AIRCRAFT ACCIDENT FINAL REPORT

A 04/20

Air Accidents Investigation Bureau (AAIB)

Ministry of Transport

Accident Involving a Leonardo AW139

Registration 9M-PMC

in Tawau, Sabah

on the 27 February 2020

Air Accidents Investigation Bureau
Ministry of Transport
No. 26, Jalan Tun Hussein, Precinct 4
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Issued on 27 February 2021

FINAL REPORT A 04/20

AIR ACCIDENTS INVESTIGATION BUREAU (AAIB)
MALAYSIA

ACCIDENT REPORT NO. : A 04/20

OPERATOR	**:**	**ROYAL MALAYSIA POLICE**
AIRCRAFT TYPE	**:**	**LEONARDO AW139**
NATIONALITY	**:**	**MALAYSIA**
REGISTRATION	**:**	**9M-PMC**
PLACE OF OCCURRENCE	**:**	**TAWAU, SABAH**
DATE AND TIME	**:**	**27 FEBRUARY 2020 AT 1936 LT**

This investigation is carried out to determine the circumstances and causes of the accident with a view for the preservation of life and the avoidance of accidents in the future. It is not for the purpose of apportioning blame or liability (Annex 13 to the Chicago Convention and the Civil Aviation Regulations of Malaysia 2016).

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

INTRODUCTION

The Air Accidents Investigation Bureau of Malaysia

The Air Accidents Investigation Bureau (AAIB) is the air accident and serious incident investigation authority in Malaysia and is accountable 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 investigations in accordance with Annex 13 to the Chicago Convention, the Civil Aviation Act of Malaysia 1969 and the 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 processes 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 to be taken.

TABLE OF CONTENTS

APPENDICES

ABBREVIATIONS

14 Bn GOF	14th Battalion General Operations Force
AAIB	Air Accidents Investigation Bureau
AUW	All-Up Weight
CAO	Confined Area Operations
CVFDR	Cockpit Voice Flight Data Recorder
K9 Section	Canine Section
LT	Local Time
MPFR	Multi Purpose Flight Recorder
MRO	Maintenance Repair & Overhaul
NAMC	National Aviation Meteorological Centre
PIC	Pilot-In-Command
POB	Persons on Board
RFM	Rotorcraft Flight Manual
RMP	Royal Malaysia Police
UTC	Universal Time Coordinated
WAT	Weight - Altitude - Temperature
WBKW	ICAO Code for Tawau Airport

SYNOPSIS

On 27 February 2020, a Royal Malaysia Police (RMP) Leonardo AW139 (registration 9M-PMC) crashed whilst approaching a football field at the 14th Battalion General Operations Force (14 Bn GOF) camp in Tawau, Sabah. All crew survived with minor injuries except for one trainee observer who suffered a serious back injury.

The AAIB Chief Inspector was notified that same night at about 2000LT and an investigation team left for Tawau the very next day.

1.0 FACTUAL INFORMATION

1.1 History of the Flight

On Thursday, 27 February 2020, at approximately 1925LT, the ill-fated helicopter took off from Tawau Airport (WBKW) for its third and final sortie of the day with six persons on-board (POB). The purpose of the flight was to reposition the helicopter at the 14 Bn GOF camp in Tawau town itself about 25km West of the airport.

On arrival, the Pilot-In-Command (PIC) circled the designated landing point before initiating an approach from the North. At approximately 300ft on extremely short finals the PIC felt a slight jerk on the controls before losing total directional control. The helicopter was now yawing uncontrollably to the right at an ever increasing rate.

Unable to regain control of the helicopter, the PIC called “Brace! Brace!”. The helicopter impacted a coconut tree first before finally coming to a rest on it’s left side between a three-storey block of quarters and the RMP K9 Section situated there.

All those on-board remained conscious and egressed from the wreckage via the starboard sliding door with assistance from GOF personnel on the ground. The last to be evacuated with the help of Fire and Rescue personnel was the seriously injured crew member and the PIC who stayed with him throughout.

1.2 Injuries to Persons

All six crew members suffered injuries consisting of lacerations, bruises and sprains. Only one of them had a serious back injury requiring hospitalisation.

Injuries	Crew	Passengers
Fatal	-	-
Serious	1	-
Minor / None	5	-

1.3 Damage to Aircraft

Please refer to the **APPENDIX A**: Aircraft Damage Assessment Report by Galaxy Aerospace, the MRO service provider for the RMP.

1.4 Other Damages

The area on which the helicopter crash landed was used by GOF personnel staying in the quarters to plant fruit and vegetables. Needless to say they were all destroyed along with the coconut tree the helicopter first impacted.

Other than that, the K9 Section suffered damage to its roof and to a four-wheel-drive vehicle parked outside due to flying debris. Miraculously no personnel on ground were injured.

