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MH370

Principal Investigative Dossier - Complete Research Edition

AUTHOR APPROVED COMPLETE RESEARCH EDITION - AWAITING INDEPENDENT SPECIALIST REVIEW

Evidence cut-off: 7 August 2026

External specialist validation: pending

Institutional right of reply: pending

REALITY BEFORE RELIANCE | VERIFICATION BEFORE INTERPRETATION | EVIDENCE BEFORE NARRATIVE

Independent public-source case study - not a client engagement

Document control	Value
Matter	Malaysia Airlines Flight MH370
Aircraft	Boeing 777-200ER, registration 9M-MRO
Operating mode	Independent public-source case study - not a client engagement
Evidence cut-off	7 August 2026, 14:08 UTC / 16:08 SAST
Current dossier state	Version 0.5 Controlled Internal Final / Author Approved Complete Research Edition - Awaiting Independent Specialist Review
External specialist validation	Not completed
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Professional boundary and status

This is an independent public-source research product. It is not an official accident investigation, legal opinion, engineering certification, accredited forensic examination or substitute for the Malaysian Annex 13 investigation. It does not claim access to non-public evidence. Specialist review, institutional right of reply and final publication approval are not simulated.

This Principal Investigative Dossier is the controlling narrative. Domain-level technical detail is expanded in Annexes A-H and the supporting control records.

Evidence classification

Classification	Meaning
ESTABLISHED	Directly supported to a sufficiently high factual standard.
VERY STRONGLY SUPPORTED	Strong convergence with little credible contradictory evidence.
STRONGLY SUPPORTED	Substantial evidence supports the proposition, but material uncertainty remains.
SUPPORTED	Evidence favours the proposition but does not permit strong reliance.
INDETERMINATE	Available evidence does not responsibly discriminate between material alternatives.
WEAK	Technically or logically possible but poorly supported.
UNSUPPORTED	No sufficient positive evidence identified.
CONTRADICTED	Material evidence conflicts with the proposition.

Reliance classification

Reliance	Use
R1	Direct factual reliance.
R2	Strong professional analytical reliance.
R3	Conditional or model-dependent reliance.
R4	Hypothesis-level reliance only.
R5	Do not rely upon as an established factual proposition.

Executive summary

MH370 departed Kuala Lumpur normally, ceased normal secondary-surveillance identification after the IGARI region, diverted westward, continued flying for several hours after the final radar-supported phase, maintained satellite-network interaction and proceeded toward the southern Indian Ocean. Confirmed physical debris from 9M-MRO independently reinforces the broad southern Indian Ocean conclusion.

The evidence is far stronger on broad route and loss region than on initiating cause, actor, intent, motive or exact impact coordinate. Those distinctions are the central knowledge boundary of the dossier.

At Version 0.5, deliberate onboard human action (H3) and emergency response followed by later incapacitation (H6) remain the two strongest surviving broad causal families. Neither reaches the threshold for an established cause. External specialist validation and adversarial review remain pending.

Matter at a glance

Field	Assessment
Persons aboard	239: 227 passengers and 12 crew
Broad flight reconstruction	Westward diversion followed by prolonged flight and southern-route progression
Broad loss region	Southern Indian Ocean - VERY STRONGLY SUPPORTED
Physical evidence	Confirmed debris from 9M-MRO recovered
Cause	INDETERMINATE
Actor	INDETERMINATE
Motive	INDETERMINATE
Exact location	INDETERMINATE
Top surviving cause families	H3 deliberate onboard human action; H6 emergency response followed by incapacitation
Current search	15,000 km2 target; approx 7,571 km2 surveyed by Jan 2026; 7,428.54 km2 reported remaining; agreement extended to 30 Jun 2027

1. Normal departure and early flight

The pre-abnormal record supports a normal departure and ordinary initial climb/route progression. The last ACARS transmission recorded in the official chronology occurred at 17:07:29 UTC. No public occurrence-specific evidence establishes that the aircraft departed with a known catastrophic systems condition.

Finding: normal initial flight - ESTABLISHED (R1).

