	rv			Workorder-descripti	18:54	Page 64/122
686	12949816 JPR	C losed.>	19. D ec <u>20. 1</u> 7			S Inco				MFC		TO REPLAC E REAR PINTLE PIN DUE EXCURS ION POSN: LH MLG		
687	12050020 JPR	Clased	18.De c.20 17	28.Dec .2	017 32	S 1:J				MFC		TO REPLACE LH MLG COMPLETE SID EXCURSION POSN:LH MLG	EST A Y DUE T	O RUN WA Y
688	1996778 JPR	C losed 7	15.D 🕵 20 <u>17</u>	27 .D ec.2	0 17 7 1	S i:;J	ſ	gi		MDI		EI- 15-059- A322 REV B INSPECTION OF RH AFT ENGINE MOU BRACKET	NT INNERRET/	AINER
689	2398436 JPR	C 19889 7	<u>15</u> .Dec.20 1	7 27.Dec.2	017 72-21	S inj		sj.		MDI		EI-15-068- A322 REV .A DETAILED IN SPECTION OF THE FOR RH ENGIN E	WARD ENG IN	E MOUNT OF THE
690	12782773 JPR	C lased.	15.Dec.20 17	27.Dec.20	017 72	53				MDI		IC-AHM-004 TO IN SPECT FANBLADE CONDITION A 72-21-00-2 10-009-A ON ESN	AS PER AMM	
69 1	12782856 JPR	Classed.	15.Dec.20 17	27.Dec.20	17 7 1	s Gi	1			MDI		IC-A HM -005 TO PERFORM FIRST IN SPECTION ON ENGINE	I ENG I NE MO	UN TING AFTER
692	12 1162 16 JPR	C losed	16.N o v.20 17	26 .D <sub>0</sub> .2	D 17 23	s <sup>i:,J</sup>	ſ	iΗ		MFC		PERFORM TSFI D0I ROS EI- I 7-230-N 322 INSTR UCTION) REV.A	COMPONENT (	ENGINE ERIN G
693	1278276 1 JPR	C locad.:	15.Dec.20 17	26 .De c .2	01772	s 🗠	-			MDI		IC+AHM+003 SURVEILLANCE INSPECTION OF TUR MOUNT LUGSON ESN	BINE FRAME	AFTENGINE
69.4	1 278 1768 JPR	C locad	15.Dec.20 17	25 .Dec .2(	017 73	S r:;;	1			MDI		IC-AHM-00 1 TO PRINT OUT CLASS 3 REPORT FOR REMO VAL.	ENGINE #2 ES	N 699198 BEFORE
695	12949326 JPR	C lo sed	25.Dec.20   7	25.Dec.20	117 24-38	м 8)				AX M	61	D I : M AIN BATT ERY 2PB2 FOUN D L A I : M A IN BATTERY 2PB2 REPLACED C/OUT FOUN D		
696	12949683 JPR	C losed 7	24.Dec.20 17	25.Dec .20	17 32	s to				MFC		TO REPLACE NLG LEGASSY DUE TO POSN : NLG	RUN WA Y EX	CURSION

					V	VO	)-S	um	m	ar	y		GRS 11.Jun.2018 18:54 Page 65/122
No 887	W/O	A/C	State	Issue- <u>Da</u>	ite Due./CDa	MATA	Туре  8	Parts	Ref.	Mel	DD	Las.	Workorder-description and/or complains TO REPLAC E NLG FORESTA Y DUE TO RUNWAY EXCURSION PORM-NLG
698	3410662	JPR	Closed	08.Dec.20	17 22.Dec.2017	35-00-	S 📖		ill			IMH	CR-AHM- 171 113 TO REPLACE PBE DUE TO LIFE LIMIT
699	34 10664	JPR	C losed 7	08 D ec.20	17 22 .D ec.20 1	7.35-00-	s i::J		gj			IMH	CR-AHM - 171 114 TO REPLACE PBE DUE TO LIFE LIMIT
700	12775348	.IPR	C losed 7	22 Dec 20	17, 22 Dec 2017	54-51-	S i::J					NID	REVISION DETAIL: INITIAL REVISION.
204	128.13584		Closed	22 Dec 201	7 33 Dec 2017	54-51-	°					NID	REVISION DETAIL: INITIAL REVISION.
705	17949459	.IPR	Closed	17. Dec. 20	17 22 Dec 2012	22	९ दिं।					MEG	TO REPLACE RH MLG COM PLETE SIDESTAY DUE TO AXLE DAMAGE DUE TO RUNWAY
703	17949485	.IPR	Gipsed	17 Dec 20	17 22 Dec 20 1	7 3.2	s i::J					MEC	EXCURSION TO REPLACE REAR PINTLE PIN DUE TO THREAD NOT SMOOTH DUE TO RUNWA Y
704	12949494	IPR	G losed -	17. Dec. 20	117 22 Dec 2017	32	s 1::.1					MEC	EXCURSION TO REPLACE REAR PINTLE PIN NUT ASSY DUE TO RUNWAY EXCURSION
705	12822264	JPR	Cigsed	21.Dec.20	17 21.Dec.2017	32	s rai					HIN	POSN: RHMLG RJ-17-543-T322REPAIR IN STRUCTIONATEM PORA RY REPAIR ON LH LOWER SID E
706	12937633	JPR			1 7 2 1.Dec.20 17		s					AXM486	STA Y - SCRATCH TO C/OUT INSTALLATION OF MLG # I WHEEL ASSY TASK C/OUT AS PER AMM 32-41-11. FOUN D SATES.
	12938230				17 21 Dec.2017							AXM410	TO C/OUT INSTALLATION OF M A IN WHEEL ASSY NO.2 TASK C/OUT AS PER AM M 32-41-11, FOUND SATIS,

				WC	<u>)-S</u>	um	m	ar	y		GRS 11.Jun.20 18:54 Page 66/1
No	W/O	A/C	State	Issue-Date Due-/CDate AT.	A Type	Parts	Ref.	Mel	DD	<b>133</b>	Workorder-description and/or complaint TO COUT INSTAL L ATION OF WHEEL #3 TASK COUT AS FER AMM 3241, 11, SATUS
320	10000005	Jon	- 0000	10 Da + 20 17 - 0 <u>1 Da +</u> 09 1 7 - 32 4	s		ill			6XM430	TO C/OUT INSTALLATION OF WHEEL NO.4 TASK C/OUT AS PER AMM 32-41-11
3 42	10000000	Jon	<del>° luud <sup>7</sup></del>	04.0000247-04.0000247-004	┉┤		-si.			0.YMA96	TO C/OU T REPLACEMENT OG M LG BRAKE ASSY #I DUE TO DIRT CONTAMINATION AFTER RUNWAY EXCURSION.
	10030300	Jnn	s-tood 3		تبيد ع		si.			6.YM496	AFTER RUNWAY EXCURSION. TO C/OUT REPLACEMENT OF MLG BRA KE ASSY #2 DUE TO DIRT CONTAM IN ATION AFTER RUNWAY EXCURSION.
7 49 -	128280.08	100	Closed	31.Dec.30.17.21.Dec.2017.32.4	- 		gi			AXM410	TO C/OU T INSTALLATION OF NO.4 BRA KE ASSY TA SK C/OUT AS PER AMM 32-42-27.
743	12020027	100	Closed	16 Dec 30 17 -31 Dec 30 7 -32-4	' <u>Gil</u>			Ц		AXMA10	TO C/OUT IN STAIL LATION OF BRAKE #3 TASK C/OUT AS PER AMM 32-42-27, SATLS.
7 14	12949109	IPR	Closed.	16 Dec 2017 21 Dec 2017 324	us ist		.11	ļļ		AXM410	TO C/OUT INSTALLAT I ON OF WHEEL #3 TA SK C/OUT AS PER AMM 32-41-11. SATIS.
7.16	12949-128	IPR	Closed.;	16 D en 20 L 7 2 1 Den 20 17 324	' <u>18  :!</u> 					AXM410	TO C/OUT INSTALLATION OF WHEEL #4 TASK C/OUT AS PER AMM 32-41- 1 1.
7.16	129,895 17	JPR	Closed.	-2 1 Dec 20 17 2.1 Dec 20 17 - 22-4	<u>ne rai</u>					AXMEN	TO REMOVE NO.I BRAKE FAN MOTOR ASSY DUE TO BRA K E FAN MOTO R UN ABLE TO ROTATE.
717	12949689	.IPR	Cinsed	21 Dec. 20   7 2 1 Dec. 20 17 32:48	s					AXM601	TO IN STA L UNEW BRAK E FAN ASSY DUE TO NO. I BRAK E FAN ASSY U/S. TASK CARRIED OUT AS PER AMM 32-48-5 1 FOUND SATIS.
718	12949734	JPR	C losed 7	2 1 Dec 20 17 21. Dec .20   733-42	2 8					AXM410	TO C/OUT REPLACEMENT OF LH LAN DING TIG HT ASSY DUE TO BROKEN AFTER RUNWAY EXCURSIONS.

## **Appendix P: Airbus Handling Quality Analysis**

- 1. Introduction
  - a. General

During the course of investigation, the Investigation Team had appointed a team of representatives from the aircraft manufacturer, Airbus as participants/observers to the investigation in order to obtain the best specialist knowledge for the purpose of data analysis.

A specific request (Tech Request) for a Handling Quality Analysis was made by the Investigation Team on the 30th of November 2017. The HQA is mainly focused on technical interpretation, analysis and findings from the FDR and may provide additional information to the Investigation Team.

The findings of the manufacturer are based solely on analysis of the Flight Data Recorder (FDR) and any additional information provided by the Investigation Team. The manufacturer did not conduct any separate investigations on the incident

b) HQA Details

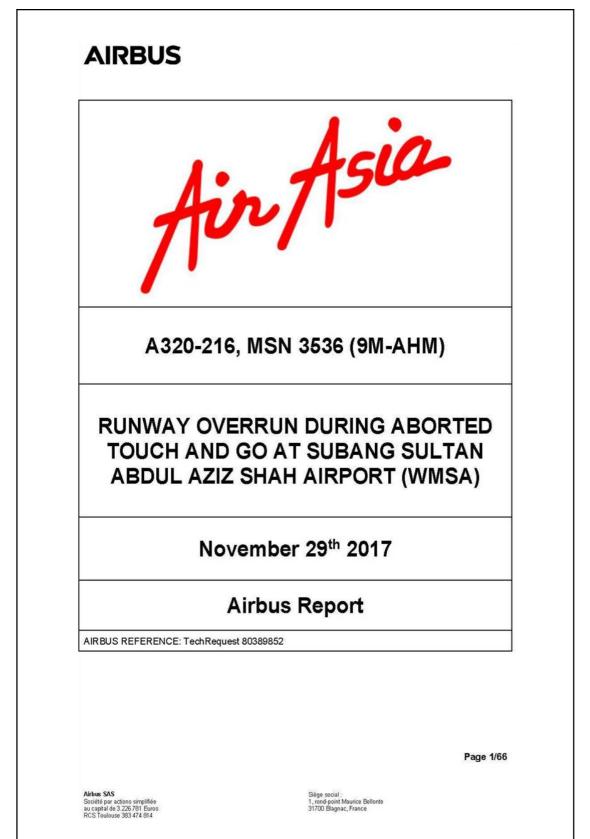
HQA TITLE	9M-AHM RUNWAY EXCURSION INCIDENT
REQUESTOR	AIRASIA BERHAD
SUBMITTED DATE	30 <sup>™</sup> NOVEMBER 2017 04:13 UTC+1 DST
REQUESTOR REFERENCE	TDR-322-AZC-17-025-01
AIRBUS REFERENCE	80389852/001

### c) Amendments to the Preliminary Report

As per paragraph 1.16.1 of the Preliminary Report, all results of tests or research done to verify the findings of the investigation shall be supplemented to the report. As such, paragraph 1.16 of the Preliminary Report is amended to reflect the results of the HQA.

It must be noted that all findings of the HQA are consistent with the findings of the Preliminary Report and does not in any way alter the final outcome of the investigation.

d) Handling Quality Analysis



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### 1. INTRODUCTION

As part of our Customer Support activity, this report provides the analysis of the Flight Data Recorder (FDR) data and any additional information provided by AIR ASIA following a runway overrun during an aborted touch and go experienced by the A320-216 MSN 3536 (9M-AHM) at Subang Sultan Abdul Aziz Shah airport (WMSA) on November 29<sup>th</sup> 2017.

While AIR ASIA remains solely responsible for the operation of their aircraft fleet, the objective of this report is to identify the causes of the event and its potential consequences, as well as to provide operational documentation, current at time of report publication, which may assist the customer to prevent re-occurrence of this type of event.

Airbus will gladly update the report if additional information becomes available.

<u>Note:</u> The Flight Data Recorder (FDR) provided by AIR ASIA for this event is a Quick Access Recorder (QAR).

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### 2. EVENT DESCRIPTION

2.1. DESCRIPTION

The AIR ASIA A320-216 MSN 3536 (9M-AHM) experienced a runway overrun during an aborted touch and go on November 29<sup>th</sup> 2017 at Subang Sultan Abdul Aziz Shah airport (WMSA) – Malaysia.

2.2. ADDITIONAL CONTEXT

AIR ASIA provided to Airbus the following report of the event:

### QUOTE

### Narrative of Event

It was an endorsement training flight. Weather condition was VMC with visibility reported of 8km, surface wind of 320/4kt, Temperature 24°C and dry runway. After the third Touch and Go, during the rolling stage, the Flaps were selected to 2 and the speed brake disarmed. Full power (TOGA) was applied with normal indications.

At 110kt, the Take-Off Configuration Warning came out with spoiler indicated in the ECAM. The instructor rechecked the speed brakes in disarmed mode but the warning still persist. Rejected Take-Off was carried out by the instructor with Full Reversers and braking. The aircraft ended overrun the threshold runway 33.

### UNQUOTE

Figure 1 – Extract of Air Safety Report

### 3. AIRCRAFT INFORMATION

MSN: 3536	A/C Registration: 9M-AHM	
Operator: AXM	Operator Name: AIR ASIA	
A/C Series: A320-216	Engine Series: CFM56-5B6/3	Engine Supplier: CFMI

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### 4. ENVIRONMENT INFORMATION

### 4.1. SUNRISE AND SUNSET INFORMATION

Event occurred on November 29<sup>th</sup> 2017 around 21:55 UTC, corresponding to November 30<sup>th</sup> 2017 around 05:55 Local Time (UTC+8): it was before civil twilight.

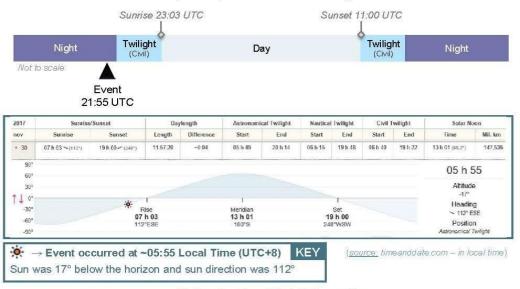


Figure 2 - Day / Night information

4.2. APPROACH AND RUNWAY INFORMATION

Based on AIR ASIA information and flight raw data, flight crew proceeded for a visual approach to runway 15 at Subang Sultan Abdul Aziz Shah airport (WMSA)

### > Visual approach



Figure 3 – Visual approach - trajectory

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### > Runway:

Based on flight raw data, the runway 15 was used at Subang Sultan Abdul Aziz Shah airport (WMSA).

Runway 15 characteristics are:

- QFU 149°
- Length 3780m with 61m of stop way
- Width 45m
- Elevation 70ft

### 4.3. WEATHER INFORMATION

4.3.1. METAR

WMSA, Subang/Sultan Abdul Aziz Shah Airport (Malaysia). WMO index: -----. Latitude 03-07N. Longitude 101-32E. Altitude 27 m.

### METAR/SPECI from WMSA, Subang/Sultan Abdul Aziz Shah Airport (Malaysia).

SA 29/11/2017 23:00-> METAR WMSA 292300Z 32003KT 280V030 9999 FEW003 SCT140 BKN260 24/23 Q1007=

SA 29/11/2017 22:00-> METAR WMSA 292200Z 32005KT 280V010 7000 -RA FEW005 SCT140 BKN260 24/23 Q1007=

SA 29/11/2017 21:00-> METAR WMSA 292100Z 32004KT 260V030 7000 -RA FEW005 SCT140 OVC260 24/23 Q1006=

Figure 4 – METAR around time of event

### Analysis:

The METAR published ~5min after the event provides the following information:

- Wind direction 320° (variable 280° to 010°), wind speed 5kt.
- Visibility 7000m
- Few cloud layer (between 1/8 and 2/8 of the sky covered with clouds) with its base at 500ft.
- Temperature +24°C with a dew point at +23°C.
- QNH 1007 hPa
- Light rain

The METAR published 55min before the event reported no significant changes.

The report provided by AIR ASIA highlighted the following weather information:



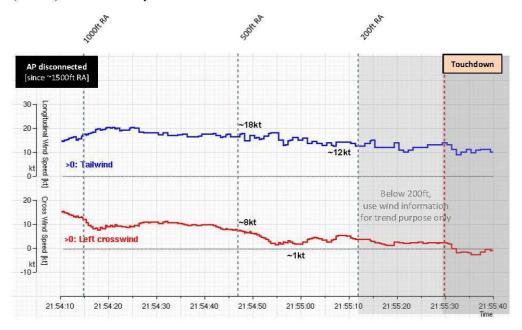
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### 4.3.2. ZOOM ON THE WIND EVOLUTIONS DURING FINAL APPROACH

In short final approach, the wind information computed by the Air Data Inertial Reference Unit (ADIRU) and recorded by the FDR was as follows:



### Figure 5 – Wind evolution computed by the ADIRU

### Analysis:

The recomputed longitudinal and lateral wind evolutions (based on the raw wind data recorded by the FDR) highlighted:

Between 500ft RA (21:54:47 UTC) and 200ft RA (21:55:12 UTC), the average wind recorded by the FDR comes from 338° at 15kt (tailwind component decreased from 18kt to 12kt and left crosswind component varied between 8kt and 1kt).

Between 200ft RA and touchdown, the tailwind was stable (around 12kt<sup>1</sup>) and the left crosswind was stable (around 2kt).

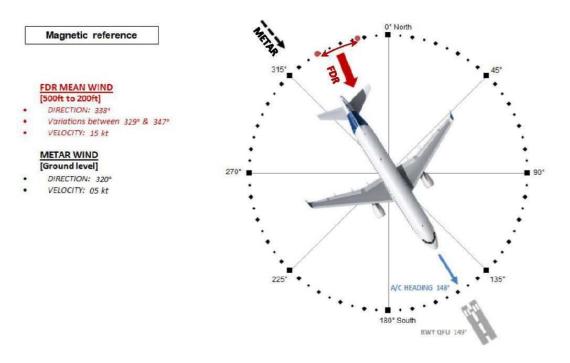
<sup>1</sup> Since wind trend is here stable, FDR recorded value can thus be considered below 200ft RA.

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## 4.3.3. WIND CONDITIONS SUM-UP



### Figure 6 – Wind condition sum-up

### Analysis

All available weather information sources are consistent in direction during final approach and landing.

However, METAR highlighted a 5kt tailwind whereas FDR recorded wind was around 15kt.

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### 5. FLIGHT DATA READOUT AND ANALYSIS

The following analysis is based on the data extracted from the FDR. The parameters, sign convention and list of abbreviations are available in Annex 1. The associated plots are available in Annex 2.

### > Definition

In the report:



Airbus refers to two different types of AP disengagement:

'Voluntarily' means disengagement:

- Through the instinctive side stick push button (by SOP)

'Involuntarily' means disengagement:

- By FCU push button
- With side stick or rudder pedal input or
- Due to a failure

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### 5.1. FINAL APPROACH AND TOUCHDOWN

On November 29<sup>th</sup> 2017, the AXM A320-216 MSN 3536 (9M-AHM) flying to Subang Sultan Abdul Aziz Shah airport (WMSA) proceeded for a visual approach to runway 15 (149°). The aircraft was performing a third Touch and Go. Both previous Touch and Go were performed in CONF 3.

## > At the beginning of final turn at 650ft RA (21:54:37 UTC) the aircraft was in the following configuration:

### Aircraft configuration

- Gross weight was 51.5T < MLW (= 66.0T).
- CG was 28.0%.
- Aircraft was in CONF 3 (Slats/Flaps 22°/20°).
- Landing gear was selected down.
- Ground spoilers were armed.
- Autobrake was not armed.

### AP/FD engagement status

 Both APs and Flight Directors (FDs) were not engaged Sidestick inputs were recorded on both CM1 and CM2 sides.

### Speed

- Autothrust (A/THR) was engaged and active in "SPEED" mode.
- VLS was estimated at 124kt.
- Speed target was managed at 129kt (VAPP=VLS+5kt).
- CAS was 134kt (=VAPP+5kt).

### Attitude and trajectory

- Rate of descent was approximately 1000ft/min decreasing.
- Pitch angle was +2° (nose up).
- Heading was 121° (QFU 149°).
- Drift angle was +3° (aircraft nose toward the left of the track).

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### Analysis:

The flight crew voluntarily disengaged AP1 around 1500ft RA (21:50:57 UTC), then during final approach CM1 and CM2 sidestick inputs were recorded with the A/THR engaged and active in "SPEED" mode. The speed target was managed.

As the takeover priority pushbutton was not pressed, the sidestick orders were algebraically added (refer to the following **FCTM extract**). It is recommended to avoid dual inputs.

AinAsia	AIRBUS OPERATIONAL PHILOSOPHY							
How	DESIGN PHILOSOPHY FLY-BY-WIRE - UTILIZATION PRINCIPLES							
A318/A319/A320/A321 Flight Crew Techniques Manual								
	USE OF SIDESTICK							
Only one pilot flies at a time.								
If the PM wants to act on the - Clearly announce "I have of - Press and maintain his/her system.								
inputs must be avoided, and Either pilot can make an inpu	n mind that sidestick inputs are algebraically added. Therefore dual will trigger aural and visual alerts. It on their sidestick at any time. e other pilot's sidestick by pressing on their sidestick pb.							
Ext	tract 1 : AOP-10-30-20- USE OF SIDESTICK							
	final to perform a third Touch and Go. Autobrake was following FCTM extract.							
. Asia	PROCEDURES							
AinAsia	NORMAL PROCEDURES							
A318/A319/A320/A321 FLIGHT CREW TECHNIQUES MANUAL								
	TOUCH AND GO							
	1							
DURING FINAL APPROACH								

Extract 2 : PR-NP-SP-40- TOUCH AND GO

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### > From 650ft RA (21:55:00 UTC) to touchdown (21:55:29 UTC):

Dual sidestick inputs occurred during approach: sidestick inputs were simultaneously recorded on Pilot Flying side and Pilot Monitoring side without activation of the takeover priority pushbutton.

### On the longitudinal axis:

- CM1 and CM2 sidestick input varied between ~1/4 of full nose down and ~1/3 of full nose up deflection.
  - Pitch angle varied between +4° and +2° before increasing up to +6° (nose up) during flare phase.
- CAS varied between 134kt (=VAPP+5kt) and 127kt (=VAPP-2kt).
- Rate of descent varied between 1050ft/min and 600ft/min.
- Vertical load factor varied between +0.85G and +1.2G.
- At ~15ft RA, thrust levers were retarded to the "IDLE" detent leading to A/THR disengagement as expected.

### On the lateral axis:

- CM1 sidestick input varied between half of full right and left deflection. At the same time, CM2 sidestick input varied between ~1/5 of full right and ~1/3 of full left deflection.
  - A right turn was performed between 650ft RA and 350ft RA.
  - Then roll angle varied between -7.5° (left wing down) and +7° (right wing down).
- No significant rudder pedal input was recorded.
- After the final turn, heading varied between 145° and 150° (QFU 149°).
- Drift angle varied between +4° and +1° (aircraft nose toward the left of the track).
- No significant lateral load factor was recorded.

### Analysis:

At 500ft RA (stabilization height recommended in Visual Meteorological Conditions):

- The aircraft was not yet on the correct lateral and vertical flight path
- The aircraft was in landing configuration
- The thrust was stabilized, and the aircraft was at target speed for approach

From 500ft RA to touchdown, as per the following **FCOM extract**, several parameters exceeded their callout value:

- The rate of descent reached 1050ft/min: higher than its callout value (1000ft/min) for ~5 seconds between 400ft RA and 300ft RA.
- After final turn, roll angle reached its callout value (+/-7°) at 270ft RA (left) and at 170ft RA (right).

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AinAsia	PROCEDURES			
/	NORMAL PROCEDURES			
A318/A319/A320/A321 FLIGHT CREW OPERATING MANUAL	STANDARD OPERATING PROCEDURES - STANDARD CALLO			
	FLIGHT PARAMETERS			
APPROACH				
During approach, the PM				
<ul> <li>arget +10 kt</li> </ul>	decreases below the speed target -5 kt or increases above the speed			
	e descent rate exceeds 1 000 ft/min			
	gle becomes greater than 7 °			
<ul> <li>"PITCH" when pitch at</li> </ul>	titude becomes lower than -2.5 ° or higher than +10 °			

Consequently, as per FCOM-PRO-NOR-SOP-18-STABILIZATION CRITERIA and FCTM-PR-NP-SOP-190 – CONF – FINAL APPROACH-TRAJECTORY STABILIZATION, considering the brief exceedances above callout values, final approach can still be considered as stabilized.

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### > At 21:55:29 UTC: Touchdown

### The aircraft touched down with:

### On the longitudinal axis: +4° of pitch angle.

- 100 --2ft/s (±2ft/s) of recalculated aircraft vertical speed.
- +1.15G of vertical load factor. -
- CAS 126kt.
- -
- Ground spoilers started to extend. -

### On the lateral axis:

- -2° of roll angle (left wing down).
  147° of heading (QFU 149°).
  +1° of drift angle (nose toward the left of the track).
- +0.05G of lateral load factor.

### Analysis:

According to the roll angle recorded at touchdown (-2°), the left main landing gear touched down first followed by the right main landing gear.

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5.2. TOUCH AND GO (DECELERATION THEN ACCELERATION)

### From touchdown (21:55:29 UTC) to ~1275m after runway threshold (21:55:39 UTC): Deceleration phase

- Nose up sidestick input was released by CM2 at touchdown.
  - Pitch angle decreased toward 0°.
  - Nose landing gear was recorded compressed ~2s after touchdown.
  - Ground spoilers were fully extended.
- Thrust levers were pushed between "IDLE" and "MCL" ~7s after touchdown.
- CONF 2 (Slats/Flaps 22°/15°) was selected ~7s after touchdown.
- No braking:

-

- o Manual braking was not applied
- Autobrake not armed

### Analysis:

After performing usual flare and landing technique, the trust levers were moved forward and a Slat/Flap configuration for Take-Off was selected (CONF 2) as recommended in following **FCTM extract**.

NORMAL PROCEDURES SUPPLEMENTARY PROCEDURES - TOUCH AND GO TOUCH AND GO Instructor
TOUCH AND GO Instructor Instructor Instructor Instructor Instructor Instructor
[] 5 cm (2 in). in round idle,
[] 5 cm (2 in). in round idle,
[] 5 cm (2 in). in round idle,
5 cm (2 in). in round idle,
5 cm (2 in). in round idle,
Set flaps configuration for takeoff <sup>(2)</sup> If necessary, reset the rudder trim     Monitor/adjust the pitch trim movement towards the green band     Place one hand behind the thrust levers to ensure that they are advanced to approximately 5 cm (2 in)     Order "GO" when the aircraft is in the correct configuration (pitch trim, rudder trim and flaps).
L

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- From ~1275m (21:55:39 UTC) to ~2600m after runway threshold (21:55:56 UTC): Acceleration phase
- Ground Spoilers were disarmed and Speed Brakes lever was pushed to +2.7°.
   Ground spoilers retracted.
- Thrust levers were pushed to "TOGA" ~6 seconds after action on speed brakes lever.
   Master Warning triggered ~2 seconds later.
- Around 21:55:53 UTC, Speed Brakes lever was set in the fully-retracted position (+0°).
  - Master Warning stopped triggering ~3s later.

<u>Note</u>: Extract from AMM 27-60-00-00 CONF 00 - SPOILER - DESCRIPTION AND OPERATION

The speedbrake lever positions and the equivalent angles are given in the following table:

1	LEVER POSITION	1	SPEEDBRAKE ANGLE (deg)	1
!		!		!
	ARMED	1	-3	3
	RET	1	0	!
	1/2	1	+28.5	!
	FULL	1	+57	1

### Analysis:

Speed brakes lever was involuntary pushed to  $+2.7^{\circ}$  most probably following the ground spoiler disaming by the flight crew.

<u>CONFIG</u> SPEED BRAKES NOT RETRACTED alert triggered as consequence. This alert triggers when:

- the speed brake lever deflection is greater than 2° ("SBC" parameter in DFDR).
- Flight Warning computer (FWC) is in flight phase 3 or 4 (Take off power applied)

Note: DFDR parameter "SBC" (Speed Brake Command) is the same FCDC parameter used by the FWC to trigger the TAKE OFF CONFIG warning "CONFIG SPD BRK NOT RETRACTED". This Boolean parameter is set at "1" when the speed brake lever deflection is greater than 2°.

As recommended in following **FCTM extract**, the ground spoilers should be carefully disarmed, so that the speed brakes lever is not moved. As the lever was not in the fully-retracted position, the <u>CONFIG</u> SPEED BRAKES NOT RETRACTED alert appeared and a Master Warning triggered then disappeared when speed brakes lever was set in the fully-retracted position.

A: Asia	PROCEDURES
There	NORMAL PROCEDURES
A318/A319/A320/A321 FLIGHT CREW TECHNIQUES MANUAL	SUPPLEMENTARY PROCEDURES - TOUCH AND GO
	TOUCH AND GO

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0	[]
	<ul> <li>Disarm the ground spoilers <sup>(i)</sup></li> <li>Order "STAND UP".</li> </ul>
5	[729]
Set TOGA thrust.	
Remove the hand from the thrust levers.	<ul> <li>Check engine parameters and announce "THRUST SET"</li> <li>Order "ROTATE" at VAPP</li> <li>Maintain the hand behind the thrust levers to ensure that the trainee does not perform an inadvertent reduction of thrust or unwanted stop.</li> </ul>
	pushes on the SPEED BRAKE lever to disarm the ground mmediate retraction of the ground spoilers, and not to wait must levers are advanced.
Carefully disarm the ground spoilers, so BRAKE lever is not in the fully-retracted	that the SPEED BRAKE lever is not moved. If the SPEED position, the <u>CONFIG</u> SPEED BRAKES NOT RETRACTED alert er will possibly command speed brakes extension. As per

According to FDR data, the master warning corresponding to the <u>CONFIG</u> SPEED BRAKES NOT RETRACTED ECAM alert was recorded OFF around 3 seconds after the recording of the speed brakes lever retraction.

These 3 seconds observed on the FDR data can be explained:

- For 1second by the recording rates of both parameters in the FDR (i.e. 2pps for the speed brake lever parameter "SBC" and 1pps for the Master Warning "CPTMW1").
- For 2seconds by the acquisition and processing time of the FWC.

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5.3. ABORTED TOUCH AND GO AND RUNWAY OVERRUN

### From ~2600m after runway threshold (21:55:56 UTC) to aircraft stop (21:56:23 UTC): Deceleration phase and runway overrun

- Around 21:55:56 UTC (ground speed 185kt), thrust levers were pulled to "MAX REV".
   Ground spoilers extended.
- Around 21:55:59 UTC (ground speed 171kt) manual braking was progressively applied to reach maximum braking ~13 seconds later (while ground speed was 95kt).
- Around 21:56:03 UTC, thrust levers were pushed to "REV IDLE" then a differential reverse thrust was applied (thrust lever 2 was pulled to "MAX REV" again while thrust lever 1 was pulled to an intermediate reverse position (between "MAX REV" and "IDLE REV").
- From 21:56:15 UTC to aircraft stop, runway overrun happened (at a ground speed of 55kt):
  - Pitch sharply decreased to -6° before stabilizing around -3°
  - Longitudinal load factor<sup>2</sup> increased up to +0.8G before decreasing to 0G.
  - Vertical load factor varied between +0.4G and +1.7G.

### Analysis:

Around 21:55:56 UTC (remaining runway ~1180m), at CAS of 174kt, the Touch and Go procedure was aborted: thrust levers were pulled to "MAX REV" leading to ground spoilers' extension.

Note: When ground spoilers are not armed and in retracted position, the full ground spoiler extension occurs when:

- Ground condition detected:
  - Both main landing gears seen on ground during 30s after touch down) Or
    - Wheels speed above 72 knots

AND

 Reverse is selected on at least one engine (the other thrust lever must be below the Maximum Continuous - MCT – notch)

Then ~3 seconds later (remaining runway ~860m), a manual braking order was progressively applied to reach maximum braking ~13 seconds after the start of braking application.

Around 21:56:03 UTC (remaining runway ~530m), at CAS of 123kt, thrust levers were pushed to "REV IDLE" for 8 seconds then a differential reverse thrust was applied.

As recommended in following FCTM extract, to perform a RTO the crew should:

- Apply "MAX REV" thrust until complete stop (reduce reverse thrust only if there is enough runway available)
- Apply maximum pressure on both pedals until complete stop (the aircraft will stop in the minimum distance, only if the brake pedals are maintained fully pressed)

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<sup>&</sup>lt;sup>2</sup> A positive longitudinal load factor means « deceleration »

AirAsia A318/A319/A320/A321 FLIGHT CREW TECHNIQUES MANUAL	ABNORM	PROCEDURES MAL AND EMERGENCY PROCEDURES MISC
	REJECTED	TAKEOFF
RTO TECHNIQUE Should a RTO procedu	re is initiated, the follo	wing task sharing will be applied.
CAPT		F/O
Simultaneously: THRUST LEVERS	ANNOUNCE	REVERSERSCHECK/ANNOUNCE (1) DECELERATIONCHECK/ANNOUNCE (2) ANY AUDIOCANCEL
available at the passing 70 kt - If the autobra not active and	end of the deceleratio [. ke is inoperative or if t d no deployment of sp	to a complete stop. But, if there is enough runway n, it is preferable to reduce reverse thrust when he takeoff is rejected prior to 72 kt (autobrake oilers), the captain simultaneously reduces thrust
and applies n	naximum pressure on	both pedals. The aircraft will stop in the minimum re maintained fully pressed until the aircraft comes

As explain in the safety report:

Weather condition was VMC with visibility reported of 8km, surface wind of 320/4kt, Temperature 24°C and dry runway.

The theoretical stopping distance was calculated by Airbus design office using the following hypothesis (conditions of the event):

- Aircraft configuration → A320-216 / Weight 51.5T / CG 28% / CONF 2
- Runway configuration → WMSA RWY15 / Elevation 70ft / Slope 0.16%
- Weather conditions → Tailwind ~15kt / OAT 24°C / DRY Runway
- RTO at 174kt CAS with MAX REV, maximum manual braking from start of braking to stop and full ground spoilers extension

The theoretical stopping distance at RTO initiation would have been 940m.

Around 21:56:15 UTC, at a ground speed of 55kt, pitch sharply decreased to -6° before stabilizing around -3° and longitudinal load factor increased up to +0.8G: the runway

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overrun happened at this moment. The increase of deceleration was most probably induced by changes of the ground surface.

During the runway overrun, several obstacles were hit leading to multiples load factors peaks: vertical load factor varied between +0.4G and +1.7G.

At 21:56:23 UTC, around 3910m after runway threshold (~130m after the end of runway), the aircraft stopped.

#### End of description.

### 6. SYNTHESIS

On November 29<sup>th</sup> 2017, the A320-216 MSN 3536 (9M-AHM) operated by AIR ASIA experienced a runway overrun during an aborted touch and go after a visual approach to runway 15 at Subang Sultan Abdul Aziz Shah airport (WMSA).

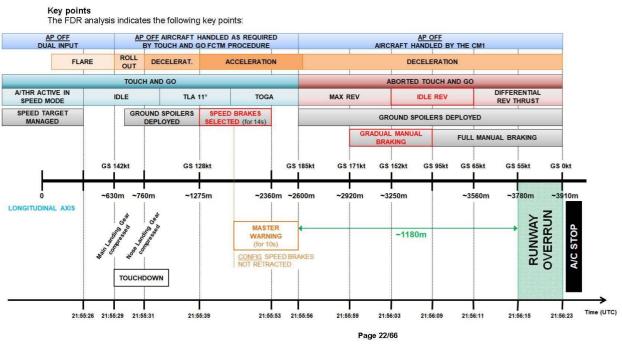
### Weather Condition

During final approach, the aircraft experienced a significant tailwind (15kt) during final approach and landing.

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Airbus SAS Société par actions simplifiée au capital de 3.226.781 Euros RCS Toulouse 383 474 814

Siège social : 1, rond-point Maurice Bellonte 31700 Blagnac, France

#### 7. CONCLUSION

The Airbus Handling Quality analysis highlights the following contributing factors of the event:

#### Aborted Touch and Go:

 During the Touch & Go manoeuver, when disarming the ground spoilers, speedbrake lever was involuntarily set to +2.7°.
 When the thrust levers were pushed to TOGA, this resulted (as per design) in the triggering of the "CONFIG SPEED BRAKES NOT RETRACTED" ECAM Warning.