1.5 Personal Information

Pilot-in-Command

Status	P1
Nationality	Malaysia
Age	43
Gender	Male
Flying Hours	Total: 2,802 Hrs Type: 135 Hrs

Co-Pilot

Status	P2
Nationality	Malaysia
Age	33
Gender	Male
Flying Hours	Total: 596 Hrs Type: 126 Hrs

1.6 Aircraft Information

The Leonardo AW139 helicopter, registration 9M-PMC was manufactured in Italy in 2016 with the serial number 31731. It is equipped with two Pratt & Whitney PT6C-67C engines with serial numbers PCE-KB1848 and PCE-KB1880 enabling a maximum take-off weight of 7000kg.

Its five main rotor blades rotate in a counterclockwise direction (when viewed from above) and has four tail rotor blades. It has a retractable nose and main landing gears with a capacity to carry a maximum of 15 passengers and two flight crew on-board. On the day before the accident, the aircraft had 1259 flight hours on both airframe and engines with 2076 landing cycles.

Aircraft	Leonardo AW139
Owner	Government of Malaysia
Registration	9M-PMC
Serial No.	31731

Year of Manufacture	2016
Manufacturer	Leonardo
Fuel used	AvTur

1.7 Meteorological Information

According to the weather report prepared by the National Aviation Meteorological Centre (NAMC), there was a slight tail-wind during the helicopters approach to the football field. This is not ideal for confined area operations in high AUW configurations.

1.8 Aids to Navigation

Not applicable.

1.9 Communications

The last communication between the pilots and Tawau Tower was before the approach to 14 Bn GOF. There was no distress call made.

1.10 Aerodrome Information

The intended landing point was a football field at 14 Bn GOF. The reason for repositioning the aircraft there after refuelling at Tawau Airport was because there was to be an additional tasking the next day. It had become a norm to reposition there due to security reasons.

Due to obstacles surrounding the football field the usual approached used is that from the North. As the landing point is to be treated as a confined area operation, care needs to be taken during the approach especially so when operating at high AUW.

Additionally, the crew that day had wanted to maintain their currency for night flying, hence their approach after last light. The football field itself is not lit with the nearest source of light coming from street lights along the road besides the field.

1.11 Flight Recorders

The helicopter is equipped with a Penny & Giles CVFDR/MPFR recorder which was removed and downloaded along with the HUMS data on the 29 February 2020. The CVFDR data was transmitted directly to Leonardo HQ in Italy which they have since translated into usable information inclusive of a detailed animation. The graphs and animation can be viewed at AAIB on request.

1.12 Wreckage and Impact Information

Once again, please refer to the **APPENDIX A**.

1.13 Medical and Pathological Information

As per Para 1.2.

1.14 Fire

There was no post-impact fire.

1.15 Survival Aspects

All the crew managed to egress from the wreckage of the helicopter through the starboard sliding door. (Note: The helicopter was lying on its port side.) The pilots however had to break through the partition between the cockpit and the cabin before egressing. GOF personnel on ground assisted the crew by using ladders.

1.16 Tests and Research

A metallurgical test on a tail rotor blade and a fuel sample test did not reveal any abnormalities.

1.17 Organisational and Management Information

As was mentioned earlier the RMP repositions its helicopters at 14 Bn GOF due to security reasons. After this accident the RMP may need to reconsider this decision due to:

1.171 The nature of the landing point being a confined area.

1.172 No Fire & Rescue Services being within close proximity.

1.173 No wind-sock available to help assess wind direction.

1.174 Very poor lighting during night-time approaches.

1.18 Additional Information

Nil.

1.19 **Useful or Effective Investigation Techniques**

The usage of Google Earth assisted the job of an investigator tremendously. For more accurate map data it is recommended that the paid version for the software be acquired.

Leornardo, the aircraft manufacturer, contributed much towards the investigation by converting the CVFDR raw data and coming up with both the analysis and animation within such a short period of time.

2.0 ANALYSIS

2.1 **AUW:** The AUW calculated by the crew at Tawau Airport was 6,598.39kg (See **APPENDIX B**). According to **APPENDIX C**, a Weight / Altitude / Temperature Chart from the AW139 RFM, the maximum AUW for the intended landing point is 6,400kg. Allowing for 50kg of fuel for start-up, taxy and hover this meant that the crew had to burn off 148.39kg of fuel during the flight in order to safely land at 14 Bn GOF.

2.2 Since the average fuel consumption for the AW139 is 400kg/hr, it would take a flight time of 22 minutes to burn off 148.39kg of fuel. Tawau Tower put the time of take-off at 1927LT. The latest recorded timing of the actual crash was given as 1938LT making it a flight time of 11 minutes. Thus leaving the helicopter with an excess 11 minutes of fuel before he could theoretically attempt a safe landing.

2.3 **Weather:** The Meteorological Report states that there was a slight tailwind during the approach. It may not have been much but when one is operating at the very edge of the performance envelope it can make all the difference.

2.4 **Torque Limiter:** Lastly, it was discovered from the CVFDR that the torque limiter was engaged during the accident.

3.0 CONCLUSION

A lapse in AUW calculations by the pilot-in-command plus the decision to approach with a slight tail-wind most certainly led the helicopter to burst it performance flight envelope leading to the loss of control and subsequent crash. Having the torque limiter engaged during this time definitely did not help.

