AIRCRAFT SERIOUS INCIDENT

FINAL REPORT

SI 05/24

Air Accident Investigation Bureau (AAIB)

Ministry of Transport, Malaysia

Fixed Wing Aircraft Diamond DA42NG Twin Star, Registration N566CB

at Sultan Abdul Aziz Shah Airport, Subang, Selangor

on 26 April 2024

Air Accident Investigation Bureau
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Issued on 16 January 2025
MOT(S).600-5/4/105

AIR ACCIDENT INVESTIGATION BUREAU (AAIB)
MALAYSIA

REPORT NO : SI 05/24

OPERATOR	**: TECHSTRAIT LTD**
AIRCRAFT TYPE	**: DIAMOND DA42 NG**
NATIONALITY	**: UNITED STATES OF AMERICA**
REGISTRATION	**: N566CB**
PLACE OF OCCURRENCE	**: SULTAN ABDUL AZIZ SHAH AIRPORT, SUBANG, SELANGOR**
DATE AND TIME	**: 26 APRIL 2024 AT 0828 LT (0028 UTC)**

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

INTRODUCTION

The Air Accident Investigation Bureau (AAIB) is the authority responsible for investigating air accidents and incidents in Malaysia, operating under the Ministry of Transport. The AAIB's mission is to promote aviation safety through independent and objective investigations into air accidents and serious incidents. Additionally, the AAIB investigates incidents that reveal potential safety issues.

All investigations by the AAIB are conducted in accordance with Annex 13 to the Convention on International Civil Aviation (ICAO Annex 13) and the Civil Aviation Regulations 2016. It is important to note that AAIB reports are not intended to apportion blame or determine liability, as neither the investigations nor the reporting processes are designed for those purposes. The sole objective of this investigation and the Final Report is the prevention of accidents and incidents.

In accordance with ICAO Annex 13 paragraph 4.1, notification of the serious incident was sent out on 2 May 2024 to the National Transport Safety Board (NTSB), United States of America as the State of Registration and Austrian Civil Aviation Accident Investigation Authority as the State of Manufacture. A copy of the Preliminary Report was submitted to the NTSB, the Austrian Civil Aviation Accident Investigation Authority, the Civil Aviation Authority of Malaysia (CAAM), the Aircraft Owner and the Aircraft Operator on 21 May 2024. The Draft Final Report was subsequently sent on 11 December 2024 to the organisations mentioned above, inviting their significant and substantiated comments.

The AAIB extends its deepest appreciation to the Austrian Civil Aviation Accident Investigation Authority for their valuable technical assistance in the investigation of this accident.

Unless otherwise indicated, recommendations in this report are addressed to the investigating or regulatory authorities of the State responsible for the matters concerning the recommendations. It is up to those authorities to decide what actions to take.

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LIST OF APPENDICES

GLOSSARY OF ABBREVIATIONS

AAIB	Air Accident Investigation Bureau
AFRS	Airport Fire & Rescue Service
ATC	Air Traffic Controller
CAAM	Civil Aviation Authority of Malaysia
CAMO	Continuing Airworthiness Management Organization
CAR	Civil Aviation Regulations
C of A	Certificate of Airworthiness
C of R	Certificate of Registration
CRM	Crew Resource Management
CVR	Cockpit Voice Recorder
FAA	Federal Aviation Administration
FDR	Flight Data Recorder
IATA	International Air Transport Association
ICAO	International Civil Aviation Organisation
IR	Instrument Rating
KLIA	Kuala Lumpur International Airport
Km	Kilometre
LDA	Landing Distance Available
LT	Local Time
LH	Left Hand
MAHB	Malaysia Airport Holding Berhad
MASB	Malaysia Airport Sendirian Berhad
MOR	Mandatory Occurrence Reporting
m	meter
PAPI	Precision Approach Path Indicator
PPL	Private Pilot License
RH	Right Hand
SOP	Standard Operating Procedure
TAF	Terminal Aerodrome Forecast
WMSA	Sultan Abdul Aziz Shah Airport, Subang (ICAO code)
SZB	Sultan Abdul Aziz Shah Airport, Subang (IATA code)

SYNOPSIS

On 26 April 2024, the N566CB aircraft was scheduled for a test flight at 0830 LT at Sultan Abdul Aziz Shah Airport (WMSA) following rectification work completed the previous day. The start-up and taxi phases were uneventful, and the pilot, who is also the owner/operator, received clearance to take off from Runway 15.

At 0826 LT, shortly after take-off, the pilot heard a warning sound and observed the No. 2 engine coolant temperature indicating a high reading (in the Red zone). The engine also exhibited rough operation. In response, the pilot shut down the No. 2 engine and requested clearance to return to base. The aircraft was redirected to runway 33, and the pilot declared a Mayday to the Subang Tower.

During the approach and landing, the pilot failed to lower the landing gear, resulting in a belly landing on the runway.

A Mandatory Occurrence Report (MOR) was subsequently submitted by the Aircraft Handler to the Civil Aviation Authority of Malaysia (CAAM) and the Air Accident Investigation Bureau, Malaysia (AAIB) to formally notify them of the incident.

1.0 FACTUAL INFORMATION

1.1 History of the Flight

The N566CB aircraft was scheduled for a flight test on 26 April 2024 at 0830 LT at Sultan Abdul Aziz Shah Airport (WMSA), following the pilot's report of high temperature and low oil pressure on the No. 2 engine during a previous flight. Engine trend data was downloaded, and the service centre was consulted for further investigation. The service centre recommended servicing the cooling system as part of the rectification process. This rectification work was carried out in accordance with the service centre's recommendations, and the aircraft was returned to service on 25 April 2024.