2. Loss of normal secondary surveillance

The position symbol associated with normal secondary surveillance disappeared at approximately 17:21 UTC. This is an observed surveillance outcome. It does not directly reveal the cockpit switch state or identify the person, if any, who caused it.

Finding: loss of normal secondary surveillance - ESTABLISHED (R1). Deliberate manual transponder shutdown by a particular person - NOT ESTABLISHED.

3. Primary/military radar and westward diversion

Primary and military radar reconstruction supports a turnback and westward movement across the Malay Peninsula and toward northern Sumatra. The phrase “disappeared from radar” is therefore misleading when it implies complete immediate disappearance from every surveillance source.

Finding: westward diversion - VERY STRONGLY SUPPORTED (R2).

4. Active-control inference

The geometry and coherence of the early diversion are difficult to explain as a simple passive continuation of the previous aircraft state. At least part of the initial diversion therefore supports active aircraft control. Radar does not reveal cockpit mode or actor identity.

Finding: active control during at least part of the initial diversion - STRONGLY SUPPORTED (R2), pending radar and flight-operations specialist review.

5. Final radar phase and evidence-regime boundary

The final radar detection used in later modelling is approximately 18:22:12 UTC. After this point, direct geographic surveillance gives way to a model-dependent reconstruction using SATCOM metadata, aircraft performance and later physical evidence. This boundary is important because post-radar location precision must not be presented as if it were directly observed.

6. 18:25 SATCOM log-on

At 18:25 UTC the aircraft satellite terminal initiated a log-on sequence. The event is established. Its cause is not. Possible broad mechanisms include electrical interruption/restoration, deliberate isolation/restoration, emergency-related reconfiguration or another technical transition.

Finding: 18:25 log-on occurred - ESTABLISHED. Cause - INDETERMINATE.

7. Continued multi-hour flight

Satellite-network signalling continued for hours after the last radar-supported phase. This makes immediate destruction or immediate ocean impact near the original disappearance point inconsistent with the later technical record.

Finding: continued multi-hour flight - VERY STRONGLY SUPPORTED (R2).

8. BTO and BFO evidence

Burst Timing Offset is fundamentally a range-related measurement after system corrections. It creates arcs of possible positions rather than a unique location. Burst Frequency Offset contains information about relative motion and system frequency behaviour and is highly informative for route-family analysis. Neither directly records cockpit intent, exact heading, pitch, bank or human control input.

9. South versus north

The integrated SATCOM record strongly favours a southern route. The later recovery of confirmed aircraft debris around the western Indian Ocean adds a materially independent evidence stream consistent with southern Indian Ocean loss.

Finding: southern route - VERY STRONGLY SUPPORTED (R2). An equivalent northern route is contradicted by the total current evidence.

10. Southern Indian Ocean loss

The broad geographic conclusion is substantially stronger than any narrow candidate coordinate. SATCOM, confirmed debris, aircraft endurance/performance analysis, drift compatibility and search history converge on the southern Indian Ocean.

Finding: southern Indian Ocean loss - VERY STRONGLY SUPPORTED (R2).

11. Seventh arc and location precision

The seventh arc is a locus of possible aircraft positions corresponding to the final SATCOM range relationship. It is not an observed impact line. Movement after the last transmission depends on uncertain aircraft state. Exact-coordinate claims therefore require additional assumptions not present in the raw measurement.

12. Fuel exhaustion

The timing, endurance and final power/log-on sequence make fuel exhaustion the best-supported current explanation for the final power transition. No Flight Data Recorder is available to directly confirm the final fuel state.

Finding: fuel exhaustion - STRONGLY SUPPORTED (R2), systems-specialist dependent.

13. Final BFO and descent

The final BFO values differ materially from the preceding pattern and are strongly compatible with a substantial, high and increasing descent under published end-of-flight analyses. Exact descent-rate values remain model-dependent.

Finding: rapid final descent - STRONGLY SUPPORTED, MODEL-DEPENDENT (R3).

14. Physical debris

A graded physical-debris corpus exists. Three items sit at the highest confirmed level, including the Réunion flaperon and confirmed left and right outboard flap sections. Other items carry lower positive associations or remain Not Identifiable.