4.0 SAFETY RECOMMENDATIONS

4.1. RMP is to review the pilot-in-command's level of proficiency before allowing him to return to flying duties.

4.2. RMP is also to look into its operations of repositioning aircraft at the 14 BN GOF.

INVESTIGATOR-IN-CHARGE
Air Accidents Investigation Bureau
Ministry of Transport
27 February 2021

Galaxy Aerospace
maintenance . repair . overhaul

AIRCRAFT PRELIMINARY DAMAGE ASSESSMENT REPORT (9M-PMC) ADAR/PMC/20/01

PREPARED BY: ENGKU EMRI ENGKU ABAS	**APPROVED BY:** AZILLAH MATAP
DATE:05/03/2020	**DATE**:05/03/2020

DESCRIPTION

History of flight

On Thursday, 27 February 2020, a Malaysian registered Leonardo AW139 helicopter, operated by PGU PDRM, registration 9M-PMC, took off from Tawau Airport (TWU/WBKW) for its third sortie of the day, at approximately 1925 local time, with 6 person onboard, heading towards PDRM PGA Tawau 14th Battalion (BN14), about 25 km to the west of Tawau Airport. After circling the designated landing zone, the helicopter initiated a landing approach from the north of the intended landing zone.

When the aircraft reached an altitude of approximately 300 ft, and a heading of 162º, the aircraft lost control, before impacting a low height coconut tree and finally came to rest on its left hand side, in a garden in between of PDRM Seksyen K9 building and PGA barrack, within PGA BN14 compound.
All those aboard remained conscious and evacuated from the wreckage with assistance of the PGA personnel and Bomba crew.

