

APERTURE

RESEARCH & VERIFICATION

MH370 VERSION 0.6 PACKAGE INDEX

Research Closure and Controlled Base Record

Evidence cut-off: 7 August 2026

READY SUBJECT TO INDEPENDENT SPECIALIST REVIEW

**Reality before reliance. Verification before interpretation.
No conclusion stronger than the available evidence.**

Independent public-source case study - not a client engagement
Prepared by Paul Hattingh | Aperture Research & Verification

PACKAGE PURPOSE

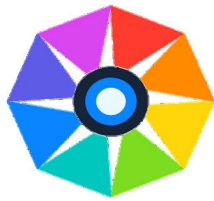
This package closes general desk research for the current evidence cut-off and preserves the author-approved v0.5 base record. The v0.6 research documents supersede v0.5 only where they explicitly change or qualify a proposition.

CONTENTS

- 01 Research Readiness Report v0.6
- 02 Research Addendum v0.6
- 03 Evidence Gaps and Specialist Questions v0.6
- 04 Source Register Update v0.6
- 05 Executive Research Closing Record v0.6
- 06 Combined v0.6 Research Closure Complete Case Pack
- machine_readable_registers - structured controls required by v10.5
- base_record_v0.5 - complete author-approved prior controlled PDF set

STATUS LIMIT

This is not an Approved Final Public Edition and does not simulate independent specialist, legal or institutional review. It is the highest honest internal research state presently supported by the accessible public evidence.



APERTURE

RESEARCH & VERIFICATION

MH370 RESEARCH READINESS REPORT

Version 0.6 Research Closure Assessment

Evidence cut-off: 7 August 2026

READY SUBJECT TO INDEPENDENT SPECIALIST REVIEW

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DOCUMENT CONTROL

Matter	Malaysia Airlines Flight MH370
Governing master	PHW Research AI v10.5
Operating mode	Independent public-source case study - not a client engagement
Research edition	Version 0.6 Research Closure
Evidence cut-off	7 August 2026
Research Readiness Score	89 / 100
Readiness classification	Ready Subject to Independent Specialist Review
External specialist review	Not completed
Institutional right of reply	Not completed
Public release	Not authorised

READINESS DECISION

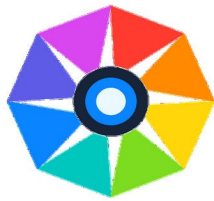
The available public evidence is sufficiently intensive, traceable and cross-tested to support a full professional dossier. Remaining high-value deficiencies are concentrated in specialist reproducibility, non-public primary evidence and current-search quality-control data. They restrict external reliance, but do not justify indefinite general source collection.

SCORE BASIS

Matter understanding, central question, scope	8/8	Mature and stable.
Primary evidence acquisition and coverage	13/15	Strong record; raw military radar and full simulator corpus unavailable.
Source authentication, quality and authority	9/10	Primary official and technical sources dominate.
Claim/source and evidence-origin traceability	8/10	Strong rebuild; historic ID mapping incomplete.
Chronology, entities and relationships	8/8	Material flight/search chronology established.
Counter-evidence, contradictions, source dependence	10/10	Adversarial sources explicitly tested.
Competing hypotheses, steelman, falsification	10/10	H1-H8 framework preserved.
Technical/scientific analysis	7/8	Extensive; full numerical SATCOM reproduction open.
Evidence gaps and specialist escalation	8/8	Explicit and ranked.
Legal/privacy/fairness	4/5	ROR/legal fairness pending for release.
Current status and reproducibility	2/4	Search current; numerical reproduction incomplete.
Completeness, termination and QC	2/4	Desk research closed; external review remains.

TERMINATION DECISION

General desk research may close under the diminishing-value test. Further broad source collection is unlikely to reverse the broad southern-Indian-Ocean conclusion. The next productive work is independent technical reproduction/review, current-search monitoring, institutional right of reply and future primary-evidence integration.



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RESEARCH & VERIFICATION

MH370 RESEARCH ADDENDUM

Version 0.6 - Technical Closure and Proposition Update

Evidence cut-off: 7 August 2026

RESEARCH CLOSED FOR GENERAL DESK WORK - SPECIALIST REVIEW PENDING

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1. PURPOSE AND CONTROL

This Addendum records research completed after the author-approved Version 0.5 base dossier. It does not silently overwrite the controlled v0.5 record. Where a v0.6 proposition differs from v0.5, the v0.6 proposition governs the current research state.

2. SATCOM AND 18:25 SDU EVENT

The 18:25 log-on is best treated as two questions: what happened to the SDU, and why it happened. The technical record strongly supports restoration of SDU power following a material interruption. The public record does not establish whether that interruption resulted from deliberate cockpit electrical reconfiguration, a local technical failure or another electrical event.

3. 00:19 END-OF-FLIGHT SEQUENCE

The final aircraft-initiated SDU log-on is more strongly connected to fuel exhaustion than the 18:25 event. The ATSB framework links engine flame-out, main AC power loss, APU auto-start and restoration of SDU power. This remains the best-supported public explanation, subject to Boeing 777 systems specialist review.

The absence of the expected subsequent IFE ground connection constrains the terminal sequence but does not uniquely distinguish impact, loss of APU/SDU power, earlier IFE isolation or satellite line-of-sight loss.

4. FINAL BFO AND ADVERSARIAL MODEL

The final BFOs strongly support a substantial and rapidly changing descent component, but BFO is not a direct vertical-speed recorder. Exact descent rate, attitude, track and control state remain model-dependent.

The 2024 Lyne controlled-eastward-descent paper is retained as a serious adversarial source. It demonstrates the need to test alternate motion decomposition, but it does not presently falsify the ATSB/DSTG/Holland interpretation. Its broader controlled-ditching and precise-location narrative requires assumptions not established by the final BFO values alone.

5. RADAR AND ACTIVE CONTROL

The Malaysian investigation records the military association of the primary-radar track with MH370 and notes that some reconstructed speed/height variations could not be replicated in Boeing 777 simulator work. This supports caution about precise altitude/speed claims while preserving the stronger westward-diversion and active-control inference.

6. SIMULATOR EVIDENCE

The official forensic report recovered more than 2,700 coordinates, mostly default-game coordinates, plus seven manually programmed coordinates from Volume Shadow Information. The report could not determine whether the seven waypoints came from one or more files and did not find a route similar to MH370's actual reconstructed path. The evidence is relevant circumstantial material but does not establish an exact rehearsal.

7. CARGO AND FIRE CLAIMS

The official cargo record confirms a 2,453 kg Motorola consignment, but only 221 kg was lithium-ion batteries; the remainder comprised chargers and radio accessories. The recurring claim that MH370 carried approximately 2.4 tonnes of lithium batteries is materially misleading. No occurrence-specific public evidence establishes a battery/mangosteen fire as the cause.

8. DEBRIS AND FLAP STATE

ATSB examination linked recovered outboard flap sections to 9M-MRO through manufacturing records. The right outboard flap was assessed as most likely retracted when it separated, and the flaperon probably at or close to neutral. This weakens a conventional flap-extended ditching scenario but does not establish control state at impact.

9. SEARCH AND LOCATION

Historical search exclusion must be resolution-sensitive. ATSB documented greater than 95% detection confidence for good-quality sonar coverage, but lower-confidence and data-gap categories also existed. Searched is therefore not treated as uniform 100% exclusion.

Malaysia extended the current Ocean Infinity agreement from 1 July 2026 to 30 June 2027. The official notice states that 7,428.54 km² remains to be completed.

10. CAUSE AND ACTOR

The new work does not justify a change from the canonical cause boundary. H3 deliberate onboard human action and H6 emergency response followed by later incapacitation remain the strongest broad causal families. Neither is established. Actor, intent and motive remain indeterminate.

11. UPDATED PROPOSITION MATRIX

V06-P001	00:19 SATCOM sequence records an SDU log-on following an interruption and restoration of electrical power.	ESTABLISHED / R1
V06-P002	Fuel exhaustion followed by APU-supplied electrical restoration is the best-supported explanation for the 00:19 SDU log-on.	STRONGLY SUPPORTED / R2
V06-P003	Absence of the expected post-log-on IFE connection constrains the terminal sequence but does not uniquely identify impact, APU power loss, IFE isolation or loss of satellite line-of-sight.	ESTABLISHED LIMITATION / R1
V06-P004	The final BFO measurements are strongly consistent with a substantial and rapidly changing descent component but do not independently establish exact descent rate, attitude or control state.	STRONGLY SUPPORTED, MODEL-DEPENDENT / R3
V06-P005	The official final-BFO framework accounts for aircraft horizontal motion and track-dependent Doppler effects; it is not accurately described as simply ignoring horizontal motion.	STRONGLY SUPPORTED / R2
V06-P006	Alternative combinations of horizontal trajectory and vertical motion can change the final-BFO solution; the last two BFO values do not uniquely determine one exact 3-D trajectory.	STRONGLY SUPPORTED / R2
V06-P007	The 2024 controlled-eastward-descent paper raises a material adversarial challenge but does not presently falsify the ATSB/DSTG rapid-descent interpretation.	SUPPORTED - specialist review required / R3
V06-P008	The 18:25 SDU log-on is strongly consistent with restoration of SDU power after a material interruption; the specific historical cause of that interruption remains indeterminate.	STRONGLY SUPPORTED / cause INDETERMINATE / R2/R4
V06-P009	A routine loss of only the left engine generator or a normal brief AC-bus transfer is not, by itself, a sufficient explanation for the 18:25 SDU log-on.	STRONGLY SUPPORTED / R2
V06-P010	The public record does not establish that the 18:25 event was an aircraft-wide dual-AC-bus failure or deliberate cockpit action.	INDETERMINATE / R4
V06-P011	The right outboard flap was most likely retracted when it separated; this weakens a conventional flap-extended ditching scenario but does not establish control state at impact.	STRONGLY SUPPORTED, SPECIALIST-DEPENDENT / R3
V06-P012	The pilot home-simulator evidence is relevant circumstantial evidence, but the official forensic record did not establish one continuous rehearsal of MH370's later route.	ESTABLISHED LIMITATION / R2
V06-P013	The lithium-ion battery mass was 221 kg within a 2,453 kg consignment; describing MH370 as carrying 2.4 tonnes of lithium batteries is materially misleading.	ESTABLISHED / R1
V06-P014	The Malaysian military associated the primary-radar track with MH370; radar-based speed/height reconstructions contain acknowledged limitations, while the track behaviour supports active control during at least part of the diversion.	STRONGLY SUPPORTED / R2/R3
V06-P015	Historic underwater search data includes areas with >95% detection confidence and lower-confidence/gap areas; searched must not automatically be equated with uniform 100% exclusion.	ESTABLISHED / QUALIFIED / R2
V06-P016	The 2026 Ocean Infinity agreement was extended to 30 June 2027 with 7,428.54 km2 of the current target area reported as remaining.	ESTABLISHED CURRENT STATUS / R1

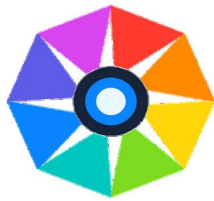
12. SOURCES ADDED OR RE-OPENED

V06-S001 - Malaysia Ministry of Transport. Safety Investigation Report MH370 (9M-MRO), 2018.
<https://www.mot.gov.my/en/MH370%20Investigation%20Report/01-Report/MH370SafetyInvestigationReport.pdf>
 V06-S002 - ATSB. MH370 Data Communication Logs, amended 30 March 2017.
<https://www.atsb.gov.au/publications/educational-fact-sheet/2022/aviation/mh370-update-signalling-unit-logs>
 V06-S003 - ATSB. Definition of Underwater Search Areas, 3 Dec 2015. <https://www.atsb.gov.au/investigations/ae-2014-054>
 V06-S004 - ATSB. Operational Search for MH370 Final Report, 3 Oct 2017.
https://www.atsb.gov.au/sites/default/files/media/5773565/operational-search-for-mh370_final_3oct2017.pdf
 V06-S005 - ATSB. MH370 Search and Debris Examination Update.
https://www.atsb.gov.au/sites/default/files/media/5773389/ae-2014-054_mh370-search-and-debris-update_aug2017.pdf
 V06-S006 - Ian D. Holland. MH370 Burst Frequency Offset Analysis and Implications on Descent Rate at End-of-Flight.
<https://arxiv.org/abs/1702.02432>
 V06-S007 - Vincent Lyne. Final two MH370 communications suggest controlled eastward descent, Journal of Navigation 77(2).
<https://doi.org/10.1017/S0373463324000262>
 V06-S008 - CSIRO. MH370 drift modelling using genuine Boeing 777 flaperon, 2017. <https://www.csiro.au/en/news/All/Articles/2017/April/mh370>

V06-S009 - Geoscience Australia. MH370 Data Release / Phase Two underwater search data.