The pilot, who is also the owner and operator, scheduled the aircraft for a test flight on 26 April 2024. After receiving clearance, the aircraft took off at 0826 LT. Unfortunately, shortly after take-off, a coolant overheat warning occurred. The No. 2 engine coolant temperature indicated high, and the engine began operating roughly. The pilot responded by shutting down the No. 2 engine and requesting to return to base. The aircraft was redirected to Runway 33, and the pilot declared a Mayday to Subang Tower.

During the landing, the pilot failed to lower the landing gear, resulting in a belly landing on the runway.

1.2 Injuries to Persons

Injuries	Crew	Passengers	Others	Total
Fatal	NIL	NIL	NIL	NIL
Serious	NIL	NIL	NIL	NIL
Minor/None	1	1	NIL	NIL

1.3 Damage to Aircraft

Preliminary analysis indicates significant damage to the left-hand (LH) and right-hand (RH) propellers, as shown in Figures 1 and 2. The damage to the LH propeller is notably more severe than that to the RH propeller. Additionally, noticeable scratch marks and damage were observed on both the bottom engine cowling and the tail boom area, as shown in Figure 3.

Initial assessment revealed that the aircraft skidded approximately 220 metres before coming to a stop, leaving visible scratch marks on the runway, as shown in Figure 4. The detailed damage assessment report is provided in Appendix B.

Figure 1: LH Propeller Damage

Figure 2: RH Propeller Damage.

Figure 3: Tail Section Area

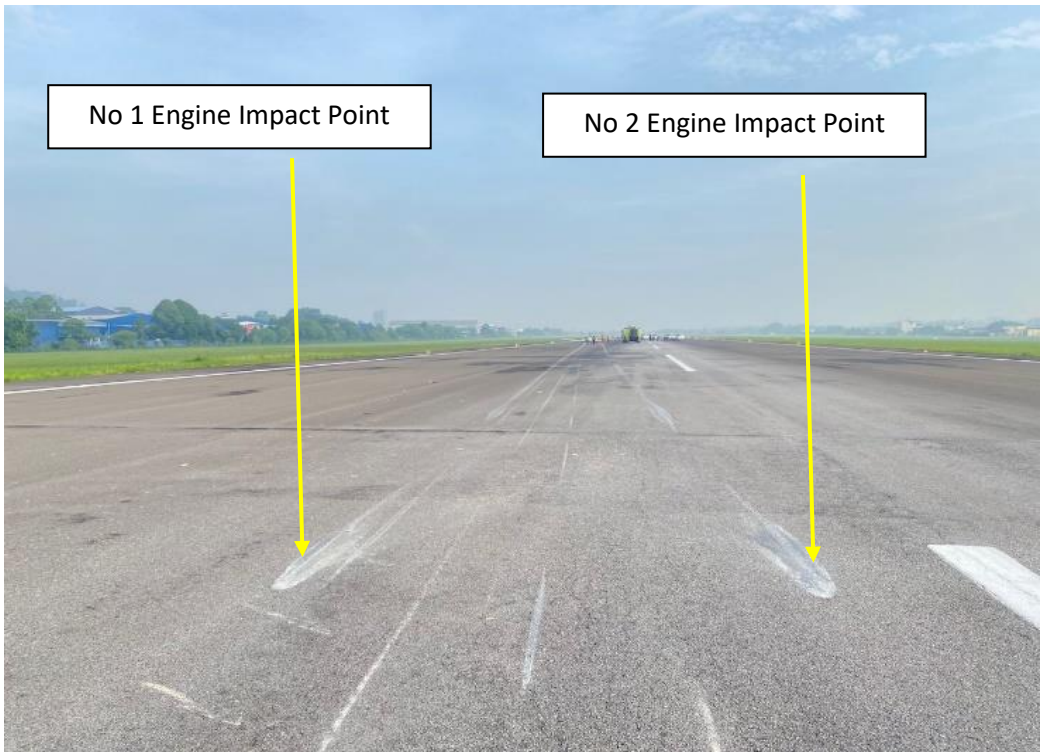


Figure 4: Initial Impact Point and Scratch Marks on Runway

1.4 Other Damage

Nil.

1.5 Personnel Information

1.5.1 Pilot

Status	Pilot in Command (PIC)
Nationality	Australia
Age	58 years old
Gender	Male
License Type	PPL (3632007)
Date of Issue	21 January 2020
Aircraft Rating	Airplane Single and Multi-Engine Land

Total Hours on Type	332 hrs
Total Flying Hours	680hrs
Rest Period Since Last Flight	More than 24hrs
Medical Expiry Date	10 February 2025

The pilot was licensed, qualified, and approved to perform the flight in accordance with existing regulations**.** The pilot was medically fit and adequately rested to operate the flight.

1.5.2 Passenger

A 28-year-old CAMO engineer from Aerohandlers Sdn Bhd.

1.6 Aircraft Information

Aircraft Type	Diamond DA42 NG Twin Star
Manufacturer	Diamond Aircraft Industries Inc
Year of Manufacturer	2012
Owner	Techstrait Ltd /Pilot
Registration No.	N566CB
Aircraft Serial No.	42.N111
C of A Issued Date	01 August 2018
C of R Expiry Date	30 June 2024

The aircraft has a valid registration and Certificate of Airworthiness (C of A) and has been maintained in compliance with applicable regulations. Maintenance records indicate that the aircraft is properly equipped and maintained in accordance with existing regulations and approved procedures. The pilot is the owner of the company Techstrait Ltd. The aircraft general specifications are detailed in **Appendix A**.

1.7 Meteorological Information

The occurrence took place during daylight. The weather conditions on that day did not contribute to the occurrence of the event.

1.8 Aids to Navigation

All navigation aids were operating normally.