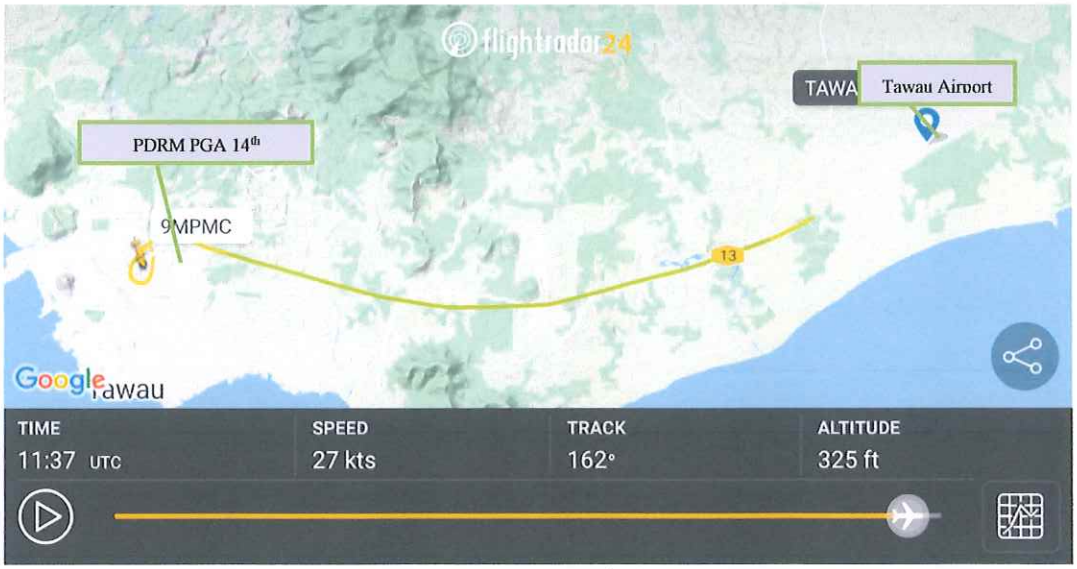


Figure 1: Flight path of 9M-PMC as recorded in Flightradar24

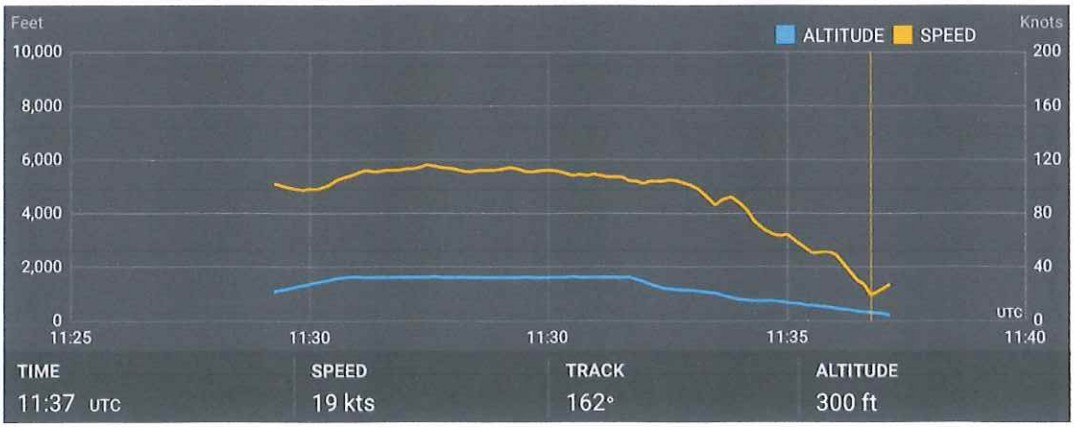


Figure 2: Flight data of 9M-PMC as recorded in Flightradar24

Aircraft information

The Leonardo AW139 helicopter, with registration 9M-PMC was manufactured in Italy on 2016 with serial number 31731, equipped with two Pratt & Whitney PT6C-67C engines with serial number PCE-KB1848 and PCE-KB1880, with maximum takeoff weight of 7000 kg. It has 5 main rotor blades rotating in counterclockwise direction (viewed from above) and 4 tail rotor blades, a retractable nose, right and left main landing gears, with capacity to carry a maximum of 15 passengers and 2 flight crews onboard. The aircraft is operated by Pasukan Gerakan Udara Polis DiRaja Malaysia (PDRM) and maintained by Galaxy Aerospace (M) Sdn. Bhd. On the day before the accident, the aircraft had 1259:05 flight hours on airframe and both engines, with 2076 landing cycles.

At the time of event, the aircraft had 6 person onboard, with approximately 1300 kg of fuel.

Figure 3: Leonardo AW139 with registration 9M-PMC

Person onboard information

Person onboard consisted of 2x flight crews, 3x air observers and 1x engineer. All are conscious right after the aircraft impacted the ground with 1 of the air observer seriously injured.

Injuries	**Crew**	**Passenger**	**Total on the aircraft**
Fatal	0	0	0
Serious	0	1	1
Minor	2	3	5
Total	2	4	6

Meteorological information

Condition at the area at the time of event was night time approximately 1930 hour with sunset at 1821 hour. Generally, weather at the area was fine with no rain, high visibility and some wind.

