

**SAFETY INVESTIGATION REPORT
MH370 (9M-MRO)**

**APPENDIX 1.6B - ENGINE HEALTH MONITORING
DECODED DATA FOR TAKE-OFF AND CLIMB REPORTS**

EHM Parameter Key

	Parameter description	Units
A/P	Autopilot status	discrete
A/T	Autothrottle status	discrete
ACID	Aircraft identification	
AOHE	Air Oil Heat Exchanger Position Selected	discrete
ASMT	Assumed Day Temperature	Celsius
AVM	Vibration monitoring system status word	hexadecimal
BBA	Broadband vibration channel A	ACU
BBB	Broadband vibration channel B	ACU
CAS	Calculated airspeed	knots
DATE	Date	dd/mm/yyyy
DP	ASCS Duct Pressure	psi
DPT	Departure airport	
DRTE	Thrust derate switch	
DST	Destination airport	
EBFR	Environmental control system bleed flow rate	lb/s
EBLD	Environmental control system discrete	discrete
EECT	EEC temperature	Celsius
EGT	Exhaust gas temperature	Celsius
EPRACT	EPR actual	
EPRACT-L	EPR actual - left	
EPRACT-R	EPR actual - right	
EPRCMD	EPR commanded	
EPRMAX	EPR maximum	
EPRTRA	EPR throttle angle	
ESN	Engine serial number	

	Parameter description	Units
ESTAT	EEC status	
FAV	ASCS FAMV Actual Position	
FCC3	EEC status word	
FCC4	EEC status word	
FCC5	EEC status word	
FCC6	EEC status word	
FLCT	Report Copy number	
FLT	Flight number	
FM	Flight phase	
FMVDMD	Fuel metering valve demanded position	
FMVSEL	Fuel metering valve commanded position	
FNDERATESW	Thrust derate switch	
FUELT	Fuel temperature in a/c tank	Celsius
GENLD	Generator load	shp
GMT	Time	hh:mm:ss
GWT	Gross Weight	lb
LAT	Latitude	degrees
LONG	Longitude	degrees
MACH	Mach number	
N1	N1 shaft speed	%
N1VA	N1 shaft vibration channel A	ACU
N1VB	N1 shaft vibration channel B	ACU
N2	N2 shaft speed	%
N2VA	N2 shaft vibration channel A	ACU
N2VB	N2 shaft vibration channel B	ACU

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	Parameter description	Units
N3	N3 shaft speed	%
N3VA	N3 shaft vibration channel A	ACU
N3VB	N3 shaft vibration channel B	ACU
NAC1	Nacelle temperature zone 1 (firewire resistance)	ohms
NAC2	Nacelle temperature zone 2 (firewire resistance)	ohms
OILP	Oil pressure	psi
OILT	Oil temperature	Celsius
P160	P160 pressure (bypass duct)	psi
P2.5	P25 pressure (HPC inlet)	psi
P20	P20 pressure (inlet)	psi
P30	P30 pressure (HPC outlet)	psi
P50	P50 pressure (LP turbine outlet)	psi
PACK	Cabin bleed discrete	discrete
PALT	Pressure altitude	feet
PHF	Vibration phase front	degrees
PHR	Vibration phase rear	degrees

**APPENDIX 1.6B - ENGINE HEALTH MONITORING
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	Parameter description	Units
PKFR	Pack mass flow rate	lb/s
PKWD	ECS status discretes	hexadecimal
PTO	ASCS PC Out temperature	Celsius
RATG	EEC rating	
SFC	Sub-Frame Counter (recorded data point)	number
SWID	Software identification	
T20	T20 temperature (inlet)	Celsius
T25	T25 temperature (HPC inlet)	Celsius
T30	T30 temperature (HPC outlet)	Celsius
TAT	Total Air Temperature	Celsius
TCAF	Turbine cooling air front	Celsius
TCAR	Turbine cooling air rear	Celsius
THDG	True heading	
TRA	Throttle resolver angle	degrees
TRALOC	Throttle resolver angle	degrees
VSV	VSV angle	degrees
WF	Fuel flow	lb/hr