1.9 Communications

All ATC communication frequencies were operating normally.

1.10 Aerodrome Information

Sultan Abdul Aziz Shah Airport, Subang (WMSA), as shown in Figure 5, is located at latitude 03°07'52"N and longitude 101°32'53"E, with an elevation of 89 feet.

Runways 15 and 33 were used for the landing, with no abnormalities observed in the surface condition. A landing distance available (LDA) of 3,780 feet was available for the landing.

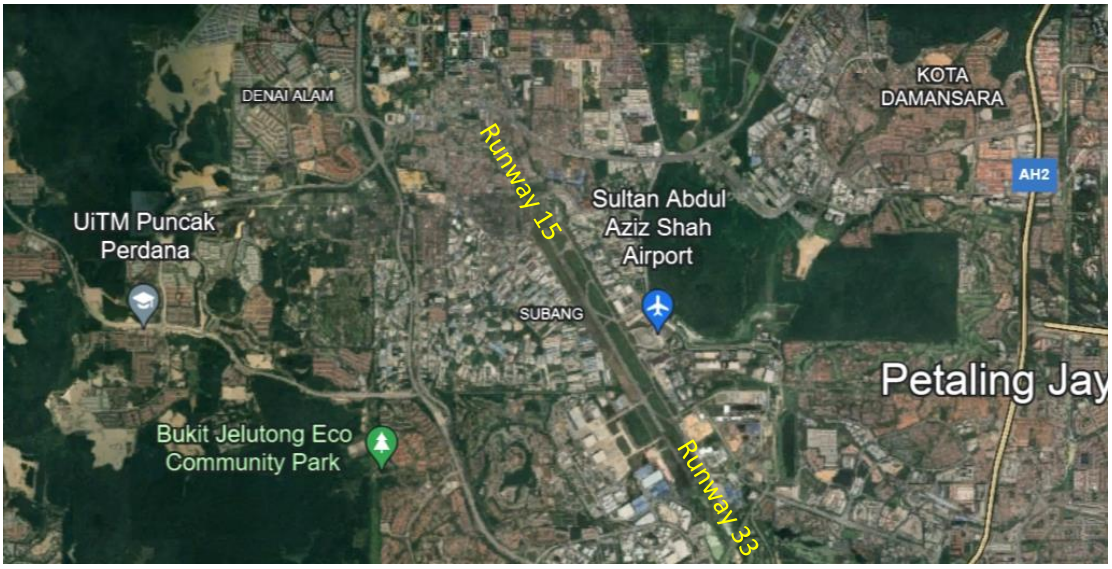


Figure 5: Sultan Abdul Aziz Shah Airport (WMSA)

1.11 Flight Recorders

The aircraft was not equipped with a FDR or a CVR; neither was required by regulations.

1.12 Wreckage and Impact Information

Figure 6: General description map of the incident

The red line in Figure 6 illustrates the flight path of the aircraft, which made a turn back after taking off from runway 15. Figure 7 highlights the impact point and visible scratch marks on the runway. The damage assessment is detailed in **Appendix B**.

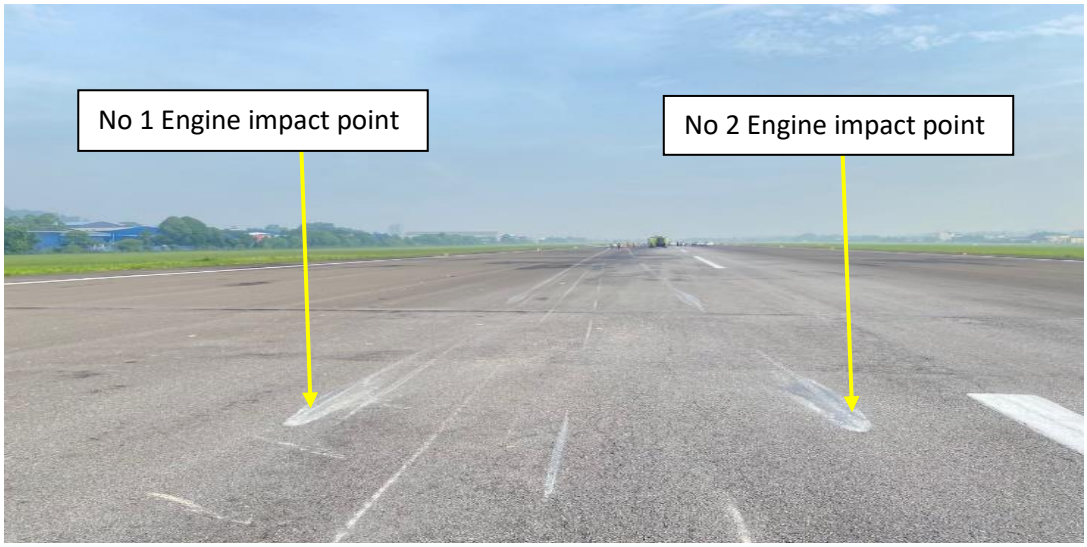


Figure 7: Initial impact point and Scratch Marks on Runway

1.13 Medical and Pathological Information

The pilot underwent a urine drug panel screening on 30 April 2024, four days after the accident, and the results were negative for substance abuse.

1.14 Fire

There were no reports of fire either before or after the impact.

1.15 Survival Aspects

Not applicable.

1.16 Tests and Research

The aircraft is not equipped with a FDR. The investigation relied on witness statements and system investigations of the engine, ignition, fuel injection, and fuel systems. Additionally, the investigation examined adherence to aircraft operating and maintenance procedures.

1.17 Organisational and Management Information

1.17.1 Owner/Operator

The pilot owns the Diamond DA42NG Twin Star aircraft, registration N566CB, and is also the owner of Techstrait Ltd. The pilot is the sole operator of the aircraft.