Note: The master warning "CONFIG SPEED BRAKES NOT RETRACTED" is recorded OFF around 3 seconds after the speed brakes lever was set back to 0° (fully retracted position). This is explained by the recording rates of both parameters in the FDR and by the internal acquisition and processing time of the alert in the FWC.

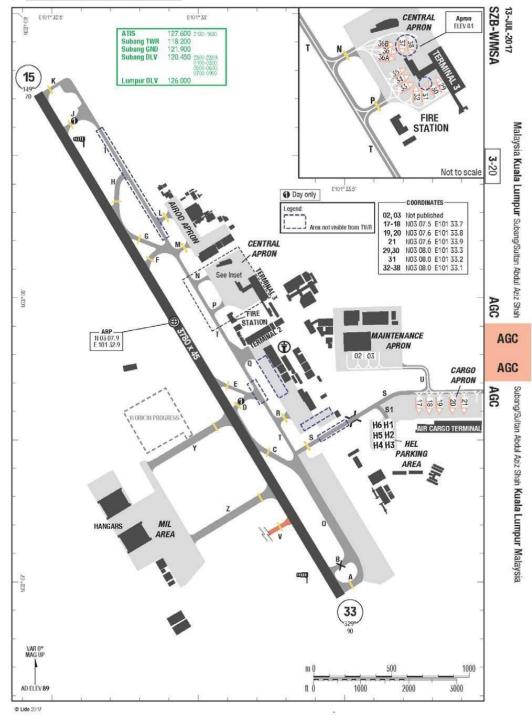
#### Runway overrun:

- "MAX REV" thrust was not applied until complete stop: thrust levers were pushed to "REV IDLE" for 8 seconds at a ground speed of 152kt then a differential reverse thrust was applied until complete stop.
- Maximum pressure on both pedals was not quickly applied: delay of ~3 seconds between "MAX REV" thrust application and manual braking orders, then ~13 seconds to reach maximum manual braking application.
- The tailwind component increased the stopping distance.

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### 8. AIRPORT INFORMATION

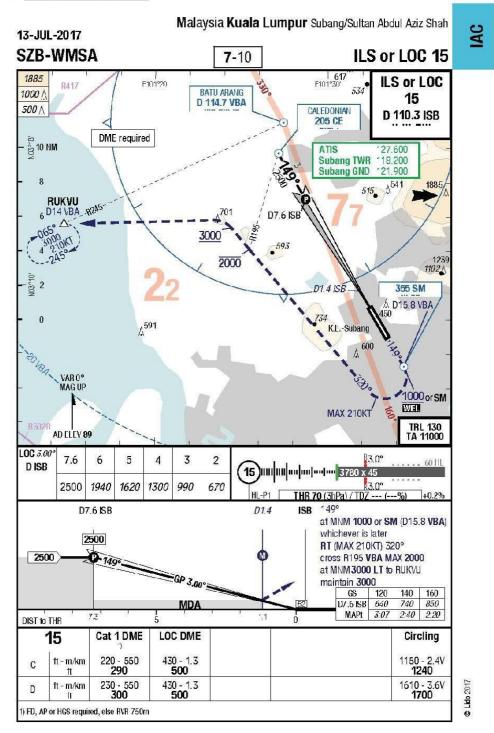


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9. APPROACH CHART



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### **10.ADDITIONAL INFORMATION**

### 10.1. POST FLIGHT REPORT (PFR)

CITY PAIR WMKK WMSA FLTN AXM9700 DATE GMT 0604 A/C ID . SM-AHM 2 DB/N POST FLIGHT REPORT A/C ID DATE GMT FLTN .9N-AHM 29NOV 2108/2156 AXM9700 CITY PAIR WMKK WMSA WARNING/MAINT.STATUS MESSAGES NO WARNING MESSAGE FAILURE MESSAGES SOURCE IDENT. GMT PH ATA 2108 02 23-28-34 NO SOU DATA CFDS

#### Analysis:

The PFR did not record any system failure that might have been involved in the runway overrun.

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10.2. AVAILABLE PICTURE





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#### 11. UPGRADE AND ENHANCEMENT: MAINTENANCE RECOMMENDATIONS

Maintenance recommendations were separately sent to AIR ASIA by Airbus Customer Support Department. All the exchanged messages are available in TechRequest (dossier 80389852).

#### 12. OPERATIONAL CONSIDERATIONS: FCOM, FCTM, QRH

The following is a synthesis of the general guidelines and procedures that are provided by Airbus in the Operational Documentation available on Airbus-World and valid at the date of this Handling Qualities Analysis report publication:

#### USE OF SIDESTICK (FCTM AOP-10-30-20 USE OF SIDESTICK)

Only one pilot flies at a time.

If the PM wants to act on the sidestick, he/she must:

- Clearly announce "I have control"
- Press and maintain his/her sidestick pushbutton, in order to get full control of the Fly-By-Wire system.

The flight crew should keep in mind that sidestick inputs are algebraically added. Therefore dual inputs must be avoided, and will trigger aural and visual alerts.

Either pilot can make an input on their sidestick at any time.

Either pilot can deactivate the other pilot's sidestick by pressing on their sidestick pb.

#### DURING FINAL APPROACH (FCTM PR-NP-SP-40 TOUCH AND GO)

Before each touch and go, the instructor confirms with the trainee that both of the following apply:

- Reverse thrust will not be selected
- Brakes (auto or manual) will not be used.

#### DURING TOUCH AND GO (FCTM PR-NP-SP-40 TOUCH AND GO)

Trainee	Instructor
<ul> <li>Perform usual flare and landing technique</li> <li>Maintain the runway centerline.</li> </ul>	
	<ul> <li>Disarm the ground spoilers <sup>(1)</sup></li> <li>Order "STAND UP".</li> </ul>
Move forward the thrust levers approximately 5 cm (2 in), in order to prevent the reduction of engines to ground idle.	
	<ul> <li>Set flaps configuration for takeoff <sup>(2)</sup></li> <li>If necessary, reset the rudder trim</li> <li>Monitor/adjust the pitch trim movement towards the green band</li> <li>Place one hand behind the thrust levers to ensure that they are advanced to approximately 5 cm (2 in)</li> </ul>

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	<ul> <li>Order "GO" when the aircraft is in the correct configuration (pitch trim, rudder trim and flaps).</li> </ul>
Set TOGA thrust.	
Remove the hand from the thrust levers.	<ul> <li>Check engine parameters and announce "THRUST SET"</li> <li>Order "ROTATE" at VAPP</li> <li>Maintain the hand behind the thrust levers to ensure that the trainee does not perform an inadvertent reduction of thrust or unwanted stop.</li> </ul>
Rotate the aircraft and target takeoff pitch attitude, then follow SRS.	

<sup>(1)</sup> At nosewheel touchdown, the instructor pushes on the SPEED BRAKE lever to disarm the ground spoilers. The objective is to initiate the immediate retraction of the ground spoilers, and not to wait for their automatic retraction while the thrust levers are advanced.

Carefully disarm the ground spoilers, so that the SPEED BRAKE lever is not moved. If the SPEED BRAKE lever is not in the fully-retracted position, the CONFIG SPEED BRAKES NOT RETRACTED alert will appear and the SPEED BRAKE lever will possibly command speed brakes extension. As per aircraft design, ground spoilers automatically retract when thrust levers are set above CLB detent.

(2) Flap settings are as follows:

- Landing configuration: CONF FULL
- Takeoff configuration: CONF 2.

#### RTO TECHNIQUE (FCTM PR-AEP-MISC REJECTED TAKEOFF)

Should a RTO procedure is initiated, the following task sharing will be applied.

CAPT	F/O
"STOP"ANNOUNCE	
Simultaneously:	
THRUST LEVERSIDLE	
REVERSE THRUSTMAX AVAIL.	REVERSERS CHECK/ANNOUNCE (1)
	DECELERATION CHECK/ANNOUNCE (2)
	ANY AUDIOCANCEL
Aircraft stopped	
Consider positioning the aircraft to keep any	/ possible fire away from the fuselage.
REVERSERSSTOWED	ATCNOTIFY
PARKING BRAKEON	EMER EVAC Procedure (QRH)LOCATE
CABIN CREWALERT	
ECAM ACTIONSORDER	ECAM ACTIONSPERFORM
The aircraft should remain stationary while t	he crow evaluates the situation

(1) : Full reverse may be used until coming to a complete stop. But, if there is enough runway available at the end of the deceleration, it is preferable to reduce reverse thrust when passing 70 kt

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(2):

- Announcing the deceleration means that the deceleration is felt by the crew, and confirmed by the VC trend on the PFD. The deceleration may also be confirmed by the DECEL light (if the autobrake is on). However, this light only comes on when the actual deceleration is 80 % of the selected rate, it is not an indicator of the proper autobrake operation. For instance, the DECEL light might not appear on a contaminated runway, with the autobrake working properly, due to the effect of the antiskid.
- If a rejected takeoff is initiated and MAX auto brake decelerates the aircraft, the captain will avoid pressing the pedals (which might be a reflex action).
- If the autobrake is inoperative or if the takeoff is rejected prior to 72 kt (autobrake not active and no deployment of spoilers), the captain simultaneously reduces thrust and applies maximum pressure on both pedals. The aircraft will stop in the minimum distance, only if the brake pedals are maintained fully pressed until the aircraft comes to a stop.
- If the brake response does not seem appropriate for the runway condition, FULL manual braking should be applied and maintained. If IN DOUBT, TAKE OVER MANUALLY.
- If normal braking is inoperative, immediately apply the Loss of Braking procedure (Refer to FCOM/PRO-ABN-BRAKES [MEM] LOSS OF BRAKING)

After a rejected takeoff, if the aircraft comes to a complete stop using autobrake MAX, release brakes prior to taxi by disarming spoilers.

Do not attempt to vacate the runway, until it is absolutely clear that an evacuation is not necessary and that it is safe to do so.

Please refer to the following Airbus Operational Documentation available on AirbusWorld and valid at the date of this Handling Qualities Analysis report publication:

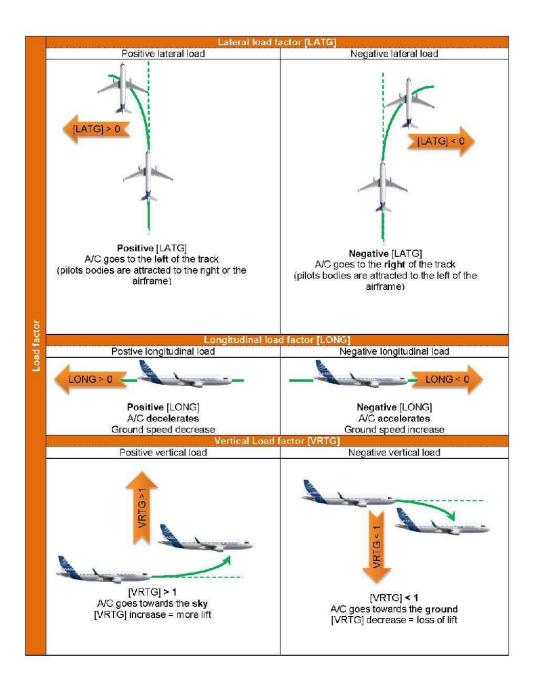
- Flight Crew Operating Manual (FCOM)
  - PRO-NOR-SOP-18-STABILIZATION CRITERIA
- Flight Crew Training Manual (FCTM)
  - AOP-10-30-20 USE OF SIDESTICK
  - PR-NP-SP-40 TOUCH AND GO
  - PR-AEP-MISC REJECTED TAKEOFF

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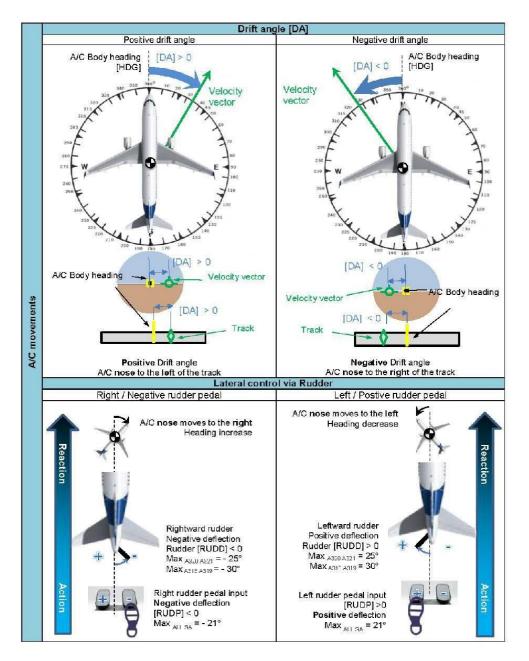
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### 13. ANNEX 1: SIGN AND CONVENTION



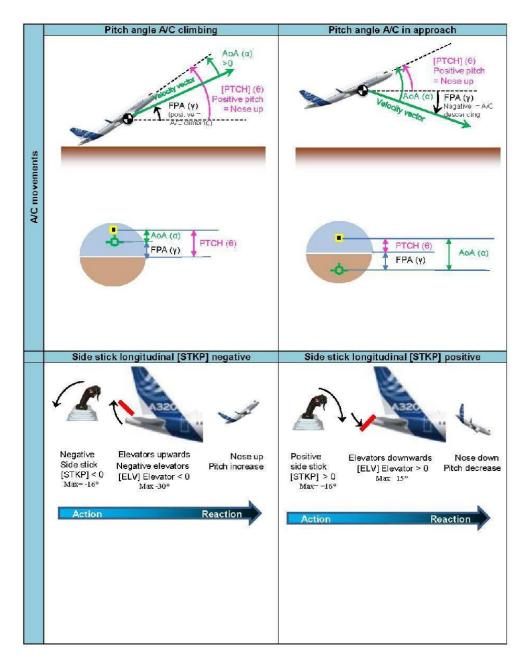
	DATE : Novemb	er 29 <sup>th</sup>	
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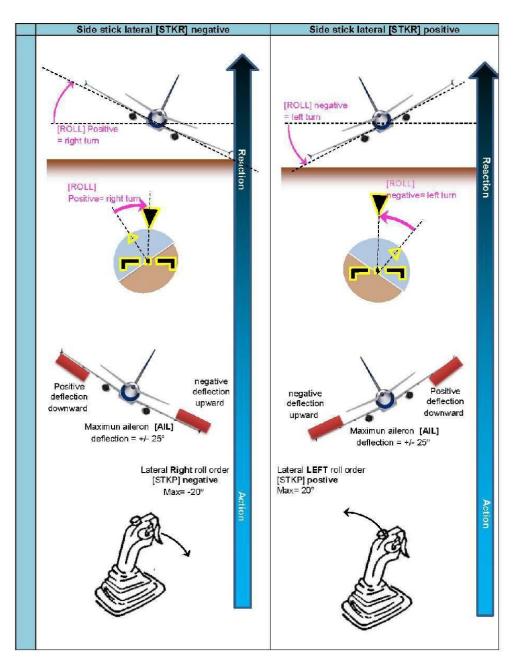
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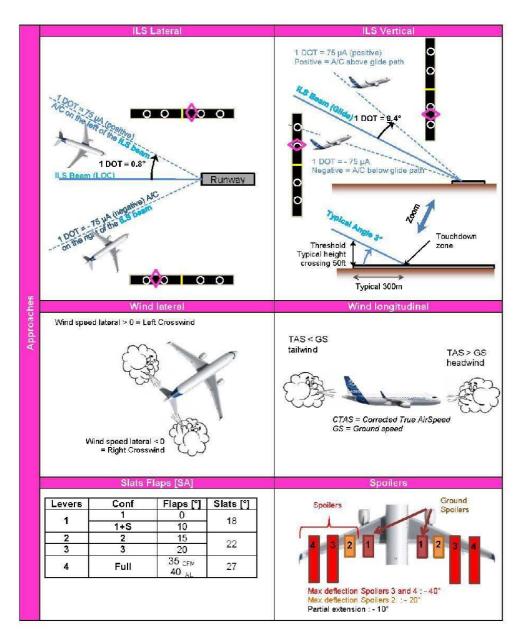
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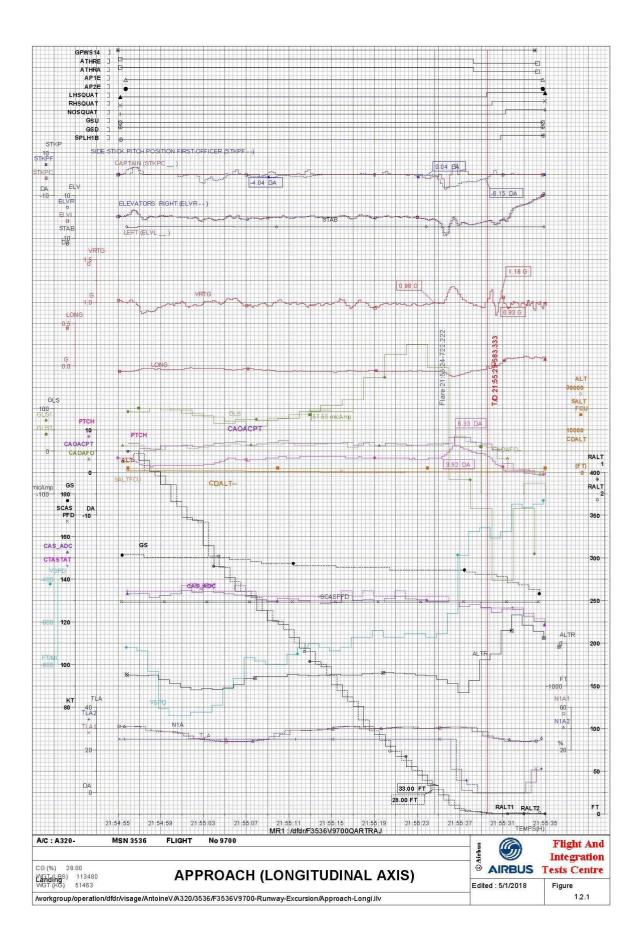
14. ANNEX 2: PLOTS OF FLIGHT RAW DATA

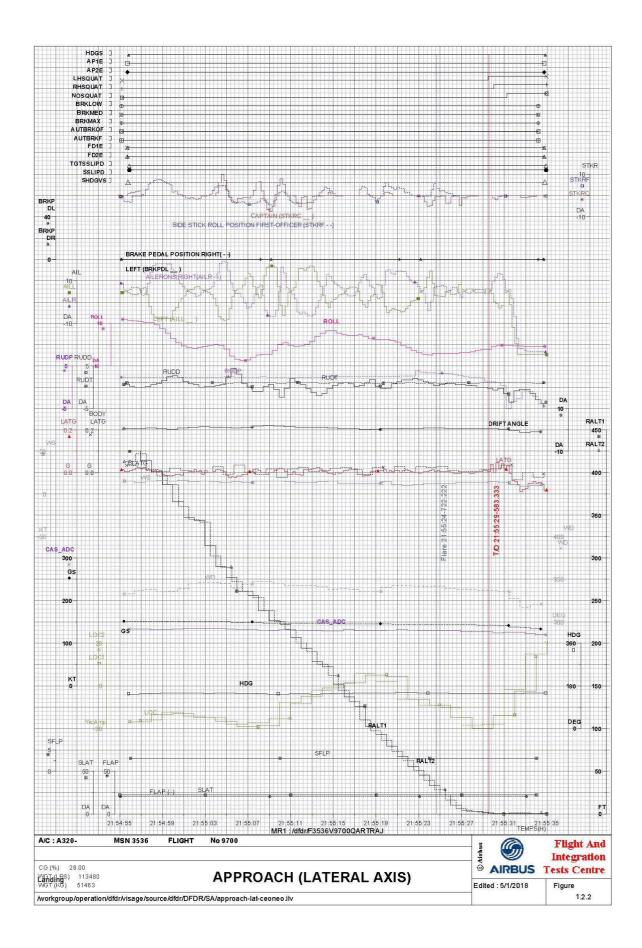
PART I: FLIGHT DATA FROM 21:54:55 UTC TO 21:55:35 UTC Zoom on approach and landing

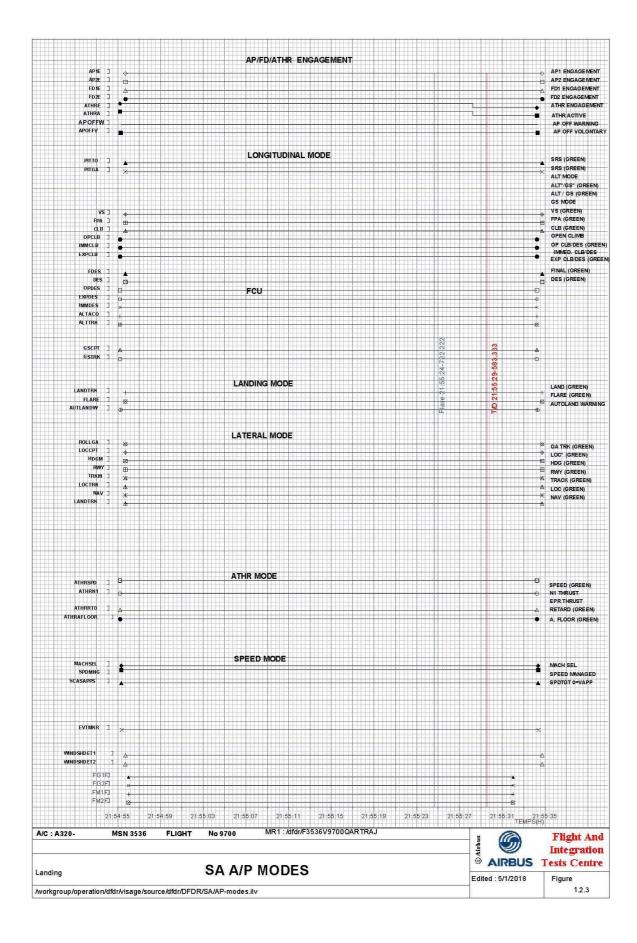
REFERENCE: TechRequest 80389852

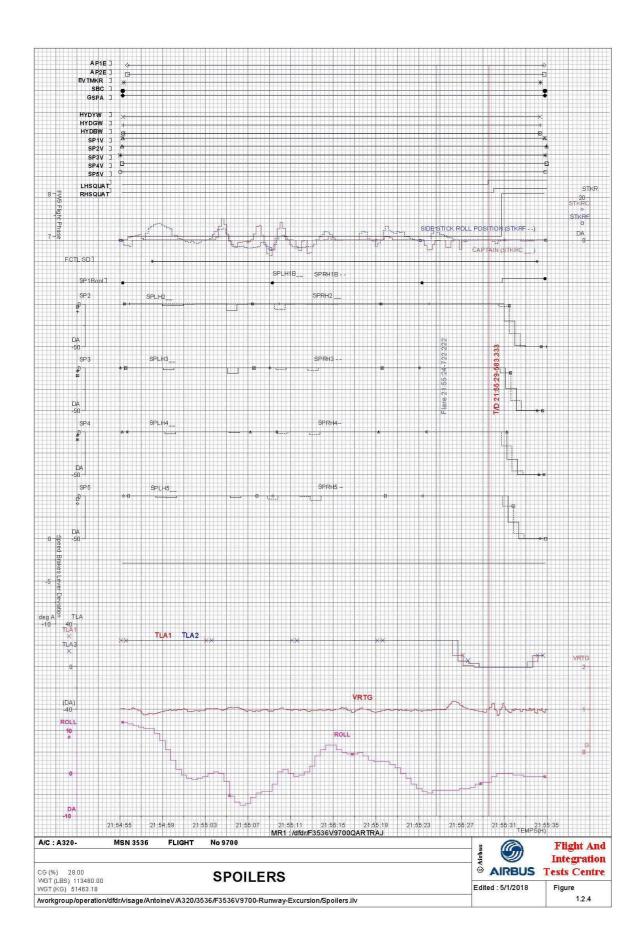
DATE : November 29<sup>th</sup> 2017

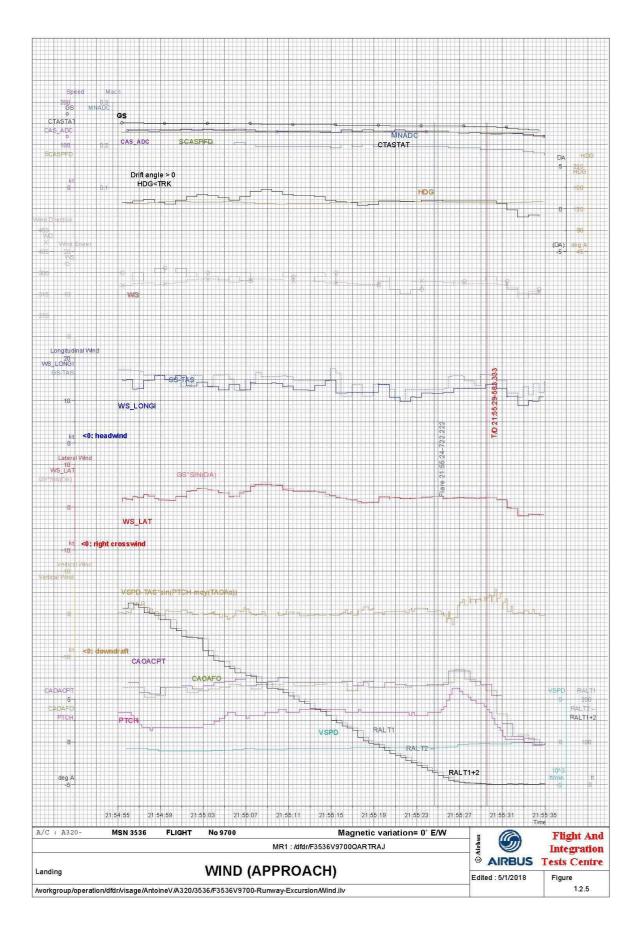
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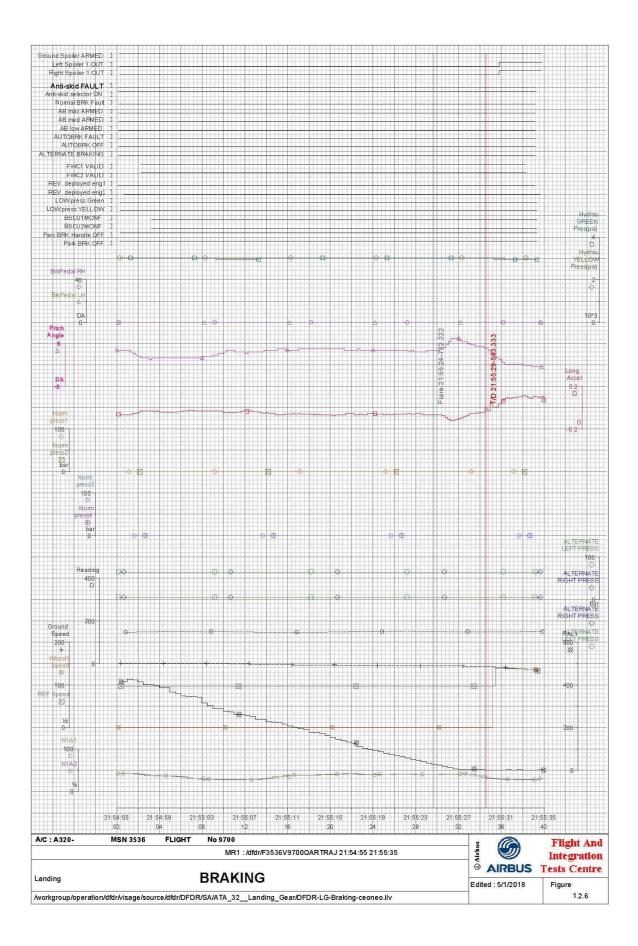


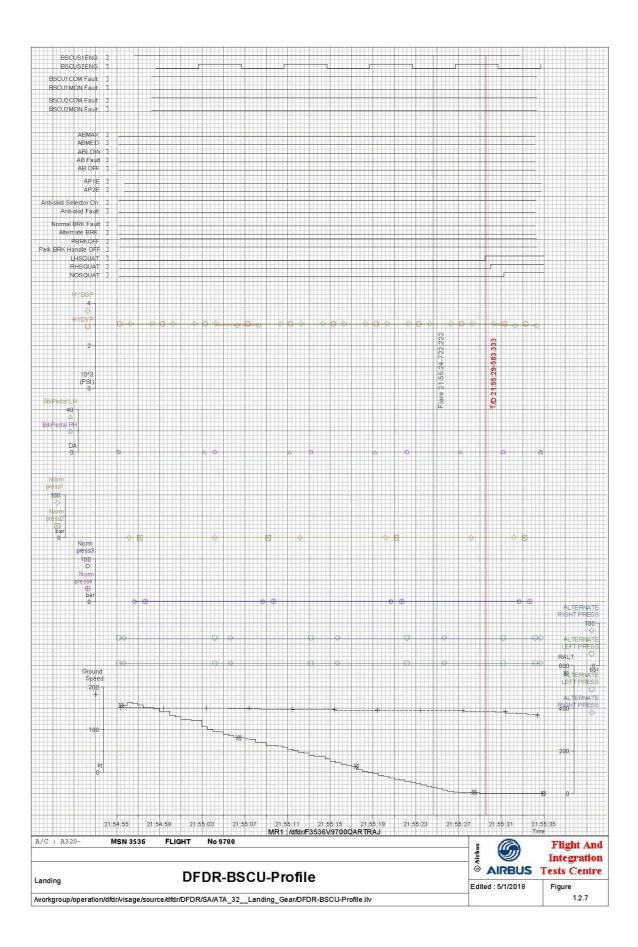


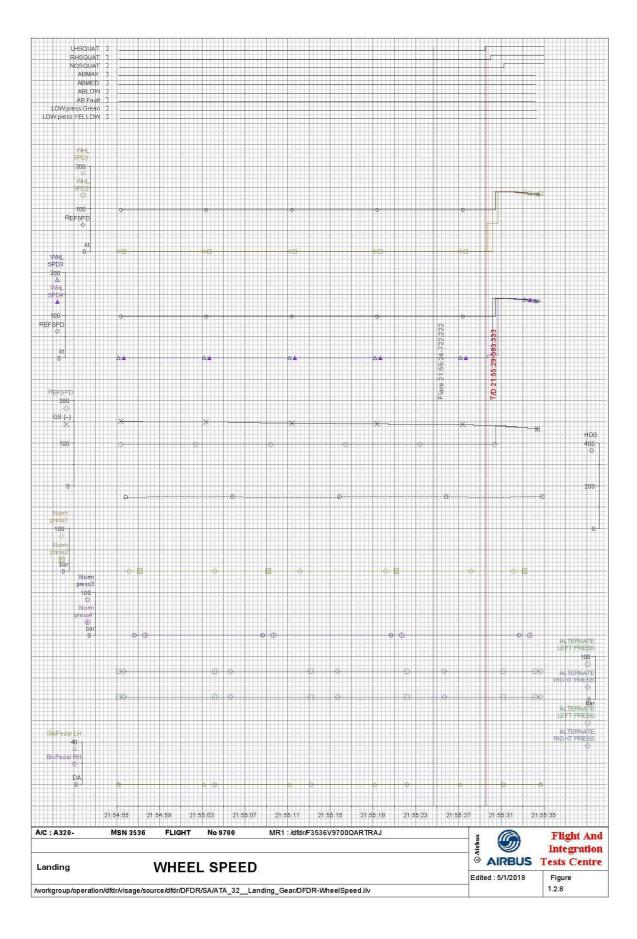


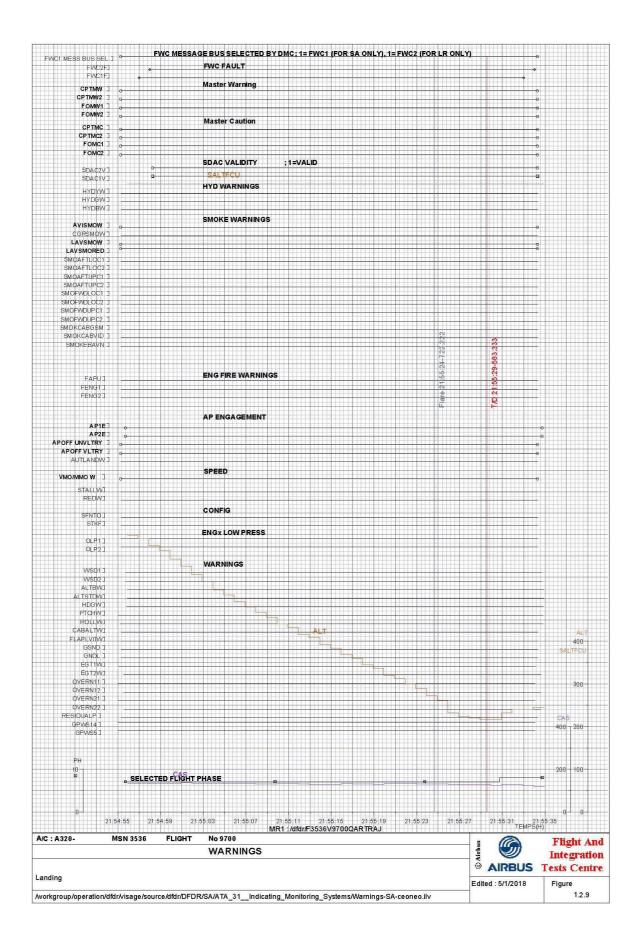


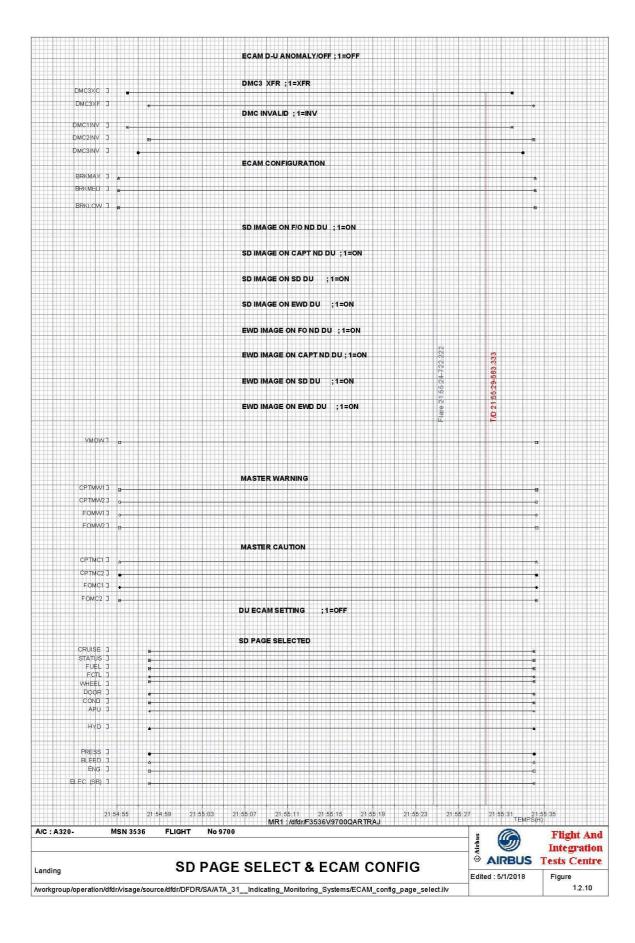












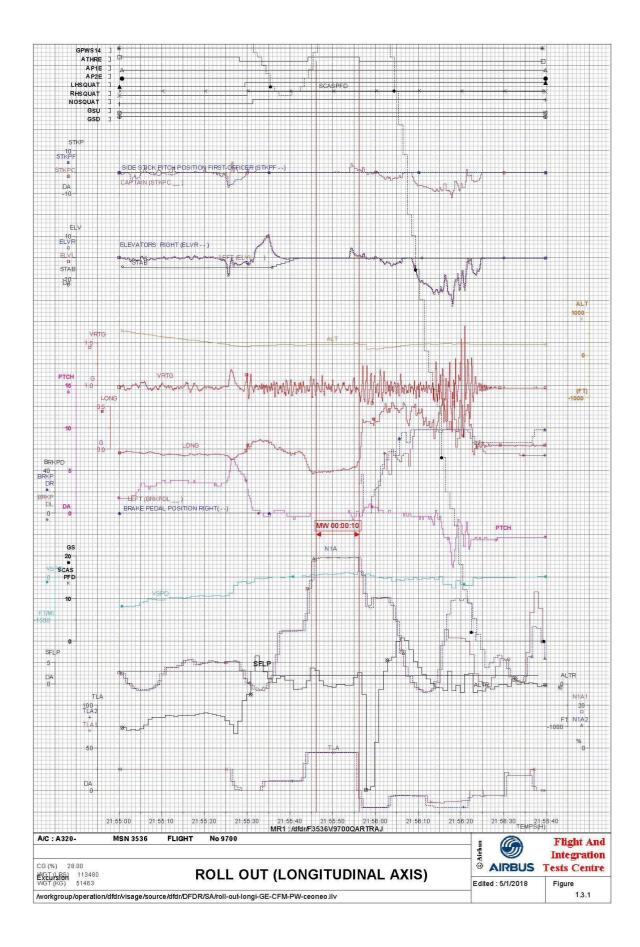


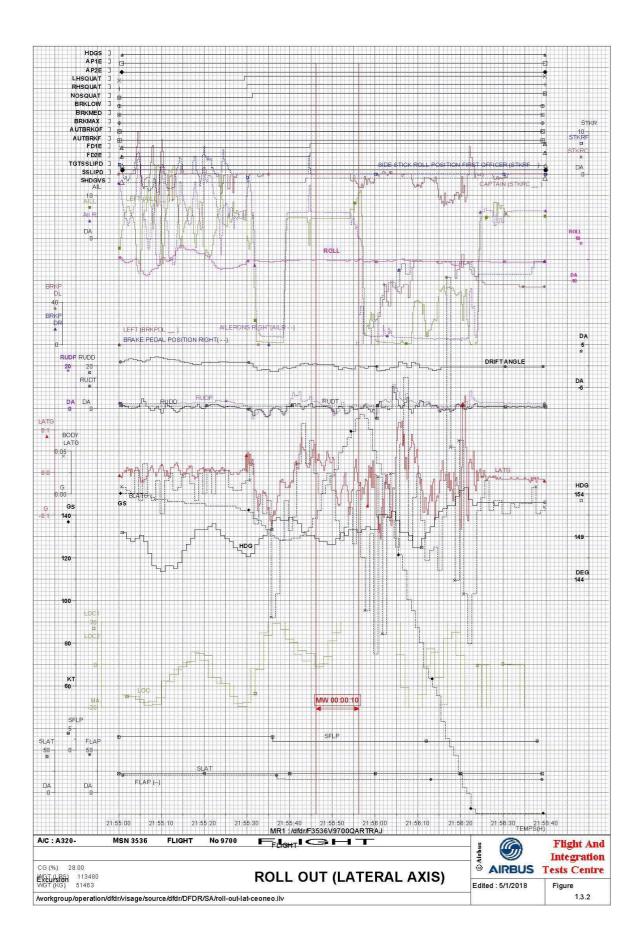
PART II: FLIGHT DATA FROM 21:55:00 UTC TO 21:56:40 UTC Zoom on roll out and runway excursion