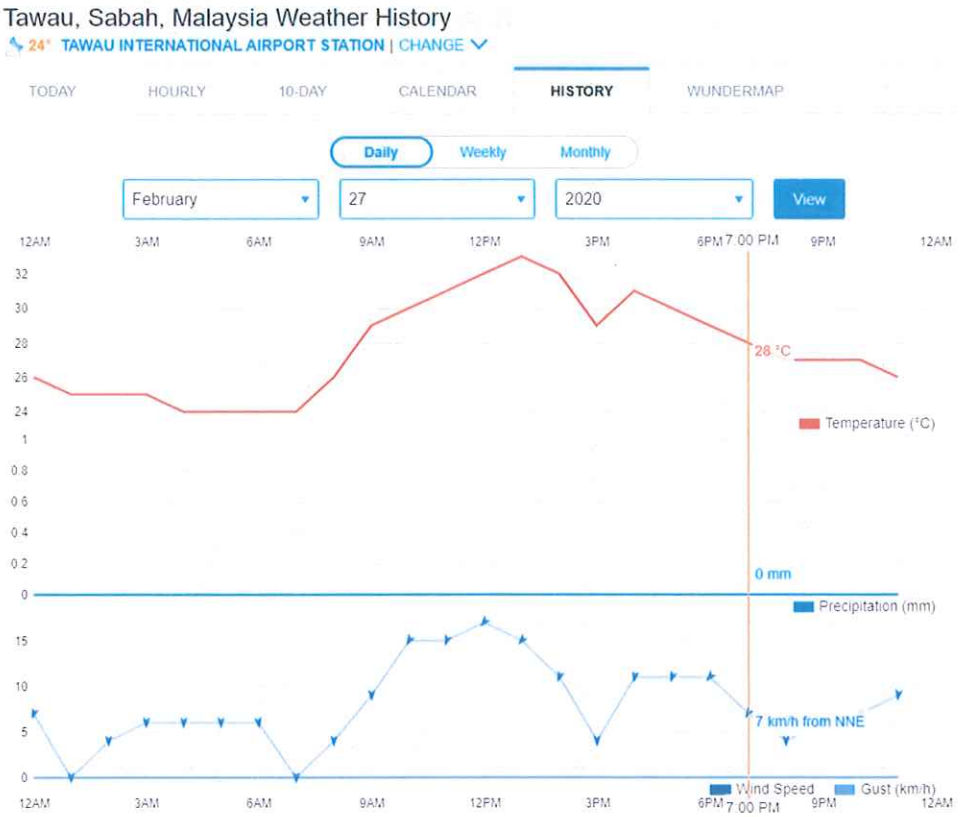


Figure 4: Tawau meteorological record on 27 February 2020

Chronology of events

Date	Local time	Event
27 Feb 2020	1225	9M-PMC first sortie departed from Sandakan Airport (WBKS) to PGA 17th Battalion Lahad Datu (BN17)
	1430	9M-PMC landed in BN17
	1750	9M-PMC second sortie departed from BN17 to Tawau Airport (WBKW)
	1900	9M-PMC landed in WBKW and refuel
	1925	9M-PMC third sortie departed from WBKW to PGA 14th Battalion Tawau (BN14)
	1930	9M-PMC reported to impact terrain within BN14 compound
	1935	Rescue and evacuation effort mobilized by BN14 personnel
	1950	Ambulance arrived
	2012	Bomba arrived
	2045	The last person onboard evacuated
28 Feb 2020	All day	PDRM officers and GAM personnel started arriving in Tawau
29 Feb 2020	0830	Wreckage inspection lead by BSKU and PDRM assisted by GAM
	0900	Inspection carried out on tail rotor, tail rotor control and tail drive shaft
	1000	CVFDR/MPFR removed
	1050	HUMS data downloaded
	1145	CVFDR/MPFR downloaded
1 Mar 2020	0900	Fuel sample collected, aircraft removal started
	1215	Aircraft repositioned in BN14 workshop compound, external fuselage check
	1530	Aircraft defueled, electrical power connected and general avionic check
	1630	Engine DCU removed, main gear box, engine drive shafts, top deck check
2 Mar 2020	0830	Aircraft sealed and secured

Wreckage and impact information

The site where the aircraft impacted is small garden by the roadside, in between of PDRM Seksyen K9 building and PGA barrack, grown with sugarcanes, shrubs and coconut trees, with about 5 degrees gradient towards the road. The wreckage was confined to a rectangular area of about 20 m by 7 m, apart from two pieces from a single main rotor blade (black color) which impacted a pick-up truck and the roof of PDRM Seksyen K9 building, located about 25 m away.

No fire break out from the wreckage but there was sign of burnt vegetation on ground immediately next to the exhaust of left engine and some heat marks on the fuselage. Smaller debris originate from main rotor blades and part of horizontal stabilizer also litters the area around the wreck within 20 m radius.

Figure 5: Location of wreckage, the planned approach and landing zone

The impact site is located on the right side of the intended approach path towards designated landing zone 160 m away, across the PDRM Seksyen K9 access road.
The aircraft came to rest on its port side, next to a fallen medium-sized coconut tree (about 4 m tall) presumably struck down by the impact. Substantial physical damage only found on port side of the helicopter with no sign of fuselage roll or tumble when it impacted ground.
The front nose, windscreen, engine compartment, underbelly, right side of fuselage and tail structure did not have any damage except the hoist, located above the sliding cabin door, which suffer significant damage, suspected from impacted by mangled main rotor blades. Transmission system found intact and satisfactory condition, apart from the area of main rotor swashplate towards main rotor head which suffered significant damage due to the main rotor blades hitting the ground.
All significant components found detached from the wreckage were accounted for, which includes all 5x main rotor blades, 5x main rotor dampers, and left horizontal stabilizer.

Figure 6: View of impact site facing heading SSW, as seen from PDRM Seksyen K9 access gate,

Figure 7: View of impact site facing heading NNE as seen from PGA barrack.

All 5 main rotor blade (MRB) found badly damage with 5 distinct marks of impact on the ground approximately 4 m away from the wreckage main rotor hub;

- MRB black found detached, 20 m away from the wreckage, impacted the roof of Seksyen K9 building and a transport.
- MRB red found detached 5 m away near the perimeter fence of the Seksyen K9 area.
- MRB blue, yellow and white found badly damage, partially connected with the wreckage.

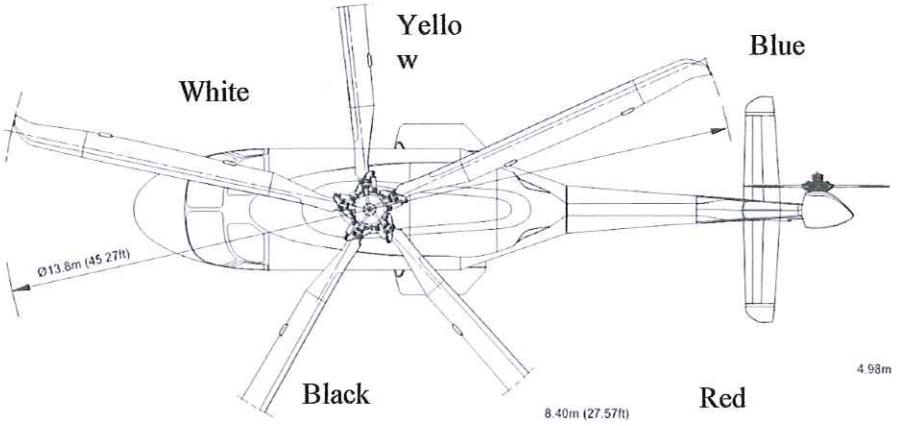


Figure 8 : Main rotor blade color position diagram

Figure 9: Top and bottom pictures exhibit 5 distinct marks of main rotor blades hitting the ground

All 4 tail rotor blades were intact on aircraft with only its outer most tips damage with sign of impact with ground and vegetation. There is a significant damage on left side of tail rotor gearbox housing which also house the tail rotor servo, but no significant damage found the servo itself and associated tail rotor control rods.