1.17.2 Aircraft Ground Handler

Sapura Aero offers a range of private aviation services, including hangarage, aircraft handling, and aircraft management. Aerohandlers Sdn Bhd, a subsidiary of Sapura Aero, conducted all required maintenance and repairs for the Diamond DA42NG Twin Star aircraft (N566CB). Aerohandlers Sdn Bhd is located at Subang Airport and is a qualified Continuing Airworthiness Management Organisation (CAMO) under the FAA for necessary servicing.

1.18 Additional Information

Nil.

1.19 Useful or Effective Investigation Techniques

N/A.

2.0 ANALYSIS

2.1 Human Factor Analysis

Human factor issues related to this accident were examined, focusing on the pilot's actions, decision-making, and potential errors. The analysis also considered environmental and operational factors that may have influenced performance.

2.1.1 Crew Resource Management (CRM)

2.1.1.1 Although the aircraft is designed for single-pilot operation, the availability of dual controls allows for the presence of a second pilot. While CRM is not a formal requirement for single-pilot aircraft, its incorporation can significantly enhance safety, particularly during functional check flights. Flying with a second pilot, rather than a regular passenger, enables better workload distribution, which is crucial in emergency situations.

2.1.1.2 In this incident, the reliance on a single pilot created challenges, especially as critical checklists were only accessible via an iPad. This setup proved cumbersome, requiring the pilot to manage flying, troubleshooting, and referencing emergency procedures simultaneously. Effective CRM strategies, such as the presence of a second pilot and more accessible resources, are vital for managing tasks, making informed decisions, and ensuring safety during critical flight phases.

2.1.2. Compliance with Standard Operating Procedures (SOPs)

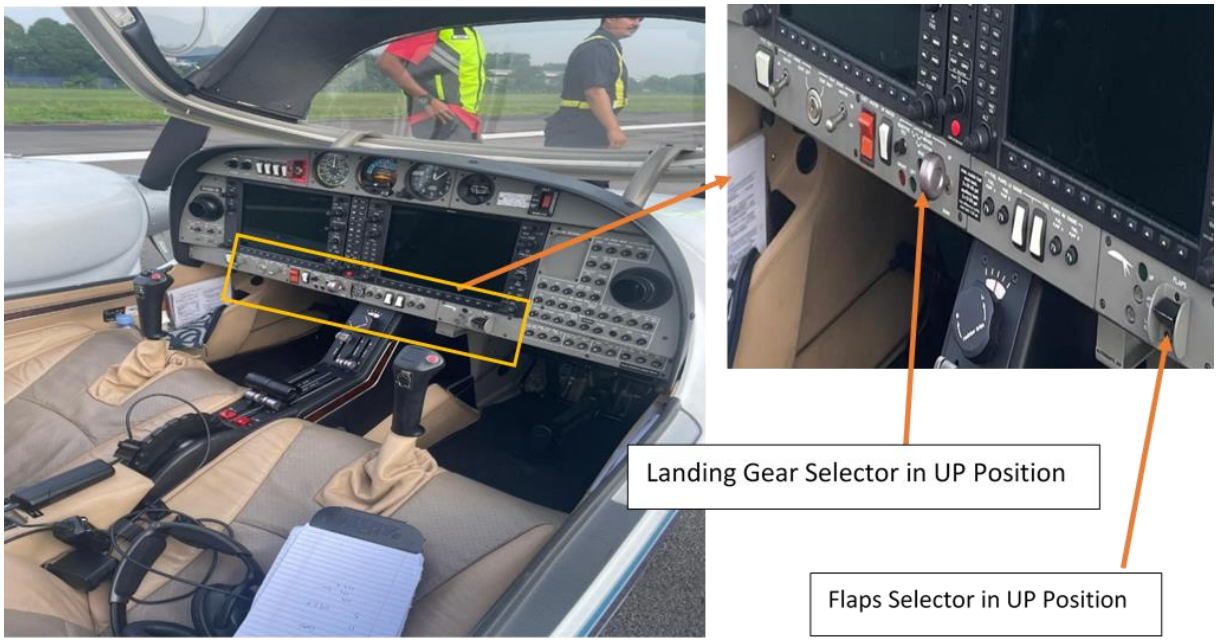


Figure 8: Cockpit Picture After the Incident

The pilot did not complete the pre-landing and landing checklist actions according to SOPs, as confirmed by both the pilot and passenger in interviews. Post-incident analysis revealed that the landing gear selector and flaps were in the up position at the time of impact (see Figure 8). This incident highlights the need to improve checklist accessibility, potentially by displaying it directly within the cockpit rather than relying solely on an iPad. SOPs are designed to safeguard operations by providing clear guidelines and consistent expectations. Non-compliance with SOPs undermines this safety framework, increasing the likelihood of errors, especially under high-stress or emergency conditions.

2.1.3 Training and Competency

The pilot's experience on this aircraft is limited, as reflected in relatively low flying hours due to the underutilisation of the aircraft. Since this is a private aircraft, the responsibility for planning and maintaining training and competency lies with the pilot. According to the pilot’s logbook and interview, the pilot has accumulated 332 hours on this aircraft type since its purchase in 2017. Adequate training and familiarity with an aircraft type are critical for safe and effective operation, particularly in managing in-flight challenges and emergencies. Limited training and infrequent practice on the aircraft may have impacted the pilot’s ability to execute necessary tasks and respond to unexpected situations.