<https://www.ga.gov.au/about/projects/marine/mh370-data-release>

V06-S010 - Malaysia Ministry of Transport. Extension of Agreement with Ocean Infinity, 29 Jun 2026. https://www.mot.gov.my/my/Kenyataan%20Media/Tahun%202026/29%20JUN%2026_KENYATAAN%20MEDIA%20MENTERI%20PENGANGKUTAN%20PERLANJUTAN%20PERJANJIAN%20ANTARA%20KERAJAAN%20MALAYSIA%20%26%20OCEAN%20INFINITY%20BAGI%20MENGESAN%20BANGKAI%20PESAWAT%20MH370.pdf



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MH370 EVIDENCE GAP AND SPECIALIST REVIEW REGISTER

Version 0.6

Evidence cut-off: 7 August 2026

READY FOR SPECIALIST REVIEW - PUBLIC RELEASE NOT AUTHORISED

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EVIDENCE GAPS

V06-EG01	Main wreckage / exact wreckage coordinate	EXTREME	Direct detection required; desk research cannot resolve.
V06-EG02	FDR and CVR	EXTREME	Requires recovery and readable recorder data.
V06-EG03	Full raw military-radar dataset	HIGH	Could refine track, altitude, speed and target association.
V06-EG04	Full original simulator forensic corpus	HIGH	Needed to test file/session relationships beyond the published summary.
V06-EG05	Independent SATCOM computational reproduction with full ephemeris/error budget	HIGH	Required before high external reliance on exact model outputs.
V06-EG06	B777 SDU/electrical power-path specialist validation	HIGH	Required for 18:25 and 00:19 mechanism validation.
V06-EG07	Current 2025-2027 Ocean Infinity AUV tracks, sensor QC, contacts and detection confidence	HIGH	Not sufficiently public for independent exclusion analysis.
V06-EG08	Complete item-level debris provenance/custody corpus	MODERATE-HIGH	Would improve reproducibility and attribution control.
V06-EG09	Independent physical-oceanography comparison of competing location families	HIGH	Needed for narrow-location ranking.
V06-EG10	Occurrence-specific evidence of fire, decompression or hypoxia	HIGH	No public occurrence-specific evidence resolves H1/H2/H6.
V06-EG11	Direct actor and intent evidence	EXTREME	Current public evidence does not identify controller, intent or motive.
V06-EG12	Institutional right of reply and external specialist review	HIGH FOR RELEASE	Required before externally relied-upon final publication.

SPECIALIST QUESTIONS

SATCOM / RF

- Independently reproduce the final BFO calculation including track, horizontal/vertical velocity coupling, satellite ephemeris, AFC, terminal bias and oscillator warm-up uncertainty.
- Test whether the 2024 declination model materially changes the permissible 00:19 flight-state range.
- State the strongest defensible inference from the last two BFO values without overstating an exact descent rate.

BOEING 777 SYSTEMS

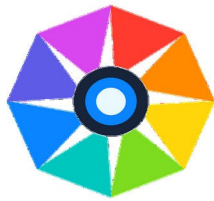
- Validate the SDU power path and conditions required for the 18:25 and 00:19 re-logons.
- Assess whether routine single-generator loss or bus transfer is sufficient for the 18:25 reboot.
- Validate the fuel-exhaustion/APU auto-start sequence and IFE reconnection expectations.

RADAR / FLIGHT OPERATIONS

- Assess reliability limits of the Malaysian primary-radar speed/height reconstruction.
- State how strongly the diversion supports active/manual or programmed control, separately from actor identity.
- Assess end-of-flight control-state possibilities consistent with the final SATCOM data.

STRUCTURES / OCEANOGRAPHY / SEARCH

- Review the right-flap retracted-state inference and its actual effect on controlled-ditching hypotheses.
- Compare competing narrow-location families using consistent drift assumptions and uncertainty.
- Quantify responsible exclusion confidence for historic and current searched seabed.



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MH370 SOURCE REGISTER UPDATE

Version 0.6 - Proposition-Specific Update

Evidence cut-off: 7 August 2026

CONTROLLED RESEARCH RECORD

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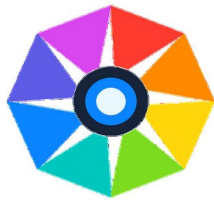
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V0.6 SOURCE REGISTER

V06-S001	Malaysia Ministry of Transport - Safety Investigation Report MH370 (9M-MRO), 2018	Primary official	Simulator, radar, cargo, aircraft systems, findings
V06-S002	ATSB - MH370 Data Communication Logs, amended 30 March 2017	Primary technical	BTO/BFO signalling records and R600 calibration
V06-S003	ATSB - Definition of Underwater Search Areas, 3 Dec 2015	Primary technical/search	18:25 SDU power interruption, APU/IFE/end-of-flight system logic
V06-S004	ATSB - Operational Search for MH370 Final Report, 3 Oct 2017	Primary search authority	Final BFO interpretation, end-of-flight, sonar detection confidence
V06-S005	ATSB - MH370 Search and Debris Examination Update	Primary search/debris authority	Right-flap state, final BFO, end-of-flight simulations
V06-S006	Ian D. Holland - MH370 Burst Frequency Offset Analysis and Implications on Descent Rate at End-of-Flight	Technical research	Independent final-BFO sensitivity and descent analysis
V06-S007	Vincent Lyne - Final two MH370 communications suggest controlled eastward descent, Journal of Navigation 77(2)	Peer-reviewed adversarial technical	Alternative final-BFO model requiring independent specialist reproduction
V06-S008	CSIRO - MH370 drift modelling using genuine Boeing 777 flaperon, 2017	Government scientific	Object-specific flaperon drift and location constraints
V06-S009	Geoscience Australia - MH370 Data Release / Phase Two underwater search data	Government data	Public sonar, multibeam and search-quality data
V06-S010	Malaysia Ministry of Transport - Extension of Agreement with Ocean Infinity, 29 Jun 2026	Primary official current status	Search extended to 30 Jun 2027; 7,428.54 km2 remaining

SOURCE-DEPENDENCE NOTE

ATSB, DSTG, Boeing, Inmarsat and Malaysian investigation material can form a collaborative technical source family rather than fully independent origins. Independent convergence is therefore assessed through physical debris, search outcomes and other evidence streams rather than publication count.



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MH370 EXECUTIVE RESEARCH CLOSING RECORD

Version 0.6

Evidence cut-off: 7 August 2026

READY SUBJECT TO INDEPENDENT SPECIALIST REVIEW

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CLOSING ASSESSMENT

The public evidence supports a high-confidence broad reconstruction: MH370 departed normally, lost normal secondary-surveillance identification, diverted west, continued flying for several hours, followed a southern SATCOM solution family and was ultimately lost in the southern Indian Ocean. Confirmed physical debris materially reinforces that broad geographic conclusion.

The v0.6 work strengthens the separation between technical mechanism and historical cause. The 18:25 SDU event is best described as restoration after a material power interruption, with cause unresolved. The 00:19 log-on is more strongly consistent with a fuel-exhaustion/APU power-restoration sequence. The final BFOs support substantial rapidly changing descent, but not one exact descent rate or control state.

No public evidence establishes the initiating cause, controller, intent, motive or exact wreckage coordinate.

RESEARCH READINESS

Score	89 / 100
Classification	Ready Subject to Independent Specialist Review
General desk research	Closed under diminishing-value test for the current evidence cut-off
SATCOM numerical reproduction	Open specialist/reproducibility gate
Right of reply	Not completed
Public release	Not authorised

NEXT CONTROL GATE

The next action is independent specialist review of SATCOM/RF, Boeing 777 systems, radar/flight operations, structures, physical oceanography and sonar/search exclusion, followed by controlled integration, institutional right of reply and release assurance.



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MH370 COMPLETE CASE PACK

Package index, correction notice and completeness ledger

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
Adversarial review execution	Not completed
Institutional right of reply	Not completed
Legal/fairness review	Not completed
Public release	Not authorised
Author approval	Approved by Paul Hattingh on 7 August 2026
Prepared by	Paul Hattingh Aperture Research & Verification
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Correction and completeness notice

This package supersedes both earlier MH370 PDF ZIP packages created in this conversation. Those packages compressed the research and did not contain the full case-pack architecture required by the Aperture research master.

This rebuild includes every research component recoverable from the active conversation, generated-file record and current public-source recheck. The earlier verbatim Step 7.1-7.31 drafting text and the original exact SR-0001 to SR-0024 mapping are not present as recoverable standalone source files in the active record. That absence is disclosed as a record-reconstruction gap. Nothing is silently invented to fill it.

The current public-facing brand is Aperture Research & Verification. The visual system in this package follows the controlled website brand: oxblood-red Aperture symbol, charcoal wordmark, warm ivory field and a restrained evidence-led layout. The composite logo on these PDFs is a vector reconstruction from the controlled brand specification because an exact current web-logo binary was not present in the accessible project archive.

Package contents / completeness ledger

Research component	File containing full treatment
Principal narrative, scope, findings, conclusion, robustness and limitations	01 Principal Investigative Dossier
Claims/propositions, classification and decision-safe wording	02 Claims & Evidence Matrix
Flight chronology and investigation/search chronology	03 Master Chronology
Reconstructed source list, canonical evidence ID control, calculations, debris/register controls	04 Source & Evidence Register
SATCOM/BTO/BFO/18:25/final-descent analysis	05 Annex A
Radar, route reconstruction, active-control limits	06 Annex B
Debris attribution, flap state, structural limits	07 Annex C
Search history, drift, 35S/25S/current search/exclusion logic	08 Annex D
Claim genealogy, mutation, misinformation/disinformation and source recycling	09 Annex E
Canonical H1-H8, falsification, H3/H6 symmetry and assumption burden	10 Annex F
Cross-domain synthesis and final proposition hierarchy	11 Annex G
Evidence gaps EG-001 to EG-018 and knowledge boundary	12 Annex H
Step 7.32-8.10 release, validation, specialist, adversarial, fairness and version-control programme	13 Validation, Adversarial & Release Assurance Record
Step 9.1-9.9 reviewer search, selection, candidates, outreach and integration controls	14 Reviewer Selection & Execution Record
Executive decision record	15 Executive Decision Record
Public portfolio derivative	16 Public Portfolio Case Study
User-approved Aperture research principles and post-publication correction philosophy	17 Aperture Research Principles
File hashes, brand deviations, completeness gaps, QA and delivery state	18 Final Delivery Manifest
All substantive PDFs combined	19 Complete Case Pack

Known record-reconstruction gaps

- Verbatim text of Step 7.1 through Step 7.31 is not recoverable as a standalone source file in the active record. The canonical outputs and later references to that work are included throughout this package.
- The original exact SR-0001 through SR-0024 source-to-ID mapping is not fully recoverable. The frozen SR range is preserved, and a separate Reconstructed Source Register (RS-001 through RS-024) identifies the authoritative sources used in this rebuild without falsely overwriting the original SR mapping.
- Individual original labels for a subset of ER-0001 through ER-0025 and ER-0053 through ER-0090 are not fully recoverable. Known exact labels are reproduced; unrecovered labels are explicitly marked rather than guessed.
- DB-04 through DB-27 were never fully source-populated in the completed internal research programme. Their incompleteness is preserved as a live evidence-control gap, not hidden.

Brand and production note

The current website standard specifies oxblood red (#9B2024), warm ivory (#F6F3ED), near-black/charcoal text, Montserrat headings and Inter body text. Those web fonts are not available in this PDF production path as ReportLab-embeddable TrueType files, so the approved Aperture document fallback is used: Carlito Bold for headings and Liberation Sans for body text. This deviation is disclosed in the Final Delivery Manifest. No font file is delivered separately.



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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
Adversarial review execution	Not completed
Institutional right of reply	Not completed
Legal/fairness review	Not completed
Public release	Not authorised
Author approval	Approved by Paul Hattingh on 7 August 2026
Prepared by	Paul Hattingh Aperture Research & Verification
Contact	info@apertureforensic.com www.apertureforensic.com

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.



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MH370

Claims & Evidence Matrix

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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Author approval	Approved by Paul Hattingh on 7 August 2026
Prepared by	Paul Hattingh Aperture Research & Verification
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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 matrix is the proposition-level reliance control. It distinguishes observation, inference, public mutation and decision-safe wording.

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.