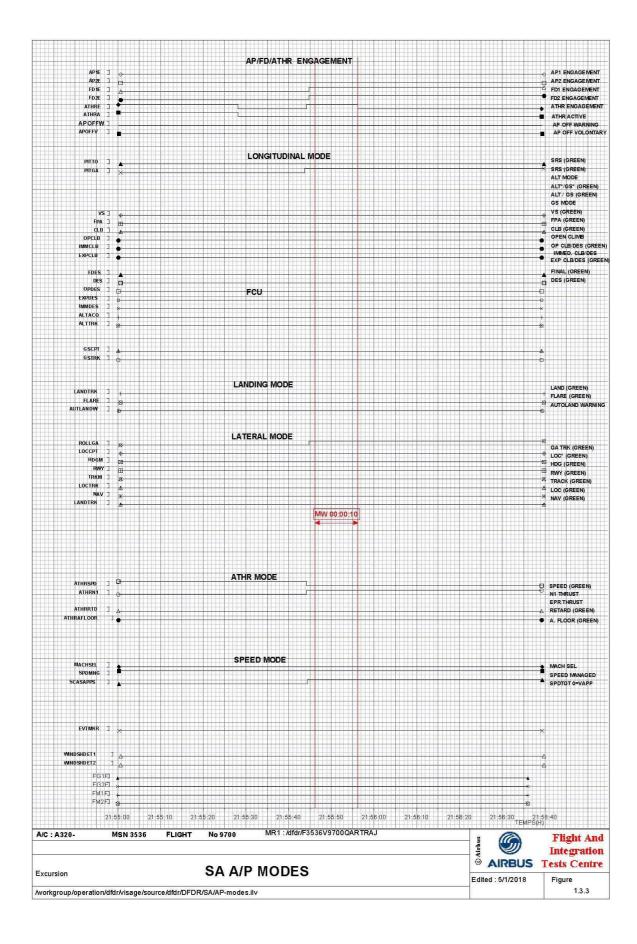
REFERENCE: TechRequest 80389852

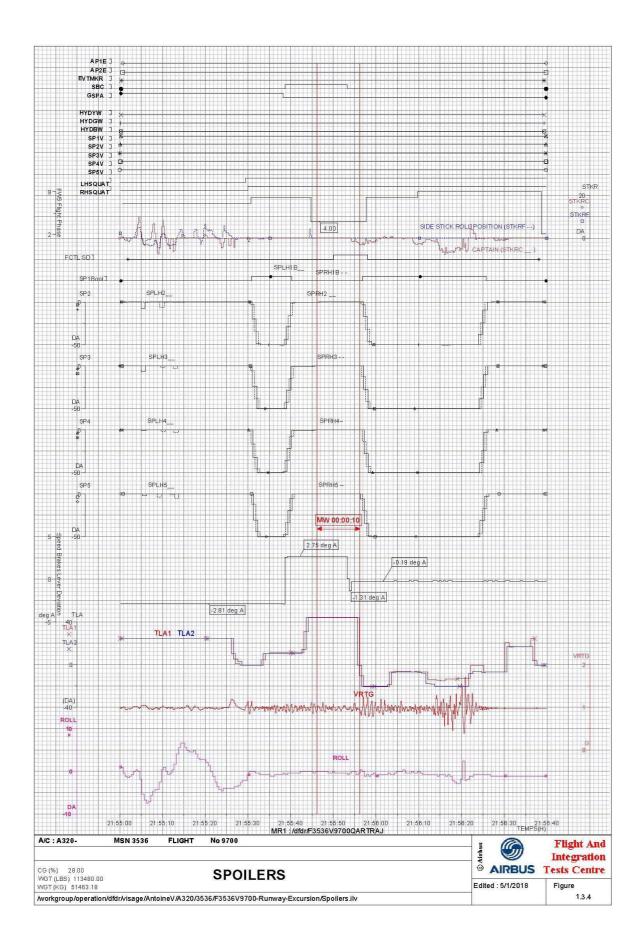
DATE : November 29<sup>th</sup> 2017

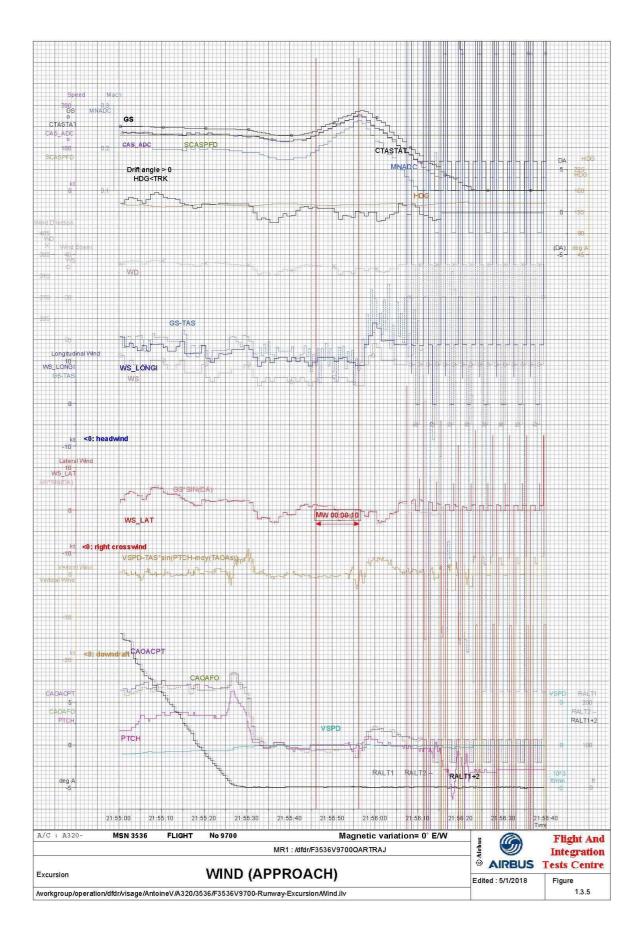
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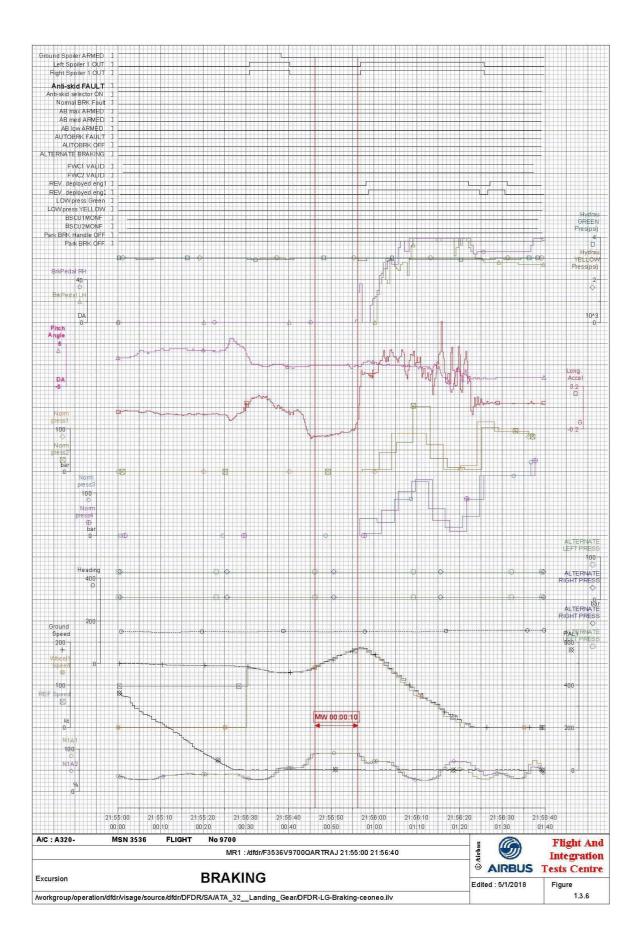


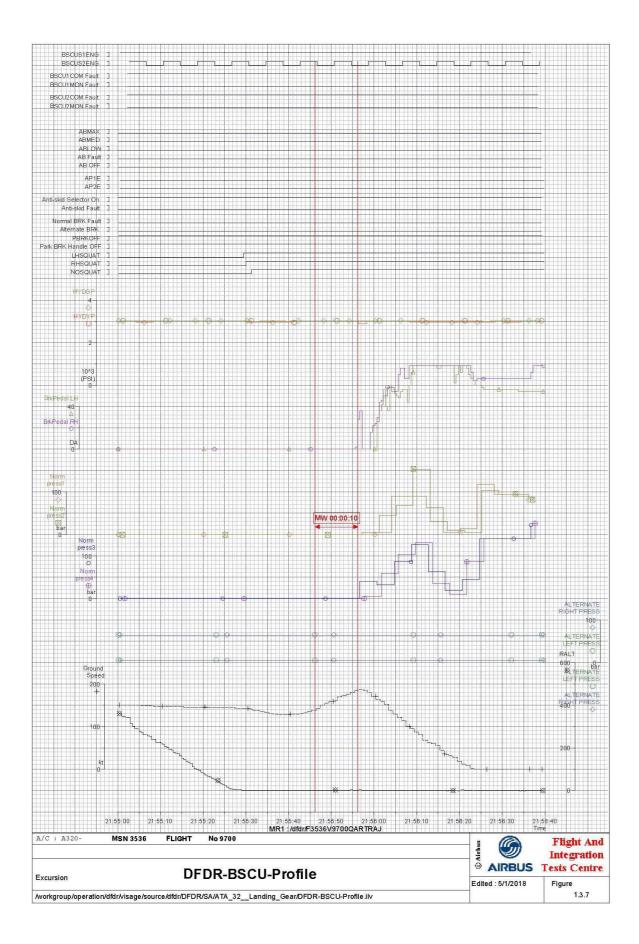


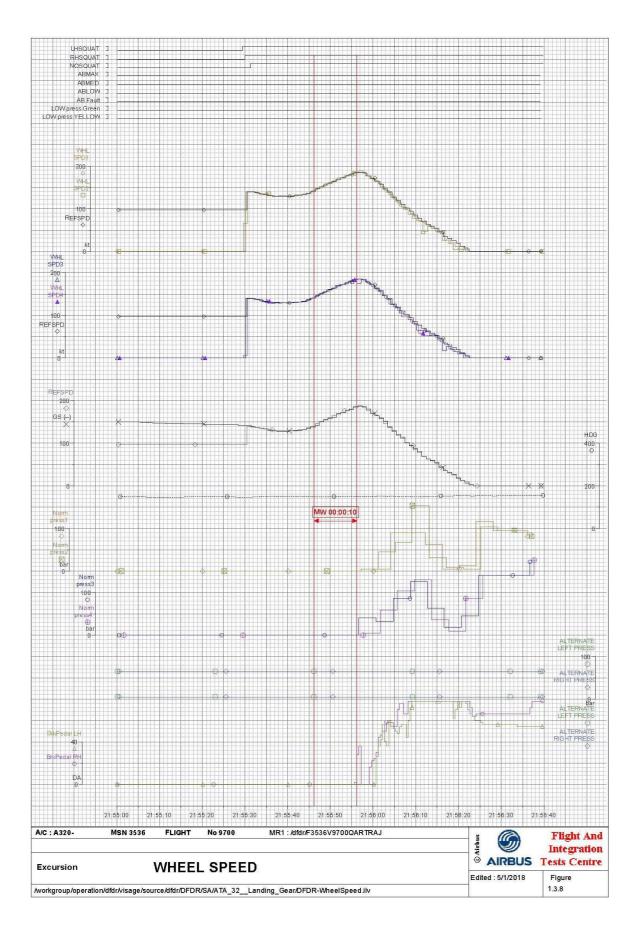


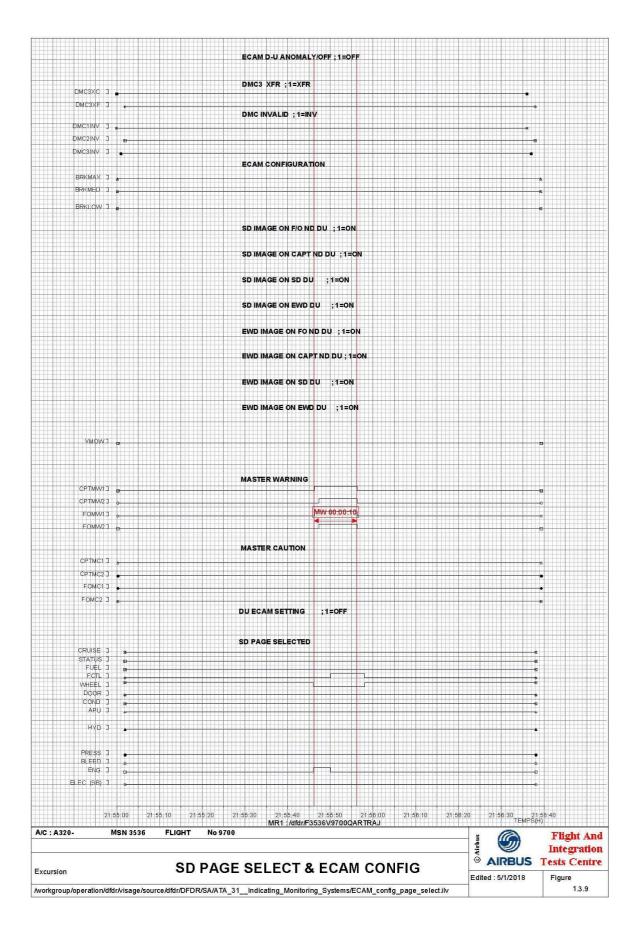


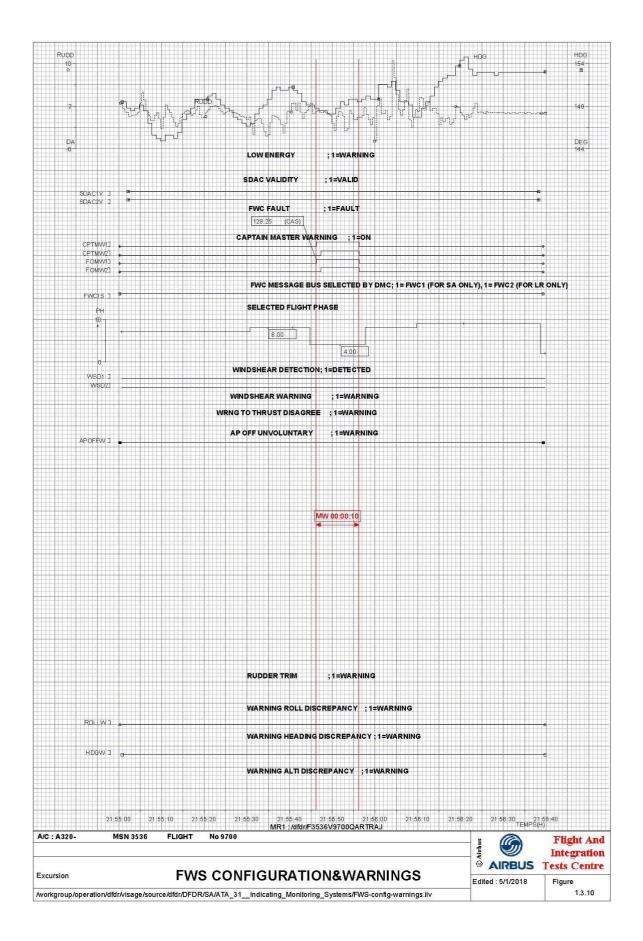














15.ANNEX 3: RECORDED PARAMETERS

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MNEMO	LIBELLE	UNIT	SOURCE	LABEL	PPS	RESOL	SIGN
116201010	FDIU DMC1 INPUT PORT FAILED	NA	FDIU	NA	1/64	NA	NA
116201020	FDIU CFDIU INPUT PORT FAILED	NA	FDIU	NA.	1/84	NA.	NA
116201030	FDIU CLOCK INPUT PORT FAILED	NA	FDIU	NA	1/84	NA	NA.
116201040	OFOR FAIL	NA	FDIU	NA.	1/84	NA.	NA
116201050	Q AR FAIL	NA	FDIU	NA.	1/84	NA.	NA.
116201060	Q AR TAPE LOW	NA	FDIU	NA.	1/64	NA.	NA
116201070	FDIU FAIL	NA.	FDIU	NA.	1/84	NA.	NA.
116201080	DITS FAIL	NA	FDIU	NA	1/84	NA	NA
116201090	CFDIUTRANSMITTER FAIL	NA	FDIU	NA	1.64	NA	NA.
116201100	DEDR PLAYBACK RECEMER FAIL	NA	FDIU	NA NA	1/84	NA.	NA
116201120	FDR STATUS SIGNAL	NA	FDIU	NA	1.64	NA.	SOURCE= FD
116201120	MDDU TRANSMITTER FAIL	NA NA	FDIU	NA.	1/04	NA.	SUURCE: FU
116202020	ISIS ANEMOMETRIC INPUT PORT FAILED	NA	FDIU	NA	1/64	NA	NA
116202020	ISIS ANEMOMETRIC INPUT PORT FALLED	NA	FDIU	NA.	1/84	NA	NA
116202040	FDIU BSCU2 INPUT PORT FAILED	NA	EDIU	NA	1/84	NA	NA
116202050	FDIU BSCUL INPUT PORT FAILED	NA	FDIU	NA	1/84	NA	NA
116202050	FDIU FCDC2 INPUT PORT FAILED	NA	FDIU	NA	1/84	NA	NA
116202070	FDIU FCDC1 INPUT PORT FAILED	NA	FDIU	NA	1/64	NA	NA
116202080	FDIU FWC2 INPUT PORT FAILED	NA	FDIU	NA	1/64	NA	NA
116202090	FOU FWC1 NPUT PORT FAILED	NA	FDIU	NA	1/64	NA	NA
116202100	FDIU SDAC2 INPUT PORT FAILED	NA	FDIU	NA	1/84	NA	NA
118202110	FDIU SDACI INPUT PORT FAILED	NA	FDIU	NA	1/84	NA	NA
116202120	FDIU DMC2 INPUT PORT FAILED	NA	FDIU	NA	1/84	NA	NA
116203010	FIRST-OFFICER DATA BASE VALIDITYMONTH bits 19-23	NA	DMC	230	1/84	NA.	NA
116203060	FIRST-OFFICER DATA BASE VALIDITY DAY. bits 24-29	NA	DMC	230	1/64	NA	NA
116203120	FIRST-OFFICER SELECTED DATA BASE CYCLE bits 18	NA	DMC	230	1/64	NA	D= 1ST /
118284010	CAPTAIN DATA BASE VALIDITYMONTH	NA	DMC	230	1/84	NA.	NA
116204060	CAPITAIN DATA BASE VALIDITY DAY	NA	DMC	230	1/64	NA	NA
116204120	CAPTAIN SELECTED DATA BASE CYCLE	NA	DMC	230	1/64	NA	D= 1ST /
116205020	A/C GROSS WEIGHT COARSE	LBS	DMC	75	1/64	NA.	NA
116205021	A/C GROSS WEIGHT COARSE	KG	DMC	75	1/04	NA	NA
116205110	Q AR TRANSMITTER FAIL	NA	FDIU	NA	1/84	NA.	NA.
116205120	DFDR TRANSMITTER FAIL	NA	FDIU	NA 76	1/84	NA	NA.
116206010	A/C GROSS WEIGHT FINE A/C GROSS WEIGHT FINE	LBS	DMC	76	1/64	NA NA	NA.
116206011	PLAYBACK FAIL	NA	FDIU	70 NA	1/04	NA	NA
116207010	VRTG ACCEL CHECK FAIL	NA	FDIU	NA	1/04	NA	NA
116207020	VRTG ACCEL CHECK PAL	NA	FDIU	NA	1/84	NA	NA
116207040	LATG ACCEL CHECK HOT HON	NA	FDIU	NA	1.6.4	NA	NA
116207050	LATG ACCEL CHECK NOT RUN	NA	FDIU	NA	1/84	NA	NA
116207050	LONG ACCEL CHECK FAL	NA	FDIU	Nå	1/64	NA	No
116207070	LONG ACCEL CHECK NOT RUN	NA	FDIU	NA	1/64	NA	NA
116208010	CITY PAIR FROM C1 bits 9-15	NA	FMG EC CMC	40	1/64	NA	NA
116208090	S OFTWARE PART NUMBER (1ST NUMBER)	NA	FDIU	47	1.64	NA	NA
116209010	CITY PAIR FROM C2 bits 18-22	NA	FMG EC CMC	40	1/84	NA	NA
116209090	S OFTWARE PART NUMBER (2ND NUMBER)	NA	FDIU	47	1/84	NA	NA
116210000	CITY PAIR FROM C3 bits 23-29	NA	FMGEC CMC	40	1/64	NA	NA
116210090	S OFTWARE PART NUMBER (3RD NUMBER)	NA	FDIU	47	1/64	NA	NA
116211010	CITY PAIR FROM C4 bits 9-15	NA	FMG EC CMC	41	1/64	NA	NA
116211090	S OFTWARE PART NUMBER (4TH NUMBER)	NA	FDIU	47	1/64	NA	NA.
116212010	CITY PAR TO C1 bits 23-29	NA	FMG EC CMC	41	1/84	NA.	NA
116212011	CITY PAIR TO C1-4	NA.	FMG EC CMC	NA	1/4	NA	NA
116212012	CITY PAIR FROM C1-4	NA	FMGEC CMC	NA.	1,44	NA.	NA
116212090	S OFTWARE PART NUMBER (5TH NUMBER)	NA	FDIU	47	1.64	NA.	NA
116213010	CITY PAIR TO C2 bits 9-15	NA.	FMG EC CMC	42	1/64	NA.	NA
116213090	S OFTWARE PART NUMBER (0TH NUMBER)	NA	FDIU	47	1/84	NA.	NA
116214010	CITY PAIR TO C3 bits 18-22	NA	FMG EC CMC	42	1/84	NA	NA
116214090	S OFTWARE PART NUMBER (7TH NUMBER)	NA.	FDIU	47	1/84	NA.	NA.
116215010	CITY PAIR TO C4bits 23-29	NA	FMG EC CMC	42	1/84	NA.	NA
116216090	S OF TWARE PART NUMBER (STH NUMBER)	NA.	FDIU	47	1/64	NA.	NA
116300010	LEFT OUTER TANK FUEL QUANTITY	LBS	FOIC DMC	147	1.64	64	NA.
116300011	LEFT OUTER TANK FUEL QUANTITY	KG	FOIC DMC	147	1.64	29.03	NA