2.1.4 Decision-Making and Judgment

The pilot made a rushed decision to shut down the No. 2 engine based solely on the coolant temperature reaching the red line (see **Appendix C**) during take-off, which was not in accordance with the checklist (see **Appendix D**). Furthermore, the immediate decision to turn back after the engine shutdown compounded the situation, leaving the pilot with limited time to assess and respond. This incident raises concerns about the pilot’s judgement and risk assessment. These decisions may reflect overconfidence in personal capability or an underestimation of the risks associated with deviating from established procedures. Effective decision-making, particularly in high-stakes situations, requires a thorough understanding of potential outcomes and strict adherence to safety protocols.

2.1.5 Workload Management

After shutting down the engine and initiating an immediate turn-back, the pilot likely faced an increased workload and heightened stress, making it more challenging to prioritise tasks effectively. This rapid escalation in demands may have impaired the pilot's ability to maintain situational awareness and execute the required actions accurately. Effective workload management is essential to maintain focus, ensuring all necessary tasks are performed correctly, and sustaining situational awareness, particularly during critical phases of flight.

2.1.6. Situational Awareness

Situational awareness involves understanding the current environment, anticipating future developments, and recognising changes that could impact safety. Due to limited emergency-handling training, the pilot focused on shutting down the engine and made a rushed decision to turn back without completing all necessary landing checklists. This led to a loss of situational awareness, as the pilot concentrated solely on landing rather than balancing the broader demands of the emergency. Maintaining situational awareness is vital, especially in emergencies, to ensure all aspects of the situation are managed effectively, reducing risks and ensuring a safe outcome.

2.1.7 Conclusion – Human Factors Analysis

The human factors analysis identifies key areas where deviations from standard procedures, insufficient training, and ineffective decision-making likely played significant roles in the incident. To prevent similar occurrences, it is crucial to emphasise compliance with established protocols, provide comprehensive and recurrent training, and foster a safety culture that prioritises adherence to SOPs and robust risk management principles.

3.0 CONCLUSION

3.1 Findings

3.1.1 Pilot

3.1.1.1 The pilot was qualified and licensed to operate the DA 42NG Twin Star aircraft in accordance with existing regulations.

3.1.1.2 The pilot's medical certificate was valid, and the pilot was adequately rested to operate the flight.

3.1.1.3 There was no evidence of physical incapacitation or physiological factors that affected the pilot's performance.

3.1.1.4 The pilot transmitted a "MAYDAY" call, which was responded to appropriately by the ATC Tower in accordance with SOPs.

3.1.1.5 The pilot did not complete the before-landing checklist due to fixation on landing.

3.1.1.6 The pilot shut down the engine after the coolant temperature reached a high level, without referring to the emergency checklist.

3.1.1.7 The pilot did not deploy the landing gear due to fixation and loss of situational awareness.

3.1.2 Environmental Conditions

3.1.2.1 The incident occurred at 0828 LT, with clear visibility and favourable meteorological conditions reported.

3.1.3 Aircraft – Diamond DA42NG Twin Star, Registration N566CB

3.1.3.1 The aircraft was airworthy, with a valid Certificate of Airworthiness (C of A) and Certificate of Registration (C of R).

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

3.1.3.3 The aircraft was not equipped with a Flight Data Recorder (FDR) or Cockpit Voice Recorder (CVR), limiting the available data for the investigation.

3.1.3.4 Notably, the aircraft had been operated in Malaysia since 2018 under its current ownership. However, there was no intention to register the aircraft under domestic registration, as required by CAR 147.

3.1.3.5 The aircraft's engine coolant temperature was indicating high.

3.2 Cause/Contributing Factors

3.2.1 The cause of the incident was the pilot’s failure to carry out the checklist for landing with one engine inoperative, leading to the aircraft belly-landing. This serious incident is categorised as **an Abnormal Runway Contact (ARC).**

3.2.2 Contributing factors included deviations from standard procedures, insufficient training, and ineffective decision-making.

4.0 SAFETY RECOMMENDATION

4.1 Aircraft Owner/Operator

The aircraft owner/operator is recommended to enhance pilot training programmes to ensure strict adherence to Standard Operating Procedures (SOPs), particularly in

emergency situations. This should focus on preparing the pilot to manage emergencies effectively and follow critical checklists, even under stress.

4.2 Civil Aviation Authority of Malaysia (CAAM)

CAAM is recommended to strengthen oversight of foreign-registered aircraft operating in Malaysia, especially those operated by foreign-licensed aircrew. This should include enforcing Civil Aviation Regulation (CAR) 147 for foreign aircraft operating in Malaysia for more than six months, and reviewing licensing, training, and operational protocols to ensure compliance with international safety standards and reduce operational risks.

5.0 COMMENTS TO DRAFT FINAL REPORT

In accordance with ICAO Annex 13, paragraph 6.3, the Draft Final Report was sent to the State of Registry (NTSB), State of Design and Manufacturer (Austrian Safety Investigation Authority), Civil Aviation Authority of Malaysia (CAAM), as well as the aircraft operator inviting their significant and substantiated comments on the report. The following (Table 7) is the status of the comments received:

Organisations	Status of Significant and Substantiated Comments
NTSB, United States of America	**No comments received**
Austrian Safety Investigation Authority	**No comments received**
CAAM, Malaysia	**No comments received**
Operator	**No comments received**

Table 7: Status of significant and substantiated comments.