Claims matrix

ID	Public claim	Assessment	Decision-safe wording / reason
C01	MH370 disappeared from all radar immediately after IGARI	Overstated	Normal secondary-surveillance identification ceased, but primary/military radar evidence continued.
C02	A person was conclusively shown to switch off the transponder	Not established	The surveillance outcome is established; exact cockpit switch action and actor are not directly recorded.
C03	ACARS was conclusively deliberately disabled	Not established	Communications behaviour changed; mechanism and intent remain unproven.
C04	MH370 reliably climbed to 45,000 feet	Unsupported / unreliable as precise fact	Official radar reconstruction cautions against extreme altitude/speed values as beyond reliable performance interpretation.
C05	The captain rehearsed the exact MH370 disappearance on his simulator	Not established	Relevant coordinates exist, but public record does not establish one coherent exact rehearsal session.
C06	MH370 carried 2.4 tonnes of lithium batteries	Contradicted	The larger consignment has been conflated with documented battery mass, approximately 221 kg in the project record.
C07	Mangosteens and batteries caused a chemical fire	Unsupported	No occurrence-specific positive evidence establishes this mechanism.
C08	Stolen passports prove terrorism	Unsupported	Security anomaly exists; no sufficient evidence links those passengers to the disappearance.
C09	The seventh arc is the exact crash line	Contradicted as phrased	It is a range locus at the final SATCOM event, not a directly observed impact line.
C10	Only three debris items matter	Misleading	Three items sit at the highest confirmed level, but a larger graded debris corpus exists.
C11	The underwater searches found nothing	Misleading	They did not find the main wreckage but generated high-value negative evidence, seabed data and model falsification.
C12	35S is the known crash site	Not established	It was a serious high-priority model family, materially challenged by non-findings.
C13	25S has solved MH370	Not established	It is a material competing drift hypothesis, not a confirmed location.
C14	Final BFO proves one exact descent rate	Overstated	It strongly supports substantial descent under models; exact rate remains model-dependent.
C15	Retracted flap proves nobody was controlling the aircraft	Contradicted inference	Flap state weakens conventional flap-extended ditching but does not identify final human control state.
C16	Negative explosives tests prove no explosive event could have occurred	Overstated	Selected negative tests do not establish a universal negative for every conceivable mechanism.
C17	Boeing or another party remotely seized the aircraft	Unsupported	No authenticated occurrence-specific evidence establishes remote takeover.
C18	Government errors prove a coordinated cover-up	Unsupported	Material failures can be established without evidence of coordinated deliberate concealment.
C19	The aircraft definitely suffered an emergency	Not established	H6 remains viable but lacks direct occurrence-specific initiating emergency evidence.
C20	The captain definitely caused the loss	Not established	H3 remains strong viable, but actor identity, intent and motive are unresolved.
C21	A northern route remains equally likely	Contradicted by total current evidence	Integrated SATCOM and later physical debris strongly favour the southern Indian Ocean.
C22	Fuel exhaustion is directly recorded	Overstated	It is the best-supported model for the final power sequence, but no FDR directly confirms fuel state.
C23	All 27 debris items are equally strong	Contradicted	Debris items have differing attribution levels including Confirmed, positive association and Not Identifiable.
C24	Surveyed seabed equals absolutely excluded seabed	Overstated	Exclusion depends on sensor performance, terrain, track spacing, quality control and detection probability.
C25	Institutional silence would prove Aperture correct	Prohibited inference	No response to right of reply is administratively recorded, not treated as evidentiary admission.

Material findings ledger

Finding	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

Claim mutation ladder

Observation -> Interpretation -> Attribution -> Intent -> Motive. Each movement to the right requires additional evidence. The audit repeatedly found public narratives that move through this ladder without acknowledging the additional evidentiary burden.

Source-dependence rule

Official report -> newspaper -> documentary -> book -> social post can create the appearance of independent confirmation while all derive from one origin. The matrix therefore distinguishes evidentiary lineage from citation volume.

Misinformation versus disinformation

An incorrect or overstated statement is not automatically disinformation. Intent to deceive must itself be established before deliberate deception terminology is used. Operational error, misinformation, overstatement, unsupported allegation and coordinated concealment are kept distinct.

Decision-safe actor wording

At Version 0.5 no individual is identified as the responsible person. The user-approved future rule is that an individual may be described as the strongest candidate only if at least two materially independent evidence streams point specifically to that individual, no equally strong alternative carries the same evidence, and the result remains explicitly inferential rather than proof.



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MH370

Master Chronology

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

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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
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External specialist validation	Not completed
Adversarial review execution	Not completed
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Legal/fairness review	Not completed
Public release	Not authorised
Author approval	Approved by Paul Hattingh on 7 August 2026
Prepared by	Paul Hattingh Aperture Research & Verification
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Flight chronology

UTC	Event	Evidence status	Sources
07 Mar 2014 16:42 UTC	MH370 departed Kuala Lumpur International Airport for Beijing with 239 persons aboard.	Observed / official	RS-001
17:07:29	Last ACARS transmission recorded in the official flight chronology.	Observed / official	RS-001
~17:19	Final normal voice communication: transfer toward Ho Chi Minh control.	Observed / official	RS-001
17:21:13	Position symbol / normal secondary surveillance disappeared from ATC radar.	Observed / official	RS-001
17:21 onward	Aircraft turned back and later proceeded west across the Malay Peninsula / toward northern Sumatra according to primary/military radar reconstruction.	Derived from radar	RS-001, RS-011
18:22:12	Final radar detection used as a key anchor in later modelling.	Observed / official reconstruction	RS-008
18:25:27	AES/SATCOM log-on sequence; R600 BTO used for first arc.	Observed technical	RS-003, RS-007
18:39	Unanswered ground-to-air telephone call; BFO available.	Observed technical	RS-008
19:41	GES-initiated handshake.	Observed technical	RS-003, RS-008
20:41	GES-initiated handshake.	Observed technical	RS-003, RS-008
21:41	GES-initiated handshake.	Observed technical	RS-003, RS-008
22:41	GES-initiated handshake.	Observed technical	RS-003, RS-008
23:15	Unanswered ground-to-air telephone call; BFO available.	Observed technical	RS-008
08 Mar 2014 00:10:59	Final regular GES-initiated handshake before terminal log-on.	Observed technical	RS-003, RS-008
00:19:29	AES-initiated log-on; R600 BTO used for seventh arc.	Observed technical	RS-003, RS-007
00:19:37	Further final log-on message; final BFO behaviour used in descent analyses.	Observed / modelled significance	RS-007, RS-009, RS-021

Investigation and search chronology

Date	Event / significance	Sources
8 Mar 2014	Search and rescue commenced in South China Sea / Straits of Malacca.	RS-020
15 Mar 2014	Malaysia received combined satellite intelligence indicating a route into the southern Indian Ocean.	RS-020
17 Mar 2014	Australia assumed responsibility for southern Indian Ocean search and rescue.	RS-020
24 Mar 2014	Malaysia announced transition from search and rescue to search and recovery.	RS-020
30 Apr 2014	Surface search concluded without locating the aircraft.	RS-020
5 May 2014	Tripartite decision to commence initial 60,000 km2 underwater search.	RS-020
29 Jan 2015	Malaysia formally declared MH370 an accident.	RS-020
8 Mar 2015	First Interim Statement / Factual Information released.	RS-020
29 Jul 2015	Flaperon recovered on Réunion Island.	RS-020
3 Sep 2015	French judicial authority confirmed the flaperon belonged to MH370.	RS-020
20 Dec 2016	ATSB First Principles Review released; new 25,000 km2 highest-probability area identified after prior searched area elimination.	RS-010
17 Jan 2017	Tripartite underwater search suspended after >120,000 km2 high-resolution sonar coverage.	RS-011, RS-020
3 Oct 2017	ATSB Operational Search Final Report released.	RS-011
21 Jan 2018	Ocean Infinity second underwater search commenced on no-find-no-fee basis.	RS-020
29 May 2018	2018 Ocean Infinity search concluded after >112,000 km2.	RS-016, RS-020
31 Jul 2018	Malaysia released final Safety Investigation Report.	RS-001, RS-020
25 Mar 2025	Malaysia signed new Ocean Infinity agreement for a new estimated 15,000 km2 search area.	RS-018
25-28 Mar 2025	Current-search Phase 1.	RS-018
31 Dec 2025-23 Jan 2026	Current-search Phase 2.	RS-018
8 Mar 2026	Malaysia reported 28 operational search days and approx 7,571 km2 surveyed without confirmed wreckage location.	RS-018
26 Jun 2026	Malaysian Cabinet approved a one-year extension.	RS-019
29 Jun 2026	Transport Minister announced extension to 30 Jun 2027 and 7,428.54 km2 remaining.	RS-019

Chronology limitations

The chronology is designed for decision-grade reconstruction, not second-by-second replication of every ATC, military or search-agency action. The complete raw military radar and complete contemporaneous military decision record remain material evidence gaps.

Flight times are reported in UTC to avoid confusion with Malaysian local time. Where the surviving project record used approximate time rather than exact seconds, the chronology preserves that distinction.



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MH370

Source, Evidence, Calculation & Register Control

AUTHOR APPROVED COMPLETE RESEARCH EDITION - AWAITING INDEPENDENT SPECIALIST REVIEW

Evidence cut-off: 7 August 2026

External specialist validation: pending

Institutional right of reply: pending

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Author approval	Approved by Paul Hattingh on 7 August 2026
Prepared by	Paul Hattingh Aperture Research & Verification
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Canonical source-register control

The Step 8 freeze preserved a canonical SR-0001 through SR-0024 range, with future sources beginning at SR-0025. The exact original title-to-ID mapping is not fully recoverable in the active project archive. This rebuild therefore does not overwrite the frozen SR identifiers. Instead it provides a Reconstructed Source Register (RS-001 through RS-024) containing the authoritative sources used to verify and rebuild the dossier.

RS	Authority	Source	Type	Principal use
RS-001	Malaysia Ministry of Transport	Safety Investigation Report MH370/01/2018, Boeing 777-200ER 9M-MRO	Primary official	Flight history, radar, systems, maintenance, crew, cargo, simulator, wreckage, organisational investigation
RS-002	Malaysia Ministry of Transport	MH370 investigation report appendices	Primary official	Underlying report appendices and technical records
RS-003	Malaysia / ATSB	MH370 Data Communication Logs, amended 30 March 2017	Primary technical	BTO/BFO signalling records and calibration notes
RS-004	Ashton, Bruce, Colledge & Dickinson (Inmarsat)	The Search for MH370, Journal of Navigation 68(1)	Peer-reviewed/open technical	SATCOM architecture, BTO/BFO analysis, route-family methodology
RS-005	ATSB	Definition of Underwater Search Areas, 18 Aug 2014	Primary search authority	Early search-area methodology and satellite analysis
RS-006	ATSB	Flight Path Analysis Update, 8 Oct 2014	Primary search authority	Refined SATCOM/flight-path analysis
RS-007	ATSB	Definition of Underwater Search Areas Update, 3 Dec 2015	Primary search authority	Updated SATCOM model and underwater search definition
RS-008	DST Group / Springer	Bayesian Methods in the Search for MH370	Government scientific / technical	Bayesian flight-path and search probability modelling
RS-009	ATSB	MH370 Search and Debris Examination Update	Primary search/debris authority	Final BFO, end-of-flight simulations, flap-state and drift update
RS-010	ATSB	First Principles Review, 20 Dec 2016	Primary multidisciplinary review	33S-36S/25,000 km2 high-priority region and evidentiary reassessment
RS-011	ATSB	Operational Search for MH370 Final Report, 3 Oct 2017	Primary search authority	120,000+ km2 high-resolution sonar search, search outcomes and current analysis
RS-012	ATSB	Debris Examination Reports 1-5	Primary forensic/debris	Manufacturing identifiers, component attribution and structural examination
RS-013	CSIRO	The Search for MH370 and Ocean Surface Drift, 8 Dec 2016	Government scientific	Drift modelling, 36S-33S/35S prospective region
RS-014	CSIRO	MH370 drift modelling using genuine Boeing 777 flaperon / final report publicised Apr 2017	Government scientific	Improved flaperon drift behaviour and geographic constraints
RS-015	Geoscience Australia	MH370 Data Release	Government data	Public marine data from search mapping and seabed search
RS-016	Ocean Infinity	Conclusion of Current Search for MH370, 29 May 2018	Operator primary statement	2018 search >112,000 km2; non-find
RS-017	Ocean Infinity	Conclusion of the Search for MH370, 8 Mar 2026	Operator primary statement	2025/26 search phase and cumulative Ocean Infinity search context
RS-018	Malaysia Ministry of Transport	Update to Families: MH370 Search Operation 2025/2026	Primary official current status	15,000 km2 target; 28 operational days; approx 7,571 km2 surveyed