11930101         Rott           11930101         CT           11930101         CT           11930101         SOLT           11940101         SOLT           11940101         MCAL           11940101         SOLT           11940101	0-01951 Ava F166, 0-048717 0-01951 Ava F166, 0-048717 0-0587 Ava F162, 0-048717 0-0587 Ava F162, 0-048717 0-0587 Ava F162, 0-048717 1-0587 Ava F162, 0-048717 1-0597 Ava F162, 0-	LBS         KG           KG         LBS           KO         LBS           KO         LBS           KG         NA           NA         NA           FT         FT           FT         FT           FT         FT           FT         FT           FT         NA           NA         NA	FOIC DAG FOIC DAG FAU FAU FAU FAU FOIC DAG FOIC FOIC FOIC FOIC FOIC FOIC FOIC FOIC	165 165 257 257 261 261 260 47 47 47 47 46 165 165 165 165 165 165 165 165 165 16	1.84 1.84 1.84 1.84 1.84 1.84 1.84 1.84	64 29.03 64 29.03 64 29.03 64 29.03 NA 29.03 NA NA 0.16 NA NA 1 NA NA 1 NA NA 1 NA NA NA NA NA NA	0= MDA NA NA
11000101         Cont           11000101         Cont           110000101         Cont           11000101         Cont           110001010         Cont           110001010         Cont	0017817A817181.00447117 0017817A817182.0044717 94887124871282.0044717 94887124871282.0044717 94887124871282.0044717 1871 94871282.0044717 1871 94871282.0044717 1871 94871282.0044717 1871 94871282.0044717 1871 94871282.0044717 1871 94871282.0044717 1871 9471282.0044717 1871 9471282.004471 1871 947129 1870 948714 1870 947129 1870 9471 1870 9471	KG LBS KG LBS KG LBS KG NA. NA NA NA FT FT FT NA NA FT FT FT NA NA NA NA NA	FOIC DAG FOIC DAG FOIC DAG FOIC DAG FOIC DAG FOIC DAG FOIC DAG FOIC DAG FOIC DAG ENAU ENAU ENAU ENAU ENAU ENAU ENAU ENAU	165 267 267 281 281 280 270 47 46 165 165 165 165 255/29 255/29 165 165 255/29 165 165 370 370 370 NA NA NA	1,854 1,854 1,854 1,854 1,854 1,854 1,854 1,854 1,854 1,854 1,854 1,854 1,854 1,854 1,854 1,854 1,854 1,854 1,854 1,854	29.00 64 29.03 64 29.03 64 29.03 NA NA NA NA NA NA NA NA NA NA NA NA NA	NA NA NA NA NA NA NA NA NA NA NA NA NA N
11000200 LETT 11000201 LETT 1000011 LETT 1000011 LETT 1000011 LETT 1000011 Cert 1000010 Cert 1000010 Cert 1000010 Cert 1000001 Cert 1000001 Cert 1000001 Cert 1000001 Cert 1000001 Cert 1000001 Cert 1000000 Cert 1000000 Cert 100000 Cert	RENET TARK TUE, QUARTITY MERT TARK TUE, QUARTITY INNER TARK TUE, QUARTITY INNER TARK TUE, QUARTITY INNER TARK TUE, QUARTITY INNER TARK TUE, QUARTITY INTERVENTION, QUARTITY INTERVENTION, QUARTITY INTERVENTION INNER TARK TUE, QUARTITY INTERVENTION INNER TARK TUE INNER TUE INNER TUE INNER TUE INNER TUE INNER TUE INNER	KG LBS KG LBS KG NA NA NA FT NA FT FT FT FT FT FT FT FT FT FT NA NA NA NA	FOIC DWG FOIC DWG FOIC DWG FOIC DWG FOIC DWG FOIC DWG FOIC DWG FOIC DWG FOIC DWG FAMU FAG FWG FAMU FAG FWG FMGC DWG FMGC DWG FMGC DWG FMGC DWG FOIU FOIU FOIU FOIU FOIU FOIU FOIU FOIU	257 261 261 270 47 46 165 255/28 165 255/28 165 255/28 165 165 165 370 370 370 NA NA NA NA	1,894 1,894	29.03 64 29.03 64 29.03 64 29.03 NA NA NA NA NA NA 1 NA NA 4096 1 NA 4095 1 1 NA NA NA	NA NA NA NA NA NA NA NA NA NA NA NA NA N
1990010 LBT1 1990010 LBT1 1990010 LBT1 1990010 LBT1 1990010 CBT1 1990010 CBT1 1990010 CBT1 1990010 CBT1 199000 CBT1 199000 CBT2 199000 CBT	NINE TARKTUR, CHARTY NINE TARKTUR, CUMITY NINE TARKTUR, CUMITY NINE TARKTUR, CUMITY INTER TARKTUR, CUMITY INT	KG LBS KG LBS KG NA NA NA FT NA FT FT FT FT FT FT FT FT FT FT NA NA NA NA	FOIC DMC FOIC DMC FOIC DMC FOIC DMC FOIC DMC FOIC DMC ENAU ENAU ENAU ENAU ENAU ENAU ENAU ENAU	257 261 261 270 47 46 165 255/28 165 255/28 165 255/28 165 165 165 370 370 370 NA NA NA NA	1,894 1,894	29.03 64 29.03 64 29.03 64 29.03 NA NA NA NA NA NA 1 NA NA 4096 1 NA 4095 1 1 NA NA NA	NA NA NA NA NA NA NA NA NA NA NA NA NA N
119920 00 Robrid 119920 01 Ro	NREET RANK FUE QUANTITY INSEE TANK FUE QUANTI	LBS KG KG NA NA S NA FT NA FT FT FT FT FT FT FT FT FT FT NA NA NA NA NA	FOIC DAG. FOIC DAG. FOIC DAG. FOIC DAG. ENAU ENAU FAC FUIC ENAU FAG CAG. FAG CAG. FAG CAG. FAG CAG. FAG CAG. FAG CAG. FAG CAG. FAG CAG. FAG CAG. FOIL FOIL FOIL FOIL FOIL	281 281 280 280 280 280 280 280 280 280 280 285 285 285 285 285 285 285 285 285 285	1,884 1,884 1,884 1,884 1,884 1,884 1,884 1,884 1,884 1,884 1,884 1,884 1,884 1,884 1,884 1,884 1,884 1,884 1,884 1,884	04 20.03 64 29.03 NA NA 0.16 NA 1 NA 4096 1 NA NA 4096 1 NA NA NA NA NA	NA NA NA NA NA NA NA NA D= WITH DI- D= MDA NA NA NA NA NA NA NA
1990011 80011 80011 199001 8001 199001 8001 199001 8001 19900 1990	HINES TAKE FUE QUANTITY IN A THE CONTENT OF A SUBJECT OF	KG LBS KG NA NA NA NA NA NA FT FT FT FT FT FT FT FT FT FT NA NA NA NA NA	FOIC DAG FOIC DAG FOIC DAG ENAU ENAU ENAU ENAU ENAU ENAU ENAU ENAU	281 280 280 47 46 78 47 46 185 185 185 185 185 185 255/28 185 255/28 185 255/28 185 370 370 370 NA NA	1,84 1,84 1,84 1,84 1,84 1,84 1,84 1,84	29.03 64 29.03 NA NA NA NA NA NA NA NA NA NA NA NA NA	NA NA NA NA NA NA NA D= WITH DH O= MDA NA NA NA NA NA NA NA NA
11999/00 C CEPT 11999/00 C CEPT 11999/00 C CEPT 11999/00 C CEPT 11999/00 C CEPT 11999/00 C CEPT 11997/00 C CEPT 11997/	RFT MAKE TODE, GUARNITY           RFT MAKE TUBE, GUARNITY           TORK TUBE, GUARNITY <t< td=""><td>LBS KG NA NA FT NA FT FT FT NA FT FT FT NA NA NA NA NA NA</td><td>FOID DAG FOID DAG FOID DAG ENANU ENANU ENANU ENANU ENANU ENANU FAGE DAG FAGE DAG FAGE DAG FAGE DAG FAGE DAG FAGE DAG FAGE DAG FOID FOID FOID FOID FOID FOID</td><td>280 280 47 48 48 165 255/28 165 255/28 165 255/28 165 255/28 165 255/28 165 255/28 165 255/28 165 255/28 165 165 165 165 165 165 165 165 165 165</td><td>1,894 1,894 1,894 1,894 1,894 1,894 1,894 1,894 1,894 1,894 1,894 1,894 1,894 1,894 1,894 1,894 1,894 1,894 1,894</td><td>64 29.03 NA 0.16 NA 1 NA 4096 1 NA NA NA NA NA NA NA NA</td><td>NA NA NA NA NA NA NA D= WITH DH D= MDA NA NA NA NA NA NA</td></t<>	LBS KG NA NA FT NA FT FT FT NA FT FT FT NA NA NA NA NA NA	FOID DAG FOID DAG FOID DAG ENANU ENANU ENANU ENANU ENANU ENANU FAGE DAG FAGE DAG FAGE DAG FAGE DAG FAGE DAG FAGE DAG FAGE DAG FOID FOID FOID FOID FOID FOID	280 280 47 48 48 165 255/28 165 255/28 165 255/28 165 255/28 165 255/28 165 255/28 165 255/28 165 255/28 165 165 165 165 165 165 165 165 165 165	1,894 1,894 1,894 1,894 1,894 1,894 1,894 1,894 1,894 1,894 1,894 1,894 1,894 1,894 1,894 1,894 1,894 1,894 1,894	64 29.03 NA 0.16 NA 1 NA 4096 1 NA NA NA NA NA NA NA NA	NA NA NA NA NA NA NA D= WITH DH D= MDA NA NA NA NA NA NA
11000011 Cent 11000010 Cent 11000010 Cent 11000010 Cent 11000010 Cent 11000010 Cent 11000010 Cent 1100000 Cent 110000000 Cent 1100000 Cent 11000000 Cen	IN TARK TUDE QUANTIY ICENT UP ICENT UP ICEN	NA NA NA NA FT NA NA FT FT FT NA NA NA NA NA NA	EMAU FACFWC EMAU FACFWC EMAU EMAU FMGC DMC FMGC DMC FDU FDU FDU FDU FDU FDU	47 46 47 46 165 255/29 255/28 165 255/28 165 255/28 165 370 370 370 NA NA NA NA	1/84 1/84 1/84 1/84 1/84 1/84 1/84 1/84	NA           NA           0.16           NA           1           NA           NA	NA NA NA NA NA D= WITH DH D= MDA NA D= WITH DH D= MDA NA NA NA NA
1100000         Biol.1           11000000         Biol.1           11000000         Airin.1           11000000         Airin.1           11000000         Airin.1           110000000         Airin.1           110000000         Airin.1           110000000         Airin.1           110000000         Airin.1           1100000000         Airin.1           110000000000000         Airin.1           1100000000000000000000000000000000000	LIGAT VARA     LIGAT VARA     LIGAT VARA     LIGAT VARA     LIGAT VARA     LIGAT      LIGAT     LIGAT      LIGAT	NA NA NA NA FT NA NA FT FT FT NA NA NA NA NA NA	EMAU FACFWC EMAU FACFWC EMAU EMAU FMGC DMC FMGC DMC FDU FDU FDU FDU FDU FDU	47 46 47 46 165 255/29 255/28 165 255/28 165 255/28 165 370 370 370 NA NA NA NA	1/84 1/84 1/84 1/84 1/84 1/84 1/84 1/84	NA           NA           0.16           NA           1           NA           NA	NA NA NA NA NA D= WITH DH D= MDA NA D= WITH DH D= MDA NA NA NA NA
11000700         CENTE           1100070         CAL           11007000         CAL           1100	B O GRAPT     GEAF USE     GEAF     GEA	% NA FT NA FT NA FT FT FT NA NA NA NA NA NA	FAC FWC ENAU ENAU FMGC DNC FMGC DNC FDU FDU FDU FDU FDU	78 47 48 165 255/29 165 165 165 165 255/29 165 370 370 370 370 NA NA NA NA	1,84 1,84 1,84 1,84 1,84 1,84 1,84 1,84	0.18 NA NA NA 4098 1 NA 4095 1 NA NA NA NA	NA NA NA 0= WITH DH 0= MDA NA 0= WITH DH 0= MDA NA NA NA NA NA
11000700         CENTE           1100070         CAL           11007000         CAL           1100	B O GRAPT     GEAF USE     GEAF     GEA	% NA FT NA FT NA FT FT FT NA NA NA NA NA NA	FAC FWC ENAU ENAU FMGC DNC FMGC DNC FDU FDU FDU FDU FDU	78 47 48 165 255/29 165 165 165 165 255/29 165 370 370 370 370 NA NA NA NA	1,84 1,84 1,84 1,84 1,84 1,84 1,84 1,84	0.18 NA NA NA 4098 1 NA 4095 1 NA NA NA NA	NA NA NA 0= WITH DH 0= MDA NA 0= WITH DH 0= MDA NA NA NA NA NA
11011010         BAC2           11011010         BAC2           11011010         BAC2           1101010         BAC2           1100100         BAC2           1100100         BAC2           1100100         BAC2           1100100         BAC2           1100100         APPR           1100100         APPR           1100000         APPR           1100000         APPR           1100000         APPR           1100000         APPR           1100000         APPR           11000000         APPR           1100000         APPR           11000000         APPR           11000000         APPR           11000000         APPR           11000000         APPR           11000000         APPR           110000000         APPR           1100000000         APPR           11000000000000 <td>Elicent value     Elicent value     Elicit value     Elicit value     Elicit value     Elicit     Elicit</td> <td>NA. FT NA FT FT NA NA FT FT FT NA NA NA NA NA</td> <td>EDAUU ENAU FMGC DMC FMGC DMC FDU FDU FDU FDU FDU FDU FDU FDU</td> <td>48 165 255/29 255/28 165 255/28 165 255/28 165 370 NA NA NA NA</td> <td>1,84 1,84 1,84 1,84 1,84 1,84 1,84 1,84</td> <td>NA 1 NA 4098 1 NA 4095 1 1 NA NA NA NA NA NA</td> <td>NA NA D= WITH OH O= MDA NA NA D= MITH OH D= MDA NA NA NA NA</td>	Elicent value     Elicent value     Elicit value     Elicit value     Elicit value     Elicit	NA. FT NA FT FT NA NA FT FT FT NA NA NA NA NA	EDAUU ENAU FMGC DMC FMGC DMC FDU FDU FDU FDU FDU FDU FDU FDU	48 165 255/29 255/28 165 255/28 165 255/28 165 370 NA NA NA NA	1,84 1,84 1,84 1,84 1,84 1,84 1,84 1,84	NA 1 NA 4098 1 NA 4095 1 1 NA NA NA NA NA NA	NA NA D= WITH OH O= MDA NA NA D= MITH OH D= MDA NA NA NA NA
1469012 MOMM 1469012 PARA 146910 PARA 146910 PARA 146910 PARA 146910 PARA 146910 PARA 1469010 PARA 1469010 PARA 1469010 PARA 1469010 PARA 1469010 PARA 1469000 PARA 146900	100 F FBE CAPT 300 F FBE CAPT 300 F UBE CAPT 100 F UBE CAPT	FT NA FT FT FT FT FT NA NA NA NA NA	FMGC DMC PMGC DMC FMGC DMC FMGC DMC FMGC DMC PMGC DMC FMGC DMC FMGC DMC FMGC DMC FMGC DMC FMGC DMC FDU FDU FDU FDU FDU FDU FDU FDU	105 255/29 255/28 105 255/28 105 255/28 105 370 370 370 NA NA NA NA	1,64 1,64 1,64 1,64 1,64 1,64 1,64 1,64	1 NA NA 4098 1 NA 4095 1 1 NA NA NA NA	NA D= WITH DH O= MDA NA D= WITH DH O= MDA NA NA NA NA NA NA
1980100 4PFRC 4000 4PF	SACH WIT HOUT DH' WITH DH' CAPT DHU BIGSREPT, CAPT DHU BIGSREPT, CAPT DHU CAPTER THE DHU C	NA NA FT FT NA NA NA NA NA NA NA	PMGC DMC PMGC DMC PMGC DMC PMGC DMC PMGC DMC PMGC DMC PMGC DMC PMGC DMC PMGC DMC PMGC DMC PDU FDIU FDIU FDIU FDIU FDIU	255/29 255/28 185 255/28 185 255/28 185 370 370 NA NA NA NA NA	1,64 1,64 1,64 1,64 1,64 1,64 1,64 1,64	NA NA 4098 1 NA 4095 1 1 NA NA NA NA	0= WITH DH 0= MDA NA 0= WITH DH 0= MDA NA NA NA NA NA NA NA
1980100 4PFRC 4000 4PF	SACH WIT HOUT DH' WITH DH' CAPT DHU BIGSREPT, CAPT DHU BIGSREPT, CAPT DHU CAPTER THE DHU C	NA NA FT FT NA NA NA NA NA NA NA	PMGC DMC PMGC DMC PMGC DMC PMGC DMC PMGC DMC PMGC DMC PMGC DMC PMGC DMC PMGC DMC PMGC DMC PDU FDIU FDIU FDIU FDIU FDIU	255/29 255/28 185 255/28 185 255/28 185 370 370 NA NA NA NA NA	1.054 1.054 1.054 1.054 1.054 1.054 1.054 1.054 1.054 1.054 1.054	NA NA 4098 1 NA 4095 1 1 NA NA NA NA	0= WITH DH 0= MDA NA 0= WITH DH 0= MDA NA NA NA NA NA NA NA
1199309 MOLAN 1199309 MOLAN 1199300 MOLAN 119930	TOP-UDD-EXEPT_CAPT TOP-CAPES CAPT TOP-CAPES CAPT TOP-CAPES CAPT TOP-CAPES CAPT TOP-CAPT TOP-CAPT TOP-CAPT TOP-CAPT TEO DECISION HEAVE TEO DECISION HEAVE TE	FT FT NA NA FT FT FT NA NA NA NA NA	FMGC DMC FMGC DMC FMGC DMC FMGC DMC FMGC DMC FMGC DMC FMGC DMC FMGC DMC FDU FDU FDU FDU FDU FDU FDU FDU FDU FDU	255/28 165 265/29 265/28 165 370 370 NA NA NA NA NA	1,84 1,84 1,84 1,84 1,84 1,84 1,84 1,84	4098 1 NA NA 4095 1 1 NA NA NA	0= MDA NA NA 0= WITH DH 0= MDA NA NA NA NA NA NA NA
1999110 ACAA 199010 ACAA 199010 ACAA 199010 ACAA 199010 ACAA 199010 ACAA 199010 ACAA 199000 ACAA 1990000 ACAA 199000 ACAA 1990	TOP COARSE CAPT TOP FOR FOR TO SACH WITH NO DH FO OND COARSE FOR DH COARSE FOR DH COAR	FT FT NA NA FT FT FT NA NA NA NA NA	FMGC DMC FMGC DMC PMGC DMC FMGC DMC FMGC DMC FMGC DMC FMGC DMC FDU FDU FDU FDU FDU FDU FDU FDU FDU	185 185 255/29 255/28 165 370 370 NA NA NA NA NA	1,84 1,84 1,84 1,84 1,84 1,84 1,84 1,84	4098 1 NA NA 4095 1 1 NA NA NA	NA NA 0= WITH DH 0= MDA NA NA NA NA NA NA
11962113 ADMAN 11962134 ADMAN 11962344 ADMAN 11962344 ADMAN 11962344 ADMAN 11962344 ADMAN 11962344 ADMAN 11962345 ADMAN	000 FILEFO 3004 WTEH NO 0H F0 004 (035 CREP) F/0 TEO DEDSION HEAVET CAPT TEO DEDSION HEAVET	FT NA FT FT FT NA NA NA NA NA	FMGC DMC PMGC DMC FMGC DMC FMGC DMC FMGC DMC FMGC DMC FDU FDU FDU FDU FDU FDU FDU FDU	165 255/29 255/28 165 370 370 NA NA NA NA	1,64 1,64 1,64 1,64 1,64 1,64 1,64 1,64	1 NA 4095 1 1 NA NA NA	NA D= WITH DH D= MDA NA NA NA NA NA NA
1960/010 4976(2) 1960/010 4976(2) 1960/010 4004 1960/010 4004	2ACH WITH HID DH F0 OMH (IDS/CRET)/F0 TOH (COARES)/F0 TED DEDSIGN HEIGHT CAPT TED DEDSIGN HEIGHT CAPT TED DEDSIGN HEIGHT CAPT TED DEDSIGN HEIGHT CAPT TEID DETCOEC (2) HIL TIMMER C1 HIL TIMMER C3 HIL TIMMER C4 HIL TIMMER C4 HIL TIMMER C5 HIL TIMMER C5 HIL TIMMER C5 HIL TIMMER C5	NA NA FT FT NA NA NA NA NA NA	PMGC DMC FMGC DMC FMGC DMC FMGC DMC FMGC DMC FDU FDU FDU FDU FDU FDU FDU FDU	265/29 255/28 165 370 370 NA NA NA NA	1,84 1,64 1,64 1,64 1,64 1,64 1,84 1,84 1,84	NA NA 4095 1 1 NA NA NA	0= WITH DH 0= MDA NA NA NA NA NA NA
116403706         WDDAM           116403716         WDDAM           116403716         WDDAM           116403716         WDDAM           116403716         WDDAM           116403716         WDDAM           116403716         WRDAM           116403716         WRDAM           116403716         WRDAM           116403710         WRDAM           116403710         WRDAM           116403710         WRDAM           116413710         WRDAM           116413710         WRDAM           116413710         WRDAM           116413701         WRDAM           1169406770         WRDAM           1169406770         WRDAM           1169406770         WRDAM           1169406770         WRDAM           1169406770	DDH (DISCRET) F/O DDH COARSE F/O TED DEGISION HEIGHT ADH TED DEGISION HEIGHT // TED DEGISION HEIGHT // TED DEGISION HEIGHT LEIDERT CODE C1 LH LINUME ER C1 LH LINUME ER C4 LH LINUME ER C5 LH LINUME ER C5	NA FT FT NA NA NA NA NA NA	FMGC DMC FMGC DMC FMGC DMC FMGC DMC FDIU FDIU FDIU FDIU FDIU FDIU FDIU	255/28 165 370 NA NA NA NA NA	1.84 1.84 1.84 1.84 1.84 1.84 1.84 1.84	NA 4095 1 1 NA NA NA	0= MDA. NA NA NA NA NA
119483100         MDAM           119484240         SELEC           1194842010         ACCTA           1194842010         ACCTA           119412010	DDFC0ARSEF00 TED DECISION HEIGHT CAPT TED DECISION HEIGHT 70 HEIDERT CODE CC1 HEIDERT CODE CC1 H. NUMBER CC1 H. NUMBER CC3 H. NUMBER CC3 H. NUMBER CC4 H. NUMBER CC5 H. NUMBER CC5	FT FT NA NA NA NA NA NA	FMGC DMC FMGC DMC FDU FDU FDU FDU FDU FDU FDU FDU	165 370 NA NA NA NA	1,64 1,64 1,64 1,64 1,64 1,64 1,64	4095 1 1 NA NA NA	NA NA NA NA
11640-940         EEEC           11640-940         SELEC           1164020         SELEC           1164020         RAPLIN           1164020         RAPLIN           1164020         RAPLIN           1164020         RAPLIN           1164020         RAPLIN           1164020         RAPLIN           1164120         RAPLIN           24620460         BAPD           106130207         IOSMAP           106140207         IOSMAP           106140207         IOSMAP           107140070         IOSMAP           107140070         IOSMAP           107140070         IOSMAP           1071407         IOSMAP           1071407         IOSMAP           1071407         IOSMAP           1071407         IOSMAP           1071407         IOSMAP           1071407         IOSMAP	TED DECISION HEIDHT CAPT TED DECISION HEIDHT F/O IEIDENT CODE C1 IEIDENT CODE C1 III (NUME EC C1 III (NUME EC C1 III (NUME EC C3 IIII (NUME EC C3 IIII (NUME EC C3- IIII (NUME C1-C7) IEIDENT C1-C2 III (NUME C5 IIII) (NUME EC C5	FT FT NA NA NA NA NA NA	FMGC DMC FMGC DMC FDIU FDIU FDIU FDIU FDIU FDIU	370 370 NA NA NA NA	1,64 1,64 1,64 1,64 1,64 1,64	1 1 NA NA NA	NA NA NA NA
11940200         21EC           119402010         ARRLIN           119402010         ARRLIN           119402010         ARRLIN           119402010         ARRLIN           119402010         ARRLIN           119402010         ARRLIN           119402010         ARCTA           119402010         ARCTA           119412010         ARCTA           1191100000         BAPO           1014120000         BAPO           1014120000         INDEN           1191200000         INDEN           1191200000         INDEN           1191200000         INDEN           1191200000         INDEN           11912000000 </td <td>TED DECISION HEIGHT F/O IEIDERT CODE C1 IL NUMBER C1 IL NUMBER C2 IL NUMBER C2 IL NUMBER C4 IL NUMBER C4 IL NUMBER C4 IL NUMBER C5 IL NUMBER C5</td> <td>FT NA NA NA NA NA</td> <td>FMGC DMC FDIU FDIU FDIU FDIU FDIU FDIU FDIU</td> <td>370 NA NA NA NA</td> <td>1,64 1,64 1,64 1,64 1,64</td> <td>1 NA NA NA</td> <td>NA NA NA</td>	TED DECISION HEIGHT F/O IEIDERT CODE C1 IL NUMBER C1 IL NUMBER C2 IL NUMBER C2 IL NUMBER C4 IL NUMBER C4 IL NUMBER C4 IL NUMBER C5 IL NUMBER C5	FT NA NA NA NA NA	FMGC DMC FDIU FDIU FDIU FDIU FDIU FDIU FDIU	370 NA NA NA NA	1,64 1,64 1,64 1,64 1,64	1 NA NA NA	NA NA NA
119402010         ARXILL           119402010         ARXILL           119402010         ARXILL           119402010         ACTA           119402010         ACTA           119402010         ACTA           119402010         ACTA           119412010         ACTA           119412010         ACTA           119412010         ACTA           119412010         ACTA           119412010         ACTA           119412010         ACTA           24804060         BARO           119412010         ACTA           119412010         ACTA           24804060         BARO           119418010         ACTA	IE IDENT CODE C1 EIDENT CODE C2 NL NUMB ER C1 LL NUMB ER C2 LL NUMB ER C3 LL NUMB ER C3 LL NUMB ER C4 LL NUMB ER C1-C7 IE IDENT C1-C2 LL NUMB ER C5	NA NA NA NA NA NA	FDIU FDIU FDIU FDIU FDIU FDIU	NA NA NA NA	1,64 1,64 1,64 1,64	NA NA NA	NA NA NA
119400010         ARCLIN           119400010         ACCTA           119400010         ACCTA           119400010         ACCTA           119400101         ACCTA           119400101         ACCTA           119410101         ACCTA           11941011         ACCTA           11941011         ACCTA           11941011         ACCTA           11941010         ACCTA           101100         IACOTA           101100         IACOTA           101100         IACOTA           10110000         IACOTA           101100000         IACOTA           1011000000         IACOTA           10110000000         IACOTA           1198400070         IOCAS           1190100000000000000000000000000000	IEIDERT CODE C2 IL NUMB ER C1 IL NUMB ER C2 IL NUMB ER C3 IL NUMB ER C4 IL NUMB ER C4 IL NUMB ER C4 IL NUMB ER C5 IL NUMB ER C5	NA NA NA NA NA	FDIU FDIU FDIU FDIU FDIU FDIU	NA NA NA	1,64 1,64 1,64	NA NA	NA NA
116400010         ACC 74           116400010         ACC 74           116410010         ACC 74           246001000         BARD           10611000         ACC 74           10611000         ACC 74           10611000         ACC 76           10611000         BARD           10611000         ACC 76           10611000         ACC 70           1061000         ACC 70           1061000         ACC 70           1061000         ACC 70           1061000         ACC 70           10610000         ACC 70           10600000         ACC 70           10600000	NL NUMBER C1 NL NUMBER C2 NL NUMBER C3 NL NUMBER C4 NL NUMBER C1-C7 IE IDENT C1-C2 NL NUMBER C5	NA NA NA NA	FDIU FDIU FDIU FDIU	NA NA NA	1,84 1,84	NA	NA
19410010         ACT #           19410010         ACT #           19412011         ACT #           19412012         ARLIN           19412010         ACT #           248040100         ACT #           105120070         NOPAL           105120070         NOPAL           10840000         ACT #           10840000         ACT #           10840000         ACT #           10840000         NOPAL	AL NUMBER C2 AL NUMBER C3 AL NUMBER C4 AL NUMBER C1-C7 EIDENT C1-C2 AL NUMBER C5	NA NA NA	FDIU FDIU FDIU	NA NA	1/64		
18411010         ACT #           18412010         ACT #           18412011         ACT #           18412012         ARLIN           18412012         ARLIN           18412012         ARLIN           18412012         ARLIN           18413010         ACT #           18414010         ACT #           18414000         BADO           184140000         NOPM           184140000         NOPM           18420000         NOPM           18420000         NOPM           18420000         NOPM           18420000         NOPM           18420000         NOPM           18420000         NOPM           184200000         NOPM	AL NUMB ER C3 AL NUMB ER C4 AL NUMB ER C1-C7 IEIDENT C1-C2 AL NUMB ER C5	NA NA NA	FDIU FDIU	NA			
11914/2010         ACC 74           11914/2010         ACC 74           11914/2011         ACC 74           11914/2012         ARUK174           11914/2012         ARUK174           11914/2012         ARUK174           11914/2012         ARUK174           11914/2012         ARUK174           249/201080         BAD 70           101108070         IOBMON           1011040070         IOBMON           1011040070         IOBMON           10104070         IOBMON           10104070         IOBMON           10104070         IOBMON           10104070         IOBMON           10104070         IOBMON           10104070         IOBMON           10104071         IOBMON           1020412         IOBMON           1020412         IOBMON           1020414         IOBMON           1020417         IOBMON           1020417         IOBMON           1020417         IOBMON	NUMBER C4 NUMBER C1-C7 IEIDENT C1-C2 NUMBER C5	NA NA	FDIU			NA	NA
116412011         ACC TA           116412012         ARTLIN           116412012         ARTLIN           116412010         ACC TA           116412010         ACC TA           116412010         ACC TA           248201060         BAPD           248021060         BAPD           248040600         BAPD           1015120607         NOPAL           1015120607         NOPAL           101840607         NOPAL           101840607         NOPAL           105410         ACC TA           1051206070         NOPAL           1051406070         NOPAL           10540607         NOPAL           1054070         NOPAL           1054070         NOPAL           1054070         NOPAL           1054070         NOPAL           1054071         NOPAL           1054072         NOPAL           1054074         NOPAL </td <td>NU NUMBER C1-C7 IEIDENT C1-C2 NU NUMBER C5</td> <td>NA</td> <td></td> <td></td> <td>1.64</td> <td>NA</td> <td>NA</td>	NU NUMBER C1-C7 IEIDENT C1-C2 NU NUMBER C5	NA			1.64	NA	NA
11614212         ARULTATI2           11614212         ARULTATI2           116141010         ACTAT           116141010         ACTAT           24800400         BAD           24800400         BAD           24800400         BAD           248004000         BAD           248004000         BAD           101101001         BAD           10110101         BAD           10110101         BAD           1010101	IEIDENT C1-C2 NL NUMBER C5			NA	1.44	NA	NA
116413010         ACC TA           116413010         ACC TA           116414010         ACC TA           248201680         BARO           248201690         BARO           248404060         BARO           2484040700         BARO           1010140070         NOPAL           101010         ACC TA           101010         ACC TA           101010         CAT TA           101010         INOPAL           10101         INOPAL           10104         IN           10104         INOPAL           10104         INOPAL           10104         INOPAL           10104         INOPAL           10104         INOPAL           10104         INOPAL           10040         INOPAL           10040         INOPAL           100404         INOPAL           INOPAL <td>NUMBER C5</td> <td></td> <td>FDIU</td> <td>NA</td> <td>1/4</td> <td>i</td> <td>NA</td>	NUMBER C5		FDIU	NA	1/4	i	NA
11641010         ACT 11           119412010         ACT 12           119412010         ACT 12           248201060         BAR0           248204060         BAR0           2484401060         BAR0           1051306070         NORM           1051306070         NORM           10140070         NORM           1018408070         NORM           1018408070         NORM           105408070         NORM           105412         NORM           105412         NORM		NA	FDIU	NA	1/84	NA	NA
1104150 10 A/C T 2 248201080 BARO 248204500 BARO 2480401080 BARO 2480401080 BARO 2480401080 BARO 1081308070 NOFM 1081308070 NOFM 101108408070 NOFM 1189308070 NOFM 1189408070 NOFM 1189408070 NOFM 1502NMC 150 NN 1502NMC 150 NN 1502NMF 150 NN	AL NUMBER C6	NA	FDIU	NA	1/04	NA	NA
2.48201080 BAPO 2.48204090 BAPO 2.48204090 BAPO 2.489401050 BAPO 2.489404050 BAPO 1061308070 NOPM 1061308070 NOPM 1004MF 10 NM 108408070 NOPM 1189408070 NOPM 1189408070 NOPM 1189408070 NOPM 1189408070 NOPM 1502NMF 150 NM	AL NUMBER CO	NA	FDIU	NA	1/04	NA	NA
249204090 BAR0 2490401060 BAR0 2490401060 BAR0 1061306070 N0FAM 1061406070 N0FAM 1061406070 N0FAM 1169406070 N0FAM 1169406070 N0FAM 160NMC 100 NN 160NMC 100 N0 160NMC 100 NN 100NMF 100 NN 10AT2 MMR1	SETTING F/0 COARSE	MB	FOUDMC	223	1/04	1000	NA
248401080 BAPO 24804000 BAPO 1061306070 NOPM 1061306070 NOPM 10140070 NOPM 1014070 NOPM 1188306070 NOPM 1188306070 NOPM 1188406070 NOPM 1501MAC 150 NN 1501MAC 150 NN 1501MAC 150 NM	SETTING F/0 COARSE	MB	FCUIDMC	223	1/4	1000	NA
249404090 BARO 1061306070 NOFAM 1061406070 NOFAM 101406070 NOFAM 101MMF 10 NM 1169306070 NOFAM 1169408070 NOFAM 1169408070 NOFAM 1169408070 NOFAM 1169408070 NOFAM 1169408070 NOFAM 1169408070 NOFAM 160NMF 150 NM							
1061308070 NORM 1061408070 NORM 101MC 10 NM 101MC 10 NM 1169308070 NORM 1169408070 NORM 1169408070 NORM 16040870 NORM 16051 AC1/E 16050MC 160 NM 100472 MMR1 10AT3 MMR1	SETTING CAPT COARSE	MB	FCU DMC	222	1/4	1000	NA
1061406070 NORM 10NMC 10 NM 10NMF 10 NM 118930070 NORM 1189408070 NORM 15KE1 AC1/E 160NMC 160 NM 150NMF 160 NM 1CAT2 MMR1 1CAT3 MMR1	SETTING CAPT COARSE	MB	FCU DMC	222	1/4	100	NA
10 NMC 10 NM 10 NMF 10 NM 1189 306070 NORM 1189 40670 NORM 16XE1 AC1/E 160 NMC 100 NA 160 NMF 100 NM 1CAT2 MMR1 1CAT3 MMR1	ALBRAKE PRESSURE5	PSI	BSCU	304	1,44	64	NA
10 NMF 10 NM 1189 306070 N0 RM 1189 406070 N0 RM 160 KE1 ACT/25 160 NMC 160 NM 160 NMF 160 NM 1CAT2 NMR1 1CAT3 MMR1	ALBRAKE PRESSURE6	PSI	BSCU	305	1,44	64	NA
1189306070 NORM 1189406070 NORM 16XE1 AC1/E 160NMC 160 NN 160NMF 160 NN 1CAT2 MMR1 1CAT3 MMR1		NA	DMC 1	273/16	1/4	NA	1= SELECTER
1189406070 NORM 16XE1 AC1/E 160NMC 160 NM 160NMF 160 NM 1CAT2 MMR1 1CAT3 MMR1		NA	DMC 2	273/18	1/4	NA	1= SELECTER
16XE1 AC1/E 160NMC 160 NM 160NMF 160 NM 1CAT2 MMR1 1CAT3 MMR1	ALBRAKE PRESSURE7	PSI	BSCU	306	1,4	64	NA
160 NMC 160 NM 160 NMF 160 NM 1CAT2 MMR1 1CAT3 MMR1	ALBRAKE PRESSURE8	PSI	BSCU	307	1,4	64	NA
160 NMF 160 NM 1CAT2 MMR1 1CAT3 MMR1	SS TRU CONTACTOR	NA	SDAC	002/15	1/4	NA	1= OFF
1CAT2 MMR1 1CAT3 MMR1		NA.	DMC 1	273/20	1/4	NA	1= SELECTER
1CAT3 MMR1		NA	DMC 2	273/20	1/4	NA	1= SELECTER
	MODEILS (CAT 2)	NA	MMR	33	1/4	NA	NA
1 GLSC GLS O	MODEILS (CAT 3)	NA	MMR	33	1/4	NA	NA
	R MMR1 FREQUENCY 100 and 10 mhz	MHZ	ILS or MMR DMC	<b>33</b>	S174	4095	NA
16LS C2 6LS 0	R MMR1 FREQUENCY	MHZ	ILS or MMR DMC	33	NA	1200	NA
1GLSCH GLS O	R MMR1 FREQUENCY	MHZ	ILS or MMR DMC	33	NA	- E	NA
1GLS F GLS O	RMMR1 FREQUENCY0.1 0.01 minz	MHZ	ILS or MMR DMC	33	1/4	1	NA
16LSSC GLS O	R MMR1 FREQUENCY 100 and 10 mhz	MHZ	ILS or MMR DMC	33	1/4	32768	NA
IMLSC MLS 0	R MMR1 FREQUENCY	MHZ	ILS or MMR DMC	33	1/4	200	NA
1MLSCH MLS O		MHZ	ILS or MMR DMC	33	NA	NA	NA
1MLSF MLS 0	R MMR1 FREQUENCY	100000	ILS or MMR	33	1/4	- 10	NA

1 PC1 1 PC2 1 PP 1XP 20NMC	DCI/DC ESS CONTACTOR						
1 PC2 1 PP 1XP 20NMC		NA	SDAC	002/18	14	info NA	CONV 1= 0FF
1 PP 1XP 20NMC	DC2/DC ESS CONTACTOR	NA	SDAC	002/18	1/4	NA	1= OFF 1= OFF
1XP 20NMC	DC1 BUS ON	NA	SDAC	002716	144	NA	1= 0PF
20NMC	ACI BUS ON	NA	SDAC	002/20	1.44	NA	1= 0N
	20 NM CAPT	NA	DMC 1	273/17	1/4	NA	1= SELECTED
20NBdF	20 NM E/0	NA	DMC 2	273/17	1.44	NA	1= SELECTED
2CAT2	MMR2MODE LS(CAT 2)	NA	MMR	33	1/4	1	NG
2CAT3	MMR2 MODE ILS (CAT 3)	NA	MMR	33	1/4	1	NA
2GLSC	GLS OR MMR1 FREQUENCY 100 and 10 mhz	MHZ	ILS or MMR DMC	33	1.64	4095	NA.
20LSC2	GLS OR MMR1 FREQUENCY	MHZ	ILS or MMR DMC	33	NA	1200	NA
2GLSCH	GLS OR MMR1 FREQUENCY	MHZ	ILS or MMR DMC	33	NA	Ť	NA.
2 GLSF	GLS OR MMR1 FREQUENCY 0.10.01 mhz	MHZ	ILS or MMR	33	1/4	- 10	NA.
2GLSS C	GLS OR MMR1 FREQUENCY 100 and 10 mhz	MHZ	ILS or MMR	33	1.64	32768	NA
2MLSC	MLS OR MMR1 FREQUENCY 100 and 10 mhz	MHZ	ILS or MMR DMC	33	1,64	200	NA
2MLS CH	MLS OR MMR1 FREQUENCY	MHZ	ILS or MMR	33	NA	NA	NA
2MLSF	MLS OR MMR1 FREQUENCYD 1 0.01 mhz	MHZ	ILS or MMR DMC	33	1/4	15	NA
2 NOTICAT	MMR2MODE ILS (CAT NOT ENCODED)	NA	N#4B	33	1/4	1	NA
2 P P	DC2 BUS ON	NA	SDAC	004/29	1.44	NA	1= ON
2X P	AC2 BUS ON	NA	SDAC	002.20	1/4	NA	1= ON
305330	T CAS CREW SELECTION NOT USED	NA	TCAS DMC	307	1	NA	NA.
305340	T CAS CREW SELECTION NOT USED	NA	TCAS DMC	307	- 81	NA	NA
305350	TCAS CREW SELECTION NOT USED	NA.	TCAS DMC	307	11	NA.	NA.
305360	TCAS CREW SELECTION NOT USED	NA	TCAS DMC	307	. 9	NA.	NA
305370	TCAS CREW SELECTION NOT USED	NA	TCAS DMC	307	1	NA.	NA
320 NMC	320 NM CAPT	NA	DMC 1	273/20	1.44	NA.	1= SELECTED
320NMF	320 NM CAPT 3 ADR NOT VALID IN FLIGHT CONDITION	NA NA	DMC 1	273/20 330/29	1/4	NA NA	1= SELECTED 1= NOT VALID
3PE	ESS TRU CONTACTOR	NA	DAC	002/17	1/4	NA	1= 0FF
3KC1	ACL/AC ESS CONTACTOR	NA	SDAC	002/16	14	NA	1= 0FF
31(C2	AC2/AC ESS CONTACTOR	NA	SDAC	002/16	1/4	NA	1= 0FF
40NMC	40 NM CAPT	NA	DMC	273/18	1.4	NA	1= SELECTED
40NMF	40 NM F/0	NA	DMC 2	273/18	1.4	NA.	1= SELECTED
415100	T CAS DOWN ADVISORY NOT USED	NA	TCAS DMC	306	1	NA	NA
415107	TCAS DOWN ADJASORY NOT USED	NA	TCAS DMC	306	1	NA	NA
415332	TCAS COMBINATED CONTROL NOT USED	NA.	TCAS DMC	306	1	NA.	NA.
415450	TCAS VERTICAL CONTROL NOT USED	NA	TCAS DMC	306	3	NA.	NA
415460	TCAS VERTICAL CONTROL NOT USED	NA	TCAS DMC	306	1	NA.	NA.
415470	TCAS VERTICAL CONTROL NOT USED	NA	TCAS DMC	306	1	NA.	NA
415760	TCAS UP ADVISORY NOT USED	NA	TCAS DMC	305	. 1	NA	NA,
415770	TCAS UP ADVISORY NOT USED	NA	TCAS DMC	306	1	NA	NA
4PC 4PP	DC BATADC ESS CONTACTOR	NA NA	SDAC SDAC	002/21	1,44	NA	1= 0FF 1= 0N
499	DC ESSENTIEL BUS ON AC ESSENTIEL BUS ON	NA	SDAC	002/18	1/4	NA	1= UN 1= ON
5NMC	5 NM CAPT	NA	DMC 1	273/16	1.85	No	1= SELECTED
6NMF	5 NM CAPT	NA	DMC 1	273/16	1/4	NA	1= SELECTED
5PU1	TRUI CONTACTOR	NA	DAC	002/17	1/4	NO	1= 0FF
5PU2	TRU2 CONTACTOR	NA	DAC	002/17	1/4	NA	1= 0FF
6PB1	BAT I CONTACTOR	NA	SDAC	002/19	1/4	NA	1= 0FF
6P82	BAT2 CONTACTOR	NA	SDAC	002/19	1,44	NA.	1= 0FF
80NMC	80 NM CAPT	NA	DMC 1	273/19	1/4	NA	1= SELECTED
SONME	80 NM F/0	NA	DMC 2	273/19	1.44	NA	1= SELECTED
SPH	DC BAT/DC ESS SHED CONTACTOR	NA	SDAC	002/19	1.44	NA	1= 0FF
ACID	A/C TAIL NUMBER C1-C7	NA	NA.	NA.	NA.	NA.	NA.
ACTAIL1	A/C TAIL NUMBER C1	NA	NA	NA	NA	NA.	NA.
	A/C TAIL NUMBER C2	NA	NA	NA	NA	NA	NA
ACTAIL2		NA					
ACTAIL3	A/C TAIL NUMBER C3		NA		NA.	NA.	NA
	AC TAL NUMBER C3 AC TAL NUMBER C4 AC TAL NUMBER C5	NA NA	NA NA NA	NA NA NA	NA NA	NA NA NA	NA NA NA

	0120110		0000000	100000	932	RESOL	SIGN
MNENO	UBELLE	UNIT	SOURCE	LABEL	PPS	info	CONV
ACTAILS	A/C TAIL NUMBER C6	NA.	NA	NA	NA	NA	NA
ACTAIL7	A/C TAIL NUMBER C7	NA	NA	NA	NA	NA	NA
ACTYPE	A/C TYPE	NA.	FDIU	NA	1.64	NA	NA
ADC1F	ADC 1 FAULT	NA NA	FWC	013/13 013/13	1,44	NA	1= FAULT 1= FAULT
ADC2F ADC3F	ADC2 FAULT ADC3 FAULT	NA	FWC	013/13	1.99	N/A N/A	1= FAULT
ADEFI	ADF1 FREQUENCY	MHZ	ADF DMC	32	NA	0.5	NA NA
ADFF2	ADF1 FREQUENCY	KHZ	ADF DMC	32	NA	0.5	NA
ADR123F	ADR 1+2+3 FAULT	NA	FWC	124/22	1	NA	1= ADR 1+2+3 FAULT
ADVNIVI	ENG.1 VIBRATION N1 ADV	NA.	EVMU DMC	035/11	1	NA	1= ADV
ADVN1V2	ENG 2 VIBRATION N1 ADV	NA.	EVALU DMC	035/11	1	NA	1= ADV
ADVN2V1	ENG.1 V/BRATION N2 ADV	NA	EVMU DMC	035/12	1	NA.	1= ADV
ADVN2V2	ENG 2 VIBRATION N1 ADV	NA	EVANU DMC	035/12	1	NA	1= ADV
ADVNOTONE	TCAS VERTICAL CONTROL ADVISORY IS NOT ONE OF THE TYPES	NA	TCAS DMC	306	:13	(NA)	NA
AllOFF	ENG.1 ANTI-ICE P/B OFF	NA.	SDAC	003/18	1/2	NA	1= 0FF
ALOFF	ENG.2 ANTI-ICE P/B OFF	NA	SDAC	003/18	1/2	NA	1= 0FF
AILL	AILERON LEFT POSITION	DA	ELAC/SEC FCDC	310	4	0.088	>0= LH AIL DOW TURN RIGHT
ALLEV	LH AILERON BLUE AVAILABLE	NA	FCDC	0.42/11	4	NA	1= AWAL
ALLGV	LH AILERON GREEN AVAILABLE AILERON RIGHT POSITION	NA DA	FCDC ELAC/SEC FCDC	0.42/12 330	4	NA DDSS	1= AVAIL >0= RH AILDOW TURN LEFT
ALERY	RH ALERON BLUE AVAILABLE	No	FCDC	0.42/14	4	NA	1= 0/01
ALROV	RH ALERON BLOE AVAILABLE RH ALERON GREEN AVAILABLE	NA	ECDC	0.42/14	4	NA	1= AVAL
ARL	ARLINE IDENT C1-C2	NA	NA	NA	NA	NA	NA
AIRL1	AIRLINE IDENT CODE C1	NA	NA	NA	NA	NA	NA
AIRL2	ARLINEIDENT CODE C2	NA	NA	NA	NA	NA	NA
AM/1F	ENG.1 ANTHICE VALVE NO FAULT	NA.	BMC SDAC	001/19	1/2	NA.	1= NO FAULT
AM/2F	ENG 2 ANTHICE WALVE NO FAULT	NA	BMC SDAC	001/19	1/2	NA	1= NO FAULT
ALT	ALTITUDE ELA9.	FT	ADIRS DMC	203	NA	4	NA
ALTACO	ALTITUDE CAPTURE	NA	FMGC DMC	302/19	1	NA	1= ACTIVATED
ALTBRK	ALTERNATE BRAKING	NA	SDAC	0 26/21	1	NA	1= ALTERNATE
ALTBW	WARNING (ALTI BARD DISCREPANCY)	NA.	FWC	124/25	1	NA	1= WARNING
ALTC	ALTITUDE COARSESCALE	FT	ADIRS DMC	203	1/2	8192	NA
ALTE	ALTITUDE FINE SCALE TCAS COMBINATED CONTROL ALTITUDE LOST.	FT NA	ADIRS DMC TCAS DMC	203	<u>ા</u> ()	4 NA	NA
ATRADC	ALTITUDE RATE	FT	ADC DMC	212	1	16	NA
ALTSTOW	WARNING (ALTI STD DIS CREPANCY)	NA	FWC	124/24	1	NA	1= WARNING
ALTTRK	ALTITUDE TRACK	NA	PMGC DMC	302/19	1	NA	1= ACTMATED
A0AJRS1	ADA VALUE BMITTED BY IRS1	DA	ADIRS DMC	335	1	0.35158	>0 + UP
A0AIR\$2	ADA VALUE BMITTED BY IRS2	DA	ADIRS DMC	335	1	0.35166	>0= UP
A0AIRS3	ADA VALUE BMITTED BY IRS3	DA.	ADIRS DMC	335	1	0.35166	>0 = UP
AP1E	A/P1 ENGAGED	NA.	FMGC DMC	276/13	1	NA.	1= ENGAGED
AP2E	A/P2 ENGAGED	NA	FMGC DMC	276/14	1	NA	1= ENGAGED
APFDTCASAR	AP/FD TCAS mode armed	NA	DMC	303	1	NA	NA
APFDTCASEN	AP/FD TCAS mode engaged	NA	DMC	303	1	NA	NA
APOFFV	AUTO-PILOT OFF VOLUNTARY AUTO-PILOT OFF WARNING (VOLUNTARY/UNVOLUNTARY)	NA NA	FW/C FW/C	124/17	1	NA NA	1= WARNING
APPCAST	APPROACH SPEED TARGET	No	DMC	304	1	1	NA
APPDHC	APP ROACH WITH NO DH CAPT	NA	NA	NA	NA	NA	NA
APPDHE	APPROACH WITHOUT DH / WITH DH F/0	NA	NA	NA	NA	NA	NA
APU	APU PAGE SELECTED	NA	DMC 2	275/18	1/4	0	1= SELECTED
APUBV	APU BLEED WALVE OPEN	NA	ECB SDAC	037/11	1/4	NA	1= 0P EN
APULEAK	APU LEAK MEMORIZED	NA	BMC FWC	0.65/28	1/4	NA	1= LEAK
APUPB	APU AIR BLEED PUSH BUTTON OFF	NA	BMC SDAC	055/12	1	NA	1= OFF
	ARC MODE CAPT	NA	DMC 1	273/12	1,4	NA	1= SELECTED
ARCC		NA	DMC 2	273/12	1/4	NA	1= SELECTED
ARCF	ARC MODE F/0						
ARCF ASKIDF	ANTISKID FAULT	NA	FWC	128/27	1	NA	1= FAULT
ARCF ASKIDF ASKIDON	ANTISKID FAULT ANTISKID SELECTOR ON	NA NA	FWC	002/23	1	NA	1= FAULT 1= ON
ARCF ASKIDF	ANTISKID FAULT	NA	FWC				1= FAULT