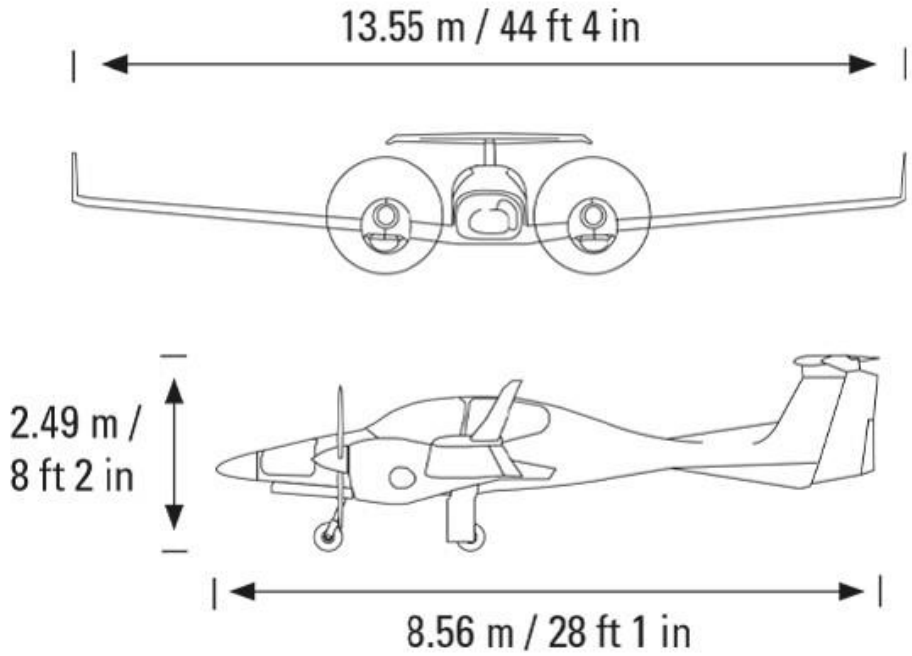
CONCLUDING STATEMENT

This investigation has revealed instances of non-compliance and operational errors. It is essential to emphasise that these findings are not intended to assign blame or liability, but rather to prevent future accidents and improve aviation safety as a whole. Addressing these findings and implementing the recommended safety measures will strengthen aviation safety and reduce risks associated with operational lapses and regulatory gaps. It is imperative that all stakeholders prioritise safety and commit to implementing the necessary measures to prevent recurrence.

INVESTIGATOR IN-CHARGE
Air Accident Investigation Bureau
Ministry of Transport Malaysia

APPENDIX A

Diamond DA42NG Twin Star Dimension



APPENDIX B

N566CB DAMAGE ASSESSMENT REPORT

AIRCRAFT INFORMATION

TCDS NO.: EASA.A.005

AIRWORTHINESS CATEGORY: JAR-23 NORMAL CATEGORY

AIRFRAME

MAKE: DIAMOND AIRCRAFT INDUSTRIES

MODEL: DA-42NG

SERIAL NO.: 42.N111

REGISTRATION: N566CB

STATE OF MFG: AUSTRIA

STATE OF REGISTRY: USA

AFHRS: 686.7

CYC: 493

ENGINE NO.1

MAKE: AUSTRO ENGINE

MODEL: E4-C

SERIAL NO.: E4-C-00023

TSN/TSO: 686.7

CSN/CS0: 493

ENGINE NO.2

MAKE: AUSTRO ENGINE

MODEL: E4-C

SERIAL NO: E4-C-00024

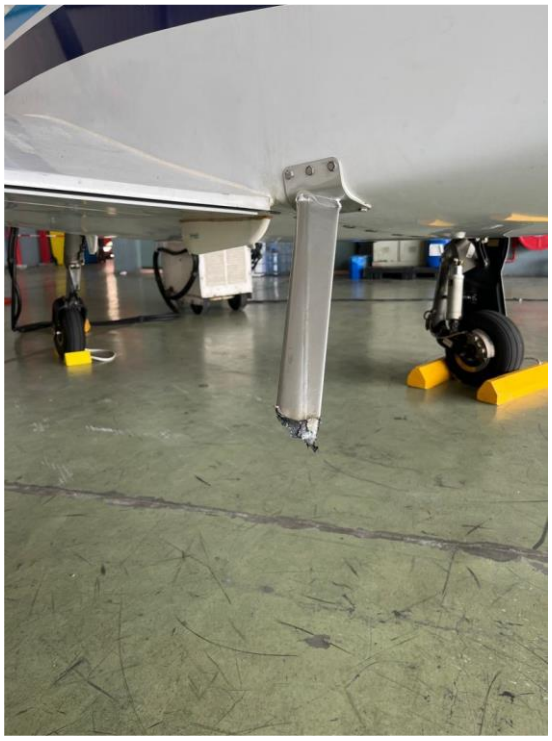
TSN/TSO: 686.7

CSN/CSO: 493

Damage to Antenna

Damage to LH Engine Lower Cowling

LH Engine Exhaust Nozzle



LH Step

Damage to Tail Structure and Rudder Trim

Damage on RH Step

Damage / chip on RH Engine Propeller

Damage to RH Engine Bottom

Damage on RH Engine Exhaust Nozzle

Damage to LH Engine Propeller

All Aircraft Exterior Structure, other than mentioned are in good and satisfactory condition. Other possible damage MAY include:

- **Landing Gear Uplock Mechanism Damage**
- **LH Engine Gearbox integrity due to Prop strike**
- **RH Engine Gearbox integrity due to Prop strike**
- **RH and LH Engine Coolant Cooler Damage**

Reported damages are preliminary damage assessment report. Further assessment shall only be carried out once accident/incident investigation is completed.

END OF REPORT

APPENDIX C

Engine Datalog report

One file (the EvtrRec-file) was indeed corrupted; however, they successfully recovered the necessary information from its content. Below is a copy of the email sent by the software expert.