RS	Authority	Source	Type	Principal use
RS-019	Malaysia Ministry of Transport	Extension of Agreement with Ocean Infinity, 29 Jun 2026	Primary official current status	Extension to 30 Jun 2027; 7,428.54 km2 remaining; \$70m no-find-no-fee
RS-020	Australian Government / JACC history	Timeline of Significant Actions - Search for MH370	Primary official chronology	Search milestones 2014-2018
RS-021	Holland, Ian D.	MH370 Burst Frequency Offset Analysis and Implications on Descent Rate at End-of-Flight	Technical research	Independent final-BFO descent analysis
RS-022	Miron, Beron-Vera, Olascoaga & Koltai	Markov-chain-inspired search for MH370	Academic technical	Competing drift result near ~25S
RS-023	ICAO	Annex 13 - Aircraft Accident and Incident Investigation	International standard	Investigation responsibility and governance context
RS-024	Current reporting cross-check	AP/Reuters coverage of June 2026 Ocean Infinity extension and search status	Secondary current verification	Cross-check current public reporting; not primary evidence where official source available

Source URLs

RS-001 | Safety Investigation Report MH370/01/2018, Boeing 777-200ER 9M-MRO | <https://www.mot.gov.my/en/AAIB%20Statistic%20%20Accident%20Report%20Document/A%200514%209M-MRO%20MH370.pdf>

RS-002 | MH370 investigation report appendices | <https://www.mot.gov.my/en/aviation/reports/archived-report/mh370/mh370ir>

RS-003 | MH370 Data Communication Logs, amended 30 March 2017 | <https://www.atsb.gov.au/publications/educational-fact-sheet/2022/aviation/mh370-update-signalling-unit-logs>

RS-004 | The Search for MH370, Journal of Navigation 68(1) | <https://doi.org/10.1017/S037346331400068X>

RS-005 | Definition of Underwater Search Areas, 18 Aug 2014 | <https://www.atsb.gov.au/investigations/ae-2014-054>

RS-006 | Flight Path Analysis Update, 8 Oct 2014 | <https://www.atsb.gov.au/investigations/ae-2014-054>

RS-007 | Definition of Underwater Search Areas Update, 3 Dec 2015 | <https://www.atsb.gov.au/investigations/ae-2014-054>

RS-008 | Bayesian Methods in the Search for MH370 | https://www.atsb.gov.au/sites/default/files/media/5733804/Bayesian_Methods_MH370_Search_3Dec2015.pdf

RS-009 | MH370 Search and Debris Examination Update | https://www.atsb.gov.au/sites/default/files/media/5773389/ae-2014-054_mh370-search-and-debris-update_aug2017.pdf

RS-010 | First Principles Review, 20 Dec 2016 | <https://www.atsb.gov.au/investigations/ae-2014-054>

RS-011 | Operational Search for MH370 Final Report, 3 Oct 2017 | <https://www.atsb.gov.au/investigations/ae-2014-054>

RS-012 | Debris Examination Reports 1-5 | <https://www.atsb.gov.au/investigations/ae-2014-054>

RS-013 | The Search for MH370 and Ocean Surface Drift, 8 Dec 2016 | <https://publications.csiro.au/publications/publication/Plcsi%3AEP167888>

RS-014 | MH370 drift modelling using genuine Boeing 777 flaperon / final report publicised Apr 2017 | <https://www.csiro.au/en/news/All/Articles/2017/April/mh370>

RS-015 | MH370 Data Release | <https://www.ga.gov.au/about/projects/marine/mh370-data-release>

RS-016 | Conclusion of Current Search for MH370, 29 May 2018 | <https://oceaninfinity.com/news/conclusion-of-current-search-for-malaysian-airlines-flight-mh370/>

RS-017 | Conclusion of the Search for MH370, 8 Mar 2026 | <https://oceaninfinity.com/news/conclusion-of-the-search-for-malaysian-airlines-flight-mh370/>

RS-018 | Update to Families: MH370 Search Operation 2025/2026 | <https://www.mot.gov.my/en/Kenyataan%20Media/Year%202026/MH370%20Search%20Operation%202025-2026%20-%20Update%20to%20Families.pdf>

RS-019 | Extension of Agreement with Ocean Infinity, 29 Jun 2026 | https://www.mot.gov.my/my/Kenyataan%20Media/Tahun%202026/29%20JUN%2026_KENYATAAN%20MEDIA%20ENTERI%20PENGANGKUTAN%20PERLANJUTAN%20PERJANJIAN%20ANTARA%20KERAJAAN%20MALAYSIA%20%26%20OCEAN%20INFINITY%20BAGI%20MENGESAN%20BANGKAI%20PESAWAT%20MH370.pdf

RS-020 | Timeline of Significant Actions - Search for MH370 | <https://www.infrastructure.gov.au/infrastructure-transport-vehicles/vehicles/aviation/joint-agency-coordination-centre/timeline>

RS-021 | MH370 Burst Frequency Offset Analysis and Implications on Descent Rate at End-of-Flight | <https://arxiv.org/abs/1702.02432>

RS-022 | Markov-chain-inspired search for MH370 | <https://arxiv.org/abs/1903.06165>

RS-023 | Annex 13 - Aircraft Accident and Incident Investigation | <https://www.icao.int/safety/airnavigation/aig/pages/annex-13.aspx>

RS-024 | AP/Reuters coverage of June 2026 Ocean Infinity extension and search status | <https://apnews.com/article/21d6bdd3cd662865a56c7cff61484798>

Canonical Evidence Register: exact labels recovered

The following exact ER labels are recoverable from the Step 8 reconciliation record. Where an ID is not listed, the original exact label was not recovered and is not guessed.

ER ID	Recovered canonical label
ER-0007	Last normal radio transmission
ER-0008	Loss of normal secondary surveillance
ER-0010	Westward turnback
ER-0012	Final official military-radar-associated point

ER ID	Recovered canonical label
ER-0014	18:25 SATCOM log-on
ER-0017	BTO measurements
ER-0018	BFO measurements
ER-0022	00:19:29 log-on
ER-0024	Final BFO deviation
ER-0025	Fuel-exhaustion end-state model
ER-0026	Formal 27-item debris corpus
ER-0027	Confirmed Réunion flaperon
ER-0028	Confirmed left outboard flap section
ER-0029	Confirmed right outboard flap section
ER-0030	Positively associated non-confirmed debris
ER-0031	Not Identifiable debris items
ER-0032	Manufacturing/work-order identification
ER-0033	Multijurisdictional recovery pattern
ER-0034	Formal custody/examination chains
ER-0035	Right outboard flap most likely retracted
ER-0036	Breakup evidence
ER-0037	Explosives testing on selected items
ER-0038	Debris drift compatibility with southern Indian Ocean
ER-0039	Early drift wind-data implementation issue
ER-0040	Genuine Boeing 777 flaperon drift test
ER-0041	33S-36S high-priority model family
ER-0042	Alternative approximately 25S drift result
ER-0043	ATSB-led underwater search exceeding 120,000 km2
ER-0044	2016 First Principles priority region
ER-0045	Ocean Infinity 2018 coverage
ER-0046	2018 non-find
ER-0047	Cumulative search approaching 200,000 km2 by 2018
ER-0048	Current 15,000 km2 target area
ER-0049	7,571 km2 reported surveyed
ER-0050	7,428.54 km2 reported remaining
ER-0051	Current search extension through 30 June 2027
ER-0052	Current search model not fully public

Evidence ranges with incomplete original-label recovery

- ER-0001 through ER-0025: Phase 1 flight/radar/SATCOM/end-state evidence. Exact recovered labels include ER-0007, 0008, 0010, 0012, 0014, 0017, 0018, 0022, 0024 and 0025. Other Phase 1 original labels were not preserved in the accessible record.
- ER-0053 through ER-0090: Phase 3 maintenance, cargo, crew, simulator, third-party/security, remote-takeover, governance and official-statement genealogy. Step 8.4 confirms ER-0053 to ER-0058 as the systems/maintenance group and ER-0079 to ER-0090 as governance/official-statement evidence. The exact individual labels for the remainder are not reconstructed without the original Step 7.11 register.

Debris sub-register control

DB-01 through DB-27 identifies physical debris items separately from evidence propositions. DB-01 through DB-03 were populated at core level in the project record. DB-04 through DB-27 remained source-level population pending; this incomplete status is retained rather than silently filled.

DB ID	Status / controlled meaning
DB-01	Réunion flaperon - populated core record
DB-02	Left outboard flap section - populated core record
DB-03	Right outboard flap section - populated core record
DB-04 to DB-27	Individual source-level population pending in the internal research record

Calculation register

ID	Calculation / status	Result / note
CALC-001	50 microsecond BTO basic range conversion	Registered arithmetic control; full SATCOM geometry requires specialist model
CALC-002	Final normal radio (~17:19:30) to 00:19:29	6 h 59 m 59 s
CALC-003	Final radar 18:22:12 to 00:19:29	5 h 57 m 17 s
CALC-004	Final radar 18:22:12 to 18:25:27 log-on	3 m 15 s
CALC-005	00:10:59 to 00:19:29	8 m 30 s
CALC-006	Current surveyed percentage	7,571 / 15,000 = 50.47%
CALC-007	Current remaining percentage	7,428.54 / 15,000 = 49.52%
CALC-008	15,000 km ² reconciliation	7,571 + 7,428.54 = 14,999.54 km ² ; 0.46 km ² rounding difference
CALC-009	2018 search versus 25,000 km ² target	>112,000 / 25,000 > 4.48x initial target
CALC-010 to 012	Reserved	Not reassigned
CALC-013	Flight-plan fuel arithmetic	Registered in original project; exact worksheet not recoverable in active archive
CALC-P01 to P05	Pending technical SATCOM tasks	Not represented as Aperture-reproduced calculations

Contradiction-register aliases

- CR-18:25 - deliberate versus non-deliberate interpretation of 18:25 event.
- CR-DRIFT - 35S/33-36S model family versus more northerly competing drift results.
- CR-MIL - military friendly/non-threat assessment versus unusual route behaviour and later reconstruction.
- CR-LOC-01 - high-priority location model versus non-find.
- CR-SEARCH-01 - nominal surveyed area versus robust practical exclusion.

Evidence-gap register control

EG-001 through EG-018 is frozen. The full descriptions are reproduced in Annex H. Future gaps begin at EG-019.



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MH370 ANNEX A

SATCOM Technical Annex

AUTHOR APPROVED COMPLETE RESEARCH EDITION - AWAITING INDEPENDENT SPECIALIST REVIEW

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External specialist validation: pending

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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
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Prepared by	Paul Hattingh Aperture Research & Verification
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Professional boundary and status

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Annex A separates directly recorded satellite communication events from derived range, motion, route and end-of-flight interpretations.

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.

A1. Recorded SATCOM evidence

The later flight is reconstructed from signalling metadata rather than ordinary position reports. Key data include log-on events, periodic handshakes, BTO and BFO values. The public logs include pre-flight/gate calibration messages and later event records.

A2. BTO

BTO is a timing-based range constraint after channel/system corrections. It supports arcs of possible aircraft positions relative to the satellite. It cannot by itself provide a unique latitude/longitude or identify heading, intent or actor.

A3. BFO

BFO is the difference between received and nominal frequency at the ground earth station, influenced by aircraft/satellite relative motion and system oscillator effects. It materially constrains route and motion under technical corrections.

A4. 18:25 event

The 18:25:27 R600 transmission is a key log-on event. Its occurrence is established. Its cause is not. System power interruption/restoration, intentional electrical action, emergency reconfiguration and other mechanisms must be tested without assuming motive.

A5. Route-family discrimination

The integrated BTO/BFO analyses strongly favour the southern route. The result is supported by later physical debris, which reduces the risk that route confidence is merely the product of one model family.

A6. First and seventh arcs

The R600 BTO values at 18:25:27 and 00:19:29 were used in key arc construction after channel calibration considerations. Arcs represent range loci, not observed aircraft tracks.

A7. Fuel-exhaustion end state

The final log-on sequence is strongly compatible with restoration of satellite terminal power after fuel exhaustion / APU-related power transition. The conclusion is inferential and requires Boeing 777 systems review.

A8. Final BFO and descent

Published analyses and ATSB search updates treat the final frequency offsets as consistent with a high and increasing descent rate. The dossier authorises “strongly compatible with substantial/rapid descent” but not a falsely exact direct descent-rate measurement.

A9. Contradictory and limiting evidence

The 18:25 and 00:19 events occur during transient terminal states. Oscillator behaviour, calibration and system assumptions create model dependence. No SATCOM measurement identifies cockpit intent.

A10. Specialist-review questions

Can the BTO/BFO derivation be independently reproduced from released logs? What mechanisms can create the 18:25 log-on? How robust is north/south discrimination? How much of the final BFO signal can responsibly be assigned to vertical motion? Does the fuel-exhaustion power sequence fit Boeing 777 electrical/SDU architecture?