Figure 10: Intact tail rotor system with minor damage at the blade tips

DISCUSION

Inspection carried out on the aircraft:

	System / component	Finding
1	Tail gear box, tail rotor blades	Found intact and satisfactory condition. Minor damage on all four of its tail rotor blades at the end tip.
2	Tail rotor servo	There sign of impact of tail rotor servo on soft ground, but no significant damage or leak found.
3	Tail control system	Found intact and satisfactory condition, with tail rotor blades movement correspond with pedal movement in cockpit.
4	Tail rotor drive shafts	Found intact and satisfactory condition.
5	Engine compartment	Found clean from significant foreign object or leak and in satisfactory condition.
6	Main gearbox, engine input shafts	Found intact, no significant leak and in satisfactory condition.
7	Main rotor servos, hydraulic system	Found intact, no leak and in satisfactory condition.
8	Top deck	Components found intact, and in satisfactory condition.
9	Cockpit	Left nose window broken, deformed control sticks (suspected caused by evacuation process), generally in satisfactory condition.
10	Cabin	No significant structural damage other than jettisoned windows.
11	Baggage	Some dents suspected caused by from external power packs carried in the baggage area.

Significant damages found on the wreckage

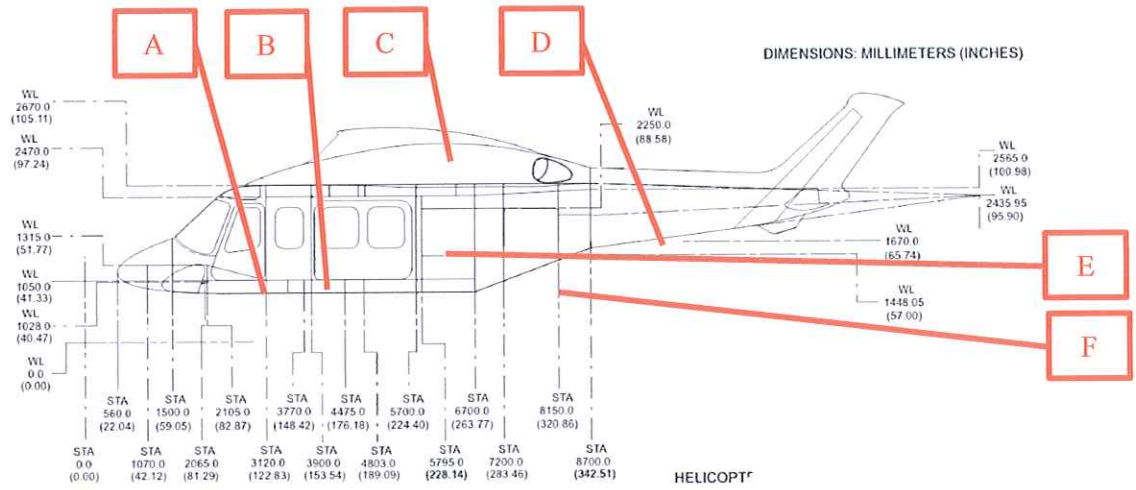


Figure 11: Substantial physical damage found as seen from port view.

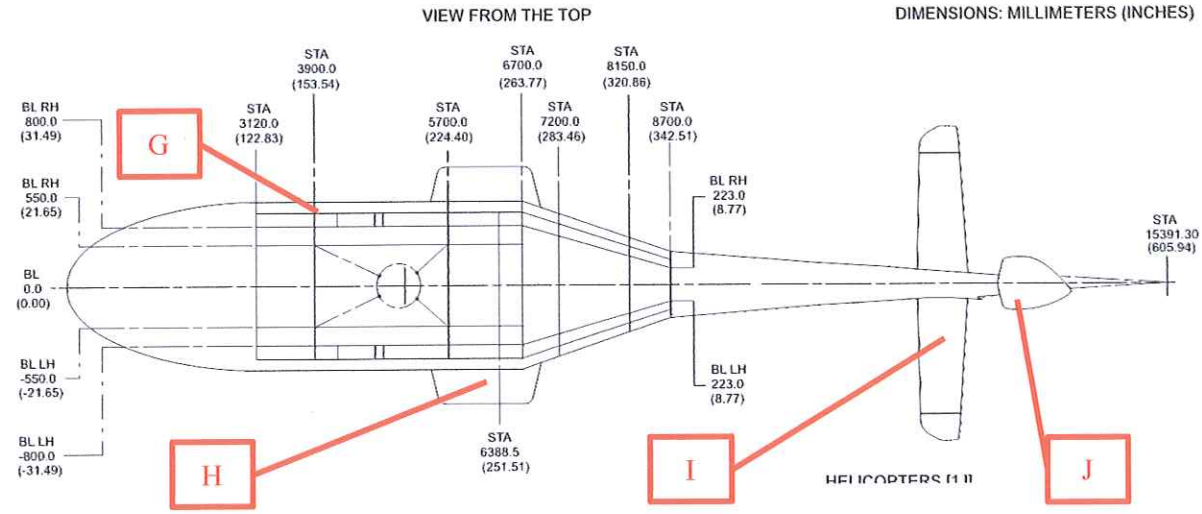


Figure 12: Substantial physical damage found as seen from top view.