For your reference, please find the approved temperature limits for the E4 engine type, as specified in the EASA Type Certificate Data Sheet (TCDS), provided below:

1. Temperature Limits

E4:

	Temperature in °C / °F	Comments
Minimum opening up Oil Temperature	50 °C / 122 °F	
Oil Temperature (normal operation)	50 °C - 135 °C / 122 °F - 275 °F	
Max. Oil Temperature:	140 °C / 284 °F	
Minimum Ambient Temperature for Starting	-22 °C / -8 °F	normal
	-30 °C / -22 °F	special procedure required, see Operation Manual
Minimum Fuel Temperature during operation	-30 °C / -22 °F	Operation with Jet Fuels
	-10 °C / 14 °F	Operation with Diesel Fuel Class D, E or F
	- 5 °C / 23 °F	Operation with Diesel Fuel Class C
	+ 5 °C / 41 °F	Operation with Diesel Fuel Unknown Class
Minimum opening up Cooling Fluid Temperature	60 °C / 140 °F	
Max. Cooling Fluid Temperature	105 °C / 221 °F	
Max. Gearbox Temperature	120 °C / 248 °F	

The data shows the limit violations of coolant temperature (105°C) and also oil temperature (135°C):

AE300-Wizard 1.3.7.438 Event -Recorder: Q:\3_DO\06_Non_Public\01_EE\Transfer_Wegscheider\Befundungen\Austria Civil Aviation Safety Investigation Author...

Show Event Filter

Timestamp	DTC	Status	Event Count	Description
26.04.2024 00:57:07	1E17	00000011	120E	Begin Event (passive) ECU B: Event : Coolant temperature operating range (MAX: Coolant temperature above normal range)
26.04.2024 00:51:03	1E17	00000001	1225	Begin Event (active) ECU A: Event : Coolant temperature operating range (MAX: Coolant temperature above normal range)
25.04.2024 09:47:18	1E17	00000001	1203	Begin Event (active) ECU B: Event : Coolant temperature operating range (MAX: Coolant temperature above normal range)
25.04.2024 09:41:14	1E17	00000011	121B	Begin Event (passive) ECU A: Event : Coolant temperature operating range (MAX: Coolant temperature above normal range)
02.04.2024 02:21:01	1E1B	00000010	11E3	End Event (passive) ECU B: Event : Engine oil temperature operating range (MAX: Engine oil temperature above normal range)
02.04.2024 02:14:58	1E1B	00000000	11F2	End Event (active) ECU A: Event : Engine oil temperature operating range (MAX: Engine oil temperature above normal range)
02.04.2024 01:52:19	1E1B	00000011	11E1	Begin Event (passive) ECU B: Event : Engine oil temperature operating range (MAX: Engine oil temperature above normal range)
02.04.2024 01:46:17	1E1B	00000001	11F0	Begin Event (active) ECU A: Event : Engine oil temperature operating range (MAX: Engine oil temperature above normal range)
19.03.2024 01:44:50	1E1B	00000000	11CB	End Event (active) ECU B: Event : Engine oil temperature operating range (MAX: Engine oil temperature above normal range)
19.03.2024 01:38:49	1E1B	00000010	11DF	End Event (passive) ECU A: Event : Engine oil temperature operating range (MAX: Engine oil temperature above normal range)
19.03.2024 01:16:55	1E1B	00000001	11C9	Begin Event (active) ECU B: Event : Engine oil temperature operating range (MAX: Engine oil temperature above normal range)
19.03.2024 01:10:54	1E1B	00000011	11DD	Begin Event (passive) ECU A: Event : Engine oil temperature operating range (MAX: Engine oil temperature above normal range)
08.03.2024 08:32:02	1E1B	00000010	11B5	End Event (passive) ECU B: Event : Engine oil temperature operating range (MAX: Engine oil temperature above normal range)
08.03.2024 08:26:02	1E1B	00000000	11CA	End Event (active) ECU A: Event : Engine oil temperature operating range (MAX: Engine oil temperature above normal range)
08.03.2024 08:00:20	1E1B	00000011	11B3	Begin Event (passive) ECU B: Event : Engine oil temperature operating range (MAX: Engine oil temperature above normal range)
08.03.2024 07:54:20	1E1B	00000001	11C8	Begin Event (active) ECU A: Event : Engine oil temperature operating range (MAX: Engine oil temperature above normal range)
08.03.2024 04:03:05	1E1B	00000000	11AA	End Event (active) ECU B: Event : Engine oil temperature operating range (MAX: Engine oil temperature above normal range)
08.03.2024 03:57:04	1E1B	00000010	11C1	End Event (passive) ECU A: Event : Engine oil temperature operating range (MAX: Engine oil temperature above normal range)
08.03.2024 03:56:27	1E1B	00000001	11A9	Begin Event (active) ECU B: Event : Engine oil temperature operating range (MAX: Engine oil temperature above normal range)
08.03.2024 03:50:27	1E1B	00000011	11C0	Begin Event (passive) ECU A: Event : Engine oil temperature operating range (MAX: Engine oil temperature above normal range)
04.03.2024 02:40:50	1E1B	00000010	11A4	End Event (passive) ECU B: Event : Engine oil temperature operating range (MAX: Engine oil temperature above normal range)
04.03.2024 02:34:58	1E1B	00000011	11A3	Begin Event (passive) ECU B: Event : Engine oil temperature operating range (MAX: Engine oil temperature above normal range)
04.03.2024 02:34:50	1E1B	00000000	11B9	End Event (active) ECU A: Event : Engine oil temperature operating range (MAX: Engine oil temperature above normal range)
04.03.2024 02:28:58	1E1B	00000001	11B8	Begin Event (active) ECU A: Event : Engine oil temperature operating range (MAX: Engine oil temperature above normal range)
06.02.2024 08:50:02	1E1B	00000000	1192	End Event (active) ECU B: Event : Engine oil temperature operating range (MAX: Engine oil temperature above normal range)
06.02.2024 08:44:07	1E1B	00000001	1191	Begin Event (active) ECU B: Event : Engine oil temperature operating range (MAX: Engine oil temperature above normal range)
06.02.2024 08:44:04	1E1B	00000010	11A9	End Event (passive) ECU A: Event : Engine oil temperature operating range (MAX: Engine oil temperature above normal range)
06.02.2024 08:38:10	1E1B	00000011	11A8	Begin Event (passive) ECU A: Event : Engine oil temperature operating range (MAX: Engine oil temperature above normal range)

The engine log shows the serial number E4-C-00024 and a total engine runtime of 874 hours.