A11. Relevant canonical evidence IDs

ER	Meaning
ER-0014	18:25 SATCOM log-on
ER-0017	BTO measurements
ER-0018	BFO measurements
ER-0022	00:19:29 log-on
ER-0024	Final BFO deviation
ER-0025	Fuel-exhaustion end-state model

A12. Principal sources

- RS-003 MH370 Data Communication Logs.
- RS-004 Inmarsat Journal of Navigation paper.
- RS-007 ATSB December 2015 search-area update.
- RS-008 DST Bayesian Methods.
- RS-009 ATSB Search and Debris Examination Update.
- RS-021 Holland final-BFO analysis.



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MH370 ANNEX B

Radar & Flight-Path Annex

AUTHOR APPROVED COMPLETE RESEARCH EDITION - AWAITING INDEPENDENT SPECIALIST REVIEW

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External specialist validation: pending

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REALITY BEFORE RELIANCE | VERIFICATION BEFORE INTERPRETATION | EVIDENCE BEFORE NARRATIVE

Independent public-source case study - not a client engagement

Document control	Value
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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
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Prepared by	Paul Hattingh Aperture Research & Verification
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Annex B controls the distinction between radar observation, target association, reconstructed path and aircraft-control inference.

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.

B1. Surveillance-state distinction

Secondary-surveillance/transponder-derived identification and primary radar are different evidence types. Loss of the former does not mean immediate disappearance from all radar.

B2. Target association

The integrated official record strongly associates the post-IGARI westward primary/military track with MH370. Full raw military radar remains unavailable to the public research record.

B3. Westward turnback

The turnback and westward progression are among the most stable reconstructed findings.

B4. Altitude and speed limitations

Extreme radar-derived altitude/speed “blips” were recognised in the official investigation as values beyond aircraft capability and unsuitable for literal aircraft-state reconstruction. Therefore the dossier rejects the precise 45,000-foot public narrative as established fact.

B5. Active control

Route coherence materially supports active control at least during part of the early diversion. “Active control” is deliberately broader than “manual hand flying” and does not identify a controller.

B6. Final radar anchor

18:22:12 is used in later modelling as the final radar anchor. The evidence after that time becomes increasingly model-dependent.

B7. Military response

The technical radar record interfaces with governance questions: recognition, classification, friendly/non-threat assessment and non-interception. The existence of an institutional decision problem does not prove concealment.

B8. Specialist questions

How robust is target association? What positional/velocity error exists? Which route segments are observed versus interpolated? What automatic or failure-driven mechanisms could reproduce the initial trajectory? What, if anything, can radar establish about manual control?

B9. Relevant evidence IDs

ER	Meaning
ER-0008	Loss of normal secondary surveillance
ER-0010	Westward turnback
ER-0012	Final official military-radar-associated point



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MH370 ANNEX C

Debris & Provenance Annex

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
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Annex C records debris attribution, provenance, structural interpretation and the limits of inference from recovered components.

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.
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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.

C1. Graded debris corpus

The project uses a graded debris corpus rather than a binary confirmed/unconfirmed approach. Three items sit at the highest confirmation level, additional items have positive association, and others remain Not Identifiable.

C2. Réunion flaperon

The flaperon recovered on Réunion is confirmed physical evidence tied to MH370 and became important to later drift-model validation.

C3. Left and right outboard flap sections

Manufacturing/work-order identifiers linked key flap sections to 9M-MRO. This is stronger provenance than generic Boeing 777 visual similarity.

C4. Chain of custody and examination

Formal custody/examination chains matter because attribution, testing and structural interpretation depend on reliable object identity.

C5. Right-flap state

ATSB analysis found the right outboard flap most likely retracted when it separated and the right flaperon probably at or near neutral. A more complex sequence beginning with flaps extended was assessed much less likely.

C6. Ditching implication

Retracted high-lift configuration weakens a conventional flap-extended landing-style ditching. It does not prove a completely uncontrolled impact or absence of human input.

C7. Breakup

Recovered pieces show structural fragmentation but cannot establish one exact breakup chronology without the main wreckage.

C8. Explosives

Selected testing does not establish explosive destruction. Negative results are used only within the scope of tested items and methods.

C9. Drift interface

Debris recovery sites create a geographic evidence stream that can be compared with drift models. Recovery location and discovery date do not translate mechanically into an exact crash coordinate or exact beaching date.

C10. Canonical evidence IDs

ER	Meaning
ER-0026	Formal 27-item debris corpus
ER-0027	Confirmed Réunion flaperon
ER-0028	Confirmed left outboard flap section
ER-0029	Confirmed right outboard flap section
ER-0030	Positively associated non-confirmed debris
ER-0031	Not Identifiable debris items
ER-0032	Manufacturing/work-order identification
ER-0033	Multijurisdictional recovery pattern
ER-0034	Formal custody/examination chains
ER-0035	Right outboard flap most likely retracted
ER-0036	Breakup evidence
ER-0037	Explosives testing on selected items
ER-0038	Debris drift compatibility with southern Indian Ocean
ER-0039	Early drift wind-data implementation issue
ER-0040	Genuine Boeing 777 flaperon drift test

C11. Debris-register completeness limit

DB-01 through DB-03 are populated at core level. DB-04 through DB-27 remained source-level population pending in the research programme. This Annex therefore does not invent item-by-item histories that were never completed.



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MH370 ANNEX D

Search & Location Analysis Annex

AUTHOR APPROVED COMPLETE RESEARCH EDITION - AWAITING INDEPENDENT SPECIALIST REVIEW

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Institutional right of reply: pending

REALITY BEFORE RELIANCE | VERIFICATION BEFORE INTERPRETATION | EVIDENCE BEFORE NARRATIVE

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Annex D distinguishes broad geographic confidence, model-specific priority regions and actual search exclusion.

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.
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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.

D1. Broad region versus exact coordinate

Southern Indian Ocean loss is very strongly supported. Exact impact coordinate is indeterminate. Confidence decreases as geographic precision increases.

D2. ATSB-led search

The high-resolution sonar search exceeded 120,000 km². ATSB concluded the searched area did not contain MH370 with a high degree of confidence. This is strong negative evidence against narrow models that placed the wreckage inside that searched zone.

D3. 2016 First Principles result

The multidisciplinary review identified approximately 25,000 km² between roughly 33S and 36S as the highest-probability remaining area after elimination of the prior searched zone.

D4. 2018 Ocean Infinity search

Ocean Infinity reported more than 112,000 km² surveyed in a little over three months, far exceeding the initial 25,000 km² target, without locating the aircraft. That non-find materially challenges simplistic claims that the 2016 target had effectively solved the location.

D5. Drift model around 35S

CSIRO historically identified the northern third of the initial search region, especially near 35S, as prospective based on debris and ocean-surface drift. This remains important historical evidence but cannot override later non-findings.

D6. Competing approximately 25S model

A later Markov-chain academic analysis placed a debris-origin solution near 25S. The project treats it as a material competing technical hypothesis, not a confirmed site.

D7. Current 15,000 km² search

Malaysia's 2025 agreement defined a new estimated 15,000 km² area. Through 23 January 2026 approximately 7,571 km² had been surveyed under the formal agreement. On 29 June 2026 Malaysia reported 7,428.54 km² remaining and extended the agreement through 30 June 2027.

D8. Surveyed versus excluded

Nominal survey area and practical exclusion are not identical. Robust exclusion depends on track spacing, sonar/AUV performance, terrain, contact classification, data quality and confidence of detection.

D9. Search non-find principle

A non-find can strongly falsify a narrow prediction if the predicted region was actually searched with high detection probability. It does not automatically falsify a broader geographic model that includes areas outside the searched envelope.

D10. Final location hierarchy

Level 1: Southern Indian Ocean - VERY STRONGLY SUPPORTED. Level 2: seventh-arc search framework - STRONGLY SUPPORTED. Level 3: candidate latitude bands - model-dependent. Level 4: current search polygons - high-priority models. Level 5: exact coordinate - INDETERMINATE.

D11. Canonical location/search evidence IDs

ER	Meaning
ER-0038	Debris drift compatibility with southern Indian Ocean
ER-0039	Early drift wind-data implementation issue
ER-0040	Genuine Boeing 777 flaperon drift test
ER-0041	33S-36S high-priority model family
ER-0042	Alternative approximately 25S drift result
ER-0043	ATSB-led underwater search exceeding 120,000 km2
ER-0044	2016 First Principles priority region
ER-0045	Ocean Infinity 2018 coverage
ER-0046	2018 non-find
ER-0047	Cumulative search approaching 200,000 km2 by 2018
ER-0048	Current 15,000 km2 target area
ER-0049	7,571 km2 reported surveyed
ER-0050	7,428.54 km2 reported remaining
ER-0051	Current search extension through 30 June 2027
ER-0052	Current search model not fully public



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MH370 ANNEX E

Claims & Evidence Audit

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
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External specialist validation	Not completed
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Legal/fairness review	Not completed
Public release	Not authorised
Author approval	Approved by Paul Hattingh on 7 August 2026
Prepared by	Paul Hattingh Aperture Research & Verification
Contact	info@apertureforensic.com www.apertureforensic.com

Professional boundary and status

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Annex E tracks how public claims mutate from observation into interpretation, attribution, intent and motive.

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.

E1. Claim-origin genealogy

Primary evidence origin -> formal interpretation -> early public statement -> secondary reporting -> long-form narrative -> online repetition -> current claim. The audit asks where meaning changed.

E2. Transponder genealogy

Observed: normal secondary-surveillance identification ceased. Mutation: somebody deliberately switched it off. Further mutation: a particular pilot switched it off as part of a planned disappearance. Only the first proposition is established.

E3. ACARS genealogy

Observed communications changes became “ACARS was disabled”, then “deliberately disabled”, then evidence of a concealment plan. The final steps outrun the public evidence.

E4. Simulator genealogy

Forensic simulator data became “seven coordinates”, then “an Indian Ocean route”, then “a coherent rehearsal”, then “an exact murder-suicide rehearsal”. Relevant circumstantial evidence exists, but the strongest public wording exceeds the authenticated public record.

E5. 45,000-foot genealogy

Unreliable/extreme radar-derived values became a precise dramatic climb, then a hypothesised decompression manoeuvre. The weak premise cannot carry the later narrative with confidence.

E6. Lithium-battery genealogy

A larger cargo consignment containing lithium batteries became described as 2.4 tonnes of batteries. The project record distinguishes the battery mass from the wider consignment.

E7. Search genealogy

“Main wreckage not found” became “searches found nothing”. This erases the evidentiary value of searched-zone elimination, bathymetry, debris discoveries and tested location models.

E8. Authority recycling

A claim repeated by many publications may still come from one original source. Repetition is not independent corroboration.

E9. Misinformation and disinformation

Incorrect information can be mistake, misunderstanding or overstatement. Deliberate deception requires evidence of intent. The dossier avoids intent labels where the record does not support them.

E10. Red-team obligation

Aperture’s own debunking is also challenged. An unpopular or outsider theory is not rejected because of status. Its evidence is tested on the same basis as institutional claims.