Table 1 : List of significant damages found on the wreckage

Item	Description of damage	Observation	Remarks
A	Broken left nose window	Suspected impact with ground.	
B	Impacted left cockpit door, windows and STA3120 bulkhead.	Suspected impact with ground.	Crack appeared at STA3120 bulkhead.
C	Broken top sliding cowling	Suspected impact with disintegrated main rotor pitch links and main rotor blades.	
D	Heat marks the fuselage	Suspected heat from exhaust gas of running left engine right after impacting the ground.	Engines seems still running at impact moment
E	Impacted left cabin sliding door and windows.	Suspected impact with ground and damage during evacuation process.	
F	Impacted aft left jacking point and STA6700 bulkhead.	Suspected impact with ground or tree.	Severe crack appeared at STA6700 with exposed bladder tank
G	Impacted hoist and boom assembly.	Suspected impact with deformed rotating main rotor blades.	The only component damaged on the right side of the fuselage
H	Broken left sponson and left main landing gear assembly	Suspected impact with ground or tree.	Total damage on left sponson, left main landing gear and actuator.
I	Impacted left side of horizontal stabilizer	Suspected impact with ground.	The whole left side of the horizontal clipped off at root.
J	Impacted left side of tail rotor gearbox cowling	Suspected impact with ground.	Only the left side of the tail gearbox cowling broken apart at ground contact. Tail servo found in almost good condition with minimal hydraulic leak.

Figure 13 : Item A

Figure 14 : Item B

Figure 15: Item C

Figure 16 : Item D

Figure 17 : Item E

Figure 18 : Item F

Figure *19 : Item G*

Figure 20 : Item H

Figure 21 : Item I

POLIS DIRAJA MALAYSIA

WEIGHT AND BALANCE SHEET AGUSTA WESTLAND 139

AIRCRAFT CALL SIGN: 9M-PMC POLICE MIKE CHARLIE UDARA 37

PILOT IN COMMAND: DSP NORHASHIM BIN AHMAD.

CO-PILOT: ASP SHAIKE FAIQZAC BIN JOHARI

OBSERVER: SJN MOHD RADZLE BIN RADAIE

MISSION: ORIENTASI OPERASI

ROUTE: WBKS – BN 17 LHD

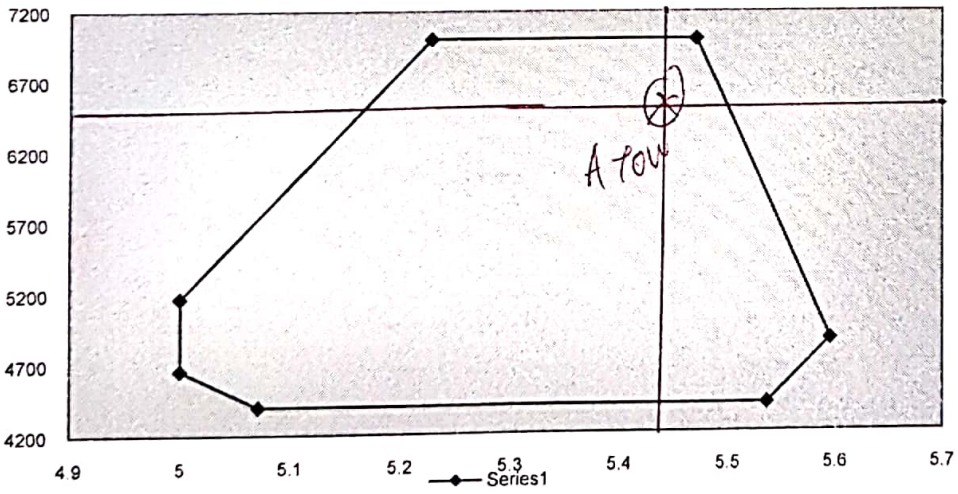
DATE: 27.02.2020

COMMANDER'S SIGNATURE:

TOTAL MOMENTS: 36 095.095

TOTAL WEIGHT: 6598.39 ✓

C of G = 5.470 M



ITEM	WEIGHT (Kg)	ARM (m)		MOMENT (Kg.m)	
		LONG.	LAT.	LONG.	LAT.
HC BASIC WEIGHT	4673.39	5.348		24895.6	
PILOT	75	2.82		211.5	
CO-PILOT	75	2.82		211.5	
PASSENGER A	75	3.449		258.675	
PASSENGER B		3.415			
PASSENGER C		3.415			
PASSENGER D		3.415			
PASSENGER E	75	3.449		258.675	
PASSENGER F		4.789			
PASSENGER G		4.789			
PASSENGER H	85	4.789		407.165	
PASSENGER I		4.789			
PASSENGER J		4.789			
PASSENGER K		5.556			
PASSENGER L		5.6			
PASSENGER M	80	5.6		448	
PASSENGER N		5.6			
PASSENGER O		5.556			
LIFERAFT		3.449			
HOIST		6.878			
BAGGAGE COMP.	120	7.7		924	
FUEL (MAIN+AUX)	1400	6.233		8726.2	