MNEMO	LIBELLE	UNIT	SOURCE	LABEL	PPS	RESOL	SIGN
	0.00.0000	1.00	Constanting and	200000	1000	info	CONV
ATHRE	AUTO THROTTLE ENGAGED	NA	EMG C DMC	271/16	- 81	NA	1= ENGAGED
ATHENITHE	ATS THRUST NI MODE (CRM & PW6000 ENG INES)	NA	FMGC DMC	271/19	1	NA.	1= ACTIVATED
ATHRRTD	ATS RETARD MODE ACTIVATED	NA	FMGC DMC	271/18	- 11	NA.	1= ACTIVATED
ATHRSP D	AUTO THROTTLE SPEED MACH MODE	NA	FMB C DMC	271/17	1	NA.	1= ACTIVATE
AUDIOTRF	AUDIO TRANSMITTER FAIL	NA	NA	NA	NA.	NA	NA
AUTBRKF	AUTOBRAKE FAULT	NA	BSCU	026/20	1	NA	1= FAULT
AUTBRKOFF	AUTOBRAKE OFF	NA	BSCU	026/19	- 1	NA.	1= 0FF
AUT LAND(A'	AUTOLAND WARNING	NA	DMC	270/24	- 81	NA	1= WARNING
AV/SM0W	AVIONIC SMOKE WARNING	NA	FWC	126.20	11	NA	1= WARNING
BACKUPALTA	BACK UP ALTI GPS ACTIVE	NA	DMC	330/28	1.44	NA.	1= ACTIVE
BACKUP SPDA	BACK UP SPEED SCALE ACTIVE	NA	DMC	330/27	1,44	NA.	1= ACTIVE
BACKUPSPDD	BACK UP SPEED VALUE DISPLAYED	DA	DMC	336	1	D.35156	>0 LEFT
BACKUPSPDI	PIN PROG BACK UP SPEED SCALE ACTIVATED	NA	DMC	305.25	1.44	NA.	1= ACTIVATED
BACKUPSPDV		NA	DMC	330.06	1 41	NA	1= VALID
BARONUC	ALT BARO NOT USED CAPTAIN	NA	DMC	276	1/4	NA	NA
BARONUE	ALT BARO NOT USED CAPITAIN	NA	DMC	276	1/4	NA	NA
BLATG	BODY LATERAL ACCELERATION	6	DMC	332	1	0.0039	>0= RH SIDESL
BLEED	B LEED PAGE SELECTED	NA	DMC 2	275/13	1/4	0.0000	1= SELECTED
BLEEDIF	ENG.1 BLEED FAULT	NA	BMC SDAC	067.08	1/4	NA	D= FAULT
BLEED2F	ENG.2 BLEED FAULT	NA	BMC SDAC	007/28	1	NA	0= FAULT
BOGGIENST	B OGGIE INSTALLED	NA	BSCU	027/29	3	NA	0= DIABOLO INSTALLED
		BAR	BSCII			18930	NSTALLED
BRKLHYPB	BRAKE LH YELLOW PRESSURE			113	1	NA.	
BRKLHYPP	BRAKE LH YELLOW PRESSURE	PSI	BSCU	113	1	64	NA
BRKLOW	DECELERATION LOW RATE ARMED	NA	BSCU	027/20	1	NA	1= ARMED
BRKMAX	DECELERATION MAXIMUM, RATE ARMED	NA	BSCU	027/22	3	NA	1= ARMED
BRIMED	DECELERATION MEDIUM RATE ARMED	NA	BSCU	027/21	1	NA	1= ARMED
BRKPDL	BRAKE PEDAL POSITION LH	DA	BSCU	331	2	2	NA.
BRKPDR	BRAKE PEDAL POSITION RH	DA	BSCU	330	2	2	NA.
BRKRHYPB	B RAKE RH YELLOW P RESSURE	BAR	BSCU	113	1	NA.	NA
BRKRHYPP	B RAKE RH YELLOW P RESSURE	P SI	BSCU	113	1	64	NA
BROAVAULT	DATA BROADCAST MODE CAPT - MODE AVAILABLE - NOT SELECTED	NA	MMR DMC	005/22-23	1.44	NA.	1= SELECTED
BROAVAL2	DATA BROADCAST MODE F/O - MODE AVAILABLE - NOT SELECTED	NA	MMR DMC	005/22-23	1.44	NA.	1= SELECTED
BROFAILED1	DATA BROADCAST MODE CAPT - MODE FAILED - NOT SELECTED	NA	MMR DMC	005/22-23	1/4	NA	1= SELECTED
BROFAILED2	DATA BROADCAST MODE F/O - MODE FAILED - NOT SELECTED	NA	MMR.DMC	005/22-23	14	NA	1= SELECTED
BRONOINST1	DATA BROADCAST MODE CAPT - MODE NOT INSTALLED	NA	MMR EMC	005/22-23	1,44	NA	1= SELECTED
BRONOINST2	DATA BROADCAST MODE F/O - MODE NOT INSTALLED	NA	MMR DMC	005/22-23	1,4	NA	1= SELECTED
BROSELECTI	DATA BROADCAST MODE CAPT - MODE SELECTED	NA	MMR DMC	005/22-23	1/4	NA	1= SELECTED
BROSELECT2	DATA BROADCAST MODE F/O - MODE S ELECTED	NA	MMR DMC	005/22-23	174	NA	1= SELECTED
BSCU1COMF	B SCU SYS1 COM FAULT	NA	SDAC	26	1/4	NA	0= FAULT
BSCUIMONE	B SCU SYSTMON FAULT	NA	SDAC	002/23	1/4	NA	1= FAULT
BSCU2COMF	B SCU SYS2 COM FAULT	NA	SDAC	28	1/4	NA	D* FAULT
BSCU2MONF	B SCU SYS2 MON FAULT	NA	SDAC	002/23	1.64	NA	1= FAULT
B SCUSTENG	BS CU Sistem 1 Engaged	NA	BSCU	27	1/4	NA	NA
B SCUS2 ENG	BS CU System 2 Engaged	NA	BSCU	27	1.64	NA	NA
BTC1	TRANSFERT CONTACTOR 1	NA	SDAC	002/15	1.64	NA	1= 0FF
BTC2	TRANSFERT CONTACTOR 1	NO	SDAC	002/15	1/4	NA	1= OFF
BTCALT	BARO-TEMP CORRECTED ALTITUDE ELAB.	FT	PM1/2 VIA MMR1/2 SUPPLIED BY DMC	20	NA	4	NA
BTCALTC	B ARO-TEMP CORRECTED ALTITUDE COARSE SCALE	FT	PM1/2 VIA MMR1/2 SUPPLIED BY	20	8	8 192	NA

MNENO	LIBELLE	UNIT	SOURCE	LABEL	PPS	RESOL	SIGN
BTCALTF	BARO-TEMP CORRECTED ALTITUDE FINE SCALE	я	FM1/2 VIA MMR1/2 SUPPLIED BY DMC	20	1	4	NA
CABALTW	EKCESS CABIN ALTITUDE	NA	FWC	126/22	্য	NA	1= EXCESS CABI ALT.
CADCI	ADIRU USED FOR ADC BUS CAPT - ADC1	NA	DMC	272/13-14	1/4	NA	NA
CADC2	ADIRU USED FOR ADC BUS CAPT - ADC2	NA	DMC	272/13-14	1/4	NA	NA
CADC3	ADIRU USED FOR ADC BUS CAPT - ADC3	NA	DMC	272/13-14	1/4	- NA	NA
CAS	COMPUTED AIRSPEED	KT	ADIRS DMC	206	1	0.125	NA
CDSSELONSD	CDSS SELECTION ON SD	NA	DMC	277/11	1/4	NA	1= SELECTED
CEGPWSI	CPT E.G.P.W.S INSTALLED	NA	EGPW/S DMC	307/28	1	NA	1= INSTALLED
CEGPWSV	CPT E.G.P.W/S VALID	NA	EGPW/S DMC	307/24	1	NA	1= VALID
CFAC	FAC USED CAPT	NA	DMC	272/15	14	NA	0= FAC2 USED
CEDIUE	CFDIU FAIL	NA.	DMC	360/17	1/4	NA	1= FAIL
CEDIUTRE	CFDIU TRANSMITTER FAIL	NA	NA	NA	NA	NA	NA
CFG CFDC	FOC USED FOR FD CAPT	NA	DMC	272/17	1/4	NA	0 = FG C2 USED FOR FD
CFGCFMA	FOC USED FOR PMA CAPT	NA	DMC	272/18	1/4	INA:	D= FG C2 USED FO R FMA
CFMC1	FMC1 USED CAPT	NA	DMC	274/18	1/4	NA	0= FMC2 USED
CO	CENTER OF GRAVITY	16	NA	NA	NA	NA.	NA
CGRSMOW	CARGO SMO KE WARNING	NA.	FWC	126/11	1	NA	1= WARNING
CHAN9 CTL1	ECU/EEC1 CHAN B IN CTL	NA.	E CU DMC	270/25	1.44	NA	0 = CHAN.A
CHANB CTL2	ECU/EEC 2 CHAN B IN CTL	NA.	ECU DMC	270/26	1,44	NA	0= CHAN.A
CHKEWDMSG	CHECK EWD MSG ACTIVATED	NA.	EIS2	001/24	1/4	NA.	1= ACTIVE
CHKND1MSG	CHECK ND1MSG ACTMATED	NA	EIS2	001/22	1/4	NA	1= ACTIVE
CHKND2MSG	CHECK ND2MSG ACTMATED	NA	EIS2	001/23	1/4	NA	1= ACTIVE
CHKPFD1MSG	CHECK PED1MSG ACTIVATED	NA	EI\$2	001/20	1/4	NA	1= ACTIVE
CHKPFD2MSG	CHECK PED2 MSG ACTIVATED	NA.	EI\$2	001/21	1/4	NA.	1= ACTIVE
CHKSDMSG	CHECK SD MS G ACTIVATED	NA.	EI\$2	001/25	1/4	NA	1= ACTIVE
CHRLATE	CAPT LATITUDE POSITION ELAB WITH HIGH RESOLUTION	DA	FMC BMC	135+310	NA	INA:	>0= NORTH
CHRLONP	CAPT LONG IT UDE POSITION ELAB WITH HIGH RESOLUTION	DA	FMC DMC	136+311	NA	NA	>D= EAST
CIRS1	ADIRU USED FOR IRS BUS CAPT - IRS1	NA	DMC	272/11-12	1/4	NA	NA
CIR\$2	ADIRU USED FOR IRS BUS CAPT - IRS2	NA	DMC	272/11-12	1/4	NA	NA
CIRS3	ADIRU USED FOR IRS BUS CAPT - IRS3	NA	DMC	272/11-12	3145	INA:	NA
CLATP	CAPTAIN LATITUDE POSITION ELAB BIT 9- 27+29	DA	FMC DMC	310	NA	0.00017	)0= NORTH
CLATPC	CAPTAIN LATITUDE POSITION COARSE BITS 20-27	DA.	FMC DMC	310	1/2	0.351	NA
CLATPF	CAPTAIN LATITUDE POSITION FINE BIT 9- 19+29	DA	FMC DMC	310	1/2	0.0002	NA
CLB	CLMB	NA	EMGC DMC	302/11	S15	NA	1= ACTIVATED
CLIMB	TCAS UP ADVISORY.CLIMB.	NA	TCAS DMC	300	1	NA	NA
CLOCKF	ARING CLOCK FAIL	NA	FDIU	NA	1/4	NA.	1= FAIL
CLOCKGPS	CLOCK SYNCHRONISED BY GPS	NA	CLOCK	150/11	1/4	NA	1= YES
CLONP	CAPTAIN LONGITUDE POSITION ELAB BIT 9- 29	DA	FMC DMC	311	NA	0.00017	>0= EAST
CLONPC	CAPTAIN LONGITUDE POSITION COARSE BIT 20-28	DA	FMC DMC	311	1/2	0.351	NA
CLONPF	CAPTAIN LONGITUDE POSITION FINE BIT 9- 19+29	DA	FMC DMC	311	1/2	0.0002	NA
CLRCFL	TCAS COMBINATED CONTROL CLEAR OF CONFLICT.	NA	TCAS DMC	306	1	NA	NA
CLSDD	DISTANCE LS DISPLAYED CAPT	NM	DME DMC	36	1/4	0.0625	NA
CNWS	CPT NAWS O RDER	DA	BSCU	340	1	0.25	NA
COMAVAIL1	COMBINED LOC/FLS MODE CAPT - MODE AVAILABLE - NOT SELECTED	NA.	MMR DMC	005/24-25	144	NA	1=\$ ELECTED

NNEMO	LIBELLE	UNIT	SOURCE	LABEL	PPS	RESOL	SIGN CONV
COM/AV/AIL2	COMBINED LOC/FLS MODE F/O - MODE AVAILABLE - NOT SELECTED	NA	MMR DMC	005/24-25	1,44	NA.	1=SELECTED
COMFALED1	COMBINED LOC/FLS MODE CAPT - MODE FAILED - NOT SELECTED	NA	MMR DMC	005/24-25	1,4	NA	1=SELECTED
COMFAILE02	COMBINED LOC/FLS MODE F/O - MODE FAILED - NOT SELECTED	NA	MMR EMC	005/24-25	1.4	NA	1=SELECTED
COMNOINST1	COMBINED LOC/FLS MODE CAPT - MODE NOT INSTALLED	NA	MMR BMC	005/24-25	14	NA	1= SELECTED
COMNOINST2	COMBINED LOC/FLS MODE F/O - MODE NOT INSTALLED	NA	MMR DMC	005/24-25	1,44	NA.	1= SELECTED
COMSELECT1	COMBINED LOC/FLS MODE CAPT - MODE SELECTED	NA	MMR DMC	005/24-25	1,4	NA	1= SELECTED
COMSELECT2	COMBINED LOC/FLS MODE F/O - MODE SELECTED	NA	MMR DMC	005/24-25	1.44	NA	1=SELECTED
COND	COND PAGE SELECTED	NA	DMC 2	275/19	1/4	D	1= SELECTED
CPTMC1	CAPTAIN MASTER CAUTION ON (FWC1 only)	NA	FWC1	126/16	) i	NA.	1= ON
CPTMC2	CAPTAIN MASTER CAUTION ON (FWC2 only)	NA	FIN/C2	126/15	81	NA	1= ON
CPTM001	MASTER WARNING CAPTAIN (PWC1 only)	NA	FWC1	126/14	1	NA.	1= ON
CP TM0/2	CAPTAIN MASTER WARNING ON (FWC2 only)	NA	FWC2	126714	1	NA.	1= ON
CPWSATC	CPT PREDICTIVE WINDSHEAR ALERT/TERRAIN CAUTION	NA	MOUR DMC	350/17	8	NA	1= ALERT/CAUTIC
CPWSWTW	CPT PREDICTIVE WINDSHEAR WARNING/TERRAIN WARNING	NA	WOLR DMC	350/18	1	NA	1= WARNING
CRA	R/AUSED CAPT	NA	DMC	272.020	1/4	NA.	0= R/A2 US ED
CREWAUTO	TCAS CREW SELECTION AUTOMATIC.	NA	TCAS DMC	307	1	NA.	NA.
CREWSTBY	TCAS CREW/SELECTION.STANDBY.	NA	TCAS DMC	307	- 51	NA	NA.
CREWTA	TCAS CREW SELECTION TA ONLY.	NA	TCAS DMC	307	1	NA	NA.
CROSSING	TCAS VERTICAL CONTROL CROSSING	NA	TCAS DMC	306	1	NA.	NA
CRUISE	CRUISE PAGE SELECTED	NA	DMC 2	275/11	1/4	0	1= SELECTED
CSASISOVI CSASTEMP	CSAS iso value VI	NA C*	FWC	21	1	NA 1.28	NA.
CSASTEMP	CSAS temperature CALCULATED STATIC AIR TEMPERATURE	DC	NA	102	Nő	128 NO	NA
CSDBC	CAPTAIN SELECTED DATA BASE CYCLE	NA	NA	NA	NA	NA	NA
CSDBC	CAPITAIN SELECTED DATA BASE CITCLE	NA	NA	NA	NA	NA	NA
CSDBD	CAPITAIN DATA BASE VALIDITI DAT	NA	NA	NA	NA	NA.	NA
CSTALT	CONSTRAINTED ALTITUDE	FT	FMG C DMC	163	1	84	NA
CTASTAT	CALCULATED TRUE ARSPEED	NA	NA	NA.	Nő	0.0	NA
CTOKG	CALCOLALED TRUE ARSPEED	KG	NA. NA	NA.	Nő	NA	NA
CTOLB	FUEL QUANTITY CENTER TANK	LBS	NA	Nó	No	NA	NO
CVERTDEV	VERTICAL DEV. CAPTAIN	DA	FMG C DMC	327	1.0	0.00391	>0= ABOVE BEA
							1= DISPLAY
CWXRABLE	WXR OR TERRAIN DISPLAY ENABLE CAPT	NA	DMC	350/20	1	NA	ENABLE
C'00:RMAP	ONLY CPT RADAR/EGPWS OPERATING	NA	DIMC	307.00	1/4	1	NA
CWKRSTBY	MODESTANDBY	NA	DMC	307.20	1/4	10	NA
CWORTST	CPT RADAR/EGPW/S OPERATING MODE/TEST	NA	DIMC	307/20	1/4	- U	NA.
CWXRTUR	MODE-TURBULENCE CPT_RADAR/EGPWS_OPERATING MODE:W/S	NA	DIMC	307.020	1.64	1	NA
CWORTWS	AND TURBULENCE CPT RADAR/EGPWS OPERATING	NA	DIVIC	307./20	1/4	1	NA
CWORWS HAZS	MODE WINDSHEAR HAZARD SECTOR CPT RADAR/EGPWS OPERATING MODE W/S	NA	DMC	307/20	1/4	1	NA.
CHATCRINISIC	ICON CPT RADAR/EOPIN'S OPERATING	NA	DMC	307.020	1/4	U.	NA.
CWXRWXR	MODE WEATHER ONLY CPT WEATHER RADAR WILD	NA	DMC	307/20	1/4	1 No	NA.
CXFRV DA	ORIET ANGLE	NA DA	AD IRS DMC	307/26	1	0.088	1= VALID >0 LEFT
DAY	DRIFT ANGLE DAY OF DATE	DA NA	ADIRS DMC CLOCK	321	1.64	0.088	>D LEFT NG
DAY	DAY OF DATE DESCENT	NA	ELOCK FMG C DMC	260	1.64	NA NA	1= ACTIVATED

MNENO	LIBELLE	UNIT	SOURCE	LABEL	PPS	RESOL	SIGN
DFDRF	DFDR FAIL	NA	NA	NA	NA	NA	NA
DEDRPLAYE	DFDR PLAYBACK RECEIVER FAIL	NA	NA	NA	NA	NA	NA
DEDRTRE	DFDR TRANSMITTER FAIL.	NA.	NA	NA	NA	NA	NA
DHC	SELECTED DECISION HEIGHT CAPT	NA.	NA	NA	NA	NA	NA
DHF	SELECTED DECISION HEIGHT F/O	NA	NA	NA	NA	NA	NA
DISCAPLOGC	DISCONNECT AP FOR LDG MESSAGE DISPLAYED CAPT	NA.	DMC	3 38/22	18	NA	1= MESSAGE DISPLAYED
DISCAPLOGE	DISCONNECT AP FOR LDG MESSAGE DISPLAYED F/O	NA	DMC	3 30/22	1	NA	1= MESSAGE DISPLAYED
DITSE	DIT'S FAIL	NA	NA	NA	NA	NA	NA
DMC1IN/	DMC1 INVALID	NA.	DMC	272/22	1/4	NA	1= INVALID
DMC2INV	DMC2 INVALID	NA.	DMC	272/23	1/4	NA	1= INV/ALID
DMC3IN/	DMC3 INVALID	NA	DMC	272/24	1/4	NA.	1= INVALID
DMC3XC	DMC3 XFR CAPT	NA.	DMC	272/25	1/4	NA	1= XFR
DMC3XF	DMC3 XFR F/0	NA	DMC	272/25	1/4	NA	1= XFR
DMC3XFRCPT	DMC3 TRANSFERRED ON CAPT SIDE	NA	DMC	272/29	1/4	NA	1= DMC3 TRANSFERRED 0 CAPT SIDE
DMC3XFRF0	DMC3 TRANSFERRED ON F/O SIDE	NA	DMC	272/29	1/4	NA	1= DMC3 TRANSFERRED 0 F/0 SIDE
DMED1	DME1 DISTANCE	NM	DIVE DIVC	202	1,4	1	NA
DMED2	DME2 DISTANCE	NM	DME DMC	202	1,4	1	NA
DMEF1	DME1 FREQUENCY ELAB.	MHZ	DME DMC	35	NA	0.05	NA
DMEF1C	DME1 FREQUENCY MSB	MHZ	DME DMC	35	1,44	0.1	NA
DMEF1F	DME1 FREQUENCY LSB	MHZ	DME DMC	35	1/4	0.05	NA
DMEF2	DME2 FREQUENCY ELAB.	MHZ	DME DMC	35	NA	0.05	NA
DMEF2C	DME2 FREQUENCY MSB	MHZ	DME DMC	35	1.4	0.1	NA
DMEF2 F	DME2 FREQUENCY LSB	MHZ	DME DMC	35	1/4	0.05	NA
DD OR	DOOR PAGE SELECTED	NA	DMC 2	275/11	1/4	0	1= SELECTED
DROPTRK	TCAS COMBINATED CONTROL DROP TRACK.	NA	TCAS DMC	300	-1	NA	NA
DTCLB	TCAS DOWN ADVISORY DON'T CLMB.	Nö	TCAS DMC	306	1	NA	NA
DTCLB 1000	TCAS DOWN ADVISIORY. DON'T CLIMB >1000.	NA	TCAS DMC	306	1	NA	NA
DTCLB2000	TCAS DOWN ADVIS ORY, DON'T CLIMB >2000.	NA	TCAS DMC	306	्यः	NA	NA
DTCL8500	TCAS DOWN ADVISORY, DON'T CLIMB >500.	NA	TCAS DMC	306	્યુ	NA	NA
DTDES	TCAS UP ADVISORY DON'T DESCENT.	NA.	TCAS DMC	306	1	NA	NA
DTDES1000	TCAS UP ADVISORY,DON'T DESCENT > 1000.	NA	TCAS DMC	306	্যু	NA	NA
DTDES2000	TCAS UP ADVISORY.DON'T DESCENT >2000.	NA.	TCAS DMC	306	1	NA	NA
DTDES500	TCAS UP ADVISORY,DON'T DESCENT >500.	NA	TCAS DMC	306	1	NA	NA
DT011	DTO SELECTED CODING ENG.1 LEVEL 1 (004)	NA	DMC	66	- 212	NA:	1+SELECTED
DT 012	DTO SELECTED CODING ENG 1 LEVEL 2 (D08)	NA	DMC	66	া	NA	1=SELECTED
DT 013	DTO SELECTED CODING ENG 1 LEVEL 3 (0012)	NA.	DMC	66	1	NA	1=SELECTED
DT 014	DTO SELECTED CODING ENG.1 LEVEL 4 (D016)	NA	DMC	66	1	NA	1=SELECTED
DT 015	DTO SELECTED CODING ENG.1 LEVEL 5 (0020)	NA	DMC	86	- 212	INA.	1+SELECTED
DT 016	DTO SELECTED CODING ENG 1 LEVEL 6 (0024)	NA.	DMC	66	୍ୟ	NA	1=SELECTED
DT 017	DTO SELECTED CODING ENG.1 LEVEL 7 (D040)	NA	DMC	66	1	NA	1=SELECTED
DT 021	DTO SELECTED CODING ENG 2 LEVEL 1 (0.04)	NA	DMC	66	1	NA	1=SELECTED
DT 022	DTO SELECTED CODING ENG 2 LEVEL 2 (008)	NA	DMC	86	- 810	- NAC	1=SELECTED
DT 023	DT0 SELECTED CODING ENG 2 LEVEL 3 (D012)	NA.	DMC	66	1	NA	1=SELECTED

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FARC1         ADBLU USED FOR ACC BUS F/G-ACC1         NA         DMC         27/17-14         14           FARC2         ADBLU USED FOR ACC BUS F/G-ACC1         NA         DMC         27/17-14         14           FARC2         ADBLU USED FOR ACC BUS F/G-ACC1         NA         DMC         27/17-14         14           FARC2         ADBLU USED FOR ACC BUS F/G-ACC2         NA         DMC         27/17-14         14           FARC2         BOINE 17/02/CF ANUT/G-AC21         NA         FYMC         10/29         16           FARFER         BOINE 17/02/CF ANUT/G-AC12         NA         FYMC         10/29         10           FARFER         BOINE 17/02/CF ANUT/G-AC12         NA         FYMC ADD         10/20         10           FARFER         SAME ADE CSFLATED CAPT         NA         FYMC ADD         10/20         1           FARFER         F.APP MESLAGE DSFLATED CAPT         NA         FYMC ADD         10/20         1           FARFER         F.APP MESLAGE DSFLATED CAPT         NA         FYMC ADD         10/20         1         1           FARFER         F.APP MESLAGE DSFLATED CAPT         NA         FYMC ADD         1         1         1         1         1         1         1         1<	RESOL		SIGN
TARCI ADULUSED FOR ACCUURD FOR	NA	1/4 NA	NA
FARECED         BOILD         FARE FAULT         BA         FINC         10202         14.0           FARECET         BIOLE 1 FAGE FAULT         IA         FINC         10202         10.1           FARECET         BIOLE 2 FAGE FAULT         IA         FINC         10207         11.1           FARECET         BIOLE FAGE FAULT         IA         FINC ADD         IAUC         10.1           FARPED         F.APP MESLAGE DISPLATED CAPT SIDE         IA         FINC ADD         IAUC         10.1           FARPER         F.APP MESLAGE DISPLATED FOR SIDE         IA         FINC ADD         IAUC         IAUC         10.1         IAUC         10.1         IAUC         I	NA	1/4 NA	NA
FARESCA         BIORE 3 FARESCRUIT         NA         Proc.         100-20         1           FAPPOC         F.APP MESTADE DIFLATED CAPT SIDE DAC         NA         Proc. AUD SUPPLICE VIEW         1           FAPPOC         F.APP MESTADE DIFLATED CAPT SIDE DAC         NA         FINC AUD SUPPLICE VIEW         1           FAPPOC         F.APP MESTADE DIFLATED CAPT SIDE DAC         NA         FINC AUD SUPPLICE VIEW         1           FAPPOC         F.APP MESTADE DIFLATED CAPT SIDE         NA         FINC AUD SUPPLICE VIEW         1           FAPPABUIC         F.APP - ROW MESTADE DIFLATED CAPT SIDE         NA         SUPPLICE VIEW         1           FAPPABUIC         F.APP - ROW MESTADE DIFLATED CAPT SIDE         NA         SUPPLICE VIEW         1           FAPPABUIC         F.APP - ROW MESTADE DIFLATED CAPT SIDE         NA         FINC AU         1           FAPPABUIC         F.APP - ROW MESTADE DIFLATED CAPT SIDE         NA         FINC AU         1           FAPPABUIC         F.APP - ROW MESTADE DIFLATED CAPT SIDE         NA         FINC AU         1           FCOLM         FAUT AUX         NA         FINC AU         NA         1           FCOLM         FOLM AUX         NA         DECC 2007071         1         1           FCOLM	NA	1/4 NA	NA
FAPPOC         F.APP MESSAGE DISPLATED CAPT SIDE         NA         FWC AD INDIC INDICATION         J20219         1           FAPPOC         F.APP MESSAGE DISPLATED CAPT SIDE         NA         FWC AD INDICATION         J20219         1           FAPPOC         F.APP MESSAGE DISPLATED CAPT SIDE         NA         FWC AD INDICATION         J20219         1           FAPPOC         F.APP MESSAGE DISPLATED CAPT         NA         FWC AD INDICATION         J20209         1           FAPPORADD         F.APP A RAY MESSADE DISPLATED CAPT         NA         FWC AD INDICATION         J20209         1           FAPPRANDC         F.APP A RAY MESSADE DISPLATED CAPT         NA         FWC AD INDICATION         J20209         1           FAPPRANDC         F.APP A RAY MESSADE DISPLATED CAPT         NA         FWC AD INDICATION         J20209         1           FAUP AND FIRE         FAPP AND         FAPP AND         FAPP AND         J20209         1           FCUID         FWC AD         MA         FWC AD         J20209         1           FCUID         FWC AD         MA         FWC AD         J20209         1           FCUID         FWC AD         MA         FWC AD         J20209         1           FCUID         FWC AD	NA	1,4 NA	1= FAULT
FAPPOC         F.APP MESSAGE DISFLATED CAPT SIDE         NA         PMCD MAX         S2019         1           FAPPOC         F.APP MESSAGE DISFLATED CAPT SIDE         NA         FINE AND MAC         S2019         1           FAPPOC         F.APP MESSAGE DISFLATED CAPT SIDE         NA         FINE AND MAC         S2019         1           FAPPOC         F.APP AEXAGE DISFLATED CAPT SIDE AND MAC         NA         FINE AND MAC         S2019         1           FAPPOR         F.APP AEXAMESSAGE DISFLATED CAPT SIDE AND MAC         NA         FINE AND MAC         S2020         1           FAPP AEXAMESSAGE DISFLATED CAPT SIDE AND MAC         NA         FINE AND MAC         S2020         1           FAPP AEXAMESSAGE DISFLATED CAPT SIDE AND MAC         NA         FOL         1000         1           FAPP AEXAMESSAGE DISFLATED CAPT SIDE AND MAC         NA         FOL         1000         1           FCAPT AEXAMESSAGE DISFLATED CAPT SIDE AND MAC         NA         FOL         1000         1           FCAP MAC         FAPP AEXAMESSAGE DISFLATED CAPT SIDE AND FOLLAR         NA         FOLLAR         1000           FCAP MAC         FAPP AEXAMESSAGE DISFLATED CAPT SIDE AND FOLLAR         NA         FOLLAR         1000           FCAP MAC         FAPA AEXAMESSAGE DISFLATED CAPT SIDE	NA	1,4 NA	1= FAULT
FAPP OF         F.APF MESSAGE DISPLATED FOR SIDE         NA         IMAC	NA	1 NA	1= MESSAGI DISPLAYED
PAPP RANCE ID APP - RAW MESSAGE DISFLATED CAPT ID         NM         Instance ID         NM         Instance ID         NM         Instance ID         NM         Instance ID         NM         Instance ID	NA	III INAL	1= MESSAGI DISPLAYED
PAPP PANNOT         P.APF - RAWINESSAGE DISPLAYED 7.0 SILE         NA         PMOD PANNOT         PANNOT         1           FAPU         APUT FRE         NA         FAPU         NA         FAPU         NA         SPAU         1           FAPU         APUT FRE         NA         FOLD         NA         FOLD         NA         SPAU         1           FC200         RECONS MERION (FROD DENT) (ARX0 FM         NA         FCCC         464201         1A           FC201         FART         NA         FCCC         464201         1A           FCC01         FART         FART         NA         FCCC         464201         1A           FCC01         FART         FART         NA         DCCC         376211         1A           FCC01         FART         FART         NA         DCCC         376211         1A           FCU14         FCC1 FART         NA         DCC FART         39174         1A           FCU14         FCU14         FART         NA         DCC FART         39174         1A           FCU14         FCU14F         FART         NA         DCC FART         39174         1A           FCU14F         FCU14 FART	NA	1 NA	1= MESSAGI DISPLAYED
FCUD         RECORM VERSION/REPO DENT/GAUGE CPM         NA         FCUD         NA         LEA           FCUDIT         FCUDIT         NA         FCCC         BAG21         140           FCUDIT         NA         FCCC         BAG21         140           FCUDIT         FCCL         FCCL         BAG21         140           FCUDIT         FCUL AREAL         NA         FCUDIT         FCUDIT <td>NA</td> <td>II INAI</td> <td>1= MESSAGI DISPLAYED</td>	NA	II INAI	1= MESSAGI DISPLAYED
FLOB         Description         NA         FLOB         Description           FLOB         SPECIFY         NA         FLOB         NA         FLOB         NA         Description           FCOIDT         FLOB         NA         FLOB         NA         DESCRIPTION         NA         DESCRIPTION           FCOIDT         FLOB         NA         DESCRIPTION         NA         DESCRIPTION         FLOB         NA         NA         DESCRIPTION         FLOB         FLOB         NA         NA         NA         NA         NA         NA         NA	NA.	1 NA	1= FIRE
FEDG2 #         FCD2 FAULT         NA         FCCC         D46/21         FLA           FCTL         FFTL	NA	1.64 NA	NA
TOTL         FITLE AGRESTIGGED         NA         DBC2         27921         1 Hz           TOTLE         FORD         NA	NA	1.4 NA	1= FAULT
TCTR         FRAME COUNTRY         NA         FOUL         Nome         LLG           FCULH#         FCULH FALL         NA         DEC # RESS         20120         1/4           FCULH#         NA         DEC # RESS         20121         1/4           FCULH#         FCULH#         NA         DEC ERSS         20121         1/4           FCULH#         FCULH#         NA         DEC ERSS         20121         1/4           FCULH#         FCULH#         NA         DEC ERSS         20124         1/4           FCULH#         FCULH#         DEC ERSS         DEC ERSS         DEC ERSS         DEC ERSS	NA	1.4 NA	1= FAULT
FCULH#         FCULH#         FCULH#         FCULH#         MA         DPC# FR013         20120         14           FCULH#         FCUL 18 FAIL         NA         DPC# FR013         20121         14           FCUL##         FCUL##         NA         DPC# FR013         20121         14           FCUL##         FCUL##         NA         DPC# FR013         20121         14           FCUL##         FCUL##         NA         DPC# FR013         20174         14           FCUL##         FCUL##         NC         DPC# FR013         20174         14           FDUE#         FCUL##         NC         DPC# FR013         20174         14           FDUE#         FCUL##         NC         DPC# FR013         20174         14           FDUE#         FCUL##         NA         DPC# FR013         20174         14           FDUE#         FCUL##         NA         MAC         ADDC CMC         20274         1           FDUE#         FCUL##         NA         MAC         NA         NA         NA         NA           FDUE#         FCUL#         NA         NA         NA         NA         NA         NA         NA         NA	0	1/4 0	1= SELECTE
LOUR         COURT         COURT         LOURT         LOURT <thl< td=""><td>Ť</td><td>1/4 1</td><td>NA</td></thl<>	Ť	1/4 1	NA
FLUITE         FLUITE<	NA	1/4 NA	1= FAIL
NUMP         NOD AVAIL         MM         LUDIE (1)         20174         CHA           FOLLAR         PCLARF         LUDIE (1)         20174         CHA         MC         DEC R PRIS         30105         142           FDIE         FOLLAR FOLLAR         DEC R PRIS         30105         142         30105         142           FDIE         FOLLAR FOLLAR         MAC DEC R PRIS         30105         144         30105         30117         30116         142           FDIE         FOLLE SOLOFE         NA         MAC DEC R PRIS         30116         143         30116         30	NA	1/4 NA	1= FAIL
FOUSE         FOUSE <th< td=""><td>NA</td><td>1/4 NA</td><td>1= FAIL</td></th<>	NA	1/4 NA	1= FAIL
TODE         FIGD BRQAGED         NA         RMC CDC         2000 H           TODE         FIGD BRQAGED         NA         RMC CDC         2000 H         TODE         NA         NA </td <td>INA</td> <td>1/41 (NA)</td> <td>1= FAIL</td>	INA	1/41 (NA)	1= FAIL
TOBS         THINE, LESCENT MODE         NA         TMCC CMC         302/20         1           TOBSCUTT         TOBSCUTT </td <td>NA</td> <td>1 NA</td> <td>1= ENGAGE</td>	NA	1 NA	1= ENGAGE
DIDBECUT         FOUND NEUT PROF FALLED         NA         <	NA		1= ENGAGE
TODISTORY         FORD SCOR INFUT/OF TALED         NA         HA         NA	NA		1= ACTIVATE
TRUETORY FRUCTOR INVERTIGATION FORE         NA         HA         NA	NA		NA
FOULDOR?         FOULDOR?         NUT/POT FOULDOR         NA         <	NA		NA
FORDACT         FORD ACCI INFO TOR FALLED         NA.         HA         NA.	NA		NA
FOLDMACE         FOLD ACE INVET FOR FACED         NA	NA		NA
FOULT         FOULT ALL         NA	NA		NA
FOURCECT         FOURCE FIRE         NA	NA		NA
FOUNDACE	NA		NA
TROFFACT         FORT STOLET         FORT STOLET         NA         HA         HA <th< td=""><td>NA</td><td></td><td>NA</td></th<>	NA		NA
TOURNOCT         FOUS TWO TONE TARLED         NA         HA         NA         NA <th< td=""><td>NA</td><td></td><td>NA</td></th<>	NA		NA
Disubscript         Frois Social Inviro PORT FALED         NA         NA         NA         NA           Disubscript         Frois Social Inviro PORT FALED         NA         NA         NA         NA         NA           FORISTIC         FOR STATUS STORAL         NA         NA         NA         NA         NA           FORISTIC         FOR STATUS STORAL         NA         EMP Social         STORE STATUS	NA		NA
Disublock?         Figure Dock?         Provide	NA		NA
FORTS         FOR STATUS SIGNAL         NA         NA         NA         NA           FEGENTIS         FOE SOFWIS BITS LED         NA         ESPMS SIGN 201768         1           FEGENTIS         FOE SOFWIS BITS LED         NA         ESPMS SIGN 201768         1           FEDENTIS         FOE SOFWIS BITS LED         NA         ESPMS SIGN 201768         1           FEDENTIS         FOE SOFWIS BITS LED         NA         ESPMS SIGN 201761         1           FEDIOI         BORE LIFRE         NA         FWC         10017         1           FEVIO         BORE 2 FIRE         NA         FWC         12018         1           FXA         FALUSE FOO         NA         AMC         22176         1/4	NA		NA
FERFURI         FO. EG.P.W.S. NICTALED         NA         EDPWS MMC         20728         T           FERFURX         FO.G.P.W.S.NUCD         NA         EDPWS MMC         30724         1           FERFURX         FO.G.P.W.S.NUCD         NA         EDPWS MMC         30727         1           FERFURX         FO.G.P.W.S.NUCD         NA         EDPWS MMC         30727         1           FERFURX         FO.G.P.W.S.NUCD         NA         EDPWS MMC         30777         1           FERFURX         NA         FPWC         13077         1         1           FERFURX         NA         FPWC         13077         1           FERFURX         NA         FPWC         13077         1           FMC         FAC USED TRE         NA         PWC         12010         1           FMC         FAC USED TRE         NA         DWC         27216         14	NA		NA
FEGFWISV         FIG E.0.P.W.S.VALID         NA.         EGPWIS DALC         307/24         1           FENDI         ENOINE1.FIRE         NA.         FWC         120/17         1           FENDI         ENOINE2.FIRE         NA.         FWC         120/17         1           FENDIQ         ENOINE2.FIRE         NA.         FWC         120/18         1           FFAC         FAC USED F/O         NA.         DMC         272/15         1/4	NA		NA
FENOT         ENOME: FIRE         NA         Field         12/017         1           FENO2         ENOME: 21RE         NA         Field         18/16         1           FFAC         FAC USED Fr0         NA         DMC         227/16         1/4	NA		1= INSTALLE
FENG2         ENGINE:2 FIRE         NA.         FWC         128/18         1           FFAC         FAC USED F/0         NA.         DMC         272/15         1/4	NA		1= VALID
FFAC FAC USED F/0 NA. DMC 272/15 1/4	NA		1= FIRE
	NA		1= FIRE
FEBCED EBC USED FOR ED E/0 NA DMC 272/17 1/4	NA		0+ FAC2 USE
	NA	1/4 NA	0= FG C2 USE FOR FD
FFGCFMA FGC USED FOR PMA F/O NA DMC 272/18 1/4	- NAC	174 NA	D= FG C2 USE FOR FMA