E11. Claims matrix

ID	Claim	Assessment	Reason
C01	MH370 disappeared from all radar immediately after IGARI	Overstated	Normal secondary-surveillance identification ceased, but primary/military radar evidence continued.
C02	A person was conclusively shown to switch off the transponder	Not established	The surveillance outcome is established; exact cockpit switch action and actor are not directly recorded.
C03	ACARS was conclusively deliberately disabled	Not established	Communications behaviour changed; mechanism and intent remain unproven.
C04	MH370 reliably climbed to 45,000 feet	Unsupported / unreliable as precise fact	Official radar reconstruction cautions against extreme altitude/speed values as beyond reliable performance interpretation.
C05	The captain rehearsed the exact MH370 disappearance on his simulator	Not established	Relevant coordinates exist, but public record does not establish one coherent exact rehearsal session.
C06	MH370 carried 2.4 tonnes of lithium batteries	Contradicted	The larger consignment has been conflated with documented battery mass, approximately 221 kg in the project record.
C07	Mangosteens and batteries caused a chemical fire	Unsupported	No occurrence-specific positive evidence establishes this mechanism.
C08	Stolen passports prove terrorism	Unsupported	Security anomaly exists; no sufficient evidence links those passengers to the disappearance.
C09	The seventh arc is the exact crash line	Contradicted as phrased	It is a range locus at the final SATCOM event, not a directly observed impact line.
C10	Only three debris items matter	Misleading	Three items sit at the highest confirmed level, but a larger graded debris corpus exists.
C11	The underwater searches found nothing	Misleading	They did not find the main wreckage but generated high-value negative evidence, seabed data and model falsification.
C12	35S is the known crash site	Not established	It was a serious high-priority model family, materially challenged by non-findings.
C13	25S has solved MH370	Not established	It is a material competing drift hypothesis, not a confirmed location.
C14	Final BFO proves one exact descent rate	Overstated	It strongly supports substantial descent under models; exact rate remains model-dependent.
C15	Retracted flap proves nobody was controlling the aircraft	Contradicted inference	Flap state weakens conventional flap-extended ditching but does not identify final human control state.
C16	Negative explosives tests prove no explosive event could have occurred	Overstated	Selected negative tests do not establish a universal negative for every conceivable mechanism.
C17	Boeing or another party remotely seized the aircraft	Unsupported	No authenticated occurrence-specific evidence establishes remote takeover.
C18	Government errors prove a coordinated cover-up	Unsupported	Material failures can be established without evidence of coordinated deliberate concealment.
C19	The aircraft definitely suffered an emergency	Not established	H6 remains viable but lacks direct occurrence-specific initiating emergency evidence.
C20	The captain definitely caused the loss	Not established	H3 remains strong viable, but actor identity, intent and motive are unresolved.
C21	A northern route remains equally likely	Contradicted by total current evidence	Integrated SATCOM and later physical debris strongly favour the southern Indian Ocean.
C22	Fuel exhaustion is directly recorded	Overstated	It is the best-supported model for the final power sequence, but no FDR directly confirms fuel state.
C23	All 27 debris items are equally strong	Contradicted	Debris items have differing attribution levels including Confirmed, positive association and Not Identifiable.
C24	Surveyed seabed equals absolutely excluded seabed	Overstated	Exclusion depends on sensor performance, terrain, track spacing, quality control and detection probability.
C25	Institutional silence would prove Aperture correct	Prohibited inference	No response to right of reply is administratively recorded, not treated as evidentiary admission.



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MH370 ANNEX F

Competing Hypotheses & Falsification

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
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Public release	Not authorised
Author approval	Approved by Paul Hattingh on 7 August 2026
Prepared by	Paul Hattingh Aperture Research & Verification
Contact	info@apertureforensic.com www.apertureforensic.com

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Annex F applies the canonical H1-H8 framework, equal evidentiary burdens and explicit falsification.

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.

F1. Canonical hypotheses

ID	Hypothesis	Current position
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

F2. H1 early incapacitation / hypoxia

Can explain later silence and prolonged automated flight but poorly explains the strongly supported early active diversion without additional mechanisms. Weak as a complete explanation.

F3. H2 technical failure / fire / electrical event

Technically possible and can form part of H6. No occurrence-specific positive evidence establishes a complete technical/fire mechanism. Weak-moderate as a complete model.

F4. H3 deliberate onboard human action

High explanatory economy for purposeful-looking route behaviour, communications changes, prolonged flight and remote-ocean end state. Critical gaps: actor identity, destructive intent and motive. Strong viable, not established.

F5. H4 other onboard human intervention

Possible in principle but supported by little actor-specific positive evidence.

F6. H5 hijacking / third-party unlawful interference

No sufficiently strong perpetrator trail, demand, claim, access evidence or operational signature. Weak / not excluded.

F7. H6 emergency response followed by incapacitation

Can explain active early diversion, later silence, prolonged automated flight and fuel-exhaustion end state without malicious intent. Critical gaps: no established initiating emergency and no direct incapacitation evidence. Strong viable, not established.

F8. H7 other material scenario

Reserve class for a genuinely distinct, evidence-supported, falsifiable mechanism not captured above.

F9. H8 indeterminate

Not a mechanism. It is the epistemic result when the public record cannot responsibly discriminate among surviving causal hypotheses strongly enough to declare one established.

F10. H3/H6 symmetry

Missing actor evidence is a burden on H3. Missing emergency/incapacitation evidence is a burden on H6. Aperture must not require direct proof from one while allowing the other to survive merely because it is less accusatory.

F11. Preferred-hypothesis rule

The user has authorised a future preferred hypothesis only if the total post-specialist, post-adversarial evidence clearly supports one. Even then the hypothesis must remain labelled unconfirmed unless the established-cause threshold is met.

F12. Individual-actor threshold

A named individual may be ranked as the strongest candidate only if multiple materially independent evidence streams specifically support that ranking, the competing actor alternatives are materially weaker, and the language remains inferential rather than proof.

F13. Falsification outcome

At Version 0.5 H3 and H6 remain joint top-tier survivors. H1 is materially weakened as a complete explanation; H2 remains possible but weaker; H4/H5 remain weak; H7 is reserve; H8 remains the final cause state.

F14. H3/H6 comparison

Dimension	H3 deliberate onboard action	H6 emergency + incapacitation
Early active diversion	Strong fit	Strong if genuine emergency response
Communications changes	Strong fit but intent inferred	Compatible with power/reconfiguration scenarios
Long silent flight	Strong fit	Strong fit via later incapacitation/automation
Direct positive initiating evidence	No direct actor/intent proof	No direct emergency proof
Motive	Unresolved	Not required, but mechanism unresolved
Current assessment	STRONG VIABLE	STRONG VIABLE



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MH370 ANNEX G

Master Synthesis

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

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Public release	Not authorised
Author approval	Approved by Paul Hattingh on 7 August 2026
Prepared by	Paul Hattingh Aperture Research & Verification
Contact	info@apertureforensic.com www.apertureforensic.com

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Annex G integrates the evidence domains without converting model-dependent inferences into direct observations.

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.

G1. Evidence convergence

The case becomes strongest where independent evidence origins converge: radar supports the early diversion; SATCOM supports prolonged flight and southern progression; physical debris supports aircraft identity and Indian Ocean loss.

G2. Broad reconstruction

Normal departure -> loss of normal secondary surveillance -> westward diversion -> final radar phase -> later SATCOM-only reconstruction -> southern route -> end-of-flight in southern Indian Ocean. Confidence remains high at this broad level.

G3. Cause boundary

Aircraft behaviour supports active control more strongly than controller identity. The record supports some purposive aircraft management but does not establish harmful intent or a particular actor.

G4. End-of-flight synthesis

Fuel exhaustion is the best-supported final power explanation. Final BFO behaviour supports substantial descent. Retracted flap evidence weakens conventional flap-extended ditching. These findings collectively constrain but do not fully reconstruct the terminal impact.

G5. Location synthesis

The broad southern Indian Ocean conclusion survives the failure of multiple narrow search models. Search non-findings are used to update specific location confidence rather than to discard strong independent evidence for the broad region.

G6. Governance synthesis

Material institutional failures are established at the level of response, coordination and information handling. A coordinated cover-up requires a much stronger evidentiary chain than the public record provides.

G7. Strongest conclusions

Most resistant to challenge: normal initial flight, loss of secondary surveillance, westward diversion, prolonged later flight, confirmed debris and southern Indian Ocean loss.

G8. Most reversible conclusions

Most sensitive to specialist/new evidence: manual-control wording, 18:25 cause, fuel-exhaustion details, final descent, flap-state impact implications, precise drift/location ranking, search-exclusion confidence and H3/H6 comparative ranking.

G9. 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

G10. Final synthesis

The public evidence supports a strong broad reconstruction but does not close the causal or exact-location questions. The disciplined conclusion is therefore stronger than “nothing is known” and more restrained than “the case is solved.”



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MH370 ANNEX H

Knowledge Boundary & Evidence Gap

AUTHOR APPROVED COMPLETE RESEARCH EDITION - AWAITING INDEPENDENT SPECIALIST REVIEW

Evidence cut-off: 7 August 2026

External specialist validation: pending

Institutional right of reply: pending

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Annex H preserves unresolved unknowns as explicit research outputs rather than filling them with narrative certainty.

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.
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Reliance classification

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

H1. Evidence-gap register

ID	Gap	Materiality	Why it matters
EG-001	Main wreckage	EXTREME	Could resolve impact mechanics, breakup, fire/explosion, configuration and systems state.
EG-002	Flight Data Recorder	EXTREME	Could reveal attitude, speed, altitude, engines, controls, autopilot modes and systems state.
EG-003	Cockpit Voice Recorder	EXTREME	Could reveal emergency discussion, crew interaction, hijacking, incapacitation or deliberate intent.
EG-004	Complete raw military radar	HIGH	Could refine track, timing, speed, altitude and target continuity.
EG-005	Cause of 18:25 SATCOM event	HIGH	Potentially discriminating between deliberate and emergency/technical system explanations.
EG-006	Full independent SATCOM reproduction	HIGH	Needed for independent BTO/BFO validation and model sensitivity.
EG-007	Complete debris custody / item-level register	MODERATE-HIGH	Improves provenance and reproducibility, especially DB-04 to DB-27.
EG-008	Exact breakup sequence	HIGH	Requires main wreckage and structural reconstruction.
EG-009	Physical-oceanography validation	HIGH	Needed to compare 35S/25S and object-specific drift uncertainty.
EG-010	Exact wreckage location	EXTREME	Direct detection required.
EG-011	Current search model	HIGH	Full target-selection probability architecture not public enough for complete independent reproduction.
EG-012	Search QC / detection probability	HIGH	AUV tracks, terrain, sensor performance and contact analysis needed to convert survey to exclusion confidence.
EG-013	Full simulator forensic corpus	HIGH	Needed for strongest assessment of planning/rehearsal claims.
EG-014	Direct actor identification	EXTREME	No public evidence identifies the responsible controller with the required threshold.
EG-015	Motive	EXTREME for attribution	No sufficiently supported financial, political, suicidal, terrorist or other motive is established.
EG-016	Occurrence-specific fire/decompression/hypoxia evidence	HIGH	Would materially affect H1/H2/H6.
EG-017	Complete military decision record	HIGH for governance	Needed to fully assess recognition, threat judgement and non-interception.
EG-018	Institutional right of reply	HIGH for publication fairness	Formal proposition-specific responses remain pending.

H2. Knowledge boundary

ESTABLISHED / very strong: normal initial flight, loss of normal secondary surveillance, westward diversion, continued later flight, confirmed debris and southern Indian Ocean loss.

Strong but inferential/model-dependent: active control, fuel exhaustion, rapid final descent, right-flap retracted state.

Indeterminate: initiating cause, controller identity, intent, motive, exact breakup sequence and exact wreckage coordinate.

H3. Reopen triggers

- Main wreckage or recorders are recovered.
- Authentic new raw military radar or cockpit-related evidence becomes public.
- A specialist materially rejects a core SATCOM, systems, radar, flight-operations, structures, oceanography or search interpretation.
- Ocean Infinity or another search locates a credible wreckage target.
- Institutional right of reply produces new primary evidence.



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MH370

Validation, Adversarial Review & Release Assurance Record

AUTHOR APPROVED COMPLETE RESEARCH EDITION - AWAITING INDEPENDENT SPECIALIST REVIEW

Evidence cut-off: 7 August 2026

External specialist validation: pending

Institutional right of reply: pending

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Prepared by	Paul Hattingh Aperture Research & Verification
Contact	info@apertureforensic.com www.apertureforensic.com

Purpose and programme state

This control record consolidates the complete validation and release architecture developed in Steps 7.32, 7.33 and 8.1 through 8.10. It does not state that external review has occurred. It defines the gates that must be passed before Version 0.8, 0.9 and 1.0 can be earned.

STEP 7.32 - Final Pre-Publication Control Matrix

The research and pre-specialist production programme was assessed as substantially complete. The remaining question became operational: what must still happen before the dossier can responsibly become Version 1.0 and be released publicly?

Completion of drafting is not completion of the investigation product. No critical gate may disappear through schedule pressure, convenience or design completion.

Gate	Status	Effect
Core research architecture	GREEN	Complete
Core Master Dossier	GREEN at pre-specialist level	No research-architecture blocker
Core evidence registers	GREEN at core level	Detail completion remains
Source completeness	AMBER	Must close
Specialist validation	RED	Release blocker
Right of reply	RED	Release blocker
Contradiction closure	AMBER	Must close
Full debris item register	AMBER	Must close or qualify
Citation/page verification	AMBER	Must close
Legal/fairness review	RED	Release blocker
Visual evidence QC	AMBER	Must close
Calculation QC	AMBER	Must close
Version reconciliation	AMBER	Must close
Source archive/hash	AMBER	Must close
Publication authority	RED	Final blocker

7.32 critical publication blockers

- External specialist validation not yet performed.
- Institutional right of reply not yet performed.

- Final legal/fairness and publication approval not yet performed.

7.32 stop-publication triggers

- Unsupported actor attribution.
- Unresolved major source contradiction.
- Specialist rejection of a core finding not integrated.
- Material right-of-reply evidence not incorporated.
- False exact-location wording.
- Citation failure affecting a major proposition.
- Model presented as observation.
- Unresolved material legal/fairness issue.