Take-off Report

ACID	FLT	FM	FLCT	DATE	GMT	DPT	DST	GWT
MRO	S370	IC	318	07/03/2014	16:41:58	WMKK	ZBAA	492320

PALT	CAS	MACH	TAT	LAT	LONG	THDG	SWID	SFC
344	173.9	0.265	33	2.778	101.708	-34.9	71002	18676

A/P	A/T	FUELT	PKWD	DRTE	ASMT	RHL	RHR	RHC	TEGTL	TEGTR
0	6	30	50F0	3	50	285	286	286	36	36

	ESN	N1	N2	N3	EGT	FMVDMD	FMVSEL	NAI	WAI
L	51463	88.3	96	96.3	760	77.5	77.5	0	0
R	51462	88.8	95.9	96.7	775.9	78.9	78.9	0	0

	P20	P160	P2.5	P30	P50	T20	T25	T30
L	15.262	23.65	109.31	444.2	19.8	32.9	282.2	595.8
R	15.242	23.778	108.53	444.2	19.8	32.9	279.7	593.9

	OILP	OILT	TRA	EPRACT	EPRMAX	EPRCMD	EPRTRA	VSV
L	103.6	112.5	66.8	1.299	1.497	1.298	1.298	90
R	109.3	111.6	66.8	1.299	1.5	1.299	1.299	92

	AVM	N1VA	N1VB	N2VA	N2VB	N3VA	N3VB	BBA	BBB	PHF	PHR
L	0	1.13	1.18	0.13	0.12	0.31	0.31	0.71	0.73	66	299
R	0	1.46	1.49	0.59	0.58	0.28	0.28	0.9	0.92	159	99

	TCAF	TCAR	PACK	PKFR	EBLD	EBFR	FAV	AOHE	FCC3	RATG
L	427.4	341.2	0	69.7	0	136.6	0	0	0E00	0058
R	425.5	349.2	0	66.8	0	181.5	0	0	0E00	0058

	NAC1	NAC2	GENLD	WF	ESTAT	EECT	TRALOC	PTO	DP
L	3	4	40	22950	3060	38	66.8	366	87
R	1	2	44	23385	3060	39	66.7	408	85

	TOTL1	TOTL2	TOTL3	TOTL4	TOTL5	TOTL6	TOTL7
L	0	0	0	0	0	0	1
R	0	0	0	0	0	0	1

	FCC4	FCC5	FCC6
L	0008	4200	0088
R	0008	4200	0088

Climb Report

	ACID	FLT	FM	FLCT	DATE	GMT	DPT	DST	GWT		
	MRO	S370	CL	318	07/03/2014	16:52:21	WMKK	ZBAA	485880		
	PALT	CAS	MACH	TAT	LAT	LONG	THDG	SWID	SFC		
	22278	299.8	0.68	11.8	3.619	102.02	27.5	71002	19299		
	A/P	A/T	FUELT	PKWD	DRTE	ASMT					
	1	6	30	5030	8	5) Note 1					
	ESN	N1	N2	N3	EGT	FMVDMD	FMVSEL	TRALOC			
L	51463	93.9	96.6	77.8	778.2	71.3	71.3	65.9			
R	51462	94	96.7	78.8	788.1	72.3	72.3	66.1			
	P20	P160	P2.5	P30	P50	T20	T25	T30			
L	8.39	14.503	70.32	294.8	11.3	11.7	275.2	590.6			
R	8.369	14.534	69.79	294.1	11.2	11.7	273.4	590.8			
	OILP	OILT	TRA	EPRACT	EPRMAX	EPRCMD	EPRTA	VSV			
L	99	146.8	65.9	1.342	1.363	1.336	1.34	47			
R	100	144.8	66.1	1.342	1.366	1.339	1.341	52			
	AVM	N1VA	N1VB	N2VA	N2VB	N3VA	N3VB	BBA	BBB	PHF	PHR
L	0	0.62	0.64	0.2	0.21	0.29	0.3	0.48	0.48	25	298
R	0	0.9	0.93	0.55	0.56	0.2	0.2	0.61	0.63	139	) Note 1
	TCAF	TCAR	PACK	PKFR	EBLD	EBFR	FAV	AOHE			
L	553.5	501.8	0	217.6	0	163.2	0	0			
R	547	512.5	0	217.5	0	154.1	0	0			
	NAC1	NAC2	GENLD	WF	ESTAT	EECT	PTO	DP	FCC3	RATG	
L	35	35	42	15583	3060	38	392	57	0E00	0058	
R	27	29	46	15786	3060	41	392	55	0E00	0058	
	ALT	MACH	TAT	EPRACT-L	EPRACT-R	FNDERATESW					
	9536	0.449	23.5	1.302	1.302	28					
	15000	0.601	22.25	1.283	1.283	38					
	25024	0.722	9.5	1.34	1.34	08					
	FCC4	FCC5	FCC6								
L	0008	4200	0082								
	0008	4400	0082								

Note 1: The character,), is generated by the ACMS to indicate that the source of information is valid and the parameter data bits are invalid.

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