MNEMO	LIBELLE	UNIT	SOURCE	LABEL	PPS	RESOL	SIGN
DT 024	DTO SELECTED CODING ENG.2 LEVEL 4 (D018)	NA	DMC	68	3	NA	1= SELECTED
DT 025	DTO SELECTED CODING ENG.2 LEVEL 5 (D020)	NA	DMC	66	-81	NA	1= SELECTED
DT 026	DTO SELECTED CODING ENG.2 LEVEL 6 (D024)	NA	DMC	60	1	NA	1= SELECTED
DT 027	DTO SELECTED CODING ENG.2 LEVEL 7 (D040)	NA	DMC	66	3	NA	1= SELECTED
DTOINST1	DTO A/C OPTION INSTALLED ENG.1	NA	DMC	066/19	- 81	NA	1= INSTALLED
DTOINST2	DTO A/C OPTION INSTALLED ENG.2	NA	DMC	066.20	11	NA.	1= INSTALLED
DTON0 SEL1	NO SELECTION ENG.1	NA	DMC	66	. 8	NA.	1=SELECTED
DTON0 SEL2	NO SELECTION ENG.2	NA	DMC	66	1	NA.	1=SELECTED
DTO SEL1 DTO SEL2	DTO LIMIT MODE SELECTED ENG.1 DTO LIMIT MODE SELECTED ENG.2	NA	DMC	066/17	1	NA.	1= INSTALLED 1= INSTALLED
DIUSEL2 DWNADVCDR	TCAS COMBINATED CONTROL.DOWN ADVISORY CORRECTIVE.	NA	TCAS DMC	308	10	NA.	1ª INSTALLED
ECAMADVY	CALL SYSTEM PAGE BY ADVISORY	NA	DMC	270/19	14	NA	1= ACTIVE
ECAMOUIC	ECAM D-U 1 ANOMALY/OFF CAPT	NA	DMC CAPT	270/19	1/4	NA	1= AUTIVE 1= OFF
ECAMOULT	ECAM D-01 ANOMALY/OFF CAPT	NA	DMC E/O	270715	1,44	NA	1= 0FF
EC/M/DU2C	ECAM D-U2 ANOMALY/OFF CAPT	NA	DMC CAPT	270/16	1/4	NA	1= 0FF
ECAMDU2F	ECAM D-U 2 ANOMALY/OFF F/0	NA	DMC F/O	270/16	1/4	NA	1= 0FF
EC.4MNDXC	ECAMIND XER CAPT	NÁ	DMC	272.07	1/4	NA	1= XFR
EC.4MNDXF	E CAMIND XER F/0	NA	DMC	272.07	1/4	NA	1= XFR
ECPF	ECP FAIL	NA	DMC	360.23	1/4	NA.	1= FAL
EFISCALE	10 NM CAPT	NA	DMC 1	273/16	1/4	NA.	1= SELECTED
EG C	EMER GEN LINE ONTOR	NA	SDAC	004/27	1/4	NA.	1= 0N
EGP/0/S ON	(E)GPWS TERRAIN ON ND	NA	EGPW'S SDAC	002/25	1	NA	1= ON POSITION
G PW/SPEAK	EGPWS PEAKS	NA	EG PW/S DMC	307/29	3	NA	1= ACTIVE
EGT1	E.G.T.ENG.1	DC	ECU DMC	345	1	10	NA.
EGT1W EGT2	ENG 1 EGT OVER LIMIT E G T ENG 2	NA DC	FWC ECUIDMC	124/15	1	NA 1	1= OVER LIMIT NA
EGT200	E.G.T.ENG.2 ENG.2.EGT.OVER.LMIT	NA	PIIC	345		NA	1= OVER LMIT
EG1200 EIS2	EIS2 INSTALLED	NA	DMC	272.028	1.44	NA	1= INSTALLED
EL1 F	ELAC 1 FAULT	NA	FCDC	040/23	1/4	NA	1= EAULT
EL1PF	ELAC 1 PITCH FAULT	NA	FCDC	040/19	1/4	NA	1= FAULT
EL1RF	ELAC 1 ROLL FAULT	NA	FCDC	040/20	1,64	NA	1= FAULT
EL2 F	ELAC 2 FAULT	NA	FCDC	040.04	1,14	NA	1= FAULT
EL2PF	ELAC 2 PITCH FAULT	NA	FCDC	040/21	1/4	NA	1= FAULT
EL2RF	ELAC 2 ROLL FAULT	NA	FCDC	040/22	1/4	NA.	1= FAULT
ELAC1PB	ELAC 1 P/B SWITCH OFF	NA	FCDC	042/19	1,4	NA	1= YES
ELAC2P8	ELAC 2 P/B SWITCH OFF	NA	FCDC	042.00	1/4	NA.	1= YES
ELEC	ELEC PAGE SELECTED	NA	DMC 2	275/16	1/4	0	1= SELECTED
ELVE	LH + RH ELEVATORS FAULT	NA DA	FWC ELAC/SEC	120/19	1	NA 0.088	1= WARNING
63534.04			FCDC	100100	10081	Conteneos	100000000000
ELVLBV	LH ELEVATOR BLUE AVAILABLE	NA	FCDC	042/15	4	NA	1= AWNL.
ELVLGV ELVR	LH ELEVATOR GREEN AVAILABLE RH ELEVATOR POSITION	DA	FCDC ELAC/SEC FCDC	042/16 334	4	0.088	1= AVAL.
ELVRBV	RH ELEVATOR BLUE AVAILABLE	NA	FCDC	042/17	4	NA	1= AVAIL
ELVRYV	RH ELEVATOR YELLOW AVAILABLE	NA	FCDC	042/18	4	NA	1= AVAL
ENG	ENGINE PAGE SELECTED	NA	DMC 2	275/12	1/4	0	1= SELECTED
ENG1PB	ENG.1 AIR BLEED PUSH BUTTON ON	NA	BMC SDAC	067/18	1	NA	1= ON
ENG2 PB	ENG.2 AIR BLEED PUSH BUTTON ON	NA	BMC SDAC	066/18	- 1	NA.	1= ON
ENGDUALF	ENGINE DUAL FAULT	NA	FWC	124/19	1	NA.	1= FAULT
EPC	EXT PWR LINE CONTACTOR	NA	SDAC	002/15	1/4	NA	1= 0FF
ESN1L	ENG.1 S/N LSD	NA	NA	NA	NA	NA	NA
ESN1M ESN2L	ENG.1 S/N MSD	NA	NA	NA.	NA NA	NA NA	NA.
ESN2L ESN2M	ENG.2 S/N LSD ENG.2 S/N MSD	NA	NA	NA	NA NA	NA NA	NA
EVTMKR	EVENT MARKER	NA	FDIU	NA	1	NA	1= EVENT
EXPCLB	EXPEDITE CLMB	NA	FMG C DMC	302/11	1	1	1= ACTIVATED
EXPORT	EXPEDITE DESCENT	NA	FMB C DMC	302/12	1	NA	1= ACTIVATED
EACIE	FACT FAL	NA	DMC	360/24	1.44	NA	1= FAIL
FAC2F	FAC2 FAIL	NA	DMC	360.25	1.4	NA	1= FAL
				350/19		NA.	0= FAC

MNEMO	LIBELLE	UNIT	SOURCE	LABEL	PPS	RESOL	SIGN
FFKG1C	FUEL FLOW ENG 1 MSB PART	KG/H	ECU DMC	244	1	NA.	NA
FEKGIE	FUEL FLOW ENG 1 LSB PART	KG/H	ECU DMC	244	1	NA	NA
FFK02	FUEL FLOW ENG 2	KG/H	ECU DMC	244	1	1,814	NA
FFKG2C	FUEL FLOW ENG 2 MSB PART	KG/H	ECU DMC	244	1	NA.	NA
FFKG2F	FUEL FLOW ENG 2 LSB P ART	KG/H	ECU DMC	244	1	NA	NA
FFLB1	FUEL FLOW ENG.1 ELA8	LB/H	ECU DMC	244	NA	4	NA
FFLB1C	FUEL FLOW ENG 1 MSB PART	LB/H	ECU DMC	244	1	NA	NA
FFLB1F	FUEL FLOW ENG 1 LSB PART	LB/H	ECU DMC	244	1	NA	NA
FFL82	FUEL FLOW ENG2 ELAB	LB/H	ECU DMC	244	NA	4	NA
FFLB2C	FUEL FLOW ENG 2 MSB PART	LB/H	ECU DMC	244	1	NA	NA
FFL82F	FUEL FLOW ENG 2 LSB PART	LB/H	ECU DMC	244	1	NA	NA
FFMC1	FMC1 USED F/0	NA	DMC	274/18	1/4	NA	D= FMC2 USED
FEVI	FUEL FIRE VALVE NOT FULLY CLOSED ENG 1	NA	FADEC SDAC	001/19	1	NA	1= NOT FULLY
FFV2	FUEL FIRE VALVE NOT FULLY CLOSED ENG2	NA	FADEC SDAC	001/19		NA	CLOSED 1= NOT FULLY
							CLOSED
FG1F	FG1 FAIL	NA	DMC	361/27	1/4	NA.	1= FAL
FG2F	FG2 FAIL	NA	DMC	361/28	174	NA	1= FAL
FHRLATP	F/O LATITUDE POSITION ELAB WITH HIGH RESOLUTION	DA	PMC DMC	135+310	NA	NA.	>0+ NORTH
FHRLONP	F/O LONG IT UDE POSITION ELAB WITH HIGH RESOLUTION	DA	FMC DMC	136 +31 1	NA	NA	>0= EAST
FILTER	FILTERING IMPROVEMENT PIN PROGRAM	NA	SDAC	007.03	874	NA	1= FILTERED RUDDER POSITIO
FIR\$1	ADIRU USED FOR IRS BUS F/O - IRS1	NA	DMC	272/11-12	1/4	NA	NA
FIR \$2	ADIRU USED FOR IRS BUS F/O - IRS2	NA	DMC	272/11-12	1/4	NA.	NA
FIRS3	ADIRU US ED FOR IRS BUS F/O - IRS3	NA	DMC	272/11-12	1/4	NA	NA.
FLAGLSPFDC	XLS FLAG DISPLAYED ON PFD CAPT	NA	MMR DMC	330/14	1,44	NA.	1= DISPLAYED
FLAGLSPFDF	F/O FLAG DISPLAYED ON PFD	NA	MMR DMC	330/14	1/4	NA.	1= DISPLAYED
FLAP	FLAP SURFACE ANGLE	DA	IPP U FWC	137	1/2	0.703	NA
FLARE	FLAREMODE	NA	FMG C DMC	302/25	- 81	NA	1= ACTIVATED
FLATP	FIRST-OFFICER LATITUDE POSITION ELAB BIT 9-27+29	DA	PMC DMC	310	NA	0.00017	>0= NORTH
FLATPC	FIRST-OFFICER LATITUDE POSITION COARSE BITS 20-27	DA	FMC DMC	310	1/2	0.351	NA
FLATPE	FIRST-OFFICER LATITUDE POSITION FINE BIT 9-19+29	DA	FMC DMC	310	1/2	0.0002	NA
FLEET	FLEET IDENT	NA	FDIU	NA	1.64	1	NA
FLEXT1	FLEX TEMPERATURE ENG.1	DC	DMC	214	1	0.0625	NA
FLEKT2	FLEX TEMPERATURE ENG.2	DC	DMC	214	1	0.0625	NA
FLOCGSPFDC	F-LOC / F-G/S INFORMATION DISPLAYED	NA	DMC	330/15	1/4	NA	0= SCALE NOT DISPLAYED
FLOCGSPFDF	F-LOC / F-G/S INFORMATION DISPLAYED F/O	NA	DMC	330/15	1/4	NA	0* SCALE NOT
FLO NP	FIRST-OFFICER LONGITUDE POSITION ELAB	DA	PMC DMC	311	NA	0.00017	DISPLAYED
FLONPC	FIRST-OFFICER LONGITUDE POSITION COARSE BIT 20-28	DA	PMC DMC	311	1/2	0.351	NA
FLONPF	FIRST-OFFICER LONGITUDE POSITION FINE	DA	FMC DMC	311	1/2	0.0002	NA.
FLPF	B IT 9-19+29 FLAPS FAULT	NA	FWC	126/14	1/4	NA	1= FAULT
ruff.	r Det a r AULI	nA	FOUL	120/19	124	niA.	1= FLAP LEVER
FLPLVRW	FLAP LEVER NOT ZERO	NA	PWC	124/18	-11	NA	1= FLAP LEVER NOT ZERO
FLSAVALI	FLS MODE CAPT - MODE AVAILABLE - NOT SELECTED	NA	MMR DMC	00 5/2 7-28	1/4	NA	1= SELE CTED
FLSAVAL2	FLS MODE F/O · MODE AVAILABLE · NOT SELECTED	NA	MMR DMC	005/27-28	1,44	NA	1= SELECTED
FLSDD	DISTANCE LS DISPLAYED F/O	184	DME DMC	36	1/4	0.0625	NA
FLSFAILED1	FLS MODE CAPT - MODE FAILED - NOT SELECTED	NA	MMR DMC	005/27-28	1/4	NA.	1= SELECTED
	FLS MODE F/0 - MODE FAILED - NOT	-		-	_	1	

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MNENO	UBELLE	UNIT	SOURCE	LABEL	PPS	RESOL	SIGN
FLSN0INST1	FLS MODE CAPT - MODE NOT INSTALLED	NA	MMR DMC	005/27-28	1/4	NA	1=S ELECTED
FLSN0INST2	FLS MODE F/O - MODE NOT INSTALLED	NA	MMR DMC	005/27-28	1/4	NA	1=SELECTED
FLSS ELECT 1	FLSMODE CAPT - MODE SELECTED	NA	MMR DMC	005/27-28	1/4	NA	1=SELECTED
FLSSELECT2	FLS MODE F/O - MODE SELECTED	NA	MMR DMC	005/27-28	1/4	NA	1*SELECTED
FLT	FUGHT NUMBER FLAB	NA	CEDIU DMC	NA	NA	0	NA
FLTC	FLIGHT NUMBER THOUS + HUND	NA	CEDIU DMC	234	1,64	100	NA
FLTF	FLIGHT NUMBER TEN + UNIT	NA.	CEDIU DMC	235	1,64	1	NA
EM1E	EMI FAL	NA.	DMC	362/11	1/4	NA	1= FAIL
FM2F	FM2 FAL	NA	DMC	362/12	1/4	NA	1= FAIL
FNU/S	F/O N/WS ORDER	DA	BSCU	341	1	0.25	NA
FOMC1	FIRST-OFFICER MASTER CAUTION ON (FWC1 only)	NA	FW/C1	126/23	11	NA	1= 0 N
FOMC2	FIRST-OFFICER MASTER CAUTION ON (FWC2 only)	NA	FW/C2	126/23	୍ୟ	NA	1= 0 N
FOMW1	FIRST-OFFICER MASTER WARNING ON (FWC1 only)	NA	FW/C1	126/22	1	NA	1= 0 N
FOMW2	FIRST-OFFICER MASTER WARNING ON (FWC2 only)	NA	FW/C2	126/22	ा	NA	1= 0 N
FPA	FP AMO DE	NA	FMGC DMC	302/18	1	NA	1= ACTIVATED
FP AALT C	FLIGHT PATH ALTITUDE CAPT ELAB.	FT	FM SUPPLIED BY DMC	25	NA	4	NA
FPAALTCC	FLIGHT PATH ALTITUDE CAPT COARSE SCALE	FT	FM SUPPLIED BY DMC	25	1/2	8192	NA
FP.AALTCF	FLIGHT PATH ALTITUDE CAPT FINE SCALE	FT	FM SUPPLIED BY DMC	25	1/2	4	NA
FPAALTE	FLIGHT PATH ALTITUDE F/O ELAB.	FT	FM SUPPLIED BY DMC	25	NA	4	NA
FPAALTEC	FLIGHT PATH ALTITUDE COARSE F/O SCALE	FT	FM SUPPLIED BY DMC	25	1/2	8192	NA
FPAALTFF	FLIGHT PATH ALTITUDE FINE F/0 S CALE	FT	FM SUPPLIED BY DMC	25	1/2	4	NA
FPAIRS	FLIGHT PATH ANGLE	DA	IRS DMC	322	1	D.0879	>D=UP
FQI1F	FQII FAIL	NA	DMC	360/18	1/4	NA	1= FAIL
FQ12F	FOR FAIL	NA	DMC	360/19	1/4	NA	1= FAIL
FRA	R/A USED F/O	NA	DMC	272/20	1/4	NA	0= R#2 USED
FROM	CITYPAR FROM CI-4	NA	NA	NA	NA	NA.	NA
FR0MC1	CITY PAIR FROM CI	NA	NA	NA	NA	NA	NA
FR0MC2	CITY PAIR FROM C2	NA	NA	NA	NA	NA	NA
FR0MC3	CITY PAIR FROM C3	NA	NA	NA	NA	NA	NA
FR0MC4	CITY PAIR FROM C4	NA	NA	NA	NA	NA	NA
FS DB C	FIRST-OFFICER SELECTED DATA BASE CYCLE	NA.	NA	NA	NA	NA	NA
FS DB D	FIRST-OFFICER DATABASE VALIDITY DAY	NA	NA	NA	NA	NA	NA
FSDBM	FIRST-OFFICER DATA BASE VALIDITY MONTH	NA	NA	NA	NA	NA	NA
FTISFAULT	FTIS Bult	NA	FWC	21	1	NA	NA
FUEL	FUEL PAGE SELECTED	NA	DMC 2	275/17	1/4	0	1= SELECTED
FULDEP1	REVERSER DEPLOYED ENG.1	NA	ECU DMC	270/13	্য	NA	1= FULLY DEPLOYED
FULDEP2	REVERSER DEPLOYED ENG.2	NA	ECU DMC	270/14	1	NA	1= FULLY DEPLOYED
<b>FVERTDEV</b>	VERTICAL DEV. FIRST-OFFICER	DA.	FMGC DMC	327	1/2	0.00391	>0= ABOVE BEA
FWC1F FWC1S	FWC1 FAIL BUS MESSAGE FROM FWC1	NA NA	DMC	362/13	1/4	NA NA	1= FAIL 1= FWC1 MESS
							BUS SEL
FWCIV	FWC1 VALID	NA.	FW/C1	126/13	1/4	NA	1= VALID
FWC2F	FWC2 FAIL	NA	DMC	362/15	1/4	NA	1= FAIL
FWC2V	FWC 2 VALID	NA	FW/C2	126/13	1/4	NA	1= VSALID
FWCM1F	FWC1 MESSAGE FAIL	NA	DMC	362/14	1/4	NA	1= FAIL
FWCM2F	FWC 2 MESSAGE FAIL	NA.	DMC	362/16	1/4	NA	1= FAIL
FWXRABLE	WXR OR TERRAIN DIS PLAY ENABLE F/O	NA	DMC	3 50/20	1	NA	1= DISPLAY ENABLE

MNEMO	LIBELLE	UNIT	SOURCE	LABEL	PPS	RESOL	SIGN CONV
FWXRMAP	F/0 RADAR/EGPWS OPERATING MODE:MAP ONLY	NA	DMC	307/20	1,44	1	NA
FWKRSTBY	F/O RADAR/EGPWS OPERATING MODE:STANDBY	NA	DMC	307.020	1/4	-10	NA.
FWORRTST	F/0 RADAR/EGPW'S OPERATING MODE:TEST	NA	DMC	307.00	1/4	19	NA
FWXRTUR	F/O RADAR/EGPW/S OPERATING MODE:TURBULENCE	NA	DMC	307.00	1,84	1	NA
FIOX RTWS	F/0 RADAR/EGPWS OPERATING MODE:W/S AND TURBULENCE	NA	DMC	307/20	1/4	1	NA
FWXRWSHAZS	F/O RADAR/EGPW/S OPERATING MODE:WINDSHEAR HAZARD SECTOR	NA	DMC	307/20	1/4	15	NA:
FWKRWSIC	F/O RADAR/EGPWS OPERATING MODE/W/S ICON	NA	DMC	307 /20	1/4	1	NA
FWICRWICR	F/O RADAR/EGPWS OPERATING MODE/WEATHER ONLY	NA	DMC	307./20	184	1	NA
FXFRV	F/0 WEATHER RADAR VALID	NA	EGPW/S DMC	307.05	31.	NA	1= VALID
GLC1	G EN LINE CONTACTOR 1	NA.	SDAC	002/14	1,4	NA.	1= 0FF
GLC2	G EN LINE CONTACTOR 2	NA.	SDAC	002/14	1,44	NA	1= 0FF
GLS1	GLIDESLOPE DEV. ILS1	MA	ILS DMC	174	1/2	1.3393	>D# ABOVE BEAM
GLS1+2	GLIDESLOPE DEV. ILS 1+2	MA	ILS DMC	124	1	1.3393	>D= ABOVE BEAM
GLS1DDM	GLIDESLOPE DEV. ILS1	DDM	ILS DMC	124	1/2	0.00156	>0= ABOVE BEAM
GLS1PT	GLIDESLOPE DEV. ILS1	PT	LS DMC	174	1.0	0.01786	>0= AB OVE BEAM
OLS2	G LIDESLOPE DEV. ILS2	MA	ILS DMC	174	1.2	13393	>0= AB OVE BEAM
GLS2DDM	GLIDESLOPE DEV ILS2	DDM	LS DMC	174	1/2	0.00156	20+ ABOVE BEAM
GLS2PT	GUDESLOPE DEV. ILS2	PT	ILS DMC	174	1.0	0.01786	>0+ AB OVE BEAM
GLS AVAIL1	GLS MODE CAPT - MODE AVAILABLE - NOT SELECTED	NA	MMR BMC	005/16-17	14	NA	1= SELECTED
GLS AVAIL2	G LS MODE F/O - MODE AVAILABLE - NOT SELECTED	NA	MMR DMC	005/16-17	1.44	NA	1= SELECTED
GLS FAILED1	G LS MODE CAPT - MODE FAILED - NOT SELECTED	NA	MMR DMC	005/16-17	1,44	NA	1= SELECTED
GLS FAILED2	G LS MODE F/O - MODE FAILED - NOT SELECTED	NA	MMR DMC	005/16-17	1.4	NA.	1= SELECTED
GLSMESPFDC	CAPTAIN GLS MESSAGE DIS PLAYED ON PFD	NA	MMR DMC	330/13	1/4	NA	1= ACTIVE
GLSMESPFDF	F/O G LS MESSAGE DIS PLAYED ON PFD	NA	MMR DMC	330/13	1/4	NA.	1= ACTIVE
GLSN0INST1	GLS MODE CAPT - MODE NOT INSTALLED	NA	MMR DMC	005/16-17	11.4	NA	1= SELECTED
GLSN0INST2	G LS MODE F/0 - MODE NOT INSTALLED	NA	MMR DMC	005/16-17	1/4	NA	1= SELECTED
GLS SELECT 1	GLSMODE CAPT - MODE SELECTED	NA	MMR DMC	005/16-17	1/4	NA.	1= SELECTED
GLS SELECT2	GLSMODE F/O - MODE SELECTED	NA	MMR DMC	005/16-17	1/4	NA	1= SELECTED
GNDL	G EAR NOT DOWNLOCKED	NA	FWC	126,24	81	NA	1= NOT DOWNLOCKED
GNSAWALL	GNSS MODE CAPT - MODE AVAILABLE	NA	MMR DMC	005/18-19	1/4	NA	1= SELECTED
ONSAVAIL2	GNSS MODE F/O - MODE AVAILAB LE	NA	MMR DMC	005/18-19	1/4	NA.	1= SELECTED
GNS DISAB1	GNSS MODE CAPT - MODE DISABLE	NA	MMR DMC	005/18-19	1/4	NA	1= SELECTED
GNS DISAB2	GNSS MODE F/O - MODE DISABLE	NA	MMR DMC	005/18-19	14	NA	1= SELECTED
GNSFAILED1	G NSS MODE CAPT - MODE FAILED	NA	MMR DMC	005/18-19	14	NA	1= SELECTED
GNSFAILED2	G NS S MODE F/O - MODE FAILED	NA	MMR DMC	0.05/18-19	1.44	NA.	1=SELECTED
GNSN0INST1	GINSSMODE CAPT - MODE NOT INSTALLED	NA	MMR DMC	005/18-19	1,4	NA	1=SELECTED
GNSN0INST2	G NS S MODE F/O - MODE NOT INSTALLED	NA	MMR DMC	0.05/18-19	14	NA	1=SELECTED
GPSALT	G PS ALTITUDE EMITTED BY IRS SELECTED B U THE DMC (ELAB)	FT	DMC IRS SUPPLIED BY DMC	76	NA	4	NA.

			r	L 1		RESOL	SIGN
MNENO	LIBELLE	UNIT	SOURCE	LABEL	PPS	info	CONV
GPSALTC	6PS ALTITUDE EMITTED BY IRS SELECTED BUTHE DMC (COARSE SCALE)	FT	DMC IRS SUPPLIED BY DMC	76	T	8192	NA
GPSALTF	GPS ALTITUDE EMITTED BY IRS SELECTED BU THE DMC (FINE SCALE)	FT	DMC IRS SUPPLIED BY DMC	76	Ч.	×.	NA
GPW/S14	G.P.W.S WNG MODE 1-4 + TERRAIN ALERTS IF EGPWS INST.	NA.	GPW/S FW/C	016/18	1	NA	1= OFF
GPW/S5	G.P.W.S.G/S.VISUAL ALERT MODE 6	NA	GPWS FWC	016/18	1	NA	1= 0FF
G PW/SF	EGPW/S SYSTEM FAULT	NA	SDAC	002/25	1/4	NA	0= FAULT
GPWSTF	GPWS TERRAIN DETECTION FAULT	NA.	SDAC	0.06/19	1/4	NA	0= FAULT
GS	GROUND SPEED	KT	ADIRS DMC	312	1	1	NA
GSCPT	GLIDESLOPE CAPTURE	NA.	FMGC DMC	302/22	1	NA	1= ACTMATE
GSD	GEAR SELECTOR DOWN	NA	FWC	0 20/29	2	NA	1= D0WN
GSND	RED ARROW ON L/G CTL LEVER SELECTOR ON	NA.	FWYC	126/25	1	NA	1= NOT DOW
GSPA	GROUND SPOILER ARMED	NA	SEC FCDC	043/27	2	NA.	1= ARMED
GSTRK	GLIDESLOPE TRACK	NA	PMGC DMC	302/22	1	NA	1= ACTMATE
GSU	GEAR SELECTOR UP	NA	FWC	022/14	2	NA	1= UP
GWK	A/C GROSS WEIGHT	KG	DMC	76	NA	40	NA
GWKC GWKF	A/C GROSS WEIGHT COARSE A/C GROSS WEIGHT FINE	NA	NA	NA	NA	NA	NA
GWL	A/C GROSS WEIGHT FINE A/C GROSS WEIGHT	LBS	DMC	75	NA	40	NA
GWLC	A/C GROSS WEIGHT COARSE	NA	NA	NA	NA	NA	NA
GWLF	A/C GROSS WEIGHT FINE	NA	NA	NA	NA	NA	NA
HDG	HEADING (true or mag. value)	0.0	ADIRS DMC	320	1	0.362	NA
HDGM	HDG MODE ACTIVE	NA	PMGC DMC	301/16	1	NA	1= ACTIVATE
HDGS	HEADING SELECTION	NA	DMC	271/25	1	NA	1= TRUE HDO
HDG'0'	WARNING HEADING DISCREPANCY	NA	FWC	126/18	1	NA	1= WARNING
HF1	H.F1 KEING	NA	SDAC	002/28	1	NA	0= EMITTING
HF2	H.F2 KEING	NA.	SDAC	002/28	1	NA	0+ BMITTING
HPFS0V1	HP FUEL VALVE ENG1 CLOSED	NA.	ECU FWC	011/14	1	NA	1= CLOSED
HPFS0V2	HP FUEL WALVE ENG2 CLOSED	NA.	ECU FWC	011/14	1	NA	1= CLOSED
HPUOFFC	HPU-CAPT OFF	NA	HUD FWC	001/16	1/4	NA	1= 0FF
HP UO FFF	HPU-F/0 OFF	NA	HUD FWC	001/16	1/4	NA	1= 0FF
HPV1	HP VALVE NOT FULLY CLOSED ENG.1	NA.	BMC SDAC	067/15	1/4	NA	1= NOT FULL CLOSED
HPME	HPVI FAULT	NA	BMC SDAC	065/22	1	NA.	1= FAULT
HPV2	HP VALVE NOT FULLY CLOSED ENG2	NA	BMC SDAC	066/15	1/4	NA	1= NOT FULL CLOSED
HP\/2F	HPV2 FAULT	NA.	BMC SDAC	064/22	1	NA	1= FAULT
HRLATPC	HIGHT RESOLUTION LATITUDE CAPTAIN	DA	FMC DMC	135	1	8.4E-08	NA
HRLATPF	HIGHT RESOLUTION LATITUDE F/0	DA	FMC DMC	135	1	8.4E-08	NA
HRLONPC	HIGHT RESOLUTION LONGITUDE CAPTAIN	DA	FMC DMC	136	1	8.4E-08	NA
HRLONPF	HIGHT RESOLUTION LONGITUDE F/0	DA.	FMC DMC	138	1	8.4E-08	NA
HUDIDECL1 HUDIDECL2	HUD1 DECLUTTER 1 HUD1 DECLUTTER 2	NA NA	HUD FWC HUD FWC	001/14	1/4	NA NA	1= DECLUTTER
HUDIDON	HUDI DISPLAY ON	NA	HUD FWC	001/15	1/4	NA	1= DECLOTTER 1= 0 N
HUD1DUAL	SINGLE OR DUAL INSTALLATION PIN PROGRAM HUD1	NA.	HUD FWC	001/24	1/4	NA	D= SINGLE
HUD1FLT	HUD 1 PHASE MATRIX - FLIGHT PHASE	NA.	HUD FW/C	001/19-22	1/4	NA	1= SELECTED
HUDTHEALTH	HUD1 HEALTHY	NA.	HUD SDAC	006/18	1/4	NA	1= NOT HEALT
HUDIMATRIX	HUD 1 PHASE MATRIX	NA	HUD FWC	001/19-22	1/4	NA	NA
HUD1 ND	HUD1 NO RMAL DISP LAY	NA	HUD FW/C	001/13	1/4	INA	1= NORMAL DISPLAY
HUDIROLOUT	HUD 1 PHASE MATRIX - ROLL-OUT PHASE	NA	HUD FW/C	001/19-22	1/4	NA	1= SELECTER
HUDI SPARE	HUD 1 SPARE	NA.	HUD FWC	001/23	1/4	NA	NA
HUDITAKI	HUD 1 PHASE MATRIC+ TAKI PHASE	NA	HUD FW/C	001/19-22	1/4	NA	1= SELECTED
HUD1TO	HUD 1 PHASE MATRIX - TAKE OFF PHASE	NA	HUD FW/C	001/19-22	1/4	NA	1= SELECTED
HUD2DECL1	HUD2 DECLUTTER 1	NA	HUD FWC	001/14	1/4	NA	1= DECLUTTER