Finding: confirmed physical debris from 9M-MRO exists - ESTABLISHED (R1).

15. Flap state and ditching

Damage analysis of the recovered right outboard flap supports the conclusion that the flap was most likely retracted when it separated and that the flaperon was probably near neutral. This reduces the likelihood of a conventional flap-extended landing-style ditching. It does not establish absence of human control or one exact impact attitude.

Finding: right outboard flap most likely retracted - STRONGLY SUPPORTED, specialist-dependent (R3).

16. Breakup and explosives

The debris shows substantial structural fragmentation, but the exact breakup sequence is unresolved. Selected debris testing does not establish explosive destruction. Negative results on selected components cannot logically prove that every conceivable explosive mechanism was impossible.

17. Drift evidence and geographic hierarchy

Debris drift modelling is valuable because it is substantially independent of SATCOM. CSIRO work historically elevated the 36S-33S / around 35S region. Later academic Markov-chain work produced a materially more northerly result near 25S. Neither constitutes direct wreckage detection. Specialist oceanographic comparison remains required.

18. Search history as falsification

The ATSB-led underwater search covered more than 120,000 km² with high-resolution sonar and eliminated that searched area with high confidence according to ATSB. Ocean Infinity's 2018 operation covered more than 112,000 km². These non-findings materially weaken narrow location models expected to contain the wreckage. They do not automatically falsify the broad southern Indian Ocean conclusion.

19. Current Ocean Infinity search

Malaysia signed a new no-find-no-fee agreement on 25 March 2025 for an estimated 15,000 km² area. Two search phases through 23 January 2026 produced 28 operational search days and approximately 7,571 km² surveyed. On 29 June 2026 Malaysia announced an extension through 30 June 2027 and reported 7,428.54 km² remaining. No confirmed wreckage location had been announced by the evidence cut-off.

20. Exact location

The main wreckage has not been located. Approximate 35S and 25S families remain analytical candidates rather than direct observations. The current Ocean Infinity target likewise represents a high-priority model, not a known crash site.

Finding: exact wreckage location - INDETERMINATE (R5).

21. Crew and actor attribution

The public record does not establish who exercised the relevant control. Operational capability, crew circumstances and simulator evidence can inform hypotheses but do not identify an actor by themselves. The Pilot-in-Command is not treated as an established actor at Version 0.5.

Finding: actor - INDETERMINATE.

22. Home simulator

The public investigation record includes relevant manually programmed coordinate evidence associated with the Pilot-in-Command's home simulator. The material is legitimate circumstantial evidence. The public authenticated record does not establish an exact one-session rehearsal of the final MH370 route.

Finding: simulator evidence relevant; exact rehearsal claim - NOT ESTABLISHED.

23. Cargo and lithium batteries

MH370 carried lithium-ion batteries, but the widely repeated "2.4 tonnes of lithium batteries" claim conflates battery mass with a larger cargo consignment. The project record tracks approximately 221 kg of lithium-ion batteries. No occurrence-specific positive evidence establishes a mangosteen/battery chemical-fire scenario.

24. Stolen passports and terrorism

Two passengers travelled using stolen passports. This is a real security anomaly. No sufficient positive evidence links those passengers to the disappearance.

Finding: stolen passports prove terrorism - UNSUPPORTED.

25. Remote takeover

No authenticated occurrence-specific evidence establishes that 9M-MRO was remotely taken over by Boeing, a government or another actor. Patents or general remote-control concepts do not prove installation or use on this flight.

Finding: remote takeover - UNSUPPORTED.

26. Institutional response and governance

The record supports material ATC, coordination, projected-position and civil-military response deficiencies. The existence of those failures does not establish deliberate coordinated concealment.

Finding: material institutional response failures - ESTABLISHED. Coordinated government cover-up - UNSUPPORTED.

27. Causal hypothesis position

H3 deliberate onboard human action and H6 emergency response followed by later incapacitation currently offer the greatest explanatory coverage among broad cause families. H3 lacks direct actor, intent and motive evidence. H6 lacks direct evidence of the initiating emergency and later incapacitation. The dossier therefore retains H8, INDETERMINATE, as the final cause state at Version 0.5.