There are no faults or warnings stored in the fault code memory.

The data log shows problems with the coolant temperature on 25th and 26th of April:

APPENDIX D

Extract of DA42 NG Checklists

4A.6.8 CLIMB

Initial Climb Check

1.	Landing light	OFF / as required
2.	Landing gear	check UP
3.	FLAPS	check UP
4.	Airspeed	
	Up to 1900 kg (4189 lb)	90 KIAS (best rate-of-climb) 90 KIAS / as required for en route (cruise) climb
	Above 1900 kg (4189 lb)	92 KIAS (best rate-of-climb) 92 KIAS / as required for en route (cruise) climb
5.	POWER lever	92% or maximum 2100 RPM
6.	Trim	as required (ball centered)
7.	Annunciations / Engine / System Page	monitor

CAUTION

If the oil temperature and/or coolant temperature reaches the yellow range during climb, flight should be continued with the airspeed increased by 10 kts and power reduced by 10 % (reduced climb rate) for better engine cooling.

NOTE

Operating in the gearbox temperature cautionary range is permitted. However, prolonged operation is not recommended.

END OF CHECKLIST

3.2 AIRPLANE-RELATED G1000 WARNINGS

3.2.1 WARNINGS / GENERAL

"Warning" means that the non-observation of the corresponding procedure leads to an immediate or important degradation in flight safety. The warning text is displayed in red color. A warning chime tone of 1.5 seconds duration will sound and repeat without delay until the alarm is acknowledged by the crew.

3.2.2 L/R ENG TEMP

L/R ENG TEMP	Left / Right engine coolant temperature is in the upper red range (too high / above 105 °C).

Coolant temperatures above the limit value of 105 °C can lead to a total loss of power due to engine failure.

- Check G1000 for L/R COOL LVL caution message (low coolant level).

L/R COOL LVL caution message not displayed:

During climb:

- Reduce power on affected engine by 10 % or more as required.
- Increase airspeed by 10 KIAS or more as required.
- If the coolant temperature does not reach the green range within 60 seconds, reduce power on affected engine as far as possible and increase airspeed.

CONTINUED

During cruise:

- Reduce power on affected engine.
- Increase airspeed.
- Check coolant temperature in green range.

CAUTION

If high coolant temperature is indicated and the L/R COOL LVL caution message is not displayed, it can be assumed that there is no technical defect in the cooling system and that the above mentioned procedure can decrease the temperature(s). This might not be the case if the coolant temperature does not return to the green range. In this case perform a precautionary landing on the nearest suitable airfield. Prepare for an engine failure in accordance with 3.7.6 - ENGINE FAILURES IN FLIGHT.

L/R COOL LVL caution message displayed:

- Reduce power on affected engine.
- Expect loss of coolant.

WARNING

A further increase in coolant temperature must be expected. Prepare for an engine failure in accordance with 3.7.6 - ENGINE FAILURES IN FLIGHT.

END OF CHECKLIST

3.7.7 LANDING WITH ONE ENGINE INOPERATIVE

Preparation:

CAUTION

For emergency landing the adjustable backrests (if installed) must be fixed in the upright position.

1. Adjustable backrests (if installed) . . . . . adjust to the upright position described by a placard on the roll-over bar and verify proper fixation

2. Safety harnesses. . . . . check fastened & tightened
3. Landing light . . . . . as required
4. Gear warning horn. . . . . check function

Operative engine:

5. Fuel pump remaining engine . . . . . ON
6. FUEL SELECTOR. . . . . check ON

CAUTION

Switching on the fuel pump in combination with CROSSFEED may cause damage to the high-pressure pump.

CAUTION

If CROSSFEED is necessary with pumps ON, special maintenance is required before next flight.

CONTINUED

Inoperative engine:

7.	Engine	check secured (feathered) according to 3.7.3 - ENGINE SECURING (FEATHERING) PROCEDURE

Not before being certain of "making the field":

8.	Airspeed	as required to operate landing gear
9.	Landing gear	DOWN, check 3 green
10.	Trim	as required
11.	Airspeed	reduce as required
12.	FLAPS	as required
13.	Final approach speed:	
	Up to 1900 kg (4189 lb)	86 KIAS (v_{REF}/FLAPS UP) 84 KIAS (v_{REF}/FLAPS APP) 84 KIAS (v_{REF}/FLAPS LDG)
	Above 1900 kg (4189 lb)	92 KIAS (v_{REF}/FLAPS UP) 88 KIAS (v_{REF}/FLAPS APP) 86 KIAS (v_{REF}/FLAPS LDG)

WARNING

One-engine inoperative approaches for landing with flap settings of more than flaps UP are not recommended unless a safe landing is assured („Making the field"). Higher flap settings increase the loss of altitude during the transition to a one engine inoperative go-around / balked landing.

CONTINUED

14. POWER lever . . . . . as required
15. Trim . . . . . as required / directional trim to neutral

NOTE

Higher approach speeds result in a significantly longer landing distance during flare.

CAUTION

In conditions such as (e.g.) strong wind, danger of wind shear or turbulence a higher approach speed should be selected.

- Perform normal touchdown and deceleration on ground.

END OF CHECKLIST