MNEMO	LIBELLE	UNIT	SOURCE	LABEL	PPS	RESOL	SIGN CONV
HUD2 DON	HUD2 DIS PLAY ON	NA	HUD FWC	001/11	1/4	NA.	1= ON
HUD2DUAL	SINGLE OR DUAL INSTALLATION PIN- PROGRAM HUD2	NA	HUD FWC	001/24	174	NA	0= SINGLE INSTALLATION
HUD2 FLT	HUD 2 PHASE MATRX - FLIGHT PHASE	NA	HUD FWC	001/19-22	1/4	NA	1= SELECTED
HUD2HEALTH	HUD2 HEALTHY	NA	HUD SDAC	006/18	1,4	NA	1= NOT HEALTHY
HUD2MATRIX	HUD 2 PHASE MATRIX	NA	HUD FWC	001/19-22	174	NA	NA:
HUD2ND	HUD2 NORMAL DISPLAY	NA	HUD FWC	001/13	1/4	NA	1= NORMAL DISPLAY
HUD2 ROLOUT	HUD 2 PHASE MATRIX - ROLL-OUT PHASE	NA	HUD FWC	001/19-22	1.4	NA	1= SELECTED
HUD2SPARE	HUD 2 SPARE	NA	HUD FINC	001/23	1.44	NA	NA
HUD2TAKI	HUD 2 PHASE MATRIX - TAKI PHASE	NA	HUD FWC	001/19-22	1.44	NA.	1= SELECTED
HUD2TO	HUD 2 PHASE MATRIX - TAKE OFF PHASE	NA	HUD FWC	001/19-22	1,44	NA	1= SELECTED
HUDINST	NEW HUD INSTALLED PIN-PROGRAM	NA	HUD SDAC	005/14	1/4	NA	8= INSTALLED
HUDON HYD	HUD P/B HYD PAGE SELECTED	NA	HUD SDAC DMC 2	275/15	1/4	NA.	1= OFF 1= SELECTED
HYDBP	BLUEHYDRAULIC PRESSURE	PSI	SDAC	174	1/4	64	I= SELECTED NA
HYDBW	HYD. LOW PRESSBLUE	NA	FWC	126/23	1	NA.	1= LOW PRESSURE
HYDGP	G REEN HYDRAULIC PRESSURE	PSI	SDAC	174	10	84	NA
HYDGW	HYD. LOW PRESS GREEN	NA	FWC	126.25	3	NA	1= LOW PRESSURE
HYDYP	YELLOW HYDRAULIC PRESSURE	PSI	SDAC	174	1/2	64	NA.
HYDYW	HYD. LOW PRESS YELLOW	NA	FWC	126.24	1	NA	1= LOW PRESSURE
ICEDET1	SEVERITY ICE DETECTED ENG.1	NA	IDC FWC	017/28	1/4	NA	D= WARNING
ICEDET2	SEVERITY ICE DETECTED ENG 2	NA	IDC FWC	017/28	1,44	NA.	0+ WARNING
ICEMN6IDC1	ICEWARNING IDC1	NA.	IDC FWC	017/18	1/4	NA.	D= WARNING
ICEWNGIDC2 ID1F	ICEWARNING IDC2	NA.	IDC FWC SDAC	017/18	1/4	NA NA	0= WARNING 1= FAULT
101 F	ICE DETECTOR ENG 2 FAULT	NA	SDAC	003/16	1/4	NA	1= FAULT
IDENTAPP C1	IDENT OF APPROACH CAPT SIDE (1st CHAR)	LIB ELL	PM SUPPLIED BY DMC	11	1/4	NA	NA
ID ENTAPP C2	IDENT OF APPROACH CAPT SIDE (2nd CHAR)	LIB ELL	FM SUPPLIED BY DMC	11	1.4	NA.	NA
IDENTAPP C3	IDENT OF APPROACH CAPT SIDE (3rd CHAR)	LIB ELL Es	PM SUPPLIED BY DMC	11	1/4	NA	NA
IDENTAPP 04	IDENT OF APPROACH CAPT SIDE (4th CHAR)	LIB ELL E=	FM SUPPLIED BY DMC	12	14	NA	NA
IDENTAPP 05	IDENT OF APPROACH CAPT SIDE (8th CHAR)	LIB ELL E*	FM SUPPLIED BY DMC	12	1/4	NA	NA.
ID ENTAPP 08	IDENT OF APPROACH CAPT SIDE (Mh CHAR)	LIB ELL E=	PM SUPPLIED BY DMC	12	1/4	NA.	NA
IDENTAPP C7	IDENT OF APPROACH CAPT SIDE (7th CHAR)	LIB ELL E=	PM SUPPLIED BY DMC	13	1/4	NA	NA
ID ENTAPP C8	IDENT OF AP PROACH CAPT SIDE (8th CHAR)	LIB ELL E=	FM SUPPLIED BY DMC	13	1/4	NAC	NA:
IDENTAPP C9	IDENT OF APPROACH CAPT SIDE (9th CHAR)	LIB ELL En	FM SUPPLIED BY DMC	13	1.44	NA	NA
IDENTAPPF1	IDENT OF APPROACH F/O SIDE (1st CHAR)	LIB ELL E=	PM SUPPLIED BY DMC	11	1/4	NA.	NA
IDENTAPPF2	IDENT OF APPROACH F/O SIDE (2nd CHAR)	LIB ELL E=	FM SUPPLIED BY DMC	11	1/4	NA	NA
IDENTAPPF3	IDENT OF APPROACH F/O SIDE (3rd CHAR)	LIB ELL E*	FM SUPPLIED BY DMC	- 11	14	NA	NA:
IDENTAPPF4	IDENT OF APPROACH F/0 SIDE (4th CHAR)	LIB ELL E=	FM SUPPLIED BY DMC	12	1/4	NA	NA
IDENTAPPF5	IDENT OF APPROACH F/O SIDE (5th CHAR)	LIB ELL E=	PM SUPPLIED BY DMC	12	1/4	NA	NA
IDENTAPPES	IDENT OF AP PROACH F/O SIDE (6th CHAR)	LIB ELL E=	FM SUPPLIED BY DMC	12	1.44	NA	NA

MNENO	LIBELLE	UNIT	SOURCE	LABEL	PPS	RESOL info	SIGN CONV
IDENTAPPF7	IDENT OF APPROACH F/O SIDE (7th CHAR)	LIBELL E=	FM SUPPLIED BY DMC	13	1/4	NA	NA
IDENTAPPF8	IDENT OF APPROACH F/O SIDE (8th CHAR)	LIBELL E=	FM SUPPLIED BY DMC	13	1/4	NA	NA
IDENT APPF9	IDENT OF APPROACH F/O SIDE (9th CHAR)	UBELL E=	FM SUPPLIED BY DMC	13	1/4	NA	NA
IGGSISOV3	13 G Siso valve V3	NA	FWIC	21	S15	NA	NA
ILSAWAIL1	ILS MODE CAPT - MODE AVAILABLE - NOT SELECTED	NA	MMR DMC	005/12-13	1/4	NA	1=SELECTED
IL SAVAIL2	ILS MODE F/O - MODE AVAILABLE - NOT SELECTED	NA	MMR DMC	005/12-13	1/4	(NA)	1=S ELECTED
ILSFAILEDI	ILS MODE CAPT - MODE FAILED - NOT SELECTED	NA	MMR DMC	005/12-13	1/4	NA	1=SELECTED
ILSFAILED2	ILS MODE F/O - MODE FAILED - NOT SELECTED	NA.	MMR DMC	005/12-13	1/4	NA	1=SELECTED
ILSMESPFDC	CAPTAIN ILS MESSAGE DISPLAYED ON PFD	NA	MMR DMC	3 30/11	1/4	NA	1= ACTIVE
ILSMES PFDF	F/O ILS MESSAGE DISPLAYED ON PFD	NA	MMR DMC	330/11	1/4	NA	1= ACTIVE
ILSMMRF1	ILS OR MMR1 FREQUENCY	MHZ	ILS or MMR DMC	33	NA	0.01	NA
LSMMRF1C	LS OR MMR1 FREQUENCY 100 and 10 mhz	MHZ	ILS or MMR DMC	33	1/4	10	NA
ILSMMRF1F	ILS OR MMR1 FREQUENCY 0.1 0.01 mhz	MHZ	ILS or MMR DMC	<u>33</u>	1/4	0.01	NA
ILSMMRF2	ILS FREQUENCY MMR2	MHZ	ILS or MMR DMC	33	NA	0.01	NA
ILSMMRF2C	ILS OR MMR2 FREQUENCY 100 and 10 mile	MHZ	ILS or MMR DMC	33	1/4	10	NA
ILSMMRF2F	ILS OR MMR2 FREQUENCY 10.10.01 mhz	MHZ	ILS or MMR DMC	33	1/4	0.01	NA
ILSNOINST1	ILS MODE CAPT - MODE NOT INSTALLED	NA	MMR DMC	005/12-13	1/4	NA	1=S ELECTED
ILSNOINST2	ILS MODE F/O - MODE NOT INSTALLED	NA.	MMR DMC	005/12-13	1/4	NA	1=SELECTED
ILSPBC	ILS PUSH BUTTON ON CAPTAIN	NA.	FOU DMC-CPT	307/27	1/2	NA	1=SELECTED
ILSPBF	ILS PUSH BUTTON ON FIRST-OFFICER	NA.	FCU DMC-F/0	307/27	1/2	NA	1=SELECTED
ILS RDC ILSRDF	ILS RAW DATA CAPTAIN ILS RAW DATA FIRST-OFFICER	NA	FOU DMC-CPT FOU DMC-E/0	276/25	1/2	NA NA	1=SELECTED 1=SELECTED
ILSSELECT1	LS MODE CAPT - MODE S ELECTED	NA	MMR DMC	005/12-13	1/2	NA	1=SELECTED
ILSSELECT2	ILS MODE F/O - MODE SELECTED	NA.	MMR DMC	005/12-13	1/4	NA	1=SELECTED
IMKR	INNER MARKER BEACON PASSAGE	NA.	VOR DMC	224/13	1	NA	1= PASSAGE
MMCLB	MMEDIATE CLM8	NA	FMGC DMC	302/11	1	1	1= ACTIVATED
IM#ADES	MMEDIATE DESCENT	NA	PMGC DMC	302/12	1	NA	1= ACTMATED
INCREASE	TCAS VERTICAL CONTROL INCREASE	NA	TCAS DMC	306	1	NA	NA
IRS1F	IRS.1 FAULT	NA.	SDAC	004/28	1/4	NA	1= FAULT
IRS2F	IRS.2 FAULT IRS.3 FAULT	NA NA	SDAC	004/28	1/4	NA Nő	1= FAULT 1= FAULT
ISISALT	LS.LS ALTITUDE (Bits 14to27+29)	FT	ISIS	203	NA	NA	NA NA
ISISALTC	LS.LS ALTITUDE COARSE Bits 23to 27	FT	1515	203	1/2	NA	NA
ISISALTE	LS.LS ALTITUDE FINE SCALE Bits 14to 24+29	FT	1515	203	1	NA	NA
ISISANEMO F	IS IS AN EMOMETRIC INPUT PORT FAILED	NA	NA	NA	NA	NA	NA
ISISBARD	LS.LS BARO REFERENCE ELAB	MB	1515	234	NA	NA	NA
ISISCAS	LS.LS CALIBRATED AIRSPEED	KT	ISIS	206	1	0.126	NA
ISIS INERTE	IS IS INERTIAL INPUT PORT FAILED	NA.	NA	NA	NA	NA	NA
ISIS INST	IS IS installed	NA	1515	157	1/4	NA	NA
IS ISLATG	LS.LS BODY LATERAL ACCELERATION	6	1515	332	1	0.004	>0+ RH SIDESL
ISIS PT CH	LS.LS PITCH ATTITUDE	DA	1515	324	4	0.352	>0+ NOSE UP >0+ RH WING
							DOWN
ISISSBAROC	LS.LS BARD REFERENCE COARSE LS.LS BARD REFERENCE FINE	MB	1515	234	1/4	100	NA NA
		MB	TSIS FINGC DMC#			303	1963
LANDTRK	LAND TRACK MODE ACTIVE	NA	RENS: LIGNE 6	300/14	1	NA	1= ACTIVATED

MNENO	LIBELLE	UNIT	SOURCE	LABEL	PP S	RESOL	SIGN CONV
LVP0\$1	SLAT-FLAP LEVER POSITION 1	NOTCH	SFCC SDAC	046/17-21	1	NA	NA
LVP0S2	SLAT-FLAP LEVER POSITION 2	NOTCH	SFCC SDAC	046/17-21	3 <b>1</b> 3	NA	NA
LVP0\$3	SLAT-FLAP LEVER POSITION 3	NOTCH	SFCC SDAC	040/17-21	1	NA	NA
M46d01	ADF1 FREQUENCY 100 10 1 khz	MHZ	ADF DMC	32	1.4	1	NA
M46d02	ADF1 FREQUENCY 1000 and 0.5 khz	MHZ	ADF DMC	32	1,44	0.5	NA
M46d03	ADF2 FREQUENCY 100 10 1 khz	KHZ	ADF DMC	32	1/4	1	NA
M48d04	ADF2 FREQUENCY 1000 and 0.5 khz	KHZ	ADF DMC	32	1,4	0.5	NA
MACHSEL	MACH SELECTION	NA.	FCU DMC	271/13	1	1	1= MACH
MAINTAIN	TCAS VERTICAL CONTROL MAINTAIN	NA.	TCAS DMC	306	1	NA	NA
MANDTOD	DTO MODE SELECTED	NA.	RMGC DMC	271/23	1	NA	1= DISPLAY
MDAMDHC	MDAMDH ELAB CAPT	FT	FMGC DMC	165	NA	NA	NA
MDAMDHCC	MDAMDH COARSE CAPT	NA	NA	NA	NA	NA	NA
MDAMDHCF	MDAMDH FINE CAPT	NA	NA	NA	NA	NA	NA
MDAMDHDC	MDAMDH (DISCRET) CAPT	NA	NA	NA	NA	NA	NA
MDAMDHDF	MDAMDH (DISCRET) F/0	NA.	NA	NA	NA	NA	NA
MDAMDHF	MDAMDH ELAB F/0	FT	RMGC DMC	165	NA	NA	NA
MDAMDHFC	MDAMDH COARSE F/O	NA.	NA	NA	NA	NA	NA
MDAMDHFF	MDAMDH FINE F/0	NA	NA	NA	NA	NA	NA
MODUTRF	MDDU TRANSMITTER FAIL	NA	NA	NA	NA	NA.	NA
MESSDONSD	"MDEO NOT AVAIL" MESSAGE DISP LAYED ON SD	NA	DMC	277/13	S1/4	NA	1# "VIDEO NOT AVAIL" MESSAG DISPLAYED ON S
MLSAVALLI	MLS MODE CAPT - MODE AVAILABLE - NOT SELECTED	NAC	MMR DMC	005/14-15	1/4	NA:	1=SELECTED
MESAVAIL2	MLS MODE F/O - MODE AVAILABLE - NOT SELECTED	NA	MMR DMC	005/14-16	1/4	NA	1=\$ELECTED
MLSFAILED1	MLS MODE CAPT - MODE FAILED - NOT SELECTED	NA.	MMR DMC	005/14-16	1/4	NA	1=SELECTED
MLSFAILED2	MLS MODE F/O - MODE FAILED - NOT SELECTED	NA	MMR DMC	005/1415	1/4	NA	1=SELECTED
MLSMES PFDC	CAPTAIN MLS MESSAGE DISPLAYED ON PFD	:NA	MMR DMC	330/12	1/4	INA:	1* ACTIVE
MLSMESPFDF	F/O MLS MESSAGE DISPLAYED ON PFD	NA	MMR DMC	3 30/12	1/4	NA	1= ACTIVE
MLSNOINST1	MLS MODE CAPT - MODE NOT INSTALLED	NA.	MMR DMC	005/14-15	1/4	NA	1=SELECTED
MLSN0INST2	MLS MODE F/0 - MODE NOT INSTALLED	NA	MMR DMC	005/1415	1/4	NA	1=SELECTED
MLSS ELECT1	MLS MODE CAPT - MODE SELECTED	NA	MMR DMC	005/14-15	1/4	NA	1+SELECTED
MLSS ELECT2	MLS MODE F/O - MODE SELECTED	NA	MMR DMC	006/14-16	1/4	NA	1=SELECTED
MMKR	MIDDLEMARKER BEACON PASSAGE	NA	VOR DMC	224/12	1	NA	1= PASSAGE
MMR1DATLK	MMR1 MODE ILS (DATALINK MODE)	NA.	MMB	33	1/4	NA	NA
MMR1FLS	MMR1 MODE ILS (FLS)	NA.	MMB	33	1/4	NA	NA
MMR16LS	MMR1 MODE ILS (GLS)	NA.	MMR	33	1/4	NA	NA
MMR1MLS	MMR1 MODE ILS (MLS AUTO MODE))	NA.	MMR	33	1/4	NA	NA
MMR1SCAT1	MMR1 MODE ILS (SCAT 1 MODE)	NA	MMR	33	1/4	NA	NA
MMR1/HF	MMR1 MODE ILS (VHF HYBRID MODE)	NA.	MMR	33	1/4	NA	NA
MMR1V0R	MMR1 MODE ILS (VOR MODE)	NA.	MMB	33	1/4	NA	NA
MMR2DATLK	MMR2 MODE ILS (DATALINK MODE)	NA	MMB	33	1/4	1	NA
MMR2FLS	MMR2 MODE ILS (FLS)	NA.	MMB	33	1.4	1	NA
MMR2GLS	MMR2 MODE ILS (GLS)	NA	MMR	33	1.65	1	NG
MMR2MLS	MMR2 MODE ILS (MLS AUTO MODE))	NA	MMB	33	1/4	1	NA
MMR2S CAT1	MMR2 MODE ILS (SCAT 1 MODE)	NA	MMR	33	1/4	1	NA
MMR2VHF	MMR2 MODE ILS (VHF HYBRID MODE)	NA	MMR	33	1/4	1	NA
MMR2V0R	MMR2 MODE ILS (VOR MODE)	NA	MMB	33	1/4	i i	NA
MNADC	MACH NUMBER	NA	ADC DMC	205	1	0.004	NA
MONTH	MONTH OF DATE	NA	CFDIU	260	1/64	1	NA
MSTATUS1	MODE STATUS CAPT SIDE	NA.	MMR SUPPLIED	005/11	1/4	NA	0= ACTIVE
MSTATUS2	MODE STATUS F/D SIDE	NA	MMR SUPPLIED BY DMC	005/11	1/4	NA	0= ACTIVE

MNEMO	LIBELLE	UNIT	SOURCE	LABEL	PPS	RESOL	SIGN CONV
14041		DA.		221	10000		CONV S0= UP
LAUAI	LH LOCAL ANGLE OF ATTACK RH LOCAL ANGLE OF ATTACK	DA	ADIRS DMC1 ADIRS DMC2	221	1	0.352	>0= UP
LATDEVI	LATERAL DEV CROSSTRACK ERROR	NM	PMGC DMC- CPT	326	1/2	0.03125	>0= RIGHT OF BEAM
LAT DEV2	LATERAL DEV CROSS TRACK ERROR	NM	FMB C DMC-F/0	326	1/2	0.03125	>D= RIGHT OF BEaM
LATG	LATERAL ACCELERATION	G	LA SDAC	332	4	0.004	>0=RH SIDESLIP
LATGCHK	LATG ACCEL CHECK NOT RUN	NA	NA.	NA	NA	NA.	NA
LATGCHKF	LATG ACCEL CHECK FAIL	NA	NA	NA	NA	NA	NA
LATNONE	LATERAL MODE NONE	NA	FMG C DMC	301	11	NA	1= ACTIVATED
LAVSMORED	LAVATORY SMOKE RED OR AMBER	NA	FWC	016/25	1	NA	0= AM8 ER
LAVSMOW	LAVATORIES SMOKE WARNING	NA.	FWC	126/12	1	NA.	1= WARNING
LDEVDC	L/DEV DISPLAY ON PFD FROM CPT	NA	DMC	350/26	1/2	NA.	1= DISPLAYED
LDEVDF	L/DEV DISPLAY ON PFD FROM F/O	NA	DMC	350.06	1/2	NA	1= DISPLAYED
LG CI F	LGCI FAIL	NA	DMC	350 /20	1,64	NA	1= FAIL
LG C2 F LG CIU1 F	LOC2 FAIL LOCIU SYSTEM 1 FAULT	NA	ENC	360./26 021./29	1/4	NA NA	1= FAIL 1= FAULT
LGCIU2F	LIGOU SYSTEM 1 FAULT	NA	PWC	021/29	1/4	NA	1= FAULT
LHGDL	LIGGIO STSTEM 2 FAOLI	NA	LGCIU FWC	021/28	2	NA	1= LOCKED DOWN
LHGNUL	LH GEAR NOT LOCKED UP	NA	LIGCIU FWC	022/11	2	NA	1= NOT UP
LHSQUAT	LDG SQUAT SWITCH LH	NA	LGCIU FWC	021/03	4	NO	LOCKED 1= COMP
LHSUUAI	LEFT WING LEAKMEMORIZED	NA	BMC FWC	005/15	4	NA	1= LEAK
LITOKO	LEFT INNER TANK FUEL QUANTITY	KG	NA	065715 NA	NA.	NA	NA NA
LITQL8	FUEL QUANTITY LEFT INNER CELL	LBS	NA	NA NA	NA	NA	NA
LOCI	LOCALZER DEV. ILS1	MA	ILS DMC	173	1/2	0.378	>0= LEFT OF BEAN
L0C1+2	LOCALIZER DEV. ILS 1+2	MA	ILS DMC	173	1	0.378	>D= LEFT OF BEAM
LOCIDDM	LOCALIZER DEV. ILS1	DDM	ILS DMC	173	1/2	0.00039	>D= LEFT OF BEA
LOCIPT	LOCALIZER DEV. ILS1	PT	ILS DMC	173	1/2	0.005	>0= LEFT OF BEAM
LOC2	LOCALIZER DEV. ILS2	MA	ILS DMC	173	1/2	0.378	>0= LEFT OF BEAN
LOC2DDM	LOCALIZER DEV. ILS2	DDM	ILS DMC	173	1/2	0.378	>0= LEFT OF BEA
LOC2PT	LOCALIZER DEV. IL S2	PT	ILS DMC	173	1/2	0.005	>0= LEFT OF BEA
LOCOPT	LOC CAPT. MODE ACTIVE	NA	FMG C DMC	301/13	3	NA	1= ACTIVATED
LOCEGSPEDC	LOC / F-G/S SCALE INFORMATION DISPLAYED CAPT	NA	DMC	330/16	1/4	NA	0= SCALE NOT DISPLAYED
LOCFGSPFDF	LOC / F-G/S SCALE INFORMATION DISPLAYED F/0	NA	DMC	330/16	1/4	NA	0= S CALE NOT DISPLAYED
LOCTRK	LOC TRACKMODE ACTIVE	NA	FMG C DMC	301/14	1	NA	1= ACTIVATED
LONG	LONG IT UDINAL ACCELERATION	G	LA SDAC	331	4	0.004	<0#ACCELERATIO
LONGCHK	LONG ACCEL CHECK NOT RUN	NA	NA	NA	NA	NA.	NA
LONGCHKE	LONG ACCEL CHECK FAIL	NA	NA	NA	No	NA	Nő
LONNONE	LONG IT UDINAL MODE NONE	NA	FMG C DMC	302	1	NA	1= ACTIVATED
LOTOKG	LEFT OUTER TANK FUEL QUANTITY	KG	NA	NA	NA	NA	NA
LOTOLB	LEFT OUTER TANK FUEL QUANTITY	LBS	NA	NA.	NA.	NA.	NA
LOWTMP1	ENG.1 LOW TEMP	NA	BMC SDAC	065/13-16	1	NA	1= LOW TEMP
LOWTMP2	ENG.2 LOW TEMP	NA	BMC SDAC	084/13-18	ij.	NA.	1= L0W/TEMP
LTKALIGN	ALIGN SUB MODE LAND TRACK ENGAGED	NA	FMG C DMC	301/14	- 1	NA	1= ACTIVATED
LTKROUT	ROLL OUT SUB MODE LAND TRACK ENGAGED	NA	FMGC DMC	301/26	3	NA.	1= ACTIVATED
LVFULPOS	SLAT-FLAP LEVER POSITION FULL	NOTCH	SFCC SDAC	046/17-21	1	NA	NA
LWNOPOS	SLAT-FLAP LEVER NO POSITION	NOTCH	SFCC SDAC	048/17-21	i i	NA.	NA
	SLAT-FLAP LEVER POSITION 0	NOTCH	SECC SDAC	04647-21		NA	NA

NNEMO	LIBELLE	UNIT	SOURCE	LABEL	PPS	RESOL	SIGN
MSTLS1B14	ENG 1 MASTER LEVER SELEC bit 14	NA	FWC	031/14	1	NA	1= SELECT ON
MSTLS1B15	ENG 1 MASTER LEVER SELEC bit 15	NA	FWC	031/15	1	NA	1= SELECT OF
MSTLS2014	ENG 2 MASTER LEVER SELEC bit 14	NA	FWC	031/14	9	NA	1= SELECT ON
MSTLS2B15	ENG 2 MASTER LEVER SELEC bit 15	NA	FWC	031/15	1	NA.	1= SELECT OF
NIA1	N1 ACTUAL ENG1	2	ECU DMC CFM	346	1	0.03125	NA
N1A2	N1 ACTUAL ENG2	2	ECU DMC CFM	345	1	0.03125	NA
NICI	N1 COMMAND ENG.1	2	ECU/EIU DMC	341	1/2	1	NA NA
N1C2 N1L1	N1 COMMAND ENG2 N1 LIMIT ENG1	2	ECU/EIU DMC ECU DMC	341	1/2	0.03125	NA
N1L2	N1 LMT ENG 2	1 1	FCU DMC	337	1	0.03125	NA
NITI	N1 TARGET ENGINE 1	×	EIU/ECU DMC	343	1.44	1	No
N1T2	N1 TARGET ENGINE 2	1	EIU/ECU DMC	343	1/4	1	NA
N15/1	N1 VIBRATION ENG.1	UNIT	ECU SDAC	135	1	0.1	NA
N15/2	N1 MBRATION ENG 2	UNIT	ECU SDAC	135	1	0.1	NA
N2A1	N2 ACTUAL ENG.1	8	ECU DMC	344	1	0.0625	NA
N2A2	N2 ACTUAL ENG.2	2	ECU DMC	344	1	0.0625	NA.
N2V1	N2 VIBRATION ENG.1	UNIT	ECU SDAC	136	1	0.1	NA
N2\/2	N2 VIBRATION ENG 2	UNIT	ECU SDAC	136	1	0.1	NA
NAV NAVACCC	NAV. MODE ACTIVE	NA	FMG C DMC	301/12 255/14	1	NA	1= ACTIVATED 1= HIGH
NAVACCC	HIGH NAMBATION ACCURACY CAPT HIGH NAMBATION ACCURACY F/0	NA	FMGC DMC FMGC DMC	255/14	1/4	NA NA	1= HIGH 1= HIGH
NAVALUE	HIGH NAMBALION ACCORACY 1/0 HDG SUBMODE NAV ENGAGED	NA	FMGC DMC	200/14	3.8	NA.	1= HIGH 1= ACTIVATED
NAVHPATH	HOR/PATH SUB MODE NAV ENGAGED	NA	FMGC DMC	301/21	1	NA	1= ACTIVATED
NAVHUDISCR	NAV HUD FPV disorepancy	NA	ENC	121	1	NA	No
NAVLCAPSE	NAV L Capt statio tault	NA	FWC	121	1	NA.	NA
NAVLFOSF	NAV L F/O static tault	NA	FWC	121	1	NA	NA
NAVRCAPSE	NAV R Capt static fault	NA	FWC	121	10	NA	NA
NAMEFOSE	NAV R F/O static fault	NA	FWC	121	1	NA.	NA
NAV/TRK	TRACK SUBMODE NAV ENGAGED	NA	FMG C DMC	301/23	1	NA.	1= ACTIVATED
NAVAOR	VOR SUB MODE NAV ENGAGED	NA	FMG C DMC	301/24	1	NA	1= ACTIVATED
NBRKF	NORMAL BRAKE FAULT	NA	FWC	126/26	1	NA	1= FAULT
NBRKP18	NORMAL BRAKE PRESSURE 1	BAR	BSCU	300	1,64	45	NA
NBRKP1P	NORMAL BRAKE PRESSURE 1	P SI	BSCU	300	1,44	64	NA
NBRKP2B NBRKP2P	NORMAL BRAKE PRESSURE 2 NORMAL BRAKE PRESSURE 2	B AR P SI	BSCU BSCU	301 301	1/4	45	NA
NBRKP3B	NORMAL BRAKE PRESSURE 3	BAR	BSCU	302	1/4	45	NA
NBRKP3P	NORMAL BRAKE PRESSURE 3	P.SI	BSCU	302	1.64	64	No
NBRKP48	NORMAL BRAKE PRESSURE 4	BAR	BSCU	303	1/4	45	NA
NBRKP4P	NORMAL BRAKE PRESSURE 4	PSI	BSCU	303	1/4	64	NA
NBRKP5B	NORMAL BRAKE PRESSURE 5	BAR	BSCU	304	1,64	64	NA
NBRKP5P	NORMAL BRAKE PRESSURE 5	P SI	BSCU	304	1,64	84	NA
NBRKP6B	NORMAL BRAKE PRESSURE 6	BAR	BSCU	305	1,74	84	NA
NBRKP6P	NORMAL BRAKE PRESSURE 6	P SI	BSCU	305	1/4	64	NA
NBRKP78	NORMAL BRAKE PRESSURE 7	BAR	BSCU	306	1/4	64	NA
NBRKP7P	NORMAL BRAKE PRESSURE 7	P SI	BSCU	305	1/4	64	NA.
NBRKP8B	NORMAL BRAKE PRESSURE 8	BAR	BSCU	307	1,4	64	NA
NBRKPSP	NORMAL BRAKE PRESSURE 8	P SI NA	BSCU	307	1/4	64 NA	NA NA
NBRRADET ND1COFF	TCAS RA NUMBER ND1 CAPT ANOMAL WOFF	NA	TCAS DMC DMC CAPT	4 274/11	1/4	NA	1= 0.FF
ND1COFF	NDT CAPT ANOMAL T/OFF	NA	DMC CAPT DMC F/0	274/11	1/4	NA NA	1= OFF 1= OFF
ND2COFF	ND2 CAPT ANOMAL T/OFF	NA	DMC CAPT	274/12	1/4	NA.	1= 0FF
NE2FOFF	ND2 CAPT PROMINE HOPP	NA	DMC F/O	274/12	1/4	NA	1= OFF
NIC	CAPTAIN NAMEATION MODE IRS ONLY.	NA	FMG C DMC	265/11-13	1/4	NA.	1= ACTIVE
NIDDC	CAPTAIN NAVIGATION MODE IRS/DME/DME	NA	FMG C DMC	255/11-13	1/4	NA	1= ACTIVE
NIDDE	F/0 NAVIGATION MODE IRS/DME/DME	NA	FMGC DMC	255/11-13	18	NA	1= ACTIVE
NIF	F/0 NAVIGATION MODE IRS ONLY.	NA	FMG C DMC	255/11-13	1/4	NA	1= ACTIVE
NIGC	CAPTAIN NAVIGATION MODE IRS/GPS.	NA	FMG C DMC	265/11-13	1/4	NA.	1= ACTIVE
NIG F	F/0 NAVIGATION MODE IRS/GPS.	NA	FMGC DMC	255/11-13	1/4	NA	1= ACTIVE
NIMDC	CAPTAIN NAVIGATION MODE IRSA/OR/OME.	NA	FMG C DMC	255/11-13	14	NA	1= ACTIVE

MNENO	LIBELLE	UNIT	SOURCE	LABEL	PPS	RESOL	SIGN CONV
NIMDE	F/O N/4/1G AT ION MODE IRSA/OR/DME.	NA.	FMGC DMC	266/11-13	1/4	NA	1= ACTIVE
NOADV	TCAS COMBINATED CONTROL NO ADVISORY	NA	TCAS DMC	306	1	NA	NA
NO DAT1	NO DATA FROM ECU/EEC 1	NA.	DMC	305/28	1/4	NA.	1= NO DATA
NO DAT2	NO DATA FROM ECU/EEC 2	NA.	DMC	305/29	1/4	NA	1= NO DATA
NODOWN	TCAS DOWN ADVIS OR Y.NO DOWN ADVIS OR Y.	NA	TCAS DMC	306	212	NA:	NA
NOGDL	NOSE GEAR DOWN LOCKED	NA.	LOCIU FWC	020/25	2	NA	1= LOCKED DOW
NOGNUL	NOSE GEAR NOT LOCKED UP	NA	LGCIU FWC	022/13	2	NA	1= NOT UP LOCKED
NDSQUAT	LDG S QUAT SWITCH NOSE	NA.	LOCIU FWC	021/12	4	NA	1= COMP
NOUP	TCAS UP ADVISORY.NO UP ADVISORY.	NA	TCAS DMC	306	1	NA	NA
NSRAI	RADIO HEIGHT NO.1 NON SIGNE	FT	RA DMC	164	1	1	NA
NS RA1+2	RADIO HEIGHT 1+2 NON SIGNES	FT	RA DMC	104	2	1	NA
NSRA2	RADIO HEIGHT NO.2 NON SIG NE	FT	RADMC	184	1	1	NA
NWSDMD	N/WS SYSTEM ORDER ANGLE	DA.	BSCU	336	1	0.25	NA
NWSR\/DT	NAWS WHEEL ANGLE POSITION FROM RVDT SENSOR	DA	BSCU	334	1	0.25	NA
01P1	OIL PRESSURE ENG.1 (FROM SDAC)	PS1 PS1	SDAC	317	1	NA	NA
01P2	OIL PRESSURE ENG.2 (FROM SDAC)		SDAC		1	NA	
0101	OIL QUANTITY ENG.1	0T 0T	SDAC SDAC	73	1	0.25	NA
0102	OIL TEMPERATURE ENG.1 (FROM SDAC)	DC	SDAC	316	1	0.25	NA
0/72	OIL TEMPERATURE ENG 2 (FROM SDAC)	DC	SDAC	316	1	0.5	NA
OLP1	OIL LOW PRESSURE ENG.1	NA	FWC	017/14	1	NA	0= WARNING
OLP2	OIL LOW PRESSURE ENG 2	NA	FWC	017/14	1	NA	0= WARNING
OMKB	OUTER MARKER BEACON PASSAGE	NA	VOR DMC	224/11	10	NA	1= PASSAGE
OPCLB	OPEN CLMB	NA	FMGC DMC	302/11	1	NA	1= ACTIVATED
OPDES	OPEN DESCENT	NA.	FMGC DMC	302/12	1	NA	1= ACTIVATED
OPV1	ENG.1 OP V NOT FULLY OP EN	NA	BMC SDAC	067/11	31/4 C	- 41	1= NOT FULLY OPEN
OPV2	ENG.2 OPVINOT FULLY OP EN	NA	BMC SDAC	066/11	1/4	1	1= NOT FULLY OPEN
ORIENGW	SYSTEM PAGE ORIGINE ENG/M	NA	DMC 2	275	1/4	NA	1= SELECTED
0 RIGECAM	SYSTEM PAGE ORIGINE ECAM (MONO DISPLAY)	NA	DMC 2	275	1/4	NA	1= SELECTED
ORISTSAUTO	SYSTEM PAGE ORIGINE SYST/STS (AUTO)	NA.	DMC 2	275	1/4	NA	1= SELECTED
ORISTSMAN	SYSTEM PAGE ORIGINE SYST/STS (MANUAL OR ADVISORY)	NA	DMC 2	275	1/4	NA	1= SELECTED
0VERN11	ENG.1 NT OVER LIMIT	NA.	FINC	124/11	1	NA	1= OVER LIMIT
OVERN12	ENG 2 N1 OVER LMIT	NA	FWC	124/12	1	NA	1= OVER LIMIT
0VERN21	ENG.1 N2 OVER LIMIT	NA	FWC	124/13	1	NA	1= OVER LIMIT
OVERN22	ENG.2 N2 OVER LMIT	NA.	FI0/C	124/14	1	NA	1= OVER LIMIT
PALAW	PITCH ALTERNATE LAW	NA	ELAC/SEC FCDC	040/12	4	NA	1= ENGAGED
PARKBHOFF	Park brake handle off	NA.	SDAC	6	15	NA	NA
PBRKOFF	PARKING BRAKE OFF	NA.	SDAC	002/22	1	NA	1= OFF
PCKFV1	PACKI FLOW CTL VALVE NOT FULLY CLOSED	NA	BMC SDAC	003/21	1/4	NA	1= NOT FULLY CLOSED
PCKFV2	PACK2 FLOW CTL VALVE NOT FULLY CLOSED	NA.	BMC SDAC	003/21	1/4	NA	1= NOT FULLY CLOSED
PCT1	ENG.1 PRE COOLER OUTLET TEMPERATURE	DC	BMC SDAC	141	1/2	0.5	NA
PCT2	ENG 2 PRE COOLER OUTLET TEMPERATURE	DC	BMC SDAC	140)	1/2	0.5	NA
PDLAW	PITCH DIRECT LAW	NA	ELAC/SEC FCDC	040/15	4	NA	1= ENGAGED
PFD1COFF	PED1 CAPT ANOMALY/OFF	NA.	DMC CAPT	276/22	1/4	NA	1= OFF
PFD1 FOFF	PFD1 F/0 ANOMAL Y/0FF	NA.	DMC F/O	276/22	1/4	NA	1= OFF
PFD2COFF	PFD2 CAPT ANOMALY/OFF	NA.	DMC CAPT	276/23	1/4	NA	1= OFF
PFD2FOFF	PFD2 F/0 ANOMAL Y/DFF	NA	DMC F/O	276/23	1/4	NA	1= OFF
PFDNDXC	PFD/ND XFR CAPT	NA	DMC	272/26	1/4	NA	1= XFR
PEDNDXE	PFD/ND XER F/O	NA.	DMC	272/26	1/4	NA	1= XFR
PGPSC	GPS PRIMARY CAP SIDE	NA	FMGC DMC	307/23	1/4	NA	1= INSTALLED A