STEP 7.33 - Master Status Review and Step 7 Lock Decision

The review found the principal findings internally consistent across registers, annexes, synthesis and executive record, but identified three control problems: hypothesis-number drift, duplicate Annex G lettering and debris evidence-ID drift.

The lock principle adopted was to lock architecture and stable evidence conclusions while keeping specialist-dependent conclusions open to defined reopen triggers.

7.33 lock levels

- L1 Architecture Lock - structure cannot change without formal reason.
- L2 Proposition Lock - wording/classification fixed subject to defined reopen triggers.
- L3 Technical Lock - requires specialist validation.
- L4 Publication Lock - requires right of reply, legal/fairness review and release approval.

7.33 locked findings

- Evidence-governance architecture.
- Central research question.
- Broad southern Indian Ocean finding, subject to specialist reopen trigger.
- Exact-location ceiling: INDETERMINATE.
- Actor ceiling: INDETERMINATE.
- Motive ceiling: INDETERMINATE.
- Coordinated cover-up: UNSUPPORTED, subject to new primary evidence.
- Source-dependence principle.
- Search non-find principle.

7.33 not final-locked

- Active/manual control.
- Fuel exhaustion.
- Rapid final descent.
- Flap-state interpretation.
- 35S/25S ranking.
- H3/H6 tie.

STEP 8.1 - Master ID Reconciliation and Controlled Version Freeze

The original populated Master Registers were declared authoritative over later annex drafting errors. The canonical H1-H8 definitions were restored and locked. Annex lettering was fixed A-H. Existing ER, SR, EG and CALC IDs were frozen rather than repurposed.

Canonical hypothesis numbering

ID	Permanent meaning
H1	Early incapacitation / hypoxia
H2	Technical failure / fire / electrical event
H3	Deliberate onboard human action
H4	Other onboard human intervention
H5	Hijacking / third-party unlawful interference
H6	Emergency response followed by incapacitation
H7	Other material scenario
H8	Indeterminate / null epistemic classification

Canonical Annex lettering

Annex	Permanent title
A	SATCOM Technical Annex
B	Radar & Flight-Path Annex
C	Debris & Provenance Annex
D	Search & Location Analysis Annex
E	Claims & Evidence Audit
F	Competing Hypotheses & Falsification
G	Master Synthesis
H	Knowledge Boundary & Evidence Gap

Version lifecycle

- 0.1 Controlled pre-specialist draft.
- 0.5 Controlled Internal Freeze / Internal Final.
- 0.8 Specialist-Reviewed Draft.
- 0.9 Pre-Release.
- 1.0 Controlled Final.

STEP 8.2 - Cross-Reference Reconciliation Pass

CRX-01 through CRX-07 closed the Annex C ER drift, Annex F H1-H8 drift, Annex H/G lettering conflict, premature Executive Decision Record 0.9 label, ER-0026 to 0052 global verification and H3/H6 definition consistency.

Version 0.5 was formally designated the controlled internal freeze. Specialist pack preparation was authorised, but public release remained blocked.

STEP 8.3 - Specialist Dispatch Master Pack

Every specialist receives common control documents plus a domain-specific bundle. Reviewers are asked to test propositions, not endorse Aperture or solve MH370 independently. Material criticism is preserved as part of the controlled audit record.

Reviewer response categories

- CONFIRMED
- CONFIRMED WITH QUALIFICATION
- NOT CONFIRMED
- CONTRADICTED
- INDETERMINATE

Impact	Meaning
RI-0	Editorial
RI-1	Minor technical qualification
RI-2	Material wording change, classification unchanged
RI-3	Classification or reliance change; proposition reopening
RI-4	Core finding reopening

Conflict/attribution controls

- Reviewer identity, qualifications and material conflicts recorded.
- Attribution can be by name, role only, or confidential to Aperture.
- A domain review may not be marketed as general endorsement of the entire dossier.
- Where multiple reviewers are used, independent review before exposure to one another is preferred.

STEP 8.4 - Domain Specialist Pack Assembly Matrix

Domain	Primary material	Review focus	Priority
SATCOM/RF	Annex A	BTO, BFO, 18:25, southern route, final BFO/descent, fuel-exhaustion interaction	Critical
B777 Systems	A/F/system extracts	Electrical power architecture, SDU log-ons, 18:25 and 00:19 mechanisms, maintenance	Critical
Radar	Annex B	Target association, westward diversion, altitude/speed reliability, active-control inference	Critical
Flight Operations	B/F extracts	Active/manual control, automation, emergency turnback, prolonged automated flight	Critical
Structures/Wreckage	Annex C	Confirmed debris, flap state, ditching, breakup, explosive-evidence limits	High
Physical Oceanography	C/D extracts	Drift, 35S vs 25S, flaperon behaviour, geographic precision	Critical for narrow location
Search/Sonar	Annex D	Detection confidence, searched vs excluded, 2018 non-find, current search QC	Critical for exclusion
Aviation Law/Governance	G/H/governance extracts	ATC/civil-military criticism, concealment distinction, publication fairness	High

Cross-domain propositions

- 18:25 event: SATCOM + B777 Systems.
- Fuel exhaustion: Systems + SATCOM.
- Rapid descent: SATCOM + Flight Operations.
- Active/manual control: Radar + Flight Operations.
- Flap state/ditching: Structures + Flight Operations.
- Narrow location: Oceanography + Search/Sonar.

STEP 8.5 - Reviewer Selection and Independence Standard

Competence and independence take priority over agreement. Reviewers should normally have at least ten years relevant experience or equivalent recognised specialist work. Public advocacy for one MH370 theory is not an automatic exclusion but increases conflict weight.

Expert-shopping is prohibited: technically sound criticism cannot be discarded merely because it is inconvenient.

Preferred dual-review domains

- SATCOM
- Flight Operations / active-control interpretation
- Structures/flap state
- Drift modelling
- Sonar/search exclusion

STEP 8.6 - Specialist Review Integration Protocol

Every returned review enters the REV register before changing the dossier. RI-3 and RI-4 changes require formal proposition/core reopening, change logging, downstream reconciliation and, where relevant, H1-H8 and location reruns.

Expert disagreement is not resolved by vote. Evidence quality, reasoning, domain fit, independence and assumptions govern the disposition. Unresolved expert disagreement normally prevents confidence upgrade.

Version 0.8 entry conditions

- Required specialist reviews complete.
- RI-3 and RI-4 issues resolved or transparently retained where allowed.
- Cross-domain reconciliations recorded.
- H1-H8 rerun.
- Master Synthesis, Executive Decision Record and Knowledge Boundary updated.
- No false representation of expert consensus.

STEP 8.7 - Adversarial Review Protocol

Technical review asks whether a proposition is defensible. Adversarial review asks for the strongest evidence-based case that Aperture is wrong. The red team is rewarded for exposing real weaknesses, not for preserving the dossier.

Tier-1 red-team targets

- Westward diversion attribution.
- Active control.
- Southern-route conclusion.
- Southern Indian Ocean loss.
- Fuel exhaustion.
- Rapid final descent.
- Flap-state/ditching interpretation.
- H3 and H6.
- Search non-find interpretation.
- Governance-failure findings.

Mandatory adversarial tests

- Hidden-assumption register.
- Circular-reasoning test.
- Double-counting / source-dependence test.
- Negative-evidence test.
- Base-rate test where reliable data exist.
- Story-coherence test.
- Precision-illusion test.
- Omission test.
- Strongest counter-case requirement.

STEP 8.8 - Version 0.8 Readiness and Validation Scorecard

Version 0.8 is a validation state, not a calendar milestone. All critical gates must pass. A suggested programme-management score is 90/100 with zero failed critical gates, but the numeric score can never override a failed critical gate.

Critical Version 0.8 gates

- Core specialist reviews complete.

- Reviewer competence verified.
- RI-3 issues processed.
- RI-4 issues closed.
- Cross-domain conflicts reconciled.
- Adversarial review complete.
- AR-4 issues closed.
- New evidence controlled.
- H1-H8 rerun.
- H3/H6 symmetry checked.
- Location hierarchy rerun.
- Master Synthesis and Executive Decision Record reconciled.
- Contradictions updated.
- No false expert consensus.

STEP 8.9 - Version 0.8 to 0.9 Fairness and Release Transition

Technical validation does not remove the duty to give materially affected institutions a fair opportunity to challenge the record. Right of reply is proposition-specific and uses Version 0.8 wording only.

Minimum right-of-reply recipients

- Malaysian Ministry of Transport / relevant investigation authority.
- Relevant Malaysian military authority.
- Malaysia Airlines.
- Ocean Infinity.

Right-of-reply controls

- Default response period: 14 calendar days from confirmed receipt.
- No response does not establish agreement, guilt, concealment or correctness of Aperture.
- New respondent evidence is authenticated and enters SR/ER control.
- ROR-I3 changes classification/reliance; ROR-I4 reopens a core finding.
- A major ROR reopening may create Version 0.8R before the pre-release process resumes.

Version 0.9 conditions

- Version 0.8 specialist validation passed.
- Right of reply completed.
- ROR-I3/I4 resolved.
- Legal/fairness review completed.
- Claims Audit, contradiction and evidence-gap registers rerun.
- H1-H8 and location hierarchy rerun.
- Executive and public derivative products reconciled.
- Source Freeze declared.

STEP 8.10 - Version 0.9 to 1.0 Final Release Assurance

Version 1.0 requires citation integrity, source archive integrity, register integrity, internal consistency, visual/figure accuracy, language quality, legal/fairness closure, publication-package integrity, reproducibility and formal release authority.

Final release package

- Executive Summary.
- Master Dossier.

- Annexes A-H.
- Claims Audit.
- Portfolio Case Study.
- Methodology Statement.
- Version History.
- Change Log.
- Source Statement.
- Transparency Statement.
- Final Delivery Manifest.

Post-publication correction protocol

- PC-1 editorial.
- PC-2 citation.
- PC-3 material factual correction.
- PC-4 analytical correction requiring a new version.
- No silent material edits.

Route to endpoint 10.5

9.10 Version 0.8 Specialist-Reviewed Draft can be earned only after real reviews. 10.1 is institutional right of reply. 10.2 integrates ROR and legal/fairness review. 10.3 creates Version 0.9 Pre-Release and Source Freeze. 10.4 performs final production/release QA. 10.5 is Version 1.0 Controlled Final plus authorised public release. The endpoint is a final dossier, not necessarily a solved historical mystery.



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MH370

Reviewer Selection, Outreach & Execution Record

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
Adversarial review execution	Not completed
Institutional right of reply	Not completed
Legal/fairness review	Not completed
Public release	Not authorised
Author approval	Approved by Paul Hattingh on 7 August 2026
Prepared by	Paul Hattingh Aperture Research & Verification
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Purpose

This record consolidates Phase 9 Steps 9.1 through 9.9: external validation launch, reviewer register and outreach pack, search profiles, candidate longlist, preliminary vetting, targeted recruitment gaps, final outreach authorisation and review-integration protocol. No person listed here is represented as an appointed Aperture reviewer.

STEP 9.1 - External Validation Launch Pack

Wave 1 tests the causal core: SATCOM/RF, B777 Systems, Radar and Flight Operations. Wave 2 tests Structures/Wreckage, Physical Oceanography and Search/Sonar. Wave 3 covers Aviation Law/Governance after the technical record stabilises.

First-wave critical propositions: westward diversion attribution, active control, likely manual turnback, southern-route SATCOM interpretation, 18:25 SDU event, fuel exhaustion and final-BFO descent interpretation.

STEP 9.2 - Reviewer Appointment Register & Outreach Pack

Every candidate receives a RAR record. Status codes include candidate, vetting, approach approved, contacted, interested, appointed, declined, no response, excluded and withdrawn. Declines and no-response outcomes remain in the audit trail.

Reviewer qualification dimensions

- Technical competence.
- Direct proposition relevance.
- Independence.
- Conflict transparency.
- Evidence reasoning.

Important scoring correction

Earlier preliminary scoring assigned some candidates 5/5 for conflict transparency before an actual declaration existed. Step 9.7 identified this as methodologically too strong. Going forward, conflict transparency remains NOT YET SCORED until a real declaration is obtained; independence also cannot be finalised solely from public biography review.

STEP 9.3 - Candidate Identification Strategy

Candidates are sought through peer-reviewed literature, professional bodies, universities, operational industry, former investigators, technical authors and referrals. Public prominence is not a qualification. Different analytical lineages are preferred for dual-review domains.