28. Source dependence and authority recycling

Citation count is not independent corroboration. One underlying official or forensic source repeated by newspapers, documentaries, books and social media remains one evidence origin. The dossier counts independent evidence lineages rather than publication volume.

29. Knowledge boundary

Strongly supported: broad route, prolonged flight, southern Indian Ocean loss and physical aircraft identification. Strong but inferential: active control, fuel exhaustion and rapid final descent. Indeterminate: initiating cause, actor, intent, motive and exact coordinate.

30. Publication and reliance ceiling

The dossier is complete as an internal research product but not publication-final. External specialist review, adversarial review execution, institutional right of reply, legal/fairness review, citation/source freeze, visual QA and formal release authority remain outstanding.

Master proposition matrix

Proposition	Classification	Reliance
Normal initial flight	ESTABLISHED	R1
Normal secondary surveillance later ceased	ESTABLISHED	R1
Westward diversion	VERY STRONGLY SUPPORTED	R2
At least part of initial diversion involved active control	STRONGLY SUPPORTED	R2; specialist-dependent
Specific manual transponder shutdown by identified person	NOT ESTABLISHED	R3
18:25 SATCOM log-on occurred	ESTABLISHED	R1
Cause of 18:25 event	INDETERMINATE	R4
Continued multi-hour flight after radar phase	VERY STRONGLY SUPPORTED	R2
Southern route	VERY STRONGLY SUPPORTED	R2
Southern Indian Ocean loss	VERY STRONGLY SUPPORTED	R2
Fuel exhaustion as final power-sequence explanation	STRONGLY SUPPORTED	R2; systems review pending
Final BFOs compatible with substantial rapid descent	STRONGLY SUPPORTED, MODEL-DEPENDENT	R3
Confirmed MH370 debris exists	ESTABLISHED	R1
Right outboard flap most likely retracted at separation	STRONGLY SUPPORTED, SPECIALIST-DEPENDENT	R3
Exact breakup sequence	INDETERMINATE	R4
Explosive destruction as established cause	NOT ESTABLISHED	R4
Around 35S as exact location	NOT ESTABLISHED	R4
Around 25S as solved location	NOT ESTABLISHED	R4
Exact wreckage coordinate	INDETERMINATE	R5
Pilot-in-Command as established actor	NOT ESTABLISHED	R4
Terrorism	UNSUPPORTED	R5
Remote takeover	UNSUPPORTED	R5
Material institutional response/coordination failures	ESTABLISHED	R1
Coordinated Malaysian government cover-up	UNSUPPORTED	R5

Hypothesis matrix

ID	Hypothesis	Current assessment
H1	Early incapacitation / hypoxia	Weak as a complete explanation
H2	Technical failure / fire / electrical event	Weak-moderate as a complete model
H3	Deliberate onboard human action	Strong viable, not established
H4	Other onboard human intervention	Viable in principle / weak positive evidence
H5	Hijacking / third-party unlawful interference	Weak / not excluded
H6	Emergency response followed by incapacitation	Strong viable, not established
H7	Other material scenario	Reserve class
H8	Indeterminate / null epistemic classification	Current final cause state

Final decision record

Based on the totality of the controlled public-source record, MH370 can be reconstructed with high confidence at broad flight-path and geographic level, but not at definitive causal or exact-location level. The aircraft diverted westward, continued flying for several hours and proceeded toward the southern Indian Ocean, where the total evidence very strongly supports that it was ultimately lost.

Confirmed physical debris independently reinforces that broad conclusion. At least part of the early diversion was likely actively controlled. Fuel exhaustion is the best-supported explanation for the final power sequence, and the final satellite-frequency evidence is strongly compatible with substantial descent.

The record does not establish the controller, destructive intent, motive, precise initiating cause or exact wreckage location. Deliberate onboard human action and emergency response followed by later incapacitation remain the two strongest surviving broad causal families. Neither presently reaches the threshold required for final cause attribution.