MNEMO	LIBELLE	UNIT	SOURCE	LABEL	PPS	RESOL	SIGN
PGPSF	G PS PRMARY F/O SIDE	NA	FMG C DMC	307/23	1,4	NA	1= INSTALLED AND
PH	FLIGHT PHASE	NA	FW/C	126	1	1	NA
PITGA	PITCH GO-AROUND	NA	FMG C DMC	302/16	1	NA.	1= ACTIVATED
PITTO	PITCH TAKE OFF	NA	FMG C DMC	302/15	1	NA.	1= ACTIVATED
PLANC	P LAN MODE CAPT	NA	DMC 1	273/11	1.44	NA	1= SELECTED
PLANE	P LAN MODE F/0	NA	DMC 2	273/11	1,44	NA	1= SELECTED
PLAYBACKE	PLAYBACK FAIL	NA	NA	NA.	NA.	NA.	NA
PINLAW	PITCH NORMAL LAW	NA	ELAC/SEC FCDC	040711	4	NA	1= ENGAGED
PR1	ENG.1 PRESSURE REGULATED	NA	BMC SDAC	143	1/2	0.5	NA
PR2	ENG.2 PRESSURE REGULATED	NA	BMC SDAC	142	1/2	0.5	NA
PRESS	P RESS PAGE SELECTED	NA	DMC 2	275/14	1,44	0	1= SELECTED
PREVENT	TCAS COMBINATED CONTROL PREVENTIVE.	NA	TCAS DMC	306	1	NA	NA
PROBEPB	P ROB E W/INDO W HEAT P/B	NA	SDAC	005/24	1/4	NA.	1= P/B ON
PRVI	PRESS REG. VALVE NFC ENGI	NA	BMC SDAC	067/17	1,4	NA	1= NOT FULLY CLOSED
PRV2	PRESS REG. VALVE NFC ENG2	NA	BMC SDAC	066/17	34	NA	1= NOT FULLY CLOSED
P\$31	P \$3 Eng 1	PSI	FADEC/ECU DMC	227		0.5	NA
P\$32	P \$3 Eng 2	PSI	FADEC/ECU DMC	227	1	0.5	NA
PTCH	PITCH ATTITUDE	DA	ADIRS DMC	324	4	0.352	20= NO SE UP
PTCHO	WARNING PITCH DISCREPANCY	NA	FINIC	124/12	4	NA	1= DISCREPANCY
PMOE	PARAVISUAL DISPLAY	NA	PVISDAC	005/28	1	NA	1= 0FF
P10'SEF	P REDICTIVE WINDSHEAR EXTERNAL FAILURE	NA	DMC	350/15		NA	1= EXTERNAL FAILURE
PWSF	PREDICTIVE WINDSHEAR INTERNAL FAILURE	NA	DMC	350/16	i i	NA	1= INTERNAL FAILURE
PWSOFF	P REDICTIVE WINDSHEAR OFF	NA	DMC	350/14	1	NA	1= 0FF
PWSPP	P REDICTIVE WINDSHEAR P IN P ROG	NA	FWC	16/23	3	NA	1= NOT INSTALLE
PYLLEAK1	ENG.1 PYLON LEAK MEMORIZED	NA	BMC SDAC	066/14	1/4	NA	1= LEAK
PYLLEAK2	ENG.2 PYLON LEAK MEMORIZED	NA	BMC SDAC	064/14	1/4	NA.	1= LEAK
QARF	Q AR FAIL	NA	NA	NA	NA	NA.	NA
ARTAPELOW	Q AR TAPE LOW	NA	NA	NA	NA.	NA	NA
QARTRE	Q AR TRANSMITTER FAIL.	NA	NA	NA	NA	NA	NA
OFEC	ALT. BARO OFE SEL CAPTAIN (feld elevat.)	NA	DMC	276	1/4	NA	1= IN QFE
DEEE	ALT. BARD OFE SEL F/D (field elevant.)	NA	DMC	276	1.41	NA	1= IN OFF
QNHC	ALT, BARO ONH SEL CAPTAIN (sea level)	NA	DMC	276	1/4	NA	1= IN Q NH
ONHE	ALT. BARO ONH SEL, F/O (sealevel)	NA	DMC	276	1/4	NA	1= IN ONH
ONHMODU	ONH AT DESTINATION ENTERED ON MCDU	MB	FM SUPPLIED B Y DMC	160	1/4	1	NA.
RALTI	RADIO HEIGHT NO.1 SIGNE ET CORRIGE (-96 TO 4000 FT)	FT	RADMC	164	NA	1	NA
RALT1+2	RADIO HEIGHT 1+2 SIGNES ET CORRIGES (- 96 TO 4000 FT)	FT	RADMC	164	NA	1	NA.
RALT2	RADIO HEIGHT NO2 SIGNEET CORRIGE (-95 TO 4000 FT)	ET	RADMC	164	NA	- 10	NA
RAMOSTD	TCAS RAMOST DANGEROUS (TA1)	NA	TCAS DMC	307/14	1	NA	1= RAMOST DANGEROUS
RAWONLYDC	RAW ONLY MESSAGE DISPLAYED CAPT SIDE	NA	FWC AND FMG C SUPPLIED BY DMC	330/21	a	NA	1= MESSAGE DISPLAYED
R44VO NLYDF	RAW ONLY MESSAGE DISPLAYED F/O SIDE	NA	FMYC AND FMG C SUPPLIED BY DMC	330/21	3	NA	1= MESSAGE DISPLAYED
RDLAW	ROLL DIRECT LAW	NA	ELAC/SEC FCDC	040/17	4	NA	1= ENGAGED
REDW	RED WARNING	NA	FWC	126.28	81	NA	1= WARNING
	REFERENCESPEED	KT	BSCU	332	1	1	NA

MNENO	LIBELLE	UNIT	SOURCE	LABEL	PPS	RESOL	SIGN
RESIDUALP	CAB PR - EXCES RESIDUAL PR	NA	FWC	124/21	τ	NA	1= CAB PR - ECCE RESIDUAL PR
REVERSAL	TCAS VERTICAL CONTROL REVERSAL	NA.	TCAS DMC	306	1	NA	NA
RHGDL	RH GEAR DOWN LOCKED	NA.	LOCIU FWC	020/24	2	NA	1= LOCKED DOW
RHONUL	RH GEAR NOT LOCKED UP	NA	LOCIU FWC	022/12	2	NA	1= NOT UP LOCKED
RHSQUAT	LDG S DUAT SWITCH RH	Nö	LOCILI DICC	021/14	4	Nő	1= COMP
RHWGLEAK	RIGHT WING LEAK MEMORIZED	NA	BMC FWC	064/15	174	NA	1= LEAK
RILSC	ROSE ILS CAPT	NA	DMC 1	273/15	1/4	NA	1= SELECTED
RILSF	ROSE ILS F/O	NA	DMC 2	273/15	1/4	NA	1= SELECTED
RITQKG	RIGHT INNER TANK FUEL QUANTITY	KG	NA	NA	NA	NA	NA
RITQLB	FUEL QUANTITY RIGHT INNER CELL	LBS	NA	NA	NA	NA	NA
RNA%C	ROSE NAV CAPT	NA	DMC 1	273/13	1/4	NA	1= SELECTED
BN49/F	ROSE NAV F/0	NA	DMC 2	273/13	1/4	NA	1= SELECTED
RNLAW	ROLL NO RMAE LAW	NA	ELAC/SEC FCDC	040/16	4	NA	1= ENGAGED
RNPPBON	RNP P/B on	NA	DMC	330	1	NA	NA
			1000000				20+ RH100NG
ROLL	ROLL ATTITUDE ROLL GO AROUND ACTIVE	DA NA	ADIRS DMC RMGC DMC	325 301/15	2	0.352 NA	DOWN 1= ACTIVATED
ROLLW	WARNING ROLL DISCREPANCY	NA	FIN'C	124/11	2	NA.	1= WARNING
ROTOKO	RIGHT OUTER TANK FUEL QUANTITY	KG	NA	NA	NA	NA	NA
ROTQLB	RIGHT OUTER TANK FUEL QUANTITY	LBS	NA	NA	NA	NA	NA
RTLACT1	RTL ACTUATOR POS FAC1	DA.	FAC1 DMC	187	1	0.0878	NA
RTLACT2	RTL ACTUATOR POS FAC2	DA	FAC2 DMC	167	1	0.0878	NA
RUDD	RUDDER POSITION	DA	SDAC	312	2	0.088	>0= TURN LEFT
RUDP	RUDDER PEDAL POSITION (A320 +/- 28*)	DA	FCDC	304	2	0.088	>0= TURN LEFT
RUDPF	RUDDER PEDAL INPUT FORCES	N	FCDC	320	1	1	NA
RUDT	RUDDER TRM POSITION	DA	FW/C	313	1	0.088	>0= TURN LEFT
RVORC	ROSE VOR CAPT	NA.	DMC 1	273/14	1/4	NA	1= SELECTED
RVORF	ROSE VOR F/O	NA	DMC 2	273/14	1/4	NA	1= SELECTED
RWS29	RED WARNING SPARE #29	NA.	FW/C	124/29	1	NA	1= WARNING
RM'SPAREM10	Red warning spare 10	NA	FINC	127	1	NA	NA
RM'SPAREM11	Red warning spare 11	NA	FWC	127	1	NA	NA
RWSPAREM7	Red warning spare 7	NA	FI0°C	127	1	NA	NA
RWSPAREM8	Red warning spare 8	NA.	FIN'C	127	1	NA	NA
RWSPAREM9	Red warning spare 9	NA	FIA'C	127	1	NA.	NA
RWY	RUNWAY MODE ACTIVE	NA.	PMGC DMC	301/11	1	NA	1= ACTMATED
RWYLOC	LOC SUB MODE RWYENGAGED	NA	FMGC DMC	301/20	1	NA	1= ACTIVATED
RWYTRK	TRACK SUB MODE RWY ENGAGED	NA.	FMGC DMC	301/23	1	NA	1= ACTIVATED
SALTFOU	SELECTED ALTITUDE (MANUAL)	FT	FCU DMC	102	1	64	NA
SAV1	ENG1 STARTER VALVE NOT CLOSED	NA	BMC SDAC	067/21	1/4	NA	1= NOT CLOSEI
SAV2	ENG.2 STARTER VALVE NOT CLOSED	NA.	BMC SDAC	0.66/21	1/4	NA	1= NOT CLOSED
SBARO C	BARO SETTING CAPT ELAB	MB	FCU DMC	222	NA	0.1	NA
SBAROCC	BARO SETTING CAPT ELAB COARSE	MB	FCU DMC	222	NA	100	NA
SBAROCE	BARD SETTING CAPT FINE	MB	FCU DMC	222	1/4	0.1	NA
SBAROF	BARD SETTING F/O ELAB	MB	FCU DMC	223	NA	0.1	NA
SBAROFC	BARD SETTING F/O ELAB COARSE	MB	FCU DMC	223	NA	100	NA
SBAROFF	BARD SETTING F/O FINE	MB	FCU DMC	223	1/4	0.1	NA
SBC	SPEED BRAKE COMMAND	NA	SEC FCDC	0 43/28	2	NA	1= COMMAND
SCASAPPS	APPROACH CONTROL	NA.	DMC	304	1	1	1= PFD SELECTE
SCASPFD	PFD SELECTED SPEED	NA	DMC	103	1	1	NA
SCRSVI	SELECTED COURSE VOR.1	DA	VOR DMC	100	1	0.703	NA
SCRSV2	SELECTED COURSE VOR.2	DA	VOR DMC	100	1	0.703	NA
SDAC1F	SDAC1 FAIL	NA	DMC	362/26	1/4	NA	1= FAIL
SDAC1V	SDAC 1 VALID	NA	FWC	126/11	1/4	NA	1= VALID
SDAC2F	SDAC2 FAIL	NA.	DMC	362/28	1/4	NA	1= FAIL
SDAC2V SDUC1HS	SDAC 2 VALID SDU CHANNEL 1 HS	NA NA	FWC SATCOM -	126/12	1/4	NA NA	1= VALID 1= CHANNEL 1
SDUCILS	SDU CHANNEL 1 LS	NA	ATSU - FWC SATCOM - ACARSMU -	270/26	1	NA	1= CHANNEL 1
		101000	FWC	1000000000	1.00	1000000	EAR IN 16 440 ST 19 510 ST

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NNEMO	LIBELLE	UNIT	SOURCE	LABEL	PPS	RESOL info	SIGN CONV
SDUC2LS	S DU CHANNEL 2 LS	NA	SATCOM- ACARS MU- FWC	270.07	н	NA	1= CHANNEL 2
SDUHSINST	S DU HS INSTALLED	NA	SATCOM- ATSU-FWC	016/21	1	NA	1= NO SATCOM H BUS
SEC1F	SEC 1 FAULT	NA	FCDC	040/25	1,44	NA.	1= FAULT
SEC1PB	SEC1 P/B SWITCH OFF	NA	FCDC	042/27	1,44	NA	1= YES
SEC2F	SEC 2 FAULT	NA	FCDC	040/20	1,44	NA.	1= FAULT
SEC2PB	SEC 2 P/B SWITCH OFF	NA	FCDC	042.028	1/4	NA.	1= YE\$
SEC3F	SEC 3 FAULT	NA	FCDC	040/29	1/4	NA	1= FAULT
SEC3PB	SEC 3 P/B SWITCH OFF	NA	FCDC	042/29	1/4	NA.	1= YE\$
SECTR	CYCLES COMPTEUR FOR SUPERFRAMES 2-3- 4	NA	NA	NA	174	NA	NA
SFLP	SLAT-FLAP LEVER POSITION	NOTCH	SFCC SDAC	046/17-21	1/2	NA	NA
SENTO	SURFACES NOT IN T/O CONFIGURATION	NA	FINC	126/29	8	NA	1= NOT IN T/O CONF.
SFPA	SELECTED FPA	DA	FCU DMC	115	1	0.088	NA
SHDG	S ELECTED HEADING	DA	FCU DMC	101	1	0.703	NA
SHDGVS	HDGA4S SELECTION	NA	FCU DMC	276.128	1	NA.	1= HDGA/4S
S LAT	SLATS SURFACE ANGLE	DA	IPP U FWC	127	1	0.703	NA.
SLDGANT1	SELECT LANDING ANTENNA CAPT	NA	MMR DMC	001/19	1/2	NA	1= SELECTED
SLDGANT2	SELECT LANDING ANTENNA F/0	NA	MMR DMC	001/19	1/2	NA.	1= SELECTED
SLTF	SLATS FAULT	NA.	FWC	126/13	1/4	NA.	1= FAULT
SMACH	S ELECTED MACH	NA	FCU DMC	106	1	0.002	NA
SMALT	METRIC ALTITUDE SELECTED	NA	ADIRS FCU	350/28	1	NA	1= SELECTED
SM0AFTL0C1	SMOKE AFT LOWER CARGO 1	NA	FWC	051/12	1	NA	1= SMOKE
SM0AFTL0C2	SMOKE AFT LOWER CARGO 2	NA	FWC	051/12	1	NA.	1= SMOKE
SM0 AFT UPC1	SMOKE AFT UPPER CARGO 1	NA	FWC	051/12	1	NA	1= SMOKE
SM0 AFT UPC2 SM0 FWDL 0 C1	SMOKE AFT UPPER CARGO 2 SMOKE FWD LOWER CARGO 1	NA NA	FWC	051/12	+	NA NA	1= SMOKE 1= SMOKE
SMOFWDL0C2	SMOKE FOOD LOWER CARGO 1	NA	FWC	051/14	1	NA	1= SMOKE
SMOFWDUPC1	SMOKE FWD UPPER CARGO 1	NA	FWC	051/14	1	NA	1= SMOKE
SMD FWDUPC2	SMOKE FWD UPPER CARGO 2	NA	FWC	051/14	1	NA	1= SMOKE
SMOKCABGSM	Smoke CAB GSM smoke	NA	FWC	124/28	1	NA	1= WARNING
SMOKCABMD	Smoke CA8 VIDE0 smoke	NA	FINC	124/27	1	NA	1= WARNING
SMOKEB AVAN	Smoke BULK AVN smoke	NA	FWC	124/26	1	NA	1= WARNING
SMSTATUS1	SELECT MODE STATUS CAPT SIDE	NA	MMR SUPPLIED BY DMC	005.26	1.44	NA	0= MODE FAILE
SMSTATUS2	S ELECT MODE STATUS F/O SIDE	NA	MMR SUPPLIED BY DMC	005/26	1,44	NA	0+ MODE FAILE
SOFTNB1	S OFTWARE PART NUMBER (8th NUMBER)	NA	NA	NA	NA	NA	NA.
SOFTNB2	SOFTWARE PART NUMBER (2ND NUMBER)	NA	NA	NA.	NA.	NA.	NA
SOFTNB3	SOFTWARE PART NUMBER (3RD NUMBER)	NA	NA	NA.	NA.	NA.	NA
SOFTNB4	S OFTWARE PART NUMBER (4TH NUMBER)	NA	NA.	NA.	NA.	NA.	NA.
SOFTNB6	S OFTWARE PART NUMBER (5TH NUMBER)	NA	NA	NA.	NA.	NA.	NA
SOFTNB6	S OFTWARE PART NUMBER (6TH NUMBER)	NA	NA	NA	NA.	NA	NA:
SOFTNB7	S OFTWARE PART NUMBER (7TH NUMBER)	NA	NA	NA	NA	NA	NA.
SOFTNB8	S OFTWARE PART NUMBER (STH NUMBER)	NA	NA	NA	NA.	NA.	NA
SP1V SP2V	SPOILER 1 AVAILABLE SPOILER 2 AVAILABLE	NA	SEC FCDC ELAC/SEC	042/21	2	NA	1= AVAL
SP3V	SPOILERS AVAILABLE	NA	FCDC ELAC/SEC	042.03	4	NA	1= AVAIL
SP4V	SPOILER 4 AVAILABLE	NA	FCDC ELAC/SEC	042/24	4	NA	1= AVAL
SP4V SP5V	SPOILER & AVAILABLE	NA	FCDC ELAC/SEC	042/25	4	NA	1= AVAL
		1995	FCDC	0.0023			SF 2333370
SPDBRK	SPEED BRAKE LEVER DEVIATION	DA	FCDC	133	2	0.0625	NA
SPDMNG	AUTO SPEED CONTROL	NA	FMG C DMC	271/22	1	1	1= AUT0
SPLH1B	LEFT SPOILER 1 OUT	NA DA	SEC FCDC ELAC/SEC	043/11 362	2	0.088	1= OUT NA
SPLH2	SPOILER LH.2 POSITION		FCDC				

MINENO	LIBELLE	UNIT	SOURCE	LABEL	PPS	RESOL info	SIGN CONV
SPL H4	SPOILER LH 4 POSITION	DA	ELAC/SEC FCDC	384	1	0.088	NA
SPLHS	SPOILER LHS POSITION	DA	ELAC/SEC FCDC	385	1	880.0	NA
SPRH18	RIGHT SPOILER 1 OUT	NA	SEC FCDC	043/12	2	NA	1= 0 UT
SP RH2	SPOILER RH 2 POSITION	DA	ELAC/SEC FCDC	372	1	0.088	NA
SP RH3	SPOILER RH.3 POSITION	DA	ELAC/SEC FCDC	373	1	880.0	NA
SPRH4	SPOILER RH.4 POSITION	DA	ELAC/SEC FCDC	374	:15	0.088	NA
SP RH5	SPOILER RH.5 POSITION	DA	ELAC/SEC FCDC	375	া	880.0	NA
SRALT1	RADIO HEIGHT NO.1 SIGNE RANGE/2	FT	RA DMC	164	1	1	NA
SRALT1+2	RADIO HEIGHT 1+2 SIGNES RANGE/2	FT	RADMC	164	2	1	NA
SRALT2	RADIO HEIGHT NO 2 SIGNE RANGE/2	FT	RADMC	164	1	1	NA
SSLIP	ESTIMATED SIDESLIP	DA	DMC	225	1	0.5	>0+ RH SIDESLI
SSUPD	SIDE SLIP DISPLAYED	NA	DMC	350/21	1	NA	1= DISPLAYED
S SLIP FLAG	SIDE SLIP FLAG DISPLAYED	NA	DMC	3 50/22	1	NA	1= DISPLAYED
STAB	STABILIZER POSITION	DA	ELAC/SEC FCDC	315	્યુ	0.04395	>0+ DOWN
STA9.J4M	STABILIZER JAM	NO	FCDC	0.41/27	1	NA	1a YES
STALLW	STALL WARNING	NA	FWC	126/17	1	NA	1= WARNING
STATUS	STATUS PAGE SELECTED	NA	DMC 2	275/28	1/4	0	1= SELECTED
STDC	ALT, STD/BARO SEL CAPTAIN	NA	DMC	278	1/4	NA	1= IN STD
STDF	ALT, STD/BARO SEL, F/O	NA	DMC	276	1/4	NA	1= IN STD
STKCF	LEFT SIDESTICK FAULT	Ně	ECDC	0.44/17	1	NA	1= FAULT
STKCINOP	CAPT. SIDESTICK INOPERATIVE	NA	ELAC/SEC ECDC	041/28	14	NA	1= INOP
STIKE	SIDESTICK NOT IN T/O CONFIGURATION	NA	FWC	126/21	1	NA	1= NOT IN T/O
STREF	RIGHT SIDESTICK FAULT	Nő	ECDC	0.44/18	1	NA	1= FAULT
STK FIND P	F/O SIDESTICK INOPERATIVE	NA	ELAC/SEC FCDC	041/29	4	NA	1= INOP
STKPC	SIDE STICK POSITION PITCH CAPT.	DA	ELAC/SEC FCDC	305	4	0 D4395	>0+ DOWN
STKPF	SIDE STICK POS. PITCH F/O	DA.	ELAC/SEC ECDC	306	4	D D4395	>D= DOWN
STKRC	SIDE STICK POSITION ROLL CAPT.	DA	ELAC/SEC FCDC	301	4	0.04395	>0= LEFT
STKRF	SIDE STICK POSITION ROLL F/O	DA	ELAC/SEC FCDC	302	4	0.04395	>0= LEFT
STRK	SELECTED TRACK	DA	FCU DMC	114	1	0.703	NA
STRKEPA	TRUEPA SELECTION	NA	FOURMO	276/29	1	NA	1= TRK/FPA
\$V\$	SELECTED VERTICAL SPEED	FTMN	FCU DMC	104	1	64	NA
SWPOSACKI	SWITCH POS. ACK SELECTION CONFIRMED 1	NA	MMR DMC	001/18	1/2	NA	1= CONFIRMED
SWP OSACK2	SWITCH POS. ACK SELECTION CONFIRMED 2	NA	MMR DMC	001/18	1/2	NA	1= CONFIRMED
TAMOSTO	TCAS TAMOST DANGEROUS (TA2)	NA	TCAS DMC	307/15	:11	INA:	1= TAMOST DANG ERO US
TADA1	TRUE LH ANGLE OF ATTACK f	DA	CALCULATED WITH SLAT AND FLAP	221	NA	0.362	>D= UP
TAD A2	TRUE RH ANGLE OF ATTACK I	DA	CALCULATED WITH SLAT AND FLAP	221	NA	0.352	>0= UP
TAONLY	TCAS TA ONLY	NA	TCAS DMC	307/12	1	NA	1= TA ONLY
TASTBY	TCAS STANDBY MODE	NA.	TCAS DMC	307/11	1	NA	1= STANDBY
TAT	TOTAL AR TEMPERATURE	DC	ADIRS DMC	211	1	0.25	NA
TCASE	TCAS FAIL	NA.	DMC	363/13	1/4	NA.	1= FAIL
TCASRAMD	TCAS RAinhibited message displayed	NA.	DMC	303	1	NA	NA
TCASV	TCAS VALID TEMPERATURE AT DESTINATION ENTERED	NA	TCAS DMC FM SUPPLIED	307/26	1	NA	1= VALID
TEMPMODU	ONMCDU	UC .	BY DMC	123	1/4	0.19336	NA
TOTSSUP	TARGET SIDESUR	DA	DMC	77	1	0.5	20# RH SIDESU

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MNEMO	LIBELLE	UNIT	SOURCE	LABEL	PPS	RESOL info	SIGN CONV
TGTSSLIPD	TARGET SIDE SLIP DISPLAYED	NA	DMC	350/29	- 31	NA	1= DISPLAYED
THRAB/JDL1	ENG1 THR LEVER ABV IDLE	NA	FWC	124/24	3	NA	1= ENG1 THR LEVER ABV IDLE
THRAB/MDL2	ENG2 THR LEVER ABV IDLE	NA	FWC	124/25	ā.	NA	1= ENG2 THR LEVER ABV IDLE
THSMAN	THS MANUAL (CONFIRMED BY COMPUTER)	NA	THSFCDC	040/27	11	NA	1= YES
THSMANSW	THS MANUAL SWITCH (NOT CONF. BY COMPUTER)	NA	THSFCDC	040714	3	NA.	1= YES
TLA1	THRUST LEVER ANGLE ENGI	DA	ECU DMC	133	- 31 - 1	0.35	NA
TLA2	THRUST LEVER ANGLE ENG2	DA	ECU DMC	133	1	0.35	NA
TLU1	TLU FUNCTION ENGAGED FAC1	NA	FAC1 DMC	167/11	1	NA.	1= ENGAGED
TLU2	TLU FUNCTION ENGAGED FAC2	NA	FAC2 DMC	167/11	1	NA.	1= ENGAGED
TO	CITY PAIR TO C1-4	NA	NA.	NA.	NA.	NA.	NA.
TOC1	CITY PAIR TO C1	NA	NA	NA	NA.	NA	NA.
T0C2	CITY PAIR TO C2	NA	NA	NA	NA.	NA	NA
T0C3	CITY PAIR TO C3	NA	NA	NA	NA	NA.	NA
T004	CITY PAIR TO C4	NA	NA	NA	NA	NA	NA
TOGOC	B EARING TO GO CAPTAIN	DA	FMGC1	118	1	0.35	NA
TOGOF	BEARING TO GO FIRST-OFFICER	DA	FMGC2	116	1	0.36	NA
TO WAYPNTC1	TO WAYPOINT CAPT SIDE (1st CHAR)	LIB ELL E=	FM SUPPLIED BY DMC	56	1,/4	NA	NA
TO WAYPNT C2	TO WAYPOINT CAPT SIDE (2nd CHAR)	LIB ELL E=	FM SUPPLIED BY DMC	68	1/4	NA.	NA
TO WAYPNT C3	TO WAYPOINT CAPT SIDE (3rd CHAR)	LIB ELL	FM SUPPLIED B Y DMC	56	1/4	NA	NA
TO WAYPNTC4	TO WAYPOINT CAPT SIDE (4th CHAR)	LIB ELL B=	PM SUPPLIED BY DMC	67	1/4	NA	NA
TO WAYPNT CS	TO WAYPOINT CAPT SIDE (6th CHAR)	LIB ELL E=	FM SUPPLIED BYDMC	67	1,74	NA.	NA
TO WAYPNT 08	TO WAYPOINT CAPT SIDE (8th CHAR)	LIB ELL E*	FM SUPPLIED BY DMC	67	1/4	NA.	NA
TO WAYPNT C7	TO WAYPOINT CAPT SIDE (7th CHAR)	LIB ELL E=	FM SUPPLIED BY DMC	53	1/4	NA	NA
TOWAYPNT C8	TO WAYPOINT CAPT SIDE (8th CHAR)	LIBELL	FM SUPPLIED	53	1,74	NA	NA
TOWAYPNT CO	TO WAYPOINT F/O SIDE (9th CHAR)	LIB ELL E <sup>4</sup>	FM SUPPLIED BYDMC	63	1/4	NA	NA
TOWAYPNTF1	TO WAYPOINT F/O SIDE (1st CHAR)	LIB ELL E=	FM SUPPLIED BYDMC	58	1/4	NA	NA
TOWAYPNTF2	T 0 WAYP OINT F/0 SIDE (2nd CHAR)	LIB ELL E=	FM SUPPLIED BY DMC	56	1/4	NA	NA
TOWAYPNTF3	TO WAYPOINT F/O SIDE (3rd CHAR)	LIB ELL E <sup>4</sup>	FM S UP PLIED B Y DMC	58	1/4	NA.	NA
TOWAYPNTF4	TO WAYPOINT F/OSIDE (466 CHAR)	LIB ELL E <sup>a</sup>	FM S UP PLIED B Y DMC	67	1,74	NA	NA.
TOWAYPNTF5	TO WAYPOINT F/O SIDE (5th CHAR)	LIB ELL En	FM SUPPLIED BY DMC	67	-14	NA	NA
TOWAYPNTF6	TO WAYPOINT F/OSIDE (19th CHAR)	LIB ELL E=	PM SUPPLIED BY DMC	67	1/4	NA	NA
TOWAYPNTF7	TO WAYPOINT F/O SIDE (7th CHAR)	LIB ELL E=	FM SUPPLIED BY DMC	53	174	NA.	NA
TOWAYPNTES	TO WAYPOINT F/D SIDE (8th CHAR)	LIB ELL E*	PM SUPPLIED B Y DMC	63	1,54	NA	NA
TOWAYPNTF9	TO WAYPOINT F/OSIDE (9th CHAR)	LIB ELL E=	RM SUPPLIED BYDMC	53	3.44	NA	NA
TRKM	TRACK MODE ACTIVE	NA	FMGC DMC# RENS:LIGNE 0	301/17	1	NA	1= ACTIVATED
UNLOCK1	REVERSER UNLOCK ENG.1	NA	ECU DMC	270/11	3	NA	1= UNLOCKED
UNLOCK2	REVERSER UNLOCK ENG2 TCAS COMBINATED CONTROL UP ADVISORY	NA	ECU DMC	270/12	. 3	NA	1= UNLOCKED
UPADVCOR	CORRECTIVE. GMT ED55F2	NA NA	TCAS DMC CLOCK	305	1 NA	NA 1	NA
UTCH	HOURS	NA	CLOCK	125	1.64	3600	NA.
UTCH	MINUTE GMT ED55F2	NA	CLOCK	125	1/4	3600	NA
		I NA	L CLUCK				169.
UTCS	SECONDE GMT ED55 F2	NA	CLOCK	125	1/4	1	NA

MNENO	LIBELLE	UNIT	SOURCE	LABEL	PPS	RESOL	SIGN
VDEVDF	WDEVDISPLAY ON PFD FROM F/O	NA	DMC	350/27	1/2	NA	1= DISPLAYED
WHF1	W.H.F1 KEING	NA	SDAC	002/29	1	NA	0= EMITTING
VHF2	W.H.F2 KEING	NA	SDAC	0.02/29	1	NA	0= EMITTING
VHF3	V.H.F3 KEING	NA.	SDAC	002/29	1	NA	0= EMITTING
MDCLEARC	CAPT VIDEO CLEAR	NA.	HUD FWC	001/18	1/4	NA	1= 0FF
VIDCLEARF	F/0 MDE0 CLEAR	NA	HUD FWC	001/18	1/4	NA	1= OFF
VIDE0 OFFC	CAPT VIDEO OFF	NA	HUD FWC	001/17	1/4	NA	1= OFF
MDEOOFFF	F/0 MDE0 0FF	NA	HUD FWC	001/17	1/4	NA	1= 0FF
MDECIONSID	MDEO AUTHORIZED ON SD	NA	DMC	277/12	1/4	NA	1= MDE0 AUTHORIZED 01 S D
AND/W	VM0/MM0_0/VERSPEED	NA.	FWYC	126/26	1	NA	1= 0 VERSPEED
VOR18G	VOR.1 BEARING	DA	V0R1	224	1	D.35	NA
VOR1BGSSM	VOR.1 BEARING ERROR CODE	NA	V0R1	224	1	NA	NA
V0R286	VOR 2 BEARING	DA	VOR2	224	1	0.35	NA
VOR2BGSSM	VOR 2 BEARING ERROR CODE	NA.	VOR2	224	1	NA	NA
V0 RF1	VOR1 FREQUENCY	MHZ	VOR DMC	34	NA	0.05	NA
VORF1C	VOR1 FREQUENCY COARSE	MHZ	VOR DMC	34	1/4	0.1	NA
VORF1F	VOR1 FREQUENCY FINE	NA	VOR DMC	34	1/4	0.05	NA
VORF2	MOR2 FREQUENCY ELAB.	MHZ	VOR DMC	34	NA	0.05	NA
VORF2C	VOR2 FREQUENCY COARSE	MHZ	VOR DMC	34	1/4	0.1	NA
VORF2F	VOR2 FREQUENCY FINE	NA	VOR DMC	34	1/4	0.05	NA
VRTG	NORMAL ACCELERATION	6	LA SDAC	333	8	0.004	>0=UP
VRTGCHK	WRTG ACCEL, CHECK NOT RUN	NA	NA	NA	NA	NA	NA
VRTGCHKE	WRTG ACCEL, CHECK FAIL	NA.	NA	NA	NA	NA	NA
VS	VERTICAL SPEED MODE	NA.	FMGC DMC	302/17	1	NA.	1= ACTIVATED
VSPD	VERTICAL SPEED	NA	IRS DMC	385	1	16	NA
WAID FF	WING ANTLICE P/B OFF	NA	SDAC	003/22	1/2	NA	1= OFF
WAION	WING ANTFICE SYSTEM ON	NA	SDAC	003/23	1/2	NA	1= 0FF
WAM	WING ANTFICE VALVE LH NOT CLOSED	NA	SDAC	001/18	1/2	NA.	1= NOT CLOSE
WAMB	WING ANTHICE VALVE RH NOT CLOSED	NA	SDAC	001/18	1/2	NA	1= NOT CLOSE
WD.	TRUE WIND DIRECTION	DA	ADIRS IRS DMC	316	3 <b>1</b> 3	0.703	NA
10'HEEL	WHEEL PAGE SELECTED	NA	DMC 2	275/22	1/4	0	1= SELECTED
WHLSPD1	WHEEL SPEED 1	KT	BSCU	320	1	1	NA
WHLSPD2	WHEEL SPEED 2	KT	BSCU	321	1	1	NA
WHLSPD3	WHEEL SPEED 3	KT	BSCU	322	10	1	NA
WHLSPD4	WHEEL SPEED 4	KT	BSCU	323	1	1	NA
WHLSPD5	WHEEL SPEED 5	KT	BSCU	324	1	1	NA
WHLSPD6	WHEEL SPEED 6	KT	BSCU	325	1	1	NA
WHLSPD7	WHEEL SPEED 7	KT	BSCU	326	1	1	NA
WHLSPDB	WHEEL SPEED 8	KT	BSCU	327	1	1	NA
101°S	WIND SPEED	кт	ADIRS IRS DMC	315	đ	1.004	NA
WSD1	WINDSHEAR DETECTION 1	NA	FWC	014/29	<u>ः</u> 1ः	NA	1= WINDSHEAR DETECTION
WSD2	WINDSHEAR DETECTION 2	NA	FWC	014/29	1	NA	1= WINDSHEAR DETECTION
WORNDOF	WOLR DUIND CAPT FAIL	NA	DMC	363/26	14	NA	1= FAIL
WORNDEF	WOLR DU ND F/O FAIL	NA	DMC	363/28	1,4	NA	1= FAL
WXRPFDCF	WXR DU PFD CAPT FAIL	NA	DMC	363/25	1,46	NA	1= FAIL
WXRPFDFF	WXR DU PFD F/0 FAIL	NA.	DMC	363/27	1,44	NA	1= FAL
XEV	CROSS FEED VALVE POSITION	NA	BMC SDAC	0.55/16	174	NA.	1= NOT FULLY CLOSED
YAWED	YAW FLIGHT DISPLAY	DA	FMGC DMC	143	1	0.08789	NA
YD1F	YAW DAMPER 1 FAULT	NA	FWC	126/15	2	NA	1= FAULT
YD2F	YAW DAMPER 2 FAULT	NA.	FWYC	126/18	2	NA	1= FAULT
YDO	YAW DAMPER ORDER	NA.	FWC	167	2	0.088	>0= TURN LEFT

# END

REFERENCE: TechRequest 80389852

DATE : November 29<sup>th</sup> 2017

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