Search-profile requirements

- SATCOM: satellite/RF + independent signal/frequency estimation.
- Systems: B777 electrical, fuel, SDU/AMS/avionics power architecture.
- Radar: primary/secondary surveillance, target association and uncertainty.
- Flight Operations: senior B777 operational/training experience.
- Structures: aircraft structures/fracture and wreckage investigation.
- Oceanography: particle drift, currents, windage/leeway and uncertainty.
- Search/Sonar: deep-ocean AUV/sonar, detection probability, terrain and QC.
- Governance: Annex 13, investigation practice and aviation law.

STEP 9.4/9.7 - Public-source candidate longlist

Domain	Candidate	Institution / basis	Preliminary public-source fit
SATCOM/RF	Barry Evans	University of Surrey	Satellite communications professor; strong direct satellite-systems pedigree.
SATCOM/RF	Elias Aboutanios	UNSW	Signal processing, frequency estimation, satellite communications and radar.
SATCOM/RF	Andrew Dempster	UNSW	Satellite navigation, positioning and signal processing.
SATCOM/RF	Gabriele Gradoni	University of Surrey	Wireless and satellite communications / propagation modelling.
SATCOM/RF	Serdar Vural	University of Surrey	Satellite communications.
B777 Systems	Irfan Madani	Cranfield University	Avionics systems, flight controls and aircraft systems.
B777 Systems	Craig Lawson	Cranfield University	Airframe systems / electrical-mechanical aircraft systems.
B777 Systems	David Cirulli	Embry-Riddle	Former Honeywell commercial aviation systems/software; certification/electrical power context.
B777 Systems	Derren Kuhn	Embry-Riddle	Pilot/A&P/IA; aircraft electrical and jet transport systems teaching.
Radar	Sean O'Neil	MITRE	Radar target tracking and surveillance systems.
Radar	Alessio Balleri	Cranfield University	Professor of Radar Systems.
Radar	Ioannis Vagias	Cranfield University	Radar lecturer with Hellenic Air Force radar-site/avionics background.
Flight Operations	Antonio Cortés	Embry-Riddle	Airline pilot/instructor, safety and B777 simulator experience.
Flight Operations	Stefan Kleinke	Embry-Riddle	Former military pilot/instructor/examiner; broad operations background.
Flight Operations	Graeme Edward Perry	Independent / training profile	Senior B777 training/checking profile; >10,000 B777 command hours reported in public profile; direct verification required.
Flight Operations	Lance Lau	Training-management profile	Retired airline captain, B777 instructor/evaluator and extensive simulator instruction reported.
Flight Operations	Chip Bornstein	Professional aviation profile	B777 captain, check-airman/safety background and prior FAA radar-controller experience.
Flight Operations	Robert Jeffrey Ward	Professional profile	B777/787 instructor pilot and former senior B777 training captain; independent history verification required.
Structures	M.H. Ferri Aliabadi	Imperial College London	Aerostructures, fracture/damage mechanics and structural integrity.
Structures	Matthew Santer	Imperial College London	Aerospace structures.
Accident Investigation	Graham Braithwaite	Cranfield University	Safety and Accident Investigation; valuable for wreckage methodology/governance.
Oceanography	David Griffin	CSIRO	Physical oceanographer; direct MH370 Drift Working Group involvement - competence strength and independence limitation.
Oceanography	Mirjam van der Mheen	University of Western Australia	Floating-object transport and Indian Ocean drift modelling.
Oceanography	Nicole Jones	University of Western Australia	Transport, mixing and physical oceanography.
Oceanography	Matt Rayson	University of Western Australia	Physical oceanography / numerical modelling.
Oceanography	Amandine Schaeffer	UNSW	Physical oceanography, dispersion and drifting dynamics.
Search/Sonar	Larry Mayer	University of New Hampshire	Deep-ocean mapping, hydrography and acoustic survey.
Search/Sonar	James Gardner	University of New Hampshire	Marine geophysics, bathymetry and acoustic mapping.
Search/Sonar	Ann Blomberg	UNH affiliate	Sonar/seismic acquisition, processing and interpretation.
Search/Sonar	Yvan Petillot	Heriot-Watt University	Underwater robotics, sonar image processing, AUV perception and target detection; independent institutional lineage.
Aviation Law/Governance	Vincent Correia	McGill IASL	International aviation law and regulation.
Aviation Law/Governance	Donal P. Hanley	McGill IASL	Air law; reserve legal reviewer.
Aviation Law/Governance	Andrea Harrington	McGill IASL	Air/space law; reserve broader legal candidate.

Candidate status warning

Candidate inclusion means only that a public professional profile suggested possible domain fit. Availability, willingness, conflicts, current role and independence remain unverified until direct contact and declaration. External validation remains 0% until an appointed reviewer returns an actual completed review.

STEP 9.5 - Preliminary shortlist logic

Initial internal rankings were used only to organise outreach. Because conflict-transparency and independence fields were prematurely scored in the first pass, those numerical scores are not treated as final appointment evidence. The corrected methodology prioritises evidence-backed credentials and leaves declaration-dependent fields unscored until obtained.

Recruitment gaps

- B777 flight-operations gap substantially improved through later B777-specific candidate discovery.
- Independent sonar/search gap substantially improved through Yvan Petillot / separate institutional lineage.
- Directly verified Boeing 777 electrical/avionics/SDU specialist remains only partially closed; Honeywell AIMS/B777 engineering is an identified institutional search route.

STEP 9.6/9.8 - Outreach authorisation

Only Version 0.5 controlled material may be dispatched for formal review. Initial invitations must not ask for endorsement and must state that reviewers are specifically wanted to identify where Aperture may be wrong, too confident, incomplete or missing credible alternatives.

Once a reviewer accepts in principle: issue reviewer ID, complete conflict vetting, agree scope/attribution/due date, assign package ID and dispatch the controlled domain bundle. Only then is the reviewer APPOINTED.

STEP 9.9 - Review Integration & Decision Protocol

Every completed review receives a REV ID and proposition-level response. Accepted changes are accumulated for Version 0.8; Version 0.5 remains frozen. Reviewer agreement does not automatically change a proposition, and disagreement is not suppressed. Evidence, reasoning, assumptions, domain fit and independence govern the integration decision.

Version 0.8 cannot be created until real first-wave reviews exist, RI-3/RI-4 matters are resolved, H1-H8 is rerun and the Master Synthesis and Executive Decision Record are updated.



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MH370

Executive Decision Record - Version 0.5

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
Adversarial review execution	Not completed
Institutional right of reply	Not completed
Legal/fairness review	Not completed
Public release	Not authorised
Author approval	Approved by Paul Hattingh on 7 August 2026
Prepared by	Paul Hattingh Aperture Research & Verification
Contact	info@apertureforensic.com www.apertureforensic.com

Decision-grade synopsis

What was investigated: the public evidence concerning MH370's normal departure, abnormal route, surveillance loss, satellite signalling, end-of-flight, recovered debris, searches, competing causal explanations and institutional response.

What the strongest evidence establishes: a westward diversion, prolonged multi-hour flight, a southern route and ultimate loss in the southern Indian Ocean, supported by confirmed physical debris.

What it does not establish: initiating cause, controller identity, intent, motive, exact impact coordinate or exact breakup sequence.

Current causal position: H3 deliberate onboard human action and H6 emergency response followed by later incapacitation remain joint top-tier broad survivors. H8 INDETERMINATE remains the final cause state.

Permitted reliance: high on broad route/loss-region conclusions; conditional on active control, fuel exhaustion, final descent and flap-state implications; no reliance on exact-coordinate or named-actor claims as established facts.

Decision-safe findings

Finding	Status	Decision significance
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

What could change the decision

- Recovery of main wreckage, FDR or CVR.
- Authentic raw radar/cockpit evidence.
- A material specialist RI-4 finding.
- A credible search contact or new physical evidence.
- New primary evidence through institutional right of reply.

Release decision

Author approval was granted by Paul Hattingh on 7 August 2026. The dossier is suitable for controlled internal research use and dispatch for independent specialist review. It is not yet suitable for public Version 1.0 reliance.



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MH370

Public Portfolio Case Study - Internal Draft

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

Paul Hattingh | Aperture Research & Verification

MH370 is an unusually demanding public-source case: multiple countries, incomplete primary evidence, technical satellite and radar inference, physical debris, changing search areas and a large body of public speculation.

- Separated observations from models and hypotheses.
- Built a controlled evidence and source architecture.
- Reconstructed flight and search chronology.
- Tested radar and SATCOM interpretations.
- Audited debris provenance and drift claims.
- Used search non-findings as model-specific falsification evidence.
- Mapped public claim mutation and source recycling.
- Ran competing H1-H8 hypotheses and knowledge-boundary analysis.
- Designed specialist, adversarial, right-of-reply and release-assurance gates.

The research supports a strong broad flight reconstruction and southern Indian Ocean loss conclusion while preserving uncertainty on cause, actor, motive and exact wreckage location. It shows how a high-volume public mystery can be converted into a controlled decision record without pretending certainty where evidence is missing.

This portfolio derivative is author approved. It remains on publication hold because independent specialist review, institutional right of reply and release assurance are incomplete.



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APERTURE

Research Principles Derived from the MH370 Programme

AUTHOR APPROVED - EXTERNAL SPECIALIST REVIEW PENDING

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
Document	Aperture Research Principles derived from the MH370 programme
Status	Author approved on 7 August 2026 - external specialist review pending
Public-facing brand	Aperture Research & Verification
Prepared by	Paul Hattingh

1. Evidence over reputation

A claim is assessed by the evidence that supports it, not the status of the person or institution making it.

2. Re-test before changing a preferred hypothesis

If evidence contradicts a preferred hypothesis, Aperture re-checks the evidence. If the contradiction survives, the conclusion changes.

3. Outsider theories are evidence-tested

Independent researchers, forums or unconventional sources receive no automatic penalty or bonus. The underlying evidence is tested.

4. Quarantine unverified/leaked material

Anonymous or leaked material may be investigated but cannot carry a material finding until origin, integrity and relevance are sufficiently authenticated. It belongs in a Quarantine Evidence Register.

5. High threshold for named actor ranking

A named individual may be called the strongest candidate only where multiple materially independent evidence streams support the ranking and equally strong alternatives do not.

6. Preferred is not proven

A future preferred hypothesis remains unconfirmed until the evidence actually reaches an established-cause threshold.

7. Correct publicly and version openly

Credible post-publication criticism triggers review. Valid material corrections create a new version and change log. No silent material edits.

8. Preserve uncertainty

Indeterminate findings remain indeterminate. Writing must not manufacture certainty.

9. Negative evidence needs expectation and detectability

Absence is evidence only when the item should reasonably have existed and been detectable if the hypothesis were true.

10. Models are not observations

Derived, estimated and modelled values must be visually and verbally distinguished from direct observations.

11. Independent convergence outranks repetition

Multiple independent evidence origins are stronger than many publications recycling one source.

12. Human accountability

Technology can support research but does not replace professional judgment, explicit limitations or final human accountability.

Post-publication review rule

No Aperture publication is final merely because it has been released. Credible new evidence or substantive criticism can trigger a formal Post-Publication Review and, where justified, a corrected Version 1.1 or later edition with a transparent change log.



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MH370

Final Delivery Manifest & Conformity Record

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
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Prepared by	Paul Hattingh Aperture Research & Verification
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Production basis

This delivery follows the controlling Aperture PDF visual master and the current bright website identity: the approved multicolour Aperture Research & Verification composite logo, navy #16233A, orange #FF7A00, cyan #00B8D9 and secondary blue #4F81BD accents on a white field.

The approved bright composite logo was recovered directly from the controlled Aperture visual-master PDF. PDF typography follows the master instruction: Carlito Bold for headings and Liberation Sans for body text, tables and footers. No silent font substitution is used.

Human approval record

Paul Hattingh, the named final human approver for this research edition, approved the complete Version 0.5 research package on 7 August 2026. This approval confirms the author-controlled content, structure, visual presentation and internal research state. It does not simulate or replace independent specialist review, legal review, institutional right of reply or later publication-release gates.

Research completeness state

- All recoverable current MH370 narrative findings included.
- Annexes A-H provided as full individual PDFs.
- Canonical H1-H8, Annex lettering and recovered ER/CALC controls included.
- Step 7.32 through Step 8.10 validation/release architecture consolidated in full functional form.
- Step 9.1 through 9.9 reviewer-selection/outreach/integration programme consolidated.
- Current 2026 Ocean Infinity search status rechecked against official Malaysian sources.
- Known unrecoverable early register wording disclosed instead of fabricated.

Release status

This is an Author Approved Complete Research Edition, Version 0.5. Paul Hattingh approved this exact research-package status on 7 August 2026. It is not Version 0.8 specialist-reviewed, Version 0.9 pre-release or Version 1.0 controlled final. No external review, legal review or institutional response has been simulated.