REMOVED ITEMS					
PAX SEAT (B,C,D)	30	3.415		102.45	
PAX SEAT (F,J)	30	4.789		143.67	
TOTAL	6598.39	5.470		36095.095	

PASUKAN GERAKAN UDARA PDRM

MULTIPLE SECTOR LOAD SHEET

Refer to the Loading Instructions and Loading Plan for use with M.S.L.S.C. of G limitations contained in the U.U.PDRM Operation manual

Aircraft Configuration

Aw139 + HOIST + CARGO HOOK

	KGS
A.P.S.	4673
Captain	75
2nd Pilot	75
Observer	75
Zero Fuel	4898

Section 2 - R.T.O.W. and PAYLOAD

LOCATION	WBKS				
Actual : Temp. °C	29				
Actual : Wind Vel. Kts.	030° 8Kt				
Take off Altitude					
R.T.O.W.	7000				
Restricted Single Engine Landing Weight	–				
Zero Fuel Weight	4898				
Disposable Load	2102				

FLIGHT INFORMATION

TOTAL TIME	VMC HR	VMC MIN	IMC HR	IMC MIN
DAY				
NIGHT				

ILS	VOR	NDB	SRA	

FLIR HR	ATAL HR

Section 3 - CERTIFICATION In accordance with the provision of the current A.N.O. and N.G. (Gen.) Regs I certify that the A/C loading confirms to the Weight Schedule Loading Instructions and restricted C.G. Limitations contained in the POLIS operation manual. STANDARD / **ACTUAL** personal weight used * Delete as appropriate

Signed [signature] Captain

Crew PSP HASHIM, ASP SHAIKE, SJW RADZIG, SJN WEDRICK, KPL ANDYRIAN

Aircraft Registration 9M-PME Date 27.02.2020 Mission OPENTASI [illegible]

Section 4 - LOADING AND FLIGHT REPORT

SECTOR	From	WBKS	BN 17	WBKW				
	To	BN 17	WBKW					
FLIGHT TIME	Take Off	1235	1750					
	Landing	1430	1900					
	TOTAL	2 : 05	1 : 10					
LOADING	No. of Pax	3	3	3				
	Zero Fuel WT.	4898	4898	4898				
	Passenger Wt.	240	240	240				
	Cargo Wt.	120	120	120				
	Remove Item –	60	60	60				
	Fuel Wt. KG	1400	626	1400				
	Total Wt.	6598 ✓	5824	6598				
	L.M.C. +/-							
	AMENDED TOTAL							

TOTALS	
Hrs :	Min
:	
:	
:	

TOTAL HRS

WEIGHT-ALTITUDE-TEMPERATURE
CONFINED AREA

FINAL REPORT A 04/20
APPENDIX C

ROTOR SPEED 102%

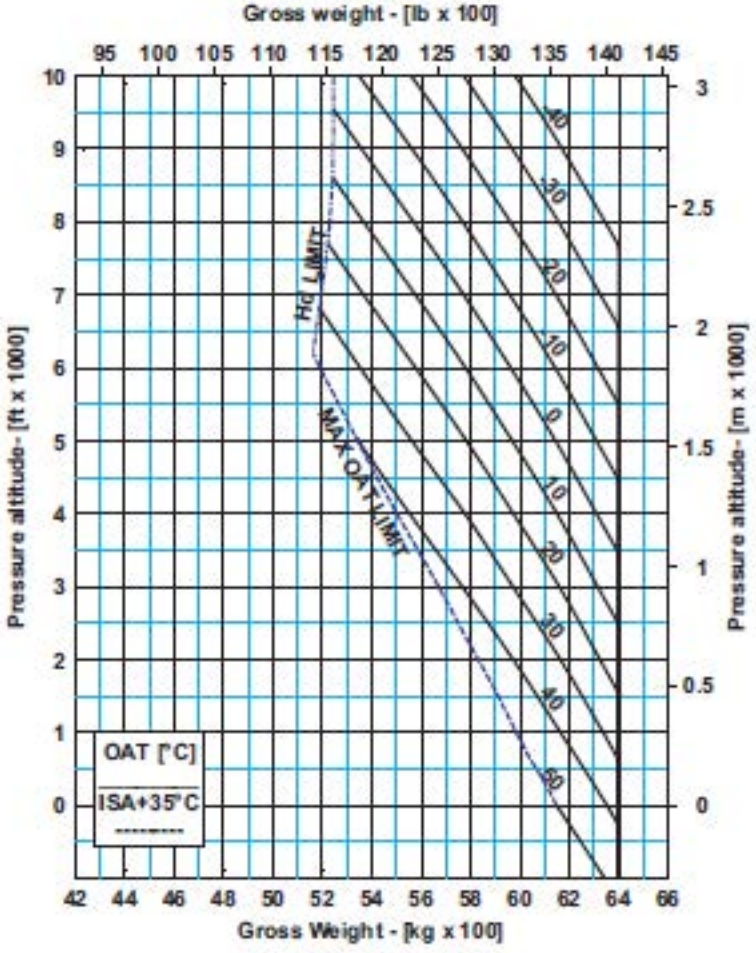


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Figure 4D-4 Confined Area Heliport Procedure Weight Limitations